

FINAL Traffic Capacity Analysis

Independence Boulevard Extension

(NCDOT STIP U-4434)

**An Analysis of 2017 No-Build Alternative, 2040
No-Build Alternative, and 2040 Build Alternatives**

**Prepared For:
North Carolina Department of Transportation**



**Prepared By:
AECOM Technical Services of North Carolina**

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FINAL Capacity Analysis Report

Independence Boulevard Extension

**From Randall Parkway to US 74 (Martin Luther King, Jr. Parkway)
City of Wilmington, New Hanover County, North Carolina**

(NCDOT STIP U-4434)

**An Analysis of the 2017 No-Build Alternative,
2040 No-Build Alternative and 2040 Build Alternatives**

For:

North Carolina Department of Transportation

By:

AECOM Technical Services of North Carolina, Inc.



May 2018

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1.0 INTRODUCTION

This report summarizes the capacity analysis findings with the project limits for North Carolina Department of Transportation (NCDOT) State Transportation Improvement Program (STIP) Project U-4434. Project U-4434 includes extending of existing Independence Blvd from the intersection with Randall Pkwy to US 74 (Martin Luther King Jr. Pkwy) in New Hanover County. This 1.8-mile long multi-lane facility, located in the northern part of the Wilmington city limits, would improve traffic operations throughout the Wilmington metropolitan area.

The analysis area is shown below in the **Project Vicinity Map**.

2.0 SCOPE

The proposed project, part on new location, would be an extension of existing Independence Blvd (SR 1209) from the intersection of Independence Blvd and Covil Ave with Randall Pkwy and Mercer Ave northward to a new interchange with US 74 (Martin Luther King, Jr. Pkwy). This report includes an evaluation of the following alternatives:

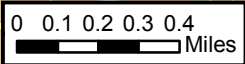
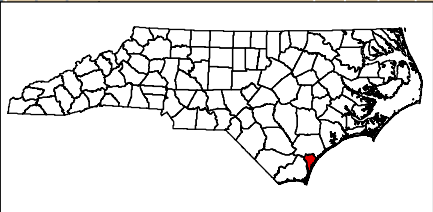
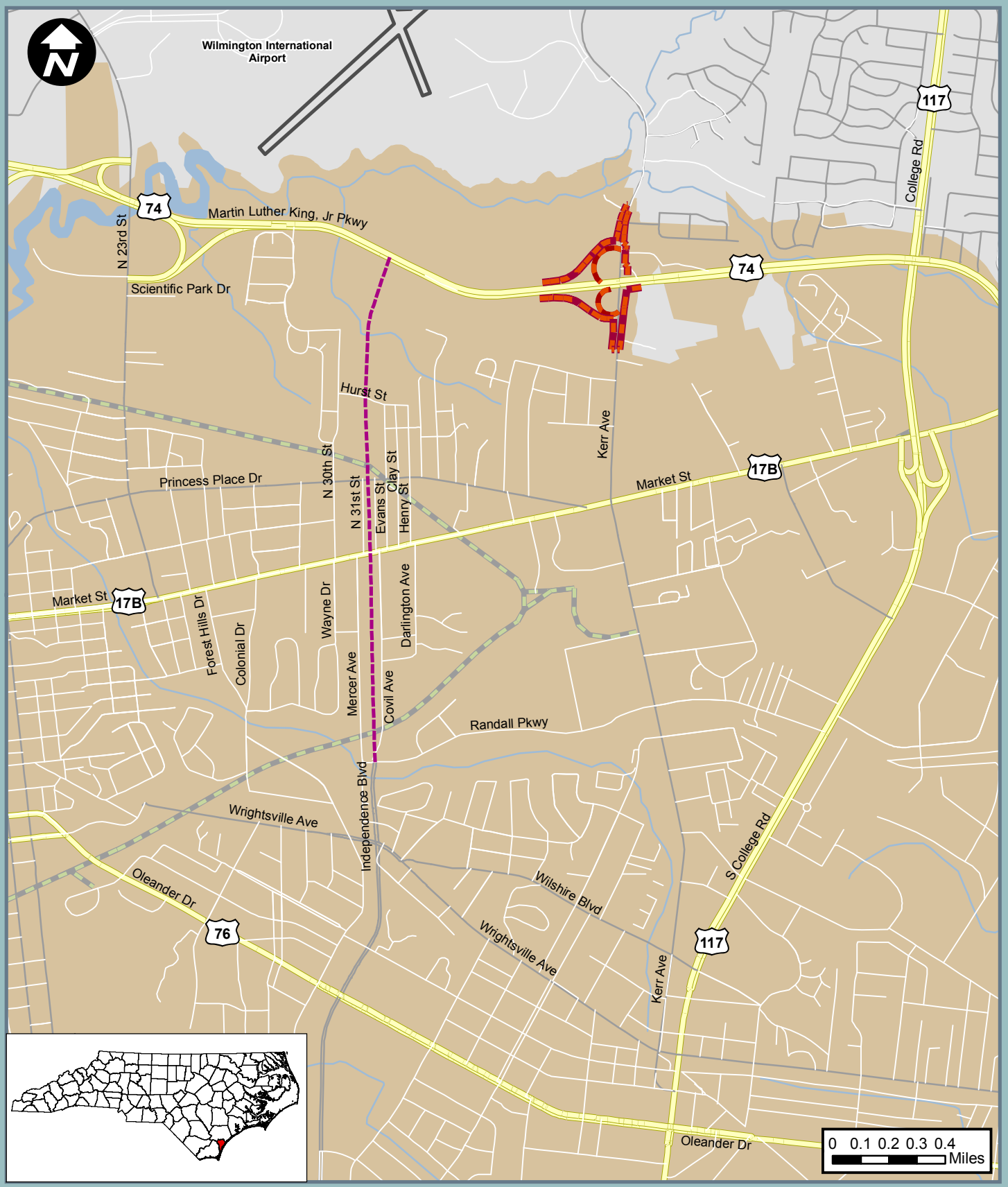
- 2017 Base Year No-Build – Existing conditions
- 2040 Future Year No-Build
- 2040 Future Year Build
 - Areas identical for all Build Alternatives
 - At-Grade Intersection at Independence Blvd and US 17 Business
 - Grade-Separated Interchange at Independence Blvd and US 17 Business
 - Alternative 2, Single Point Urban Interchange (SPUI) at Independence Blvd and US 17 Business
 - Alternative 2, Tight Urban Diamond Interchange (TUDI) at Independence Blvd and US 17 Business
 - Alternative 7, Single Point Urban Interchange (SPUI) at Independence Blvd and US 17 Business
 - Alternative 7, Tight Urban Diamond Interchange (TUDI) at Independence Blvd and US 17 Business

Areas adjacent to the U-4434 Project Limits will also be analyzed under the 2017 Base Year No-Build, 2040 Future Year No-Build, and 2040 Future Year Build Scenarios. This analysis will be included within this memorandum at a later time to show the impacts the project could have on those areas.

Using the traffic forecast information provided by the NCDOT (dated July 2017) and located in **Appendix B**, Synchro/ SimTraffic, and HCS 2010 capacity analysis were performed. Per the current scope of the project, the analysis included no-build conditions and build conditions with recommendations on future improvements.



Wilmington International Airport












North Carolina
Department of Transportation



April 2018

Legend

-  U-4434 (Proposed)
-  Proposed Kerr Ave Interchange (U-3338)
-  US Highway
-  State Route
-  Local Road
-  Railroad
-  Streams (non-delineated)
-  Water
-  Wilmington Municipal Boundary

**Independence Boulevard
Extension
New Hanover County, NC
STIP U-4434**

Figure 1

Project Vicinity

3.0 PROJECT BACKGROUND

3.1 Existing Conditions

The roadway network in the Wilmington area consists of two Interstate highways, several primary US and NC routes, and numerous secondary and local streets. Most roadways vary from two-lane to six-lane segments and carry both local and regional traffic. The primary north-south routes in the project vicinity are I-40/NC132 (College Rd), existing SR 1209 (Independence Blvd), SR 1775 (Kerr Ave), and 23rd St while the primary east-west roadways are US 74 (Martin Luther King Jr. Pkwy), US 17 Business (Market St), Randall Pkwy, and US 76 (Oleander Drive). Princess Place Drive is a secondary route that carries east-west local traffic, and Covil Ave carries north-south traffic.

Independence Blvd is a north-south major arterial serving central Wilmington. The road begins as a two-lane roadway at the intersection with River Rd near Cape Fear River on the south-west side of Wilmington and becomes a four-lane divided roadway after its intersection with US 421 (Carolina Beach Rd) until it meets Randall Pkwy. It carries between 5,300 and 33,000 vehicles per day. It has a posted speed limit of 45 miles per hour (mph).

Land uses vary along the roadways and have varying levels of access control with portions of US 74 being the only controlled access roadway in the vicinity of the project. Land use at the southern project terminus (Randall Pkwy/Mercer Ave/existing Independence Blvd) is made up mostly of residential development while the northern terminus (US 74) includes a park and mostly undeveloped forest. The area immediately to the northeast of the northern project terminus is the flight path for one of the main runways at Wilmington International Airport.

In addition to the roadway summarized in this section, CSX has a major rail line that crosses through the project area twice. This particular rail line begins at the Port of Wilmington and stretches westward to major train route intersection in Hamlet and Monroe before arriving in Charlotte.

3.2 Description of Alternatives Analyzed

3.2.1 2017 No-Build Alternative

The 2017 No-Build Alternative is based on the current traffic volumes and configuration of the transportation network within the project study area. No proposed improvements have been included in this analysis.

3.2.2 2040 No-Build Alternative

The 2040 No-Build Alternative assumes the local transportation system would evolve as currently planned, but without implementation of the proposed project.

3.2.3 2040 Build Alternatives

There are three proposed alternatives for Independence Blvd, associated with the build alternatives. All of these alternatives begin at the current northern terminus of Independence Blvd at Randall Pkwy and Mercer Ave. From there, the at-grade intersection alternative heads northward, meeting US 17 Business (Market St) at-grade and crossing over Darlington Ave, Princess Place Drive, CSX Railroad, and Hurst St before ending at a proposed interchange with US 74 (Martin Luther King, Jr. Pkwy). The two grade-separated alternatives also head northward, crossing over US 17 Business (Market St), Darlington Ave, Princess Place Drive, CSX Railroad, and Hurst St before ending at a proposed interchange with US 74 (Martin Luther King, Jr. Pkwy). Each of the two proposed grade-separated alternatives includes Independence Blvd passing over US 17 Business and providing access between the roads via either a Single Point Urban Interchange (SPUI) or a Tight Urban Diamond Interchange (TUDI), with signalized ramp termini on US 17 (Market St).

For the 2040 Build scenario, Darlington Ave is assumed to be grade separated from Independence Blvd and extended to Mercer Drive to the west. At this location, it is assumed that all movements, with the exception of the left turn from Darlington Ave WB to Independence Blvd SB, would be rerouted to the US 17 Business (Market St) Interchange. The left turning movement would be rerouted to Mercer Ave using the extension from Darlington Ave, and access Independence Blvd using the at-grade intersection at Mercer Ave and Randall Pkwy. All traffic redistributions are included in **Appendix C**.

ALTERNATIVE 2

2040 Build Alternative 2 assumes Independence Blvd will be extended on new alignment from its current terminus at Randall Pkwy and Mercer Ave northward to an interchange with existing US 74 (Martin Luther King, Jr. Pkwy). The alignment will roughly follow the existing alignments of Covil Ave and Montgomery Ave until reaching Princess Place Drive. At that point, Independence Blvd will continue northward on new location until reaching US 74.

ALTERNATIVE 7

2040 Build Alternative 7 assumes Independence Blvd will be extended on new alignment from its current terminus at Randall Pkwy and Mercer Ave northward to an interchange with existing US 74 (Martin Luther King, Jr. Pkwy). The alignment will be set between Covil Ave and Mercer Ave to the south of US 17 Business and slightly to the west of Montgomery Ave north of US 1 Business until reaching Princess Place Drive. At that point, Independence Blvd will continue northward on new location until reaching US 74.

4.0 METHOD OF ANALYSIS

4.1 Traffic Volume Assumptions

The traffic forecast used for this project was conducted and furnished to AECOM by NCDOT (dated July 2017), as shown in **Appendix B**. Using this forecast and NCDOT's

Intersection Analysis Utility (IAU) tool, AM and PM peak hour volumes were developed for all of the alternatives being evaluated. The Wilmington Metropolitan Planning Organization (WMPO) Metropolitan Transportation Plan (MTP) and NCDOT 2018-2027 STIP were reviewed. Based on these, the following fiscally constrained projects are assumed to be in place in the future year:

- R-1: U-3338B – Kerr Ave Widening
- R-7: U-5702 – US 117/NC 132/College Rd Widening
- R-9: U-5869 – US 17 Business/Market St Road Diet
- R-13: U-5704 – US 117/NC 132/College Rd/Oleander Drive Intersection
- R-14: U-4902 – US 17 Business/Market St Access Management
- R-19: U-5792 – US 117/NC 132/College & MLK Pkwy Intersection
- R-20: U-3338C – Kerr Ave/MLK Jr. Pkwy Intersection Improvements
- R-33: U-3338B – Kerr Ave Widening
- R-35: U-6083 – North 23rd St Widening
- R-40: N/A – Kerr Ave Extension

The numbers associated with each project correspond to the Fiscally-Constrained Project List of the WMPO MTP.

The IAU spreadsheets for all scenarios are included in **Appendix C**.

4.2 Capacity Analysis

The highway capacity analyses performed were based on methodologies from the *Highway Capacity Manual (HCS version 6.9)*. Traffic modeling software used in the capacity analyses were *Synchro 9.1* and *SimTraffic 9.1, (Build 912, Rev 4)*. The analyses were conducted in accordance with the latest NCDOT Congestion Management Unit's *Capacity Analysis Guidelines for TIP projects*, dated July 2015.

The traffic carrying ability of a roadway is described by levels of service (LOS) that range from LOS A to LOS F. **Table 1** defines the traffic flow conditions and approximate driver comfort level at each level of service for signalized and unsignalized intersections, as well as basic freeway segments, ramp merges/diverges, and weaving segments. Note that the delays associated with LOS for signalized intersections are different from those associated with unsignalized intersections. *HCM 2010* explains that drivers perceive that a signalized intersection is designed to carry higher traffic volumes, and therefore expect to experience greater delays at signalized intersections. A signalized intersection is described by a single LOS. Unsignalized intersections are assigned a LOS for each minor movement. Basic freeway segments, ramps, and weaving segments are described by density (passenger cars per mile per lane (pc/mi/ln)) or volume-to-capacity (v/c) ratios.

For the HCS analysis, several types of merges and diverges were considered:

1. Standard ramp – a deceleration or acceleration lane develops, followed by a lane departing from or adding to the freeway, respectively; this interaction results with the same number of lanes on the freeway before and after the ramp, and HCS will report LOS.

2. Major merge – multiple lanes join the freeway from the on-ramp, and one or more ramp lanes taper in; this interaction results with more lanes on the freeway after the ramp, but a lesser number than the total ramp lanes (i.e., 3-lane freeway, 2-lane on-ramp, resulting in a 4-lane freeway). It should be noted that neither HCS 2010 nor HCM 2010 includes a module/methodology to analyze major merges. For analysis purposes, if a major merge had a v/c ratio of 0.85 or less, then it was assumed to have adequate capacity and meet minimum LOS D requirements.
3. Major diverge – multiple lanes depart the freeway to the off-ramp, and include a decision lane from the freeway, in which traffic has the option to stay on the freeway or exit; this interaction results with fewer lanes on the freeway after the ramp, but a greater number than the total ramp lanes (i.e., 3-lane freeway, 2-lane off-ramp, resulting in a 2-lane freeway). It should be noted that neither HCS 2010 nor HCM 2010 includes a module/methodology to analyze major diverges. For analysis purposes, if a major diverge had a v/c ratio of 0.85 or less, then it was assumed to have adequate capacity and meet minimum LOS D requirements. For each leg, LOS is based on the vehicle density of the roadway.
4. Isolated ramp – continuous lanes drop from or are added to the freeway; this interaction results in fewer or more lanes on the freeway, respectively, at a number equal to the total ramp lanes (i.e., 3-lane freeway, 1-lane off-ramp, resulting in a 2-lane freeway), however HCS will not report LOS. Instead, at these locations v/c ratios are used to compare how many vehicles use the ramp to the number of available ramp lanes; v/c ratios are reported as two-digit decimals.

Table 1 Level of Service (LOS) Index						
LOS	Traffic Flow Conditions	Signalized Intersection Delay (sec)	Unsignalized Intersection Delay (sec)	Basic Freeway Segment Density (pc/mi/ln)	Ramp Merge/Diverge Density (pc/mi/ln)	Freeway Weaving Segment Density (pc/mi/ln)
A	Progression is extremely favorable and most vehicles do not stop at all.	≤ 10	≤ 10	≤ 11	≤ 10	≤ 10
B	Good progression, some delay.	> 10 - 20	> 10 - 15	> 11 - 18	> 10 - 20	> 10 - 20
C	Fair progression, higher delay.	> 20 - 35	> 15 - 25	> 18 - 26	> 20 - 28	> 20 - 28
D	Unfavorable progression, congestion becomes apparent.	> 35 - 55	> 25 - 35	> 26 - 35	> 28 - 35	> 28 - 35
E	Poor progression, substantial delay.	> 55 - 80	> 35 - 50	> 35 - 45	> 35 and v/c < 1.00	> 35 - 43**
F	Poor progression, extreme delay.	> 80	> 50	> 45 or v/c > 1.00	v/c > 1.00	> 43** or v/c > 1.00

Source: HCM 2010

For the queue analysis, simulation runs (using SimTraffic) were performed to analyze the queuing and blocking problems. The queue reported is the greater of the SimTraffic maximum queue and the Synchro 95th percentile queue.

5.0 CONCLUSIONS AND RECOMMENDATIONS

Sections 5.1 through 5.8 summarize the findings and recommendations of the capacity and queuing analyses. Synchro Analysis reports for all no-build and build alternatives are included in **Appendix D**, and HCS Analysis reports are included in **Appendix E**.

5.1 2017 No-Build Alternative

Eight (8) out of nine (9) intersections analyzed within the project limits exhibit poor level of service in at least one peak hour. Existing storage lengths at all intersections, based

on available data and current conditions, are reported. Several intersections do not adequately handle the queues and need additional storage.

Table 2 in **Appendix A** shows the results for the 2017 No-Build Alternative and **Figure 2** shown in **Appendix A** show the results graphically. Peak hour traffic volumes are included in **Figure 3**. Detailed Synchro/SimTraffic reports are located in **Appendix D**.

5.2 2040 No-Build Alternative

All intersections analyzed within the project limits exhibit poor level of service in one or both peak hours. Existing storage lengths at all intersections, based on available data and current conditions, are reported. Several intersections do not adequately handle the queues and need additional storage.

Table 3 in **Appendix A** shows the results for the 2017 No-Build Alternative and **Figure 4** shown in **Appendix A** show the results graphically. Peak hour traffic volumes are included in **Figure 5**. Detailed Synchro/SimTraffic reports are located in **Appendix D**.

5.3 2040 Build Alternative – Common to all Build Alternatives

5.3.1 Freeway Segments

All freeway elements within the project limits are projected to operate at LOS D or better, or with a v/c ratio of 0.85 or better, in both peak hours.

5.3.2 Intersection of Independence Blvd and Mercer Ave/Randall Pkwy

The intersection of Independence Blvd and Mercer Ave/Randall Pkwy was analyzed as a stand-alone intersection that is common to all build alternatives. Three options were considered, and their results are below:

- a. Typical four-leg intersection: As an at-grade intersection, Independence Blvd would need four lanes in each direction through the Mercer Ave/Randall Pkwy intersection to provide LOS D or better, and/or a v/c ratio of 0.85 or better.
- b. Three-leg intersection with Mercer Ave removed: Removing Mercer Ave from the intersection was considered in an attempt to provide adequate operations at the signal with only three lanes along Independence Blvd in each direction. This proposed intersection alternative is projected to have at least one movement with LOS E or F in at least one peak hour with v/c ratios greater than 0.85 but less than 1.0.
- c. Superstreet: implementing a Superstreet design at this intersection would allow operations of LOS D or better throughout the corridor during both peak hour, with three lanes on Independence Blvd in each direction.

Table 4 in **Appendix A** shows the results for the 2040 Build Common to All Alternatives and **Figures 6A-6C** shown in **Appendix A** show the results graphically. Peak hour traffic volumes are included in **Figures 7A-7C**. Detailed Synchro/SimTraffic and HCS reports are located in **Appendices D and E**.

5.4 2040 Build - At-Grade Intersection

The intersection of Independence Blvd and US 17 Business (Market St) analyzed as an at-grade intersection, exhibits poor level of service in one or both peak hours. Recommended storage lengths are additional storage that are required beyond the proposed design storage.

Table 5 in **Appendix A** shows the results for the 2040 Build Alternative 2 At-Grade Intersection Option and **Figure 8** shown in **Appendix A** show the results graphically. Peak hour traffic volumes are included in **Figure 9**. Detailed Synchro/SimTraffic reports are located in **Appendix D**.

5.5 2040 Build - Alternative 2 SPUI

All intersections analyzed within the project limits perform at LOS D or better, and/or with a v/c ratio of 0.85 or better, both peak hours. Recommended storage lengths are additional storage that are required beyond the proposed design storage. In general, the provided storage lengths in the proposed design for the intersections within the study area adequately handle queues.

Table 6 in **Appendix A** shows the results for the 2040 Build Alternative 2 SPUI Option and **Figure 10** shown in **Appendix A** show the results graphically. Peak hour traffic volumes are included in **Figure 11**. Detailed Synchro/SimTraffic reports are located in **Appendix D**.

5.6 2040 Build - Alternative 2 TUDI

All intersections analyzed within the project limits perform at LOS D or better, and/or with a v/c ratio of 0.85 or better, both peak hours. Recommended storage lengths are additional storage that are required beyond the proposed design storage. In general, the provided storage lengths in the proposed design for the intersections within the study area adequately handle queues.

Table 7 in **Appendix A** shows the results for the 2040 Build Alternative 2 TUDI Option and **Figure 12** shown in **Appendix A** show the results graphically. Peak hour traffic volumes are included in **Figure 13**. Detailed Synchro/SimTraffic reports are located in **Appendix D**.

5.7 2040 Build - Alternative 7 SPUI

All intersections analyzed within the project limits perform at LOS D or better, and/or with a v/c ratio of 0.85 or better, both peak hours. Recommended storage lengths are additional storage that are required beyond the proposed design storage. In general, the provided storage lengths in the proposed design for the intersections within the study area adequately handle queues.

Table 8 in **Appendix A** shows the results for the 2040 Build Alternative 7 SPUI Option and **Figure 14** shown in **Appendix A** show the results graphically. Peak hour traffic volumes are included in **Figure 15**. Detailed Synchro/SimTraffic reports are located in **Appendix D**.

5.8 2040 Build - Alternative 7 TUDI

All intersections analyzed within the project limits perform at LOS D or better, and/or with a v/c ratio of 0.85 or better, both peak hours. Recommended storage lengths are additional storage that are required beyond the proposed design storage. In general, the provided storage lengths in the proposed design for the intersections within the study area adequately handle queues.

Table 9 in **Appendix A** shows the results for the 2040 Build Alternative 7 TUDI Option and **Figures 16** shown in **Appendix A** show the results graphically. Peak hour traffic volumes are included in **Figures 17**. Detailed Synchro/SimTraffic reports are located in **Appendix D**.

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APPENDIX A – Tables and Figures

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2017 No-Build Alternative

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**Table 2A
2017 No Build – Intersection Level of Service**

#	Intersection	Level of Service	
		AM Peak	PM Peak
11*	Wayne Drive/30th Street at US 17 Bus (Market Street)	F	F
	Eastbound Left	B	B
	Westbound Left	B	B
	Northbound Left/Through/Right	F	F
	Southbound Left/Through/Right	F	F
12*	Mercer Avenue at US 17 Bus (Market Street)	E	F
	Westbound Left	B	B
	Northbound Left/Right	E	F
13*	US 17 Bus (Market Street) at 31st Street	F	F
	Eastbound Left	B	B
	Southbound Left/Right	F	F
14	Covil Avenue/Montgomery Avenue at US 17 Bus (Market Street)	F	F
	Eastbound Left	D	D
	Eastbound Through/Right	F	F
	Westbound Left	F	F
	Westbound Through/Right	C	D
	Northbound Left/Through	F	F
	Northbound Right	C	B
	Southbound Left	F	F
Southbound Through/Right	F	F	
15*	US 17 Bus (Market Street) at Evans Street	F	F
	Eastbound Left/Through	A	A
	Southbound Left/Right	F	F
16*	US 17 Bus (Market Street) at Clay Street	F	F
	Eastbound Left	C	B
	Southbound Left/Right	F	F

**Table 2A Cont.
2017 No Build – Intersection Level of Service**

#	Intersection	Level of Service	
		AM Peak	PM Peak
17*	Darlington Avenue/Henry Street at US 17 Bus (Market Street)	F	F
	Eastbound Left	C	B
	Westbound Left	B	C
	Northbound Left/Through	F	F
	Northbound Right	B	B
	Southbound Left/Through/Right	F	F
22*	Covil Avenue and Darlington Avenue	F	F
	Westbound Left	F	F
	Westbound Right	C	D
	Southbound Left	B	B
23	Independence Boulevard/Covil Avenue at Mercer Avenue/Randall Pkwy	D	D
	Eastbound Left/Through	E	E
	Eastbound Right	E	E
	Westbound Left	D	D
	Westbound Through/Right	C	C
	Northbound Left	D	C
	Northbound Through	D	D
	Northbound Right	B	C
	Southbound Left	E	F
Southbound Through/Right	C	B	

*Unsignalized Intersections

Table 2B				
2017 No Build – Queuing and Storage Length				
#	Intersection	Queue Feet		Existing Storage (feet)
		AM Peak	PM Peak	
11*	Wayne Drive/30th Street at US 17 Bus (Market Street)			
	Eastbound Left	276	276	250
	Westbound Left	40	55	300
12*	Mercer Avenue at US 17 Bus (Market Street)			
	Westbound Left	49	54	40
13*	US 17 Bus (Market Street) at 31st Street			
	Eastbound Left	81	50	40
14	Covil Avenue/Montgomery Avenue at US 17 Bus (Market Street)			
	Eastbound Left	115	87	175
	Westbound Left	1007	1036	Cont.
	Northbound Left/Through	1019	1253	Cont.
	Northbound Right	388	403	650
	Southbound Left	134	120	35
15*	US 17 Bus (Market Street) at Evans Street			
	Eastbound Left/Through	102	96	Cont.
16*	US 17 Bus (Market Street) at Clay Street			
	Eastbound Left	20	45	35
17*	Darlington Avenue/Henry Street at US 17 Bus (Market Street)			
	Eastbound Left	26	36	150
	Westbound Left	600	600	500
	Northbound Left/Through	246	246	150

Table 2B Cont.				
2017 No Build – Queuing and Storage Length				
#	Intersection	Queue Feet		Existing Storage (feet)
		AM Peak	PM Peak	
22*	Covil Avenue and Darlington Avenue			
	Westbound Left	250	250	150
	Westbound Right	990	993	Cont.
	Southbound Left	77	110	100
23	Independence Boulevard/Covil Avenue at Mercer Avenue/Randall Pkwy			
	Eastbound Through/Left	137	234	Cont.
	Eastbound Right	110	185	150
	Westbound Left	483	322	500
	Northbound Left	314	375	275
	Northbound Right	502	848	750
	Southbound Left	266	278	375

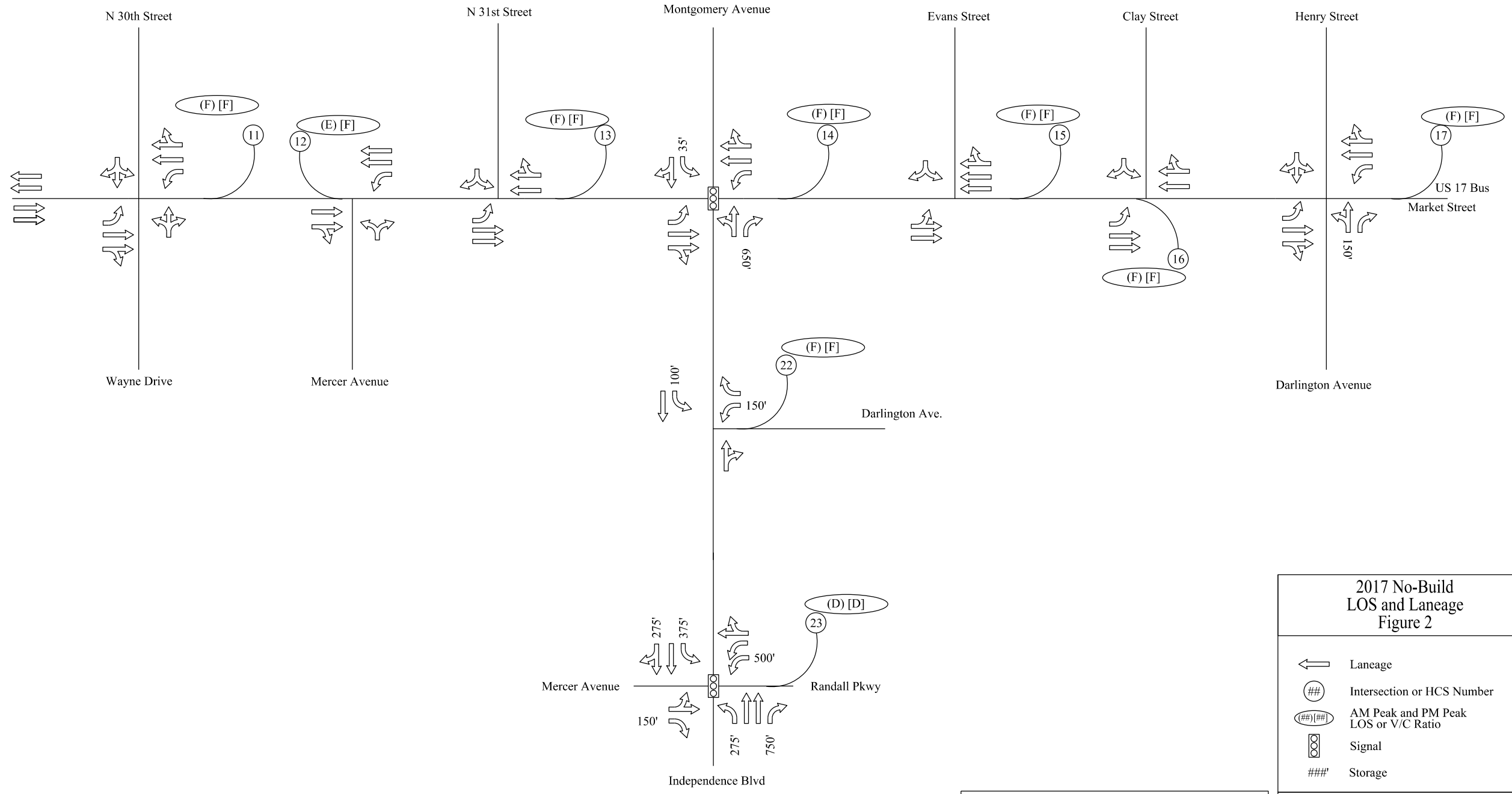
*Unsignalized Intersections

Note: 1. Reported queue denotes the greater of the 95th percentile queue length reported by Synchro or the maximum queue length reported by SimTraffic.

2. Reported queue lengths at certain nodes are longer than the links because of the massive spillback queuing that occurs at the westbound approach to Int #14, which extends into and beyond the intersections upstream including #15, #16 and #17.

LOS and Laneage Figures

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Note: Two-way Left-turn Lane exists along US 17 Bus (Market Street) throughout.

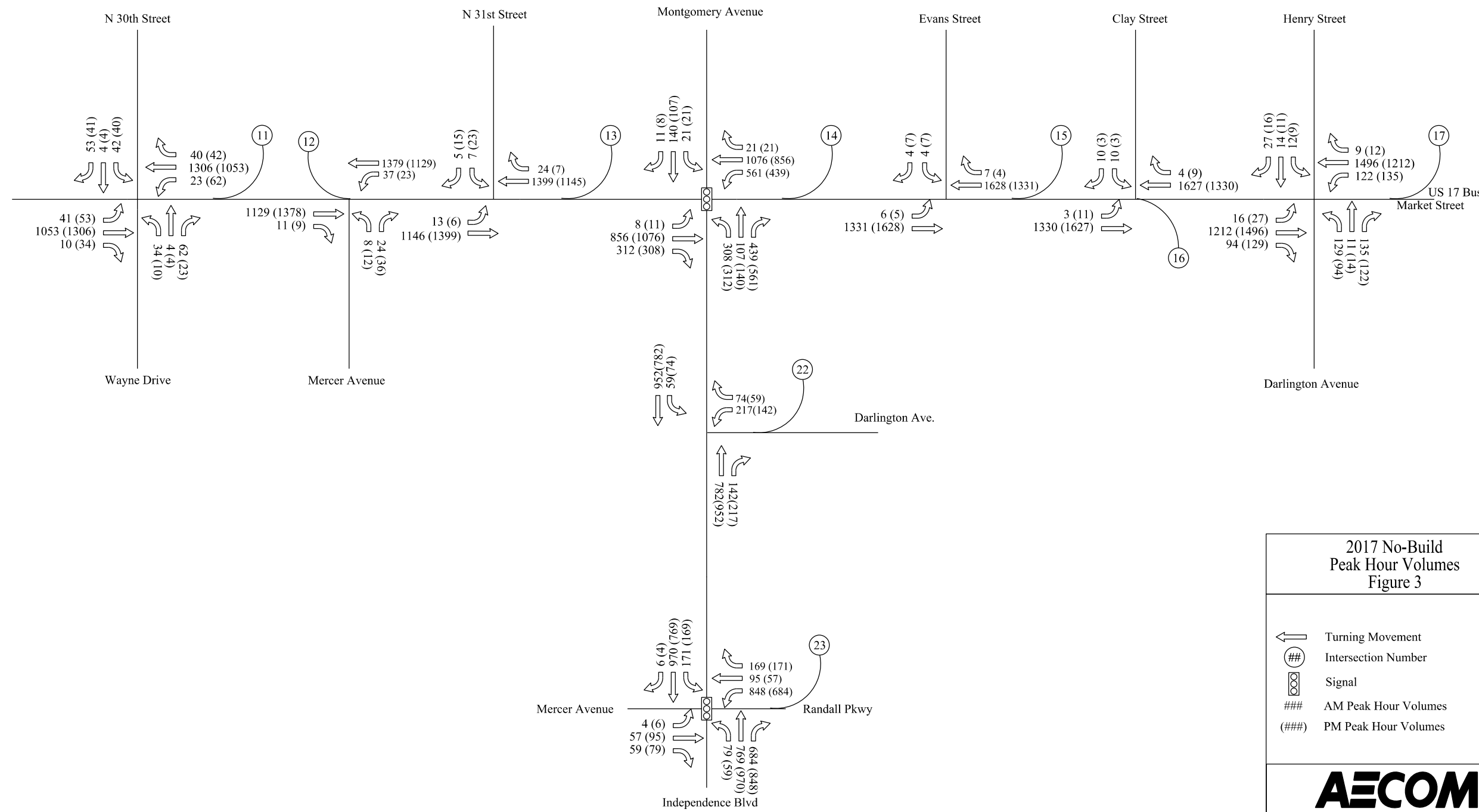
2017 No-Build LOS and Laneage Figure 2	
	Laneage
	Intersection or HCS Number
	AM Peak and PM Peak LOS or V/C Ratio
	Signal
	Storage



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Peak Hour Volume Figures

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2040 No-Build Alternative

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**Table 3A
2040 No Build – Intersection Level of Service**

#	Intersection	Level of Service	
		AM Peak	PM Peak
11*	Wayne Drive/30th Street at US 17 Bus (Market Street)	F	F
	Eastbound Left	B	B
	Westbound Left	B	C
	Northbound Left/Through/Right	F	F
	Southbound Left/Through/Right	F	F
12*	Mercer Avenue at US 17 Bus (Market Street)	F	F
	Westbound Left	B	C
	Northbound Left/Right	F	F
13*	US 17 Bus (Market Street) at 31st Street	F	F
	Eastbound Left	B	B
	Southbound Left/Right	F	F
14	Covil Avenue/Montgomery Avenue at US 17 Bus (Market Street)	F	F
	Eastbound Left	D	D
	Eastbound Through/Right	F	F
	Westbound Left	F	F
	Westbound Through/Right	C	C
	Northbound Left/Through	F	F
	Northbound Right	C	D
	Southbound Left	F	F
Southbound Through/Right	F	F	
15*	US 17 Bus (Market Street) at Evans Street	F	F
	Eastbound Left/Through	A	A
	Southbound Left/Right	F	F
16*	US 17 Bus (Market Street) at Clay Street	F	F
	Eastbound Left	C	C
	Southbound Left/Right	F	F

**Table 3A Cont.
2040 No Build – Intersection Level of Service**

#	Intersection	Level of Service	
		AM Peak	PM Peak
17*	Darlington Avenue/Henry Street at US 17 Bus (Market Street)	F	F
	Eastbound Left	C	B
	Westbound Left	C	E
	Northbound Left/Through	F	F
	Northbound Right	B	B
	Southbound Left/Through/Right	F	F
22*	Covil Avenue and Darlington Avenue	F	F
	Westbound Left	F	F
	Westbound Right	D	E
	Southbound Left	B	C
23	Independence Boulevard/Covil Avenue at Mercer Avenue/Randall Pkwy	E	F
	Eastbound Through/Right	F	F
	Eastbound Right	F	F
	Westbound Left	F	D
	Westbound Through/Right	C	C
	Northbound Left	F	D
	Northbound Through	E	F
	Northbound Right	D	F
	Southbound Left	F	F
Southbound Through/Right	D	C	

*Unsignalized Intersections

Table 3B				
2040 No Build – Queuing and Storage Length				
#	Intersection	Queue Feet		Existing Storage (feet)
		AM Peak	PM Peak	
11*	Wayne Drive/30th Street at US 17 Bus (Market Street)			
	Eastbound Left	275	275	250
	Westbound Left	22	58	300
12*	Mercer Avenue at US 17 Bus (Market Street)			
	Westbound Left	59	49	40
13*	US 17 Bus (Market Street) at 31st Street			
	Eastbound Left	74	46	40
14	Covil Avenue/Montgomery Avenue at US 17 Bus (Market Street)			
	Eastbound Left	85	33	175
	Westbound Left	1371	1117	Cont.
	Northbound Left/Through	1431	1558	Cont.
	Northbound Right	427	788	650
	Southbound Left	134	134	35
15*	US 17 Bus (Market Street) at Evans Street			
	Eastbound Left/Through	118	89	Cont.
16*	US 17 Bus (Market Street) at Clay Street			
	Eastbound Left	29	56	35
17*	Darlington Avenue/Henry Street at US 17 Bus (Market Street)			
	Eastbound Left	36	37	150
	Westbound Left	600	600	500
	Northbound Left/Through	245	246	150
22*	Covil Avenue and Darlington Avenue			
	Westbound Left	250	250	150
	Westbound Right	998	1005	Cont.
	Southbound Left	91	113	100

Table 3B Cont.				
2040 No Build – Queuing and Storage Length				
#	Intersection	Queue Feet		Existing Storage (feet)
		AM Peak	PM Peak	
23	Independence Boulevard/Coville Avenue at Mercer Avenue/Randall Pkwy			
	Eastbound Through/Left	185	299	Cont.
	Eastbound Right	157	216	150
	Westbound Left	979	614	500
	Northbound Left	375	375	275
	Northbound Right	1387	1929	750
	Southbound Left	477	485	375

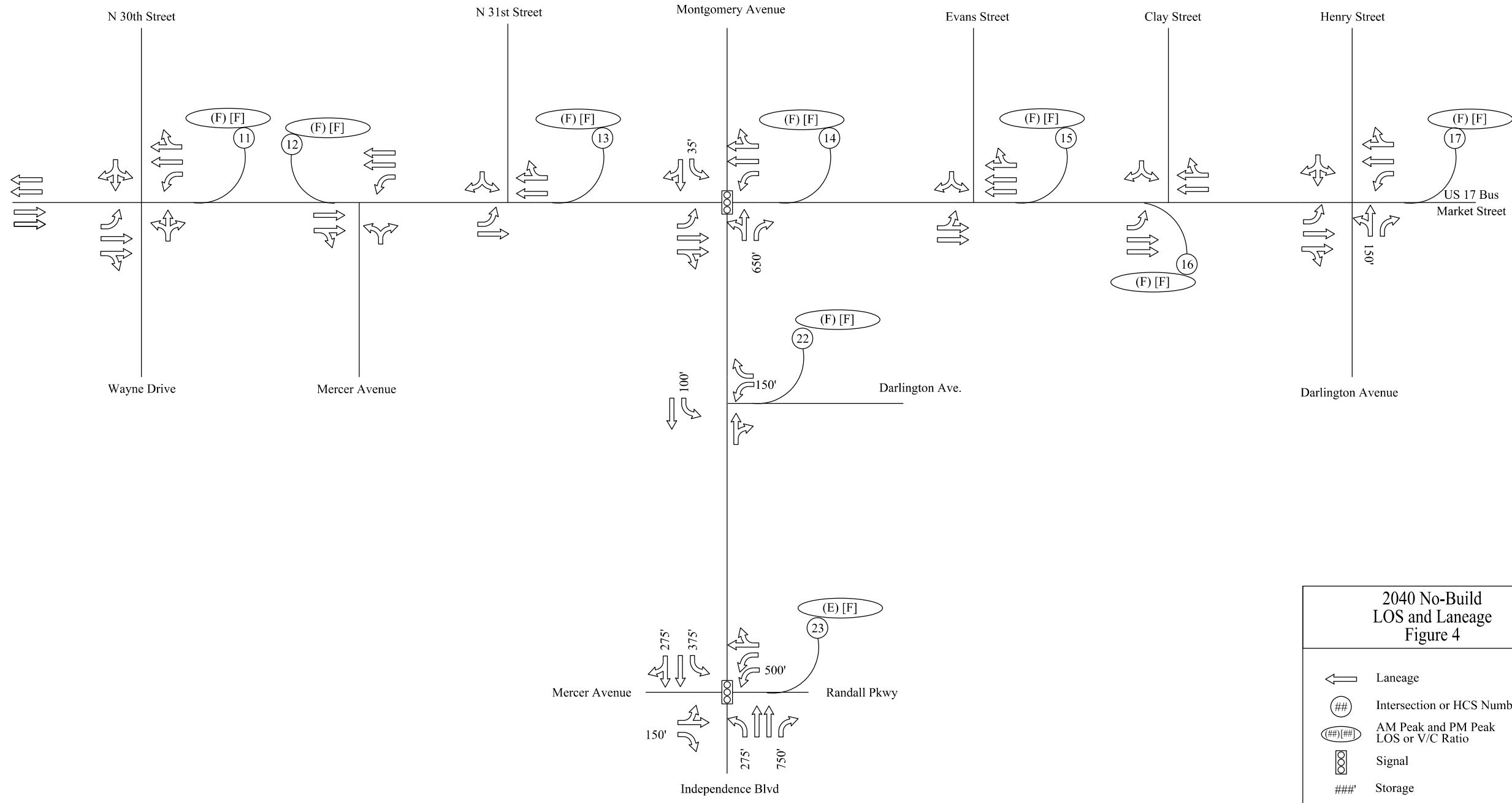
*Unsignalized Intersections

Note: 1. Reported queue denotes the greater of the 95th percentile queue length reported by Synchro or the maximum queue length reported by SimTraffic.

2. Reported queue lengths at certain nodes are longer than the links because of the massive spillback queuing that occurs at the westbound approach to Int #14, which extends into and beyond the intersections upstream including #15, #16 and #17.

LOS and Laneage Figures

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Note: Two-way Left-turn Lane exists along US 17 Bus (Market Street) throughout.

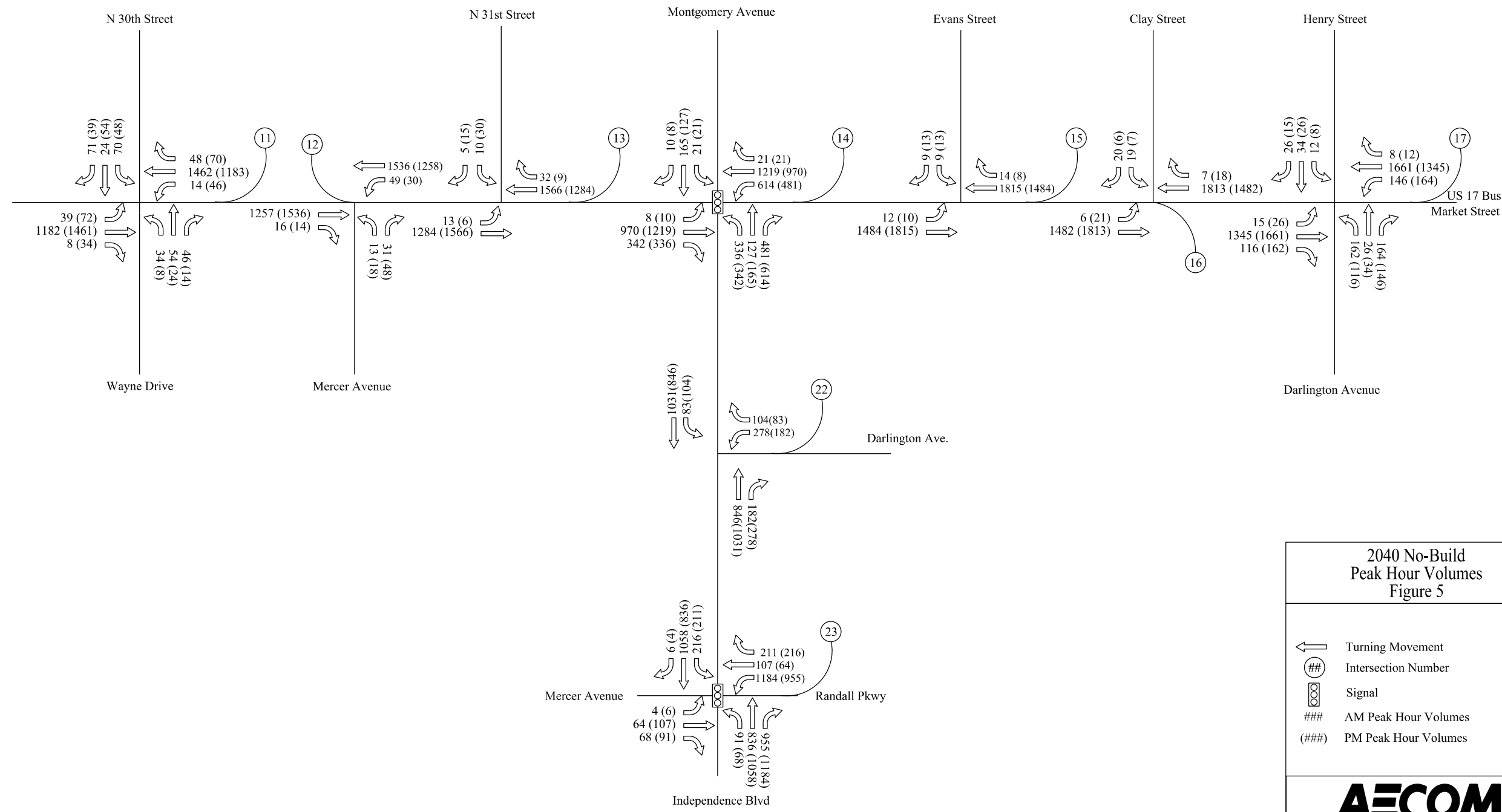
2040 No-Build LOS and Laneage Figure 4	
	Laneage
	Intersection or HCS Number
	AM Peak and PM Peak LOS or V/C Ratio
	Signal
	Storage



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Peak Hour Volume Figures

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2040 Build – Common to All Alternatives

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Table 4A			
2040 Build Common to All Alternatives – HCS Level of Service			
#	Segment	Level of Service or v/c Ratio	
		AM Peak	PM Peak
Basic Freeway Segments			
101	Independence Blvd NB - within US 17 Bus Int	B	C
102	Independence Blvd SB - within US 17 Bus Int	C	B
103	Independence Blvd NB - from US 17 Bus to US 74	C	D
104	US 74 WB from Independence Blvd to 23rd St	C	B
105	US 74 EB within Independence Blvd Int	A	B
106	US 74 WB within Independence Blvd Int	B	A
#	Segment	Level of Service or v/c Ratio	
		AM Peak	PM Peak
Ramps and Ramp Junctions			
201	Independence Blvd NB - to US 17 Bus (Isolated Diverge – v/c ratio reported)	0.43	0.50
202	Independence Blvd SB - from US 17 Bus (Isolated Diverge – v/c ratio reported)	0.46	0.41
203	Independence Blvd NB - From US 17 Bus	B	C
204	Independence Blvd NB - to US 74 WB (Isolated Diverge – v/c ratio reported)	0.62	0.55
205	Independence Blvd SB - from US 74 EB (Isolated Diverge – v/c ratio reported)	0.24	0.27
206	Independence Blvd NB - to US 74 EB (Isolated Diverge – v/c ratio reported)	0.29	0.42
207	US 74 WB - from Independence Blvd NB	B	B
#	Segment	Level of Service or v/c Ratio	
		AM Peak	PM Peak
Weaving Segments			
301	Independence Blvd SB from US 74 to US 17 Bus	C	C
302	US 74 EB from N 23rd Street to Independence Blvd	B	C

Table 4A Cont.			
2040 Build Common to All Alternatives – HCS Level of Service			
#	Segment	Level of Service or v/c Ratio	
		AM Peak	PM Peak
Weaving Segments			
303	US 74 EB from Independence Blvd to Kerr Avenue	B	C
304	US 74 WB from Kerr Avenue to Independence Blvd	C	B
#	Segment	Level of Service or v/c Ratio	
		AM Peak	PM Peak
Multilane Segments			
401	Independence Blvd. - South of US 17 Bus NB	C	B
401	Independence Blvd. - South of US 17 Bus SB	B	C

Table 4B							
2040 Build Common to All Alternatives – Intersection Level of Service							
#	Intersection	Level of Service		V/C Ratio		Delay (s)	
		AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak
23	Independence Boulevard & Mercer Ave./Randall Pkwy.	D	D				
	Eastbound Through/Left	F	F	0.59	0.73	91.9	93.4
	Eastbound Right	D	D	0.56	0.35	46.9	36.2
	Westbound Left	E	E	0.70	0.70	71.7	78.6
	Westbound Through/Left	E	F	0.70	0.69	78.7	86.9
	Westbound Right	D	E	0.49	0.60	45.7	56.6
	Northbound Left	F	E	0.63	0.28	87.8	66.6
	Northbound Through	C	C	0.74	0.87	32.1	34.1
	Northbound Right	A	A	0.32	0.42	6.5	7.4
	Southbound Left	E	F	0.61	0.83	69.9	84.3
	Southbound Through/Right	C	C	0.85	0.70	33.2	31.0

Table 4C				
2040 Build Common to All Alternatives – Queuing and Storage Length				
#	Intersection	Queue (Feet)		Recommended Storage (feet)
		AM Peak	PM Peak	
23	Independence Boulevard & Mercer Ave./Randall Pkwy.			
	Eastbound Left/Through	150	266	Cont.
	Eastbound Right	196	171	200
	Westbound Left	279	232	300
	Westbound Left/Through	316	257	Cont.
	Westbound Right	275	286	300
	Northbound Left	206	138	225
	Northbound Right	175	193	200
	Southbound Left	275	323	325

Table 4D

2040 Build Common to All Alternatives – Cul-de-Sac on Mercer – Intersection Level of Service

#	Intersection	Level of Service		V/C Ratio		Delay (s)	
		AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak
23	Independence Boulevard & Mercer Ave./Randall Pkwy.	C	C				
	Westbound Left	F	F	0.79	0.85	83.2	98.0
	Westbound Right	D	E	0.46	0.53	46.6	56.7
	Northbound Through	C	C	0.80	0.93	31.2	33.4
	Northbound Right	A	A	0.27	0.35	5.9	5.8
	Southbound Left	F	F	0.78	0.90	83.8	97.2
	Southbound Through	B	A	0.76	0.54	12.6	5.3

Table 4E

2040 Build Common to All Alternatives – Cul-de-Sac on Mercer – Queuing and Storage Length

#	Intersection	Queue (Feet)		Recommended Storage (feet)
		AM Peak	PM Peak	
23	Independence Boulevard & Randall Pkwy.			
	Westbound Left	327	253	350
	Westbound Right	280	260	Cont.
	Northbound Right	166	200	200
	Southbound Left	377	472	475

Table 4F

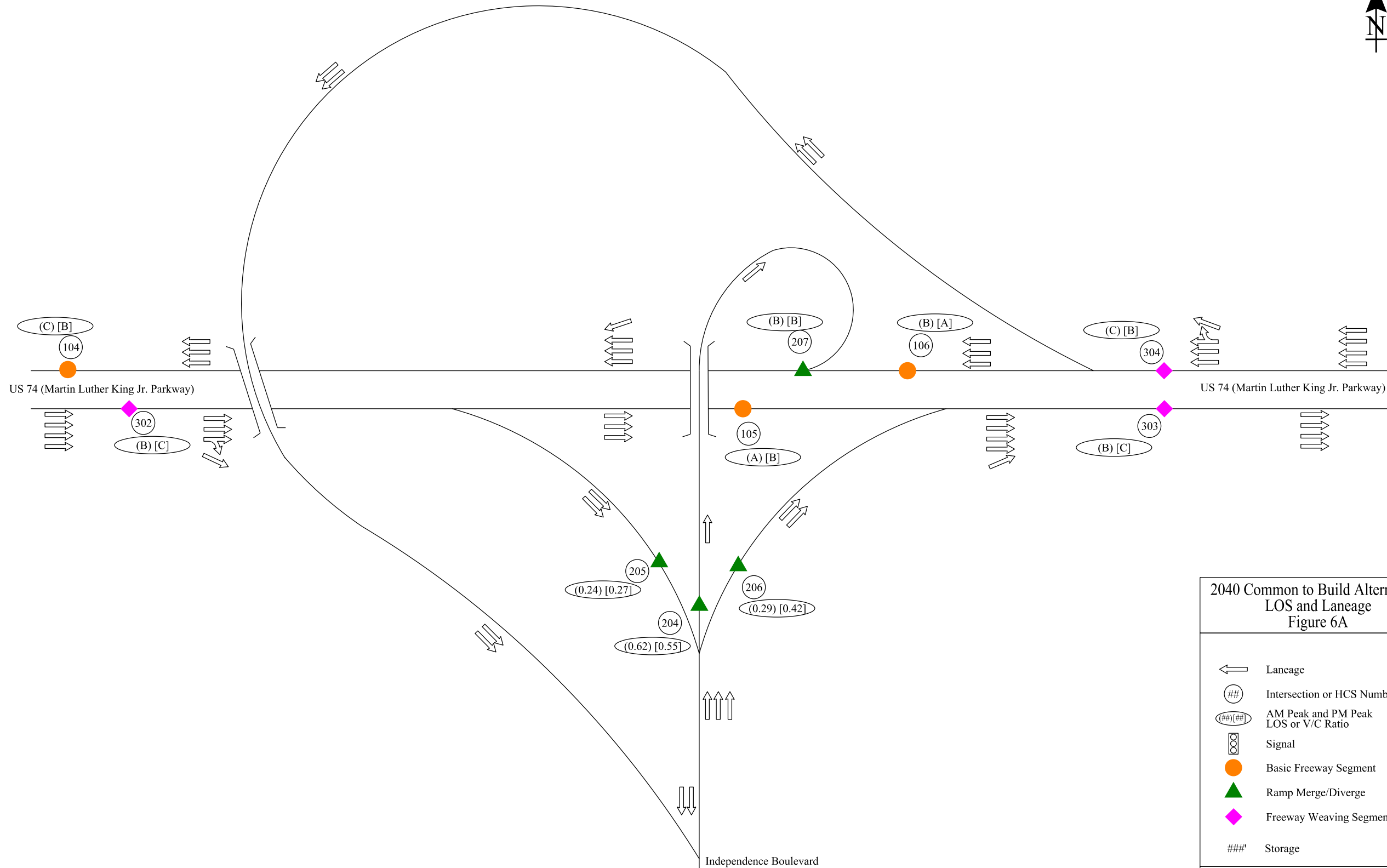
2040 Build Common to All Alternatives – Superstreet – Intersection Level of Service

#	Intersection	Level of Service		V/C Ratio		Delay (s)	
		AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak
23	Independence Boulevard & Mercer Ave./Randall Pkwy.	B	B				
	Eastbound Right	B	C	0.36	0.54	14.5	22.0
	Westbound Right	C	D	0.83	0.89	34.9	42.1
	Northbound Left	D	C	0.52	0.40	45.2	34.8
	Northbound Through	B	A	0.80	0.90	14.1	9.1
	Northbound Right	A	A	0.38	0.49	5.2	2.3
	Southbound Left	C	D	0.40	0.58	31.3	37.7
	Southbound Through	A	A	0.86	0.69	3.5	2.2
	Southbound Right	A	A	0.10	0.06	0.1	0.2
231	Independence Boulevard U-Turn 800' North of Randall Pkwy.	B	A				
	Northbound U-Turn	D	C	0.86	0.66	43.9	32.8
	Northbound Through	A	A	0.57	0.68	0.3	0.3
	Southbound Through	B	B	0.95	0.79	20.0	10.4
232	Independence Boulevard U-Turn 800' South of Randall Pkwy.	A	A				
	Northbound Through	A	B	0.67	0.89	5.2	11.3
	Southbound U-Turn	D	D	0.40	0.66	49.3	52.5
	Southbound Through	A	A	0.69	0.56	0.4	0.3

Table 4G				
2040 Build Common to All Alternatives – Superstreet – Queuing and Storage Length				
#	Intersection	Queue (Feet)		Recommended Storage (feet)
		AM Peak	PM Peak	
23	Independence Boulevard & Mercer Ave./Randall Pkwy.			
	Eastbound Right	166	200	200
	Westbound Right	298	256	300
	Northbound Left	751	86	775
	Northbound Right	812	97	825
	Southbound Left	118	150	150
	Southbound Right	37	32	100
231	Independence Boulevard U-Turn 800' North of Randall Pkwy.			
	Northbound U-Turn	771	392	775
232	Independence Boulevard U-Turn 800' South of Randall Pkwy.			
	Southbound U-Turn	78	126	150

LOS and Laneage Figures

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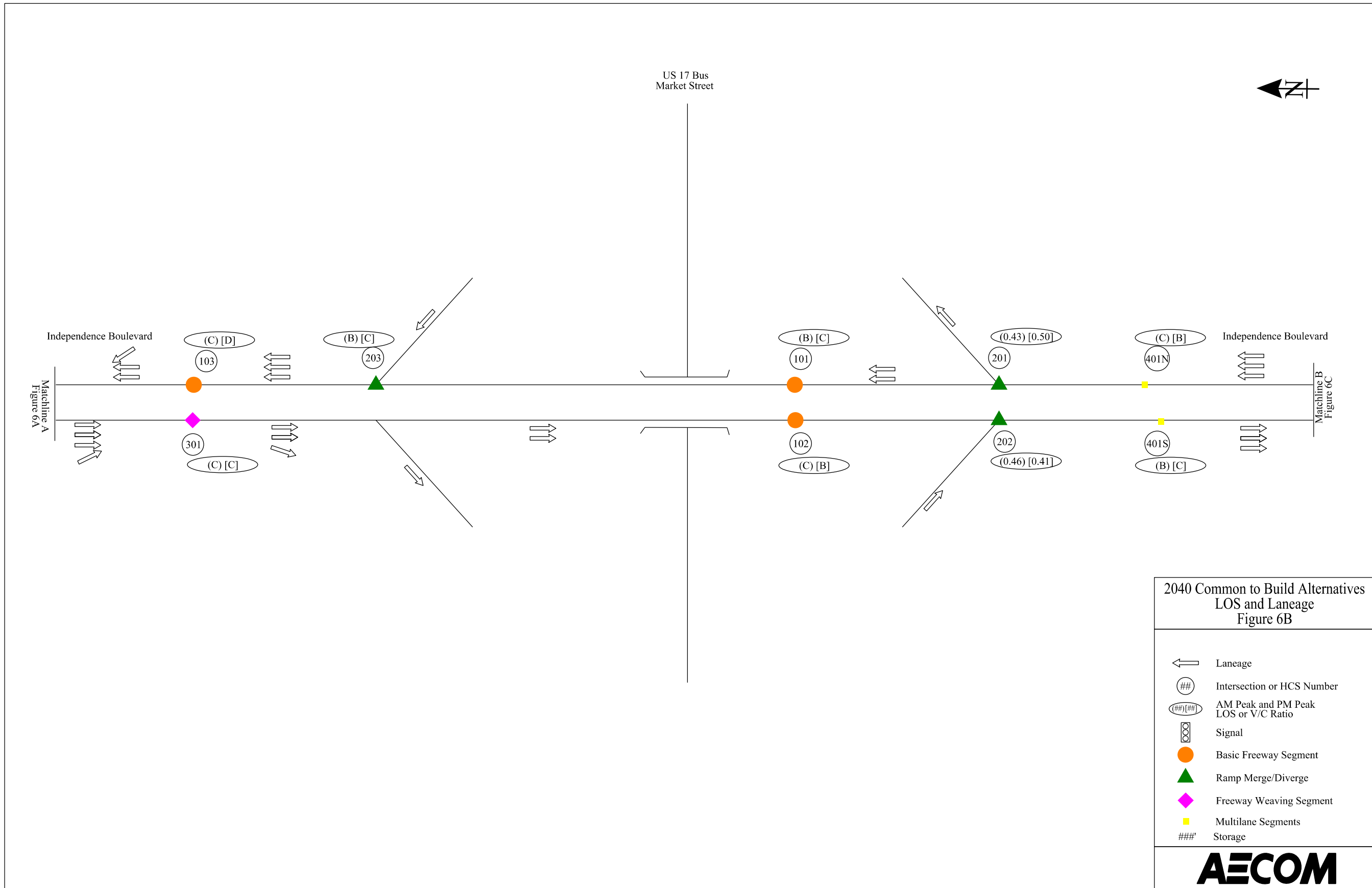


2040 Common to Build Alternatives
LOS and Laneage
Figure 6A

- Laneage
- Intersection or HCS Number
- AM Peak and PM Peak LOS or V/C Ratio
- Signal
- Basic Freeway Segment
- Ramp Merge/Diverge
- Freeway Weaving Segment
- Storage



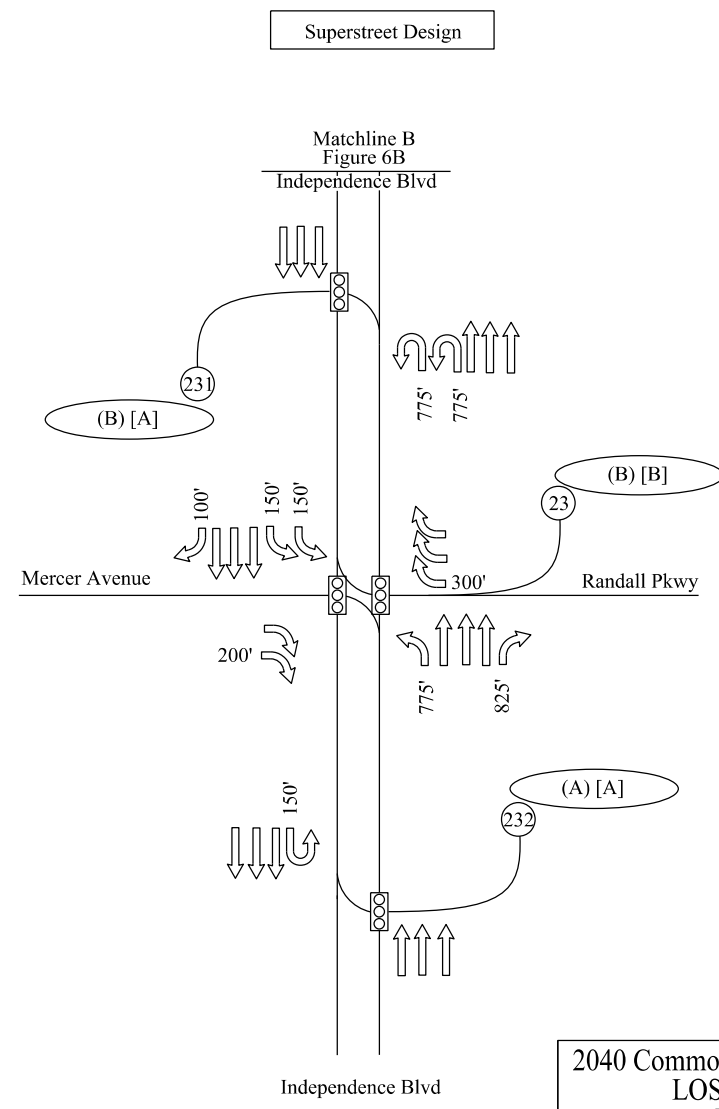
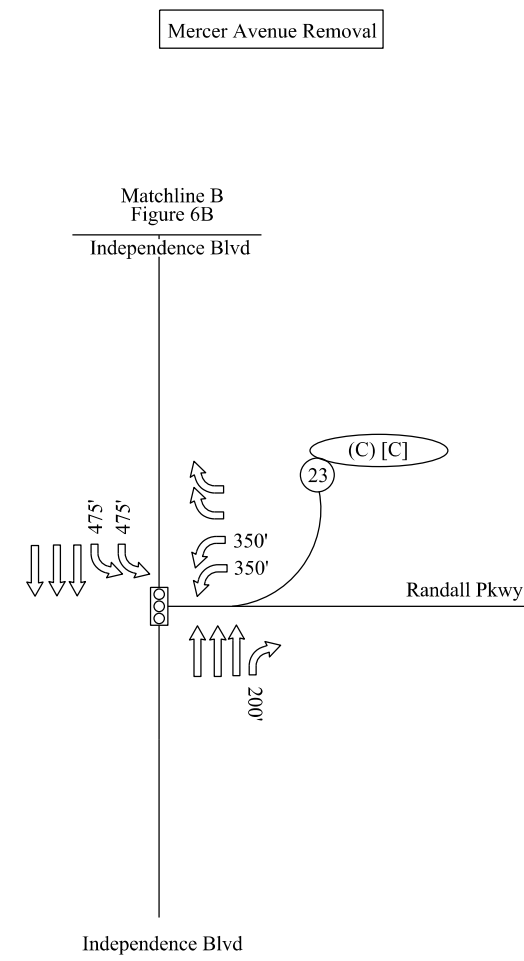
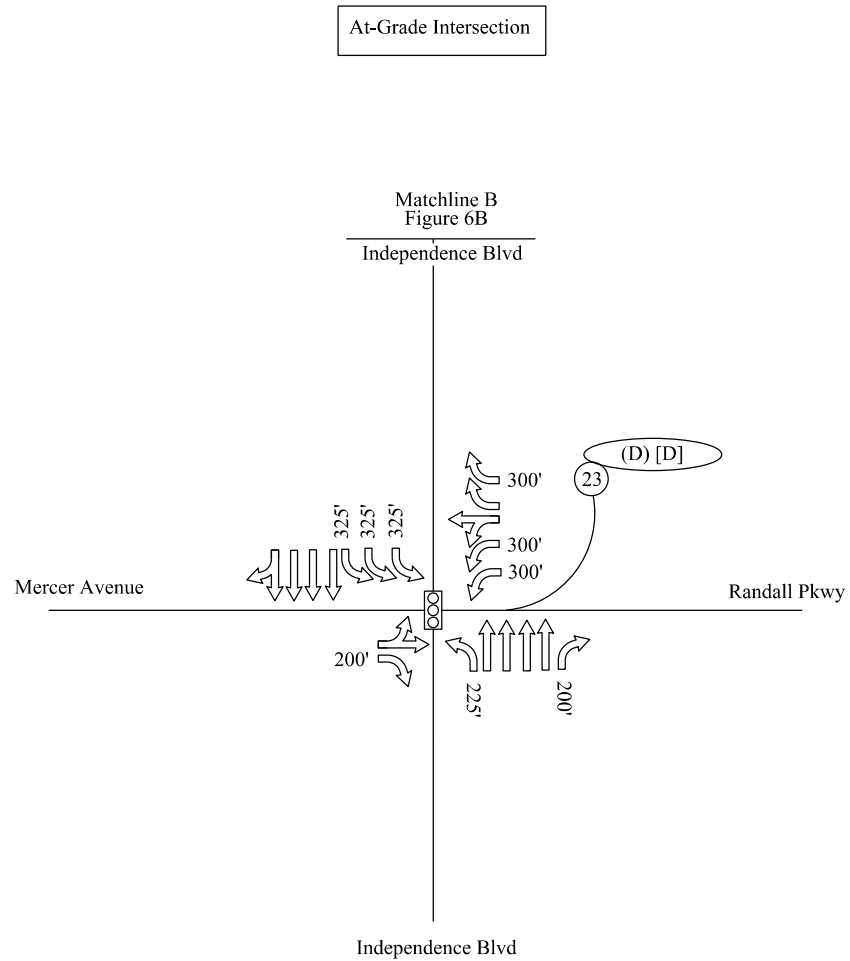
Matchline A
Figure 6B



2040 Common to Build Alternatives
LOS and Laneage
Figure 6B

- ← Laneage
- ## Intersection or HCS Number
- (##)(##) AM Peak and PM Peak LOS or V/C Ratio
- ⊞ Signal
- Basic Freeway Segment
- ▲ Ramp Merge/Diverge
- ◆ Freeway Weaving Segment
- Multilane Segments
- ### Storage





2040 Common to Build Alternatives
LOS and Laneage
Figure 6C

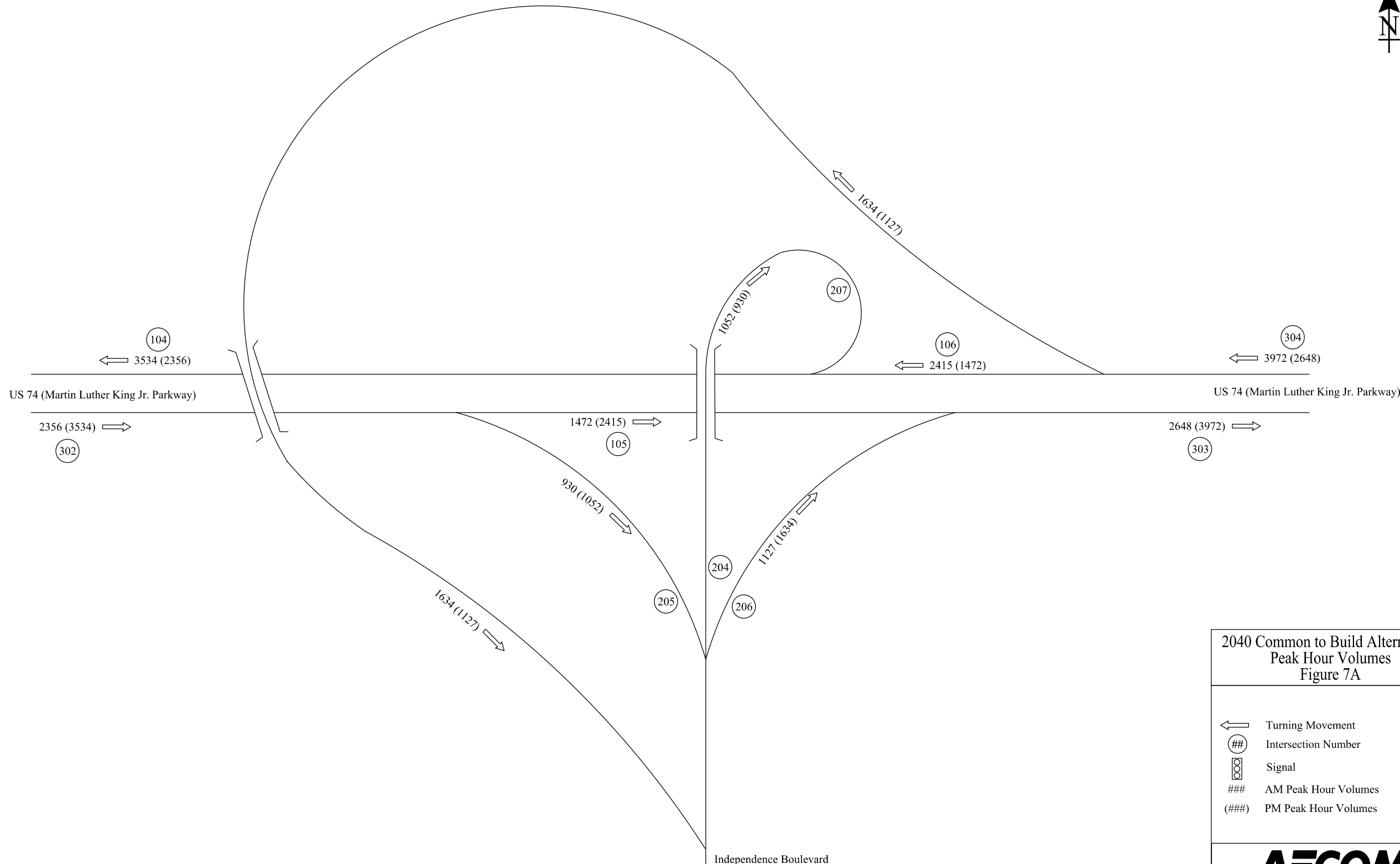
- ← Laneage
- ## Intersection or HCS Number
- (##) [##] AM Peak and PM Peak
LOS or V/C Ratio
- Ⓜ Signal
- ###' Storage








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Peak Hour Volume Figures

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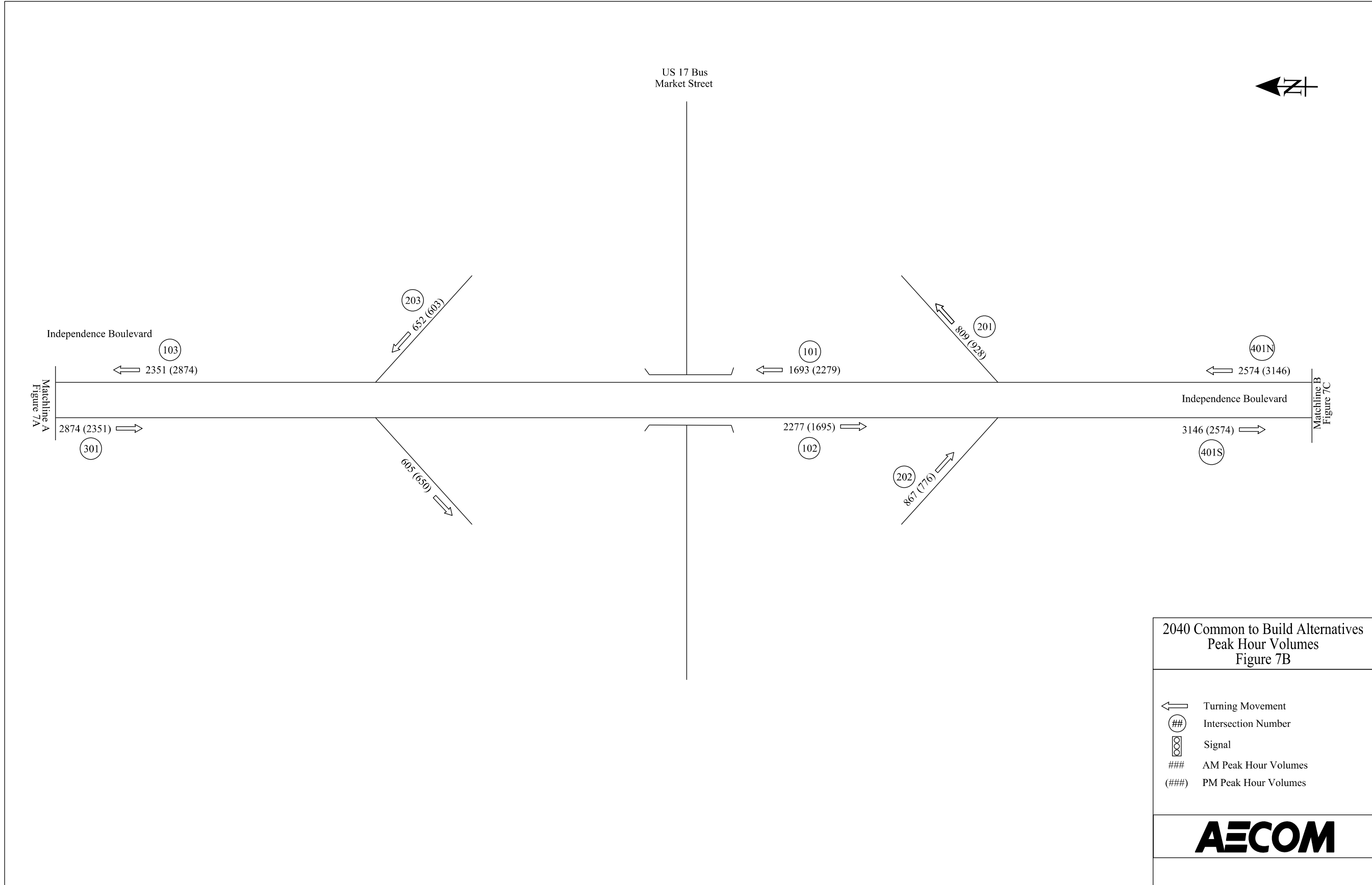


2040 Common to Build Alternatives
Peak Hour Volumes
Figure 7A

-  Turning Movement
-  Intersection Number
-  Signal
-  AM Peak Hour Volumes
-  PM Peak Hour Volumes



Matchline A
Figure 7B



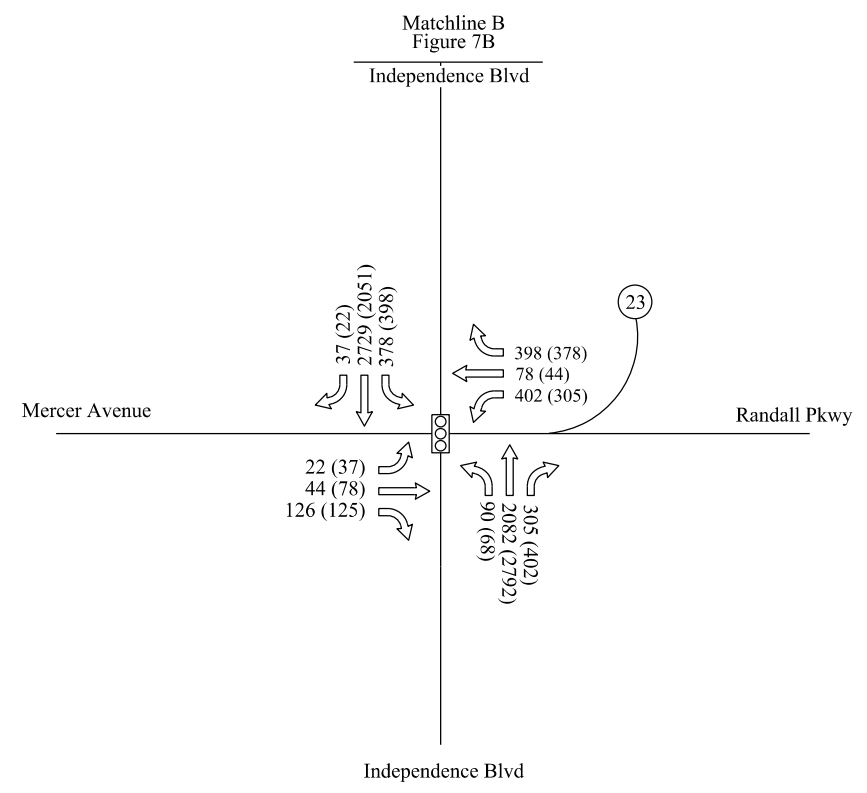
2040 Common to Build Alternatives
Peak Hour Volumes
Figure 7B

- ← Turning Movement
- ⊕ Intersection Number
- ⊞ Signal
- ### AM Peak Hour Volumes
- (###) PM Peak Hour Volumes

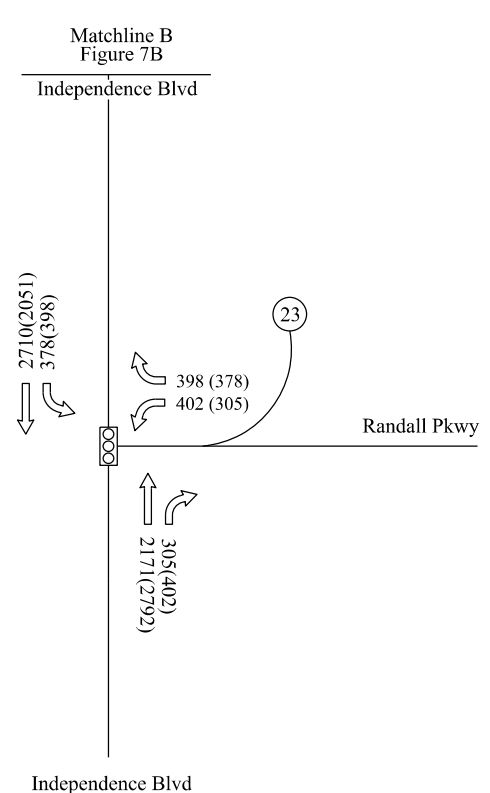




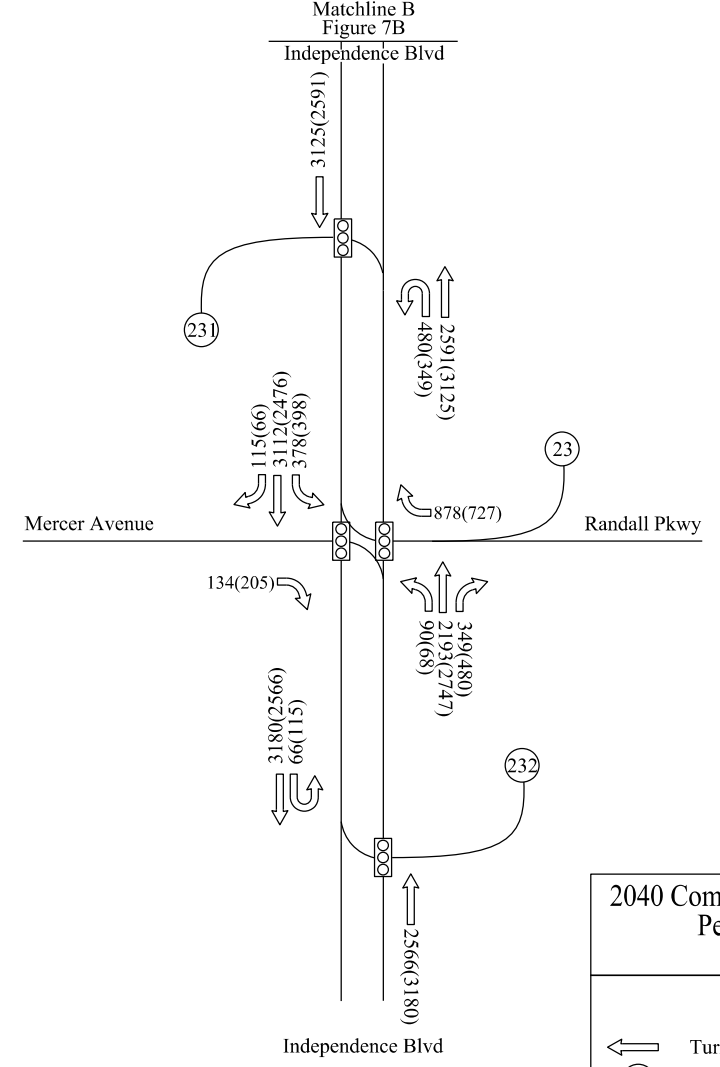
At-Grade Intersection



Mercer Avenue Removal



Superstreet Design



2040 Common to Build Alternatives
Peak Hour Volumes
Figure 7C

- ← Turning Movement
- ## Intersection Number
- ⊠ Signal
- ### AM Peak Hour Volumes
- (###) PM Peak Hour Volumes



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2040 Build – At-Grade Intersection

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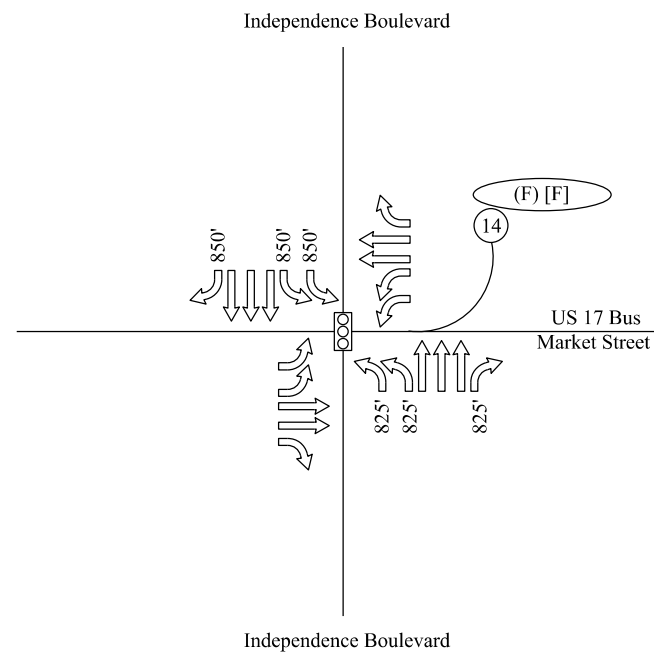
Table 5A			
2040 Build At-Grade Alternative – Intersection Level of Service			
#	Intersection	Level of Service	
		AM Peak	PM Peak
14	Independence Boulevard at US 17 Bus (Market Street)	F	F
	Eastbound Left	F	F
	Eastbound Through	F	F
	Eastbound Right	E	D
	Westbound Left	F	F
	Westbound Through	F	E
	Westbound Right	D	D
	Northbound Left	F	F
	Northbound Through	D	F
	Northbound Right	B	C
	Southbound Left	F	F
	Southbound Through	F	F
	Southbound Right	C	C

Table 5B				
2040 Build At-Grade Alternative – Queuing and Storage Length				
#	Intersection	Queue Feet		Recommended Storage (feet)
		AM Peak	PM Peak	
14	Independence Boulevard at US 17 Bus (Market Street)			
	Eastbound Left	652	888	Cont.
	Eastbound Right	823	1026	Cont.
	Westbound Left	1167	986	Cont.
	Westbound Right	337	318	Cont.
	Northbound Left	823	824	825
	Northbound Right	353	824	825
	Southbound Left	828	828	850
	Southbound Right	828	685	850






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LOS and Laneage Figures

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2040 At-Grade Intersection
LOS and Laneage
Figure 8

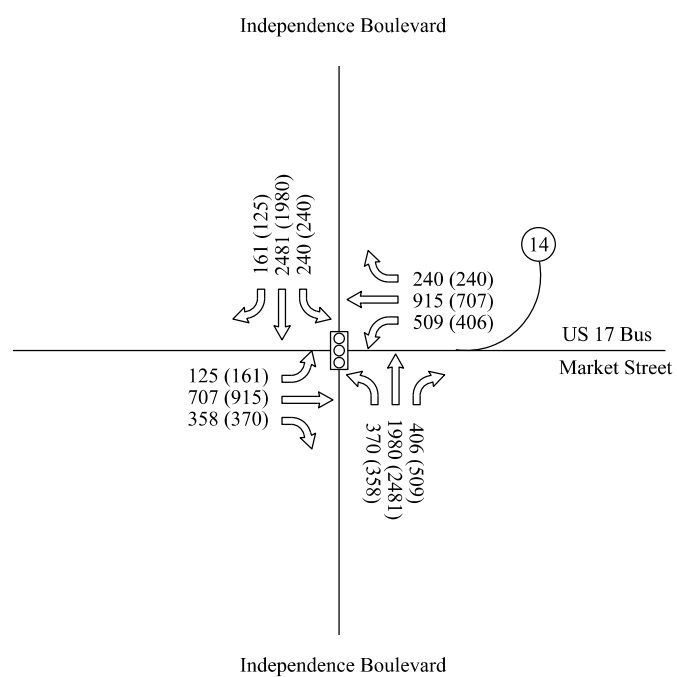
-  Laneage
-  Intersection or HCS Number
-  AM Peak and PM Peak
LOS or V/C Ratio
-  Signal
-  Storage








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Peak Hour Volume Figures

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2040 At-Grade Intersection
Peak Hour Volumes
Figure 9

-  Turning Movement
-  Intersection Number
-  Signal
-  AM Peak Hour Volumes
-  PM Peak Hour Volumes



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2040 Build – Alternative 2 SPUI

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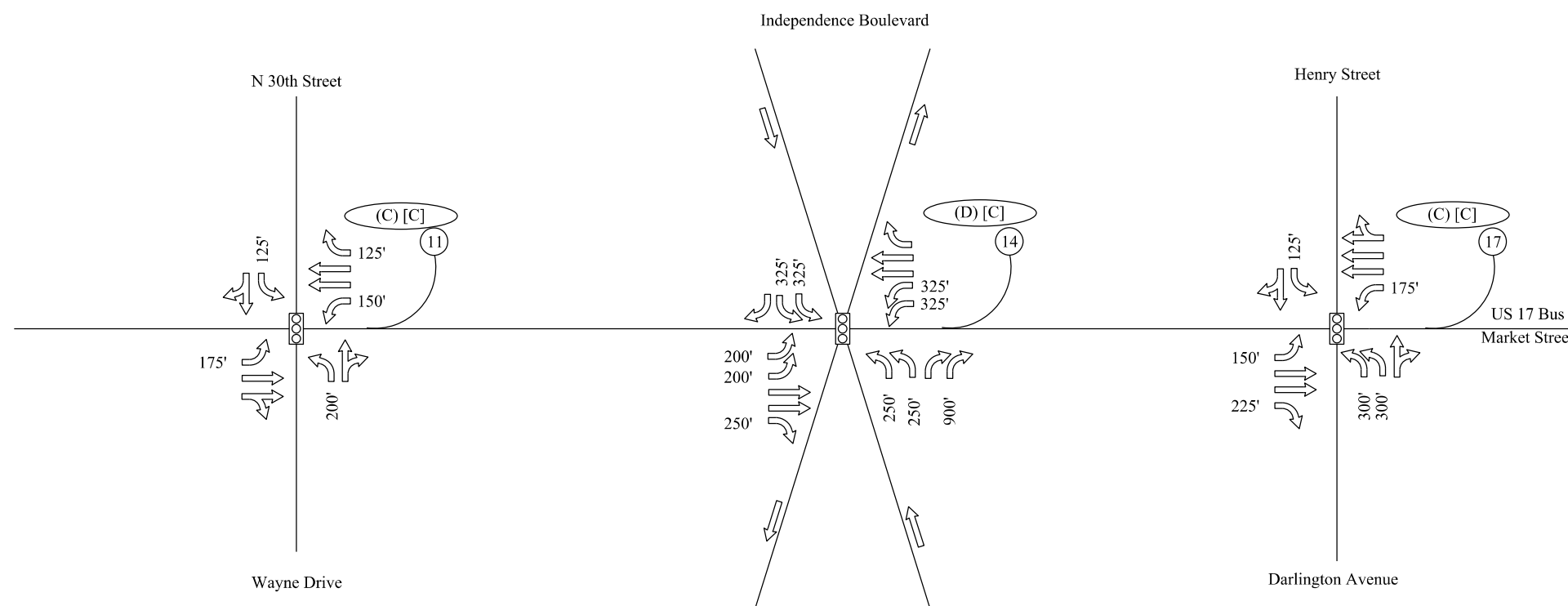
Table 6A			
2040 Build Alternative 2 SPUI – Intersection Level of Service			
#	Intersection	Level of Service	
		AM Peak	PM Peak
11	Wayne Drive/30th Street at US 17 Bus (Market Street)	C	C
	Eastbound Left	E**	D
	Eastbound Through/Right	C	C
	Westbound Left	E**	E**
	Westbound Through	B	C
	Westbound Right	A	B
	Northbound Left	E**	E**
	Northbound Through/Right	D	D
	Southbound Left	E**	E**
	Southbound Through/Right	E**	E**
14	Independence Boulevard On-Ramps at Independence Boulevard Off-Ramps	D	C
	Eastbound Left	D	E**
	Eastbound Through	D	C
	Eastbound Right	A	B
	Westbound Left	E**	D
	Westbound Through	D	C
	Westbound Right	C	C
	Northbound Left	C	D
	Northbound Right	C	D
	Southbound Left	C	D
Southbound Right	B	A	
17	Darlington Avenue/Henry Street at US 17 Bus (Market Street)	C	C
	Eastbound Left	E**	D
	Eastbound Through	C	C
	Eastbound Right	A	A
	Westbound Left	E**	E**
	Westbound Through/Right	C	C
	Northbound Left	D	E**
	Northbound Through/Right	D	D
	Southbound Left	E**	E**
Southbound Through/Right	E**	E**	

** LOS E, V/C ≤ 0.85

Table 6B				
2040 Build Alternative 2 SPUI – Queuing and Storage Length				
#	Intersection	Queue Feet		Recommended Storage (feet)
		AM Peak	PM Peak	
11	Wayne Drive/30th Street at US 17 Bus (Market Street)			
	Eastbound Left	100	167	175
	Westbound Left	141	128	150
	Westbound Right	85	102	125
	Northbound Left	180	85	200
	Southbound Left	107	113	125
14	Independence Boulevard On-Ramps at Independence Boulevard Off-Ramps			
	Eastbound Left	113	191	200
	Eastbound Right	235	250	250
	Westbound Left	307	228	325
	Westbound Right	580	387	Cont.
	Northbound Left	236	241	250
	Northbound Right	268	303	Cont.
	Southbound Left	268	303	325
Southbound Right	189	175	Cont.	
17	Darlington Avenue/Henry Street at US 17 Bus (Market Street)			
	Eastbound Left	107	146	150
	Eastbound Right	198	225	225
	Westbound Left	153	159	175
	Northbound Left	277	232	300
	Southbound Left	105	85	125

LOS and Laneage Figures

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2040 Alternative 2 SPUI
LOS and Laneage
Figure 10

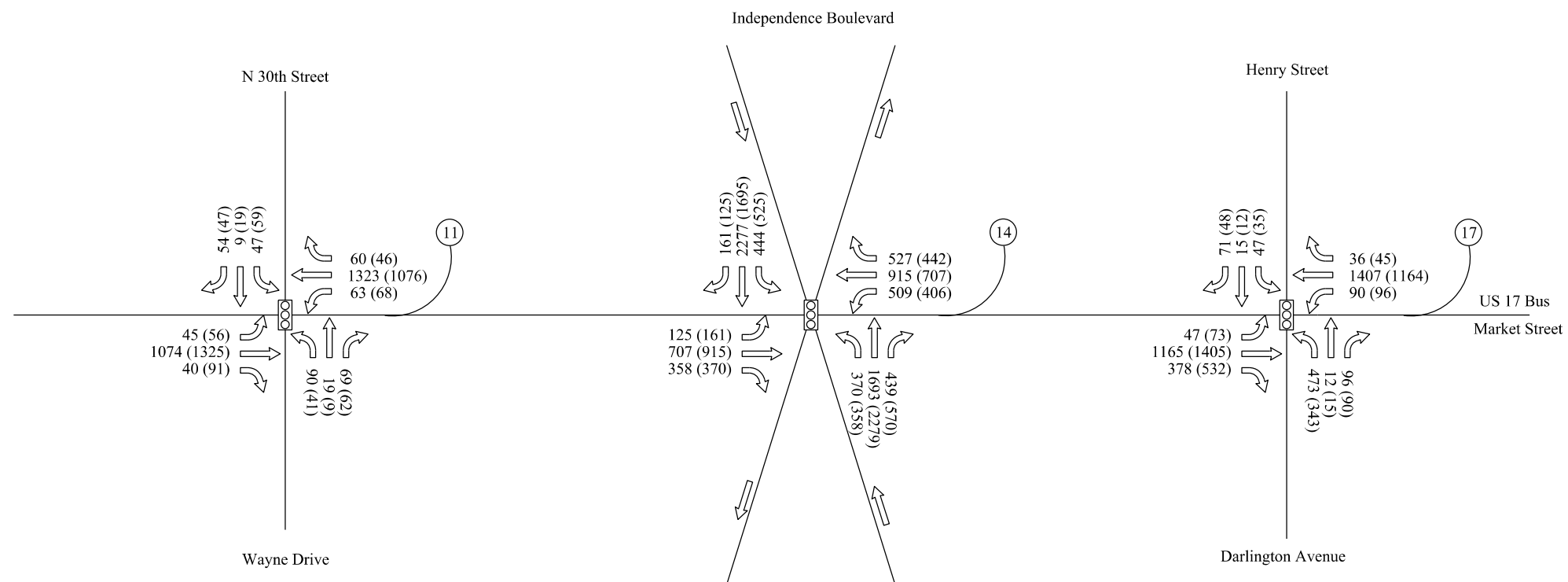
- ## Intersection or HCS Number
- (##)## AM Peak and PM Peak
LOS or V/C Ratio
- Signal
- ###' Storage



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Peak Hour Volume Figures

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2040 Alternative 2 SPUI
Peak Hour Volumes
Figure 11

- Turning Movement
- Intersection Number
- Signal
- ### AM Peak Hour Volumes
- (###) PM Peak Hour Volumes



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2040 Build – Alternative 2 TUDI

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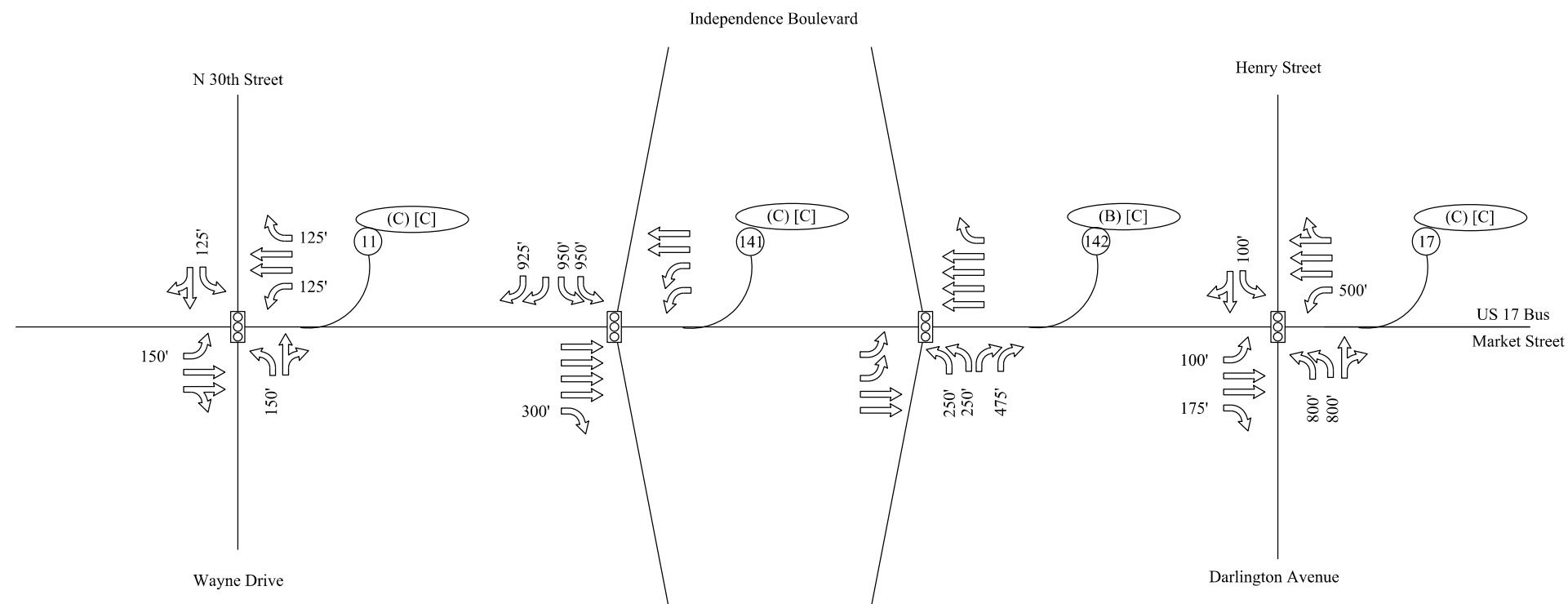
Table 7A			
2040 Build Alternative 2 TUDI – Intersection Level of Service			
#	Intersection	Level of Service	
		AM Peak	PM Peak
11	Wayne Drive/30th Street at US 17 Bus (Market Street)	C	C
	Eastbound Left	E**	D
	Eastbound Through/Right	C	C
	Westbound Left	D	E**
	Westbound Through	A	B
	Westbound Right	A	B
	Northbound Left	E**	E**
	Northbound Through/Right	D	D
	Southbound Left	E**	E**
	Southbound Through/Right	E**	E**
17	Darlington Avenue/Henry Street at US 17 Bus (Market Street)	C	C
	Eastbound Left	E**	E**
	Eastbound Through	C	C
	Eastbound Right	A	A
	Westbound Left	E**	E**
	Westbound Through/Right	C	B
	Northbound Left	D	E**
	Northbound Through/Right	D	E**
	Southbound Left	E**	E**
Southbound Through/Right	E**	E**	
141	SB Independence Boulevard at US 17 (Market Street)	C	C
	Eastbound Through	B	B
	Eastbound Right	B	C
	Westbound Left	D	D
	Westbound Through	A	A
	Southbound Left	D	D
	Southbound Right	D	D
142	NB Independence Boulevard at US 17 Bus (Market Street)	B	C
	Eastbound Left	E**	E**
	Eastbound Through	A	B
	Westbound Through	A	B
	Westbound Right	B	B
	Northbound Left	D	D
Northbound Right	D	D	

** LOS E, V/C ≤ 0.85

Table 7B				
2040 Build Alternative 2 TUDI – Queuing and Storage Length				
#	Intersection	Queue Feet		Recommended Storage (feet)
		AM Peak	PM Peak	
11	Wayne Drive/30th Street at US 17 Bus (Market Street)			
	Eastbound Left	135	96	150
	Westbound Left	102	108	125
	Westbound Right	105	79	125
	Northbound Left	150	79	150
	Southbound Left	105	104	125
17	Darlington Avenue/Henry Street at US 17 Bus (Market Street)			
	Eastbound Left	100	99	100
	Eastbound Right	164	171	175
	Westbound Left	492	159	500
	Northbound Left	793	721	800
	Southbound Left	88	84	100
141	SB Independence Boulevard at US 17 (Market Street)			
	Eastbound Right	276	289	300
	Westbound Left	289	241	Cont.
	Southbound Left	486	928	950
	Southbound Right	210	914	925
142	NB Independence Boulevard at US 17 Bus (Market Street)			
	Eastbound Left	129	154	Cont.
	Westbound Right	367	314	Cont.
	Northbound Left	219	232	250
	Northbound Right	442	454	475

LOS and Laneage Figures

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2040 Alternative 2 TUDI
LOS and Laneage
Figure 12

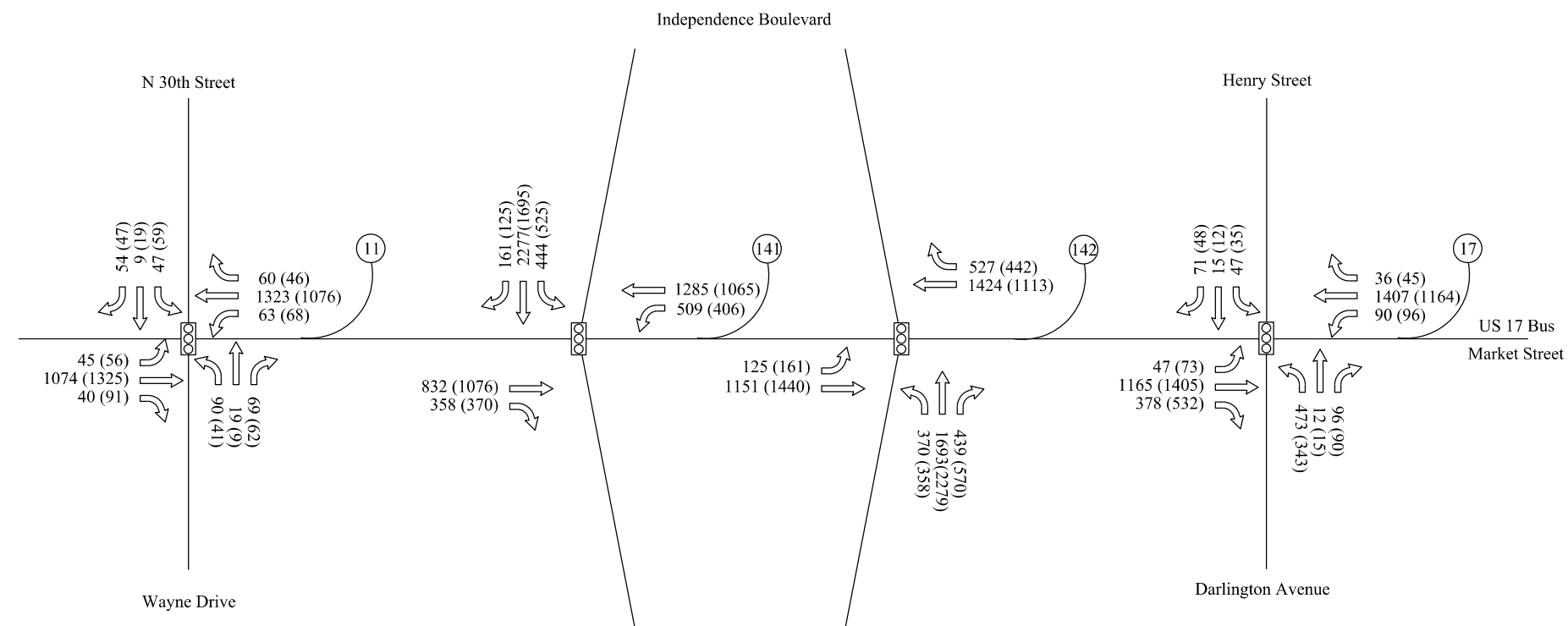
- ## Intersection or HCS Number
- (##)[##] AM Peak and PM Peak LOS or V/C Ratio
- Signal
- ###' Storage



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Peak Hour Volume Figures

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2040 Alternative 2 TUDI
Peak Hour Volumes
Figure 13

- ← Turning Movement
- ## Intersection Number
- ⊞ Signal
- ### AM Peak Hour Volumes
- (###) PM Peak Hour Volumes



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2040 Build – Alternative 7 SPUI

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Table 8A
2040 Build Alternative 7 SPUI – Intersection Level of Service

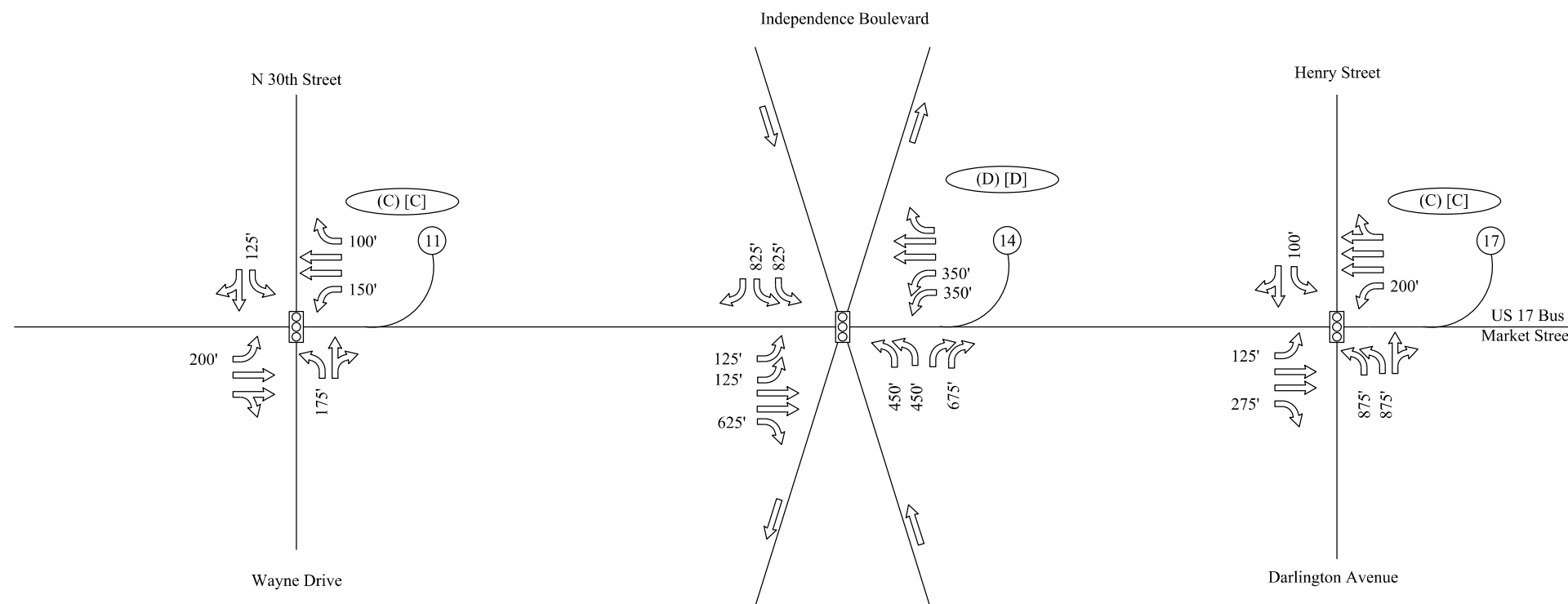
#	Intersection	Level of Service	
		AM Peak	PM Peak
11	Wayne Drive/30th Street at US 17 Bus (Market Street)	C	C
	Eastbound Left	E**	D
	Eastbound Through/Right	C	C
	Westbound Left	E**	E**
	Westbound Through	B	C
	Westbound Right	A	B
	Northbound Left/	E**	E**
	Northbound Through/Right	D	D
	Southbound Left	E**	E**
	Southbound Through/Right	E**	E**
14	Independence Boulevard On-Ramps at Independence Boulevard Off-Ramps	D	D
	Eastbound Left	D	C
	Eastbound Through	D	C
	Eastbound Right	A	A
	Westbound Left	E**	D
	Westbound Through	D	D
	Westbound Right	C	D
	Northbound Left	C	D
	Northbound Right	C	D
	Southbound Left	C	D
Southbound Right	B	A	
17	Darlington Avenue/Henry Street at US 17 Bus (Market Street)	C	C
	Eastbound Left	E**	E**
	Eastbound Through	C	C
	Eastbound Right	A	A
	Westbound Left	E**	E**
	Westbound Through/Right	C	B
	Northbound Left	D	E**
	Northbound Through/Right	D	D
	Southbound Left	E**	E**
Southbound Through/Right	E**	E**	

** LOS E, V/C ≤ 0.85

Table 8B				
2040 Build Alternative 7 SPUI – Queuing and Storage Length				
#	Intersection	Queue Feet		Recommended Storage (feet)
		AM Peak	PM Peak	
11	Wayne Drive/30th Street at US 17 Bus (Market Street)			
	Eastbound Left	120	176	200
	Westbound Left	94	127	150
	Westbound Right	73	69	100
	Northbound Left	159	76	175
	Southbound Left	125	114	125
14	Independence Boulevard On-Ramps at Independence Boulevard Off-Ramps			
	Eastbound Left	101	109	125
	Eastbound Right	608	189	625
	Westbound Left	339	212	350
	Westbound Right	687	518	Cont.
	Northbound Left	333	444	450
	Northbound Right	397	664	675
	Southbound Left	398	810	825
17	Darlington Avenue/Henry Street at US 17 Bus (Market Street)			
	Eastbound Left	89	113	125
	Eastbound Right	167	268	275
	Westbound Left	147	171	200
	Northbound Left	874	442	875
	Southbound Left	96	76	100

LOS and Laneage Figures

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2040 Alternative 7 SPUI
LOS and Laneage
Figure 14

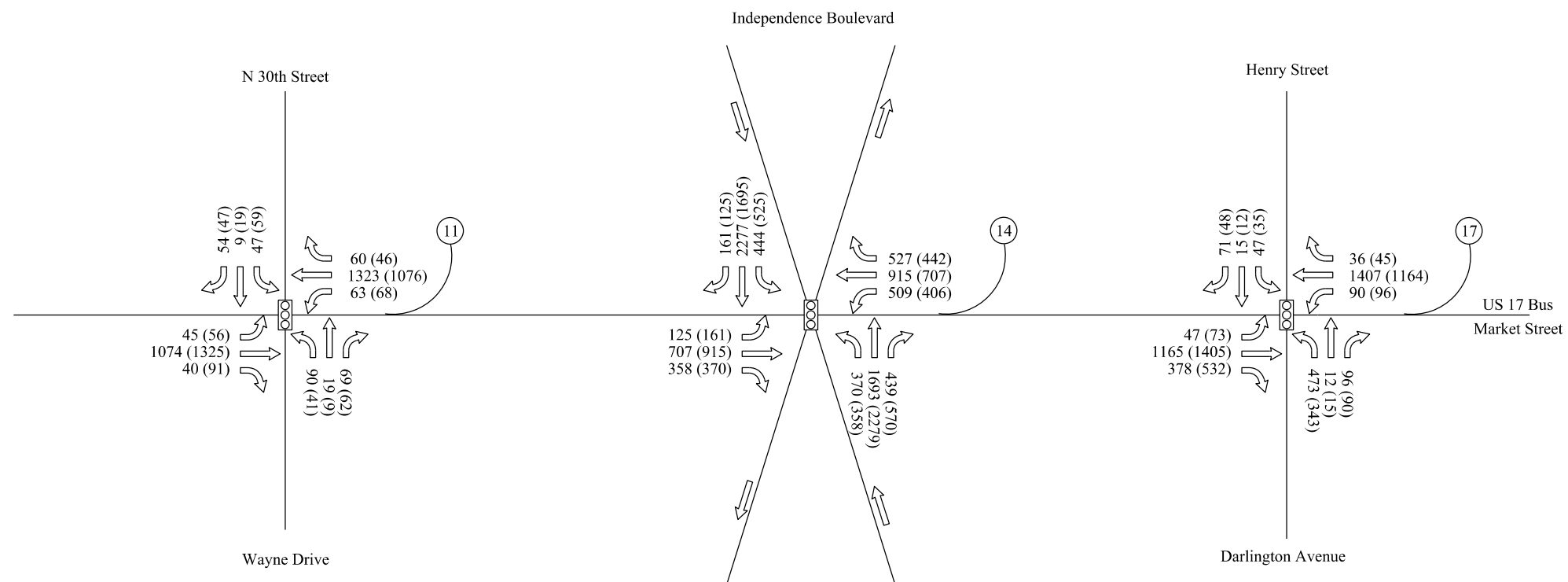
- ## Intersection or HCS Number
- (##)[##] AM Peak and PM Peak LOS or V/C Ratio
- Signal
- ###' Storage



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Peak Hour Volume Figures

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2040 Build Alternative 7 SPUI
Peak Hour Volumes
Figure 15

- ← Turning Movement
- ## Intersection Number
- ⊠ Signal
- ### AM Peak Hour Volumes
- (###) PM Peak Hour Volumes



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2040 Build – Alternative 7 TUDI

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**Table 9A
2040 Build Alternative 7 TUDI – Intersection Level of Service**

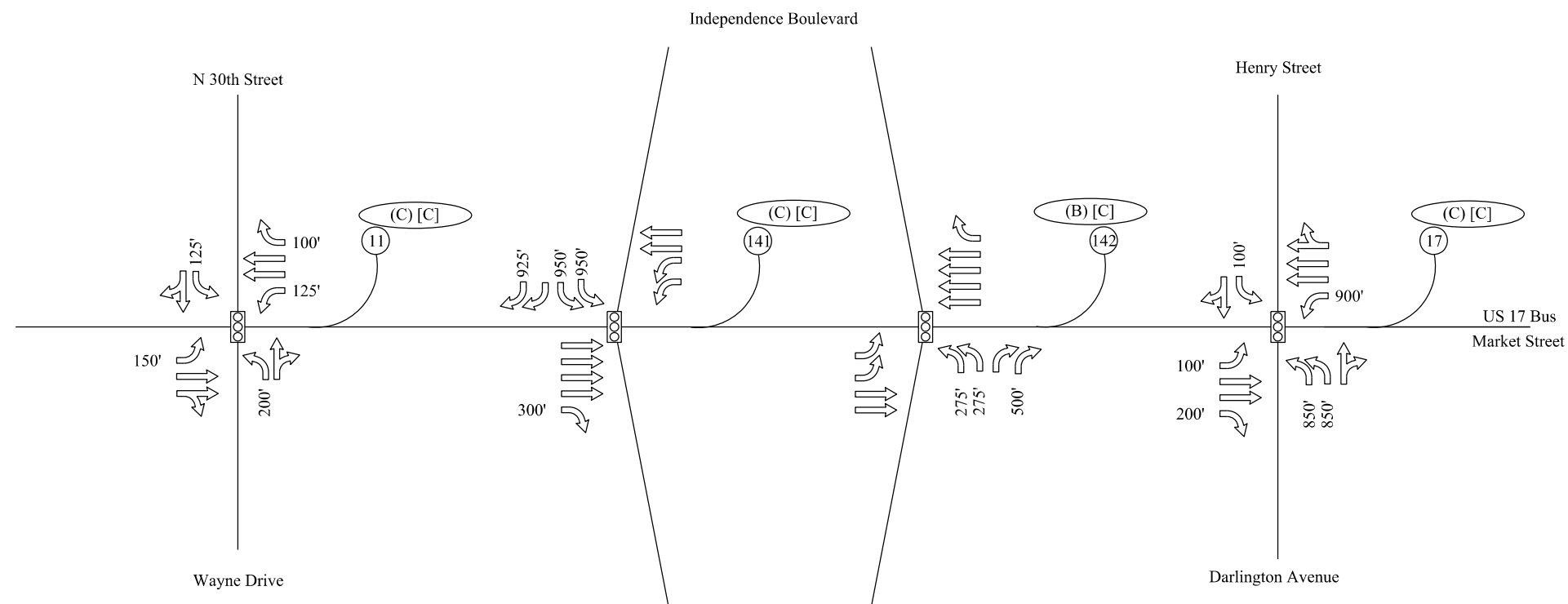
#	Intersection	Level of Service	
		AM Peak	PM Peak
11	Wayne Drive/30th Street at US 17 Bus (Market Street)	C	C
	Eastbound Left	E**	D
	Eastbound Through/Right	C	C
	Westbound Left	D	E**
	Westbound Through	A	B
	Westbound Right	A	B
	Northbound Left	E**	E**
	Northbound Through/Right	D	D
	Southbound Left	E**	E**
	Southbound Through/Right	E**	E**
17	Darlington Avenue/Henry Street at US 17 Bus (Market Street)	C	C
	Eastbound Left	E**	E**
	Eastbound Through	C	C
	Eastbound Right	A	A
	Westbound Left	E**	E**
	Westbound Through/Right	C	B
	Northbound Left	D	E**
	Northbound Through/Right	D	D
	Southbound Left	E**	E**
Southbound Through/Right	E**	E**	
141	SB Independence Boulevard at US 17 (Market Street)	C	C
	Eastbound Through	B	B
	Eastbound Right	B	C
	Westbound Left	D	D
	Westbound Through	A	A
	Southbound Left	D	D
	Southbound Right	D	D
142	NB Independence Boulevard at US 17 (Market Street)	B	C
	Eastbound Left	E**	E**
	Eastbound Through	A	A
	Westbound Through	A	B
	Westbound Right	B	B
	Northbound Left	D	D
Northbound Right	D	D	

** LOS E, V/C ≤ 0.85

Table 9B				
2040 Build Alternative 7 TUDI – Queuing and Storage Length				
#	Intersection	Queue Feet		Recommended Storage (feet)
		AM Peak	PM Peak	
11	Wayne Drive/30th Street at US 17 Bus (Market Street)			
	Eastbound Left	83	126	150
	Westbound Left	105	125	125
	Westbound Right	90	90	100
	Northbound Left	180	100	200
	Southbound Left	98	119	125
17	Darlington Avenue/Henry Street at US 17 Bus (Market Street)			
	Eastbound Left	92	100	100
	Eastbound Right	150	177	200
	Westbound Left	851	173	900
	Northbound Left	829	713	850
	Southbound Left	86	88	100
141	SB Independence Boulevard at US 17 (Market Street)			
	Eastbound Right	288	267	300
	Westbound Left	280	226	Cont.
	Southbound Left	644	928	950
	Southbound Right	220	921	925
142	NB Independence Boulevard at US 17 Bus (Market Street)			
	Eastbound Left	98	205	Cont.
	Westbound Right	279	282	Cont.
	Northbound Left	256	232	275
	Northbound Right	496	467	500

LOS and Laneage Figures

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2040 Alternative 7 TUDI
LOS and Laneage
Figure 16

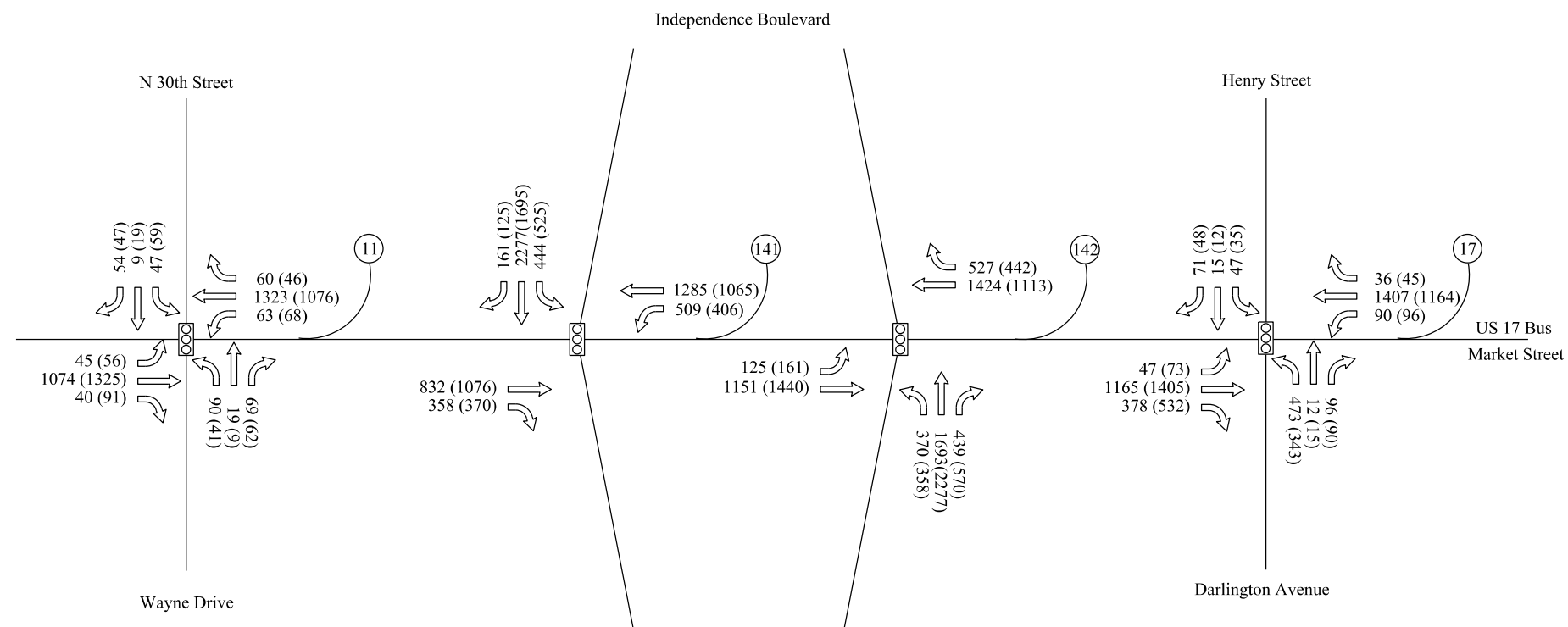
- ## Intersection or HCS Number
- (##)## AM Peak and PM Peak
LOS or V/C Ratio
- Signal
- ###' Storage



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Peak Hour Volume Figures

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2040 Build Alternative 7 TUDI
Peak Hour Volumes
Figure 17

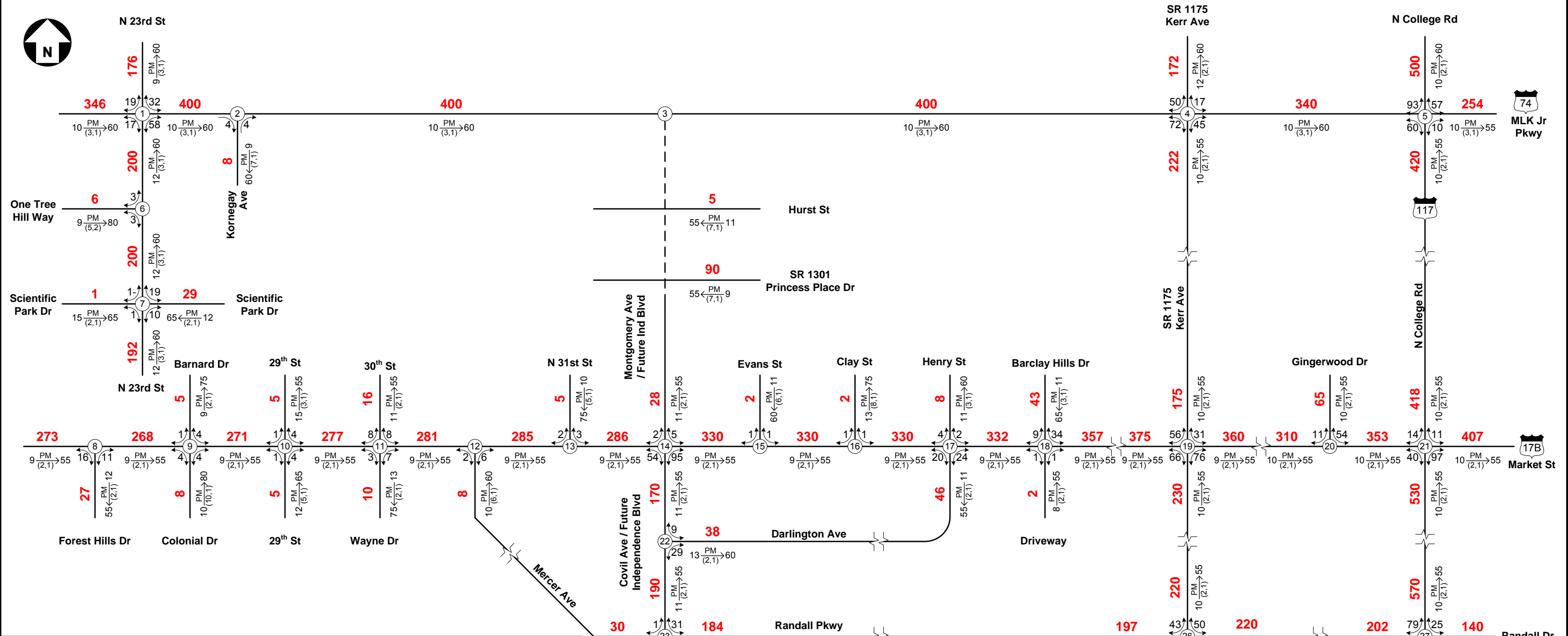
- ← Turning Movement
- ⊞ Intersection Number
- ⊞ Signal
- ### AM Peak Hour Volumes
- (###) PM Peak Hour Volumes



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APPENDIX B – U-4434 Traffic Forecast

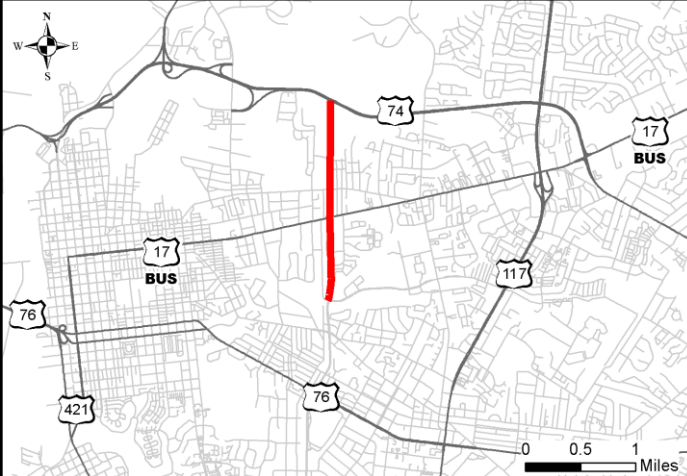
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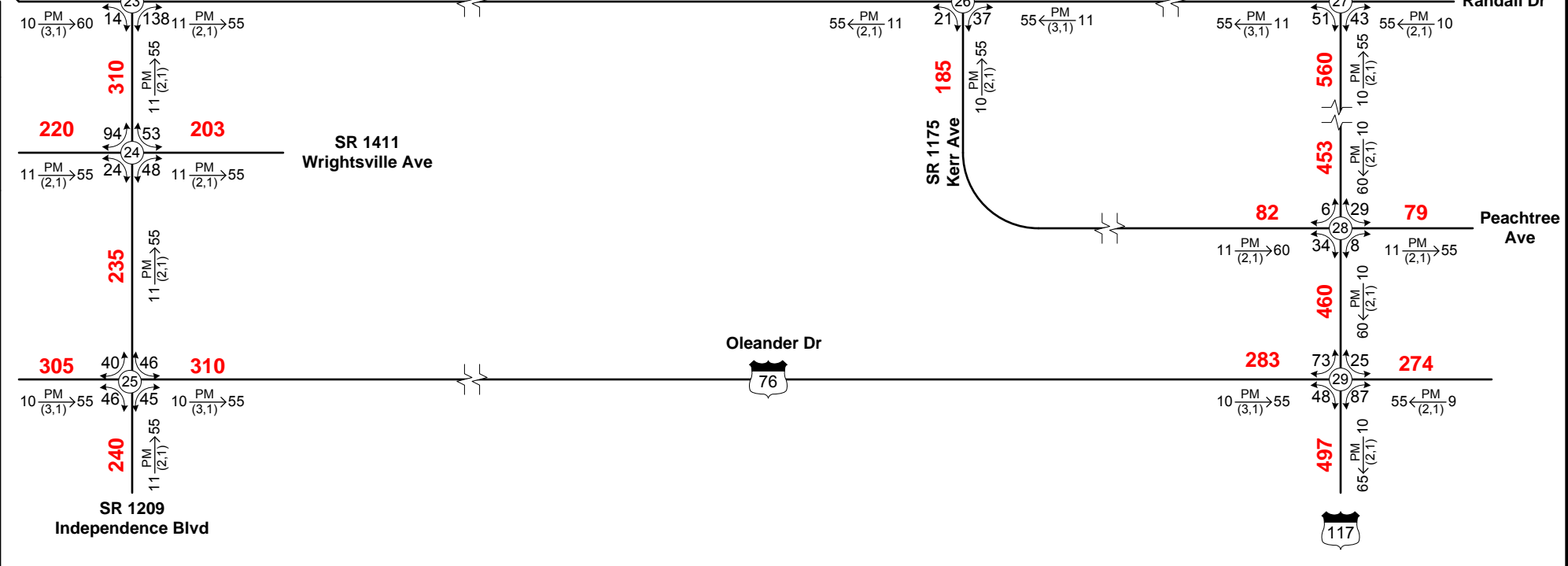
2017 No - Build Traffic Forecast

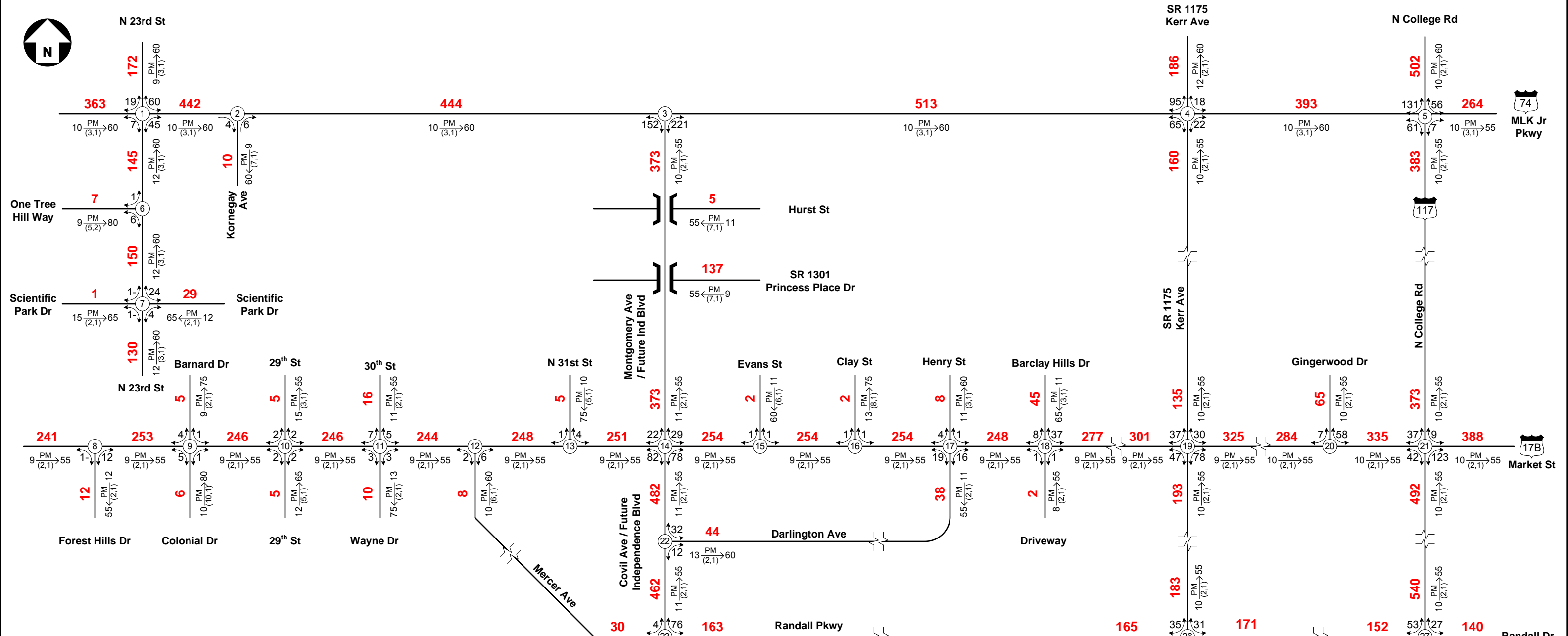
SHEET 1 OF 4 AVERAGE ANNUAL DAILY TRAFFIC

TIP: U-4434	WBS: 37764.1.1	DATE: July 2017	DIVISION: 3
PREPARED BY: AECOM	PROJECT: Independence Blvd Extension		
COUNTY: New Hanover	LOCATION: Randall Pkwy to Martin Luther King Jr Pkwy		



- ### No. of Vehicles Per Day in 100s
- 1- Less than 50 vpd
- X Movement Prohibited
- K $\frac{PM}{(d, t)}$ Design Hour Factor (%)
- PM PM Peak Period
- D Peak Hour Directional Split (%)
- Indicates Direction of D
- (d, t) Duals, TT-STs (%)



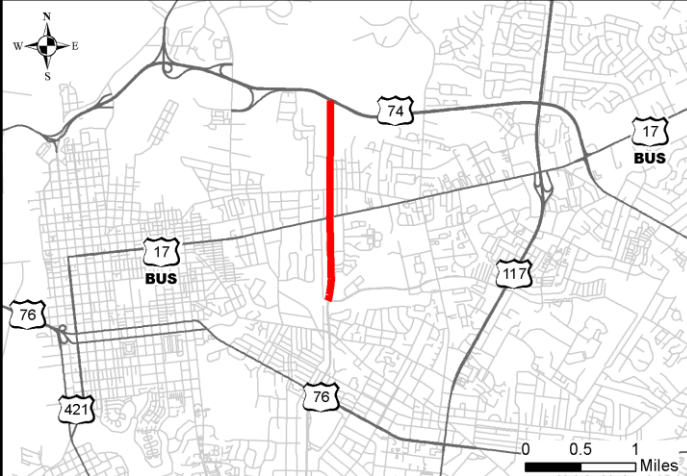


2017 Build Traffic Forecast

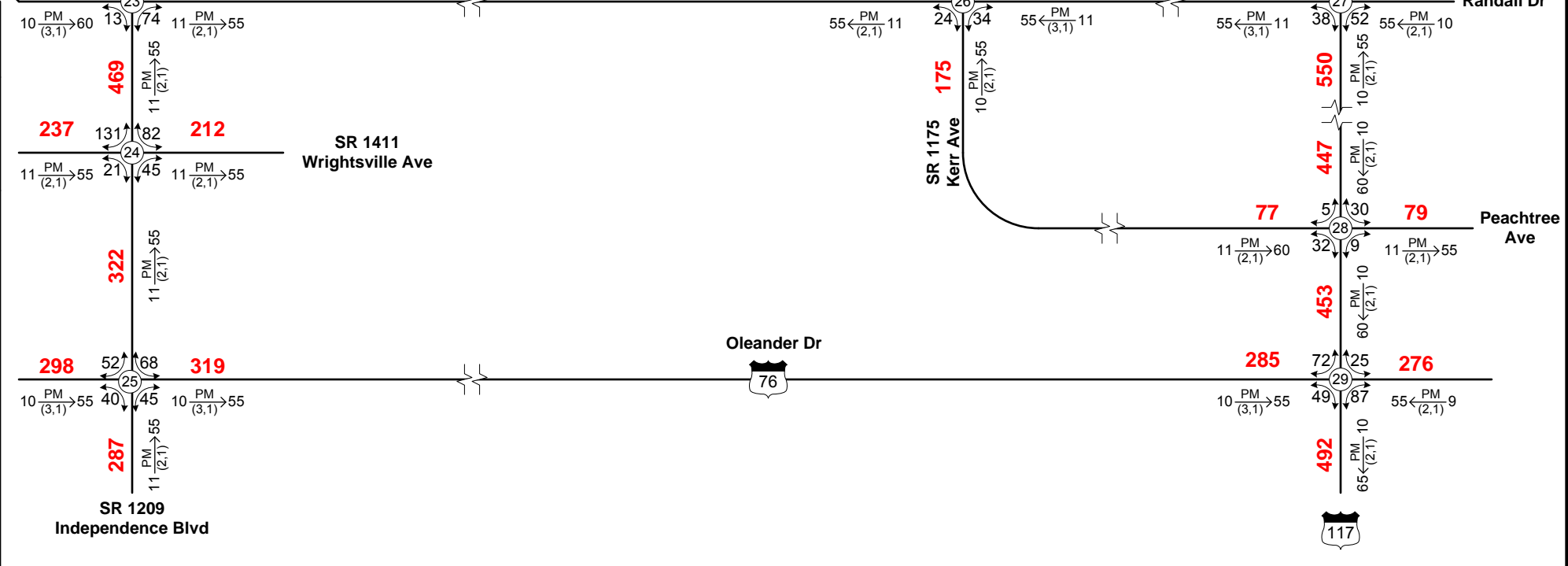
SHEET 2 OF 4

AVERAGE ANNUAL DAILY TRAFFIC

TIP: U-4434	WBS: 37764.1.1	DATE: July 2017	DIVISION: 3
PREPARED BY: AECOM	PROJECT: Independence Blvd Extension		
COUNTY: New Hanover	LOCATION: Randall Pkwy to Martin Luther King Jr Pkwy		



- ### No. of Vehicles Per Day in 100s
- 1- Less than 50 vpd
- X Movement Prohibited
- K $\frac{PM}{(d, t)}$ Design Hour Factor (%)
- PM PM Peak Period
- D Peak Hour Directional Split (%)
- Indicates Direction of D
- (d, t) Duals, TT-STs (%)

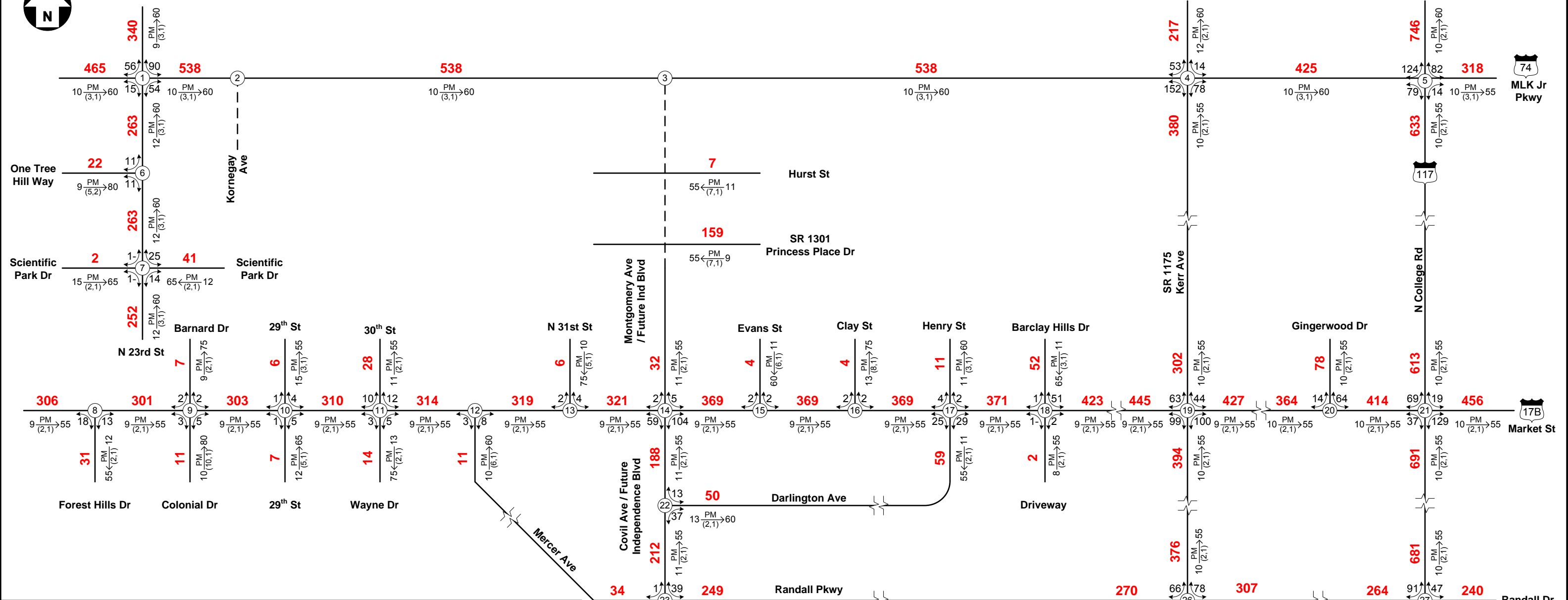




N 23rd St

SR 1175
Kerr Ave

N College Rd



2040

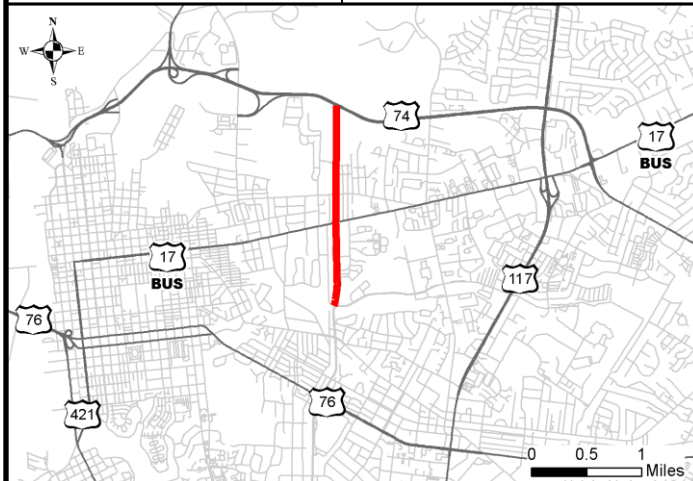
No - Build Traffic Forecast SHEET 3 OF 4

AVERAGE ANNUAL DAILY TRAFFIC

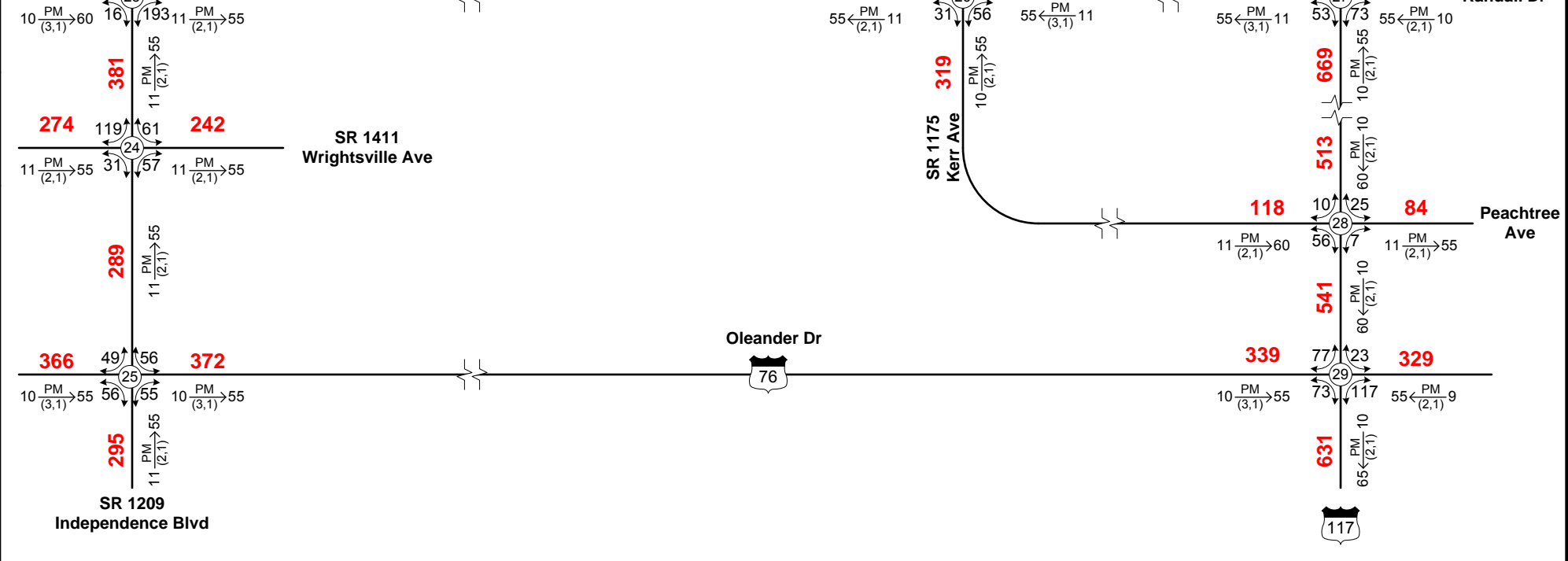
TIP: U-4434	WBS: 37764.1.1	DATE: July 2017	DIVISION: 3
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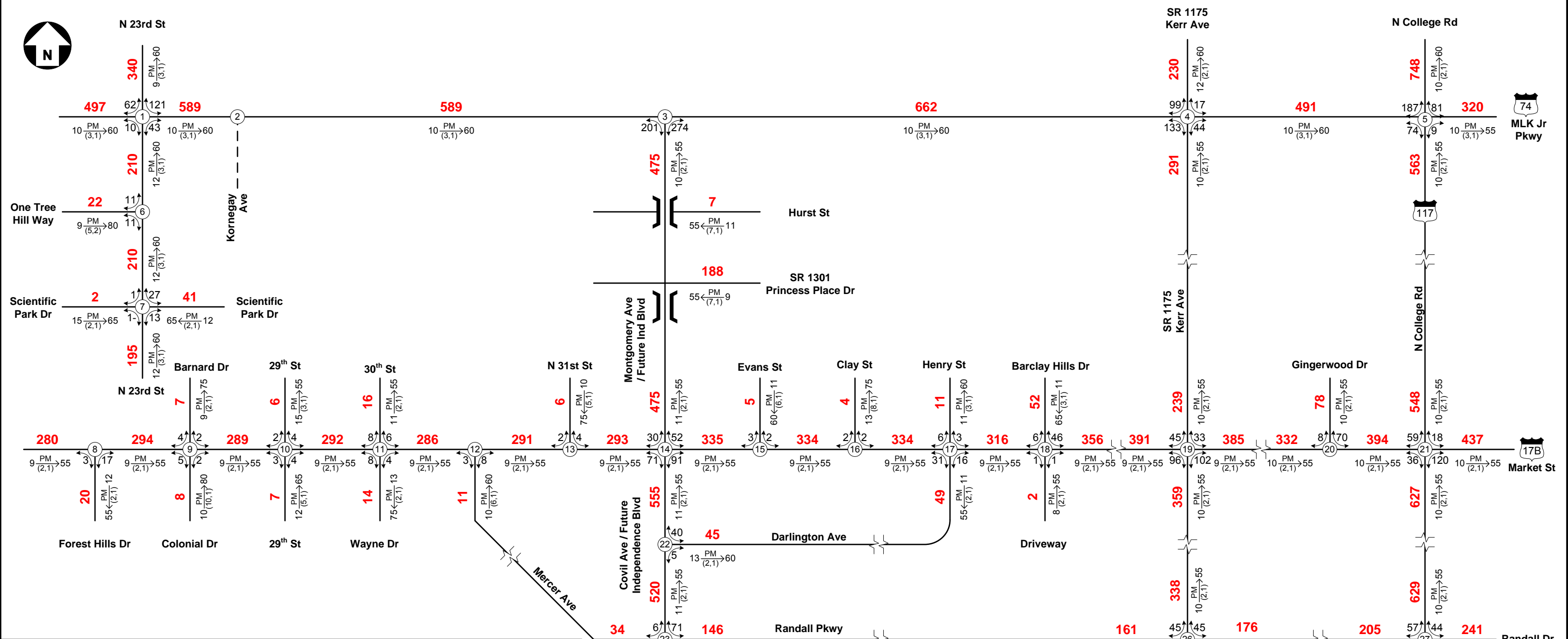
PREPARED BY: AECOM	PROJECT: Independence Blvd Extension
--------------------	--------------------------------------

COUNTY: New Hanover	LOCATION: Randall Pkwy to Martin Luther King Jr Pkwy
---------------------	--



- ### No. of Vehicles Per Day in 100s
- 1- Less than 50 vpd
- X Movement Prohibited
- K $\frac{PM}{(d, t)}$ Design Hour Factor (%)
- PM PM Peak Period
- D Peak Hour Directional Split (%)
- Indicates Direction of D
- (d, t) Duals, TT-STs (%)



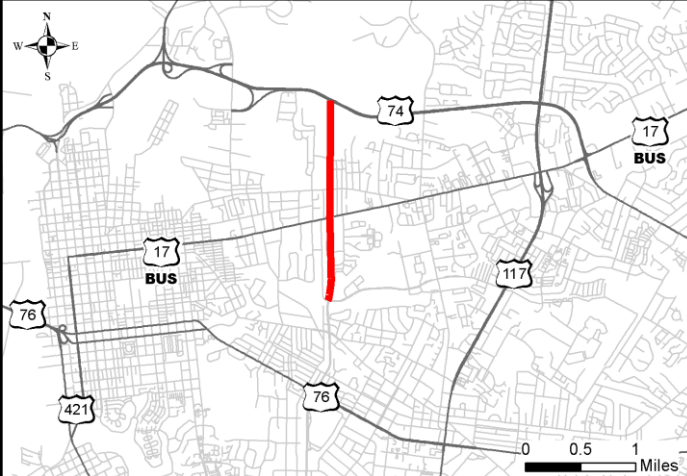


2040

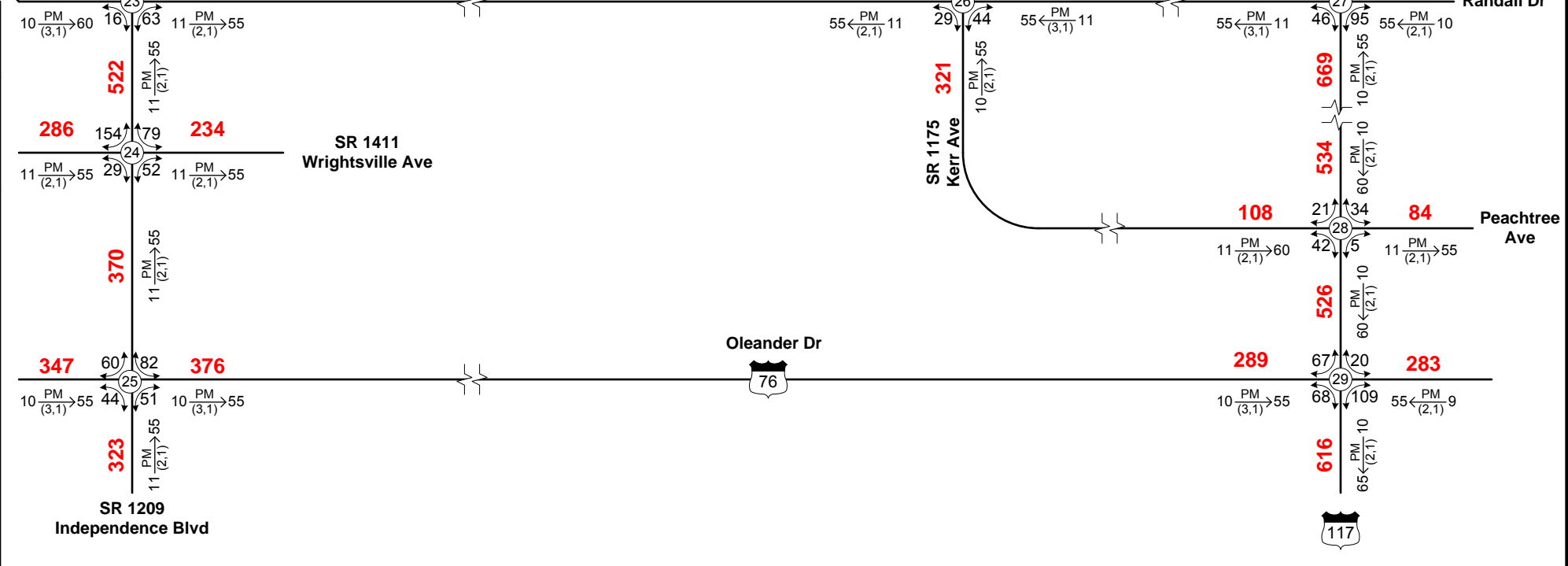
Build Traffic Forecast SHEET 4 OF 4

AVERAGE ANNUAL DAILY TRAFFIC

TIP: U-4434	WBS: 37764.1.1	DATE: July 2017	DIVISION: 3
PREPARED BY: AECOM	PROJECT: Independence Blvd Extension		
COUNTY: New Hanover	LOCATION: Randall Pkwy to Martin Luther King Jr Pkwy		



- ### No. of Vehicles Per Day in 100s
- 1- Less than 50 vpd
- X Movement Prohibited
- $\frac{K}{(d, t)}$
- K Design Hour Factor (%)
- PM PM Peak Period
- D Peak Hour Directional Split (%)
- Indicates Direction of D
- (d, t) Duals, TT-STs (%)

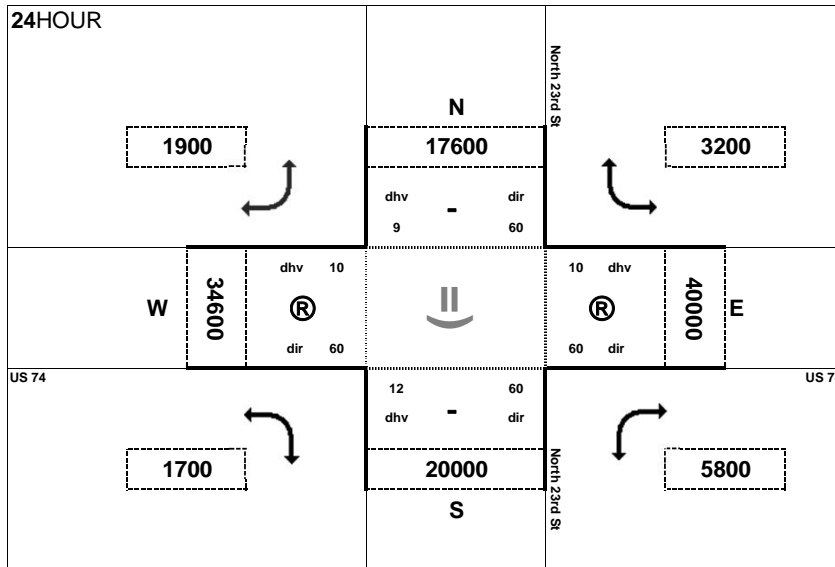


APPENDIX C – Peak Hour Volume Breakouts

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2017 No-Build Alternative

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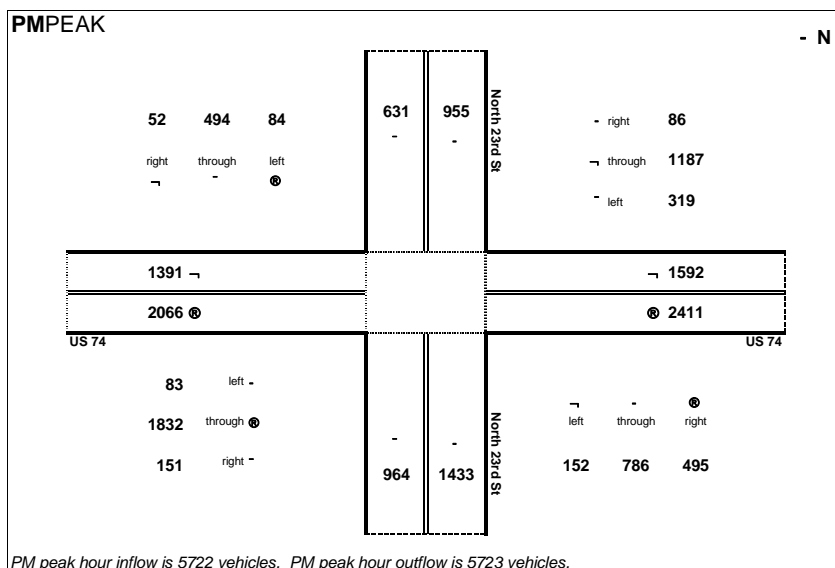
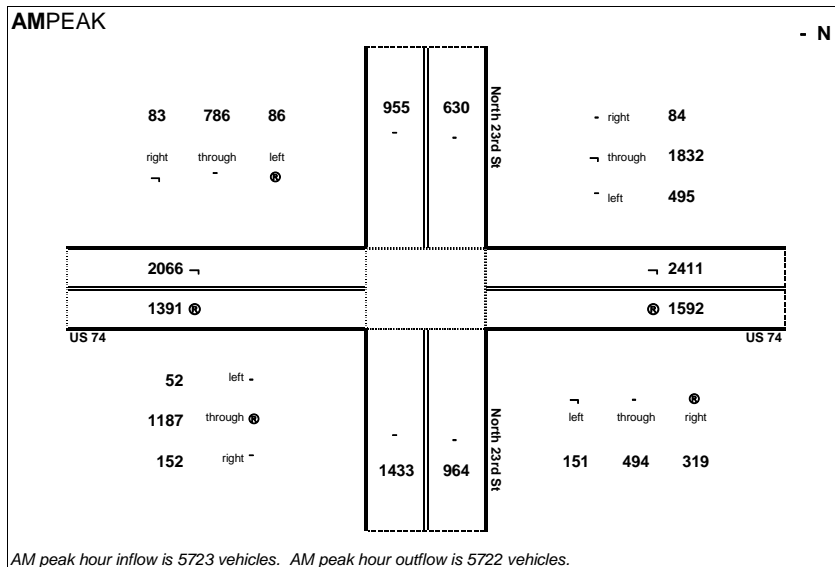


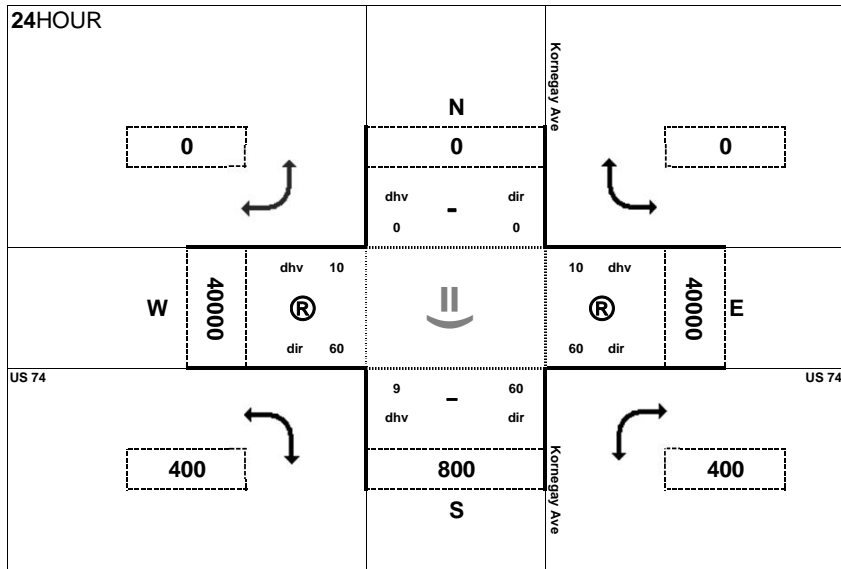
Peak Hour Volume Breakouts Report:
1 Intersection of US 74 and North 23rd St

Traffic Forecast Release Date:
July, 2017

Traffic Data Year:
2017 No Build

Project:
U-4434



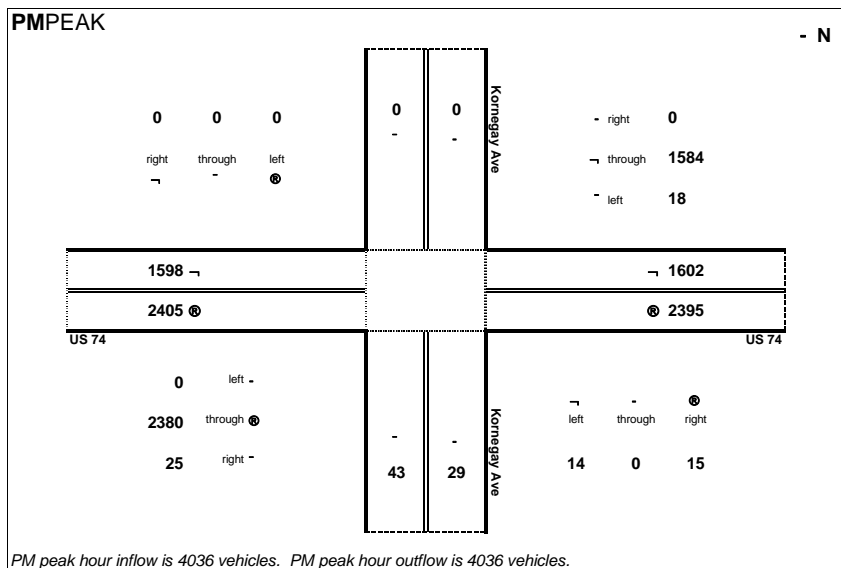
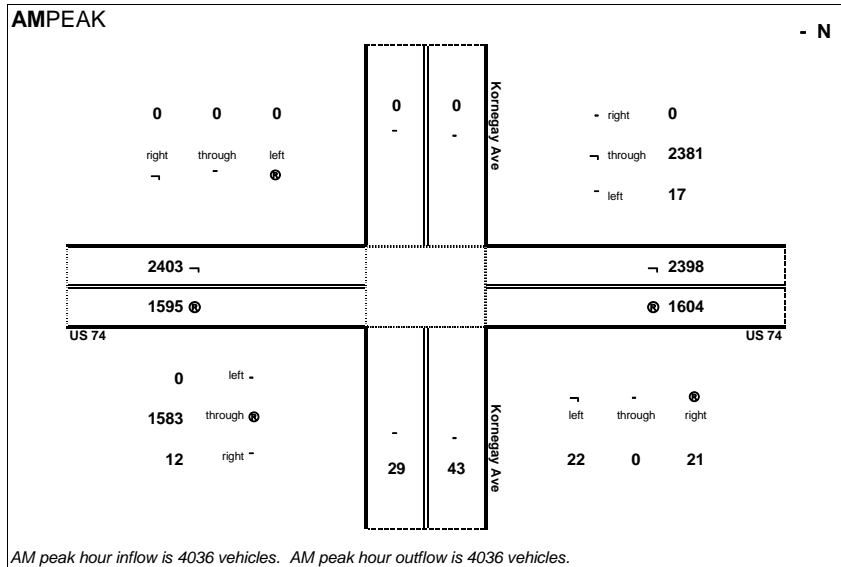


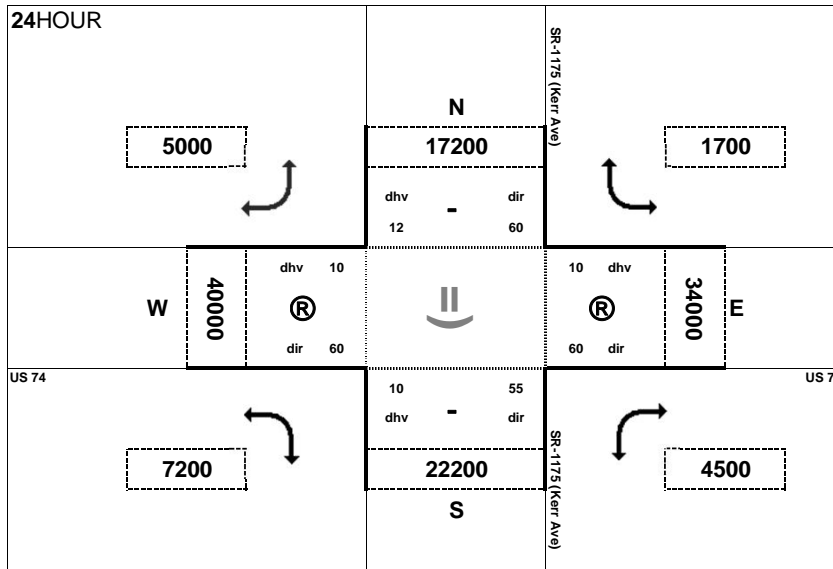
Peak Hour Volume Breakouts Report:
2 Intersection of US 74 and Kornegay Ave

Traffic Forecast Release Date:
July, 2017

Traffic Data Year:
2017 No Build

Project:
U-4434



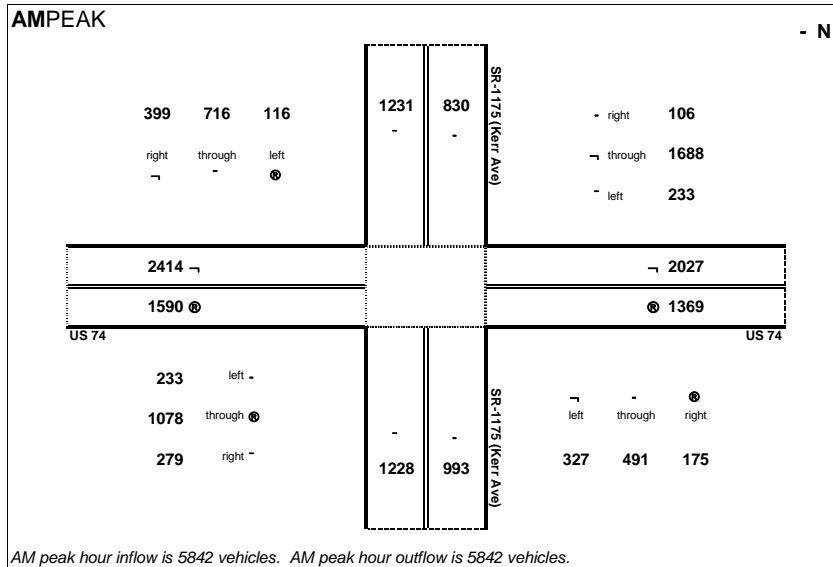


Peak Hour Volume Breakouts Report:
4 Intersection of US 74 and SR-1175 (Kerr Ave)

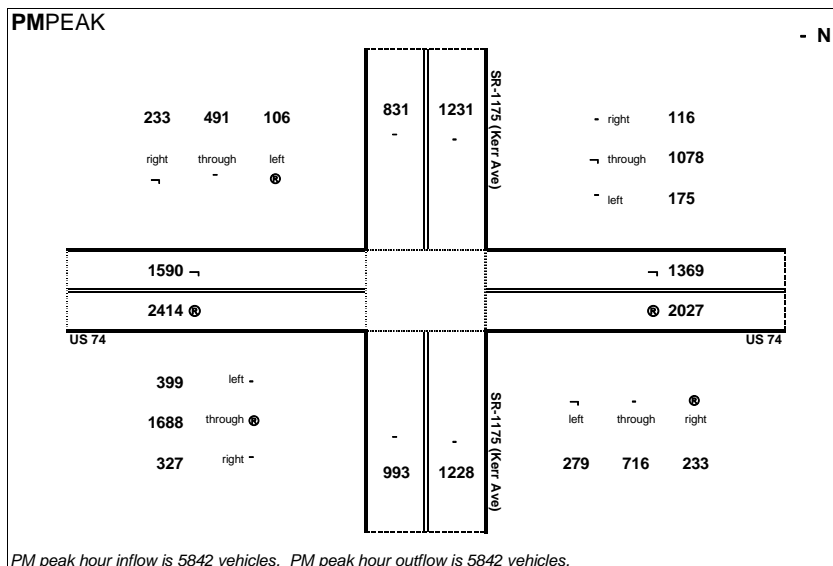
Traffic Forecast Release Date:
July, 2017

Traffic Data Year:
2017 No Build

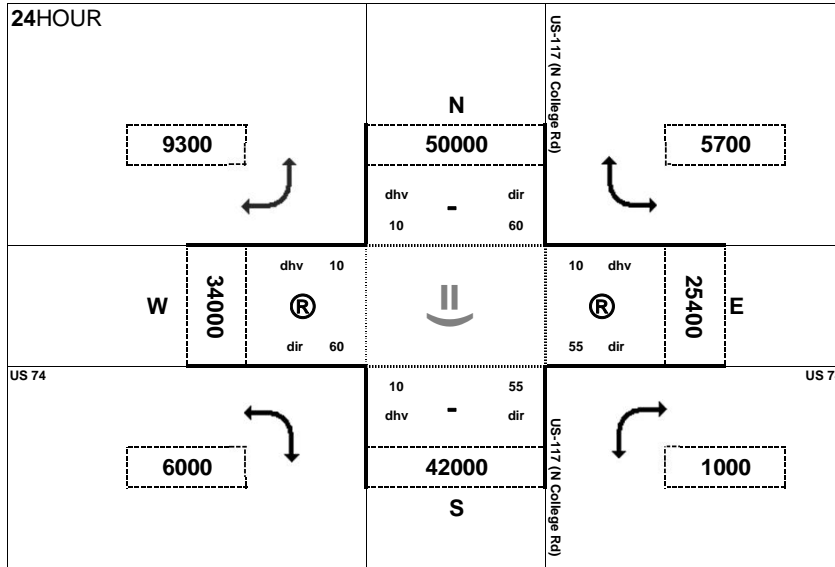
Project:
U-4434



AM peak hour inflow is 5842 vehicles. AM peak hour outflow is 5842 vehicles.



PM peak hour inflow is 5842 vehicles. PM peak hour outflow is 5842 vehicles.

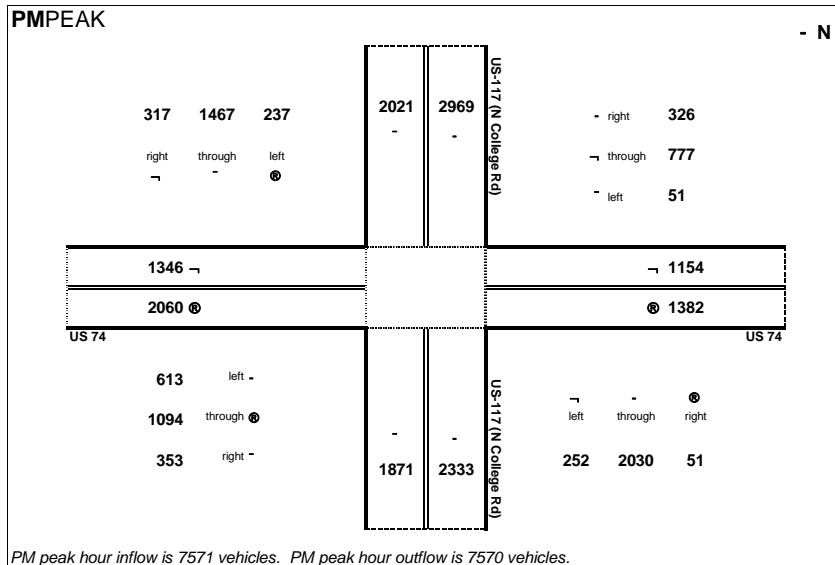
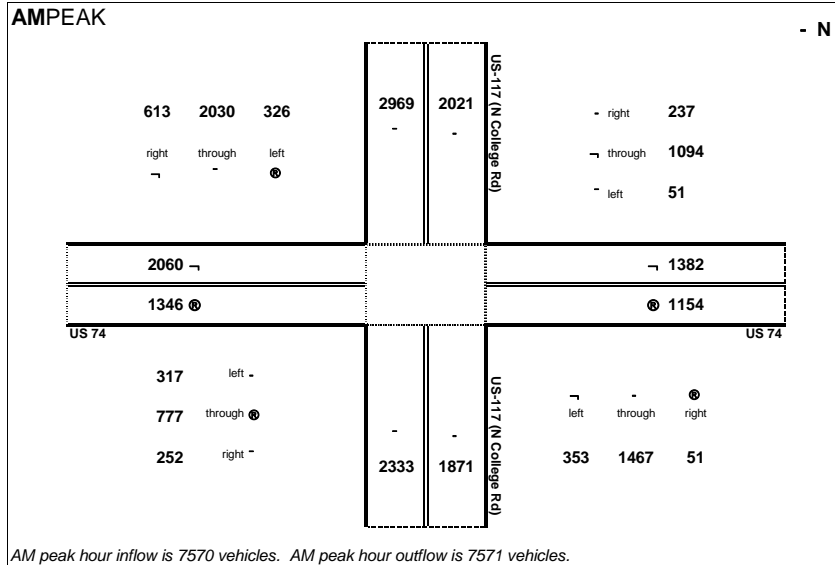


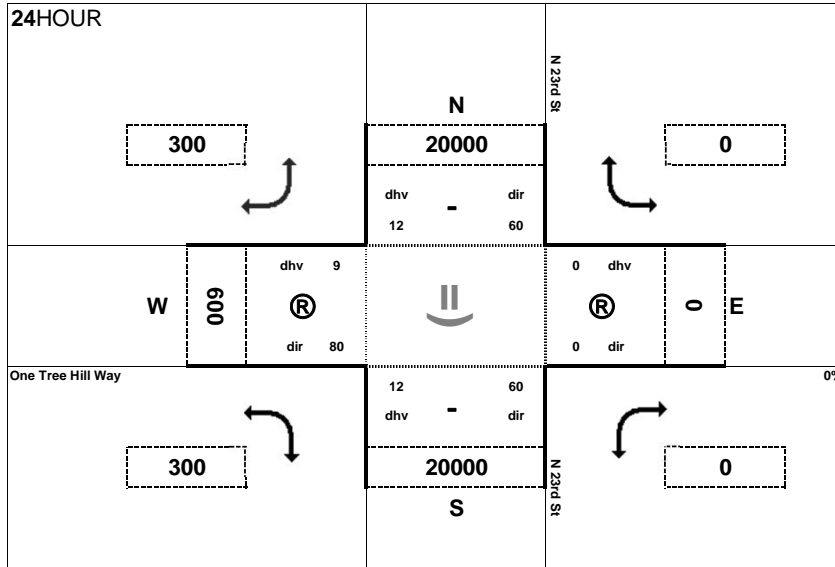
Peak Hour Volume Breakouts Report:
5 Intersection of US 74 and US-117 (N College Rd)

Traffic Forecast Release Date:
July, 2017

Traffic Data Year:
2017 No Build

Project:
U-4434



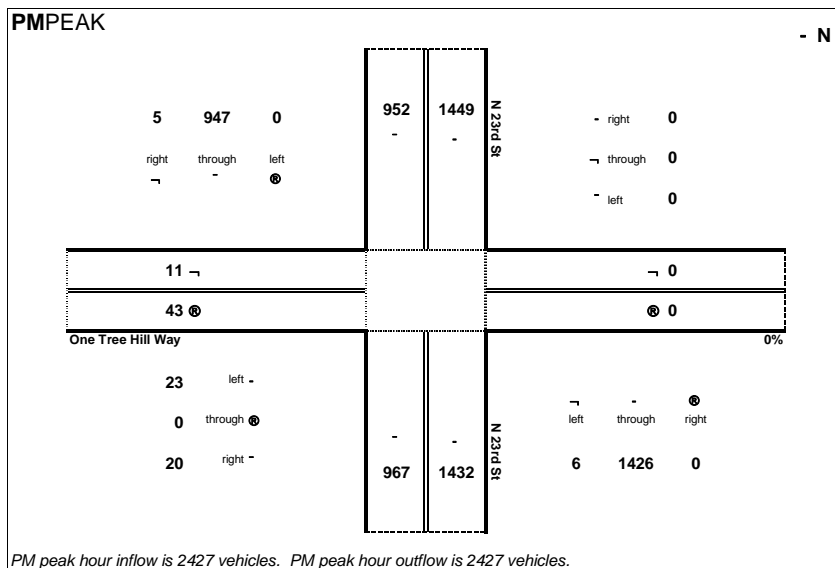
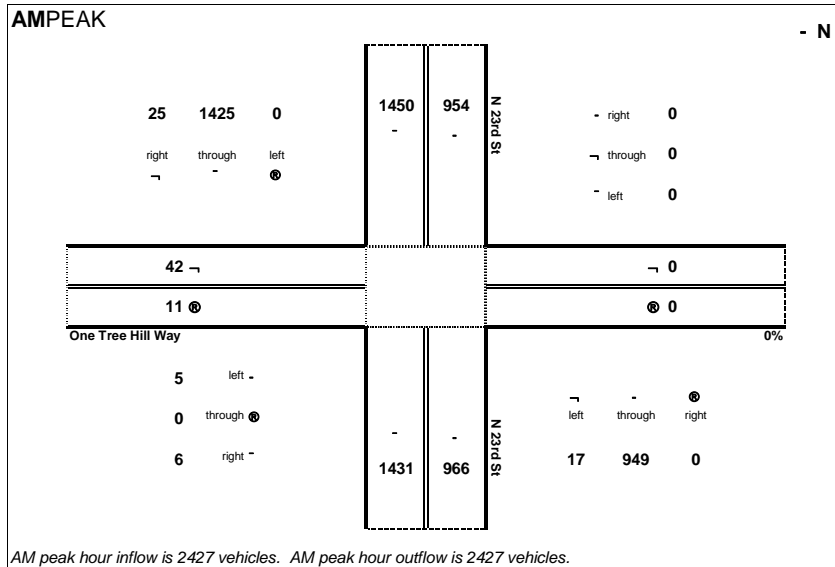


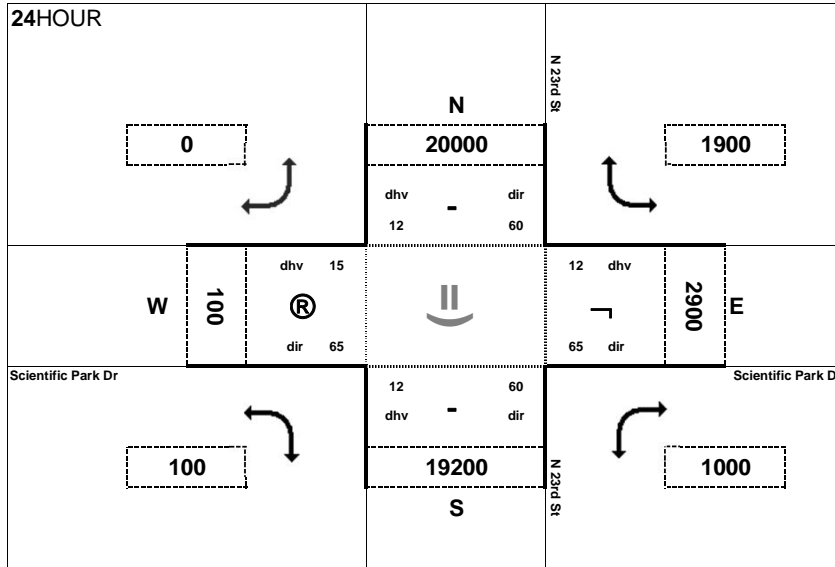
Peak Hour Volume Breakouts Report:
6 Intersection of N 23rd St and One Tree Hill Way

Traffic Forecast Release Date:
July, 2017

Traffic Data Year:
2017 No Build

Project:
U-4434



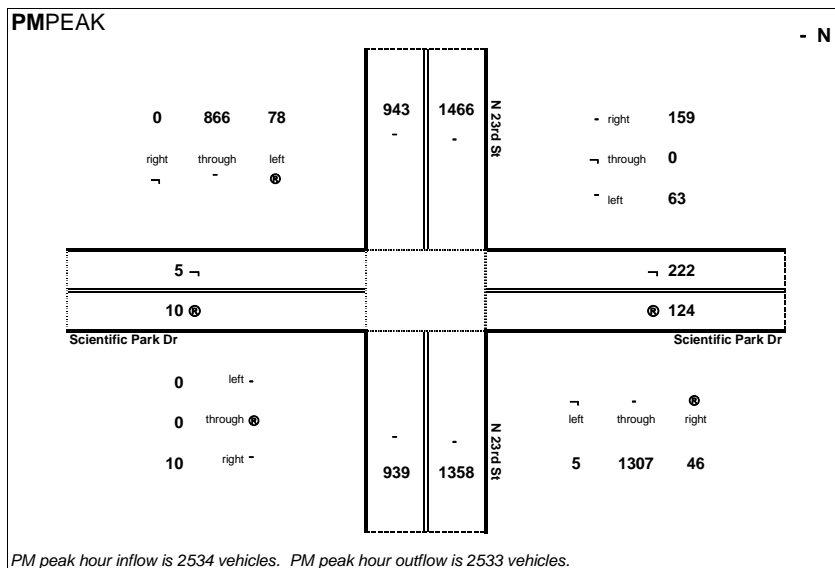
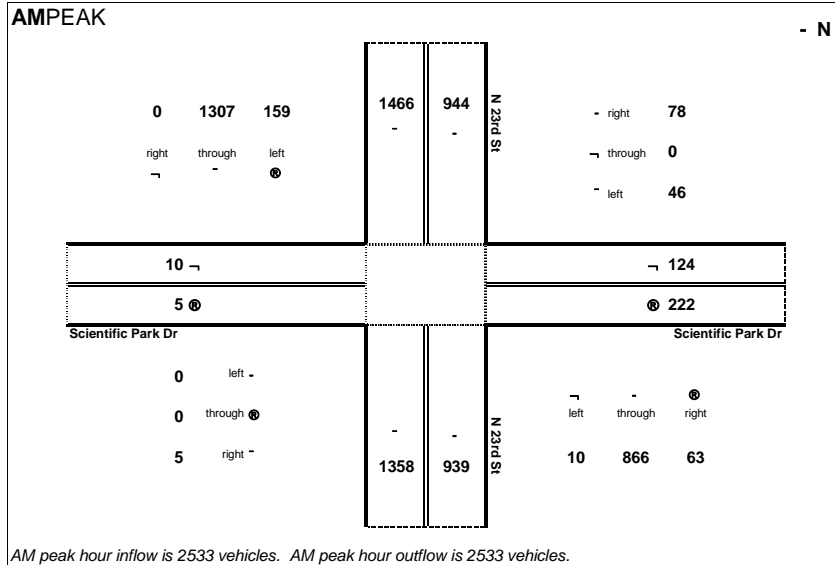


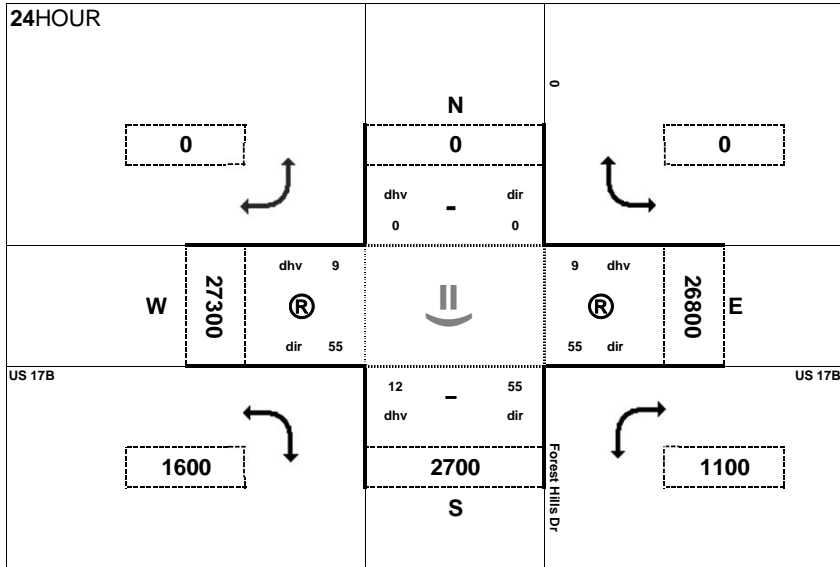
Peak Hour Volume Breakouts Report:
7 Intersection of N 23rd St and Scientific Park Dr

Traffic Forecast Release Date:
July, 2017

Traffic Data Year:
2017 No Build

Project:
U-4434



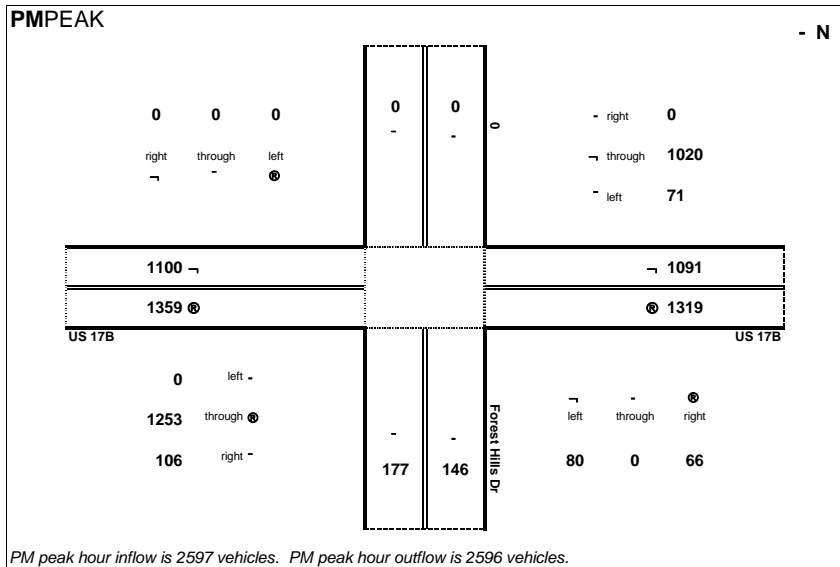
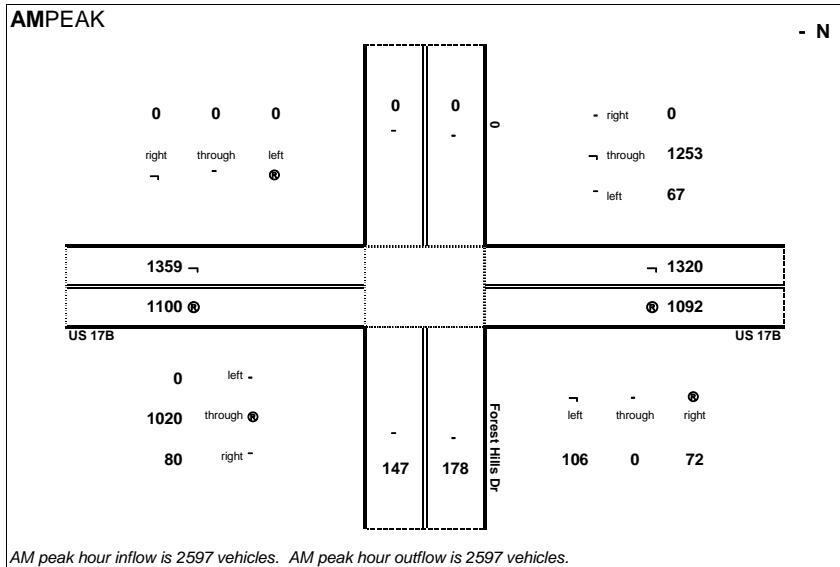


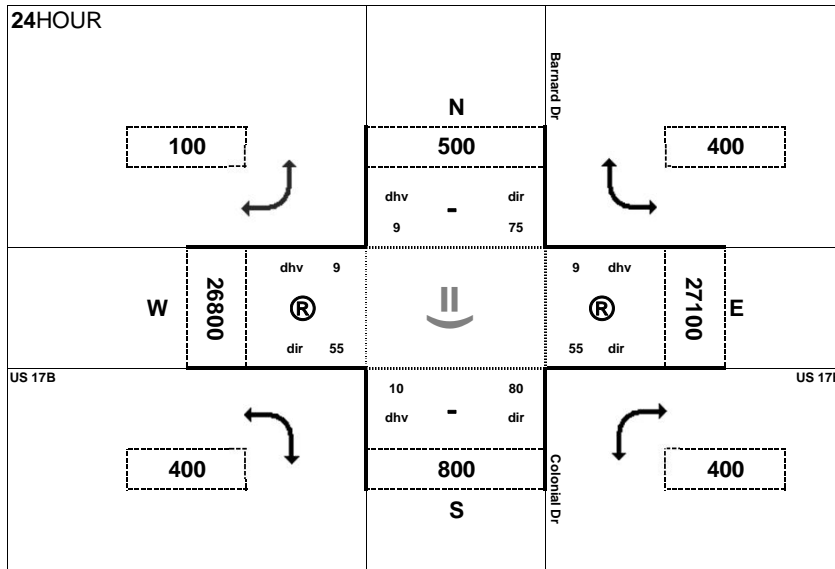
Peak Hour Volume Breakouts Report:
8 Intersection of US 17B and Forest Hills Dr

Traffic Forecast Release Date:
July, 2017

Traffic Data Year:
2017 No Build

Project:
U-4434



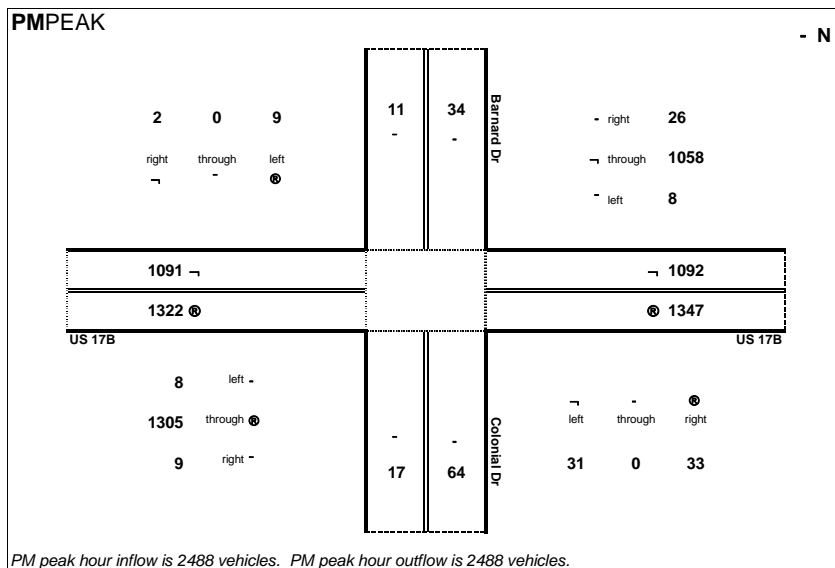
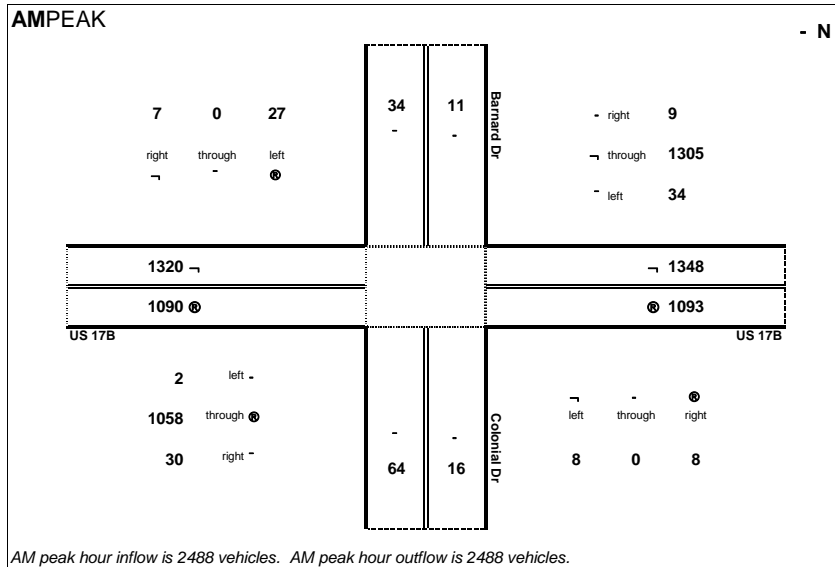


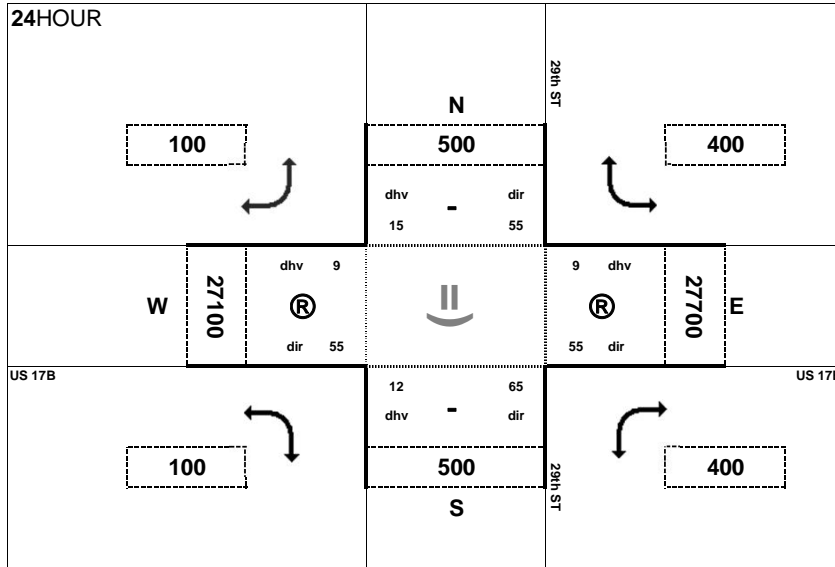
Peak Hour Volume Breakouts Report:
 9 Intersection of US 17B and Colonial Dr-Barnard Dr

Traffic Forecast Release Date:
 July, 2017

Traffic Data Year:
 2017 No Build

Project:
 U-4434



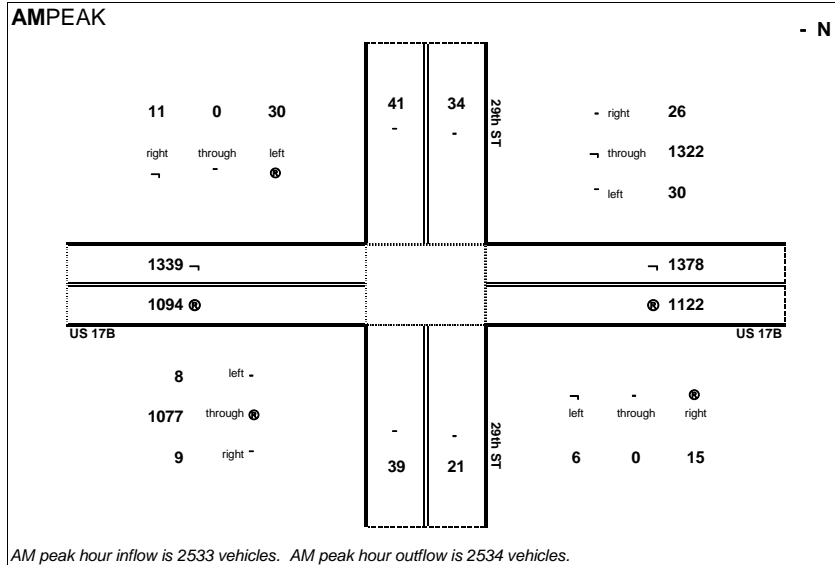


Peak Hour Volume Breakouts Report:
10 Intersection of US 17B and 29th St

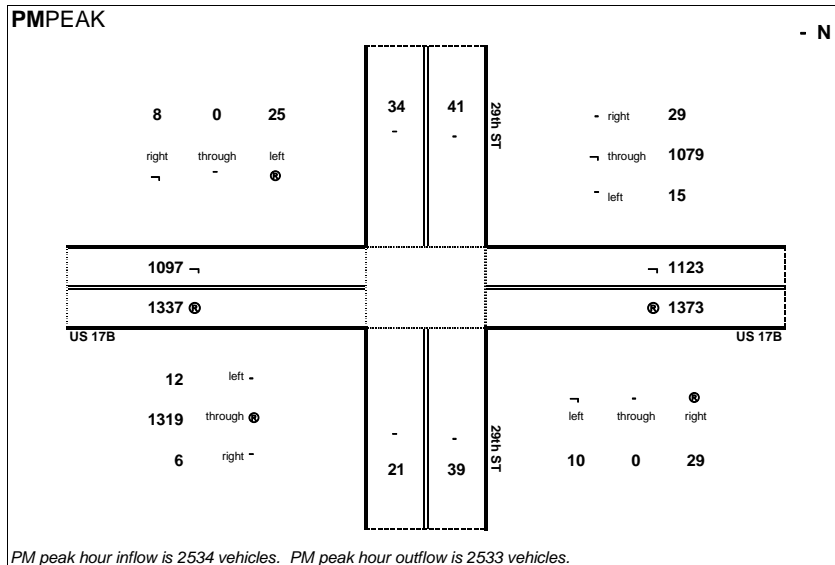
Traffic Forecast Release Date:
July, 2017

Traffic Data Year:
2017 No Build

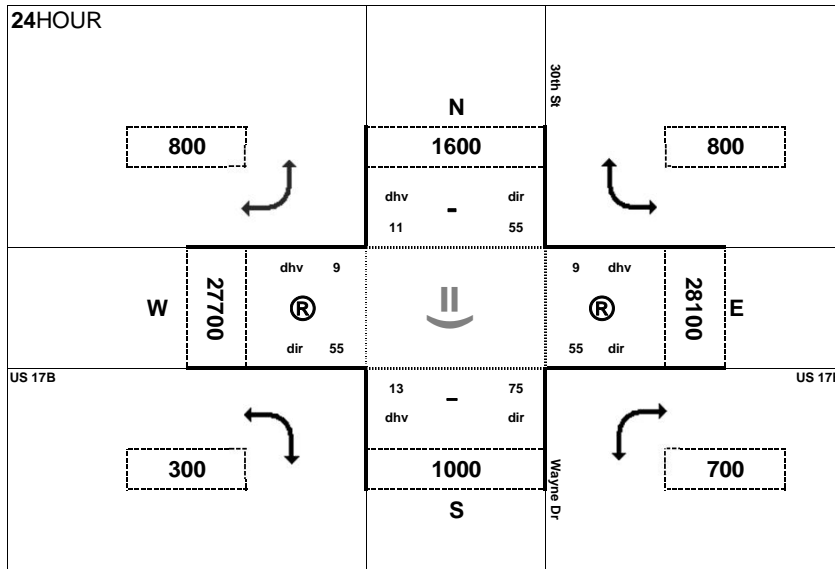
Project:
U-4434



AM peak hour inflow is 2533 vehicles. AM peak hour outflow is 2534 vehicles.



PM peak hour inflow is 2534 vehicles. PM peak hour outflow is 2533 vehicles.

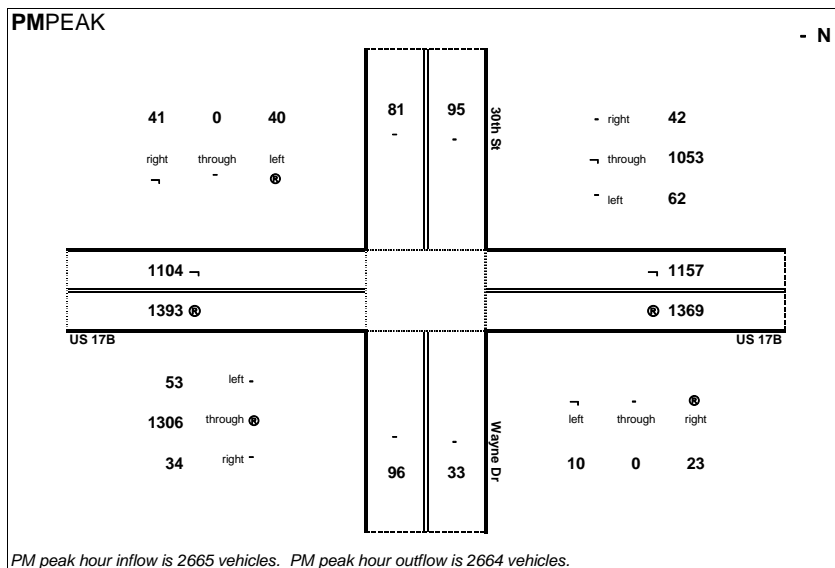
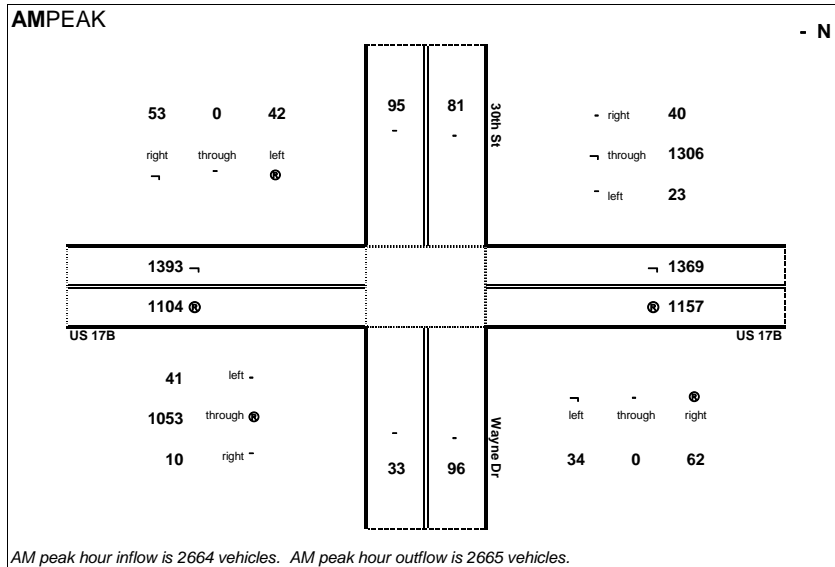


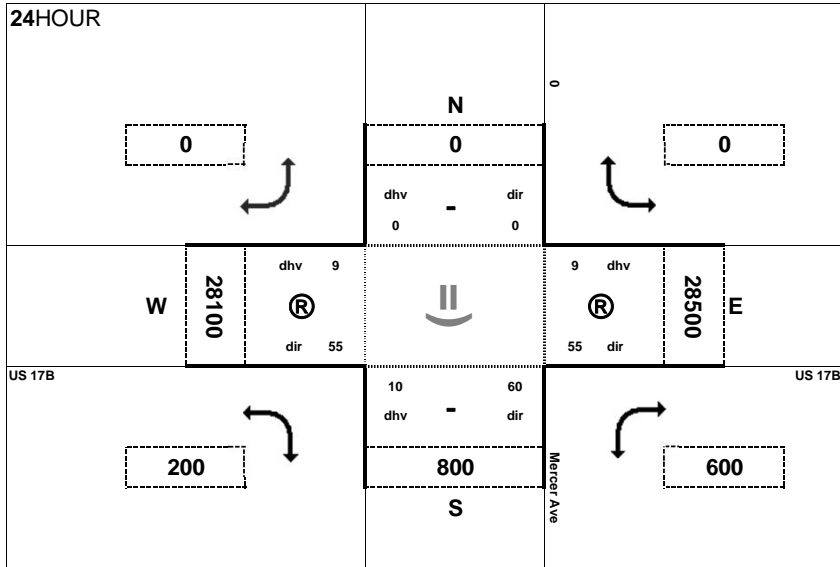
Peak Hour Volume Breakouts Report:
11 Intersection of US 17B and 30th St-Wayne Dr

Traffic Forecast Release Date:
July, 2017

Traffic Data Year:
2017 No Build

Project:
U-4434



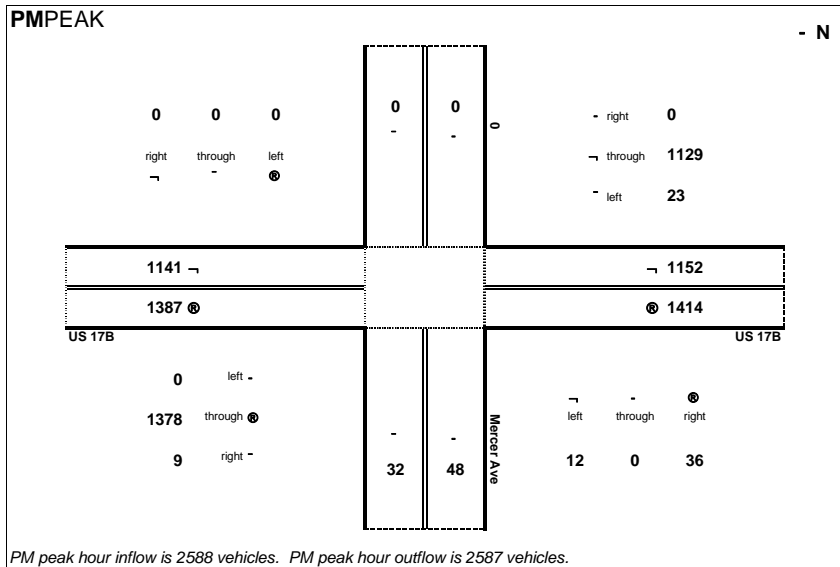
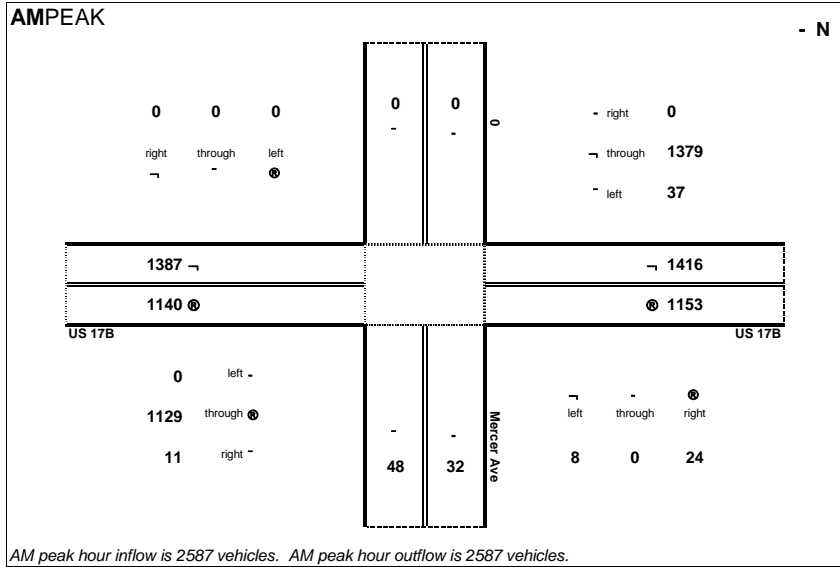


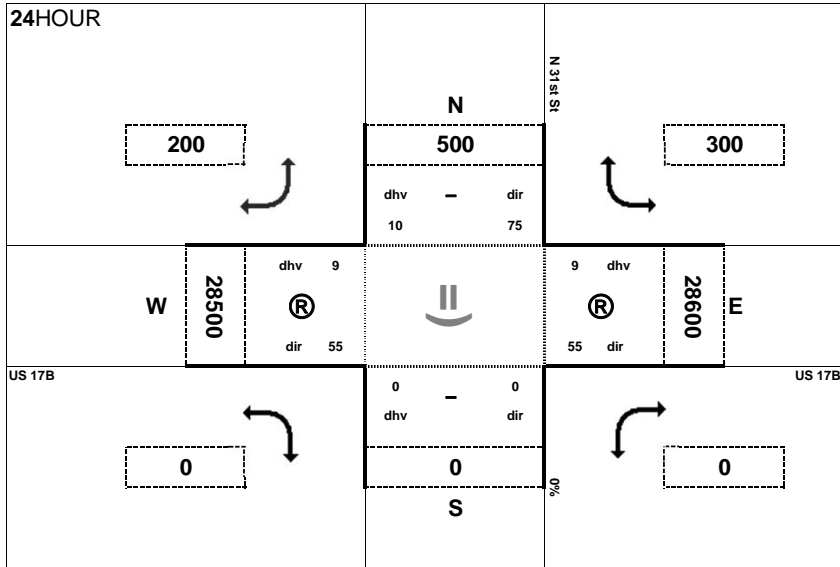
Peak Hour Volume Breakouts Report:
12 Intersection of US 17B and Mercer Ave

Traffic Forecast Release Date:
July, 2017

Traffic Data Year:
2017 No Build

Project:
U-4434



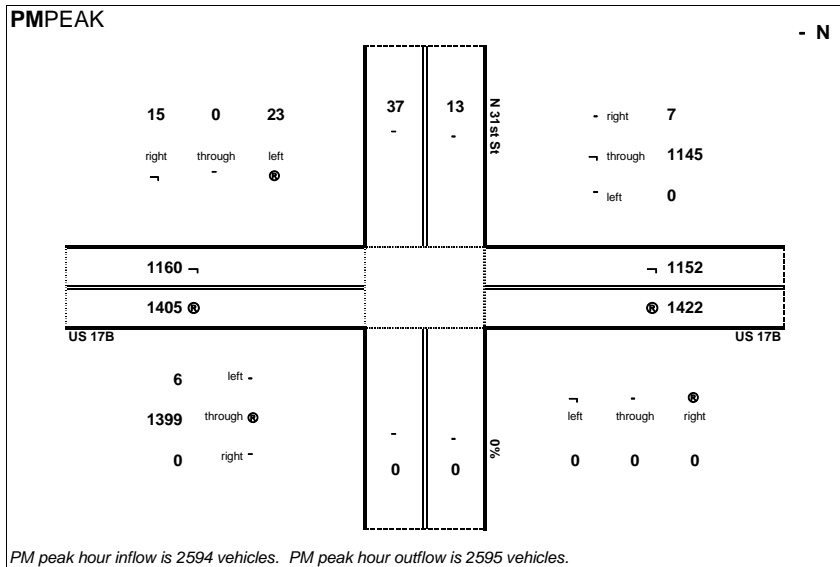
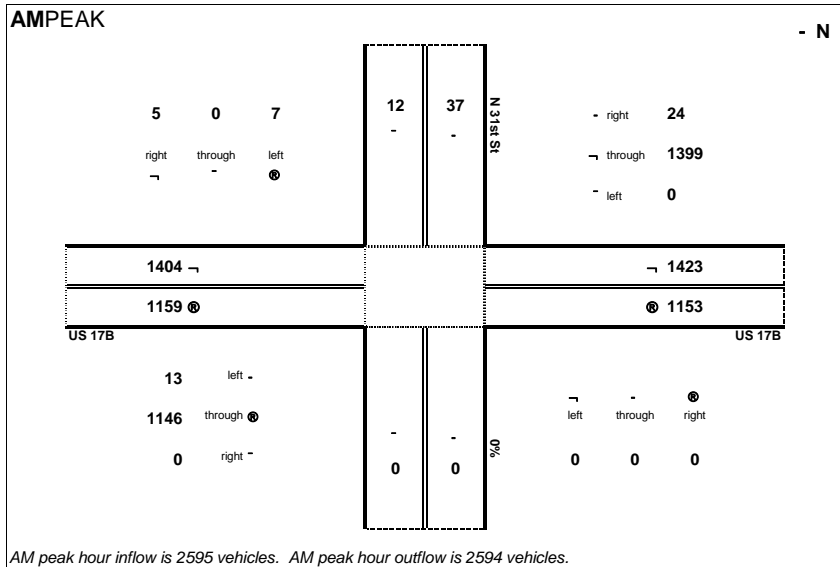


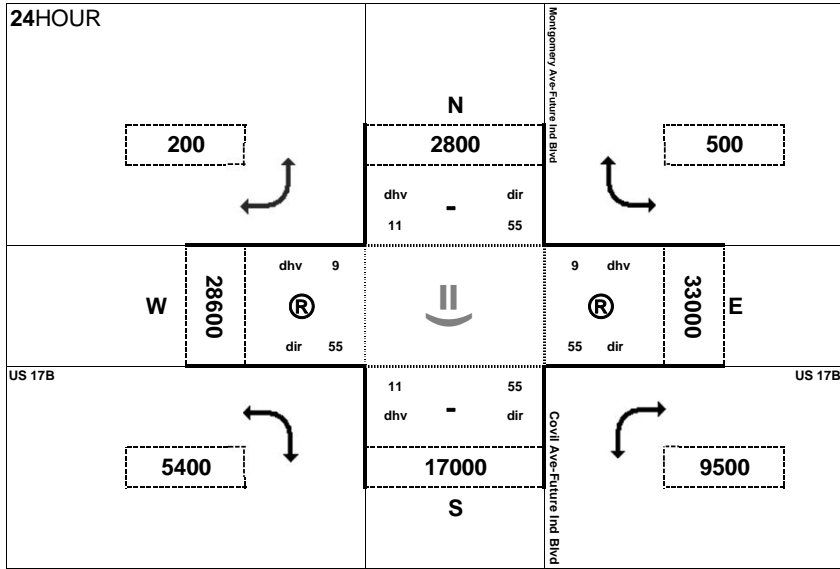
Peak Hour Volume Breakouts Report:
13 Intersection of US 17B and N 31st St

Traffic Forecast Release Date:
July, 2017

Traffic Data Year:
2017 No Build

Project:
U-4434



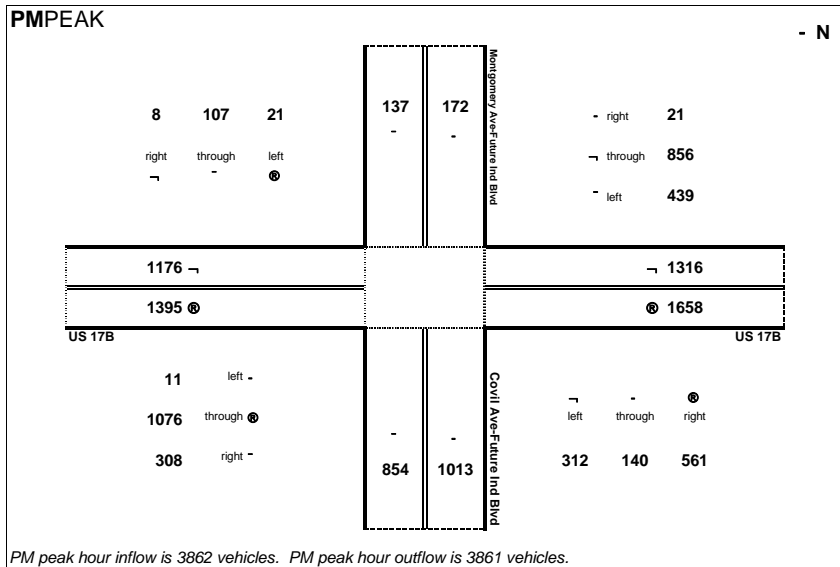
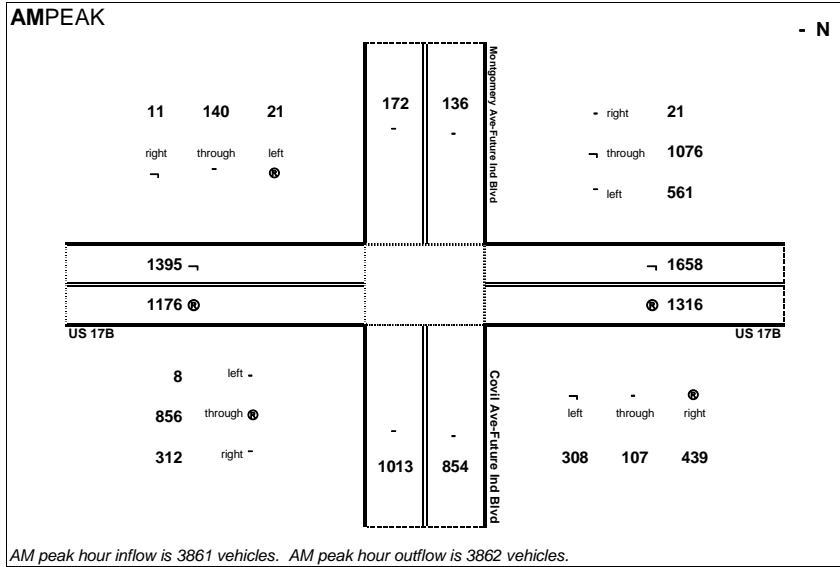


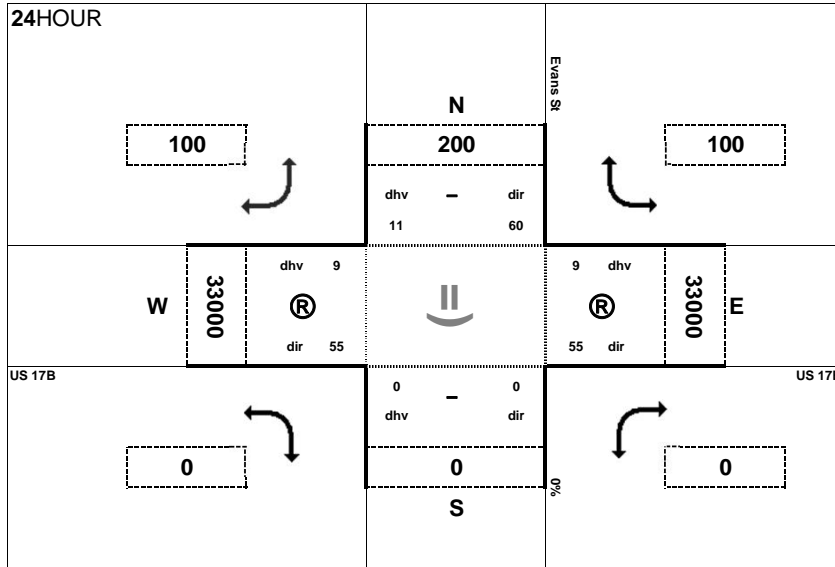
Peak Hour Volume Breakouts Report:
 14 Intersection of US 17B and Montgomery Ave-Covil Ave-Future Ind Blvd

Traffic Forecast Release Date:
 July, 2017

Traffic Data Year:
 2017 No Build

Project:
 U-4434



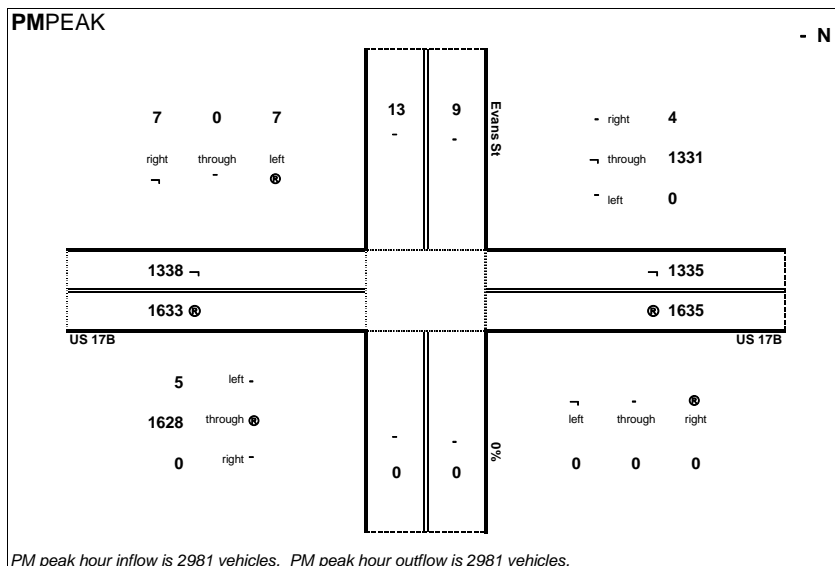
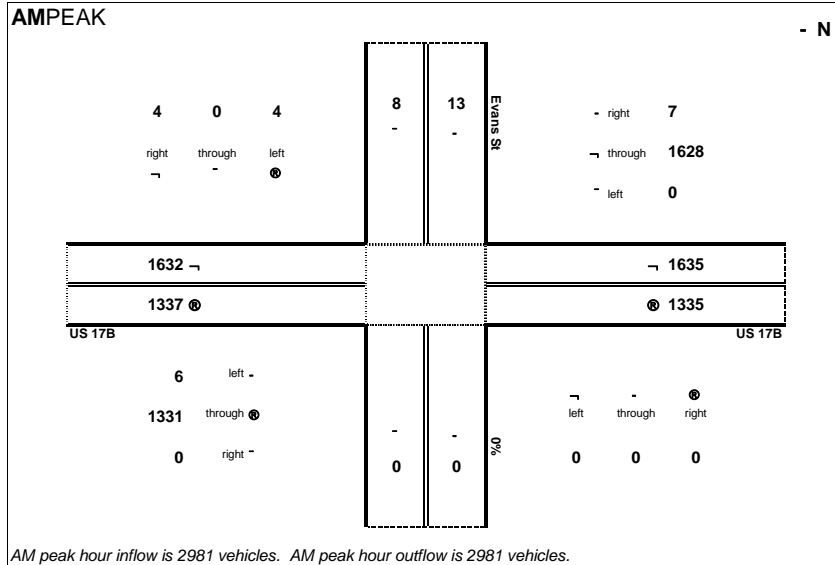


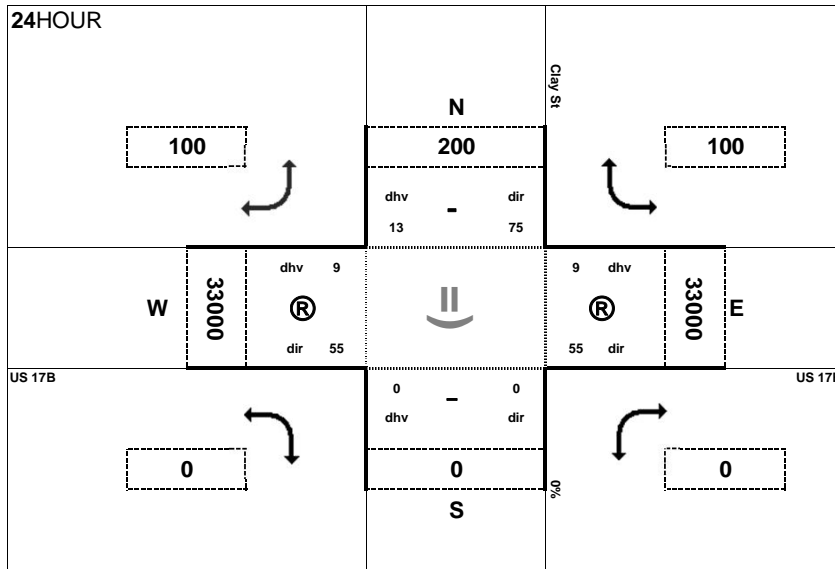
Peak Hour Volume Breakouts Report:
15 Intersection of US 17B and Evans St

Traffic Forecast Release Date:
July, 2017

Traffic Data Year:
2017 No Build

Project:
U-4434



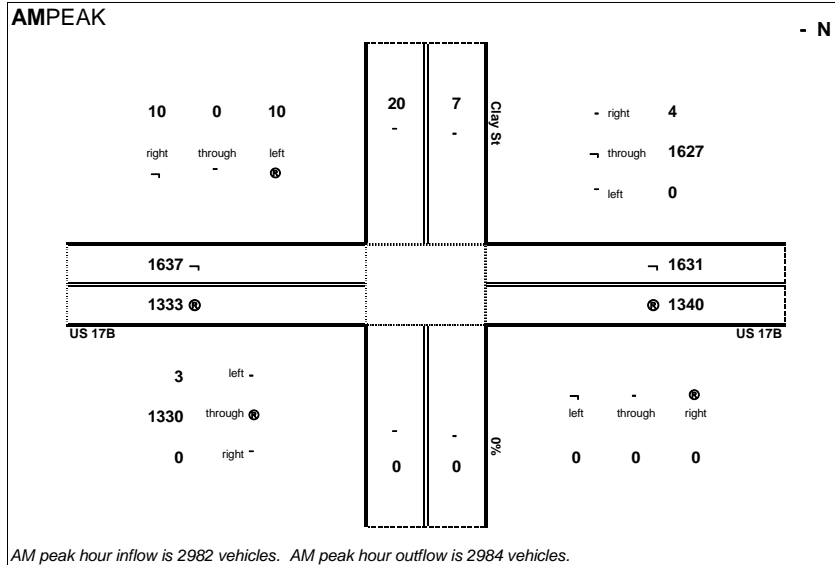


Peak Hour Volume Breakouts Report:
16 Intersection of US 17B and Clay St

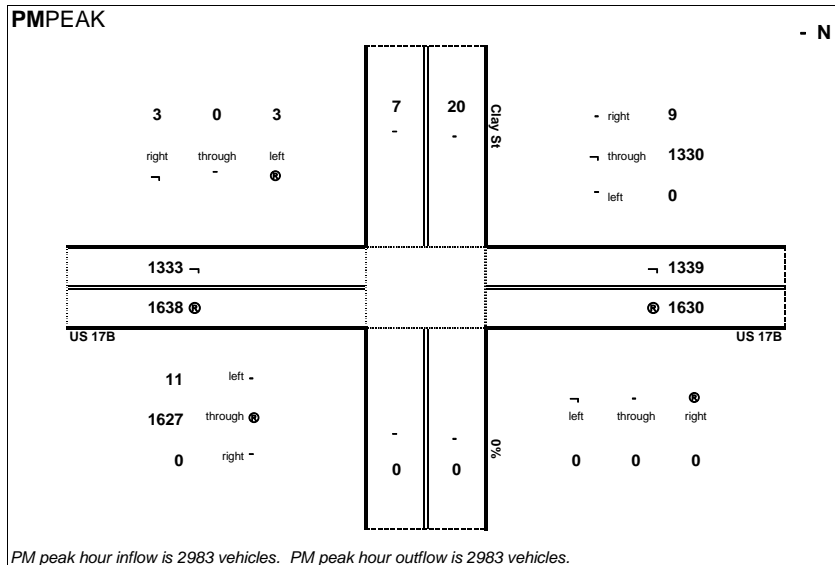
Traffic Forecast Release Date:
July, 2017

Traffic Data Year:
2017 No Build

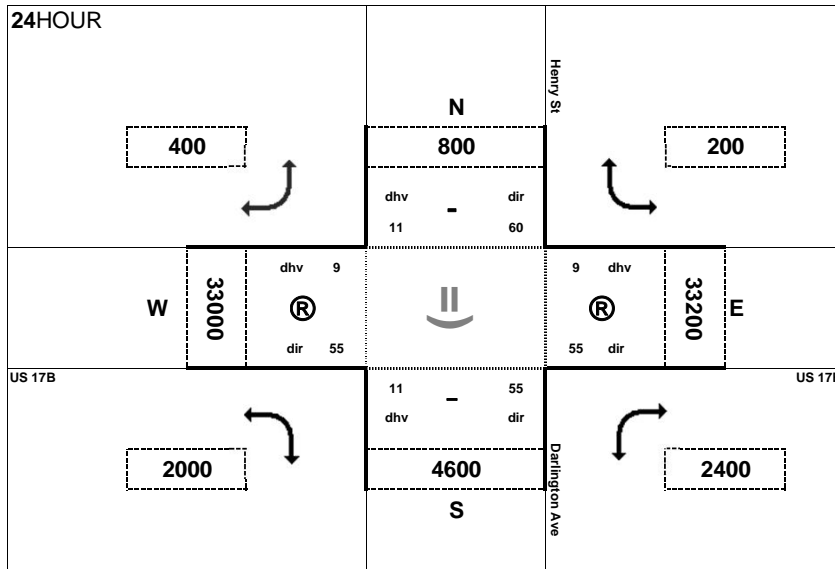
Project:
U-4434



AM peak hour inflow is 2982 vehicles. AM peak hour outflow is 2984 vehicles.



PM peak hour inflow is 2983 vehicles. PM peak hour outflow is 2983 vehicles.

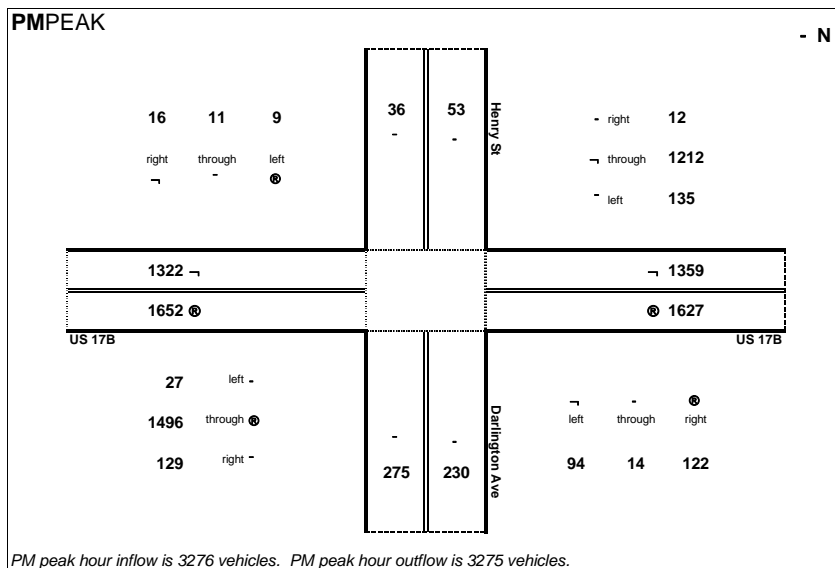
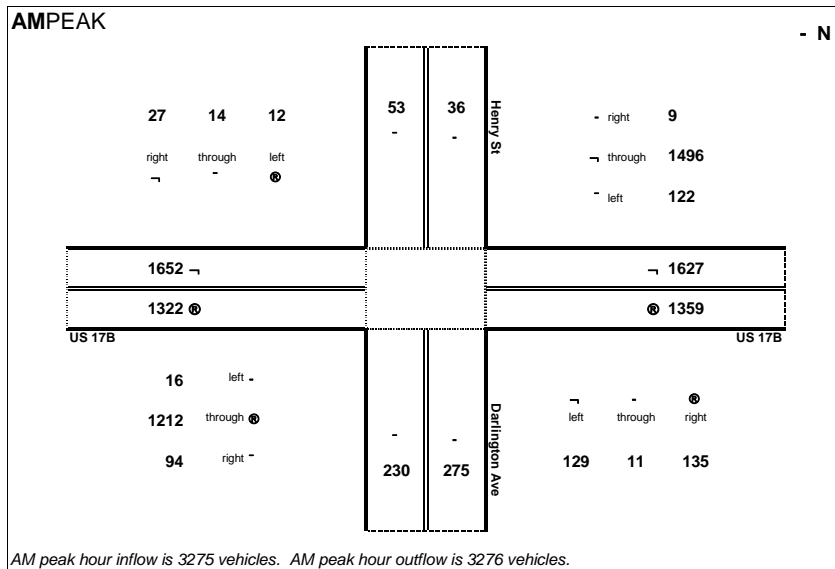


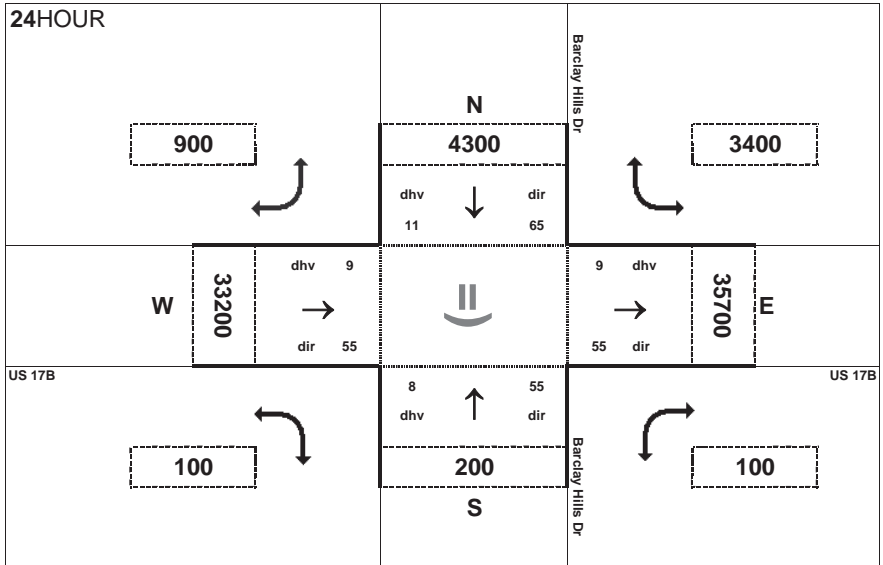
Peak Hour Volume Breakouts Report:
 17 Intersection of US 17B and Henry St-Darlington Ave

Traffic Forecast Release Date:
 July, 2017

Traffic Data Year:
 2017 No Build

Project:
 U-4434



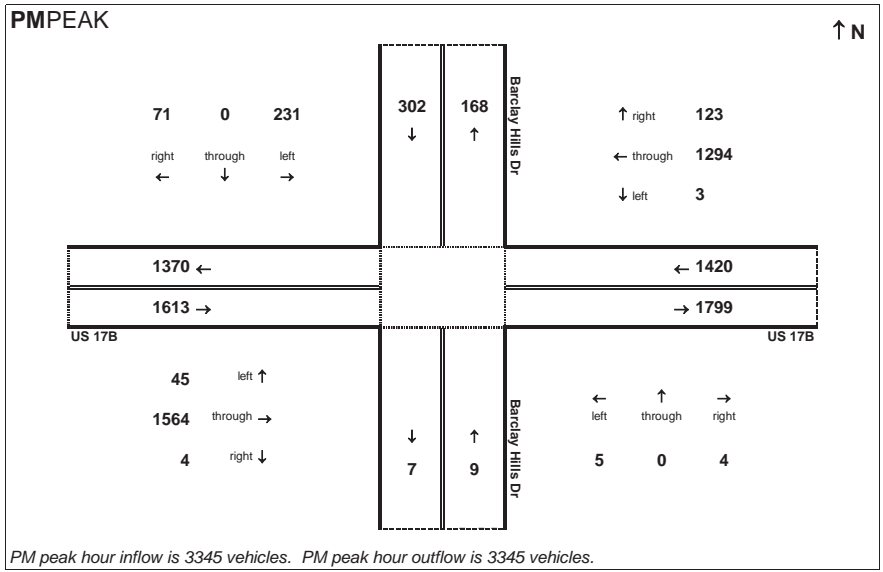
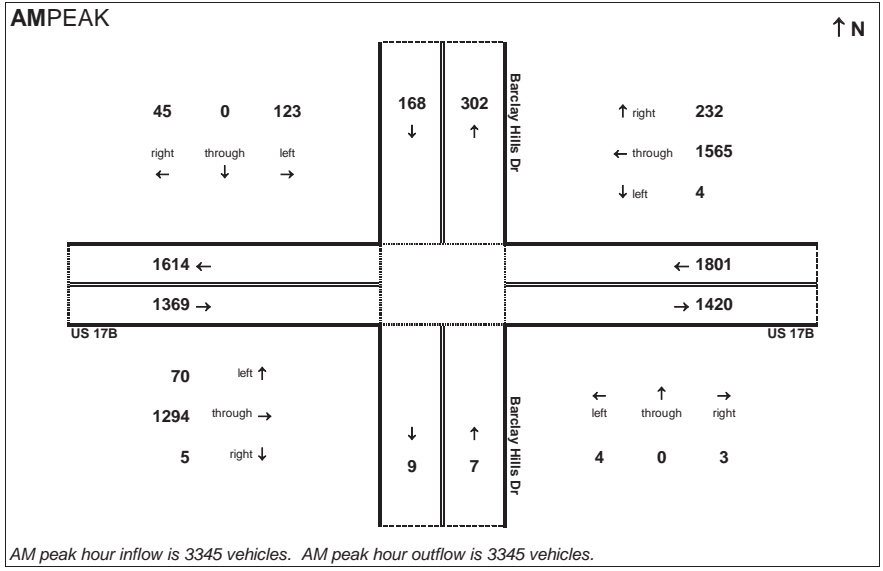


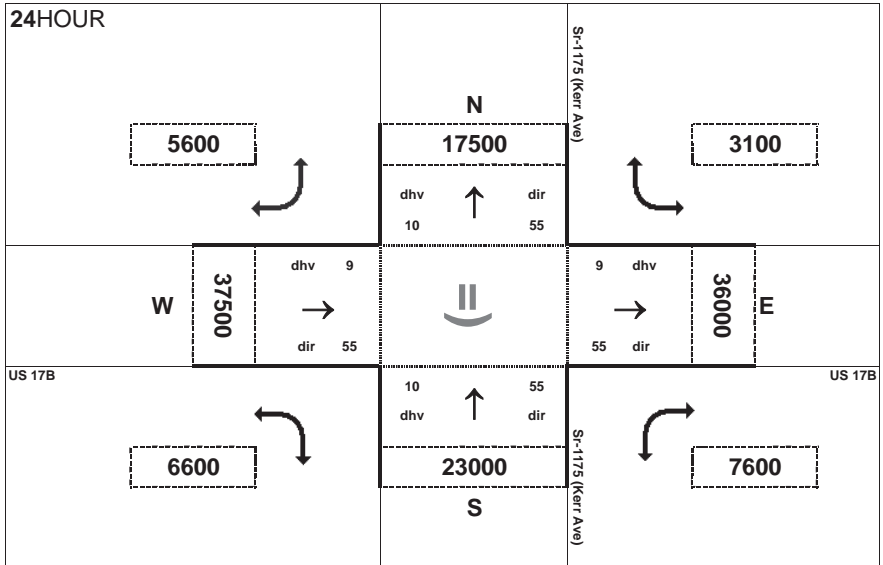
Peak Hour Volume Breakouts Report:
 18 Intersection of US 17B and Barclay Hills Dr

Traffic Forecast Release Date:
 July, 2017

Traffic Data Year:
 2017 No Build

Project:
 U-4434



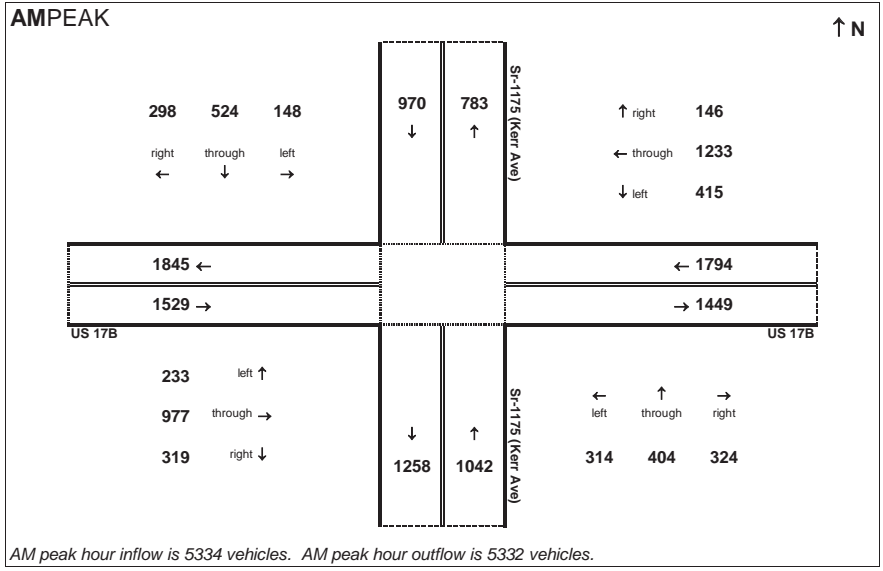


Peak Hour Volume Breakouts Report:
 19 Intersection of US 17B and Sr-1175 (Kerr Ave)

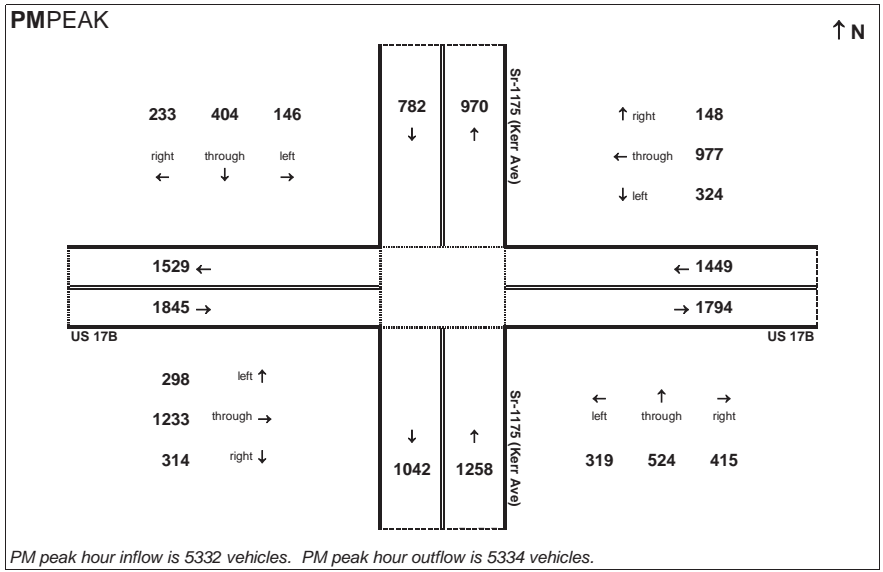
Traffic Forecast Release Date:
 July, 2017

Traffic Data Year:
 2017 No Build

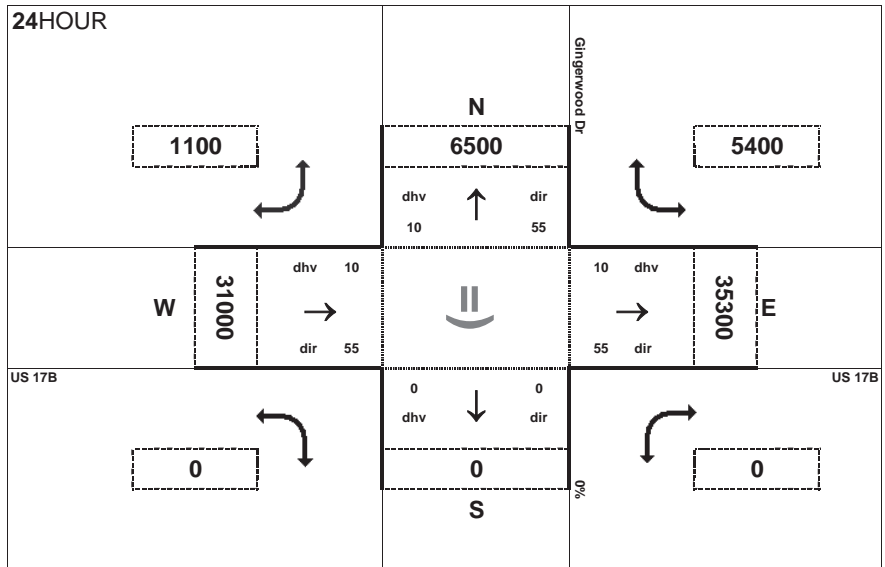
Project:
 U-4434



AM peak hour inflow is 5334 vehicles. AM peak hour outflow is 5332 vehicles.



PM peak hour inflow is 5332 vehicles. PM peak hour outflow is 5334 vehicles.

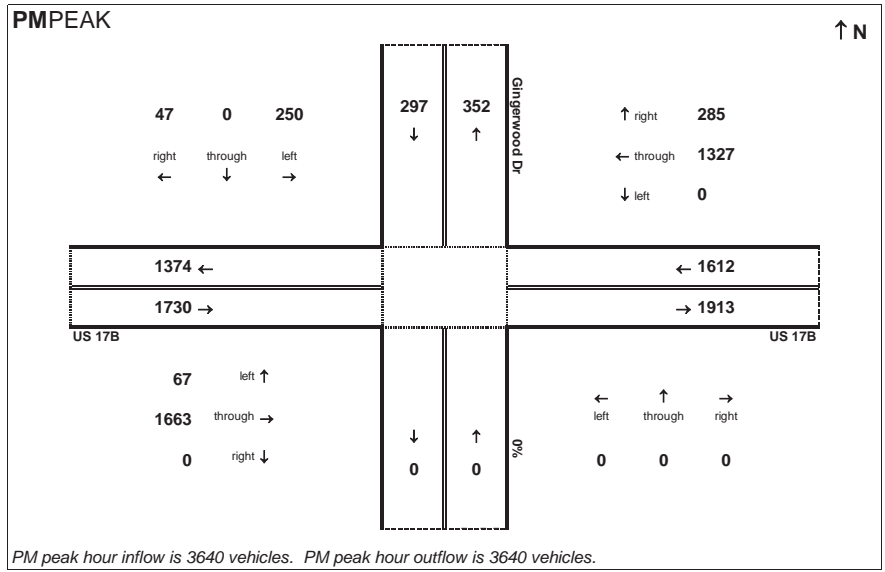
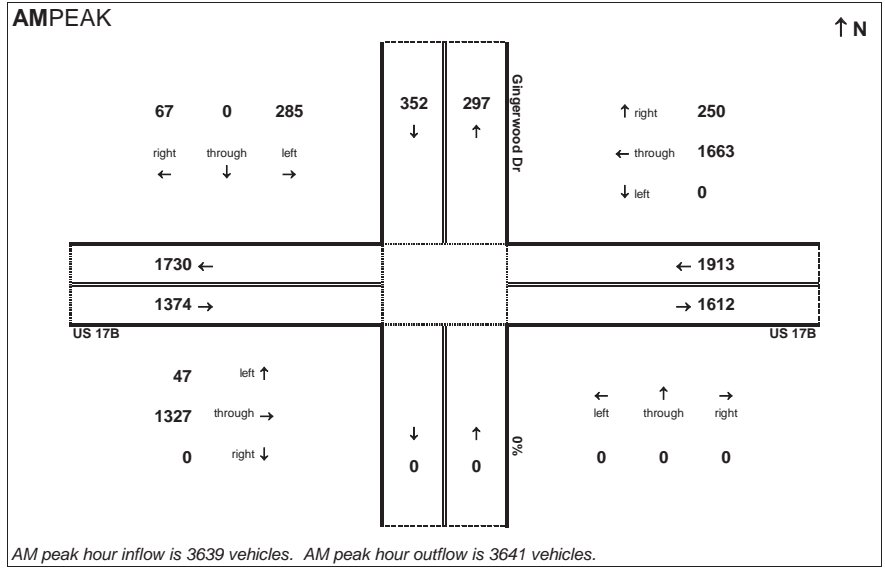


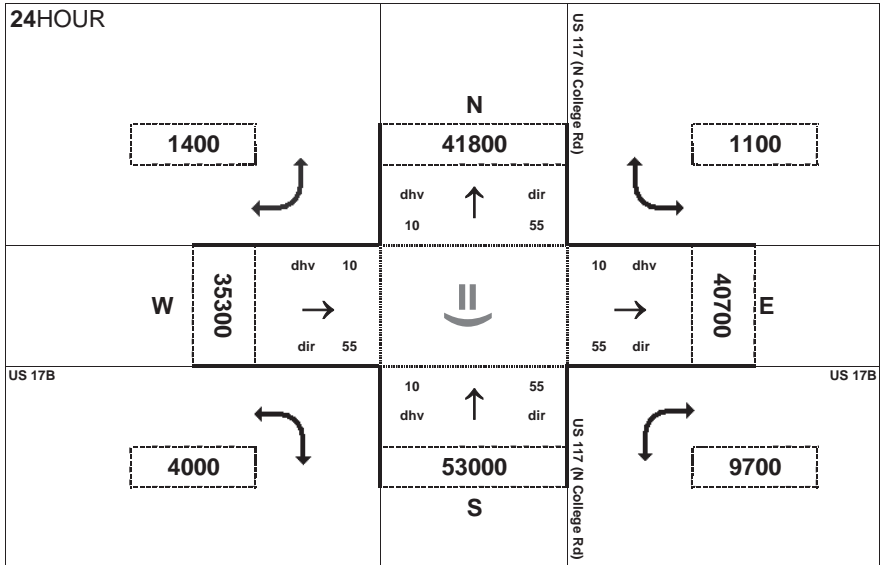
Peak Hour Volume Breakouts Report:
20 Intersection of US 17B and Gingerwood Dr

Traffic Forecast Release Date:
July, 2017

Traffic Data Year:
2017 No Build

Project:
U-4434



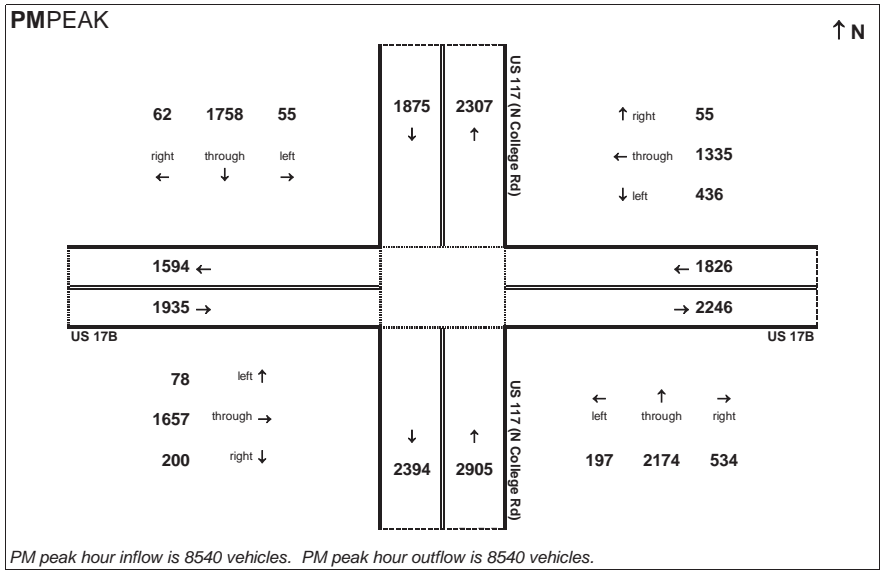
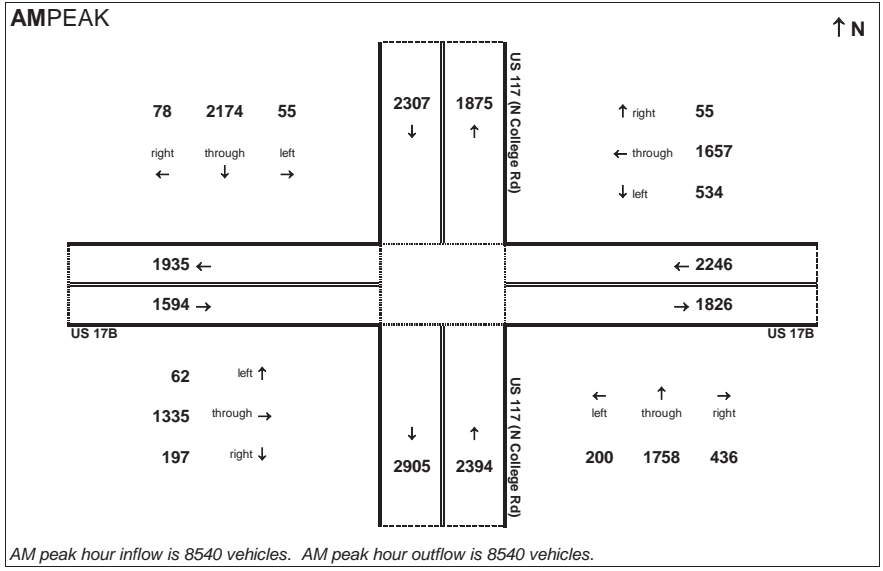


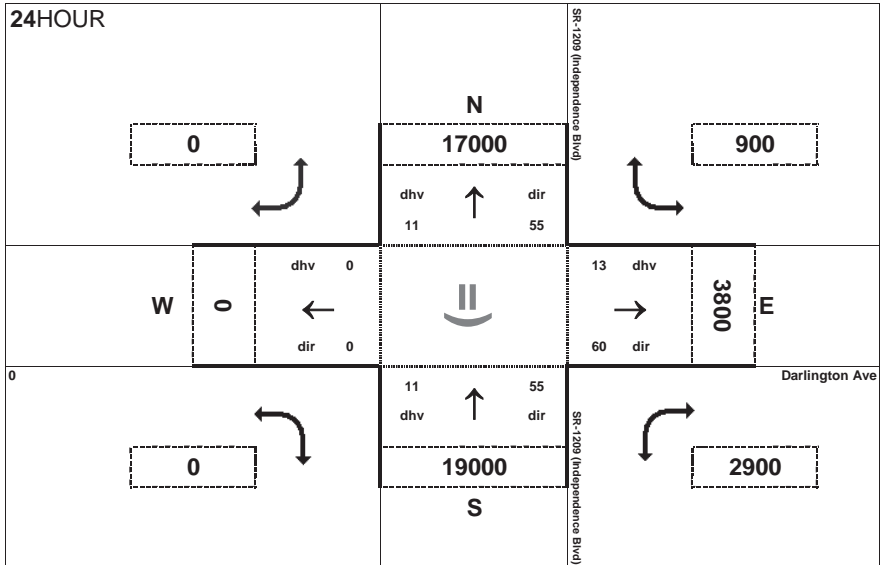
Peak Hour Volume Breakouts Report:
 21 Intersection of US 17B and US 117 (N College Rd)

Traffic Forecast Release Date:
 July, 2017

Traffic Data Year:
 2017 No Build

Project:
 U-4434



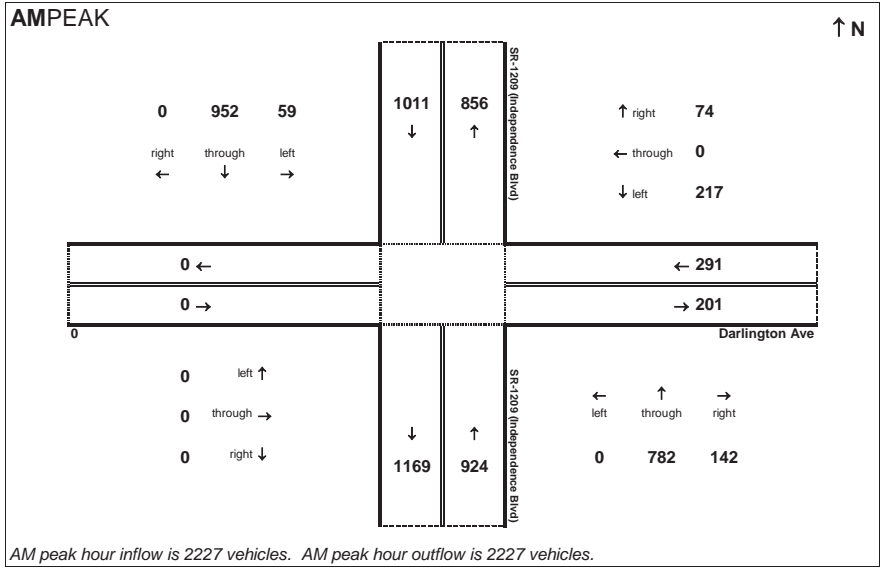


Peak Hour Volume Breakouts Report:
 22 Intersection of SR-1209 (Independence Blvd) and Darlington Ave

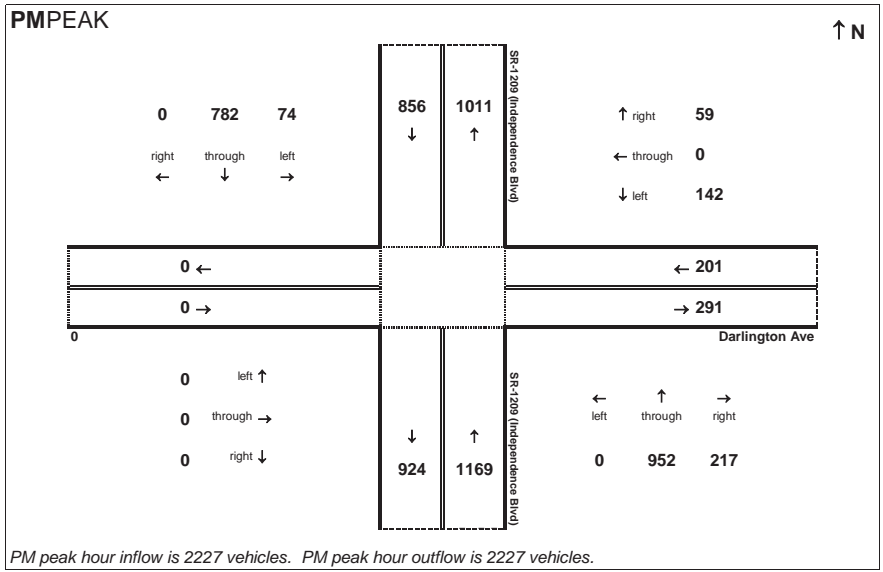
Traffic Forecast Release Date:
 July, 2017

Traffic Data Year:
 2017 No Build

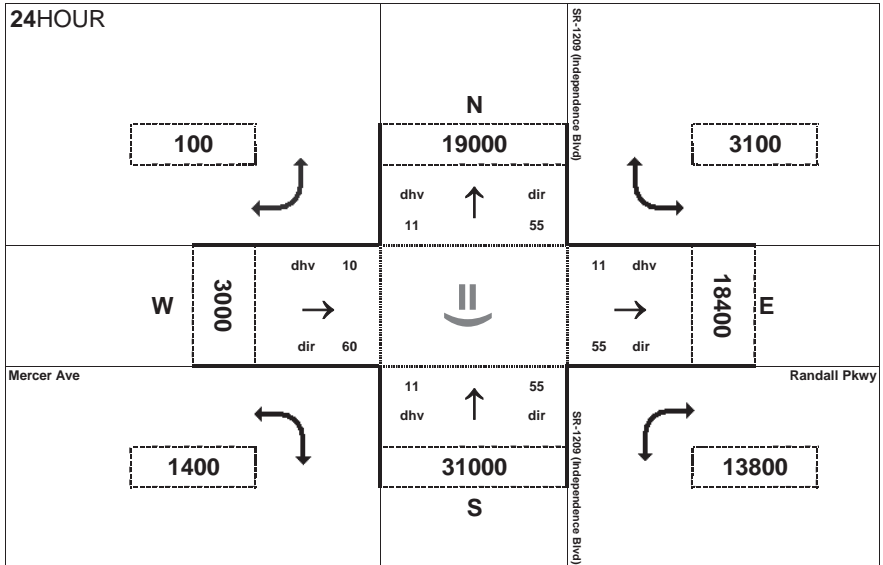
Project:
 U-4434



AM peak hour inflow is 2227 vehicles. AM peak hour outflow is 2227 vehicles.



PM peak hour inflow is 2227 vehicles. PM peak hour outflow is 2227 vehicles.

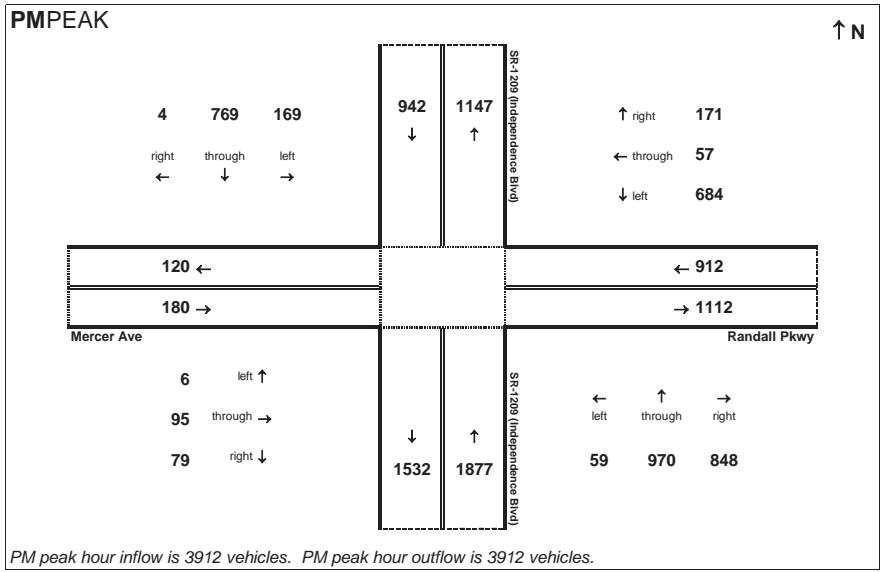
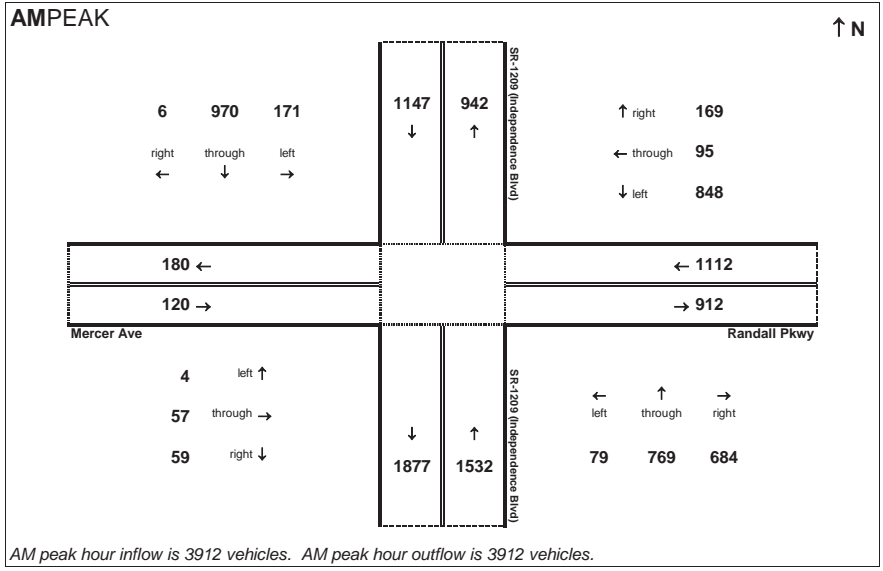


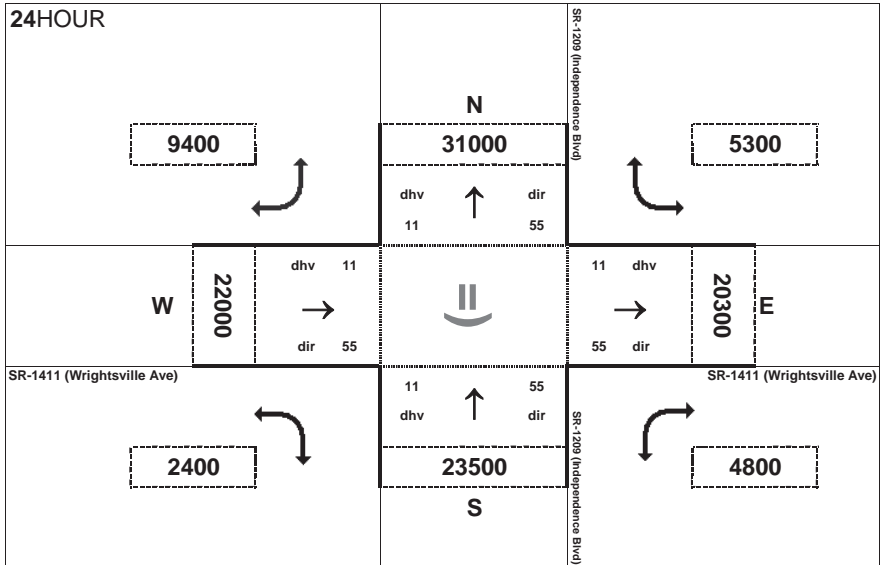
Peak Hour Volume Breakouts Report:
 23 Intersection of SR-1209 (Independence Blvd) and Mercer Ave-Randall Pkwy

Traffic Forecast Release Date:
 July, 2017

Traffic Data Year:
 2017 No Build

Project:
 U-4434



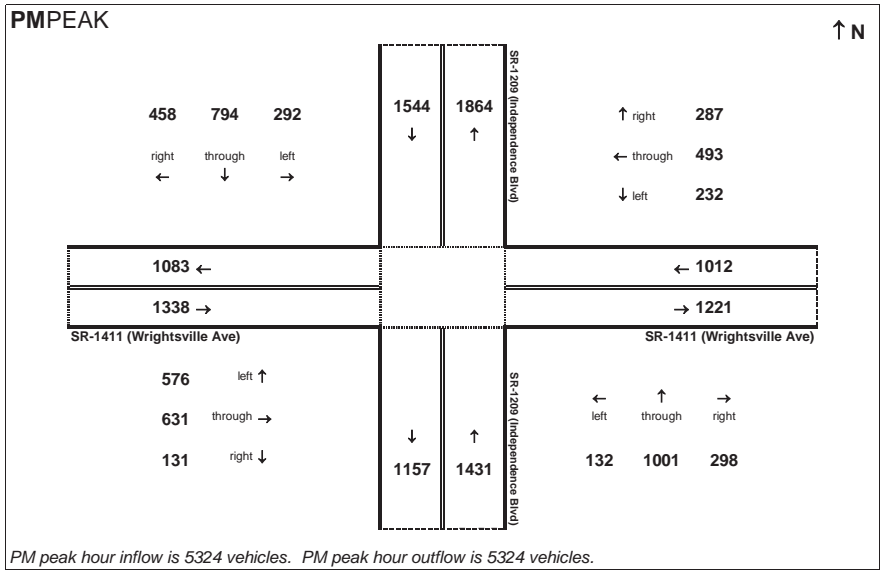
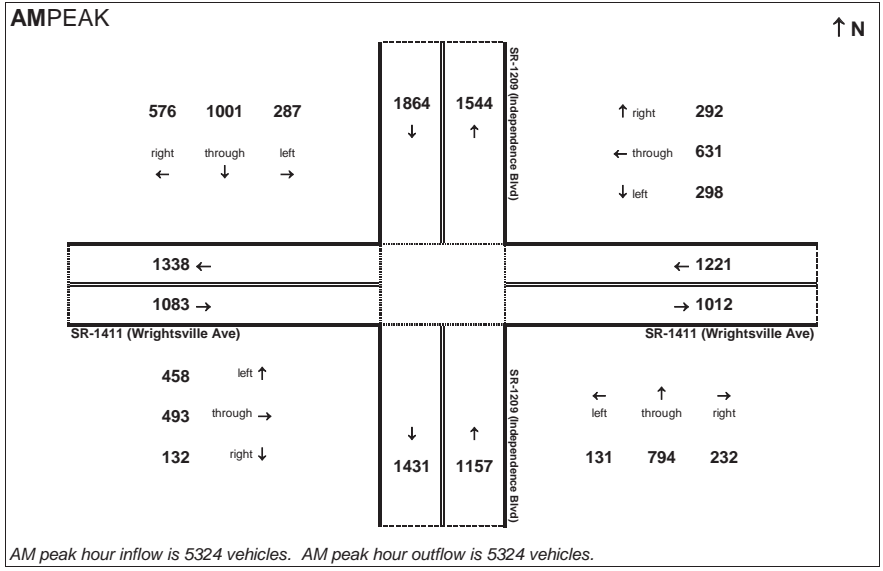


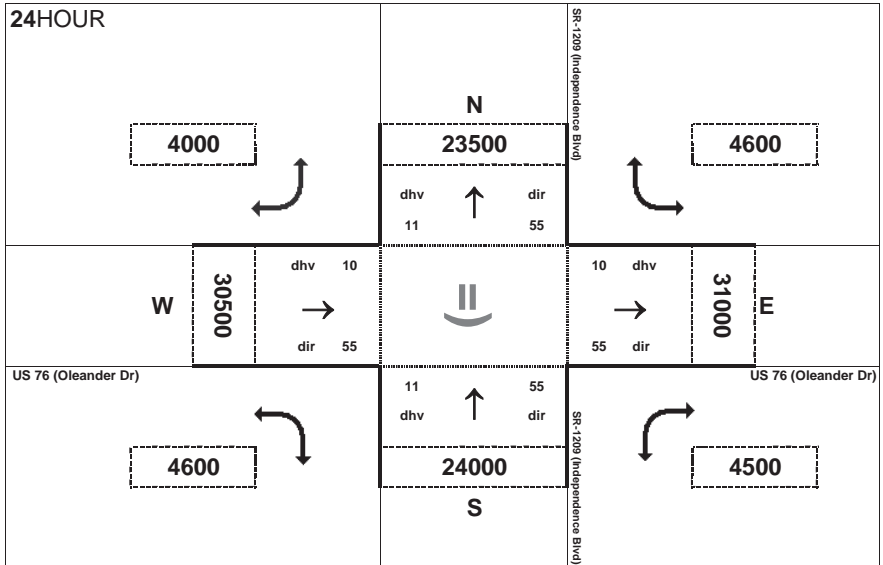
Peak Hour Volume Breakouts Report:
 24 Intersection of SR-1209 (Independence Blvd) and SR-1411 (Wrightsville Ave)

Traffic Forecast Release Date:
 July, 2017

Traffic Data Year:
 2017 No Build

Project:
 U-4434



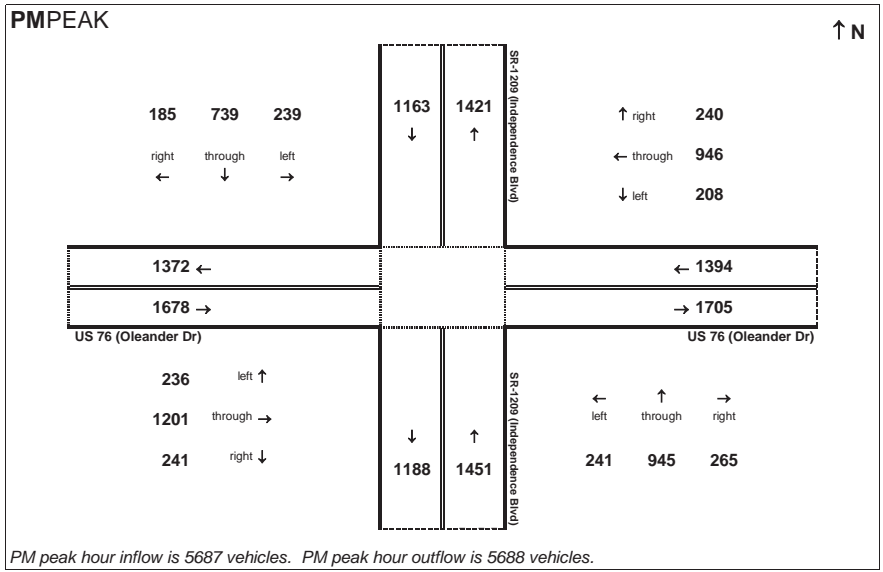
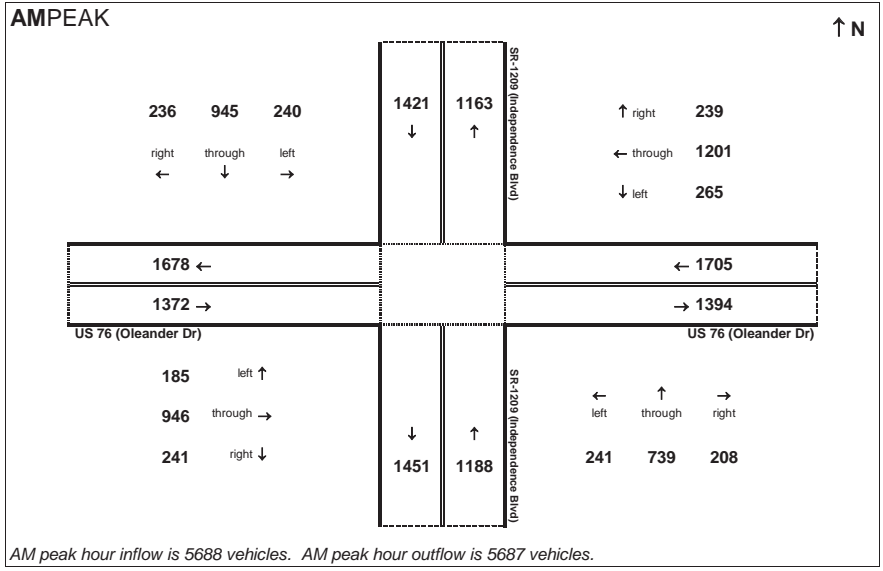


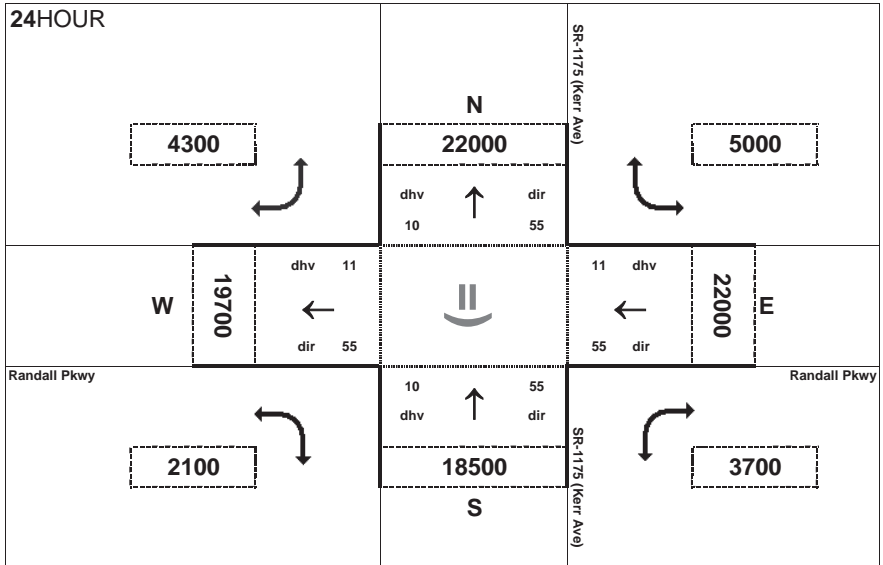
Peak Hour Volume Breakouts Report:
 25 Intersection of SR-1209 (Independence Blvd) and US 76 (Oleander Dr)

Traffic Forecast Release Date:
 July, 2017

Traffic Data Year:
 2017 No Build

Project:
 U-4434



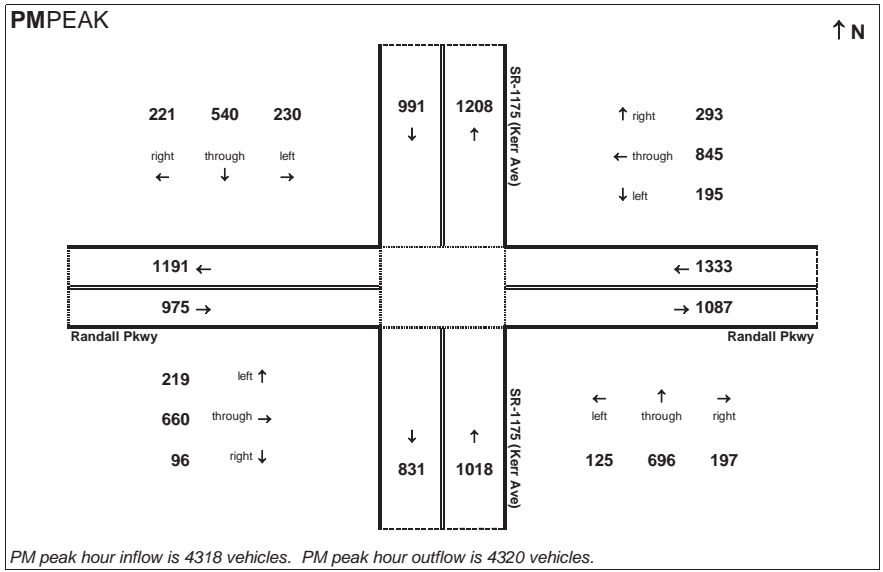
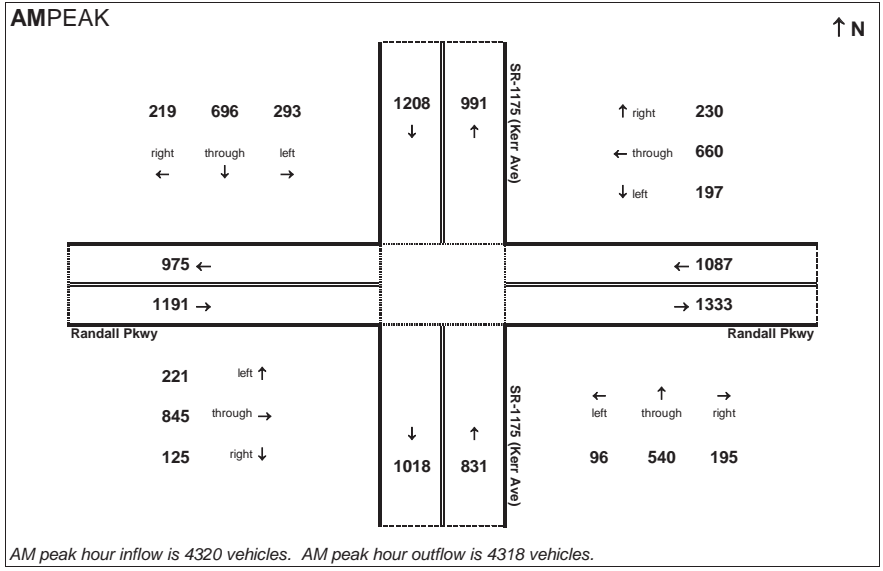


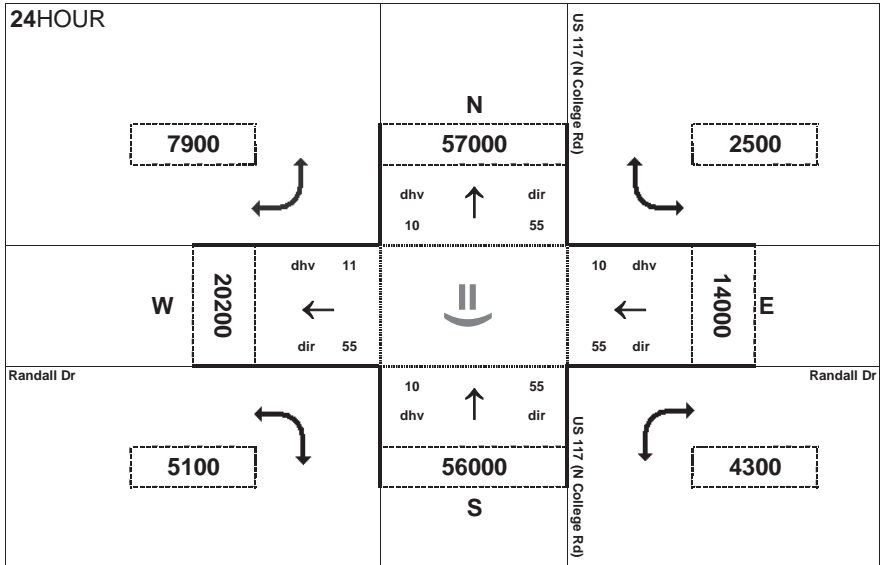
Peak Hour Volume Breakouts Report:
 26 Intersection of SR-1175 (Kerr Ave) and Randall Pkwy

Traffic Forecast Release Date:
 July, 2017

Traffic Data Year:
 2017 No Build

Project:
 U-4434



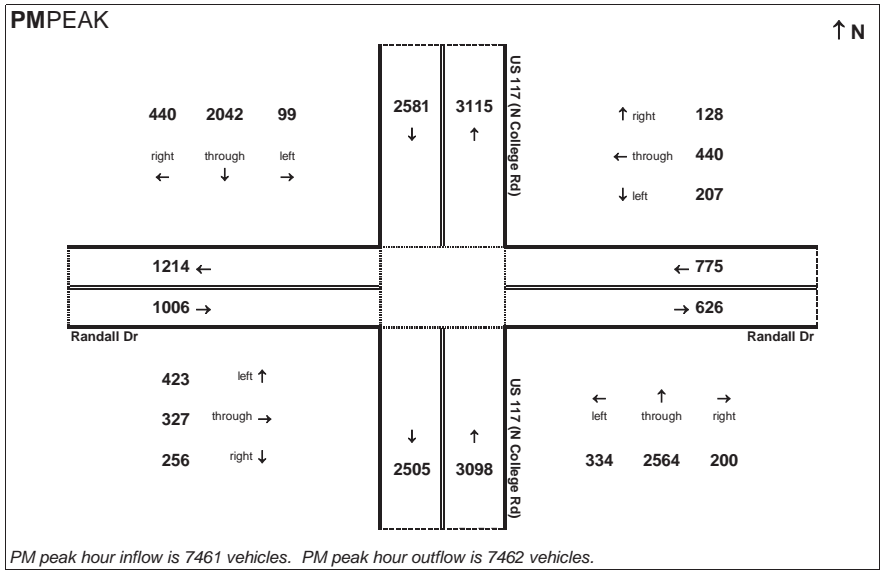
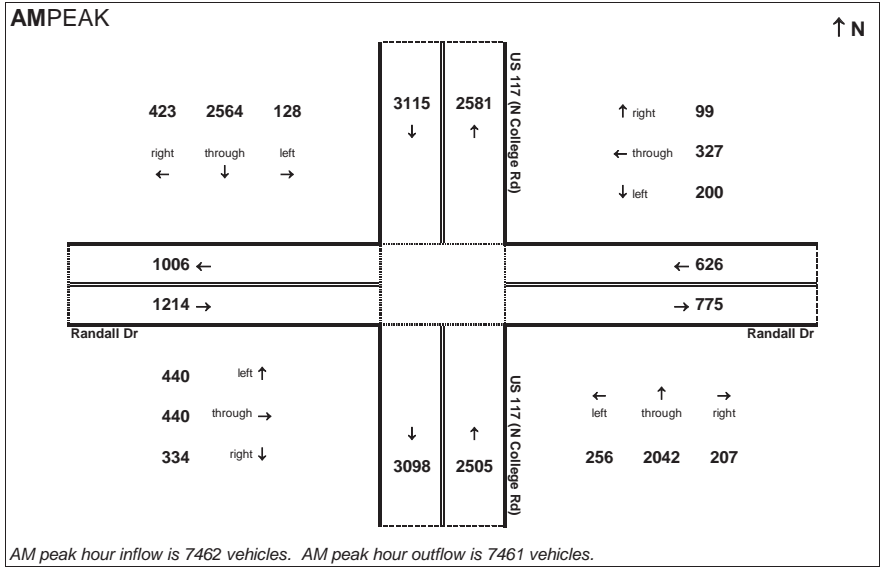


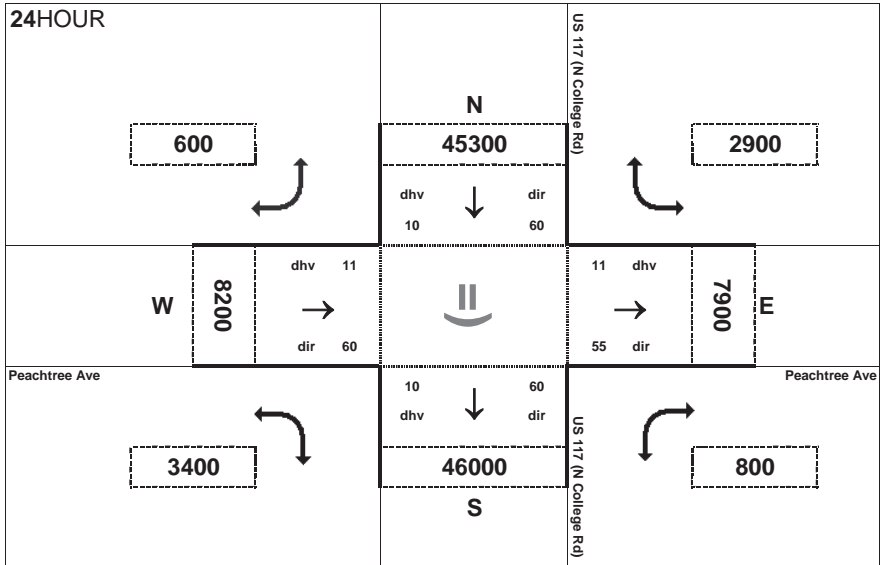
Peak Hour Volume Breakouts Report:
 27 Intersection of US 117 (N College Rd) and Randall Dr

Traffic Forecast Release Date:
 July, 2017

Traffic Data Year:
 2017 No Build

Project:
 U-4434



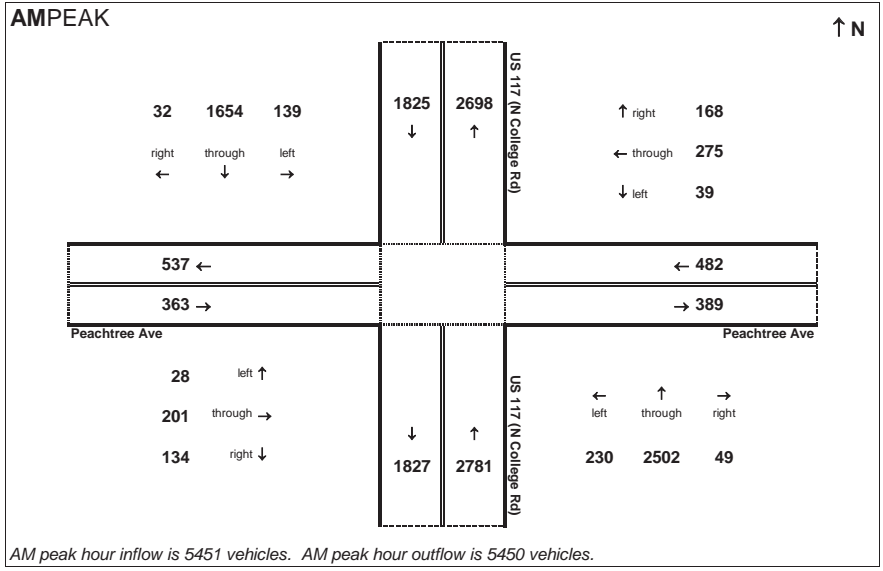


Peak Hour Volume Breakouts Report:
 28 Intersection of US 117 (N College Rd) and Peachtree Ave

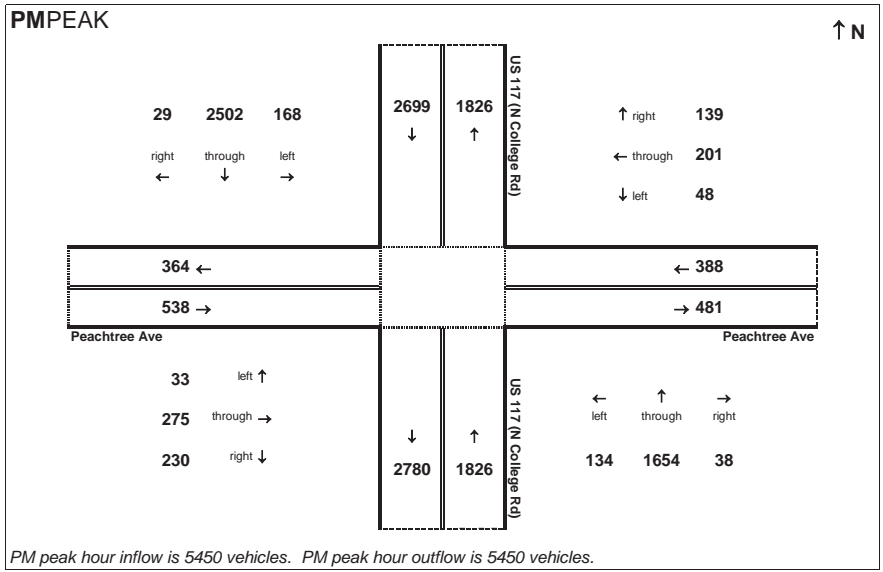
Traffic Forecast Release Date:
 July, 2017

Traffic Data Year:
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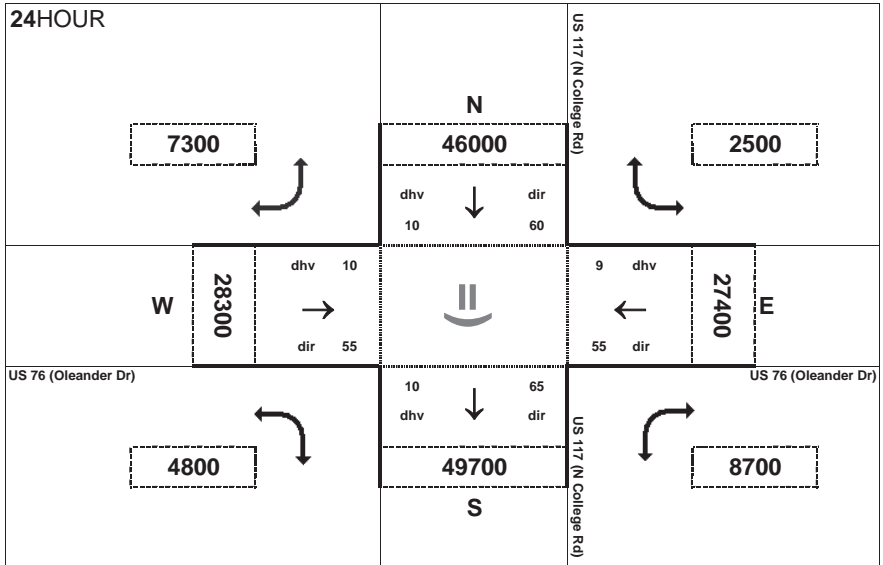
Project:
 U-4434



AM peak hour inflow is 5451 vehicles. AM peak hour outflow is 5450 vehicles.



PM peak hour inflow is 5450 vehicles. PM peak hour outflow is 5450 vehicles.

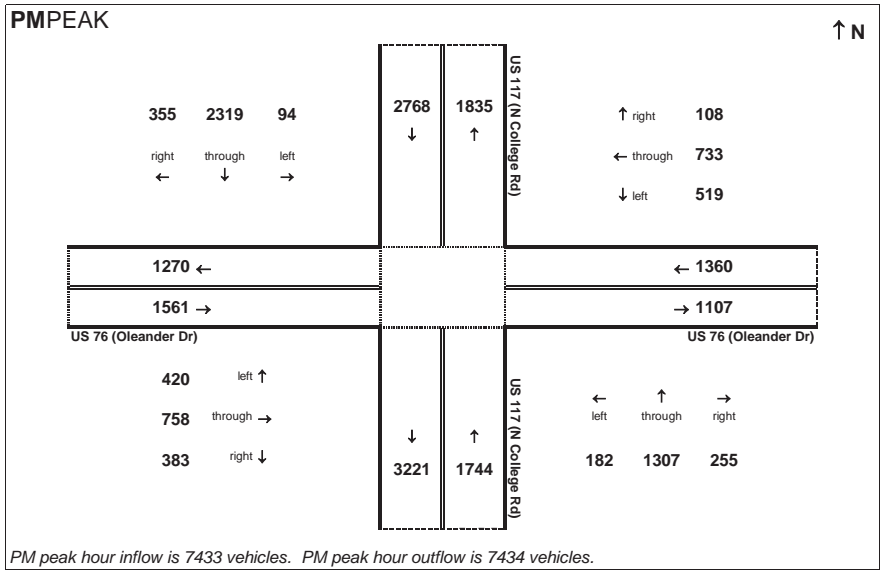
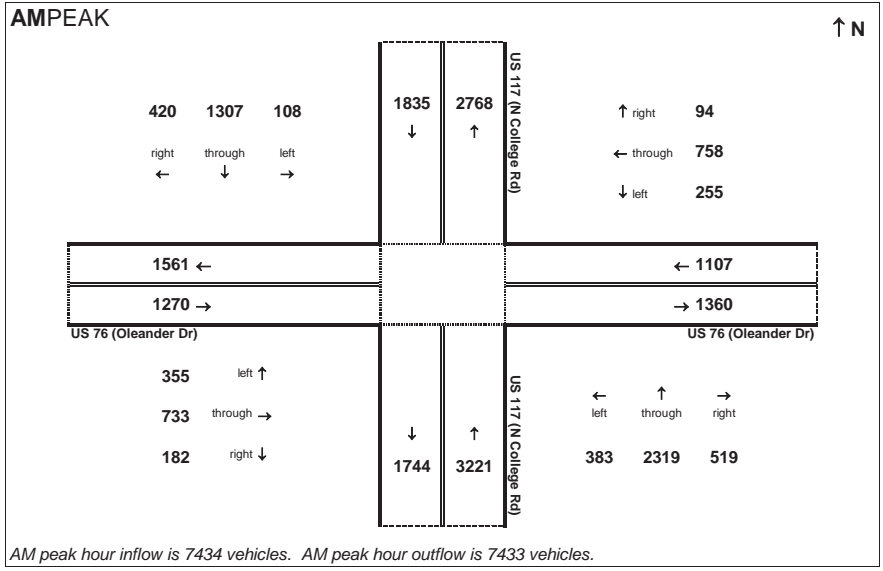


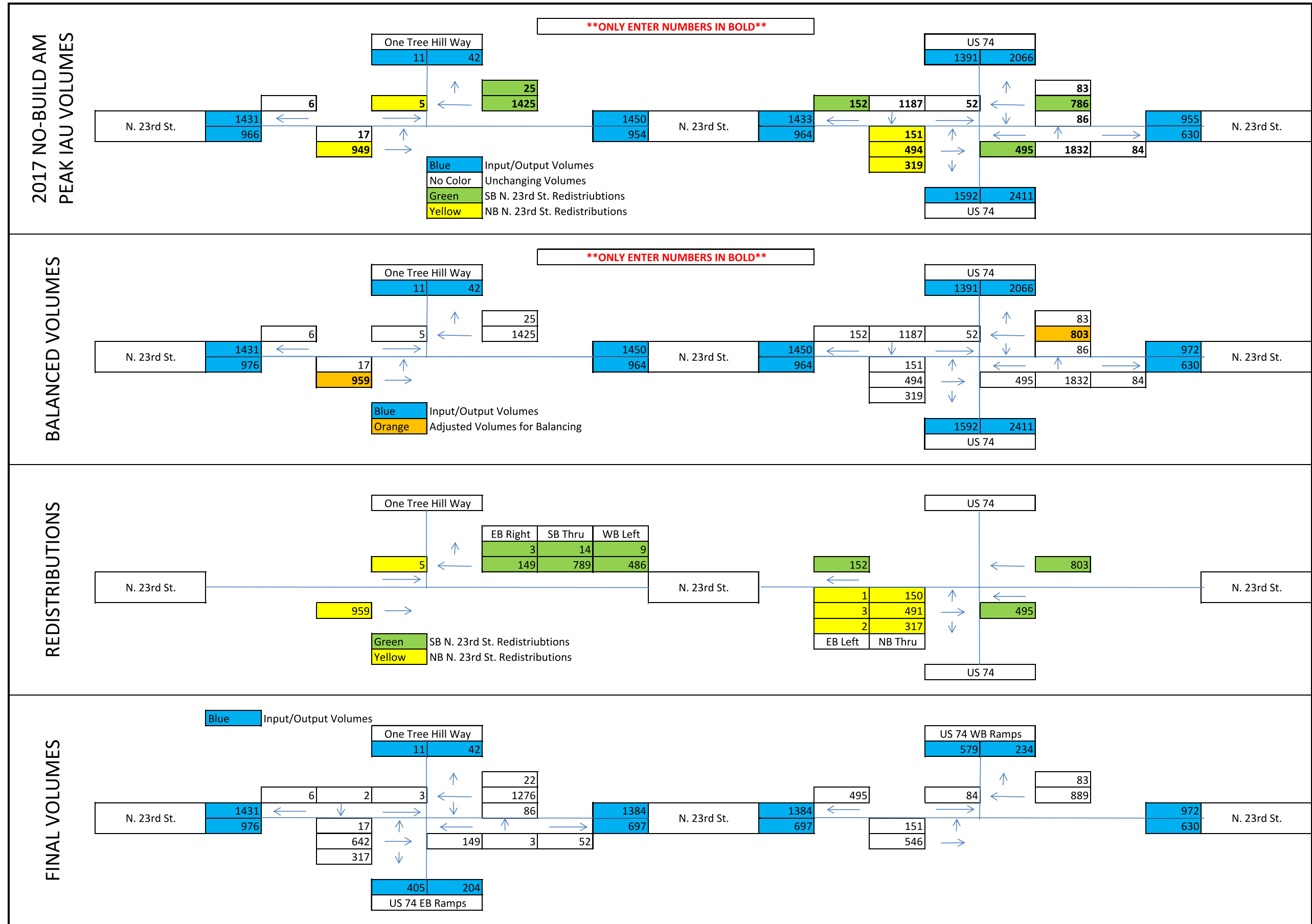
Peak Hour Volume Breakouts Report:
 29 Intersection of US 117 (N College Rd) and US 76 (Oleander Dr)

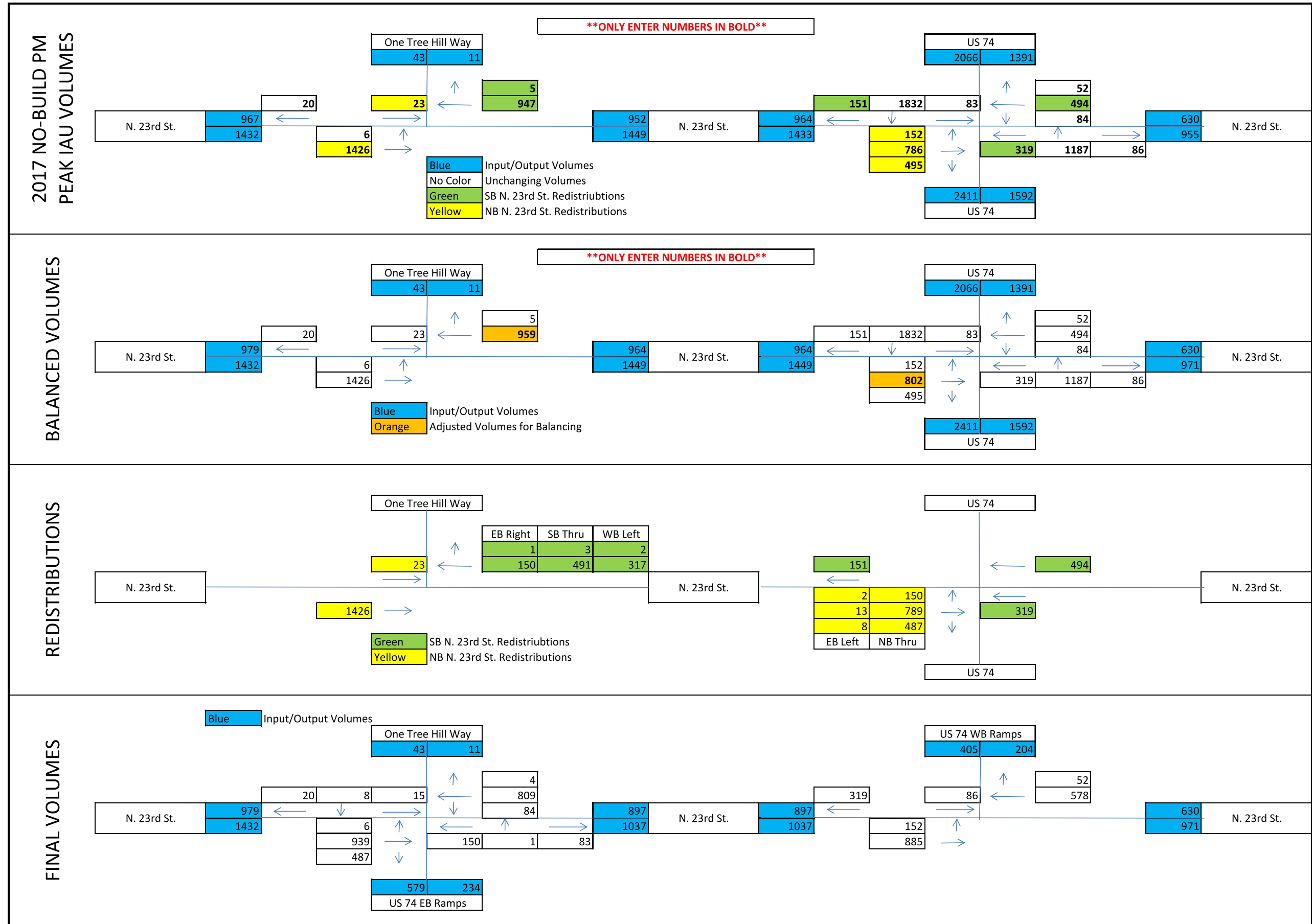
Traffic Forecast Release Date:
 July, 2017

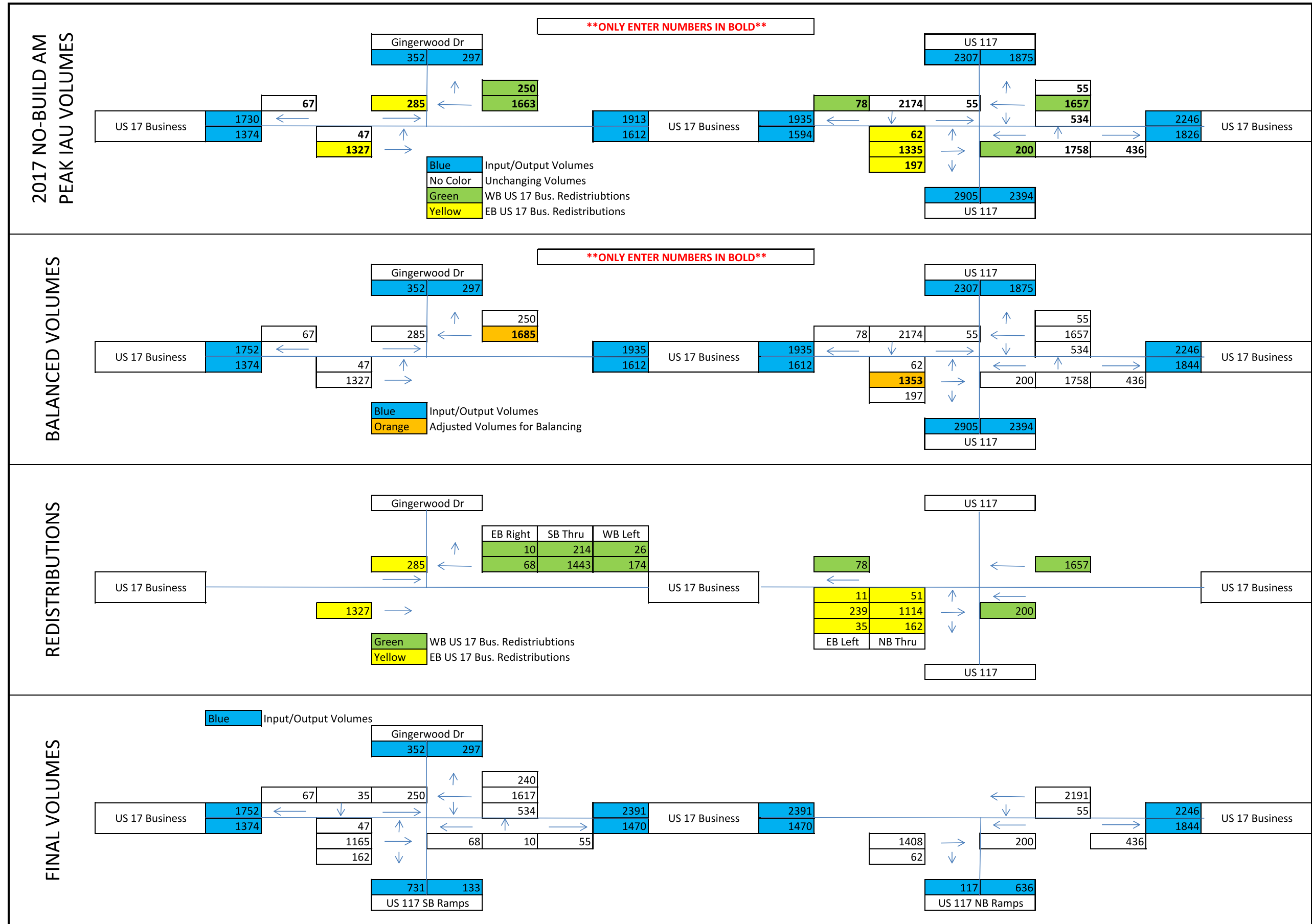
Traffic Data Year:
 2017 No Build

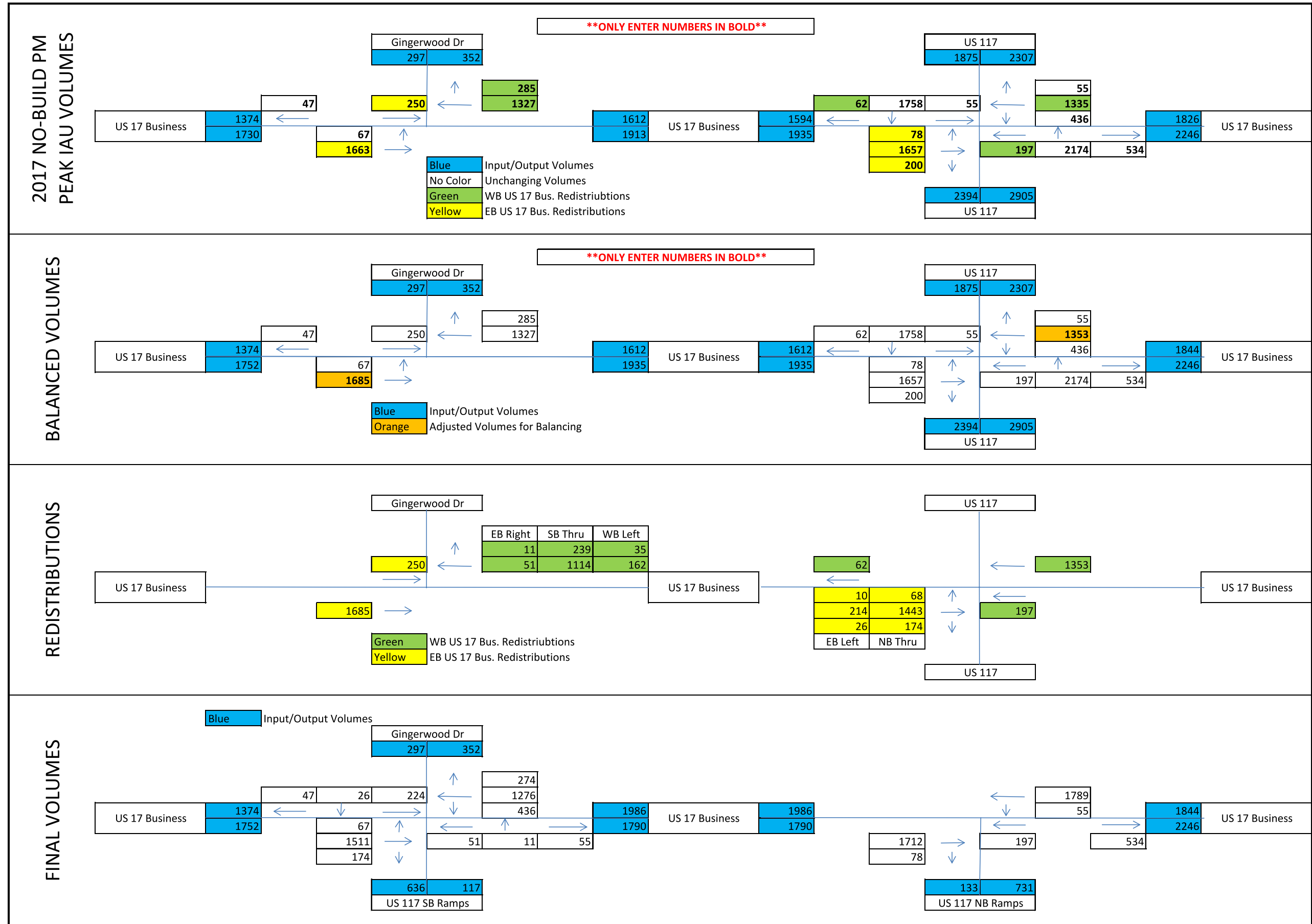
Project:
 U-4434





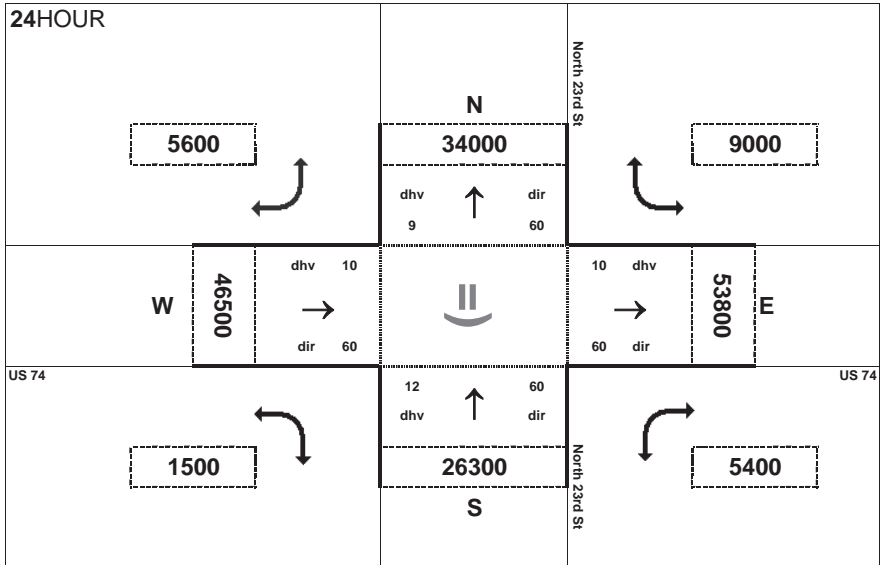






2040 No-Build Alternative

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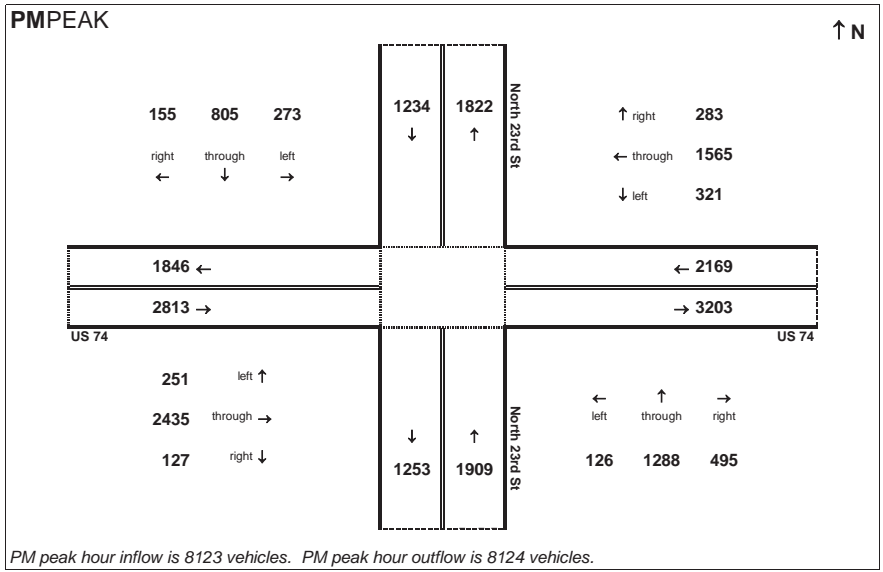
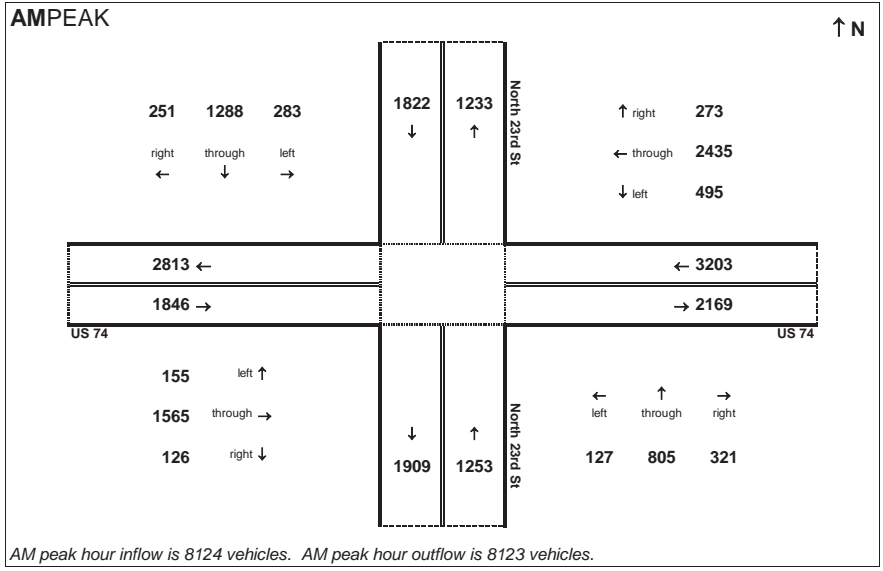


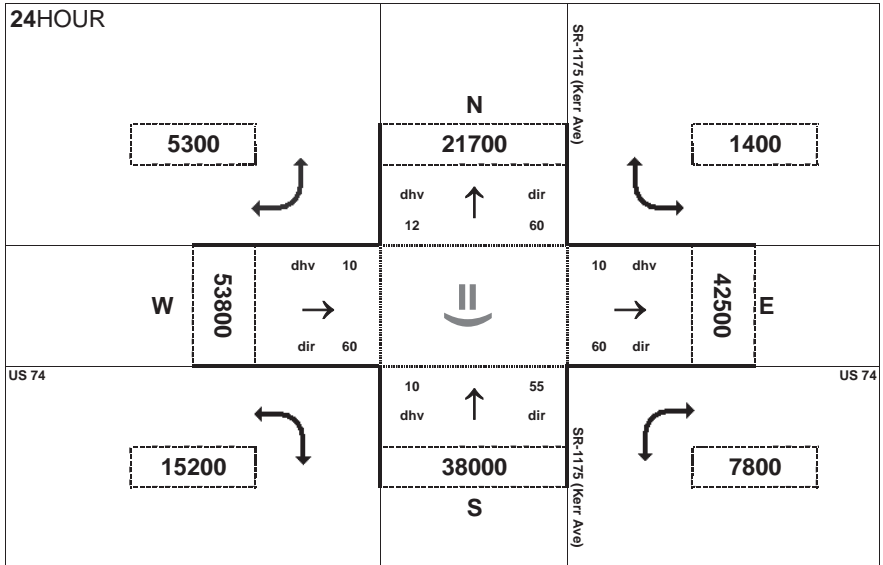
Peak Hour Volume Breakouts Report:
1 Intersection of US 74 and North 23rd St

Traffic Forecast Release Date:
July, 2017

Traffic Data Year:
2040 No Build

Project:
U-4434



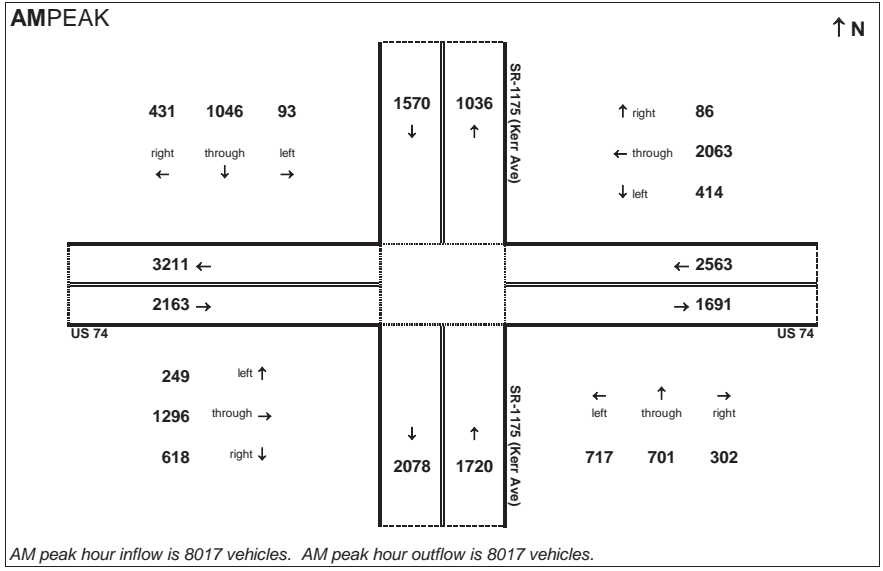


Peak Hour Volume Breakouts Report:
 4 Intersection of US 74 and SR-1175 (Kerr Ave)

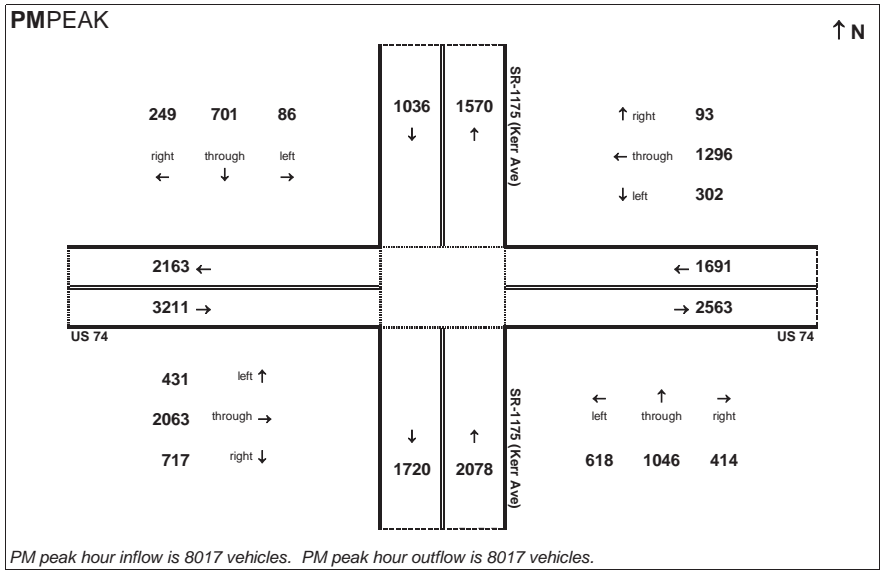
Traffic Forecast Release Date:
 July, 2017

Traffic Data Year:
 2040 No Build

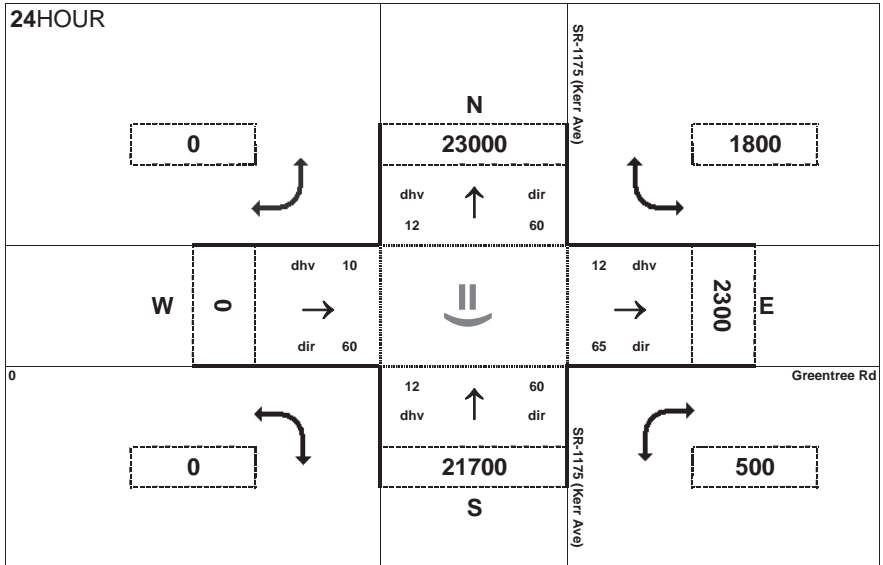
Project:
 U-4434



AM peak hour inflow is 8017 vehicles. AM peak hour outflow is 8017 vehicles.



PM peak hour inflow is 8017 vehicles. PM peak hour outflow is 8017 vehicles.

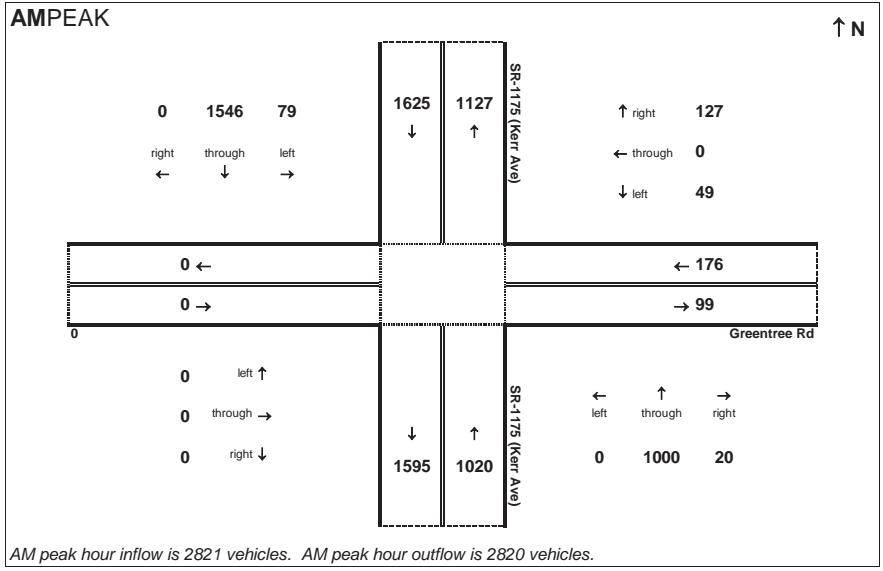


Peak Hour Volume Breakouts Report:
 4A Intersection SR-1175 (Kerr Ave) and Greentree Rd

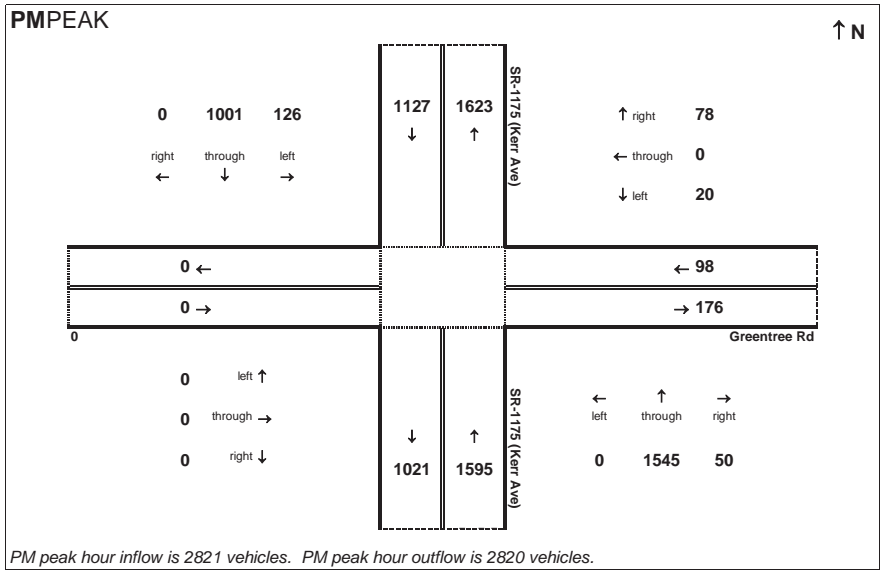
Traffic Forecast Release Date:
 July, 2017

Traffic Data Year:
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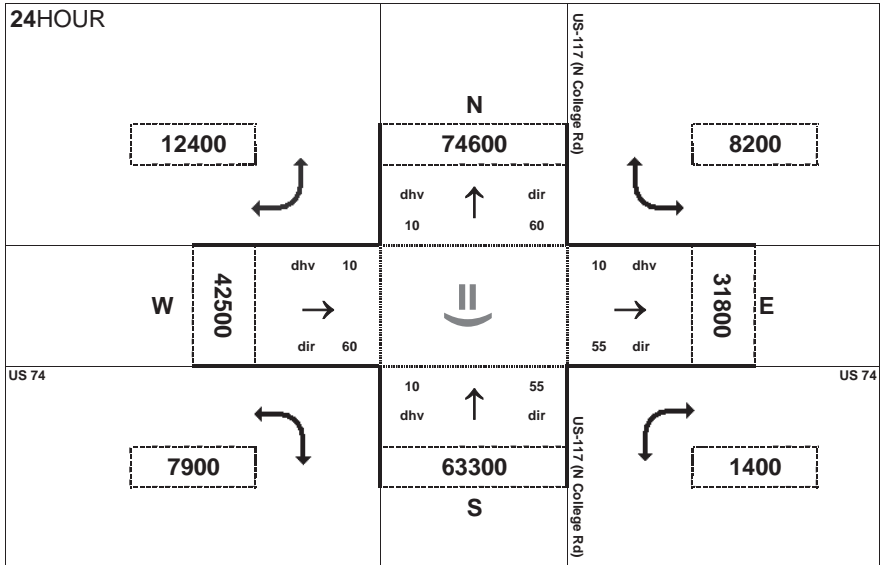
Project:
 U-4434



AM peak hour inflow is 2821 vehicles. AM peak hour outflow is 2820 vehicles.



PM peak hour inflow is 2821 vehicles. PM peak hour outflow is 2820 vehicles.

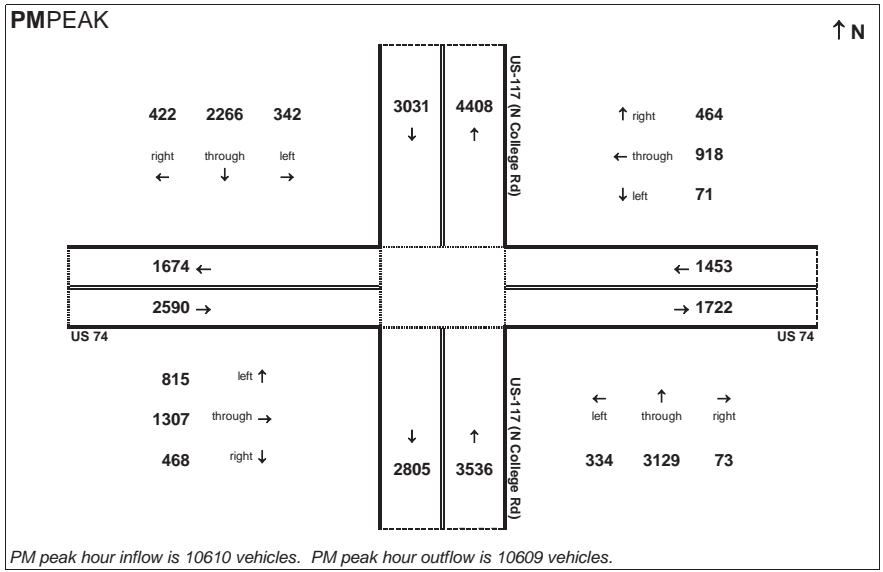
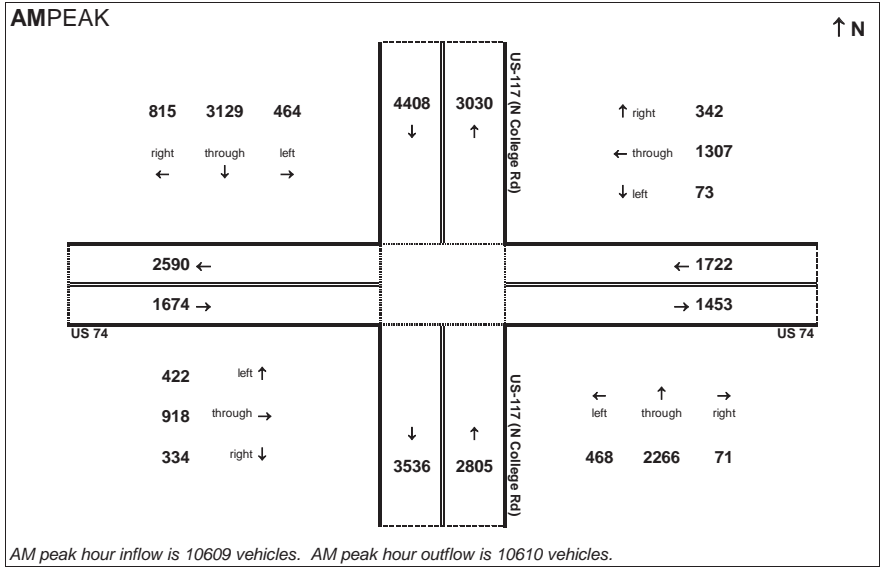


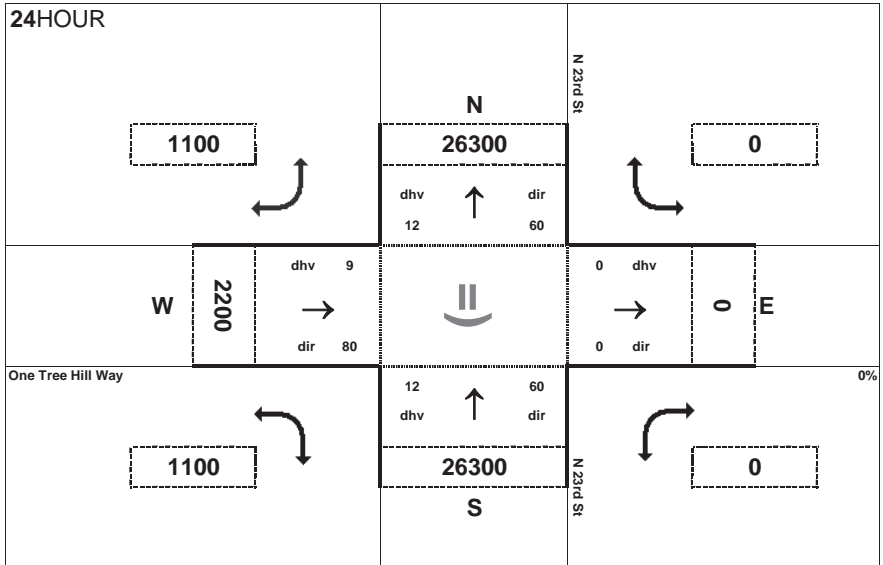
Peak Hour Volume Breakouts Report:
 5 Intersection of US 74 and US-117 (N College Rd)

Traffic Forecast Release Date:
 July, 2017

Traffic Data Year:
 2040 No Build

Project:
 U-4434



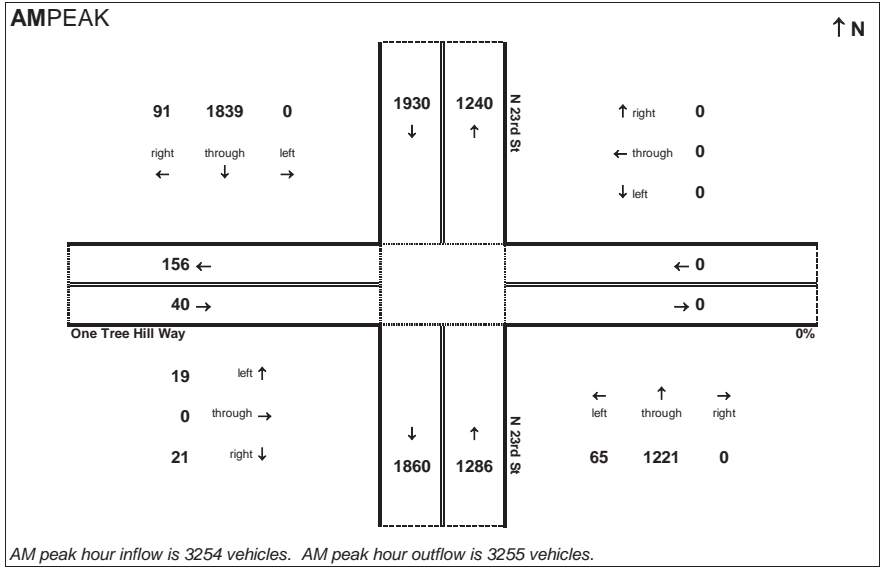


Peak Hour Volume Breakouts Report:
 6 Intersection of N 23rd St and One Tree Hill Way

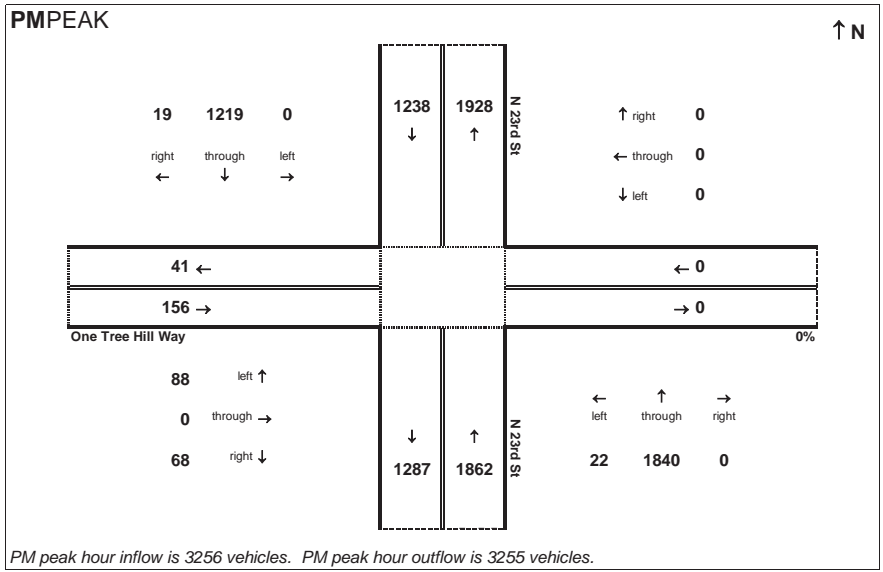
Traffic Forecast Release Date:
 July, 2017

Traffic Data Year:
 2040 No Build

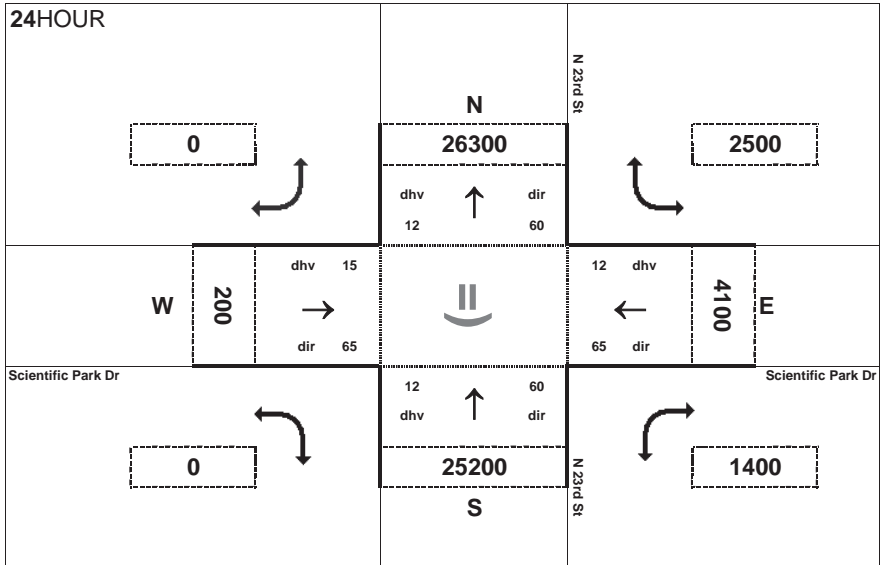
Project:
 U-4434



AM peak hour inflow is 3254 vehicles. AM peak hour outflow is 3255 vehicles.



PM peak hour inflow is 3256 vehicles. PM peak hour outflow is 3255 vehicles.

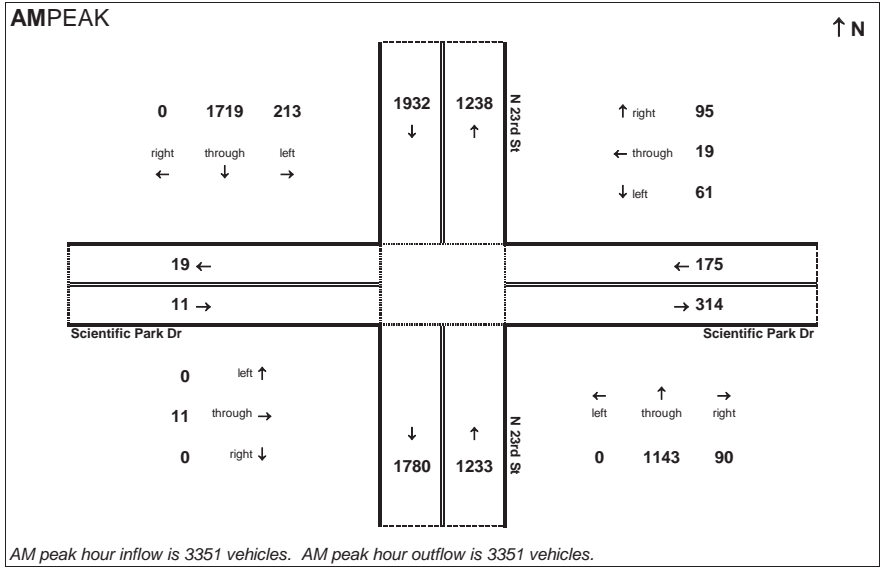


Peak Hour Volume Breakouts Report:
 7 Intersection of N 23rd St and Scientific Park Dr

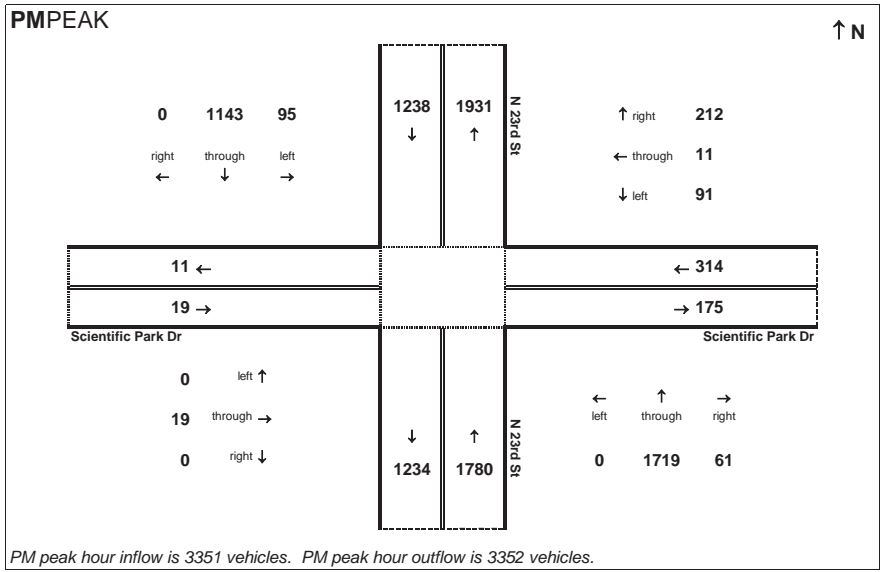
Traffic Forecast Release Date:
 July, 2017

Traffic Data Year:
 2040 No Build

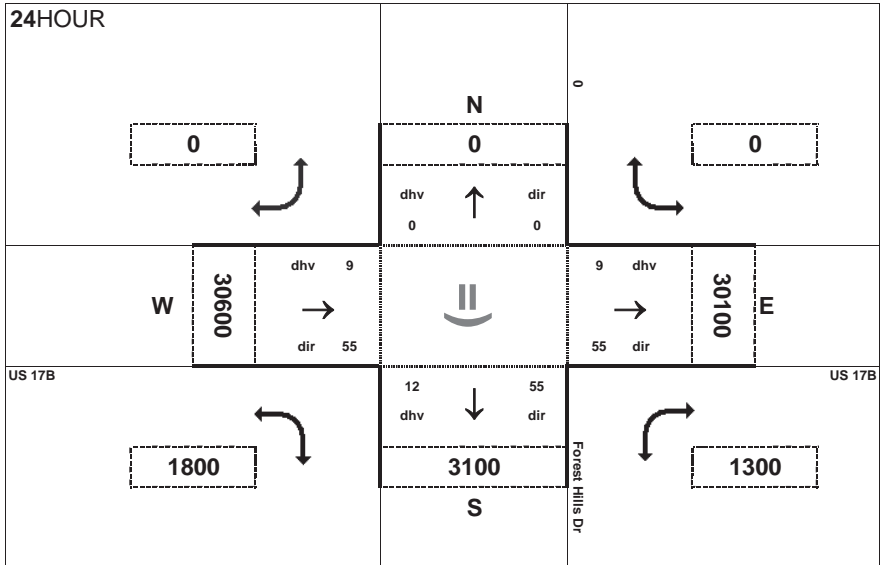
Project:
 U-4434



AM peak hour inflow is 3351 vehicles. AM peak hour outflow is 3351 vehicles.



PM peak hour inflow is 3351 vehicles. PM peak hour outflow is 3352 vehicles.

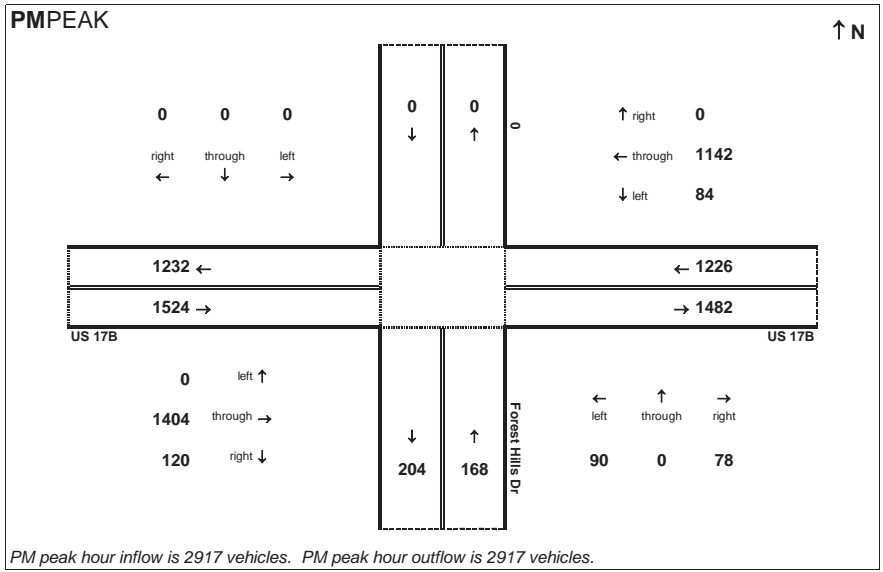
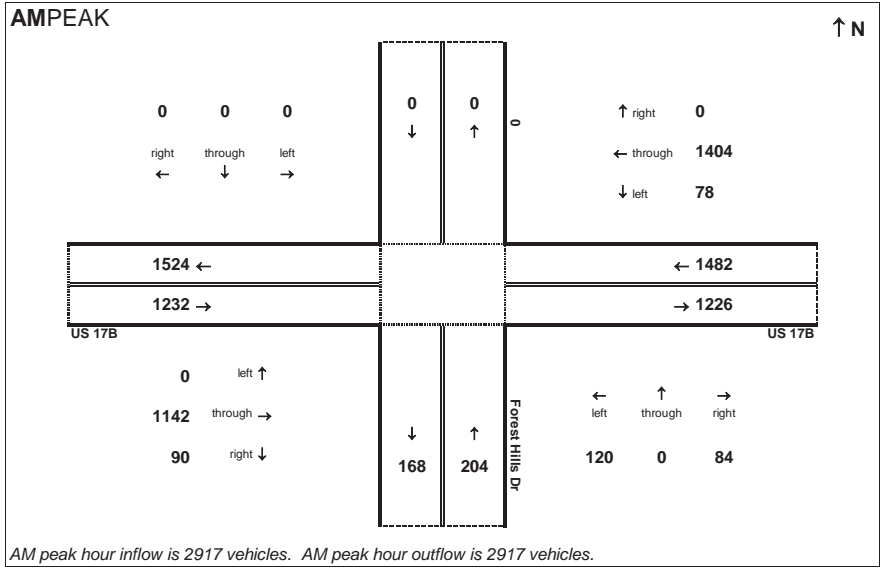


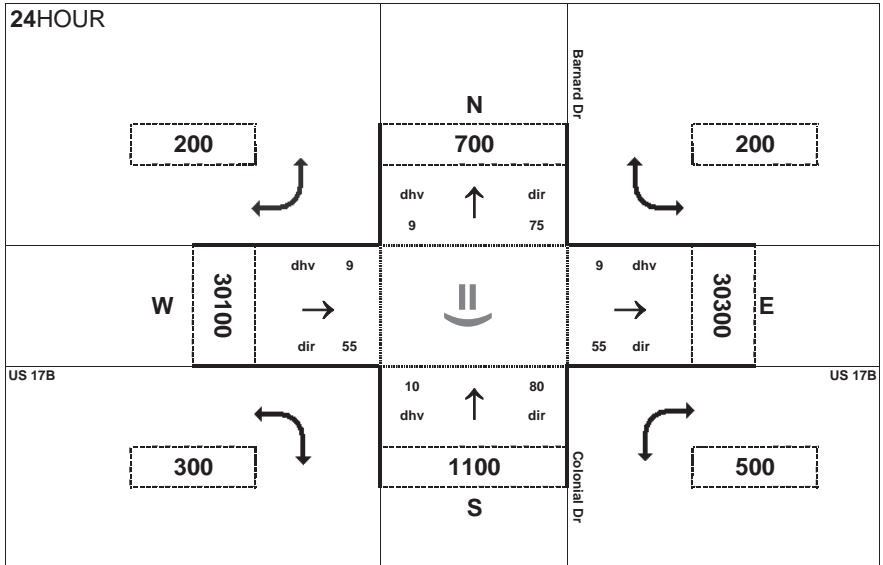
Peak Hour Volume Breakouts Report:
8 Intersection of US 17B and Forest Hills Dr

Traffic Forecast Release Date:
July, 2017

Traffic Data Year:
2040 No Build

Project:
U-4434



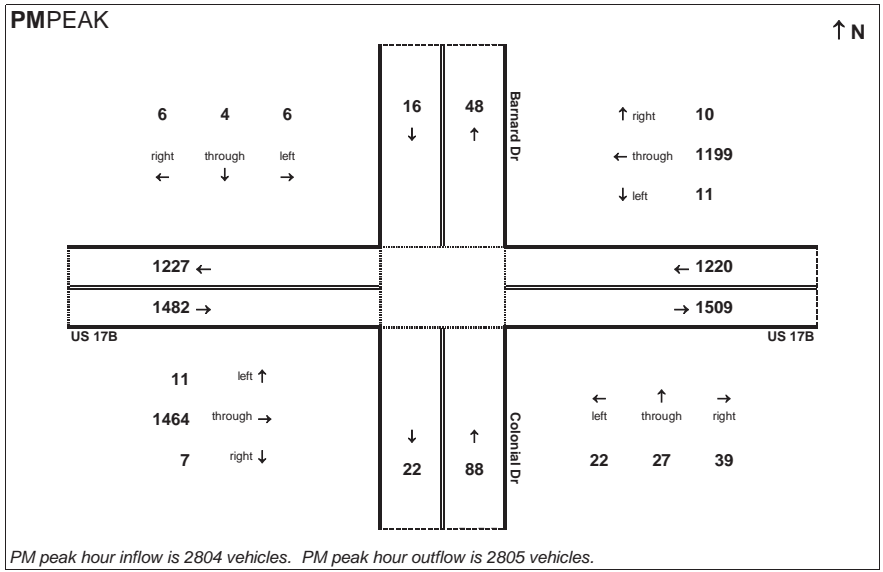
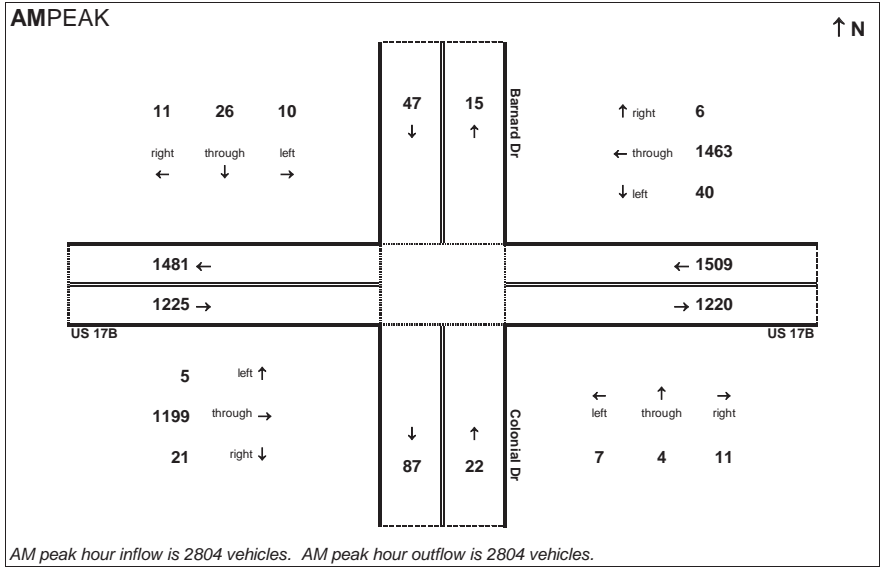


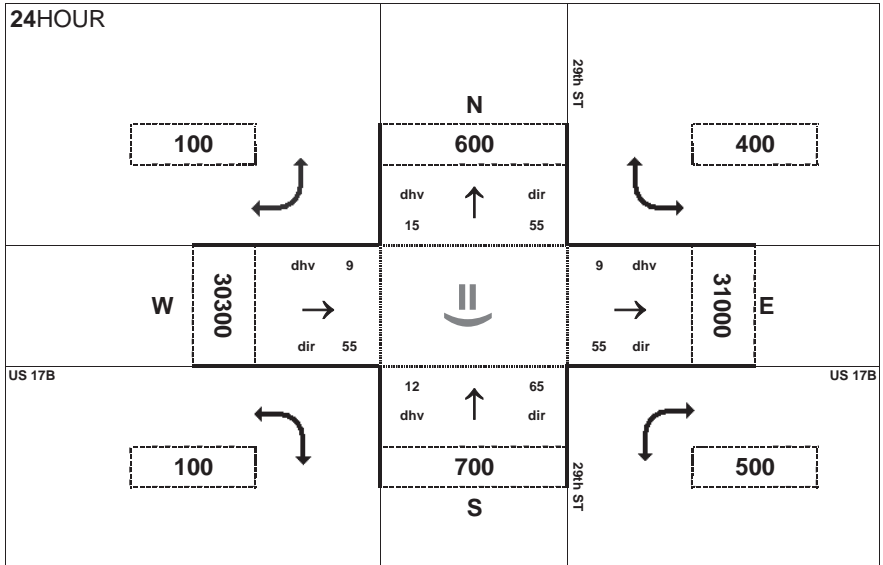
Peak Hour Volume Breakouts Report:
 9 Intersection of US 17B and Colonial Dr-Barnard Dr

Traffic Forecast Release Date:
 July, 2017

Traffic Data Year:
 2040 No Build

Project:
 U-4434



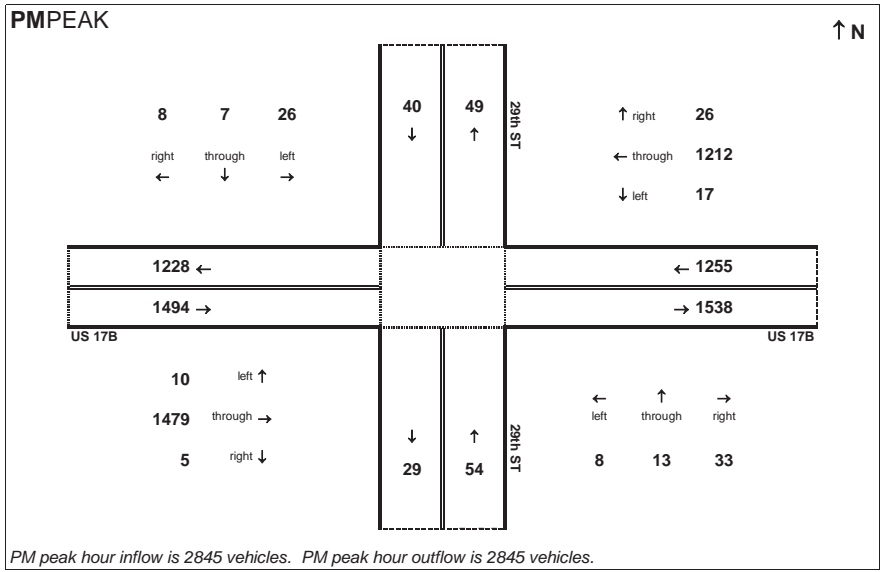
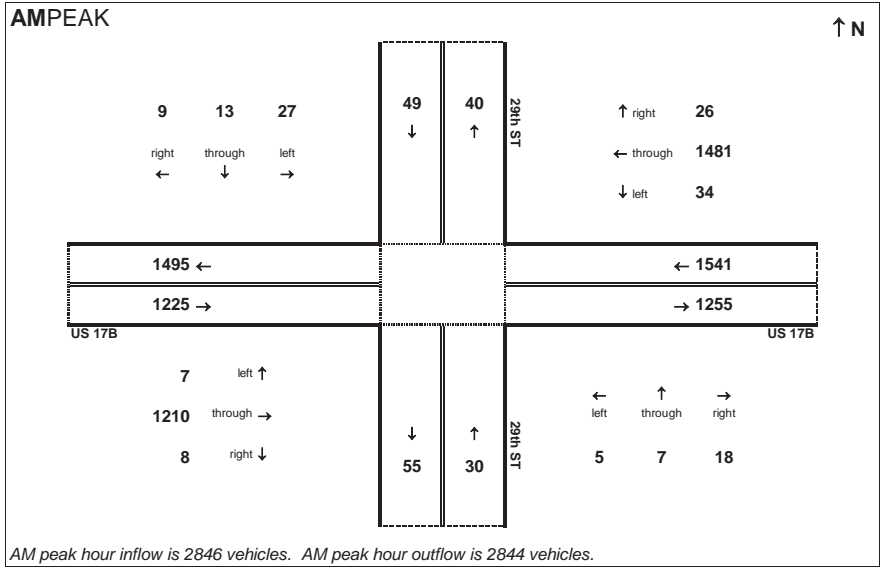


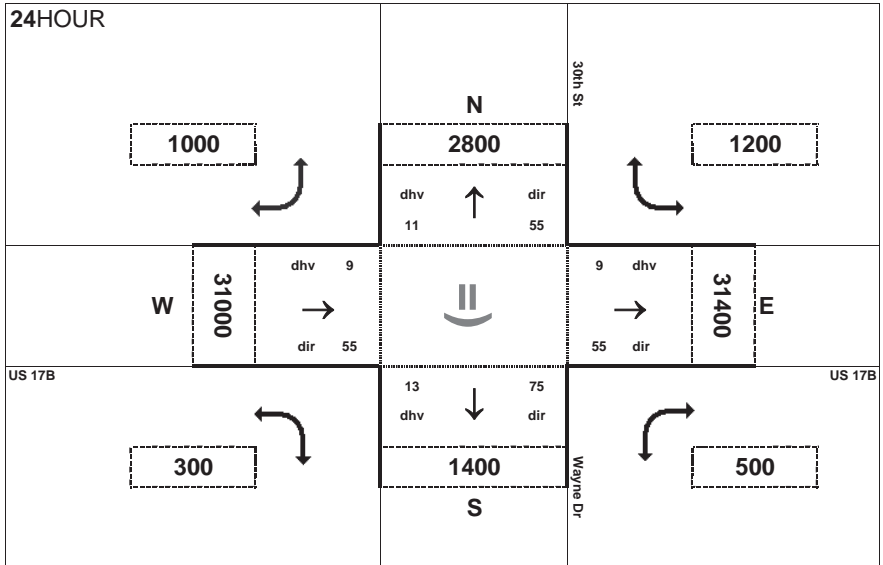
Peak Hour Volume Breakouts Report:
10 Intersection of US 17B and 29th St

Traffic Forecast Release Date:
July, 2017

Traffic Data Year:
2040 No Build

Project:
U-4434



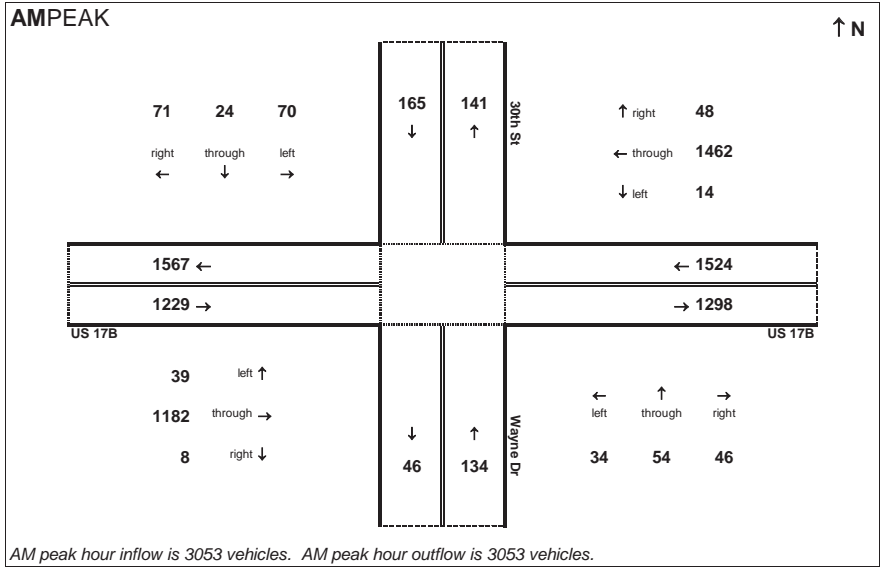


Peak Hour Volume Breakouts Report:
 11 Intersection of US 17B and 30th St-Wayne Dr

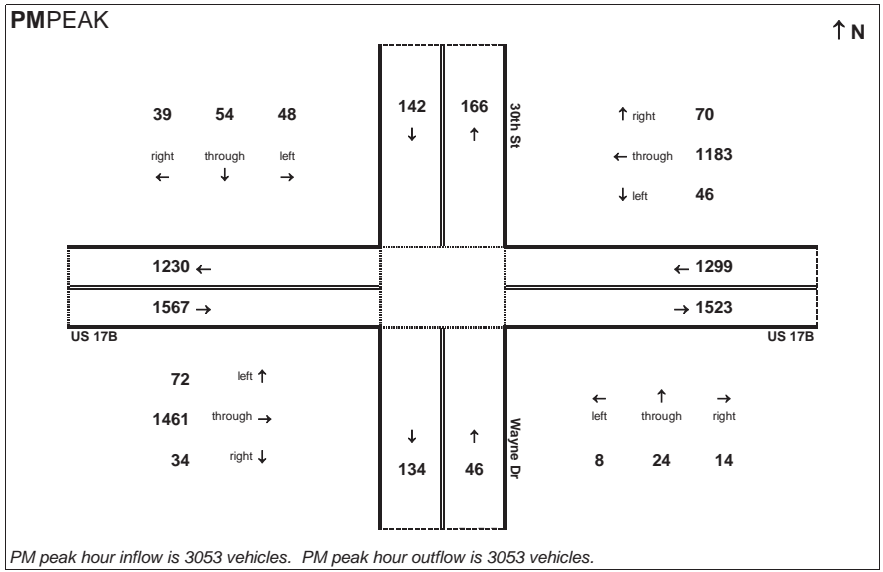
Traffic Forecast Release Date:
 July, 2017

Traffic Data Year:
 2040 No Build

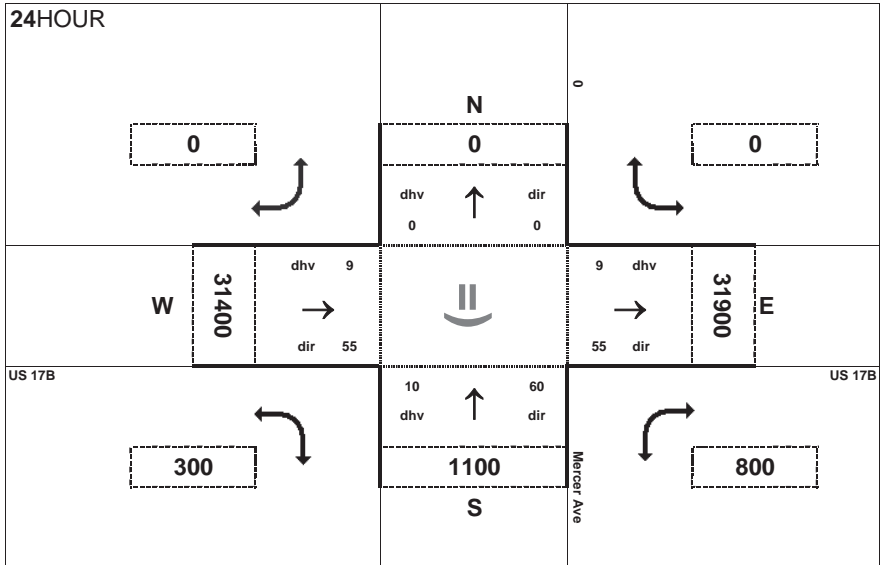
Project:
 U-4434



AM peak hour inflow is 3053 vehicles. AM peak hour outflow is 3053 vehicles.



PM peak hour inflow is 3053 vehicles. PM peak hour outflow is 3053 vehicles.

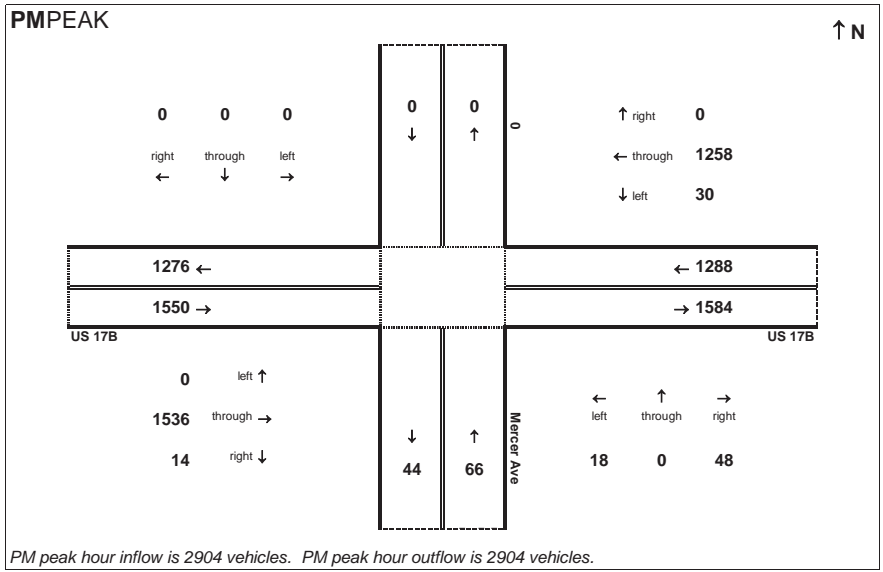
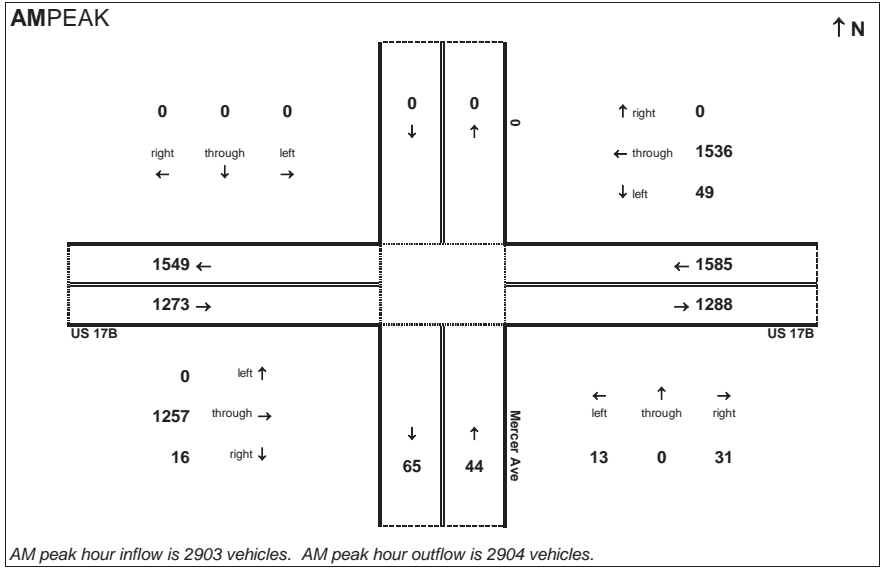


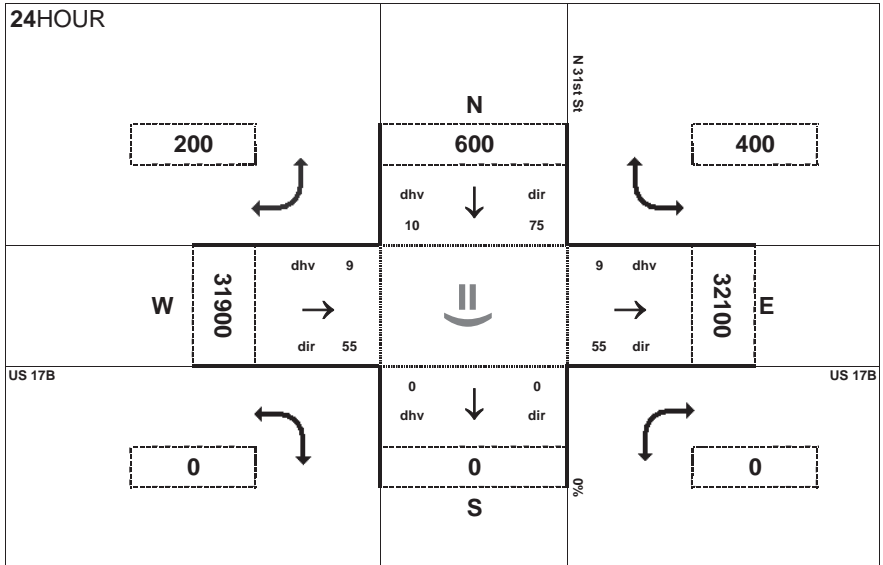
Peak Hour Volume Breakouts Report:
12 Intersection of US 17B and Mercer Ave

Traffic Forecast Release Date:
July, 2017

Traffic Data Year:
2040 No Build

Project:
U-4434



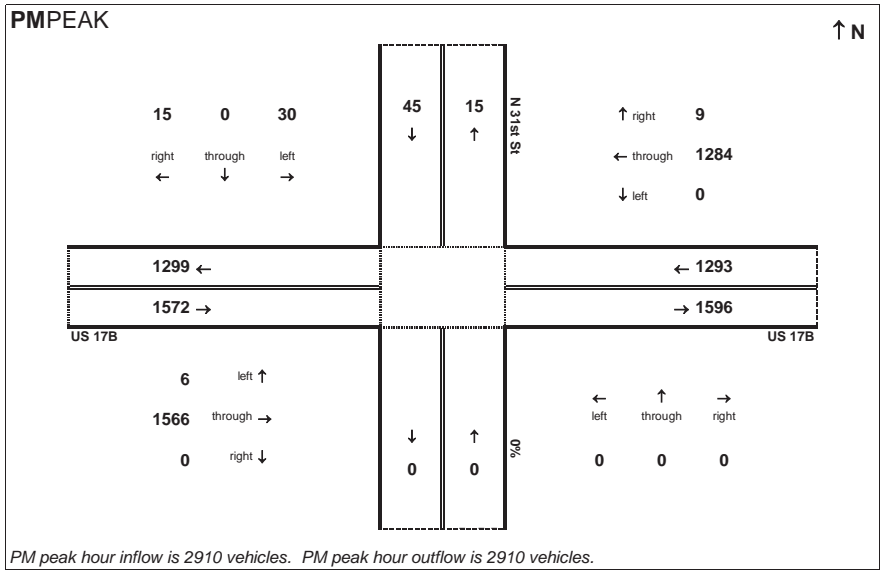
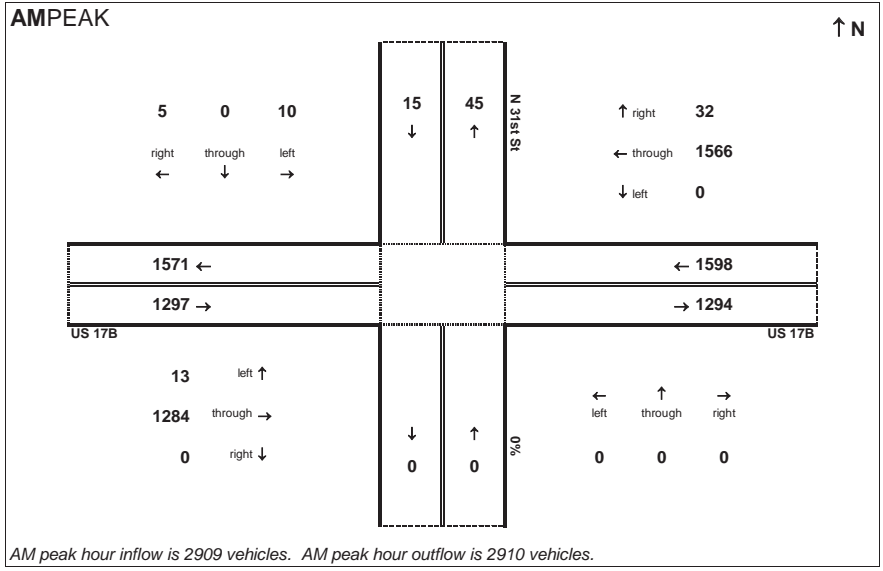


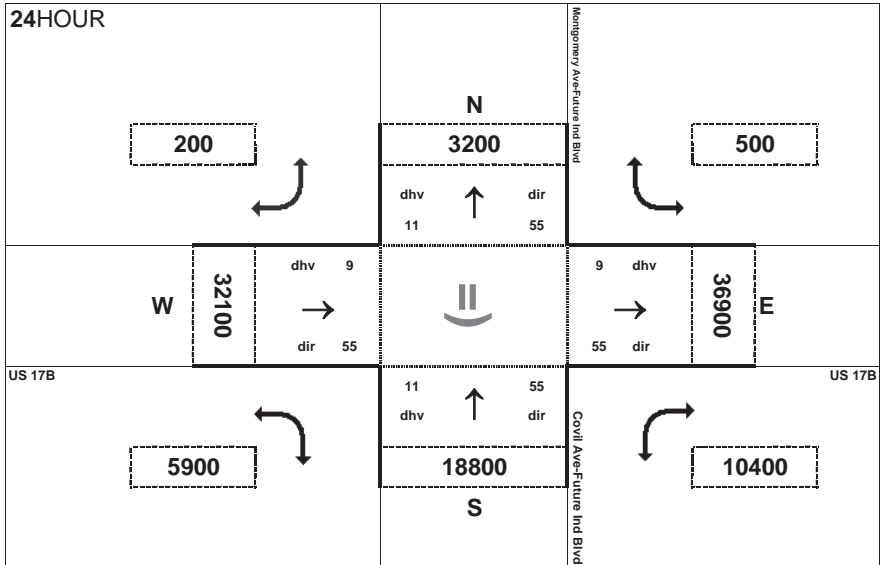
Peak Hour Volume Breakouts Report:
13 Intersection of US 17B and N 31st St

Traffic Forecast Release Date:
July, 2017

Traffic Data Year:
2040 No Build

Project:
U-4434



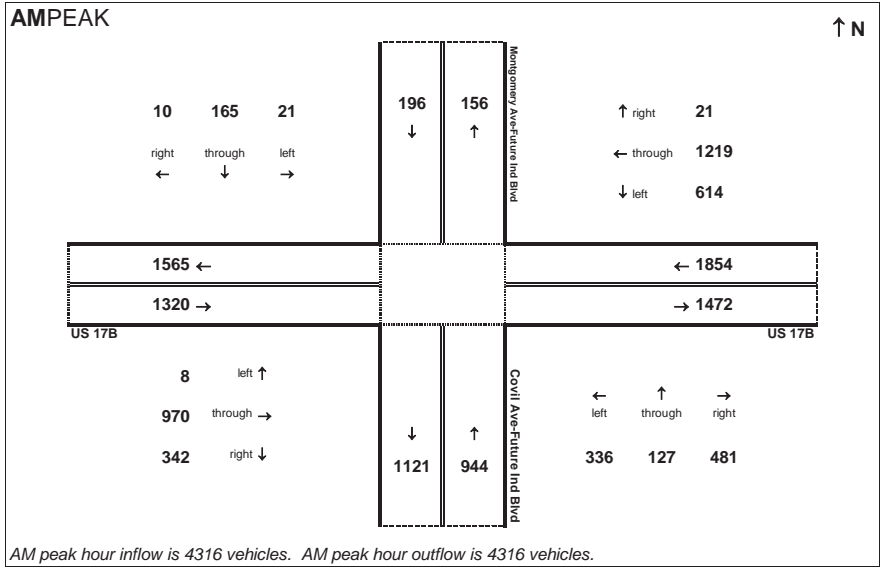


Peak Hour Volume Breakouts Report:
 14 Intersection of US 17B and Montgomery Ave-Covil Ave-Future Ind Blvd

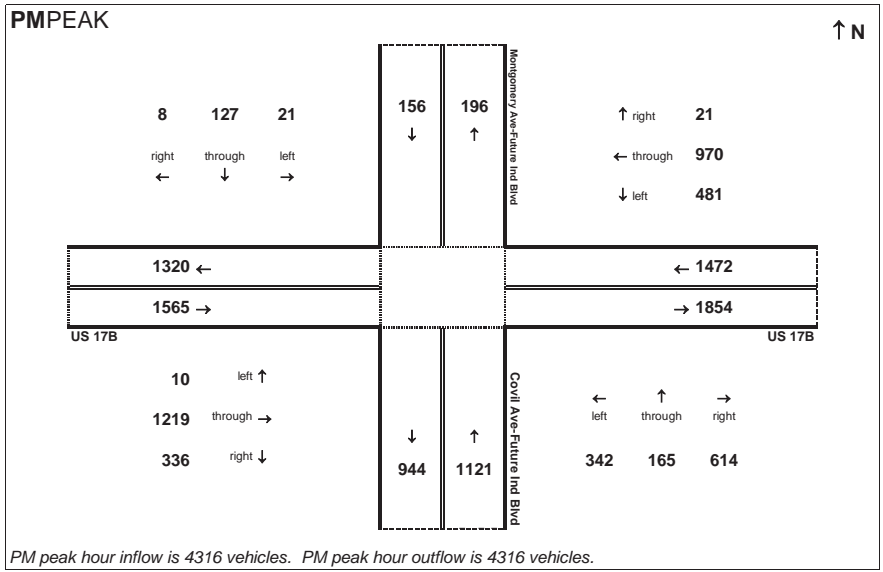
Traffic Forecast Release Date:
 July, 2017

Traffic Data Year:
 2040 No Build

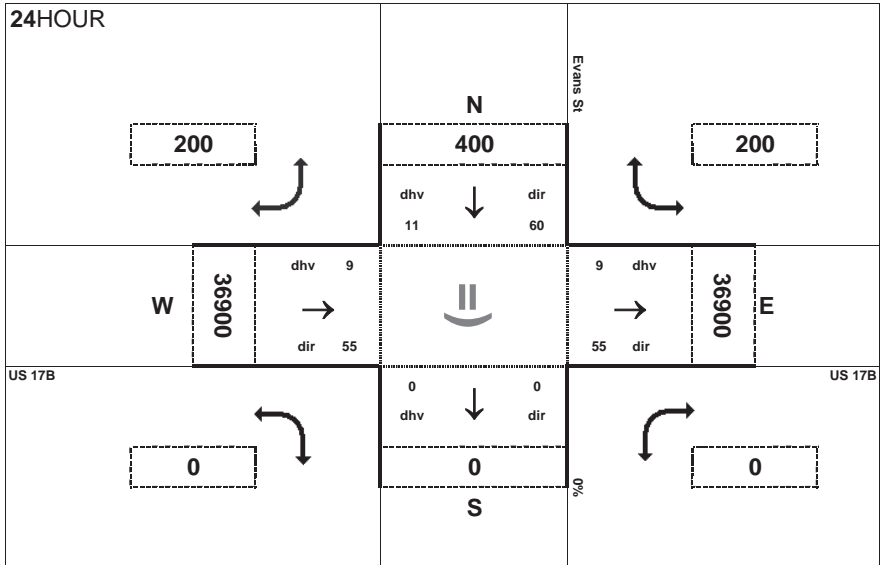
Project:
 U-4434



AM peak hour inflow is 4316 vehicles. AM peak hour outflow is 4316 vehicles.



PM peak hour inflow is 4316 vehicles. PM peak hour outflow is 4316 vehicles.

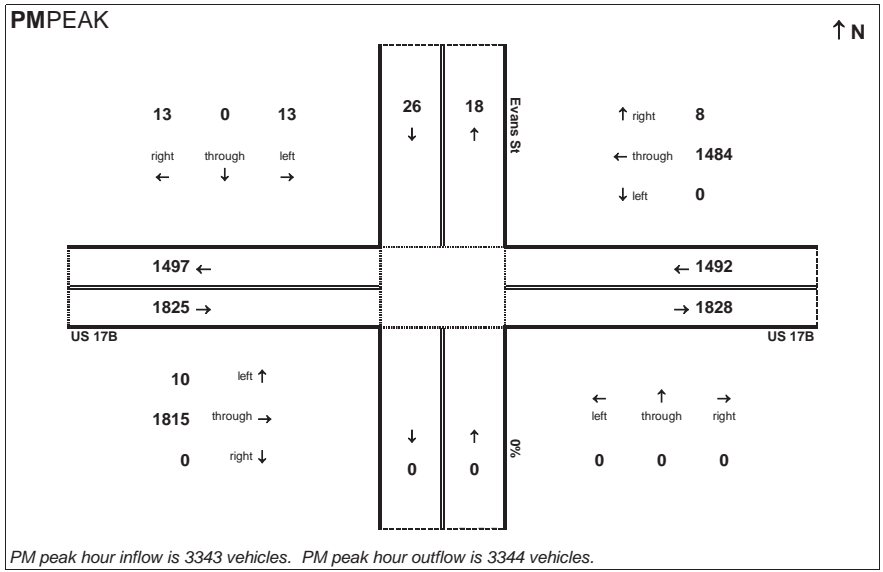
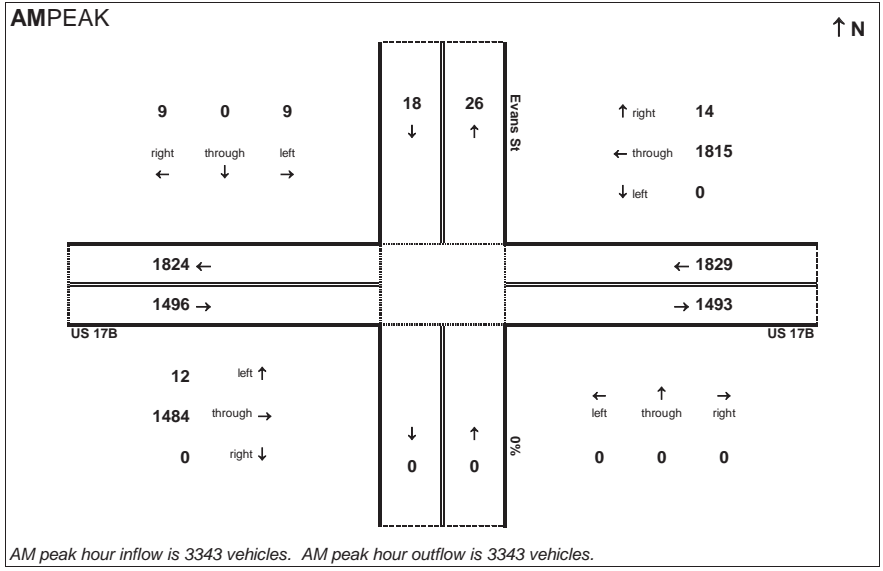


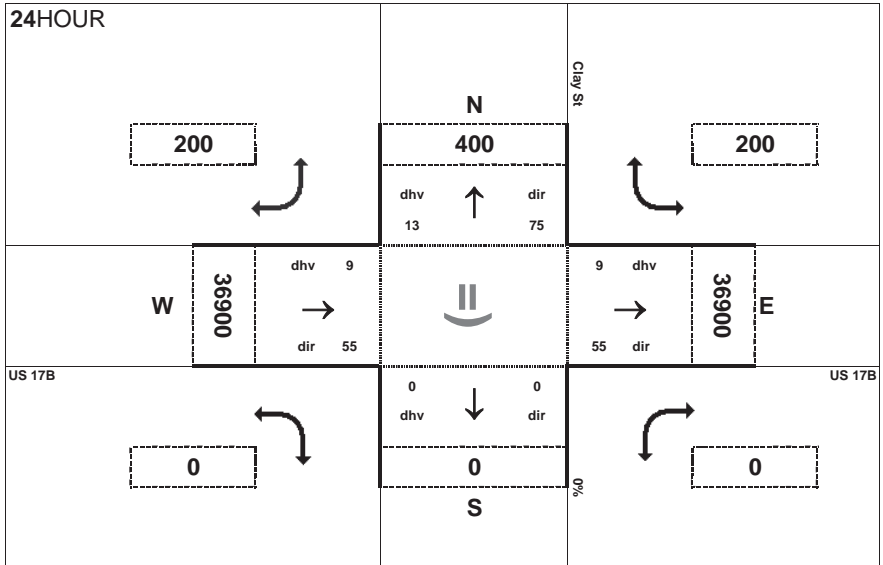
Peak Hour Volume Breakouts Report:
15 Intersection of US 17B and Evans St

Traffic Forecast Release Date:
July, 2017

Traffic Data Year:
2040 No Build

Project:
U-4434



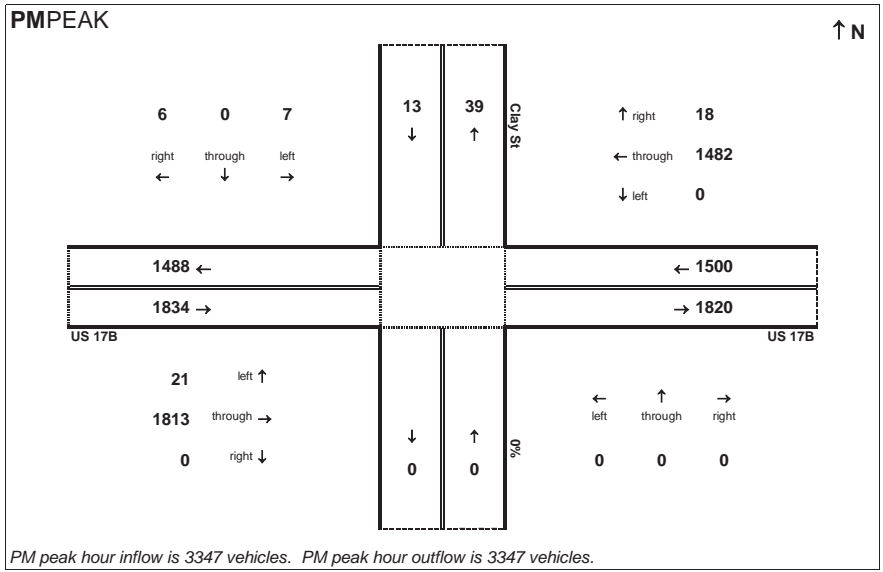
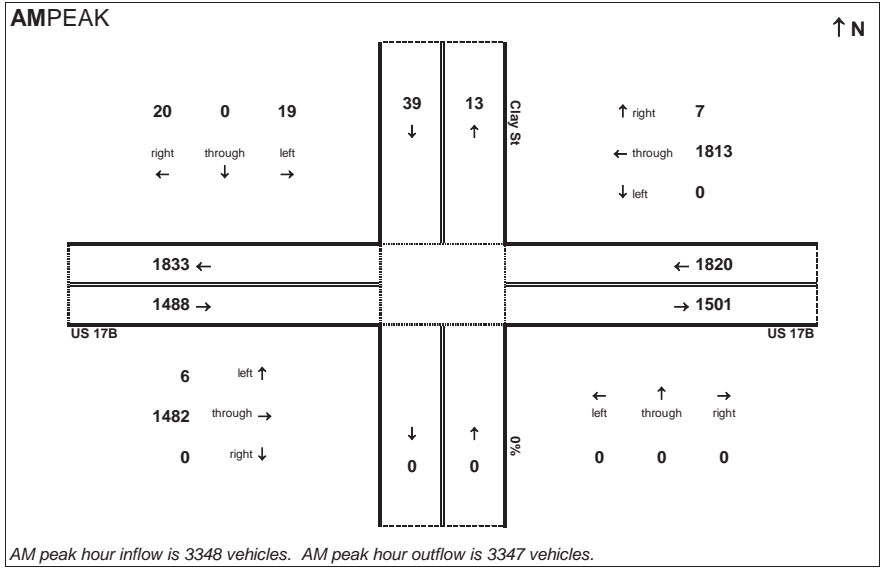


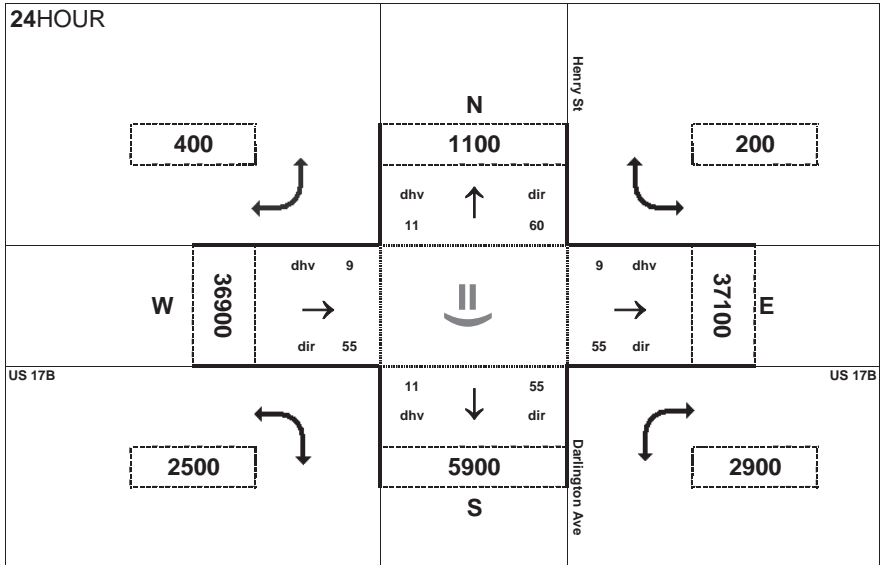
Peak Hour Volume Breakouts Report:
16 Intersection of US 17B and Clay St

Traffic Forecast Release Date:
July, 2017

Traffic Data Year:
2040 No Build

Project:
U-4434



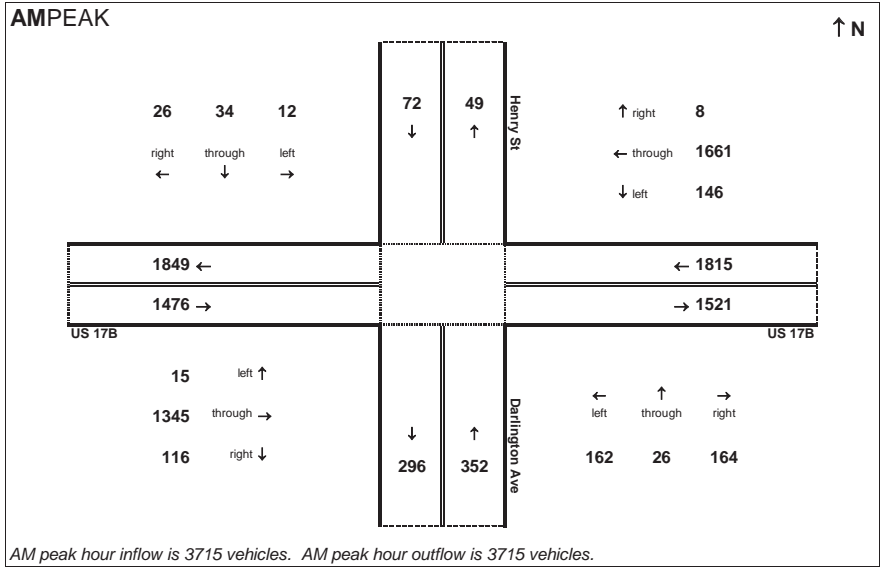


Peak Hour Volume Breakouts Report:
 17 Intersection of US 17B and Henry St-Darlington Ave

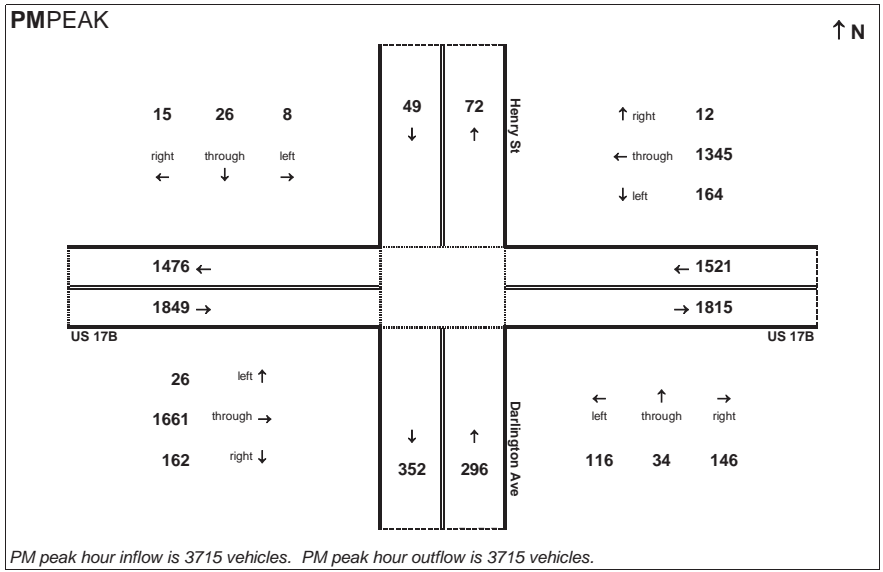
Traffic Forecast Release Date:
 July, 2017

Traffic Data Year:
 2040 No Build

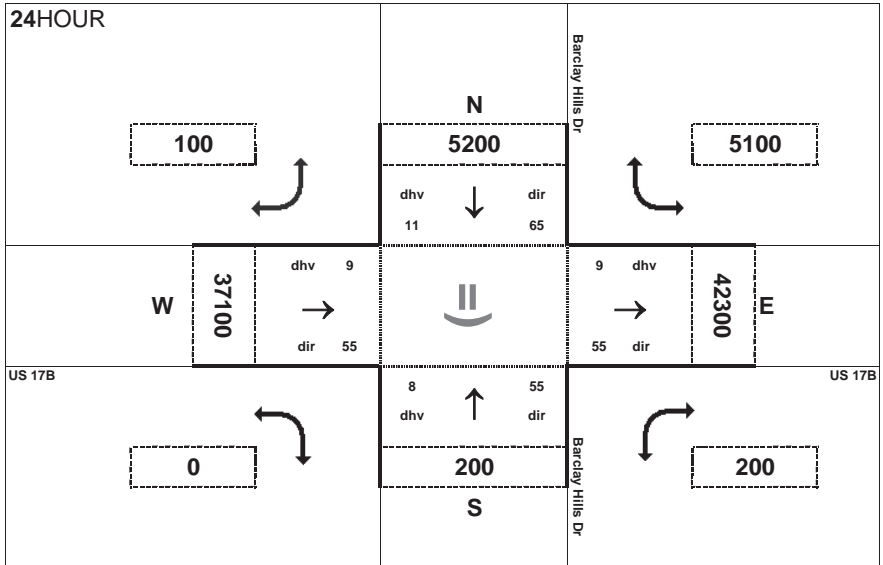
Project:
 U-4434



AM peak hour inflow is 3715 vehicles. AM peak hour outflow is 3715 vehicles.



PM peak hour inflow is 3715 vehicles. PM peak hour outflow is 3715 vehicles.

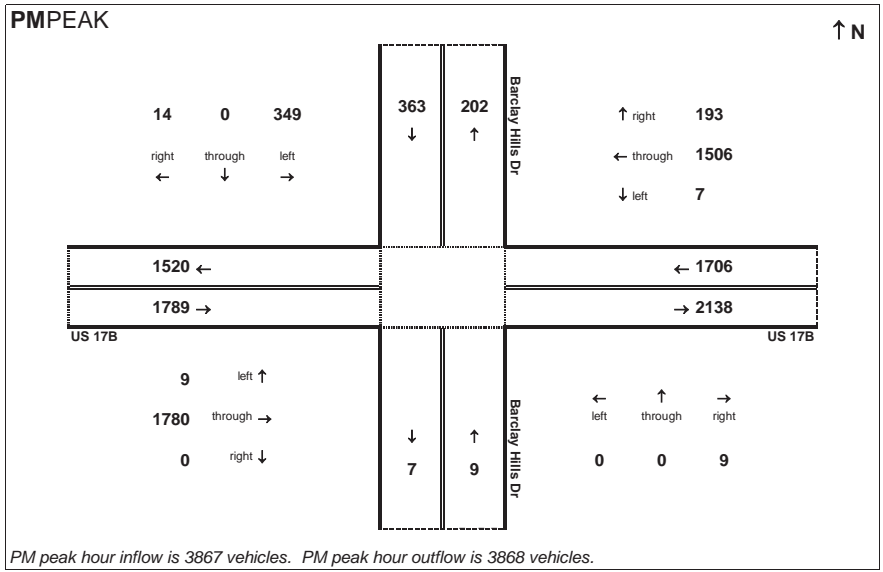
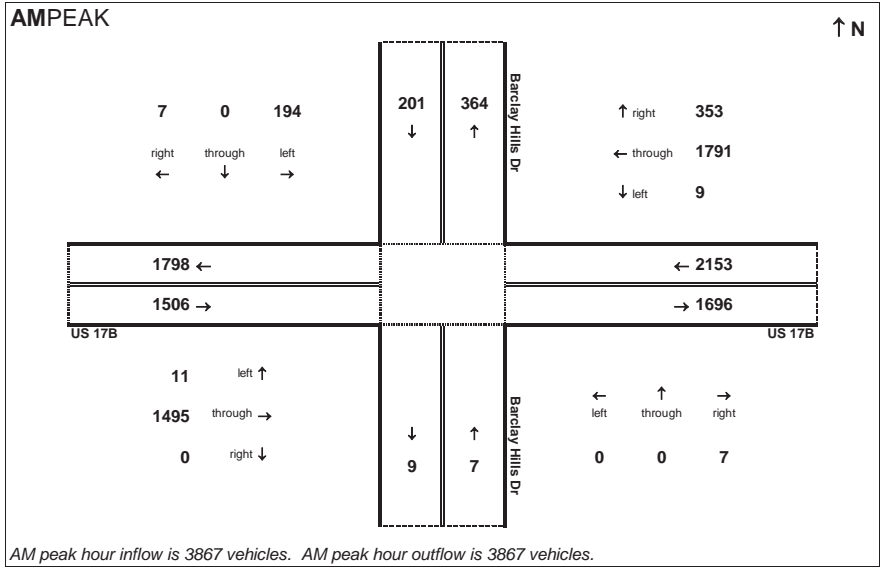


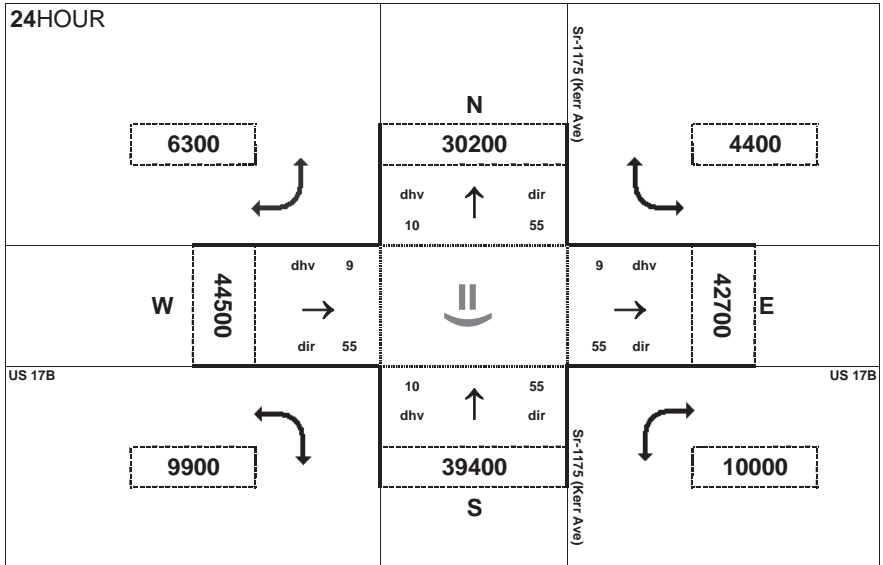
Peak Hour Volume Breakouts Report:
 18 Intersection of US 17B and Barclay Hills Dr

Traffic Forecast Release Date:
 July, 2017

Traffic Data Year:
 2040 No Build

Project:
 U-4434



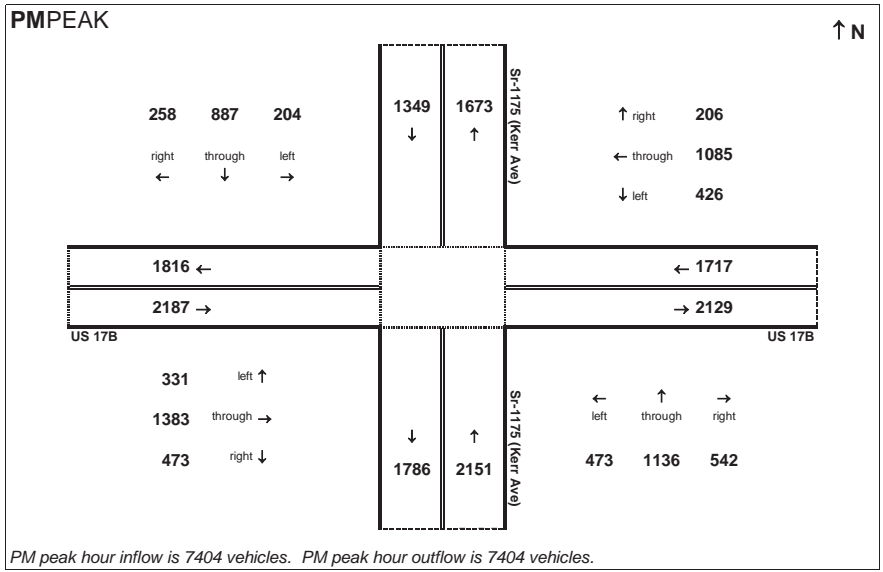
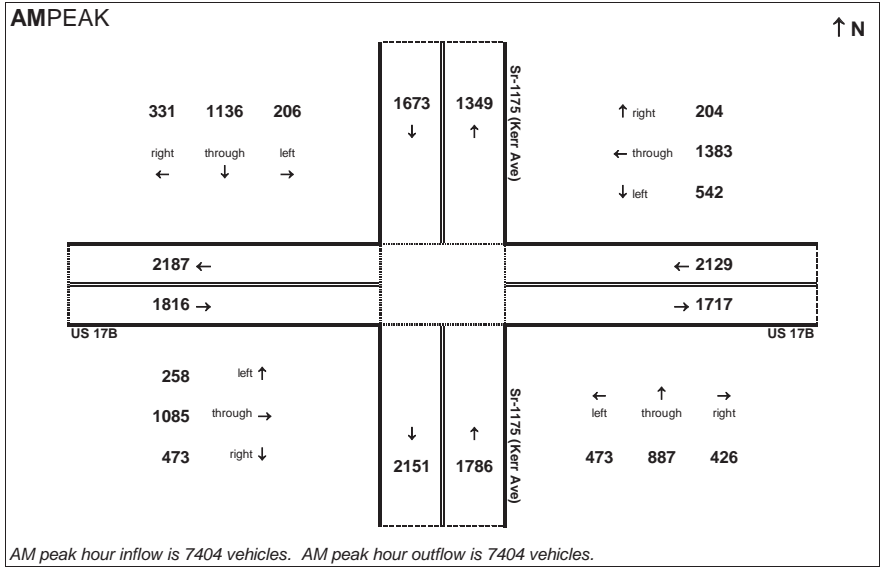


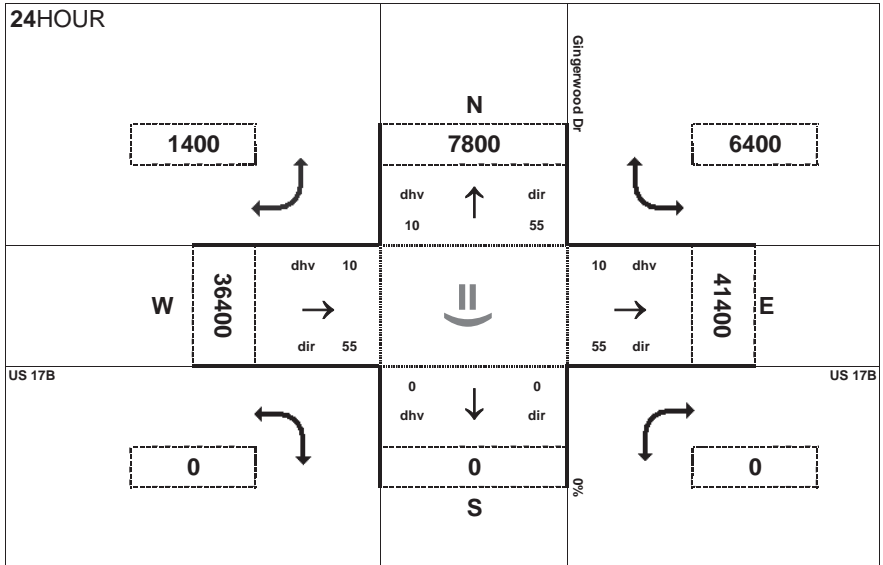
Peak Hour Volume Breakouts Report:
19 Intersection of US 17B and Sr-1175 (Kerr Ave)

Traffic Forecast Release Date:
July, 2017

Traffic Data Year:
2040 No Build

Project:
U-4434



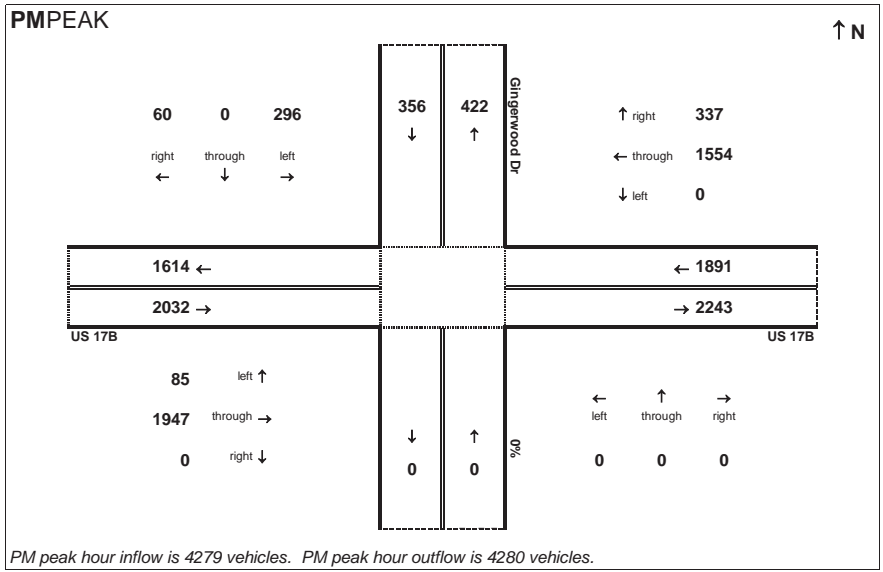
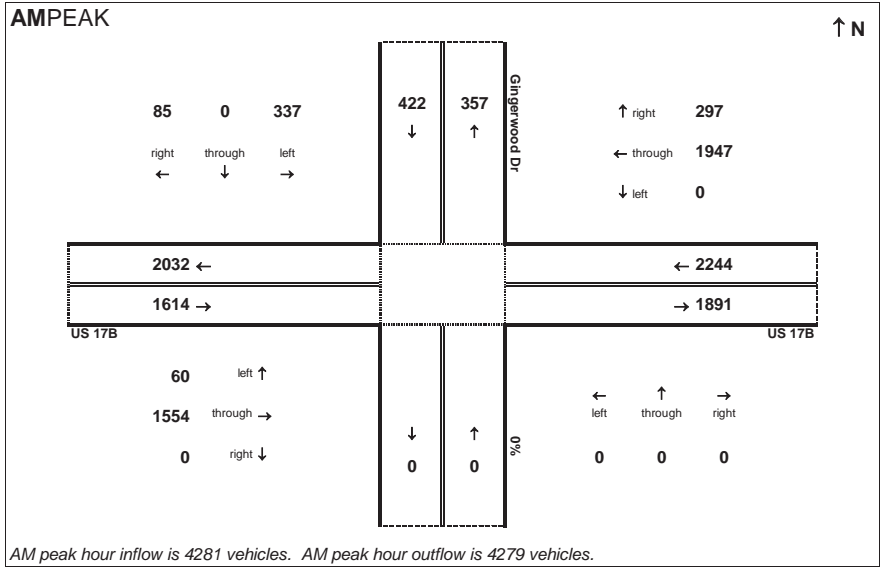


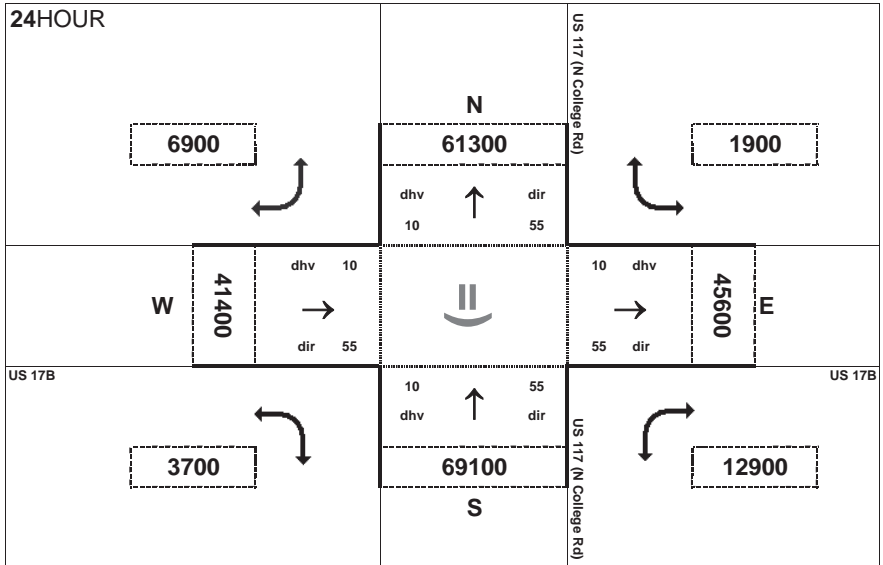
Peak Hour Volume Breakouts Report:
20 Intersection of US 17B and Gingerwood Dr

Traffic Forecast Release Date:
July, 2017

Traffic Data Year:
2040 No Build

Project:
U-4434



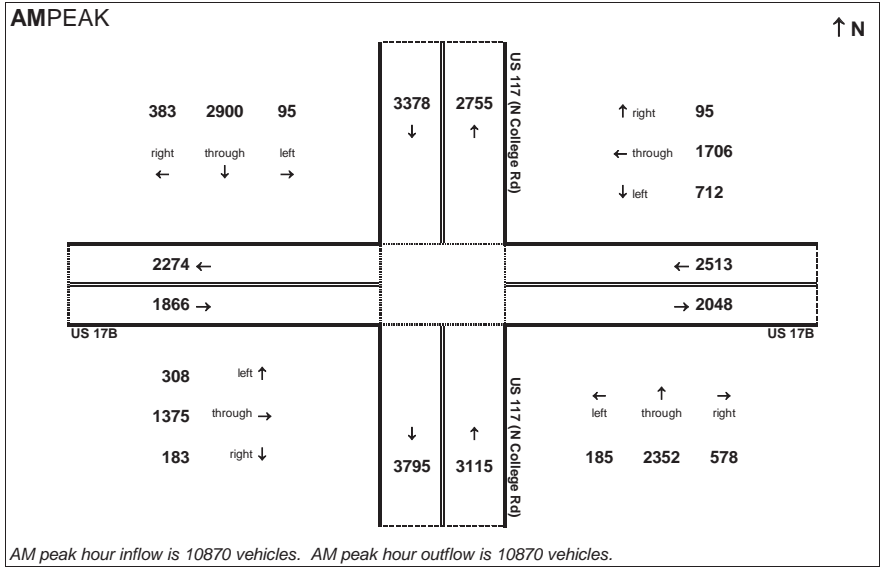


Peak Hour Volume Breakouts Report:
 21 Intersection of US 17B and US 117 (N College Rd)

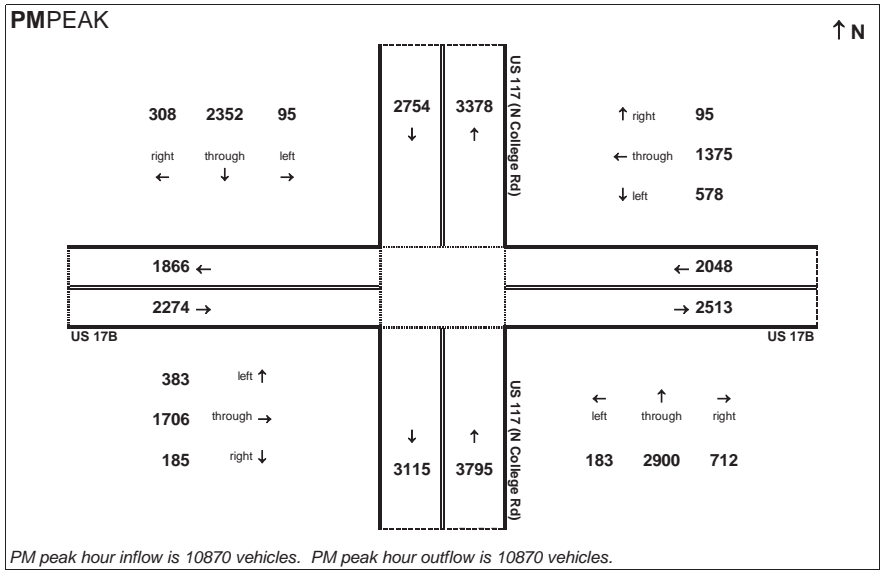
Traffic Forecast Release Date:
 July, 2017

Traffic Data Year:
 2040 No Build

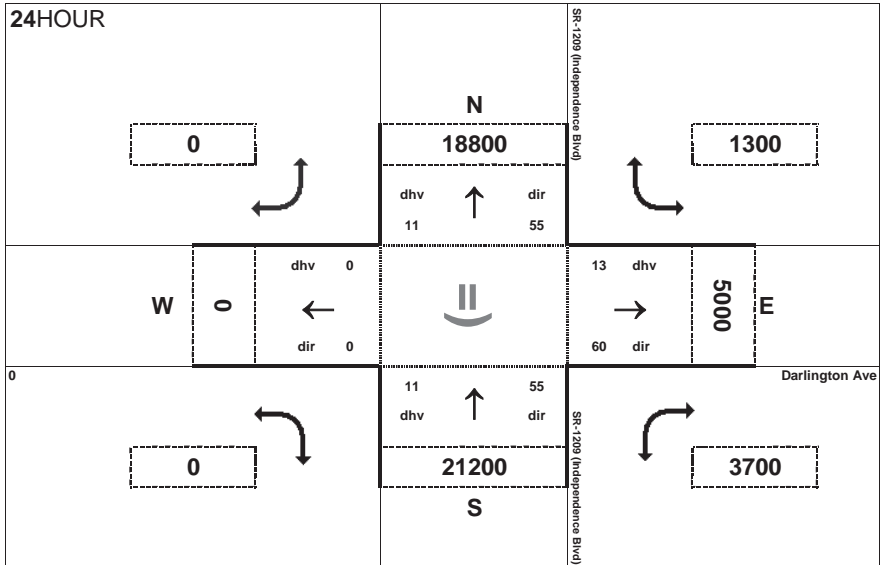
Project:
 U-4434



AM peak hour inflow is 10870 vehicles. AM peak hour outflow is 10870 vehicles.



PM peak hour inflow is 10870 vehicles. PM peak hour outflow is 10870 vehicles.

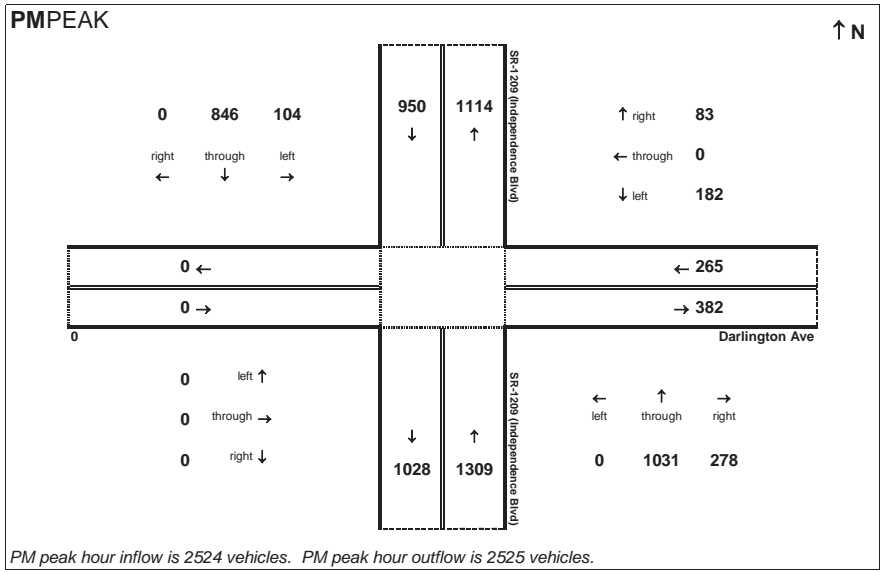
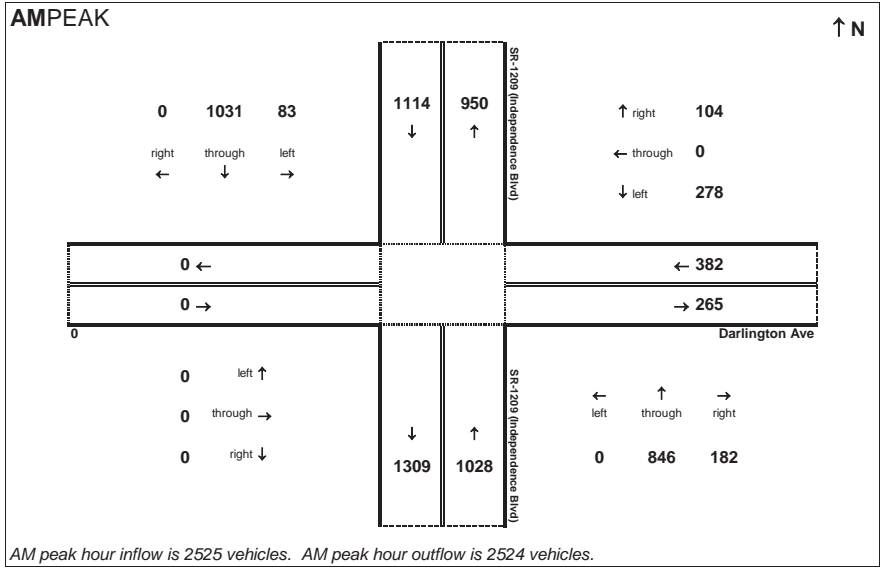


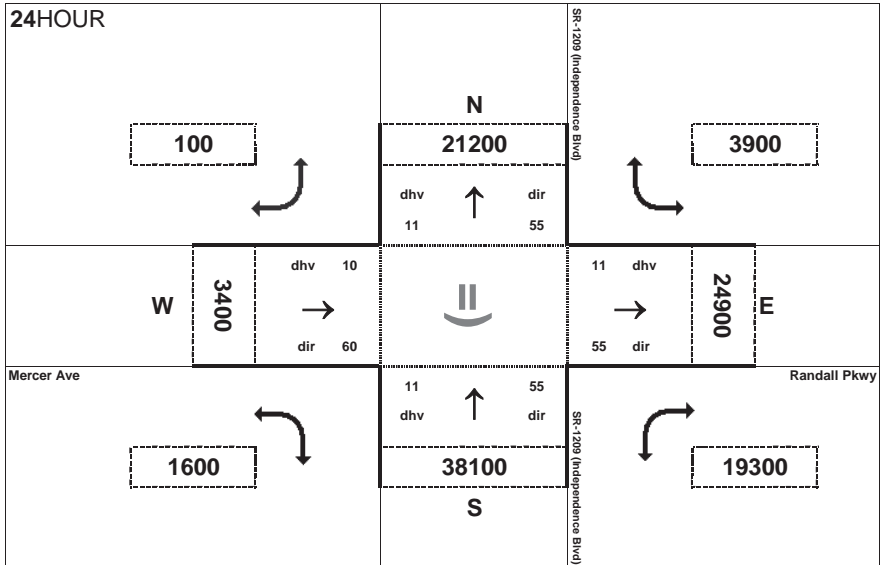
Peak Hour Volume Breakouts Report:
 22 Intersection of SR-1209 (Independence Blvd) and Darlington Ave

Traffic Forecast Release Date:
 July, 2017

Traffic Data Year:
 2040 No Build

Project:
 U-4434



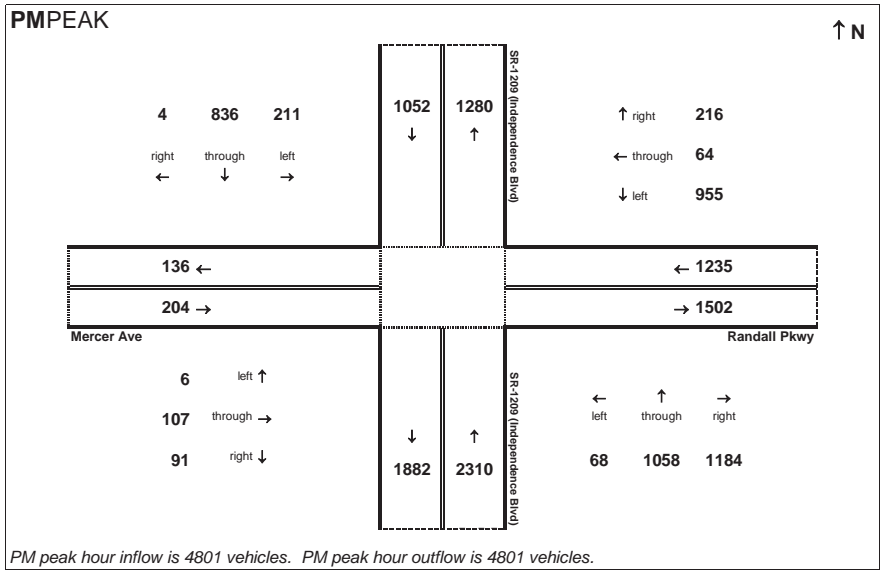
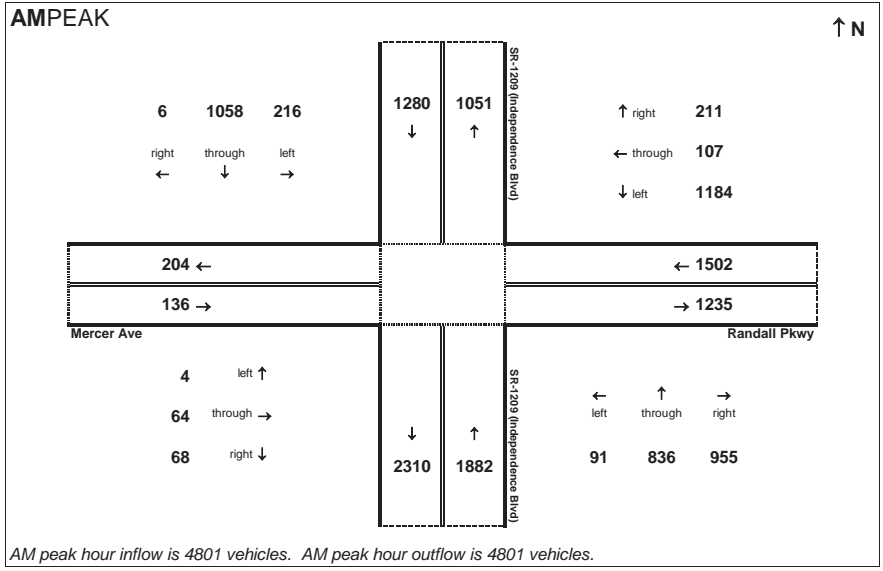


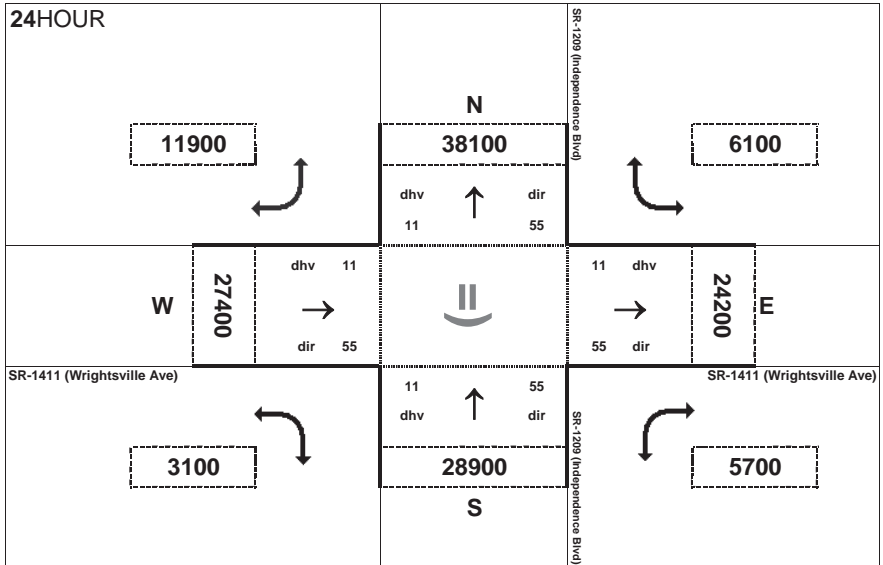
Peak Hour Volume Breakouts Report:
 23 Intersection of SR-1209 (Independence Blvd) and Mercer Ave-Randall Pkwy

Traffic Forecast Release Date:
 July, 2017

Traffic Data Year:
 2040 No Build

Project:
 U-4434



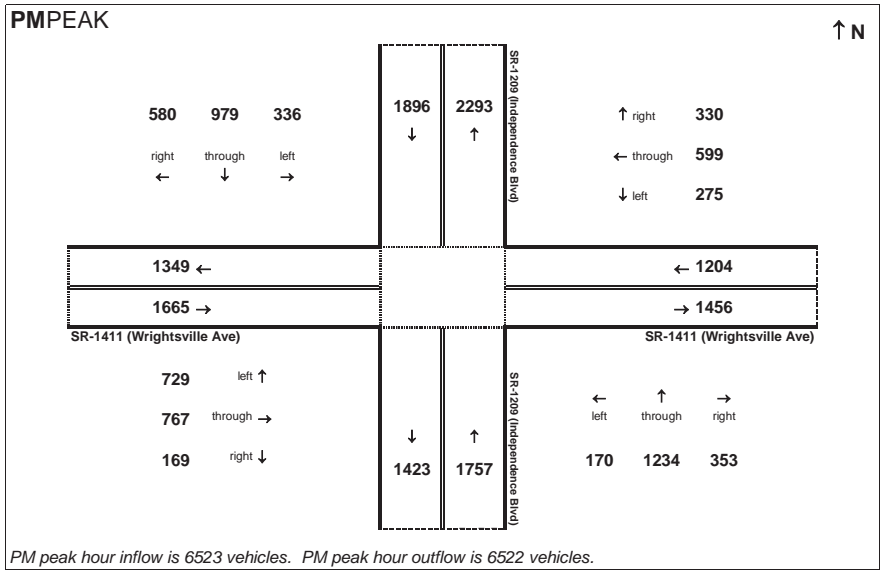
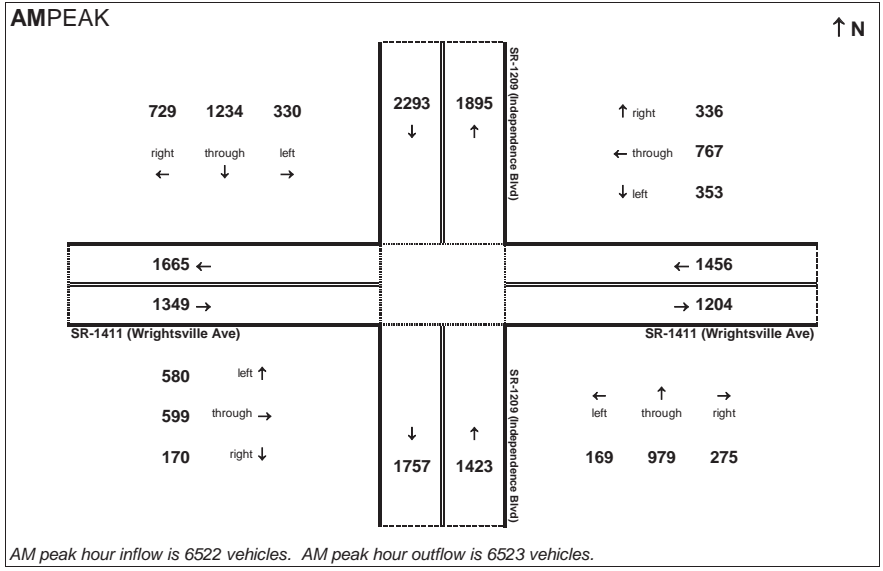


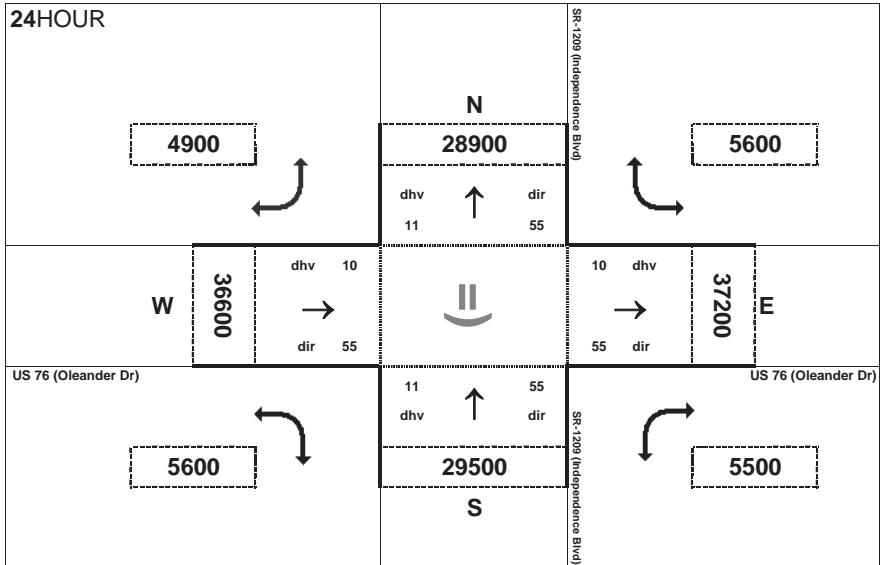
Peak Hour Volume Breakouts Report:
 24 Intersection of SR-1209 (Independence Blvd) and SR-1411 (Wrightsville Ave)

Traffic Forecast Release Date:
 July, 2017

Traffic Data Year:
 2040 No Build

Project:
 U-4434



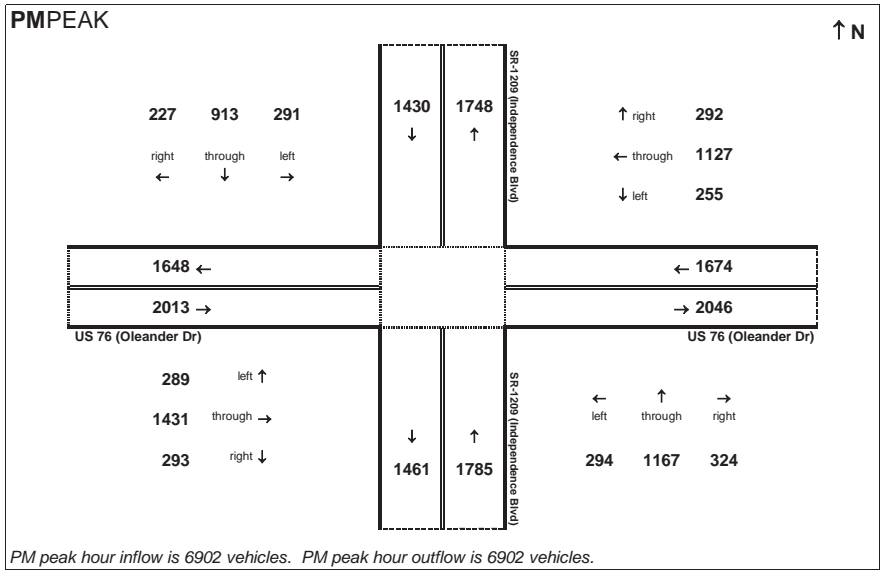
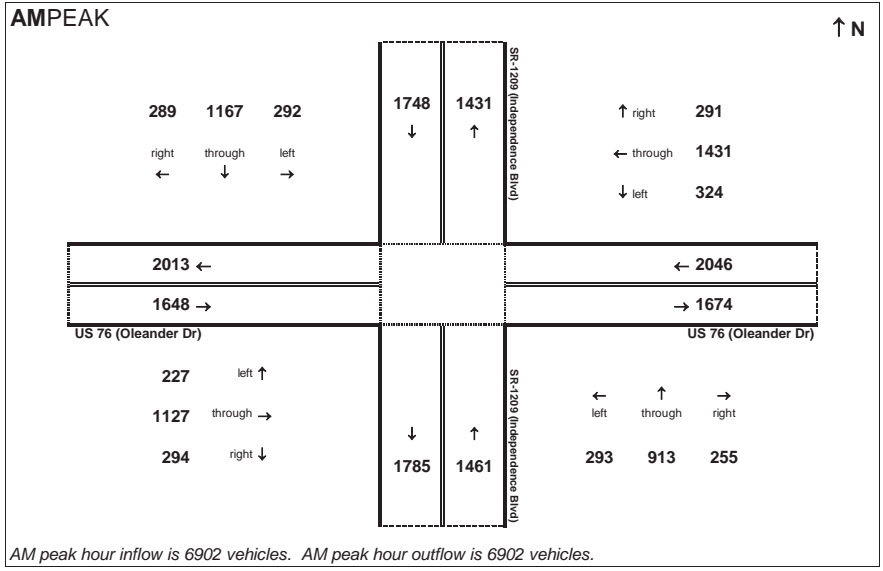


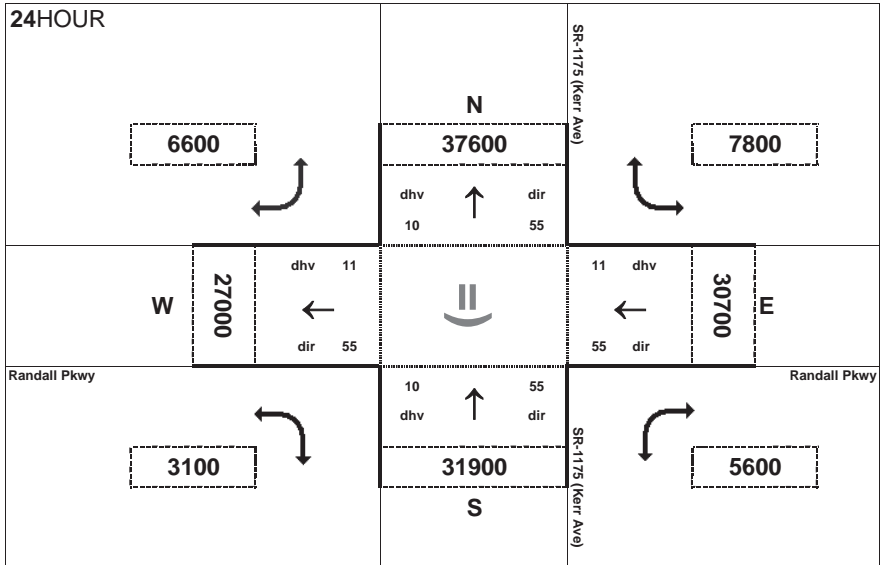
Peak Hour Volume Breakouts Report:
 25 Intersection of SR-1209 (Independence Blvd) and US 76 (Oleander Dr)

Traffic Forecast Release Date:
 July, 2017

Traffic Data Year:
 2040 No Build

Project:
 U-4434



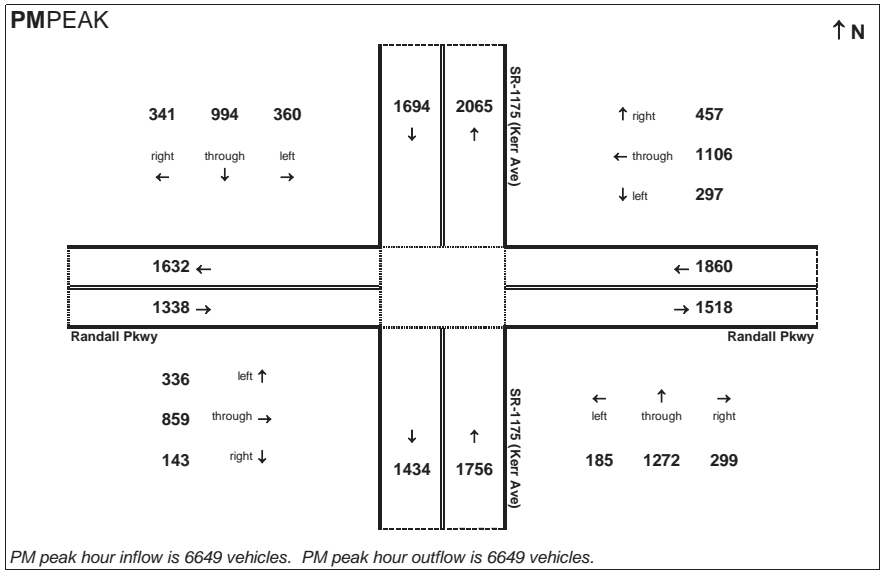
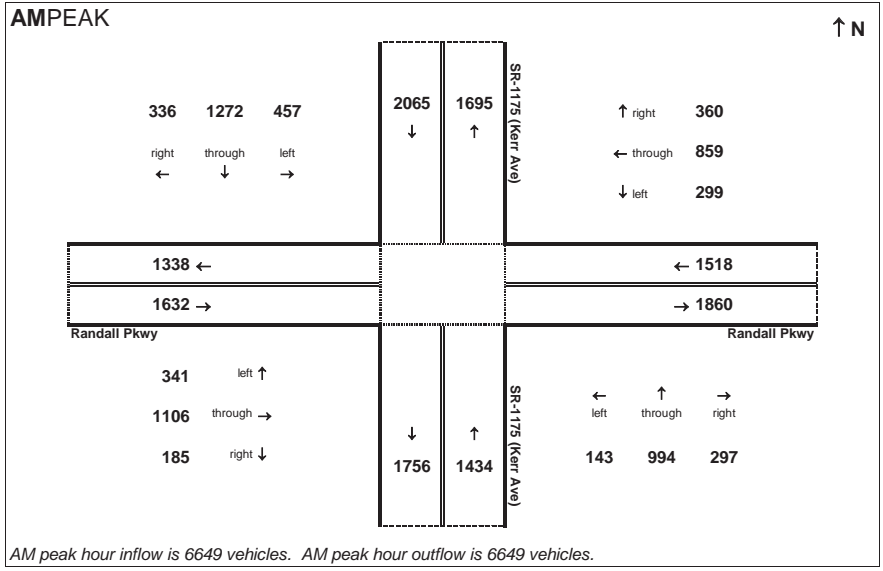


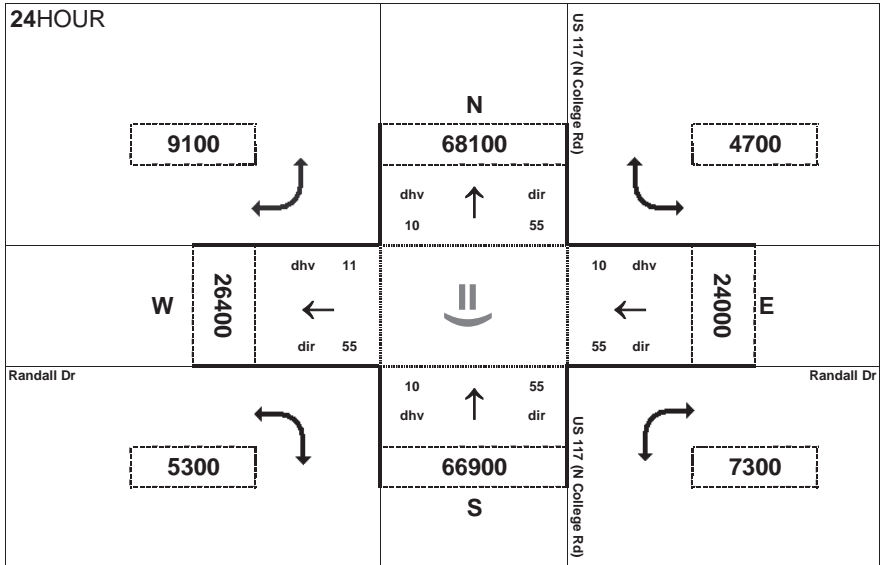
Peak Hour Volume Breakouts Report:
 26 Intersection of SR-1175 (Kerr Ave) and Randall Pkwy

Traffic Forecast Release Date:
 July, 2017

Traffic Data Year:
 2040 No Build

Project:
 U-4434



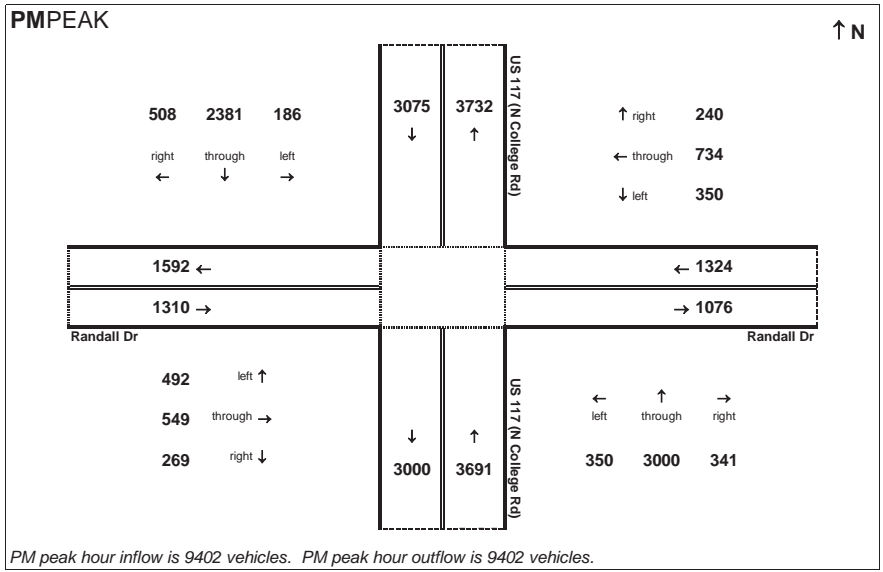
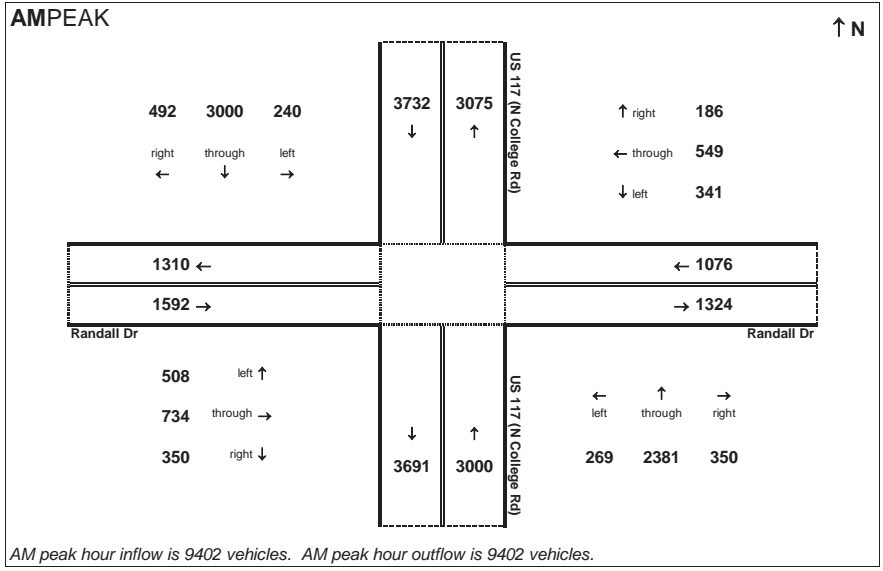


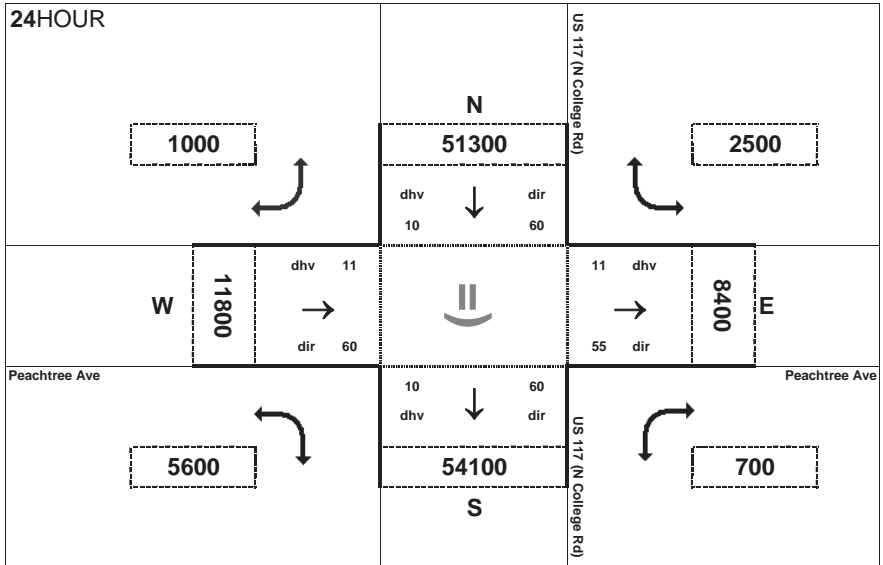
Peak Hour Volume Breakouts Report:
 27 Intersection of US 117 (N College Rd) and Randall Dr

Traffic Forecast Release Date:
 July, 2017

Traffic Data Year:
 2040 No Build

Project:
 U-4434



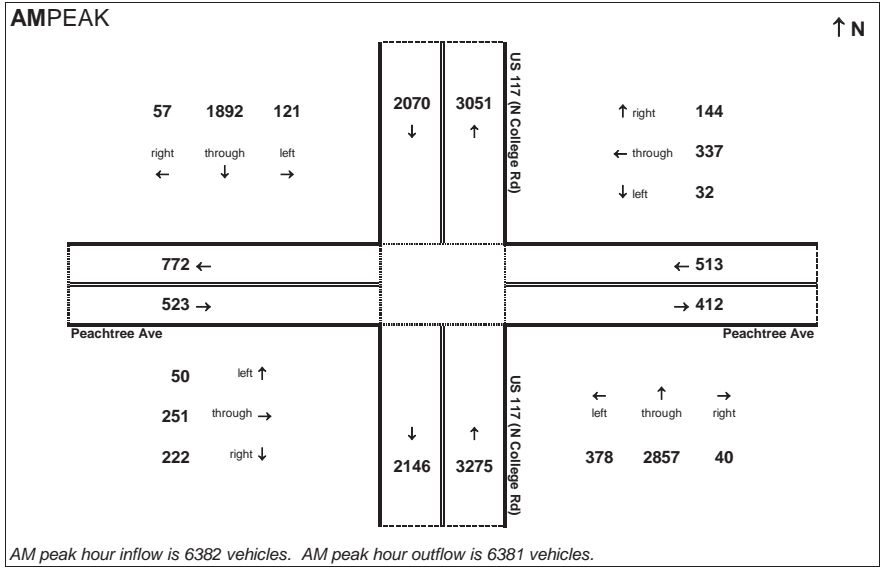


Peak Hour Volume Breakouts Report:
 28 Intersection of US 117 (N College Rd) and Peachtree Ave

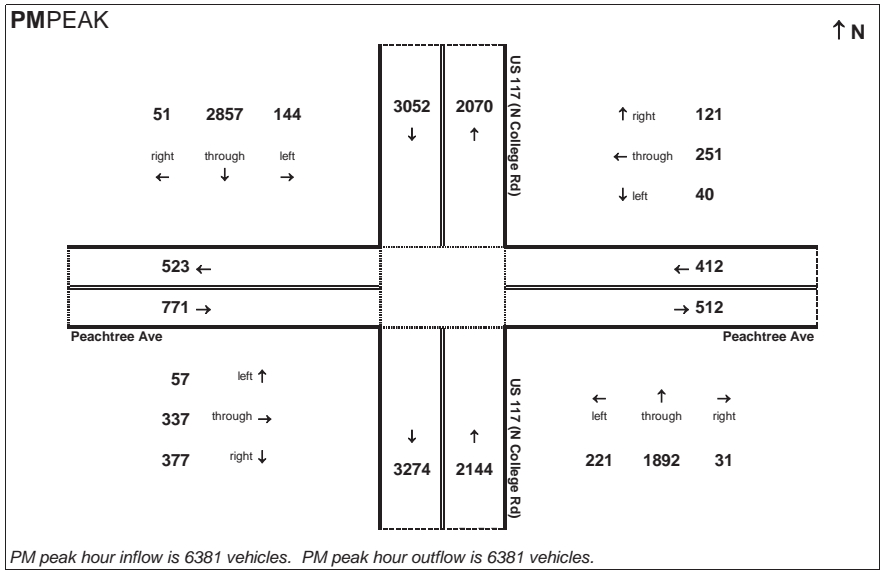
Traffic Forecast Release Date:
 July, 2017

Traffic Data Year:
 2040 No Build

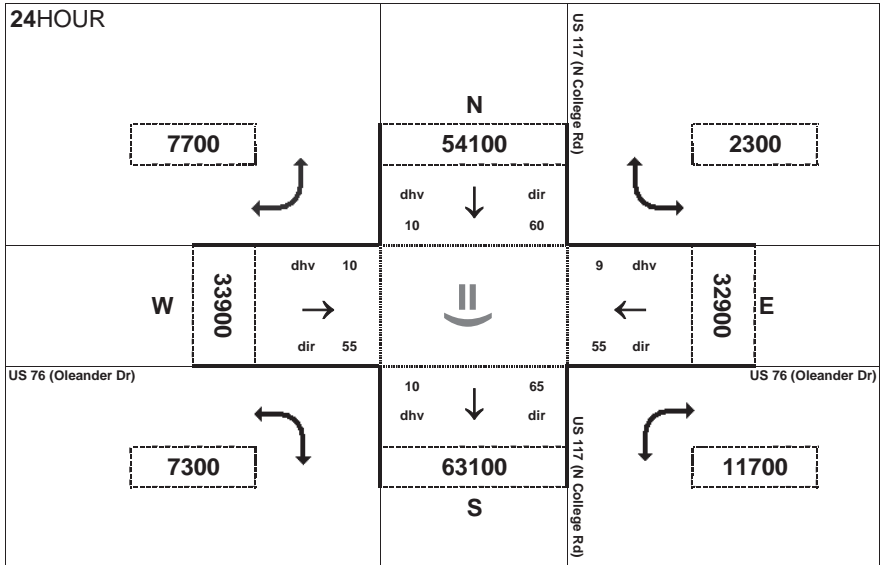
Project:
 U-4434



AM peak hour inflow is 6382 vehicles. AM peak hour outflow is 6381 vehicles.



PM peak hour inflow is 6381 vehicles. PM peak hour outflow is 6381 vehicles.

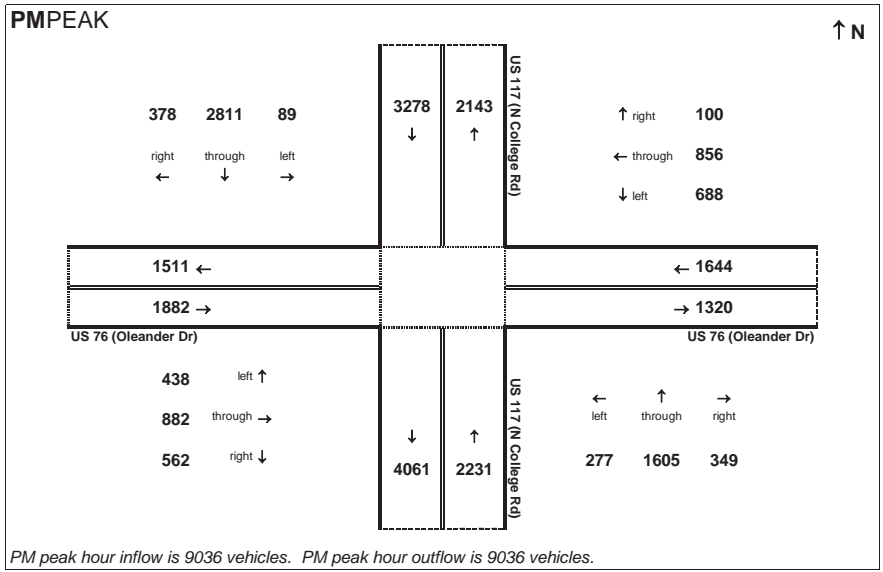
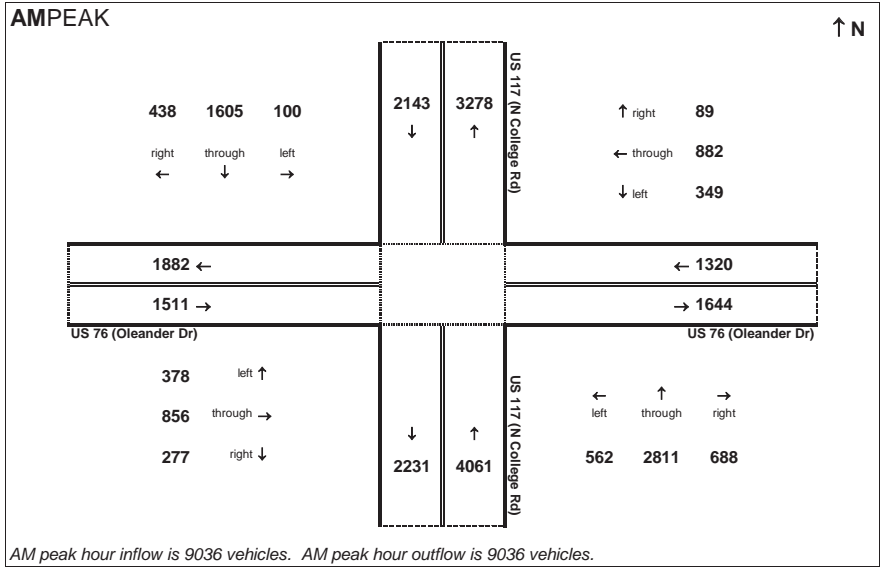


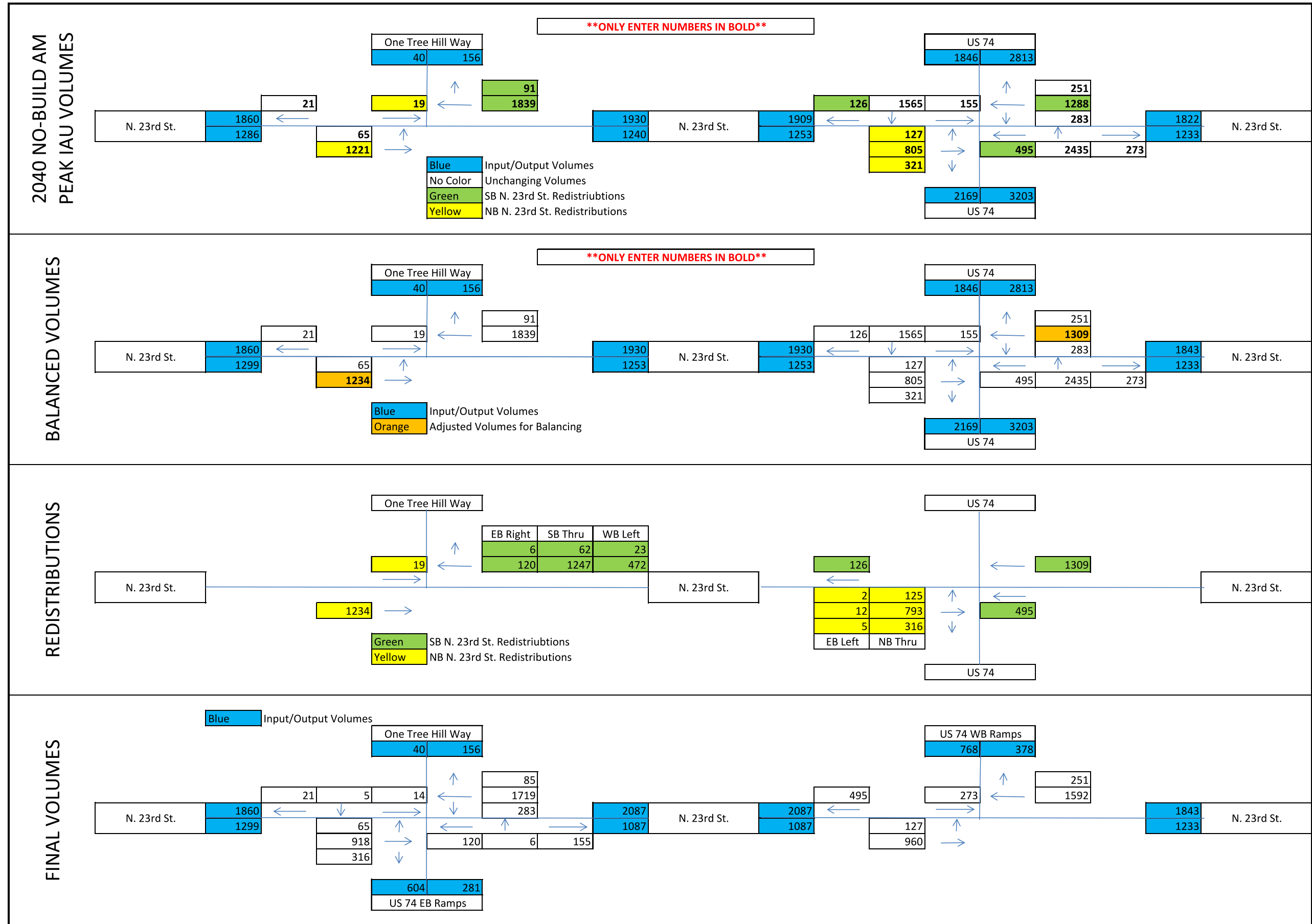
Peak Hour Volume Breakouts Report:
 29 Intersection of US 117 (N College Rd) and US 76 (Oleander Dr)

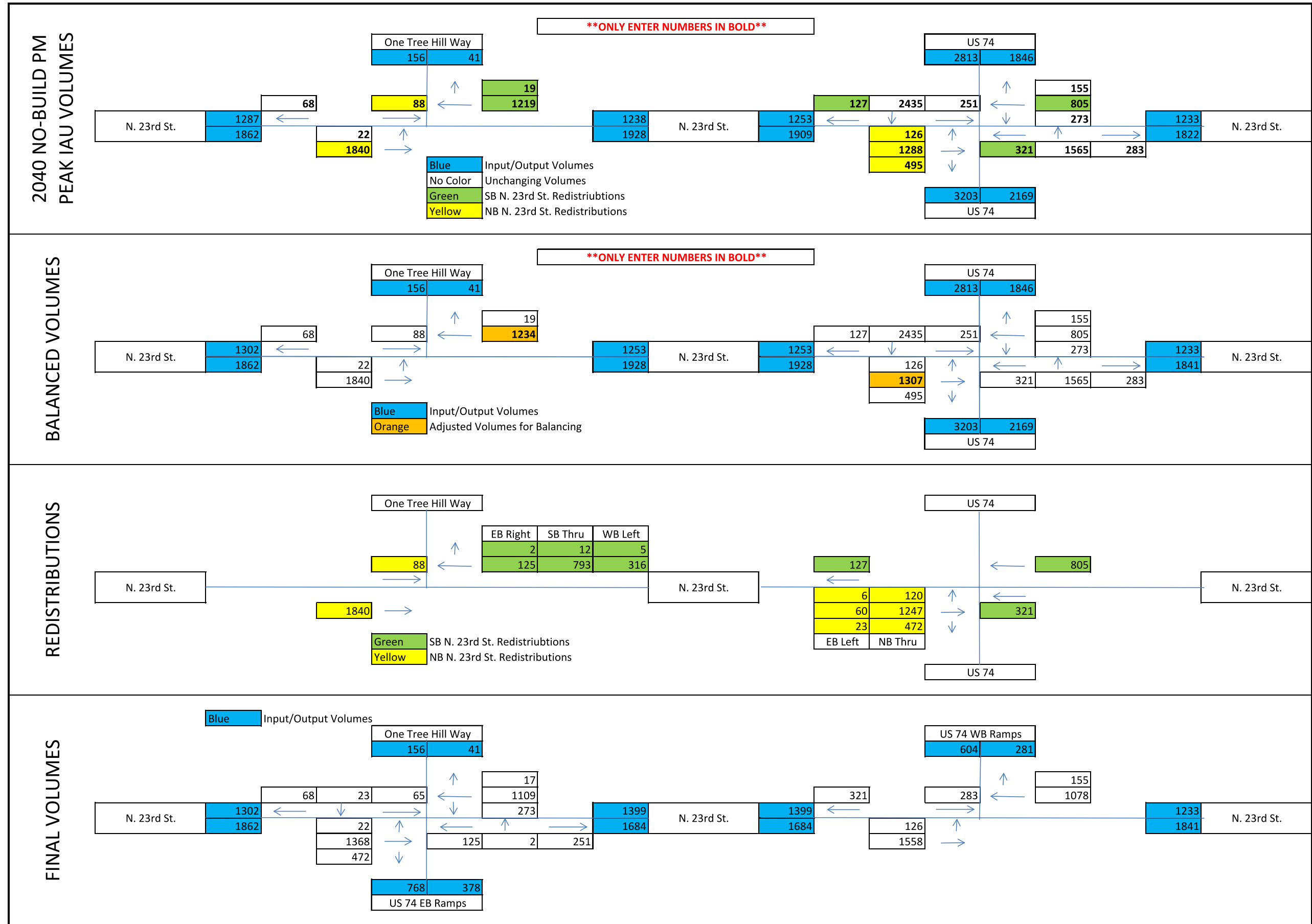
Traffic Forecast Release Date:
 July, 2017

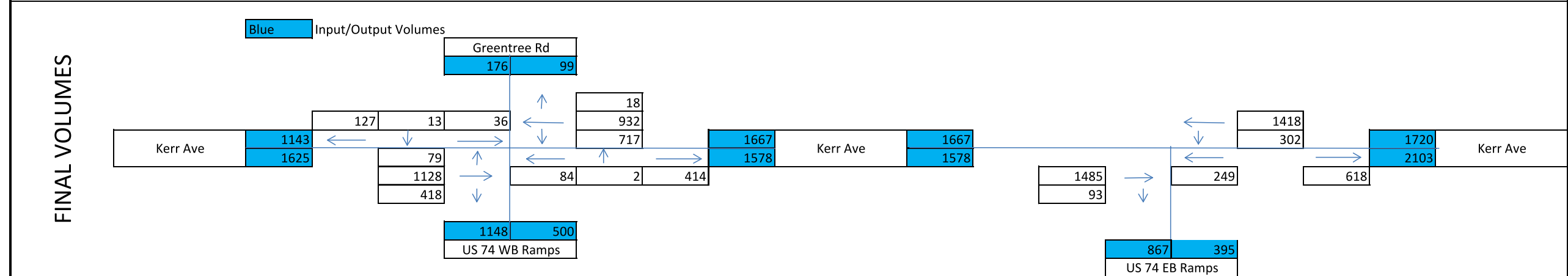
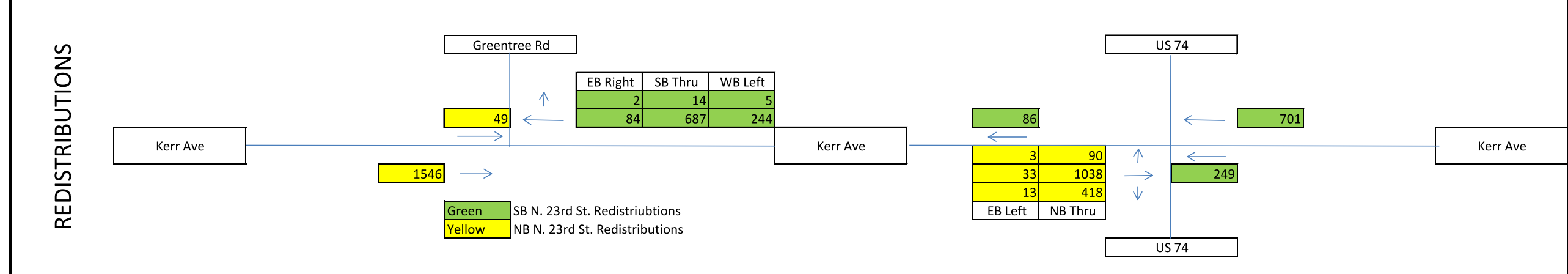
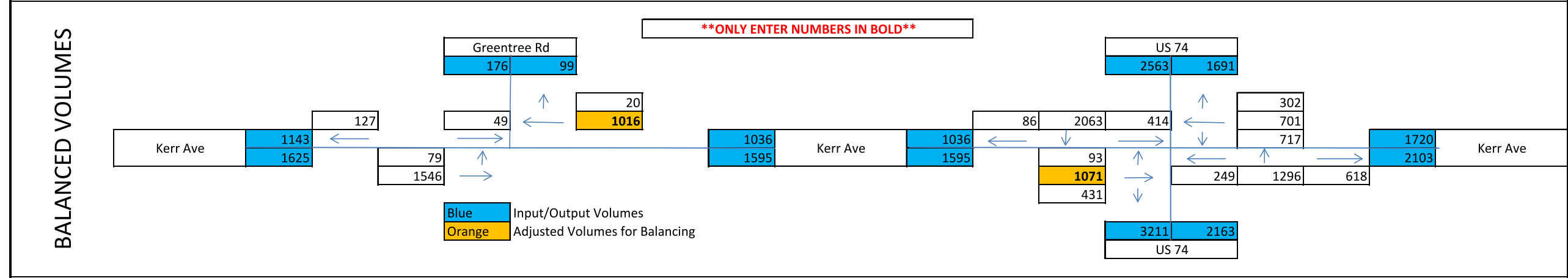
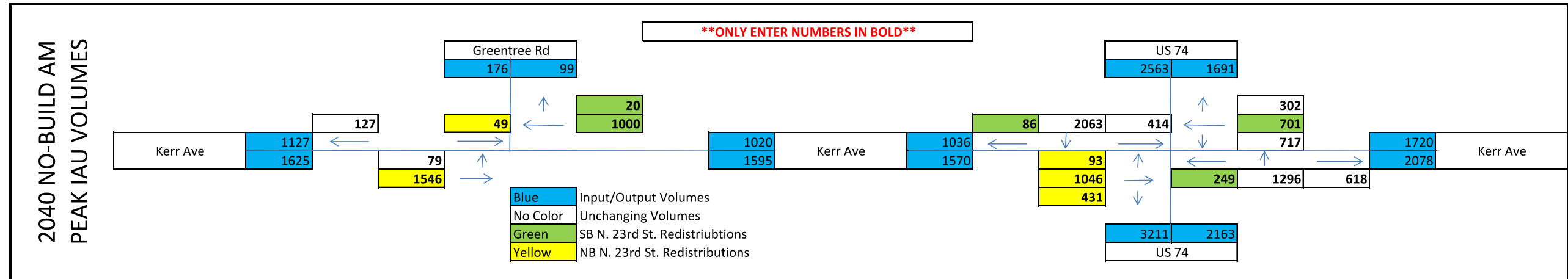
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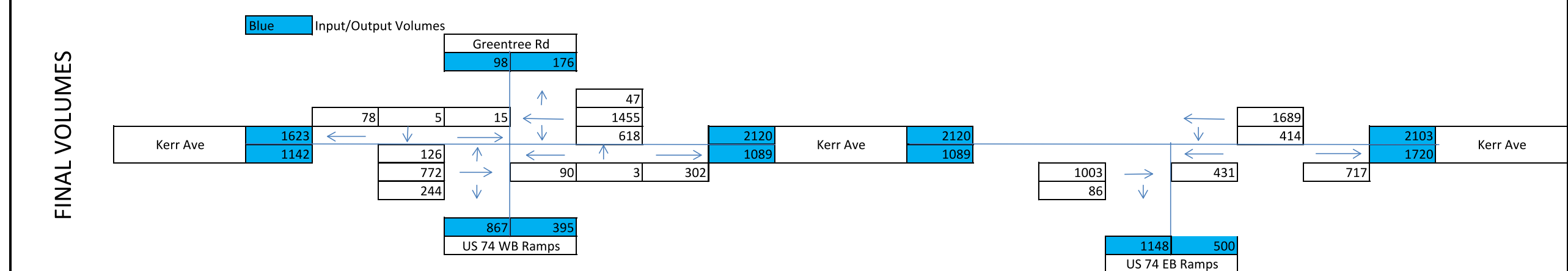
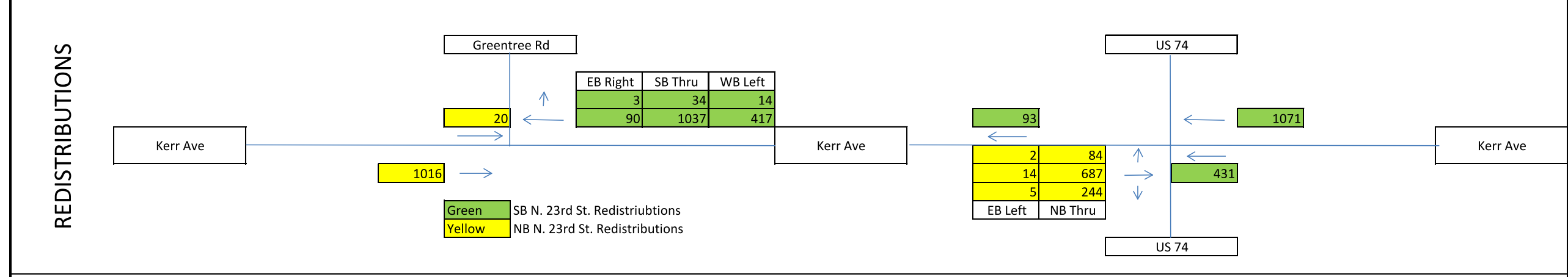
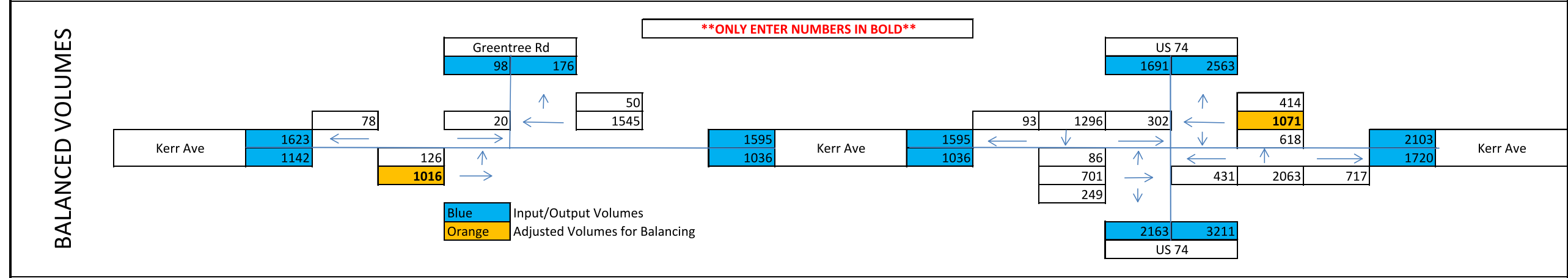
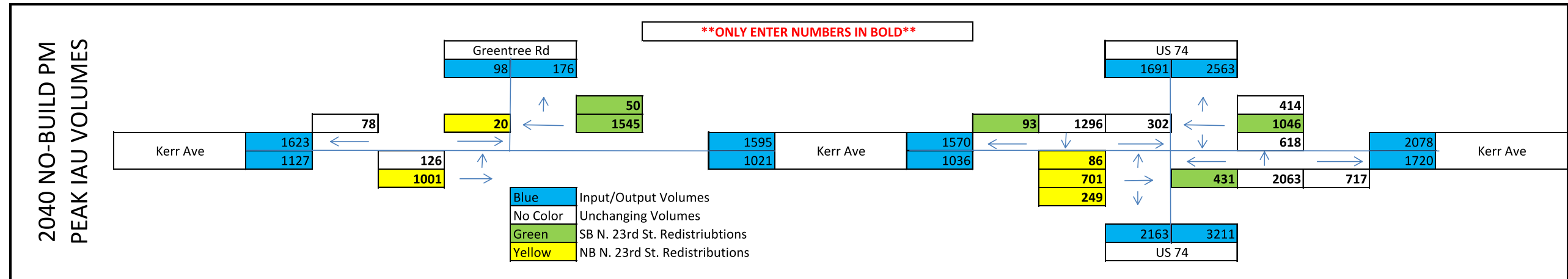
Project:
 U-4434

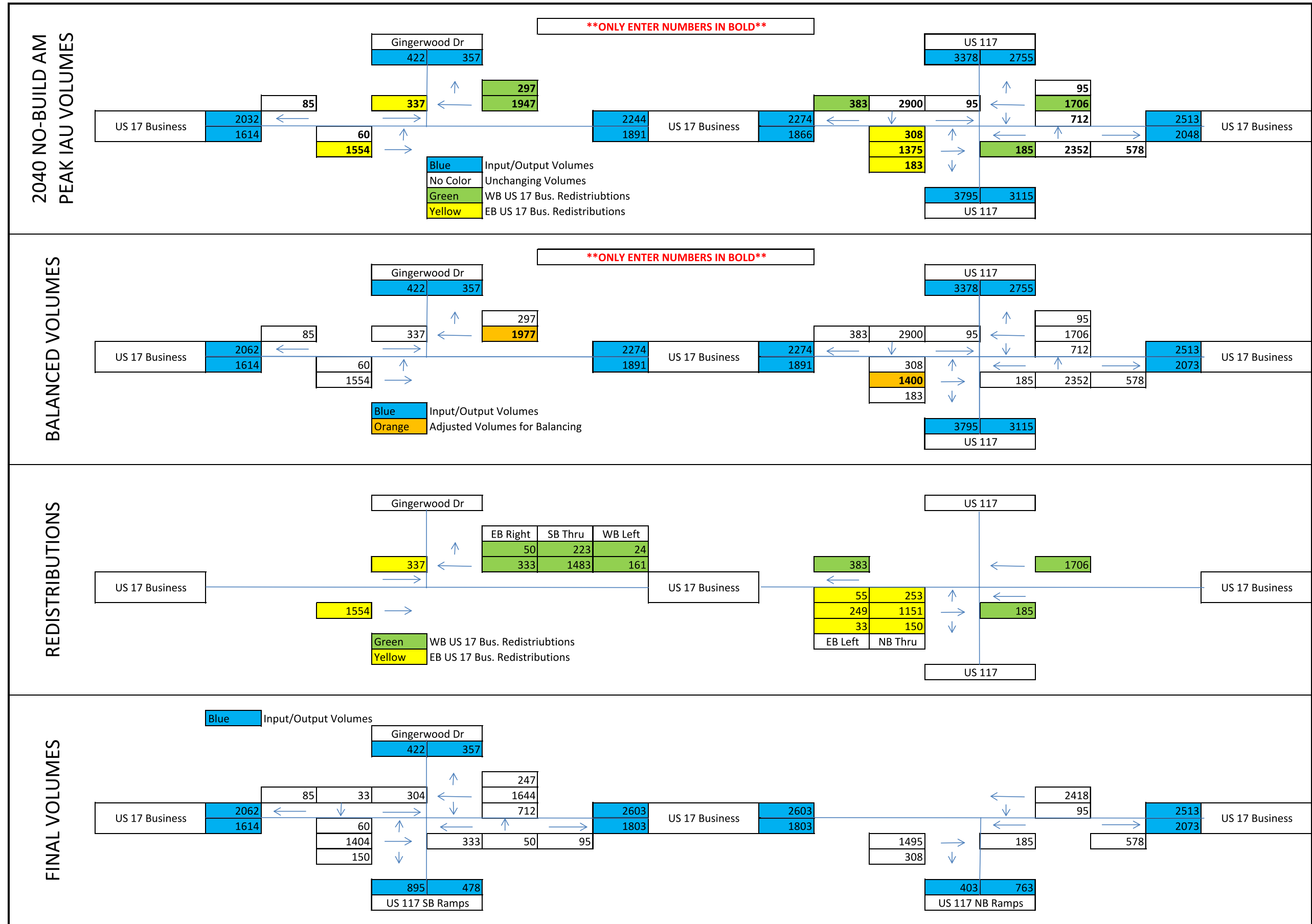


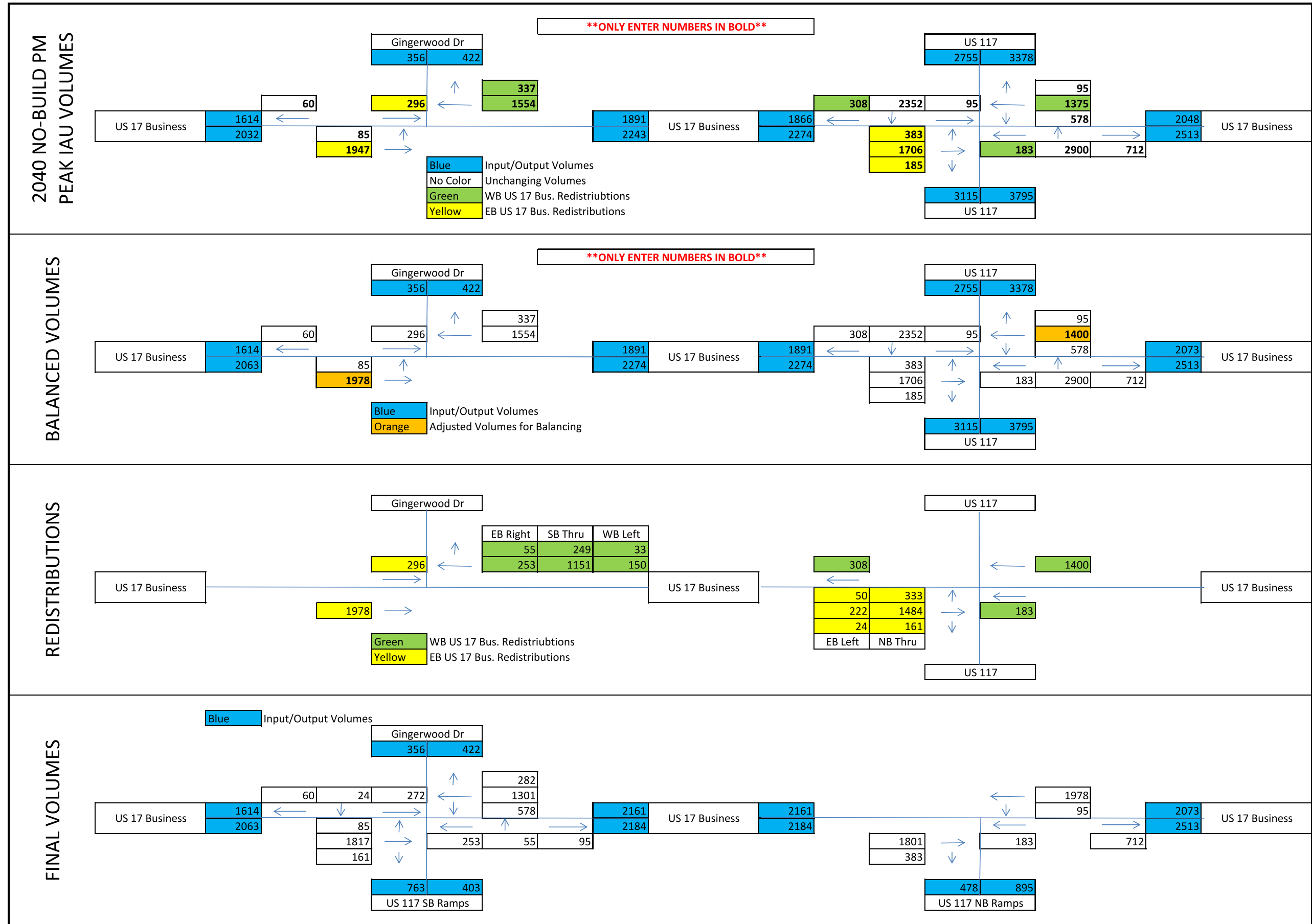






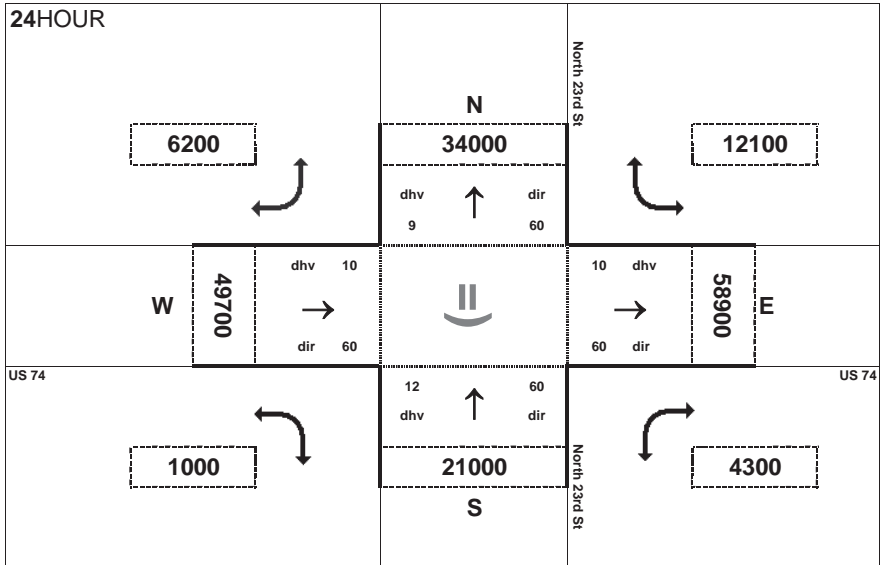






2040 Build

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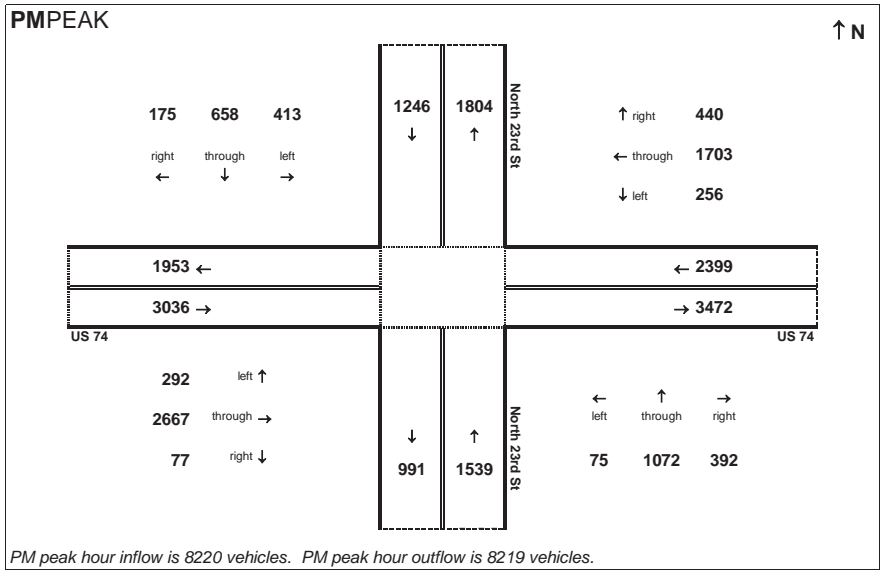
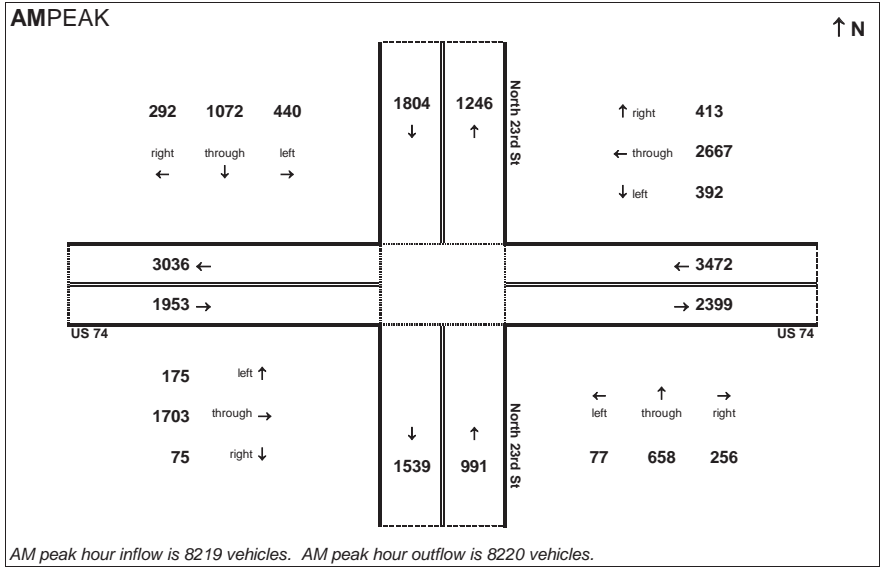


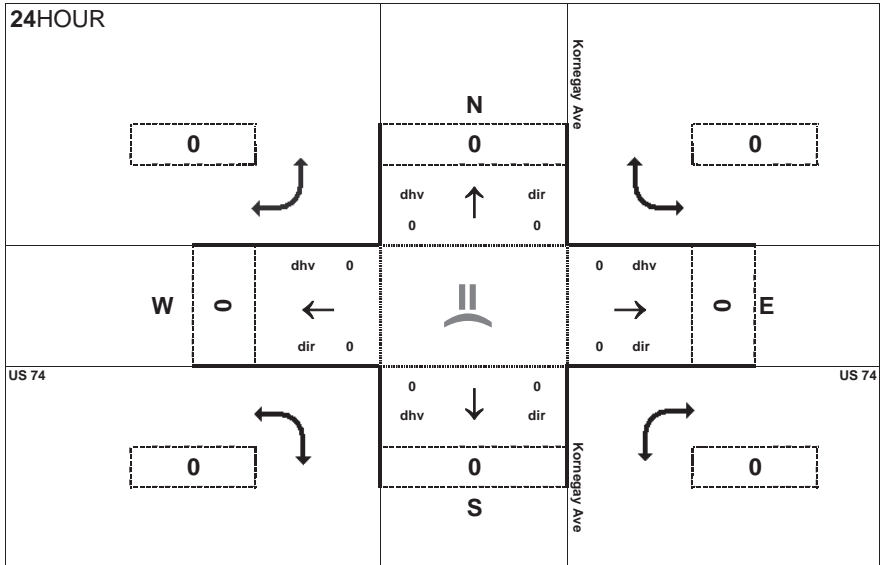
Peak Hour Volume Breakouts Report:
1 Intersection of US 74 and North 23rd St

Traffic Forecast Release Date:
July, 2017

Traffic Data Year:
2040 Build

Project:
U-4434



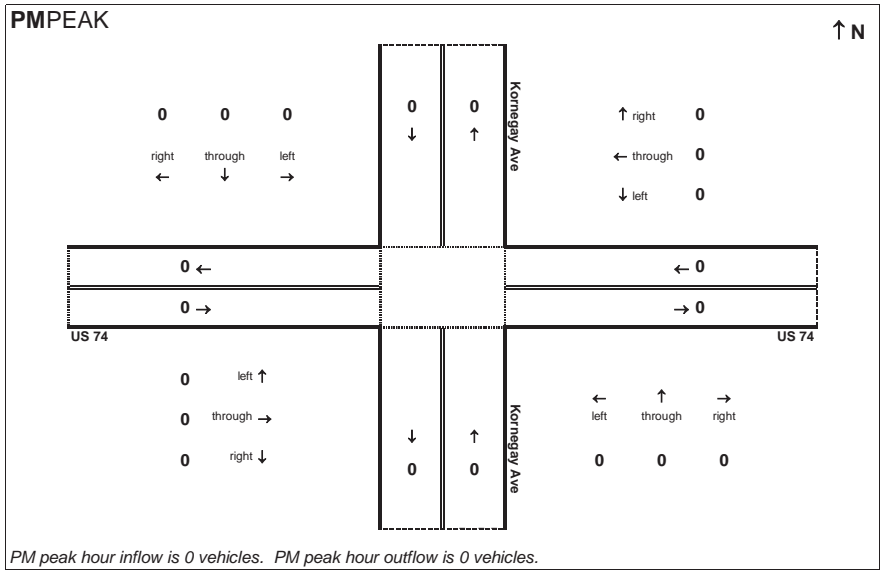
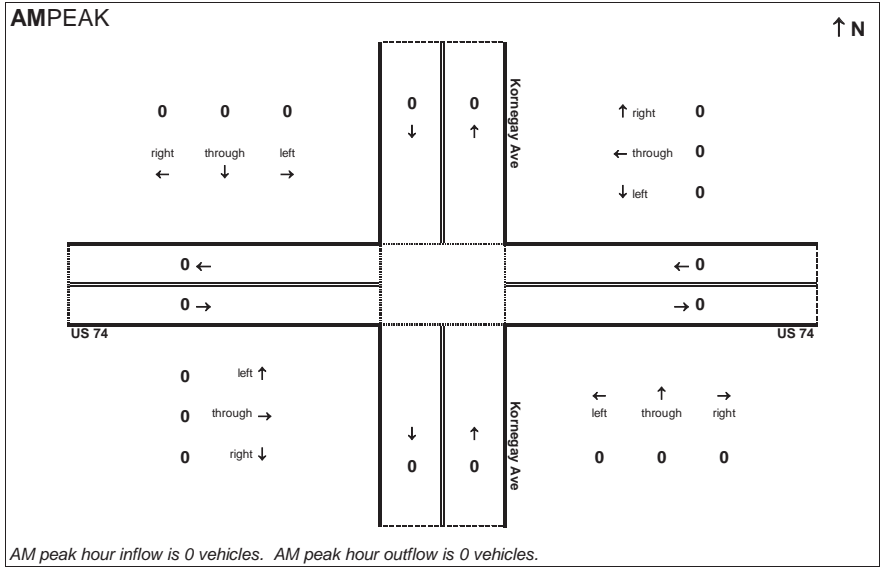


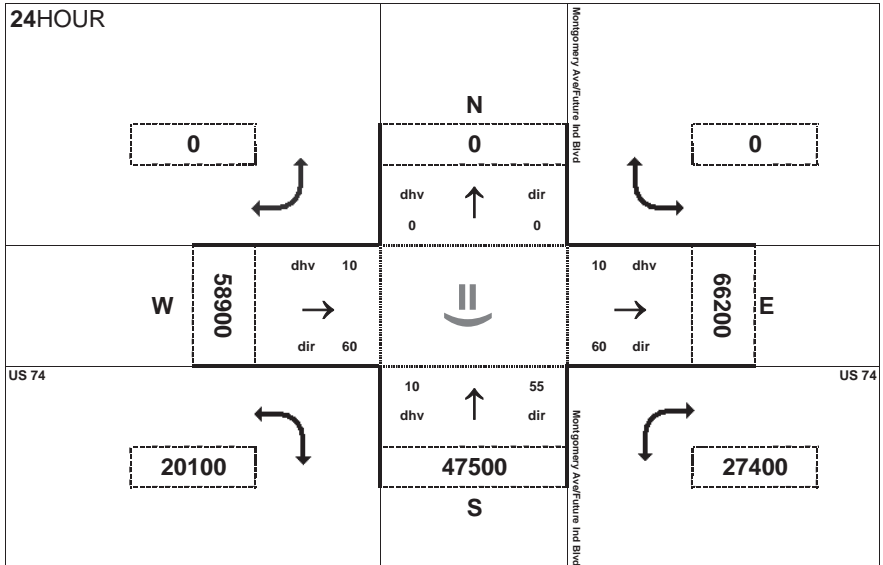
Peak Hour Volume Breakouts Report:
 2 Intersection of US 74 and Kornegay Ave

Traffic Forecast Release Date:
 July, 2017

Traffic Data Year:
 2040 Build

Project:
 U-4434



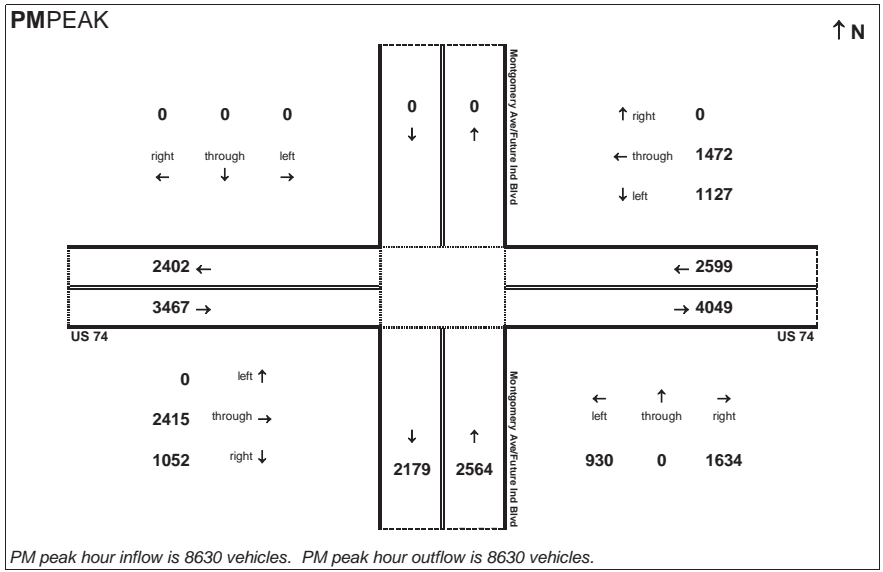
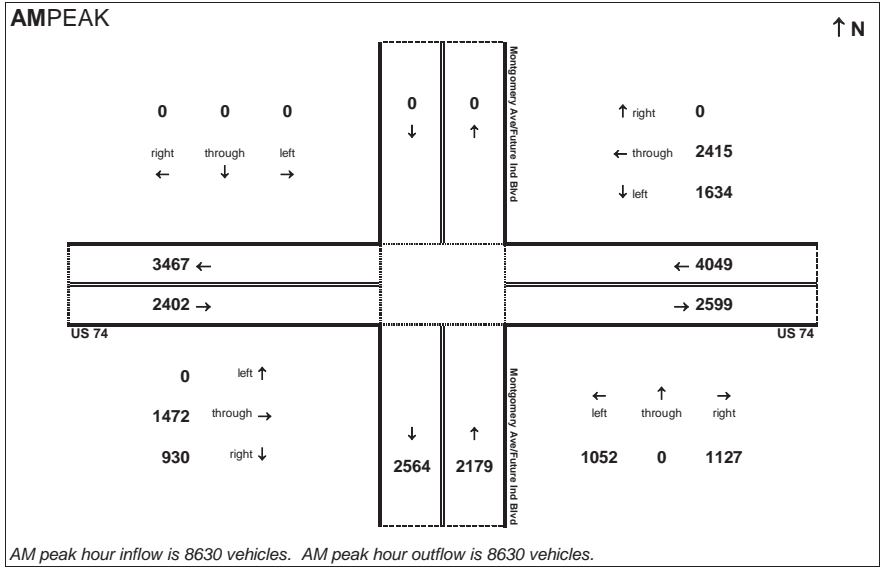


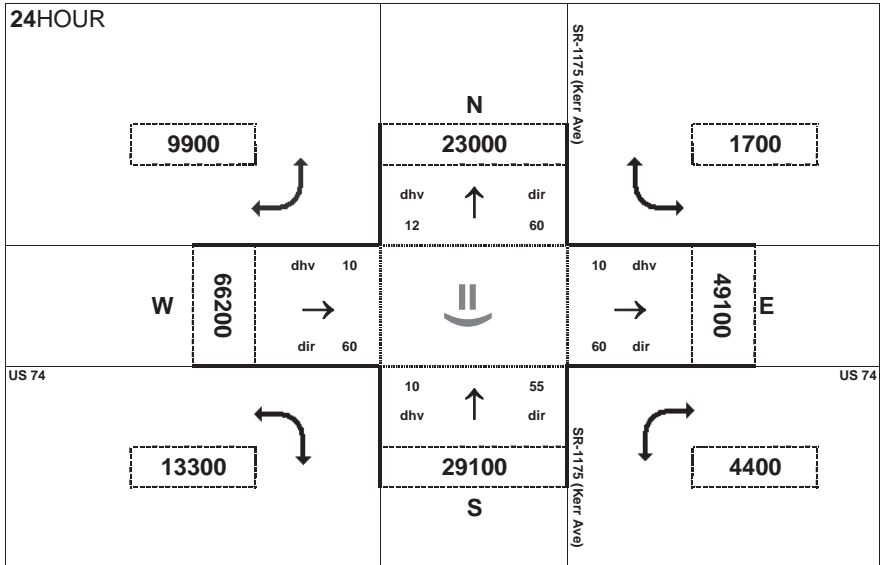
Peak Hour Volume Breakouts Report:
 3 Intersection of US 74 and Montgomery Ave/Future Ind Blvd

Traffic Forecast Release Date:
 July, 2017

Traffic Data Year:
 2040 Build

Project:
 U-4434



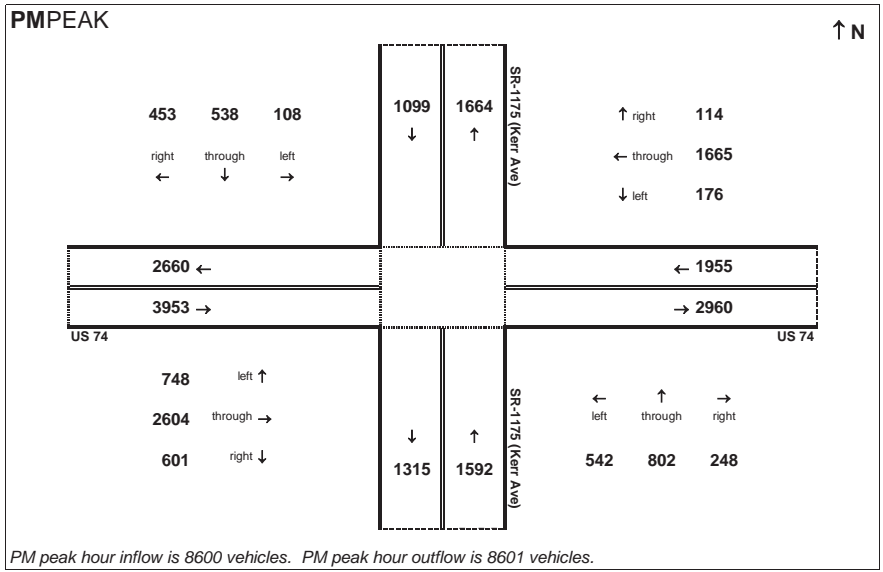
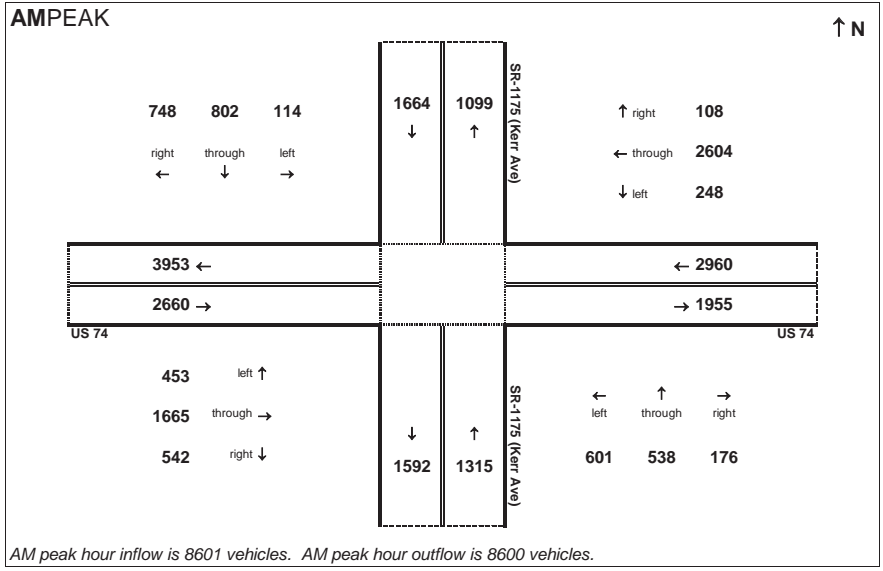


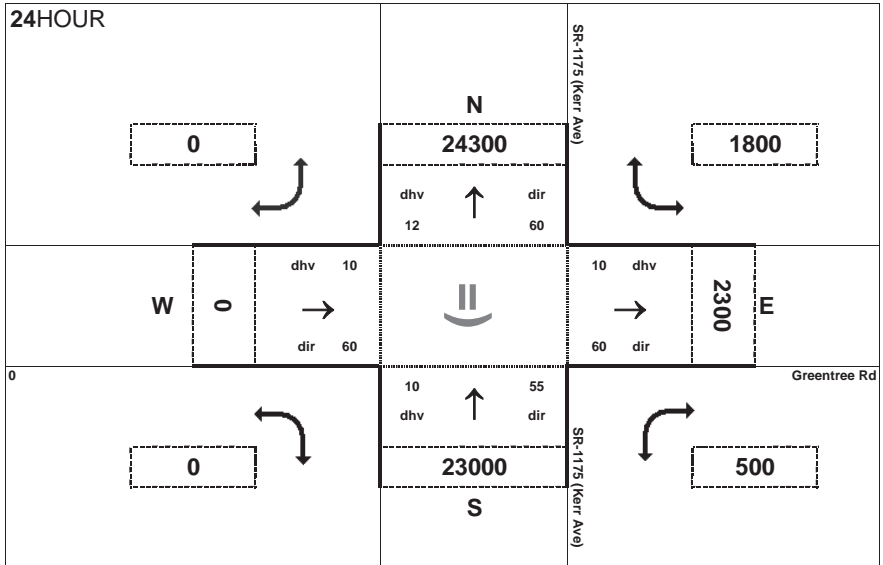
Peak Hour Volume Breakouts Report:
4 Intersection of US 74 and SR-1175 (Kerr Ave)

Traffic Forecast Release Date:
July, 2017

Traffic Data Year:
2040 Build

Project:
U-4434



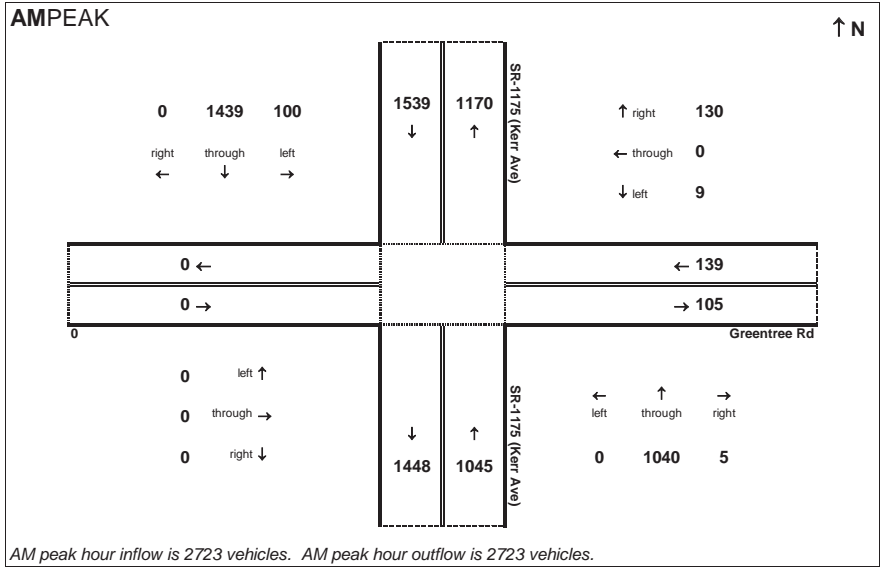


Peak Hour Volume Breakouts Report:
 4A Intersection SR-1175 (Kerr Ave) and Greentree Rd

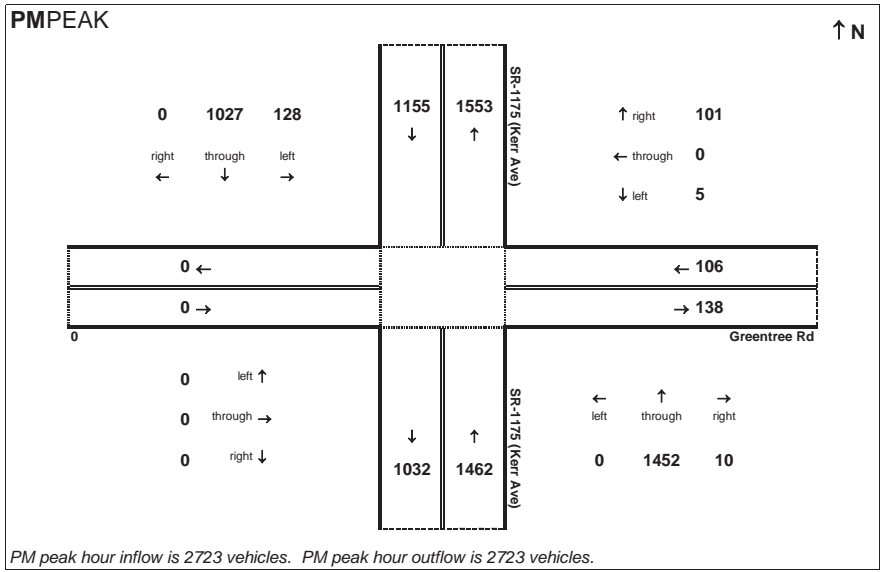
Traffic Forecast Release Date:
 July, 2017

Traffic Data Year:
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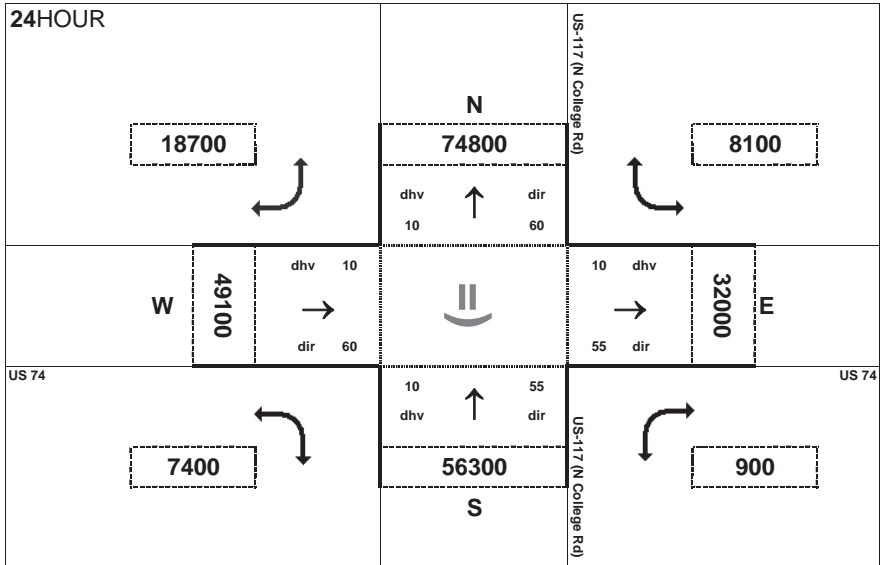
Project:
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AM peak hour inflow is 2723 vehicles. AM peak hour outflow is 2723 vehicles.



PM peak hour inflow is 2723 vehicles. PM peak hour outflow is 2723 vehicles.

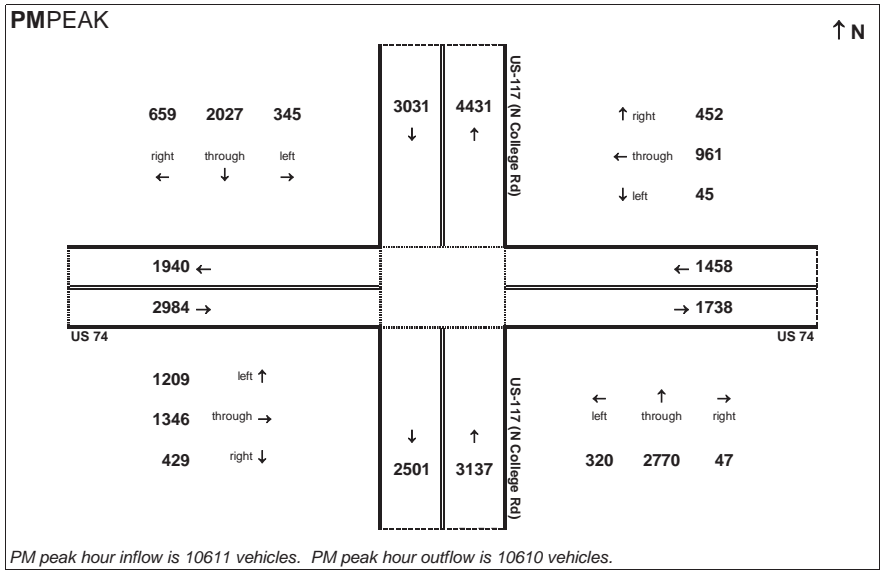
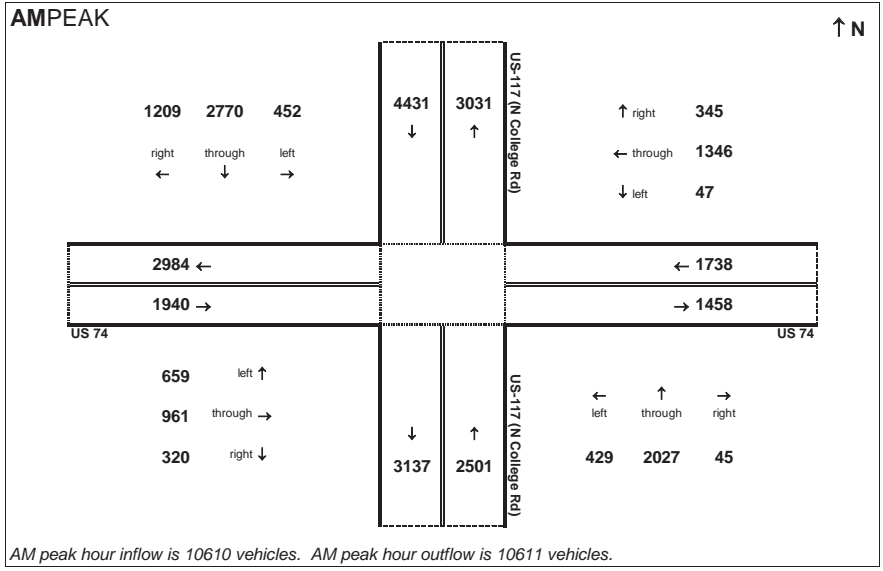


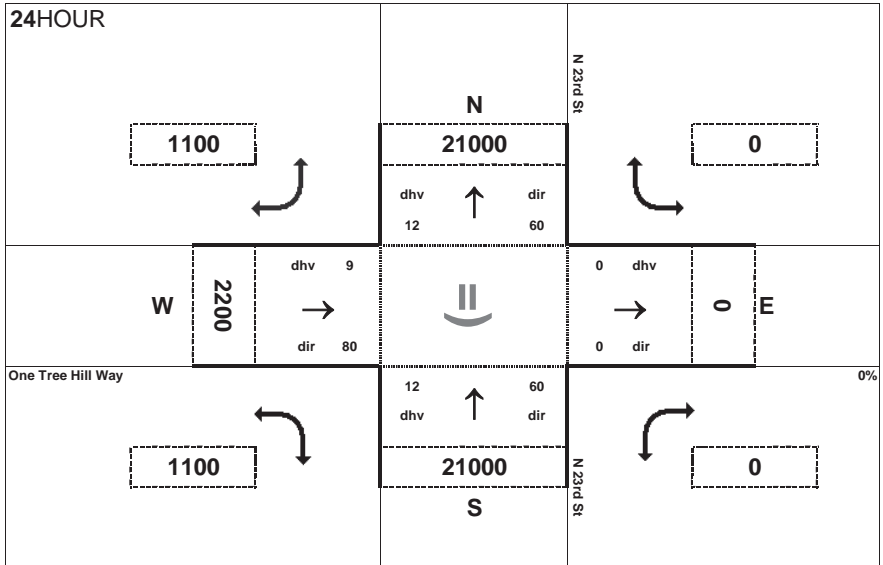
Peak Hour Volume Breakouts Report:
 5 Intersection of US 74 and US-117 (N College Rd)

Traffic Forecast Release Date:
 July, 2017

Traffic Data Year:
 2040 Build

Project:
 U-4434



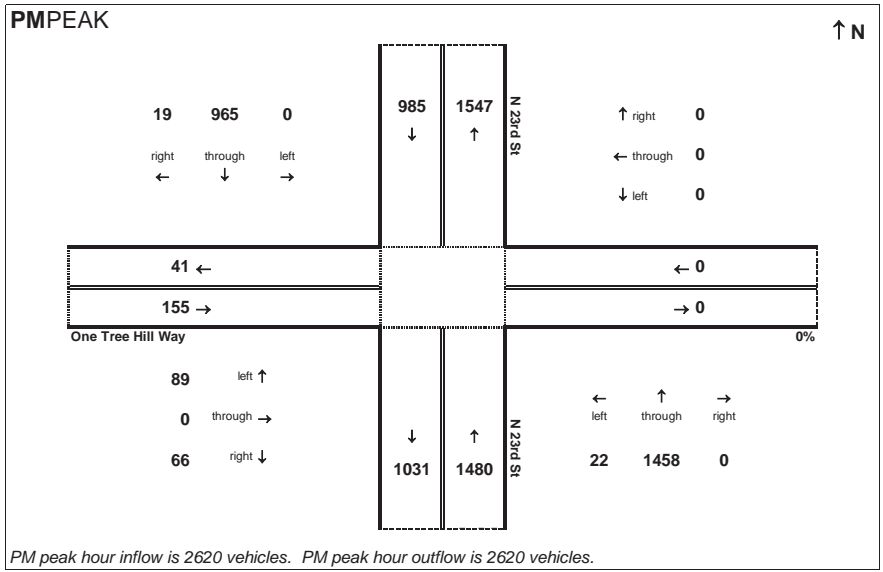
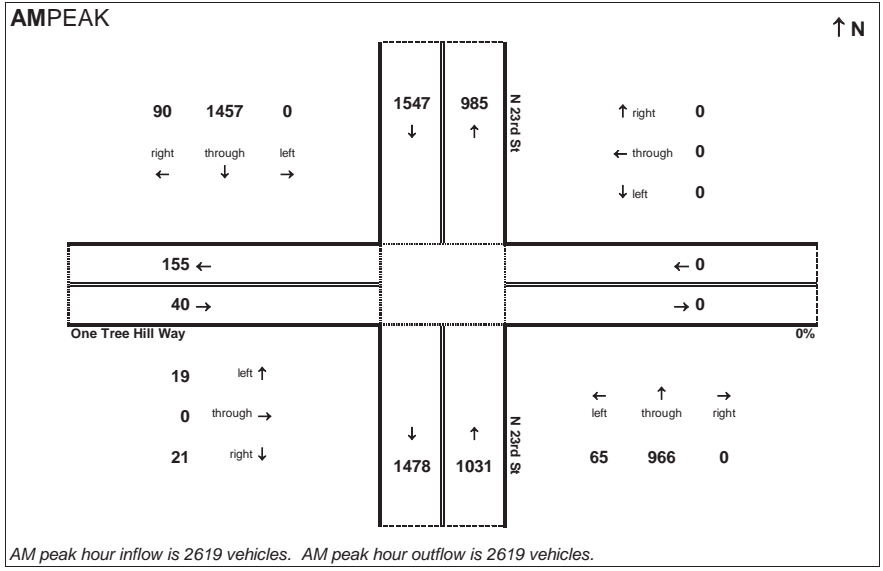


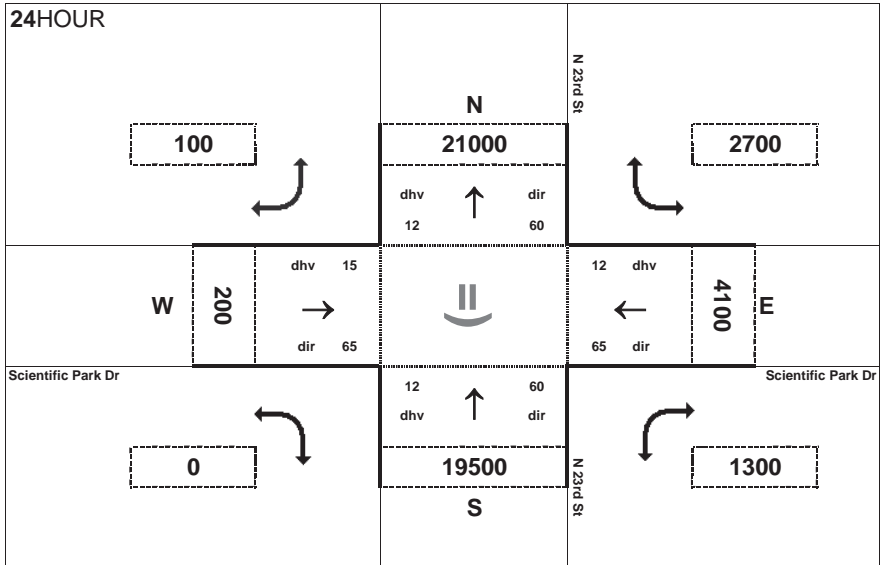
Peak Hour Volume Breakouts Report:
6 Intersection of N 23rd St and One Tree Hill Way

Traffic Forecast Release Date:
July, 2017

Traffic Data Year:
2040 Build

Project:
U-4434



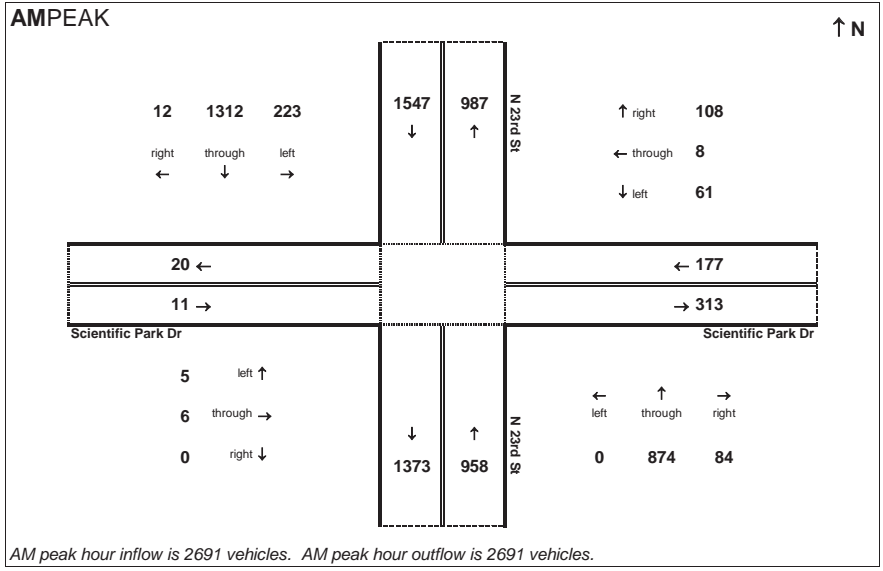


Peak Hour Volume Breakouts Report:
7 Intersection of N 23rd St and Scientific Park Dr

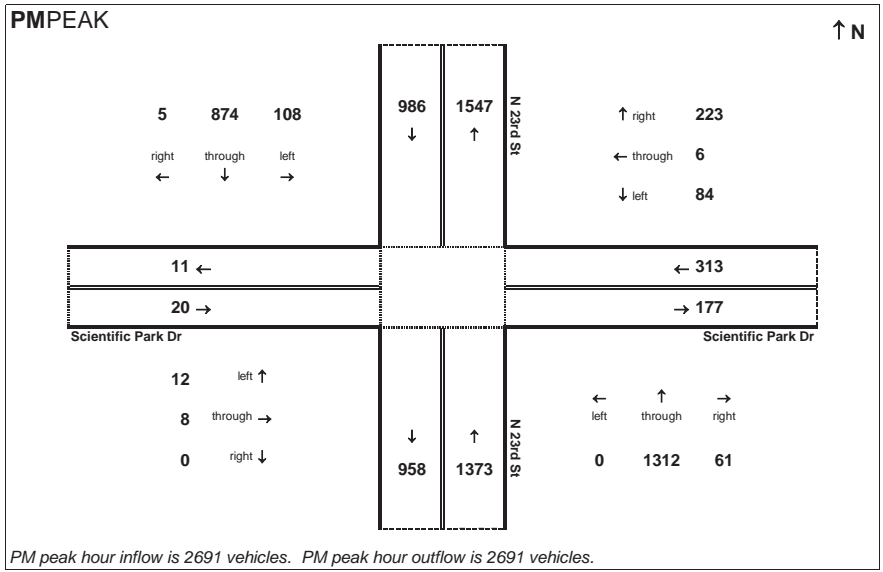
Traffic Forecast Release Date:
July, 2017

Traffic Data Year:
2040 Build

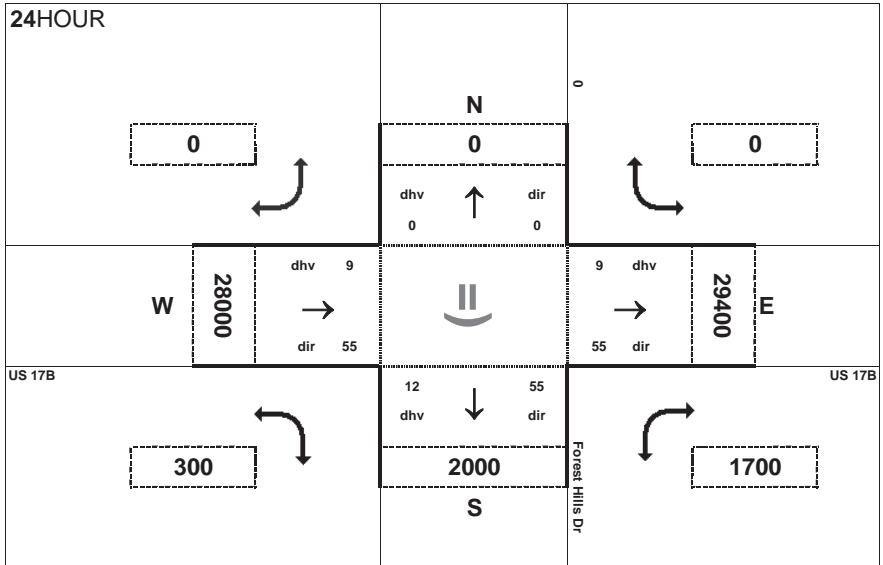
Project:
U-4434



AM peak hour inflow is 2691 vehicles. AM peak hour outflow is 2691 vehicles.



PM peak hour inflow is 2691 vehicles. PM peak hour outflow is 2691 vehicles.

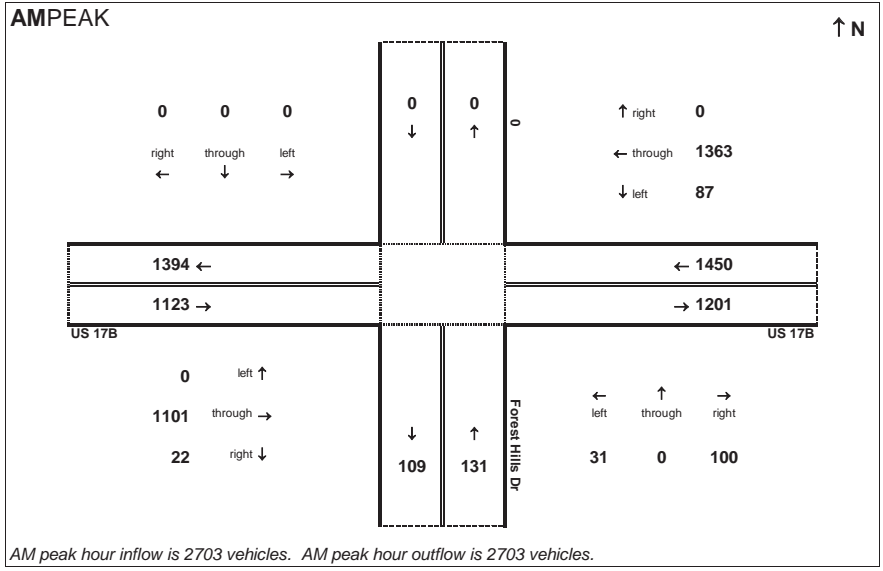


Peak Hour Volume Breakouts Report:
8 Intersection of US 17B and Forest Hills Dr

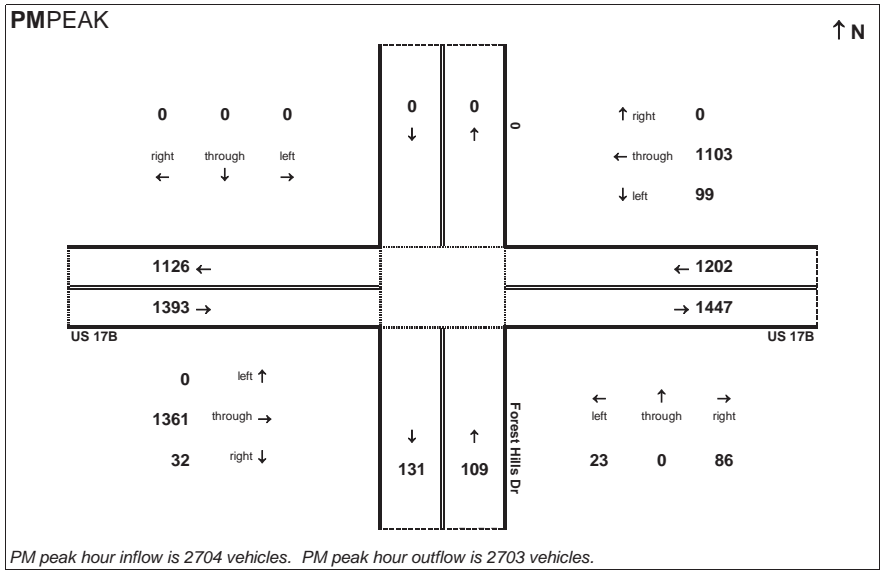
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July, 2017

Traffic Data Year:
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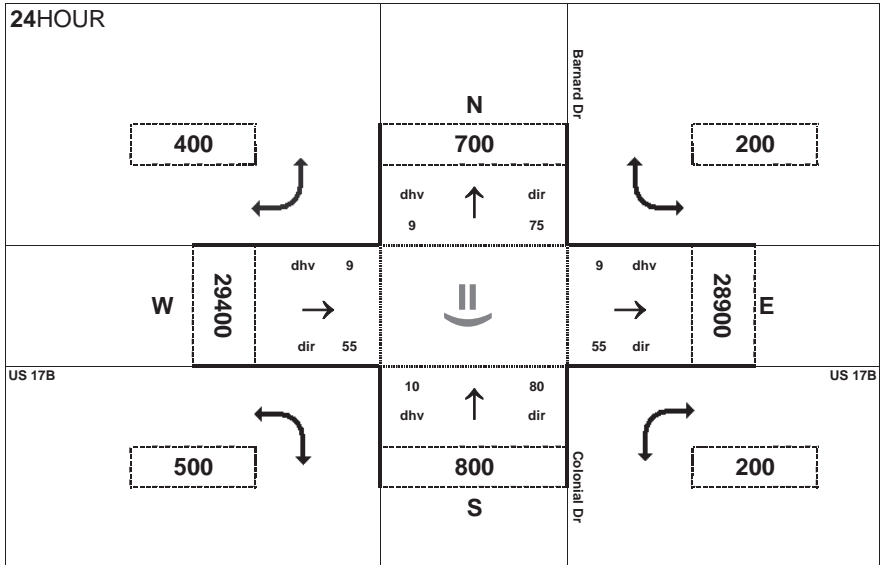
Project:
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AM peak hour inflow is 2703 vehicles. AM peak hour outflow is 2703 vehicles.



PM peak hour inflow is 2704 vehicles. PM peak hour outflow is 2703 vehicles.

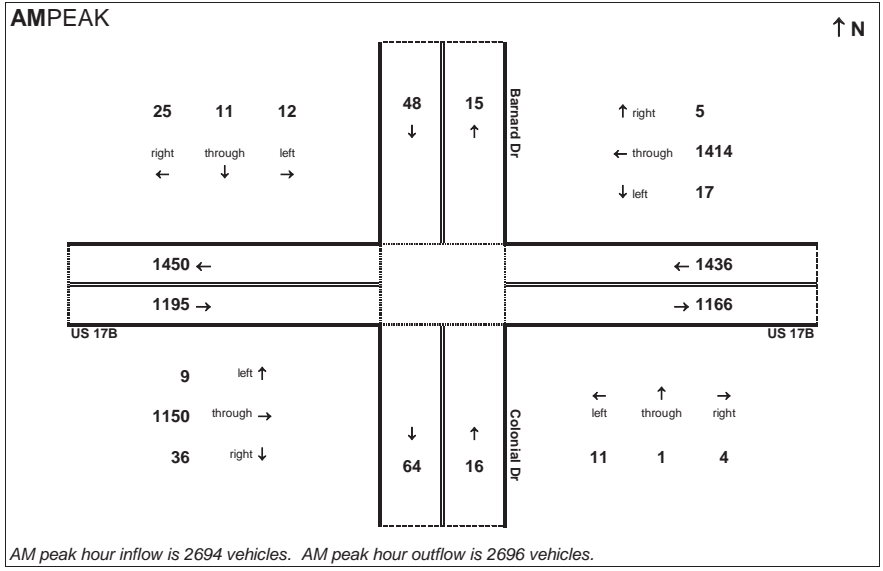


Peak Hour Volume Breakouts Report:
 9 Intersection of US 17B and Colonial Dr-Barnard Dr

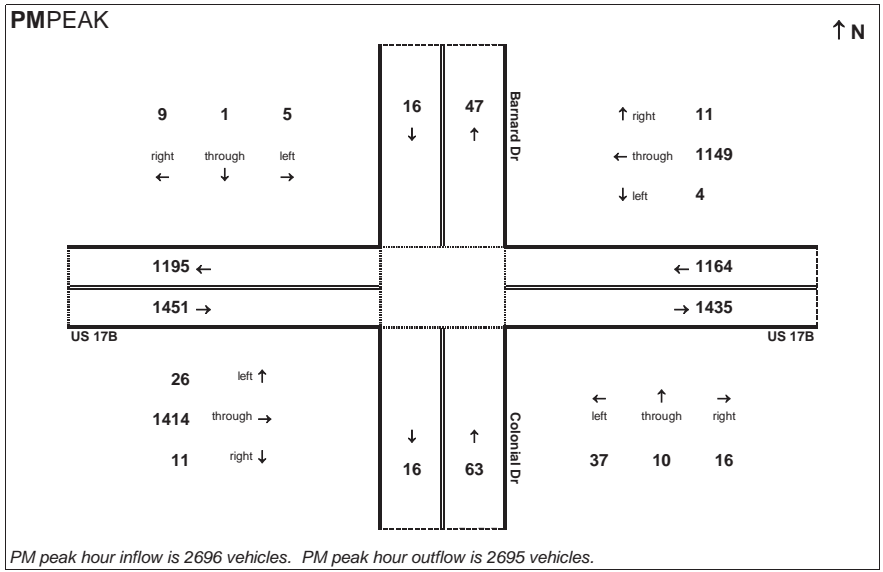
Traffic Forecast Release Date:
 July, 2017

Traffic Data Year:
 2040 Build

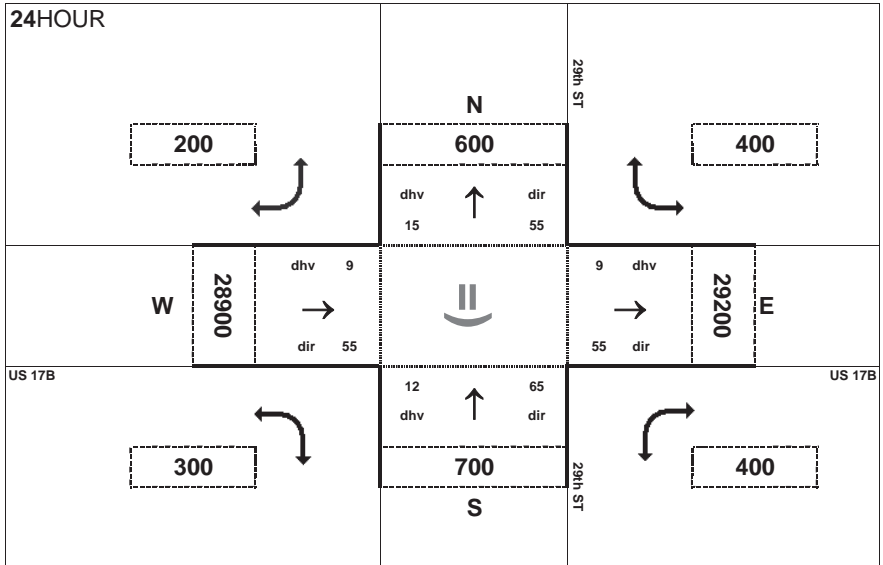
Project:
 U-4434



AM peak hour inflow is 2694 vehicles. AM peak hour outflow is 2696 vehicles.



PM peak hour inflow is 2696 vehicles. PM peak hour outflow is 2695 vehicles.

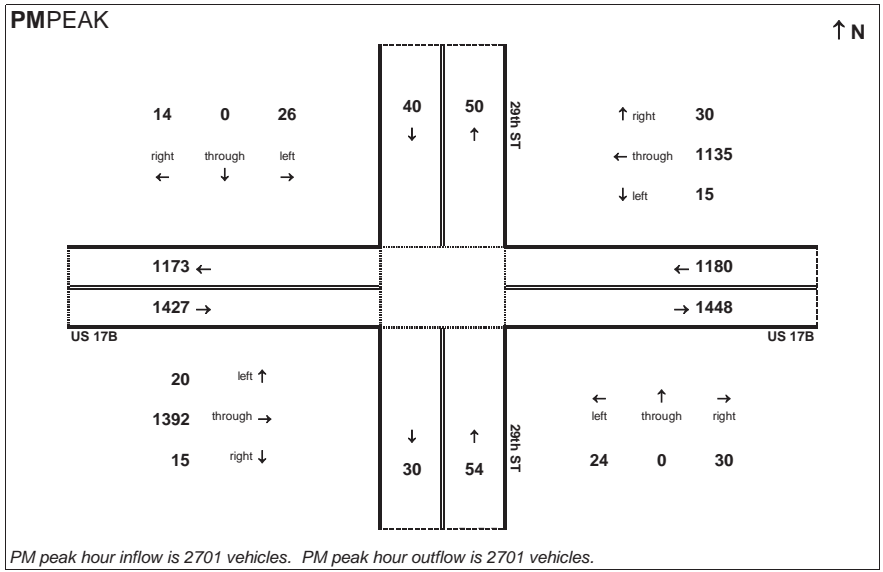
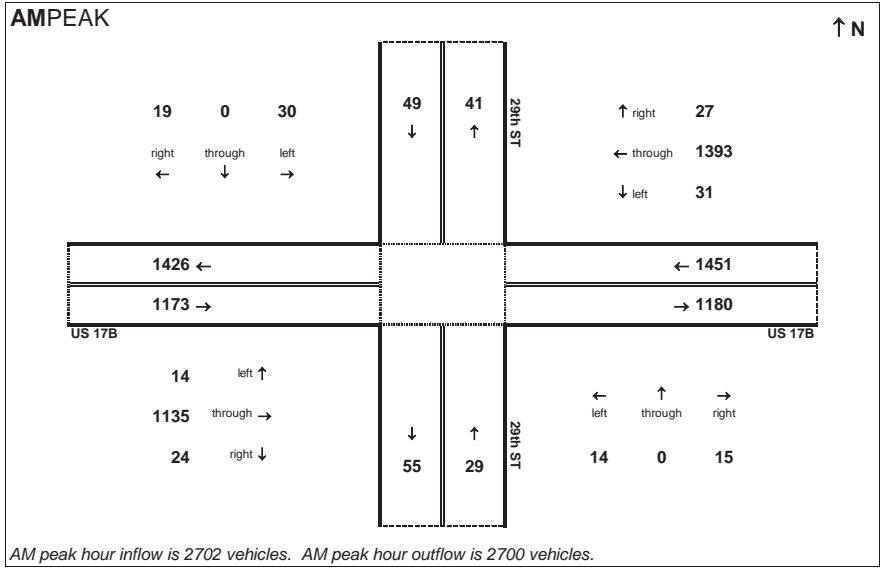


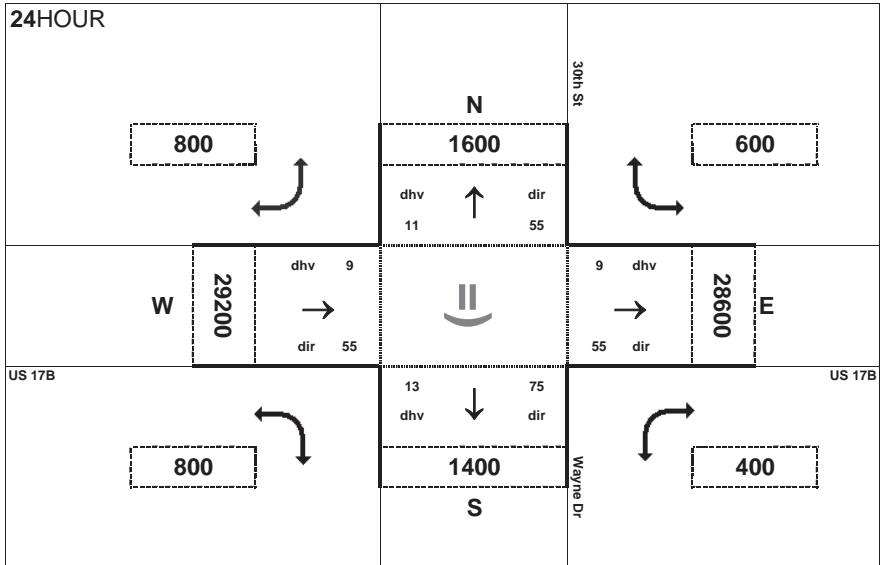
Peak Hour Volume Breakouts Report:
10 Intersection of US 17B and 29th St

Traffic Forecast Release Date:
July, 2017

Traffic Data Year:
2040 Build

Project:
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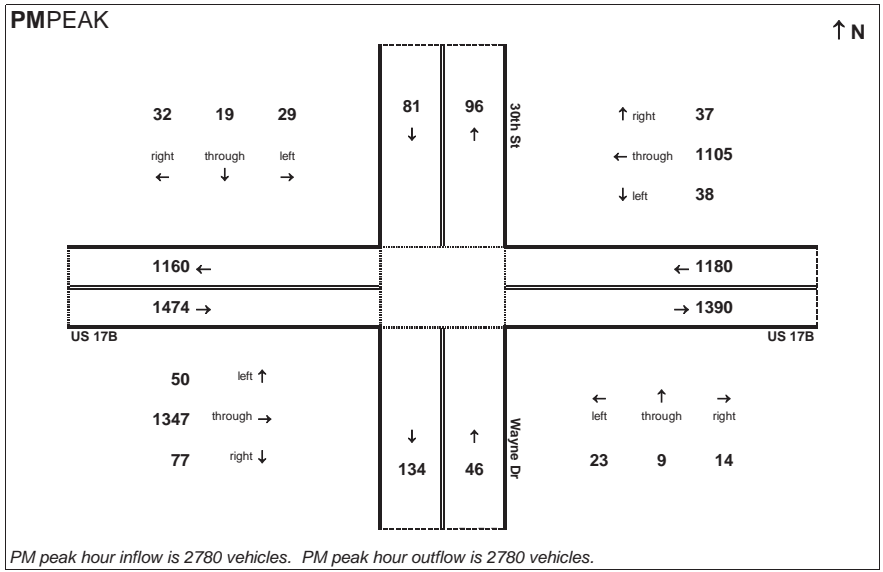
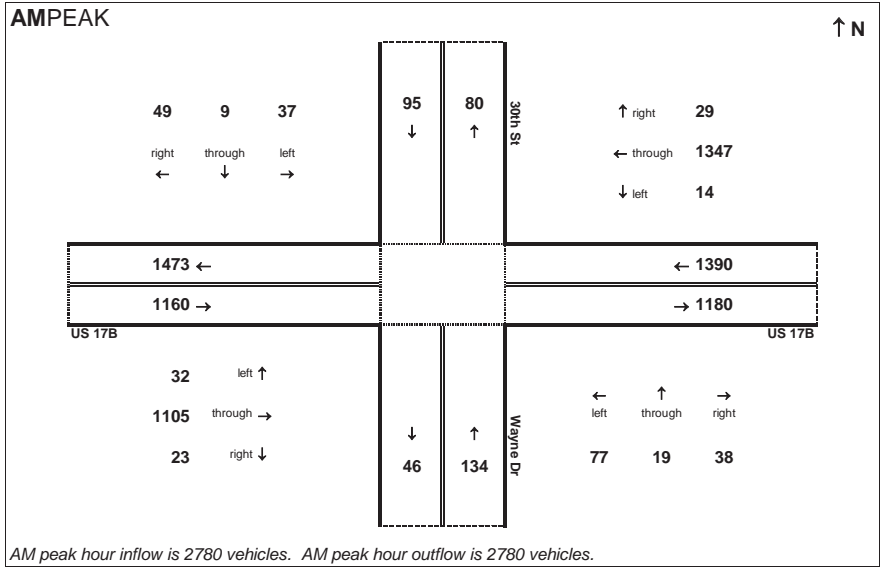


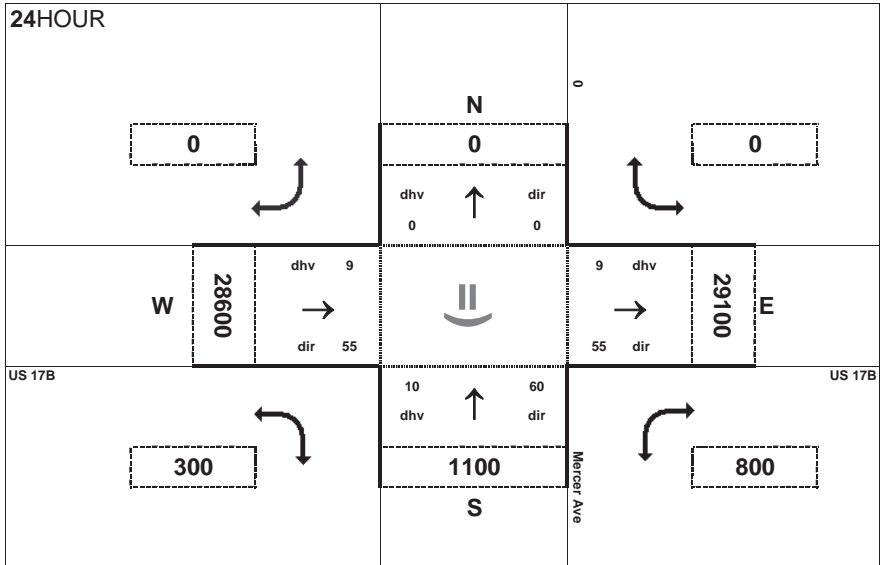
Peak Hour Volume Breakouts Report:
 11 Intersection of US 17B and 30th St-Wayne Dr

Traffic Forecast Release Date:
 July, 2017

Traffic Data Year:
 2040 Build

Project:
 U-4434



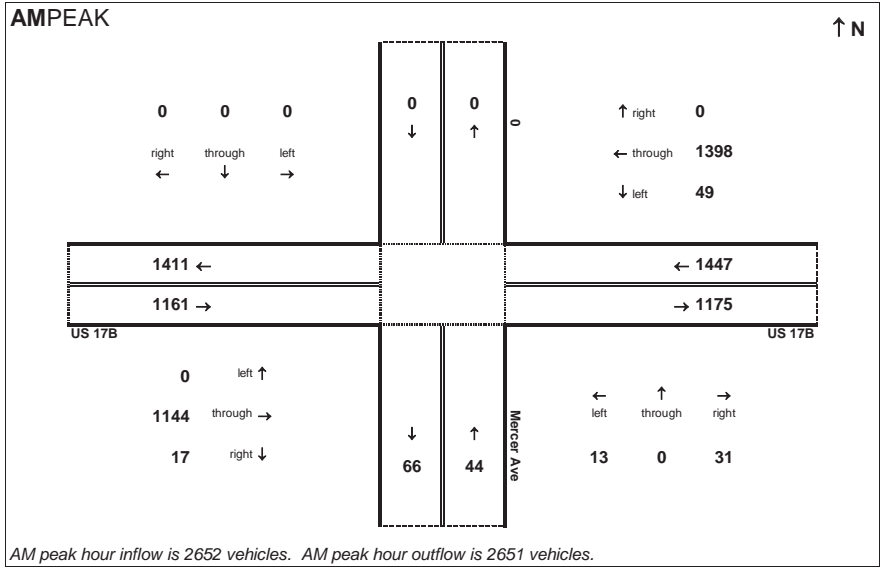


Peak Hour Volume Breakouts Report:
12 Intersection of US 17B and Mercer Ave

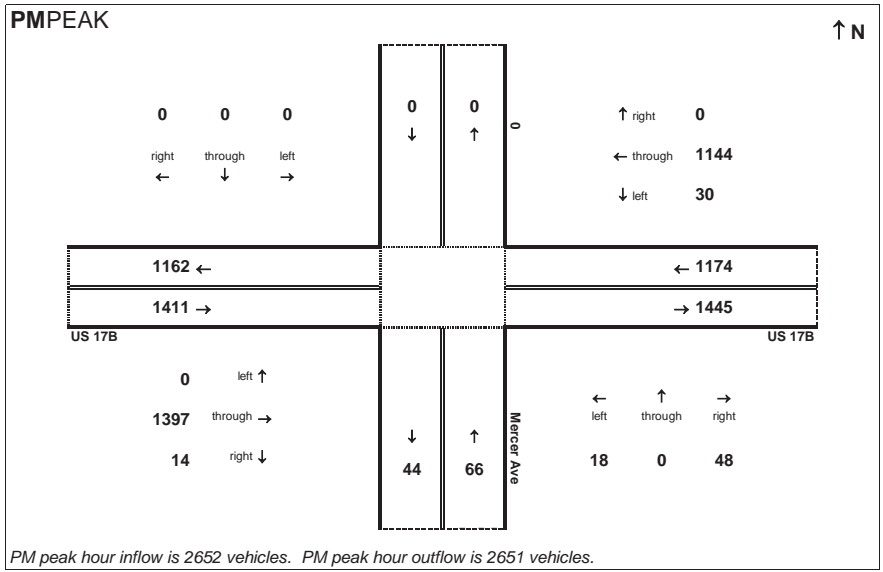
Traffic Forecast Release Date:
July, 2017

Traffic Data Year:
2040 Build

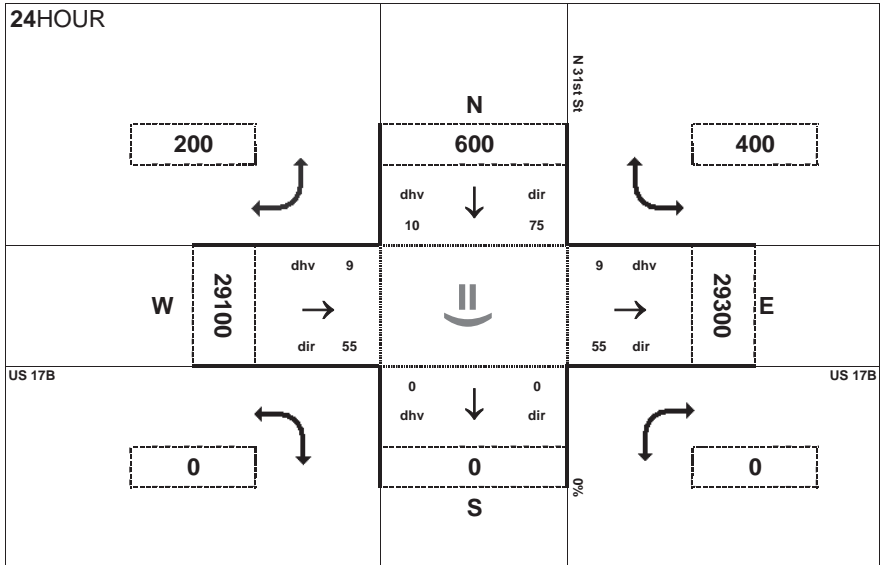
Project:
U-4434



AM peak hour inflow is 2652 vehicles. AM peak hour outflow is 2651 vehicles.



PM peak hour inflow is 2652 vehicles. PM peak hour outflow is 2651 vehicles.

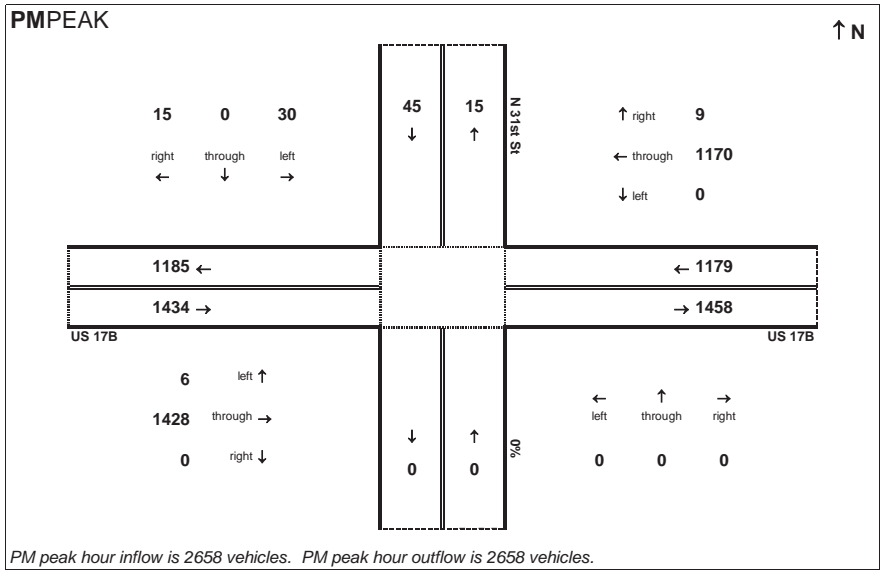
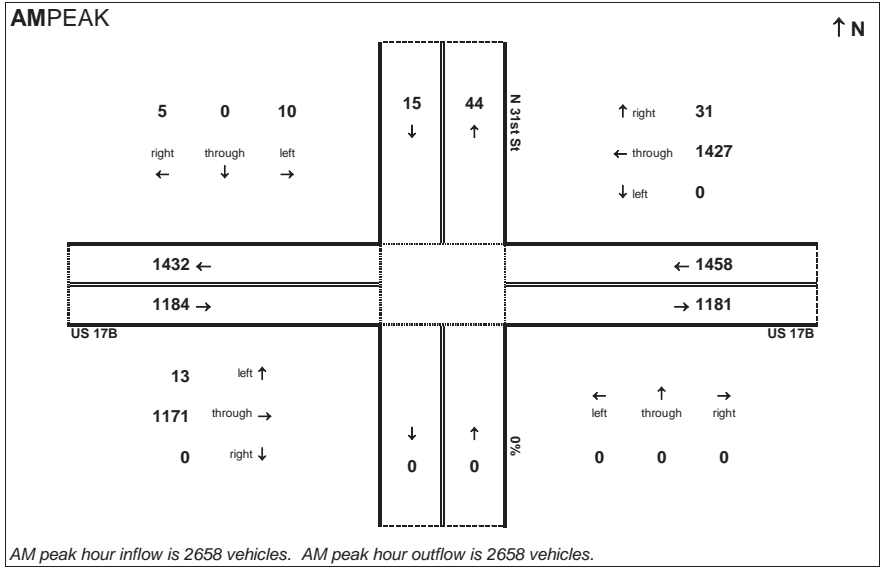


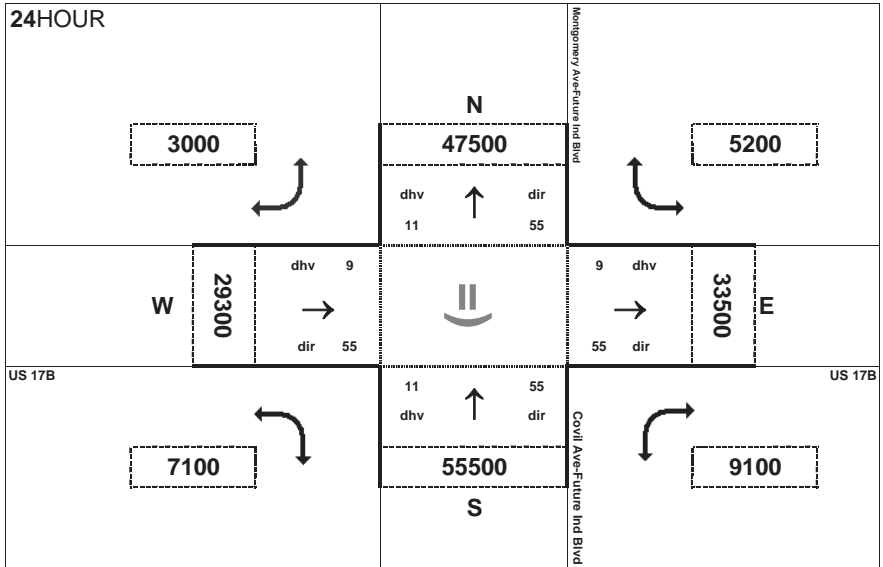
Peak Hour Volume Breakouts Report:
13 Intersection of US 17B and N 31st St

Traffic Forecast Release Date:
July, 2017

Traffic Data Year:
2040 Build

Project:
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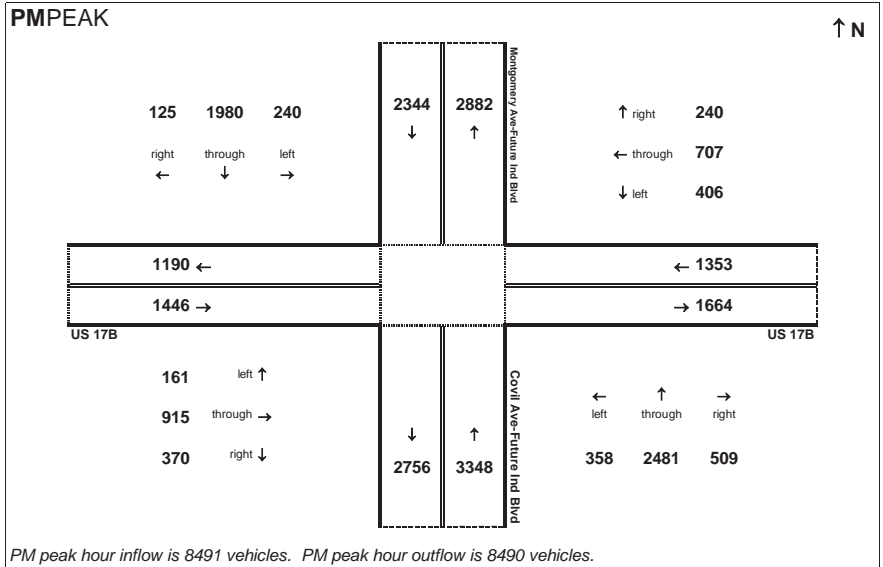
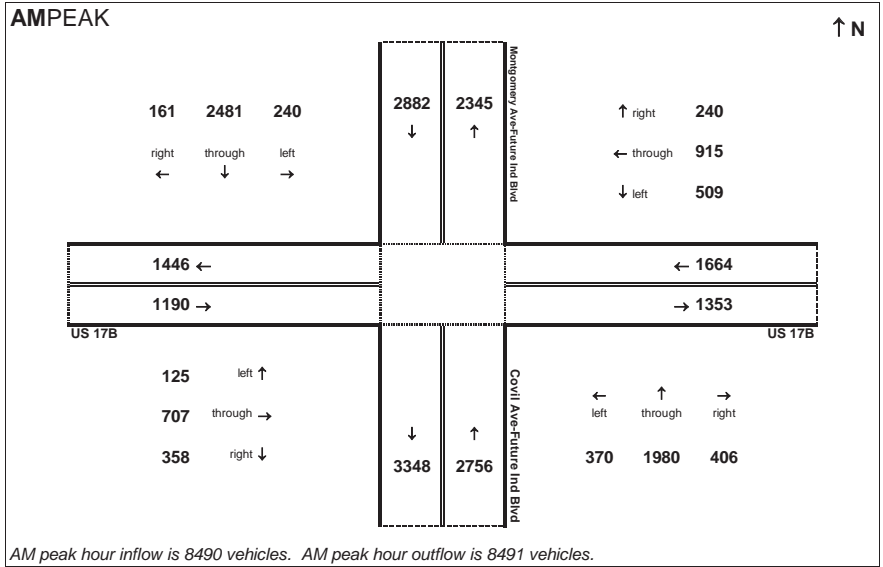


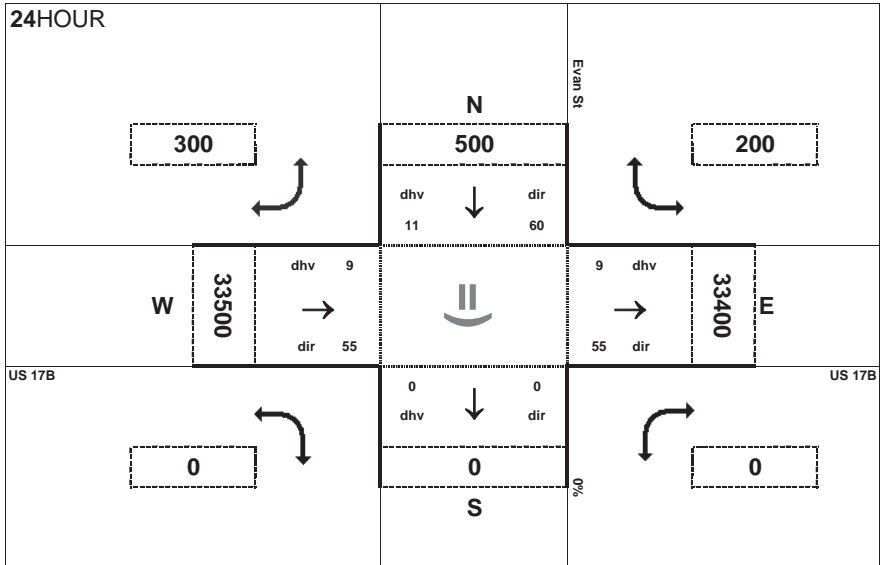
Peak Hour Volume Breakouts Report:
 14 Intersection of US 17B and Montgomery Ave-Covil Ave-Future Ind Blvd

Traffic Forecast Release Date:
 July, 2017

Traffic Data Year:
 2040 Build

Project:
 U-4434



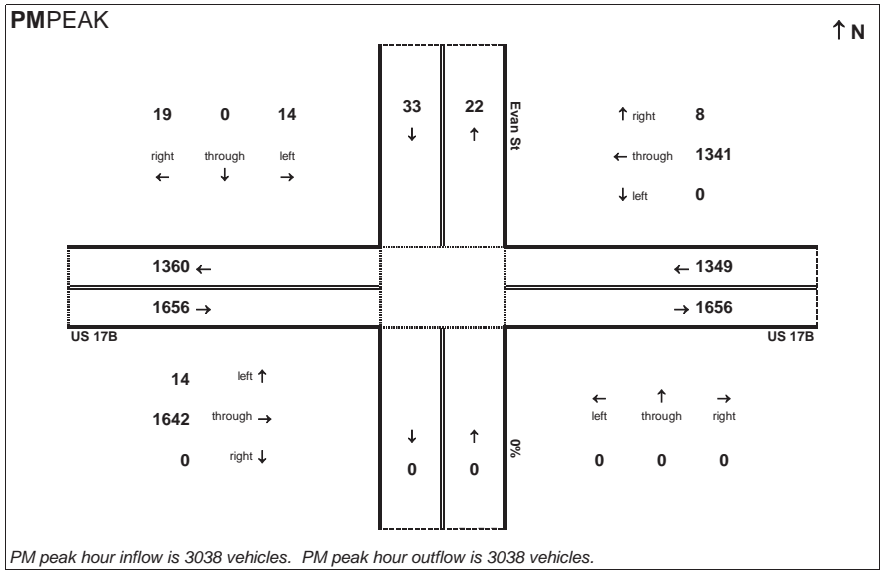
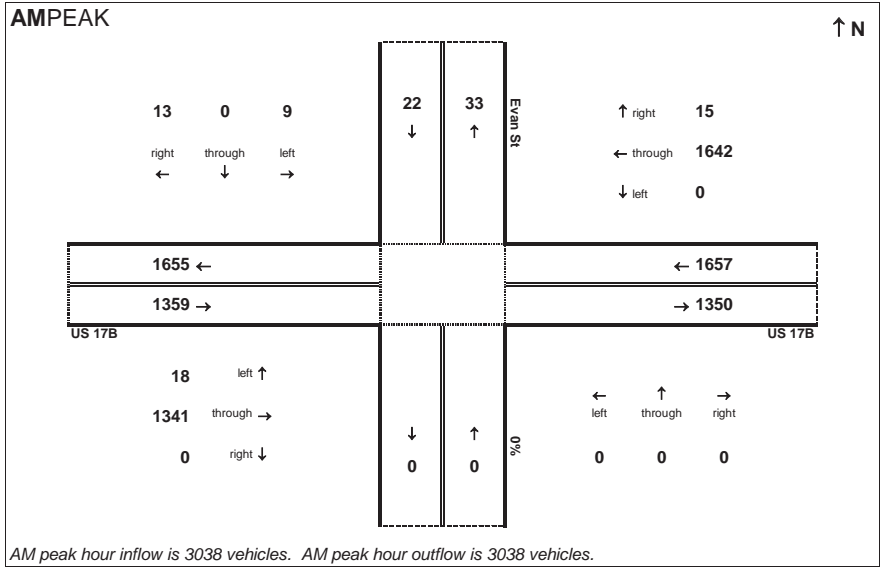


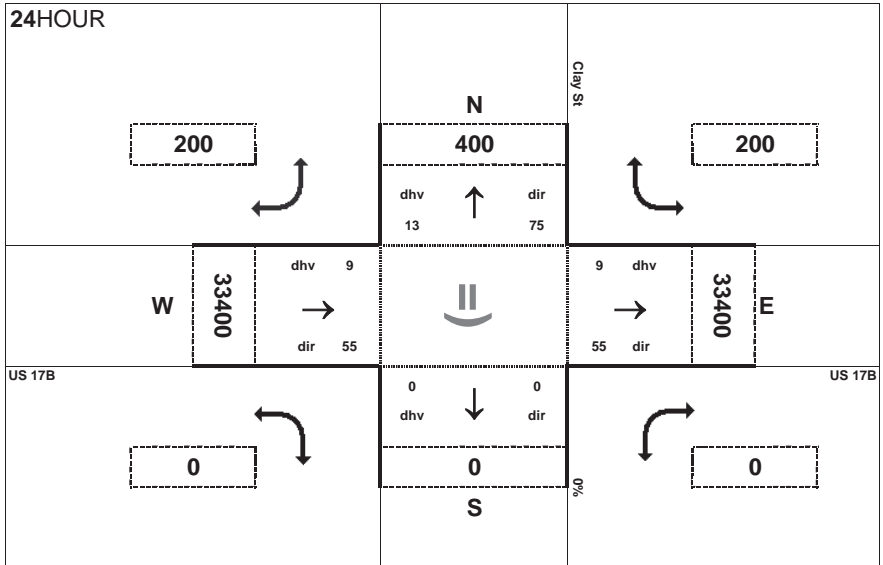
Peak Hour Volume Breakouts Report:
15 Intersection of US 17B and Evans St

Traffic Forecast Release Date:
July, 2017

Traffic Data Year:
2040 Build

Project:
U-4434



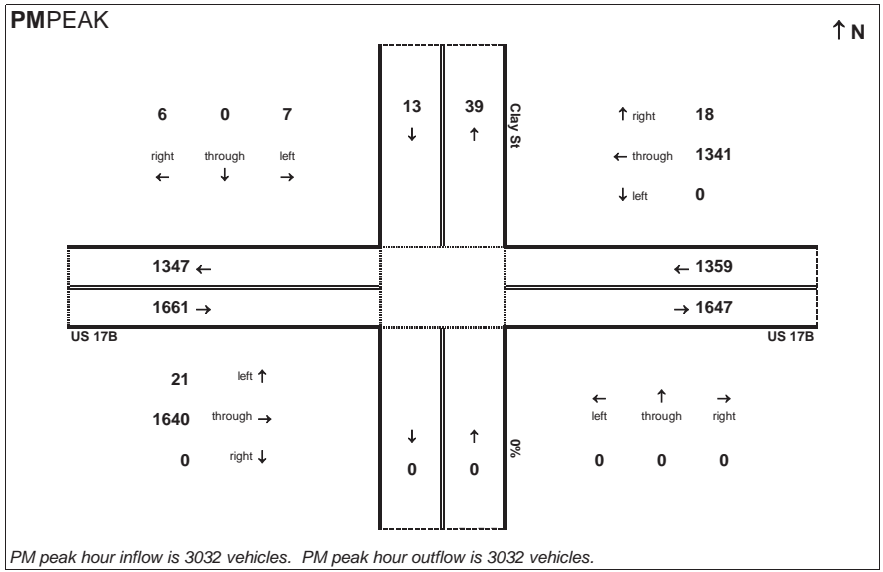
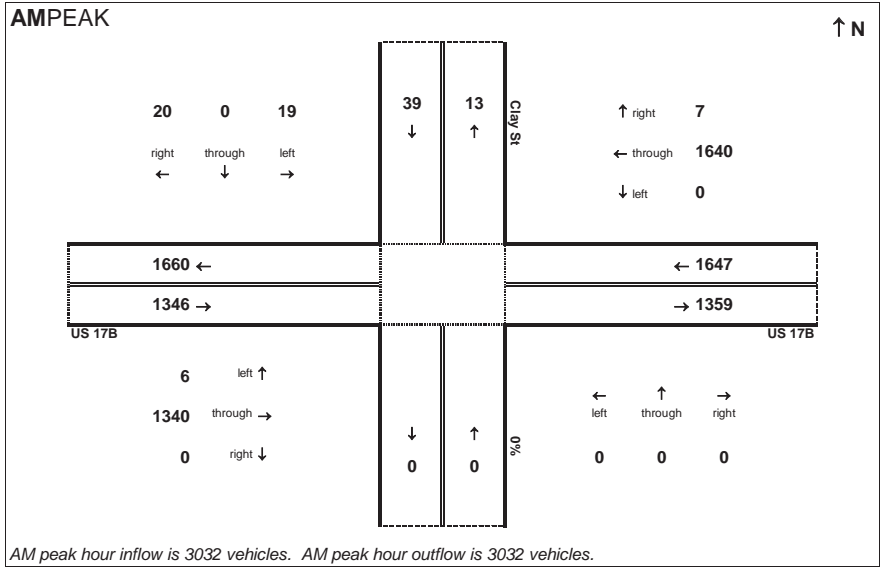


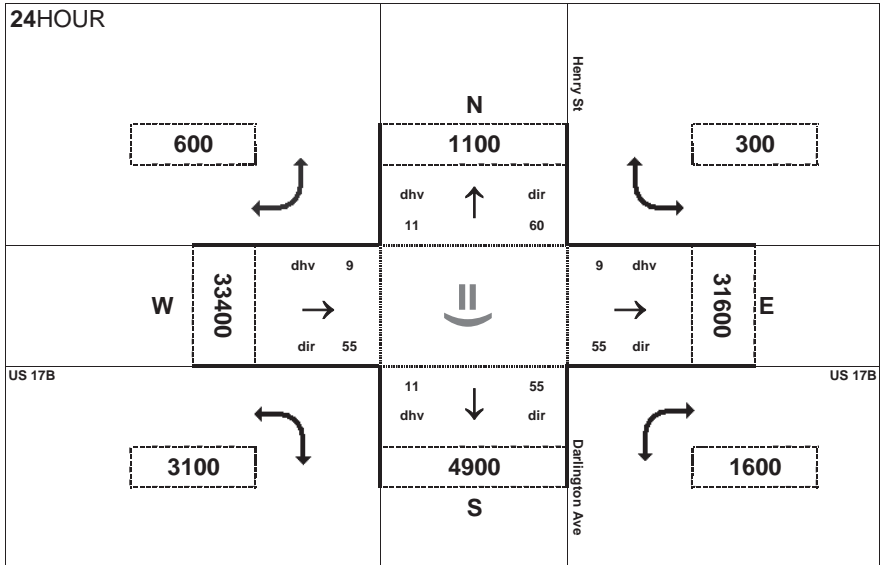
Peak Hour Volume Breakouts Report:
16 Intersection of US 17B and Clay St

Traffic Forecast Release Date:
July, 2017

Traffic Data Year:
2040 Build

Project:
U-4434



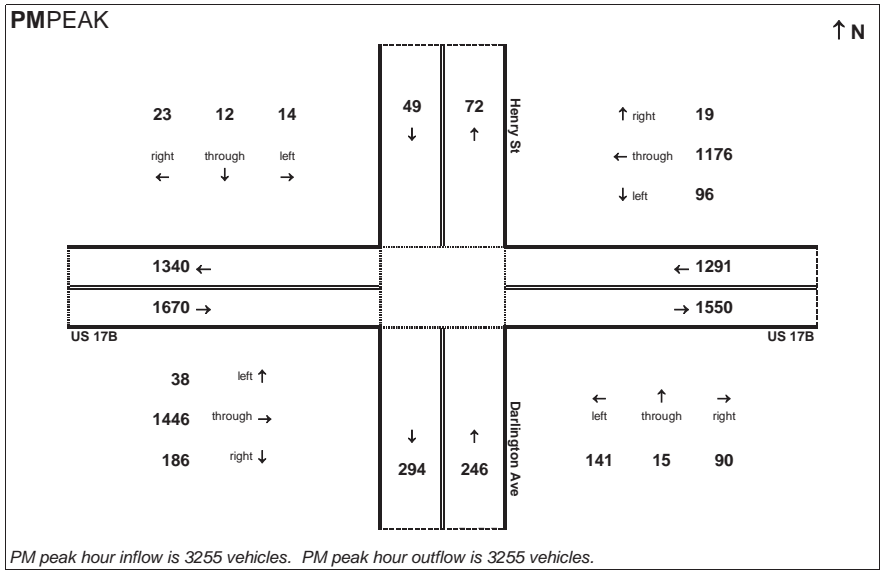
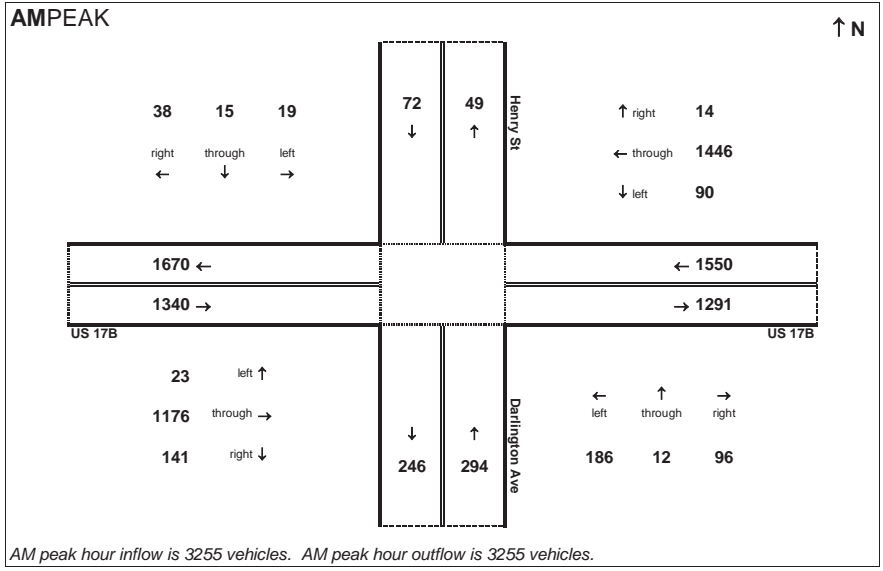


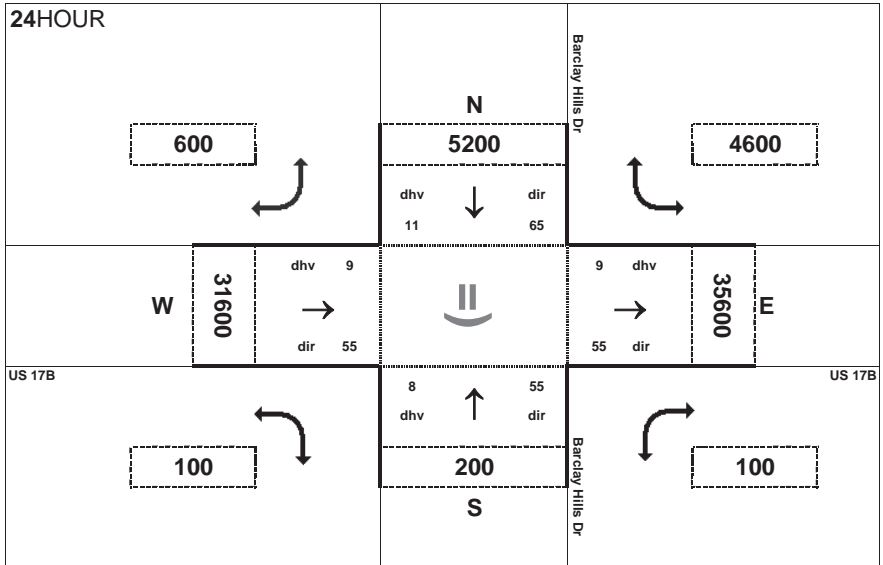
Peak Hour Volume Breakouts Report:
 17 Intersection of US 17B and Henry St-Darlington Ave

Traffic Forecast Release Date:
 July, 2017

Traffic Data Year:
 2040 Build

Project:
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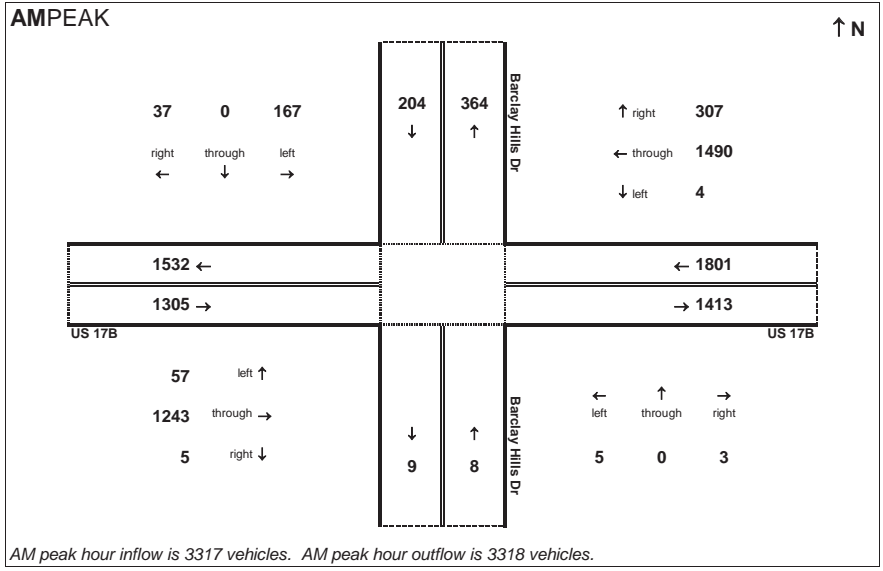


Peak Hour Volume Breakouts Report:
 18 Intersection of US 17B and Barclay Hills Dr

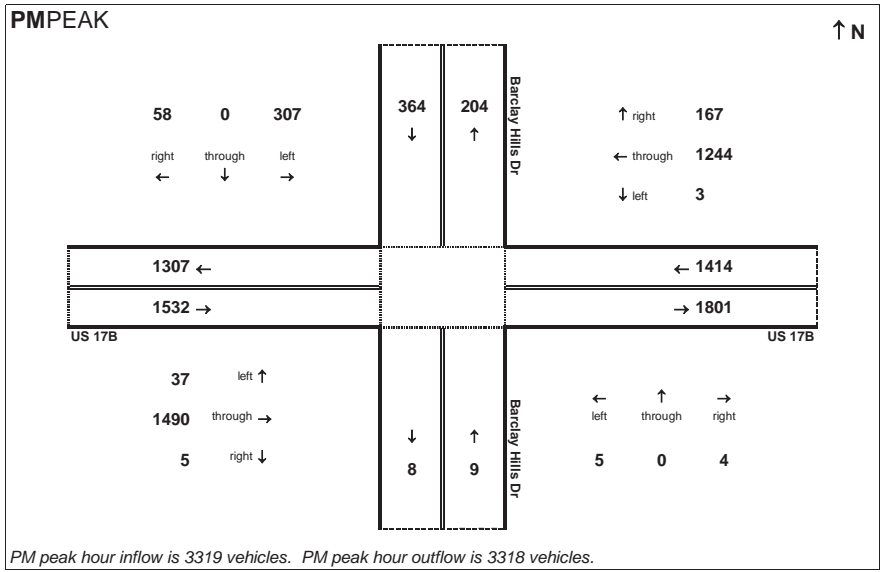
Traffic Forecast Release Date:
 July, 2017

Traffic Data Year:
 2040 Build

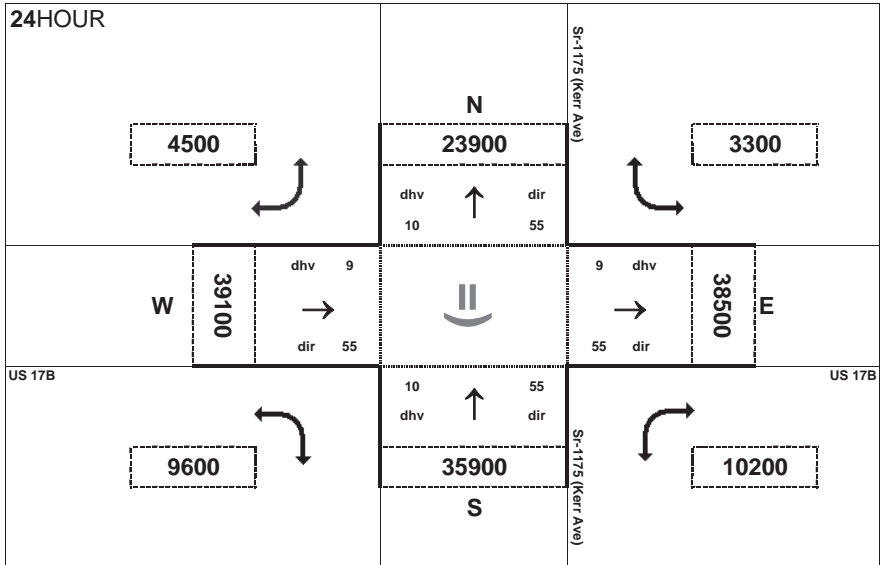
Project:
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AM peak hour inflow is 3317 vehicles. AM peak hour outflow is 3318 vehicles.



PM peak hour inflow is 3319 vehicles. PM peak hour outflow is 3318 vehicles.

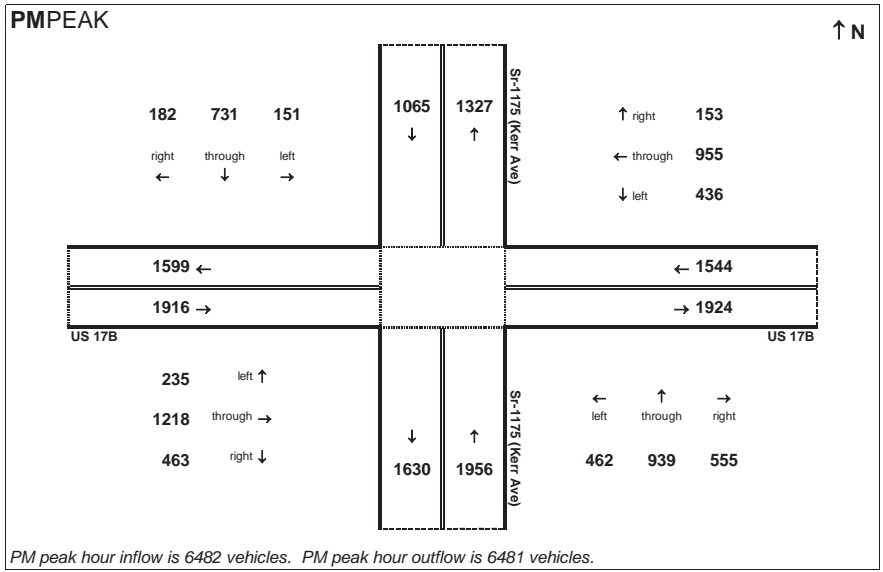
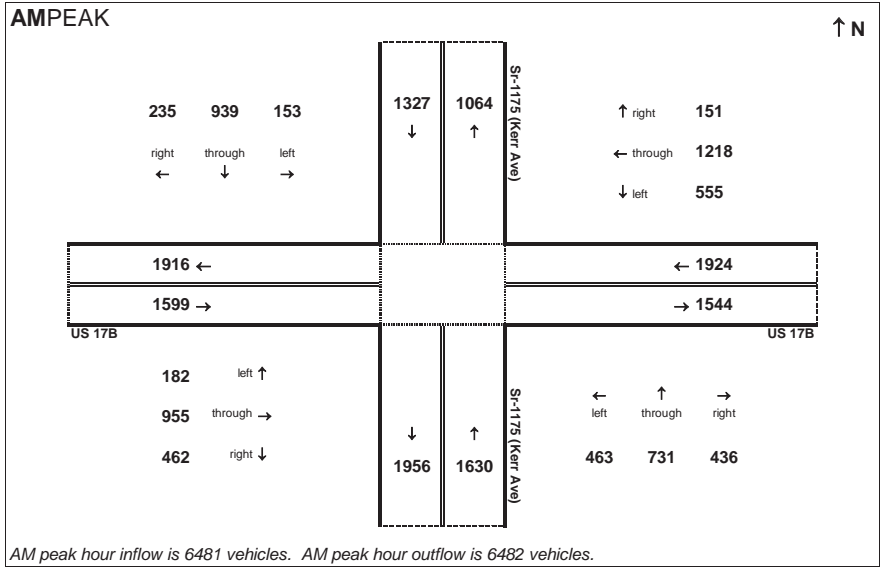


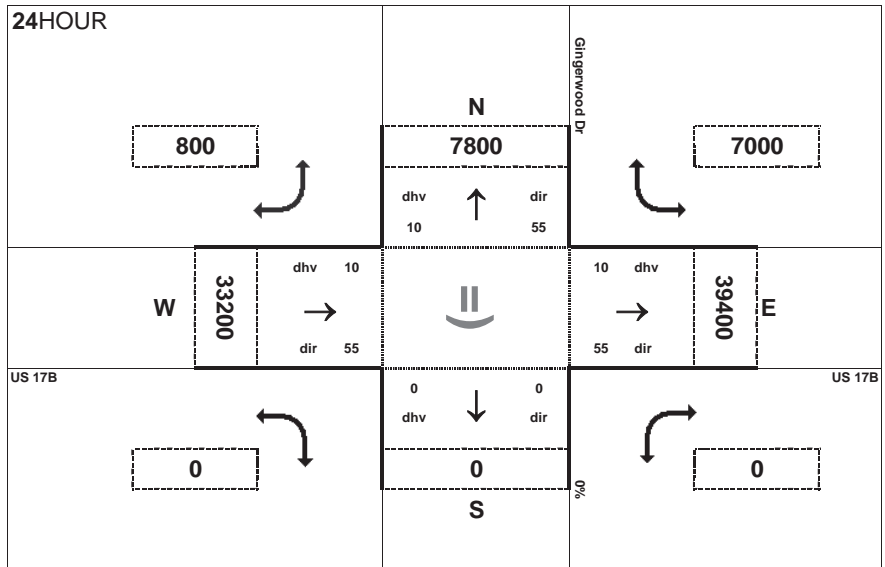
Peak Hour Volume Breakouts Report:
 19 Intersection of US 17B and Sr-1175 (Kerr Ave)

Traffic Forecast Release Date:
 July, 2017

Traffic Data Year:
 2040 Build

Project:
 U-4434



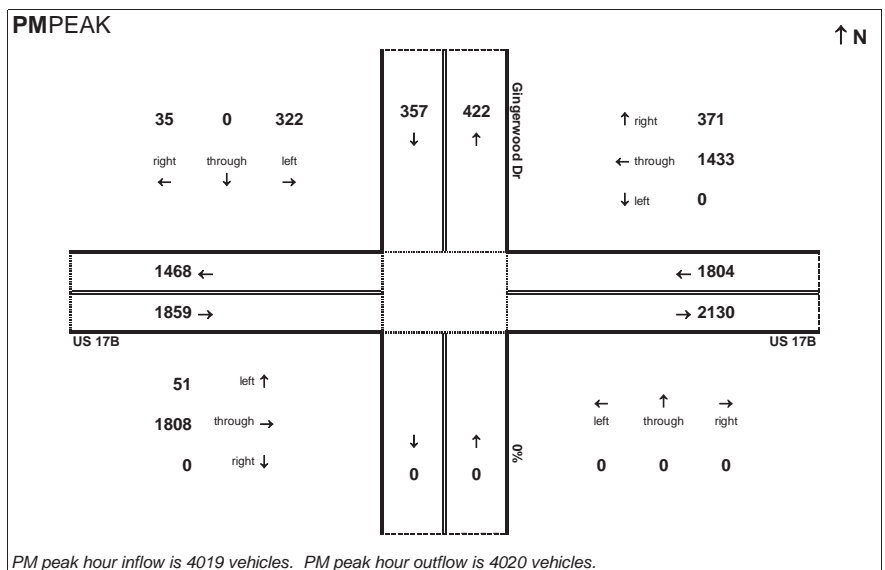
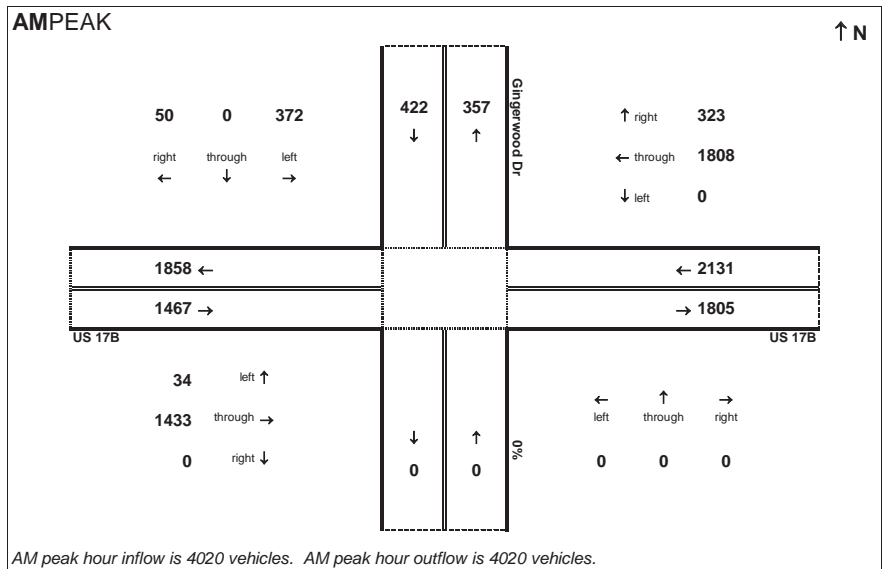


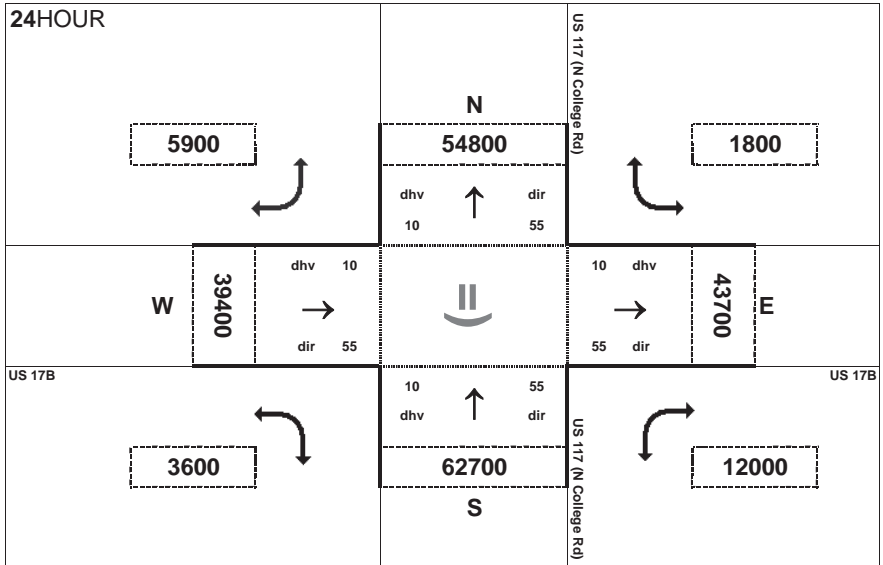
Peak Hour Volume Breakouts Report:
20 Intersection of US 17B and Gingerwood Dr

Traffic Forecast Release Date:
July, 2017

Traffic Data Year:
2040 Build

Project:
U-4434



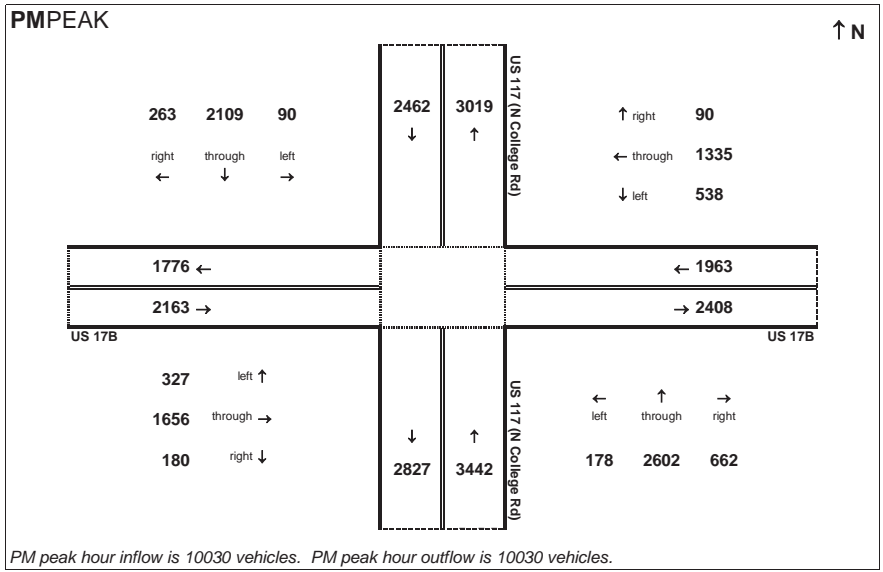
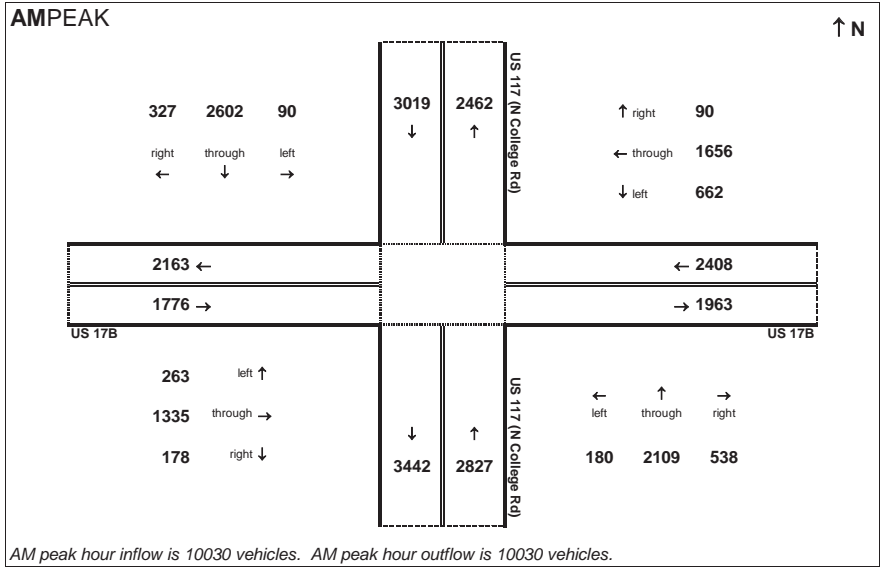


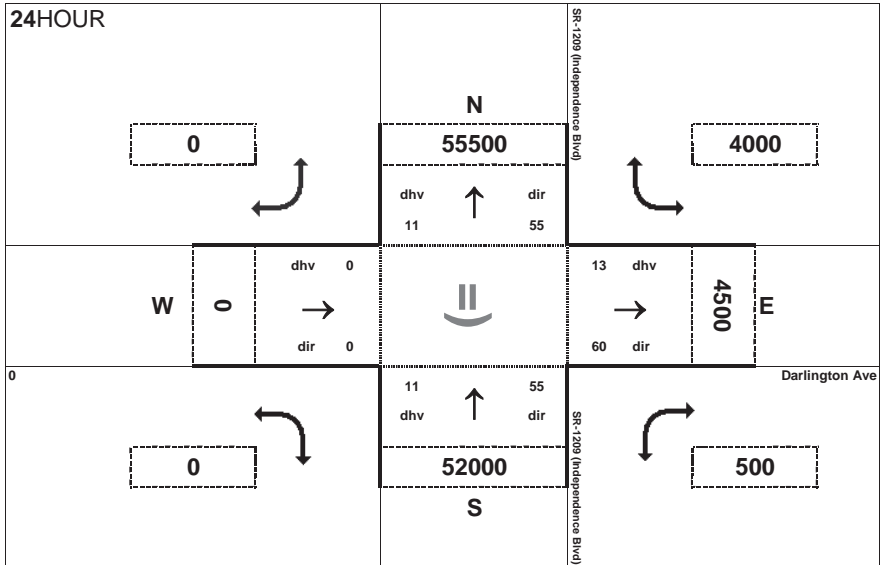
Peak Hour Volume Breakouts Report:
 21 Intersection of US 17B and US 117 (N College Rd)

Traffic Forecast Release Date:
 July, 2017

Traffic Data Year:
 2040 Build

Project:
 U-4434



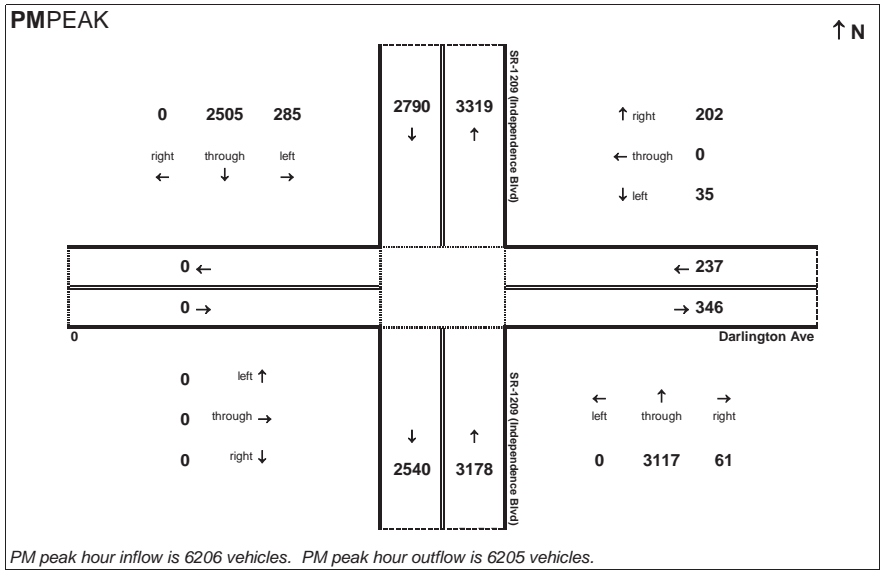
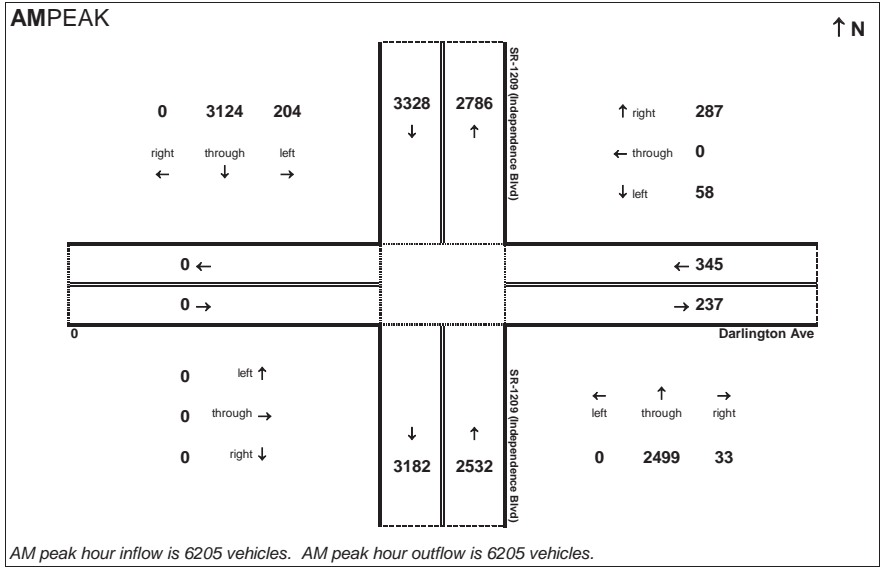


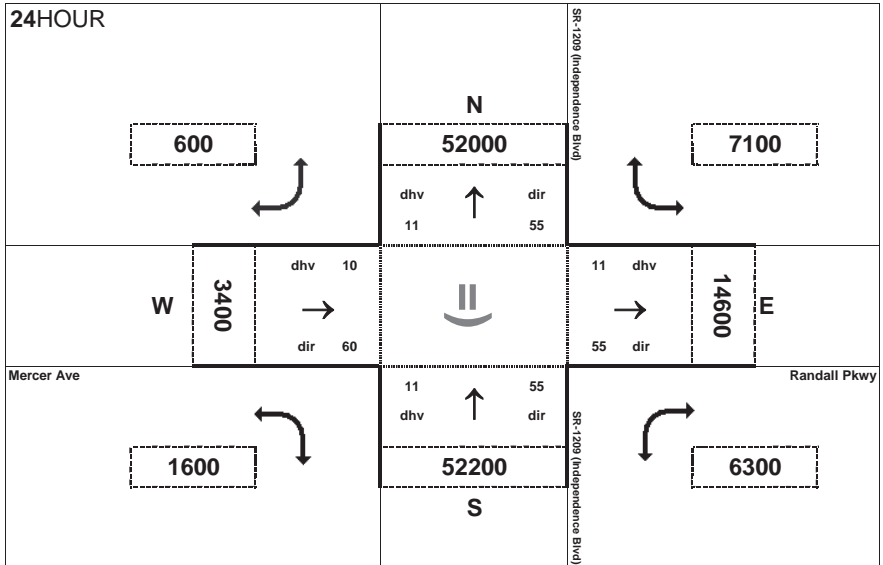
Peak Hour Volume Breakouts Report:
 22 Intersection of SR-1209 (Independence Blvd) and Darlington Ave

Traffic Forecast Release Date:
 July, 2017

Traffic Data Year:
 2040 Build

Project:
 U-4434



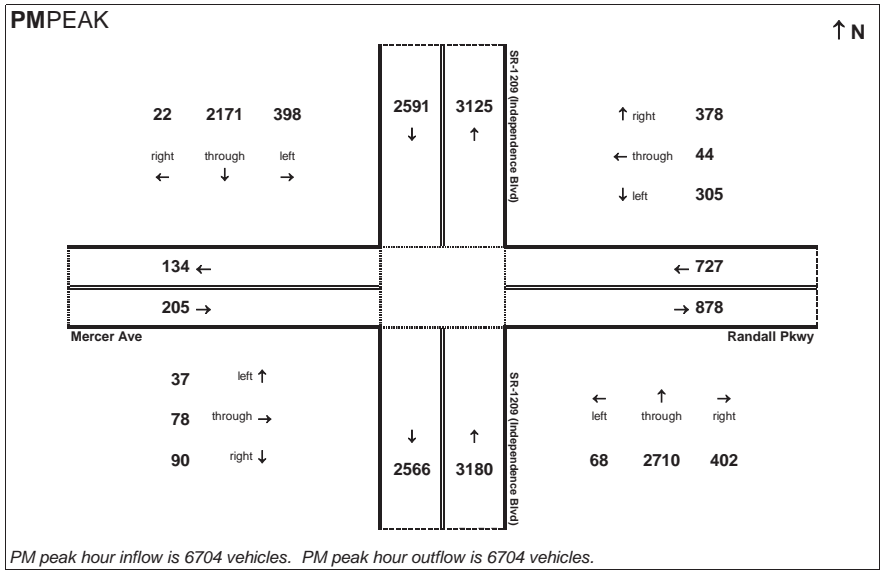
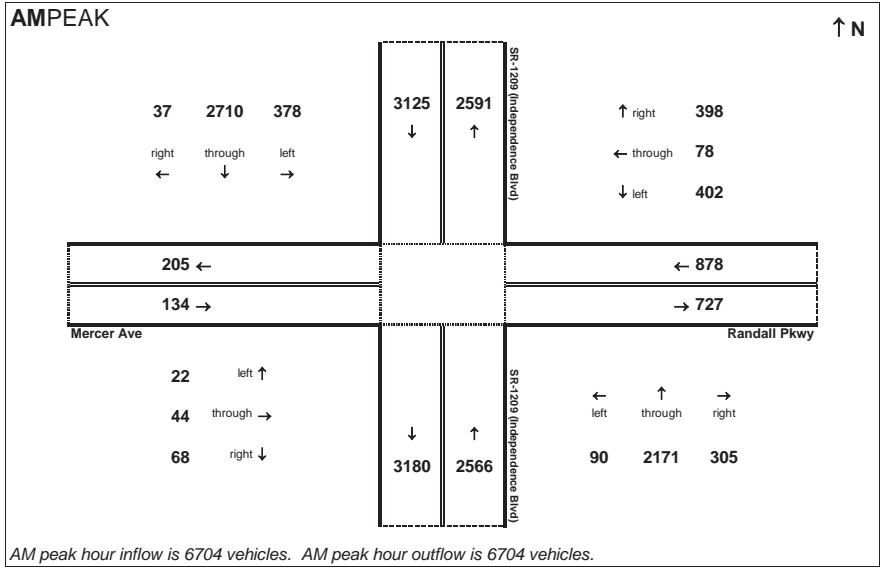


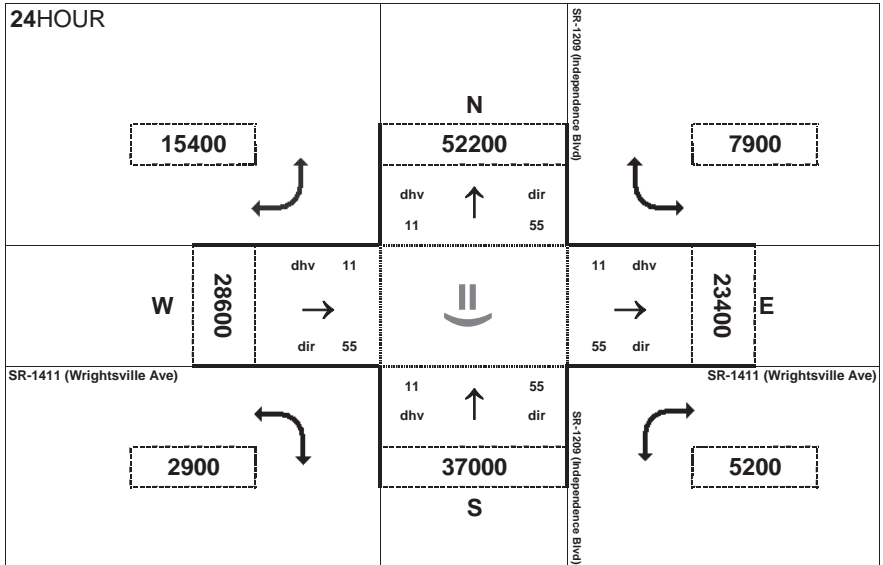
Peak Hour Volume Breakouts Report:
 23 Intersection of SR-1209 (Independence Blvd) and Mercer Ave-Randall Pkwy

Traffic Forecast Release Date:
 July, 2017

Traffic Data Year:
 2040 Build

Project:
 U-4434



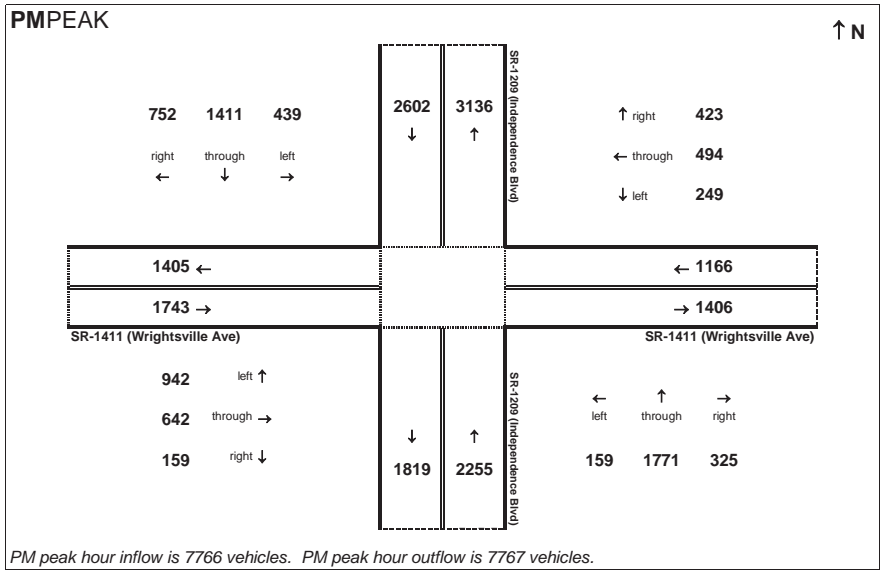
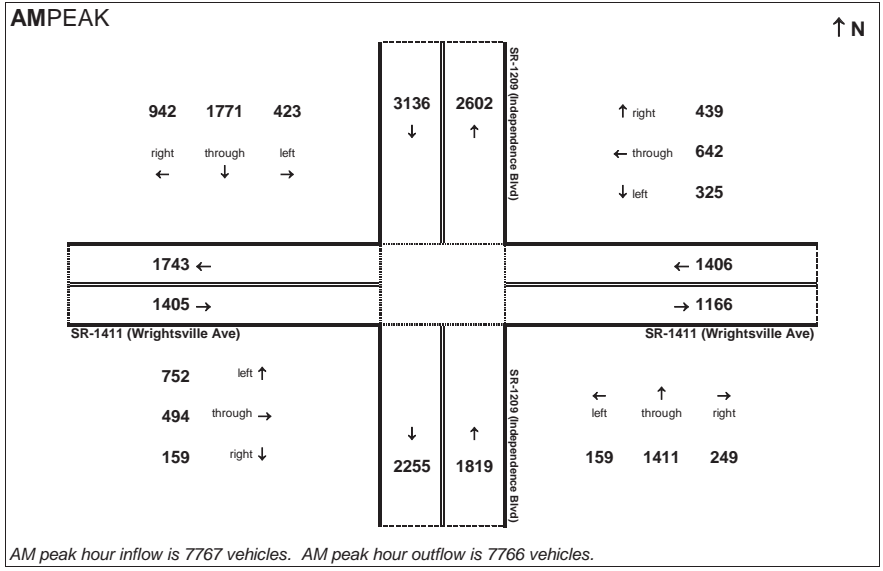


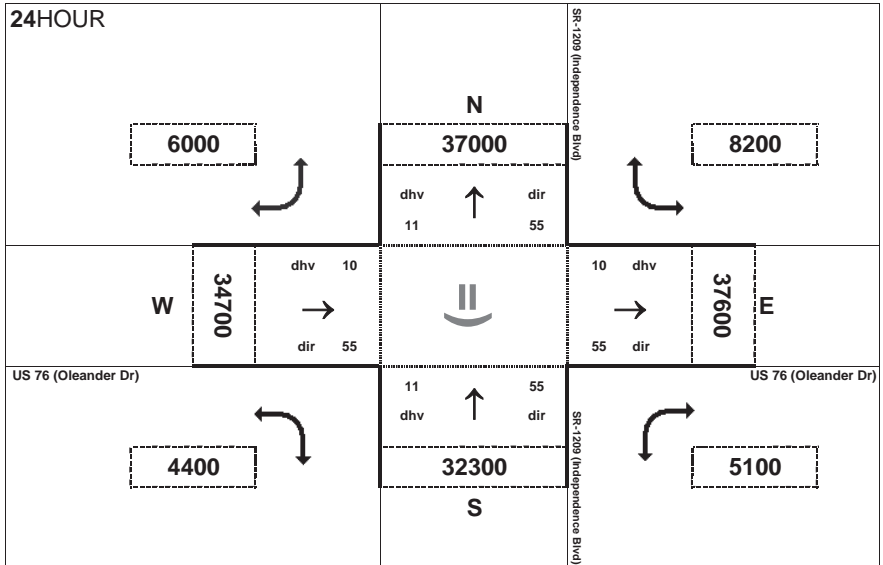
Peak Hour Volume Breakouts Report:
 24 Intersection of SR-1209 (Independence Blvd) and SR-1411 (Wrightsville Ave)

Traffic Forecast Release Date:
 July, 2017

Traffic Data Year:
 2040 Build

Project:
 U-4434



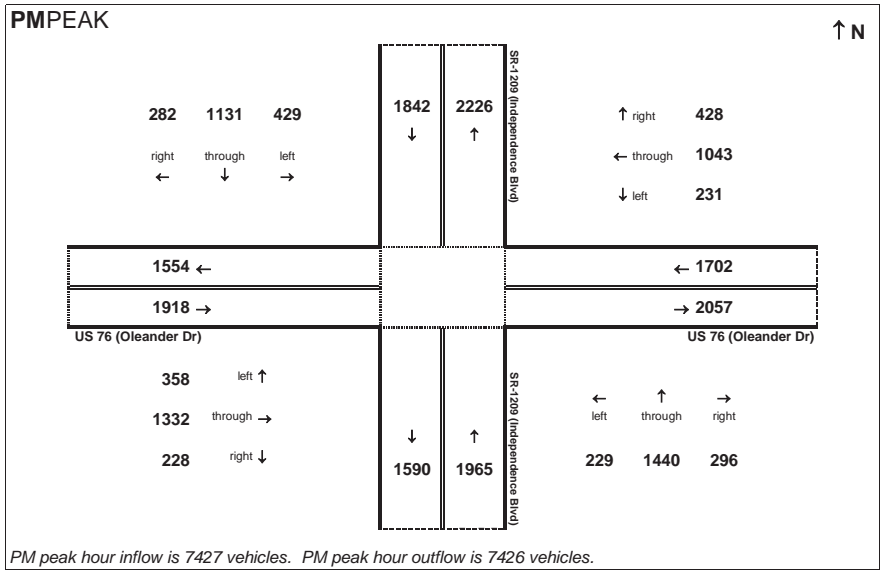
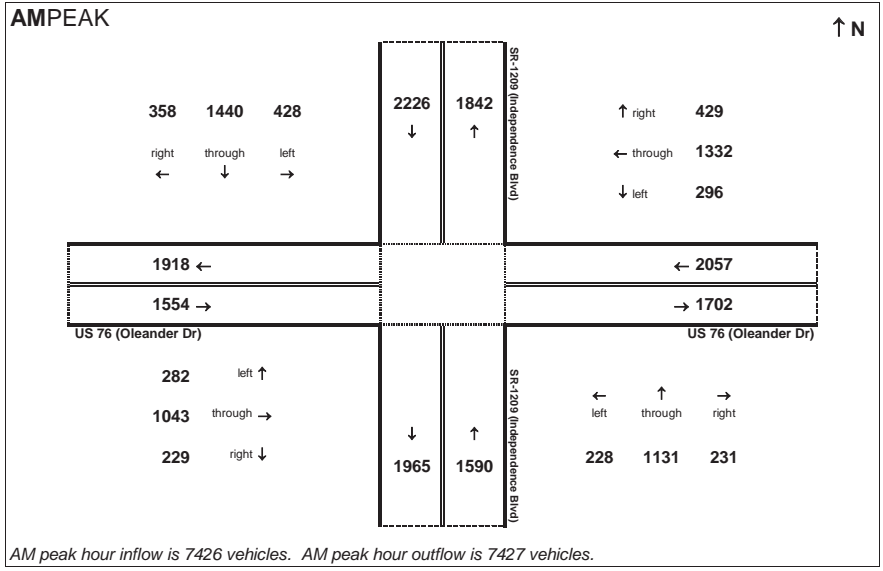


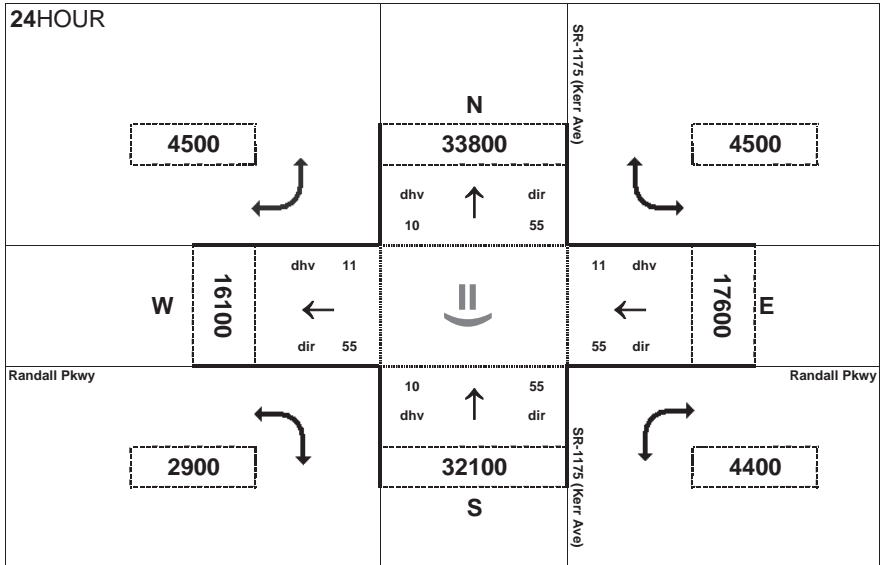
Peak Hour Volume Breakouts Report:
 25 Intersection of SR-1209 (Independence Blvd) and US 76 (Oleander Dr)

Traffic Forecast Release Date:
 July, 2017

Traffic Data Year:
 2040 Build

Project:
 U-4434



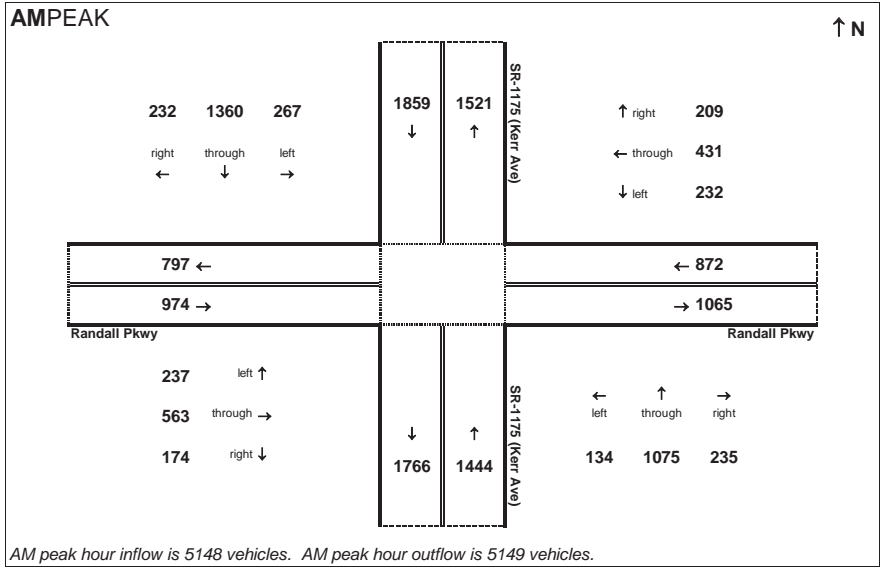


Peak Hour Volume Breakouts Report:
 26 Intersection of SR-1175 (Kerr Ave) and Randall Pkwy

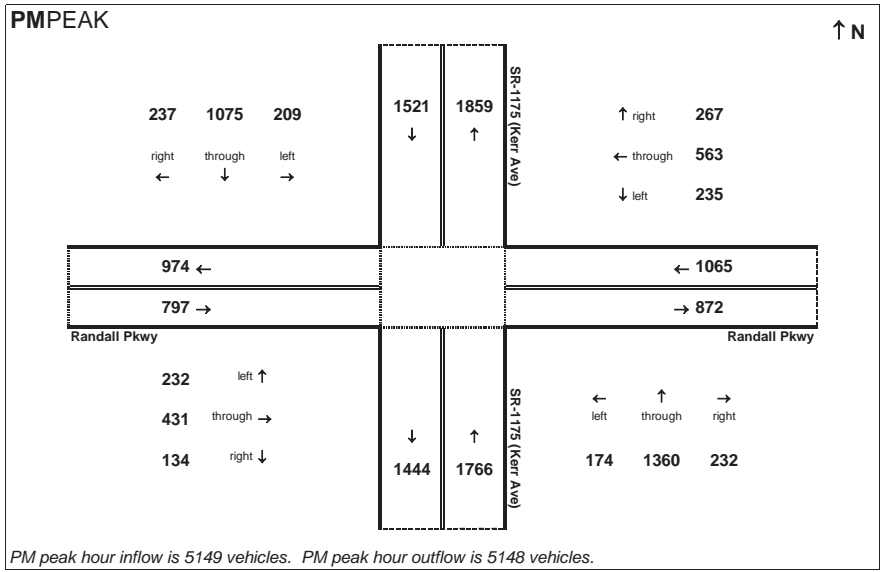
Traffic Forecast Release Date:
 July, 2017

Traffic Data Year:
 2040 Build

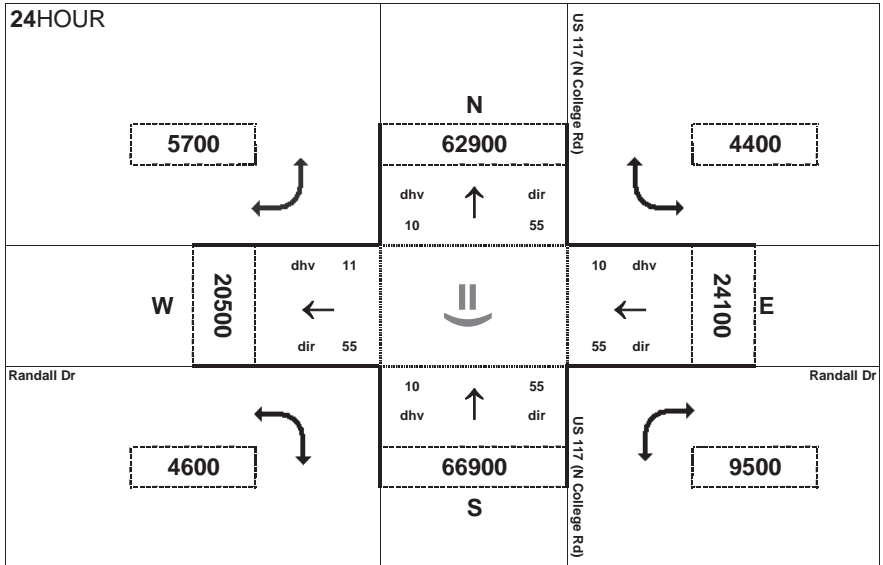
Project:
 U-4434



AM peak hour inflow is 5148 vehicles. AM peak hour outflow is 5149 vehicles.



PM peak hour inflow is 5149 vehicles. PM peak hour outflow is 5148 vehicles.

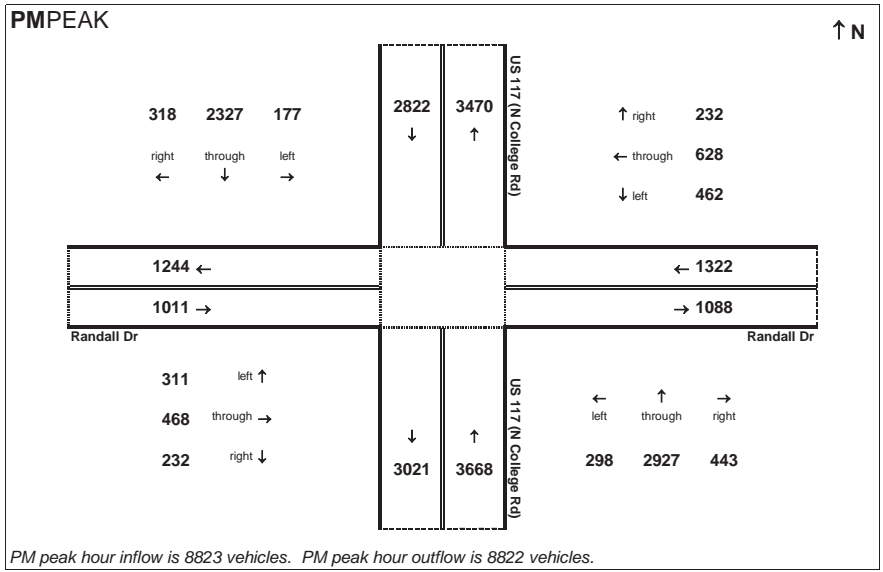
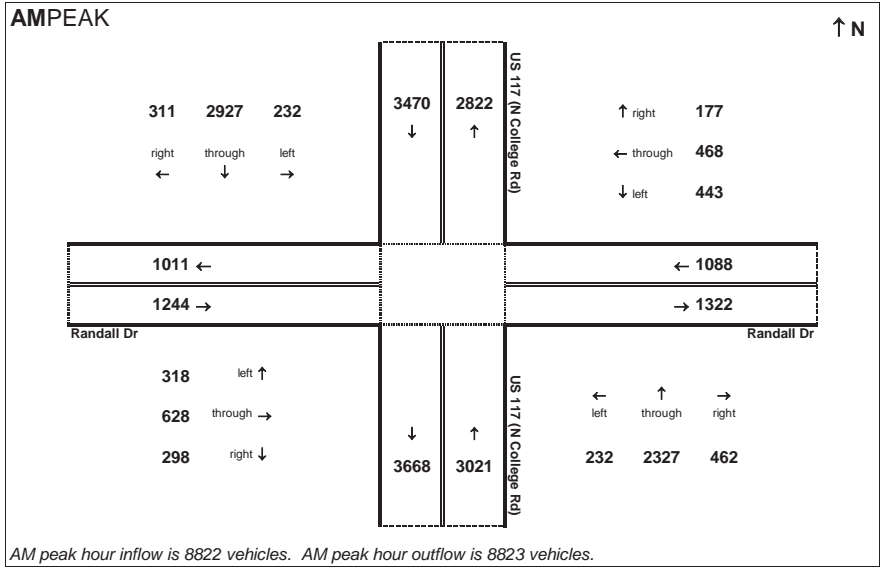


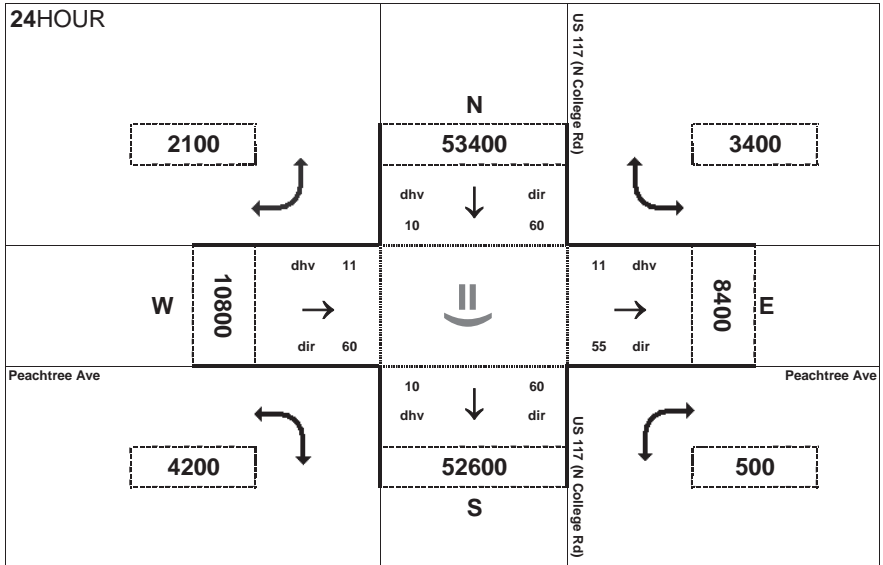
Peak Hour Volume Breakouts Report:
 27 Intersection of US 117 (N College Rd) and Randall Dr

Traffic Forecast Release Date:
 July, 2017

Traffic Data Year:
 2040 Build

Project:
 U-4434



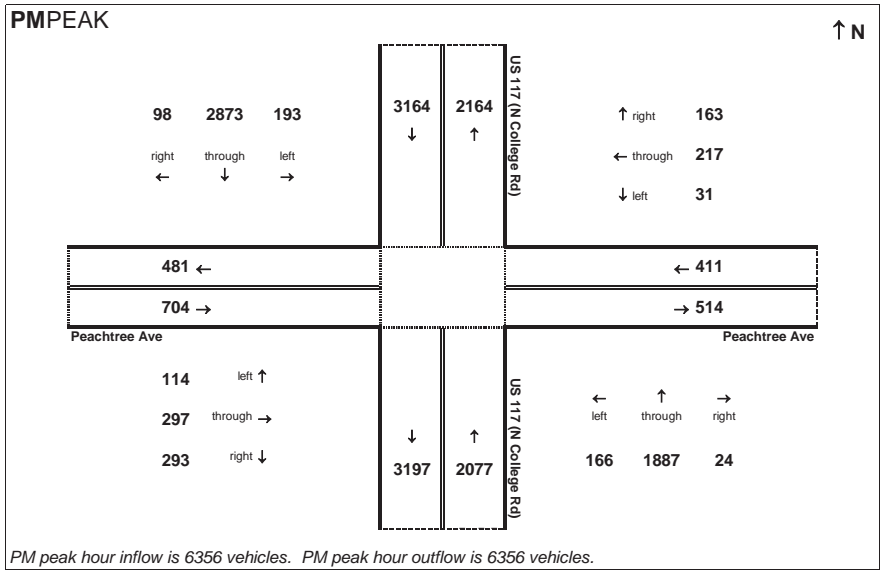
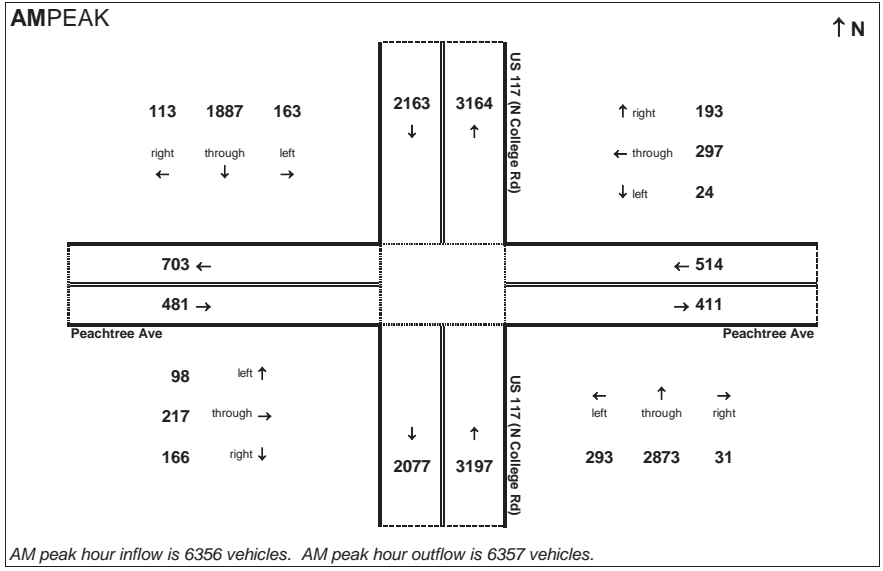


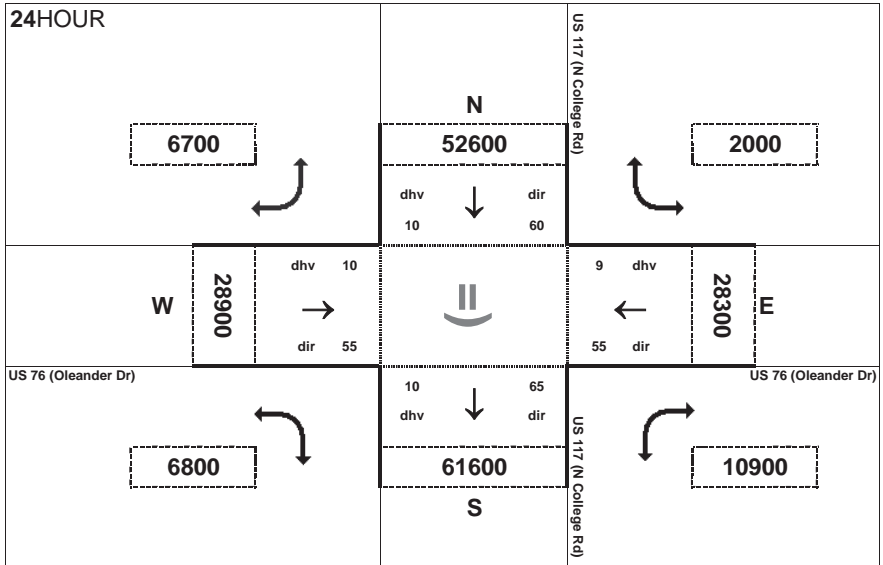
Peak Hour Volume Breakouts Report:
 28 Intersection of US 117 (N College Rd) and Peachtree Ave

Traffic Forecast Release Date:
 July, 2017

Traffic Data Year:
 2040 Build

Project:
 U-4434



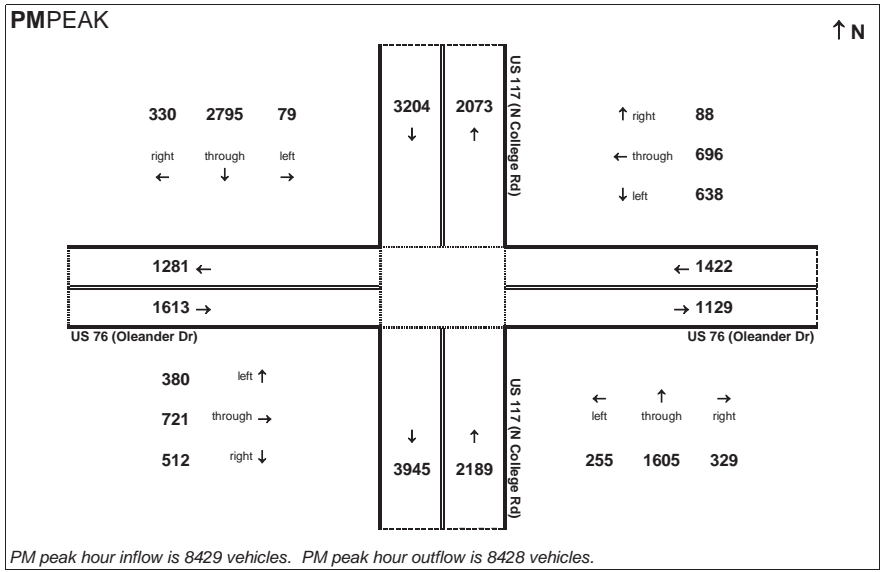
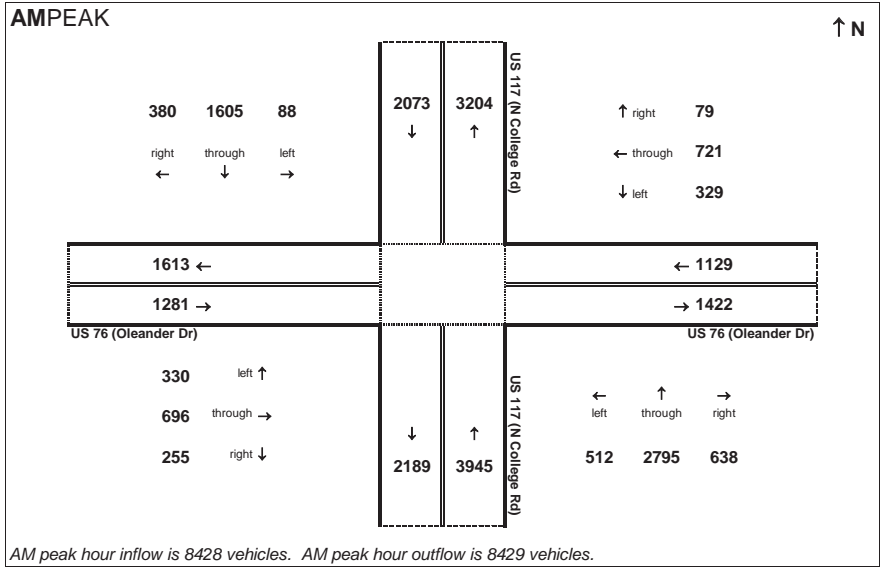


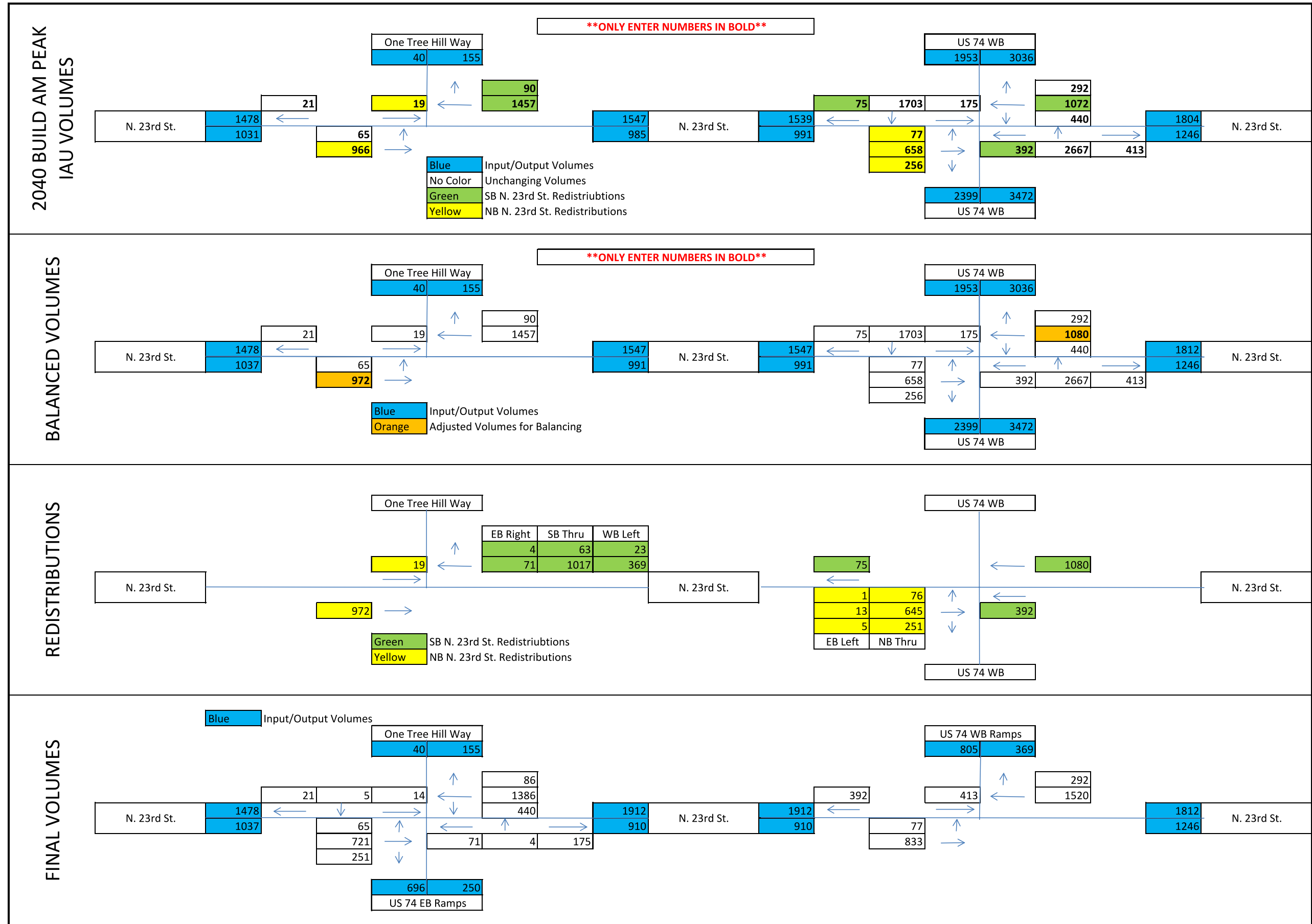
Peak Hour Volume Breakouts Report:
 29 Intersection of US 117 (N College Rd) and US 76 (Oleander Dr)

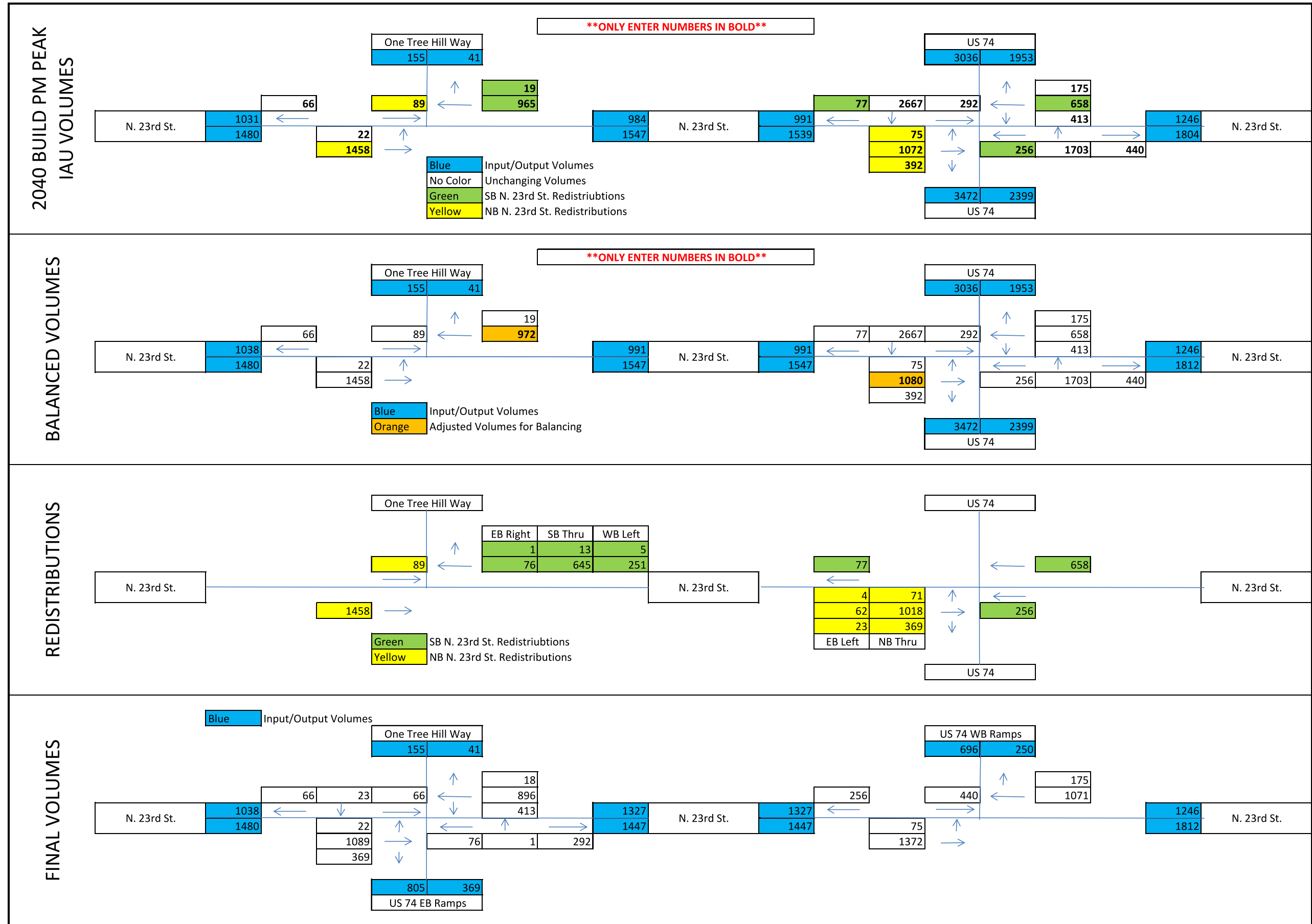
Traffic Forecast Release Date:
 July, 2017

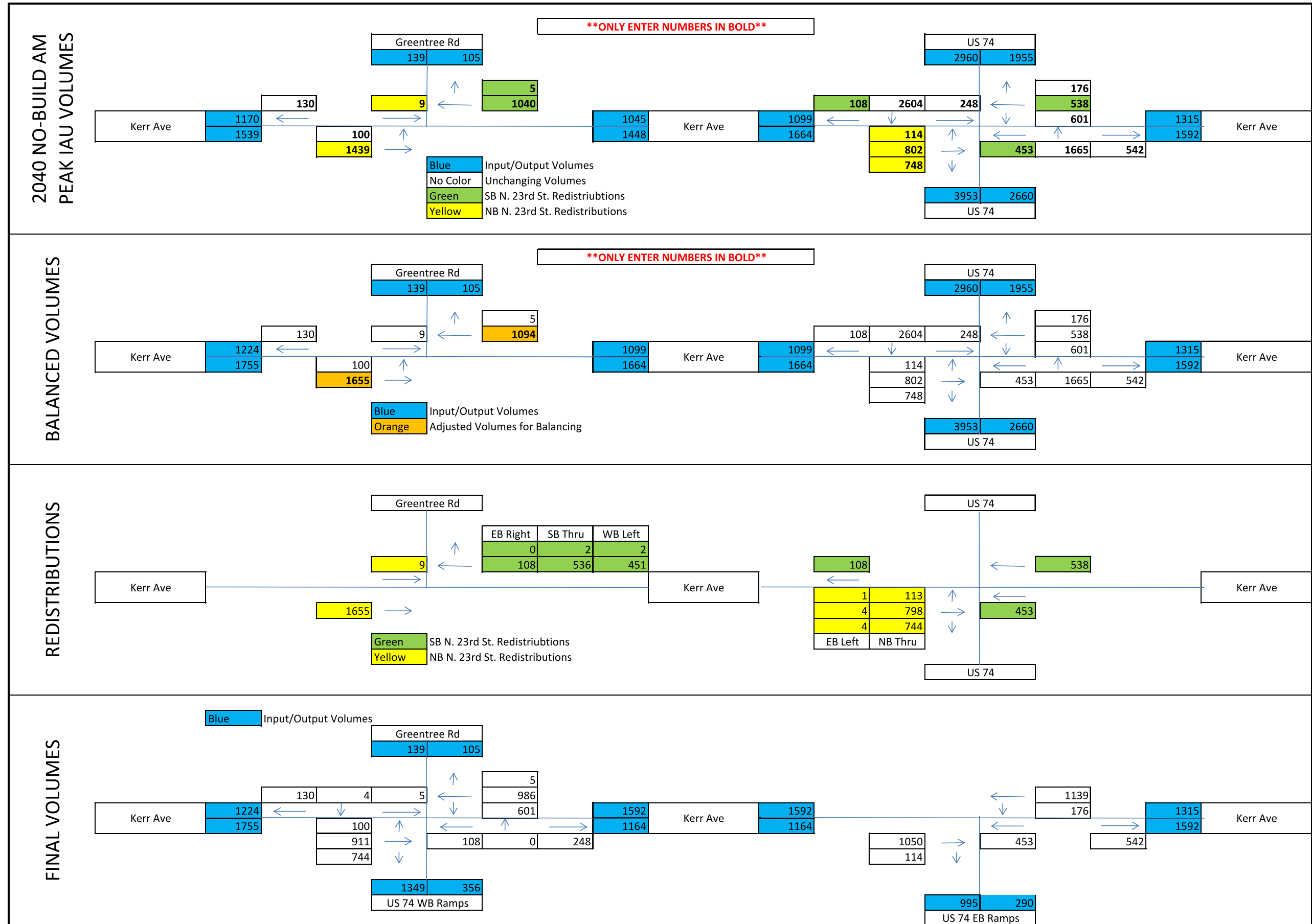
Traffic Data Year:
 2040 Build

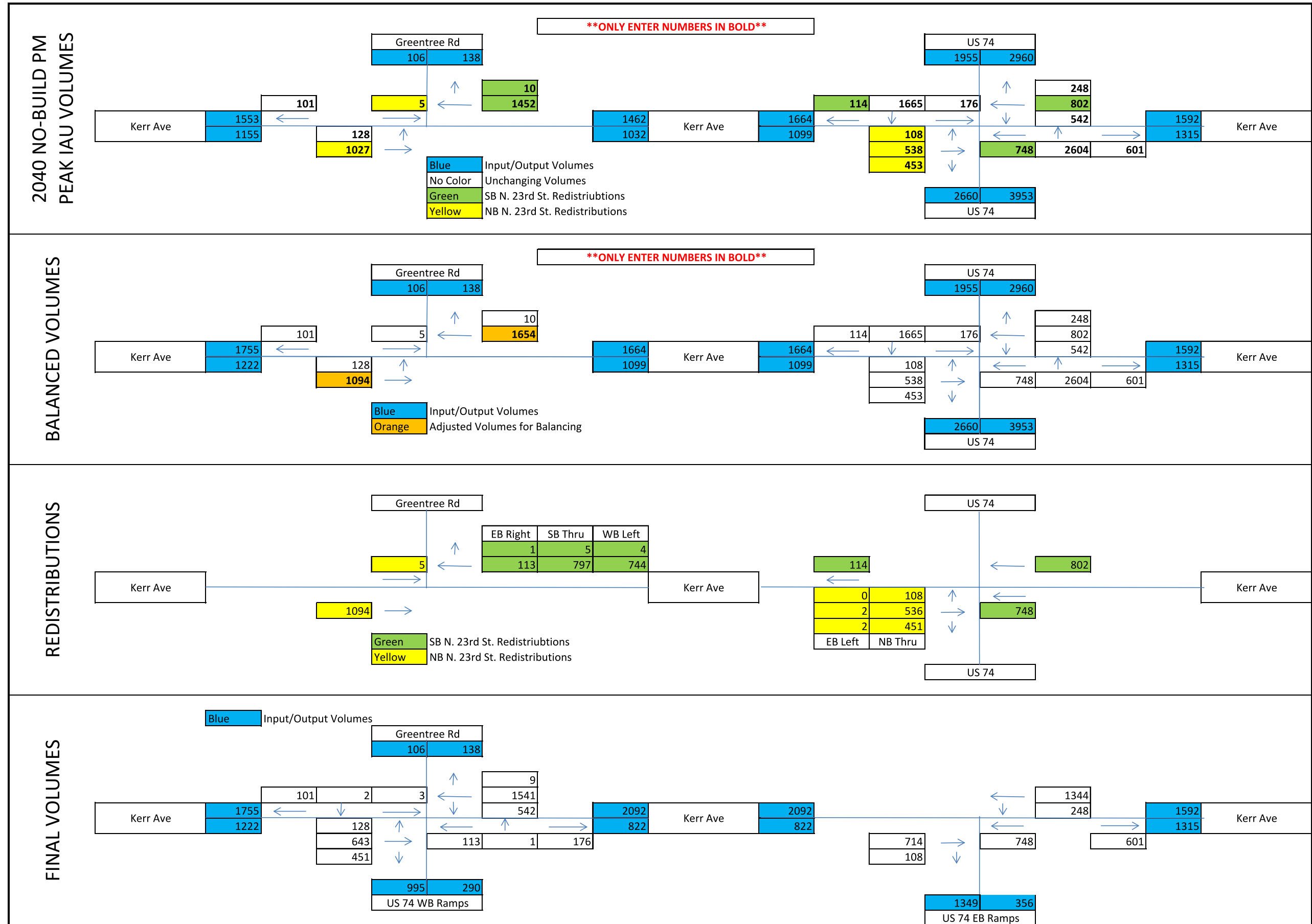
Project:
 U-4434

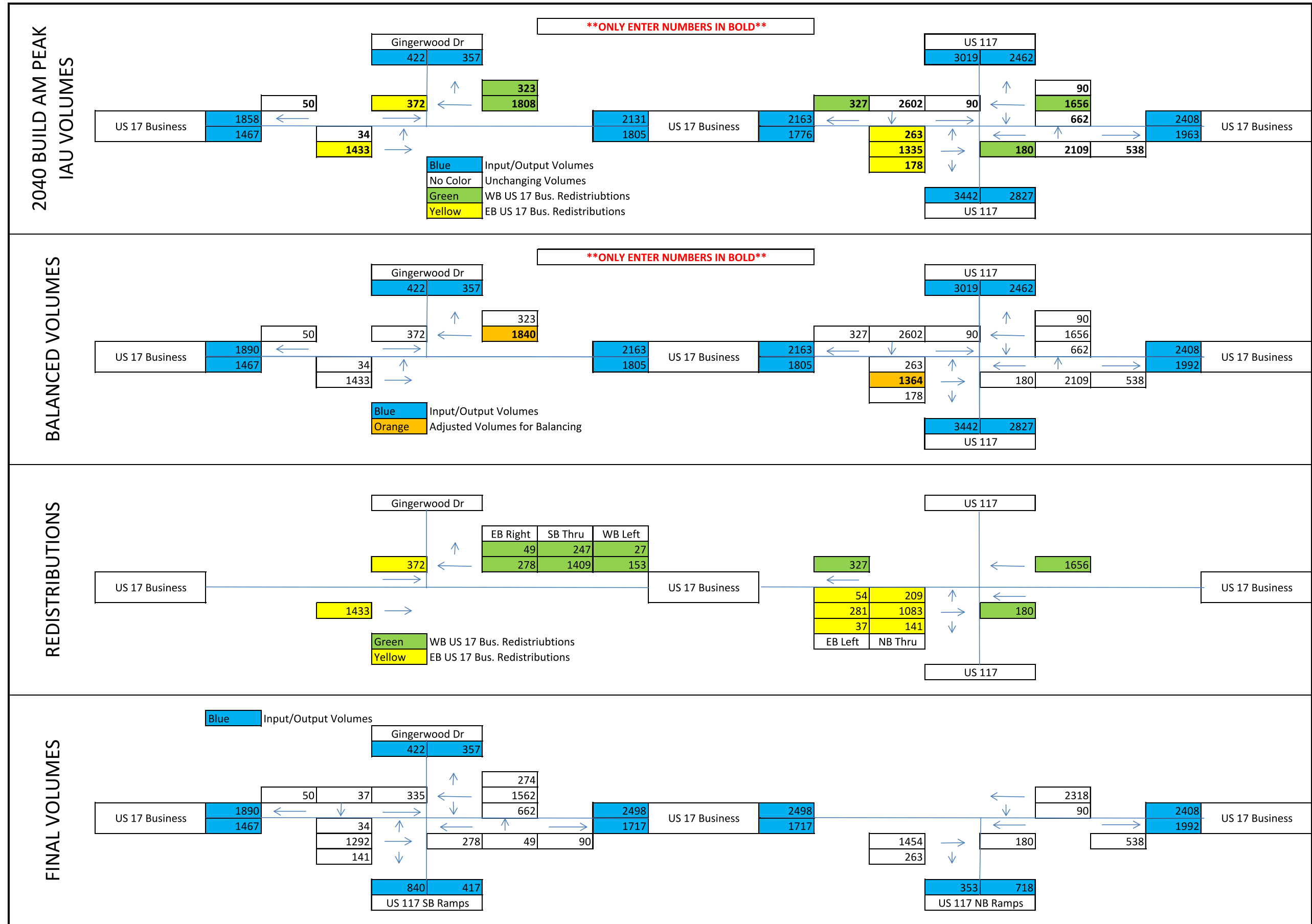


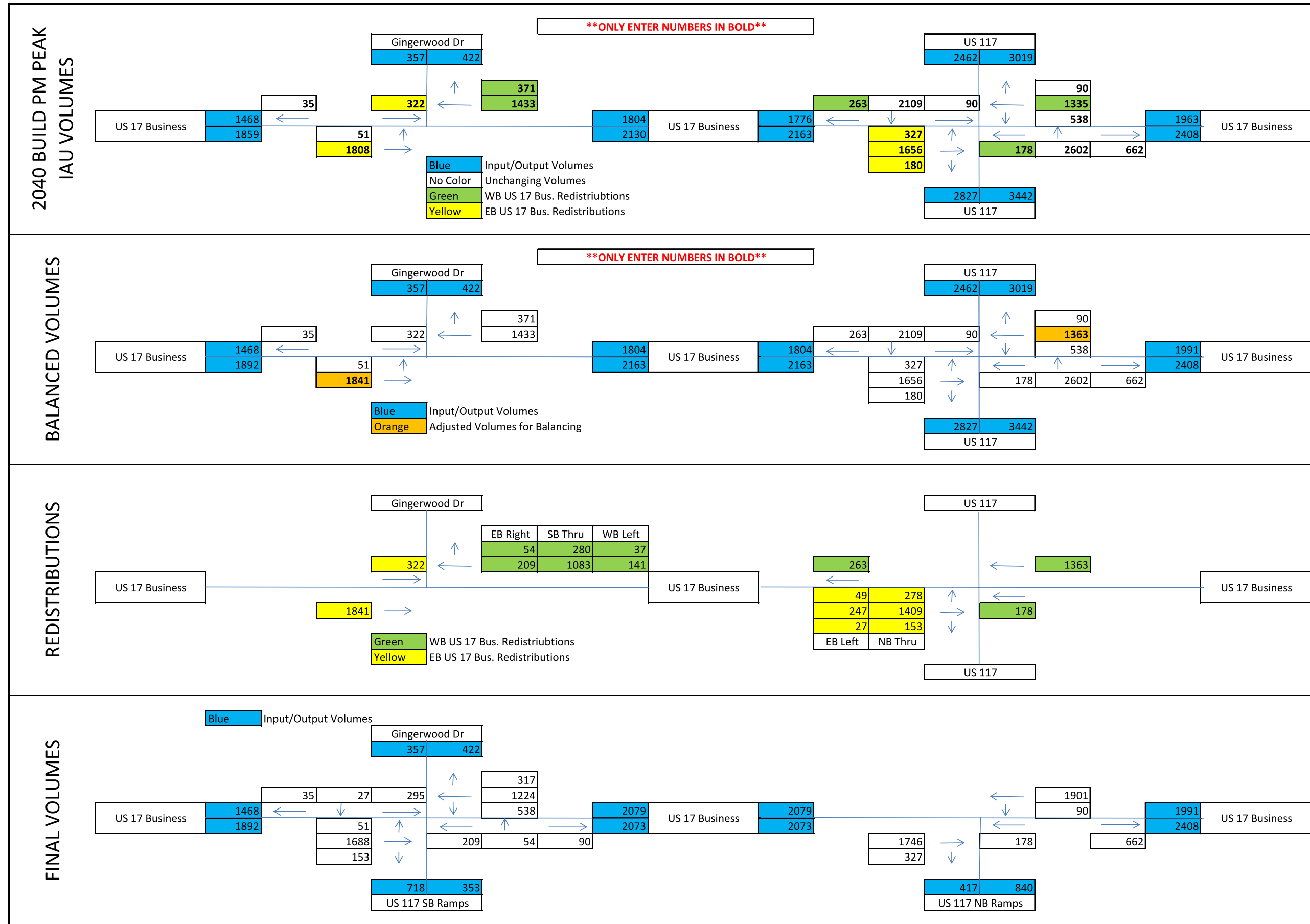








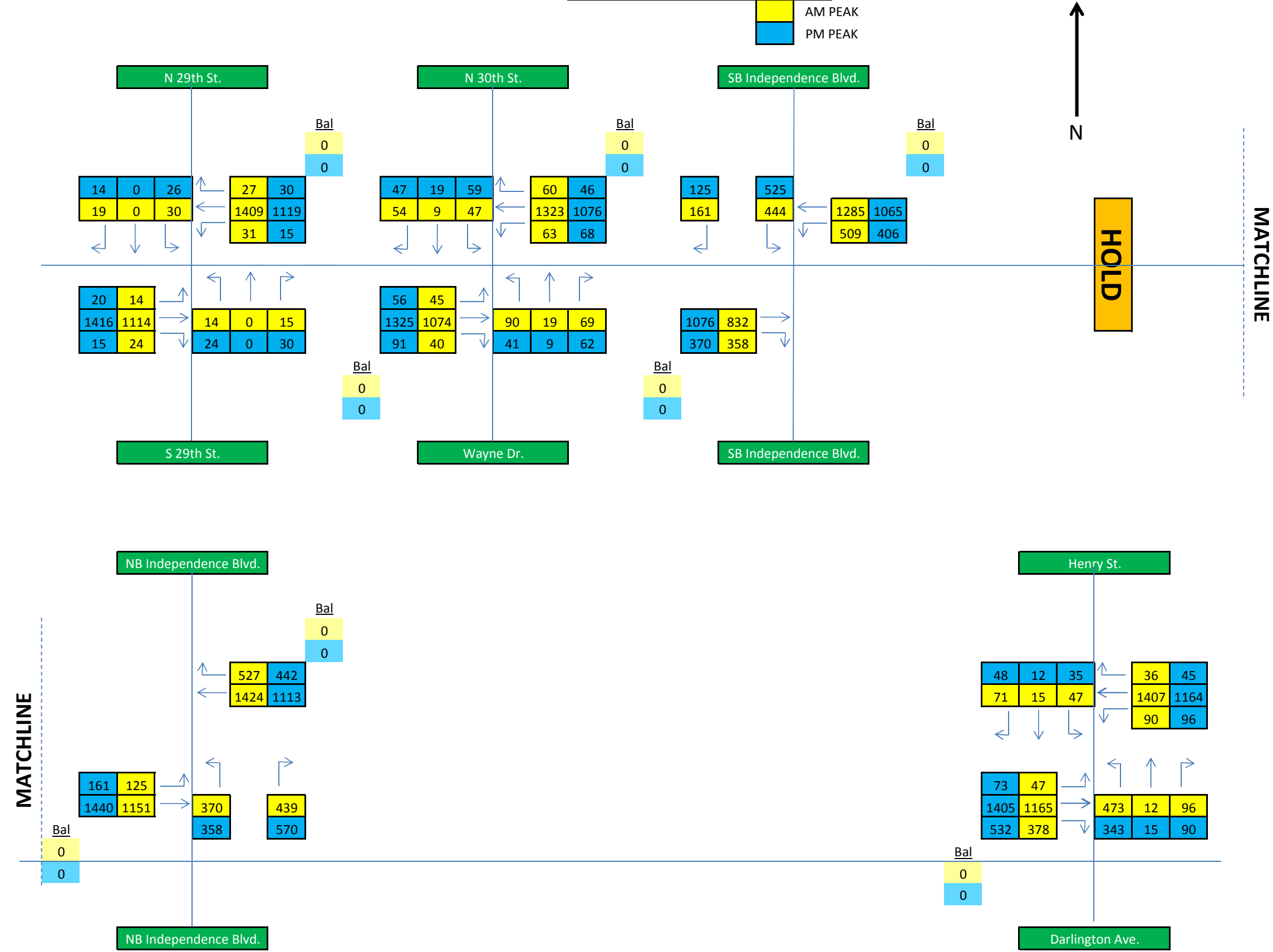




Turning Movement Redistribution Worksheet
US-17 Business (Market St.)

Project ID:	U-4434 Independence Boulevard Extension	Scenario:	2040 Build	Alternative:	Alternatives 2 and 7 (SPUI and TUDI)
BALANCED VOLUMES					

AM PEAK
PM PEAK



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APPENDIX D – Synchro and SimTraffic Analysis























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2017 No-Build

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Lanes, Volumes, Timings
 11: Wayne Dr./30th St. & US 17 Bus. (Market St.)

U-4434 Independence Blvd.
 2017 Base Year

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			 			 			 	
Traffic Volume (vph)	41	1053	10	23	1306	40	34	0	62	42	0	53
Future Volume (vph)	41	1053	10	23	1306	40	34	0	62	42	0	53
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	250		0	300		0	0		0	0		0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (ft)	100			100			100			100		
Satd. Flow (prot)	1770	3536	0	1770	3525	0	0	1672	0	0	1685	0
Flt Permitted	0.950			0.950				0.983			0.978	
Satd. Flow (perm)	1770	3536	0	1770	3525	0	0	1672	0	0	1685	0
Link Speed (mph)		40			40			25			25	
Link Distance (ft)		315			411			873			738	
Travel Time (s)		5.4			7.0			23.8			20.1	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	46	1181	0	26	1495	0	0	107	0	0	106	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	























Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	52.0%
Analysis Period (min)	15
	ICU Level of Service A

HCM Unsignalized Intersection Capacity Analysis
 11: Wayne Dr./30th St. & US 17 Bus. (Market St.)























U-4434 Independence Blvd.

2017 Base Year

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			 			 			 	
Traffic Volume (veh/h)	41	1053	10	23	1306	40	34	0	62	42	0	53
Future Volume (Veh/h)	41	1053	10	23	1306	40	34	0	62	42	0	53
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	46	1170	11	26	1451	44	38	0	69	47	0	59
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)					834							
pX, platoon unblocked	0.78						0.78	0.78		0.78	0.78	0.78
vC, conflicting volume	1495			1181			2104	2814	590	2271	2798	748
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1073			1181			1853	2762	590	2067	2741	116
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	91			96			0	100	85	0	100	92
cM capacity (veh/h)	504			587			29	13	450	19	13	714
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1				
Volume Total	46	780	401	26	967	528	107	106				
Volume Left	46	0	0	26	0	0	38	47				
Volume Right	0	0	11	0	0	44	69	59				
cSH	504	1700	1700	587	1700	1700	74	41				
Volume to Capacity	0.09	0.46	0.24	0.04	0.57	0.31	1.44	2.60				
Queue Length 95th (ft)	7	0	0	3	0	0	218	290				
Control Delay (s)	12.9	0.0	0.0	11.4	0.0	0.0	357.0	934.7				
Lane LOS	B			B			F	F				
Approach Delay (s)	0.5			0.2			357.0	934.7				
Approach LOS							F	F				
Intersection Summary												
Average Delay			46.7									
Intersection Capacity Utilization			52.0%		ICU Level of Service			A				
Analysis Period (min)			15									

Lanes, Volumes, Timings
 11: Wayne Dr./30th St. & US 17 Bus. (Market St.)

U-4434 Independence Blvd.
 2017 Base Year























												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			 			 			 	
Traffic Volume (vph)	53	1306	34	62	1053	42	10	0	23	40	0	41
Future Volume (vph)	53	1306	34	62	1053	42	10	0	23	40	0	41
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	250		0	300		0	0		0	0		0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (ft)	100			100			100			100		
Satd. Flow (prot)	1770	3525	0	1770	3518	0	0	1660	0	0	1693	0
Flt Permitted	0.950			0.950				0.985			0.976	
Satd. Flow (perm)	1770	3525	0	1770	3518	0	0	1660	0	0	1693	0
Link Speed (mph)		40			40			25			25	
Link Distance (ft)		315			411			873			738	
Travel Time (s)		5.4			7.0			23.8			20.1	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	59	1489	0	69	1217	0	0	37	0	0	90	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	58.5%
Analysis Period (min)	15
	ICU Level of Service B

HCM Unsignalized Intersection Capacity Analysis
 11: Wayne Dr./30th St. & US 17 Bus. (Market St.)

U-4434 Independence Blvd.
 2017 Base Year

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			 			 			 	
Traffic Volume (veh/h)	53	1306	34	62	1053	42	10	0	23	40	0	41
Future Volume (Veh/h)	53	1306	34	62	1053	42	10	0	23	40	0	41
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	59	1451	38	69	1170	47	11	0	26	44	0	46
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type												
		None			None							
Median storage (veh)												
Upstream signal (ft)												
					834							
pX, platoon unblocked	0.78						0.78	0.78		0.78	0.78	0.78
vC, conflicting volume	1217			1489			2357	2943	744	2201	2938	608
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	717			1489			2177	2927	744	1977	2921	0
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	91			85			30	100	93	0	100	95
cM capacity (veh/h)	687			447			16	9	357	22	9	847
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1				
Volume Total	59	967	522	69	780	437	37	90				
Volume Left	59	0	0	69	0	0	11	44				
Volume Right	0	0	38	0	0	47	26	46				
cSH	687	1700	1700	447	1700	1700	48	44				
Volume to Capacity	0.09	0.57	0.31	0.15	0.46	0.26	0.77	2.06				
Queue Length 95th (ft)	7	0	0	14	0	0	77	234				
Control Delay (s)	10.7	0.0	0.0	14.5	0.0	0.0	197.5	688.9				
Lane LOS	B			B			F	F				
Approach Delay (s)	0.4			0.8			197.5	688.9				
Approach LOS							F	F				
Intersection Summary												
Average Delay			24.0									
Intersection Capacity Utilization			58.5%		ICU Level of Service				B			
Analysis Period (min)			15									

Lanes, Volumes, Timings
 12: Mercer Ave. & US 17 Bus. (Market St.)

U-4434 Independence Blvd.
 2017 Base Year

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↕↕		↘	↕↕	↖	
Traffic Volume (vph)	1129	11	37	1379	8	24
Future Volume (vph)	1129	11	37	1379	8	24
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)		0	40		0	0
Storage Lanes		0	1		1	0
Taper Length (ft)			100		100	
Satd. Flow (prot)	3536	0	1770	3539	1655	0
Flt Permitted			0.950		0.988	
Satd. Flow (perm)	3536	0	1770	3539	1655	0
Link Speed (mph)	40			40	25	
Link Distance (ft)	411			142	909	
Travel Time (s)	7.0			2.4	24.8	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	2%	2%	4%	4%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1266	0	41	1532	36	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	48.1% ICU Level of Service A
Analysis Period (min)	15

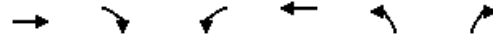
HCM Unsignalized Intersection Capacity Analysis
 12: Mercer Ave. & US 17 Bus. (Market St.)

U-4434 Independence Blvd.
 2017 Base Year

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↑	↑↑	↑	
Traffic Volume (veh/h)	1129	11	37	1379	8	24
Future Volume (Veh/h)	1129	11	37	1379	8	24
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	1254	12	41	1532	9	27
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (ft)	423					
pX, platoon unblocked						0.78
vC, conflicting volume			1266			633
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			1266			633
tC, single (s)			4.1			6.9
tC, 2 stage (s)						
tF (s)			2.2			3.3
p0 queue free %			92			94
cM capacity (veh/h)			545			422
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1
Volume Total	836	430	41	766	766	36
Volume Left	0	0	41	0	0	9
Volume Right	0	12	0	0	0	27
cSH	1700	1700	545	1700	1700	141
Volume to Capacity	0.49	0.25	0.08	0.45	0.45	0.25
Queue Length 95th (ft)	0	0	6	0	0	24
Control Delay (s)	0.0	0.0	12.1	0.0	0.0	39.0
Lane LOS	B			E		
Approach Delay (s)	0.0		0.3			39.0
Approach LOS				E		
Intersection Summary						
Average Delay			0.7			
Intersection Capacity Utilization			48.1%	ICU Level of Service		A
Analysis Period (min)	15					

Lanes, Volumes, Timings
 12: Mercer Ave. & US 17 Bus. (Market St.)

U-4434 Independence Blvd.
 2017 Base Year



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↵	↑↑	↵	
Traffic Volume (vph)	1378	9	23	1129	12	36
Future Volume (vph)	1378	9	23	1129	12	36
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)		0	40		0	0
Storage Lanes		0	1		1	0
Taper Length (ft)			100		100	
Satd. Flow (prot)	3536	0	1770	3539	1653	0
Flt Permitted			0.950		0.988	
Satd. Flow (perm)	3536	0	1770	3539	1653	0
Link Speed (mph)	40			40	25	
Link Distance (ft)	411			142	909	
Travel Time (s)	7.0			2.4	24.8	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	2%	2%	4%	4%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1541	0	26	1254	53	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	48.4%
Analysis Period (min)	15
	ICU Level of Service A

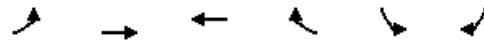
HCM Unsignalized Intersection Capacity Analysis
 12: Mercer Ave. & US 17 Bus. (Market St.)

U-4434 Independence Blvd.
 2017 Base Year

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↑	↑↑	↑	
Traffic Volume (veh/h)	1378	9	23	1129	12	36
Future Volume (Veh/h)	1378	9	23	1129	12	36
Sign Control	Free		Free		Stop	
Grade	0%		0%		0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	1531	10	26	1254	13	40
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None		None			
Median storage (veh)						
Upstream signal (ft)	423					
pX, platoon unblocked						0.77
vC, conflicting volume			1541		2215	770
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			1541		1985	770
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			94		66	88
cM capacity (veh/h)			427		39	343
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1
Volume Total	1021	520	26	627	627	53
Volume Left	0	0	26	0	0	13
Volume Right	0	10	0	0	0	40
cSH	1700	1700	427	1700	1700	117
Volume to Capacity	0.60	0.31	0.06	0.37	0.37	0.45
Queue Length 95th (ft)	0	0	5	0	0	50
Control Delay (s)	0.0	0.0	14.0	0.0	0.0	58.9
Lane LOS			B	F		
Approach Delay (s)	0.0		0.3	58.9		
Approach LOS				F		
Intersection Summary						
Average Delay			1.2			
Intersection Capacity Utilization			48.4%	ICU Level of Service	A	
Analysis Period (min)	15					

Lanes, Volumes, Timings
 13: US 17 Bus. (Market St.) & 31st St.

U-4434 Independence Blvd.
 2017 Base Year



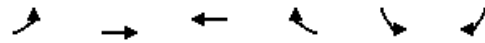
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	13	1146	1399	24	7	5
Future Volume (vph)	13	1146	1399	24	7	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	40			0	0	0
Storage Lanes	1			0	1	0
Taper Length (ft)	100				100	
Satd. Flow (prot)	1770	3539	3529	0	1706	0
Flt Permitted	0.950				0.972	
Satd. Flow (perm)	1770	3539	3529	0	1706	0
Link Speed (mph)		40	40		25	
Link Distance (ft)		142	281		960	
Travel Time (s)		2.4	4.8		26.2	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	2%	2%	3%	3%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	14	1273	1581	0	14	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		12	12		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	49.4% ICU Level of Service A
Analysis Period (min)	15

HCM Unsignalized Intersection Capacity Analysis
 13: US 17 Bus. (Market St.) & 31st St.

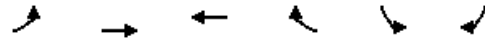
U-4434 Independence Blvd.
 2017 Base Year



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	13	1146	1399	24	7	5
Future Volume (Veh/h)	13	1146	1399	24	7	5
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	14	1273	1554	27	8	6
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (ft)			281			
pX, platoon unblocked	0.78				0.78	0.78
vC, conflicting volume	1581				2232	790
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1170				2010	151
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	97				79	99
cM capacity (veh/h)	460				39	673
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1
Volume Total	14	636	636	1036	545	14
Volume Left	14	0	0	0	0	8
Volume Right	0	0	0	0	27	6
cSH	460	1700	1700	1700	1700	65
Volume to Capacity	0.03	0.37	0.37	0.61	0.32	0.22
Queue Length 95th (ft)	2	0	0	0	0	19
Control Delay (s)	13.1	0.0	0.0	0.0	0.0	75.3
Lane LOS	B					F
Approach Delay (s)	0.1			0.0		75.3
Approach LOS						F
Intersection Summary						
Average Delay			0.4			
Intersection Capacity Utilization			49.4%		ICU Level of Service	A
Analysis Period (min)			15			

Lanes, Volumes, Timings
 13: US 17 Bus. (Market St.) & 31st St.

U-4434 Independence Blvd.
 2017 Base Year



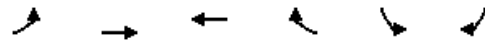
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	6	1399	1145	7	23	15
Future Volume (vph)	6	1399	1145	7	23	15
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	40			0	0	0
Storage Lanes	1			0	1	0
Taper Length (ft)	100				100	
Satd. Flow (prot)	1770	3539	3536	0	1713	0
Flt Permitted	0.950				0.971	
Satd. Flow (perm)	1770	3539	3536	0	1713	0
Link Speed (mph)		40	40		25	
Link Distance (ft)		142	281		960	
Travel Time (s)		2.4	4.8		26.2	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	2%	2%	3%	3%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	7	1554	1280	0	43	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		12	12		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	48.7%
Analysis Period (min)	15
	ICU Level of Service A

HCM Unsignalized Intersection Capacity Analysis
 13: US 17 Bus. (Market St.) & 31st St.

U-4434 Independence Blvd.
 2017 Base Year



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	6	1399	1145	7	23	15
Future Volume (Veh/h)	6	1399	1145	7	23	15
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	7	1554	1272	8	26	17
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (ft)			281			
pX, platoon unblocked	0.77				0.77	0.77
vC, conflicting volume	1280				2067	640
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	771				1791	0
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	99				53	98
cM capacity (veh/h)	648				55	837
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1
Volume Total	7	777	777	848	432	43
Volume Left	7	0	0	0	0	26
Volume Right	0	0	0	0	8	17
cSH	648	1700	1700	1700	1700	87
Volume to Capacity	0.01	0.46	0.46	0.50	0.25	0.49
Queue Length 95th (ft)	1	0	0	0	0	53
Control Delay (s)	10.6	0.0	0.0	0.0	0.0	81.0
Lane LOS	B					F
Approach Delay (s)	0.0			0.0		81.0
Approach LOS						F
Intersection Summary						
Average Delay			1.2			
Intersection Capacity Utilization			48.7%		ICU Level of Service	A
Analysis Period (min)			15			

Lanes, Volumes, Timings
 14: Covil Ave./Montgomery Ave. & US 17 Bus. (Market St.)

U-4434 Independence Blvd.

2017 Base Year

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	8	856	312	561	1076	21	308	107	439	21	140	11
Future Volume (vph)	8	856	312	561	1076	21	308	107	439	21	140	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	175		0	0		0	0		650	35		0
Storage Lanes	1		0	1		0	0		1	1		0
Taper Length (ft)	100			100			100			100		
Satd. Flow (prot)	1770	3398	0	1770	3529	0	0	1796	1583	1770	1842	0
Flt Permitted	0.230			0.950				0.100		0.498		
Satd. Flow (perm)	428	3398	0	1770	3529	0	0	186	1583	928	1842	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		40			40			35			25	
Link Distance (ft)		281			164			1137			915	
Travel Time (s)		4.8			2.8			22.1			25.0	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	9	1298	0	623	1219	0	0	461	488	23	168	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Perm	NA		Prot	NA		Perm	NA	pt+ov	Perm	NA	
Protected Phases		2		1	6			4	4 1		3	
Permitted Phases	2						4			3		
Detector Phase	2	2		1	6		4	4	4 1	3	3	
Switch Phase												
Minimum Initial (s)	12.0	12.0		7.0	12.0		7.0	7.0		7.0	7.0	
Minimum Split (s)	19.0	19.0		14.0	19.0		14.0	14.0		14.0	14.0	
Total Split (s)	47.0	47.0		39.0	86.0		40.0	40.0		14.0	14.0	
Total Split (%)	33.6%	33.6%		27.9%	61.4%		28.6%	28.6%		10.0%	10.0%	
Maximum Green (s)	41.0	41.0		33.7	80.0		34.2	34.2		7.9	7.9	
Yellow Time (s)	4.2	4.2		3.0	4.2		3.8	3.8		3.1	3.1	
All-Red Time (s)	1.8	1.8		2.3	1.8		2.0	2.0		3.0	3.0	
Lost Time Adjust (s)	-1.0	-1.0		-0.3	-1.0			-0.8		-1.1	-1.1	
Total Lost Time (s)	5.0	5.0		5.0	5.0			5.0		5.0	5.0	
Lead/Lag	Lag	Lag		Lead			Lead	Lead		Lag	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	6.0	6.0		2.0	6.0		2.0	2.0		2.0	2.0	
Minimum Gap (s)	3.0	3.0		0.2	3.0		0.2	0.2		0.2	0.2	
Time Before Reduce (s)	15.0	15.0		0.0	15.0		0.0	0.0		0.0	0.0	
Time To Reduce (s)	30.0	30.0		0.0	30.0		0.0	0.0		0.0	0.0	
Recall Mode	C-Min	C-Min		None	C-Min		None	None		None	None	
Act Effect Green (s)	42.0	42.0		34.0	81.0			35.0	69.0	9.0	9.0	

Lanes, Volumes, Timings
 14: Covil Ave./Montgomery Ave. & US 17 Bus. (Market St.)

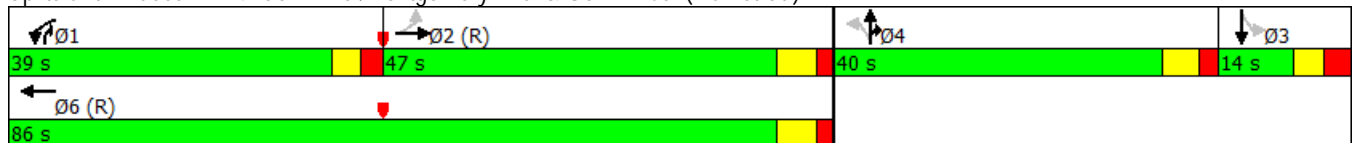
U-4434 Independence Blvd.
 2017 Base Year

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Actuated g/C Ratio	0.30	0.30		0.24	0.58			0.25	0.49	0.06	0.06	
v/c Ratio	0.07	1.27		1.45	0.60			10.02	0.63	0.39	1.42	
Control Delay	37.1	171.2		254.2	20.5			4108.7	20.0	82.2	277.3	
Queue Delay	0.0	0.0		0.0	0.0			0.0	0.0	0.0	0.0	
Total Delay	37.1	171.2		254.2	20.5			4108.7	20.0	82.2	277.3	
LOS	D	F		F	C			F	C	F	F	
Approach Delay		170.3			99.5			2006.2			253.8	
Approach LOS		F			F			F			F	
Queue Length 50th (ft)	6	~784		~771	361			~798	226	21	~206	
Queue Length 95th (ft)	21	#924		#1007	428			#1019	313	53	#357	
Internal Link Dist (ft)		201			84			1057			835	
Turn Bay Length (ft)	175								650	35		
Base Capacity (vph)	128	1019		429	2041			46	780	59	118	
Starvation Cap Reductn	0	0		0	0			0	0	0	0	
Spillback Cap Reductn	0	0		0	0			0	0	0	0	
Storage Cap Reductn	0	0		0	0			0	0	0	0	
Reduced v/c Ratio	0.07	1.27		1.45	0.60			10.02	0.63	0.39	1.42	

Intersection Summary

Area Type: Other
 Cycle Length: 140
 Actuated Cycle Length: 140
 Offset: 101 (72%), Referenced to phase 2:EBTL and 6:WBT, Start of Green
 Natural Cycle: 65
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 10.02
 Intersection Signal Delay: 549.9 Intersection LOS: F
 Intersection Capacity Utilization 112.1% ICU Level of Service H
 Analysis Period (min) 15
 ~ Volume exceeds capacity, queue is theoretically infinite.
 Queue shown is maximum after two cycles.
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.





















Splits and Phases: 14: Covil Ave./Montgomery Ave. & US 17 Bus. (Market St.)



Lanes, Volumes, Timings
 14: Covil Ave./Montgomery Ave. & US 17 Bus. (Market St.)

U-4434 Independence Blvd.

2017 Base Year

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	11	1076	308	439	856	21	312	140	561	21	107	8
Future Volume (vph)	11	1076	308	439	856	21	312	140	561	21	107	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	175		0	0		0	0		650	35		0
Storage Lanes	1		0	1		0	0		1	1		0
Taper Length (ft)	100			100			100			100		
Satd. Flow (prot)	1770	3422	0	1770	3525	0	0	1801	1583	1770	1842	0
Flt Permitted	0.238			0.950				0.047		0.479		
Satd. Flow (perm)	443	3422	0	1770	3525	0	0	88	1583	892	1842	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		40			40			35			25	
Link Distance (ft)		281			164			1137			915	
Travel Time (s)		4.8			2.8			22.1			25.0	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	12	1538	0	488	974	0	0	503	623	23	128	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Perm	NA		Prot	NA		Perm	NA	pt+ov	Perm	NA	
Protected Phases		2		1	6			4	4 1		3	
Permitted Phases	2						4			3		
Detector Phase	2	2		1	6		4	4	4 1	3	3	
Switch Phase												
Minimum Initial (s)	12.0	12.0		7.0	12.0		7.0	7.0		7.0	7.0	
Minimum Split (s)	19.0	19.0		14.0	19.0		14.0	14.0		14.0	14.0	
Total Split (s)	43.0	43.0		26.0	69.0		77.0	77.0		14.0	14.0	
Total Split (%)	26.9%	26.9%		16.3%	43.1%		48.1%	48.1%		8.8%	8.8%	
Maximum Green (s)	37.0	37.0		20.7	63.0		71.2	71.2		7.9	7.9	
Yellow Time (s)	4.2	4.2		3.0	4.2		3.8	3.8		3.1	3.1	
All-Red Time (s)	1.8	1.8		2.3	1.8		2.0	2.0		3.0	3.0	
Lost Time Adjust (s)	-1.0	-1.0		-0.3	-1.0			-0.8		-1.1	-1.1	
Total Lost Time (s)	5.0	5.0		5.0	5.0			5.0		5.0	5.0	
Lead/Lag	Lag	Lag		Lead			Lead	Lead		Lag	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	6.0	6.0		2.0	6.0		2.0	2.0		2.0	2.0	
Minimum Gap (s)	3.0	3.0		0.2	3.0		0.2	0.2		0.2	0.2	
Time Before Reduce (s)	15.0	15.0		0.0	15.0		0.0	0.0		0.0	0.0	
Time To Reduce (s)	30.0	30.0		0.0	30.0		0.0	0.0		0.0	0.0	
Recall Mode	C-Min	C-Min		None	C-Min		None	None		None	None	
Act Effect Green (s)	38.0	38.0		21.0	64.0			72.0	93.0	9.0	9.0	

Lanes, Volumes, Timings
 14: Covil Ave./Montgomery Ave. & US 17 Bus. (Market St.)

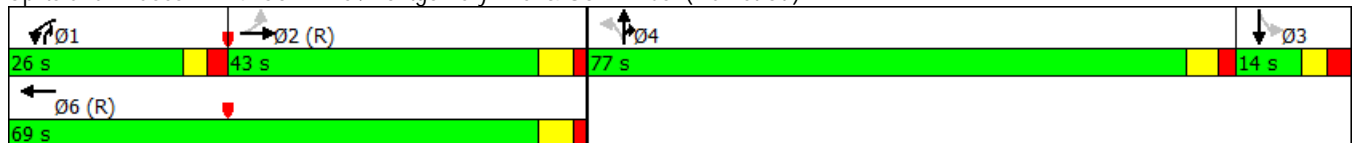
U-4434 Independence Blvd.
 2017 Base Year

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Actuated g/C Ratio	0.24	0.24		0.13	0.40			0.45	0.58	0.06	0.06	
v/c Ratio	0.11	1.89		2.10	0.69			12.90	0.68	0.46	1.24	
Control Delay	51.5	438.9		541.6	43.0			5408.0	18.1	101.6	224.8	
Queue Delay	0.0	0.0		0.0	0.0			0.0	0.0	0.0	0.0	
Total Delay	51.5	438.9		541.6	43.0			5408.0	18.1	101.6	224.8	
LOS	D	F		F	D			F	B	F	F	
Approach Delay		435.9			209.4			2425.9			206.0	
Approach LOS		F			F			F			F	
Queue Length 50th (ft)	10	~1291		~806	442			~1018	300	24	~165	
Queue Length 95th (ft)	31	#1430		#1036	523			#1253	402	#63	#308	
Internal Link Dist (ft)		201			84			1057			835	
Turn Bay Length (ft)	175								650	35		
Base Capacity (vph)	105	812		232	1410			39	920	50	103	
Starvation Cap Reductn	0	0		0	0			0	0	0	0	
Spillback Cap Reductn	0	0		0	0			0	0	0	0	
Storage Cap Reductn	0	0		0	0			0	0	0	0	
Reduced v/c Ratio	0.11	1.89		2.10	0.69			12.90	0.68	0.46	1.24	

Intersection Summary

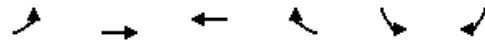
Area Type: Other
 Cycle Length: 160
 Actuated Cycle Length: 160
 Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBT, Start of Green
 Natural Cycle: 65
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 12.90
 Intersection Signal Delay: 873.0 Intersection LOS: F
 Intersection Capacity Utilization 107.7% ICU Level of Service G
 Analysis Period (min) 15
 ~ Volume exceeds capacity, queue is theoretically infinite.
 Queue shown is maximum after two cycles.
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 14: Covil Ave./Montgomery Ave. & US 17 Bus. (Market St.)



Lanes, Volumes, Timings
 15: US 17 Bus. (Market St.) & Evans St.

U-4434 Independence Blvd.
 2017 Base Year



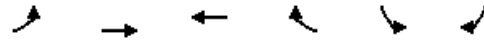
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↔↕	↔↕↔		↔↕	
Traffic Volume (vph)	6	1331	1628	7	4	4
Future Volume (vph)	6	1331	1628	7	4	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0			0	0	0
Storage Lanes	0			0	1	0
Taper Length (ft)	100				100	
Satd. Flow (prot)	0	3505	5031	0	1662	0
Flt Permitted					0.976	
Satd. Flow (perm)	0	3505	5031	0	1662	0
Link Speed (mph)		40	40		25	
Link Distance (ft)		164	218		894	
Travel Time (s)		2.8	3.7		24.4	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	2%	2%	4%	4%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	1486	1817	0	8	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	51.0%
Analysis Period (min)	15
	ICU Level of Service A

HCM Unsignalized Intersection Capacity Analysis
 15: US 17 Bus. (Market St.) & Evans St.

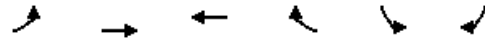
U-4434 Independence Blvd.
 2017 Base Year



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↔↕	↕↔↔		↕↔	
Traffic Volume (veh/h)	6	1331	1628	7	4	4
Future Volume (Veh/h)	6	1331	1628	7	4	4
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	7	1479	1809	8	4	4
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (ft)		164				
pX, platoon unblocked					0.70	
vC, conflicting volume	1817				2566	607
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1817				2385	607
tC, single (s)	4.2				6.9	7.0
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	98				79	99
cM capacity (veh/h)	329				19	435
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	SB 1
Volume Total	500	986	724	724	370	8
Volume Left	7	0	0	0	0	4
Volume Right	0	0	0	0	8	4
cSH	329	1700	1700	1700	1700	37
Volume to Capacity	0.02	0.58	0.43	0.43	0.22	0.22
Queue Length 95th (ft)	2	0	0	0	0	18
Control Delay (s)	0.7	0.0	0.0	0.0	0.0	129.2
Lane LOS	A					F
Approach Delay (s)	0.2		0.0			129.2
Approach LOS						F
Intersection Summary						
Average Delay			0.4			
Intersection Capacity Utilization			51.0%		ICU Level of Service	A
Analysis Period (min)			15			

Lanes, Volumes, Timings
 15: US 17 Bus. (Market St.) & Evans St.

U-4434 Independence Blvd.
 2017 Base Year



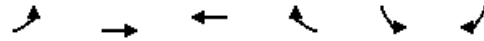
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↔↕	↔↕↔		↕↔	
Traffic Volume (vph)	5	1628	1331	4	7	7
Future Volume (vph)	5	1628	1331	4	7	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0			0	0	0
Storage Lanes	0			0	1	0
Taper Length (ft)	100				100	
Satd. Flow (prot)	0	3505	5036	0	1662	0
Flt Permitted					0.976	
Satd. Flow (perm)	0	3505	5036	0	1662	0
Link Speed (mph)		40	40		25	
Link Distance (ft)		164	218		894	
Travel Time (s)		2.8	3.7		24.4	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	2%	2%	4%	4%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	1815	1483	0	16	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	58.5%
Analysis Period (min)	15
	ICU Level of Service B

HCM Unsignalized Intersection Capacity Analysis
 15: US 17 Bus. (Market St.) & Evans St.

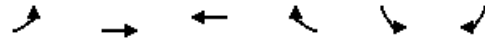
U-4434 Independence Blvd.
 2017 Base Year



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↔↕	↕↔↔		↕↔	
Traffic Volume (veh/h)	5	1628	1331	4	7	7
Future Volume (Veh/h)	5	1628	1331	4	7	7
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	6	1809	1479	4	8	8
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (ft)		164				
pX, platoon unblocked					0.76	
vC, conflicting volume	1483				2398	495
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1483				2212	495
tC, single (s)	4.2				6.9	7.0
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	99				71	98
cM capacity (veh/h)	445				27	515
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	SB 1
Volume Total	609	1206	592	592	300	16
Volume Left	6	0	0	0	0	8
Volume Right	0	0	0	0	4	8
cSH	445	1700	1700	1700	1700	52
Volume to Capacity	0.01	0.71	0.35	0.35	0.18	0.31
Queue Length 95th (ft)	1	0	0	0	0	27
Control Delay (s)	0.4	0.0	0.0	0.0	0.0	102.1
Lane LOS	A					F
Approach Delay (s)	0.1		0.0			102.1
Approach LOS						F
Intersection Summary						
Average Delay			0.6			
Intersection Capacity Utilization			58.5%		ICU Level of Service	B
Analysis Period (min)			15			

Lanes, Volumes, Timings
 16: US 17 Bus. (Market St.) & Clay St.

U-4434 Independence Blvd.
 2017 Base Year



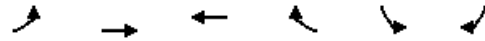
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	3	1330	1627	4	10	10
Future Volume (vph)	3	1330	1627	4	10	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	35			0	0	0
Storage Lanes	1			0	1	0
Taper Length (ft)	100				100	
Satd. Flow (prot)	1752	3505	3505	0	1694	0
Flt Permitted	0.950				0.976	
Satd. Flow (perm)	1752	3505	3505	0	1694	0
Link Speed (mph)		40	40		25	
Link Distance (ft)		218	274		819	
Travel Time (s)		3.7	4.7		22.3	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	2%	2%	5%	5%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	3	1478	1812	0	22	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		12	12		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	55.1%
Analysis Period (min)	15
	ICU Level of Service B

HCM Unsignalized Intersection Capacity Analysis
 16: US 17 Bus. (Market St.) & Clay St.

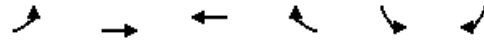
U-4434 Independence Blvd.
 2017 Base Year



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	3	1330	1627	4	10	10
Future Volume (Veh/h)	3	1330	1627	4	10	10
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	3	1478	1808	4	11	11
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (ft)		382				
pX, platoon unblocked					0.71	
vC, conflicting volume	1812				2555	906
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1812				2372	906
tC, single (s)	4.2				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	99				46	96
cM capacity (veh/h)	331				20	279
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1
Volume Total	3	739	739	1205	607	22
Volume Left	3	0	0	0	0	11
Volume Right	0	0	0	0	4	11
cSH	331	1700	1700	1700	1700	38
Volume to Capacity	0.01	0.43	0.43	0.71	0.36	0.58
Queue Length 95th (ft)	1	0	0	0	0	51
Control Delay (s)	16.0	0.0	0.0	0.0	0.0	188.6
Lane LOS	C					F
Approach Delay (s)	0.0			0.0		188.6
Approach LOS						F
Intersection Summary						
Average Delay			1.3			
Intersection Capacity Utilization			55.1%		ICU Level of Service	B
Analysis Period (min)			15			

Lanes, Volumes, Timings
 16: US 17 Bus. (Market St.) & Clay St.

U-4434 Independence Blvd.
 2017 Base Year



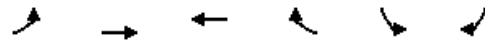
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	11	1627	1330	9	3	3
Future Volume (vph)	11	1627	1330	9	3	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	35			0	0	0
Storage Lanes	1			0	1	0
Taper Length (ft)	100				100	
Satd. Flow (prot)	1752	3505	3501	0	1694	0
Flt Permitted	0.950				0.976	
Satd. Flow (perm)	1752	3505	3501	0	1694	0
Link Speed (mph)		40	40		25	
Link Distance (ft)		218	274		819	
Travel Time (s)		3.7	4.7		22.3	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	2%	2%	5%	5%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	12	1808	1488	0	6	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		12	12		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	55.0%
Analysis Period (min)	15
	ICU Level of Service A

HCM Unsignalized Intersection Capacity Analysis
 16: US 17 Bus. (Market St.) & Clay St.
























U-4434 Independence Blvd.
 2017 Base Year



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	11	1627	1330	9	3	3
Future Volume (Veh/h)	11	1627	1330	9	3	3
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	12	1808	1478	10	3	3
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (ft)		382				
pX, platoon unblocked					0.77	
vC, conflicting volume	1488				2411	744
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1488				2232	744
tC, single (s)	4.2				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	97				89	99
cM capacity (veh/h)	443				27	357
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1
Volume Total	12	904	904	985	503	6
Volume Left	12	0	0	0	0	3
Volume Right	0	0	0	0	10	3
cSH	443	1700	1700	1700	1700	50
Volume to Capacity	0.03	0.53	0.53	0.58	0.30	0.12
Queue Length 95th (ft)	2	0	0	0	0	10
Control Delay (s)	13.4	0.0	0.0	0.0	0.0	86.1
Lane LOS	B					F
Approach Delay (s)	0.1			0.0		86.1
Approach LOS						F
Intersection Summary						
Average Delay			0.2			
Intersection Capacity Utilization			55.0%		ICU Level of Service	A
Analysis Period (min)			15			

Lanes, Volumes, Timings
 17: Darlington Ave./Henry St. & US 17 Bus. (Market St.)

U-4434 Independence Blvd.
 2017 Base Year
























												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			 						 	
Traffic Volume (vph)	16	1212	94	122	1496	9	129	11	135	12	14	27
Future Volume (vph)	16	1212	94	122	1496	9	129	11	135	12	14	27
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150		0	500		0	150		0	0		0
Storage Lanes	1		0	1		0	1		1	0		0
Taper Length (ft)	100			100			100			100		
Satd. Flow (prot)	1752	3466	0	1752	3501	0	0	1781	1583	0	1698	0
Flt Permitted	0.950			0.950				0.956			0.989	
Satd. Flow (perm)	1752	3466	0	1752	3501	0	0	1781	1583	0	1698	0
Link Speed (mph)		40			40			25			25	
Link Distance (ft)		274			2396			913			767	
Travel Time (s)		4.7			40.8			24.9			20.9	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	18	1451	0	136	1672	0	0	155	150	0	59	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			24			24	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	69.4%
Analysis Period (min)	15
	ICU Level of Service C























HCM Unsignalized Intersection Capacity Analysis
 17: Darlington Ave./Henry St. & US 17 Bus. (Market St.)

U-4434 Independence Blvd.
 2017 Base Year

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			 				 		 	
Traffic Volume (veh/h)	16	1212	94	122	1496	9	129	11	135	12	14	27
Future Volume (Veh/h)	16	1212	94	122	1496	9	129	11	135	12	14	27
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	18	1347	104	136	1662	10	143	12	150	13	16	30
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)		656										
pX, platoon unblocked				0.72			0.72	0.72	0.72	0.72	0.72	
vC, conflicting volume	1672			1451			2576	3379	726	2804	3426	836
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1672			834			2407	3530	0	2727	3596	836
tC, single (s)	4.2			4.2			7.5	6.5	6.9	7.6	6.6	7.0
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	95			76			0	0	81	0	0	90
cM capacity (veh/h)	375			564			0	3	776	0	3	308
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	NB 2	SB 1			
Volume Total	18	898	553	136	1108	564	155	150	59			
Volume Left	18	0	0	136	0	0	143	0	13			
Volume Right	0	0	104	0	0	10	0	150	30			
cSH	375	1700	1700	564	1700	1700	0	776	0			
Volume to Capacity	0.05	0.53	0.33	0.24	0.65	0.33	Err	0.19	Err			
Queue Length 95th (ft)	4	0	0	23	0	0	Err	18	Err			
Control Delay (s)	15.1	0.0	0.0	13.4	0.0	0.0	Err	10.8	Err			
Lane LOS	C			B			F	B	F			
Approach Delay (s)	0.2			1.0			Err		Err			
Approach LOS							F		F			
Intersection Summary												
Average Delay			Err									
Intersection Capacity Utilization			69.4%		ICU Level of Service					C		
Analysis Period (min)			15									

Lanes, Volumes, Timings
 17: Darlington Ave./Henry St. & US 17 Bus. (Market St.)

U-4434 Independence Blvd.
 2017 Base Year

























												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			 						 	
Traffic Volume (vph)	27	1496	129	135	1212	12	94	14	122	9	11	16
Future Volume (vph)	27	1496	129	135	1212	12	94	14	122	9	11	16
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150		0	500		0	150		0	0		0
Storage Lanes	1		0	1		0	1		1	0		0
Taper Length (ft)	100			100			100			100		
Satd. Flow (prot)	1752	3463	0	1752	3501	0	0	1785	1583	0	1711	0
Flt Permitted	0.950			0.950				0.958			0.988	
Satd. Flow (perm)	1752	3463	0	1752	3501	0	0	1785	1583	0	1711	0
Link Speed (mph)		40			40			25			25	
Link Distance (ft)		274			2396			913			767	
Travel Time (s)		4.7			40.8			24.9			20.9	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	30	1805	0	150	1360	0	0	120	136	0	40	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			24			24	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	












Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	75.5%
Analysis Period (min)	15
	ICU Level of Service D

HCM Unsignalized Intersection Capacity Analysis
 17: Darlington Ave./Henry St. & US 17 Bus. (Market St.)

U-4434 Independence Blvd.
 2017 Base Year

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			 				 		 	
Traffic Volume (veh/h)	27	1496	129	135	1212	12	94	14	122	9	11	16
Future Volume (Veh/h)	27	1496	129	135	1212	12	94	14	122	9	11	16
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	30	1662	143	150	1347	13	104	16	136	10	12	18
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)		656										
pX, platoon unblocked				0.77			0.77	0.77	0.77	0.77	0.77	
vC, conflicting volume	1360			1805			2791	3454	902	2688	3518	680
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1360			1447			2728	3589	275	2595	3674	680
tC, single (s)	4.2			4.2			7.5	6.5	6.9	7.6	6.6	7.0
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	94			58			0	0	76	0	0	95
cM capacity (veh/h)	496			353			0	2	556	0	2	391
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	NB 2	SB 1			
Volume Total	30	1108	697	150	898	462	120	136	40			
Volume Left	30	0	0	150	0	0	104	0	10			
Volume Right	0	0	143	0	0	13	0	136	18			
cSH	496	1700	1700	353	1700	1700	0	556	0			
Volume to Capacity	0.06	0.65	0.41	0.42	0.53	0.27	Err	0.24	Err			
Queue Length 95th (ft)	5	0	0	51	0	0	Err	24	Err			
Control Delay (s)	12.7	0.0	0.0	22.5	0.0	0.0	Err	13.6	Err			
Lane LOS	B			C			F	B	F			
Approach Delay (s)	0.2			2.2			Err		Err			
Approach LOS							F		F			
Intersection Summary												
Average Delay				Err								
Intersection Capacity Utilization			75.5%		ICU Level of Service					D		
Analysis Period (min)			15									












						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	217	74	782	142	59	952
Future Volume (vph)	217	74	782	142	59	952
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150	0		0	100	
Storage Lanes	1	1		0	1	
Taper Length (ft)	100				100	
Satd. Flow (prot)	1770	1583	1806	0	1752	1845
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1770	1583	1806	0	1752	1845
Link Speed (mph)	25		35			35
Link Distance (ft)	991		906			1149
Travel Time (s)	27.0		17.6			22.4
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	241	82	1027	0	66	1058
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free












Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	68.8%
Analysis Period (min)	15
	ICU Level of Service C

HCM Unsignalized Intersection Capacity Analysis
 22: Covil Ave. & Darlington Ave.

U-4434 Independence Blvd.
 2017 Base Year

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	217	74	782	142	59	952
Future Volume (Veh/h)	217	74	782	142	59	952
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	241	82	869	158	66	1058
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	2138	948			1027	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	2138	948			1027	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	0	74			90	
cM capacity (veh/h)	49	316			672	
Direction, Lane #	WB 1	WB 2	NB 1	SB 1	SB 2	
Volume Total	241	82	1027	66	1058	
Volume Left	241	0	0	66	0	
Volume Right	0	82	158	0	0	
cSH	49	316	1700	672	1700	
Volume to Capacity	4.96	0.26	0.60	0.10	0.62	
Queue Length 95th (ft)	Err	25	0	8	0	
Control Delay (s)	Err	20.3	0.0	10.9	0.0	
Lane LOS	F	C		B		
Approach Delay (s)	7465.7		0.0	0.6		
Approach LOS	F					
Intersection Summary						
Average Delay			975.0			
Intersection Capacity Utilization			68.8%	ICU Level of Service		C
Analysis Period (min)			15			












						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	142	59	952	217	74	782
Future Volume (vph)	142	59	952	217	74	782
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150	0		0	100	
Storage Lanes	1	1		0	1	
Taper Length (ft)	100				100	
Satd. Flow (prot)	1770	1583	1799	0	1752	1845
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1770	1583	1799	0	1752	1845
Link Speed (mph)	25		35			35
Link Distance (ft)	991		906			1149
Travel Time (s)	27.0		17.6			22.4
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	158	66	1299	0	82	869
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	77.8%
Analysis Period (min)	15
	ICU Level of Service D

HCM Unsignalized Intersection Capacity Analysis
 22: Covil Ave. & Darlington Ave.

U-4434 Independence Blvd.
 2017 Base Year























						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	142	59	952	217	74	782
Future Volume (Veh/h)	142	59	952	217	74	782
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	158	66	1058	241	82	869
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	2212	1178			1299	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	2212	1178			1299	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	0	72			85	
cM capacity (veh/h)	41	232			530	
Direction, Lane #	WB 1	WB 2	NB 1	SB 1	SB 2	
Volume Total	158	66	1299	82	869	
Volume Left	158	0	0	82	0	
Volume Right	0	66	241	0	0	
cSH	41	232	1700	530	1700	
Volume to Capacity	3.86	0.28	0.76	0.15	0.51	
Queue Length 95th (ft)	Err	28	0	14	0	
Control Delay (s)	Err	26.5	0.0	13.0	0.0	
Lane LOS	F	D		B		
Approach Delay (s)	7060.7		0.0	1.1		
Approach LOS	F					
Intersection Summary						
Average Delay			639.7			
Intersection Capacity Utilization			77.8%	ICU Level of Service		D
Analysis Period (min)			15			

Lanes, Volumes, Timings

U-4434 Independence Blvd.

23: Independence Blvd./Covil Ave. & Mercer Ave./Randall Pkwy.

2017 Base Year

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	4	57	59	848	95	169	79	769	684	171	970	6
Future Volume (vph)	4	57	59	848	95	169	79	769	684	171	970	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		150	500		825	275		750	375		275
Storage Lanes	0		1	1		1	1		1	1		1
Taper Length (ft)	100			100			100			100		
Satd. Flow (prot)	0	1857	1583	3433	1684	0	1770	3539	1583	1770	3536	0
Flt Permitted		0.951		0.950			0.250			0.950		
Satd. Flow (perm)	0	1771	1583	3433	1684	0	466	3539	1583	1770	3536	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		25			35			45			35	
Link Distance (ft)		801			965			826			786	
Travel Time (s)		21.8			18.8			12.5			15.3	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	67	66	942	294	0	88	854	760	190	1085	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Perm	NA	Perm	Prot	NA		Perm	NA	pm+ov	Prot	NA	
Protected Phases		8		7	4			6	7	5	2	
Permitted Phases	8		8				6		6			
Detector Phase	8	8	8	7	4		6	6	7	5	2	
Switch Phase												
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0		12.0	12.0	7.0	7.0	12.0	
Minimum Split (s)	14.0	14.0	14.0	14.0	14.0		19.0	19.0	14.0	14.0	19.0	
Total Split (s)	14.0	14.0	14.0	41.0	55.0		44.0	44.0	41.0	21.0	65.0	
Total Split (%)	11.7%	11.7%	11.7%	34.2%	45.8%		36.7%	36.7%	34.2%	17.5%	54.2%	
Maximum Green (s)	7.0	7.0	7.0	34.0	48.0		37.0	37.0	34.0	14.0	58.0	
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)		-2.0	-2.0	-2.0	-2.0		-2.0	-2.0	-2.0	-2.0	-2.0	
Total Lost Time (s)		5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	
Lead/Lag	Lag	Lag	Lag	Lead			Lag	Lag	Lead	Lead		
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None	None	None	None		C-Min	C-Min	None	None	C-Min	
Act Effct Green (s)		9.0	9.0	37.0	48.2		41.0	41.0	83.1	15.7	61.8	
Actuated g/C Ratio		0.08	0.08	0.31	0.40		0.34	0.34	0.69	0.13	0.52	
v/c Ratio		0.51	0.56	0.89	0.43		0.55	0.71	0.69	0.82	0.60	
Control Delay		67.3	72.2	51.2	27.8		49.6	39.0	16.2	77.9	22.8	

Lanes, Volumes, Timings
 23: Independence Blvd./Covil Ave. & Mercer Ave./Randall Pkwy.

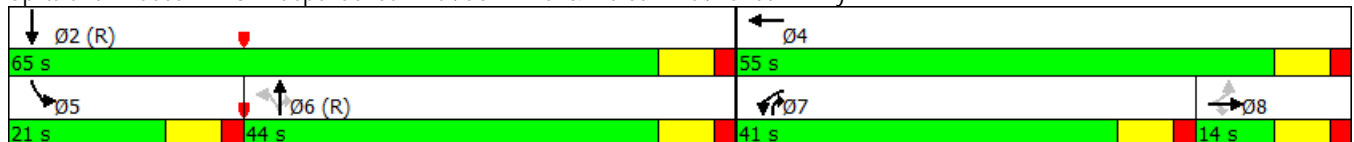
U-4434 Independence Blvd.
 2017 Base Year

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Delay		0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay		67.3	72.2	51.2	27.8		49.6	39.0	16.2	77.9	22.8	
LOS		E	E	D	C		D	D	B	E	C	
Approach Delay		69.7			45.7			29.4			31.0	
Approach LOS		E			D			C			C	
Queue Length 50th (ft)		51	50	358	156		57	312	345	145	314	
Queue Length 95th (ft)		100	#106	#483	236		#129	385	502	#266	378	
Internal Link Dist (ft)		721			885			746			706	
Turn Bay Length (ft)			150	500			275		750	375		
Base Capacity (vph)		132	118	1059	715		163	1240	1096	236	1850	
Starvation Cap Reductn		0	0	0	0		0	0	0	0	0	
Spillback Cap Reductn		0	0	0	0		0	0	0	0	0	
Storage Cap Reductn		0	0	0	0		0	0	0	0	0	
Reduced v/c Ratio		0.51	0.56	0.89	0.41		0.54	0.69	0.69	0.81	0.59	

Intersection Summary

Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 85 (71%), Referenced to phase 2:SBT and 6:NBTL, Start of Green
 Natural Cycle: 90
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.89
 Intersection Signal Delay: 35.7
 Intersection Capacity Utilization 80.4%
 Analysis Period (min) 15
 Intersection LOS: D
 ICU Level of Service D
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 23: Independence Blvd./Covil Ave. & Mercer Ave./Randall Pkwy.

























Lanes, Volumes, Timings

U-4434 Independence Blvd.

23: Independence Blvd./Covil Ave. & Mercer Ave./Randall Pkwy.

2017 Base Year

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	6	95	79	684	57	171	59	970	848	169	769	4
Future Volume (vph)	6	95	79	684	57	171	59	970	848	169	769	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		150	500		825	275		750	375		275
Storage Lanes	0		1	1		1	1		1	1		1
Taper Length (ft)	100			100			100			100		
Satd. Flow (prot)	0	1857	1583	3433	1652	0	1770	3539	1583	1770	3536	0
Flt Permitted		0.955		0.950			0.330			0.950		
Satd. Flow (perm)	0	1779	1583	3433	1652	0	615	3539	1583	1770	3536	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		25			35			45			35	
Link Distance (ft)		801			965			826			786	
Travel Time (s)		21.8			18.8			12.5			15.3	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	113	88	760	253	0	66	1078	942	188	858	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Perm	NA	Perm	Prot	NA		Perm	NA	pm+ov	Prot	NA	
Protected Phases		8		7	4			6	7	5	2	
Permitted Phases	8		8				6		6			
Detector Phase	8	8	8	7	4		6	6	7	5	2	
Switch Phase												
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0		12.0	12.0	7.0	7.0	12.0	
Minimum Split (s)	14.0	14.0	14.0	14.0	14.0		19.0	19.0	14.0	14.0	19.0	
Total Split (s)	14.0	14.0	14.0	37.0	51.0		42.0	42.0	37.0	17.0	59.0	
Total Split (%)	12.7%	12.7%	12.7%	33.6%	46.4%		38.2%	38.2%	33.6%	15.5%	53.6%	
Maximum Green (s)	7.0	7.0	7.0	30.0	44.0		35.0	35.0	30.0	10.0	52.0	
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)		-2.0	-2.0	-2.0	-2.0		-2.0	-2.0	-2.0	-2.0	-2.0	
Total Lost Time (s)		5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	
Lead/Lag	Lag	Lag	Lag	Lead			Lag	Lag	Lead	Lead		
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None	None	None	None		C-Min	C-Min	None	None	C-Min	
Act Effct Green (s)		9.3	9.3	31.1	45.4		36.7	36.7	72.8	12.9	54.6	
Actuated g/C Ratio		0.08	0.08	0.28	0.41		0.33	0.33	0.66	0.12	0.50	
v/c Ratio		0.75	0.66	0.78	0.37		0.32	0.91	0.90	0.91	0.49	
Control Delay		79.2	72.6	42.9	24.2		32.7	47.7	28.7	92.2	19.7	

Lanes, Volumes, Timings
 23: Independence Blvd./Covil Ave. & Mercer Ave./Randall Pkwy.

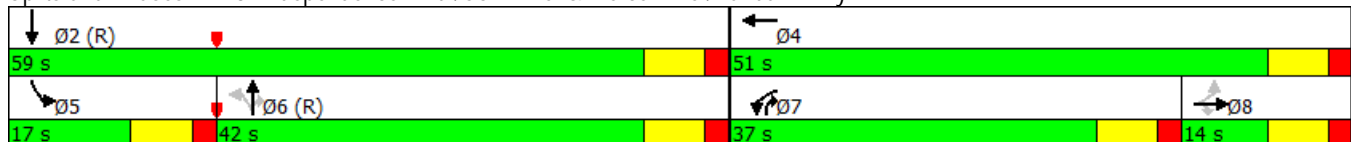
U-4434 Independence Blvd.
 2017 Base Year

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Delay		0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay		79.2	72.6	42.9	24.2		32.7	47.7	28.7	92.2	19.7	
LOS		E	E	D	C		C	D	C	F	B	
Approach Delay		76.3			38.2			38.6			32.8	
Approach LOS		E			D			D			C	
Queue Length 50th (ft)		80	62	251	120		34	379	486	134	207	
Queue Length 95th (ft)		#176	#137	322	187		75	#506	#848	#278	262	
Internal Link Dist (ft)		721			885			746			706	
Turn Bay Length (ft)			150	500			275		750	375		
Base Capacity (vph)		150	134	998	690		206	1190	1060	207	1754	
Starvation Cap Reductn		0	0	0	0		0	0	0	0	0	
Spillback Cap Reductn		0	0	0	0		0	0	0	0	0	
Storage Cap Reductn		0	0	0	0		0	0	0	0	0	
Reduced v/c Ratio		0.75	0.66	0.76	0.37		0.32	0.91	0.89	0.91	0.49	

Intersection Summary

Area Type: Other
 Cycle Length: 110
 Actuated Cycle Length: 110
 Offset: 80 (73%), Referenced to phase 2:SBT and 6:NBTL, Start of Green
 Natural Cycle: 90
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.91
 Intersection Signal Delay: 38.9
 Intersection Capacity Utilization 80.2%
 Analysis Period (min) 15
 Intersection LOS: D
 ICU Level of Service D
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 23: Independence Blvd./Covil Ave. & Mercer Ave./Randall Pkwy.



Summary of All Intervals

Run Number	1	2	3	4	Build AM 20171113 1346	Avg
Start Time	6:50	6:50	6:50	6:50	6:50	6:50
End Time	8:00	8:00	8:00	8:00	8:00	8:00
Total Time (min)	70	70	70	70	70	70
Time Recorded (min)	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1
Vehs Entered	6004	5854	5991	5918	5932	5940
Vehs Exited	5635	5513	5652	5615	5604	5610
Starting Vehs	322	359	366	376	365	358
Ending Vehs	691	700	705	679	693	694
Travel Distance (mi)	4529	4463	4543	4521	4504	4522
Travel Time (hr)	809.6	889.6	835.0	744.8	802.2	822.9
Total Delay (hr)	677.2	759.0	702.3	612.3	669.9	690.5
Total Stops	9849	10363	10454	9841	9994	10149
Fuel Used (gal)	310.9	327.5	316.4	295.2	307.3	313.2

Interval #0 Information Seeding

Start Time	6:50
End Time	7:00
Total Time (min)	10
Volumes adjusted by Growth Factors.	
No data recorded this interval.	

Interval #1 Information Recording

Start Time	7:00
End Time	8:00
Total Time (min)	60
Volumes adjusted by Growth Factors.	

Run Number	1	2	3	4	Build AM 20171113 1346	Avg
Vehs Entered	6004	5854	5991	5918	5932	5940
Vehs Exited	5635	5513	5652	5615	5604	5610
Starting Vehs	322	359	366	376	365	358
Ending Vehs	691	700	705	679	693	694
Travel Distance (mi)	4529	4463	4543	4521	4504	4522
Travel Time (hr)	809.6	889.6	835.0	744.8	802.2	822.9
Total Delay (hr)	677.2	759.0	702.3	612.3	669.9	690.5
Total Stops	9849	10363	10454	9841	9994	10149
Fuel Used (gal)	310.9	327.5	316.4	295.2	307.3	313.2

Intersection: 11: Wayne Dr./30th St. & US 17 Bus. (Market St.)

Movement	EB	EB	EB	WB	WB	NB	SB
Directions Served	L	T	TR	L	TR	LTR	LTR
Maximum Queue (ft)	276	305	320	40	7	830	700
Average Queue (ft)	52	242	251	8	0	549	477
95th Queue (ft)	205	395	400	30	5	1050	890
Link Distance (ft)		276	276		331	819	685
Upstream Blk Time (%)	0	35	47			43	45
Queuing Penalty (veh)	0	0	0			0	0
Storage Bay Dist (ft)	250			300			
Storage Blk Time (%)	0	29					
Queuing Penalty (veh)	0	12					

Intersection: 12: Mercer Ave. & US 17 Bus. (Market St.)

Movement	EB	EB	WB	WB	NB
Directions Served	T	TR	L	T	LR
Maximum Queue (ft)	370	380	49	9	545
Average Queue (ft)	346	353	12	0	259
95th Queue (ft)	377	375	39	7	535
Link Distance (ft)	331	331		108	856
Upstream Blk Time (%)	47	57			
Queuing Penalty (veh)	270	333			
Storage Bay Dist (ft)			40		
Storage Blk Time (%)			2	0	
Queuing Penalty (veh)			13	0	

Intersection: 13: US 17 Bus. (Market St.) & 31st St.

Movement	EB	EB	EB	WB	SB
Directions Served	L	T	T	TR	LR
Maximum Queue (ft)	81	130	135	9	262
Average Queue (ft)	8	118	119	0	118
95th Queue (ft)	42	127	129	7	270
Link Distance (ft)		108	108	203	906
Upstream Blk Time (%)	0	64	67		
Queuing Penalty (veh)	0	369	387		
Storage Bay Dist (ft)	40				
Storage Blk Time (%)	0	71			
Queuing Penalty (veh)	2	9			

Intersection: 14: Covil Ave./Montgomery Ave. & US 17 Bus. (Market St.)

Movement	EB	EB	EB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	TR	L	T	TR	LT	R	L	TR
Maximum Queue (ft)	115	231	230	115	121	128	558	388	134	827
Average Queue (ft)	9	207	208	108	94	99	354	167	54	641
95th Queue (ft)	60	218	218	117	130	126	554	297	148	1060
Link Distance (ft)		203	203	96	96	96	1058			869
Upstream Blk Time (%)	0	64	65	72	11	19				38
Queuing Penalty (veh)	0	367	377	393	61	105				0
Storage Bay Dist (ft)	175							650	35	
Storage Blk Time (%)		68					1		34	95
Queuing Penalty (veh)		5					5		51	20

Intersection: 15: US 17 Bus. (Market St.) & Evans St.

Movement	EB	EB	WB	WB	WB	SB
Directions Served	LT	T	T	T	TR	LR
Maximum Queue (ft)	102	85	157	223	169	87
Average Queue (ft)	10	7	153	186	120	26
95th Queue (ft)	57	48	159	211	210	83
Link Distance (ft)	96	96		157	157	835
Upstream Blk Time (%)	0	0	56	74	6	
Queuing Penalty (veh)	2	1	0	605	52	
Storage Bay Dist (ft)			100			
Storage Blk Time (%)			82	9		
Queuing Penalty (veh)			445	51		

Intersection: 16: US 17 Bus. (Market St.) & Clay St.

Movement	EB	WB	WB	SB
Directions Served	L	T	TR	LR
Maximum Queue (ft)	20	205	194	391
Average Queue (ft)	1	199	83	184
95th Queue (ft)	11	209	216	439
Link Distance (ft)		181	181	764
Upstream Blk Time (%)		73	3	
Queuing Penalty (veh)		604	25	
Storage Bay Dist (ft)	35			
Storage Blk Time (%)	1			
Queuing Penalty (veh)	5			

Intersection: 17: Darlington Ave./Henry St. & US 17 Bus. (Market St.)

Movement	EB	EB	WB	WB	WB	NB	NB	SB
Directions Served	L	TR	L	T	TR	LT	R	LTR
Maximum Queue (ft)	26	10	600	2380	2386	246	879	711
Average Queue (ft)	5	0	416	1824	1796	237	861	533
95th Queue (ft)	19	4	855	2922	2935	255	902	842
Link Distance (ft)		181		2333	2333		864	718
Upstream Blk Time (%)				44	30		97	36
Queuing Penalty (veh)				0	0		0	0
Storage Bay Dist (ft)	150		500			150		
Storage Blk Time (%)				75		100		
Queuing Penalty (veh)				92		135		

Intersection: 22: Covil Ave. & Darlington Ave.

Movement	WB	WB	NB	B218	B218	SB	SB
Directions Served	L	R	TR	T		L	T
Maximum Queue (ft)	250	990	30	695	524	77	65
Average Queue (ft)	249	919	3	88	31	24	2
95th Queue (ft)	252	1108	16	452	259	60	30
Link Distance (ft)		957	845	712	712		1087
Upstream Blk Time (%)		69		0	0		
Queuing Penalty (veh)		0		1	0		
Storage Bay Dist (ft)	150					100	
Storage Blk Time (%)	100	0				0	0
Queuing Penalty (veh)	74	1				1	0

Intersection: 23: Independence Blvd./Covil Ave. & Mercer Ave./Randall Pkwy.

Movement	EB	EB	WB	WB	WB	NB	NB	NB	NB	SB	SB	SB
Directions Served	LT	R	L	L	TR	L	T	T	R	L	T	TR
Maximum Queue (ft)	137	110	449	440	258	314	476	445	386	202	246	255
Average Queue (ft)	58	50	274	296	144	78	311	265	192	97	150	156
95th Queue (ft)	110	96	385	404	230	238	441	398	329	170	234	235
Link Distance (ft)	757			876			775	775				712
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)		150	500		825	275			750	375		275
Storage Blk Time (%)	0	0	0	0		0	20				0	0
Queuing Penalty (veh)	0	0	0	1		0	16				0	0

Network Summary

Network wide Queuing Penalty: 4890

Summary of All Intervals

Run Number	1	2	3	4	Build PM 20171113 1347	Avg
Start Time	4:50	4:50	4:50	4:50	4:50	4:50
End Time	6:00	6:00	6:00	6:00	6:00	6:00
Total Time (min)	70	70	70	70	70	70
Time Recorded (min)	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1
Vehs Entered	5737	5646	5822	5195	5599	5667
Vehs Exited	5496	5346	5539	4705	5414	5323
Starting Vehs	340	366	385	375	402	362
Ending Vehs	581	666	668	865	587	603
Travel Distance (mi)	4449	4374	4427	3675	4406	4397
Travel Time (hr)	910.7	976.8	976.7	1112.6	1092.6	992.3
Total Delay (hr)	780.3	848.5	846.4	1003.2	963.4	863.2
Total Stops	9602	8883	10082	8540	8966	8483
Fuel Used (gal)	331.0	343.0	346.3	355.5	371.7	348.0

Interval #0 Information Seeding

Start Time	4:50
End Time	5:00
Total Time (min)	10
Volumes adjusted by Growth Factors.	
No data recorded this interval.	

Interval #1 Information Recording

Start Time	5:00
End Time	6:00
Total Time (min)	60
Volumes adjusted by Growth Factors.	

Run Number	1	2	3	4	Build PM 20171113 1347	Avg
Vehs Entered	5737	5646	5822	5195	5599	5667
Vehs Exited	5496	5346	5539	4705	5414	5323
Starting Vehs	340	366	385	375	402	362
Ending Vehs	581	666	668	865	587	603
Travel Distance (mi)	4449	4374	4427	3675	4406	4397
Travel Time (hr)	910.7	976.8	976.7	1112.6	1092.6	992.3
Total Delay (hr)	780.3	848.5	846.4	1003.2	963.4	863.2
Total Stops	9602	8883	10082	8540	8966	8483
Fuel Used (gal)	331.0	343.0	346.3	355.5	371.7	348.0

Intersection: 11: Wayne Dr./30th St. & US 17 Bus. (Market St.)

Movement	EB	EB	EB	WB	NB	SB
Directions Served	L	T	TR	L	LTR	LTR
Maximum Queue (ft)	276	319	317	55	597	697
Average Queue (ft)	58	290	293	18	334	585
95th Queue (ft)	229	315	304	51	629	862
Link Distance (ft)		276	276		819	685
Upstream Blk Time (%)	0	63	83			64
Queuing Penalty (veh)	0	0	0			0
Storage Bay Dist (ft)	250			300		
Storage Blk Time (%)		49				
Queuing Penalty (veh)		26				

Intersection: 12: Mercer Ave. & US 17 Bus. (Market St.)

Movement	EB	EB	WB	NB
Directions Served	T	TR	L	LR
Maximum Queue (ft)	366	368	54	865
Average Queue (ft)	348	351	10	599
95th Queue (ft)	363	365	38	1008
Link Distance (ft)	331	331		856
Upstream Blk Time (%)	70	73		21
Queuing Penalty (veh)	477	499		0
Storage Bay Dist (ft)			40	
Storage Blk Time (%)			2	
Queuing Penalty (veh)			11	

Intersection: 13: US 17 Bus. (Market St.) & 31st St.

Movement	EB	EB	EB	SB
Directions Served	L	T	T	LR
Maximum Queue (ft)	50	138	144	772
Average Queue (ft)	3	117	119	415
95th Queue (ft)	25	130	134	794
Link Distance (ft)		108	108	906
Upstream Blk Time (%)	0	72	74	2
Queuing Penalty (veh)	0	508	522	0
Storage Bay Dist (ft)	40			
Storage Blk Time (%)	0	77		
Queuing Penalty (veh)	1	5		

Intersection: 14: Covil Ave./Montgomery Ave. & US 17 Bus. (Market St.)

Movement	EB	EB	EB	WB	WB	WB	NB	NB	B215	SB	SB
Directions Served	L	T	TR	L	T	TR	LT	R	T	L	TR
Maximum Queue (ft)	87	228	232	116	116	125	621	403	182	120	306
Average Queue (ft)	8	207	208	99	85	93	326	203	31	32	134
95th Queue (ft)	47	220	224	145	138	139	606	392	325	98	242
Link Distance (ft)		203	203	96	96	96	1058		1087		869
Upstream Blk Time (%)	0	71	71	69	16	27	3		2		
Queuing Penalty (veh)	0	502	506	309	70	121	29		22		
Storage Bay Dist (ft)	175								650		35
Storage Blk Time (%)		74					3	3		24	73
Queuing Penalty (veh)		8					18	14		28	15

Intersection: 15: US 17 Bus. (Market St.) & Evans St.

Movement	EB	EB	WB	WB	WB	SB
Directions Served	LT	T	T	T	TR	LR
Maximum Queue (ft)	96	100	157	217	166	169
Average Queue (ft)	11	6	147	183	118	78
95th Queue (ft)	62	48	173	225	219	230
Link Distance (ft)	96	96		157	157	835
Upstream Blk Time (%)	4	0	47	72	13	
Queuing Penalty (veh)	33	1	0	481	86	
Storage Bay Dist (ft)			100			
Storage Blk Time (%)			82	8		
Queuing Penalty (veh)			362	35		

Intersection: 16: US 17 Bus. (Market St.) & Clay St.

Movement	EB	WB	WB	SB
Directions Served	L	T	TR	LR
Maximum Queue (ft)	45	207	198	57
Average Queue (ft)	9	195	100	17
95th Queue (ft)	37	223	234	61
Link Distance (ft)		181	181	764
Upstream Blk Time (%)		68	7	
Queuing Penalty (veh)		453	48	
Storage Bay Dist (ft)	35			
Storage Blk Time (%)	9			
Queuing Penalty (veh)	70			

Intersection: 17: Darlington Ave./Henry St. & US 17 Bus. (Market St.)

Movement	EB	EB	EB	WB	WB	WB	NB	NB	SB
Directions Served	L	T	TR	L	T	TR	LT	R	LTR
Maximum Queue (ft)	36	1	15	600	1806	1788	246	878	520
Average Queue (ft)	7	0	1	260	959	908	240	845	294
95th Queue (ft)	24	1	8	714	2077	2039	252	980	651
Link Distance (ft)		181	181		2333	2333		864	718
Upstream Blk Time (%)					7	7		90	8
Queuing Penalty (veh)					0	0		0	0
Storage Bay Dist (ft)	150			500			150		
Storage Blk Time (%)					52		100		
Queuing Penalty (veh)					70		122		

Intersection: 22: Covil Ave. & Darlington Ave.

Movement	WB	WB	NB	B218	B218	SB	SB
Directions Served	L	R	TR	T		L	T
Maximum Queue (ft)	250	993	192	748	666	110	122
Average Queue (ft)	233	712	25	256	66	38	14
95th Queue (ft)	308	1254	245	777	384	84	79
Link Distance (ft)		957	845	712	712		1087
Upstream Blk Time (%)		41	2	2	1		
Queuing Penalty (veh)		0	21	10	8		
Storage Bay Dist (ft)	150					100	
Storage Blk Time (%)	90	2				1	0
Queuing Penalty (veh)	53	3				9	0

Intersection: 23: Independence Blvd./Covil Ave. & Mercer Ave./Randall Pkwy.

Movement	EB	EB	WB	WB	WB	NB	NB	NB	NB	SB	SB	SB
Directions Served	LT	R	L	L	TR	L	T	T	R	L	T	TR
Maximum Queue (ft)	234	185	304	374	308	375	814	788	754	205	212	202
Average Queue (ft)	105	80	187	209	115	263	705	670	567	107	115	121
95th Queue (ft)	210	156	291	320	235	527	928	922	962	196	190	197
Link Distance (ft)	757			876			775	775				712
Upstream Blk Time (%)							35	13	2			
Queuing Penalty (veh)							0	0	0			
Storage Bay Dist (ft)		150	500		825	275			750	375		275
Storage Blk Time (%)	9	1	0	0			80	17	1			0
Queuing Penalty (veh)	7	1	0	2			47	142	6			0

Network Summary




















Network wide Queuing Penalty: 5761

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Lanes, Volumes, Timings
 11: Wayne Dr./30th St. & US 17 Bus. (Market St.)

U-4434 Independence Blvd.
 2040 No Build























												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	39	1182	8	14	1462	48	34	54	46	70	24	71
Future Volume (vph)	39	1182	8	14	1462	48	34	54	46	70	24	71
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	250		0	300		0	0		0	0		0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (ft)	100			100			100			100		
Satd. Flow (prot)	1770	3536	0	1770	3522	0	0	1754	0	0	1718	0
Flt Permitted	0.950			0.950				0.987			0.979	
Satd. Flow (perm)	1770	3536	0	1770	3522	0	0	1754	0	0	1718	0
Link Speed (mph)		40			40			25			25	
Link Distance (ft)		315			411			873			738	
Travel Time (s)		5.4			7.0			23.8			20.1	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	43	1322	0	16	1677	0	0	149	0	0	184	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	64.6%
Analysis Period (min)	15
	ICU Level of Service C

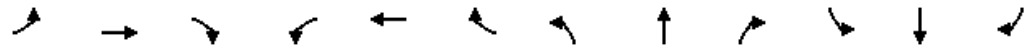
HCM Unsignalized Intersection Capacity Analysis
 11: Wayne Dr./30th St. & US 17 Bus. (Market St.)

U-4434 Independence Blvd.
 2040 No Build

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			 			 			 	
Traffic Volume (veh/h)	39	1182	8	14	1462	48	34	54	46	70	24	71
Future Volume (Veh/h)	39	1182	8	14	1462	48	34	54	46	70	24	71
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	43	1313	9	16	1624	53	38	60	51	78	27	79
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type												
		None			None							
Median storage veh												
Upstream signal (ft)												
					834							
pX, platoon unblocked	0.73						0.73	0.73		0.73	0.73	0.73
vC, conflicting volume	1677			1322			2340	3112	661	2506	3090	838
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1188			1322			2096	3154	661	2323	3124	39
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	90			97			0	0	87	0	0	89
cM capacity (veh/h)	426			519			0	7	405	0	7	747
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1				
Volume Total	43	875	447	16	1083	594	149	184				
Volume Left	43	0	0	16	0	0	38	78				
Volume Right	0	0	9	0	0	53	51	79				
cSH	426	1700	1700	519	1700	1700	0	0				
Volume to Capacity	0.10	0.51	0.26	0.03	0.64	0.35	Err	Err				
Queue Length 95th (ft)	8	0	0	2	0	0	Err	Err				
Control Delay (s)	14.4	0.0	0.0	12.2	0.0	0.0	Err	Err				
Lane LOS	B			B			F	F				
Approach Delay (s)	0.5			0.1			Err	Err				
Approach LOS							F	F				
Intersection Summary												
Average Delay				Err								
Intersection Capacity Utilization			64.6%		ICU Level of Service					C		
Analysis Period (min)			15									

Lanes, Volumes, Timings
 11: Wayne Dr./30th St. & US 17 Bus. (Market St.)

U-4434 Independence Blvd.
 2040 No Build

























Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	72	1461	34	46	1183	70	8	24	14	48	54	39
Future Volume (vph)	72	1461	34	46	1183	70	8	24	14	48	54	39
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	250		0	300		0	0		0	0		0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (ft)	100			100			100			100		
Satd. Flow (prot)	1770	3529	0	1770	3511	0	0	1768	0	0	1763	0
Flt Permitted	0.950			0.950				0.991			0.983	
Satd. Flow (perm)	1770	3529	0	1770	3511	0	0	1768	0	0	1763	0
Link Speed (mph)		40			40			25			25	
Link Distance (ft)		315			411			873			738	
Travel Time (s)		5.4			7.0			23.8			20.1	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	80	1661	0	51	1392	0	0	52	0	0	156	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	69.0%
Analysis Period (min)	15
	ICU Level of Service C

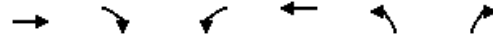
HCM Unsignalized Intersection Capacity Analysis
 11: Wayne Dr./30th St. & US 17 Bus. (Market St.)

U-4434 Independence Blvd.
 2040 No Build

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			 			 			 	
Traffic Volume (veh/h)	72	1461	34	46	1183	70	8	24	14	48	54	39
Future Volume (Veh/h)	72	1461	34	46	1183	70	8	24	14	48	54	39
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	80	1623	38	51	1314	78	9	27	16	53	60	43
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type												
		None			None							
Median storage (veh)												
Upstream signal (ft)												
					834							
pX, platoon unblocked	0.81						0.81	0.81		0.81	0.81	0.81
vC, conflicting volume	1392			1661			2634	3296	830	2456	3276	696
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1020			1661			2549	3364	830	2330	3340	163
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	85			87			0	0	95	0	0	94
cM capacity (veh/h)	549			384			0	5	313	0	5	693
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1				
Volume Total	80	1082	579	51	876	516	52	156				
Volume Left	80	0	0	51	0	0	9	53				
Volume Right	0	0	38	0	0	78	16	43				
cSH	549	1700	1700	384	1700	1700	0	0				
Volume to Capacity	0.15	0.64	0.34	0.13	0.52	0.30	Err	Err				
Queue Length 95th (ft)	13	0	0	11	0	0	Err	Err				
Control Delay (s)	12.7	0.0	0.0	15.8	0.0	0.0	Err	Err				
Lane LOS	B			C			F	F				
Approach Delay (s)	0.6			0.6			Err	Err				
Approach LOS							F	F				
Intersection Summary												
Average Delay			Err									
Intersection Capacity Utilization			69.0%		ICU Level of Service					C		
Analysis Period (min)			15									

Lanes, Volumes, Timings
 12: Mercer Ave. & US 17 Bus. (Market St.)

U-4434 Independence Blvd.
 2040 No Build



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↵	↑↑	↵	
Traffic Volume (vph)	1257	16	49	1536	13	31
Future Volume (vph)	1257	16	49	1536	13	31
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)		0	40		0	0
Storage Lanes		0	1		1	0
Taper Length (ft)			100		100	
Satd. Flow (prot)	3532	0	1770	3539	1660	0
Flt Permitted			0.950		0.986	
Satd. Flow (perm)	3532	0	1770	3539	1660	0
Link Speed (mph)	40			40	25	
Link Distance (ft)	411			142	909	
Travel Time (s)	7.0			2.4	24.8	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	2%	2%	4%	4%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1415	0	54	1707	48	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	52.5%
Analysis Period (min)	15
	ICU Level of Service A

HCM Unsignalized Intersection Capacity Analysis
 12: Mercer Ave. & US 17 Bus. (Market St.)

U-4434 Independence Blvd.
 2040 No Build



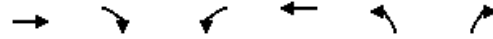
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↑	↑↑	↑	
Traffic Volume (veh/h)	1257	16	49	1536	13	31
Future Volume (Veh/h)	1257	16	49	1536	13	31
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	1397	18	54	1707	14	34
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (ft)				423		
pX, platoon unblocked				0.73		
vC, conflicting volume	1415			2368 708		
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1415			2132 708		
tC, single (s)	4.1			6.8 6.9		
tC, 2 stage (s)						
tF (s)	2.2			3.5 3.3		
p0 queue free %	89			49 91		
cM capacity (veh/h)	478			27 377		

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1
Volume Total	931	484	54	854	854	48
Volume Left	0	0	54	0	0	14
Volume Right	0	18	0	0	0	34
cSH	1700	1700	478	1700	1700	80
Volume to Capacity	0.55	0.28	0.11	0.50	0.50	0.60
Queue Length 95th (ft)	0	0	9	0	0	67
Control Delay (s)	0.0	0.0	13.5	0.0	0.0	102.6
Lane LOS	B			F		
Approach Delay (s)	0.0			102.6		
Approach LOS				F		

Intersection Summary						
Average Delay	1.8					
Intersection Capacity Utilization	52.5%			ICU Level of Service	A	
Analysis Period (min)	15					

Lanes, Volumes, Timings
 12: Mercer Ave. & US 17 Bus. (Market St.)

U-4434 Independence Blvd.
 2040 No Build



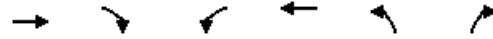
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↑	↑↑	↑	
Traffic Volume (vph)	1536	14	30	1258	18	48
Future Volume (vph)	1536	14	30	1258	18	48
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)		0	40		0	0
Storage Lanes		0	1		1	0
Taper Length (ft)			100		100	
Satd. Flow (prot)	3536	0	1770	3539	1657	0
Flt Permitted			0.950		0.986	
Satd. Flow (perm)	3536	0	1770	3539	1657	0
Link Speed (mph)	40			40	25	
Link Distance (ft)	411			142	909	
Travel Time (s)	7.0			2.4	24.8	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	2%	2%	4%	4%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1723	0	33	1398	73	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	53.5%
Analysis Period (min)	15
	ICU Level of Service A

HCM Unsignalized Intersection Capacity Analysis
 12: Mercer Ave. & US 17 Bus. (Market St.)

U-4434 Independence Blvd.
 2040 No Build



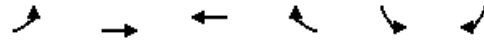
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↑	↑↑	↑	
Traffic Volume (veh/h)	1536	14	30	1258	18	48
Future Volume (Veh/h)	1536	14	30	1258	18	48
Sign Control	Free		Free		Stop	
Grade	0%		0%		0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	1707	16	33	1398	20	53
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None		None			
Median storage (veh)						
Upstream signal (ft)	423					
pX, platoon unblocked					0.81	
vC, conflicting volume			1723		2480	862
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			1723		2356	862
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			91		8	82
cM capacity (veh/h)			363		22	299

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1
Volume Total	1138	585	33	699	699	73
Volume Left	0	0	33	0	0	20
Volume Right	0	16	0	0	0	53
cSH	1700	1700	363	1700	1700	67
Volume to Capacity	0.67	0.34	0.09	0.41	0.41	1.09
Queue Length 95th (ft)	0	0	7	0	0	141
Control Delay (s)	0.0	0.0	15.9	0.0	0.0	243.8
Lane LOS	C			F		
Approach Delay (s)	0.0		0.4			243.8
Approach LOS						F

Intersection Summary						
Average Delay			5.7			
Intersection Capacity Utilization			53.5%	ICU Level of Service	A	
Analysis Period (min)	15					

Lanes, Volumes, Timings
 13: US 17 Bus. (Market St.) & 31st St.

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 2040 No Build



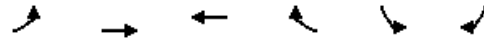
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	13	1284	1566	32	10	5
Future Volume (vph)	13	1284	1566	32	10	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	40			0	0	0
Storage Lanes	1			0	1	0
Taper Length (ft)	100				100	
Satd. Flow (prot)	1770	3539	3529	0	1718	0
Flt Permitted	0.950				0.969	
Satd. Flow (perm)	1770	3539	3529	0	1718	0
Link Speed (mph)		40	40		25	
Link Distance (ft)		142	281		960	
Travel Time (s)		2.4	4.8		26.2	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	2%	2%	3%	3%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	14	1427	1776	0	17	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		12	12		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	54.3%
Analysis Period (min)	15
	ICU Level of Service A

HCM Unsignalized Intersection Capacity Analysis
 13: US 17 Bus. (Market St.) & 31st St.

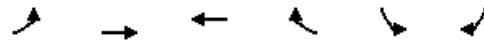
U-4434 Independence Blvd.
 2040 No Build



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↶	↷	↷		↶	
Traffic Volume (veh/h)	13	1284	1566	32	10	5
Future Volume (Veh/h)	13	1284	1566	32	10	5
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	14	1427	1740	36	11	6
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (ft)			281			
pX, platoon unblocked	0.73				0.73	0.73
vC, conflicting volume	1776				2500	888
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1316				2311	94
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	96				51	99
cM capacity (veh/h)	379				22	686
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1
Volume Total	14	714	714	1160	616	17
Volume Left	14	0	0	0	0	11
Volume Right	0	0	0	0	36	6
cSH	379	1700	1700	1700	1700	34
Volume to Capacity	0.04	0.42	0.42	0.68	0.36	0.50
Queue Length 95th (ft)	3	0	0	0	0	42
Control Delay (s)	14.9	0.0	0.0	0.0	0.0	189.7
Lane LOS	B					F
Approach Delay (s)	0.1			0.0		189.7
Approach LOS						F
Intersection Summary						
Average Delay			1.1			
Intersection Capacity Utilization			54.3%		ICU Level of Service	A
Analysis Period (min)			15			

Lanes, Volumes, Timings
 13: US 17 Bus. (Market St.) & 31st St.

U-4434 Independence Blvd.
 2040 No Build



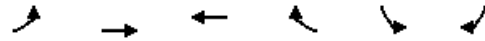
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	6	1566	1284	9	30	15
Future Volume (vph)	6	1566	1284	9	30	15
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	40			0	0	0
Storage Lanes	1			0	1	0
Taper Length (ft)	100				100	
Satd. Flow (prot)	1770	3539	3536	0	1720	0
Flt Permitted	0.950				0.968	
Satd. Flow (perm)	1770	3539	3536	0	1720	0
Link Speed (mph)		40	40		25	
Link Distance (ft)		142	281		960	
Travel Time (s)		2.4	4.8		26.2	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	2%	2%	3%	3%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	7	1740	1437	0	50	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		12	12		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	53.3%
Analysis Period (min)	15
	ICU Level of Service A

HCM Unsignalized Intersection Capacity Analysis
 13: US 17 Bus. (Market St.) & 31st St.

U-4434 Independence Blvd.
 2040 No Build



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	6	1566	1284	9	30	15
Future Volume (Veh/h)	6	1566	1284	9	30	15
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	7	1740	1427	10	33	17
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (ft)			281			
pX, platoon unblocked	0.81				0.81	0.81
vC, conflicting volume	1437				2316	718
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1061				2151	169
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	99				0	98
cM capacity (veh/h)	526				33	681
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1
Volume Total	7	870	870	951	486	50
Volume Left	7	0	0	0	0	33
Volume Right	0	0	0	0	10	17
cSH	526	1700	1700	1700	1700	48
Volume to Capacity	0.01	0.51	0.51	0.56	0.29	1.03
Queue Length 95th (ft)	1	0	0	0	0	111
Control Delay (s)	11.9	0.0	0.0	0.0	0.0	273.4
Lane LOS	B					F
Approach Delay (s)	0.0			0.0		273.4
Approach LOS						F
Intersection Summary						
Average Delay			4.3			
Intersection Capacity Utilization			53.3%		ICU Level of Service	A
Analysis Period (min)			15			

Lanes, Volumes, Timings
 14: Covil Ave./Montgomery Ave. & US 17 Bus. (Market St.)

U-4434 Independence Blvd.

2040 No Build

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	8	970	342	614	1219	21	336	127	481	21	165	10
Future Volume (vph)	8	970	342	614	1219	21	336	127	481	21	165	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	175		0	0		0	0		650	35		0
Storage Lanes	1		0	1		0	0		1	1		0
Taper Length (ft)	100			100			100			100		
Satd. Flow (prot)	1770	3401	0	1770	3529	0	0	1798	1583	1770	1846	0
Flt Permitted	0.196			0.950				0.073		0.474		
Satd. Flow (perm)	365	3401	0	1770	3529	0	0	136	1583	883	1846	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		40			40			35			25	
Link Distance (ft)		281			164			1137			915	
Travel Time (s)		4.8			2.8			22.1			25.0	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	9	1458	0	682	1377	0	0	514	534	23	194	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Perm	NA		Prot	NA		Perm	NA	pt+ov	Perm	NA	
Protected Phases		2		1	6			4	4 1		3	
Permitted Phases	2						4			3		
Detector Phase	2	2		1	6		4	4	4 1	3	3	
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Minimum Split (s)	14.0	14.0		14.0	14.0		14.0	14.0		14.0	14.0	
Total Split (s)	58.0	58.0		51.0	109.0		52.0	52.0		19.0	19.0	
Total Split (%)	32.2%	32.2%		28.3%	60.6%		28.9%	28.9%		10.6%	10.6%	
Maximum Green (s)	51.0	51.0		44.0	102.0		45.0	45.0		12.0	12.0	
Yellow Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-2.0		-2.0	-2.0		-2.0	-2.0	
Total Lost Time (s)	5.0	5.0		5.0	5.0			5.0		5.0	5.0	
Lead/Lag	Lag	Lag		Lead			Lead	Lead		Lag	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes			Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	C-Min	C-Min		None	C-Min		None	None		None	None	
Act Effct Green (s)	53.0	53.0		46.0	104.0			47.0	93.0	14.0	14.0	
Actuated g/C Ratio	0.29	0.29		0.26	0.58			0.26	0.52	0.08	0.08	
v/c Ratio	0.08	1.46		1.51	0.68			14.69	0.65	0.34	1.36	
Control Delay	48.9	253.9		283.1	28.4			6217.4	23.5	92.8	255.2	

Lanes, Volumes, Timings
 14: Covil Ave./Montgomery Ave. & US 17 Bus. (Market St.)

U-4434 Independence Blvd.
 2040 No Build

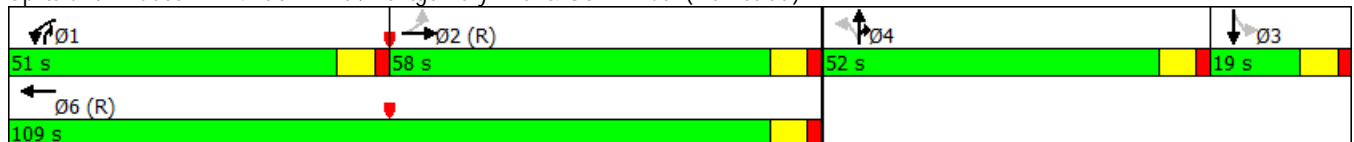
	↖	→	↘	↙	←	↖	↙	↑	↘	↘	↓	↙
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Delay	0.0	0.0		0.0	0.0			0.0	0.0	0.0	0.0	
Total Delay	48.9	253.9		283.1	28.4			6217.4	23.5	92.8	255.2	
LOS	D	F		F	C			F	C	F	F	
Approach Delay		252.6			112.8			3061.3			238.0	
Approach LOS		F			F			F			F	
Queue Length 50th (ft)	8	~1232		~1115	577			~1186	319	26	~299	
Queue Length 95th (ft)	25	#1369		#1371	656			#1431	419	61	#475	
Internal Link Dist (ft)		201			84			1057			835	
Turn Bay Length (ft)	175								650	35		
Base Capacity (vph)	107	1001		452	2038			35	817	68	143	
Starvation Cap Reductn	0	0		0	0			0	0	0	0	
Spillback Cap Reductn	0	0		0	0			0	0	0	0	
Storage Cap Reductn	0	0		0	0			0	0	0	0	
Reduced v/c Ratio	0.08	1.46		1.51	0.68			14.69	0.65	0.34	1.36	

Intersection Summary

Area Type: Other
 Cycle Length: 180
 Actuated Cycle Length: 180
 Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBT, Start of Green
 Natural Cycle: 60
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 14.69
 Intersection Signal Delay: 806.2
 Intersection Capacity Utilization 123.0%
 Analysis Period (min) 15
 Intersection LOS: F
 ICU Level of Service H

~ Volume exceeds capacity, queue is theoretically infinite.
 Queue shown is maximum after two cycles.
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.


























Splits and Phases: 14: Covil Ave./Montgomery Ave. & US 17 Bus. (Market St.)



Lanes, Volumes, Timings
 14: Covil Ave./Montgomery Ave. & US 17 Bus. (Market St.)

U-4434 Independence Blvd.

2040 No Build

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			 				 		 	
Traffic Volume (vph)	10	1219	336	481	970	21	342	165	614	21	127	8
Future Volume (vph)	10	1219	336	481	970	21	342	165	614	21	127	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	175		0	0		0	0		650	35		0
Storage Lanes	1		0	1		0	0		1	1		0
Taper Length (ft)	100			100			100			100		
Satd. Flow (prot)	1770	3426	0	1770	3529	0	0	1801	1583	1770	1846	0
Flt Permitted	0.259			0.950				0.067		0.453		
Satd. Flow (perm)	482	3426	0	1770	3529	0	0	125	1583	844	1846	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		40			40			35			25	
Link Distance (ft)		281			164			1137			915	
Travel Time (s)		4.8			2.8			22.1			25.0	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	11	1727	0	534	1101	0	0	563	682	23	150	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Perm	NA		Prot	NA		Perm	NA	pt+ov	Perm	NA	
Protected Phases		2		1	6			4	4 1		3	
Permitted Phases	2						4			3		
Detector Phase	2	2		1	6		4	4	4 1	3	3	
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Minimum Split (s)	14.0	14.0		14.0	14.0		14.0	14.0		14.0	14.0	
Total Split (s)	67.0	67.0		41.0	108.0		55.0	55.0		17.0	17.0	
Total Split (%)	37.2%	37.2%		22.8%	60.0%		30.6%	30.6%		9.4%	9.4%	
Maximum Green (s)	60.0	60.0		34.0	101.0		48.0	48.0		10.0	10.0	
Yellow Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-2.0		-2.0	-2.0		-2.0	-2.0	
Total Lost Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Lead/Lag	Lag	Lag		Lead			Lead	Lead		Lag	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes			Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	C-Min	C-Min		None	C-Min		None	None		None	None	
Act Effct Green (s)	62.0	62.0		36.0	103.0		50.0	86.0		12.0	12.0	
Actuated g/C Ratio	0.34	0.34		0.20	0.57		0.28	0.48		0.07	0.07	
v/c Ratio	0.07	1.46		1.51	0.55		16.56	0.90		0.41	1.22	
Control Delay	41.3	253.8		288.1	25.2		7061.0	46.4		102.7	215.7	

Lanes, Volumes, Timings
 14: Covil Ave./Montgomery Ave. & US 17 Bus. (Market St.)

U-4434 Independence Blvd.
 2040 No Build

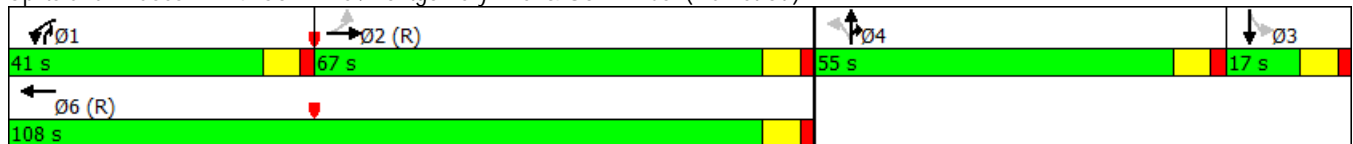
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Delay	0.0	0.0		0.0	0.0			0.0	0.0	0.0	0.0	
Total Delay	41.3	253.8		288.1	25.2			7061.0	46.4	102.7	215.7	
LOS	D	F		F	C			F	D	F	F	
Approach Delay		252.5			111.1			3218.5			200.6	
Approach LOS		F			F			F			F	
Queue Length 50th (ft)	9	~1463		~873	415			~1309	550	27	~216	
Queue Length 95th (ft)	27	#1595		#1117	478			#1558	#788	62	#378	
Internal Link Dist (ft)		201			84			1057			835	
Turn Bay Length (ft)	175								650	35		
Base Capacity (vph)	166	1180		354	2019			34	756	56	123	
Starvation Cap Reductn	0	0		0	0			0	0	0	0	
Spillback Cap Reductn	0	0		0	0			0	0	0	0	
Storage Cap Reductn	0	0		0	0			0	0	0	0	
Reduced v/c Ratio	0.07	1.46		1.51	0.55			16.56	0.90	0.41	1.22	

Intersection Summary

Area Type: Other
 Cycle Length: 180
 Actuated Cycle Length: 180
 Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBT, Start of Green
 Natural Cycle: 60
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 16.56
 Intersection Signal Delay: 973.1
 Intersection Capacity Utilization 122.5%
 Analysis Period (min) 15
 Intersection LOS: F
 ICU Level of Service H

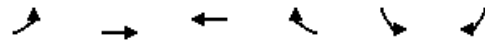
~ Volume exceeds capacity, queue is theoretically infinite.
 Queue shown is maximum after two cycles.
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 14: Covil Ave./Montgomery Ave. & US 17 Bus. (Market St.)



Lanes, Volumes, Timings
 15: US 17 Bus. (Market St.) & Evans St.

U-4434 Independence Blvd.
 2040 No Build



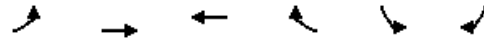
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↔↕	↔↕↔		↔↕	
Traffic Volume (vph)	12	1484	1815	14	9	9
Future Volume (vph)	12	1484	1815	14	9	9
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0			0	0	0
Storage Lanes	0			0	1	0
Taper Length (ft)	100				100	
Satd. Flow (prot)	0	3505	5031	0	1662	0
Flt Permitted					0.976	
Satd. Flow (perm)	0	3505	5031	0	1662	0
Link Speed (mph)		40	40		25	
Link Distance (ft)		164	218		894	
Travel Time (s)		2.8	3.7		24.4	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	2%	2%	4%	4%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	1662	2033	0	20	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	59.4%
Analysis Period (min)	15
	ICU Level of Service B

HCM Unsignalized Intersection Capacity Analysis
 15: US 17 Bus. (Market St.) & Evans St.

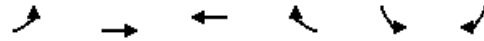
U-4434 Independence Blvd.
 2040 No Build



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↔↑	↔↑↔		↔↓	
Traffic Volume (veh/h)	12	1484	1815	14	9	9
Future Volume (Veh/h)	12	1484	1815	14	9	9
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	13	1649	2017	16	10	10
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (ft)		164				
pX, platoon unblocked					0.71	
vC, conflicting volume	2033				2876	680
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	2033				2824	680
tC, single (s)	4.2				6.9	7.0
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	95				0	97
cM capacity (veh/h)	271				9	389
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	SB 1
Volume Total	563	1099	807	807	419	20
Volume Left	13	0	0	0	0	10
Volume Right	0	0	0	0	16	10
cSH	271	1700	1700	1700	1700	18
Volume to Capacity	0.05	0.65	0.47	0.47	0.25	1.11
Queue Length 95th (ft)	4	0	0	0	0	72
Control Delay (s)	1.8	0.0	0.0	0.0	0.0	549.0
Lane LOS	A					F
Approach Delay (s)	0.6		0.0			549.0
Approach LOS						F
Intersection Summary						
Average Delay			3.2			
Intersection Capacity Utilization			59.4%		ICU Level of Service	B
Analysis Period (min)			15			

Lanes, Volumes, Timings
 15: US 17 Bus. (Market St.) & Evans St.

U-4434 Independence Blvd.
 2040 No Build



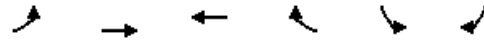
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↔↕	↕↔↔		↕↔	
Traffic Volume (vph)	10	1815	1484	8	13	13
Future Volume (vph)	10	1815	1484	8	13	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0			0	0	0
Storage Lanes	0			0	1	0
Taper Length (ft)	100				100	
Satd. Flow (prot)	0	3505	5031	0	1662	0
Flt Permitted					0.976	
Satd. Flow (perm)	0	3505	5031	0	1662	0
Link Speed (mph)		40	40		25	
Link Distance (ft)		164	218		894	
Travel Time (s)		2.8	3.7		24.4	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	2%	2%	4%	4%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	2028	1658	0	28	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	67.2%
Analysis Period (min)	15
	ICU Level of Service C

HCM Unsignalized Intersection Capacity Analysis
 15: US 17 Bus. (Market St.) & Evans St.

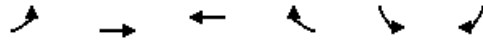
U-4434 Independence Blvd.
 2040 No Build



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↔↕	↕↔↔		↕↔	
Traffic Volume (veh/h)	10	1815	1484	8	13	13
Future Volume (Veh/h)	10	1815	1484	8	13	13
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	11	2017	1649	9	14	14
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (ft)		164				
pX, platoon unblocked					0.66	
vC, conflicting volume	1658				2684	554
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1658				2520	554
tC, single (s)	4.2				6.9	7.0
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	97				2	97
cM capacity (veh/h)	380				14	471
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	SB 1
Volume Total	683	1345	660	660	339	28
Volume Left	11	0	0	0	0	14
Volume Right	0	0	0	0	9	14
cSH	380	1700	1700	1700	1700	28
Volume to Capacity	0.03	0.79	0.39	0.39	0.20	1.01
Queue Length 95th (ft)	2	0	0	0	0	82
Control Delay (s)	0.9	0.0	0.0	0.0	0.0	381.8
Lane LOS	A					F
Approach Delay (s)	0.3		0.0			381.8
Approach LOS						F
Intersection Summary						
Average Delay			3.0			
Intersection Capacity Utilization			67.2%		ICU Level of Service	C
Analysis Period (min)			15			

Lanes, Volumes, Timings
 16: US 17 Bus. (Market St.) & Clay St.

U-4434 Independence Blvd.
 2040 No Build



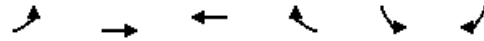
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	6	1482	1813	7	19	20
Future Volume (vph)	6	1482	1813	7	19	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	35			0	0	0
Storage Lanes	1			0	1	0
Taper Length (ft)	100				100	
Satd. Flow (prot)	1752	3505	3501	0	1693	0
Flt Permitted	0.950				0.976	
Satd. Flow (perm)	1752	3505	3501	0	1693	0
Link Speed (mph)		40	40		25	
Link Distance (ft)		218	274		819	
Travel Time (s)		3.7	4.7		22.3	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	2%	2%	5%	5%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	7	1647	2022	0	43	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		12	12		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	60.3%
Analysis Period (min)	15
	ICU Level of Service B

HCM Unsignalized Intersection Capacity Analysis
 16: US 17 Bus. (Market St.) & Clay St.

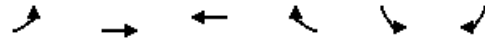
U-4434 Independence Blvd.
 2040 No Build



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	6	1482	1813	7	19	20
Future Volume (Veh/h)	6	1482	1813	7	19	20
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	7	1647	2014	8	21	22
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (ft)		382				
pX, platoon unblocked					0.71	
vC, conflicting volume	2022				2856	1011
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	2022				2796	1011
tC, single (s)	4.2				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	97				0	91
cM capacity (veh/h)	274				10	237
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1
Volume Total	7	824	824	1343	679	43
Volume Left	7	0	0	0	0	21
Volume Right	0	0	0	0	8	22
cSH	274	1700	1700	1700	1700	20
Volume to Capacity	0.03	0.48	0.48	0.79	0.40	2.15
Queue Length 95th (ft)	2	0	0	0	0	143
Control Delay (s)	18.5	0.0	0.0	0.0	0.0	936.9
Lane LOS	C					F
Approach Delay (s)	0.1			0.0		936.9
Approach LOS						F
Intersection Summary						
Average Delay			10.9			
Intersection Capacity Utilization			60.3%		ICU Level of Service	B
Analysis Period (min)			15			

Lanes, Volumes, Timings
 16: US 17 Bus. (Market St.) & Clay St.

U-4434 Independence Blvd.
 2040 No Build



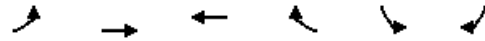
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	21	1813	1482	18	7	6
Future Volume (vph)	21	1813	1482	18	7	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	35			0	0	0
Storage Lanes	1			0	1	0
Taper Length (ft)	100				100	
Satd. Flow (prot)	1752	3505	3498	0	1700	0
Flt Permitted	0.950				0.974	
Satd. Flow (perm)	1752	3505	3498	0	1700	0
Link Speed (mph)		40	40		25	
Link Distance (ft)		218	274		819	
Travel Time (s)		3.7	4.7		22.3	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	2%	2%	5%	2%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	23	2014	1667	0	15	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		12	12		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	60.1%
Analysis Period (min)	15
	ICU Level of Service B

HCM Unsignalized Intersection Capacity Analysis
 16: US 17 Bus. (Market St.) & Clay St.

U-4434 Independence Blvd.
 2040 No Build



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	21	1813	1482	18	7	6
Future Volume (Veh/h)	21	1813	1482	18	7	6
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	23	2014	1647	20	8	7
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (ft)		382				
pX, platoon unblocked					0.66	
vC, conflicting volume	1667				2710	834
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1667				2560	834
tC, single (s)	4.2				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	94				40	98
cM capacity (veh/h)	377				13	312
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1
Volume Total	23	1007	1007	1098	569	15
Volume Left	23	0	0	0	0	8
Volume Right	0	0	0	0	20	7
cSH	377	1700	1700	1700	1700	24
Volume to Capacity	0.06	0.59	0.59	0.65	0.33	0.62
Queue Length 95th (ft)	5	0	0	0	0	47
Control Delay (s)	15.2	0.0	0.0	0.0	0.0	291.2
Lane LOS	C					F
Approach Delay (s)	0.2			0.0		291.2
Approach LOS						F
Intersection Summary						
Average Delay			1.3			
Intersection Capacity Utilization			60.1%		ICU Level of Service	B
Analysis Period (min)			15			

Lanes, Volumes, Timings
 17: Darlington Ave./Henry St. & US 17 Bus. (Market St.)

U-4434 Independence Blvd.

2040 No Build























Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	15	1345	116	146	1661	8	162	26	164	12	34	26
Future Volume (vph)	15	1345	116	146	1661	8	162	26	164	12	34	26
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150		0	500		0	150		0	0		0
Storage Lanes	1		0	1		0	1		1	0		0
Taper Length (ft)	100			100			100			100		
Satd. Flow (prot)	1752	3463	0	1752	3501	0	0	1786	1583	0	1740	0
Flt Permitted	0.950			0.950				0.959			0.992	
Satd. Flow (perm)	1752	3463	0	1752	3501	0	0	1786	1583	0	1740	0
Link Speed (mph)		40			40			25			25	
Link Distance (ft)		274			2396			913			767	
Travel Time (s)		4.7			40.8			24.9			20.9	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	17	1623	0	162	1855	0	0	209	182	0	80	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			24			24	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	76.5%
Analysis Period (min)	15
	ICU Level of Service D

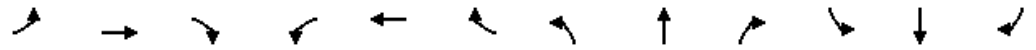
HCM Unsignalized Intersection Capacity Analysis
 17: Darlington Ave./Henry St. & US 17 Bus. (Market St.)

U-4434 Independence Blvd.
 2040 No Build

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	15	1345	116	146	1661	8	162	26	164	12	34	26
Future Volume (Veh/h)	15	1345	116	146	1661	8	162	26	164	12	34	26
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	17	1494	129	162	1846	9	180	29	182	13	38	29
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)		656										
pX, platoon unblocked				0.71			0.71	0.71	0.71	0.71	0.71	
vC, conflicting volume	1855			1623			2888	3772	812	3152	3832	928
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1855			1067			2842	4083	0	3213	4167	928
tC, single (s)	4.2			4.2			7.5	6.5	6.9	7.6	6.6	7.0
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	95			65			0	0	76	0	0	89
cM capacity (veh/h)	318			458			0	1	772	0	1	268
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	NB 2	SB 1			
Volume Total	17	996	627	162	1231	624	209	182	80			
Volume Left	17	0	0	162	0	0	180	0	13			
Volume Right	0	0	129	0	0	9	0	182	29			
cSH	318	1700	1700	458	1700	1700	0	772	0			
Volume to Capacity	0.05	0.59	0.37	0.35	0.72	0.37	Err	0.24	Err			
Queue Length 95th (ft)	4	0	0	39	0	0	Err	23	Err			
Control Delay (s)	16.9	0.0	0.0	17.1	0.0	0.0	Err	11.1	Err			
Lane LOS	C			C			F	B	F			
Approach Delay (s)	0.2			1.4			Err		Err			
Approach LOS							F		F			
Intersection Summary												
Average Delay				Err								
Intersection Capacity Utilization			76.5%		ICU Level of Service					D		
Analysis Period (min)			15									

Lanes, Volumes, Timings
 17: Darlington Ave./Henry St. & US 17 Bus. (Market St.)

U-4434 Independence Blvd.
 2040 No Build

























Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	26	1661	162	164	1345	12	116	34	146	8	26	15
Future Volume (vph)	26	1661	162	164	1345	12	116	34	146	8	26	15
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150		0	500		0	150		0	0		0
Storage Lanes	1		0	1		0	1		1	0		0
Taper Length (ft)	100			100			100			100		
Satd. Flow (prot)	1752	3459	0	1752	3501	0	0	1794	1583	0	1753	0
Flt Permitted	0.950			0.950				0.963			0.992	
Satd. Flow (perm)	1752	3459	0	1752	3501	0	0	1794	1583	0	1753	0
Link Speed (mph)		40			40			25			25	
Link Distance (ft)		274			2396			913			767	
Travel Time (s)		4.7			40.8			24.9			20.9	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	29	2026	0	182	1507	0	0	167	162	0	55	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			24			24	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	












Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	85.0%
Analysis Period (min)	15
	ICU Level of Service E

HCM Unsignalized Intersection Capacity Analysis
 17: Darlington Ave./Henry St. & US 17 Bus. (Market St.)

U-4434 Independence Blvd.
 2040 No Build

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			 						 	
Traffic Volume (veh/h)	26	1661	162	164	1345	12	116	34	146	8	26	15
Future Volume (Veh/h)	26	1661	162	164	1345	12	116	34	146	8	26	15
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	29	1846	180	182	1494	13	129	38	162	9	29	17
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)		656										
pX, platoon unblocked				0.66			0.66	0.66	0.66	0.66	0.66	
vC, conflicting volume	1507			2026			3136	3865	1013	3026	3948	754
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1507			1528			3206	4307	0	3040	4433	754
tC, single (s)	4.2			4.2			7.5	6.5	6.9	7.6	6.6	7.0
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	93			36			0	0	77	0	0	95
cM capacity (veh/h)	435			283			0	0	718	0	0	350
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	NB 2	SB 1			
Volume Total	29	1231	795	182	996	511	167	162	55			
Volume Left	29	0	0	182	0	0	129	0	9			
Volume Right	0	0	180	0	0	13	0	162	17			
cSH	435	1700	1700	283	1700	1700	0	718	0			
Volume to Capacity	0.07	0.72	0.47	0.64	0.59	0.30	Err	0.23	Err			
Queue Length 95th (ft)	5	0	0	102	0	0	Err	22	Err			
Control Delay (s)	13.9	0.0	0.0	38.2	0.0	0.0	Err	11.5	Err			
Lane LOS	B			E			F	B	F			
Approach Delay (s)	0.2			4.1			Err		Err			
Approach LOS							F		F			
Intersection Summary												
Average Delay				Err								
Intersection Capacity Utilization			85.0%		ICU Level of Service					E		
Analysis Period (min)			15									












						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	278	104	846	182	83	1031
Future Volume (vph)	278	104	846	182	83	1031
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150	0		0	100	
Storage Lanes	1	1		0	1	
Taper Length (ft)	100				100	
Satd. Flow (prot)	1770	1583	1800	0	1752	1845
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1770	1583	1800	0	1752	1845
Link Speed (mph)	25		35			35
Link Distance (ft)	991		906			1149
Travel Time (s)	27.0		17.6			22.4
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	309	116	1142	0	92	1146
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free












Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	85.6%
Analysis Period (min)	15
	ICU Level of Service E

HCM Unsignalized Intersection Capacity Analysis
 22: Covil Ave. & Darlington Ave.

U-4434 Independence Blvd.
 2040 No Build

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	278	104	846	182	83	1031
Future Volume (Veh/h)	278	104	846	182	83	1031
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	309	116	940	202	92	1146
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	2371	1041			1142	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	2371	1041			1142	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	0	58			85	
cM capacity (veh/h)	33	279			608	
Direction, Lane #	WB 1	WB 2	NB 1	SB 1	SB 2	
Volume Total	309	116	1142	92	1146	
Volume Left	309	0	0	92	0	
Volume Right	0	116	202	0	0	
cSH	33	279	1700	608	1700	
Volume to Capacity	9.50	0.42	0.67	0.15	0.67	
Queue Length 95th (ft)	Err	49	0	13	0	
Control Delay (s)	Err	26.7	0.0	12.0	0.0	
Lane LOS	F	D		B		
Approach Delay (s)	7277.2		0.0	0.9		
Approach LOS	F					
Intersection Summary						
Average Delay			1103.0			
Intersection Capacity Utilization			85.6%	ICU Level of Service		E
Analysis Period (min)			15			

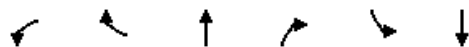
						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	182	83	1031	278	104	846
Future Volume (vph)	182	83	1031	278	104	846
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150	0		0	100	
Storage Lanes	1	1		0	1	
Taper Length (ft)	100				100	
Satd. Flow (prot)	1770	1583	1791	0	1752	1845
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1770	1583	1791	0	1752	1845
Link Speed (mph)	25		35			35
Link Distance (ft)	991		906			1149
Travel Time (s)	27.0		17.6			22.4
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	202	92	1455	0	116	940
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	97.0%
Analysis Period (min)	15
	ICU Level of Service F

HCM Unsignalized Intersection Capacity Analysis
 22: Covil Ave. & Darlington Ave.

U-4434 Independence Blvd.
 2040 No Build



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	182	83	1031	278	104	846
Future Volume (Veh/h)	182	83	1031	278	104	846
Sign Control	Stop		Free		Free	
Grade	0%		0%		0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	202	92	1146	309	116	940
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	2472	1300			1455	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	2472	1300			1455	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	0	53			75	
cM capacity (veh/h)	25	197			462	
Direction, Lane #	WB 1	WB 2	NB 1	SB 1	SB 2	
Volume Total	202	92	1455	116	940	
Volume Left	202	0	0	116	0	
Volume Right	0	92	309	0	0	
cSH	25	197	1700	462	1700	
Volume to Capacity	8.17	0.47	0.86	0.25	0.55	
Queue Length 95th (ft)	Err	56	0	25	0	
Control Delay (s)	Err	38.4	0.0	15.4	0.0	
Lane LOS	F	E		C		
Approach Delay (s)	6882.1		0.0	1.7		
Approach LOS	F					
Intersection Summary						
Average Delay			722.0			
Intersection Capacity Utilization			97.0%	ICU Level of Service	F	
Analysis Period (min)			15			

Lanes, Volumes, Timings

U-4434 Independence Blvd.

23: Independence Blvd./Covil Ave. & Mercer Ave./Randall Pkwy.

2040 No Build



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗	↖↗	↖		↖	↕↕	↗	↖	↕↖	
Traffic Volume (vph)	4	64	68	1184	107	211	91	836	955	216	1058	6
Future Volume (vph)	4	64	68	1184	107	211	91	836	955	216	1058	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		150	500		825	275		750	375		275
Storage Lanes	0		1	1		1	1		1	1		1
Taper Length (ft)	100			100			100			100		
Satd. Flow (prot)	0	1857	1583	3433	1678	0	1770	3539	1583	1770	3536	0
Flt Permitted		0.964		0.950			0.175			0.950		
Satd. Flow (perm)	0	1796	1583	3433	1678	0	326	3539	1583	1770	3536	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		25			35			45			35	
Link Distance (ft)		801			965			826			786	
Travel Time (s)		21.8			18.8			12.5			15.3	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	75	76	1316	353	0	101	929	1061	240	1183	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Perm	NA	Perm	Prot	NA		Perm	NA	pm+ov	Prot	NA	
Protected Phases		8		7	4			6	7	5	2	
Permitted Phases	8		8				6		6			
Detector Phase	8	8	8	7	4		6	6	7	5	2	
Switch Phase												
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0		7.0	7.0	7.0	7.0	7.0	
Minimum Split (s)	14.0	14.0	14.0	14.0	14.0		14.0	14.0	14.0	14.0	14.0	
Total Split (s)	21.0	21.0	21.0	60.0	81.0		55.0	55.0	60.0	24.0	79.0	
Total Split (%)	13.1%	13.1%	13.1%	37.5%	50.6%		34.4%	34.4%	37.5%	15.0%	49.4%	
Maximum Green (s)	14.0	14.0	14.0	53.0	74.0		48.0	48.0	53.0	17.0	72.0	
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)		-2.0	-2.0	-2.0	-2.0		-2.0	-2.0	-2.0	-2.0	-2.0	
Total Lost Time (s)		5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	
Lead/Lag	Lag	Lag	Lag	Lead			Lag	Lag	Lead	Lead		
Lead-Lag Optimize?							Yes	Yes		Yes		
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None	None	None	None		C-Min	C-Min	None	None	C-Min	
Act Effct Green (s)		13.9	13.9	55.0	73.9		50.0	50.0	110.0	21.1	76.1	
Actuated g/C Ratio		0.09	0.09	0.34	0.46		0.31	0.31	0.69	0.13	0.48	
v/c Ratio		0.48	0.55	1.12	0.46		1.00	0.84	0.98	1.03	0.70	
Control Delay		79.6	85.1	111.4	31.3		143.5	59.4	46.0	131.9	36.2	

Lanes, Volumes, Timings
 23: Independence Blvd./Covil Ave. & Mercer Ave./Randall Pkwy.

U-4434 Independence Blvd.
 2040 No Build

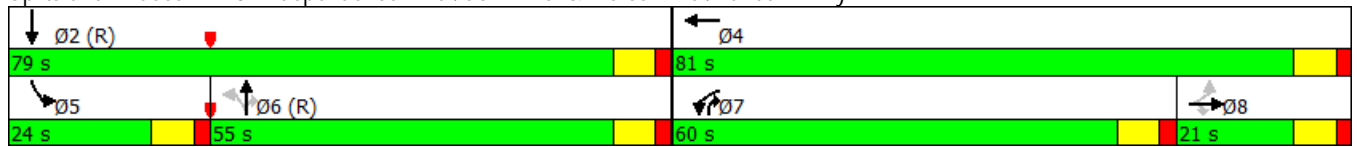
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Delay		0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay		79.6	85.1	111.4	31.3		143.5	59.4	46.0	131.9	36.2	
LOS		E	F	F	C		F	E	D	F	D	
Approach Delay		82.4			94.5			56.7			52.4	
Approach LOS		F			F			E			D	
Queue Length 50th (ft)		76	77	-810	245		106	478	985	-280	513	
Queue Length 95th (ft)		133	136	#948	333		#239	567	#1387	#477	605	
Internal Link Dist (ft)		721			885			746			706	
Turn Bay Length (ft)			150	500			275		750	375		
Base Capacity (vph)		179	158	1180	797		101	1105	1088	233	1681	
Starvation Cap Reductn		0	0	0	0		0	0	0	0	0	
Spillback Cap Reductn		0	0	0	0		0	0	0	0	0	
Storage Cap Reductn		0	0	0	0		0	0	0	0	0	
Reduced v/c Ratio		0.42	0.48	1.12	0.44		1.00	0.84	0.98	1.03	0.70	

Intersection Summary

Area Type: Other
 Cycle Length: 160
 Actuated Cycle Length: 160
 Offset: 112 (70%), Referenced to phase 2:SBT and 6:NBTL, Start of Green
 Natural Cycle: 140
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.12
 Intersection Signal Delay: 68.1
 Intersection Capacity Utilization 89.4%
 Analysis Period (min) 15
 Intersection LOS: E
 ICU Level of Service E

~ Volume exceeds capacity, queue is theoretically infinite.
 Queue shown is maximum after two cycles.
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 23: Independence Blvd./Covil Ave. & Mercer Ave./Randall Pkwy.

























Lanes, Volumes, Timings

U-4434 Independence Blvd.

23: Independence Blvd./Covil Ave. & Mercer Ave./Randall Pkwy.

2040 No Build

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	6	107	91	955	64	216	68	1058	1184	211	836	4
Future Volume (vph)	6	107	91	955	64	216	68	1058	1184	211	836	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		150	500		825	275		750	375		275
Storage Lanes	0		1	1		1	1		1	1		1
Taper Length (ft)	100			100			100			100		
Satd. Flow (prot)	0	1857	1583	3433	1647	0	1770	3539	1583	1770	3536	0
Flt Permitted		0.965		0.950			0.270			0.950		
Satd. Flow (perm)	0	1798	1583	3433	1647	0	503	3539	1583	1770	3536	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		25			35			45			35	
Link Distance (ft)		801			965			826			786	
Travel Time (s)		21.8			18.8			12.5			15.3	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	126	101	1061	311	0	76	1176	1316	234	933	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Perm	NA	Perm	Prot	NA		Perm	NA	pm+ov	Prot	NA	
Protected Phases		8		7	4			6	7	5	2	
Permitted Phases	8		8				6		6			
Detector Phase	8	8	8	7	4		6	6	7	5	2	
Switch Phase												
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0		7.0	7.0	7.0	7.0	7.0	
Minimum Split (s)	14.0	14.0	14.0	14.0	14.0		14.0	14.0	14.0	14.0	14.0	
Total Split (s)	22.0	22.0	22.0	64.0	86.0		52.0	52.0	64.0	22.0	74.0	
Total Split (%)	13.8%	13.8%	13.8%	40.0%	53.8%		32.5%	32.5%	40.0%	13.8%	46.3%	
Maximum Green (s)	15.0	15.0	15.0	57.0	79.0		45.0	45.0	57.0	15.0	67.0	
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)		-2.0	-2.0	-2.0	-2.0		-2.0	-2.0	-2.0	-2.0	-2.0	
Total Lost Time (s)		5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	
Lead/Lag	Lag	Lag	Lag	Lead			Lag	Lag	Lead	Lead		
Lead-Lag Optimize?	Yes	Yes	Yes	Yes			Yes	Yes	Yes	Yes		
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None	None	None	None		C-Min	C-Min	None	None	C-Min	
Act Effct Green (s)		15.9	15.9	59.0	79.9		47.0	47.0	111.0	18.1	70.1	
Actuated g/C Ratio		0.10	0.10	0.37	0.50		0.29	0.29	0.69	0.11	0.44	
v/c Ratio		0.70	0.64	0.84	0.38		0.52	1.13	1.20	1.17	0.60	
Control Delay		90.6	87.9	53.4	26.2		61.7	121.7	123.7	175.9	36.6	

Lanes, Volumes, Timings
 23: Independence Blvd./Covil Ave. & Mercer Ave./Randall Pkwy.

U-4434 Independence Blvd.
 2040 No Build

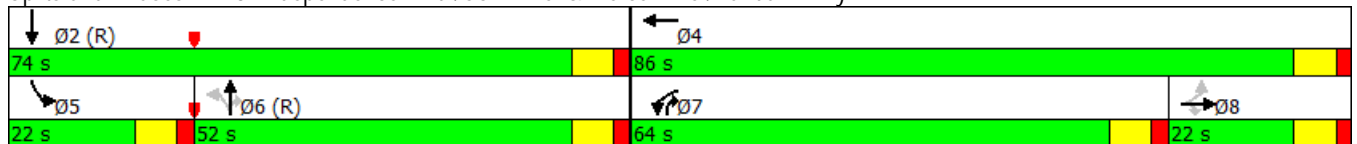
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Delay		0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay		90.6	87.9	53.4	26.2		61.7	121.7	123.7	175.9	36.6	
LOS		F	F	D	C		E	F	F	F	D	
Approach Delay		89.4			47.2			120.9			64.5	
Approach LOS		F			D			F			E	
Queue Length 50th (ft)		129	103	522	194		67	-748	-1662	-303	394	
Queue Length 95th (ft)		#208	170	614	271		130	#890	#1929	#485	466	
Internal Link Dist (ft)		721			885			746			706	
Turn Bay Length (ft)			150	500			275		750	375		
Base Capacity (vph)		191	168	1265	833		147	1039	1098	200	1548	
Starvation Cap Reductn		0	0	0	0		0	0	0	0	0	
Spillback Cap Reductn		0	0	0	0		0	0	0	0	0	
Storage Cap Reductn		0	0	0	0		0	0	0	0	0	
Reduced v/c Ratio		0.66	0.60	0.84	0.37		0.52	1.13	1.20	1.17	0.60	

Intersection Summary

Area Type: Other
 Cycle Length: 160
 Actuated Cycle Length: 160
 Offset: 8 (5%), Referenced to phase 2:SBT and 6:NBTL, Start of Green
 Natural Cycle: 150
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.20
 Intersection Signal Delay: 88.3
 Intersection Capacity Utilization 103.5%
 Analysis Period (min) 15
 Intersection LOS: F
 ICU Level of Service G

~ Volume exceeds capacity, queue is theoretically infinite.
 Queue shown is maximum after two cycles.
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 23: Independence Blvd./Covil Ave. & Mercer Ave./Randall Pkwy.



Summary of All Intervals

Run Number	1	2	3	4	Build AM	20171113	1339	Avg
Start Time	6:50	6:50	6:50	6:50	6:50	6:50	6:50	6:50
End Time	8:00	8:00	8:00	8:00	8:00	8:00	8:00	8:00
Total Time (min)	70	70	70	70	70	70	70	70
Time Recorded (min)	60	60	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1	1	1
Vehs Entered	6675	6667	6675	6708	6621	6575	6651	6651
Vehs Exited	6283	6331	6282	6279	6259	6171	6268	6268
Starting Vehs	478	496	471	473	444	446	463	463
Ending Vehs	870	832	864	902	806	850	849	849
Travel Distance (mi)	4936	4996	4909	4878	4870	4824	4902	4902
Travel Time (hr)	1414.9	1451.6	1424.4	1498.2	1346.3	1522.8	1443.0	1443.0
Total Delay (hr)	1269.8	1305.0	1280.8	1354.6	1203.0	1380.8	1299.0	1299.0
Total Stops	13419	13071	13053	13324	12498	13116	13074	13074
Fuel Used (gal)	463.0	472.4	463.8	479.8	443.9	483.8	467.8	467.8

Interval #0 Information Seeding

Start Time	6:50
End Time	7:00
Total Time (min)	10
Volumes adjusted by Growth Factors.	
No data recorded this interval.	

Interval #1 Information Recording

Start Time	7:00
End Time	8:00
Total Time (min)	60
Volumes adjusted by Growth Factors.	

Run Number	1	2	3	4	Build AM	20171113	1339	Avg
Vehs Entered	6675	6667	6675	6708	6621	6575	6651	6651
Vehs Exited	6283	6331	6282	6279	6259	6171	6268	6268
Starting Vehs	478	496	471	473	444	446	463	463
Ending Vehs	870	832	864	902	806	850	849	849
Travel Distance (mi)	4936	4996	4909	4878	4870	4824	4902	4902
Travel Time (hr)	1414.9	1451.6	1424.4	1498.2	1346.3	1522.8	1443.0	1443.0
Total Delay (hr)	1269.8	1305.0	1280.8	1354.6	1203.0	1380.8	1299.0	1299.0
Total Stops	13419	13071	13053	13324	12498	13116	13074	13074
Fuel Used (gal)	463.0	472.4	463.8	479.8	443.9	483.8	467.8	467.8

Intersection: 11: Wayne Dr./30th St. & US 17 Bus. (Market St.)

Movement	EB	EB	EB	WB	NB	SB
Directions Served	L	T	TR	L	LTR	LTR
Maximum Queue (ft)	275	304	311	22	831	698
Average Queue (ft)	39	282	288	2	776	673
95th Queue (ft)	175	349	336	12	951	752
Link Distance (ft)		276	276		819	685
Upstream Blk Time (%)	0	51	74		81	89
Queuing Penalty (veh)	0	0	0		0	0
Storage Bay Dist (ft)	250			300		
Storage Blk Time (%)		41				
Queuing Penalty (veh)		16				

Intersection: 12: Mercer Ave. & US 17 Bus. (Market St.)

Movement	EB	EB	WB	WB	NB
Directions Served	T	TR	L	T	LR
Maximum Queue (ft)	367	374	59	9	819
Average Queue (ft)	346	352	17	0	481
95th Queue (ft)	368	367	49	7	889
Link Distance (ft)	331	331		108	856
Upstream Blk Time (%)	61	67			9
Queuing Penalty (veh)	398	434			0
Storage Bay Dist (ft)			40		
Storage Blk Time (%)			4	0	
Queuing Penalty (veh)			33	0	

Intersection: 13: US 17 Bus. (Market St.) & 31st St.

Movement	EB	EB	EB	WB	SB
Directions Served	L	T	T	T	LR
Maximum Queue (ft)	74	135	138	9	290
Average Queue (ft)	7	116	118	0	155
95th Queue (ft)	37	128	130	7	336
Link Distance (ft)		108	108	203	906
Upstream Blk Time (%)	0	67	69		
Queuing Penalty (veh)	0	435	443		
Storage Bay Dist (ft)	40				
Storage Blk Time (%)	0	71			
Queuing Penalty (veh)	3	9			

Intersection: 14: Covil Ave./Montgomery Ave. & US 17 Bus. (Market St.)

Movement	EB	EB	EB	WB	WB	WB	NB	NB	B215	SB	SB
Directions Served	L	T	TR	L	T	TR	LT	R	T	L	TR
Maximum Queue (ft)	85	224	231	119	125	110	732	427	36	134	902
Average Queue (ft)	7	207	207	106	99	99	464	232	4	35	697
95th Queue (ft)	47	216	219	118	122	110	751	477	46	117	1043
Link Distance (ft)		203	203	96	96	96	1058		1087		869
Upstream Blk Time (%)	0	66	67	73	21	28	1				38
Queuing Penalty (veh)	0	428	434	445	130	169	7				0
Storage Bay Dist (ft)	175							650		35	
Storage Blk Time (%)		70					4			30	93
Queuing Penalty (veh)		6					18			53	20

Intersection: 15: US 17 Bus. (Market St.) & Evans St.

Movement	EB	EB	WB	WB	WB	SB
Directions Served	LT	T	T	T	TR	LR
Maximum Queue (ft)	118	113	157	218	171	321
Average Queue (ft)	12	9	152	184	153	149
95th Queue (ft)	63	56	160	211	200	363
Link Distance (ft)	96	96		157	157	835
Upstream Blk Time (%)	0	0	60	74	18	
Queuing Penalty (veh)	3	2	0	674	162	
Storage Bay Dist (ft)			100			
Storage Blk Time (%)			80	15		
Queuing Penalty (veh)			484	88		

Intersection: 16: US 17 Bus. (Market St.) & Clay St.

Movement	EB	WB	WB	SB
Directions Served	L	T	TR	LR
Maximum Queue (ft)	29	206	206	769
Average Queue (ft)	2	196	158	459
95th Queue (ft)	15	209	251	838
Link Distance (ft)		181	181	764
Upstream Blk Time (%)		73	12	17
Queuing Penalty (veh)		671	113	0
Storage Bay Dist (ft)	35			
Storage Blk Time (%)	1			
Queuing Penalty (veh)	9			

Intersection: 17: Darlington Ave./Henry St. & US 17 Bus. (Market St.)

Movement	EB	EB	EB	WB	WB	WB	NB	NB	SB
Directions Served	L	T	TR	L	T	TR	LT	R	LTR
Maximum Queue (ft)	36	0	3	600	2381	2375	245	865	738
Average Queue (ft)	5	0	0	375	1972	1945	240	859	561
95th Queue (ft)	21	0	2	816	2983	3015	254	879	914
Link Distance (ft)		181	181		2333	2333		864	718
Upstream Blk Time (%)					52	34		100	51
Queuing Penalty (veh)					0	0		0	0
Storage Bay Dist (ft)	150			500			150		
Storage Blk Time (%)					74		100		
Queuing Penalty (veh)					108		164		

Intersection: 22: Covil Ave. & Darlington Ave.

Movement	WB	WB	NB	B218	B218	SB	SB
Directions Served	L	R	TR	T		L	T
Maximum Queue (ft)	250	998	46	737	723	91	115
Average Queue (ft)	248	965	4	352	153	34	8
95th Queue (ft)	256	1033	22	905	600	73	57
Link Distance (ft)		957	845	712	712		1087
Upstream Blk Time (%)		94		1	0		
Queuing Penalty (veh)		0		4	0		
Storage Bay Dist (ft)	150					100	
Storage Blk Time (%)	100					0	0
Queuing Penalty (veh)	104					3	0

Intersection: 23: Independence Blvd./Covil Ave. & Mercer Ave./Randall Pkwy.

Movement	EB	EB	WB	WB	WB	B221	NB	NB	NB	NB	SB	SB
Directions Served	LT	R	L	L	TR	T	L	T	T	R	L	T
Maximum Queue (ft)	185	157	600	979	876	976	375	805	815	775	250	334
Average Queue (ft)	73	68	586	897	586	629	261	681	723	706	132	177
95th Queue (ft)	147	131	645	1101	1148	1282	508	896	955	952	227	292
Link Distance (ft)	757				876	927		775		775	712	
Upstream Blk Time (%)				19	1	17			11	14	17	
Queuing Penalty (veh)				0	0	0			0	0	0	
Storage Bay Dist (ft)	150		500		825		275		750		375	
Storage Blk Time (%)	2	1	38	48	0	0		68	6	33	0	1
Queuing Penalty (veh)	1	1	350	435	0	0		62	59	137	1	10

Intersection: 23: Independence Blvd./Covil Ave. & Mercer Ave./Randall Pkwy.

Movement	SB
Directions Served	TR
Maximum Queue (ft)	325
Average Queue (ft)	180
95th Queue (ft)	286
Link Distance (ft)	
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	275
Storage Blk Time (%)	1
Queuing Penalty (veh)	8

Network Summary

Network wide Queuing Penalty: 7131

Summary of All Intervals

Run Number	1	2	3	4	Build PM 20171113 1341	Avg
Start Time	4:50	4:50	4:50	4:50	4:50	4:50
End Time	6:00	6:00	6:00	6:00	6:00	6:00
Total Time (min)	70	70	70	70	70	70
Time Recorded (min)	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1
Vehs Entered	6163	6477	6287	6368	6275	6314
Vehs Exited	5873	6145	5938	6047	5862	5984
Starting Vehs	474	414	438	480	430	446
Ending Vehs	764	746	787	801	843	785
Travel Distance (mi)	4522	4728	4582	4693	4577	4622
Travel Time (hr)	1576.1	1476.0	1544.0	1599.7	1607.2	1551.7
Total Delay (hr)	1442.1	1336.4	1408.5	1461.6	1472.1	1415.1
Total Stops	9815	9943	9780	10568	9595	10015
Fuel Used (gal)	486.8	468.3	479.5	496.7	494.6	483.2

Interval #0 Information Seeding

Start Time	4:50
End Time	5:00
Total Time (min)	10
Volumes adjusted by Growth Factors.	
No data recorded this interval.	

Interval #1 Information Recording

Start Time	5:00
End Time	6:00
Total Time (min)	60
Volumes adjusted by Growth Factors.	

Run Number	1	2	3	4	Build PM 20171113 1341	Avg
Vehs Entered	6163	6477	6287	6368	6275	6314
Vehs Exited	5873	6145	5938	6047	5862	5984
Starting Vehs	474	414	438	480	430	446
Ending Vehs	764	746	787	801	843	785
Travel Distance (mi)	4522	4728	4582	4693	4577	4622
Travel Time (hr)	1576.1	1476.0	1544.0	1599.7	1607.2	1551.7
Total Delay (hr)	1442.1	1336.4	1408.5	1461.6	1472.1	1415.1
Total Stops	9815	9943	9780	10568	9595	10015
Fuel Used (gal)	486.8	468.3	479.5	496.7	494.6	483.2

Intersection: 11: Wayne Dr./30th St. & US 17 Bus. (Market St.)

Movement	EB	EB	EB	WB	WB	NB	SB
Directions Served	L	T	TR	L	TR	LTR	LTR
Maximum Queue (ft)	275	306	318	58	21	731	706
Average Queue (ft)	55	288	293	9	1	373	670
95th Queue (ft)	210	310	305	34	10	763	779
Link Distance (ft)		276	276		331	819	685
Upstream Blk Time (%)	0	49	70			2	88
Queuing Penalty (veh)	0	0	0			0	0
Storage Bay Dist (ft)	250			300			
Storage Blk Time (%)		41					
Queuing Penalty (veh)		30					

Intersection: 12: Mercer Ave. & US 17 Bus. (Market St.)

Movement	EB	EB	WB	NB
Directions Served	T	TR	L	LR
Maximum Queue (ft)	370	372	49	864
Average Queue (ft)	348	350	9	667
95th Queue (ft)	367	366	34	1043
Link Distance (ft)	331	331		856
Upstream Blk Time (%)	56	60		41
Queuing Penalty (veh)	428	461		0
Storage Bay Dist (ft)			40	
Storage Blk Time (%)			1	
Queuing Penalty (veh)			9	

Intersection: 13: US 17 Bus. (Market St.) & 31st St.

Movement	EB	EB	EB	SB
Directions Served	L	T	T	LR
Maximum Queue (ft)	46	125	137	912
Average Queue (ft)	3	116	117	610
95th Queue (ft)	25	125	130	1014
Link Distance (ft)		108	108	906
Upstream Blk Time (%)		61	63	18
Queuing Penalty (veh)		487	498	0
Storage Bay Dist (ft)	40			
Storage Blk Time (%)	0	66		
Queuing Penalty (veh)	1	4		

Intersection: 14: Covil Ave./Montgomery Ave. & US 17 Bus. (Market St.)

Movement	EB	EB	EB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	TR	L	T	TR	LT	R	L	TR
Maximum Queue (ft)	33	226	224	116	116	124	508	480	134	731
Average Queue (ft)	4	206	206	105	88	93	325	260	46	472
95th Queue (ft)	21	217	214	117	136	134	464	420	137	870
Link Distance (ft)		203	203	96	96	96	1058			869
Upstream Blk Time (%)		60	61	78	15	24				12
Queuing Penalty (veh)		482	486	389	76	120				0
Storage Bay Dist (ft)	175							650	35	
Storage Blk Time (%)		64							39	93
Queuing Penalty (veh)		6							53	19

Intersection: 15: US 17 Bus. (Market St.) & Evans St.

Movement	EB	EB	WB	WB	WB	SB
Directions Served	LT	T	T	T	TR	LR
Maximum Queue (ft)	89	69	157	217	165	394
Average Queue (ft)	7	4	150	182	114	183
95th Queue (ft)	43	34	163	209	215	403
Link Distance (ft)	96	96		157	157	835
Upstream Blk Time (%)	0	0	56	78	11	
Queuing Penalty (veh)	1	0	0	581	83	
Storage Bay Dist (ft)			100			
Storage Blk Time (%)			85	8		
Queuing Penalty (veh)			418	39		

Intersection: 16: US 17 Bus. (Market St.) & Clay St.

Movement	EB	EB	EB	WB	WB	SB
Directions Served	L	T	T	T	TR	LR
Maximum Queue (ft)	56	26	33	206	197	121
Average Queue (ft)	14	2	2	196	84	55
95th Queue (ft)	43	27	34	209	221	151
Link Distance (ft)		157	157	181	181	764
Upstream Blk Time (%)		0	0	77	7	
Queuing Penalty (veh)		2	1	570	52	
Storage Bay Dist (ft)	35					
Storage Blk Time (%)	8	1				
Queuing Penalty (veh)	68	0				

Intersection: 17: Darlington Ave./Henry St. & US 17 Bus. (Market St.)

Movement	EB	EB	EB	WB	WB	WB	NB	NB	SB
Directions Served	L	T	TR	L	T	TR	LT	R	LTR
Maximum Queue (ft)	37	4	10	600	2385	2372	246	881	656
Average Queue (ft)	6	0	0	399	1850	1810	241	866	379
95th Queue (ft)	22	2	6	822	3041	3066	251	897	743
Link Distance (ft)		181	181		2333	2333		864	718
Upstream Blk Time (%)					53	32		97	13
Queuing Penalty (veh)					0	0		0	0
Storage Bay Dist (ft)	150			500			150		
Storage Blk Time (%)					76		100		
Queuing Penalty (veh)					124		146		

Intersection: 22: Covil Ave. & Darlington Ave.

Movement	WB	WB	NB	B218	B218	SB	SB
Directions Served	L	R	TR	T		L	T
Maximum Queue (ft)	250	1005	40	743	735	113	150
Average Queue (ft)	246	831	4	299	96	48	18
95th Queue (ft)	268	1262	23	837	475	97	96
Link Distance (ft)		957	845	712	712		1087
Upstream Blk Time (%)		66		1	0		
Queuing Penalty (veh)		0		3	0		
Storage Bay Dist (ft)	150					100	
Storage Blk Time (%)	97	1				3	0
Queuing Penalty (veh)	81	1				22	0

Intersection: 23: Independence Blvd./Covil Ave. & Mercer Ave./Randall Pkwy.

Movement	EB	EB	WB	WB	WB	NB	NB	NB	NB	SB	SB	SB
Directions Served	LT	R	L	L	TR	L	T	T	R	L	T	TR
Maximum Queue (ft)	299	216	490	510	258	375	818	825	775	309	308	286
Average Queue (ft)	133	100	312	340	126	223	781	790	748	174	153	154
95th Queue (ft)	241	184	449	461	218	512	859	815	932	294	272	262
Link Distance (ft)	757			876			775	775				712
Upstream Blk Time (%)							56	28	7			
Queuing Penalty (veh)							0	0	0			
Storage Bay Dist (ft)		150	500		825	275			750	375		275
Storage Blk Time (%)	12	3	0	0			87	31	9	0	0	0
Queuing Penalty (veh)	11	4	1	2			59	367	48	1	2	3

Network Summary

Network wide Queuing Penalty: 6238

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2040 Build – Common to All Alternatives

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**2040 Build – Common to All Alternatives
At-Grade Intersection**

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Lanes, Volumes, Timings
 23: Independence Blvd. & Mercer Ave./Randall Pkwy.

U-4434 Independence Blvd.
 2040 Build AM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗	↖↗	↕	↖↗	↖	↑↑↑	↗	↖↗↘	↑↑↑	↘
Traffic Volume (vph)	22	44	126	402	78	398	90	2171	305	378	2710	37
Future Volume (vph)	22	44	126	402	78	398	90	2171	305	378	2710	37
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		200	300		300	225		200	325		0
Storage Lanes	0		1	2		1	1		1	3		0
Taper Length (ft)	100			100			100			100		
Satd. Flow (prot)	0	1833	1583	3221	1653	2787	1770	6408	1583	4990	6395	0
Flt Permitted		0.984		0.950	0.975		0.950			0.950		
Satd. Flow (perm)	0	1833	1583	3221	1653	2787	1770	6408	1583	4990	6395	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		25			35			45				55
Link Distance (ft)		801			965			772				1157
Travel Time (s)		21.8			18.8			11.7				14.3
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Shared Lane Traffic (%)				21%								
Lane Group Flow (vph)	0	73	140	353	181	442	100	2412	339	420	3052	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			36				36
Link Offset(ft)		0			0			0				0
Crosswalk Width(ft)		16			16			16				16
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Split	NA	pm+ov	Split	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	
Protected Phases	8	8	1	4	4	5	1	6	4	5	2	
Permitted Phases			8			4			6			
Detector Phase	8	8	1	4	4	5	1	6	4	5	2	
Switch Phase												
Minimum Initial (s)	7.0	7.0	7.0	12.0	12.0	7.0	7.0	12.0	12.0	7.0	14.0	
Minimum Split (s)	14.0	14.0	14.0	19.0	19.0	14.0	14.0	19.0	19.0	14.0	21.0	
Total Split (s)	16.0	16.0	20.0	32.0	32.0	24.0	20.0	88.0	32.0	24.0	92.0	
Total Split (%)	10.0%	10.0%	12.5%	20.0%	20.0%	15.0%	12.5%	55.0%	20.0%	15.0%	57.5%	
Maximum Green (s)	9.0	9.0	13.0	25.0	25.0	17.0	13.0	81.0	25.0	17.0	85.0	
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)		-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	
Total Lost Time (s)		5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	
Lead/Lag			Lag			Lag	Lag	Lead		Lag	Lead	
Lead-Lag Optimize?			Yes			Yes	Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None	None	None	None	None	None	C-Min	None	None	C-Min	
Act Effect Green (s)		10.8	25.3	25.1	25.1	52.2	14.5	81.9	107.0	22.2	89.6	
Actuated g/C Ratio		0.07	0.16	0.16	0.16	0.33	0.09	0.51	0.67	0.14	0.56	
v/c Ratio		0.59	0.56	0.70	0.70	0.49	0.63	0.74	0.32	0.61	0.85	
Control Delay		91.9	46.9	71.7	78.7	45.7	87.8	32.1	6.5	69.9	33.2	

Lanes, Volumes, Timings
 23: Independence Blvd. & Mercer Ave./Randall Pkwy.

U-4434 Independence Blvd.
 2040 Build AM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Delay		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		91.9	46.9	71.7	78.7	45.7	87.8	32.1	6.5	69.9	33.2	
LOS		F	D	E	E	D	F	C	A	E	C	
Approach Delay		62.3			61.2			31.0				37.6
Approach LOS		E			E			C				D
Queue Length 50th (ft)		76	97	192	196	213	102	554	69	152	790	
Queue Length 95th (ft)		134	152	253	294	275	170	593	96	193	832	
Internal Link Dist (ft)		721			885			692			1077	
Turn Bay Length (ft)			500	800		800	750		750	900		
Base Capacity (vph)		128	255	543	278	910	165	3324	1077	691	3582	
Starvation Cap Reductn		0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn		0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn		0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio		0.57	0.55	0.65	0.65	0.49	0.61	0.73	0.31	0.61	0.85	

Intersection Summary

Area Type:	Other
Cycle Length:	160
Actuated Cycle Length:	160
Offset:	0 (0%), Referenced to phase 2:SBT and 6:NBT, Start of Green
Natural Cycle:	90
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.85
Intersection Signal Delay:	38.9
Intersection LOS:	D
Intersection Capacity Utilization:	73.7%
ICU Level of Service:	D
Analysis Period (min):	15

Splits and Phases: 23: Independence Blvd. & Mercer Ave./Randall Pkwy.

Ø2 (R)	Ø1	Ø4	Ø8
92 s	20 s	32 s	16 s
Ø6 (R)	Ø5		
88 s	24 s		

Lanes, Volumes, Timings
 23: Independence Blvd. & Mercer Ave./Randall Pkwy.

U-4434 Independence Blvd.
 2040 Build AM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗	↖	↕	↗	↖	↑↑↑	↗	↖↖↖	↑↑↑	
Traffic Volume (vph)	37	78	125	305	44	378	68	2792	402	398	2051	22
Future Volume (vph)	37	78	125	305	44	378	68	2792	402	398	2051	22
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		200	300		300	225		200	325		0
Storage Lanes	0		1	2		1	1		1	3		0
Taper Length (ft)	100			100			100			100		
Satd. Flow (prot)	0	1833	1583	3221	1644	2787	1770	6408	1583	4990	6395	0
Flt Permitted		0.984		0.950	0.970		0.950			0.950		
Satd. Flow (perm)	0	1833	1583	3221	1644	2787	1770	6408	1583	4990	6395	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		25			35			45				55
Link Distance (ft)		801			965			772				1157
Travel Time (s)		21.8			18.8			11.7				14.3
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Shared Lane Traffic (%)				24%								
Lane Group Flow (vph)	0	128	139	258	130	420	76	3102	447	442	2303	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			36				36
Link Offset(ft)		0			0			0				0
Crosswalk Width(ft)		16			16			16				16
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Split	NA	pm+ov	Split	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	
Protected Phases	8	8	1	4	4	5	1	6	4	5	2	
Permitted Phases			8			4			6			
Detector Phase	8	8	1	4	4	5	1	6	4	5	2	
Switch Phase												
Minimum Initial (s)	7.0	7.0	7.0	12.0	12.0	7.0	7.0	12.0	12.0	7.0	14.0	
Minimum Split (s)	14.0	14.0	14.0	19.0	19.0	14.0	14.0	19.0	19.0	14.0	21.0	
Total Split (s)	21.0	21.0	18.0	24.0	24.0	22.0	18.0	93.0	24.0	22.0	97.0	
Total Split (%)	13.1%	13.1%	11.3%	15.0%	15.0%	13.8%	11.3%	58.1%	15.0%	13.8%	60.6%	
Maximum Green (s)	14.0	14.0	11.0	17.0	17.0	15.0	11.0	86.0	17.0	15.0	90.0	
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)		-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	
Total Lost Time (s)		5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	
Lead/Lag			Lag			Lag	Lag	Lead		Lag	Lead	
Lead-Lag Optimize?			Yes			Yes	Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None	None	None	None	None	None	C-Min	None	None	C-Min	
Act Effect Green (s)		15.4	39.8	18.4	18.4	40.4	24.4	89.2	107.6	17.0	81.8	
Actuated g/C Ratio		0.10	0.25	0.12	0.12	0.25	0.15	0.56	0.67	0.11	0.51	
v/c Ratio		0.73	0.35	0.70	0.69	0.60	0.28	0.87	0.42	0.83	0.70	
Control Delay		93.4	36.2	78.6	86.9	56.6	66.6	34.1	7.4	84.3	31.0	

Lanes, Volumes, Timings
 23: Independence Blvd. & Mercer Ave./Randall Pkwy.

U-4434 Independence Blvd.
 2040 Build AM Peak

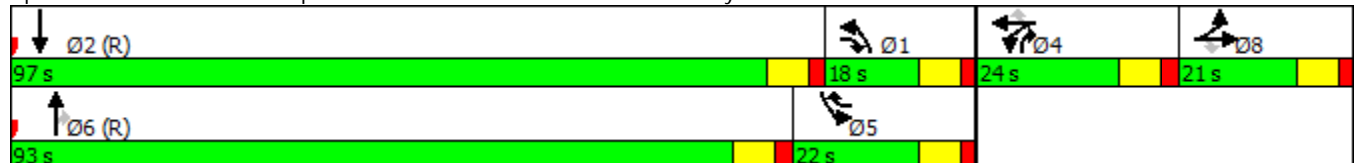


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Delay		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		93.4	36.2	78.6	86.9	56.6	66.6	34.1	7.4	84.3	31.0	
LOS		F	D	E	F	E	E	C	A	F	C	
Approach Delay		63.6			68.5			31.5			39.5	
Approach LOS		E			E			C			D	
Queue Length 50th (ft)		132	91	144	145	220	72	801	91	163	526	
Queue Length 95th (ft)		#222	157	198	#232	286	136	842	123	#215	498	
Internal Link Dist (ft)		721			885			692			1077	
Turn Bay Length (ft)			500	850		850	750		750	900		
Base Capacity (vph)		183	393	382	195	704	270	3572	1070	530	3677	
Starvation Cap Reductn		0	0	0	0	0	0	0	0	0	0	
Spillback Cap Reductn		0	0	0	0	0	0	0	0	0	0	
Storage Cap Reductn		0	0	0	0	0	0	0	0	0	0	
Reduced v/c Ratio		0.70	0.35	0.68	0.67	0.60	0.28	0.87	0.42	0.83	0.63	

Intersection Summary

Area Type: Other
 Cycle Length: 160
 Actuated Cycle Length: 160
 Offset: 0 (0%), Referenced to phase 2:SBT and 6:NBT, Start of Green
 Natural Cycle: 90
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.87
 Intersection Signal Delay: 39.6
 Intersection LOS: D
 Intersection Capacity Utilization 73.6%
 ICU Level of Service D
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 23: Independence Blvd. & Mercer Ave./Randall Pkwy.



Summary of All Intervals

Run Number	1	2	3	4	5	Avg
Start Time	6:50	6:50	6:50	6:50	6:50	6:50
End Time	8:00	8:00	8:00	8:00	8:00	8:00
Total Time (min)	70	70	70	70	70	70
Time Recorded (min)	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1
Vehs Entered	6778	6787	6800	6639	6735	6749
Vehs Exited	6748	6736	6744	6582	6693	6701
Starting Vehs	131	104	117	106	115	112
Ending Vehs	161	155	173	163	157	161
Travel Distance (mi)	2723	2735	2718	2656	2704	2707
Travel Time (hr)	153.8	152.5	150.1	142.7	149.1	149.6
Total Delay (hr)	82.2	80.6	79.0	73.2	78.1	78.6
Total Stops	4476	4402	4424	4165	4307	4352
Fuel Used (gal)	115.5	115.4	113.7	110.1	113.6	113.7

Interval #0 Information Seeding

Start Time	6:50
End Time	7:00
Total Time (min)	10
Volumes adjusted by Growth Factors.	
No data recorded this interval.	

Interval #1 Information Recording

Start Time	7:00
End Time	8:00
Total Time (min)	60
Volumes adjusted by Growth Factors.	

Run Number	1	2	3	4	5	Avg
Vehs Entered	6778	6787	6800	6639	6735	6749
Vehs Exited	6748	6736	6744	6582	6693	6701
Starting Vehs	131	104	117	106	115	112
Ending Vehs	161	155	173	163	157	161
Travel Distance (mi)	2723	2735	2718	2656	2704	2707
Travel Time (hr)	153.8	152.5	150.1	142.7	149.1	149.6
Total Delay (hr)	82.2	80.6	79.0	73.2	78.1	78.6
Total Stops	4476	4402	4424	4165	4307	4352
Fuel Used (gal)	115.5	115.4	113.7	110.1	113.6	113.7

Intersection: 23: Independence Blvd. & Mercer Ave./Randall Pkwy.

Movement	EB	EB	WB	WB	WB	WB	WB	NB	NB	NB	NB	NB
Directions Served	LT	R	L	L	LT	R	R	L	T	T	T	T
Maximum Queue (ft)	150	196	192	279	316	245	232	206	639	579	439	302
Average Queue (ft)	71	92	106	179	211	150	140	97	451	407	284	169
95th Queue (ft)	134	165	192	259	289	218	208	190	588	544	400	278
Link Distance (ft)	721				838				701			
Upstream Blk Time (%)									0			
Queuing Penalty (veh)									0			
Storage Bay Dist (ft)	300		300		300		300		225			
Storage Blk Time (%)									0			
Queuing Penalty (veh)									0			

Intersection: 23: Independence Blvd. & Mercer Ave./Randall Pkwy.

Movement	NB	SB	SB	SB	SB	SB	SB	SB
Directions Served	R	L	L	L	T	T	T	TR
Maximum Queue (ft)	175	226	275	192	568	531	471	396
Average Queue (ft)	68	151	191	106	376	362	311	223
95th Queue (ft)	137	216	253	183	507	486	444	354
Link Distance (ft)					1083		1083	
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)	200	325	325	325				
Storage Blk Time (%)								
Queuing Penalty (veh)								

Network Summary

Network wide Queuing Penalty: 0

Summary of All Intervals

Run Number	1	2	3	4	5	Avg
Start Time	4:50	4:50	4:50	4:50	4:50	4:50
End Time	6:00	6:00	6:00	6:00	6:00	6:00
Total Time (min)	70	70	70	70	70	70
Time Recorded (min)	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1
Vehs Entered	6674	6868	6750	6584	6721	6717
Vehs Exited	6628	6826	6698	6542	6670	6673
Starting Vehs	115	122	135	129	123	125
Ending Vehs	161	164	187	171	174	173
Travel Distance (mi)	2675	2754	2692	2639	2699	2692
Travel Time (hr)	154.2	164.4	154.1	150.7	154.1	155.5
Total Delay (hr)	82.7	90.6	82.2	80.2	81.9	83.5
Total Stops	4363	4611	4493	4211	4404	4415
Fuel Used (gal)	113.3	118.5	114.2	111.9	114.2	114.4

Interval #0 Information Seeding

Start Time	4:50
End Time	5:00
Total Time (min)	10
Volumes adjusted by Growth Factors.	
No data recorded this interval.	

Interval #1 Information Recording

Start Time	5:00
End Time	6:00
Total Time (min)	60
Volumes adjusted by Growth Factors.	

Run Number	1	2	3	4	5	Avg
Vehs Entered	6674	6868	6750	6584	6721	6717
Vehs Exited	6628	6826	6698	6542	6670	6673
Starting Vehs	115	122	135	129	123	125
Ending Vehs	161	164	187	171	174	173
Travel Distance (mi)	2675	2754	2692	2639	2699	2692
Travel Time (hr)	154.2	164.4	154.1	150.7	154.1	155.5
Total Delay (hr)	82.7	90.6	82.2	80.2	81.9	83.5
Total Stops	4363	4611	4493	4211	4404	4415
Fuel Used (gal)	113.3	118.5	114.2	111.9	114.2	114.4

Intersection: 23: Independence Blvd. & Mercer Ave./Randall Pkwy.

Movement	EB	EB	WB	WB	WB	WB	WB	NB	NB	NB	NB	NB
Directions Served	LT	R	L	L	LT	R	R	L	T	T	T	T
Maximum Queue (ft)	266	171	180	232	257	261	232	138	720	658	554	377
Average Queue (ft)	137	82	87	149	174	153	141	54	540	482	355	221
95th Queue (ft)	245	149	175	217	238	232	212	114	707	631	510	343
Link Distance (ft)	721				838		838		701		701	
Upstream Blk Time (%)									1			
Queuing Penalty (veh)									0			
Storage Bay Dist (ft)	200		300		300		300		225			
Storage Blk Time (%)									1			
Queuing Penalty (veh)									1			

Intersection: 23: Independence Blvd. & Mercer Ave./Randall Pkwy.

Movement	NB	SB	SB	SB	SB	SB	SB	SB
Directions Served	R	L	L	L	T	T	T	TR
Maximum Queue (ft)	193	270	323	250	513	515	430	369
Average Queue (ft)	87	182	227	157	315	302	248	164
95th Queue (ft)	161	257	306	243	440	429	372	297
Link Distance (ft)					1083		1083	
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)	200	325	325	325				
Storage Blk Time (%)								
Queuing Penalty (veh)								

Intersection: 221: Bend

Movement	EB	EB
Directions Served	T	T
Maximum Queue (ft)	164	164
Average Queue (ft)	5	5
95th Queue (ft)	115	115
Link Distance (ft)	838	838
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Network Summary

Network wide Queuing Penalty: 1

**2040 Build – Common to All Alternatives
Cul-de-sac**

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Lanes, Volumes, Timings
 23: Independence Blvd. & Randall Pkwy.

U-4434 Independence Blvd.
 2040 Build Mercer Cul-de-sac



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↙↙	↘↘	↑↑↑	↘	↙↙	↑↑↑
Traffic Volume (vph)	402	398	2171	305	378	2710
Future Volume (vph)	402	398	2171	305	378	2710
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	350	0		200	475	
Storage Lanes	2	2		1	2	
Taper Length (ft)	100				100	
Satd. Flow (prot)	3433	2787	5085	1583	3433	5085
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	3433	2787	5085	1583	3433	5085
Right Turn on Red		No		No		
Satd. Flow (RTOR)						
Link Speed (mph)	35		45			55
Link Distance (ft)	965		772			1157
Travel Time (s)	18.8		11.7			14.3
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	447	442	2412	339	420	3011
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	24		24			24
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Turn Type	Prot	pm+ov	NA	pm+ov	Prot	NA
Protected Phases	4	5	6	4	5	2
Permitted Phases		4		6		
Detector Phase	4	5	6	4	5	2
Switch Phase						
Minimum Initial (s)	12.0	7.0	12.0	12.0	7.0	14.0
Minimum Split (s)	19.0	14.0	19.0	19.0	14.0	21.0
Total Split (s)	37.0	35.0	108.0	37.0	35.0	143.0
Total Split (%)	20.6%	19.4%	60.0%	20.6%	19.4%	79.4%
Maximum Green (s)	30.0	28.0	101.0	30.0	28.0	136.0
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag		Lag	Lead		Lag	
Lead-Lag Optimize?		Yes	Yes		Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	C-Min	None	None	C-Min
Act Effct Green (s)	29.5	62.7	107.3	141.9	28.1	140.5
Actuated g/C Ratio	0.16	0.35	0.60	0.79	0.16	0.78
v/c Ratio	0.79	0.46	0.80	0.27	0.78	0.76
Control Delay	83.2	46.6	31.2	5.9	83.8	12.6

Lanes, Volumes, Timings
 23: Independence Blvd. & Randall Pkwy.

U-4434 Independence Blvd.
 2040 Build Mercer Cul-de-sac



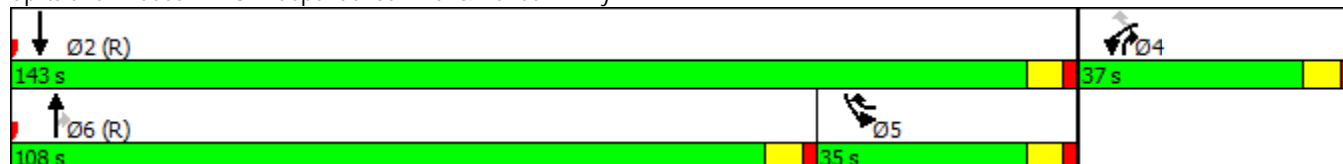
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	83.2	46.6	31.2	5.9	83.8	12.6
LOS	F	D	C	A	F	B
Approach Delay	65.0		28.1			21.3
Approach LOS	E		C			C
Queue Length 50th (ft)	262	223	822	102	246	665
Queue Length 95th (ft)	327	280	886	138	311	713
Internal Link Dist (ft)	885		692			1077
Turn Bay Length (ft)	900			900	900	
Base Capacity (vph)	610	962	3031	1238	572	3968
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.73	0.46	0.80	0.27	0.73	0.76

Intersection Summary

Area Type: Other
 Cycle Length: 180
 Actuated Cycle Length: 180
 Offset: 0 (0%), Referenced to phase 2:SBT and 6:NBT, Start of Green
 Natural Cycle: 80
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.80
 Intersection Signal Delay: 29.4
 Intersection Capacity Utilization 76.7%
 Analysis Period (min) 15

Intersection LOS: C
 ICU Level of Service D

Splits and Phases: 23: Independence Blvd. & Randall Pkwy.



Lanes, Volumes, Timings
 23: Independence Blvd. & Randall Pkwy.

U-4434 Independence Blvd.
 2040 Build Mercer Cul-de-sac



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	305	378	2792	402	398	2051
Future Volume (vph)	305	378	2792	402	398	2051
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	350	0		200	475	
Storage Lanes	2	2		1	2	
Taper Length (ft)	100				100	
Satd. Flow (prot)	3433	2787	5085	1583	3433	5085
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	3433	2787	5085	1583	3433	5085
Right Turn on Red		No		No		
Satd. Flow (RTOR)						
Link Speed (mph)	35		45			55
Link Distance (ft)	965		772			1157
Travel Time (s)	18.8		11.7			14.3
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	339	420	3102	447	442	2279
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	24		24			24
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Turn Type	Prot	pm+ov	NA	pm+ov	Prot	NA
Protected Phases	4	5	6	4	5	2
Permitted Phases		4		6		
Detector Phase	4	5	6	4	5	2
Switch Phase						
Minimum Initial (s)	12.0	7.0	12.0	12.0	7.0	14.0
Minimum Split (s)	19.0	14.0	19.0	19.0	14.0	21.0
Total Split (s)	26.0	31.0	123.0	26.0	31.0	154.0
Total Split (%)	14.4%	17.2%	68.3%	14.4%	17.2%	85.6%
Maximum Green (s)	19.0	24.0	116.0	19.0	24.0	147.0
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag		Lag	Lead		Lag	
Lead-Lag Optimize?		Yes	Yes		Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	C-Min	None	None	C-Min
Act Effect Green (s)	20.8	51.6	118.4	144.2	25.8	149.2
Actuated g/C Ratio	0.12	0.29	0.66	0.80	0.14	0.83
v/c Ratio	0.85	0.53	0.93	0.35	0.90	0.54
Control Delay	98.0	56.7	33.4	5.8	97.2	5.3

Lanes, Volumes, Timings
 23: Independence Blvd. & Randall Pkwy.

U-4434 Independence Blvd.
 2040 Build Mercer Cul-de-sac



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	98.0	56.7	33.4	5.8	97.2	5.3
LOS	F	E	C	A	F	A
Approach Delay	75.1		29.9			20.3
Approach LOS	E		C			C
Queue Length 50th (ft)	206	238	1134	130	268	263
Queue Length 95th (ft)	#285	303	1190	172	#364	282
Internal Link Dist (ft)	885		692			1077
Turn Bay Length (ft)	900			900	900	
Base Capacity (vph)	400	787	3343	1260	495	4214
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.85	0.53	0.93	0.35	0.89	0.54

Intersection Summary

Area Type: Other
 Cycle Length: 180
 Actuated Cycle Length: 180
 Offset: 0 (0%), Referenced to phase 2:SBT and 6:NBT, Start of Green
 Natural Cycle: 100
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.93
 Intersection Signal Delay: 31.0
 Intersection LOS: C
 Intersection Capacity Utilization 87.8%
 ICU Level of Service E
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 23: Independence Blvd. & Randall Pkwy.



Summary of All Intervals

Run Number	1	2	3	4	5	Avg
Start Time	6:50	6:50	6:50	6:50	6:50	6:50
End Time	8:00	8:00	8:00	8:00	8:00	8:00
Total Time (min)	70	70	70	70	70	70
Time Recorded (min)	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1
Vehs Entered	6361	6471	6371	6351	6213	6354
Vehs Exited	6361	6475	6360	6375	6204	6355
Starting Vehs	126	140	124	143	124	131
Ending Vehs	126	136	135	119	133	130
Travel Distance (mi)	2584	2626	2589	2586	2520	2581
Travel Time (hr)	121.8	125.1	123.0	119.9	116.9	121.3
Total Delay (hr)	55.7	58.1	56.5	53.6	52.6	55.3
Total Stops	2869	2881	2947	2794	2770	2851
Fuel Used (gal)	98.1	100.3	98.3	97.0	94.9	97.7

Interval #0 Information Seeding

Start Time	6:50
End Time	7:00
Total Time (min)	10
Volumes adjusted by Growth Factors.	
No data recorded this interval.	

Interval #1 Information Recording

Start Time	7:00
End Time	8:00
Total Time (min)	60
Volumes adjusted by Growth Factors.	

Run Number	1	2	3	4	5	Avg
Vehs Entered	6361	6471	6371	6351	6213	6354
Vehs Exited	6361	6475	6360	6375	6204	6355
Starting Vehs	126	140	124	143	124	131
Ending Vehs	126	136	135	119	133	130
Travel Distance (mi)	2584	2626	2589	2586	2520	2581
Travel Time (hr)	121.8	125.1	123.0	119.9	116.9	121.3
Total Delay (hr)	55.7	58.1	56.5	53.6	52.6	55.3
Total Stops	2869	2881	2947	2794	2770	2851
Fuel Used (gal)	98.1	100.3	98.3	97.0	94.9	97.7

Intersection: 23: Independence Blvd. & Randall Pkwy.

Movement	WB	WB	WB	WB	NB	NB	NB	NB	SB	SB	SB	SB
Directions Served	L	L	R	R	T	T	T	R	L	L	T	T
Maximum Queue (ft)	307	321	243	249	721	617	493	166	316	377	321	321
Average Queue (ft)	182	202	133	134	496	433	316	69	177	220	201	208
95th Queue (ft)	275	296	221	224	667	596	465	140	277	315	313	326
Link Distance (ft)			857	857	714	714	714				1097	1097
Upstream Blk Time (%)					0							
Queuing Penalty (veh)					0							
Storage Bay Dist (ft)	350	350						200	475	475		
Storage Blk Time (%)												
Queuing Penalty (veh)												

Intersection: 23: Independence Blvd. & Randall Pkwy.

Movement	SB
Directions Served	T
Maximum Queue (ft)	300
Average Queue (ft)	167
95th Queue (ft)	277
Link Distance (ft)	1097
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Network Summary

Network wide Queuing Penalty: 0

Summary of All Intervals

Run Number	1	2	3	4	5	Avg
Start Time	4:50	4:50	4:50	4:50	4:50	4:50
End Time	6:00	6:00	6:00	6:00	6:00	6:00
Total Time (min)	70	70	70	70	70	70
Time Recorded (min)	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1
Vehs Entered	6326	6397	6257	6183	6208	6275
Vehs Exited	6324	6423	6250	6214	6200	6282
Starting Vehs	124	150	130	154	116	135
Ending Vehs	126	124	137	123	124	127
Travel Distance (mi)	2565	2604	2539	2512	2510	2546
Travel Time (hr)	125.3	128.8	127.2	117.9	116.2	123.1
Total Delay (hr)	58.1	60.6	60.7	52.3	50.7	56.5
Total Stops	2793	2862	2747	2632	2532	2713
Fuel Used (gal)	97.4	99.5	96.7	93.8	93.0	96.1

Interval #0 Information Seeding

Start Time	4:50
End Time	5:00
Total Time (min)	10
Volumes adjusted by Growth Factors.	
No data recorded this interval.	

Interval #1 Information Recording

Start Time	5:00
End Time	6:00
Total Time (min)	60
Volumes adjusted by Growth Factors.	

Run Number	1	2	3	4	5	Avg
Vehs Entered	6326	6397	6257	6183	6208	6275
Vehs Exited	6324	6423	6250	6214	6200	6282
Starting Vehs	124	150	130	154	116	135
Ending Vehs	126	124	137	123	124	127
Travel Distance (mi)	2565	2604	2539	2512	2510	2546
Travel Time (hr)	125.3	128.8	127.2	117.9	116.2	123.1
Total Delay (hr)	58.1	60.6	60.7	52.3	50.7	56.5
Total Stops	2793	2862	2747	2632	2532	2713
Fuel Used (gal)	97.4	99.5	96.7	93.8	93.0	96.1

Intersection: 23: Independence Blvd. & Randall Pkwy.

Movement	WB	WB	WB	WB	NB	NB	NB	NB	SB	SB	SB	SB
Directions Served	L	L	R	R	T	T	T	R	L	L	T	T
Maximum Queue (ft)	226	253	239	260	728	683	529	200	433	472	188	204
Average Queue (ft)	139	157	163	164	514	458	347	72	260	299	106	121
95th Queue (ft)	210	232	232	235	696	624	485	164	407	446	166	187
Link Distance (ft)			857	857	714	714	714				1097	1097
Upstream Blk Time (%)					1	0						
Queuing Penalty (veh)					0	0						
Storage Bay Dist (ft)	350	350						200	475	475		
Storage Blk Time (%)												
Queuing Penalty (veh)												

Intersection: 23: Independence Blvd. & Randall Pkwy.

Movement	SB
Directions Served	T
Maximum Queue (ft)	164
Average Queue (ft)	72
95th Queue (ft)	142
Link Distance (ft)	1097
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Network Summary






























Network wide Queuing Penalty: 0

**2040 Build – Common to All Alternatives
Superstreet design**

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Lanes, Volumes, Timings
 23: Independence Blvd. & Mercer Ave./Randall Pkwy.

U-4434 Independence Blvd.
 2040 Build at Mercer Ave

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations			 			  		  		  	  	
Traffic Volume (vph)	0	0	134	0	0	878	90	2193	349	378	3112	115
Future Volume (vph)	0	0	134	0	0	878	90	2193	349	378	3112	115
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)			200			300	775		825	150		100
Storage Lanes	0		1	0		1	1		1	2		1
Taper Length (ft)	100			100			100			100		
Satd. Flow (prot)	0	0	2787	0	0	3610	1770	5085	1583	3433	5085	1583
Flt Permitted							0.950			0.950		
Satd. Flow (perm)	0	0	2787	0	0	3610	1770	5085	1583	3433	5085	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			120			120			196			128
Link Speed (mph)		25			35			45			55	
Link Distance (ft)		801			965			841			791	
Travel Time (s)		21.8			18.8			12.7			9.8	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	149	0	0	976	100	2437	388	420	3458	128
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			30			30	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type			Over			Over	Prot	NA	Perm	Prot	NA	Perm
Protected Phases			1			5	1	6		5	2	
Permitted Phases									6			2
Detector Phase			1			5	1	6	6	5	2	2
Switch Phase												
Minimum Initial (s)			7.0			7.0	7.0	12.0	12.0	7.0	14.0	14.0
Minimum Split (s)			14.0			14.0	14.0	19.0	19.0	14.0	21.0	21.0
Total Split (s)			16.0			37.0	16.0	63.0	63.0	37.0	84.0	84.0
Total Split (%)			16.0%			37.0%	16.0%	63.0%	63.0%	37.0%	84.0%	84.0%
Maximum Green (s)			9.0			30.0	9.0	56.0	56.0	30.0	77.0	77.0
Yellow Time (s)			5.0			5.0	5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)			2.0			2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)			-2.0			-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)			5.0			5.0	5.0	5.0	5.0	5.0	5.0	5.0

Lanes, Volumes, Timings
 23: Independence Blvd. & Mercer Ave./Randall Pkwy.

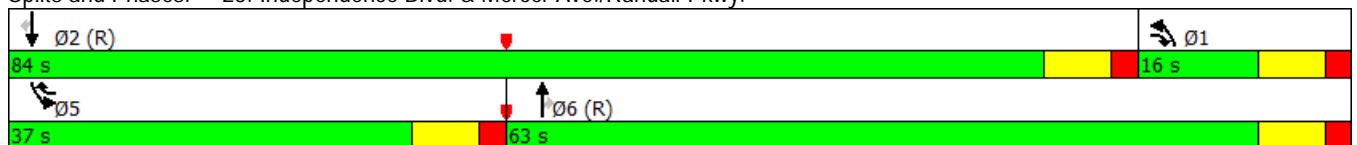
U-4434 Independence Blvd.
 2040 Build at Mercer Ave

	↖	→	↘	↙	←	↖	↙	↑	↘	↘	↓	↙
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lead/Lag			Lag			Lead	Lag	Lag	Lag	Lead	Lead	Lead
Lead-Lag Optimize?			Yes			Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)			3.0			3.0	3.0	3.0	3.0	3.0	3.0	3.0
Minimum Gap (s)			3.0			3.0	3.0	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)			0.0			0.0	0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)			0.0			0.0	0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode			None			None	None	C-Min	C-Min	None	C-Min	C-Min
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)			10.9			30.4	10.9	59.6	59.6	30.4	79.1	79.1
Actuated g/C Ratio			0.11			0.30	0.11	0.60	0.60	0.30	0.79	0.79
v/c Ratio			0.36			0.83	0.52	0.80	0.38	0.40	0.86	0.10
Control Delay			14.5			34.9	45.2	14.1	5.2	31.3	3.2	0.1
Queue Delay			0.0			0.0	0.0	0.0	0.0	0.0	0.3	0.0
Total Delay			14.5			34.9	45.2	14.1	5.2	31.3	3.5	0.1
LOS			B			C	D	B	A	C	A	A
Approach Delay		14.5			34.9			14.0			6.3	
Approach LOS		B			C			B			A	
Queue Length 50th (ft)			9			218	61	237	44	105	131	0
Queue Length 95th (ft)			42			284	m91	256	80	m115	143	m0
Internal Link Dist (ft)		721			885			761			711	
Turn Bay Length (ft)												
Base Capacity (vph)			413			1236	194	3031	1022	1098	4021	1278
Starvation Cap Reductn			0			0	0	0	0	0	135	0
Spillback Cap Reductn			0			0	0	0	0	0	0	0
Storage Cap Reductn			0			0	0	0	0	0	0	0
Reduced v/c Ratio			0.36			0.79	0.52	0.80	0.38	0.38	0.89	0.10

Intersection Summary






























Area Type: Other
 Cycle Length: 100
 Actuated Cycle Length: 100
 Offset: 97 (97%), Referenced to phase 2:SBT and 6:NBT, Start of Green
 Natural Cycle: 65
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.86
 Intersection Signal Delay: 12.7 Intersection LOS: B
 Intersection Capacity Utilization 74.3% ICU Level of Service D
 Analysis Period (min) 15
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 23: Independence Blvd. & Mercer Ave./Randall Pkwy.



Lanes, Volumes, Timings
 23: Independence Blvd. & Mercer Ave./Randall Pkwy.

U-4434 Independence Blvd.
 2040 Build at Mercer Ave

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations			 			  		  		  	  	
Traffic Volume (vph)	0	0	205	0	0	727	68	2747	480	398	2476	66
Future Volume (vph)	0	0	205	0	0	727	68	2747	480	398	2476	66
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)			200			300	775		825	150		100
Storage Lanes	0		1	0		1	1		1	2		1
Taper Length (ft)	100			100			100			100		
Satd. Flow (prot)	0	0	2787	0	0	3610	1770	5085	1583	3433	5085	1583
Flt Permitted							0.950			0.950		
Satd. Flow (perm)	0	0	2787	0	0	3610	1770	5085	1583	3433	5085	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			133			133			77			73
Link Speed (mph)		25			35			45			55	
Link Distance (ft)		801			965			841			791	
Travel Time (s)		21.8			18.8			12.7			9.8	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	228	0	0	808	76	3052	533	442	2751	73
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			30			30	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type			Over			Over	Prot	NA	Perm	Prot	NA	Perm
Protected Phases			1			5	1	6		5	2	
Permitted Phases									6			2
Detector Phase			1			5	1	6	6	5	2	2
Switch Phase												
Minimum Initial (s)			7.0			7.0	7.0	12.0	12.0	7.0	14.0	14.0
Minimum Split (s)			14.0			14.0	14.0	19.0	19.0	14.0	21.0	21.0
Total Split (s)			14.0			25.0	14.0	65.0	65.0	25.0	76.0	76.0
Total Split (%)			15.6%			27.8%	15.6%	72.2%	72.2%	27.8%	84.4%	84.4%
Maximum Green (s)			7.0			18.0	7.0	58.0	58.0	18.0	69.0	69.0
Yellow Time (s)			5.0			5.0	5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)			2.0			2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)			-2.0			-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)			5.0			5.0	5.0	5.0	5.0	5.0	5.0	5.0

Lanes, Volumes, Timings
 23: Independence Blvd. & Mercer Ave./Randall Pkwy.

U-4434 Independence Blvd.
 2040 Build at Mercer Ave



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lead/Lag			Lag			Lead	Lag	Lag	Lag	Lead	Lead	Lead
Lead-Lag Optimize?			Yes			Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)			3.0			3.0	3.0	3.0	3.0	3.0	3.0	3.0
Minimum Gap (s)			3.0			3.0	3.0	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)			0.0			0.0	0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)			0.0			0.0	0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode			None			None	None	C-Min	C-Min	None	C-Min	C-Min
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)			9.8			20.0	9.8	60.0	60.0	20.0	70.2	70.2
Actuated g/C Ratio			0.11			0.22	0.11	0.67	0.67	0.22	0.78	0.78
v/c Ratio			0.54			0.89	0.40	0.90	0.49	0.58	0.69	0.06
Control Delay			22.0			42.1	34.8	9.1	2.3	37.7	2.2	0.2
Queue Delay			0.0			0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay			22.0			42.1	34.8	9.1	2.3	37.7	2.2	0.2
LOS			C			D	C	A	A	D	A	A
Approach Delay		22.0			42.1			8.6			7.0	
Approach LOS		C			D			A			A	
Queue Length 50th (ft)			28			166	42	395	31	109	72	0
Queue Length 95th (ft)			68			#256	m46	334	m34	m145	79	m0
Internal Link Dist (ft)		721			885			761			711	
Turn Bay Length (ft)												
Base Capacity (vph)			420			905	192	3390	1081	762	4011	1264
Starvation Cap Reductn			0			0	0	0	0	0	0	0
Spillback Cap Reductn			0			0	0	0	0	0	0	0
Storage Cap Reductn			0			0	0	0	0	0	0	0
Reduced v/c Ratio			0.54			0.89	0.40	0.90	0.49	0.58	0.69	0.06

Intersection Summary








Area Type: Other
 Cycle Length: 90
 Actuated Cycle Length: 90
 Offset: 22 (24%), Referenced to phase 2:SBT and 6:NBT, Start of Green
 Natural Cycle: 70
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.90
 Intersection Signal Delay: 11.7 Intersection LOS: B
 Intersection Capacity Utilization 78.4% ICU Level of Service D
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 23: Independence Blvd. & Mercer Ave./Randall Pkwy.



Lanes, Volumes, Timings
231: Independence Blvd.

U-4434 Independence Blvd.
2040 Build at Mercer Ave

							
Lane Group	EBL	EBR	NBU	NBL	NBT	SBT	SBR
Lane Configurations			□□		↑↑↑	↑↑↑	
Traffic Volume (vph)	0	0	480	0	2591	3125	0
Future Volume (vph)	0	0	480	0	2591	3125	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12
Grade (%)	0%				0%	0%	
Storage Length (ft)				775			
Storage Lanes	0	0		2			0
Taper Length (ft)	100			100			
Satd. Flow (prot)	0	0	3433	0	5085	5085	0
Flt Permitted			0.950				
Satd. Flow (perm)	0	0	3433	0	5085	5085	0
Right Turn on Red		No					No
Satd. Flow (RTOR)							
Link Speed (mph)	30				35	55	
Link Distance (ft)	385				791	580	
Travel Time (s)	8.8				15.4	7.2	
Confl. Peds. (#/hr)							
Confl. Bikes (#/hr)							
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	0%	2%	0%	2%	2%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0
Parking (#/hr)							
Mid-Block Traffic (%)	0%				0%	0%	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	0	0	533	0	2879	3472	0
Enter Blocked Intersection	No	No	No	No	No	No	No
Lane Alignment	Left	Right	R NA	Left	Left	Left	Right
Median Width(ft)	0				24	24	
Link Offset(ft)	0				0	0	
Crosswalk Width(ft)	16				16	16	
Two way Left Turn Lane							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9	9	15			9
Turn Type			Prot		NA	NA	
Protected Phases			5		2	6	
Permitted Phases							
Detector Phase			5		2	6	
Switch Phase							
Minimum Initial (s)			7.0		7.0	7.0	
Minimum Split (s)			14.0		14.0	14.0	
Total Split (s)			23.0		100.0	77.0	
Total Split (%)			23.0%		100.0%	77.0%	
Maximum Green (s)			16.0		93.0	70.0	
Yellow Time (s)			5.0		5.0	5.0	
All-Red Time (s)			2.0		2.0	2.0	
Lost Time Adjust (s)			-2.0		-2.0	-2.0	
Total Lost Time (s)			5.0		5.0	5.0	



Lane Group	EBL	EBR	NBU	NBL	NBT	SBT	SBR
Lead/Lag			Lead			Lag	
Lead-Lag Optimize?			Yes			Yes	
Vehicle Extension (s)			3.0		3.0	3.0	
Minimum Gap (s)			3.0		3.0	3.0	
Time Before Reduce (s)			0.0		0.0	0.0	
Time To Reduce (s)			0.0		0.0	0.0	
Recall Mode			None		C-Min	C-Min	
Walk Time (s)							
Flash Dont Walk (s)							
Pedestrian Calls (#/hr)							
Act Effct Green (s)			18.0		100.0	72.0	
Actuated g/C Ratio			0.18		1.00	0.72	
v/c Ratio			0.86		0.57	0.95	
Control Delay			43.9		0.3	20.0	
Queue Delay			0.0		0.0	0.0	
Total Delay			43.9		0.3	20.0	
LOS			D		A	B	
Approach Delay					7.1	20.0	
Approach LOS					A	B	
Queue Length 50th (ft)			164		0	614	
Queue Length 95th (ft)			m#243		0	724	
Internal Link Dist (ft)	305				711	500	
Turn Bay Length (ft)							
Base Capacity (vph)			617		5085	3661	
Starvation Cap Reductn			0		0	0	
Spillback Cap Reductn			0		0	0	
Storage Cap Reductn			0		0	0	
Reduced v/c Ratio			0.86		0.57	0.95	

Intersection Summary








Area Type: Other
 Cycle Length: 100
 Actuated Cycle Length: 100
 Offset: 59 (59%), Referenced to phase 2:NBT and 6:SBT, Start of Green
 Natural Cycle: 90
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.95
 Intersection Signal Delay: 13.6
 Intersection Capacity Utilization 82.4%
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 231: Independence Blvd.



Lanes, Volumes, Timings
231: Independence Blvd.

U-4434 Independence Blvd.
2040 Build at Mercer Ave

							
Lane Group	EBL	EBR	NBU	NBL	NBT	SBT	SBR
Lane Configurations			□□		↑↑↑	↑↑↑	
Traffic Volume (vph)	0	0	349	0	3125	2591	0
Future Volume (vph)	0	0	349	0	3125	2591	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12
Grade (%)	0%				0%	0%	
Storage Length (ft)				775			
Storage Lanes	0	0		2			0
Taper Length (ft)	100			100			
Satd. Flow (prot)	0	0	3433	0	5085	5085	0
Flt Permitted			0.950				
Satd. Flow (perm)	0	0	3433	0	5085	5085	0
Right Turn on Red		No					No
Satd. Flow (RTOR)							
Link Speed (mph)	30				35	55	
Link Distance (ft)	385				791	580	
Travel Time (s)	8.8				15.4	7.2	
Confl. Peds. (#/hr)							
Confl. Bikes (#/hr)							
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	0%	2%	0%	2%	2%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0
Parking (#/hr)							
Mid-Block Traffic (%)	0%				0%	0%	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	0	0	388	0	3472	2879	0
Enter Blocked Intersection	No	No	No	No	No	No	No
Lane Alignment	Left	Right	R NA	Left	Left	Left	Right
Median Width(ft)	0				24	24	
Link Offset(ft)	0				0	0	
Crosswalk Width(ft)	16				16	16	
Two way Left Turn Lane							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9	9	15			9
Turn Type			Prot		NA	NA	
Protected Phases			5		2	6	
Permitted Phases							
Detector Phase			5		2	6	
Switch Phase							
Minimum Initial (s)			7.0		7.0	7.0	
Minimum Split (s)			14.0		14.0	14.0	
Total Split (s)			21.0		90.0	69.0	
Total Split (%)			23.3%		100.0%	76.7%	
Maximum Green (s)			14.0		83.0	62.0	
Yellow Time (s)			5.0		5.0	5.0	
All-Red Time (s)			2.0		2.0	2.0	
Lost Time Adjust (s)			-2.0		-2.0	-2.0	
Total Lost Time (s)			5.0		5.0	5.0	

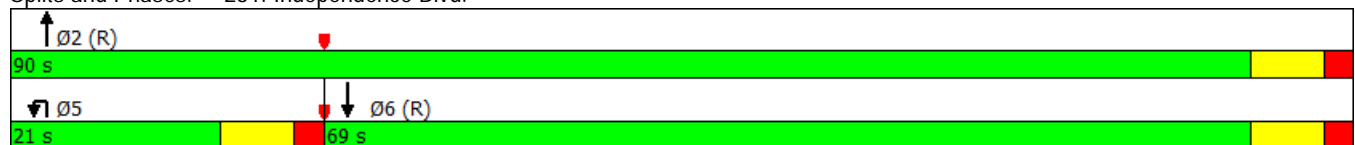


Lane Group	EBL	EBR	NBU	NBL	NBT	SBT	SBR
Lead/Lag			Lead			Lag	
Lead-Lag Optimize?			Yes			Yes	
Vehicle Extension (s)			3.0		3.0	3.0	
Minimum Gap (s)			3.0		3.0	3.0	
Time Before Reduce (s)			0.0		0.0	0.0	
Time To Reduce (s)			0.0		0.0	0.0	
Recall Mode			None		C-Min	C-Min	
Walk Time (s)							
Flash Dont Walk (s)							
Pedestrian Calls (#/hr)							
Act Effct Green (s)			15.4		90.0	64.6	
Actuated g/C Ratio			0.17		1.00	0.72	
v/c Ratio			0.66		0.68	0.79	
Control Delay			32.8		0.3	10.4	
Queue Delay			0.0		0.0	0.0	
Total Delay			32.8		0.3	10.4	
LOS			C		A	B	
Approach Delay					3.6	10.4	
Approach LOS					A	B	
Queue Length 50th (ft)			98		0	338	
Queue Length 95th (ft)			m115		0	402	
Internal Link Dist (ft)	305				711	500	
Turn Bay Length (ft)							
Base Capacity (vph)			610		5085	3652	
Starvation Cap Reductn			0		0	0	
Spillback Cap Reductn			0		0	0	
Storage Cap Reductn			0		0	0	
Reduced v/c Ratio			0.64		0.68	0.79	

Intersection Summary








Area Type: Other
 Cycle Length: 90
 Actuated Cycle Length: 90
 Offset: 84 (93%), Referenced to phase 2:NBT and 6:SBT, Start of Green
 Natural Cycle: 60
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.79
 Intersection Signal Delay: 6.5 Intersection LOS: A
 Intersection Capacity Utilization 68.4% ICU Level of Service C
 Analysis Period (min) 15
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 231: Independence Blvd.



Lanes, Volumes, Timings
232: Independence Blvd.

U-4434 Independence Blvd.
2040 Build at Mercer Ave

							
Lane Group	WBL	WBR	NBT	NBR	SBU	SBL	SBT
Lane Configurations			↑↑↑		⌵		↑↑↑
Traffic Volume (vph)	0	0	2566	0	66	0	3180
Future Volume (vph)	0	0	2566	0	66	0	3180
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12
Grade (%)	0%		0%				0%
Storage Length (ft)						150	
Storage Lanes	0	0		0		1	
Taper Length (ft)	100					100	
Satd. Flow (prot)	0	0	5085	0	1770	0	5085
Flt Permitted					0.950		
Satd. Flow (perm)	0	0	5085	0	1770	0	5085
Right Turn on Red		No		No			
Satd. Flow (RTOR)							
Link Speed (mph)	30		45				45
Link Distance (ft)	441		457				841
Travel Time (s)	10.0		6.9				12.7
Confl. Peds. (#/hr)							
Confl. Bikes (#/hr)							
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	0%	2%	0%	2%	0%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0
Parking (#/hr)							
Mid-Block Traffic (%)	0%		0%				0%
Shared Lane Traffic (%)							
Lane Group Flow (vph)	0	0	2851	0	73	0	3533
Enter Blocked Intersection	No	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	R NA	Left	Left
Median Width(ft)	0		12				12
Link Offset(ft)	0		0				0
Crosswalk Width(ft)	16		16				16
Two way Left Turn Lane							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	9	15	
Turn Type			NA		Prot		NA
Protected Phases			2		1		6
Permitted Phases							
Detector Phase			2		1		6
Switch Phase							
Minimum Initial (s)			7.0		7.0		7.0
Minimum Split (s)			14.0		14.0		14.0
Total Split (s)			84.0		16.0		100.0
Total Split (%)			84.0%		16.0%		100.0%
Maximum Green (s)			77.0		9.0		93.0
Yellow Time (s)			5.0		5.0		5.0
All-Red Time (s)			2.0		2.0		2.0
Lost Time Adjust (s)			-2.0		-2.0		-2.0
Total Lost Time (s)			5.0		5.0		5.0

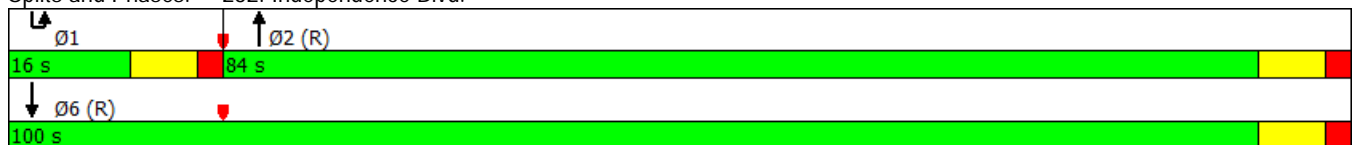


Lane Group	WBL	WBR	NBT	NBR	SBU	SBL	SBT
Lead/Lag			Lag		Lead		
Lead-Lag Optimize?			Yes		Yes		
Vehicle Extension (s)			3.0		3.0		3.0
Minimum Gap (s)			3.0		3.0		3.0
Time Before Reduce (s)			0.0		0.0		0.0
Time To Reduce (s)			0.0		0.0		0.0
Recall Mode			C-Min		None		C-Min
Walk Time (s)							
Flash Dont Walk (s)							
Pedestrian Calls (#/hr)							
Act Effct Green (s)			83.4		10.4		100.0
Actuated g/C Ratio			0.83		0.10		1.00
v/c Ratio			0.67		0.40		0.69
Control Delay			5.2		49.3		0.4
Queue Delay			0.0		0.0		0.0
Total Delay			5.2		49.3		0.4
LOS			A		D		A
Approach Delay			5.2				1.4
Approach LOS			A				A
Queue Length 50th (ft)			248		41		0
Queue Length 95th (ft)			289		m51		0
Internal Link Dist (ft)	361		377				761
Turn Bay Length (ft)							
Base Capacity (vph)			4241		194		5085
Starvation Cap Reductn			0		0		0
Spillback Cap Reductn			0		0		0
Storage Cap Reductn			0		0		0
Reduced v/c Ratio			0.67		0.38		0.69

Intersection Summary








Area Type: Other
 Cycle Length: 100
 Actuated Cycle Length: 100
 Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green, Master Intersection
 Natural Cycle: 55
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.69
 Intersection Signal Delay: 3.1 Intersection LOS: A
 Intersection Capacity Utilization 65.6% ICU Level of Service C
 Analysis Period (min) 15
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 232: Independence Blvd.



Lanes, Volumes, Timings
232: Independence Blvd.

U-4434 Independence Blvd.
2040 Build at Mercer Ave

							
Lane Group	WBL	WBR	NBT	NBR	SBU	SBL	SBT
Lane Configurations			↑↑↑		↓		↑↑↑
Traffic Volume (vph)	0	0	3180	0	115	0	2566
Future Volume (vph)	0	0	3180	0	115	0	2566
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12
Grade (%)	0%		0%				0%
Storage Length (ft)						150	
Storage Lanes	0	0		0		1	
Taper Length (ft)	100					100	
Satd. Flow (prot)	0	0	5085	0	1770	0	5085
Flt Permitted					0.950		
Satd. Flow (perm)	0	0	5085	0	1770	0	5085
Right Turn on Red		No		No			
Satd. Flow (RTOR)							
Link Speed (mph)	30		45				45
Link Distance (ft)	441		457				841
Travel Time (s)	10.0		6.9				12.7
Confl. Peds. (#/hr)							
Confl. Bikes (#/hr)							
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	0%	2%	0%	2%	0%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0
Parking (#/hr)							
Mid-Block Traffic (%)	0%		0%				0%
Shared Lane Traffic (%)							
Lane Group Flow (vph)	0	0	3533	0	128	0	2851
Enter Blocked Intersection	No	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	R NA	Left	Left
Median Width(ft)	0		12				12
Link Offset(ft)	0		0				0
Crosswalk Width(ft)	16		16				16
Two way Left Turn Lane							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	9	15	
Turn Type			NA		Prot		NA
Protected Phases			2		1		6
Permitted Phases							
Detector Phase			2		1		6
Switch Phase							
Minimum Initial (s)			7.0		7.0		7.0
Minimum Split (s)			14.0		14.0		14.0
Total Split (s)			75.0		15.0		90.0
Total Split (%)			83.3%		16.7%		100.0%
Maximum Green (s)			68.0		8.0		83.0
Yellow Time (s)			5.0		5.0		5.0
All-Red Time (s)			2.0		2.0		2.0
Lost Time Adjust (s)			-2.0		-2.0		-2.0
Total Lost Time (s)			5.0		5.0		5.0

Summary of All Intervals

Run Number	1	2	3	4	5	Avg
Start Time	6:50	6:50	6:50	6:50	6:50	6:50
End Time	8:00	8:00	8:00	8:00	8:00	8:00
Total Time (min)	70	70	70	70	70	70
Time Recorded (min)	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1
Vehs Entered	4022	3718	3621	3807	4121	3858
Vehs Exited	3963	3665	3565	3749	4035	3796
Starting Vehs	178	161	182	187	147	169
Ending Vehs	237	214	238	245	233	234
Travel Distance (mi)	2205	2054	2001	2092	2255	2122
Travel Time (hr)	1764.9	1822.5	1918.1	1858.6	1712.3	1815.3
Total Delay (hr)	1705.7	1767.2	1864.5	1802.7	1651.8	1758.4
Total Stops	5736	5058	5150	5422	5906	5455
Fuel Used (gal)	473.1	481.4	502.0	490.1	462.9	481.9

Interval #0 Information Seeding

Start Time	6:50
End Time	7:00
Total Time (min)	10
Volumes adjusted by Growth Factors.	
No data recorded this interval.	

Interval #1 Information Recording

Start Time	7:00
End Time	8:00
Total Time (min)	60
Volumes adjusted by Growth Factors.	

Run Number	1	2	3	4	5	Avg
Vehs Entered	4022	3718	3621	3807	4121	3858
Vehs Exited	3963	3665	3565	3749	4035	3796
Starting Vehs	178	161	182	187	147	169
Ending Vehs	237	214	238	245	233	234
Travel Distance (mi)	2205	2054	2001	2092	2255	2122
Travel Time (hr)	1764.9	1822.5	1918.1	1858.6	1712.3	1815.3
Total Delay (hr)	1705.7	1767.2	1864.5	1802.7	1651.8	1758.4
Total Stops	5736	5058	5150	5422	5906	5455
Fuel Used (gal)	473.1	481.4	502.0	490.1	462.9	481.9

Intersection: 23: Independence Blvd. & Mercer Ave./Randall Pkwy.

Movement	EB	EB	WB	WB	WB	NB	NB	NB	NB	NB	SB	SB
Directions Served	R	R	R	R	R	L	T	T	T	R	L	L
Maximum Queue (ft)	166	126	298	287	253	751	815	777	820	812	118	95
Average Queue (ft)	74	22	209	194	144	149	590	759	788	142	50	24
95th Queue (ft)	129	74	285	271	220	527	928	872	878	559	99	69
Link Distance (ft)	720	720	849	849	849	777	777	777	777	777	729	729
Upstream Blk Time (%)						2	4	7	29	1		
Queuing Penalty (veh)						11	19	36	152	6		
Storage Bay Dist (ft)		200			300	775				825	150	150
Storage Blk Time (%)												
Queuing Penalty (veh)												

Intersection: 23: Independence Blvd. & Mercer Ave./Randall Pkwy.

Movement	SB	SB	SB	SB
Directions Served	T	T	T	R
Maximum Queue (ft)	310	416	321	37
Average Queue (ft)	32	66	65	5
95th Queue (ft)	162	235	201	20
Link Distance (ft)	729	729	729	729
Upstream Blk Time (%)		0		
Queuing Penalty (veh)		0		
Storage Bay Dist (ft)				100
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 231: Independence Blvd.

Movement	NB	NB	NB	NB	SB	SB	SB
Directions Served	U	U	T	T	T	T	T
Maximum Queue (ft)	771	770	803	589	571	606	615
Average Queue (ft)	728	699	410	61	109	580	584
95th Queue (ft)	814	871	1027	389	391	593	603
Link Distance (ft)	729	729	729	729	561	561	561
Upstream Blk Time (%)	58	35	12	0	1	67	82
Queuing Penalty (veh)	359	216	73	1	0	0	0
Storage Bay Dist (ft)	775	775					
Storage Blk Time (%)							
Queuing Penalty (veh)							

Intersection: 232: Independence Blvd.

Movement	NB	NB	NB	SB
Directions Served	T	T	T	U
Maximum Queue (ft)	449	470	487	78
Average Queue (ft)	107	440	458	31
95th Queue (ft)	380	540	522	68
Link Distance (ft)	440	440	440	777
Upstream Blk Time (%)	0	30	85	
Queuing Penalty (veh)	0	0	0	
Storage Bay Dist (ft)				150
Storage Blk Time (%)				
Queuing Penalty (veh)				

Network Summary

Network wide Queuing Penalty: 873

Summary of All Intervals

Run Number	1	2	3	4	5	Avg
Start Time	4:50	4:50	4:50	4:50	4:50	4:50
End Time	6:00	6:00	6:00	6:00	6:00	6:00
Total Time (min)	70	70	70	70	70	70
Time Recorded (min)	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1
Vehs Entered	4544	4584	4510	4444	4440	4503
Vehs Exited	4505	4573	4522	4449	4399	4489
Starting Vehs	139	136	138	142	110	133
Ending Vehs	178	147	126	137	151	148
Travel Distance (mi)	2484	2503	2478	2452	2431	2470
Travel Time (hr)	1499.7	1520.1	1567.1	1603.6	1478.0	1533.7
Total Delay (hr)	1433.2	1453.3	1500.8	1538.1	1412.7	1467.6
Total Stops	5064	4945	4992	4885	4754	4928
Fuel Used (gal)	423.3	428.3	438.3	445.9	415.3	430.2

Interval #0 Information Seeding

Start Time	4:50
End Time	6:00
Total Time (min)	10
Volumes adjusted by Growth Factors.	
No data recorded this interval.	

Interval #1 Information Recording

Start Time	5:00
End Time	6:00
Total Time (min)	60
Volumes adjusted by Growth Factors.	

Run Number	1	2	3	4	5	Avg
Vehs Entered	4544	4584	4510	4444	4440	4503
Vehs Exited	4505	4573	4522	4449	4399	4489
Starting Vehs	139	136	138	142	110	133
Ending Vehs	178	147	126	137	151	148
Travel Distance (mi)	2484	2503	2478	2452	2431	2470
Travel Time (hr)	1499.7	1520.1	1567.1	1603.6	1478.0	1533.7
Total Delay (hr)	1433.2	1453.3	1500.8	1538.1	1412.7	1467.6
Total Stops	5064	4945	4992	4885	4754	4928
Fuel Used (gal)	423.3	428.3	438.3	445.9	415.3	430.2

Intersection: 23: Independence Blvd. & Mercer Ave./Randall Pkwy.

Movement	EB	EB	WB	WB	WB	NB	NB	NB	NB	NB	SB	SB		
Directions Served	R	R	R	R	R	L	T	T	T	T	R	L	L	
Maximum Queue (ft)	200	153	256	240	214	86	81	368	424	97	150	141		
Average Queue (ft)	110	58	176	166	127	29	14	132	214	34	79	56		
95th Queue (ft)	178	143	238	222	195	68	51	280	365	68	128	120		
Link Distance (ft)	720	720	849	849	849	777	777	777	777	777	729	729		
Upstream Blk Time (%)														
Queuing Penalty (veh)														
Storage Bay Dist (ft)	200				300			775			825		150	150
Storage Blk Time (%)														
Queuing Penalty (veh)														

Intersection: 23: Independence Blvd. & Mercer Ave./Randall Pkwy.

Movement	SB	SB	SB	SB
Directions Served	T	T	T	R
Maximum Queue (ft)	227	379	284	32
Average Queue (ft)	28	54	52	4
95th Queue (ft)	137	224	192	19
Link Distance (ft)	729	729	729	729
Upstream Blk Time (%)	0			
Queuing Penalty (veh)	0			
Storage Bay Dist (ft)	100			
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 231: Independence Blvd.

Movement	NB	NB	SB	SB	SB
Directions Served	U	U	T	T	T
Maximum Queue (ft)	392	269	573	610	610
Average Queue (ft)	195	75	154	580	583
95th Queue (ft)	357	215	492	597	602
Link Distance (ft)	729	729	561	561	561
Upstream Blk Time (%)			1	68	82
Queuing Penalty (veh)			0	0	0
Storage Bay Dist (ft)	775	775			
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 232: Independence Blvd.

Movement	NB	NB	NB	SB
Directions Served	T	T	T	U
Maximum Queue (ft)	441	472	489	126
Average Queue (ft)	94	419	462	54
95th Queue (ft)	335	588	480	105
Link Distance (ft)	440	440	440	777
Upstream Blk Time (%)	0	14	55	
Queuing Penalty (veh)	0	0	0	
Storage Bay Dist (ft)				150
Storage Blk Time (%)				
Queuing Penalty (veh)				

Network Summary

Network wide Queuing Penalty: 0

2040 Build – At-Grade

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Lanes, Volumes, Timings
 14: Independence Blvd. & US 17 Bus. (Market St.)

U-4434 Independence Blvd.
 2040 Build At-Grade



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	125	707	358	509	915	240	370	1980	406	240	2481	161
Future Volume (vph)	125	707	358	509	915	240	370	1980	406	240	2481	161
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	825		825	850		850
Storage Lanes	0		0	0		0	2		1	2		1
Taper Length (ft)	100			100			100			100		
Satd. Flow (prot)	3433	3539	1583	3433	3539	1583	3433	5085	1583	3433	5085	1583
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3433	3539	1583	3433	3539	1583	3433	5085	1583	3433	5085	1583
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		40			40			55			55	
Link Distance (ft)		1428			1598			931			936	
Travel Time (s)		24.3			27.2			11.5			11.6	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	139	786	398	566	1017	267	411	2200	451	267	2757	179
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	pm+ov
Protected Phases	5	2	3	1	6	7	3	8	1	7	4	5
Permitted Phases			2			6			8			4
Detector Phase	5	2	3	1	6	7	3	8	1	7	4	5
Switch Phase												
Minimum Initial (s)	7.0	12.0	7.0	7.0	12.0	7.0	7.0	14.0	7.0	7.0	14.0	7.0
Minimum Split (s)	14.0	19.0	14.0	14.0	19.0	14.0	14.0	21.0	14.0	14.0	21.0	14.0
Total Split (s)	14.0	41.0	23.0	30.0	57.0	21.0	23.0	88.0	30.0	21.0	86.0	14.0
Total Split (%)	7.8%	22.8%	12.8%	16.7%	31.7%	11.7%	12.8%	48.9%	16.7%	11.7%	47.8%	7.8%
Maximum Green (s)	7.0	34.0	16.0	23.0	50.0	14.0	16.0	81.0	23.0	14.0	79.0	7.0
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	C-Min	None	None	C-Min	None	None	Min	None	None	Min	None
Act Effct Green (s)	9.0	36.0	59.0	25.0	52.0	73.0	18.0	83.0	113.0	16.0	81.0	95.0
Actuated g/C Ratio	0.05	0.20	0.33	0.14	0.29	0.41	0.10	0.46	0.63	0.09	0.45	0.53
v/c Ratio	0.81	1.11	0.77	1.19	1.00	0.42	1.20	0.94	0.45	0.88	1.20	0.21
Control Delay	116.3	131.9	65.7	166.9	89.7	40.8	178.1	55.0	19.3	107.8	139.2	23.5

Lanes, Volumes, Timings
 14: Independence Blvd. & US 17 Bus. (Market St.)

U-4434 Independence Blvd.
 2040 Build At-Grade



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	116.3	131.9	65.7	166.9	89.7	40.8	178.1	55.0	19.3	107.8	139.2	23.5
LOS	F	F	E	F	F	D	F	D	B	F	F	C
Approach Delay		110.4			106.2			66.2			130.1	
Approach LOS		F			F			E			F	
Queue Length 50th (ft)	85	-556	425	-412	636	225	-301	897	267	163	-1444	111
Queue Length 95th (ft)	#147	#693	569	#540	#792	313	#419	965	353	#246	#1509	162
Internal Link Dist (ft)		1348			1518			851			856	
Turn Bay Length (ft)							825		825	850		850
Base Capacity (vph)	171	707	518	476	1022	641	343	2344	993	305	2288	835
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.81	1.11	0.77	1.19	1.00	0.42	1.20	0.94	0.45	0.88	1.20	0.21

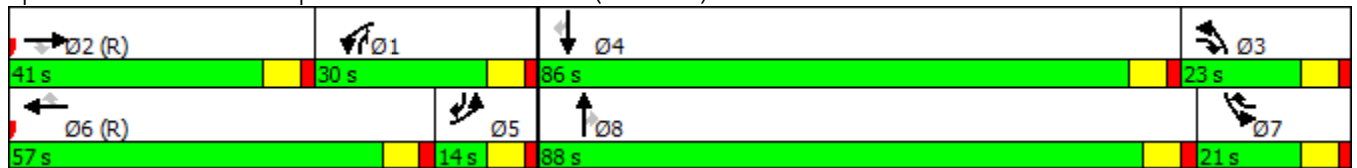
Intersection Summary

Area Type: Other
 Cycle Length: 180
 Actuated Cycle Length: 180
 Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green
 Natural Cycle: 170
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.20
 Intersection Signal Delay: 101.9
 Intersection Capacity Utilization 109.2%
 Analysis Period (min) 15
 Intersection LOS: F
 ICU Level of Service H

~ Volume exceeds capacity, queue is theoretically infinite.
 Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 14: Independence Blvd. & US 17 Bus. (Market St.)



Lanes, Volumes, Timings
 14: US 17 Bus. (Market St.) & Independence Blvd.

U-4434 Independence Blvd.
 2040 Build At Grade



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	161	915	370	406	707	240	358	2481	509	240	1980	125
Future Volume (vph)	161	915	370	406	707	240	358	2481	509	240	1980	125
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	825		825	850		850
Storage Lanes	2		1	2		1	2		1	2		1
Taper Length (ft)	100			100			100			100		
Satd. Flow (prot)	3433	3539	1583	3433	3539	1583	3433	5085	1583	3433	5085	1583
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3433	3539	1583	3433	3539	1583	3433	5085	1583	3433	5085	1583
Right Turn on Red			No			No			Yes			No
Satd. Flow (RTOR)									67			
Link Speed (mph)		40			40			55			55	
Link Distance (ft)		1428			1598			931			936	
Travel Time (s)		24.3			27.2			11.5			11.6	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	179	1017	411	451	786	267	398	2757	566	267	2200	139
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	pm+ov
Protected Phases	5	2	3	1	6	7	3	8	1	7	4	5
Permitted Phases			2			6			8			4
Detector Phase	5	2	3	1	6	7	3	8	1	7	4	5
Switch Phase												
Minimum Initial (s)	7.0	12.0	7.0	7.0	12.0	7.0	7.0	14.0	7.0	7.0	14.0	7.0
Minimum Split (s)	14.0	19.0	14.0	14.0	19.0	14.0	14.0	21.0	14.0	14.0	21.0	14.0
Total Split (s)	17.0	53.0	24.0	25.0	61.0	16.0	24.0	86.0	25.0	16.0	78.0	17.0
Total Split (%)	9.4%	29.4%	13.3%	13.9%	33.9%	8.9%	13.3%	47.8%	13.9%	8.9%	43.3%	9.4%
Maximum Green (s)	10.0	46.0	17.0	18.0	54.0	9.0	17.0	79.0	18.0	9.0	71.0	10.0
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	C-Min	None	None	C-Min	None	None	Min	None	None	Min	None
Act Effect Green (s)	12.0	48.0	72.0	20.0	56.0	72.0	19.0	81.0	106.0	11.0	73.0	90.0
Actuated g/C Ratio	0.07	0.27	0.40	0.11	0.31	0.40	0.11	0.45	0.59	0.06	0.41	0.50
v/c Ratio	0.79	1.08	0.65	1.18	0.71	0.42	1.10	1.20	0.59	1.28	1.07	0.18
Control Delay	105.4	113.1	49.6	170.7	59.2	41.6	147.2	139.2	23.2	217.9	90.7	25.4

Lanes, Volumes, Timings
 14: US 17 Bus. (Market St.) & Independence Blvd.

U-4434 Independence Blvd.
 2040 Build At Grade

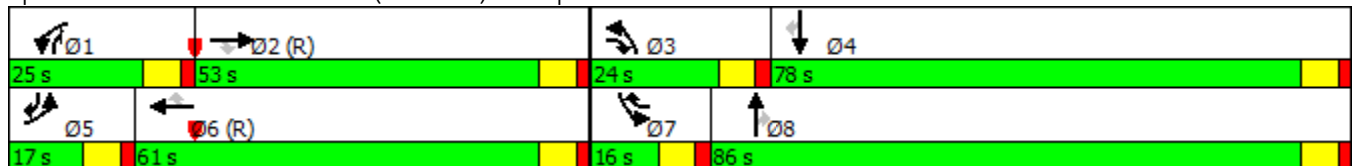


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	105.4	113.1	49.6	170.7	59.2	41.6	147.2	139.2	23.2	217.9	90.7	25.4
LOS	F	F	D	F	E	D	F	F	C	F	F	C
Approach Delay		96.0			89.5			122.4			100.2	
Approach LOS		F			F			F			F	
Queue Length 50th (ft)	109	~701	393	~327	435	228	~273	~1444	363	~204	~1046	89
Queue Length 95th (ft)	#169	#843	524	#447	515	316	#390	#1509	485	#306	#1128	136
Internal Link Dist (ft)		1348			1518			851			856	
Turn Bay Length (ft)							825		825	850		850
Base Capacity (vph)	228	943	633	381	1101	633	362	2288	959	209	2062	791
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.79	1.08	0.65	1.18	0.71	0.42	1.10	1.20	0.59	1.28	1.07	0.18

Intersection Summary

Area Type: Other
 Cycle Length: 180
 Actuated Cycle Length: 180
 Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green
 Natural Cycle: 170
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.28
 Intersection Signal Delay: 106.5
 Intersection LOS: F
 Intersection Capacity Utilization 108.3%
 ICU Level of Service G
 Analysis Period (min) 15
 ~ Volume exceeds capacity, queue is theoretically infinite.
 Queue shown is maximum after two cycles.
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 14: US 17 Bus. (Market St.) & Independence Blvd.



Summary of All Intervals

Run Number	1	2	3	4	5	Avg
Start Time	6:50	6:50	6:50	6:50	6:50	6:50
End Time	8:00	8:00	8:00	8:00	8:00	8:00
Total Time (min)	70	70	70	70	70	70
Time Recorded (min)	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1
Vehs Entered	8156	8017	8142	8158	8016	8098
Vehs Exited	7835	7779	7887	7851	7775	7825
Starting Vehs	367	423	397	355	392	389
Ending Vehs	688	661	652	662	633	660
Travel Distance (mi)	5191	5150	5220	5212	5152	5185
Travel Time (hr)	723.9	760.4	709.9	661.9	678.8	707.0
Total Delay (hr)	610.4	648.0	595.9	548.6	566.9	593.9
Total Stops	11823	11664	11668	11190	11384	11547
Fuel Used (gal)	333.7	344.0	331.1	320.4	322.4	330.3

Interval #0 Information Seeding

Start Time	6:50
End Time	7:00
Total Time (min)	10
Volumes adjusted by Growth Factors.	
No data recorded this interval.	

Interval #1 Information Recording

Start Time	7:00
End Time	8:00
Total Time (min)	60
Volumes adjusted by Growth Factors.	

Run Number	1	2	3	4	5	Avg
Vehs Entered	8156	8017	8142	8158	8016	8098
Vehs Exited	7835	7779	7887	7851	7775	7825
Starting Vehs	367	423	397	355	392	389
Ending Vehs	688	661	652	662	633	660
Travel Distance (mi)	5191	5150	5220	5212	5152	5185
Travel Time (hr)	723.9	760.4	709.9	661.9	678.8	707.0
Total Delay (hr)	610.4	648.0	595.9	548.6	566.9	593.9
Total Stops	11823	11664	11668	11190	11384	11547
Fuel Used (gal)	333.7	344.0	331.1	320.4	322.4	330.3

Intersection: 14: Independence Blvd. & US 17 Bus. (Market St.)

Movement	EB	EB	EB	EB	EB	WB	WB	WB	WB	WB	NB	NB
Directions Served	L	L	T	T	R	L	L	T	T	R	L	L
Maximum Queue (ft)	423	652	1169	1154	823	1167	1123	688	659	337	819	823
Average Queue (ft)	128	151	825	793	343	690	661	494	467	153	633	656
95th Queue (ft)	423	647	1370	1339	768	1189	1147	708	683	275	953	964
Link Distance (ft)	1349	1349	1349	1349	1349	1519	1519	1519	1519	1519		
Upstream Blk Time (%)	0	1	5	3	1						1	13
Queuing Penalty (veh)	0	0	0	0	0						0	0
Storage Bay Dist (ft)											825	825
Storage Blk Time (%)											1	13
Queuing Penalty (veh)											4	86

Intersection: 14: Independence Blvd. & US 17 Bus. (Market St.)

Movement	NB	NB	NB	NB	B103	B103	B103	SB	SB	SB	SB	SB
Directions Served	T	T	T	R	T	T	T	L	L	T	T	T
Maximum Queue (ft)	914	848	581	317	774	740	466	235	828	928	928	931
Average Queue (ft)	668	540	419	130	197	172	35	100	646	903	902	901
95th Queue (ft)	1040	841	572	264	680	626	225	217	1170	917	915	925
Link Distance (ft)	824	824	824		931	931	931			828	828	828
Upstream Blk Time (%)	26	1			1	0			1	53	59	57
Queuing Penalty (veh)	0	0			0	0			0	0	0	0
Storage Bay Dist (ft)				825				850	850			
Storage Blk Time (%)	26								1	53		57
Queuing Penalty (veh)	97								5	128		92

Intersection: 14: Independence Blvd. & US 17 Bus. (Market St.)

Movement	SB	B101	B101	B101
Directions Served	R	T	T	T
Maximum Queue (ft)	828	912	905	907
Average Queue (ft)	577	834	827	817
95th Queue (ft)	1163	1082	1101	1120
Link Distance (ft)		861	861	861
Upstream Blk Time (%)	1	56	47	52
Queuing Penalty (veh)	0	0	0	0
Storage Bay Dist (ft)	850			
Storage Blk Time (%)	1			
Queuing Penalty (veh)	9			

Intersection: 101: Bend

Movement	NB
Directions Served	T
Maximum Queue (ft)	170
Average Queue (ft)	6
95th Queue (ft)	120
Link Distance (ft)	828
Upstream Blk Time (%)	0
Queuing Penalty (veh)	0
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 103: Bend

Movement	SB	SB
Directions Served	T	T
Maximum Queue (ft)	314	164
Average Queue (ft)	10	5
95th Queue (ft)	160	115
Link Distance (ft)	824	824
Upstream Blk Time (%)	0	0
Queuing Penalty (veh)	0	0
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Network Summary

Network wide Queuing Penalty: 422

Summary of All Intervals

Run Number	1	2	3	4	5	Avg
Start Time	4:50	4:50	4:50	4:50	4:50	4:50
End Time	6:00	6:00	6:00	6:00	6:00	6:00
Total Time (min)	70	70	70	70	70	70
Time Recorded (min)	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1
Vehs Entered	8082	8104	8128	8057	8005	8076
Vehs Exited	7742	7751	7799	7683	7728	7740
Starting Vehs	343	340	402	338	370	360
Ending Vehs	683	693	731	712	647	694
Travel Distance (mi)	5153	5157	5172	5118	5121	5144
Travel Time (hr)	797.2	757.3	726.9	675.0	649.1	721.1
Total Delay (hr)	685.2	645.0	614.1	563.5	537.5	609.0
Total Stops	14325	13539	14000	12925	11877	13334
Fuel Used (gal)	352.6	342.3	336.6	319.9	313.4	333.0

Interval #0 Information Seeding

Start Time	4:50
End Time	5:00
Total Time (min)	10
Volumes adjusted by Growth Factors.	
No data recorded this interval.	

Interval #1 Information Recording

Start Time	5:00
End Time	6:00
Total Time (min)	60
Volumes adjusted by Growth Factors.	

Run Number	1	2	3	4	5	Avg
Vehs Entered	8082	8104	8128	8057	8005	8076
Vehs Exited	7742	7751	7799	7683	7728	7740
Starting Vehs	343	340	402	338	370	360
Ending Vehs	683	693	731	712	647	694
Travel Distance (mi)	5153	5157	5172	5118	5121	5144
Travel Time (hr)	797.2	757.3	726.9	675.0	649.1	721.1
Total Delay (hr)	685.2	645.0	614.1	563.5	537.5	609.0
Total Stops	14325	13539	14000	12925	11877	13334
Fuel Used (gal)	352.6	342.3	336.6	319.9	313.4	333.0

Intersection: 14: US 17 Bus. (Market St.) & Independence Blvd.

Movement	EB	EB	EB	EB	EB	WB	WB	WB	WB	WB	NB	NB
Directions Served	L	L	T	T	R	L	L	T	T	R	L	L
Maximum Queue (ft)	662	888	1303	1278	1026	986	949	425	402	318	514	824
Average Queue (ft)	241	371	1017	984	500	664	635	297	275	146	296	715
95th Queue (ft)	824	1244	1462	1441	1238	1054	1020	405	380	265	466	1063
Link Distance (ft)	1349	1349	1349	1349	1349	1519	1519	1519	1519	1519		
Upstream Blk Time (%)	1	7	17	14	9							1
Queuing Penalty (veh)	0	0	0	0	0							0
Storage Bay Dist (ft)											825	825
Storage Blk Time (%)												1
Queuing Penalty (veh)												7

Intersection: 14: US 17 Bus. (Market St.) & Independence Blvd.

Movement	NB	NB	NB	NB	B103	B103	B103	SB	SB	SB	SB	SB
Directions Served	T	T	T	R	T	T	T	L	L	T	T	T
Maximum Queue (ft)	925	929	920	824	978	971	978	812	828	921	915	870
Average Queue (ft)	898	900	897	732	861	846	838	527	640	770	753	712
95th Queue (ft)	916	919	914	1101	1212	1220	1251	880	1015	1045	1048	1049
Link Distance (ft)	824	824	824		931	931	931			828	828	828
Upstream Blk Time (%)	45	50	43	3	36	23	39	0	4	32	26	21
Queuing Penalty (veh)	0	0	0	0	0	0	0	0	0	0	0	0
Storage Bay Dist (ft)				825				850	850			
Storage Blk Time (%)	45		43	3				0	4	32		21
Queuing Penalty (veh)	160		218	26				1	26	76		26

Intersection: 14: US 17 Bus. (Market St.) & Independence Blvd.

Movement	SB	B101	B101	B101
Directions Served	R	T	T	T
Maximum Queue (ft)	685	710	651	503
Average Queue (ft)	320	289	262	175
95th Queue (ft)	932	830	759	547
Link Distance (ft)		861	861	861
Upstream Blk Time (%)	1	2		
Queuing Penalty (veh)	0	0		
Storage Bay Dist (ft)	850			
Storage Blk Time (%)	1			
Queuing Penalty (veh)	4			

Intersection: 101: Bend

Movement	NB	NB	NB
Directions Served	T	T	T
Maximum Queue (ft)	325	474	325
Average Queue (ft)	11	16	11
95th Queue (ft)	165	198	165
Link Distance (ft)	828	828	828
Upstream Blk Time (%)	0	0	0
Queuing Penalty (veh)	0	0	0
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 103: Bend

Movement	SB	SB
Directions Served	T	T
Maximum Queue (ft)	159	297
Average Queue (ft)	5	10
95th Queue (ft)	112	151
Link Distance (ft)	824	824
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Network Summary

Network wide Queuing Penalty: 544

2040 Build – Alternative 2 SPUI

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Lanes, Volumes, Timings
 11: Wayne Dr./30th St. & US 17 Bus. (Market St.)

U-4434 Independence Blvd.
 2040 Build 2 SPU1



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	45	1074	40	63	1323	60	90	19	69	47	9	54
Future Volume (vph)	45	1074	40	63	1323	60	90	19	69	47	9	54
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	175		0	150		125	200		0	125		0
Storage Lanes	1		0	1		1	1		0	1		0
Taper Length (ft)	100			100			100			100		
Satd. Flow (prot)	1770	3522	0	1770	3539	1583	1770	1643	0	1770	1622	0
Flt Permitted	0.950			0.950			0.950			0.694		
Satd. Flow (perm)	1770	3522	0	1770	3539	1583	1770	1643	0	1293	1622	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		40			40			25			25	
Link Distance (ft)		315			765			873			738	
Travel Time (s)		5.4			13.0			23.8			20.1	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	50	1237	0	70	1470	67	100	98	0	52	70	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Right	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA		Perm	NA	
Protected Phases	5	2		1	6		3	8				4
Permitted Phases						6				4		
Detector Phase	5	2		1	6	6	3	8		4		4
Switch Phase												
Minimum Initial (s)	7.0	12.0		7.0	12.0	12.0	7.0	7.0		7.0		7.0
Minimum Split (s)	14.0	19.0		14.0	19.0	19.0	14.0	14.0		14.0		14.0
Total Split (s)	14.0	71.0		15.0	72.0	72.0	18.0	34.0		16.0		16.0
Total Split (%)	11.7%	59.2%		12.5%	60.0%	60.0%	15.0%	28.3%		13.3%		13.3%
Maximum Green (s)	7.0	64.0		8.0	65.0	65.0	11.0	27.0		9.0		9.0
Yellow Time (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0		5.0		5.0
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		2.0		2.0
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-2.0	-2.0	-2.0	-2.0		-2.0		-2.0
Total Lost Time (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0		5.0		5.0
Lead/Lag	Lag	Lead		Lag	Lead	Lead	Lead			Lag		Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes			Yes		Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0		3.0
Recall Mode	None	C-Min		None	C-Min	C-Min	None	None		None		None
Act Effect Green (s)	9.5	68.2		14.2	72.9	72.9	12.3	25.4		10.9		10.9
Actuated g/C Ratio	0.08	0.57		0.12	0.61	0.61	0.10	0.21		0.09		0.09
v/c Ratio	0.36	0.62		0.33	0.68	0.07	0.55	0.28		0.45		0.48
Control Delay	60.0	21.7		55.8	17.3	6.8	63.0	40.0		64.2		63.2

Lanes, Volumes, Timings
 11: Wayne Dr./30th St. & US 17 Bus. (Market St.)

U-4434 Independence Blvd.
 2040 Build 2 SPU1

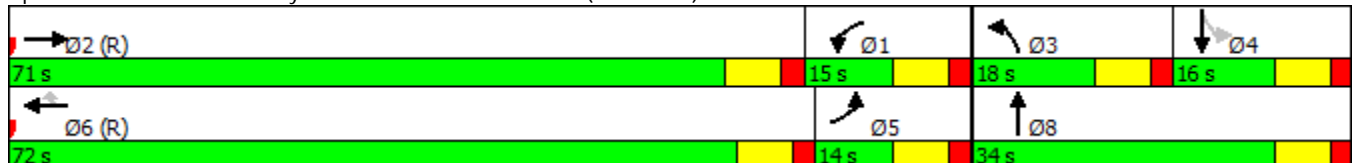


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Delay	0.0	0.0		0.0	0.1	0.0	0.0	0.0		0.0	0.0	
Total Delay	60.0	21.7		55.8	17.5	6.8	63.0	40.0		64.2	63.2	
LOS	E	C		E	B	A	E	D		E	E	
Approach Delay		23.2			18.7			51.6			63.6	
Approach LOS		C			B			D			E	
Queue Length 50th (ft)	37	409		51	517	17	74	60		38	52	
Queue Length 95th (ft)	80	425		m86	559	m24	133	110		82	102	
Internal Link Dist (ft)		235			685			793			658	
Turn Bay Length (ft)	300			500		500	800			700		
Base Capacity (vph)	140	2140		212	2177	974	194	404		121	152	
Starvation Cap Reductn	0	0		0	123	0	0	0		0	0	
Spillback Cap Reductn	0	0		0	0	0	0	0		0	0	
Storage Cap Reductn	0	0		0	0	0	0	0		0	0	
Reduced v/c Ratio	0.36	0.58		0.33	0.72	0.07	0.52	0.24		0.43	0.46	

Intersection Summary

Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green
 Natural Cycle: 80
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.68
 Intersection Signal Delay: 24.2
 Intersection LOS: C
 Intersection Capacity Utilization 66.6%
 ICU Level of Service C
 Analysis Period (min) 15
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 11: Wayne Dr./30th St. & US 17 Bus. (Market St.)



Lanes, Volumes, Timings
 11: Wayne Dr./30th St. & US 17 Bus. (Market St.)

U-4434 Independence Blvd.
 2040 Build 2 SPU1



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	56	1325	91	68	1076	46	41	9	62	59	19	47
Future Volume (vph)	56	1325	91	68	1076	46	41	9	62	59	19	47
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	175		0	150		125	200		0	125		0
Storage Lanes	1		0	1		1	1		0	1		0
Taper Length (ft)	100			100			100			100		
Satd. Flow (prot)	1770	3504	0	1770	3539	1583	1770	1619	0	1770	1663	0
Flt Permitted	0.950			0.950			0.950			0.706		
Satd. Flow (perm)	1770	3504	0	1770	3539	1583	1770	1619	0	1315	1663	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		40			40			25			25	
Link Distance (ft)		315			765			873			738	
Travel Time (s)		5.4			13.0			23.8			20.1	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	62	1573	0	76	1196	51	46	79	0	66	73	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Right	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA		Perm	NA	
Protected Phases	5	2		1	6		3	8				4
Permitted Phases						6				4		
Detector Phase	5	2		1	6	6	3	8		4		4
Switch Phase												
Minimum Initial (s)	7.0	12.0		7.0	12.0	12.0	7.0	7.0		7.0		7.0
Minimum Split (s)	14.0	19.0		14.0	19.0	19.0	14.0	14.0		14.0		14.0
Total Split (s)	14.0	73.0		16.0	75.0	75.0	14.0	31.0		17.0		17.0
Total Split (%)	11.7%	60.8%		13.3%	62.5%	62.5%	11.7%	25.8%		14.2%		14.2%
Maximum Green (s)	7.0	66.0		9.0	68.0	68.0	7.0	24.0		10.0		10.0
Yellow Time (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0		5.0		5.0
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		2.0		2.0
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-2.0	-2.0	-2.0	-2.0		-2.0		-2.0
Total Lost Time (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0		5.0		5.0
Lead/Lag	Lag	Lag		Lead	Lead	Lead	Lag			Lead		Lead
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes			Yes		Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0		3.0
Recall Mode	None	C-Min		None	C-Min	C-Min	None	None		None		None
Act Effct Green (s)	17.2	74.6		10.6	67.9	67.9	9.0	22.7		11.4		11.4
Actuated g/C Ratio	0.14	0.62		0.09	0.57	0.57	0.08	0.19		0.10		0.10
v/c Ratio	0.25	0.72		0.49	0.60	0.06	0.35	0.26		0.53		0.46
Control Delay	47.9	20.5		58.1	22.9	18.5	60.4	41.9		67.2		61.0

Lanes, Volumes, Timings
 11: Wayne Dr./30th St. & US 17 Bus. (Market St.)

U-4434 Independence Blvd.
 2040 Build 2 SPU1



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	47.9	20.5		58.1	22.9	18.5	60.4	41.9		67.2	61.0	
LOS	D	C		E	C	B	E	D		E	E	
Approach Delay		21.5			24.8			48.7			64.0	
Approach LOS		C			C			D			E	
Queue Length 50th (ft)	41	489		57	365	21	34	50		49	54	
Queue Length 95th (ft)	89	580		109	383	39	74	96		98	104	
Internal Link Dist (ft)		235			685			793			658	
Turn Bay Length (ft)	300			500		500	800			700		
Base Capacity (vph)	253	2182		162	2247	1005	133	352		133	168	
Starvation Cap Reductn	0	0		0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0		0	0	0	0	0		0	0	
Storage Cap Reductn	0	0		0	0	0	0	0		0	0	
Reduced v/c Ratio	0.25	0.72		0.47	0.53	0.05	0.35	0.22		0.50	0.43	

Intersection Summary

Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green
 Natural Cycle: 90
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.72
 Intersection Signal Delay: 25.8
 Intersection LOS: C
 Intersection Capacity Utilization 67.8%
 ICU Level of Service C
 Analysis Period (min) 15

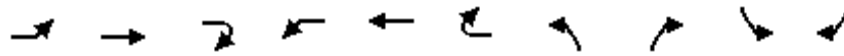
Splits and Phases: 11: Wayne Dr./30th St. & US 17 Bus. (Market St.)



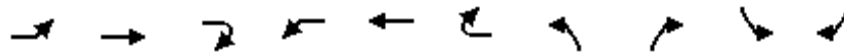
Lanes, Volumes, Timings

U-4434 Independence Blvd.

14: WB Independence On Ramp/EB Independence On Ramp & EB Independence Off Ramp/WB Independence



Lane Group	EBL	EBT	EBR2	WBL	WBT	WBR2	NBL	NBR2	SBL	SBR2
Lane Configurations										
Traffic Volume (vph)	125	707	358	509	915	527	370	439	444	161
Future Volume (vph)	125	707	358	509	915	527	370	439	444	161
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	200		250	325			250	900	325	
Storage Lanes	2		1	2				1	2	
Taper Length (ft)	100			100			100		100	
Satd. Flow (prot)	3433	3539	1583	3433	3539	950	3433	2787	3433	1583
Flt Permitted	0.950			0.950			0.950		0.950	
Satd. Flow (perm)	3433	3539	1583	3433	3539	950	3433	2787	3433	1583
Right Turn on Red			No			No		Yes		Yes
Satd. Flow (RTOR)								265		175
Link Speed (mph)		40			40					
Link Distance (ft)		765			725					
Travel Time (s)		13.0			12.4					
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	100	0	0	0	0
Shared Lane Traffic (%)										
Lane Group Flow (vph)	139	786	398	566	1017	586	411	488	493	179
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	R NA	Right	Left	Right
Median Width(ft)		36			24					
Link Offset(ft)		0			0					
Crosswalk Width(ft)		16			16					
Two way Left Turn Lane										
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.87	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		25	15		25	15	25	15	25
Turn Type	Prot	NA	custom	Prot	NA	custom	Prot	Prot	Prot	Prot
Protected Phases	5	2	3	1	6	7	3	1	7	5
Permitted Phases			2			6				
Detector Phase	5	2	3	1	6	7	3	1	7	5
Switch Phase										
Minimum Initial (s)	7.0	12.0	7.0	7.0	12.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	19.0	19.0	14.0	19.0	19.0	19.0	14.0	19.0	19.0	19.0
Total Split (s)	19.0	38.0	53.0	29.0	48.0	53.0	53.0	29.0	53.0	19.0
Total Split (%)	15.8%	31.7%	44.2%	24.2%	40.0%	44.2%	44.2%	24.2%	44.2%	15.8%
Maximum Green (s)	12.0	31.0	46.0	22.0	41.0	46.0	46.0	22.0	46.0	12.0
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lag	Lag		Lead	Lead			Lead		Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes			Yes		Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	Min	C-Min	None	Min	Min	Min	None	Min	Min	Min
Act Effct Green (s)	15.6	35.9	86.0	24.0	44.4	94.4	45.1	24.0	45.1	15.6
Actuated g/C Ratio	0.13	0.30	0.72	0.20	0.37	0.79	0.38	0.20	0.38	0.13
v/c Ratio	0.31	0.74	0.35	0.83	0.78	0.78	0.32	0.63	0.38	0.50

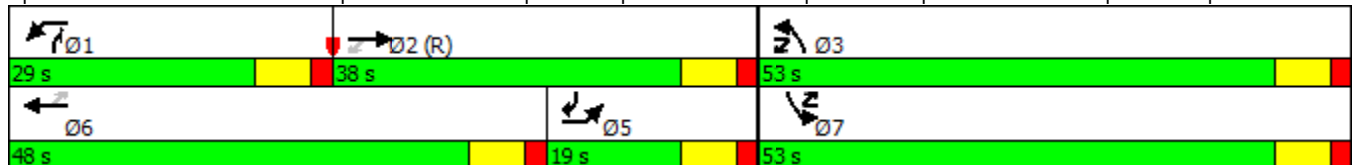


Lane Group	EBL	EBT	EBR2	WBL	WBT	WBR2	NBL	NBR2	SBL	SBR2
Control Delay	48.1	40.4	2.4	59.5	50.3	28.0	26.9	23.6	27.9	12.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	48.1	40.4	2.4	59.5	50.3	28.0	26.9	23.6	27.9	12.9
LOS	D	D	A	E	D	C	C	C	C	B
Approach Delay	29.8			46.7						
Approach LOS	C			D						
Queue Length 50th (ft)	38	182	26	239	415	346	110	88	136	3
Queue Length 95th (ft)	71	288	23	#307	485	580	149	153	180	71
Internal Link Dist (ft)	685			645						
Turn Bay Length (ft)	500		700	700			900	900	900	
Base Capacity (vph)	445	1059	1173	695	1308	747	1373	776	1373	357
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	1	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.31	0.74	0.34	0.81	0.78	0.78	0.30	0.63	0.36	0.50

Intersection Summary

Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 0 (0%), Referenced to phase 2:EBT, Start of Green
 Natural Cycle: 70
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.83
 Intersection Signal Delay: 35.4
 Intersection LOS: D
 Intersection Capacity Utilization Err%
 ICU Level of Service H
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

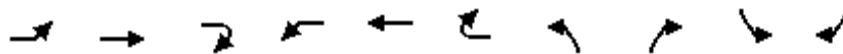
Splits and Phases: 14: WB Independence On Ramp/EB Independence On Ramp & EB Independence Off Ramp/WB Independence Off Ramp & US 17



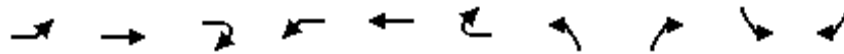
Lanes, Volumes, Timings

U-4434 Independence Blvd.

14: WB Independence On Ramp/EB Independence On Ramp & EB Independence On Ramp/WB Independence On Ramp



Lane Group	EBL	EBT	EBR2	WBL	WBT	WBR2	NBL	NBR2	SBL	SBR2
Lane Configurations										
Traffic Volume (vph)	161	915	370	406	707	442	358	570	525	125
Future Volume (vph)	161	915	370	406	707	442	358	570	525	125
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	200		250	325			250	900	325	
Storage Lanes	2		1	2			2	1	2	
Taper Length (ft)	100			100			100		100	
Satd. Flow (prot)	3433	3539	1583	3433	3539	950	3433	2787	3433	1583
Flt Permitted	0.950			0.950			0.950		0.950	
Satd. Flow (perm)	3433	3539	1583	3433	3539	950	3433	2787	3433	1583
Right Turn on Red			No			No		Yes		Yes
Satd. Flow (RTOR)								164		164
Link Speed (mph)		40			40					
Link Distance (ft)		765			725					
Travel Time (s)		13.0			12.4					
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	100	0	0	0	0
Shared Lane Traffic (%)										
Lane Group Flow (vph)	179	1017	411	451	786	491	398	633	583	139
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	R NA	Right	Left	Right
Median Width(ft)		36			24					
Link Offset(ft)		0			0					
Crosswalk Width(ft)		16			16					
Two way Left Turn Lane										
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.87	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		25	15		25	15	25	15	25
Turn Type	Prot	NA	custom	Prot	NA	custom	Prot	Prot	Prot	Prot
Protected Phases	5	2	3	1	6	7	3	1	7	5
Permitted Phases			2			6				
Detector Phase	5	2	3	1	6	7	3	1	7	5
Switch Phase										
Minimum Initial (s)	7.0	12.0	7.0	7.0	12.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	19.0	19.0	14.0	19.0	19.0	19.0	14.0	19.0	19.0	19.0
Total Split (s)	19.0	49.0	39.0	32.0	62.0	39.0	39.0	32.0	39.0	19.0
Total Split (%)	15.8%	40.8%	32.5%	26.7%	51.7%	32.5%	32.5%	26.7%	32.5%	15.8%
Maximum Green (s)	12.0	42.0	32.0	25.0	55.0	32.0	32.0	25.0	32.0	12.0
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lead		Lag	Lag			Lag		Lead
Lead-Lag Optimize?	Yes	Yes		Yes	Yes			Yes		Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	Min	C-Min	None	Min	Min	Min	None	Min	Min	Min
Act Effct Green (s)	13.0	49.8	83.4	26.6	63.3	97.0	28.7	26.6	28.7	13.0
Actuated g/C Ratio	0.11	0.42	0.70	0.22	0.53	0.81	0.24	0.22	0.24	0.11
v/c Ratio	0.48	0.69	0.37	0.59	0.42	0.64	0.49	0.85	0.71	0.44

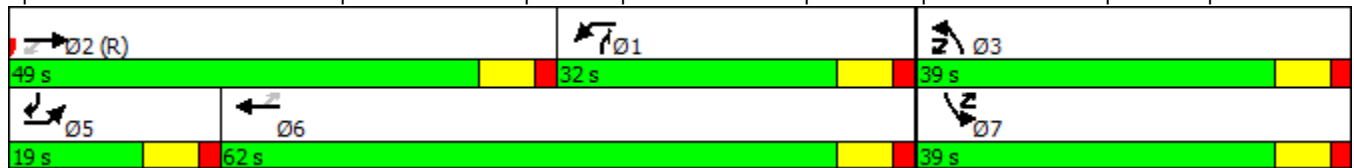


Lane Group	EBL	EBT	EBR2	WBL	WBT	WBR2	NBL	NBR2	SBL	SBR2
Control Delay	74.9	31.3	12.4	53.4	22.5	21.8	40.8	44.7	46.7	9.0
Queue Delay	0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0
Total Delay	74.9	31.7	12.4	53.4	22.5	21.8	40.8	44.9	46.7	9.0
LOS	E	C	B	D	C	C	D	D	D	A
Approach Delay	31.6			30.4						
Approach LOS	C			C						
Queue Length 50th (ft)	76	234	177	193	324	307	136	196	213	0
Queue Length 95th (ft)	m106	337	244	247	394	387	175	#303	261	41
Internal Link Dist (ft)	685			645						
Turn Bay Length (ft)	500		700	700			900	900	900	
Base Capacity (vph)	405	1467	1093	790	1868	810	972	767	972	331
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	116	0	0	0	0	0	5	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.44	0.75	0.38	0.57	0.42	0.61	0.41	0.83	0.60	0.42

Intersection Summary

Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 0 (0%), Referenced to phase 2:EBT, Start of Green
 Natural Cycle: 65
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.85
 Intersection Signal Delay: 34.7
 Intersection LOS: C
 Intersection Capacity Utilization Err%
 ICU Level of Service H
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 14: WB Independence On Ramp/EB Independence On Ramp & EB Independence Off Ramp/WB Independence Off Ramp & US 17



Lanes, Volumes, Timings
 17: Darlington Ave./Henry St. & US 17 Bus. (Market St.)

U-4434 Independence Blvd.
 2040 Build 2 SPU1



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	47	1165	378	90	1407	36	473	12	96	47	15	71
Future Volume (vph)	47	1165	378	90	1407	36	473	12	96	47	15	71
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150		225	175			300		0	125		0
Storage Lanes	1		1	1			2		0	1		0
Taper Length (ft)	100			100			100			100		
Satd. Flow (prot)	1770	3539	1583	1770	5065	0	3433	1613	0	1770	1634	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1770	3539	1583	1770	5065	0	3433	1613	0	1770	1634	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		40			40			25			25	
Link Distance (ft)		725			1024			915			767	
Travel Time (s)		12.4			17.5			25.0			20.9	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	52	1294	420	100	1603	0	526	120	0	52	96	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Right	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Prot	NA	pm+ov	Prot	NA		Split	NA		Split	NA	
Protected Phases	5	2	8	1	6		8	8		4	4	
Permitted Phases			2									
Detector Phase	5	2	8	1	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	7.0	12.0	7.0	7.0	12.0		7.0	7.0		7.0	7.0	
Minimum Split (s)	14.0	19.0	14.0	14.0	19.0		14.0	14.0		14.0	14.0	
Total Split (s)	14.0	58.0	29.0	16.0	60.0		29.0	29.0		17.0	17.0	
Total Split (%)	11.7%	48.3%	24.2%	13.3%	50.0%		24.2%	24.2%		14.2%	14.2%	
Maximum Green (s)	7.0	51.0	22.0	9.0	53.0		22.0	22.0		10.0	10.0	
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0		-2.0	-2.0		-2.0	-2.0	
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	
Lead/Lag	Lead	Lag		Lead	Lag							
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	C-Min	None	None	C-Min		None	None		None	None	
Act Effect Green (s)	9.0	53.8	77.7	10.7	58.4		23.9	23.9		11.6	11.6	
Actuated g/C Ratio	0.08	0.45	0.65	0.09	0.49		0.20	0.20		0.10	0.10	
v/c Ratio	0.39	0.81	0.41	0.63	0.65		0.77	0.38		0.31	0.61	
Control Delay	67.1	28.6	6.6	71.1	25.7		54.0	45.4		55.3	69.1	

Lanes, Volumes, Timings
 17: Darlington Ave./Henry St. & US 17 Bus. (Market St.)

U-4434 Independence Blvd.
 2040 Build 2 SPU1

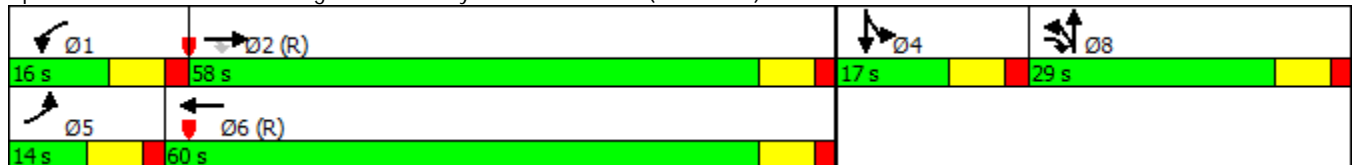


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Delay	0.0	0.2	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	67.1	28.7	6.6	71.1	25.7		54.0	45.4		55.3	69.1	
LOS	E	C	A	E	C		D	D		E	E	
Approach Delay		24.6			28.4			52.4			64.2	
Approach LOS		C			C			D			E	
Queue Length 50th (ft)	38	355	74	76	351		200	81		38	72	
Queue Length 95th (ft)	m62	487	102	#145	407		263	140		79	#133	
Internal Link Dist (ft)		645			944			835			687	
Turn Bay Length (ft)	500		500	900			900			700		
Base Capacity (vph)	132	1600	1031	162	2481		696	327		178	164	
Starvation Cap Reductn	0	28	0	0	0		0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0		0	0		0	0	
Storage Cap Reductn	0	0	0	0	0		0	0		0	0	
Reduced v/c Ratio	0.39	0.82	0.41	0.62	0.65		0.76	0.37		0.29	0.59	

Intersection Summary

Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green
 Natural Cycle: 80
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.81
 Intersection Signal Delay: 31.7
 Intersection LOS: C
 Intersection Capacity Utilization 70.7%
 ICU Level of Service C
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 17: Darlington Ave./Henry St. & US 17 Bus. (Market St.)



Lanes, Volumes, Timings
 17: Darlington Ave./Henry St. & US 17 Bus. (Market St.)

U-4434 Independence Blvd.
 2040 Build 2 SPU1



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	73	1405	532	96	1164	45	343	15	90	35	12	48
Future Volume (vph)	73	1405	532	96	1164	45	343	15	90	35	12	48
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150		225	175			300		0	125		0
Storage Lanes	1		1	1		1	2		0	1		0
Taper Length (ft)	100			100			100			100		
Satd. Flow (prot)	1770	3539	1583	1770	5055	0	3433	1624	0	1770	1639	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1770	3539	1583	1770	5055	0	3433	1624	0	1770	1639	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		40			40			25			25	
Link Distance (ft)		725			1024			915			767	
Travel Time (s)		12.4			17.5			25.0			20.9	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	81	1561	591	107	1343	0	381	117	0	39	66	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Right	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Prot	NA	pm+ov	Prot	NA		Split	NA		Split	NA	
Protected Phases	5	2	8	1	6		8	8		4	4	
Permitted Phases			2									
Detector Phase	5	2	8	1	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	7.0	12.0	7.0	7.0	12.0		7.0	7.0		7.0	7.0	
Minimum Split (s)	14.0	19.0	14.0	14.0	19.0		14.0	14.0		14.0	14.0	
Total Split (s)	17.0	67.0	23.0	16.0	66.0		23.0	23.0		14.0	14.0	
Total Split (%)	14.2%	55.8%	19.2%	13.3%	55.0%		19.2%	19.2%		11.7%	11.7%	
Maximum Green (s)	10.0	60.0	16.0	9.0	59.0		16.0	16.0		7.0	7.0	
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0		-2.0	-2.0		-2.0	-2.0	
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	
Lead/Lag	Lag	Lag		Lead	Lead							
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	C-Min	None	None	C-Min		None	None		None	None	
Act Effct Green (s)	21.9	64.9	83.8	10.8	56.6		17.9	17.9		9.2	9.2	
Actuated g/C Ratio	0.18	0.54	0.70	0.09	0.47		0.15	0.15		0.08	0.08	
v/c Ratio	0.25	0.82	0.53	0.67	0.56		0.74	0.48		0.29	0.53	
Control Delay	42.8	27.2	6.7	73.9	26.8		58.6	54.2		58.4	69.3	

Lanes, Volumes, Timings
 17: Darlington Ave./Henry St. & US 17 Bus. (Market St.)

U-4434 Independence Blvd.
 2040 Build 2 SPU1

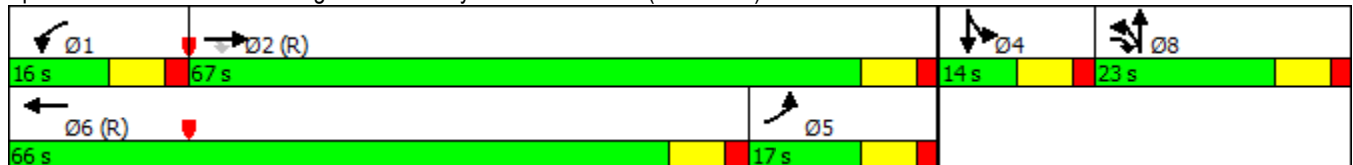


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Delay	0.0	1.8	0.1	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	42.8	29.0	6.8	73.9	26.8		58.6	54.2		58.4	69.3	
LOS	D	C	A	E	C		E	D		E	E	
Approach Delay		23.6			30.3			57.6			65.2	
Approach LOS		C			C			E			E	
Queue Length 50th (ft)	53	568	101	82	316		147	84		29	50	
Queue Length 95th (ft)	m83	688	m133	#159	330		201	146		66	#100	
Internal Link Dist (ft)		645			944			835			687	
Turn Bay Length (ft)	500		500	900			900			700		
Base Capacity (vph)	332	1918	1106	162	2833		514	243		135	125	
Starvation Cap Reductn	0	207	50	0	0		0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0		0	0		0	0	
Storage Cap Reductn	0	0	0	0	0		0	0		0	0	
Reduced v/c Ratio	0.24	0.91	0.56	0.66	0.47		0.74	0.48		0.29	0.53	

Intersection Summary

Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green
 Natural Cycle: 90
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.82
 Intersection Signal Delay: 30.8
 Intersection LOS: C
 Intersection Capacity Utilization 73.6%
 ICU Level of Service D
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 17: Darlington Ave./Henry St. & US 17 Bus. (Market St.)



Summary of All Intervals

Run Number	1	2	3	4	5	Avg
Start Time	6:50	6:50	6:50	6:50	6:50	6:50
End Time	8:00	8:00	8:00	8:00	8:00	8:00
Total Time (min)	70	70	70	70	70	70
Time Recorded (min)	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1
Vehs Entered	5024	5117	5087	5019	5111	5073
Vehs Exited	5064	5131	5097	5041	5073	5081
Starting Vehs	194	182	194	192	156	186
Ending Vehs	154	168	184	170	194	172
Travel Distance (mi)	2312	2346	2326	2301	2337	2324
Travel Time (hr)	170.4	179.9	175.6	169.0	177.0	174.4
Total Delay (hr)	97.4	105.9	102.2	96.9	103.5	101.2
Total Stops	6708	7169	6950	6619	6933	6876
Fuel Used (gal)	112.4	116.8	113.6	111.5	114.1	113.7

Interval #0 Information Seeding

Start Time	6:50
End Time	7:00
Total Time (min)	10
Volumes adjusted by Growth Factors.	
No data recorded this interval.	

Interval #1 Information Recording

Start Time	7:00
End Time	8:00
Total Time (min)	60
Volumes adjusted by Growth Factors.	

Run Number	1	2	3	4	5	Avg
Vehs Entered	5024	5117	5087	5019	5111	5073
Vehs Exited	5064	5131	5097	5041	5073	5081
Starting Vehs	194	182	194	192	156	186
Ending Vehs	154	168	184	170	194	172
Travel Distance (mi)	2312	2346	2326	2301	2337	2324
Travel Time (hr)	170.4	179.9	175.6	169.0	177.0	174.4
Total Delay (hr)	97.4	105.9	102.2	96.9	103.5	101.2
Total Stops	6708	7169	6950	6619	6933	6876
Fuel Used (gal)	112.4	116.8	113.6	111.5	114.1	113.7

Intersection: 11: Wayne Dr./30th St. & US 17 Bus. (Market St.)

Movement	EB	EB	EB	WB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	TR	L	T	T	R	L	TR	L	TR
Maximum Queue (ft)	100	289	297	141	525	517	85	180	134	107	104
Average Queue (ft)	35	201	230	57	245	256	26	73	52	34	38
95th Queue (ft)	75	320	342	119	468	472	67	140	108	79	83
Link Distance (ft)		270	270		639	639			818		671
Upstream Blk Time (%)		4	10								
Queuing Penalty (veh)		0	0								
Storage Bay Dist (ft)	175			150			125	200		125	
Storage Blk Time (%)		4			0	0					
Queuing Penalty (veh)		2			0	0					

Intersection: 14: WB Independence On Ramp/EB Independence On Ramp & EB Independence Off Ramp

Movement	EB	EB	EB	EB	EB	WB	WB	WB	WB	WB	NB	NB
Directions Served	L	L	T	T	>	L	L	T	T	>	L	L
Maximum Queue (ft)	94	113	338	344	235	266	275	458	461	42	236	218
Average Queue (ft)	20	46	163	178	27	133	150	248	252	1	153	112
95th Queue (ft)	62	91	318	323	151	223	236	384	387	30	216	195
Link Distance (ft)			639	639				597	597	597		
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	200	200			250	325	325				250	250
Storage Blk Time (%)												
Queuing Penalty (veh)												

Intersection: 14: WB Independence On Ramp/EB Independence On Ramp & EB Independence Off Ramp

Movement	NB	NB	SB	SB	SB
Directions Served	>	>	L	L	>
Maximum Queue (ft)	261	268	268	247	189
Average Queue (ft)	96	43	162	143	32
95th Queue (ft)	243	179	235	221	137
Link Distance (ft)	874				888
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)		900	325	325	
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 17: Darlington Ave./Henry St. & US 17 Bus. (Market St.)

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB
Directions Served	L	T	T	R	L	T	T	TR	L	L	TR	L
Maximum Queue (ft)	107	427	412	198	153	434	366	292	277	249	146	105
Average Queue (ft)	32	275	278	89	69	298	225	192	175	138	58	34
95th Queue (ft)	78	379	377	158	132	415	339	275	262	226	121	77
Link Distance (ft)		597	597			975	975					839
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	500			500	900			900	900	900		700
Storage Blk Time (%)		0	0									
Queuing Penalty (veh)		0	0									

Intersection: 17: Darlington Ave./Henry St. & US 17 Bus. (Market St.)

Movement	SB
Directions Served	TR
Maximum Queue (ft)	156
Average Queue (ft)	70
95th Queue (ft)	134
Link Distance (ft)	697
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Network Summary

Network wide Queuing Penalty: 3

Summary of All Intervals

Run Number	1	2	3	4	5	Avg
Start Time	4:50	4:50	4:50	4:50	4:50	4:50
End Time	6:00	6:00	6:00	6:00	6:00	6:00
Total Time (min)	70	70	70	70	70	70
Time Recorded (min)	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1
Vehs Entered	5032	5172	5078	5078	5082	5087
Vehs Exited	5091	5181	5081	5123	5073	5110
Starting Vehs	213	180	182	202	155	184
Ending Vehs	154	171	179	157	164	166
Travel Distance (mi)	2305	2365	2310	2319	2326	2325
Travel Time (hr)	168.5	179.4	175.4	178.1	169.9	174.3
Total Delay (hr)	95.7	104.6	102.6	105.0	96.3	100.8
Total Stops	6512	6957	6890	6822	6524	6742
Fuel Used (gal)	111.7	116.1	114.2	114.5	112.0	113.7

Interval #0 Information Seeding

Start Time	4:50
End Time	5:00
Total Time (min)	10
Volumes adjusted by Growth Factors.	
No data recorded this interval.	

Interval #1 Information Recording

Start Time	5:00
End Time	6:00
Total Time (min)	60
Volumes adjusted by Growth Factors.	

Run Number	1	2	3	4	5	Avg
Vehs Entered	5032	5172	5078	5078	5082	5087
Vehs Exited	5091	5181	5081	5123	5073	5110
Starting Vehs	213	180	182	202	155	184
Ending Vehs	154	171	179	157	164	166
Travel Distance (mi)	2305	2365	2310	2319	2326	2325
Travel Time (hr)	168.5	179.4	175.4	178.1	169.9	174.3
Total Delay (hr)	95.7	104.6	102.6	105.0	96.3	100.8
Total Stops	6512	6957	6890	6822	6524	6742
Fuel Used (gal)	111.7	116.1	114.2	114.5	112.0	113.7

Intersection: 11: Wayne Dr./30th St. & US 17 Bus. (Market St.)

Movement	EB	EB	EB	WB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	TR	L	T	T	R	L	TR	L	TR
Maximum Queue (ft)	167	301	302	128	487	508	102	85	110	113	121
Average Queue (ft)	49	221	266	46	235	255	24	34	44	47	47
95th Queue (ft)	122	324	345	106	456	473	70	76	87	100	99
Link Distance (ft)		270	270		639	639			818		671
Upstream Blk Time (%)	0	4	15								
Queuing Penalty (veh)	0	0	0								
Storage Bay Dist (ft)	175			150			125	200		125	
Storage Blk Time (%)	0	4			0	0					
Queuing Penalty (veh)	0	2			0	0					

Intersection: 14: WB Independence On Ramp/EB Independence On Ramp & EB Independence Off Ramp

Movement	EB	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB
Directions Served	L	L	T	T	>	L	L	T	T	L	L	>
Maximum Queue (ft)	137	191	417	442	250	202	228	278	293	241	215	317
Average Queue (ft)	48	75	216	244	21	113	130	147	156	139	97	171
95th Queue (ft)	109	142	375	397	131	190	209	254	269	220	192	318
Link Distance (ft)			639	639				597	597			874
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	200	200			250	325	325			250	250	
Storage Blk Time (%)				0								
Queuing Penalty (veh)				0								

Intersection: 14: WB Independence On Ramp/EB Independence On Ramp & EB Independence Off Ramp

Movement	NB	SB	SB	SB
Directions Served	>	L	L	>
Maximum Queue (ft)	324	303	295	175
Average Queue (ft)	129	167	159	35
95th Queue (ft)	306	263	255	140
Link Distance (ft)				888
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)		900	325	325
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 17: Darlington Ave./Henry St. & US 17 Bus. (Market St.)

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB
Directions Served	L	T	T	R	L	T	T	TR	L	L	TR	L
Maximum Queue (ft)	146	493	495	225	159	395	362	309	232	200	163	85
Average Queue (ft)	52	301	309	116	71	235	171	163	130	104	67	26
95th Queue (ft)	111	432	437	196	143	366	306	275	202	180	137	64
Link Distance (ft)		597	597			975	975					839
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	500			500	900			900	900	900		700
Storage Blk Time (%)		0	0									
Queuing Penalty (veh)		0	2									

Intersection: 17: Darlington Ave./Henry St. & US 17 Bus. (Market St.)

Movement	SB
Directions Served	TR
Maximum Queue (ft)	122
Average Queue (ft)	47
95th Queue (ft)	99
Link Distance (ft)	697
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Network Summary

























Network wide Queuing Penalty: 6

2040 Build – Alternative 2 TUDI

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Lanes, Volumes, Timings
 11: Wayne Dr./30th St. & US 17 Bus. (Market St.)

U-4434 Independence Blvd.
 2040 Build 2 TUDI

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			 			 				
Traffic Volume (vph)	45	1074	40	63	1323	60	90	19	69	47	9	54
Future Volume (vph)	45	1074	40	63	1323	60	90	19	69	47	9	54
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	150			125		125	150			125		
Storage Lanes	1		0	1		1	1		0	1		0
Taper Length (ft)	100			100			100			100		
Satd. Flow (prot)	1770	3522	0	1770	3539	1583	1770	1643	0	1770	1622	0
Flt Permitted	0.950			0.950			0.950			0.694		
Satd. Flow (perm)	1770	3522	0	1770	3539	1583	1770	1643	0	1293	1622	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		40			40			25			25	
Link Distance (ft)		315			568			873			738	
Travel Time (s)		5.4			9.7			23.8			20.1	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	50	1237	0	70	1470	67	100	98	0	52	70	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			6			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA		Perm	NA	
Protected Phases	5	2		1	6		3	8			4	
Permitted Phases						6				4		
Detector Phase	5	2		1	6	6	3	8		4	4	
Switch Phase												
Minimum Initial (s)	7.0	12.0		7.0	12.0	12.0	7.0	7.0		7.0	7.0	
Minimum Split (s)	14.0	19.0		14.0	19.0	19.0	14.0	14.0		14.0	14.0	
Total Split (s)	14.0	71.0		15.0	72.0	72.0	18.0	34.0		16.0	16.0	
Total Split (%)	11.7%	59.2%		12.5%	60.0%	60.0%	15.0%	28.3%		13.3%	13.3%	
Maximum Green (s)	7.0	64.0		8.0	65.0	65.0	11.0	27.0		9.0	9.0	
Yellow Time (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-2.0	-2.0	-2.0	-2.0		-2.0	-2.0	
Total Lost Time (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	

Lanes, Volumes, Timings
 11: Wayne Dr./30th St. & US 17 Bus. (Market St.)

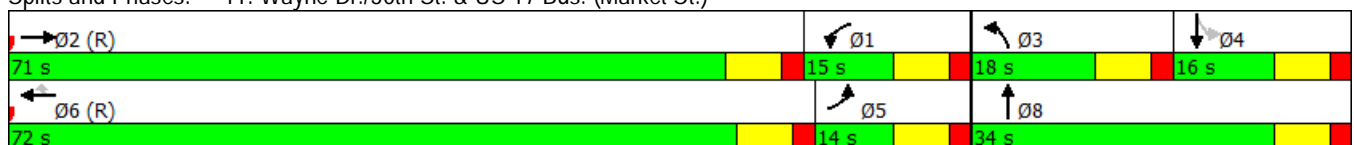
U-4434 Independence Blvd.
 2040 Build 2 TUDI

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lead/Lag	Lag	Lead		Lag	Lead	Lead	Lead			Lag	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes			Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Minimum Gap (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Time Before Reduce (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Time To Reduce (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Recall Mode	None	C-Min		None	C-Min	C-Min	None	None		None	None	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)	9.5	68.2		14.2	72.9	72.9	12.3	25.4		10.9	10.9	
Actuated g/C Ratio	0.08	0.57		0.12	0.61	0.61	0.10	0.21		0.09	0.09	
v/c Ratio	0.36	0.62		0.33	0.68	0.07	0.55	0.28		0.45	0.48	
Control Delay	60.0	21.7		46.2	9.1	6.2	63.0	40.0		64.2	63.2	
Queue Delay	0.0	0.0		0.0	0.1	0.0	0.0	0.0		0.0	0.0	
Total Delay	60.0	21.7		46.2	9.1	6.2	63.0	40.0		64.2	63.2	
LOS	E	C		D	A	A	E	D		E	E	
Approach Delay		23.2			10.6			51.6			63.6	
Approach LOS		C			B			D			E	
Queue Length 50th (ft)	37	409		54	239	11	74	60		38	52	
Queue Length 95th (ft)	80	425		m102	158	m21	133	110		82	102	
Internal Link Dist (ft)		235			488			793			658	
Turn Bay Length (ft)												
Base Capacity (vph)	140	2140		212	2177	974	194	404		121	152	
Starvation Cap Reductn	0	0		0	64	0	0	0		0	0	
Spillback Cap Reductn	0	0		0	0	0	0	0		0	0	
Storage Cap Reductn	0	0		0	0	0	0	0		0	0	
Reduced v/c Ratio	0.36	0.58		0.33	0.70	0.07	0.52	0.24		0.43	0.46	

Intersection Summary

























Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green
 Natural Cycle: 80
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.68
 Intersection Signal Delay: 20.2 Intersection LOS: C
 Intersection Capacity Utilization 66.6% ICU Level of Service C
 Analysis Period (min) 15
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 11: Wayne Dr./30th St. & US 17 Bus. (Market St.)



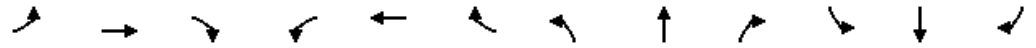
Lanes, Volumes, Timings
 11: Wayne Dr./30th St. & US 17 Bus. (Market St.)

U-4434 Independence Blvd.
 2040 Build 2 TUDI

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			 			 				
Traffic Volume (vph)	56	1325	91	68	1076	46	41	9	62	59	19	47
Future Volume (vph)	56	1325	91	68	1076	46	41	9	62	59	19	47
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	150			125		125	150			125		
Storage Lanes	1		0	1		1	1		0	1		0
Taper Length (ft)	100			100			100			100		
Satd. Flow (prot)	1770	3504	0	1770	3539	1583	1770	1619	0	1770	1663	0
Flt Permitted	0.950			0.950			0.950			0.706		
Satd. Flow (perm)	1770	3504	0	1770	3539	1583	1770	1619	0	1315	1663	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		40			40			25			25	
Link Distance (ft)		315			568			873			738	
Travel Time (s)		5.4			9.7			23.8			20.1	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	62	1573	0	76	1196	51	46	79	0	66	73	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			6			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA		Perm	NA	
Protected Phases	5	2		1	6		3	8			4	
Permitted Phases						6				4		
Detector Phase	5	2		1	6	6	3	8		4	4	
Switch Phase												
Minimum Initial (s)	7.0	12.0		7.0	12.0	12.0	7.0	7.0		7.0	7.0	
Minimum Split (s)	14.0	19.0		14.0	19.0	19.0	14.0	14.0		14.0	14.0	
Total Split (s)	14.0	73.0		16.0	75.0	75.0	14.0	31.0		17.0	17.0	
Total Split (%)	11.7%	60.8%		13.3%	62.5%	62.5%	11.7%	25.8%		14.2%	14.2%	
Maximum Green (s)	7.0	66.0		9.0	68.0	68.0	7.0	24.0		10.0	10.0	
Yellow Time (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-2.0	-2.0	-2.0	-2.0		-2.0	-2.0	
Total Lost Time (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	

Lanes, Volumes, Timings
 11: Wayne Dr./30th St. & US 17 Bus. (Market St.)

U-4434 Independence Blvd.
 2040 Build 2 TUDI



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lead/Lag	Lag	Lead		Lag	Lead	Lead	Lead			Lag	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes			Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Minimum Gap (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Time Before Reduce (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Time To Reduce (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Recall Mode	None	C-Min		None	C-Min	C-Min	None	None		None	None	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)	17.2	74.6		10.7	68.1	68.1	9.0	22.5		11.3	11.3	
Actuated g/C Ratio	0.14	0.62		0.09	0.57	0.57	0.08	0.19		0.09	0.09	
v/c Ratio	0.25	0.72		0.48	0.60	0.06	0.35	0.26		0.54	0.47	
Control Delay	47.9	20.5		57.9	12.9	10.8	60.4	42.1		68.1	61.6	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	47.9	20.5		57.9	12.9	10.8	60.4	42.1		68.1	61.6	
LOS	D	C		E	B	B	E	D		E	E	
Approach Delay		21.5			15.4			48.8			64.7	
Approach LOS		C			B			D			E	
Queue Length 50th (ft)	41	489		55	192	12	34	51		49	54	
Queue Length 95th (ft)	89	580		108	167	24	74	96		98	104	
Internal Link Dist (ft)		235			488			793			658	
Turn Bay Length (ft)												
Base Capacity (vph)	253	2182		165	2247	1005	133	350		131	166	
Starvation Cap Reductn	0	0		0	66	0	0	0		0	0	
Spillback Cap Reductn	0	0		0	0	0	0	0		0	0	
Storage Cap Reductn	0	0		0	0	0	0	0		0	0	
Reduced v/c Ratio	0.25	0.72		0.46	0.55	0.05	0.35	0.23		0.50	0.44	

Intersection Summary


























Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green
 Natural Cycle: 90
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.72
 Intersection Signal Delay: 21.9 Intersection LOS: C
 Intersection Capacity Utilization 67.8% ICU Level of Service C
 Analysis Period (min) 15

Splits and Phases: 11: Wayne Dr./30th St. & US 17 Bus. (Market St.)



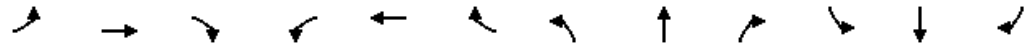
Lanes, Volumes, Timings
 17: Darlington Ave./Henry St. & US 17 Bus. (Market St.)

U-4434 Independence Blvd.
 2040 Build 2 TUDI

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			  		 					
Traffic Volume (vph)	47	1165	378	90	1407	36	473	12	96	47	15	71
Future Volume (vph)	47	1165	378	90	1407	36	473	12	96	47	15	71
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	100		175	500			800			100		
Storage Lanes	1		1	1		0	2		0	1		0
Taper Length (ft)	100			100			100			100		
Satd. Flow (prot)	1770	3539	1583	1770	5065	0	3433	1613	0	1770	1634	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1770	3539	1583	1770	5065	0	3433	1613	0	1770	1634	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		40			40			25			25	
Link Distance (ft)		532			1024			915			767	
Travel Time (s)		9.1			17.5			25.0			20.9	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	52	1294	420	100	1603	0	526	120	0	52	96	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			24			24	
Link Offset(ft)		12			-6			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Prot	NA	pm+ov	Prot	NA		Split	NA		Split	NA	
Protected Phases	5	2	8	1	6		8	8		4	4	
Permitted Phases			2									
Detector Phase	5	2	8	1	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	7.0	12.0	7.0	7.0	12.0		7.0	7.0		7.0	7.0	
Minimum Split (s)	14.0	19.0	14.0	14.0	19.0		14.0	14.0		14.0	14.0	
Total Split (s)	14.0	58.0	29.0	16.0	60.0		29.0	29.0		17.0	17.0	
Total Split (%)	11.7%	48.3%	24.2%	13.3%	50.0%		24.2%	24.2%		14.2%	14.2%	
Maximum Green (s)	7.0	51.0	22.0	9.0	53.0		22.0	22.0		10.0	10.0	
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0		-2.0	-2.0		-2.0	-2.0	
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	

Lanes, Volumes, Timings
 17: Darlington Ave./Henry St. & US 17 Bus. (Market St.)

U-4434 Independence Blvd.
 2040 Build 2 TUDI

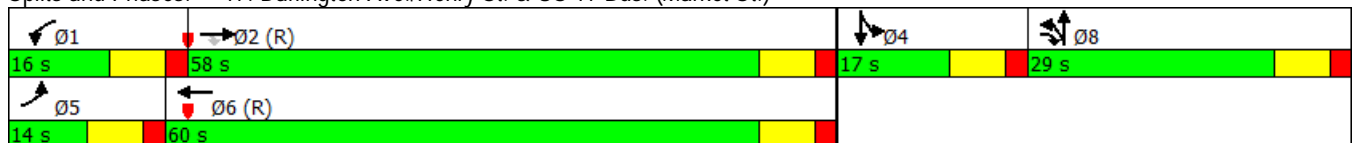


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lead/Lag	Lead	Lag		Lead	Lag							
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Recall Mode	None	C-Min	None	None	C-Min		None	None		None	None	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)	9.0	53.8	77.7	10.7	58.4		23.9	23.9		11.6	11.6	
Actuated g/C Ratio	0.08	0.45	0.65	0.09	0.49		0.20	0.20		0.10	0.10	
v/c Ratio	0.39	0.81	0.41	0.63	0.65		0.77	0.38		0.31	0.61	
Control Delay	69.3	28.4	5.2	71.1	25.7		54.0	45.4		55.3	69.1	
Queue Delay	0.0	1.2	0.1	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	69.3	29.6	5.3	71.1	25.7		54.0	45.4		55.3	69.1	
LOS	E	C	A	E	C		D	D		E	E	
Approach Delay		25.0			28.4			52.4			64.2	
Approach LOS		C			C			D			E	
Queue Length 50th (ft)	42	417	22	76	351		200	81		38	72	
Queue Length 95th (ft)	m75	550	77	#145	407		263	140		79	#133	
Internal Link Dist (ft)		452			944			835			687	
Turn Bay Length (ft)												
Base Capacity (vph)	132	1600	1031	162	2481		696	327		178	164	
Starvation Cap Reductn	0	129	71	0	0		0	0		0	0	
Spillback Cap Reductn	0	0	0	0	19		0	0		0	0	
Storage Cap Reductn	0	0	0	0	0		0	0		0	0	
Reduced v/c Ratio	0.39	0.88	0.44	0.62	0.65		0.76	0.37		0.29	0.59	

Intersection Summary


























Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green
 Natural Cycle: 80
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.81
 Intersection Signal Delay: 31.8 Intersection LOS: C
 Intersection Capacity Utilization 70.7% ICU Level of Service C
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 17: Darlington Ave./Henry St. & US 17 Bus. (Market St.)



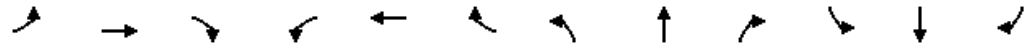
Lanes, Volumes, Timings
 17: Darlington Ave./Henry St. & US 17 Bus. (Market St.)

U-4434 Independence Blvd.
 2040 Build 2 TUDI

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			  		 					
Traffic Volume (vph)	73	1405	532	96	1164	45	343	15	90	35	12	48
Future Volume (vph)	73	1405	532	96	1164	45	343	15	90	35	12	48
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	100		175	500			800			100		
Storage Lanes	1		1	1		0	2		0	1		0
Taper Length (ft)	100			100			100			100		
Satd. Flow (prot)	1770	3539	1583	1770	5055	0	3433	1624	0	1770	1639	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1770	3539	1583	1770	5055	0	3433	1624	0	1770	1639	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		40			40			25			25	
Link Distance (ft)		532			1024			915			767	
Travel Time (s)		9.1			17.5			25.0			20.9	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	81	1561	591	107	1343	0	381	117	0	39	66	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			24			24	
Link Offset(ft)		12			-6			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Prot	NA	pm+ov	Prot	NA		Split	NA		Split	NA	
Protected Phases	5	2	8	1	6		8	8		4	4	
Permitted Phases			2									
Detector Phase	5	2	8	1	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	7.0	12.0	7.0	7.0	12.0		7.0	7.0		7.0	7.0	
Minimum Split (s)	14.0	19.0	14.0	14.0	19.0		14.0	14.0		14.0	14.0	
Total Split (s)	17.0	67.0	23.0	16.0	66.0		23.0	23.0		14.0	14.0	
Total Split (%)	14.2%	55.8%	19.2%	13.3%	55.0%		19.2%	19.2%		11.7%	11.7%	
Maximum Green (s)	10.0	60.0	16.0	9.0	59.0		16.0	16.0		7.0	7.0	
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0		-2.0	-2.0		-2.0	-2.0	
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	

Lanes, Volumes, Timings
 17: Darlington Ave./Henry St. & US 17 Bus. (Market St.)

U-4434 Independence Blvd.
 2040 Build 2 TUDI

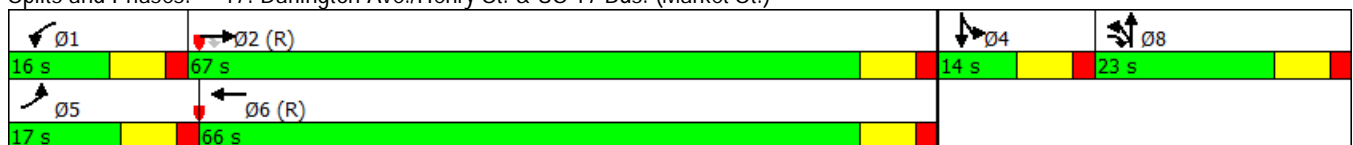


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lead/Lag	Lead	Lag		Lead	Lag							
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Recall Mode	None	C-Min	None	None	C-Min		None	None		None	None	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)	11.2	64.9	83.8	10.8	67.2		17.9	17.9		9.2	9.2	
Actuated g/C Ratio	0.09	0.54	0.70	0.09	0.56		0.15	0.15		0.08	0.08	
v/c Ratio	0.49	0.82	0.53	0.67	0.47		0.74	0.48		0.29	0.53	
Control Delay	65.5	26.3	5.7	73.9	18.2		58.6	54.2		58.4	69.3	
Queue Delay	0.0	3.2	0.3	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	65.5	29.5	6.0	73.9	18.2		58.6	54.2		58.4	69.3	
LOS	E	C	A	E	B		E	D		E	E	
Approach Delay		24.6			22.3			57.6			65.2	
Approach LOS		C			C			E			E	
Queue Length 50th (ft)	57	572	133	82	246		147	84		29	50	
Queue Length 95th (ft)	m91	653	89	#159	289		201	146		66	#100	
Internal Link Dist (ft)		452			944			835			687	
Turn Bay Length (ft)												
Base Capacity (vph)	177	1918	1106	162	2833		514	243		135	125	
Starvation Cap Reductn	0	257	120	0	0		0	0		0	0	
Spillback Cap Reductn	0	0	0	0	18		0	0		0	0	
Storage Cap Reductn	0	0	0	0	0		0	0		0	0	
Reduced v/c Ratio	0.46	0.94	0.60	0.66	0.48		0.74	0.48		0.29	0.53	

Intersection Summary













Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green
 Natural Cycle: 90
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.82
 Intersection Signal Delay: 28.6 Intersection LOS: C
 Intersection Capacity Utilization 73.6% ICU Level of Service D
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 17: Darlington Ave./Henry St. & US 17 Bus. (Market St.)



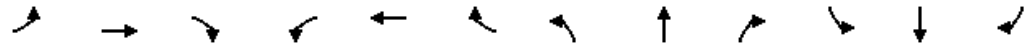
Lanes, Volumes, Timings
 141: SB Independence Blvd. & US 17 Bus. (Market St.)

U-4434 Independence Blvd.
 2040 Build 2 TUDI

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑	↗	↘↗	↑↑					↘↗		↗↘
Traffic Volume (vph)	0	832	358	509	1285	0	0	0	0	444	0	161
Future Volume (vph)	0	832	358	509	1285	0	0	0	0	444	0	161
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)			300							950		925
Storage Lanes	0		1			0	0		0	2		1
Taper Length (ft)	100		100							100		100
Satd. Flow (prot)	0	6408	1583	3433	3539	0	0	0	0	3433	0	2787
Flt Permitted				0.950						0.950		
Satd. Flow (perm)	0	6408	1583	3433	3539	0	0	0	0	3433	0	2787
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		40			40			30			45	
Link Distance (ft)		568			390			881			961	
Travel Time (s)		9.7			6.6			20.0			14.6	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	2%	2%	2%	2%	0%	0%	0%	0%	2%	0%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	924	398	566	1428	0	0	0	0	493	0	179
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	R NA	Left	Right
Median Width(ft)		24			24			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type		NA	Perm	Prot	NA					Prot		Prot
Protected Phases		2		1	6					4		4
Permitted Phases			2									
Detector Phase		2	2	1	6					4		4
Switch Phase												
Minimum Initial (s)		12.0	12.0	7.0	12.0					7.0		7.0
Minimum Split (s)		19.0	19.0	14.0	19.0					14.0		14.0
Total Split (s)		54.0	54.0	35.0	89.0					31.0		31.0
Total Split (%)		45.0%	45.0%	29.2%	74.2%					25.8%		25.8%
Maximum Green (s)		47.0	47.0	28.0	82.0					24.0		24.0
Yellow Time (s)		5.0	5.0	5.0	5.0					5.0		5.0
All-Red Time (s)		2.0	2.0	2.0	2.0					2.0		2.0
Lost Time Adjust (s)		-2.0	-2.0	-2.0	-2.0					-2.0		-2.0
Total Lost Time (s)		5.0	5.0	5.0	5.0					5.0		5.0

Lanes, Volumes, Timings
 141: SB Independence Blvd. & US 17 Bus. (Market St.)

U-4434 Independence Blvd.
 2040 Build 2 TUDI

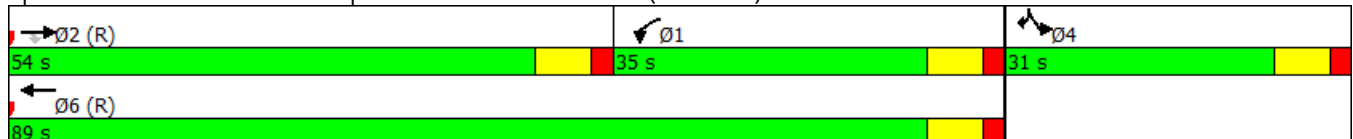


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lead/Lag		Lead	Lead	Lag								
Lead-Lag Optimize?		Yes	Yes	Yes								
Vehicle Extension (s)		3.0	3.0	3.0	3.0					3.0		3.0
Minimum Gap (s)		3.0	3.0	3.0	3.0					3.0		3.0
Time Before Reduce (s)		0.0	0.0	0.0	0.0					0.0		0.0
Time To Reduce (s)		0.0	0.0	0.0	0.0					0.0		0.0
Recall Mode		C-Min	C-Min	None	C-Min					None		None
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)		54.9	54.9	26.4	86.3					23.7		23.7
Actuated g/C Ratio		0.46	0.46	0.22	0.72					0.20		0.20
v/c Ratio		0.32	0.55	0.75	0.56					0.73		0.32
Control Delay		13.7	16.8	48.2	6.8					51.6		42.4
Queue Delay		0.0	0.0	0.3	0.0					0.0		0.0
Total Delay		13.7	16.8	48.6	6.8					51.6		42.4
LOS		B	B	D	A					D		D
Approach Delay		14.6			18.6						49.1	
Approach LOS		B			B						D	
Queue Length 50th (ft)		72	109	226	129					185		67
Queue Length 95th (ft)		73	129	280	96					240		103
Internal Link Dist (ft)		488			310			801			881	
Turn Bay Length (ft)				300								
Base Capacity (vph)		2934	724	858	2551					750		609
Starvation Cap Reductn		0	0	50	75					0		0
Spillback Cap Reductn		215	0	0	4					0		0
Storage Cap Reductn		0	0	0	0					0		0
Reduced v/c Ratio		0.34	0.55	0.70	0.58					0.66		0.29

Intersection Summary













Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green
 Natural Cycle: 55
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.75
 Intersection Signal Delay: 22.4 Intersection LOS: C
 Intersection Capacity Utilization 61.9% ICU Level of Service B
 Analysis Period (min) 15

Splits and Phases: 141: SB Independence Blvd. & US 17 Bus. (Market St.)



Lanes, Volumes, Timings
 141: SB Independence Blvd. & US 17 Bus. (Market St.)

U-4434 Independence Blvd.
 2040 Build 2 TUDI

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑	↗	↘↘	↑↑					↘↘		↗↗
Traffic Volume (vph)	0	1076	370	406	1065	0	0	0	0	525	0	125
Future Volume (vph)	0	1076	370	406	1065	0	0	0	0	525	0	125
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)			300							950		925
Storage Lanes	0		1			0	0			2		1
Taper Length (ft)	100		100							100		100
Satd. Flow (prot)	0	6408	1583	3433	3539	0	0	0	0	3433	0	2787
Flt Permitted				0.950						0.950		
Satd. Flow (perm)	0	6408	1583	3433	3539	0	0	0	0	3433	0	2787
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		40			40			30				45
Link Distance (ft)		568			390			881				961
Travel Time (s)		9.7			6.6			20.0				14.6
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	2%	2%	2%	2%	0%	0%	0%	0%	2%	0%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%				0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1196	411	451	1183	0	0	0	0	583	0	139
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	R NA	Left	Right
Median Width(ft)		24			24			24				24
Link Offset(ft)		0			0			0				0
Crosswalk Width(ft)		16			16			16				16
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type		NA	Perm	Prot	NA					Prot		Prot
Protected Phases		2		1	6					4		4
Permitted Phases			2									
Detector Phase		2	2	1	6					4		4
Switch Phase												
Minimum Initial (s)		12.0	12.0	7.0	12.0					7.0		7.0
Minimum Split (s)		19.0	19.0	14.0	19.0					14.0		14.0
Total Split (s)		55.0	55.0	30.0	85.0					35.0		35.0
Total Split (%)		45.8%	45.8%	25.0%	70.8%					29.2%		29.2%
Maximum Green (s)		48.0	48.0	23.0	78.0					28.0		28.0
Yellow Time (s)		5.0	5.0	5.0	5.0					5.0		5.0
All-Red Time (s)		2.0	2.0	2.0	2.0					2.0		2.0
Lost Time Adjust (s)		-2.0	-2.0	-2.0	-2.0					-2.0		-2.0
Total Lost Time (s)		5.0	5.0	5.0	5.0					5.0		5.0

Lanes, Volumes, Timings
 141: SB Independence Blvd. & US 17 Bus. (Market St.)

U-4434 Independence Blvd.
 2040 Build 2 TUDI

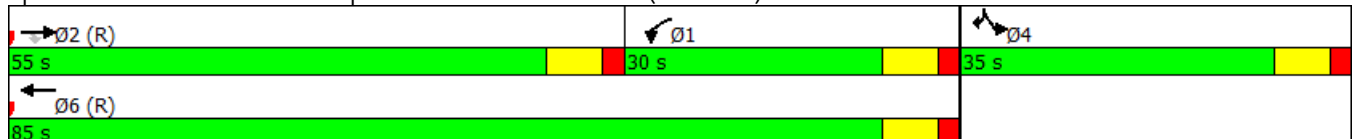


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lead/Lag		Lead	Lead	Lag								
Lead-Lag Optimize?		Yes	Yes	Yes								
Vehicle Extension (s)		3.0	3.0	3.0	3.0					3.0		3.0
Minimum Gap (s)		3.0	3.0	3.0	3.0					3.0		3.0
Time Before Reduce (s)		0.0	0.0	0.0	0.0					0.0		0.0
Time To Reduce (s)		0.0	0.0	0.0	0.0					0.0		0.0
Recall Mode		C-Min	C-Min	None	C-Min					None		None
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)		55.9	55.9	22.3	83.1					26.9		26.9
Actuated g/C Ratio		0.47	0.47	0.19	0.69					0.22		0.22
v/c Ratio		0.40	0.56	0.71	0.48					0.76		0.22
Control Delay		18.6	21.9	41.6	3.5					50.3		38.2
Queue Delay		0.0	0.3	0.0	0.1					0.0		0.0
Total Delay		18.6	22.2	41.6	3.6					50.3		38.2
LOS		B	C	D	A					D		D
Approach Delay		19.5			14.1						47.9	
Approach LOS		B			B						D	
Queue Length 50th (ft)		119	145	163	51					218		50
Queue Length 95th (ft)		137	205	208	48					274		79
Internal Link Dist (ft)		488			310			801			881	
Turn Bay Length (ft)												
Base Capacity (vph)		2982	736	715	2452					859		697
Starvation Cap Reductn		0	59	0	285					0		0
Spillback Cap Reductn		0	0	0	0					0		0
Storage Cap Reductn		0	0	0	0					0		0
Reduced v/c Ratio		0.40	0.61	0.63	0.55					0.68		0.20

Intersection Summary



















Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green
 Natural Cycle: 55
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.76
 Intersection Signal Delay: 22.4
 Intersection Capacity Utilization 68.1%
 Analysis Period (min) 15
 Intersection LOS: C
 ICU Level of Service C

Splits and Phases: 141: SB Independence Blvd. & US 17 Bus. (Market St.)



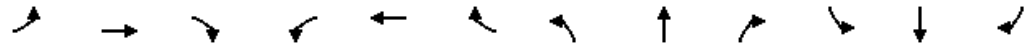
Lanes, Volumes, Timings
 142: NB Independence Blvd & US 17 Bus. (Market St.)

U-4434 Independence Blvd.
 2040 Build 2 TUDI

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	125	1151	0	0	1424	527	370	0	439	0	0	0
Future Volume (vph)	125	1151	0	0	1424	527	370	0	439	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)							250		475			
Storage Lanes	2		0	0			2		1	0		0
Taper Length (ft)	100			100			100			100		
Satd. Flow (prot)	3433	3539	0	0	6408	1583	3433	0	2787	0	0	0
Flt Permitted	0.950						0.950					
Satd. Flow (perm)	3433	3539	0	0	6408	1583	3433	0	2787	0	0	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		40			40			45			30	
Link Distance (ft)		390			532			920			889	
Travel Time (s)		6.6			9.1			13.9			20.2	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	0%	0%	2%	2%	2%	0%	2%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	139	1279	0	0	1582	586	411	0	488	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	R NA	Left	Right	Left	Left	Right
Median Width(ft)		24			24			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Prot	NA			NA	Perm	Prot		Prot			
Protected Phases	5	2			6		8		8			
Permitted Phases						6						
Detector Phase	5	2			6	6	8		8			
Switch Phase												
Minimum Initial (s)	7.0	12.0			12.0	12.0	7.0		7.0			
Minimum Split (s)	14.0	19.0			19.0	19.0	14.0		14.0			
Total Split (s)	14.0	85.0			71.0	71.0	35.0		35.0			
Total Split (%)	11.7%	70.8%			59.2%	59.2%	29.2%		29.2%			
Maximum Green (s)	7.0	78.0			64.0	64.0	28.0		28.0			
Yellow Time (s)	5.0	5.0			5.0	5.0	5.0		5.0			
All-Red Time (s)	2.0	2.0			2.0	2.0	2.0		2.0			
Lost Time Adjust (s)	-2.0	-2.0			-2.0	-2.0	-2.0		-2.0			
Total Lost Time (s)	5.0	5.0			5.0	5.0	5.0		5.0			

Lanes, Volumes, Timings
 142: NB Independence Blvd & US 17 Bus. (Market St.)

U-4434 Independence Blvd.
 2040 Build 2 TUDI

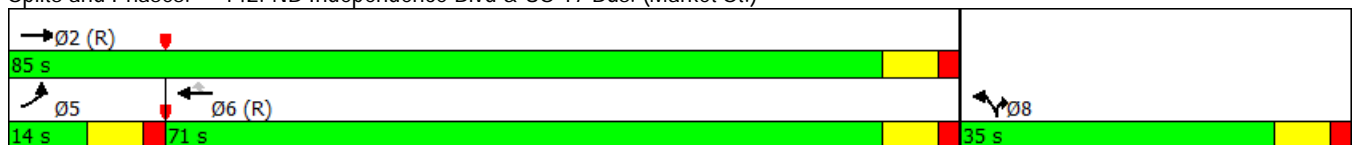


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lead/Lag	Lead			Lag			Lag					
Lead-Lag Optimize?	Yes			Yes			Yes					
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0		3.0			
Minimum Gap (s)	3.0	3.0			3.0	3.0	3.0		3.0			
Time Before Reduce (s)	0.0	0.0			0.0	0.0	0.0		0.0			
Time To Reduce (s)	0.0	0.0			0.0	0.0	0.0		0.0			
Recall Mode	None	C-Min			C-Min	C-Min	None		None			
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)	9.7	82.7			68.0	68.0	27.3		27.3			
Actuated g/C Ratio	0.08	0.69			0.57	0.57	0.23		0.23			
v/c Ratio	0.50	0.52			0.44	0.65	0.53		0.77			
Control Delay	61.0	6.6			9.0	14.4	42.9		52.0			
Queue Delay	0.0	0.3			0.0	0.6	0.0		0.0			
Total Delay	61.0	6.9			9.0	15.0	42.9		52.0			
LOS	E	A			A	B	D		D			
Approach Delay		12.2			10.6			47.8				
Approach LOS		B			B			D				
Queue Length 50th (ft)	47	330			106	136	142		198			
Queue Length 95th (ft)	m81	172			118	367	190		263			
Internal Link Dist (ft)		310			452			840			809	
Turn Bay Length (ft)	200											
Base Capacity (vph)	277	2438			3629	896	858		696			
Starvation Cap Reductn	0	546			0	88	0		0			
Spillback Cap Reductn	0	82			46	0	0		0			
Storage Cap Reductn	0	0			0	0	0		0			
Reduced v/c Ratio	0.50	0.68			0.44	0.73	0.48		0.70			

Intersection Summary



















Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green
 Natural Cycle: 60
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.77
 Intersection Signal Delay: 18.6 Intersection LOS: B
 Intersection Capacity Utilization 61.9% ICU Level of Service B
 Analysis Period (min) 15
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 142: NB Independence Blvd & US 17 Bus. (Market St.)



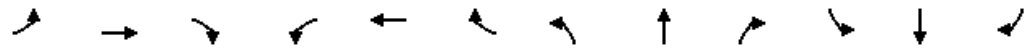
Lanes, Volumes, Timings
 142: NB Independence Blvd & US 17 Bus. (Market St.)

U-4434 Independence Blvd.
 2040 Build 2 TUDI

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	161	1440	0	0	1113	442	358	0	570	0	0	0
Future Volume (vph)	161	1440	0	0	1113	442	358	0	570	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	175						250		475			
Storage Lanes	2		0	0			2		1	0		0
Taper Length (ft)	100			100			100			100		
Satd. Flow (prot)	3433	3539	0	0	6408	1583	3433	0	2787	0	0	0
Flt Permitted	0.950						0.950					
Satd. Flow (perm)	3433	3539	0	0	6408	1583	3433	0	2787	0	0	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		40			40			45			30	
Link Distance (ft)		390			532			920			889	
Travel Time (s)		6.6			9.1			13.9			20.2	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	0%	0%	2%	2%	2%	0%	2%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	179	1600	0	0	1237	491	398	0	633	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	R NA	Left	Right	Left	Left	Right
Median Width(ft)		24			24			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Prot	NA			NA	Perm	Prot		Prot			
Protected Phases	5	2			6		8		8			
Permitted Phases						6						
Detector Phase	5	2			6	6	8		8			
Switch Phase												
Minimum Initial (s)	7.0	12.0			12.0	12.0	7.0		7.0			
Minimum Split (s)	14.0	19.0			19.0	19.0	14.0		14.0			
Total Split (s)	16.0	77.0			61.0	61.0	43.0		43.0			
Total Split (%)	13.3%	64.2%			50.8%	50.8%	35.8%		35.8%			
Maximum Green (s)	9.0	70.0			54.0	54.0	36.0		36.0			
Yellow Time (s)	5.0	5.0			5.0	5.0	5.0		5.0			
All-Red Time (s)	2.0	2.0			2.0	2.0	2.0		2.0			
Lost Time Adjust (s)	-2.0	-2.0			-2.0	-2.0	-2.0		-2.0			
Total Lost Time (s)	5.0	5.0			5.0	5.0	5.0		5.0			

Lanes, Volumes, Timings
 142: NB Independence Blvd & US 17 Bus. (Market St.)

U-4434 Independence Blvd.
 2040 Build 2 TUDI

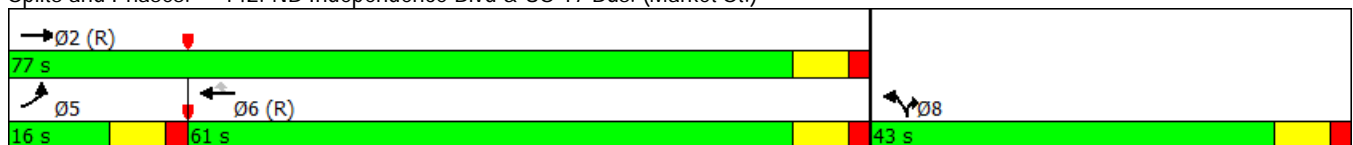


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lead/Lag	Lead			Lag			Lag					
Lead-Lag Optimize?	Yes			Yes			Yes					
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0		3.0			
Minimum Gap (s)	3.0	3.0			3.0	3.0	3.0		3.0			
Time Before Reduce (s)	0.0	0.0			0.0	0.0	0.0		0.0			
Time To Reduce (s)	0.0	0.0			0.0	0.0	0.0		0.0			
Recall Mode	None	C-Min			C-Min	C-Min	None		None			
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)	11.6	75.9			59.3	59.3	34.1		34.1			
Actuated g/C Ratio	0.10	0.63			0.49	0.49	0.28		0.28			
v/c Ratio	0.54	0.71			0.39	0.63	0.41		0.80			
Control Delay	63.3	6.4			13.4	19.0	35.6		47.9			
Queue Delay	0.0	0.6			0.0	0.1	0.0		0.0			
Total Delay	63.3	7.0			13.4	19.1	35.6		47.9			
LOS	E	A			B	B	D		D			
Approach Delay		12.7			15.0			43.1				
Approach LOS		B			B			D				
Queue Length 50th (ft)	68	225			113	155	127		255			
Queue Length 95th (ft)	m102	248			115	311	166		321			
Internal Link Dist (ft)		310			452		840		809			
Turn Bay Length (ft)												
Base Capacity (vph)	336	2239			3167	782	1087		882			
Starvation Cap Reductn	0	27			0	19	0		0			
Spillback Cap Reductn	0	276			0	0	0		0			
Storage Cap Reductn	0	0			0	0	0		0			
Reduced v/c Ratio	0.53	0.82			0.39	0.64	0.37		0.72			

Intersection Summary

Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green
 Natural Cycle: 60
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.80
 Intersection Signal Delay: 20.5 Intersection LOS: C
 Intersection Capacity Utilization 68.1% ICU Level of Service C
 Analysis Period (min) 15
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 142: NB Independence Blvd & US 17 Bus. (Market St.)



Summary of All Intervals

Run Number	1	2	3	4	5	Avg
Start Time	6:50	6:50	6:50	6:50	6:50	6:50
End Time	8:00	8:00	8:00	8:00	8:00	8:00
Total Time (min)	70	70	70	70	70	70
Time Recorded (min)	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1
Vehs Entered	4753	4766	4632	4855	4763	4755
Vehs Exited	4711	4745	4574	4791	4754	4715
Starting Vehs	207	211	232	227	205	217
Ending Vehs	249	232	290	291	214	255
Travel Distance (mi)	2155	2156	2089	2192	2158	2150
Travel Time (hr)	404.0	414.3	475.8	382.7	349.9	405.3
Total Delay (hr)	336.0	345.8	409.7	313.3	281.5	337.2
Total Stops	8236	7931	7639	8470	8023	8063
Fuel Used (gal)	168.4	170.9	181.9	165.1	156.2	168.5

Interval #0 Information Seeding

Start Time	6:50
End Time	7:00
Total Time (min)	10
Volumes adjusted by Growth Factors.	
No data recorded this interval.	

Interval #1 Information Recording

Start Time	7:00
End Time	8:00
Total Time (min)	60
Volumes adjusted by Growth Factors.	

Run Number	1	2	3	4	5	Avg
Vehs Entered	4753	4766	4632	4855	4763	4755
Vehs Exited	4711	4745	4574	4791	4754	4715
Starting Vehs	207	211	232	227	205	217
Ending Vehs	249	232	290	291	214	255
Travel Distance (mi)	2155	2156	2089	2192	2158	2150
Travel Time (hr)	404.0	414.3	475.8	382.7	349.9	405.3
Total Delay (hr)	336.0	345.8	409.7	313.3	281.5	337.2
Total Stops	8236	7931	7639	8470	8023	8063
Fuel Used (gal)	168.4	170.9	181.9	165.1	156.2	168.5

Intersection: 11: Wayne Dr./30th St. & US 17 Bus. (Market St.)

Movement	EB	EB	EB	WB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	TR	L	T	T	R	L	TR	L	TR
Maximum Queue (ft)	135	274	308	99	458	462	105	150	142	105	136
Average Queue (ft)	34	58	285	34	205	215	28	65	58	38	44
95th Queue (ft)	88	205	299	76	419	431	76	130	112	86	103
Link Distance (ft)	268	268	268	454	454	454	454	797	797	666	666
Upstream Blk Time (%)		2	47		1	1					
Queuing Penalty (veh)		0	0		3	5					
Storage Bay Dist (ft)	150			125			125	150		125	
Storage Blk Time (%)											
Queuing Penalty (veh)											

Intersection: 17: Darlington Ave./Henry St. & US 17 Bus. (Market St.)

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB
Directions Served	L	T	T	R	L	T	T	TR	L	L	TR	L
Maximum Queue (ft)	100	298	305	164	492	992	1003	1025	793	843	642	88
Average Queue (ft)	29	212	220	78	94	536	979	996	411	698	328	38
95th Queue (ft)	72	277	281	140	400	1106	1037	1013	975	991	943	78
Link Distance (ft)	420	420	420	420	976	976	976	976	832	832	832	699
Upstream Blk Time (%)					0	2	33	91	7	32	19	
Queuing Penalty (veh)					0	0	0	0	0	0	0	
Storage Bay Dist (ft)	100			175	500				800	800		100
Storage Blk Time (%)												
Queuing Penalty (veh)												

Intersection: 17: Darlington Ave./Henry St. & US 17 Bus. (Market St.)

Movement	SB
Directions Served	TR
Maximum Queue (ft)	154
Average Queue (ft)	71
95th Queue (ft)	135
Link Distance (ft)	699
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 141: SB Independence Blvd. & US 17 Bus. (Market St.)

Movement	EB	EB	EB	EB	EB	WB	WB	WB	WB	SB	SB	SB
Directions Served	T	T	T	T	R	L	L	T	T	L	L	R
Maximum Queue (ft)	77	52	310	391	276	288	289	275	351	449	486	210
Average Queue (ft)	23	8	124	257	171	168	170	30	229	219	303	89
95th Queue (ft)	57	32	258	357	258	253	253	132	340	448	492	168
Link Distance (ft)	454	454	454	454	454	313	313	313	313	890	890	890
Upstream Blk Time (%)			0	0		0	0	0	1			
Queuing Penalty (veh)			0	0		0	0	0	6			
Storage Bay Dist (ft)					300					950	950	
Storage Blk Time (%)												
Queuing Penalty (veh)												

Intersection: 141: SB Independence Blvd. & US 17 Bus. (Market St.)

Movement	SB
Directions Served	R
Maximum Queue (ft)	62
Average Queue (ft)	9
95th Queue (ft)	39
Link Distance (ft)	890
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	925
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 142: NB Independence Blvd & US 17 Bus. (Market St.)

Movement	EB	EB	EB	EB	WB	WB	WB	WB	WB	NB	NB	NB	
Directions Served	L	L	T	T	T	T	T	T	T	R	L	L	R
Maximum Queue (ft)	111	129	46	267	109	111	229	301	233	186	219	442	
Average Queue (ft)	45	42	4	55	53	56	107	193	149	88	127	258	
95th Queue (ft)	90	96	25	186	92	101	203	269	218	167	201	405	
Link Distance (ft)	313	313	313	313	420	420	420	420	420	850	850	850	
Upstream Blk Time (%)	0												
Queuing Penalty (veh)	0												
Storage Bay Dist (ft)											250	250	
Storage Blk Time (%)													
Queuing Penalty (veh)													

Intersection: 142: NB Independence Blvd & US 17 Bus. (Market St.)

Movement	NB
Directions Served	R
Maximum Queue (ft)	416
Average Queue (ft)	138
95th Queue (ft)	334
Link Distance (ft)	850
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	475
Storage Blk Time (%)	
Queuing Penalty (veh)	

Network Summary

Network wide Queuing Penalty: 15

Summary of All Intervals

Run Number	1	2	3	4	5	Avg
Start Time	4:50	4:50	4:50	4:50	4:50	4:50
End Time	6:00	6:00	6:00	6:00	6:00	6:00
Total Time (min)	70	70	70	70	70	70
Time Recorded (min)	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1
Vehs Entered	4617	4667	4631	4624	4575	4622
Vehs Exited	4581	4583	4581	4582	4544	4573
Starting Vehs	228	219	204	206	210	215
Ending Vehs	264	303	254	248	241	261
Travel Distance (mi)	2106	2109	2109	2109	2089	2104
Travel Time (hr)	563.6	569.2	552.3	558.2	458.9	540.4
Total Delay (hr)	497.2	502.8	485.7	491.4	393.1	474.0
Total Stops	7967	8467	8307	8394	7988	8226
Fuel Used (gal)	200.0	202.1	197.5	199.5	175.8	195.0

Interval #0 Information Seeding

Start Time	4:50
End Time	5:00
Total Time (min)	10
Volumes adjusted by Growth Factors.	
No data recorded this interval.	

Interval #1 Information Recording

Start Time	5:00
End Time	6:00
Total Time (min)	60
Volumes adjusted by Growth Factors.	

Run Number	1	2	3	4	5	Avg
Vehs Entered	4617	4667	4631	4624	4575	4622
Vehs Exited	4581	4583	4581	4582	4544	4573
Starting Vehs	228	219	204	206	210	215
Ending Vehs	264	303	254	248	241	261
Travel Distance (mi)	2106	2109	2109	2109	2089	2104
Travel Time (hr)	563.6	569.2	552.3	558.2	458.9	540.4
Total Delay (hr)	497.2	502.8	485.7	491.4	393.1	474.0
Total Stops	7967	8467	8307	8394	7988	8226
Fuel Used (gal)	200.0	202.1	197.5	199.5	175.8	195.0

Intersection: 11: Wayne Dr./30th St. & US 17 Bus. (Market St.)

Movement	EB	EB	EB	WB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	TR	L	T	T	R	L	TR	L	TR
Maximum Queue (ft)	96	270	315	108	471	493	79	79	131	104	108
Average Queue (ft)	31	59	287	46	227	238	21	31	44	43	42
95th Queue (ft)	74	203	301	93	476	493	58	70	95	92	89
Link Distance (ft)	268	268	268	454	454	454	454	797	797	666	666
Upstream Blk Time (%)		1	50		0	1					
Queuing Penalty (veh)		0	0		1	4					
Storage Bay Dist (ft)	150			125			125	150		125	
Storage Blk Time (%)											
Queuing Penalty (veh)											

Intersection: 17: Darlington Ave./Henry St. & US 17 Bus. (Market St.)

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB
Directions Served	L	T	T	R	L	T	T	TR	L	L	TR	L
Maximum Queue (ft)	99	271	272	171	158	440	798	918	565	721	440	84
Average Queue (ft)	34	188	200	80	75	93	429	554	213	503	204	27
95th Queue (ft)	81	244	253	141	149	255	768	869	711	884	698	68
Link Distance (ft)	420	420	420	420	976	976	976	976	832	832	832	699
Upstream Blk Time (%)						0	0	1	5	17	8	
Queuing Penalty (veh)						0	0	0	0	0	0	
Storage Bay Dist (ft)	100			175	500				800	800		100
Storage Blk Time (%)												
Queuing Penalty (veh)												

Intersection: 17: Darlington Ave./Henry St. & US 17 Bus. (Market St.)

Movement	SB
Directions Served	TR
Maximum Queue (ft)	125
Average Queue (ft)	51
95th Queue (ft)	105
Link Distance (ft)	699
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 141: SB Independence Blvd. & US 17 Bus. (Market St.)

Movement	EB	EB	EB	EB	EB	WB	WB	WB	WB	SB	SB	SB
Directions Served	T	T	T	T	R	L	L	T	T	L	L	R
Maximum Queue (ft)	69	38	422	469	289	227	241	336	354	920	928	914
Average Queue (ft)	23	6	202	333	150	146	138	43	210	837	862	699
95th Queue (ft)	55	24	417	487	244	213	208	183	347	1076	1049	1285
Link Distance (ft)	454	454	454	454	454	313	313	313	313	890	890	890
Upstream Blk Time (%)			0	2				0	2	47	74	56
Queuing Penalty (veh)			0	5				1	8	0	0	0
Storage Bay Dist (ft)					300					950	950	
Storage Blk Time (%)												
Queuing Penalty (veh)												

Intersection: 141: SB Independence Blvd. & US 17 Bus. (Market St.)

Movement	SB
Directions Served	R
Maximum Queue (ft)	794
Average Queue (ft)	54
95th Queue (ft)	357
Link Distance (ft)	890
Upstream Blk Time (%)	0
Queuing Penalty (veh)	0
Storage Bay Dist (ft)	925
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 142: NB Independence Blvd & US 17 Bus. (Market St.)

Movement	EB	EB	EB	EB	WB	WB	WB	WB	WB	NB	NB	NB	
Directions Served	L	L	T	T	T	T	T	T	T	R	L	L	R
Maximum Queue (ft)	102	154	333	380	119	139	372	413	314	186	232	454	
Average Queue (ft)	46	46	57	301	55	56	177	240	192	77	116	280	
95th Queue (ft)	87	117	235	401	98	113	314	357	281	157	195	438	
Link Distance (ft)	313	313	313	313	420	420	420	420	420	850	850	850	
Upstream Blk Time (%)		0	0	6			0	0	0				
Queuing Penalty (veh)		0	1	23			0	2	0				
Storage Bay Dist (ft)										250	250		
Storage Blk Time (%)													
Queuing Penalty (veh)													

Intersection: 142: NB Independence Blvd & US 17 Bus. (Market St.)

Movement	NB
Directions Served	R
Maximum Queue (ft)	408
Average Queue (ft)	146
95th Queue (ft)	332
Link Distance (ft)	850
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	475
Storage Blk Time (%)	
Queuing Penalty (veh)	

Network Summary

Network wide Queuing Penalty: 44

2040 Build – Alternative 7 SPUI

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Lanes, Volumes, Timings
 11: Wayne Dr./30th St. & US 17 Bus. (Market St.)

U-4434 Independence Blvd.
 2040 Build 7 SPU1



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	45	1074	40	63	1323	60	90	19	69	47	9	54
Future Volume (vph)	45	1074	40	63	1323	60	90	19	69	47	9	54
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	200		0	150		100	175		0	125		0
Storage Lanes	1		0	1		1	1		0	1		0
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		0.995				0.850		0.882			0.871	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3522	0	1770	3539	1583	1770	1643	0	1770	1622	0
Flt Permitted	0.950			0.950			0.950			0.694		
Satd. Flow (perm)	1770	3522	0	1770	3539	1583	1770	1643	0	1293	1622	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		40			40			25			25	
Link Distance (ft)		315			704			873			738	
Travel Time (s)		5.4			12.0			23.8			20.1	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	50	1193	44	70	1470	67	100	21	77	52	10	60
Shared Lane Traffic (%)												
Lane Group Flow (vph)	50	1237	0	70	1470	67	100	98	0	52	70	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA		Perm	NA	
Protected Phases	5	2		1	6		3	8			4	
Permitted Phases						6				4		
Detector Phase	5	2		1	6	6	3	8		4	4	
Switch Phase												
Minimum Initial (s)	7.0	12.0		7.0	12.0	12.0	7.0	7.0		7.0	7.0	
Minimum Split (s)	14.0	19.0		14.0	19.0	19.0	14.0	14.0		14.0	14.0	
Total Split (s)	14.0	71.0		15.0	72.0	72.0	18.0	34.0		16.0	16.0	
Total Split (%)	11.7%	59.2%		12.5%	60.0%	60.0%	15.0%	28.3%		13.3%	13.3%	

Lanes, Volumes, Timings
 11: Wayne Dr./30th St. & US 17 Bus. (Market St.)

U-4434 Independence Blvd.
 2040 Build 7 SPU1

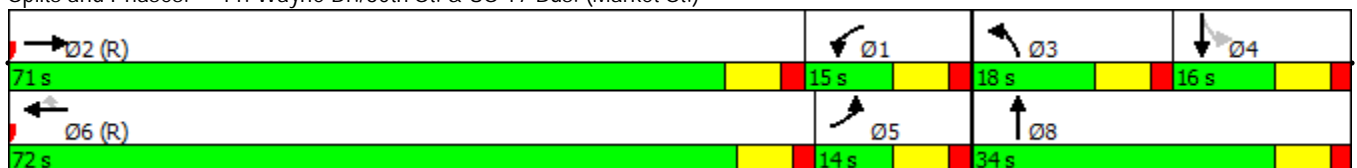


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Maximum Green (s)	7.0	64.0		8.0	65.0	65.0	11.0	27.0		9.0	9.0	
Yellow Time (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-2.0	-2.0	-2.0	-2.0		-2.0	-2.0	
Total Lost Time (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Lead/Lag	Lag	Lead		Lag	Lead	Lead	Lead			Lag	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes			Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Minimum Gap (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Time Before Reduce (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Time To Reduce (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Recall Mode	None	C-Min		None	C-Min	C-Min	None	None		None	None	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effect Green (s)	9.5	68.2		14.2	72.9	72.9	12.3	25.4		10.9	10.9	
Actuated g/C Ratio	0.08	0.57		0.12	0.61	0.61	0.10	0.21		0.09	0.09	
v/c Ratio	0.36	0.62		0.33	0.68	0.07	0.55	0.28		0.45	0.48	
Control Delay	60.0	21.7		56.5	17.4	6.9	63.0	40.0		64.2	63.2	
Queue Delay	0.0	0.0		0.0	0.4	0.0	0.0	0.0		0.0	0.0	
Total Delay	60.0	21.7		56.5	17.8	6.9	63.0	40.0		64.2	63.2	
LOS	E	C		E	B	A	E	D		E	E	
Approach Delay		23.2			19.0			51.6			63.6	
Approach LOS		C			B			D			E	
Queue Length 50th (ft)	37	409		52	515	18	74	60		38	52	
Queue Length 95th (ft)	80	425		m86	562	m25	133	110		82	102	
Internal Link Dist (ft)		235			624			793			658	
Turn Bay Length (ft)	200			150		100	175			125		
Base Capacity (vph)	140	2140		212	2177	974	194	404		121	152	
Starvation Cap Reductn	0	0		0	244	0	0	0		0	0	
Spillback Cap Reductn	0	0		0	0	0	0	0		0	0	
Storage Cap Reductn	0	0		0	0	0	0	0		0	0	
Reduced v/c Ratio	0.36	0.58		0.33	0.76	0.07	0.52	0.24		0.43	0.46	

Intersection Summary

Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green
 Natural Cycle: 80
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.68
 Intersection Signal Delay: 24.4
 Intersection LOS: C
 Intersection Capacity Utilization 66.6%
 ICU Level of Service C
 Analysis Period (min) 15
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 11: Wayne Dr./30th St. & US 17 Bus. (Market St.)



Lanes, Volumes, Timings
 11: Wayne Dr./30th St. & US 17 Bus. (Market St.)

U-4434 Independence Blvd.
 2040 Build 7 SPU1



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	56	1325	91	68	1076	46	41	9	62	59	19	47
Future Volume (vph)	56	1325	91	68	1076	46	41	9	62	59	19	47
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	200		0	150		100	175		0	125		0
Storage Lanes	1		0	1		1	1		0	1		0
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		0.990				0.850		0.869			0.893	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3504	0	1770	3539	1583	1770	1619	0	1770	1663	0
Flt Permitted	0.950			0.950			0.950			0.706		
Satd. Flow (perm)	1770	3504	0	1770	3539	1583	1770	1619	0	1315	1663	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		40			40			25			25	
Link Distance (ft)		315			704			873			738	
Travel Time (s)		5.4			12.0			23.8			20.1	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	62	1472	101	76	1196	51	46	10	69	66	21	52
Shared Lane Traffic (%)												
Lane Group Flow (vph)	62	1573	0	76	1196	51	46	79	0	66	73	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA		Perm	NA	
Protected Phases	5	2		1	6		3	8			4	
Permitted Phases						6				4		
Detector Phase	5	2		1	6	6	3	8		4	4	
Switch Phase												
Minimum Initial (s)	7.0	12.0		7.0	12.0	12.0	7.0	7.0		7.0	7.0	
Minimum Split (s)	14.0	19.0		14.0	19.0	19.0	14.0	14.0		14.0	14.0	
Total Split (s)	14.0	73.0		16.0	75.0	75.0	14.0	31.0		17.0	17.0	
Total Split (%)	11.7%	60.8%		13.3%	62.5%	62.5%	11.7%	25.8%		14.2%	14.2%	

Lanes, Volumes, Timings
 11: Wayne Dr./30th St. & US 17 Bus. (Market St.)

U-4434 Independence Blvd.
 2040 Build 7 SPU1



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Maximum Green (s)	7.0	66.0		9.0	68.0	68.0	7.0	24.0		10.0	10.0	
Yellow Time (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-2.0	-2.0	-2.0	-2.0		-2.0	-2.0	
Total Lost Time (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Lead/Lag	Lag	Lead		Lag	Lead	Lead	Lead			Lag	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes			Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Minimum Gap (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Time Before Reduce (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Time To Reduce (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Recall Mode	None	C-Min		None	C-Min	C-Min	None	None		None	None	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effect Green (s)	17.2	74.6		10.7	68.1	68.1	9.0	22.5		11.3	11.3	
Actuated g/C Ratio	0.14	0.62		0.09	0.57	0.57	0.08	0.19		0.09	0.09	
v/c Ratio	0.25	0.72		0.48	0.60	0.06	0.35	0.26		0.54	0.47	
Control Delay	47.9	20.5		68.1	31.2	19.8	60.4	42.1		68.1	61.6	
Queue Delay	0.0	0.0		0.0	0.1	0.0	0.0	0.0		0.0	0.0	
Total Delay	47.9	20.5		68.1	31.3	19.8	60.4	42.1		68.1	61.6	
LOS	D	C		E	C	B	E	D		E	E	
Approach Delay		21.5			33.0			48.8			64.7	
Approach LOS		C			C			D			E	
Queue Length 50th (ft)	41	489		60	514	31	34	51		49	54	
Queue Length 95th (ft)	89	580		113	544	53	74	96		98	104	
Internal Link Dist (ft)		235			624			793			658	
Turn Bay Length (ft)	200			150		100	175			125		
Base Capacity (vph)	253	2182		165	2247	1005	133	350		131	166	
Starvation Cap Reductn	0	0		0	233	0	0	0		0	0	
Spillback Cap Reductn	0	0		0	0	0	0	0		0	0	
Storage Cap Reductn	0	0		0	0	0	0	0		0	0	
Reduced v/c Ratio	0.25	0.72		0.46	0.59	0.05	0.35	0.23		0.50	0.44	

Intersection Summary

Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green
 Natural Cycle: 90
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.72
 Intersection Signal Delay: 29.2
 Intersection LOS: C
 Intersection Capacity Utilization 67.8%
 ICU Level of Service C
 Analysis Period (min) 15

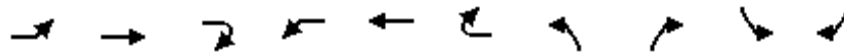
Splits and Phases: 11: Wayne Dr./30th St. & US 17 Bus. (Market St.)



Lanes, Volumes, Timings

U-4434 Independence Blvd.

14: WB Independence On Ramp/EB Independence On Ramp & EB Independence On Ramp/WB Independence On Ramp

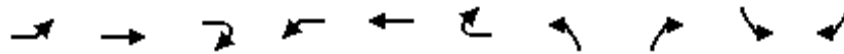


Lane Group	EBL	EBT	EBR2	WBL	WBT	WBR2	NBL	NBR2	SBL	SBR2
Lane Configurations										
Traffic Volume (vph)	125	707	358	509	915	527	370	439	444	161
Future Volume (vph)	125	707	358	509	915	527	370	439	444	161
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%					
Storage Length (ft)	125		625	350			450	675	825	
Storage Lanes	2		1	2			2	1	2	
Taper Length (ft)	100			100			100	100	100	
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.88	0.97	1.00
Ped Bike Factor										
Frt			0.850			0.850		0.850		0.850
Flt Protected	0.950			0.950			0.950		0.950	
Satd. Flow (prot)	3433	3539	1583	3433	3539	950	3433	2787	3433	1583
Flt Permitted	0.950			0.950			0.950		0.950	
Satd. Flow (perm)	3433	3539	1583	3433	3539	950	3433	2787	3433	1583
Right Turn on Red			No			No		Yes		Yes
Satd. Flow (RTOR)								265		175
Link Speed (mph)		40			40					
Link Distance (ft)		704			787					
Travel Time (s)		12.0			13.4					
Confl. Peds. (#/hr)										
Confl. Bikes (#/hr)										
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	100	0	0	0	0
Parking (#/hr)										
Mid-Block Traffic (%)		0%			0%					
Adj. Flow (vph)	139	786	398	566	1017	586	411	488	493	179
Shared Lane Traffic (%)										
Lane Group Flow (vph)	139	786	398	566	1017	586	411	488	493	179
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	R NA	Right	Left	Right
Median Width(ft)		36			24					
Link Offset(ft)		0			0					
Crosswalk Width(ft)		16			16					
Two way Left Turn Lane										
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.87	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		25	15		25	15	25	15	25
Turn Type	Prot	NA	custom	Prot	NA	custom	Prot	Prot	Prot	Prot
Protected Phases	5	2	3	1	6	7	3	1	7	5
Permitted Phases			2			6				
Detector Phase	5	2	3	1	6	7	3	1	7	5
Switch Phase										
Minimum Initial (s)	7.0	12.0	7.0	7.0	12.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	19.0	19.0	14.0	19.0	19.0	19.0	14.0	19.0	19.0	19.0
Total Split (s)	19.0	38.0	53.0	29.0	48.0	53.0	53.0	29.0	53.0	19.0
Total Split (%)	15.8%	31.7%	44.2%	24.2%	40.0%	44.2%	44.2%	24.2%	44.2%	15.8%

Lanes, Volumes, Timings

U-4434 Independence Blvd.

14: WB Independence On Ramp/EB Independence On Ramp & EB Independence On Ramp/WB Independence On Ramp



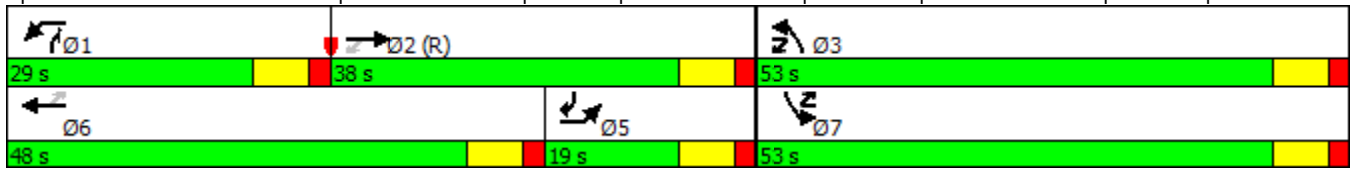
Lane Group	EBL	EBT	EBR2	WBL	WBT	WBR2	NBL	NBR2	SBL	SBR2
Maximum Green (s)	12.0	31.0	46.0	22.0	41.0	46.0	46.0	22.0	46.0	12.0
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lag	Lag		Lead	Lead			Lead		Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes			Yes		Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode	Min	C-Min	None	Min	Min	Min	None	Min	Min	Min
Walk Time (s)										
Flash Dont Walk (s)										
Pedestrian Calls (#/hr)										
Act Effect Green (s)	15.6	35.9	86.0	24.0	44.4	94.4	45.1	24.0	45.1	15.6
Actuated g/C Ratio	0.13	0.30	0.72	0.20	0.37	0.79	0.38	0.20	0.38	0.13
v/c Ratio	0.31	0.74	0.35	0.83	0.78	0.78	0.32	0.63	0.38	0.50
Control Delay	47.1	39.5	2.5	58.6	50.8	28.1	26.9	23.6	27.9	12.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	47.1	39.5	2.5	58.6	50.8	28.1	26.9	23.6	27.9	12.9
LOS	D	D	A	E	D	C	C	C	C	B
Approach Delay	29.1				46.7					
Approach LOS	C				D					
Queue Length 50th (ft)	38	174	30	235	424	353	110	88	136	3
Queue Length 95th (ft)	71	288	23	#304	494	586	149	153	180	71
Internal Link Dist (ft)	624				707					
Turn Bay Length (ft)	125	625		350			450	675	825	
Base Capacity (vph)	445	1059	1173	695	1308	747	1373	776	1373	357
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.31	0.74	0.34	0.81	0.78	0.78	0.30	0.63	0.36	0.50

Intersection Summary

Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 0 (0%), Referenced to phase 2:EBT, Start of Green
 Natural Cycle: 70
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.83
 Intersection Signal Delay: 35.3
 Intersection LOS: D
 Intersection Capacity Utilization Err%
 ICU Level of Service H
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

14: WB Independence On Ramp/EB Independence On Ramp & EB Independence Off Ramp/WB Independence Off Ramp

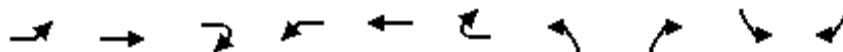
Splits and Phases: 14: WB Independence On Ramp/EB Independence On Ramp & EB Independence Off Ramp/WB Independence Off Ramp & US 17



Lanes, Volumes, Timings

U-4434 Independence Blvd.

14: WB Independence On Ramp/EB Independence On Ramp & EB Independence On Ramp/WB Independence On Ramp

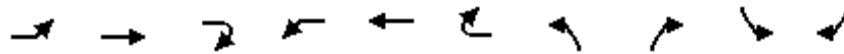


Lane Group	EBL	EBT	EBR2	WBL	WBT	WBR2	NBL	NBR2	SBL	SBR2
Lane Configurations										
Traffic Volume (vph)	161	915	370	406	707	442	358	570	525	125
Future Volume (vph)	161	915	370	406	707	442	358	570	525	125
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%					
Storage Length (ft)	125		625	350			450	675	825	
Storage Lanes	2		1	2			2	1	2	
Taper Length (ft)	100			100			100	100	100	
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.88	0.97	1.00
Ped Bike Factor										
Frt			0.850			0.850		0.850		0.850
Flt Protected	0.950			0.950			0.950		0.950	
Satd. Flow (prot)	3433	3539	1583	3433	3539	950	3433	2787	3433	1583
Flt Permitted	0.950			0.950			0.950		0.950	
Satd. Flow (perm)	3433	3539	1583	3433	3539	950	3433	2787	3433	1583
Right Turn on Red			No			No		Yes		Yes
Satd. Flow (RTOR)								164		164
Link Speed (mph)		40			40					
Link Distance (ft)		704			787					
Travel Time (s)		12.0			13.4					
Confl. Peds. (#/hr)										
Confl. Bikes (#/hr)										
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	100	0	0	0	0
Parking (#/hr)										
Mid-Block Traffic (%)		0%			0%					
Adj. Flow (vph)	179	1017	411	451	786	491	398	633	583	139
Shared Lane Traffic (%)										
Lane Group Flow (vph)	179	1017	411	451	786	491	398	633	583	139
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	R NA	Right	Left	Right
Median Width(ft)		36			24					
Link Offset(ft)		0			0					
Crosswalk Width(ft)		16			16					
Two way Left Turn Lane										
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.87	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		25	15		25	15	25	15	25
Turn Type	Prot	NA	custom	Prot	NA	custom	Prot	Prot	Prot	Prot
Protected Phases	5	2	3	1	6	7	3	1	7	5
Permitted Phases			2			6				
Detector Phase	5	2	3	1	6	7	3	1	7	5
Switch Phase										
Minimum Initial (s)	7.0	12.0	7.0	7.0	12.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	19.0	19.0	14.0	19.0	19.0	19.0	14.0	19.0	19.0	19.0
Total Split (s)	19.0	49.0	39.0	32.0	62.0	39.0	39.0	32.0	39.0	19.0
Total Split (%)	15.8%	40.8%	32.5%	26.7%	51.7%	32.5%	32.5%	26.7%	32.5%	15.8%

Lanes, Volumes, Timings

U-4434 Independence Blvd.

14: WB Independence On Ramp/EB Independence On Ramp & EB Independence On Ramp/WB Independence On Ramp

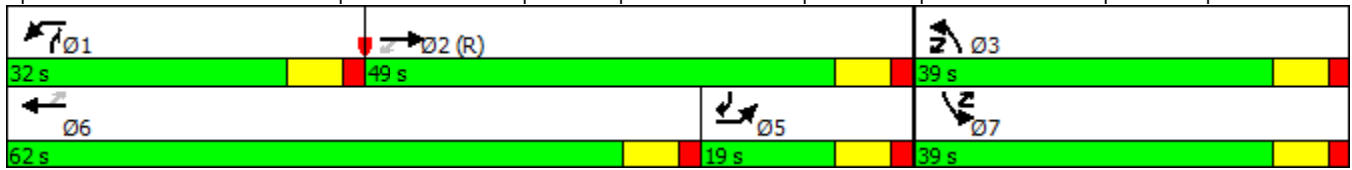


Lane Group	EBL	EBT	EBR2	WBL	WBT	WBR2	NBL	NBR2	SBL	SBR2	
Maximum Green (s)	12.0	42.0	32.0	25.0	55.0	32.0	32.0	25.0	32.0	12.0	
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	
Lead/Lag	Lag	Lag		Lead	Lead			Lead		Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes			Yes		Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Recall Mode	Min	C-Min	None	Min	Min	Min	None	Min	Min	Min	
Walk Time (s)											
Flash Dont Walk (s)											
Pedestrian Calls (#/hr)											
Act Effect Green (s)	31.0	43.9	84.0	26.0	38.9	79.0	35.1	26.0	35.1	31.0	
Actuated g/C Ratio	0.26	0.37	0.70	0.22	0.32	0.66	0.29	0.22	0.29	0.26	
v/c Ratio	0.20	0.79	0.37	0.61	0.69	0.79	0.40	0.87	0.58	0.26	
Control Delay	32.9	33.0	2.2	47.8	50.3	36.4	35.5	46.5	39.0	4.8	
Queue Delay	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	
Total Delay	32.9	33.5	2.2	47.8	50.3	36.4	35.5	46.6	39.0	4.8	
LOS	C	C	A	D	D	D	D	D	D	A	
Approach Delay	25.4				45.7						
Approach LOS	C				D						
Queue Length 50th (ft)	36	208	14	155	343	319	127	203	199	0	
Queue Length 95th (ft)	m64	337	18	210	411	518	175	#303	261	36	
Internal Link Dist (ft)	624				707						
Turn Bay Length (ft)	125		625		350		450		675		825
Base Capacity (vph)	887	1347	1117	772	1681	623	1025	754	1025	530	
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	77	0	0	0	0	0	3	0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.20	0.80	0.37	0.58	0.47	0.79	0.39	0.84	0.57	0.26	

Intersection Summary

Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 0 (0%), Referenced to phase 2:EBT, Start of Green
 Natural Cycle: 65
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.87
 Intersection Signal Delay: 36.7
 Intersection LOS: D
 Intersection Capacity Utilization Err%
 ICU Level of Service H
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 14: WB Independence On Ramp/EB Independence On Ramp & EB Independence Off Ramp/WB Independence Off Ramp & US 17



Lanes, Volumes, Timings
 17: Darlington Ave./Henry St. & US 17 Bus. (Market St.)

U-4434 Independence Blvd.
 2040 Build 7 SPU1



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗	↘	↖	↗		↖	↗		↖	↗	
Traffic Volume (vph)	47	1165	378	90	1407	36	473	12	96	47	15	71
Future Volume (vph)	47	1165	378	90	1407	36	473	12	96	47	15	71
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	125		275	200		0	875		0	100		0
Storage Lanes	1		1	1		0	2		0	1		0
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.91	0.91	0.97	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt			0.850		0.996			0.866			0.877	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3539	1583	1770	5065	0	3433	1613	0	1770	1634	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1770	3539	1583	1770	5065	0	3433	1613	0	1770	1634	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		40			40			25			25	
Link Distance (ft)		787			1024			915			767	
Travel Time (s)		13.4			17.5			25.0			20.9	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	52	1294	420	100	1563	40	526	13	107	52	17	79
Shared Lane Traffic (%)												
Lane Group Flow (vph)	52	1294	420	100	1603	0	526	120	0	52	96	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Right	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Prot	NA	pm+ov	Prot	NA		Split	NA		Split	NA	
Protected Phases	5	2	8	1	6		8	8		4	4	
Permitted Phases			2									
Detector Phase	5	2	8	1	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	7.0	12.0	7.0	7.0	12.0		7.0	7.0		7.0	7.0	
Minimum Split (s)	14.0	19.0	14.0	14.0	19.0		14.0	14.0		14.0	14.0	
Total Split (s)	14.0	58.0	29.0	16.0	60.0		29.0	29.0		17.0	17.0	
Total Split (%)	11.7%	48.3%	24.2%	13.3%	50.0%		24.2%	24.2%		14.2%	14.2%	

Lanes, Volumes, Timings
 17: Darlington Ave./Henry St. & US 17 Bus. (Market St.)

U-4434 Independence Blvd.
 2040 Build 7 SPU1

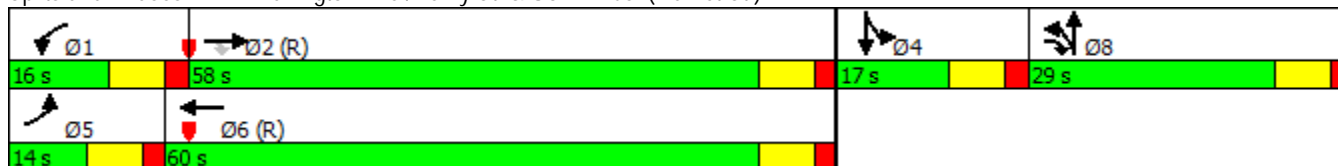


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Maximum Green (s)	7.0	51.0	22.0	9.0	53.0		22.0	22.0		10.0	10.0	
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0		-2.0	-2.0		-2.0	-2.0	
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	
Lead/Lag	Lead	Lag		Lead	Lag							
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Recall Mode	None	C-Min	None	None	C-Min		None	None		None	None	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effect Green (s)	9.0	53.8	77.7	10.7	58.4		23.9	23.9		11.6	11.6	
Actuated g/C Ratio	0.08	0.45	0.65	0.09	0.49		0.20	0.20		0.10	0.10	
v/c Ratio	0.39	0.81	0.41	0.63	0.65		0.77	0.38		0.31	0.61	
Control Delay	67.3	29.2	6.7	71.1	25.7		54.0	45.4		55.3	69.1	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	67.3	29.2	6.7	71.1	25.7		54.0	45.4		55.3	69.1	
LOS	E	C	A	E	C		D	D		E	E	
Approach Delay		25.0			28.4			52.4			64.2	
Approach LOS		C			C			D			E	
Queue Length 50th (ft)	38	352	80	76	351		200	81		38	72	
Queue Length 95th (ft)	m63	484	107	#145	407		263	140		79	#133	
Internal Link Dist (ft)		707			944			835			687	
Turn Bay Length (ft)	125		275	200			875			100		
Base Capacity (vph)	132	1600	1031	162	2481		696	327		178	164	
Starvation Cap Reductn	0	0	0	0	0		0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0		0	0		0	0	
Storage Cap Reductn	0	0	0	0	0		0	0		0	0	
Reduced v/c Ratio	0.39	0.81	0.41	0.62	0.65		0.76	0.37		0.29	0.59	

Intersection Summary

Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green
 Natural Cycle: 80
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.81
 Intersection Signal Delay: 31.8 Intersection LOS: C
 Intersection Capacity Utilization 70.7% ICU Level of Service C
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 17: Darlington Ave./Henry St. & US 17 Bus. (Market St.)



Lanes, Volumes, Timings
 17: Darlington Ave./Henry St. & US 17 Bus. (Market St.)

U-4434 Independence Blvd.
 2040 Build 7 SPU1



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↶	↶↶	↶	↶	↶↶↶		↶↶	↶		↶	↶	
Traffic Volume (vph)	73	1405	532	96	1164	45	343	15	90	35	12	48
Future Volume (vph)	73	1405	532	96	1164	45	343	15	90	35	12	48
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	125		275	200		0	875		0	100		0
Storage Lanes	1		1	1		0	2		0	1		0
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.91	0.91	0.97	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt			0.850		0.994			0.872				0.880
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3539	1583	1770	5055	0	3433	1624	0	1770	1639	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1770	3539	1583	1770	5055	0	3433	1624	0	1770	1639	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		40			40			25				25
Link Distance (ft)		787			1024			915				767
Travel Time (s)		13.4			17.5			25.0				20.9
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%				0%
Adj. Flow (vph)	81	1561	591	107	1293	50	381	17	100	39	13	53
Shared Lane Traffic (%)												
Lane Group Flow (vph)	81	1561	591	107	1343	0	381	117	0	39	66	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Right	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			24				24
Link Offset(ft)		0			0			0				0
Crosswalk Width(ft)		16			16			16				16
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Prot	NA	pm+ov	Prot	NA		Split	NA		Split	NA	
Protected Phases	5	2	8	1	6		8	8		4	4	
Permitted Phases			2									
Detector Phase	5	2	8	1	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	7.0	12.0	7.0	7.0	12.0		7.0	7.0		7.0	7.0	
Minimum Split (s)	14.0	19.0	14.0	14.0	19.0		14.0	14.0		14.0	14.0	
Total Split (s)	17.0	67.0	23.0	16.0	66.0		23.0	23.0		14.0	14.0	
Total Split (%)	14.2%	55.8%	19.2%	13.3%	55.0%		19.2%	19.2%		11.7%	11.7%	

Lanes, Volumes, Timings
 17: Darlington Ave./Henry St. & US 17 Bus. (Market St.)

U-4434 Independence Blvd.
 2040 Build 7 SPU1





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Maximum Green (s)	10.0	60.0	16.0	9.0	59.0		16.0	16.0		7.0	7.0	
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0		-2.0	-2.0		-2.0	-2.0	
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	
Lead/Lag	Lead	Lag		Lead	Lag							
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Recall Mode	None	C-Min	None	None	C-Min		None	None		None	None	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effect Green (s)	11.2	64.9	83.8	10.8	67.2		17.9	17.9		9.2	9.2	
Actuated g/C Ratio	0.09	0.54	0.70	0.09	0.56		0.15	0.15		0.08	0.08	
v/c Ratio	0.49	0.82	0.53	0.67	0.47		0.74	0.48		0.29	0.53	
Control Delay	62.8	24.7	6.4	73.9	18.2		58.6	54.2		58.4	69.3	
Queue Delay	0.0	0.7	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	62.8	25.4	6.4	73.9	18.2		58.6	54.2		58.4	69.3	
LOS	E	C	A	E	B		E	D		E	E	
Approach Delay		21.8			22.3			57.6			65.2	
Approach LOS		C			C			E			E	
Queue Length 50th (ft)	58	570	124	82	246		147	84		29	50	
Queue Length 95th (ft)	m85	650	m155	#159	289		201	146		66	#100	
Internal Link Dist (ft)		707			944			835			687	
Turn Bay Length (ft)	125		275	200			875			100		
Base Capacity (vph)	177	1918	1106	162	2833		514	243		135	125	
Starvation Cap Reductn	0	122	0	0	0		0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0		0	0		0	0	
Storage Cap Reductn	0	0	0	0	0		0	0		0	0	
Reduced v/c Ratio	0.46	0.87	0.53	0.66	0.47		0.74	0.48		0.29	0.53	

Intersection Summary

Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green
 Natural Cycle: 90
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.82
 Intersection Signal Delay: 27.2 Intersection LOS: C
 Intersection Capacity Utilization 73.6% ICU Level of Service D
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 17: Darlington Ave./Henry St. & US 17 Bus. (Market St.)

 Ø1 16 s	 Ø2 (R) 67 s	 Ø4 14 s	 Ø8 23 s
 Ø5 17 s	 Ø6 (R) 66 s		

Summary of All Intervals

Run Number	1	2	3	4434 Build 7 SPUI AM Peak			Avg
Start Time	6:50	6:50	6:50	6:50	6:50	6:50	6:50
End Time	8:00	8:00	8:00	8:00	8:00	8:00	8:00
Total Time (min)	70	70	70	70	70	70	70
Time Recorded (min)	60	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1	1
Vehs Entered	4754	4670	4659	4720	4592	4575	4660
Vehs Exited	4694	4694	4668	4664	4589	4557	4645
Starting Vehs	185	244	262	234	241	249	236
Ending Vehs	245	220	253	290	244	267	251
Travel Distance (mi)	2162	2152	2145	2144	2109	2101	2136
Travel Time (hr)	314.4	506.1	426.9	444.8	477.4	503.7	445.5
Total Delay (hr)	246.0	438.3	359.5	377.2	411.0	437.7	378.3
Total Stops	7595	7645	7845	7934	7662	7623	7719
Fuel Used (gal)	141.7	185.9	166.5	170.8	176.6	183.6	170.8

Interval #0 Information Seeding

Start Time	6:50
End Time	7:00
Total Time (min)	10
Volumes adjusted by Growth Factors.	
No data recorded this interval.	

Interval #1 Information Recording

Start Time	7:00
End Time	8:00
Total Time (min)	60
Volumes adjusted by Growth Factors.	

Run Number	1	2	3	4434 Build 7 SPUI AM Peak			Avg
Vehs Entered	4754	4670	4659	4720	4592	4575	4660
Vehs Exited	4694	4694	4668	4664	4589	4557	4645
Starting Vehs	185	244	262	234	241	249	236
Ending Vehs	245	220	253	290	244	267	251
Travel Distance (mi)	2162	2152	2145	2144	2109	2101	2136
Travel Time (hr)	314.4	506.1	426.9	444.8	477.4	503.7	445.5
Total Delay (hr)	246.0	438.3	359.5	377.2	411.0	437.7	378.3
Total Stops	7595	7645	7845	7934	7662	7623	7719
Fuel Used (gal)	141.7	185.9	166.5	170.8	176.6	183.6	170.8

Intersection: 11: Wayne Dr./30th St. & US 17 Bus. (Market St.)

Movement	EB	EB	EB	WB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	TR	L	T	T	R	L	TR	L	TR
Maximum Queue (ft)	120	254	321	94	389	385	73	159	142	125	122
Average Queue (ft)	28	49	289	37	223	245	24	58	60	39	42
95th Queue (ft)	77	172	306	78	352	370	61	120	116	93	98
Link Distance (ft)		270	270	573	573	573	573	790	790	670	670
Upstream Blk Time (%)	0	1	61								
Queuing Penalty (veh)	0	0	0								
Storage Bay Dist (ft)	200			150			100	175		125	
Storage Blk Time (%)		0									
Queuing Penalty (veh)		0									

Intersection: 14: WB Independence On Ramp/EB Independence On Ramp & EB Independence Off Ramp

Movement	EB	EB	EB	EB	EB	WB	WB	WB	WB	WB	NB	NB
Directions Served	L	L	T	T	>	L	L	T	T	>	L	L
Maximum Queue (ft)	101	92	572	617	608	248	339	682	703	687	333	290
Average Queue (ft)	48	28	485	566	135	158	164	546	611	135	180	59
95th Queue (ft)	92	73	696	668	539	231	266	799	773	573	288	175
Link Distance (ft)	573	573	573	573	573	660	660	660	660	660	856	856
Upstream Blk Time (%)			1	18	3			1	19	4		
Queuing Penalty (veh)			2	42	7			6	73	14		
Storage Bay Dist (ft)	125	125			625	350	350				450	450
Storage Blk Time (%)												
Queuing Penalty (veh)												

Intersection: 14: WB Independence On Ramp/EB Independence On Ramp & EB Independence Off Ramp

Movement	NB	NB	SB	SB	SB
Directions Served	>	>	L	L	>
Maximum Queue (ft)	397	352	329	398	334
Average Queue (ft)	196	76	91	220	149
95th Queue (ft)	385	282	250	345	333
Link Distance (ft)	856	856	862	862	862
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)		675	825	825	
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 17: Darlington Ave./Henry St. & US 17 Bus. (Market St.)

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB
Directions Served	L	T	T	R	L	T	T	TR	L	L	TR	L
Maximum Queue (ft)	89	329	337	167	147	379	400	326	865	874	870	96
Average Queue (ft)	28	233	245	88	64	236	251	201	579	832	712	32
95th Queue (ft)	70	315	325	146	128	331	361	306	1160	962	1212	73
Link Distance (ft)	660	660	660	660	975	975	975	975	845	845	845	687
Upstream Blk Time (%)									19	82	55	
Queuing Penalty (veh)									0	0	0	
Storage Bay Dist (ft)	125			275	200				875	875		100
Storage Blk Time (%)												
Queuing Penalty (veh)												

Intersection: 17: Darlington Ave./Henry St. & US 17 Bus. (Market St.)

Movement	SB
Directions Served	TR
Maximum Queue (ft)	166
Average Queue (ft)	78
95th Queue (ft)	151
Link Distance (ft)	687
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Network Summary

Network wide Queuing Penalty: 144

Summary of All Intervals

Run Number	1	2	3	4434 Build 7 SPUI PM Peak			Avg
Start Time	4:50	4:50	4:50	4:50	4:50	4:50	4:50
End Time	6:00	6:00	6:00	6:00	6:00	6:00	6:00
Total Time (min)	70	70	70	70	70	70	70
Time Recorded (min)	60	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1	1
Vehs Entered	4727	4848	4751	4767	4688	4737	4753
Vehs Exited	4705	4840	4735	4759	4645	4743	4738
Starting Vehs	214	181	221	225	194	194	206
Ending Vehs	236	189	237	233	237	188	218
Travel Distance (mi)	2172	2231	2175	2187	2137	2186	2181
Travel Time (hr)	445.4	398.0	471.3	451.8	409.8	472.4	441.4
Total Delay (hr)	376.1	327.2	402.5	382.2	342.0	403.1	372.2
Total Stops	7498	7643	7489	7228	7343	7453	7441
Fuel Used (gal)	171.7	163.2	178.0	174.1	162.7	177.9	171.3

Interval #0 Information Seeding

Start Time	4:50
End Time	5:00
Total Time (min)	10
Volumes adjusted by Growth Factors.	
No data recorded this interval.	

Interval #1 Information Recording

Start Time	5:00
End Time	6:00
Total Time (min)	60
Volumes adjusted by Growth Factors.	

Run Number	1	2	3	4434 Build 7 SPUI PM Peak			Avg
Vehs Entered	4727	4848	4751	4767	4688	4737	4753
Vehs Exited	4705	4840	4735	4759	4645	4743	4738
Starting Vehs	214	181	221	225	194	194	206
Ending Vehs	236	189	237	233	237	188	218
Travel Distance (mi)	2172	2231	2175	2187	2137	2186	2181
Travel Time (hr)	445.4	398.0	471.3	451.8	409.8	472.4	441.4
Total Delay (hr)	376.1	327.2	402.5	382.2	342.0	403.1	372.2
Total Stops	7498	7643	7489	7228	7343	7453	7441
Fuel Used (gal)	171.7	163.2	178.0	174.1	162.7	177.9	171.3

Intersection: 11: Wayne Dr./30th St. & US 17 Bus. (Market St.)

Movement	EB	EB	EB	WB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	TR	L	T	T	R	L	TR	L	TR
Maximum Queue (ft)	176	281	316	127	352	353	69	76	130	114	144
Average Queue (ft)	34	58	288	48	197	214	17	26	49	41	47
95th Queue (ft)	98	195	302	101	317	329	50	61	104	91	106
Link Distance (ft)		270	270	573	573	573	573	790	790	670	670
Upstream Blk Time (%)	0	1	49								
Queuing Penalty (veh)	0	0	0								
Storage Bay Dist (ft)	200			150			100	175		125	
Storage Blk Time (%)		0									
Queuing Penalty (veh)		0									

Intersection: 14: WB Independence On Ramp/EB Independence On Ramp & EB Independence Off Ramp

Movement	EB	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB
Directions Served	L	L	T	T	>	L	L	T	T	L	L	>
Maximum Queue (ft)	109	96	575	610	189	210	212	434	506	444	434	664
Average Queue (ft)	49	31	354	473	6	128	126	177	323	213	78	426
95th Queue (ft)	92	77	609	639	104	191	192	402	490	380	305	715
Link Distance (ft)	573	573	573	573	573	660	660	660	660	856	856	856
Upstream Blk Time (%)			0	3	0					0	0	1
Queuing Penalty (veh)			1	9	0					0	0	0
Storage Bay Dist (ft)	125	125			625	350	350			450	450	
Storage Blk Time (%)												
Queuing Penalty (veh)												

Intersection: 14: WB Independence On Ramp/EB Independence On Ramp & EB Independence Off Ramp

Movement	NB	SB	SB	SB
Directions Served	>	L	L	>
Maximum Queue (ft)	623	772	810	552
Average Queue (ft)	349	574	633	266
95th Queue (ft)	695	975	971	900
Link Distance (ft)	856	862	862	862
Upstream Blk Time (%)	1	17	26	21
Queuing Penalty (veh)	0	0	0	0
Storage Bay Dist (ft)	675	825	825	
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 17: Darlington Ave./Henry St. & US 17 Bus. (Market St.)

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB
Directions Served	L	T	T	R	L	T	T	TR	L	L	TR	L
Maximum Queue (ft)	113	379	387	268	171	254	289	271	251	442	151	76
Average Queue (ft)	38	253	265	138	67	166	182	158	61	264	61	27
95th Queue (ft)	91	344	347	218	129	247	257	249	150	445	123	65
Link Distance (ft)	660	660	660	660	975	975	975	975	845	845	845	687
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	125				275	200				875	875	100
Storage Blk Time (%)												
Queuing Penalty (veh)												

Intersection: 17: Darlington Ave./Henry St. & US 17 Bus. (Market St.)

Movement	SB
Directions Served	TR
Maximum Queue (ft)	128
Average Queue (ft)	51
95th Queue (ft)	108
Link Distance (ft)	687
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Network Summary

Network wide Queuing Penalty: 10

2040 Build – Alternative 7 TUDI

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Lanes, Volumes, Timings
 11: Wayne Dr./30th St. & US 17 Bus. (Market St.)

U-4434 Independence Blvd.
 2040 Build 7 TUDI



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	45	1074	40	63	1323	60	90	19	69	47	9	54
Future Volume (vph)	45	1074	40	63	1323	60	90	19	69	47	9	54
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	150		0	125		100	200		0	125		0
Storage Lanes	1		0	1		1	1		0	1		0
Taper Length (ft)	100			100			100			100		
Satd. Flow (prot)	1770	3522	0	1770	3539	1583	1770	1643	0	1770	1622	0
Flt Permitted	0.950			0.950			0.950			0.694		
Satd. Flow (perm)	1770	3522	0	1770	3539	1583	1770	1643	0	1293	1622	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		40			40			25			25	
Link Distance (ft)		315			511			873			738	
Travel Time (s)		5.4			8.7			23.8			20.1	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	50	1237	0	70	1470	67	100	98	0	52	70	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			6			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA		Perm	NA	
Protected Phases	5	2		1	6		3	8				4
Permitted Phases						6				4		
Detector Phase	5	2		1	6	6	3	8		4		4
Switch Phase												
Minimum Initial (s)	7.0	12.0		7.0	12.0	12.0	7.0	7.0		7.0		7.0
Minimum Split (s)	14.0	19.0		14.0	19.0	19.0	14.0	14.0		14.0		14.0
Total Split (s)	14.0	71.0		15.0	72.0	72.0	18.0	34.0		16.0		16.0
Total Split (%)	11.7%	59.2%		12.5%	60.0%	60.0%	15.0%	28.3%		13.3%		13.3%
Maximum Green (s)	7.0	64.0		8.0	65.0	65.0	11.0	27.0		9.0		9.0
Yellow Time (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0		5.0		5.0
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		2.0		2.0
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-2.0	-2.0	-2.0	-2.0		-2.0		-2.0
Total Lost Time (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0		5.0		5.0

Lanes, Volumes, Timings
 11: Wayne Dr./30th St. & US 17 Bus. (Market St.)

U-4434 Independence Blvd.
 2040 Build 7 TUDI

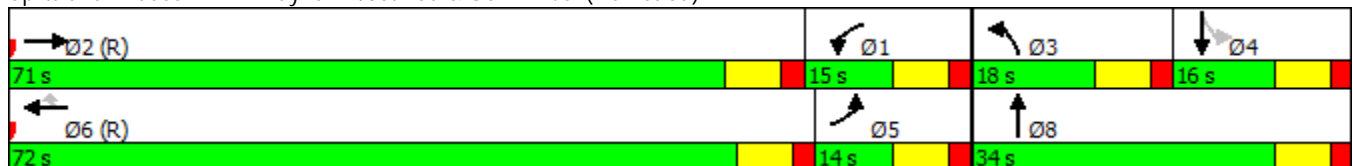


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lead/Lag	Lag	Lead		Lag	Lead	Lead	Lead			Lag	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes			Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Minimum Gap (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Time Before Reduce (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Time To Reduce (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Recall Mode	None	C-Min		None	C-Min	C-Min	None	None		None	None	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effect Green (s)	9.5	68.2		14.2	72.9	72.9	12.3	25.4		10.9	10.9	
Actuated g/C Ratio	0.08	0.57		0.12	0.61	0.61	0.10	0.21		0.09	0.09	
v/c Ratio	0.36	0.62		0.33	0.68	0.07	0.55	0.28		0.45	0.48	
Control Delay	60.0	21.7		46.7	9.4	6.4	63.0	40.0		64.2	63.2	
Queue Delay	0.0	0.0		0.0	0.1	0.0	0.0	0.0		0.0	0.0	
Total Delay	60.0	21.7		46.7	9.5	6.4	63.0	40.0		64.2	63.2	
LOS	E	C		D	A	A	E	D		E	E	
Approach Delay		23.2			11.0			51.6			63.6	
Approach LOS		C			B			D			E	
Queue Length 50th (ft)	37	409		53	239	12	74	60		38	52	
Queue Length 95th (ft)	80	425		m102	158	m21	133	110		82	102	
Internal Link Dist (ft)		235			431			793			658	
Turn Bay Length (ft)	150			125		100	200			125		
Base Capacity (vph)	140	2140		212	2177	974	194	404		121	152	
Starvation Cap Reductn	0	0		0	74	0	0	0		0	0	
Spillback Cap Reductn	0	0		0	0	0	0	0		0	0	
Storage Cap Reductn	0	0		0	0	0	0	0		0	0	
Reduced v/c Ratio	0.36	0.58		0.33	0.70	0.07	0.52	0.24		0.43	0.46	

Intersection Summary

Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green
 Natural Cycle: 80
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.68
 Intersection Signal Delay: 20.4 Intersection LOS: C
 Intersection Capacity Utilization 66.6% ICU Level of Service C
 Analysis Period (min) 15
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 11: Wayne Dr./30th St. & US 17 Bus. (Market St.)



Lanes, Volumes, Timings
 11: Wayne Dr./30th St. & US 17 Bus. (Market St.)

U-4434 Independence Blvd.
 2040 Build 7 TUDI



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	56	1325	91	68	1076	46	41	9	62	59	19	47
Future Volume (vph)	56	1325	91	68	1076	46	41	9	62	59	19	47
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	150		0	125		100	200		0	125		0
Storage Lanes	1		0	1		1	1		0	1		0
Taper Length (ft)	100			100			100			100		
Satd. Flow (prot)	1770	3504	0	1770	3539	1583	1770	1619	0	1770	1663	0
Flt Permitted	0.950			0.950			0.950			0.706		
Satd. Flow (perm)	1770	3504	0	1770	3539	1583	1770	1619	0	1315	1663	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		40			40			25			25	
Link Distance (ft)		315			511			873			738	
Travel Time (s)		5.4			8.7			23.8			20.1	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	62	1573	0	76	1196	51	46	79	0	66	73	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			6			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA		Perm	NA	
Protected Phases	5	2		1	6		3	8				4
Permitted Phases						6				4		
Detector Phase	5	2		1	6	6	3	8		4		4
Switch Phase												
Minimum Initial (s)	7.0	12.0		7.0	12.0	12.0	7.0	7.0		7.0		7.0
Minimum Split (s)	14.0	19.0		14.0	19.0	19.0	14.0	14.0		14.0		14.0
Total Split (s)	14.0	73.0		16.0	75.0	75.0	14.0	31.0		17.0		17.0
Total Split (%)	11.7%	60.8%		13.3%	62.5%	62.5%	11.7%	25.8%		14.2%		14.2%
Maximum Green (s)	7.0	66.0		9.0	68.0	68.0	7.0	24.0		10.0		10.0
Yellow Time (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0		5.0		5.0
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		2.0		2.0
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-2.0	-2.0	-2.0	-2.0		-2.0		-2.0
Total Lost Time (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0		5.0		5.0

Lanes, Volumes, Timings
 11: Wayne Dr./30th St. & US 17 Bus. (Market St.)

U-4434 Independence Blvd.
 2040 Build 7 TUDI



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lead/Lag	Lag	Lead		Lag	Lead	Lead	Lead			Lag	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes			Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Minimum Gap (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Time Before Reduce (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Time To Reduce (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Recall Mode	None	C-Min		None	C-Min	C-Min	None	None		None	None	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effect Green (s)	17.2	74.6		10.7	68.1	68.1	9.0	22.5		11.3	11.3	
Actuated g/C Ratio	0.14	0.62		0.09	0.57	0.57	0.08	0.19		0.09	0.09	
v/c Ratio	0.25	0.72		0.48	0.60	0.06	0.35	0.26		0.54	0.47	
Control Delay	47.9	20.5		57.4	13.1	10.8	60.4	42.1		68.1	61.6	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	47.9	20.5		57.4	13.1	10.8	60.4	42.1		68.1	61.6	
LOS	D	C		E	B	B	E	D		E	E	
Approach Delay		21.5			15.6			48.8			64.7	
Approach LOS		C			B			D			E	
Queue Length 50th (ft)	41	489		55	212	12	34	51		49	54	
Queue Length 95th (ft)	89	580		106	164	23	74	96		98	104	
Internal Link Dist (ft)		235			431			793			658	
Turn Bay Length (ft)	150			125		100	200			125		
Base Capacity (vph)	253	2182		165	2247	1005	133	350		131	166	
Starvation Cap Reductn	0	0		0	80	0	0	0		0	0	
Spillback Cap Reductn	0	0		0	0	0	0	0		0	0	
Storage Cap Reductn	0	0		0	0	0	0	0		0	0	
Reduced v/c Ratio	0.25	0.72		0.46	0.55	0.05	0.35	0.23		0.50	0.44	

Intersection Summary

Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green
 Natural Cycle: 90
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.72
 Intersection Signal Delay: 22.0
 Intersection LOS: C
 Intersection Capacity Utilization 67.8%
 ICU Level of Service C
 Analysis Period (min) 15

Splits and Phases: 11: Wayne Dr./30th St. & US 17 Bus. (Market St.)



Lanes, Volumes, Timings
 17: Darlington Ave./Henry St. & US 17 Bus. (Market St.)

U-4434 Independence Blvd.
 2040 Build 7 TUDI



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	47	1165	378	90	1407	36	473	12	96	47	15	71
Future Volume (vph)	47	1165	378	90	1407	36	473	12	96	47	15	71
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	100		200	900		0	850		0	100		0
Storage Lanes	1		1	1		0	2		0	1		0
Taper Length (ft)	100			100			100			100		
Satd. Flow (prot)	1770	3539	1583	1770	5065	0	3433	1613	0	1770	1634	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1770	3539	1583	1770	5065	0	3433	1613	0	1770	1634	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		40			40			25			25	
Link Distance (ft)		590			1024			915			767	
Travel Time (s)		10.1			17.5			25.0			20.9	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	52	1294	420	100	1603	0	526	120	0	52	96	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			24			24	
Link Offset(ft)		12			-6			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Prot	NA	pm+ov	Prot	NA		Split	NA		Split	NA	
Protected Phases	5	2	8	1	6		8	8		4	4	
Permitted Phases			2									
Detector Phase	5	2	8	1	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	7.0	12.0	7.0	7.0	12.0		7.0	7.0		7.0	7.0	
Minimum Split (s)	14.0	19.0	14.0	14.0	19.0		14.0	14.0		14.0	14.0	
Total Split (s)	14.0	58.0	29.0	16.0	60.0		29.0	29.0		17.0	17.0	
Total Split (%)	11.7%	48.3%	24.2%	13.3%	50.0%		24.2%	24.2%		14.2%	14.2%	
Maximum Green (s)	7.0	51.0	22.0	9.0	53.0		22.0	22.0		10.0	10.0	
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0		-2.0	-2.0		-2.0	-2.0	
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	

Lanes, Volumes, Timings
 17: Darlington Ave./Henry St. & US 17 Bus. (Market St.)

U-4434 Independence Blvd.
 2040 Build 7 TUDI



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗	↘	↖	↗		↖	↗		↖	↗	
Traffic Volume (vph)	73	1405	532	96	1164	45	343	15	90	35	12	48
Future Volume (vph)	73	1405	532	96	1164	45	343	15	90	35	12	48
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	100		200	900		0	850		0	100		0
Storage Lanes	1		1	1		0	2		0	1		0
Taper Length (ft)	100			100			100			100		
Satd. Flow (prot)	1770	3539	1583	1770	5055	0	3433	1624	0	1770	1639	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1770	3539	1583	1770	5055	0	3433	1624	0	1770	1639	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		40			40			25			25	
Link Distance (ft)		590			1024			915			767	
Travel Time (s)		10.1			17.5			25.0			20.9	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	81	1561	591	107	1343	0	381	117	0	39	66	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			24			24	
Link Offset(ft)		12			-6			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Prot	NA	pm+ov	Prot	NA		Split	NA		Split	NA	
Protected Phases	5	2	8	1	6		8	8		4	4	
Permitted Phases			2									
Detector Phase	5	2	8	1	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	7.0	12.0	7.0	7.0	12.0		7.0	7.0		7.0	7.0	
Minimum Split (s)	14.0	19.0	14.0	14.0	19.0		14.0	14.0		14.0	14.0	
Total Split (s)	17.0	67.0	23.0	16.0	66.0		23.0	23.0		14.0	14.0	
Total Split (%)	14.2%	55.8%	19.2%	13.3%	55.0%		19.2%	19.2%		11.7%	11.7%	
Maximum Green (s)	10.0	60.0	16.0	9.0	59.0		16.0	16.0		7.0	7.0	
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0		-2.0	-2.0		-2.0	-2.0	
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	

Lanes, Volumes, Timings
 17: Darlington Ave./Henry St. & US 17 Bus. (Market St.)

U-4434 Independence Blvd.
 2040 Build 7 TUDI



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lead/Lag	Lead	Lag		Lead	Lag							
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Recall Mode	None	C-Min	None	None	C-Min		None	None		None	None	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effect Green (s)	11.2	64.9	83.8	10.8	67.2		17.9	17.9		9.2	9.2	
Actuated g/C Ratio	0.09	0.54	0.70	0.09	0.56		0.15	0.15		0.08	0.08	
v/c Ratio	0.49	0.82	0.53	0.67	0.47		0.74	0.48		0.29	0.53	
Control Delay	66.1	26.0	5.6	73.9	18.2		58.6	54.2		58.4	69.3	
Queue Delay	0.0	1.8	0.2	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	66.1	27.8	5.8	73.9	18.2		58.6	54.2		58.4	69.3	
LOS	E	C	A	E	B		E	D		E	E	
Approach Delay		23.4			22.3			57.6			65.2	
Approach LOS		C			C			E			E	
Queue Length 50th (ft)	58	562	121	82	246		147	84		29	50	
Queue Length 95th (ft)	m92	643	84	#159	289		201	146		66	#100	
Internal Link Dist (ft)		510			944			835			687	
Turn Bay Length (ft)	100		200	900			850			100		
Base Capacity (vph)	177	1918	1106	162	2833		514	243		135	125	
Starvation Cap Reductn	0	207	91	0	0		0	0		0	0	
Spillback Cap Reductn	0	0	0	0	3		0	0		0	0	
Storage Cap Reductn	0	0	0	0	0		0	0		0	0	
Reduced v/c Ratio	0.46	0.91	0.58	0.66	0.47		0.74	0.48		0.29	0.53	

Intersection Summary

Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green
 Natural Cycle: 90
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.82
 Intersection Signal Delay: 28.0 Intersection LOS: C
 Intersection Capacity Utilization 73.6% ICU Level of Service D
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 17: Darlington Ave./Henry St. & US 17 Bus. (Market St.)



Lanes, Volumes, Timings
 141: SB Independence Blvd. & US 17 Bus. (Market St.)

U-4434 Independence Blvd.
 2040 Build 7 TUDI



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑	↗	↘↘	↑↑					↘↘		↗↗
Traffic Volume (vph)	0	832	358	509	1285	0	0	0	0	444	0	161
Future Volume (vph)	0	832	358	509	1285	0	0	0	0	444	0	161
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		300	0		0	0		0	950		925
Storage Lanes	0		1	0		0	0		0	2		1
Taper Length (ft)	100			100			100			100		
Satd. Flow (prot)	0	6408	1583	3433	3539	0	0	0	0	3433	0	2787
Flt Permitted				0.950						0.950		
Satd. Flow (perm)	0	6408	1583	3433	3539	0	0	0	0	3433	0	2787
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		40			40			30			45	
Link Distance (ft)		511			390			881			961	
Travel Time (s)		8.7			6.6			20.0			14.6	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	2%	2%	2%	2%	0%	0%	0%	0%	2%	0%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	924	398	566	1428	0	0	0	0	493	0	179
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	R NA	Left	Right
Median Width(ft)		24			24			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type		NA	Perm	Prot	NA					Prot		Prot
Protected Phases		2		1	6					4		4
Permitted Phases			2									
Detector Phase		2	2	1	6					4		4
Switch Phase												
Minimum Initial (s)		12.0	12.0	7.0	12.0					7.0		7.0
Minimum Split (s)		19.0	19.0	14.0	19.0					14.0		14.0
Total Split (s)		54.0	54.0	35.0	89.0					31.0		31.0
Total Split (%)		45.0%	45.0%	29.2%	74.2%					25.8%		25.8%
Maximum Green (s)		47.0	47.0	28.0	82.0					24.0		24.0
Yellow Time (s)		5.0	5.0	5.0	5.0					5.0		5.0
All-Red Time (s)		2.0	2.0	2.0	2.0					2.0		2.0
Lost Time Adjust (s)		-2.0	-2.0	-2.0	-2.0					-2.0		-2.0
Total Lost Time (s)		5.0	5.0	5.0	5.0					5.0		5.0

Lanes, Volumes, Timings
 141: SB Independence Blvd. & US 17 Bus. (Market St.)

U-4434 Independence Blvd.
 2040 Build 7 TUDI

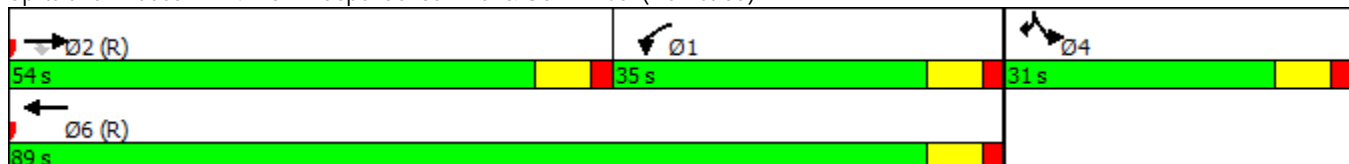


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lead/Lag		Lead	Lead	Lag								
Lead-Lag Optimize?		Yes	Yes	Yes								
Vehicle Extension (s)		3.0	3.0	3.0	3.0					3.0		3.0
Minimum Gap (s)		3.0	3.0	3.0	3.0					3.0		3.0
Time Before Reduce (s)		0.0	0.0	0.0	0.0					0.0		0.0
Time To Reduce (s)		0.0	0.0	0.0	0.0					0.0		0.0
Recall Mode		C-Min	C-Min	None	C-Min					None		None
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effect Green (s)		54.9	54.9	26.4	86.3					23.7		23.7
Actuated g/C Ratio		0.46	0.46	0.22	0.72					0.20		0.20
v/c Ratio		0.32	0.55	0.75	0.56					0.73		0.32
Control Delay		13.0	16.0	47.9	6.7					51.6		42.4
Queue Delay		0.0	0.3	0.3	0.0					0.0		0.0
Total Delay		13.0	16.3	48.2	6.7					51.6		42.4
LOS		B	B	D	A					D		D
Approach Delay		14.0			18.5							49.1
Approach LOS		B			B							D
Queue Length 50th (ft)		68	102	226	132					185		67
Queue Length 95th (ft)		69	121	280	96					240		103
Internal Link Dist (ft)		431			310			801				881
Turn Bay Length (ft)			300							950		925
Base Capacity (vph)		2934	724	858	2551					750		609
Starvation Cap Reductn		0	59	50	75					0		0
Spillback Cap Reductn		195	0	0	22					0		0
Storage Cap Reductn		0	0	0	0					0		0
Reduced v/c Ratio		0.34	0.60	0.70	0.58					0.66		0.29

Intersection Summary

Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green
 Natural Cycle: 55
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.75
 Intersection Signal Delay: 22.2
 Intersection LOS: C
 Intersection Capacity Utilization 61.9%
 ICU Level of Service B
 Analysis Period (min) 15

Splits and Phases: 141: SB Independence Blvd. & US 17 Bus. (Market St.)



Lanes, Volumes, Timings
 141: SB Independence Blvd. & US 17 Bus. (Market St.)

U-4434 Independence Blvd.
 2040 Build 7 TUDI



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑	↗	↘	↑↑					↖		↗
Traffic Volume (vph)	0	1076	370	406	1065	0	0	0	0	525	0	125
Future Volume (vph)	0	1076	370	406	1065	0	0	0	0	525	0	125
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		300	0		0	0		0	950		925
Storage Lanes	0		1	0		0	0		0	2		1
Taper Length (ft)	100			100			100			100		
Satd. Flow (prot)	0	6408	1583	3433	3539	0	0	0	0	3433	0	2787
Flt Permitted				0.950						0.950		
Satd. Flow (perm)	0	6408	1583	3433	3539	0	0	0	0	3433	0	2787
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		40			40			30				45
Link Distance (ft)		511			390			881				961
Travel Time (s)		8.7			6.6			20.0				14.6
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	2%	2%	2%	2%	0%	0%	0%	0%	2%	0%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%				0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1196	411	451	1183	0	0	0	0	583	0	139
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	R NA	Left	Right
Median Width(ft)		24			24			24				24
Link Offset(ft)		0			0			0				0
Crosswalk Width(ft)		16			16			16				16
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type		NA	Perm	Prot	NA					Prot		Prot
Protected Phases		2		1	6					4		4
Permitted Phases			2									
Detector Phase		2	2	1	6					4		4
Switch Phase												
Minimum Initial (s)		12.0	12.0	7.0	12.0					7.0		7.0
Minimum Split (s)		19.0	19.0	14.0	19.0					14.0		14.0
Total Split (s)		55.0	55.0	30.0	85.0					35.0		35.0
Total Split (%)		45.8%	45.8%	25.0%	70.8%					29.2%		29.2%
Maximum Green (s)		48.0	48.0	23.0	78.0					28.0		28.0
Yellow Time (s)		5.0	5.0	5.0	5.0					5.0		5.0
All-Red Time (s)		2.0	2.0	2.0	2.0					2.0		2.0
Lost Time Adjust (s)		-2.0	-2.0	-2.0	-2.0					-2.0		-2.0
Total Lost Time (s)		5.0	5.0	5.0	5.0					5.0		5.0

Lanes, Volumes, Timings
 141: SB Independence Blvd. & US 17 Bus. (Market St.)

U-4434 Independence Blvd.
 2040 Build 7 TUDI

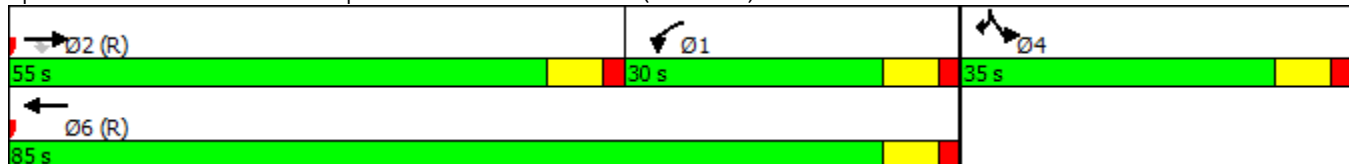


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lead/Lag		Lead	Lead	Lag								
Lead-Lag Optimize?		Yes	Yes	Yes								
Vehicle Extension (s)		3.0	3.0	3.0	3.0					3.0		3.0
Minimum Gap (s)		3.0	3.0	3.0	3.0					3.0		3.0
Time Before Reduce (s)		0.0	0.0	0.0	0.0					0.0		0.0
Time To Reduce (s)		0.0	0.0	0.0	0.0					0.0		0.0
Recall Mode		C-Min	C-Min	None	C-Min					None		None
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effect Green (s)		55.9	55.9	22.3	83.1					26.9		26.9
Actuated g/C Ratio		0.47	0.47	0.19	0.69					0.22		0.22
v/c Ratio		0.40	0.56	0.71	0.48					0.76		0.22
Control Delay		18.0	21.3	41.4	3.4					50.3		38.2
Queue Delay		0.0	0.5	0.0	0.1					0.0		0.0
Total Delay		18.0	21.8	41.4	3.5					50.3		38.2
LOS		B	C	D	A					D		D
Approach Delay		19.0			14.0							47.9
Approach LOS		B			B							D
Queue Length 50th (ft)		114	140	163	51					218		50
Queue Length 95th (ft)		132	205	208	48					274		79
Internal Link Dist (ft)		431			310			801				881
Turn Bay Length (ft)			300							950		925
Base Capacity (vph)		2982	736	715	2452					859		697
Starvation Cap Reductn		0	86	0	285					0		0
Spillback Cap Reductn		0	0	0	0					0		0
Storage Cap Reductn		0	0	0	0					0		0
Reduced v/c Ratio		0.40	0.63	0.63	0.55					0.68		0.20

Intersection Summary

Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green
 Natural Cycle: 55
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.76
 Intersection Signal Delay: 22.2
 Intersection LOS: C
 Intersection Capacity Utilization 68.1%
 ICU Level of Service C
 Analysis Period (min) 15

Splits and Phases: 141: SB Independence Blvd. & US 17 Bus. (Market St.)



Lanes, Volumes, Timings
 142: NB Independence Blvd & US 17 Bus. (Market St.)

U-4434 Independence Blvd.
 2040 Build 7 TUDI



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖↗	↑↑			↑↑↑↑	↖	↖↗		↖↗			
Traffic Volume (vph)	125	1151	0	0	1424	527	370	0	439	0	0	0
Future Volume (vph)	125	1151	0	0	1424	527	370	0	439	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	0			275		500	0		0
Storage Lanes	0		0	0			2		1	0		0
Taper Length (ft)	100			100			100			100		
Satd. Flow (prot)	3433	3539	0	0	6408	1583	3433	0	2787	0	0	0
Flt Permitted	0.950						0.950					
Satd. Flow (perm)	3433	3539	0	0	6408	1583	3433	0	2787	0	0	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		40			40			45				30
Link Distance (ft)		390			590			920				889
Travel Time (s)		6.6			10.1			13.9				20.2
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	0%	0%	2%	2%	2%	0%	2%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%				0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	139	1279	0	0	1582	586	411	0	488	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	R NA	Left	Right	Left	Left	Right
Median Width(ft)		24			24			24				24
Link Offset(ft)		0			0			0				0
Crosswalk Width(ft)		16			16			16				16
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Prot	NA			NA	Perm	Prot		Prot			
Protected Phases	5	2			6		8		8			
Permitted Phases						6						
Detector Phase	5	2			6	6	8		8			
Switch Phase												
Minimum Initial (s)	7.0	12.0			12.0	12.0	7.0		7.0			
Minimum Split (s)	14.0	19.0			19.0	19.0	14.0		14.0			
Total Split (s)	14.0	85.0			71.0	71.0	35.0		35.0			
Total Split (%)	11.7%	70.8%			59.2%	59.2%	29.2%		29.2%			
Maximum Green (s)	7.0	78.0			64.0	64.0	28.0		28.0			
Yellow Time (s)	5.0	5.0			5.0	5.0	5.0		5.0			
All-Red Time (s)	2.0	2.0			2.0	2.0	2.0		2.0			
Lost Time Adjust (s)	-2.0	-2.0			-2.0	-2.0	-2.0		-2.0			
Total Lost Time (s)	5.0	5.0			5.0	5.0	5.0		5.0			

Lanes, Volumes, Timings
 142: NB Independence Blvd & US 17 Bus. (Market St.)

U-4434 Independence Blvd.
 2040 Build 7 TUDI

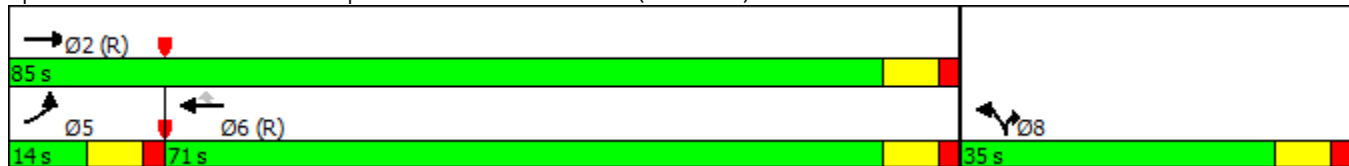


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lead/Lag	Lead			Lag			Lag					
Lead-Lag Optimize?	Yes			Yes			Yes					
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0		3.0			
Minimum Gap (s)	3.0	3.0			3.0	3.0	3.0		3.0			
Time Before Reduce (s)	0.0	0.0			0.0	0.0	0.0		0.0			
Time To Reduce (s)	0.0	0.0			0.0	0.0	0.0		0.0			
Recall Mode	None	C-Min			C-Min	C-Min	None		None			
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effect Green (s)	9.7	82.7			68.0	68.0	27.3		27.3			
Actuated g/C Ratio	0.08	0.69			0.57	0.57	0.23		0.23			
v/c Ratio	0.50	0.52			0.44	0.65	0.53		0.77			
Control Delay	61.1	6.5			8.8	13.8	42.9		52.0			
Queue Delay	0.0	0.3			0.0	0.4	0.0		0.0			
Total Delay	61.1	6.9			8.8	14.2	42.9		52.0			
LOS	E	A			A	B	D		D			
Approach Delay		12.2			10.3			47.8				
Approach LOS		B			B			D				
Queue Length 50th (ft)	47	323			106	136	142		198			
Queue Length 95th (ft)	m81	172			118	279	190		263			
Internal Link Dist (ft)		310			510			840			809	
Turn Bay Length (ft)						300	275		475			
Base Capacity (vph)	277	2438			3629	896	858		696			
Starvation Cap Reductn	0	546			0	68	0		0			
Spillback Cap Reductn	0	137			40	0	0		0			
Storage Cap Reductn	0	0			0	0	0		0			
Reduced v/c Ratio	0.50	0.68			0.44	0.71	0.48		0.70			

Intersection Summary

Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green
 Natural Cycle: 60
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.77
 Intersection Signal Delay: 18.4 Intersection LOS: B
 Intersection Capacity Utilization 61.9% ICU Level of Service B
 Analysis Period (min) 15
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 142: NB Independence Blvd & US 17 Bus. (Market St.)



Lanes, Volumes, Timings
 142: NB Independence Blvd & US 17 Bus. (Market St.)

U-4434 Independence Blvd.
 2040 Build 7 TUDI



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	161	1440	0	0	1113	442	358	0	570	0	0	0
Future Volume (vph)	161	1440	0	0	1113	442	358	0	570	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	0			275		500	0		0
Storage Lanes	0		0	0			2		1	0		0
Taper Length (ft)	100			100			100			100		
Satd. Flow (prot)	3433	3539	0	0	6408	1583	3433	0	2787	0	0	0
Flt Permitted	0.950						0.950					
Satd. Flow (perm)	3433	3539	0	0	6408	1583	3433	0	2787	0	0	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		40			40			45				30
Link Distance (ft)		390			590			920				889
Travel Time (s)		6.6			10.1			13.9				20.2
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	0%	0%	2%	2%	2%	0%	2%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%				0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	179	1600	0	0	1237	491	398	0	633	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	R NA	Left	Right	Left	Left	Right
Median Width(ft)		24			24			24				24
Link Offset(ft)		0			0			0				0
Crosswalk Width(ft)		16			16			16				16
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Prot	NA			NA	Perm	Prot		Prot			
Protected Phases	5	2			6		8		8			
Permitted Phases						6						
Detector Phase	5	2			6	6	8		8			
Switch Phase												
Minimum Initial (s)	7.0	12.0			12.0	12.0	7.0		7.0			
Minimum Split (s)	14.0	19.0			19.0	19.0	14.0		14.0			
Total Split (s)	16.0	77.0			61.0	61.0	43.0		43.0			
Total Split (%)	13.3%	64.2%			50.8%	50.8%	35.8%		35.8%			
Maximum Green (s)	9.0	70.0			54.0	54.0	36.0		36.0			
Yellow Time (s)	5.0	5.0			5.0	5.0	5.0		5.0			
All-Red Time (s)	2.0	2.0			2.0	2.0	2.0		2.0			
Lost Time Adjust (s)	-2.0	-2.0			-2.0	-2.0	-2.0		-2.0			
Total Lost Time (s)	5.0	5.0			5.0	5.0	5.0		5.0			

Lanes, Volumes, Timings
 142: NB Independence Blvd & US 17 Bus. (Market St.)

U-4434 Independence Blvd.
 2040 Build 7 TUDI

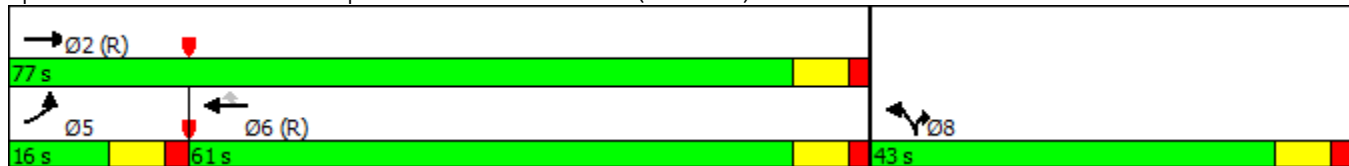


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lead/Lag	Lead			Lag			Lag					
Lead-Lag Optimize?	Yes			Yes			Yes					
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0		3.0			
Minimum Gap (s)	3.0	3.0			3.0	3.0	3.0		3.0			
Time Before Reduce (s)	0.0	0.0			0.0	0.0	0.0		0.0			
Time To Reduce (s)	0.0	0.0			0.0	0.0	0.0		0.0			
Recall Mode	None	C-Min			C-Min	C-Min	None		None			
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effect Green (s)	11.6	75.9			59.3	59.3	34.1		34.1			
Actuated g/C Ratio	0.10	0.63			0.49	0.49	0.28		0.28			
v/c Ratio	0.54	0.71			0.39	0.63	0.41		0.80			
Control Delay	63.2	6.4			13.4	18.9	35.6		47.9			
Queue Delay	0.0	0.8			0.0	0.1	0.0		0.0			
Total Delay	63.2	7.3			13.4	18.9	35.6		47.9			
LOS	E	A			B	B	D		D			
Approach Delay		12.9			15.0			43.1				
Approach LOS		B			B			D				
Queue Length 50th (ft)	68	225			115	158	127		255			
Queue Length 95th (ft)	m102	248			117	214	166		321			
Internal Link Dist (ft)		310			510			840			809	
Turn Bay Length (ft)						300	275		475			
Base Capacity (vph)	336	2239			3167	782	1087		882			
Starvation Cap Reductn	0	27			0	13	0		0			
Spillback Cap Reductn	0	331			0	0	0		0			
Storage Cap Reductn	0	0			0	0	0		0			
Reduced v/c Ratio	0.53	0.84			0.39	0.64	0.37		0.72			

Intersection Summary

Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green
 Natural Cycle: 60
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.80
 Intersection Signal Delay: 20.6 Intersection LOS: C
 Intersection Capacity Utilization 68.1% ICU Level of Service C
 Analysis Period (min) 15
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 142: NB Independence Blvd & US 17 Bus. (Market St.)



Summary of All Intervals

Run Number	1	2	3	4434 Build 7 TUDI AM Peak			Avg
Start Time	6:50	6:50	6:50	6:50	6:50	6:50	6:50
End Time	8:00	8:00	8:00	8:00	8:00	8:00	8:00
Total Time (min)	70	70	70	70	70	70	70
Time Recorded (min)	60	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1	1
Vehs Entered	4767	4910	4767	4844	4886	4848	4836
Vehs Exited	4715	4841	4730	4830	4799	4780	4782
Starting Vehs	221	220	230	230	198	213	220
Ending Vehs	273	289	267	244	285	281	269
Travel Distance (mi)	2168	2227	2174	2215	2229	2202	2202
Travel Time (hr)	378.4	408.9	428.4	441.9	328.3	403.2	398.2
Total Delay (hr)	310.2	338.6	359.9	372.3	258.5	333.4	328.8
Total Stops	8249	8492	8036	8536	8524	8196	8337
Fuel Used (gal)	163.3	173.3	175.0	180.0	154.0	170.0	169.3

Interval #0 Information Seeding

Start Time	6:50
End Time	7:00
Total Time (min)	10
Volumes adjusted by Growth Factors.	
No data recorded this interval.	

Interval #1 Information Recording

Start Time	7:00
End Time	8:00
Total Time (min)	60
Volumes adjusted by Growth Factors.	

Run Number	1	2	3	4434 Build 7 TUDI AM Peak			Avg
Vehs Entered	4767	4910	4767	4844	4886	4848	4836
Vehs Exited	4715	4841	4730	4830	4799	4780	4782
Starting Vehs	221	220	230	230	198	213	220
Ending Vehs	273	289	267	244	285	281	269
Travel Distance (mi)	2168	2227	2174	2215	2229	2202	2202
Travel Time (hr)	378.4	408.9	428.4	441.9	328.3	403.2	398.2
Total Delay (hr)	310.2	338.6	359.9	372.3	258.5	333.4	328.8
Total Stops	8249	8492	8036	8536	8524	8196	8337
Fuel Used (gal)	163.3	173.3	175.0	180.0	154.0	170.0	169.3

Intersection: 11: Wayne Dr./30th St. & US 17 Bus. (Market St.)

Movement	EB	EB	EB	WB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	TR	L	T	T	R	L	TR	L	TR
Maximum Queue (ft)	83	219	311	105	412	436	90	180	130	98	139
Average Queue (ft)	30	31	286	37	192	203	28	67	58	37	47
95th Queue (ft)	69	119	299	85	345	369	71	133	113	79	104
Link Distance (ft)	268	268	268	394	394	394	394	797	797	665	665
Upstream Blk Time (%)		0	47		1	2					
Queuing Penalty (veh)		0	0		4	8					
Storage Bay Dist (ft)	150			125			100	200		125	
Storage Blk Time (%)											
Queuing Penalty (veh)											

Intersection: 17: Darlington Ave./Henry St. & US 17 Bus. (Market St.)

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB
Directions Served	L	T	T	R	L	T	T	TR	L	L	TR	L
Maximum Queue (ft)	92	294	298	150	851	992	1001	1031	829	856	784	86
Average Queue (ft)	32	212	225	77	124	585	964	988	398	665	289	35
95th Queue (ft)	75	271	283	132	489	1118	1111	1076	976	979	872	74
Link Distance (ft)	482	482	482	482	976	976	976	976	833	833	833	699
Upstream Blk Time (%)					0	2	29	87	5	25	10	
Queuing Penalty (veh)					0	0	0	0	0	0	0	
Storage Bay Dist (ft)	100			200	900				850	850		100
Storage Blk Time (%)												
Queuing Penalty (veh)												

Intersection: 17: Darlington Ave./Henry St. & US 17 Bus. (Market St.)

Movement	SB
Directions Served	TR
Maximum Queue (ft)	171
Average Queue (ft)	71
95th Queue (ft)	141
Link Distance (ft)	699
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 141: SB Independence Blvd. & US 17 Bus. (Market St.)

Movement	EB	EB	EB	EB	EB	WB	WB	WB	WB	SB	SB	SB
Directions Served	T	T	T	T	R	L	L	T	T	L	L	R
Maximum Queue (ft)	80	50	339	379	288	273	275	343	368	579	644	220
Average Queue (ft)	24	9	137	252	162	164	168	34	244	346	419	96
95th Queue (ft)	61	33	284	354	242	247	253	167	373	662	714	178
Link Distance (ft)	394	394	394	394	394	312	312	312	312	890	890	890
Upstream Blk Time (%)			0	0		0	0	0	3			0
Queuing Penalty (veh)			0	1		1	0	1	14			0
Storage Bay Dist (ft)					300					950	950	
Storage Blk Time (%)												
Queuing Penalty (veh)												

Intersection: 141: SB Independence Blvd. & US 17 Bus. (Market St.)

Movement	SB
Directions Served	R
Maximum Queue (ft)	63
Average Queue (ft)	8
95th Queue (ft)	37
Link Distance (ft)	890
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	925
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 142: NB Independence Blvd & US 17 Bus. (Market St.)

Movement	EB	EB	EB	EB	WB	WB	WB	WB	WB	NB	NB	NB	
Directions Served	L	L	T	T	T	T	T	T	T	R	L	L	R
Maximum Queue (ft)	98	96	92	271	139	235	360	415	250	204	256	496	
Average Queue (ft)	44	35	6	52	52	67	135	225	153	87	126	279	
95th Queue (ft)	87	84	41	185	105	160	292	360	232	166	210	463	
Link Distance (ft)	312	312	312	312	482	482	482	482	482	849	849	849	
Upstream Blk Time (%)	0				0				0				
Queuing Penalty (veh)	0				0				1				
Storage Bay Dist (ft)										275	275		
Storage Blk Time (%)													
Queuing Penalty (veh)													

Intersection: 142: NB Independence Blvd & US 17 Bus. (Market St.)

Movement	NB
Directions Served	R
Maximum Queue (ft)	461
Average Queue (ft)	168
95th Queue (ft)	398
Link Distance (ft)	849
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	500
Storage Blk Time (%)	
Queuing Penalty (veh)	

Network Summary

Network wide Queuing Penalty: 30

Summary of All Intervals

Run Number	1	2	3	4434 Build 7 TUDI PM Peak			Avg
Start Time	4:50	4:50	4:50	4:50	4:50	4:50	4:50
End Time	6:00	6:00	6:00	6:00	6:00	6:00	6:00
Total Time (min)	70	70	70	70	70	70	70
Time Recorded (min)	60	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1	1
Vehs Entered	4617	4711	4626	4650	4609	4629	4639
Vehs Exited	4561	4680	4570	4641	4566	4625	4608
Starting Vehs	183	207	202	213	199	228	203
Ending Vehs	239	238	258	222	242	232	234
Travel Distance (mi)	2104	2156	2108	2125	2114	2133	2123
Travel Time (hr)	473.2	539.3	500.8	509.4	500.2	607.4	521.7
Total Delay (hr)	407.0	471.5	434.4	442.3	433.5	540.1	454.8
Total Stops	7623	8468	7697	8128	7523	8079	7920
Fuel Used (gal)	179.6	197.3	185.5	188.9	185.0	211.1	191.2

Interval #0 Information Seeding

Start Time	4:50
End Time	5:00
Total Time (min)	10
Volumes adjusted by Growth Factors.	
No data recorded this interval.	

Interval #1 Information Recording

Start Time	5:00
End Time	6:00
Total Time (min)	60
Volumes adjusted by Growth Factors.	

Run Number	1	2	3	4434 Build 7 TUDI PM Peak			Avg
Vehs Entered	4617	4711	4626	4650	4609	4629	4639
Vehs Exited	4561	4680	4570	4641	4566	4625	4608
Starting Vehs	183	207	202	213	199	228	203
Ending Vehs	239	238	258	222	242	232	234
Travel Distance (mi)	2104	2156	2108	2125	2114	2133	2123
Travel Time (hr)	473.2	539.3	500.8	509.4	500.2	607.4	521.7
Total Delay (hr)	407.0	471.5	434.4	442.3	433.5	540.1	454.8
Total Stops	7623	8468	7697	8128	7523	8079	7920
Fuel Used (gal)	179.6	197.3	185.5	188.9	185.0	211.1	191.2

Intersection: 11: Wayne Dr./30th St. & US 17 Bus. (Market St.)

Movement	EB	EB	EB	WB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	TR	L	T	T	R	L	TR	L	TR
Maximum Queue (ft)	126	232	310	125	415	424	90	100	127	119	123
Average Queue (ft)	35	43	286	45	154	168	20	29	47	45	46
95th Queue (ft)	92	157	297	99	350	364	63	70	100	96	100
Link Distance (ft)	268	268	268	394	394	394	394	797	797	665	665
Upstream Blk Time (%)		0	50		1	2					
Queuing Penalty (veh)		0	0		2	6					
Storage Bay Dist (ft)	150			125			100	200		125	
Storage Blk Time (%)											
Queuing Penalty (veh)											

Intersection: 17: Darlington Ave./Henry St. & US 17 Bus. (Market St.)

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB
Directions Served	L	T	T	R	L	T	T	TR	L	L	TR	L
Maximum Queue (ft)	100	248	269	177	173	288	636	711	713	773	634	88
Average Queue (ft)	36	189	207	81	75	80	329	446	309	611	285	31
95th Queue (ft)	83	233	254	142	151	210	609	700	880	993	858	72
Link Distance (ft)	482	482	482	482	976	976	976	976	833	833	833	699
Upstream Blk Time (%)								0	3	24	10	
Queuing Penalty (veh)								0	0	0	0	
Storage Bay Dist (ft)	100			200	900				850	850		100
Storage Blk Time (%)												
Queuing Penalty (veh)												

Intersection: 17: Darlington Ave./Henry St. & US 17 Bus. (Market St.)

Movement	SB
Directions Served	TR
Maximum Queue (ft)	120
Average Queue (ft)	51
95th Queue (ft)	99
Link Distance (ft)	699
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 141: SB Independence Blvd. & US 17 Bus. (Market St.)

Movement	EB	EB	EB	EB	EB	WB	WB	WB	WB	SB	SB	SB
Directions Served	T	T	T	T	R	L	L	T	T	L	L	R
Maximum Queue (ft)	71	63	393	423	267	226	220	298	362	928	920	921
Average Queue (ft)	24	9	189	308	144	142	136	37	218	805	831	645
95th Queue (ft)	56	36	374	429	232	209	202	170	358	1110	1091	1276
Link Distance (ft)	394	394	394	394	394	312	312	312	312	890	890	890
Upstream Blk Time (%)			0	3	0			0	2	44	66	53
Queuing Penalty (veh)			0	8	0			1	8	0	0	0
Storage Bay Dist (ft)					300					950	950	
Storage Blk Time (%)												
Queuing Penalty (veh)												

Intersection: 141: SB Independence Blvd. & US 17 Bus. (Market St.)

Movement	SB
Directions Served	R
Maximum Queue (ft)	863
Average Queue (ft)	61
95th Queue (ft)	400
Link Distance (ft)	890
Upstream Blk Time (%)	0
Queuing Penalty (veh)	0
Storage Bay Dist (ft)	925
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 142: NB Independence Blvd & US 17 Bus. (Market St.)

Movement	EB	EB	EB	EB	WB	WB	WB	WB	WB	NB	NB	NB	
Directions Served	L	L	T	T	T	T	T	T	T	R	L	L	R
Maximum Queue (ft)	111	205	350	358	97	214	382	444	282	191	232	467	
Average Queue (ft)	47	48	97	301	48	57	166	260	195	71	112	286	
95th Queue (ft)	92	137	311	407	84	137	338	404	279	147	194	435	
Link Distance (ft)	312	312	312	312	482	482	482	482	482	849	849	849	
Upstream Blk Time (%)		0	1	7		0	0	0					
Queuing Penalty (veh)		0	3	26		0	0	1					
Storage Bay Dist (ft)										275	275		
Storage Blk Time (%)													
Queuing Penalty (veh)													

Intersection: 142: NB Independence Blvd & US 17 Bus. (Market St.)

Movement	NB
Directions Served	R
Maximum Queue (ft)	422
Average Queue (ft)	179
95th Queue (ft)	372
Link Distance (ft)	849
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	500
Storage Blk Time (%)	
Queuing Penalty (veh)	

Network Summary

Network wide Queuing Penalty: 56

APPENDIX E – HCS Analysis

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2040 Build – Common to All Alternatives

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Input Sheets

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HIGHWAY CAPACITY SOFTWARE 2010 (Release 6.90)

NETWORK DATA SUMMARY - ANALYSIS NOTES

General Information	Site Information
Analyst Agency or Company Project Description	AECOM Date Performed Analysis Year 2018 2040 Build - Common to All Alternatives U-4434 Independence Boulevard Extension

Date of NCDOT Capacity Analysis Guidelines for TIP Project Analyses used for this Study: **July 2015**

Default Values - Freeways			Default Values - Signalized Intersections		
Peak Hour Factor (PHF)	0.90	NCDOT Standard	Signal System Type	Coordinated	NCDOT Standard
Terrain	Level	AASHTO Classification	Right Turn on Red	Not Allowed	NCDOT Standard
Driver Population Factor	1	NCDOT Standard - Tourist Area	Total Loss Time	5 sec.	NCDOT Standard
Truck Percentages	1/2 of TTST+Duals	NCDOT Standard (rounded up)	Yellow/All Red	5 sec./2 sec.	NCDOT Standard
Base Free-flow Speed - Freeway	60 mph (US 74), 55 mph (Independence Blvd)	Determined to be appropriate based on design speed and speed limit	Minimum Initial Green	7 sec. - Minor 10-14 sec. - Major (based on speed)	NCDOT Standard
Freeway Type	Urban	AASHTO Classification	Minimum Cycle Length	60 sec - 2 phase 90 sec - 3 phase 120 sec - 4-8 phase	NCDOT Standard
Base Free-flow Speed - Ramps	Ramp: 45 mph Loop: 25 mph	NCDOT Standard	Maximum Cycle Length	180 sec.	NCDOT Recommendation
Y-line Truck Percentages - Ramps	Same as Y-line truck percentage	Due to more through trips by trucks this is most reasonable method	Saturation Flow Rate	1900 vphpl	NCDOT Standard
Y-line Truck Percentages - Weaving	Use freeway trucks percentage for all movements	NCDOT Standard			

Level of Service Standards - Freeways	Level of Service Standards - Signalized Intersections
Level of Service (LOS) D or better (FHWA regulations)	LOS D or better for overall intersection required LOS D or better for individual movements recommended If not LOS D for individual movement - v/c ratio must be less than 0.85

Assumed Improvements	
TIP No.	Description
U-6083	North of 23rd St Widening from US 74/MLK Jr. Pkwy to NC 133
U-3338B	Kerr Avenue Widening from Pandall Pkwy to US 74/MLK Jr. Parkway
U-3338C	Kerr Avenue/MLK Jr. Pkwy Intersection Improvements
U-4902B	US 17 Bus (Market St) Access Management from CSX Railroad to Cinema Dr; Jacksonville Street to north of US 117/NC 132 (College Rd)
U-5792	US 117/NC 132/College Rd and MLK Jr. Pkwy Intersection. Convert-at-grade intersection to interchange
U-5869	US 17 Bus (Market St) road diet from 17th St to Covil Avenue
U-5881	NC 132 (College Rd) from SR 2048 (Gordon Rd) to SR 1272 (New Center Dr). Upgrade Roadway.
U-5702A	NC 132 (College Rd) widening from SR 1272 (New Centre Dr) to US 117 (Shipyard Blvd). Access Mgmt and Travel Time Improvements
U-5704	US 117/NC 132/College Rd and US 76/Oleander Intersection
	Kerr Avenue Extension from Wrightsville Ave to US 76/Oleander Dr

General Analysis Notes

- ▶ Interchange Density – Determined over 6-mile segment (3 miles upstream, 3 miles downstream) - N/A if using Measured Speed
- ▶ Ramp Acceleration/Deceleration Length - Measured from the point where the edge of the ramp lane and edge of freeway lane converge to the end of the taper
- ▶ Adjacent Ramps – Generally included if within 2 miles of ramp to capture any possible impacts. When the subject ramp is a merge, upstream and downstream off ramps will be included. When the subject ramp is a diverge, upstream on ramps and downstream off ramps will be included.
- ▶ Adjacent Ramps Distance – Measured from the point where the edge of the ramp lane and the edge of the freeway converge to the same point on the adjacent ramp
- ▶ Weaving Segment Length – Measured from where solid striping for on-ramp ends to where solid striping on off ramp begins. For proposed designs, this is assumed to be where the ramp alignments become tangent to the freeway alignment.
- ▶ If the v/c ratio for any segment or intersection movement is 1 or above, the LOS is changed to F by default.
- ▶ Basic Freeway Segment Volumes: Peak Hour Volumes from traffic forecast
- ▶ Ramp Junction Volumes: Peak Hour Volumes from traffic forecast
- ▶ Weaving Segment Volumes: Peak Hour Volumes from traffic forecast
- ▶ Ramp Junctions - Maximum adjacent ramp distance in HCS is 9999 ft. Distances greater than this will be shown in HCS as 9999 ft.
- ▶ Basic Freeway Segments within interchanges - Higher of two heavy vehicle percentages will be used if between segments with two different values.
- ▶ Ramp Junctions - Higher of two heavy vehicle percentages will be used if exiting to or entering from y-line with two different values.

Design Specific Analysis Notes

Analysis Points Note
None

Locations where LOS D or better not achieved

Analysis Points Note
None

Traffic elements critical to the design of the project

2040 Build - Common to All Alternatives
 Basic Freeway Segment Volumes - between interchanges

Segment	Description	AADT	K	Total	D (PM)	AM	PM
103	Independence Blvd NB - from US 17 Bus. To US 74	47,500	0.11	5,225	0.55	2,351	2,874
104	US 74 WB between Independence Blvd and 23rd Street	58,900	0.10	5,890	0.40	3,534	2,356
301	Independence Blvd SB from US 74 to US 17 Business	47,500	0.11	5,225	0.45	2,874	2,351
302	US 74 EB between 23rd Street and Independence Blvd	58,900	0.10	5,890	0.60	2,356	3,534
303	US 74 EB between Independence Blvd and Kerr Avenue	66,200	0.10	6,620	0.60	2,648	3,972
304	US 74 WB between Kerr Avenue and Independence Blvd	66,200	0.10	6,620	0.40	3,972	2,648
401	Independence Blvd - south of US 17 Business	52,000	0.11	5,720	0.55	2,574	3,146

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NETWORK DATA SUMMARY - BASIC FREEWAY SEGMENTS

General Information	Site Information
Analyst Agency or Company	AECOM
Date Performed	2018
Analysis Year	2040 Build - Common to All Alternatives
Project Description	U-4434 Independence Boulevard Extension

101	102	103
Independence Blvd NB - within US 17 Bus Int	Independence Blvd SB - within US 17 Bus Int	Independence Blvd NB - from US 17 B to US 74
AM Peak Volume 1693	AM Peak Volume 2277	AM Peak Volume 2351
PM Peak Volume 2279	PM Peak Volume 1695	PM Peak Volume 2874
Peak Hour Factor 0.90	Peak Hour Factor 0.90	Peak Hour Factor 0.90
Number of Lanes 2	Number of Lanes 2	Number of Lanes 2
Terrain Level	Terrain Level	Terrain Level
Truck Percentage 2%	Truck Percentage 2%	Truck Percentage 2%
Driver Pop. Adj. 1.00	Driver Pop. Adj. 1.00	Driver Pop. Adj. 1.00
Measured FFS 55 mph	Measured FFS 55 mph	Measured FFS 55 mph
Lane Width N/A ft	Lane Width N/A ft	Lane Width N/A ft
Right Side Clearance N/A ft	Right Side Clearance N/A ft	Right Side Clearance N/A ft
Total Ramp Density N/A ramp/mi	Total Ramp Density N/A ramp/mi	Total Ramp Density N/A ramp/mi

104	105	106
US 74 WB from Independence Blvd to 23rd St	US 74 EB within Independence Blvd Int	US 74 WB within Independence Blvd Int
AM Peak Volume 3534	AM Peak Volume 1472	AM Peak Volume 2415
PM Peak Volume 2356	PM Peak Volume 2415	PM Peak Volume 1472
Peak Hour Factor 0.90	Peak Hour Factor 1.00	Peak Hour Factor 1.00
Number of Lanes 3	Number of Lanes 3	Number of Lanes 3
Terrain Level	Terrain Level	Terrain Level
Truck Percentage 2%	Truck Percentage 2%	Truck Percentage 2%
Driver Pop. Adj. 1.00	Driver Pop. Adj. 1.00	Driver Pop. Adj. 1.00
Measured FFS 60 mph	Measured FFS 60 mph	Measured FFS 60 mph
Lane Width N/A ft	Lane Width N/A ft	Lane Width N/A ft
Right Side Clearance N/A ft	Right Side Clearance N/A ft	Right Side Clearance N/A ft
Total Ramp Density N/A ramp/mi	Total Ramp Density N/A ramp/mi	Total Ramp Density N/A ramp/mi

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NETWORK DATA SUMMARY - RAMPS AND RAMP JUNCTIONS

General Information

Site Information

Analyst	AECOM	Date Performed	2018
Agency or Company		Analysis Year	2040 Build - Common to All Alternatives
Project Description	U-4434 Independence Boulevard Extension		

<div style="border: 1px solid black; display: inline-block; padding: 2px; margin-bottom: 5px;">207</div> <p>US 74 WB - from Independence Blvd NB</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td>Merge/Diverge</td> <td style="text-align: center;">Merge</td> <td></td> </tr> <tr> <td>No. of lanes on Freeway</td> <td style="text-align: center;">3</td> <td></td> </tr> <tr> <td>Freeway FFS</td> <td style="text-align: center;">60</td> <td style="text-align: right;">mph</td> </tr> <tr> <td>Freeway Volume (AM/PM)</td> <td style="text-align: center;">2415</td> <td style="text-align: right;">1472</td> </tr> <tr> <td>Ramp Side (Left or Right)</td> <td style="text-align: center;">Right</td> <td></td> </tr> <tr> <td>Ramp FFS</td> <td style="text-align: center;">25</td> <td style="text-align: right;">mph</td> </tr> <tr> <td>Ramp Volume (AM/PM)</td> <td style="text-align: center;">1052</td> <td style="text-align: right;">930</td> </tr> <tr> <td>No. Lanes on Ramp</td> <td style="text-align: center;">1</td> <td></td> </tr> <tr> <td>Accel/Decel Distance 1</td> <td style="text-align: center;">1200</td> <td style="text-align: right;">ft</td> </tr> <tr> <td>Accel/Decel Distance 2</td> <td style="text-align: center;">N/A</td> <td style="text-align: right;">ft</td> </tr> <tr> <td>Adjacent Upstream</td> <td style="text-align: center;">Yes</td> <td></td> </tr> <tr> <td>Off/On</td> <td style="text-align: center;">Off</td> <td></td> </tr> <tr> <td>Distance</td> <td style="text-align: center;">1330</td> <td style="text-align: right;">ft</td> </tr> <tr> <td>Truck %</td> <td style="text-align: center;">2</td> <td></td> </tr> <tr> <td>Ramp Volume (AM/PM)</td> <td style="text-align: center;">1634</td> <td style="text-align: right;">1127</td> </tr> <tr> <td>Adjacent Downstream</td> <td style="text-align: center;">Yes</td> <td></td> </tr> <tr> <td>Off/On</td> <td style="text-align: center;">Off</td> <td></td> </tr> <tr> <td>Distance</td> <td style="text-align: center;">6000</td> <td style="text-align: right;">ft</td> </tr> <tr> <td>Truck %</td> <td style="text-align: center;">2</td> <td></td> </tr> <tr> <td>Ramp Volume (AM/PM)</td> <td style="text-align: center;">805</td> <td style="text-align: right;">696</td> </tr> <tr> <td>Peak Hour Factor</td> <td style="text-align: center;">0.90</td> <td></td> </tr> <tr> <td>Terrain</td> <td style="text-align: center;">Level</td> <td></td> </tr> <tr> <td>Population Adj. Factor</td> <td style="text-align: center;">1.00</td> <td></td> </tr> <tr> <td>Freeway Truck %</td> <td style="text-align: center;">2%</td> <td></td> </tr> <tr> <td>Ramp Truck %</td> <td style="text-align: center;">2%</td> <td></td> </tr> </table>	Merge/Diverge	Merge		No. of lanes on Freeway	3		Freeway FFS	60	mph	Freeway Volume (AM/PM)	2415	1472	Ramp Side (Left or Right)	Right		Ramp FFS	25	mph	Ramp Volume (AM/PM)	1052	930	No. Lanes on Ramp	1		Accel/Decel Distance 1	1200	ft	Accel/Decel Distance 2	N/A	ft	Adjacent Upstream	Yes		Off/On	Off		Distance	1330	ft	Truck %	2		Ramp Volume (AM/PM)	1634	1127	Adjacent Downstream	Yes		Off/On	Off		Distance	6000	ft	Truck %	2		Ramp Volume (AM/PM)	805	696	Peak Hour Factor	0.90		Terrain	Level		Population Adj. Factor	1.00		Freeway Truck %	2%		Ramp Truck %	2%			
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NETWORK DATA SUMMARY - WEAVING SEGMENTS

General Information		Site Information	
Analyst	AECOM	Date Performed	2018
Agency or Company		Analysis Year	2040 Build - Common to All Alternatives
Project Description	U-4434 Independence Boulevard Extension		

301	302	303																																																																																																																																				
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HIGHWAY CAPACITY SOFTWARE 2010 (Release 6.90)

NETWORK DATA SUMMARY - WEAVING SEGMENTS

General Information		Site Information	
Analyst	AECOM	Date Performed	2018
Agency or Company		Analysis Year	2040 Build - Common to All Alternatives
Project Description		U-4434 Independence Boulevard Extension	

301	302	303																																		
Independence Blvd SB from US 74 to US 17 Business <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;"><u>Interchange</u></th> <th style="text-align: right;"><u>No.</u></th> </tr> </thead> <tbody> <tr> <td>US 74</td> <td style="text-align: right;">1</td> </tr> <tr> <td>Market Street</td> <td style="text-align: right;">1</td> </tr> </tbody> </table>	<u>Interchange</u>	<u>No.</u>	US 74	1	Market Street	1	US 74 EB from N 23rd Street to Independence Blvd <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;"><u>Interchange</u></th> <th style="text-align: right;"><u>No.</u></th> </tr> </thead> <tbody> <tr> <td>NC 133 West</td> <td style="text-align: right;">1</td> </tr> <tr> <td>McRae Street</td> <td style="text-align: right;">1</td> </tr> <tr> <td>NC 133 North</td> <td style="text-align: right;">1</td> </tr> <tr> <td>23rd Street</td> <td style="text-align: right;">1</td> </tr> <tr> <td>Independence Blvd</td> <td style="text-align: right;">1</td> </tr> <tr> <td>Kerr Avenue</td> <td style="text-align: right;">1</td> </tr> </tbody> </table>	<u>Interchange</u>	<u>No.</u>	NC 133 West	1	McRae Street	1	NC 133 North	1	23rd Street	1	Independence Blvd	1	Kerr Avenue	1	US 74 EB from Independence Blvd to Kerr Avenue <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;"><u>Interchange</u></th> <th style="text-align: right;"><u>No.</u></th> </tr> </thead> <tbody> <tr> <td>NC 133 West</td> <td style="text-align: right;">1</td> </tr> <tr> <td>McRae Street</td> <td style="text-align: right;">1</td> </tr> <tr> <td>NC 133 North</td> <td style="text-align: right;">1</td> </tr> <tr> <td>23rd Street</td> <td style="text-align: right;">1</td> </tr> <tr> <td>Independence Blvd</td> <td style="text-align: right;">1</td> </tr> <tr> <td>Kerr Avenue</td> <td style="text-align: right;">1</td> </tr> </tbody> </table>	<u>Interchange</u>	<u>No.</u>	NC 133 West	1	McRae Street	1	NC 133 North	1	23rd Street	1	Independence Blvd	1	Kerr Avenue	1
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US 74 WB from Kerr Avenue to Independence Blvd <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;"><u>Interchange</u></th> <th style="text-align: right;"><u>No.</u></th> </tr> </thead> <tbody> <tr> <td>NC 133 West</td> <td style="text-align: right;">1</td> </tr> <tr> <td>McRae Street</td> <td style="text-align: right;">1</td> </tr> <tr> <td>NC 133 North</td> <td style="text-align: right;">1</td> </tr> <tr> <td>23rd Street</td> <td style="text-align: right;">1</td> </tr> <tr> <td>Independence Blvd</td> <td style="text-align: right;">1</td> </tr> <tr> <td>Kerr Avenue</td> <td style="text-align: right;">1</td> </tr> </tbody> </table>	<u>Interchange</u>	<u>No.</u>	NC 133 West	1	McRae Street	1	NC 133 North	1	23rd Street	1	Independence Blvd	1	Kerr Avenue	1	#REF! <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;"><u>Interchange</u></th> <th style="text-align: right;"><u>No.</u></th> </tr> </thead> <tbody> <tr> <td> </td> <td style="text-align: right;"> </td> </tr> </tbody> </table>	<u>Interchange</u>	<u>No.</u>			#REF! <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;"><u>Interchange</u></th> <th style="text-align: right;"><u>No.</u></th> </tr> </thead> <tbody> <tr> <td> </td> <td style="text-align: right;"> </td> </tr> </tbody> </table>	<u>Interchange</u>	<u>No.</u>		
<u>Interchange</u>	<u>No.</u>																							
NC 133 West	1																							
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NC 133 North	1																							
23rd Street	1																							
Independence Blvd	1																							
Kerr Avenue	1																							
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*Only approximately 4 miles free Interchange Density 1.00 int/mi	Interchange Density 0.00 int/mi	Interchange Density 0.00 int/mi																						

HIGHWAY CAPACITY SOFTWARE 2010 (Release 6.90)

NETWORK DATA SUMMARY - MULTI LANE SEGMENTS

General Information

Site Information

Analyst AECOM

Date Performed 2018

Agency or Company

Analysis Year 2040 Build - Common to All Alternatives

Project Description

U-4434 Independence Boulevard Extension

<p align="center">401</p> <p>Independence Blvd. - South of US 17 Bus.</p> <p>Base FFS (est.) 55 mph</p> <p>Median Type Divided</p> <p>Lane Width 12 ft</p> <p>Right Edge 10 ft</p> <p>Left Edge 4 ft</p> <p>Access Points per mi. 0</p> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th></th> <th align="center"><u>Direction 1</u></th> <th align="center"><u>Direction 2</u></th> </tr> </thead> <tbody> <tr> <td>Volume (AM/PM)</td> <td align="center">3146/2574</td> <td align="center">2574/3146</td> </tr> <tr> <td>PHF</td> <td align="center">0.9</td> <td align="center">0.9</td> </tr> <tr> <td>No. of Lanes</td> <td align="center">3</td> <td align="center">3</td> </tr> <tr> <td>Terrain</td> <td align="center">Level</td> <td align="center">Level</td> </tr> <tr> <td>Grade</td> <td align="center">N/A</td> <td align="center">N/A</td> </tr> <tr> <td>Length</td> <td align="center">N/A</td> <td align="center">N/A</td> </tr> <tr> <td>Trucks and Bus</td> <td align="center">2%</td> <td align="center">2%</td> </tr> <tr> <td>Rec. Vehicles</td> <td align="center">0</td> <td align="center">0%</td> </tr> <tr> <td>Driv. Pop. Fac.</td> <td align="center">1</td> <td align="center">1</td> </tr> </tbody> </table>		<u>Direction 1</u>	<u>Direction 2</u>	Volume (AM/PM)	3146/2574	2574/3146	PHF	0.9	0.9	No. of Lanes	3	3	Terrain	Level	Level	Grade	N/A	N/A	Length	N/A	N/A	Trucks and Bus	2%	2%	Rec. Vehicles	0	0%	Driv. Pop. Fac.	1	1		
	<u>Direction 1</u>	<u>Direction 2</u>																														
Volume (AM/PM)	3146/2574	2574/3146																														
PHF	0.9	0.9																														
No. of Lanes	3	3																														
Terrain	Level	Level																														
Grade	N/A	N/A																														
Length	N/A	N/A																														
Trucks and Bus	2%	2%																														
Rec. Vehicles	0	0%																														
Driv. Pop. Fac.	1	1																														

Basic Freeway Segments

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information		Site Information	
Analyst	AECOM	Highway/Direction of Travel	Independence Blvd NB
Agency or Company		From/To	within US 17 Bus
Date Performed	2018	Jurisdiction	Segment #101
Analysis Time Period	AM Peak	Analysis Year	2040 Build - All Alternatives
Project Description U-4434 Independence Boulevard Extension			
<input checked="" type="checkbox"/> Oper.(LOS)		<input type="checkbox"/> Des.(N)	
<input type="checkbox"/> Planning Data			
Flow Inputs			
Volume, V	1693	veh/h	Peak-Hour Factor, PHF 0.90
AADT		veh/day	%Trucks and Buses, P _T 2
Peak-Hr Prop. of AADT, K			%RVs, P _R 0
Peak-Hr Direction Prop, D			General Terrain: Level
DDHV = AADT x K x D		veh/h	Grade % Length mi
			Up/Down %
Calculate Flow Adjustments			
f _p	1.00	E _R	1.2
E _T	1.5	f _{HV} = 1/[1+P _T (E _T - 1) + P _R (E _R - 1)]	0.990
Speed Inputs		Calc Speed Adj and FFS	
Lane Width	ft		
Rt-Side Lat. Clearance	ft	f _{LW}	mph
Number of Lanes, N	2	f _{LC}	mph
Total Ramp Density, TRD	ramps/mi	TRD Adjustment	mph
FFS (measured)	55.0	FFS	55.0
Base free-flow Speed, BFFS	mph		
LOS and Performance Measures		Design (N)	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v _p = (V or DDHV) / (PHF x N x f _{HV})	950	pc/h/ln	
x f _p)			v _p = (V or DDHV) / (PHF x N x f _{HV})
S	55.0	mph	x f _p)
D = v _p / S	17.3	pc/mi/ln	S
LOS	B		D = v _p / S
			pc/mi/ln
			Required Number of Lanes, N
Glossary		Factor Location	
N - Number of lanes	S - Speed	E _R - Exhibits 11-10, 11-12	f _{LW} - Exhibit 11-8
V - Hourly volume	D - Density	E _T - Exhibits 11-10, 11-11, 11-13	f _{LC} - Exhibit 11-9
v _p - Flow rate	FFS - Free-flow speed	f _p - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v _p - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

BASIC FREEWAY SEGMENTS WORKSHEET

General Information		Site Information	
Analyst	AECOM	Highway/Direction of Travel <i>Independence Blvd NB</i>	
Agency or Company		From/To	
Date Performed	2018	Jurisdiction	Segment #101
Analysis Time Period	PM Peak	Analysis Year	2040 Build - All Alternatives
Project Description <i>U-4434 Independence Boulevard Extension</i>			
<input checked="" type="checkbox"/> Oper.(LOS)		<input type="checkbox"/> Des.(N)	
<input type="checkbox"/> Planning Data			
Flow Inputs			
Volume, V	2279	veh/h	Peak-Hour Factor, PHF 0.90
AADT		veh/day	%Trucks and Buses, P _T 2
Peak-Hr Prop. of AADT, K			%RVs, P _R 0
Peak-Hr Direction Prop, D			General Terrain: Level
DDHV = AADT x K x D		veh/h	Grade % Length mi
			Up/Down %
Calculate Flow Adjustments			
f _p	1.00	E _R	1.2
E _T	1.5	f _{HV} = 1/[1+P _T (E _T - 1) + P _R (E _R - 1)]	0.990
Speed Inputs		Calc Speed Adj and FFS	
Lane Width	ft		
Rt-Side Lat. Clearance	ft	f _{LW}	mph
Number of Lanes, N	2	f _{LC}	mph
Total Ramp Density, TRD	ramps/mi	TRD Adjustment	mph
FFS (measured)	55.0	FFS	55.0
Base free-flow Speed, BFFS	mph		
LOS and Performance Measures		Design (N)	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
Design LOS		Design LOS	
v _p = (V or DDHV) / (PHF x N x f _{HV})	1279 pc/h/ln	v _p = (V or DDHV) / (PHF x N x f _{HV})	pc/h/ln
x f _p)		x f _p)	
S	55.0 mph	S	mph
D = v _p / S	23.3 pc/mi/ln	D = v _p / S	pc/mi/ln
LOS	C	Required Number of Lanes, N	
Glossary		Factor Location	
N - Number of lanes	S - Speed	E _R - Exhibits 11-10, 11-12	f _{LW} - Exhibit 11-8
V - Hourly volume	D - Density	E _T - Exhibits 11-10, 11-11, 11-13	f _{LC} - Exhibit 11-9
v _p - Flow rate	FFS - Free-flow speed	f _p - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v _p - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

BASIC FREEWAY SEGMENTS WORKSHEET

General Information		Site Information	
Analyst	AECOM	Highway/Direction of Travel	Independence Blvd SB
Agency or Company		From/To	within US 17 Bus
Date Performed	2018	Jurisdiction	Segment #102
Analysis Time Period	AM Peak	Analysis Year	2040 Build - All Alternatives
Project Description U-4434 Independence Boulevard Extension			
<input checked="" type="checkbox"/> Oper.(LOS)		<input type="checkbox"/> Des.(N)	
<input type="checkbox"/> Planning Data			
Flow Inputs			
Volume, V	2277	veh/h	Peak-Hour Factor, PHF 0.90
AADT		veh/day	%Trucks and Buses, P _T 2
Peak-Hr Prop. of AADT, K			%RVs, P _R 0
Peak-Hr Direction Prop, D			General Terrain: Level
DDHV = AADT x K x D		veh/h	Grade % Length mi
			Up/Down %
Calculate Flow Adjustments			
f _p	1.00	E _R	1.2
E _T	1.5	f _{HV} = 1/[1+P _T (E _T - 1) + P _R (E _R - 1)]	0.990
Speed Inputs		Calc Speed Adj and FFS	
Lane Width	ft		
Rt-Side Lat. Clearance	ft	f _{LW}	mph
Number of Lanes, N	2	f _{LC}	mph
Total Ramp Density, TRD	ramps/mi	TRD Adjustment	mph
FFS (measured)	55.0	FFS	55.0
Base free-flow Speed, BFFS	mph		
LOS and Performance Measures		Design (N)	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v _p = (V or DDHV) / (PHF x N x f _{HV})	1278	pc/h/ln	
x f _p)			v _p = (V or DDHV) / (PHF x N x f _{HV})
S	55.0	mph	x f _p)
D = v _p / S	23.2	pc/mi/ln	S
LOS	C		D = v _p / S
			pc/mi/ln
			Required Number of Lanes, N
Glossary		Factor Location	
N - Number of lanes	S - Speed	E _R - Exhibits 11-10, 11-12	f _{LW} - Exhibit 11-8
V - Hourly volume	D - Density	E _T - Exhibits 11-10, 11-11, 11-13	f _{LC} - Exhibit 11-9
v _p - Flow rate	FFS - Free-flow speed	f _p - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v _p - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

BASIC FREEWAY SEGMENTS WORKSHEET

General Information		Site Information	
Analyst	AECOM	Highway/Direction of Travel	Independence Blvd SB
Agency or Company		From/To	within US 17 Bus
Date Performed	2018	Jurisdiction	Segment #102
Analysis Time Period	PM Peak	Analysis Year	2040 Build - All Alternatives
Project Description U-4434 Independence Boulevard Extension			
<input checked="" type="checkbox"/> Oper.(LOS)		<input type="checkbox"/> Des.(N)	
<input type="checkbox"/> Planning Data			
Flow Inputs			
Volume, V	1695	veh/h	Peak-Hour Factor, PHF 0.90
AADT		veh/day	%Trucks and Buses, P _T 2
Peak-Hr Prop. of AADT, K			%RVs, P _R 0
Peak-Hr Direction Prop, D			General Terrain: Level
DDHV = AADT x K x D		veh/h	Grade % Length mi
			Up/Down %
Calculate Flow Adjustments			
f _p	1.00	E _R	1.2
E _T	1.5	f _{HV} = 1/[1+P _T (E _T - 1) + P _R (E _R - 1)]	0.990
Speed Inputs		Calc Speed Adj and FFS	
Lane Width	ft		
Rt-Side Lat. Clearance	ft	f _{LW}	mph
Number of Lanes, N	2	f _{LC}	mph
Total Ramp Density, TRD	ramps/mi	TRD Adjustment	mph
FFS (measured)	55.0	FFS	55.0
Base free-flow Speed, BFFS	mph		
LOS and Performance Measures		Design (N)	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v _p = (V or DDHV) / (PHF x N x f _{HV})	951	pc/h/ln	
x f _p)			v _p = (V or DDHV) / (PHF x N x f _{HV})
S	55.0	mph	x f _p)
D = v _p / S	17.3	pc/mi/ln	S
LOS	B		D = v _p / S
			pc/mi/ln
			Required Number of Lanes, N
Glossary		Factor Location	
N - Number of lanes	S - Speed	E _R - Exhibits 11-10, 11-12	f _{LW} - Exhibit 11-8
V - Hourly volume	D - Density	E _T - Exhibits 11-10, 11-11, 11-13	f _{LC} - Exhibit 11-9
v _p - Flow rate	FFS - Free-flow speed	f _p - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v _p - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

BASIC FREEWAY SEGMENTS WORKSHEET

General Information		Site Information	
Analyst	AECOM	Highway/Direction of Travel	Independence Blvd NB
Agency or Company		From/To	from US 17 Bus to US 74
Date Performed	2018	Jurisdiction	Segment #103
Analysis Time Period	AM Peak	Analysis Year	2040 Build - All Alternatives
Project Description U-4434 Independence Boulevard Extension			
<input checked="" type="checkbox"/> Oper.(LOS)		<input type="checkbox"/> Des.(N)	
<input type="checkbox"/> Planning Data			
Flow Inputs			
Volume, V	2351	veh/h	Peak-Hour Factor, PHF 0.90
AADT		veh/day	%Trucks and Buses, P _T 2
Peak-Hr Prop. of AADT, K			%RVs, P _R 0
Peak-Hr Direction Prop, D			General Terrain: Level
DDHV = AADT x K x D		veh/h	Grade % Length mi
			Up/Down %
Calculate Flow Adjustments			
f _p	1.00	E _R	1.2
E _T	1.5	f _{HV} = 1/[1+P _T (E _T - 1) + P _R (E _R - 1)]	0.990
Speed Inputs		Calc Speed Adj and FFS	
Lane Width	ft		
Rt-Side Lat. Clearance	ft	f _{LW}	mph
Number of Lanes, N	2	f _{LC}	mph
Total Ramp Density, TRD	ramps/mi	TRD Adjustment	mph
FFS (measured)	55.0	FFS	55.0
Base free-flow Speed, BFFS	mph		mph
LOS and Performance Measures		Design (N)	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v _p = (V or DDHV) / (PHF x N x f _{HV})	1319	pc/h/ln	
x f _p)			v _p = (V or DDHV) / (PHF x N x f _{HV})
S	55.0	mph	x f _p)
D = v _p / S	24.0	pc/mi/ln	S
LOS	C		D = v _p / S
			pc/mi/ln
			Required Number of Lanes, N
Glossary		Factor Location	
N - Number of lanes	S - Speed	E _R - Exhibits 11-10, 11-12	f _{LW} - Exhibit 11-8
V - Hourly volume	D - Density	E _T - Exhibits 11-10, 11-11, 11-13	f _{LC} - Exhibit 11-9
v _p - Flow rate	FFS - Free-flow speed	f _p - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v _p - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

BASIC FREEWAY SEGMENTS WORKSHEET

General Information		Site Information	
Analyst	AECOM	Highway/Direction of Travel	Independence Blvd NB
Agency or Company		From/To	from US 17 Bus to US 74
Date Performed	2018	Jurisdiction	Segment #103
Analysis Time Period	PM Peak	Analysis Year	2040 Build - All Alternatives
Project Description U-4434 Independence Boulevard Extension			
<input checked="" type="checkbox"/> Oper.(LOS)		<input type="checkbox"/> Des.(N)	
<input type="checkbox"/> Planning Data			
Flow Inputs			
Volume, V	2874	veh/h	Peak-Hour Factor, PHF 0.90
AADT		veh/day	%Trucks and Buses, P _T 2
Peak-Hr Prop. of AADT, K			%RVs, P _R 0
Peak-Hr Direction Prop, D			General Terrain: Level
DDHV = AADT x K x D		veh/h	Grade % Length mi
			Up/Down %
Calculate Flow Adjustments			
f _p	1.00	E _R	1.2
E _T	1.5	f _{HV} = 1/[1+P _T (E _T - 1) + P _R (E _R - 1)]	0.990
Speed Inputs		Calc Speed Adj and FFS	
Lane Width	ft		
Rt-Side Lat. Clearance	ft	f _{LW}	mph
Number of Lanes, N	2	f _{LC}	mph
Total Ramp Density, TRD	ramps/mi	TRD Adjustment	mph
FFS (measured)	55.0	FFS	55.0
Base free-flow Speed, BFFS	mph		mph
LOS and Performance Measures		Design (N)	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v _p = (V or DDHV) / (PHF x N x f _{HV})	1613	pc/h/ln	
x f _p)			v _p = (V or DDHV) / (PHF x N x f _{HV})
S	55.0	mph	x f _p)
D = v _p / S	29.3	pc/mi/ln	S
LOS	D		D = v _p / S
			pc/mi/ln
			Required Number of Lanes, N
Glossary		Factor Location	
N - Number of lanes	S - Speed	E _R - Exhibits 11-10, 11-12	f _{LW} - Exhibit 11-8
V - Hourly volume	D - Density	E _T - Exhibits 11-10, 11-11, 11-13	f _{LC} - Exhibit 11-9
v _p - Flow rate	FFS - Free-flow speed	f _p - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v _p - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

BASIC FREEWAY SEGMENTS WORKSHEET

General Information		Site Information	
Analyst	AECOM	Highway/Direction of Travel	US 74 WB
Agency or Company		From/To	Independence Blvd to 23rd St
Date Performed	2018	Jurisdiction	Segment #104
Analysis Time Period	PM Peak	Analysis Year	2040 Build - All Alternatives
Project Description U-4434 Independence Boulevard Extension			
<input checked="" type="checkbox"/> Oper.(LOS)		<input type="checkbox"/> Des.(N)	
<input type="checkbox"/> Planning Data			
Flow Inputs			
Volume, V	2356	veh/h	Peak-Hour Factor, PHF
AADT		veh/day	%Trucks and Buses, P _T
Peak-Hr Prop. of AADT, K			%RVs, P _R
Peak-Hr Direction Prop, D			General Terrain:
DDHV = AADT x K x D		veh/h	Grade % Length
			Up/Down %
			0.90
			2
			0
			Level
			mi
Calculate Flow Adjustments			
f _p	1.00	E _R	1.2
E _T	1.5	f _{HV} = 1/[1+P _T (E _T - 1) + P _R (E _R - 1)]	0.990
Speed Inputs		Calc Speed Adj and FFS	
Lane Width	ft	f _{LW}	mph
Rt-Side Lat. Clearance	ft	f _{LC}	mph
Number of Lanes, N	3	TRD Adjustment	mph
Total Ramp Density, TRD	ramps/mi	FFS	60.0
FFS (measured)	60.0	mph	mph
Base free-flow Speed, BFFS	mph		
LOS and Performance Measures		Design (N)	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v _p = (V or DDHV) / (PHF x N x f _{HV})	881	Design LOS	
x f _p)		v _p = (V or DDHV) / (PHF x N x f _{HV})	pc/h/ln
S	60.0	x f _p)	
D = v _p / S	14.7	S	mph
LOS	B	D = v _p / S	pc/mi/ln
		Required Number of Lanes, N	
Glossary		Factor Location	
N - Number of lanes	S - Speed	E _R - Exhibits 11-10, 11-12	f _{LW} - Exhibit 11-8
V - Hourly volume	D - Density	E _T - Exhibits 11-10, 11-11, 11-13	f _{LC} - Exhibit 11-9
v _p - Flow rate	FFS - Free-flow speed	f _p - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v _p - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

BASIC FREEWAY SEGMENTS WORKSHEET

General Information		Site Information	
Analyst	AECOM	Highway/Direction of Travel	US 74 EB
Agency or Company		From/To	Independence Blvd Interchange
Date Performed	2018	Jurisdiction	Segment #105
Analysis Time Period	AM Peak	Analysis Year	2040 Build - All Alternatives

Project Description U-4434 Independence Boulevard Extension

Oper.(LOS)
 Des.(N)
 Planning Data

Flow Inputs			
Volume, V	1472	veh/h	Peak-Hour Factor, PHF
AADT		veh/day	%Trucks and Buses, P _T
Peak-Hr Prop. of AADT, K			%RVs, P _R
Peak-Hr Direction Prop, D			General Terrain:
DDHV = AADT x K x D		veh/h	Grade % Length
			Up/Down %

Calculate Flow Adjustments			
f _p	1.00	E _R	1.2
E _T	1.5	f _{HV} = 1/[1+P _T (E _T - 1) + P _R (E _R - 1)]	0.990

Speed Inputs		Calc Speed Adj and FFS	
Lane Width	ft	f _{LW}	mph
Rt-Side Lat. Clearance	ft	f _{LC}	mph
Number of Lanes, N	3	TRD Adjustment	mph
Total Ramp Density, TRD	ramps/mi	FFS	60.0 mph
FFS (measured)	60.0 mph		
Base free-flow Speed, BFFS	mph		

LOS and Performance Measures		Design (N)	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v _p = (V or DDHV) / (PHF x N x f _{HV})	551 pc/h/ln	Design LOS	
x f _p)		v _p = (V or DDHV) / (PHF x N x f _{HV})	pc/h/ln
S	60.0 mph	x f _p)	
D = v _p / S	9.2 pc/mi/ln	S	mph
LOS	A	D = v _p / S	pc/mi/ln
		Required Number of Lanes, N	

Glossary		Factor Location	
N - Number of lanes	S - Speed	E _R - Exhibits 11-10, 11-12	f _{LW} - Exhibit 11-8
V - Hourly volume	D - Density	E _T - Exhibits 11-10, 11-11, 11-13	f _{LC} - Exhibit 11-9
v _p - Flow rate	FFS - Free-flow speed	f _p - Page 11-18	TRD - Page 11-11
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DDHV - Directional design hour volume			

BASIC FREEWAY SEGMENTS WORKSHEET

General Information		Site Information	
Analyst	AECOM	Highway/Direction of Travel	US 74 EB
Agency or Company		From/To	Independence Blvd Interchange
Date Performed	2018	Jurisdiction	Segment #105
Analysis Time Period	PM Peak	Analysis Year	2040 Build - All Alternatives

Project Description *U-4434 Independence Boulevard Extension*

Oper.(LOS)
 Des.(N)
 Planning Data

Flow Inputs

Volume, V	2415	veh/h	Peak-Hour Factor, PHF	0.90
AADT		veh/day	%Trucks and Buses, P _T	2
Peak-Hr Prop. of AADT, K			%RVs, P _R	0
Peak-Hr Direction Prop, D			General Terrain:	Level
DDHV = AADT x K x D		veh/h	Grade % Length	mi
			Up/Down %	

Calculate Flow Adjustments

f _p	1.00	E _R	1.2
E _T	1.5	f _{HV} = 1/[1+P _T (E _T - 1) + P _R (E _R - 1)]	0.990

Speed Inputs

Speed Inputs		Calc Speed Adj and FFS	
Lane Width	ft	f _{LW}	mph
Rt-Side Lat. Clearance	ft	f _{LC}	mph
Number of Lanes, N	3	TRD Adjustment	mph
Total Ramp Density, TRD	ramps/mi	FFS	60.0 mph
FFS (measured)	60.0 mph		
Base free-flow Speed, BFFS	mph		

LOS and Performance Measures

LOS and Performance Measures		Design (N)	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v _p = (V or DDHV) / (PHF x N x f _{HV})	903 pc/h/ln	Design LOS	
x f _p)		v _p = (V or DDHV) / (PHF x N x f _{HV})	pc/h/ln
S	60.0 mph	x f _p)	
D = v _p / S	15.1 pc/mi/ln	S	mph
LOS	B	D = v _p / S	pc/mi/ln
		Required Number of Lanes, N	

Glossary

Glossary		Factor Location	
N - Number of lanes	S - Speed	E _R - Exhibits 11-10, 11-12	f _{LW} - Exhibit 11-8
V - Hourly volume	D - Density	E _T - Exhibits 11-10, 11-11, 11-13	f _{LC} - Exhibit 11-9
v _p - Flow rate	FFS - Free-flow speed	f _p - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v _p - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

BASIC FREEWAY SEGMENTS WORKSHEET

General Information		Site Information	
Analyst	AECOM	Highway/Direction of Travel	US 74 WB
Agency or Company		From/To	Independence Blvd Interchange
Date Performed	2018	Jurisdiction	Segment #106
Analysis Time Period	AM Peak	Analysis Year	2040 Build - All Alternatives
Project Description U-4434 Independence Boulevard Extension			
<input checked="" type="checkbox"/> Oper.(LOS)		<input type="checkbox"/> Des.(N)	
<input type="checkbox"/> Planning Data			

Flow Inputs			
Volume, V	2415	veh/h	Peak-Hour Factor, PHF
AADT		veh/day	%Trucks and Buses, P _T
Peak-Hr Prop. of AADT, K			%RVs, P _R
Peak-Hr Direction Prop, D			General Terrain:
DDHV = AADT x K x D		veh/h	Grade % Length
			Up/Down %

Calculate Flow Adjustments			
f _p	1.00	E _R	1.2
E _T	1.5	f _{HV} = 1/[1+P _T (E _T - 1) + P _R (E _R - 1)]	0.990

Speed Inputs		Calc Speed Adj and FFS	
Lane Width	ft	f _{LW}	mph
Rt-Side Lat. Clearance	ft	f _{LC}	mph
Number of Lanes, N	3	TRD Adjustment	mph
Total Ramp Density, TRD	ramps/mi	FFS	60.0
FFS (measured)	60.0	mph	
Base free-flow Speed, BFFS	mph		

LOS and Performance Measures		Design (N)	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v _p = (V or DDHV) / (PHF x N x f _{HV})	903	Design LOS	
x f _p)		v _p = (V or DDHV) / (PHF x N x f _{HV})	pc/h/ln
S	60.0	x f _p)	
D = v _p / S	15.1	S	mph
LOS	B	D = v _p / S	pc/mi/ln
		Required Number of Lanes, N	

Glossary		Factor Location	
N - Number of lanes	S - Speed	E _R - Exhibits 11-10, 11-12	f _{LW} - Exhibit 11-8
V - Hourly volume	D - Density	E _T - Exhibits 11-10, 11-11, 11-13	f _{LC} - Exhibit 11-9
v _p - Flow rate	FFS - Free-flow speed	f _p - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v _p - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

BASIC FREEWAY SEGMENTS WORKSHEET

General Information		Site Information	
Analyst	AECOM	Highway/Direction of Travel	US 74 WB
Agency or Company		From/To	Independence Blvd Interchange
Date Performed	2018	Jurisdiction	Segment #108
Analysis Time Period	PM Peak	Analysis Year	2040 Build - All Alternatives
Project Description U-4434 Independence Boulevard Extension			
<input checked="" type="checkbox"/> Oper.(LOS)		<input type="checkbox"/> Des.(N)	
<input type="checkbox"/> Planning Data			

Flow Inputs			
Volume, V	1472	veh/h	Peak-Hour Factor, PHF
AADT		veh/day	%Trucks and Buses, P _T
Peak-Hr Prop. of AADT, K			%RVs, P _R
Peak-Hr Direction Prop, D			General Terrain:
DDHV = AADT x K x D		veh/h	Grade % Length
			Up/Down %

Calculate Flow Adjustments			
f _p	1.00	E _R	1.2
E _T	1.5	f _{HV} = 1/[1+P _T (E _T - 1) + P _R (E _R - 1)]	0.990

Speed Inputs		Calc Speed Adj and FFS	
Lane Width	ft	f _{LW}	mph
Rt-Side Lat. Clearance	ft	f _{LC}	mph
Number of Lanes, N	3	TRD Adjustment	mph
Total Ramp Density, TRD	ramps/mi	FFS	60.0
FFS (measured)	60.0	mph	
Base free-flow Speed, BFFS	mph		

LOS and Performance Measures		Design (N)	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v _p = (V or DDHV) / (PHF x N x f _{HV})	551 pc/h/ln	Design LOS	
x f _p)		v _p = (V or DDHV) / (PHF x N x f _{HV})	pc/h/ln
S	60.0 mph	x f _p)	
D = v _p / S	9.2 pc/mi/ln	S	mph
LOS	A	D = v _p / S	pc/mi/ln
		Required Number of Lanes, N	

Glossary		Factor Location	
N - Number of lanes	S - Speed	E _R - Exhibits 11-10, 11-12	f _{LW} - Exhibit 11-8
V - Hourly volume	D - Density	E _T - Exhibits 11-10, 11-11, 11-13	f _{LC} - Exhibit 11-9
v _p - Flow rate	FFS - Free-flow speed	f _p - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v _p - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

Ramps and Ramp Junctions

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FREEWAY MERGE AND DIVERGE SEGMENTS

RAMP ROADWAY CAPACITY FOR ISOLATED RAMPS

General Information

Site Information

Analyst	AECOM	Freeway/Dir of Travel	Independence Blvd NB
Agency or Company		Junction	to US 17 Business
Date Performed	2018	Jurisdiction	Segment #201
Analysis Time Period	AM Peak	Analysis Year	2040 Build - All Alternatives

Project Description U-4434 Independence Boulevard Extension

Inputs

Terrain:	Level
Peak Hour Factor	0.90
Pop. Factor	1
Heavy Veh. PCE	1.5

Lanes	1
Speed (mph)	45
Capacity (vph)	2100
Heavy Veh. %	2 %
Heavy Veh. Factor	0.990
Volume	809
Flow Rate	908
Vol. to Cap. Ratio	0.43

ISOLATED RAMP V/C RATIO:

0.43

FREEWAY MERGE AND DIVERGE SEGMENTS

RAMP ROADWAY CAPACITY FOR ISOLATED RAMPS

General Information

Site Information

Analyst	AECOM	Freeway/Dir of Travel	Independence Blvd NB
Agency or Company		Junction	to US 17 Business
Date Performed	2018	Jurisdiction	Segment #201
Analysis Time Period	PM Peak	Analysis Year	2040 Build - All Alternatives

Project Description U-4434 Independence Boulevard Extension

Inputs

Terrain:	Level
Peak Hour Factor	0.90
Pop. Factor	1
Heavy Veh. PCE	1.5

Lanes	1
Speed (mph)	45
Capacity (vph)	2100
Heavy Veh. %	2 %
Heavy Veh. Factor	0.990
Volume	928
Flow Rate	1041
Vol. to Cap. Ratio	0.50

ISOLATED RAMP V/C RATIO:	0.50
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FREEWAY MERGE AND DIVERGE SEGMENTS

RAMP ROADWAY CAPACITY FOR ISOLATED RAMPS

General Information

Site Information

Analyst	AECOM	Freeway/Dir of Travel	Independence Blvd SB
Agency or Company		Junction	from US 17 Business
Date Performed	2018	Jurisdiction	Segment #202
Analysis Time Period	AM Peak	Analysis Year	2040 Build - All Alternatives

Project Description U-4434 Independence Boulevard Extension

Inputs

Terrain:	Level
Peak Hour Factor	0.90
Pop. Factor	1
Heavy Veh. PCE	1.5

Lanes	1
Speed (mph)	45
Capacity (vph)	2100
Heavy Veh. %	2 %
Heavy Veh. Factor	0.990
Volume	867
Flow Rate	973
Vol. to Cap. Ratio	0.46

ISOLATED RAMP V/C RATIO:

0.46

FREEWAY MERGE AND DIVERGE SEGMENTS

RAMP ROADWAY CAPACITY FOR ISOLATED RAMPS

General Information

Site Information

Analyst	AECOM	Freeway/Dir of Travel	Independence Blvd SB
Agency or Company		Junction	from US 17 Business
Date Performed	2018	Jurisdiction	Segment #202
Analysis Time Period	PM Peak	Analysis Year	2040 Build - All Alternatives

Project Description U-4434 Independence Boulevard Extension

Inputs

Terrain:	Level
Peak Hour Factor	0.90
Pop. Factor	1
Heavy Veh. PCE	1.5

Lanes	1
Speed (mph)	45
Capacity (vph)	2100
Heavy Veh. %	2 %
Heavy Veh. Factor	0.990
Volume	776
Flow Rate	871
Vol. to Cap. Ratio	0.41

ISOLATED RAMP V/C RATIO:

0.41

RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information		Site Information	
Analyst	AECOM	Freeway/Dir of Travel	Independence Blvd NB
Agency or Company		Junction	From US 17 Bus
Date Performed	2018	Jurisdiction	Segment #203
Analysis Time Period	AM Peak	Analysis Year	2040 Build - All Alternatives

Project Description U-4434 Independence Boulevard Extension

Inputs

Upstream Adj Ramp <input type="checkbox"/> Yes <input type="checkbox"/> On <input checked="" type="checkbox"/> No <input type="checkbox"/> Off L _{up} = ft V _u = veh/h	Freeway Number of Lanes, N 2 Ramp Number of Lanes, N 1 Acceleration Lane Length, L _A 1200 Deceleration Lane Length L _D Freeway Volume, V _F 1693 Ramp Volume, V _R 652 Freeway Free-Flow Speed, S _{FF} 55.0 Ramp Free-Flow Speed, S _{FR} 45.0	Downstream Adj Ramp <input type="checkbox"/> Yes <input type="checkbox"/> On <input checked="" type="checkbox"/> No <input type="checkbox"/> Off L _{down} = ft V _D = veh/h
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Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f _{HV}	f _p	v = V/PHF x f _{HV} x f _p
Freeway	1693	0.90	Level	2	0	0.971	1.00	1938
Ramp	652	0.90	Level	2	0	0.990	1.00	732
UpStream								
DownStream								

Merge Areas

Diverge Areas

Estimation of v₁₂

$V_{12} = V_F (P_{FM})$
(Equation 13-6 or 13-7)

L_{EQ} =

P_{FM} = 1.000 using Equation (Exhibit 13-6)

V₁₂ = 1938 pc/h

V₃ or V_{av34} = 0 pc/h (Equation 13-14 or 13-17)

Is V₃ or V_{av34} > 2,700 pc/h? Yes No

Is V₃ or V_{av34} > 1.5 * V₁₂/2 Yes No

If Yes, V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Estimation of v₁₂

$V_{12} = V_R + (V_F - V_R)P_{FD}$
(Equation 13-12 or 13-13)

L_{EQ} =

P_{FD} = using Equation (Exhibit 13-7)

V₁₂ = pc/h

V₃ or V_{av34} = pc/h (Equation 13-14 or 13-17)

Is V₃ or V_{av34} > 2,700 pc/h? Yes No

Is V₃ or V_{av34} > 1.5 * V₁₂/2 Yes No

If Yes, V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity	LOS F?
V _{FO}	2670	Exhibit 13-8	No

Capacity Checks

	Actual	Capacity	LOS F?
V _F		Exhibit 13-8	
V _{FO} = V _F - V _R		Exhibit 13-8	
V _R		Exhibit 13-10	

Flow Entering Merge Influence Area

	Actual	Max Desirable	Violation?
V _{R12}	2670	Exhibit 13-8	4600:All No

Flow Entering Diverge Influence Area

	Actual	Max Desirable	Violation?
V ₁₂		Exhibit 13-8	

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734 v_R + 0.0078 V_{12} - 0.00627 L_A$

D_R = 18.4 (pc/mi/ln)

LOS = B (Exhibit 13-2)

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086 V_{12} - 0.009 L_D$

D_R = (pc/mi/ln)

LOS = (Exhibit 13-2)

Speed Determination

M_S = 0.269 (Exhibit 13-11)

S_R = 51.5 mph (Exhibit 13-11)

S₀ = N/A mph (Exhibit 13-11)

S = 51.5 mph (Exhibit 13-13)

Speed Determination

D_S = (Exhibit 13-12)

S_R = mph (Exhibit 13-12)

S₀ = mph (Exhibit 13-12)

S = mph (Exhibit 13-13)

RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information		Site Information	
Analyst	AECOM	Freeway/Dir of Travel	Independence Blvd NB
Agency or Company		Junction	From US 17 Bus
Date Performed	2018	Jurisdiction	Segment #203
Analysis Time Period	PM Peak	Analysis Year	2040 Build - All Alternatives

Project Description U-4434 Independence Boulevard Extension

Inputs

Upstream Adj Ramp <input type="checkbox"/> Yes <input type="checkbox"/> On <input checked="" type="checkbox"/> No <input type="checkbox"/> Off L _{up} = ft V _u = veh/h	Freeway Number of Lanes, N 2 Ramp Number of Lanes, N 1 Acceleration Lane Length, L _A 1200 Deceleration Lane Length L _D Freeway Volume, V _F 2279 Ramp Volume, V _R 603 Freeway Free-Flow Speed, S _{FF} 55.0 Ramp Free-Flow Speed, S _{FR} 45.0	Downstream Adj Ramp <input type="checkbox"/> Yes <input type="checkbox"/> On <input checked="" type="checkbox"/> No <input type="checkbox"/> Off L _{down} = ft V _D = veh/h
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Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f _{HV}	f _p	v = V/PHF x f _{HV} x f _p
Freeway	2279	0.90	Level	2	0	0.971	1.00	2608
Ramp	603	0.90	Level	2	0	0.990	1.00	677
UpStream								
DownStream								

Merge Areas

Diverge Areas

Estimation of v₁₂

$V_{12} = V_F (P_{FM})$
 (Equation 13-6 or 13-7)
 P_{FM} = 1.000 using Equation (Exhibit 13-6)
 V₁₂ = 2608 pc/h
 V₃ or V_{av34} = 0 pc/h (Equation 13-14 or 13-17)
 Is V₃ or V_{av34} > 2,700 pc/h? Yes No
 Is V₃ or V_{av34} > 1.5 * V₁₂/2 Yes No
 If Yes, V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Estimation of v₁₂

$V_{12} = V_R + (V_F - V_R)P_{FD}$
 (Equation 13-12 or 13-13)
 P_{FD} = using Equation (Exhibit 13-7)
 V₁₂ = pc/h
 V₃ or V_{av34} = pc/h (Equation 13-14 or 13-17)
 Is V₃ or V_{av34} > 2,700 pc/h? Yes No
 Is V₃ or V_{av34} > 1.5 * V₁₂/2 Yes No
 If Yes, V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity	LOS F?
V _{FO}	3285	Exhibit 13-8	No

Capacity Checks

	Actual	Capacity	LOS F?
V _F		Exhibit 13-8	
V _{FO} = V _F - V _R		Exhibit 13-8	
V _R		Exhibit 13-10	

Flow Entering Merge Influence Area

	Actual	Max Desirable	Violation?
V _{R12}	3285	Exhibit 13-8	4600:All No

Flow Entering Diverge Influence Area

	Actual	Max Desirable	Violation?
V ₁₂		Exhibit 13-8	

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734 v_R + 0.0078 V_{12} - 0.00627 L_A$
 D_R = 23.3 (pc/mi/ln)
 LOS = C (Exhibit 13-2)

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086 V_{12} - 0.009 L_D$
 D_R = (pc/mi/ln)
 LOS = (Exhibit 13-2)

Speed Determination

M_S = 0.317 (Exhibit 13-11)
 S_R = 50.9 mph (Exhibit 13-11)
 S₀ = N/A mph (Exhibit 13-11)
 S = 50.9 mph (Exhibit 13-13)

Speed Determination

D_S = (Exhibit 13-12)
 S_R = mph (Exhibit 13-12)
 S₀ = mph (Exhibit 13-12)
 S = mph (Exhibit 13-13)

FREEWAY MERGE AND DIVERGE SEGMENTS

RAMP ROADWAY CAPACITY FOR ISOLATED RAMPS

General Information **Site Information**

Analyst	AECOM	Freeway/Dir of Travel	Independence Blvd NB
Agency or Company		Junction	to US 74 WB
Date Performed	2018	Jurisdiction	Segment #204
Analysis Time Period	AM Peak	Analysis Year	2040 Build - All Alternatives

Project Description U-4434 Independence Boulevard Extension

Inputs

Terrain:	Level
Peak Hour Factor	0.90
Pop. Factor	1
Heavy Veh. PCE	1.5

Lanes	1
Speed (mph)	25
Capacity (vph)	1900
Heavy Veh. %	2 %
Heavy Veh. Factor	0.990
Volume	1052
Flow Rate	1181
Vol. to Cap. Ratio	0.62

ISOLATED RAMP V/C RATIO:	0.62
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FREEWAY MERGE AND DIVERGE SEGMENTS

RAMP ROADWAY CAPACITY FOR ISOLATED RAMPS

General Information

Site Information

Analyst AECOM
Agency or Company
Date Performed 2018
Analysis Time Period PM Peak

Freeway/Dir of Travel Independence Blvd NB
Junction to US 74 WB
Jurisdiction Segment #204
Analysis Year 2040 Build - All Alternatives

Project Description U-4434 Independence Boulevard Extension

Inputs

Terrain:	Level
Peak Hour Factor	0.90
Pop. Factor	1
Heavy Veh. PCE	1.5

Lanes	1
Speed (mph)	25
Capacity (vph)	1900
Heavy Veh. %	2 %
Heavy Veh. Factor	0.990
Volume	930
Flow Rate	1044
Vol. to Cap. Ratio	0.55

ISOLATED RAMP V/C RATIO:	0.55
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FREEWAY MERGE AND DIVERGE SEGMENTS

RAMP ROADWAY CAPACITY FOR ISOLATED RAMPS

General Information

Site Information

Analyst	AECOM	Freeway/Dir of Travel	Independence Blvd SB
Agency or Company		Junction	from US 74 EB
Date Performed	2018	Jurisdiction	Segment #205
Analysis Time Period	AM Peak	Analysis Year	2040 Build - All Alternatives

Project Description U-4434 Independence Boulevard Extension

Inputs

Terrain:	Level
Peak Hour Factor	0.90
Pop. Factor	1
Heavy Veh. PCE	1.5

Lanes	2
Speed (mph)	55
Capacity (vph)	2200
Heavy Veh. %	2 %
Heavy Veh. Factor	0.990
Volume	930
Flow Rate	1044
Vol. to Cap. Ratio	0.24

ISOLATED RAMP V/C RATIO:	0.24
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FREEWAY MERGE AND DIVERGE SEGMENTS

RAMP ROADWAY CAPACITY FOR ISOLATED RAMPS

General Information

Site Information

Analyst	AECOM	Freeway/Dir of Travel	Independence Blvd SB
Agency or Company		Junction	from US 74 EB
Date Performed	2018	Jurisdiction	Segment #205
Analysis Time Period	PM Peak	Analysis Year	2040 Build - All Alternatives

Project Description U-4434 Independence Boulevard Extension

Inputs

Terrain:	Level
Peak Hour Factor	0.90
Pop. Factor	1
Heavy Veh. PCE	1.5

Lanes	2
Speed (mph)	55
Capacity (vph)	2200
Heavy Veh. %	2 %
Heavy Veh. Factor	0.990
Volume	1052
Flow Rate	1181
Vol. to Cap. Ratio	0.27

ISOLATED RAMP V/C RATIO:

0.27

FREEWAY MERGE AND DIVERGE SEGMENTS

RAMP ROADWAY CAPACITY FOR ISOLATED RAMPS

General Information

Site Information

Analyst	AECOM	Freeway/Dir of Travel	Independence Blvd NB
Agency or Company		Junction	to US 74 EB
Date Performed	2018	Jurisdiction	Segment #206
Analysis Time Period	AM Peak	Analysis Year	2040 Build - All Alternatives

Project Description U-4434 Independence Boulevard Extension

Inputs

Terrain:	Level
Peak Hour Factor	0.90
Pop. Factor	1
Heavy Veh. PCE	1.5

Lanes	2
Speed (mph)	55
Capacity (vph)	2200
Heavy Veh. %	2 %
Heavy Veh. Factor	0.990
Volume	1127
Flow Rate	1265
Vol. to Cap. Ratio	0.29

ISOLATED RAMP V/C RATIO:	0.29
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FREEWAY MERGE AND DIVERGE SEGMENTS

RAMP ROADWAY CAPACITY FOR ISOLATED RAMPS

General Information

Site Information

Analyst	AECOM	Freeway/Dir of Travel	Independence Blvd NB
Agency or Company		Junction	to US 74 EB
Date Performed	2018	Jurisdiction	Segment #206
Analysis Time Period	PM Peak	Analysis Year	2040 Build - All Alternatives

Project Description U-4434 Independence Boulevard Extension

Inputs

Terrain:	Level
Peak Hour Factor	0.90
Pop. Factor	1
Heavy Veh. PCE	1.5

Lanes	2
Speed (mph)	55
Capacity (vph)	2200
Heavy Veh. %	2 %
Heavy Veh. Factor	0.990
Volume	1634
Flow Rate	1834
Vol. to Cap. Ratio	0.42

ISOLATED RAMP V/C RATIO:	0.42
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RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information		Site Information	
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Analyst	AECOM	Freeway/Dir of Travel	US 74 WB
Agency or Company		Junction	from Independence Blvd NB
Date Performed	2018	Jurisdiction	Segment #207 - Downstream
Analysis Time Period	AM Peak	Analysis Year	2040 Build - All Alternatives

Project Description U-4434 Independence Boulevard Extension

Inputs

Upstream Adj Ramp <input type="checkbox"/> Yes <input type="checkbox"/> On <input checked="" type="checkbox"/> No <input type="checkbox"/> Off L _{up} = ft V _u = veh/h	Freeway Number of Lanes, N 3 Ramp Number of Lanes, N 1 Acceleration Lane Length, L _A 1200 Deceleration Lane Length L _D 1200 Freeway Volume, V _F 2415 Ramp Volume, V _R 1052 Freeway Free-Flow Speed, S _{FF} 60.0 Ramp Free-Flow Speed, S _{FR} 25.0	Downstream Adj Ramp <input checked="" type="checkbox"/> Yes <input type="checkbox"/> On <input type="checkbox"/> No <input checked="" type="checkbox"/> Off L _{down} = 6000 ft V _D = 805 veh/h
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Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f _{HV}	f _p	V = V/PHF x f _{HV} x f _p
Freeway	2415	0.90	Level	2	0	0.990	1.00	2710
Ramp	1052	0.90	Level	2	0	0.990	1.00	1181
UpStream								
DownStream	805	0.90	Level	2	0	0.990	1.00	903

Merge Areas	Diverge Areas
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Estimation of v ₁₂	Estimation of v ₁₂
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$V_{12} = V_F (P_{FM})$ L _{EQ} = 3794.12 (Equation 13-6 or 13-7) P _{FM} = 0.611 using Equation (Exhibit 13-6) V ₁₂ = 1656 pc/h V ₃ or V _{av34} = 1054 pc/h (Equation 13-14 or 13-17) Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No If Yes, V _{12a} = 1656 pc/h (Equation 13-16, 13-18, or 13-19)	$V_{12} = V_R + (V_F - V_R)P_{FD}$ L _{EQ} = (Equation 13-12 or 13-13) P _{FD} = using Equation (Exhibit 13-7) V ₁₂ = pc/h V ₃ or V _{av34} = pc/h (Equation 13-14 or 13-17) Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input type="checkbox"/> No If Yes, V _{12a} = pc/h (Equation 13-16, 13-18, or 13-19)
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Capacity Checks	Capacity Checks
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	Actual	Capacity	LOS F?		Actual	Capacity	LOS F?
V _{FO}	3891	Exhibit 13-8	No	V _F		Exhibit 13-8	
				V _{FO} = V _F - V _R		Exhibit 13-8	
				V _R		Exhibit 13-10	

Flow Entering Merge Influence Area	Flow Entering Diverge Influence Area
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	Actual	Max Desirable	Violation?		Actual	Max Desirable	Violation?
V _{R12}	2837	Exhibit 13-8	4600:All	No	V ₁₂	Exhibit 13-8	

Level of Service Determination (if not F)	Level of Service Determination (if not F)
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$D_R = 5.475 + 0.00734 v_R + 0.0078 V_{12} - 0.00627 L_A$ D _R = 19.5 (pc/mi/ln) LOS = B (Exhibit 13-2)	$D_R = 4.252 + 0.0086 V_{12} - 0.009 L_D$ D _R = (pc/mi/ln) LOS = (Exhibit 13-2)
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Speed Determination	Speed Determination
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M _S = 0.328 (Exhibit 13-11) S _R = 54.1 mph (Exhibit 13-11) S ₀ = 58.0 mph (Exhibit 13-11) S = 55.1 mph (Exhibit 13-13)	D _S = (Exhibit 13-12) S _R = mph (Exhibit 13-12) S ₀ = mph (Exhibit 13-12) S = mph (Exhibit 13-13)
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RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information	Site Information
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Analyst	AECOM	Freeway/Dir of Travel	US 74 WB
Agency or Company		Junction	from Independence Blvd NB
Date Performed	2018	Jurisdiction	Segment #207 - Downstream
Analysis Time Period	PM Peak	Analysis Year	2040 Build - All Alternatives

Project Description U-4434 Independence Boulevard Extension

Inputs

Upstream Adj Ramp <input type="checkbox"/> Yes <input type="checkbox"/> On <input checked="" type="checkbox"/> No <input type="checkbox"/> Off L _{up} = ft V _u = veh/h	<table style="width: 100%;"> <tr> <td style="width: 50%;">Freeway Number of Lanes, N</td> <td style="width: 50%;">3</td> </tr> <tr> <td>Ramp Number of Lanes, N</td> <td>1</td> </tr> <tr> <td>Acceleration Lane Length, L_A</td> <td>1200</td> </tr> <tr> <td>Deceleration Lane Length L_D</td> <td></td> </tr> <tr> <td>Freeway Volume, V_F</td> <td>1472</td> </tr> <tr> <td>Ramp Volume, V_R</td> <td>930</td> </tr> <tr> <td>Freeway Free-Flow Speed, S_{FF}</td> <td>60.0</td> </tr> <tr> <td>Ramp Free-Flow Speed, S_{FR}</td> <td>25.0</td> </tr> </table>	Freeway Number of Lanes, N	3	Ramp Number of Lanes, N	1	Acceleration Lane Length, L _A	1200	Deceleration Lane Length L _D		Freeway Volume, V _F	1472	Ramp Volume, V _R	930	Freeway Free-Flow Speed, S _{FF}	60.0	Ramp Free-Flow Speed, S _{FR}	25.0	Downstream Adj Ramp <input checked="" type="checkbox"/> Yes <input type="checkbox"/> On <input type="checkbox"/> No <input checked="" type="checkbox"/> Off L _{down} = 6000 ft V _D = 696 veh/h
Freeway Number of Lanes, N	3																	
Ramp Number of Lanes, N	1																	
Acceleration Lane Length, L _A	1200																	
Deceleration Lane Length L _D																		
Freeway Volume, V _F	1472																	
Ramp Volume, V _R	930																	
Freeway Free-Flow Speed, S _{FF}	60.0																	
Ramp Free-Flow Speed, S _{FR}	25.0																	

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f _{HV}	f _p	V = V/PHF x f _{HV} x f _p
Freeway	1472	0.90	Level	2	0	0.990	1.00	1652
Ramp	930	0.90	Level	2	0	0.990	1.00	1044
UpStream								
DownStream	696	0.90	Level	2	0	0.990	1.00	781

Merge Areas	Diverge Areas
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Estimation of v ₁₂	Estimation of v ₁₂
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$V_{12} = V_F (P_{FM})$ L _{EQ} = 3281.51 (Equation 13-6 or 13-7) P _{FM} = 0.611 using Equation (Exhibit 13-6) V ₁₂ = 1010 pc/h V ₃ or V _{av34} = 642 pc/h (Equation 13-14 or 13-17) Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No If Yes, V _{12a} = 1010 pc/h (Equation 13-16, 13-18, or 13-19)	$V_{12} = V_R + (V_F - V_R)P_{FD}$ L _{EQ} = (Equation 13-12 or 13-13) P _{FD} = using Equation (Exhibit 13-7) V ₁₂ = pc/h V ₃ or V _{av34} = pc/h (Equation 13-14 or 13-17) Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input type="checkbox"/> No If Yes, V _{12a} = pc/h (Equation 13-16, 13-18, or 13-19)
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Capacity Checks	Capacity Checks
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	Actual	Capacity	LOS F?		Actual	Capacity	LOS F?
V _{FO}	2696	Exhibit 13-8	No	V _F		Exhibit 13-8	
				V _{FO} = V _F - V _R		Exhibit 13-8	
				V _R		Exhibit 13-10	

Flow Entering Merge Influence Area	Flow Entering Diverge Influence Area
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	Actual	Max Desirable	Violation?		Actual	Max Desirable	Violation?
V _{R12}	2054	Exhibit 13-8	4600:All	No	V ₁₂	Exhibit 13-8	

Level of Service Determination (if not F)	Level of Service Determination (if not F)
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$D_R = 5.475 + 0.00734 v_R + 0.0078 V_{12} - 0.00627 L_A$ D _R = 13.5 (pc/mi/ln) LOS = B (Exhibit 13-2)	$D_R = 4.252 + 0.0086 V_{12} - 0.009 L_D$ D _R = (pc/mi/ln) LOS = (Exhibit 13-2)
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Speed Determination	Speed Determination
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M _S = 0.291 (Exhibit 13-11) S _R = 54.8 mph (Exhibit 13-11) S ₀ = 59.5 mph (Exhibit 13-11) S = 55.8 mph (Exhibit 13-13)	D _S = (Exhibit 13-12) S _R = mph (Exhibit 13-12) S ₀ = mph (Exhibit 13-12) S = mph (Exhibit 13-13)
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RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information		Site Information	
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Analyst	AECOM	Freeway/Dir of Travel	US 74 WB
Agency or Company		Junction	from Independence Blvd NB
Date Performed	2018	Jurisdiction	Segment #207 - Upstream
Analysis Time Period	AM Peak	Analysis Year	2040 Build - All Alternatives

Project Description U-4434 Independence Boulevard Extension

Inputs

Upstream Adj Ramp <input checked="" type="checkbox"/> Yes <input type="checkbox"/> On <input type="checkbox"/> No <input checked="" type="checkbox"/> Off L _{up} = 1330 ft V _u = 1634 veh/h	<table style="width: 100%;"> <tr> <td>Freeway Number of Lanes, N</td> <td style="text-align: right;">3</td> </tr> <tr> <td>Ramp Number of Lanes, N</td> <td style="text-align: right;">1</td> </tr> <tr> <td>Acceleration Lane Length, L_A</td> <td style="text-align: right;">1200</td> </tr> <tr> <td>Deceleration Lane Length L_D</td> <td></td> </tr> <tr> <td>Freeway Volume, V_F</td> <td style="text-align: right;">2415</td> </tr> <tr> <td>Ramp Volume, V_R</td> <td style="text-align: right;">1052</td> </tr> <tr> <td>Freeway Free-Flow Speed, S_{FF}</td> <td style="text-align: right;">60.0</td> </tr> <tr> <td>Ramp Free-Flow Speed, S_{FR}</td> <td style="text-align: right;">25.0</td> </tr> </table>	Freeway Number of Lanes, N	3	Ramp Number of Lanes, N	1	Acceleration Lane Length, L _A	1200	Deceleration Lane Length L _D		Freeway Volume, V _F	2415	Ramp Volume, V _R	1052	Freeway Free-Flow Speed, S _{FF}	60.0	Ramp Free-Flow Speed, S _{FR}	25.0	Downstream Adj Ramp <input type="checkbox"/> Yes <input type="checkbox"/> On <input checked="" type="checkbox"/> No <input type="checkbox"/> Off L _{down} = ft V _D = veh/h
Freeway Number of Lanes, N	3																	
Ramp Number of Lanes, N	1																	
Acceleration Lane Length, L _A	1200																	
Deceleration Lane Length L _D																		
Freeway Volume, V _F	2415																	
Ramp Volume, V _R	1052																	
Freeway Free-Flow Speed, S _{FF}	60.0																	
Ramp Free-Flow Speed, S _{FR}	25.0																	

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f _{HV}	f _p	V = V/PHF x f _{HV} x f _p
Freeway	2415	0.90	Level	2	0	0.990	1.00	2710
Ramp	1052	0.90	Level	2	0	0.990	1.00	1181
UpStream	1634	0.90	Level	2	0	0.990	1.00	1834
DownStream								

Merge Areas	Diverge Areas
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Estimation of v₁₂

$V_{12} = V_F (P_{FM})$ L _{EQ} = 270.47 (Equation 13-6 or 13-7) P _{FM} = 0.611 using Equation (Exhibit 13-6) V ₁₂ = 1656 pc/h V ₃ or V _{av34} = 1054 pc/h (Equation 13-14 or 13-17) Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No If Yes, V _{12a} = 1656 pc/h (Equation 13-16, 13-18, or 13-19)	$V_{12} = V_R + (V_F - V_R)P_{FD}$ L _{EQ} = (Equation 13-12 or 13-13) P _{FD} = using Equation (Exhibit 13-7) V ₁₂ = pc/h V ₃ or V _{av34} = pc/h (Equation 13-14 or 13-17) Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input type="checkbox"/> No If Yes, V _{12a} = pc/h (Equation 13-16, 13-18, or 13-19)
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Capacity Checks

	Actual	Capacity	LOS F?
V _{FO}	3891	Exhibit 13-8	No
		V _F	Exhibit 13-8
		V _{FO} = V _F - V _R	Exhibit 13-8
		V _R	Exhibit 13-10

Flow Entering Merge Influence Area				Flow Entering Diverge Influence Area			
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	Actual	Max Desirable	Violation?
V _{R12}	2837	Exhibit 13-8	4600:All
V ₁₂		Exhibit 13-8	

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734 v_R + 0.0078 v_{12} - 0.00627 L_A$ D _R = 19.5 (pc/mi/ln) LOS = B (Exhibit 13-2)	$D_R = 4.252 + 0.0086 v_{12} - 0.009 L_D$ D _R = (pc/mi/ln) LOS = (Exhibit 13-2)
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Speed Determination

M _S = 0.328 (Exhibit 13-11) S _R = 54.1 mph (Exhibit 13-11) S ₀ = 58.0 mph (Exhibit 13-11) S = 55.1 mph (Exhibit 13-13)	D _S = (Exhibit 13-12) S _R = mph (Exhibit 13-12) S ₀ = mph (Exhibit 13-12) S = mph (Exhibit 13-13)
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RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information		Site Information	
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Analyst	AECOM	Freeway/Dir of Travel	US 74 WB
Agency or Company		Junction	from Independence Blvd NB
Date Performed	2018	Jurisdiction	Segment #207 - Upstream
Analysis Time Period	PM Peak	Analysis Year	2040 Build - All Alternatives

Project Description U-4434 Independence Boulevard Extension

Inputs

Upstream Adj Ramp <input checked="" type="checkbox"/> Yes <input type="checkbox"/> On <input type="checkbox"/> No <input checked="" type="checkbox"/> Off L _{up} = 1330 ft V _u = 1127 veh/h	<table style="width: 100%;"> <tr> <td>Freeway Number of Lanes, N</td> <td style="text-align: right;">3</td> </tr> <tr> <td>Ramp Number of Lanes, N</td> <td style="text-align: right;">1</td> </tr> <tr> <td>Acceleration Lane Length, L_A</td> <td style="text-align: right;">1200</td> </tr> <tr> <td>Deceleration Lane Length L_D</td> <td></td> </tr> <tr> <td>Freeway Volume, V_F</td> <td style="text-align: right;">1472</td> </tr> <tr> <td>Ramp Volume, V_R</td> <td style="text-align: right;">930</td> </tr> <tr> <td>Freeway Free-Flow Speed, S_{FF}</td> <td style="text-align: right;">60.0</td> </tr> <tr> <td>Ramp Free-Flow Speed, S_{FR}</td> <td style="text-align: right;">25.0</td> </tr> </table>	Freeway Number of Lanes, N	3	Ramp Number of Lanes, N	1	Acceleration Lane Length, L _A	1200	Deceleration Lane Length L _D		Freeway Volume, V _F	1472	Ramp Volume, V _R	930	Freeway Free-Flow Speed, S _{FF}	60.0	Ramp Free-Flow Speed, S _{FR}	25.0	Downstream Adj Ramp <input type="checkbox"/> Yes <input type="checkbox"/> On <input checked="" type="checkbox"/> No <input type="checkbox"/> Off L _{down} = ft V _D = veh/h
Freeway Number of Lanes, N	3																	
Ramp Number of Lanes, N	1																	
Acceleration Lane Length, L _A	1200																	
Deceleration Lane Length L _D																		
Freeway Volume, V _F	1472																	
Ramp Volume, V _R	930																	
Freeway Free-Flow Speed, S _{FF}	60.0																	
Ramp Free-Flow Speed, S _{FR}	25.0																	

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f _{HV}	f _p	V = V/PHF x f _{HV} x f _p
Freeway	1472	0.90	Level	2	0	0.990	1.00	1652
Ramp	930	0.90	Level	2	0	0.990	1.00	1044
UpStream	1127	0.90	Level	2	0	0.990	1.00	1265
DownStream								

Merge Areas	Diverge Areas
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Estimation of v₁₂

$V_{12} = V_F (P_{FM})$ L _{EQ} = 14.74 (Equation 13-6 or 13-7) P _{FM} = 0.611 using Equation (Exhibit 13-6) V ₁₂ = 1010 pc/h V ₃ or V _{av34} = 642 pc/h (Equation 13-14 or 13-17) Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No If Yes, V _{12a} = 1010 pc/h (Equation 13-16, 13-18, or 13-19)	$V_{12} = V_R + (V_F - V_R)P_{FD}$ L _{EQ} = (Equation 13-12 or 13-13) P _{FD} = using Equation (Exhibit 13-7) V ₁₂ = pc/h V ₃ or V _{av34} = pc/h (Equation 13-14 or 13-17) Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input type="checkbox"/> No If Yes, V _{12a} = pc/h (Equation 13-16, 13-18, or 13-19)
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Capacity Checks

	Actual	Capacity	LOS F?
V _{FO}	2696	Exhibit 13-8	No
		V _F	Exhibit 13-8
		V _{FO} = V _F - V _R	Exhibit 13-8
		V _R	Exhibit 13-10

Flow Entering Merge Influence Area				Flow Entering Diverge Influence Area			
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	Actual	Max Desirable	Violation?
V _{R12}	2054	Exhibit 13-8	4600:All
V ₁₂		Exhibit 13-8	

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734 v_R + 0.0078 V_{12} - 0.00627 L_A$ D _R = 13.5 (pc/mi/ln) LOS = B (Exhibit 13-2)	$D_R = 4.252 + 0.0086 V_{12} - 0.009 L_D$ D _R = (pc/mi/ln) LOS = (Exhibit 13-2)
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Speed Determination

M _S = 0.291 (Exhibit 13-11) S _R = 54.8 mph (Exhibit 13-11) S ₀ = 59.5 mph (Exhibit 13-11) S = 55.8 mph (Exhibit 13-13)	D _S = (Exhibit 13-12) S _R = mph (Exhibit 13-12) S ₀ = mph (Exhibit 13-12) S = mph (Exhibit 13-13)
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Weaving Segments

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FREEWAY WEAVING WORKSHEET

General Information		Site Information	
Analyst	AECOM	Freeway/Dir of Travel	Independence Blvd SB
Agency/Company	Segment #301	Weaving Segment Location	US 74 to US 17 Bus
Date Performed	2018	Analysis Year	2040 Build - All Alternatives
Analysis Time Period	AM Peak		

Project Description U-4434 Independence Boulevard Extension

Inputs

Weaving configuration	One-Sided	Segment type	Freeway
Weaving number of lanes, N	3	Freeway minimum speed, S_{MIN}	15
Weaving segment length, L_S	2710ft	Freeway maximum capacity, C_{IFL}	2250
Freeway free-flow speed, FFS	55 mph	Terrain type	Level

Conversions to pc/h Under Base Conditions

	V (veh/h)	PHF	Truck (%)	RV (%)	E_T	E_R	f_{HV}	f_p	v (pc/h)
V_{FF}	979	0.90	2	0	1.5	1.2	0.990	1.00	1099
V_{RF}	1290	0.90	2	0	2.5	1.2	0.971	1.00	1476
V_{FR}	261	0.90	2	0	1.5	1.2	0.990	1.00	293
V_{RR}	344	0.90	2	0	1.5	1.2	0.990	1.00	386
V_{NW}	1485							V =	3254
V_W	1769								
VR	0.544								

Configuration Characteristics

Minimum maneuver lanes, N_{WL}	2 lc	Minimum weaving lane changes, LC_{MIN}	1769 lc/h
Interchange density, ID	0.3 int/mi	Weaving lane changes, LC_W	1982 lc/h
Minimum RF lane changes, LC_{RF}	1 lc/pc	Non-weaving lane changes, LC_{NW}	1197 lc/h
Minimum FR lane changes, LC_{FR}	1 lc/pc	Total lane changes, LC_{ALL}	3179 lc/h
Minimum RR lane changes, LC_{RR}	lc/pc	Non-weaving vehicle index, I_{NW}	121

Weaving Segment Speed, Density, Level of Service, and Capacity

Weaving segment flow rate, v	3194 veh/h	Weaving intensity factor, W	0.256
Weaving segment capacity, c_w	4371 veh/h	Weaving segment speed, S	41.8 mph
Weaving segment v/c ratio	0.731	Average weaving speed, S_W	46.8 mph
Weaving segment density, D	25.9 pc/mi/ln	Average non-weaving speed, S_{NW}	37.1 mph
Level of Service, LOS	C	Maximum weaving length, L_{MAX}	8341 ft

Notes

- a. Weaving segments longer than the calculated maximum length should be treated as isolated merge and diverge areas using the procedures of Chapter 13, "Freeway Merge and Diverge Segments".
- b. For volumes that exceed the weaving segment capacity, the level of service is "F".

FREEWAY WEAVING WORKSHEET

General Information		Site Information	
Analyst	AECOM	Freeway/Dir of Travel	Independence Blvd SB
Agency/Company	Segment #301	Weaving Segment Location	US 74 to US 17 Bus
Date Performed	2018	Analysis Year	2040 Build - All Alternatives
Analysis Time Period	PM Peak		

Project Description U-4434 Independence Boulevard Extension

Inputs

Weaving configuration	One-Sided	Segment type	Freeway
Weaving number of lanes, N	3	Freeway minimum speed, S_{MIN}	15
Weaving segment length, L_S	2710ft	Freeway maximum capacity, C_{IFL}	2250
Freeway free-flow speed, FFS	55 mph	Terrain type	Level

Conversions to pc/h Under Base Conditions

	V (veh/h)	PHF	Truck (%)	RV (%)	E_T	E_R	f_{HV}	f_p	v (pc/h)
V_{FF}	886	0.90	2	0	1.5	1.2	0.990	1.00	994
V_{RF}	815	0.90	2	0	2.5	1.2	0.971	1.00	933
V_{FR}	338	0.90	2	0	1.5	1.2	0.990	1.00	379
V_{RR}	312	0.90	2	0	1.5	1.2	0.990	1.00	350
V_{NW}	1344							V =	2656
V_W	1312								
VR	0.494								

Configuration Characteristics

Minimum maneuver lanes, N_{WL}	2 lc	Minimum weaving lane changes, LC_{MIN}	1312 lc/h
Interchange density, ID	0.3 int/mi	Weaving lane changes, LC_W	1525 lc/h
Minimum RF lane changes, LC_{RF}	1 lc/pc	Non-weaving lane changes, LC_{NW}	1168 lc/h
Minimum FR lane changes, LC_{FR}	1 lc/pc	Total lane changes, LC_{ALL}	2693 lc/h
Minimum RR lane changes, LC_{RR}	lc/pc	Non-weaving vehicle index, I_{NW}	109

Weaving Segment Speed, Density, Level of Service, and Capacity

Weaving segment flow rate, v	2613 veh/h	Weaving intensity factor, W	0.225
Weaving segment capacity, c_w	4810 veh/h	Weaving segment speed, S	44.2 mph
Weaving segment v/c ratio	0.543	Average weaving speed, S_W	47.7 mph
Weaving segment density, D	20.0 pc/mi/ln	Average non-weaving speed, S_{NW}	41.3 mph
Level of Service, LOS	C	Maximum weaving length, L_{MAX}	7756 ft

Notes

- a. Weaving segments longer than the calculated maximum length should be treated as isolated merge and diverge areas using the procedures of Chapter 13, "Freeway Merge and Diverge Segments".
- b. For volumes that exceed the weaving segment capacity, the level of service is "F".

FREEWAY WEAVING WORKSHEET

General Information		Site Information	
Analyst	AECOM	Freeway/Dir of Travel	US 74 EB
Agency/Company	Segment #302	Weaving Segment Location	N 23rd Street to Independence
Date Performed	2018	Analysis Year	2040 Build - All Alternatives
Analysis Time Period	AM Peak		

Project Description U-4434 Independence Boulevard Extension

Inputs

Weaving configuration	One-Sided	Segment type	Freeway
Weaving number of lanes, N	4	Freeway minimum speed, S_{MIN}	15
Weaving segment length, L_S	1890ft	Freeway maximum capacity, C_{IFL}	2300
Freeway free-flow speed, FFS	60 mph	Terrain type	Level

Conversions to pc/h Under Base Conditions

	V (veh/h)	PHF	Truck (%)	RV (%)	E_T	E_R	f_{HV}	f_p	v (pc/h)
V_{FF}	1005	0.90	2	0	1.5	1.2	0.990	1.00	1128
V_{RF}	421	0.90	2	0	2.5	1.2	0.971	1.00	482
V_{FR}	655	0.90	2	0	1.5	1.2	0.990	1.00	735
V_{RR}	275	0.90	2	0	1.5	1.2	0.990	1.00	309
V_{NW}	1437							V =	2654
V_W	1217								
VR	0.459								

Configuration Characteristics

Minimum maneuver lanes, N_{WL}	3 lc	Minimum weaving lane changes, LC_{MIN}	735 lc/h
Interchange density, ID	1.0 int/mi	Weaving lane changes, LC_W	1168 lc/h
Minimum RF lane changes, LC_{RF}	0 lc/pc	Non-weaving lane changes, LC_{NW}	550 lc/h
Minimum FR lane changes, LC_{FR}	1 lc/pc	Total lane changes, LC_{ALL}	1718 lc/h
Minimum RR lane changes, LC_{RR}	lc/pc	Non-weaving vehicle index, I_{NW}	272

Weaving Segment Speed, Density, Level of Service, and Capacity

Weaving segment flow rate, v	2618 veh/h	Weaving intensity factor, W	0.210
Weaving segment capacity, c_w	7557 veh/h	Weaving segment speed, S	51.8 mph
Weaving segment v/c ratio	0.346	Average weaving speed, S_W	52.2 mph
Weaving segment density, D	12.8 pc/mi/ln	Average non-weaving speed, S_{NW}	51.5 mph
Level of Service, LOS	B	Maximum weaving length, L_{MAX}	5780 ft

Notes

- a. Weaving segments longer than the calculated maximum length should be treated as isolated merge and diverge areas using the procedures of Chapter 13, "Freeway Merge and Diverge Segments".
- b. For volumes that exceed the weaving segment capacity, the level of service is "F".

FREEWAY WEAVING WORKSHEET

General Information		Site Information	
Analyst	AECOM	Freeway/Dir of Travel	US 74 EB
Agency/Company	Segment #302	Weaving Segment Location	N 23rd Street to Independence
Date Performed	2018	Analysis Year	2040 Build - All Alternatives
Analysis Time Period	PM Peak		

Project Description U-4434 Independence Boulevard Extension

Inputs

Weaving configuration	One-Sided	Segment type	Freeway
Weaving number of lanes, N	4	Freeway minimum speed, S_{MIN}	15
Weaving segment length, L_S	1890ft	Freeway maximum capacity, C_{IFL}	2300
Freeway free-flow speed, FFS	60 mph	Terrain type	Level

Conversions to pc/h Under Base Conditions

	V (veh/h)	PHF	Truck (%)	RV (%)	E_T	E_R	f_{HV}	f_p	v (pc/h)
V_{FF}	1917	0.90	2	0	1.5	1.2	0.990	1.00	2151
V_{RF}	565	0.90	2	0	2.5	1.2	0.971	1.00	647
V_{FR}	812	0.90	2	0	1.5	1.2	0.990	1.00	911
V_{RR}	240	0.90	2	0	1.5	1.2	0.990	1.00	269
V_{NW}	2420							V =	3978
V_W	1558								
VR	0.392								

Configuration Characteristics

Minimum maneuver lanes, N_{WL}	3 lc	Minimum weaving lane changes, LC_{MIN}	911 lc/h
Interchange density, ID	1.0 int/mi	Weaving lane changes, LC_W	1344 lc/h
Minimum RF lane changes, LC_{RF}	0 lc/pc	Non-weaving lane changes, LC_{NW}	753 lc/h
Minimum FR lane changes, LC_{FR}	1 lc/pc	Total lane changes, LC_{ALL}	2097 lc/h
Minimum RR lane changes, LC_{RR}	lc/pc	Non-weaving vehicle index, I_{NW}	457

Weaving Segment Speed, Density, Level of Service, and Capacity

Weaving segment flow rate, v	3927 veh/h	Weaving intensity factor, W	0.245
Weaving segment capacity, c_w	8158 veh/h	Weaving segment speed, S	49.6 mph
Weaving segment v/c ratio	0.481	Average weaving speed, S_W	51.1 mph
Weaving segment density, D	20.0 pc/mi/ln	Average non-weaving speed, S_{NW}	48.7 mph
Level of Service, LOS	C	Maximum weaving length, L_{MAX}	5022 ft

Notes

- a. Weaving segments longer than the calculated maximum length should be treated as isolated merge and diverge areas using the procedures of Chapter 13, "Freeway Merge and Diverge Segments".
- b. For volumes that exceed the weaving segment capacity, the level of service is "F".

FREEWAY WEAVING WORKSHEET

General Information		Site Information	
Analyst	AECOM	Freeway/Dir of Travel	US 74 EB
Agency/Company	Segment #303	Weaving Segment Location	Independence Blvd to Kerr Ave
Date Performed	2018	Analysis Year	2040 Build - All Alternatives
Analysis Time Period	AM Peak		

Project Description U-4434 Independence Boulevard Extension

Inputs

Weaving configuration	One-Sided	Segment type	Freeway
Weaving number of lanes, N	4	Freeway minimum speed, S_{MIN}	15
Weaving segment length, L_S	1580ft	Freeway maximum capacity, C_{IFL}	2300
Freeway free-flow speed, FFS	60 mph	Terrain type	Level

Conversions to pc/h Under Base Conditions

	V (veh/h)	PHF	Truck (%)	RV (%)	E_T	E_R	f_{HV}	f_p	v (pc/h)
V_{FF}	949	0.90	2	0	1.5	1.2	0.990	1.00	1065
V_{RF}	704	0.90	2	0	2.5	1.2	0.971	1.00	806
V_{FR}	572	0.90	2	0	1.5	1.2	0.990	1.00	642
V_{RR}	423	0.90	2	0	1.5	1.2	0.990	1.00	475
V_{NW}	1540							V =	2988
V_W	1448								
VR	0.485								

Configuration Characteristics

Minimum maneuver lanes, N_{WL}	2 lc	Minimum weaving lane changes, LC_{MIN}	1448 lc/h
Interchange density, ID	1.0 int/mi	Weaving lane changes, LC_W	1837 lc/h
Minimum RF lane changes, LC_{RF}	1 lc/pc	Non-weaving lane changes, LC_{NW}	403 lc/h
Minimum FR lane changes, LC_{FR}	1 lc/pc	Total lane changes, LC_{ALL}	2240 lc/h
Minimum RR lane changes, LC_{RR}	lc/pc	Non-weaving vehicle index, I_{NW}	243

Weaving Segment Speed, Density, Level of Service, and Capacity

Weaving segment flow rate, v	2943 veh/h	Weaving intensity factor, W	0.298
Weaving segment capacity, c_w	4903 veh/h	Weaving segment speed, S	47.7 mph
Weaving segment v/c ratio	0.600	Average weaving speed, S_W	49.7 mph
Weaving segment density, D	15.7 pc/mi/ln	Average non-weaving speed, S_{NW}	46.0 mph
Level of Service, LOS	B	Maximum weaving length, L_{MAX}	7647 ft

Notes

- a. Weaving segments longer than the calculated maximum length should be treated as isolated merge and diverge areas using the procedures of Chapter 13, "Freeway Merge and Diverge Segments".
- b. For volumes that exceed the weaving segment capacity, the level of service is "F".

FREEWAY WEAVING WORKSHEET

General Information		Site Information	
Analyst	AECOM	Freeway/Dir of Travel	US 74 EB
Agency/Company	Segment #303	Weaving Segment Location	Independence Blvd to Kerr Ave
Date Performed	2018	Analysis Year	2040 Build - All Alternatives
Analysis Time Period	PM Peak		

Project Description U-4434 Independence Boulevard Extension

Inputs

Weaving configuration	One-Sided	Segment type	Freeway
Weaving number of lanes, N	4	Freeway minimum speed, S_{MIN}	15
Weaving segment length, L_S	1580ft	Freeway maximum capacity, C_{IFL}	2300
Freeway free-flow speed, FFS	60 mph	Terrain type	Level

Conversions to pc/h Under Base Conditions

	V (veh/h)	PHF	Truck (%)	RV (%)	E_T	E_R	f_{HV}	f_p	v (pc/h)
V_{FF}	1544	0.90	2	0	1.5	1.2	0.990	1.00	1733
V_{RF}	1079	0.90	2	0	2.5	1.2	0.971	1.00	1235
V_{FR}	794	0.90	2	0	1.5	1.2	0.990	1.00	891
V_{RR}	555	0.90	2	0	1.5	1.2	0.990	1.00	623
V_{NW}	2356							V =	4482
V_W	2126								
VR	0.474								

Configuration Characteristics

Minimum maneuver lanes, N_{WL}	2 lc	Minimum weaving lane changes, LC_{MIN}	2126 lc/h
Interchange density, ID	1.0 int/mi	Weaving lane changes, LC_W	2515 lc/h
Minimum RF lane changes, LC_{RF}	1 lc/pc	Non-weaving lane changes, LC_{NW}	571 lc/h
Minimum FR lane changes, LC_{FR}	1 lc/pc	Total lane changes, LC_{ALL}	3086 lc/h
Minimum RR lane changes, LC_{RR}	lc/pc	Non-weaving vehicle index, I_{NW}	372

Weaving Segment Speed, Density, Level of Service, and Capacity

Weaving segment flow rate, v	4414 veh/h	Weaving intensity factor, W	0.383
Weaving segment capacity, c_w	5010 veh/h	Weaving segment speed, S	42.8 mph
Weaving segment v/c ratio	0.881	Average weaving speed, S_W	47.5 mph
Weaving segment density, D	26.2 pc/mi/ln	Average non-weaving speed, S_{NW}	39.3 mph
Level of Service, LOS	C	Maximum weaving length, L_{MAX}	7528 ft

Notes

- a. Weaving segments longer than the calculated maximum length should be treated as isolated merge and diverge areas using the procedures of Chapter 13, "Freeway Merge and Diverge Segments".
- b. For volumes that exceed the weaving segment capacity, the level of service is "F".

FREEWAY WEAVING WORKSHEET

General Information		Site Information	
Analyst	AECOM	Freeway/Dir of Travel	US 74 WB
Agency/Company	Segment #304	Weaving Segment Location	Kerr Ave to Independence Blvd
Date Performed	2018	Analysis Year	2040 Build - All Alternatives
Analysis Time Period	AM Peak		

Project Description U-4434 Independence Boulevard Extension

Inputs

Weaving configuration	One-Sided	Segment type	Freeway
Weaving number of lanes, N	4	Freeway minimum speed, S_{MIN}	15
Weaving segment length, L_S	1660ft	Freeway maximum capacity, C_{IFL}	2300
Freeway free-flow speed, FFS	60 mph	Terrain type	Level

Conversions to pc/h Under Base Conditions

	V (veh/h)	PHF	Truck (%)	RV (%)	E_T	E_R	f_{HV}	f_p	v (pc/h)
V_{FF}	1544	0.90	2	0	1.5	1.2	0.990	1.00	1733
V_{RF}	794	0.90	2	0	2.5	1.2	0.971	1.00	909
V_{FR}	1079	0.90	2	0	1.5	1.2	0.990	1.00	1211
V_{RR}	555	0.90	2	0	1.5	1.2	0.990	1.00	623
V_{NW}	2356							V =	4476
V_W	2120								
VR	0.474								

Configuration Characteristics

Minimum maneuver lanes, N_{WL}	3 lc	Minimum weaving lane changes, LC_{MIN}	909 lc/h
Interchange density, ID	1.0 int/mi	Weaving lane changes, LC_W	1310 lc/h
Minimum RF lane changes, LC_{RF}	1 lc/pc	Non-weaving lane changes, LC_{NW}	615 lc/h
Minimum FR lane changes, LC_{FR}	0 lc/pc	Total lane changes, LC_{ALL}	1925 lc/h
Minimum RR lane changes, LC_{RR}	lc/pc	Non-weaving vehicle index, I_{NW}	391

Weaving Segment Speed, Density, Level of Service, and Capacity

Weaving segment flow rate, v	4414 veh/h	Weaving intensity factor, W	0.254
Weaving segment capacity, c_w	7316 veh/h	Weaving segment speed, S	49.4 mph
Weaving segment v/c ratio	0.603	Average weaving speed, S_W	50.9 mph
Weaving segment density, D	22.7 pc/mi/ln	Average non-weaving speed, S_{NW}	48.1 mph
Level of Service, LOS	C	Maximum weaving length, L_{MAX}	5954 ft

Notes

- a. Weaving segments longer than the calculated maximum length should be treated as isolated merge and diverge areas using the procedures of Chapter 13, "Freeway Merge and Diverge Segments".
- b. For volumes that exceed the weaving segment capacity, the level of service is "F".

FREEWAY WEAVING WORKSHEET

General Information		Site Information	
Analyst	AECOM	Freeway/Dir of Travel	US 74 WB
Agency/Company	Segment #304	Weaving Segment Location	Kerr Ave to Independence Blvd
Date Performed	2018	Analysis Year	2040 Build - All Alternatives
Analysis Time Period	PM Peak		

Project Description U-4434 Independence Boulevard Extension

Inputs

Weaving configuration	One-Sided	Segment type	Freeway
Weaving number of lanes, N	4	Freeway minimum speed, S_{MIN}	15
Weaving segment length, L_S	1660ft	Freeway maximum capacity, C_{IFL}	2300
Freeway free-flow speed, FFS	60 mph	Terrain type	Level

Conversions to pc/h Under Base Conditions

	V (veh/h)	PHF	Truck (%)	RV (%)	E_T	E_R	f_{HV}	f_p	v (pc/h)
V_{FF}	949	0.90	2	0	1.5	1.2	0.990	1.00	1065
V_{RF}	572	0.90	2	0	2.5	1.2	0.971	1.00	655
V_{FR}	704	0.90	2	0	1.5	1.2	0.990	1.00	790
V_{RR}	423	0.90	2	0	1.5	1.2	0.990	1.00	475
V_{NW}	1540							V =	2985
V_W	1445								
VR	0.484								

Configuration Characteristics

Minimum maneuver lanes, N_{WL}	3 lc	Minimum weaving lane changes, LC_{MIN}	655 lc/h
Interchange density, ID	1.0 int/mi	Weaving lane changes, LC_W	1056 lc/h
Minimum RF lane changes, LC_{RF}	1 lc/pc	Non-weaving lane changes, LC_{NW}	447 lc/h
Minimum FR lane changes, LC_{FR}	0 lc/pc	Total lane changes, LC_{ALL}	1503 lc/h
Minimum RR lane changes, LC_{RR}	lc/pc	Non-weaving vehicle index, I_{NW}	256

Weaving Segment Speed, Density, Level of Service, and Capacity

Weaving segment flow rate, v	2943 veh/h	Weaving intensity factor, W	0.209
Weaving segment capacity, c_w	7159 veh/h	Weaving segment speed, S	52.0 mph
Weaving segment v/c ratio	0.411	Average weaving speed, S_W	52.2 mph
Weaving segment density, D	14.4 pc/mi/ln	Average non-weaving speed, S_{NW}	51.7 mph
Level of Service, LOS	B	Maximum weaving length, L_{MAX}	6075 ft

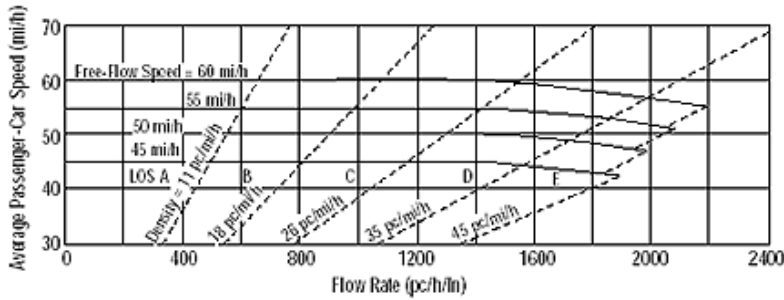
Notes

- a. Weaving segments longer than the calculated maximum length should be treated as isolated merge and diverge areas using the procedures of Chapter 13, "Freeway Merge and Diverge Segments".
- b. For volumes that exceed the weaving segment capacity, the level of service is "F".

Multilane Segments

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MULTILANE HIGHWAYS WORKSHEET(Direction 1)



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p , S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p , S, D

General Information

Analyst: AECOM
 Agency or Company:
 Date Performed: 2018
 Analysis Time Period: AM Peak

Site Information

Highway/Direction to Travel: Independence Blvd
 From/To: South of US 17 Bus
 Jurisdiction: Segment #401
 Analysis Year: 2040 Build - All Alternatives

Project Description: U-4434 Independence Boulevard Extension

Oper. (LOS)

Des. (N)

Plan. (v_p)

Flow Inputs

Volume, V (veh/h)	3146	Peak-Hour Factor, PHF	0.90
AADT(veh/h)		%Trucks and Buses, P_T	2
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	0
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (mi)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	3

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.990

Speed Inputs

Lane Width, LW (ft): 12.0
 Total Lateral Clearance, LC (ft): 12.0
 Access Points, A (A/mi): 0
 Median Type, M:
 FFS (measured): 55.0
 Base Free-Flow Speed, BFFS:

Calc Speed Adj and FFS

f_{LW} (mi/h)
 f_{LC} (mi/h)
 f_A (mi/h)
 f_M (mi/h)
 FFS (mi/h): 55.0

Operations

Operational (LOS)
 Flow Rate, v_p (pc/h/ln): 1176
 Speed, S (mi/h): 55.0
 D (pc/mi/ln): 21.4
 LOS: C

Design

Design (N)
 Required Number of Lanes, N
 Flow Rate, v_p (pc/h)
 Max Service Flow Rate (pc/h/ln)
 Design LOS

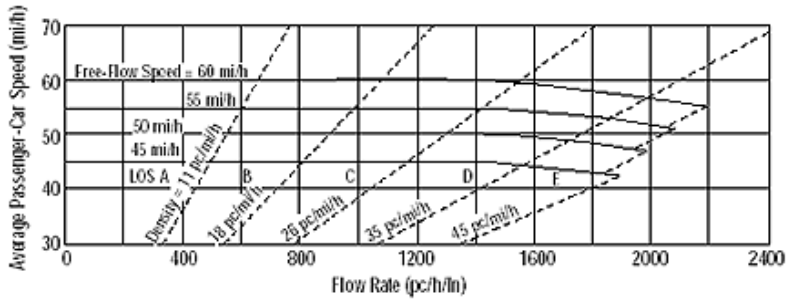
Bicycle Level of Service

Directional demand flow rate in outside lane, v_{OL} (Eq. 15-24) veh/h

1165.2

Effective width, W_v (Eq. 15-29) ft	24.00
Effective speed factor, S_t (Eq. 15-30)	4.79
Bicycle level of service score, BLOS (Eq. 15-31)	2.94
Bicycle level of service (Exhibit 15-4)	C

MULTILANE HIGHWAYS WORKSHEET(Direction 1)



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p , S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p , S, D

General Information		Site Information	
Analyst	AECOM	Highway/Direction to Travel	Independence Blvd
Agency or Company		From/To	South of US 17 Bus
Date Performed	2018	Jurisdiction	Segment #401
Analysis Time Period	PM Peak	Analysis Year	2040 Build - All Alternatives

Project Description U-4434 Independence Boulevard Extension

Oper. (LOS)
 Des. (N)
 Plan. (vp)

Flow Inputs			
Volume, V (veh/h)	2574	Peak-Hour Factor, PHF	0.90
AAADT(veh/h)		%Trucks and Buses, P_T	2
Peak-Hour Prop of AAADT (veh/d)		%RVs, P_R	0
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (mi)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	3

Calculate Flow Adjustments			
f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.990

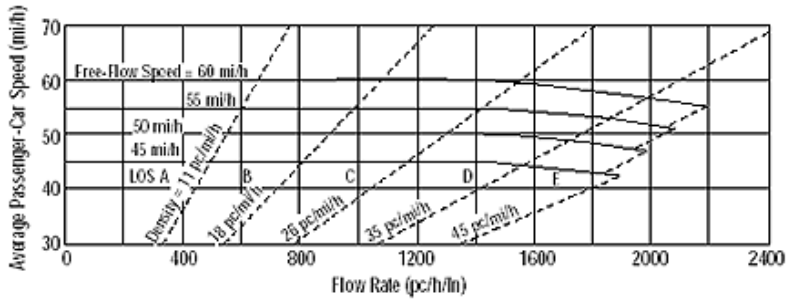
Speed Inputs		Calc Speed Adj and FFS	
Lane Width, LW (ft)	12.0	f_{LW} (mi/h)	
Total Lateral Clearance, LC (ft)	12.0	f_{LC} (mi/h)	
Access Points, A (A/mi)	0	f_A (mi/h)	
Median Type, M		f_M (mi/h)	
FFS (measured)	55.0	FFS (mi/h)	55.0
Base Free-Flow Speed, BFFS			

Operations		Design	
Operational (LOS)		Design (N)	
Flow Rate, v_p (pc/h/ln)	962	Required Number of Lanes, N	
Speed, S (mi/h)	55.0	Flow Rate, v_p (pc/h)	
D (pc/mi/ln)	17.5	Max Service Flow Rate (pc/h/ln)	
LOS	B	Design LOS	

Bicycle Level of Service	
Directional demand flow rate in outside lane, v_{OL} (Eq. 15-24) veh/h	953.3

Effective width, W_v (Eq. 15-29) ft	24.00
Effective speed factor, S_t (Eq. 15-30)	4.79
Bicycle level of service score, BLOS (Eq. 15-31)	2.84
Bicycle level of service (Exhibit 15-4)	C

MULTILANE HIGHWAYS WORKSHEET(Direction 2)



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p , S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p , S, D

General Information		Site Information	
Analyst	AECOM	Highway/Direction to Travel	Independence Blvd
Agency or Company		From/To	South of US 17 Bus
Date Performed	2018	Jurisdiction	Segment #401
Analysis Time Period	AM Peak	Analysis Year	2040 Build - All Alternatives

Project Description U-4434 Independence Boulevard Extension

Oper. (LOS)
 Des. (N)
 Plan. (v_p)

Flow Inputs			
Volume, V (veh/h)	2574	Peak-Hour Factor, PHF	0.90
AADT(veh/h)		%Trucks and Buses, P_T	2
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	0
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (mi)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	3

Calculate Flow Adjustments			
f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.990

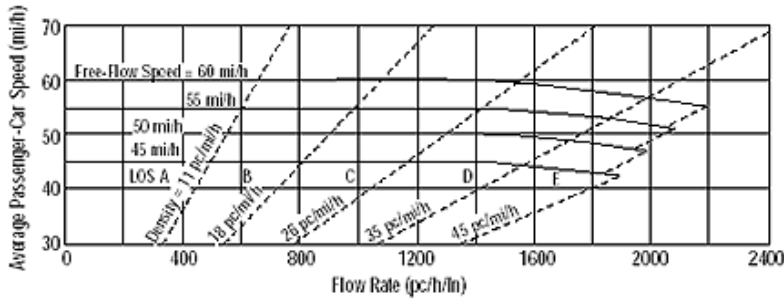
Speed Inputs		Calc Speed Adj and FFS	
Lane Width, LW (ft)	12.0	f_{LW} (mi/h)	
Total Lateral Clearance, LC (ft)	12.0	f_{LC} (mi/h)	
Access Points, A (A/mi)	0	f_A (mi/h)	
Median Type, M		f_M (mi/h)	
FFS (measured)	55.0	FFS (mi/h)	55.0
Base Free-Flow Speed, BFFS			

Operations		Design	
Operational (LOS)		Design (N)	
Flow Rate, v_p (pc/h/ln)	962	Required Number of Lanes, N	
Speed, S (mi/h)	55.0	Flow Rate, v_p (pc/h)	
D (pc/mi/ln)	17.5	Max Service Flow Rate (pc/h/ln)	
LOS	B	Design LOS	

Bicycle Level of Service	
Directional demand flow rate in outside lane, v_{OL} (Eq. 15-24) veh/h	953.3

Effective width, W_v (Eq. 15-29) ft	24.00
Effective speed factor, S_t (Eq. 15-30)	4.79
Bicycle level of service score, BLOS (Eq. 15-31)	2.84
Bicycle level of service (Exhibit 15-4)	C

MULTILANE HIGHWAYS WORKSHEET(Direction 2)



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p , S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p , S, D

General Information

Analyst	AECOM
Agency or Company	
Date Performed	2018
Analysis Time Period	PM Peak

Site Information

Highway/Direction to Travel	Independence Blvd
From/To	South of US 17 Bus
Jurisdiction	Segment #401
Analysis Year	2040 Build - All Alternatives

Project Description U-4434 Independence Boulevard Extension

- Oper. (LOS)
 Des. (N)
 Plan. (v_p)

Flow Inputs

Volume, V (veh/h)	3146	Peak-Hour Factor, PHF	0.90
AAADT(veh/h)		%Trucks and Buses, P_T	2
Peak-Hour Prop of AAADT (veh/d)		%RVs, P_R	0
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (mi)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	3

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.990

Speed Inputs

Lane Width, LW (ft)	12.0
Total Lateral Clearance, LC (ft)	12.0
Access Points, A (A/mi)	0
Median Type, M	
FFS (measured)	55.0
Base Free-Flow Speed, BFFS	

Calc Speed Adj and FFS

f_{LW} (mi/h)	
f_{LC} (mi/h)	
f_A (mi/h)	
f_M (mi/h)	
FFS (mi/h)	55.0

Operations

<u>Operational (LOS)</u>	
Flow Rate, v_p (pc/h/ln)	1176
Speed, S (mi/h)	55.0
D (pc/mi/ln)	21.4
LOS	C

Design

<u>Design (N)</u>	
Required Number of Lanes, N	
Flow Rate, v_p (pc/h)	
Max Service Flow Rate (pc/h/ln)	
Design LOS	

Bicycle Level of Service

Directional demand flow rate in outside lane, v_{OL} (Eq. 15-24) veh/h	1165.2
--	--------

Effective width, W_v (Eq. 15-29) ft	24.00
Effective speed factor, S_t (Eq. 15-30)	4.79
Bicycle level of service score, BLOS (Eq. 15-31)	2.94
Bicycle level of service (Exhibit 15-4)	C

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