

**Interstate 85 Widening Phase III
Interchange Modification Report
Exit 106 – E. Cherokee Street**

Cherokee County, SC



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Transportation



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EXECUTIVE SUMMARY

Interstate 85 (I-85) provides a major travel corridor running north-south between Virginia and Alabama. The increasingly busy trucking corridor connects the upstate of South Carolina with the metropolitan areas of Charlotte, North Carolina to the north and Atlanta, Georgia to the south. In addition to serving as a major route between urban areas, the I-85 study area in Cherokee County serves other specific needs, including:

- Daily commuting routes for intra- and interstate travelers;
- Access to Automated Distribution Systems and Cherokee Speedway at Exit 96;
- Access to Blacksburg Aggregate Quarry and Flying J Travel Plaza at Exit 102;
- Access to South Carolina Welcome Center and Rest Area at MM 103 Southbound;
- Access to Atlas Industrial Park, Love's Truck Stop and Shelton Fireworks at Exit 104;
- Access to Wilco Hess Truck Stop and North Carolina State Line at Exit 106

The South Carolina Department of Transportation (SCDOT) proposes multiple improvements to the I-85 corridor designed to increase capacity, upgrade interchanges to meet design requirements, and replace overpass bridges for improved interchange geometry and expanded vertical clearance. Specifically, SCDOT proposes widening I-85 from four to six lanes from the Broad River Bridge, 1.5 miles north of Exit 96 – Shelby Highway to the southernmost ramps at Exit 106 – E. Cherokee Street. The new outside lane in the northbound direction will serve as an exit only lane at Exit 106. The southbound on-ramp lane at Exit 106 will merge with I-85 becoming the third lane in the southbound direction. Along the approximately 10 mile study area located in Cherokee County interchanges at Exit 100 – Blacksburg Highway, Exit 102 – N. Mountain Street, Exit 104 – Tribal Road, and Exit 106 – E. Cherokee Street will be reconfigured to improve traffic flow and correct any compliance issues that exist. The overpass bridges at Exit 100 – Blacksburg Highway, Exit 102 – N. Mountain Street, Exit 104 – Tribal Road, and Exit 106 – E. Cherokee Street will be replaced by bridges with improved alignment for the new interchange geometry.

The proposed project has two primary purposes: increase roadway capacity to address the projected increased traffic volumes and improve geometric deficiencies along the mainline and at several interchanges and overpasses in this section of I-85 by bringing them into compliance with current state and federal design standards. The secondary purpose is to improve safety which will be enhanced by improving the geometric design of the facility.

This interchange modification report (IMR) presents information for the proposed interchange modifications at Exit 106 – E. Cherokee Street located in Cherokee County, SC. Today, the Exit 106 interchange is a partial diamond interchange. The southbound off-ramp is a cloverleaf loop located in the southeastern quadrant of the interchange. The exit is signed in the northbound and southbound directions with the US highway 29 shield and the text "Grover" and "Blacksburg."

Information discussed in the report is derived from the following projects report: *Interstate 85 Widening Traffic Analysis Report: I-85 Widening Project MM 96 to MM 106.*

Four alternatives were initially developed for Exit 106. Alternatives 1-3 replace the northbound off loop with a linear off-ramp in the southwest quadrant to create a complete diamond interchange. The northbound on-ramp intersection with Mill Creek Road is to be eliminated. Mill Creek Road would be realigned to intersect E. Cherokee directly. The southbound on-ramp will be separated from Crossover road and realigned with the southbound off-ramp. Alternative 4 represents the 2040 No-Build scenario.

Alternative 3, the preferred alternative, combines the features of the other alternatives with the exception of the Mill Creek Road realignment. Alternative 3 will realign Mill Creek Road as an extension of Lakeview Drive, which intersects E. Cherokee Street south of the interchange. Alternative 3 would result in the displacement of four businesses and one privately owned building. Alternative 3 is shown in **Figure 1**.

Based on the traffic analysis of the preferred alternative 3, the intersections within the Exit 106 study area will not require additional signalization. All intersections will remain stop controlled on the minor street/ramp approaches.

Figure 1 - Exit 106: Improvement Alternative 3



1.0 INTRODUCTION

I-85 is a north-south Interstate highway that begins at I-65 in Montgomery, Alabama. From Montgomery, I-85 runs generally to the northeast through Alabama, Georgia, South Carolina, North Carolina and Virginia, where it terminates south of Richmond at I-95 in Petersburg, Virginia. Along its 668 mile length, I-85 provides access to Montgomery, Alabama; Atlanta, Georgia; Greenville and Spartanburg, South Carolina; Charlotte, Greensboro, and Durham, North Carolina; and Petersburg, Virginia.

In South Carolina, I-85 covers about 106 miles, and provides connections to I-385 (outside of Greenville), and I-26 (outside of Spartanburg). Within the study area, I-85 crosses a portion of Cherokee County and provides access to the town of Blacksburg, SC and Grover, NC. Throughout the study area, I-85 currently provides two lanes in each direction and a posted speed limit of 65 miles per hour.

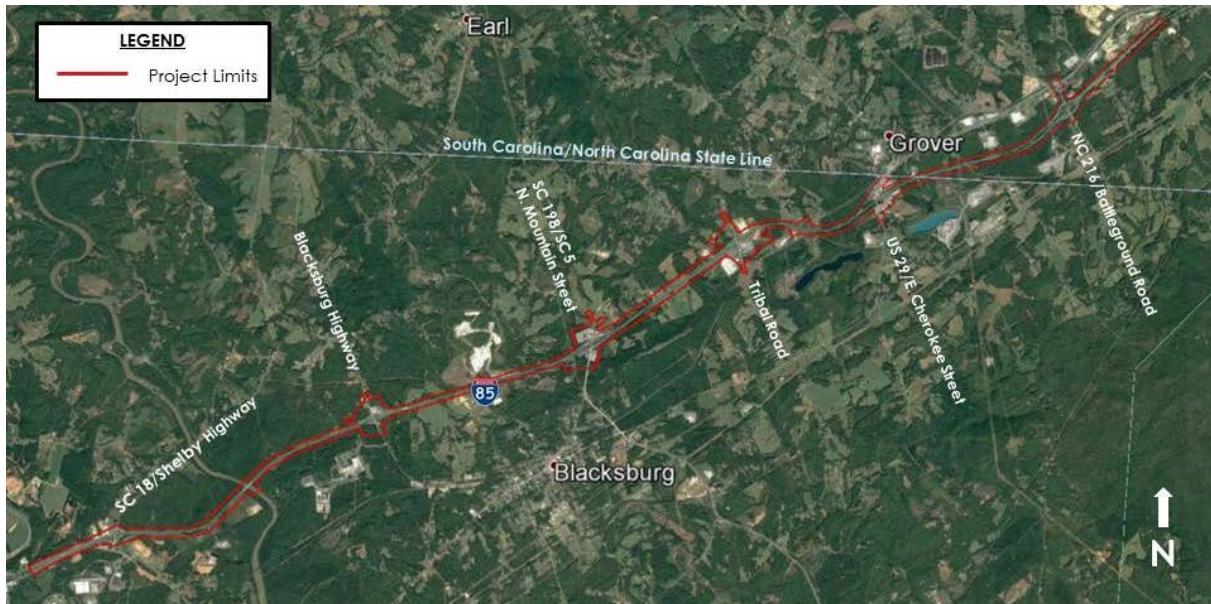
In general, interstate routes can be characterized as having level, rolling, or mountainous terrain. Within the study area along I-85, the interstate grades fluctuate between a maximum -4.70 percent down grade and a maximum 5.04 percent upgrade. Based on these grades, the portion of I-85 within the study area can be characterized as having a *rolling terrain*.

A parallel frontage road system is present at portions of both sides of I-85 throughout the study area.

1.1 OVERALL PROJECT

SCDOT is proposing multiple improvements to the I-85 corridor from mile marker 96 to mile marker 106 designed to increase capacity, upgrade interchanges to meet design requirements, and expand vertical clearance at overpass bridges. Specifically, SCDOT proposes widening I-85 from four to six lanes from the Broad River Bridge, 1.5 miles north of Exit 96 – Shelby Highway to the southernmost ramps at Exit 106 – E. Cherokee Street. The new outside lane in the northbound direction will serve as an exit only lane at Exit 106. The southbound on-ramp lane at Exit 106 will merge with I-85 becoming the third lane in the southbound direction. Along the approximately 10-mile project area located Cherokee County, interchanges at Exit 100 – Blacksburg Highway (S-83), Exit 102 – N. Mountain Street (SC 5/SC 198), Exit 104 – Tribal Road (S-99) and Exit 106 – E. Cherokee Street (US 29) will be improved to bring them into compliance with design requirements. Exit 98 – Frontage Road will be removed, redirecting traffic downstream to Exit 100 – Blacksburg Highway (S-83). **Figure 2** depicts the study area for the overall I-85 Widening project.

Figure 2 – I-85 Study Area



1.2 EXIT 106 – E. CHEROKEE STREET (US 29) INTERCHANGE

The E. Cherokee Street interchange is a partial diamond interchange. Three of the four access ramps are intersected by surface roads and/or business driveways. The northbound off-ramp is a cloverleaf loop located in the southeastern quadrant of the interchange. The northbound and southbound on-ramps tie into two way roads prior to merging with I-85.

1.3 EXISTING CONDITIONS

The sections of I-85 within the vicinity of Exit 106 currently consist of a four-lane interstate with a grassed median for most of its length.

The Exit 106 – E. Cherokee Street (US 29) is a partial diamond interchange. Three of the four access ramps are intersected by surface roads and/or business driveways.

The northbound off-ramp diverges from I-85 with a 245 foot long deceleration lane. The off-ramp loop is a single lane ramp that is approximately 870 feet long and intersects directly with E. Cherokee Street. The ramp also provides one-way access to Mill Creek Road. This ramp loop has a posted advisory speed limit of 20 miles per hour. The left turning movements onto Mill Creek Road and E. Cherokee Street from this approach are stop controlled, and the channelized right turning movement onto E. Cherokee Street is controlled by a yield sign.

The northbound on-ramp is approximately 820 feet long from its tie in point at the Mill Creek Road intersection to the gore point. The on-ramp is reached from E. Cherokee Street via Mill Creek Road. The ramp merges onto I-85 with a 580 foot long acceleration lane (with a parallel length of approximately 220 feet).

The northbound on and off-ramp are separated by approximately 770 feet on I-85.

The southbound off-ramp diverges from I-85 with a 240 foot long tapered deceleration lane. The single lane ramp is approximately 930 feet long and intersects directly with E. Cherokee Street. This ramp has an advisory speed limit of 40 miles per hour. The left and right turning movements from this approach are controlled by a stop sign.

The southbound on-ramp is approximately 1,330 feet long and merges onto I-85 with a 1,470 foot long acceleration lane (with a parallel length of 1000 feet).

The southbound on and off-ramp are separated by approximately 2,765 feet on I-85.

The exit is signed in the northbound and southbound directions with the US highway 29 shield and the text "Grover" and "Blacksburg." The existing configuration at the Exit 106 interchange is shown in **Figure 3** on the following page.

Figure 3 – Exit 106 Existing Interchange Configuration



Nine intersections are located in the vicinity of the interchange. The intersection of E. Cherokee Street and the three Service Station/Retail Store driveways are located approximately 95, 330, and 560 feet north of the southbound on-ramp, respectively. The intersection of E. Cherokee Street and the Service Station/Fireworks Store driveways is located approximately 330 feet south of the nearest southbound on-ramp access point. The two Service Station driveway access points intersecting the southbound on-ramp are located approximately 275 and 500 feet south of the nearest E. Cherokee access point.

The intersection of E. Cherokee Street & Mill Creek Road is located approximately 100 feet south of northbound on-ramp loop intersection with E. Cherokee Street. The intersection of the I-85 northbound on-ramp and Mill Creek Road is located approximately 460 feet before the painted gore point at the I-85 northbound merge area. The intersection of the I-85 southbound off-ramp with the Hess Service Station driveway is located approximately 355 feet from the western terminus of the off-ramp at E. Cherokee Street. The intersection of the I-85 southbound off-ramp with the Exxon Service Station driveway is located approximately 110 feet from the western terminus of the off-ramp at E. Cherokee Street. The intersection of E. Cherokee Street and Lakeview Drive is located approximately 1,140 feet south of the I-85 northbound off-ramp loop intersection.

US 29 & Retail Store Driveways (3)

The intersection of E. Cherokee Street & the three retail/service station driveways north of I-85 are all unsignalized intersections with right-of-way given to E. Cherokee Street. The northbound approach of E. Cherokee Street is a single shared through-right turn lane. The southbound approach of E. Cherokee Street is a single shared through-left turn lane. Each of the three driveways allows left and right turns onto E. Cherokee Street. The E. Cherokee Street/Retail Store driveways intersection is shown in **Figure 4** on the following page.

Figure 4 – Service Station/Retail Store Driveways at E. Cherokee Street



US 29 & Service Station/Retail Store Driveways (4)

The intersection of E. Cherokee Street & the Service Station/Fireworks Store driveways is an unsignalized intersection with right-of-way given to E. Cherokee Street. The northbound approach of E. Cherokee Street is a single shared through-right turn lane. The southbound approach of E. Cherokee Street is a single shared through-left turn lane. Each of the four driveways allows left and right turns onto E. Cherokee Street. The E. Cherokee Street/Service Station & Retail Store driveway intersections are shown in **Figure 5**.

Figure 5 – Service Station/Firework Store Driveways at E. Cherokee Street



US 29 & I-85 Southbound On-Ramp/Abandoned Lot Driveway (north)

The intersection of the I-85 southbound on-ramp & the first abandoned lot driveway is an unsignalized intersection with right-of-way given to the on-ramp. The northbound approach of the on-ramp is a single shared through-right turn lane. The southbound approach of on-ramp is a single shared through-left turn lane. The I-85 southbound on-ramp/abandoned lot driveway (north) intersection is shown in **Figure 6**.

US 29 & I-85 Southbound On-Ramp/Abandoned Lot Driveway (south)

The intersection of the I-85 southbound on-ramp & the second abandoned lot driveway is an unsignalized intersection with right-of-way given to the on-ramp. The northbound approach of the on-ramp is a single shared through-right turn lane. The southbound approach of on-ramp is a single shared through-left turn lane. The I-85 southbound on-ramp/abandoned lot driveway (south) intersection is shown in **Figure 6**.

Figure 6 – Abandoned Lot Driveways at I-85 Southbound On-Ramp from E. Cherokee Street



I-85 southbound off-ramp to US 29 & Service Station Driveway 1

The intersection of the I-85 southbound off-ramp & the Hess Service Station driveway is an unsignalized T-intersection. The driveway only receives right turn movements from the single shared through-right lane on the off-ramp westbound approach. The I-85 southbound off-ramp/Service Station 1 intersection is shown in **Figure 7** on the following page.

I-85 southbound off-ramp to US 29 & Service Station Driveway 2

The intersection of the I-85 southbound off-ramp & the Exxon Service Station driveway is an unsignalized T-intersection. The driveway only receives right turn movements from the single shared through-right lane on the off-ramp westbound approach. The I-85 southbound off-ramp/Service Station 2 intersection is shown in **Figure 7** on the following page.

Figure 7 – Service Station Driveways at I-85 Southbound Off-Ramp to E. Cherokee Street



US 29 & I-85 Northbound On-Ramp/Frontage Road

The intersection of E. Cherokee Street & the shared I-85 northbound on-ramp/Mill Creek Road is an unsignalized intersection with stop control on the Mill Creek Road approach and a yield controlled channelized right turn on the northbound E. Cherokee Street approach. The through movement on E. Cherokee Street is free-flowing. The westbound Mill Creek Road approach provides a single through-right-left turn lane for traffic to access E. Cherokee Street and the BP Service Station on the western side of the intersection. The E. Cherokee Street/Mill Creek Road intersection is shown in **Figure 8**.

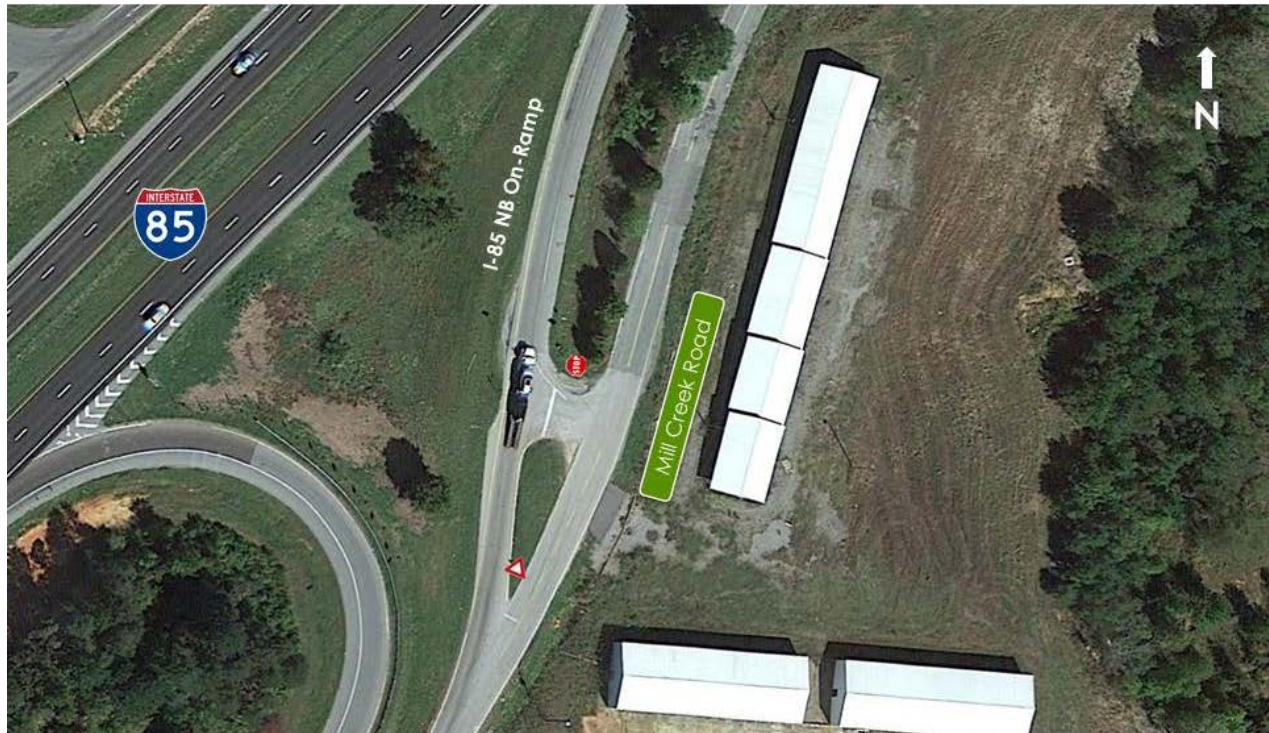
Figure 8 – Mill Creek Road at E. Cherokee Street



US 29 on-ramp to I-85 northbound & Frontage Road

The intersection of the I-85 northbound on-ramp & Mill Creek Road is an unsignalized intersection with a stop control on the Mill Creek Road approach. The one-way on-ramp approach provides a single through lane for traffic traveling to I-85 northbound. The Mill Creek Road approach provides a single right turn lane for traffic traveling to I-85 northbound. The I-85 northbound on-ramp/Mill Creek Road intersection is shown in **Figure 9**.

Figure 9 – Mill Creek Road at I-85 Northbound On-Ramp from E. Cherokee Street



US 29 & Lakeview Drive

The intersection E. Cherokee Street & Lakeview drive is an unsignalized intersection with a stop control on the Lakeview Drive approach. The northbound approach of E. Cherokee Street is a single shared through-right turn lane. The southbound approach of E. Cherokee Street is a single shared through-left turn lane. The westbound approach from Lakeview Drive is a single shared right-left turn lane. The E. Cherokee Street/Lakeview Drive intersection is shown in **Figure 10** on the following page.

Figure 10 – Lakeview Drive at E. Cherokee Street



1.4 PURPOSE AND NEED

The proposed project has two primary purposes: increase roadway capacity to address the projected increased traffic volumes and improve geometric deficiencies along the mainline and at several interchanges and overpasses in this section of I-85 by bringing them into compliance with current SCDOT and federal design standards. The secondary purpose is to improve safety, which will be enhanced by improving the geometric design of the facility.

The needs for this project were identified through a comprehensive review of previous studies along with the analysis of current data compiled for this study. This includes information in the Traffic Analysis Report and the Accident Analysis Report, as well as data collected through meetings with SCDOT; federal, state and local agencies; project stakeholders, and the public.

1.5 CONCEPTUAL DESIGN

Three build alternatives were initially developed for Exit 106 (**Figure 11** through **Figure 13**). Alternatives 1-3 replace the northbound off loop with a typical off-ramp in the southwest quadrant to create a complete diamond interchange. The proposed, widened northbound lane will serve as an exit only drop off lane at the northbound off-ramp. The northbound on-ramp intersection with Mill Creek Road is to be eliminated in each alternative. Mill Creek Road would be realigned to intersect E. Cherokee directly in Alternatives 1 and 2. The southbound on-ramp will be separated from Crossover Road and realigned with the southbound off-ramp in all alternative conditions. In addition, the southbound on-ramp will merge into I-85 as the new third lane in the southbound direction. Alternative 4 represents the 2040 No-Build scenario.

Alternative 3, the preferred alternative, combines the features of the other alternatives with the exception of the Mill Creek Road realignment. Alternative 3 will realign Mill Creek Road as an extension of Lakeview Drive, which intersects E. Cherokee Street south of the interchange. Crossover Road will be aligned with the first remaining service station driveway north of the southbound ramps intersection.

Figure 11 - Exit 106: Improvement Alternative 1

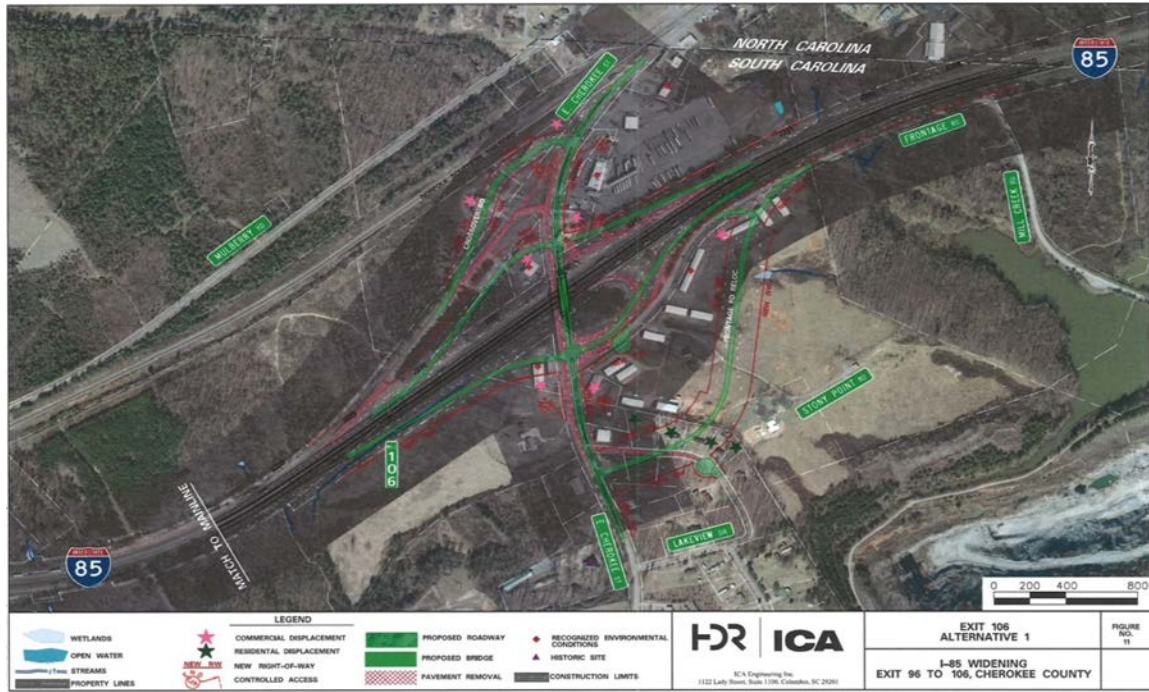


Figure 12 - Exit 106: Improvement Alternative 2

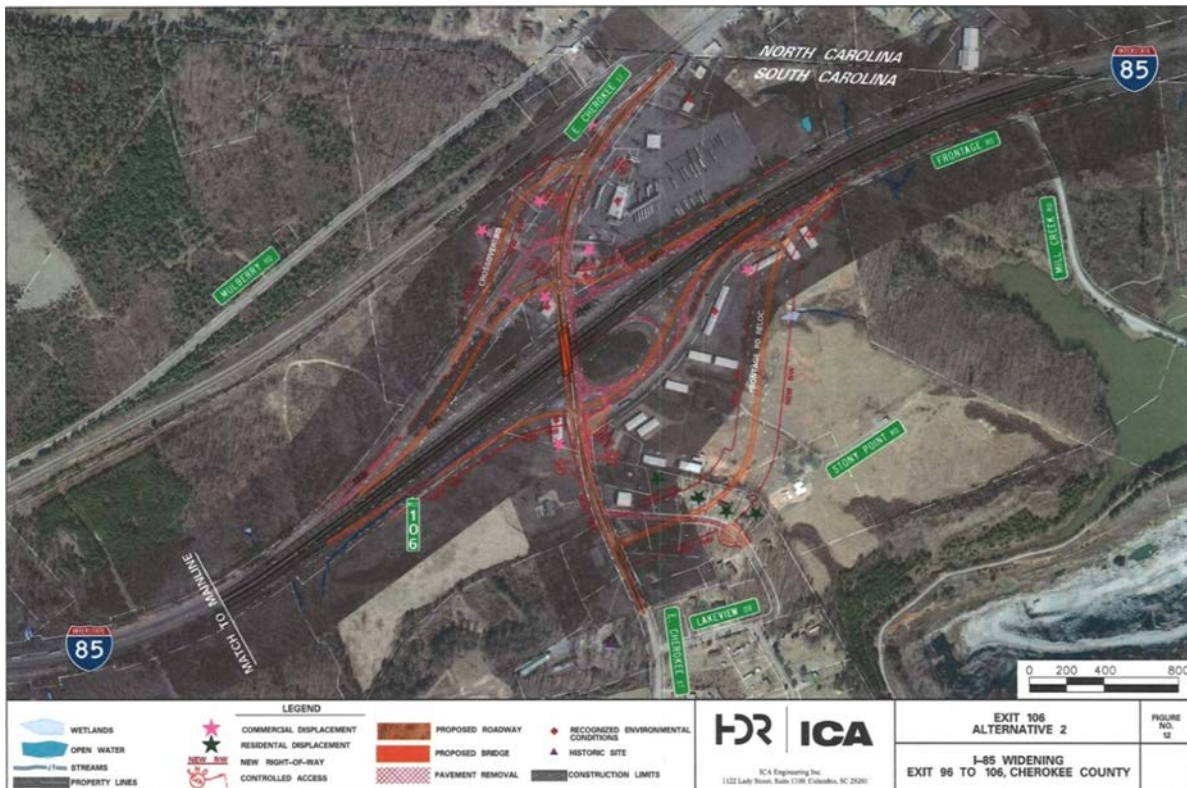


Figure 13 - Exit 106: Improvement Alternative 3



1.6 INTERCHANGE MODIFICATION REPORT APPLICANT

The interchange policy is administered by the Federal Highway Administration (FHWA). Therefore, FHWA is required to approve all new access or changes in access points pursuant to this policy.

As the owner and operator of the Interstate System, SCDOT is responsible for submitting a formal request to the FHWA in the form of an IMR that documents the analysis, the rationale for the proposed change in access, and the recommended action.

SCDOT is the sponsoring agency for the I-85 Widening project.

2.0 STUDY AREA

In South Carolina, I-85 covers approximately 106 mile, and provides connection I-385 outside of Greenville, and I-26 outside of Spartanburg. Within the study area shown in **Figure 14** on the following page, I-85 crosses a portion of Cherokee County, and provides access to the towns of Blacksburg, SC and Grover, NC.

2.1 DEMOGRAPHICS

The United States Census Bureau’s decennial data for 2000 and 2010 were used to determine the demographic composition of the state and Cherokee County. **Table 1** on the following page presents race, age, poverty, and growth percentages for South Carolina and Cherokee County.

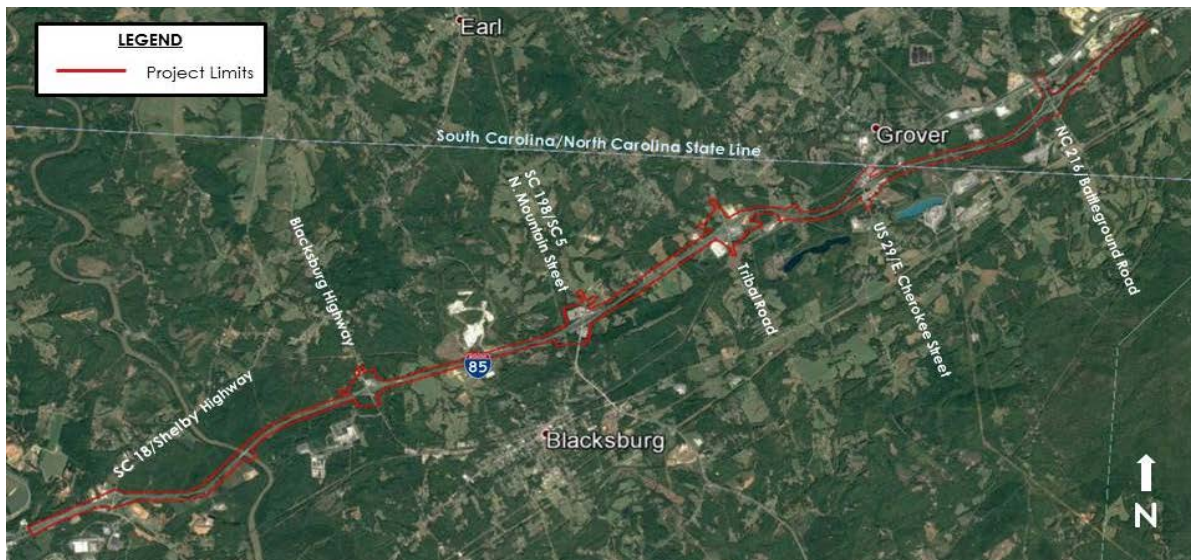
Table 1: Population Demographic		
	South Carolina	Cherokee County
Percent that is white	64.1%	74.0%
Percent that is minority	35.9%	26.0%
Percent age 65 and Over	13.7%	13.4%
*Percent income below poverty level	14.1%	13.9%
Percent Change in Population (2000-2010)	15.3%	5.3%

Source: Census.gov (2010 data); *Decennial Census 2000 data

Comparisons of the data indicate the percentage minority population Cherokee County (26.0%) is below the reported State percentage (35.9%). The population age 65 and older is nearly the same when comparing Cherokee County (13.4%) to South Carolina as a whole (13.7%). The percent of the population with an income below the poverty level is slightly lower for Cherokee County (13.9%) compared to South Carolina (14.1%).

Although Cherokee County experienced population growth between 2000 and 2010, growth in the county was less than the 15.3% growth experienced by South Carolina as a whole.

Figure 14 – I-85 Study Area



2.2 LAND USE

Cherokee County has historically been rural with an economy based on agriculture until highway retail and commercial facilities began to develop near the interstates and major highways in the county. Due to these types of development demands, land uses have been converted from agricultural and open lands to commercial and industrial uses throughout both counties in recent years.

According to the 2010 Census, Cherokee County has approximately 55,000 residents. The county has seen a steady increase in population since the 1950's. Between 2000 and 2010, Cherokee County saw a five percent increase in population. According to the South Carolina Revenue and Fiscal Affairs Office, Cherokee County is expected to continue to see a gradual population growth between 2010 and 2030 of 3.5 percent. **Table 3** presents the population growth and projection for Cherokee County.

County	2000 Population	2010 Population	2030 Population	2000-2010 % Growth	2010-2030 % Growth
Cherokee	52,537	55,342	57,300	5.3%	3.5%

Exit 106 – E. Cherokee Street (US 29) are located within unincorporated areas of Cherokee County. The land uses in the study area surrounding Exit 106 – E. Cherokee Street (US 29) consist of low-density residential, commercial, and open/wooded land. Lakeview Drive runs east from its intersection with E. Cherokee Street south of the interchange. The BP Service Station is located in the southwest quadrant. The Mobil Service Station and the Fireworks Store are located in the northwest quadrant. The Exxon and Hess Service Stations are located in the northeast quadrant and are currently accessible from both E. Cherokee Street and the southbound off-ramp. Also located in the north east quadrant is the ABC Liquor Store. Southeast of the interchange exists numerous abandoned storage facilities accessed via the Mill Creek frontage road and a low density residential area adjacent to E. Cherokee Street (US 29).

2.3 TRANSPORTATION SYSTEM

The project study area roadway transportation system in Cherokee County is accessed via I-85, which is a north-south freeway (but physically more northeast-southwest) connecting the Charlotte and Atlanta metros.

For this IMR, a focused roadway system was evaluated. It consisted of the I-85 mainline and the Exit 106 – E. Cherokee Street (US 29) interchange. Specifically, the I-85 northbound and southbound mainline segments at Exit 106 – E. Cherokee Street (US 29) were evaluated for traffic conditions during different hours of the day.

It should be noted that this IMR study area is a subset of the broader study area that was analyzed during the *Interstate 85 Widening Traffic Analysis Report*. The I-85 Widening study evaluated the current and future traffic volumes on I-85 mainline and interchanges between mile markers 96 and the State Line. The focus of the IMR is on I-85 Exit 106 – E. Cherokee Street (US 29).

3.0 METHODOLOGY

3.1 SCENARIOS ANALYZED

Analyses were performed for existing conditions (existing traffic, intersection traffic control and geometry), 2040 No-Build conditions (2040 traffic, and existing intersection traffic control and geometry) and 2040 Build Alternatives (2040 traffic and modified intersection traffic control and geometry reflecting the interchange improvement alternative). The Exit 106 alternatives were compared against one another to determine which best met the purpose and need with the least impacts.

The 2040 No-Build Alternative (Alternative 4) for the Exit 106 interchange represents the existing interchange configuration, intersection traffic control and geometric conditions with no changes to those conditions. Many of the impacts associated with the construction of the interchanges would not occur, but the interchanges would continue to be out of conformance with current state and federal design standards. This would not satisfy the purpose and need for the project.

There were three reasonable build alternatives developed for Exit 106. These alternatives share many common features. They all would meet the purpose and need for the project by bringing the interchange into compliance with current state and federal design requirements. The safety at the interchange will be improved by providing on- and off-ramps that separate the interstate traffic from local traffic, and which will be long enough to allow traffic to merge onto the interstate and to store traffic that is exiting the interstate during peak hours. Alternative 3 was recommended as the Preferred Alternative for Exit 106, therefore the other alternatives were not carried forward in this document and Alternative 3 was analyzed for the 2040 Build Conditions for Exit 106. As previously stated, Alternative 4 represents the 2040 No-Build scenario.

The interchanges adjacent to Exit 106 are Exit 104 and Exit 2. Exit 104 – Tribal Road (S-99) is located approximately 1.7 miles south of Exit 106. Exit 2 – Battleground Road (NC 216) is located approximately 2.25 miles north of Exit 106 and is on the North Carolina side of the state line. The interaction of the modifications proposed at Exit 106 with the adjacent interchanges was initially analyzed and are included in the *I-85 Widening Traffic Analysis Report*.

By replacing the substandard ramps and modifying the existing interchange to meet current design standards, the proposed modified interchange with E. Cherokee Street (US 29) is anticipated to contribute to an improvement in traffic safety and provide space for the future construction of an additional travel lane in each direction along I-85. The proposed improvements should mitigate the existing factors identified in the Accident Analysis as contributing to a high occurrence of rear-end collisions in the area, including short ramps and merge/diverge areas, as well as a narrow clear zone at and adjacent to the overpass for E. Cherokee Street (US 29).

The preferred alternative of the interchange design also provides space for the future construction of an additional travel lane in each direction along I-85. Altogether, these design provisions would enhance the operational efficiency and safety of the corridor, thereby increasing capacity and improving levels of service in the long term.

3.2 TRAFFIC FORECASTS

A proposed average annual growth rate was estimated based on a comparison of the AADT average annual growth rates (between 1990 and 2015) and the South Carolina Statewide Model (SCSWM) average annual growth rates for each of the segments. This proposed growth rate would be applied to all mainline and ramp movement volumes within the study area to generate the design year peak hour volumes for use in the alternatives analysis. Interchange cross streets were analyzed separately to determine the growth rate for the arterial turning movements at each interchange. In setting the growth rate, an annual percentage that is comparable to, but higher than the observed growth rates is often desirable so a conservative analysis of future traffic conditions may be attained.

Many of the segments in the study area had estimated growth rates exceeding 1.0 percent per year. Several of the rates estimated using the historic data exceeded 1.25 percent per year. Based on these estimates and how they compare to the growth percentages on an adjacent widening study on I-85, an average annual growth rate of 1.5 percent per year was selected to be applied to develop the design year volumes throughout the study area. An annual growth rate of 1.5 percent per year would provide a conservative estimate of future traffic volumes on all freeway segments in the study area. The 1.5 percent year growth rate was applied to the freeway and ramp traffic to develop projections of the 2040 No-Build and 2040 Build Conditions traffic volumes.

3.3 TRAFFIC ANALYSIS

A series of capacity analyses were performed based on the methodologies and guidelines contained in the Transportation Research Board's publication *HCM 2010 Highway Capacity Manual* (HCM). Various software analysis and simulation packages based on the HCM were used in performing the analyses.

These included:

- a. McTrans' *HCS 2010*
 - Freeway Segments
 - Ramp Merge/Diverge Areas
 - Weaving Segments
- b. Trafficware's *Synchro*
 - Unsignalized Intersections
 - Signalized Intersections

The analysis methodologies contained in the HCM for the various facility types and users describe the operational conditions in terms of a Level of Service (LOS). The HCM defines LOS as:

"...a quality measure describing operations conditions within a traffic stream, generally in terms of such service measures as speed and travel time, freedom to maneuver, traffic interruptions, comfort and convenience. Six LOS are defined for each type of facility that has analysis procedures available. Letters designate each level, from A to F, with LOS A representing the best operating conditions and LOS F the worst. Each level of service represents a range of operating conditions and the driver's perception of those conditions. Safety is not included in the measures that establish service levels."

The following discussions and tables describe the HCM LOS criteria for the freeway segments, ramp merge/diverge segments, weaving segments, unsignalized intersections and signalization intersections.

Freeway Segments

The HCM characterizes the capacity of a basic freeway segment "...by three performance measures: density in passenger cars per mile per lane (pc/mi/ln), space mean speed in miles per hour (mi/h), and the ratio of demand flow rate to capacity (v/c). Each of these measures is an indication of how well traffic is being accommodated by the basic freeway segment." LOS F occurs when either the segment density exceeds 45 pc/mi/ln or when the segment v/c ratio exceeds 1.0 (regardless of the segment density). **Table 4** shows the HCM LOS criteria for basic freeway segments.

Table 4 – Freeway Segment LOS Criteria

Basic Freeway Segments	
LOS	Density (pc/mi/ln)
A	< 11
B	> 11-18
C	> 18-26
D	> 26-35
E	> 35-45
F	> 45 v/c > 1.0

Ramp Merge and Diverge Area

Ramp-freeway junctions occur when merging maneuvers occur (on-ramps) or when diverging maneuvers occur (off-ramps). The operation of these merge and diverge areas are affected by a number of factors, including the operation of the adjacent freeway segment and the proximity and flow on adjacent ramps. Typically, the influence area of the ramps is 1,500 feet upstream of a diverge point and downstream from a merge point. As with freeway segments and weaving segments, the LOS of a merge or diverge area is related to the density of the segment. Regardless of the density, the merge or diverge areas are considered to operate at LOS F when the freeway demand exceeds the capacity of the upstream freeway segment (at diverge areas) or the downstream freeway segment (at merge areas), as well as when the ramp demand exceeds the ramp capacity. **Table 5** shows the HCM LOS criteria for ramp merge and diverge areas.

Table 5 – Merge/Diverge LOS Criteria

Merge/Diverge Areas	
LOS	Density (pc/mi/ln)
A	< 10
B	> 10-20
C	> 20-28
D	> 28-35
E	> 35
F	v/c > 1.0

Unsignalized Intersections

The LOS for unsignalized intersections is based on the average control delay per vehicle. Since major street traffic is seldom controlled by stops signs (except at intersections with all-way stop control or in special circumstances), major street traffic generally will experience virtually no delay. Most of the delay will be encountered by traffic on approaches controlled by stop signs. Under certain conditions, delay will also be encountered by left turning traffic on the major street waiting for appropriate sized gaps in the opposing traffic flow to complete their turn. Therefore, the delay experienced by stop controlled movements and major street left turns, rather than the entire average intersection delay, are used to identify the critical LOS at these intersections. **Table 6** shows the HCM LOS criteria for unsignalized intersections.

Table 6 – Unsignalized Intersection LOS Criteria

Unsignalized Intersections	
LOS	Control Delay (sec/veh)
A	< 10
B	> 10-15
C	> 15-25
D	> 25-35
E	> 35-50
F	> 50

Signalized Intersections

The LOS for signalized intersections is based on the average control delay per vehicle. LOS can be identified for the entire intersection, individual intersection approaches, and each movement/lane-group. **Table 7** shows the HCM LOS criteria for signalized intersections.

Table 7 – Signalized Intersection LOS Criteria

Signalized Intersections	
LOS	Control Delay (sec/veh)
A	< 10
B	> 10-20
C	> 20-35
D	> 35-55
E	> 55-80
F	> 80

4.0 TRAFFIC VOLUMES

This section presents the traffic volumes utilized in preparing the IMR for Exit 106. The volumes were first prepared for existing (2015) conditions, and then for the future (2040) no-build and build conditions. The turning movement count data is provided in **Appendix A**.

4.1 EXISTING 2015 TRAFFIC VOLUMES

The turning movement traffic count data for the ramp termini and adjacent intersection within the area of Exit 106 were evaluated and reviewed. The morning and afternoon peak hour volumes at the ramp termini and the adjacent intersections at the interchange were identified and the traffic balanced between intersections. The balanced morning and afternoon peak hour volumes for Exit 106 are shown in **Figure 15**.

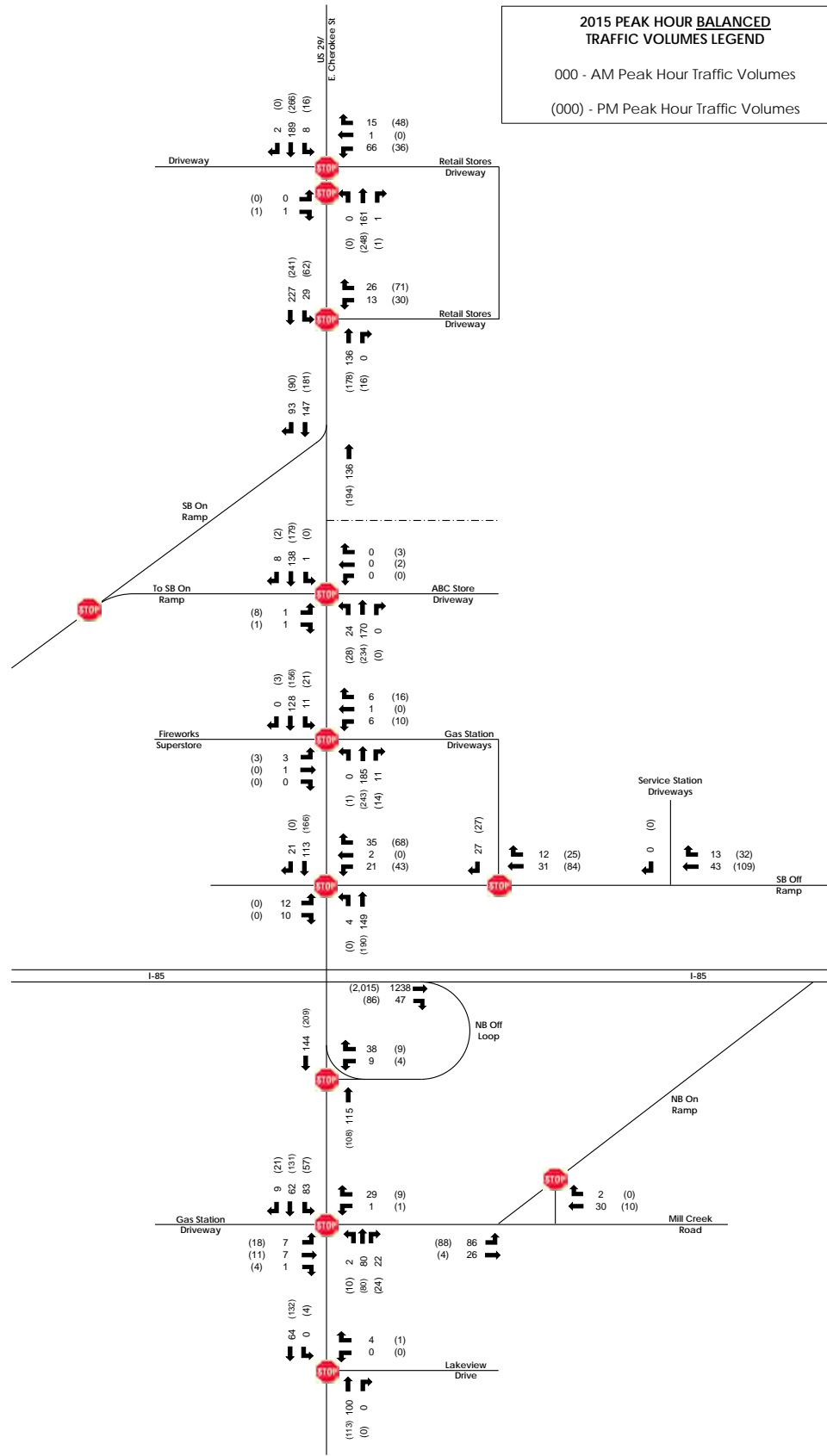
4.2 2040 TRAFFIC VOLUMES

An annual growth rate of 1.5 percent was applied to the freeway and ramp traffic. The historical count data along E. Cherokee Street was reviewed over the past five years. It was determined that the roadway experienced annual growth less than 1.0 percent. Therefore, to provide a conservative analysis, a 1.0 percent annual growth was utilized to develop the 2040 No-Build Design Hour Traffic Volumes. The 2040 estimated peak hour turning movement volumes on the existing (no-build) network at the Exit 106 interchange are shown in **Figure 16**.

The 2040 Build turning movement volumes were derived from the 2040 No Build network. Ramp volumes remained the same, while turning movements were estimated based on the redirection of traffic from the existing roadway configuration to that developed for each of the alternatives. The removal of businesses and industrial plants within some interchanges decreased the ramp volumes in the 2040 Build conditions. The 2040 estimated peak hour turning movement volumes on the preferred Alternative 3 network at the Exit 106 interchange are shown in **Figure 17**.



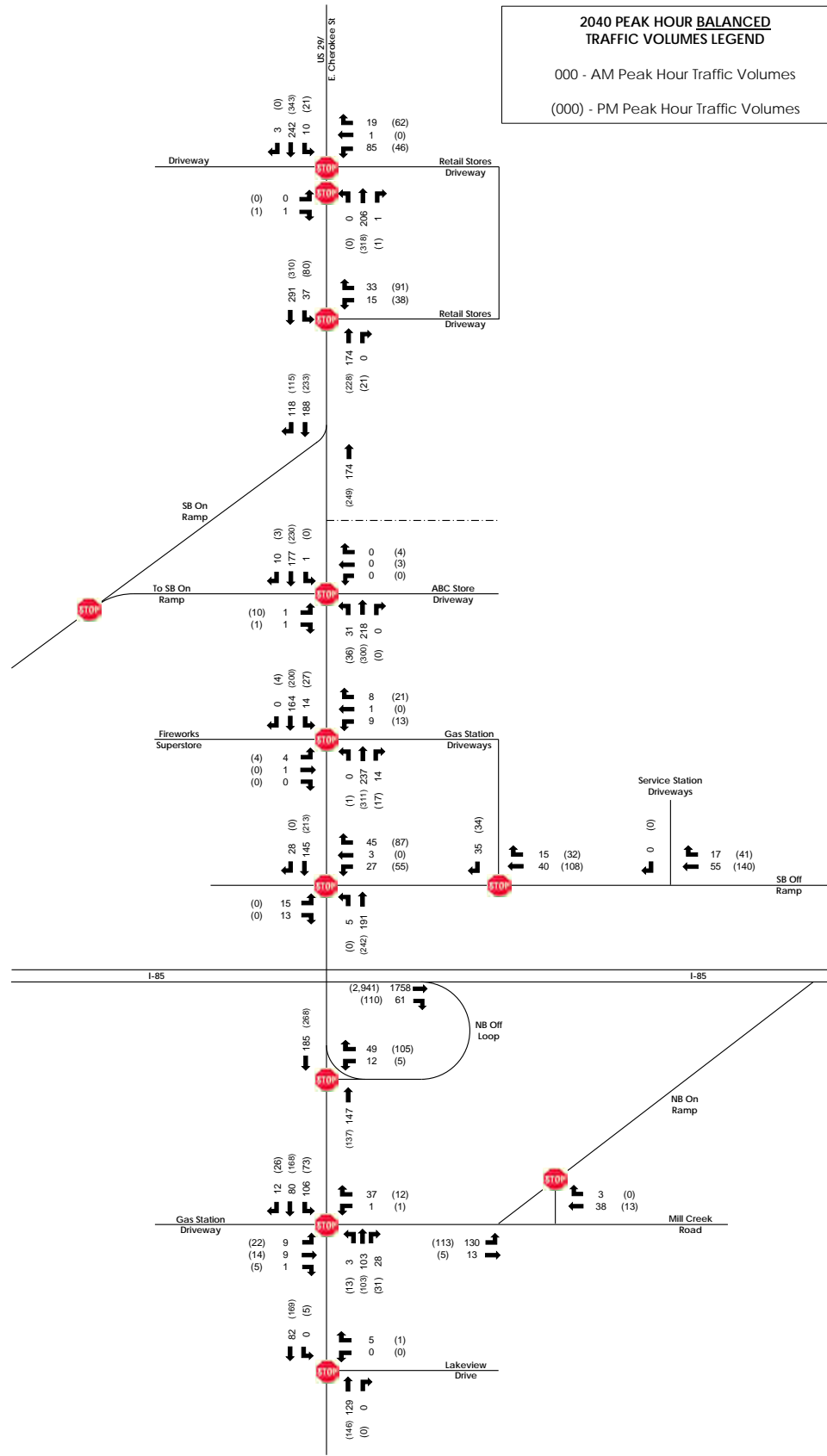
2015 PEAK HOUR BALANCED TRAFFIC VOLUMES LEGEND
 000 - AM Peak Hour Traffic Volumes
 (000) - PM Peak Hour Traffic Volumes



I-85 Widening Mile Marker 96-106
 Figure 15 - 2015 Existing Conditions
 Peak Hour Traffic Volumes



2040 PEAK HOUR BALANCED TRAFFIC VOLUMES LEGEND
 000 - AM Peak Hour Traffic Volumes
 (000) - PM Peak Hour Traffic Volumes

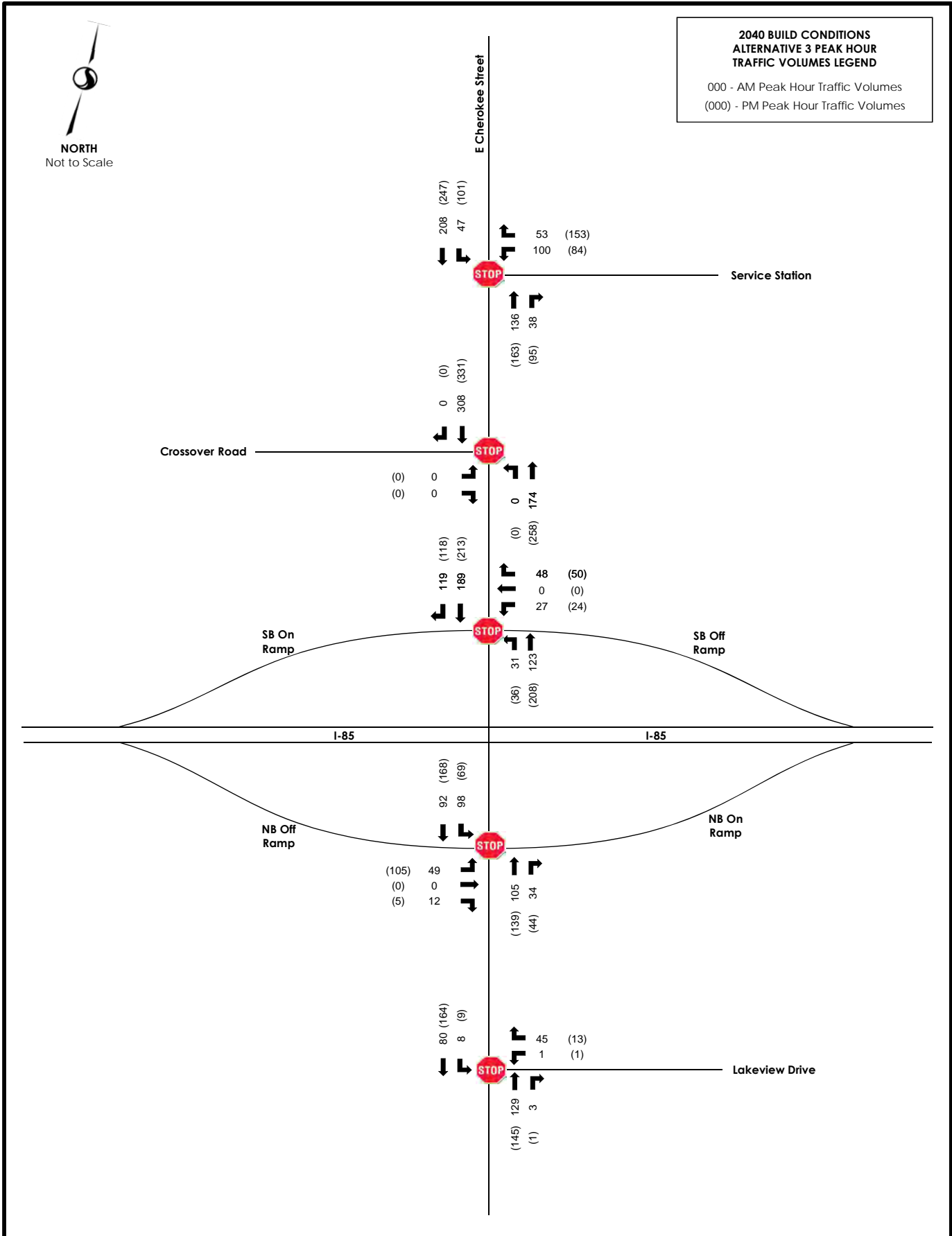


I-85 Widening Mile Marker 96-106
 Figure 16 - 2040 No Build Conditions
 Peak Hour Traffic Volumes



**2040 BUILD CONDITIONS
ALTERNATIVE 3 PEAK HOUR
TRAFFIC VOLUMES LEGEND**

000 - AM Peak Hour Traffic Volumes
(000) - PM Peak Hour Traffic Volumes



5.0 TRAFFIC OPERATIONS

5.1 FREEWAY AND RAMP MERGE/DIVERGE SEGMENT ANALYSIS

The analysis of basic freeway segments within the study area were performed for Existing (2015) conditions and for Future (2040) No-Build and Build conditions. The following criteria were identified through discussions with SCDOT and used for various inputs within the freeway segment analysis:

- The approved peak hour volumes (8:00-9:00AM and 2:00-3:00PM) based on the P-132 ATR count station data were balanced through the system and used for the freeway segment mainline volumes.
- To develop future (2040) traffic volumes, a 1.5 percent annual growth rate was applied to existing interstate volumes in the study area.
- A peak hour factor of 0.94 was used for freeway segments and ramp areas.
- The proportion of trucks and buses traveling on the freeway segments and ramp movements, based on averaged SCDOT data from the two mainline count locations within the corridor limits, is 30 percent.
- Based on the grades through the study area, the terrain was selected as "Rolling", instead of "Level" or "Mountainous".
- Free-flow speed was set at the posted speed limit along the segment.

Freeway Segment Analysis

The existing condition and 2040 No-Build condition analyses were performed using the existing number of freeway lanes present on the segments within the study area. The 2040 Build condition analysis was performed assuming I-85 would provide three lanes in each direction on between Exit 96 – Shelby Highway and the southernmost ramps at Exit 106 – E. Cherokee Street. The Basic Freeway Segment Analysis outputs are provided in **Appendix B** and a summary of results is shown in **Table 8** on the following page.

2015 Existing Conditions

Using the design hour volumes for the morning and afternoon peak hours, the analysis results indicate that:

- During the morning peak hour, the freeway segments at Exit 106 operate at LOS B.
- During the afternoon peak hour, the freeway segments at Exit 106 operate at LOS C.

2040 No-Build Conditions

With traffic volumes projected to increase within the corridor at an annual rate of 1.5 percent per year, if I-85 is not widened, the increased traffic volumes traveling on the existing interstate capacity will result in increased density and reductions of freeway segment LOS.

- During the morning peak hours, the freeway segments at Exit 106 will operate at LOS C.

During the afternoon peak hour:

- The northbound freeway segments at Exit 106 will operate at LOS E.
- The southbound freeway segment north of Exit 106 will operate at LOS F.
- The southbound freeway segment south of Exit 106 will operate at LOS E

2040 Build Conditions

With traffic volumes projected to increase within the corridor at an annual rate of 1.5 percent per year, if I-85 is not widened, the increased traffic volumes traveling on the existing interstate capacity will result in increased density and reductions of freeway segment LOS. The addition of a third travel lane in each direction on I-85 is expected to improve the LOS on each segment.

During the morning peak hour:

- All freeway segments Exit 106 will operate at LOS B and C.

During the afternoon peak hour:

- The freeway segments at Exit 106 will operate at LOS C south of the interchange.
- The northbound freeway segment north of Exit 106 will operate at LOS E.
- The southbound freeway segment north of Exit 106 will operate at LOS F.

Table 8 – Freeway Segment Capacity Analysis

Basic Freeway Segment Analysis Results													
	Segment	AM Peak Hour						PM Peak Hour					
		2015 Existing		2040 No-Build		2040 Build		2015 Existing		2040 No-Build		2040 Build	
		LOS	Density	LOS	Density	LOS	Density	LOS	Density	LOS	Density	LOS	Density
NB	Exit 104-106	B	14.1	C	20.2	B	13.4	C	23.8	E	43.1	C	22.9
NB	Exit 106-State Line	B	14.6	C	20.8	C	20.8	C	23.9	E	43.2	E	43.2
SB	State Line-Exit 106	B	13.1	C	19.6	C	19.6	C	24.9	F	45.1	F	45.1
SB	Exit 106-104	B	13.9	C	20.7	B	13.6	C	24.6	E	44.3	C	23.3

Ramp Merge Area Analysis

The Ramp Merge Analyses outputs are provided in **Appendix B** and the summary results are shown in **Table 9**. The analysis results for the ramp merge areas indicate the following:

2015 Existing Conditions

Using the design hour volumes for the morning and afternoon peak hours, the analysis results indicate that:

- During the morning peak hour, all ramp merge areas at Exit 106 operate at LOS B
- During the afternoon peak hour, all ramp merge areas at Exit 106 operate at LOS C

2040 No-Build Conditions

With traffic volumes projected to increase within the corridor at an annual rate of 1.5 percent per year, and if I-85 is not widened, the increased traffic volumes traveling on the existing interstate capacity will result in increased density and reductions of ramp area LOS.

During the morning peak hour:

- The merge ramp in the northbound direction at Exit 106 will operate at LOS C
- The merge ramp in the southbound direction at Exit 106 will operate at LOS B

During the afternoon peak hour:

- The merge ramp in the northbound direction at Exit 106 will operate at LOS E
- The merge ramp in the southbound direction at Exit 106 will operate at LOS D

2040 Build Conditions

With traffic volumes projected to increase within the corridor at an annual rate of 1.5 percent per year, and if I-85 is not widened, the increased traffic volumes traveling on the existing interstate capacity will result in increased density and reductions of freeway segment LOS. The addition of a third lane in each direction on I-85 is expected to improve the LOS on all segments.

During the morning peak hour:

- The merge ramp in the northbound direction at Exit 106 will operate at LOS C.
- The merge ramp in the southbound direction at Exit 106 will operate at LOS B.

During the afternoon peak hour:

- The merge ramp in the northbound direction at Exit 106 will operate at LOS E.
- The merge ramp in the southbound direction at Exit 106 will operate at LOS C.

Table 9 – Ramp Merge Capacity Analysis Results

Freeway Merge Analysis Results													
		AM Peak Hour						PM Peak Hour					
	Merge Location	2015 Existing		2040 No-Build		2040 Build		2015 Existing		2040 No-Build		2040 Build	
		LOS	Density	LOS	Density	LOS	Density	LOS	Density	LOS	Density	LOS	Density
NB	Exit 106	B	17.4	C	23.9	C	21.9	C	26.8	E	38.1	E	36.1
SB	Exit 106	B	10.7	B	17.8	B	13.4	C	21.5	D	32.6	C	22.3

Ramp Diverge Area Analysis

The Ramp Diverge Analyses outputs are provided in **Appendix B** and the summary results are shown in **Table 10**. The analysis results for the ramp merge areas indicate the following:

2015 Existing Conditions

Using the design hour volumes for the morning and afternoon peak hours, the analysis results indicate that:

- During the morning peak hour, all ramp diverge areas at Exit 106 operate at LOS B.
- During the afternoon peak hour, all ramp diverge areas at Exit 106 operate at LOS D.

2040 No-Build Conditions

With traffic volumes projected to increase within the corridor at an annual rate of 1.5 percent per year, and if I-85 is not widened, the increased traffic volumes traveling on the existing interstate capacity will result in increased density and reductions of ramp area LOS.

- During the morning peak hour, all ramp diverge areas at Exit 106 operate at LOS C.
- During the afternoon peak hour, all ramp diverge areas at Exit 106 operate at LOS E.

2040 Build Conditions

With traffic volumes projected to increase within the corridor at an annual rate of 1.5 percent per year, and if I-85 is not widened, the increased traffic volumes traveling on the existing interstate capacity will result in increased density and reductions of freeway segment LOS. The addition of a third travel lane in each direction on I-85 is expected to improve the LOS on each segment.

- During the morning peak hour, the ramp diverge areas at Exit 106 operate at LOS A in the northbound direction and LOS C in the southbound direction.
- During the afternoon peak hour, the ramp diverge areas at Exit 106 operate at LOS B in the northbound direction and LOS D in the southbound direction.

Table 10 – Ramp Diverge Capacity Analysis Results

Freeway Diverge Analysis Results													
		AM Peak Hour						PM Peak Hour					
	Merge Location	2015 Existing		2040 No-Build		2040 Build		2015 Existing		2040 No-Build		2040 Build	
		LOS	Density	LOS	Density	LOS	Density	LOS	Density	LOS	Density	LOS	Density
NB	Exit 106	B	18.3	C	25.2	A	7.0	D	28.6	E	40.9	B	16.1
SB	Exit 106	B	17.2	C	24.7	C	24.7	D	30.4	E	41.1	D	29.2

5.2 EXISTING AND 2040 NO BUILD INTERSECTION ANALYSIS

Capacity analyses for the signalized and unsignalized intersections at the interchanges within the study area were performed. Analyses were performed for existing conditions (existing traffic, intersection traffic control and geometry) and the 2040 No-Build conditions (2040 traffic, and existing intersection traffic control and geometry)

For unsignalized intersections, the intersection operation is represented by the worst approach delay and LOS of all the stop sign controlled approaches to the intersection. For signalized intersections, the intersection operation is represented by the intersection delay and LOS.

The results of the unsignalized intersection capacity analyses for 2015 existing conditions and the 2040 No-Build conditions for Exit 106 – E. Cherokee Street (US 29) interchange are shown in **Table 11** on the following page. The HCM intersection capacity outputs for each intersection are provided in **Appendix C**.

Under the 2015 Existing Conditions at Exit 106, the yield and/or stop sign controlled approaches at the unsignalized intersections operate at LOS C or better during the morning and afternoon peak hours. No improvements are necessary to provide acceptable LOS under existing conditions.

Table 11 – Intersection Capacity Analysis Results

Intersection Name	2015 Base Conditions				2040 No Build Conditions			
	AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
	LOS	Delay (s)	LOS	Delay (s)	LOS	Delay (s)	LOS	Delay (s)
Exit 106 (E. Cherokee Street/US 29)								
US 29 & Retail Store Driveways (3)*	C	16.0	C	17.0	C	18.4	C	20.8
US 29 & Service Station/Retail Store Driveways (4)*	B	12.6	C	15.0	B	12.6	C	15.1
US 29 & SB on-ramp(north)/Service Station Driveway*	A	0.0	A	0.0	A	0.0	A	0.0
US 29 & SB on-ramp(south)/Service Station Driveway*	A	0.0	A	0.0	A	0.0	A	0.0
US 29 & I-85 Southbound Off-Ramp*	B	10.6	B	11.6	B	11.1	B	12.8
US 29 & I-85 Northbound Off-Ramp*	A	8.6	A	9.6	A	8.7	A	9.7
US 29 & I-85 Northbound On-Ramp/Frontage Road**	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
US 29 & on-ramp to I-85 Northbound & Frontage Rd*	B	12.1	B	11.4	B	13.2	B	11.7
I-85 Southbound off-ramp & Service Station Dwy 1*	A	0.0	A	0.0	A	0.0	A	0.0
I-85 Southbound off-ramp & Service Station Dwy 2*	A	8.6	A	9.0	A	8.7	A	9.1
US 29 & Lakeview Drive*	A	8.9	A	8.9	A	9.0	A	9.1

*Unsignalized intersection; worst approach LOS and delay reported

**Unique intersection geometry under all Conditions incompatible with HCM 2010; LOS and delay not reported

In general, with the forecast increases in traffic and without improvements to the intersections, delay in the 2040 No-Build analyses can be expected to be higher than delay during the Existing Conditions analyses. In some cases, the increases in delay may still result in acceptable LOS being obtained. In other cases, the increases in delay may result in LOS E or F conditions. When these results occur, it may be necessary to provide additional capacity (such as constructing separate left and/or right turn lanes) and/or changes in the traffic control to reduce delay and improve the LOS.

Under the 2040 No-Build conditions, the yield and/or stop sign controlled approaches at the unsignalized intersections are anticipated to operate at LOS C or better during the morning and afternoon peak hours.

5.3 2040 BUILD INTERSECTION ANALYSIS – PREFERRED ALTERNATE 3

The Exit 106 – E. Cherokee Street (US 29) interchange is expected to be modified as part of the I-85 widening project. 2040 Build analyses for the intersections within the Exit 106 interchange area were performed for three alternatives. Alternative 3, which replaces the existing Exit 106 interchange with a full diamond, including a new northbound off-ramp located in the southwest quadrant of the interchange, was selected as the preferred alternative.

Other elements of the alternative concept include:

- Eliminating the intersections of:
 - Crossover Road/southbound on-ramp & E. Cherokee Street
 - Service Station Driveways & the southbound off-ramp
 - Fireworks Store/Service Station Driveways & E. Cherokee Street
 - ABC Store Driveway & E. Cherokee Street
 - Mill Creek Road & northbound on-ramp
 - Mill Creek Road/Service Station Driveway & E. Cherokee Street
 - Lakeview Drive (northernmost access) & E Cherokee Street
- Relocating and adjusting the alignment of the northbound ramps intersection with E. Cherokee Street. The off-loop will be replaced with a standard off-ramp in the south western quadrant of the interchange.
- The 395 foot long slip ramp that allowed free flow access for southbound traffic on E. Cherokee Street to reach the southbound on-ramp would be removed.
- Relocating and adjusting the alignment of Frontage Road/Crossover Road intersection opposite the first remaining Service Station driveway north of the southbound ramps.
- Relocating and adjusting the alignment of the southbound ramps intersection with E. Cherokee Street.

Capacity analyses for the signalized and unsignalized intersections of the Preferred Alternative were performed for the 2040 Final Build conditions which included the 2040 traffic volumes and modified intersection traffic control and geometry to the interchange at Exit 106. The traffic operations analysis of the preferred Alternative 3 identified areas where traffic control improvements were projected to be needed to provide acceptable operating LOS. The results of the unsignalized intersection capacity analysis for the 2040 Build Preferred Alternative 3 (without additional improvements) is shown in **Table 12**. The conceptual design of Alternative 3 for the E. Cherokee Street (US 29) interchange intersections is shown in **Figure 15**.

Under Alternative 3, the stop sign controlled approaches at the intersections are predicted to operate at LOS C or better during the morning and afternoon peak hours.

Table 12 – Interchange Alternate Analysis Results

Intersection Name	2040 No Build Conditions				2040 Build Conditions			
	AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
	LOS	Delay (s)	LOS	Delay (s)	LOS	Delay (s)	LOS	Delay (s)
Exit 106 (E. Cherokee Street/US 29) Alternative 3								
US 29 & Retail Store Driveways (3)*	C	18.4	C	20.8	Removed in Build Conditions			
US 29 & Retail Store/Service Station Driveway*	Added in Build Conditions				B	13.3	C	16.9
US 29 & Crossover Road*	Added in Build Conditions				A	0.0	A	0.0
US 29 & Service Station/Retail Store Driveways (4)*	B	12.6	C	15.1	Removed in Build Conditions			
US 29 & SB on-ramp(north)/Service Station Driveway*	A	0.0	A	0.0	Removed in Build Conditions			
US 29 & SB on-ramp(south)/Service Station Driveway*	A	0.0	A	0.0	Removed in Build Conditions			
US 29 & I-85 Southbound Off-Ramp*	B	11.1	B	12.8	B	10.3	B	10.9
US 29 & I-85 Northbound Off-Ramp*	A	8.7	A	9.7	B	11.9	B	14.2
US 29 & I-85 Northbound On-Ramp/Frontage Road**	n/a	n/a	n/a	n/a	Removed in Build Conditions			
US 29 & on-ramp to I-85 Northbound & Frontage Rd*	B	13.2	B	11.7	Removed in Build Conditions			
I-85 Southbound off-ramp & Service Station Dwy 1*	A	0.0	A	0.0	Removed in Build Conditions			
I-85 Southbound off-ramp & Service Station Dwy 2*	A	8.7	A	9.1	Removed in Build Conditions			
US 29 & Lakeview Drive*	A	9.0	A	9.1	A	9.2	A	9.2

Figure 15 - Exit 106: Improvement Alternative 3



6.0 INTERCHANGE JUSTIFICATION

A policy statement for justifying the need for additional or modified access to the existing sections of an Interstate System was first published in the Federal Register on October 22, 1990 entitled "Access to the Interstate System". It was then modified and updated on February 11, 1998 and on August 27, 2009. The objectives of this policy are to ensure that all new or revised access points do not adversely impact the operations and safety of the Interstate System, and all new or revised access points have been vetted through a systematic evaluation process.

In order to explain the intent and requirements of this new policy, FHWA published the Interstate System Access Information Guide in August 2010. This FHWA Guide was followed in preparing the current Interchange Modification Report (IMR) for the I-85/Exit 106 Interchange in Cherokee County, South Carolina.

6.1 POLICY POINT 1

The need being addressed by the request cannot be adequately satisfied by existing interchanges to the Interstate, and/or local roads and streets in the corridor can neither provide the desired access, nor can they be reasonably improved (such as access control along surface streets, improving traffic control, modifying ramp terminals and intersections, adding turn bays or lengthening storage) to satisfactorily accommodate the design-year traffic demands (23 CFR 625.2 (a)).

The section of I-85 analyzed in this study is a major component of the regional network. Travel demand includes commuter traffic and heavy truck traffic that originates in areas adjacent to the interstate as well as through traffic between Charlotte and Atlanta. The analyses shows that existing operating conditions during the afternoon peak hour are approaching capacity of the four lane freeway, and are projected to be over-capacity during the 2040 No-Build condition.

The existing Exit 106 interchange configuration is not in compliance with current state and federal design requirements. Ramps enter and exit directly from two-way frontage roads, increasing the risk of head-on collisions and wrong way movements onto exit ramps. Traffic using the northbound on-ramp is only accessible from its intersection with the two-way frontage road (Mill Creek Road). Similarly, the traffic on the southbound on-ramp immediately conflicts with two-way traffic and driveway turning movements from adjacent service stations. In this partial diamond interchange, the northbound off-ramp is a loop intersecting directly with E. Cherokee Street. The posted advisory speed at the ramp is 20mph, which requires traffic to reduce their speed on the mainline prior to exiting. This increases the potential for rear-end and other types of collisions. The southbound on- and off-ramp intersections are approximately 675 feet apart on E. Cherokee Street.

The proposed changes would meet the purpose and need for the project by bringing the interchange into compliance with current state and federal design requirements and to accommodate design year traffic. The safety at the interchange will be improved by providing on- and off-ramps that separate the interstate traffic from local traffic on the adjacent frontage roads. The on-ramps and their acceleration lanes will be long enough to allow traffic to reach freeway speed prior to merging onto the interstate. The southbound on-ramp will continue onto I-85, becoming the proposed third lane in the southbound direction. The southbound off-ramp and its deceleration lane will be long enough to allow traffic to exit at mainline speed and safely decelerate prior to the ramp terminus as well as provide sufficient vehicle storage during peak hours to keep traffic from backing up into I-85. The proposed, widened northbound lane will serve as an exit only drop off lane at the northbound off-ramp.

On the north side of I-85, the intersection of the I-85 southbound on-ramp and E. Cherokee Street would be shifted southward to align with the southbound off-ramp intersection, emulating a standard diamond interchange traffic pattern. The driveway entrances on the southbound off-ramp will be removed. To the south of I-85, the existing northbound off-loop and on-ramp would be removed. A new off-ramp would be added and aligned with the new single lane northbound off-ramp. Mill Creek Road (frontage road S-11-658) access will be relocated further to the south. Additionally, improvements will be made to Mill Creek Road to maintain access to properties in the southeast quadrant of the interchange.

6.2 POLICY POINT 2

The need being addressed by the request cannot be adequately satisfied by reasonable transportation system management (such as ramp metering, mass transit, and HOV facilities), geometric design, and alternative improvements to the Interstate without the proposed change(s) in access (23 CFR 625.2(a)).

The intent of Policy Point 2 is to demonstrate that a new access point would be needed in cases where transportation system management or alternative improvements to the existing interstate system would be inadequate.

Transportation System Management (TSM) can include improvements such as carpooling, ramp metering, reversible lanes, mass transit and high-occupancy vehicle (HOV) lanes to maximize the capacity and efficiency of the existing roadway network.

Typically, the TSM alternatives would be implemented to reduce or eliminate the need for new facility construction. However, the TSM alternative would not satisfy the project's Purpose and Need since it would not increase capacity, upgrade an obsolete interchange to meet current design requirements, and expand vertical clearances at overpass bridges. The provision of HOV facilities would still require widening mainline I-85 and constructing the proposed modifications to the existing interchange. Mass transit services in the I-85 corridor do not exist to the extent that transit could provide a reasonable alternative to relieve congestion in either the near term or for design year travel demand. Therefore, TSM strategies would not be effective in relieving delay and congestion, or addressing the Purpose and Need of the project.

Multiple alternatives were analyzed at Exit 106 as outlined in the *Interstate 85 Widening Traffic Report*. The preferred build alternative (Alternative 3) represents the most feasible option for meeting the purpose and need of the project. The Preferred Build Alternative was selected after considering multiple interchange designs, alternate roadway alignments and bridge locations. All alternatives received extensive review and comment at Public Information Meetings.

6.3 POLICY POINT 3

An operational and safety analysis has concluded that the proposed change in access does not have a significant adverse impact on the safety and operation of the Interstate facility (which includes mainline lanes, existing, new, or modified ramps, ramp intersections with crossroad) or on the local street network based on both the current and the planned future traffic projections. The analysis shall, particularly in urbanized areas, include at least the first adjacent existing or proposed interchange on either side of the proposed change in access (23 CFR 625.2(a), 655.603(d) and 771.111(f)). The crossroads and the local street network, to at least the first major intersection on either side of the proposed change in access, shall be included in this analysis to the extent necessary to fully evaluate the safety and operational impacts that the proposed change in access and other transportation improvements may have on the local street network (23 CFR 625.2(a) and 655.603(d)). Requests for a proposed change in access must include a description and assessment of the impacts and ability of the proposed changes to safely and efficiently collect, distribute and accommodate traffic on the Interstate facility, ramps, intersection of ramps with crossroad, and local street network (23 CFR 625.2(a) and 655.603(d)). Each request must also include a conceptual plan of the type and location of the signs proposed to support each design alternative (23 U.S.C. 109(d) and 23 CFR 655.603(d)).

The intent of the Policy Point 3 is to require detailed operational and safety analysis of the relevant interstate segments and provide a comparison of the no-build and build conditions that are anticipated to occur through the design year of the project.

The analysis of the interstate facility and Exit 106 is an extension of the project-wide traffic operations and safety analysis as summarized in the *I-85 Widening Traffic Analysis Report* and the *I-85 Widening Project MM 96 -MM 106 Accident Analysis Report*.

The analysis of the interstate facility includes the portion of I-85 between Broad River Bridge (1.5 miles north of Exit 96) and the southernmost ramps at Exit 106, including the proposed modification of E. Cherokee Street (US 29) interchange (Exit 106). The analysis was performed using methodologies and procedures outlined in the Transportation Research Board's *Highway Capacity Manual* and used the HCS-2010 analysis modeling software.

The analysis of the 2040 Build condition of the preferred alternative (Alternative 3) illustrates that the project would not have any significant negative impact of the safety and the operation of the facilities within the project area. The analysis shows that, with the proposed improvements, Interstate 85 mainline operations and ramp merge/diverge areas are estimated to operate at LOS A, B and C during the 2040 Build morning peak hour and LOS B and C within the project widening area during the 2040 build afternoon peak hour. Without the proposed improvement, the freeway segments would operate at LOS C and ramp merge/diverge areas would operate at LOS B and C during the 2040 No-Build morning peak hour. During the 2040 No-Build afternoon peak hour, the freeway segments would operate at LOS E and F, and the ramp merge/diverge areas would operate at LOS D, E and F.

An accident analysis identified possible contributing factors to the occurrence of angled and rear-end collisions in the area such as the radius of the northbound off-ramp coupled with a short diverge lane (approximately 150 feet full width diverge distance) and a narrow clear zone due to the overpass for E. Cherokee (US 29). By replacing the substandard ramps and modifying the existing interchange to meet current design standards, the proposed new interchange with E. Cherokee Street (US 29) is anticipated to contribute to an improvement in traffic safety.

The preferred alternative of the interchange design also provides space for the future construction of an additional travel lane in each direction along I-85. Altogether, these design provisions would enhance the operational efficiency and safety of the corridor, thereby increasing capacity, and improving levels of service in the long term. However, pedestrian facilities are not incorporated into the design due to the rural nature of the interchange area.

6.4 POLICY POINT 4

The proposed access connects to a public road only and will provide for all traffic movements. Less than "full interchanges" may be considered on a case-by-case basis for applications requiring special access for managed lanes (e.g., transit, HOVs, HOT lanes) or park and ride lots. The proposed access will be designed to meet or exceed current standards (23 CFR 625.2(a), 625.4(a) (2), and 655.603 (d)).

The intent of the Policy Point 4 is to require implementation of an interchange design for the new access that allows for all relevant movements for general purpose traffic, whenever feasible.

The existing E. Cherokee Street interchange is a partial diamond interchange that provides for all traffic movements. The northbound off-ramp is a cloverleaf loop located in the southeast quadrant of the interchange. Existing ramps tie directly into two-way frontage roads running parallel to the mainline freeway lanes.

As illustrated in the design concept for the preferred alternative, the proposed modification of Exit 106 would continue to provide full access for all traffic movements. It would shift ramp movements away from the two-way frontage roads directly to intersections with E. Cherokee Street, add a conventional northbound off-ramp to replace the existing low speed off-ramp loop, and provide ramps that meet or exceed current design standards, improving access to E. Cherokee Street (US 29) and the surrounding roadway network.

6.5 POLICY POINT 5

The proposal considers and is consistent with local and regional land use and transportation plans. Prior to receiving final approval, all requests for new or revised access must be included in an adopted Metropolitan Transportation Plan, in the adopted Statewide or Metropolitan Transportation Improvement Program (STIP or TIP), and the Congestion Management Process within transportation management areas, as appropriate, and as specified in 23 CFR part 450, and the transportation conformity requirements of 40 CFR parts 51 and 93.

The intent of Policy Point 5 is to ensure consistency of the access request with local and regional plans.

As part of the proposed I-85 widening between mile markers 96 and 106, the proposed project at Exit 106 is consistent with SCDOT's Statewide Transportation Improvement Program (STIP) for Cherokee County. A source of funding for bridge, resurfacing and mainline interstate projects is available through Act 98 of 2013. Act 98 provides an annual appropriation of \$50 million to SCDOT, which in turn transfers an equivalent amount to the South Carolina Transportation Infrastructure Bank (SCTIB) to be utilized to finance an estimated \$550 million of interstate improvements. This I-85 Improvement (Cherokee County – Phase III of I-85 Widening Preliminary Engineering) project is fully funded by approximately \$171 million of the \$550 million SCTIB funds.

6.6 POLICY POINT 6

In corridors where the potential exists for future multiple interchange additions, a comprehensive corridor or network study must accompany all requests for new or revised access with recommendations that address all of the proposed and desired access changes within the context of a longer-range system or network plan (23 U.S.C. 109(d), 23 CFR 625.2(a), 655.603(d), and 771.111.

The intent of Policy Point 6 is to ensure coordinated network study and evaluation of cumulative effects for those cases when multiple new access requests are involved within the same vicinity.

This IMR study area is an extension of the broader study area that was analyzed during the *Interstate 85 Widening Traffic Analysis Report*. The I-85 Widening study evaluated the current and future traffic volumes on I-85 mainline and interchanges between mile markers 96 and the State Line. The northbound single exit ramp at Exit 98 is expected to be removed as part of this project. No other known proposed or desired access changes are anticipated in the vicinity of this interchange.

6.7 POLICY POINT 7

When a new or revised access point is due to a new, expanded, or substantial change in current or planned future development or land use, requests must demonstrate appropriate coordination has occurred between the development and any proposed transportation system improvements (23 CFR 625.2(a) and 655.603(d)). The request must describe the commitments agreed upon to assure adequate collection and dispersion of the traffic resulting from the development with the adjoining local street network and Interstate access point (23 CFR 625.2(a) and 655.603(d)).

The intent of Policy Point 7 is to ensure coordination and cooperation with relevant stakeholders when the need for interchange is primarily due to new developments.

The analysis assesses the Interstate network and evaluates the improvements required to accommodate the regional growth in traffic. The growth in freeway and local traffic results from incremental changes in land use over time, as represented by the annual growth rate applied to existing traffic to obtain 2040 traffic volumes. The revisions proposed at Exit 106 are not due to a new, expanded or change in current or future development in the vicinity of the interchange.

6.8 POLICY POINT 8

The proposal can be expected to be included as an alternative in the required environmental evaluation, review and processing. The proposal should include supporting information and current status of the environmental processing (23 CFR 771.111).

The intent of the Policy Point 8 is to ensure that the National Environmental Policy Act (NEPA) process is completed for environmental evaluation.

This IMR study area is an extension of the project-wide study that was summarized in the *Interstate 85 Widening Traffic Analysis Report*. That analysis considered the Interstate network, the proposed interstate widening, and proposed interchange modifications throughout the corridor and was developed concurrently with the preparation of the Environmental Assessment for the proposed improvements. The Environmental Assessment makes use of the same traffic data and improvement alternatives discussed in the project-wide study, including the Preferred Alternative at Exit 106, which was included in the Environmental Assessment as Alternative 3.

APPENDIX A

TURNING MOVEMENT COUNT DATA

All Traffic Data Service, Inc

1336 Farmer Road
 Conyers, Ga 30012
 404-374-1283

File Name : #27 US29&RETAILSTORES3DRIVEWAYAM

Site Code : 10

Start Date : 5/27/2015

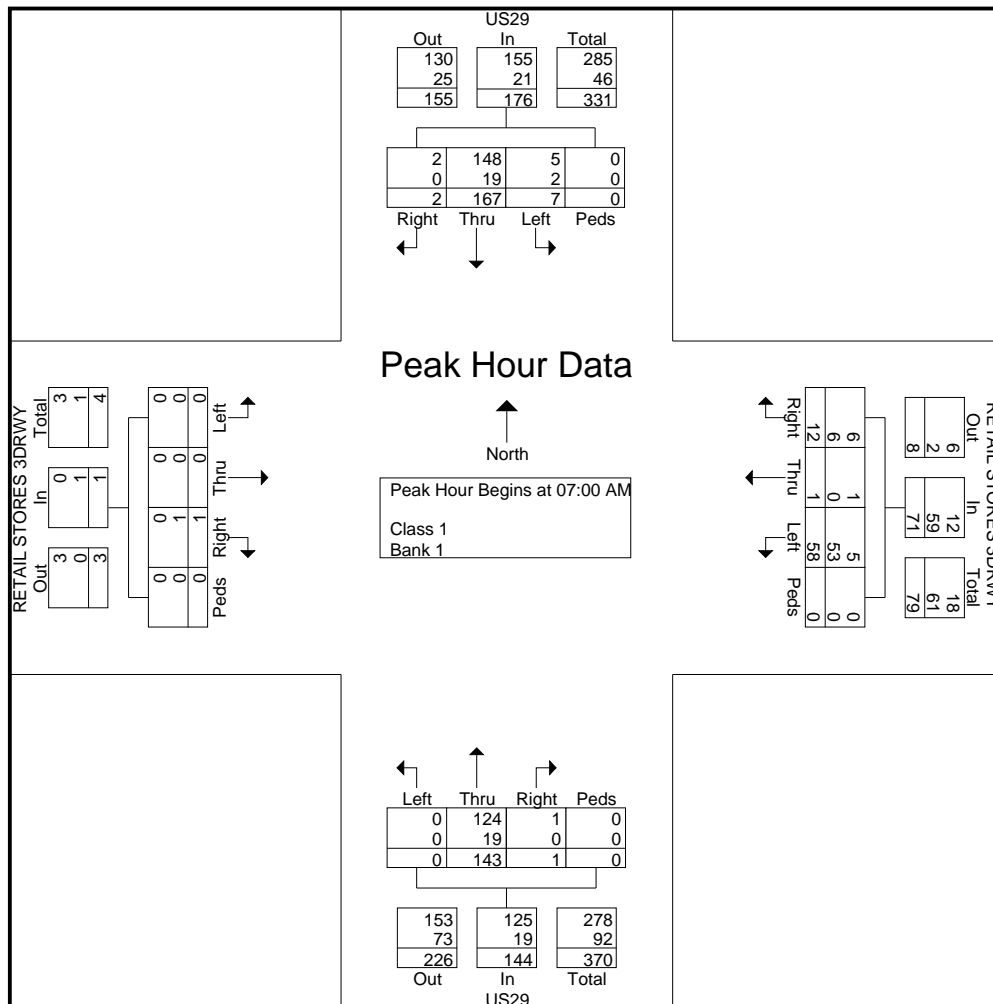
Page No : 2

Start Time	US29 Southbound					RETAIL STORES 3DRWY Westbound					US29 Northbound					RETAIL STORES 3DRWY Eastbound					Int. Total
	Right	Thru	Left	Bikes	App. Total	Right	Thru	Left	Bikes	App. Total	Right	Thru	Left	Bikes	App. Total	Right	Thru	Left	Bikes	App. Total	

Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1

Peak Hour for Entire Intersection Begins at 07:00 AM

07:00 AM	0	40	3	0	43	3	1	20	0	24	0	27	0	0	27	0	0	0	0	0	0	94
07:15 AM	0	43	2	0	45	5	0	13	0	18	1	36	0	0	37	0	0	0	0	0	0	100
07:30 AM	0	48	0	0	48	3	0	11	0	14	0	42	0	0	42	1	0	0	0	0	1	105
07:45 AM	2	36	2	0	40	1	0	14	0	15	0	38	0	0	38	0	0	0	0	0	0	93
Total Volume	2	167	7	0	176	12	1	58	0	71	1	143	0	0	144	1	0	0	0	0	1	392
% App. Total	1.1	94.9	4	0		16.9	1.4	81.7	0		0.7	99.3	0	0		100	0	0	0	0		
PHF	.250	.870	.583	.000	.917	.600	.250	.725	.000	.740	.250	.851	.000	.000	.857	.250	.000	.000	.000	.250		.933
Class 1	2	148	5	0	155	6	1	5	0	12	1	124	0	0	125	0	0	0	0	0	0	292
% Class 1		88.6	71.4	0	88.1	50.0	100	8.6	0	16.9	100	86.7	0	0	86.8	0	0	0	0	0	0	74.5
Bank 1	0	19	2	0	21	6	0	53	0	59	0	19	0	0	19	1	0	0	0	0	1	100
% Bank 1	0	11.4	28.6	0	11.9	50.0	0	91.4	0	83.1	0	13.3	0	0	13.2	100	0	0	0	0	100	25.5



All Traffic Data Service, Inc

1336 Farmer Road
 Conyers, Ga 30012
 404-374-1283

File Name : #27 US29&RETAILSTORES3DRIVEWAYPM

Site Code : 10

Start Date : 5/27/2015

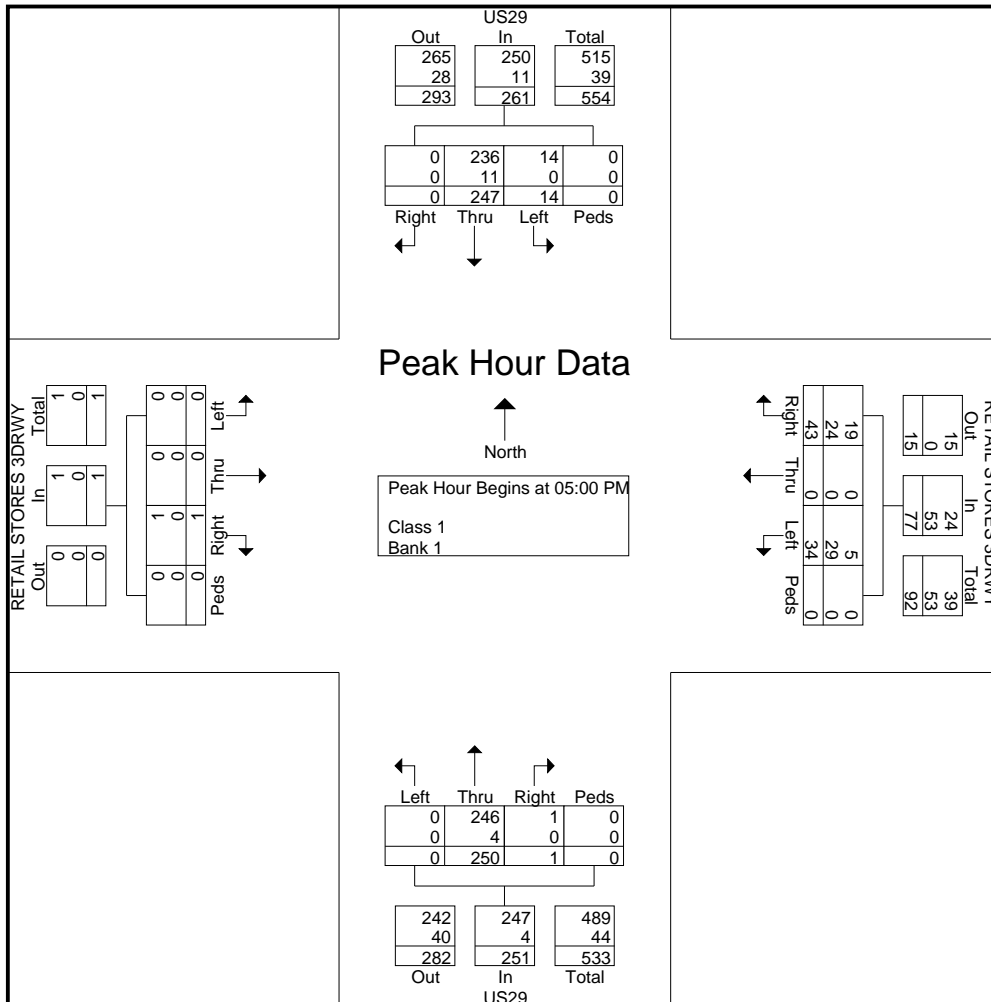
Page No : 2

Start Time	US29 Southbound					RETAIL STORES 3DRWY Westbound					US29 Northbound					RETAIL STORES 3DRWY Eastbound					Int. Total
	Right	Thru	Left	Bikes	App. Total	Right	Thru	Left	Bikes	App. Total	Right	Thru	Left	Bikes	App. Total	Right	Thru	Left	Bikes	App. Total	

Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1

Peak Hour for Entire Intersection Begins at 05:00 PM

05:00 PM	0	60	5	0	65	9	0	7	0	16	0	62	0	0	62	0	0	0	0	0	143
05:15 PM	0	59	2	0	61	15	0	12	0	27	0	58	0	0	58	0	0	0	0	0	146
05:30 PM	0	74	3	0	77	10	0	7	0	17	1	64	0	0	65	1	0	0	0	1	160
05:45 PM	0	54	4	0	58	9	0	8	0	17	0	66	0	0	66	0	0	0	0	0	141
Total Volume	0	247	14	0	261	43	0	34	0	77	1	250	0	0	251	1	0	0	0	1	590
% App. Total	0	94.6	5.4	0		55.8	0	44.2	0		0.4	99.6	0	0		100	0	0	0		
PHF	.000	.834	.700	.000	.847	.717	.000	.708	.000	.713	.250	.947	.000	.000	.951	.250	.000	.000	.000	.250	.922
Class 1	0	236	14	0	250	19	0	5	0	24	1	246	0	0	247	1	0	0	0	1	522
% Class 1		95.5	100	0	95.8	44.2	0	14.7	0	31.2	100	98.4	0	0	98.4	100	0	0	0	100	88.5
Bank 1	0	11	0	0	11	24	0	29	0	53	0	4	0	0	4	0	0	0	0	0	68
% Bank 1	0	4.5	0	0	4.2	55.8	0	85.3	0	68.8	0	1.6	0	0	1.6	0	0	0	0	0	11.5



All Traffic Data Service, Inc

1336 Farmer Road
Conyers, Ga 30012
404-374-1283

File Name : #28 US29&RETAILSTORESAM

Site Code : 28

Start Date : 5/27/2015

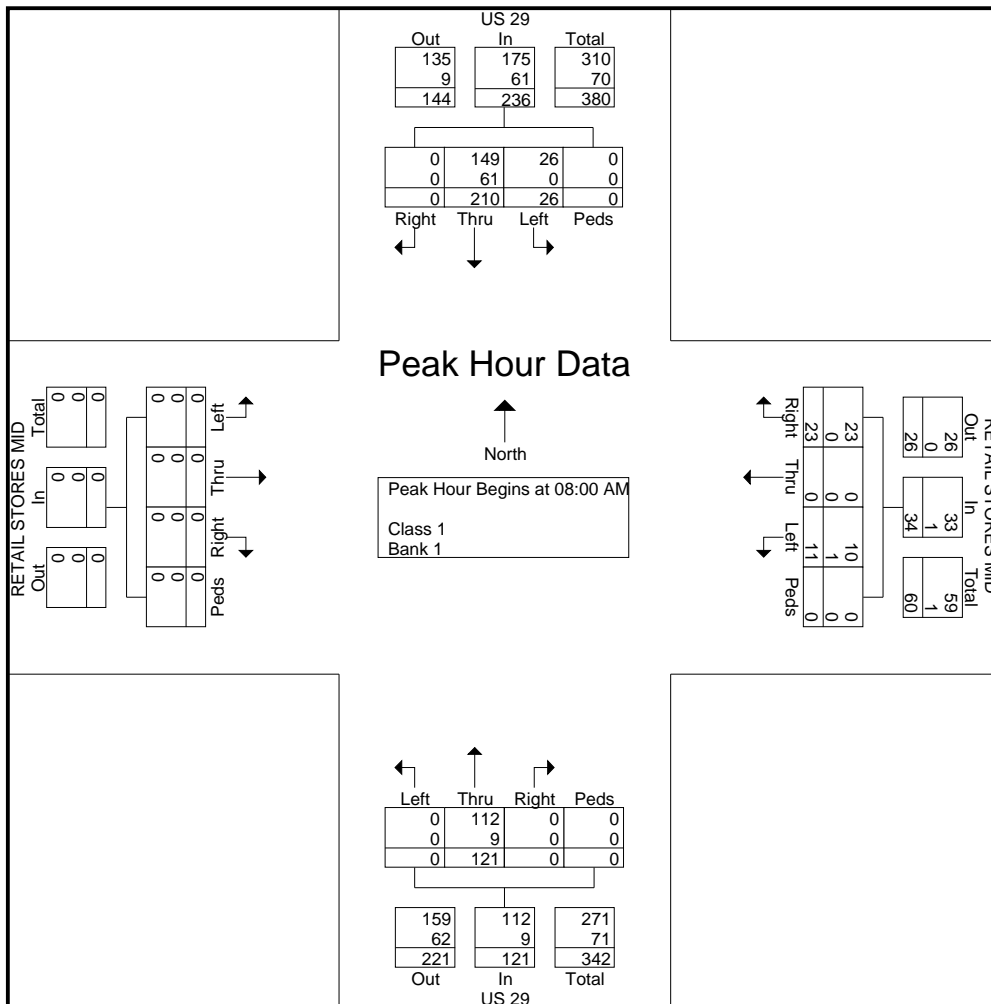
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Start Time	US 29 Southbound					RETAIL STORES MID Westbound					US 29 Northbound					RETAIL STORES MID Eastbound					Int. Total
	Right	Thru	Left	Bikes	App. Total	Right	Thru	Left	Bikes	App. Total	Right	Thru	Left	Bikes	App. Total	Right	Thru	Left	Bikes	App. Total	

Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1

Peak Hour for Entire Intersection Begins at 08:00 AM

08:00 AM	0	57	7	0	64	5	0	2	0	7	0	21	0	0	21	0	0	0	0	0	92
08:15 AM	0	59	7	0	66	7	0	4	0	11	0	32	0	0	32	0	0	0	0	0	109
08:30 AM	0	51	5	0	56	6	0	1	0	7	0	35	0	0	35	0	0	0	0	0	98
08:45 AM	0	43	7	0	50	5	0	4	0	9	0	33	0	0	33	0	0	0	0	0	92
Total Volume	0	210	26	0	236	23	0	11	0	34	0	121	0	0	121	0	0	0	0	0	391
% App. Total	0	89	11	0		67.6	0	32.4	0		0	100	0	0		0	0	0	0	0	
PHF	.000	.890	.929	.000	.894	.821	.000	.688	.000	.773	.000	.864	.000	.000	.864	.000	.000	.000	.000	.000	.897
Class 1	0	149	26	0	175	23	0	10	0	33	0	112	0	0	112	0	0	0	0	0	320
% Class 1		71.0	100	0	74.2	100	0	90.9	0	97.1	0	92.6	0	0	92.6	0	0	0	0	0	81.8
Bank 1	0	61	0	0	61	0	0	1	0	1	0	9	0	0	9	0	0	0	0	0	71
% Bank 1	0	29.0	0	0	25.8	0	0	9.1	0	2.9	0	7.4	0	0	7.4	0	0	0	0	0	18.2



All Traffic Data Service, Inc

1336 Farmer Road
 Conyers, Ga 30012
 404-374-1283

File Name : #28 US29&RETAILSTORESPM

Site Code : 28

Start Date : 5/27/2015

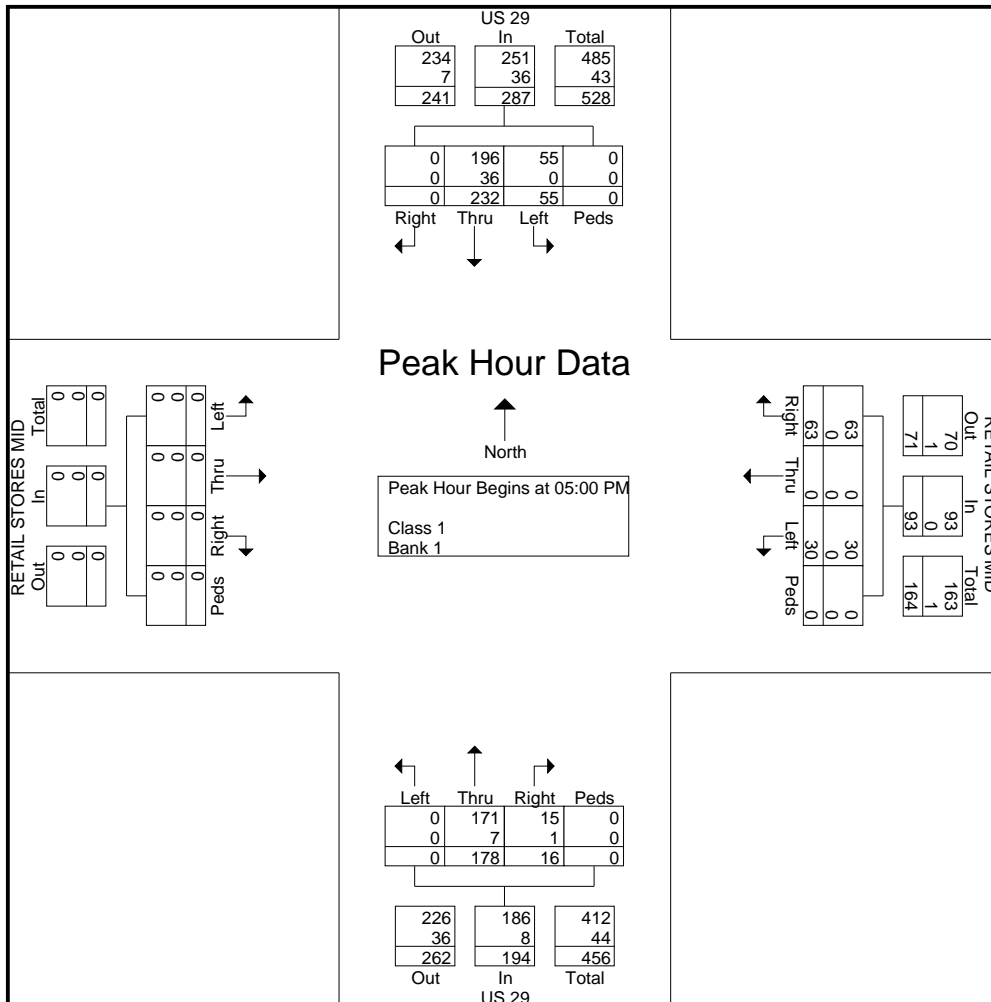
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Start Time	US 29 Southbound					RETAIL STORES MID Westbound					US 29 Northbound					RETAIL STORES MID Eastbound					Int. Total
	Right	Thru	Left	Bikes	App. Total	Right	Thru	Left	Bikes	App. Total	Right	Thru	Left	Bikes	App. Total	Right	Thru	Left	Bikes	App. Total	

Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1

Peak Hour for Entire Intersection Begins at 05:00 PM

05:00 PM	0	59	13	0	72	12	0	6	0	18	2	42	0	0	44	0	0	0	0	0	134
05:15 PM	0	62	13	0	75	16	0	8	0	24	4	48	0	0	52	0	0	0	0	0	151
05:30 PM	0	66	14	0	80	16	0	9	0	25	5	47	0	0	52	0	0	0	0	0	157
05:45 PM	0	45	15	0	60	19	0	7	0	26	5	41	0	0	46	0	0	0	0	0	132
Total Volume	0	232	55	0	287	63	0	30	0	93	16	178	0	0	194	0	0	0	0	0	574
% App. Total	0	80.8	19.2	0		67.7	0	32.3	0		8.2	91.8	0	0		0	0	0	0	0	
PHF	.000	.879	.917	.000	.897	.829	.000	.833	.000	.894	.800	.927	.000	.000	.933	.000	.000	.000	.000	.000	.914
Class 1	0	196	55	0	251	63	0	30	0	93	15	171	0	0	186	0	0	0	0	0	530
% Class 1		84.5	100	0	87.5	100	0	100	0	100	93.8	96.1	0	0	95.9	0	0	0	0	0	92.3
Bank 1	0	36	0	0	36	0	0	0	0	0	1	7	0	0	8	0	0	0	0	0	44
% Bank 1	0	15.5	0	0	12.5	0	0	0	0	0	6.3	3.9	0	0	4.1	0	0	0	0	0	7.7



All Traffic Data Service, Inc

1336 Farmer Road
Conyers, Ga 30012
404-374-1283

File Name : #29 US29&I85SBONRAMPAM

Site Code : 10

Start Date : 5/27/2015

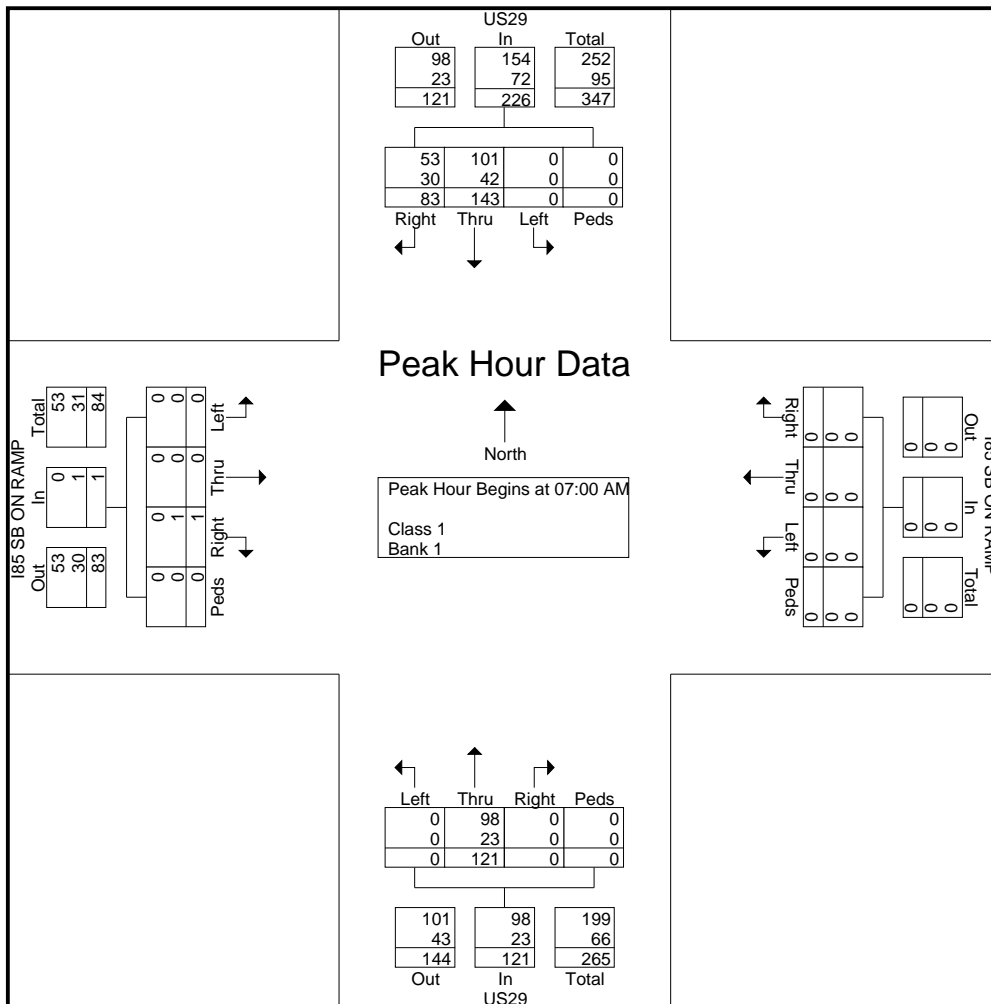
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Start Time	US29 Southbound					I85 SB ON RAMP Westbound					US29 Northbound					I85 SB ON RAMP Eastbound					Int. Total
	Right	Thru	Left	Bikes	App. Total	Right	Thru	Left	Bikes	App. Total	Right	Thru	Left	Bikes	App. Total	Right	Thru	Left	Bikes	App. Total	

Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1

Peak Hour for Entire Intersection Begins at 07:00 AM

07:00 AM	18	40	0	0	58	0	0	0	0	0	0	21	0	0	21	0	0	0	0	0	0	79
07:15 AM	26	39	0	0	65	0	0	0	0	0	0	32	0	0	32	0	0	0	0	0	0	97
07:30 AM	19	34	0	0	53	0	0	0	0	0	0	34	0	0	34	1	0	0	0	0	1	88
07:45 AM	20	30	0	0	50	0	0	0	0	0	0	34	0	0	34	0	0	0	0	0	0	84
Total Volume	83	143	0	0	226	0	0	0	0	0	0	121	0	0	121	1	0	0	0	0	1	348
% App. Total	36.7	63.3	0	0		0	0	0	0	0	0	100	0	0		100	0	0	0	0		
PHF	.798	.894	.000	.000	.869	.000	.000	.000	.000	.000	.000	.890	.000	.000	.890	.250	.000	.000	.000	.250		.897
Class 1	53	101	0	0	154	0	0	0	0	0	0	98	0	0	98	0	0	0	0	0	0	252
% Class 1	63.9	70.6	0	0	68.1	0	0	0	0	0	0	81.0	0	0	81.0	0	0	0	0	0	0	72.4
Bank 1	30	42	0	0	72	0	0	0	0	0	0	23	0	0	23	1	0	0	0	0	1	96
% Bank 1	36.1	29.4	0	0	31.9	0	0	0	0	0	0	19.0	0	0	19.0	100	0	0	0	0	100	27.6



All Traffic Data Service, Inc

1336 Farmer Road
Conyers, Ga 30012
404-374-1283

File Name : #29 US29&I85SBONRAMPPM

Site Code : 10

Start Date : 5/27/2015

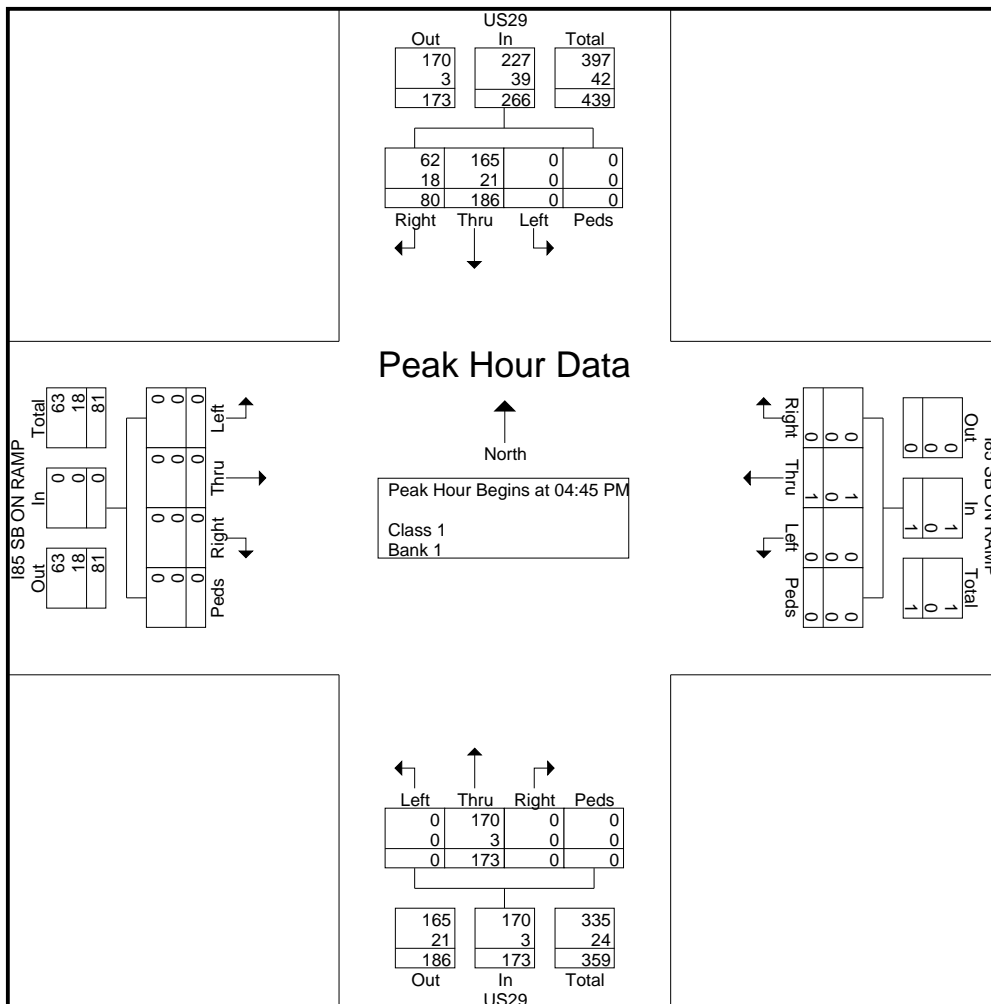
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Start Time	US29 Southbound					I85 SB ON RAMP Westbound					US29 Northbound					I85 SB ON RAMP Eastbound					Int. Total
	Right	Thru	Left	Bikes	App. Total	Right	Thru	Left	Bikes	App. Total	Right	Thru	Left	Bikes	App. Total	Right	Thru	Left	Bikes	App. Total	

Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1

Peak Hour for Entire Intersection Begins at 04:45 PM

04:45 PM	17	46	0	0	63	0	0	0	0	0	0	36	0	0	36	0	0	0	0	0	99
05:00 PM	21	39	0	0	60	0	1	0	0	1	0	40	0	0	40	0	0	0	0	0	101
05:15 PM	22	39	0	0	61	0	0	0	0	0	0	50	0	0	50	0	0	0	0	0	111
05:30 PM	20	62	0	0	82	0	0	0	0	0	0	47	0	0	47	0	0	0	0	0	129
Total Volume	80	186	0	0	266	0	1	0	0	1	0	173	0	0	173	0	0	0	0	0	440
% App. Total	30.1	69.9	0	0		0	100	0	0		0	100	0	0		0	0	0	0	0	
PHF	.909	.750	.000	.000	.811	.000	.250	.000	.000	.250	.000	.865	.000	.000	.865	.000	.000	.000	.000	.000	.853
Class 1	62	165	0	0	227	0	1	0	0	1	0	170	0	0	170	0	0	0	0	0	398
% Class 1	77.5	88.7	0	0	85.3	0	100	0	0	100	0	98.3	0	0	98.3	0	0	0	0	0	90.5
Bank 1	18	21	0	0	39	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	42
% Bank 1	22.5	11.3	0	0	14.7	0	0	0	0	0	0	1.7	0	0	1.7	0	0	0	0	0	9.5



All Traffic Data Service, Inc

1336 Farmer Road
Conyers, Ga 30012
404-374-1283

File Name : #30 US29&I85 SBO nRampAM

Site Code : 30

Start Date : 5/27/2015

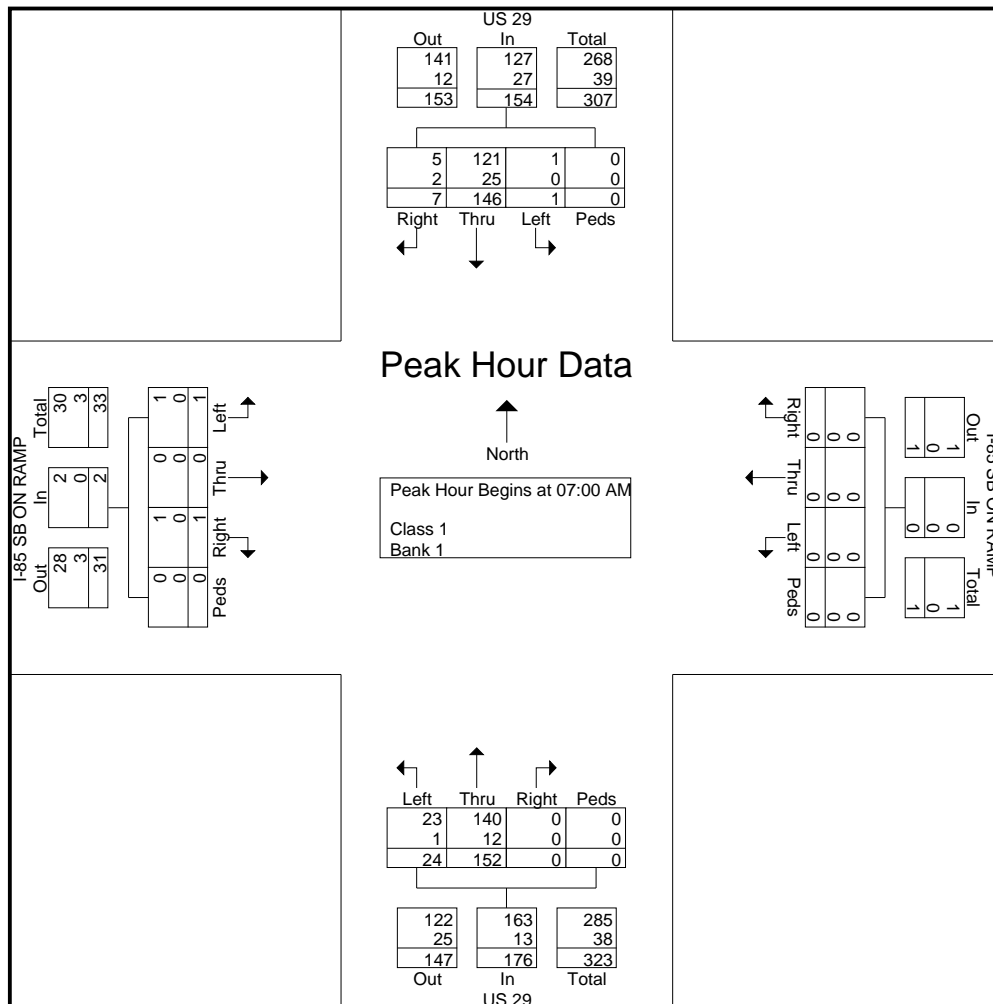
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Start Time	US 29 Southbound					I-85 SB ON RAMP Westbound					US 29 Northbound					I-85 SB ON RAMP Eastbound					Int. Total
	Right	Thru	Left	Bikes	App. Total	Right	Thru	Left	Bikes	App. Total	Right	Thru	Left	Bikes	App. Total	Right	Thru	Left	Bikes	App. Total	

Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1

Peak Hour for Entire Intersection Begins at 07:00 AM

07:00 AM	3	45	0	0	48	0	0	0	0	0	0	25	6	0	31	1	0	0	0	1	80
07:15 AM	0	34	1	0	35	0	0	0	0	0	0	41	8	0	49	0	0	1	0	1	85
07:30 AM	1	31	0	0	32	0	0	0	0	0	0	43	4	0	47	0	0	0	0	0	79
07:45 AM	3	36	0	0	39	0	0	0	0	0	0	43	6	0	49	0	0	0	0	0	88
Total Volume	7	146	1	0	154	0	0	0	0	0	0	152	24	0	176	1	0	1	0	2	332
% App. Total	4.5	94.8	0.6	0		0	0	0	0	0	0	86.4	13.6	0		50	0	50	0		
PHF	.583	.811	.250	.000	.802	.000	.000	.000	.000	.000	.000	.884	.750	.000	.898	.250	.000	.250	.000	.500	.943
Class 1	5	121	1	0	127	0	0	0	0	0	0	140	23	0	163	1	0	1	0	2	292
% Class 1	71.4	82.9	100	0	82.5	0	0	0	0	0	0	92.1	95.8	0	92.6	100	0	100	0	100	88.0
Bank 1	2	25	0	0	27	0	0	0	0	0	0	12	1	0	13	0	0	0	0	0	40
% Bank 1	28.6	17.1	0	0	17.5	0	0	0	0	0	0	7.9	4.2	0	7.4	0	0	0	0	0	12.0



All Traffic Data Service, Inc

1336 Farmer Road
Conyers, Ga 30012
404-374-1283

File Name : #30 US29&I85 SBOonRampPM

Site Code : 30

Start Date : 5/27/2015

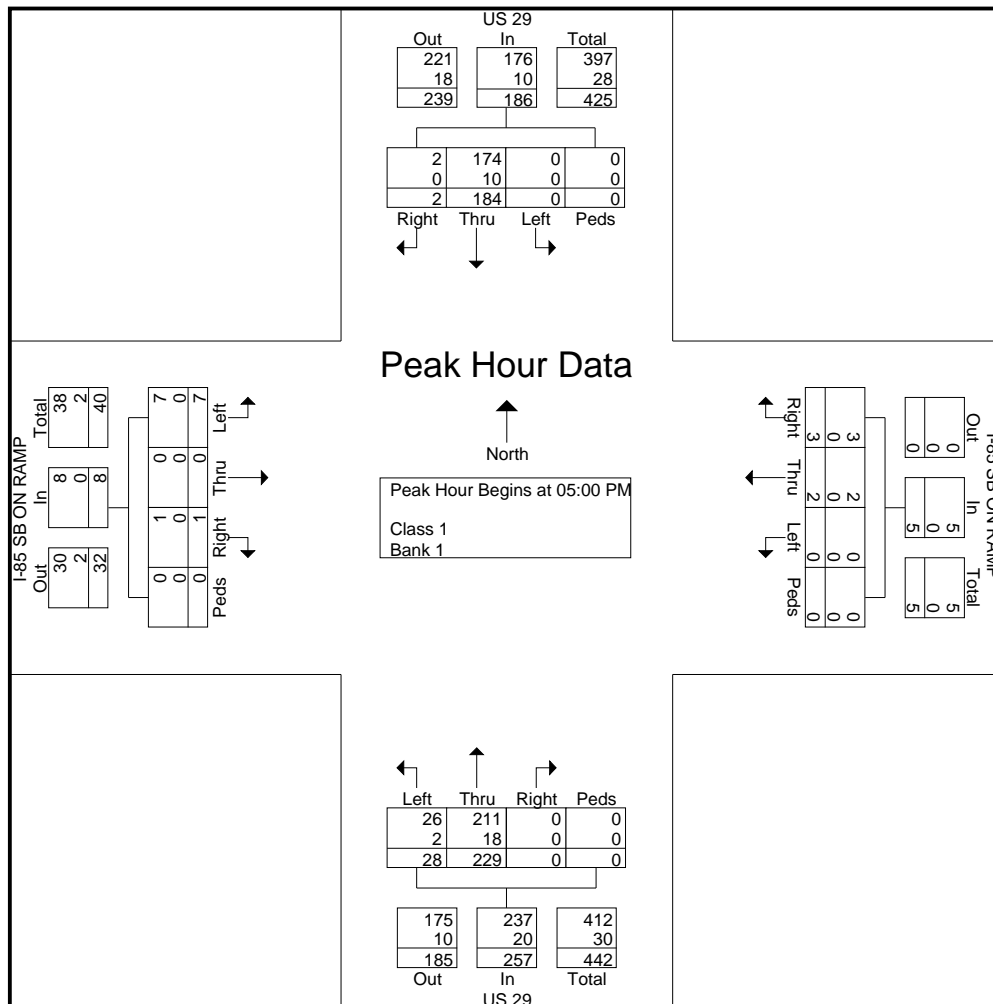
Page No : 2

Start Time	US 29 Southbound					I-85 SB ON RAMP Westbound					US 29 Northbound					I-85 SB ON RAMP Eastbound					Int. Total
	Right	Thru	Left	Bikes	App. Total	Right	Thru	Left	Bikes	App. Total	Right	Thru	Left	Bikes	App. Total	Right	Thru	Left	Bikes	App. Total	

Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1

Peak Hour for Entire Intersection Begins at 05:00 PM

05:00 PM	1	44	0	0	45	0	0	0	0	0	0	56	10	0	66	0	0	4	0	4	115
05:15 PM	1	42	0	0	43	0	0	0	0	0	0	62	8	0	70	0	0	0	0	0	113
05:30 PM	0	59	0	0	59	2	0	0	0	2	0	50	7	0	57	1	0	2	0	3	121
05:45 PM	0	39	0	0	39	1	2	0	0	3	0	61	3	0	64	0	0	1	0	1	107
Total Volume	2	184	0	0	186	3	2	0	0	5	0	229	28	0	257	1	0	7	0	8	456
% App. Total	1.1	98.9	0	0		60	40	0	0		0	89.1	10.9	0		12.5	0	87.5	0		
PHF	.500	.780	.000	.000	.788	.375	.250	.000	.000	.417	.000	.923	.700	.000	.918	.250	.000	.438	.000	.500	.942
Class 1	2	174	0	0	176	3	2	0	0	5	0	211	26	0	237	1	0	7	0	8	426
% Class 1		94.6	0	0	94.6	100	100	0	0	100	0	92.1	92.9	0	92.2	100	0	100	0	100	93.4
Bank 1	0	10	0	0	10	0	0	0	0	0	0	18	2	0	20	0	0	0	0	0	30
% Bank 1	0	5.4	0	0	5.4	0	0	0	0	0	0	7.9	7.1	0	7.8	0	0	0	0	0	6.6



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Conyers, Ga 30012
404-374-1283

File Name : #31 US29@Fireworks-LiquorAM

Site Code : 10

Start Date : 5/27/2015

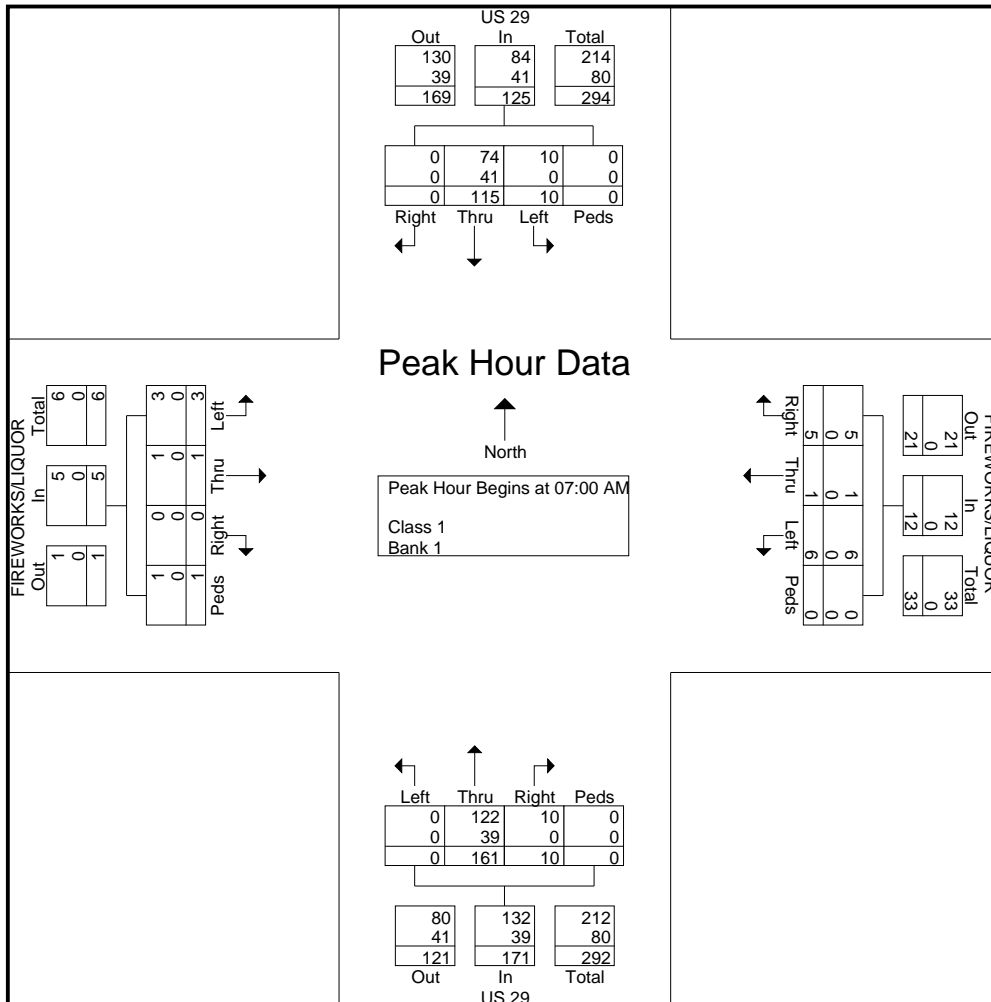
Page No : 2

Start Time	US 29 Southbound					FIREWORKS/LIQUOR Westbound					US 29 Northbound					FIREWORKS/LIQUOR Eastbound					Int. Total
	Right	Thru	Left	Bikes	App. Total	Right	Thru	Left	Bikes	App. Total	Right	Thru	Left	Bikes	App. Total	Right	Thru	Left	Bikes	App. Total	

Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1

Peak Hour for Entire Intersection Begins at 07:00 AM

07:00 AM	0	45	0	0	45	1	1	1	0	3	2	26	0	0	28	0	0	1	0	1	77
07:15 AM	0	21	5	0	26	1	0	1	0	2	2	42	0	0	44	0	1	1	0	2	74
07:30 AM	0	25	0	0	25	2	0	2	0	4	2	47	0	0	49	0	0	0	1	1	79
07:45 AM	0	24	5	0	29	1	0	2	0	3	4	46	0	0	50	0	0	1	0	1	83
Total Volume	0	115	10	0	125	5	1	6	0	12	10	161	0	0	171	0	1	3	1	5	313
% App. Total	0	92	8	0		41.7	8.3	50	0		5.8	94.2	0	0		0	20	60	20		
PHF	.000	.639	.500	.000	.694	.625	.250	.750	.000	.750	.625	.856	.000	.000	.855	.000	.250	.750	.250	.625	.943
Class 1	0	74	10	0	84	5	1	6	0	12	10	122	0	0	132	0	1	3	1	5	233
% Class 1		64.3	100	0	67.2	100	100	100	0	100	100	75.8	0	0	77.2	0	100	100	100	100	74.4
Bank 1	0	41	0	0	41	0	0	0	0	0	0	39	0	0	39	0	0	0	0	0	80
% Bank 1	0	35.7	0	0	32.8	0	0	0	0	0	0	24.2	0	0	22.8	0	0	0	0	0	25.6



All Traffic Data Service, Inc

1336 Farmer Road
Conyers, Ga 30012
404-374-1283

File Name : #31 US29@Fireworks-LiquorPM

Site Code : 10

Start Date : 5/27/2015

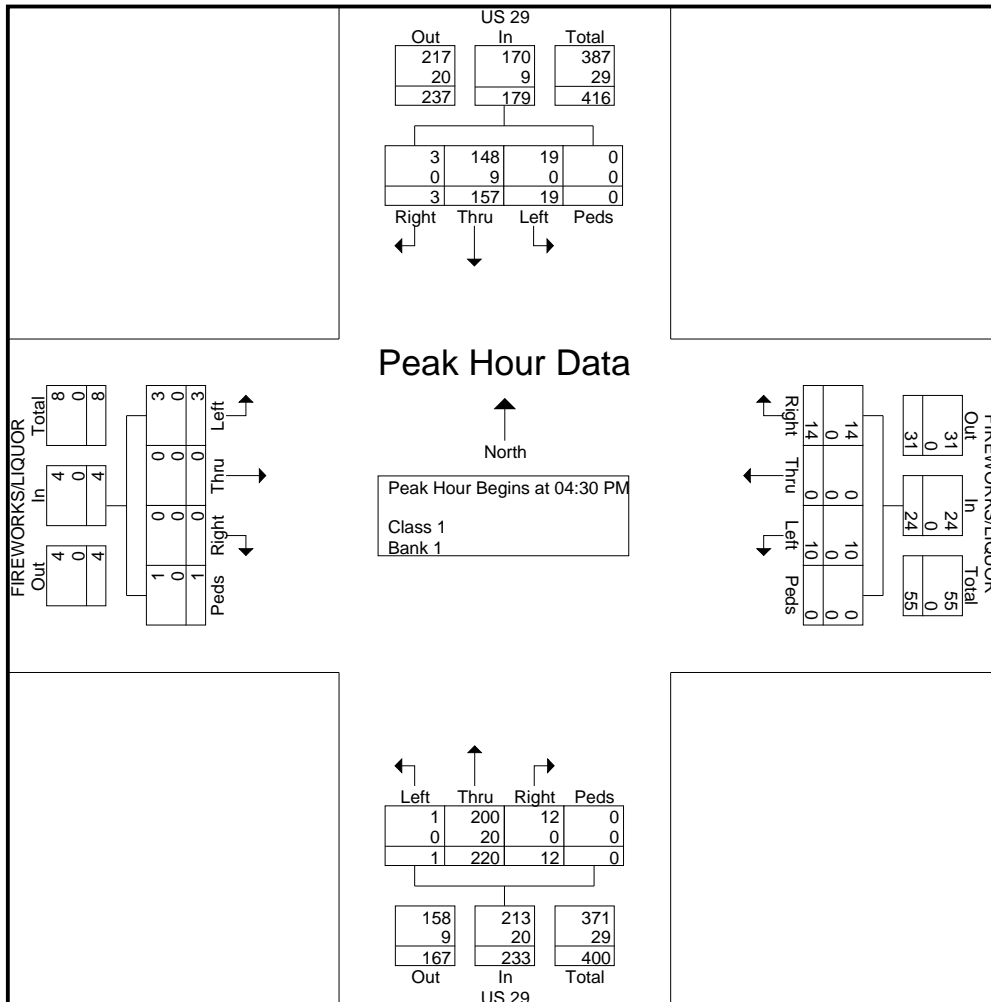
Page No : 2

Start Time	US 29 Southbound					FIREWORKS/LIQUOR Westbound					US 29 Northbound					FIREWORKS/LIQUOR Eastbound					Int. Total
	Right	Thru	Left	Bikes	App. Total	Right	Thru	Left	Bikes	App. Total	Right	Thru	Left	Bikes	App. Total	Right	Thru	Left	Bikes	App. Total	

Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1

Peak Hour for Entire Intersection Begins at 04:30 PM

04:30 PM	1	48	5	0	54	4	0	2	0	6	3	48	0	0	51	0	0	1	1	2	113
04:45 PM	1	34	6	0	41	5	0	3	0	8	2	58	1	0	61	0	0	0	0	0	110
05:00 PM	0	37	4	0	41	1	0	4	0	5	5	54	0	0	59	0	0	1	0	1	106
05:15 PM	1	38	4	0	43	4	0	1	0	5	2	60	0	0	62	0	0	1	0	1	111
Total Volume	3	157	19	0	179	14	0	10	0	24	12	220	1	0	233	0	0	3	1	4	440
% App. Total	1.7	87.7	10.6	0		58.3	0	41.7	0		5.2	94.4	0.4	0		0	0	75	25		
PHF	.750	.818	.792	.000	.829	.700	.000	.625	.000	.750	.600	.917	.250	.000	.940	.000	.000	.750	.250	.500	.973
Class 1	3	148	19	0	170	14	0	10	0	24	12	200	1	0	213	0	0	3	1	4	411
% Class 1		94.3	100	0	95.0	100	0	100	0	100	100	90.9	100	0	91.4	0	0	100	100	100	93.4
Bank 1	0	9	0	0	9	0	0	0	0	0	0	20	0	0	20	0	0	0	0	0	29
% Bank 1	0	5.7	0	0	5.0	0	0	0	0	0	0	9.1	0	0	8.6	0	0	0	0	0	6.6



All Traffic Data Service, Inc

1336 Farmer Road
Conyers, Ga 30012
404-374-1283

File Name : #32 US29&I85SBOFFRAMPAM

Site Code : 10

Start Date : 5/27/2015

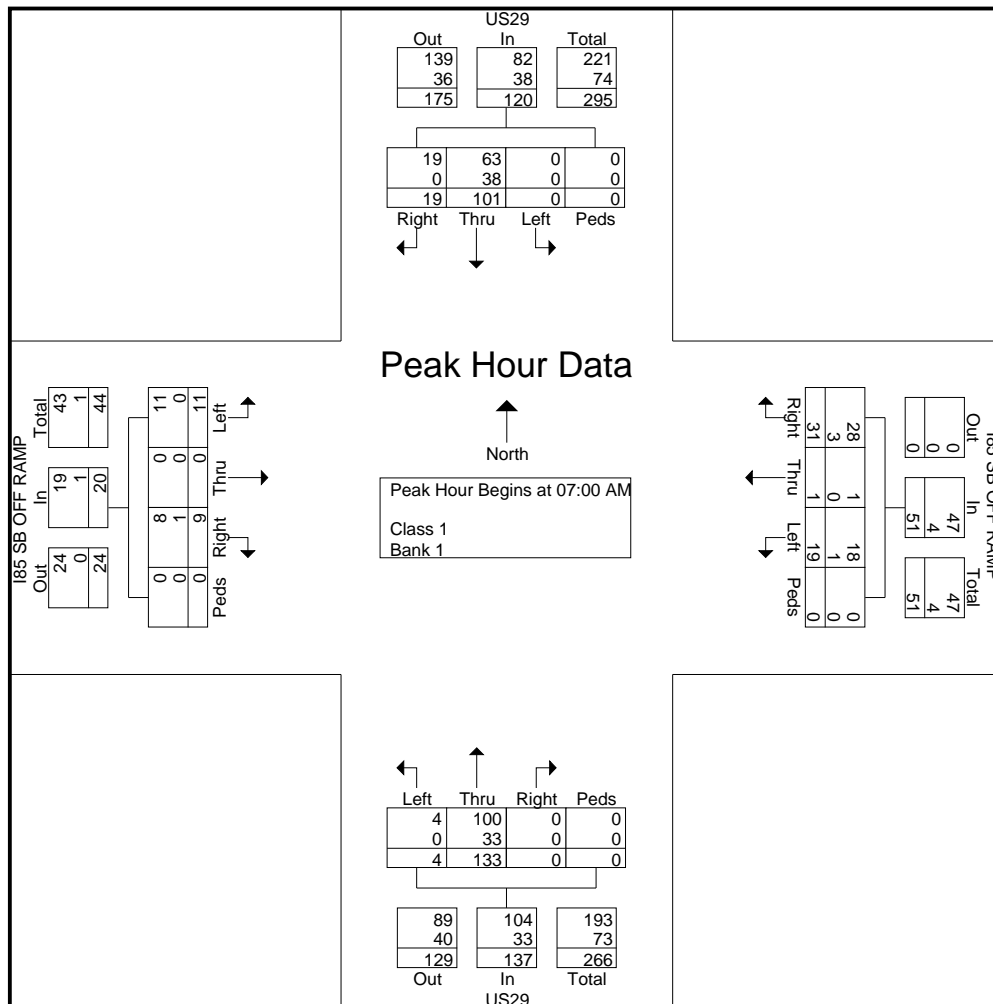
Page No : 2

Start Time	US29 Southbound					I85 SB OFF RAMP Westbound					US29 Northbound					I85 SB OFF RAMP Eastbound					Int. Total
	Right	Thru	Left	Bikes	App. Total	Right	Thru	Left	Bikes	App. Total	Right	Thru	Left	Bikes	App. Total	Right	Thru	Left	Bikes	App. Total	

Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1

Peak Hour for Entire Intersection Begins at 07:00 AM

07:00 AM	7	28	0	0	35	5	1	4	0	10	0	22	2	0	24	5	0	3	0	8	77
07:15 AM	5	23	0	0	28	6	0	5	0	11	0	39	2	0	41	2	0	5	0	7	87
07:30 AM	5	28	0	0	33	12	0	5	0	17	0	32	0	0	32	0	0	3	0	3	85
07:45 AM	2	22	0	0	24	8	0	5	0	13	0	40	0	0	40	2	0	0	0	2	79
Total Volume	19	101	0	0	120	31	1	19	0	51	0	133	4	0	137	9	0	11	0	20	328
% App. Total	15.8	84.2	0	0		60.8	2	37.3	0		0	97.1	2.9	0		45	0	55	0		
PHF	.679	.902	.000	.000	.857	.646	.250	.950	.000	.750	.000	.831	.500	.000	.835	.450	.000	.550	.000	.625	.943
Class 1	19	63	0	0	82	28	1	18	0	47	0	100	4	0	104	8	0	11	0	19	252
% Class 1		62.4	0	0	68.3	90.3	100	94.7	0	92.2	0	75.2	100	0	75.9	88.9	0	100	0	95.0	76.8
Bank 1	0	38	0	0	38	3	0	1	0	4	0	33	0	0	33	1	0	0	0	1	76
% Bank 1	0	37.6	0	0	31.7	9.7	0	5.3	0	7.8	0	24.8	0	0	24.1	11.1	0	0	0	5.0	23.2



All Traffic Data Service, Inc

1336 Farmer Road
Conyers, Ga 30012
404-374-1283

File Name : #32 US29&I85SBOFFRAMPPM

Site Code : 10

Start Date : 5/27/2015

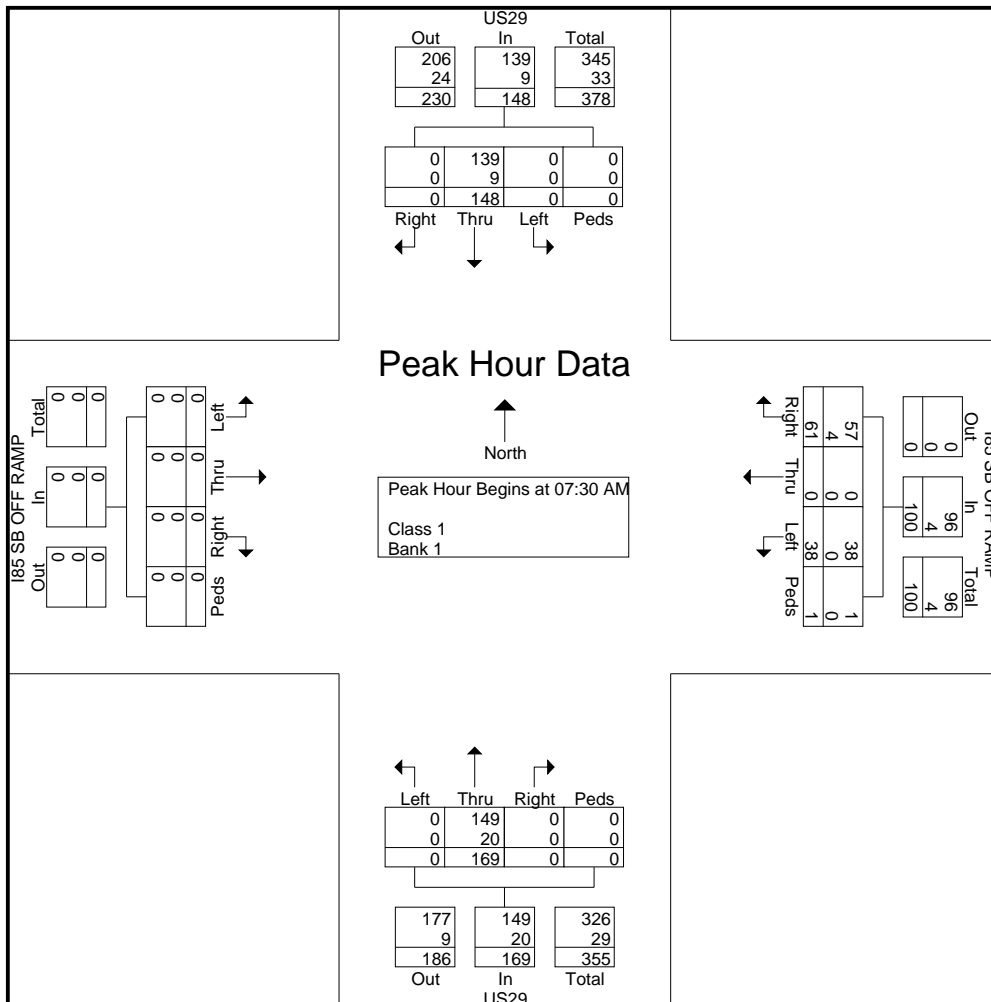
Page No : 2

Start Time	US29 Southbound					I85 SB OFF RAMP Westbound					US29 Northbound					I85 SB OFF RAMP Eastbound					Int. Total
	Right	Thru	Left	Bikes	App. Total	Right	Thru	Left	Bikes	App. Total	Right	Thru	Left	Bikes	App. Total	Right	Thru	Left	Bikes	App. Total	

Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1

Peak Hour for Entire Intersection Begins at 07:30 AM

07:30 AM	0	45	0	0	45	13	0	9	0	22	0	39	0	0	39	0	0	0	0	0	0	106
07:45 AM	0	37	0	0	37	14	0	10	0	24	0	41	0	0	41	0	0	0	0	0	0	102
08:00 AM	0	33	0	0	33	17	0	9	0	26	0	47	0	0	47	0	0	0	0	0	0	106
08:15 AM	0	33	0	0	33	17	0	10	1	28	0	42	0	0	42	0	0	0	0	0	0	103
Total Volume	0	148	0	0	148	61	0	38	1	100	0	169	0	0	169	0	0	0	0	0	0	417
% App. Total	0	100	0	0	100	61	0	38	1	100	0	100	0	0	100	0	0	0	0	0	0	100
PHF	.000	.822	.000	.000	.822	.897	.000	.950	.250	.893	.000	.899	.000	.000	.899	.000	.000	.000	.000	.000	.000	.983
Class 1	0	139	0	0	139	57	0	38	1	96	0	149	0	0	149	0	0	0	0	0	0	384
% Class 1		93.9	0	0	93.9	93.4	0	100	100	96.0	0	88.2	0	0	88.2	0	0	0	0	0	0	92.1
Bank 1	0	9	0	0	9	4	0	0	0	4	0	20	0	0	20	0	0	0	0	0	0	33
% Bank 1	0	6.1	0	0	6.1	6.6	0	0	0	4.0	0	11.8	0	0	11.8	0	0	0	0	0	0	7.9



All Traffic Data Service, Inc

1336 Farmer Road
Conyers, Ga 30012
404-374-1283

File Name : #33 US29&I85NBOFFAM

Site Code : 33

Start Date : 5/27/2015

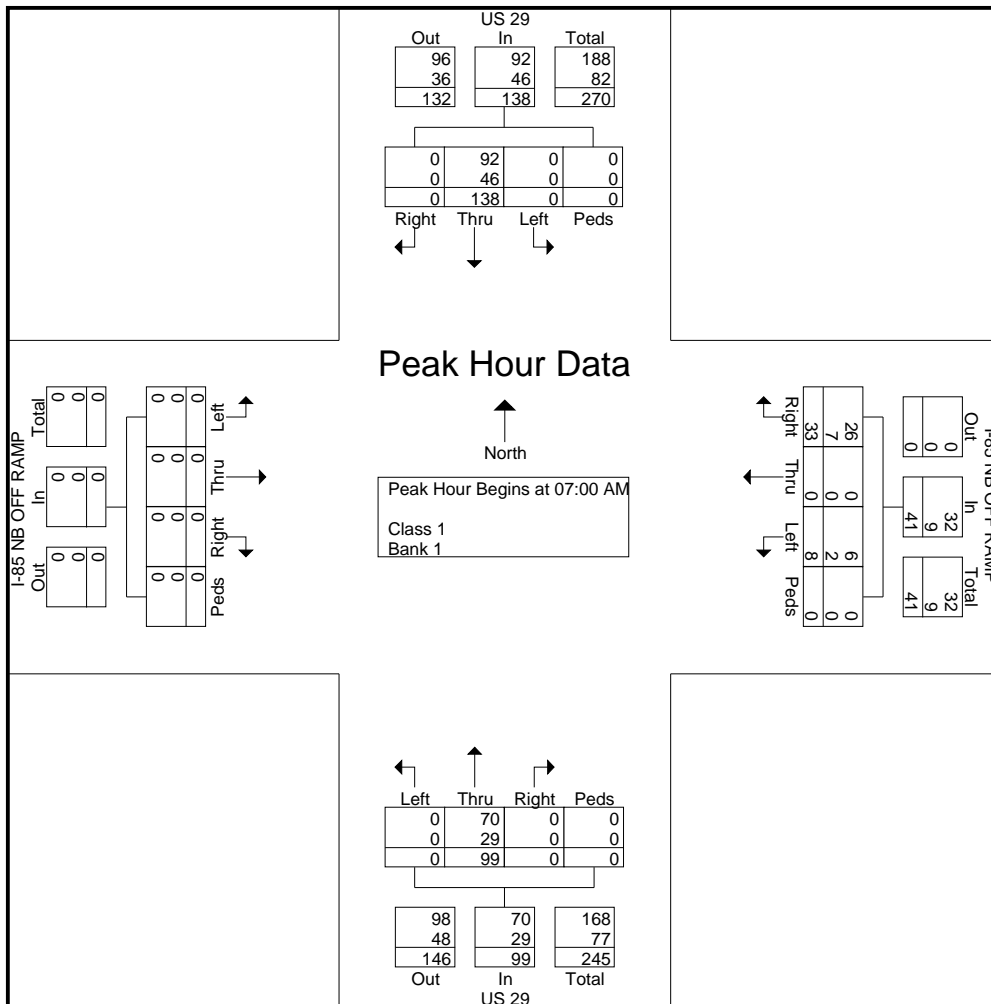
Page No : 2

Start Time	US 29 Southbound					I-85 NB OFF RAMP Westbound					US 29 Northbound					I-85 NB OFF RAMP Eastbound					Int. Total
	Right	Thru	Left	Bikes	App. Total	Right	Thru	Left	Bikes	App. Total	Right	Thru	Left	Bikes	App. Total	Right	Thru	Left	Bikes	App. Total	

Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1

Peak Hour for Entire Intersection Begins at 07:00 AM

07:00 AM	0	37	0	0	37	6	0	2	0	8	0	16	0	0	16	0	0	0	0	0	0	61
07:15 AM	0	37	0	0	37	8	0	2	0	10	0	28	0	0	28	0	0	0	0	0	0	75
07:30 AM	0	32	0	0	32	7	0	1	0	8	0	25	0	0	25	0	0	0	0	0	0	65
07:45 AM	0	32	0	0	32	12	0	3	0	15	0	30	0	0	30	0	0	0	0	0	0	77
Total Volume	0	138	0	0	138	33	0	8	0	41	0	99	0	0	99	0	0	0	0	0	0	278
% App. Total	0	100	0	0	100	80.5	0	19.5	0	100	0	100	0	0	100	0	0	0	0	0	0	100
PHF	.000	.932	.000	.000	.932	.688	.000	.667	.000	.683	.000	.825	.000	.000	.825	.000	.000	.000	.000	.000	.000	.903
Class 1	0	92	0	0	92	26	0	6	0	32	0	70	0	0	70	0	0	0	0	0	0	194
% Class 1		66.7	0	0	66.7	78.8	0	75.0	0	78.0	0	70.7	0	0	70.7	0	0	0	0	0	0	69.8
Bank 1	0	46	0	0	46	7	0	2	0	9	0	29	0	0	29	0	0	0	0	0	0	84
% Bank 1	0	33.3	0	0	33.3	21.2	0	25.0	0	22.0	0	29.3	0	0	29.3	0	0	0	0	0	0	30.2



All Traffic Data Service, Inc

1336 Farmer Road
Conyers, Ga 30012
404-374-1283

File Name : #33 US29&I85NBOFFPM

Site Code : 33

Start Date : 5/27/2015

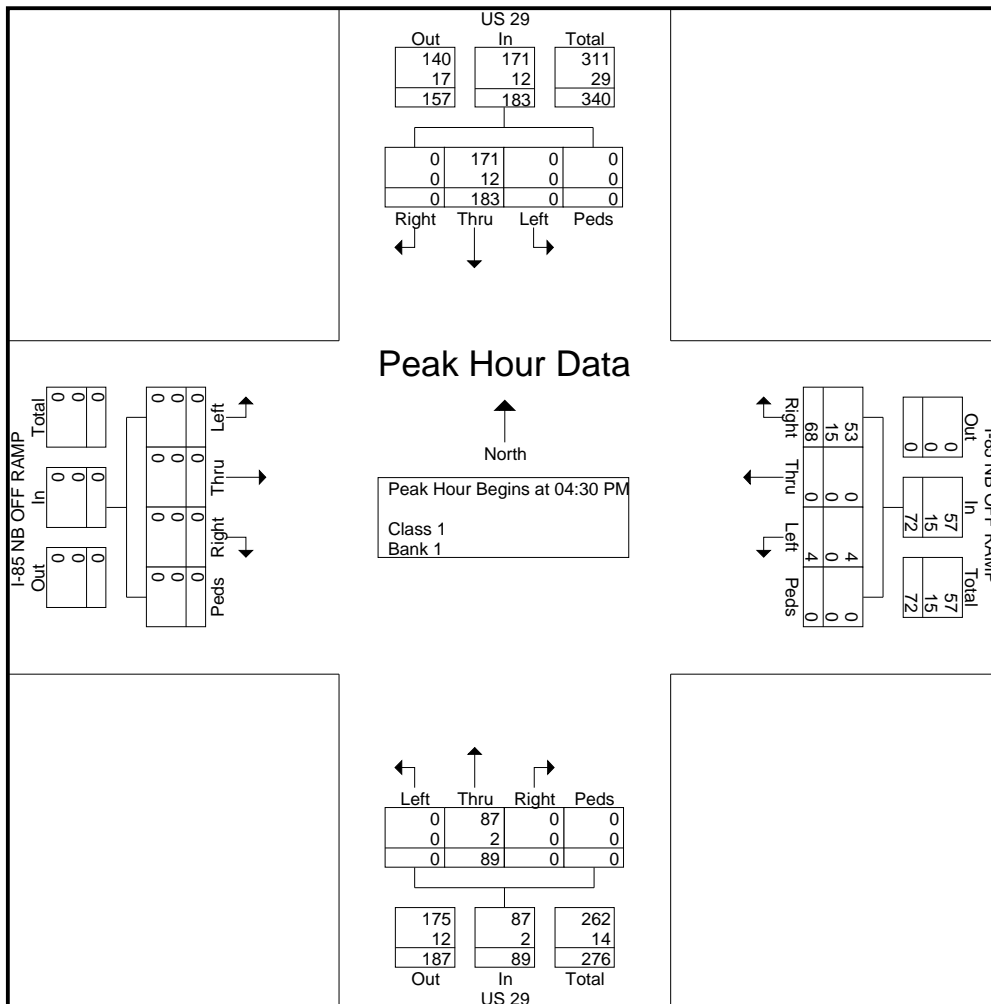
Page No : 2

Start Time	US 29 Southbound					I-85 NB OFF RAMP Westbound					US 29 Northbound					I-85 NB OFF RAMP Eastbound					Int. Total
	Right	Thru	Left	Bikes	App. Total	Right	Thru	Left	Bikes	App. Total	Right	Thru	Left	Bikes	App. Total	Right	Thru	Left	Bikes	App. Total	

Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1

Peak Hour for Entire Intersection Begins at 04:30 PM

04:30 PM	0	53	0	0	53	14	0	1	0	15	0	19	0	0	19	0	0	0	0	0	0	87
04:45 PM	0	45	0	0	45	12	0	0	0	12	0	26	0	0	26	0	0	0	0	0	0	83
05:00 PM	0	43	0	0	43	19	0	1	0	20	0	23	0	0	23	0	0	0	0	0	0	86
05:15 PM	0	42	0	0	42	23	0	2	0	25	0	21	0	0	21	0	0	0	0	0	0	88
Total Volume	0	183	0	0	183	68	0	4	0	72	0	89	0	0	89	0	0	0	0	0	0	344
% App. Total	0	100	0	0		94.4	0	5.6	0		0	100	0	0		0	0	0	0	0	0	
PHF	.000	.863	.000	.000	.863	.739	.000	.500	.000	.720	.000	.856	.000	.000	.856	.000	.000	.000	.000	.000	.000	.977
Class 1	0	171	0	0	171	53	0	4	0	57	0	87	0	0	87	0	0	0	0	0	0	315
% Class 1		93.4	0	0	93.4	77.9	0	100	0	79.2	0	97.8	0	0	97.8	0	0	0	0	0	0	91.6
Bank 1	0	12	0	0	12	15	0	0	0	15	0	2	0	0	2	0	0	0	0	0	0	29
% Bank 1	0	6.6	0	0	6.6	22.1	0	0	0	20.8	0	2.2	0	0	2.2	0	0	0	0	0	0	8.4



All Traffic Data Service, Inc

1336 Farmer Road
Conyers, Ga 30012
404-374-1283

File Name : #34 FrontageRd@ I-85NBOnRampam

Site Code : 10

Start Date : 5/27/2015

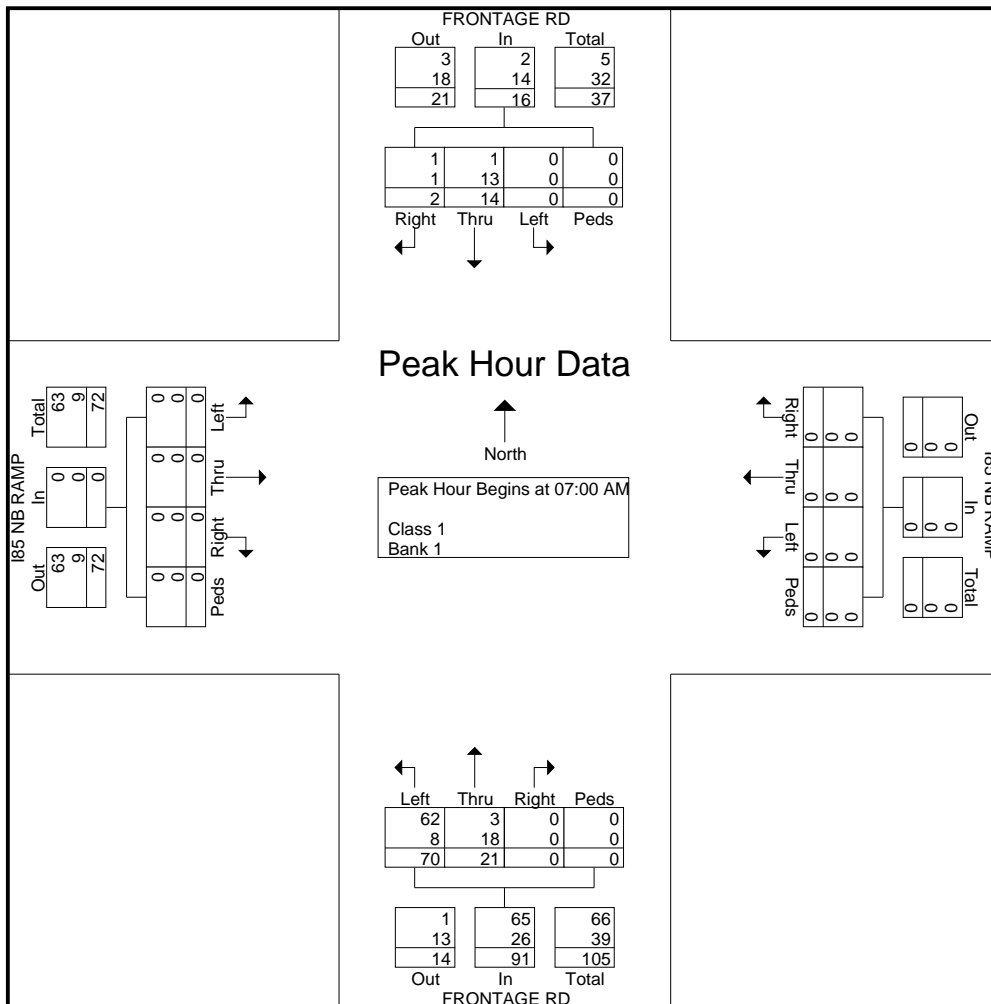
Page No : 2

Start Time	FRONTAGE RD Southbound					I85 NB RAMP Westbound					FRONTAGE RD Northbound					I85 NB RAMP Eastbound					Int. Total
	Right	Thru	Left	Bikes	App. Total	Right	Thru	Left	Bikes	App. Total	Right	Thru	Left	Bikes	App. Total	Right	Thru	Left	Bikes	App. Total	

Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1

Peak Hour for Entire Intersection Begins at 07:00 AM

07:00 AM	1	2	0	0	3	0	0	0	0	0	0	11	17	0	28	0	0	0	0	0	0	31
07:15 AM	0	4	0	0	4	0	0	0	0	0	0	3	20	0	23	0	0	0	0	0	0	27
07:30 AM	0	3	0	0	3	0	0	0	0	0	0	2	14	0	16	0	0	0	0	0	0	19
07:45 AM	1	5	0	0	6	0	0	0	0	0	0	5	19	0	24	0	0	0	0	0	0	30
Total Volume	2	14	0	0	16	0	0	0	0	0	0	21	70	0	91	0	0	0	0	0	0	107
% App. Total	12.5	87.5	0	0								23.1	76.9	0								
PHF	.500	.700	.000	.000	.667	.000	.000	.000	.000	.000	.000	.477	.875	.000	.813	.000	.000	.000	.000	.000	.000	.863
Class 1	1	1	0	0	2	0	0	0	0	0	0	3	62	0	65	0	0	0	0	0	0	67
% Class 1	50.0	7.1	0	0	12.5	0	0	0	0	0	0	14.3	88.6	0	71.4	0	0	0	0	0	0	62.6
Bank 1	1	13	0	0	14	0	0	0	0	0	0	18	8	0	26	0	0	0	0	0	0	40
% Bank 1	50.0	92.9	0	0	87.5	0	0	0	0	0	0	85.7	11.4	0	28.6	0	0	0	0	0	0	37.4



All Traffic Data Service, Inc

1336 Farmer Road
Conyers, Ga 30012
404-374-1283

File Name : #34 FrontageRd@ I-85NBOnRampPM

Site Code :

Start Date : 5/27/2015

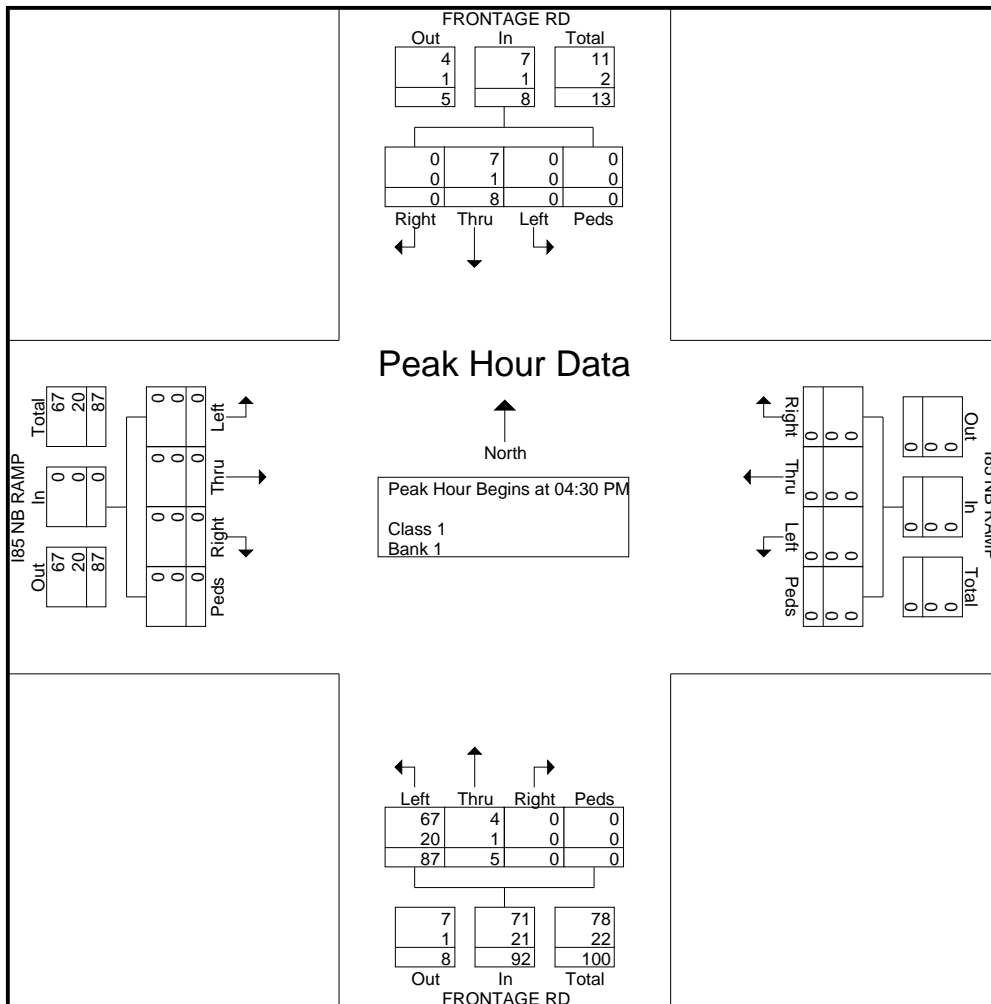
Page No : 2

Start Time	FRONTAGE RD Southbound					I85 NB RAMP Westbound					FRONTAGE RD Northbound					I85 NB RAMP Eastbound					Int. Total
	Right	Thru	Left	Bikes	App. Total	Right	Thru	Left	Bikes	App. Total	Right	Thru	Left	Bikes	App. Total	Right	Thru	Left	Bikes	App. Total	

Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1

Peak Hour for Entire Intersection Begins at 04:30 PM

04:30 PM	0	2	0	0	2	0	0	0	0	0	0	3	29	0	32	0	0	0	0	0	34
04:45 PM	0	3	0	0	3	0	0	0	0	0	0	0	22	0	22	0	0	0	0	0	25
05:00 PM	0	3	0	0	3	0	0	0	0	0	0	1	16	0	17	0	0	0	0	0	20
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	1	20	0	21	0	0	0	0	0	21
Total Volume	0	8	0	0	8	0	0	0	0	0	0	5	87	0	92	0	0	0	0	0	100
% App. Total	0	100	0	0		0	0	0	0		0	5.4	94.6	0		0	0	0	0		
PHF	.000	.667	.000	.000	.667	.000	.000	.000	.000	.000	.000	.417	.750	.000	.719	.000	.000	.000	.000	.000	.735
Class 1	0	7	0	0	7	0	0	0	0	0	0	4	67	0	71	0	0	0	0	0	78
% Class 1		87.5	0	0	87.5	0	0	0	0	0	0	80.0	77.0	0	77.2	0	0	0	0	0	78.0
Bank 1	0	1	0	0	1	0	0	0	0	0	0	1	20	0	21	0	0	0	0	0	22
% Bank 1	0	12.5	0	0	12.5	0	0	0	0	0	0	20.0	23.0	0	22.8	0	0	0	0	0	22.0



All Traffic Data Service, Inc

1336 Farmer Road
Conyers, Ga 30012
404-374-1283

File Name : #35 US29&I85NBONAM

Site Code : 35

Start Date : 5/28/2015

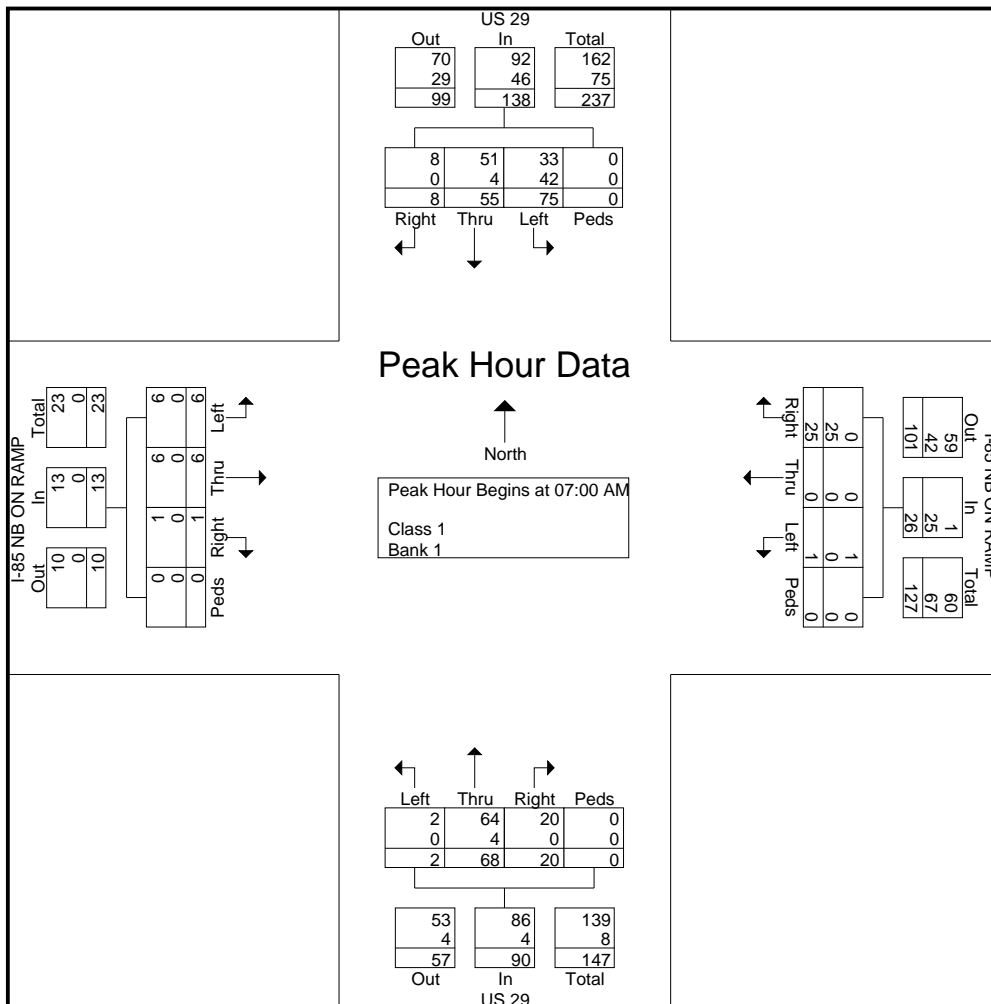
Page No : 2

Start Time	US 29 Southbound					I-85 NB ON RAMP Westbound					US 29 Northbound					I-85 NB ON RAMP Eastbound					Int. Total
	Right	Thru	Left	Bikes	App. Total	Right	Thru	Left	Bikes	App. Total	Right	Thru	Left	Bikes	App. Total	Right	Thru	Left	Bikes	App. Total	

Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1

Peak Hour for Entire Intersection Begins at 07:00 AM

07:00 AM	3	13	21	0	37	0	0	0	0	0	5	16	0	0	21	1	2	0	0	3	61
07:15 AM	3	10	24	0	37	7	0	0	0	7	6	19	0	0	25	0	2	2	0	4	73
07:30 AM	1	16	15	0	32	6	0	0	0	6	8	17	2	0	27	0	2	2	0	4	69
07:45 AM	1	16	15	0	32	12	0	1	0	13	1	16	0	0	17	0	0	2	0	2	64
Total Volume	8	55	75	0	138	25	0	1	0	26	20	68	2	0	90	1	6	6	0	13	267
% App. Total	5.8	39.9	54.3	0		96.2	0	3.8	0		22.2	75.6	2.2	0		7.7	46.2	46.2	0		
PHF	.667	.859	.781	.000	.932	.521	.000	.250	.000	.500	.625	.895	.250	.000	.833	.250	.750	.750	.000	.813	.914
Class 1	8	51	33	0	92	0	0	1	0	1	20	64	2	0	86	1	6	6	0	13	192
% Class 1		92.7	44.0	0	66.7	0	0	100	0	3.8	100	94.1	100	0	95.6	100	100	100	0	100	71.9
Bank 1	0	4	42	0	46	25	0	0	0	25	0	4	0	0	4	0	0	0	0	0	75
% Bank 1	0	7.3	56.0	0	33.3	100	0	0	0	96.2	0	5.9	0	0	4.4	0	0	0	0	0	28.1



All Traffic Data Service, Inc

1336 Farmer Road
Conyers, Ga 30012
404-374-1283

File Name : #35 US29&I85NBONPM

Site Code : 35

Start Date : 5/28/2015

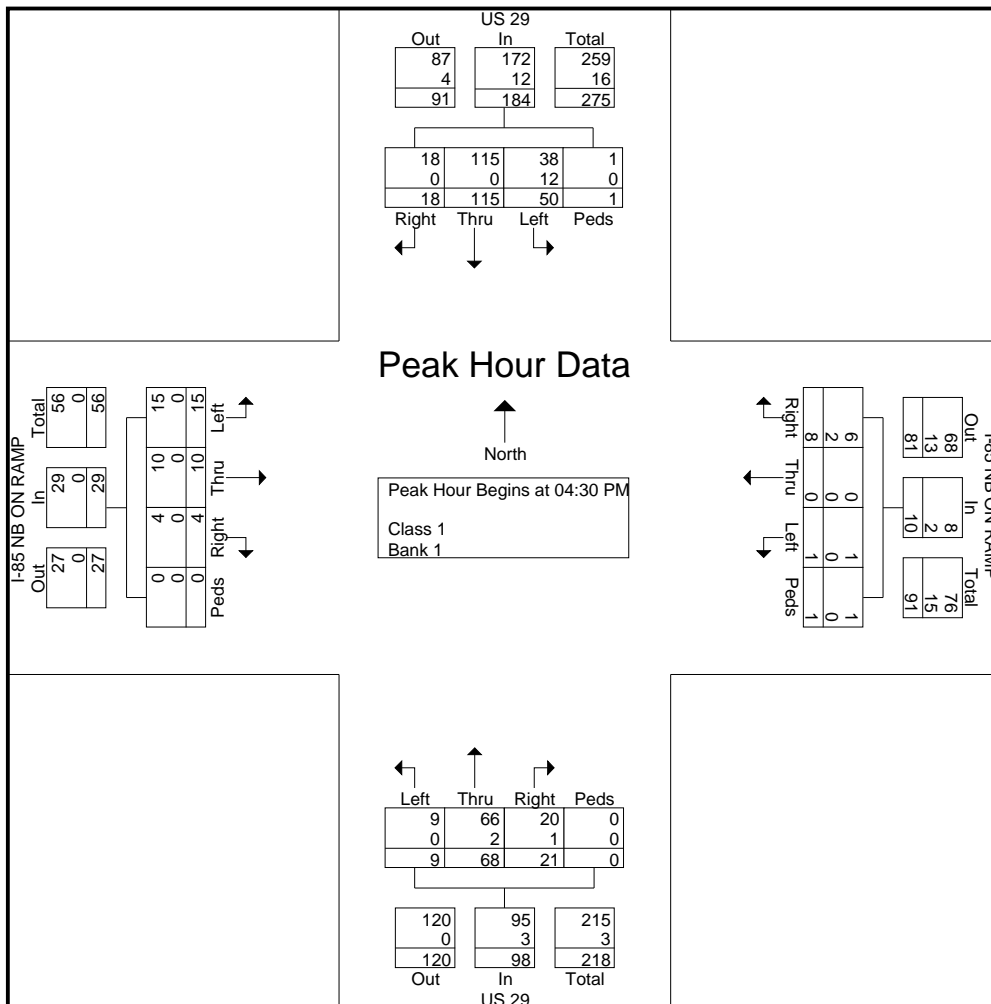
Page No : 2

Start Time	US 29 Southbound					I-85 NB ON RAMP Westbound					US 29 Northbound					I-85 NB ON RAMP Eastbound					Int. Total
	Right	Thru	Left	Bikes	App. Total	Right	Thru	Left	Bikes	App. Total	Right	Thru	Left	Bikes	App. Total	Right	Thru	Left	Bikes	App. Total	

Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1

Peak Hour for Entire Intersection Begins at 04:30 PM

04:30 PM	8	27	18	0	53	1	0	0	0	1	3	15	4	0	22	1	4	4	0	9	85
04:45 PM	5	26	14	1	46	2	0	0	1	3	5	18	0	0	23	0	3	6	0	9	81
05:00 PM	2	34	7	0	43	5	0	1	0	6	5	16	2	0	23	2	2	3	0	7	79
05:15 PM	3	28	11	0	42	0	0	0	0	0	8	19	3	0	30	1	1	2	0	4	76
Total Volume	18	115	50	1	184	8	0	1	1	10	21	68	9	0	98	4	10	15	0	29	321
% App. Total	9.8	62.5	27.2	0.5		80	0	10	10		21.4	69.4	9.2	0		13.8	34.5	51.7	0		
PHF	.563	.846	.694	.250	.868	.400	.000	.250	.250	.417	.656	.895	.563	.000	.817	.500	.625	.625	.000	.806	.944
Class 1	18	115	38	1	172	6	0	1	1	8	20	66	9	0	95	4	10	15	0	29	304
% Class 1			76.0	100	93.5	75.0	0	100	100	80.0	95.2	97.1	100	0	96.9	100	100	100	0	100	94.7
Bank 1	0	0	12	0	12	2	0	0	0	2	1	2	0	0	3	0	0	0	0	0	17
% Bank 1	0	0	24.0	0	6.5	25.0	0	0	0	20.0	4.8	2.9	0	0	3.1	0	0	0	0	0	5.3



All Traffic Data Service, Inc

1336 Farmer Road
Conyers, Ga 30012
404-374-1283

File Name : #36 SERVICESTATION&I85SBOFFAM

Site Code : 36

Start Date : 5/27/2015

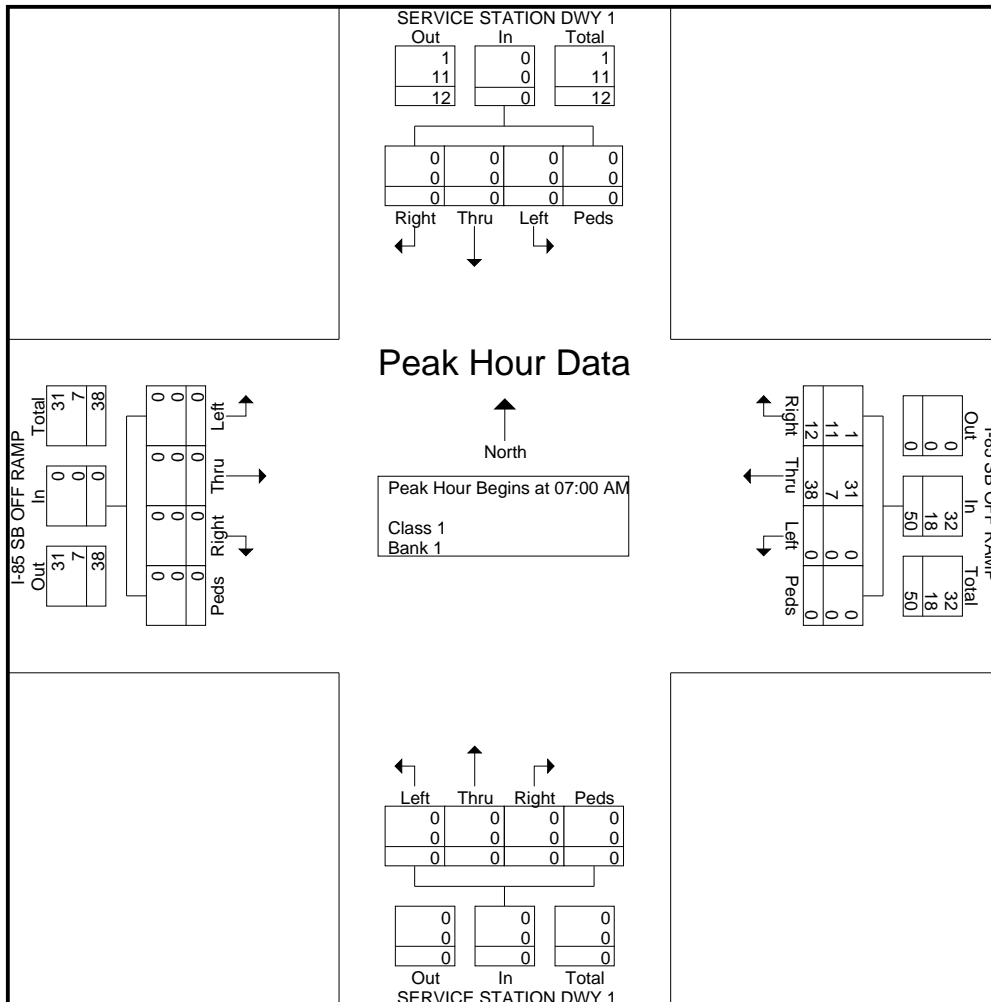
Page No : 2

Start Time	SERVICE STATION DWY 1 Southbound					I-85 SB OFF RAMP Westbound					SERVICE STATION DWY 1 Northbound					I-85 SB OFF RAMP Eastbound					Int. Total
	Right	Thru	Left	Bikes	App. Total	Right	Thru	Left	Bikes	App. Total	Right	Thru	Left	Bikes	App. Total	Right	Thru	Left	Bikes	App. Total	

Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1

Peak Hour for Entire Intersection Begins at 07:00 AM

07:00 AM	0	0	0	0	0	5	10	0	0	15	0	0	0	0	0	0	0	0	0	0	15
07:15 AM	0	0	0	0	0	2	10	0	0	12	0	0	0	0	0	0	0	0	0	0	12
07:30 AM	0	0	0	0	0	3	9	0	0	12	0	0	0	0	0	0	0	0	0	0	12
07:45 AM	0	0	0	0	0	2	9	0	0	11	0	0	0	0	0	0	0	0	0	0	11
Total Volume	0	0	0	0	0	12	38	0	0	50	0	0	0	0	0	0	0	0	0	0	50
% App. Total	0	0	0	0	0	24	76	0	0	833	0	0	0	0	0	0	0	0	0	0	833
PHF	.000	.000	.000	.000	.000	.600	.950	.000	.000	.833	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.833
Class 1	0	0	0	0	0	1	31	0	0	32	0	0	0	0	0	0	0	0	0	0	32
% Class 1							81.6	0	0	64.0	0	0	0	0	0	0	0	0	0	0	64.0
Bank 1	0	0	0	0	0	11	7	0	0	18	0	0	0	0	0	0	0	0	0	0	18
% Bank 1	0	0	0	0	0	91.7	18.4	0	0	36.0	0	0	0	0	0	0	0	0	0	0	36.0



All Traffic Data Service, Inc

1336 Farmer Road
Conyers, Ga 30012
404-374-1283

File Name : #36 SERVICESTATION&I85SBOFFPM

Site Code : 36

Start Date : 5/27/2015

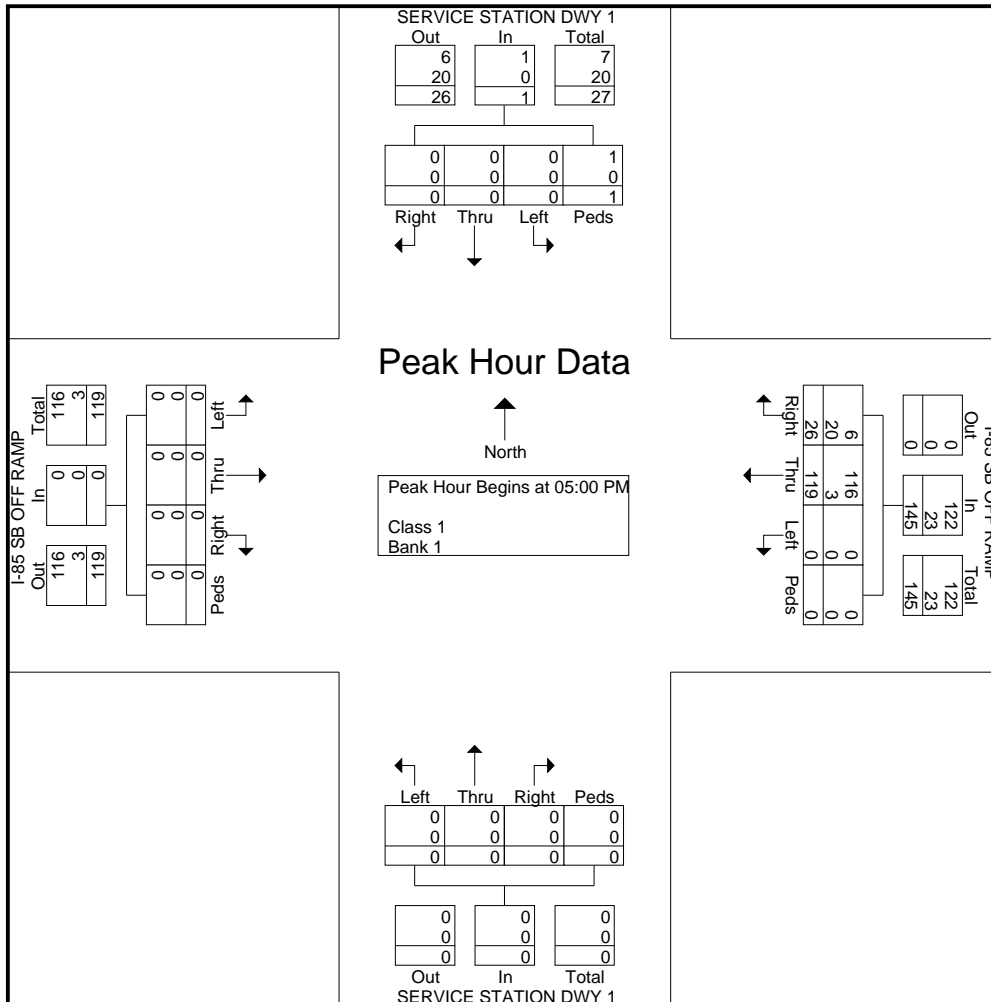
Page No : 2

Start Time	SERVICE STATION DWY 1 Southbound					I-85 SB OFF RAMP Westbound					SERVICE STATION DWY 1 Northbound					I-85 SB OFF RAMP Eastbound					Int. Total
	Right	Thru	Left	Bikes	App. Total	Right	Thru	Left	Bikes	App. Total	Right	Thru	Left	Bikes	App. Total	Right	Thru	Left	Bikes	App. Total	

Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1

Peak Hour for Entire Intersection Begins at 05:00 PM

05:00 PM	0	0	0	0	0	10	28	0	0	38	0	0	0	0	0	0	0	0	0	0	38
05:15 PM	0	0	0	0	0	9	26	0	0	35	0	0	0	0	0	0	0	0	0	0	35
05:30 PM	0	0	0	0	0	3	37	0	0	40	0	0	0	0	0	0	0	0	0	0	40
05:45 PM	0	0	0	1	1	4	28	0	0	32	0	0	0	0	0	0	0	0	0	0	33
Total Volume	0	0	0	1	1	26	119	0	0	145	0	0	0	0	0	0	0	0	0	0	146
% App. Total	0	0	0	100		17.9	82.1	0	0		0	0	0	0	0	0	0	0	0	0	
PHF	.000	.000	.000	.250	.250	.650	.804	.000	.000	.906	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.913
Class 1	0	0	0	1	1	6	116	0	0	122	0	0	0	0	0	0	0	0	0	0	123
% Class 1						23.1	97.5	0	0	84.1	0	0	0	0	0	0	0	0	0	0	84.2
Bank 1	0	0	0	0	0	20	3	0	0	23	0	0	0	0	0	0	0	0	0	0	23
% Bank 1						76.9	2.5	0	0	15.9	0	0	0	0	0	0	0	0	0	0	15.8



All Traffic Data Service, Inc

1336 Farmer Road
 Conyers, Ga 30012
 404-374-1283

File Name : #37 ServiceStatDwy2@I-85SBOffRampAM

Site Code : 10

Start Date : 5/27/2015

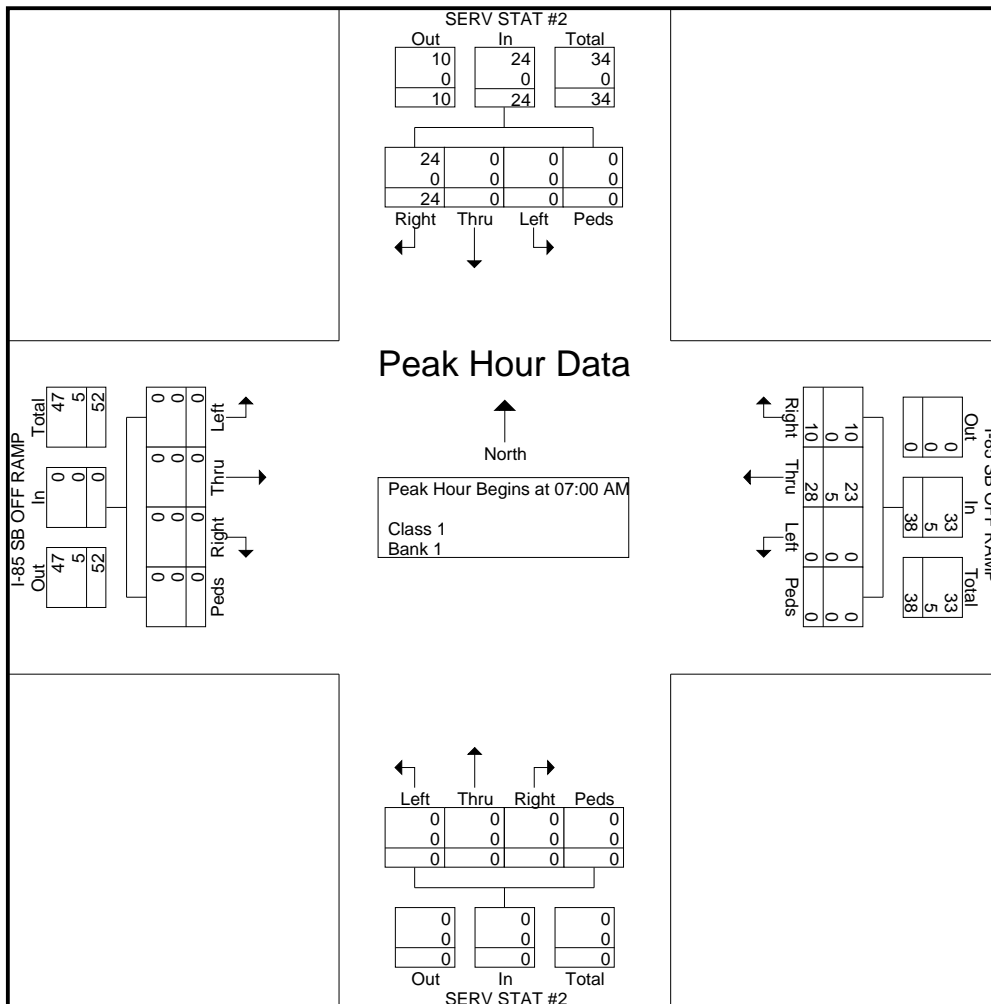
Page No : 2

Start Time	SERV STAT #2 Southbound					I-85 SB OFF RAMP Westbound					SERV STAT #2 Northbound					I-85 SB OFF RAMP Eastbound					Int. Total
	Right	Thru	Left	Bikes	App. Total	Right	Thru	Left	Bikes	App. Total	Right	Thru	Left	Bikes	App. Total	Right	Thru	Left	Bikes	App. Total	

Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1

Peak Hour for Entire Intersection Begins at 07:00 AM

07:00 AM	3	0	0	0	3	2	8	0	0	10	0	0	0	0	0	0	0	0	0	0	0	13
07:15 AM	5	0	0	0	5	3	7	0	0	10	0	0	0	0	0	0	0	0	0	0	0	15
07:30 AM	9	0	0	0	9	1	6	0	0	7	0	0	0	0	0	0	0	0	0	0	0	16
07:45 AM	7	0	0	0	7	4	7	0	0	11	0	0	0	0	0	0	0	0	0	0	0	18
Total Volume	24	0	0	0	24	10	28	0	0	38	0	0	0	0	0	0	0	0	0	0	0	62
% App. Total	100	0	0	0		26.3	73.7	0	0		0	0	0	0	0	0	0	0	0	0	0	
PHF	.667	.000	.000	.000	.667	.625	.875	.000	.000	.864	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.861
Class 1	24	0	0	0	24	10	23	0	0	33	0	0	0	0	0	0	0	0	0	0	0	57
% Class 1							82.1	0	0	86.8	0	0	0	0	0	0	0	0	0	0	0	91.9
Bank 1	0	0	0	0	0	0	5	0	0	5	0	0	0	0	0	0	0	0	0	0	0	5
% Bank 1	0	0	0	0	0	0	17.9	0	0	13.2	0	0	0	0	0	0	0	0	0	0	0	8.1



All Traffic Data Service, Inc

1336 Farmer Road
Conyers, Ga 30012
404-374-1283

File Name : #37 ServiceStatDwy2@I-85SBOffRampPM

Site Code : 10

Start Date : 5/27/2015

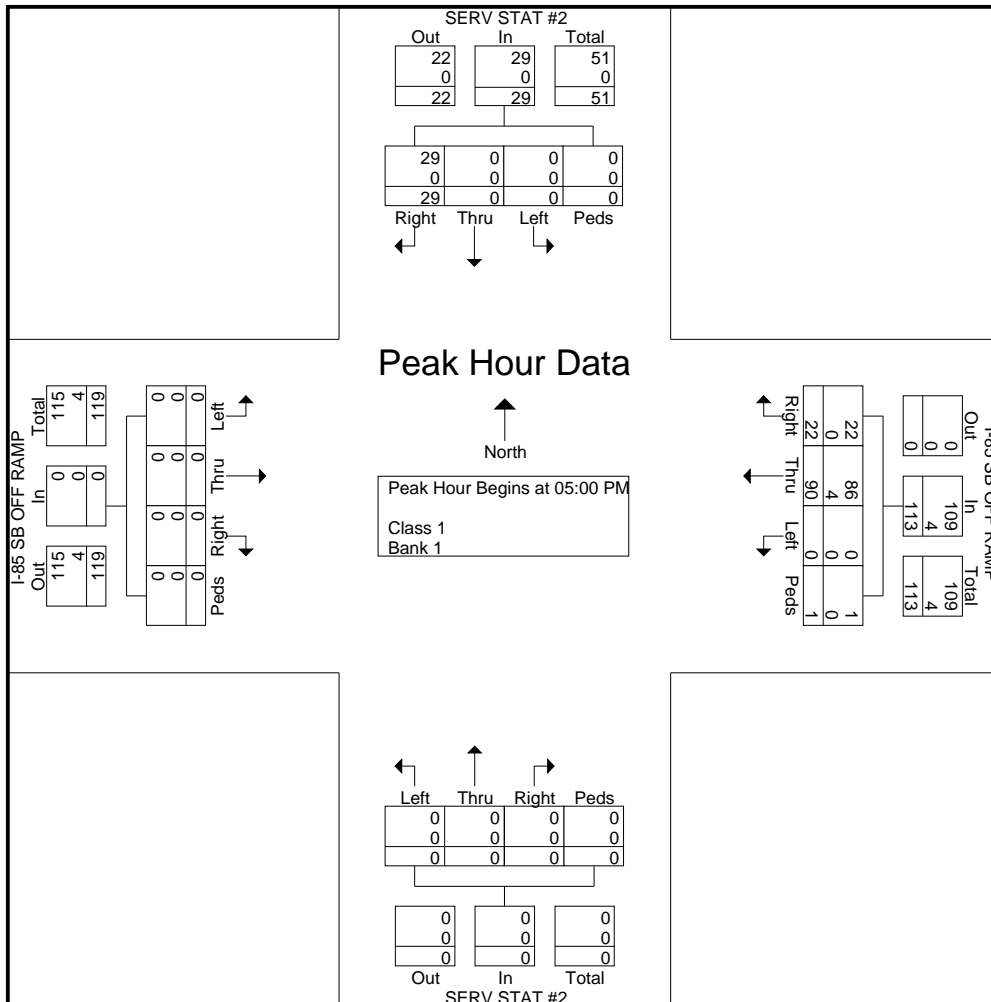
Page No : 2

Start Time	SERV STAT #2 Southbound					I-85 SB OFF RAMP Westbound					SERV STAT #2 Northbound					I-85 SB OFF RAMP Eastbound					Int. Total
	Right	Thru	Left	Bikes	App. Total	Right	Thru	Left	Bikes	App. Total	Right	Thru	Left	Bikes	App. Total	Right	Thru	Left	Bikes	App. Total	

Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1

Peak Hour for Entire Intersection Begins at 05:00 PM

05:00 PM	5	0	0	0	5	6	24	0	0	30	0	0	0	0	0	0	0	0	0	0	35
05:15 PM	10	0	0	0	10	9	16	0	0	25	0	0	0	0	0	0	0	0	0	0	35
05:30 PM	8	0	0	0	8	2	29	0	0	31	0	0	0	0	0	0	0	0	0	0	39
05:45 PM	6	0	0	0	6	5	21	0	1	27	0	0	0	0	0	0	0	0	0	0	33
Total Volume	29	0	0	0	29	22	90	0	1	113	0	0	0	0	0	0	0	0	0	0	142
% App. Total	100	0	0	0		19.5	79.6	0	0.9		0	0	0	0	0	0	0	0	0	0	
PHF	.725	.000	.000	.000	.725	.611	.776	.000	.250	.911	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.910
Class 1	29	0	0	0	29	22	86	0	1	109	0	0	0	0	0	0	0	0	0	0	138
% Class 1							95.6	0	100	96.5	0	0	0	0	0	0	0	0	0	0	97.2
Bank 1	0	0	0	0	0	0	4	0	0	4	0	0	0	0	0	0	0	0	0	0	4
% Bank 1	0	0	0	0	0	0	4.4	0	0	3.5	0	0	0	0	0	0	0	0	0	0	2.8



All Traffic Data Service, Inc

1336 Farmer Road
Conyers, Ga 30012
404-374-1283

File Name : #38 US29&LAKEVIEWAM

Site Code : 38

Start Date : 5/28/2015

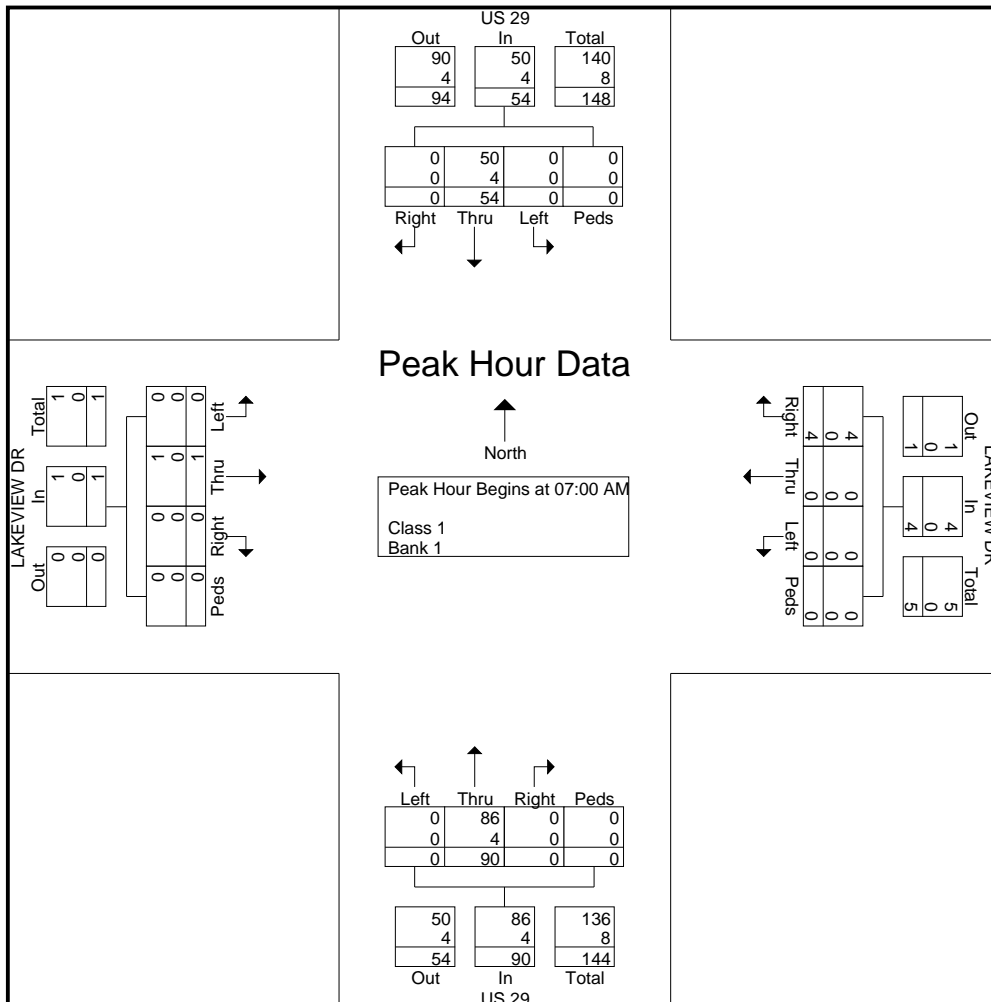
Page No : 2

Start Time	US 29 Southbound					LAKEVIEW DR Westbound					US 29 Northbound					LAKEVIEW DR Eastbound					Int. Total
	Right	Thru	Left	Bikes	App. Total	Right	Thru	Left	Bikes	App. Total	Right	Thru	Left	Bikes	App. Total	Right	Thru	Left	Bikes	App. Total	

Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1

Peak Hour for Entire Intersection Begins at 07:00 AM

07:00 AM	0	15	0	0	15	0	0	0	0	0	0	20	0	0	20	0	1	0	0	1	36
07:15 AM	0	7	0	0	7	2	0	0	0	2	0	26	0	0	26	0	0	0	0	0	35
07:30 AM	0	16	0	0	16	2	0	0	0	2	0	25	0	0	25	0	0	0	0	0	43
07:45 AM	0	16	0	0	16	0	0	0	0	0	0	19	0	0	19	0	0	0	0	0	35
Total Volume	0	54	0	0	54	4	0	0	0	4	0	90	0	0	90	0	1	0	0	1	149
% App. Total	0	100	0	0		100	0	0	0		0	100	0	0		0	100	0	0		
PHF	.000	.844	.000	.000	.844	.500	.000	.000	.000	.500	.000	.865	.000	.000	.865	.000	.250	.000	.000	.250	.866
Class 1	0	50	0	0	50	4	0	0	0	4	0	86	0	0	86	0	1	0	0	1	141
% Class 1		92.6	0	0	92.6	100	0	0	0	100	0	95.6	0	0	95.6	0	100	0	0	100	94.6
Bank 1	0	4	0	0	4	0	0	0	0	0	0	4	0	0	4	0	0	0	0	0	8
% Bank 1	0	7.4	0	0	7.4	0	0	0	0	0	0	4.4	0	0	4.4	0	0	0	0	0	5.4



All Traffic Data Service, Inc

1336 Farmer Road
Conyers, Ga 30012
404-374-1283

File Name : #38 US29&LAKEVIEWWPM

Site Code : 38

Start Date : 5/28/2015

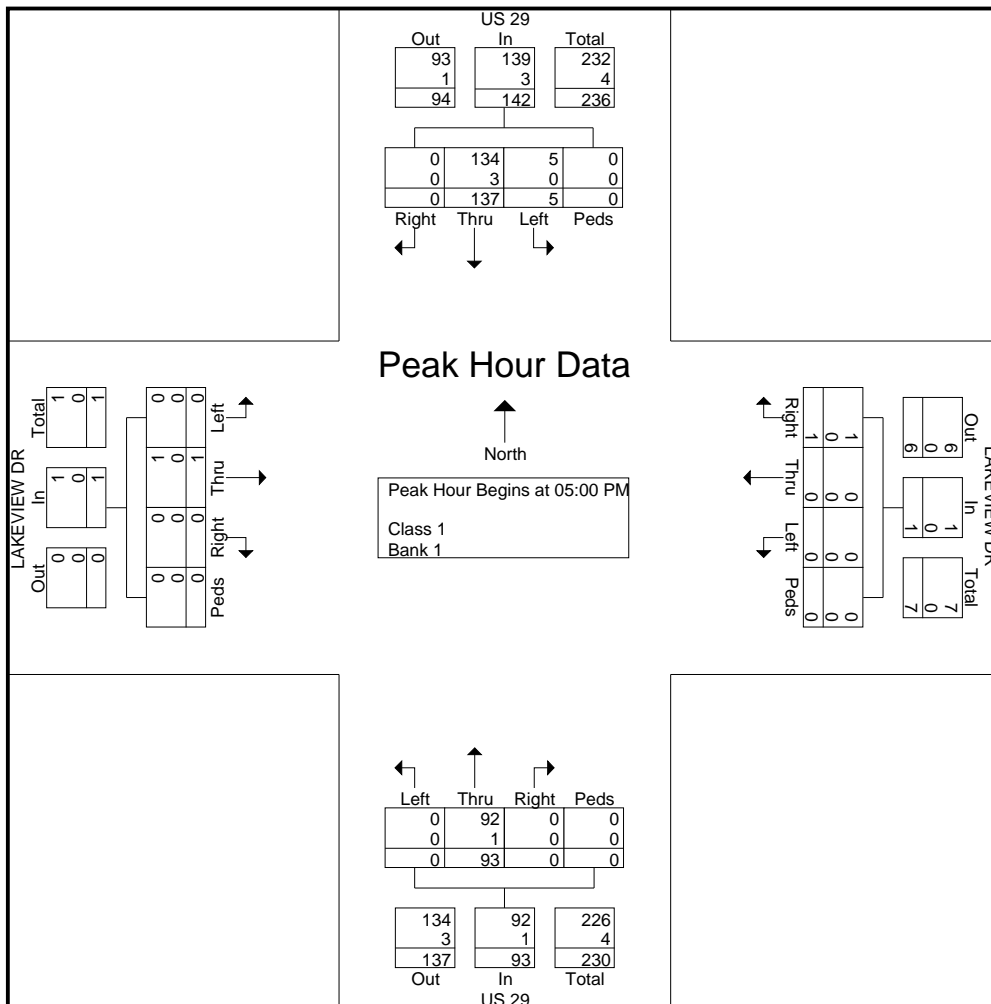
Page No : 2

Start Time	US 29 Southbound					LAKEVIEW DR Westbound					US 29 Northbound					LAKEVIEW DR Eastbound					Int. Total
	Right	Thru	Left	Bikes	App. Total	Right	Thru	Left	Bikes	App. Total	Right	Thru	Left	Bikes	App. Total	Right	Thru	Left	Bikes	App. Total	

Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1

Peak Hour for Entire Intersection Begins at 05:00 PM

05:00 PM	0	37	1	0	38	0	0	0	0	0	0	23	0	0	23	0	1	0	0	1	62
05:15 PM	0	27	0	0	27	0	0	0	0	0	0	29	0	0	29	0	0	0	0	0	56
05:30 PM	0	40	2	0	42	0	0	0	0	0	0	18	0	0	18	0	0	0	0	0	60
05:45 PM	0	33	2	0	35	1	0	0	0	1	0	23	0	0	23	0	0	0	0	0	59
Total Volume	0	137	5	0	142	1	0	0	0	1	0	93	0	0	93	0	1	0	0	1	237
% App. Total	0	96.5	3.5	0		100	0	0	0		0	100	0	0		0	100	0	0		
PHF	.000	.856	.625	.000	.845	.250	.000	.000	.000	.250	.000	.802	.000	.000	.802	.000	.250	.000	.000	.250	.956
Class 1	0	134	5	0	139	1	0	0	0	1	0	92	0	0	92	0	1	0	0	1	233
% Class 1		97.8	100	0	97.9	100	0	0	0	100	0	98.9	0	0	98.9	0	100	0	0	100	98.3
Bank 1	0	3	0	0	3	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	4
% Bank 1	0	2.2	0	0	2.1	0	0	0	0	0	0	1.1	0	0	1.1	0	0	0	0	0	1.7



APPENDIX B

FREEWAY SEGMENT HCS ANALYSIS

**2015 EXISTING CONDITIONS
FREEWAY SEGMENT HCS ANALYSIS**

Phone: Fax:
E-mail:

-----Operational Analysis-----

Analyst:
Agency or Company: Stantec
Date Performed: 11/8/2016
Analysis Time Period: 8:00AM-9:00AM
Freeway/Direction: I-85 Northbound
From/To: Tribal Rd To US 29
Jurisdiction: SCDOT
Analysis Year: 2015 Existing Conditions
Description:

-----Flow Inputs and Adjustments-----

Volume, V	1284	veh/h
Peak-hour factor, PHF	0.94	
Peak 15-min volume, v15	341	v
Trucks and buses	30	%
Recreational vehicles	0	%
Terrain type:	Rolling	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	2.5	
Recreational vehicle PCE, ER	2.0	
Heavy vehicle adjustment, fHV	0.690	
Driver population factor, fp	1.00	
Flow rate, vp	990	pc/h/ln

-----Speed Inputs and Adjustments-----

Lane width	11.2	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	0.83	ramps/mi
Number of lanes, N	2	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	1.9	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	2.8	mi/h
Free-flow speed, FFS	70.7	mi/h

-----LOS and Performance Measures-----

Flow rate, vp	990	pc/h/ln
Free-flow speed, FFS	70.7	mi/h
Average passenger-car speed, S	70.0	mi/h
Number of lanes, N	2	
Density, D	14.1	pc/mi/ln
Level of service, LOS	B	

Phone: Fax:
E-mail:

-----Operational Analysis-----

Analyst:
Agency or Company: Stantec
Date Performed: 11/8/2016
Analysis Time Period: 8:00AM-9:00AM
Freeway/Direction: I-85 Northbound
From/To: US 29 To NC 216
Jurisdiction: SCDOT/NCDOT
Analysis Year: 2015 Existing Conditions
Description:

-----Flow Inputs and Adjustments-----

Volume, V	1325	veh/h
Peak-hour factor, PHF	0.94	
Peak 15-min volume, v15	352	v
Trucks and buses	30	%
Recreational vehicles	0	%
Terrain type:	Rolling	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	2.5	
Recreational vehicle PCE, ER	2.0	
Heavy vehicle adjustment, fHV	0.690	
Driver population factor, fp	1.00	
Flow rate, vp	1022	pc/h/ln

-----Speed Inputs and Adjustments-----

Lane width	11.3	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	1.50	ramps/mi
Number of lanes, N	2	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	1.9	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	4.5	mi/h
Free-flow speed, FFS	69.0	mi/h

-----LOS and Performance Measures-----

Flow rate, vp	1022	pc/h/ln
Free-flow speed, FFS	69.0	mi/h
Average passenger-car speed, S	70.0	mi/h
Number of lanes, N	2	
Density, D	14.6	pc/mi/ln
Level of service, LOS	B	

Phone: Fax:
E-mail:

Operational Analysis

Analyst:
Agency or Company: Stantec
Date Performed: 11/9/2016
Analysis Time Period: 8:00AM -9:00AM
Freeway/Direction: I-85 Southbound
From/To: NC 216 to US 29
Jurisdiction: SCDOT/NCDOT
Analysis Year: 2015 Existing Conditions
Description:

Flow Inputs and Adjustments

Volume, V	1189	veh/h
Peak-hour factor, PHF	0.94	
Peak 15-min volume, v15	316	v
Trucks and buses	30	%
Recreational vehicles	0	%
Terrain type:	Rolling	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	2.5	
Recreational vehicle PCE, ER	2.0	
Heavy vehicle adjustment, fHV	0.690	
Driver population factor, fp	1.00	
Flow rate, vp	917	pc/h/ln

Speed Inputs and Adjustments

Lane width	11.0	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	1.00	ramps/mi
Number of lanes, N	2	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	1.9	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	3.2	mi/h
Free-flow speed, FFS	70.3	mi/h

LOS and Performance Measures

Flow rate, vp	917	pc/h/ln
Free-flow speed, FFS	70.3	mi/h
Average passenger-car speed, S	70.0	mi/h
Number of lanes, N	2	
Density, D	13.1	pc/mi/ln
Level of service, LOS	B	

Phone: _____ Fax: _____
 E-mail: _____

-----Operational Analysis-----

Analyst:
 Agency or Company: Stantec
 Date Performed: 11/9/2016
 Analysis Time Period: 8:00AM -9:00AM
 Freeway/Direction: I-85 Southbound
 From/To: US 29 to Tribal Rd
 Jurisdiction: SCDOT
 Analysis Year: 2015 Existing Conditions
 Description:

-----Flow Inputs and Adjustments-----

Volume, V	1258	veh/h
Peak-hour factor, PHF	0.94	
Peak 15-min volume, v15	335	v
Trucks and buses	30	%
Recreational vehicles	0	%
Terrain type:	Rolling	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	2.5	
Recreational vehicle PCE, ER	2.0	
Heavy vehicle adjustment, fHV	0.690	
Driver population factor, fp	1.00	
Flow rate, vp	970	pc/h/ln

-----Speed Inputs and Adjustments-----

Lane width	11.7	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	1.50	ramps/mi
Number of lanes, N	2	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	1.9	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	4.5	mi/h
Free-flow speed, FFS	69.0	mi/h

-----LOS and Performance Measures-----

Flow rate, vp	970	pc/h/ln
Free-flow speed, FFS	69.0	mi/h
Average passenger-car speed, S	70.0	mi/h
Number of lanes, N	2	
Density, D	13.9	pc/mi/ln
Level of service, LOS	B	

Phone: Fax:
E-mail:

-----Operational Analysis-----

Analyst:
Agency or Company: Stantec
Date Performed: 11/9/2016
Analysis Time Period: 2:00PM-3:00PM
Freeway/Direction: I-85 Northbound
From/To: Tribal Road to US 29
Jurisdiction: SCDOT
Analysis Year: 2015 Existing Conditions
Description:

-----Flow Inputs and Adjustments-----

Volume, V	2101	veh/h
Peak-hour factor, PHF	0.94	
Peak 15-min volume, v15	559	v
Trucks and buses	30	%
Recreational vehicles	0	%
Terrain type:	Rolling	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	2.5	
Recreational vehicle PCE, ER	2.0	
Heavy vehicle adjustment, fHV	0.690	
Driver population factor, fp	1.00	
Flow rate, vp	1620	pc/h/ln

-----Speed Inputs and Adjustments-----

Lane width	11.2	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	0.83	ramps/mi
Number of lanes, N	2	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	1.9	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	2.8	mi/h
Free-flow speed, FFS	70.7	mi/h

-----LOS and Performance Measures-----

Flow rate, vp	1620	pc/h/ln
Free-flow speed, FFS	70.7	mi/h
Average passenger-car speed, S	68.0	mi/h
Number of lanes, N	2	
Density, D	23.8	pc/mi/ln
Level of service, LOS	C	

Phone: _____ Fax: _____
 E-mail: _____

-----Operational Analysis-----

Analyst:
 Agency or Company: Stantec
 Date Performed: 11/9/2016
 Analysis Time Period: 2:00PM-3:00PM
 Freeway/Direction: I-85 Northbound
 From/To: US 29 to NC 216
 Jurisdiction: SCDOT/NCDOT
 Analysis Year: 2015 Existing Conditions
 Description:

-----Flow Inputs and Adjustments-----

Volume, V	2103	veh/h
Peak-hour factor, PHF	0.94	
Peak 15-min volume, v15	559	v
Trucks and buses	30	%
Recreational vehicles	0	%
Terrain type:	Rolling	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	2.5	
Recreational vehicle PCE, ER	2.0	
Heavy vehicle adjustment, fHV	0.690	
Driver population factor, fp	1.00	
Flow rate, vp	1622	pc/h/ln

-----Speed Inputs and Adjustments-----

Lane width	11.3	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	1.50	ramps/mi
Number of lanes, N	2	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	1.9	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	4.5	mi/h
Free-flow speed, FFS	69.0	mi/h

-----LOS and Performance Measures-----

Flow rate, vp	1622	pc/h/ln
Free-flow speed, FFS	69.0	mi/h
Average passenger-car speed, S	67.9	mi/h
Number of lanes, N	2	
Density, D	23.9	pc/mi/ln
Level of service, LOS	C	

Phone: Fax:
E-mail:

-----Operational Analysis-----

Analyst:
Agency or Company: Stantec
Date Performed: 11/9/2016
Analysis Time Period: 2:00PM-3:00PM
Freeway/Direction: I-85 Southbound
From/To: NC 216 to US 29
Jurisdiction: SCDOT/NCDOT
Analysis Year: 2015 Existing Conditions
Description:

-----Flow Inputs and Adjustments-----

Volume, V	2174	veh/h
Peak-hour factor, PHF	0.94	
Peak 15-min volume, v15	578	v
Trucks and buses	30	%
Recreational vehicles	0	%
Terrain type:	Rolling	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	2.5	
Recreational vehicle PCE, ER	2.0	
Heavy vehicle adjustment, fHV	0.690	
Driver population factor, fp	1.00	
Flow rate, vp	1677	pc/h/ln

-----Speed Inputs and Adjustments-----

Lane width	11.0	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	1.00	ramps/mi
Number of lanes, N	2	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	1.9	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	3.2	mi/h
Free-flow speed, FFS	70.3	mi/h

-----LOS and Performance Measures-----

Flow rate, vp	1677	pc/h/ln
Free-flow speed, FFS	70.3	mi/h
Average passenger-car speed, S	67.4	mi/h
Number of lanes, N	2	
Density, D	24.9	pc/mi/ln
Level of service, LOS	C	

Phone: Fax:
E-mail:

-----Operational Analysis-----

Analyst:
Agency or Company: Stantec
Date Performed: 11/9/2016
Analysis Time Period: 2:00PM-3:00PM
Freeway/Direction: I-85 Southbound
From/To: US 29 to Tribal Rd
Jurisdiction: SCDOT
Analysis Year: 2015 Existing Conditions
Description:

-----Flow Inputs and Adjustments-----

Volume, V	2155	veh/h
Peak-hour factor, PHF	0.94	
Peak 15-min volume, v15	573	v
Trucks and buses	30	%
Recreational vehicles	0	%
Terrain type:	Rolling	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	2.5	
Recreational vehicle PCE, ER	2.0	
Heavy vehicle adjustment, fHV	0.690	
Driver population factor, fp	1.00	
Flow rate, vp	1662	pc/h/ln

-----Speed Inputs and Adjustments-----

Lane width	11.7	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	1.50	ramps/mi
Number of lanes, N	2	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	1.9	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	4.5	mi/h
Free-flow speed, FFS	69.0	mi/h

-----LOS and Performance Measures-----

Flow rate, vp	1662	pc/h/ln
Free-flow speed, FFS	69.0	mi/h
Average passenger-car speed, S	67.5	mi/h
Number of lanes, N	2	
Density, D	24.6	pc/mi/ln
Level of service, LOS	C	



**2040 NO-BUILD CONDITIONS
FREEWAY SEGMENT HCS ANALYSIS**

Phone: Fax:
E-mail:

-----Operational Analysis-----

Analyst:
Agency or Company: Stantec
Date Performed: 11/8/2016
Analysis Time Period: 8:00AM-9:00AM
Freeway/Direction: I-85 Northbound
From/To: Tribal Rd To US 29
Jurisdiction: SCDOT
Analysis Year: 2040 No Build Conditions
Description:

-----Flow Inputs and Adjustments-----

Volume, V	1819	veh/h
Peak-hour factor, PHF	0.94	
Peak 15-min volume, v15	484	v
Trucks and buses	30	%
Recreational vehicles	0	%
Terrain type:	Rolling	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	2.5	
Recreational vehicle PCE, ER	2.0	
Heavy vehicle adjustment, fHV	0.690	
Driver population factor, fp	1.00	
Flow rate, vp	1403	pc/h/ln

-----Speed Inputs and Adjustments-----

Lane width	11.2	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	0.83	ramps/mi
Number of lanes, N	2	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	1.9	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	2.8	mi/h
Free-flow speed, FFS	70.7	mi/h

-----LOS and Performance Measures-----

Flow rate, vp	1403	pc/h/ln
Free-flow speed, FFS	70.7	mi/h
Average passenger-car speed, S	69.5	mi/h
Number of lanes, N	2	
Density, D	20.2	pc/mi/ln
Level of service, LOS	C	

Phone: Fax:
E-mail:

-----Operational Analysis-----

Analyst:
Agency or Company: Stantec
Date Performed: 11/8/2016
Analysis Time Period: 8:00AM-9:00AM
Freeway/Direction: I-85 Northbound
From/To: US 29 To NC 216
Jurisdiction: SCDOT/NCDOT
Analysis Year: 2040 No Build Conditions
Description:

-----Flow Inputs and Adjustments-----

Volume, V	1871	veh/h
Peak-hour factor, PHF	0.94	
Peak 15-min volume, v15	498	v
Trucks and buses	30	%
Recreational vehicles	0	%
Terrain type:	Rolling	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	2.5	
Recreational vehicle PCE, ER	2.0	
Heavy vehicle adjustment, fHV	0.690	
Driver population factor, fp	1.00	
Flow rate, vp	1443	pc/h/ln

-----Speed Inputs and Adjustments-----

Lane width	11.3	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	1.50	ramps/mi
Number of lanes, N	2	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	1.9	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	4.5	mi/h
Free-flow speed, FFS	69.0	mi/h

-----LOS and Performance Measures-----

Flow rate, vp	1443	pc/h/ln
Free-flow speed, FFS	69.0	mi/h
Average passenger-car speed, S	69.3	mi/h
Number of lanes, N	2	
Density, D	20.8	pc/mi/ln
Level of service, LOS	C	

Phone: Fax:
E-mail:

-----Operational Analysis-----

Analyst:
Agency or Company: Stantec
Date Performed: 11/9/2016
Analysis Time Period: 8:00AM -9:00AM
Freeway/Direction: I-85 Southbound
From/To: NC 216 to US 29
Jurisdiction: SCDOT/NCDOT
Analysis Year: 2040 No Build Conditions
Description:

-----Flow Inputs and Adjustments-----

Volume, V	1771	veh/h
Peak-hour factor, PHF	0.94	
Peak 15-min volume, v15	471	v
Trucks and buses	30	%
Recreational vehicles	0	%
Terrain type:	Rolling	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	2.5	
Recreational vehicle PCE, ER	2.0	
Heavy vehicle adjustment, fHV	0.690	
Driver population factor, fp	1.00	
Flow rate, vp	1366	pc/h/ln

-----Speed Inputs and Adjustments-----

Lane width	11.0	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	1.00	ramps/mi
Number of lanes, N	2	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	1.9	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	3.2	mi/h
Free-flow speed, FFS	70.3	mi/h

-----LOS and Performance Measures-----

Flow rate, vp	1366	pc/h/ln
Free-flow speed, FFS	70.3	mi/h
Average passenger-car speed, S	69.7	mi/h
Number of lanes, N	2	
Density, D	19.6	pc/mi/ln
Level of service, LOS	C	

Phone: Fax:
E-mail:

-----Operational Analysis-----

Analyst:
Agency or Company: Stantec
Date Performed: 11/9/2016
Analysis Time Period: 8:00AM -9:00AM
Freeway/Direction: I-85 Southbound
From/To: US 29 to Tribal Rd
Jurisdiction: SCDOT
Analysis Year: 2040 No Build Conditions
Description:

-----Flow Inputs and Adjustments-----

Volume, V	1858	veh/h
Peak-hour factor, PHF	0.94	
Peak 15-min volume, v15	494	v
Trucks and buses	30	%
Recreational vehicles	0	%
Terrain type:	Rolling	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	2.5	
Recreational vehicle PCE, ER	2.0	
Heavy vehicle adjustment, fHV	0.690	
Driver population factor, fp	1.00	
Flow rate, vp	1433	pc/h/ln

-----Speed Inputs and Adjustments-----

Lane width	11.7	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	1.50	ramps/mi
Number of lanes, N	2	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	1.9	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	4.5	mi/h
Free-flow speed, FFS	69.0	mi/h

-----LOS and Performance Measures-----

Flow rate, vp	1433	pc/h/ln
Free-flow speed, FFS	69.0	mi/h
Average passenger-car speed, S	69.4	mi/h
Number of lanes, N	2	
Density, D	20.7	pc/mi/ln
Level of service, LOS	C	

Phone: Fax:
E-mail:

-----Operational Analysis-----

Analyst:
Agency or Company: Stantec
Date Performed: 11/9/2016
Analysis Time Period: 2:00PM-3:00PM
Freeway/Direction: I-85 Northbound
From/To: Tribal Road to US 29
Jurisdiction: SCDOT
Analysis Year: 2040 No Build Conditions
Description:

-----Flow Inputs and Adjustments-----

Volume, V	3051	veh/h
Peak-hour factor, PHF	0.94	
Peak 15-min volume, v15	811	v
Trucks and buses	30	%
Recreational vehicles	0	%
Terrain type:	Rolling	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	2.5	
Recreational vehicle PCE, ER	2.0	
Heavy vehicle adjustment, fHV	0.690	
Driver population factor, fp	1.00	
Flow rate, vp	2353	pc/h/ln

-----Speed Inputs and Adjustments-----

Lane width	11.2	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	0.83	ramps/mi
Number of lanes, N	2	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	1.9	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	2.8	mi/h
Free-flow speed, FFS	70.7	mi/h

-----LOS and Performance Measures-----

Flow rate, vp	2353	pc/h/ln
Free-flow speed, FFS	70.7	mi/h
Average passenger-car speed, S	54.6	mi/h
Number of lanes, N	2	
Density, D	43.1	pc/mi/ln
Level of service, LOS	E	

Phone: Fax:
E-mail:

-----Operational Analysis-----

Analyst:
Agency or Company: Stantec
Date Performed: 11/9/2016
Analysis Time Period: 2:00PM-3:00PM
Freeway/Direction: I-85 Northbound
From/To: US 29 to NC 216
Jurisdiction: SCDOT/NCDOT
Analysis Year: 2040 No Build Conditions
Description:

-----Flow Inputs and Adjustments-----

Volume, V	3054	veh/h
Peak-hour factor, PHF	0.94	
Peak 15-min volume, v15	812	v
Trucks and buses	30	%
Recreational vehicles	0	%
Terrain type:	Rolling	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	2.5	
Recreational vehicle PCE, ER	2.0	
Heavy vehicle adjustment, fHV	0.690	
Driver population factor, fp	1.00	
Flow rate, vp	2355	pc/h/ln

-----Speed Inputs and Adjustments-----

Lane width	11.3	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	1.50	ramps/mi
Number of lanes, N	2	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	1.9	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	4.5	mi/h
Free-flow speed, FFS	69.0	mi/h

-----LOS and Performance Measures-----

Flow rate, vp	2355	pc/h/ln
Free-flow speed, FFS	69.0	mi/h
Average passenger-car speed, S	54.5	mi/h
Number of lanes, N	2	
Density, D	43.2	pc/mi/ln
Level of service, LOS	E	

Phone: Fax:
E-mail:

-----Operational Analysis-----

Analyst:
Agency or Company: Stantec
Date Performed: 11/9/2016
Analysis Time Period: 2:00PM-3:00PM
Freeway/Direction: I-85 Southbound
From/To: NC 216 to US 29
Jurisdiction: SCDOT/NCDOT
Analysis Year: 2040 No Build Conditions
Description:

-----Flow Inputs and Adjustments-----

Volume, V	3114	veh/h
Peak-hour factor, PHF	0.94	
Peak 15-min volume, v15	828	v
Trucks and buses	30	%
Recreational vehicles	0	%
Terrain type:	Rolling	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	2.5	
Recreational vehicle PCE, ER	2.0	
Heavy vehicle adjustment, fHV	0.690	
Driver population factor, fp	1.00	
Flow rate, vp	2402	pc/h/ln

-----Speed Inputs and Adjustments-----

Lane width	11.0	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	1.00	ramps/mi
Number of lanes, N	2	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	1.9	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	3.2	mi/h
Free-flow speed, FFS	70.3	mi/h

-----LOS and Performance Measures-----

Flow rate, vp	2402	pc/h/ln
Free-flow speed, FFS	70.3	mi/h
Average passenger-car speed, S	53.2	mi/h
Number of lanes, N	2	
Density, D	45.1	pc/mi/ln
Level of service, LOS	F	

Phone: _____ Fax: _____
 E-mail: _____

-----Operational Analysis-----

Analyst:
 Agency or Company: Stantec
 Date Performed: 11/9/2016
 Analysis Time Period: 2:00PM-3:00PM
 Freeway/Direction: I-85 Southbound
 From/To: US 29 to Tribal Rd
 Jurisdiction: SCDOT
 Analysis Year: 2040 No Build Conditions
 Description:

-----Flow Inputs and Adjustments-----

Volume, V	3090	veh/h
Peak-hour factor, PHF	0.94	
Peak 15-min volume, v15	822	v
Trucks and buses	30	%
Recreational vehicles	0	%
Terrain type:	Rolling	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	2.5	
Recreational vehicle PCE, ER	2.0	
Heavy vehicle adjustment, fHV	0.690	
Driver population factor, fp	1.00	
Flow rate, vp	2383	pc/h/ln

-----Speed Inputs and Adjustments-----

Lane width	11.7	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	1.50	ramps/mi
Number of lanes, N	2	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	1.9	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	4.5	mi/h
Free-flow speed, FFS	69.0	mi/h

-----LOS and Performance Measures-----

Flow rate, vp	2383	pc/h/ln
Free-flow speed, FFS	69.0	mi/h
Average passenger-car speed, S	53.8	mi/h
Number of lanes, N	2	
Density, D	44.3	pc/mi/ln
Level of service, LOS	E	

**2040 BUILD CONDITIONS
FREEWAY SEGMENT HCS ANALYSIS**

Phone: Fax:
E-mail:

-----Operational Analysis-----

Analyst:
Agency or Company: Stantec
Date Performed: 11/8/2016
Analysis Time Period: 8:00AM-9:00AM
Freeway/Direction: I-85 Northbound
From/To: Tribal Rd To US 29
Jurisdiction: SCDOT
Analysis Year: 2040 Build Conditions
Description:

-----Flow Inputs and Adjustments-----

Volume, V	1819	veh/h
Peak-hour factor, PHF	0.94	
Peak 15-min volume, v15	484	v
Trucks and buses	30	%
Recreational vehicles	0	%
Terrain type:	Rolling	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	2.5	
Recreational vehicle PCE, ER	2.0	
Heavy vehicle adjustment, fHV	0.690	
Driver population factor, fp	1.00	
Flow rate, vp	935	pc/h/ln

-----Speed Inputs and Adjustments-----

Lane width	11.2	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	0.83	ramps/mi
Number of lanes, N	3	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	1.9	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	2.8	mi/h
Free-flow speed, FFS	70.7	mi/h

-----LOS and Performance Measures-----

Flow rate, vp	935	pc/h/ln
Free-flow speed, FFS	70.7	mi/h
Average passenger-car speed, S	70.0	mi/h
Number of lanes, N	3	
Density, D	13.4	pc/mi/ln
Level of service, LOS	B	

Phone: Fax:
E-mail:

-----Operational Analysis-----

Analyst:
Agency or Company: Stantec
Date Performed: 11/8/2016
Analysis Time Period: 8:00AM-9:00AM
Freeway/Direction: I-85 Northbound
From/To: US 29 To NC 216
Jurisdiction: SCDOT/NCDOT
Analysis Year: 2040 Build Conditions
Description:

-----Flow Inputs and Adjustments-----

Volume, V	1871	veh/h
Peak-hour factor, PHF	0.94	
Peak 15-min volume, v15	498	v
Trucks and buses	30	%
Recreational vehicles	0	%
Terrain type:	Rolling	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	2.5	
Recreational vehicle PCE, ER	2.0	
Heavy vehicle adjustment, fHV	0.690	
Driver population factor, fp	1.00	
Flow rate, vp	1443	pc/h/ln

-----Speed Inputs and Adjustments-----

Lane width	11.3	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	1.50	ramps/mi
Number of lanes, N	2	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	1.9	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	4.5	mi/h
Free-flow speed, FFS	69.0	mi/h

-----LOS and Performance Measures-----

Flow rate, vp	1443	pc/h/ln
Free-flow speed, FFS	69.0	mi/h
Average passenger-car speed, S	69.3	mi/h
Number of lanes, N	2	
Density, D	20.8	pc/mi/ln
Level of service, LOS	C	

Phone: Fax:
E-mail:

-----Operational Analysis-----

Analyst:
Agency or Company: Stantec
Date Performed: 11/9/2016
Analysis Time Period: 8:00AM -9:00AM
Freeway/Direction: I-85 Southbound
From/To: NC 216 to US 29
Jurisdiction: SCDOT/NCDOT
Analysis Year: 2040 Build Conditions
Description:

-----Flow Inputs and Adjustments-----

Volume, V	1771	veh/h
Peak-hour factor, PHF	0.94	
Peak 15-min volume, v15	471	v
Trucks and buses	30	%
Recreational vehicles	0	%
Terrain type:	Rolling	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	2.5	
Recreational vehicle PCE, ER	2.0	
Heavy vehicle adjustment, fHV	0.690	
Driver population factor, fp	1.00	
Flow rate, vp	1366	pc/h/ln

-----Speed Inputs and Adjustments-----

Lane width	11.0	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	1.00	ramps/mi
Number of lanes, N	2	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	1.9	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	3.2	mi/h
Free-flow speed, FFS	70.3	mi/h

-----LOS and Performance Measures-----

Flow rate, vp	1366	pc/h/ln
Free-flow speed, FFS	70.3	mi/h
Average passenger-car speed, S	69.7	mi/h
Number of lanes, N	2	
Density, D	19.6	pc/mi/ln
Level of service, LOS	C	

Phone: Fax:
E-mail:

-----Operational Analysis-----

Analyst:
Agency or Company: Stantec
Date Performed: 11/9/2016
Analysis Time Period: 8:00AM -9:00AM
Freeway/Direction: I-85 Southbound
From/To: US 29 to Tribal Rd
Jurisdiction: SCDOT
Analysis Year: 2040 Build Conditions
Description:

-----Flow Inputs and Adjustments-----

Volume, V	1858	veh/h
Peak-hour factor, PHF	0.94	
Peak 15-min volume, v15	494	v
Trucks and buses	30	%
Recreational vehicles	0	%
Terrain type:	Rolling	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	2.5	
Recreational vehicle PCE, ER	2.0	
Heavy vehicle adjustment, fHV	0.690	
Driver population factor, fp	1.00	
Flow rate, vp	955	pc/h/ln

-----Speed Inputs and Adjustments-----

Lane width	11.7	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	1.50	ramps/mi
Number of lanes, N	3	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	1.9	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	4.5	mi/h
Free-flow speed, FFS	69.0	mi/h

-----LOS and Performance Measures-----

Flow rate, vp	955	pc/h/ln
Free-flow speed, FFS	69.0	mi/h
Average passenger-car speed, S	70.0	mi/h
Number of lanes, N	3	
Density, D	13.6	pc/mi/ln
Level of service, LOS	B	

Phone: Fax:
E-mail:

-----Operational Analysis-----

Analyst:
Agency or Company: Stantec
Date Performed: 11/9/2016
Analysis Time Period: 2:00PM-3:00PM
Freeway/Direction: I-85 Northbound
From/To: Tribal Road to US 29
Jurisdiction: SCDOT
Analysis Year: 2040 Build Conditions
Description:

-----Flow Inputs and Adjustments-----

Volume, V	3051	veh/h
Peak-hour factor, PHF	0.94	
Peak 15-min volume, v15	811	v
Trucks and buses	30	%
Recreational vehicles	0	%
Terrain type:	Rolling	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	2.5	
Recreational vehicle PCE, ER	2.0	
Heavy vehicle adjustment, fHV	0.690	
Driver population factor, fp	1.00	
Flow rate, vp	1569	pc/h/ln

-----Speed Inputs and Adjustments-----

Lane width	11.2	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	0.83	ramps/mi
Number of lanes, N	3	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	1.9	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	2.8	mi/h
Free-flow speed, FFS	70.7	mi/h

-----LOS and Performance Measures-----

Flow rate, vp	1569	pc/h/ln
Free-flow speed, FFS	70.7	mi/h
Average passenger-car speed, S	68.4	mi/h
Number of lanes, N	3	
Density, D	22.9	pc/mi/ln
Level of service, LOS	C	

Phone: Fax:
E-mail:

-----Operational Analysis-----

Analyst:
Agency or Company: Stantec
Date Performed: 11/9/2016
Analysis Time Period: 2:00PM-3:00PM
Freeway/Direction: I-85 Northbound
From/To: US 29 to NC 216
Jurisdiction: SCDOT/NCDOT
Analysis Year: 2040 Build Conditions
Description:

-----Flow Inputs and Adjustments-----

Volume, V	3054	veh/h
Peak-hour factor, PHF	0.94	
Peak 15-min volume, v15	812	v
Trucks and buses	30	%
Recreational vehicles	0	%
Terrain type:	Rolling	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	2.5	
Recreational vehicle PCE, ER	2.0	
Heavy vehicle adjustment, fHV	0.690	
Driver population factor, fp	1.00	
Flow rate, vp	2355	pc/h/ln

-----Speed Inputs and Adjustments-----

Lane width	11.3	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	1.50	ramps/mi
Number of lanes, N	2	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	1.9	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	4.5	mi/h
Free-flow speed, FFS	69.0	mi/h

-----LOS and Performance Measures-----

Flow rate, vp	2355	pc/h/ln
Free-flow speed, FFS	69.0	mi/h
Average passenger-car speed, S	54.5	mi/h
Number of lanes, N	2	
Density, D	43.2	pc/mi/ln
Level of service, LOS	E	

Phone: Fax:
 E-mail:

-----Operational Analysis-----

Analyst:
 Agency or Company: Stantec
 Date Performed: 11/9/2016
 Analysis Time Period: 2:00PM-3:00PM
 Freeway/Direction: I-85 Southbound
 From/To: NC 216 to US 29
 Jurisdiction: SCDOT/NCDOT
 Analysis Year: 2040 Build Conditions
 Description:

-----Flow Inputs and Adjustments-----

Volume, V	3114	veh/h
Peak-hour factor, PHF	0.94	
Peak 15-min volume, v15	828	v
Trucks and buses	30	%
Recreational vehicles	0	%
Terrain type:	Rolling	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	2.5	
Recreational vehicle PCE, ER	2.0	
Heavy vehicle adjustment, fHV	0.690	
Driver population factor, fp	1.00	
Flow rate, vp	2402	pc/h/ln

-----Speed Inputs and Adjustments-----

Lane width	11.0	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	1.00	ramps/mi
Number of lanes, N	2	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	1.9	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	3.2	mi/h
Free-flow speed, FFS	70.3	mi/h

-----LOS and Performance Measures-----

Flow rate, vp	2402	pc/h/ln
Free-flow speed, FFS	70.3	mi/h
Average passenger-car speed, S	53.2	mi/h
Number of lanes, N	2	
Density, D	45.1	pc/mi/ln
Level of service, LOS	F	

Phone: _____ Fax: _____
 E-mail: _____

-----Operational Analysis-----

Analyst:
 Agency or Company: Stantec
 Date Performed: 11/9/2016
 Analysis Time Period: 2:00PM-3:00PM
 Freeway/Direction: I-85 Southbound
 From/To: US 29 to Tribal Rd
 Jurisdiction: SCDOT
 Analysis Year: 2040 Build Conditions
 Description:

-----Flow Inputs and Adjustments-----

Volume, V	3090	veh/h
Peak-hour factor, PHF	0.94	
Peak 15-min volume, v15	822	v
Trucks and buses	30	%
Recreational vehicles	0	%
Terrain type:	Rolling	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	2.5	
Recreational vehicle PCE, ER	2.0	
Heavy vehicle adjustment, fHV	0.690	
Driver population factor, fp	1.00	
Flow rate, vp	1589	pc/h/ln

-----Speed Inputs and Adjustments-----

Lane width	11.7	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	1.50	ramps/mi
Number of lanes, N	3	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	1.9	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	4.5	mi/h
Free-flow speed, FFS	69.0	mi/h

-----LOS and Performance Measures-----

Flow rate, vp	1589	pc/h/ln
Free-flow speed, FFS	69.0	mi/h
Average passenger-car speed, S	68.2	mi/h
Number of lanes, N	3	
Density, D	23.3	pc/mi/ln
Level of service, LOS	C	

APPENDIX B

RAMP MERGE/DIVERGE HCS ANALYSIS

**2015 EXISTING CONDITIONS
RAMP MERGE AREAS - HCS ANALYSIS**

Phone: _____ Fax: _____
 E-mail: _____

----- Merge Analysis -----

Analyst:
 Agency/Co.: Stantec
 Date performed: 11/9/2016
 Analysis time period: 8:00AM-9:00AM
 Freeway/Dir of Travel: I-85 Northbound
 Junction: US 29 On Ramp to I-85 NB
 Jurisdiction: SCDOT
 Analysis Year: 2015 Existing Conditions
 Description:

----- Freeway Data -----

Type of analysis	Merge		
Number of lanes in freeway	2		
Free-flow speed on freeway	70.7	mph	
Volume on freeway	1237	vph	

----- On Ramp Data -----

Side of freeway	Right		
Number of lanes in ramp	1		
Free-flow speed on ramp	35.0	mph	
Volume on ramp	88	vph	
Length of first accel/decel lane	580	ft	
Length of second accel/decel lane		ft	

----- Adjacent Ramp Data (if one exists) -----

Does adjacent ramp exist?	Yes		
Volume on adjacent Ramp	47	vph	
Position of adjacent Ramp	Upstream		
Type of adjacent Ramp	Off		
Distance to adjacent Ramp	745	ft	

----- Conversion to pc/h Under Base Conditions -----

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	1237	88	47	vph
Peak-hour factor, PHF	0.94	0.94	0.94	
Peak 15-min volume, v15	329	23	13	v
Trucks and buses	30	0	0	%
Recreational vehicles	0	0	0	%
Terrain type:	Rolling	Level	Level	
Grade	%		%	%
Length	mi		mi	mi
Trucks and buses PCE, ET	2.5	1.5	1.5	
Recreational vehicle PCE, ER	2.0	1.2	1.2	

Heavy vehicle adjustment, fHV	0.690	1.000	1.000	
Driver population factor, fP	1.00	1.00	1.00	
Flow rate, vp	1908	94	50	pcph

----- Estimation of V12 Merge Areas -----

L = (Equation 13-6 or 13-7)

EQ

P = 1.000 Using Equation 0

FM

v = v (P) = 1908 pc/h

12 F FM

----- Capacity Checks -----

	Actual	Maximum	LOS F?
v	2002	4800	No
FO			
v or v	0 pc/h	(Equation 13-14 or 13-17)	
3 av34			
Is v or v	> 2700 pc/h?	No	
3 av34			
Is v or v	> 1.5 v /2	No	
3 av34	12		
If yes, v	= 1908	(Equation 13-15, 13-16, 13-18, or 13-19)	
12A			

----- Flow Entering Merge Influence Area -----

	Actual	Max Desirable	Violation?
v	2002	4600	No
R12			

----- Level of Service Determination (if not F) -----

Density, D = 5.475 + 0.00734 v + 0.0078 v - 0.00627 L = 17.4 pc/mi/ln

R R 12 A B

Level of service for ramp-freeway junction areas of influence B

----- Speed Estimation -----

Intermediate speed variable,	M = 0.309	
	S	
Space mean speed in ramp influence area,	S = 61.8	mph
	R	
Space mean speed in outer lanes,	S = N/A	mph
	0	
Space mean speed for all vehicles,	S = 61.8	mph

Phone: _____ Fax: _____
 E-mail: _____

----- Merge Analysis -----

Analyst:
 Agency/Co.: Stantec
 Date performed: 11/9/2016
 Analysis time period: 8:00AM-9:00AM
 Freeway/Dir of Travel: I-85 Southbound
 Junction: US 29 On Ramp to I-85 SB
 Jurisdiction: SCDOT
 Analysis Year: 2015 Existing Conditions
 Description:

----- Freeway Data -----

Type of analysis	Merge		
Number of lanes in freeway	2		
Free-flow speed on freeway	70.3	mph	
Volume on freeway	1133	vph	

----- On Ramp Data -----

Side of freeway	Right		
Number of lanes in ramp	1		
Free-flow speed on ramp	35.0	mph	
Volume on ramp	125	vph	
Length of first accel/decel lane	1500	ft	
Length of second accel/decel lane		ft	

----- Adjacent Ramp Data (if one exists) -----

Does adjacent ramp exist?	Yes		
Volume on adjacent Ramp	56	vph	
Position of adjacent Ramp	Upstream		
Type of adjacent Ramp	Off		
Distance to adjacent Ramp	2738	ft	

----- Conversion to pc/h Under Base Conditions -----

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	1133	125	56	vph
Peak-hour factor, PHF	0.94	0.94	0.94	
Peak 15-min volume, v15	301	33	15	v
Trucks and buses	30	0	0	%
Recreational vehicles	0	0	0	%
Terrain type:	Rolling	Level	Level	
Grade	%		%	%
Length	mi		mi	mi
Trucks and buses PCE, ET	2.5	1.5	1.5	
Recreational vehicle PCE, ER	2.0	1.2	1.2	

Heavy vehicle adjustment, fHV	0.690	1.000	1.000	
Driver population factor, fP	1.00	1.00	1.00	
Flow rate, vp	1748	133	60	pcph

----- Estimation of V12 Merge Areas -----

L = (Equation 13-6 or 13-7)

EQ

P = 1.000 Using Equation 0

FM

v = v (P) = 1748 pc/h

12 F FM

----- Capacity Checks -----

	Actual	Maximum	LOS F?
v	1881	4800	No
FO			
v or v	0 pc/h	(Equation 13-14 or 13-17)	
3 av34			
Is v or v	> 2700 pc/h?	No	
3 av34			
Is v or v	> 1.5 v /2	No	
3 av34	12		
If yes, v	= 1748	(Equation 13-15, 13-16, 13-18, or 13-19)	
12A			

----- Flow Entering Merge Influence Area -----

	Actual	Max Desirable	Violation?
v	1881	4600	No
R12			

----- Level of Service Determination (if not F) -----

Density, D = 5.475 + 0.00734 v + 0.0078 v - 0.00627 L = 10.7 pc/mi/ln

R R 12 A

Level of service for ramp-freeway junction areas of influence B

----- Speed Estimation -----

Intermediate speed variable,	M = 0.242	
	S	
Space mean speed in ramp influence area,	S = 63.5	mph
	R	
Space mean speed in outer lanes,	S = N/A	mph
	0	
Space mean speed for all vehicles,	S = 63.5	mph

Phone: _____ Fax: _____
 E-mail: _____

----- Merge Analysis -----

Analyst:
 Agency/Co.: Stantec
 Date performed: 11/10/2016
 Analysis time period: 2:00PM-3:00PM
 Freeway/Dir of Travel: I-85 Northbound
 Junction: US 29 On Ramp to I-85 NB
 Jurisdiction: SCDOT
 Analysis Year: 2015 Existing Conditions
 Description:

----- Freeway Data -----

Type of analysis	Merge		
Number of lanes in freeway	2		
Free-flow speed on freeway	70.7	mph	
Volume on freeway	2015	vph	

----- On Ramp Data -----

Side of freeway	Right		
Number of lanes in ramp	1		
Free-flow speed on ramp	35.0	mph	
Volume on ramp	88	vph	
Length of first accel/decel lane	580	ft	
Length of second accel/decel lane		ft	

----- Adjacent Ramp Data (if one exists) -----

Does adjacent ramp exist?	Yes		
Volume on adjacent Ramp	86	vph	
Position of adjacent Ramp	Upstream		
Type of adjacent Ramp	Off		
Distance to adjacent Ramp	745	ft	

----- Conversion to pc/h Under Base Conditions -----

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	2015	88	86	vph
Peak-hour factor, PHF	0.94	0.94	0.94	
Peak 15-min volume, v15	536	23	23	v
Trucks and buses	30	0	0	%
Recreational vehicles	0	0	0	%
Terrain type:	Rolling	Level	Level	
Grade	%		%	%
Length	mi		mi	mi
Trucks and buses PCE, ET	2.5	1.5	1.5	
Recreational vehicle PCE, ER	2.0	1.2	1.2	

Heavy vehicle adjustment, fHV	0.690	1.000	1.000	
Driver population factor, fP	1.00	1.00	1.00	
Flow rate, vp	3108	94	91	pcph

----- Estimation of V12 Merge Areas -----

L = (Equation 13-6 or 13-7)

EQ

P = 1.000 Using Equation 0

FM

v = v (P) = 3108 pc/h

12 F FM

----- Capacity Checks -----

	Actual	Maximum	LOS F?
v	3202	4800	No
FO			
v or v	0 pc/h	(Equation 13-14 or 13-17)	
3 av34			
Is v or v	> 2700 pc/h?	No	
3 av34			
Is v or v	> 1.5 v /2	No	
3 av34	12		
If yes, v	= 3108	(Equation 13-15, 13-16, 13-18, or 13-19)	
12A			

----- Flow Entering Merge Influence Area -----

	Actual	Max Desirable	Violation?
v	3202	4600	No
R12			

----- Level of Service Determination (if not F) -----

Density, D = 5.475 + 0.00734 v + 0.0078 v - 0.00627 L = 26.8 pc/mi/ln

R R 12 A C

Level of service for ramp-freeway junction areas of influence C

----- Speed Estimation -----

Intermediate speed variable,	M = 0.376	
	S	
Space mean speed in ramp influence area,	S = 59.9	mph
	R	
Space mean speed in outer lanes,	S = N/A	mph
	0	
Space mean speed for all vehicles,	S = 59.9	mph

Phone: Fax:
E-mail:

----- Merge Analysis -----

Analyst:
Agency/Co.: Stantec
Date performed: 11/10/2016
Analysis time period: 2:00PM-3:00PM
Freeway/Dir of Travel: I-85 Southbound
Junction: US 29 On Ramp to I-85 SB
Jurisdiction: SCDOT
Analysis Year: 2015 Existing Conditions
Description:

----- Freeway Data -----

Type of analysis	Merge		
Number of lanes in freeway	2		
Free-flow speed on freeway	70.3	mph	
Volume on freeway	2033	vph	

----- On Ramp Data -----

Side of freeway	Right		
Number of lanes in ramp	1		
Free-flow speed on ramp	35.0	mph	
Volume on ramp	122	vph	
Length of first accel/decel lane	1500	ft	
Length of second accel/decel lane		ft	

----- Adjacent Ramp Data (if one exists) -----

Does adjacent ramp exist?	Yes		
Volume on adjacent Ramp	141	vph	
Position of adjacent Ramp	Upstream		
Type of adjacent Ramp	Off		
Distance to adjacent Ramp	2738	ft	

----- Conversion to pc/h Under Base Conditions -----

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	2033	122	141	vph
Peak-hour factor, PHF	0.94	0.94	0.94	
Peak 15-min volume, v15	541	32	38	v
Trucks and buses	30	0	0	%
Recreational vehicles	0	0	0	%
Terrain type:	Rolling	Level	Level	
Grade	%		%	%
Length	mi		mi	mi
Trucks and buses PCE, ET	2.5	1.5	1.5	
Recreational vehicle PCE, ER	2.0	1.2	1.2	

Heavy vehicle adjustment, fHV	0.690	1.000	1.000	
Driver population factor, fP	1.00	1.00	1.00	
Flow rate, vp	3136	130	150	pcph

----- Estimation of V12 Merge Areas -----

L = (Equation 13-6 or 13-7)

EQ

P = 1.000 Using Equation 0

FM

v = v (P) = 3136 pc/h

12 F FM

----- Capacity Checks -----

	Actual	Maximum	LOS F?
v	3266	4800	No
FO			
v or v	0 pc/h	(Equation 13-14 or 13-17)	
3 av34			
Is v or v	> 2700 pc/h?	No	
3 av34			
Is v or v	> 1.5 v /2	No	
3 av34	12		
If yes, v	= 3136	(Equation 13-15, 13-16, 13-18, or 13-19)	
12A			

----- Flow Entering Merge Influence Area -----

	Actual	Max Desirable	Violation?
v	3266	4600	No
R12			

----- Level of Service Determination (if not F) -----

Density, D = 5.475 + 0.00734 v + 0.0078 v - 0.00627 L = 21.5 pc/mi/ln

R R 12 A C

Level of service for ramp-freeway junction areas of influence C

----- Speed Estimation -----

Intermediate speed variable,	M = 0.318	
	S	
Space mean speed in ramp influence area,	S = 61.3	mph
	R	
Space mean speed in outer lanes,	S = N/A	mph
	0	
Space mean speed for all vehicles,	S = 61.3	mph



**2040 NO BUILD CONDITIONS
RAMP MERGE AREAS - HCS ANALYSIS**

Phone: Fax:
E-mail:

----- Merge Analysis -----

Analyst:
Agency/Co.: Stantec
Date performed: 11/9/2016
Analysis time period: 8:00AM-9:00AM
Freeway/Dir of Travel: I-85 Northbound
Junction: US 29 On Ramp to I-85 NB
Jurisdiction: SCDOT
Analysis Year: 2015 Existing Conditions
Description:

----- Freeway Data -----

Type of analysis	Merge		
Number of lanes in freeway	2		
Free-flow speed on freeway	70.7	mph	
Volume on freeway	1758	vph	

----- On Ramp Data -----

Side of freeway	Right		
Number of lanes in ramp	1		
Free-flow speed on ramp	35.0	mph	
Volume on ramp	113	vph	
Length of first accel/decel lane	580	ft	
Length of second accel/decel lane		ft	

----- Adjacent Ramp Data (if one exists) -----

Does adjacent ramp exist?	Yes		
Volume on adjacent Ramp	61	vph	
Position of adjacent Ramp	Upstream		
Type of adjacent Ramp	Off		
Distance to adjacent Ramp	745	ft	

----- Conversion to pc/h Under Base Conditions -----

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	1758	113	61	vph
Peak-hour factor, PHF	0.94	0.94	0.94	
Peak 15-min volume, v15	468	30	16	v
Trucks and buses	30	0	0	%
Recreational vehicles	0	0	0	%
Terrain type:	Rolling	Level	Level	
Grade	%		%	%
Length	mi		mi	mi
Trucks and buses PCE, ET	2.5	1.5	1.5	
Recreational vehicle PCE, ER	2.0	1.2	1.2	

Heavy vehicle adjustment, fHV	0.690	1.000	1.000	
Driver population factor, fP	1.00	1.00	1.00	
Flow rate, vp	2712	120	65	pcph

----- Estimation of V12 Merge Areas -----

L = (Equation 13-6 or 13-7)

EQ

P = 1.000 Using Equation 0

FM

v = v (P) = 2712 pc/h

12 F FM

----- Capacity Checks -----

	Actual	Maximum	LOS F?
v	2832	4800	No
FO			
v or v	0 pc/h	(Equation 13-14 or 13-17)	
3 av34			
Is v or v	> 2700 pc/h?	No	
3 av34			
Is v or v	> 1.5 v /2	No	
3 av34	12		
If yes, v	= 2712	(Equation 13-15, 13-16, 13-18, or 13-19)	
12A			

----- Flow Entering Merge Influence Area -----

	Actual	Max Desirable	Violation?
v	2832	4600	No
R12			

----- Level of Service Determination (if not F) -----

Density, D = 5.475 + 0.00734 v + 0.0078 v - 0.00627 L = 23.9 pc/mi/ln

R R 12 A C

Level of service for ramp-freeway junction areas of influence C

----- Speed Estimation -----

Intermediate speed variable,	M = 0.347	
	S	
Space mean speed in ramp influence area,	S = 60.8	mph
	R	
Space mean speed in outer lanes,	S = N/A	mph
	0	
Space mean speed for all vehicles,	S = 60.8	mph

Phone: _____ Fax: _____
 E-mail: _____

----- Merge Analysis -----

Analyst:
 Agency/Co.: Stantec
 Date performed: 11/9/2016
 Analysis time period: 8:00AM-9:00AM
 Freeway/Dir of Travel: I-85 Southbound
 Junction: US 29 On Ramp to I-85 SB
 Jurisdiction: SCDOT
 Analysis Year: 2040 No Build Conditions
 Description:

----- Freeway Data -----

Type of analysis	Merge		
Number of lanes in freeway	2		
Free-flow speed on freeway	70.3	mph	
Volume on freeway	1699	vph	

----- On Ramp Data -----

Side of freeway	Right		
Number of lanes in ramp	1		
Free-flow speed on ramp	35.0	mph	
Volume on ramp	159	vph	
Length of first accel/decel lane	1500	ft	
Length of second accel/decel lane		ft	

----- Adjacent Ramp Data (if one exists) -----

Does adjacent ramp exist?	Yes		
Volume on adjacent Ramp	72	vph	
Position of adjacent Ramp	Upstream		
Type of adjacent Ramp	Off		
Distance to adjacent Ramp	2738	ft	

----- Conversion to pc/h Under Base Conditions -----

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	1699	159	72	vph
Peak-hour factor, PHF	0.94	0.94	0.94	
Peak 15-min volume, v15	452	42	19	v
Trucks and buses	30	0	0	%
Recreational vehicles	0	0	0	%
Terrain type:	Rolling	Level	Level	
Grade	%		%	%
Length	mi		mi	mi
Trucks and buses PCE, ET	2.5	1.5	1.5	
Recreational vehicle PCE, ER	2.0	1.2	1.2	

Heavy vehicle adjustment, fHV	0.690	1.000	1.000	
Driver population factor, fP	1.00	1.00	1.00	
Flow rate, vp	2621	169	77	pcph

----- Estimation of V12 Merge Areas -----

L = (Equation 13-6 or 13-7)

EQ

P = 1.000 Using Equation 0

FM

v = v (P) = 2621 pc/h

12 F FM

----- Capacity Checks -----

	Actual	Maximum	LOS F?
v	2790	4800	No
FO			
v or v	0 pc/h	(Equation 13-14 or 13-17)	
3 av34			
Is v or v	> 2700 pc/h?	No	
3 av34			
Is v or v	> 1.5 v /2	No	
3 av34	12		
If yes, v	= 2621	(Equation 13-15, 13-16, 13-18, or 13-19)	
12A			

----- Flow Entering Merge Influence Area -----

	Actual	Max Desirable	Violation?
v	2790	4600	No
R12			

----- Level of Service Determination (if not F) -----

Density, D = 5.475 + 0.00734 v + 0.0078 v - 0.00627 L = 17.8 pc/mi/ln

R R 12 A B

Level of service for ramp-freeway junction areas of influence B

----- Speed Estimation -----

Intermediate speed variable,	M = 0.279	
	S	
Space mean speed in ramp influence area,	S = 62.4	mph
	R	
Space mean speed in outer lanes,	S = N/A	mph
	0	
Space mean speed for all vehicles,	S = 62.4	mph

Phone: Fax:
E-mail:

----- Merge Analysis -----

Analyst:
Agency/Co.: Stantec
Date performed: 11/10/2016
Analysis time period: 2:00PM-3:00PM
Freeway/Dir of Travel: I-85 Northbound
Junction: US 29 On Ramp to I-85 NB
Jurisdiction: SCDOT
Analysis Year: 2040 No Build Conditions
Description:

----- Freeway Data -----

Type of analysis	Merge		
Number of lanes in freeway	2		
Free-flow speed on freeway	70.7	mph	
Volume on freeway	2941	vph	

----- On Ramp Data -----

Side of freeway	Right		
Number of lanes in ramp	1		
Free-flow speed on ramp	35.0	mph	
Volume on ramp	113	vph	
Length of first accel/decel lane	580	ft	
Length of second accel/decel lane		ft	

----- Adjacent Ramp Data (if one exists) -----

Does adjacent ramp exist?	Yes		
Volume on adjacent Ramp	110	vph	
Position of adjacent Ramp	Upstream		
Type of adjacent Ramp	Off		
Distance to adjacent Ramp	745	ft	

----- Conversion to pc/h Under Base Conditions -----

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	2941	113	110	vph
Peak-hour factor, PHF	0.94	0.94	0.94	
Peak 15-min volume, v15	782	30	29	v
Trucks and buses	30	0	0	%
Recreational vehicles	0	0	0	%
Terrain type:	Rolling	Level	Level	
Grade	%		%	%
Length	mi		mi	mi
Trucks and buses PCE, ET	2.5	1.5	1.5	
Recreational vehicle PCE, ER	2.0	1.2	1.2	

Heavy vehicle adjustment, fHV	0.690	1.000	1.000	
Driver population factor, fP	1.00	1.00	1.00	
Flow rate, vp	4537	120	117	pcph

----- Estimation of V12 Merge Areas -----

L = (Equation 13-6 or 13-7)

EQ

P = 1.000 Using Equation 0

FM

v = v (P) = 4537 pc/h

12 F FM

----- Capacity Checks -----

	Actual	Maximum	LOS F?
v	4657	4800	No
FO			
v or v	0 pc/h	(Equation 13-14 or 13-17)	
3 av34			
Is v or v	> 2700 pc/h?	No	
3 av34			
Is v or v	> 1.5 v /2	No	
3 av34	12		
If yes, v	= 4537	(Equation 13-15, 13-16, 13-18, or 13-19)	
12A			

----- Flow Entering Merge Influence Area -----

	Actual	Max Desirable	Violation?
v	4657	4600	Yes
R12			

----- Level of Service Determination (if not F) -----

Density, D = 5.475 + 0.00734 v + 0.0078 v - 0.00627 L = 38.1 pc/mi/ln

R R 12 A E

Level of service for ramp-freeway junction areas of influence E

----- Speed Estimation -----

Intermediate speed variable,	M = 0.691	
	S	
Space mean speed in ramp influence area,	S = 50.9	mph
	R	
Space mean speed in outer lanes,	S = N/A	mph
	0	
Space mean speed for all vehicles,	S = 50.9	mph

Phone: _____ Fax: _____
 E-mail: _____

----- Merge Analysis -----

Analyst:
 Agency/Co.: Stantec
 Date performed: 11/10/2016
 Analysis time period: 2:00PM-3:00PM
 Freeway/Dir of Travel: I-85 Southbound
 Junction: US 29 On Ramp to I-85 SB
 Jurisdiction: SCDOT
 Analysis Year: 2040 No Build Conditions
 Description:

----- Freeway Data -----

Type of analysis	Merge		
Number of lanes in freeway	2		
Free-flow speed on freeway	70.3	mph	
Volume on freeway	2933	vph	

----- On Ramp Data -----

Side of freeway	Right		
Number of lanes in ramp	1		
Free-flow speed on ramp	35.0	mph	
Volume on ramp	157	vph	
Length of first accel/decel lane	1500	ft	
Length of second accel/decel lane		ft	

----- Adjacent Ramp Data (if one exists) -----

Does adjacent ramp exist?	Yes		
Volume on adjacent Ramp	181	vph	
Position of adjacent Ramp	Upstream		
Type of adjacent Ramp	Off		
Distance to adjacent Ramp	2738	ft	

----- Conversion to pc/h Under Base Conditions -----

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	2933	157	181	vph
Peak-hour factor, PHF	0.94	0.94	0.94	
Peak 15-min volume, v15	780	42	48	v
Trucks and buses	30	0	0	%
Recreational vehicles	0	0	0	%
Terrain type:	Rolling	Level	Level	
Grade	%		%	%
Length	mi		mi	mi
Trucks and buses PCE, ET	2.5	1.5	1.5	
Recreational vehicle PCE, ER	2.0	1.2	1.2	

Heavy vehicle adjustment, fHV	0.690	1.000	1.000	
Driver population factor, fP	1.00	1.00	1.00	
Flow rate, vp	4524	167	193	pcph

----- Estimation of V12 Merge Areas -----

L = (Equation 13-6 or 13-7)

EQ

P = 1.000 Using Equation 0

FM

v = v (P) = 4524 pc/h

12 F FM

----- Capacity Checks -----

	Actual	Maximum	LOS F?
v	4691	4800	No
FO			
v or v	0 pc/h	(Equation 13-14 or 13-17)	
3 av34			
Is v or v	> 2700 pc/h?	No	
3 av34			
Is v or v	> 1.5 v /2	No	
3 av34	12		
If yes, v	= 4524	(Equation 13-15, 13-16, 13-18, or 13-19)	
12A			

----- Flow Entering Merge Influence Area -----

	Actual	Max Desirable	Violation?
v	4691	4600	Yes
R12			

----- Level of Service Determination (if not F) -----

Density, D = 5.475 + 0.00734 v + 0.0078 v - 0.00627 L = 32.6 pc/mi/ln

R R 12 A

Level of service for ramp-freeway junction areas of influence D

----- Speed Estimation -----

Intermediate speed variable,	M = 0.641	
	S	
Space mean speed in ramp influence area,	S = 52.2	mph
	R	
Space mean speed in outer lanes,	S = N/A	mph
	0	
Space mean speed for all vehicles,	S = 52.2	mph

**2040 BUILD CONDITIONS
RAMP MERGE AREAS - HCS ANALYSIS**

Phone: _____ Fax: _____
 E-mail: _____

----- Merge Analysis -----

Analyst:
 Agency/Co.: Stantec
 Date performed: 05/02/17
 Analysis time period: 8:00AM-9:00AM
 Freeway/Dir of Travel: I-85 Northbound
 Junction: US 29 On-Ramp to I-85 NB
 Jurisdiction: SCDOT
 Analysis Year: 2040 Build Conditions
 Description:

----- Freeway Data -----

Type of analysis	Merge		
Number of lanes in freeway	2		
Free-flow speed on freeway	70.7	mph	
Volume on freeway	1758	vph	

----- On Ramp Data -----

Side of freeway	Right		
Number of lanes in ramp	1		
Free-flow speed on ramp	35.0	mph	
Volume on ramp	113	vph	
Length of first accel/decel lane	900	ft	
Length of second accel/decel lane		ft	

----- Adjacent Ramp Data (if one exists) -----

Does adjacent ramp exist?	Yes		
Volume on adjacent Ramp	61	vph	
Position of adjacent Ramp	Upstream		
Type of adjacent Ramp	Off		
Distance to adjacent Ramp	745	ft	

----- Conversion to pc/h Under Base Conditions -----

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	1758	113	61	vph
Peak-hour factor, PHF	0.94	0.94	0.94	
Peak 15-min volume, v15	468	30	16	v
Trucks and buses	30	0	0	%
Recreational vehicles	0	0	0	%
Terrain type:	Rolling	Level	Level	
Grade	%		%	%
Length	mi		mi	mi
Trucks and buses PCE, ET	2.5	1.5	1.5	
Recreational vehicle PCE, ER	2.0	1.2	1.2	

Heavy vehicle adjustment, fHV	0.690	1.000	1.000	
Driver population factor, fP	1.00	1.00	1.00	
Flow rate, vp	2712	120	65	pcph

----- Estimation of V12 Merge Areas -----

L = (Equation 13-6 or 13-7)

EQ

P = 1.000 Using Equation 0

FM

v = v (P) = 2712 pc/h

12 F FM

----- Capacity Checks -----

	Actual	Maximum	LOS F?
v	2832	4800	No
FO			
v or v	0 pc/h	(Equation 13-14 or 13-17)	
3 av34			
Is v or v	> 2700 pc/h?	No	
3 av34			
Is v or v	> 1.5 v /2	No	
3 av34	12		
If yes, v	= 2712	(Equation 13-15, 13-16, 13-18, or 13-19)	
12A			

----- Flow Entering Merge Influence Area -----

	Actual	Max Desirable	Violation?
v	2832	4600	No
R12			

----- Level of Service Determination (if not F) -----

Density, D = 5.475 + 0.00734 v + 0.0078 v - 0.00627 L = 21.9 pc/mi/ln

R R 12 A C

Level of service for ramp-freeway junction areas of influence C

----- Speed Estimation -----

Intermediate speed variable,	M = 0.324	
	S	
Space mean speed in ramp influence area,	S = 61.4	mph
	R	
Space mean speed in outer lanes,	S = N/A	mph
	0	
Space mean speed for all vehicles,	S = 61.4	mph

Phone: Fax:
E-mail:

-----Merge Analysis-----

Analyst:
Agency/Co.: Stantec
Date performed: 05/02/17
Analysis time period: 8:00AM-9:00AM
Freeway/Dir of Travel: I-85 Southbound
Junction: US 29 On-Ramp to I-85 SB
Jurisdiction: SCDOT
Analysis Year: 2040 Build Conditions
Description:

-----Freeway Data-----

Type of analysis	Merge		
Number of lanes in freeway	3		
Free-flow speed on freeway	70.3	mph	
Volume on freeway	1699	vph	

-----On Ramp Data-----

Side of freeway	Right		
Number of lanes in ramp	1		
Free-flow speed on ramp	35.0	mph	
Volume on ramp	159	vph	
Length of first accel/decel lane	900	ft	
Length of second accel/decel lane		ft	

-----Adjacent Ramp Data (if one exists)-----

Does adjacent ramp exist?	Yes		
Volume on adjacent Ramp	72	vph	
Position of adjacent Ramp	Upstream		
Type of adjacent Ramp	Off		
Distance to adjacent Ramp	2738	ft	

-----Conversion to pc/h Under Base Conditions-----

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	1699	159	72	vph
Peak-hour factor, PHF	0.94	0.94	0.94	
Peak 15-min volume, v15	452	42	19	v
Trucks and buses	30	0	0	%
Recreational vehicles	0	0	0	%
Terrain type:	Rolling	Level	Level	
Grade	%		%	%
Length	mi		mi	mi
Trucks and buses PCE, ET	2.5	1.5	1.5	
Recreational vehicle PCE, ER	2.0	1.2	1.2	

Heavy vehicle adjustment, fHV	0.690	1.000	1.000	
Driver population factor, fP	1.00	1.00	1.00	
Flow rate, vp	2621	169	77	pcph

----- Estimation of V12 Merge Areas -----

L = 424.86 (Equation 13-6 or 13-7)

EQ

P = 0.603 Using Equation 1

FM

$v_{12} = v_{F, FM} = 1580$ pc/h

12 F FM

----- Capacity Checks -----

	Actual	Maximum	LOS F?
v _{FO}	2790	7200	No
v ₃ or v _{av34}	1041 pc/h	(Equation 13-14 or 13-17)	
Is v ₃ or v _{av34} > 2700 pc/h?		No	
Is v ₃ or v _{av34} > 1.5 v ₁₂ / 2		Yes	
If yes, v _{12A} = 1580		(Equation 13-15, 13-16, 13-18, or 13-19)	

----- Flow Entering Merge Influence Area -----

	Actual	Max Desirable	Violation?
v _{12A}	1749	4600	No

----- Level of Service Determination (if not F) -----

Density, $D = 5.475 + 0.00734 v_R + 0.0078 v_{12} - 0.00627 L_A = 13.4$ pc/mi/ln
 Level of service for ramp-freeway junction areas of influence B

----- Speed Estimation -----

Intermediate speed variable,	M = 0.280	
Space mean speed in ramp influence area,	S _R = 62.4	mph
Space mean speed in outer lanes,	S ₀ = 68.4	mph
Space mean speed for all vehicles,	S = 64.5	mph

Phone: _____ Fax: _____
 E-mail: _____

----- Merge Analysis -----

Analyst:
 Agency/Co.: Stantec
 Date performed: 05/02/17
 Analysis time period: 2:00PM-3:00PM
 Freeway/Dir of Travel: I-85 Northbound
 Junction: US 29 On-Ramp to I-85 NB
 Jurisdiction: SCDOT
 Analysis Year: 2040 Build Conditions
 Description:

----- Freeway Data -----

Type of analysis	Merge		
Number of lanes in freeway	2		
Free-flow speed on freeway	70.7	mph	
Volume on freeway	2941	vph	

----- On Ramp Data -----

Side of freeway	Right		
Number of lanes in ramp	1		
Free-flow speed on ramp	35.0	mph	
Volume on ramp	113	vph	
Length of first accel/decel lane	900	ft	
Length of second accel/decel lane		ft	

----- Adjacent Ramp Data (if one exists) -----

Does adjacent ramp exist?	Yes		
Volume on adjacent Ramp	110	vph	
Position of adjacent Ramp	Upstream		
Type of adjacent Ramp	Off		
Distance to adjacent Ramp	745	ft	

----- Conversion to pc/h Under Base Conditions -----

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	2941	113	110	vph
Peak-hour factor, PHF	0.94	0.94	0.94	
Peak 15-min volume, v15	782	30	29	v
Trucks and buses	30	0	0	%
Recreational vehicles	0	0	0	%
Terrain type:	Rolling	Level	Level	
Grade	%		%	%
Length	mi		mi	mi
Trucks and buses PCE, ET	2.5	1.5	1.5	
Recreational vehicle PCE, ER	2.0	1.2	1.2	

Heavy vehicle adjustment, fHV	0.690	1.000	1.000	
Driver population factor, fP	1.00	1.00	1.00	
Flow rate, vp	4537	120	117	pcph

----- Estimation of V12 Merge Areas -----

L = (Equation 13-6 or 13-7)

EQ

P = 1.000 Using Equation 0

FM

v = v (P) = 4537 pc/h

12 F FM

----- Capacity Checks -----

	Actual	Maximum	LOS F?
v	4657	4800	No
FO			
v or v	0 pc/h	(Equation 13-14 or 13-17)	
3 av34			
Is v or v	> 2700 pc/h?	No	
3 av34			
Is v or v	> 1.5 v /2	No	
3 av34	12		
If yes, v	= 4537	(Equation 13-15, 13-16, 13-18, or 13-19)	
12A			

----- Flow Entering Merge Influence Area -----

	Actual	Max Desirable	Violation?
v	4657	4600	Yes
R12			

----- Level of Service Determination (if not F) -----

Density, D = 5.475 + 0.00734 v + 0.0078 v - 0.00627 L = 36.1 pc/mi/ln

R R 12 A E

Level of service for ramp-freeway junction areas of influence E

----- Speed Estimation -----

Intermediate speed variable,	M = 0.669	
	S	
Space mean speed in ramp influence area,	S = 51.5	mph
	R	
Space mean speed in outer lanes,	S = N/A	mph
	0	
Space mean speed for all vehicles,	S = 51.5	mph

Phone: _____ Fax: _____
 E-mail: _____

----- Merge Analysis -----

Analyst:
 Agency/Co.: Stantec
 Date performed: 05/02/17
 Analysis time period: 2:00PM-3:00PM
 Freeway/Dir of Travel: I-85 Southbound
 Junction: US 29 On-Ramp to I-85 SB
 Jurisdiction: SCDOT
 Analysis Year: 2040 Build Conditions
 Description:

----- Freeway Data -----

Type of analysis	Merge		
Number of lanes in freeway	3		
Free-flow speed on freeway	70.3	mph	
Volume on freeway	2933	vph	

----- On Ramp Data -----

Side of freeway	Right		
Number of lanes in ramp	1		
Free-flow speed on ramp	35.0	mph	
Volume on ramp	157	vph	
Length of first accel/decel lane	900	ft	
Length of second accel/decel lane		ft	

----- Adjacent Ramp Data (if one exists) -----

Does adjacent ramp exist?	Yes		
Volume on adjacent Ramp	181	vph	
Position of adjacent Ramp	Upstream		
Type of adjacent Ramp	Off		
Distance to adjacent Ramp	2738	ft	

----- Conversion to pc/h Under Base Conditions -----

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	2933	157	181	vph
Peak-hour factor, PHF	0.94	0.94	0.94	
Peak 15-min volume, v15	780	42	48	v
Trucks and buses	30	0	0	%
Recreational vehicles	0	0	0	%
Terrain type:	Rolling	Level	Level	
Grade	%		%	%
Length	mi		mi	mi
Trucks and buses PCE, ET	2.5	1.5	1.5	
Recreational vehicle PCE, ER	2.0	1.2	1.2	

Heavy vehicle adjustment, fHV	0.690	1.000	1.000	
Driver population factor, fP	1.00	1.00	1.00	
Flow rate, vp	4524	167	193	pcph

----- Estimation of V12 Merge Areas -----

L = 831.67 (Equation 13-6 or 13-7)

EQ

P = 0.603 Using Equation 1

FM

v = v (P) = 2727 pc/h

12 F FM

----- Capacity Checks -----

	Actual	Maximum	LOS F?
v	4691	7200	No
FO			
v or v	1797 pc/h	(Equation 13-14 or 13-17)	
3 av34			
Is v or v	> 2700 pc/h?	No	
3 av34			
Is v or v	> 1.5 v /2	Yes	
3 av34	12		
If yes, v	= 2727	(Equation 13-15, 13-16, 13-18, or 13-19)	
12A			

----- Flow Entering Merge Influence Area -----

	Actual	Max Desirable	Violation?
v	2894	4600	No
12A			

----- Level of Service Determination (if not F) -----

Density, D = 5.475 + 0.00734 v + 0.0078 v - 0.00627 L = 22.3 pc/mi/ln

R R 12 A C

Level of service for ramp-freeway junction areas of influence C

----- Speed Estimation -----

Intermediate speed variable,	M = 0.328	
	S	
Space mean speed in ramp influence area,	S = 61.0	mph
	R	
Space mean speed in outer lanes,	S = 65.6	mph
	0	
Space mean speed for all vehicles,	S = 62.7	mph

**2015 EXISTING CONDITIONS
RAMP DIVERGE AREAS - HCS ANALYSIS**

Phone: _____ Fax: _____
 E-mail: _____

-----Diverge Analysis-----

Analyst:
 Agency/Co.: Stantec
 Date performed: 11/9/2016
 Analysis time period: 8:00AM-9:00AM
 Freeway/Dir of Travel: I-85 Northbound
 Junction: I-85 NB Off Loop to US 29
 Jurisdiction: SCDOT
 Analysis Year: 2015 Existing Conditions
 Description:

-----Freeway Data-----

Type of analysis	Diverge		
Number of lanes in freeway	2		
Free-flow speed on freeway	70.7	mph	
Volume on freeway	1237	vph	

-----Off Ramp Data-----

Side of freeway	Right		
Number of lanes in ramp	1		
Free-Flow speed on ramp	35.0	mph	
Volume on ramp	47	vph	
Length of first accel/decel lane	260	ft	
Length of second accel/decel lane		ft	

-----Adjacent Ramp Data (if one exists)-----

Does adjacent ramp exist?	Yes		
Volume on adjacent ramp	88	vph	
Position of adjacent ramp	Downstream		
Type of adjacent ramp	On		
Distance to adjacent ramp	745	ft	

-----Conversion to pc/h Under Base Conditions-----

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	1237	47	88	vph
Peak-hour factor, PHF	0.94	0.94	0.94	
Peak 15-min volume, v15	329	13	23	v
Trucks and buses	30	0	0	%
Recreational vehicles	0	0	0	%
Terrain type:	Rolling	Level	Level	
Grade	0.00 %	0.00 %	0.00 %	
Length	0.00 mi	0.00 mi	0.00 mi	
Trucks and buses PCE, ET	2.5	1.5	1.5	
Recreational vehicle PCE, ER	2.0	1.2	1.2	

Heavy vehicle adjustment, fHV	0.690	1.000	1.000	
Driver population factor, fP	1.00	1.00	1.00	
Flow rate, vp	1908	50	94	pcph

----- Estimation of V12 Diverge Areas -----

L = (Equation 13-12 or 13-13)

EQ

P = 1.000 Using Equation 0

FD

$v_{12} = v_R + (v_F - v_R) P_{FD} = 1908 \text{ pc/h}$

----- Capacity Checks -----

	Actual	Maximum	LOS F?
$v_{12} = v_{12}$	1908	4800	No
$v_{FO} = v_F - v_R$	1858	4800	No
v_R	50	2000	No
$v_3 \text{ or } v_{av34}$	0 pc/h	(Equation 13-14 or 13-17)	
Is $v_3 \text{ or } v_{av34} > 2700 \text{ pc/h?}$		No	
Is $v_3 \text{ or } v_{av34} > 1.5 v_{12} / 2$		No	
If yes, $v_{12A} = 1908$		(Equation 13-15, 13-16, 13-18, or 13-19)	

----- Flow Entering Diverge Influence Area -----

	Actual	Max Desirable	Violation?
v_{12}	1908	4400	No

----- Level of Service Determination (if not F) -----

Density, $D = 4.252 + 0.0086 v_{12} - 0.009 L_D = 18.3 \text{ pc/mi/ln}$

Level of service for ramp-freeway junction areas of influence B

----- Speed Estimation -----

Intermediate speed variable,	D = 0.433	
Space mean speed in ramp influence area,	S _R = 58.3	mph
Space mean speed in outer lanes,	S ₀ = N/A	mph
Space mean speed for all vehicles,	S = 58.3	mph

Phone: _____ Fax: _____
 E-mail: _____

-----Diverge Analysis-----

Analyst:
 Agency/Co.: Stantec
 Date performed: 11/9/2016
 Analysis time period: 8:00AM-9:00AM
 Freeway/Dir of Travel: I-85 Southbound
 Junction: I-85 Off Ramp to US 29
 Jurisdiction: SCDOT
 Analysis Year: 2015 Existing Conditions
 Description:

-----Freeway Data-----

Type of analysis	Diverge		
Number of lanes in freeway	2		
Free-flow speed on freeway	70.3	mph	
Volume on freeway	1133	vph	

-----Off Ramp Data-----

Side of freeway	Right		
Number of lanes in ramp	1		
Free-Flow speed on ramp	35.0	mph	
Volume on ramp	56	vph	
Length of first accel/decel lane	228	ft	
Length of second accel/decel lane		ft	

-----Adjacent Ramp Data (if one exists)-----

Does adjacent ramp exist?	Yes		
Volume on adjacent ramp	125	vph	
Position of adjacent ramp	Downstream		
Type of adjacent ramp	On		
Distance to adjacent ramp	2738	ft	

-----Conversion to pc/h Under Base Conditions-----

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	1133	56	125	vph
Peak-hour factor, PHF	0.94	0.94	0.94	
Peak 15-min volume, v15	301	15	33	v
Trucks and buses	30	0	0	%
Recreational vehicles	0	0	0	%
Terrain type:	Rolling	Level	Level	
Grade	0.00 %	0.00 %	0.00 %	
Length	0.00 mi	0.00 mi	0.00 mi	
Trucks and buses PCE, ET	2.5	1.5	1.5	
Recreational vehicle PCE, ER	2.0	1.2	1.2	

Heavy vehicle adjustment, fHV	0.690	1.000	1.000	
Driver population factor, fP	1.00	1.00	1.00	
Flow rate, vp	1748	60	133	pcph

----- Estimation of V12 Diverge Areas -----

L = (Equation 13-12 or 13-13)

EQ

P = 1.000 Using Equation 0

FD

$v_{12} = v_R + (v_F - v_R) P = 1748$ pc/h
 12 R F R FD

----- Capacity Checks -----

	Actual	Maximum	LOS F?
$v = v_{12}$	1748	4800	No
$v_{Fi} = v_F - v_R$	1688	4800	No
v_R	60	2000	No
v_3 or v_{av34}	0 pc/h	(Equation 13-14 or 13-17)	
Is v_3 or $v_{av34} > 2700$ pc/h?		No	
Is v_3 or $v_{av34} > 1.5 v_{12} / 2$		No	
If yes, $v_{12A} = 1748$		(Equation 13-15, 13-16, 13-18, or 13-19)	

----- Flow Entering Diverge Influence Area -----

	Actual	Max Desirable	Violation?
v_{12}	1748	4400	No

----- Level of Service Determination (if not F) -----

Density, $D = 4.252 + 0.0086 v_{12} - 0.009 L_D = 17.2$ pc/mi/ln
 R 12 D
 Level of service for ramp-freeway junction areas of influence B

----- Speed Estimation -----

Intermediate speed variable,	D = 0.433	
Space mean speed in ramp influence area,	S = 58.0	mph
Space mean speed in outer lanes,	S = N/A	mph
Space mean speed for all vehicles,	S = 58.0	mph

Phone: _____ Fax: _____
 E-mail: _____

-----Diverge Analysis-----

Analyst:
 Agency/Co.: Stantec
 Date performed: 11/10/2016
 Analysis time period: 2:00PM-3:00PM
 Freeway/Dir of Travel: I-85 Northbound
 Junction: I-85 NB Off Loop to US 29
 Jurisdiction: SCDOT
 Analysis Year: 2015 Existing Conditions
 Description:

-----Freeway Data-----

Type of analysis	Diverge		
Number of lanes in freeway	2		
Free-flow speed on freeway	70.7	mph	
Volume on freeway	2015	vph	

-----Off Ramp Data-----

Side of freeway	Right		
Number of lanes in ramp	1		
Free-Flow speed on ramp	35.0	mph	
Volume on ramp	86	vph	
Length of first accel/decel lane	260	ft	
Length of second accel/decel lane		ft	

-----Adjacent Ramp Data (if one exists)-----

Does adjacent ramp exist?	Yes		
Volume on adjacent ramp	88	vph	
Position of adjacent ramp	Downstream		
Type of adjacent ramp	On		
Distance to adjacent ramp	745	ft	

-----Conversion to pc/h Under Base Conditions-----

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	2015	86	88	vph
Peak-hour factor, PHF	0.94	0.94	0.94	
Peak 15-min volume, v15	536	23	23	v
Trucks and buses	30	0	0	%
Recreational vehicles	0	0	0	%
Terrain type:	Rolling	Level	Level	
Grade	0.00 %	0.00 %	0.00 %	
Length	0.00 mi	0.00 mi	0.00 mi	
Trucks and buses PCE, ET	2.5	1.5	1.5	
Recreational vehicle PCE, ER	2.0	1.2	1.2	

Heavy vehicle adjustment, fHV	0.690	1.000	1.000	
Driver population factor, fP	1.00	1.00	1.00	
Flow rate, vp	3108	91	94	pcph

----- Estimation of V12 Diverge Areas -----

L = (Equation 13-12 or 13-13)

EQ

P = 1.000 Using Equation 0

FD

$v_{12} = v_R + (v_F - v_R) P = 3108$ pc/h
FD

----- Capacity Checks -----

	Actual	Maximum	LOS F?
$v_{12} = v_{12}$	3108	4800	No
$v_{FO} = v_F - v_R$	3017	4800	No
v_R	91	2000	No
v_3 or v_{av34}	0 pc/h	(Equation 13-14 or 13-17)	
Is v_3 or $v_{av34} > 2700$ pc/h?		No	
Is v_3 or $v_{av34} > 1.5 v_{12} / 2$		No	
If yes, $v_{12A} = 3108$		(Equation 13-15, 13-16, 13-18, or 13-19)	

----- Flow Entering Diverge Influence Area -----

	Actual	Max Desirable	Violation?
v_{12}	3108	4400	No

----- Level of Service Determination (if not F) -----

Density, $D = 4.252 + 0.0086 v_{12} - 0.009 L_D = 28.6$ pc/mi/ln
Level of service for ramp-freeway junction areas of influence D

----- Speed Estimation -----

Intermediate speed variable,	D = 0.436	
Space mean speed in ramp influence area,	S _R = 58.2	mph
Space mean speed in outer lanes,	S ₀ = N/A	mph
Space mean speed for all vehicles,	S = 58.2	mph

Phone: Fax:
E-mail:

-----Diverge Analysis-----

Analyst:
Agency/Co.: Stantec
Date performed: 11/10/2016
Analysis time period: 2:00PM-3:00PM
Freeway/Dir of Travel: I-85 Southbound
Junction: I-85 Off Ramp to US 29
Jurisdiction: SCDOT
Analysis Year: 2015 Existing Conditions
Description:

-----Freeway Data-----

Type of analysis	Diverge		
Number of lanes in freeway	2		
Free-flow speed on freeway	70.3	mph	
Volume on freeway	2033	vph	

-----Off Ramp Data-----

Side of freeway	Right		
Number of lanes in ramp	1		
Free-Flow speed on ramp	35.0	mph	
Volume on ramp	141	vph	
Length of first accel/decel lane	228	ft	
Length of second accel/decel lane		ft	

-----Adjacent Ramp Data (if one exists)-----

Does adjacent ramp exist?	Yes		
Volume on adjacent ramp	122	vph	
Position of adjacent ramp	Downstream		
Type of adjacent ramp	On		
Distance to adjacent ramp	2738	ft	

-----Conversion to pc/h Under Base Conditions-----

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	2033	141	122	vph
Peak-hour factor, PHF	0.94	0.94	0.94	
Peak 15-min volume, v15	541	38	32	v
Trucks and buses	30	0	0	%
Recreational vehicles	0	0	0	%
Terrain type:	Rolling	Level	Level	
Grade	0.00 %	0.00 %	0.00 %	
Length	0.00 mi	0.00 mi	0.00 mi	
Trucks and buses PCE, ET	2.5	1.5	1.5	
Recreational vehicle PCE, ER	2.0	1.2	1.2	

Heavy vehicle adjustment, fHV	0.690	1.000	1.000	
Driver population factor, fP	1.00	1.00	1.00	
Flow rate, vp	3136	150	130	pcph

----- Estimation of V12 Diverge Areas -----

L = (Equation 13-12 or 13-13)

EQ

P = 1.000 Using Equation 0

FD

$v_{12} = v_R + (v_F - v_R) P = 3136$ pc/h
 12 R F R FD

----- Capacity Checks -----

	Actual	Maximum	LOS F?
$v = v_{12}$	3136	4800	No
$v_{Fi} = v_F - v_R$	2986	4800	No
v_R	150	2000	No
v_3 or v_{av34}	0 pc/h	(Equation 13-14 or 13-17)	
Is v_3 or $v_{av34} > 2700$ pc/h?		No	
Is v_3 or $v_{av34} > 1.5 v_{12} / 2$		No	
If yes, $v_{12A} = 3136$		(Equation 13-15, 13-16, 13-18, or 13-19)	

----- Flow Entering Diverge Influence Area -----

	Actual	Max Desirable	Violation?
v_{12}	3136	4400	No

----- Level of Service Determination (if not F) -----

Density, $D = 4.252 + 0.0086 v_R - 0.009 L_D = 29.2$ pc/mi/ln
 Level of service for ramp-freeway junction areas of influence D

----- Speed Estimation -----

Intermediate speed variable,	D = 0.442	
Space mean speed in ramp influence area,	S _R = 57.8	mph
Space mean speed in outer lanes,	S ₀ = N/A	mph
Space mean speed for all vehicles,	S = 57.8	mph

**2040 NO BUILD CONDITIONS
RAMP DIVERGE AREAS - HCS ANALYSIS**

Phone: _____ Fax: _____
 E-mail: _____

-----Diverge Analysis-----

Analyst:
 Agency/Co.: Stantec
 Date performed: 11/9/2016
 Analysis time period: 8:00AM-9:00AM
 Freeway/Dir of Travel: I-85 Northbound
 Junction: I-85 NB Off Loop to US 29
 Jurisdiction: SCDOT
 Analysis Year: 2040 No Build Conditions
 Description:

-----Freeway Data-----

Type of analysis	Diverge		
Number of lanes in freeway	2		
Free-flow speed on freeway	70.7	mph	
Volume on freeway	1758	vph	

-----Off Ramp Data-----

Side of freeway	Right		
Number of lanes in ramp	1		
Free-Flow speed on ramp	35.0	mph	
Volume on ramp	61	vph	
Length of first accel/decel lane	260	ft	
Length of second accel/decel lane		ft	

-----Adjacent Ramp Data (if one exists)-----

Does adjacent ramp exist?	Yes		
Volume on adjacent ramp	113	vph	
Position of adjacent ramp	Downstream		
Type of adjacent ramp	On		
Distance to adjacent ramp	745	ft	

-----Conversion to pc/h Under Base Conditions-----

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	1758	61	113	vph
Peak-hour factor, PHF	0.94	0.94	0.94	
Peak 15-min volume, v15	468	16	30	v
Trucks and buses	30	0	0	%
Recreational vehicles	0	0	0	%
Terrain type:	Rolling	Level	Level	
Grade	0.00 %	0.00 %	0.00 %	
Length	0.00 mi	0.00 mi	0.00 mi	
Trucks and buses PCE, ET	2.5	1.5	1.5	
Recreational vehicle PCE, ER	2.0	1.2	1.2	

Heavy vehicle adjustment, fHV	0.690	1.000	1.000	
Driver population factor, fP	1.00	1.00	1.00	
Flow rate, vp	2712	65	120	pcph

----- Estimation of V12 Diverge Areas -----

L = (Equation 13-12 or 13-13)

EQ

P = 1.000 Using Equation 0

FD

$v_{12} = v_R + (v_F - v_R) P = 2712$ pc/h
FD

----- Capacity Checks -----

	Actual	Maximum	LOS F?
$v = v_{12}$	2712	4800	No
$v_{Fi} = v_F - v_R$	2647	4800	No
v_R	65	2000	No
v_3 or v_{av34}	0 pc/h	(Equation 13-14 or 13-17)	
Is v_3 or $v_{av34} > 2700$ pc/h?		No	
Is v_3 or $v_{av34} > 1.5 v_{12} / 2$		No	
If yes, $v_{12A} = 2712$		(Equation 13-15, 13-16, 13-18, or 13-19)	

----- Flow Entering Diverge Influence Area -----

	Actual	Max Desirable	Violation?
v_{12}	2712	4400	No

----- Level of Service Determination (if not F) -----

Density, $D = 4.252 + 0.0086 v_R - 0.009 L_D = 25.2$ pc/mi/ln
Level of service for ramp-freeway junction areas of influence C

----- Speed Estimation -----

Intermediate speed variable,	D = 0.434	
Space mean speed in ramp influence area,	S _R = 58.2	mph
Space mean speed in outer lanes,	S ₀ = N/A	mph
Space mean speed for all vehicles,	S = 58.2	mph

Phone: _____ Fax: _____
 E-mail: _____

-----Diverge Analysis-----

Analyst:
 Agency/Co.: Stantec
 Date performed: 11/9/2016
 Analysis time period: 8:00AM-9:00AM
 Freeway/Dir of Travel: I-85 Southbound
 Junction: I-85 Off Ramp to US 29
 Jurisdiction: SCDOT
 Analysis Year: 2040 No Build Conditions
 Description:

-----Freeway Data-----

Type of analysis	Diverge		
Number of lanes in freeway	2		
Free-flow speed on freeway	70.3	mph	
Volume on freeway	1699	vph	

-----Off Ramp Data-----

Side of freeway	Right		
Number of lanes in ramp	1		
Free-Flow speed on ramp	35.0	mph	
Volume on ramp	72	vph	
Length of first accel/decel lane	228	ft	
Length of second accel/decel lane		ft	

-----Adjacent Ramp Data (if one exists)-----

Does adjacent ramp exist?	Yes		
Volume on adjacent ramp	159	vph	
Position of adjacent ramp	Downstream		
Type of adjacent ramp	On		
Distance to adjacent ramp	2738	ft	

-----Conversion to pc/h Under Base Conditions-----

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	1699	72	159	vph
Peak-hour factor, PHF	0.94	0.94	0.94	
Peak 15-min volume, v15	452	19	42	v
Trucks and buses	30	0	0	%
Recreational vehicles	0	0	0	%
Terrain type:	Rolling	Level	Level	
Grade	0.00 %	0.00 %	0.00 %	
Length	0.00 mi	0.00 mi	0.00 mi	
Trucks and buses PCE, ET	2.5	1.5	1.5	
Recreational vehicle PCE, ER	2.0	1.2	1.2	

Heavy vehicle adjustment, fHV	0.690	1.000	1.000	
Driver population factor, fP	1.00	1.00	1.00	
Flow rate, vp	2621	77	169	pcph

----- Estimation of V12 Diverge Areas -----

L = (Equation 13-12 or 13-13)

EQ

P = 1.000 Using Equation 0

FD

$v_{12} = v_R + (v_F - v_R) P = 2621$ pc/h
FD

----- Capacity Checks -----

	Actual	Maximum	LOS F?
$v_{12} = v_{12}$	2621	4800	No
$v_{FO} = v_F - v_R$	2544	4800	No
v_R	77	2000	No
v_3 or v_{av34}	0 pc/h	(Equation 13-14 or 13-17)	
Is v_3 or $v_{av34} > 2700$ pc/h?		No	
Is v_3 or $v_{av34} > 1.5 v_{12} / 2$		No	
If yes, $v_{12A} = 2621$		(Equation 13-15, 13-16, 13-18, or 13-19)	

----- Flow Entering Diverge Influence Area -----

	Actual	Max Desirable	Violation?
v_{12}	2621	4400	No

----- Level of Service Determination (if not F) -----

Density, $D = 4.252 + 0.0086 v_R - 0.009 L_D = 24.7$ pc/mi/ln
Level of service for ramp-freeway junction areas of influence C

----- Speed Estimation -----

Intermediate speed variable,	D = 0.435	
Space mean speed in ramp influence area,	S _R = 58.0	mph
Space mean speed in outer lanes,	S ₀ = N/A	mph
Space mean speed for all vehicles,	S = 58.0	mph

Phone: _____ Fax: _____
 E-mail: _____

-----Diverge Analysis-----

Analyst:
 Agency/Co.: Stantec
 Date performed: 11/10/2016
 Analysis time period: 2:00PM-3:00PM
 Freeway/Dir of Travel: I-85 Northbound
 Junction: I-85 NB Off Loop to US 29
 Jurisdiction: SCDOT
 Analysis Year: 2040 No Build Conditions
 Description:

-----Freeway Data-----

Type of analysis	Diverge		
Number of lanes in freeway	2		
Free-flow speed on freeway	70.7	mph	
Volume on freeway	2941	vph	

-----Off Ramp Data-----

Side of freeway	Right		
Number of lanes in ramp	1		
Free-Flow speed on ramp	35.0	mph	
Volume on ramp	110	vph	
Length of first accel/decel lane	260	ft	
Length of second accel/decel lane		ft	

-----Adjacent Ramp Data (if one exists)-----

Does adjacent ramp exist?	Yes		
Volume on adjacent ramp	113	vph	
Position of adjacent ramp	Downstream		
Type of adjacent ramp	On		
Distance to adjacent ramp	745	ft	

-----Conversion to pc/h Under Base Conditions-----

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	2941	110	113	vph
Peak-hour factor, PHF	0.94	0.94	0.94	
Peak 15-min volume, v15	782	29	30	v
Trucks and buses	30	0	0	%
Recreational vehicles	0	0	0	%
Terrain type:	Rolling	Level	Level	
Grade	0.00 %	0.00 %	0.00 %	
Length	0.00 mi	0.00 mi	0.00 mi	
Trucks and buses PCE, ET	2.5	1.5	1.5	
Recreational vehicle PCE, ER	2.0	1.2	1.2	

Heavy vehicle adjustment, fHV	0.690	1.000	1.000	
Driver population factor, fP	1.00	1.00	1.00	
Flow rate, vp	4537	117	120	pcph

----- Estimation of V12 Diverge Areas -----

L = (Equation 13-12 or 13-13)

EQ

P = 1.000 Using Equation 0

FD

$v_{12} = v_R + (v_F - v_R) P = 4537$ pc/h
 12 R F R FD

----- Capacity Checks -----

	Actual	Maximum	LOS F?
$v_{12} = v_{12}$	4537	4800	No
$v_{FO} = v_F - v_R$	4420	4800	No
v_R	117	2000	No
v_3 or v_{av34}	0 pc/h	(Equation 13-14 or 13-17)	
Is v_3 or $v_{av34} > 2700$ pc/h?		No	
Is v_3 or $v_{av34} > 1.5 v_{12} / 2$		No	
If yes, $v_{12A} = 4537$		(Equation 13-15, 13-16, 13-18, or 13-19)	

----- Flow Entering Diverge Influence Area -----

	Actual	Max Desirable	Violation?
v_{12}	4537	4400	Yes

----- Level of Service Determination (if not F) -----

Density, $D = 4.252 + 0.0086 v_{12} - 0.009 L_D = 40.9$ pc/mi/ln
 R 12 D
 Level of service for ramp-freeway junction areas of influence E

----- Speed Estimation -----

Intermediate speed variable,	D = 0.439	
Space mean speed in ramp influence area,	S = 58.1	mph
Space mean speed in outer lanes,	S = N/A	mph
Space mean speed for all vehicles,	S = 58.1	mph

Phone: _____ Fax: _____
 E-mail: _____

-----Diverge Analysis-----

Analyst:
 Agency/Co.: Stantec
 Date performed: 11/10/2016
 Analysis time period: 2:00PM-3:00PM
 Freeway/Dir of Travel: I-85 Southbound
 Junction: I-85 Off Ramp to US 29
 Jurisdiction: SCDOT
 Analysis Year: 2040 No Build Conditions
 Description:

-----Freeway Data-----

Type of analysis	Diverge		
Number of lanes in freeway	2		
Free-flow speed on freeway	70.3	mph	
Volume on freeway	2933	vph	

-----Off Ramp Data-----

Side of freeway	Right		
Number of lanes in ramp	1		
Free-Flow speed on ramp	35.0	mph	
Volume on ramp	181	vph	
Length of first accel/decel lane	228	ft	
Length of second accel/decel lane		ft	

-----Adjacent Ramp Data (if one exists)-----

Does adjacent ramp exist?	Yes		
Volume on adjacent ramp	157	vph	
Position of adjacent ramp	Downstream		
Type of adjacent ramp	On		
Distance to adjacent ramp	2738	ft	

-----Conversion to pc/h Under Base Conditions-----

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	2933	181	157	vph
Peak-hour factor, PHF	0.94	0.94	0.94	
Peak 15-min volume, v15	780	48	42	v
Trucks and buses	30	0	0	%
Recreational vehicles	0	0	0	%
Terrain type:	Rolling	Level	Level	
Grade	0.00 %	0.00 %	0.00 %	
Length	0.00 mi	0.00 mi	0.00 mi	
Trucks and buses PCE, ET	2.5	1.5	1.5	
Recreational vehicle PCE, ER	2.0	1.2	1.2	

Heavy vehicle adjustment, fHV	0.690	1.000	1.000	
Driver population factor, fP	1.00	1.00	1.00	
Flow rate, vp	4524	193	167	pcph

----- Estimation of V12 Diverge Areas -----

L = (Equation 13-12 or 13-13)

EQ

P = 1.000 Using Equation 0

FD

$v_{12} = v_R + (v_F - v_R) P = 4524$ pc/h
 12 R F R FD

----- Capacity Checks -----

	Actual	Maximum	LOS F?
$v_{12} = v_{12}$	4524	4800	No
$v_{FO} = v_F - v_R$	4331	4800	No
v_R	193	2000	No
v_3 or v_{av34}	0 pc/h	(Equation 13-14 or 13-17)	
Is v_3 or $v_{av34} > 2700$ pc/h?		No	
Is v_3 or $v_{av34} > 1.5 v_{12} / 2$		No	
If yes, $v_{12A} = 4524$		(Equation 13-15, 13-16, 13-18, or 13-19)	

----- Flow Entering Diverge Influence Area -----

	Actual	Max Desirable	Violation?
v_{12}	4524	4400	Yes

----- Level of Service Determination (if not F) -----

Density, $D = 4.252 + 0.0086 v_{12} - 0.009 L_D = 41.1$ pc/mi/ln
 Level of service for ramp-freeway junction areas of influence E

----- Speed Estimation -----

Intermediate speed variable,	D = 0.445	
Space mean speed in ramp influence area,	S = 57.7	mph
Space mean speed in outer lanes,	S = N/A	mph
Space mean speed for all vehicles,	S = 57.7	mph

**2040 BUILD CONDITIONS
RAMP DIVERGE AREAS - HCS ANALYSIS**

Phone: _____ Fax: _____
 E-mail: _____

-----Diverge Analysis-----

Analyst:
 Agency/Co.: Stantec
 Date performed: 11/9/2016
 Analysis time period: 8:00AM-9:00AM
 Freeway/Dir of Travel: I-85 Northbound
 Junction: I-85 NB Off-Ramp to US 29
 Jurisdiction: SCDOT
 Analysis Year: 2040 Build Conditions
 Description:

-----Freeway Data-----

Type of analysis	Diverge		
Number of lanes in freeway	3		
Free-flow speed on freeway	70.7	mph	
Volume on freeway	1758	vph	

-----Off Ramp Data-----

Side of freeway	Right		
Number of lanes in ramp	1		
Free-Flow speed on ramp	35.0	mph	
Volume on ramp	61	vph	
Length of first accel/decel lane	1500	ft	
Length of second accel/decel lane		ft	

-----Adjacent Ramp Data (if one exists)-----

Does adjacent ramp exist?	Yes		
Volume on adjacent ramp	113	vph	
Position of adjacent ramp	Downstream		
Type of adjacent ramp	On		
Distance to adjacent ramp	745	ft	

-----Conversion to pc/h Under Base Conditions-----

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	1758	61	113	vph
Peak-hour factor, PHF	0.94	0.94	0.94	
Peak 15-min volume, v15	468	16	30	v
Trucks and buses	30	0	0	%
Recreational vehicles	0	0	0	%
Terrain type:	Rolling	Level	Level	
Grade	0.00 %	0.00 %	0.00 %	
Length	0.00 mi	0.00 mi	0.00 mi	
Trucks and buses PCE, ET	2.5	1.5	1.5	
Recreational vehicle PCE, ER	2.0	1.2	1.2	

Heavy vehicle adjustment, fHV	0.690	1.000	1.000	
Driver population factor, fP	1.00	1.00	1.00	
Flow rate, vp	2712	65	120	pcph

----- Estimation of V12 Diverge Areas -----

L = (Equation 13-12 or 13-13)

EQ

P = 0.689 Using Equation 5

FD

$v_{12} = v_R + (v_F - v_R) P = 1889$ pc/h
 12 R F R FD

----- Capacity Checks -----

	Actual	Maximum	LOS F?
$v = v_{12}$	2712	7200	No
$v_{Fi} = v_F - v_R$	2647	7200	No
v_R	65	2000	No
v_3 or v_{av34}	823 pc/h	(Equation 13-14 or 13-17)	
Is v_3 or $v_{av34} > 2700$ pc/h?		No	
Is v_3 or $v_{av34} > 1.5 v_{12} / 2$		No	
If yes, $v_{12A} = 1889$		(Equation 13-15, 13-16, 13-18, or 13-19)	

----- Flow Entering Diverge Influence Area -----

	Actual	Max Desirable	Violation?
v_{12}	1889	4400	No

----- Level of Service Determination (if not F) -----

Density, $D = 4.252 + 0.0086 v_{12} - 0.009 L_D = 7.0$ pc/mi/ln
 R 12 D
 Level of service for ramp-freeway junction areas of influence A

----- Speed Estimation -----

Intermediate speed variable,	D = 0.434	
Space mean speed in ramp influence area,	S = 58.2	mph
Space mean speed in outer lanes,	S = 77.6	mph
Space mean speed for all vehicles,	S = 63.0	mph

Phone: _____ Fax: _____
 E-mail: _____

-----Diverge Analysis-----

Analyst:
 Agency/Co.: Stantec
 Date performed: 11/9/2016
 Analysis time period: 8:00AM-9:00AM
 Freeway/Dir of Travel: I-85 Southbound
 Junction: I-85 Off Ramp to US 29
 Jurisdiction: SCDOT
 Analysis Year: 2040 Build Conditions
 Description:

-----Freeway Data-----

Type of analysis	Diverge		
Number of lanes in freeway	2		
Free-flow speed on freeway	70.3	mph	
Volume on freeway	1699	vph	

-----Off Ramp Data-----

Side of freeway	Right		
Number of lanes in ramp	1		
Free-Flow speed on ramp	35.0	mph	
Volume on ramp	72	vph	
Length of first accel/decel lane	228	ft	
Length of second accel/decel lane		ft	

-----Adjacent Ramp Data (if one exists)-----

Does adjacent ramp exist?	Yes		
Volume on adjacent ramp	159	vph	
Position of adjacent ramp	Downstream		
Type of adjacent ramp	On		
Distance to adjacent ramp	2738	ft	

-----Conversion to pc/h Under Base Conditions-----

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	1699	72	159	vph
Peak-hour factor, PHF	0.94	0.94	0.94	
Peak 15-min volume, v15	452	19	42	v
Trucks and buses	30	0	0	%
Recreational vehicles	0	0	0	%
Terrain type:	Rolling	Level	Level	
Grade	0.00 %	0.00 %	0.00 %	
Length	0.00 mi	0.00 mi	0.00 mi	
Trucks and buses PCE, ET	2.5	1.5	1.5	
Recreational vehicle PCE, ER	2.0	1.2	1.2	

Heavy vehicle adjustment, fHV	0.690	1.000	1.000	
Driver population factor, fP	1.00	1.00	1.00	
Flow rate, vp	2621	77	169	pcph

----- Estimation of V12 Diverge Areas -----

L = (Equation 13-12 or 13-13)

EQ

P = 1.000 Using Equation 0

FD

$v_{12} = v_R + (v_F - v_R) P_{FD} = 2621 \text{ pc/h}$

----- Capacity Checks -----

	Actual	Maximum	LOS F?
$v_{12} = v_{12}$	2621	4800	No
$v_{FO} = v_F - v_R$	2544	4800	No
v_R	77	2000	No
$v_3 \text{ or } v_{av34}$	0 pc/h	(Equation 13-14 or 13-17)	
Is $v_3 \text{ or } v_{av34} > 2700 \text{ pc/h?}$		No	
Is $v_3 \text{ or } v_{av34} > 1.5 v_{12} / 2$		No	
If yes, $v_{12A} = 2621$		(Equation 13-15, 13-16, 13-18, or 13-19)	

----- Flow Entering Diverge Influence Area -----

	Actual	Max Desirable	Violation?
v_{12}	2621	4400	No

----- Level of Service Determination (if not F) -----

Density, $D = 4.252 + 0.0086 v_{12} - 0.009 L_D = 24.7 \text{ pc/mi/ln}$

Level of service for ramp-freeway junction areas of influence C

----- Speed Estimation -----

Intermediate speed variable,	D = 0.435	
Space mean speed in ramp influence area,	S _R = 58.0	mph
Space mean speed in outer lanes,	S ₀ = N/A	mph
Space mean speed for all vehicles,	S = 58.0	mph

Phone: _____ Fax: _____
 E-mail: _____

-----Diverge Analysis-----

Analyst:
 Agency/Co.: Stantec
 Date performed: 11/10/2016
 Analysis time period: 2:00PM-3:00PM
 Freeway/Dir of Travel: I-85 Northbound
 Junction: I-85 NB Off-Ramp to US 29
 Jurisdiction: SCDOT
 Analysis Year: 2040 Build Conditions
 Description:

-----Freeway Data-----

Type of analysis	Diverge		
Number of lanes in freeway	3		
Free-flow speed on freeway	70.7	mph	
Volume on freeway	2941	vph	

-----Off Ramp Data-----

Side of freeway	Right		
Number of lanes in ramp	1		
Free-Flow speed on ramp	35.0	mph	
Volume on ramp	110	vph	
Length of first accel/decel lane	1500	ft	
Length of second accel/decel lane		ft	

-----Adjacent Ramp Data (if one exists)-----

Does adjacent ramp exist?	Yes		
Volume on adjacent ramp	113	vph	
Position of adjacent ramp	Downstream		
Type of adjacent ramp	On		
Distance to adjacent ramp	745	ft	

-----Conversion to pc/h Under Base Conditions-----

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	2941	110	113	vph
Peak-hour factor, PHF	0.94	0.94	0.94	
Peak 15-min volume, v15	782	29	30	v
Trucks and buses	30	0	0	%
Recreational vehicles	0	0	0	%
Terrain type:	Rolling	Level	Level	
Grade	0.00 %	0.00 %	0.00 %	
Length	0.00 mi	0.00 mi	0.00 mi	
Trucks and buses PCE, ET	2.5	1.5	1.5	
Recreational vehicle PCE, ER	2.0	1.2	1.2	

Heavy vehicle adjustment, fHV	0.690	1.000	1.000	
Driver population factor, fP	1.00	1.00	1.00	
Flow rate, vp	4537	117	120	pcph

----- Estimation of V12 Diverge Areas -----

L = (Equation 13-12 or 13-13)

EQ

P = 0.641 Using Equation 5

FD

$v_{12} = v_R + (v_F - v_R) P = 2951$ pc/h
FD

----- Capacity Checks -----

	Actual	Maximum	LOS F?
$v = v_{12}$	4537	7200	No
$v_{Fi} = v_F - v_R$	4420	7200	No
v_R	117	2000	No
v_3 or v_{av34}	1586 pc/h	(Equation 13-14 or 13-17)	
Is v_3 or $v_{av34} > 2700$ pc/h?		No	
Is v_3 or $v_{av34} > 1.5 v_{12} / 2$		No	
If yes, $v_{12A} = 2951$		(Equation 13-15, 13-16, 13-18, or 13-19)	

----- Flow Entering Diverge Influence Area -----

	Actual	Max Desirable	Violation?
v_{12}	2951	4400	No

----- Level of Service Determination (if not F) -----

Density, $D = 4.252 + 0.0086 v_R - 0.009 L_D = 16.1$ pc/mi/ln
Level of service for ramp-freeway junction areas of influence B

----- Speed Estimation -----

Intermediate speed variable,	D = 0.439	
Space mean speed in ramp influence area,	S _R = 58.1	mph
Space mean speed in outer lanes,	S ₀ = 75.3	mph
Space mean speed for all vehicles,	S = 63.1	mph

Phone: _____ Fax: _____
 E-mail: _____

-----Diverge Analysis-----

Analyst:
 Agency/Co.: Stantec
 Date performed: 11/10/2016
 Analysis time period: 2:00PM-3:00PM
 Freeway/Dir of Travel: I-85 Southbound
 Junction: I-85 Off Ramp to US 29
 Jurisdiction: SCDOT
 Analysis Year: 2040 Build Conditions
 Description:

-----Freeway Data-----

Type of analysis	Diverge		
Number of lanes in freeway	2		
Free-flow speed on freeway	70.3	mph	
Volume on freeway	2933	vph	

-----Off Ramp Data-----

Side of freeway	Right		
Number of lanes in ramp	1		
Free-Flow speed on ramp	35.0	mph	
Volume on ramp	181	vph	
Length of first accel/decel lane	228	ft	
Length of second accel/decel lane		ft	

-----Adjacent Ramp Data (if one exists)-----

Does adjacent ramp exist?	Yes		
Volume on adjacent ramp	157	vph	
Position of adjacent ramp	Downstream		
Type of adjacent ramp	On		
Distance to adjacent ramp	2738	ft	

-----Conversion to pc/h Under Base Conditions-----

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	2933	181	157	vph
Peak-hour factor, PHF	0.94	0.94	0.94	
Peak 15-min volume, v15	780	48	42	v
Trucks and buses	30	0	0	%
Recreational vehicles	0	0	0	%
Terrain type:	Rolling	Level	Level	
Grade	0.00 %	0.00 %	0.00 %	
Length	0.00 mi	0.00 mi	0.00 mi	
Trucks and buses PCE, ET	2.5	1.5	1.5	
Recreational vehicle PCE, ER	2.0	1.2	1.2	

Heavy vehicle adjustment, fHV	0.690	1.000	1.000	
Driver population factor, fP	1.00	1.00	1.00	
Flow rate, vp	4524	193	167	pcph

----- Estimation of V12 Diverge Areas -----

L = (Equation 13-12 or 13-13)

EQ

P = 1.000 Using Equation 0

FD

$v_{12} = v_R + (v_F - v_R) P = 4524$ pc/h
FD

----- Capacity Checks -----

	Actual	Maximum	LOS F?
$v = v_{12}$	4524	4800	No
$v_{Fi} = v_F - v_R$	4331	4800	No
v_R	193	2000	No
v_3 or v_{av34}	0 pc/h	(Equation 13-14 or 13-17)	
Is v_3 or $v_{av34} > 2700$ pc/h?		No	
Is v_3 or $v_{av34} > 1.5 v_{12} / 2$		No	
If yes, $v_{12A} = 4524$		(Equation 13-15, 13-16, 13-18, or 13-19)	

----- Flow Entering Diverge Influence Area -----

	Actual	Max Desirable	Violation?
v_{12}	4524	4400	Yes

----- Level of Service Determination (if not F) -----

Density, $D = 4.252 + 0.0086 v_R - 0.009 L_D = 41.1$ pc/mi/ln
Level of service for ramp-freeway junction areas of influence E

----- Speed Estimation -----

Intermediate speed variable,	D = 0.445	
Space mean speed in ramp influence area,	S _R = 57.7	mph
Space mean speed in outer lanes,	S ₀ = N/A	mph
Space mean speed for all vehicles,	S = 57.7	mph

APPENDIX C

SYNCHRO HCM ANALYSIS



**2015 EXISTING CONDITIONS
SYNCHRO HCM ANALYSIS**

HCM 2010 TWSC - 2015 AM Existing Conditions
 150: Service Station Dwy/Retail Store & E. Cherokee St

11/17/2016

Intersection												
Int Delay, s/veh	3.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	161	1	8	189	2	66	1	15	0	0	1
Future Vol, veh/h	0	161	1	8	189	2	66	1	15	0	0	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	25	85	25	58	87	25	75	25	60	92	92	25
Heavy Vehicles, %	0	13	0	29	11	0	90	0	50	0	0	100
Mvmt Flow	0	189	4	14	217	8	88	4	25	0	0	4
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	225	0	0	193	0	0	442	444	191	455	442	221
Stage 1	-	-	-	-	-	-	191	191	-	249	249	-
Stage 2	-	-	-	-	-	-	251	253	-	206	193	-
Critical Hdwy	4.1	-	-	4.39	-	-	8	6.5	6.7	7.1	6.5	7.2
Critical Hdwy Stg 1	-	-	-	-	-	-	7	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	7	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.461	-	-	4.31	4	3.75	3.5	4	4.2
Pot Cap-1 Maneuver	1356	-	-	1234	-	-	403	511	742	519	513	625
Stage 1	-	-	-	-	-	-	645	746	-	759	704	-
Stage 2	-	-	-	-	-	-	594	701	-	801	745	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1356	-	-	1234	-	-	396	504	742	494	506	625
Mov Cap-2 Maneuver	-	-	-	-	-	-	396	504	-	494	506	-
Stage 1	-	-	-	-	-	-	645	746	-	759	695	-
Stage 2	-	-	-	-	-	-	583	692	-	770	745	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0			0.5			16			10.8		
HCM LOS							C			B		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	443	1356	-	-	1234	-	-	625				
HCM Lane V/C Ratio	0.264	-	-	-	0.011	-	-	0.006				
HCM Control Delay (s)	16	0	-	-	8	0	-	10.8				
HCM Lane LOS	C	A	-	-	A	A	-	B				
HCM 95th %tile Q(veh)	1.1	0	-	-	0	-	-	0				

HCM 2010 TWSC - 2015 AM Existing Conditions
 148: E. Cherokee St & Retail Store/Service Station

11/17/2016

Intersection

Int Delay, s/veh 1.6

Movement	WBL	WBR	NET	NER	SWL	SWT
Lane Configurations	Y		P			A
Traffic Vol, veh/h	13	26	136	0	29	227
Future Vol, veh/h	13	26	136	0	29	227
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	82	69	86	25	93	89
Heavy Vehicles, %	9	0	7	0	2	2
Mvmt Flow	16	38	158	0	31	255

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	475	158	0	0	158	0
Stage 1	158	-	-	-	-	-
Stage 2	317	-	-	-	-	-
Critical Hdwy	6.49	6.2	-	-	4.12	-
Critical Hdwy Stg 1	5.49	-	-	-	-	-
Critical Hdwy Stg 2	5.49	-	-	-	-	-
Follow-up Hdwy	3.581	3.3	-	-	2.218	-
Pot Cap-1 Maneuver	536	893	-	-	1422	-
Stage 1	854	-	-	-	-	-
Stage 2	723	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	523	893	-	-	1422	-
Mov Cap-2 Maneuver	523	-	-	-	-	-
Stage 1	854	-	-	-	-	-
Stage 2	705	-	-	-	-	-

Approach	WB		NE		SW
HCM Control Delay, s	10.3		0		0.8
HCM LOS	B				

Minor Lane/Major Mvmt	NET	NERWBLn1	SWL	SWT
Capacity (veh/h)	-	-	738	1422
HCM Lane V/C Ratio	-	-	0.073	0.022
HCM Control Delay (s)	-	-	10.3	7.6
HCM Lane LOS	-	-	B	A
HCM 95th %tile Q(veh)	-	-	0.2	0.1

HCM 2010 TWSC - 2015 AM Existing Conditions
 142: E. Cherokee St

11/17/2016

Intersection

Int Delay, s/veh 0.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	1	0	1	0	0	0	24	170	0	1	138	8
Future Vol, veh/h	1	0	1	0	0	0	24	170	0	1	138	8
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	25	92	25	92	92	92	75	88	92	25	81	58
Heavy Vehicles, %	0	0	0	2	2	2	4	8	2	0	20	29
Mvmt Flow	4	0	4	0	0	0	32	193	0	4	170	14

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	442	442	177	444	449	193	184	0	0	193	0	0
Stage 1	185	185	-	257	257	-	-	-	-	-	-	-
Stage 2	257	257	-	187	192	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.12	6.52	6.22	4.14	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.518	4.018	3.318	2.236	-	-	2.2	-	-
Pot Cap-1 Maneuver	529	513	871	524	505	849	1379	-	-	1392	-	-
Stage 1	821	751	-	748	695	-	-	-	-	-	-	-
Stage 2	752	699	-	815	742	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	517	498	871	510	490	849	1379	-	-	1392	-	-
Mov Cap-2 Maneuver	517	498	-	510	490	-	-	-	-	-	-	-
Stage 1	800	749	-	729	677	-	-	-	-	-	-	-
Stage 2	732	681	-	809	740	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10.6	0	1.1	0.2
HCM LOS	B	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1379	-	-	649	-	1392	-	-
HCM Lane V/C Ratio	0.023	-	-	0.012	-	0.003	-	-
HCM Control Delay (s)	7.7	0	-	10.6	0	7.6	0	-
HCM Lane LOS	A	A	-	B	A	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0	-	0	-	-

HCM 2010 TWSC - 2015 AM Existing Conditions
 140: E. Cherokee St & Fireworks Store/Liquor Store

11/17/2016

Intersection												
Int Delay, s/veh	1.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	3	1	0	6	1	6	0	185	11	11	128	0
Future Vol, veh/h	3	1	0	6	1	6	0	185	11	11	128	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	75	25	25	75	25	62	92	86	63	50	64	25
Heavy Vehicles, %	0	0	0	0	0	0	0	24	0	0	36	0
Mvmt Flow	4	4	0	8	4	10	0	215	17	22	200	0
Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	475	477	200	470	468	224	200	0	0	233	0	0
Stage 1	244	244	-	224	224	-	-	-	-	-	-	-
Stage 2	231	233	-	246	244	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	503	490	846	507	496	820	1384	-	-	1346	-	-
Stage 1	764	708	-	783	722	-	-	-	-	-	-	-
Stage 2	776	716	-	762	708	-	-	-	-	-	-	-
Platoon blocked, %												
Mov Cap-1 Maneuver	487	481	846	497	487	820	1384	-	-	1346	-	-
Mov Cap-2 Maneuver	487	481	-	497	487	-	-	-	-	-	-	-
Stage 1	764	695	-	783	722	-	-	-	-	-	-	-
Stage 2	763	716	-	744	695	-	-	-	-	-	-	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	12.6			11.2			0			0.8		
HCM LOS	B			B								
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	1384	-	-	484	600	1346	-	-				
HCM Lane V/C Ratio	-	-	-	0.017	0.036	0.016	-	-				
HCM Control Delay (s)	0	-	-	12.6	11.2	7.7	0	-				
HCM Lane LOS	A	-	-	B	B	A	A	-				
HCM 95th %tile Q(veh)	0	-	-	0.1	0.1	0.1	-	-				

HCM 2010 TWSC - 2015 AM Existing Conditions
 136: E. Cherokee St & Service Station Dwy/I-85 SB Off-Ramp

11/17/2016

Intersection												
Int Delay, s/veh	3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖		↗		↕		↖			↗		
Traffic Vol, veh/h	12	0	10	21	2	35	4	149	0	0	113	21
Future Vol, veh/h	12	0	10	21	2	35	4	149	0	0	113	21
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	0	-	0	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	55	92	45	95	25	65	50	83	92	92	90	68
Heavy Vehicles, %	11	2	0	5	0	10	0	25	2	2	37	0
Mvmt Flow	22	0	22	22	8	54	8	180	0	0	126	31
Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	367	-	141	337	352	180	156	0	-	-	-	0
Stage 1	141	-	-	196	196	-	-	-	-	-	-	-
Stage 2	226	-	-	141	156	-	-	-	-	-	-	-
Critical Hdwy	7.21	-	6.2	7.15	6.5	6.3	4.1	-	-	-	-	-
Critical Hdwy Stg 1	6.21	-	-	6.15	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.21	-	-	6.15	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.599	-	3.3	3.545	4	3.39	2.2	-	-	-	-	-
Pot Cap-1 Maneuver	573	0	912	611	576	843	1436	-	0	0	-	-
Stage 1	841	0	-	799	742	-	-	-	0	0	-	-
Stage 2	757	0	-	855	772	-	-	-	0	0	-	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	528	-	912	593	573	843	1436	-	-	-	-	-
Mov Cap-2 Maneuver	528	-	-	593	573	-	-	-	-	-	-	-
Stage 1	836	-	-	794	738	-	-	-	-	-	-	-
Stage 2	697	-	-	834	772	-	-	-	-	-	-	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	10.5			10.6			0.3			0		
HCM LOS	B			B								
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	WBLn1	SBT	SBR					
Capacity (veh/h)	1436	-	528	912	729	-	-					
HCM Lane V/C Ratio	0.006	-	0.041	0.024	0.115	-	-					
HCM Control Delay (s)	7.5	0	12.1	9	10.6	-	-					
HCM Lane LOS	A	A	B	A	B	-	-					
HCM 95th %tile Q(veh)	0	-	0.1	0.1	0.4	-	-					

HCM 2010 TWSC - 2015 AM Existing Conditions
 131: E. Cherokee St & I-85 NB Off-Ramp

11/17/2016

Intersection

Int Delay, s/veh 1.6

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↕		↑			↑
Traffic Vol, veh/h	9	38	115	0	0	144
Future Vol, veh/h	9	38	115	0	0	144
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Yield	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	67	69	82	92	92	93
Heavy Vehicles, %	25	21	28	2	2	36
Mvmt Flow	13	55	140	0	0	155

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	295	140	0	-	-	-
Stage 1	140	-	-	-	-	-
Stage 2	155	-	-	-	-	-
Critical Hdwy	6.65	6.41	-	-	-	-
Critical Hdwy Stg 1	5.65	-	-	-	-	-
Critical Hdwy Stg 2	5.65	-	-	-	-	-
Follow-up Hdwy	3.725	3.489	-	-	-	-
Pot Cap-1 Maneuver	650	860	-	0	0	-
Stage 1	833	-	-	0	0	-
Stage 2	820	-	-	0	0	-
Platoon blocked, %			-			-
Mov Cap-1 Maneuver	650	860	-	-	-	-
Mov Cap-2 Maneuver	650	-	-	-	-	-
Stage 1	833	-	-	-	-	-
Stage 2	820	-	-	-	-	-

Approach	WB		NB		SB
HCM Control Delay, s	8.6		0		0
HCM LOS	A				

Minor Lane/Major Mvmt	NBTWBLn1	SBT
Capacity (veh/h)	- 1070	-
HCM Lane V/C Ratio	- 0.064	-
HCM Control Delay (s)	- 8.6	-
HCM Lane LOS	- A	-
HCM 95th %tile Q(veh)	- 0.2	-

HCM 2010 TWSC - 2015 AM Existing Conditions

129: E. Cherokee St & Service Station Dwy & I-85 NB On-Ramp/Mill Creek Rd

11/17/2016

Intersection												
Int Delay, s/veh	4.8											
Movement	EBL	EBR	NBL	NBT	NBR	SBL	SBT	SBR	SWL	SWR		
Lane Configurations	↔		↔			↔			↔			
Traffic Vol, veh/h	7	1	2	80	22	83	62	9	1	0		
Future Vol, veh/h	7	1	2	80	22	83	62	9	1	0		
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0		
Sign Control	Stop	Stop	Free	Free	Free	Free	Free	Free	Stop	Stop		
RT Channelized	-	None	-	-	Free	-	-	None	-	-		
Storage Length	0	-	-	-	-	-	-	-	0	-		
Veh in Median Storage, #	0	-	-	0	-	-	0	-	0	-		
Grade, %	0	-	-	0	-	-	0	-	0	-		
Peak Hour Factor	75	25	25	90	62	78	86	67	25	25		
Heavy Vehicles, %	0	0	0	6	0	57	7	0	2	2		
Mvmt Flow	9	4	8	89	35	106	72	13	4	0		
Major/Minor	Minor2		Major1			Major2			Minor1			
Conflicting Flow All	425	79	86	0	-	89	0	0	403	89		
Stage 1	292	-	-	-	-	-	-	-	105	-		
Stage 2	133	-	-	-	-	-	-	-	298	-		
Critical Hdwy	7.1	6.2	4.1	-	-	4.67	-	-	7.12	6.22		
Critical Hdwy Stg 1	6.1	-	-	-	-	-	-	-	6.12	-		
Critical Hdwy Stg 2	6.1	-	-	-	-	-	-	-	6.12	-		
Follow-up Hdwy	3.5	3.3	2.2	-	-	2.713	-	-	3.518	3.318		
Pot Cap-1 Maneuver	543	987	1523	-	0	1222	-	-	558	969		
Stage 1	720	-	-	-	0	-	-	-	901	-		
Stage 2	875	-	-	-	0	-	-	-	711	-		
Platoon blocked, %				-			-					
Mov Cap-1 Maneuver	474	987	1523	-	-	1222	-	-	507	969		
Mov Cap-2 Maneuver	474	-	-	-	-	-	-	-	507	-		
Stage 1	716	-	-	-	-	-	-	-	896	-		
Stage 2	820	-	-	-	-	-	-	-	634	-		
Approach	EB		NB			SB			SW			
HCM Control Delay, s	12.1		0.6			4.6			9.2			
HCM LOS	B								A			
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBL	SBT	SBRSWLn1						
Capacity (veh/h)	1523	-	531	1222	-	-	913					
HCM Lane V/C Ratio	0.005	-	0.043	0.087	-	-	0.065					
HCM Control Delay (s)	7.4	0	12.1	8.2	0	-	9.2					
HCM Lane LOS	A	A	B	A	A	-	A					
HCM 95th %tile Q(veh)	0	-	0.1	0.3	-	-	0.2					

HCM 2010 TWSC - 2015 AM Existing Conditions
 138: I-85 SB Off-Ramp & Service Station Dwy 2

11/17/2016

Intersection

Int Delay, s/veh 3.7

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations			↶			↷
Traffic Vol, veh/h	0	0	31	12	0	27
Future Vol, veh/h	0	0	31	12	0	27
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	-	-	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	88	63	92	67
Heavy Vehicles, %	2	2	18	0	2	0
Mvmt Flow	0	0	35	19	0	40

Major/Minor

	Major2	Minor2
Conflicting Flow All	-	0
Stage 1	-	-
Stage 2	-	-
Critical Hdwy	-	-
Critical Hdwy Stg 1	-	-
Critical Hdwy Stg 2	-	-
Follow-up Hdwy	-	-
Pot Cap-1 Maneuver	-	-
Stage 1	-	-
Stage 2	-	-
Platoon blocked, %	-	-
Mov Cap-1 Maneuver	-	-
Mov Cap-2 Maneuver	-	-
Stage 1	-	-
Stage 2	-	-

Approach

	WB	SB
HCM Control Delay, s	0	8.6
HCM LOS		A

Minor Lane/Major Mvmt

	WBT	WBR	SBLn1
Capacity (veh/h)	-	-	1031
HCM Lane V/C Ratio	-	-	0.039
HCM Control Delay (s)	-	-	8.6
HCM Lane LOS	-	-	A
HCM 95th %tile Q(veh)	-	-	0.1

Intersection

Int Delay, s/veh 0.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	Y		P			A
Traffic Vol, veh/h	0	4	100	0	0	64
Future Vol, veh/h	0	4	100	0	0	64
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	25	50	87	25	25	84
Heavy Vehicles, %	0	0	1	0	0	7
Mvmt Flow	0	8	115	0	0	76

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	191	115	0	0	115	0
Stage 1	115	-	-	-	-	-
Stage 2	76	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	803	943	-	-	1487	-
Stage 1	915	-	-	-	-	-
Stage 2	952	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	803	943	-	-	1487	-
Mov Cap-2 Maneuver	803	-	-	-	-	-
Stage 1	915	-	-	-	-	-
Stage 2	952	-	-	-	-	-

Approach	WB		NB		SB
HCM Control Delay, s	8.9		0		0
HCM LOS	A				

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	- 943	1487	-
HCM Lane V/C Ratio	-	- 0.008	-	-
HCM Control Delay (s)	-	- 8.9	0	-
HCM Lane LOS	-	- A	A	-
HCM 95th %tile Q(veh)	-	- 0	0	-

HCM 2010 TWSC - 2015 PM Existing Conditions
 150: Service Station Dwy/Retail Store & E. Cherokee Street

11/17/2016

Intersection												
Int Delay, s/veh	3.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	248	1	16	265	0	36	0	48	0	0	1
Future Vol, veh/h	0	248	1	16	265	0	36	0	48	0	0	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	25	85	25	58	87	25	75	25	60	92	92	25
Heavy Vehicles, %	0	13	0	29	11	0	90	0	50	0	0	100
Mvmt Flow	0	292	4	28	305	0	48	0	80	0	0	4
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	305	0	0	296	0	0	656	654	294	694	656	305
Stage 1	-	-	-	-	-	-	294	294	-	360	360	-
Stage 2	-	-	-	-	-	-	362	360	-	334	296	-
Critical Hdwy	4.1	-	-	4.39	-	-	8	6.5	6.7	7.1	6.5	7.2
Critical Hdwy Stg 1	-	-	-	-	-	-	7	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	7	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.461	-	-	4.31	4	3.75	3.5	4	4.2
Pot Cap-1 Maneuver	1267	-	-	1126	-	-	281	389	645	360	388	553
Stage 1	-	-	-	-	-	-	559	673	-	662	630	-
Stage 2	-	-	-	-	-	-	509	630	-	684	672	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1267	-	-	1126	-	-	273	377	645	308	376	553
Mov Cap-2 Maneuver	-	-	-	-	-	-	273	377	-	308	376	-
Stage 1	-	-	-	-	-	-	559	673	-	662	611	-
Stage 2	-	-	-	-	-	-	490	611	-	599	672	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0			0.7			17			11.6		
HCM LOS							C			B		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	427	1267	-	-	1126	-	-	553				
HCM Lane V/C Ratio	0.3	-	-	-	0.024	-	-	0.007				
HCM Control Delay (s)	17	0	-	-	8.3	0	-	11.6				
HCM Lane LOS	C	A	-	-	A	A	-	B				
HCM 95th %tile Q(veh)	1.2	0	-	-	0.1	-	-	0				

HCM 2010 TWSC - 2015 PM Existing Conditions
 148: E. Cherokee Street & Retail Store/Service Station

11/17/2016

Intersection

Int Delay, s/veh 3

Movement	WBL	WBR	NET	NER	SWL	SWT
Lane Configurations	Y		P			A
Traffic Vol, veh/h	30	71	178	16	62	241
Future Vol, veh/h	30	71	178	16	62	241
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	82	69	86	25	93	89
Heavy Vehicles, %	9	0	7	0	2	2
Mvmt Flow	37	103	207	64	67	271

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	643	239	0	0	271	0
Stage 1	239	-	-	-	-	-
Stage 2	404	-	-	-	-	-
Critical Hdwy	6.49	6.2	-	-	4.12	-
Critical Hdwy Stg 1	5.49	-	-	-	-	-
Critical Hdwy Stg 2	5.49	-	-	-	-	-
Follow-up Hdwy	3.581	3.3	-	-	2.218	-
Pot Cap-1 Maneuver	427	805	-	-	1292	-
Stage 1	785	-	-	-	-	-
Stage 2	659	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	401	805	-	-	1292	-
Mov Cap-2 Maneuver	401	-	-	-	-	-
Stage 1	785	-	-	-	-	-
Stage 2	619	-	-	-	-	-

Approach	WB		NE		SW
HCM Control Delay, s	12.2		0		1.6
HCM LOS	B				

Minor Lane/Major Mvmt	NET	NER	WBLn1	SWL	SWT
Capacity (veh/h)	-	-	637	1292	-
HCM Lane V/C Ratio	-	-	0.219	0.052	-
HCM Control Delay (s)	-	-	12.2	7.9	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.8	0.2	-

HCM 2010 TWSC - 2015 PM Existing Conditions
 142: E. Cherokee Street & I-85 SB On-Ramp

11/17/2016

Intersection

Int Delay, s/veh 1.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	8	0	1	0	3	2	28	234	0	0	179	2
Future Vol, veh/h	8	0	1	0	3	2	28	234	0	0	179	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	25	92	25	92	92	92	75	88	92	25	81	58
Heavy Vehicles, %	0	0	0	2	2	2	4	8	2	0	20	29
Mvmt Flow	32	0	4	0	3	2	37	266	0	0	221	3

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	566	564	223	566	565	266	224	0	0	266	0	0
Stage 1	223	223	-	341	341	-	-	-	-	-	-	-
Stage 2	343	341	-	225	224	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.12	6.52	6.22	4.14	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.518	4.018	3.318	2.236	-	-	2.2	-	-
Pot Cap-1 Maneuver	438	438	822	435	434	773	1333	-	-	1310	-	-
Stage 1	784	723	-	674	639	-	-	-	-	-	-	-
Stage 2	676	642	-	778	718	-	-	-	-	-	-	-
Platoon blocked, %												
Mov Cap-1 Maneuver	423	424	822	422	420	773	1333	-	-	1310	-	-
Mov Cap-2 Maneuver	423	424	-	422	420	-	-	-	-	-	-	-
Stage 1	758	723	-	652	618	-	-	-	-	-	-	-
Stage 2	648	621	-	774	718	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	13.8	12.1	1	0
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1333	-	-	447	514	1310	-	-
HCM Lane V/C Ratio	0.028	-	-	0.081	0.011	-	-	-
HCM Control Delay (s)	7.8	0	-	13.8	12.1	0	-	-
HCM Lane LOS	A	A	-	B	B	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.3	0	0	-	-

HCM 2010 TWSC - 2015 PM Existing Conditions
 140: E. Cherokee Street & Fireworks Store/Liquor Store

11/17/2016

Intersection												
Int Delay, s/veh	1.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	3	0	0	10	0	16	1	243	14	21	156	3
Future Vol, veh/h	3	0	0	10	0	16	1	243	14	21	156	3
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	75	25	25	75	25	62	92	86	63	50	64	25
Heavy Vehicles, %	0	0	0	0	0	0	0	24	0	0	36	0
Mvmt Flow	4	0	0	13	0	26	1	283	22	42	244	12
Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	643	641	250	630	636	294	256	0	0	305	0	0
Stage 1	334	334	-	296	296	-	-	-	-	-	-	-
Stage 2	309	307	-	334	340	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	389	395	794	397	398	750	1321	-	-	1267	-	-
Stage 1	684	647	-	717	672	-	-	-	-	-	-	-
Stage 2	705	665	-	684	643	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	364	379	794	385	382	750	1321	-	-	1267	-	-
Mov Cap-2 Maneuver	364	379	-	385	382	-	-	-	-	-	-	-
Stage 1	683	622	-	716	671	-	-	-	-	-	-	-
Stage 2	680	664	-	657	618	-	-	-	-	-	-	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	15			11.8			0			1.1		
HCM LOS	C			B								
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	1321	-	-	364	567	1267	-	-				
HCM Lane V/C Ratio	0.001	-	-	0.011	0.069	0.033	-	-				
HCM Control Delay (s)	7.7	0	-	15	11.8	7.9	0	-				
HCM Lane LOS	A	A	-	C	B	A	A	-				
HCM 95th %tile Q(veh)	0	-	-	0	0.2	0.1	-	-				

HCM 2010 TWSC - 2015 PM Existing Conditions
 131: E. Cherokee Street & I-85 NB Off-Ramp

11/17/2016

Intersection

Int Delay, s/veh 2.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	Y		↑			↑
Traffic Vol, veh/h	4	82	108	0	0	208
Future Vol, veh/h	4	82	108	0	0	208
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Yield	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	67	69	82	92	92	93
Heavy Vehicles, %	25	21	28	2	2	36
Mvmt Flow	6	119	132	0	0	224

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	356	132	0	-	-	-
Stage 1	132	-	-	-	-	-
Stage 2	224	-	-	-	-	-
Critical Hdwy	6.65	6.41	-	-	-	-
Critical Hdwy Stg 1	5.65	-	-	-	-	-
Critical Hdwy Stg 2	5.65	-	-	-	-	-
Follow-up Hdwy	3.725	3.489	-	-	-	-
Pot Cap-1 Maneuver	599	869	-	0	0	-
Stage 1	840	-	-	0	0	-
Stage 2	762	-	-	0	0	-
Platoon blocked, %			-			-
Mov Cap-1 Maneuver	599	869	-	-	-	-
Mov Cap-2 Maneuver	599	-	-	-	-	-
Stage 1	840	-	-	-	-	-
Stage 2	762	-	-	-	-	-

Approach	WB		NB		SB
HCM Control Delay, s	9.6		0		0
HCM LOS	A				

Minor Lane/Major Mvmt	NBTWBLn1	SBT
Capacity (veh/h)	- 913	-
HCM Lane V/C Ratio	- 0.137	-
HCM Control Delay (s)	- 9.6	-
HCM Lane LOS	- A	-
HCM 95th %tile Q(veh)	- 0.5	-

HCM 2010 TWSC - 2015 PM Existing Conditions

129: E. Cherokee Street & Service Station Dwy & I-85 NB On-Ramp/Mill Creek Rd

11/17/2016

Intersection												
Int Delay, s/veh	3.7											
Movement	EBL	EBR	NBL	NBT	NBR	SBL	SBT	SBR	SWL	SWR		
Lane Configurations	Y		+			+			Y			
Traffic Vol, veh/h	11	4	10	80	24	57	131	21	1	0		
Future Vol, veh/h	11	4	10	80	24	57	131	21	1	0		
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0		
Sign Control	Stop	Stop	Free	Free	Free	Free	Free	Free	Stop	Stop		
RT Channelized	-	None	-	-	Free	-	-	None	-	-		
Storage Length	0	-	-	-	-	-	-	-	0	-		
Veh in Median Storage, #	0	-	-	0	-	-	0	-	0	-		
Grade, %	0	-	-	0	-	-	0	-	0	-		
Peak Hour Factor	75	25	25	90	62	78	86	67	25	25		
Heavy Vehicles, %	0	0	0	6	0	57	7	0	2	2		
Mvmt Flow	15	16	40	89	39	73	152	31	4	0		
Major/Minor	Minor2		Major1			Major2			Minor1			
Conflicting Flow All	492	168	184	0	-	89	0	0	498	89		
Stage 1	314	-	-	-	-	-	-	-	169	-		
Stage 2	178	-	-	-	-	-	-	-	329	-		
Critical Hdwy	7.1	6.2	4.1	-	-	4.67	-	-	7.12	6.22		
Critical Hdwy Stg 1	6.1	-	-	-	-	-	-	-	6.12	-		
Critical Hdwy Stg 2	6.1	-	-	-	-	-	-	-	6.12	-		
Follow-up Hdwy	3.5	3.3	2.2	-	-	2.713	-	-	3.518	3.318		
Pot Cap-1 Maneuver	490	881	1403	-	0	1222	-	-	483	969		
Stage 1	701	-	-	-	0	-	-	-	833	-		
Stage 2	828	-	-	-	0	-	-	-	684	-		
Platoon blocked, %				-			-					
Mov Cap-1 Maneuver	446	881	1403	-	-	1222	-	-	429	969		
Mov Cap-2 Maneuver	446	-	-	-	-	-	-	-	429	-		
Stage 1	680	-	-	-	-	-	-	-	808	-		
Stage 2	789	-	-	-	-	-	-	-	612	-		
Approach	EB		NB			SB			SW			
HCM Control Delay, s	11.4		2.4			2.3			9.7			
HCM LOS	B								A			
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBL	SBT	SBRSWLn1						
Capacity (veh/h)	1403	-	596	1222	-	-	784					
HCM Lane V/C Ratio	0.029	-	0.051	0.06	-	-	0.027					
HCM Control Delay (s)	7.6	0	11.4	8.1	0	-	9.7					
HCM Lane LOS	A	A	B	A	A	-	A					
HCM 95th %tile Q(veh)	0.1	-	0.2	0.2	-	-	0.1					

HCM 2010 TWSC - 2015 PM Existing Conditions
 138: I-85 SB Off-Ramp & Service Station Dwy 2

11/17/2016

Intersection

Int Delay, s/veh 2.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations			↔			↔
Traffic Vol, veh/h	0	0	84	25	0	27
Future Vol, veh/h	0	0	84	25	0	27
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	-	-	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	88	63	92	67
Heavy Vehicles, %	2	2	18	0	2	0
Mvmt Flow	0	0	95	40	0	40

Major/Minor

	Major2	Minor2
Conflicting Flow All	-	0
Stage 1	-	-
Stage 2	-	-
Critical Hdwy	-	-
Critical Hdwy Stg 1	-	-
Critical Hdwy Stg 2	-	-
Follow-up Hdwy	-	-
Pot Cap-1 Maneuver	-	-
Stage 1	-	-
Stage 2	-	-
Platoon blocked, %	-	-
Mov Cap-1 Maneuver	-	-
Mov Cap-2 Maneuver	-	-
Stage 1	-	-
Stage 2	-	-

Approach

	WB	SB
HCM Control Delay, s	0	9
HCM LOS		A

Minor Lane/Major Mvmt

	WBT	WBR	SBLn1
Capacity (veh/h)	-	-	943
HCM Lane V/C Ratio	-	-	0.043
HCM Control Delay (s)	-	-	9
HCM Lane LOS	-	-	A
HCM 95th %tile Q(veh)	-	-	0.1

HCM 2010 TWSC - 2015 PM Existing Conditions
 133: E. Cherokee Street & Lakeview Dr

11/17/2016

Intersection

Int Delay, s/veh 0.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	Y		P			A
Traffic Vol, veh/h	0	1	113	0	4	132
Future Vol, veh/h	0	1	113	0	4	132
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	25	50	87	25	25	84
Heavy Vehicles, %	0	0	1	0	0	7
Mvmt Flow	0	2	130	0	16	157

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	319	130	0	0	130	0
Stage 1	130	-	-	-	-	-
Stage 2	189	-	-	-	-	-
Critical Hdwy	7.1	6.2	-	-	4.1	-
Critical Hdwy Stg 1	6.1	-	-	-	-	-
Critical Hdwy Stg 2	6.1	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	638	925	-	-	1468	-
Stage 1	878	-	-	-	-	-
Stage 2	817	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	632	925	-	-	1468	-
Mov Cap-2 Maneuver	632	-	-	-	-	-
Stage 1	878	-	-	-	-	-
Stage 2	807	-	-	-	-	-

Approach	WB		NB		SB
HCM Control Delay, s	8.9		0		0.7
HCM LOS	A				

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	925	1468	-
HCM Lane V/C Ratio	-	-	0.002	0.011	-
HCM Control Delay (s)	-	-	8.9	7.5	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0	0	-



**2040 NO BUILD CONDITIONS
SYNCHRO HCM ANALYSIS**

HCM 2010 TWSC - 2040 No-Build AM
 150: Service Station Dwy/Retail Store & E. Cherokee Street

11/17/2016

Intersection												
Int Delay, s/veh	3.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	206	1	10	242	3	85	1	19	0	0	1
Future Vol, veh/h	0	206	1	10	242	3	85	1	19	0	0	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	92	92	90
Heavy Vehicles, %	0	13	0	29	11	0	90	0	50	0	0	100
Mvmt Flow	0	229	1	11	269	3	94	1	21	0	0	1
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	272	0	0	230	0	0	522	523	229	534	523	271
Stage 1	-	-	-	-	-	-	229	229	-	293	293	-
Stage 2	-	-	-	-	-	-	293	294	-	241	230	-
Critical Hdwy	4.1	-	-	4.39	-	-	8	6.5	6.7	7.1	6.5	7.2
Critical Hdwy Stg 1	-	-	-	-	-	-	7	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	7	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.461	-	-	4.31	4	3.75	3.5	4	4.2
Pot Cap-1 Maneuver	1303	-	-	1194	-	-	352	462	705	460	462	581
Stage 1	-	-	-	-	-	-	612	718	-	719	674	-
Stage 2	-	-	-	-	-	-	560	673	-	767	718	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1303	-	-	1194	-	-	348	457	705	442	457	581
Mov Cap-2 Maneuver	-	-	-	-	-	-	348	457	-	442	457	-
Stage 1	-	-	-	-	-	-	612	718	-	719	667	-
Stage 2	-	-	-	-	-	-	553	666	-	743	718	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0			0.3			18.4			11.2		
HCM LOS							C			B		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	384	1303	-	-	1194	-	-	581				
HCM Lane V/C Ratio	0.304	-	-	-	0.009	-	-	0.002				
HCM Control Delay (s)	18.4	0	-	-	8	0	-	11.2				
HCM Lane LOS	C	A	-	-	A	A	-	B				
HCM 95th %tile Q(veh)	1.3	0	-	-	0	-	-	0				

Intersection

Int Delay, s/veh 1.4

Movement	WBL	WBR	NET	NER	SWL	SWT
Lane Configurations	Y		P			A
Traffic Vol, veh/h	15	33	174	0	37	291
Future Vol, veh/h	15	33	174	0	37	291
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	90	90	90	90	93	90
Heavy Vehicles, %	9	0	7	0	2	2
Mvmt Flow	17	37	193	0	40	323

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	596	193	0	0	193	0
Stage 1	193	-	-	-	-	-
Stage 2	403	-	-	-	-	-
Critical Hdwy	6.49	6.2	-	-	4.12	-
Critical Hdwy Stg 1	5.49	-	-	-	-	-
Critical Hdwy Stg 2	5.49	-	-	-	-	-
Follow-up Hdwy	3.581	3.3	-	-	2.218	-
Pot Cap-1 Maneuver	455	854	-	-	1380	-
Stage 1	823	-	-	-	-	-
Stage 2	660	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	439	854	-	-	1380	-
Mov Cap-2 Maneuver	439	-	-	-	-	-
Stage 1	823	-	-	-	-	-
Stage 2	637	-	-	-	-	-

Approach	WB		NE		SW
HCM Control Delay, s	10.9		0		0.8
HCM LOS	B				

Minor Lane/Major Mvmt	NET	NER	WBLn1	SWL	SWT
Capacity (veh/h)	-	-	659	1380	-
HCM Lane V/C Ratio	-	-	0.081	0.029	-
HCM Control Delay (s)	-	-	10.9	7.7	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.3	0.1	-

Intersection												
Int Delay, s/veh	0.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	1	0	1	0	0	0	31	218	0	1	177	10
Future Vol, veh/h	1	0	1	0	0	0	31	218	0	1	177	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	92	90	92	92	92	90	90	92	90	90	90
Heavy Vehicles, %	0	0	0	2	2	2	4	8	2	0	20	29
Mvmt Flow	1	0	1	0	0	0	34	242	0	1	197	11
Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	515	515	202	516	521	242	208	0	0	242	0	0
Stage 1	204	204	-	311	311	-	-	-	-	-	-	-
Stage 2	311	311	-	205	210	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.12	6.52	6.22	4.14	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.518	4.018	3.318	2.236	-	-	2.2	-	-
Pot Cap-1 Maneuver	474	466	844	470	460	797	1351	-	-	1336	-	-
Stage 1	803	737	-	699	658	-	-	-	-	-	-	-
Stage 2	704	662	-	797	728	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	463	452	844	459	446	797	1351	-	-	1336	-	-
Mov Cap-2 Maneuver	463	452	-	459	446	-	-	-	-	-	-	-
Stage 1	780	736	-	679	639	-	-	-	-	-	-	-
Stage 2	684	643	-	795	727	-	-	-	-	-	-	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	11			0			1			0		
HCM LOS	B			A								
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	1351	-	-	598	-	1336	-	-				
HCM Lane V/C Ratio	0.025	-	-	0.004	-	0.001	-	-				
HCM Control Delay (s)	7.7	0	-	11	0	7.7	0	-				
HCM Lane LOS	A	A	-	B	A	A	A	-				
HCM 95th %tile Q(veh)	0.1	-	-	0	-	0	-	-				

HCM 2010 TWSC - 2040 No-Build AM
 140: E. Cherokee Street & Fireworks Store/Liquor Store

11/17/2016

Intersection												
Int Delay, s/veh	0.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	4	1	0	9	1	8	0	237	14	14	164	0
Future Vol, veh/h	4	1	0	9	1	8	0	237	14	14	164	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	92	90	90	90	90	90
Heavy Vehicles, %	0	0	0	0	0	0	0	24	0	0	36	0
Mvmt Flow	4	1	0	10	1	9	0	263	16	16	182	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	489	492	182	485	484	271	182	0	0	279	0	0
Stage 1	213	213	-	271	271	-	-	-	-	-	-	-
Stage 2	276	279	-	214	213	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	493	481	866	496	486	773	1405	-	-	1295	-	-
Stage 1	794	730	-	739	689	-	-	-	-	-	-	-
Stage 2	735	683	-	793	730	-	-	-	-	-	-	-
Platoon blocked, %												
Mov Cap-1 Maneuver	481	474	866	490	479	773	1405	-	-	1295	-	-
Mov Cap-2 Maneuver	481	474	-	490	479	-	-	-	-	-	-	-
Stage 1	794	720	-	739	689	-	-	-	-	-	-	-
Stage 2	725	683	-	781	720	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	12.6	11.4	0	0.6
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1405	-	-	480	584	1295	-	-
HCM Lane V/C Ratio	-	-	-	0.012	0.034	0.012	-	-
HCM Control Delay (s)	0	-	-	12.6	11.4	7.8	0	-
HCM Lane LOS	A	-	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0	0.1	0	-	-

Intersection												
Int Delay, s/veh	2.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖		↗		↕		↖			↗		
Traffic Vol, veh/h	15	0	13	27	3	45	5	191	0	0	145	28
Future Vol, veh/h	15	0	13	27	3	45	5	191	0	0	145	28
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	0	-	0	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	92	90	95	90	90	90	90	92	92	90	68
Heavy Vehicles, %	11	2	0	5	0	10	0	25	2	2	37	0
Mvmt Flow	17	0	14	28	3	50	6	212	0	0	161	41
Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	432	-	182	405	425	212	202	0	-	-	-	0
Stage 1	182	-	-	223	223	-	-	-	-	-	-	-
Stage 2	250	-	-	182	202	-	-	-	-	-	-	-
Critical Hdwy	7.21	-	6.2	7.15	6.5	6.3	4.1	-	-	-	-	-
Critical Hdwy Stg 1	6.21	-	-	6.15	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.21	-	-	6.15	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.599	-	3.3	3.545	4	3.39	2.2	-	-	-	-	-
Pot Cap-1 Maneuver	519	0	866	551	524	808	1382	-	0	0	-	-
Stage 1	799	0	-	773	723	-	-	-	0	0	-	-
Stage 2	734	0	-	813	738	-	-	-	0	0	-	-
Platoon blocked, %	-											
Mov Cap-1 Maneuver	483	-	866	540	521	808	1382	-	-	-	-	-
Mov Cap-2 Maneuver	483	-	-	540	521	-	-	-	-	-	-	-
Stage 1	795	-	-	769	719	-	-	-	-	-	-	-
Stage 2	682	-	-	799	738	-	-	-	-	-	-	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	11.1			11.1			0.2			0		
HCM LOS	B			B								
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	WBLn1	SBT	SBR					
Capacity (veh/h)	1382	-	483	866	676	-	-					
HCM Lane V/C Ratio	0.004	-	0.035	0.017	0.121	-	-					
HCM Control Delay (s)	7.6	0	12.7	9.2	11.1	-	-					
HCM Lane LOS	A	A	B	A	B	-	-					
HCM 95th %tile Q(veh)	0	-	0.1	0.1	0.4	-	-					

Intersection

Int Delay, s/veh 1.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	Y		↑			↑
Traffic Vol, veh/h	12	49	147	0	0	185
Future Vol, veh/h	12	49	147	0	0	185
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Yield	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	90	90	90	92	92	93
Heavy Vehicles, %	25	21	28	2	2	36
Mvmt Flow	13	54	163	0	0	199

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	362	163	0	-	-	-
Stage 1	163	-	-	-	-	-
Stage 2	199	-	-	-	-	-
Critical Hdwy	6.65	6.41	-	-	-	-
Critical Hdwy Stg 1	5.65	-	-	-	-	-
Critical Hdwy Stg 2	5.65	-	-	-	-	-
Follow-up Hdwy	3.725	3.489	-	-	-	-
Pot Cap-1 Maneuver	594	834	-	0	0	-
Stage 1	813	-	-	0	0	-
Stage 2	782	-	-	0	0	-
Platoon blocked, %			-			-
Mov Cap-1 Maneuver	594	834	-	-	-	-
Mov Cap-2 Maneuver	594	-	-	-	-	-
Stage 1	813	-	-	-	-	-
Stage 2	782	-	-	-	-	-

Approach	WB		NB		SB
HCM Control Delay, s	8.7		0		0
HCM LOS	A				

Minor Lane/Major Mvmt	NBTWBLn1	SBT
Capacity (veh/h)	- 1038	-
HCM Lane V/C Ratio	- 0.065	-
HCM Control Delay (s)	- 8.7	-
HCM Lane LOS	- A	-
HCM 95th %tile Q(veh)	- 0.2	-

Intersection												
Int Delay, s/veh	4.2											
Movement	EBL	EBR	NBL	NBT	NBR	SBL	SBT	SBR	SWL	SWR		
Lane Configurations	↔		↔			↔			↔			
Traffic Vol, veh/h	9	1	3	103	28	106	80	12	1	0		
Future Vol, veh/h	9	1	3	103	28	106	80	12	1	0		
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0		
Sign Control	Stop	Stop	Free	Free	Free	Free	Free	Free	Stop	Stop		
RT Channelized	-	None	-	-	Free	-	-	None	-	-		
Storage Length	0	-	-	-	-	-	-	-	0	-		
Veh in Median Storage, #	0	-	-	0	-	-	0	-	0	-		
Grade, %	0	-	-	0	-	-	0	-	0	-		
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90		
Heavy Vehicles, %	0	0	0	6	0	57	7	0	2	2		
Mvmt Flow	10	1	3	114	31	118	89	13	1	0		
Major/Minor	Minor2		Major1			Major2			Minor1			
Conflicting Flow All	473	96	102	0	-	114	0	0	458	114		
Stage 1	331	-	-	-	-	-	-	-	121	-		
Stage 2	142	-	-	-	-	-	-	-	337	-		
Critical Hdwy	7.1	6.2	4.1	-	-	4.67	-	-	7.12	6.22		
Critical Hdwy Stg 1	6.1	-	-	-	-	-	-	-	6.12	-		
Critical Hdwy Stg 2	6.1	-	-	-	-	-	-	-	6.12	-		
Follow-up Hdwy	3.5	3.3	2.2	-	-	2.713	-	-	3.518	3.318		
Pot Cap-1 Maneuver	505	966	1503	-	0	1194	-	-	513	939		
Stage 1	687	-	-	-	0	-	-	-	883	-		
Stage 2	866	-	-	-	0	-	-	-	677	-		
Platoon blocked, %				-			-	-				
Mov Cap-1 Maneuver	443	966	1503	-	-	1194	-	-	463	939		
Mov Cap-2 Maneuver	443	-	-	-	-	-	-	-	463	-		
Stage 1	686	-	-	-	-	-	-	-	881	-		
Stage 2	826	-	-	-	-	-	-	-	595	-		
Approach	EB		NB			SB			SW			
HCM Control Delay, s	13.2		0.2			4.5			9.1			
HCM LOS	B								A			
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBL	SBT	SBRSWLn1						
Capacity (veh/h)	1503	-	460	1194	-	-	914					
HCM Lane V/C Ratio	0.002	-	0.046	0.099	-	-	0.046					
HCM Control Delay (s)	7.4	0	13.2	8.3	0	-	9.1					
HCM Lane LOS	A	A	B	A	A	-	A					
HCM 95th %tile Q(veh)	0	-	0.1	0.3	-	-	0.1					

Intersection

Int Delay, s/veh 3.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations			↶			↷
Traffic Vol, veh/h	0	0	40	14	0	35
Future Vol, veh/h	0	0	40	14	0	35
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	-	-	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	90	90	92	90
Heavy Vehicles, %	2	2	18	0	2	0
Mvmt Flow	0	0	44	16	0	39

Major/Minor

	Major2	Minor2
Conflicting Flow All	-	0
Stage 1	-	-
Stage 2	-	-
Critical Hdwy	-	-
Critical Hdwy Stg 1	-	-
Critical Hdwy Stg 2	-	-
Follow-up Hdwy	-	-
Pot Cap-1 Maneuver	-	-
Stage 1	-	-
Stage 2	-	-
Platoon blocked, %	-	-
Mov Cap-1 Maneuver	-	-
Mov Cap-2 Maneuver	-	-
Stage 1	-	-
Stage 2	-	-

Approach

	WB	SB
HCM Control Delay, s	0	8.7
HCM LOS		A

Minor Lane/Major Mvmt

	WBT	WBR	SBLn1
Capacity (veh/h)	-	-	1021
HCM Lane V/C Ratio	-	-	0.038
HCM Control Delay (s)	-	-	8.7
HCM Lane LOS	-	-	A
HCM 95th %tile Q(veh)	-	-	0.1

Intersection

Int Delay, s/veh 0.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	Y		P			A
Traffic Vol, veh/h	0	5	129	0	0	82
Future Vol, veh/h	0	5	129	0	0	82
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	0	0	1	0	0	7
Mvmt Flow	0	6	143	0	0	91

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	234	143	0	0	143	0
Stage 1	143	-	-	-	-	-
Stage 2	91	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	759	910	-	-	1452	-
Stage 1	889	-	-	-	-	-
Stage 2	938	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	759	910	-	-	1452	-
Mov Cap-2 Maneuver	759	-	-	-	-	-
Stage 1	889	-	-	-	-	-
Stage 2	938	-	-	-	-	-

Approach	WB		NB		SB
HCM Control Delay, s	9		0		0
HCM LOS	A				

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	- 910	1452	-
HCM Lane V/C Ratio	-	- 0.006	-	-
HCM Control Delay (s)	-	- 9	0	-
HCM Lane LOS	-	- A	A	-
HCM 95th %tile Q(veh)	-	- 0	0	-

HCM 2010 TWSC - 2040 No-Build PM
 150: Service Station Dwy/Retail Store & E. Cherokee Street

11/17/2016

Intersection												
Int Delay, s/veh	3.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	318	1	21	343	0	46	0	62	0	0	1
Future Vol, veh/h	0	318	1	21	343	0	46	0	62	0	0	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	92	92	90
Heavy Vehicles, %	0	13	0	29	11	0	90	0	50	0	0	100
Mvmt Flow	0	353	1	23	381	0	51	0	69	0	0	1
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	381	0	0	354	0	0	782	782	354	816	782	381
Stage 1	-	-	-	-	-	-	354	354	-	428	428	-
Stage 2	-	-	-	-	-	-	428	428	-	388	354	-
Critical Hdwy	4.1	-	-	4.39	-	-	8	6.5	6.7	7.1	6.5	7.2
Critical Hdwy Stg 1	-	-	-	-	-	-	7	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	7	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.461	-	-	4.31	4	3.75	3.5	4	4.2
Pot Cap-1 Maneuver	1189	-	-	1070	-	-	226	328	594	298	328	496
Stage 1	-	-	-	-	-	-	515	634	-	609	588	-
Stage 2	-	-	-	-	-	-	464	588	-	640	634	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1189	-	-	1070	-	-	221	319	594	258	319	496
Mov Cap-2 Maneuver	-	-	-	-	-	-	221	319	-	258	319	-
Stage 1	-	-	-	-	-	-	515	634	-	609	572	-
Stage 2	-	-	-	-	-	-	450	572	-	566	634	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0			0.5			20.8			12.3		
HCM LOS							C			B		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	346	1189	-	-	1070	-	-	496				
HCM Lane V/C Ratio	0.347	-	-	-	0.022	-	-	0.002				
HCM Control Delay (s)	20.8	0	-	-	8.4	0	-	12.3				
HCM Lane LOS	C	A	-	-	A	A	-	B				
HCM 95th %tile Q(veh)	1.5	0	-	-	0.1	-	-	0				

Intersection

Int Delay, s/veh 3.3

Movement	WBL	WBR	NET	NER	SWL	SWT
Lane Configurations	Y		P			A
Traffic Vol, veh/h	38	91	228	21	80	310
Future Vol, veh/h	38	91	228	21	80	310
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	90	90	90	90	93	90
Heavy Vehicles, %	9	0	7	0	2	2
Mvmt Flow	42	101	253	23	86	344

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	781	265	0	0	277	0
Stage 1	265	-	-	-	-	-
Stage 2	516	-	-	-	-	-
Critical Hdwy	7.19	6.2	-	-	4.12	-
Critical Hdwy Stg 1	6.19	-	-	-	-	-
Critical Hdwy Stg 2	6.19	-	-	-	-	-
Follow-up Hdwy	3.581	3.3	-	-	2.218	-
Pot Cap-1 Maneuver	304	779	-	-	1286	-
Stage 1	725	-	-	-	-	-
Stage 2	529	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	285	779	-	-	1286	-
Mov Cap-2 Maneuver	285	-	-	-	-	-
Stage 1	725	-	-	-	-	-
Stage 2	485	-	-	-	-	-

Approach	WB		NE		SW
HCM Control Delay, s	14.6		0		1.6
HCM LOS	B				

Minor Lane/Major Mvmt	NET	NERWBLn1	SWL	SWT
Capacity (veh/h)	-	-	516	1286
HCM Lane V/C Ratio	-	-	0.278	0.067
HCM Control Delay (s)	-	-	14.6	8
HCM Lane LOS	-	-	B	A
HCM 95th %tile Q(veh)	-	-	1.1	0.2

Intersection												
Int Delay, s/veh	0.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	10	0	1	0	3	4	36	300	0	0	230	3
Future Vol, veh/h	10	0	1	0	3	4	36	300	0	0	230	3
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	92	90	92	92	92	90	90	92	90	90	90
Heavy Vehicles, %	0	0	0	2	2	2	4	8	2	0	20	29
Mvmt Flow	11	0	1	0	3	4	40	333	0	0	256	3
Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	674	670	257	671	672	333	259	0	0	333	0	0
Stage 1	257	257	-	413	413	-	-	-	-	-	-	-
Stage 2	417	413	-	258	259	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.12	6.52	6.22	4.14	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.518	4.018	3.318	2.236	-	-	2.2	-	-
Pot Cap-1 Maneuver	371	381	787	370	377	709	1294	-	-	1238	-	-
Stage 1	752	699	-	616	594	-	-	-	-	-	-	-
Stage 2	617	597	-	747	694	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	356	367	787	359	363	709	1294	-	-	1238	-	-
Mov Cap-2 Maneuver	356	367	-	359	363	-	-	-	-	-	-	-
Stage 1	723	699	-	593	571	-	-	-	-	-	-	-
Stage 2	587	574	-	746	694	-	-	-	-	-	-	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	14.9			12.3			0.8			0		
HCM LOS	B			B								
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	1294	-	-	375	503	1238	-	-				
HCM Lane V/C Ratio	0.031	-	-	0.033	0.015	-	-	-				
HCM Control Delay (s)	7.9	0	-	14.9	12.3	0	-	-				
HCM Lane LOS	A	A	-	B	B	A	-	-				
HCM 95th %tile Q(veh)	0.1	-	-	0.1	0	0	-	-				

HCM 2010 TWSC - 2040 No-Build PM
 140: E. Cherokee Street & Fireworks Store/Liquor Store

11/17/2016

Intersection												
Int Delay, s/veh	1.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	4	0	0	13	0	21	1	311	17	27	200	4
Future Vol, veh/h	4	0	0	13	0	21	1	311	17	27	200	4
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	92	90	90	90	90	90
Heavy Vehicles, %	0	0	0	0	0	0	0	24	0	0	36	0
Mvmt Flow	4	0	0	14	0	23	1	346	19	30	222	4
Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	653	651	224	641	644	355	227	0	0	364	0	0
Stage 1	284	284	-	357	357	-	-	-	-	-	-	-
Stage 2	369	367	-	284	287	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	383	390	820	390	394	693	1353	-	-	1206	-	-
Stage 1	727	680	-	665	632	-	-	-	-	-	-	-
Stage 2	655	626	-	727	678	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	362	379	820	381	383	693	1353	-	-	1206	-	-
Mov Cap-2 Maneuver	362	379	-	381	383	-	-	-	-	-	-	-
Stage 1	726	661	-	664	631	-	-	-	-	-	-	-
Stage 2	632	625	-	707	659	-	-	-	-	-	-	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	15.1			12.3			0			0.9		
HCM LOS	C			B								
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	1353	-	-	362	528	1206	-	-				
HCM Lane V/C Ratio	0.001	-	-	0.012	0.072	0.025	-	-				
HCM Control Delay (s)	7.7	0	-	15.1	12.3	8.1	0	-				
HCM Lane LOS	A	A	-	C	B	A	A	-				
HCM 95th %tile Q(veh)	0	-	-	0	0.2	0.1	-	-				

HCM 2010 TWSC - 2040 No-Build PM
 136: E. Cherokee Street & Service Station Dwy/I-85 SB Off-Ramp

11/17/2016

Intersection												
Int Delay, s/veh	3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖		↗	↕			↖			↗		
Traffic Vol, veh/h	0	0	0	55	0	87	0	242	0	0	213	0
Future Vol, veh/h	0	0	0	55	0	87	0	242	0	0	213	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	0	-	0	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	92	90	95	90	90	90	90	100	92	90	90
Heavy Vehicles, %	11	2	0	5	0	10	0	25	2	2	37	0
Mvmt Flow	0	0	0	58	0	97	0	269	0	0	237	0
Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	554	-	237	506	506	269	237	0	-	-	-	0
Stage 1	237	-	-	269	269	-	-	-	-	-	-	-
Stage 2	317	-	-	237	237	-	-	-	-	-	-	-
Critical Hdwy	7.21	-	6.2	7.15	6.5	6.3	4.1	-	-	-	-	-
Critical Hdwy Stg 1	6.21	-	-	6.15	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.21	-	-	6.15	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.599	-	3.3	3.545	4	3.39	2.2	-	-	-	-	-
Pot Cap-1 Maneuver	430	0	807	472	472	751	1342	-	0	0	-	-
Stage 1	746	0	-	730	690	-	-	-	0	0	-	-
Stage 2	676	0	-	760	713	-	-	-	0	0	-	-
Platoon blocked, %	-											
Mov Cap-1 Maneuver	375	-	807	472	472	751	1342	-	-	-	-	-
Mov Cap-2 Maneuver	375	-	-	472	472	-	-	-	-	-	-	-
Stage 1	746	-	-	730	690	-	-	-	-	-	-	-
Stage 2	589	-	-	760	713	-	-	-	-	-	-	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0			12.8			0			0		
HCM LOS	A			B								
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	WBLn1	SBT	SBR					
Capacity (veh/h)	1342	-	-	-	615	-	-					
HCM Lane V/C Ratio	-	-	-	-	0.251	-	-					
HCM Control Delay (s)	0	-	0	0	12.8	-	-					
HCM Lane LOS	A	-	A	A	B	-	-					
HCM 95th %tile Q(veh)	0	-	-	-	1	-	-					

Intersection

Int Delay, s/veh 2.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	Y		↑			↑
Traffic Vol, veh/h	5	105	137	0	0	268
Future Vol, veh/h	5	105	137	0	0	268
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Yield	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	90	90	90	92	92	93
Heavy Vehicles, %	25	21	28	2	2	36
Mvmt Flow	6	117	152	0	0	288

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	440	152	0	-	-	-
Stage 1	152	-	-	-	-	-
Stage 2	288	-	-	-	-	-
Critical Hdwy	6.65	6.41	-	-	-	-
Critical Hdwy Stg 1	5.65	-	-	-	-	-
Critical Hdwy Stg 2	5.65	-	-	-	-	-
Follow-up Hdwy	3.725	3.489	-	-	-	-
Pot Cap-1 Maneuver	534	847	-	0	0	-
Stage 1	823	-	-	0	0	-
Stage 2	711	-	-	0	0	-
Platoon blocked, %			-			-
Mov Cap-1 Maneuver	534	847	-	-	-	-
Mov Cap-2 Maneuver	534	-	-	-	-	-
Stage 1	823	-	-	-	-	-
Stage 2	711	-	-	-	-	-

Approach	WB		NB		SB
HCM Control Delay, s	9.7		0		0
HCM LOS	A				

Minor Lane/Major Mvmt	NBTWBLn1	SBT
Capacity (veh/h)	- 887	-
HCM Lane V/C Ratio	- 0.138	-
HCM Control Delay (s)	- 9.7	-
HCM Lane LOS	- A	-
HCM 95th %tile Q(veh)	- 0.5	-

Intersection												
Int Delay, s/veh	2.2											
Movement	EBL	EBR	NBL	NBT	NBR	SBL	SBT	SBR	SWL	SWR		
Lane Configurations	↔		↔			↔			↔			
Traffic Vol, veh/h	14	5	3	103	28	23	168	26	1	0		
Future Vol, veh/h	14	5	3	103	28	23	168	26	1	0		
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0		
Sign Control	Stop	Stop	Free	Free	Free	Free	Free	Free	Stop	Stop		
RT Channelized	-	None	-	-	Free	-	-	None	-	-		
Storage Length	0	-	-	-	-	-	-	-	0	-		
Veh in Median Storage, #	0	-	-	0	-	-	0	-	0	-		
Grade, %	0	-	-	0	-	-	0	-	0	-		
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90		
Heavy Vehicles, %	0	0	0	6	0	57	7	0	2	2		
Mvmt Flow	16	6	3	114	31	26	187	29	1	0		
Major/Minor	Minor2		Major1			Major2			Minor1			
Conflicting Flow All	380	201	216	0	-	114	0	0	384	114		
Stage 1	252	-	-	-	-	-	-	-	121	-		
Stage 2	128	-	-	-	-	-	-	-	263	-		
Critical Hdwy	7.1	6.2	4.1	-	-	4.67	-	-	7.12	6.22		
Critical Hdwy Stg 1	6.1	-	-	-	-	-	-	-	6.12	-		
Critical Hdwy Stg 2	6.1	-	-	-	-	-	-	-	6.12	-		
Follow-up Hdwy	3.5	3.3	2.2	-	-	2.713	-	-	3.518	3.318		
Pot Cap-1 Maneuver	581	845	1366	-	0	1194	-	-	574	939		
Stage 1	757	-	-	-	0	-	-	-	883	-		
Stage 2	881	-	-	-	0	-	-	-	742	-		
Platoon blocked, %				-			-					
Mov Cap-1 Maneuver	561	845	1366	-	-	1194	-	-	546	939		
Mov Cap-2 Maneuver	561	-	-	-	-	-	-	-	546	-		
Stage 1	755	-	-	-	-	-	-	-	881	-		
Stage 2	867	-	-	-	-	-	-	-	702	-		
Approach	EB		NB			SB			SW			
HCM Control Delay, s	11.7		0.2			0.9			9.1			
HCM LOS	B								A			
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBL	SBT	SBRSWLn1						
Capacity (veh/h)	1366	-	579	1194	-	-	890					
HCM Lane V/C Ratio	0.002	-	0.079	0.021	-	-	0.016					
HCM Control Delay (s)	7.6	0	11.7	8.1	0	-	9.1					
HCM Lane LOS	A	A	B	A	A	-	A					
HCM 95th %tile Q(veh)	0	-	0.3	0.1	-	-	0					

Intersection

Int Delay, s/veh 1.8

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations			↔			↗
Traffic Vol, veh/h	0	0	108	32	0	34
Future Vol, veh/h	0	0	108	32	0	34
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	-	-	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	90	90	92	90
Heavy Vehicles, %	2	2	18	0	2	0
Mvmt Flow	0	0	120	36	0	38

Major/Minor

	Major2	Minor2
Conflicting Flow All	-	0
Stage 1	-	-
Stage 2	-	-
Critical Hdwy	-	-
Critical Hdwy Stg 1	-	-
Critical Hdwy Stg 2	-	-
Follow-up Hdwy	-	-
Pot Cap-1 Maneuver	-	-
Stage 1	-	-
Stage 2	-	-
Platoon blocked, %	-	-
Mov Cap-1 Maneuver	-	-
Mov Cap-2 Maneuver	-	-
Stage 1	-	-
Stage 2	-	-

Approach

	WB	SB
HCM Control Delay, s	0	9.1
HCM LOS		A

Minor Lane/Major Mvmt

	WBT	WBR	SBLn1
Capacity (veh/h)	-	-	916
HCM Lane V/C Ratio	-	-	0.041
HCM Control Delay (s)	-	-	9.1
HCM Lane LOS	-	-	A
HCM 95th %tile Q(veh)	-	-	0.1

Intersection

Int Delay, s/veh 0.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	Y		T			T
Traffic Vol, veh/h	0	1	146	0	5	169
Future Vol, veh/h	0	1	146	0	5	169
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	0	0	1	0	0	7
Mvmt Flow	0	1	162	0	6	188

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	361	162	0	0	162	0
Stage 1	162	-	-	-	-	-
Stage 2	199	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	642	888	-	-	1429	-
Stage 1	872	-	-	-	-	-
Stage 2	839	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	639	888	-	-	1429	-
Mov Cap-2 Maneuver	639	-	-	-	-	-
Stage 1	872	-	-	-	-	-
Stage 2	835	-	-	-	-	-

Approach	WB		NB		SB
HCM Control Delay, s	9.1		0		0.2
HCM LOS	A				

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	888	1429	-
HCM Lane V/C Ratio	-	-	0.001	0.004	-
HCM Control Delay (s)	-	-	9.1	7.5	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0	0	-

**2040 BUILD ALTERNATIVES
EXIT 106 – E. CHEROKEE STREET**

Intersection

Int Delay, s/veh 0.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	Y		P			A
Traffic Vol, veh/h	0	5	128	0	0	81
Future Vol, veh/h	0	5	128	0	0	81
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	5	139	0	0	88

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	227	139	0	0	139	0
Stage 1	139	-	-	-	-	-
Stage 2	88	-	-	-	-	-
Critical Hdwy	7.12	6.22	-	-	4.12	-
Critical Hdwy Stg 1	6.12	-	-	-	-	-
Critical Hdwy Stg 2	6.12	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	728	909	-	-	1445	-
Stage 1	864	-	-	-	-	-
Stage 2	920	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	728	909	-	-	1445	-
Mov Cap-2 Maneuver	728	-	-	-	-	-
Stage 1	864	-	-	-	-	-
Stage 2	920	-	-	-	-	-

Approach	WB		NB		SB
HCM Control Delay, s	9		0		0
HCM LOS	A				

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	909	1445	-
HCM Lane V/C Ratio	-	-	0.006	-	-
HCM Control Delay (s)	-	-	9	0	-
HCM Lane LOS	-	-	A	A	-
HCM 95th %tile Q(veh)	-	-	0	0	-

Intersection

Int Delay, s/veh 1.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↔	↔	↔	↔			↔	
Traffic Vol, veh/h	0	0	0	27	0	48	31	123	0	0	189	119
Future Vol, veh/h	0	0	0	27	0	48	31	123	0	0	189	119
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	150	150	-	-	-	-	-
Veh in Median Storage, #	-	-	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	29	0	52	34	134	0	0	205	129

Major/Minor	Minor1			Major1			Major2		
Conflicting Flow All	471	536	134	335	0	-	-	-	0
Stage 1	201	201	-	-	-	-	-	-	-
Stage 2	270	335	-	-	-	-	-	-	-
Critical Hdwy	6.42	6.52	6.22	4.12	-	-	-	-	-
Critical Hdwy Stg 1	5.42	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.42	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	2.218	-	-	-	-	-
Pot Cap-1 Maneuver	551	451	915	1224	-	0	0	-	-
Stage 1	833	735	-	-	-	0	0	-	-
Stage 2	775	643	-	-	-	0	0	-	-
Platoon blocked, %									
Mov Cap-1 Maneuver	536	0	915	1224	-	-	-	-	-
Mov Cap-2 Maneuver	596	0	-	-	-	-	-	-	-
Stage 1	810	0	-	-	-	-	-	-	-
Stage 2	775	0	-	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10	1.6	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBTWBLn1	WBLn2	SBT	SBR
Capacity (veh/h)	1224	-	596	915	-
HCM Lane V/C Ratio	0.028	-	0.049	0.057	-
HCM Control Delay (s)	8	-	11.4	9.2	-
HCM Lane LOS	A	-	B	A	-
HCM 95th %tile Q(veh)	0.1	-	0.2	0.2	-

Intersection

Int Delay, s/veh 0

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	Y		Y	↑	↑	
Traffic Vol, veh/h	0	0	0	174	308	0
Future Vol, veh/h	0	0	0	174	308	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	150	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	0	189	335	0

Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	524	335	335	0	0
Stage 1	335	-	-	-	-
Stage 2	189	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-
Pot Cap-1 Maneuver	514	707	1224	-	-
Stage 1	725	-	-	-	-
Stage 2	843	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	514	707	1224	-	-
Mov Cap-2 Maneuver	514	-	-	-	-
Stage 1	725	-	-	-	-
Stage 2	843	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	0	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1224	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	0	-	0	-	-
HCM Lane LOS	A	-	A	-	-
HCM 95th %tile Q(veh)	0	-	-	-	-

Intersection

Int Delay, s/veh 1.7

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↖	↗	↔		↖	↗
Traffic Vol, veh/h	1	40	130	3	8	80
Future Vol, veh/h	1	40	130	3	8	80
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	150	0	-	-	150	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1	43	141	3	9	87

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	247	143	0	0	145	0
Stage 1	143	-	-	-	-	-
Stage 2	104	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	741	905	-	-	1437	-
Stage 1	884	-	-	-	-	-
Stage 2	920	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	736	905	-	-	1437	-
Mov Cap-2 Maneuver	736	-	-	-	-	-
Stage 1	884	-	-	-	-	-
Stage 2	914	-	-	-	-	-

Approach	WB		NB		SB
HCM Control Delay, s	9.2		0		0.7
HCM LOS	A				

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	736	905	1437	-
HCM Lane V/C Ratio	-	-	0.001	0.048	0.006	-
HCM Control Delay (s)	-	-	9.9	9.2	7.5	-
HCM Lane LOS	-	-	A	A	A	-
HCM 95th %tile Q(veh)	-	-	0	0.2	0	-

Intersection

Int Delay, s/veh 4.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	Y		P			A
Traffic Vol, veh/h	100	53	136	38	47	208
Future Vol, veh/h	100	53	136	38	47	208
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	109	58	148	41	51	226

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	496	168	0	0	189	0
Stage 1	168	-	-	-	-	-
Stage 2	328	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	533	876	-	-	1385	-
Stage 1	862	-	-	-	-	-
Stage 2	730	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	511	876	-	-	1385	-
Mov Cap-2 Maneuver	511	-	-	-	-	-
Stage 1	862	-	-	-	-	-
Stage 2	699	-	-	-	-	-

Approach	WB		NB		SB
HCM Control Delay, s	13.3		0		1.4
HCM LOS	B				

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	- 597	1385	-
HCM Lane V/C Ratio	-	- 0.279	0.037	-
HCM Control Delay (s)	-	- 13.3	7.7	0
HCM Lane LOS	-	- B	A	A
HCM 95th %tile Q(veh)	-	- 1.1	0.1	-

Intersection

Int Delay, s/veh 5.7

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	Y		P			A
Traffic Vol, veh/h	84	153	163	95	101	247
Future Vol, veh/h	84	153	163	95	101	247
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	91	166	177	103	110	268

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	717	229	0	0	280	0
Stage 1	229	-	-	-	-	-
Stage 2	488	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	396	810	-	-	1283	-
Stage 1	809	-	-	-	-	-
Stage 2	617	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	356	810	-	-	1283	-
Mov Cap-2 Maneuver	356	-	-	-	-	-
Stage 1	809	-	-	-	-	-
Stage 2	555	-	-	-	-	-

Approach	WB		NB		SB
HCM Control Delay, s	16.9		0		2.3
HCM LOS	C				

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	558	1283	-
HCM Lane V/C Ratio	-	-	0.462	0.086	-
HCM Control Delay (s)	-	-	16.9	8.1	0
HCM Lane LOS	-	-	C	A	A
HCM 95th %tile Q(veh)	-	-	2.4	0.3	-

Intersection

Int Delay, s/veh 0

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	Y		Y	↑	↑	
Traffic Vol, veh/h	0	0	0	258	331	0
Future Vol, veh/h	0	0	0	258	331	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	150	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	0	280	360	0

Major/Minor	Minor2	Major1		Major2
Conflicting Flow All	640	360	360	0
Stage 1	360	-	-	-
Stage 2	280	-	-	-
Critical Hdwy	6.42	6.22	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-
Pot Cap-1 Maneuver	440	684	1199	-
Stage 1	706	-	-	-
Stage 2	767	-	-	-
Platoon blocked, %				-
Mov Cap-1 Maneuver	440	684	1199	-
Mov Cap-2 Maneuver	440	-	-	-
Stage 1	706	-	-	-
Stage 2	767	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	0	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1199	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	0	-	0	-	-
HCM Lane LOS	A	-	A	-	-
HCM 95th %tile Q(veh)	0	-	-	-	-

Intersection

Int Delay, s/veh 1.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				↕	↕		↕	↕			↕	
Traffic Vol, veh/h	0	0	0	24	0	50	36	208	0	0	213	118
Future Vol, veh/h	0	0	0	24	0	50	36	208	0	0	213	118
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	200	-	-	250	-	-	-	-	-
Veh in Median Storage, #	-	-	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	26	0	54	39	226	0	0	232	128

Major/Minor	Minor1			Major1			Major2		
Conflicting Flow All	600	664	226	360	0	-	-	-	0
Stage 1	304	304	-	-	-	-	-	-	-
Stage 2	296	360	-	-	-	-	-	-	-
Critical Hdwy	6.42	6.52	6.22	4.12	-	-	-	-	-
Critical Hdwy Stg 1	5.42	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.42	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	2.218	-	-	-	-	-
Pot Cap-1 Maneuver	464	381	813	1199	-	0	0	-	-
Stage 1	748	663	-	-	-	0	0	-	-
Stage 2	755	626	-	-	-	0	0	-	-
Platoon blocked, %									
Mov Cap-1 Maneuver	449	0	813	1199	-	-	-	-	-
Mov Cap-2 Maneuver	449	0	-	-	-	-	-	-	-
Stage 1	724	0	-	-	-	-	-	-	-
Stage 2	755	0	-	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10.9	1.2	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBTWBLn1	WBLn2	SBT	SBR
Capacity (veh/h)	1199	-	449	813	-
HCM Lane V/C Ratio	0.033	-	0.058	0.067	-
HCM Control Delay (s)	8.1	-	13.5	9.7	-
HCM Lane LOS	A	-	B	A	-
HCM 95th %tile Q(veh)	0.1	-	0.2	0.2	-

Intersection												
Int Delay, s/veh	4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↶	↷						↷		↶	↶	
Traffic Vol, veh/h	105	0	5	0	0	0	0	139	44	69	168	0
Future Vol, veh/h	105	0	5	0	0	0	0	139	44	69	168	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	200	-	-	-	-	-	-	-	-	250	-	-
Veh in Median Storage, #	-	0	-	-	-	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	114	0	5	0	0	0	0	151	48	75	183	0
Major/Minor	Minor2			Major1			Major2					
Conflicting Flow All	508	532	183	-	0	0	-	0	0	199	0	0
Stage 1	333	333	-	-	-	-	-	-	-	-	-	-
Stage 2	175	199	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	6.42	6.52	6.22	-	-	-	-	-	-	4.12	-	-
Critical Hdwy Stg 1	5.42	5.52	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.42	5.52	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	-	-	-	-	-	-	2.218	-	-
Pot Cap-1 Maneuver	525	453	859	0	-	-	0	-	-	1373	-	0
Stage 1	726	644	-	0	-	-	0	-	-	-	-	0
Stage 2	855	736	-	0	-	-	0	-	-	-	-	0
Platoon blocked, %												
Mov Cap-1 Maneuver	496	0	859	-	-	-	-	-	-	1373	-	-
Mov Cap-2 Maneuver	496	0	-	-	-	-	-	-	-	-	-	-
Stage 1	686	0	-	-	-	-	-	-	-	-	-	-
Stage 2	855	0	-	-	-	-	-	-	-	-	-	-
Approach	EB			NB			SB					
HCM Control Delay, s	14.2			0			2.3					
HCM LOS	B											
Minor Lane/Major Mvmt	NBT	NBR	EBLn1	EBLn2	SBL	SBT						
Capacity (veh/h)	-	-	496	859	1373	-						
HCM Lane V/C Ratio	-	-	0.23	0.006	0.055	-						
HCM Control Delay (s)	-	-	14.4	9.2	7.8	-						
HCM Lane LOS	-	-	B	A	A	-						
HCM 95th %tile Q(veh)	-	-	0.9	0	0.2	-						

Intersection

Int Delay, s/veh 0.6

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	Y		P		T	T
Traffic Vol, veh/h	1	13	145	1	9	164
Future Vol, veh/h	1	13	145	1	9	164
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	250	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1	14	158	1	10	178

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	356	158	0	0	159	0
Stage 1	158	-	-	-	-	-
Stage 2	198	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	642	887	-	-	1420	-
Stage 1	871	-	-	-	-	-
Stage 2	835	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	637	887	-	-	1420	-
Mov Cap-2 Maneuver	637	-	-	-	-	-
Stage 1	871	-	-	-	-	-
Stage 2	829	-	-	-	-	-

Approach	WB		NB		SB
HCM Control Delay, s	9.2		0		0.4
HCM LOS	A				

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	- 863	1420	-
HCM Lane V/C Ratio	-	- 0.018	0.007	-
HCM Control Delay (s)	-	- 9.2	7.6	-
HCM Lane LOS	-	- A	A	-
HCM 95th %tile Q(veh)	-	- 0.1	0	-

Intersection

Int Delay, s/veh 0.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	Y		P			A
Traffic Vol, veh/h	0	1	145	0	5	165
Future Vol, veh/h	0	1	145	0	5	165
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	1	158	0	5	179

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	348	158	0	0	158	0
Stage 1	158	-	-	-	-	-
Stage 2	190	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	649	887	-	-	1422	-
Stage 1	871	-	-	-	-	-
Stage 2	842	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	646	887	-	-	1422	-
Mov Cap-2 Maneuver	646	-	-	-	-	-
Stage 1	871	-	-	-	-	-
Stage 2	839	-	-	-	-	-

Approach	WB		NB		SB
HCM Control Delay, s	9.1		0		0.2
HCM LOS	A				

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	887	1422	-
HCM Lane V/C Ratio	-	-	0.001	0.004	-
HCM Control Delay (s)	-	-	9.1	7.5	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0	0	-

Intersection

Int Delay, s/veh 1.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↔	↔	↔	↔			↔	
Traffic Vol, veh/h	0	0	0	24	0	50	36	208	0	0	213	118
Future Vol, veh/h	0	0	0	24	0	50	36	208	0	0	213	118
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	150	150	-	-	-	-	-
Veh in Median Storage, #	-	-	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	26	0	54	39	226	0	0	232	128

Major/Minor	Minor1			Major1			Major2		
Conflicting Flow All	600	664	226	360	0	-	-	-	0
Stage 1	304	304	-	-	-	-	-	-	-
Stage 2	296	360	-	-	-	-	-	-	-
Critical Hdwy	6.42	6.52	6.22	4.12	-	-	-	-	-
Critical Hdwy Stg 1	5.42	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.42	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	2.218	-	-	-	-	-
Pot Cap-1 Maneuver	464	381	813	1199	-	0	0	-	-
Stage 1	748	663	-	-	-	0	0	-	-
Stage 2	755	626	-	-	-	0	0	-	-
Platoon blocked, %									
Mov Cap-1 Maneuver	449	0	813	1199	-	-	-	-	-
Mov Cap-2 Maneuver	533	0	-	-	-	-	-	-	-
Stage 1	724	0	-	-	-	-	-	-	-
Stage 2	755	0	-	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10.5	1.2	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBTWBLn1	WBLn2	SBT	SBR
Capacity (veh/h)	1199	-	533	813	-
HCM Lane V/C Ratio	0.033	-	0.049	0.067	-
HCM Control Delay (s)	8.1	-	12.1	9.7	-
HCM Lane LOS	A	-	B	A	-
HCM 95th %tile Q(veh)	0.1	-	0.2	0.2	-

Intersection

Int Delay, s/veh 0

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	Y		Y	↑	↑	
Traffic Vol, veh/h	0	0	0	258	331	0
Future Vol, veh/h	0	0	0	258	331	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	150	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	0	280	360	0

Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	640	360	360	0	0
Stage 1	360	-	-	-	-
Stage 2	280	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-
Pot Cap-1 Maneuver	440	684	1199	-	-
Stage 1	706	-	-	-	-
Stage 2	767	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	440	684	1199	-	-
Mov Cap-2 Maneuver	440	-	-	-	-
Stage 1	706	-	-	-	-
Stage 2	767	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	0	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1199	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	0	-	0	-	-
HCM Lane LOS	A	-	A	-	-
HCM 95th %tile Q(veh)	0	-	-	-	-

Intersection

Int Delay, s/veh 0.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↖	↗	↔		↖	↗
Traffic Vol, veh/h	1	12	145	1	4	169
Future Vol, veh/h	1	12	145	1	4	169
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	150	0	-	-	150	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1	13	158	1	4	184

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	350	158	0	0	159	0
Stage 1	158	-	-	-	-	-
Stage 2	192	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	647	887	-	-	1420	-
Stage 1	871	-	-	-	-	-
Stage 2	841	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	645	887	-	-	1420	-
Mov Cap-2 Maneuver	645	-	-	-	-	-
Stage 1	871	-	-	-	-	-
Stage 2	839	-	-	-	-	-

Approach	WB		NB		SB
HCM Control Delay, s	9.2		0		0.2
HCM LOS	A				

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	645	887	1420	-
HCM Lane V/C Ratio	-	-	0.002	0.015	0.003	-
HCM Control Delay (s)	-	-	10.6	9.1	7.5	-
HCM Lane LOS	-	-	B	A	A	-
HCM 95th %tile Q(veh)	-	-	0	0	0	-

Intersection

Int Delay, s/veh 5.7

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	Y		T			T
Traffic Vol, veh/h	84	153	163	95	101	247
Future Vol, veh/h	84	153	163	95	101	247
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	91	166	177	103	110	268

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	717	229	0	0	280	0
Stage 1	229	-	-	-	-	-
Stage 2	488	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	396	810	-	-	1283	-
Stage 1	809	-	-	-	-	-
Stage 2	617	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	356	810	-	-	1283	-
Mov Cap-2 Maneuver	356	-	-	-	-	-
Stage 1	809	-	-	-	-	-
Stage 2	555	-	-	-	-	-

Approach	WB		NB		SB
HCM Control Delay, s	16.9		0		2.3
HCM LOS	C				

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	- 558	1283	-
HCM Lane V/C Ratio	-	- 0.462	0.086	-
HCM Control Delay (s)	-	- 16.9	8.1	0
HCM Lane LOS	-	- C	A	A
HCM 95th %tile Q(veh)	-	- 2.4	0.3	-

Intersection

Int Delay, s/veh 4.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	Y		P			A
Traffic Vol, veh/h	100	53	136	38	47	208
Future Vol, veh/h	100	53	136	38	47	208
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	109	58	148	41	51	226

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	496	168	0	0	189	0
Stage 1	168	-	-	-	-	-
Stage 2	328	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	533	876	-	-	1385	-
Stage 1	862	-	-	-	-	-
Stage 2	730	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	511	876	-	-	1385	-
Mov Cap-2 Maneuver	511	-	-	-	-	-
Stage 1	862	-	-	-	-	-
Stage 2	699	-	-	-	-	-

Approach	WB		NB		SB
HCM Control Delay, s	13.3		0		1.4
HCM LOS	B				

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	- 597	1385	-
HCM Lane V/C Ratio	-	- 0.279	0.037	-
HCM Control Delay (s)	-	- 13.3	7.7	0
HCM Lane LOS	-	- B	A	A
HCM 95th %tile Q(veh)	-	- 1.1	0.1	-

Intersection

Int Delay, s/veh 0

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↘		↘	↗	↗	
Traffic Vol, veh/h	0	0	0	174	308	0
Future Vol, veh/h	0	0	0	174	308	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	150	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	0	189	335	0

Major/Minor	Minor2	Major1		Major2
Conflicting Flow All	524	335	335	0
Stage 1	335	-	-	-
Stage 2	189	-	-	-
Critical Hdwy	7.12	6.22	4.12	-
Critical Hdwy Stg 1	6.12	-	-	-
Critical Hdwy Stg 2	6.12	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-
Pot Cap-1 Maneuver	464	707	1224	-
Stage 1	679	-	-	-
Stage 2	813	-	-	-
Platoon blocked, %				-
Mov Cap-1 Maneuver	464	707	1224	-
Mov Cap-2 Maneuver	464	-	-	-
Stage 1	679	-	-	-
Stage 2	813	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	0	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1224	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	0	-	0	-	-
HCM Lane LOS	A	-	A	-	-
HCM 95th %tile Q(veh)	0	-	-	-	-

Intersection

Int Delay, s/veh 1.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				↕	↕		↕	↕			↕	
Traffic Vol, veh/h	0	0	0	27	0	45	31	123	0	0	189	119
Future Vol, veh/h	0	0	0	27	0	45	31	123	0	0	189	119
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	200	-	-	250	-	-	-	-	-
Veh in Median Storage, #	-	-	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	29	0	49	34	134	0	0	205	129

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	471	536	134
Stage 1	201	201	-
Stage 2	270	335	-
Critical Hdwy	6.42	6.52	6.22
Critical Hdwy Stg 1	5.42	5.52	-
Critical Hdwy Stg 2	5.42	5.52	-
Follow-up Hdwy	3.518	4.018	3.318
Pot Cap-1 Maneuver	551	451	915
Stage 1	833	735	-
Stage 2	775	643	-
Platoon blocked, %			
Mov Cap-1 Maneuver	536	0	915
Mov Cap-2 Maneuver	536	0	-
Stage 1	810	0	-
Stage 2	775	0	-

Approach	WB	NB	SB
HCM Control Delay, s	10.3	1.6	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBTWBLn1	WBLn2	SBT	SBR
Capacity (veh/h)	1224	-	536	915	-
HCM Lane V/C Ratio	0.028	-	0.055	0.053	-
HCM Control Delay (s)	8	-	12.1	9.2	-
HCM Lane LOS	A	-	B	A	-
HCM 95th %tile Q(veh)	0.1	-	0.2	0.2	-

Intersection												
Int Delay, s/veh	3.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗						↖		↖	↗	
Traffic Vol, veh/h	49	0	12	0	0	0	0	105	34	98	92	0
Future Vol, veh/h	49	0	12	0	0	0	0	105	34	98	92	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	200	-	-	-	-	-	-	-	-	250	-	-
Veh in Median Storage, #	-	0	-	-	-	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	53	0	13	0	0	0	0	114	37	107	100	0
Major/Minor	Minor2			Major1			Major2					
Conflicting Flow All	446	464	100	-	0	0	-	0	0	151	0	0
Stage 1	313	313	-	-	-	-	-	-	-	-	-	-
Stage 2	133	151	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	6.42	6.52	6.22	-	-	-	-	-	-	4.12	-	-
Critical Hdwy Stg 1	5.42	5.52	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.42	5.52	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	-	-	-	-	-	-	2.218	-	-
Pot Cap-1 Maneuver	570	495	956	-	-	-	0	-	-	1430	-	0
Stage 1	741	657	-	-	-	-	0	-	-	-	-	0
Stage 2	893	772	-	-	-	-	0	-	-	-	-	0
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	527	0	956	-	-	-	-	-	-	1430	-	-
Mov Cap-2 Maneuver	527	0	-	-	-	-	-	-	-	-	-	-
Stage 1	686	0	-	-	-	-	-	-	-	-	-	-
Stage 2	893	0	-	-	-	-	-	-	-	-	-	-
Approach	EB			NB			SB					
HCM Control Delay, s	11.9			0			4					
HCM LOS	B											
Minor Lane/Major Mvmt	NBT	NBR	EBLn1	EBLn2	SBL	SBT						
Capacity (veh/h)	-	-	527	956	1430	-						
HCM Lane V/C Ratio	-	-	0.101	0.014	0.074	-						
HCM Control Delay (s)	-	-	12.6	8.8	7.7	-						
HCM Lane LOS	-	-	B	A	A	-						
HCM 95th %tile Q(veh)	-	-	0.3	0	0.2	-						

Intersection

Int Delay, s/veh 1.8

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	Y		P		T	T
Traffic Vol, veh/h	1	45	129	3	8	80
Future Vol, veh/h	1	45	129	3	8	80
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	250	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1	49	140	3	9	87

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	246	142	0	0	143	0
Stage 1	142	-	-	-	-	-
Stage 2	104	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	742	906	-	-	1440	-
Stage 1	885	-	-	-	-	-
Stage 2	920	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	737	906	-	-	1440	-
Mov Cap-2 Maneuver	737	-	-	-	-	-
Stage 1	885	-	-	-	-	-
Stage 2	914	-	-	-	-	-

Approach	WB		NB		SB
HCM Control Delay, s	9.2		0		0.7
HCM LOS	A				

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	- 902	1440	-
HCM Lane V/C Ratio	-	- 0.055	0.006	-
HCM Control Delay (s)	-	- 9.2	7.5	-
HCM Lane LOS	-	- A	A	-
HCM 95th %tile Q(veh)	-	- 0.2	0	-