This Interchange Justification Report (IJR) has not been approved by Federal Highway Administration. Once approval is issued, a final approved IJR will be provided.

I-26 & VOLVO CAR DRIVE INTERCHANGE JUSTIFICATION REPORT

Berkeley County, South Carolina



Thomas & Hutton Engineering Co.

Prepared by: Stantec Consulting Services Inc.

JUNE 2016

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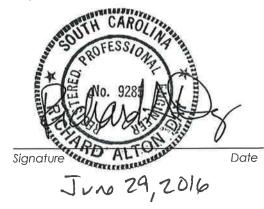


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1.0 Introduction

The purpose of this report is to document an Interchange Justification Report (IJR) for the proposed I-26 & Volvo Car Drive interchange in Berkeley County, South Carolina in accordance with Federal Highway Administration (FHWA) and South Carolina Department of Transportation (SCDOT) guidelines. This report summarizes the procedures and findings of the selection of study design hour, the traffic volume development for the design years, the results of the capacity analyses, and responses to FHWA's eight policy requirements for an Interstate System Access Change Request.

1.1 PROJECT BACKGROUND

Car manufacturer Volvo has recently selected Berkeley County to build its first car factory in North America. The proposed factory is located in the 6,800-acre Camp Hall Commerce Park on the north side of I-26 between SC 27/Ridgeville Road (Exit 187) and Jedburg Road (Exit 194). The Volvo factory is expected to accommodate approximately 4,000 employees by 2040. In addition to the Volvo factory, up to 9,900,000 square feet of supporting industrial warehouse and manufacturing development is expected to be developed in the Camp Hall Commerce Park for Volvo-related suppliers and manufacturers.

Several new roadways are planned to support the proposed development of the Camp Hall Commerce Park for Volvo. Volvo Car Drive is planned as the primary north/south roadway connection between I-26 and US 176 providing access to the development. There are two east/west roadway connections between SC 27/Ridgeville Road and Volvo Car Drive planned to provide additional access. They are currently named Westvaco Road and Lower Westvaco Road. A figure illustrating the location of the Volvo-related development, proposed roadways, and overall area is shown in Exhibit 1.1.

The proposed I-26 & Volvo Car Drive project is located near mile marker 189 approximately two miles from SC 27/Ridgeville Road (Exit 187) and approximately five miles from Jedburg Road (Exit 194). The proposed I-26 & Volvo Car Drive interchange configuration is a three-level, three-leg directional interchange that connects I-26 and the Camp Hall Commerce Park via Volvo Car Drive. Directional ramps are proposed for all movements that will be achieved through three bridge structures. Due to the expected high attraction to/from the Charleston area, the ramps to/from Charleston are proposed to be constructed as two-lane ramps.

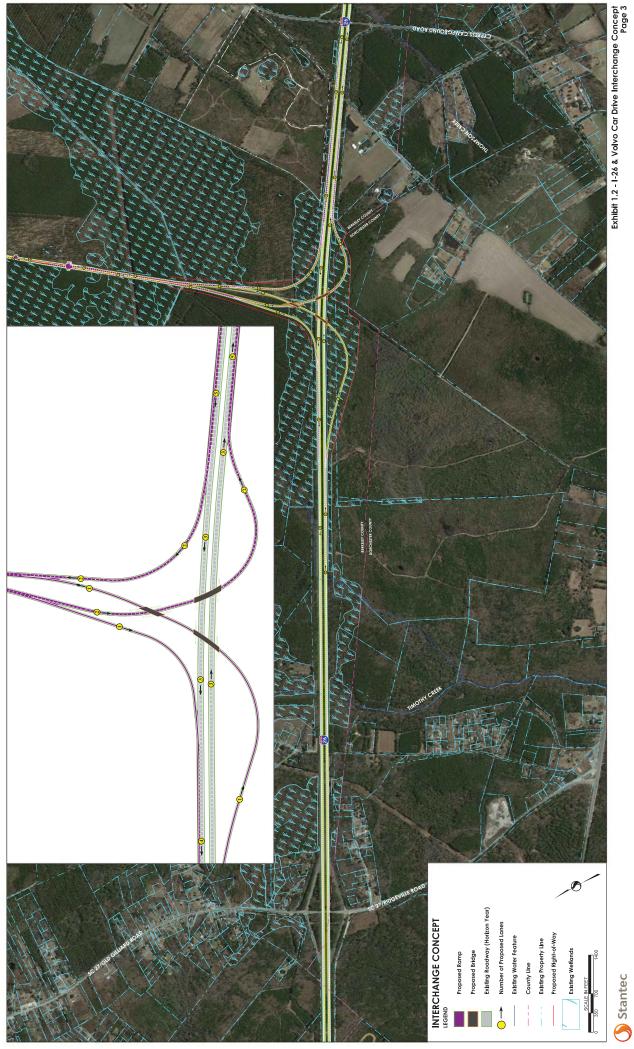
A figure illustrating a concept of the proposed I-26 & Volvo Car Drive interchange is shown in Exhibit 1.2 and a figure illustrating a conceptual guide sign plan for the proposed interchange is shown in Exhibit 1.3.







I-26 & Volvo Car Drive IJR Exhibit 1.1 - Project Location Map Page 2





1.2 EXISTING ROADWAY CONDITIONS

I-26 is a four-lane interstate freeway that connects the Charleston area with the rest of South Carolina, including I-95 and the Columbia area. In the area of the proposed interchange, I-26 is divided by a wide grassed median and has a posted speed limit of 70 mph. The 2014 AADT along I-26 between SC 27/Ridgeville Road and Jedburg Road was 39,900 vpd and based upon classification data from the week of May 4, 2015, the percentage of heavy vehicles along I-26 between SC 27/Ridgeville Road and Jedburg Road was 39,900 vpd and based upon classification data from the week of May 4, 2015, the percentage of heavy vehicles along I-26 between SC 27/Ridgeville Road and Jedburg Road is approximately 20%.

SC 27/Ridgeville Road is a two-lane major collector that primarily serves rural residential land uses. The 2014 AADT was 1,900 vpd north of I-26 and 8,400 vpd south of I-26. The posted speed limit is 55 mph from US 78 to near I-26, 45 mph through the I-26 interchange area, and 50 mph north to Westvaco Road. Based upon existing turning movement counts, the percentage of heavy vehicles along SC 27/Ridgeville Road is approximately 11%.

Jedburg Road is a two-lane major collector that primarily serves residential land uses. The 2014 AADT was 5,200 vpd north of I-26 and 10,700 south of I-26. The posted speed limit is 45 mph through the I-26 interchange area. Based upon existing turning movement counts, the percentage of heavy vehicles along Jedburg Road is approximately 6%.

1.3 FUTURE ROADWAY IMPROVEMENTS

As part of the IJR analyses, two future roadway projects were considered.

A new interchange at Sheep Island Parkway (new Exit 197) is planned to be constructed approximately three miles south of Jedburg Road (Exit 194). Improvements to the I-26 & Sheep Island Parkway and I-26 & Jedburg Road interchanges are documented in the May 2010 *Sheep Island Parkway IJR/Jedburg Road Interchange Modification Report (IMR)*. Improvements to the I-26 & Jedburg Road interchange were assumed to be in place as part of the 2019 and 2039 analyses and include the widening of Jedburg Road to a four-lane, median divided section in the interchange area and the addition of an I-26 westbound-to-Jedburg Road southbound loop off-ramp.

The widening of I-26 from SC 27/Ridgeville Road (Exit 187) to US 17A (Exit 199) to six lanes divided by a grass median is programmed in the South Carolina Statewide Transportation Improvement Program (STIP) for preliminary engineering in 2015. For the 2039 Build and No Build analyses, the widening of I-26 to a six-lane section from west of SC 27/Ridgeville Road to east of Jedburg Road was assumed to be in place.



1.4 STATEMENT OF NEED

Car manufacturer Volvo has recently selected Berkeley County to build its first car factory in North America. The Volvo factory is expected to accommodate approximately 4,000 employees by 2040. In addition to the Volvo factory, up to 9,900,000 square feet of supporting industrial warehouse and manufacturing development is expected to be developed in the Camp Hall Commerce Park for Volvo-related suppliers and manufacturers. The proposed I-26 & Volvo Car Drive interchange project is required to accommodate the design-year traffic demands from the new Volvo factory and supporting Volvo-related suppliers and manufacturers.

Based upon the results of 2039 No Build conditions, the three intersections along SC 27/Ridgeville Road between I-26 and Lower Westvaco Road are projected to operate at severe LOS F conditions that would represent gridlock along SC 27/Ridgeville Road. This gridlock will likely cause severe queuing on the I-26 off-ramps to SC 27/Ridgeville Road, which could potentially back-up to the I-26 mainlines in both directions. The severe failing conditions along SC 27/Ridgeville Road can be attributed to all of the Volvo-related traffic being assigned to that roadway to access I-26.

The results of an improvement analysis scenario indicate a typical widening improvement along SC 27/Ridgeville Road – including widening to a four-lane, median divided cross section; controlling access between I-26 and Lower Westvaco Road; and increasing the spacing of the I-26 ramp intersections from 700 feet to 1,320 feet – would <u>not</u> accommodate the 2039 No Build traffic demands. The two I-26 ramp intersections along SC 27/Ridgeville Road would still be projected to operate at severe LOS F conditions – although less severe than without improvements – that would still represent gridlock along SC 27/Ridgeville Road, which could still potentially back-up to the I-26 mainlines in both directions. The severe failing conditions along SC 27/Ridgeville Road can be attributed to all of the Volvo-related traffic being assigned to that roadway to access I-26.

Therefore, based upon the results of the 2039 No Build conditions analysis and the 2039 No Build conditions with improvements analysis, the I-26 & Volvo Car Drive interchange is justified and needed to accommodate design-year traffic demands of the new Volvo factory and the supporting industrial warehouse and manufacturing development of Volvo-related suppliers and manufacturers of the Camp Hall Commerce Park.

In addition, it should be noted that the proposed two points of access to I-26 through Volvo Car Drive and SC 27/Ridgeville Road for the Volvo factory and Volvo-related industrial development would be equal to the access of the existing BMW factory in Greer, South Carolina.



1.5 IJR ANALYSIS METHODOLOGY

Numerous coordination meetings have been held to discuss and agree to the IJR analysis methodology and assumptions. The meetings' attendees have included U. S. Army Corps of Engineers (USACE), FHWA, SCDOT, SC Department of Commerce, and project consultant staffs. The following documents a summary of assumptions agreed to and used in the analyses. The analyses were conducted in accordance with FHWA's *Interstate System Access Informational Guide* (August 2010).

The proposed I-26 & Volvo Car Drive interchange is planned to be opened in 2019; therefore, the design years of the IJR analyses are opening-year 2019 conditions and horizon-year 2039 conditions. For the IJR analyses, Build and No Build conditions of the proposed interchange for the respective analysis years have been considered.

The adjacent interchanges of I-26 & SC 27/Ridgeville Road and I-26 & Jedburg Road were considered in the project study area.

The VOlvo factory is planned to open in 2017 with approximately 1,000 manufacturing employees. The Volvo factory is projected to increase to 4,000 employees by 2040. In 2017, it is expected that approximately 1,000,000 square feet of Volvo-related suppliers and manufacturers would be operating with approximately 1,000 additional employees. By 2040, it is projected that the Volvo-related suppliers and manufacturers will total approximately 9,900,000 square feet of industrial uses in the Camp Hall Commerce Park. For the purposes of this analysis, a conservative ratio of 1.0 employees per 1,000 square feet of development is the same ratio that is utilized by the CHATS regional transportation model for trip generation and was determined to be conservative when compared to data from existing developments in Georgia which have ratios ranging from 1.0 employees per 2,415 square feet to 1.0 employees per 5,890 square feet.

To develop an annual background growth rate for traffic in the study area, including I-26, not related to the Volvo factory and Volvo-related industrial development, three sources of data were reviewed: historical count data along I-26 between SC 27/Ridgeville Road and Jedburg Road (SCDOT count station #2179) over the past 10 years; growth rate assumptions from the May 2010 *Sheep Island Parkway IJR/Jedburg Road IMR;* and traffic volume projections of BCDCOG's Charleston Area Transportation Study (CHATS) travel demand model.



2.0 Selection of Design Hour

As required in the American Association of State Highway and Transportation Officials' (AASHTO) *A Policy on Design Standards Interstate System*, 5th Edition (January 2005), the 30th Design Hour shall be used to determine the appropriate traffic volume used for the design. The Transportation Research Board's *Highway Capacity Manual 2010* and the Institute of Transportation Engineers' (ITE) *Traffic Engineering Handbook*, 6th Edition (2012) have nearly identical language with respect to the selection of the design hour volume. All publications indicate the rationale by which 30th highest hour traffic volume is selected for use as the design hour traffic volume for rural highways.

The 30th highest hourly volume is determined by listing traffic volumes for every hour of every day in a calendar year in descending order from highest to lowest. The 30th volume in this list is the 30th highest-hour volume. Graphing the volumes in descending order can show a large variation in volumes, generally taking the form of a curve that initially descends steeply and ends in a more gently declining, almost linear slope. The design hour is usually selected from the "knee of the curve" – the area between the initial steep descent and the more gradually declining linear slope. The reason for this is described in the *Highway Capacity Manual*, "The selection of an appropriate hour for planning, design, and operational purposes is a compromise between providing an adequate level of service (LOS) for every (or almost every) hour of the year and economic efficiency." Simply put, building a highway to accommodate traffic volumes on the initial steep slope of the volume curve can be very expensive and provide under-used capacity. Some measure of infrequent congestion under exceptional circumstances may be appropriate and allowable from a design standpoint.

Standard practice is to base rural highway design on an hour between the 30th and 100th highest hour of the year. This range of hours generally falls within the "knee" in the graphed curve of the volume data. In standard practice, the knee is assumed to occur at the 30th highest hour which is why this hour is used as the basis for estimates of design-hour volume. In reality, the 30th highest hour may or may not be the correct choice to identify the design-hour volume.

For the proposed I-26 & Volvo Car Drive interchange, the existing traffic volumes along I-26 were reviewed to determine if the use of the 30th highest hour was appropriate for the existing conditions and context of the improvement.



A review was conducted of available traffic data from Automatic Traffic Recorder (ATR) station P-54 along I-26 between SC 27/Ridgeville Road and Jedburg Road between May 2014 and April 2015. The results of the review indicated that the majority of the highest 30 hours and 100 hours are Friday afternoons, which is likely due to the high amount of tourist traffic coming into the Charleston area for the weekends via I-26 eastbound during the normal commuter afternoon peak heading out of the Charleston area via I-26 westbound. A graph of the volume data was created and no discernible "knee" is visible. The 100 highest hours occurred on only 41 different days, and the only hours of the top 100 occurring on non-Fridays were related to holiday travel:

- Sunday, April 5, 2015 Easter Sunday;
- Sunday, April 12, 2015 the Sunday after the Berkeley County School District spring break week;
- Sunday, July 6, 2014 the Sunday after the July 4th holiday; and
- Tuesday, November 25, 2014; Wednesday, November 26, 2014; and Sunday, November 30, 2014
 before and after the Thanksgiving holiday.

Based upon 30 and 100 highest hours, it was agreed that selecting a Friday time period due to holiday travel did not seem appropriate and would potentially result in an uneconomical and excessive design for the new interchange. Therefore, Fridays containing the top 100 highest hours of the year during non-holiday weekends were reviewed to determine a representative day for the analysis. It was determined and agreed to that Friday, October 3, 2014 would be an appropriate representative day since it contained four consecutive hours in the afternoon that fell in the top 100, including two hours that fell in the top 49. A summary of the two-way volumes for this day and corresponding yearly volume rank is provided below.

- 2:00 3:00 PM: 4,160, 98th highest hour
- 3:00 4:00 PM: 4,407, 41st highest hour Study Design Hour
- 4:00 5:00 PM: 4,342, 49th highest hour
- 5:00 6:00 PM: 4,164, 97th highest hour

With consideration of the projected peak Volvo volumes that are discussed in the next section, it was determined that the 3:00 – 4:00 PM hour would be the I-26 & Volvo Car Drive IJR Study Design Hour. The selection of this design hour is within the range of hours specified in standard practices and methodologies and reflects best design practices for the unique circumstances and context of this section of I-26 in Berkeley County.



3.0 Traffic Volume Development

For the IJR analyses, opening-year 2019 and horizon-year 2039 conditions were considered. For both of the respective study years, Build and No Build conditions of the proposed interchange were evaluated. Existing 2015 traffic volumes were collected along SC 27/Ridgeville Road and Jedburg Road for use in the analysis; the development of the I-26 Design Hour was discussed in the previous section; and the horizon-year 2039 traffic volumes along Jedburg Road were based upon information in the May 2010 *Sheep Island Parkway IJR/Jedburg Road IMR* document.

3.1 BACKGROUND GROWTH RATE

To develop an annual background growth rate for traffic not related to the Volvo factory and Volvo-related industrial development, three sources of data were reviewed: historical count data along I-26 between SC 27/Ridgeville Road and Jedburg Road (SCDOT count station #2179) over the past 10 years; growth rate assumptions from the May 2010 *Sheep Island Parkway IJR/Jedburg Road IMR;* and traffic volume projections of BCDCOG's Charleston Area Transportation Study (CHATS) travel demand model.

Based upon the historical data, I-26 between SC 27/Ridgeville Road and Jedburg Road has experienced approximately 0.87% annual growth. The May 2010 *Sheep Island Parkway IJR/Jedburg Road IMR* considered an annual growth assumption of 2.1%. The CHATS travel demand model projects approximately 1.85% annual growth along I-26 considering 2040 projections.

Based upon this information, a 2.0% annual linear growth rate was utilized to develop opening-year 2019 and horizon-year 2039 traffic volumes not related to the Volvo factory and Volvo-related industrial development. For Jedburg Road, the May 2010 *Sheep Island Parkway IJR/Jedburg Road IMR* traffic volumes for 2035 conditions were utilized and grown to horizon-year 2039 conditions using the 2.0% annual growth rate.

3.2 OPENING-YEAR 2019 TRAFFIC VOLUMES

The opening-year 2019 traffic volumes were developed for projected 2019 conditions by applying an annual growth rate to the existing traffic volumes and adding the projected traffic volumes of the Volvo factory, Volvo-related industrial development, and construction traffic.



3.2.1 Volvo Developments Trip Generation (2019)

The trip generation potential of the Volvo factory and Volvo-related industrial development was developed based upon information of other large-scale manufacturing factories in South Carolina, including the BMW factory in Greer, South Carolina. The trip generation for the developments was separated into three land uses, Volvo Office, Volvo Manufacturing, and Volvo-related Industrial. The trip generation potential was also estimated for construction traffic associated with the Volvo Manufacturing and Volvo-Related Industrial developments during the 2019 analyses.

- Volvo Office (200 employees): the trip generation was estimated using information contained in ITE's Trip Generation Manual, 9th Edition (2012) reference for land use code 710 – General Office Building.
- *Volvo Manufacturing (1,000 employees):* the trip generation was estimated considering 1.0 employees per vehicle and a 90%/10% directional split during ingress and egress. This assumption is based upon the trip generation characteristics of other large-scale manufacturing factories in South Carolina.
- Volvo-Related Industrial Development (1,000,000 square feet): for the purposes of this analysis, a conservative ratio of 1.0 employees per 1,000 square feet of industrial development was utilized for the Volvo-related industrial development. The trip generation was estimated using information contained in ITE's *Trip Generation Manual*, 9th Edition (2012) reference for land use codes 140 Manufacturing and 150 Warehousing. It was assumed that approximately 60% of the Volvo-related industrial development would be manufacturing (600 employees by 2019) and approximately 40% of the Volvo-related industrial development would be warehousing (400 employees by 2019).
- *Construction (500 employees by 2019):* the trip generation was estimated considering 1.0 employees per vehicle and a 90%/10% directional split during ingress and egress.

Due to the conservative estimate of additional construction traffic and considering the limited opening-year operations of the Volvo factory and Volvo-Related Industrial developments, potential truck trips generated by the manufacturing facilities were not considered as additional trips. Instead, a heavy vehicle percentage of 20% was utilized for the opening year capacity analyses, as discussed in section 4.0.



The total 2019 opening year trip generation estimates for the Volvo developments are shown in Table 3.1 and documented in Appendix A.

Land Use	Scale	Ingres	s Peak	Egress Peak		
Land Use	Scale	Entering	Exiting	Entering	Exiting	
Volvo Office	200 employees	105	15	25	110	
Volvo Manufacturing	1,000 employees	900	100	100	900	
Volvo-Related Industrial	1,000 employees	325	125	185	285	
Construction	500 employees	450	50	50	450	

Table 3.1 – Opening-Year 2019 Trip Generation Summary

3.2.2 Volvo Developments Shifts (2019)

Based upon the trip generation results, the trips were distributed throughout the day considering one shift. The shift assumptions are summarized herein.

- Volvo Office: it was assumed that the office operations would occur during typical workday operations, from 8:30 AM 5:00 PM, with 10% of the PM peak hour trips occurring during the 3:00 4:00 PM Design Hour.
- Volvo Manufacturing: it was assumed that manufacturing would be one shift for opening-year 2019 conditions beginning at 6:30 AM, which is the start time of the 1st shift of Volvo's existing Gothenburg, Sweden factory. It was assumed that the shift would end at 3:00 PM, with 100% of the PM peak hour trips occurring during the 3:00 PM 4:00 PM Design hour.
- Volvo-Related Industrial Development: it was assumed that 25% of the Volvo-related industrial development traffic would coincide with the Volvo Manufacturing operations during the 3:00 4:00 PM design hour.
- *Construction:* it was assumed that 40% of the construction-related traffic would coincide with the Volvo Manufacturing operations during the 3:00 PM 4:00 PM Design Hour.



3.2.3 Trip Distribution (2019)

Traffic expected to be generated by the Volvo factory and Volvo-related industrial development for opening-year 2019 conditions was distributed and assigned to the adjacent roadway network.

The distribution was based upon the location of existing population centers and census tract information for the four counties of Berkeley, Charleston, Dorchester, and Orangeburg. The distribution also considered future residential development projects and expected travel patterns for the Volvo factory and Volvo-related industrial development. The distribution agreed to by USACE, FHWA, SCDOT, SC Department of Commerce, and project consultant staffs during the coordination meetings is:

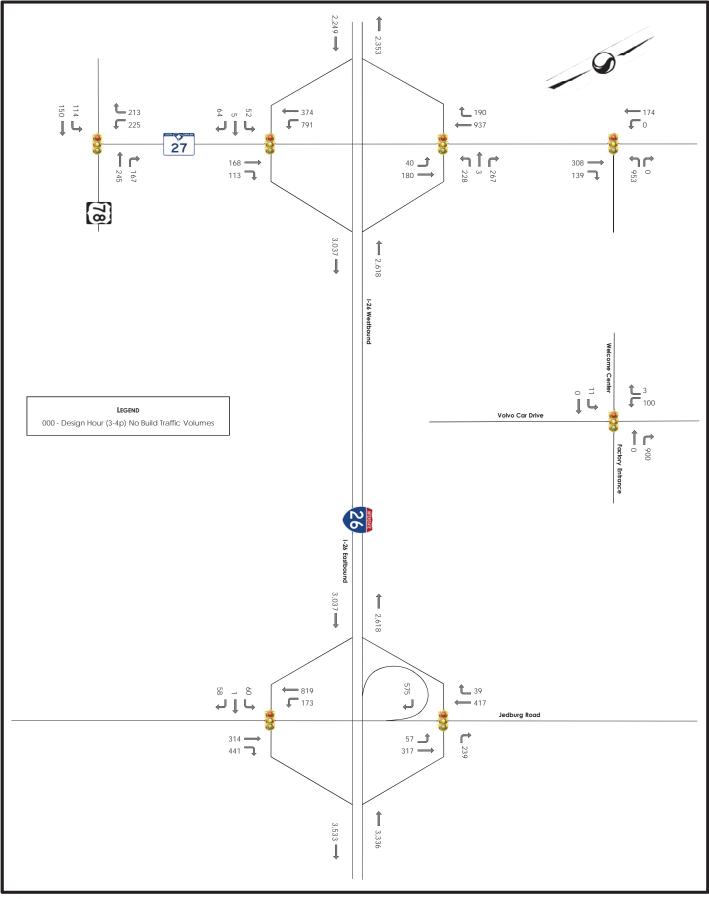
- 15% to/from the west via I-26 (towards Orangeburg);
- 60% to/from the east via I-26 (towards Charleston);
- 3% to/from the west via US 78 and SC 27/Ridgeville Road;
- 4% to/from the east via US 78 and SC 27/Ridgeville Road;
- 8% to/from the west via US 176; and
- 10% to/from the east via US 176.

3.2.4 Opening-year 2019 Traffic Volume Development Summary

Based upon the traffic volume development impacts of the Volvo factory and Volvo-related industrial development and considering the 2.0% annual growth rate, the effective annual growth rate along I-26 eastbound between Volvo Car Drive and Jedburg Road (the peak direction during the Volvo Manufacturing egress) during the 3:00 – 4:00 PM Design Hour is approximately 10.1% per year. Worksheets documenting the traffic volume development are provided in Appendix B.

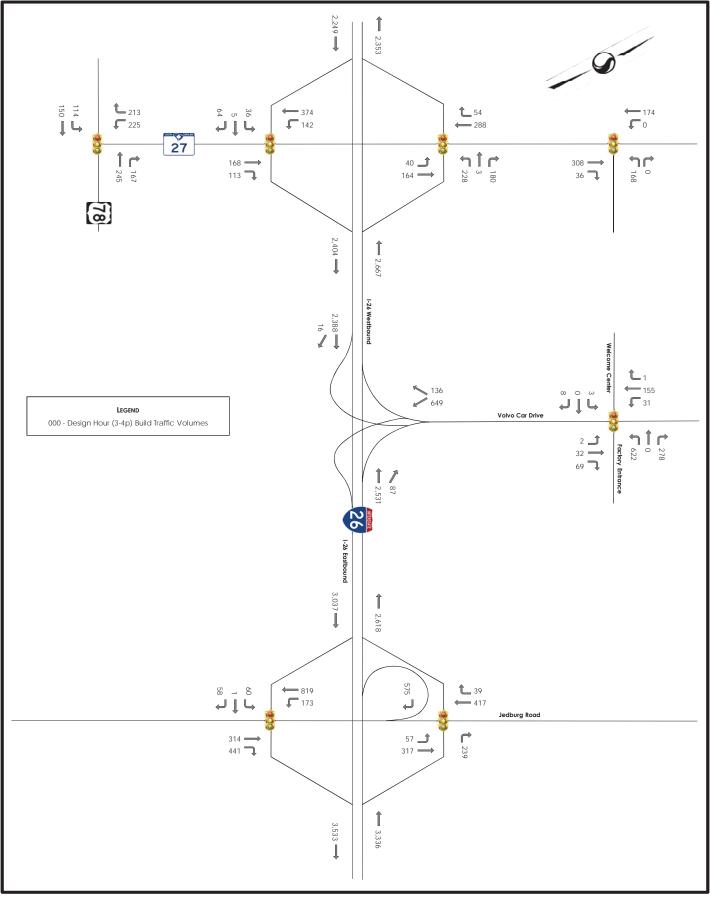
Figures illustrating the proposed opening-year Design Hour traffic volumes for No Build and Build conditions are shown in Exhibits 3.1 and 3.2, respectively.







I-26 & Volvo Car Drive IJR Exhibit 3.1 - Opening-year 2019 No Build Traffic Volumes Page 14





3.3 HORIZON-YEAR 2039 TRAFFIC VOLUMES

The horizon-year 2039 traffic volumes were developed for projected 2039 conditions by applying an annual growth rate to the existing traffic volumes and adding the projected traffic volumes of the Volvo factory and Volvo-related industrial development, with the exception of the Jedburg Road volumes, which were based upon the May 2010 *Sheep Island Parkway IJR/Jedburg Road IMR* document.

3.3.1 Volvo Developments Trip Generation (2039)

The trip generation potential of the Volvo factory and Volvo-related industrial development was developed based upon information of other large-scale manufacturing factories in South Carolina, including the BMW factory in Greer, South Carolina. The trip generation for the developments was separated into three land uses, Volvo Office, Volvo Manufacturing, and Volvo-related Industrial. Additional truck trips generated by the manufacturing facilities were considered in the horizon year.

- *Volvo Office (500 employees):* the trip generation was estimated using information contained in ITE's *Trip Generation Manual*, 9th Edition (2012) reference for land use code 710 General Office Building.
- *Volvo Manufacturing (4,000 employees):* the trip generation was estimated considering 1.0 employees per vehicle and a 90%/10% directional split during ingress and egress. This assumption is based upon the trip generation characteristics of other large-scale manufacturing factories in South Carolina.
- Volvo Manufacturing Trucks (712 trucks daily): the trip generation was estimated based on a production-based rate provided by Volvo Cars. The estimated trips were distributed throughout the entire 24-hours of operation for the Volvo Factory and a 50%/50% directional split for ingress and egress was assumed.
- Volvo-Related Industrial Development (9,900,000 square feet): using a conservative ratio of 1.0 employees per 1,000 square feet of industrial development, the trip generation was estimated using information contained in ITE's *Trip Generation Manual*, 9th Edition (2012) reference for land use codes 140 Manufacturing and 150 Warehousing. It was assumed that approximately 60% of the Volvo-related industrial development would be manufacturing (6,000 employees by 2039) and approximately 40% of the Volvo-related industrial development would be warehousing (3,900 employees by 2039).
- Volvo-Related Industrial Development Trucks (10% of employee trips): the trip generation was estimated considering additional truck trips equal to 10% of the total Volvo-Related Industrial Development employee trips, which is approximately 360 trucks entering daily and 285 trucks exiting daily.

The total horizon-year 2039 trip generation estimates for the Volvo developments are shown in Table 3.2 and documented in Appendix A.



Land Use	Scale	Ingres	s Peak	Egress Peak		
Land Use	Scale	Entering	Exiting	Entering	Exiting	
Volvo Office	500 employees	240	31	41	210	
Volvo Manufacturing	4,000 employees	3,600	400	400	3,600	
Volvo Manufacturing Trucks	712 trucks daily	32	32	50	50	
Volvo-Related Industrial	9,900 employees	2,355	890	1,250	1,950	
Volvo-Related Industrial Trucks	10% of employee trips	235	90	125	195	

Table 3.2 – Horizon-Year 2039 Trip Generation Summary

3.3.2 Volvo Developments Shifts (2039)

Based upon the total trip generation results, the trips were distributed throughout the day based upon several shifts. The shift potential of the Volvo factory and Volvo-related industrial development was developed based upon data of other large-scale manufacturing factories in South Carolina, including the BMW factory in Greer, South Carolina.

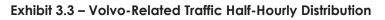
- *Volvo Office:* it was assumed that the office operations would occur during typical workday operations, from 8:30 AM 5:00 PM.
- Volvo Manufacturing (employees): it was assumed that manufacturing would be separated into three shifts, with 60% of the employees working during the 1st shift, 30% of the employees working during the 2nd shift, and 10% of the employees working during the 3rd shift. It was assumed that the 1st shift would begin at 6:30 AM, which is the start time of the 1st shift of Volvo's existing Gothenburg, Sweden factory. The starts of the 2nd and 3rd shifts were assumed to be staggered by 8 hours and 16 hours respectively from the 1st shift. It was assumed that the egress of the 1st shift would be from 3:00 4:00 PM and that the egress of the 2nd and 3rd shifts would be staggered by 8 hours and 16 hours respectively.
- Volvo Manufacturing Trucks: it was assumed that the truck trips generated by the Volvo factory would be distributed throughout the day based upon the existing hourly distribution of trucks along I-26 as determined by data collected from SCDOT ATR station P-54 along I-26 between SC 27/Ridgeville Road and Jedburg Road.
- Volvo-Related Industrial Development (employees and trucks): it was assumed that one-third of the Volvo-related industrial development would operate similar to the Volvo office operations from 8:30 AM 5:00 PM. It was assumed that the other two-thirds of the Volvo-related development would operate on three shifts similar to the Volvo Manufacturing operations, but staggered one hour later with the Volvo-related industrial development 1st shift beginning at 7:30 AM. It was assumed that the egress of the 1st shift would be from 4:00 5:00 PM and the ingress of the 2nd shift would be from 2:30 3:30 PM.

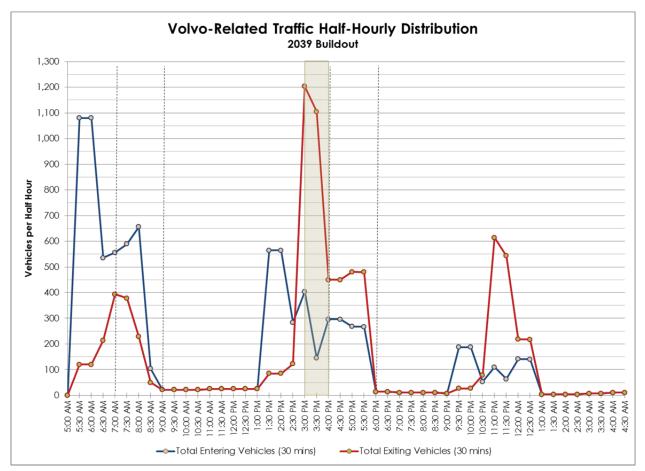
The shift assumptions are summarized in Table 3.3 and documented in Appendix A. The resulting halfhourly distribution of Volvo-related traffic is illustrated in Exhibit 3.3.



Land Use	Shift	% of Workers Operation Hours in Shift		Ingress Peak	Egress Peak
Volvo Office			8:30 AM – 5:00 PM	7:30 AM to 8:30 AM	5:00 PM to 6:00 PM
Volvo	1 st	60%	6:30 AM to 3:00 PM	5:30 AM to 6:30 AM	3:00 PM to 4:00 PM
Manufacturing	2 nd	30%	2:30 PM to 11:00 PM	1:30 PM to 2:30 PM	11:00 PM to 12:00 AM
(employees)	3 rd	10%	10:30 PM to 7:00 AM	9:30 PM to 10:30 PM	7:00 AM to 8:00 AM
Volvo Manufacturing (trucks)			24-hours	11:00 AM to 4:00 PM	11:00 AM to 4:00 PM
Volvo-Related Industrial Office			8:30 AM – 5:00 PM	7:30 AM to 8:30 AM	5:00 PM to 6:00 PM
Volvo-Related	1 st	60%	7:30 AM to 4:00 PM	6:30 AM to 7:30 AM	4:00 PM to 5:00 PM
Industrial (employees and	2 nd	30%	3:30 PM to 12:00 AM	2:30 PM to 3:30 PM	12:00 AM to 1:00 AM
trucks)	3 rd	10%	11:30 PM to 8:00 AM	10:30 PM to 11:30 PM	8:00 AM to 9:00 AM

Table 3.3 – Horizon-Year 2039 Shift Assumptions Summary







The peak of the Volvo-related traffic throughout the day occurs between 3:00 PM and 4:00 PM with the egress of the Volvo Manufacturing 1st-shift employees. This 3:00 PM to 4:00 PM hour corresponds to the I-26 Design Hour and was considered the selected Design Hour for the IJR analyses.

The peak of ingress for Volvo-related traffic throughout the day occurs between 5:30 AM and 6:30 AM. Due to the fact that the ingress peak is less than the egress peak and that the ingress peak time period occurs away from the typical AM peak period (between 7:00 AM and 9:00 AM) for I-26 and area traffic, the ingress peak time period was not considered in the IJR analyses, with the exception of the Factory Entrance analyses discussed in section 4.2.4.

3.3.3 Trip Distribution (2039)

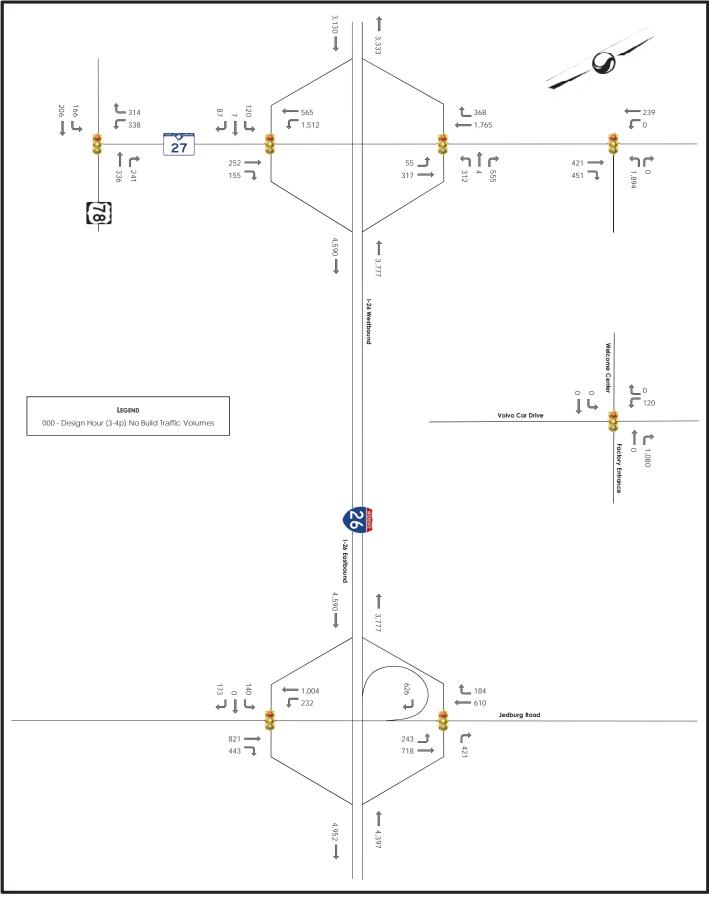
Employee traffic expected to be generated by the Volvo factory and Volvo-related industrial development for horizon-year 2039 conditions was distributed and assigned to the adjacent roadway network based upon the assumptions for opening-year 2019 conditions as documented in Section 3.2.3. Truck traffic, as described in Section 3.3.1, was distributed in the same manner as employee traffic.

3.3.4 Horizon-year 2039 Traffic Volume Development Summary

Based upon the traffic volume development impacts of the Volvo factory and Volvo-related industrial development and considering the 2.0% annual growth rate, the effective annual growth rate along I-26 eastbound between Volvo Car Drive and Jedburg Road (the peak direction during the Volvo Manufacturing egress) during the 3:00 – 4:00 PM Design Hour is approximately 4.7% per year. Worksheets documenting the traffic volume development are provided in Appendix C.

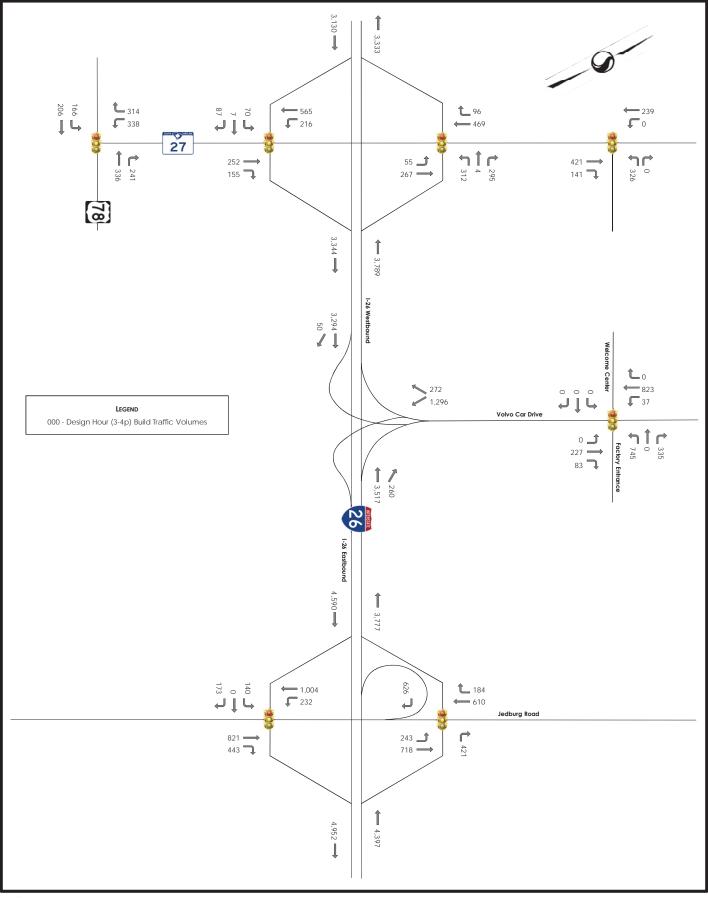
Figures illustrating the proposed horizon-year 2039 Design Hour traffic volumes for No Build and Build conditions are shown in Exhibits 3.4 and 3.5, respectively.







I-26 & Volvo Car Drive IJR Exhibit 3.4 - Horizon-year 2039 No Build Traffic Volumes Page 20





4.0 Capacity Analysis

Using the projected opening-year 2019 and horizon-year 2039 traffic volumes for No Build and Build conditions of the proposed I-26 & Volvo Car Drive interchange, capacity analyses were conducted for the study area freeway facilities and intersections using the *Highway Capacity Software (HCS 2010)* and the *Highway Capacity Manual 2010 (HCM 2010)* methodologies of the *Synchro* Version 9 software. The *Synchro* analyses were conducted at a planning level and exact signal timings and phases will be determined during the design phase in accordance with the SCDOT *Signal Design Guidelines*.

Level of service (LOS) grades range from LOS A to LOS F, which are directly related to traffic density of freeway facilities and the level of control delay at intersections. LOS A operations typically represent ideal, free-flow conditions where vehicles experience low densities or little delays, and LOS F operations typically represent poor, forced-flow (bumper-to-bumper) conditions with high densities or vehicular delays and are generally considered undesirable. Table 4.1 summarizes the *HCM 2010* density and control delay thresholds associated with each LOS grade for freeway facilities and signalized intersections.

LOS	Ramp Merge & Diverge Areas	Freeway Segments	Signa	alized Intersections	
LUS	Dens (passenger car	•	LOS Delay Per Vehicle (seconds)		
А	<u><</u> 10	<u><</u> 11	А	<u><</u> 10	
В	> 10 and <u><</u> 20	> 11 and <u><</u> 18	В	> 10 and <u><</u> 20	
С	> 20 and <u><</u> 28	> 18 and <u><</u> 26	С	> 20 and <u><</u> 35	
D	> 28 and <u><</u> 35	> 26 and <u><</u> 35	D	> 35 and <u><</u> 55	
E	> 35	> 35 and <u><</u> 45	E	> 55 and <u><</u> 80	
F	Demand exceeds capacity	> 45	F	> 80	

As part of the analyses, a peak hour factor of 0.90 and truck percentage of 20% were assumed for all freeway facilities and intersections. The truck percentage was based upon existing data collected from SCDOT ATR station P-54 along I-26 between SC 27/Ridgeville Road and Jedburg Road.



4.1 OPENING-YEAR 2019 ANALYSES

For 2019 Build conditions, the proposed I-26 & Volvo Car Drive interchange configuration is a three-level, three-leg directional interchange that connects I-26 and the Camp Hall Commerce Park via Volvo Car Drive. Directional ramps are proposed for all movements that will be achieved through three bridge structures. Due to the expected high attraction to/from the Charleston area, the ramps to/from Charleston are proposed to be constructed as two-lane ramps. All proposed new ramp lengths exceed Highway Capacity Ramp Analysis values and are therefore analyzed as a freeway segment.

As part of the 2019 Build and No Build analyses, the existing configuration of I-26 as a four-lane section from west of SC 27/Ridgeville Road to east of Jedburg Road was assumed.

4.1.1 Freeway Facility Analyses – 2019 No Build

The results of the freeway facility analyses considering 2019 No Build conditions for the 3:00 – 4:00 PM Design Hour are summarized in Table 4.2 and illustrated in Exhibit 4.1 and indicate that the study area freeway facilities are projected to operate at acceptable conditions considering 2019 No Build conditions with one exception. Worksheets documenting the freeway analyses for 2019 No Build conditions are included in Appendix D.

	Eastbound							Westbound						
I-26 Section	Ramp Volume (veh/hr)	Mainline Volume (veh/hr)	Average Speed (mph)	Density (pc/mi/ln)	Туре	LOS	LOS	Туре	Density (pc/mi/ln)	Average Speed (mph)	Mainline Volume (veh/hr)	Ramp Volume (veh/hr)		
West of SC 27		2,249	73.5	18.7	FS	с	с	FS	19.7	72.9	2,353			
On/Off West of SC 27	121	2,249	60.4	23.8	D	с	С	м	22.0	64.3	2,120	233		
At SC 27		2,128	74.0	17.6	FS	В	В	FS	17.5	74.0	2,120			
On/Off East of SC 27	909	2,128	61.0	28.9	М	D	С	D	27.3	59.1	2,618	498		
SC 27 to Jedburg		3,037	66.9	27.7	FS	D	С	FS	22.5	71.0	2,618			
On/Off West of Jedburg Road	119	3,037	60.4	31.7	D	D	С	м	22.2	61.8	2,522	96		
Loop Off-Ramp to On- Ramp							С	FS	22.4	68.7	2,522			
Loop Off-Ramp							D	D	30.1	56.9	3,097	575		
On/Off Ramp to Loop Off-Ramp		2,918	68.2	26.1	FS	D	D	FS	29.4	64.4	3,097			
On/OffEast of Jedburg Road	615	2,918	57.4	31.6	М	D	D	D	32.6	58.0	3,336	239		
East of Jedburg Road		3,533	59.3	36.4	FS	Е	D	FS	33.0	61.8	3,336			

Table 4.2 – Freeway Facility LOS Analysis Summary (2019 No Build)



For the I-26 eastbound Freeway Segment between Jedburg Road and Sheep Island Parkway the 2019 No Build traffic volume is 3,533, which is equivalent to LOS E conditions. It should be noted that SCDOT has identified this section of I-26 for widening to six lanes.

4.1.2 Freeway Facility Analyses – 2019 Build

The results of the freeway facility analyses considering 2019 Build conditions for the 3:00 – 4:00 PM Design Hour are summarized in Table 4.3 and illustrated in Exhibit 4.2 and indicate that the study area freeway facilities are projected to operate at acceptable conditions considering 2019 Build conditions with one exception. Worksheets documenting the freeway analyses for 2019 Build conditions are included in Appendix D.

		Eastbound							Westbound							
I-26 Section	Ramp Volume (veh/hr)	Mainline Volume (veh/hr)	Average Speed (mph)	Density (pc/mi/ln)	Туре	LOS	LOS	Туре	Density (pc/mi/ln)	Average Speed (mph)	Mainline Volume (veh/hr)	Ramp Volume (veh/hr)				
West of SC 27		2,249	73.5	18.7	FS	с	С	FS	19.7	72.9	2,353					
On/Off West of SC 27	105	2,249	60.5	23.8	D	с	С	М	22.1	63.0	2,256	97				
At SC 27		2,144	73.9	17.7	FS	В	с	FS	18.8	73.4	2,256					
On/Off East of SC 27	260	2,144	63.8	23.2	М	с	с	D	27.8	58.4	2,667	411				
SC 27 to New Interchange		2,404	72.6	20.2	FS	с	с	FS	23.1	70.6	2,667					
Three-Lane On/Off West of New Interchange		2,404	75.0	13.1	FS	В	В	FS	14.5	74.9	2,667					
At New Interchange		2,388	72.7	20.1	FS	с	С	FS	21.6	71.7	2,531					
Four-Lane On/Off East of New Interchange		3,037	75.0	12.4	FS	В	Α	FS	10.7	75.0	2,618					
Three-Lane On/Off East of New Interchange		3,037	74.4	16.6	FS	В	В	FS	14.2	75.0	2,618					
New Interchange to Jedburg Road		3,037	66.9	27.7	FS	D	с	FS	22.5	71.0	2,618					
On/Off West of Jedburg Road	119	3,037	59.4	31.7	D	D	С	м	22.2	61.8	2,522	96				
Loop Off-Ramp to On- Ramp							С	FS	22.4	68.7	2,522					
Loop Off-Ramp							D	D	30.1	56.9	3,097	575				
On/Off Ramp to Loop Off-Ramp		2,918	68.2	26.1	FS	D	D	FS	29.4	64.4	3,097					
On/Off East of Jedburg Road	615	2,918	56.5	31.6	М	D	D	D	32.6	58.0	3,336	239				
East of Jedburg Road		3,533	59.3	36.4	FS	Е	D	FS	33.0	61.8	3,336					

Table 4.3 – Freeway Facility LOS Analysis Summary (2019 Build)



For the I-26 eastbound Freeway Segment between Jedburg Road and Sheep Island Parkway the 2019 Build traffic volume is the same as the 2019 No Build traffic volume of 3,533, which is equivalent to LOS E conditions. It should be noted that SCDOT has identified this section of I-26 for widening to six lanes.

4.1.3 Intersection Analyses – 2019 No Build and Build

As part of the 2019 Build and No Build intersection analyses, improvements to SC 27/Ridgeville Road were assumed to be in place in conjunction with construction of the initial phases of the Volvo factory to be open in 2017. The assumed improvements are listed below.

- At the SC 27/Ridgeville Road & I-26 Eastbound Ramps intersection, the addition of an exclusive eastbound right-turn lane, an exclusive southbound left-turn lane, and intersection signalization with coordinated control and protected-permitted left-turn phasing for the southbound left-turn were assumed in place.
- At the SC 27/Ridgeville Road & I-26 Westbound Ramps intersection, the addition of an exclusive westbound right-turn lane, an exclusive southbound right-turn lane, an exclusive northbound left-turn lane, and intersection signalization with coordinated control were assumed in place.
- Along SC 27/Ridgeville Road between I-26 and Lower Westvaco Road, an improved two-lane section with left-turn lanes and median separation was assumed to be in place.

No improvements to the existing SC 27/Ridgeville Road bridge over I-26 are proposed at this time. It is recommended that the SC 27/Ridgeville Road bridge over I-26 be replaced to provide for a more typical cross section, but replacement of the SC 27/Ridgeville Road bridge is not part of the I-26 & Volvo Car Drive interchange construction.

Improvements to the I-26 & Jedburg Road interchange were also assumed to be in place as part of the 2019 Build and No Build intersection analyses. These improvements are documented in the May 2010 *Sheep Island Parkway IJR/Jedburg Road IMR,* and include the widening of Jedburg Road to a four-lane, median divided section in the interchange area and the addition of an I-26 westbound-to-Jedburg Road southbound loop off-ramp.

As part of the analyses, a peak hour factor of 0.90 and truck percentage of 20% were assumed for all intersections. The truck percentage was based upon existing data collected from SCDOT ATR station P-54 along I-26 between SC 27/Ridgeville Road and Jedburg Road. To provide for a conservative analysis of intersection capacity, the 20% estimated truck percentage considered in the freeway analyses was utilized throughout the roadway network in place of exact truck percentages derived from the estimated volume of trucks at each intersection.



The results of the intersection analyses considering 2019 No Build and 2019 Build conditions are summarized in Table 4.4 for the 3:00 – 4:00 PM Design Hour. Worksheets documenting the intersection analyses are included in Appendix E.

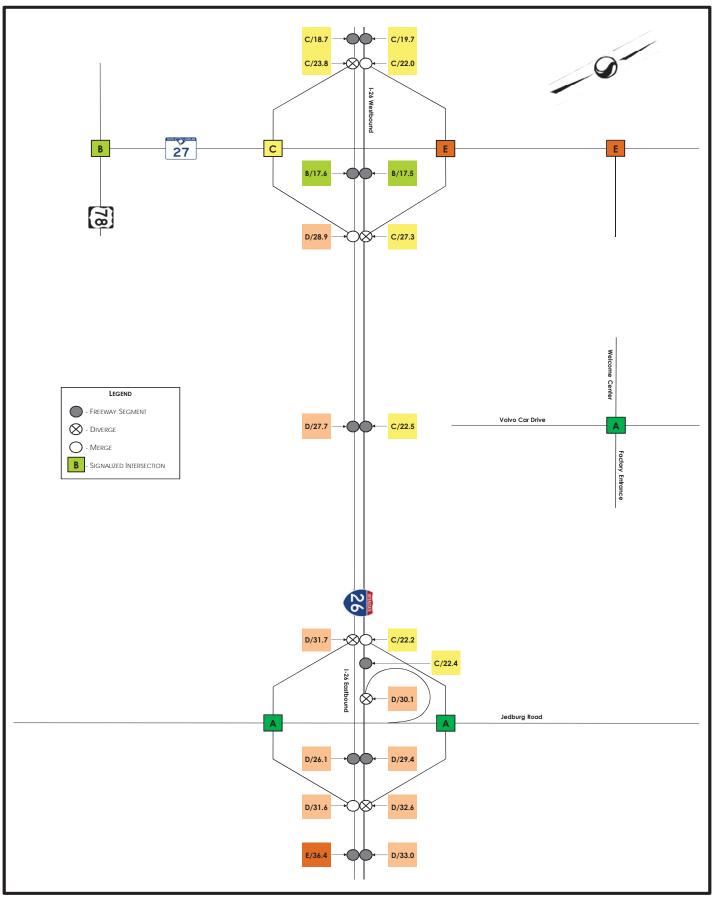
The results indicate that the study area intersections are projected to operate at acceptable conditions considering 2019 Build conditions. The results indicate that for 2019 No Build conditions, the SC 27/Ridgeville Road & I-26 Westbound Ramps intersection and SC 27/Ridgeville Road & Lower Westvaco Road intersections are projected to operate at LOS E conditions.

Intersection		rvice/Delay onds)
mersection	2019 Build	2019 No Build
SC 27 & US 78	B/15.0	B/15.0
SC 27 & I-26 Eastbound Ramps	A/7.9	C/27.6
SC 27 & I-26 Westbound Ramps	B/18.6	E/55.5
SC 27 & Lower Westvaco Road	B/10.4	E/60.9
Volvo Car Drive & Factory Entrance	B/18.3	A/6.1
Jedburg Road & I-26 Eastbound Ramps	A/6.7	A/6.7
Jedburg Road & I-26 Westbound Ramps	A/1.8	A/1.8

Table 4.4 – Design Hour Intersection LOS Analysis Summary (2019)

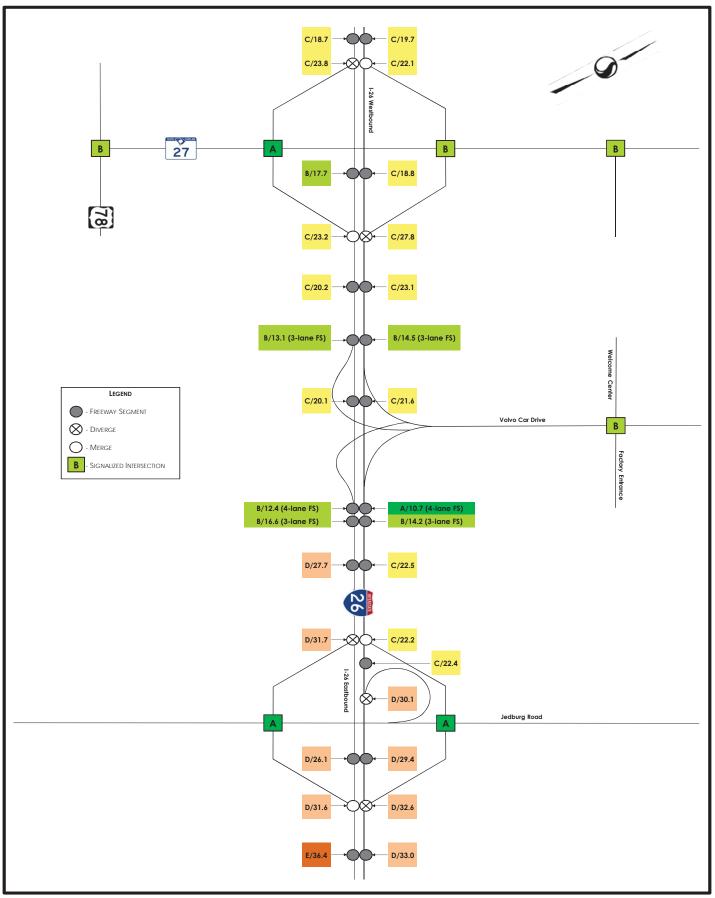
For 2019 No Build conditions, the LOS E conditions at the SC 27/Ridgeville Road & I-26 Westbound Ramps intersection and SC 27/Ridgeville Road & Lower Westvaco Road intersection can be attributed to all of the Volvo-related traffic being assigned to the roadway to access I-26 and the egress of Volvo factory workers during the 3:00 PM – 4:00 PM design hour.







I-26 & Volvo Car Drive IJR Exhibit 4.1 - Opening-year 2019 No Build Level of Service Page 27





4.2 HORIZON-YEAR 2039 ANALYSES

For 2039 Build conditions, the proposed I-26 & Volvo Car Drive interchange configuration is a threelevel, three-leg directional interchange that connects I-26 and the Camp Hall Commerce Park via Volvo Car Drive. Directional ramps are proposed for all movements that will be achieved through three bridge structures. Due to the expected high attraction to/from the Charleston area, the ramps to/from Charleston are proposed to be constructed as two-lane ramps. All proposed new ramp lengths exceed Highway Capacity Ramp Analysis values and are therefore analyzed as a freeway segment.

As part of the 2039 Build and No Build analyses, the widening of I-26 to a six-lane section from west of SC 27/Ridgeville Road to east of Jedburg Road was assumed to be in place.

4.2.1 Freeway Facility Analyses – 2039 No Build

The results of the freeway facility analyses considering 2039 No Build conditions for the 3:00 – 4:00 PM Design Hour are summarized in Table 4.5 and Exhibit 4.3 and indicate that the study area freeway facilities are projected to operate at acceptable conditions considering 2039 No Build conditions. Worksheets documenting the freeway analyses for 2039 No Build conditions are included in Appendix F.

		Eastbound								Westbound						
I-26 Section	Ramp Volume (veh/hr)		Average Speed (mph)	Density (pc/mi/ln)	Туре	LOS	L	LOS	Туре	Density (pc/mi/ln)	Average Speed (mph)	Mainline Volume (veh/hr)	Ramp Volume (veh/hr)			
Two-Lane West of SC 27		3,130	65.8	29.1	FS	D		D	FS	32.3	63.1	3,333				
West of SC 27		3,130	74.2	17.2	FS	В		с	FS	18.5	73.6	3,333				
On/Off West of SC 27	214	3,130	65.7	22.5	D	с		с	М	20.2	67.0	2,906	427			
At SC 27		2,916	74.6	15.9	FS	В		в	FS	15.9	74.6	2,906				
On/Off East of SC 27	1,674	2,916	60.8	32.2	М	D		с	D	27.1	63.3	3,777	871			
SC 27 to Jedburg		4,590	66.6	28.1	FS	D		с	FS	21.4	71.8	3,777				
On/Off West of Jedburg Road	313	4,590	65.4	30.1	D	D		с	М	20.6	63.9	3,350	427			
Loop Off-Ramp to On- Ramp								с	FS	19.6	69.7	3,350				
Loop Off-Ramp								с	D	25.3	61.9	3,976	626			
On/Off Ramp to Loop Off-Ramp		4,277	68.9	25.3	FS	с		с	FS	23.8	68.0	3,976				
On/Off East of Jedburg Road	675	4,277	62.9	29.2	М	D		D	D	28.2	62.3	4,397	421			
East of Jedburg Road		4,952	62.3	32.4	FS	D		D	FS	27.2	65.9	4,397				
East of Jedburg Road*		3,725	65.0	21.2	FS	с		с	FS	20.0	65.0	3,505				

Table 4.5 – Freeway Facility LOS Analysis Summary (2039 No Build)

*LOS Results from the Sheep Island Parkway IJR/Jedburg Road IMR for 2035 Build PM peak-hour conditions.



4.2.2 Freeway Facility Analyses – 2039 Build

The results of the freeway facility analyses considering 2039 Build conditions for the 3:00 – 4:00 PM Design Hour are summarized in Table 4.6 and illustrated in Exhibit 4.4 and indicate that the study area freeway facilities are projected to operate at acceptable conditions considering 2039 Build conditions. Worksheets documenting the freeway analyses for 2039 Build conditions are included in Appendix F.

			Eastbou	nd					We	stbound		
I-26 Section	Ramp Volume (veh/hr)	Mainline Volume (veh/hr)	Average Speed (mph)	Density (pc/mi/ln)	Туре	LOS	los	Туре	Density (pc/mi/In)	Average Speed (mph)	Mainline Volume (veh/hr)	Ramp Volume (veh/hr)
Two-Lane West of SC 27		3,130	65.8	29.1	FS	D	D	FS	32.3	63.1	3,333	
West of SC 27		3,130	74.2	17.2	FS	В	с	FS	18.5	73.6	3,333	
On/Off West of SC 27	164	3,130	65.8	22.4	D	с	В	М	19.3	65.7	3,178	155
At SC 27		2,966	74.5	16.2	FS	В	В	FS	17.5	74.0	3,178	
On/Off East of SC 27	378	2,966	66.8	20.8	М	с	с	D	26.5	63.1	3,789	611
SC 27 to New Interchange		3,344	73.5	18.5	FS	С	с	FS	21.5	71.7	3,789	
Four-Lane On/Off West of New Interchange		3,344	75.0	13.6	FS	В	в	FS	15.5	74.7	3,789	
At New Interchange		3,294	73.7	18.2	FS	с	с	FS	19.7	72.9	3,517	
Five-Lane On/Off East of New Interchange		4,590	74.8	15.0	FS	В	в	FS	12.3	75.0	3,777	
Four-Lane On/Off East of New Interchange		4,590	73.2	19.2	FS	с	в	FS	15.4	74.7	3,777	
New Interchange to Jedburg Road		4,590	66.6	28.1	FS	D	с	FS	21.4	71.8	3,777	
On/Off West of Jedburg Road	313	4,590	64.1	30.1	D	D	с	М	20.6	63.9	3,350	427
Loop Off-Ramp to On- Ramp							с	FS	19.6	69.7	3,350	
Loop Off-Ramp							с	D	25.3	61.9	3,976	626
On/Off Ramp to Loop Off-Ramp		4,277	68.9	25.3	FS	с	с	FS	23.8	68.0	3,976	
On/Off East of Jedburg Road	675	4,277	61.6	29.2	M	D	D	D	28.2	62.3	4,397	421
East of Jedburg Road		4,952	62.3	32.4	FS	D	 D	FS	27.2	65.9	4,397	
East of Jedburg Road*		3,725	65.0	21.2	FS	с	с	FS	20.0	65.0	3,505	

Table 1 6 - Freeway	/ Facility		nalveie	Summary	(2030	Ruild)
Table 4.6 – Freeway	Гасш	y lus a	naiysis	Sommary	(2037	DUIICA)

*LOS Results from the *Sheep Island Parkway IJR/Jedburg Road IMR* for 2035 Build PM peak-hour conditions.



4.2.3 Intersection Analyses – 2039 No Build and Build

As part of the 2039 Build and No Build intersection analyses, improvements to SC 27/Ridgeville Road were assumed to be in place in conjunction with construction of the initial phases of the Volvo factory to be open in 2017. The assumed improvements are listed below.

- At the SC 27/Ridgeville Road & I-26 Eastbound Ramps intersection, the addition of an exclusive eastbound right-turn lane, an exclusive southbound left-turn lane, and intersection signalization with coordinated control and protected-permitted left-turn phasing for the southbound left-turn were assumed in place.
- At the SC 27/Ridgeville Road & I-26 Westbound Ramps intersection, the addition of an exclusive westbound right-turn lane, an exclusive southbound right-turn lane, an exclusive northbound left-turn lane, and intersection signalization with coordinated control were assumed in place.
- Along SC 27/Ridgeville Road between I-26 and Lower Westvaco Road, an improved two-lane section with left-turn lanes and median separation was assumed to be in place.

It should be noted that no improvements to the existing SC 27/Ridgeville Road overpass over I-26 are proposed at this time. It is recommended that the SC 27/Ridgeville Road overpass over I-26 be replaced to provide for a more typical cross section, but replacement of the SC 27/Ridgeville Road overpass is not part of the I-26 & Volvo Car Drive interchange construction.

In addition, improvements to the I-26 & Jedburg Road interchange were also assumed to be in place as part of the 2039 No Build and Build intersection analyses. These improvements are documented in the May 2010 *Sheep Island Parkway IJR/Jedburg Road IMR*, and include the widening of Jedburg Road to a four-lane, median divided section in the interchange area and the addition of an I-26 westbound-to-Jedburg Road southbound loop off-ramp.

As part of the analyses, a peak hour factor of 0.90 and truck percentage of 20% were assumed for all intersections. The truck percentage was based upon existing data collected from SCDOT ATR station P-54 along I-26 between SC 27/Ridgeville Road and Jedburg Road. To provide for a conservative analysis of intersection capacity, the 20% estimated truck percentage considered in the freeway analyses was utilized throughout the roadway network in place of exact truck percentages derived from the estimated volume of trucks at each intersection, with the exception of the Volvo Car Drive & Factory Entrance intersection analysis, which utilized truck percentages derived from the estimated truck volumes projected for the horizon year.



The results of the intersection analyses considering 2039 Build and 2039 No Build conditions are summarized in Table 4.7 for the 3:00 - 4:00 PM Design Hour. Worksheets documenting the intersection analyses are included in Appendix G.

Intersection	Level Of Service/Delay (seconds)				
inersection	2039 Build	2039 No Build			
SC 27 & US 78	C/23.6	C/23.6			
SC 27 & I-26 Eastbound Ramps	B/10.2	F/250.9			
SC 27 & I-26 Westbound Ramps	C/25.5	F/337.4			
SC 27 & Lower Westvaco Road	B/14.8	F/337.3			
Volvo Car Drive & Factory Entrance	C/30.9	A/6.1			
Jedburg Road & I-26 Eastbound Ramps	B/12.4	B/12.4			
Jedburg Road & I-26 Westbound Ramps	A/3.2	A/3.2			

Table 4.7 – Design Hour Intersection LOS Analysis Summary (2039)

The results indicate that the study area intersections are projected to operate at acceptable conditions considering 2039 Build conditions.

The results indicate that for 2039 No Build conditions, the three intersections along SC 27/Ridgeville Road between I-26 and Lower Westvaco Road are projected to operate at severe LOS F conditions that would represent gridlock along SC 27/Ridgeville Road. This gridlock will likely cause severe queuing on the I-26 off-ramps to SC 27/Ridgeville Road, which could potentially back-up to the I-26 mainlines in both directions. The severe failing conditions along SC 27/Ridgeville Road can be attributed to all of the Volvo-related traffic being assigned to the roadway to access I-26.

4.2.4 Intersection Analyses – 2039 No Build Plus Improvements

Due to the projected severe LOS F conditions that would represent gridlock along SC 27/Ridgeville Road in the 2039 No Build intersection analyses, an improvement analysis scenario for 2039 No Build conditions was evaluated considering a typical widening project for SC 27/Ridgeville Road. The improvements included widening SC 27/Ridgeville Road to a four-lane, median divided cross section; controlling access between I-26 and Lower Westvaco Road; and increasing the spacing of the I-26 ramp intersections from 700 feet to 1,320 feet. The results of the intersection analyses considering 2039 No



Build conditions plus improvements are summarized in Table 4.8 for the 3:00 – 4:00 PM Design Hour. Worksheets documenting the intersection analyses are included in Appendix G.

la have all an	Level Of Service/Delay (seconds)				
Intersection	2039 Build	2039 No Build	2039 No Build Plus Improvements		
SC 27 & US 78	C/23.6	C/23.6	C/23.6		
SC 27 & I-26 Eastbound Ramps	B/10.2	F/250.9	F/173.2		
SC 27 & I-26 Westbound Ramps	C/25.5	F/337.4	F/146.8		
SC 27 & Lower Westvaco Road	B/14.8	F/337.3	C/34.8		
Volvo Car Drive & Factory Entrance	C/30.9	A/6.1	A/6.1		
Jedburg Road & I-26 Eastbound Ramps	B/12.4	B/12.4	B/12.4		
Jedburg Road & I-26 Westbound Ramps	A/3.2	A/3.2	A/3.2		

Table 4.8 – Design Hour Intersection LOS Analysis Summary (2039 No Build plus Improvements)

The results indicate that for 2039 No Build conditions plus improvements, the typical widening improvements along SC 27/Ridgeville Road would <u>not</u> accommodate the 2039 No Build traffic demands. The two I-26 ramp intersections along SC 27/Ridgeville Road would still be projected to operate at severe LOS F conditions – although less severe than without improvements – that would still represent gridlock along SC 27/Ridgeville Road, which could still potentially back-up to the I-26 mainlines in both directions. The severe failing conditions along SC 27/Ridgeville Road can be attributed to all of the Volvo-related traffic being assigned to the roadway to access I-26.

The peak-direction design-hour traffic volumes along SC 27/Ridgeville Road between Lower Westvaco Road and I-26 (2,133 southbound) indicate that improvements beyond widening to a four-lane, median divided section would be required for SC 27/Ridgeville Road to operate acceptably. Furthermore, the proposed design-hour traffic demands of SC 27/Ridgeville Road traffic accessing I-26 eastbound (1,512 southbound left-turning vehicles) would require a major reconfiguration of the existing interchange beyond typical widening and turn lane improvements.

Therefore, based upon the results of the 2039 No Build conditions analysis and the 2039 No Build conditions with improvements analysis, the I-26 & Volvo Car Drive interchange is justified and needed to accommodate design-year traffic demands of the new Volvo factory and the supporting industrial



warehouse and manufacturing development of Volvo-related suppliers and manufacturers of the Camp Hall Commerce Park.

4.2.5 Volvo Car Drive & Factory Entrance Analyses – 2039 Build

Volvo Car Drive, a rural collector road, will begin at the point where the eastbound and westbound I-26 exit ramps converge after passing over I-26. The eastbound ramp creates the left-most lane and the westbound ramp creates the two right lanes for a total of three northbound lanes on Volvo Car Drive. Access will be fully controlled to a point 2,650 feet north of this point of convergence, where a Berkeley County project will begin, constructing the remaining 4.5 miles of Volvo Car Drive to its intersection with US 176.

The Berkeley County project will include a signalized intersection approximately 500 feet north of the access control point, and this Factory Entrance intersection will serve as the employee entrance to the Volvo factory to the east, and to the visitors' center on the west. The primary truck entrance for the Volvo factory will be located 1,000 feet north of the Factory Entrance intersection.

The Volvo Car Drive & Factory Entrance intersection will serve as the primary entrance for the Volvo Factory. The left-most lane of northbound Volvo Car Drive will terminate at the Factory Entrance intersection as a left-turn only lane into the Welcome Center while the two right lanes will continue as through lanes, with an added right-turn only lane into the Volvo Factory being developed prior to the intersection. The Volvo Car Drive & Factory Entrance intersection is also planned to be the first signalized intersection along Volvo Car Drive after entering the project site via the proposed new interchange with I-26. Therefore, intersection capacity, queueing and weaving analyses were performed to determine potential impacts that the Volvo Car Drive & Factory Entrance intersection may have on operations of the proposed new interchange during the peak ingress and peak egress time periods in horizon year 2039 Build conditions.

The peak ingress time period of the Volvo-related traffic throughout the day occurs between 5:30 AM and 6:30 AM with the ingress of the Volvo Manufacturing 1st-shift employees and was considered in the Volvo Car Drive & Factory Entrance intersection analyses.

The peak egress time period of the Volvo-related traffic throughout the day occurs between 3:00 PM and 4:00 PM with the egress of the Volvo Manufacturing 1st-shift employees and was considered in the Volvo Car Drive & Factory Entrance intersection analyses.

As part of the analyses, a peak hour factor of 0.90 was assumed for the Volvo Car Drive & Factory Entrance intersection. The analyses utilized truck percentages derived from the estimated truck volumes projected for the horizon year.



The results of the intersection capacity analyses considering 2039 Build conditions for the 5:30 - 6:30 AM peak ingress hour and 3:00 - 4:00 PM peak egress hour are summarized in Table 4.9. Worksheets documenting the intersection analyses are included in Appendix G.

Intersection	Level Of Service/	/Delay (seconds)
mersection	Peak Ingress Hour (5:30-6:30AM)	Peak Egress Hour (3:00-4:00PM)
Volvo Car Drive & Factory Entrance	B/17.9	C/30.9

The results indicate that for horizon year 2039 Build conditions, the proposed Volvo Car Drive & Factory Entrance intersection is projected to operate at an acceptable level of service during both the 5:30 - 6:30 AM peak ingress and 3:00 - 4:00 PM peak egress time periods.

Based upon the results of the Volvo Car Drive & Factory Entrance intersection analyses, the 95th percentile back-of-queue for the eastbound approach was determined to be 270 feet during the 5:30 - 6:30 AM peak ingress time period and 85 feet during the 3:00 - 4:00 PM peak egress period. Worksheets documenting the queues associated with the intersection analyses are included in Appendix G.

To determine the effect of the signalized Volvo Car Drive & Factory Entrance intersection on the I-26 & Volvo Car Drive interchange, a weaving analysis was performed for the 5:30 - 6:30 AM peak ingress and 3:00 - 4:00 PM peak egress time periods. The weaving analysis considered the section of eastbound Volvo Car Drive between where the two ramps from I-26 meet to the back of the 95th percentile queue at the first signalized intersection.

Anticipated truck volumes were also considered an important factor in the weave analysis. Representatives of Volvo Cars reported that trucks will access the Volvo factory at a separate intersection, located 1,000 feet further north of the Factory Entrance intersection. The anticipated truck volumes coinciding with the peak ingress and peak egress hours are documented in Appendix A.

The horizon-year volume of 712 trucks per day was distributed throughout the day based upon the existing hourly distribution of trucks along I-26 as determined by data collected from SCDOT ATR station P-54 along I-26 between SC 27/Ridgeville Road and Jedburg Road. Based upon this distribution, it was determined that 4.5% of the daily truck trips would coincide with the peak ingress hour and 7.0% of the daily truck trips would coincide with the peak ingress hour and 7.0% of the daily truck trips would coincide with the peak egress hour. The resulting truck percentages for eastbound Volvo Car Drive between the new interchange and the Factory Entrance are 2% during the peak ingress hour and 16% during the peak egress hour.



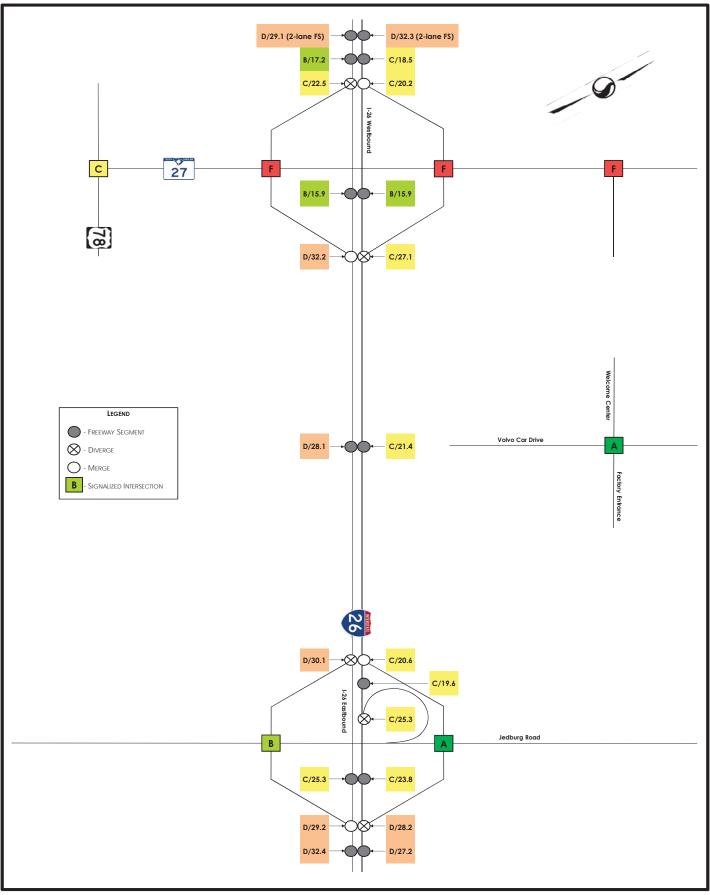
Since the analysis of the proposed interchange including freeway and ramp operations was based on twenty percent (20%) trucks, the weaving analysis was expanded to compare the capacity of Volvo Car Drive with the horizon-year ramp volumes. The results of the Volvo Car Drive weaving analysis for the 5:30 - 6:30 AM peak ingress and 3:00 - 4:00 PM peak egress time periods in the 2039 Build conditions are summarized in Table 4.10. Worksheets documenting the weaving analyses are included in Appendix H.

		LOS/Density (pc/mi/ln)		
Segment	Heavy Vehicle Percentage	Peak Ingress Hour (5:30-6:30 AM)	Peak Egress Hour (3:00-4:00 PM)	
	2%	B/15.0		
Volvo Car Drive between I-26 and Factory Entrance	16%		A/3.1	
120 and racioly Entrance	20%	B/16.5	A/3.1	

Table 4.10 - Volvo Car Drive Weaving Analysis Summary (2039 Build)

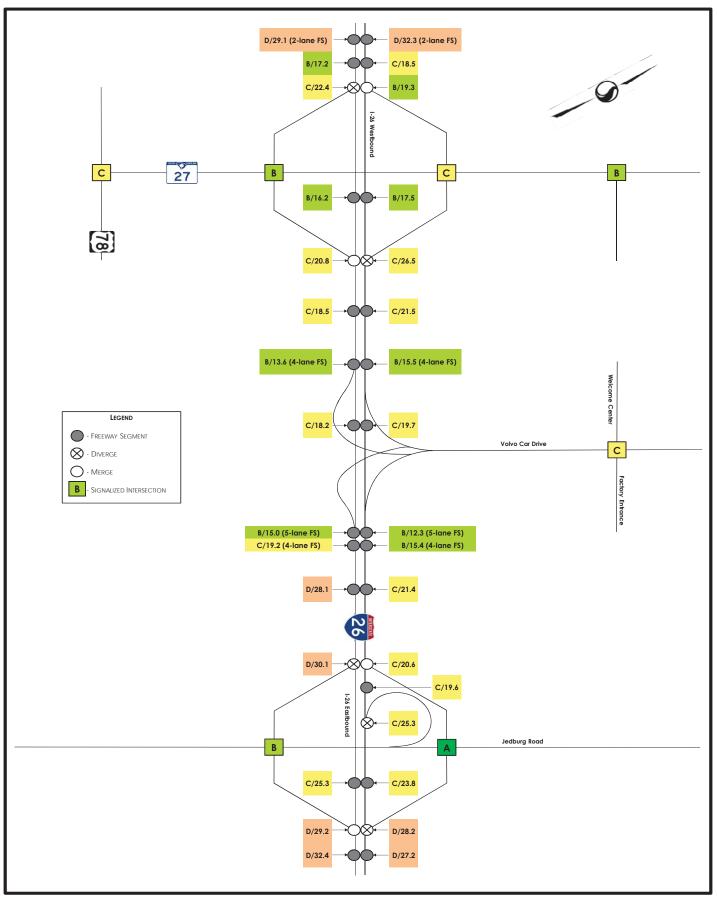
The results indicate that for 2039 Build conditions, the proposed roadway segment between I-26 and the Volvo Car Drive & Factory Entrance intersection is projected to operate at an acceptable level of service during both the 5:30 - 6:30 AM peak ingress and 3:00 - 4:00 PM peak egress time periods.







I-26 & Volvo Car Drive IJR Exhibit 4.3 - Horizon-year 2039 No Build Level of Service Page 37



Stantec

I-26 & Volvo Car Drive IJR Exhibit 4.4 - Horizon-year 2039 Build Level of Service Page 38

5.0 Eight Policy Requirements

FHWA policy requires that all requests for new or revised access should address eight policy requirements and the appropriate issues and provide the information necessary to allow the FHWA to make an informed decision considering the potential consequences of a change in access. The policy requirements are outlined in FHWA's *Interstate System Access Informational Guide* (August 2010) reference, which was used as a basis for this justification of the I-26 & Volvo Car Drive interchange.

The eight policy requirements (in bold) and responses specific to the proposed I-26 & Volvo Car Drive interchange are provided herein.

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)).

Car manufacturer Volvo has recently selected Berkeley County to build its first car factory in North America. The Volvo factory is expected to accommodate approximately 4,000 employees by 2040. In addition to the Volvo factory, up to 9,900,000 square feet of supporting industrial warehouse and manufacturing development is expected to be developed in the Camp Hall Commerce Park for Volvo-related suppliers and manufacturers. The proposed I-26 & Volvo Car Drive interchange project is required to accommodate the design-year traffic demands from the new Volvo factory and supporting Volvo-related suppliers and manufacturers.

Based upon the results of 2039 No Build condition, as summarized in Table 4.7, the three intersections along SC 27/Ridgeville Road between I-26 and Lower Westvaco Road are projected to operate at severe LOS F conditions that would represent gridlock along SC 27/Ridgeville Road. This gridlock will likely cause severe queuing on the I-26 off-ramps to SC 27/Ridgeville Road, which could potentially back-up to the I-26 mainlines in both directions. The severe failing conditions along SC 27/Ridgeville Road can be attributed to all of the Volvo-related traffic being assigned to the roadway to access I-26.

Therefore, an improvement analysis scenario for 2039 No Build conditions was evaluated considering a typical widening project for SC 27/Ridgeville Road. The improvements included widening SC 27/Ridgeville Road to a four-lane, median divided cross section; controlling access between I-26 and Lower Westvaco Road; and increasing the spacing of the I-26 ramp intersections from 700 feet to 1,320 feet.



The results of the improvement analysis scenario, as summarized in Table 4.8, indicate a typical widening improvement along SC 27/Ridgeville Road would <u>not</u> accommodate the 2039 No Build traffic demands. The two I-26 ramp intersections along SC 27/Ridgeville Road would still be projected to operate at severe LOS F conditions – although less severe than without improvements – that would still represent gridlock along SC 27/Ridgeville Road, which could still potentially back-up to the I-26 mainlines in both directions. The severe failing conditions along SC 27/Ridgeville Road can be attributed to all of the Volvo-related traffic being assigned to the roadway to access I-26.

As shown in Exhibit 3.4, the peak-direction design-hour traffic volumes along SC 27/Ridgeville Road between Lower Westvaco Road and I-26 (2,133 southbound) indicate that improvements beyond widening to a four-lane, median divided section would be required for SC 27/Ridgeville Road to operate acceptably. Furthermore, the proposed design-hour traffic demands of SC 27/Ridgeville Road traffic accessing I-26 eastbound (1,512 southbound left-turning vehicles) would require a major reconfiguration of the existing interchange beyond typical widening and turn lane improvements.

Therefore, based upon the results of the 2039 No Build conditions analysis and the 2039 No Build conditions with improvements analysis summarized in Table 4.8, the I-26 & Volvo Car Drive interchange is justified and needed to accommodate design-year traffic demands of the new Volvo factory and the supporting industrial warehouse and manufacturing development of Volvo-related suppliers and manufacturers of the Camp Hall Commerce Park.

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 VOlvo factory is planned to open in 2017 with approximately 1,000 manufacturing employees. The Volvo factory is projected to increase to 4,000 employees by 2040. In 2017, it is expected that approximately 1,000,000 square feet of Volvo-related suppliers and manufacturers would be operating with approximately 1,000 additional employees. By 2040, it is projected that the Volvo-related suppliers and manufacturers will total approximately 9,900,000 square feet of industrial uses in the Camp Hall Commerce Park.

As shown in Exhibit 1.2, the proposed I-26 & Volvo Car Drive interchange configuration is a three-level, three-leg directional interchange that connects I-26 and the Camp Hall Commerce Park via Volvo Car Drive. Directional ramps are proposed for all movements that will be achieved through three bridge structures. Due to the expected high attraction to/from the Charleston area, the ramps to/from Charleston are proposed to be constructed as two-lane ramps.



Due to the scope of the proposed Volvo factory and Volvo-related industrial development, Transportation System Management (TSM) improvements would not be effective in mitigating the future traffic impacts to an acceptable LOS. Charleston area transit providers CARTA and Tri-County Link currently do not serve this area of rural Berkeley County. There are currently no HOV facilities in South Carolina and SCDOT conducted a *HOV/HOT Lane Feasibility Study* in 2009 that found that HOV and HOT lanes along I-26 in the Charleston area would not be cost feasible.

The IJR traffic analyses consider shifting of employees and staggered work hours, as described in sections 3.2.2 and 3.3.2 and documented in Appendix A, to minimize and spread out the peak travel demands of the Volvo factory and Volvo-related industrial development; however, the I-26 & Volvo Car Drive interchange is still required to accommodate the design-year traffic demand. Other travel demand management options such as carpooling were considered, but it was noted that at the BMW factory in Greer, South Carolina, employee carpooling has been difficult to achieve due to changing shifts and the staggered schedules that are currently in use.

Without the proposed I-26 & Volvo Car Drive interchange, the peak-direction design-hour traffic volumes shown in Exhibit 3.4 along SC 27/Ridgeville Road between Lower Westvaco Road and I-26 (2,133 southbound) indicate that improvements beyond widening to a four-lane, median divided section would be required for SC 27/Ridgeville Road to operate acceptably. Furthermore, the proposed design-hour traffic demands of SC 27/Ridgeville Road traffic accessing I-26 eastbound (1,512 southbound left-turning vehicles) would require a major reconfiguration of the existing interchange beyond typical widening and turn lane improvements.

Therefore, the I-26 & Volvo Car Drive interchange is justified and needed to accommodate design-year traffic demands of the new Volvo factory and the supporting industrial warehouse and manufacturing development of Volvo-related suppliers and manufacturers of the Camp Hall Commerce Park.

It should be noted that the proposed two points of access to I-26 through Volvo Car Drive and SC 27/Ridgeville Road for the Volvo factory and Volvo-related industrial development would be equal to the access of the existing BMW factory in Greer, South Carolina.



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)).

Using the projected opening-year 2019 and horizon-year 2039 traffic volumes for No Build and Build conditions of the proposed I-26 & Volvo Car Drive interchange, capacity analyses were conducted for the study area freeway facilities and intersections using the *Highway Capacity Software 2010* and the Transportation Research Board's *Highway Capacity Manual 2010* methodologies of the *Synchro* Version 9 software.

Based upon the results of the 2039 Build analysis for the 3:00 – 4:00 PM Design Hour, the operations of the proposed I-26 & Volvo Car Drive interchange and the I-26 freeway between SC 27/Ridgeville Road and Jedburg Road will be improved from the 2039 No Build scenario. As shown in Table 4.6 and Exhibit 4.4, the results of the freeway facility analyses considering 2039 Build conditions indicate that the study area freeway facilities are projected to operate at acceptable conditions considering 2039 Build conditions.

The adjacent interchanges of I-26 & SC 27/Ridgeville Road and I-26 & Jedburg Road were considered in the project study area. Improvements to the I-26 & Jedburg Road interchange, as documented in the May 2010 *Sheep Island Parkway IJR/Jedburg Road IMR*, were assumed to be in place as part of the 2019 and 2039 analyses. The improvements include the widening of Jedburg Road to a four-lane, median divided section in the interchange area and the addition of an I-26 westbound-to-Jedburg Road southbound loop off-ramp. For analysis purposes, the IMR year 2035 traffic volumes, assumptions, and results for the I-26



& Jedburg Road interchange were considered as a base for the development of the 2039 Build and No Build analyses.

Based upon the results of the 2039 Build analysis at the study intersections along SC 27/Ridgeville Road and Jedburg Road summarized in Table 4.7, the results indicate that the study intersections are projected to operate at acceptable conditions considering 2039 Build conditions.

A figure illustrating a concept of the proposed I-26 & Volvo Car Drive interchange is shown in Exhibit 1.2 and a figure illustrating a conceptual guide sign plan for the proposed interchange is shown in Exhibit 1.3.

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)).

As illustrated in Exhibit 1.2, the proposed I-26 & Volvo Car Drive interchange configuration is a threelevel, three-leg directional interchange that connects I-26 and the Camp Hall Commerce Park via Volvo Car Drive. Volvo Car Drive is proposed to be a new Berkeley County roadway from the I-26 limited access right of way to US 176.

Directional ramps are proposed at the new interchange for all movements that will be achieved through three bridge structures. Due to the expected high attraction to/from the Charleston area, the ramps to/from Charleston are proposed to be constructed as two-lane ramps.

The new interchange will provide the four basic movements to/from I-26 in both the eastbound and westbound directions and will be designed to meet the current standards.

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 proposed I-26 & Volvo Car Drive interchange project is currently included in the South Carolina Statewide Transportation Improvement Program as amended January 21, 2016.



The project is located within the rural planning area served by the Berkeley-Charleston-Dorchester Council of Governments (BCDCOG). Overall, the I-26 & Volvo Car Drive interchange project is a major project in Berkeley County that supports the region's and state's economic development goals. The I-26 & Volvo Car Drive interchange project is incorporated in the current South Carolina Statewide Transportation Improvement Program (STIP), which is the State's six-year transportation improvement program for all projects or program areas receiving federal funding. The STIP covers all federally funded improvements for which funding has been approved and that are expected to be undertaken during the upcoming six-year period. The amended STIP revision was published on January 21, 2016 with \$35M beginning in FY2016 and intended only for these improvements.

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 proposed I-26 & Volvo Car Drive project is located approximately two miles from SC 27/Ridgeville Road (Exit 187) and approximately five miles from Jedburg Road (Exit 194). No other new interchanges are currently planned along I-26 between the proposed Volvo Car Drive and Jedburg Road.

A new interchange at Sheep Island Parkway (new Exit 197) is planned to be constructed approximately three miles south of Jedburg Road (Exit 194). Improvements to the I-26 & Sheep Island Parkway and I-26 & Jedburg Road interchanges are documented in the May 2010 *Sheep Island Parkway IJR/Jedburg Road IMR*.

It should be noted that SCDOT is currently advertising for an I-26 Corridor Management Plan project that will evaluate existing and future projection congestion along the corridor from SC 27/Ridgeville Road (Exit 187) east to the Charleston peninsula at Meeting Street/US 17 South (Exit 221).

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)).



Numerous coordination meetings have been held to discuss the development of the Camp Hall Commerce Park for the Volvo factory and Volvo-related industrial development. The meetings' attendees have included USACE, FHWA, SCDOT, SC Department of Commerce, and project consultant staffs.

Several new roadways are planned to support the proposed development of the Camp Hall Commerce Park for Volvo. Volvo Car Drive is planned as the primary north/south roadway connection between I-26 and US 176 providing access to the development. There are two east/west roadway connections between SC 27/Ridgeville Road and Volvo Car Drive planned to provide additional access which are currently named Westvaco Road and Lower Westvaco Road.

The adjacent interchanges of I-26 & SC 27/Ridgeville Road and I-26 & Jedburg Road were considered in the project study area. Improvements to the I-26 & Jedburg Road interchange, as documented in the May 2010 *Sheep Island Parkway IJR/Jedburg Road IMR*, were assumed to be in place as part of the 2019 and 2039 analyses. The improvements include the widening of Jedburg Road to a four-lane, median divided section in the interchange area and the addition of an I-26 westbound-to-Jedburg Road southbound loop off-ramp. For analysis purposes, the IMR year 2035 traffic volumes, assumptions, and results for the I-26 & Jedburg Road interchange were considered as a base for the development of the 2039 Build and No Build analyses.

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 proposed I-26 & Volvo Car Drive interchange in Berkeley County, South Carolina has been included as part of the National Environmental Policy Act (NEPA) permitting process for the Camp Hall Commerce Park. FHWA was a contributing agency to the NEPA document prepared by the U.S. Army Corps of Engineers for the permit issued for the Camp Hall Commerce Park site, which included the proposed new interchange area. FHWA will utilize the information prepared and included as a part of the U.S. Corps of Engineers NEPA document to prepare a Finding of No Significant Impact (FONSI) for their file on the interchange project.



Appendix A

Trip Generation & Shift Assumption Worksheets



I-26 & Volvo Car Drive IJR Shift Summary Assumptions 2019 Buildout

TRIP GENERATION ASSUMPTIONS

Use	Size	AM Entering	AM Exiting	PM Entering	PM Exiting	Notes
Volvo Office	200 emps	105	15	25	110	ITE LUC 710
Volvo Manufacturing	1,000 emps	900	100	100	900	1.0 emps/veh, 90/10 directional split
Camp Hall Warehousing	400 emps	145	55	80	150	ITE LUC 150
Camp Hall Manufacturing	600 emps	180	70	105	135	ITE LUC 140
Total Camp Hall	1,000 emps	325	125	185	285	Warehousing + Manufacturing
Construction	500 emps	450	50	50	450	1.0 emps/veh, 90/10 directional split

Volvo Office (assume 10% during Volvo peaks)

Entering Peak: Exiting Peak:

AM Entering

3:00 PM to 4:00 PM AM Exiting PM Entering PM Exiting

5:30 AM to 6:30 AM

3:00 PM to 4:00 PM

5:30 AM to 6:30 AM

11	2	3	

Volvo Manufacturing (One Shift) 5:30 AM to 6:30 AM

Entering Peak: Exiting Peak:

AM Entering	AM Exiting	PM Entering	PM Exiting
900	100	100	900

TOTAL

Entering Peak:

Exiting Peak:	3:00 PM to 4:00 PM

1,172 153 169 1,162	AM Entering	AM Exiting	PM Entering	PM Exiting
	1,172	153	169	1,162

Total Camp Hall (assume 25% during Volvo peaks)

Entering Peak: Exiting Peak:

5:30 AM to 6:30 AM 3:00 PM to 4:00 PM

3:00 PM to 4:00 PM

AM Entering	AM Exiting	PM Entering	PM Exiting
81	31	46	71

Construction (assume 40% during Volvo peaks) 5:30 AM to 6:30 AM

Entering Peak: Exiting Peak:

AM Entering	AM Exiting	PM Entering	PM Exiting
180	20	20	180

ASSUMPTIONS

> 6:30 AM starting time for Volvo based upon information from Volvo (same as Boeing 1st shift starting time).

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I-26 & Volvo Car Drive IJR Shift Summary Assumptions

2039 Buildout

TRIP GENERATION ASSUMPTIONS

Use	Size	AM Entering	AM Exiting	PM Entering	PM Exiting	Notes
Volvo Office	500 emps	240	31	41	210	ITE LUC 710
Volvo Manufacturing	4,000 emps	3,600	400	400	3,600	1.0 emps/veh, 90/10 directional split
Volvo Trucks	712 daily trips	32	32	50	50	Daily rate provided by Volvo
Camp Hall Warehousing	3,900 emps	1,080	420	620	1,150	ITE LUC 150
Camp Hall Manufacturing	6,000 emps	1,275	470	630	800	ITE LUC 140
Camp Hall Trucks	10% of employee trips	235	90	125	195	Additional 10%
Total Camp Hall	9,900 emps	2,590	980	1,375	2,145	Warehousing + Manufacturing + Trucks

PROPOSED SHIFT ASSUMPTIONS

Volvo Office

Operations:	8:30 AM to 5:00 PM
Entering Peak:	7:30 AM to 8:30 AM
Exiting Peak:	5:00 PM to 6:00 PM

AM Entering	AM Exiting	PM Entering	PM Exiting
240	31	41	210

Volvo Manufacturing - 1st Shift

Assume:	60% of total workers
Operations:	6:30 AM to 3:00 PM
Entering Peak:	5:30 AM to 6:30 AM
Exiting Peak:	3:00 PM to 4:00 PM

AM Entering	AM Exiting	PM Entering	PM Exiting
2,160	240	240	2,160

Volvo Manufacturing - 2nd Shift

Assume:	30% of total workers
Operations:	2:30 PM to 11:00 PM
Entering Peak:	1:30 PM to 2:30 PM
Exiting Peak:	11:00 PM to 12:00 AM

AM Entering	AM Exiting	PM Entering	PM Exiting
1,080	120	120	1,080

Volvo Manufacturing - 3rd Shift

Assume:	10% of total workers
Operations:	10:30 PM to 7:00 AM
Entering Peak:	9:30 PM to 10:30 PM
Exiting Peak:	7:00 AM to 8:00 AM

AM Entering	AM Exiting	PM Entering	PM Exiting
360	40	40	360

Volvo Trucks

Value
4,000
300,000
712

Assume:

50/50 directional split 4.5% during 5:30 AM to 6:30 AM 7.0% during 3:00 PM to 4:00 PM

AM Entering	AM Exiting	PM Entering	PM Exiting
32	32	50	50

Total Camp Hall - 1/3 Office Operations

Assume:	Office Operations
Operations:	8:30 AM to 5:00 PM
Entering Peak:	7:30 AM to 8:30 AM
Exiting Peak:	5:00 PM to 6:00 PM

AM Entering	AM Exiting	PM Entering	PM Exiting
863	327	458	715

Total Camp Hall - 2/3 Manufacturing - 1st Shift

Assume:	60% of total workers
Operations:	7:30 AM to 4:00 PM
Entering Peak:	6:30 AM to 7:30 AM
Exiting Peak:	4:00 PM to 5:00 PM

AM Entering	AM Exiting	PM Entering	PM Exiting
1,036	392	550	858

Total Camp Hall - 2/3 Manufacturing - 2nd Shift

Assume:		30% of total w	orkers
Operations:		3:30 PM to 12:	MA 00
Entering Peak:		2:30 PM to 3:3	0 PM
Exiting Peak:		12:00 AM to 1:	00 AM
AM Entering	AM Exiting	PM Entering	PM Exiting

AM Entering	AM Exiting	PM Entering	PM Exiting
518	196	275	429

Total Camp Hall - 2/3 Manufacturing - 3rd Shift

Assume:	10% of total workers
Operations:	11:30 PM to 8:00 AM
Entering Peak:	10:30 PM to 11:30 PM
Exiting Peak:	8:00 AM to 9:00 AM

AM Entering	AM Exiting	PM Entering	PM Exiting
173	65	92	143

Volvo Trucks Hourly Distribution

Hour	%	Hour	%
Beginning At	70	Beginning At	70
12:00 AM	1.0%	12:00 PM	7.0%
1:00 AM	1.0%	1:00 PM	7.0%
2:00 AM	1.0%	2:00 PM	7.0%
3:00 AM	2.0%	3:00 PM	7.0%
4:00 AM	3.0%	4:00 PM	6.0%
5:00 AM	4.0%	5:00 PM	5.0%
6:00 AM	5.0%	6:00 PM	4.0%
7:00 AM	5.0%	7:00 PM	3.0%
8:00 AM	5.0%	8:00 PM	3.0%
9:00 AM	6.0%	9:00 PM	2.0%
10:00 AM	6.0%	10:00 PM	2.0%
11:00 AM	7.0%	11:00 PM	1.0%

ASSUMPTIONS

> 6:30 AM starting time for Volvo 1st shift based upon information from Volvo (same as Boeing 1st shift starting time).

> 60%/30%/10% shift split percentage based upon existing shifts of other large developments in the area.

> Assume Volvo Truck trips follow the hourly distribution of heavy vehicles on I-26 based on permanent count station information.

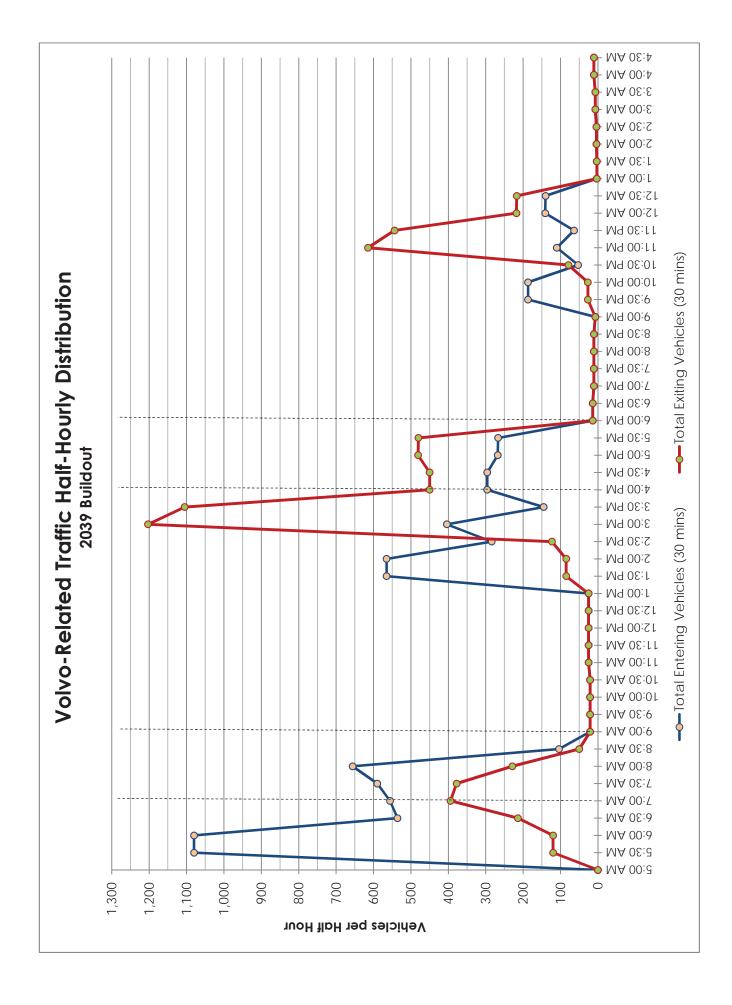
> Assume 2/3 of the total Camp Hall trips are manufacturing-related and use shifts staggered one hour from the Volvo shifts and 1/3 of the total Camp Hall trips are office-related and follow the Volvo Office operations (this is a similar split as other large-scale developments in the area).

> Assume Camp Hall Truck trips follow the same assumptions as the employee trips

I-26 & Volvo Car Drive IJR Hourly Distribution Assumptions

2039 Buildout

Time	Volvo		Volvo 1		Volvo 2r		Volvo 3		Volvo		- 1/3 0 Opera	Office ations	1st S	nfctrng - Shift	- 2/3 Mi 2nd	nfetrng - Shift	- 2/3 Mi 3rd	nfetrng - Shift	Total Entering Vehicles (30 mins)	Vehicles
5 00 010	Enter	Exit	Enter	Exit	Enter	Exit	Enter	Exit	Enter	Exit	Enter	Exit	Enter	Exit	Enter	Exit	Enter	Exit		
5:00 AM			1 000	100					14	14									0	
5:30 AM			1,080	120					14	14									1,080	
6:00 AM			1,080	120					18	18									1,080	
6:30 AM									18	18			518	196					536	
7:00 AM							20	180	18	18			518	196					556	
7:30 AM	120	16					20	180	18	18	432	164							590	
8:00 AM	120	15							18	18	431	163					87	33		
8:30 AM									18	18							86	32		
9:00 AM									21	21									21	
9:30 AM									21	21									21	
10:00 AM									21	21									21	
10:30 AM		T							21	21									21	
11:00 AM									25	25									25	
11:30 AM									25	25									25	
12:00 PM									25	25									25	25
12:30 PM									25	25									25	
1:00 PM									25	25									25	
1:30 PM					540	60			25	25									565	
2:00 PM					540	60			25	25									565	
2:30 PM									25	25					259	98			284	
3:00 PM			120	1,080					25	25					259				404	
3:30 PM			120	1,080					25	25					207	,0			145	
4:00 PM			120	1,000					21	23			275	429					296	
4:30 PM									21	21			275	429					296	
5:00 PM	21	105							18	18	229	358	215	427					268	
5:30 PM	21	105							18	18	229	357							267	
6:00 PM	20	105							14	14	229	307							14	
6:30 PM									14	14									14	
7:00 PM									14	14									14	
7:00 PM									11	11									11	
8:00 PM									11	11									11	
8:30 PM									11	11									11	
9:00 PM							100		7	7									107	
9:30 PM							180	20	· · · · ·										187	
10:00 PM							180	20	7	7									187	
10:30 PM									7	7							46			
11:00 PM					60	540			4	4							46	71		
11:30 PM					60	540			4	4									64	
12:00 AM									3	3					138				141	
12:30 AM									3	3					137	214			140	
1:00 AM									3	3									3	
1:30 AM									3	3									3	
2:00 AM		T							4	4									4	
2:30 AM									4	4									4	4
3:00 AM									7	7									7	7
3:30 AM									7	7									7	7
4:00 AM									11	11									11	11
4:30 AM									11	11							1		11	



Appendix B

2019 Traffic Volume Development Worksheets



SC 27/Ridgeville Road & US 78

TRAFFIC CONTROL: Signalized

DESIGN PEAK HOUR (3:00-4:00 PM)	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
2015 TRAFFIC VOLUMES	87	139			227	129				150		150
Years To Buildout (2019)	4	4			4	4				4		4
Yearly Growth Rate	2.0%	2.0%			2.0%	2.0%				2.0%		2.0%
Background Traffic Growth	7	11			18	10				12		12
Volvo Traffic	3					4				36		27
Camp Hall Traffic	1					2				3		2
Construction Traffic	1					1				7		5
2019 NO BUILD TRAFFIC VOLUMES	99	150			245	146				208		196
Balance Adjustment	15					21				17		17
2019 NO BUILD TRAFFIC VOLUMES	114	150			245	167				225		213
Years To Buildout (2019)	4	4			4	4				4		4
Yearly Growth Rate	2.0%	2.0%			2.0%	2.0%				2.0%		2.0%
Background Traffic Growth	7	11			18	10				12		12
Volvo Traffic	3					4				36		27
Camp Hall Traffic	1					2				3		2
Construction Traffic	1					1				7		5
2019 BUILD TRAFFIC VOLUMES	99	150			245	146				208		196
Balance Adjustment	15					21				17		17
2019 BUILD TRAFFIC VOLUMES	114	150			245	167				225		213

SC 27/Ridgeville Road & I-26 Eastbound Ramps

TRAFFIC CONTROL: Unsignalized

DESIGN PEAK HOUR (3:00-4:00 PM)	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
2015 TRAFFIC VOLUMES	25	5	59					144	105	86	272	
Years To Buildout (2019)	4	4	4					4	4	4	4	
Yearly Growth Rate	2.0%	2.0%	2.0%					2.0%	2.0%	2.0%	2.0%	
Background Traffic Growth	2	0	5					12	8	7	22	
Volvo Traffic	15							7		547	63	
Camp Hall Traffic	7							3		43	5	
Construction Traffic	3							2		108	12	
2019 NO BUILD TRAFFIC VOLUMES	52	5	64					168	113	791	374	
Balance Adjustment												
2019 NO BUILD TRAFFIC VOLUMES	52	5	64					168	113	791	374	
Years To Buildout (2019)	4	4	4					4	4	4	4	
Yearly Growth Rate	2.0%	2.0%	2.0%					2.0%	2.0%	2.0%	2.0%	
Background Traffic Growth	2	0	5					12	8	7	22	
Volvo Traffic	3							7		27	63	
Camp Hall Traffic	5							3		17	5	
Construction Traffic	1							2		5	12	
2019 BUILD TRAFFIC VOLUMES	36	5	64					168	113	142	374	
Balance Adjustment												
2019 BUILD TRAFFIC VOLUMES	36	5	64					168	113	142	374	

SC 27/Ridgeville Road & I-26 Westbound Ramps

TRAFFIC CONTROL: Unsignalized

DESIGN PEAK HOUR (3:00-4:00 PM)	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
2015 TRAFFIC VOLUMES				211	3	153	37	125			135	14
Years To Buildout (2019)				4	4	4	4	4			4	4
Yearly Growth Rate				2.0%	2.0%	2.0%	2.0%	2.0%			2.0%	2.0%
Background Traffic Growth				17	0	12	3	10			11	1
Volvo Traffic						62		22			610	137
Camp Hall Traffic						28		10			48	11
Construction Traffic						12		5			120	27
2019 NO BUILD TRAFFIC VOLUMES				228	3	267	40	172			924	190
Balance Adjustment								8			13	
2019 NO BUILD TRAFFIC VOLUMES				228	3	267	40	180			937	190
Years To Buildout (2019)				4	4	4	4	4			4	4
Yearly Growth Rate				2.0%	2.0%	2.0%	2.0%	2.0%			2.0%	2.0%
Background Traffic Growth				17	0	12	3	10			11	1
Volvo Traffic						3		10			90	27
Camp Hall Traffic						11		8			22	7
Construction Traffic						1		3			17	5
2019 BUILD TRAFFIC VOLUMES				228	3	180	40	156			275	54
Balance Adjustment								8			13	
2019 BUILD TRAFFIC VOLUMES				228	3	180	40	164			288	54

SC 27/Old Gilliard Road & Lower Westvaco Road

TRAFFIC CONTROL: Unsignalized DATE COUNTED:

DESIGN PEAK HOUR (3:00-4:00 PM)	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
2015 TRAFFIC VOLUMES				0		0		278	0	0	149	
Years To Buildout (2019)				4		4		4	4	4	4	
Yearly Growth Rate				2.0%		2.0%		2.0%	2.0%	2.0%	2.0%	
Background Traffic Growth				0		0		22	0	0	12	
Volvo Traffic				747					84			
Camp Hall Traffic				59					38			
Construction Traffic				147					17			
2019 NO BUILD TRAFFIC VOLUMES				953		0		300	139	0	161	
Balance Adjustment								8			13	
2019 NO BUILD TRAFFIC VOLUMES				953		0		308	139	0	174	
Years To Buildout (2019)				4		4		4	4	4	4	
Yearly Growth Rate				2.0%		2.0%		2.0%	2.0%	2.0%	2.0%	
Background Traffic Growth				0		0		22	0	0	12	
Volvo Traffic				117					13			
Camp Hall Traffic				29					19			
Construction Traffic				22					4			
2019 BUILD TRAFFIC VOLUMES				168		0		300	36	0	161	
Balance Adjustment								8			13	
2019 BUILD TRAFFIC VOLUMES				168		0		308	36	0	174	

Jedburg Road & I-26 Eastbound Ramps

TRAFFIC CONTROL: Signalized DATE COUNTED: May 13, 2015

DESIGN PEAK HOUR (3:00-4:00 PM)	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
2015 TRAFFIC VOLUMES	56	1	54					291	408	160	758	
Years To Buildout (2019)	4	4	4					4	4	4	4	
Yearly Growth Rate	2.0%	2.0%	2.0%					2.0%	2.0%	2.0%	2.0%	
Background Traffic Growth	4	0	4					23	33	13	61	
2019 NO BUILD TRAFFIC VOLUMES	60	1	58					314	441	173	819	
Balance Adjustment												
2019 NO BUILD TRAFFIC VOLUMES	60	1	58					314	441	173	819	
Years To Buildout (2019)	4	4	4					4	4	4	4	
Yearly Growth Rate	2.0%	2.0%	2.0%					2.0%	2.0%	2.0%	2.0%	
Background Traffic Growth	4	0	4					23	33	13	61	
2019 BUILD TRAFFIC VOLUMES	60	1	58					314	441	173	819	
Balance Adjustment												
2019 BUILD TRAFFIC VOLUMES	60	1	58					314	441	173	819	

Jedburg Road & I-26 Westbound Ramps

TRAFFIC CONTROL: Signalized DATE COUNTED: May 7, 2015

DESIGN PEAK HOUR (3:00-4:00 PM)	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
2015 TRAFFIC VOLUMES				532	3	221	53	241			378	36
Years To Buildout (2019)			4	4	4	4	4	4			4	4
Yearly Growth Rate			2.0%	2.0%	2.0%	2.0%	2.0%	2.0%			2.0%	2.0%
Background Traffic Growth			43	43	0	18	4	19			30	3
2019 NO BUILD TRAFFIC VOLUMES			575			239	57	260			408	39
Balance Adjustment								57			9	
2019 NO BUILD TRAFFIC VOLUMES			575			239	57	317			417	39
Years To Buildout (2019)			4	4	4	4	4	4			4	4
Yearly Growth Rate			2.0%	2.0%	2.0%	2.0%	2.0%	2.0%			2.0%	2.0%
Background Traffic Growth			43	43	0	18	4	19			30	3
2019 BUILD TRAFFIC VOLUMES			575			239	57	260			408	39
Balance Adjustment								57			9	
2019 BUILD TRAFFIC VOLUMES			575			239	57	317			417	39

TRAFFIC VOLUME DEVELOPMENT

I-26

DATE COUNTED: Friday, October 3, 2014

DESIGN PEAK HOUR (3:00-4:00 PM)	West of	f SC 27*		Volvo Car ive		ar Drive to rg Road	East of Jed	burg Road*
	EB	WB	EB	WB	EB	WB	EB	WB
2014 TRAFFIC VOLUMES			2,123	2,284	2,123	2,284		
2015 TRAFFIC VOLUMES	2,059	2,017	2,165	2,330	2,165	2,330	2,625	2,994
Years To Buildout (2019)	4	4	4	4	4	4	4	4
Yearly Growth Rate	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
Background Traffic Growth	165	161	173	186	173	186	210	240
Volvo Traffic	15	137	547	62	547	62	547	62
Camp Hall Traffic	7	11	43	28	43	28	43	28
Construction Traffic	3	27	108	12	108	12	108	12
2019 NO BUILD TRAFFIC VOLUMES	2,249	2,353	3,037	2,618	3,037	2,618	3,533	3,336
Years To Buildout (2019)	4	4	4	4	4	4	4	4
Yearly Growth Rate	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
Background Traffic Growth	165	161	173	186	173	186	210	240
Volvo Traffic	15	137	39	113	547	62	547	62
Camp Hall Traffic	7	11	19	15	43	28	43	28
Construction Traffic	3	27	7	23	108	12	108	12
2019 BUILD TRAFFIC VOLUMES	2,249	2,353	2,404	2,667	3,037	2,618	3,533	3,336

*Freeway volumes derived from the I-26 freeway volumes between Volvo Car Drive and Jedburg Road.

Appendix C

2039 Traffic Volume Development Worksheets



SC 27/Ridgeville Road & US 78

TRAFFIC CONTROL: Signalized

DESIGN PEAK HOUR (3:00-4:00 PM)	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
2015 TRAFFIC VOLUMES	87	139			227	129				150		150
Years to Design Year (2039)	24	24			24	24				24		24
Yearly Growth Rate	2.0%	2.0%			2.0%	2.0%				2.0%		2.0%
Background Traffic Growth	42	67			109	62				72		72
Volvo Traffic	9					12				88		67
Camp Hall Traffic	8					10				4		3
2039 NO BUILD TRAFFIC VOLUMES	146	206			336	213				314		292
Balance Adjustment	20					28				24		22
2039 NO BUILD TRAFFIC VOLUMES	166	206			336	241				338		314
Years to Design Year (2039)	24	24			24	24				24		24
Yearly Growth Rate	2.0%	2.0%			2.0%	2.0%				2.0%		2.0%
Background Traffic Growth	42	67			109	62				72		72
Volvo Traffic	9					12				88		67
Camp Hall Traffic	8					10				4		3
2039 BUILD TRAFFIC VOLUMES	146	206			336	213				314		292
Balance Adjustment	20					28				24		22
2039 BUILD TRAFFIC VOLUMES	166	206			336	241				338		314

SC 27/Ridgeville Road & I-26 Eastbound Ramps

TRAFFIC CONTROL: Unsignalized

DESIGN PEAK HOUR (3:00-4:00 PM)	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
2015 TRAFFIC VOLUMES	25	5	59					144	105	86	272	
Years to Design Year (2039)	24	24	24					24	24	24	24	
Yearly Growth Rate	2.0%	2.0%	2.0%					2.0%	2.0%	2.0%	2.0%	
Background Traffic Growth	12	2	28					69	50	41	131	
Volvo Traffic	44							21		1,326	155	
Camp Hall Traffic	39							18		59	7	
2039 NO BUILD TRAFFIC VOLUMES	120	7	87					252	155	1,512	565	
Balance Adjustment												
2039 NO BUILD TRAFFIC VOLUMES	120	7	87					252	155	1,512	565	
Years to Design Year (2039)	24	24	24					24	24	24	24	
Yearly Growth Rate	2.0%	2.0%	2.0%					2.0%	2.0%	2.0%	2.0%	
Background Traffic Growth	12	2	28					69	50	41	131	
Volvo Traffic	7							21		65	155	
Camp Hall Traffic	26							18		24	7	
2039 BUILD TRAFFIC VOLUMES	70	7	87					252	155	216	565	
Balance Adjustment												
2039 BUILD TRAFFIC VOLUMES	70	7	87					252	155	216	565	

SC 27/Ridgeville Road & I-26 Westbound Ramps

TRAFFIC CONTROL: Unsignalized

DESIGN PEAK HOUR (3:00-4:00 PM)	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
2015 TRAFFIC VOLUMES				211	3	153	37	125			135	14
Years to Design Year (2039)				24	24	24	24	24			24	24
Yearly Growth Rate				2.0%	2.0%	2.0%	2.0%	2.0%			2.0%	2.0%
Background Traffic Growth				101	1	73	18	60			65	7
Volvo Traffic						174		65			1,481	332
Camp Hall Traffic						155		57			66	15
2039 NO BUILD TRAFFIC VOLUMES				312	4	555	55	307			1,747	368
Balance Adjustment								10			18	
2039 NO BUILD TRAFFIC VOLUMES				312	4	555	55	317			1,765	368
Years to Design Year (2039)				24	24	24	24	24			24	24
Yearly Growth Rate				2.0%	2.0%	2.0%	2.0%	2.0%			2.0%	2.0%
Background Traffic Growth				101	1	73	18	60			65	7
Volvo Traffic						7		28			220	65
Camp Hall Traffic						62		44			31	10
2039 BUILD TRAFFIC VOLUMES				312	4	295	55	257			451	96
Balance Adjustment								10			18	
2039 BUILD TRAFFIC VOLUMES				312	4	295	55	267			469	96

SC 27/Old Gilliard Road & Lower Westvaco Road

TRAFFIC CONTROL: Unsignalized DATE COUNTED:

DESIGN PEAK HOUR (3:00-4:00 PM)	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
2015 TRAFFIC VOLUMES				0		0		278	0	0	149	
Years to Design Year (2039)				24		24		24	24	24	24	
Yearly Growth Rate				2.0%		2.0%		2.0%	2.0%	2.0%	2.0%	
Background Traffic Growth				0		0		133	0	0	72	
Volvo Traffic				1,813					239			
Camp Hall Traffic				81					212			
2039 NO BUILD TRAFFIC VOLUMES				1,894		0		411	451	0	221	
Balance Adjustment								10			18	
2039 NO BUILD TRAFFIC VOLUMES				1,894		0		421	451	0	239	
Years to Design Year (2039)				24		24		24	24	24	24	
Yearly Growth Rate				2.0%		2.0%		2.0%	2.0%	2.0%	2.0%	
Background Traffic Growth				0		0		133	0	0	72	
Volvo Traffic				285					35			
Camp Hall Traffic				41					106			
2039 BUILD TRAFFIC VOLUMES				326		0		411	141	0	221	
Balance Adjustment								10			18	
2039 BUILD TRAFFIC VOLUMES				326		0		421	141	0	239	

Jedburg Road & I-26 Eastbound Ramps

TRAFFIC CONTROL: Signalized From Sheep Island Parkway IJR/Jedburg Road IMR

DESIGN PEAK HOUR (3:00-4:00 PM)	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
2035 NO BUILD TRAFFIC VOLUMES*	130		160					760	410	215	930	
Years to Design Year (2039)	4		4					4	4	4	4	
Yearly Growth Rate	2.0%		2.0%					2.0%	2.0%	2.0%	2.0%	
Background Traffic Growth	10		13					61	33	17	74	
Balance Adjustment												
2039 NO BUILD TRAFFIC VOLUMES	140		173					821	443	232	1,004	
2035 BUILD TRAFFIC VOLUMES*	130		160					760	410	215	930	
Years to Design Year (2039)	4		4					4	4	4	4	
Yearly Growth Rate	2.0%		2.0%					2.0%	2.0%	2.0%	2.0%	
Background Traffic Growth	10		13					61	33	17	74	
Balance Adjustment												
2039 BUILD TRAFFIC VOLUMES	140		173					821	443	232	1,004	

* Traffic Volumes taken from the May 2010 Sheep Island Parkway IJR/Jedburg Road IMR

Jedburg Road & I-26 Westbound Ramps

TRAFFIC CONTROL: Signalized From Sheep Island Parkway IJR/Jedburg Road IMR

DESIGN PEAK HOUR (3:00-4:00 PM)	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
2035 NO BUILD TRAFFIC VOLUMES*			580			390	225	665			565	170
Years to Design Year (2039)			4			4	4	4			4	4
Yearly Growth Rate			2.0%			2.0%	2.0%	2.0%			2.0%	2.0%
Background Traffic Growth			46			31	18	53			45	14
Balance Adjustment												
2039 NO BUILD TRAFFIC VOLUMES			626			421	243	718			610	184
2035 BUILD TRAFFIC VOLUMES*			580			390	225	665			565	170
Years to Design Year (2039)			4			4	4	4			4	4
Yearly Growth Rate			2.0%			2.0%	2.0%	2.0%			2.0%	2.0%
Background Traffic Growth			46			31	18	53			45	14
Balance Adjustment												
2039 BUILD TRAFFIC VOLUMES			626			421	243	718			610	184

* Traffic Volumes taken from the May 2010 Sheep Island Parkway IJR/Jedburg Road IMR

Volvo Car Drive & Factory Entrance

TRAFFIC CONTROL: Signalized

DESIGN PEAK HOUR (3:00-4:00 PM)	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volvo Traffic				120					1080			
Camp Hall Traffic												
2039 NO BUILD TRAFFIC VOLUMES				120		0		0	1,080	0	0	
Volvo Traffic		121	83	37	783		745		335			
Camp Hall Traffic		106			40							
2039 BUILD TRAFFIC VOLUMES	0	227	83	37	823	0	745	0	335	0	0	0

Volvo Car Drive & Factory Entrance

TRAFFIC CONTROL: Signalized

INGRESS PEAK HOUR (5:30-6:30 AM)	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volvo Traffic				1080					120			
Camp Hall Traffic												
2039 NO BUILD TRAFFIC VOLUMES				1,080		0		0	120	0	0	
Volvo Traffic		769	745	335	107		83		37			
Camp Hall Traffic												
2039 BUILD TRAFFIC VOLUMES	0	769	745	335	107	0	83	0	37	0	0	0

TRAFFIC VOLUME DEVELOPMENT

I-26

DATE COUNTED: Friday, October 3, 2014

DESIGN PEAK HOUR (3:00-4:00 PM)	West of	SC 27*		Volvo Car ive		ır Drive To g Road	East of Je	dburg Rd.*
	EB	WB	EB	WB	EB	WB	EB	WB
2014 TRAFFIC VOLUMES			2,123	2,284	2,123	2,284		
2015 TRAFFIC VOLUMES	2,059	2,018	2,165	2,330	2,165	2,330	2,410	2,749
Years to Design Year (2039)	24	24	24	24	24	24	24	24
Yearly Growth Rate	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
Background Traffic Growth	988	968	1,039	1,118	1,039	1,118	1,157	1,319
Volvo Traffic	44	332	1,326	174	1,326	174	1,326	174
Camp Hall Traffic	39	15	59	155	59	155	59	155
2039 NO BUILD TRAFFIC VOLUMES	3,130	3,333	4,590	3,777	4,590	3,777	4,952	4,397
Balance Adjustment								
2039 NO BUILD TRAFFIC VOLUMES	3,130	3,333	4,590	3,777	4,590	3,777	4,952	4,397
Years to Design Year (2039)	24	24	24	24	24	24	24	24
Yearly Growth Rate	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
Background Traffic Growth	988	968	1,039	1,118	1,039	1,118	1,157	1,319
Volvo Traffic	44	332	102	274	1,326	174	1,326	174
Camp Hall Traffic	39	15	37	67	59	155	59	155
2039 BUILD TRAFFIC VOLUMES	3,130	3,333	3,344	3,789	4,590	3,777	4,952	4,397
Balance Adjustment								
2039 BUILD TRAFFIC VOLUMES	3,130	3,333	3,344	3,789	4,590	3,777	4,952	4,397

*Freeway volumes derived from the I-26 freeway volumes between Volvo Car Drive and Jedburg Road.

Appendix D

2019 Freeway Analysis Worksheets



Fax:

___Operational Analysis______ Analyst: ae Agency or Company: Stantec Date Performed: 8/21/2015 Date Performed:8/21/2015Analysis Time Period:3:00 - 4:00 PMFreeway/Direction:I-26 Eastbound From/To: West of SC 27 Jurisdiction: SCDOT Analysis Year: 2019 Opening Year Description: 171001612 - No Build Flow Inputs and Adjustments Volume, V veh/h 2249 Peak-hour factor, PHF 0.90 Peak 15-min volume, v15 625 V Trucks and buses 20 % Recreational vehicles % 0 Terrain type: Level 00 Grade _ Segment length mi Trucks and buses PCE, ET 1.5 Recreational vehicle PCE, ER 1.2 Heavy vehicle adjustment, fHV 0.909 Driver population factor, fp 1.00 Flow rate, vp 1374 pc/h/ln _____Speed Inputs and Adjustments_____ Lane width ft 12.0 Right-side lateral clearance 6.0 ft Total ramp density, TRD 0.00 ramps/mi Number of lanes, N 2 Free-flow speed: Base FFS or BFFS 75.4 mi/h Lane width adjustment, fLW 0.0 mi/h mi/h Lateral clearance adjustment, fLC 0.0 TRD adjustment 0.0 mi/h Free-flow speed, FFS 75.4 mi/h LOS and Performance Measures Flow rate, vp 1374 pc/h/ln Free-flow speed, FFS 75.4 mi/h Average passenger-car speed, S 73.5 mi/h Number of lanes, N 2 Density, D 18.7 pc/mi/ln Level of service, LOS С

Fax:

_____Diverge Analysis Analyst: ae Agency/Co.: Stantec Agency/Co.:StantecDate performed:8/21/2015Analysis time period:3:00 - 4:00 PM Freeway/Dir of Travel: I-26 Eastbound Junction:SC 27 Off-RampJurisdiction:SCDOTAnalysis Year:2019 Opening Year Description: 171001612 - No Build _____Freeway Data Type of analysis Diverge Number of lanes in freeway 2 75.0 mph 2249 vph Free-flow speed on freeway Volume on freeway _____Off Ramp Data______ Side of freeway Right Number of lanes in ramp 1 mph Free-Flow speed on ramp 35.0 vph Volume on ramp 121 Length of first accel/decel lane 450 ft Length of second accel/decel lane ft _____Adjacent Ramp Data (if one exists)_____ Yes 909 Does adjacent ramp exist? Volume on adjacent ramp vph Position of adjacent ramp Downstream Type of adjacent ramp On 2330 ft Distance to adjacent ramp _____Conversion to pc/h Under Base Conditions_____ Junction Components Freeway Ramp Adjacent Ramp

 2249
 121

 0.90
 0.90

 625
 34

 20
 20

 0
 0

 Volume, V (vph) vph 909 0.90 253 Peak-hour factor, PHF Peak 15-min volume, v15 v 2 0 0 Trucks and buses % 00 Recreational vehicles 0 0 0 % Level Level 0.00 % 0.00 % 0.00 % Terrain type: Grade 0.00 mi 0.00 mi 0.00 1.5* 1.5 1.5 1.2 1.2 1.2 Length mi Length Trucks and buses PCE, ET Recreational vehicle PCE, ER

		justment, fHV n factor, fP		1.00	1.00	pcph
$ \begin{array}{c} & EQ \\ P = 1.000 \text{Using Equation 0} \\ PD \\ PD = 2749 pc/h \\ 12 R F R PD \end{array} \\ \hline \\$		Estimatio	n of V12 D	iverge Areas	3	
P = 1.000 Using Equation 0 FD FD $T = v + (v - v) P = 2749 pc/h$ $12 R F R FD$ $Capacity Checks$ $Capacity Checks$ R $V = v + 2749 + 4800 No$ $FO F R$ $V = v - v + 2601 + 4800 No$ $FO F R$ $v = v - v + 2601 + 4800 No$ $FO F R$ $v = v - v + 2601 + 4800 No$ $FO F R$ $v = v - v + 2601 + 4800 No$ $FO F R$ $v = v - v + 2601 + 4800 No$ R $v = v - v + 2601 + 4800 No$ $FO F R$ $v = v - v + 2601 + 4800 No$ $FO F R$ $v = 2749 + 148 + 2000 No$ R $r = v + 148 + 2000 No$ R $r = v + 148 + 2000 No$ R $r = 120 No$ R $r = 120 Pc$ R			(Equation	13-12 or 13-	-13)	
12RFRFD		P = 1.000	Using Equa	tion 0		
ActualMaximumLOS F? $v = v - v$ 2749 4800NoFi FF26014800No $v = v - v$ 26014800NoFO F R1482000No v or v0pc/h(Equation 13-14 or 13-17)3av3412NoIs v or v> 2700 pc/h?No3av3412If yes, v= 2749(Equation 13-15, 13-16, 13-18, or 13-19)12A				749 pc/h		
v = v 2749 4800 No Fi F v = v - v 2601 4800 No FO F R v 148 2000 No R v or v 0 pc/h (Equation 13-14 or 13-17) 3 av34 Is v or v > 2700 pc/h? No 3 av34 12 If yes, v = 2749 (Equation 13-15, 13-16, 13-18, or 13-19) 12A 		Cap	acity Chec	ks		
v = v - v FO F R FO F R v 148 2000 NO R $v or v$ 9 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 Is fyes, v = 2749 (Equation 13-15, 13-16, 13-18, or 13-19) 12A $$						
v 148 2000 No R 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 = 2749 (Equation 13-15, 13-16, 13-18, or 13-19) 12A 	v = v - v		480	0	No	
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 = 2749 (Equation 13-15, 13-16, 13-18, or 13-19) 12A 	v		200	0	No	
Is v or v $> 2700 \text{ pc/h}$? No 3 av34 Is v or v $> 1.5 \text{ v}/2$ No 3 av34 12 If yes, v = 2749 (Equation 13-15, 13-16, 13-18, or 13-19) 12A Flow Entering Diverge Influence Area Actual Max Desirable Violation? v 2749 4400 No 12 Level of Service Determination (if not F) Density, D = 4.252 + 0.0086 v - 0.009 L = 23.8 pc/mi/ln R 12 D Level of service for ramp-freeway junction areas of influence C Speed Estimation Intermediate speed variable, D = 0.441 Space mean speed in ramp influence area, S = 60.4 mph R Space mean speed in outer lanes, S = N/A mph 0	v or v		/h (Eq	uation 13-14	or 13-17)	
Is v or v > 1.5 v /2 No 3 av34 12 If yes, v = 2749 (Equation 13-15, 13-16, 13-18, or 13-19) 12A 	Is v or v	> 2700 pc/h?	No			
If yes, v = 2749 (Equation 13-15, 13-16, 13-18, or 13-19) 12A Flow Entering Diverge Influence Area Actual Max Desirable Violation? v 2749 4400 No 12 Level of Service Determination (if not F) Density, D = 4.252 + 0.0086 v - 0.009 L = 23.8 pc/mi/ln R 12 D Level of service for ramp-freeway junction areas of influence C Speed Estimation Intermediate speed variable, D = 0.441 Space mean speed in ramp influence area, S = 60.4 mph R Space mean speed in outer lanes, S = N/A mph 0	Is v or v	> 1.5 v /2	No			
Actual Max Desirable Violation? v 2749 4400 No 12 Level of Service Determination (if not F)	If yes, $v = 27$		(Equat	ion 13-15, 1	3-16, 13-18,	or 13-19)
v 2749 4400 No 12 Level of Service Determination (if not F) Density, $D = 4.252 + 0.0086 \text{ v} - 0.009 \text{ L} = 23.8 \text{ pc/mi/ln}$ Level of service for ramp-freeway junction areas of influence C Speed Estimation Intermediate speed variable, $D = 0.441$ Space mean speed in ramp influence area, $S = 60.4$ mph Space mean speed in outer lanes, $S = N/A$ mph 0						
Level of Service Determination (if not F) Density, $D = 4.252 + 0.0086 \text{ v} - 0.009 \text{ L} = 23.8 \text{ pc/mi/ln}$ R 12 D Level of service for ramp-freeway junction areas of influence C Speed Estimation Intermediate speed variable, $D = 0.441$ Space mean speed in ramp influence area, $S = 60.4$ mph R Space mean speed in outer lanes, $S = N/A$ mph 0		Actual 2749	Max Desi: 4400	rable		
R 12 D Level of service for ramp-freeway junction areas of influence C	12	Level of Service	Determinat	ion (if not	F)	
Level of service for ramp-freeway junction areas of influence C Speed Estimation Intermediate speed variable, D = 0.441 Space mean speed in ramp influence area, S = 60.4 mph R Space mean speed in outer lanes, S = N/A mph 0	Density,					pc/mi/ln
Intermediate speed variable, Space mean speed in ramp influence area, Space mean speed in outer lanes, D = 0.441 S = 60.4 mph R S = N/A mph 0	Level of service					
Space mean speed in ramp influence area, Space mean speed in outer lanes, Space mean speed in speed in outer lanes, Space mean speed in speed in spece mean speed in spece mean		Speed	Estimatio	n		
Space mean speed in ramp influence area, $S = 60.4$ mph R Space mean speed in outer lanes, $S = N/A$ mph 0	Intermediate spee	ed variable,				
Space mean speed in outer lanes, $S = N/A$ mph 0	Space mean speed	in ramp influence	area,	S = 60.4	mph	
	Space mean speed	in outer lanes,		S = N/A	mph	
Space mean speed for all venteres, $S = 00.4$ mph	Space mean speed	for all vehicles,		S = 60.4	mph	

Fax:

___Operational Analysis______ Analyst: ae Agency or Company: Stantec Date Performed: 8/21/2015 Date Performed:8/21/2015Analysis Time Period:3:00 - 4:00 PMFreeway/Direction:I-26 Eastbound From/To: SC 27 Interchange Jurisdiction: SCDOT Analysis Year: 2019 Opening Year Description: 171001612 - No Build Flow Inputs and Adjustments Volume, V veh/h 2128 Peak-hour factor, PHF 0.90 Peak 15-min volume, v15 591 v Trucks and buses 20 % Recreational vehicles % 0 Terrain type: Level 00 Grade _ Segment length mi Trucks and buses PCE, ET 1.5 Recreational vehicle PCE, ER 1.2 Heavy vehicle adjustment, fHV 0.909 Driver population factor, fp 1.00 Flow rate, vp 1300 pc/h/ln _____Speed Inputs and Adjustments_____ ft Lane width 12.0 Right-side lateral clearance 6.0 ft Total ramp density, TRD 0.00 ramps/mi Number of lanes, N 2 Free-flow speed: Base FFS or BFFS 75.4 mi/h Lane width adjustment, fLW 0.0 mi/h mi/h Lateral clearance adjustment, fLC 0.0 TRD adjustment 0.0 mi/h Free-flow speed, FFS 75.4 mi/h LOS and Performance Measures Flow rate, vp 1300 pc/h/ln Free-flow speed, FFS 75.4 mi/h Average passenger-car speed, S 74.0 mi/h Number of lanes, N 2 Density, D 17.6 pc/mi/ln Level of service, LOS В

Fax:

Merge Analysis Analyst: ae Agency/Co.: Stantec Agency/Co.:StantecDate performed:8/21/2015Analysis time period:3:00 - 4:00 PM Freeway/Dir of Travel: I-26 Eastbound Junction:SC 27 On-RampJurisdiction:SCDOTAnalysis Year:2019 Opening Year Description: 171001612 - No Build _____Freeway Data Type of analysis Merge Number of lanes in freeway 2 75.0 2128 mph Free-flow speed on freeway Volume on freeway vph _____On Ramp Data_____ Side of freeway Right Number of lanes in ramp 1 mph Free-flow speed on ramp 35.0 vph 909 Volume on ramp Length of first accel/decel lane 800 ft Length of second accel/decel lane ft _____Adjacent Ramp Data (if one exists)_____ Yes 121 Does adjacent ramp exist? Volume on adjacent Ramp vph Position of adjacent Ramp Upstream Type of adjacent Ramp Off Distance to adjacent Ramp 2330 ft Conversion to pc/h Under Base Conditions Junction Components Freeway Ramp Adjacent Ramp
 2128
 909

 0.90
 0.90

 591
 253

 20
 20

 0
 0
 Volume, V (vph) vph 121 Peak-hour factor, PHF 0.90 34 Peak 15-min volume, v15 v 20 20 20 0 0 0 Level Level Level % % mi mi Trucks and buses % 00 Recreational vehicles Terrain type: % mi 00 Grade Lenqth mi Trucks and buses PCE, ET Recreational vehicle PCE, ER 1.5

Heavy vehicle adjustment, fHV Driver population factor, fP Flow rate, vp		1.00	0.909 1.00 148	pcph
Estima	tion of V12 Me	erge Areas		
L =	(Equation 1	3-6 or 13-7)	
EQ P = 1.000 FM	Using Equat	ion 0		
v = v (P) 12 F FM	= 2601 pc/	'n		
	Capacity Check			
Actu v 3712 FO	al Maxi 4800	.mum)	LOS F? No	
v or v 0	pc/h (Equ	ation 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 = 2601 12A	(Equati	on 13-15, 13.	3-16, 13-18,	or 13-19)
	cering Merge I Max Desir 4600 ce Determinati	able	Violation? No	
Density, D = $5.475 + 0.00734 v$ R R R	+ 0.0078 v	- 0.00627 L	= 28.9	pc/mi/ln
Level of service for ramp-freew.				
Sp	eed Estimation	l		
Intermediate speed variable,		M = 0.425		
Space mean speed in ramp influe:	nce area,	S = 61.0	mph	
Space mean speed in outer lanes	,	R = N/A	mph	
Space mean speed for all vehicle	es,	0 S = 61.0	mph	

Fax:

___Operational Analysis______ Analyst: ae Agency or Company: Stantec Date Performed: 8/21/2015 Date Performed:8/21/2015Analysis Time Period:3:00 - 4:00 PMFreeway/Direction:I-26 Eastbound From/To: SC 27 to Jedburg Jurisdiction: SCDOT Analysis Year: 2019 Opening Year Description: 171001612 - No Build Flow Inputs and Adjustments Volume, V veh/h 3037 Peak-hour factor, PHF 0.90 Peak 15-min volume, v15 844 V Trucks and buses 20 % Recreational vehicles % 0 Terrain type: Level 00 Grade _ Segment length mi Trucks and buses PCE, ET 1.5 Recreational vehicle PCE, ER 1.2 Heavy vehicle adjustment, fHV 0.909 Driver population factor, fp 1.00 Flow rate, vp 1856 pc/h/ln _____Speed Inputs and Adjustments_____ Lane width ft 12.0 Right-side lateral clearance 6.0 ft Total ramp density, TRD 0.00 ramps/mi Number of lanes, N 2 Free-flow speed: Base FFS or BFFS 75.4 mi/h Lane width adjustment, fLW 0.0 mi/h mi/h Lateral clearance adjustment, fLC 0.0 TRD adjustment 0.0 mi/h Free-flow speed, FFS 75.4 mi/h LOS and Performance Measures Flow rate, vp 1856 pc/h/ln Free-flow speed, FFS 75.4 mi/h Average passenger-car speed, S 66.9 mi/h Number of lanes, N 2 27.7 Density, D pc/mi/ln Level of service, LOS D

Fax:

_____Diverge Analysis Analyst: ae Agency/Co.: Stantec Agency/Co.:StantecDate performed:8/21/2015Analysis time period:3:00 - 4:00 PM Freeway/Dir of Travel: I-26 Eastbound Jedburg Off-Ramp Junction:Jedburg Off-RampJurisdiction:SCDOTAnalysis Year:2019 Opening Year Description: 171001612 - No Build _____Freeway Data Type of analysis Diverge Number of lanes in freeway 2 75.0 mph 3037 vph Free-flow speed on freeway Volume on freeway _____Off Ramp Data______ Side of freeway Right Number of lanes in ramp 1 mph Free-Flow speed on ramp 35.0 vph Volume on ramp 119 500 Length of first accel/decel lane ft Length of second accel/decel lane ft _____Adjacent Ramp Data (if one exists)_____ Yes 615 Does adjacent ramp exist? Volume on adjacent ramp vph Position of adjacent ramp Downstream Type of adjacent ramp On ft Distance to adjacent ramp 1620 _____Conversion to pc/h Under Base Conditions_____ Junction Components Freeway Ramp Adjacent Ramp

 3037
 119

 0.90
 0.90

 844
 33

 20
 20

 0
 0

 Volume, V (vph) vph 615 0.90 171 Peak-hour factor, PHF ∠∪ 0 Levra Peak 15-min volume, v15 v 20 0 Trucks and buses % 00 Recreational vehicles 0 0 0 % Level Level 0.00 % 0.00 % 0.00 % Terrain type: Grade 0.00 mi 0.00 mi 0.00 1.5 1.5 1.5 1.2 1.2 1.2 Length mi Length Trucks and buses PCE, ET 1.5 1.2 Recreational vehicle PCE, ER

Heavy vehicle adj Driver populatior Flow rate, vp		1.00	1.00	1.00	pcph
	Estimati	on of V12 D	iverge Areas	5	
	L = EQ	(Equation	13-12 or 13-	-13)	
	P = 1.000 FD	Using Equa	tion 0		
	v = v + (v - 12 R F		712 pc/h		
	Ca	pacity Chec	ks		
V = V Fi F	Actual 3712	Max 480		LOS F? No	
v = v - v FO F R	3567	480	0	No	
v R	145	200	0	No	
v or v 3 av34		c/h (Eq	uation 13-14	or 13-17)	
	> 2700 pc/h?	No			
	> 1.5 v /2	No			
If yes, v = 37 12A		(Equat	ion 13-15, 1	.3-16, 13-18,	or 13-19)
			Influence Ar		
v	Actual 3712	Max Desi 4400	rable	Violation? No	
12	Level of Service	Determinat	ion (if not	F)	
Density,				= 31.7	pc/mi/ln
Level of service	R for ramp-freeway	-	2 I reas of infl	•	
	Spee	d Estimatic	n		
Intermediate spee	ed variable,		D = 0.441 S		
Space mean speed	in ramp influence	e area,	S = 60.4 R	mph	
Space mean speed	in outer lanes,		S = N/A	mph	
Space mean speed	for all vehicles	1	S = 60.4	mph	

Fax:

___Operational Analysis______ Analyst: ae Agency or Company: Stantec Date Performed: 8/21/2015 Date Performed:8/21/2015Analysis Time Period:3:00 - 4:00 PMFreeway/Direction:I-26 Eastbound From/To: Jedburg Interchange Jurisdiction: SCDOT Analysis Year: 2019 Opening Year Description: 171001612 - No Build Flow Inputs and Adjustments Volume, V veh/h 2918 Peak-hour factor, PHF 0.90 Peak 15-min volume, v15 811 V Trucks and buses 20 % Recreational vehicles % 0 Terrain type: Level 00 Grade _ Segment length mi Trucks and buses PCE, ET 1.5 Recreational vehicle PCE, ER 1.2 Heavy vehicle adjustment, fHV 0.909 Driver population factor, fp 1.00 Flow rate, vp 1783 pc/h/ln _____Speed Inputs and Adjustments_____ Lane width ft 12.0 Right-side lateral clearance 6.0 ft Total ramp density, TRD 0.00 ramps/mi Number of lanes, N 2 Free-flow speed: Base FFS or BFFS 75.4 mi/h Lane width adjustment, fLW 0.0 mi/h mi/h Lateral clearance adjustment, fLC 0.0 TRD adjustment 0.0 mi/h Free-flow speed, FFS 75.4 mi/h LOS and Performance Measures Flow rate, vp 1783 pc/h/ln Free-flow speed, FFS 75.4 mi/h Average passenger-car speed, S 68.2 mi/h Number of lanes, N 2 Density, D 26.1 pc/mi/ln Level of service, LOS D

Fax:

E-mall:							
	Merge	Analy	sis				
Applyst.	20						
Analyst: Agency/Co.:	ae Stantec						
Date performed:							
Analysis time period:		r					
Freeway/Dir of Travel:							
_							
Junction: Jurisdiction:	SCDOT	P					
Analysis Year:		ear					
Description: 171001612		cui					
	Free	way Da	ta				
Type of analysis			Merge				
Number of lanes in free	-		2				
Free-flow speed on free	Nay		75.0		mph		
Volume on freeway			2918		vph		
	On R	amp Da	ta				
Side of freeway			Right				
Number of lanes in ramp			1				
Free-flow speed on ramp			35.0		mph		
Volume on ramp			615		vph		
Length of first accel/de	ecel lane		1150		ft		
Length of second accel/o	decel lane				ft		
	Adjacent Ramp	Data	(if on	e exists	з)		
Does adjacent ramp exist	t?		Yes				
Volume on adjacent Ramp			119		vph		
Position of adjacent Ran	an		Upstre		· Ľ · · ·		
Type of adjacent Ramp	<u>T.</u>	Off					
Distance to adjacent Ram	np		1620		ft		
Con	version to pc/h	Under	Base	Conditio	ons		
Junction Components		Freew	ay	Ramp		Adjacen	t
			-	-		Ramp	
-							vph
- Volume, V (vph)		2918		615		119	vpn
		2918 0.90		615 0.90		119 0.90	vpn
Peak-hour factor, PHF							vpii
Peak-hour factor, PHF Peak 15-min volume, v15		0.90		0.90		0.90	-
Peak-hour factor, PHF Peak 15-min volume, v15 Trucks and buses		0.90 811		0.90 171		0.90 33	v
Peak-hour factor, PHF Peak 15-min volume, v15 Trucks and buses Recreational vehicles		0.90 811 20		0.90 171 20		0.90 33 20	- ک ا
Peak-hour factor, PHF Peak 15-min volume, v15 Trucks and buses Recreational vehicles		0.90 811 20 0	80	0.90 171 20 0	00	0.90 33 20 0	- ک ا
Peak-hour factor, PHF Peak 15-min volume, v15 Trucks and buses Recreational vehicles Terrain type:		0.90 811 20 0		0.90 171 20 0	۶ mi	0.90 33 20 0	V 00 00
	Г	0.90 811 20 0	olo	0.90 171 20 0		0.90 33 20 0	- V 00 00

Heavy vehicle adjustment, fHV Driver population factor, fP Flow rate, vp	1.00	1.00	0.909 1.00 145	pcph
Estim	ation of V12 N	lerge Areas		
L =	(Equation	13-6 or 13-7	7)	
EQ P = 1.00 FM	0 Using Equa	ation 0		
) = 3566 pc	c/h		
	_Capacity Chec	cks		
v 431	ual Max 8 480	cimum)O	LOS F? No	
	pc/h (Ec	quation 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 = 3566 12A	(Equat	ion 13-15, 1	3-16, 13-18,	or 13-19)
		lrable	Violation? No	
Density, D = 5.475 + 0.00734 v R Level of service for ramp-free	+ 0.0078 v R 12	- 0.00627 I	31.6 A	pc/mi/ln
S	peed Estimatio	on		
Intermediate speed variable,		M = 0.533		
Space mean speed in ramp influ	ence area,	S = 57.4	mph	
Space mean speed in outer lane	s,	$ \begin{array}{rcl} R \\ S &= N/A \end{array} $	mph	
Space mean speed for all vehic	les,	0 S = 57.4	mph	

Fax:

___Operational Analysis______ Analyst: ae Agency or Company: Stantec Date Performed: 8/21/2015 Date Performed:8/21/2015Analysis Time Period:3:00 - 4:00 PMFreeway/Direction:I-26 Eastbound From/To: East of Jedburg Jurisdiction: SCDOT Analysis Year: 2019 Opening Year Description: 171001612 - No Build Flow Inputs and Adjustments Volume, V veh/h 3533 Peak-hour factor, PHF 0.90 Peak 15-min volume, v15 981 V Trucks and buses 20 % Recreational vehicles % 0 Terrain type: Level 00 Grade _ Segment length mi Trucks and buses PCE, ET 1.5 Recreational vehicle PCE, ER 1.2 Heavy vehicle adjustment, fHV 0.909 Driver population factor, fp 1.00 Flow rate, vp 2159 pc/h/ln _____Speed Inputs and Adjustments_____ Lane width ft 12.0 Right-side lateral clearance 6.0 ft Total ramp density, TRD 1.17 ramps/mi Number of lanes, N 2 Free-flow speed: Base FFS or BFFS 75.4 mi/h Lane width adjustment, fLW 0.0 mi/h mi/h Lateral clearance adjustment, fLC 0.0 TRD adjustment mi/h 3.7 Free-flow speed, FFS 71.7 mi/h LOS and Performance Measures Flow rate, vp 2159 pc/h/ln Free-flow speed, FFS 71.7 mi/h Average passenger-car speed, S 59.3 mi/h Number of lanes, N 2 Density, D 36.4 pc/mi/ln Level of service, LOS Ε

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___Operational Analysis______ Analyst: ae Agency or Company: Stantec Date Performed: 8/21/2015 Date Performed:8/21/2015Analysis Time Period:3:00 - 4:00 PMFreeway/Direction:I-26 Westbound From/To: East of Jedburg Jurisdiction: SCDOT Analysis Year: 2019 Opening Year Description: 171001612 - No Build Flow Inputs and Adjustments Volume, V veh/h 3336 Peak-hour factor, PHF 0.90 Peak 15-min volume, v15 927 V Trucks and buses 20 % Recreational vehicles % 0 Terrain type: Level 00 Grade _ Segment length mi Trucks and buses PCE, ET 1.5 Recreational vehicle PCE, ER 1.2 Heavy vehicle adjustment, fHV 0.909 Driver population factor, fp 1.00 Flow rate, vp 2039 pc/h/ln _____Speed Inputs and Adjustments_____ Lane width ft 12.0 Right-side lateral clearance 6.0 ft Total ramp density, TRD 1.33 ramps/mi Number of lanes, N 2 Free-flow speed: Base FFS or BFFS 75.4 mi/h Lane width adjustment, fLW 0.0 mi/h mi/h Lateral clearance adjustment, fLC 0.0 TRD adjustment mi/h 4.1 Free-flow speed, FFS 71.3 mi/h LOS and Performance Measures Flow rate, vp 2039 pc/h/ln Free-flow speed, FFS 71.3 mi/h Average passenger-car speed, S 61.8 mi/h Number of lanes, N 2 Density, D 33.0 pc/mi/ln Level of service, LOS D

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_____Diverge Analysis Analyst: ae Agency/Co.: Stantec Agency/Co.:StantecDate performed:8/21/2015Analysis time period:3:00 - 4:00 PM Freeway/Dir of Travel: I-26 Westbound Junction:Jedburg Off-RampJurisdiction:SCDOTAnalysis Year:2019 Opening Year Description: 171001612 - No Build _____Freeway Data Type of analysis Diverge Number of lanes in freeway 2 71.3 mph 3336 vph Free-flow speed on freeway Volume on freeway _____Off Ramp Data______ Side of freeway Right Number of lanes in ramp 1 mph Free-Flow speed on ramp 35.0 vph Volume on ramp 239 750 Length of first accel/decel lane ft Length of second accel/decel lane ft _____Adjacent Ramp Data (if one exists)_____ Does adjacent ramp exist? Yes 575 Volume on adjacent ramp vph Position of adjacent ramp Downstream Type of adjacent ramp Off Distance to adjacent ramp 750 ft _____Conversion to pc/h Under Base Conditions_____ Junction Components Freeway Ramp Adjacent Ramp

 3336
 239

 0.90
 0.90

 927
 66

 20
 20

 0
 0

 Volume, V (vph) 575 vph 0.90 160 Peak-hour factor, PHF Peak 15-min volume, v15 v 2 0 0 Trucks and buses % 00 Recreational vehicles 0 0 0 8 Level Level Level 0.00 % 0.00 % 0.00 % Terrain type: Grade 0.00 mi 0.00 mi 0.00 1.5 1.5 1.5 1.2 1.2 1.2 Length mi Lengtn Trucks and buses PCE, ET 1.5 1.2 Recreational vehicle PCE, ER

	ustment, fHV 1 factor, fP	1.00		1.00	pcph
	Estimatic	on of V12 D	iverge Areas	5	
	L = EQ	(Equation	13-12 or 13-	-13)	
	P = 1.000 FD	Using Equa	tion 0		
	v = v + (v - v 12 R F		077 pc/h		
	Cap	acity Chec	ks		
V = V Fi F		Max 480		LOS F? No	
v = v - v FO F R	3785	480	0	No	
v R	292	200	0	No	
v or v 3 av34		/h (Eq	uation 13-14	l or 13-17)	
Is v or v	> 2700 pc/h?	No			
	> 1.5 v /2	No			
3 av34 If yes, v = 40 12A		(Equat	ion 13-15, 1	L3-16, 13-18,	or 13-19)
	Flow Enterin				
v	Actual 4077	Max Desi 4400	rable	Violation? No	
12	Level of Service	Determinat	ion (if not	F)	
Density,	D = 4.252 + R	0.0086 v 1		= 32.6	pc/mi/ln
Level of service	for ramp-freeway	junction a	reas of infl	luence D	
	Speed	l Estimatio	n		
Intermediate spee	ed variable,		D = 0.454 S		
Space mean speed	in ramp influence	area,	S = 58.0 R	mph	
Space mean speed	in outer lanes,		S = N/A	mph	
Space mean speed	for all vehicles,		0 S = 58.0	mph	

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___Operational Analysis______ Analyst: ae Agency or Company: Stantec Date Performed: 8/21/2015 Date Performed:8/21/2015Analysis Time Period:3:00 - 4:00 PMFreeway/Direction:I-26 Westbound From/To: Jedburg Interchange Jurisdiction: SCDOT Analysis Year: 2019 Opening Year Description: 171001612 - No Build Flow Inputs and Adjustments Volume, V veh/h 3097 Peak-hour factor, PHF 0.90 Peak 15-min volume, v15 860 V Trucks and buses 20 % Recreational vehicles % 0 Terrain type: Level 00 Grade _ Segment length mi Trucks and buses PCE, ET 1.5 Recreational vehicle PCE, ER 1.2 Heavy vehicle adjustment, fHV 0.909 Driver population factor, fp 1.00 Flow rate, vp 1893 pc/h/ln _____Speed Inputs and Adjustments_____ Lane width ft 12.0 Right-side lateral clearance 6.0 ft Total ramp density, TRD 1.33 ramps/mi Number of lanes, N 2 Free-flow speed: Base FFS or BFFS 75.4 mi/h Lane width adjustment, fLW 0.0 mi/h mi/h Lateral clearance adjustment, fLC 0.0 TRD adjustment mi/h 4.1 Free-flow speed, FFS 71.3 mi/h LOS and Performance Measures Flow rate, vp 1893 pc/h/ln Free-flow speed, FFS 71.3 mi/h Average passenger-car speed, S 64.4 mi/h Number of lanes, N 2 Density, D 29.4 pc/mi/ln Level of service, LOS D

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	Diver	ge Anal	lysis_				
Analyst: Agency/Co.: Date performed: Analysis time period: Freeway/Dir of Travel: Junction: Jurisdiction: Analysis Year: Description: 171001612	3:00 - 4:00 PM I-26 Westbound Jedburg Loop C SCDOT 2019 Opening Y	l) ff-Ram <u>r</u>	þ				
	Free	way Dat	ca				
Type of analysis Number of lanes in freev Free-flow speed on freev Volume on freeway		2	Diverg 2 71.3 3097		mph vph		
	Off R	lamp Dat	ca				
Side of freeway Number of lanes in ramp Free-Flow speed on ramp Volume on ramp Length of first accel/d Length of second accel/d]	Right 1 35.0 575 750		mph vph ft ft		
	Adjacent Ramp	Data	(if on	e exist	s)		
Does adjacent ramp exist Volume on adjacent ramp Position of adjacent ram Type of adjacent ramp Distance to adjacent ram	np	2 t	Zes 239 Jpstre Off 750	am	vph ft		
Con	version to pc/h	Under	Base	Conditi	ons		
Junction Components Volume, V (vph) Peak-hour factor, PHF Peak 15-min volume, v15 Trucks and buses Recreational vehicles		Freewa 3097 0.90 860 20 0	ау	Ramp 575 0.90 160 20 0		Adjace Ramp 239 0.90 66 20 0	nt vph v % %
Terrain type: Grade Length Trucks and buses PCE, E Recreational vehicle PC		Level 0.00 0.00 1.5 1.2	% mi	Level 0.00 0.00 1.5 1.2	% mi	Level 0.00 0.00 1.5 1.2	% mi

	justment, fHV 1 factor, fP		1.00	9 0.909 1.00 292	pcph
	Estimatic	n of V12 D	iverge Areas	5	
	L = EQ	(Equation	13-12 or 13-	-13)	
	EQ P = 1.000 FD	Using Equa	tion 0		
	v = v + (v - v) 12 R F		785 pc/h		
	Cap	acity Chec	ks		
V = V Fi F		Max 480		LOS F? No	
v = v - v FO F R	3082	480	0	No	
v R	703	200	0	No	
v or v		/h (Eq	uation 13-14	4 or 13-17)	
	> 2700 pc/h?	No			
	> 1.5 v /2	No			
3 av34 If yes, v = 37 12A		(Equat	ion 13-15, 1	13-16, 13-18,	or 13-19)
	Flow Enterin				
v	Actual 3785	Max Desi 4400	rable	Violation? No	
12	Level of Service	Determinat	ion (if not	F)	
Density,	D = 4.252 + R	0.0086 v 1		= 30.1	pc/mi/ln
Level of service	for ramp-freeway	-			
	Speed	Estimatio	n		
Intermediate spee	ed variable,		D = 0.491 S		
Space mean speed	in ramp influence	area,	S = 56.9	mph	
Space mean speed	in outer lanes,		R = N/A	mph	
Space mean speed	for all vehicles,		0 S = 56.9	mph	

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__Operational Analysis______ Analyst: ae Agency or Company: Stantec Date Performed: 8/21/2015 Date Fellormed.8/21/2015Analysis Time Period:3:00 - 4:00 PMFreeway/Direction:I-26 Westbound From/To: Jedburg Loop Ramp to On-Ramp Jurisdiction: SCDOT Analysis Year: 2019 Opening Year Description: 171001612 - No Build Flow Inputs and Adjustments Volume, V veh/h 2522 Peak-hour factor, PHF 0.90 Peak 15-min volume, v15 701 v Trucks and buses 20 % Recreational vehicles % 0 Terrain type: Level 00 Grade _ Segment length mi Trucks and buses PCE, ET 1.5 Recreational vehicle PCE, ER 1.2 Heavy vehicle adjustment, fHV 0.909 Driver population factor, fp 1.00 Flow rate, vp 1541 pc/h/ln _____Speed Inputs and Adjustments_____ Lane width ft 12.0 Right-side lateral clearance 6.0 ft Total ramp density, TRD 1.33 ramps/mi Number of lanes, N 2 Free-flow speed: Base FFS or BFFS 75.4 mi/h Lane width adjustment, fLW 0.0 mi/h mi/h Lateral clearance adjustment, fLC 0.0 TRD adjustment mi/h 4.1 Free-flow speed, FFS 71.3 mi/h LOS and Performance Measures Flow rate, vp 1541 pc/h/ln Free-flow speed, FFS 71.3 mi/h Average passenger-car speed, S 68.7 mi/h Number of lanes, N 2 Density, D 22.4 pc/mi/ln Level of service, LOS С

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Fre	eway Data						
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				mph			
-				_			
07	Damp Data			-			
011	Kamp Data						
		-					
			-				
Volume on ramp Length of first accel/decel lane				_	-		
			1300				
ecel lane				ft			
_Adjacent Ram	np Data (i	f on	e exist	з)			
?	Уе	S					
	57	5		vph			
p	Up	stre	am				
	Of	f					
p	90	0		ft			
ersion to pc/	'h Under B	ase	Conditi	ons			
	Freeway		Ramp		-	nt	
	0500		0.6		-		
						vph	
						V	
						00	
						010	
	Level	0	Level	0	Level	0	
						00	
	1 5	mι	1 -	шт	1 -	mi	
, EK	1.2		1.2		⊥.∠		
	ae Stantec 8/21/2015 3:00 - 4:00 F I-26 Westbour Jedburg On-Ra SCDOT 2019 Opening - No Build Fre Tay ay ay On cel lane ecel lane _Adjacent Ram ?	ae Stantec 8/21/2015 3:00 - 4:00 PM I-26 Westbound Jedburg On-Ramp SCDOT 2019 Opening Year - No Build Freeway Data ay ay ay ay ay Cel lane On Ramp Data Ri 1 35 96 cel lane On Ramp Data (i ? Adjacent Ramp Data (i ? ye 57 p Up 0f p 90 rersion to pc/h Under B Freeway 2522 0.90 701 20 0 Level 1.5	ae Stantec 8/21/2015 3:00 - 4:00 PM I-26 Westbound Jedburg On-Ramp SCDOT 2019 Opening Year - No Build Freeway Data ay ay ay T1.3 2522 On Ramp Data Right 1 35.0 96 cel lane ecel lane Adjacent Ramp Data (if on ? Yes 575 p Upstre Off p 900 ersion to pc/h Under Base Freeway 2522 0.90 701 20 0 Level % mi 1.5	ae Stantec 8/21/2015 3:00 - 4:00 PM I-26 Westbound Jedburg On-Ramp SCDOT 2019 Opening Year - No Build Freeway Data ay 2 ay 71.3 2522 On Ramp Data Right 1 35.0 96 cel lane 1300 ecel lane Adjacent Ramp Data (if one exists ? Yes 575 p Upstream Off p 900 rersion to pc/h Under Base Condition Freeway Ramp 2522 96 0.90 0.90 701 27 20 20 0 0 Level Level % mi 1.5 1.5	ae Stantec 8/21/2015 3:00 - 4:00 PM I-26 Westbound Jedburg On-Ramp SCDOT 2019 Opening Year - No Build Freeway Data ay 71.3 mph 2522 vph On Ramp Data On Ramp Data Right 1 35.0 mph 96 vph 96 vph 96 vph 1300 ft ecel lane ecel lane Adjacent Ramp Data (if one exists) ? Yes 575 vph p Upstream Off p 900 ft ersion to pc/h Under Base Conditions Freeway Ramp 2522 96 0.90 0.90 ft ersion to pc/h Under Base Conditions Freeway Ramp 2522 96 0.90 0.90 1.5 1.5	Stantec 8/21/2015 3:00 - 4:00 PM 1-26 Westbound Jedburg On-Ramp SCDOT 2019 Opening Year - No Build Freeway Data ay 71.3 mph 2522 vph On Ramp Data Right 1 35.0 mph 96 vph 96 vph 96 vph 1300 ft ecel lane 1300 ft t Adjacent Ramp Data (if one exists) ? Yes 575 vph p Upstream Off p 900 ft rersion to pc/h Under Base Conditions Freeway Ramp Adjacer Ramp 2522 96 575 0.90 0.90 0.90 701 27 160 20 20 20 0 0 0 Level Level Level % % mi mi	

Heavy vehicle adjustment, fHV Driver population factor, fP Flow rate, vp	0.909 1.00 3082	1.00	0.909 1.00 703	pcph
Estimation c	of V12 Merge	Areas		
L = (Eq EQ	uation 13-6	or 13-7)		
P = 1.000 Usi FM	ng Equation	0		
v = v (P) = 30 12 F FM	82 pc/h			
Capaci	ty Checks			
	Maximum 4800		LOS F? No	
	(Equatio	on 13-14	or 13-17)	
Is v or v > 2700 pc/h? 3 av34	No			
Is v or v > 1.5 v /2	No			
3 av34 12 If yes, v = 3082 12A	(Equation 3	13-15, 13	-16, 13-18,	or 13-19)
Flow Entering Actual M v 3199 4 R12 Level of Service Det	lax Desirable 600	9	Violation? No	
Density, D = $5.475 + 0.00734 v + 0.0$ R R Level of service for ramp-freeway jun	12	A		pc/m1/11
Speed Es	timation			
Intermediate speed variable,		= 0.326		
Space mean speed in ramp influence ar		= 61.8	mph	
Space mean speed in outer lanes,	R S = 0	= N/A	mph	
Space mean speed for all vehicles,	Ŭ	= 61.8	mph	

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___Operational Analysis______ Analyst: ae Agency or Company: Stantec Date Performed: 8/21/2015 Date Performed:8/21/2015Analysis Time Period:3:00 - 4:00 PMFreeway/Direction:I-26 Westbound From/To: Jedburg to SC 27 Jurisdiction: SCDOT Analysis Year: 2019 Opening Year Description: 171001612 - No Build Flow Inputs and Adjustments Volume, V veh/h 2618 Peak-hour factor, PHF 0.90 Peak 15-min volume, v15 727 V Trucks and buses 20 % Recreational vehicles % 0 Terrain type: Level 00 Grade _ Segment length mi Trucks and buses PCE, ET 1.5 Recreational vehicle PCE, ER 1.2 Heavy vehicle adjustment, fHV 0.909 Driver population factor, fp 1.00 Flow rate, vp 1600 pc/h/ln _____Speed Inputs and Adjustments_____ Lane width ft 12.0 Right-side lateral clearance 6.0 ft Total ramp density, TRD 0.00 ramps/mi Number of lanes, N 2 Free-flow speed: Base FFS or BFFS 75.4 mi/h Lane width adjustment, fLW 0.0 mi/h mi/h Lateral clearance adjustment, fLC 0.0 TRD adjustment 0.0 mi/h Free-flow speed, FFS 75.4 mi/h LOS and Performance Measures Flow rate, vp 1600 pc/h/ln Free-flow speed, FFS 75.4 mi/h Average passenger-car speed, S 71.0 mi/h Number of lanes, N 2 Density, D 22.5 pc/mi/ln Level of service, LOS С

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_____Diverge Analysis Analyst: ae Agency/Co.: Stantec Agency/Co.:StantecDate performed:8/21/2015Analysis time period:3:00 - 4:00 PM Freeway/Dir of Travel: I-26 Westbound Junction:SC 27 Off-RampJurisdiction:SCDOTAnalysis Year:2019 Opening Year SC 27 Off-Ramp Description: 171001612 - No Build _____Freeway Data Type of analysis Diverge Number of lanes in freeway 2 75.0 mph 2618 vph Free-flow speed on freeway Volume on freeway _____Off Ramp Data______ Side of freeway Right Number of lanes in ramp 1 mph Free-Flow speed on ramp 35.0 vph Volume on ramp 498 500 Length of first accel/decel lane ft Length of second accel/decel lane ft _____Adjacent Ramp Data (if one exists)_____ Yes 233 Does adjacent ramp exist? Volume on adjacent ramp vph Position of adjacent ramp Downstream Type of adjacent ramp On ft Distance to adjacent ramp 2175 _____Conversion to pc/h Under Base Conditions_____ Junction Components Freeway Ramp Adjacent Ramp

 2618
 498
 233

 0.90
 0.90
 0.90

 727
 138
 65

 20
 20
 20

 0
 0
 0

 Volume, V (vph) vph Peak-hour factor, PHF Peak 15-min volume, v15 v Trucks and buses 20 % 20 0 00 Recreational vehicles 0 0 0 % Level Level 0.00 % 0.00 % 0.00 % Terrain type: Grade 0.00 mi 0.00 mi 0.00 1.5 1.5 1.5 1.2 1.2 1.2 Length mi Lengtn Trucks and buses PCE, ET 1.5 1.2 Recreational vehicle PCE, ER

	justment, fHV 1 factor, fP		1.00	1.00	pcph
	Estimatio	n of V12 D	lverge Areas	5	
	L = EQ	(Equation 2	13-12 or 13-	-13)	
	P = 1.000 FD	Using Equat	cion 0		
	v = v + (v - v 12 R F		200 pc/h		
	Cap	acity Checł	s		
V = V Fi F		Max: 4800		LOS F? No	
v = v - v FO F R	2591	4800)	No	
v R	609	2000)	No	
v or v 3 av34		/h (Equ	ation 13-14	l or 13-17)	
Is v or v	> 2700 pc/h?	No			
3 av34 Is v or v 3 av34	> 1.5 v /2	No			
If yes, v = 32 12A		(Equat	lon 13-15, 1	13-16, 13-18,	or 13-19)
	Flow Enterin				
v	Actual 3200	Max Desi 4400	rable	Violation? No	
12	Level of Service	Determinat	ion (if not	F)	
Density,	D = 4.252 + R	0.0086 v 12		= 27.3	pc/mi/ln
Level of service	for ramp-freeway				
	Speed	Estimation	ı		
Intermediate spee	ed variable,		D = 0.483		
Space mean speed	in ramp influence	area,	S = 59.1	mph	
Space mean speed	in outer lanes,		S = N/A	mph	
Space mean speed	for all vehicles,		S = 59.1	mph	

Fax:

___Operational Analysis______ Analyst: ae Agency or Company: Stantec Date Performed: 8/21/2015 Date Performed:8/21/2015Analysis Time Period:3:00 - 4:00 PMFreeway/Direction:I-26 Westbound From/To: SC 27 Interchange Jurisdiction: SCDOT Analysis Year: 2019 Opening Year Description: 171001612 - No Build Flow Inputs and Adjustments Volume, V veh/h 2120 Peak-hour factor, PHF 0.90 Peak 15-min volume, v15 589 V Trucks and buses 20 % Recreational vehicles % 0 Terrain type: Level 00 Grade _ Segment length mi Trucks and buses PCE, ET 1.5 Recreational vehicle PCE, ER 1.2 Heavy vehicle adjustment, fHV 0.909 Driver population factor, fp 1.00 Flow rate, vp 1296 pc/h/ln _____Speed Inputs and Adjustments_____ Lane width ft 12.0 Right-side lateral clearance 6.0 ft Total ramp density, TRD 0.00 ramps/mi Number of lanes, N 2 Free-flow speed: Base FFS or BFFS 75.4 mi/h Lane width adjustment, fLW 0.0 mi/h mi/h Lateral clearance adjustment, fLC 0.0 TRD adjustment 0.0 mi/h Free-flow speed, FFS 75.4 mi/h LOS and Performance Measures Flow rate, vp 1296 pc/h/ln Free-flow speed, FFS 75.4 mi/h Average passenger-car speed, S 74.0 mi/h Number of lanes, N 2 Density, D 17.5 pc/mi/ln Level of service, LOS В

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Merge Analysis Analyst: ae Agency/Co.: Stantec Agency/Co.:StantecDate performed:8/21/2015Analysis time period:3:00 - 4:00 PM Freeway/Dir of Travel: I-26 Westbound Junction:SC 27 On-RampJurisdiction:SCDOTAnalysis Year:2019 Opening Year Description: 171001612 - No Build _____Freeway Data Type of analysis Merge Number of lanes in freeway 2 75.0 2120 mph Free-flow speed on freeway Volume on freeway vph _____On Ramp Data_____ Side of freeway Right Number of lanes in ramp 1 mph Free-flow speed on ramp 35.0 vph Volume on ramp 233 Length of first accel/decel lane 925 ft Length of second accel/decel lane ft _____Adjacent Ramp Data (if one exists)_____ Yes 498 Does adjacent ramp exist? Volume on adjacent Ramp vph Position of adjacent Ramp Upstream Type of adjacent Ramp Off Distance to adjacent Ramp 2175 ft Conversion to pc/h Under Base Conditions Freeway Ramp Adjacent Junction Components Ramp

 2120
 233

 0.90
 0.90

 589
 65

 20
 20

 0
 0

 Volume, V (vph) vph 498 Peak-hour factor, PHF 0.90 138 v Peak 15-min volume, v15
 589
 65
 138

 20
 20
 20

 0
 0
 0

 Level
 Level
 Level
 Trucks and buses 8 00 Recreational vehicles Terrain type: ۶ mi % mi 00 Grade Lenqth mi Trucks and buses PCE, ET Recreational vehicle PCE, ER mi mi 1.5 1.5 1.5 1.2 1.2 1.2 1.5

Heavy vehicle adjustment, fHV Driver population factor, fP Flow rate, vp	0.909 1.00 2591	1.00	0.909 1.00 609	pcph
Estimation	of V12 Merge	Areas		
L = (E EQ	quation 13-6	or 13-7)		
P = 1.000 Us FM	ing Equation	0		
v = v (P) = 2 12 F FM	591 pc/h			
Capac	ity Checks			
v 2876	Maximum 4800		LOS F? No	
	(Equation	on 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 = 2591 12A	(Equation 3	13-15, 13	-16, 13-18,	or 13-19)
Flow Enterin Actual v 2876 R12 Level of Service De	Max Desirable 4600	2	Violation? No	
Density, D = $5.475 + 0.00734 v + 0$. R R Level of service for ramp-freeway ju	12	A		pc/m1/11
Speed E	stimation			
Intermediate speed variable,		= 0.325		
Space mean speed in ramp influence a		= 64.3	mph	
Space mean speed in outer lanes,	R S = 0	= N/A	mph	
Space mean speed for all vehicles,		= 64.3	mph	

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___Operational Analysis______ Analyst: ae Agency or Company: Stantec Date Performed: 8/21/2015 From/To: West of SC 27 Jurisdiction: SCDOT Analysis Year: 2019 Opening Year Description: 171001612 - No Build Flow Inputs and Adjustments Volume, V veh/h 2353 Peak-hour factor, PHF 0.90 Peak 15-min volume, v15 654 v Trucks and buses 20 % Recreational vehicles % 0 Terrain type: Level 00 Grade _ Segment length mi Trucks and buses PCE, ET 1.5 Recreational vehicle PCE, ER 1.2 Heavy vehicle adjustment, fHV 0.909 Driver population factor, fp 1.00 Flow rate, vp 1438 pc/h/ln _____Speed Inputs and Adjustments_____ Lane width ft 12.0 Right-side lateral clearance 6.0 ft Total ramp density, TRD 0.00 ramps/mi Number of lanes, N 2 Free-flow speed: Base FFS or BFFS 75.4 mi/h Lane width adjustment, fLW 0.0 mi/h mi/h Lateral clearance adjustment, fLC 0.0 TRD adjustment 0.0 mi/h Free-flow speed, FFS 75.4 mi/h LOS and Performance Measures Flow rate, vp 1438 pc/h/ln Free-flow speed, FFS 75.4 mi/h Average passenger-car speed, S 72.9 mi/h Number of lanes, N 2 19.7 Density, D pc/mi/ln Level of service, LOS С

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___Operational Analysis______ Analyst: ae Agency or Company: Stantec Date Performed: 8/21/2015 Date Performed:8/21/2015Analysis Time Period:3:00 - 4:00 PMFreeway/Direction:I-26 Eastbound From/To: West of SC 27 Jurisdiction: SCDOT Analysis Year: 2019 Opening Year Description: 171001612 - Build Flow Inputs and Adjustments Volume, V veh/h 2249 Peak-hour factor, PHF 0.90 Peak 15-min volume, v15 625 V Trucks and buses 20 % Recreational vehicles % 0 Terrain type: Level 00 Grade _ Segment length mi Trucks and buses PCE, ET 1.5 Recreational vehicle PCE, ER 1.2 Heavy vehicle adjustment, fHV 0.909 Driver population factor, fp 1.00 Flow rate, vp 1374 pc/h/ln _____Speed Inputs and Adjustments_____ Lane width ft 12.0 Right-side lateral clearance 6.0 ft Total ramp density, TRD 0.00 ramps/mi Number of lanes, N 2 Free-flow speed: Base FFS or BFFS 75.4 mi/h Lane width adjustment, fLW 0.0 mi/h mi/h Lateral clearance adjustment, fLC 0.0 TRD adjustment 0.0 mi/h Free-flow speed, FFS 75.4 mi/h LOS and Performance Measures Flow rate, vp 1374 pc/h/ln Free-flow speed, FFS 75.4 mi/h Average passenger-car speed, S 73.5 mi/h Number of lanes, N 2 Density, D 18.7 pc/mi/ln Level of service, LOS С

Fax:

_____Diverge Analysis Analyst: ae Agency/Co.: Stantec Agency/Co.:StantecDate performed:8/21/2015Analysis time period:3:00 - 4:00 PM Freeway/Dir of Travel: I-26 Eastbound Junction:SC 27 Off-RampJurisdiction:SCDOTAnalysis Year:2019 Opening Year Description: 171001612 - Build _____Freeway Data Type of analysis Diverge Number of lanes in freeway 2 75.0 mph 2249 vph Free-flow speed on freeway Volume on freeway _____Off Ramp Data______ Side of freeway Right Number of lanes in ramp 1 mph Free-Flow speed on ramp 35.0 vph Volume on ramp 105 Length of first accel/decel lane 450 ft Length of second accel/decel lane ft _____Adjacent Ramp Data (if one exists)_____ Yes 260 Does adjacent ramp exist? Volume on adjacent ramp vph Position of adjacent ramp Downstream Type of adjacent ramp On ft Distance to adjacent ramp 2330 _____Conversion to pc/h Under Base Conditions_____ Junction Components Freeway Ramp Adjacent Ramp

 2249
 105

 0.90
 0.90

 625
 29

 20
 20

 0
 0

 Volume, V (vph) vph 260 0.90 72 Peak-hour factor, PHF ∠U 0 Level Peak 15-min volume, v15 v Trucks and buses 20 % 20 0 00 Recreational vehicles 0 0 9 Level Level 0.00 % 0.00 % 0.00 % Terrain type: Grade 0.00 mi 0.00 mi 0.00 1.5* 1.5 1.5 1.2 1.2 1.2 Length mi Length Trucks and buses PCE, ET Recreational vehicle PCE, ER

	justment, fHV n factor, fP	1.00	1.00	1.00	pcph			
Estimation of V12 Diverge Areas								
	L = EQ	(Equation	13-12 or 13-	-13)				
	P = 1.000 Using Equation 0 FD							
	v = v + (v - v 12 R F		749 pc/h					
Capacity Checks								
V = V Fi F		Max 480		LOS F? No				
V = V - V FO F R	2621	480	0	No				
v R	128	200	0	No				
v or v 3 av34		c/h (Eq	uation 13-14	1 or 13-17)				
	> 2700 pc/h?	No						
	> 1.5 v /2	No						
If yes, v = 27 12A		(Equat	ion 13-15, 1	13-16, 13-18,	or 13-19)			
	Flow Enterin							
		Max Desi 4400	rable	Violation? No				
12	Level of Service	Determinat	ion (if not	F)				
Density, D = 4.252 + 0.0086 v - 0.009 L = 23.8 pc/mi/ln								
Level of service	R for ramp-freeway	-	2 I reas of infl					
	Speed	d Estimatic	n					
Intermediate spee	ed variable,		D = 0.440 S					
Space mean speed	in ramp influence	e area,	S = 60.5	mph				
Space mean speed	in outer lanes,		S = N/A	mph				
Space mean speed	for all vehicles	,	S = 60.5	mph				

Fax:

___Operational Analysis______ Analyst: ae Agency or Company: Stantec Date Performed: 8/21/2015 Date Performed:8/21/2015Analysis Time Period:3:00 - 4:00 PMFreeway/Direction:I-26 Eastbound SC 27 Interchange From/To: Jurisdiction: SCDOT Analysis Year: 2019 Opening Year Description: 171001612 - Build Flow Inputs and Adjustments Volume, V veh/h 2144 Peak-hour factor, PHF 0.90 Peak 15-min volume, v15 596 v Trucks and buses 20 % Recreational vehicles % 0 Terrain type: Level 00 Grade _ Segment length mi Trucks and buses PCE, ET 1.5 Recreational vehicle PCE, ER 1.2 Heavy vehicle adjustment, fHV 0.909 Driver population factor, fp 1.00 Flow rate, vp 1310 pc/h/ln _____Speed Inputs and Adjustments_____ Lane width ft 12.0 Right-side lateral clearance 6.0 ft Total ramp density, TRD 0.00 ramps/mi Number of lanes, N 2 Free-flow speed: Base FFS or BFFS 75.4 mi/h Lane width adjustment, fLW 0.0 mi/h mi/h Lateral clearance adjustment, fLC 0.0 TRD adjustment 0.0 mi/h Free-flow speed, FFS 75.4 mi/h LOS and Performance Measures Flow rate, vp 1310 pc/h/ln Free-flow speed, FFS 75.4 mi/h Average passenger-car speed, S 73.9 mi/h Number of lanes, N 2 17.7 Density, D pc/mi/ln Level of service, LOS В

Phone: Fax: E-mail: Merge Analysis Analyst: ae Agency/Co.: Stantec Agency/Co.:StantecDate performed:8/21/2015Analysis time period:3:00 - 4:00 PM Freeway/Dir of Travel: I-26 Eastbound SC 27 On-Ramp Junction:SC 27 On-RampJurisdiction:SCDOTAnalysis Year:2019 Opening Year Description: 171001612 - Build _____Freeway Data____ Type of analysis Merge Number of lanes in freeway 2 75.0 mph 2144 vph Free-flow speed on freeway Volume on freeway vph _____On Ramp Data_____ Side of freeway Right Number of lanes in ramp 1 mph Free-flow speed on ramp 35.0 vph Volume on ramp 260 Length of first accel/decel lane 800 ft Length of second accel/decel lane ft Yes 105 Does adjacent ramp exist? Volume on adjacent Ramp vph Position of adjacent Ramp Upstream Type of adjacent Ramp Off Distance to adjacent Ramp 2330 ft Junction Components Ramp Volume, V (vph) 105

Terrain type:

Grade Lenqth

Trucks and buses PCE, ET Recreational vehicle PCE, ER

_____Adjacent Ramp Data (if one exists)_____ Conversion to pc/h Under Base Conditions Freeway Ramp Adjacent

 2144
 260

 0.90
 0.90

 596
 72

 20
 20

 0
 0

 vph 0.90 Peak-hour factor, PHF 29 Peak 15-min volume, v15 v 20 0 I.e. 20 20 20 0 0 0 Level Level Level % % mi mi Trucks and buses % 00 Recreational vehicles

% mi

mi mi 1.5 1.5 1.5 1.2 1.2 1.2

00

1.5

mi

Heavy vehicle adjustment, fHV Driver population factor, fP Flow rate, vp	0.909 1.00 2620	1.00		pcph				
Estimation	of V12 Merge	Areas						
	Equation 13-6	or 13-7)						
EQ P = 1.000 Us FM	ing Equation	0						
v = v (P) = 2 12 F FM	2620 pc/h							
Capacity Checks								
Actual v 2938 FO	Maximum 4800		LOS F? No					
vorv 0 pc/h	n (Equati	on 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 = 2620 12A	(Equation	13-15, 13	-16, 13-18,	or 13-19)				
R12	Max Desirabl 4600	e	Violation? No					
Level of Service Determination (if not F)								
Density, D = $5.475 + 0.00734 v + 0.$ R R Level of service for ramp-freeway ju	12	A		pc/mi/ln				
Speed Estimation								
Intermediate speed variable, M = 0.339								
Space mean speed in ramp influence a		= 63.8	mph					
Space mean speed in outer lanes,		= N/A	mph					
Space mean speed for all vehicles,	0 S	= 63.8	mph					

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___Operational Analysis_____ Analyst: ae Agency or Company: Stantec Date Performed: 8/21/2015 Date Performed:8/21/2015Analysis Time Period:3:00 - 4:00 PMFreeway/Direction:I-26 Eastbound From/To: SC 27 to New Interchange Jurisdiction: SCDOT Analysis Year: 2019 Opening Year Description: 171001612 - Build Flow Inputs and Adjustments Volume, V veh/h 2404 Peak-hour factor, PHF 0.90 Peak 15-min volume, v15 668 v Trucks and buses 20 % Recreational vehicles % 0 Terrain type: Level 00 Grade _ Segment length mi Trucks and buses PCE, ET 1.5 Recreational vehicle PCE, ER 1.2 Heavy vehicle adjustment, fHV 0.909 Driver population factor, fp 1.00 Flow rate, vp 1469 pc/h/ln _____Speed Inputs and Adjustments_____ Lane width ft 12.0 Right-side lateral clearance 6.0 ft Total ramp density, TRD 0.67 ramps/mi Number of lanes, N 2 Free-flow speed: Base FFS or BFFS 75.4 mi/h Lane width adjustment, fLW 0.0 mi/h mi/h Lateral clearance adjustment, fLC 0.0 TRD adjustment mi/h 2.3 Free-flow speed, FFS 73.1 mi/h LOS and Performance Measures Flow rate, vp 1469 pc/h/ln Free-flow speed, FFS 73.1 mi/h Average passenger-car speed, S 72.6 mi/h Number of lanes, N 2 20.2 Density, D pc/mi/ln Level of service, LOS С

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	Operational Ar	nalysis	
Analyst:	ae		
	Stantec		
Date Performed:	8/21/2015		
Analysis Time Period:	3:00 - 4:00 PM		
Freeway/Direction:			
	New Interchange	e Off-Ramp Area	
Jurisdiction:	SCDOT		
Analysis Year:		ear	
Description: 171001612	- Build		
	Flow Inputs ar	nd Adjustments	
Volume, V		2404	veh/h
Peak-hour factor, PHF		0.90	,
Peak 15-min volume, v15		668	v
Trucks and buses		20	0€
Recreational vehicles		0	010
Terrain type:		Level	-
Grade		-	0
Segment length		_	mi
Trucks and buses PCE, E	Т	1.5	
Recreational vehicle PC		1.2	
Heavy vehicle adjustmen		0.909	
Driver population facto		1.00	
Flow rate, vp	-, -P	979	pc/h/ln
	Speed Inputs a	and Adjustments	
Lane width		12.0	ft
Right-side lateral clea		6.0	ft
Total ramp density, TRD		0.67	ramps/mi
Number of lanes, N		3	
Free-flow speed:		Base	
FFS or BFFS	_	75.4	mi/h
Lane width adjustment,		0.0	mi/h
Lateral clearance adjus	tment, fLC	0.0	mi/h
TRD adjustment		2.3	mi/h
Free-flow speed, FFS		73.1	mi/h
	LOS and Perfor	mance Measures_	
Flow rate, vp		979	pc/h/ln
Free-flow speed, FFS		73.1	mi/h
Average passenger-car s	peed, S	75.0	mi/h
Number of lanes, N	L/	3	,
Density, D		13.1	pc/mi/ln
Level of service, LOS		B	<u>P</u> · / ···· / ···
		_	

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___Operational Analysis_____ Analyst: ae Agency or Company: Stantec Date Performed: 8/21/2015 Date Performed:8/21/2015Analysis Time Period:3:00 - 4:00 PMFreeway/Direction:I-26 Eastbound From/To: New Interchange Jurisdiction: SCDOT Analysis Year: 2019 Opening Year Description: 171001612 - Build Flow Inputs and Adjustments Volume, V veh/h 2388 Peak-hour factor, PHF 0.90 Peak 15-min volume, v15 663 v Trucks and buses 20 % Recreational vehicles % 0 Terrain type: Level 00 Grade _ Segment length mi Trucks and buses PCE, ET 1.5 Recreational vehicle PCE, ER 1.2 Heavy vehicle adjustment, fHV 0.909 Driver population factor, fp 1.00 Flow rate, vp 1459 pc/h/ln _____Speed Inputs and Adjustments_____ Lane width ft 12.0 Right-side lateral clearance 6.0 ft Total ramp density, TRD 0.67 ramps/mi Number of lanes, N 2 Free-flow speed: Base FFS or BFFS 75.4 mi/h Lane width adjustment, fLW 0.0 mi/h mi/h Lateral clearance adjustment, fLC 0.0 TRD adjustment mi/h 2.3 Free-flow speed, FFS 73.1 mi/h LOS and Performance Measures Flow rate, vp 1459 pc/h/ln Free-flow speed, FFS 73.1 mi/h Average passenger-car speed, S 72.7 mi/h Number of lanes, N 2 Density, D 20.1 pc/mi/ln Level of service, LOS С

Fax:

___Operational Analysis_____ Analyst: ae Agency or Company: Stantec Date Performed: 8/21/2015 Date Performed:8/21/2015Analysis Time Period:3:00 - 4:00 PMFreeway/Direction:I-26 Eastbound From/To: New Interchange 2 On Ramp Jurisdiction: SCDOT Analysis Year: 2019 Opening Year Description: 171001612 - Build Flow Inputs and Adjustments Volume, V veh/h 3037 Peak-hour factor, PHF 0.90 Peak 15-min volume, v15 844 v Trucks and buses 20 % Recreational vehicles % 0 Terrain type: Level 00 Grade _ Segment length mi Trucks and buses PCE, ET 1.5 Recreational vehicle PCE, ER 1.2 Heavy vehicle adjustment, fHV 0.909 Driver population factor, fp 1.00 Flow rate, vp 928 pc/h/ln _____Speed Inputs and Adjustments_____ Lane width ft 12.0 Right-side lateral clearance 6.0 ft Total ramp density, TRD 0.67 ramps/mi Number of lanes, N 4 Free-flow speed: Base FFS or BFFS 75.4 mi/h Lane width adjustment, fLW 0.0 mi/h mi/h Lateral clearance adjustment, fLC 0.0 TRD adjustment mi/h 2.3 Free-flow speed, FFS 73.1 mi/h LOS and Performance Measures Flow rate, vp 928 pc/h/ln Free-flow speed, FFS 73.1 mi/h Average passenger-car speed, S 75.0 mi/h Number of lanes, N 4 Density, D 12.4 pc/mi/ln Level of service, LOS В

Fax:

___Operational Analysis_____ Analyst: ae Agency or Company: Stantec Date Performed: 8/21/2015 Date Performed:8/21/2015Analysis Time Period:3:00 - 4:00 PMFreeway/Direction:I-26 Eastbound From/To: New Interchange 1 On Ramp Jurisdiction: SCDOT Analysis Year: 2019 Opening Year Description: 171001612 - Build Flow Inputs and Adjustments Volume, V veh/h 3037 Peak-hour factor, PHF 0.90 Peak 15-min volume, v15 844 V Trucks and buses 20 % Recreational vehicles % 0 Terrain type: Level 00 Grade _ Segment length mi Trucks and buses PCE, ET 1.5 Recreational vehicle PCE, ER 1.2 Heavy vehicle adjustment, fHV 0.909 Driver population factor, fp 1.00 Flow rate, vp 1237 pc/h/ln _____Speed Inputs and Adjustments_____ ft Lane width 12.0 Right-side lateral clearance 6.0 ft Total ramp density, TRD 0.67 ramps/mi Number of lanes, N 3 Free-flow speed: Base FFS or BFFS 75.4 mi/h Lane width adjustment, fLW 0.0 mi/h mi/h Lateral clearance adjustment, fLC 0.0 TRD adjustment mi/h 2.3 Free-flow speed, FFS 73.1 mi/h LOS and Performance Measures Flow rate, vp 1237 pc/h/ln Free-flow speed, FFS 73.1 mi/h Average passenger-car speed, S 74.4 mi/h Number of lanes, N 3 Density, D 16.6 pc/mi/ln Level of service, LOS В

Fax:

___Operational Analysis_____ Analyst: ae Agency or Company: Stantec Date Performed: 8/21/2015 Date Performed:8/21/2015Analysis Time Period:3:00 - 4:00 PMFreeway/Direction:I-26 Eastbound From/To: New Interchange to Jedburg Jurisdiction: SCDOT Analysis Year: 2019 Opening Year Description: 171001612 - Build Flow Inputs and Adjustments Volume, V veh/h 3037 Peak-hour factor, PHF 0.90 Peak 15-min volume, v15 844 v Trucks and buses 20 % Recreational vehicles % 0 Terrain type: Level 00 Grade _ Segment length mi Trucks and buses PCE, ET 1.5 Recreational vehicle PCE, ER 1.2 Heavy vehicle adjustment, fHV 0.909 Driver population factor, fp 1.00 Flow rate, vp 1856 pc/h/ln _____Speed Inputs and Adjustments_____ Lane width ft 12.0 Right-side lateral clearance 6.0 ft Total ramp density, TRD 0.67 ramps/mi Number of lanes, N 2 Free-flow speed: Base FFS or BFFS 75.4 mi/h Lane width adjustment, fLW 0.0 mi/h mi/h Lateral clearance adjustment, fLC 0.0 TRD adjustment mi/h 2.3 Free-flow speed, FFS 73.1 mi/h LOS and Performance Measures Flow rate, vp 1856 pc/h/ln Free-flow speed, FFS 73.1 mi/h Average passenger-car speed, S 66.9 mi/h Number of lanes, N 2 27.7 Density, D pc/mi/ln Level of service, LOS D

Fax:

_____Diverge Analysis Analyst: ae Agency/Co.: Stantec Agency/Co.:StantecDate performed:8/21/2015Analysis time period:3:00 - 4:00 PM Freeway/Dir of Travel: I-26 Eastbound Junction:Jedburg Off-RampJurisdiction:SCDOTAnalysis Year:2019 Opening Year Description: 171001612 - Build _____Freeway Data Type of analysis Diverge Number of lanes in freeway 2 73.1 mph 3037 vph Free-flow speed on freeway Volume on freeway _____Off Ramp Data______ Side of freeway Right Number of lanes in ramp 1 mph Free-Flow speed on ramp 35.0 vph Volume on ramp 119 500 Length of first accel/decel lane ft Length of second accel/decel lane ft _____Adjacent Ramp Data (if one exists)_____ Yes 615 Does adjacent ramp exist? Volume on adjacent ramp vph Position of adjacent ramp Downstream Type of adjacent ramp On ft Distance to adjacent ramp 1620 _____Conversion to pc/h Under Base Conditions_____ Junction Components Freeway Ramp Adjacent Ramp

 3037
 119

 0.90
 0.90

 844
 33

 20
 20

 0
 0

 Volume, V (vph) vph 615 Peak-hour factor, PHF 0.90 171 20 0 Levr⁻ Peak 15-min volume, v15 v 20 0 Trucks and buses % 00 Recreational vehicles 0 0 9 Level Level 0.00 % 0.00 % 0.00 % Terrain type: Grade 0.00 mi 0.00 mi 0.00 1.5 1.5 1.5 1.2 1.2 1.2 Length mi Lengtn Trucks and buses PCE, ET 1.5 1.2 Recreational vehicle PCE, ER

Estimation of V12 L = (Equation EQ P = 1.000 Using Equ	13-12 or 13-2 ation 0		
EQ $P = 1.000 Using Equ$	ation 0	13)	
P = 1.000 Using Equ			
FD	3712 pc/h		
v = v + (v - v) P = 12 R F R FD	-		
Capacity Che	cks		
v = v Fi F $Actual Max$ $3712 48$		LOS F? No	
v = v - v 3567 48 FO F R	0 0	No	
v 145 20 R	0 0	No	
vorv 0 pc/h (E	quation 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 = 3712 (Equa 12A	tion 13-15, 13	3-16, 13-18,	or 13-19)
Flow Entering Diverge			
v Actual Max Des 4400	irable	Violation? No	
12 Level of Service Determina	tion (if not 1	F)	
Density, $D = 4.252 + 0.0086 v$	- 0.009 L 12 D	= 31.7	pc/mi/ln
Level of service for ramp-freeway junction		lence D	
Speed Estimation	on		
Intermediate speed variable,	D = 0.441 S		
Space mean speed in ramp influence area,	S = 59.4	mph	
Space mean speed in outer lanes,	R = N/A	mph	
Space mean speed for all vehicles,	S = 59.4	mph	

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___Operational Analysis_____ Analyst: ae Agency or Company: Stantec Date Performed: 8/21/2015 Date Performed:8/21/2015Analysis Time Period:3:00 - 4:00 PMFreeway/Direction:I-26 Eastbound From/To: Jedburg Interchange Jurisdiction: SCDOT Analysis Year: 2019 Opening Year Description: 171001612 - Build Flow Inputs and Adjustments Volume, V veh/h 2918 Peak-hour factor, PHF 0.90 Peak 15-min volume, v15 811 V Trucks and buses 20 % Recreational vehicles % 0 Terrain type: Level 00 Grade _ Segment length mi Trucks and buses PCE, ET 1.5 Recreational vehicle PCE, ER 1.2 Heavy vehicle adjustment, fHV 0.909 Driver population factor, fp 1.00 Flow rate, vp 1783 pc/h/ln _____Speed Inputs and Adjustments_____ Lane width ft 12.0 Right-side lateral clearance 6.0 ft Total ramp density, TRD 0.67 ramps/mi Number of lanes, N 2 Free-flow speed: Base FFS or BFFS 75.4 mi/h Lane width adjustment, fLW 0.0 mi/h mi/h Lateral clearance adjustment, fLC 0.0 TRD adjustment mi/h 2.3 Free-flow speed, FFS 73.1 mi/h LOS and Performance Measures Flow rate, vp 1783 pc/h/ln Free-flow speed, FFS 73.1 mi/h Average passenger-car speed, S 68.2 mi/h Number of lanes, N 2 Density, D 26.1 pc/mi/ln Level of service, LOS D

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	Merge	Analysis				
Analyst:	ae					
Agency/Co.:	Stantec					
Date performed:						
Analysis time period:		т				
Freeway/Dir of Travel:						
Junction:						
Jurisdiction:	SCDOT	¹ P				
Analysis Year:		'ear				
Description: 171001612		Cui				
	Free	way Data_				
Type of analysis		Mer	ge			
Number of lanes in free	-	2				
Free-flow speed on free	way	73.		mph		
Volume on freeway		291	8	vph		
	On F	amp Data_				
Side of freeway		Rig				
Number of lanes in ramp		1				
Free-flow speed on ramp	35.	0	mph			
Volume on ramp	615		vph			
Length of first accel/decel lane		1150		ft		
Length of second accel/	decel lane			ft		
	Adjacent Ramp	Data (if	one exist	s)		
Does adjacent ramp exis	t?	Yes				
		119		vph		
Volume on adjacent Ramp						
	mp	Ups	tream			
Position of adjacent Ran	mp	Ups Off				
Position of adjacent Ram Type of adjacent Ramp	-	_		ft		
Position of adjacent Ram Type of adjacent Ramp Distance to adjacent Ram	-	Off 162	0			
Position of adjacent Ram Type of adjacent Ramp Distance to adjacent Ram Con	mp	Off 162	0		Adjacen	t
Position of adjacent Ran Type of adjacent Ramp Distance to adjacent Ran Con Junction Components	mp	Off 162 N Under Ba	0 se Conditi		Adjacen Ramp 119	
Position of adjacent Ran Type of adjacent Ramp Distance to adjacent Ran Con ⁻ Junction Components Volume, V (vph)	mp	Off 162 Dunder Ba Freeway	0 se Conditi Ramp		Ramp	
Position of adjacent Ran Type of adjacent Ramp Distance to adjacent Ran Con Junction Components Volume, V (vph) Peak-hour factor, PHF	mp	Off 162 Under Ba Freeway 2918	0 se Conditi Ramp 615		Ramp 119	
Position of adjacent Ran Type of adjacent Ramp Distance to adjacent Ran Con Junction Components Volume, V (vph) Peak-hour factor, PHF Peak 15-min volume, v15	mp	Off 162 Under Ba Freeway 2918 0.90	0 se Conditi Ramp 615 0.90		Ramp 119 0.90	vph
Position of adjacent Ran Type of adjacent Ramp Distance to adjacent Ran Con Junction Components Volume, V (vph) Peak-hour factor, PHF Peak 15-min volume, v15 Trucks and buses	mp	Off 162 Under Ba Freeway 2918 0.90 811	0 se Conditi Ramp 615 0.90 171		Ramp 119 0.90 33	vph v
Position of adjacent Ran Type of adjacent Ramp Distance to adjacent Ran Con Junction Components Volume, V (vph) Peak-hour factor, PHF Peak 15-min volume, v15 Trucks and buses Recreational vehicles	mp	Off 162 Under Ba Freeway 2918 0.90 811 20	0 se Conditi Ramp 615 0.90 171 20		Ramp 119 0.90 33 20	vph v %
Position of adjacent Ram Type of adjacent Ramp Distance to adjacent Ram Con Junction Components Volume, V (vph) Peak-hour factor, PHF Peak 15-min volume, v15 Trucks and buses Recreational vehicles	mp	Off 162 Under Ba Freeway 2918 0.90 811 20 0 Level	0 se Conditi Ramp 615 0.90 171 20 0		Ramp 119 0.90 33 20 0	vph v %
Position of adjacent Ram Type of adjacent Ramp Distance to adjacent Ram Con Junction Components Volume, V (vph) Peak-hour factor, PHF Peak 15-min volume, v15 Trucks and buses Recreational vehicles Terrain type: Grade	mp	Off 162 Under Ba Freeway 2918 0.90 811 20 0 Level	0 se Conditi Ramp 615 0.90 171 20 0 Level	ons	Ramp 119 0.90 33 20 0	vph v %
Junction Components Volume, V (vph) Peak-hour factor, PHF Peak 15-min volume, v15 Trucks and buses Recreational vehicles Terrain type:	mp version to pc/h	Off 162 Under Ba Freeway 2918 0.90 811 20 0 Level	0 se Conditi Ramp 615 0.90 171 20 0 Level %	ons	Ramp 119 0.90 33 20 0	vph v % %

Heavy vehicle adjustment, fHV Driver population factor, fP Flow rate, vp		1.00	0.909 1.00 145	pcph
Estimat	ion of V12 Merg	e Areas		
	(Equation 13-	6 or 13-7)		
EQ P = 1.000 FM	Using Equation	n 0		
	= 3566 pc/h			
C	apacity Checks_			
v 4318	l Maximu 4800	m LC Nc	DS F?	
	pc/h (Equat	ion 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 = 3566 12A	(Equation	13-15, 13-1	.6, 13-18, 0	or 13-19)
		le V	iolation? No	
Density, D = 5.475 + 0.00734 v R R Level of service for ramp-freewa	+ 0.0078 v -	- 0.00627 L A	= 31.6	pc/mi/ln
Spe	ed Estimation			
Intermediate speed variable,	М	= 0.533		
Space mean speed in ramp influen		= 56.5 m	ıph	
Space mean speed in outer lanes,		= N/A m	ıph	
Space mean speed for all vehicle	0 s, S	= 56.5 m	ıph	

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___Operational Analysis______ Analyst: ae Agency or Company: Stantec Date Performed: 8/21/2015 Date Performed:8/21/2015Analysis Time Period:3:00 - 4:00 PMFreeway/Direction:I-26 Eastbound From/To: East of Jedburg Jurisdiction: SCDOT Analysis Year: 2019 Opening Year Description: 171001612 - Build Flow Inputs and Adjustments Volume, V veh/h 3533 Peak-hour factor, PHF 0.90 Peak 15-min volume, v15 981 V Trucks and buses 20 % Recreational vehicles % 0 Terrain type: Level 00 Grade _ Segment length mi Trucks and buses PCE, ET 1.5 Recreational vehicle PCE, ER 1.2 Heavy vehicle adjustment, fHV 0.909 Driver population factor, fp 1.00 Flow rate, vp 2159 pc/h/ln _____Speed Inputs and Adjustments_____ Lane width ft 12.0 Right-side lateral clearance 6.0 ft Total ramp density, TRD 1.17 ramps/mi Number of lanes, N 2 Free-flow speed: Base FFS or BFFS 75.4 mi/h Lane width adjustment, fLW 0.0 mi/h mi/h Lateral clearance adjustment, fLC 0.0 TRD adjustment mi/h 3.7 Free-flow speed, FFS 71.7 mi/h LOS and Performance Measures Flow rate, vp 2159 pc/h/ln Free-flow speed, FFS 71.7 mi/h Average passenger-car speed, S 59.3 mi/h Number of lanes, N 2 Density, D 36.4 pc/mi/ln Level of service, LOS Ε

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____Operational Analysis______ Analyst: ae Agency or Company: Stantec Date Performed: 8/21/2015 Date Performed:8/21/2015Analysis Time Period:3:00 - 4:00 PMFreeway/Direction:I-26 Westbound From/To: East of Jedburg Jurisdiction: SCDOT Analysis Year: 2019 Opening Year Description: 171001612 - Build Flow Inputs and Adjustments Volume, V veh/h 3336 Peak-hour factor, PHF 0.90 Peak 15-min volume, v15 927 V Trucks and buses 20 % Recreational vehicles % 0 Terrain type: Level 00 Grade _ Segment length mi Trucks and buses PCE, ET 1.5 Recreational vehicle PCE, ER 1.2 Heavy vehicle adjustment, fHV 0.909 Driver population factor, fp 1.00 Flow rate, vp 2039 pc/h/ln _____Speed Inputs and Adjustments_____ Lane width ft 12.0 Right-side lateral clearance 6.0 ft Total ramp density, TRD 1.33 ramps/mi Number of lanes, N 2 Free-flow speed: Base FFS or BFFS 75.4 mi/h Lane width adjustment, fLW 0.0 mi/h mi/h Lateral clearance adjustment, fLC 0.0 TRD adjustment mi/h 4.1 Free-flow speed, FFS 71.3 mi/h LOS and Performance Measures Flow rate, vp 2039 pc/h/ln Free-flow speed, FFS 71.3 mi/h Average passenger-car speed, S 61.8 mi/h Number of lanes, N 2 Density, D 33.0 pc/mi/ln Level of service, LOS D

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_____Diverge Analysis Analyst: ae Agency/Co.: Stantec Agency/Co.:StantecDate performed:8/21/2015Analysis time period:3:00 - 4:00 PM Freeway/Dir of Travel: I-26 Westbound Junction:Jedburg Off-RampJurisdiction:SCDOTAnalysis Year:2019 Opening Year Description: 171001612 - Build _____Freeway Data Type of analysis Diverge Number of lanes in freeway 2 71.3 mph 3336 vph Free-flow speed on freeway Volume on freeway _____Off Ramp Data______ Side of freeway Right Number of lanes in ramp 1 mph Free-Flow speed on ramp 35.0 vph Volume on ramp 239 Length of first accel/decel lane 750 ft Length of second accel/decel lane ft _____Adjacent Ramp Data (if one exists)_____ Does adjacent ramp exist? Yes 575 Volume on adjacent ramp vph Position of adjacent ramp Downstream Type of adjacent ramp Off Distance to adjacent ramp 750 ft _____Conversion to pc/h Under Base Conditions_____ Junction Components Freeway Ramp Adjacent Ramp

 3336
 239

 0.90
 0.90

 927
 66

 20
 20

 0
 0

 Volume, V (vph) 575 vph 0.90 160 Peak-hour factor, PHF Peak 15-min volume, v15 v 2 0 0 Trucks and buses % 00 Recreational vehicles 0 0 0 8 Level Level Level 0.00 % 0.00 % 0.00 % Terrain type: Grade 0.00 mi 0.00 mi 0.00 1.5 1.5 1.5 1.2 1.2 1.2 Length mi Trucks and buses PCE, ET 1.5 1.2 Recreational vehicle PCE, ER

	ustment, fHV 1 factor, fP	1.00		1.00	pcph
	Estimatic	on of V12 D	iverge Areas	5	
	L = EQ	(Equation	13-12 or 13-	-13)	
	P = 1.000 FD	Using Equa	tion 0		
	v = v + (v - v 12 R F		077 pc/h		
	Cap	acity Chec	ks		
V = V Fi F		Max 480		LOS F? No	
v = v - v FO F R	3785	480	0	No	
v R	292	200	0	No	
v or v 3 av34		/h (Eq	uation 13-14	l or 13-17)	
Is v or v	> 2700 pc/h?	No			
	> 1.5 v /2	No			
3 av34 If yes, v = 40 12A		(Equat	ion 13-15, 1	L3-16, 13-18,	or 13-19)
	Flow Enterin				
v	Actual 4077	Max Desi 4400	rable	Violation? No	
12	Level of Service	Determinat	ion (if not	F)	
Density,	D = 4.252 + R	0.0086 v 1		= 32.6	pc/mi/ln
Level of service	for ramp-freeway	junction a	reas of infl	luence D	
	Speed	l Estimatio	n		
Intermediate spee	ed variable,		D = 0.454 S		
Space mean speed	in ramp influence	area,	S = 58.0 R	mph	
Space mean speed	in outer lanes,		S = N/A	mph	
Space mean speed	for all vehicles,		0 S = 58.0	mph	

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___Operational Analysis_____ Analyst: ae Agency or Company: Stantec Date Performed: 8/21/2015 Date Performed:8/21/2015Analysis Time Period:3:00 - 4:00 PMFreeway/Direction:I-26 Westbound From/To: Jedburg Interchange Jurisdiction: SCDOT Analysis Year: 2019 Opening Year Description: 171001612 - Build Flow Inputs and Adjustments Volume, V veh/h 3097 Peak-hour factor, PHF 0.90 Peak 15-min volume, v15 860 V Trucks and buses 20 % Recreational vehicles % 0 Terrain type: Level 00 Grade _ Segment length mi Trucks and buses PCE, ET 1.5 Recreational vehicle PCE, ER 1.2 Heavy vehicle adjustment, fHV 0.909 Driver population factor, fp 1.00 Flow rate, vp 1893 pc/h/ln _____Speed Inputs and Adjustments_____ Lane width ft 12.0 Right-side lateral clearance 6.0 ft Total ramp density, TRD 1.33 ramps/mi Number of lanes, N 2 Free-flow speed: Base FFS or BFFS 75.4 mi/h Lane width adjustment, fLW 0.0 mi/h mi/h Lateral clearance adjustment, fLC 0.0 TRD adjustment mi/h 4.1 Free-flow speed, FFS 71.3 mi/h LOS and Performance Measures Flow rate, vp 1893 pc/h/ln Free-flow speed, FFS 71.3 mi/h Average passenger-car speed, S 64.4 mi/h Number of lanes, N 2 Density, D 29.4 pc/mi/ln Level of service, LOS D

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8/21/2015								
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I-26 Westbour	nd							
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2019 Opening	Year							
Fre	eeway Dat	a						
	Ľ	iverg	e					
yay	2	2						
yay	7	1.3		mph				
	3	097		vph				
Off	Ramp Dat	a						
	R	light						
		-						
Number of lanes in ramp Free-Flow speed on ramp			35.0					
Volume on ramp			575			-		
cel lane	7	50		ft				
				ft				
_Adjacent Ram	np Data (if on	e exist	s)				
?	Y	es						
	2	39		vph				
ıp	Ŭ	Jpstre	am					
-	C	ff						
ıp	7	50		ft				
rersion to pc/	'h Under	Base	Conditi	ons				
	Freewa	ıy	Ramp		Adjace	nt		
	2007		57F		-	h		
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	ae Stantec 8/21/2015 3:00 - 4:00 H I-26 Westbour Jedburg Loop SCDOT 2019 Opening - Build Fre May Yay Contended of the second Contended of the se	ae Stantec 8/21/2015 3:00 - 4:00 PM I-26 Westbound Jedburg Loop Off-Ramp SCDOT 2019 Opening Year - Build Freeway Dat ay Off Ramp Dat Off Ramp Dat 	ae Stantec 8/21/2015 3:00 - 4:00 PM I-26 Westbound Jedburg Loop Off-Ramp SCDOT 2019 Opening Year - Build Freeway Data Off Ramp Data Off Ramp Data Off Ramp Data Right 1 35.0 575 scel lane Lecel lane Adjacent Ramp Data (if on .? Yes 239 Mp Upstree Off Mp 750 rersion to pc/h Under Base Freeway 3097 0.90 860 20 0 Level 0.00 % 0.00 mi 1.5	ae Stantec 8/21/2015 3:00 - 4:00 PM I-26 Westbound Jedburg Loop Off-Ramp SCDOT 2019 Opening Year - Build Freeway Data Preeway Data agy 71.3 3097 Off Ramp Data Right 1 35.0 575 575 575 575 239 ap Upstream Off ap 750 rersion to pc/h Under Base Conditi Freeway Ramp 3097 575 0.90 0.90 860 160 20 20 0 Level Level 0.00 % 0.00 0.00 mi 0.00 1.5 1.5	ae Stantec 8/21/2015 3:00 - 4:00 PM I-26 Westbound Jedburg Loop Off-Ramp SCDOT 2019 Opening Year - Build Freeway Data Off Ramp Data Off Ramp Data Off Ramp Data Right 1 35.0 mph 575 vph 575	Stantec 8/21/2015 3:00 - 4:00 PM 1-26 Westbound Jedburg Loop Off-Ramp SCDOT 2019 Opening Year - Build Freeway Data ray 71.3 mph 3097 vph Off Ramp Data Right 1 35.0 mph 575 vph 575 t1 rersion to pc/h Under Base Conditions Freeway Ramp Adjaces Ramp 3097 575 239 0.90 0.90 0.90 860 160 66 20 20 20 0 0 0 Level Level Level 0.00 % 0.00 % 0.00 1.5 1.5 1.5 1.5		

	justment, fHV 1 factor, fP		1.00	9 0.909 1.00 292	pcph
	Estimatic	n of V12 D	iverge Areas	5	
	L = EQ	(Equation	13-12 or 13-	-13)	
	EQ P = 1.000 FD	Using Equa	tion 0		
	v = v + (v - v) 12 R F		785 pc/h		
	Cap	acity Chec	ks		
V = V Fi F		Max 480		LOS F? No	
v = v - v FO F R	3082	480	0	No	
v R	703	200	0	No	
v or v		/h (Eq	uation 13-14	4 or 13-17)	
	> 2700 pc/h?	No			
	> 1.5 v /2	No			
3 av34 If yes, v = 37 12A		(Equat	ion 13-15, 1	13-16, 13-18,	or 13-19)
	Flow Enterin				
v	Actual 3785	Max Desi 4400	rable	Violation? No	
12	Level of Service	Determinat	ion (if not	F)	
Density,	D = 4.252 + R	0.0086 v 1		= 30.1	pc/mi/ln
Level of service	for ramp-freeway	-			
	Speed	Estimatio	n		
Intermediate spee	ed variable,		D = 0.491 S		
Space mean speed	in ramp influence	area,	S = 56.9	mph	
Space mean speed	in outer lanes,		R = N/A	mph	
Space mean speed	for all vehicles,		0 S = 56.9	mph	

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__Operational Analysis______ Analyst: ae Agency or Company: Stantec Date Performed: 8/21/2015 Date Performed:8/21/2015Analysis Time Period:3:00 - 4:00 PMFreeway/Direction:I-26 Westbound From/To: Jedburg Loop Ramp to On-Ramp Jurisdiction: SCDOT Analysis Year: 2019 Opening Year Description: 171001612 - Build Flow Inputs and Adjustments Volume, V veh/h 2522 Peak-hour factor, PHF 0.90 Peak 15-min volume, v15 701 v Trucks and buses 20 % Recreational vehicles % 0 Terrain type: Level 00 Grade _ Segment length mi Trucks and buses PCE, ET 1.5 Recreational vehicle PCE, ER 1.2 Heavy vehicle adjustment, fHV 0.909 Driver population factor, fp 1.00 Flow rate, vp 1541 pc/h/ln _____Speed Inputs and Adjustments_____ Lane width ft 12.0 Right-side lateral clearance 6.0 ft Total ramp density, TRD 1.33 ramps/mi Number of lanes, N 2 Free-flow speed: Base FFS or BFFS 75.4 mi/h Lane width adjustment, fLW 0.0 mi/h mi/h Lateral clearance adjustment, fLC 0.0 TRD adjustment mi/h 4.1 Free-flow speed, FFS 71.3 mi/h LOS and Performance Measures Flow rate, vp 1541 pc/h/ln Free-flow speed, FFS 71.3 mi/h Average passenger-car speed, S 68.7 mi/h Number of lanes, N 2 Density, D 22.4 pc/mi/ln Level of service, LOS С

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Analyst:	ae						
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Freeway/Dir of Travel: Junction:							
Junction: Jurisdiction:	SCDOT	цр					
Analysis Year:		Vear					
Description: 171001612		Cal					
	Free	eway Data					
Type of analysis		Mer	ge				
Number of lanes in free	-	2					
Free-flow speed on free	way	71.3		mph			
Volume on freeway		2522 vp			ph		
	On H	Ramp Data					
Side of freeway		Rig	nt				
Number of lanes in ramp		1					
Free-flow speed on ramp	35.	0	mph				
Volume on ramp	96		vph				
Length of first accel/decel lane		1300		ft			
Length of second accel/	decel lane			ft			
	Adjacent Ram	Data (if	one exist	s)			
Does adjacent ramp exis	t?	Yes					
Volume on adjacent Ramp		575		vph			
Position of adjacent Ra	mp	Upsi	cream				
Type of adjacent Ramp		Off					
Type of adjacent Ramp	mp	Off 900		ft			
Type of adjacent Ramp Distance to adjacent Ra	mp version to pc/ł	900					
Type of adjacent Ramp Distance to adjacent Ra	_	900			Adjacen	it	
Type of adjacent Ramp Distance to adjacent Ra Con Junction Components	_	900 n Under Bas Freeway	se Conditi Ramp		Ramp		
Type of adjacent Ramp Distance to adjacent Ra Con Junction Components Volume, V (vph)	_	900 1 Under Bas Freeway 2522	se Conditi Ramp 96		Ramp 575		
Type of adjacent Ramp Distance to adjacent Ra Con Junction Components Volume, V (vph) Peak-hour factor, PHF	_	900 1 Under Bas Freeway 2522 0.90	se Conditi Ramp 96 0.90		Ramp 575 0.90	vph	
Type of adjacent Ramp Distance to adjacent Ra Con Junction Components Volume, V (vph) Peak-hour factor, PHF Peak 15-min volume, v15	_	900 1 Under Bas Freeway 2522 0.90 701	se Conditi Ramp 96 0.90 27		Ramp 575 0.90 160	vph v	
Type of adjacent Ramp Distance to adjacent Ra Con Junction Components Volume, V (vph) Peak-hour factor, PHF Peak 15-min volume, v15 Trucks and buses	_	900 1 Under Bas Freeway 2522 0.90 701 20	se Conditi Ramp 96 0.90 27 20		Ramp 575 0.90 160 20	vph v %	
Type of adjacent Ramp Distance to adjacent Ra Con Junction Components Volume, V (vph) Peak-hour factor, PHF Peak 15-min volume, v15 Trucks and buses Recreational vehicles	_	900 D Under Bas Freeway 2522 0.90 701 20 0	se Conditi Ramp 96 0.90 27 20 0		Ramp 575 0.90 160 20 0	vph v	
Type of adjacent Ramp Distance to adjacent Ra Con Junction Components Volume, V (vph) Peak-hour factor, PHF Peak 15-min volume, v15 Trucks and buses Recreational vehicles Terrain type:	_	900 1 Under Bas Freeway 2522 0.90 701 20 0 Level	se Conditi Ramp 96 0.90 27 20 0 Level	ons	Ramp 575 0.90 160 20	vph v % %	
Type of adjacent Ramp Distance to adjacent Ram Con Junction Components Volume, V (vph) Peak-hour factor, PHF Peak 15-min volume, v15 Trucks and buses Recreational vehicles Terrain type: Grade	_	900 1 Under Bas Freeway 2522 0.90 701 20 0 Level	Se Conditi Ramp 96 0.90 27 20 0 Level	ons	Ramp 575 0.90 160 20 0	vph v %	
Type of adjacent Ramp Distance to adjacent Ram Com Junction Components Volume, V (vph) Peak-hour factor, PHF Peak 15-min volume, v15 Trucks and buses Recreational vehicles Terrain type:	version to pc/h	900 1 Under Bas Freeway 2522 0.90 701 20 0 Level	se Conditi Ramp 96 0.90 27 20 0 Level	ons	Ramp 575 0.90 160 20 0	vph v %	

Heavy vehicle adjustment, fHV Driver population factor, fP Flow rate, vp	0.909 1.00 3082	1.00	0.909 1.00 703	pcph
Estimation c	of V12 Merge	Areas		
L = (Eq EQ	uation 13-6	or 13-7)		
P = 1.000 Usi FM	ng Equation	0		
v = v (P) = 30 12 F FM	82 pc/h			
Capaci	ty Checks			
	Maximum 4800		LOS F? No	
	(Equatio	on 13-14	or 13-17)	
Is v or v > 2700 pc/h? 3 av34	No			
Is v or v > 1.5 v /2	No			
3 av34 12 If yes, v = 3082 12A	(Equation 3	13-15, 13	-16, 13-18,	or 13-19)
Flow Entering Actual M v 3199 4 R12 Level of Service Det	lax Desirable 600	2	Violation? No	
Density, D = $5.475 + 0.00734 v + 0.0$ R R Level of service for ramp-freeway jun	12	A		pc/m1/11
Speed Es	timation			
Intermediate speed variable,		= 0.326		
Space mean speed in ramp influence ar		= 61.8	mph	
Space mean speed in outer lanes,	R S = 0	= N/A	mph	
Space mean speed for all vehicles,	Ŭ	= 61.8	mph	

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___Operational Analysis_____ Analyst: ae Agency or Company: Stantec Date Performed: 8/21/2015 Date Performed:8/21/2015Analysis Time Period:3:00 - 4:00 PMFreeway/Direction:I-26 Westbound From/To: Jedburg to New Interchange Jurisdiction: SCDOT Analysis Year: 2019 Opening Year Description: 171001612 - Build Flow Inputs and Adjustments Volume, V veh/h 2618 Peak-hour factor, PHF 0.90 Peak 15-min volume, v15 727 v Trucks and buses 20 % Recreational vehicles % 0 Terrain type: Level 00 Grade _ Segment length mi Trucks and buses PCE, ET 1.5 Recreational vehicle PCE, ER 1.2 Heavy vehicle adjustment, fHV 0.909 Driver population factor, fp 1.00 Flow rate, vp 1600 pc/h/ln _____Speed Inputs and Adjustments_____ Lane width ft 12.0 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 0.0 mi/h mi/h Lateral clearance adjustment, fLC 0.0 TRD adjustment mi/h 2.8 Free-flow speed, FFS 72.6 mi/h LOS and Performance Measures Flow rate, vp 1600 pc/h/ln Free-flow speed, FFS 72.6 mi/h Average passenger-car speed, S 71.0 mi/h Number of lanes, N 2 Density, D 22.5 pc/mi/ln Level of service, LOS С

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___Operational Analysis_____ Analyst: ae Agency or Company: Stantec Date Performed: 8/21/2015 Date Fellormed.8/21/2015Analysis Time Period:3:00 - 4:00 PMFreeway/Direction:I-26 Westbound From/To: New Interchange 1 Off Ramp Jurisdiction: SCDOT Analysis Year: 2019 Opening Year Description: 171001612 - Build Flow Inputs and Adjustments Volume, V veh/h 2618 Peak-hour factor, PHF 0.90 Peak 15-min volume, v15 727 v Trucks and buses 20 % Recreational vehicles % 0 Terrain type: Level 00 Grade _ Segment length mi Trucks and buses PCE, ET 1.5 Recreational vehicle PCE, ER 1.2 Heavy vehicle adjustment, fHV 0.909 Driver population factor, fp 1.00 Flow rate, vp 1067 pc/h/ln _____Speed Inputs and Adjustments_____ ft Lane width 12.0 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 0.0 mi/h mi/h Lateral clearance adjustment, fLC 0.0 TRD adjustment mi/h 2.8 Free-flow speed, FFS 72.6 mi/h LOS and Performance Measures Flow rate, vp 1067 pc/h/ln Free-flow speed, FFS 72.6 mi/h Average passenger-car speed, S 75.0 mi/h Number of lanes, N 3 Density, D 14.2 pc/mi/ln Level of service, LOS В

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___Operational Analysis_____ Analyst: ae Agency or Company: Stantec Date Performed: 8/21/2015 Date Performed:8/21/2015Analysis Time Period:3:00 - 4:00 PMFreeway/Direction:I-26 Westbound From/To: New Interchange 2 Off Ramp SCDOT Jurisdiction: Analysis Year: 2019 Opening Year Description: 171001612 - Build Flow Inputs and Adjustments Volume, V veh/h 2618 Peak-hour factor, PHF 0.90 Peak 15-min volume, v15 727 v Trucks and buses 20 % Recreational vehicles % 0 Terrain type: Level 00 Grade _ Segment length mi Trucks and buses PCE, ET 1.5 Recreational vehicle PCE, ER 1.2 Heavy vehicle adjustment, fHV 0.909 Driver population factor, fp 1.00 Flow rate, vp 800 pc/h/ln _____Speed Inputs and Adjustments_____ Lane width ft 12.0 Right-side lateral clearance 6.0 ft Total ramp density, TRD 0.83 ramps/mi Number of lanes, N 4 Free-flow speed: Base FFS or BFFS 75.4 mi/h Lane width adjustment, fLW 0.0 mi/h mi/h Lateral clearance adjustment, fLC 0.0 TRD adjustment mi/h 2.8 Free-flow speed, FFS 72.6 mi/h LOS and Performance Measures____ Flow rate, vp 800 pc/h/ln Free-flow speed, FFS 72.6 mi/h Average passenger-car speed, S 75.0 mi/h Number of lanes, N 4 Density, D 10.7 pc/mi/ln Level of service, LOS Α

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___Operational Analysis______ Analyst: ae Agency or Company: Stantec Date Performed: 8/21/2015 Date Performed:8/21/2015Analysis Time Period:3:00 - 4:00 PMFreeway/Direction:I-26 Westbound New Interchange From/To: SCDOT Jurisdiction: Analysis Year: 2019 Opening Year Description: 171001612 - Build Flow Inputs and Adjustments Volume, V veh/h 2531 Peak-hour factor, PHF 0.90 Peak 15-min volume, v15 703 v Trucks and buses 20 % Recreational vehicles % 0 Terrain type: Level 00 Grade _ Segment length mi Trucks and buses PCE, ET 1.5 Recreational vehicle PCE, ER 1.2 Heavy vehicle adjustment, fHV 0.909 Driver population factor, fp 1.00 Flow rate, vp 1547 pc/h/ln _____Speed Inputs and Adjustments_____ Lane width ft 12.0 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 0.0 mi/h mi/h Lateral clearance adjustment, fLC 0.0 TRD adjustment mi/h 2.8 Free-flow speed, FFS 72.6 mi/h LOS and Performance Measures Flow rate, vp 1547 pc/h/ln Free-flow speed, FFS 72.6 mi/h Average passenger-car speed, S 71.7 mi/h Number of lanes, N 2 Density, D 21.6 pc/mi/ln Level of service, LOS С

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___Operational Analysis_____ Analyst: ae Agency or Company: Stantec Date Performed: 8/21/2015 Date Fellormed.8/21/2015Analysis Time Period:3:00 - 4:00 PMFreeway/Direction:I-26 Westbound From/To: New Interchange On Ramp Jurisdiction: SCDOT Analysis Year: 2019 Opening Year Description: 171001612 - Build Flow Inputs and Adjustments Volume, V veh/h 2667 Peak-hour factor, PHF 0.90 Peak 15-min volume, v15 741 V Trucks and buses 20 % Recreational vehicles % 0 Terrain type: Level 00 Grade _ Segment length mi Trucks and buses PCE, ET 1.5 Recreational vehicle PCE, ER 1.2 Heavy vehicle adjustment, fHV 0.909 Driver population factor, fp 1.00 Flow rate, vp 1087 pc/h/ln _____Speed Inputs and Adjustments_____ Lane width ft 12.0 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 0.0 mi/h mi/h Lateral clearance adjustment, fLC 0.0 TRD adjustment mi/h 2.8 Free-flow speed, FFS 72.6 mi/h LOS and Performance Measures Flow rate, vp 1087 pc/h/ln Free-flow speed, FFS 72.6 mi/h Average passenger-car speed, S 74.9 mi/h Number of lanes, N 3 Density, D 14.5 pc/mi/ln Level of service, LOS В

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___Operational Analysis______ Analyst: ae Agency or Company: Stantec Date Performed: 8/21/2015 Date Fellormed.8/21/2015Analysis Time Period:3:00 - 4:00 PMFreeway/Direction:I-26 Westbound From/To: New Interchange to SC 27 Jurisdiction: SCDOT Analysis Year: 2019 Opening Year Description: 171001612 - Build Flow Inputs and Adjustments Volume, V veh/h 2667 Peak-hour factor, PHF 0.90 Peak 15-min volume, v15 741 V Trucks and buses 20 % Recreational vehicles % 0 Terrain type: Level 00 Grade _ Segment length mi Trucks and buses PCE, ET 1.5 Recreational vehicle PCE, ER 1.2 Heavy vehicle adjustment, fHV 0.909 Driver population factor, fp 1.00 Flow rate, vp 1630 pc/h/ln _____Speed Inputs and Adjustments_____ Lane width ft 12.0 Right-side lateral clearance 6.0 ft Total ramp density, TRD 0.67 ramps/mi Number of lanes, N 2 Free-flow speed: Base FFS or BFFS 75.4 mi/h Lane width adjustment, fLW 0.0 mi/h mi/h Lateral clearance adjustment, fLC 0.0 TRD adjustment mi/h 2.3 Free-flow speed, FFS 73.1 mi/h LOS and Performance Measures Flow rate, vp 1630 pc/h/ln Free-flow speed, FFS 73.1 mi/h Average passenger-car speed, S 70.6 mi/h Number of lanes, N 2 Density, D 23.1 pc/mi/ln Level of service, LOS С

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_____Diverge Analysis Analyst: ae Agency/Co.: Stantec Agency/Co.:StantecDate performed:8/21/2015Analysis time period:3:00 - 4:00 PM Freeway/Dir of Travel: I-26 Westbound Junction:SC 27 Off-RampJurisdiction:SCDOTAnalysis Year:2019 Opening Year Description: 171001612 - Build _____Freeway Data Type of analysis Diverge Number of lanes in freeway 2 73.1 mph 2667 vph Free-flow speed on freeway Volume on freeway _____Off Ramp Data_____ Side of freeway Right Number of lanes in ramp 1 mph Free-Flow speed on ramp 35.0 vph Volume on ramp 411 500 Length of first accel/decel lane ft Length of second accel/decel lane ft _____Adjacent Ramp Data (if one exists)_____ Does adjacent ramp exist? Yes Volume on adjacent ramp 97 vph Position of adjacent ramp Downstream Type of adjacent ramp On 2175 ft Distance to adjacent ramp _____Conversion to pc/h Under Base Conditions_____ Junction Components Freeway Ramp Adjacent Ramp

 2667
 411

 0.90
 0.90

 741
 114

 20
 20

 0
 0

 Volume, V (vph) vph 97 0.90 27 Peak-hour factor, PHF Peak 15-min volume, v15 v 2 0 0 Trucks and buses 20 % 0 00 Recreational vehicles
 0
 0
 0
 4

 Level
 Level
 Level
 0
 4

 0.00
 %
 0.00
 %
 0.00
 %
 Terrain type: Grade 0.00 mi 0.00 mi 0.00 1.5 1.5 1.5 1.2 1.2 1.2 Length mi Trucks and buses PCE, ET 1.5 1.2 Recreational vehicle PCE, ER

$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	
EQ P = 1.000 Using Equation 0 FD v = v + (v - v) P = 3260 pc/h 12 R F R FD Capacity Checks Capacity Checks Actual Maximum LOS F? v = v 3260 4800 No Fi F v = v - v 2758 4800 No FO F R v 502 2000 No R 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 = 3260 (Equation 13-15, 13-16, 13-18, or 1	
P = 1.000 Using Equation 0 $FD = 1.000 Using Equation 0$ $FD = 3260 pc/h$ $12 R F R FD$ $Capacity Checks$ $Capacity Che$	
$12 R F R FD$ Capacity Checks $\begin{array}{c ccccccccccccccccccccccccccccccccccc$	
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	
v = v 3260 4800 No Fi F v 2758 4800 No FO F R V 502 2000 No R v 502 2000 No No R v or v 0 pc/h (Equation 13-14 or 13-17) 3 av34 No 3 3 Is v or v > 2700 pc/h? No No 3 av34 12 If yes, v = 3260 (Equation 13-15, 13-16, 13-18, or 1)	
v = v - v 2758 4800 No FO F R 2000 No v 502 2000 No R v or v 0 pc/h (Equation 13-14 or 13-17) 3 av34 av34 1 1 Is v or v > 2700 pc/h? No 3 av34 12 1 If yes, v = 3260 (Equation 13-15, 13-16, 13-18, or 1	
v 502 2000 No R v or v 0 pc/h (Equation 13-14 or 13-17) 3 av34 No 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 = 3260 (Equation 13-15, 13-16, 13-18, or 1)	
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 = 3260 (Equation 13-15, 13-16, 13-18, or 1	
<pre>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 = 3260 (Equation 13-15, 13-16, 13-18, or 1</pre>	
Is v or v > 1.5 v /2 No 3 av34 12 If yes, v = 3260 (Equation 13-15, 13-16, 13-18, or 1	
If yes, v = 3260 (Equation 13-15, 13-16, 13-18, or 1	
	3-19)
Flow Entering Diverge Influence Area	
ActualMax DesirableViolation?v32604400No	
12 Level of Service Determination (if not F)	
Density, $D = 4.252 + 0.0086 v - 0.009 L = 27.8 pc/R 12 D$	′mi/ln
Level of service for ramp-freeway junction areas of influence C	
Speed Estimation	
Intermediate speed variable, D = 0.473 S	
Space mean speed in ramp influence area, $S = 58.4$ mph	
Space mean speed in outer lanes, $R = N/A$ mph	
Space mean speed for all vehicles, $S = 58.4$ mph	

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___Operational Analysis______ Analyst: ae Agency or Company: Stantec Date Performed: 8/21/2015 Date Performed:8/21/2015Analysis Time Period:3:00 - 4:00 PMFreeway/Direction:I-26 Westbound SC 27 Interchange From/To: Jurisdiction: SCDOT Analysis Year: 2019 Opening Year Description: 171001612 - Build Flow Inputs and Adjustments Volume, V veh/h 2256 Peak-hour factor, PHF 0.90 Peak 15-min volume, v15 627 v Trucks and buses 20 % Recreational vehicles % 0 Terrain type: Level 00 Grade _ Segment length mi Trucks and buses PCE, ET 1.5 Recreational vehicle PCE, ER 1.2 Heavy vehicle adjustment, fHV 0.909 Driver population factor, fp 1.00 Flow rate, vp 1379 pc/h/ln _____Speed Inputs and Adjustments_____ Lane width ft 12.0 Right-side lateral clearance 6.0 ft Total ramp density, TRD 0.67 ramps/mi Number of lanes, N 2 Free-flow speed: Base FFS or BFFS 75.4 mi/h Lane width adjustment, fLW 0.0 mi/h mi/h Lateral clearance adjustment, fLC 0.0 TRD adjustment mi/h 2.3 Free-flow speed, FFS 73.1 mi/h LOS and Performance Measures Flow rate, vp 1379 pc/h/ln Free-flow speed, FFS 73.1 mi/h Average passenger-car speed, S 73.4 mi/h Number of lanes, N 2 Density, D 18.8 pc/mi/ln Level of service, LOS С

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Fre	eeway Data					
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ay	73	.1	mpl	h		
	22	2256 vp				
On	Ramp Data					
	Rig	ght				
	1					
Free-flow speed on ramp			mpl	mph		
Volume on ramp			97 vph			
Length of first accel/decel lane		925		ft		
			ft			
Adjacent Ram	np Data (i	f one	exists)			
?	Ye	S				
	41	1	vpl	h		
ıp	Up	Upstream				
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ıp	21	75	ft			
version to pc/	'h Under Ba	ase Cc	nditions_			
	Freeway	R	amp	Adjace: Ramp	nt	
	2256	q	7	-	vph	
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	ae Stantec 8/21/2015 3:00 - 4:00 H I-26 Westbour SC 27 On-Ramp SCDOT 2019 Opening - Build Fre Vay Vay May On ecel lane decel lane On	ae Stantec 8/21/2015 3:00 - 4:00 PM I-26 Westbound SC 27 On-Ramp SCDOT 2019 Opening Year - Build Freeway Data Me vay 2 vay 73 22 On Ramp Data Ri 1 35 97 ecel lane 92 ecel lane 92 ecel lane 92 ecel lane 1 Adjacent Ramp Data (i ?? Ye 41 np Up of np 21 version to pc/h Under B Freeway 2256 0.90 627 20 0 Level 1.5	ae Stantec 8/21/2015 3:00 - 4:00 PM I-26 Westbound SC 27 On-Ramp SCDOT 2019 Opening Year - Build Freeway Data On Ramp Data On Ramp Data On Ramp Data Right 1 35.0 97 925 ecel lane decel lane 2256 On Ramp Data (if one ?? Yes 411 np Upstream Off np 2175 version to pc/h Under Base Co Freeway R 2256 9 0.90 627 20 0 Level L % mi	ae Stantec 8/21/2015 3:00 - 4:00 PM I-26 Westbound SC 27 On-Ramp SCDOT 2019 Opening Year - Build Freeway Data Merge 2 Yay 2 Yay 73.1 mpl 2256 vpl On Ramp Data Right 1 35.0 mpl 97 vpl 97 v	Stantec 8/21/2015 3:00 - 4:00 PM 1-26 Westbound SC 27 On-Ramp SCDOT 2019 Opening Year - Build Freeway Data Merge Yay 2 Yay 73.1 mph 2256 vph On Ramp Data Right 1 1 35.0 mph 97 vph 97 vph 97 vph 97 vph 925 ft Hecel lane ft Adjacent Ramp Data (if one exists) :? Yes 411 vph np Upstream Off np 2175 ft Yersion to pc/h Under Base Conditions Freeway Ramp Adjacent Ramp 2256 97 411 0.90 0.90 0.90 627 27 114 20 20 20 0 0 0 Level Level Level % % mi mi	

Heavy vehicle adjustment, fHV Driver population factor, fP Flow rate, vp	0.909 1.00 2757	1.00	0.909 1.00 502	pcph
Estimation	n of V12 Merge	Areas		
	(Equation 13-6	or 13-7)		
EQ P = 1.000 (FM	Jsing Equation	0		
v = v (P) = 12 F FM	2757 pc/h			
Capa	acity Checks			
Actual v 2876 FO	Maximum 4800		LOS F? No	
v or v 0 pc/	h (Equati	on 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 = 2757 12A	(Equation	13-15, 13	-16, 13-18,	or 13-19)
	ing Merge Infl Max Desirabl 4600 Determination	e	Violation? No	
Density, D = $5.475 + 0.00734 v + 0$).0078 v - 0	.00627 L	= 22.1	pc/mi/ln
Level of service for ramp-freeway				
Speed	Estimation			
Intermediate speed variable,		= 0.325		
Space mean speed in ramp influence		= 63.0	mph	
Space mean speed in outer lanes,		= N/A	mph	
Space mean speed for all vehicles,	0 S	= 63.0	mph	

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___Operational Analysis______ Analyst: ae Agency or Company: Stantec Date Performed: 8/21/2015 Date Performed:8/21/2015Analysis Time Period:3:00 - 4:00 PMFreeway/Direction:I-26 Westbound From/To: West of SC 27 Jurisdiction: SCDOT Analysis Year: 2019 Opening Year Description: 171001612 - Build Flow Inputs and Adjustments Volume, V veh/h 2353 Peak-hour factor, PHF 0.90 Peak 15-min volume, v15 654 V Trucks and buses 20 % Recreational vehicles % 0 Terrain type: Level 00 Grade _ Segment length mi Trucks and buses PCE, ET 1.5 Recreational vehicle PCE, ER 1.2 Heavy vehicle adjustment, fHV 0.909 Driver population factor, fp 1.00 Flow rate, vp 1438 pc/h/ln _____Speed Inputs and Adjustments_____ Lane width ft 12.0 Right-side lateral clearance 6.0 ft Total ramp density, TRD 0.00 ramps/mi Number of lanes, N 2 Free-flow speed: Base FFS or BFFS 75.4 mi/h Lane width adjustment, fLW 0.0 mi/h mi/h Lateral clearance adjustment, fLC 0.0 TRD adjustment 0.0 mi/h Free-flow speed, FFS 75.4 mi/h LOS and Performance Measures Flow rate, vp 1438 pc/h/ln Free-flow speed, FFS 75.4 mi/h Average passenger-car speed, S 72.9 mi/h Number of lanes, N 2 19.7 Density, D pc/mi/ln Level of service, LOS С

Appendix E

2019 Intersection Analysis Worksheets



Timings 101: US 78 & SC 27/Ridgeville Road

	≯	+	+		1	4
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	ሻ	1	1	1	ሻ	1
Traffic Volume (vph)	114	150	245	167	225	213
Future Volume (vph)	114	150	245	167	225	213
Turn Type	pm+pt	NA	NA	pm+ov	Prot	pm+ov
Protected Phases	5	2	6	4	4	5
Permitted Phases	2			6		4
Detector Phase	5	2	6	4	4	5
Switch Phase						
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	15.0	22.0	22.0	22.0	22.0	15.0
Total Split (s)	15.0	38.0	23.0	22.0	22.0	15.0
Total Split (%)	25.0%	63.3%	38.3%	36.7%	36.7%	25.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag	Lead		Lag			Lead
Lead-Lag Optimize?			0			
Recall Mode	None	Мах	Max	Min	Min	None
Act Effct Green (s)	32.1	32.1	18.4	37.8	13.4	27.0
Actuated g/C Ratio	0.56	0.56	0.32	0.66	0.23	0.47
v/c Ratio	0.26	0.19	0.54	0.20	0.71	0.31
Control Delay	8.4	7.7	22.1	1.3	32.6	2.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	8.4	7.7	22.1	1.3	32.6	2.5
LOS	А	А	С	А	С	А
Approach Delay		8.0	13.7		18.0	
Approach LOS		А	В		В	
Intersection Summary						
Cycle Length: 60						
Actuated Cycle Length: 57.	.5					
Natural Cycle: 60						
Control Type: Actuated-Un	coordinated	1				
Maximum v/c Ratio: 0.71	oooraniatoo	•				
Intersection Signal Delay: 1	14 0			Ir	ntersectio	n LOS: B
Intersection Capacity Utiliza)				of Service
Analysis Period (min) 15					00 2000	01 001 1100

Splits and Phases: 101: US 78 & SC 27/Ridgeville Road

		Ø4	
38 s		22 s	
* Ø5	4 ⁴ Ø6		
15 s	23 s		

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Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	<u> </u>	1	1	1	<u> </u>	1
Traffic Volume (veh/h)	114	150	245	167	225	213
Future Volume (veh/h)	114	150	245	167	225	213
Number	5	2	6	16	7	14
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	0	0	1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1583	1583	1583	1583	1583	1583
Adj Flow Rate, veh/h	127	167	272	186	250	237
Adj No. of Lanes	1	1	1	1	1	1
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	20	20	20	20	20	20
Cap, veh/h	452	912	627	813	314	377
Arrive On Green	0.07	0.58	0.40	0.40	0.21	0.21
Sat Flow, veh/h	1508	1583	1583	1346	1508	1346
Grp Volume(v), veh/h	127	167	272	186	250	237
Grp Sat Flow(s),veh/h/ln	1508	1583	1583	1346	1508	1346
Q Serve(g_s), s	2.5	2.8	7.0	3.5	8.7	8.6
Cycle Q Clear(g_c), s	2.5	2.8	7.0	3.5	8.7	8.6
Prop In Lane	1.00	2.0	7.0	1.00	1.00	1.00
Lane Grp Cap(c), veh/h	452	912	627	813	314	377
V/C Ratio(X)	0.28	0.18	0.43	0.23	0.80	0.63
Avail Cap(c_a), veh/h	588	912	627	813	434	484
HCM Platoon Ratio	1.00	1.00	1.00	1.00	4.54	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	8.3	5.6	12.2	5.0	20.9	17.5
Incr Delay (d2), s/veh	0.3	0.4	2.2	0.7	7.0	1.7
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/In	1.9	2.4	6.1	3.8	7.6	10.6
LnGrp Delay(d),s/veh	8.7	6.0	14.4	5.7	27.8	19.2
LnGrp LOS	А	А	В	А	С	В
Approach Vol, veh/h		294	458		487	
Approach Delay, s/veh		7.2	10.9		23.6	
Approach LOS		А	В		С	
Timer	1	2	3	4	5	6
	1		3			
Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		38.0		17.6	10.0	28.0
Change Period (Y+Rc), s		6.0		6.0	6.0	6.0
Max Green Setting (Gmax), s		32.0		16.0	9.0	17.0
Max Q Clear Time (g_c+l1), s		4.8		10.7	4.5	9.0
Green Ext Time (p_c), s		8.3		0.8	0.1	3.9
Intersection Summary						
HCM 2010 Ctrl Delay			15.0			
HCM 2010 LOS			B			

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		•	I		•		
Lane Group	EBT	EBR	NBT	SBL	SBT		
Lane Configurations	र्स	1	ef 👘	<u> </u>	↑		
Traffic Volume (vph)	5	64	168	791	374		
Future Volume (vph)	5	64	168	791	374		
Turn Type	NA	Perm	NA	pm+pt	NA		
Protected Phases	8		6	5	2		
Permitted Phases		8		2			
Detector Phase	8	8	6	5	2		
Switch Phase							
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0		
Minimum Split (s)	22.0	22.0	22.0	15.0	22.0		
Total Split (s)	22.0	22.0	27.0	61.0	88.0		
Total Split (%)	20.0%	20.0%	24.5%	55.5%	80.0%		
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0		
Lead/Lag			Lag	Lead			
Lead-Lag Optimize?			Ū				
Recall Mode	None	None	C-Min	None	C-Min		
Act Effct Green (s)	9.6	9.6	21.0	90.7	91.9		
Actuated g/C Ratio	0.09	0.09	0.19	0.82	0.84		
v/c Ratio	0.44	0.36	1.03	0.94	0.31		
Control Delay	56.4	11.4	100.3	22.6	3.5		
Queue Delay	0.0	0.0	0.0	0.0	0.0		
Total Delay	56.4	11.4	100.3	22.6	3.5		
LOS	E	В	F	С	А		
Approach Delay	32.7		100.3		16.5		
Approach LOS	С		F		В		
Intersection Summary							
Cycle Length: 110	110						
Actuated Cycle Length:				TOLI			
Offset: 34 (31%), Refere	enced to phase	2:SBIL	and 6:NB	FI, Start o	of Yellow		
Natural Cycle: 120	0 1 1						
Control Type: Actuated-							
Maximum v/c Ratio: 1.0							
Intersection Signal Dela					ntersection		
Intersection Capacity Ut](U Level o	f Service D	
Analysis Period (min) 15)						
Solits and Phases: 10	17. SC 17/Dida	ovillo Do	ad 8,194	EB Uŧt D	2mn/1 26	B On Domo	

Splits and Phases: 102: SC 27/Ridgeville Road & I-26 EB Off-Ramp/I-26 EB On-Ramp



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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		स	1					eî 👘		ሻ	↑	
Traffic Volume (veh/h)	52	5	64	0	0	0	0	168	113	791	374	0
Future Volume (veh/h)	52	5	64	0	0	0	0	168	113	791	374	0
Number	3	8	18				1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1881	1630	1568				0	1568	1881	1583	1583	0
Adj Flow Rate, veh/h	58	6	71				0	187	126	879	416	0
Adj No. of Lanes	0	1	1				0	1	0	1	1	0
Peak Hour Factor	0.90	0.90	0.90				0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	20	20	20				0	20	20	20	20	0
Cap, veh/h	101	10	95				0	232	156	878	1298	0
Arrive On Green	0.07	0.07	0.07				0.00	0.26	0.26	0.67	1.00	0.00
Sat Flow, veh/h	1413	146	1332				0	874	589	1508	1583	0
Grp Volume(v), veh/h	64	0	71				0	0	313	879	416	0
Grp Sat Flow(s), veh/h/ln	1560	0	1332				0	0	1464	1508	1583	0
Q Serve(g_s), s	4.4	0.0	5.7				0.0	0.0	22.0	55.0	0.0	0.0
Cycle Q Clear(g_c), s	4.4	0.0	5.7				0.0	0.0	22.0	55.0	0.0	0.0
Prop In Lane	0.91	0.0	1.00				0.00	0.0	0.40	1.00	0.0	0.00
Lane Grp Cap(c), veh/h	111	0	95				0	0	388	878	1298	0.00
V/C Ratio(X)	0.57	0.00	0.75				0.00	0.00	0.81	1.00	0.32	0.00
Avail Cap(c_a), veh/h	227	0	194				0	0	388	878	1298	0.00
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.33	1.33	1.00
Upstream Filter(I)	1.00	0.00	1.00				0.00	0.00	1.00	0.26	0.26	0.00
Uniform Delay (d), s/veh	49.5	0.0	50.1				0.0	0.0	37.8	10.9	0.0	0.0
Incr Delay (d2), s/veh	4.6	0.0	11.0				0.0	0.0	16.3	15.6	0.2	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	3.6	0.0	4.3				0.0	0.0	16.0	52.8	0.0	0.0
LnGrp Delay(d),s/veh	54.1	0.0	61.1				0.0	0.0	54.1	26.6	0.1	0.0
LnGrp LOS	D	0.0	E				0.0	0.0	D	20.0 F	A	0.0
Approach Vol, veh/h	D	135	E					313			1295	
Approach Delay, s/veh		57.8						54.1			12,75	
Approach LOS		57.0 E						D			B	
											D	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2			5	6		8				
Phs Duration (G+Y+Rc), s		96.1			61.0	35.1		13.9				
Change Period (Y+Rc), s		6.0			6.0	6.0		6.0				
Max Green Setting (Gmax), s		82.0			55.0	21.0		16.0				
Max Q Clear Time (g_c+l1), s		2.0			57.0	24.0		7.7				
Green Ext Time (p_c), s		24.2			0.0	0.0		0.2				
Intersection Summary												
HCM 2010 Ctrl Delay			27.6									
HCM 2010 LOS			С									

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Lane Group	WBT	WBR	NBL	NBT	SBT	SBR	
Lane Configurations	र्भ	1	ሻ	†	†	1	
Traffic Volume (vph)	3	267	40	180	937	190	
Future Volume (vph)	3	267	40	180	937	190	
Turn Type	NA	Perm	Perm	NA	NA	Perm	
Protected Phases	4			6	2		
Permitted Phases		4	6			2	
Detector Phase	4	4	6	6	2	2	
Switch Phase							
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	
Minimum Split (s)	22.0	22.0	22.0	22.0	22.0	22.0	
Total Split (s)	25.0	25.0	85.0	85.0	85.0	85.0	
Total Split (%)	22.7%	22.7%	77.3%	77.3%	77.3%	77.3%	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	
Lead/Lag							
Lead-Lag Optimize?							
Recall Mode	None	None	C-Min	C-Min	C-Min	C-Min	
Act Effct Green (s)	19.2	19.2	78.8	78.8	78.8	78.8	
Actuated g/C Ratio	0.17	0.17	0.72	0.72	0.72	0.72	
v/c Ratio	0.90	0.62	0.25	0.18	0.93	0.21	
Control Delay	77.2	11.0	8.3	2.0	29.0	1.5	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	77.2	11.0	8.3	2.0	29.0	1.5	
LOS	E	В	А	А	С	А	
Approach Delay	41.7			3.1	24.4		
Approach LOS	D			А	С		
Intersection Summary							
Cycle Length: 110							
Actuated Cycle Length: 110							
Offset: 0 (0%), Referenced	to phase 2	:SBT and	6:NBTL,	Start of Y	ellow/		
Natural Cycle: 90							
Control Type: Actuated-Coc	ordinated						
Maximum v/c Ratio: 0.93							
Intersection Signal Delay: 2						n LOS: C	
Intersection Capacity Utiliza	ation 80.4%)		[(CU Level	of Service	e D
Analysis Period (min) 15							
Splits and Dhasper 102.	SC 27/Dida	uovillo Dov	2018 194	\M/R ∩n Γ	Damn/I 04	. \N/B ∪tt i	Damn
Splits and Phases: 103: S	SC 27/Ridg	eville R0	au & I-20	VVD UII-F	xa111p/1-20	VVD UII-I	λαπιμ

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					र्भ	1	- ከ	↑			↑	1
Traffic Volume (veh/h)	0	0	0	228	3	267	40	180	0	0	937	190
Future Volume (veh/h)	0	0	0	228	3	267	40	180	0	0	937	190
Number				7	4	14	1	6	16	5	2	12
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln				1881	1630	1568	1583	1583	0	0	1568	1568
Adj Flow Rate, veh/h				253	3	297	44	200	0	0	1041	211
Adj No. of Lanes				0	1	1	1	1	0	0	1	1
Peak Hour Factor				0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %				20	20	20	20	20	0	0	20	20
Cap, veh/h				265	3	230	126	1137	0	0	1126	957
Arrive On Green				0.17	0.17	0.17	1.00	1.00	0.00	0.00	0.72	0.72
Sat Flow, veh/h				1535	18	1332	376	1583	0	0	1568	1332
Grp Volume(v), veh/h				256	0	297	44	200	0	0	1041	211
Grp Sat Flow(s),veh/h/ln				1553	0	1332	376	1583	0	0	1568	1332
Q Serve(q_s), s				18.0	0.0	19.0	11.9	0.0	0.0	0.0	61.3	5.8
Cycle Q Clear(g_c), s				18.0	0.0	19.0	73.2	0.0	0.0	0.0	61.3	5.8
Prop In Lane				0.99		1.00	1.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h				268	0	230	126	1137	0	0	1126	957
V/C Ratio(X)				0.95	0.00	1.29	0.35	0.18	0.00	0.00	0.92	0.22
Avail Cap(c_a), veh/h				268	0	230	126	1137	0	0	1126	957
HCM Platoon Ratio				1.00	1.00	1.00	2.00	2.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	1.00	0.09	0.09	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh				45.1	0.0	45.5	28.4	0.0	0.0	0.0	13.0	5.2
Incr Delay (d2), s/veh				42.4	0.0	159.3	0.7	0.0	0.0	0.0	13.9	0.5
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln				16.2	0.0	30.9	1.8	0.0	0.0	0.0	39.4	4.1
LnGrp Delay(d),s/veh				87.5	0.0	204.8	29.1	0.0	0.0	0.0	26.9	5.7
LnGrp LOS				F		F	С	А			С	А
Approach Vol, veh/h					553			244			1252	
Approach Delay, s/veh					150.5			5.3			23.4	
Approach LOS					F			A			С	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	J	4	J	6	1	0				
Phs Duration (G+Y+Rc), s		85.0		25.0		85.0						
Change Period (Y+Rc), s		6.0		6.0		6.0						
Max Green Setting (Gmax), s		79.0		19.0		79.0						
Max Q Clear Time (g_c+11), s		63.3		21.0		75.2						
Green Ext Time (p_c), s		14.8		0.0		3.6						
		14.0		0.0		5.0						
Intersection Summary												
HCM 2010 Ctrl Delay			55.5									_
HCM 2010 LOS			E									

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Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	۲	1	†	1	۲	1
Traffic Volume (vph)	953	10	308	139	10	174
Future Volume (vph)	953	10	308	139	10	174
Turn Type	Prot	Perm	NA	Perm	Perm	NA
Protected Phases	4		6			2
Permitted Phases		4		6	2	
Detector Phase	4	4	6	6	2	2
Switch Phase						
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	22.0	22.0	22.0	22.0	22.0	22.0
Total Split (s)	96.0	96.0	34.0	34.0	34.0	34.0
Total Split (%)	73.8%	73.8%	26.2%	26.2%	26.2%	26.2%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None	None	Мах	Мах	Мах	Мах
Act Effct Green (s)	90.0	90.0	28.0	28.0	28.0	28.0
Actuated g/C Ratio	0.69	0.69	0.22	0.22	0.22	0.22
v/c Ratio	1.02	0.01	1.01	0.38	0.16	0.57
Control Delay	53.2	4.7	101.0	11.1	48.4	53.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	53.2	4.7	101.0	11.1	48.4	53.1
LOS	D	A	F	В	D	D
Approach Delay	52.7		73.1			52.8
Approach LOS	D		E			D
Intersection Summary						
Cycle Length: 130						
Actuated Cycle Length: 130						
Natural Cycle: 130						
Control Type: Actuated-Unco	ordinated					
Maximum v/c Ratio: 1.02						
Intersection Signal Delay: 58	.4			Ir	ntersectio	n LOS: E
Intersection Capacity Utilizati)		[(CU Level	of Service
Analysis Period (min) 15						
Solits and Phases 104-St	- ا- ! ח/ דר	ouille D-		0 = \ \ /+ -		

Splits and Phases: 104: SC 27/Ridgeville Road & Lower Westvaco Road

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34 s	96 s
Ø6	
34 s	

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Movement	WBL	WBR	NBT	NBR	SBL	SBT	
Lane Configurations	ň	1	1.01	1	<u> </u>	1	
Traffic Volume (veh/h)	953	10	308	139	10	174	
Future Volume (veh/h)	953	10	308	139	10	174	
Number	7	14	6	16	5	2	
Initial Q (Qb), veh	0	0	0	0	0	0	
Ped-Bike Adj(A_pbT)	1.00	1.00	U	1.00	1.00	Ū	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	
Adj Sat Flow, veh/h/ln	1583	1583	1583	1583	1583	1583	
Adj Flow Rate, veh/h	1059	11	342	154	1303	193	
Adj No. of Lanes	1037	1	1	134	1	175	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	
Percent Heavy Veh, %	0.90	20	20	0.90	0.90	20	
	1044	932	341	20	20 55	341	
Cap, veh/h			0.22	0.22	0.22	0.22	
Arrive On Green	0.69	0.69					
Sat Flow, veh/h	1508	1346	1583	1346	763	1583	
Grp Volume(v), veh/h	1059	11	342	154	11	193	
Grp Sat Flow(s),veh/h/ln	1508	1346	1583	1346	763	1583	
Q Serve(g_s), s	90.0	0.3	28.0	13.2	0.0	14.2	
Cycle Q Clear(g_c), s	90.0	0.3	28.0	13.2	28.0	14.2	
Prop In Lane	1.00	1.00		1.00	1.00		
Lane Grp Cap(c), veh/h	1044	932	341	290	55	341	
V/C Ratio(X)	1.01	0.01	1.00	0.53	0.20	0.57	
Avail Cap(c_a), veh/h	1044	932	341	290	55	341	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	
Uniform Delay (d), s/veh	20.0	6.2	51.0	45.2	65.0	45.6	
Incr Delay (d2), s/veh	31.5	0.0	49.5	6.8	7.9	6.7	
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	
%ile BackOfQ(95%),veh/In	82.7	0.2	30.4	9.3	0.9	11.1	
LnGrp Delay(d),s/veh	51.5	6.2	100.5	52.0	72.9	52.2	
LnGrp LOS	F	А	F	D	E	D	
Approach Vol, veh/h	1070		496			204	
Approach Delay, s/veh	51.0		85.4			53.3	
Approach LOS	D		F			D	
Timer	1	2	3	4	5	6	7 8
Assigned Phs		2		4		6	
Phs Duration (G+Y+Rc), s		34.0		96.0		34.0	
Change Period (Y+Rc), s		6.0		6.0		6.0	
Max Green Setting (Gmax), s		28.0		90.0		28.0	
Max Q Clear Time (g_c+11) , s		30.0		92.0		30.0	
Green Ext Time (p_c), s		0.0		0.0		0.0	
		0.0		0.0		0.0	
Intersection Summary							
HCM 2010 Ctrl Delay			60.9				
HCM 2010 LOS			E				

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Lane Group	EBT	EBR	NBT	NBR	SBL	SBT
Lane Configurations	ર્સ	1	^	1	۲	† †
Traffic Volume (vph)	1	58	314	441	173	819
Future Volume (vph)	1	58	314	441	173	819
Turn Type	NA	Perm	NA	Perm	pm+pt	NA
Protected Phases	8		6		5	2
Permitted Phases		8		6	2	
Detector Phase	8	8	6	6	5	2
Switch Phase						
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	22.0	22.0	22.0	22.0	15.0	22.0
Total Split (s)	22.0	22.0	23.0	23.0	15.0	38.0
Total Split (%)	36.7%	36.7%	38.3%	38.3%	25.0%	63.3%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag			Lag	Lag	Lead	
Lead-Lag Optimize?			Ū	0		
Recall Mode	None	None	Max	Max	None	Max
Act Effct Green (s)	7.8	7.8	21.0	21.0	35.0	36.2
Actuated g/C Ratio	0.15	0.15	0.40	0.40	0.67	0.69
v/c Ratio	0.30	0.19	0.29	0.59	0.34	0.44
Control Delay	23.2	1.2	13.5	5.2	6.4	6.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	23.2	1.2	13.5	5.2	6.4	6.1
LOS	С	А	В	А	А	А
Approach Delay	12.5		8.7			6.1
Approach LOS	В		А			А
Intersection Summary						
Cycle Length: 60						
Actuated Cycle Length: 52.	5					
Natural Cycle: 60						
Control Type: Semi Act-Unc	coord					
Maximum v/c Ratio: 0.59						
Intersection Signal Delay: 7	.6			Ir	ntersectio	n LOS: A
Intersection Capacity Utiliza)				of Service
Analysis Period (min) 15						2 2

Splits and Phases: 202: Jedburg Road & I-26 EB Off-Ramp/I-26 EB On-Ramp

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38 s		22 s	
Ø5	Ø6		
15 s	23 s		

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4	1					<u></u>	1	٦	<u></u>	
Traffic Volume (veh/h)	60	1	58	0	0	0	0	314	441	173	819	0
Future Volume (veh/h)	60	1	58	0	0	0	0	314	441	173	819	0
Number	3	8	18				1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1583	1583				0	1583	1583	1583	1583	0
Adj Flow Rate, veh/h	67	1	0				0	349	0	192	910	0
Adj No. of Lanes	0	1	1				0	2	1	1	2	0
Peak Hour Factor	0.90	0.90	0.90				0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	20	20	20				0	20	20	20	20	0
Cap, veh/h	78	1	71				0	1393	623	644	2073	0
Arrive On Green	0.05	0.05	0.00				0.00	0.46	0.00	0.10	0.69	0.00
Sat Flow, veh/h	1487	22	1346				0	3088	1346	1508	3088	0
Grp Volume(v), veh/h	68	0	0				0	349	0	192	910	0
Grp Sat Flow(s),veh/h/ln	1509	0	1346				0	1504	1346	1508	1504	0
Q Serve(g_s), s	2.1	0.0	0.0				0.0	3.3	0.0	2.7	6.3	0.0
Cycle Q Clear(g_c), s	2.1	0.0	0.0				0.0	3.3	0.0	2.7	6.3	0.0
Prop In Lane	0.99		1.00				0.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	79	0	71				0	1393	623	644	2073	0
V/C Ratio(X)	0.86	0.00	0.00				0.00	0.25	0.00	0.30	0.44	0.00
Avail Cap(c_a), veh/h	520	0	464				0	1393	623	790	2073	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00				0.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	21.8	0.0	0.0				0.0	7.6	0.0	4.6	3.2	0.0
Incr Delay (d2), s/veh	21.9	0.0	0.0				0.0	0.4	0.0	0.3	0.7	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	2.4	0.0	0.0				0.0	2.6	0.0	2.0	4.9	0.0
LnGrp Delay(d),s/veh	43.7	0.0	0.0				0.0	8.0	0.0	4.8	3.9	0.0
LnGrp LOS	D							А		А	А	
Approach Vol, veh/h		68						349			1102	
Approach Delay, s/veh		43.7						8.0			4.1	
Approach LOS		D						A			A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2			5	6		8				
Phs Duration (G+Y+Rc), s		38.0			10.5	27.5		8.4				
Change Period (Y+Rc), s		6.0			6.0	6.0		6.0				
Max Green Setting (Gmax), s		32.0			9.0	17.0		16.0				
Max Q Clear Time (g_c+11) , s		8.3			4.7	5.3		4.1				
Green Ext Time (p_c), s		20.0			0.2	10.5		0.1				
Intersection Summary					-			-				
HCM 2010 Ctrl Delay			6.7									
HCM 2010 LOS			0.7 A									
			A									

Timings 203: Jedburg Road & I-26 WB On-Ramp

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Lane Group	NBL	NBT	SBT
Lane Configurations	<u> </u>	- 11	<u>ተ</u> ኩ
Traffic Volume (vph)	57	317	417
Future Volume (vph)	57	317	417
Turn Type	D.P+P	NA	NA
Protected Phases	1	Free	2
Permitted Phases	2		
Detector Phase	1		2
Switch Phase			
Minimum Initial (s)	4.0		4.0
Minimum Split (s)	15.0		22.0
Total Split (s)	22.0		38.0
Total Split (%)	36.7%		63.3%
Yellow Time (s)	4.0		4.0
All-Red Time (s)	2.0		2.0
Lost Time Adjust (s)	0.0		0.0
Total Lost Time (s)	6.0		6.0
Lead/Lag	Lead		Lag
Lead-Lag Optimize?			
Recall Mode	None		Max
Act Effct Green (s)	41.6	51.3	40.3
Actuated g/C Ratio	0.81	1.00	0.79
v/c Ratio	0.09	0.12	0.22
Control Delay	1.0	0.1	3.1
Queue Delay	0.0	0.0	0.0
Total Delay	1.0	0.1	3.1
LOS	А	А	А
Approach Delay		0.2	3.1
Approach LOS		А	А
Intersection Summary			
Cycle Length: 60			
Actuated Cycle Length: 51.3	3		
Natural Cycle: 40	J		
Control Type: Semi Act-Unc	coord		
Maximum v/c Ratio: 0.22	.0010		
	0		
Intersection Signal Delay: 1. Intersection Capacity Utiliza			
Analysis Period (min) 15	1011 02.0%		
Analysis Pendu (IIIIII) 15			

Splits and Phases: 203: Jedburg Road & I-26 WB On-Ramp

1 Ø1	♦ Ø2	
22 s	38 s	

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Movement	EBL	EBR	NBL	• NBT	SBT	SBR		
Lane Configurations			٦	† †	≜ †⊅			
Traffic Volume (vph)	0	0	57	317	417	39		
Future Volume (vph)	0	0	57	317	417	39		
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900		
Total Lost time (s)	1700	1700	6.0	4.0	6.0	1700		
Lane Util. Factor			1.00	0.95	0.95			
Frt			1.00	1.00	0.99			
Flt Protected			0.95	1.00	1.00			
Satd. Flow (prot)			1504	3008	2970			
Flt Permitted			0.47	1.00	1.00			
Satd. Flow (perm)			738	3008	2970			
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90		
Adj. Flow (vph)	0.70	0.70	63	352	463	43		
RTOR Reduction (vph)	0	0	0	0	7	0		
Lane Group Flow (vph)	0	0	63	352	499	0		
Turn Type	0	0	D.P+P	NA	NA	0		
Protected Phases			1	Free	2			
Permitted Phases			2	TICC	2			
Actuated Green, G (s)			41.6	53.6	38.0			
Effective Green, g (s)			41.6	53.6	38.0			
Actuated g/C Ratio			0.78	1.00	0.71			
Clearance Time (s)			6.0	1.00	6.0			
Vehicle Extension (s)			3.0		3.0			
Lane Grp Cap (vph)			624	3008	2105			
v/s Ratio Prot			0.01	0.12	c0.17			
v/s Ratio Perm			0.07	0.12	0.17			
v/c Ratio			0.10	0.12	0.24			
Uniform Delay, d1			1.4	0.12	2.7			
Progression Factor			1.00	1.00	1.00			
Incremental Delay, d2			0.1	0.1	0.3			
Delay (s)			1.5	0.1	3.0			
Level of Service			A	A	3.0 A			
Approach Delay (s)	0.0			0.3	3.0			
Approach LOS	A			0.5 A	3.0 A			
Intersection Summary								
HCM 2000 Control Delay			1.8	Н	CM 2000	Level of Service	А	
HCM 2000 Volume to Capac	city ratio		0.24					
Actuated Cycle Length (s)	, ,		53.6	S	um of lost	time (s)	12.0	
Intersection Capacity Utilizat	tion		53.8%			of Service	А	
Analysis Period (min)			15					
c Critical Lane Group								

c Critical Lane Group

HCM 2010 analysis expects strict NEMA phasing.

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Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	۲	1	†	1	۲	†
Traffic Volume (vph)	100	10	10	900	11	10
Future Volume (vph)	100	10	10	900	11	10
Turn Type	Prot	Perm	NA	Free	Perm	NA
Protected Phases	6		8			4
Permitted Phases		6		Free	4	
Detector Phase	6	6	8		4	4
Switch Phase						
Minimum Initial (s)	4.0	4.0	4.0		4.0	4.0
Minimum Split (s)	15.0	15.0	22.0		22.0	22.0
Total Split (s)	33.0	33.0	27.0		27.0	27.0
Total Split (%)	55.0%	55.0%	45.0%		45.0%	45.0%
Yellow Time (s)	4.0	4.0	4.0		4.0	4.0
All-Red Time (s)	2.0	2.0	2.0		2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0		6.0	6.0
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	Min	Min	None		None	None
Act Effct Green (s)	25.5	25.5	5.8	28.5	5.9	5.9
Actuated g/C Ratio	0.89	0.89	0.20	1.00	0.21	0.21
v/c Ratio	0.07	0.01	0.03	0.63	0.03	0.03
Control Delay	2.5	2.3	10.5	1.9	10.5	10.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	2.5	2.3	10.5	1.9	10.5	10.5
LOS	А	А	В	А	В	В
Approach Delay	2.5		2.0			10.5
Approach LOS	А		А			В
Intersection Summary						
Cycle Length: 60						
Actuated Cycle Length: 28.5						
Natural Cycle: 40						
Control Type: Actuated-Unco	pordinated					
Maximum v/c Ratio: 0.63						
Intersection Signal Delay: 2.2	2			Ir	ntersectio	n LOS: A
Intersection Capacity Utilizat						of Service
Analysis Period (min) 15						
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Splits and Phases: 301: Factory Entrance/Welcome Center & Volvo Car Drive

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Movement	WBL	WBR	NBT	NBR	SBL	SBT	
Lane Configurations	ሻ	1	†	1	٦	†	
Traffic Volume (veh/h)	100	10	10	900	11	10	
Future Volume (veh/h)	100	10	10	900	11	10	
Number	1	16	8	18	7	4	
Initial Q (Qb), veh	0	0	0	0	0	0	
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00		
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	
Adj Flow Rate, veh/h	111	11	11	0	12	11	
Adj No. of Lanes	1	1	1	1	1	1	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	
Percent Heavy Veh, %	2	2	2	2	2	2	
Cap, veh/h	428	382	65	55	475	65	
Arrive On Green	0.24	0.24	0.03	0.00	0.03	0.03	
Sat Flow, veh/h	1774	1583	1863	1583	1398	1863	
Grp Volume(v), veh/h	111	11	11	0	1370	11	
Grp Sat Flow(s), veh/h/ln	1774	1583	1863	1583	1398	1863	
Q Serve(g_s), s	0.8	0.1	0.1	0.0	0.1	0.1	
	0.8	0.1	0.1	0.0	0.1	0.1	
Cycle Q Clear(g_c), s Prop In Lane		1.00	0.1	1.00	1.00	0.1	
	1.00	382	4 F	55		65	
Lane Grp Cap(c), veh/h	428		65		475		
V/C Ratio(X)	0.26	0.03	0.17	0.00	0.03	0.17	
Avail Cap(c_a), veh/h	2889	2578	2359	2005	2197	2359	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	
Upstream Filter(I)	1.00	1.00	1.00	0.00	1.00	1.00	
Uniform Delay (d), s/veh	5.1	4.8	7.8	0.0	7.9	7.8	
Incr Delay (d2), s/veh	0.3	0.0	1.2	0.0	0.0	1.2	
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	
%ile BackOfQ(95%),veh/In	0.8	0.1	0.1	0.0	0.1	0.1	
LnGrp Delay(d),s/veh	5.4	4.8	9.0	0.0	7.9	9.0	
LnGrp LOS	A	А	A		A	A	
Approach Vol, veh/h	122		11			23	
Approach Delay, s/veh	5.4		9.0			8.4	
Approach LOS	А		А			А	
Timer	1	2	3	4	5	6	7 8
Assigned Phs				4		6	8
Phs Duration (G+Y+Rc), s				6.6		10.0	6.6
Change Period (Y+Rc), s				6.0		6.0	6.0
Max Green Setting (Gmax), s				21.0		27.0	21.0
				2.2		2.8	2.1
0, ,				2.2			
Max Q Clear Time (g_c+I1), s				0.0		03	0.0
Max Q Clear Time (g_c+l1), s Green Ext Time (p_c), s				0.0		0.3	0.0
Max Q Clear Time (g_c+l1), s Green Ext Time (p_c), s Intersection Summary				0.0		0.3	0.0
Max Q Clear Time (g_c+l1), s Green Ext Time (p_c), s			6.1 A	0.0		0.3	0.0

Timings 101: US 78 & SC 27/Ridgeville Road

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Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	ሻ	1	†	1	ሻ	1
Traffic Volume (vph)	114	150	245	167	225	213
Future Volume (vph)	114	150	245	167	225	213
Turn Type	pm+pt	NA	NA	pm+ov	Prot	pm+ov
Protected Phases	5	2	6	4	4	5
Permitted Phases	2			6		4
Detector Phase	5	2	6	4	4	5
Switch Phase						
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	15.0	22.0	22.0	22.0	22.0	15.0
Total Split (s)	15.0	38.0	23.0	22.0	22.0	15.0
Total Split (%)	25.0%	63.3%	38.3%	36.7%	36.7%	25.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag	Lead		Lag			Lead
Lead-Lag Optimize?						
Recall Mode	None	Мах	Мах	None	None	None
Act Effct Green (s)	32.1	32.1	18.4	37.8	13.4	27.0
Actuated g/C Ratio	0.56	0.56	0.32	0.66	0.23	0.47
v/c Ratio	0.26	0.19	0.54	0.20	0.71	0.31
Control Delay	8.4	7.7	22.1	1.3	32.6	2.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	8.4	7.7	22.1	1.3	32.6	2.5
LOS	А	А	С	А	С	А
Approach Delay		8.0	13.7		18.0	
Approach LOS		А	В		В	
Intersection Summary						
Cycle Length: 60						
Actuated Cycle Length: 57	.5					
Natural Cycle: 60						
Control Type: Actuated-Un	ncoordinated					
Maximum v/c Ratio: 0.71						
Intersection Signal Delay:	14.0			Ir	ntersectio	n LOS: B
Intersection Capacity Utiliz)				of Service
Analysis Period (min) 15						

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Splits and Phases: 101: US 78 & SC 27/Ridgeville Road

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* Ø5					
15 s	23 s				

Lane Configurations Image: Configuration in the image: Configurating in the image: Configuration in the image: Configuration in th		≯	-	-	×	1	~
Lane Configurations Image: Configurations Image: Configurations Image: Configurations Traffic Volume (veh/h) 114 150 245 167 225 213 Future Volume (veh/h) 114 150 245 167 225 213 Number 5 2 6 16 7 14 Initial Q (Ob), veh 0 0 0 0 0 0 Ped-Bike Adj(A_pbT) 1.00 1.00 1.00 1.00 1.00 1.00 1.00 Adj Sat Flow, veh/h/ln 1583 1583 1583 1583 1583 1583 1583 1583 1583 1583 1583 1583 1583 1583 1583 1583 1583 1583 1344 377 Adj No. of Lanes 1 <td< td=""><td>Movement</td><td>EBL</td><td>EBT</td><td>WBT</td><td>WBR</td><td>SBL</td><td>SBR</td></td<>	Movement	EBL	EBT	WBT	WBR	SBL	SBR
Traffic Volume (veh/h) 114 150 245 167 225 213 Future Volume (veh/h) 114 150 245 167 225 213 Number 5 2 6 16 7 14 Initial Q (ob), veh 0 0 0 0 0 0 Ped-Bike Adj(A_pbT) 1.00 1.00 1.00 1.00 1.00 1.00 1.00 Adj Root Lanes 1 1 1 1 1 1 1 1 1 Peak Hour Factor 0.90 0.90 0.90 0.90 0.90 0.90 0.90 0.90 Percent Heavy Veh, % 20							
Future Volume (veh/h) 114 150 245 167 225 213 Number 5 2 6 16 7 14 Initial Q (Db), veh 0 0 0 0 0 0 Ped-Bike Adj(A, pbT) 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 Ped-Bike Adj(A, pbT) 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 Adj Sat Flow, veh/h/n 127 167 272 186 250 237 Adj No. of Lanes 1 1 1 1 1 1 1 1 Peak Hour Factor 0.90<							
Number 5 2 6 16 7 14 Initial Q (Qb), veh 0 0 0 0 0 0 Ped-Bike Adj(A_pbT) 1.00 1.00 1.00 1.00 1.00 1.00 Parking Bus, Adj 1.00 1.00 1.00 1.00 1.00 1.00 Adj Sta Flow, veh/h/n 1583 1583 1583 1583 1583 1583 Adj Flow Rate, veh/h 127 167 272 186 250 237 Adj No. of Lanes 1 1 1 1 1 1 1 1 Peak Hour Factor 0.90 0.90 0.90 0.90 0.90 0.90 20 <							
Initial Q (Qb), veh 0 0 0 0 0 0 Ped-Bike Adj(A_pbT) 1.00 1.00 1.00 1.00 1.00 1.00 Adj Sat Flow, veh/h/ln 1583 1583 1583 1583 1583 1583 Adj Fow Rate, veh/h 127 167 272 186 250 237 Adj No. of Lanes 1 1 1 1 1 1 1 1 Peak Hour Factor 0.90 0.90 0.90 0.90 0.90 0.90 0.90 0.90 Percent Heavy Veh, % 20 <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>							
Ped-Bike Adj(A_pbT) 1.00 1.00 1.00 1.00 1.00 1.00 Parking Bus, Adj 1.00 1.00 1.00 1.00 1.00 1.00 Adj Sat Flow, veh/h/ln 1583 1583 1583 1583 1583 1583 Adj No. of Lanes 1 1 1 1 1 1 1 Peak Hour Factor 0.90 0.90 0.90 0.90 0.90 0.90 0.90 Percent Heavy Veh, % 20 20 20 20 20 20 20 Sat Flow, veh/h 1508 1583 1583 1346 1508 1346 Grp Volume(v), veh/h 127 167 272 186 250 237 Grp Sat Flow(s), veh/h 127 167 272 186 250 237 Grp Sat Flow(s), veh/h 1508 1583 1583 1346 1508 1346 Q Serve(g_s), s 2.5 2.8 7.0 3.5 8.7 8.6 Cycle Q Clear(g_c), veh/h 452 912 627 81							
Parking Bus, Adj1.001.001.001.001.001.00Adj Sat Flow, veh/h/ln1583158315831583158315831583Adj No. of Lanes111111Peak Hour Factor0.900.900.900.900.90Percent Heavy Veh, %2020202020Cap, veh/h452912627813314377Arrive On Green0.070.580.400.400.210.21Sat Flow, veh/h150815831583134615081346Grp Volume(V), veh/h150815831583134615081346O Serve(g_s), s2.52.87.03.58.78.6Cycle Q Clear(g_c), s2.52.87.03.58.78.6Prop In Lane1.001.001.001.001.001.001.00Lang Cap, veh/h452912627813314377V/C Ratio(X)0.280.180.430.230.800.63Avail Cap(c_a), veh/h588912627813344484HCM Platoon Ratio1.001.001.001.001.001.00Upstream Filter(I)1.001.001.001.001.001.001.00Upstream Filter(I)1.001.001.001.000.000.00.0Upstream Filter(I)1.00	. ,		Ŭ	Ũ			
Adj Sat Flow, veh/h/ln1583158315831583158315831583Adj Flow Rate, veh/h127167272186250237Adj No. of Lanes111111Peak Hour Factor0.900.900.900.900.900.90Percent Heavy Veh, %202020202020Cap, veh/h452912627813314377Arrive On Green0.070.580.400.400.210.21Sat Flow, veh/h150815831583134615081346Grp Volume(v), veh/h127167272186250237Grp Sat Flow(s), veh/h/ln150815831583134415081346Q Serve(g_s), s2.52.87.03.58.78.6Cycle Q Clear(g_c), s2.52.87.03.58.78.6Cycle Q Clear(g_c), veh/h452912627813314377V/C Ratio(X)0.280.180.430.230.800.63Avail Cap(c_a), veh/h588912627813434484HCM Platoon Ratio1.001.001.001.001.001.00Upstream Filter(I)1.001.001.001.001.001.00Uniform Delay (d), s/veh8.35.612.25.72.77.01.7Incr Delay (d2), s/ve			1 00	1 00			
Adj Flow Rate, veh/h 127 167 272 186 250 237 Adj No. of Lanes 1 1 1 1 1 1 1 Peak Hour Factor 0.90 0.90 0.90 0.90 0.90 0.90 0.90 Percent Heavy Veh, % 20 21 21							
Adj No. of Lanes 1 1 1 1 1 1 1 Peak Hour Factor 0.90 0.90 0.90 0.90 0.90 0.90 Percent Heavy Veh, % 20 20 20 20 20 20 20 Cap, veh/h 452 912 627 813 314 377 Arrive On Green 0.07 0.58 0.40 0.40 0.21 0.21 Sat Flow, veh/h 1508 1583 1583 1346 1508 1346 Grp Sat Flow(s), veh/h/ln 1508 1583 1583 1346 1508 1346 Q Serve(g_s), s 2.5 2.8 7.0 3.5 8.7 8.6 Cycle Q Clear(g_c), s 2.5 2.8 7.0 3.5 8.7 8.6 Prop In Lane 1.00 1.00 1.00 1.00 1.00 1.00 1.00 Lane Grp Cap(c), veh/h 58 912 627 813 434 484 HCM Platoon Ratio 1.00 1.00 1.00 1.00 1.00							
Peak Hour Factor 0.90 0.90 0.90 0.90 0.90 0.90 0.90 Percent Heavy Veh, % 20 21 21 <td>,</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>	,						
Percent Heavy Veh, % 20 20 20 20 20 20 Cap, veh/h 452 912 627 813 314 377 Arrive On Green 0.07 0.58 0.40 0.40 0.21 0.21 Sat Flow, veh/h 1508 1583 1583 1346 1508 1346 Grp Volume(v), veh/h 127 167 272 186 250 237 Grp Sat Flow(s), veh/h/ln 1508 1583 1583 1346 1508 1346 Q Serve(g_s), s 2.5 2.8 7.0 3.5 8.7 8.6 Prop In Lane 1.00 1.00 1.00 1.00 1.00 1.00 Lane Grp Cap(c), veh/h 452 912 627 813 314 377 V/C Ratio(X) 0.28 0.18 0.43 0.23 0.80 0.63 Avail Cap(c_a), veh/h 588 912 627 813 314 377 V/C Ratio(X)							
Cap, veh/h452912627813314377Arrive On Green0.070.580.400.400.210.21Sat Flow, veh/h150815831583134615081346Grp Volume(v), veh/h127167272186250237Grp Sat Flow(s), veh/h/ln150815831583134615081346Q Serve(g_s), s2.52.87.03.58.78.6Cycle Q Clear(g_c), s2.52.87.03.58.78.6Prop In Lane1.001.001.001.001.001.00Lane Grp Cap(c), veh/h452912627813314377V/C Ratio(X)0.280.180.430.230.800.63Avail Cap(c_a), veh/h588912627813434484HCM Platoon Ratio1.001.001.001.001.001.00Unform Delay (d), s/veh8.35.612.25.120.917.5Incr Delay (d2), s/veh0.30.42.20.77.01.7Initial Q Delay(d3), s/veh8.76.014.45.727.819.2LnGrp LOSAABACBApproach Vol, veh/h294458487487Approach LOSABCCBApproach LOSABCCBApproach LOSA <t< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td></t<>							
Arrive On Green0.070.580.400.400.210.21Sat Flow, veh/h150815831583134615081346Grp Volume(v), veh/h127167272186250237Grp Sat Flow(s), veh/h/ln150815831583134615081346Q Serve(g_s), s2.52.87.03.58.78.6Cycle Q Clear(g_c), s2.52.87.03.58.78.6Prop In Lane1.001.001.001.001.00Lane Grp Cap(c), veh/h452912627813314377V/C Ratio(X)0.280.180.430.230.800.63Avail Cap(c_a), veh/h588912627813434484HCM Platoon Ratio1.001.001.001.001.001.00Upstream Filter(I)1.001.001.001.001.001.00Uniform Delay (d), s/veh8.35.612.25.120.917.5Incr Delay (d2), s/veh0.30.42.20.77.01.7Initial Q Delay(d3), s/veh8.76.014.45.727.819.2LnGrp Delay (d), s/veh8.76.014.45.727.819.2LnGrp LOSAABCBApproach Uol, veh/h294458487Approach LOSABCBApproach LOSA </td <td>3</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>	3						
Sat Flow, veh/h150815831583134615081346Grp Volume(v), veh/h127167272186250237Grp Sat Flow(s), veh/h/ln150815831583134615081346Q Serve(g_s), s2.52.87.03.58.78.6Cycle Q Clear(g_c), s2.52.87.03.58.78.6Prop In Lane1.001.001.001.001.00Lane Grp Cap(c), veh/h452912627813314377V/C Ratio(X)0.280.180.430.230.800.63Avail Cap(c_a), veh/h588912627813434484HCM Platoon Ratio1.001.001.001.001.001.00Upstream Filter(I)1.001.001.001.001.001.00Uniform Delay (d), s/veh8.35.612.25.120.917.5Incr Delay (d2), s/veh0.30.42.20.77.01.7Initial Q Delay(d3), s/veh0.00.00.00.00.0%ile BackOfQ(95%), veh/ln1.92.46.13.87.610.6LnGrp LOSAABACBApproach LOSAABCBApproach LOSABCB6.06.0Max Green Setting (Gmax), s32.016.09.017.0Max Q Clear							
Grp Volume(v), veh/h127167272186250237Grp Sat Flow(s), veh/h/ln150815831583134615081346Q Serve(g_s), s2.52.87.03.58.78.6Cycle Q Clear(g_c), s2.52.87.03.58.78.6Prop In Lane1.001.001.001.001.00Lane Grp Cap(c), veh/h452912627813314377V/C Ratio(X)0.280.180.430.230.800.63Avail Cap(c_a), veh/h588912627813434484HCM Platoon Ratio1.001.001.001.001.001.00Upstream Filter(I)1.001.001.001.001.001.00Uniform Delay (d), s/veh8.35.612.25.120.917.5Incr Delay (d2), s/veh0.30.42.20.77.01.7Initial Q Delay(d3), s/veh0.00.00.00.00.0%ile BackOfQ(95%), veh/ln1.92.46.13.87.610.6LnGrp Delay(d), s/veh8.76.014.45.727.819.2LnGrp LOSAABCBApproach Vol, veh/h294458487Approach LOSABCCTimer123456Phs Duration (G+Y+Rc), s38.017.610.0							
Grp Sat Flow(s),veh/h/ln150815831583134615081346Q Serve(g_s), s2.52.87.03.58.78.6Cycle Q Clear(g_c), s2.52.87.03.58.78.6Prop In Lane1.001.001.001.001.00Lane Grp Cap(c), veh/h452912627813314377V/C Ratio(X)0.280.180.430.230.800.63Avail Cap(c_a), veh/h588912627813434484HCM Platoon Ratio1.001.001.001.001.001.00Upstream Filter(I)1.001.001.001.001.001.00Uniform Delay (d), s/veh8.35.612.25.120.917.5Incr Delay (d2), s/veh0.30.42.20.77.01.7Initial Q Delay(d3), s/veh0.00.00.00.00.0%ile BackOfQ(95%), veh/ln1.92.46.13.87.610.6LnGrp Delay(d), s/veh8.76.014.45.727.819.2LnGrp LOSAABCBApproach Vol, veh/h294458487Approach LOSABCCTimer123456Phs Duration (G+Y+Rc), s38.017.610.028.0Change Period (Y+Rc), s6.06.06.06.0							
Q Serve(g_s), s2.52.87.03.58.78.6Cycle Q Clear(g_c), s2.52.87.03.58.78.6Prop In Lane1.001.001.001.001.00Lane Grp Cap(c), veh/h452912627813314377V/C Ratio(X)0.280.180.430.230.800.63Avail Cap(c_a), veh/h588912627813434484HCM Platoon Ratio1.001.001.001.001.001.00Upstream Filter(I)1.001.001.001.001.001.00Uniform Delay (d), s/veh8.35.612.25.120.917.5Incr Delay (d2), s/veh0.30.42.20.77.01.7Initial Q Delay(d3), s/veh0.00.00.00.00.0%ile BackOfQ(95%), veh/ln1.92.46.13.87.610.6LnGrp Delay(d), s/veh8.76.014.45.727.819.2LnGrp LOSAABCB2456Approach Vol, veh/h29445848745066.0 <t< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td></t<>							
Cycle Q Clear(g_c), s2.52.87.03.58.78.6Prop In Lane1.001.001.001.001.00Lane Grp Cap(c), veh/h452912627813314377V/C Ratio(X)0.280.180.430.230.800.63Avail Cap(c_a), veh/h588912627813434484HCM Platoon Ratio1.001.001.001.001.001.00Upstream Filter(I)1.001.001.001.001.001.00Uniform Delay (d), s/veh8.35.612.25.120.917.5Incr Delay (d2), s/veh0.30.42.20.77.01.7Initial Q Delay(d3), s/veh0.00.00.00.00.0%ile BackOfQ(95%), veh/ln1.92.46.13.87.610.6LnGrp Delay(d), s/veh8.76.014.45.727.819.2LnGrp LOSAABCBApproach Vol, veh/h294458487Approach LOSABCCTimer123456Assigned Phs2456Phs Duration (G+Y+Rc), s38.017.610.028.0Change Period (Y+Rc), s6.06.06.06.0Max Green Setting (Gmax), s32.016.09.017.0Max Q Clear Time (p_c+I1), s4.81							
Prop In Lane1.001.001.001.00Lane Grp Cap(c), veh/h452912627813314377V/C Ratio(X)0.280.180.430.230.800.63Avail Cap(c_a), veh/h588912627813434484HCM Platoon Ratio1.001.001.001.001.001.001.00Upstream Filter(I)1.001.001.001.001.001.001.00Uniform Delay (d), s/veh8.35.612.25.120.917.5Incr Delay (d2), s/veh0.30.42.20.77.01.7Initial Q Delay(d3), s/veh0.00.00.00.00.0%ile BackOfQ(95%), veh/ln1.92.46.13.87.610.6LnGrp Delay(d), s/veh8.76.014.45.727.819.2LnGrp LOSAABACBApproach Vol, veh/h294458487Approach LOSABCCTimer123456Phs Duration (G+Y+Rc), s38.017.610.028.0Change Period (Y+Rc), s6.06.06.06.0Max Green Setting (Gmax), s32.016.09.017.0Max Q Clear Time (p_c, s8.30.80.13.9Intersection SummaryHCM 2010 Ctrl Delay15.015.0	Q Serve(g_s), s	2.5	2.8	7.0	3.5	8.7	8.6
Prop In Lane1.001.001.001.00Lane Grp Cap(c), veh/h452912627813314377V/C Ratio(X)0.280.180.430.230.800.63Avail Cap(c_a), veh/h588912627813434484HCM Platoon Ratio1.001.001.001.001.001.001.00Upstream Filter(I)1.001.001.001.001.001.001.00Uniform Delay (d), s/veh8.35.612.25.120.917.5Incr Delay (d2), s/veh0.30.42.20.77.01.7Initial Q Delay(d3), s/veh0.00.00.00.00.0%ile BackOfQ(95%), veh/ln1.92.46.13.87.610.6LnGrp Delay(d), s/veh8.76.014.45.727.819.2LnGrp LOSAABACBApproach Vol, veh/h294458487Approach LOSABCImage: Comparison of the second compari	Cycle Q Clear(g_c), s	2.5	2.8	7.0	3.5	8.7	8.6
Lane Grp Cap(c), veh/h452912627813314377V/C Ratio(X)0.280.180.430.230.800.63Avail Cap(c_a), veh/h588912627813434484HCM Platoon Ratio1.001.001.001.001.001.00Upstream Filter(I)1.001.001.001.001.001.00Uniform Delay (d), s/veh8.35.612.25.120.917.5Incr Delay (d2), s/veh0.30.42.20.77.01.7Initial Q Delay(d3), s/veh0.00.00.00.00.0%ile BackOfQ(95%), veh/ln1.92.46.13.87.610.6LnGrp Delay(d), s/veh8.76.014.45.727.819.2LnGrp LOSAABACBApproach Vol, veh/h294458487487Approach LOSABCC10.028.0Change Period (Y+Rc), s38.017.610.028.06.06.06.0Max Green Setting (Gmax), s32.016.09.017.03.93.9Intersection Summary4.810.74.59.03.9Intersection Summary15.015.015.015.015.0	Prop In Lane	1.00			1.00	1.00	1.00
V/C Ratio(X)0.280.180.430.230.800.63Avail Cap(c_a), veh/h588912627813434484HCM Platoon Ratio1.001.001.001.001.001.00Upstream Filter(I)1.001.001.001.001.001.00Uniform Delay (d), s/veh8.35.612.25.120.917.5Incr Delay (d2), s/veh0.30.42.20.77.01.7Initial Q Delay(d3), s/veh0.00.00.00.00.0%ile BackOfQ(95%), veh/ln1.92.46.13.87.610.6LnGrp Delay(d), s/veh8.76.014.45.727.819.2LnGrp LOSAABACBApproach Vol, veh/h294458487Approach LOSABCCTimer123456Assigned Phs24566Phs Duration (G+Y+Rc), s38.017.610.028.0Change Period (Y+Rc), s6.06.06.06.06.0Max Green Setting (Gmax), s32.016.09.017.0Max Q Clear Time (p_c), s8.30.80.13.9Intersection SummaryHCM 2010 Ctrl Delay15.015.0	Lane Grp Cap(c), veh/h	452	912	627	813	314	377
Avail Cap(c_a), veh/h588912 627 813 434 484 HCM Platoon Ratio1.001.001.001.001.001.001.00Upstream Filter(I)1.001.001.001.001.001.001.00Uniform Delay (d), s/veh8.35.612.25.120.917.5Incr Delay (d2), s/veh0.30.42.20.77.01.7Initial Q Delay(d3), s/veh0.00.00.00.00.0%ile BackOfQ(95%), veh/ln1.92.46.13.87.610.6LnGrp Delay(d), s/veh8.76.014.45.727.819.2LnGrp LOSAABACBApproach Vol, veh/h294458487Approach LOSABCCTimer123456Assigned Phs2456Phs Duration (G+Y+Rc), s38.017.610.028.0Change Period (Y+Rc), s6.06.06.06.0Max Q Clear Time (g_c+11), s4.810.74.59.0Green Ext Time (p_c), s8.30.80.13.9Intersection Summary15.015.015.0							
HCM Platoon Ratio1.001.001.001.001.001.001.00Upstream Filter(I)1.001.001.001.001.001.001.00Uniform Delay (d), s/veh8.35.612.25.120.917.5Incr Delay (d2), s/veh0.30.42.20.77.01.7Initial Q Delay(d3), s/veh0.00.00.00.00.00.0%ile BackOfQ(95%), veh/ln1.92.46.13.87.610.6LnGrp Delay(d), s/veh8.76.014.45.727.819.2LnGrp Delay(d), s/veh8.76.014.45.727.819.2LnGrp LOSAABACBApproach Vol, veh/h294458487487Approach LOSABCTimer123456Assigned Phs245666.06.06.06.06.0Max Green Setting (Gmax), s32.016.09.017.0Max Q Clear Time (p_c, s)8.30.80.13.9Intersection SummaryHCM 2010 Ctrl Delay15.015.015.015.015.0							
Upstream Filter(I)1.001.001.001.001.001.001.00Uniform Delay (d), s/veh8.35.612.25.120.917.5Incr Delay (d2), s/veh0.30.42.20.77.01.7Initial Q Delay(d3), s/veh0.00.00.00.00.0%ile BackOfQ(95%), veh/ln1.92.46.13.87.610.6LnGrp Delay(d), s/veh8.76.014.45.727.819.2LnGrp Delay(d), s/veh8.76.014.45.727.819.2LnGrp LOSAABACBApproach Vol, veh/h294458487Approach Delay, s/veh7.210.923.6Approach LOSABCCTimer123456Phs Duration (G+Y+Rc), s38.017.610.028.0CChange Period (Y+Rc), s6.06.06.06.06.06.0Max Q Clear Time (g_c+11), s4.810.74.59.0Green Ext Time (p_c), s8.30.80.13.9Intersection SummaryHCM 2010 Ctrl Delay15.015.015.015.015.0							
Uniform Delay (d), s/veh 8.3 5.6 12.2 5.1 20.9 17.5 Incr Delay (d2), s/veh 0.3 0.4 2.2 0.7 7.0 1.7 Initial Q Delay(d3), s/veh 0.0 0.0 0.0 0.0 0.0 0.0 % Weith BackOfQ(95%), veh/In 1.9 2.4 6.1 3.8 7.6 10.6 LnGrp Delay(d), s/veh 8.7 6.0 14.4 5.7 27.8 19.2 LnGrp LOS A A B A C B Approach Vol, veh/h 294 458 487 Approach LOS A B C Timer 1 2 3 4 5 6 Approach LOS A B C C Timer 1 2 3 4 5 6 Phs Duration (G+Y+Rc), s 38.0 17.6 10.0 28.0 28.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6							
Incr Delay (d2), s/veh 0.3 0.4 2.2 0.7 7.0 1.7 Initial Q Delay(d3), s/veh 0.0 0.0 0.0 0.0 0.0 0.0 %ile BackOfQ(95%), veh/ln 1.9 2.4 6.1 3.8 7.6 10.6 LnGrp Delay(d), s/veh 8.7 6.0 14.4 5.7 27.8 19.2 LnGrp DOS A A B A C B Approach Vol, veh/h 294 458 487 Approach Delay, s/veh 7.2 10.9 23.6 Approach LOS A B C Timer 1 2 3 4 5 6 Assigned Phs 2 4 5 6 6 Phs Duration (G+Y+Rc), s 38.0 17.6 10.0 28.0 0 Change Period (Y+Rc), s 6.0 6.0 6.0 6.0 6.0 Max Green Setting (Gmax), s 32.0 16.0 9.0 17.0 Max Q Clear Time (p_c), s 8.3 0.8 0.1 3.9	1 12						
Initial Q Delay(d3),s/veh 0.0 0.0 0.0 0.0 0.0 %ile BackOfQ(95%),veh/ln 1.9 2.4 6.1 3.8 7.6 10.6 LnGrp Delay(d),s/veh 8.7 6.0 14.4 5.7 27.8 19.2 LnGrp LOS A A B A C B Approach Vol, veh/h 294 458 487 Approach Delay, s/veh 7.2 10.9 23.6 Approach LOS A B C Timer 1 2 3 4 5 6 Assigned Phs 2 4 5 6 Phs Duration (G+Y+Rc), s 38.0 17.6 10.0 28.0 Change Period (Y+Rc), s 6.0 6.0 6.0 6.0 Max Green Setting (Gmax), s 32.0 16.0 9.0 17.0 Max Q Clear Time (p_c), s 8.3 0.8 0.1 3.9 Intersection Summary 15.0 15.0 15.0							
%ile BackOfQ(95%),veh/ln 1.9 2.4 6.1 3.8 7.6 10.6 LnGrp Delay(d),s/veh 8.7 6.0 14.4 5.7 27.8 19.2 LnGrp LOS A A B A C B Approach Vol, veh/h 294 458 487 Approach Delay, s/veh 7.2 10.9 23.6 Approach LOS A B C Timer 1 2 3 4 5 6 Assigned Phs 2 4 5 6 Phs Duration (G+Y+Rc), s 38.0 17.6 10.0 28.0 Change Period (Y+Rc), s 6.0 6.0 6.0 6.0 Max Green Setting (Gmax), s 32.0 16.0 9.0 17.0 Max Q Clear Time (p_c), s 8.3 0.8 0.1 3.9 Intersection Summary 15.0 15.0 15.0							
LnGrp Delay(d),s/veh 8.7 6.0 14.4 5.7 27.8 19.2 LnGrp LOS A A B A C B Approach Vol, veh/h 294 458 487 Approach Delay, s/veh 7.2 10.9 23.6 Approach LOS A B C C Timer 1 2 3 4 5 6 Assigned Phs 2 4 5 6 6 Assigned Phs 2 4 5 6 6 Phs Duration (G+Y+Rc), s 38.0 17.6 10.0 28.0 28.0 Change Period (Y+Rc), s 6.0 6.0 6.0 6.0 6.0 6.0 Max Green Setting (Gmax), s 32.0 16.0 9.0 17.0 3.9 3.9 3.9 3.3 0.8 0.1 3.9 Intersection Summary 15.0 15.0 15.0 15.0 15.0							
LnGrp LOS A A B A C B Approach Vol, veh/h 294 458 487 Approach Vol, veh/h 294 458 487 Approach Delay, s/veh 7.2 10.9 23.6 Approach LOS A B C Timer 1 2 3 4 5 6 Assigned Phs 2 4 5 6 Phs Duration (G+Y+Rc), s 38.0 17.6 10.0 28.0 Change Period (Y+Rc), s 6.0 6.0 6.0 6.0 Max Green Setting (Gmax), s 32.0 16.0 9.0 17.0 Max Q Clear Time (g_C+I1), s 4.8 10.7 4.5 9.0 Green Ext Time (p_C), s 8.3 0.8 0.1 3.9 Intersection Summary 15.0 15.0 15.0							
Approach Vol, veh/h 294 458 487 Approach Delay, s/veh 7.2 10.9 23.6 Approach LOS A B C Timer 1 2 3 4 5 6 Assigned Phs 2 4 5 6 Phs Duration (G+Y+Rc), s 38.0 17.6 10.0 28.0 Change Period (Y+Rc), s 6.0 6.0 6.0 6.0 Max Green Setting (Gmax), s 32.0 16.0 9.0 17.0 Max Q Clear Time (g_C+I1), s 4.8 10.7 4.5 9.0 Green Ext Time (p_C), s 8.3 0.8 0.1 3.9 Intersection Summary 15.0 15.0 15.0							
Approach Delay, s/veh 7.2 10.9 23.6 Approach LOS A B C Timer 1 2 3 4 5 6 Assigned Phs 2 4 5 6 Phs Duration (G+Y+Rc), s 38.0 17.6 10.0 28.0 Change Period (Y+Rc), s 6.0 6.0 6.0 6.0 Max Green Setting (Gmax), s 32.0 16.0 9.0 17.0 Max Q Clear Time (g_c+I1), s 4.8 10.7 4.5 9.0 Green Ext Time (p_c), s 8.3 0.8 0.1 3.9 Intersection Summary 15.0 15.0 15.0	•	A			A		В
Approach LOS A B C Timer 1 2 3 4 5 6 Assigned Phs 2 4 5 6 Phs Duration (G+Y+Rc), s 38.0 17.6 10.0 28.0 Change Period (Y+Rc), s 6.0 6.0 6.0 6.0 Max Green Setting (Gmax), s 32.0 16.0 9.0 17.0 Max Q Clear Time (g_c+I1), s 4.8 10.7 4.5 9.0 Green Ext Time (p_c), s 8.3 0.8 0.1 3.9 Intersection Summary 15.0 15.0 15.0							
Timer 1 2 3 4 5 6 Assigned Phs 2 4 5 6 Phs Duration (G+Y+Rc), s 38.0 17.6 10.0 28.0 Change Period (Y+Rc), s 6.0 6.0 6.0 6.0 Max Green Setting (Gmax), s 32.0 16.0 9.0 17.0 Max Q Clear Time (g_c+I1), s 4.8 10.7 4.5 9.0 Green Ext Time (p_c), s 8.3 0.8 0.1 3.9 Intersection Summary 15.0 15.0 15.0	11 3			10.9		23.6	
Assigned Phs 2 4 5 6 Phs Duration (G+Y+Rc), s 38.0 17.6 10.0 28.0 Change Period (Y+Rc), s 6.0 6.0 6.0 6.0 Max Green Setting (Gmax), s 32.0 16.0 9.0 17.0 Max Q Clear Time (g_c+I1), s 4.8 10.7 4.5 9.0 Green Ext Time (p_c), s 8.3 0.8 0.1 3.9 Intersection Summary 15.0 15.0 15.0	Approach LOS		А	В		С	
Phs Duration (G+Y+Rc), s 38.0 17.6 10.0 28.0 Change Period (Y+Rc), s 6.0 6.0 6.0 6.0 Max Green Setting (Gmax), s 32.0 16.0 9.0 17.0 Max Q Clear Time (g_c+I1), s 4.8 10.7 4.5 9.0 Green Ext Time (p_c), s 8.3 0.8 0.1 3.9 Intersection Summary 15.0 15.0	Timer	1	2	3	4	5	6
Phs Duration (G+Y+Rc), s 38.0 17.6 10.0 28.0 Change Period (Y+Rc), s 6.0 6.0 6.0 6.0 Max Green Setting (Gmax), s 32.0 16.0 9.0 17.0 Max Q Clear Time (g_c+I1), s 4.8 10.7 4.5 9.0 Green Ext Time (p_c), s 8.3 0.8 0.1 3.9 Intersection Summary 15.0 15.0	Assigned Phs		2		4	5	6
Change Period (Y+Rc), s 6.0 6.0 6.0 6.0 Max Green Setting (Gmax), s 32.0 16.0 9.0 17.0 Max Q Clear Time (g_C+I1), s 4.8 10.7 4.5 9.0 Green Ext Time (p_C), s 8.3 0.8 0.1 3.9 Intersection Summary 15.0 15.0	0						
Max Green Setting (Gmax), s 32.0 16.0 9.0 17.0 Max Q Clear Time (g_c+I1), s 4.8 10.7 4.5 9.0 Green Ext Time (p_c), s 8.3 0.8 0.1 3.9 Intersection Summary 15.0 15.0							
Max Q Clear Time (g_c+l1), s 4.8 10.7 4.5 9.0 Green Ext Time (p_c), s 8.3 0.8 0.1 3.9 Intersection Summary 15.0							
Green Ext Time (p_c), s 8.3 0.8 0.1 3.9 Intersection Summary 15.0 15.0							
Intersection Summary HCM 2010 Ctrl Delay 15.0							
HCM 2010 Ctrl Delay 15.0			0.0		0.0	0.1	5.7
				45.5			
HCM 2010 LOS B							
	HCM 2010 LOS			В			

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Lane Group	EBT	EBR	NBT	SBL	SBT	
Lane Configurations	र्स	1	ef 🔰	٦	•	
Traffic Volume (vph)	5	64	168	142	374	
Future Volume (vph)	5	64	168	142	374	
Turn Type	NA	Perm	NA	pm+pt	NA	
Protected Phases	8		6	5	2	
Permitted Phases		8		2		
Detector Phase	8	8	6	5	2	
Switch Phase						
Vinimum Initial (s)	4.0	4.0	4.0	4.0	4.0	
Vinimum Split (s)	22.0	22.0	22.0	15.0	22.0	
Total Split (s)	22.0	22.0	33.0	15.0	48.0	
Fotal Split (%)	31.4%	31.4%	47.1%	21.4%	68.6%	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	
_ost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	
_ead/Lag			Lag	Lead		
_ead-Lag Optimize?						
Recall Mode	None	None	C-Min	None	C-Min	
Act Effct Green (s)	7.5	7.5	39.0	52.8	54.0	
Actuated g/C Ratio	0.11	0.11	0.56	0.75	0.77	
//c Ratio	0.26	0.27	0.37	0.24	0.34	
Control Delay	31.8	3.0	10.2	2.5	2.4	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Fotal Delay	31.8	3.0	10.2	2.5	2.4	
_OS	С	А	В	А	А	
Approach Delay	14.3		10.2		2.4	
Approach LOS	В		В		А	
ntersection Summary						
Cycle Length: 70						
Actuated Cycle Length: 70						
Offset: 58 (83%), Reference	ed to phase	2:SBTL	and 6:NB	T, Start c	of Yellow	
Vatural Cycle: 60						
Control Type: Actuated-Co	ordinated					
/laximum v/c Ratio: 0.37						
ntersection Signal Delay: 6					ntersectior	
ntersection Capacity Utiliz	ation 46.3%)		[(CU Level o	of Service A
Analysis Period (min) 15						
Splits and Phases: 102:	SC 27/Dida	ovilla Da	2018 L 24	FR ∩ff D	amn/1 26	EB On-Ramp
	JUZIIKIU		au & 1-20		amp/1-20	



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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		स	1					eî 👘		ሻ	↑	
Traffic Volume (veh/h)	36	5	64	0	0	0	0	168	113	142	374	0
Future Volume (veh/h)	36	5	64	0	0	0	0	168	113	142	374	0
Number	3	8	18				1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1881	1630	1568				0	1568	1881	1583	1583	0
Adj Flow Rate, veh/h	40	6	71				0	187	126	158	416	0
Adj No. of Lanes	0	1	1				0	1	0	1	1	0
Peak Hour Factor	0.90	0.90	0.90				0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	20	20	20				0	20	20	20	20	0
Cap, veh/h	102	15	100				0	527	355	647	1193	0
Arrive On Green	0.08	0.08	0.08				0.00	0.60	0.60	0.13	1.00	0.00
Sat Flow, veh/h	1358	204	1332				0	874	589	1508	1583	0
Grp Volume(v), veh/h	46	0	71				0	0	313	158	416	0
Grp Sat Flow(s), veh/h/ln	1562	0	1332				0	0	1464	1508	1583	0
Q Serve(g_s), s	2.0	0.0	3.6				0.0	0.0	7.6	2.6	0.0	0.0
Cycle Q Clear(q_c), s	2.0	0.0	3.6				0.0	0.0	7.6	2.6	0.0	0.0
Prop In Lane	0.87		1.00				0.00		0.40	1.00		0.00
Lane Grp Cap(c), veh/h	118	0	100				0	0	882	647	1193	0
V/C Ratio(X)	0.39	0.00	0.71				0.00	0.00	0.35	0.24	0.35	0.00
Avail Cap(c_a), veh/h	357	0	305				0	0	882	743	1193	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	2.00	2.00	1.00
Upstream Filter(I)	1.00	0.00	1.00				0.00	0.00	1.00	0.95	0.95	0.00
Uniform Delay (d), s/veh	30.8	0.0	31.6				0.0	0.0	7.0	4.1	0.0	0.0
Incr Delay (d2), s/veh	2.1	0.0	8.8				0.0	0.0	1.1	0.2	0.8	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/In	1.6	0.0	2.9				0.0	0.0	6.0	1.8	0.5	0.0
LnGrp Delay(d),s/veh	33.0	0.0	40.5				0.0	0.0	8.2	4.3	0.8	0.0
LnGrp LOS	С		D						А	A	A	
Approach Vol, veh/h		117						313			574	
Approach Delay, s/veh		37.5						8.2			1.7	
Approach LOS		D						A			A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2	0		5	6		8				
Phs Duration (G+Y+Rc), s		58.7			10.6	48.2		11.3				
Change Period (Y+Rc), s		6.0			6.0	6.0		6.0				
Max Green Setting (Gmax), s		42.0			9.0	27.0		16.0				
Max Q Clear Time (g_c+11), s		2.0			4.6	9.6		5.6				
Green Ext Time (p_c), s		18.6			0.2	10.8		0.2				
Intersection Summary												
HCM 2010 Ctrl Delay			7.9									
HCM 2010 LOS			А									

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Lane Group	WBT	WBR	NBL	NBT	SBT	SBR
Lane Configurations	ર્સ	1	۲	†	†	1
Traffic Volume (vph)	3	180	40	164	288	54
Future Volume (vph)	3	180	40	164	288	54
Turn Type	NA	Perm	Perm	NA	NA	Perm
Protected Phases	4			6	2	
Permitted Phases		4	6			2
Detector Phase	4	4	6	6	2	2
Switch Phase						
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	22.0	22.0	22.0	22.0	22.0	22.0
Total Split (s)	31.0	31.0	39.0	39.0	39.0	39.0
Total Split (%)	44.3%	44.3%	55.7%	55.7%	55.7%	55.7%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None	None	C-Min	C-Min	C-Min	C-Min
Act Effct Green (s)	16.3	16.3	41.7	41.7	41.7	41.7
Actuated g/C Ratio	0.23	0.23	0.60	0.60	0.60	0.60
v/c Ratio	0.67	0.43	0.08	0.19	0.34	0.07
Control Delay	32.6	6.3	6.2	6.1	9.6	2.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	32.6	6.3	6.2	6.1	9.6	2.9
LOS	С	А	А	А	А	А
Approach Delay	21.0			6.2	8.6	
Approach LOS	С			А	А	
Intersection Summary						
Cycle Length: 70						
Actuated Cycle Length: 70						
Offset: 0 (0%), Referenced	to phase 2	SBT and	6:NBTL,	Start of Y	/ellow	
Natural Cycle: 45						
Control Type: Actuated-Cod	ordinated					
Maximum v/c Ratio: 0.67						
Intersection Signal Delay: 1	3.4			Ir	ntersectio	n LOS: B
Intersection Capacity Utiliza)		[(CU Level	of Service
Analysis Period (min) 15						
Cullus and Discussion 400.0						
Splits and Phases: 103: 3	SC 27/Ridg	eville Roa	ad & I-26	WB On-F	amp/I-26	WB Off-

↓ Ø2 (R)
39 s
31 s

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					र्भ	1	ሻ	↑			↑	1
Traffic Volume (veh/h)	0	0	0	228	3	180	40	164	0	0	288	54
Future Volume (veh/h)	0	0	0	228	3	180	40	164	0	0	288	54
Number				7	4	14	1	6	16	5	2	12
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln				1881	1630	1568	1583	1583	0	0	1568	1568
Adj Flow Rate, veh/h				253	3	200	44	182	0	0	320	60
Adj No. of Lanes				0	1	1	1	1	0	0	1	1
Peak Hour Factor				0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %				20	20	20	20	20	0	0	20	20
Cap, veh/h				315	4	273	550	987	0	0	978	831
Arrive On Green				0.20	0.20	0.20	0.21	0.21	0.00	0.00	0.62	0.62
Sat Flow, veh/h				1535	18	1332	849	1583	0	0	1568	1332
Grp Volume(v), veh/h				256	0	200	44	182	0	0	320	60
Grp Sat Flow(s),veh/h/ln				1553	0	1332	849	1583	0	0	1568	1332
Q Serve(g_s), s				11.0	0.0	9.8	3.0	6.6	0.0	0.0	6.8	1.2
Cycle Q Clear(q_c), s				11.0	0.0	9.8	9.8	6.6	0.0	0.0	6.8	1.2
Prop In Lane				0.99		1.00	1.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h				318	0	273	550	987	0	0	978	831
V/C Ratio(X)				0.80	0.00	0.73	0.08	0.18	0.00	0.00	0.33	0.07
Avail Cap(c_a), veh/h				555	0	476	550	987	0	0	978	831
HCM Platoon Ratio				1.00	1.00	1.00	0.33	0.33	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	1.00	0.94	0.94	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh				26.5	0.0	26.0	17.2	13.1	0.0	0.0	6.2	5.2
Incr Delay (d2), s/veh				4.8	0.0	3.8	0.3	0.4	0.0	0.0	0.9	0.2
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/In				8.8	0.0	7.0	1.4	5.5	0.0	0.0	5.6	0.9
LnGrp Delay(d),s/veh				31.3	0.0	29.8	17.5	13.5	0.0	0.0	7.1	5.4
LnGrp LOS				С		С	В	В			А	А
Approach Vol, veh/h					456			226			380	
Approach Delay, s/veh					30.6			14.3			6.8	
Approach LOS					С			В			A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2		4		6						
Phs Duration (G+Y+Rc), s		49.7		20.3		49.7						
Change Period (Y+Rc), s		6.0		6.0		6.0						
Max Green Setting (Gmax), s		33.0		25.0		33.0						
Max Q Clear Time (q_c+I1), s		8.8		13.0		11.8						
Green Ext Time (p_c), s		9.8		1.4		9.1						
Intersection Summary												
HCM 2010 Ctrl Delay			18.6									
HCM 2010 LOS			B									
HOW 2010 LOG			D									

	4	*	1	1	1	Ļ
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	۲	1	1	1	۲.	1
Traffic Volume (vph)	168	10	308	36	10	174
Future Volume (vph)	168	10	308	36	10	174
Turn Type	Prot	Perm	NA	Perm	Perm	NA
Protected Phases	4		6			2
Permitted Phases		4		6	2	
Detector Phase	4	4	6	6	2	2
Switch Phase						
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	22.0	22.0	22.0	22.0	22.0	22.0
Total Split (s)	26.0	26.0	34.0	34.0	34.0	34.0
Total Split (%)	43.3%	43.3%	56.7%	56.7%	56.7%	56.7%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None	None	Мах	Мах	Max	Мах
Act Effct Green (s)	11.6	11.6	32.5	32.5	32.5	32.5
Actuated g/C Ratio	0.22	0.22	0.62	0.62	0.62	0.62
v/c Ratio	0.56	0.04	0.35	0.05	0.02	0.20
Control Delay	24.5	8.8	8.8	3.1	7.1	7.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	24.5	8.8	8.8	3.1	7.1	7.6
LOS	С	А	А	А	А	А
Approach Delay	23.6		8.2			7.6
Approach LOS	С		А			А
Intersection Summary						
Cycle Length: 60						
Actuated Cycle Length: 52.	1					
Natural Cycle: 45						
Control Type: Actuated-Unc	coordinated					
Maximum v/c Ratio: 0.56	o or anna co o					
Intersection Signal Delay: 1	19			Ir	ntersectio	n I OS [.] B
Intersection Capacity Utiliza)				of Service
Analysis Period (min) 15						0.0011100

Splits and Phases: 104: SC 27/Ridgeville Road & Lower Westvaco Road

₩ø2	
34 s	26 s
¶ø6	
34 s	

	1	•	1	1	1	Ļ
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	ሻ	1	†	1	ሽ	†
Traffic Volume (veh/h)	168	10	308	36	10	174
Future Volume (veh/h)	168	10	308	36	10	174
Number	7	14	6	16	5	2
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1583	1583	1583	1583	1583	1583
Adj Flow Rate, veh/h	187	11	342	40	11	193
Adj No. of Lanes	1	1	1	1	1	1
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	20	20	20	20	20	20
Cap, veh/h	239	214	932	792	554	932
Arrive On Green	0.16	0.16	0.59	0.59	0.59	0.59
Sat Flow, veh/h	1508	1346	1583	1346	847	1583
Grp Volume(v), veh/h	187	1340	342	40	11	193
Grp Sat Flow(s), veh/h/ln	187	1346	342 1583	40 1346	847	1583
	1508 5.7		1583 5.4			2.7
Q Serve(g_s), s		0.3		0.6	0.3	
Cycle Q Clear(g_c), s	5.7	0.3	5.4	0.6	5.7	2.7
Prop In Lane	1.00	1.00	000	1.00	1.00	000
Lane Grp Cap(c), veh/h	239	214	932	792	554	932
V/C Ratio(X)	0.78	0.05	0.37	0.05	0.02	0.21
Avail Cap(c_a), veh/h	634	566	932	792	554	932
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	19.2	17.0	5.1	4.1	6.6	4.6
Incr Delay (d2), s/veh	5.5	0.1	1.1	0.1	0.1	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/In	4.9	0.2	4.6	0.4	0.2	2.4
LnGrp Delay(d),s/veh	24.7	17.1	6.2	4.3	6.7	5.1
LnGrp LOS	С	В	А	А	А	А
Approach Vol, veh/h	198		382			204
Approach Delay, s/veh	24.3		6.0			5.2
Approach LOS	C		A			A
		•			-	
Timer	1	2	3	4	5	6
Assigned Phs		2		4		6
Phs Duration (G+Y+Rc), s		34.0		13.6		34.0
Change Period (Y+Rc), s		6.0		6.0		6.0
Max Green Setting (Gmax), s		28.0		20.0		28.0
Max Q Clear Time (g_c+l1), s		7.7		7.7		7.4
Green Ext Time (p_c), s		8.8		0.5		8.9
Intersection Summary						
HCM 2010 Ctrl Delay			10.4			
HCM 2010 LOS			10.4 B			
			D			

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Lane Group	EBT	EBR	NBT	NBR	SBL	SBT
Lane Configurations	र्स	1	<u></u>	1	5	<u></u>
Traffic Volume (vph)	1	58	314	441	173	819
Future Volume (vph)	1	58	314	441	173	819
Turn Type	NA	Perm	NA	Perm	pm+pt	NA
Protected Phases	8		6		5	2
Permitted Phases		8		6	2	
Detector Phase	8	8	6	6	5	2
Switch Phase						
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	22.0	22.0	22.0	22.0	15.0	22.0
Total Split (s)	22.0	22.0	23.0	23.0	15.0	38.0
Total Split (%)	36.7%	36.7%	38.3%	38.3%	25.0%	63.3%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag			Lag	Lag	Lead	
Lead-Lag Optimize?				Ū		
Recall Mode	None	None	Max	Max	None	Max
Act Effct Green (s)	7.8	7.8	21.0	21.0	35.0	36.2
Actuated g/C Ratio	0.15	0.15	0.40	0.40	0.67	0.69
v/c Ratio	0.30	0.19	0.29	0.59	0.34	0.44
Control Delay	23.2	1.2	13.5	5.2	6.4	6.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	23.2	1.2	13.5	5.2	6.4	6.1
LOS	С	А	В	А	А	А
Approach Delay	12.5		8.7			6.1
Approach LOS	В		А			А
Intersection Summary						
Cycle Length: 60						
Actuated Cycle Length: 52.5	;					
Natural Cycle: 60						
Control Type: Actuated-Unco	oordinated					
Maximum v/c Ratio: 0.59						
Intersection Signal Delay: 7.	6			Ir	ntersectio	n LOS: A
Intersection Capacity Utilizat		1				of Service
Analysis Period (min) 15					20101	

Splits and Phases: 202: Jedburg Road & I-26 EB Off-Ramp/I-26 EB On-Ramp

₽ø2	↓ Ø8			
38 s			22 s	
Ø5	Ø6			
15 s	23 s			

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		<u>स</u>	1					- ††	1	<u>۲</u>	- ††	
Traffic Volume (veh/h)	60	1	58	0	0	0	0	314	441	173	819	0
Future Volume (veh/h)	60	1	58	0	0	0	0	314	441	173	819	0
Number	3	8	18				1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1583	1583				0	1583	1583	1583	1583	0
Adj Flow Rate, veh/h	67	1	0				0	349	0	192	910	0
Adj No. of Lanes	0	1	1				0	2	1	1	2	0
Peak Hour Factor	0.90	0.90	0.90				0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	20	20	20				0	20	20	20	20	0
Cap, veh/h	78	1	71				0	1393	623	644	2073	0
Arrive On Green	0.05	0.05	0.00				0.00	0.46	0.00	0.10	0.69	0.00
Sat Flow, veh/h	1487	22	1346				0	3088	1346	1508	3088	0
Grp Volume(v), veh/h	68	0	0				0	349	0	192	910	0
Grp Sat Flow(s),veh/h/ln	1509	0	1346				0	1504	1346	1508	1504	0
Q Serve(g_s), s	2.1	0.0	0.0				0.0	3.3	0.0	2.7	6.3	0.0
Cycle Q Clear(g_c), s	2.1	0.0	0.0				0.0	3.3	0.0	2.7	6.3	0.0
Prop In Lane	0.99		1.00				0.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	79	0	71				0	1393	623	644	2073	0
V/C Ratio(X)	0.86	0.00	0.00				0.00	0.25	0.00	0.30	0.44	0.00
Avail Cap(c_a), veh/h	520	0	464				0	1393	623	790	2073	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00				0.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	21.8	0.0	0.0				0.0	7.6	0.0	4.6	3.2	0.0
Incr Delay (d2), s/veh	21.9	0.0	0.0				0.0	0.4	0.0	0.3	0.7	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/In	2.4	0.0	0.0				0.0	2.6	0.0	2.0	4.9	0.0
LnGrp Delay(d),s/veh	43.7	0.0	0.0				0.0	8.0	0.0	4.8	3.9	0.0
LnGrp LOS	D	0.0	0.0				0.0	A	0.0	A	A	0.0
Approach Vol, veh/h		68						349			1102	
Approach Delay, s/veh		43.7						8.0			4.1	
Approach LOS		D						A			A	
	1		2	4	-	1	7				7.	
Timer		2	3	4	5	6	7	8				
Assigned Phs		2			5	6		8				
Phs Duration (G+Y+Rc), s		38.0			10.5	27.5		8.4				
Change Period (Y+Rc), s		6.0			6.0	6.0		6.0				
Max Green Setting (Gmax), s		32.0			9.0	17.0		16.0				
Max Q Clear Time (g_c+l1), s		8.3			4.7	5.3		4.1				
Green Ext Time (p_c), s		20.0			0.2	10.5		0.1				
Intersection Summary												
HCM 2010 Ctrl Delay			6.7									
HCM 2010 LOS			А									

Timings 203: Jedburg Road & I-26 WB On-Ramp

	•	t	Ļ
Long Croup	۱ NDI		
Lane Group	NBL	NBT	SBT
Lane Configurations	`	↑↑	†
Traffic Volume (vph)	57	317	417
Future Volume (vph)	57	317	417
Turn Type	D.P+P	NA	NA
Protected Phases	1	Free	2
Permitted Phases	2		0
Detector Phase	1		2
Switch Phase			1.0
Minimum Initial (s)	4.0		4.0
Minimum Split (s)	15.0		22.0
Total Split (s)	22.0		38.0
Total Split (%)	36.7%		63.3%
Yellow Time (s)	4.0		4.0
All-Red Time (s)	2.0		2.0
Lost Time Adjust (s)	0.0		0.0
Total Lost Time (s)	6.0		6.0
Lead/Lag	Lead		Lag
Lead-Lag Optimize?			
Recall Mode	None		Мах
Act Effct Green (s)	41.6	51.3	40.3
Actuated g/C Ratio	0.81	1.00	0.79
v/c Ratio	0.09	0.12	0.22
Control Delay	1.0	0.1	3.1
Queue Delay	0.0	0.0	0.0
Total Delay	1.0	0.1	3.1
LOS	А	А	А
Approach Delay		0.2	3.1
Approach LOS		А	А
Intersection Summary			
Cycle Length: 60			
Actuated Cycle Length: 51.	3		
Natural Cycle: 40			
Control Type: Actuated-Uni	coordinated		
Maximum v/c Ratio: 0.22			
Intersection Signal Delay: 1	1.8		
Intersection Capacity Utiliza			
Analysis Period (min) 15			

Splits and Phases: 203: Jedburg Road & I-26 WB On-Ramp

▲ Ø1	₩ Ø2	
22 s	38 s	

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Movement	EBL	EBR	NBL	NBT	SBT	SBR		
Lane Configurations			۲.	† †	A			
Traffic Volume (vph)	0	0	57	317	417	39		
Future Volume (vph)	0	0	57	317	417	39		
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900		
Total Lost time (s)			6.0	4.0	6.0			
Lane Util. Factor			1.00	0.95	0.95			
Frt			1.00	1.00	0.99			
Flt Protected			0.95	1.00	1.00			
Satd. Flow (prot)			1504	3008	2970			
Flt Permitted			0.47	1.00	1.00			
Satd. Flow (perm)			738	3008	2970			
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90		
Adj. Flow (vph)	0.70	0.70	63	352	463	43		
RTOR Reduction (vph)	0	0	0	0	7	43		
Lane Group Flow (vph)	0	0	63	352	499	0		
Turn Type	0	0	D.P+P	NA	NA	0		
Protected Phases			D.r +r 1	Free	2			
Permitted Phases			2	TIEE	Z			
Actuated Green, G (s)			41.6	53.6	38.0			
Effective Green, g (s)			41.6	53.6	38.0			
Actuated g/C Ratio			0.78	1.00	0.71			
Clearance Time (s)			6.0	1.00	6.0			
Vehicle Extension (s)			3.0		3.0			
			624	3008	2105			
Lane Grp Cap (vph) v/s Ratio Prot			024	0.12	c0.17			
v/s Ratio Perm			0.01	0.12	CU.17			
			0.07	0.12	0.24			
v/c Ratio			0.10 1.4	0.12	0.24 2.7			
Uniform Delay, d1			1.4					
Progression Factor				1.00	1.00			
Incremental Delay, d2			0.1	0.1	0.3			
Delay (s) Level of Service			1.5	0.1	3.0			
	0.0		А	A	A			
Approach Delay (s) Approach LOS	0.0 A			0.3 A	3.0 A			
Intersection Summary								
HCM 2000 Control Delay			1.8	Н	CM 2000	Level of Service	A	
HCM 2000 Volume to Capa	city ratio		0.24		2000			
Actuated Cycle Length (s)			53.6	S	um of lost	time (s)	12.0	
Intersection Capacity Utiliza	tion		53.8%			of Service	A	
Analysis Period (min)			15					
c Critical Lano Croup			10					

c Critical Lane Group

HCM 2010 analysis expects strict NEMA phasing.

Timings
301: Factory Entrance/Welcome Center & Volvo Car Drive

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Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	
Lane Configurations	ኘ	† †	1	1	∱ ⊅	ካካ	eî 👘	۲	4	
Traffic Volume (vph)	10	32	69	31	155	622	10	10	10	
Future Volume (vph)	10	32	69	31	155	622	10	10	10	
Turn Type	pm+pt	NA	Free	pm+pt	NA	Prot	NA	pm+pt	NA	
Protected Phases	5	2		1	6	3	8	7	4	
Permitted Phases	2		Free	6				4		
Detector Phase	5	2		1	6	3	8	7	4	
Switch Phase										
Minimum Initial (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	
Minimum Split (s)	15.0	22.0		15.0	22.0	15.0	22.0	15.0	22.0	
Total Split (s)	15.0	22.0		15.0	22.0	21.0	28.0	15.0	22.0	
Total Split (%)	18.8%	27.5%		18.8%	27.5%	26.3%	35.0%	18.8%	27.5%	
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	6.0	6.0		6.0	6.0	6.0	6.0	6.0	6.0	
Lead/Lag	Lead	Lag		Lead	Lag	Lead	Lag	Lead	Lag	
Lead-Lag Optimize?										
Recall Mode	None	Min		None	Min	None	None	None	None	
Act Effct Green (s)	7.8	4.8	39.6	9.4	7.2	16.1	16.3	7.1	6.3	
Actuated g/C Ratio	0.20	0.12	1.00	0.24	0.18	0.41	0.41	0.18	0.16	
v/c Ratio	0.03	0.10	0.05	0.09	0.33	0.49	0.38	0.03	0.08	
Control Delay	12.1	20.4	0.1	12.1	17.1	14.2	4.3	12.8	15.8	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	12.1	20.4	0.1	12.1	17.1	14.2	4.3	12.8	15.8	
LOS	В	С	А	В	В	В	А	В	В	
Approach Delay		7.0			16.3		11.1		14.8	
Approach LOS		А			В		В		В	
Intersection Summary										
Cycle Length: 80										
Actuated Cycle Length: 39.	.6									
Natural Cycle: 80										
Control Type: Actuated-Un	coordinated									
Maximum v/c Ratio: 0.49										
Intersection Signal Delay: 1					ntersectio					
Intersection Capacity Utilization	ation 42.8%)		[(CU Level	of Service	A			
Analysis Period (min) 15										

Splits and Phases: 301: Factory Entrance/Welcome Center & Volvo Car Drive

Ø1	<u> →_{Ø2}</u>	▲ Ø3		₽ Ø4	
15 s	22 s	21 s		22 s	
	★ Ø6	Ø7	1	Ø8	
15 s	22 s	15 s	28 s		

	≯	-	\mathbf{i}	1	+	*	1	1	1	1	ţ	~
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	۳.	<u></u>	1	٦	↑ ĵ≽		ሻሻ	eî 👘		٦	et 🗧	
Traffic Volume (veh/h)	10	32	69	31	155	10	622	10	278	10	10	10
Future Volume (veh/h)	10	32	69	31	155	10	622	10	278	10	10	10
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1583	1863	1863	1598	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	11	36	0	34	172	11	691	11	309	11	11	11
Adj No. of Lanes	1	2	1	1	2	0	2	1	0	1	1	0
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	20	2	2	20	20	2	2	2	2	2	2
Cap, veh/h	279	376	198	362	418	27	878	18	503	260	71	71
Arrive On Green	0.01	0.13	0.00	0.03	0.14	0.14	0.26	0.33	0.33	0.01	0.08	0.08
Sat Flow, veh/h	1774	3008	1583	1774	2899	184	3442	55	1537	1774	856	856
Grp Volume(v), veh/h	11	36	0	34	89	94	691	0	320	11	0	22
Grp Sat Flow(s), veh/h/ln	1774	1504	1583	1774	1518	1565	1721	0	1592	1774	0	1712
Q Serve(g_s), s	0.3	0.5	0.0	0.8	2.5	2.6	8.9	0.0	8.0	0.3	0.0	0.6
Cycle Q Clear(g_c), s	0.3	0.5	0.0	0.8	2.5	2.6	8.9	0.0	8.0	0.3	0.0	0.6
Prop In Lane	1.00		1.00	1.00		0.12	1.00		0.97	1.00		0.50
Lane Grp Cap(c), veh/h	279	376	198	362	219	226	878	0	521	260	0	143
V/C Ratio(X)	0.04	0.10	0.00	0.09	0.41	0.41	0.79	0.00	0.61	0.04	0.00	0.15
Avail Cap(c_a), veh/h	596	1014	534	645	512	528	1088	0	738	576	0	577
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	17.8	18.4	0.0	17.3	18.5	18.5	16.5	0.0	13.4	19.6	0.0	20.2
Incr Delay (d2), s/veh	0.1	0.1	0.0	0.1	1.2	1.2	3.1	0.0	1.2	0.1	0.0	0.5
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.2	0.4	0.0	0.7	2.1	2.1	8.1	0.0	6.5	0.2	0.0	0.5
LnGrp Delay(d),s/veh	17.9	18.5	0.0	17.4	19.7	19.7	19.6	0.0	14.6	19.6	0.0	20.7
LnGrp LOS	В	В		В	В	В	В		В	В		С
Approach Vol, veh/h		47			217			1011			33	
Approach Delay, s/veh		18.4			19.3			18.0			20.3	
Approach LOS		В			B			B			C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	7.4	11.9	18.1	10.0	6.5	12.8	6.5	21.5				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax), s	9.0	16.0	15.0	16.0	9.0	16.0	9.0	22.0				
Max Q Clear Time (g_c+I1), s	2.8	2.5	10.9	2.6	2.3	4.6	2.3	10.0				
Green Ext Time (p_c), s	0.0	2.5	10.9	1.1	0.0	2.3	0.0	1.0				
· ·	0.0	2.0	1.2	1.1	0.0	2.3	0.0	1.0				
Intersection Summary			10.0									
HCM 2010 Ctrl Delay			18.3									
HCM 2010 LOS			В									

Appendix F

2039 Freeway Analysis Worksheets



Fax:

___Operational Analysis_____ Analyst: ae Agency or Company: Stantec Date Performed: 6/15/16 Date Performed:6/15/16Analysis Time Period:3:00 - 4:00 PMFreeway/Direction:I-26 Eastbound From/To: West of SC 27 Jurisdiction: SCDOT Analysis Year: 2039 Design Year Description: 171001612 - No Build - 4k Flow Inputs and Adjustments Volume, V veh/h 3130 Peak-hour factor, PHF 0.90 Peak 15-min volume, v15 869 V Trucks and buses 20 % Recreational vehicles % 0 Terrain type: Level 00 Grade _ Segment length mi Trucks and buses PCE, ET 1.5 Recreational vehicle PCE, ER 1.2 Heavy vehicle adjustment, fHV 0.909 Driver population factor, fp 1.00 Flow rate, vp 1913 pc/h/ln _____Speed Inputs and Adjustments_____ Lane width ft 12.0 Right-side lateral clearance 6.0 ft Total ramp density, TRD 0.00 ramps/mi Number of lanes, N 2 Free-flow speed: Base FFS or BFFS 75.4 mi/h Lane width adjustment, fLW 0.0 mi/h mi/h Lateral clearance adjustment, fLC 0.0 TRD adjustment 0.0 mi/h Free-flow speed, FFS 75.4 mi/h LOS and Performance Measures Flow rate, vp 1913 pc/h/ln Free-flow speed, FFS 75.4 mi/h Average passenger-car speed, S 65.8 mi/h Number of lanes, N 2 Density, D 29.1 pc/mi/ln Level of service, LOS D

Fax:

	Operational Anal	ysis					
Analyst:	ae						
Agency or Company:							
	6/15/16						
Analysis Time Period:	3:00 - 4:00 PM						
Freeway/Direction:	I-26 Eastbound						
	West of SC 27						
Jurisdiction:	SCDOT						
Analysis Year:	2039 Design Year						
Description: 171001612	- No Build - 4k						
	Flow Inputs and	Adjustments					
Volume, V		3130	veh/h				
Peak-hour factor, PHF		0.90					
Peak 15-min volume, v1	5	869	V				
Trucks and buses		20	00				
Recreational vehicles		0	8				
Terrain type:		Level					
Grade		-	00				
Segment length		-	mi				
Trucks and buses PCE, 1	ET	1.5					
Recreational vehicle Po	CE, ER	1.2					
Heavy vehicle adjustmen	nt, fHV	0.909					
Driver population facto	or, fp	1.00					
Flow rate, vp		1275	pc/h/ln				
	Speed Inputs and	Adjustments					
Lane width		12.0	ft				
Right-side lateral clea	arance	6.0	ft				
Total ramp density, TRI	D	0.00	ramps/mi				
Number of lanes, N		3					
Free-flow speed:		Base					
FFS or BFFS		75.4	mi/h				
Lane width adjustment,	fLW	0.0	mi/h				
Lateral clearance adjus	stment, fLC	0.0	mi/h				
TRD adjustment		0.0	mi/h				
Free-flow speed, FFS		75.4	mi/h				
	LOS and Performa	nce Measures					
Flow rate, vp		1275	pc/h/ln				
Free-flow speed, FFS		75.4	mi/h				
Average passenger-car s	speed, S	74.2	mi/h				
Number of lanes, N		3					
Density, D		17.2	pc/mi/ln				
Level of service, LOS		В					

Fax:

_____Diverge Analysis Analyst: ae Agency/Co.: Stantec Agency/Co.:StantecDate performed:6/15/16Analysis time period:3:00 - 4:00 PM Freeway/Dir of Travel: I-26 Eastbound SC 27 Off-Ramp Junction: Jurisdiction: SCDOT Analysis Year: 2039 Design Year Description: 171001612 - No Build - 4k _____Freeway Data Type of analysis Diverge Number of lanes in freeway 3 75.0 mph 3130 vph Free-flow speed on freeway Volume on freeway _____Off Ramp Data_____ Side of freeway Right Number of lanes in ramp 1 mph Free-Flow speed on ramp 35.0 vph Volume on ramp 214 Length of first accel/decel lane 450 ft Length of second accel/decel lane ft _____Adjacent Ramp Data (if one exists)_____ Does adjacent ramp exist? 1674 Yes Volume on adjacent ramp vph Position of adjacent ramp Downstream Type of adjacent ramp On ft Distance to adjacent ramp 2330 _____Conversion to pc/h Under Base Conditions_____ Junction Components Freeway Ramp Adjacent Ramp

 3130
 214

 0.90
 0.90

 869
 59

 20
 20

 0
 0

 Volume, V (vph) 1674 vph 0.90 Peak-hour factor, PHF 20 0 Lev²⁷ 465 Peak 15-min volume, v15 v 2 0 0 Trucks and buses % 00 Recreational vehicles 0 0 9 Level Level 0.00 % 0.00 % 0.00 % Terrain type: Grade 0.00 mi 0.00 mi 0.00 1.5* 1.5 1.5 1.2 1.2 1.2 Length mi Lengtn Trucks and buses PCE, ET Recreational vehicle PCE, ER

Driver population fact Flow rate, vp			1.00	0.90 0.90 1.00 2046	
	Estimation	of V12 Di	verge Areas	5	
L = EQ	(1	Equation 1	3-12 or 13-	-13)	
	0.652 U	sing Equat	ion 5		
	v + (v - v R F R		87 pc/h		
	Capa	city Check	s		
v = v Fi F	Actual 3826	Maxi 7200		LOS F? No	
v = v - v FO F R	3564	7200		No	
v R	262	2000		No	
v or v 3 av34	1239 pc/1	h (Equ	ation 13-14	e or 13-17)	
Is v or v > 27 3 av34	00 pc/h?	No			
Is v or v > 1 . 3 av34		No			
If yes, v = 2587 12A	12	(Equati	on 13-15, 1	13-16, 13-18	, or 13-19)
	Flow Entering				
V	Max Desir 4400	able	Violation No	?	
12 Level	of Service D	eterminati	on (if not	F)	
Density,	D = 4.252 + R	0.0086 v 12			pc/mi/ln
Level of service for r			_		
	Speed 1	Estimation			
Intermediate speed var	iable,		D = 0.452 S		
Space mean speed in ra	mp influence a	area,	S = 60.1 R	mph	
Space mean speed in ou	ter lanes,		S = 81.3	mph	
Space mean speed for a	ll vehicles,		S = 65.7	mph	

Fax:

___Operational Analysis_____ Analyst: ae Agency or Company: Stantec Date Performed: 6/15/16 Analysis Time Period: 3:00 - 4:00 PM Freeway/Direction: I-26 Eastbound From/To: SC 27 Interchange Jurisdiction: SCDOT Analysis Year: 2039 Design Year Description: 171001612 - No Build - 4k Flow Inputs and Adjustments Volume, V veh/h 2916 Peak-hour factor, PHF 0.90 Peak 15-min volume, v15 810 V Trucks and buses 20 % Recreational vehicles % 0 Terrain type: Level 00 Grade _ Segment length mi Trucks and buses PCE, ET 1.5 Recreational vehicle PCE, ER 1.2 Heavy vehicle adjustment, fHV 0.909 Driver population factor, fp 1.00 Flow rate, vp 1188 pc/h/ln _____Speed Inputs and Adjustments_____ Lane width ft 12.0 Right-side lateral clearance 6.0 ft Total ramp density, TRD 0.00 ramps/mi Number of lanes, N 3 Free-flow speed: Base FFS or BFFS 75.4 mi/h Lane width adjustment, fLW 0.0 mi/h mi/h Lateral clearance adjustment, fLC 0.0 TRD adjustment 0.0 mi/h Free-flow speed, FFS 75.4 mi/h LOS and Performance Measures Flow rate, vp 1188 pc/h/ln Free-flow speed, FFS 75.4 mi/h Average passenger-car speed, S 74.6 mi/h Number of lanes, N 3 Density, D 15.9 pc/mi/ln Level of service, LOS В

Phone: E-mail: Merge Analysis Analyst: ae Agency/Co.: Stantec Agency/Co.:StantecDate performed:6/15/16Analysis time period:3:00 - 4:00 PM Freeway/Dir of Travel: I-26 Eastbound Junction: SC 27 On-Ramp Jurisdiction: SCDOT Analysis Year: 2039 Design Year Description: 171001612 - No Build - 4k _____Freeway Data Type of analysis Merge Number of lanes in freeway 3 75.0 2916 mph Free-flow speed on freeway Volume on freeway vph _____On Ramp Data_____ Side of freeway Right Number of lanes in ramp 1 Free-flow speed on ramp 35.0 mph vph Volume on ramp 1674 Length of first accel/decel lane 800 ft Length of second accel/decel lane ft _____Adjacent Ramp Data (if one exists)_____ Yes 214 Does adjacent ramp exist? Volume on adjacent Ramp vph Position of adjacent Ramp Upstream Type of adjacent Ramp Off Distance to adjacent Ramp 2330 ft Conversion to pc/h Under Base Conditions Junction Components Freeway Ramp Adjacent Ramp
 2916
 1674

 0.90
 0.90

 810
 465

 20
 20
 Volume, V (vph) vph 214 Peak-hour factor, PHF 0.90 59 Peak 15-min volume, v15 v 20 0 Trucks and buses 20 ∠∪ ∪ 0 0 Level Level % % mi 20 % 0 00 Recreational vehicles Terrain type: ۶ mi % mi 00 Grade Length mi Lengtn Trucks and buses PCE, ET 1.5 Recreational vehicle PCE, ER

Fax:

Driver population factor, fP	0.909 1.00 3564	1.00		pcph
Estimation of V	V12 Merge A	reas		
L = 983.94 (Equat EQ P = 0.600 Using FM V = V (P) = 2138 12 F FM	Equation			
Capacity	Checks			
Actual v 5610 FO	Maximum 7200	LOS No	5 F?	
v or v 1426 pc/h 3 av34	(Equation	13-14 or	13-17)	
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 = 2138 (H 12A	Equation 13	-15, 13-16	5, 13-18, 0	r 13-19)
Flow Entering Me Actual Max v 4184 4600 12A Level of Service Deterr	Desirable)	V	olation?	
Density, D = $5.475 + 0.00734 v + 0.0078$ R R Level of service for ramp-freeway junct:	12	A		pc/mi/ln
Speed Estir	mation			
Intermediate speed variable,		0.521		
Space mean speed in ramp influence area,		57.8 m <u>r</u>	oh	
Space mean speed in outer lanes,		71.7 mg	oh	
Space mean speed for all vehicles,	0 S =	60.8 mg	oh	

Fax:

Operational Analysis_____ Analyst: ae Agency or Company: Stantec Date Performed: 6/15/16 Analysis Time Period: 3:00 - 4:00 PM Freeway/Direction: I-26 Eastbound From/To: SC 27 to Jedburg Jurisdiction: SCDOT Analysis Year: 2039 Design Year Description: 171001612 - No Build - 4k Flow Inputs and Adjustments Volume, V veh/h 4590 Peak-hour factor, PHF 0.90 Peak 15-min volume, v15 1275 V Trucks and buses 20 % Recreational vehicles % 0 Terrain type: Level 00 Grade _ Segment length mi Trucks and buses PCE, ET 1.5 Recreational vehicle PCE, ER 1.2 Heavy vehicle adjustment, fHV 0.909 Driver population factor, fp 1.00 Flow rate, vp 1870 pc/h/ln _____Speed Inputs and Adjustments_____ Lane width ft 12.0 Right-side lateral clearance 6.0 ft Total ramp density, TRD 0.00 ramps/mi Number of lanes, N 3 Free-flow speed: Base FFS or BFFS 75.4 mi/h Lane width adjustment, fLW 0.0 mi/h mi/h Lateral clearance adjustment, fLC 0.0 TRD adjustment 0.0 mi/h Free-flow speed, FFS 75.4 mi/h LOS and Performance Measures Flow rate, vp 1870 pc/h/ln Free-flow speed, FFS 75.4 mi/h Average passenger-car speed, S 66.6 mi/h Number of lanes, N 3 Density, D 28.1 pc/mi/ln Level of service, LOS D

Phone: E-mail: _____Diverge Analysis Analyst: ae Agency/Co.: Stantec Agency/Co.:StantecDate performed:6/15/16Analysis time period:3:00 - 4:00 PM Freeway/Dir of Travel: I-26 Eastbound Junction:Jedburg Off-RampJurisdiction:SCDOTAnalysis Year:2039 Design Year Description: 171001612 - No Build - 4k _____Freeway Data___ Type of analysis Diverge Number of lanes in freeway 3 75.0 mph 4590 vph Free-flow speed on freeway Volume on freeway _____Off Ramp Data_____ Side of freeway Right Number of lanes in ramp 1 mph Free-Flow speed on ramp 35.0 vph Volume on ramp 313 500 Length of first accel/decel lane ft Length of second accel/decel lane ft _____Adjacent Ramp Data (if one exists)_____ Yes 675 Does adjacent ramp exist? Volume on adjacent ramp vph Position of adjacent ramp Downstream Type of adjacent ramp On ft Distance to adjacent ramp 1620 _____Conversion to pc/h Under Base Conditions_____ Freeway Ramp Junction Components Adjacent Ramp

 4590
 313

 0.90
 0.90

 1275
 87

 20
 20

 0
 0

 Volume, V (vph) 675 vph Peak-hour factor, PHF 0.90 188 Peak 15-min volume, v15 v 20 0 Trucks and buses % 00 Recreational vehicles 0 0 9 Level Level 0.00 % 0.00 % 0.00 % Terrain type: Grade 0.00 mi 0.00 mi 0.00 1.5 1.5 1.5 1.2 1.2 1.2 Length mi Trucks and buses PCE, ET 1.5 1.2 Recreational vehicle PCE, ER

		ustment, fHV factor, fP		1.00	0.909 1.00 825	pcph
EQ P = 0.602 Using Equation 5 FD V = V + (V - V) P = 3530 pc/h 12 R F R FD Capacity Checks Capacity Checks Actual Maximum LOS F? V = V 5610 7200 No Fi F V = V 5227 7200 No FO F R V 383 2000 No R V or V 2080 pc/h (Equation 13-14 or 13-17) 3 av34 Is V or V > 2080 pc/h (Equation 13-14 or 13-17) 3 av34 Is V or V > 2080 pc/h? No 3 av34 Is V or V > 1.5 V /2 No 3 av34 Is V or V > 1.5 V /2 No 3 av34 If yes, V = 3530 (Equation 13-15, 13-16, 13-18, or 13-19) 12A Plow Entering Diverge Influence Area Actual Max Desirable Violation? V 3530 4400 No 12 Level of Service Determination (if not F) Level of service for ramp-freeway junction areas of influence D Speed Estimation Intermediate speed variable, D = 0.462 Space mean speed in ramp influence area, S = 59.7 mph Space mean speed in outer lanes, O		Estimatior	n of V12 Di	lverge Areas		
$\begin{array}{cccccccccccccccccccccccccccccccccccc$			(Equation 1	13-12 or 13-	13)	
12 R F R FD Capacity Checks Capacity Checks V = V S 5610 7200 No Fi F F V = V - V 5227 7200 No FO F R V 383 2000 No R V or V 2080 pc/h (Equation 13-14 or 13-17) 3 av34 IS V or V > 2700 pc/h? No 3 av34 12 If yes, V = 3530 (Equation 13-15, 13-16, 13-18, or 13-19) 12A Flow Entering Diverge Influence Area Actual Max Desirable Violation? V 3530 4400 No 12 Level of Service Determination (if not F) Level of service Determination (if not F) Speed Estimation Intermediate speed variable, D = 0.462 Space mean speed in ramp influence area, S = 59.7 mph R Space mean speed in ramp influence area, S = 78.1 mph 0		P = 0.602 U	Jsing Equat	ion 5		
ActualMaximumLOS F?v = v56107200NoFiF7200NoF0FR7200Novor v52277200NoR2080 pc/h(Equation 13-14 or 13-17)av3413Isv or v> 2700 pc/h?Noav34Isv or v> 2700 pc/h?No3av341212If yes, v= 3530(Equation 13-15, 13-16, 13-18, or 13-19)12A				530 pc/h		
v = v 5610 7200 No Fi F F v = v - v 5227 7200 No FO F R v 383 2000 No R v or v 2080 pc/h (Equation 13-14 or 13-17) 3 av34 Is v or v > 2700 pc/h? No 3 av34 12 If yes, v = 3530 (Equation 13-15, 13-16, 13-18, or 13-19) 12A 		Capa	acity Check	s		
v = v - v FO F R FO F R v 383 2000 No R $v or v$ 2080 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 Is fyes, v = 3530 (Equation 13-15, 13-16, 13-18, or 13-19) 12A If yes, v = 3530 (Equation 13-15, 13-16, 13-18, or 13-19) 12A If yes, v = 3530 (Equation 13-15, 13-16, 13-18, or 13-19) 12A If yes, v = 4.252 + 0.0086 v - 0.009 L = 30.1 pc/mi/ln R Level of Service for ramp-freeway junction areas of influence D Intermediate speed variable, Space mean speed in ramp influence area, S = 78.1 mph o						
v 383 2000 No R v or v 2080 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 = 3530 (Equation 13-15, 13-16, 13-18, or 13-19) 12A 	v = v - v	5227	7200)	No	
v or v 2080 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 = 3530 (Equation 13-15, 13-16, 13-18, or 13-19) 12A 	v	383	2000)	No	
Is v or v $> 2700 \text{ pc/h}$? No 3 av34 Is v or v $> 1.5 \text{ v}/2$ No 3 av34 12 If yes, v = 3530 (Equation 13-15, 13-16, 13-18, or 13-19) 12A 	v or v		/h (Equ	ation 13-14	or 13-17)	
Is v or v > 1.5 v /2 No 3 av34 12 If yes, v = 3530 (Equation 13-15, 13-16, 13-18, or 13-19) 12A 	Is v or v	> 2700 pc/h?	No			
If yes, v = 3530 (Equation 13-15, 13-16, 13-18, or 13-19) 12A Flow Entering Diverge Influence Area Actual Max Desirable Violation? v 3530 4400 No 12 Level of Service Determination (if not F) Density, D = 4.252 + 0.0086 v - 0.009 L = 30.1 pc/mi/ln R 12 D Level of service for ramp-freeway junction areas of influence D Speed Estimation Intermediate speed variable, D = 0.462 Space mean speed in ramp influence area, S = 59.7 mph R Space mean speed in outer lanes, S = 78.1 mph 0	Is v or v	> 1.5 v /2	No			
Actual Max Desirable Violation? v 3530 4400 No 12 Level of Service Determination (if not F)	If yes, $v = 35$		(Equati	lon 13-15, 1	3-16, 13-18,	or 13-19)
v 3530 4400 No 12 Level of Service Determination (if not F) Density, $D = 4.252 + 0.0086 \text{ v} - 0.009 \text{ L} = 30.1 \text{ pc/mi/ln}$ R 12 D Level of service for ramp-freeway junction areas of influence D Speed Estimation Intermediate speed variable, $D = 0.462$ Space mean speed in ramp influence area, $S = 59.7$ mph R Space mean speed in outer lanes, $S = 78.1$ mph 0						
				rable		
R 12 D Level of service for ramp-freeway junction areas of influence D		Level of Service I	Determinati	on (if not	F)	
Level of service for ramp-freeway junction areas of influence D 	Density,					pc/mi/ln
Intermediate speed variable, Space mean speed in ramp influence area, Space mean speed in outer lanes, D = 0.462 S S = 59.7 mph R S = 78.1 mph 0	Level of service	10				
S Space mean speed in ramp influence area, S = 59.7 mph R Space mean speed in outer lanes, S = 78.1 mph 0		Speed	Estimatior	1		
Space mean speed in ramp influence area, S = 59.7 mph R Space mean speed in outer lanes, S = 78.1 mph 0	Intermediate spee	ed variable,				
Space mean speed in outer lanes, $S = 78.1$ mph 0	Space mean speed	in ramp influence	area,	S = 59.7	mph	
· ·	Space mean speed	in outer lanes,		S = 78.1	mph	
	Space mean speed	for all vehicles,		•	mph	

Fax:

__Operational Analysis_____ Analyst: ae Agency or Company: Stantec Date Performed: 6/15/16 Date Performed:6/15/16Analysis Time Period:3:00 - 4:00 PMFreeway/Direction:I-26 Eastbound From/To: Jedburg Interchange Jurisdiction: SCDOT Analysis Year: 2039 Design Year Description: 171001612 - No Build - 4k Flow Inputs and Adjustments Volume, V veh/h 4277 Peak-hour factor, PHF 0.90 Peak 15-min volume, v15 1188 V Trucks and buses 20 % Recreational vehicles % 0 Terrain type: Level 00 Grade _ Segment length mi Trucks and buses PCE, ET 1.5 Recreational vehicle PCE, ER 1.2 Heavy vehicle adjustment, fHV 0.909 Driver population factor, fp 1.00 Flow rate, vp 1742 pc/h/ln _____Speed Inputs and Adjustments_____ Lane width ft 12.0 Right-side lateral clearance 6.0 ft Total ramp density, TRD 0.00 ramps/mi Number of lanes, N 3 Free-flow speed: Base FFS or BFFS 75.4 mi/h Lane width adjustment, fLW 0.0 mi/h mi/h Lateral clearance adjustment, fLC 0.0 TRD adjustment 0.0 mi/h Free-flow speed, FFS 75.4 mi/h LOS and Performance Measures Flow rate, vp 1742 pc/h/ln Free-flow speed, FFS 75.4 mi/h Average passenger-car speed, S 68.9 mi/h Number of lanes, N 3 Density, D 25.3 pc/mi/ln Level of service, LOS С

Phone: E-mail: Merge Analysis Analyst: ae Agency/Co.: Stantec Agency/Co.:StantecDate performed:6/15/16Analysis time period:3:00 - 4:00 PM Freeway/Dir of Travel: I-26 Eastbound Junction:Jedburg On-RampJurisdiction:SCDOTAnalysis Year:2039 Design Year Description: 171001612 - No Build - 4k _____Freeway Data Type of analysis Merge Number of lanes in freeway 3 75.0 4277 mph Free-flow speed on freeway Volume on freeway vph _____On Ramp Data_____ Side of freeway Right Number of lanes in ramp 1 mph Free-flow speed on ramp 35.0 vph Volume on ramp 675 Length of first accel/decel lane 1150 ft Length of second accel/decel lane ft _____Adjacent Ramp Data (if one exists)_____ Yes 313 Does adjacent ramp exist? Volume on adjacent Ramp vph Position of adjacent Ramp Upstream Type of adjacent Ramp Off Distance to adjacent Ramp 1620 ft Conversion to pc/h Under Base Conditions Junction Components Freeway Ramp Adjacent Ramp 4277 0.90 1188 675 0.90 188 Volume, V (vph) vph 313 Peak-hour factor, PHF 0.90 Peak 15-min volume, v15 87 v 2 0 0 Trucks and buses 20 0 20 5 0 0 Level Level Level % % mi 20 % 00 Recreational vehicles Terrain type: ۶ mi % mi 00 Grade Lenqth mi Lengtn Trucks and buses PCE, ET 1.5 1.5 1.2 1.2 1.5 1.5 1.2 Recreational vehicle PCE, ER

Heavy vehicle adjustment, f Driver population factor, f Flow rate, vp		0.909 1.00 5227	1.00	0.909 1.00 383	pcph
Es	timation of	V12 Merge A	reas		
EQ P = 0 FM	233.93 (Equa .610 Using P) = 3187 FM	g Equation			
	Capacity	/ Checks			
	Actual 6052	Maximum 7200		IOS F? Io	
v or v	2040 pc/h	(Equation	13-14 c	or 13-17)	
3 av34 Is v or v > 2700 pc	/h?	No			
3 av34 Is v or v > 1.5 v		Yes			
3 av34 12 If yes, v = 3187 12A		(Equation 13	-15, 13-	16, 13-18,	or 13-19)
Actua v 4012 12A	w Entering M l Max 460 ervice Deter	Desirable		Violation? No	
Density, D = 5.475 + 0.0073 R Level of service for ramp-f	R	12	A		pc/mi/ln
	Speed Esti	mation			
Intermediate speed variable	,		0.456		
Space mean speed in ramp in	fluence area		60.0	mph	
Space mean speed in outer l	anes,		69.5	mph	
Space mean speed for all ve	hicles,	0 S =	62.9	mph	

Fax:

Operational Analysis_____ Analyst: ae Agency or Company: Stantec Date Performed: 6/15/16 Analysis Time Period: 3:00 - 4:00 PM Freeway/Direction: I-26 Eastbound From/To: East of Jedburg Jurisdiction: SCDOT Analysis Year: 2039 Design Year Description: 171001612 - No Build - 4k Flow Inputs and Adjustments Volume, V veh/h 4952 Peak-hour factor, PHF 0.90 Peak 15-min volume, v15 1376 V Trucks and buses 20 % Recreational vehicles 0 % Terrain type: Level 00 Grade _ Segment length mi Trucks and buses PCE, ET 1.5 Recreational vehicle PCE, ER 1.2 Heavy vehicle adjustment, fHV 0.909 Driver population factor, fp 1.00 Flow rate, vp 2017 pc/h/ln _____Speed Inputs and Adjustments_____ Lane width ft 12.0 Right-side lateral clearance 6.0 ft Total ramp density, TRD 1.17 ramps/mi Number of lanes, N 3 Free-flow speed: Base FFS or BFFS 75.4 mi/h Lane width adjustment, fLW 0.0 mi/h mi/h Lateral clearance adjustment, fLC 0.0 TRD adjustment mi/h 3.7 Free-flow speed, FFS 71.7 mi/h LOS and Performance Measures Flow rate, vp 2017 pc/h/ln Free-flow speed, FFS 71.7 mi/h Average passenger-car speed, S 62.3 mi/h Number of lanes, N 3 Density, D 32.4 pc/mi/ln Level of service, LOS D

Fax:

___Operational Analysis_____ Analyst: ae Agency or Company: Stantec Date Performed: 6/15/16 Date Performed:6/15/16Analysis Time Period:3:00 - 4:00 PMFreeway/Direction:I-26 Westbound From/To: East of Jedburg Jurisdiction: SCDOT Analysis Year: 2039 Design Year Description: 171001612 - No Build - 4k Flow Inputs and Adjustments Volume, V veh/h 4397 Peak-hour factor, PHF 0.90 Peak 15-min volume, v15 1221 V Trucks and buses 20 % Recreational vehicles % 0 Terrain type: Level 00 Grade _ Segment length mi Trucks and buses PCE, ET 1.5 Recreational vehicle PCE, ER 1.2 Heavy vehicle adjustment, fHV 0.909 Driver population factor, fp 1.00 Flow rate, vp 1791 pc/h/ln _____Speed Inputs and Adjustments_____ Lane width ft 12.0 Right-side lateral clearance 6.0 ft Total ramp density, TRD 1.33 ramps/mi Number of lanes, N 3 Free-flow speed: Base FFS or BFFS 75.4 mi/h Lane width adjustment, fLW 0.0 mi/h mi/h Lateral clearance adjustment, fLC 0.0 TRD adjustment mi/h 4.1 Free-flow speed, FFS 71.3 mi/h LOS and Performance Measures Flow rate, vp 1791 pc/h/ln Free-flow speed, FFS 71.3 mi/h Average passenger-car speed, S 65.9 mi/h Number of lanes, N 3 27.2 Density, D pc/mi/ln Level of service, LOS D

E-mail: _____Diverge Analysis Analyst: ae Agency/Co.: Stantec Agency/Co.:StantecDate performed:6/15/16Analysis time period:3:00 - 4:00 PM Freeway/Dir of Travel: I-26 Westbound Junction:Jedburg Off-RampJurisdiction:SCDOTAnalysis Year:2039 Design Year Description: 171001612 - No Build - 4k _____Freeway Data Type of analysis Diverge Number of lanes in freeway 3 71.3 mph 4397 vph Free-flow speed on freeway Volume on freeway _____Off Ramp Data______ Side of freeway Right Number of lanes in ramp 1 mph Free-Flow speed on ramp 35.0 vph Volume on ramp 421 Length of first accel/decel lane 750 ft Length of second accel/decel lane ft _____Adjacent Ramp Data (if one exists)_____ Does adjacent ramp exist? Yes 626 Volume on adjacent ramp vph Position of adjacent ramp Downstream Type of adjacent ramp Off Distance to adjacent ramp 750 ft _____Conversion to pc/h Under Base Conditions_____ Freeway Ramp Junction Components Adjacent Ramp

 4397
 421
 626

 0.90
 0.90
 0.90

 1221
 117
 174

 20
 20
 20

 0
 0
 0

 Volume, V (vph) vph Peak-hour factor, PHF Peak 15-min volume, v15 v Trucks and buses % 00 Recreational vehicles
 0
 0
 0
 4

 Level
 Level
 Level
 0
 4

 0.00
 %
 0.00
 %
 0.00
 %
 Terrain type: Grade 0.00 mi 0.00 mi 0.00 1.5 1.5 1.5 1.2 1.2 1.2 Length mi Trucks and buses PCE, ET 1.5 1.2

Phone:

Recreational vehicle PCE, ER

Heavy vehicle adjus Driver population f Flow rate, vp			1.00	1.00	pcph
	Estimation	of V12 Diverg	e Areas		
	= 971.54 (H	Equation 13-12	or 13-13	3)	
P	= 0.630 Us FD	sing Equation	7		
	= v + (v - v) 12 R F R		pc/h		
	Capac	city Checks			
v = v Fi F		Maximum 7200		los f? No	
v = v - v FO F R	4859	7200	1	Jo	
V	515	2000	1	10	
R v or v 3 av34	1800 pc/H	n (Equation	n 13-14 c	or 13-17)	
Is v or v >	2700 pc/h?	No			
3 av34 Is v or v >		No			
3 av34 If yes, v = 3574 12A		(Equation 1	3-15, 13-	-16, 13-18,	or 13-19)
	Flow Entering				
v	Actual 3574	Max Desirable 4400		Violation? No	
12 Le	vel of Service De	etermination (if not F)		
Density,	D = 4.252 + ().0086 v - 0. 12	009 L D	= 28.2	pc/mi/ln
Level of service fo			2	ence D	
	Speed H	Estimation			
Intermediate speed	variable,	D = S	0.474		
Space mean speed in	ramp influence a	area, S =	57.4	mph	
Space mean speed in	outer lanes,		75.1	mph	
Space mean speed fo	r all vehicles,	0 S =	62.3	mph	

Fax:

___Operational Analysis_____ Analyst: ae Agency or Company: Stantec Date Performed: 6/15/16 Date Performed:6/15/16Analysis Time Period:3:00 - 4:00 PMFreeway/Direction:I-26 Westbound From/To: Jedburg Off-Ramp to Loop Ramp Jurisdiction: SCDOT Analysis Year: 2039 Design Year Description: 171001612 - Build - 4k Flow Inputs and Adjustments Volume, V 3976 veh/h Peak-hour factor, PHF 0.90 Peak 15-min volume, v15 1104 V Trucks and buses 20 % Recreational vehicles % 0 Terrain type: Level 00 Grade _ Segment length mi Trucks and buses PCE, ET 1.5 Recreational vehicle PCE, ER 1.2 Heavy vehicle adjustment, fHV 0.909 Driver population factor, fp 1.00 Flow rate, vp 1620 pc/h/ln _____Speed Inputs and Adjustments_____ Lane width ft 12.0 Right-side lateral clearance 6.0 ft Total ramp density, TRD 1.33 ramps/mi Number of lanes, N 3 Free-flow speed: Base FFS or BFFS 75.4 mi/h Lane width adjustment, fLW 0.0 mi/h mi/h Lateral clearance adjustment, fLC 0.0 TRD adjustment mi/h 4.1 Free-flow speed, FFS 71.3 mi/h LOS and Performance Measures Flow rate, vp 1620 pc/h/ln Free-flow speed, FFS 71.3 mi/h Average passenger-car speed, S 68.0 mi/h Number of lanes, N 3 Density, D 23.8 pc/mi/ln Level of service, LOS С

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_____Diverge Analysis Analyst: ae Agency/Co.: Stantec Agency/Co.:StantecDate performed:6/15/16Analysis time period:3:00 - 4:00 PM Freeway/Dir of Travel: I-26 Westbound Junction: Jedburg Loop Off-Ramp Jurisdiction:SCDOTAnalysis Year:2039 Design Year Description: 171001612 - No Build - 4k _____Freeway Data___ Type of analysis Diverge Number of lanes in freeway 3 71.3 mph 3976 vph Free-flow speed on freeway Volume on freeway _____Off Ramp Data_____ Side of freeway Right Number of lanes in ramp 1 Free-Flow speed on ramp 35.0 mph vph Volume on ramp 626 Length of first accel/decel lane 750 ft Length of second accel/decel lane ft _____Adjacent Ramp Data (if one exists)_____ Yes 421 Does adjacent ramp exist? Volume on adjacent ramp vph Position of adjacent ramp Upstream Type of adjacent ramp Off Distance to adjacent ramp 750 ft _____Conversion to pc/h Under Base Conditions_____ Freeway Ramp Junction Components Adjacent Ramp
 3976
 626

 0.90
 0.90

 1104
 174

 20
 20

 0
 0
 Volume, V (vph) 421 vph Peak-hour factor, PHF 0.90 117 20 0 Peak 15-min volume, v15 v Trucks and buses % 00 Recreational vehicles 0 0 9 Level Level 0.00 % 0.00 % 0.00 % Terrain type: Grade 0.00 mi 0.00 mi 0.00 1.5 1.5 1.5 1.2 1.2 1.2 Length mi Trucks and buses PCE, ET 1.5 1.2 Recreational vehicle PCE, ER

	ustment, fHV factor, fP		1.00	1.00	pcph
	Estimation	n of V12 Di	iverge Areas		
	L = (EQ	Equation 1	13-12 or 13-	13)	
	P = 0.603 U FD	Jsing Equat	tion 5		
	v = v + (v - v 12 R F R		236 pc/h		
	Capa	acity Check	s		
V = V Fi F	Actual 4860	Max1 7200		LOS F? No	
v = v - v FO F R	4095	7200)	No	
v R	765	2000)	No	
v or v 3 av34		'h (Equ	ation 13-14	or 13-17)	
	> 2700 pc/h?	No			
	> 1.5 v /2	No			
If yes, v = 32 12A		(Equati	ion 13-15, 1	3-16, 13-18,	or 13-19)
	Flow Entering				
V	Actual 3236	Max Desiı 4400	rable	Violation? No	
12	Level of Service D	Determinati	ion (if not	F)	
Density,				= 25.3	pc/mi/ln
Level of service	R for ramp-freeway j	12 unction an			
	Speed	Estimatior	ı		
Intermediate spee	ed variable,		D = 0.497		
Space mean speed	in ramp influence	area,	S S = 56.7	mph	
Space mean speed	in outer lanes,		R = 75.8	mph	
Space mean speed	for all vehicles,		S = 61.9	mph	

Fax:

__Operational Analysis_____ Analyst: ae Agency or Company: Stantec Date Performed: 6/15/16 Date Performed:6/15/16Analysis Time Period:3:00 - 4:00 PMFreeway/Direction:I-26 Westbound From/To: Jedburg Loop Ramp to On-Ramp Jurisdiction: SCDOT Analysis Year: 2039 Design Year Description: 171001612 - No Build - 4k Flow Inputs and Adjustments Volume, V veh/h 3350 Peak-hour factor, PHF 0.90 Peak 15-min volume, v15 931 v Trucks and buses 20 % Recreational vehicles % 0 Terrain type: Level 00 Grade _ Segment length mi Trucks and buses PCE, ET 1.5 Recreational vehicle PCE, ER 1.2 Heavy vehicle adjustment, fHV 0.909 Driver population factor, fp 1.00 Flow rate, vp 1365 pc/h/ln _____Speed Inputs and Adjustments_____ Lane width ft 12.0 Right-side lateral clearance 6.0 ft Total ramp density, TRD 1.33 ramps/mi Number of lanes, N 3 Free-flow speed: Base FFS or BFFS 75.4 mi/h Lane width adjustment, fLW 0.0 mi/h mi/h Lateral clearance adjustment, fLC 0.0 TRD adjustment mi/h 4.1 Free-flow speed, FFS 71.3 mi/h LOS and Performance Measures Flow rate, vp 1365 pc/h/ln Free-flow speed, FFS 71.3 mi/h Average passenger-car speed, S 69.7 mi/h Number of lanes, N 3 Density, D 19.6 pc/mi/ln Level of service, LOS С

Phone: E-mail: Merge Analysis Analyst: ae Agency/Co.: Stantec Agency/Co.:StantecDate performed:6/15/16Analysis time period:3:00 - 4:00 PM Freeway/Dir of Travel: I-26 Westbound Junction:Jedburg On-RampJurisdiction:SCDOTAnalysis Year:2039 Design Year Description: 171001612 - No Build - 4k _____Freeway Data Type of analysis Merge Number of lanes in freeway 3 71.3 3350 mph Free-flow speed on freeway Volume on freeway vph _____On Ramp Data_____ Side of freeway Right Number of lanes in ramp 1 mph Free-flow speed on ramp 35.0 vph 427 Volume on ramp Length of first accel/decel lane 1300 ft Length of second accel/decel lane ft _____Adjacent Ramp Data (if one exists)_____ Yes 626 Does adjacent ramp exist? Volume on adjacent Ramp vph Position of adjacent Ramp Upstream Type of adjacent Ramp Off Distance to adjacent Ramp 900 ft Conversion to pc/h Under Base Conditions Junction Components Freeway Ramp Adjacent Ramp 33504270.900.90931119202000 Volume, V (vph) vph 626 Peak-hour factor, PHF 0.90 Peak 15-min volume, v15 174 v 20 20 20 0 0 0 Level Level Level % % Trucks and buses % 00 Recreational vehicles Terrain type: ۶ mi % mi 00 Grade Lenqth mi Trucks and buses PCE, ET Recreational vehicle PCE, ER 1.5

Heavy vehicle adjustment, fHV Driver population factor, fP Flow rate, vp		1.00	9 0.909 1.00 765	pcph
Estir	nation of V12 I	Merge Areas_		
EQ P = 0.60 FM	22 (Equation 08 Using Equa) = 2489 po	ation 2	7)	
	Capacity Che	cks		
	ual Ma: .6 72	kimum DO	LOS F? No	
v or v 160)5 pc/h (Ed	quation 13-1	4 or 13-17)	
3 av34 Is v or v > 2700 pc/h3	No No			
3 av34 Is v or v > 1.5 v /2	Ye	5		
3 av34 12 If yes, v = 2489 12A	(Equa	tion 13-15,	13-16, 13-18,	or 13-19)
Actual v 3011 12A	Intering Merge Max Des 4600 vice Determinat	irable	Violation? No	
Density, D = 5.475 + 0.00734 v R Level of service for ramp-free	R 11	2	A	pc/mi/ln
	Speed Estimation	on		
Intermediate speed variable,		M = 0.309		
Space mean speed in ramp influ	lence area,	S = 62.2	mph	
Space mean speed in outer lane	es,	R = 67.3	mph	
Space mean speed for all vehic	les,	0 S = 63.9	mph	

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__Operational Analysis_____ Analyst: ae Agency or Company: Stantec Date Performed: 6/15/16 Date Performed:6/15/16Analysis Time Period:3:00 - 4:00 PMFreeway/Direction:I-26 Westbound From/To: Jedburg to SC 27 SCDOT Jurisdiction: Analysis Year: 2039 Design Year Description: 171001612 - No Build - 4k Flow Inputs and Adjustments Volume, V veh/h 3777 Peak-hour factor, PHF 0.90 Peak 15-min volume, v15 1049 V Trucks and buses 20 % Recreational vehicles 0 % Terrain type: Level 00 Grade _ Segment length mi Trucks and buses PCE, ET 1.5 Recreational vehicle PCE, ER 1.2 Heavy vehicle adjustment, fHV 0.909 Driver population factor, fp 1.00 Flow rate, vp 1539 pc/h/ln _____Speed Inputs and Adjustments_____ Lane width ft 12.0 Right-side lateral clearance 6.0 ft Total ramp density, TRD 0.00 ramps/mi Number of lanes, N 3 Free-flow speed: Base FFS or BFFS 75.4 mi/h Lane width adjustment, fLW 0.0 mi/h mi/h Lateral clearance adjustment, fLC 0.0 TRD adjustment 0.0 mi/h Free-flow speed, FFS 75.4 mi/h LOS and Performance Measures Flow rate, vp 1539 pc/h/ln Free-flow speed, FFS 75.4 mi/h Average passenger-car speed, S 71.8 mi/h Number of lanes, N 3 Density, D 21.4 pc/mi/ln Level of service, LOS С

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_____Diverge Analysis Analyst: ae Agency/Co.: Stantec Agency/Co.:StantecDate performed:6/15/16Analysis time period:3:00 - 4:00 PM Freeway/Dir of Travel: I-26 Westbound Junction: SC 27 Off-Ramp Jurisdiction: SCDOT Analysis Year: 2039 Design Year Description: 171001612 - No Build - 4k _____Freeway Data Type of analysis Diverge Number of lanes in freeway 3 75.0 mph 3777 vph Free-flow speed on freeway Volume on freeway _____Off Ramp Data______ Side of freeway Right Number of lanes in ramp 1 Free-Flow speed on ramp 35.0 mph vph Volume on ramp 871 500 Length of first accel/decel lane ft Length of second accel/decel lane ft _____Adjacent Ramp Data (if one exists)_____ Yes 427 Does adjacent ramp exist? Volume on adjacent ramp vph Position of adjacent ramp Downstream Type of adjacent ramp On ft Distance to adjacent ramp 2175 _____Conversion to pc/h Under Base Conditions_____ Junction Components Freeway Ramp Adjacent Ramp 37778710.900.901049242202000 Volume, V (vph) 427 vph Peak-hour factor, PHF 0.90 119 20 0 Peak 15-min volume, v15 v Trucks and buses % 00 Recreational vehicles 0 0 9 Level Level 0.00 % 0.00 % 0.00 % Terrain type: Grade 0.00 mi 0.00 mi 0.00 1.5 1.5 1.5 1.2 1.2 1.2 Length mi Trucks and buses PCE, ET 1.5 1.2 Recreational vehicle PCE, ER

	ustment, fHV factor, fP		1.00	1.00	pcph
	Estimatior	n of V12 Div	verge Areas		
	L = (EQ	(Equation 13	3-12 or 13-3	13)	
	P = 0.596 U FD	Jsing Equat:	on 5		
	v = v + (v - v) $12 R F F$		30 pc/h		
	Capa	acity Checks	5		
v = v Fi F		Maxir 7200		LOS F? No	
v = v - v FO F R	3551	7200		No	
V	1065	2000		No	
R v or v 3 av34		h (Equa	ation 13-14	or 13-17)	
Is v or v	> 2700 pc/h?	No			
	> 1.5 v /2	No			
3 av34 If yes, v = 31 12A		(Equatio	on 13-15, 13	3-16, 13-18,	or 13-19)
	Flow Entering				
V	Actual 3180	Max Desira 4400	able	Violation? No	
12	Level of Service I	Determinatio	on (if not 1	F)	
Density,	D = 4.252 + R	0.0086 v	- 0.009 L D	= 27.1	pc/mi/ln
Level of service	for ramp-freeway j		2	uence C	
	Speed	Estimation_			
Intermediate spee	d variable,	I	0 = 0.524		
Space mean speed	in ramp influence	area, S	S = 57.7	mph	
Space mean speed	in outer lanes,	(R 5 = 80.6	mph	
Space mean speed	for all vehicles,	(0 5 = 63.3	mph	

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___Operational Analysis_____ Analyst: ae Agency or Company: Stantec Date Performed: 6/15/16 Analysis Time Period: 3:00 - 4:00 PM Freeway/Direction: I-26 Westbound From/To: SC 27 Interchange Jurisdiction: SCDOT Analysis Year: 2039 Design Year Description: 171001612 - No Build - 4k Flow Inputs and Adjustments Volume, V veh/h 2906 Peak-hour factor, PHF 0.90 Peak 15-min volume, v15 807 V Trucks and buses 20 % Recreational vehicles % 0 Terrain type: Level 00 Grade _ Segment length mi Trucks and buses PCE, ET 1.5 Recreational vehicle PCE, ER 1.2 Heavy vehicle adjustment, fHV 0.909 Driver population factor, fp 1.00 Flow rate, vp 1184 pc/h/ln _____Speed Inputs and Adjustments_____ Lane width ft 12.0 Right-side lateral clearance 6.0 ft Total ramp density, TRD 0.00 ramps/mi Number of lanes, N 3 Free-flow speed: Base FFS or BFFS 75.4 mi/h Lane width adjustment, fLW 0.0 mi/h mi/h Lateral clearance adjustment, fLC 0.0 TRD adjustment 0.0 mi/h Free-flow speed, FFS 75.4 mi/h LOS and Performance Measures Flow rate, vp 1184 pc/h/ln Free-flow speed, FFS 75.4 mi/h Average passenger-car speed, S 74.6 mi/h Number of lanes, N 3 Density, D 15.9 pc/mi/ln Level of service, LOS В

Phone: E-mail: Merge Analysis Analyst: ae Agency/Co.: Stantec Agency/Co.:StantecDate performed:6/15/16Analysis time period:3:00 - 4:00 PM Freeway/Dir of Travel: I-26 Westbound Junction: SC 27 On-Ramp Jurisdiction: SCDOT Analysis Year: 2039 Design Year Description: 171001612 - No Build - 4k _____Freeway Data Type of analysis Merge Number of lanes in freeway 3 75.0 2906 mph Free-flow speed on freeway Volume on freeway vph _____On Ramp Data_____ Side of freeway Right Number of lanes in ramp 1 mph Free-flow speed on ramp 35.0 vph 427 Volume on ramp Length of first accel/decel lane 925 ft Length of second accel/decel lane ft _____Adjacent Ramp Data (if one exists)_____ Yes Does adjacent ramp exist? Volume on adjacent Ramp vph Position of adjacent Ramp Upstream Type of adjacent Ramp Off Distance to adjacent Ramp 2175 ft Conversion to pc/h Under Base Conditions Junction Components Freeway Ramp Adjacent Ramp

 2906
 427

 0.90
 0.90

 807
 119

 20
 20

 0
 0

 Volume, V (vph) vph 871 Peak-hour factor, PHF 0.90 Peak 15-min volume, v15 242 v 20 20 20 0 0 0 Level Level Level % % Trucks and buses % 00 Recreational vehicles Terrain type: ۶ mi % mi 00 Grade Lenqth mi Lengtn Trucks and buses PCE, ET 1.5 Recreational vehicle PCE, ER

Heavy vehicle adjustment, f Driver population factor, f Flow rate, vp	P	0.909 1.00 3552	1.00		pcph
Es	timation of	V12 Merge A	reas		
EQ P = 0 FM	10.74 (Equa .603 Using P) = 2143 FM	Equation			
	Capacity	Checks			
	Actual 4074	Maximum 7200		LOS F? No	
v or v	1409 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		Yes			
3 av34 12 If yes, v = 2143 12A		Equation 13	-15, 13	-16, 13-18,	or 13-19)
Actua v 2665 12A	w Entering M l Max 460 ervice Deter	Desirable 0		Violation? No	
Density, D = 5.475 + 0.0073 R Level of service for ramp-f	R	12	A		pc/mi/ln
	Speed Esti	mation			
Intermediate speed variable	,		0.312		
Space mean speed in ramp in	fluence area		64.7	mph	
Space mean speed in outer l	anes,		71.7	mph	
Space mean speed for all ve	hicles,	0 S =	67.0	mph	

E-Mall:		
Operational Ana	lysis	
Analyst: ae		
Agency or Company: Stantec		
Date Performed: 6/15/16		
Analysis Time Period: 3:00 - 4:00 PM		
Analysis Time Period:3:00 - 4:00 PMFreeway/Direction:I-26 Westbound		
From/To: West of SC 27		
Jurisdiction: SCDOT		
Analysis Year: 2039 Design Year		
Description: 171001612 - No Build - 4k		
Flow Inputs and	Adjustments	
Volume, V	3333	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	926	v
Trucks and buses	20	00
Recreational vehicles	0	₽ ₽
Terrain type:	Level	
Grade	-	00
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.909	
Driver population factor, fp	1.00	
Flow rate, vp	1358	pc/h/ln
Speed Inputs an	d Adjustments	
Lane width	12.0	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	0.00	ramps/mi
Number of lanes, N	3	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	0.0	mi/h
Free-flow speed, FFS	75.4	mi/h
LOS and Perform	ance Measures	
Flow rate, vp	1358	pc/h/ln
Free-flow speed, FFS	75.4	mi/h
Average passenger-car speed, S	73.6	mi/h
Number of lanes, N	3	
Density, D Level of service, LOS	18.5 C	pc/mi/ln

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___Operational Analysis_____ Analyst: ae Agency or Company: Stantec Date Performed: 6/15/16 Date Performed:6/15/16Analysis Time Period:3:00 - 4:00 PMFreeway/Direction:I-26 Westbound From/To: West of SC 27 Jurisdiction: SCDOT Analysis Year: 2039 Design Year Description: 171001612 - No Build - 4k Flow Inputs and Adjustments Volume, V veh/h 3333 Peak-hour factor, PHF 0.90 Peak 15-min volume, v15 926 V Trucks and buses 20 % Recreational vehicles % 0 Terrain type: Level 00 Grade _ Segment length mi Trucks and buses PCE, ET 1.5 Recreational vehicle PCE, ER 1.2 Heavy vehicle adjustment, fHV 0.909 Driver population factor, fp 1.00 Flow rate, vp 2037 pc/h/ln _____Speed Inputs and Adjustments_____ Lane width ft 12.0 Right-side lateral clearance 6.0 ft Total ramp density, TRD 0.00 ramps/mi Number of lanes, N 2 Free-flow speed: Base FFS or BFFS 75.4 mi/h Lane width adjustment, fLW 0.0 mi/h mi/h Lateral clearance adjustment, fLC 0.0 TRD adjustment 0.0 mi/h Free-flow speed, FFS 75.4 mi/h LOS and Performance Measures Flow rate, vp 2037 pc/h/ln Free-flow speed, FFS 75.4 mi/h Average passenger-car speed, S 63.1 mi/h Number of lanes, N 2 Density, D 32.3 pc/mi/ln Level of service, LOS D

E-Mall:	
Operationa	l Analysis
Analyst: ae	
Agency or Company: Stantec	
Date Performed: 6/15/16	
Analysis Time Period: 3:00 - 4:00 Freeway/Direction: I-26 Eastbo	PM
Freewav/Direction: I-26 Eastbo	ound
From/To: West of SC	
Jurisdiction: SCDOT	
Analysis Year: 2039 Desigr	Year
Description: 171001612 - Build - 4	
Flow Input	s and Adjustments
Volume, V	3130 veh/h
Peak-hour factor, PHF	0.90
Peak 15-min volume, v15	869 v
Trucks and buses	20 %
Recreational vehicles	0 %
Terrain type:	Level
Grade	- %
Segment length	- mi
Irucks and buses PCE, ET	1.5
Recreational vehicle PCE, ER	1.2
Heavy vehicle adjustment, fHV	0.909
Driver population factor, fp	1.00
Flow rate, vp	1913 pc/h/ln
Speed Inpu	its and Adjustments
Lane width	12.0 ft
Right-side lateral clearance	6.0 ft
Total ramp density, TRD	0.00 ramps/mi
Number of lanes, N	2
Free-flow speed:	Base
FFS or BFFS	75.4 mi/h
Lane width adjustment, fLW	0.0 mi/h
Lateral clearance adjustment, fLC	0.0 mi/h
TRD adjustment	0.0 mi/h
Free-flow speed, FFS	75.4 mi/h
LOS and Pe	erformance Measures
Flow rate, vp	1913 pc/h/ln
Free-flow speed, FFS	75.4 mi/h
Average passenger-car speed, S	65.8 mi/h
Number of lanes, N	2
Density, D	29.1 pc/mi/ln
Level of service, LOS	D

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Operational An	alysis	
Analyst: ae		
Agency or Company: Stantec		
Date Performed: 6/15/16		
Analysis Time Period: 3:00 - 4:00 PM		
Freeway/Direction: I-26 Eastbound		
From/To: West of SC 27		
Jurisdiction: SCDOT		
Analysis Year: 2039 Design Yea	r	
Description: 171001612 - Build - 4k		
Flow Inputs an	d Adjustments	
Volume, V	3130	veh/h
Peak-hour factor, PHF	0.90	·
Peak 15-min volume, v15	869	v
Trucks and buses	20	00
Recreational vehicles	0	00
Terrain type:	Level	
Grade	-	00
Segment length	-	mi
Irucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.909	
Driver population factor, fp	1.00	
Flow rate, vp	1275	pc/h/ln
Speed Inputs a	nd Adjustments_	
Lane width	12.0	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	0.00	ramps/mi
Number of lanes, N	3	_
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	0.0	mi/h
Free-flow speed, FFS	75.4	mi/h
LOS and Perfor	mance Measures_	
Flow rate, vp	1275	pc/h/ln
Free-flow speed, FFS	75.4	mi/h
Average passenger-car speed, S	74.2	mi/h
Number of lanes, N	3	
Density, D Level of service, LOS	17.2	pc/mi/ln

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_____Diverge Analysis Analyst: ae Agency/Co.: Stantec Agency/Co.:StantecDate performed:6/15/16Analysis time period:3:00 - 4:00 PM Freeway/Dir of Travel: I-26 Eastbound Junction: SC 27 Off-Ramp Jurisdiction: SCDOT Analysis Year: 2039 Design Year Description: 171001612 - Build - 4k _____Freeway Data Type of analysis Diverge Number of lanes in freeway 3 75.0 mph 3130 vph Free-flow speed on freeway Volume on freeway _____Off Ramp Data______ Side of freeway Right Number of lanes in ramp 1 mph Free-Flow speed on ramp 35.0 vph Volume on ramp 164 Length of first accel/decel lane 450 ft Length of second accel/decel lane ft _____Adjacent Ramp Data (if one exists)_____ Yes 378 Does adjacent ramp exist? Volume on adjacent ramp vph Position of adjacent ramp Downstream Type of adjacent ramp On ft Distance to adjacent ramp 2330 _____Conversion to pc/h Under Base Conditions_____ Junction Components Freeway Ramp Adjacent Ramp

 3130
 164

 0.90
 0.90

 869
 46

 20
 20

 0
 0

 Volume, V (vph) 378 vph 0.90 Peak-hour factor, PHF 105 Peak 15-min volume, v15 v 2 0 0 Trucks and buses % 00 Recreational vehicles 0 0 9 Level Level 0.00 % 0.00 % 0.00 % Terrain type: Grade 0.00 mi 0.00 mi 0.00 1.5* 1.5 1.5 1.2 1.2 1.2 Length mi Lengtn Trucks and buses PCE, ET Recreational vehicle PCE, ER

		justment, fHV n factor, fP		1.00	0.909 1.00 462	
$ \begin{array}{c} & & & & & & & & & & & & & & & & & & &$		Estimation	n of V12 Di	iverge Areas		
$\begin{array}{cccccccccccccccccccccccccccccccccccc$			(Equation 1	13-12 or 13-	13)	
12 R F R FD Capacity Checks Actual Maximum LOS F? V = V 3826 7200 No Fi F F V = V - V 3626 7200 No FO F R V 200 2000 No R V 0 r V 1250 pc/h (Equation 13-14 or 13-17) 3 av34 Is V or V > 2700 pc/h? No 3 av34 12 If yes, V = 2576 (Equation 13-15, 13-16, 13-18, or 13-19) 12A 		P = 0.655 U	Using Equat	ion 5		
ActualMaximumLOS F?v = v 3826 7200 NoFi Fr 3626 7200 NoFO F R 200 2000 Novor v 1250 pc/h (Equation 13-14 or 13-17)3av34 12 NoIs v or v > 2700 pc/h?No3av34 12 If yes, v = 2576 (Equation 13-15, 13-16, 13-18, or 13-19)12A				576 pc/h		
v = v 3826 7200 No Fi F v = v - v 3626 7200 No FO F R v 200 2000 No R v or v 1250 pc/h (Equation 13-14 or 13-17) 3 av34 Is v or v > 2700 pc/h? No 3 av34 12 If yes, v = 2576 (Equation 13-15, 13-16, 13-18, or 13-19) 12A 		Capa	acity Checł	۲S		
v = v - v FO F R FO F R V 200 2000 NO R V 0 or v 1250 pc/h (Equation 13-14 or 13-17) 3 av34 Is v or v 15 v /2 NO 3 av34 Is v or v 15 v /2 NO 3 av34 Is Flow Entering Diverge Influence Area C C C C C C C C C C C C C C C C C C C						
v 200 200 No R v or v 1250 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 = 2576 (Equation 13-15, 13-16, 13-18, or 13-19) 12A 	v = v - v		7200)	No	
v or v 1250 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 = 2576 (Equation 13-15, 13-16, 13-18, or 13-19) 12A 	v		2000)	No	
Is v or v $> 2700 \text{ pc/h}$? No 3 av34 Is v or v $> 1.5 \text{ v}/2$ No 3 av34 12 If yes, v = 2576 (Equation 13-15, 13-16, 13-18, or 13-19) 12A Flow Entering Diverge Influence Area Actual Max Desirable Violation? v 2576 4400 No 12 Level of Service Determination (if not F) Density, D = 4.252 + 0.0086 v - 0.009 L = 22.4 pc/mi/ln R 12 D Level of service for ramp-freeway junction areas of influence C Speed Estimation Intermediate speed variable, D = 0.446 Space mean speed in ramp influence area, S = 60.3 mph R Space mean speed in outer lanes, S = 81.3 mph 0	v or v		/h (Equ	ation 13-14	or 13-17)	
Is v or v > 1.5 v /2 No 3 av34 12 If yes, v = 2576 (Equation 13-15, 13-16, 13-18, or 13-19) 12A 	Is v or v	> 2700 pc/h?	No			
If yes, v = 2576 (Equation 13-15, 13-16, 13-18, or 13-19) 12A Flow Entering Diverge Influence Area Actual Max Desirable Violation? v 2576 4400 No 12 Level of Service Determination (if not F) Density, D = 4.252 + 0.0086 v - 0.009 L = 22.4 pc/mi/ln R 12 D Level of service for ramp-freeway junction areas of influence C Speed Estimation Intermediate speed variable, D = 0.446 Space mean speed in ramp influence area, S = 60.3 mph R Space mean speed in outer lanes, S = 81.3 mph 0	Is v or v	> 1.5 v /2	No			
Actual Max Desirable Violation? v 2576 4400 No 12	If yes, $v = 25$		(Equati	ion 13-15, 1	3-16, 13-18,	or 13-19)
v 2576 4400 No 12 Level of Service Determination (if not F) Density, $D = 4.252 + 0.0086 \text{ v} - 0.009 \text{ L} = 22.4 \text{ pc/mi/ln}$ Level of service for ramp-freeway junction areas of influence C Speed Estimation Intermediate speed variable, $D = 0.446$ Space mean speed in ramp influence area, $S = 60.3 \text{ mph}$ R Space mean speed in outer lanes, $S = 81.3 \text{ mph}$ 0						
Level of Service Determination (if not F) Density, D = 4.252 + 0.0086 v - 0.009 L = 22.4 pc/mi/ln R 12 D Level of service for ramp-freeway junction areas of influence C Speed Estimation Intermediate speed variable, D = 0.446 Space mean speed in ramp influence area, S = 60.3 mph R Space mean speed in outer lanes, S = 81.3 mph 0		Actual 2576		rable		
R 12 D Level of service for ramp-freeway junction areas of influence C	12	Level of Service I	Determinati	ion (if not	F)	
Level of service for ramp-freeway junction areas of influence C Speed Estimation Intermediate speed variable, D = 0.446 Space mean speed in ramp influence area, S = 60.3 mph R Space mean speed in outer lanes, S = 81.3 mph 0	Density,					pc/mi/ln
Intermediate speed variable, Space mean speed in ramp influence area, Space mean speed in outer lanes, D = 0.446 S S = 60.3 mph R S = 81.3 mph 0	Level of service					
Space mean speed in ramp influence area, Space mean speed in outer lanes, Space mean speed in speed in outer lanes, Space mean speed in		Speed	Estimatior	ı		
Space mean speed in ramp influence area,S = 60.3mphRRS= 81.3mph00000	Intermediate spee	ed variable,				
Space mean speed in outer lanes, S = 81.3 mph 0	Space mean speed	in ramp influence	area,	S = 60.3	mph	
· ·	Space mean speed	in outer lanes,		S = 81.3	mph	
	Space mean speed	for all vehicles,		•	mph	

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___Operational Analysis_____ Analyst: ae Agency or Company: Stantec Date Performed: 6/15/16 Analysis Time Period: 3:00 - 4:00 PM Freeway/Direction: I-26 Eastbound From/To: SC 27 Interchange Jurisdiction: SCDOT Analysis Year: 2039 Design Year Description: 171001612 - Build - 4k _____Flow Inputs and Adjustments_____ Volume, V veh/h 2966 Peak-hour factor, PHF 0.90 Peak 15-min volume, v15 824 V Trucks and buses 20 % Recreational vehicles % 0 Terrain type: Level 00 Grade _ Segment length mi Trucks and buses PCE, ET 1.5 Recreational vehicle PCE, ER 1.2 Heavy vehicle adjustment, fHV 0.909 Driver population factor, fp 1.00 Flow rate, vp 1208 pc/h/ln _____Speed Inputs and Adjustments_____ Lane width ft 12.0 Right-side lateral clearance 6.0 ft Total ramp density, TRD 0.00 ramps/mi Number of lanes, N 3 Free-flow speed: Base FFS or BFFS 75.4 mi/h Lane width adjustment, fLW 0.0 mi/h mi/h Lateral clearance adjustment, fLC 0.0 TRD adjustment 0.0 mi/h Free-flow speed, FFS 75.4 mi/h LOS and Performance Measures Flow rate, vp 1208 pc/h/ln Free-flow speed, FFS 75.4 mi/h Average passenger-car speed, S 74.5 mi/h Number of lanes, N 3 16.2 Density, D pc/mi/ln Level of service, LOS В

Phone: E-mail: Merge Analysis Analyst: ae Agency/Co.: Stantec Agency/Co.:StantecDate performed:6/15/16Analysis time period:3:00 - 4:00 PM Freeway/Dir of Travel: I-26 Eastbound Junction: SC 27 On-Ramp Jurisdiction: SCDOT Analysis Year: 2039 Design Year Description: 171001612 - Build - 4k _____Freeway Data Type of analysis Merge Number of lanes in freeway 3 75.0 mph 2966 vph Free-flow speed on freeway Volume on freeway vph _____On Ramp Data_____ Side of freeway Right Number of lanes in ramp 1 mph Free-flow speed on ramp 35.0 vph 378 Volume on ramp Length of first accel/decel lane 800 ft Length of second accel/decel lane ft _____Adjacent Ramp Data (if one exists)_____ Yes 164 Does adjacent ramp exist? Volume on adjacent Ramp vph Position of adjacent Ramp Upstream Type of adjacent Ramp Off Distance to adjacent Ramp 2330 ft Conversion to pc/h Under Base Conditions Junction Components Freeway Ramp Adjacent Ramp

 2966
 378

 0.90
 0.90

 824
 105

 20
 20

 0
 0

 Volume, V (vph) vph 164 Peak-hour factor, PHF 0.90 Peak 15-min volume, v15 46 v 20 20 20 0 0 0 Level Level Level % % Trucks and buses % 00 Recreational vehicles Terrain type: % mi % mi 00 Grade Lenqth mi Lengtn Trucks and buses PCE, ET 1.5 Recreational vehicle PCE, ER

Flow rate, vp 3625 462 200 pcp	h
Estimation of V12 Merge Areas	
L = 658.02 (Equation 13-6 or 13-7) EQ P = 0.600 Using Equation 1 FM v = v (P) = 2175 pc/h 12 F FM	
Capacity Checks	
Actual Maximum LOS F? v 4087 7200 No FO FO	
v or v 1450 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 = 2175 (Equation 13-15, 13-16, 13-18, or 13-1 12A	9)
Flow Entering Merge Influence Area Actual Max Desirable Violation? v 2637 4600 No 12A Level of Service Determination (if not F)	
Density, D = $5.475 + 0.00734 v + 0.0078 v - 0.00627 L = 20.8 pc/mi$ R R 12 A Level of service for ramp-freeway junction areas of influence C	/ln
Speed Estimation	
Intermediate speed variable, M = 0.319	
S Space mean speed in ramp influence area, S = 64.5 mph	
Space mean speed in outer lanes, S = 71.6 mph	
Space mean speed for all vehicles, S = 66.8 mph	

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___Operational Analysis______ Analyst: ae Agency or Company: Stantec Date Performed: 6/15/16 Analysis Time Period: 3:00 - 4:00 PM Freeway/Direction: I-26 Eastbound From/To: SC 27 to New Interchange Jurisdiction: SCDOT Analysis Year: 2039 Design Year Description: 171001612 - Build - 4k Flow Inputs and Adjustments_____ Volume, V veh/h 3344 Peak-hour factor, PHF 0.90 Peak 15-min volume, v15 929 v Trucks and buses 20 % Recreational vehicles % 0 Terrain type: Level 00 Grade _ Segment length mi Trucks and buses PCE, ET 1.5 Recreational vehicle PCE, ER 1.2 Heavy vehicle adjustment, fHV 0.909 Driver population factor, fp 1.00 Flow rate, vp 1362 pc/h/ln _____Speed Inputs and Adjustments_____ Lane width ft 12.0 Right-side lateral clearance 6.0 ft Total ramp density, TRD 0.67 ramps/mi Number of lanes, N 3 Free-flow speed: Base FFS or BFFS 75.4 mi/h Lane width adjustment, fLW 0.0 mi/h mi/h Lateral clearance adjustment, fLC 0.0 TRD adjustment mi/h 2.3 Free-flow speed, FFS 73.1 mi/h LOS and Performance Measures Flow rate, vp 1362 pc/h/ln Free-flow speed, FFS 73.1 mi/h Average passenger-car speed, S 73.5 mi/h Number of lanes, N 3 Density, D 18.5 pc/mi/ln Level of service, LOS С

	Operational Ar	nalysis	
Analyst:	ae		
Agency or Company:	Stantec		
	6/15/16		
Analysis Time Period: 3:00 - 4:00 PM			
Freeway/Direction:		Off Dama June	
From/To: New Interchange Off-Ramp Area Jurisdiction: SCDOT			
Analysis Year: 2039 Design Year Description: 171001612 - Build - 4k			
Description: 1/100161.	2 - Build - 4k		
	Flow Inputs ar	nd Adjustments	
Volume, V		3344	veh/h
Peak-hour factor, PHF		0.90	
Peak 15-min volume, v15		929	V
Trucks and buses		20	8
Recreational vehicles		0	8
Terrain type:		Level	-
Grade		-	8
Segment length		-	mi
Trucks and buses PCE, ET		1.5	
Recreational vehicle PCE, ER		1.2	
Heavy vehicle adjustment, fHV		0.909	
Driver population factor, fp		1.00	
Flow rate, vp	/ - <u>F</u>	1022	pc/h/ln
	Speed Inputs a	and Adjustments_	
Lane width		12.0	ft
Right-side lateral clearance		6.0	ft
Total ramp density, TRD		0.67	ramps/mi
Number of lanes, N		4	
Free-flow speed:		Base	
FFS or BFFS		75.4	mi/h
Lane width adjustment, fLW		0.0	mi/h
Lateral clearance adjustment, fLC		0.0	mi/h
TRD adjustment		2.3	mi/h
Free-flow speed, FFS		73.1	mi/h
	LOS and Perfor	rmance Measures_	
Flow rate, vp		1022	pc/h/ln
Free-flow speed, FFS		73.1	mi/h
Average passenger-car speed, S		75.0	mi/h
Number of lanes, N		4	
Density, D		13.6	pc/mi/ln
Level of service, LOS		нэ.0 В	P.C. (

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___Operational Analysis_____ Analyst: ae Agency or Company: Stantec Date Performed: 6/15/16 Date Performed:6/15/16Analysis Time Period:3:00 - 4:00 PMFreeway/Direction:I-26 Eastbound From/To: New Interchange Jurisdiction: SCDOT Analysis Year: 2039 Design Year Description: 171001612 - Build - 4k Flow Inputs and Adjustments_____ Volume, V veh/h 3294 Peak-hour factor, PHF 0.90 Peak 15-min volume, v15 915 v Trucks and buses 20 % Recreational vehicles % 0 Terrain type: Level 00 Grade _ Segment length mi Trucks and buses PCE, ET 1.5 Recreational vehicle PCE, ER 1.2 Heavy vehicle adjustment, fHV 0.909 Driver population factor, fp 1.00 Flow rate, vp 1342 pc/h/ln _____Speed Inputs and Adjustments_____ Lane width ft 12.0 Right-side lateral clearance 6.0 ft Total ramp density, TRD 0.67 ramps/mi Number of lanes, N 3 Free-flow speed: Base FFS or BFFS 75.4 mi/h Lane width adjustment, fLW 0.0 mi/h mi/h Lateral clearance adjustment, fLC 0.0 TRD adjustment mi/h 2.3 Free-flow speed, FFS 73.1 mi/h LOS and Performance Measures Flow rate, vp 1342 pc/h/ln Free-flow speed, FFS 73.1 mi/h Average passenger-car speed, S 73.7 mi/h Number of lanes, N 3 18.2 Density, D pc/mi/ln Level of service, LOS С

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___Operational Analysis_____ Analyst: ae Agency or Company: Stantec Date Performed: 6/15/16 Date Performed:6/15/16Analysis Time Period:3:00 - 4:00 PMFreeway/Direction:I-26 Eastbound From/To: New Interchange 2 On Ramp Jurisdiction: SCDOT Analysis Year: 2039 Design Year Description: 171001612 - Build - 4k Flow Inputs and Adjustments_____ Volume, V veh/h 4590 Peak-hour factor, PHF 0.90 Peak 15-min volume, v15 1275 V Trucks and buses 20 % Recreational vehicles % 0 Terrain type: Level 00 Grade _ Segment length mi Trucks and buses PCE, ET 1.5 Recreational vehicle PCE, ER 1.2 Heavy vehicle adjustment, fHV 0.909 Driver population factor, fp 1.00 Flow rate, vp 1122 pc/h/ln _____Speed Inputs and Adjustments_____ Lane width ft 12.0 Right-side lateral clearance 6.0 ft Total ramp density, TRD 0.67 ramps/mi Number of lanes, N 5 Free-flow speed: Base FFS or BFFS 75.4 mi/h Lane width adjustment, fLW 0.0 mi/h mi/h Lateral clearance adjustment, fLC 0.0 TRD adjustment mi/h 2.3 Free-flow speed, FFS 73.1 mi/h LOS and Performance Measures Flow rate, vp 1122 pc/h/ln Free-flow speed, FFS 73.1 mi/h Average passenger-car speed, S 74.8 mi/h Number of lanes, N 5 Density, D 15.0 pc/mi/ln Level of service, LOS В

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___Operational Analysis_____ Analyst: ae Agency or Company: Stantec Date Performed: 6/15/16 Date Performed:6/15/16Analysis Time Period:3:00 - 4:00 PMFreeway/Direction:I-26 Eastbound From/To: New Interchange 1 On Ramp Jurisdiction: SCDOT Analysis Year: 2039 Design Year Description: 171001612 - Build - 4k Flow Inputs and Adjustments_____ Volume, V veh/h 4590 Peak-hour factor, PHF 0.90 Peak 15-min volume, v15 1275 V Trucks and buses 20 % Recreational vehicles % 0 Terrain type: Level 00 Grade _ Segment length mi Trucks and buses PCE, ET 1.5 Recreational vehicle PCE, ER 1.2 Heavy vehicle adjustment, fHV 0.909 Driver population factor, fp 1.00 Flow rate, vp 1402 pc/h/ln _____Speed Inputs and Adjustments_____ ft Lane width 12.0 Right-side lateral clearance 6.0 ft Total ramp density, TRD 0.67 ramps/mi Number of lanes, N 4 Free-flow speed: Base FFS or BFFS 75.4 mi/h Lane width adjustment, fLW 0.0 mi/h mi/h Lateral clearance adjustment, fLC 0.0 TRD adjustment mi/h 2.3 Free-flow speed, FFS 73.1 mi/h LOS and Performance Measures Flow rate, vp 1402 pc/h/ln Free-flow speed, FFS 73.1 mi/h Average passenger-car speed, S 73.2 mi/h Number of lanes, N 4 19.2 Density, D pc/mi/ln Level of service, LOS С

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___Operational Analysis_____ Analyst: ae Agency or Company: Stantec Date Performed: 6/15/16 Date Performed:6/15/16Analysis Time Period:3:00 - 4:00 PMFreeway/Direction:I-26 Eastbound From/To: New Interchange to Jedburg Jurisdiction: SCDOT Analysis Year: 2039 Design Year Description: 171001612 - Build - 4k Flow Inputs and Adjustments_____ Volume, V veh/h 4590 Peak-hour factor, PHF 0.90 Peak 15-min volume, v15 1275 V Trucks and buses 20 % Recreational vehicles % 0 Terrain type: Level 00 Grade _ Segment length mi Trucks and buses PCE, ET 1.5 Recreational vehicle PCE, ER 1.2 Heavy vehicle adjustment, fHV 0.909 Driver population factor, fp 1.00 Flow rate, vp 1870 pc/h/ln _____Speed Inputs and Adjustments_____ Lane width ft 12.0 Right-side lateral clearance 6.0 ft Total ramp density, TRD 0.67 ramps/mi Number of lanes, N 3 Free-flow speed: Base FFS or BFFS 75.4 mi/h Lane width adjustment, fLW 0.0 mi/h mi/h Lateral clearance adjustment, fLC 0.0 TRD adjustment mi/h 2.3 Free-flow speed, FFS 73.1 mi/h LOS and Performance Measures Flow rate, vp 1870 pc/h/ln Free-flow speed, FFS 73.1 mi/h Average passenger-car speed, S 66.6 mi/h Number of lanes, N 3 Density, D 28.1 pc/mi/ln Level of service, LOS D

Phone: Fax: E-mail: _____Diverge Analysis Analyst: ae Agency/Co.: Stantec Agency/Co.:StantecDate performed:6/15/16Analysis time period:3:00 - 4:00 PM Freeway/Dir of Travel: I-26 Eastbound Junction:Jedburg Off-RampJurisdiction:SCDOTAnalysis Year:2039 Design Year Description: 171001612 - Build - 4k _____Freeway Data Type of analysis Diverge Number of lanes in freeway 3 73.1 mph 4590 vph Free-flow speed on freeway Volume on freeway _____Off Ramp Data_____ Side of freeway Right Number of lanes in ramp 1 mph Free-Flow speed on ramp 35.0 vph Volume on ramp 313 500 Length of first accel/decel lane ft Length of second accel/decel lane ft _____Adjacent Ramp Data (if one exists)_____ Yes 675 Does adjacent ramp exist? Volume on adjacent ramp vph Position of adjacent ramp Downstream Type of adjacent ramp On ft Distance to adjacent ramp 1620 Conversion to pc/h Under Base Conditions Freeway Ramp Junction Components Adjacent Ramp

 4590
 313

 0.90
 0.90

 1275
 87

 20
 20

 0
 0

 Volume, V (vph) 675 vph 0.90 188 Peak-hour factor, PHF Peak 15-min volume, v15 v 20 0 Trucks and buses % 00 Recreational vehicles 0 0 9 Level Level 0.00 % 0.00 % 0.00 % Terrain type: Grade 0.00 mi 0.00 mi 0.00 1.5 1.5 1.5 1.2 1.2 1.2 Length

1.5 1.2

Trucks and buses PCE, ET

Recreational vehicle PCE, ER

mi

		justment, fHV n factor, fP		1.00	0.909 1.00 825	
$ \begin{array}{c} & & & & & & & & & & & & & & & & & & &$		Estimation	n of V12 D:	iverge Areas		
$\begin{array}{cccccccccccccccccccccccccccccccccccc$			(Equation 3	13-12 or 13-	13)	
12 R F R FD Capacity Checks Actual Maximum LOS F? V = V 5610 7200 No Fi F F 5227 7200 No FO F R 383 2000 No V 383 2000 No R v 383 2000 No R vorv 2080 pc/h (Equation 13-14 or 13-17) 3 3 av34 12 No 3 av34 Is vorv > 2700 pc/h? No 3 av34 12 If yes, v = 3530 (Equation 13-15, 13-16, 13-18, or 13-19) 12A		P = 0.602	Using Equat	tion 5		
Actual Maximum LOS F? v = v 5610 7200 No Fi F v = v - v 5227 7200 No FO F R v 383 2000 No R v or v 2080 pc/h (Equation 13-14 or 13-17) 3 av34 Is v or v > 2700 pc/h? No 3 av34 12 If yes, v = 3530 (Equation 13-15, 13-16, 13-18, or 13-19) 12A 				530 pc/h		
v = v 5610 7200 No Fi F v = v - v 5227 7200 No FO F R v 383 2000 No R v or v 2080 pc/h (Equation 13-14 or 13-17) 3 av34 Is v or v > 2700 pc/h? No 3 av34 12 If yes, v = 3530 (Equation 13-15, 13-16, 13-18, or 13-19) 12A 		Capa	acity Checl	<s< td=""><td></td><td></td></s<>		
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$						
v 383 200 No R v or v 2080 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 = 3530 (Equation 13-15, 13-16, 13-18, or 13-19) 12A 	V = V - V	5227	7200	0	No	
v or v 2080 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 = 3530 (Equation 13-15, 13-16, 13-18, or 13-19) 12A Flow Entering Diverge Influence Area Actual Max Desirable Violation? v 3530 4400 No 12 Level of Service Determination (if not F) Level of Service Determination (if not F) Level of service for ramp-freeway junction areas of influence D Speed Estimation Intermediate speed variable, D = 0.462 Space mean speed in ramp influence area, S = 58.7 mph R Space mean speed in outer lanes, S = 76.0 mph 0	V	383	200	D	No	
Is v or v $> 2700 \text{ pc/h}$? No 3 av34 Is v or v $> 1.5 \text{ v}/2$ No 3 av34 12 If yes, v = 3530 (Equation 13-15, 13-16, 13-18, or 13-19) 12A 	v or v		/h (Equ	uation 13-14	or 13-17)	
Is v or v > 1.5 v /2 No 3 av34 12 If yes, v = 3530 (Equation 13-15, 13-16, 13-18, or 13-19) 12A 	Is v or v	> 2700 pc/h?	No			
If yes, v = 3530 (Equation 13-15, 13-16, 13-18, or 13-19) 12A Flow Entering Diverge Influence Area Actual Max Desirable Violation? v 3530 4400 No 12 Level of Service Determination (if not F) Density, D = 4.252 + 0.0086 v - 0.009 L = 30.1 pc/mi/ln R 12 D Level of service for ramp-freeway junction areas of influence D Speed Estimation Intermediate speed variable, D = 0.462 Space mean speed in ramp influence area, S = 58.7 mph R Space mean speed in outer lanes, S = 76.0 mph 0	Is v or v	> 1.5 v /2	No			
Actual Max Desirable Violation? v 3530 4400 No 12	If yes, $v = 35$		(Equat:	ion 13-15, 1	3-16, 13-18,	or 13-19)
v 3530 4400 No 12 Level of Service Determination (if not F) Density, D = 4.252 + 0.0086 v - 0.009 L = 30.1 pc/mi/ln R 12 D Level of service for ramp-freeway junction areas of influence D Speed Estimation Intermediate speed variable, D = 0.462 Space mean speed in ramp influence area, S = 58.7 mph R Space mean speed in outer lanes, S = 76.0 mph 0						
Level of Service Determination (if not F) Density, D = 4.252 + 0.0086 v - 0.009 L = 30.1 pc/mi/ln R 12 D Level of service for ramp-freeway junction areas of influence D Speed Estimation Intermediate speed variable, D = 0.462 Space mean speed in ramp influence area, S = 58.7 mph R Space mean speed in outer lanes, S = 76.0 mph 0				rable		
R 12 D Level of service for ramp-freeway junction areas of influence D	12	Level of Service	Determinat:	ion (if not	F)	
Level of service for ramp-freeway junction areas of influence D Speed Estimation Intermediate speed variable, D = 0.462 Space mean speed in ramp influence area, S = 58.7 mph R Space mean speed in outer lanes, S = 76.0 mph 0	Density,					pc/mi/ln
Intermediate speed variable, Space mean speed in ramp influence area, Space mean speed in outer lanes, D = 0.462 S S = 58.7 mph R S = 76.0 mph 0	Level of service	for ramp-freeway		- 2		
Space mean speed in ramp influence area, Space mean speed in outer lanes, Space mean speed in speed in outer lanes, Space mean speed in sp		Speed	Estimation	n		
Space mean speed in ramp influence area, $S = 58.7$ mph R Space mean speed in outer lanes, $S = 76.0$ mph 0	Intermediate spee	ed variable,				
Space mean speed in outer lanes, $S = 76.0$ mph 0	Space mean speed	in ramp influence	area,	S = 58.7	mph	
	Space mean speed	in outer lanes,		S = 76.0	mph	
	Space mean speed	for all vehicles,		•	mph	

Fax:

Operational Analysis_____ Analyst: ae Agency or Company: Stantec Date Performed: 6/15/16 Date Performed:6/15/16Analysis Time Period:3:00 - 4:00 PMFreeway/Direction:I-26 Eastbound From/To: Jedburg Interchange Jurisdiction: SCDOT Analysis Year: 2039 Design Year Description: 171001612 - Build - 4k Flow Inputs and Adjustments Volume, V veh/h 4277 Peak-hour factor, PHF 0.90 Peak 15-min volume, v15 1188 V Trucks and buses 20 % Recreational vehicles % 0 Terrain type: Level 00 Grade _ Segment length mi Trucks and buses PCE, ET 1.5 Recreational vehicle PCE, ER 1.2 Heavy vehicle adjustment, fHV 0.909 Driver population factor, fp 1.00 Flow rate, vp 1742 pc/h/ln _____Speed Inputs and Adjustments_____ Lane width ft 12.0 Right-side lateral clearance 6.0 ft Total ramp density, TRD 0.67 ramps/mi Number of lanes, N 3 Free-flow speed: Base FFS or BFFS 75.4 mi/h Lane width adjustment, fLW 0.0 mi/h mi/h Lateral clearance adjustment, fLC 0.0 TRD adjustment mi/h 2.3 Free-flow speed, FFS 73.1 mi/h LOS and Performance Measures Flow rate, vp 1742 pc/h/ln Free-flow speed, FFS 73.1 mi/h Average passenger-car speed, S 68.9 mi/h Number of lanes, N 3 25.3 Density, D pc/mi/ln Level of service, LOS С

Fax:

E-mail: Merge Analysis Analyst: ae Agency/Co.: Stantec Agency/Co.:StantecDate performed:6/15/16Analysis time period:3:00 - 4:00 PM Freeway/Dir of Travel: I-26 Eastbound Junction:Jedburg On-RampJurisdiction:SCDOTAnalysis Year:2039 Design Year Description: 171001612 - Build - 4k _____Freeway Data Type of analysis Merge Number of lanes in freeway 3 73.1 mph 4277 vph Free-flow speed on freeway Volume on freeway vph _____On Ramp Data_____ Side of freeway Right Number of lanes in ramp 1 mph Free-flow speed on ramp 35.0 vph Volume on ramp 675 Length of first accel/decel lane 1150 ft Length of second accel/decel lane ft _____Adjacent Ramp Data (if one exists)_____ Yes 313 Does adjacent ramp exist? Volume on adjacent Ramp vph Position of adjacent Ramp Upstream Type of adjacent Ramp Off Distance to adjacent Ramp 1620 ft Conversion to pc/h Under Base Conditions Freeway Ramp Junction Components Adjacent Ramp

 4277
 675

 0.90
 0.90

 1188
 188

 20
 20

 0
 0

 Volume, V (vph) vph 313 Peak-hour factor, PHF 0.90 Peak 15-min volume, v15 87 v 2 0 0 ∠0 0 0 Level Level Level % % mi Trucks and buses 20 % 00 Recreational vehicles Terrain type: ۶ mi % mi 00 Grade Lenqth mi Lengtn Trucks and buses PCE, ET 1.5 1.5 1.2 1.2 1.5 1.5 1.2 Recreational vehicle PCE, ER

Phone:

Heavy vehicle adjustment, fHV Driver population factor, fP Flow rate, vp				pcph
Estimat	ion of V12 Merge	e Areas		
EQ P = 0.610 FM	3 (Equation 13-6 Using Equation = 3187 pc/h			
C	apacity Checks			
Actua v 6052 FO	l Maximum 7200	n LO. No	5 F?	
v or v 2040	pc/h (Equati	on 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 = 3187 12A	(Equation	13-15, 13-1	5, 13-18, c	or 13-19)
Actual v 4012 12A	ering Merge Infl Max Desirabl 4600 e Determination	e V	iolation?	
Density, D = 5.475 + 0.00734 v R R Level of service for ramp-freewa	12	A		pc/mi/ln
Spe	ed Estimation			
Intermediate speed variable,	М	= 0.456		
Space mean speed in ramp influer		= 58.9 mj	ph	
Space mean speed in outer lanes,	RS	= 67.6 mj	ph	
Space mean speed for all vehicle	0 s, S	= 61.6 mj	ọh	

Operational A		
Operational An	nalysis	
Analyst: ae		
Agency or Company: Stantec		
Date Performed: 6/15/16		
Analysis Time Period: 3:00 - 4:00 PM		
Freeway/Direction: I-26 Eastbound		
From/To: East of Jedburg		
Jurisdiction: SCDOT	-	
Analysis Year: 2039 Design Yea	ar	
Description: 171001612 - Build - 4k		
Flow Inputs an	nd Adjustments	
Volume, V	4952	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	1376	V
Irucks and buses	20	00
Recreational vehicles	0	00
Terrain type:	Level	
Grade	-	00
Segment length	-	mi
Irucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.909	
Driver population factor, fp	1.00	
Flow rate, vp	2017	pc/h/ln
Speed Inputs a	and Adjustments_	
Lane width	12.0	ft
Right-side lateral clearance	6.0	ft
Iotal ramp density, TRD	1.17	ramps/mi
Number of lanes, N	3	± '
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
IRD adjustment	3.7	mi/h
Free-flow speed, FFS	71.7	mi/h
LOS and Perfo	rmance Measures_	
Flow rate, vp	2017	pc/h/ln
Free-flow speed, FFS	71.7	mi/h
Average passenger-car speed, S	62.3	mi/h
Number of lanes, N	3	
Density, D	32.4	pc/mi/ln

E-Mall.		
Operational 2	Analysis	
Analyst: ae		
Agency or Company: Stantec		
Date Performed: 6/15/16		
Analysis Time Period: 3:00 - 4:00 PI	M	
Freeway/Direction: I-26 Westbound	d	
From/To: East of Jedbu:		
Jurisdiction: SCDOT	2	
Analysis Year: 2039 Design Ye	ear	
Description: 171001612 - Build - 4k		
Flow Inputs a	and Adjustments	
Volume, V	4397	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	1221	V
Trucks and buses	20	20
Recreational vehicles	0	<u>0</u>
Terrain type:	Level	
Grade	-	00
Segment length	-	mi
Irucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.909	
Driver population factor, fp	1.00	
Flow rate, vp	1791	pc/h/ln
Speed Inputs	and Adjustments_	
Lane width	12.0	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	1.33	ramps/mi
Number of lanes, N	3	_
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	4.1	mi/h
Free-flow speed, FFS	71.3	mi/h
LOS and Perfo	ormance Measures_	
Flow rate, vp	1791	pc/h/ln
Free-flow speed, FFS	71.3	mi/h
Average passenger-car speed, S	65.9	mi/h
Number of lanes, N	3	
Density, D	27.2	pc/mi/ln
Level of service, LOS	D	

Fax:

_____Diverge Analysis Analyst: ae Agency/Co.: Stantec Agency/Co.:StantecDate performed:6/15/16Analysis time period:3:00 - 4:00 PM Freeway/Dir of Travel: I-26 Westbound Junction:Jedburg Off-RampJurisdiction:SCDOTAnalysis Year:2039 Design Year Description: 171001612 - Build - 4k _____Freeway Data Type of analysis Diverge Number of lanes in freeway 3 71.3 mph 4397 vph Free-flow speed on freeway Volume on freeway _____Off Ramp Data______ Side of freeway Right Number of lanes in ramp 1 mph Free-Flow speed on ramp 35.0 vph Volume on ramp 421 Length of first accel/decel lane 750 ft Length of second accel/decel lane ft _____Adjacent Ramp Data (if one exists)_____ Does adjacent ramp exist? Yes 626 Volume on adjacent ramp vph Position of adjacent ramp Downstream Type of adjacent ramp Off Distance to adjacent ramp 750 ft Conversion to pc/h Under Base Conditions Freeway Ramp Junction Components Adjacent Ramp

 4397
 421
 626

 0.90
 0.90
 0.90

 1221
 117
 174

 20
 20
 20

 0
 0
 0

 Volume, V (vph) vph Peak-hour factor, PHF Peak 15-min volume, v15 v Trucks and buses % 00 Recreational vehicles
 0
 0
 0
 4

 Level
 Level
 Level
 0
 4

 0.00
 %
 0.00
 %
 0.00
 %
 Terrain type: Grade 0.00 mi 0.00 mi 0.00 1.5 1.5 1.5 1.2 1.2 1.2 Length mi Trucks and buses PCE, ET 1.5 1.2 Recreational vehicle PCE, ER

Heavy vehicle adjus Driver population f Flow rate, vp			1.00	1.00	pcph
	Estimation	of V12 Diverg	e Areas		
	= 971.54 (H	Equation 13-12	or 13-13	3)	
P	= 0.630 Us FD	sing Equation	7		
	= v + (v - v) 12 R F R		pc/h		
	Capac	city Checks			
v = v Fi F		Maximum 7200		los f? No	
v = v - v FO F R	4859	7200	1	Jo	
V	515	2000	1	10	
R v or v 3 av34	1800 pc/H	n (Equation	n 13-14 c	or 13-17)	
Is v or v >	2700 pc/h?	No			
3 av34 Is v or v >		No			
3 av34 If yes, v = 3574 12A		(Equation 1	3-15, 13-	-16, 13-18,	or 13-19)
	Flow Entering				
v	Actual 3574	Max Desirable 4400		Violation? No	
12 Le	vel of Service De	etermination (if not F)		
Density,	D = 4.252 + ().0086 v - 0. 12	009 L D	= 28.2	pc/mi/ln
Level of service fo			2	ence D	
	Speed H	Estimation			
Intermediate speed	variable,	D = S	0.474		
Space mean speed in	ramp influence a	area, S =	57.4	mph	
Space mean speed in	outer lanes,		75.1	mph	
Space mean speed fo	r all vehicles,	0 S =	62.3	mph	

Fax:

___Operational Analysis_____ Analyst: ae Agency or Company: Stantec Date Performed: 6/15/16 Date Performed:6/15/16Analysis Time Period:3:00 - 4:00 PMFreeway/Direction:I-26 Westbound From/To: Jedburg Off-Ramp to Loop Ramp Jurisdiction: SCDOT Analysis Year: 2039 Design Year Description: 171001612 - Build - 4k Flow Inputs and Adjustments Volume, V 3976 veh/h Peak-hour factor, PHF 0.90 Peak 15-min volume, v15 1104 V Trucks and buses 20 % Recreational vehicles % 0 Terrain type: Level 00 Grade _ Segment length mi Trucks and buses PCE, ET 1.5 Recreational vehicle PCE, ER 1.2 Heavy vehicle adjustment, fHV 0.909 Driver population factor, fp 1.00 Flow rate, vp 1620 pc/h/ln _____Speed Inputs and Adjustments_____ Lane width ft 12.0 Right-side lateral clearance 6.0 ft Total ramp density, TRD 1.33 ramps/mi Number of lanes, N 3 Free-flow speed: Base FFS or BFFS 75.4 mi/h Lane width adjustment, fLW 0.0 mi/h mi/h Lateral clearance adjustment, fLC 0.0 TRD adjustment mi/h 4.1 Free-flow speed, FFS 71.3 mi/h LOS and Performance Measures Flow rate, vp 1620 pc/h/ln Free-flow speed, FFS 71.3 mi/h Average passenger-car speed, S 68.0 mi/h Number of lanes, N 3 Density, D 23.8 pc/mi/ln Level of service, LOS С

Fax:

_____Diverge Analysis Analyst: ae Agency/Co.: Stantec Agency/Co.:StantecDate performed:6/15/16Analysis time period:3:00 - 4:00 PM Freeway/Dir of Travel: I-26 Westbound Junction: Jedburg Loop Off-Ramp Jurisdiction: SCDOT Analysis Year: 2039 Design Year Description: 171001612 - Build - 4k _____Freeway Data Type of analysis Diverge Number of lanes in freeway 3 71.3 mph 3976 vph Free-flow speed on freeway Volume on freeway _____Off Ramp Data______ Side of freeway Right Number of lanes in ramp 1 Free-Flow speed on ramp 35.0 mph vph Volume on ramp 626 Length of first accel/decel lane 750 ft Length of second accel/decel lane ft _____Adjacent Ramp Data (if one exists)_____ Yes 421 Does adjacent ramp exist? Volume on adjacent ramp vph Position of adjacent ramp Upstream Type of adjacent ramp Off Distance to adjacent ramp 750 ft Conversion to pc/h Under Base Conditions Freeway Ramp Junction Components Adjacent Ramp
 3976
 626

 0.90
 0.90

 1104
 174

 20
 20

 0
 0
 Volume, V (vph) 421 vph Peak-hour factor, PHF 0.90 117 20 0 Peak 15-min volume, v15 v Trucks and buses % 00 Recreational vehicles 0 0 9 Level Level 0.00 % 0.00 % 0.00 % Terrain type: Grade 0.00 mi 0.00 mi 0.00 1.5 1.5 1.5 1.2 1.2 1.2 Length mi Trucks and buses PCE, ET 1.5 1.2 Recreational vehicle PCE, ER

	ustment, fHV factor, fP		1.00	1.00	pcph
	Estimation	n of V12 Di	iverge Areas		
	L = (EQ	Equation 1	13-12 or 13-	13)	
	P = 0.603 U FD	Jsing Equat	tion 5		
	v = v + (v - v 12 R F R		236 pc/h		
	Capa	acity Check	s		
V = V Fi F	Actual 4860	Max1 7200		LOS F? No	
v = v - v FO F R	4095	7200)	No	
v R	765	2000)	No	
v or v 3 av34	-	'h (Equ	ation 13-14	or 13-17)	
	> 2700 pc/h?	No			
	> 1.5 v /2	No			
If yes, v = 32 12A		(Equati	ion 13-15, 1	3-16, 13-18,	or 13-19)
	Flow Entering				
V	Actual 3236	Max Desiı 4400	rable	Violation? No	
12	Level of Service D	Determinati	ion (if not	F)	
Density,				= 25.3	pc/mi/ln
Level of service	R for ramp-freeway j	12 unction an			
	Speed	Estimatior	ı		
Intermediate spee	ed variable,		D = 0.497		
Space mean speed	in ramp influence	area,	S S = 56.7	mph	
Space mean speed	in outer lanes,		R = 75.8	mph	
Space mean speed	for all vehicles,		S = 61.9	mph	

Fax:

__Operational Analysis_____ Analyst: ae Agency or Company: Stantec Date Performed: 6/15/16 Date Performed:6/15/16Analysis Time Period:3:00 - 4:00 PMFreeway/Direction:I-26 Westbound From/To: Jedburg Loop Ramp to On-Ramp Jurisdiction: SCDOT Analysis Year: 2039 Design Year Description: 171001612 - Build - 4k _____Flow Inputs and Adjustments_____ Volume, V veh/h 3350 Peak-hour factor, PHF 0.90 Peak 15-min volume, v15 931 v Trucks and buses 20 % Recreational vehicles % 0 Terrain type: Level 00 Grade _ Segment length mi Trucks and buses PCE, ET 1.5 Recreational vehicle PCE, ER 1.2 Heavy vehicle adjustment, fHV 0.909 Driver population factor, fp 1.00 Flow rate, vp 1365 pc/h/ln _____Speed Inputs and Adjustments_____ Lane width ft 12.0 Right-side lateral clearance 6.0 ft Total ramp density, TRD 1.33 ramps/mi Number of lanes, N 3 Free-flow speed: Base FFS or BFFS 75.4 mi/h Lane width adjustment, fLW 0.0 mi/h mi/h Lateral clearance adjustment, fLC 0.0 TRD adjustment mi/h 4.1 Free-flow speed, FFS 71.3 mi/h LOS and Performance Measures Flow rate, vp 1365 pc/h/ln Free-flow speed, FFS 71.3 mi/h Average passenger-car speed, S 69.7 mi/h Number of lanes, N 3 Density, D 19.6 pc/mi/ln Level of service, LOS С

Phone: Fax: E-mail: Merge Analysis Analyst: ae Agency/Co.: Stantec Agency/Co.:StantecDate performed:6/15/16Analysis time period:3:00 - 4:00 PM Freeway/Dir of Travel: I-26 Westbound Junction:Jedburg On-RampJurisdiction:SCDOTAnalysis Year:2039 Design Year Description: 171001612 - Build - 4k _____Freeway Data Type of analysis Merge Number of lanes in freeway 3 71.3 3350 mph Free-flow speed on freeway Volume on freeway vph _____On Ramp Data_____ Side of freeway Right Number of lanes in ramp 1 mph Free-flow speed on ramp 35.0 vph 427 Volume on ramp Length of first accel/decel lane 1300 ft Length of second accel/decel lane ft _____Adjacent Ramp Data (if one exists)_____ Yes 626 Does adjacent ramp exist? Volume on adjacent Ramp vph Position of adjacent Ramp Upstream Type of adjacent Ramp Off Distance to adjacent Ramp 900 ft Conversion to pc/h Under Base Conditions Junction Components Freeway Ramp Adjacent Ramp 33504270.900.90931119202000 Volume, V (vph) vph 626 Peak-hour factor, PHF 0.90 Peak 15-min volume, v15 174 v 20 20 20 0 0 0 Level Level Level % % mi Trucks and buses 8 00 Recreational vehicles Terrain type: ۶ mi % mi 00 Grade Lenqth mi Trucks and buses PCE, ET Recreational vehicle PCE, ER 1.5

Heavy vehicle adjustment, fHV Driver population factor, fP Flow rate, vp		1.00	9 0.909 1.00 765	pcph
Estir	nation of V12 I	Merge Areas_		
EQ P = 0.60 FM	22 (Equation 08 Using Equa) = 2489 po 1	ation 2	7)	
	Capacity Che	cks		
	ual Ma: .6 72	kimum DO	LOS F? No	
v or v 160)5 pc/h (Ed	quation 13-1	4 or 13-17)	
3 av34 Is v or v > 2700 pc/h3	No No			
3 av34 Is v or v > 1.5 v /2	Ye	5		
3 av34 12 If yes, v = 2489 12A	(Equa	tion 13-15,	13-16, 13-18,	or 13-19)
Actual v 3011 12A	Intering Merge Max Des 4600 vice Determinat	irable	Violation? No	
Density, D = 5.475 + 0.00734 v R Level of service for ramp-free	R 11	2	A	pc/mi/ln
	Speed Estimation	on		
Intermediate speed variable,		M = 0.309		
Space mean speed in ramp influ	lence area,	S = 62.2	mph	
Space mean speed in outer lane	es,	R = 67.3	mph	
Space mean speed for all vehic	les,	0 S = 63.9	mph	

Operational A	malysis	
Analyst: ae		
Agency or Company: Stantec		
Date Performed: 6/15/16		
Analysis Time Period: 3:00 - 4:00 PM	1	
Freeway/Direction: I-26 Westbound	l	
From/To: Jedburg to New	/ Interchange	
Jurisdiction: SCDOT		
Analysis Year: 2039 Design Ye	ear	
Description: 171001612 - Build - 4k		
Flow Inputs a	and Adjustments	
Volume, V	3777	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	1049	V
Trucks and buses	20	20
Recreational vehicles	0	00
Terrain type:	Level	
Grade	-	9
Segment length	-	mi
Irucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.909	
Driver population factor, fp	1.00	
Flow rate, vp	1539	pc/h/ln
Speed Inputs	and Adjustments_	
Lane width	12.0	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	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	2.8	mi/h
Free-flow speed, FFS	72.6	mi/h
LOS and Perfo	ormance Measures_	
Flow rate, vp	1539	pc/h/ln
Free-flow speed, FFS	72.6	mi/h
Average passenger-car speed, S	71.8	mi/h
Number of lanes, N	3	
Density, D	21.4	pc/mi/ln
Level of service, LOS	С	

	Operational An	nalvsis	
Analyst:	ae		
Agency or Company:	Stantec		
	6/15/16		
Analysis Time Period:			
	I-26 Westbound		
From/To:	New Interchange	e 1 Off Ramp	
Jurisdiction:	SCDOT		
	2039 Design Yea	ar	
Description: 171001612	- Build - 4k		
	Flow Inputs an	nd Adjustments	
Volume, V		3777	veh/h
Peak-hour factor, PHF		0.90	V C11/ 11
Peak 15-min volume, v15		1049	V
Trucks and buses		20	২
Recreational vehicles		0	8 8
Terrain type:		Level	0
Grade		-	8
Segment length		_	mi
Trucks and buses PCE, E	י ד י	1.5	
Recreational vehicle PC		1.2	
Heavy vehicle adjustmen		0.909	
Driver population facto		1.00	
Flow rate, vp	, , , , , , , , , , , , , , , , , , ,	1154	pc/h/ln
		1101	
	Speed Inputs a	and Adjustments_	
Lane width		12.0	ft
Right-side lateral clea	rance	6.0	ft
Total ramp density, TRD)	0.83	ramps/mi
Number of lanes, N		4	
Free-flow speed:		Base	
FFS or BFFS		75.4	mi/h
Lane width adjustment,	fLW	0.0	mi/h
Lateral clearance adjus	tment, fLC	0.0	mi/h
TRD adjustment		2.8	mi/h
Free-flow speed, FFS		72.6	mi/h
	LOS and Perfo	rmance Measures_	
Flow rate, vp		1154	pc/h/ln
Free-flow speed, FFS		72.6	mi/h
Average passenger-car s	need S	72.8	mi/h
Number of lanes, N	peed, b	4	···· · / ···
Density, D		15.4	pc/mi/ln
Level of service, LOS		цэ.4 В	PC/ m1/ 11
Level of Service, 105			

Fax:

___Operational Analysis_____ Analyst: ae Agency or Company: Stantec Date Performed: 6/15/16 Date Performed:6/15/16Analysis Time Period:3:00 - 4:00 PMFreeway/Direction:I-26 Westbound From/To: New Interchange 2 Off Ramp Jurisdiction: SCDOT Analysis Year: 2039 Design Year Description: 171001612 - Build - 4k Flow Inputs and Adjustments_____ Volume, V veh/h 3777 Peak-hour factor, PHF 0.90 Peak 15-min volume, v15 1049 V 20 Trucks and buses % Recreational vehicles % 0 Terrain type: Level 00 Grade _ Segment length mi Trucks and buses PCE, ET 1.5 Recreational vehicle PCE, ER 1.2 Heavy vehicle adjustment, fHV 0.909 Driver population factor, fp 1.00 Flow rate, vp 923 pc/h/ln _____Speed Inputs and Adjustments_____ Lane width ft 12.0 Right-side lateral clearance 6.0 ft Total ramp density, TRD 0.83 ramps/mi Number of lanes, N 5 Free-flow speed: Base FFS or BFFS 75.4 mi/h Lane width adjustment, fLW 0.0 mi/h mi/h Lateral clearance adjustment, fLC 0.0 TRD adjustment mi/h 2.8 Free-flow speed, FFS 72.6 mi/h LOS and Performance Measures Flow rate, vp 923 pc/h/ln Free-flow speed, FFS 72.6 mi/h Average passenger-car speed, S 75.0 mi/h Number of lanes, N 5 Density, D 12.3 pc/mi/ln Level of service, LOS В

Fax:

___Operational Analysis_____ Analyst: ae Agency or Company: Stantec Date Performed: 6/15/16 Date Performed:6/15/16Analysis Time Period:3:00 - 4:00 PMFreeway/Direction:I-26 Westbound From/To: New Interchange Jurisdiction: SCDOT Analysis Year: 2039 Design Year Description: 171001612 - Build - 4k Flow Inputs and Adjustments_____ Volume, V veh/h 3517 Peak-hour factor, PHF 0.90 977 Peak 15-min volume, v15 V Trucks and buses 20 % Recreational vehicles % 0 Terrain type: Level 00 Grade _ Segment length mi Trucks and buses PCE, ET 1.5 Recreational vehicle PCE, ER 1.2 Heavy vehicle adjustment, fHV 0.909 Driver population factor, fp 1.00 Flow rate, vp 1433 pc/h/ln _____Speed Inputs and Adjustments_____ Lane width ft 12.0 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 0.0 mi/h mi/h Lateral clearance adjustment, fLC 0.0 TRD adjustment mi/h 2.8 Free-flow speed, FFS 72.6 mi/h LOS and Performance Measures Flow rate, vp 1433 pc/h/ln Free-flow speed, FFS 72.6 mi/h Average passenger-car speed, S 72.9 mi/h Number of lanes, N 3 19.7 Density, D pc/mi/ln Level of service, LOS С

Fax:

___Operational Analysis_____ Analyst: ae Agency or Company: Stantec Date Performed: 6/15/16 Date Performed:6/15/16Analysis Time Period:3:00 - 4:00 PMFreeway/Direction:I-26 Westbound From/To: New Interchange Off Ramp Jurisdiction: SCDOT Analysis Year: 2039 Design Year Description: 171001612 - Build - 4k Flow Inputs and Adjustments_____ Volume, V veh/h 3789 Peak-hour factor, PHF 0.90 Peak 15-min volume, v15 1053 V Trucks and buses 20 % Recreational vehicles % 0 Terrain type: Level 00 Grade _ Segment length mi Trucks and buses PCE, ET 1.5 Recreational vehicle PCE, ER 1.2 Heavy vehicle adjustment, fHV 0.909 Driver population factor, fp 1.00 Flow rate, vp 1158 pc/h/ln _____Speed Inputs and Adjustments_____ Lane width ft 12.0 Right-side lateral clearance 6.0 ft Total ramp density, TRD 0.83 ramps/mi Number of lanes, N 4 Free-flow speed: Base FFS or BFFS 75.4 mi/h Lane width adjustment, fLW 0.0 mi/h mi/h Lateral clearance adjustment, fLC 0.0 TRD adjustment mi/h 2.8 Free-flow speed, FFS 72.6 mi/h LOS and Performance Measures Flow rate, vp 1158 pc/h/ln Free-flow speed, FFS 72.6 mi/h Average passenger-car speed, S 74.7 mi/h Number of lanes, N 4 Density, D 15.5 pc/mi/ln Level of service, LOS В

Fax:

___Operational Analysis_____ Analyst: ae Agency or Company: Stantec Date Performed: 6/15/16 Date Performed:6/15/16Analysis Time Period:3:00 - 4:00 PMFreeway/Direction:I-26 Westbound From/To: New Interchange to SC 27 Jurisdiction: SCDOT Analysis Year: 2039 Design Year Description: 171001612 - Build - 4k Flow Inputs and Adjustments_____ Volume, V veh/h 3789 Peak-hour factor, PHF 0.90 Peak 15-min volume, v15 1053 V Trucks and buses 20 % Recreational vehicles % 0 Terrain type: Level 00 Grade _ Segment length mi Trucks and buses PCE, ET 1.5 Recreational vehicle PCE, ER 1.2 Heavy vehicle adjustment, fHV 0.909 Driver population factor, fp 1.00 Flow rate, vp 1544 pc/h/ln _____Speed Inputs and Adjustments_____ Lane width ft 12.0 Right-side lateral clearance 6.0 ft Total ramp density, TRD 0.67 ramps/mi Number of lanes, N 3 Free-flow speed: Base FFS or BFFS 75.4 mi/h Lane width adjustment, fLW 0.0 mi/h mi/h Lateral clearance adjustment, fLC 0.0 TRD adjustment mi/h 2.3 Free-flow speed, FFS 73.1 mi/h LOS and Performance Measures Flow rate, vp 1544 pc/h/ln Free-flow speed, FFS 73.1 mi/h Average passenger-car speed, S 71.7 mi/h Number of lanes, N 3 Density, D 21.5 pc/mi/ln Level of service, LOS С

Fax:

_____Diverge Analysis Analyst: ae Agency/Co.: Stantec Agency/Co.:StantecDate performed:6/15/16Analysis time period:3:00 - 4:00 PM Freeway/Dir of Travel: I-26 Westbound Junction: SC 27 Off-Ramp Jurisdiction: SCDOT Analysis Year: 2039 Design Year Description: 171001612 - Build - 4k _____Freeway Data Type of analysis Diverge Number of lanes in freeway 3 73.1 mph 3789 vph Free-flow speed on freeway Volume on freeway _____Off Ramp Data______ Side of freeway Right Number of lanes in ramp 1 mph Free-Flow speed on ramp 35.0 vph Volume on ramp 611 500 Length of first accel/decel lane ft Length of second accel/decel lane ft _____Adjacent Ramp Data (if one exists)_____ Yes 155 Does adjacent ramp exist? Volume on adjacent ramp vph Position of adjacent ramp Downstream Type of adjacent ramp On ft Distance to adjacent ramp 2175 _____Conversion to pc/h Under Base Conditions_____ Freeway Ramp Junction Components Adjacent Ramp

 3789
 611

 0.90
 0.90

 1053
 170

 20
 20

 0
 0

 Volume, V (vph) vph 155 0.90 43 Peak-hour factor, PHF Peak 15-min volume, v15 v Trucks and buses 20 % 20 0 00 Recreational vehicles
 U
 0
 %

 Level
 Level
 Level

 0.00
 %
 0.00
 %
 Terrain type: Grade 0.00 mi 0.00 mi 0.00 1.5 1.5 1.5 1.2 1.2 1.2 Length mi Lengtn Trucks and buses PCE, ET 1.5 1.2 Recreational vehicle PCE, ER

	justment, fHV n factor, fP		1.00	1.00	pcph
	Estimation	n of V12 Di	verge Areas		
	L = EQ	(Equation 1	.3-12 or 13-	13)	
	P = 0.610 (FD	Using Equat	ion 5		
	v = v + (v - v 12 R F F		16 pc/h		
	Capa	acity Check	.s		
V = V Fi F		Maxi 7200		LOS F? No	
v = v - v FO F R	3884	7200)	No	
v R	747	2000)	No	
v or v 3 av34		/h (Equ	ation 13-14	or 13-17)	
	> 2700 pc/h?	No			
	> 1.5 v /2	No			
If yes, v = 31 12A		(Equati	on 13-15, 1.	3-16, 13-18,	or 13-19)
	Flow Entering				
V	Actual 3116	Max Desir 4400	able	Violation? No	
12	Level of Service I	Determinati	on (if not	F)	
Density,				= 26.5	pc/mi/ln
Level of service	R for ramp-freeway	12 junction ar			
	Speed	Estimation	l		
Intermediate spee	ed variable,		D = 0.495		
Space mean speed	in ramp influence	area,	S = 57.7	mph	
Space mean speed	in outer lanes,		R = 78.2	mph	
Space mean speed	for all vehicles,		S = 63.1	mph	

Fax:

___Operational Analysis_____ Analyst: ae Agency or Company: Stantec Date Performed: 6/15/16 Analysis Time Period: 3:00 - 4:00 PM Freeway/Direction: I-26 Westbound From/To: SC 27 Interchange Jurisdiction: SCDOT Analysis Year: 2039 Design Year Description: 171001612 - Build - 4k _____Flow Inputs and Adjustments_____ Volume, V veh/h 3178 Peak-hour factor, PHF 0.90 Peak 15-min volume, v15 883 v Trucks and buses 20 % Recreational vehicles % 0 Terrain type: Level 00 Grade _ Segment length mi Trucks and buses PCE, ET 1.5 Recreational vehicle PCE, ER 1.2 Heavy vehicle adjustment, fHV 0.909 Driver population factor, fp 1.00 Flow rate, vp 1295 pc/h/ln _____Speed Inputs and Adjustments_____ Lane width ft 12.0 Right-side lateral clearance 6.0 ft Total ramp density, TRD 0.67 ramps/mi Number of lanes, N 3 Free-flow speed: Base FFS or BFFS 75.4 mi/h Lane width adjustment, fLW 0.0 mi/h mi/h Lateral clearance adjustment, fLC 0.0 TRD adjustment mi/h 2.3 Free-flow speed, FFS 73.1 mi/h LOS and Performance Measures Flow rate, vp 1295 pc/h/ln Free-flow speed, FFS 73.1 mi/h Average passenger-car speed, S 74.0 mi/h Number of lanes, N 3 17.5 Density, D pc/mi/ln Level of service, LOS В

Phone:

E-mail: Merge Analysis Analyst: ae Agency/Co.: Stantec Agency/Co.:StantecDate performed:6/15/16Analysis time period:3:00 - 4:00 PM Freeway/Dir of Travel: I-26 Westbound Junction: SC 27 On-Ramp Jurisdiction: SCDOT Analysis Year: 2039 Design Year Description: 171001612 - Build - 4k _____Freeway Data Type of analysis Merge Number of lanes in freeway 3 73.1 mph 3178 vph Free-flow speed on freeway Volume on freeway vph _____On Ramp Data_____ Side of freeway Right Number of lanes in ramp 1 mph Free-flow speed on ramp 35.0 vph 155 Volume on ramp Length of first accel/decel lane 925 ft Length of second accel/decel lane ft _____Adjacent Ramp Data (if one exists)_____ Yes 611 Does adjacent ramp exist? Volume on adjacent Ramp vph Position of adjacent Ramp Upstream Type of adjacent Ramp Off Distance to adjacent Ramp 2175 ft Conversion to pc/h Under Base Conditions Junction Components Freeway Ramp Adjacent Ramp

 3178
 155

 0.90
 0.90

 883
 43

 20
 20

 0
 0

 Volume, V (vph) vph 611 Peak-hour factor, PHF 0.90 Peak 15-min volume, v15 170 v 20 0 Let 20 20 20 0 0 0 Level Level Level % % mi Trucks and buses 8 00 Recreational vehicles Terrain type: ۶ mi % mi 00 Grade Lenqth mi Lengtn Trucks and buses PCE, ET 1.5 Recreational vehicle PCE, ER

Heavy vehicle adjustment, fHV Driver population factor, fP Flow rate, vp	1.0	0 0		0.909 1.00 747	pcph
Esti	mation of V12	2 Merge An	reas		
EQ P = 0.6 FM	0.52 (Equation 503 Using Ed) = 2344 M	quation 3			
	Capacity Ch	hecks			
	tual N 173	Maximum 7200	L N	OS F? O	
vorv 15	40 pc/h	(Equation	13-14 o	r 13-17)	
3 av34 Is v or v > 2700 pc/h	1? 1	No			
3 av34 Is v or v > 1.5 v /2	2	Yes			
3 av34 12 If yes, v = 2344 12A	(Equ	uation 13-	-15, 13-	16, 13-18,	or 13-19)
Actual v 2533 12A	Entering Merg Max De 4600 Twice Determin	esirable		Violation? No	
Density, D = 5.475 + 0.00734 R Level of service for ramp-fre	R	12	A		pc/mi/ln
	Speed Estimat	tion			
Intermediate speed variable,			0.305		
Space mean speed in ramp infl	uence area,		53.6	mph	
Space mean speed in outer lan	les,		59.4	mph	
Space mean speed for all vehi	cles,	0 S = 6	65 . 7	mph	

E-Mall:		
Operational A	nalysis	
Analyst: ae		
Agency or Company: Stantec		
Date Performed, $6/15/16$		
Analysis Time Period: 3:00 - 4:00 PM	I	
Analysis Time Period: 3:00 - 4:00 PM Freeway/Direction: I-26 Westbound		
From/To: West of SC 27		
Jurisdiction: SCDOT		
Analysis Year: 2039 Design Ye	ar	
Description: 171001612 - Build - 4k		
Flow Inputs a	nd Adjustments	
Volume, V	3333	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	926	V
Trucks and buses	20	8
Recreational vehicles	0	8
Terrain type:	Level	
Grade	-	°₀
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.909	
Driver population factor, fp	1.00	
Flow rate, vp	1358	pc/h/ln
Speed Inputs	and Adjustments_	
Lane width	12.0	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	0.00	ramps/mi
Number of lanes, N	3	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	0.0	mi/h
Free-flow speed, FFS	75.4	mi/h
LOS and Perfo	ormance Measures_	
Flow rate, vp	1358	pc/h/ln
Free-flow speed, FFS	75.4	mi/h
Average passenger-car speed, S	73.6	mi/h
Number of lanes, N	3	
Density, D	18.5	pc/mi/ln
Level of service, LOS	С	

Oper	cional Analysis	
Analyst: ae		
Agency or Company: Stant	C	
Date Performed: 6/15/	5	
Analysis Time Period: 3:00 Freeway/Direction: I-26	4:00 PM	
Freeway/Direction: I-26	estbound	
	E SC 27	
Jurisdiction: SCDOI		
Analysis Year: 2039	esign Year	
Description: 171001612 - Bui		
Flow	Inputs and Adjustments	
Volume, V	3333	veh/h
Peak-hour factor, PHF	0.90	
Peak 15-min volume, v15	926	V
Trucks and buses	20	00
Recreational vehicles	0	00
Terrain type:	Level	
Grade	-	00
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.909	
Driver population factor, fp	1.00	
Flow rate, vp	2037	pc/h/ln
Spee	Inputs and Adjustments	
Lane width	12.0	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	0.00	ramps/mi
Number of lanes, N	2	-
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment,	ELC 0.0	mi/h
TRD adjustment	0.0	mi/h
Free-flow speed, FFS	75.4	mi/h
LOS	nd Performance Measures	
Flow rate, vp	2037	pc/h/ln
Free-flow speed, FFS	75.4	mi/h
Average passenger-car speed,	63.1	mi/h
Number of lanes, N	2	
Density, D	32.3	pc/mi/ln
Level of service, LOS		PC/ m1/ 11

Appendix G

2039 Intersection Analysis Worksheets



Timings 101: US 78 & SC 27/Ridgeville Road

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		-	-	~	- >	
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	ሻ	1	†	1	ሻ	1
Traffic Volume (vph)	166	206	336	241	338	314
Future Volume (vph)	166	206	336	241	338	314
Turn Type	pm+pt	NA	NA	pm+ov	Prot	pm+ov
Protected Phases	5	2	6	4	4	5
Permitted Phases	2			6		4
Detector Phase	5	2	6	4	4	5
Switch Phase						
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	15.0	22.0	22.0	22.0	22.0	15.0
Total Split (s)	15.0	38.0	23.0	22.0	22.0	15.0
Total Split (%)	25.0%	63.3%	38.3%	36.7%	36.7%	25.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag	Lead		Lag			Lead
Lead-Lag Optimize?						
Recall Mode	None	Мах	Мах	Min	Min	None
Act Effct Green (s)	32.0	32.0	17.7	39.7	16.0	30.3
Actuated g/C Ratio	0.53	0.53	0.30	0.66	0.27	0.50
v/c Ratio	0.47	0.27	0.80	0.27	0.94	0.45
Control Delay	11.9	8.7	36.0	1.4	57.4	6.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	11.9	8.7	36.0	1.4	57.4	6.1
LOS	В	А	D	А	E	А
Approach Delay		10.1	21.5		32.7	
Approach LOS		В	С		С	
Intersection Summary						
Cycle Length: 60						
Actuated Cycle Length: 60						
Natural Cycle: 60						
Control Type: Actuated-Un	coordinated					
Maximum v/c Ratio: 0.94						
Intersection Signal Delay: 2	23.4			I	ntersectio	n LOS: C
Intersection Capacity Utilization)		[(CU Level	of Service
Analysis Period (min) 15						

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Splits and Phases: 101: US 78 & SC 27/Ridgeville Road

	≪ ™ Ø4					
38 s			22 s			
* Ø5						
15 s	23 s					

	≯	-	+	•	1	-
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	1	1	1	1	<u> </u>	1
Traffic Volume (veh/h)	166	206	336	241	338	314
Future Volume (veh/h)	166	206	336	241	338	314
Number	5	200	6	16	7	14
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	0	0	1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
	1583	1583	1583	1583	1583	1583
Adj Sat Flow, veh/h/ln						
Adj Flow Rate, veh/h	184	229	373	268	376	349
Adj No. of Lanes	1	1	1	1	1	1
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	20	20	20	20	20	20
Cap, veh/h	359	844	521	802	402	499
Arrive On Green	0.10	0.53	0.33	0.33	0.27	0.27
Sat Flow, veh/h	1508	1583	1583	1346	1508	1346
Grp Volume(v), veh/h	184	229	373	268	376	349
Grp Sat Flow(s), veh/h/ln	1508	1583	1583	1346	1508	1346
Q Serve(g_s), s	4.4	4.7	12.4	6.0	14.6	13.2
Cycle Q Clear(g_c), s	4.4	4.7	12.4	6.0	14.6	13.2
Prop In Lane	1.00	4.7	12.4	1.00	14.0	1.00
		044	F.0.1	802	402	499
Lane Grp Cap(c), veh/h	359	844	521			
V/C Ratio(X)	0.51	0.27	0.72	0.33	0.94	0.70
Avail Cap(c_a), veh/h	428	844	521	802	402	499
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	12.1	7.6	17.7	6.1	21.5	16.0
Incr Delay (d2), s/veh	1.1	0.8	8.2	1.1	29.0	4.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/In	3.5	4.0	10.8	7.2	14.3	15.2
LnGrp Delay(d),s/veh	13.2	8.4	25.9	7.2	50.5	20.3
LnGrp LOS	B	A	C	A	D	C
Approach Vol, veh/h	D	413	641	7.	725	Ŭ
Approach Delay, s/veh		10.6	18.1		36.0	
		-	-		-	
Approach LOS		В	В		D	
Timer	1	2	3	4	5	6
Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		38.0		22.0	12.3	25.7
Change Period (Y+Rc), s		6.0		6.0	6.0	6.0
Max Green Setting (Gmax), s		32.0		16.0	9.0	17.0
Max Q Clear Time (g_c+11) , s		6.7		16.6	6.4	14.4
Green Ext Time (p_c), s		11.4		0.0	0.1	1.8
· ·		11.4		0.0	0.1	1.0
Intersection Summary						
HCM 2010 Ctrl Delay			23.6			
HCM 2010 LOS			С			

	-	\mathbf{i}	†	1	Ļ					
Lane Group	EBT	EBR	NBT	SBL	SBT					
Lane Configurations	र्भ	7	eî	ሻ	↑					
Traffic Volume (vph)	7	87	252	1512	565					
Future Volume (vph)	7	87	252	1512	565					
Turn Type	NA	Perm	NA	pm+pt	NA					
Protected Phases	8		6	5	2					
Permitted Phases		8		2						
Detector Phase	8	8	6	5	2					
Switch Phase										
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0					
Minimum Split (s)	22.0	22.0	22.0	15.0	22.0					
Total Split (s)	22.0	22.0	42.0	116.0	158.0					
Total Split (%)	12.2%	12.2%	23.3%	64.4%	87.8%					
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0					
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0					
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0					
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0					
Lead/Lag			Lag	Lead						
Lead-Lag Optimize?			~ • •							
Recall Mode	None	None	C-Min	None	C-Min					
Act Effct Green (s)	16.0	16.0	36.0	152.0	152.0					
Actuated g/C Ratio	0.09	0.09	0.20	0.84	0.84					
v/c Ratio	0.96	0.47	1.45	1.76	0.47					
Control Delay	142.7	20.0	264.6	365.6	3.2					
Queue Delay	0.0	0.0	0.0	0.5	3.4					
Total Delay	142.7	20.0	264.6	366.1	6.5					
LOS	F	В	F	F	A					
Approach Delay	92.7		264.6		268.3					
Approach LOS	F		F		F					
Intersection Summary										
Cycle Length: 180										
Actuated Cycle Length: 180										
Offset: 48 (27%), Reference	ed to phase	e 2:SBTL	and 6:NB	T, Start c	of Yellow					
Natural Cycle: 150										
Control Type: Actuated-Coo	ordinated									
Maximum v/c Ratio: 1.76	50.0									
Intersection Signal Delay: 2		24			ntersection					
Intersection Capacity Utiliza	ition 128.7	%		[(U Level	of Service H				
Analysis Period (min) 15										
Splits and Phases: 102: S	SC 27/Rido	eville Ro	ad & I-26	FR Off-R	amn/I_26	FB On-Ramp				
Splits and Phases: 102: SC 27/Ridgeville Road & I-26 EB Off-Ramp/I-26 EB On-Ramp										

Ø2 (R)



Movement ERI ERI ERI WBL WBL NBL NBL NBL SBL S		۶	-	$\mathbf{\hat{z}}$	4	-	*	1	1	1	1	Ļ	~
$\begin{tabular}{l l l l l l l l l l l l l l l l l l l $	Movement	EBL	EBT		WBL	WBT	WBR	NBL		NBR		SBT	SBR
Future Volume (veh/h) 120 7 87 0 0 0 252 155 1512 565 10 Number 3 8 18 1 6 16 5 2 12 Initial 0 (b), veh 0 <t< td=""><td></td><td></td><td>र्च</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></t<>			र्च										
Number 3 8 18 1 6 16 5 2 12 Initial O (Cb), veh 0	Traffic Volume (veh/h)		7		0	0		0					0
Initial (Cb), veh 0	Future Volume (veh/h)				0	0	0		252		1512		
Ped-Bike Adj(A, pbT) 1.00 <td< td=""><td>Number</td><td></td><td>8</td><td>18</td><td></td><td></td><td></td><td>1</td><td>6</td><td>16</td><td>5</td><td>2</td><td>12</td></td<>	Number		8	18				1	6	16	5	2	12
Parking Bus, Adj 1.00 1.0		0	0					0	0	0	0	0	0
Adj Sař Flow, veh/h/ln 1900 1647 1583 0 1583 1900 1583 1583 0 Adj No. of Lanes 0 1 1 0 1 1 0 0 188 0 Adj No. of Lanes 0 1 1 0 1 1 0 1 1 0 Peak Hour Factor 0.90 <td>Ped-Bike Adj(A_pbT)</td> <td>1.00</td> <td></td> <td>1.00</td> <td></td> <td></td> <td></td> <td>1.00</td> <td></td> <td>1.00</td> <td>1.00</td> <td></td> <td>1.00</td>	Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00	1.00		1.00
Adj Flow Rate, veh/h 133 8 97 0 280 172 1680 628 0 Adj No. of Lanes 0 1 1 0 1 0 1 1 0 Peak Hour Factor 0.90 <td< td=""><td>Parking Bus, Adj</td><td>1.00</td><td>1.00</td><td>1.00</td><td></td><td></td><td></td><td>1.00</td><td>1.00</td><td>1.00</td><td>1.00</td><td>1.00</td><td>1.00</td></td<>	Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Adj No. of Lanes 0 1 1 0 1 0 1 0 1 1 0 Peak Hour Factor 0.90<	Adj Sat Flow, veh/h/ln	1900	1647	1583				0	1583	1900	1583	1583	0
Pack Hour Factor 0.90 0.9	Adj Flow Rate, veh/h	133	8	97				0	280	172	1680	628	0
Percent Heavy Veh, % 20 <th20< th=""> 20 <th20< th=""> 2</th20<></th20<>	Adj No. of Lanes	0	1	1				0	1	0	1	1	0
Cap, veh/h 132 8 120 0 184 113 962 1337 0 Arrive On Green 0.09 0.09 0.09 0.00 0.00 0.20 0.20 0.00 0.00 0.00 Sat Flow, veh/h 1483 89 1346 0 919 565 1508 1583 0 Grp Volume(0), veh/h 141 0 97 0 0 452 1680 628 0 Grp Sat Flow(s), veh/h 1573 0 1346 0 0.1484 1508 1583 0 Oyde O Clear(g_c), s 16.0 0.0 12.7 0.0 0.0 360 1100 0.00 0.00 Cycle O Clear(g_c), s 16.0 0.0 12.7 0.0 0.0 297 962 1337 0 V/C Ratio(X) 101 0.00 0.81 0.00 0.00 1.52 1.75 0.47 0.00 Avail Cap(C_a), eh/h 140 0 120 0 0 297 962 1337 0 U	Peak Hour Factor	0.90	0.90	0.90				0.90	0.90	0.90	0.90	0.90	0.90
Arrive On Green 0.09 0.09 0.00 0.20 0.20 1.00 1.00 0.00 Sat Flow, veh/h 1443 89 1346 0 919 565 1508 1583 0 Grp Volume(v), veh/h 141 0 97 0 0 452 1680 628 0 Grp Sat Flow, veh/h 1573 0 1346 0 0 1481 1583 0 Grp Sat Flow(s), veh/h/ln 1573 0 1346 0 0.0 10.0 0.00 0.00 0.081 0.00	Percent Heavy Veh, %	20	20	20				0	20	20	20	20	0
Arrive On Green 0.09 0.09 0.00 0.20 0.20 1.00 1.00 0.00 Sat Flow, veh/h 1443 89 1346 0 919 565 1508 1583 0 Grp Volume(v), veh/h 141 0 97 0 0 452 1680 628 0 Grp Sat Flow(s), veh/h/ln 1573 0 1346 0 0 1481 1583 0 Q Serve(g_s), s 16.0 0.0 12.7 0.0 0.0 36.0 110.0 0.0 0.0 Lane Grp Cap(c), veh/h 140 0 120 0 0 297 962 1337 0 V/C Ratio(X) 1.01 0.00 0.81 0.00 0.00 1.52 1.75 0.47 0.00 V/C Ratio(X) 1.01 0.00 0.81 0.00 0.00 1.67 1.67 1.00 Upstream Filter(1) 1.00 0.00 1.00 1.00 1.00 1.00 0.00 0.00 0.00 0.00 0.00 0.00 0.0<	Cap, veh/h	132	8	120				0	184	113	962	1337	0
Grp Volume(v), veh/h 141 0 97 0 0 452 1680 628 0 Grp Sat Flow(S), veh/h/ln 1573 0 1346 0 0 1484 1508 1583 0 Q Serve(g_s), s 16.0 0.0 12.7 0.0 0.0 36.0 110.0 0.0 0.0 Cycle Q Clear(g_c), s 16.0 0.0 12.7 0.0 0.0 36.0 110.0 0.0 0.0 Cycle Q Clear(g_c), s 16.0 0.0 12.7 0.0 0.0 287 962 1337 0 V/C Ratio(X) 1.01 0.00 0.81 0.00 0.00 1.67 1.67 0.0 V/C Ratio(X) 1.01 1.00 1.00 1.00 1.00 1.00 1.00 0.0 0.977 962 1337 0 HCM Platoon Ratio 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.67 1.67 1.60 1.00 1.00 1.00 1.00 1.00 1.00 1		0.09	0.09	0.09				0.00	0.20	0.20	1.00	1.00	0.00
Grp Volume(v), veh/h 141 0 97 0 0 452 1680 628 0 Grp Sat Flow(S), veh/h/ln 1573 0 1346 0 0 1484 1508 1583 0 Q Serve(g_s), s 16.0 0.0 12.7 0.0 0.0 36.0 110.0 0.0 0.0 Cycle Q Clear(g_c), s 16.0 0.0 12.7 0.0 0.0 36.0 110.0 0.0 0.0 Cycle Q Clear(g_c), s 16.0 0.0 12.7 0.0 0.0 287 962 1337 0 V/C Ratio(X) 1.01 0.00 0.81 0.00 0.00 1.67 1.67 0.0 V/C Ratio(X) 1.01 1.00 1.00 1.00 1.00 1.00 1.00 0.0 0.977 962 1337 0 HCM Platoon Ratio 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.67 1.67 1.60 1.00 1.00 1.00 1.00 1.00 1.00 1	Sat Flow, veh/h	1483	89	1346						565	1508	1583	0
Grp Sat Flow(s),veh/h/ln 1573 0 1346 0 0 1484 1508 1583 0 Q Serve(Q_S), s 16.0 0.0 12.7 0.0 0.0 36.0 110.0 0.0 0.0 Cycle Q Clear(g_c), s 16.0 0.0 12.7 0.0 0.0 36.0 110.0 0.0 0.0 Prop In Lane 0.94 1.00 0.00 0.38 1.00 0.00 Lane Grp Cap(c), veh/h 140 0 120 0 0.297 962 1337 0 V/C Ratio(X) 1.01 0.00 0.81 0.00 0.0 1.67 1.67 1.00 Avait Cap(c_a), veh/h 140 0 120 0 0.297 962 1337 0 HCM Platoon Ratio 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00								0		452		628	0
Q Serve(g_s), s 16.0 0.0 12.7 0.0 0.0 36.0 110.0 0.0 0.0 Cycle O Clear(g_c), s 16.0 0.0 12.7 0.0 0.0 36.0 110.0 0.0 0.0 Prop In Lane 0.94 1.00 0.00 0.38 1.00 0.00 Lane Grp Cap(c), veh/h 140 0 120 0 0 297 962 1337 0.0 V/C Ratio(X) 1.01 0.00 0.81 0.00 0.00 1.52 1.75 0.47 0.00 Avail Cap(c_a), veh/h 140 0 120 0 0 297 962 1337 0 Upstream Filter(1) 1.00 1.00 1.00 1.00 1.00 1.00 1.00 0.0	1 1												
Cycle Q Clear(g_c), s 16.0 0.0 12.7 0.0 0.0 36.0 110.0 0.0 Prop In Lane 0.94 1.00 0.00 0.38 1.00 0.00 Lane Grp Cap(c), veh/h 140 0 120 0 0 297 962 1337 0.00 V/C Ratio(X) 1.01 0.00 0.81 0.00 0.00 1.52 1.75 0.47 0.00 V/C Ratio(X) 1.01 0.00 1.00 1.00 1.00 1.00 1.07 1.67 1.67 1.00 Upstream Filter(I) 1.00 0.00 1.00 1.00 1.00 1.00 0.0<													
Prop In Lane 0.94 1.00 0.00 0.38 1.00 0.00 Lane Grp Cap(c), veh/h 140 0 120 0 0 297 962 1337 0 V/C Ratio(X) 1.01 0.00 0.81 0.00 1.52 1.75 0.47 0.00 Avail Cap(c. a), veh/h 140 0 120 0 0 297 962 1337 0 HCM Platoon Ratio 1.00 1.00 1.00 1.00 1.00 1.67 1.67 1.67 Upstream Filter(I) 1.00 0.00 80.5 0.0 0.0 252.0 336.7 0.1 0.0 Uniform Delay (d), s/weh 82.0 0.0 80.5 0.0													
Lane Grp Cap(c), veh/h 140 0 120 0 0 297 962 1337 0 V/C Ratio(X) 1.01 0.00 0.81 0.00 0.00 1.52 1.75 0.47 0.00 Avail Cap(c_a), veh/h 140 0 120 0 0 297 962 1337 0 HCM Platoon Ratio 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.07 1.67 1.67 1.00 Upstream Filter(1) 1.00 0.00 1.00 1.00 0			010						010			010	
V/C Ratio(X) 1.01 0.00 0.81 0.00 0.00 1.52 1.75 0.47 0.00 Avail Cap(c_a), veh/h 140 0 120 0 0 297 962 1337 0 HCM Platoon Ratio 1.00 1.00 1.00 1.00 1.00 1.00 1.67 1.67 1.00 Upstream Filter(I) 1.00 0.00 1.00 0.00 0.00 0.00 0.09 0.09 0.00 Uniform Delay (d), s/veh 82.0 0.0 80.5 0.0 0.0 72.0 3.9 0.0 0.0 Incr Delay (d2), s/veh 78.4 0.0 32.8 0.0			0						0			1337	
Avail Cap(c_a), veh/h 140 0 120 0 0 297 962 1337 0 HCM Platoon Ratio 1.00 0.09 0.09 0.00 Upstream Filter(I) 1.00 0.00 80.5 0.0 0.0 72.0 3.9 0.0 0.0 Uniform Delay (d), s/veh 78.4 0.0 32.8 0.0 0.													
HCM Platoon Ratio1.001.001.001.001.001.001.071.671.071.00Upstream Filter(I)1.000.001.000.000.000.000.090.090.00Uniform Delay (d), s/veh82.00.080.50.00.072.03.90.00.0Incr Delay (d2), s/veh78.40.032.80.00.0252.0336.70.10.0Intial Q Delay(d3), s/veh0.00.00.00.00.00.00.00.00.0Sile BackOfQ(95%), veh/In18.00.09.80.00.00.00.00.00.0InGrp Delay(d), s/veh160.50.0113.30.00.0324.0340.50.10.0InGrp DolsFFFAAApproach Vol, veh/h2384522308Approach LOSFFFFFFFImer12345678Assigned Phs2568FFFImer12345678Assigned Phs2568FFFImer12345678Assigned Phs2568FFFImer12345678 <tr< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr<>													
Upstream Filter(I)1.000.001.000.001.000.001.000.090.090.00Uniform Delay (d), s/veh82.00.080.50.00.072.03.90.00.0Incr Delay (d2), s/veh78.40.032.80.00.0252.0336.70.10.0Initial Q Delay(d3), s/veh0.00.00.00.00.00.00.00.00.0%ile BackOfQ(95%), veh/In18.00.09.80.00.00.00.00.00.0InGrp Delay(d), s/veh160.50.0113.30.00.0324.0340.50.10.0InGrp LOSFFFAApproach Vol, veh/h2384522308Approach Delay, s/veh141.2324.0247.9Approach LOSFFFFFFFFFFImer12345678FFFFImer12345678FFF <t< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></t<>													
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Initial Q Delay(d3), s/veh 0.0 <													
%ile BackOfQ(95%),veh/ln 18.0 0.0 9.8 0.0 0.0 63.9 217.3 0.1 0.0 LnGrp Delay(d),s/veh 160.5 0.0 113.3 0.0 0.0 324.0 340.5 0.1 0.0 LnGrp LOS F F F F A Approach Vol, veh/h 238 452 2308 Approach Delay, s/veh 141.2 324.0 247.9 Approach LOS F F F A Timer 1 2 3 4 5 6 7 8 Timer 1 2 3 4 5 6 7 8 V Timer 1 2 3 4 5 6 7 8 V V Assigned Phs 2 5 6 8 V V V V V Assigned Phs 2 5 6 8 V V V V V Change Period (Y+Rc), s 6.0 6.0 6.0 <													
LnGrp Delay(d),s/veh 160.5 0.0 113.3 0.0 0.0 324.0 340.5 0.1 0.0 LnGrp LOS F F F A F A Approach Vol, veh/h 238 452 2308 Approach Delay, s/veh 141.2 324.0 247.9 Approach LOS F F A Timer 1 2 3 4 5 6 7 8 Timer 1 2 3 4 5 6 7 8 Change Period (Y+Rc), s 158.0 116.0 42.0 22.0 22.0 Change Period (Y+Rc), s 6.0 <td></td>													
LnGrp LOS F F A Approach Vol, veh/h 238 452 2308 Approach Delay, s/veh 141.2 324.0 247.9 Approach LOS F F F Timer 1 2 3 4 5 6 7 8 Assigned Phs 2 3 4 5 6 8													
Approach Vol, veh/h 238 452 2308 Approach Delay, s/veh 141.2 324.0 247.9 Approach LOS F F F Timer 1 2 3 4 5 6 7 8 Timer 1 2 3 4 5 6 7 8 Assigned Phs 2 5 6 8 9 <	1 317		0.0					0.0	0.0				0.0
Approach Delay, s/veh 141.2 324.0 247.9 Approach LOS F F F Timer 1 2 3 4 5 6 7 8 Assigned Phs 2 5 6 8			228						152				
Approach LOS F F F Timer 1 2 3 4 5 6 7 8 Assigned Phs 2 5 6 8 9 8 9													
Timer 1 2 3 4 5 6 7 8 Assigned Phs 2 5 6 8													
Assigned Phs 2 5 6 8 Phs Duration (G+Y+Rc), s 158.0 116.0 42.0 22.0 Change Period (Y+Rc), s 6.0 6.0 6.0 6.0 Max Green Setting (Gmax), s 152.0 110.0 36.0 16.0 Max Q Clear Time (g_c+I1), s 2.0 112.0 38.0 18.0 Green Ext Time (p_c), s 57.5 0.0 0.0 0.0 Intersection Summary 250.9 250.9 10.0 10.0	Approach 203		1						I			I	
Phs Duration (G+Y+Rc), s 158.0 116.0 42.0 22.0 Change Period (Y+Rc), s 6.0 6.0 6.0 Max Green Setting (Gmax), s 152.0 110.0 36.0 16.0 Max Q Clear Time (g_c+I1), s 2.0 112.0 38.0 18.0 Green Ext Time (p_c), s 57.5 0.0 0.0 0.0 Intersection Summary 250.9 250.9 10.0 10.0		1		3	4			7					
Change Period (Y+Rc), s 6.0 6.0 6.0 6.0 Max Green Setting (Gmax), s 152.0 110.0 36.0 16.0 Max Q Clear Time (g_c+I1), s 2.0 112.0 38.0 18.0 Green Ext Time (p_c), s 57.5 0.0 0.0 0.0 Intersection Summary 250.9 250.9 250.9 250.9													
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Intersection Summary HCM 2010 Ctrl Delay 250.9									18.0				
HCM 2010 Ctrl Delay 250.9	Green Ext Time (p_c), s		57.5			0.0	0.0		0.0				
J													
HCM 2010 LOS F				250.9									
	HCM 2010 LOS			F									

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Lane Group	WBT	WBR	NBL	NBT	SBT	SBR	
Lane Configurations	र्भ	7	ሻ	↑	↑	1	
Traffic Volume (vph)	4	555	55	317	1765	368	
Future Volume (vph)	4	555	55	317	1765	368	
Turn Type	NA	Perm	Perm	NA	NA	Perm	
Protected Phases	4			6	2		
Permitted Phases		4	6			2	
Detector Phase	4	4	6	6	2	2	
Switch Phase							
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	
Vinimum Split (s)	22.0	22.0	22.0	22.0	22.0	22.0	
Total Split (s)	35.0	35.0	145.0	145.0	145.0	145.0	
Total Split (%)	19.4%	19.4%	80.6%	80.6%	80.6%	80.6%	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	
Lead/Lag							
Lead-Lag Optimize?							
Recall Mode	None	None	C-Min	C-Min	C-Min	C-Min	
Act Effct Green (s)	29.0	29.0	139.0	139.0	139.0	139.0	
Actuated g/C Ratio	0.16	0.16	0.77	0.77	0.77	0.77	
v/c Ratio	1.31	0.85	1.74	0.29	1.60	0.38	
Control Delay	220.0	17.0	377.3	10.0	298.0	5.0	
Queue Delay	0.0	0.0	0.0	0.0	2.1	0.0	
Total Delay	220.0	17.0	377.3	10.0	300.1	5.0	
LOS	F	В	F	А	F	А	
Approach Delay	90.6			64.2	249.2		
Approach LOS	F			E	F		
ntersection Summary							
Cycle Length: 180							
Actuated Cycle Length: 180							
Offset: 0 (0%), Referenced	to phase 2	:SBT and	6:NBTL,	Start of Y	ellow/		
Natural Cycle: 150							
Control Type: Actuated-Coc	ordinated						
/laximum v/c Ratio: 1.74							
ntersection Signal Delay: 1					ntersectio		
ntersection Capacity Utiliza	ition 128.7	%		[(CU Level	of Service	эH
Analysis Period (min) 15							
Splits and Phases: 103: S	SC 27/Ridg	eville Ro	ad & I_26	WR ∩n ⊑	2amn/l_24	WR ∩ff ⊑	Ramn
$\frac{100}{2}$			au & 1-20		xamp/1-20	יייט טויי	Namp

 Ø2 (R) 	₽ Ø4
145 s	35 s
145 s	

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					4	1	ሻ	↑			↑	1
Traffic Volume (veh/h)	0	0	0	312	4	555	55	317	0	0	1765	368
Future Volume (veh/h)	0	0	0	312	4	555	55	317	0	0	1765	368
Number				7	4	14	1	6	16	5	2	12
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln				1900	1647	1583	1583	1583	0	0	1583	1583
Adj Flow Rate, veh/h				347	4	617	61	352	0	0	1961	409
Adj No. of Lanes				0	1	1	1	1	0	0	1	1
Peak Hour Factor				0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %				20	20	20	20	20	0	0	20	20
Cap, veh/h				250	3	217	40	1223	0	0	1223	1039
Arrive On Green				0.16	0.16	0.16	1.00	1.00	0.00	0.00	0.77	0.77
Sat Flow, veh/h				1551	18	1346	126	1583	0	0	1583	1346
Grp Volume(v), veh/h				351	0	617	61	352	0	0	1961	409
Grp Sat Flow(s), veh/h/ln				1569	0	1346	126	1583	0	0	1583	1346
Q Serve(q_s), s				29.0	0.0	29.0	0.0	0.0	0.0	0.0	139.0	17.9
Cycle Q Clear(g_c), s				29.0	0.0	29.0	139.0	0.0	0.0	0.0	139.0	17.9
Prop In Lane				0.99	010	1.00	1.00	010	0.00	0.00	10,10	1.00
Lane Grp Cap(c), veh/h				253	0	217	40	1223	0	0	1223	1039
V/C Ratio(X)				1.39	0.00	2.85	1.52	0.29	0.00	0.00	1.60	0.39
Avail Cap(c_a), veh/h				253	0	217	40	1223	0	0	1223	1039
HCM Platoon Ratio				1.00	1.00	1.00	2.00	2.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	1.00	0.09	0.09	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh				75.5	0.0	75.5	69.5	0.0	0.0	0.0	20.5	6.7
Incr Delay (d2), s/veh				197.3	0.0	843.1	247.5	0.1	0.0	0.0	275.6	1.1
Initial Q Delay(d3), s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln				47.6	0.0	110.8	8.5	0.0	0.0	0.0	276.1	11.2
LnGrp Delay(d),s/veh				272.8	0.0	918.6	317.0	0.1	0.0	0.0	296.1	7.8
LnGrp LOS				E72.0	0.0	F	F	A	0.0	0.0	F	A
Approach Vol, veh/h					968			413			2370	
Approach Delay, s/veh					684.5			46.9			246.3	
Approach LOS					F			+0.7 D			240.5 F	
					I						1	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2		4		6						
Phs Duration (G+Y+Rc), s		145.0		35.0		145.0						
Change Period (Y+Rc), s		6.0		6.0		6.0						
Max Green Setting (Gmax), s		139.0		29.0		139.0						
Max Q Clear Time (g_c+I1), s		141.0		31.0		141.0						
Green Ext Time (p_c), s		0.0		0.0		0.0						
Intersection Summary												
HCM 2010 Ctrl Delay			337.4									
HCM 2010 LOS			F									

	4		†	1	1	Ļ
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	۲	1	†	1	5	†
Traffic Volume (vph)	1894	10	421	451	10	239
Future Volume (vph)	1894	10	421	451	10	239
Turn Type	Prot	Perm	NA	pm+ov	Perm	NA
Protected Phases	4		6	. 4		2
Permitted Phases		4		6	2	
Detector Phase	4	4	6	4	2	2
Switch Phase						
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	22.0	22.0	22.0	22.0	22.0	22.0
Total Split (s)	110.0	110.0	40.0	110.0	40.0	40.0
Total Split (%)	73.3%	73.3%	26.7%	73.3%	26.7%	26.7%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None	None	Мах	None	Мах	Max
Act Effct Green (s)	104.0	104.0	34.0	150.0	34.0	34.0
Actuated g/C Ratio	0.69	0.69	0.23	1.00	0.23	0.23
v/c Ratio	2.02	0.01	1.31	0.37	0.26	0.74
Control Delay	482.7	6.3	201.7	0.8	66.1	67.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	482.7	6.3	201.7	0.8	66.1	67.8
LOS	F	А	F	А	E	E
Approach Delay	480.2		97.8			67.7
Approach LOS	F		F			E
Intersection Summary						
Cycle Length: 150						
Actuated Cycle Length: 150						
Natural Cycle: 150						
Control Type: Actuated-Unco	ordinated					
Maximum v/c Ratio: 2.02						
Intersection Signal Delay: 33	5.9			Ir	ntersectio	n LOS: F
Intersection Capacity Utilizati		%		[(CU Level	of Service
Analysis Period (min) 15						
J () /						

Splits and Phases: 104: SC 27/Ridgeville Road & Lower Westvaco Road

₽ [®] Ø2	€ 04	
40 s	10 s	
¶ø6		
40 s		

	4	•	1	1	1	Ļ	
Movement	WBL	WBR	NBT	NBR	SBL	SBT	
Lane Configurations	ň	1	↑	1	۲	1	
Traffic Volume (veh/h)	1894	10	421	451	10	239	
Future Volume (veh/h)	1894	10	421	451	10	239	
Number	7	14	6	16	5	2	
Initial Q (Qb), veh	0	0	0	0	0	0	
Ped-Bike Adj(A_pbT)	1.00	1.00	Ū	1.00	1.00	Ŭ	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	
Adj Sat Flow, veh/h/ln	1583	1583	1583	1583	1583	1583	
Adj Flow Rate, veh/h	2104	11	468	501	11	266	
Adj No. of Lanes	1	1	1	1	1	1	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	
Percent Heavy Veh, %	20	20	20	20	20	20	
Cap, veh/h	1046	933	359	1238	48	359	
Arrive On Green	0.69	0.69	0.23	0.23	0.23	0.23	
Sat Flow, veh/h	1508	1346	1583	1346	491	1583	
Grp Volume(v), veh/h	2104	11	468	501	11	266	
Grp Sat Flow(s), veh/h/ln	2104 1508	1346	408	1346	491	1583	
	104.0	0.4	34.0	7.1	0.0	23.4	
Q Serve(g_s), s					34.0		
Cycle Q Clear(g_c), s	104.0	0.4	34.0	7.1		23.4	
Prop In Lane	1.00	1.00	250	1.00	1.00	250	
Lane Grp Cap(c), veh/h	1046	933	359	1238	48	359	
V/C Ratio(X)	2.01	0.01	1.30	0.40	0.23	0.74	
Avail Cap(c_a), veh/h	1046	933	359	1238	48	359	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	
Jpstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	
Uniform Delay (d), s/veh	23.0	7.1	58.0	0.8	75.0	53.9	
Incr Delay (d2), s/veh	459.0	0.0	155.7	1.0	10.8	12.9	
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	
%ile BackOfQ(95%),veh/In	315.3	0.3	54.7	28.6	1.1	17.1	
LnGrp Delay(d),s/veh	482.0	7.1	213.7	1.7	85.8	66.8	
LnGrp LOS	F	А	F	А	F	E	
Approach Vol, veh/h	2115		969			277	
Approach Delay, s/veh	479.5		104.1			67.6	
Approach LOS	F		F			E	
Timer	1	2	3	4	5	6	7 8
Assigned Phs		2		4		6	
Phs Duration (G+Y+Rc), s		40.0		110.0		40.0	
Change Period (Y+Rc), s		6.0		6.0		6.0	
Max Green Setting (Gmax), s		34.0		104.0		34.0	
Max Q Clear Time (g_c+l1), s		36.0		106.0		36.0	
Green Ext Time (p_c), s		0.0		0.0		0.0	
Intersection Summary							
HCM 2010 Ctrl Delay			337.3				
HCM 2010 LOS			557.5 F				

	-	\mathbf{r}	†	1	1	Ļ
Lane Group	EBT	EBR	NBT	NBR	SBL	SBT
Lane Configurations	નુ	1	† †	1	5	<u>†</u> †
Traffic Volume (vph)	0	173	821	443	232	1004
Future Volume (vph)	0	173	821	443	232	1004
Turn Type	NA	Perm	NA	Perm	pm+pt	NA
Protected Phases	8		6		5	2
Permitted Phases		8		6	2	
Detector Phase	8	8	6	6	5	2
Switch Phase						
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	22.0	22.0	22.0	22.0	15.0	22.0
Total Split (s)	22.0	22.0	28.0	28.0	15.0	43.0
Total Split (%)	33.8%	33.8%	43.1%	43.1%	23.1%	66.2%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag			Lag	Lag	Lead	
Lead-Lag Optimize?						
Recall Mode	None	None	Max	Max	None	Max
Act Effct Green (s)	11.3	11.3	22.1	22.1	37.1	37.1
Actuated g/C Ratio	0.19	0.19	0.37	0.37	0.61	0.61
v/c Ratio	0.56	0.51	0.83	0.67	0.76	0.60
Control Delay	30.1	11.9	26.8	9.9	27.4	9.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	30.1	11.9	26.8	9.9	27.4	9.5
LOS	С	В	С	А	С	А
Approach Delay	20.0		20.9			12.9
Approach LOS	С		С			В
Intersection Summary						
Cycle Length: 65						
Actuated Cycle Length: 60.	.4					
Natural Cycle: 65						
Control Type: Actuated-Un	coordinated	1				
Maximum v/c Ratio: 0.83						
Intersection Signal Delay: 1	17.3			Ir	ntersectio	n LOS: B
Intersection Capacity Utiliza)				of Service
Analysis Period (min) 15						2
,						

Splits and Phases: 202: Jedburg Road & I-26 EB Off-Ramp/I-26 EB On-Ramp

Ø2		2 8	
43 s		22 s	
Ø5	Ø6		
15 s	28 s		

Movement EBL EBR WBL WBT WBR NBL NBT NBR SBL SBT Traffic Volume (veh/h) 140 0 173 0 0 0 0 821 443 232 1004 Number 3 8 18 1 6 16 5 2 Initial Q (2b), veh 0 <td< th=""><th>4</th><th>Ŧ</th><th>1</th><th>1</th><th>1</th><th>1</th><th>*</th><th>+</th><th>4</th><th>$\mathbf{\hat{z}}$</th><th>-</th><th>۶</th><th></th></td<>	4	Ŧ	1	1	1	1	*	+	4	$\mathbf{\hat{z}}$	-	۶	
Traffic Volume (veh/h) 140 0 173 0 0 0 0 821 443 232 1004 Future Volume (veh/h) 140 0 173 0	SBR			NBR		NBL	WBR	WBT	WBL	EBR	EBT	EBL	Movement
Future Volume (veh/h) 140 0 173 0 0 0 821 443 232 1004 Number 3 8 18 1 6 16 5 2 Initial Q (b), veh 0 <t< td=""><td></td><td>^</td><td></td><td>1</td><td>- ††</td><td></td><td></td><td></td><td></td><td></td><td>स</td><td></td><td>5</td></t<>		^		1	- ††						स		5
Number 3 8 18 1 6 16 5 2 Initial Q (2b), veh 0 </td <td>0</td> <td></td> <td></td> <td>443</td> <td></td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td></td> <td>0</td> <td>140</td> <td>Traffic Volume (veh/h)</td>	0			443		0	0	0	0		0	140	Traffic Volume (veh/h)
Initial Q (Qb), veh 0 0 0 0 0 0 0 0 Ped-Bike Adj(A_pbT) 1.00 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01	0	1004	232		821		0	0	0				Future Volume (veh/h)
Ped-Bike Adj(A_pbT) 1.00 1.00 1.00 1.00 1.00 1.00 Parking Bus, Adj 1.00 1.00 1.00 1.00 1.00 1.00 1.00 Adj Sat Flow, veh/h/ln 1900 1583 1583 1583 1583 1583 1583 1583 Adj Flow Rate, veh/h 156 0 0 0 912 0 258 1116 Adj No. of Lanes 0 1 1 0 2 1 1 2 Peak Hour Factor 0.90 20 20 20 20 20 20 20 20 20	12	2	5	16	6	1				18	8	3	
Parking Bus, Adj1.001.001.001.001.001.001.001.00Adj Sat Flow, veh/h/ln19001583158315830158315831583Adj Flow Rate, veh/h15600091202581116Adj No. of Lanes01102112Peak Hour Factor0.900.900.900.900.900.900.900.900.90Percent Heavy Veh, %202020020202020Cap, veh/h1940173012925784061979Arrive On Green0.130.000.000.000.430.000.100.66Sat Flow, veh/h15600091202581116Grp Sat Flow(s), veh/h/ln15680134601504134615083088Grp Volume(y), veh/h15080134601504134615081504Q Serve(g_s), s5.70.00.00.01.001.001.001.001.00Lane Grp Cap(c), veh/h1940173012925784061979V/C Ratio(X)0.800.000.000.001.001.001.001.001.00Lane Grp Cap(c), veh/h1940173012925784631979V/C Ratio(X) </td <td>0</td> <td>0</td> <td></td> <td></td> <td>0</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>0</td> <td></td> <td>Initial Q (Qb), veh</td>	0	0			0						0		Initial Q (Qb), veh
Adj Sať Flow, veh/h/in 1900 1583 1583 1583 0 1583	1.00		1.00	1.00		1.00				1.00		1.00	Ped-Bike Adj(A_pbT)
Adj Flow Rate, veh/h 156 0 0 912 0 258 1116 Adj No. of Lanes 0 1 1 0 2 1 1 2 Peak Hour Factor 0.90 0.91	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00	Parking Bus, Adj
Adj No. of Lanes 0 1 1 0 2 1 1 2 Peak Hour Factor 0.90 Cap, veh/h 173 0 1292 578 406 1508 1504 0.84 11.3 13 Cycle O Clear(g_c), s 5.7 0.0 0.0 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	0	1583	1583	1583	1583	0				1583	1583	1900	Adj Sat Flow, veh/h/ln
Peak Hour Factor 0.90 0.91 0.83 0.838 0.838 0.838 0.838 0.838 11.3 0.90 0.90 1.90 1.91 0.91 1.91 0.91 1.91 0.91 1.91 0.91 1.91 1.91 1.91	0	1116	258	0	912	0				0	0	156	Adj Flow Rate, veh/h
Percent Heavy Veh, % 20 20 20 20 20 20 20 Cap, veh/h 194 0 173 0 1292 578 406 1979 Arrive On Green 0.13 0.00 0.00 0.43 0.00 0.12 0.66 Sat Flow, veh/h 1508 0 1346 0 3088 1346 1508 3088 Grp Volume(v), veh/h 1506 0 0 912 0 258 1116 Grp Sat Flow(s), veh/h/ln 1508 0 1346 0 1504 1346 1508 1504 Q Serve(g_s), s 5.7 0.0 0.0 0.0 1.40 0. 4.8 11.3 Cycle Q Clear(g_c), s s 5.7 0.0 0.0 0.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	0	2	1	1	2	0				1	1	0	Adj No. of Lanes
Cap, veh/h 194 0 173 0 1292 578 406 1979 Arrive On Green 0.13 0.00 0.00 0.00 0.43 0.00 0.12 0.66 Sat Flow, veh/h 1508 0 1346 0 3088 1346 1508 3088 Grp Volume(v), veh/h 156 0 0 0 912 0 258 1116 Grp Sat Flow(s), veh/h 1508 0 1346 0 1504 1346 1508 1504 Q Serve(g_s), s 5.7 0.0 0.0 0.0 14.0 0.0 4.8 11.3 Cycle O Clear(g_c), s 5.7 0.0 0.0 0.00 1.00 1.00 Lane Grp Cap(c), veh/h 194 0 173 0 1292 578 406 1979 V/C Ratio(X) 0.80 0.00 0.00 0.00 0.00 1.00 1.00 1.00 Upstream Filter(I) 1.00	0.90	0.90	0.90	0.90	0.90	0.90				0.90	0.90	0.90	Peak Hour Factor
Arrive On Green 0.13 0.00 0.00 0.43 0.00 0.12 0.66 Sat Flow, veh/h 1508 0 1346 0 3088 1346 1508 3088 Grp Volume(v), veh/h 156 0 0 0 912 0 258 1116 Grp Sat Flow(s), veh/h/ln 1508 0 1346 0 1504 1346 1508 3088 Q Serve(g.s), s 5.7 0.0 0.0 14.0 0.0 4.8 11.3 Cycle O Clear(g.c), s 5.7 0.0 0.0 1.00 </td <td>0</td> <td>20</td> <td>20</td> <td>20</td> <td>20</td> <td>0</td> <td></td> <td></td> <td></td> <td>20</td> <td>20</td> <td>20</td> <td>Percent Heavy Veh, %</td>	0	20	20	20	20	0				20	20	20	Percent Heavy Veh, %
Sat Flow, veh/h 1508 0 1346 0 3088 1346 1508 3088 Grp Volume(v), veh/h 156 0 0 0 912 0 258 1116 Grp Sat Flow(s), veh/h/ln 1508 0 1346 0 1504 1346 1508 1504 Q Serve(g_s), s 5.7 0.0 0.0 0.0 14.0 0.0 4.8 11.3 Cycle Q Clear(g_c), s 5.7 0.0 0.0 0.00 1.00	0	1979	406	578	1292	0				173	0	194	Cap, veh/h
Sat Flow, veh/h 1508 0 1346 0 3088 1346 1508 3088 Grp Volume(v), veh/h 156 0 0 0 912 0 258 1116 Grp Sat Flow(s), veh/h/ln 1508 0 1346 0 1504 1346 1508 1504 Q Serve(g_s), s 5.7 0.0 0.0 0.0 14.0 0.0 4.8 11.3 Cycle Q Clear(g_c), s 5.7 0.0 0.0 0.00 1.00	0.00	0.66	0.12	0.00	0.43	0.00				0.00	0.00	0.13	
Grp Volume(v), veh/h 156 0 0 912 0 258 1116 Grp Sat Flow(s), veh/h/ln 1508 0 1346 0 1504 1346 1508 1504 Q Serve(g_s), s 5.7 0.0 0.0 0.0 14.0 0.0 4.8 11.3 Cycle Q Clear(g_c), s 5.7 0.0 0.0 0.0 14.0 0.0 4.8 11.3 Prop In Lane 1.00 1.00 0.00 1.00	0	3088	1508	1346						1346	0	1508	Sat Flow, veh/h
Grp Sat Flow(s), veh/h/ln 1508 0 1346 0 1504 1346 1508 1504 Q Serve(g_s), s 5.7 0.0 0.0 0.0 14.0 0.0 4.8 11.3 Cycle Q Clear(g_c), s 5.7 0.0 0.0 0.0 14.0 0.0 4.8 11.3 Prop In Lane 1.00 1.00 0.00 1.00 1.00 1.00 1.00 Lane Grp Cap(C), veh/h 194 0 173 0 1292 578 406 1979 V/C Ratio(X) 0.80 0.00 0.00 0.00 0.71 0.00 0.64 0.56 Avail Cap(c_a), veh/h 429 0 383 0 1292 578 463 1979 HCM Platoon Ratio 1.00 <td>0</td> <td></td>	0												
Q Serve(g_s), s 5.7 0.0 0.0 14.0 0.0 4.8 11.3 Cycle Q Clear(g_c), s 5.7 0.0 0.0 1.00 0.0 14.0 0.0 4.8 11.3 Prop In Lane 1.00 1.00 0.0 0.0 14.0 0.0 4.8 11.3 Prop In Lane 1.00 1.00 0.00 0.00 1.00 1.00 Lane Grp Cap(c), veh/h 194 0 173 0 1292 578 406 1979 V/C Ratio(X) 0.80 0.00 0.00 0.00 0.71 0.00 0.64 0.56 Avail Cap(c_a), veh/h 429 0 383 0 1292 578 463 1979 HCM Platoon Ratio 1.00 <	0												
Cycle Q Clear(g_c), s 5.7 0.0 0.0 14.0 0.0 4.8 11.3 Prop In Lane 1.00 1.00 0.00 1.00 1.00 1.00 Lane Grp Cap(c), veh/h 194 0 173 0 1292 578 406 1979 V/C Ratio(X) 0.80 0.00 0.00 0.00 0.71 0.00 0.64 0.56 Avail Cap(c_a), veh/h 429 0 383 0 1292 578 463 1979 HCM Platoon Ratio 1.00	0.0												
Prop In Lane 1.00 1.00 1.00 1.00 1.00 Lane Grp Cap(c), veh/h 194 0 173 0 1292 578 406 1979 V/C Ratio(X) 0.80 0.00 0.00 0.00 0.71 0.00 0.64 0.56 Avail Cap(c_a), veh/h 429 0 383 0 1292 578 463 1979 HCM Platoon Ratio 1.00	0.0												
Lane Grp Cap(c), veh/h1940173012925784061979V/C Ratio(X)0.800.000.000.000.000.710.000.640.56Avail Cap(c_a), veh/h4290383012925784631979HCM Platoon Ratio1.001.001.001.001.001.001.001.001.00Upstream Filter(I)1.000.000.000.000.001.001.001.001.00Uniform Delay (d), s/veh23.80.00.00.00.013.10.010.05.2Incr Delay (d2), s/veh7.60.00.00.00.00.00.00.00.0Ville BackOfQ(95%), veh/ln4.90.00.00.00.00.00.00.00.0%ile BackOfQ(95%), veh/ln4.90.00.00.010.40.03.88.66.4LnGrp Delay(d), s/veh31.40.00.00.016.40.012.46.46.41.647.5Approach Vol, veh/h156912137416.47.5Approach LOSBAATimer12345678AAssigned Phs25685685	0.00	11.0			11.0						0.0		
V/C Ratio(X) 0.80 0.00 0.00 0.71 0.00 0.64 0.56 Avail Cap(c_a), veh/h 429 0 383 0 1292 578 463 1979 HCM Platoon Ratio 1.00	0.00	1979			1292						0		
Avail Cap(c_a), veh/h 429 0 383 0 1292 578 463 1979 HCM Platoon Ratio 1.00	0.00												
HCM Platoon Ratio1.001.001.001.001.001.001.001.001.00Upstream Filter(I)1.000.000.000.000.001.001.001.001.00Uniform Delay (d), s/veh23.80.00.00.013.10.010.05.2Incr Delay (d2), s/veh7.60.00.00.03.30.02.31.2Initial Q Delay(d3), s/veh0.00.00.00.00.00.00.0%ile BackOfQ(95%), veh/In4.90.00.00.010.40.03.88.6LnGrp Delay(d), s/veh31.40.00.00.016.40.012.46.4LnGrp LOSCBBAApproach Vol, veh/h1569121374Approach LOSCBATimer12345678Assigned Phs256881	0.00												. ,
Upstream Filter(I)1.000.000.000.001.001.001.00Uniform Delay (d), s/veh23.80.00.00.013.10.010.05.2Incr Delay (d2), s/veh7.60.00.00.03.30.02.31.2Initial Q Delay(d3),s/veh0.00.00.00.00.00.00.00.0%ile BackOfQ(95%),veh/ln4.90.00.00.010.40.03.88.6LnGrp Delay(d),s/veh31.40.00.00.016.40.012.46.4LnGrp LOSCBBAApproach Vol, veh/h1569121374Approach LOSCBATimer12345678Assigned Phs25688100	1.00												
Uniform Delay (d), s/veh 23.8 0.0 0.0 13.1 0.0 10.0 5.2 Incr Delay (d2), s/veh 7.6 0.0 0.0 0.0 3.3 0.0 2.3 1.2 Initial Q Delay(d3), s/veh 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 %ile BackOfQ(95%), veh/ln 4.9 0.0 0.0 0.0 10.4 0.0 3.8 8.6 LnGrp Delay(d), s/veh 31.4 0.0 0.0 0.0 16.4 0.0 12.4 6.4 LnGrp LOS C B B A Approach Vol, veh/h 156 912 1374 Approach LOS C B A Timer 1 2 3 4 5 6 7 8 Assigned Phs 2 5 6 8 5 6 7 8 5	0.00												
Incr Delay (d2), s/veh 7.6 0.0 0.0 0.0 3.3 0.0 2.3 1.2 Initial Q Delay(d3), s/veh 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 % ile BackOfQ(95%), veh/ln 4.9 0.0 0.0 0.0 10.4 0.0 3.8 8.6 LnGrp Delay(d), s/veh 31.4 0.0 0.0 0.0 16.4 0.0 12.4 6.4 LnGrp LOS C B B A Approach Vol, veh/h 156 912 1374 Approach LOS C B A Timer 1 2 3 4 5 6 7 8 Assigned Phs 2 5 6 8 5 5 6 7 8 5	0.0												1
Initial Q Delay(d3),s/veh 0.0 <t< td=""><td>0.0</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></t<>	0.0												
%ile BackOfQ(95%),veh/ln 4.9 0.0 0.0 0.0 10.4 0.0 3.8 8.6 LnGrp Delay(d),s/veh 31.4 0.0 0.0 0.0 16.4 0.0 12.4 6.4 LnGrp LOS C B B A Approach Vol, veh/h 156 912 1374 Approach Delay, s/veh 31.4 0.0 2 3 4 5 6 7 8 A Timer 1 2 3 4 5 6 7 8 A Assigned Phs 2 5 6 7 8 A	0.0												
LnGrp Delay(d),s/veh 31.4 0.0 0.0 16.4 0.0 12.4 6.4 LnGrp LOS C B B A Approach Vol, veh/h 156 912 1374 Approach Delay, s/veh 31.4 16.4 7.5 Approach LOS C B A Timer 1 2 3 4 5 6 7 8 Assigned Phs 2 5 6 8 8 2	0.0												
LnGrp LOS C B B A Approach Vol, veh/h 156 912 1374 Approach Delay, s/veh 31.4 16.4 7.5 Approach LOS C B A Timer 1 2 3 4 5 6 7 8 Assigned Phs 2 5 6 8 8 16	0.0												
Approach Vol, veh/h 156 912 1374 Approach Delay, s/veh 31.4 16.4 7.5 Approach LOS C B A Timer 1 2 3 4 5 6 7 8 Assigned Phs 2 5 6 8 8	0.0			0.0		0.0				0.0	0.0		
Approach Delay, s/veh 31.4 16.4 7.5 Approach LOS C B A Timer 1 2 3 4 5 6 7 8 Assigned Phs 2 5 6 8 8			D								154	C	
Approach LOS C B A Timer 1 2 3 4 5 6 7 8 Assigned Phs 2 5 6 8 8 8													
Timer 1 2 3 4 5 6 7 8 Assigned Phs 2 5 6 8													
Assigned Phs 2 5 6 8		A			В						C		Approach LOS
						7	6		4	3	2	1	
Phs Duration (G+Y+RC), s 43.0 12.9 30.1 13.2					13.2		30.1	12.9			43.0		Phs Duration (G+Y+Rc), s
Change Period (Y+Rc), s 6.0 6.0 6.0 6.0					6.0		6.0	6.0			6.0		
Max Green Setting (Gmax), s 37.0 9.0 22.0 16.0					16.0		22.0	9.0			37.0		Max Green Setting (Gmax), s
Max Q Clear Time (g_c+I1), s 13.3 6.8 16.0 7.7					7.7		16.0	6.8			13.3		Max Q Clear Time (g_c+l1), s
Green Ext Time (p_c), s 23.1 0.2 6.0 0.3					0.3		6.0	0.2			23.1		Green Ext Time (p_c), s
Intersection Summary													Intersection Summary
HCM 2010 Ctrl Delay 12.4										12.4			HCM 2010 Ctrl Delay
HCM 2010 LOS B													

Timings 203: Jedburg Road & I-26 WB On-Ramp

Lane GroupNBLNBTSBTLane Configurations \uparrow \uparrow \uparrow Traffic Volume (vph)243718610Future Volume (vph)243718610Future Volume (vph)243718610Turn TypeD.P+PNANAProtected Phases1Free2Detector Phase12Switch PhaseMinimum Initial (s)4.04.0Minimum Split (s)15.022.0Total Split (s)2.038.0Total Split (s)2.02.0Lost Time (s)2.02.0Lost Time (s)2.02.0Lost Time (s)6.06.0Lead-Lag Optimize?Recall ModeRecall ModeNoneMaxAct Effct Green (s)39.451.4Autated g/C Ratio0.771.000.62v/c Ratio0.510.770.00.0Total Delay5.50.25.80.00.0Cycle Length: 51.4AApproach LOSAAAApproach LOSAAAIntersection SummaryCycle Length: 51.4Maximum v/c Ratio: 0.51Intersection LOS: AIntersection LOS: AIntersection LOS: A		1	†	Ļ	
Lane Configurations \checkmark \bigstar \bigstar Traffic Volume (vph)243718610Future Volume (vph)243718610Future Volume (vph)243718610Future Volume (vph)243718610Furnet Volume (vph)243718610Permitted Phases222Permitted Phases12Switch Phase12Switch Phase12Switch Phase12Switch Phase12Switch Phase12Switch Phase12Switch Phase12Switch Phase12Switch Phase4.04.0Minimum Initial (s)4.04.0All-Red Time (s)2.02.0Lost Time (s)4.04.0All-Red Time (s)2.02.0Lost Time (s)6.06.0Lead-Lag Optimize?Recall ModeMaxRecall ModeNoneMaxAct Effct Green (s)39.451.4Act Effct Green (s)39.451.4Act Effct Green (s)5.50.2 </td <td>Lane Group</td> <td>NBL</td> <td>NBT</td> <td>SBT</td> <td></td>	Lane Group	NBL	NBT	SBT	
Traffic Volume (vph) 243 718 610 Future Volume (vph) 243 718 610 Turn Type D.P+P NA NA Protected Phases 1 Free 2 Permitted Phases 2 2 Detector Phase 1 2 Switch Phase 2 Minimum Initial (s) 4.0 4.0 Minimum Split (s) 15.0 22.0 Total Split (s) 2.0 38.0 Total Split (s) 2.0 2.0 Lost Time (s) 4.0 4.0 All-Red Time (s) 2.0 2.0 Lost Time Adjust (s) 0.0 0.0 Total Lost Time (s) 6.0 6.0 Lead-Lag Optimize? Recall Mode None Recall Mode None Max Act Effct Green (s) 39.4 51.4 32.0 Actuated g/C Ratio 0.51 0.27 0.48 Control Delay 5.5 0.2 5.8 Queue Delay 0.0 0.0 0.0 Total Delay </td <td></td> <td>5</td> <td>**</td> <td>≜15</td> <td></td>		5	**	≜1 5	
Future Volume (vph) 243 718 610 Turn Type D.P+P NA NA Protected Phases 1 Free 2 Permitted Phases 2 2 Detector Phase 1 2 Switch Phase 1 2 Minimum Initial (s) 4.0 4.0 Minimum Split (s) 15.0 22.0 Total Split (s) 2.0 38.0 Total Split (s) 2.0 38.0 Total Split (s) 2.0 2.0 Lost Time (s) 4.0 4.0 All-Red Time (s) 2.0 2.0 Lost Time (s) 6.0 6.0 Lead/Lag Lead Lag Lead-Lag Optimize? Recall Mode None Recall Mode None Max Act Effct Green (s) 39.4 51.4 32.0 Actuated g/C Ratio 0.77 1.00 0.62 v/c Ratio 0.51 0.27 0.48 Control Delay 5.5 0.2 5.8 Quee Delay 0.0					
Turn Type D.P+P NA NA Protected Phases 1 Free 2 Permitted Phases 2 2 Detector Phase 1 2 Switch Phase 1 2 Minimum Initial (s) 4.0 4.0 Minimum Split (s) 15.0 22.0 Total Split (s) 22.0 38.0 Total Split (s) 22.0 38.0 Total Split (s) 2.0 2.0 Lost Time (s) 4.0 4.0 All-Red Time (s) 2.0 2.0 Lost Time Adjust (s) 0.0 0.0 Total Lost Time (s) 6.0 6.0 Lead/Lag Lead Lag Lead-Lag Optimize? Recall Mode None Recall Mode None Max Actuated g/C Ratio 0.77 1.00 0.62 v/c Ratio 0.51 0.27 0.48 Control Delay 5.5 0.2 5.8 LOS A <					
Protected Phases 1 Free 2 Permitted Phases 2 2 Detector Phase 1 2 Switch Phase		D.P+P	NA	NA	
Detector Phase 1 2 Switch Phase		1	Free	2	
Switch Phase Minimum Initial (s) 4.0 Minimum Split (s) 15.0 22.0 Total Split (s) 22.0 38.0 Total Split (%) 36.7% 63.3% Yellow Time (s) 4.0 4.0 All-Red Time (s) 2.0 2.0 Lost Time Adjust (s) 0.0 0.0 Total Lost Time (s) 6.0 6.0 Lead/Lag Lead Lag Lead-Lag Optimize? Recall Mode None Recall Mode None Max Act Effct Green (s) 39.4 51.4 32.0 Actuated g/C Ratio 0.51 0.27 0.48 Control Delay 5.5 0.2 5.8 Queue Delay 0.0 0.0 0.0 Total Delay 5.5 0.2 5.8 LOS A A A Approach Delay 1.6 5.8 Approach LOS A A Acturated Cycle Length: 51.4 Natural Cycle: 40 Control Type: Actuated-Uncoordinated Maximum v/c Ratio: 0.51	Permitted Phases	2			
Minimum Initial (s) 4.0 4.0 Minimum Split (s) 15.0 22.0 Total Split (s) 22.0 38.0 Total Split (%) 36.7% 63.3% Yellow Time (s) 4.0 4.0 All-Red Time (s) 2.0 2.0 Lost Time Adjust (s) 0.0 0.0 Total Lost Time (s) 6.0 6.0 Lead/Lag Lead Lag Lead-Lag Optimize? Recall Mode None Recall Mode None Max Act Effct Green (s) 39.4 51.4 32.0 Actuated g/C Ratio 0.77 1.00 0.62 v/c Ratio 0.51 0.27 0.48 Control Delay 5.5 0.2 5.8 Queue Delay 0.0 0.0 0.0 Total Delay 5.5 0.2 5.8 LOS A A A Approach LOS A A Approach LOS A A Atuated Cycle Length: 51.4 Natural Cycle: 40 Control Type: Actuated-Uncoordinated	Detector Phase	1		2	
Minimum Split (s) 15.0 22.0 Total Split (s) 22.0 38.0 Total Split (%) 36.7% 63.3% Yellow Time (s) 4.0 4.0 All-Red Time (s) 2.0 2.0 Lost Time Adjust (s) 0.0 0.0 Total Lost Time (s) 6.0 6.0 Lead/Lag Lead Lag Lead-Lag Optimize? Recall Mode None Recall Mode None Max Act Effct Green (s) 39.4 51.4 32.0 Actuated g/C Ratio 0.77 1.00 0.62 v/c Ratio 0.51 0.27 0.48 Control Delay 5.5 0.2 5.8 Queue Delay 0.0 0.0 0.0 Total Delay 5.5 0.2 5.8 LOS A A A Approach Delay 1.6 5.8 Approach LOS A A A Actuated Cycle Length: 51.4 Natural Cycle: 40 Control Type: Actuated-Uncoordinated Maximum v/c Ratio: 0.51 Uncoordina	Switch Phase				
Minimum Split (s) 15.0 22.0 Total Split (s) 22.0 38.0 Total Split (%) 36.7% 63.3% Yellow Time (s) 4.0 4.0 All-Red Time (s) 2.0 2.0 Lost Time Adjust (s) 0.0 0.0 Total Lost Time (s) 6.0 6.0 Lead/Lag Lead Lag Lead-Lag Optimize? Recall Mode None Recall Mode None Max Act Effct Green (s) 39.4 51.4 32.0 Actuated g/C Ratio 0.77 1.00 0.62 v/c Ratio 0.51 0.27 0.48 Control Delay 5.5 0.2 5.8 Queue Delay 0.0 0.0 0.0 Total Delay 5.5 0.2 5.8 LOS A A A Approach Delay 1.6 5.8 Approach LOS A A A Attuated Cycle Length: 51.4 Natural Cycle: 40 Control Type: Actuated-Uncoordinated Maximum v/c Ratio: 0.51 V	Minimum Initial (s)	4.0		4.0	
Total Split (s) 22.0 38.0 Total Split (%) 36.7% 63.3% Yellow Time (s) 4.0 4.0 All-Red Time (s) 2.0 2.0 Lost Time Adjust (s) 0.0 0.0 Total Lost Time (s) 6.0 6.0 Lead/Lag Lead Lag Lead-Lag Optimize? Recall Mode None Max Act Effct Green (s) 39.4 51.4 32.0 Actuated g/C Ratio 0.77 1.00 0.62 v/c Ratio 0.51 0.27 0.48 Control Delay 5.5 0.2 5.8 Queue Delay 0.0 0.0 0.0 Total Delay 5.5 0.2 5.8 LOS A A A Approach Delay 1.6 5.8 Approach LOS A A A A A Intersection Summary Cycle Length: 60 Actuated Cycle Length: 51.4 Natural Cycle: 40 Control Type: Actuated-Uncoordinated Maximum v/c Ratio: 0.51				22.0	
Total Split (%) 36.7% 63.3% Yellow Time (s) 4.0 4.0 All-Red Time (s) 2.0 2.0 Lost Time Adjust (s) 0.0 0.0 Total Lost Time (s) 6.0 6.0 Lead/Lag Lead Lag Lead-Lag Optimize? Recall Mode None Max Act Effct Green (s) 39.4 51.4 32.0 Actuated g/C Ratio 0.77 1.00 0.62 v/c Ratio 0.51 0.27 0.48 Control Delay 5.5 0.2 5.8 Queue Delay 0.0 0.0 0.0 Total Delay 5.5 0.2 5.8 LOS A A A Approach Delay 1.6 5.8 Approach LOS A A A A A Natural Cycle 51.4 Natural Cycle: 40 Control Type: Actuated-Uncoordinated Maximum v/c Ratio: 0.51		22.0		38.0	
Yellow Time (s) 4.0 4.0 All-Red Time (s) 2.0 2.0 Lost Time Adjust (s) 0.0 0.0 Total Lost Time (s) 6.0 6.0 Lead/Lag Lead Lag Lead-Lag Optimize? Recall Mode None Max Act Effct Green (s) 39.4 51.4 32.0 Actuated g/C Ratio 0.77 1.00 0.62 v/c Ratio 0.51 0.27 0.48 Control Delay 5.5 0.2 5.8 Queue Delay 0.0 0.0 0.0 Total Delay 5.5 0.2 5.8 LOS A A A Approach Delay 1.6 5.8 Approach LOS A A Approach LOS A A Attuated Cycle Length: 60 Actuated Cycle Length: 51.4 Natural Cycle: 40 Control Type: Actuated-Uncoordinated Maximum v/c Ratio: 0.51 United Cycle: 0.51		36.7%		63.3%	
Lost Time Adjust (s) 0.0 0.0 Total Lost Time (s) 6.0 6.0 Lead/Lag Lead Lag Lead-Lag Optimize? Recall Mode None Max Act Effct Green (s) 39.4 51.4 32.0 Actuated g/C Ratio 0.77 1.00 0.62 v/c Ratio 0.51 0.27 0.48 Control Delay 5.5 0.2 5.8 Queue Delay 0.0 0.0 0.0 Total Delay 5.5 0.2 5.8 LOS A A A Approach Delay 1.6 5.8 Approach LOS A A Approach LOS A A Atuated Cycle Length: 60 Actuated Cycle Length: 51.4 Natural Cycle: 40 Control Type: Actuated-Uncoordinated Maximum v/c Ratio: 0.51 Uncoordinated		4.0		4.0	
Total Lost Time (s) 6.0 6.0 Lead/Lag Lead Lag Lead-Lag Optimize? Recall Mode None Max Act Effct Green (s) 39.4 51.4 32.0 Actuated g/C Ratio 0.77 1.00 0.62 v/c Ratio 0.51 0.27 0.48 Control Delay 5.5 0.2 5.8 Queue Delay 0.0 0.0 0.0 Total Delay 5.5 0.2 5.8 LOS A A A Approach Delay 1.6 5.8 Approach LOS A A Approach LOS A A Intersection Summary Cycle Length: 51.4 Natural Cycle: 40 Control Type: Actuated-Uncoordinated Maximum v/c Ratio: 0.51 V	All-Red Time (s)	2.0		2.0	
Total Lost Time (s) 6.0 6.0 Lead/Lag Lead Lag Lead-Lag Optimize? Recall Mode None Max Act Effct Green (s) 39.4 51.4 32.0 Actuated g/C Ratio 0.77 1.00 0.62 v/c Ratio 0.51 0.27 0.48 Control Delay 5.5 0.2 5.8 Queue Delay 0.0 0.0 0.0 Total Delay 5.5 0.2 5.8 LOS A A A Approach Delay 1.6 5.8 Approach LOS A A Approach LOS A A Ana A A Approach LOS A A Ana A A Approach LOS A A Ana A A Ana<	Lost Time Adjust (s)	0.0		0.0	
Lead/Lag Lead Lag Lead-Lag Optimize? Recall Mode None Max Act Effct Green (s) 39.4 51.4 32.0 Actuated g/C Ratio 0.77 1.00 0.62 v/c Ratio 0.51 0.27 0.48 Control Delay 5.5 0.2 5.8 Queue Delay 0.0 0.0 0.0 Total Delay 5.5 0.2 5.8 LOS A A A Approach Delay 1.6 5.8 Approach LOS A A Actuated Cycle Length: 51.4 A Natural Cycle: 40 Control Type: Actuated-Uncoordinated Maximum v/c Ratio: 0.51 Use Use		6.0		6.0	
Lead-Lag Optimize? Max Recall Mode None Max Act Effct Green (s) 39.4 51.4 32.0 Actuated g/C Ratio 0.77 1.00 0.62 v/c Ratio 0.51 0.27 0.48 Control Delay 5.5 0.2 5.8 Queue Delay 0.0 0.0 0.0 Total Delay 5.5 0.2 5.8 LOS A A A Approach Delay 1.6 5.8 Approach LOS A A Intersection Summary Cycle Length: 51.4 Natural Cycle: 40 Control Type: Actuated-Uncoordinated Maximum v/c Ratio: 0.51 0.51		Lead		Lag	
Recall Mode None Max Act Effct Green (s) 39.4 51.4 32.0 Actuated g/C Ratio 0.77 1.00 0.62 v/c Ratio 0.51 0.27 0.48 Control Delay 5.5 0.2 5.8 Queue Delay 0.0 0.0 0.0 Total Delay 5.5 0.2 5.8 LOS A A A Approach Delay 1.6 5.8 Approach LOS A A Actuated Cycle Length: 60 Actuated Cycle Length: 51.4 Natural Cycle: 40 Control Type: Actuated-Uncoordinated Maximum v/c Ratio: 0.51 Unit State				5	
Actuated g/C Ratio 0.77 1.00 0.62 v/c Ratio 0.51 0.27 0.48 Control Delay 5.5 0.2 5.8 Queue Delay 0.0 0.0 0.0 Total Delay 5.5 0.2 5.8 LOS A A A Approach Delay 1.6 5.8 Approach LOS A A Intersection Summary Cycle Length: 60 Actuated Cycle Length: 51.4 Xatural Cycle: 40 Control Type: Actuated-Uncoordinated Maximum v/c Ratio: 0.51		None		Мах	
Actuated g/C Ratio 0.77 1.00 0.62 v/c Ratio 0.51 0.27 0.48 Control Delay 5.5 0.2 5.8 Queue Delay 0.0 0.0 0.0 Total Delay 5.5 0.2 5.8 LOS A A A Approach Delay 1.6 5.8 Approach LOS A A Intersection Summary Cycle Length: 60 Actuated Cycle Length: 51.4 Xatural Cycle: 40 Control Type: Actuated-Uncoordinated Maximum v/c Ratio: 0.51	Act Effct Green (s)	39.4	51.4	32.0	
v/c Ratio 0.51 0.27 0.48 Control Delay 5.5 0.2 5.8 Queue Delay 0.0 0.0 0.0 Total Delay 5.5 0.2 5.8 LOS A A A Approach Delay 1.6 5.8 Approach LOS A A Intersection Summary Cycle Length: 60 Actuated Cycle Length: 51.4 Atural Cycle: 40 Control Type: Actuated-Uncoordinated Maximum v/c Ratio: 0.51	Actuated g/C Ratio	0.77	1.00	0.62	
Queue Delay0.00.00.0Total Delay5.50.25.8LOSAAAApproach Delay1.65.8Approach LOSAAIntersection SummaryCycle Length: 60Actuated Cycle Length: 51.4Atuated Cycle Length: 51.4Natural Cycle: 40Control Type: Actuated-UncoordinatedMaximum v/c Ratio: 0.510.0		0.51	0.27	0.48	
Queue Delay0.00.00.0Total Delay5.50.25.8LOSAAAApproach Delay1.65.8Approach LOSAAIntersection SummaryCycle Length: 60Actuated Cycle Length: 51.4Atuated Cycle Length: 51.4Natural Cycle: 40Control Type: Actuated-UncoordinatedMaximum v/c Ratio: 0.510.0	Control Delay	5.5	0.2	5.8	
Total Delay5.50.25.8LOSAAAApproach Delay1.65.8Approach LOSAAIntersection SummaryCycle Length: 60Actuated Cycle Length: 51.4Actuated Cycle Length: 51.4Natural Cycle: 40Control Type: Actuated-UncoordinatedMaximum v/c Ratio: 0.51Los		0.0	0.0	0.0	
LOSAAAApproach Delay1.65.8Approach LOSAAIntersection SummaryCycle Length: 60Actuated Cycle Length: 51.4Actuated Cycle: 40Natural Cycle: 40Control Type: Actuated-UncoordinatedMaximum v/c Ratio: 0.510.51	3	5.5	0.2	5.8	
Approach LOS A A Intersection Summary		А	А	А	
Approach LOSAAIntersection SummaryCycle Length: 60Actuated Cycle Length: 51.4Actuated Cycle: 40Natural Cycle: 40Control Type: Actuated-UncoordinatedMaximum v/c Ratio: 0.51Actuated Cycle: 40	Approach Delay		1.6	5.8	
Cycle Length: 60 Actuated Cycle Length: 51.4 Natural Cycle: 40 Control Type: Actuated-Uncoordinated Maximum v/c Ratio: 0.51			А	А	
Cycle Length: 60 Actuated Cycle Length: 51.4 Natural Cycle: 40 Control Type: Actuated-Uncoordinated Maximum v/c Ratio: 0.51	Intersection Summary				
Actuated Cycle Length: 51.4 Natural Cycle: 40 Control Type: Actuated-Uncoordinated Maximum v/c Ratio: 0.51					
Natural Cycle: 40 Control Type: Actuated-Uncoordinated Maximum v/c Ratio: 0.51					
Control Type: Actuated-Uncoordinated Maximum v/c Ratio: 0.51					
Maximum v/c Ratio: 0.51		oordinated			
	Intersection Signal Delay: 3.	5			Intersection LOS: A
Intersection Capacity Utilization 62.3% ICU Level of Service B					
Analysis Period (min) 15					

Splits and Phases: 203: Jedburg Road & I-26 WB On-Ramp

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22 s	38 s	

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Movement	EBL	EBR	• NBL	NBT	SBT	SBR			
Lane Configurations		LDIX	<u> </u>		1	501			
Traffic Volume (vph)	0	0	243	718	610	184			
Future Volume (vph)	0	0	243	718	610	184			
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900			
Total Lost time (s)	1700	1700	6.0	4.0	6.0	1700			
Lane Util. Factor			1.00	0.95	0.95				
Frt			1.00	1.00	0.95				
Flt Protected			0.95	1.00	1.00				
Satd. Flow (prot)			1504	3008	2904				
Flt Permitted			0.31	1.00	1.00				
			498	3008	2904				
Satd. Flow (perm)	0.90	0.00				0.00			
Peak-hour factor, PHF		0.90	0.90	0.90	0.90	0.90			
Adj. Flow (vph)	0	0	270	798	678	204			
RTOR Reduction (vph)	0	0	0	0	38	0			
Lane Group Flow (vph)	0	0	270	798	844	0			
Turn Type			D.P+P	NA	NA				
Protected Phases			1	Free	2				
Permitted Phases			2	54.4					
Actuated Green, G (s)			39.4	51.4	32.0				
Effective Green, g (s)			39.4	51.4	32.0				
Actuated g/C Ratio			0.77	1.00	0.62				
Clearance Time (s)			6.0		6.0				
Vehicle Extension (s)			3.0		3.0				
Lane Grp Cap (vph)			526	3008	1807				
v/s Ratio Prot			c0.07	0.27	0.29				
v/s Ratio Perm			c0.32						
v/c Ratio			0.51	0.27	0.47				
Uniform Delay, d1			1.7	0.0	5.2				
Progression Factor			1.00	1.00	1.00				
Incremental Delay, d2			0.8	0.2	0.9				
Delay (s)			2.6	0.2	6.0				
Level of Service			А	А	А				
Approach Delay (s)	0.0			0.8	6.0				
Approach LOS	А			А	А				
Intersection Summary									
HCM 2000 Control Delay			3.2	H	CM 2000	Level of Service		А	
HCM 2000 Volume to Capac	city ratio		0.51						
Actuated Cycle Length (s)	, ,		51.4	Si	um of lost	time (s)	12	2.0	
Intersection Capacity Utiliza	tion		62.3%		U Level c			В	
Analysis Period (min)			15						
c Critical Lane Group									

c Critical Lane Group

HCM 2010 analysis expects strict NEMA phasing.

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Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	ሽ	1	†	1	7	†
Traffic Volume (vph)	120	10	10	1080	10	10
Future Volume (vph)	120	10	10	1080	10	10
Turn Type	Prot	Perm	NA	Free	Perm	NA
Protected Phases	6		8			4
Permitted Phases		6		Free	4	
Detector Phase	6	6	8		4	4
Switch Phase						
Minimum Initial (s)	4.0	4.0	4.0		4.0	4.0
Minimum Split (s)	15.0	15.0	22.0		22.0	22.0
Total Split (s)	34.0	34.0	26.0		26.0	26.0
Total Split (%)	56.7%	56.7%	43.3%		43.3%	43.3%
Yellow Time (s)	4.0	4.0	4.0		4.0	4.0
All-Red Time (s)	2.0	2.0	2.0		2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0		6.0	6.0
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	Min	Min	None		None	None
Act Effct Green (s)	25.7	25.7	5.8	28.7	5.9	5.9
Actuated g/C Ratio	0.90	0.90	0.20	1.00	0.21	0.21
v/c Ratio	0.08	0.01	0.03	0.76	0.03	0.03
Control Delay	2.4	2.2	10.8	3.8	10.8	10.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	2.4	2.2	10.8	3.8	10.8	10.8
LOS	А	А	В	А	В	В
Approach Delay	2.4		3.9			10.8
Approach LOS	А		А			В
Intersection Summary						
Cycle Length: 60						
Actuated Cycle Length: 28.7						
Natural Cycle: 40						
Control Type: Actuated-Unco	oordinated	1				
Maximum v/c Ratio: 0.76		-				
Intersection Signal Delay: 3.	8			Ir	ntersectio	n LOS: A
Intersection Capacity Utilizat)			CU Level	
Analysis Period (min) 15					2 20001	2. 0011100

Splits and Phases: 301: Factory Entrance/Welcome Center & Volvo Car Drive

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✓ Ø6	▲ Ø8
34 s	26 s

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Movement	WBL	WBR	NBT	NBR	SBL	SBT	
Lane Configurations	ሻ	1	†	1	٦	^	
Traffic Volume (veh/h)	120	10	10	1080	10	10	
Future Volume (veh/h)	120	10	10	1080	10	10	
Number	1	16	8	18	7	4	
Initial Q (Qb), veh	0	0	0	0	0	0	
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00		
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	
Adj Flow Rate, veh/h	133	11	11	0	11	11	
Adj No. of Lanes	1	1	1	1	1	1	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	
Percent Heavy Veh, %	2	2	2	2	2	2	
Cap, veh/h	428	382	63	54	474	63	
Arrive On Green	0.24	0.24	0.03	0.00	0.03	0.03	
Sat Flow, veh/h	1774	1583	1863	1583	1398	1863	
Grp Volume(v), veh/h	133	11	11	0	11	11	
Grp Sat Flow(s), veh/h/ln	1774	1583	1863	1583	1398	1863	
Q Serve(g_s), s	1.0	0.1	0.1	0.0	0.1	0.1	
	1.0	0.1	0.1	0.0	0.1	0.1	
Cycle Q Clear(g_c), s Prop In Lane		1.00	0.1	1.00	1.00	0.1	
1	1.00	382	40	54	474	63	
Lane Grp Cap(c), veh/h	428		63				
V/C Ratio(X)	0.31	0.03	0.17	0.00	0.02	0.17	
Avail Cap(c_a), veh/h	2999	2677	2249	1912	2114	2249	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	
Upstream Filter(I)	1.00	1.00	1.00	0.00	1.00	1.00	
Uniform Delay (d), s/veh	5.2	4.8	7.8	0.0	7.9	7.8	
Incr Delay (d2), s/veh	0.4	0.0	1.3	0.0	0.0	1.3	
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	
%ile BackOfQ(95%),veh/ln	1.0	0.1	0.1	0.0	0.1	0.1	
LnGrp Delay(d),s/veh	5.6	4.8	9.1	0.0	7.9	9.1	
LnGrp LOS	А	А	A		A	A	
Approach Vol, veh/h	144		11			22	
Approach Delay, s/veh	5.5		9.1			8.5	
Approach LOS	А		А			А	
Timer	1	2	3	4	5	6	7 8
Assigned Phs				4		6	8
Phs Duration (G+Y+Rc), s				6.6		10.0	6.6
Change Period (Y+Rc), s				6.0		6.0	6.0
Max Green Setting (Gmax), s				20.0		28.0	20.0
0, ,						3.0	21
Max Q Clear Time (g_c+l1), s				2.2		3.0 0.4	2.1
Max Q Clear Time (g_c+l1), s Green Ext Time (p_c), s						3.0 0.4	2.1 0.0
Max Q Clear Time (g_c+l1), s Green Ext Time (p_c), s Intersection Summary				2.2			
Max Q Clear Time (g_c+l1), s			6.1 A	2.2			

Timings 101: US 78 & SC 27/Ridgeville Road

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Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	ሻ	1	†	1	ሻ	1
Traffic Volume (vph)	166	206	336	241	338	314
Future Volume (vph)	166	206	336	241	338	314
Turn Type	pm+pt	NA	NA	pm+ov	Prot	pm+ov
Protected Phases	5	2	6	4	4	5
Permitted Phases	2			6		4
Detector Phase	5	2	6	4	4	5
Switch Phase						
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	15.0	22.0	22.0	22.0	22.0	15.0
Total Split (s)	15.0	38.0	23.0	22.0	22.0	15.0
Total Split (%)	25.0%	63.3%	38.3%	36.7%	36.7%	25.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag	Lead		Lag			Lead
Lead-Lag Optimize?			- 3			
Recall Mode	None	Мах	Мах	Min	Min	None
Act Effct Green (s)	32.0	32.0	17.7	39.7	16.0	30.3
Actuated g/C Ratio	0.53	0.53	0.30	0.66	0.27	0.50
v/c Ratio	0.47	0.27	0.80	0.27	0.94	0.45
Control Delay	11.9	8.7	36.0	1.4	57.4	6.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	11.9	8.7	36.0	1.4	57.4	6.1
LOS	В	A	D	A	E	A
Approach Delay	5	10.1	21.5		32.7	
Approach LOS		В	С		C	
Intersection Summary						
Cycle Length: 60						
Actuated Cycle Length: 60						
Natural Cycle: 60						
Control Type: Actuated-Unc	oordinated					
Maximum v/c Ratio: 0.94						
Intersection Signal Delay: 23	3.4			Ir	ntersectio	n LOS: C
Intersection Capacity Utiliza)				of Service
Analysis Period (min) 15		·				

Splits and Phases: 101: US 78 & SC 27/Ridgeville Road

		Ø4	
38 s		22 s	
* Ø5			
15 s	23 s		

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Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	<u> </u>	<u> </u>	<u> </u>	1	<u>, 1000</u>	1
Traffic Volume (veh/h)	166	206	336	241	338	314
Future Volume (veh/h)	166	206	336	241	338	314
Number	5	200	6	16	7	14
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	0	0	1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1583	1583	1583	1583	1583	1583
	184	229	373	268	376	349
Adj Flow Rate, veh/h	184	1	3/3	208	370	349 1
Adj No. of Lanes						
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	20	20	20	20	20	20
Cap, veh/h	359	844	521	802	402	499
Arrive On Green	0.10	0.53	0.33	0.33	0.27	0.27
Sat Flow, veh/h	1508	1583	1583	1346	1508	1346
Grp Volume(v), veh/h	184	229	373	268	376	349
Grp Sat Flow(s),veh/h/ln	1508	1583	1583	1346	1508	1346
Q Serve(g_s), s	4.4	4.7	12.4	6.0	14.6	13.2
Cycle Q Clear(g_c), s	4.4	4.7	12.4	6.0	14.6	13.2
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	359	844	521	802	402	499
V/C Ratio(X)	0.51	0.27	0.72	0.33	0.94	0.70
Avail Cap(c_a), veh/h	428	844	521	802	402	499
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	12.1	7.6	17.7	6.1	21.5	16.0
Incr Delay (d2), s/veh	1.1	0.8	8.2	1.1	29.0	4.3
Initial Q Delay(d3), s/veh	0.0	0.0	0.2	0.0	29.0	4.5
%ile BackOfQ(50%),veh/ln	2.0	2.2	6.6	4.0	9.3	10.0
LnGrp Delay(d),s/veh	13.2	8.4	25.9	7.2	50.5	20.3
LnGrp LOS	В	A	С	A	D	С
Approach Vol, veh/h		413	641		725	
Approach Delay, s/veh		10.6	18.1		36.0	
Approach LOS		В	В		D	
Timer	1	2	3	4	5	6
Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		38.0		22.0	12.3	25.7
Change Period (Y+Rc), s		6.0		6.0	6.0	6.0
Max Green Setting (Gmax), s		32.0		16.0	9.0	17.0
Max Q Clear Time (g_c+11), s		6.7		16.6	6.4	14.4
Green Ext Time (p_c), s					0.4	
		11.4		0.0	U. I	1.8
Intercoction Summary						
Intersection Summary						
HCM 2010 Ctrl Delay HCM 2010 LOS			23.6 C			

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Lane Group	EBT	EBR	NBT	NBR	SBL	SBT	
Lane Configurations	र्स	1	† †	1	ሻ	† †	
Traffic Volume (vph)	7	87	252	155	1512	565	
Future Volume (vph)	7	87	252	155	1512	565	
Turn Type	NA	Perm	NA	Perm	pm+pt	NA	
Protected Phases	8		6		5	2	
Permitted Phases		8		6	2		
Detector Phase	8	8	6	6	5	2	
Switch Phase							
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	
Minimum Split (s)	22.0	22.0	22.0	22.0	15.0	22.0	
Total Split (s)	22.0	22.0	22.0	22.0	106.0	128.0	
Total Split (%)	14.7%	14.7%	14.7%	14.7%	70.7%	85.3%	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	
Lead/Lag			Lag	Lag	Lead		
Lead-Lag Optimize?							
Recall Mode	None	None	C-Max	C-Max	None	C-Max	
Act Effct Green (s)	14.1	14.1	16.0	16.0	123.9	123.9	
Actuated g/C Ratio	0.09	0.09	0.11	0.11	0.83	0.83	
v/c Ratio	0.90	0.45	0.88	0.58	1.55	0.25	
Control Delay	116.3	18.0	92.4	16.6	265.3	1.6	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	116.3	18.0	92.4	16.6	265.3	1.6	
LOS	F	В	F	В	F	A	
Approach Delay	76.2		63.5			193.6	
Approach LOS	E		E			F	
Intersection Summary							
Cycle Length: 150							
Actuated Cycle Length: 150)						
Offset: 0 (0%), Referenced	to phase 2:	SBTL an	d 6:NBT,	Start of Y	ellow, Ma	aster Inter	rsection
Natural Cycle: 150							
Control Type: Actuated-Coc	ordinated						
Maximum v/c Ratio: 1.55							
Intersection Signal Delay: 1						n LOS: F	
Intersection Capacity Utiliza	ation 112.19	%		10	CU Level	of Service	еH
Analysis Period (min) 15							
Callia and Dhassan (200)		a di c					1
Splits and Phases: 102: S	SC 27/Ridg	eville Ro	ad & I-26	FR Ott-K	amp/I-26	EB On-R	amp

Ø2 (R) 128 s Ø5 Ø5 Ø5 Ø6 (R) ↓ HCM 2010 Signalized Intersection Summary2039 N102: SC 27/Ridgeville Road & I-26 EB Off-Ramp/I-26 EB On-Ramp

Design Hour (3:00 - 4:00 PM)

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		र्भ	1					<u>^</u>	1	ኘ	<u>^</u>	
Traffic Volume (veh/h)	120	7	87	0	0	0	0	252	155	1512	565	0
Future Volume (veh/h)	120	7	87	0	0	0	0	252	155	1512	565	0
Number	3	8	18				1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1647	1583				0	1583	1583	1583	1583	0
Adj Flow Rate, veh/h	133	8	97				0	280	172	1680	628	0
Adj No. of Lanes	0	1	1				0	2	1	1	2	0
Peak Hour Factor	0.90	0.90	0.90				0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	20	20	20				0	20	20	20	20	0
Cap, veh/h	153	9	138				0	332	149	1069	2458	0
Arrive On Green	0.10	0.10	0.10				0.00	0.11	0.11	1.00	1.00	0.00
Sat Flow, veh/h	1483	89	1346				0	3088	1346	1508	3088	0
Grp Volume(v), veh/h	141	0	97				0	280	172	1680	628	0
Grp Sat Flow(s), veh/h/ln	1573	0	1346				0	1504	1346	1508	1504	0
Q Serve(g_s), s	13.3	0.0	10.5				0.0	13.7	16.6	100.0	0.0	0.0
Cycle Q Clear(g_c), s	13.3	0.0	10.5				0.0	13.7	16.6	100.0	0.0	0.0
Prop In Lane	0.94	0.0	1.00				0.00	10.7	1.00	1.00	0.0	0.00
Lane Grp Cap(c), veh/h	162	0	138				0.00	332	149	1069	2458	0.00
V/C Ratio(X)	0.87	0.00	0.70				0.00	0.84	1.16	1.57	0.26	0.00
Avail Cap(c_a), veh/h	168	0.00	144				0.00	332	149	1069	2458	0.00
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.67	1.67	1.00
Upstream Filter(I)	1.00	0.00	1.00				0.00	1.00	1.00	0.09	0.09	0.00
Uniform Delay (d), s/veh	66.3	0.0	65.0				0.0	65.4	66.7	4.0	0.0	0.0
Incr Delay (d2), s/veh	35.2	0.0	13.6				0.0	22.1	122.3	257.9	0.0	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.3	0.0	4.4				0.0	6.7	11.2	113.5	0.0	0.0
LnGrp Delay(d),s/veh	101.5	0.0	78.6				0.0	87.6	189.0	262.0	0.0	0.0
LnGrp LOS	F	0.0	70.0 E				0.0	67.0 F	F	202.0 F	A	0.0
Approach Vol, veh/h		238	E					452			2308	
Approach Delay, s/veh		92.2						126.2			190.7	
Approach LOS		72.2 F						120.2 F			F	
Appidacii EOS		1									I	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2			5	6		8				
Phs Duration (G+Y+Rc), s		128.6			106.0	22.6		21.4				
Change Period (Y+Rc), s		6.0			6.0	6.0		6.0				
Max Green Setting (Gmax), s		122.0			100.0	16.0		16.0				
Max Q Clear Time (g_c+I1), s		2.0			102.0	18.6		15.3				
Green Ext Time (p_c), s		37.6			0.0	0.0		0.2				
Intersection Summary												
HCM 2010 Ctrl Delay			173.2									
HCM 2010 LOS			F									
10W 2010 LOJ			1									

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Lane Group	WBT	WBR	NBL	NBT	SBT	SBR
Lane Configurations	ર્સ	1	5	† †	† †	1
Traffic Volume (vph)	4	555	55	317	1765	368
Future Volume (vph)	4	555	55	317	1765	368
Turn Type	NA	Perm	pm+pt	NA	NA	Perm
Protected Phases	4		1	6	2	
Permitted Phases		4	6			2
Detector Phase	4	4	1	6	2	2
Switch Phase						
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	22.0	22.0	15.0	22.0	22.0	22.0
Total Split (s)	36.0	36.0	15.0	114.0	99.0	99.0
Total Split (%)	24.0%	24.0%	10.0%	76.0%	66.0%	66.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag			Lead		Lag	Lag
Lead-Lag Optimize?					5	5
Recall Mode	None	None	None	C-Max	C-Max	C-Max
Act Effct Green (s)	30.0	30.0	108.0	108.0	96.8	96.8
Actuated g/C Ratio	0.20	0.20	0.72	0.72	0.65	0.65
v/c Ratio	1.06	0.84	0.52	0.16	1.01	0.41
Control Delay	121.3	17.4	45.3	0.1	49.9	2.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	121.3	17.4	45.3	0.1	49.9	2.9
LOS	F	В	D	A	D	A
Approach Delay	55.1			6.8	41.8	
Approach LOS	E			A	D	
Intersection Summary						
Cycle Length: 150						
Actuated Cycle Length: 150			and GND	TI Ctort	of Vollov	,
Offset: 111 (74%), Referenc	eu lo prias	Se 2:3DT		IL, SIAII	of reliow	
Natural Cycle: 150	rdinated					
Control Type: Actuated-Coo	rainalea					
Maximum v/c Ratio: 1.06	1 /			1.	atoro o at!-	
Intersection Signal Delay: 47		0/				n LOS: D
Intersection Capacity Utilizat	uon 107.8	70](JU Level	of Service
Analysis Period (min) 15						
0 111 1 101 100 0						

Splits and Phases: 103: SC 27/Ridgeville Road & I-26 WB On-Ramp/I-26 WB Off-Ramp

▲ Ø1 🔮 Ø2 (R)	Ø4
15 s 99 s	36 s
114 s	

HCM 2010 Signalized Intersection Summary2039 No103: SC 27/Ridgeville Road & I-26 WB On-Ramp/I-26 WB Off-Ramp

Design Hour (3:00 - 4:00 PM)

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					र्स	1	۲.	<u></u>			<u></u>	1
Traffic Volume (veh/h)	0	0	0	312	4	555	55	317	0	0	1765	368
Future Volume (veh/h)	0	0	0	312	4	555	55	317	0	0	1765	368
Number				7	4	14	1	6	16	5	2	12
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln				1900	1647	1583	1583	1583	0	0	1583	1583
Adj Flow Rate, veh/h				347	4	617	61	352	0	0	1961	409
Adj No. of Lanes				0	1	1	1	2	0	0	2	1
Peak Hour Factor				0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %				20	20	20	20	20	0	0	20	20
Cap, veh/h				310	4	269	86	2166	0	0	1971	882
Arrive On Green				0.20	0.20	0.20	0.05	1.00	0.00	0.00	0.66	0.66
Sat Flow, veh/h				1551	18	1346	1508	3088	0	0	3088	1346
Grp Volume(v), veh/h				351	0	617	61	352	0	0	1961	409
Grp Sat Flow(s), veh/h/ln				1569	0	1346	1508	1504	0	0	1504	1346
Q Serve(g_s), s				30.0	0.0	30.0	2.0	0.0	0.0	0.0	96.8	22.6
Cycle Q Clear(g_c), s				30.0	0.0	30.0	2.0	0.0	0.0	0.0	96.8	22.0
Prop In Lane				0.99	0.0	1.00	1.00	0.0	0.00	0.00	70.0	1.00
Lane Grp Cap(c), veh/h				314	0	269	86	2166	0.00	0.00	1971	882
V/C Ratio(X)				1.12	0.00	2.29	0.71	0.16	0.00	0.00	0.99	0.46
Avail Cap(c_a), veh/h				314	0.00	2.29	140	2166	0.00	0.00	1971	882
HCM Platoon Ratio				1.00	1.00	1.00	2.00	2.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	1.00	0.36	0.36	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh				60.0	0.00	60.0	39.8	0.30	0.0	0.00	25.6	12.8
Incr Delay (d2), s/veh				86.6	0.0	593.1	39.0 3.8	0.0	0.0	0.0	25.0 19.1	12.0
				0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0
Initial Q Delay(d3),s/veh											45.0	
%ile BackOfQ(50%),veh/In				20.5	0.0	55.5 653.1	1.7	0.0	0.0	0.0		8.7
LnGrp Delay(d),s/veh				146.6	0.0		43.7	0.1	0.0	0.0	44.6	14.6
LnGrp LOS				F	0/0	F	D	A			D	B
Approach Vol, veh/h					968			413			2370	
Approach Delay, s/veh					469.5			6.5			39.5	_
Approach LOS					F			А			D	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4		6						
Phs Duration (G+Y+Rc), s	9.7	104.3		36.0		114.0						
Change Period (Y+Rc), s	6.0	6.0		6.0		6.0						
Max Green Setting (Gmax), s	9.0	93.0		30.0		108.0						
Max Q Clear Time (g_c+I1), s	4.0	98.8		32.0		2.0						
Green Ext Time (p_c), s	0.0	0.0		0.0		103.6						
Intersection Summary												
HCM 2010 Ctrl Delay			146.8									
HCM 2010 LOS			F									

	4	*	1	1	1	Ļ
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	ካካ	1	<u>†</u> †	1	<u></u>	<u>†</u> †
Traffic Volume (vph)	1894	10	421	451	10	239
Future Volume (vph)	1894	10	421	451	10	239
Turn Type	Prot	Perm	NA	pm+ov	Perm	NA
Protected Phases	4		6	. 4		2
Permitted Phases		4		6	2	
Detector Phase	4	4	6	4	2	2
Switch Phase						
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	22.0	22.0	22.0	22.0	22.0	22.0
Total Split (s)	118.0	118.0	32.0	118.0	32.0	32.0
Total Split (%)	78.7%	78.7%	21.3%	78.7%	21.3%	21.3%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None	None	Мах	None	Мах	Мах
Act Effct Green (s)	108.6	108.6	26.0	146.7	26.0	26.0
Actuated g/C Ratio	0.74	0.74	0.18	1.00	0.18	0.18
v/c Ratio	0.97	0.01	0.88	0.37	0.16	0.50
Control Delay	32.2	3.6	77.4	0.8	60.0	58.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	32.2	3.6	77.4	0.8	60.0	58.9
LOS	С	А	E	А	E	E
Approach Delay	32.1		37.8			59.0
Approach LOS	С		D			E
Intersection Summary						
Cycle Length: 150						
Actuated Cycle Length: 146	5.7					
Natural Cycle: 90						
Control Type: Actuated-Und	coordinated					
Maximum v/c Ratio: 0.97						
Intersection Signal Delay: 3	35.9			Ir	ntersectio	n LOS: D
Intersection Capacity Utiliza					CU Level	
Analysis Period (min) 15						

Splits and Phases: 104: SC 27/Ridgeville Road & Lower Westvaco Road

	€1 04
32 s	118 s
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32 s	

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Movement	WBL	WBR	NBT	NBR	SBL	SBT	
Lane Configurations	ሻሻ	1	††	1	7	† †	
Traffic Volume (veh/h)	1894	10	421	451	10	239	
Future Volume (veh/h)	1894	10	421	451	10	239	
Number	7	14	6	16	5	2	
Initial Q (Qb), veh	0	0	0	0	0	0	
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00		
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	
Adj Sat Flow, veh/h/ln	1583	1583	1583	1583	1583	1583	
Adj Flow Rate, veh/h	2104	11	468	501	11	266	
Adj No. of Lanes	2	1	2	1	1	2	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	
Percent Heavy Veh, %	20	20	20	20	20	20	
Cap, veh/h	2165	996	535	1235	62	535	
Arrive On Green	0.74	0.74	0.18	0.18	0.18	0.18	
Sat Flow, veh/h	2925	1346	3088	1346	491	3088	
Grp Volume(v), veh/h	2104	11	468	501	11	266	
Grp Sat Flow(s), veh/h/ln	1463	1346	400 1504	1346	491	1504	
Q Serve(q_s), s	97.3	0.3	22.2	7.1	3.3	11.7	
, <u> </u>	97.3 97.3		22.2	7.1	3.3 25.4	11.7	
Cycle Q Clear(g_c), s		0.3 1.00	ZZ.Z			11.7	
Prop In Lane	1.00		FDF	1.00	1.00	FDF	
Lane Grp Cap(c), veh/h	2165	996	535	1235	62	535	
V/C Ratio(X)	0.97	0.01	0.88	0.41	0.18	0.50	
Avail Cap(c_a), veh/h	2240	1031	535	1235	62	535	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	
Uniform Delay (d), s/veh	17.6	5.0	58.5	0.8	70.9	54.2	
Incr Delay (d2), s/veh	12.9	0.0	17.9	1.0	6.1	3.3	
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	
%ile BackOfQ(50%),veh/ln	42.4	0.1	10.6	20.5	0.5	5.1	
LnGrp Delay(d),s/veh	30.4	5.0	76.4	1.8	77.0	57.5	
LnGrp LOS	С	A	E	A	E	E	
Approach Vol, veh/h	2115		969			277	
Approach Delay, s/veh	30.3		37.8			58.3	
Approach LOS	С		D			E	
Timer	1	2	3	4	5	6	7 8
Assigned Phs		2		4		6	
Phs Duration (G+Y+Rc), s		32.0		114.3		32.0	
Change Period (Y+Rc), s		6.0		6.0		6.0	
Max Green Setting (Gmax), s		26.0		112.0		26.0	
Max Q Clear Time (g_c+11) , s		27.4		99.3		24.2	
Green Ext Time (p_c), s		0.0		8.9		1.6	
Intersection Summary							
HCM 2010 Ctrl Delay			34.8				
HCM 2010 LOS			34.0 C				
			C				

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Lane Group	EBT	EBR	NBT	NBR	SBL	SBT
Lane Configurations	ર્સ	1	† †	7	ሻ	† †
Traffic Volume (vph)	0	173	821	443	232	1004
Future Volume (vph)	0	173	821	443	232	1004
Turn Type	NA	Perm	NA	Perm	pm+pt	NA
Protected Phases	8		6		5	2
Permitted Phases		8		6	2	
Detector Phase	8	8	6	6	5	2
Switch Phase						
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	22.0	22.0	22.0	22.0	15.0	22.0
Total Split (s)	22.0	22.0	28.0	28.0	15.0	43.0
Total Split (%)	33.8%	33.8%	43.1%	43.1%	23.1%	66.2%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag			Lag	Lag	Lead	
Lead-Lag Optimize?			Ū	Ū		
Recall Mode	None	None	Мах	Мах	None	Max
Act Effct Green (s)	11.3	11.3	22.1	22.1	37.1	37.1
Actuated g/C Ratio	0.19	0.19	0.37	0.37	0.61	0.61
v/c Ratio	0.56	0.51	0.83	0.67	0.76	0.60
Control Delay	30.1	11.9	26.8	9.9	27.4	9.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	30.1	11.9	26.8	9.9	27.4	9.5
LOS	С	В	С	А	С	А
Approach Delay	20.0		20.9			12.9
Approach LOS	С		С			В
Intersection Summary						
Cycle Length: 65						
Actuated Cycle Length: 60.4	4					
Natural Cycle: 65						
Control Type: Actuated-Unc	coordinated	1				
Maximum v/c Ratio: 0.83	5001 411 14100	•				
Intersection Signal Delay: 1	73			Ir	ntersectio	n I OS [,] B
Intersection Capacity Utiliza)				of Service
Analysis Period (min) 15		,				

Splits and Phases: 202: Jedburg Road & I-26 EB Off-Ramp/I-26 EB On-Ramp

₽ Ø2		4 Ø8	
43 s		22 s	
Ø5	Ø6		
15 s	28 s		

Movement EBI EBI EBI WBI WBI WBI NBI NBR SBI SBR SBR Lane Configurations		≯	-	$\mathbf{\hat{z}}$	∢	-	*	1	1	1	1	Ļ	~
Traffic Volume (veh/h) 140 0 173 0 0 0 821 443 232 1004 0 Future Volume (veh/h) 140 0 173 0 0 0 821 443 232 1004 0 Initial Q (2b), veh 0 <th>Movement</th> <th>EBL</th> <th>EBT</th> <th>EBR</th> <th>WBL</th> <th>WBT</th> <th>WBR</th> <th>NBL</th> <th></th> <th>NBR</th> <th>SBL</th> <th>SBT</th> <th>SBR</th>	Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL		NBR	SBL	SBT	SBR
Traffic Volume (veh/h) 140 0 173 0 0 0 821 443 232 1004 0 Future Volume (veh/h) 140 0 173 0 0 0 821 443 232 1004 0 Initial Q (2b), veh 0 <td>Lane Configurations</td> <td></td> <td><u>स</u></td> <td>1</td> <td></td> <td></td> <td></td> <td></td> <td><u>^</u></td> <td>1</td> <td>ሻ</td> <td><u></u></td> <td></td>	Lane Configurations		<u>स</u>	1					<u>^</u>	1	ሻ	<u></u>	
Number 3 8 18 1 6 16 5 2 12 Initial Q (Ob), veh 0<	Traffic Volume (veh/h)	140	0	173	0	0	0	0	821	443	232	1004	0
Initial Q(b), veh 0	Future Volume (veh/h)	140	0	173	0	0	0	0	821	443	232	1004	
Ped-Bike Adj(A_pbT) 1.00	Number	3	8	18				1	6	16	5	2	12
Parking Bus, Adj 1.00 1.0	Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Adj Sar Flow, veĥuhin 1900 1583 1583 1583 1583 1583 1583 0 Adj No, di Lanes 0 1 0 2 1 1 2 0 258 1116 0 Peak Hour Factor 0.90 <td>Ped-Bike Adj(A_pbT)</td> <td>1.00</td> <td></td> <td>1.00</td> <td></td> <td></td> <td></td> <td>1.00</td> <td></td> <td>1.00</td> <td>1.00</td> <td></td> <td>1.00</td>	Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00	1.00		1.00
Adj Flow Rate, veh/h 156 0 0 912 0 258 1116 0 Adj Ko of Lanes 0 1 1 0 2 1 1 2 0 Peck Hour Factor 0.90	Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Adj No. of Lanes 0 1 1 0 2 1 1 2 0 Peak Hour Factor 0.90 <th< td=""><td>Adj Sat Flow, veh/h/ln</td><td>1900</td><td>1583</td><td>1583</td><td></td><td></td><td></td><td>0</td><td>1583</td><td>1583</td><td>1583</td><td>1583</td><td>0</td></th<>	Adj Sat Flow, veh/h/ln	1900	1583	1583				0	1583	1583	1583	1583	0
Peak Hour Factor 0.90 0.9	Adj Flow Rate, veh/h	156	0	0				0	912	0	258	1116	0
Percent Heavy Veh, % 20 <th< td=""><td>Adj No. of Lanes</td><td>0</td><td>1</td><td>1</td><td></td><td></td><td></td><td>0</td><td>2</td><td>1</td><td>1</td><td>2</td><td>0</td></th<>	Adj No. of Lanes	0	1	1				0	2	1	1	2	0
Cap, veh/h 194 0 173 0 1292 578 406 1979 0 Arrive On Green 0.13 0.00 0.00 0.00 0.00 0.43 0.00 0.12 0.66 0.00 Sat Flow, veh/h 1508 0 1346 0 3088 1036 106 0 Grp Volume(V), veh/h 156 0 0 0 912 0 258 1116 0 Grp Sat Flow(s), veh/h/in 1508 0 1346 0 1504 0.0 4.8 1.3 0.0 Qcycle O Clear(g_c), s 5.7 0.0 0.0 0.0 1.40 0.0 4.8 11.3 0.0 Cycle O Clear(g_c), s 5.7 0.0 0.0 0.00 1.00 1.00 1.00 0.00 Lane Grp Cap(c), veh/h 194 0 173 0 1292 578 406 1979 0 V/C Ratio(X) 0.80 0.00 0.00 0.00 0.00 0.00 0.00 1.00 1.00 1.00 1.00	Peak Hour Factor	0.90	0.90	0.90				0.90	0.90	0.90	0.90	0.90	0.90
Arrive On Green 0.13 0.00 0.00 0.00 0.43 0.00 0.12 0.66 0.00 Sat Flow, veh/h 1508 0 1346 0 3088 1346 1508 3088 0 Grp Volume(V), veh/h 156 0 0 0 912 0 258 1116 0 Grp Sat Flow(s), veh/h/ln 1508 0 1346 0 1504 1346 0 0 4.8 11.3 0.0 Q Serve(g_s), s 5.7 0.0 0.0 0.0 1.40 0.0 4.8 11.3 0.0 Prop In Lane 1.00 1.00 0.00 1.00 1.00 0.00	Percent Heavy Veh, %	20	20	20				0	20	20	20	20	0
Sat Flow, veh/h 1508 0 1346 0 3088 1346 1508 3088 0 Grp Volume(v), veh/h 156 0 0 912 0 258 1116 0 Grp Sat Flow(s), veh/h/ln 1508 0 1346 0 0.0 140 0.0 4.8 11.3 0.0 Q Serve(g.s.) 5.7 0.0 0.0 0.0 1.40 0.0 4.8 11.3 0.0 Cycle Q Clear(g.c.) 5.7 0.0 0.0 0.0 1.00 1.00 0.00 Ane Grp Cap(c), veh/h 194 0 173 0 1292 578 406 1979 0 V/C Ratio(X) 0.80 0.00 0.00 0.00 1.0	Cap, veh/h	194	0	173				0	1292	578	406	1979	0
Grp Volume(v), veh/h 156 0 0 912 0 258 1116 0 Grp Sat Flow(s), veh/h/ln 1508 0 1346 0 1504 1346 1508 1504 0 Q Serve(g_c), s 5.7 0.0 0.0 0.0 14.0 0.0 4.8 11.3 0.0 Cycle Q Clear(g_c), s 5.7 0.0 0.0 0.0 1.00 1.00 0.00 4.8 11.3 0.0 Cycle Q Clear(g_c), s 5.7 0.0 0.0 0.00 1.00 1.00 0.00 4.8 11.3 0.0 Prop In Lane 1.00 1.00 1.00 0.00 0.00 1.00 1.00 0.00 1.00 1.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 1.00		0.13	0.00	0.00				0.00	0.43	0.00	0.12	0.66	0.00
Grp Sat Flow(s), veh/h/ln 1508 0 1346 0 1504 1346 1508 1504 0 Q Serve(g, s), s 5.7 0.0 0.0 0.0 14.0 0.0 4.8 11.3 0.0 Cycle Q Clear(g, c), s 5.7 0.0 0.0 0.0 14.0 0.0 4.8 11.3 0.0 Prop In Lane 1.00 1.00 0.00 1.00 1.00 0.00 Lane Grp Cap(c), veh/h 194 0 173 0 1292 578 406 1979 0 V/C Ratio(X) 0.80 0.00 0.00 0.00 0.71 0.00 0.64 0.56 0.00 Avait Cap(c, a), veh/h 429 0 383 0 1.00 0.00 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Sat Flow, veh/h	1508	0	1346				0	3088	1346	1508	3088	0
Grp Sat Flow(s), veh/h/ln 1508 0 1346 0 1504 1346 1508 1504 0 Q Serve(g, s), s 5.7 0.0 0.0 0.0 14.0 0.0 4.8 11.3 0.0 Cycle Q Clear(g, c), s 5.7 0.0 0.0 0.0 14.0 0.0 4.8 11.3 0.0 Prop In Lane 1.00 1.00 0.00 1.00 1.00 0.00 Lane Grp Cap(c), veh/h 194 0 173 0 1292 578 406 1979 0 V/C Ratio(X) 0.80 0.00 0.00 0.00 0.71 0.00 0.64 0.56 0.00 Avait Cap(c, a), veh/h 429 0 383 0 1.00 0.00 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Grp Volume(v), veh/h	156	0	0				0	912	0	258	1116	0
Q Serve(g_s), s 5.7 0.0 0.0 14.0 0.0 4.8 11.3 0.0 Cycle Q Clear(g_c), s 5.7 0.0 0.0 0.0 14.0 0.0 4.8 11.3 0.0 Prop In Lane 1.00 1.00 1.00 0.00 1.00 1.00 0.00 Lane Grp Cap(c), veh/h 194 0 173 0 1292 578 406 1979 0 V/C Ratio(X) 0.80 0.00 0.00 0.00 0.71 0.00 0.64 0.56 0.00 Avait Cap(c_a), veh/h 429 0 383 0 1292 578 463 1979 0 Upstream Filter(I) 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0													
Cycle Q Clear(g_c), s 5.7 0.0 0.0 14.0 0.0 4.8 11.3 0.0 Prop In Lane 1.00 1.00 0.00 1.00 1.00 0.00 Lane Grp Cap(c), veh/h 194 0 173 0 1292 578 406 1979 0 V/C Ratio(X) 0.80 0.00 0.00 0.00 0.71 0.00 0.64 0.56 0.00 Avail Cap(c_a), veh/h 429 0 383 0 1292 578 463 1979 0 HCM Platoon Ratio 1.00	1												
Prop In Lane 1.00 1.00 1.00 1.00 1.00 0.00 Lane Grp Cap(c), veh/h 194 0 173 0 1292 578 406 1979 0 V/C Ratio(X) 0.80 0.00 0.00 0.00 0.00 0.00 0.04 0.56 0.00 Avail Cap(c_a), veh/h 429 0 383 0 1292 578 463 1979 0 HCM Platon Ratio 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 0.00 0.00 0.00 1.00 1.00 1.00 0.00 0.00 0.00 0.00 1.00 1.00 1.00 0.													
Lane Grp Cap(c), veh/h 194 0 173 0 1292 578 406 1979 0 V/C Ratio(X) 0.80 0.00 0.00 0.00 0.71 0.00 0.64 0.56 0.00 Avail Cap(c, a), veh/h 429 0 383 0 1292 578 463 1979 0 HCM Platoon Ratio 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 0.00 0.00 0.00 1.00 1.00 1.00 0.00 <td></td>													
V/C Ratio(X) 0.80 0.00 0.00 0.71 0.00 0.64 0.56 0.00 Avail Cap(c_a), veh/h 429 0 383 0 1292 578 463 1979 0 HCM Platoon Ratio 1.00			0						1292			1979	
Avail Cap(c_a), veh/h 429 0 383 0 1292 578 463 1979 0 HCM Platoon Ratio 1.00 0.00 <td< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>0.00</td></td<>													0.00
HCM Platoon Ratio 1.00 1.													
Upstream Filter(I) 1.00 0.00 0.00 1.00 0.00 1.00 0.00 Uniform Delay (d), s/veh 23.8 0.0 0.0 0.0 13.1 0.0 10.0 5.2 0.0 Incr Delay (d2), s/veh 7.6 0.0 0.0 0.0 3.3 0.0 2.3 1.2 0.0 Initial Q Delay(d3), s/veh 0.0													1.00
Uniform Delay (d), s/veh23.80.00.00.013.10.010.05.20.0Incr Delay (d2), s/veh7.60.00.00.03.30.02.31.20.0Initial Q Delay(d3), s/veh0.00.00.00.00.00.00.00.00.0%ile BackOfQ(50%), veh/ln2.70.00.00.00.00.00.00.00.00.0%ile BackOfQ(50%), veh/ln2.70.00.00.00.00.00.00.00.00.00.0LnGrp Delay(d), s/veh31.40.00.00.00.016.40.012.46.40.00.00.013.74Approach Vol, veh/h15691213744pproach LOS16.47.54pproach LOSBAAAApproach LOSCBAA <td></td>													
Incr Delay (d2), s/veh 7.6 0.0 0.0 0.0 3.3 0.0 2.3 1.2 0.0 Initial Q Delay(d3), s/veh 0.0 <													
Initial Q Delay(d3),s/veh 0.0 <t< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></t<>													
%ile BackOfQ(50%),veh/ln 2.7 0.0 0.0 0.0 6.3 0.0 2.1 5.0 0.0 LnGrp Delay(d),s/veh 31.4 0.0 0.0 0.0 16.4 0.0 12.4 6.4 0.0 LnGrp LOS C B B A Approach Vol, veh/h 156 912 1374 Approach Delay, s/veh 31.4 16.4 7.5 Approach LOS C B A Timer 1 2 3 4 5 6 7 8 Assigned Phs 2 5 6 8 4 7 7 Change Period (Y+Rc), s 43.0 12.9 30.1 13.2 7 Change Period (Y+Rc), s 6.0 6.0 6.0 6.0 6.0 6.0 7 8 7 Max Green Setting (Gmax), s 37.0 9.0 22.0 16.0 7 7 7 Green Ext Time (p_c), s 23.1 0.2 6.0 0.3 13.3 6.8 16.0 7.7													
LnGrp Delay(d),s/veh 31.4 0.0 0.0 16.4 0.0 12.4 6.4 0.0 LnGrp LOS C B B A B A Approach Vol, veh/h 156 912 1374 Approach Delay, s/veh 31.4 16.4 7.5 Approach LOS C B A Timer 1 2 3 4 5 6 7 8 Assigned Phs 2 5 6 8 A 2 Change Period (Y+Rc), s 43.0 12.9 30.1 13.2 2 Change Period (Y+Rc), s 6.0 6.0 6.0 6.0 6.0 7.7 Green Ext Time (p_c), s 37.0 9.0 22.0 16.0 3 3 3 3 4.8 3 3 3 3 3 3 3 3 3 4.8 4.9 4.9 4.9 4.9 4.9 4.9 4.9 4.9 4.9 4.9 4.9 4.9 4.9 4.9 4.9 4.9 4													
LnGrp LOS C B B A Approach Vol, veh/h 156 912 1374 Approach Delay, s/veh 31.4 16.4 7.5 Approach LOS C B A Timer 1 2 3 4 5 6 7 8 Assigned Phs 2 3 4 5 6 7 8 4 Phs Duration (G+Y+Rc), s 43.0 12.9 30.1 13.2 -													
Approach Vol, veh/h 156 912 1374 Approach Delay, s/veh 31.4 16.4 7.5 Approach LOS C B A Timer 1 2 3 4 5 6 7 8 Assigned Phs 2 3 4 5 6 7 8 Assigned Phs 2 5 6 8 9 2 13.2 2 Change Period (Y+Rc), s 43.0 12.9 30.1 13.2 13.2 14.0 14.0 15.0 14.0 15.			0.0	0.0				0.0		0.0			0.0
Approach Delay, s/veh 31.4 16.4 7.5 Approach LOS C B A Timer 1 2 3 4 5 6 7 8 Assigned Phs 2 5 6 8 4 7.5 6 8 Phs Duration (G+Y+Rc), s 43.0 12.9 30.1 13.2 6.0	· · · · · · · · · · · · · · · · · · ·		156										
Approach LOS C B A Timer 1 2 3 4 5 6 7 8 Assigned Phs 2 5 6 8 4 5 6 8 6 6 8 6 6 8 6 6 8 6 6 8 6 6 8 6 6 6 8 6 6 6 8 6													
Timer 1 2 3 4 5 6 7 8 Assigned Phs 2 5 6 8 10 7 7 8 8 10 7 7 8 8 10 7 7 10			~						-				
Assigned Phs 2 5 6 8 Phs Duration (G+Y+Rc), s 43.0 12.9 30.1 13.2 Change Period (Y+Rc), s 6.0 6.0 6.0 Max Green Setting (Gmax), s 37.0 9.0 22.0 16.0 Max Q Clear Time (g_c+I1), s 13.3 6.8 16.0 7.7 Green Ext Time (p_c), s 23.1 0.2 6.0 0.3 Intersection Summary 12.4 12.4	••											Л	
Phs Duration (G+Y+Rc), s 43.0 12.9 30.1 13.2 Change Period (Y+Rc), s 6.0 6.0 6.0 Max Green Setting (Gmax), s 37.0 9.0 22.0 16.0 Max Q Clear Time (g_c+11), s 13.3 6.8 16.0 7.7 Green Ext Time (p_c), s 23.1 0.2 6.0 0.3 Intersection Summary 12.4 12.4		1		3	4			/					
Change Period (Y+Rc), s 6.0 6.0 6.0 6.0 Max Green Setting (Gmax), s 37.0 9.0 22.0 16.0 Max Q Clear Time (g_c+I1), s 13.3 6.8 16.0 7.7 Green Ext Time (p_c), s 23.1 0.2 6.0 0.3 Intersection Summary 12.4 12.4													
Max Green Setting (Gmax), s 37.0 9.0 22.0 16.0 Max Q Clear Time (g_c+l1), s 13.3 6.8 16.0 7.7 Green Ext Time (p_c), s 23.1 0.2 6.0 0.3 Intersection Summary HCM 2010 Ctrl Delay 12.4													
Max Q Clear Time (g_c+l1), s 13.3 6.8 16.0 7.7 Green Ext Time (p_c), s 23.1 0.2 6.0 0.3 Intersection Summary 12.4													
Green Ext Time (p_c), s 23.1 0.2 6.0 0.3 Intersection Summary Intersection Summary 12.4 12.4	0, ,												
Intersection Summary HCM 2010 Ctrl Delay 12.4													
HCM 2010 Ctrl Delay 12.4	Green Ext Time (p_c), s		23.1			0.2	6.0		0.3				
	Intersection Summary												
HCM 2010 LOS B	HCM 2010 Ctrl Delay			12.4									
	HCM 2010 LOS			В									

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Lane Group	NBL	NBT	SBT
Lane Configurations	7	† †	≜ †⊅
Traffic Volume (vph)	243	718	610
Future Volume (vph)	243	718	610
Turn Type	D.P+P	NA	NA
Protected Phases	1	Free	2
Permitted Phases	2		
Detector Phase	1		2
Switch Phase			
Minimum Initial (s)	4.0		4.0
Minimum Split (s)	15.0		22.0
Total Split (s)	22.0		38.0
Total Split (%)	36.7%		63.3%
Yellow Time (s)	4.0		4.0
All-Red Time (s)	2.0		2.0
Lost Time Adjust (s)	0.0		0.0
Total Lost Time (s)	6.0		6.0
Lead/Lag	Lead		Lag
Lead-Lag Optimize?			
Recall Mode	None		Мах
Act Effct Green (s)	39.4	51.4	32.0
Actuated g/C Ratio	0.77	1.00	0.62
v/c Ratio	0.51	0.27	0.48
Control Delay	5.5	0.2	5.8
Queue Delay	0.0	0.0	0.0
Total Delay	5.5	0.2	5.8
LOS	А	А	А
Approach Delay		1.6	5.8
Approach LOS		А	А
Intersection Summary			
Cycle Length: 60			
Actuated Cycle Length: 51	1 /		
Natural Cycle: 40	1.4		
Control Type: Actuated-U	ncoordinated		
Maximum v/c Ratio: 0.51			
Intersection Signal Delay:	35		
	241011 02.070		
Intersection Capacity Utiliz Analysis Period (min) 15	zation 62.3%		

Splits and Phases: 203: Jedburg Road & I-26 WB On-Ramp

↑ Ø1		
22 s	38 s	

	≯	\mathbf{i}	-	1	Ļ	1		
Movement	EBL	EBR	NBL	NBT	SBT	SBR		
Lane Configurations			۲.	<u></u>	ተኩ			
Traffic Volume (vph)	0	0	243	718	610	184		
Future Volume (vph)	0	0	243	718	610	184		
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900		
Total Lost time (s)			6.0	4.0	6.0			
Lane Util. Factor			1.00	0.95	0.95			
Frt			1.00	1.00	0.97			
Flt Protected			0.95	1.00	1.00			
Satd. Flow (prot)			1504	3008	2904			
Flt Permitted			0.31	1.00	1.00			
Satd. Flow (perm)			498	3008	2904			
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90		
Adj. Flow (vph)	0	0	270	798	678	204		
RTOR Reduction (vph)	0	0	0	0	38	0		
Lane Group Flow (vph)	0	0	270	798	844	0		
Turn Type			D.P+P	NA	NA			
Protected Phases			1	Free	2			
Permitted Phases			2					
Actuated Green, G (s)			39.4	51.4	32.0			
Effective Green, g (s)			39.4	51.4	32.0			
Actuated g/C Ratio			0.77	1.00	0.62			
Clearance Time (s)			6.0		6.0			
Vehicle Extension (s)			3.0		3.0			
Lane Grp Cap (vph)			526	3008	1807			
v/s Ratio Prot			c0.07	0.27	0.29			
v/s Ratio Perm			c0.32					
v/c Ratio			0.51	0.27	0.47			
Uniform Delay, d1			1.7	0.0	5.2			
Progression Factor			1.00	1.00	1.00			
Incremental Delay, d2			0.8	0.2	0.9			
Delay (s)			2.6	0.2	6.0			
Level of Service			А	А	А			
Approach Delay (s)	0.0			0.8	6.0			
Approach LOS	А			А	А			
Intersection Summary								
HCM 2000 Control Delay			3.2	H	CM 2000	Level of Service	А	
HCM 2000 Volume to Capa	icity ratio		0.51					
Actuated Cycle Length (s)			51.4		um of lost		12.0	
Intersection Capacity Utilization	ation		62.3%	IC	CU Level o	of Service	В	
Analysis Period (min)			15					
c Critical Lano Croup								

c Critical Lane Group

HCM 2010 analysis expects strict NEMA phasing.

	4		†	1	1	÷.
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	ሻ	1	†	1	5	^
Traffic Volume (vph)	120	10	10	1080	10	10
Future Volume (vph)	120	10	10	1080	10	10
Turn Type	Prot	Perm	NA	Free	Perm	NA
Protected Phases	6		8			4
Permitted Phases		6		Free	4	
Detector Phase	6	6	8		4	4
Switch Phase						
Minimum Initial (s)	4.0	4.0	4.0		4.0	4.0
Minimum Split (s)	15.0	15.0	22.0		22.0	22.0
Total Split (s)	34.0	34.0	26.0		26.0	26.0
Total Split (%)	56.7%	56.7%	43.3%		43.3%	43.3%
Yellow Time (s)	4.0	4.0	4.0		4.0	4.0
All-Red Time (s)	2.0	2.0	2.0		2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0		6.0	6.0
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	Min	Min	None		None	None
Act Effct Green (s)	25.7	25.7	5.8	28.7	5.9	5.9
Actuated g/C Ratio	0.90	0.90	0.20	1.00	0.21	0.21
v/c Ratio	0.08	0.01	0.03	0.76	0.03	0.03
Control Delay	2.4	2.2	10.8	3.8	10.8	10.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	2.4	2.2	10.8	3.8	10.8	10.8
LOS	А	А	В	А	В	В
Approach Delay	2.4		3.9			10.8
Approach LOS	А		А			В
Intersection Summary						
Cycle Length: 60						
Actuated Cycle Length: 28.3	7					
Natural Cycle: 40						
Control Type: Actuated-Unc	cordinated	1				
Maximum v/c Ratio: 0.76	2 01 0110100					
Intersection Signal Delay: 3	.8			Ir	ntersectio	n LOS: A
Intersection Capacity Utiliza)				of Service
Analysis Period (min) 15					2 20101	

Splits and Phases: 301: Factory Entrance/Welcome Center & Volvo Car Drive

	▼ [▶] Ø4
	26 s
	↑ ø8
34 s	26 s

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Movement	WBL	WBR	NBT	NBR	SBL	SBT		
Lane Configurations	1	1	†	1	7	†		
Traffic Volume (veh/h)	120	10	10	1080	10	10		
Future Volume (veh/h)	120	10	10	1080	10	10		
Number	1	16	8	18	7	4		
Initial Q (Qb), veh	0	0	0	0	0	0		
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00		
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863		
Adj Flow Rate, veh/h	133	11	11	0	11	11		
Adj No. of Lanes	1	1	1	1	1	1		
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90		
Percent Heavy Veh, %	2	2	2	2	2	2		
Cap, veh/h	428	382	63	54	474	63		
Arrive On Green	0.24	0.24	0.03	0.00	0.03	0.03		
Sat Flow, veh/h	1774	1583	1863	1583	1398	1863		
Grp Volume(v), veh/h	133	11	11	0	11	11		
Grp Sat Flow(s), veh/h/ln	1774	1583	1863	1583	1398	1863		
Q Serve(g_s), s	1.0	0.1	0.1	0.0	0.1	0.1		
Cycle Q Clear(g_c), s	1.0	0.1	0.1	0.0	0.2	0.1		
Prop In Lane	1.00	1.00		1.00	1.00			
Lane Grp Cap(c), veh/h	428	382	63	54	474	63		
V/C Ratio(X)	0.31	0.03	0.17	0.00	0.02	0.17		
Avail Cap(c_a), veh/h	2999	2677	2249	1912	2114	2249		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00		
Jpstream Filter(I)	1.00	1.00	1.00	0.00	1.00	1.00		
Uniform Delay (d), s/veh	5.2	4.8	7.8	0.0	7.9	7.8		
Incr Delay (d2), s/veh	0.4	0.0	1.3	0.0	0.0	1.3		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(95%),veh/In	1.0	0.1	0.1	0.0	0.1	0.1		
LnGrp Delay(d),s/veh	5.6	4.8	9.1	0.0	7.9	9.1		
LnGrp LOS	А	А	А		А	А		
Approach Vol, veh/h	144		11			22		
Approach Delay, s/veh	5.5		9.1			8.5		
Approach LOS	А		А			А		
Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6		8
Phs Duration (G+Y+Rc), s				6.6		10.0		5.6
Change Period (Y+Rc), s				6.0		6.0		5.0
Max Green Setting (Gmax), s				20.0		28.0).0
Max Q Clear Time (g_c+11) , s				2.2		3.0		2.1
Green Ext Time (p_c), s				0.0		0.4).0
				5.0		5.1		
Intersection Summary			/ 1					
HCM 2010 Ctrl Delay			6.1					
HCM 2010 LOS			А					

Timings 101: US 78 & SC 27/Ridgeville Road

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Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	۲	1	1	1	ኘ	1
Traffic Volume (vph)	166	206	336	241	338	314
Future Volume (vph)	166	206	336	241	338	314
Turn Type	pm+pt	NA	NA	pm+ov	Prot	pm+ov
Protected Phases	5	2	6	4	4	5
Permitted Phases	2			6		4
Detector Phase	5	2	6	4	4	5
Switch Phase						
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	15.0	22.0	22.0	22.0	22.0	15.0
Total Split (s)	15.0	38.0	23.0	22.0	22.0	15.0
Total Split (%)	25.0%	63.3%	38.3%	36.7%	36.7%	25.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag	Lead		Lag			Lead
Lead-Lag Optimize?						
Recall Mode	None	Max	Max	None	None	None
Act Effct Green (s)	32.0	32.0	17.7	39.7	16.0	30.3
Actuated g/C Ratio	0.53	0.53	0.30	0.66	0.27	0.50
v/c Ratio	0.47	0.27	0.80	0.27	0.94	0.45
Control Delay	11.9	8.7	36.0	1.4	57.4	6.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	11.9	8.7	36.0	1.4	57.4	6.1
LOS	В	А	D	А	E	А
Approach Delay		10.1	21.5		32.7	
Approach LOS		В	С		С	
Intersection Summary						
Cycle Length: 60						
Actuated Cycle Length: 60						
Natural Cycle: 60						
Control Type: Actuated-Und	coordinated	1				
Maximum v/c Ratio: 0.94						
Intersection Signal Delay: 2	23.4			I	ntersectio	n LOS: C
Intersection Capacity Utiliza)				of Service
Analysis Period (min) 15						

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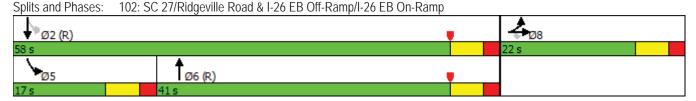
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Splits and Phases: 101: US 78 & SC 27/Ridgeville Road

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38 s		22 s	
* Ø5			
15 s	23 s		

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Movement	EBL	EBT	WBT	WBR	SBL	SBR	
Lane Configurations	<u></u>						
Traffic Volume (veh/h)	166	T 206	T 336	2 41	338	314	
Future Volume (veh/h)	166	200	336	241	338	314	
Number	5	200	6	16	7	14	
Initial Q (Qb), veh	0	2	0	0	0	0	
Ped-Bike Adj(A_pbT)	1.00	0	0	1.00	1.00	1.00	
	1.00	1.00	1.00	1.00	1.00	1.00	
Parking Bus, Adj	1583	1583	1583	1583	1583	1583	
Adj Sat Flow, veh/h/ln	1583	229	373	268	376	349	
Adj Flow Rate, veh/h							
Adj No. of Lanes	1	1	1	1	1	1	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	
Percent Heavy Veh, %	20	20	20	20	20	20	
Cap, veh/h	359	844	521	802	402	499	
Arrive On Green	0.10	0.53	0.33	0.33	0.27	0.27	
Sat Flow, veh/h	1508	1583	1583	1346	1508	1346	
Grp Volume(v), veh/h	184	229	373	268	376	349	
Grp Sat Flow(s),veh/h/ln	1508	1583	1583	1346	1508	1346	
Q Serve(g_s), s	4.4	4.7	12.4	6.0	14.6	13.2	
Cycle Q Clear(g_c), s	4.4	4.7	12.4	6.0	14.6	13.2	
Prop In Lane	1.00			1.00	1.00	1.00	
Lane Grp Cap(c), veh/h	359	844	521	802	402	499	
V/C Ratio(X)	0.51	0.27	0.72	0.33	0.94	0.70	
Avail Cap(c_a), veh/h	428	844	521	802	402	499	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	
Uniform Delay (d), s/veh	12.1	7.6	17.7	6.1	21.5	16.0	
Incr Delay (d2), s/veh	1.1	0.8	8.2	1.1	29.0	4.3	
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	
%ile BackOfQ(95%),veh/ln	3.5	4.0	10.8	7.2	14.3	15.2	
LnGrp Delay(d),s/veh	13.2	8.4	25.9	7.2	50.5	20.3	
LnGrp LOS	В	A	С	A	D	С	
Approach Vol, veh/h		413	641		725		
Approach Delay, s/veh		10.6	18.1		36.0		
Approach LOS		B	B		50.0 D		
Appidacii 200		D	D		D		
Timer	1	2	3	4	5	6	
Assigned Phs		2		4	5	6	
Phs Duration (G+Y+Rc), s		38.0		22.0	12.3	25.7	
Change Period (Y+Rc), s		6.0		6.0	6.0	6.0	
Max Green Setting (Gmax), s		32.0		16.0	9.0	17.0	
Max Q Clear Time (g_c+I1), s		6.7		16.6	6.4	14.4	
Green Ext Time (p_c), s		11.4		0.0	0.1	1.8	
Intersection Summary							
HCM 2010 Ctrl Delay			23.6				
			23.0 C				
HCM 2010 LOS			C				

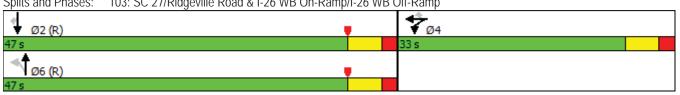
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Lane Group	EBT	EBR	NBT	SBL	SBT		
Lane Configurations	ર્સ	1	¢Î	ሻ	†		
Traffic Volume (vph)	7	87	252	216	565		
Future Volume (vph)	7	87	252	216	565		
Turn Type	NA	Perm	NA	pm+pt	NA		
Protected Phases	8		6	5	2		
Permitted Phases		8		2			
Detector Phase	8	8	6	5	2		
Switch Phase							
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0		
Minimum Split (s)	22.0	22.0	22.0	15.0	22.0		
Total Split (s)	22.0	22.0	41.0	17.0	58.0		
Total Split (%)	27.5%	27.5%	51.3%	21.3%	72.5%		
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0		
Lead/Lag			Lag	Lead			
Lead-Lag Optimize?							
Recall Mode	None	None	C-Min	None	C-Min		
Act Effct Green (s)	9.5	9.5	45.3	60.9	62.1		
Actuated g/C Ratio	0.12	0.12	0.57	0.76	0.78		
v/c Ratio	0.44	0.36	0.52	0.42	0.51		
Control Delay	39.1	8.0	14.7	6.7	7.3		
Queue Delay	0.0	0.0	0.0	0.0	0.0		
Total Delay	39.1	8.0	14.7	6.7	7.3		
LOS	D	А	В	А	А		
Approach Delay	22.6		14.7		7.1		
Approach LOS	С		В		А		
Intersection Summary							
Cycle Length: 80							
Actuated Cycle Length: 80							
Offset: 57 (71%), Reference	ed to phase	2:SBTL	and 6:NB	T. Start c	of Yellow		
Natural Cycle: 60		2.02.12		i j otait e			
Control Type: Actuated-Coo	ordinated						
Maximum v/c Ratio: 0.52							
Intersection Signal Delay: 1	1.3			Ir	ntersectior	LOS: B	
Intersection Capacity Utiliza)				of Service B	
Analysis Period (min) 15					2 20.01		
Splits and Phases: 102: S							



Stantec Consulting Services Inc

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		र्भ	1					4î 👘		ሻ	↑	
Traffic Volume (veh/h)	70	7	87	0	0	0	0	252	155	216	565	0
Future Volume (veh/h)	70	7	87	0	0	0	0	252	155	216	565	0
Number	3	8	18				1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1881	1630	1568				0	1568	1881	1583	1583	0
Adj Flow Rate, veh/h	78	8	97				0	280	172	240	628	0
Adj No. of Lanes	0	1	1				0	1	0	1	1	0
Peak Hour Factor	0.90	0.90	0.90				0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	20	20	20				0	20	20	20	20	0
Cap, veh/h	139	14	131				0	533	327	546	1190	0
Arrive On Green	0.10	0.10	0.10				0.00	0.59	0.59	0.18	1.00	0.00
Sat Flow, veh/h	1414	145	1332				0	910	559	1508	1583	0
Grp Volume(v), veh/h	86	0	97				0	0	452	240	628	0
Grp Sat Flow(s), veh/h/ln	1559	0	1332				0	0	1469	1508	1583	0
Q Serve(g_s), s	4.2	0.0	5.7				0.0	0.0	14.7	5.0	0.0	0.0
Cycle Q Clear(q_c), s	4.2	0.0	5.7				0.0	0.0	14.7	5.0	0.0	0.0
Prop In Lane	0.91	010	1.00				0.00	010	0.38	1.00	010	0.00
Lane Grp Cap(c), veh/h	154	0	131				0	0	860	546	1190	0
V/C Ratio(X)	0.56	0.00	0.74				0.00	0.00	0.53	0.44	0.53	0.00
Avail Cap(c_a), veh/h	312	0	266				0	0	860	617	1190	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	2.00	2.00	1.00
Upstream Filter(I)	1.00	0.00	1.00				0.00	0.00	1.00	0.79	0.79	0.00
Uniform Delay (d), s/veh	34.4	0.0	35.1				0.0	0.0	9.9	6.0	0.0	0.0
Incr Delay (d2), s/veh	3.2	0.0	7.9				0.0	0.0	2.3	0.4	1.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/In	3.5	0.0	4.3				0.0	0.0	10.6	3.7	0.8	0.0
LnGrp Delay(d),s/veh	37.6	0.0	42.9				0.0	0.0	12.2	6.5	1.3	0.0
LnGrp LOS	D	010	D				010	010	В	A	A	0.0
Approach Vol, veh/h		183						452			868	
Approach Delay, s/veh		40.4						12.2			2.8	
Approach LOS		D						B			A	
	1		2	4	-	1	7				7.	
Timer	<u> </u>	2	3	4	5	6	/	8				
Assigned Phs		2			5	6		8				
Phs Duration (G+Y+Rc), s		66.1			13.3	52.9		13.9				
Change Period (Y+Rc), s		6.0			6.0	6.0		6.0				
Max Green Setting (Gmax), s		52.0			11.0	35.0		16.0				_
Max Q Clear Time (g_c+l1), s		2.0			7.0	16.7		7.7				
Green Ext Time (p_c), s		33.3			0.3	15.0		0.4				
Intersection Summary												
HCM 2010 Ctrl Delay			10.2									
HCM 2010 LOS			В									

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Lane Group	WBT	WBR	NBL	NBT	SBT	SBR	
Lane Configurations	र्भ	1	۲	1	†	1	
Traffic Volume (vph)	4	295	55	267	469	96	
Future Volume (vph)	4	295	55	267	469	96	
Turn Type	NA	Perm	Perm	NA	NA	Perm	
Protected Phases	4			6	2		
Permitted Phases		4	6			2	
Detector Phase	4	4	6	6	2	2	
Switch Phase							
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	
Minimum Split (s)	22.0	22.0	22.0	22.0	22.0	22.0	
Total Split (s)	33.0	33.0	47.0	47.0	47.0	47.0	
Total Split (%)	41.3%	41.3%	58.8%	58.8%	58.8%	58.8%	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	
Lead/Lag							
Lead-Lag Optimize?							
Recall Mode	None	None	C-Min	C-Min	C-Min	C-Min	
Act Effct Green (s)	22.0	22.0	46.0	46.0	46.0	46.0	
Actuated g/C Ratio	0.28	0.28	0.58	0.58	0.58	0.58	
v/c Ratio	0.78	0.54	0.17	0.33	0.58	0.13	
Control Delay	38.7	6.2	4.4	4.9	15.3	2.7	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	38.7	6.2	4.4	4.9	15.3	2.7	
LOS	D	А	А	А	В	А	
Approach Delay	23.0			4.8	13.2		
Approach LOS	С			А	В		
Intersection Summary							
Cycle Length: 80							
Actuated Cycle Length: 80							
Offset: 0 (0%), Referenced t	o phase 2	SBT and	6:NBTL,	Start of Y	ellow/		
Natural Cycle: 60							
Control Type: Actuated-Coo	rdinated						
Maximum v/c Ratio: 0.78							
Intersection Signal Delay: 15	5.4			Ir	ntersectio	n LOS: B	}
Intersection Capacity Utilizat		1			CU Level		
Analysis Period (min) 15							
Splits and Phases: 103: S	C 27/Ridg	eville Roa	ad & I-26	WB On-F	Ramp/I-26	WB Off-I	Ramp



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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					- सी	1	ሻ	↑			↑	1
Traffic Volume (veh/h)	0	0	0	312	4	295	55	267	0	0	469	96
Future Volume (veh/h)	0	0	0	312	4	295	55	267	0	0	469	96
Number				7	4	14	1	6	16	5	2	12
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln				1881	1630	1568	1583	1583	0	0	1568	1568
Adj Flow Rate, veh/h				347	4	328	61	297	0	0	521	107
Adj No. of Lanes				0	1	1	1	1	0	0	1	1
Peak Hour Factor				0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %				20	20	20	20	20	0	0	20	20
Cap, veh/h				429	5	372	331	903	0	0	894	760
Arrive On Green				0.28	0.28	0.28	0.19	0.19	0.00	0.00	0.57	0.57
Sat Flow, veh/h				1536	18	1332	675	1583	0	0	1568	1332
Grp Volume(v), veh/h				351	0	328	61	297	0	0	521	107
Grp Sat Flow(s),veh/h/ln				1553	0	1332	675	1583	0	0	1568	1332
Q Serve(g_s), s				16.8	0.0	18.8	6.6	13.0	0.0	0.0	17.1	3.0
Cycle Q Clear(q_c), s				16.8	0.0	18.8	23.7	13.0	0.0	0.0	17.1	3.0
Prop In Lane				0.99		1.00	1.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h				434	0	372	331	903	0	0	894	760
V/C Ratio(X)				0.81	0.00	0.88	0.18	0.33	0.00	0.00	0.58	0.14
Avail Cap(c_a), veh/h				524	0	450	331	903	0	0	894	760
HCM Platoon Ratio				1.00	1.00	1.00	0.33	0.33	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	1.00	0.84	0.84	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh				26.8	0.0	27.6	31.3	19.2	0.0	0.0	11.0	8.0
Incr Delay (d2), s/veh				7.8	0.0	15.9	1.0	0.8	0.0	0.0	2.8	0.4
Initial Q Delay(d3), s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/In				12.8	0.0	13.4	2.4	9.6	0.0	0.0	12.7	2.1
LnGrp Delay(d),s/veh				34.6	0.0	43.5	32.4	20.0	0.0	0.0	13.8	8.4
LnGrp LOS				С		D	С	С			В	A
Approach Vol, veh/h					679			358			628	
Approach Delay, s/veh					38.9			22.1			12.9	
Approach LOS					D			C			B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	<u> </u>	2	3	4	0	6	1	0				
Phs Duration (G+Y+Rc), s		51.7		28.3		51.7						
Change Period (Y+Rc), s		6.0		6.0		6.0						
Max Green Setting (Gmax), s		41.0		27.0		41.0						
Max Q Clear Time (g_c+11) , s		19.1		20.8		25.7						
Green Ext Time (p_c), s		14.8		1.5		11.2						
		14.0		1.5		11.2						
Intersection Summary												
HCM 2010 Ctrl Delay			25.5									_
HCM 2010 LOS			С									

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Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	۲	1	†	1		1
Traffic Volume (vph)	322	10	421	137	10	239
Future Volume (vph)	322	10	421	137	10	239
Turn Type	Prot	Perm	NA	pm+ov	Perm	NA
Protected Phases	4		6	4		2
Permitted Phases		4		6	2	
Detector Phase	4	4	6	4	2	2
Switch Phase						
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	22.0	22.0	22.0	22.0	22.0	22.0
Total Split (s)	27.0	27.0	33.0	27.0	33.0	33.0
Total Split (%)	45.0%	45.0%	55.0%	45.0%	55.0%	55.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0		0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0		6.0
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None	None	Мах	None	Мах	Мах
Act Effct Green (s)	17.2	17.2	27.1	56.4		27.1
Actuated g/C Ratio	0.30	0.30	0.48	1.00		0.48
v/c Ratio	0.78	0.03	0.61	0.11		0.37
Control Delay	31.0	7.6	16.2	0.2		12.1
Queue Delay	0.0	0.0	0.0	0.0		0.0
Total Delay	31.0	7.6	16.2	0.2		12.1
LOS	С	A	В	А		В
Approach Delay	30.3		12.2			12.1
Approach LOS	С		В			В
Intersection Summary						
Cycle Length: 60						
Actuated Cycle Length: 56.4	1					
Natural Cycle: 55	,					
Control Type: Actuated-Unc	oordinated	1				
Maximum v/c Ratio: 0.78	oorunatee	1				
Intersection Signal Delay: 17	75			Ir	ntersectio	n LOS: B
Intersection Capacity Utiliza						of Service
Analysis Period (min) 15	1011 30.070			N		

Splits and Phases: 104: SC 27/Ridgeville Road & Lower Westvaco Road

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33 s	27 s	
¶ø6		
33 s		

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Movement	WBL	WBR	NBT	NBR	SBL	SBT		
Lane Configurations	٦	1	†	1		↑		
Traffic Volume (veh/h)	322	10	421	137	10	239		
Future Volume (veh/h)	322	10	421	137	10	239		
Number	7	14	6	16	5	207		
Initial Q (Qb), veh	0	0	0	0	0	0		
Ped-Bike Adj(A_pbT)	1.00	1.00	0	1.00	1.00	U		
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00		
Adj Sat Flow, veh/h/ln	1583	1583	1583	1583	1900	1583		
Adj Flow Rate, veh/h	358	11	468	152	11	266		
Adj No. of Lanes	1	1	400	1	0	200		
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90		
Percent Heavy Veh, %	0.90	0.90	20	20	20	0.90		
3	416	371	794	1046	20 79	772		
Cap, veh/h								
Arrive On Green	0.28	0.28	0.50	0.50	0.50	0.50		
Sat Flow, veh/h	1508	1346	1583	1346	19	1539		
Grp Volume(v), veh/h	358	11	468	152	277	0		
Grp Sat Flow(s),veh/h/ln	1508	1346	1583	1346	1558	0		
2 Serve(g_s), s	12.1	0.3	11.3	1.5	0.0	0.0		
Cycle Q Clear(g_c), s	12.1	0.3	11.3	1.5	5.7	0.0		
Prop In Lane	1.00	1.00		1.00	0.04			
ane Grp Cap(c), veh/h	416	371	794	1046	851	0		
//C Ratio(X)	0.86	0.03	0.59	0.15	0.33	0.00		
wail Cap(c_a), veh/h	588	525	794	1046	851	0		
ICM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00		
Jpstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00		
Iniform Delay (d), s/veh	18.5	14.2	9.5	1.5	8.1	0.0		
ncr Delay (d2), s/veh	9.0	0.0	3.2	0.3	1.0	0.0		
nitial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
6ile BackOfQ(95%), veh/In	10.0	0.2	9.4	2.4	4.9	0.0		
nGrp Delay(d),s/veh	27.5	14.3	12.7	1.8	9.1	0.0		
nGrp LOS	С	В	В	А	А			
pproach Vol, veh/h	369		620			277		
pproach Delay, s/veh	27.2		10.0			9.1		
Approach LOS	С		В			A		
ïmer	1	2	3	4	5	6	7 8	
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		33.0		20.9		33.0		
Change Period (Y+Rc), s		6.0		6.0		6.0		
Nax Green Setting (Gmax), s		27.0		21.0		27.0		
Max Q Clear Time (g_c+11) , s		7.7		14.1		13.3		
Green Ext Time (p_c), s		11.8		0.8		9.1		
		11.0		0.0		7.1		
ntersection Summary			4					
ICM 2010 Ctrl Delay			14.8					
HCM 2010 LOS			В					

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Lane Group	EBT	EBR	NBT	NBR	SBL	SBT
Lane Configurations	र्स	1	^	1	5	††
Traffic Volume (vph)	0	173	821	443	232	1004
Future Volume (vph)	0	173	821	443	232	1004
Turn Type	NA	Perm	NA	Perm	pm+pt	NA
Protected Phases	8		6		5	2
Permitted Phases		8		6	2	
Detector Phase	8	8	6	6	5	2
Switch Phase						
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	22.0	22.0	22.0	22.0	15.0	22.0
Total Split (s)	22.0	22.0	28.0	28.0	15.0	43.0
Total Split (%)	33.8%	33.8%	43.1%	43.1%	23.1%	66.2%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag			Lag	Lag	Lead	
Lead-Lag Optimize?						
Recall Mode	None	None	Max	Max	None	Max
Act Effct Green (s)	11.3	11.3	22.1	22.1	37.1	37.1
Actuated g/C Ratio	0.19	0.19	0.37	0.37	0.61	0.61
v/c Ratio	0.56	0.51	0.83	0.67	0.76	0.60
Control Delay	30.1	11.9	26.8	9.9	27.4	9.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	30.1	11.9	26.8	9.9	27.4	9.5
LOS	С	В	С	А	С	А
Approach Delay	20.0		20.9			12.9
Approach LOS	С		С			В
Intersection Summary						
Cycle Length: 65						
Actuated Cycle Length: 60.4	4					
Natural Cycle: 65						
Control Type: Actuated-Unc	coordinated					
Maximum v/c Ratio: 0.83						
Intersection Signal Delay: 1	7.3			I	ntersectio	n LOS: B
Intersection Capacity Utiliza						of Service
Analysis Period (min) 15						2.5.1.00

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Splits and Phases: 202: Jedburg Road & I-26 EB Off-Ramp/I-26 EB On-Ramp

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43 s		22 s
Ø5	¶ø6	
15 s	28 s	

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		् स्	1					- ††	1	<u>۲</u>	- ††	
Traffic Volume (veh/h)	140	0	173	0	0	0	0	821	443	232	1004	0
Future Volume (veh/h)	140	0	173	0	0	0	0	821	443	232	1004	0
Number	3	8	18				1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1583	1583				0	1583	1583	1583	1583	0
Adj Flow Rate, veh/h	156	0	0				0	912	0	258	1116	0
Adj No. of Lanes	0	1	1				0	2	1	1	2	0
Peak Hour Factor	0.90	0.90	0.90				0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	20	20	20				0	20	20	20	20	0
Cap, veh/h	194	0	173				0	1292	578	406	1979	0
Arrive On Green	0.13	0.00	0.00				0.00	0.43	0.00	0.12	0.66	0.00
Sat Flow, veh/h	1508	0	1346				0	3088	1346	1508	3088	0
Grp Volume(v), veh/h	156	0	0				0	912	0	258	1116	0
Grp Sat Flow(s),veh/h/ln	1508	0	1346				0	1504	1346	1508	1504	0
Q Serve(g_s), s	5.7	0.0	0.0				0.0	14.0	0.0	4.8	11.3	0.0
Cycle Q Clear(g_c), s	5.7	0.0	0.0				0.0	14.0	0.0	4.8	11.3	0.0
Prop In Lane	1.00		1.00				0.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	194	0	173				0	1292	578	406	1979	0
V/C Ratio(X)	0.80	0.00	0.00				0.00	0.71	0.00	0.64	0.56	0.00
Avail Cap(c_a), veh/h	429	0	383				0	1292	578	463	1979	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00				0.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	23.8	0.0	0.0				0.0	13.1	0.0	10.0	5.2	0.0
Incr Delay (d2), s/veh	7.6	0.0	0.0				0.0	3.3	0.0	2.3	1.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/In	4.9	0.0	0.0				0.0	10.4	0.0	3.8	8.6	0.0
LnGrp Delay(d),s/veh	31.4	0.0	0.0				0.0	16.4	0.0	12.4	6.4	0.0
LnGrp LOS	С							В		В	А	
Approach Vol, veh/h		156						912			1374	
Approach Delay, s/veh		31.4						16.4			7.5	
Approach LOS		С						В			A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2	5	Т	5	6	1	8				
Phs Duration (G+Y+Rc), s		43.0			12.9	30.1		13.2				
Change Period (Y+Rc), s		6.0			6.0	6.0		6.0				
Max Green Setting (Gmax), s		37.0			9.0	22.0		16.0				
Max Q Clear Time (q_c+11) , s		13.3			6.8	16.0		7.7				
Green Ext Time (p_c), s		23.1			0.0	6.0		0.3				
		zJ. ۱			0.2	0.0		0.0				
Intersection Summary			10.4									
HCM 2010 Ctrl Delay			12.4									
HCM 2010 LOS			В									

Timings 203: Jedburg Road & I-26 WB On-Ramp

	-	1	Ļ
Lane Group	NBL	NBT	SBT
Lane Configurations	٦	††	A
Traffic Volume (vph)	243	718	610
Future Volume (vph)	243	718	610
Turn Type	D.P+P	NA	NA
Protected Phases	1	Free	2
Permitted Phases	2		
Detector Phase	1		2
Switch Phase			
Minimum Initial (s)	4.0		4.0
Minimum Split (s)	15.0		22.0
Total Split (s)	22.0		38.0
Total Split (%)	36.7%		63.3%
Yellow Time (s)	4.0		4.0
All-Red Time (s)	2.0		2.0
Lost Time Adjust (s)	0.0		0.0
Total Lost Time (s)	6.0		6.0
Lead/Lag	Lead		Lag
Lead-Lag Optimize?			5
Recall Mode	None		Мах
Act Effct Green (s)	39.4	51.4	32.0
Actuated g/C Ratio	0.77	1.00	0.62
v/c Ratio	0.51	0.27	0.48
Control Delay	5.5	0.2	5.8
Queue Delay	0.0	0.0	0.0
Total Delay	5.5	0.2	5.8
LOS	A	A	A
Approach Delay		1.6	5.8
Approach LOS		A	A
Intersection Summary			
Cycle Length: 60			
Actuated Cycle Length: 51.4	1		
Natural Cycle: 40	r		
Control Type: Actuated-Unc	oordinatod		
Maximum v/c Ratio: 0.51	ooruiriateu		
	E .		
Intersection Signal Delay: 3. Intersection Capacity Utilization			
	1011 02.5%		
Analysis Period (min) 15			

Splits and Phases: 203: Jedburg Road & I-26 WB On-Ramp

Ø1		
22 s	38 s	

	≯	*	-	1	Ļ	1		
Movement	EBL	EBR	NBL	NBT	SBT	SBR		
Lane Configurations			5	^	≜ †⊅			
Traffic Volume (vph)	0	0	243	718	610	184		
Future Volume (vph)	0	0	243	718	610	184		
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900		
Total Lost time (s)			6.0	4.0	6.0			
Lane Util. Factor			1.00	0.95	0.95			
Frt			1.00	1.00	0.97			
Flt Protected			0.95	1.00	1.00			
Satd. Flow (prot)			1504	3008	2904			
Flt Permitted			0.31	1.00	1.00			
Satd. Flow (perm)			498	3008	2904			
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90		
Adj. Flow (vph)	0.70	0.70	270	798	678	204		
RTOR Reduction (vph)	0	0	0	0	38	0		
Lane Group Flow (vph)	0	0	270	798	844	0		
Turn Type			D.P+P	NA	NA			
Protected Phases			1	Free	2			
Permitted Phases			2	1100	2			
Actuated Green, G (s)			39.4	51.4	32.0			
Effective Green, g (s)			39.4	51.4	32.0			
Actuated g/C Ratio			0.77	1.00	0.62			
Clearance Time (s)			6.0	1.00	6.0			
Vehicle Extension (s)			3.0		3.0			
Lane Grp Cap (vph)			526	3008	1807			
v/s Ratio Prot			c0.07	0.27	0.29			
v/s Ratio Perm			c0.32	0.27	0.27			
v/c Ratio			0.51	0.27	0.47			
Uniform Delay, d1			1.7	0.0	5.2			
Progression Factor			1.00	1.00	1.00			
Incremental Delay, d2			0.8	0.2	0.9			
Delay (s)			2.6	0.2	6.0			
Level of Service			A	A	A			
Approach Delay (s)	0.0		71	0.8	6.0			
Approach LOS	A			A	A			
Intersection Summary								
HCM 2000 Control Delay			3.2	H	CM 2000	Level of Service	А	
HCM 2000 Volume to Capa	city ratio		0.51					
Actuated Cycle Length (s)			51.4	Si	um of lost	time (s)	12.0	
Intersection Capacity Utiliza	ation		62.3%			of Service	В	
Analysis Period (min)			15					
c Critical Lano Croup								

c Critical Lane Group

HCM 2010 analysis expects strict NEMA phasing.

Timings
301: Factory Entrance/Welcome Center & Volvo Car Drive

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Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations	۲	††	1	1	A	ካካ	ef 👘	5	¢Î
Traffic Volume (vph)	10	227	83	37	823	745	10	10	10
Future Volume (vph)	10	227	83	37	823	745	10	10	10
Turn Type	pm+pt	NA	Free	pm+pt	NA	Prot	NA	pm+pt	NA
Protected Phases	5	2		1	6	3	8	7	4
Permitted Phases	2		Free	6				4	
Detector Phase	5	2		1	6	3	8	7	4
Switch Phase									
Minimum Initial (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	15.0	22.0		15.0	22.0	15.0	22.0	15.0	22.0
Total Split (s)	15.0	27.0		15.0	27.0	26.0	33.0	15.0	22.0
Total Split (%)	16.7%	30.0%		16.7%	30.0%	28.9%	36.7%	16.7%	24.4%
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0		6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag	Lead	Lag		Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?									
Recall Mode	None	Min		None	Min	None	None	None	None
Act Effct Green (s)	21.1	18.8	58.5	23.0	21.8	20.5	20.7	7.1	6.2
Actuated g/C Ratio	0.36	0.32	1.00	0.39	0.37	0.35	0.35	0.12	0.11
v/c Ratio	0.04	0.26	0.06	0.08	0.72	0.69	0.48	0.05	0.11
Control Delay	12.2	18.7	0.1	12.0	22.5	22.6	5.1	18.9	21.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	12.2	18.7	0.1	12.0	22.5	22.6	5.1	18.9	21.6
LOS	В	В	А	В	С	С	А	В	С
Approach Delay		13.7			22.1		17.1		20.7
Approach LOS		В			С		В		С
Intersection Summary									
Cycle Length: 90									
Actuated Cycle Length: 58.	5								
Natural Cycle: 90									
Control Type: Actuated-Und	coordinated	1							
Maximum v/c Ratio: 0.72									
Intersection Signal Delay: 1	8.5			Ir	ntersectio	n LOS: B			
Intersection Capacity Utiliza	ation 68.7%)		[(CU Level	of Service	еC		
Analysis Period (min) 15									

Splits and Phases: 301: Factory Entrance/Welcome Center & Volvo Car Drive

Ø1	<u>→</u> _{Ø2}	Ø3		Ø4	
15 s	27 s	26 s		22 s	
	₩ Ø6	Ø7	¶ø8		
15 s	27 s	15 s	33 s		

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	<u>۲</u>	- † †	1	<u>٦</u>	≜ †≱		ሻሻ	eî 👘		<u>۲</u>	eî 👘	
Traffic Volume (veh/h)	10	227	83	37	823	10	745	10	335	10	10	10
Future Volume (veh/h)	10	227	83	37	823	10	745	10	335	10	10	10
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1557	1863	1863	1810	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	11	252	0	41	914	11	828	11	372	11	11	11
Adj No. of Lanes	1	2	1	1	2	0	2	1	0	1	1	0
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	22	2	2	5	5	2	2	2	2	2	2
Cap, veh/h	159	840	450	405	1060	13	939	15	498	185	52	52
Arrive On Green	0.01	0.28	0.00	0.03	0.30	0.30	0.27	0.32	0.32	0.01	0.06	0.06
Sat Flow, veh/h	1774	2959	1583	1774	3480	42	3442	46	1545	1774	856	856
Grp Volume(v), veh/h	11	252	0	41	452	473	828	0	383	11	0	22
Grp Sat Flow(s),veh/h/ln	1774	1480	1583	1774	1720	1803	1721	0	1590	1774	0	1712
Q Serve(g_s), s	0.3	4.6	0.0	1.1	16.9	16.9	15.8	0.0	14.7	0.4	0.0	0.8
Cycle Q Clear(q_c), s	0.3	4.6	0.0	1.1	16.9	16.9	15.8	0.0	14.7	0.4	0.0	0.8
Prop In Lane	1.00		1.00	1.00		0.02	1.00		0.97	1.00		0.50
Lane Grp Cap(c), veh/h	159	840	450	405	524	549	939	0	513	185	0	104
V/C Ratio(X)	0.07	0.30	0.00	0.10	0.86	0.86	0.88	0.00	0.75	0.06	0.00	0.21
Avail Cap(c_a), veh/h	373	908	486	583	528	553	1006	0	628	399	0	400
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	18.9	19.2	0.0	16.6	22.4	22.4	23.8	0.0	20.7	29.7	0.0	30.6
Incr Delay (d2), s/veh	0.2	0.2	0.0	0.1	13.6	13.1	8.9	0.0	3.9	0.1	0.0	1.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.3	3.4	0.0	1.0	15.2	15.7	13.4	0.0	11.3	0.4	0.0	0.8
LnGrp Delay(d),s/veh	19.1	19.4	0.0	16.7	36.1	35.5	32.7	0.0	24.6	29.8	0.0	31.6
LnGrp LOS	В	В		В	D	D	С		С	С		С
Approach Vol, veh/h		263			966			1211			33	
Approach Delay, s/veh		19.4			35.0			30.1			31.0	
Approach LOS		В			С			С			С	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	8.2	25.4	24.7	10.2	6.8	26.8	6.8	28.1				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax), s	9.0	21.0	20.0	16.0	9.0	21.0	9.0	27.0				
Max Q Clear Time (g_c+11) , s	3.1	6.6	17.8	2.8	2.3	18.9	2.4	16.7				
Green Ext Time (p_c), s	0.0	12.1	0.9	1.3	0.0	1.9	0.0	1.2				
Intersection Summary												
HCM 2010 Ctrl Delay			30.9									
HCM 2010 LOS			30.9 C									
			C									

Timings	
301: Factory	/ Entrance/Welcome Center & Volvo Car Drive

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Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations	ሻ	<u>††</u>	1	1	∱1 ≱	ካካ	ef 👘	<u> </u>	¢Î
Traffic Volume (vph)	10	769	745	335	115	83	10	10	10
Future Volume (vph)	10	769	745	335	115	83	10	10	10
Turn Type	pm+pt	NA	Free	pm+pt	NA	Prot	NA	pm+pt	NA
Protected Phases	5	2		1	6	3	8	7	4
Permitted Phases	2		Free	6				4	
Detector Phase	5	2		1	6	3	8	7	4
Switch Phase									
Minimum Initial (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	15.0	22.0		15.0	22.0	15.0	22.0	15.0	22.0
Total Split (s)	15.0	31.0		22.0	38.0	15.0	22.0	15.0	22.0
Total Split (%)	16.7%	34.4%		24.4%	42.2%	16.7%	24.4%	16.7%	24.4%
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0		6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag	Lead	Lag		Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?									
Recall Mode	None	Min		None	Min	None	None	None	None
Act Effct Green (s)	26.3	19.9	62.6	41.9	42.3	7.7	9.8	8.7	6.8
Actuated g/C Ratio	0.42	0.32	1.00	0.67	0.68	0.12	0.16	0.14	0.11
v/c Ratio	0.02	0.77	0.52	0.66	0.07	0.22	0.18	0.04	0.11
Control Delay	8.4	26.6	1.2	19.4	8.0	31.8	14.4	23.1	25.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	8.4	26.6	1.2	19.4	8.0	31.8	14.4	23.1	25.1
LOS	А	С	А	В	А	С	В	С	С
Approach Delay		14.1			16.3		25.5		24.4
Approach LOS		В			В		С		С
Intersection Summary									
Cycle Length: 90									
Actuated Cycle Length: 62									
Natural Cycle: 90									
Control Type: Actuated-Un	ncoordinated	1							
Maximum v/c Ratio: 0.77									
Intersection Signal Delay: 7					ntersectio				
Intersection Capacity Utiliz	ation 63.9%)		[(CU Level	of Service	вB		
Analysis Period (min) 15									

Splits and Phases: 301: Factory Entrance/Welcome Center & Volvo Car Drive

6 01	<u>→</u> _{Ø2}	Ø 3	Ø4
22 s	31 s	15 s	22 s
▶ _{Ø5} ★	06	Ø7	¶ø8
15 s 38 s		15 s	22 s

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	- ሽ	- † †	1	<u>۲</u>	∱ ⊅		ካካ	ef 👘		- ሽ	ef 👘	
Traffic Volume (veh/h)	10	769	745	335	115	10	83	10	37	10	10	10
Future Volume (veh/h)	10	769	745	335	115	10	83	10	37	10	10	10
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1845	1863	1863	1578	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	11	854	0	372	128	11	92	11	41	11	11	11
Adj No. of Lanes	1	2	1	1	2	0	2	1	0	1	1	0
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	3	2	2	22	22	2	2	2	2	2	2
Cap, veh/h	584	1270	574	499	1431	122	174	31	114	199	42	42
Arrive On Green	0.01	0.36	0.00	0.16	0.51	0.51	0.05	0.09	0.09	0.01	0.05	0.05
Sat Flow, veh/h	1774	3505	1583	1774	2797	238	3442	346	1289	1774	856	856
Grp Volume(v), veh/h	11	854	0	372	68	71	92	0	52	11	0	22
Grp Sat Flow(s), veh/h/ln	1774	1752	1583	1774	1499	1536	1721	0	1635	1774	0	1712
Q Serve(g_s), s	0.2	13.0	0.0	7.5	1.5	1.5	1.7	0.0	1.9	0.4	0.0	0.8
Cycle Q Clear(g_c), s	0.2	13.0	0.0	7.5	1.5	1.5	1.7	0.0	1.9	0.4	0.0	0.8
Prop In Lane	1.00		1.00	1.00		0.15	1.00		0.79	1.00		0.50
Lane Grp Cap(c), veh/h	584	1270	574	499	767	786	174	0	144	199	0	84
V/C Ratio(X)	0.02	0.67	0.00	0.75	0.09	0.09	0.53	0.00	0.36	0.06	0.00	0.26
Avail Cap(c_a), veh/h	816	1380	623	661	767	786	488	0	412	431	0	431
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	12.5	17.1	0.0	11.6	7.9	7.9	29.4	0.0	27.3	28.2	0.0	29.1
Incr Delay (d2), s/veh	0.0	1.2	0.0	3.2	0.0	0.0	2.5	0.0	1.5	0.1	0.0	1.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.2	10.7	0.0	7.1	1.1	1.2	1.5	0.0	1.6	0.3	0.0	0.7
LnGrp Delay(d),s/veh	12.6	18.2	0.0	14.8	8.0	8.0	31.9	0.0	28.8	28.3	0.0	30.7
LnGrp LOS	В	В		В	А	А	С		С	С		С
Approach Vol, veh/h		865			511			144			33	
Approach Delay, s/veh		18.2			12.9			30.8			29.9	
Approach LOS		В			В			С			С	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	16.2	29.0	9.2	9.1	6.7	38.5	6.7	11.6				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax), s	16.0	25.0	9.0	16.0	9.0	32.0	9.0	16.0				
Max Q Clear Time (g_c+11), s	9.5	15.0	3.7	2.8	2.2	3.5	2.4	3.9				
Green Ext Time (p_c), s	0.7	8.0	0.1	0.1	0.0	19.3	0.0	0.1				
	0.7	0.0	0.1	0.1	0.0	17.5	0.0	0.1				
Intersection Summary			17.0									
HCM 2010 Ctrl Delay			17.9									
HCM 2010 LOS			В									

Appendix H

2039 Weaving Analysis Worksheets



HCS 2 Phone: E-mail:	010: Freeway	Weaving Rel Fax:	ease 6.6	0
	_Operational .	Analysis		
	ae Stantec 6/16/16 5:30a-6:30a Volvo Car Dr 2039 Weave Distan		eue (2%HV)
	Inputs_			
Segment Type Weaving configuration Number of lanes, N Weaving segment length, LS Freeway free-flow speed, FFS Minimum segment speed, SMIN Freeway maximum capacity, cIF	Ľ	C-D Roadw One-Sided 3 2840 45 15 1800*	-	ilane Highways ln
Terrain type Grade Length		Level 0.00 0.00	% mi	
Conversion	to pc/h Unde Vol	r Base Cond ume Compone		
Volume, V Peak hour factor, PHF Peak 15-min volume, v15 Trucks and buses Recreational vehicles Trucks and buses PCE, ET Recreational vehicle PCE, ER Heavy vehicle adjustment, fHV Driver population adjustment, Flow rate, v Volume ratio, VR	VFF 125 0.9 348 2 0 1.5 1.2 0.9	VRF 1 263 0 0.90 73 2 0 1.5 1.2 90 0.990 0 1.00	VFR	VRR 10 veh/h 0.90 3 2 % 0 % 1.5 1.2 0.990 1.00 11 pc/h
Conf	iguration Cha	racteristic	!S	
Number of maneuver lanes, NWL Interchange density, ID Minimum RF lane changes, LCRF Minimum FR lane changes, LCFR Minimum RR lane changes, LCRR Minimum weaving lane changes,		2 0.0 2 1	ln int/mi lc/pc lc/pc lc/pc lc/h	
Weaving lane changes, LCW Non-weaving vehicle index, IN Non-weaving lane change, LCNW Total lane changes, LCALL	W	778 0 1253 2031	lc/h lc/h lc/h	
Weavin Weaving intensity factor, W	g and Non-Wea	ving Speeds 0.173	l	

Average weaving speed, SW Average non-weaving speed		40.6 37.9	mi/h mi/h					
Weaving Segment Weaving segment speed, S Weaving segment density, Level of service, LOS Weaving segment v/c ratic Weaving segment flow rate Weaving segment capacity,	Speed, Density D , v	, Level of Se 38.4	rvice and Cap	oacity				
Limitations on Weaving Segments If limit reached, see note.								
Weaving length (ft) Density-based capacty, cIWL (pc/h/ln)	Minimum 300	Maximum 4311 Maximum 1800*	-	Note a,b c				
v/c ratio		Maximum 1.00	Analyzed 0.340	d				

- a. In weaving segments shorter than 300 ft, weaving vehicles are assumed to make only necessary lane changes.
- b. Weaving segments longer than the calculated maximum length should be treated as isolated merge and diverge areas using the procedures of Chapter 13, "Freeway Merge and Diverge Segments."

c. The density-based capacity exceeds the capacity of a basic freeway segment, under equivalent ideal conditions.

Phone: I-mail:	E	'ax:		
O	perational Ana	lysis		
Analyst: a	9			
Agency/Co.: St	tantec			
	/16/16			
-	:30a-6:30a			
1 /	olvo Car Drive			
Veaving Location: Analysis Year: 20	039			
-	eave Distance	Less Oue	eue (20%H	IV)
1	Inputs	~		
Segment Type Neaving configuration		ne-Sidec		ilane Highways
Jumber of lanes, N		me-sidec	ln	
eaving segment length, LS		840	ft	
reeway free-flow speed, FFS		5	mi/h	
linimum segment speed, SMIN		5	mi/h	-
reeway maximum capacity, cIFL	1	800*	pc/h/	ln
'errain type	I	evel		
Grade		.00	010	
Length	C	.00	mi	
Conversion to	o pc/h Under E			·
		Compone		
	VFF	VRF	VFR 10	VRR 10 veh/h
Olume, V Peak hour factor, PHF			0.90	,
eak 15-min volume, v15	348		3	3
rucks and buses	20			
ecreational vehicles	0	0	0	0 %
rucks and buses PCE, ET	1.5	1.5	1.5	1.5
ecreational vehicle PCE, ER	1.2	1.2	1.2	1.2
leavy vehicle adjustment, fHV	0.909			
river population adjustment, fi 'low rate, v	P 1.00 1529	1.00 321		1.00 12 pc/h
olume ratio, VR		0.178		2
	uration Charac	teristic	19	
umber of maneuver lanes, NWL	2		ln	
nterchange density, ID	0.	0	int/mi	
linimum RF lane changes, LCRF	2		lc/pc	
linimum FR lane changes, LCFR	1		lc/pc	
inimum RR lane changes, LCRR			lc/pc	
inimum weaving lane changes, Lo	CMIN 65	4	lc/h	
eaving lane changes, LCW		1	lc/h	
on-weaving vehicle index, INW	0		- /·	
on-weaving lane change, LCNW		79	lc/h lc/h	
otal lane changes, LCALL	21	10	lc/h	
	and Non-Weavir	a 1		

Average weaving speed, SW Average non-weaving speed		40.5 37.3	mi/h mi/h					
Weaving Segment Weaving segment speed, S Weaving segment density, Level of service, LOS Weaving segment v/c ratio Weaving segment flow rate Weaving segment capacity,	D D 2, V	37.8	mi/h pc/mi/ln veh/h	oacity				
Limitations on Weaving Segments If limit reached, see note.								
Weaving length (ft) Density-based capacty, cIWL (pc/h/ln)	Minimum 300	Maximum 4309 Maximum 1800*	Actual 2840 Analyzed 1688	Note a,b c				
v/c ratio		Maximum 1.00	Analyzed 0.370	d				

- a. In weaving segments shorter than 300 ft, weaving vehicles are assumed to make only necessary lane changes.
- b. Weaving segments longer than the calculated maximum length should be treated as isolated merge and diverge areas using the procedures of Chapter 13, "Freeway Merge and Diverge Segments."

c. The density-based capacity exceeds the capacity of a basic freeway segment, under equivalent ideal conditions.

Phone:	10: Freeway	Weavi Fax	-	ease 6.6	0	
E-mail:	Operational	Analv	sis			
Analyst: Agency/Co.:	ae Stantec					
Date Performed:	6/16/16					
	3:00p-4:00p					
	Volvo Car Dr	ive				
Weaving Location:						
Analysis Year:	2039			(
Description:	Weave Distance Less Queue (16%HV)					
	Inputs_					
Segment Type	C-D Roadway/ Mult				ilane Highways	
Weaving configuration			-Sided			
Number of lanes, N Weaving segment length, LS		3 302	5	ln ft		
Freeway free-flow speed, FFS		302 45		mi/h		
Minimum segment speed, SMIN		15		mi/h		
Freeway maximum capacity, cIFI	L		0 *	pc/h/	ln	
Terrain type		Lev	el			
Grade		0.0	0	00		
Length		0.0	0	mi		
Conversion	to pc/h Unde	r Bas	e Condi	itions		
	_		omponei			
	VFF		RF	VFR	VRR	
Volume, V				10		
Peak hour factor, PHF Peak 15-min volume, v15	0.9 72			0.90 3		
Trucks and buses	16			16		
Recreational vehicles				0	0 %	
Trucks and buses PCE, ET	1.5		1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2		1.2	1.2	1.2	
Heavy vehicle adjustment, fHV	0.9	26	0.926	0.926		
Driver population adjustment,			1.00			
Flow rate, v	312		60	12	12 pc/h	
Volume ratio, VR			0.182			
	guration Cha		ristic			
Number of maneuver lanes, NWL		2		ln int/mi		
Interchange density, ID Minimum RF lane changes, LCRF		0.0 2		int/mi		
Minimum FR lane changes, LCFR	2 1		lc/pc lc/pc			
Minimum RR lane changes, LCRR		-		lc/pc		
Minimum weaving lane changes,	T.CMTN	132		lc/h		
Weaving lane changes, LCW		315		lc/h		
Non-weaving vehicle index, INW	I	0				
Non-weaving lane change, LCNW	N 1128			lc/h		
Total lane changes, LCALL		1443		lc/h		
	g and Non-Wea	_				
Weaving intensity factor, W		0.12	6			

Average weaving speed, SW Average non-weaving speed		41.6 43.4	mi/h mi/h				
Weaving Segment Weaving segment speed, S Weaving segment density, Level of service, LOS Weaving segment v/c ratio Weaving segment flow rate Weaving segment capacity,	D 0 2, V	43.1		acity			
Limitations on Weaving Segments If limit reached, see note.							
Weaving length (ft) Density-based capacty, cIWL (pc/h/ln)	Minimum 300	Maximum 4351 Maximum 1800*	-	Note a,b C			
v/c ratio		Maximum 1.00	Analyzed 0.078	d			

- a. In weaving segments shorter than 300 ft, weaving vehicles are assumed to make only necessary lane changes.
- b. Weaving segments longer than the calculated maximum length should be treated as isolated merge and diverge areas using the procedures of Chapter 13, "Freeway Merge and Diverge Segments."

c. The density-based capacity exceeds the capacity of a basic freeway segment, under equivalent ideal conditions.

Phone:	10: Freeway	Weav Fa	-	ease 6.6	0	
E-mail:		_	·			
	Operational	Anal	ysis			
Analyst:	ae					
Agency/Co.:	Stantec					
Date Performed: Analysis Time Period:	6/16/16 3:00p-4:00p					
	Volvo Car Dr	ive				
Neaving Location:	VOIVO CUI DI	IVC				
Analysis Year:	2039					
Description:	Weave Distance Less Queue (20%HV)					
	Inputs_					
Segment Type					ilane Highways	
Neaving configuration			e-Sided			
Number of lanes, N		3	0 -	ln		
Weaving segment length, LS			25	ft mi/h		
Freeway free-flow speed, FFS Minimum segment speed, SMIN		45 15		mi/h mi/h		
Freeway maximum capacity, cIFI	1		00*	pc/h/	ln	
Ferrain type		Le	vel			
Grade		00	00			
Length		0.	0 0	mi		
Conversion	to pc/h Unde					
			Compone			
	VFF		VRF	VFR	VRR	
<i>J</i> olume, V Peak hour factor, PHF				10 0.90		
Peak 15-min volume, v15	0.9 72	0	0.90 14		3	
Frucks and buses	20		20			
Recreational vehicles				0	0 %	
Irucks and buses PCE, ET	1.5		1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2		1.2	1.2	1.2	
Heavy vehicle adjustment, fHV		09	0.909	0.909	0.909	
Driver population adjustment,		0	1.00			
Flow rate, v	318		61	12	12 pc/h	
/olume ratio, VR			0.181			
	guration Cha		eristic			
Number of maneuver lanes, NWL		2 0.0		ln int/mi		
Interchange density, ID Minimum RF lane changes, LCRF		0.0 2		lc/pc		
Ainimum FR lane changes, LCFR		1		lc/pc		
Ainimum RR lane changes, LCRR		-		lc/pc		
Ainimum weaving lane changes,	LCMIN	134		lc/h		
Weaving lane changes, LCW		317		lc/h		
Non-weaving vehicle index, INW Non-weaving lane change, LCNW				lc/h		
Fotal lane changes, LCALL	1130 1447			lc/h		
Weaving	🛭 and Non-Wea	vina	Speede			

Average weaving speed, SW Average non-weaving speed		41.6 43.4	mi/h mi/h				
Weaving Segment Weaving segment speed, S Weaving segment density,	Speed, Density	, Level of Se 43.1 3.1+	rvice and Cap	acity			
Level of service, LOS Weaving segment v/c ratio Weaving segment flow rate Weaving segment capacity,	e, V	A 0.079 367 4634	'				
Limitations on Weaving Segments							
Weaving length (ft)	Minimum 300	Maximum 4344 Maximum	Actual 3025 Analyzed	Note a,b			
Density-based capacty, cIWL (pc/h/ln)		1800*	1699	С			
v/c ratio			Analyzed 0.079	d			

- a. In weaving segments shorter than 300 ft, weaving vehicles are assumed to make only necessary lane changes.
- b. Weaving segments longer than the calculated maximum length should be treated as isolated merge and diverge areas using the procedures of Chapter 13, "Freeway Merge and Diverge Segments."

c. The density-based capacity exceeds the capacity of a basic freeway segment, under equivalent ideal conditions.