

**NCDOT STIP
I-4400/4700**

**PURPOSE AND NEED
TRAFFIC ANALYSIS -
ADDENDUM**

**I-26 Widening - Buncombe
and Henderson Counties**



PREPARED FOR:

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Transportation**

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October 2014

NCDOT STIP I-4400/I-4700
I-26 WIDENING
BUNCOMBE AND HENDERSON COUNTIES
PURPOSE AND NEED
TRAFFIC ANALYSIS TECHNICAL MEMORANDUM
ADDENDUM

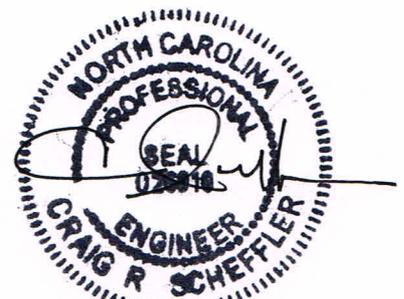
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October 2014



10-13-14

EXECUTIVE SUMMARY

1. Introduction

HNTB North Carolina, PC has been contracted by the North Carolina Department of Transportation (NCDOT), to develop base and future year traffic capacity analyses for NCDOT State Transportation Improvement Program (STIP) Project I-4400/I-4700, I-26 Widening in Buncombe and Henderson Counties. The analyses for the base and future design year scenarios will be used to develop the environmental documentation required by the National Environmental Policy Act (NEPA).

For the purposes of the environmental document, it was decided in a project scoping meeting on August 15, 2012 and through coordination with NCDOT that the base year scenario would use a base year of 2011 and the future design year scenario would be for the year 2040. In this meeting, a project study area was also defined that would satisfy the requirements of NEPA and potential Interchange Modification Report (IMR) requirements for the Federal Highway Administration (FHWA). Separate No-Build and Build Alternative traffic capacity analyses were conducted for both the 2011 base year and 2040 design year. **Figure 1** shows the project study area for the traffic analyses. **Appendix A** contains all figures described in this report.

The *NCDOT STIP I-4400/I-4700 Purpose and Need Traffic Analysis Technical Memorandum* was completed by HNTB in September 2013 and studied three alternatives: the No-Build Alternative, the Build 6-Lane alternative, and the Build 8-Lane Alternative. The September 2013 report recommended that consideration should be made in the design of I-4400/I-4700 to examine an eight-lane facility for a portion of the I-26 corridor and transition to a six-lane facility for the remainder of the corridor. Based on the 2040 design year freeway system analysis results, the most reasonable transition between a six-lane widening and eight-lane widening is at the current US 25 (Asheville Highway) interchange, with eight lanes required north of this location and six lanes required south of the interchange.

Therefore, this memorandum serves as an addendum to the *NCDOT STIP I-4400/I-4700 Purpose and Need Traffic Analysis Technical Memorandum* (HNTB, September 2013) and compares the No-Build alternative from the September 2013 report to an additional Build Alternative: the Build 8/6-Lane Combination alternative. With this additional study, there are three Build Alternatives that are being studied in the NEPA process, the two from the September 2013 report (Build 6-Lane and Build 8-Lane alternatives) and the Build 8/6-Lane Combination alternative from this addendum report.

This analysis addendum also contains detailed traffic microsimulation analyses for two locations along the project study area corridor. Initial results from the September 2013 technical memorandum indicated that interchange improvements will be necessary at the US 25 (Asheville Highway) interchange to provide adequate traffic operations in this vicinity. Results also indicated that additional detailed study was necessary for the I-26 southbound segment between the Upward Road and US 25 (Flat Rock) interchanges to determine if proposed Build – 6 Lane and Build – 8 Lane designs would provide adequate traffic operations at this project terminus.

2. Existing Conditions

The existing geometrics, intersection traffic control, and speed limits for existing freeway network and roadways in the study area are shown schematically in **Figures 2.1 to 2.3**. Refer to Executive Summary Section 2 of *NCDOT STIP I-4400/I-4700 Purpose and Need Traffic*

Analysis Technical Memorandum (HNTB, September 2013) for detailed information on existing conditions in the project study area.

3. Capacity Analysis Methodology

Per standards for the preparation of capacity analyses for TIP projects used by the NCDOT Congestion Management Section, and to ultimately satisfy requirements of an IMR for the FHWA, the I-4400/I-4700 project study area was analyzed using methodologies set forth in the *Highway Capacity Manual 2010* (Transportation Research Board, December 2010) and the accompanying Highway Capacity Software 2010 (HCS Version 6.41) for freeway facilities and unsignalized intersections. Signalized intersections were analyzed in Synchro Professional Version 7. Results for AM and PM peak hour timeframes are given as a Level-of-Service (LOS) for segments of freeway and intersections that correspond to a letter grade of LOS A through LOS F. As noted in the September 2013 traffic analysis technical memorandum, in general, LOS D is the minimum threshold for acceptable peak hour traffic operations on the freeway segments and study area intersections, and was used as a benchmark in determining the appropriate functional design geometrics for the 2040 analysis year.

Additional traffic microsimulation studies contained in this analysis addendum were completed using the Caliper TransModeler software package Version 3.0. Methodologies for traffic microsimulation development, calibration, and validation conform to NCDOT and FHWA standards and are described in detail in **Sections 9 and 10** of this report.

4. Development of Alternatives

Two alternatives were studied in this addendum report: the No-Build Alternative and the Build 8/6-Lane Combination alternative. The No-Build Alternative assumes no changes to the project study corridor, other than the proposed Balfour Parkway interchange (FS 1214B), current capacity improvements at the Upward Road interchange (STIP R-4430), and basic traffic signal retiming by the 2040 design year as indicated in the September 2013 capacity analysis study.

The Build 8/6 Lane Combination Alternative studied in this addendum analysis assumes mainline widening of the existing I-26 facility with two additional lanes in each direction between the I-40/I-240/I-26 system interchange and US 25 (Asheville Highway) and one additional lane in each direction between US 25 (Asheville Highway) and the US 25 system interchange. This alternative was specifically developed to address future capacity needs as determined in the original traffic analysis technical memorandum.

This addendum analysis also addresses potential improvements and design considerations at two locations along the I-26 project study corridor. Initial capacity analysis results indicate the need for additional interchange improvements at the I-25/US 25 (Asheville Highway) service interchange. Initial results were also inconclusive as to the effects of lane drops for I-26 southbound at the southern project termini between the Upward Road interchange and the US 25 system interchange.

5. 2011 Base Year/2040 Design Year Traffic Volume Development

Peak hour traffic volume estimates for the 2011 base year and 2040 design year were developed as previously indicated in Executive Summary Section 5 of the *NCDOT STIP I-4400/I-4700 Purpose and Need Traffic Analysis Technical Memorandum* (HNTB, September 2013).

Because the Build 8/6 Lane Combination Alternative would exhibit the potential to experience slightly different peak hour traffic volumes than the original Build-6 Lane and Build-8 Lane

Alternatives, NCDOT TPB produced a traffic forecast expansion for this Alternative, submitted December 16, 2013. Traffic volumes for the combination alternative were updated in all traffic analyses presented in this technical memorandum addendum.

6. Capacity Analysis Results

Freeway Operations

The results from the HCS FreeVal analysis, shown in **Table ES-2** for freeway segments, indicate that traffic operations along northbound and southbound I-26 in the project study area are mostly acceptable (LOS D or better) for 2011 base analysis year No-Build conditions, with the exception of 16 segments north of the NC 280 interchange that operate at a LOS E, given the existing traffic forecast peak hour volumes and existing geometrics. The proposed capacity expansion of a combination of six and eight travel lanes eliminates these deficiencies in the 2011 base year. There will be several changes to the I-26 freeway segments due to the future Balfour Parkway interchange in the 2040 design year.

Table ES-2. I-4400/4700 Freeway Capacity Analysis Summary

Analysis Year	Scenario	Number of Freeway Segments Operating at Given LOS in at Least One AM or PM Peak Hour					
		LOS A	LOS B	LOS C	LOS D	LOS E	LOS F
2011	No-Build	0	16	36	16	16	0
	Build – 8/6 Lane Combination	1	64	18	1	0	0
2040	No-Build	0	0	15	19	53	7
	Build – 8/6 Lane Combination	0	0	42	52	0	0

In general, the additional capacity provided by the 8/6 Lane Combination Alternative will provide improved freeway operations along the I-26 corridor in the 2040 design year, even though traffic forecasts for the build alternative project daily traffic volumes increase along the facility because of the capacity expansion. In the 2040 design year, 60 of the 94 analyzed freeway segments are projected to be at or over capacity in the No-Build Alternative. The Build – 8/6 Lane Combination Alternative eliminates these deficiencies in the 2040 design year. Additional traffic microsimulation models were developed for this addendum study to verify and further explore the potential causes of the reported deficient LOS E/F freeway segments for the Build – 8 Lane and Build – 6 Lane Alternatives in the original traffic analysis technical memorandum.

Intersection Operations

The results from the HCS (unsignalized) and Synchro (signalized) intersections analyses indicate that there are some traffic congestion issues at interchange ramp terminals in the project study area in the 2011 base year, with these issues projected to increase in the 2040 design year peak hours. The Build 8/6 Lane Combination Alternative provides additional interstate mainline capacity, but was not studied, for the purposes of this report, to add improvements to mitigate any interchange ramp terminal operational issues except for the service interchange at US 25 (Asheville Highway), where traffic microsimulation was utilized to evaluate four potential interchange improvement designs at this location.

Table ES-3 provides intersection capacity analysis results for all signalized and unsignalized intersections in the project study area for the 2011 and 2040 analysis years.

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Table ES-3. 2011 Base Year / 2040 Design Year Intersection Capacity Analysis Results

Intersections	Peak Hour	2011 Base Year				2040 Design Year			
		No-Build		Build 8/6 Lane		No-Build		Build 8/6 Lane	
		LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay
1) NC 146 SPUI Ramps	AM	C	21.8	C	32.0	C	30.5	D	35.1
	PM	C	21.5	C	32.0	C	30.0	C	33.7
2) US 25 (Asheville Highway) Northbound Ramps	AM	D	47.1	C	21.8	F	161.1	F	126.7
	PM	E	77.6	D	41.9	F	174.5	F	151.5
3) US 25 (Asheville Highway) Southbound Ramps	AM	F	162.9	F	102.0	F	265.6	F	241.3
	PM	D	50.2	E	57.6	F	259.8	F	217.3
4) Future Balfour Parkway Northbound Ramps	AM	N/A	N/A	N/A	N/A	B	18.6	C	27.3
	PM	N/A	N/A	N/A	N/A	B	16.0	C	27.1
5) Future Balfour Parkway Southbound Ramps	AM	N/A	N/A	N/A	N/A	B	15.8	B	18.7
	PM	N/A	N/A	N/A	N/A	B	18.3	C	23.8
6) US 64 & Francis Road/Sugarloaf Road	AM	E	65.2	D	37.7	E	62.7	E	76.0
	PM	D	41.1	C	33.7	D	52.2	E	59.3
7) US 64 & I-26 Southbound Off Ramp	AM	B	13.9	B	11.2	B	15.2	B	16.4
	PM	A	9.1	B	10.2	B	11.9	B	13.5
8) US 64 & Carolina Village Road / Orr's Camp Road	AM	D	49.8	C	33.2	F	107.6	F	107.4
	PM	D	47.5	D	41.0	F	106.1	F	104.7
9) Upward Road Northbound Ramps	AM	C	22.3	C	22.7	C	32.2	C	30.3
	PM	D	35.9	D	39.0	C	28.7	C	28.6
10) Upward Road Southbound Ramps	AM	C	31.4	C	34.6	C	23.6	C	29.7
	PM	C	22.7	C	24.8	B	19.8	C	24.5
11) Holbert Cove Road Northbound Ramps*	AM	B	12.6	B	12.6	B	14.2	B	14.6
	PM	B	12.2	B	12.2	B	15.0	B	14.5
12) Holbert Cove Road Southbound Ramps*	AM	B	11.2	B	11.2	B	13.3	B	13.3
	PM	B	11.0	B	11.0	B	13.0	B	13.0

Delay Measured in Seconds Per Vehicle. N/A - Not Applicable, i.e. intersection is non-existent

* - LOS/Delay Data is for worst-case critical stop-controlled movement

BOLD/ITALIC = Intersection/Approach/Movement that has Operational Deficiencies (LOS E or F)

7. Microsimulation Analysis

I-26/US 25 (Asheville Highway) Interchange

Existing Base Year 2011 AM and PM peak hour microsimulation models of the US 25 (Asheville Highway) service interchange were developed using the TransModeler software package. After successfully calibrating the models to existing field observed conditions, the model networks were modified to test four (4) proposed initial design concepts – a diverging diamond interchange (DDI), a displaced left-turn Interchange (DLT), a standard partial cloverleaf, and a modified partial cloverleaf containing some design exceptions that allow a smaller interchange footprint.

Measures of Effectiveness (MOEs) such as travel speeds, delays, and queues were extracted from the models (averages of 10 model runs for each scenario), and a comparison of the No-Build Alternative and Build Alternatives for system operations is presented in **Table ES-4**.

Table ES-4. 2011 and 2040 No-Build to Build System-Level Comparison

Build Alternative	Analysis Year	Percent Improvement over No-Build Alternative							
		Vehicle Miles Traveled (VMT)		Vehicle Hours Traveled (VHT)		Mean System Speed (mph)		Total System Delay (Hours)	
		AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak
DDI	2011	9%	21%	-14%	-8%	26%	30%	-44%	-38%
	2040	92%	78%	-77%	-73%	468%	380%	-85%	-83%
DLT	2011	9%	21%	-20%	-20%	35%	50%	-56%	-63%
	2040	97%	84%	-85%	-84%	731%	686%	-94%	-95%
Partial Cloverleaf	2011	13%	26%	-18%	-15%	37%	48%	-60%	-62%
	2040	105%	90%	-87%	-85%	873%	735%	-97%	-96%
Partial Cloverleaf (Design Exception)	2011	11%	24%	-19%	-16%	36%	47%	-60%	-63%
	2040	103%	88%	-87%	-85%	870%	743%	-97%	-96%

The data, and corresponding corridor and intersection-level analyses indicates that all four design alternatives improve overall system and corridor performance in both peak hours for the vehicle hours traveled, speed, and delay MOEs. However, the two partial cloverleaf designs offer the most operational benefits, followed by the DLT and finally, the DDI. Based solely on operational performance, the partial cloverleaf designs are recommended for further environmental study to assess their impacts.

I-26 Southbound Merge/Diverge Area

The TransModeler software package was used to develop traffic microsimulation networks of the I-26 southbound corridor between the Upward Road southbound on-ramp and the US 25 (Flat Rock) off-ramp. This analysis was necessary to verify the initial FreeVal results from the original Purpose and Need Traffic Analysis Technical Memorandum. FreeVal results indicated that the Build Alternatives performed poorly at the southern terminus of the project for southbound travel in the AM peak hour, with the 8-Lane Alternative performing worse than the 6-Lane alternative. Since FreeVal inputs cannot explicitly handle the actual geometrics of the 8-Lane design (with inner lane drop), the area was tested in microsimulation.

2040 design year microsimulation results for all the Build Alternatives indicate that this area of I-26 should operate much better than the initially reported FreeVal data indicated. Thus, any of the Build Alternatives should provide adequate traffic operations for this particular area of the project.

8. Summary and Recommendations

The I-4400/I-4700 traffic capacity analysis addendum was completed to evaluate existing and future peak hour traffic operations along I-26 and its study area interchanges to determine if a hybrid combination study alternative meets the purpose and need for the project. Three alternatives were analyzed in the original September 2013 study – the No-Build Alternative and the Six and Eight-Lane Widening Build Alternatives, and two alternatives were analyzed in this addendum study – the No-Build Alternative and an Eight/Six Lane Combination Alternative. Refer to Executive Summary Section 8 of the *NCDOT STIP I-4400/I-4700 Purpose and Need*

Traffic Analysis Technical Memorandum (HNTB, September 2013) for the summary and recommendations pertaining to the original Six and Eight-Lane Widening Build Alternatives.

The following points summarize the results contained in this addendum report, along with recommendations for two specific areas studied using traffic microsimulation software.

- **I-26 Mainline Analysis**

The Build – 8/6 Lane Combination alternative assumes that I-26 will be widened for an additional travel lane in each direction from the I-40/I-240/I-26 system interchange to the US 25 (Asheville Highway) interchange, and two additional travel lanes in each direction from the US 25 (Asheville Highway) interchange to the US 25 system interchange. No specific design details related to which side of the existing facility would be widened were assumed, nor were any improvements assumptions made for necessary changes to existing overpass / underpass y-line facilities or interchange ramp terminals, except as described below. Proposed design changes to existing ramp acceleration/deceleration lane lengths along I-26 were included for the Build alternative in this study. Freeway operations results for this alternative indicate that it would mitigate all 2011 base year operational deficiencies, along with providing adequate capacity for all freeway segments along the corridor in the 2040 design year in both peak hours.

- **US 25 (Asheville Highway) Interchange Improvements Analysis**

The No-Build Alternative has major operational issues in the 2040 design year, effectively completely grid-locking the model network. All four Build alternatives offer operational improvement in both the 2011 Base Year and 2040 Design Year, though the partial cloverleaf options provide the most operational benefits.

- **I-26 Southbound Southern Project Termini Analysis**

Generally, all three I-26 design alternatives improve freeway densities in this section by 50 percent or more compared to the No-Build existing freeway and on-ramp/off-ramp configuration. Density values reported from the Build alternative simulation runs, if compared to HCM methodology LOS ranges and thresholds for basic freeway, ramp merge/diverge segments, would equate to a LOS D or better in both peak hours in the 2040 design year. Therefore, any of the I-26 Build Alternative current conceptual designs should provide adequate peak hour traffic operations in the 2040 design year peak hours for this segment of I-26. This also serves to verify that the initial 2040 design year capacity analysis results from FreeVal are not valid for this area.

One additional recommendation, based on freeway and intersection capacity analysis results found in the original I-4400/I-4700 capacity analysis report, and remaining unchanged from findings in this study include:

- Additional improvements may also be needed for the US 64 corridor signalized intersections adjacent to the I-26 interchange to prevent congestion impact to the interchange area. These improvements may not necessarily be part of alternative designs for the I-4400/I-4700 project.

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1. INTRODUCTION

HNTB North Carolina, PC has been contracted by the North Carolina Department of Transportation (NCDOT), to develop base and future year traffic capacity analyses for NCDOT State Transportation Improvement Program (STIP) Project I-4400/I-4700, I-26 Widening in Buncombe and Henderson Counties. The analyses for the base and future design year scenarios will be used to develop the environmental documentation required by the National Environmental Policy Act (NEPA).

For the purposes of the environmental document, it was decided in a project scoping meeting on August 15, 2012 and through coordination with NCDOT that the base year scenario would use a base year of 2011 and the future design year scenario would be for the year 2040. In this meeting, a project study area was also defined that would satisfy the requirements of NEPA and potential Interchange Modification Report (IMR) requirements for the Federal Highway Administration (FHWA). Separate No-Build and Build Alternative traffic capacity analyses were conducted for both the 2011 base year and 2040 design year. **Figure 1** shows the project study area for the traffic analyses. **Appendix A** contains all figures described in this report.

The I-26 corridor between Asheville and Hendersonville currently experiences congestion and queuing along the freeway facility, and at several interchange ramp terminal intersection approaches, during the AM and PM peak travel periods. Without mainline and interchange ramp terminal/configuration capacity improvements, existing congestion will likely grow in the future in both location and duration. This study analyzes the following existing interchanges along the I-26 corridor (north to south):

- NC 191 (Brevard Road) – Exit 33
- NC 146 (Long Shoals Road) – Exit 37
- NC 280 (Airport Road) – Exit 40
- US 25 (Asheville Highway) – Exit 44
- US 64 (Four Seasons Boulevard) – Exit 49 (System Interchange)
- SR 1783 (Upward Road) – Exit 53
- US 25 – Exit 54 (System Interchange)
- SR 1142 (Holbert Cove Road) – Exit 54

The study also analyzes 12 interchange ramp terminal and surface street intersections in the vicinity of the locations listed above, as well as freeway segments throughout the I-26 corridor.

This traffic capacity analysis technical memorandum addendum addresses issues related to the No-Build and Build 8/6 Lane Combination Alternative scenarios and provides detailed explanations of the tables and figures developed as a part of HNTB's capacity analysis for the I-26 project study area corridor. This memorandum incorporates intersection turning movement volumes and freeway volumes for the study area as forecasted in the *Project Level Traffic Forecast Report: TIP Projects I-4400 / I-4700 / B-5178 / I-5501* by the NCDOT Transportation Planning Branch (TPB) dated February 2012.

The *NCDOT STIP I-4400/I-4700 Purpose and Need Traffic Analysis Technical Memorandum* was completed by HNTB in September 2013 and studied three alternatives: the No-Build Alternative, the Build 6-Lane alternative, and the Build 8-Lane Alternative. This report recommended that consideration should be made in the design of I-4400/I-4700 to examine an eight-lane facility for a portion of the I-26 corridor and transition to a six-lane facility for the remainder of the corridor. Based on the 2040 design year freeway system analysis results, the

transition between a six-lane widening and eight-lane widening should be made at US 25 (Asheville Highway). Therefore, this memorandum serves as an addendum to the *NCDOT STIP I-4400/I-4700 Purpose and Need Traffic Analysis Technical Memorandum*. Content in this addendum study compares the No-Build alternative from the September 2013 report to an additional Build Alternative: the Build 8/6-Lane Combination alternative. With the additional combination alternative, there are three Build Alternatives that are being studied in the NEPA process, the two from the September 2013 report (Build 6-Lane and Build 8-Lane alternatives) and the Build 8/6-Lane Combination alternative from this addendum report.

The addendum analysis also incorporates some additional design features not studied in the original traffic analysis technical memorandum – recommended changes to existing accelerations and deceleration lanes along I-26, potential design improvements to the I-26/US 25 Asheville Highway service interchange, and a more detailed study of potential effects of the three proposed Build Scenarios at the US 25 system interchange southern project terminus for the I-26 mainline in the southbound direction.

2. EXISTING CONDITIONS

A detailed description of existing conditions along the I-26 corridor, along with analyses of these conditions is found in **Section 2** of the *NCDOT STIP I-4400/I-4700 Purpose and Need Traffic Analysis Technical Memorandum*. No additional analyses or updates for this section of the original report was made in this addendum study, other than to conduct field studies and gather inputs for microsimulation model calibration for the US 25 Asheville Highway and I-26 Southbound/US 25 System Interchange areas (see **Sections 9 and 10** of this addendum analysis).

3. CAPACITY ANALYSIS METHODOLOGY

As indicated and described in Section 3 of the *NCDOT STIP I-4400/I-4700 Purpose and Need Traffic Analysis Technical Memorandum* (HNTB, September 2013), evaluating traffic operations on suburban arterials and uninterrupted flow freeway facilities is generally done by the determination of level of service (LOS) criteria. LOS for intersections is determined by average delay per vehicle, while LOS for freeway facilities is primarily determined by vehicular density of a defined freeway segment, merge/diverge area or weaving section. Level of service letter designations and criteria for arterial intersections (seconds of delay per vehicle) and for freeway facilities (average density in passenger cars per mile per lane (pc/mi/ln)) are described in **Table 1**.

The results of this analysis are based on the LOS and delay procedures presented in the *2010 Highway Capacity Manual (HCM 2010)*. Methodologies for obtaining optimized signal timings and conducting all freeway analyses are described in Section 3 of the *NCDOT STIP I-4400/I-4700 Purpose and Need Traffic Analysis Technical Memorandum* (HNTB, September 2013).

The traffic volume forecasts developed in the *Project Level Traffic Forecast Report: TIP Projects I-4400 / I-4700 / B-5178 / I-5501* by the NCDOT Transportation Planning Branch (TPB) dated February 2012 and in the expanded forecast dated December 2013 were used as the basis for analysis of the No-Build and Build 8/6 Lane Combination Alternative in this addendum report, respectively. **Appendix B** contains the updated forecast results for the Build – 8/6 Combination Alternative.

Table 1. Intersection & Freeway Segment Level of Service (LOS) Characteristics

Level of Service Description	Intersection		Freeway	
	Per Vehicle Delay Signal Control	Per Vehicle Delay Stop Control	Basic Freeway Segment Density (pc/mi/ln)	Merge / Diverge / Weaving Area Density (pc/mi/ln)
LOS A ➤ Free flow ➤ Freedom to select desired speed / maneuver is extremely high ➤ General level of comfort and convenience for motorists is excellent	< 10.0 seconds	< 10.0 seconds	0 – 11.0	<= 10.0
LOS B ➤ Stable flow ➤ Other vehicles in the traffic stream become noticeable ➤ Reduction in freedom to maneuver from LOS A	10.0 – 20.0 seconds	10.0 – 15.0 seconds	>11.0 – 18.0	>10.0 – 20.0
LOS C ➤ Stable flow ➤ Maneuverability/operating speed are significantly affected by other vehicles ➤ General level of comfort and convenience declines noticeably	20.0 – 35.0 seconds	15.0 – 25.0 seconds	>18.0 – 26.0	>20.0 – 28.0
LOS D ➤ High density but stable flow ➤ Speed and freedom to maneuver are severely restricted ➤ General level of comfort / convenience is poor ➤ Small increases in traffic will generally cause operational problems	35.0 – 55.0 seconds	25.0 – 35.0 seconds	>26.0 – 35.0	>28.0 – 35.0
LOS E ➤ Unstable flow ➤ Speed reduced to lower but relatively uniform value ➤ Volumes at or near capacity level ➤ Comfort and convenience are extremely poor ➤ Small flow increases/minor traffic disturbances will cause breakdowns	55.0 – 80.0 seconds	35.0 – 50.0 seconds	>35.0 – 45.0	>35.0
LOS F ➤ Forced or breakdown flow ➤ Volumes exceed roadway capacity ➤ Formation of unstable queues ➤ Stoppages for long periods of time because of traffic congestion	> 80.0 seconds	> 50.0 seconds	> 45.0	Demand exceeds capacity

Transportation Research Board, *Highway Capacity Manual*. Washington, D.C.: National Research Council, 2010.

To simplify the process of organizing analysis results for all No-Build Alternative and Build Alternative scenarios, an identification scheme was developed for freeway segments and study area intersections in the September 2013 traffic analysis memorandum. That same identification scheme is used in this addendum report and is described in Section 3 of the *NCDOT STIP I-4400/I-4700 Purpose and Need Traffic Analysis Technical Memorandum* (HNTB, September 2013). **Figures 2.1 to 2.3** shows the identification method schematically. Any changes to these identification methods for changes in the future 2040 alternative network is discussed in that section and shown on **Figures 5.1 and 5.2**.

3.1 Freeway Analysis Methodology

The initial procedure for freeway analysis input into the HCS 2010 freeway facility module (FreeVal) involved the segmentation of the existing I-26 freeway into 84 existing and 94 design year segments in the project study area (42 and 47 in each direction, respectively). Segments fall into the following categories – basic freeway segments, merge areas, diverge areas, and weaving segments. Based on existing interchange spacing, no unconventional roadway segments (as defined by HCM methodologies) exist or are projected to occur in the project study area. Several additional segments were added for 2040 future year analyses, as the future Balfour Parkway facility is planned to have a full-movement interchange with I-26 in the project study area corridor.

Refer to Section 3.1 of the *NCDOT STIP I-4400/I-4700 Purpose and Need Traffic Analysis Technical Memorandum* for details on geometric and traffic flow input parameters that were entered in the HCS FreeVal software for each basic freeway segment as well as merging, diverging, and weaving areas.

- For all freeway merge, diverge, and weaving segments along the existing I-26 corridor, additional consideration should be given in the design concepts for the Build alternatives to lengthen any sub-standard acceleration and deceleration lanes to improve operations and safety for traffic flow in these areas.

After inputs were entered into FreeVal and checked, output data for each segment was collected for the segment density and corresponding LOS. In addition, system-wide information (by freeway direction) from FreeVal was compiled and compared for the study alternatives. Detailed output from FreeVal can be found in **Appendix C**.

3.2 Signalized Intersection Analysis Methodology

Signalized intersection capacity analyses were performed using Synchro Professional Software Version 7.0 for all scenarios. Refer to Section 3.2 of the *NCDOT STIP I-4400/I-4700 Purpose and Need Traffic Analysis Technical Memorandum* for the signalized intersection analysis methodology used in this addendum report.

2011 Build Alternative analyses and 2040 design year No-Build and Build analyses included updates to Synchro inputs for several inputs including the following:

- Traffic volume updates for each alternative from traffic forecast breakouts
- Reoptimization of cycle lengths/splits/offsets for the 2011 Base Year Build alternatives – holding this data constant between the alternatives for relevant comparison of Build alternative impacts

- Reoptimization of cycle lengths/splits/offsets for 2040 No-Build conditions. Further reoptimization checks for the 2040 Build 8/6 Lane Combination Alternative scenarios
- Addition of potential future signalized ramp terminal intersections at the Balfour Parkway future interchange with I-26
- Permissible changes in signal phasing in situations where phase orders could improve performance and complied with NCDOT policies/guidelines.

Synchro output, including both LOS and delay results for all analyses, is included in **Appendix D**.

3.3 Unsignalized Intersection Analysis Methodology

Unsignalized intersection capacity analyses were performed using the HCS software module for two-way stop-controlled intersections. There are two existing unsignalized, two-way stop-controlled intersections in the project study area that were included in this analysis – located at the interchange ramp terminals of I-26 and Holbert Cove Road at the southern end of the project study corridor. Inputs into this module include:

- Direction of major street
- Laneage for all approaches
- Traffic Volumes for all approaches
- Median Type (no median)
- Peak Hour Factor (Assume 0.90)
- Truck Percentages (Taken from Traffic Forecast – Duals+TTST/2 for peak hour)
- Approach Grades

Detailed output from HCS for the unsignalized intersections can be found in **Appendix E**.

3.4 Traffic Microsimulation Methodology

See **Sections 9 and 10** of this traffic analysis addendum for specific details related to the process utilized to develop, calibrate, validate, and collect Measures of Effectiveness (MOEs) from the traffic microsimulation models.

4. DEVELOPMENT OF ALTERNATIVES

The following sections describe the alternatives analyzed in this addendum report. During the project scoping process, it was agreed by all project stakeholders that two Build Alternatives (6 lane and 8 lane widening) would be compared to No-Build scenarios, which were studied in the *NCDOT STIP I-4400/I-4700 Purpose and Need Traffic Analysis Technical Memorandum*. As previously noted, the September 2013 report recommended that consideration should be made in the design of I-4400/I-4700 to examine an eight-lane facility for a portion of the I-26 corridor and transition to a six-lane facility for the remainder of the corridor. Therefore, this memorandum serves as an addendum to the *NCDOT STIP I-4400/I-4700 Purpose and Need Traffic Analysis Technical Memorandum* and compares the No-Build alternative from the September 2013 report to an additional Build Alternative: the Build 8/6-Lane Combination alternative. These two alternatives are discussed in detail below.

4.1 No-Build Alternative

Refer to Section 4.1 of the *NCDOT STIP I-4400/I-4700 Purpose and Need Traffic Analysis Technical Memorandum* for details on the development of the No-Build Alternative.

4.2 Build Alternative – Widen I-26 to Eight/Six Lanes

The proposed Build – 8/6 Lane Combination Widening alternative would add two additional northbound and southbound travel lanes to I-26 between the I-40/I-240/I-26 system interchange and the US 25 (Asheville Highway) interchange, and one additional northbound and southbound travel lane between US 25 (Asheville Highway) and the US 25 system interchange. For the purposes of the analysis, it is assumed that these lanes would add/drop at existing ramp connections at the above named interchanges. The decision to transition the eight-lane widening to six lanes at US 25 (Asheville Highway) was made based on analysis results and recommendations from the initial capacity analysis documentation.

Similar to the initial capacity analysis study, no specific determination of whether the lanes would be added to the inside or outside (or combinations thereof) of the existing I-26 mainline was made for this analysis. No specific assumptions regarding the need to reconstruct/reconfigure any existing interchange ramp terminal intersections were made for this analysis, except for the US 25 (Asheville Highway) service interchange as detailed in **Section 9.0**. In the original capacity analysis technical memorandum, no specific design modifications for existing off-ramp or on-ramp auxiliary lane lengths were made – all existing auxiliary lane lengths were maintained for the Build – 6 Lane and Build – 8 Lane Alternatives. In this analysis addendum, changes to acceleration and deceleration lane lengths were made based on preliminary roadway design information for the Build 8/6 Lane Combination Alternative. Changes were made to adhere to current AASHTO and NCDOT roadway design criteria.

The proposed Build 8/6-Lane Combination Alternative laneage is shown on capacity analysis results schematics for the 2011 and 2040 analysis years (detailed in **Sections 6 and 7** of this report).

5. 2011 BASE YEAR / 2040 DESIGN YEAR TRAFFIC VOLUME DEVELOPMENT

NCDOT-approved traffic forecast information from the *Project Level Traffic Forecast Report: TIP Projects I-4400 / I-4700 / B-5178 / I-5501*, prepared by NCDOT TPB in February 2012 was used as a basis for developing AM and PM peak hour traffic volume data for the 2011 base year and 2040 design year No-Build Alternatives. This forecast was subsequently expanded to account for the effects of the Build 8/6 Lane Combination Alternative studied in this document. The *Forecast Expansion for I-4400 / I-4700 / I-5501/ B-5178, Buncombe and Henderson County, I-26 from I-40 in Buncombe County to US 25 in Henderson County* was completed by NCDOT TPB on December 16, 2013 and includes updated data for the 2011 base year and 2040 design year for the Build 8/6 Lane Combination Alternative. The daily traffic forecasts for the I-4400/I-4700 study area from the two TPB documents are shown in **Appendix B**. The same procedure from the original traffic analysis technical memorandum for estimating peak hour flows and traffic compositions was used in this analysis addendum.

Both the updated peak hour breakout spreadsheets and the interchange conversion spreadsheets for the Build 8/6 Lane Combination Alternative are found in **Appendix F**. All peak hour traffic volumes in the project study area are shown in the freeway segment/intersection LOS results figures in **Appendix A**. These figures, described in detail in the following sections,

also schematically show the I-26 freeway system, study area analysis segments, intersections, laneage for each alternative and analysis year.

6. 2011 BASE YEAR CAPACITY ANALYSIS RESULTS

This section presents capacity analysis results for the 2011 base year AM and PM peak hours for freeway facilities and intersections within the I-4400/I-4700 project study area.

6.1 2011 Freeway Segment Results

This analysis uses the 2011 base year peak hour traffic volumes and existing freeway geometrics to evaluate existing traffic operations on the I-26 uninterrupted flow facility in the project study area and to determine the density and LOS measures of effectiveness for individual freeway segments, as well as system-wide information. **Figures 2.1 to 2.3** schematically show existing geometrics, intersection traffic control, and speed limits for roadways in the study area, along with the scheme for freeway segment identification numbers. **Appendix C** contains the HCS 2010 FreeVal output files.

6.1.1 2011 No-Build Alternative Scenario Results

The following information remains unchanged from the original Traffic Analysis Technical Memorandum, but is presented here for comparison to the Build 8/6 Lane Combination Alternative. Existing peak hour traffic volumes and geometrics were entered into the HCS 2010 FreeVal software module, and **Table 2** provides the results for basic freeway sections, merges, and diverges for northbound and southbound I-26. Most segments along I-26 perform at an acceptable LOS D or better in the AM and PM peak hours, although 16 segments are at or exceeding peak hour capacity (LOS E) in areas north of the NC 280 (Airport Road) interchange. **Figures 3.1 to 3.3** provide a schematic representation of the results for the freeway system in the project study area.

6.1.2 2011 Build – 8/6 Lane Combination Alternative Scenario Results

The Build – 8/6 Lane Combination alternative scenario freeway operations results are shown in **Table 3**, and include data that compares the percentage improvement in segment density between the Build – 8/6 Lane Combination Alternative and the No-Build Alternative. Results indicate that the Build – 8/6 Lane Combination Alternative would mitigate all No-Build deficiencies in the 2011 base year, even with increased traffic forecast volumes between the two scenarios. Density improvement percentages on segments directly affected by the capacity improvement approximately range from 30-50 percent. **Figures 4.1 to 4.3** provide a schematic representation of the laneage and results for the freeway system in the project study area.

NCDOT STIP I-4400/I-4700: I-26 Widening (Buncombe & Henderson Counties)
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Table 2. 2011 Base Year No-Build Freeway Operations Summary

I-26 Southbound						Y-Line	I-26 Northbound					
AM Peak Hour		PM Peak Hour		ID#	Type		ID#	Type	AM Peak Hour		PM Peak Hour	
LOS	Density	LOS	Density						LOS	Density	LOS	Density
E	44.8	D	32.4	B1	Basic	NC 191	B94	Basic	D	33.5	E	44.7
E	42.7	E	38.6	D2	Diverge		M93	Merge	E	37.3	E	47.7
D	31.8	C	25.7	B3	Basic		B92	Basic	D	26.4	D	31.6
E	40.8	D	33.1	M4	Merge		D91	Diverge	E	36.8	E	42.0
E	37.9	D	29.5	B5	Basic	NC 146 (Long Shoals Road)	B90	Basic	D	30.6	E	37.8
E	39.3	D	32.6	D6	Diverge		M89	Merge	D	34.2	E	41.0
D	27.7	C	21.9	B7	Basic		B88	Basic	C	22.7	D	27.2
E	38.5	D	30.2	M8	Merge		D87	Diverge	D	30.8	E	36.5
E	36.0	D	26.9	B9	Basic	NC 280 (Airport Road)	B86	Basic	D	27.8	E	35.4
E	38.9	D	30.7	D10	Diverge		M85	Merge	D	30.2	E	37.3
C	22.8	B	17.3	B11	Basic		B84	Basic	B	18.0	C	21.9
D	30.1	C	23.5	M12	Merge		D83	Diverge	C	24.5	D	29.4
D	27.2	C	21.4	B13	Basic	Rest Stop	B82	Basic	C	22.0	D	26.4
D	30.5	C	23.5	D14	Diverge		M81	Merge	C	23.8	D	29.1
C	25.6	C	19.8	B15	Basic		B80	Basic	C	20.4	C	24.8
D	30.1	C	23.0	M16	Merge		D79	Diverge	C	24.2	D	29.0
D	27.1	C	20.9	B17	Basic	US 25 (Asheville Hwy)	B78	Basic	C	21.6	D	26.3
D	31.3	C	23.9	D18	Diverge		M77	Merge	C	24.0	D	29.3
C	20.8	B	15.6	B19	Basic		B76	Basic	B	16.3	C	19.7
C	28.0	C	21.2	M20	Merge		D75	Diverge	C	22.5	C	27.2
C	24.0	B	17.8	B21	Basic	Weigh Station	B74	Basic	C	18.4	C	22.6
C	27.8	C	20.5	D22	Diverge		M73	Merge	B	18.5	C	22.4
C	19.5	B	15.1	B23	Basic		B72	Basic	B	15.6	C	18.7
C	26.2	B	18.0	M24	Merge		D71	Diverge	C	21.2	C	25.7
C	24.0	B	17.8	B25	Basic	US 64	B65	Basic	C	18.4	C	22.6
C	27.6	B	19.8	D31	Diverge		M64	Merge	C	21.1	C	25.9
C	21.2	B	15.9	B32	Basic		B63	Basic	B	15.4	C	19.3
C	21.7	B	14.4	W33	Weave		W62	Weave	B	12.9	B	16.1
C	21.3	B	15.2	B34	Basic	Upward Road (SR 1783)	B61	Basic	B	15.0	C	18.2
C	25.3	B	18.7	M35	Merge		D60	Diverge	B	19.0	C	23.4
C	22.3	B	16.4	B36	Basic		B59	Basic	B	17.0	C	21.1
C	26.2	B	19.0	D37	Diverge		M58	Merge	B	19.1	C	23.7
C	18.1	B	13.2	B38	Basic	US 25 (System)	B57	Basic	B	13.8	B	17.1
C	22.6	B	17.1	M39	Merge		D56	Diverge	B	18.3	C	22.1
C	24.4	B	17.3	D40	Diverge		M55	Merge	B	17.2	C	21.0
B	14.4	A	10.4	B41	Basic		B54	Basic	B	11.2	B	13.5
B	15.7	B	11.5	M42	Merge	Holbert Cove Rd (SR 1142)	D53	Diverge	B	14.2	B	17.1
B	14.3	A	10.5	B43	Basic		B52	Basic	A	11.0	B	13.3
B	16.8	B	12.0	D44	Diverge		M51	Merge	B	12.3	B	14.8
B	13.5	A	9.3	B45	Basic		B50	Basic	A	9.9	B	12.3
B	15.9	B	11.1	M46	Merge	B48	D49	Diverge	B	12.0	B	15.0
B	14.3	A	9.9	B47	Basic		B48	Basic	B	10.5	B	13.2

Density = Passenger Cars Equivalent/Mile/Lane

Table 3. 2011 Base Year Build – 8/6 Lane Combination Alternative Freeway Operations Summary

I-26 Southbound						Y-Line	I-26 Northbound									
AM Peak Hour			PM Peak Hour				ID#	Type	AM Peak Hour			PM Peak Hour				
LOS	Density	% Imprv	LOS	Density	% Imprv				LOS	Density	% Imprv	LOS	Density	% Imprv		
C	21.7	52%	B	17.5	46%	B1	Basic	NC 191 (Brevard Road)	B94	Basic	B	18.1	46%	D	28.7	36%
C	24.2	43%	B	19.3	50%	D2	Diverge		M93	Merge	B	19.2	49%	C	22.3	53%
C	19.2	40%	B	15.4	40%	B3	Basic		B92	Basic	B	15.9	40%	C	18.2	42%
C	22.4	45%	B	18.2	45%	M4	Merge		D91	Diverge	B	19.2	48%	C	21.7	48%
C	20.8	45%	B	17.1	42%	B5	Basic	NC 146 (Long Shoals Road)	B90	Basic	B	17.6	42%	C	19.8	48%
C	21.4	46%	B	17.5	46%	D6	Diverge		M89	Merge	B	18.7	45%	C	21.2	48%
B	16.9	39%	B	13.2	40%	B7	Basic		B88	Basic	B	13.7	40%	B	15.9	42%
C	20.8	46%	B	16.2	46%	M8	Merge		D87	Diverge	B	16.3	47%	B	19.1	48%
C	19.5	46%	B	15.3	43%	B9	Basic	NC 280 (Airport Road)	B86	Basic	B	15.8	43%	C	18.5	48%
C	21.0	46%	B	16.6	46%	D10	Diverge		M85	Merge	B	16.7	45%	B	19.7	47%
B	13.5	41%	A	10.0	42%	B11	Basic		B84	Basic	A	10.5	42%	B	12.5	43%
B	16.3	46%	B	12.3	48%	M12	Merge		D83	Diverge	B	12.6	49%	B	14.8	50%
B	15.6	43%	B	11.9	44%	B13	Basic	Rest Stop	B82	Basic	B	12.4	44%	B	14.6	45%
B	15.6	49%	B	11.9	49%	D14	Diverge		M81	Merge	B	12.8	46%	B	15.2	48%
B	14.8	42%	B	11.1	44%	B15	Basic		B80	Basic	B	11.6	43%	B	13.8	44%
B	16.3	46%	B	12.2	47%	M16	Merge		D79	Diverge	B	12.4	49%	B	14.6	50%
B	15.4	43%	B	11.7	44%	B17	Basic	US 25 (Asheville Highway)	B78	Basic	B	12.2	44%	B	14.4	45%
B	16.2	48%	B	12.3	49%	D18	Diverge		M77	Merge	B	13.0	46%	B	15.4	47%
B	16.0	23%	B	11.6	26%	B19	Basic		B76	Basic	B	12.3	25%	B	14.7	25%
C	20.1	28%	B	14.8	30%	M20	Merge		D75	Diverge	B	15.6	31%	B	18.6	32%
C	18.7	22%	B	13.9	22%	B21	Basic	Weigh Station	B74	Basic	B	14.5	21%	B	17.4	23%
C	20.4	27%	B	15.3	25%	D22	Diverge		M73	Merge	B	12.4	33%	B	15.2	32%
B	13.7	30%	A	8.9	41%	B23	Basic		B72	Basic	A	8.1	48%	A	11.0	41%
B	17.2	34%	B	12.2	32%	M24	Merge		D71	Diverge	B	16.3	23%	B	19.3	25%
B	18.7	22%	B	13.9	22%	B25	Basic	US 64	B65	Basic	B	14.5	21%	B	17.4	23%
B	19.6	29%	B	14.6	26%	D31	Diverge		M64	Merge	B	15.5	27%	B	18.7	28%
B	16.5	22%	B	12.2	23%	B32	Basic		B63	Basic	B	11.9	23%	B	14.9	23%
B	16.9	22%	B	12.2	15%	W33	Weave		W62	Weave	B	10.9	16%	B	13.7	15%
B	16.2	24%	B	11.1	27%	B34	Basic	Upward Road (SR 1783)	B61	Basic	A	11.0	27%	B	13.4	26%
B	17.8	30%	B	12.5	33%	M35	Merge		D60	Diverge	B	13.1	31%	B	16.0	32%
B	16.6	26%	B	11.8	28%	B36	Basic		B59	Basic	B	12.5	26%	B	15.3	27%
B	17.9	32%	B	12.8	33%	D37	Diverge		M58	Merge	B	13.3	30%	B	16.4	31%
B	13.6	25%	A	9.3	30%	B38	Basic	US 25 (System)	B57	Basic	A	10.0	28%	B	12.3	28%
B	16.3	28%	B	11.5	33%	M39	Merge		D56	Diverge	B	12.8	30%	B	15.6	29%
B	16.4	33%	B	11.6	33%	D40	Diverge		M55	Merge	B	12.0	30%	B	14.6	30%
B	16.2	-13%	A	10.8	-4%	B41	Basic		B54	Basic	B	12.0	-7%	B	14.5	-7%
B	17.7	-13%	B	11.9	-3%	M42	Merge	Holbert Cove Road (SR 1142)	D53	Diverge	B	14.8	-4%	B	17.8	-4%
B	16.3	-14%	A	11.0	-5%	B43	Basic		B52	Basic	B	11.9	-8%	B	14.3	-8%
B	18.3	-9%	B	12.3	-3%	D44	Diverge		M51	Merge	B	13.1	-7%	B	15.8	-7%
B	15.2	-13%	A	9.7	-4%	B45	Basic		B50	Basic	A	10.7	-8%	B	13.2	-7%
B	17.9	-13%	B	11.4	-3%	M46	Merge	Y-Line	D49	Diverge	B	12.7	-6%	B	15.9	-6%
B	16.2	-13%	A	10.4	-5%	B47	Basic		B48	Basic	B	11.3	-8%	B	14.2	-8%

Density = Passenger Cars Equivalent/Mile/Lane

% Improvement = Percentage Change in Density Between Build Alternative and No-Build Alternative By Segment

6.2 2011 Base Year Intersection Capacity Analysis Results

The following sections provide descriptions and tabular results for intersection capacity analyses for all project study area intersections. LOS results and additional details for these scenarios are found in the raw Synchro output sheets in **Appendix D**. The project study area contains two unsignalized intersections – these capacity analysis output sheets are found in **Appendix E**. A tabular results summary for all alternative scenarios is found in **Table 4** on the following pages.

6.2.1 2011 No-Build Alternative Scenario Results

The following information remains unchanged from the original Traffic Analysis Technical Memorandum, but is presented here for comparison to the Build 8/6 Lane Combination Alternative. For the 2011 No-Build alternative AM and PM peak hour scenarios, the existing signalized ramp terminal intersections along the I-26 study area corridor generally operate at or have movements that operate at adequate levels of service in the AM and PM peak hours. Existing signal timing data provided by NCDOT was used in all analyses. Several notable results include:

- ◆ The US 25 (Asheville Highway) ramp terminal intersections currently experience deficient overall LOS in at least one peak hour at each intersection, primarily due to high vehicular delays for left-turn movements.
- ◆ The US 64 and Francis Road/Sugarloaf Road intersection experiences a LOS E for the AM peak hour, primarily due to limited capacity for US 64 left-turn movements and side street traffic flows.
- ◆ The Upward Road ramp terminal intersections provide adequate operations for the overall intersections, even with the older two-lane bridge geometrics. Assumptions for coordinated signal timings were necessary at these locations, as no data was available for older signal control parameters.

Traffic volumes, geometrics, and overall intersection LOS results are also found in **Figures 3.1 to 3.3** for the study area intersections in the 2011 No-Build alternative scenario.

6.2.2 2011 Build – 8/6 Lane Combination Alternative Scenario Results

For the 2011 Build – 8/6 Lane Combination Alternative AM and PM peak hour scenarios, it was assumed that all existing signalized intersections in the project study area would be reoptimized, to reflect anticipated traffic volume changes that were included in the I-4400/I-4700 traffic forecast data. These changes had a positive effect on operations at the US 25 (Asheville Highway) ramp terminal intersections, though the I-26 Southbound Ramps intersection still is projected to operate at a LOS F. Signal timing adjustments also allowed the US 64 and Francis Road/Sugarloaf Road intersection to improve from a LOS E to a LOS D in the 2011 AM peak hour. No other intersections would be expected to operate at an overall LOS E or LOS F in the 2011 base year in this alternative.

Traffic volumes, geometrics, and overall intersection LOS results are also found in **Figures 4.1 to 4.3** for the study area intersections in the 2011 Build – 8/6 Lane Combination Alternative scenario.

Table 4. 2011 AM & (PM) Peak Hour No-Build/Build Intersection Capacity Analysis Results Summary

Intersection (ID#)	2011 No-Build Alternative						2011 - Build 8/6 Lane Combination Alternative														
	LOS	Delay	Approach	LOS	Delay	Movement	LOS	Delay	LOS	Delay	Approach	LOS	Delay	Movement	LOS	Delay					
I-26 Ramps & NC 146 (Long Shoals Road) SPU (1)	C (C)	21.8 (21.5)	EB	B (C)	19.8 (25.2)	EB LT	D (D)	37.4 (42.5)	C (C)	32.0 (32.0)	EB	C (C)	22.9 (24.8)	EB LT	D (E)	49.7 (56.3)					
						EB TH	C (C)	21.9 (27.6)						EB TH	C (C)	21.1 (20.2)					
						EB RT	A (A)	0.2 (0.2)						EB RT	A (A)	0.2 (0.2)					
			WB	C (B)	20.6 (18.2)	WB LT	D (D)	48.2 (43.2)			WB	B (B)	16.2 (15.1)	WB LT	D (D)	42.9 (45.3)					
						WB TH	B (C)	19.4 (21.4)						WB TH	B (B)	14.8 (14.4)					
						WB RT	A (A)	1.0 (1.0)						WB RT	A (A)	1.4 (1.3)					
			NB	A (A)	8.8 (7.4)	NB LT	C (C)	26.3 (26.4)			NB	B (A)	11.8 (9.6)	NB LT	C (C)	33.5 (32.6)					
						NB RT	A (A)	0.4 (0.6)						NB RT	A (A)	0.4 (0.5)					
			SB	D (D)	35.6 (33.0)	SB LT	D (D)	36.7 (36.3)			SB	F (F)	80.9 (81.9)	SB LT	F (F)	90.5 (91.6)					
						SB RT	C (C)	31.8 (29.3)						SB RT	D (D)	50.1 (40.7)					
			I-26 Northbound Ramps & US 25 (Asheville Highway) (2)	D (E)	47.1 (77.6)	WB	C (F)	23.5 (180.5)			WB LT	E (E)	62.8 (68.8)	C (D)	21.8 (41.9)	WB	C (E)	26.8 (76.1)	WB LT	F (D)	81.0 (40.6)
											WB RT	A (F)	8.3 (214.7)						WB RT	B (F)	11.4 (84.2)
NB	A (F)	8.7 (85.0)				NB LT	C (F)	24.5 (232.9)	NB	A (C)	7.6 (20.6)	NB LT	B (E)			19.1 (56.0)					
						NB TH	A (A)	0.1 (2.7)				NB TH	A (A)			1.4 (0.7)					
SB	F (C)	89.9 (21.9)				SB TH	F (C)	103.7 (26.1)	SB	C (E)	33.7 (57.1)	SB TH	D (E)			40.5 (71.2)					
						SB RT	A (A)	0.2 (0.2)				SB RT	A (A)			0.3 (0.3)					
I-26 Southbound Ramps & US 25 (Asheville Highway) (3)	F (D)	162.9 (50.2)	EB	F (F)	608.9 (111.5)	EB LT	E (F)	67.7 (84.0)	F (E)	102.0 (57.6)	EB	F (F)	140.6 (84.5)	EB LT	C (E)	32.3 (58.7)					
						EB RT	F (F)	787.4 (123.0)						EB RT	F (F)	184.3 (97.7)					
			NB	D (D)	42.0 (47.8)	NB TH	D (D)	46.6 (51.9)			NB	F (E)	128.0 (66.3)	NB TH	F (E)	138.4 (70.6)					
						NB RT	A (A)	0.1 (0.1)						NB RT	A (A)	0.1 (0.1)					
			SB	C (B)	24.2 (17.3)	SB LT	E (E)	56.2 (58.1)			SB	D (C)	53.1 (26.7)	SB LT	F (F)	154.9 (83.6)					
						SB TH	B (A)	10.8 (0.8)						SB TH	A (A)	7.8 (2.1)					
US 64 (Chimney Rock Road) & Francis Road / Sugarloaf Road (6)	E (D)	65.2 (41.1)	EB	C (D)	23.5 (36.3)	EB LT	D (F)	53.6 (98.1)	D (C)	37.7 (33.7)	EB	C (C)	23.5 (23.7)	EB LT	F (F)	143.5 (103.1)					
						EB TH	C (D)	23.0 (37.0)						EB TH	B (C)	17.8 (22.0)					
						EB RT	B (B)	16.1 (13.2)						EB RT	B (A)	10.8 (9.9)					
			WB	F (D)	109.9 (36.0)	WB LT	E (F)	72.6 (93.4)			WB	D (C)	44.0 (28.6)	WB LT	F (F)	90.5 (103.1)					
						WB THRT	F (C)	111.6 (33.6)						WB THRT	D (C)	42.1 (25.9)					
			NB	E (E)	55.2 (76.0)	NB LT	E (F)	60.1 (83.6)			NB	E (F)	67.6 (90.7)	NB LT	E (F)	71.9 (98.8)					
						NB LTTH	E (F)	59.5 (82.1)						NB LTTH	E (F)	72.2 (99.4)					
			SB	D (E)	46.4 (59.2)	NB RT	C (D)	30.4 (46.2)			SB	E (E)	69.3 (69.2)	NB RT	D (D)	39.9 (49.3)					
						SB LTTH	E (F)	56.6 (81.7)						SB LTTH	E (E)	60.8 (74.3)					
			SB RT	D (D)	44.0 (52.9)	SB RT	E (E)	70.6 (68.1)													
			I-26 Southbound Ramps & US 64 Westbound (7)	B (A)	13.9 (9.1)	EB	A (A)	0.2 (1.0)			EB TH	A (A)	0.2 (1.1)	B (B)	11.2 (10.2)	EB	A (A)	0.2 (0.2)	EB TH	A (A)	0.2 (0.2)
											EB RT	A (A)	0.1 (0.1)						EB RT	A (A)	0.1 (0.1)
WB	B (A)	16.3 (5.2)				WB TH	B (A)	16.3 (5.2)	WB	A (A)	8.3 (8.5)	WB TH	A (A)			8.3 (8.5)					
						WB RT	B (A)	16.3 (5.2)				WB RT	A (A)			8.3 (8.5)					
SB	E (F)	64.6 (85.2)				SB RT	E (F)	64.6 (85.2)	SB	E (E)	65.4 (78.0)	SB RT	E (E)			65.4 (78.0)					
						SB TH	E (F)	64.6 (85.2)				SB TH	E (E)			65.4 (78.0)					
US 64 (4 Seasons Boulevard) & Carolina Village Road / Orr's Camp Road (8)	D (D)	49.8 (47.5)	EB	C (D)	26.7 (50.0)	EB LT	D (F)	47.8 (81.7)	C (D)	33.2 (41.0)	EB	C (D)	29.7 (42.5)	EB LT	F (E)	81.7 (74.5)					
						EB THRT	C (D)	25.9 (48.7)						EB THRT	C (D)	27.8 (41.2)					
						WB LT	E (F)	72.0 (97.7)						WB LT	F (F)	88.7 (127.8)					
			WB	E (C)	57.2 (34.2)	WB TH	E (C)	58.9 (31.1)			WB	C (C)	25.7 (25.4)	WB TH	C (B)	21.9 (19.0)					
						WB RT	A (B)	8.3 (15.2)						WB RT	A (A)	5.9 (9.8)					
			NB	F (F)	133.7 (109.4)	NB LTR	F (F)	133.7 (109.4)			NB	F (F)	104.8 (120.3)	NB LTR	F (F)	104.8 (120.3)					
						SB LTTH	F (F)	107.1 (81.9)						SB LTTH	F (F)	88.4 (89.4)					
			SB RT	C (C)	26.4 (34.6)	SB RT	C (C)	26.4 (34.6)													

Delay Measured In Seconds Per Vehicle
BOLD/ITALIC = Intersection/Approach/Movement that has Operational Deficiencies (LOS E or F)

Table 4 (Continued). 2011 AM & (PM) Peak Hour No-Build/Build Intersection Capacity Analysis Results Summary

Intersection (ID#)	2011 No-Build Alternative								2011 – Build 8/6 Lane Combination Alternative							
	LOS	Delay	Approach	LOS	Delay	Movement	LOS	Delay	LOS	Delay	Approach	LOS	Delay	Movement	LOS	Delay
I-26 Northbound Ramps & Upward Road (9)	C (D)	22.3 (35.9)	EB	B (C)	19.3 (28.7)	EB LTTH	B (C)	19.3 (28.7)	C (D)	22.7 (39.0)	EB	C (D)	21.3 (36.6)	EB LTTH	C (D)	21.3 (36.6)
			WB	A (A)	4.5 (3.2)	WB TH	A (A)	4.8 (3.4)			WB	A (A)	4.4 (3.2)	WB TH	A (A)	4.6 (3.3)
				WB RT	A (A)	3.8 (2.9)	WB RT	A (A)				3.8 (2.9)				
			NB	E (F)	59.0 (97.1)	NB LT	E (F)	66.5 (119.7)			NB LT	E (F)	62.7 (111.2)			
						NB RT	D (D)	38.6 (50.1)			NB RT	D (D)	37.7 (47.2)			

I-26 Southbound Ramps & Upward Road (10)	C (C)	31.4 (22.7)	EB	B (B)	13.5 (14.1)	EB TH	B (B)	14.6 (15.6)	C (C)	34.6 (24.8)	EB	B (B)	13.5 (15.3)	EB TH	B (B)	14.7 (17.1)
				EB RT	B (A)	10.5 (9.2)	EB RT	B (A)				10.4 (9.3)				
			WB	C (B)	34.9 (19.2)	WB LTTH	C (B)	34.9 (19.2)			WB	C (B)	24.7 (18.3)	WB LTTH	C (B)	24.7 (18.3)
				SB	D (D)	53.0 (43.7)	SB LT	C (C)				24.4 (26.8)	SB LT	C (C)	24.3 (26.4)	
			SB RT				E (D)	60.8 (49.8)			SB RT	F (E)	83.5 (56.5)			

I-26 Northbound Ramps & Holbert Cove Road (11)	N/A	N/A	EB	N/A	N/A	EB LT	A (A)	7.6 (7.6)	N/A	N/A	EB	N/A	N/A	EB LT	A (A)	7.6 (7.6)
			NB	B (B)	11.4 (11.4)	NB LT	B (B)	12.6 (12.2)			NB	B (B)	11.4 (11.4)	NB LT	B (B)	12.6 (12.2)
						NB RT	A (A)	8.7 (8.7)						NB RT	A (A)	8.7 (8.7)

I-26 Southbound Ramps & Holbert Cove Road (12)	N/A	N/A	WB	N/A	N/A	WB LT	A (A)	7.9 (7.7)	N/A	N/A	WB	N/A	N/A	WB LT	A (A)	7.9 (7.7)
			SB	A (A)	9.8 (9.9)	SB LT	B (B)	11.2 (11.0)			SB	A (A)	9.8 (9.9)	SB LT	B (B)	11.2 (11.0)
						SB RT	A (A)	9.1 (9.6)						SB RT	A (A)	9.1 (9.6)

N/A – LOS/Delay Not Calculated for Overall Unsignalized Intersection or Non-Stop-Controlled Approaches
Delay Measured In Seconds Per Vehicle
BOLD/ITALIC = Intersection/Approach/Movement that has Operational Deficiencies (LOS E or F)

7. 2040 DESIGN YEAR CAPACITY ANALYSIS RESULTS

This section presents capacity analysis results for the 2040 design year AM and PM peak hours for freeway facilities and intersections within the I-4400/I-4700 project study area.

7.1 2040 Freeway Segment Analysis Results

This analysis incorporates the 2040 design year approved traffic forecast daily traffic volumes converted to peak hour traffic volumes and existing freeway geometrics (with several modifications) to evaluate future traffic operations on the I-26 facility in the project study area. These inputs determine the density and LOS measures of effectiveness for individual freeway segments. **Figures 5.1** and **5.2** schematically show proposed geometric changes and intersection traffic control that are expected to occur by the 2040 analysis year in the I-4400/I-4700 study area. **Figures 5.1** and **5.2** also illustrate the scheme for any changes to freeway segment identification numbers. The following are the anticipated changes to the study area freeway network between the 2011 and 2040 analysis years, regardless of alternative scenario analyzed and remain unchanged from the original traffic analysis technical memorandum.

Balfour Parkway Interchange

FS 1214B – Balfour Parkway is currently under study by NCDOT. At the time of this analysis addendum, no information regarding a potential interchange concept is available from FS 1214B, though a full movement interchange with I-26 was part of both of the I-4400/I-4700 traffic forecast and forecast expansion documents. To analyze potential impacts to freeway operations from the proposed Balfour Parkway project, some initial assumptions of an interchange form that could reasonably accommodate future 2040 peak hour traffic volumes was made – no additional analyses or quantification of impacts of this proposed form (a partial cloverleaf interchange) were made as part of the I-4400/I-4700 NEPA process.

A partial cloverleaf, with loop ramps in the northeast and southwest quadrants, was analyzed in the FreeVal methodology by inserting diverge and merge segments into the existing I-26 freeway network configuration. There would be two successive diverge segments (for each direction of Balfour Parkway traffic) along I-26, followed by a single merge segment in this concept. Additional assumptions were made for diverge lane deceleration lengths (450 feet for each diverge) and acceleration lane lengths for each merge (1,000 feet). All ramp merges and diverges were assumed to be a single lane, widening for auxiliary turn lanes at the signalized ramp terminals.

As previously mentioned, additional study area network changes to interchange ramps and signalized ramp terminal intersections are planned to occur at the NC 191 and NC 280 interchanges. These changes were not specifically analyzed in the original traffic analysis technical memorandum or this addendum report, per direction from NCDOT. **Appendix C** contains the HCS 2010 FreeVal output files. Individual alternative scenario results are highlighted below.

7.1.1 2040 No-Build Alternative Scenario Results

The following information remains unchanged from the original Traffic Analysis Technical Memorandum, but is presented here for comparison to the Build 8/6 Lane Combination Alternative. 2040 peak hour traffic volumes and geometrics were entered into the HCS 2010 FreeVal software module, and **Table 5** provides the results for basic freeway sections, merges, and diverges for northbound and southbound I-26. The increase in projected traffic volumes between 2011 and 2040 along the corridor causes multiple

segments to experience deficient (LOS E or F) results in one or both peak hours. AM peak hour southbound and PM peak hour northbound, in particular, experience capacity issues for a majority of the I-26 project study area. **Figures 6.1 to 6.4** provide a schematic representation of the results for the freeway system in the project study area.

7.1.2 2040 Build – 8/6 Lane Combination Alternative Scenario Results

The Build – 8/6 Lane Combination alternative scenario freeway operations results for the 2040 design year are shown in **Table 6**, and include data that compares the percentage improvement in segment density between the Build – 8/6 Lane Combination Alternative and the No-Build *Alternative*. Results indicate that the Build – 8/6 Lane Combination Alternative would mitigate all No-Build deficiencies in the 2040 design year, even with increased traffic forecast volumes between the two scenarios.

Density improvement percentages on segments directly affected by the capacity improvement range from 2-67 percent. **Figures 7.1 to 7.4** provide a schematic representation of the laneage and results for the freeway system in the project study area.

NCDOT STIP I-4400/I-4700: I-26 Widening (Buncombe & Henderson Counties)
Purpose and Need Traffic Analysis Technical Memorandum Addendum

Table 5. 2040 Design Year No-Build Alternative - Freeway Operations Summary

I-26 Southbound						Y-Line	I-26 Northbound					
AM Peak Hour		PM Peak Hour		ID#	Type		ID#	Type	AM Peak Hour		PM Peak Hour	
LOS	Density	LOS	Density						LOS	Density	LOS	Density
E	42.7	E	41.4	B1	Basic	NC 191 (Brevard Road)	B94	Basic	E	39.5	E	44.5
F	47.4	E	44.3	D2	Diverge		M93	Merge	E	43.0	E	46.3
F	53.1	D	32.4	B3	Basic		B92	Basic	D	31.2	F	49.2
E	45.8	E	45.8	M4	Merge		D91	Diverge	E	44.5	E	42.5
E	44.5	E	43.2	B5	Basic	NC 146 (Long Shoals Road)	B90	Basic	E	41.4	E	44.7
E	43.3	E	41.4	D6	Diverge		M89	Merge	E	43.9	E	45.0
D	28.8	D	26.8	B7	Basic		B88	Basic	C	25.9	F	65.5
E	42.4	E	38.2	M8	Merge		D87	Diverge	E	35.5	E	42.8
E	41.1	E	35.2	B9	Basic	NC 280 (Airport Road)	B86	Basic	D	33.7	F	45.1
E	42.0	E	37.2	D10	Diverge		M85	Merge	E	35.8	E	43.5
C	25.3	C	22.1	B11	Basic		B84	Basic	C	21.3	D	27.3
E	41.8	E	36.9	M12	Merge		D83	Diverge	E	35.2	E	43.7
E	41.3	D	33.8	B13	Basic	Rest Stop	B82	Basic	D	32.4	F	45.4
E	40.1	D	34.9	D14	Diverge		M81	Merge	E	35.1	E	47.0
E	38.7	D	31.2	B15	Basic		B80	Basic	D	29.9	E	37.2
E	44.6	E	36.4	M16	Merge		D79	Diverge	D	34.0	E	42.0
E	42.6	D	33.8	B17	Basic	US 25 (Asheville Hwy)	B78	Basic	D	32.4	F	45.4
E	42.4	E	36.1	D18	Diverge		M77	Merge	E	35.3	E	45.1
D	26.4	C	22.9	B19	Basic		B76	Basic	C	22.0	D	28.5
E	38.1	D	32.8	M20	Merge		D75	Diverge	D	31.6	E	40.2
D	34.7	D	28.3	B21	Basic	Weigh Station	B74	Basic	D	27.1	E	37.8
E	36.4	D	30.8	D22	Diverge		M73	Merge	C	25.8	E	38.3
C	25.6	C	21.7	B23	Basic		B72	Basic	C	21.0	D	27.5
E	36.6	C	26.9	M24	Merge		D71	Diverge	D	29.8	E	38.2
E	35.7	D	28.3	B25	Basic	Balfour Parkway	B70	Basic	D	28.4	E	37.8
E	36.2	D	30.2	D26	Diverge		M69	Merge	D	31.3	E	38.0
D	34.2	D	32.9	D27	Diverge		B68	Basic	C	20.3	C	25.0
C	24.3	C	19.7	B28	Basic		D67	Diverge	D	31.9	D	34.8
E	36.3	D	30.1	M29	Merge	US 64	D66	Diverge	D	30.5	E	37.5
E	35.8	D	27.5	B30	Basic		B65	Basic	D	26.4	E	37.9
E	36.4	D	28.9	D31	Diverge		M64	Merge	D	29.9	E	40.5
D	30.1	C	24.0	B32	Basic		B63	Basic	C	22.1	D	30.2
D	30.4	C	22.3	W33	Weave	Upward Road (SR 1783)	W62	Weave	B	19.5	D	29.0
D	30.8	C	24.1	B34	Basic		B61	Basic	C	22.0	D	29.5
E	39.5	D	30.5	M35	Merge		D60	Diverge	C	27.8	E	37.2
E	36.8	D	27.1	B36	Basic		B59	Basic	C	26.0	E	36.9
E	37.5	D	29.8	D37	Diverge	US 25 (System)	M58	Merge	D	28.9	E	38.1
D	27.4	C	21.6	B38	Basic		B57	Basic	C	20.7	D	28.2
E	39.8	D	32.4	M39	Merge		D56	Diverge	D	31.0	E	38.8
E	39.3	D	31.2	D40	Diverge		M55	Merge	D	30.3	E	39.4
C	25.2	C	20.6	B41	Basic	Holbert Cove Rd (SR 1142)	B54	Basic	C	20.2	C	24.5
C	27.7	C	23.1	M42	Merge		D53	Diverge	C	25.5	D	28.3
C	25.2	C	20.8	B43	Basic		B52	Basic	C	19.9	C	25.2
D	28.5	C	23.6	D44	Diverge		M51	Merge	C	22.5	C	28.0
C	23.4	C	19.2	B45	Basic	Rest Stop	B50	Basic	C	18.5	C	23.5
C	27.9	C	23.1	M46	Merge		D49	Diverge	C	22.2	D	28.5
C	25.2	C	20.5	B47	Basic		B48	Basic	C	21.0	C	25.2

Density = Passenger Cars Equivalent/Mile/Lane **BOLD/ITALIC** = Segment that has Operational Deficiencies (LOS E/F)

Table 6. 2040 Design Year Build – 8/6 Lane Combination Alternative - Freeway Operations Summary

I-26 Southbound						Y-Line	I-26 Northbound								
AM Peak Hour			PM Peak Hour				ID#	Type	AM Peak Hour			PM Peak Hour			
LOS	Density	% Imprv	LOS	Density	% Imprv				LOS	Density	% Imprv	LOS	Density	% Imprv	
D	28.2	34%	C	22.1	47%	B1	Basic	B94	Basic	C	22.0	44%	D	26.7	40%
D	30.5	36%	C	24.4	45%	D2	Diverge	M93	Merge	C	23.7	45%	D	28.7	38%
C	24.9	53%	C	20.1	38%	B3	Basic	B92	Basic	C	20.0	36%	C	23.8	52%
D	31.6	31%	C	24.7	46%	M4	Merge	D91	Diverge	C	25.3	43%	D	29.9	30%
D	28.8	35%	C	22.8	47%	B5	Basic	B90	Basic	C	22.7	45%	D	27.4	39%
D	29.3	32%	C	23.8	43%	D6	Diverge	M89	Merge	C	24.6	44%	D	29.4	35%
C	22.6	22%	B	17.9	33%	B7	Basic	B88	Basic	B	17.8	31%	C	21.6	67%
D	29.1	31%	C	22.9	40%	M8	Merge	D87	Diverge	C	22.1	38%	C	26.7	38%
D	27.1	34%	C	21.2	40%	B9	Basic	B86	Basic	C	21.1	37%	C	25.7	43%
D	28.6	32%	C	22.8	39%	D10	Diverge	M85	Merge	C	22.7	37%	C	27.8	36%
C	20.0	21%	B	15.4	30%	B11	Basic	B84	Basic	B	15.3	28%	C	18.9	31%
C	26.2	37%	C	20.4	45%	M12	Merge	D83	Diverge	B	19.9	43%	C	24.2	45%
C	24.5	41%	C	19.4	43%	B13	Basic	B82	Basic	C	19.2	41%	C	23.3	49%
C	24.8	38%	B	19.5	44%	D14	Diverge	M81	Merge	C	20.2	42%	C	24.8	47%
C	23.3	40%	C	18.3	41%	B15	Basic	B80	Basic	C	18.2	39%	C	22.2	40%
C	26.1	41%	C	20.4	44%	M16	Merge	D79	Diverge	B	19.3	43%	C	23.6	44%
C	24.2	43%	C	19.1	43%	B17	Basic	B78	Basic	C	19.0	41%	C	23.0	49%
C	25.6	40%	C	20.2	44%	D18	Diverge	M77	Merge	C	20.5	42%	C	25.2	44%
C	25.8	2%	C	19.8	14%	B19	Basic	B76	Basic	C	19.7	10%	C	24.1	15%
D	33.7	12%	C	25.5	22%	M20	Merge	D75	Diverge	C	25.1	21%	D	30.7	24%
D	31.7	9%	C	23.4	17%	B21	Basic	B74	Basic	C	23.2	14%	D	29.5	22%
D	33.0	9%	C	25.9	16%	D22	Diverge	M73	Merge	C	20.3	21%	C	25.9	32%
C	22.9	11%	B	16.4	24%	B23	Basic	B72	Basic	B	14.1	33%	C	19.3	30%
C	28.8	21%	C	21.4	20%	M24	Merge	D71	Diverge	C	26.3	12%	D	31.9	16%
D	31.7	11%	C	23.4	17%	B25	Basic	B70	Basic	C	23.2	18%	D	29.5	22%
D	32.0	12%	C	24.9	18%	D26	Diverge	M69	Merge	C	25.4	19%	D	31.9	16%
D	32.3	6%	C	25.6	22%	D27	Diverge	B68	Basic	B	17.3	15%	C	22.1	12%
C	23.6	3%	B	17.5	11%	B28	Basic	D67	Diverge	C	24.7	23%	D	30.0	14%
D	32.0	12%	C	24.1	20%	M29	Merge	D66	Diverge	C	23.3	24%	D	28.7	23%
D	29.7	17%	C	22.3	19%	B30	Basic	B65	Basic	C	22.2	16%	D	27.6	27%
D	30.1	17%	C	23.3	19%	D31	Diverge	M64	Merge	C	23.9	20%	D	30.0	26%
C	26.1	13%	C	20.2	16%	B32	Basic	B63	Basic	C	19.3	13%	C	24.6	19%
C	29.0	5%	C	21.6	3%	W33	Weave	W62	Weave	B	18.7	4%	C	24.0	17%
C	27.4	11%	C	20.3	16%	B34	Basic	B61	Basic	C	18.6	15%	C	23.1	22%
D	30.6	23%	C	22.8	25%	M35	Merge	D60	Diverge	C	21.9	21%	C	27.5	26%
D	28.4	23%	C	21.1	22%	B36	Basic	B59	Basic	C	20.9	20%	D	26.5	28%
D	29.9	20%	C	22.8	23%	D37	Diverge	M58	Merge	C	22.7	21%	D	28.9	24%
C	22.5	18%	B	17.0	21%	B38	Basic	B57	Basic	B	16.9	18%	C	21.1	25%
D	30.6	23%	C	22.5	31%	M39	Merge	D56	Diverge	C	23.5	24%	D	29.0	25%
D	29.0	26%	C	22.7	27%	D40	Diverge	M55	Merge	C	22.0	27%	C	27.4	30%
D	30.5	-21%	C	22.4	-9%	B41	Basic	B54	Basic	C	22.5	-11%	D	27.3	-11%
D	33.6	-21%	C	25.0	-8%	M42	Merge	D53	Diverge	C	27.7	-9%	D	33.5	-18%
D	30.8	-22%	C	22.6	-9%	B43	Basic	B52	Basic	C	22.2	-12%	D	27.5	-9%
D	32.8	-15%	C	25.4	-8%	D44	Diverge	M51	Merge	C	24.9	-11%	D	30.9	-10%
D	28.7	-23%	C	21.0	-9%	B45	Basic	B50	Basic	C	20.7	-12%	C	25.8	-10%
D	34.4	-23%	C	24.9	-8%	M46	Merge	D49	Diverge	C	24.5	-10%	D	30.4	-7%
D	31.1	-23%	C	22.2	-8%	B47	Basic	B48	Basic	C	21.8	-4%	D	27.8	-10%

Density = Passenger Cars Equivalent/Mile/Lane
% Improvement = Percentage Change in Density Between Build Alternative and No-Build Alternative By Segment

7.2 2040 Design Year Intersection Capacity Analysis Results

The following sections provide descriptions and tabular results for intersection capacity analyses for all project study area intersections. LOS results and additional details for these scenarios are found in the raw Synchro output sheets in **Appendix D**. The project study area contains two unsignalized intersections – these capacity analysis output sheets are found in **Appendix E**. The following are the anticipated changes to the study area surface street/intersection network between the 2011 and 2040 analysis years, regardless of alternative scenario analyzed and remain unchanged from the original traffic analysis technical memorandum.

Balfour Parkway Interchange

As described in **Section 7.1**, the planned Balfour Parkway project (FS 1214B) is currently under study by NCDOT, but no results are available for potential interchange forms at the Balfour Parkway crossing of I-26. The assumed partial cloverleaf interchange studied in the original traffic analysis technical memorandum (and unchanged for this addendum study) provides two ramp terminal intersections with the future Balfour Parkway which was assumed to be a four-lane divided cross-section in the interchange vicinity. Intersection capacity analyses with 2040 design year peak hour traffic volumes were conducted to determine preliminary laneage configurations, signal phasing and timing, and auxiliary turn bay lengths that would meet projected 2040 peak hour traffic demands as derived from the 2040 NCDOT traffic forecast data.

Figure 5.1 shows potential laneage concepts and turn bay lengths that provide adequate capacity and operations at the Balfour Parkway signalized ramp terminals in the 2040 Build 8/6 Lane Combination Alternative scenario.

Upward Road Interchange

As described in previous sections, the NCDOT STIP R-4430 has recently widened Upward Road to a four-lane divided facility in the vicinity of the existing I-26 interchange, providing additional auxiliary lanes and ramp improvements to the interchange signalized ramp terminals. **Figure 5.1** shows these laneage changes.

As previously mentioned, additional study area network changes to interchange ramps and signalized ramp terminal intersections are planned to occur at the NC 191 and NC 280 interchanges. These changes were not specifically analyzed in the original traffic analysis technical memorandum or this addendum report, per direction from NCDOT.

A tabular capacity analysis results summary for all 2040 design year alternative scenarios is found in **Table 7**.

Table 7. 2040 AM & (PM) Peak Hour No-Build/Build Intersection Capacity Analysis Results Summary

Intersection (ID#)	2040 No-Build Alternative							2040 – Build 8/6 Lane Combination Alternative													
	LOS	Delay	Approach	LOS	Delay	Movement	LOS	Delay	LOS	Delay	Approach	LOS	Delay	Movement	LOS	Delay					
I-26 Ramps & NC 146 (Long Shoals Road) SPUI (1)	C (C)	30.5 (30.0)	EB	C (C)	33.2 (32.4)	EB LT	E (D)	57.6 (46.6)	D (C)	35.1 (33.7)	EB	D (C)	37.1 (32.9)	EB LT	E (D)	74.2 (51.5)					
						EB TH	D (D)	36.2 (36.1)						EB TH	D (D)	38.3 (36.7)					
						EB RT	A (A)	0.4 (0.4)						EB RT	A (A)	0.5 (0.5)					
			WB	C (C)	27.4 (25.1)	WB LT	D (E)	53.8 (63.6)			WB	C (C)	34.0 (32.7)	WB LT	E (F)	76.7 (95.6)					
						WB TH	C (C)	34.7 (30.2)						WB TH	D (C)	36.8 (30.7)					
						WB RT	A (A)	1.7 (1.6)						WB RT	A (A)	1.9 (1.7)					
			NB	B (B)	12.5 (11.6)	NB LT	C (C)	27.2 (29.2)			NB	B (B)	13.3 (12.6)	NB LT	C (C)	27.8 (30.5)					
						NB RT	A (A)	0.4 (0.6)						NB RT	A (A)	0.5 (0.8)					
			SB	D (D)	44.5 (47.8)	SB LT	D (D)	39.7 (49.6)			SB	D (D)	49.1 (53.4)	SB LT	D (D)	39.2 (54.4)					
						SB RT	D (D)	52.8 (43.0)						SB RT	E (D)	67.7 (51.0)					
			I-26 Northbound Ramps & US 25 (Asheville Highway) (2)	F (F)	161.1 (174.5)	WB	F (F)	117.1 (223.6)			WB LT	F (F)	218.9 (183.8)	F (F)	126.7 (151.5)	WB	E (F)	70.1 (283.9)	WB LT	F (E)	81.4 (72.1)
											WB RT	D (F)	45.1 (246.0)						WB RT	E (F)	65.7 (350.3)
NB	F (F)	112.3 (127.7)				NB LT	F (F)	282.5 (304.8)	NB	F (F)	81.8 (94.6)	NB LT	F (F)			214.9 (233.7)					
						NB TH	A (B)	2.8 (11.1)				NB TH	A (A)			2.0 (8.5)					
SB	F (F)	225.4 (222.0)				SB TH	F (F)	253.1 (255.8)	SB	F (F)	187.3 (169.1)	SB TH	F (F)			223.1 (209.1)					
						SB RT	A (A)	0.2 (0.2)				SB RT	A (A)			0.4 (0.4)					
I-26 Southbound Ramps & US 25 (Asheville Highway) (3)	F (F)	265.6 (259.8)	EB	F (F)	427.9 (363.5)	EB LT	C (D)	30.1 (39.5)	F (F)	241.3 (217.3)	EB	F (F)	321.3 (239.8)	EB LT	D (D)	35.1 (52.0)					
						EB RT	F (F)	515.2 (453.0)						EB RT	F (F)	424.1 (325.2)					
			NB	F (F)	321.3 (312.5)	NB TH	F (F)	371.4 (351.7)			NB	F (F)	250.7 (234.8)	NB TH	F (F)	279.9 (256.6)					
						NB RT	A (A)	0.3 (0.3)						NB RT	A (A)	0.2 (0.2)					
			SB	F (F)	114.7 (119.0)	SB LT	F (F)	428.5 (377.5)			SB	F (F)	181.2 (176.9)	SB LT	F (F)	569.7 (505.6)					
						SB TH	B (D)	13.6 (39.0)						SB TH	A (C)	3.5 (31.5)					
I-26 Northbound Ramps & Future Balfour Parkway (4)	B (B)	18.6 (16.0)	EB	E (D)	55.6 (50.7)	EB RT	E (D)	55.6 (50.7)	C (C)	27.1 (25.3)	EB	E (E)	77.7 (68.8)	EB RT	E (E)	77.7 (68.8)					
						WB	A (A)	0.2 (0.3)						WB RT	A (A)	0.2 (0.3)					
			NB	A (A)	3.8 (5.1)	NB LT	C (C)	25.3 (31.7)			NB	A (B)	7.3 (18.3)	NB LT	D (F)	36.1 (85.7)					
						NB TH	A (A)	0.3 (0.3)						NB TH	A (A)	0.3 (0.3)					
			SB	C (B)	20.8 (19.0)	SB TH	B (B)	13.2 (10.6)			SB	C (C)	29.5 (25.4)	SB TH	B (A)	12.1 (10.0)					
						SB RT	C (C)	33.5 (29.7)						SB RT	D (D)	53.6 (41.5)					
I-26 Southbound Ramps & Future Balfour Parkway (5)	B (B)	15.8 (18.3)	EB	A (A)	0.3 (0.2)	EB RT	A (A)	0.3 (0.2)	B (C)	18.7 (23.8)	EB	A (A)	0.5 (0.3)	EB RT	A (A)	0.5 (0.3)					
						WB	D (D)	42.4 (44.8)						WB RT	D (E)	50.5 (61.0)					
			NB	B (C)	19.8 (22.1)	NB TH	B (B)	13.4 (16.8)			NB	C (C)	25.2 (28.2)	NB TH	B (B)	14.0 (18.1)					
						NB RT	C (C)	28.8 (32.1)						NB RT	D (D)	40.3 (46.5)					
			SB	A (A)	4.9 (3.6)	SB LT	C (C)	25.9 (20.4)			SB	A (A)	3.8 (2.8)	SB LT	C (B)	23.4 (18.6)					
						SB TH	A (A)	4.9 (0.3)						SB TH	A (A)	0.3 (0.3)					

Delay Measured In Seconds Per Vehicle

BOLD/ITALIC = Intersection/Approach/Movement that has Operational Deficiencies (LOS E or F)

Table 7 (Continued). 2040 AM & (PM) Peak Hour No-Build/Build Intersection Capacity Analysis Results Summary

Intersection (ID#)	2040 No-Build Alternative							2040 – Build 8/6 Lane Combination Alternative													
	LOS	Delay	Approach	LOS	Delay	Movement	LOS	Delay	LOS	Delay	Approach	LOS	Delay	Movement	LOS	Delay					
US 64 (Chimney Rock Road) & Francis Road / Sugarloaf Road (6)	E (D)	62.7 (52.2)	EB	C (D)	30.6 (44.5)	EB LT	F (F)	206.3 (135.7)	E (E)	76.0 (59.3)	EB	C (D)	21.8 (54.6)	EB LT	F (F)	123.4 (115.2)					
						EB TH	B (D)	18.1 (44.6)						EB TH	B (E)	16.6 (59.6)					
						EB RT	B (B)	13.5 (13.0)						EB RT	B (B)	12.3 (13.1)					
			WB	F (D)	89.0 (43.1)	WB LT	F (F)	106.5 (151.8)			WB	F (D)	123.2 (44.0)	WB LT	F (F)	82.2 (90.8)					
						WB THRT	F (D)	88.2 (38.5)						WB THRT	F (D)	123.8 (43.4)					
			NB	F (F)	85.5 (101.9)	NB LT	F (F)	93.5 (113.6)			NB	F (F)	123.5 (123.0)	NB LT	F (F)	127.1 (128.6)					
						NB LTTH	F (F)	90.7 (109.2)						NB LTTH	F (F)	127.5 (126.1)					
						NB RT	D (E)	45.2 (55.9)						NB RT	D (D)	47.6 (52.8)					
			SB	F (F)	81.7 (90.1)	SB LTTH	E (F)	76.2 (95.2)			SB	E (F)	68.0 (81.0)	SB LTTH	E (F)	79.6 (95.4)					
						SB RT	F (F)	82.8 (88.9)						SB RT	E (E)	64.2 (76.7)					
			I-26 Southbound Ramps & US 64 Westbound (7)	B (B)	15.2 (11.9)	EB	A (A)	0.0 (1.3)			EB TH	A (A)	0.0 (1.5)	B (B)	16.4 (13.5)	EB	A (A)	0.0 (1.7)	EB TH	A (A)	0.1 (2.0)
											EB RT	A (A)	0.0 (0.0)						EB RT	A (A)	0.0 (0.0)
WB	B (B)	16.1 (11.4)				WB TH	B (B)	16.1 (11.4)	WB	B (B)	17.1 (13.1)	WB TH	B (B)			17.1 (13.1)					
						WB RT	B (B)	17.1 (15.4)				WB RT	B (B)			17.4 (14.7)					
SB	E (F)	78.8 (88.4)				SB RT	E (F)	78.8 (88.4)	SB	E (F)	78.0 (87.4)	SB RT	E (F)			78.0 (87.4)					
						SB LTTH	F (F)	157.3 (162.8)				SB LTTH	F (F)			147.5 (162.4)					
US 64 (4 Seasons Boulevard) & Carolina Village Road / Orr's Camp Road (8)	F (F)	107.6 (106.1)	EB	F (F)	91.7 (141.3)	EB LT	F (F)	123.7 (153.6)	F (F)	107.4 (104.7)	EB	F (F)	92.9 (143.2)	EB LT	F (F)	113.6 (136.0)					
						EB THRT	F (F)	90.4 (140.8)						EB THRT	F (F)	92.1 (143.5)					
			WB	F (D)	112.7 (49.9)	WB LT	F (F)	160.9 (219.7)			WB	F (D)	114.9 (48.7)	WB LT	F (F)	145.3 (211.3)					
						WB TH	F (D)	116.8 (35.5)						WB TH	F (D)	121.3 (35.3)					
						WB RT	B (B)	17.1 (15.4)						WB RT	B (B)	17.4 (14.7)					
			NB	F (F)	146.1 (194.4)	NB LTR	F (F)	146.1 (194.4)			NB	F (F)	123.5 (171.7)	NB LTR	F (F)	123.5 (171.7)					
						SB RT	C (C)	32.8 (34.9)						SB RT	C (C)	32.5 (34.7)					
			SB	F (F)	120.9 (131.1)	SB LTTH	F (F)	157.3 (162.8)			SB	F (F)	116.2 (132.8)	SB LTTH	F (F)	147.5 (162.4)					
						SB RT	C (C)	32.8 (34.9)						SB RT	C (C)	32.5 (34.7)					
			I-26 Northbound Ramps & Upward Road (9)	C (C)	32.2 (28.7)	EB	C (B)	24.3 (15.7)			EB LT	D (C)	51.5 (31.7)	C (C)	30.3 (28.6)	EB	B (B)	18.4 (14.8)	EB LT	C (C)	33.3 (25.5)
											EB TH	A (A)	3.3 (2.8)						EB TH	A (A)	1.8 (2.3)
						WB	C (C)	27.9 (30.7)			WB THRT	C (C)	27.9 (30.7)			WB	C (C)	29.2 (31.9)	WB THRT	C (C)	29.2 (31.9)
NB LT	D (D)	51.3 (49.5)							NB LT	E (E)	57.6 (59.2)										
NB	D (D)	47.5 (47.2)				NB RT	D (D)	35.0 (41.4)	NB	E (E)	55.0 (55.0)	NB RT	D (D)			36.7 (43.3)					
						SB RT	E (D)	59.5 (54.0)				SB RT	E (D)			62.9 (52.8)					
I-26 Southbound Ramps & Upward Road (10)	C (B)	23.6 (19.8)	EB	C (C)	26.0 (21.2)	EB TH	B (A)	16.2 (2.8)	C (C)	29.7 (24.5)	EB	C (C)	32.0 (24.8)	EB TH	C (C)	22.6 (20.1)					
						EB RT	D (C)	40.8 (34.0)						EB RT	D (D)	51.0 (36.6)					
			WB	A (A)	6.1 (3.8)	WB LT	B (B)	14.8 (16.4)			WB	A (A)	5.9 (6.7)	WB LT	B (B)	19.2 (19.9)					
						WB TH	A (A)	4.4 (1.5)						WB TH	A (A)	3.6 (4.6)					
			SB	D (D)	54.0 (49.6)	SB LTTH	C (D)	30.1 (35.0)			SB	E (D)	56.5 (47.9)	SB LTTH	C (C)	24.3 (29.3)					
						SB RT	E (D)	59.5 (54.0)						SB RT	E (D)	62.9 (52.8)					
I-26 Northbound Ramps & Holbert Cove Road (11)	N/A	N/A	EB	N/A	N/A	EB LT	A (A)	7.8 (7.8)	N/A	N/A	EB	N/A	N/A	EB LT	A (A)	7.8 (7.8)					
			NB	B (B)	12.0 (13.3)	NB LT	B (B)	14.2 (15.0)			NB	B (B)	12.3 (12.9)	NB LT	B (B)	14.6 (14.5)					
						NB RT	A (A)	8.9 (9.0)						NB RT	A (A)	9.1 (8.9)					
I-26 Southbound Ramps & Holbert Cove Road (12)	N/A	N/A	WB	N/A	N/A	WB LT	A (A)	8.1 (7.8)	N/A	N/A	WB	N/A	N/A	WB LT	A (A)	8.1 (7.8)					
			SB	B (B)	11.0 (10.9)	SB LT	B (B)	13.3 (13.0)			SB	B (B)	11.0 (10.9)	SB LT	B (B)	13.3 (13.0)					
						SB RT	A (B)	9.3 (10.1)						SB RT	A (B)	9.3 (10.1)					

N/A – LOS/Delay Not Calculated for Overall Unsignalized Intersection or Non-Stop-Controlled Approaches
BOLD/ITALIC = Intersection/Approach/Movement that has Operational Deficiencies (LOS E or F)

Delay Measured In Seconds Per Vehicle

7.2.1 2040 No-Build Alternative Scenario Results

The following information remains unchanged from the original Traffic Analysis Technical Memorandum, but is presented here for comparison to the Build 8/6 Lane Combination Alternative. For the 2040 No-Build alternative AM and PM peak hour scenarios, the signalized ramp terminal intersections along the I-26 study area corridor generally operate at or have movements that operate at adequate levels of service in the AM and PM peak hours. Reoptimization of all signal timings was employed in the 2040 No-Build alternative analyses. Several notable results include:

- ◆ The existing SPUI configuration at NC 146 (Long Shoals Road) is expected to provide adequate overall peak hour LOS, regardless of alternative scenario in the 2040 design year.
- ◆ The US 25 (Asheville Highway) ramp terminal intersections are expected to experience overall LOS F, with several critical approaches and movements experiencing LOS F and excessive queues and spillback in the 2040 design year – if no geometric improvements are made to the facility, and regardless of I-4400/I-4700 alternative scenario.
- ◆ The US 64 intersections with Francis Road/Sugarloaf Road and Carolina Village Road/Orr's Camp Road are expected to operate at overall intersection LOS E or F in at least one peak hour in every alternative scenario for 2040 conditions.

Traffic volumes, geometrics, and overall intersection LOS results are also found in **Figures 6.1 to 6.4** for the study area intersections in the 2040 No-Build alternative scenario.

7.2.2 2040 Build – 8/6 Lane Combination Alternative Scenario Results

For the 2040 Build – 8/6 Lane Combination Alternative AM and PM peak hour scenarios, it was assumed that all signalized intersections in the project study area would be reoptimized, to reflect anticipated traffic volume changes that were included in the I-4400/I-4700 traffic forecast data. These changes had only minor effects (some positive, some negative, depending on the projected volume changes) on operations at most study area ramp terminal intersections.

Traffic volumes, geometrics, and overall intersection LOS results are also found in **Figures 7.1 to 7.4** for the study area intersections in the 2040 Build – 8/6 Lane Combination Alternative scenario.

8. I-26 FAILURE YEAR ANALYSIS

An update to the original traffic analysis technical memorandum failure year mainline HCS capacity check was performed at five locations along I-26 in five year increments (year 2015, 2020, 2025, 2030, 2035) in addition to the 2011 base year and the 2040 design year to estimate what year freeway mainline segments are projected to reach LOS E and LOS F in the No-Build and Build 8/6 Lane Combination Alternative conditions. The analysis results are based on individual basic freeway segments using AM and PM peak hour straight-line volume interpolations between 2011 and 2040 from traffic forecast breakout sheets.

Overall, the No-Build Alternative experiences peak hour segment LOS E and F from I-40 to NC 280 in 2011, and all segments are expected to degrade to a LOS E or F in the 2040 No-Build scenario. For the Build – 8/6 Lane Combination Alternative, all basic freeway segments are projected to operate at LOS D or better through 2040. **Table 8** presents analysis results for the worst case AM or PM peak hour level of service and density. Analysis output files are located in **Appendix G**.

Table 8. Failure Year Analysis – I-26 Freeway Operations Summary

I-26 Basic Freeway Segment	ID #	No-Build Alternative LOS/Density*						
		2011	2015	2020	2025	2030	2035	2040
I-40 to NC 191	B1	F	F	F	F	F	F	F
		64.0	67.6	72.5	78.1	84.6	92.3	101.4
NC 146 to NC 280	B2	E	F	F	F	F	F	F
		43.9	46.1	49.2	52.6	56.6	61.1	66.3
NC 280 to US 25	B3	D	D	E	E	F	F	F
		30.0	32.6	36.3	40.7	46.1	52.8	61.4
US 25 to US 64 (Balfour Pkwy in 2040)	B4	C	D	D	D	E	E	E
		25.4	27.3	29.9	32.8	36.2	40.0	44.6
US 64 to Upward Road	B5	C	C	D	D	D	E	E
		23.2	25.2	27.9	30.9	34.4	38.5	43.3
I-26 Basic Freeway Segment	ID #	Build 8/6 Lane Combination Alternative LOS/Density*						
		2011	2015	2020	2025	2030	2035	2040
I-40 to NC 191	B1	C	C	D	D	D	D	D
		24.2	25.1	26.2	27.4	28.6	30.0	31.4
NC 146 to NC 280	B2	C	C	C	C	D	D	D
		21.0	22.0	23.3	24.6	26.1	27.6	29.3
NC 280 to US 25	B3	B	B	C	C	C	C	C
		16.3	17.5	19.1	20.7	22.3	24.0	25.9
US 25 to US 64 (Balfour Pkwy in 2040)	B4	C	C	C	C	D	D	D
		19.3	20.9	23.0	25.3	27.8	30.7	34.1
US 64 to Upward Road	B5	B	C	C	C	C	D	D
		16.6	18.3	20.3	22.3	24.5	26.9	29.6

* - Density Reported as Passenger Car Equivalents Per Mile Per Lane

9. I-26 / US 25 (ASHEVILLE HIGHWAY) INTERCHANGE ALTERNATIVES OPERATIONS ANALYSIS

For the 2011 and 2040 No-Build and Build – 8/6 Lane Combination Alternative conditions, detailed AM and PM peak hour traffic microsimulation analyses (using the TransModeler Version 3.0 Release 2 software package) were created to determine the impacts of four (4) potential interchange form improvements at the I-26/US 25 (Asheville Highway) - Exit 44 interchange where the capacity analysis results from the original *NCDOT STIP I-4400/I-4700 (I-26 Widening) Purpose and Need Traffic Analysis Technical Memorandum* indicated operational deficiencies in the No-Build, 6-Lane and 8-Lane Build alternatives. These results were used to coordinate with planning and design staff to determine the feasibility of proposed interchange forms.

9.1 Preliminary Alternatives Studied

Based on the original traffic capacity analysis results, several options for improvements to the interchange were discussed with HNTB roadway design staff to determine feasibility from an operations perspective, as well as to consider potential existing right-of-way and environmental constraints and impact to the existing bridge overpass configuration. The five basic interchange preliminary design improvements studied in this report include:

- **Alternative 1 – No-Build**

The No-Build Alternative for the interchange microsimulation analysis includes no changes to the existing laneage configuration for US 25 (Asheville Highway) or the interchange ramp terminal on-ramps or off-ramps. Preliminary roadway designs for improvements to the I-26 mainline for the Build – 8/6 Lane Combination Alternative were modeled in the 2011 Base Year Build Alternative scenarios and all 2040 Design Year Alternatives for this microsimulation analysis. The 2011 Base Year No-Build Alternative modeled existing I-26 laneage for the purposes of model calibration.

- **Alternative 2 - Diverging Diamond (DDI)**

The Diverging Diamond interchange configuration assumes the ability to carry three lanes of traffic across the existing bridge cross-section in each direction, with single lane left-turn free flowing on-ramps. Traffic on US 25 will be subject to two “crossovers” upstream of the bridge to cross the bridge on the “opposite” side of the road. This alternative preserves the existing bridge structure and would have the ability to reduce the size of the interchange footprint compared to the other Build alternatives (particularly the partial cloverleaf designs). Additional modification to the off-ramp approaches at US 25 will also be necessary to maintain adequate capacity.

- **Alternative 3 - Displaced Left-Turn (DLT)**

The Displaced Left-Turn (DLT) Alternative design moves left-turning traffic (traffic turning left from US 25 onto I-26) in both directions to a location approximately 400 feet upstream of the signal-controlled ramp terminals. This left-turning traffic is crossed over the opposing US 25 through lanes at a new signalized intersection. This traffic then travels on a new roadway that is located between the opposing US 25 through lanes and a new roadway for the right-turning I-26 off-ramp traffic. These drivers then travel in the “opposite” direction on the outside of the bridge and make a left turn onto the I-26 on-ramp. This alternative may require widening the existing bridge structure, but would have a reduced interchange footprint compared to the partial cloverleaf build alternatives. Additional modification to the off-ramp approaches at US 25 will also be necessary to maintain adequate capacity.

- Alternative 4 - Partial Cloverleaf
The Partial Cloverleaf design adds loop ramps from US 25 to the I-26 mainline in the northeast and southwest quadrants, eliminating the problematic left-turn on-ramp movements from US 25 to I-26. This will simplify existing signal operations at the interchange ramp terminal intersections. The primary tradeoff with the alternative is the large right-of-way/construction cost/environmental impacts caused by the enlarged interchange footprint.
- Alternative 5 - Partial Cloverleaf (With Design Exception on Loops)
This alternative would operate similar to Alternative 4, with a reduced right-of-way impact due to smaller loop radii. The tradeoff with the reduced loop radii is primarily safety of turning vehicles – particularly the possibility of large semi-trailer trucks overturning on the tighter turn radii.

Figure 8.1 shows the preliminary designs for each build alternative. Additional modifications to these designs due to traffic operations analysis results are detailed **Figures 8.2-8.4**. The laneage, traffic control, and storage lengths shown in **Figure 8.4** apply to both Partial Cloverleaf alternatives. The recommended laneage, storage, geometrics, and traffic control are shown in **Figures 8.2-8.4**. Each alternative was initially analyzed in Synchro to determine practical laneage and storage lengths based on a 2040 design year. The laneage and storages were then input into TransModeler to create a semi-constrained network for microsimulation. After completing the TransModeler analysis, average maximum queues over 10 runs for each alternative were reviewed to determine recommended storage lengths. Microsimulation runs were visually reviewed to further assess any questionable reported queues.

9.2 Measures of Effectiveness

The Measures of Effectiveness (MOEs) of each AM and PM peak hour model scenario were compiled from TransModeler simulation runs and include the following:

US 25 Interchange Area System MOEs

- Vehicle Miles Traveled (VMT)
- Vehicle Hours Traveled (VHT)
- Mean System Speed
- Total System Delay

Corridor-Level MOEs

- Average Travel Time/Speed between selected points on US 25

Localized Element MOEs

- Average Queue Length for each freeway junction with at-grade roadways
- Maximum Queue Length for each freeway junction with at-grade roadways
- Average vehicular delay at at-grade intersections, by approach

MOEs of the 2011 Base Year and 2040 Future No-Build scenarios with the 2011 Base Year and 2040 Future Year Build 8/6 Lane Combination Alternative were compared to assess traffic operations between the four preliminary design concepts and their relative improvement in operations compared to the No-Build Alternative scenario (existing interchange geometrics). No indirect computation of any LOS for any intersection was made with Synchro/HCS results as described in previous sections. Comparisons between HCS/Synchro results and simulation results were limited to qualitative comparisons of results. Synchro analysis was not included

specifically in the comparison of the 2011 Base Year and 2040 Future No-Build scenarios with the 2011 Base Year and 2040 Future Year Build 8/6 Lane Combination Alternatives at the I-26 and US 25 (Asheville Highway) interchange. Simulation models for the following scenarios were developed for AM and PM peak periods:

- Calibrated 2011 Base Year No-Build Scenario (2011 traffic volumes taken from NCDOT TPB Forecast Turning Movement Count Data)
- 2011 Base Year Build – 8/6 Lane Alternative Scenario (4 Preliminary Design Concepts)
- 2040 Future Year No-Build Scenario (2040 traffic volumes taken from NCDOT TPB traffic forecast data)
- 2040 Future Year Build – 8/6 Lane Alternative Scenario (4 Preliminary Design Concepts)

The duration of the peak period, model seeding duration, and the number of model runs for each scenario were determined in collaboration with current NCDOT and FHWA recommendations. The peak period was one hour for each simulation run, with a seeding duration of 15 minutes at 75 percent of the peak hour volumes. Ten runs were performed for each scenario. The random seed was set at five for the first simulation and then incremented by five for each subsequent simulation run.

9.3 Microscopic Traffic Simulation Calibration

The 2011 Base Year No-Build model was calibrated by coding and adjusting the model so that it closely replicated field observations. The same settings and methodology were then used to develop the other alternatives in the base and future year models.

The following information was collected for the 2011 microsimulation base model development. This information was taken from previous work by HNTB, NCDOT or others.

- Control Data (signal timing plans for all intersections provided by NCDOT)
- Demand Data (from NCDOT TPB Traffic forecast raw turning movement count data – balanced between interchange ramp terminal intersections)
- Vehicle Mix (from NCDOT TPB Traffic forecast and FreeVal output estimates for I-26 mainline and from traffic turning movement count data for US 25 – Asheville Highway)
- Geometric Data (number lanes, configuration, etc.)

Additional information and observations were collected in a field visit completed on May 7 and 8, 2014.

- Geometric Data (grades)
- Free flow Speed Distributions (from field data collected by HNTB)
- Corridor Travel Time Data (floating car runs completed by HNTB)

HNTB coordinated with NCDOT staff in the project scoping process to verify the following basic calibration approach as presented below.

- The base model was calibrated based on 2011 Base Year peak period (AM and PM) operations for a single peak hour. Calibration was based upon peak hour NCDOT TPB traffic forecast raw turning movement count data, balanced between interchange ramp terminal intersections along US 25 and to/from existing I-26 on and off-ramps.
- HNTB calibrated the models based upon existing AM and PM peak hour travel speeds through the network along US 25 and volume throughput (compared to turning movement counts) in each direction near the center of the network in both directions along US 25.

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- HNTB performed travel time runs during the AM and PM peak periods to determine network travel speeds for calibration. HNTB also noted general interchange operations in the vicinity of the interchange during travel time data collection (average/maximum queues, any operational deficiencies).
- Calibration targets were to have 10 run MOE averages within 10 percent of actual conditions and based upon ten model runs, with different random seeds for each peak period. Models were “seeded” for a 15 minute interval prior to actual peak hour operations and MOE data collection.

The following adjustments were made to the default TransModeler parameters during the calibration process:

Driving Behavior Parameters

- Minimum number of links to look ahead changed from 4 to 5
- Time headway to look ahead changed from 90 sec. to 100 sec.
- Vehicle stopped times between which the acceptable headway shrinks adjusted to 15-45 sec.

Traffic Control Parameters

- Run yellow threshold was increased from 1.5 seconds to 2.0 seconds

General Parameters

- Minimum desired speed (percent of speed limit) changed from 85% to 92%
- Reduction in desired speed when queue is visible downstream changed from 15% to 10%.

9.3.1 2011 Base Year No-Build Model Calibration Results

Table 9 details 2011 Base Year No-Build volume throughput and travel time calibration results for the US 25 corridor at the interchange with I-26. Field-collected speed distributions along US 25 and I-26 and travel times for the US 25 corridor are detailed in **Appendix H**.

Table 9. Model Calibration Summary

Volume Throughput								
Time Period	Breakout Volume between Interchange Ramp Terminals		10% Calibration Target		2011 BY NB Model Average Volume		Within Target	
	NB	SB	NB	SB	NB	SB	NB	SB
AM	1332	980	1199 - 1465	882 - 1078	1284	970	Yes	Yes
PM	1137	983	1023 - 1251	885 - 1081	1111	966	Yes	Yes

Travel Time								
Time Period	Field-Observed Travel Time along US 25 (min)		10% Calibration Target (min)		2011 BY NB Model Average Travel Time (min)		Within Target	
	NB	SB	NB	SB	NB	SB	NB	SB
AM	1.12	1.03	1.01 - 1.23	0.93 - 1.13	1.40	0.94	No	Yes
PM	0.99	0.73	0.89 - 1.09	0.66 - 0.8	0.94	0.77	Yes	Yes

In both peak hours the average volume throughput in the 2011 Base Year No-Build model fell within the 10 percent calibration target for the northbound and southbound volumes between the I-26 ramp terminals on US 25. Since the field-observed US 25 travel times along the corridor were collected traveling with through vehicles in the right-most lane only, the average travel times extracted from the 2011 Base Year No-Build model were also for vehicles traveling through the corridor start to finish in the right-most lane only. To calibrate the model travel times to align with the field-observed travel times, the US 25 northbound and southbound speed distributions observed in the field were entered into the model and then adjusted so the average travel times from the model would lie within the target calibration range.

As shown in **Table 9**, the northbound US 25 corridor model travel time in the AM peak hour did not fall within the target calibration range. This was due to vehicles in the right lane of US 25 waiting for gaps in the heavily-queued left lane of US 25 to make a left-turn downstream. Further adjustments to the northbound US 25 speed distributions to increase AM peak speeds along the corridor resulted in PM peak travel times that were approaching the lower bounds of the target calibration range. The difference between the observed northbound AM peak speed (18.5 mph) and the model speed (14.8 mph) is -3.7 mph. Since this difference was less than 5 mph, the 2011 Base Year No-Build model was considered to be calibrated.

The 2011 Base Year No-Build model was also visually checked for any potential errors before modifications were made to the networks to assess the Build Scenario designs that encompassed:

- Review of any software errors
- Review of model input
- Review of model animation and comparison to field-observed conditions, such as queues
- Residual errors
- Key decision points

9.4 Alternative Analysis Results

After calibration of the 2011 No-Build Base Models, HNTB developed the 2011 Base Year Build models and future 2040 No-Build and Build Scenario models. The volumes used in the 2011 Base Year Build models are shown in **Figures 8.5-8.7**. The following sections detail model results for each analysis year and design scenario.

9.4.1 2011 Base Year Alternative Scenario Results

The following tables show 2011 AM and PM peak hour averaged results for system, corridor and intersection level MOEs for all of the alternative improvement scenarios studied for the I-26/US 25 (Asheville Highway) interchange.

Table 10 highlights system MOE results for the entire model network. As shown in **Table 10**, the Build alternatives all offer some improvement over No-Build conditions, with larger differences evident in mean system travel speeds and total system delay.

Table 11 compares operations along US 25 for vehicles making a complete trip through the interchange area in the network. Similar to system results in **Table 10**, all the proposed Build alternatives are expected to improve travel speeds, reduce delays, and allow a higher level of throughput (based on total trips completed through the interchange). The two cloverleaf designs produce the most operational benefits, with higher speed and lower delay results than the DDI or DLT options.

Table 10. 2011 Base Year Interchange System MOE Results

Alternative Scenario	MOE							
	Vehicle Miles Traveled (VMT)		Vehicle Hours Traveled (VHT)		Mean System Speed (mph)		Total System Delay (Hours)	
	AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak
No-Build	8,445	7,585	233	227	37.2	34.2	102.6	109.6
DDI	9,198	9,193	200	209	46.9	44.7	57.5	67.5
DLT	9,207	9,213	186	182	50.3	51.4	44.8	40.9
Partial Cloverleaf	9,548	9,549	191	192	50.8	50.6	40.7	41.1
Partial Cloverleaf (Design Exception)	9,406	9,408	189	190	50.5	50.5	40.8	41.0

Table 11. 2011 Base Year US 25 Corridor MOE Results

Alternative Scenario	Travel Direction	MOE					
		Trips		Travel Time (min)		Speed (mph)	
		AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak
No-Build	Northbound	340	320	2.30	1.28	15.6	28.0
	Southbound	272	258	1.36	1.17	26.5	30.7
DDI	Northbound	331	421	1.88	2.05	19.2	17.6
	Southbound	408	323	1.52	1.71	23.8	21.2
DLT	Northbound	327	416	1.13	1.03	31.8	34.7
	Southbound	411	339	1.21	1.11	29.7	32.3
Partial Cloverleaf	Northbound	335	423	1.01	0.96	35.6	37.5
	Southbound	420	338	1.08	1.07	33.3	33.7
Partial Cloverleaf (Design Exception)	Northbound	343	430	0.97	0.95	36.9	37.8
	Southbound	418	336	1.10	1.08	32.9	33.5

Table 12, on the following page, highlights individual intersection approach MOEs for each alternative scenario in the AM and PM peak hours of the 2011 Base Year. Due to the fact that each Build design has different laneage features and intersection operational characteristics, direct comparisons of results are not possible for each scenario. For example, the DDI configuration introduces six signalized intersections, while the DLT alternative results in four separate intersection analyses.

However, some general trends are observable in the data provided. The No-Build Alternative has lengthy queues and vehicular delay results that would translate to LOS E or F conditions for some approaches if a direct comparison were possible with HCM LOS thresholds. Both of the partial cloverleaf alternative designs produce the best overall results in terms of minimizing delays and queues, slightly outperforming the DDI and DLT designs.

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Table 12. 2011 Base Year Interchange Ramp Terminal MOE Results

Alternative Scenario	Intersection	Approach	Avg Queue Length (feet)		Max Queue Length (feet)		Average Delay (sec/veh)		
			AM	PM	AM	PM	AM	PM	
No-Build	I-26 Eastbound Ramp Terminal	EB (Off-Ramp)	592	793	592	2,219	47.1	113.2	
		NB (US 25)	572	136	572	376	71.9	28.7	
		SB (US 25)	425	237	425	437	27.4	22.2	
	I-26 Westbound Ramp Terminal	WB (Off-Ramp)	556	123	556	376	62.6	51.6	
		NB (US 25)	432	289	432	477	16.5	30.8	
		SB (US 25)	196	101	196	193	25.8	20.1	
DDI	I-26 EB Ramp Right Turns & US 25 SB	EB (Off-Ramp)	77	57	163	124	12.7	9.5	
		SB (US 25)	21	22	43	47	3.7	4.8	
	I-26 EB Ramp Terminal Crossover	NB (US 25)	102	189	294	465	26.2	34.4	
		SB (US 25)	38	45	84	100	9.6	11.6	
	I-26 EB Ramp Left Turns & US 25 NB	EB (Off-Ramp)	48	52	115	118	29.7	32.0	
		NB (US 25)	--	--	--	--	2.5	2.6	
	I-26 WB Ramp Left Turns & US 25 SB	WB (Off-Ramp)	23	20	43	33	27.2	24.7	
		SB (US 25)	--	--	--	--	2.5	2.5	
	I-26 WB Ramp Terminal Crossover	NB (US 25)	110	112	216	225	22.4	18.5	
		SB (US 25)	80	77	201	188	25.9	30.3	
	I-26 WB Ramp Right Turns & US 25 NB	WB (Off-Ramp)	53	65	124	144	15.5	20.6	
		NB (US 25)	--	18	--	25	0.6	2.6	
DLT	Left Turn Crossover south of I-26 EB Ramp Terminal	EB (Off-Ramp)	116	90	230	174	15.7	12.7	
		NB Left Crossover	46	56	103	129	7.6	7.4	
		SB (US 25)	67	51	176	149	13.5	11.7	
	I-26 Eastbound Ramp Terminal	EB (Off-Ramp)	45	41	103	102	31.5	29.1	
		NB Left Crossover	139	141	235	208	15.0	10.5	
		NB (US 25)	48	52	92	111	6.0	6.1	
	I-26 Westbound Ramp Terminal	SB (US 25)	57	25	109	41	6.7	4.7	
		WB (Off-Ramp)	22	22	46	37	36.9	32.0	
		SB Left Crossover	80	97	160	170	7.8	13.1	
	Left Turn Crossover north of I-26 WB Ramp Terminal	NB (US 25)	69	31	116	63	7.6	4.3	
		SB (US 25)	64	44	130	76	4.6	4.5	
		WB (Off-Ramp)	81	84	177	170	19.3	17.3	
	Partial Cloverleaf	I-26 Eastbound Ramp Terminal	SB Left Crossover	57	39	151	77	8.3	6.2
			NB (US 25)	61	39	131	111	10.6	8.3
			EB (Off-Ramp)	96	93	215	197	31.2	33.4
I-26 Westbound Ramp Terminal		NB (US 25)	63	68	107	122	15.1	13.9	
		SB (US 25)	65	60	125	111	9.5	8.9	
		WB (Off-Ramp)	68	91	186	232	33.9	37.3	
Partial Cloverleaf (Design Exception)		I-26 Eastbound Ramp Terminal	NB (US 25)	58	71	113	119	6.3	6.3
			SB (US 25)	70	63	137	110	10.3	10.0
			WB (Off-Ramp)	65	77	159	191	34.6	34.9
	I-26 Westbound Ramp Terminal	NB (US 25)	70	73	118	125	6.6	6.8	
		SB (US 25)	80	74	142	135	10.5	10.3	
		EB (Off-Ramp)	102	89	221	202	30.6	32.6	

"--" = Queue Data Not Reported by TransModeler, Queue Length is Insignificant

9.4.2 2040 Design Year Alternative Scenario Results

The following three MOE results tables summarize TransModeler simulation runs for the five alternative scenarios with anticipated 2040 design year AM and PM peak hour traffic volumes. The volumes used in the 2040 Future Year Build models are shown in **Figures 8.8-8.10**.

Table 13 highlights system MOE results for the entire 2040 model networks. As shown in **Table 13**, the Build alternatives all offer substantial improvement over No-Build conditions, with larger differences evident in VHT, mean system travel speeds and total system delay. The No-Build network will be completely oversaturated and essentially “gridlocked” with the projected increases in peak hour traffic demand. The DDI Alternative, though offering some improvement from the No-Build scenario, does not provide the same level of system-wide improvements that the other three Build alternatives do.

Table 14 compares operations along US 25 for vehicles making a complete trip through the interchange area in the network. Similar to system results in **Table 13**, all the proposed Build alternatives are expected to improve travel speeds, reduce delays, and allow a higher level of throughput (based on total trips completed through the interchange). Similar to the analysis results for the corridor in the 2011 Base Year, the two cloverleaf designs produce the most operational benefits in the 2040 design year, with higher speeds and lower delay results than the DDI or DLT options.

Table 15, on the following page, highlights individual intersection approach MOEs for each alternative scenario in the AM and PM peak hours of the 2011 Base Year. Due to the fact that each Build design has different laneage features and intersection operational characteristics, direct comparisons of results are not possible for each scenario. For example, the DDI configuration introduces six signalized intersections, while the DLT alternative results in four separate intersection analyses.

However, some general trends are observable in the data provided. The No-Build Alternative has lengthy queues and vehicular delay results that would translate to LOS E or F conditions for some approaches if a direct comparison were possible with HCM LOS thresholds. Both of the partial cloverleaf alternative designs produce the best overall results in terms of minimizing delays and queues, slightly outperforming the DDI and DLT designs.

Table 13. 2040 Design Year Interchange System MOE Results

Alternative Scenario	MOE							
	Vehicle Miles Traveled (VMT)		Vehicle Hours Traveled (VHT)		Mean System Speed (mph)		Total System Delay (Hours)	
	AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak
No-Build	7,233	7,805	2,303	2,053	5.0	5.8	2186.7	1928.1
DDI	13,888	13,854	540	550	28.5	27.9	325.0	335.1
DLT	14,253	14,346	349	319	41.7	45.8	129.0	97.8
Partial Cloverleaf	14,860	14,854	309	311	48.9	48.7	74.6	75.8
Partial Cloverleaf (Design Exception)	14,660	14,657	306	304	48.8	49.1	74.0	71.7

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Table 14. 2040 Design Year US 25 Corridor MOE Results

Alternative Scenario	Travel Direction	MOE					
		Trips		Travel Time (min)		Speed (mph)	
		AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak
No-Build	Northbound	293	354	4.01	3.56	9.0	10.1
	Southbound	390	334	3.57	4.21	10.1	8.6
DDI	Northbound	393	479	3.35	2.79	10.8	13.0
	Southbound	427	346	3.14	3.70	11.5	9.8
DLT	Northbound	431	558	1.26	1.51	28.5	23.8
	Southbound	498	428	3.28	2.00	11.0	18.0
Partial Cloverleaf	Northbound	454	566	1.16	1.16	30.8	31.0
	Southbound	553	441	1.38	1.27	26.2	28.5
Partial Cloverleaf (Design Exception)	Northbound	449	566	1.12	1.08	32.0	33.1
	Southbound	560	438	1.35	1.22	26.6	29.7

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Table 15. 2040 Design Year Interchange Ramp Terminal MOE Results

Alternative Scenario	Intersection	Approach	Avg Queue Length (feet)		Max Queue Length (feet)		Average Delay (sec/veh)		
			AM	PM	AM	PM	AM	PM	
No-Build	I-26 EB Ramp Terminal	EB (Off-Ramp)	1,086	1,080	2,235	2,223	147.6	136.2	
		NB (US 25)	482	472	616	614	164.7	141.3	
		SB (US 25)	373	392	478	473	44.1	64.4	
	I-26 WB Ramp Terminal	WB (Off-Ramp)	1,234	1,057	2,881	2,875	229.9	211.9	
		NB (US 25)	201	274	449	468	17.4	31.1	
		SB (US 25)	563	578	749	749	134.0	146.9	
DDI	I-26 EB Ramp Right Turns & US 25 SB	EB (Off-Ramp)	163	123	362	292	21.2	13.5	
		SB (US 25)	--	--	--	--	1.4	1.4	
	I-26 EB Ramp Terminal Crossover	NB (US 25)	361	380	604	603	70.6	66.1	
		SB (US 25)	104	89	318	305	19.1	29.9	
	I-26 EB Ramp Left Turns & US 25 NB	EB (Off-Ramp)	101	107	322	279	52.2	50.8	
		NB (US 25)	36	72	36	74	2.9	3.0	
	I-26 WB Ramp Left Turns & US 25 SB	WB (Off-Ramp)	48	38	113	85	23.8	17.9	
		SB (US 25)	71	56	80	74	3.1	3.0	
	I-26 WB Ramp Terminal Crossover	NB (US 25)	273	225	426	418	35.6	26.4	
		SB (US 25)	462	461	806	815	90.9	100.7	
	I-26 WB Ramp Right Turns & US 25 NB	WB (Off-Ramp)	113	134	230	279	22.4	27.6	
		NB (US 25)	--	--	--	--	0.6	0.6	
DLT	Left Turn Crossover south of I-26 EB Ramp Terminal	EB (Off-Ramp)	258	168	622	395	28.8	21.5	
		NB Left Crossover	110	162	262	340	10.8	14.8	
		SB (US 25)	229	218	311	310	35.1	36.2	
	I-26 EB Ramp Terminal	EB (Off-Ramp)	102	62	469	126	43.7	46.3	
		NB Left Crossover	154	154	285	247	11.9	8.7	
		NB (US 25)	108	143	264	337	6.2	6.1	
		SB (US 25)	266	175	478	393	28.2	14.2	
	I-26 WB Ramp Terminal	WB (Off-Ramp)	52	55	128	143	52.2	52.3	
		SB Left Crossover	--	64	--	112	3.0	5.4	
		NB (US 25)	68	122	114	307	6.3	9.0	
	Left Turn Crossover north of I-26 WB Ramp Terminal	SB (US 25)	350	92	799	215	17.2	4.6	
		WB (Off-Ramp)	152	177	314	369	24.3	27.2	
		SB Left Crossover	325	92	799	215	19.9	10.4	
	Partial Cloverleaf	I-26 EB Ramp Terminal	NB (US 25)	159	187	243	267	14.7	20.3
			EB (Off-Ramp)	139	142	425	392	30.4	35.7
NB (US 25)			78	83	198	185	18.6	16.1	
I-26 WB Ramp Terminal		SB (US 25)	127	96	224	187	15.8	11.5	
		WB (Off-Ramp)	108	209	317	728	32.1	33.2	
		NB (US 25)	80	92	184	184	8.7	10.4	
Partial Cloverleaf (Design Exception)		I-26 EB Ramp Terminal	SB (US 25)	98	85	231	201	14.3	15.5
			EB (Off-Ramp)	142	152	396	446	29.8	35.8
			NB (US 25)	99	101	187	200	20.2	17.1
	I-26 WB Ramp Terminal	SB (US 25)	128	85	257	166	15.9	11.0	
		WB (Off-Ramp)	92	96	212	209	33.8	29.3	
		NB (US 25)	70	77	161	171	8.0	8.8	
		SB (US 25)	94	84	194	161	13.2	14.0	

--" = Queue Data Not Reported by TransModeler, Queue Length is Insignificant

10. I-26 Southbound Project Termini Operations Analysis

Initial HCS-FreeVal results in the *NCDOT STIP I-4400/I-4700 (I-26 Widening) Purpose and Need Traffic Analysis Technical Memorandum* for the southbound segments of I-26 at the southern project termini at US 25 (Exit 54) produced inconclusive data as to future 2040 freeway operations in this area when comparing the 2040 No-Build, Build – 6 Lane Alternative, and Build – 8 Lane Alternative. To further investigate and assess expected freeway system performance in this area, AM and PM peak hour traffic microsimulation models using the TransModeler software tool were created.

10.1 Preliminary Alternatives Studied

The microsimulation models for the section of southbound I-26 between the Upward Road (Exit 53) interchange and the US 25 Flat Rock (Exit 54) interchange were developed to include the southbound Upward Road on-ramp, I-26 mainline, and US 25 (Flat Rock) off-ramp segments only.

- The No-Build Alternative models assume existing freeway mainline and ramp configuration geometrics and all existing operational parameters only.
- The Build 6-Lane, 8-Lane, and 8/6 Lane Combination Alternative models incorporate current functional design improvements, which include a third southbound lane on I-26 that will drop at the US 25 off-ramp (in the 6-Lane and 8/6 Lane Combination Alternative models). **Figure 9.1** details the analysis boundaries, laneage, geometrics, and volumes used in the TransModeler analysis of all three Build Alternative models.
- The Build 8-Lane Alternative model includes one I-26 southbound lane dropping at the US 25 interchange and the fourth I-26 southbound “inside” lane dropping south of the US 25 diverge, outside “south” of the model boundary. This laneage configuration matches the preliminary designs.

10.2 Measures of Effectiveness and Calibration

2011 Base Year No-Build AM and PM peak hour calibrated models were developed with existing information similar to the process, inputs, and methodology as described in **Section 9.3** above. The only differences to the process were the fact that MOEs were computed for freeway operations only – no intersection MOEs or arterial corridor MOEs were developed for these models, and that no additional field collection of travel speed data was conducted. Instead, existing vehicle speed profiles for a rural 65 mile per hour facility were utilized from speed distribution curves developed in the *SPOT Interchange/Intersection Projects – Travel Time Analysis Program Management Report* (June 2013).

The 2011 calibrated base year models were used for 2040 evaluations for the No-Build, Build – 6 Lane, Build – 8 Lane and Build 8/6 Lane Combination Alternatives by updating peak hour vehicular information and updating the existing I-26 and ramp configuration with preliminary design information for the I-4400/I-4700 project being developed by HNTB concurrently with this traffic analysis documentation.

10.3 Analysis Results

The following sections highlight 2011 Base Year and 2040 Design Year analysis results for the I-26 southbound freeway section between Upward Road and the US 25 system interchange. 10 run average TransModeler MOE output was tabulated and comparisons between the No-Build

Alternative and Build 6-Lane, Build 8-Lane, and Build – Combination 8/6 Lane Alternatives were made to determine if the initial FreeVal results from the original Purpose and Need Traffic Analysis Technical Memorandum were valid.

10.3.1 2011 Base Year No-Build Scenario Results

Tables 16 and 17 provide MOE results for the I-26 southbound segment for AM and PM peak hour 2011 Base Year conditions. This information is primarily shown as a baseline comparison to 2040 simulation results in Section 10.3.2. No major operational issues are shown in the tables, which correlate with field observed conditions during peak hours in this area of the I-26 corridor.

Table 16. 2011 Base Year No-Build MOE Results

MOE							
Vehicle Miles Traveled (VMT)		Vehicle Hours Traveled (VHT)		Mean System Speed (mph)		Total System Delay (Hours)	
AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak
2783.5	2063.9	43.0	31.5	64.7	65.5	3.4	2.2

Table 17. 2011 Base Year No-Build Freeway Operations Summary

Segment**	LOS**		Density (veh/mi/ln)	
	AM Peak	PM Peak	AM Peak	PM Peak
Basic (North of Upward Road On-Ramp)	C	B	22.4	15.9
Weaving (Between Ramps)^	C	B	23.2	16.6
Basic (South of US 25 Off-Ramp)	B	B	17.2	12.3

** - HCM Information for Comparison Only, LOS Not Directly Computed by Simulation Results

^ - TransModeler evaluates the freeway section between the ramps as a weaving segment when determining density

10.3.2 2040 Design Year Alternative Scenario Results

To accurately assess the validity of the FreeVal results for the I-26 southbound segments immediately upstream of the US 25 system interchange, as presented in the original I-26 Purpose and Need Traffic Analysis Technical Memorandum, TransModeler runs for the current No-Build and Build Alternative design concepts were compiled and results shown in **Tables 18 and 19**. AM peak hour run results are the primary focus, as projected volumes are higher in the southbound direction in this area, and were the ones in question from the original FreeVal analysis.

Table 18. 2040 Design Year Alternative Scenario MOE Results

Alternative Scenario	MOE							
	Vehicle Miles Traveled (VMT)		Vehicle Hours Traveled (VHT)		Mean System Speed (mph)		Total System Delay (Hours)	
	AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak
No-Build	4295.1	3641.4	101.1	57.7	42.7	63.1	39.1	5.3
Build – 6 Lane	4824.4	3830.4	77.0	59.9	62.7	64.0	7.5	4.9
Build – 8 Lane	5015.9	3833.2	78.5	59.1	63.9	64.8	6.8	4.5
Build – 8/6 Lane Combination	4878.4	3810.4	77.9	59.6	62.6	63.9	7.7	4.9

Table 19.
2040 Design Year Alternative Scenario I-26 Southbound Freeway Operations Summary

Alternative Scenario	Segment**	LOS**		Density	
		AM Peak	PM Peak	AM Peak	PM Peak
No-Build	Basic	<i>F</i>	D	<i>63.9</i>	26.2
	Weaving^	<i>E</i>	D	<i>50.4</i>	31.1
	Basic	D	C	29.2	24.1
Build – 6 Lane	Basic	C	C	25.7	19.1
	Weaving^	D	C	29.5	22.8
	Basic	D	C	34.1	25.9
Build – 8 Lane	Basic	C	B	19.7	14.2
	Weaving^	C	B	22.5	16.8
	Basic	C	B	23.1	17.2
Build – 8/6 Lane Combination	Basic	C	C	25.9	18.9
	Weaving^	D	C	29.8	22.6
	Basic	D	C	34.0	25.8

BOLD/ITALIC – Segment Exceeds LOS D Thresholds

** - HCM Information for Comparison Only, LOS Not Directly Computed by Simulation Results

^ - TransModeler evaluates the freeway section between the ramps as a weaving segment when determining density

As clearly shown in **Tables 18 and 19**, all Build Alternative designs for the I-26 mainline offer some operational improvements in this particular freeway area, particularly in the weaving area between the Upward Road interchange on-ramp and the US 25 (Flat Rock) off-ramp. Initial FreeVal results for this segment predicted 2040 AM peak hour LOS to be LOS F for the merge section and LOS E for the diverge section – for both the Build – 6 Lane and Build – 8 Lane sections. Since FreeVal methodologies are not set up to evaluate this area accurately, the microsimulation models were developed to more realistically answer this issue. From the results in the tables above, no peak hour operational issues are expected with any of the three proposed design alternatives.

11. CONCLUSIONS AND RECOMMENDATIONS

The I-4400/I-4700 study area traffic capacity analysis addendum was completed to address the following issues raised in the initial traffic analysis study:

- A new evaluation of existing and future peak hour traffic operations along I-26 and its study area interchanges was necessary to determine if the additional Build 8/6 Lane Combination Alternative meets the purpose and need for the project.
- A detailed study using traffic microsimulation software of the US 25 (Asheville Highway) service interchange was necessary to test conceptual interchange form improvements. Both current interchange ramp terminal intersections at this location are projected to have significant operational and congestion issues in the 2040 AM and PM peak travel periods.
- A detailed study using traffic microsimulation software of the segment of I-26 southbound between the Upward Road and US 25 (Flat Rock) interchanges was necessary to evaluate projected 2040 future peak hour operations in this area, testing the proposed design alternatives' ability to provide adequate traffic operations. Initial study results using the FreeVal software indicated potential operational issues in the Build – 6 Lane and Build – 8 Lane alternatives.

Two alternatives were analyzed in this addendum study – the No-Build Alternative and the Eight/Six-Lane Combination Widening Build Alternative.

- The No-Build Alternative assumes that no changes will be made to study area roadways in terms of geometric or traffic control improvements – other than changes to improve signal timings during AM and PM peak hours, along with the addition of the proposed Balfour Parkway interchange north of Hendersonville and improvements recently completed for Upward Road in the vicinity of I-26.
- The Build – 8/6 Lane Combination Alternative assumes that I-26 will be widened for two additional travel lanes in each direction from the I-40/I-240/I-26 system interchange to the US 25 (Asheville Highway) interchange, and one additional travel lane in each direction from the US 25 (Asheville Highway) interchange to the US 25 system interchange. Conceptual design information for improvements to existing auxiliary acceleration/deceleration lanes was also added.

11.1 Freeway/Interchange Ramp Terminal Operations

The No-Build Alternative capacity analysis results from the original traffic capacity analysis study indicate that existing traffic operations issues in the project study area are related to peak hour congestion along the I-26 corridor between I-40 system interchange and NC 280 (Airport Road). The extent and duration of this congestion is expected to increase by the 2040 project design year. 68 of the 84 existing I-26 freeway segments analyzed in the project study area provide adequate (LOS D or better) operations in both peak hours in the 2011 base year. This number is expected to decrease to only 34 of 94 future freeway segments in the 2040 design year – No Build alternative, due to the projected peak hour traffic volume increases along the I-26 corridor.

The two existing interchange ramp terminal intersections at the I-26 interchange with US 25 (Asheville Highway) and the US 64 intersection with Francis Road/Sugarloaf Road operate worse than a LOS D in at least one base year peak hour, with one additional intersection (US 64

and Carolina Village Road/Orr's Camp Road) in the project study area expected to degrade to a LOS E or LOS F in at least one peak hour in the 2040 design year – No Build alternative.

Capacity analysis results for the Build 8/6 Lane Combination Alternative indicate that the proposed improvements will provide a LOS D or better for all freeway segments in the project study area in both the 2011 Base Year and 2040 Design Year.

Table 20 highlights the No-Build and Build – 8/6 Lane Alternative freeway analysis comparison.

Table 20. I-4400/4700 Freeway Capacity Analysis Summary

Analysis Year	Scenario	Number of Freeway Segments Operating at Given LOS in at Least One AM or PM Peak Hour					
		LOS A	LOS B	LOS C	LOS D	LOS E	LOS F
2011	No-Build	0	16	36	16	16	0
	Build – 8/6 Lane Combination	1	64	18	1	0	0
2040	No-Build	0	0	15	19	53	7
	Build – 8/6 Lane Combination	0	0	42	52	0	0

11.2 US 25 (Asheville Highway) Service Interchange Analysis

After calibrating existing 2011 AM and PM peak hour microsimulation models of the US 25 (Asheville Highway) service interchange using the TransModeler software package, the model networks were modified to test four (4) proposed initial design concepts – a diverging diamond interchange (DDI), a displaced left-turn Interchange (DLT), a standard partial cloverleaf, and a modified partial cloverleaf containing some design exceptions that allow a smaller interchange footprint.

Measures of Effectiveness (MOEs) such as travel speeds, vehicular delays, and queues were extracted from the models (averages of 10 model runs for each scenario) and a comparison of the No-Build Alternative and four Build Alternatives is presented in **Tables 21 and 22**. These tables provide data for the entire interchange (including effects of the designs along US 25 and the I-26 mainline) as well as for vehicles on the US 25 corridor. The data provides direct comparisons of the anticipated operational effects each Build alternative would have when compared to the No-Build Alternative (the existing standard diamond interchange configuration).

The data indicates that all four design alternatives improve overall system and corridor performance in both peak hours for the vehicle hours traveled, speed, and delay MOEs. However, the two partial cloverleaf designs offer the most operational benefits, followed by the DLT and finally, the DDI.

Based solely on operational performance, the partial cloverleaf designs are recommended for further environmental study to assess their impacts.

Table 21. 2011 and 2040 No-Build to Build System-Level Comparison

Build Alternative	Analysis Year	Percent Improvement over No-Build Alternative							
		Vehicle Miles Traveled (VMT)		Vehicle Hours Traveled (VHT)		Mean System Speed (mph)		Total System Delay (Hours)	
		AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak
DDI	2011	9%	21%	-14%	-8%	26%	30%	-44%	-38%
	2040	92%	78%	-77%	-73%	468%	380%	-85%	-83%
DLT	2011	9%	21%	-20%	-20%	35%	50%	-56%	-63%
	2040	97%	84%	-85%	-84%	731%	686%	-94%	-95%
Partial Cloverleaf	2011	13%	26%	-18%	-15%	37%	48%	-60%	-62%
	2040	105%	90%	-87%	-85%	873%	735%	-97%	-96%
Partial Cloverleaf (Design Exception)	2011	11%	24%	-19%	-16%	36%	47%	-60%	-63%
	2040	103%	88%	-87%	-85%	870%	743%	-97%	-96%

Table 22. 2011 and 2040 No-Build to Build US 25 Corridor-Level Comparison

Build Alternative	US 25 Direction	2011 Percent Improvement over No-Build Alternative				2040 Percent Improvement over No-Build Alternative			
		Travel Time (min)		US 25 Through Trips		Travel Time (min)		US 25 Through Trips	
		AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak
DDI	NB	-18%	60%	-3%	32%	-16%	-22%	34%	35%
	SB	12%	46%	50%	25%	-12%	-12%	10%	4%
DLT	NB	-51%	-19%	-4%	30%	-69%	-58%	47%	58%
	SB	-11%	-5%	51%	31%	-8%	-53%	28%	28%
Partial Cloverleaf	NB	-56%	-25%	-2%	32%	-71%	-67%	55%	60%
	SB	-20%	-9%	55%	31%	-61%	-70%	42%	32%
Partial Cloverleaf (Design Exception)	NB	-58%	-26%	1%	34%	-72%	-69%	53%	60%
	SB	-19%	-8%	54%	30%	-62%	-71%	44%	31%

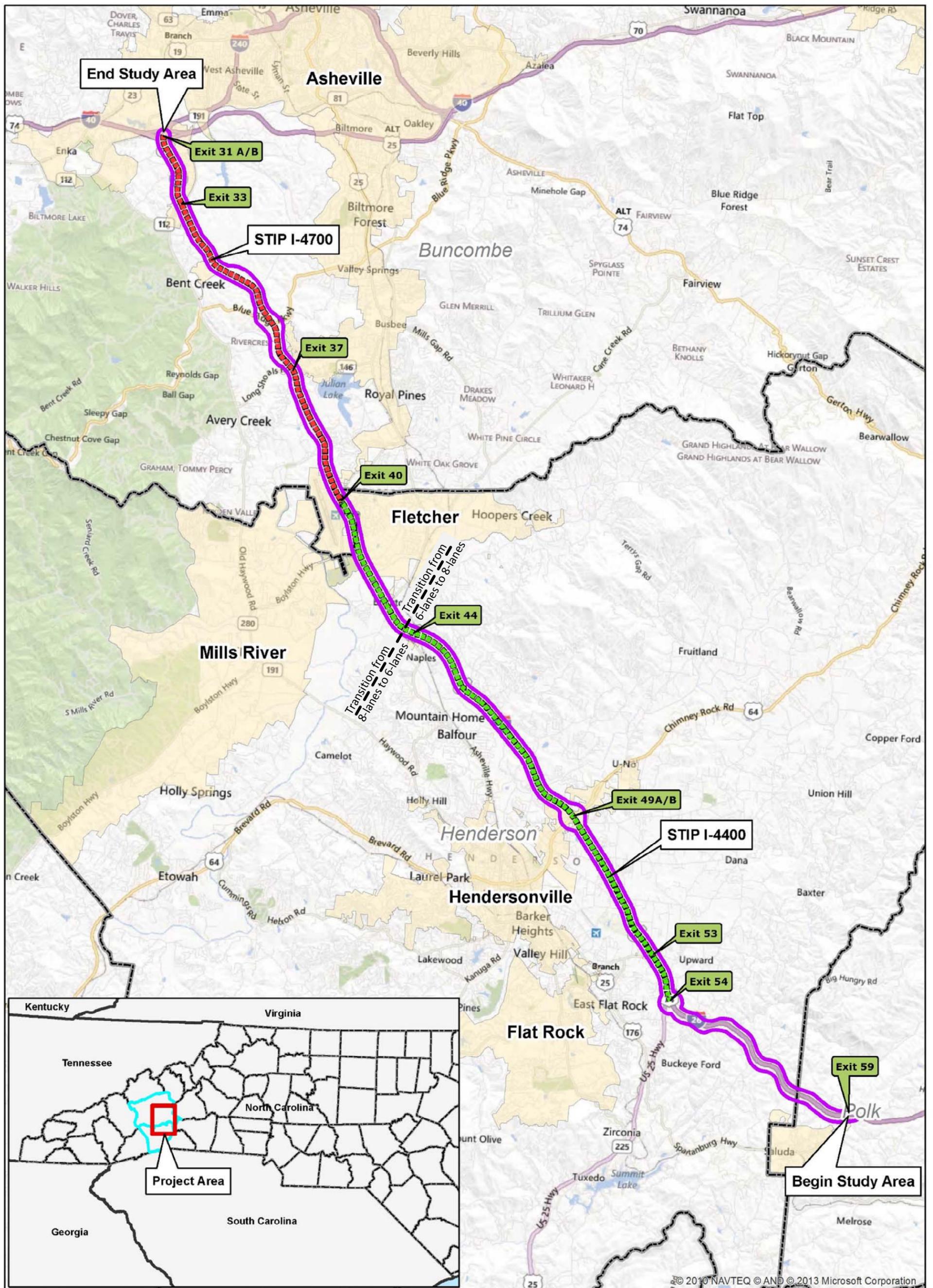
11.3 I-26 Southbound Termini Analysis

To validate initial capacity analysis results from the FreeVal freeway system evaluation software, the segment of I-26 southbound between the Upward Road and US 25 (Flat Rock) interchanges was analyzed in the TransModeler microsimulation program to compare No-Build and I-26 Build Alternative operations, primarily focusing on the 2040 design year. The goal was to evaluate results from the Build – 6 Lane, 8-Lane, and 8/6 Combination Alternative preliminary roadway designs in this area to compare to initial FreeVal merge and diverge results (LOS F/E, respectively in the 2040 AM peak hour).

The following MOE results were extracted from the models:

- Generally, all three I-26 design alternatives improve freeway densities in this section by 50 percent or more compared to the No-Build existing freeway and on-ramp/off-ramp configuration.
- Density values reported from the Build alternative simulation runs, if compared to HCM methodology LOS ranges and thresholds for basic freeway, ramp merge/diverge segments, would equate to a LOS D or better in both peak hours in the 2040 design year.
- Therefore, any of the I-26 Build Alternative current conceptual designs should provide adequate peak hour traffic operations in the 2040 design year peak hours for this segment of I-26. This also serves to verify that the initial 2040 design year capacity analysis results from FreeVal are not valid for this area.

Appendix A – Figures



Traffic Analysis Study Area Figure 1
 STIP Project I-4400/I-4700
 October 2014

Legend

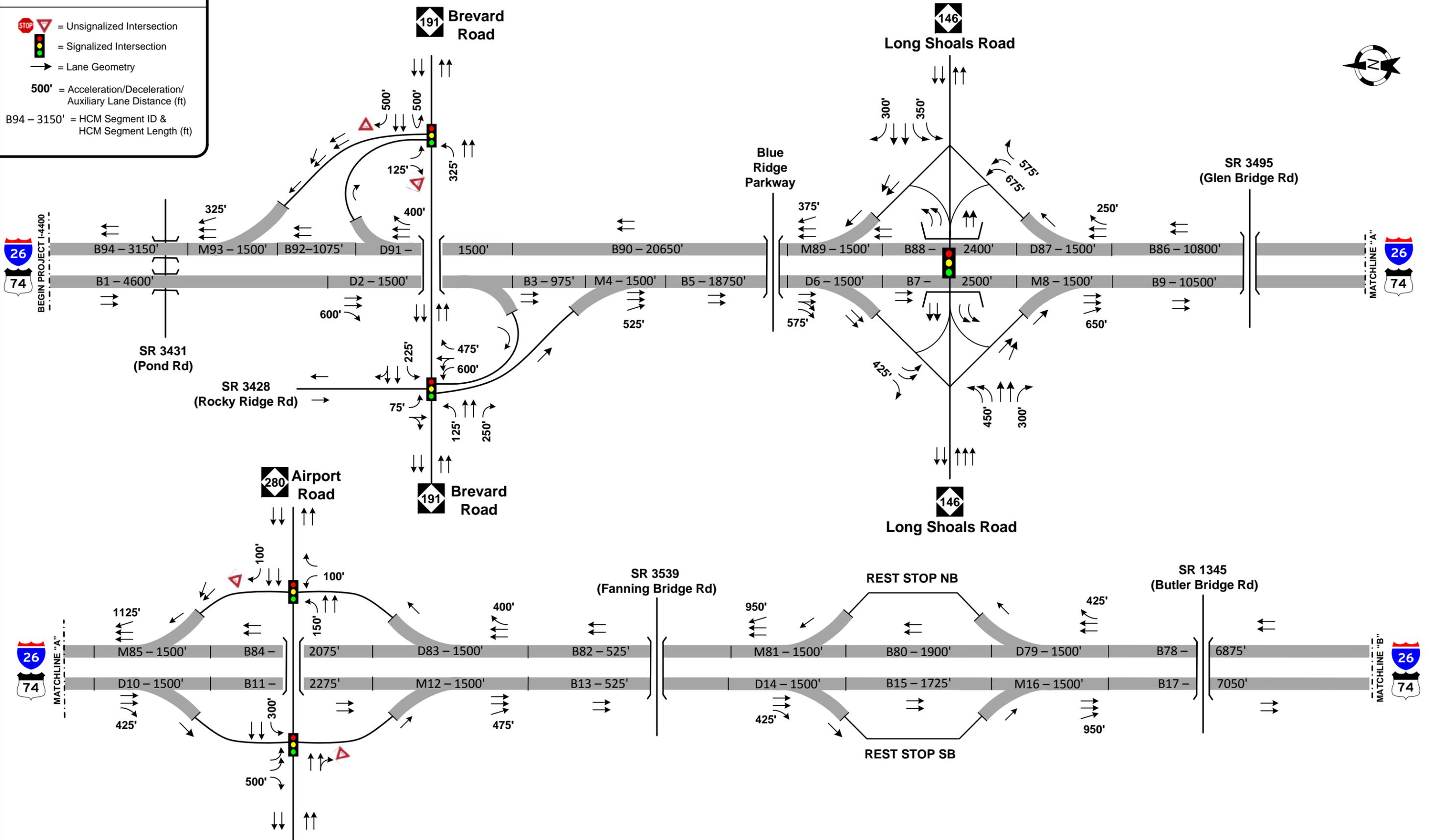
- - - - - STIP Project I-4400
- - - - - STIP Project I-4700
- I-4400/I-4700 Traffic Analysis Study Area



Data Sources: NCDOT, NC OneMap, Bing Maps, HNTB

LEGEND

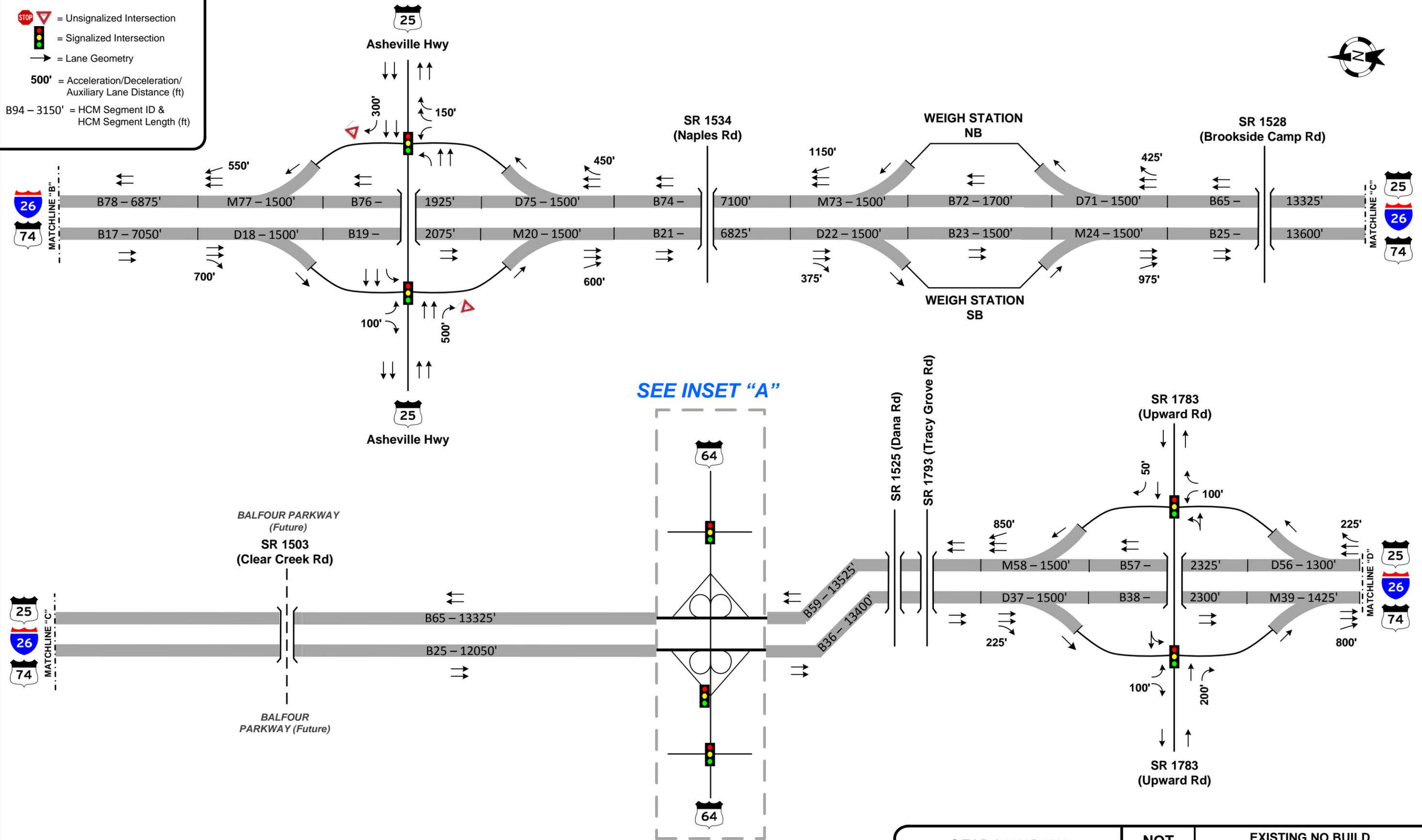
-  = Unsignalized Intersection
-  = Signalized Intersection
-  = Lane Geometry
- 500'** = Acceleration/Deceleration/Auxiliary Lane Distance (ft)
- B94 - 3150'** = HCM Segment ID & HCM Segment Length (ft)



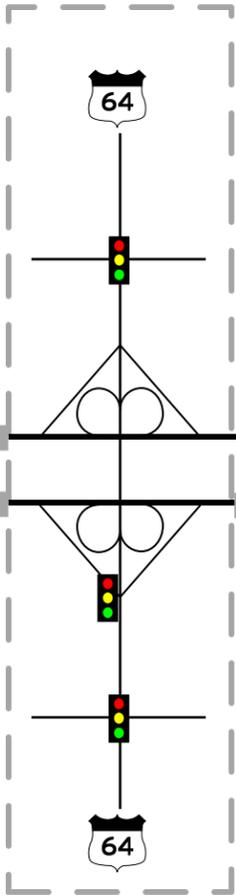
S.T.I.P. I-4400/I-4700 I-26 WIDENING BUNCOMBE AND HENDERSON COUNTIES	NOT TO SCALE	EXISTING NO BUILD LANEAGE & HCM SEGMENT ID# DATE: October 2014	FIGURE 2.1
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LEGEND

-  = Unsignalized Intersection
-  = Signalized Intersection
-  = Lane Geometry
- 500'** = Acceleration/Deceleration/Auxiliary Lane Distance (ft)
- B94 – 3150'** = HCM Segment ID & HCM Segment Length (ft)

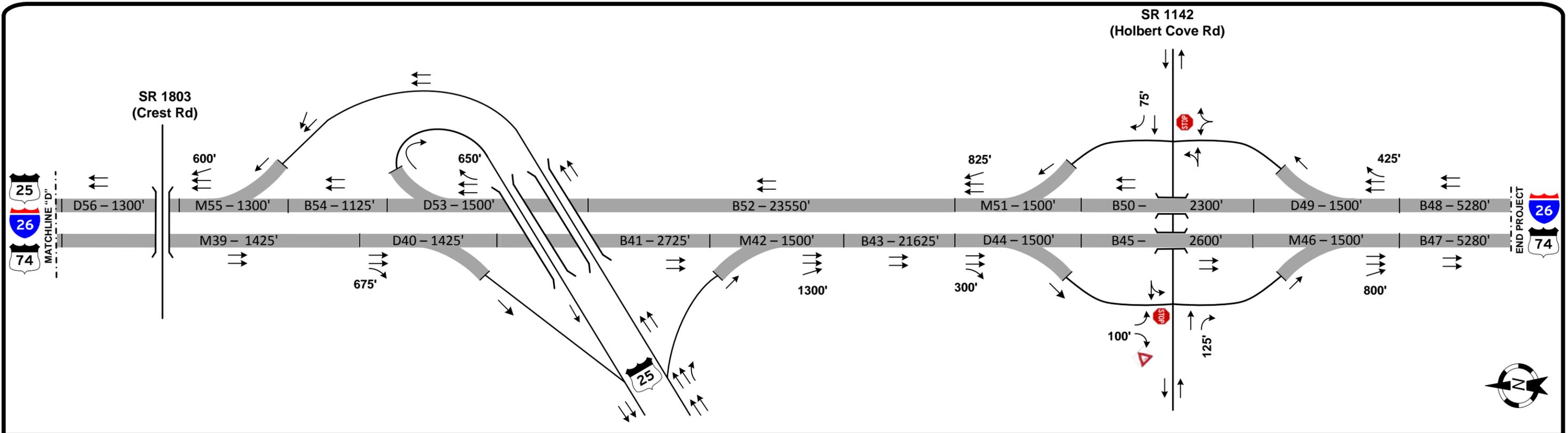


SEE INSET "A"

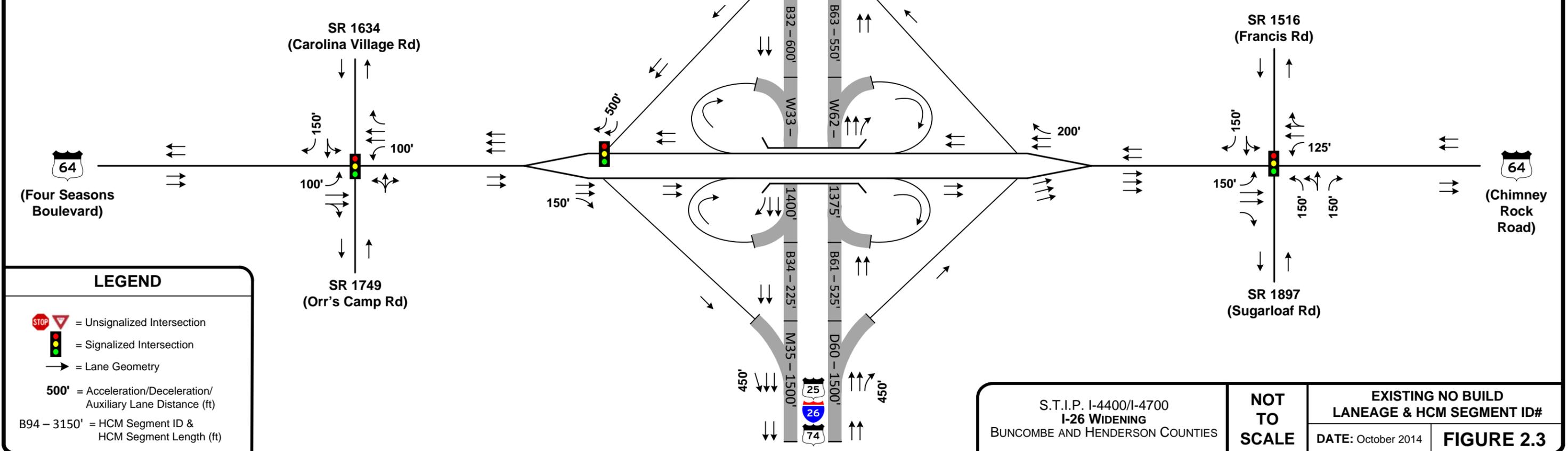


S.T.I.P. I-4400/I-4700 I-26 WIDENING BUNCOMBE AND HENDERSON COUNTIES	NOT TO SCALE	EXISTING NO BUILD LANEAGE & HCM SEGMENT ID#
		DATE: October 2014

FIGURE 2.2



INSET "A"
I-26/US 64
INTERCHANGE



LEGEND

- = Unsignalized Intersection
- = Signalized Intersection
- = Lane Geometry
- 500'** = Acceleration/Deceleration/Auxiliary Lane Distance (ft)
- B94 - 3150'** = HCM Segment ID & HCM Segment Length (ft)

S.T.I.P. I-4400/I-4700
I-26 WIDENING
 BUNCOMBE AND HENDERSON COUNTIES

NOT TO SCALE

EXISTING NO BUILD LANEAGE & HCM SEGMENT ID#
 DATE: October 2014 **FIGURE 2.3**

LEGEND

XX (XX) = AM (PM) Peak Hour Volumes

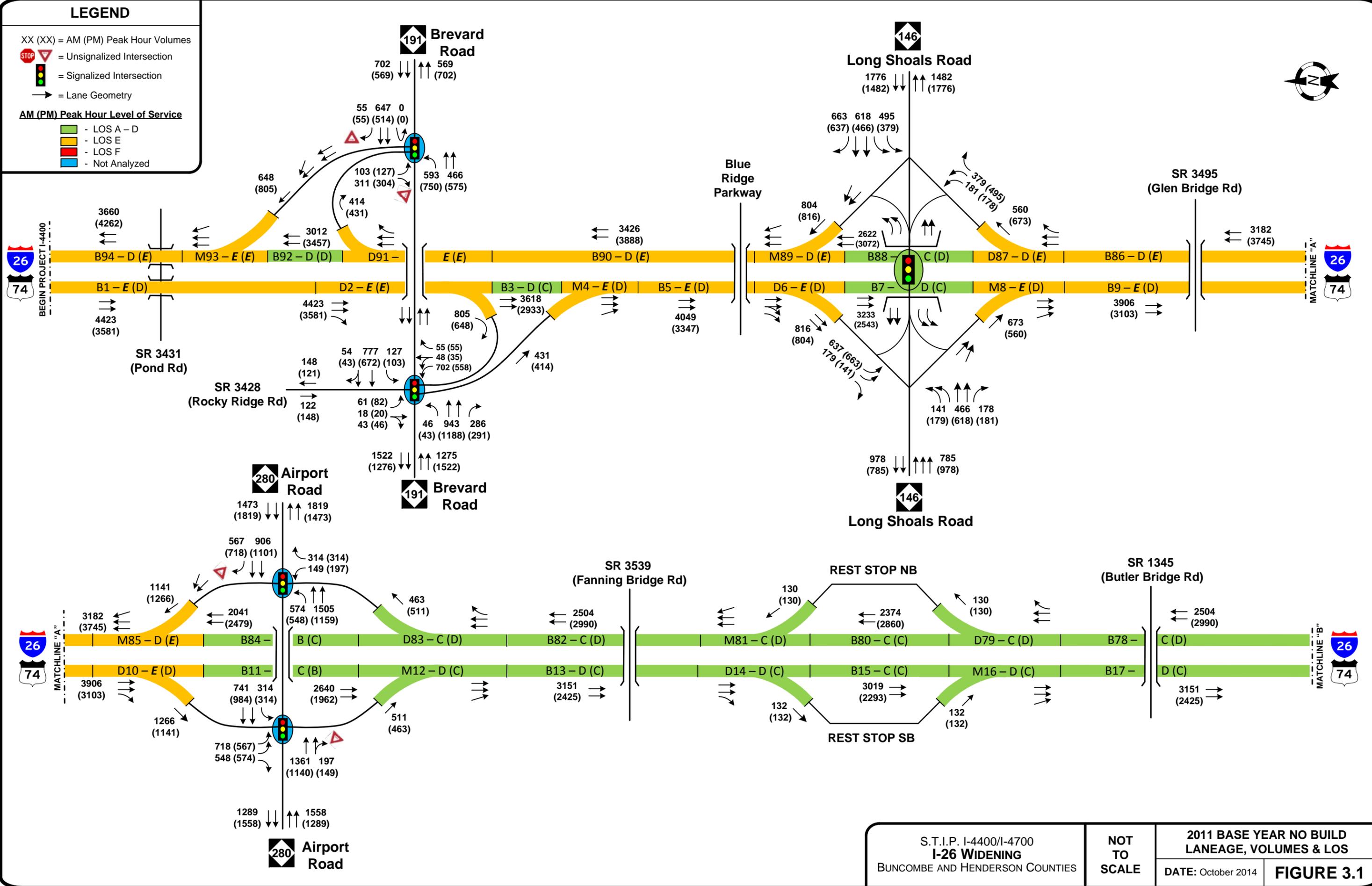
= Unsignalized Intersection

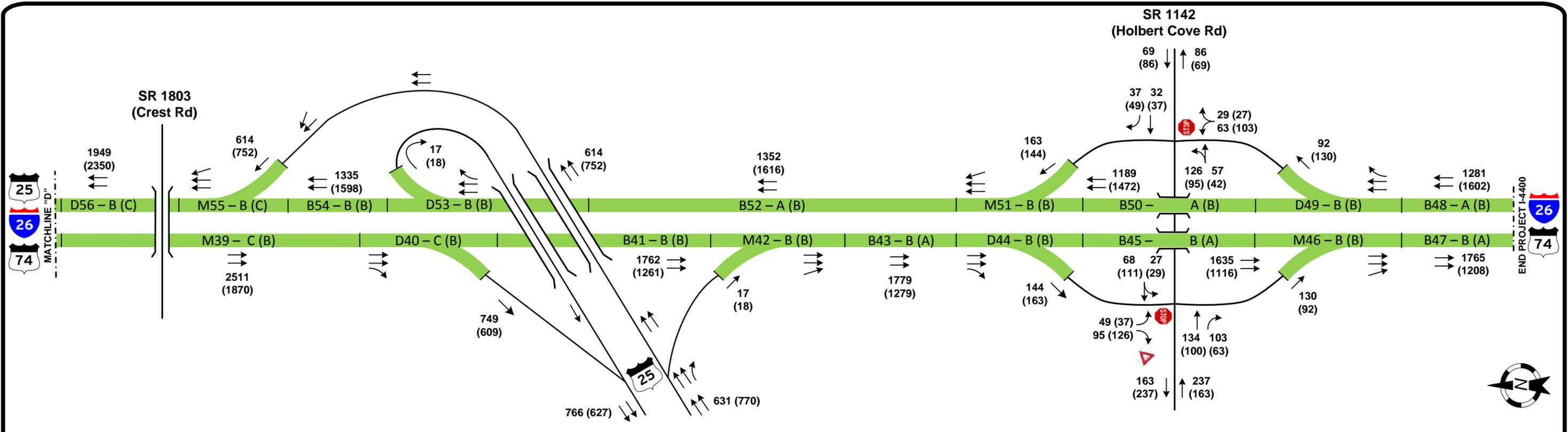
= Signalized Intersection

= Lane Geometry

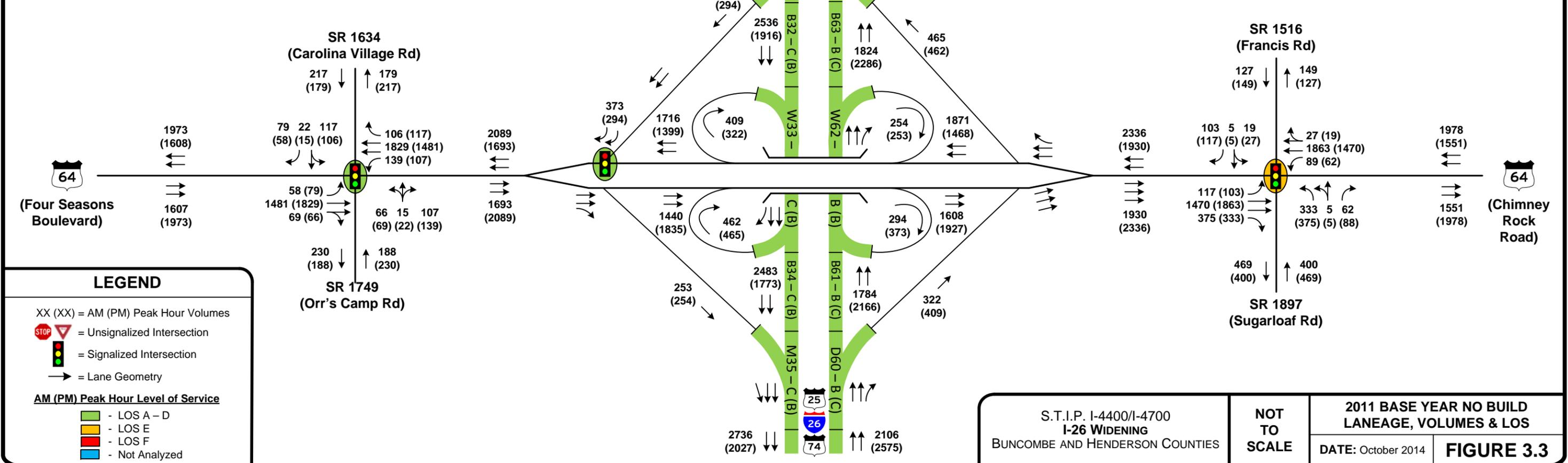
AM (PM) Peak Hour Level of Service

- LOS A - D
- LOS E
- LOS F
- Not Analyzed





INSET "A"
I-26/US 64
INTERCHANGE

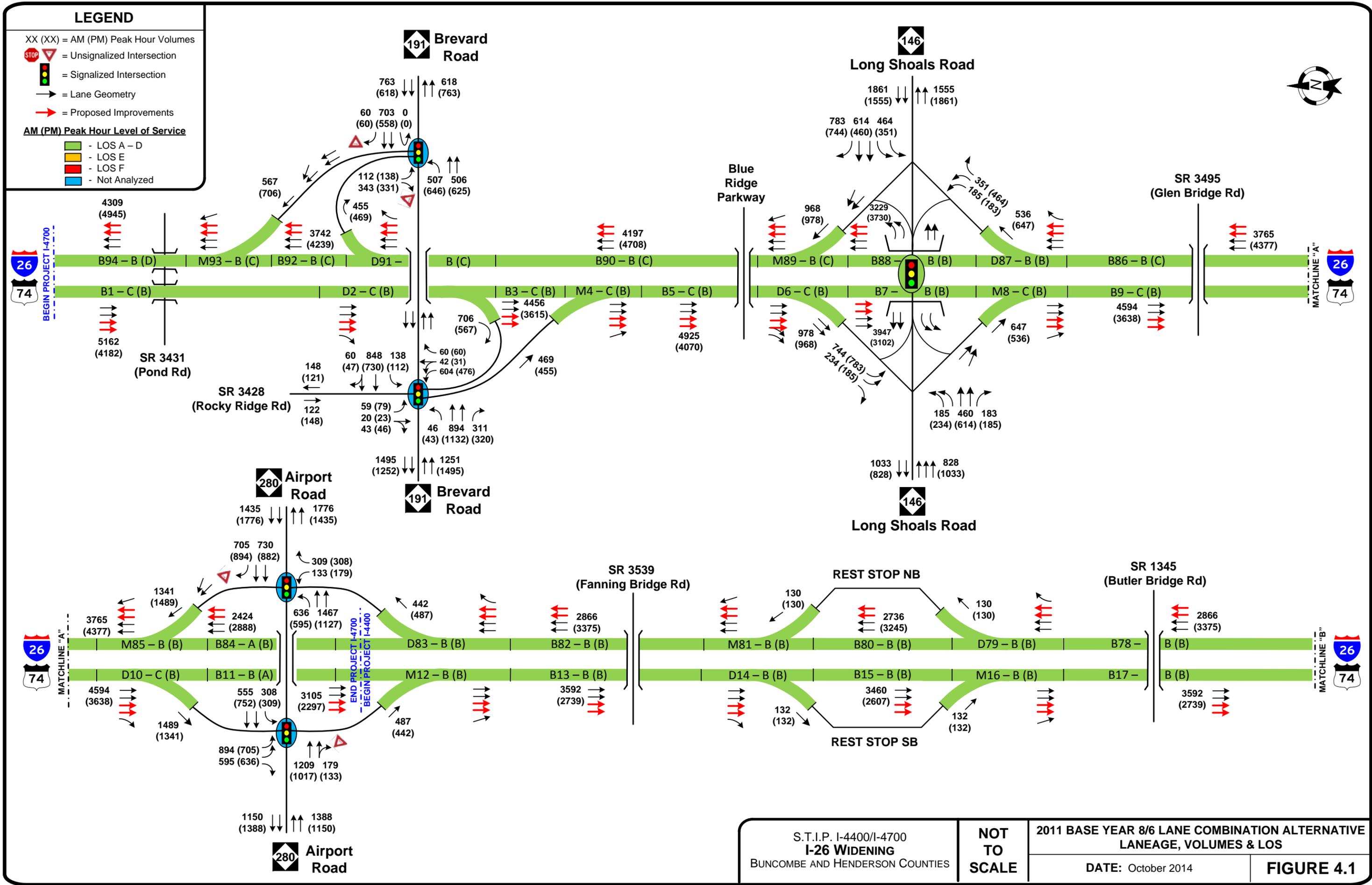


LEGEND

- XX (XX) = AM (PM) Peak Hour Volumes
- = Unsignalized Intersection
- = Signalized Intersection
- = Lane Geometry
- AM (PM) Peak Hour Level of Service**
- LOS A - D
- LOS E
- LOS F
- Not Analyzed

LEGEND

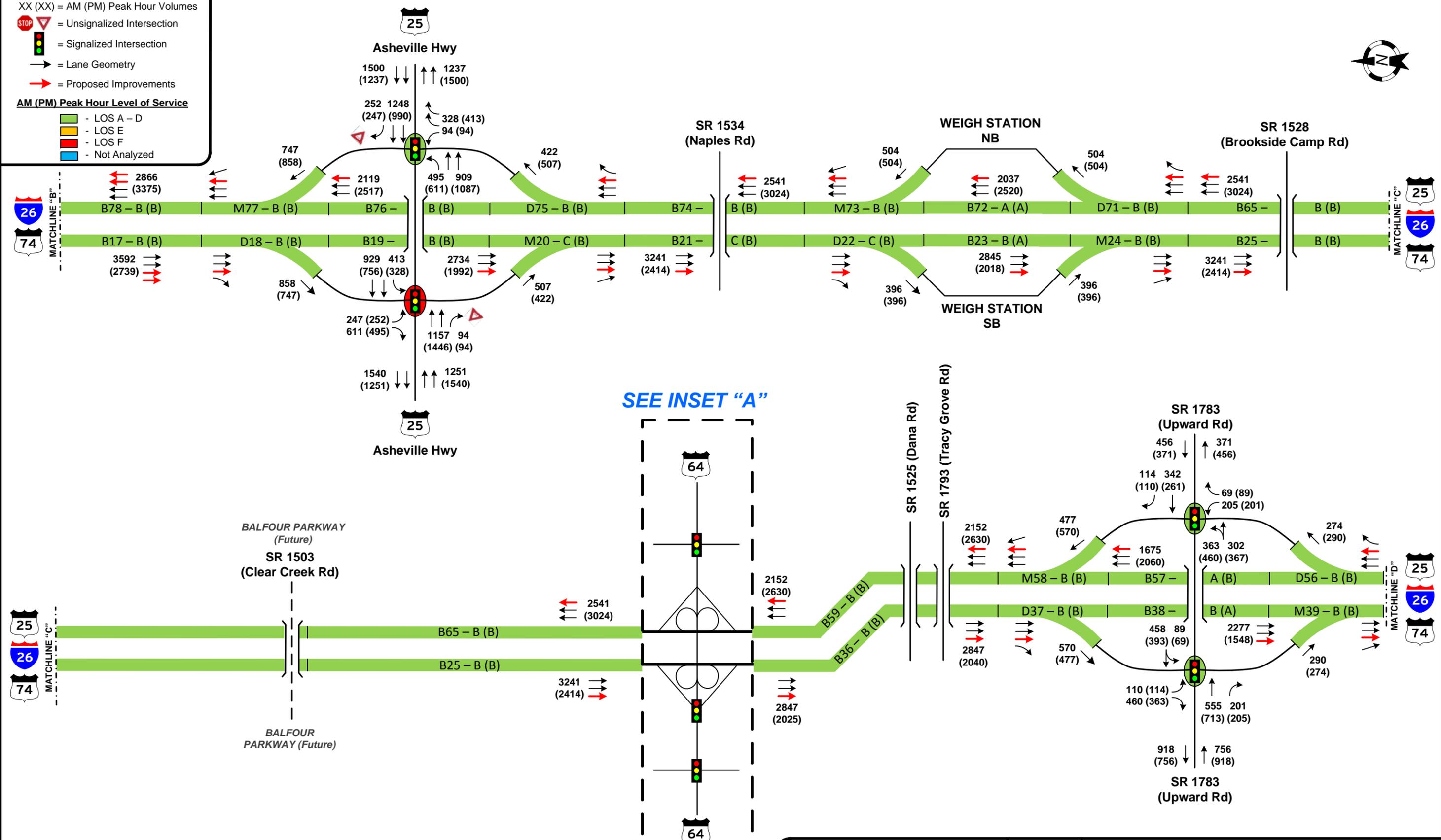
- XX (XX) = AM (PM) Peak Hour Volumes
 - = Unsignalized Intersection
 - = Signalized Intersection
 - = Lane Geometry
 - = Proposed Improvements
- AM (PM) Peak Hour Level of Service**
- LOS A - D
 - LOS E
 - LOS F
 - Not Analyzed



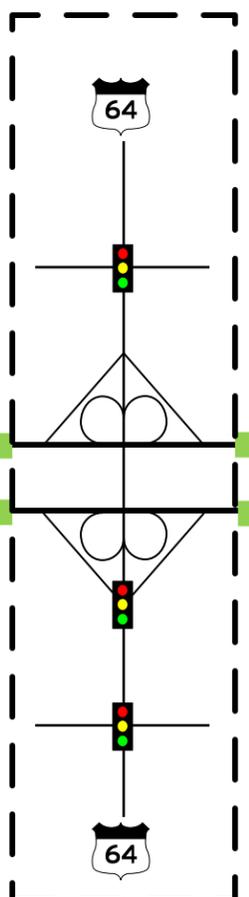
S.T.I.P. I-4400/I-4700 I-26 WIDENING BUNCOMBE AND HENDERSON COUNTIES	NOT TO SCALE	2011 BASE YEAR 8/6 LANE COMBINATION ALTERNATIVE LANEAGE, VOLUMES & LOS DATE: October 2014	FIGURE 4.1
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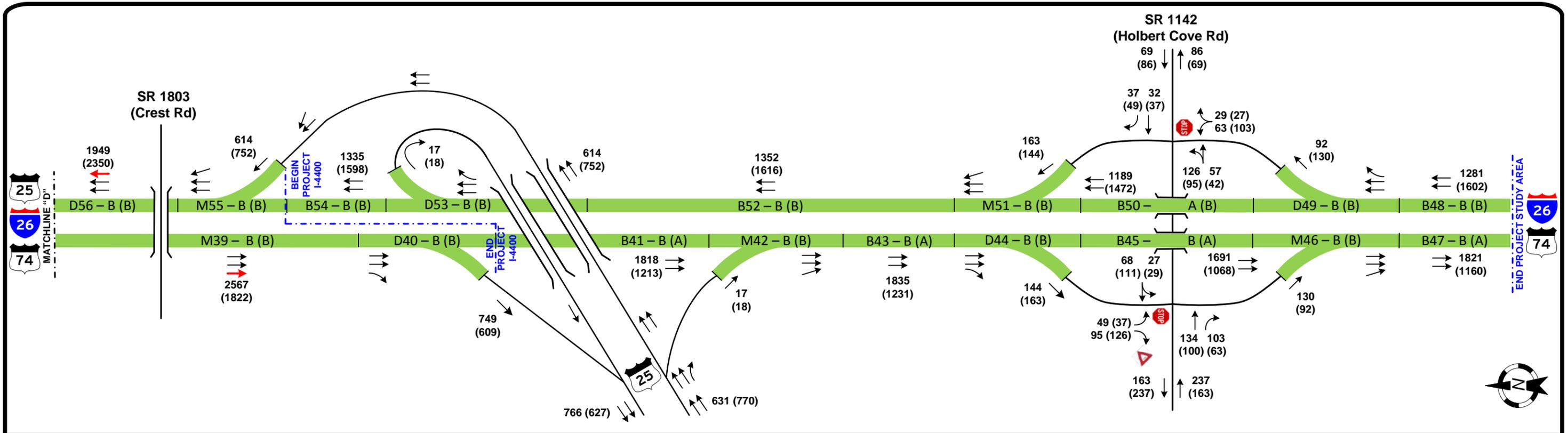
LEGEND

- XX (XX) = AM (PM) Peak Hour Volumes
-   = Unsignalized Intersection
-  = Signalized Intersection
-  = Lane Geometry
-  = Proposed Improvements
- AM (PM) Peak Hour Level of Service**
-  - LOS A - D
-  - LOS E
-  - LOS F
-  - Not Analyzed

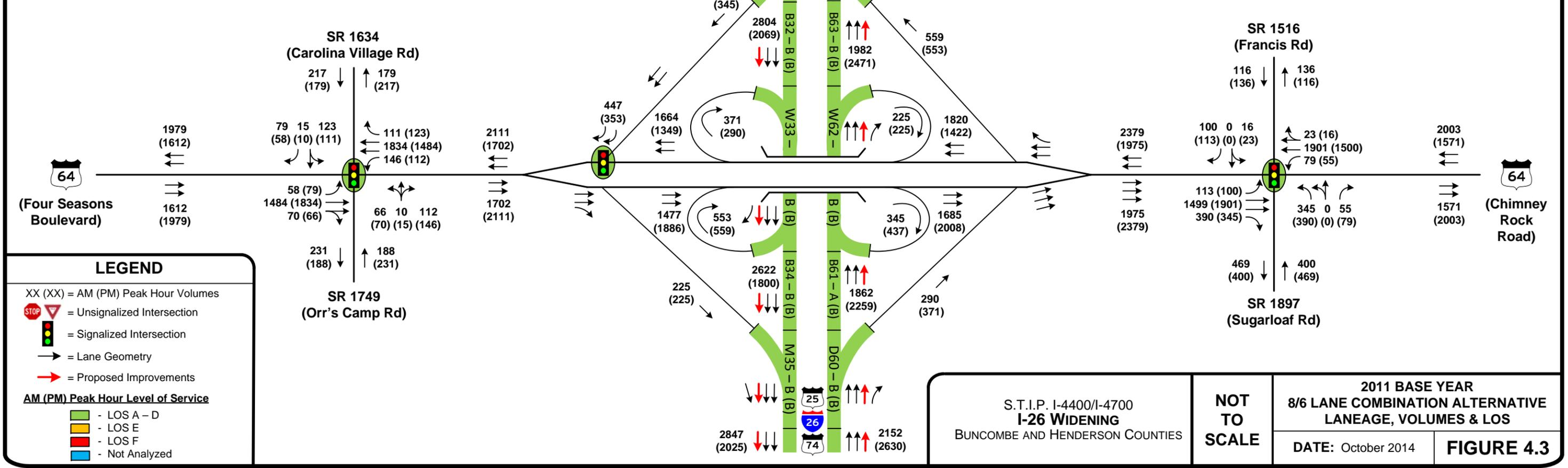


SEE INSET "A"





INSET "A"
I-26/US 64
INTERCHANGE



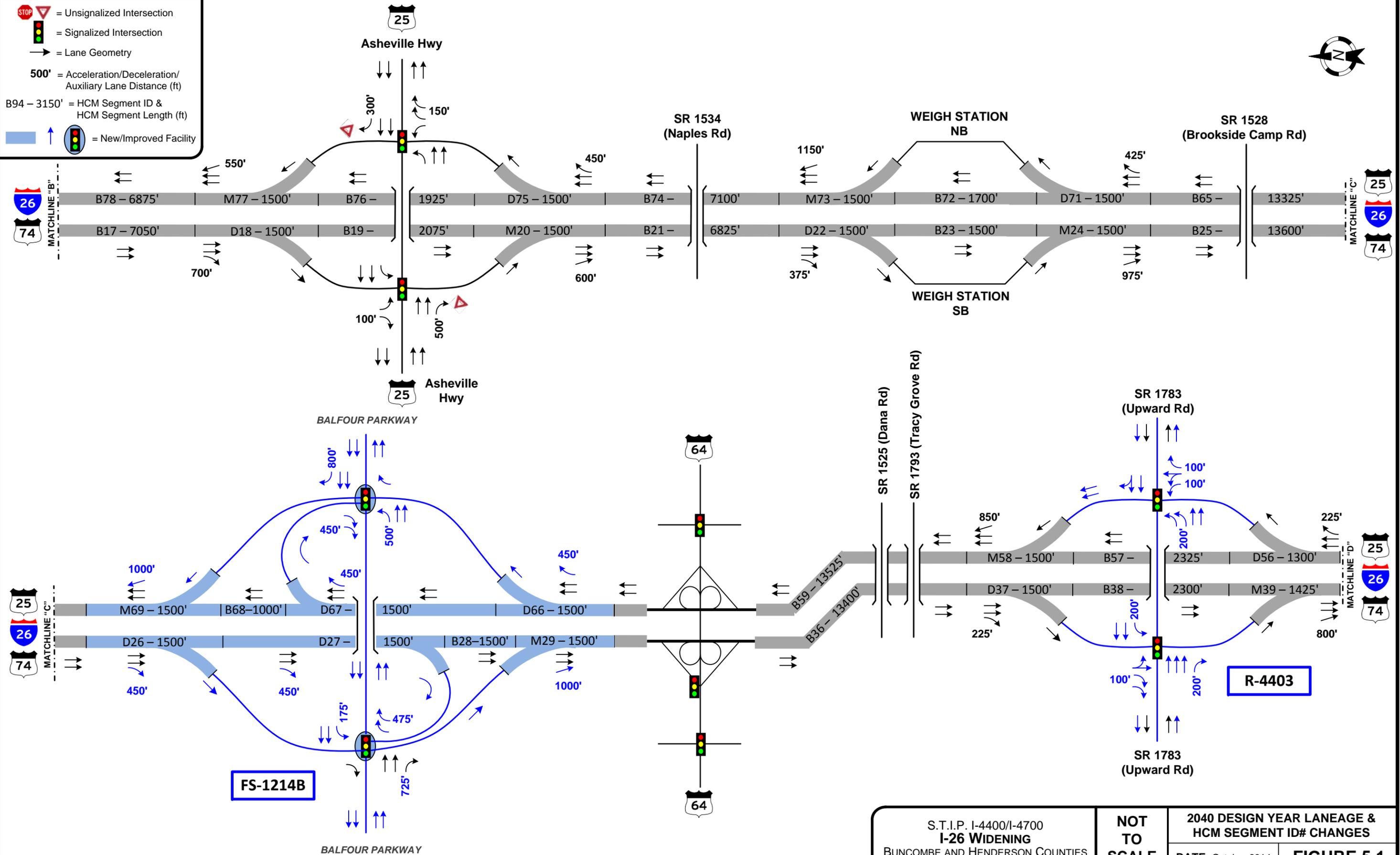
LEGEND

- XX (XX) = AM (PM) Peak Hour Volumes
- = Unsignalized Intersection
- = Signalized Intersection
- = Lane Geometry
- = Proposed Improvements
- AM (PM) Peak Hour Level of Service**
- LOS A - D
- LOS E
- LOS F
- Not Analyzed

S.T.I.P. I-4400/I-4700 I-26 WIDENING BUNCOMBE AND HENDERSON COUNTIES	NOT TO SCALE	2011 BASE YEAR 8/6 LANE COMBINATION LANEAGE, VOLUMES & LOS	
		DATE: October 2014	FIGURE 4.3

LEGEND

-  = Unsignalized Intersection
-  = Signalized Intersection
-  = Lane Geometry
- 500' = Acceleration/Deceleration/Auxiliary Lane Distance (ft)
- B94 - 3150' = HCM Segment ID & HCM Segment Length (ft)
-   = New/Improved Facility



FS-1214B

R-4403

S.T.I.P. I-4400/I-4700
I-26 WIDENING
 BUNCOMBE AND HENDERSON COUNTIES

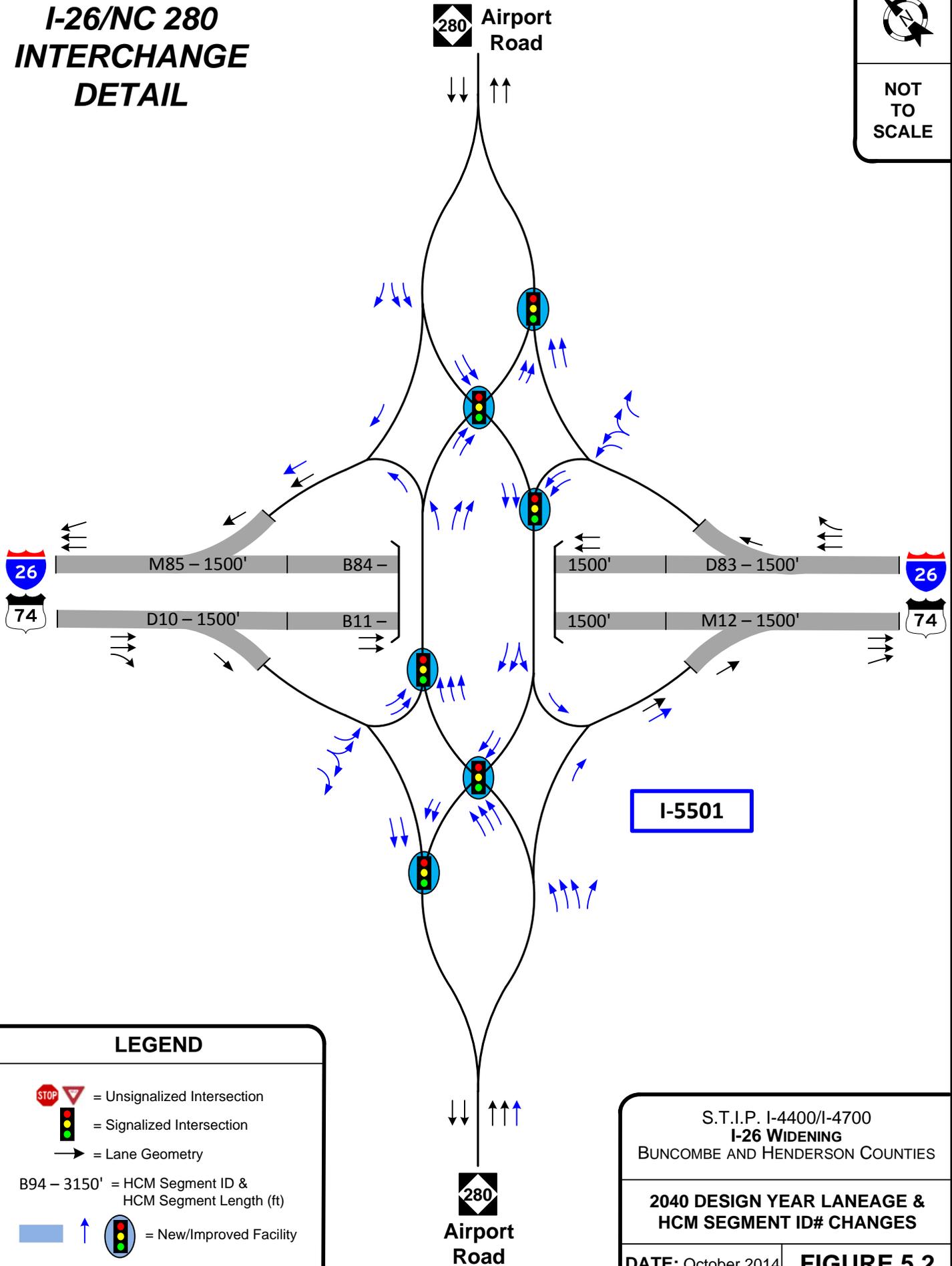
NOT TO SCALE

2040 DESIGN YEAR LANEAGE & HCM SEGMENT ID# CHANGES
 DATE: October 2014 **FIGURE 5.1**

I-26/NC 280 INTERCHANGE DETAIL



NOT
TO
SCALE



LEGEND

- = Unsignalized Intersection
- = Signalized Intersection
- = Lane Geometry
- B94 - 3150' = HCM Segment ID & HCM Segment Length (ft)
- = New/Improved Facility

S.T.I.P. I-4400/I-4700
I-26 WIDENING
BUNCOMBE AND HENDERSON COUNTIES

2040 DESIGN YEAR LANEAGE &
HCM SEGMENT ID# CHANGES

DATE: October 2014

FIGURE 5.2

LEGEND

XX (XX) = AM (PM) Peak Hour Volumes

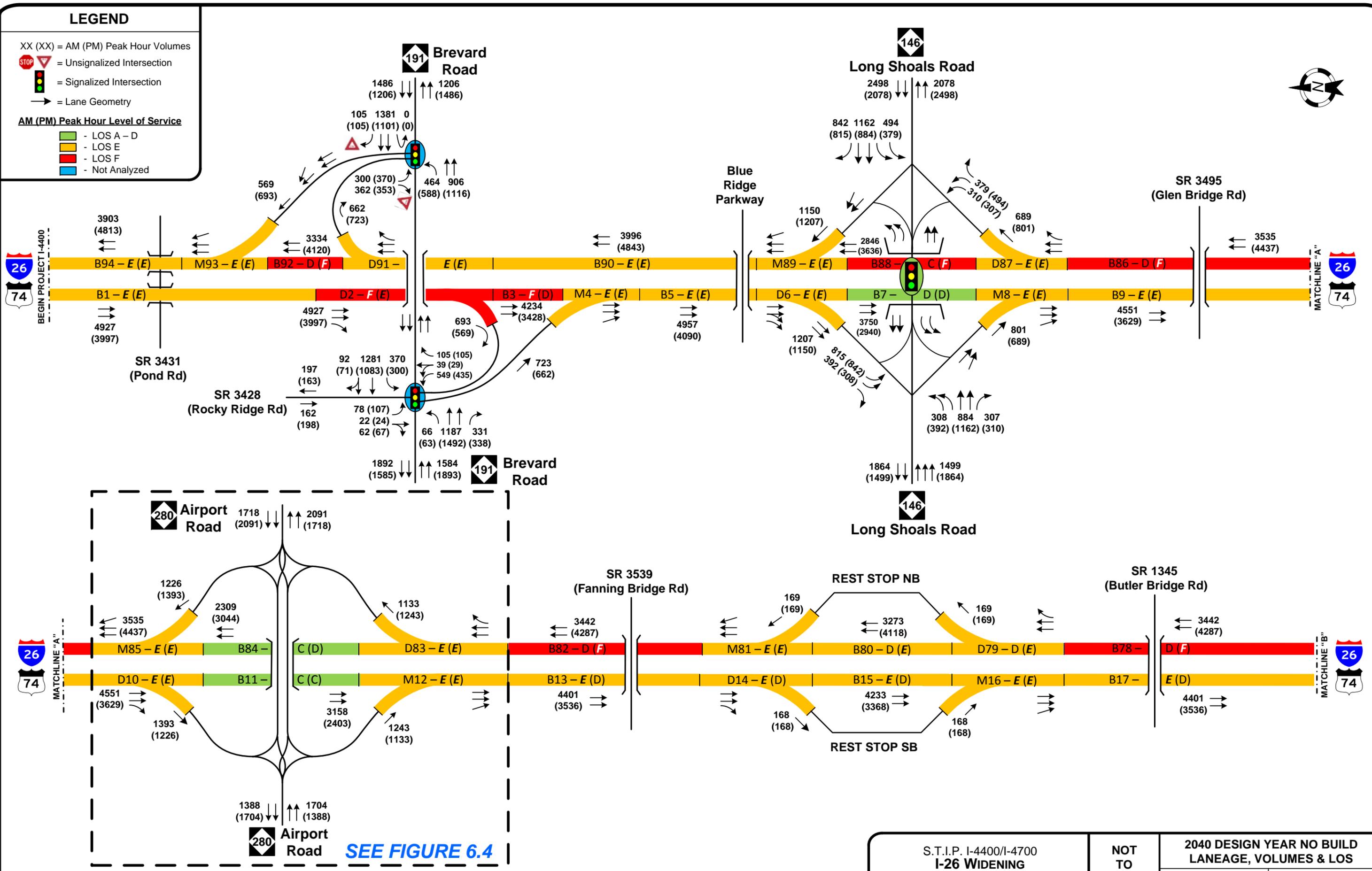
= Unsignalized Intersection

= Signalized Intersection

= Lane Geometry

AM (PM) Peak Hour Level of Service

- LOS A - D
- LOS E
- LOS F
- Not Analyzed



MATCHLINE "A"

MATCHLINE "B"

SEE FIGURE 6.4

S.T.I.P. I-4400/I-4700 I-26 WIDENING BUNCOMBE AND HENDERSON COUNTIES	NOT TO SCALE	2040 DESIGN YEAR NO BUILD LANEAGE, VOLUMES & LOS	
		DATE: October 2014	FIGURE 6.1

LEGEND

XX (XX) = AM (PM) Peak Hour Volumes

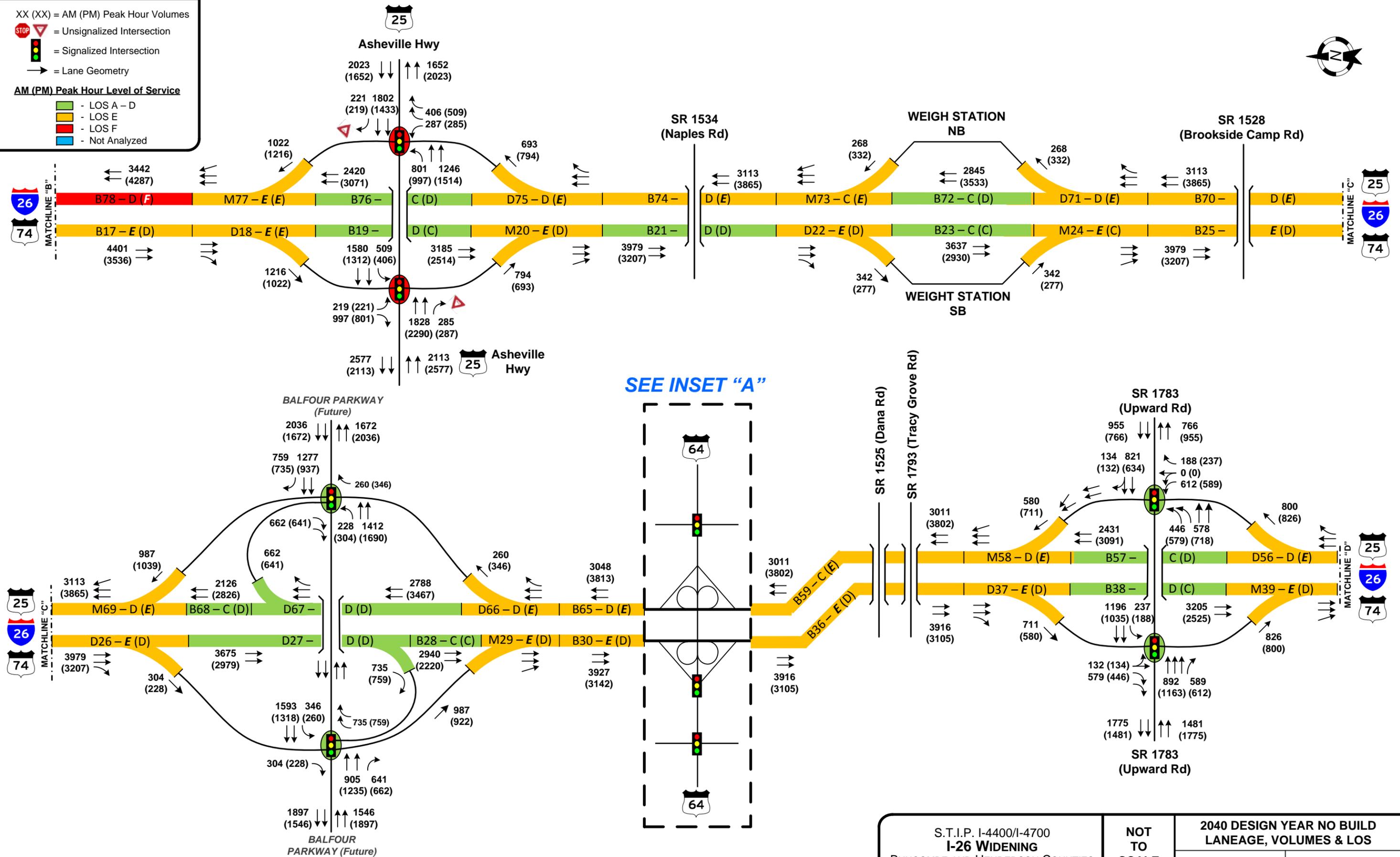
= Unsignalized Intersection

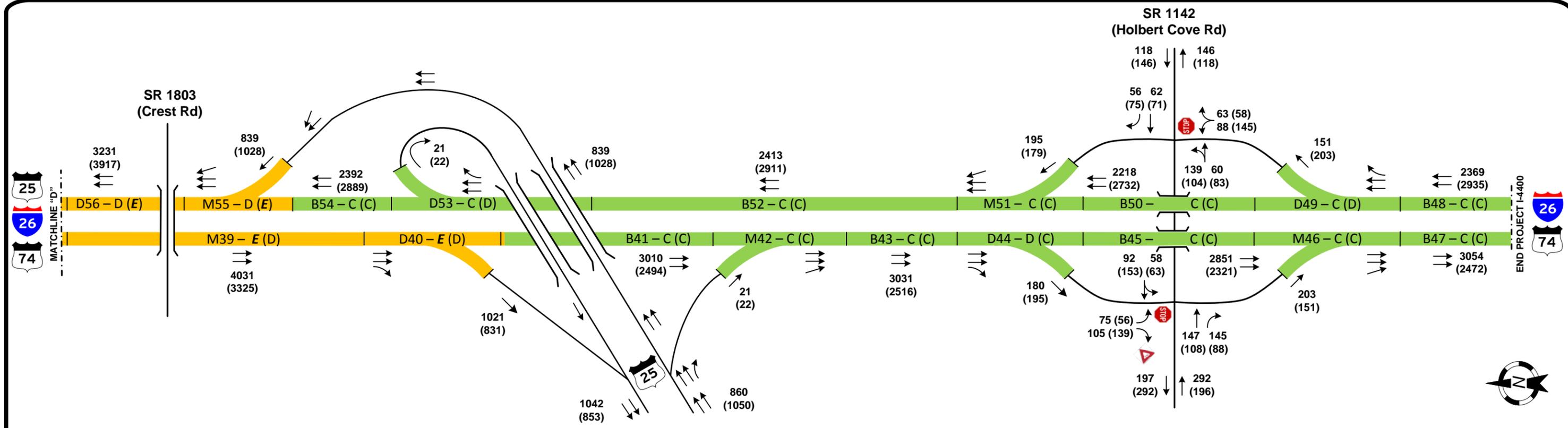
= Signalized Intersection

= Lane Geometry

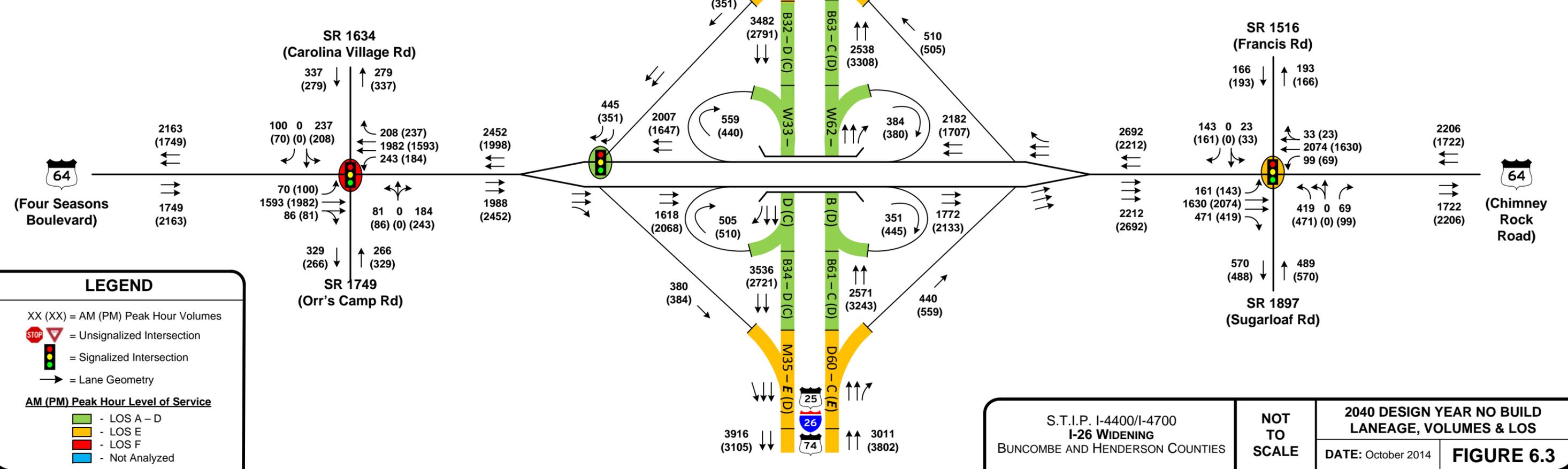
AM (PM) Peak Hour Level of Service

- LOS A - D
- LOS E
- LOS F
- Not Analyzed





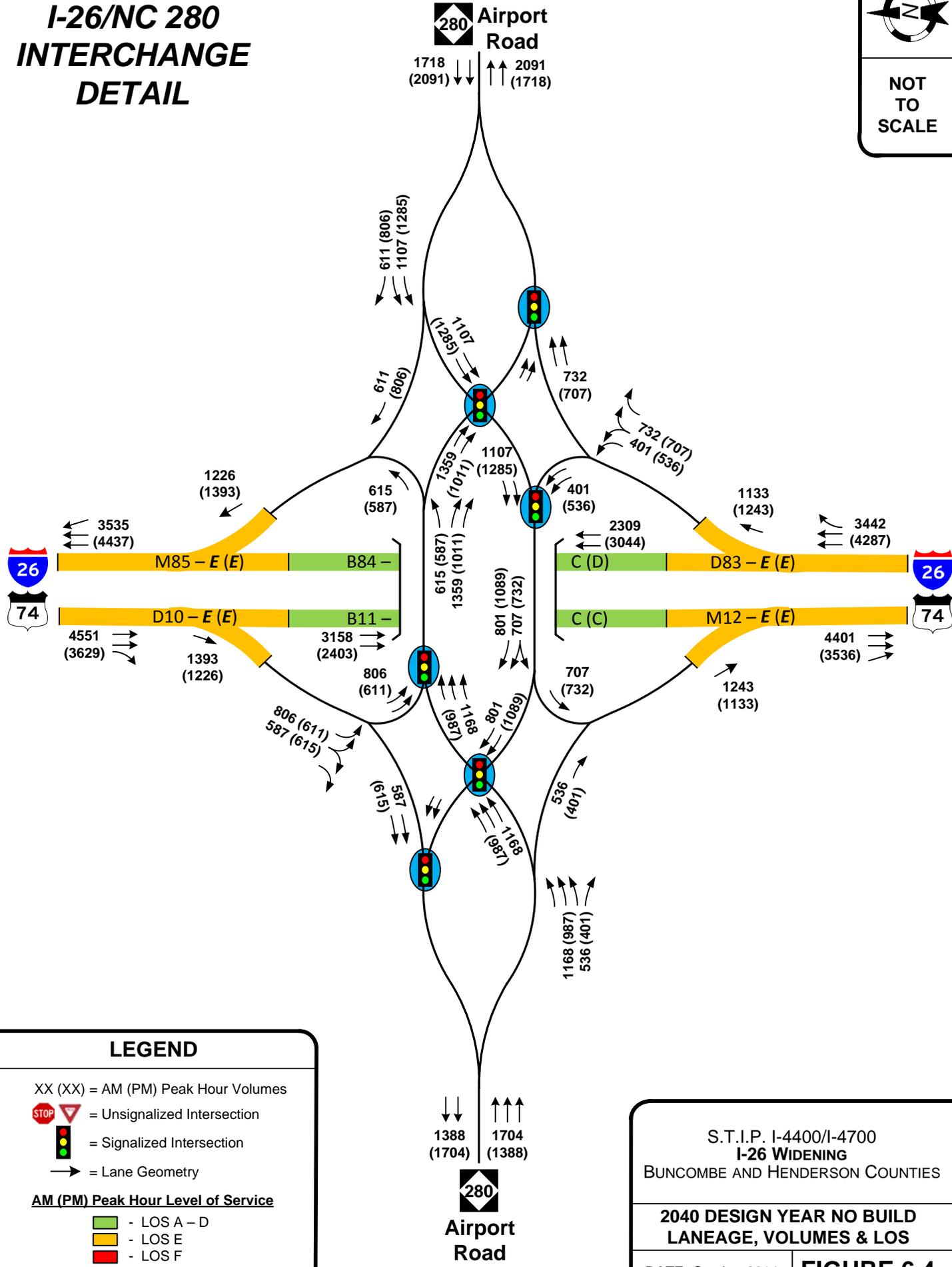
INSET "A"
I-26/US 64
INTERCHANGE



S.T.I.P. I-4400/I-4700 I-26 WIDENING BUNCOMBE AND HENDERSON COUNTIES	NOT TO SCALE	2040 DESIGN YEAR NO BUILD LANEAGE, VOLUMES & LOS	
		DATE: October 2014	FIGURE 6.3

I-26/NC 280 INTERCHANGE DETAIL

NOT TO SCALE



LEGEND

- XX (XX) = AM (PM) Peak Hour Volumes
 - = Unsignalized Intersection
 - = Signalized Intersection
 - = Lane Geometry
- AM (PM) Peak Hour Level of Service**
- LOS A - D
 - LOS E
 - LOS F
 - Not Analyzed

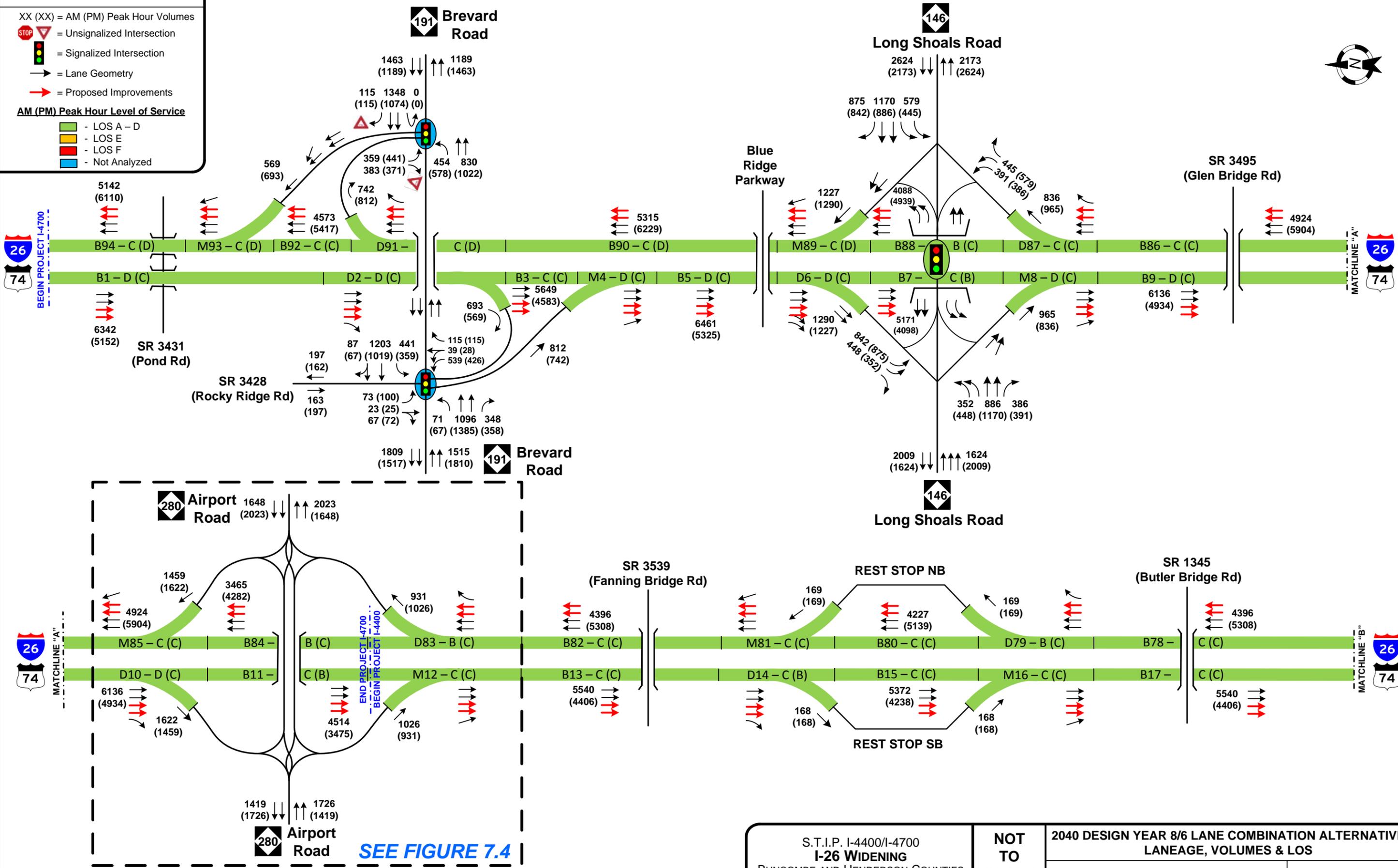
S.T.I.P. I-4400/I-4700
I-26 WIDENING
 BUNCOMBE AND HENDERSON COUNTIES

2040 DESIGN YEAR NO BUILD LANEAGE, VOLUMES & LOS

DATE: October 2014 **FIGURE 6.4**

LEGEND

- XX (XX) = AM (PM) Peak Hour Volumes
 - = Unsignalized Intersection
 - = Signalized Intersection
 - = Lane Geometry
 - = Proposed Improvements
- AM (PM) Peak Hour Level of Service**
- LOS A - D
 - LOS E
 - LOS F
 - Not Analyzed

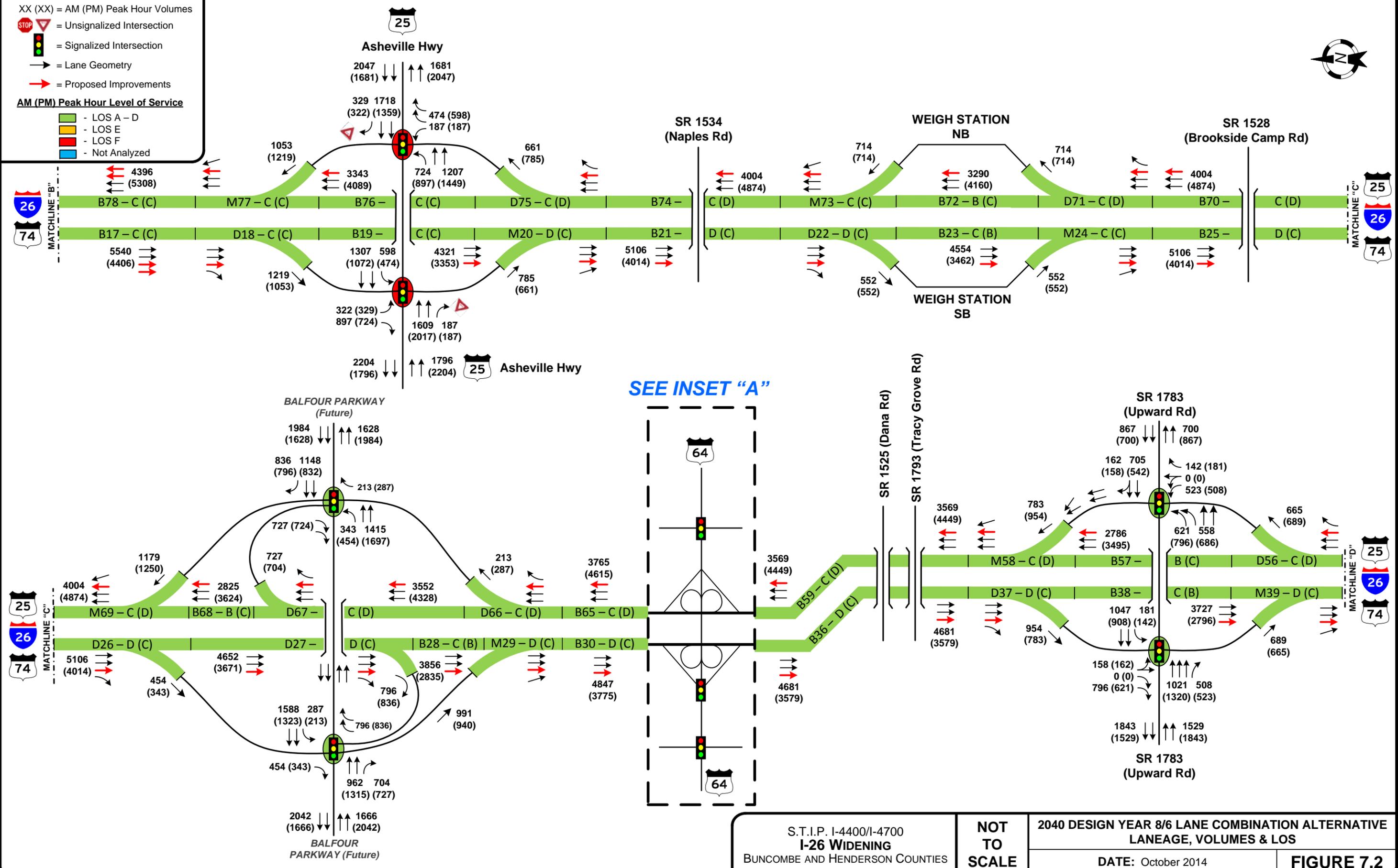


SEE FIGURE 7.4

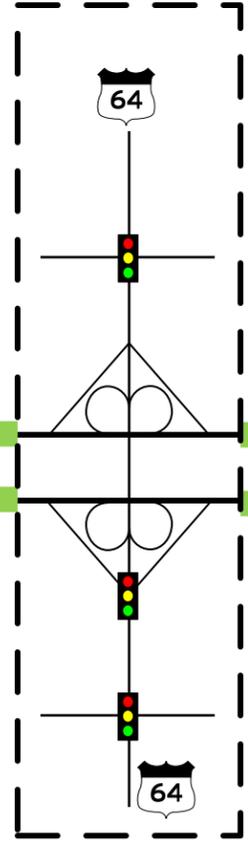
S.T.I.P. I-4400/I-4700 I-26 WIDENING BUNCOMBE AND HENDERSON COUNTIES	NOT TO SCALE	2040 DESIGN YEAR 8/6 LANE COMBINATION ALTERNATIVE LANEAGE, VOLUMES & LOS DATE: October 2014
		FIGURE 7.1

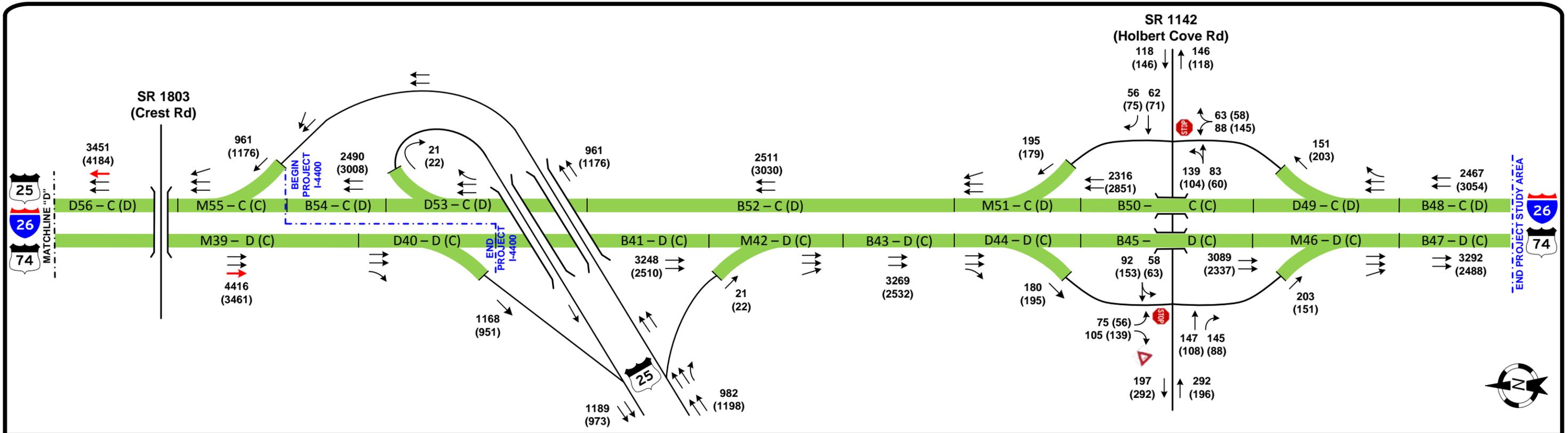
LEGEND

- XX (XX) = AM (PM) Peak Hour Volumes
 - = Unsignalized Intersection
 - = Signalized Intersection
 - = Lane Geometry
 - = Proposed Improvements
- AM (PM) Peak Hour Level of Service**
- LOS A - D
 - LOS E
 - LOS F
 - Not Analyzed

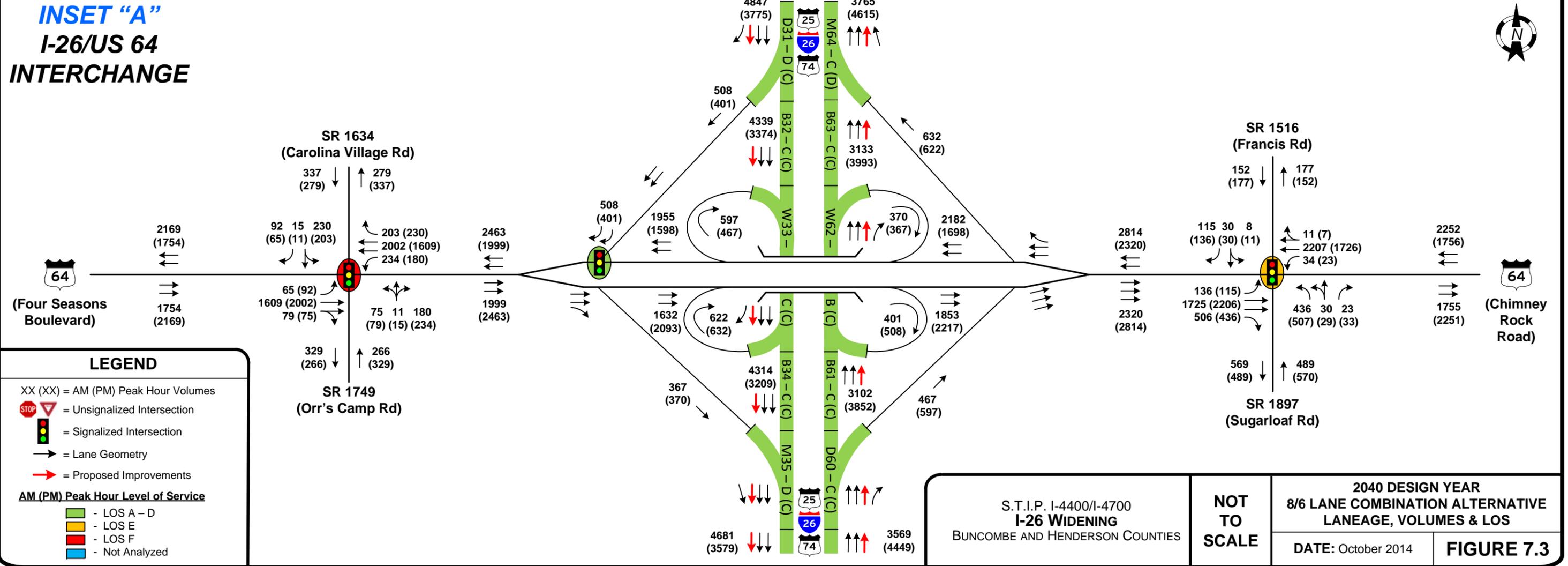


SEE INSET "A"



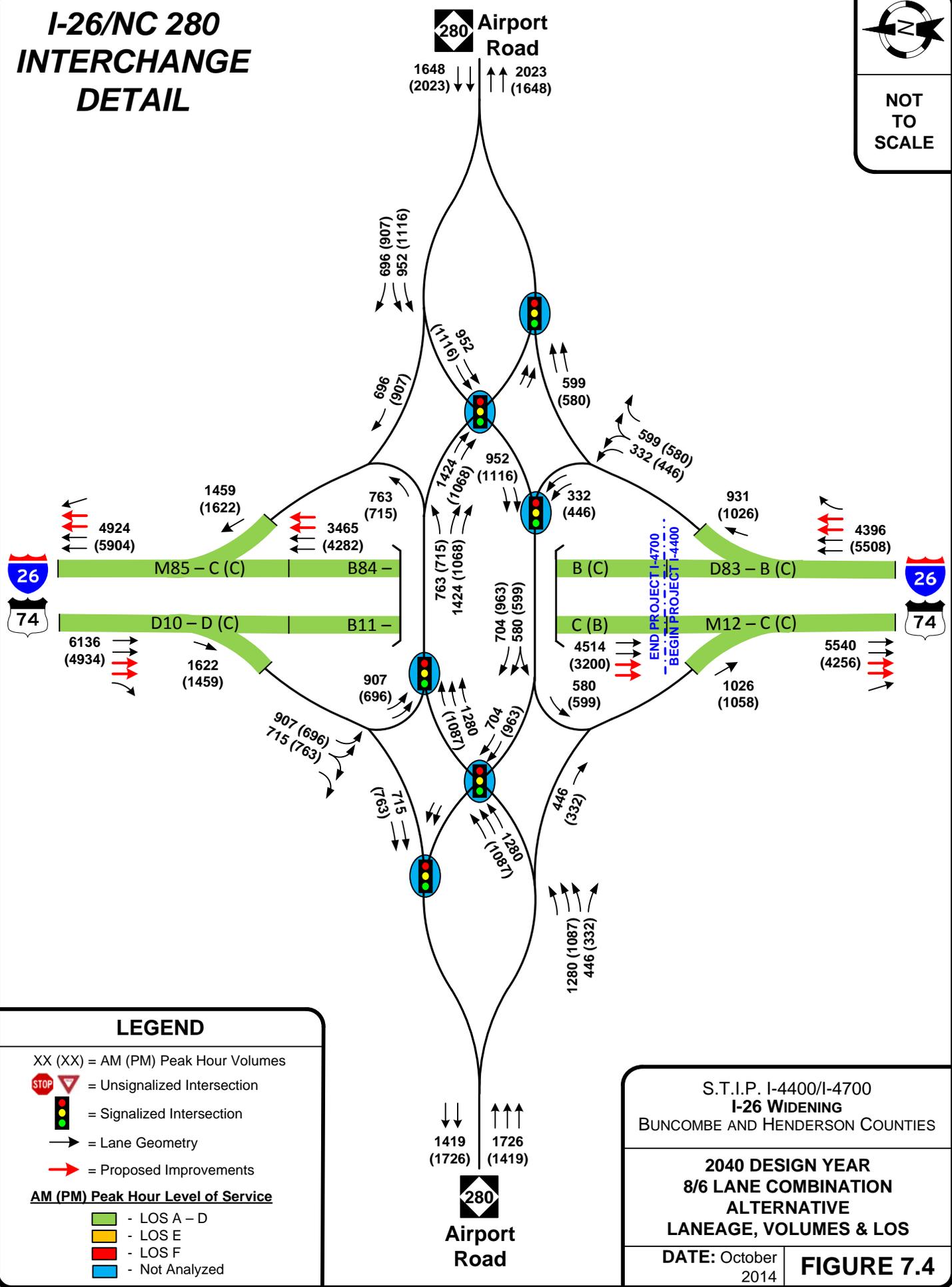


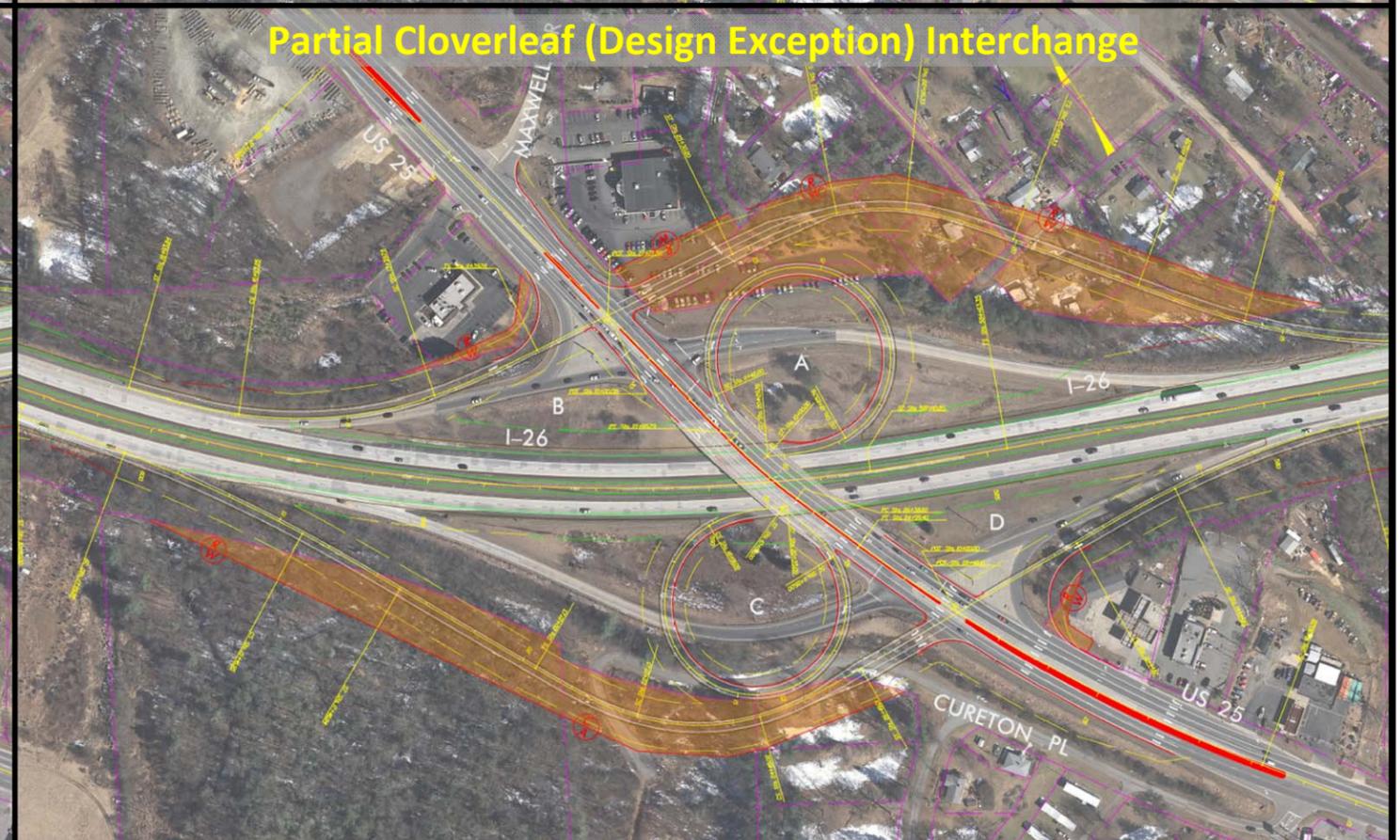
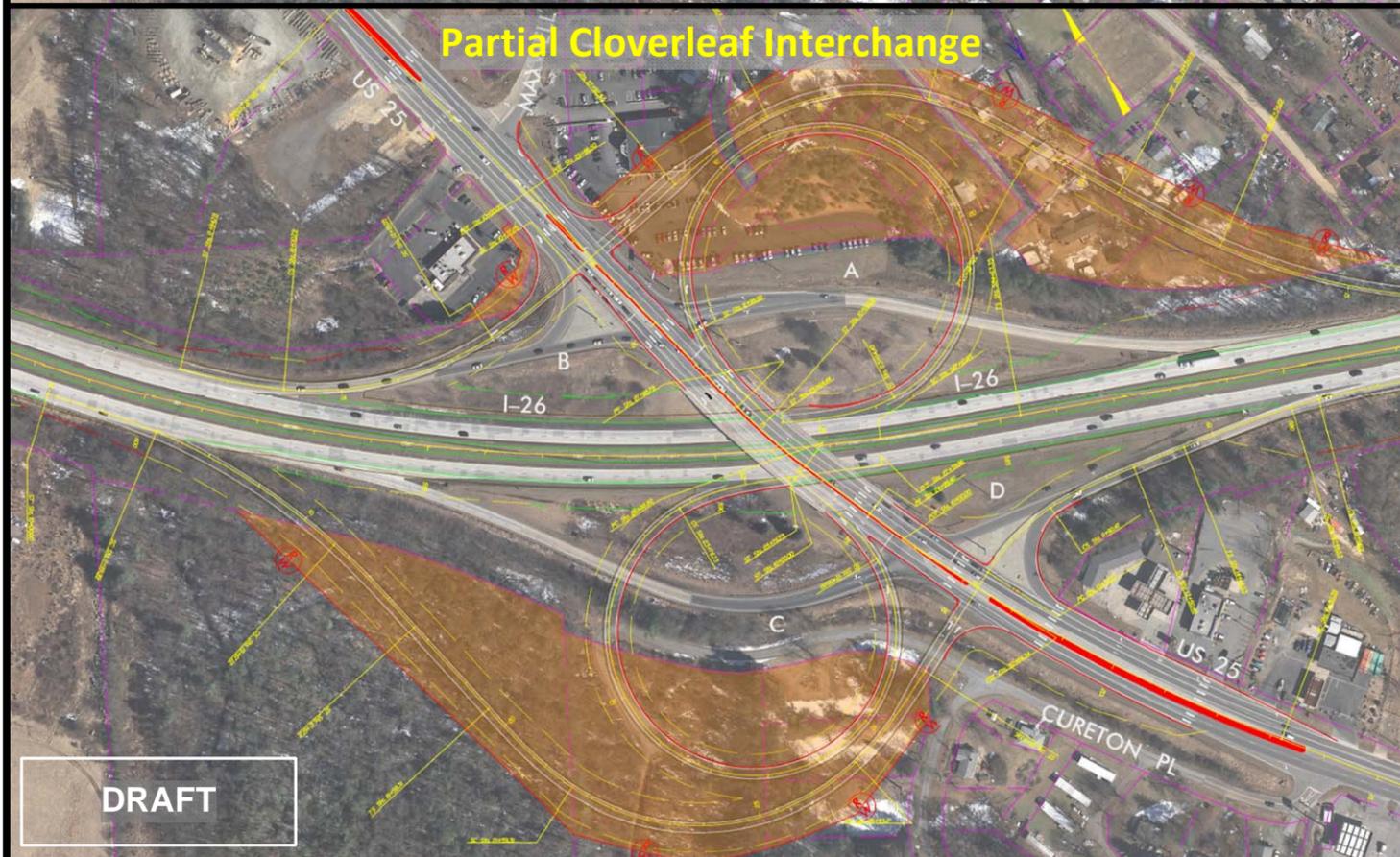
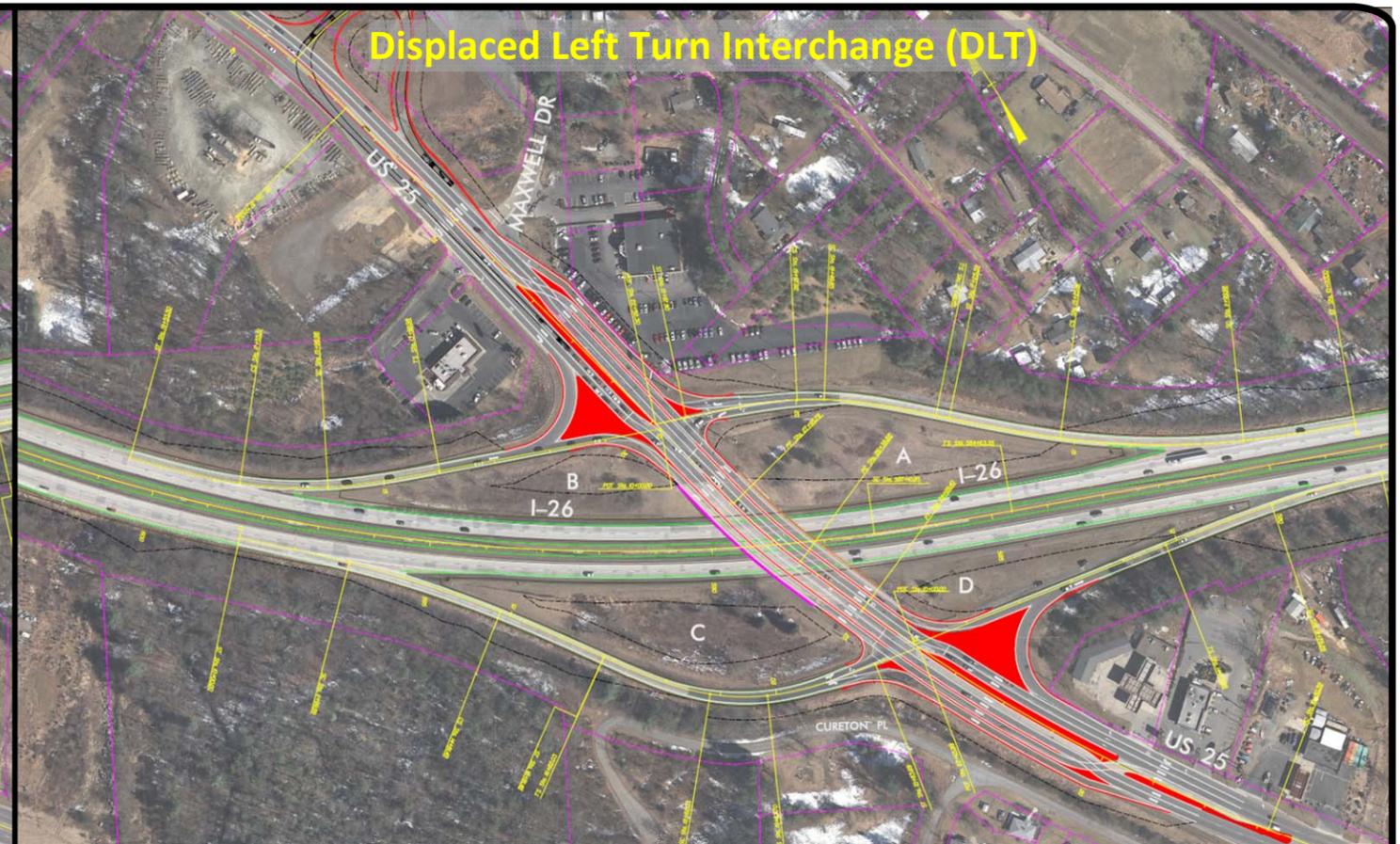
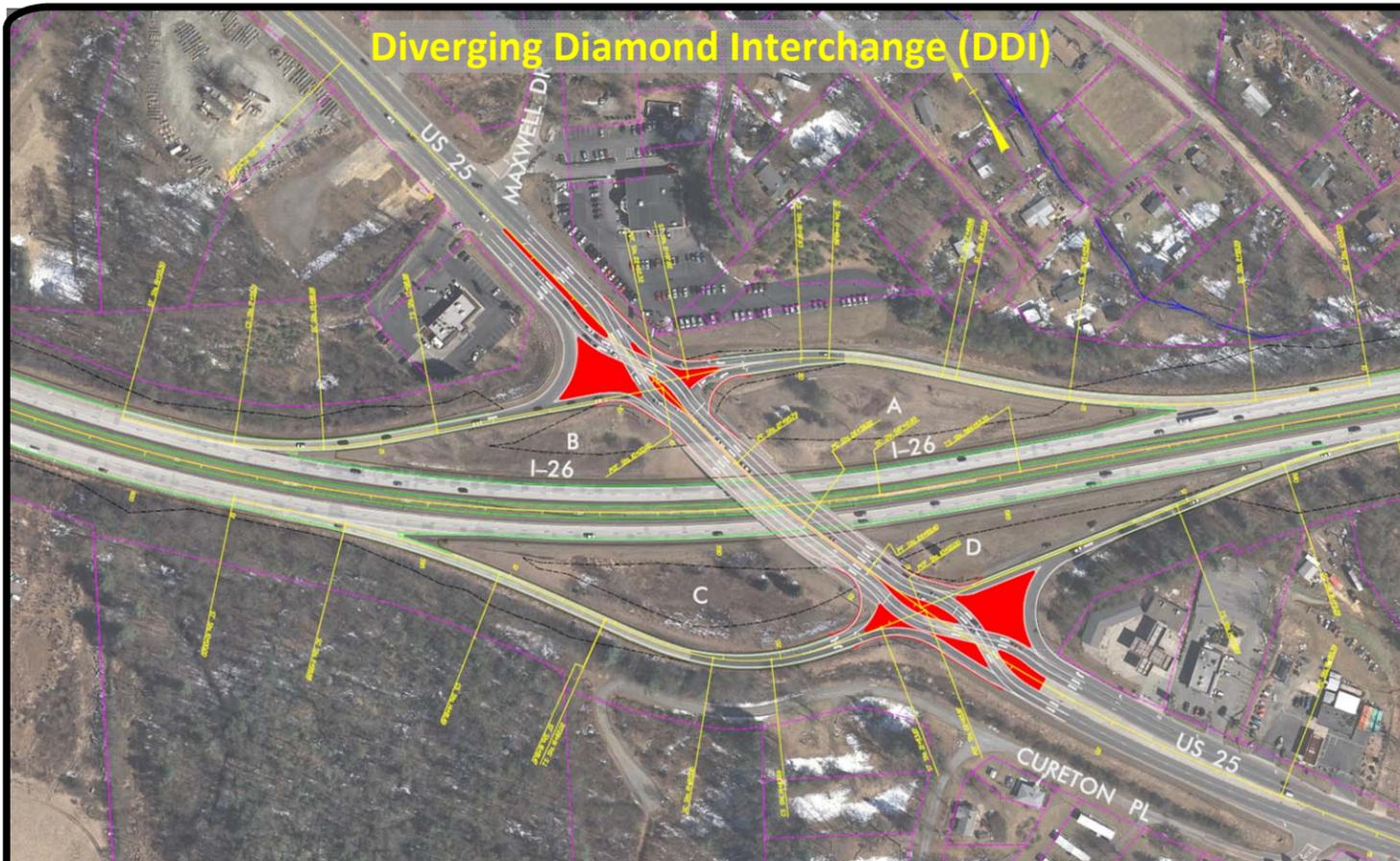
INSET "A"
I-26/US 64
INTERCHANGE



I-26/NC 280 INTERCHANGE DETAIL

NOT TO SCALE





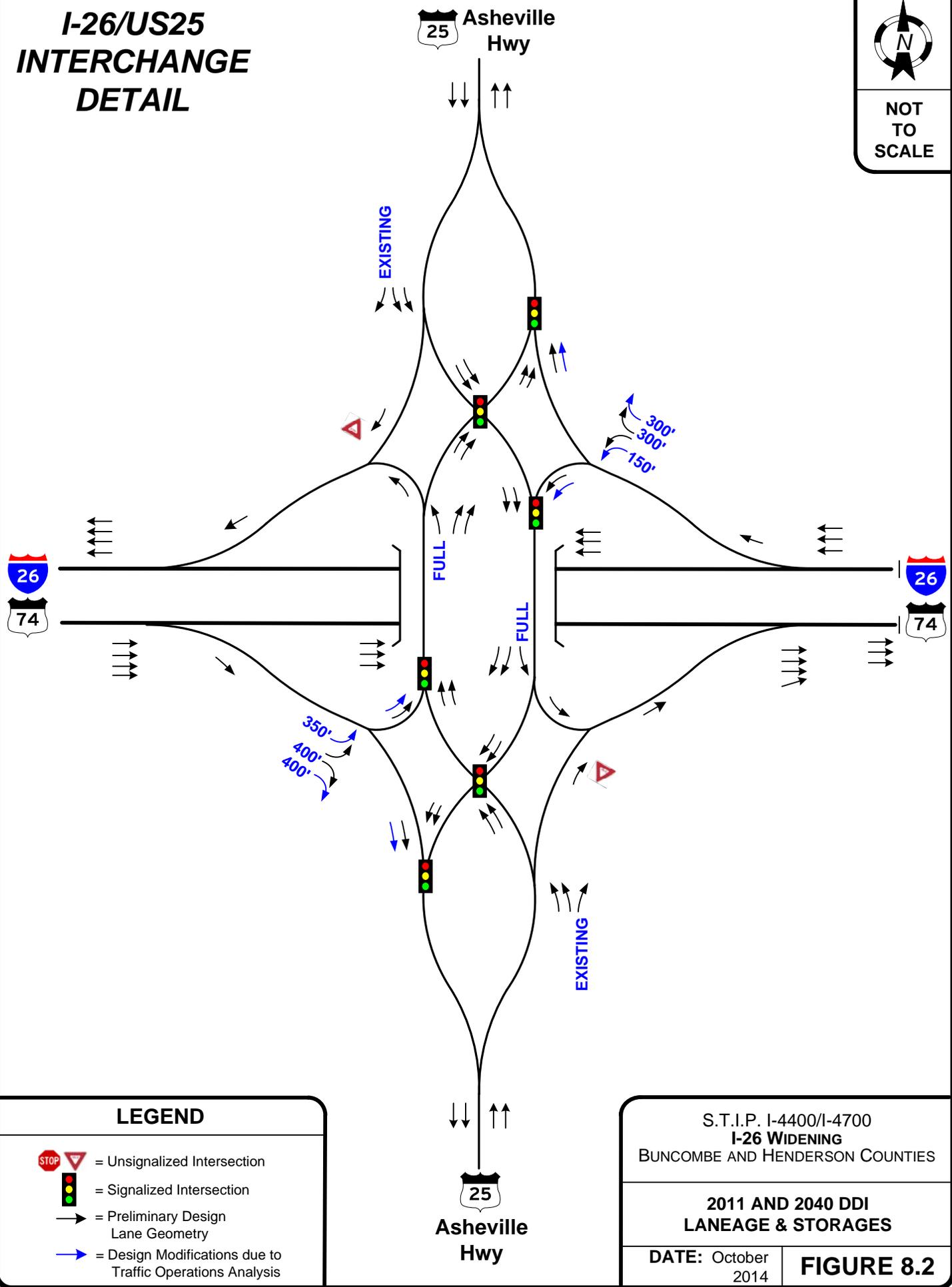
DRAFT



I-26/US25 INTERCHANGE DETAIL



NOT TO SCALE



LEGEND

- = Unsignalized Intersection
- = Signalized Intersection
- = Preliminary Design Lane Geometry
- = Design Modifications due to Traffic Operations Analysis

S.T.I.P. I-4400/I-4700
I-26 WIDENING
 BUNCOMBE AND HENDERSON COUNTIES

**2011 AND 2040 DDI
 LANEAGE & STORAGES**

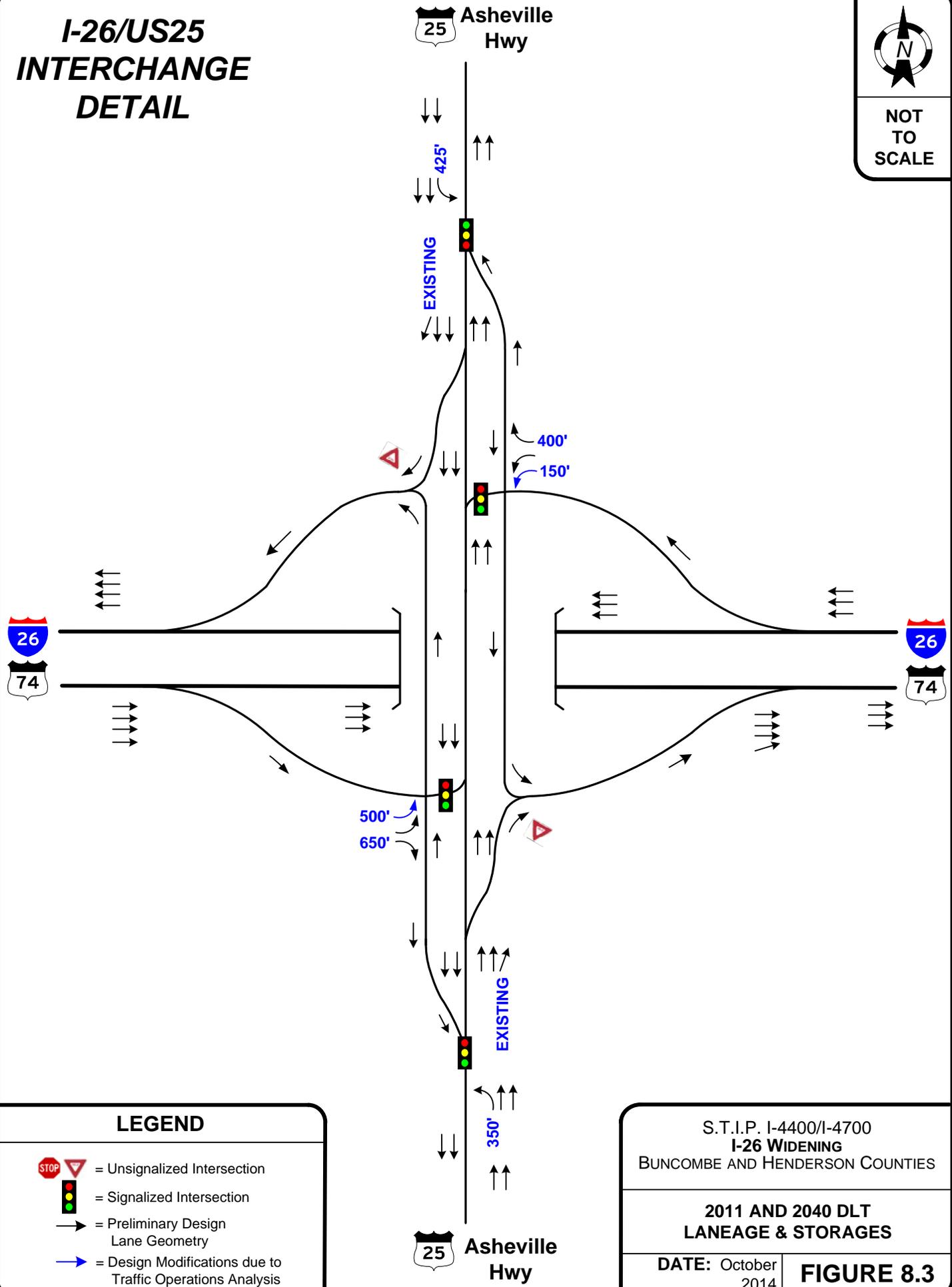
DATE: October 2014

FIGURE 8.2

I-26/US25 INTERCHANGE DETAIL



NOT TO SCALE



LEGEND

- = Unsignalized Intersection
- = Signalized Intersection
- = Preliminary Design Lane Geometry
- = Design Modifications due to Traffic Operations Analysis

S.T.I.P. I-4400/I-4700
I-26 WIDENING
 BUNCOMBE AND HENDERSON COUNTIES

**2011 AND 2040 DLT
 LANEAGE & STORAGES**

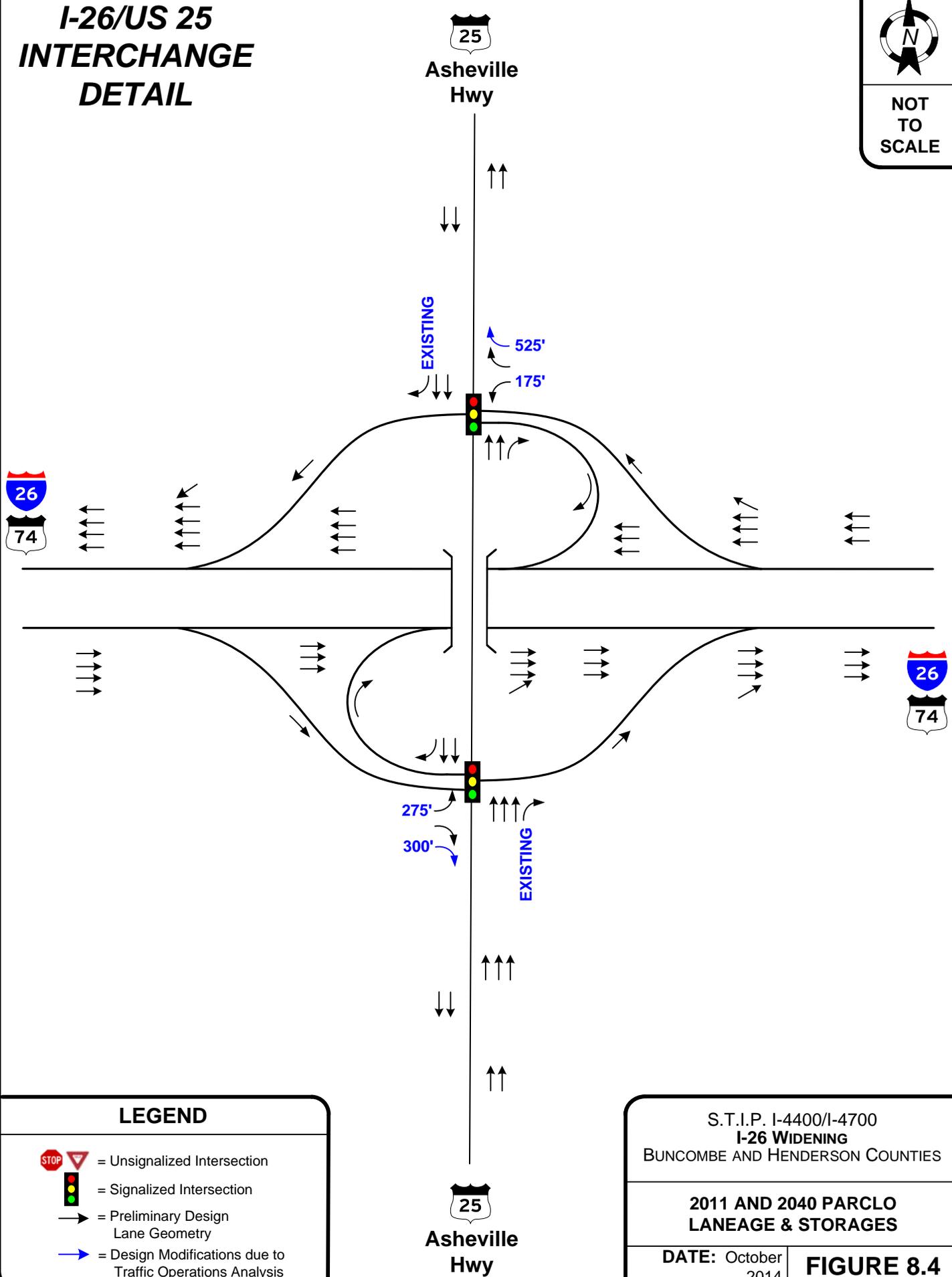
DATE: October 2014

FIGURE 8.3

I-26/US 25 INTERCHANGE DETAIL



NOT TO SCALE



LEGEND

- = Unsignalized Intersection
- = Signalized Intersection
- = Preliminary Design Lane Geometry
- = Design Modifications due to Traffic Operations Analysis

S.T.I.P. I-4400/I-4700
I-26 WIDENING
BUNCOMBE AND HENDERSON COUNTIES

2011 AND 2040 PARCLO
LANEAGE & STORAGES

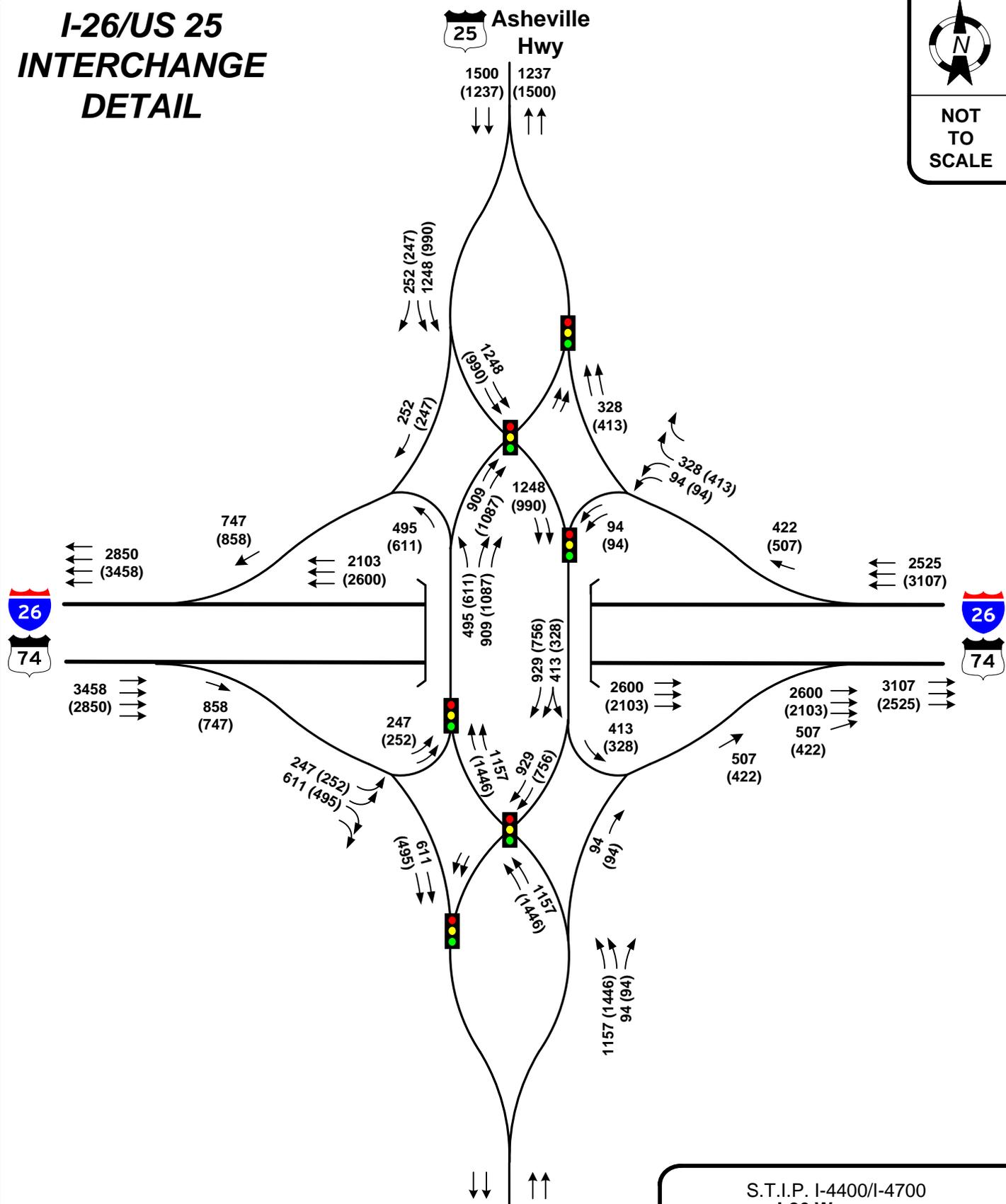
DATE: October
2014

FIGURE 8.4

I-26/US 25 INTERCHANGE DETAIL



NOT TO SCALE



LEGEND

- XX (XX) = AM (PM) Peak Hour Volumes
- = Unsignalized Intersection
- = Signalized Intersection
- = Lane Geometry

S.T.I.P. I-4400/I-4700
I-26 WIDENING
BUNCOMBE AND HENDERSON COUNTIES

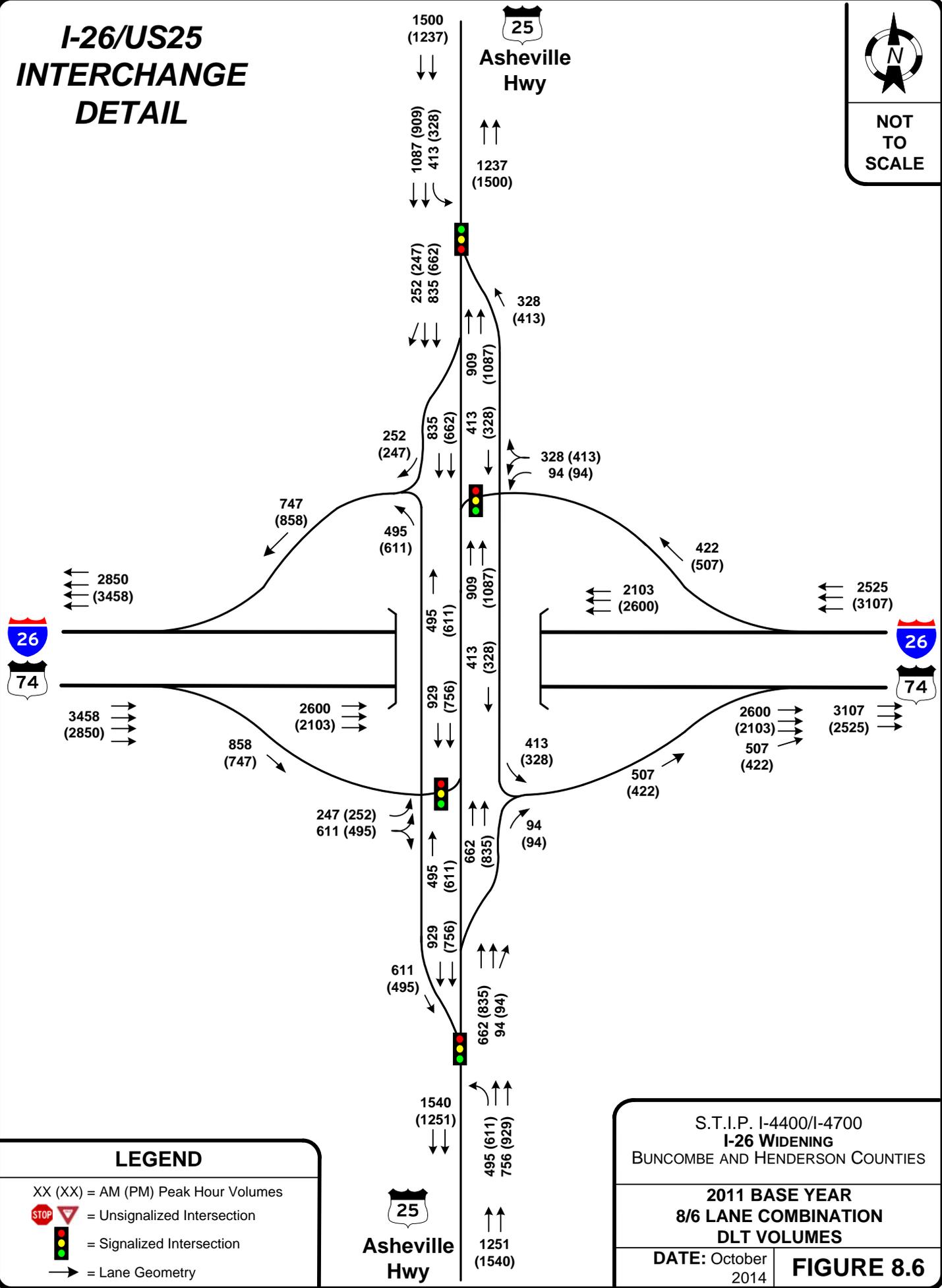
2011 BASE YEAR
8/6 LANE COMBINATION
DDI VOLUMES

DATE: October 2014 **FIGURE 8.5**

I-26/US25 INTERCHANGE DETAIL



NOT TO SCALE



LEGEND

- XX (XX) = AM (PM) Peak Hour Volumes
- = Unsignalized Intersection
- = Signalized Intersection
- = Lane Geometry

S.T.I.P. I-4400/I-4700
I-26 WIDENING
 BUNCOMBE AND HENDERSON COUNTIES

2011 BASE YEAR
8/6 LANE COMBINATION
DLT VOLUMES

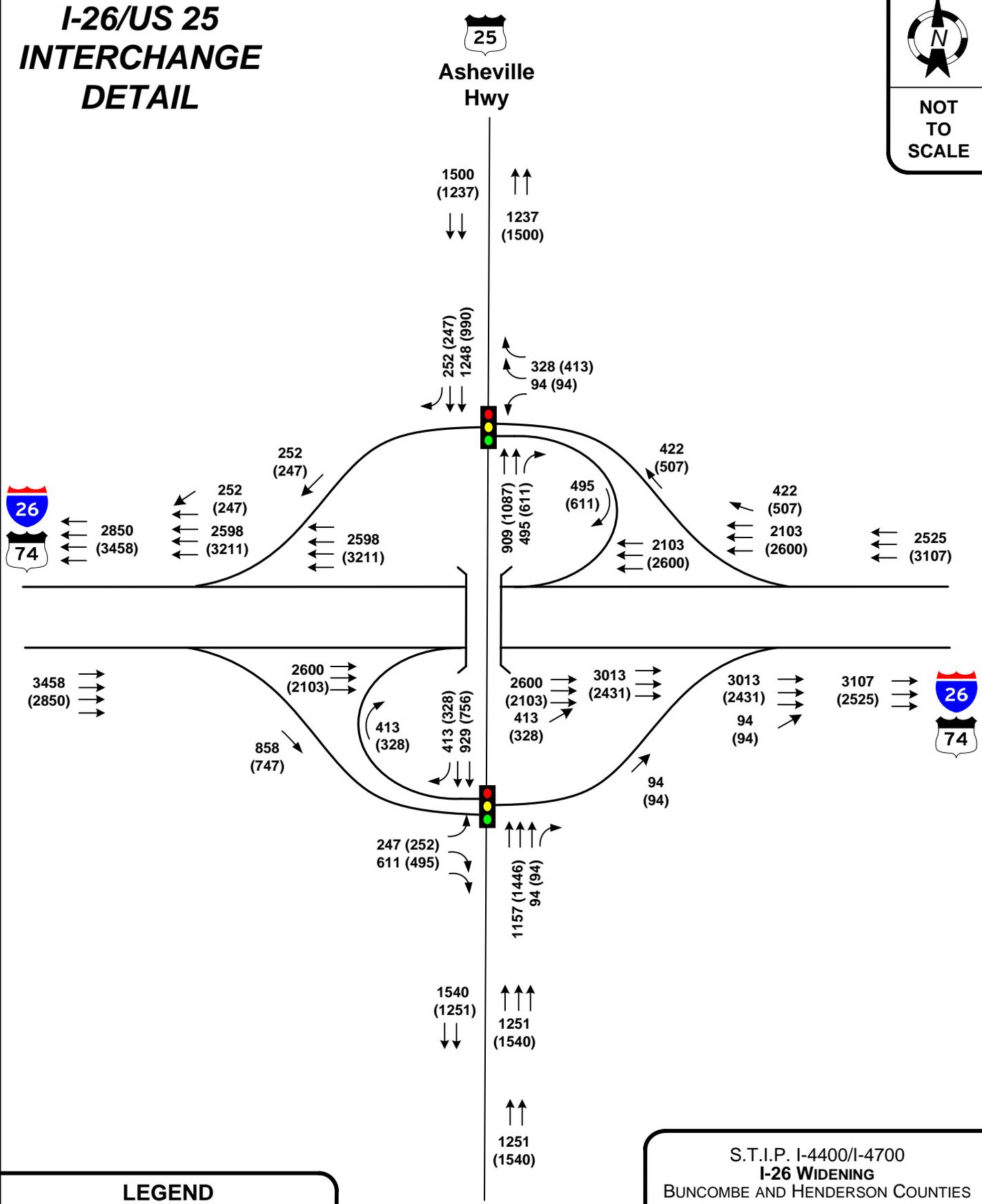
DATE: October 2014

FIGURE 8.6

I-26/US 25 INTERCHANGE DETAIL



NOT
TO
SCALE



S.T.I.P. I-4400/I-4700
I-26 WIDENING
BUNCOMBE AND HENDERSON COUNTIES

2011 BASE YEAR
8/6 LANE COMBINATION
PARCLO VOLUMES

DATE: October 2014 **FIGURE 8.7**

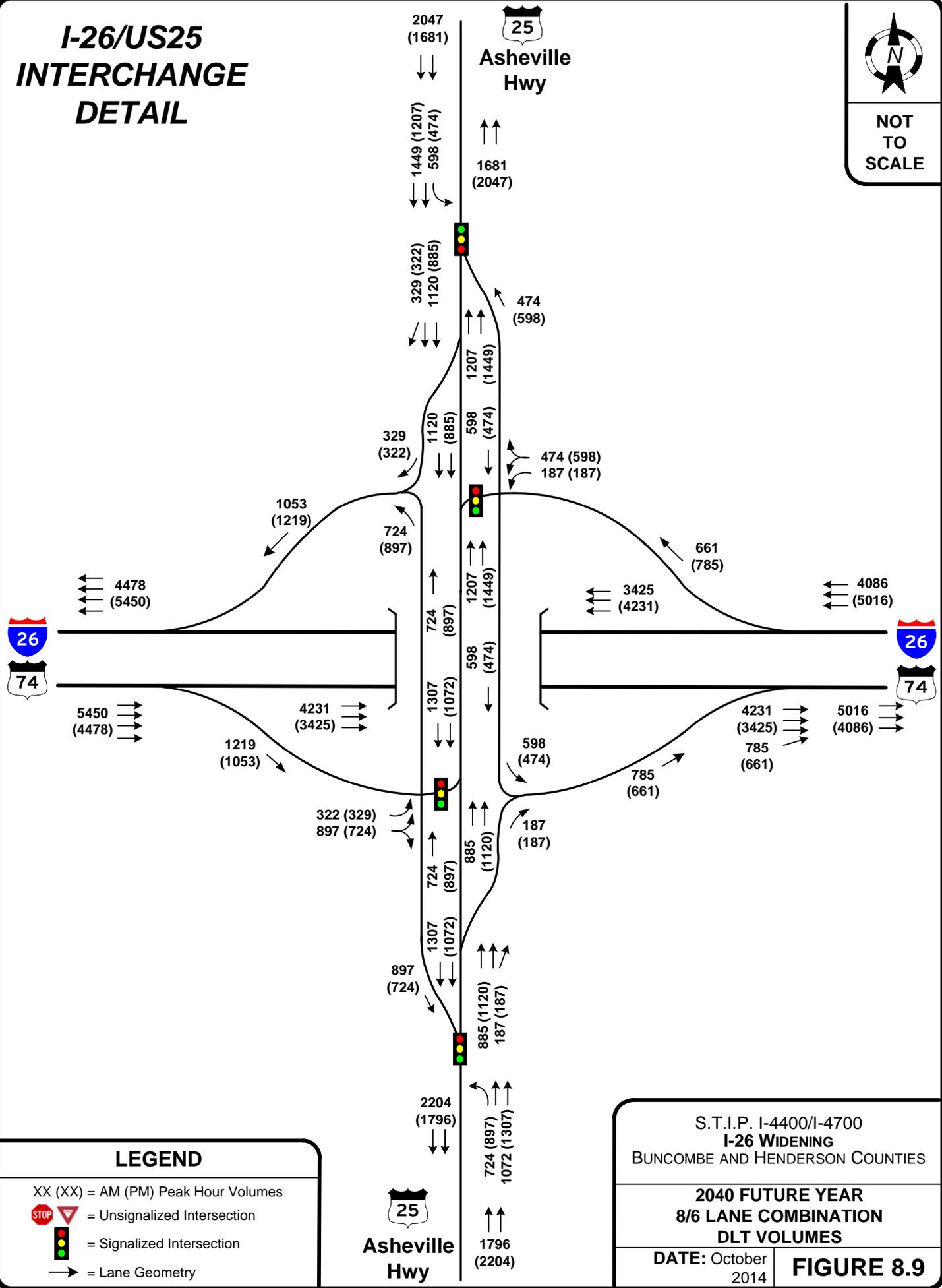
Asheville Hwy

US 25

I-26/US25 INTERCHANGE DETAIL



NOT TO SCALE



S.T.I.P. I-4400/I-4700
I-26 WIDENING
 BUNCOMBE AND HENDERSON COUNTIES

2040 FUTURE YEAR
8/6 LANE COMBINATION
DLT VOLUMES

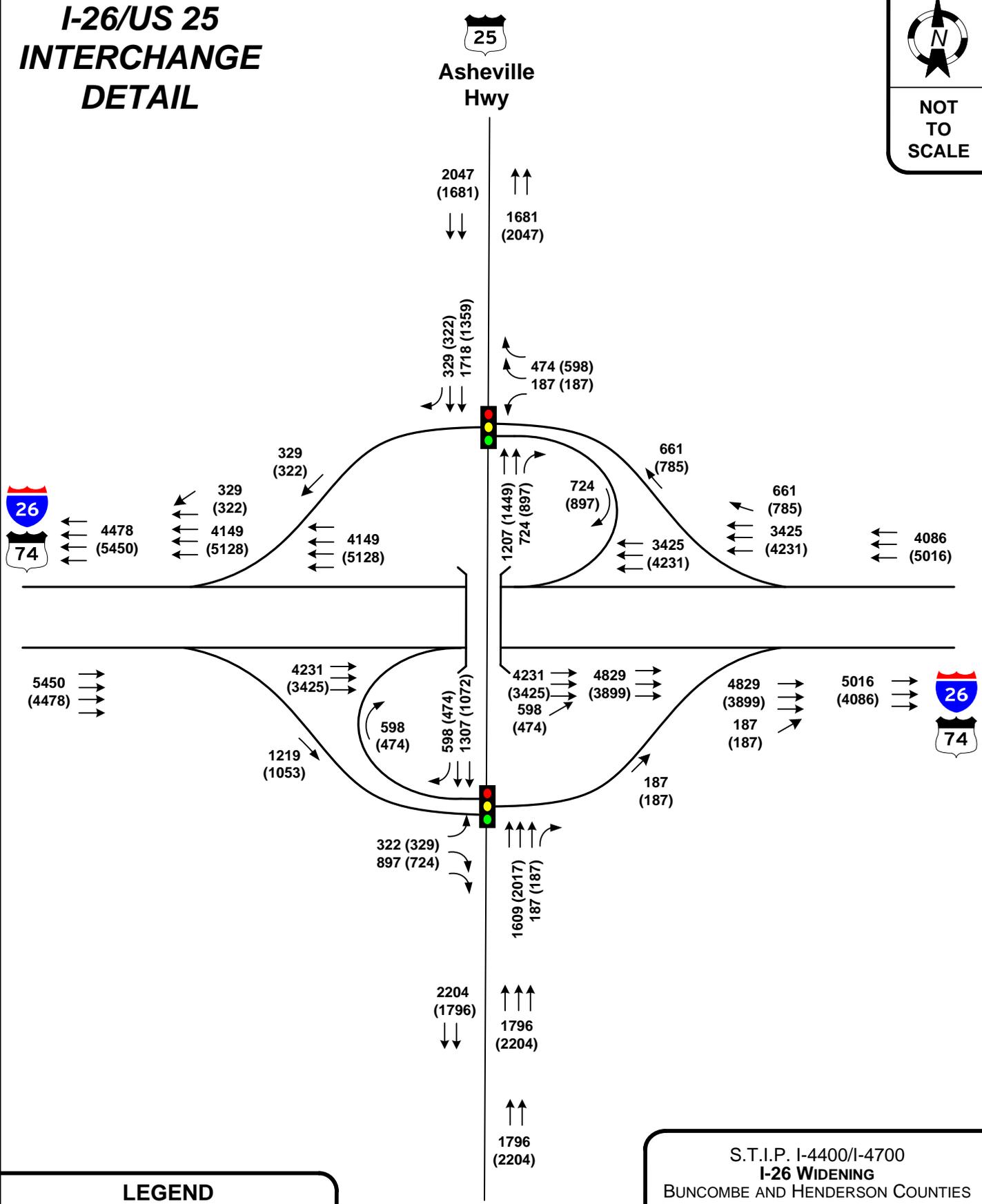
DATE: October 2014

FIGURE 8.9

I-26/US 25 INTERCHANGE DETAIL



NOT
TO
SCALE



LEGEND

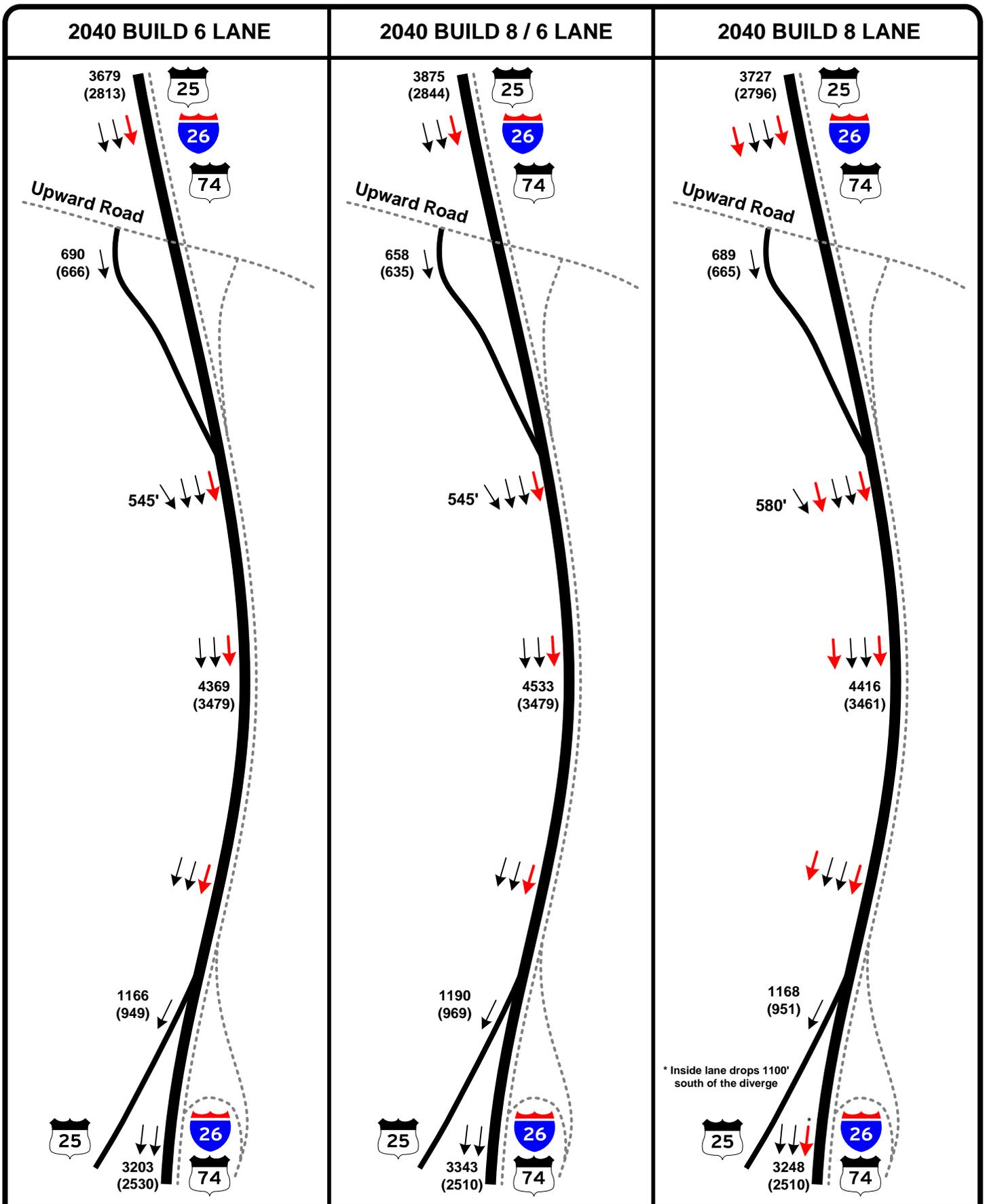
- XX (XX) = AM (PM) Peak Hour Volumes
- = Unsignalized Intersection
- = Signalized Intersection
- = Lane Geometry

S.T.I.P. I-4400/I-4700
I-26 WIDENING
BUNCOMBE AND HENDERSON COUNTIES

2040 FUTURE YEAR
8/6 LANE COMBINATION
PARCLO VOLUMES

DATE: October
2014

FIGURE 8.10



LEGEND

- XX (XX) = AM (PM) Peak Hour Volumes
- = Lane Geometry
- = Proposed Improvements

S.T.I.P. I-4400/I-4700
I-26 WIDENING
 BUNCOMBE AND
 HENDERSON COUNTIES



NOT TO SCALE

**I-26 SOUTHBOUND TRANSMODELER
 ANALYSIS BUILD ALTERNATIVES
 LANEAGE & VOLUMES**

DATE: October 2014

FIGURE 9.1

Appendix B – Updated Traffic Forecast



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

PAT MCCRORY
GOVERNOR

ANTHONY J. TATA
SECRETARY

December 16, 2013

MEMORANDUM TO: Undrea Major
Project Development and Environmental Analysis Branch

FROM: Keith G. Dixon
Western Traffic Forecasting Group
Transportation Planning Branch

SUBJECT: Forecast Expansion for I-4400 / I-4700 / I-5501/ B-5178
Buncombe and Henderson County
I-26 from I-40 in Buncombe County to US 25 in Henderson
County
Expanded to Include a Combination 8 / 6 Lane Build Alternative

Please find attached the 2011 / 2040 traffic forecast expansion for I-4400 / I-4700 / I-5501 and B-5178. TIP I-4400 / I-4700 concerns the addition of lanes to I-26 from I-40 in Buncombe County to US 25 in Henderson County. I-5501 concerns the retrofitting of the exiting I-26 Interchange at NC 280-Airport Rd to a Diverging Diamond Configuration. TIP B-5178 concerns the replacement of Bridges 235 and 238 on I-26 over SR 3431 - Pond Rd and Hominy Creek.

The original forecast for I-4400, I-4700, B-5178 and I-5501 was produced by Keith Dixon and delivered to Undrea Major of PDEA on February 14, 2012. A forecast expansion was requested by Undrea Major on October 24, 2013. This forecast expansion adds another build alternative to the original forecast which results in the addition of two new build scenarios:

- 2011 Build – 8 / 6 Lanes
- 2040 Build – 8 / 6 Lanes

These new scenarios include the assumption that I-26 has been widened to 8 lanes from I-40 (Exit 31) in Asheville to US 25 (Exit 44) south of Fletcher; and 6 lanes from US 25 (Exit 44) to US 25 (Exit 54) south of Hendersonville. All other assumptions and methodologies used in the production of these new scenarios are identical to those used in the production of the original forecast scenarios.

If it is determined that any of these assumptions have become inconsistent with the project and surrounding area activity, please request updated projections at this location.

MAILING ADDRESS:
NC DEPARTMENT OF TRANSPORTATION
TRANSPORTATION PLANNING BRANCH
1554 MAIL SERVICE CENTER
RALEIGH NC 27699-1554



<http://ncdot.org/doh/preconstruct/tpb/>

LOCATION:
TRANSPORTATION BUILDING
1 SOUTH WILMINGTON STREET
RALEIGH, NC 27601
Phone: 919-707-0900
Fax: 919-733-9794

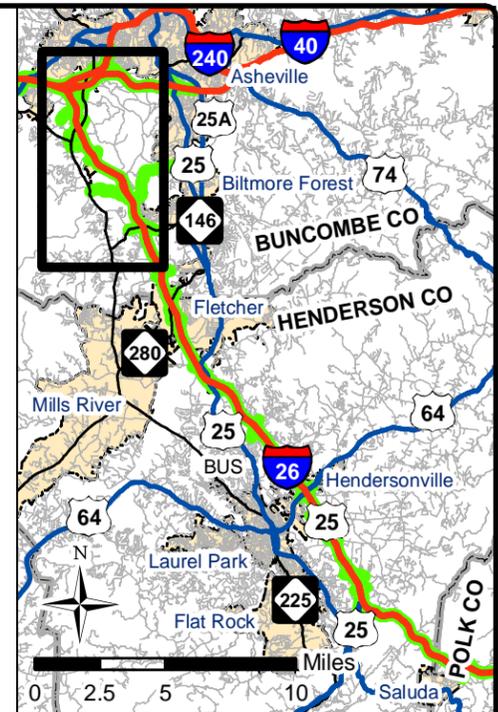
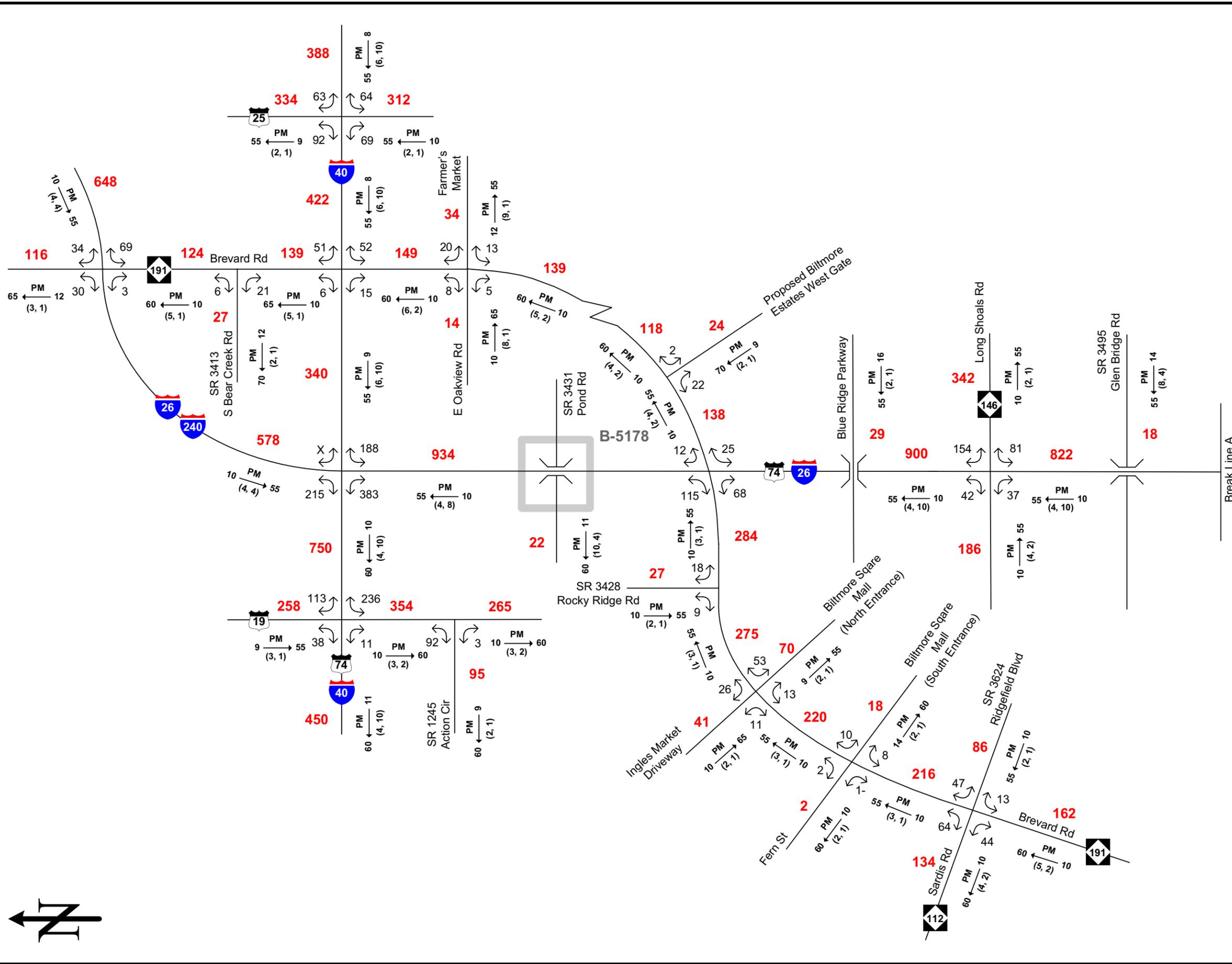
To estimate AADT for intermediate years, straight-line interpolation may be used between matching build alternatives. AADT volumes may be extrapolated for up to 2 years following 2040.

For future reference, this forecast will be saved in Project Store under I4400, I5501 and B5178 in the LongRangePlanning\Traffic Forecasts folders.

If we can be of any further assistance on this project please do not hesitate to contact me at 919-707-0984, email: kdixon1@ncdot.gov or Michael Orr at 919-707-0982, email: mlorr@ncdot.gov.

CC (with Attachments):

Jay Bennett, PE, Roadway Design
Pam Cook, PE, Transportation Planning Branch
Deborah Hutchings, PE, Transportation Planning Branch
James Dunlop, PE, Congestion Management
Don Chen, PE, Pavement Management
Paul Black, French Broad River MPO
Kristina L. Solberg, PE, Division 13
Reuben Moore, PE, Division 14
File Copy: I-4400 / I-4700 Buncombe Henderson County
File Copy: I-5501 Buncombe Henderson County
File Copy: B-5178 Buncombe County



2011

ANNUAL AVERAGE
DAILY TRAFFIC

Build – 8/6 Lanes

8-lanes from I-40 (Exit 31) to US 25 (Exit 44)
6-lanes from US 25 (Exit 44) to US 25 (Exit 54)

SHEET 7 - 1

LEGEND

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

TIP: I-4400 / I-4700 WBS: 34232.1.1

COUNTY: Buncombe DIVISION: 13

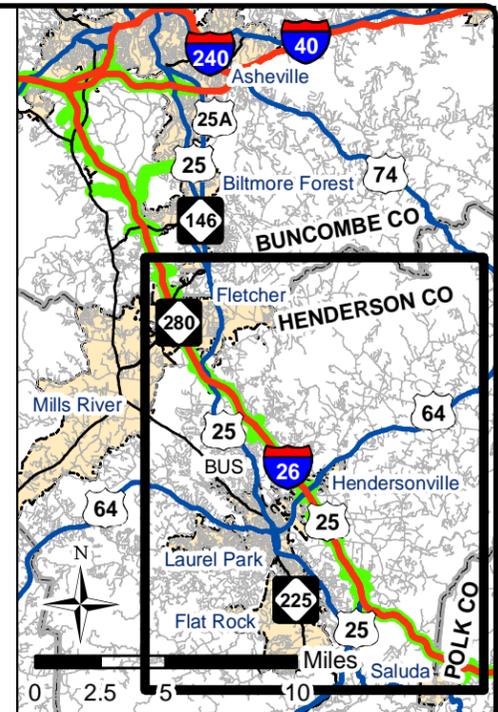
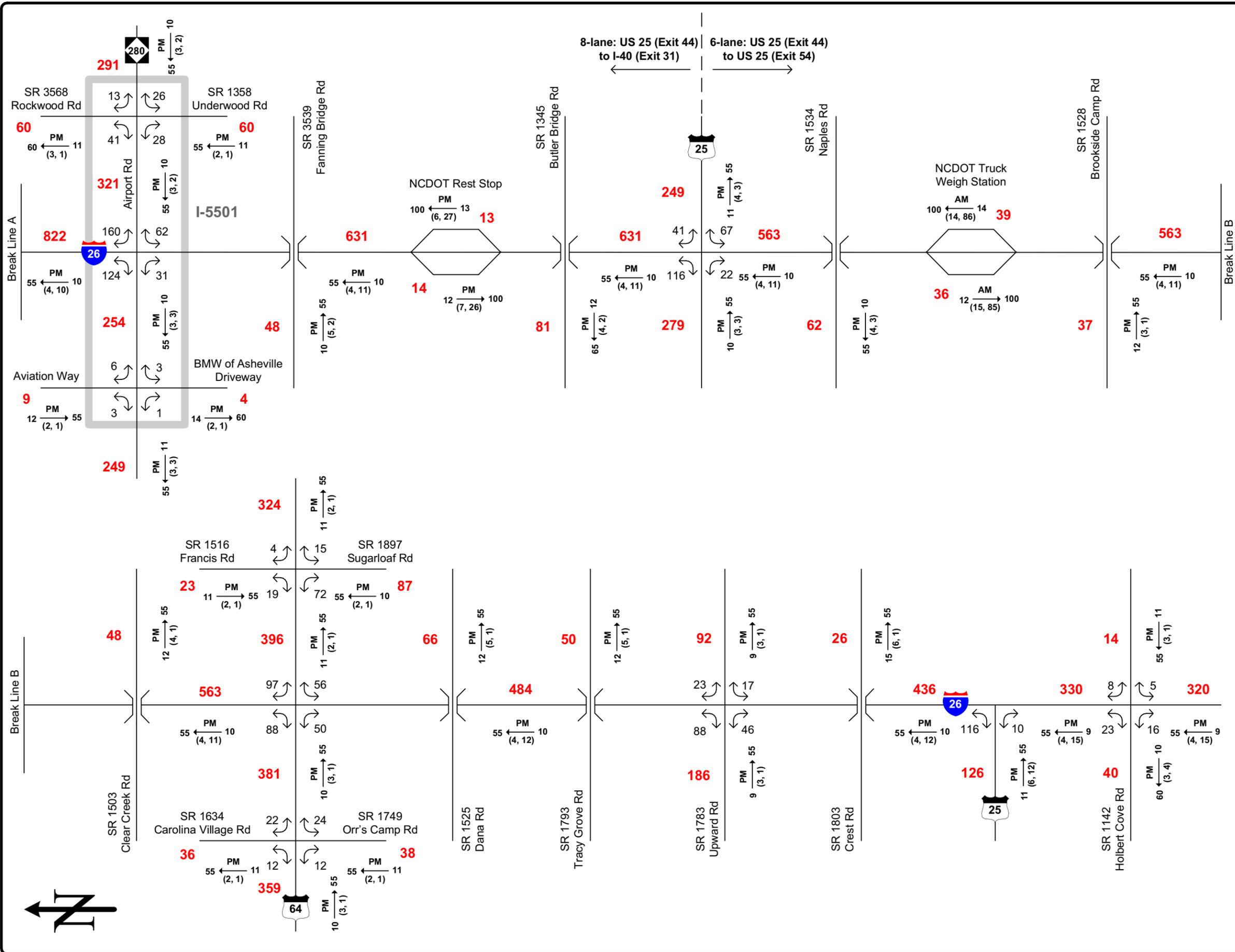
DATE: 12-16-2013

PREPARED BY: Keith Dixon

LOCATION: I-26 from I-40 in Buncombe Co. to US 25 in Henderson Co.

PROJECT: Widen I-26





2011

ANNUAL AVERAGE
DAILY TRAFFIC

Build – 8/6 Lanes

8-lanes from I-40 (Exit 31) to US 25 (Exit 44)
6-lanes from US 25 (Exit 44) to US 25 (Exit 54)

SHEET 7 - 2

LEGEND

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

TIP: I-4400 / I-4700	WBS: 34232.1.1
COUNTY: Buncombe	DIVISION: 13
DATE: 12-16-2013	
PREPARED BY: Keith Dixon	
LOCATION: I-26 from I-40 in Buncombe Co. to US 25 in Henderson Co.	
PROJECT: Widen I-26	



Appendix C – FreeVal Freeway System Analysis Output

Freeval Accel / Decel Distance Inputs
Previous Freeval (Based on Existing Distances) & Current Freeval (Based on HNTB Preliminary Design)

KEY

- No change from existing to design
- Major design changes due to widening
- Apply existing (previous Freeval) distance
- Updates due to new interchange ramp location
- Design and existing (previous Freeval) distances equal
- Design less than existing (previous Freeval)

SOUTHBOUND I-26 MAINLINE					
#	Name	Influence	Freeval		# Lanes
			Previous Accel/Decel (ft)	Current Freeval Accel/Decel (ft)	
1	B1	4,600			
2	D2	1,500	600	800	1
3	B3	975			
4	M4	1,500	525	975	1
5	B5	18,750			
6	D6	1,500	575	650	1
7	B7	2,500			
8	M8	1,500	650	900	1
9	B9	10,500			
10	D10	1,500	425	650	1
11	B11	2,275			
12	M12	1,500	475	900	1
13	B13	525			
14	D14	1,500	425	650	1
15	B15	1,725			
16	M16	1,500	950	900	1
17	B17	7,050			
18	D18	1,500	700	650	1
19	B19	2,075			
20	M20	1,500	600	900 (880)	1
21	B21	6,825			
22	D22	1,500	375	650	1
23	B23	1,500			
24	M24	1,500	975	900 (880)	1
25	B25	12,050			
26	D31	1,500	475	650	1
27	B32	600			
28	W33	1,400	400	355	2
29	B34	225			
30	M35	1,500	450	1125 (1120)	1
31	B36	13,400			
32	D37	1,500	225	225	1
33	B38	2,300			
34	M39	1,425	800	900	1
35	D40	1,425	675	drop	1
36	B41	2,725			
37	M42	1,500	1,300	1,300	1
38	B43	21,625			
39	D44	1,500	300	300	1
40	B45	2,600			
41	M46	1,500	800	800	1
42	B47	5,280			
Total Feet		151,355			
Total Miles		28.7			

NORTHBOUND I-26 MAINLINE					
#	Name	Influence	Freeval		# Lanes
			Previous Accel/Decel (ft)	Current Freeval Accel/Decel (ft)	
1	B48	5,280			
2	D49	1,500	425	425	1
3	B50	2,300			
4	M51	1,500	825	825	1
5	B52	23,550			
6	D53	1,500	650	650	1
7	B54	1,125			
8	M55	1,300	600	add	1
9	D56	1,300	225	250	1
10	B57	2,325			
11	M58	1,500	850	900 (880)	1
12	B59	13,525			
13	D60	1,500	450	650 (640)	1
14	B61	525			
15	W62	1,375	375	350	2
16	B63	550			
17	M64	1,500	325	900 (880)	1
18	B65	13,325			
19	D71	1,500	425	650 (640)	1
20	B72	1,700			
21	M73	1,500	1,150	1200 (1195)	1
22	B74	7,100			
23	D75	1,500	450	650 (640)	1
24	B76	1,925			
25	M77	1,500	550	900	1
26	B78	6,875			
27	D79	1,500	425	650 (640)	1
28	B80	1,900			
29	M81	1,500	950	900	1
30	B82	525			
31	D83	1,500	400	650 (640)	1
32	B84	2,075			
33	M85	1,500	1,125	900	1
34	B86	10,800			
35	D87	1,500	250	650 (640)	1
36	B88	2,400			
37	M89	1,500	375	900	1
38	B90	21,400			
39	D91	1,500	400	775 (770)	1
40	B92	1,200			
41	M93	1,500	325	1075 (1070)	1
42	B94	2,275			
Total Feet		153,655			
Total Miles		29.1			

2011 No-Build

HCS 2010 Freeway Facilities

Project Properties

Analyst		Freeway Name	TP 1-4600 I-4700 I-26 Widening		Analysis Period	AM Peak
Analysis Date	2/8/2013 10:12:36 AM	From	Exit 59 (Holbert Cove Road)	Version Date	10/10/2012	
Agency	NHTB North Carolina, PC	To	Exit 33 (NC 191)			
Location	I-26	Analysis Direction	Northbound			
User Notes	2011 B7NB					
File Name	C:\Temp\preview.xml					

Facility-wide Values

Jam Density (pc/h/ln)	190	Time Period Duration (min)	15	Facility Length (mi)	29.10100
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Segment Input Data

Time Period 1

Seg #	From	To	Type	Length	Terrain	Adj. Demand	% Trucks	% RVs	# Lanes	FFS
1	B48	B48	Basic Segment	5280	Rolling	1281	10.00	0.00	2	70
2	D49	Off Ramp	1500	Rolling	1281	10.00	0.00	2	70	
3	HOLBERT COVE RD	B50	Basic Segment	2300	Rolling	1189	10.62	0.00	2	70
4	M51	On Ramp	1500	Rolling	1352	9.58	0.00	2	70	
5	B52	Basic Segment	2350	Rolling	1352	9.58	0.00	2	70	
6	D53	Off Ramp	1500	Rolling	1352	9.58	0.00	2	70	
7	US 25 SYSTEM ICHG	B54	Basic Segment	1125	Rolling	1335	9.59	0.00	2	70
8	M55	On Ramp	1300	Rolling	1949	9.40	0.00	2	70	
9	D56	Off Ramp	1300	Rolling	1949	9.40	0.00	2	70	
10	UPWARD RD	B57	Basic Segment	2325	Rolling	1659	10.70	0.00	2	70
11	M58	On Ramp	1500	Rolling	2106	8.85	0.00	2	70	
12	B59	Basic Segment	13525	Rolling	2106	8.85	0.00	2	70	
13	D60	Off Ramp	1500	Rolling	2106	8.85	0.00	2	70	
14	B61	Basic Segment	525	Rolling	1784	10.09	0.00	2	70	
15	US 64 - 4 SEASONS BL	W62	Weaving	1375	Rolling	2078	8.94	0.00	3	70
16	B63	Basic Segment	590	Rolling	1824	9.91	0.00	2	70	
17	M64	On Ramp	1500	Rolling	2289	8.30	0.00	2	70	
18	B65	Basic Segment	13325	Rolling	2289	8.30	0.00	2	70	
19	D71	Off Ramp	1500	Rolling	2289	8.30	0.00	2	70	
20	WELSH STATION NB	B72	Basic Segment	1700	Rolling	2125	1.23	0.00	2	70
21	M73	On Ramp	1500	Rolling	2289	8.30	0.00	2	70	
22	B74	Basic Segment	7100	Rolling	2289	8.30	0.00	2	70	
23	D75	Off Ramp	1500	Rolling	2289	8.30	0.00	2	65	
24	US 25 - ASHEVILLE HWY	B76	Basic Segment	1925	Rolling	1846	9.34	0.00	2	65
25	M77	On Ramp	1500	Rolling	2504	7.93	0.00	2	65	
26	B78	Basic Segment	6875	Rolling	2504	7.93	0.00	2	65	
27	D79	Off Ramp	1500	Rolling	2504	7.93	0.00	2	65	
28	WEST AREA NB	B80	Basic Segment	1900	Rolling	2374	7.44	0.00	2	65
29	M81	On Ramp	1500	Rolling	2504	7.93	0.00	2	65	
30	B82	Basic Segment	525	Rolling	2504	7.93	0.00	2	65	
31	D83	Off Ramp	1500	Rolling	2504	7.93	0.00	2	65	
32	NC 280 - AIRPORT RD	B84	Basic Segment	2075	Rolling	2041	9.05	0.00	2	65
33	M85	On Ramp	1500	Rolling	3182	6.88	0.00	2	65	
34	B86	Basic Segment	10800	Rolling	3182	6.88	0.00	2	65	
35	D87	Off Ramp	1500	Rolling	3182	6.88	0.00	2	65	
36	NC 146 - LONG SHOALS	B88	Basic Segment	2400	Rolling	2622	7.92	0.00	2	65
37	M89	On Ramp	1500	Rolling	3426	6.77	0.00	2	65	
38	B90	Basic Segment	20650	Rolling	3426	6.77	0.00	2	65	
39	D91	Off Ramp	1500	Rolling	3426	6.77	0.00	2	65	
40	NC 191 - BREWARD RD	B92	Basic Segment	1075	Rolling	3012	7.29	0.00	2	65
41	M93	On Ramp	1500	Rolling	3660	6.35	0.00	2	65	
42	END PROJECT NB	B94	Basic Segment	3150	Rolling	3660	6.35	0.00	2	65

Seg #	Type	Adj. Demand	% Trucks	% RVs	Lanes	Accel/Decel Length	FFS
2	Off Ramp	92	2.00	0.00	1	425	45
4	On Ramp	163	2.00	0.00	1	825	45
6	Off Ramp	17	9.00	0.00	1	650	25
8	On Ramp	614	9.00	0.00	1	600	50
9	Off Ramp	290	2.00	0.00	1	225	45
11	On Ramp	447	2.00	0.00	1	850	45
13	Off Ramp	322	2.00	0.00	1	450	50
17	On Ramp	465	2.00	0.00	1	325	50
19	Off Ramp	164	100.00	0.00	1	425	45
21	On Ramp	164	100.00	0.00	1	1150	45
23	Off Ramp	443	4.00	0.00	1	450	45
25	On Ramp	658	4.00	0.00	1	550	45
27	Off Ramp	130	17.00	0.00	1	425	45
29	On Ramp	130	17.00	0.00	1	900	45
31	Off Ramp	463	3.00	0.00	1	400	45
33	On Ramp	1141	3.00	0.00	1	1125	45
35	Off Ramp	560	2.00	0.00	1	250	45
37	On Ramp	804	3.00	0.00	1	375	45
39	Off Ramp	414	3.00	0.00	1	400	25
41	On Ramp	648	2.00	0.00	1	325	45

Seg #	Ramp to Ramp Prop.	On-Ramp					Off-Ramp				
		Adj. Demand	% Trucks	% RVs	Lanes	FFS	Adj. Demand	% Trucks	% RVs	Lanes	FFS
15	0.000	294	2.00	0.00	1	25	254	2.00	0.00	1	25

Time Period Independent Weaving Segment Data

Seg #	Configuration	Short Length	# Weaving Lanes	Min. Lane Changes Freeway-Ramp	Min. Lane Changes Ramp-Freeway	Min. Lane Changes Ramp-Ramp
15	375	2	1	1	0	

Time Period Results

Time Period 1

Seg #	From	To	Type	Adj. Demand	Vol. Served	Capacity (pc/h)	Capacity (veh/h)	d/c Ratio	v/c ratio	Queue Length(ft)	Avg. Speed (mi/h)	Density (pc/mi/ln)	Density (veh/mi/ln)	Avg. Travel Time (min/veh)	Free-Flow Travel Time (min/veh)	Mainline Delay (min/veh)	System Delay (min/veh)	VHT Demand (veh-h)	VHT Volume (veh-h)	VHT (veh-hrs)	VHD (veh-hrs)	LOS
1	BEGIN PROJECT NB	B48	Basic Segment	1281	1281	4800	4174	0.31	0.31	0	70.0	10.5	9.2	0.86	0.86	0.0	0.0	320.3	320.3	4.6	0.0	A
2	D49	Off Ramp	1281	1281	4800	4174	0.31	0.31	0	61.4	12.0	10.4	0.28	0.24	0.0	0.0	91.0	91.0	1.5	0.2	B	
3	HOLBERT COVE RD	B50	Basic Segment	1189	1189	4800	4140	0.29	0.29	0	69.6	9.9	8.5	0.38	0.37	0.0	0.0	129.5	129.5	1.9	0.0	A
4	M51	On Ramp	1352	1352	4800	4197	0.32	0.32	0	62.6	12.3	10.8	0.27	0.24	0.0	0.0	96.0	96.0	1.5	0.2	B	
5	B52	Basic Segment	1352	1352	4800	4197	0.32	0.32	0	70.0	11.0	9.7	3.82	3.82	0.0	0.0	1507.6	1507.6	21.5	0.0	A	
6	D53	Off Ramp	1352	1352	4800	4197	0.32	0.32	0	54.3	14.2	12.4	0.31	0.24	0.1	0.1	96.0	96.0	1.8	0.4	B	
7	US 25 SYSTEM ICHG	B54	Basic Segment	1335	1335	4800	4197	0.32	0.32	0	68.1	11.2	9.8	0.19	0.18	0.0	0.0	71.1	71.1	1.0	0.0	B
8	M55	On Ramp	1949	1949	4800	4207	0.46	0.46	0	61.8	17.2	15.1	0.24	0.21	0.0	0.0	120.0	120.0	1.9	0.2	B	
9	D56	Off Ramp	1949	1949	4800	4207	0.46	0.46	0	60.9	18.3	16.0	0.24	0.21	0.0	0.0	120.0	120.0	2.0	0.3	B	
10	UPWARD RD	B57	Basic Segment	1659	1659	4800	4136	0.40	0.40	0	69.5	13.8	11.9	0.38	0.38	0.0	0.0	182.6	182.6	2.6	0.0	B
11	M58	On Ramp	2106	2106	4800	4237	0.50	0.50	0	62.0	19.1	16.9	0.27	0.24	0.0	0.0	149.6	149.6	2.4	0.3	B	
12	B59	Basic Segment	2106	2106	4800	4237	0.50	0.50	0	70.0	17.0	15.0	2.20	2.20	0.0	0.0	1348.7	1348.7	19.3	0.0	B	
13	D60	Off Ramp	2106	2106	4800	4237	0.50	0.50	0	62.6	19.0	16.8	0.27	0.24	0.0	0.0	149.6	149.6	2.4	0.3	B	
14	B61	Basic Segment	525	525	4800	4169	0.43	0.43	0	68.6	15.0	13.0	0.09	0.09	0.0	0.0	44.3	44.3	0.6	0.0	B	
15	US 64 - 4 SEASONS BL	W62	Weaving	2078	2078	6184	5453	0.38	0.38	0	61.0	12.9	11.4	0.26	0.22	0.0	0.0	135.3	135.3	2.2	0.3	B
16	B63	Basic Segment	590	590	4800	4179	0.44	0.44	0	68.1	15.4	13.4	0.09	0.09	0.0	0.0	47.5	47.5	0.7	0.0	B	
17	M64	On Ramp	2289	2289	4800	4268	0.54	0.54	0	60.5	21.1	18.8	0.28	0.24	0.0	0.0	162.6	162.6	2.7	0.4	C	
18	B65	Basic Segment	2289	2289	4800	4268	0.54	0.54	0	69.9	18.4	16.4	2.17	2.16	0.0	0.0	1444.2	1444.2	20.7	0.0	C	
19	D71	Off Ramp	2289	2289	4800	4268	0.54	0.54	0	60.6	21.2	18.9	0.28	0.24	0.0	0.0	162.6	162.6	2.7	0.4	C	
20	WELSH STATION NB	B72	Basic Segment	2125	2125	4800	4713	0.45	0.45	0	69.3	15.6	15.3	0.28	0.28	0.0	0.0	171.0	171.0	2.5	0.0	B
21	M73	On Ramp	2289	2289	4800	4268	0.54	0.54	0	62.8	18.5	16.5	0.27	0.24	0.0	0.0	162.6	162.6	2.6	0.3	B	
22	B74	Basic Segment	2289	2289	4800	4268	0.54	0.54	0	69.9	18.4	16.4	1.15	1.15	0.0	0.0	769.5	769.5	11.0	0.0	C	
23	D75	Off Ramp	2289	2289	4700	4179	0.55	0.55	0	57.2	22.5	20.0	0.30	0.26	0.0	0.0	162.6	162.6	2.8	0.3	C	
24	US 25 - ASHEVILLE HWY	B76	Basic Segment	1846	1846	4700	4123	0.45	0.45	0	64.5	16.3	14.3	0.34	0.34	0.0	0.0	168.3	168.3	2.6	0.0	B
25	M77	On Ramp	2504	2504	4700	4200	0.60	0.60	0	57.3	24.0	21.5	0.30	0.26	0.0	0.0	177.8	177.8	3.1	0.4	C	
26	B78	Basic Segment	2504	2504	4700	4200	0.60	0.60	0	65.0	21.6	19.3	1.20	1.20	0.0	0.0	815.1	815.1	12.5	0.0	C	
27	D79	Off Ramp	2504	2504	4700	4200	0.60	0.60	0	57.8	24.2	21.7	0.29	0.26	0.0	0.0	177.8	177.8	3.1	0.3	C	
28	WEST AREA NB	B80	Basic Segment	2374	2374	4700	4228	0.56	0.56	0	64.5	20.4	18.4	0.33	0.33	0.0	0.0	213.6	213.6	3.3	0.0	C
29	M81	On Ramp	2504	2504	4700	4200	0.60	0.60	0	58.2	2											

B61	Basic	0.42	68.6	15.0	13.0	0.09	0.09	0.044.3	0.044.3	0.65	0.01
US 64 - 4 SEASONS BLW-52	Weaving	0.38	61.0	12.9	11.4	0.26	0.22	0.135.3	0.135.3	2.22	0.28
M63	Basic	0.44	68.1	15.4	13.4	0.09	0.09	0.047.5	0.047.5	0.70	0.02
M64	OnRamp	0.54	60.5	21.1	18.8	0.28	0.24	0.162.6	0.162.6	2.69	0.36
M65	Basic	0.54	69.9	18.4	16.4	2.17	2.18	1.444.2	1.444.2	20.16	0.03
D71	OnRamp	0.54	60.6	21.2	18.9	0.28	0.24	0.162.6	0.162.6	2.68	0.36
WELSH STATION NB-872	Basic	0.45	69.3	15.6	15.3	0.28	0.28	0.171.0	0.171.0	2.47	0.02
M73	OnRamp	0.54	62.8	18.5	16.5	0.27	0.24	0.162.6	0.162.6	2.59	0.27
S74	Basic	0.54	69.9	18.4	16.4	1.15	1.15	0.769.5	0.769.5	11.01	0.01
O75	OnRamp	0.55	57.2	22.5	20.0	0.30	0.26	0.162.6	0.162.6	2.84	0.38
US 25 - ADRIEVILLE HWY-676	Basic	0.45	64.5	16.3	14.3	0.34	0.34	0.188.3	0.188.3	2.61	0.02
M77	OnRamp	0.60	57.3	24.0	21.5	0.30	0.26	0.177.8	0.177.8	3.10	0.37
S78	Basic	0.60	65.0	21.6	19.3	1.20	1.20	0.815.1	0.815.1	12.54	0.00
O79	OnRamp	0.60	57.8	24.2	21.7	0.29	0.26	0.177.8	0.177.8	3.08	0.34
REST AREA NB-895	Basic	0.56	64.5	20.4	18.4	0.33	0.33	0.213.6	0.213.6	3.11	0.02
M81	OnRamp	0.60	58.2	23.8	21.2	0.29	0.26	0.177.8	0.177.8	3.06	0.32
M82	Basic	0.60	63.7	22.0	19.7	0.09	0.09	0.062.2	0.062.2	0.98	0.02
O83	OnRamp	0.60	57.1	24.5	21.9	0.30	0.26	0.177.8	0.177.8	3.11	0.38
NC 280 - ABBOTTS RD-884	Basic	0.49	64.6	18.0	15.8	0.37	0.36	0.200.5	0.200.5	3.11	0.02
M85	OnRamp	0.75	57.1	30.2	27.4	0.30	0.26	0.226.0	0.226.0	3.96	0.48
M86	Basic	0.75	63.2	27.8	25.2	1.94	1.89	1.627.2	1.627.2	25.74	0.71
O87	OnRamp	0.75	57.0	30.8	27.9	0.30	0.26	0.226.0	0.226.0	3.97	0.49
NC 146 - LONG SHOALS-888	Basic	0.62	64.7	22.7	20.3	0.42	0.42	0.298.0	0.298.0	4.61	0.02
M89	OnRamp	0.80	54.6	24.2	21.0	0.31	0.26	0.243.2	0.243.2	4.45	0.71
M90	Basic	0.80	61.6	30.6	27.8	3.81	3.61	3.349.8	3.349.8	54.35	2.81
O91	OnRamp	0.80	51.3	36.8	33.4	0.33	0.26	0.243.3	0.243.3	4.75	1.00
NC 191 - BRISLAND RD-892	Basic	0.71	61.3	26.4	23.8	0.19	0.19	0.153.3	0.153.3	2.42	0.06
M93	OnRamp	0.85	53.5	37.3	34.1	0.32	0.26	0.259.9	0.259.9	4.86	0.86
END PROJECT NB-894	Basic	0.85	59.8	33.5	30.6	0.60	0.55	0.545.9	0.545.9	9.13	0.73
Freeway			63.9	20.3	18.2	26.92	25.77	16,987.6	16,987.6	0.266.0	0.012.9

Density-Based LOS by Segment															
Segment	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Time Step	Basic	Off Ramp	Basic	On Ramp	Basic	Off Ramp	Basic	On Ramp	Off Ramp	Basic	On Ramp	Basic	Off Ramp	Basic	Weaving
1	A	B	A	B	A	B	B	B	B	B	B	B	B	B	B

Density-Based LOS by Segment															
Segment	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Time Step	Basic	On Ramp	Basic	Off Ramp	Basic	On Ramp	Basic	Off Ramp	Basic	On Ramp	Basic	Off Ramp	Basic	On Ramp	Basic
1	B	C	C	C	B	B	C	C	C	C	C	C	C	C	C

Density-Based LOS by Segment														
Segment	31	32	33	34	35	36	37	38	39	40	41	42		
Time Step	Off Ramp	Basic	On Ramp	Basic	Off Ramp	Basic	On Ramp	Basic	Off Ramp	Basic	On Ramp	Basic		
1	C	B	D	D	D	C	D	D	D	E	D	E	D	

Demand-Based LOS by Segment															
Time Step	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Demand-Based LOS by Segment															
Time Step	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Demand-Based LOS by Segment														
Time Step	31	32	33	34	35	36	37	38	39	40	41	42		
1	-	-	-	-	-	-	-	-	-	-	-	-	-	

HCS 2010 Freeway Facilities

Project Properties

Analyst		Freeway Name	TP 1-4600 I-4700 I-26 Widening	Analysis Period	PM Peak
Analysis Date	2/8/2013 10:12:36 AM	From	Exit 59 (Holbert Cove Road)	Version Date	10/10/2012
Agency	NHTB North Carolina, PC	To	Exit 33 (NC 191)		
Location	I-26	Analysis Direction	Northbound		
User Notes	2011 B7NB				
File Name	C:\Temp\preview.xml				

Facility-wide Values

Jam Density (pc/h/ln)	190	Time Period Duration (min)	15	Facility Length (mi)	29.10100
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Segment Input Data

Time Period 1

Seg #	From	To	Type	Length	Terrain	Adj. Demand	% Trucks	% RVs	# Lanes	FFS
1	B48	B48	Basic Segment	5280	Rolling	1602	10.00	0.00	2	70
2	D49	D49	Off Ramp	1500	Rolling	1602	10.00	0.00	2	70
3	HOLBERT COVE RD	B50	Basic Segment	2300	Rolling	1472	10.71	0.00	2	70
4	H51	H51	On Ramp	1500	Rolling	1616	9.93	0.00	2	70
5	B52	B52	Basic Segment	23500	Rolling	1616	9.93	0.00	2	70
6	D53	D53	Off Ramp	1500	Rolling	1616	9.93	0.00	2	70
7	US 25 SYSTEM ICHG	B54	Basic Segment	1125	Rolling	1598	9.94	0.00	2	70
8	M55	M55	On Ramp	1300	Rolling	2350	9.64	0.00	2	70
9	D56	D56	Off Ramp	1300	Rolling	2350	9.64	0.00	2	70
10	UPWARD RD	B57	Basic Segment	2325	Rolling	2043	10.79	0.00	2	70
11	M58	M58	On Ramp	1500	Rolling	2575	8.97	0.00	2	70
12	B59	B59	Basic Segment	13525	Rolling	2575	8.97	0.00	2	70
13	D60	D60	Off Ramp	1500	Rolling	2575	8.97	0.00	2	70
14	B61	B61	Basic Segment	525	Rolling	2166	10.29	0.00	2	70
15	US 64 - 4 SEASONS BL	W62	Weaving	1375	Rolling	2539	9.07	0.00	3	70
16	B63	B63	Basic Segment	550	Rolling	2286	9.85	0.00	2	70
17	M64	M64	On Ramp	1500	Rolling	2748	8.53	0.00	2	70
18	B65	B65	Basic Segment	13325	Rolling	2748	8.53	0.00	2	70
19	D71	D71	Off Ramp	1500	Rolling	2748	8.53	0.00	2	70
20	WELSH STATION NB	B72	Basic Segment	1700	Rolling	2545	1.24	0.00	2	70
21	M73	M73	On Ramp	1500	Rolling	2748	8.53	0.00	2	70
22	B74	B74	Basic Segment	7100	Rolling	2748	8.53	0.00	2	70
23	D75	D75	Off Ramp	1500	Rolling	2748	8.53	0.00	2	65
24	US 25 - ASHEVILLE HWY	B76	Basic Segment	1925	Rolling	2224	9.60	0.00	2	65
25	M77	M77	On Ramp	1500	Rolling	2990	8.17	0.00	2	65
26	B78	B78	Basic Segment	6875	Rolling	2990	8.17	0.00	2	65
27	D79	D79	Off Ramp	1500	Rolling	2990	8.17	0.00	2	65
28	WEST AREA NB	B80	Basic Segment	1900	Rolling	2860	7.77	0.00	2	65
29	M81	M81	On Ramp	1500	Rolling	2990	8.17	0.00	2	65
30	B82	B82	Basic Segment	525	Rolling	2990	8.17	0.00	2	65
31	D83	D83	Off Ramp	1500	Rolling	2990	8.17	0.00	2	65
32	NC 280 - AIRPORT RD	B84	Basic Segment	2075	Rolling	2479	9.23	0.00	2	65
33	M85	M85	On Ramp	1500	Rolling	3745	7.12	0.00	2	65
34	B86	B86	Basic Segment	10800	Rolling	3745	7.12	0.00	2	65
35	D87	D87	Off Ramp	1500	Rolling	3745	7.12	0.00	2	65
36	NC 146 - LONG SHOALS	B88	Basic Segment	2400	Rolling	3072	8.25	0.00	2	65
37	M89	M89	On Ramp	1500	Rolling	3888	7.15	0.00	2	65
38	B90	B90	Basic Segment	20650	Rolling	3888	7.15	0.00	2	65
39	D91	D91	Off Ramp	1500	Rolling	3888	7.15	0.00	2	65
40	NC 191 - BREWARD RD	B92	Basic Segment	1075	Rolling	3457	7.66	0.00	2	65
41	M93	M93	On Ramp	1500	Rolling	4262	6.59	0.00	2	65
42	END PROJECT NB	B94	Basic Segment	3150	Rolling	4262	6.59	0.00	2	65

Seg #	Type	Adj. Demand	% Trucks	% RVs	Lanes	Accel/Decel Length	FFS
2	Off Ramp	130	2.00	0.00	1	425	45
4	On Ramp	144	2.00	0.00	1	825	45
6	Off Ramp	18	9.00	0.00	1	650	25
8	On Ramp	752	9.00	0.00	1	600	50
9	Off Ramp	307	2.00	0.00	1	225	45
11	On Ramp	532	2.00	0.00	1	850	45
13	Off Ramp	409	2.00	0.00	1	450	50
17	On Ramp	462	2.00	0.00	1	325	50
19	Off Ramp	203	100.00	0.00	1	425	45
21	On Ramp	203	100.00	0.00	1	1150	45
23	Off Ramp	524	4.00	0.00	1	450	45
25	On Ramp	766	4.00	0.00	1	550	45
27	Off Ramp	130	17.00	0.00	1	425	45
29	On Ramp	130	17.00	0.00	1	900	45
31	Off Ramp	511	3.00	0.00	1	400	45
33	On Ramp	1266	3.00	0.00	1	1125	45
35	Off Ramp	673	2.00	0.00	1	250	45
37	On Ramp	816	3.00	0.00	1	375	45
39	Off Ramp	431	3.00	0.00	1	400	25
41	On Ramp	805	2.00	0.00	1	325	45

Seg #	Ramp to Ramp Prop.	On-Ramp					Off-Ramp				
		Adj. Demand	% Trucks	% RVs	Lanes	FFS	Adj. Demand	% Trucks	% RVs	Lanes	FFS
15	0.000	372	2.00	0.00	1	25	252	2.00	0.00	1	25

Time Period Independent Weaving Segment Data

Seg #	Configuration	Short Length	# Weaving Lanes	Min. Lane Changes Freeway-Ramp	Min. Lane Changes Ramp-Freeway	Min. Lane Changes Ramp-Ramp
15	375	2	1	1	0	

Time Period Results

Time Period 1

Seg #	From	To	Type	Adj. Demand	Vol. Served	Capacity (pc/h)	Capacity (veh/h)	d/c Ratio	v/c ratio	Queue Length (ft)	Avg. Speed (mi/h)	Density (pc/mi/ln)	Density (veh/mi/ln)	Avg. Travel Time (min/veh)	Free-Flow Travel Time (min/veh)	Mainline Delay (min/veh)	System Delay (min/veh)	VHT Demand (veh-h)	VHT Volume (veh-h)	VHT (veh-hrs)	VHD (veh-hrs)	LOS
1	BEGIN PROJECT NB	B48	Basic Segment	1602	1602	4800	4174	0.38	0.38	0	70.0	13.2	11.4	0.86	0.86	0.0	0.0	400.5	400.5	5.7	0.0	B
2	D49	D49	Off Ramp	1602	1602	4800	4174	0.38	0.38	0	61.3	15.0	13.1	0.28	0.24	0.0	0.0	113.8	113.8	1.9	0.2	B
3	HOLBERT COVE RD	B50	Basic Segment	1472	1472	4800	4136	0.36	0.36	0	69.6	12.3	10.6	0.38	0.37	0.0	0.0	160.3	160.3	2.3	0.0	B
4	H51	H51	On Ramp	1616	1616	4800	4178	0.39	0.39	0	62.4	14.8	12.9	0.27	0.24	0.0	0.0	114.8	114.8	1.8	0.2	B
5	B52	B52	Basic Segment	1616	1616	4800	4178	0.39	0.39	0	70.0	13.3	11.5	3.82	3.82	0.0	0.0	3801.9	3801.9	25.7	0.0	B
6	D53	D53	Off Ramp	1616	1616	4800	4178	0.39	0.39	0	54.3	17.1	14.9	0.31	0.24	0.1	0.1	114.8	114.8	2.1	0.5	B
7	US 25 SYSTEM ICHG	B54	Basic Segment	1598	1598	4800	4177	0.38	0.38	0	68.1	13.5	11.7	0.19	0.18	0.0	0.0	85.1	85.1	1.2	0.0	B
8	M55	M55	On Ramp	2350	2350	4800	4194	0.56	0.56	0	61.3	21.0	18.3	0.24	0.21	0.0	0.0	144.6	144.6	2.4	0.3	C
9	D56	D56	Off Ramp	2350	2350	4800	4194	0.56	0.56	0	60.9	22.1	19.3	0.24	0.21	0.0	0.0	144.6	144.6	2.4	0.3	C
10	UPWARD RD	B57	Basic Segment	2043	2043	4800	4131	0.49	0.49	0	69.5	17.1	14.7	0.38	0.38	0.0	0.0	224.9	224.9	3.2	0.0	B
11	M58	M58	On Ramp	2575	2575	4800	4231	0.61	0.61	0	61.2	23.7	20.9	0.28	0.24	0.0	0.0	182.9	182.9	3.0	0.4	C
12	B59	B59	Basic Segment	2575	2575	4800	4231	0.61	0.61	0	69.2	21.1	18.6	2.22	2.20	0.0	0.0	1649.0	1649.0	23.8	0.3	C
13	D60	D60	Off Ramp	2575	2575	4800	4231	0.61	0.61	0	62.4	23.4	20.6	0.27	0.24	0.0	0.0	182.9	182.9	2.9	0.3	C
14	B61	B61	Basic Segment	2166	2166	4800	4188	0.52	0.52	0	68.5	18.2	15.8	0.09	0.09	0.0	0.0	53.8	53.8	0.8	0.0	C
15	US 64 - 4 SEASONS BL	W62	Weaving	2539	2539	6232	5477	0.46	0.46	0	59.6	16.1	14.2	0.26	0.22	0.0	0.0	165.3	165.3	2.8	0.4	B
16	B63	B63	Basic Segment	2286	2286	4800	4182	0.55	0.55	0	67.8	19.3	16.9	0.09	0.09	0.0	0.0	59.5	59.5	0.9	0.0	C
17	M64	M64	On Ramp	2748	2748	4800	4255	0.65	0.65	0	59.5	25.9	23.0	0.29	0.24	0.0	0.0	195.2	195.2	3.3	0.5	C
18	B65	B65	Basic Segment	2748	2748	4800	4255	0.65	0.65	0	68.6	22.6	20.0	2.21	2.16	0.0	0.0	1733.8	1733.8	25.3	0.5	C
19	D71	D71	Off Ramp	2748	2748	4800	4255	0.65	0.65	0	60.4	25.7	22.8	0.28	0.24	0.0	0.0	195.2	195.2	3.2	0.4	C
20	WELSH STATION NB	B72	Basic Segment	2545	2545	4800	4713	0.54	0.54	0	69.3	18.7	18.4	0.28	0.28	0.0	0.0	204.9	204.9	3.0	0.0	C
21	M73	M73	On Ramp	2748	2748	4800	4255	0.65	0.65	0	62.1	22.4	19.9	0.27	0.24	0.0	0.0	195.2	195.2	3.1	0.4	C
22	B74	B74	Basic Segment	2748	2748	4800	4255	0.65	0.65	0	68.6	22.6	20.0	1.18	1.15	0.0	0.0	923.8	923.8	13.5	0.3	C
23	D75	D75	Off Ramp	2748	2748	4700	4167	0.66	0.66	0	57.0	27.2	24.1	0.30	0.26	0.0	0.0	195.2	195.2	3.4	0.4	C
24	US 25 - ASHEVILLE HWY	B76	Basic Segment	2224	2224	4700	4108	0.54	0.54	0	64.5	19.7	17.2	0.34	0.34	0.0	0.0	202.7	202.7	3.1	0.0	C
25	M77	M77	On Ramp	2990	2990	4700	4187	0.71	0.71	0	56.3	29.3	26.1	0.30	0.26	0.0	0.0	212.4	212.4	3.8	0.5	D
26	B78	B78	Basic Segment	2990	2990	4700	4187	0.71	0.71	0	63.9	26.3	23.4	1.22	1.20	0.0	0.0	973.3	973.3	15.2	0.3	D
27	D79	D79	Off Ramp	2990	2990	4700	4187	0.71	0.71	0	57.8	29.0	25.9	0.29</								

B61	Basic	0.52	68.5	18.2	15.8	0.09	0.09	0.053.8	0.053.8	0.79	0.02
US 64 - 4 SEASONS BLW/SC	Weaving	0.46	59.6	16.1	14.2	0.26	0.22	0.165.3	0.165.3	2.78	0.41
M63	Basic	0.55	67.8	19.3	16.9	0.09	0.09	0.059.5	0.059.5	0.88	0.03
M64	OnRamp	0.65	59.5	25.9	23.0	0.29	0.24	0.195.2	0.195.2	3.28	0.49
M65	Basic	0.65	68.6	22.6	20.0	0.21	0.18	1.713.8	1.713.8	25.28	0.51
D71	OnRamp	0.65	60.4	25.7	22.8	0.28	0.24	0.195.2	0.195.2	3.23	0.44
WELSH STATION NB-872	Basic	0.54	69.3	18.7	18.4	0.28	0.28	0.204.9	0.204.9	2.96	0.03
M73	OnRamp	0.65	62.1	22.4	19.9	0.27	0.24	0.195.2	0.195.2	3.14	0.35
M74	Basic	0.65	68.6	22.6	20.0	0.18	0.15	0.925.8	0.925.8	13.47	0.27
D75	OnRamp	0.65	57.0	27.2	24.1	0.30	0.26	0.195.2	0.195.2	3.42	0.45
US 25 - ADRIAN HWY 676	Basic	0.54	64.5	19.7	17.2	0.34	0.34	0.202.7	0.202.7	5.14	0.02
M77	OnRamp	0.71	56.3	29.3	26.1	0.30	0.26	0.212.4	0.212.4	3.77	0.50
D76	Basic	0.71	61.9	26.3	23.4	0.22	0.20	0.973.3	0.973.3	15.23	0.26
D78	OnRamp	0.71	57.8	29.0	25.9	0.29	0.26	0.212.4	0.212.4	3.67	0.41
REST AREA NB-895	Basic	0.68	64.5	24.8	22.2	0.33	0.33	0.257.3	0.257.3	3.99	0.03
M81	OnRamp	0.71	57.1	29.1	25.9	0.30	0.26	0.212.4	0.212.4	3.72	0.45
M82	Basic	0.71	61.5	26.4	23.6	0.09	0.09	0.074.3	0.074.3	1.17	0.03
D83	OnRamp	0.71	57.0	29.4	26.2	0.30	0.26	0.212.4	0.212.4	3.72	0.46
NC 280 - ABBOTSD RD-884	Basic	0.60	64.6	21.9	19.2	0.37	0.36	0.243.6	0.243.6	3.77	0.03
M85	OnRamp	0.88	54.6	37.3	33.7	0.31	0.26	0.266.0	0.266.0	4.87	0.78
M86	Basic	0.88	58.6	35.4	32.0	0.09	0.09	1.915.1	1.915.1	32.69	3.23
D87	OnRamp	0.88	56.7	36.5	33.0	0.30	0.26	0.266.0	0.266.0	4.69	0.60
NC 146 - LONG SHOALS-888	Basic	0.73	63.5	27.2	24.2	0.43	0.42	0.349.1	0.349.1	5.90	0.13
M89	OnRamp	0.92	53.0	41.0	37.0	0.33	0.26	0.276.1	0.276.1	5.31	1.06
M90	Basic	0.92	57.0	37.8	34.1	0.12	0.11	3.801.5	3.801.5	66.72	6.24
D91	OnRamp	0.92	51.2	42.0	37.9	0.33	0.26	0.276.1	0.276.1	5.39	1.14
NC 191 - BRISLAND RD-892	Basic	0.82	61.1	31.6	28.3	0.20	0.19	0.176.0	0.176.0	2.88	0.17
M93	OnRamp	1.00	48.8	47.7	43.4	0.35	0.26	0.302.7	0.302.7	6.20	1.54
END PROJECT NB-894	Basic	1.00	52.4	44.7	40.6	0.68	0.55	0.635.7	0.635.7	12.13	2.35
	Freeway		61.6	25.0	22.3	27.69	25.77	20,106.7	20,106.7	0,326.3	0,026.9

Density-Based LOS by Segment															
Segment	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Time Step	Basic	Off Ramp	Basic	On Ramp	Basic	Off Ramp	Basic	On Ramp	Off Ramp	Basic	On Ramp	Basic	Off Ramp	Basic	Weaving
1	B	B	B	B	B	B	B	B	C	B	C	C	C	C	B
Density-Based LOS by Segment															
Segment	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Time Step	Basic	On Ramp	Basic	Off Ramp	Basic	On Ramp	Basic	Off Ramp	Basic	On Ramp	Basic	Off Ramp	Basic	On Ramp	Basic
1	C	C	C	C	C	C	C	C	C	D	D	D	C	D	D
Density-Based LOS by Segment															
Segment	31	32	33	34	35	36	37	38	39	40	41	42			
Time Step	Off Ramp	Basic	On Ramp	Basic	Off Ramp	Basic	On Ramp	Basic	Off Ramp	Basic	On Ramp	Basic			
1	D	C	E	E	E	D	E	E	E	D	E	E			
Demand-Based LOS by Segment															
Time Step	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Demand-Based LOS by Segment															
Time Step	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Demand-Based LOS by Segment															
Time Step	31	32	33	34	35	36	37	38	39	40	41	42			
1	-	-	-	-	-	-	-	-	-	-	-	-			

HCS 2010 Freeway Facilities

Project Properties

Analyst		Freeway Name	TP 1-4600 I-4700 I-26 Widening	Analysis Period	AM Peak
Analysis Date	2/8/2013 3:14:33 PM	From	Exit 33 (NC 191)	Version Date	10/10/2012
Agency	NHTB North Carolina, PC	To	Exit 59 (Hobert Cove Rd)		
Location	I-26	Analysis Direction	Southbound		
User Notes	2011 B7NB				
File Name	C:\Temp\preview.xml				

Facility-wide Values

Jam Density (pc/h/ln)	190	Time Period Duration (min)	15	Facility Length (mi)	28.95900
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Segment Input Data

Time Period 1

Seg #	From	To	Type	Length	Terrain	Adj. Demand	% Trucks	% RVs	# Lanes	FFS
1	BEGIN PROJECT SB	B1	Basic Segment	4600	Rolling	4423	6.75	0.00	2	65
2	D2	Off Ramp	1500	Rolling	4423	6.75	0.00	2	65	
3	NC 191 - BREVARO RD	B3	Basic Segment	975	Rolling	3618	7.58	0.00	2	65
4	M4	On Ramp	1500	Rolling	4049	7.10	0.00	2	65	
5	B5	Basic Segment	18750	Rolling	4049	7.10	0.00	2	65	
6	D6	Off Ramp	1500	Rolling	4049	7.10	0.00	2	65	
7	NC 146 - LONG SHOALS	B7	Basic Segment	2500	Rolling	3233	8.13	0.00	2	65
8	M8	On Ramp	1500	Rolling	3906	7.25	0.00	2	65	
9	B9	Basic Segment	10500	Rolling	3906	7.25	0.00	2	65	
10	D10	Off Ramp	1500	Rolling	3906	7.25	0.00	2	65	
11	NC 280 - AIRPORT RD	B11	Basic Segment	2275	Rolling	2640	9.28	0.00	2	65
12	M12	On Ramp	1500	Rolling	3151	8.26	0.00	2	65	
13	B13	Basic Segment	525	Rolling	3151	8.26	0.00	2	65	
14	D14	Off Ramp	1500	Rolling	3151	8.26	0.00	2	65	
15	REST AREA SB	B15	Basic Segment	1725	Rolling	3019	7.88	0.00	2	65
16	M16	On Ramp	1500	Rolling	3151	8.26	0.00	2	65	
17	B17	Basic Segment	7050	Rolling	3151	8.26	0.00	2	65	
18	D18	Off Ramp	1500	Rolling	3151	8.26	0.00	2	65	
19	US 25 - ASHVILLE HWY	B19	Basic Segment	2075	Rolling	2385	9.63	0.00	2	65
20	M20	On Ramp	1500	Rolling	2909	8.62	0.00	2	70	
21	B21	Basic Segment	6825	Rolling	2909	8.62	0.00	2	70	
22	D22	Off Ramp	1500	Rolling	2909	8.62	0.00	2	70	
23	WEIGH STATION SB	B23	Basic Segment	1500	Rolling	2692	1.25	0.00	2	70
24	M24	On Ramp	1500	Rolling	2909	8.62	0.00	2	70	
25	B25	Basic Segment	13600	Rolling	2909	8.62	0.00	2	70	
26	D31	Off Ramp	1500	Rolling	2909	8.62	0.00	2	70	
27	B32	Basic Segment	600	Rolling	2536	9.59	0.00	2	70	
28	US 64 - 4 SEASONS BL	W33	Weaving	1400	Rolling	2945	8.54	0.00	3	70
29	B34	Basic Segment	225	Rolling	2483	9.75	0.00	2	70	
30	M35	On Ramp	1500	Rolling	2736	9.04	0.00	2	70	
31	B36	Basic Segment	13400	Rolling	2736	9.04	0.00	2	70	
32	D37	Off Ramp	1500	Rolling	2736	9.04	0.00	2	70	
33	UPWARD RD	B38	Basic Segment	2300	Rolling	2204	10.74	0.00	2	70
34	M39	On Ramp	1425	Rolling	2511	9.67	0.00	2	70	
35	D40	Off Ramp	1425	Rolling	2511	9.67	0.00	2	70	
36	US 25 SYSTEM ICHG	B41	Basic Segment	2725	Rolling	1762	9.95	0.00	2	70
37	M42	On Ramp	1500	Rolling	1779	9.94	0.00	2	70	
38	B43	Basic Segment	21635	Rolling	1779	9.94	0.00	2	70	
39	D44	Off Ramp	1500	Rolling	1779	9.94	0.00	2	70	
40	HOLBERT COVE RD	B45	Basic Segment	2600	Rolling	1635	10.47	0.00	2	70
41	M46	On Ramp	1500	Rolling	1765	9.99	0.00	2	70	
42	END PROJECT SB	B47	Basic Segment	5280	Rolling	1765	9.99	0.00	2	70

Time Period Independent Weaving Segment Data

Seg #	Configuration	Short Length	# Weaving Lanes	Min. Lane Changes Freeway-Ramp	Min. Lane Changes Ramp-Freeway	Min. Lane Changes Ramp-Ramp
28	400	2	1	1	0	

Seg #	Type	Adj. Demand	% Trucks	% RVs	Lanes	Accel/Decel Length	FFS
2	Off Ramp	805	3.00	0.00	1	600	25
4	On Ramp	431	3.00	0.00	1	525	45
6	Off Ramp	816	3.00	0.00	2	575	45
8	On Ramp	673	3.00	0.00	1	650	45
10	Off Ramp	1268	3.00	0.00	1	425	45
12	On Ramp	511	3.00	0.00	1	475	45
14	Off Ramp	132	17.00	0.00	1	425	45
16	On Ramp	132	17.00	0.00	1	950	45
18	Off Ramp	76	4.00	0.00	1	700	45
20	On Ramp	524	4.00	0.00	1	600	45
22	Off Ramp	217	100.00	0.00	1	375	45
24	On Ramp	217	100.00	0.00	1	975	45
26	Off Ramp	373	2.00	0.00	1	475	50
28	On Ramp	253	2.00	0.00	1	450	50
32	Off Ramp	532	2.00	0.00	1	225	45
34	On Ramp	307	2.00	0.00	1	800	45
35	Off Ramp	749	9.00	0.00	1	675	50
37	On Ramp	17	9.00	0.00	1	1300	45
39	Off Ramp	144	4.00	0.00	1	300	45
41	On Ramp	130	4.00	0.00	1	800	45

Seg #	Ramp to Prop.	On-Ramp				Off-Ramp					
		Adj. Demand	% Trucks	% RVs	FFS	Adj. Demand	% Trucks	% RVs	FFS		
28	0.000	409	2.00	0.00	1	25	462	2.00	0.00	1	25

Time Period Results

Time Period 1

Seg #	From	To	Type	Adj. Demand	Vol. Served	Capacity (pc/h)	Capacity (veh/h)	d/c Ratio	v/c ratio	Queue Length(ft)	Avg. Speed (mi/h)	Density (pc/mi/ln)	Density (veh/mi/ln)	Avg. Travel Time (min/veh)	Free-Flow Travel Time (min/veh)	Mainline Delay (min/veh)	System Delay (min/veh)	VHT Demand (veh-min)	VHT Volume (veh-min)	VHT (veh-hrs)	VHD (veh-hrs)	LOS
1	BEGIN PROJECT SB	B1	Basic Segment	4423	4260	4700	4268	1.04	1.00	0	52.3	44.8	40.7	1.00	0.80	0.2	0.2	963.3	927.8	17.7	3.5	E
2	D2	Off Ramp	4423	4260	4700	4268	1.04	1.00	0	54.9	42.7	38.8	0.31	0.26	0.0	0.0	0.0	314.1	302.6	5.5	0.9	E
3	NC 191 - BREVARO RD	B3	Basic Segment	3618	3480	4700	4220	0.86	0.82	0	60.9	31.8	28.6	0.18	0.17	0.0	0.0	167.0	160.7	2.6	0.2	D
4	M4	On Ramp	4049	3900	4700	4248	0.95	0.92	0	52.3	40.8	36.9	0.33	0.26	0.1	0.1	287.6	277.0	5.3	1.0	E	
5	B5	Basic Segment	4049	3900	4700	4248	0.95	0.92	0	56.9	37.9	34.3	3.75	3.28	0.5	0.5	3594.6	3462.4	60.9	7.6	E	
6	D6	Off Ramp	4049	3900	4700	4248	0.95	0.92	0	54.9	39.3	35.5	0.31	0.26	0.0	0.0	287.6	277.0	5.0	0.8	E	
7	NC 146 - LONG SHOALS	B7	Basic Segment	3233	3120	4700	4189	0.77	0.74	0	63.3	27.7	24.7	0.45	0.44	0.0	0.0	382.7	369.3	5.8	0.2	D
8	M8	On Ramp	3906	3780	4700	4239	0.92	0.89	0	53.5	38.5	34.7	0.32	0.26	0.1	0.1	277.4	268.5	5.0	0.9	E	
9	B9	Basic Segment	3906	3780	4700	4239	0.92	0.89	0	58.1	36.0	32.5	2.05	1.84	0.2	0.2	1941.9	1879.3	32.3	3.4	E	
10	D10	Off Ramp	3906	3780	4700	4239	0.92	0.89	0	53.9	38.9	35.1	0.32	0.26	0.1	0.1	277.4	268.5	5.0	0.8	E	
11	NC 280 - AIRPORT RD	B11	Basic Segment	2640	2580	4700	4126	0.64	0.63	0	64.5	22.8	20.0	0.40	0.40	0.0	0.0	284.4	277.9	4.3	0.0	C
12	M12	On Ramp	3151	3060	4700	4182	0.75	0.73	0	56.0	30.1	26.8	0.30	0.26	0.0	0.0	223.8	217.3	3.9	0.5	D	
13	B13	Basic Segment	3151	3060	4700	4182	0.75	0.73	0	63.3	27.2	24.2	0.09	0.09	0.0	0.0	78.3	76.1	1.2	0.0	D	
14	D14	Off Ramp	3151	3060	4700	4182	0.75	0.73	0	56.3	30.5	27.2	0.30	0.26	0.0	0.0	223.8	217.3	3.9	0.5	D	
15	REST AREA SB	B15	Basic Segment	3019	2940	4700	4203	0.72	0.70	0	64.2	25.6	22.9	0.31	0.30	0.0	0.0	246.6	240.1	3.7	0.0	C
16	M16	On Ramp	3151	3060	4700	4182	0.75	0.73	0	56.8	30.1	26.8	0.30	0.26	0.0	0.0	223.8	217.3	3.8	0.5	D	
17	B17	Basic Segment	3151	3060	4700	4182	0.75	0.73	0	63.6	27.1	24.1	1.26	1.23	0.0	0.0	1051.8	1021.4	16.1	0.4	D	
18	D18	Off Ramp	3151	3060	4700	4182	0.75	0.73	0	55.0	31.3	27.8	0.31	0.26	0.0	0.0	223.8	217.3	4.0	0.6	D	
19	US 25 - ASHVILLE HWY	B19	Basic Segment	2385	2340	4700	4107	0.58	0.57	0	64.4	20.8	18.2	0.37	0.36	0.0	0.0	234.3	229.9	3.6	0.0	C
20	M20	On Ramp	2909	2880	4700	4162	0.70	0.69	0	56.7	28.0	24.8	0.30	0.26	0.0	0.0	206.6	204.5	3.6	0.5	C	
21	B21	Basic Segment	2909	2880	4800	4251	0.68	0.68	0	67.9	24.0	21.2	1.14	1.11	0.0	0.0	940.1	930.7	13.7	0.4	C	
22	D22	Off Ramp	2909	2880	4800	4251	0.68	0.68	0	58.5	27.8	24.6	0.29	0.24	0.0	0.0	206.6	204.5	3.5	0.8	C	
23	WEIGH STATION SB	B23	Basic Segment	2692	2640	4800	4711	0.57	0.56	0	69.0	19.5	19.1	0.25	0.24	0.0	0.0	191.2	187.5	2.7	0.0	C
24	M24	On Ramp	2909	2880	4800	4251	0.68	0.68	0	60.8	26.2	23.2	0.28	0.24	0.0	0.0	206.6	204.5	3.4	0.4	C	
25	B25	Basic Segment	2909	2880	4800	4251	0.68	0.68	0	67.9	24.0	21.2	2.28	2.21	0.1	0.1	1873.2	1854.5	27.3	0.8	C	
26	D31	Off Ramp	2909	2880	4800	4251	0.68	0.68	0	58.9	27.6	24.5	0.29	0.24	0.0	0.0	206.6	204.5	3.5	0.6	C	
27	B32	Basic Segment	2536	2520	4800	4196	0.60	0.60	0	68.0	21.2	18.5	0.10	0.10	0.0	0.0	72.0	71.6	1.1	0.0	C	
28	US 64 - 4 SEASONS BL	W33	Weaving	2945	2880	6115	5421	0.54	0.53	0	56.3	21.7	19.3	0.28	0.23	0.1	0.1	195.2	190.9	3.4	0.7	C
29	B34	Basic Segment	2483	2460	4800	4187	0.59	0.59	0	66.3	21.3											

-B13	Basic	0.75	63.3	27.2	24.2	0.09	0.09	0.078.3	0.076.1	1.20	0.03
-D14	OffRamp	0.75	56.3	30.5	27.2	0.30	0.36	0.223.8	0.217.3	3.86	0.52
REST AREA SB-B15	Basic	0.72	64.2	25.6	22.9	0.31	0.30	0.246.6	0.240.1	3.74	0.05
-H16	OnRamp	0.75	56.8	30.1	26.8	0.30	0.26	0.223.8	0.217.3	3.82	0.48
-B17	Basic	0.75	63.6	27.1	24.1	1.23	1.23	1.051.8	1.021.4	16.07	0.36
-D18	OffRamp	0.75	55.0	31.3	27.8	0.31	0.26	0.223.8	0.217.3	3.95	0.63
US 25 - ADM'TL14 HWY 619	Basic	0.58	64.4	20.8	18.2	0.37	0.36	0.234.3	0.229.9	3.57	0.03
-H20	OnRamp	0.70	56.7	28.0	24.8	0.30	0.26	0.206.6	0.204.5	3.61	0.46
-B21	Basic	0.68	67.9	24.0	21.2	1.14	1.11	0.940.1	0.930.7	13.71	0.41
-D22	OffRamp	0.68	58.5	27.8	24.6	0.29	0.24	0.206.6	0.204.5	3.50	0.58
WEIGH STATION SB-B23	Basic	0.57	69.0	19.5	19.1	0.25	0.24	0.191.2	0.187.5	2.72	0.04
-H24	OnRamp	0.68	60.8	26.2	23.2	0.28	0.24	0.206.6	0.204.5	3.36	0.44
-B25	Basic	0.68	67.9	24.0	21.2	2.28	2.21	1.872.2	1.834.5	27.32	0.62
-D26	OffRamp	0.68	58.9	27.6	24.5	0.29	0.24	0.206.6	0.204.5	3.47	0.55
-B27	Basic	0.60	68.0	21.2	18.5	0.10	0.10	0.072.0	0.071.6	1.05	0.03
US 64 - 4 SEASONS BL-W33	Weaving	0.54	56.3	21.7	19.3	0.28	0.23	0.195.2	0.190.9	3.39	0.66
-B34	Basic	0.59	66.3	21.3	18.5	0.04	0.04	0.026.5	0.026.2	0.40	0.02
-H35	OnRamp	0.65	60.0	25.3	22.2	0.28	0.24	0.194.3	0.191.8	3.20	0.46
-B36	Basic	0.65	68.7	22.3	19.6	2.22	2.18	1.735.9	1.713.1	24.93	0.46
-D37	OffRamp	0.65	58.5	26.2	23.1	0.29	0.24	0.194.3	0.191.8	3.28	0.54
UPWARD RD-B38	Basic	0.53	69.5	18.1	15.5	0.38	0.37	0.240.0	0.235.2	3.39	0.03
-H39	OnRamp	0.60	61.3	22.6	19.7	0.26	0.23	0.169.4	0.166.0	2.71	0.34
-D40	OffRamp	0.60	57.7	24.4	21.3	0.28	0.23	0.169.4	0.166.0	2.88	0.51
US 25 SYSTEM (DOW-84)	Basic	0.42	69.6	14.4	12.5	0.45	0.44	0.227.3	0.224.5	3.23	0.02
-H42	OnRamp	0.43	63.5	15.7	13.7	0.27	0.24	0.126.3	0.123.6	1.95	0.18
-B43	Basic	0.43	70.0	14.3	12.4	3.51	3.51	1.821.5	1.781.6	25.45	0.00
-D44	OffRamp	0.43	59.5	16.8	14.6	0.29	0.24	0.126.3	0.123.6	2.08	0.31
HOLBERT COVE RD-B45	Basic	0.39	69.6	13.5	11.6	0.42	0.42	0.201.3	0.199.4	2.86	0.02
-H46	OnRamp	0.42	62.2	15.9	13.8	0.27	0.24	0.125.4	0.123.6	1.99	0.22
END PROJECT SB-B47	Basic	0.42	70.0	14.3	12.4	0.86	0.86	0.441.3	0.435.0	6.22	0.00
Freeway			61.4	25.9	23.1	27.68	25.65	21,181.8	20,662.3	0,336.4	0.029.0

Density-Based LOS by Segment															
Segment	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Time Step	Basic	Off Ramp	Basic	On Ramp	Basic	Off Ramp	Basic	On Ramp	Basic	Off Ramp	Basic	On Ramp	Basic	Off Ramp	Basic
1	E	E	D	E	E	E	D	E	E	E	C	D	D	D	C
Density-Based LOS by Segment															
Segment	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Time Step	On Ramp	Basic	Off Ramp	Basic	On Ramp	Basic	Off Ramp	Basic	On Ramp	Basic	Off Ramp	Basic	Weaving	Basic	On Ramp
1	D	D	D	C	C	C	C	C	C	C	C	C	C	C	C
Density-Based LOS by Segment															
Segment	31	32	33	34	35	36	37	38	39	40	41	42			
Time Step	Basic	Off Ramp	Basic	On Ramp	Off Ramp	Basic	On Ramp	Basic	Off Ramp	Basic	On Ramp	Basic			
1	C	C	C	C	C	B	B	B	B	B	B	B			
Demand-Based LOS by Segment															
Time Step	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	F	F	-	-	-	-	-	-	-	-	-	-	-	-	-
Demand-Based LOS by Segment															
Time Step	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Demand-Based LOS by Segment															
Time Step	31	32	33	34	35	36	37	38	39	40	41	42			
1	-	-	-	-	-	-	-	-	-	-	-	-			

HCS 2010 Freeway Facilities

Project Properties

Analyst		Freeway Name	TP 1-4600 I-4700 I-26 Widening	Analysis Period	PM Peak
Analysis Date	2/8/2013 3:14:33 PM	From	Exit 33 (NC 191)	Version Date	10/10/2012
Agency	NHTB North Carolina, PC	To	Exit 59 (Hobert Cove Rd)		
Location	I-26	Analysis Direction	Southbound		
User Notes	2011 B7NB				
File Name	C:\Temp\preview.xml				

Facility-wide Values

Jam Density (pc/H/ln)	190	Time Period Duration (min)	15	Facility Length (mi)	28.95900
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Segment Input Data

Time Period 1

Seg #	From	To	Type	Length	Terrain	Adj. Demand	% Trucks	% RVs	# Lanes	FFS
1	BEGIN PROJECT SB	B1	Basic Segment	4600	Rolling	3581	6.35	0.00	2	65
2	D2	Off Ramp	1500	Rolling	3581	6.35	0.00	2	65	
3	NC 191 - BREWARD RD	B3	Basic Segment	975	Rolling	2933	7.09	0.00	2	65
4	M4	On Ramp	1500	Rolling	3347	6.58	0.00	2	65	
5	B5	Basic Segment	18750	Rolling	3347	6.58	0.00	2	65	
6	D6	Off Ramp	1500	Rolling	3347	6.58	0.00	2	65	
7	NC 146 - LONG SHOALS	B7	Basic Segment	2500	Rolling	2543	7.72	0.00	2	65
8	M8	On Ramp	1500	Rolling	3103	6.67	0.00	2	65	
9	B9	Basic Segment	10500	Rolling	3103	6.67	0.00	2	65	
10	D10	Off Ramp	1500	Rolling	3103	6.67	0.00	2	65	
11	NC 280 - AIRPORT RD	B11	Basic Segment	2275	Rolling	1962	9.11	0.00	2	65
12	M12	On Ramp	1500	Rolling	2425	7.95	0.00	2	65	
13	B13	Basic Segment	525	Rolling	2425	7.95	0.00	2	65	
14	D14	Off Ramp	1500	Rolling	2425	7.95	0.00	2	65	
15	REST AREA SB	B15	Basic Segment	1725	Rolling	2293	7.43	0.00	2	65
16	M16	On Ramp	1500	Rolling	2425	7.95	0.00	2	65	
17	B17	Basic Segment	7050	Rolling	2425	7.95	0.00	2	65	
18	D18	Off Ramp	1500	Rolling	2425	7.95	0.00	2	65	
19	US 25 - ASHVILLE HWY	B19	Basic Segment	2075	Rolling	1767	9.42	0.00	2	65
20	M20	On Ramp	1500	Rolling	2210	8.33	0.00	2	70	
21	B21	Basic Segment	6825	Rolling	2210	8.33	0.00	2	70	
22	D22	Off Ramp	1500	Rolling	2210	8.33	0.00	2	70	
23	WEIGH STATION SB	B23	Basic Segment	1500	Rolling	2050	1.18	0.00	2	70
24	M24	On Ramp	1500	Rolling	2210	8.33	0.00	2	70	
25	B25	Basic Segment	13600	Rolling	2210	8.33	0.00	2	70	
26	D31	Off Ramp	1500	Rolling	2210	8.33	0.00	2	70	
27	B32	Basic Segment	600	Rolling	1916	9.30	0.00	2	70	
28	US 64 - 4 SEASONS BL	W33	Weaving	1400	Rolling	2228	8.25	0.00	3	70
29	B34	Basic Segment	225	Rolling	1773	9.89	0.00	2	70	
30	M35	On Ramp	1500	Rolling	2027	8.90	0.00	2	70	
31	B36	Basic Segment	13400	Rolling	2027	8.90	0.00	2	70	
32	D37	Off Ramp	1500	Rolling	2027	8.90	0.00	2	70	
33	UPWARD RD	B38	Basic Segment	2300	Rolling	1580	10.86	0.00	2	70
34	M39	On Ramp	1425	Rolling	1870	9.48	0.00	2	70	
35	D40	Off Ramp	1425	Rolling	1870	9.48	0.00	2	70	
36	US 33 SYSTEM [CHG]	B41	Basic Segment	2725	Rolling	1261	9.71	0.00	2	70
37	M42	On Ramp	1500	Rolling	1279	9.70	0.00	2	70	
38	B43	Basic Segment	21615	Rolling	1279	9.70	0.00	2	70	
39	D44	Off Ramp	1500	Rolling	1279	9.70	0.00	2	70	
40	HOLBERT COVE RD	B45	Basic Segment	2600	Rolling	1116	10.54	0.00	2	70
41	M46	On Ramp	1500	Rolling	1208	10.04	0.00	2	70	
42	END PROJECT SB	B47	Basic Segment	5280	Rolling	1208	10.04	0.00	2	70

Time Period Independent Weaving Segment Data

Seg #	Configuration	Short Length	# Weaving Lanes	Min. Lane Changes Freeway-Ramp	Min. Lane Changes Ramp-Freeway	Min. Lane Changes Ramp-Ramp
28	400	2	1	1	0	

Seg #	Type	Adj. Demand	% Trucks	% RVs	Lanes	Accel/Decel Length	FFS
2	Off Ramp	648	3.00	0.00	1	600	25
4	On Ramp	414	3.00	0.00	1	525	45
6	Off Ramp	804	3.00	0.00	2	575	45
8	On Ramp	560	3.00	0.00	1	650	45
10	Off Ramp	1141	3.00	0.00	1	425	45
12	On Ramp	863	3.00	0.00	1	425	45
14	Off Ramp	132	17.00	0.00	1	425	45
16	On Ramp	132	17.00	0.00	1	950	45
18	Off Ramp	558	4.00	0.00	1	700	45
20	On Ramp	443	4.00	0.00	1	600	45
22	Off Ramp	160	100.00	0.00	1	375	45
24	On Ramp	160	100.00	0.00	1	975	45
26	Off Ramp	294	2.00	0.00	1	475	50
30	On Ramp	254	2.00	0.00	1	450	50
32	Off Ramp	447	2.00	0.00	1	225	45
34	On Ramp	290	2.00	0.00	1	800	45
35	Off Ramp	609	9.00	0.00	1	675	50
37	On Ramp	18	9.00	0.00	1	1300	45
39	Off Ramp	163	4.00	0.00	1	300	45
41	On Ramp	92	4.00	0.00	1	800	45

Seg #	Ramp to Prop.	On-Ramp					Off-Ramp				
		Adj. Demand	% Trucks	% RVs	Lanes	FFS	Adj. Demand	% Trucks	% RVs	Lanes	FFS
28	0.000	322	2.00	0.00	1	25	465	2.00	0.00	1	25

Time Period Results

Time Period 1

Seg #	From	To	Type	Adj. Demand	Vol. Served	Capacity (pc/H)	Capacity (veh/H)	d/c Ratio	v/c ratio	Queue Length(ft)	Avg. Speed (mi/H)	Density (pc/mi/ln)	Density (veh/mi/ln)	Avg. Travel Time (min/veh)	Free-Flow Travel Time (min/veh)	Mainline Delay (min/veh)	System Delay (min/veh)	VHT Demand (veh-min)	VHT Volume (veh-min)	VHT (veh-hrs)	VHD (veh-hrs)	LOS
1	BEGIN PROJECT SB	B1	Basic Segment	3581	3581	4700	4291	0.83	0.83	0	60.5	32.4	29.6	0.86	0.80	0.1	0.1	780.0	780.0	12.9	0.9	D
2	D2	Off Ramp	1500	3581	3581	4700	4291	0.83	0.83	0	50.8	38.6	35.3	0.34	0.26	0.1	0.1	254.3	254.3	5.0	1.1	E
3	NC 191 - BREWARD RD	B3	Basic Segment	2933	2933	4700	4248	0.69	0.69	0	63.1	25.7	23.2	0.18	0.17	0.0	0.0	135.4	135.4	2.1	0.1	C
4	M4	On Ramp	1500	3347	3347	4700	4278	0.78	0.78	0	55.2	33.1	30.1	0.31	0.26	0.0	0.0	237.7	237.7	4.3	0.6	D
5	B5	Basic Segment	18750	3347	3347	4700	4278	0.78	0.78	0	62.3	29.5	26.9	3.42	3.28	0.1	0.1	2971.4	2971.4	47.7	2.0	D
6	D6	Off Ramp	1500	3347	3347	4700	4278	0.78	0.78	0	56.4	32.6	29.7	0.30	0.26	0.0	0.0	237.7	237.7	4.2	0.6	D
7	NC 146 - LONG SHOALS	B7	Basic Segment	2543	2543	4700	4212	0.60	0.60	0	64.7	21.9	19.7	0.44	0.44	0.0	0.0	301.0	301.0	4.7	0.0	C
8	M8	On Ramp	1500	3103	3103	4700	4261	0.73	0.73	0	56.3	30.2	27.3	0.30	0.26	0.0	0.0	220.4	220.4	3.9	0.5	D
9	B9	Basic Segment	10500	3103	3103	4700	4261	0.73	0.73	0	63.6	26.9	24.4	1.88	1.84	0.0	0.0	1542.7	1542.7	24.2	0.5	D
10	D10	Off Ramp	1500	3103	3103	4700	4261	0.73	0.73	0	55.7	30.7	27.9	0.31	0.26	0.0	0.0	220.4	220.4	4.0	0.6	D
11	NC 280 - AIRPORT RD	B11	Basic Segment	1962	1962	4700	4135	0.47	0.47	0	64.6	17.3	15.2	0.40	0.40	0.0	0.0	211.3	211.3	3.3	0.0	B
12	M12	On Ramp	1500	2425	2425	4700	4199	0.58	0.58	0	57.3	23.5	21.0	0.30	0.26	0.0	0.0	172.2	172.2	3.0	0.4	C
13	B13	Basic Segment	525	2425	2425	4700	4199	0.58	0.58	0	63.5	21.4	19.1	0.09	0.09	0.0	0.0	60.3	60.3	0.9	0.0	C
14	D14	Off Ramp	1500	2425	2425	4700	4199	0.58	0.58	0	57.8	23.5	21.0	0.29	0.26	0.0	0.0	172.2	172.2	3.0	0.3	C
15	REST AREA SB	B15	Basic Segment	2293	2293	4700	4229	0.54	0.54	0	64.5	19.8	17.8	0.30	0.30	0.0	0.0	187.3	187.3	2.9	0.0	C
16	M16	On Ramp	1500	2425	2425	4700	4199	0.58	0.58	0	58.3	23.0	20.5	0.29	0.26	0.0	0.0	172.2	172.2	3.0	0.3	C
17	B17	Basic Segment	7050	2425	2425	4700	4199	0.58	0.58	0	65.0	20.9	18.7	1.23	1.23	0.0	0.0	809.5	809.5	12.5	0.0	C
18	D18	Off Ramp	1500	2425	2425	4700	4199	0.58	0.58	0	56.7	23.9	21.4	0.23	0.26	0.0	0.0	172.2	172.2	3.0	0.4	C
19	US 25 - ASHVILLE HWY	B19	Basic Segment	1767	1767	4700	4118	0.43	0.43	0	64.5	15.6	13.7	0.37	0.36	0.0	0.0	173.6	173.6	2.7	0.0	B
20	M20	On Ramp	1500	2210	2210	4700	4178	0.53	0.53	0	57.8	21.2	18.9	0.29	0.26	0.0	0.0	157.0	157.0	2.7	0.3	C
21	B21	Basic Segment	6825	2210	2210	4800	4267	0.52	0.52	0	70.0	17.8	15.6	1.11	1.11	0.0	0.0	714.2	714.2	10.2	0.0	B
22	D22	Off Ramp	1500	2210	2210	4800	4267	0.52	0.52	0	60.6	20.5	18.2	0.28	0.24	0.0	0.0	157.0	157.0	2.6	0.3	C
23	WEIGH STATION SB	B23	Basic Segment	2050	2050	4800	4717	0.43	0.43	0	69.2	15.1	14.8	0.25	0.24	0.0	0.0	145.6	145.6	2.1	0.0	B
24	M24	On Ramp	1500	2210	2210	4800	4267	0.52	0.52	0	62.4	18.0	16.0	0.27	0.24	0.0	0.0	157.0	157.0	2.5	0.3	B
25	B25	Basic Segment	2210	2210	2210	4800	4267	0.52	0.52	0	70.0	17.8	15.8	2.21	2.21	0.0	0.0	1423.1	1423.1	20.3	0.0	B
26	D31	Off Ramp	1500	2210	2210	4800	4267	0.52	0.52	0	62.7	19.8	17.6	0.27	0.24	0.0	0.0	157.0	157.0	2.5	0.3	B
27	B32	Basic Segment	1916	1916	1916	4800	4212	0.45	0.45	0	68.7	15.9	14.0	0.10	0.10	0.0	0.0	54.4	54.4	0.8	0.0	B
28	US 64 - 4 SEASONS BL	W33	Weaving	2238	2238	5990	5330	0.42	0.42	0	58.4	14.4										

-B13	Basic	0.58	63.5	21.4	19.1	0.09	0.09	0.060.3	0.060.3	0.05	0.02
-D14	OffRamp	0.58	57.8	23.5	21.0	0.29	0.26	0.172.2	0.172.2	2.98	0.33
REST AREA SB-B15	Basic	0.54	64.5	19.8	17.8	0.30	0.30	0.187.3	0.187.3	2.90	0.02
-H16	OnRamp	0.58	58.3	23.0	20.5	0.29	0.26	0.172.2	0.172.2	2.96	0.31
-B17	Basic	0.58	63.0	20.9	18.7	1.23	1.23	0.809.5	0.809.5	12.45	0.00
-D18	OffRamp	0.58	56.7	23.9	21.4	0.30	0.26	0.172.2	0.172.2	3.04	0.39
US 25 - ADMETVILLE HWY 619	Basic	0.43	64.5	15.6	13.7	0.37	0.36	0.173.6	0.173.6	2.69	0.02
-H20	OnRamp	0.53	57.8	21.2	18.9	0.29	0.26	0.157.0	0.157.0	2.71	0.30
-B21	Basic	0.52	70.0	17.8	15.8	1.11	1.11	0.714.2	0.714.2	10.21	0.00
-D22	OffRamp	0.52	60.6	20.5	18.2	0.28	0.24	0.157.0	0.157.0	2.59	0.35
WEIGH STATION SB-B23	Basic	0.43	69.2	15.1	14.8	0.25	0.24	0.145.6	0.145.6	2.10	0.02
-H24	OnRamp	0.52	62.4	18.0	16.0	0.27	0.24	0.157.0	0.157.0	2.51	0.27
-B25	Basic	0.52	70.0	17.8	15.8	2.21	2.21	1.423.1	1.423.1	20.34	0.01
-D31	OffRamp	0.52	62.7	19.8	17.6	0.27	0.24	0.157.0	0.157.0	2.50	0.26
-B32	Basic	0.45	68.7	15.9	14.0	0.10	0.10	0.054.4	0.054.4	0.79	0.02
US 64 - 4 SEASONS BL-W33	Weaving	0.42	58.4	14.4	12.8	0.27	0.23	0.148.4	0.148.4	2.54	0.42
-B34	Basic	0.42	66.9	15.2	13.3	0.04	0.04	0.018.9	0.018.9	0.28	0.01
-H35	OnRamp	0.48	61.2	18.7	16.5	0.28	0.24	0.144.0	0.144.0	2.35	0.30
-B36	Basic	0.48	70.0	16.4	14.5	2.18	2.18	1.286.1	1.286.1	18.37	0.00
-D37	OffRamp	0.48	60.5	19.0	16.8	0.28	0.24	0.144.0	0.144.0	2.38	0.32
UPWARD RD-R38	Basic	0.38	69.6	13.2	11.4	0.38	0.37	0.172.1	0.172.1	2.47	0.02
-H39	OnRamp	0.44	62.1	17.1	15.0	0.26	0.23	0.126.2	0.126.2	2.03	0.23
-D40	OffRamp	0.44	61.7	17.3	15.1	0.26	0.23	0.126.2	0.126.2	2.04	0.24
US 25 SYSTEM (DOWNSHIFT)	Basic	0.30	69.7	10.4	9.0	0.44	0.44	0.162.7	0.162.7	2.33	0.01
-H42	OnRamp	0.31	63.8	11.5	10.0	0.27	0.24	0.090.8	0.090.8	1.42	0.13
-B43	Basic	0.31	70.0	10.5	9.1	3.51	3.51	1.309.6	1.309.6	18.71	0.00
-D44	OffRamp	0.31	61.2	12.0	10.4	0.28	0.24	0.090.8	0.090.8	1.48	0.19
HOLBERT COVE RD-B45	Basic	0.27	69.7	9.3	8.0	0.42	0.42	0.137.4	0.137.4	1.97	0.01
-H46	OnRamp	0.29	62.6	11.1	9.6	0.27	0.24	0.085.8	0.085.8	1.37	0.15
END PROJECT SB-B47	Basic	0.29	70.0	9.9	8.6	0.86	0.86	0.302.0	0.302.0	4.32	0.00
Freeway			64.0	19.6	17.5	26.70	25.65	16,341.8	16,341.8	0,255.1	0,011.6

Density-Based LOS by Segment															
Segment	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Time Step	Basic	Off Ramp	Basic	On Ramp	Basic	Off Ramp	Basic	On Ramp	Basic	Off Ramp	Basic	On Ramp	Basic	Off Ramp	Basic
1	D	E	C	D	D	D	C	D	D	D	B	C	C	C	C
Density-Based LOS by Segment															
Segment	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Time Step	On Ramp	Basic	Off Ramp	Basic	On Ramp	Basic	Off Ramp	Basic	On Ramp	Basic	Off Ramp	Basic	Weaving	Basic	On Ramp
1	C	C	C	B	C	B	C	B	B	B	B	B	B	B	B
Density-Based LOS by Segment															
Segment	31	32	33	34	35	36	37	38	39	40	41	42			
Time Step	Basic	Off Ramp	Basic	On Ramp	Off Ramp	Basic	On Ramp	Basic	Off Ramp	Basic	On Ramp	Basic			
1	B	B	B	B	B	A	B	A	B	A	B	A			
Demand-Based LOS by Segment															
Time Step	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Demand-Based LOS by Segment															
Time Step	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Demand-Based LOS by Segment															
Time Step	31	32	33	34	35	36	37	38	39	40	41	42			
1	-	-	-	-	-	-	-	-	-	-	-	-			

2011 Build 8/6 Lane

HCS 2010 Freeway Facilities

Project Properties

Analyst	CRS	Freeway Name	STIP I-4400 I-4700 I-26 Widening	Analysis Period	AM Peak
Analysis Date	2/4/2014 10:12:36 AM	From	Exit 59 (Holbert Cove Road)	Version Date	10/10/2012
Agency	HNTB North Carolina, PC	To	Exit 33 (NC 191)		
Location	I-26	Analysis Direction	Northbound		
User Notes	2011 Base Year - Build 6/8 Lane Combination Alternative				
File Name	C:\Temp\preview.xml				

Facility-wide Values

Jam Density (pc/h/In)	190	Time Period Duration (min)	15	Facility Length (mi)	29.10100
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Segment Input Data

Time Period 1

Mainline Data										
Seg #	From	To	Type	Length	Terrain	Adj. Demand	% Trucks	% RVs	# Lanes	FFS
1	BEGIN PROJECT NB	B48	Basic Segment	5280	Rolling	1281	10.00	0.00	2	65
2		D49	Off Ramp	1500	Rolling	1281	10.00	0.00	2	65
3	HOLBERT COVE RD	B50	Basic Segment	2300	Rolling	1189	10.62	0.00	2	65
4		M51	On Ramp	1500	Rolling	1352	9.58	0.00	2	65
5		B52	Basic Segment	23550	Rolling	1352	9.58	0.00	2	65
6		D53	Off Ramp	1500	Rolling	1352	9.58	0.00	2	65
7	US 25 SYSTEM ICHG	B54	Basic Segment	1125	Rolling	1335	9.59	0.00	2	65
8		M55	On Ramp	1300	Rolling	1949	9.40	0.00	3	65
9		D56	Off Ramp	1300	Rolling	1949	9.40	0.00	3	65
10	UPWARD RD	B57	Basic Segment	2325	Rolling	1675	10.61	0.00	3	65
11		M58	On Ramp	1500	Rolling	2152	8.70	0.00	3	65
12		B59	Basic Segment	13525	Rolling	2152	8.70	0.00	3	65
13		D60	Off Ramp	1500	Rolling	2152	8.70	0.00	3	65
14		B61	Basic Segment	525	Rolling	1862	9.75	0.00	3	65
15	US 64 - 4 SEASONS BL	W62	Weaving	1375	Rolling	2207	8.54	0.00	4	65
16		B63	Basic Segment	550	Rolling	1982	9.28	0.00	3	65
17		M64	On Ramp	1500	Rolling	2541	7.68	0.00	3	65
18		B65	Basic Segment	13325	Rolling	2541	7.68	0.00	3	65
19		D71	Off Ramp	1500	Rolling	2541	7.68	0.00	3	65
20	WEIGH STATION NB	B72	Basic Segment	1700	Rolling	2037	-15.16	0.00	3	65
21		M73	On Ramp	1500	Rolling	2541	7.68	0.00	3	65
22		B74	Basic Segment	7100	Rolling	2541	7.68	0.00	3	65
23		D75	Off Ramp	1500	Rolling	2541	7.68	0.00	3	65
24	US 25 - ASHEVILLE HWY	B76	Basic Segment	1925	Rolling	2119	8.41	0.00	3	65
25		M77	On Ramp	1500	Rolling	2866	7.26	0.00	4	65
26		B78	Basic Segment	6875	Rolling	2866	7.26	0.00	4	65
27		D79	Off Ramp	1500	Rolling	2866	7.26	0.00	4	65
28	REST AREA NB	B80	Basic Segment	1900	Rolling	2736	6.80	0.00	4	65
29		M81	On Ramp	1500	Rolling	2866	7.26	0.00	4	65
30		B82	Basic Segment	525	Rolling	2866	7.26	0.00	4	65
31		D83	Off Ramp	1500	Rolling	2866	7.26	0.00	4	65
32	NC 280 - AIRPORT RD	B84	Basic Segment	2075	Rolling	2424	8.04	0.00	4	65
33		M85	On Ramp	1500	Rolling	3765	6.24	0.00	4	65
34		B86	Basic Segment	10800	Rolling	3765	6.24	0.00	4	65
35		D87	Off Ramp	1500	Rolling	3765	6.24	0.00	4	65
36	NC 146 - LONG SHOALS	B88	Basic Segment	2400	Rolling	3229	6.95	0.00	4	65
37		M89	On Ramp	1500	Rolling	4197	6.04	0.00	4	65
38		B90	Basic Segment	20650	Rolling	4197	6.04	0.00	4	65

RampData							
Seg #	Type	Adj. Demand	% Trucks	% RVs	Lanes	Accel/Decel Length	FFS
2	Off Ramp	92	2.00	0.00	1	425	45
4	On Ramp	163	2.00	0.00	1	825	45
6	Off Ramp	17	9.00	0.00	1	650	25
8	On Ramp	614	9.00	0.00	1	0	50
9	Off Ramp	274	2.00	0.00	1	250	45
11	On Ramp	477	2.00	0.00	1	900	45
13	Off Ramp	290	2.00	0.00	1	650	50
17	On Ramp	559	2.00	0.00	1	900	50
19	Off Ramp	504	100.00	0.00	1	650	45
21	On Ramp	504	100.00	0.00	1	1200	45
23	Off Ramp	422	4.00	0.00	1	650	45
25	On Ramp	747	4.00	0.00	1	0	45
27	Off Ramp	130	17.00	0.00	1	650	45
29	On Ramp	130	17.00	0.00	1	900	45
31	Off Ramp	442	3.00	0.00	1	650	45
33	On Ramp	1341	3.00	0.00	1	900	45
35	Off Ramp	536	2.00	0.00	1	650	45
37	On Ramp	968	3.00	0.00	1	900	45
39	Off Ramp	455	3.00	0.00	1	775	25
41	On Ramp	567	2.00	0.00	1	1075	45

Weaving Segment Data											
Seg #	Ramp to Ramp Prop.	On-Ramp					Off-Ramp				
		Adj. Demand	% Trucks	% RVs	Lanes	FFS	Adj. Demand	% Trucks	% RVs	Lanes	FFS
15	0.050	345	2.00	0.00	1	25	225	2.00	0.00	1	25

39		D91	Off Ramp	1500	Rolling	4197	6.04	0.00	4	65
40	NC 191 - BREVARD RD	B92	Basic Segment	1075	Rolling	3742	6.41	0.00	4	65
41		M93	On Ramp	1500	Rolling	4309	5.83	0.00	4	65
42	END PROJECT NB	B94	Basic Segment	3150	Rolling	4309	5.83	0.00	4	65

Time Period Independent Weaving Segment Data

Seg #	Configuration	Short Length	# Weaving Lanes	Min. Lane Changes Freeway-Ramp	Min. Lane Changes Ramp-Freeway	Min. Lane Changes Ramp-Ramp
15	375	2	1	1	0	

Time Period Results

Time Period 1

Seg #	From	To	Type	Adj. Demand	Vol. Served	Capacity (pc/h)	Capacity (veh/h)	d/c Ratio	v/c ratio	Queue Length (ft)	Avg. Speed (mi/h)	Density (pc/mi/in)	Density (veh/mi/in)	Avg. Travel Time (min/veh)	Free-Flow Travel Time (min/veh)	Mainline Delay (min/veh)	System Delay (min/veh)	VTM Demand (veh-min)	VTM Volume (veh-min)	VHT (veh-hrs)	VHD (veh-hrs)	LOS
1	BEGIN PROJECT NB	B48	Basic Segment	1281	1281	4700	4087	0.31	0.31	0	65.0	11.3	9.9	0.92	0.92	0.0	0.0	320.3	320.3	4.9	0.0	B
2		D49	Off Ramp	1281	1281	4700	4087	0.31	0.31	0	57.9	12.7	11.1	0.29	0.26	0.0	0.0	91.0	91.0	1.6	0.2	B
3	HOLBERT COVE RD	B50	Basic Segment	1189	1189	4700	4054	0.29	0.29	0	64.7	10.7	9.2	0.40	0.40	0.0	0.0	129.5	129.5	2.0	0.0	A
4		M51	On Ramp	1352	1352	4700	4109	0.33	0.33	0	58.9	13.1	11.4	0.29	0.26	0.0	0.0	96.0	96.0	1.6	0.2	B
5		B52	Basic Segment	1352	1352	4700	4109	0.33	0.33	0	65.0	11.9	10.4	4.12	4.12	0.0	0.0	1507.6	1507.6	23.2	0.0	B
6		D53	Off Ramp	1352	1352	4700	4109	0.33	0.33	0	52.1	14.8	13.0	0.33	0.26	0.1	0.1	96.0	96.0	1.8	0.4	B
7	US 25 SYSTEM ICHG	B54	Basic Segment	1335	1335	4700	4109	0.32	0.32	0	63.5	12.0	10.5	0.20	0.20	0.0	0.0	71.1	71.1	1.1	0.0	B
8		M55	On Ramp	1949	1949	7050	6179	0.32	0.32	0	59.0	12.0	10.5	0.25	0.23	0.0	0.0	120.0	120.0	2.0	0.2	B
9		D56	Off Ramp	1949	1949	7050	6179	0.32	0.32	0	58.0	12.8	11.2	0.25	0.23	0.0	0.0	120.0	120.0	2.1	0.2	B
10	UPWARD RD	B57	Basic Segment	1675	1675	7050	6082	0.28	0.28	0	64.6	10.0	8.6	0.41	0.41	0.0	0.0	184.4	184.4	2.9	0.0	A
11		M58	On Ramp	2152	2152	7050	6236	0.35	0.35	0	60.5	13.3	11.8	0.28	0.26	0.0	0.0	152.8	152.8	2.5	0.2	B
12		B59	Basic Segment	2152	2152	7050	6236	0.35	0.35	0	65.0	12.5	11.0	2.36	2.36	0.0	0.0	1378.1	1378.1	21.2	0.0	B
13		D60	Off Ramp	2152	2152	7050	6236	0.35	0.35	0	62.0	13.1	11.6	0.28	0.26	0.0	0.0	152.8	152.8	2.5	0.1	B
14		B61	Basic Segment	1862	1862	7050	6151	0.30	0.30	0	64.4	11.0	9.6	0.09	0.09	0.0	0.0	46.3	46.3	0.7	0.0	A
15	US 64 - 4 SEASONS BL	W62	Weaving	2207	2207	8061	7146	0.31	0.31	0	57.2	10.9	9.6	0.27	0.24	0.0	0.0	143.7	143.7	2.5	0.3	B
16		B63	Basic Segment	1982	1982	7050	6189	0.32	0.32	0	63.4	11.9	10.4	0.10	0.10	0.0	0.0	51.6	51.6	0.8	0.0	B
17		M64	On Ramp	2541	2541	7050	6322	0.40	0.40	0	60.4	15.5	13.9	0.28	0.26	0.0	0.0	180.5	180.5	3.0	0.2	B
18		B65	Basic Segment	2541	2541	7050	6322	0.40	0.40	0	65.0	14.5	13.0	2.33	2.33	0.0	0.0	1603.2	1603.2	24.7	0.0	B
19		D71	Off Ramp	2541	2541	7050	6322	0.40	0.40	0	58.0	16.3	14.6	0.29	0.26	0.0	0.0	180.5	180.5	3.1	0.3	B
20	WEIGH STATION NB	B72	Basic Segment	2037	2037	7050	9126	0.22	0.22	0	64.5	8.1	10.5	0.30	0.30	0.0	0.0	164.0	164.0	2.5	0.0	A
21		M73	On Ramp	2541	2541	7050	6322	0.40	0.40	0	60.4	12.4	11.1	0.28	0.26	0.0	0.0	180.5	180.5	3.0	0.2	B
22		B74	Basic Segment	2541	2541	7050	6322	0.40	0.40	0	65.0	14.5	13.0	1.24	1.24	0.0	0.0	854.2	854.2	13.1	0.0	B
23		D75	Off Ramp	2541	2541	7050	6322	0.40	0.40	0	60.4	15.6	14.0	0.28	0.26	0.0	0.0	180.5	180.5	3.0	0.2	B
24	US 25 - ASHEVILLE HWY	B76	Basic Segment	2119	2119	7050	6260	0.34	0.34	0	64.7	12.3	10.9	0.34	0.34	0.0	0.0	193.1	193.1	3.0	0.0	B
25		M77	On Ramp	2866	2866	9400	8477	0.34	0.34	0	60.1	13.0	11.7	0.28	0.26	0.0	0.0	203.6	203.6	3.4	0.3	B
26		B78	Basic Segment	2866	2866	9400	8477	0.34	0.34	0	65.0	12.2	11.0	1.20	1.20	0.0	0.0	932.9	932.9	14.4	0.0	B
27		D79	Off Ramp	2866	2866	9400	8477	0.34	0.34	0	64.3	12.4	11.1	0.26	0.26	0.0	0.0	203.6	203.6	3.2	0.0	B
28	REST AREA NB	B80	Basic Segment	2736	2736	9400	8530	0.32	0.32	0	65.0	11.6	10.5	0.33	0.33	0.0	0.0	246.1	246.1	3.8	0.0	B
29		M81	On Ramp	2866	2866	9400	8477	0.34	0.34	0	61.5	12.8	11.5	0.28	0.26	0.0	0.0	203.6	203.6	3.3	0.2	B
30		B82	Basic Segment	2866	2866	9400	8477	0.34	0.34	0	64.3	12.4	11.1	0.09	0.09	0.0	0.0	71.2	71.2	1.1	0.0	B
31		D83	Off Ramp	2866	2866	9400	8477	0.34	0.34	0	63.2	12.6	11.3	0.27	0.26	0.0	0.0	203.6	203.6	3.2	0.1	B
32	NC 280 - AIRPORT	B84	Basic Segment	2424	2424	9400	8389	0.29	0.29	0	64.9	10.5	9.3	0.36	0.36	0.0	0.0	238.2	238.2	3.7	0.0	A

RD																							
33		M85	On Ramp	3765	3765	9400	8595	0.44	0.44	0	60.5	16.7	15.3	0.28	0.26	0.0	0.0	267.4	267.4	4.4	0.3	B	
34		B86	Basic Segment	3765	3765	9400	8595	0.44	0.44	0	65.0	15.8	14.5	1.89	1.89	0.0	0.0	1925.3	1925.3	29.6	0.0	B	
35		D87	Off Ramp	3765	3765	9400	8595	0.44	0.44	0	63.2	16.3	14.9	0.27	0.26	0.0	0.0	267.4	267.4	4.2	0.1	B	
36	NC 146 - LONG SHOALS	B88	Basic Segment	3229	3229	9400	8513	0.38	0.38	0	64.9	13.7	12.4	0.42	0.42	0.0	0.0	366.9	366.9	5.7	0.0	B	
37		M89	On Ramp	4197	4197	9400	8619	0.49	0.49	0	60.5	18.7	17.2	0.28	0.26	0.0	0.0	298.1	298.1	4.9	0.3	B	
38		B90	Basic Segment	4197	4197	9400	8619	0.49	0.49	0	65.0	17.6	16.1	3.61	3.61	0.0	0.0	4103.6	4103.6	63.1	0.0	B	
39		D91	Off Ramp	4197	4197	9400	8619	0.49	0.49	0	59.5	19.2	17.6	0.29	0.26	0.0	0.0	298.1	298.1	5.0	0.4	B	
40	NC 191 - BREVARD RD	B92	Basic Segment	3742	3742	9400	8576	0.44	0.44	0	64.3	15.9	14.5	0.19	0.19	0.0	0.0	190.5	190.5	3.0	0.0	B	
41		M93	On Ramp	4309	4309	9400	8644	0.50	0.50	0	60.7	19.2	17.7	0.28	0.26	0.0	0.0	306.0	306.0	5.0	0.3	B	
42	END PROJECT NB	B94	Basic Segment	4309	4309	9400	8644	0.50	0.50	0	64.9	18.0	16.6	0.55	0.55	0.0	0.0	642.7	642.7	9.9	0.0	B	

Overall Results

Segment	Segment Type	Maximum d/c Ratio	Avg. Speed (mi/h)	Density (pc/mi/in)	Density (veh/mi/in)	Avg. Travel Time (min/veh)	Free-Flow Travel Time (min/veh)	VTM Demand (veh-min)	VTM Volume (veh-min)	VHT (veh-hrs)	VHD (veh-hrs)
BEGIN PROJECT NB-B48	Basic	0.31	65.0	11.3	9.9	0.92	0.92	0,320.3	0,320.3	4.93	0.00
-D49	OffRamp	0.31	57.9	12.7	11.1	0.29	0.26	0,091.0	0,091.0	1.57	0.17
HOLBERT COVE RD-B50	Basic	0.29	64.7	10.7	9.2	0.40	0.40	0,129.5	0,129.5	2.00	0.01
-M51	OnRamp	0.33	58.9	13.1	11.4	0.29	0.26	0,096.0	0,096.0	1.63	0.15
-B52	Basic	0.33	65.0	11.9	10.4	4.12	4.12	1,507.6	1,507.6	23.19	0.00
-D53	OffRamp	0.33	52.1	14.8	13.0	0.33	0.26	0,096.0	0,096.0	1.84	0.36
US 25 SYSTEM ICHG-B54	Basic	0.32	63.5	12.0	10.5	0.20	0.20	0,071.1	0,071.1	1.12	0.03
-M55	OnRamp	0.32	59.0	12.0	10.5	0.25	0.23	0,120.0	0,120.0	2.03	0.19
-D56	OffRamp	0.32	58.0	12.8	11.2	0.25	0.23	0,120.0	0,120.0	2.07	0.22
UPWARD RD-B57	Basic	0.28	64.6	10.0	8.6	0.41	0.41	0,184.4	0,184.4	2.85	0.02
-M58	OnRamp	0.35	60.5	13.3	11.8	0.28	0.26	0,152.8	0,152.8	2.53	0.17
-B59	Basic	0.35	65.0	12.5	11.0	2.36	2.36	1,378.1	1,378.1	21.20	0.00
-D60	OffRamp	0.35	62.0	13.1	11.6	0.28	0.26	0,152.8	0,152.8	2.47	0.12
-B61	Basic	0.30	64.4	11.0	9.6	0.09	0.09	0,046.3	0,046.3	0.72	0.01
US 64 - 4 SEASONS BL-W62	Weaving	0.31	57.2	10.9	9.6	0.27	0.24	0,143.7	0,143.7	2.51	0.30
-B63	Basic	0.32	63.4	11.9	10.4	0.10	0.10	0,051.6	0,051.6	0.81	0.02
-M64	OnRamp	0.40	60.4	15.5	13.9	0.28	0.26	0,180.5	0,180.5	2.99	0.21
-B65	Basic	0.40	65.0	14.5	13.0	2.33	2.33	1,603.2	1,603.2	24.66	0.00
-D71	OffRamp	0.40	58.0	16.3	14.6	0.29	0.26	0,180.5	0,180.5	3.11	0.33
WEIGH STATION NB-B72	Basic	0.22	64.5	8.1	10.5	0.30	0.30	0,164.0	0,164.0	2.54	0.02
-M73	OnRamp	0.40	60.4	12.4	11.1	0.28	0.26	0,180.5	0,180.5	2.99	0.21
-B74	Basic	0.40	65.0	14.5	13.0	1.24	1.24	0,854.2	0,854.2	13.14	0.00
-D75	OffRamp	0.40	60.4	15.6	14.0	0.28	0.26	0,180.5	0,180.5	2.99	0.21
US 25 - ASHEVILLE HWY-B76	Basic	0.34	64.7	12.3	10.9	0.34	0.34	0,193.1	0,193.1	2.98	0.01
-M77	OnRamp	0.34	60.1	13.0	11.7	0.28	0.26	0,203.6	0,203.6	3.39	0.25
-B78	Basic	0.34	65.0	12.2	11.0	1.20	1.20	0,932.9	0,932.9	14.35	0.00
-D79	OffRamp	0.34	64.3	12.4	11.1	0.26	0.26	0,203.6	0,203.6	3.16	0.03
REST AREA NB-B80	Basic	0.32	65.0	11.6	10.5	0.33	0.33	0,246.1	0,246.1	3.79	0.00
-M81	OnRamp	0.34	61.5	12.8	11.5	0.28	0.26	0,203.6	0,203.6	3.31	0.18
-B82	Basic	0.34	64.3	12.4	11.1	0.09	0.09	0,071.2	0,071.2	1.11	0.01
-D83	OffRamp	0.34	63.2	12.6	11.3	0.27	0.26	0,203.6	0,203.6	3.22	0.09
NC 280 - AIRPORT RD-B84	Basic	0.29	64.9	10.5	9.3	0.36	0.36	0,238.2	0,238.2	3.67	0.01
-M85	OnRamp	0.44	60.5	16.7	15.3	0.28	0.26	0,267.4	0,267.4	4.42	0.31
-B86	Basic	0.44	65.0	15.8	14.5	1.89	1.89	1,925.3	1,925.3	29.62	0.00
-D87	OffRamp	0.44	63.2	16.3	14.9	0.27	0.26	0,267.4	0,267.4	4.23	0.12
NC 146 - LONG SHOALS-B88	Basic	0.38	64.9	13.7	12.4	0.42	0.42	0,366.9	0,366.9	5.65	0.01
-M89	OnRamp	0.49	60.5	18.7	17.2	0.28	0.26	0,298.1	0,298.1	4.93	0.34
-B90	Basic	0.49	65.0	17.6	16.1	3.61	3.61	4,103.6	4,103.6	63.13	0.00
-D91	OffRamp	0.49	59.5	19.2	17.6	0.29	0.26	0,298.1	0,298.1	5.01	0.43
NC 191 - BREVARD RD-B92	Basic	0.44	64.3	15.9	14.5	0.19	0.19	0,190.5	0,190.5	2.96	0.03
-M93	OnRamp	0.50	60.7	19.2	17.7	0.28	0.26	0,306.0	0,306.0	5.04	0.33

END PROJECT NB-B94	Basic	0.50	64.9	18.0	16.6	0.55	0.55	0,642.7	0,642.7	9.90	0.02
Freeway			63.9	14.3	12.9	27.35	26.86	19,166.1	19,166.1	0,299.8	0,004.9

Density-Based LOS by Segment															
Segment	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Time Step	Basic	Off Ramp	Basic	On Ramp	Basic	Off Ramp	Basic	On Ramp	Off Ramp	Basic	On Ramp	Basic	Off Ramp	Basic	Weaving
1	B	B	A	B	B	B	B	B	B	A	B	B	B	A	B
Density-Based LOS by Segment															
Segment	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Time Step	Basic	On Ramp	Basic	Off Ramp	Basic	On Ramp	Basic	Off Ramp	Basic	On Ramp	Basic	Off Ramp	Basic	On Ramp	Basic
1	B	B	B	B	A	B	B	B	B	B	B	B	B	B	B
Density-Based LOS by Segment															
Segment	31	32	33	34	35	36	37	38	39	40	41	42			
Time Step	Off Ramp	Basic	On Ramp	Basic	Off Ramp	Basic	On Ramp	Basic	Off Ramp	Basic	On Ramp	Basic			
1	B	A	B	B	B	B	B	B	B	B	B	B			
Demand-Based LOS by Segment															
Time Step	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Demand-Based LOS by Segment															
Time Step	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Demand-Based LOS by Segment															
Time Step	31	32	33	34	35	36	37	38	39	40	41	42			
1	.	.	.	.	.	.	.	.	.	.	.	.

HCS 2010 Freeway Facilities

Project Properties

Analyst	CRS	Freeway Name	STIP I-4400 I-4700 I-26 Widening	Analysis Period	PM Peak
Analysis Date	2/4/2014 10:12:36 AM	From	Exit 59 (Holbert Cove Road)	Version Date	10/10/2012
Agency	HNTB North Carolina, PC	To	Exit 33 (NC 191)		
Location	I-26	Analysis Direction	Northbound		
User Notes	2011 Base Year - Build 6/8 Lane Combination Alternative				
File Name	C:\Temp\preview.xml				

Facility-wide Values

Jam Density (pc/h/In)	190	Time Period Duration (min)	15	Facility Length (mi)	29.10100
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Segment Input Data

Time Period 1

Mainline Data										
Seg #	From	To	Type	Length	Terrain	Adj. Demand	% Trucks	% RVs	# Lanes	FFS
1	BEGIN PROJECT NB	B48	Basic Segment	5280	Rolling	1602	10.00	0.00	2	65
2		D49	Off Ramp	1500	Rolling	1602	10.00	0.00	2	65
3	HOLBERT COVE RD	B50	Basic Segment	2300	Rolling	1472	10.71	0.00	2	65
4		M51	On Ramp	1500	Rolling	1616	9.93	0.00	2	65
5		B52	Basic Segment	23550	Rolling	1616	9.93	0.00	2	65
6		D53	Off Ramp	1500	Rolling	1616	9.93	0.00	2	65
7	US 25 SYSTEM ICHG	B54	Basic Segment	1125	Rolling	1598	9.94	0.00	2	65
8		M55	On Ramp	1300	Rolling	2350	9.64	0.00	3	65
9		D56	Off Ramp	1300	Rolling	2350	9.64	0.00	3	65
10	UPWARD RD	B57	Basic Segment	2325	Rolling	2060	10.72	0.00	3	65
11		M58	On Ramp	1500	Rolling	2630	8.83	0.00	3	65
12		B59	Basic Segment	13525	Rolling	2630	8.83	0.00	3	65
13		D60	Off Ramp	1500	Rolling	2630	8.83	0.00	3	65
14		B61	Basic Segment	525	Rolling	2259	9.95	0.00	3	65
15	US 64 - 4 SEASONS BL	W62	Weaving	1375	Rolling	2696	8.66	0.00	4	65
16		B63	Basic Segment	550	Rolling	2471	9.27	0.00	3	65
17		M64	On Ramp	1500	Rolling	3024	7.94	0.00	3	65
18		B65	Basic Segment	13325	Rolling	3024	7.94	0.00	3	65
19		D71	Off Ramp	1500	Rolling	3024	7.94	0.00	3	65
20	WEIGH STATION NB	B72	Basic Segment	1700	Rolling	2520	-10.48	0.00	3	65
21		M73	On Ramp	1500	Rolling	3024	7.94	0.00	3	65
22		B74	Basic Segment	7100	Rolling	3024	7.94	0.00	3	65
23		D75	Off Ramp	1500	Rolling	3024	7.94	0.00	3	65
24	US 25 - ASHEVILLE HWY	B76	Basic Segment	1925	Rolling	2517	8.73	0.00	3	65
25		M77	On Ramp	1500	Rolling	3375	7.53	0.00	4	65
26		B78	Basic Segment	6875	Rolling	3375	7.53	0.00	4	65
27		D79	Off Ramp	1500	Rolling	3375	7.53	0.00	4	65
28	REST AREA NB	B80	Basic Segment	1900	Rolling	3245	7.15	0.00	4	65
29		M81	On Ramp	1500	Rolling	3375	7.53	0.00	4	65
30		B82	Basic Segment	525	Rolling	3375	7.53	0.00	4	65
31		D83	Off Ramp	1500	Rolling	3375	7.53	0.00	4	65
32	NC 280 - AIRPORT RD	B84	Basic Segment	2075	Rolling	2888	8.29	0.00	4	65
33		M85	On Ramp	1500	Rolling	4377	6.49	0.00	4	65
34		B86	Basic Segment	10800	Rolling	4377	6.49	0.00	4	65
35		D87	Off Ramp	1500	Rolling	4377	6.49	0.00	4	65
36	NC 146 - LONG SHOALS	B88	Basic Segment	2400	Rolling	3730	7.27	0.00	4	65
37		M89	On Ramp	1500	Rolling	4708	6.38	0.00	4	65
38		B90	Basic Segment	20650	Rolling	4708	6.38	0.00	4	65

RampData							
Seg #	Type	Adj. Demand	% Trucks	% RVs	Lanes	Accel/Decel Length	FFS
2	Off Ramp	130	2.00	0.00	1	425	45
4	On Ramp	144	2.00	0.00	1	825	45
6	Off Ramp	18	9.00	0.00	1	650	25
8	On Ramp	752	9.00	0.00	1	0	50
9	Off Ramp	290	2.00	0.00	1	250	45
11	On Ramp	570	2.00	0.00	1	900	45
13	Off Ramp	371	2.00	0.00	1	650	50
17	On Ramp	553	2.00	0.00	1	900	50
19	Off Ramp	504	100.00	0.00	1	650	45
21	On Ramp	504	100.00	0.00	1	1200	45
23	Off Ramp	507	4.00	0.00	1	650	45
25	On Ramp	858	4.00	0.00	1	0	45
27	Off Ramp	130	17.00	0.00	1	650	45
29	On Ramp	130	17.00	0.00	1	900	45
31	Off Ramp	487	3.00	0.00	1	650	45
33	On Ramp	1489	3.00	0.00	1	900	45
35	Off Ramp	647	2.00	0.00	1	650	45
37	On Ramp	978	3.00	0.00	1	900	45
39	Off Ramp	469	3.00	0.00	1	775	25
41	On Ramp	706	2.00	0.00	1	1075	45

Weaving Segment Data											
Seg #	Ramp to Ramp Prop.	On-Ramp					Off-Ramp				
		Adj. Demand	% Trucks	% RVs	Lanes	FFS	Adj. Demand	% Trucks	% RVs	Lanes	FFS
15	0.050	437	2.00	0.00	1	25	225	2.00	0.00	1	25

39		D91	Off Ramp	1500	Rolling	4708	6.38	0.00	4	65
40	NC 191 - BREVARD RD	B92	Basic Segment	1075	Rolling	4239	6.76	0.00	4	65
41		M93	On Ramp	1500	Rolling	4945	6.08	0.00	4	65
42	END PROJECT NB	B94	Basic Segment	3150	Rolling	4945	6.08	0.00	3	65

Time Period Independent Weaving Segment Data

Seg #	Configuration	Short Length	# Weaving Lanes	Min. Lane Changes Freeway-Ramp	Min. Lane Changes Ramp-Freeway	Min. Lane Changes Ramp-Ramp
15	375	2	1	1	0	

Time Period Results

Time Period 1

Seg #	From	To	Type	Adj. Demand	Vol. Served	Capacity (pc/h)	Capacity (veh/h)	d/c Ratio	v/c ratio	Queue Length (ft)	Avg. Speed (mi/h)	Density (pc/mi/in)	Density (veh/mi/in)	Avg. Travel Time (min/veh)	Free-Flow Travel Time (min/veh)	Mainline Delay (min/veh)	System Delay (min/veh)	VMT Demand (veh-min)	VMT Volume (veh-min)	VHT (veh-hrs)	VHD (veh-hrs)	LOS
1	BEGIN PROJECT NB	B48	Basic Segment	1602	1602	4700	4087	0.39	0.39	0	65.0	14.2	12.3	0.92	0.92	0.0	0.0	400.5	400.5	6.2	0.0	B
2		D49	Off Ramp	1602	1602	4700	4087	0.39	0.39	0	57.9	15.9	13.8	0.29	0.26	0.0	0.0	113.8	113.8	2.0	0.2	B
3	HOLBERT COVE RD	B50	Basic Segment	1472	1472	4700	4050	0.36	0.36	0	64.7	13.2	11.4	0.40	0.40	0.0	0.0	160.3	160.3	2.5	0.0	B
4		M51	On Ramp	1616	1616	4700	4091	0.40	0.40	0	58.8	15.8	13.7	0.29	0.26	0.0	0.0	114.8	114.8	2.0	0.2	B
5		B52	Basic Segment	1616	1616	4700	4091	0.40	0.40	0	65.0	14.3	12.4	4.12	4.12	0.0	0.0	1801.9	1801.9	27.7	0.0	B
6		D53	Off Ramp	1616	1616	4700	4091	0.40	0.40	0	52.1	17.8	15.5	0.33	0.26	0.1	0.1	114.8	114.8	2.2	0.4	B
7	US 25 SYSTEM ICHG	B54	Basic Segment	1598	1598	4700	4090	0.39	0.39	0	63.5	14.5	12.6	0.20	0.20	0.0	0.0	85.1	85.1	1.3	0.0	B
8		M55	On Ramp	2350	2350	7050	6159	0.38	0.38	0	58.8	14.6	12.8	0.25	0.23	0.0	0.0	144.6	144.6	2.5	0.2	B
9		D56	Off Ramp	2350	2350	7050	6159	0.38	0.38	0	57.4	15.6	13.6	0.26	0.23	0.0	0.0	144.6	144.6	2.5	0.3	B
10	UPWARD RD	B57	Basic Segment	2060	2060	7050	6074	0.34	0.34	0	64.6	12.3	10.6	0.41	0.41	0.0	0.0	226.8	226.8	3.5	0.0	B
11		M58	On Ramp	2630	2630	7050	6226	0.42	0.42	0	60.2	16.4	14.5	0.28	0.26	0.0	0.0	186.8	186.8	3.1	0.2	B
12		B59	Basic Segment	2630	2630	7050	6226	0.42	0.42	0	65.0	15.3	13.5	2.36	2.36	0.0	0.0	1684.2	1684.2	25.9	0.0	B
13		D60	Off Ramp	2630	2630	7050	6226	0.42	0.42	0	62.0	16.0	14.1	0.27	0.26	0.0	0.0	186.8	186.8	3.0	0.1	B
14		B61	Basic Segment	2259	2259	7050	6135	0.37	0.37	0	64.4	13.4	11.7	0.09	0.09	0.0	0.0	56.2	56.2	0.9	0.0	B
15	US 64 - 4 SEASONS BL	W62	Weaving	2696	2696	8100	7169	0.38	0.38	0	55.7	13.7	12.1	0.28	0.24	0.0	0.0	175.5	175.5	3.1	0.4	B
16		B63	Basic Segment	2471	2471	7050	6190	0.40	0.40	0	63.1	14.9	13.1	0.10	0.10	0.0	0.0	64.3	64.3	1.0	0.0	B
17		M64	On Ramp	3024	3024	7050	6300	0.48	0.48	0	60.1	18.7	16.7	0.28	0.26	0.0	0.0	214.8	214.8	3.6	0.3	B
18		B65	Basic Segment	3024	3024	7050	6300	0.48	0.48	0	65.0	17.4	15.5	2.33	2.33	0.0	0.0	1907.9	1907.9	29.4	0.0	B
19		D71	Off Ramp	3024	3024	7050	6300	0.48	0.48	0	58.5	19.3	17.2	0.29	0.26	0.0	0.0	214.8	214.8	3.7	0.4	B
20	WEIGH STATION NB	B72	Basic Segment	2520	2520	7050	8364	0.30	0.30	0	64.5	11.0	13.0	0.30	0.30	0.0	0.0	202.8	202.8	3.1	0.0	A
21		M73	On Ramp	3024	3024	7050	6300	0.48	0.48	0	60.4	15.2	13.6	0.28	0.26	0.0	0.0	214.8	214.8	3.6	0.3	B
22		B74	Basic Segment	3024	3024	7050	6300	0.48	0.48	0	65.0	17.4	15.5	1.24	1.24	0.0	0.0	1016.6	1016.6	15.6	0.0	B
23		D75	Off Ramp	3024	3024	7050	6300	0.48	0.48	0	60.5	18.6	16.7	0.28	0.26	0.0	0.0	214.8	214.8	3.6	0.2	B
24	US 25 - ASHEVILLE HWY	B76	Basic Segment	2517	2517	7050	6234	0.40	0.40	0	64.7	14.7	13.0	0.34	0.34	0.0	0.0	229.4	229.4	3.5	0.0	B
25		M77	On Ramp	3375	3375	9400	8446	0.40	0.40	0	59.8	15.4	13.9	0.28	0.26	0.0	0.0	239.7	239.7	4.0	0.3	B
26		B78	Basic Segment	3375	3375	9400	8446	0.40	0.40	0	65.0	14.4	13.0	1.20	1.20	0.0	0.0	1098.6	1098.6	16.9	0.0	B
27		D79	Off Ramp	3375	3375	9400	8446	0.40	0.40	0	64.4	14.6	13.1	0.26	0.26	0.0	0.0	239.7	239.7	3.7	0.0	B
28	REST AREA NB	B80	Basic Segment	3245	3245	9400	8490	0.38	0.38	0	65.0	13.8	12.5	0.33	0.33	0.0	0.0	291.9	291.9	4.5	0.0	B
29		M81	On Ramp	3375	3375	9400	8446	0.40	0.40	0	61.2	15.2	13.6	0.28	0.26	0.0	0.0	239.7	239.7	3.9	0.2	B
30		B82	Basic Segment	3375	3375	9400	8446	0.40	0.40	0	64.3	14.6	13.1	0.09	0.09	0.0	0.0	83.9	83.9	1.3	0.0	B
31		D83	Off Ramp	3375	3375	9400	8446	0.40	0.40	0	63.2	14.8	13.3	0.27	0.26	0.0	0.0	239.7	239.7	3.8	0.1	B
32	NC 280 - AIRPORT	B84	Basic Segment	2888	2888	9400	8360	0.35	0.35	0	64.9	12.5	11.1	0.36	0.36	0.0	0.0	283.7	283.7	4.4	0.0	B

END PROJECT NB-B94	Basic	0.77	62.7	28.7	26.3	0.57	0.55	0,737.5	0,737.5	11.75	0.41
Freeway			63.8	17.0	15.3	27.39	26.86	22,454.2	22,454.2	0,352.0	0,006.5

Density-Based LOS by Segment															
Segment	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Time Step	Basic	Off Ramp	Basic	On Ramp	Basic	Off Ramp	Basic	On Ramp	Off Ramp	Basic	On Ramp	Basic	Off Ramp	Basic	Weaving
1	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
Density-Based LOS by Segment															
Segment	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Time Step	Basic	On Ramp	Basic	Off Ramp	Basic	On Ramp	Basic	Off Ramp	Basic	On Ramp	Basic	Off Ramp	Basic	On Ramp	Basic
1	B	B	B	B	A	B	B	B	B	B	B	B	B	B	B
Density-Based LOS by Segment															
Segment	31	32	33	34	35	36	37	38	39	40	41	42			
Time Step	Off Ramp	Basic	On Ramp	Basic	Off Ramp	Basic	On Ramp	Basic	Off Ramp	Basic	On Ramp	Basic			
1	B	B	B	C	B	B	C	C	C	C	C	D			
Demand-Based LOS by Segment															
Time Step	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Demand-Based LOS by Segment															
Time Step	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Demand-Based LOS by Segment															
Time Step	31	32	33	34	35	36	37	38	39	40	41	42			
1	.	.	.	.	.	.	.	.	.	.	.	.

HCS 2010 Freeway Facilities

Project Properties

Analyst	CRS	Freeway Name	STIP I-4400 I-4700 I-26 Widening	Analysis Period	AM Peak
Analysis Date	2/4/2014 3:14:33 PM	From	Exit 33 (NC 191)	Version Date	10/10/2012
Agency	HNTB North Carolina, PC	To	Exit 59 (Holbert Cove Rd)		
Location	I-26	Analysis Direction	Southbound		
User Notes	2011 Base Year - Build 6/8 Lane Combination Alternative				
File Name	C:\Temp\preview.xml				

Facility-wide Values

Jam Density (pc/h/ln)	190	Time Period Duration (min)	15	Facility Length (mi)	28.95900
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Segment Input Data

Time Period 1

Mainline Data										
Seg #	From	To	Type	Length	Terrain	Adj. Demand	% Trucks	% RVs	# Lanes	FFS
1	BEGIN PROJECT SB	B1	Basic Segment	4600	Rolling	5162	6.35	0.00	4	65
2		D2	Off Ramp	1500	Rolling	5162	6.35	0.00	4	65
3	NC 191 - BREVARD RD	B3	Basic Segment	975	Rolling	4456	6.88	0.00	4	65
4		M4	On Ramp	1500	Rolling	4925	6.51	0.00	4	65
5		B5	Basic Segment	18750	Rolling	4925	6.51	0.00	4	65
6		D6	Off Ramp	1500	Rolling	4925	6.51	0.00	4	65
7	NC 146 - LONG SHOALS	B7	Basic Segment	2500	Rolling	3947	7.38	0.00	4	65
8		M8	On Ramp	1500	Rolling	4594	6.76	0.00	4	65
9		B9	Basic Segment	10500	Rolling	4594	6.76	0.00	4	65
10		D10	Off Ramp	1500	Rolling	4594	6.76	0.00	4	65
11	NC 280 - AIRPORT RD	B11	Basic Segment	2275	Rolling	3105	8.57	0.00	4	65
12		M12	On Ramp	1500	Rolling	3592	7.81	0.00	4	65
13		B13	Basic Segment	525	Rolling	3592	7.81	0.00	4	65
14		D14	Off Ramp	1500	Rolling	3592	7.81	0.00	4	65
15	REST AREA SB	B15	Basic Segment	1725	Rolling	3460	7.46	0.00	4	65
16		M16	On Ramp	1500	Rolling	3592	7.81	0.00	4	65
17		B17	Basic Segment	7050	Rolling	3592	7.81	0.00	4	65
18		D18	Off Ramp	1500	Rolling	3592	7.81	0.00	4	65
19	US 25 - ASHEVILLE HWY	B19	Basic Segment	2075	Rolling	2734	9.01	0.00	3	65
20		M20	On Ramp	1500	Rolling	3241	8.23	0.00	3	65
21		B21	Basic Segment	6825	Rolling	3241	8.23	0.00	3	65
22		D22	Off Ramp	1500	Rolling	3241	8.23	0.00	3	65
23	WEIGH STATION SB	B23	Basic Segment	1500	Rolling	2845	-4.55	0.00	3	65
24		M24	On Ramp	1500	Rolling	3241	8.23	0.00	3	65
25		B25	Basic Segment	13600	Rolling	3241	8.23	0.00	3	65
26		D31	Off Ramp	1500	Rolling	3241	8.23	0.00	3	65
27		B32	Basic Segment	600	Rolling	2804	9.20	0.00	3	65
28	US 64 - 4 SEASONS BL	W33	Weaving	1400	Rolling	3175	8.36	0.00	4	65
29		B34	Basic Segment	225	Rolling	2622	9.70	0.00	3	65
30		M35	On Ramp	1500	Rolling	2847	9.09	0.00	3	65
31		B36	Basic Segment	13400	Rolling	2847	9.09	0.00	3	65
32		D37	Off Ramp	1500	Rolling	2847	9.09	0.00	3	65
33	UPWARD RD	B38	Basic Segment	2300	Rolling	2277	10.86	0.00	3	65
34		M39	On Ramp	1425	Rolling	2567	9.86	0.00	3	65
35		D40	Off Ramp	1425	Rolling	2567	9.86	0.00	3	65
36	US 25 SYSTEM ICHG	B41	Basic Segment	2725	Rolling	1818	10.22	0.00	2	65
37		M42	On Ramp	1500	Rolling	1835	10.21	0.00	2	65
			Basic							

RampData							
Seg #	Type	Adj. Demand	% Trucks	% RVs	Lanes	Accel/Decel Length	FFS
2	Off Ramp	706	3.00	0.00	1	800	25
4	On Ramp	469	3.00	0.00	1	975	45
6	Off Ramp	978	3.00	0.00	2	650	45
8	On Ramp	647	3.00	0.00	1	900	45
10	Off Ramp	1489	3.00	0.00	1	650	45
12	On Ramp	487	3.00	0.00	1	900	45
14	Off Ramp	132	17.00	0.00	1	650	45
16	On Ramp	132	17.00	0.00	1	900	45
18	Off Ramp	858	4.00	0.00	1	0	45
20	On Ramp	507	4.00	0.00	1	900	45
22	Off Ramp	396	100.00	0.00	1	650	45
24	On Ramp	396	100.00	0.00	1	900	45
26	Off Ramp	437	2.00	0.00	1	650	50
30	On Ramp	225	2.00	0.00	1	1125	50
32	Off Ramp	570	2.00	0.00	1	225	45
34	On Ramp	290	2.00	0.00	1	900	45
35	Off Ramp	749	9.00	0.00	1	0	50
37	On Ramp	17	9.00	0.00	1	1300	45
39	Off Ramp	144	4.00	0.00	1	300	45
41	On Ramp	130	4.00	0.00	1	800	45

Weaving Segment Data											
Seg #	Ramp to Ramp Prop.	On-Ramp					Off-Ramp				
		Adj. Demand	% Trucks	% RVs	Lanes	FFS	Adj. Demand	% Trucks	% RVs	Lanes	FFS
28	0.050	371	2.00	0.00	1	25	553	2.00	0.00	1	25

38		B43	Segment	21625	Rolling	1835	10.21	0.00	2	65
39		D44	Off Ramp	1500	Rolling	1835	10.21	0.00	2	65
40	HOLBERT COVE RD	B45	Basic Segment	2600	Rolling	1691	10.73	0.00	2	65
41		M46	On Ramp	1500	Rolling	1821	10.25	0.00	2	65
42	END PROJECT SB	B47	Basic Segment	5280	Rolling	1821	10.25	0.00	2	65

Time Period Independent Weaving Segment Data

Seg #	Configuration	Short Length	# Weaving Lanes	Min. Lane Changes Freeway-Ramp	Min. Lane Changes Ramp-Freeway	Min. Lane Changes Ramp-Ramp
28	400	2	1	1	0	

Time Period Results

Time Period 1

Seg #	From	To	Type	Adj. Demand	Vol. Served	Capacity (pc/h)	Capacity (veh/h)	d/c Ratio	v/c ratio	Queue Length (ft)	Avg. Speed (mi/h)	Density (pc/mi/in)	Density (veh/mi/in)	Avg. Travel Time (min/veh)	Free-Flow Travel Time (min/veh)	Mainline Delay (min/veh)	System Delay (min/veh)	VMT Demand (veh-min)	VMT Volume (veh-min)	VHT (veh-hrs)	VHD (veh-hrs)	LOS
1	BEGIN PROJECT SB	B1	Basic Segment	5162	5162	9400	8583	0.60	0.60	0	65.0	21.7	19.9	0.80	0.80	0.0	0.0	1124.3	1124.3	17.3	0.0	C
2		D2	Off Ramp	5162	5162	9400	8583	0.60	0.60	0	58.5	24.2	22.1	0.29	0.26	0.0	0.0	366.6	366.6	6.3	0.6	C
3	NC 191 - BREVARD RD	B3	Basic Segment	4456	4456	9400	8521	0.52	0.52	0	64.1	19.2	17.4	0.17	0.17	0.0	0.0	205.7	205.7	3.2	0.0	C
4		M4	On Ramp	4925	4925	9400	8564	0.58	0.58	0	60.2	22.4	20.4	0.28	0.26	0.0	0.0	349.8	349.8	5.8	0.4	C
5		B5	Basic Segment	4925	4925	9400	8564	0.58	0.58	0	65.0	20.8	18.9	3.28	3.28	0.0	0.0	4372.3	4372.3	67.3	0.0	C
6		D6	Off Ramp	4925	4925	9400	8564	0.58	0.58	0	63.1	21.4	19.5	0.27	0.26	0.0	0.0	349.8	349.8	5.5	0.2	C
7	NC 146 - LONG SHOALS	B7	Basic Segment	3947	3947	9400	8463	0.47	0.47	0	64.9	16.9	15.2	0.44	0.44	0.0	0.0	467.2	467.2	7.2	0.0	B
8		M8	On Ramp	4594	4594	9400	8534	0.54	0.54	0	60.3	20.8	18.9	0.28	0.26	0.0	0.0	326.3	326.3	5.4	0.4	C
9		B9	Basic Segment	4594	4594	9400	8534	0.54	0.54	0	65.0	19.5	17.7	1.84	1.84	0.0	0.0	2283.9	2283.9	35.1	0.0	C
10		D10	Off Ramp	4594	4594	9400	8534	0.54	0.54	0	60.3	21.0	19.0	0.28	0.26	0.0	0.0	326.3	326.3	5.4	0.4	C
11	NC 280 - AIRPORT RD	B11	Basic Segment	3105	3105	9400	8329	0.37	0.37	0	64.8	13.5	12.0	0.40	0.40	0.0	0.0	334.5	334.5	5.2	0.0	B
12		M12	On Ramp	3592	3592	9400	8414	0.43	0.43	0	61.0	16.3	14.6	0.28	0.26	0.0	0.0	255.1	255.1	4.2	0.3	B
13		B13	Basic Segment	3592	3592	9400	8414	0.43	0.43	0	64.2	15.6	14.0	0.09	0.09	0.0	0.0	89.3	89.3	1.4	0.0	B
14		D14	Off Ramp	3592	3592	9400	8414	0.43	0.43	0	64.2	15.6	14.0	0.27	0.26	0.0	0.0	255.1	255.1	4.0	0.0	B
15	REST AREA SB	B15	Basic Segment	3460	3460	9400	8454	0.41	0.41	0	64.9	14.8	13.3	0.30	0.30	0.0	0.0	282.6	282.6	4.4	0.0	B
16		M16	On Ramp	3592	3592	9400	8414	0.43	0.43	0	61.1	16.3	14.6	0.28	0.26	0.0	0.0	255.1	255.1	4.2	0.3	B
17		B17	Basic Segment	3592	3592	9400	8414	0.43	0.43	0	65.0	15.4	13.8	1.23	1.23	0.0	0.0	1199.0	1199.0	18.4	0.0	B
18		D18	Off Ramp	3592	3592	9400	8414	0.43	0.43	0	62.0	16.2	14.5	0.28	0.26	0.0	0.0	255.1	255.1	4.1	0.2	B
19	US 25 - ASHEVILLE HWY	B19	Basic Segment	2734	2734	7050	6211	0.44	0.44	0	64.8	16.0	14.1	0.36	0.36	0.0	0.0	268.6	268.6	4.1	0.0	B
20		M20	On Ramp	3241	3241	7050	6276	0.52	0.52	0	59.8	20.1	17.9	0.29	0.26	0.0	0.0	230.2	230.2	3.9	0.3	C
21		B21	Basic Segment	3241	3241	7050	6276	0.52	0.52	0	65.0	18.7	16.6	1.19	1.19	0.0	0.0	1047.3	1047.3	16.1	0.0	C
22		D22	Off Ramp	3241	3241	7050	6276	0.52	0.52	0	59.6	20.4	18.1	0.29	0.26	0.0	0.0	230.2	230.2	3.9	0.3	C
23	WEIGH STATION SB	B23	Basic Segment	2845	2845	7050	7566	0.38	0.38	0	64.5	13.7	14.7	0.26	0.26	0.0	0.0	202.1	202.1	3.1	0.0	B
24		M24	On Ramp	3241	3241	7050	6276	0.52	0.52	0	59.9	17.2	15.3	0.28	0.26	0.0	0.0	230.2	230.2	3.8	0.3	B
25		B25	Basic Segment	3241	3241	7050	6276	0.52	0.52	0	65.0	18.7	16.6	2.38	2.38	0.0	0.0	2087.0	2087.0	32.1	0.0	C
26		D31	Off Ramp	3241	3241	7050	6276	0.52	0.52	0	62.0	19.6	17.4	0.28	0.26	0.0	0.0	230.2	230.2	3.7	0.2	B
27		B32	Basic Segment	2804	2804	7050	6195	0.45	0.45	0	64.4	16.5	14.5	0.11	0.10	0.0	0.0	79.7	79.7	1.2	0.0	B
28	US 64 - 4 SEASONS BL	W33	Weaving	3175	3175	7959	7072	0.45	0.45	0	52.8	16.9	15.0	0.30	0.24	0.1	0.1	210.5	210.5	4.0	0.7	B
29		B34	Basic Segment	2622	2622	7050	6155	0.43	0.43	0	61.7	16.2	14.2	0.04	0.04	0.0	0.0	27.9	27.9	0.5	0.0	B
30		M35	On Ramp	2847	2847	7050	6204	0.46	0.46	0	60.6	17.8	15.6	0.28	0.26	0.0	0.0	202.2	202.2	3.3	0.2	B
31		B36	Basic Segment	2847	2847	7050	6204	0.46	0.46	0	65.0	16.6	14.6	2.34	2.34	0.0	0.0	1806.3	1806.3	27.8	0.0	B

32		D37	Off Ramp	2847	2847	7050	6204	0.46	0.46	0	60.4	17.9	15.7	0.28	0.26	0.0	0.0	202.2	202.2	3.3	0.2	B
33	UPWARD RD	B38	Basic Segment	2277	2277	7050	6062	0.38	0.38	0	64.8	13.6	11.7	0.40	0.40	0.0	0.0	248.0	248.0	3.8	0.0	B
34		M39	On Ramp	2567	2567	7050	6141	0.42	0.42	0	60.0	16.3	14.2	0.27	0.25	0.0	0.0	173.2	173.2	2.9	0.2	B
35		D40	Off Ramp	2567	2567	7050	6141	0.42	0.42	0	60.1	16.4	14.2	0.27	0.25	0.0	0.0	173.2	173.2	2.9	0.2	B
36	US 25 SYSTEM ICHG	B41	Basic Segment	1818	1818	4700	4075	0.45	0.45	0	64.8	16.2	14.0	0.48	0.48	0.0	0.0	234.6	234.6	3.6	0.0	B
37		M42	On Ramp	1835	1835	4700	4076	0.45	0.45	0	59.6	17.7	15.4	0.29	0.26	0.0	0.0	130.3	130.3	2.2	0.2	B
38		B43	Basic Segment	1835	1835	4700	4076	0.45	0.45	0	65.0	16.3	14.1	3.78	3.78	0.0	0.0	1878.9	1878.9	28.9	0.0	B
39		D44	Off Ramp	1835	1835	4700	4076	0.45	0.45	0	57.8	18.3	15.9	0.29	0.26	0.0	0.0	130.3	130.3	2.3	0.2	B
40	HOLBERT COVE RD	B45	Basic Segment	1691	1691	4700	4048	0.42	0.42	0	64.7	15.2	13.1	0.46	0.45	0.0	0.0	208.2	208.2	3.2	0.0	B
41		M46	On Ramp	1821	1821	4700	4073	0.45	0.45	0	58.5	17.9	15.5	0.29	0.26	0.0	0.0	129.3	129.3	2.2	0.2	B
42	END PROJECT SB	B47	Basic Segment	1821	1821	4700	4073	0.45	0.45	0	65.0	16.2	14.0	0.92	0.92	0.0	0.0	455.3	455.3	7.0	0.0	B

Overall Results

Segment	Segment Type	Maximum d/c Ratio	Avg. Speed (mi/h)	Density (pc/mi/in)	Density (veh/mi/in)	Avg. Travel Time (min/veh)	Free-Flow Travel Time (min/veh)	VMT Demand (veh-min)	VMT Volume (veh-min)	VHT (veh-hrs)	VHD (veh-hrs)
BEGIN PROJECT SB-B1	Basic	0.60	65.0	21.7	19.9	0.80	0.80	1,124.3	1,124.3	17.30	0.00
-D2	OffRamp	0.60	58.5	24.2	22.1	0.29	0.26	0,366.6	0,366.6	6.27	0.62
NC 191 - BREVARD RD-B3	Basic	0.52	64.1	19.2	17.4	0.17	0.17	0,205.7	0,205.7	3.21	0.04
-M4	OnRamp	0.58	60.2	22.4	20.4	0.28	0.26	0,349.8	0,349.8	5.81	0.43
-B5	Basic	0.58	65.0	20.8	18.9	3.28	3.28	4,372.3	4,372.3	67.27	0.00
-D6	OffRamp	0.58	63.1	21.4	19.5	0.27	0.26	0,349.8	0,349.8	5.54	0.16
NC 146 - LONG SHOALS-B7	Basic	0.47	64.9	16.9	15.2	0.44	0.44	0,467.2	0,467.2	7.20	0.01
-M8	OnRamp	0.54	60.3	20.8	18.9	0.28	0.26	0,326.3	0,326.3	5.41	0.39
-B9	Basic	0.54	65.0	19.5	17.7	1.84	1.84	2,283.9	2,283.9	35.14	0.00
-D10	OffRamp	0.54	60.3	21.0	19.0	0.28	0.26	0,326.3	0,326.3	5.41	0.39
NC 280 - AIRPORT RD-B11	Basic	0.37	64.8	13.5	12.0	0.40	0.40	0,334.5	0,334.5	5.16	0.02
-M12	OnRamp	0.43	61.0	16.3	14.6	0.28	0.26	0,255.1	0,255.1	4.18	0.26
-B13	Basic	0.43	64.2	15.6	14.0	0.09	0.09	0,089.3	0,089.3	1.39	0.02
-D14	OffRamp	0.43	64.2	15.6	14.0	0.27	0.26	0,255.1	0,255.1	3.97	0.05
REST AREA SB-B15	Basic	0.41	64.9	14.8	13.3	0.30	0.30	0,282.6	0,282.6	4.35	0.00
-M16	OnRamp	0.43	61.1	16.3	14.6	0.28	0.26	0,255.1	0,255.1	4.18	0.25
-B17	Basic	0.43	65.0	15.4	13.8	1.23	1.23	1,199.0	1,199.0	18.45	0.00
-D18	OffRamp	0.43	62.0	16.2	14.5	0.28	0.26	0,255.1	0,255.1	4.12	0.19
US 25 - ASHEVILLE HWY-B19	Basic	0.44	64.8	16.0	14.1	0.36	0.36	0,268.6	0,268.6	4.14	0.01
-M20	OnRamp	0.52	59.8	20.1	17.9	0.29	0.26	0,230.2	0,230.2	3.85	0.31
-B21	Basic	0.52	65.0	18.7	16.6	1.19	1.19	1,047.3	1,047.3	16.11	0.00
-D22	OffRamp	0.52	59.6	20.4	18.1	0.29	0.26	0,230.2	0,230.2	3.86	0.32
WEIGH STATION SB-B23	Basic	0.38	64.5	13.7	14.7	0.26	0.26	0,202.1	0,202.1	3.13	0.02
-M24	OnRamp	0.52	59.9	17.2	15.3	0.28	0.26	0,230.2	0,230.2	3.84	0.30
-B25	Basic	0.52	65.0	18.7	16.6	2.38	2.38	2,087.0	2,087.0	32.11	0.00
-D31	OffRamp	0.52	62.0	19.6	17.4	0.28	0.26	0,230.2	0,230.2	3.71	0.17
-B32	Basic	0.45	64.4	16.5	14.5	0.11	0.10	0,079.7	0,079.7	1.24	0.01
US 64 - 4 SEASONS BL-W33	Weaving	0.45	52.8	16.9	15.0	0.30	0.24	0,210.5	0,210.5	3.99	0.75
-B34	Basic	0.43	61.7	16.2	14.2	0.04	0.04	0,027.9	0,027.9	0.45	0.02
-M35	OnRamp	0.46	60.6	17.8	15.6	0.28	0.26	0,202.2	0,202.2	3.34	0.23
-B36	Basic	0.46	65.0	16.6	14.6	2.34	2.34	1,806.3	1,806.3	27.79	0.00
-D37	OffRamp	0.46	60.4	17.9	15.7	0.28	0.26	0,202.2	0,202.2	3.35	0.24
UPWARD RD-B38	Basic	0.38	64.8	13.6	11.7	0.40	0.40	0,248.0	0,248.0	3.83	0.01
-M39	OnRamp	0.42	60.0	16.3	14.2	0.27	0.25	0,173.2	0,173.2	2.89	0.22
-D40	OffRamp	0.42	60.1	16.4	14.2	0.27	0.25	0,173.2	0,173.2	2.88	0.22
US 25 SYSTEM ICHG-B41	Basic	0.45	64.8	16.2	14.0	0.48	0.48	0,234.6	0,234.6	3.62	0.01
-M42	OnRamp	0.45	59.6	17.7	15.4	0.29	0.26	0,130.3	0,130.3	2.19	0.18
-B43	Basic	0.45	65.0	16.3	14.1	3.78	3.78	1,878.9	1,878.9	28.91	0.00
-D44	OffRamp	0.45	57.8	18.3	15.9	0.29	0.26	0,130.3	0,130.3	2.25	0.25
HOLBERT COVE RD-B45	Basic	0.42	64.7	15.2	13.1	0.46	0.45	0,208.2	0,208.2	3.22	0.01
-M46	OnRamp	0.45	58.5	17.9	15.5	0.29	0.26	0,129.3	0,129.3	2.21	0.22

END PROJECT SB-B47	Basic	0.45	65.0	16.2	14.0	0.92	0.92	0,455.3	0,455.3	7.01	0.00
Freeway			63.9	18.1	16.2	27.20	26.73	23,913.9	23,913.9	0,374.3	0,006.4

Density-Based LOS by Segment															
Segment	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Time Step	Basic	Off Ramp	Basic	On Ramp	Basic	Off Ramp	Basic	On Ramp	Basic	Off Ramp	Basic	On Ramp	Basic	Off Ramp	Basic
1	C	C	C	C	C	C	B	C	C	C	B	B	B	B	B
Density-Based LOS by Segment															
Segment	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Time Step	On Ramp	Basic	Off Ramp	Basic	On Ramp	Basic	Off Ramp	Basic	On Ramp	Basic	Off Ramp	Basic	Weaving	Basic	On Ramp
1	B	B	B	B	C	C	C	B	B	C	B	B	B	B	B
Density-Based LOS by Segment															
Segment	31	32	33	34	35	36	37	38	39	40	41	42			
Time Step	Basic	Off Ramp	Basic	On Ramp	Off Ramp	Basic	On Ramp	Basic	Off Ramp	Basic	On Ramp	Basic			
1	B	B	B	B	B	B	B	B	B	B	B	B			
Demand-Based LOS by Segment															
Time Step	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Demand-Based LOS by Segment															
Time Step	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Demand-Based LOS by Segment															
Time Step	31	32	33	34	35	36	37	38	39	40	41	42			
1	.	.	.	.	.	.	.	.	.	.	.	.

HCS 2010 Freeway Facilities

Project Properties

Analyst	CRS	Freeway Name	STIP I-4400 I-4700 I-26 Widening	Analysis Period	PM Peak
Analysis Date	2/4/2014 3:14:33 PM	From	Exit 33 (NC 191)	Version Date	10/10/2012
Agency	HNTB North Carolina, PC	To	Exit 59 (Holbert Cove Rd)		
Location	I-26	Analysis Direction	Southbound		
User Notes	2011 Base Year - Build 6/8 Lane Combination Alternative				
File Name	C:\Temp\preview.xml				

Facility-wide Values

Jam Density (pc/h/ln)	190	Time Period Duration (min)	15	Facility Length (mi)	28.95900
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Segment Input Data

Time Period 1

Mainline Data										
Seg #	From	To	Type	Length	Terrain	Adj. Demand	% Trucks	% RVs	# Lanes	FFS
1	BEGIN PROJECT SB	B1	Basic Segment	4600	Rolling	4182	6.00	0.00	4	65
2		D2	Off Ramp	1500	Rolling	4182	6.00	0.00	4	65
3	NC 191 - BREVARD RD	B3	Basic Segment	975	Rolling	3615	6.47	0.00	4	65
4		M4	On Ramp	1500	Rolling	4070	6.08	0.00	4	65
5		B5	Basic Segment	18750	Rolling	4070	6.08	0.00	4	65
6		D6	Off Ramp	1500	Rolling	4070	6.08	0.00	4	65
7	NC 146 - LONG SHOALS	B7	Basic Segment	2500	Rolling	3102	7.04	0.00	4	65
8		M8	On Ramp	1500	Rolling	3638	6.45	0.00	4	65
9		B9	Basic Segment	10500	Rolling	3638	6.45	0.00	4	65
10		D10	Off Ramp	1500	Rolling	3638	6.45	0.00	4	65
11	NC 280 - AIRPORT RD	B11	Basic Segment	2275	Rolling	2297	8.46	0.00	4	65
12		M12	On Ramp	1500	Rolling	2739	7.58	0.00	4	65
13		B13	Basic Segment	525	Rolling	2739	7.58	0.00	4	65
14		D14	Off Ramp	1500	Rolling	2739	7.58	0.00	4	65
15	REST AREA SB	B15	Basic Segment	1725	Rolling	2607	7.10	0.00	4	65
16		M16	On Ramp	1500	Rolling	2739	7.58	0.00	4	65
17		B17	Basic Segment	7050	Rolling	2739	7.58	0.00	4	65
18		D18	Off Ramp	1500	Rolling	2739	7.58	0.00	4	65
19	US 25 - ASHEVILLE HWY	B19	Basic Segment	2075	Rolling	1992	8.92	0.00	3	65
20		M20	On Ramp	1500	Rolling	2414	8.06	0.00	3	65
21		B21	Basic Segment	6825	Rolling	2414	8.06	0.00	3	65
22		D22	Off Ramp	1500	Rolling	2414	8.06	0.00	3	65
23	WEIGH STATION SB	B23	Basic Segment	1500	Rolling	2018	-9.98	0.00	3	65
24		M24	On Ramp	1500	Rolling	2414	8.06	0.00	3	65
25		B25	Basic Segment	13600	Rolling	2414	8.06	0.00	3	65
26		D31	Off Ramp	1500	Rolling	2414	8.06	0.00	3	65
27		B32	Basic Segment	600	Rolling	2069	9.07	0.00	3	65
28	US 64 - 4 SEASONS BL	W33	Weaving	1400	Rolling	2359	8.20	0.00	4	65
29		B34	Basic Segment	225	Rolling	1800	10.13	0.00	3	65
30		M35	On Ramp	1500	Rolling	2025	9.23	0.00	3	65
31		B36	Basic Segment	13400	Rolling	2025	9.23	0.00	3	65
32		D37	Off Ramp	1500	Rolling	2025	9.23	0.00	3	65
33	UPWARD RD	B38	Basic Segment	2300	Rolling	1548	11.45	0.00	3	65
34		M39	On Ramp	1425	Rolling	1822	10.03	0.00	3	65
35		D40	Off Ramp	1425	Rolling	1822	10.03	0.00	3	65
36	US 25 SYSTEM ICHG	B41	Basic Segment	2725	Rolling	1213	10.55	0.00	2	65
37		M42	On Ramp	1500	Rolling	1231	10.53	0.00	2	65
			Basic							

RampData							
Seg #	Type	Adj. Demand	% Trucks	% RVs	Lanes	Accel/Decel Length	FFS
2	Off Ramp	567	3.00	0.00	1	800	25
4	On Ramp	455	3.00	0.00	1	975	45
6	Off Ramp	968	3.00	0.00	2	650	45
8	On Ramp	536	3.00	0.00	1	900	45
10	Off Ramp	1341	3.00	0.00	1	650	45
12	On Ramp	442	3.00	0.00	1	900	45
14	Off Ramp	132	17.00	0.00	1	650	45
16	On Ramp	132	17.00	0.00	1	900	45
18	Off Ramp	747	4.00	0.00	1	0	45
20	On Ramp	422	4.00	0.00	1	900	45
22	Off Ramp	396	100.00	0.00	1	650	45
24	On Ramp	396	100.00	0.00	1	900	45
26	Off Ramp	345	2.00	0.00	1	650	50
30	On Ramp	225	2.00	0.00	1	1125	50
32	Off Ramp	477	2.00	0.00	1	225	45
34	On Ramp	274	2.00	0.00	1	900	45
35	Off Ramp	609	9.00	0.00	1	0	50
37	On Ramp	18	9.00	0.00	1	1300	45
39	Off Ramp	163	4.00	0.00	1	300	45
41	On Ramp	92	4.00	0.00	1	800	45

Weaving Segment Data											
Seg #	Ramp to Ramp Prop.	On-Ramp					Off-Ramp				
		Adj. Demand	% Trucks	% RVs	Lanes	FFS	Adj. Demand	% Trucks	% RVs	Lanes	FFS
28	0.050	290	2.00	0.00	1	25	559	2.00	0.00	1	25

38		B43	Segment	21625	Rolling	1231	10.53	0.00	2	65
39		D44	Off Ramp	1500	Rolling	1231	10.53	0.00	2	65
40	HOLBERT COVE RD	B45	Basic Segment	2600	Rolling	1068	11.52	0.00	2	65
41		M46	On Ramp	1500	Rolling	1160	10.93	0.00	2	65
42	END PROJECT SB	B47	Basic Segment	5280	Rolling	1160	10.93	0.00	2	65

Time Period Independent Weaving Segment Data

Seg #	Configuration	Short Length	# Weaving Lanes	Min. Lane Changes Freeway-Ramp	Min. Lane Changes Ramp-Freeway	Min. Lane Changes Ramp-Ramp
28	400	2	1	1	0	

Time Period Results

Time Period 1

Seg #	From	To	Type	Adj. Demand	Vol. Served	Capacity (pc/h)	Capacity (veh/h)	d/c Ratio	v/c ratio	Queue Length (ft)	Avg. Speed (mi/h)	Density (pc/mi/in)	Density (veh/mi/in)	Avg. Travel Time (min/veh)	Free-Flow Travel Time (min/veh)	Mainline Delay (min/veh)	System Delay (min/veh)	VMT Demand (veh-min)	VMT Volume (veh-min)	VHT (veh-hrs)	VHD (veh-hrs)	LOS
1	BEGIN PROJECT SB	B1	Basic Segment	4182	4182	9400	8624	0.48	0.48	0	65.0	17.5	16.1	0.80	0.80	0.0	0.0	910.9	910.9	14.0	0.0	B
2		D2	Off Ramp	4182	4182	9400	8624	0.48	0.48	0	59.1	19.3	17.7	0.29	0.26	0.0	0.0	297.0	297.0	5.0	0.5	B
3	NC 191 - BREVARD RD	B3	Basic Segment	3615	3615	9400	8568	0.42	0.42	0	64.2	15.4	14.1	0.17	0.17	0.0	0.0	166.9	166.9	2.6	0.0	B
4		M4	On Ramp	4070	4070	9400	8614	0.47	0.47	0	60.8	18.2	16.6	0.28	0.26	0.0	0.0	289.1	289.1	4.8	0.3	B
5		B5	Basic Segment	4070	4070	9400	8614	0.47	0.47	0	65.0	17.1	15.7	3.28	3.28	0.0	0.0	3613.3	3613.3	55.6	0.0	B
6		D6	Off Ramp	4070	4070	9400	8614	0.47	0.47	0	63.4	17.5	16.1	0.27	0.26	0.0	0.0	289.1	289.1	4.6	0.1	B
7	NC 146 - LONG SHOALS	B7	Basic Segment	3102	3102	9400	8502	0.36	0.36	0	64.9	13.2	11.9	0.44	0.44	0.0	0.0	367.2	367.2	5.7	0.0	B
8		M8	On Ramp	3638	3638	9400	8571	0.42	0.42	0	61.0	16.2	14.8	0.28	0.26	0.0	0.0	258.4	258.4	4.2	0.3	B
9		B9	Basic Segment	3638	3638	9400	8571	0.42	0.42	0	65.0	15.3	14.0	1.84	1.84	0.0	0.0	1808.7	1808.7	27.8	0.0	B
10		D10	Off Ramp	3638	3638	9400	8571	0.42	0.42	0	60.2	16.6	15.1	0.28	0.26	0.0	0.0	258.4	258.4	4.3	0.3	B
11	NC 280 - AIRPORT RD	B11	Basic Segment	2297	2297	9400	8341	0.28	0.28	0	64.8	10.0	8.9	0.40	0.40	0.0	0.0	247.4	247.4	3.8	0.0	A
12		M12	On Ramp	2739	2739	9400	8440	0.32	0.32	0	61.5	12.3	11.1	0.28	0.26	0.0	0.0	194.5	194.5	3.2	0.2	B
13		B13	Basic Segment	2739	2739	9400	8440	0.32	0.32	0	64.3	11.9	10.6	0.09	0.09	0.0	0.0	68.1	68.1	1.1	0.0	B
14		D14	Off Ramp	2739	2739	9400	8440	0.32	0.32	0	64.3	11.9	10.6	0.27	0.26	0.0	0.0	194.5	194.5	3.0	0.0	B
15	REST AREA SB	B15	Basic Segment	2607	2607	9400	8495	0.31	0.31	0	64.9	11.1	10.0	0.30	0.30	0.0	0.0	212.9	212.9	3.3	0.0	B
16		M16	On Ramp	2739	2739	9400	8440	0.32	0.32	0	61.6	12.2	11.0	0.28	0.26	0.0	0.0	194.5	194.5	3.2	0.2	B
17		B17	Basic Segment	2739	2739	9400	8440	0.32	0.32	0	65.0	11.7	10.5	1.23	1.23	0.0	0.0	914.3	914.3	14.1	0.0	B
18		D18	Off Ramp	2739	2739	9400	8440	0.32	0.32	0	61.9	12.3	11.1	0.28	0.26	0.0	0.0	194.5	194.5	3.1	0.2	B
19	US 25 - ASHEVILLE HWY	B19	Basic Segment	1992	1992	7050	6218	0.32	0.32	0	64.8	11.6	10.2	0.36	0.36	0.0	0.0	195.7	195.7	3.0	0.0	B
20		M20	On Ramp	2414	2414	7050	6289	0.38	0.38	0	60.4	14.8	13.2	0.28	0.26	0.0	0.0	171.4	171.4	2.8	0.2	B
21		B21	Basic Segment	2414	2414	7050	6289	0.38	0.38	0	65.0	13.9	12.4	1.19	1.19	0.0	0.0	780.1	780.1	12.0	0.0	B
22		D22	Off Ramp	2414	2414	7050	6289	0.38	0.38	0	58.9	15.3	13.7	0.29	0.26	0.0	0.0	171.4	171.4	2.9	0.3	B
23	WEIGH STATION SB	B23	Basic Segment	2018	2018	7050	8291	0.24	0.24	0	64.5	8.9	10.4	0.26	0.26	0.0	0.0	143.3	143.3	2.2	0.0	A
24		M24	On Ramp	2414	2414	7050	6289	0.38	0.38	0	60.2	12.2	10.9	0.28	0.26	0.0	0.0	171.4	171.4	2.8	0.2	B
25		B25	Basic Segment	2414	2414	7050	6289	0.38	0.38	0	65.0	13.9	12.4	2.38	2.38	0.0	0.0	1554.5	1554.5	23.9	0.0	B
26		D31	Off Ramp	2414	2414	7050	6289	0.38	0.38	0	61.9	14.6	13.0	0.28	0.26	0.0	0.0	171.4	171.4	2.8	0.1	B
27		B32	Basic Segment	2069	2069	7050	6205	0.33	0.33	0	64.4	12.2	10.7	0.11	0.10	0.0	0.0	58.8	58.8	0.9	0.0	B
28	US 64 - 4 SEASONS BL	W33	Weaving	2359	2359	7539	6713	0.35	0.35	0	54.3	12.2	10.9	0.29	0.24	0.0	0.0	156.4	156.4	2.9	0.5	B
29		B34	Basic Segment	1800	1800	7050	6120	0.29	0.29	0	62.1	11.1	9.7	0.04	0.04	0.0	0.0	19.2	19.2	0.3	0.0	B
30		M35	On Ramp	2025	2025	7050	6193	0.33	0.33	0	61.2	12.5	11.0	0.28	0.26	0.0	0.0	143.8	143.8	2.4	0.1	B
31		B36	Basic Segment	2025	2025	7050	6193	0.33	0.33	0	65.0	11.8	10.4	2.34	2.34	0.0	0.0	1284.8	1284.8	19.8	0.0	B

32		D37	Off Ramp	2025	2025	7050	6193	0.33	0.33	0	60.1	12.8	11.2	0.28	0.26	0.0	0.0	143.8	143.8	2.4	0.2	B
33	UPWARD RD	B38	Basic Segment	1548	1548	7050	6016	0.26	0.26	0	64.8	9.3	8.0	0.40	0.40	0.0	0.0	168.6	168.6	2.6	0.0	A
34		M39	On Ramp	1822	1822	7050	6128	0.30	0.30	0	60.5	11.5	10.0	0.27	0.25	0.0	0.0	122.9	122.9	2.0	0.1	B
35		D40	Off Ramp	1822	1822	7050	6128	0.30	0.30	0	60.0	11.6	10.1	0.27	0.25	0.0	0.0	122.9	122.9	2.0	0.2	B
36	US 25 SYSTEM ICHG	B41	Basic Segment	1213	1213	4700	4058	0.30	0.30	0	64.8	10.8	9.4	0.48	0.48	0.0	0.0	156.5	156.5	2.4	0.0	A
37		M42	On Ramp	1231	1231	4700	4059	0.30	0.30	0	59.9	11.9	10.2	0.28	0.26	0.0	0.0	87.4	87.4	1.5	0.1	B
38		B43	Basic Segment	1231	1231	4700	4059	0.30	0.30	0	65.0	11.0	9.5	3.78	3.78	0.0	0.0	1260.4	1260.4	19.4	0.0	A
39		D44	Off Ramp	1231	1231	4700	4059	0.30	0.30	0	57.8	12.3	10.7	0.29	0.26	0.0	0.0	87.4	87.4	1.5	0.2	B
40	HOLBERT COVE RD	B45	Basic Segment	1068	1068	4700	4007	0.27	0.27	0	64.7	9.7	8.2	0.46	0.45	0.0	0.0	131.5	131.5	2.0	0.0	A
41		M46	On Ramp	1160	1160	4700	4038	0.29	0.29	0	58.9	11.4	9.8	0.29	0.26	0.0	0.0	82.4	82.4	1.4	0.1	B
42	END PROJECT SB	B47	Basic Segment	1160	1160	4700	4038	0.29	0.29	0	65.0	10.4	8.9	0.92	0.92	0.0	0.0	290.0	290.0	4.5	0.0	A

Overall Results

Segment	Segment Type	Maximum d/c Ratio	Avg. Speed (mi/h)	Density (pc/mi/in)	Density (veh/mi/in)	Avg. Travel Time (min/veh)	Free-Flow Travel Time (min/veh)	VMT Demand (veh-min)	VMT Volume (veh-min)	VHT (veh-hrs)	VHD (veh-hrs)
BEGIN PROJECT SB-B1	Basic	0.48	65.0	17.5	16.1	0.80	0.80	0,910.9	0,910.9	14.01	0.00
-D2	OffRamp	0.48	59.1	19.3	17.7	0.29	0.26	0,297.0	0,297.0	5.03	0.46
NC 191 - BREVARD RD-B3	Basic	0.42	64.2	15.4	14.1	0.17	0.17	0,166.9	0,166.9	2.60	0.03
-M4	OnRamp	0.47	60.8	18.2	16.6	0.28	0.26	0,289.1	0,289.1	4.75	0.31
-B5	Basic	0.47	65.0	17.1	15.7	3.28	3.28	3,613.3	3,613.3	55.59	0.00
-D6	OffRamp	0.47	63.4	17.5	16.1	0.27	0.26	0,289.1	0,289.1	4.56	0.11
NC 146 - LONG SHOALS-B7	Basic	0.36	64.9	13.2	11.9	0.44	0.44	0,367.2	0,367.2	5.65	0.01
-M8	OnRamp	0.42	61.0	16.2	14.8	0.28	0.26	0,258.4	0,258.4	4.24	0.26
-B9	Basic	0.42	65.0	15.3	14.0	1.84	1.84	1,808.7	1,808.7	27.83	0.00
-D10	OffRamp	0.42	60.2	16.6	15.1	0.28	0.26	0,258.4	0,258.4	4.29	0.32
NC 280 - AIRPORT RD-B11	Basic	0.28	64.8	10.0	8.9	0.40	0.40	0,247.4	0,247.4	3.82	0.01
-M12	OnRamp	0.32	61.5	12.3	11.1	0.28	0.26	0,194.5	0,194.5	3.16	0.17
-B13	Basic	0.32	64.3	11.9	10.6	0.09	0.09	0,068.1	0,068.1	1.06	0.01
-D14	OffRamp	0.32	64.3	11.9	10.6	0.27	0.26	0,194.5	0,194.5	3.03	0.03
REST AREA SB-B15	Basic	0.31	64.9	11.1	10.0	0.30	0.30	0,212.9	0,212.9	3.28	0.00
-M16	OnRamp	0.32	61.6	12.2	11.0	0.28	0.26	0,194.5	0,194.5	3.16	0.16
-B17	Basic	0.32	65.0	11.7	10.5	1.23	1.23	0,914.3	0,914.3	14.07	0.00
-D18	OffRamp	0.32	61.9	12.3	11.1	0.28	0.26	0,194.5	0,194.5	3.14	0.15
US 25 - ASHEVILLE HWY-B19	Basic	0.32	64.8	11.6	10.2	0.36	0.36	0,195.7	0,195.7	3.02	0.01
-M20	OnRamp	0.38	60.4	14.8	13.2	0.28	0.26	0,171.4	0,171.4	2.84	0.20
-B21	Basic	0.38	65.0	13.9	12.4	1.19	1.19	0,780.1	0,780.1	12.00	0.00
-D22	OffRamp	0.38	58.9	15.3	13.7	0.29	0.26	0,171.4	0,171.4	2.91	0.27
WEIGH STATION SB-B23	Basic	0.24	64.5	8.9	10.4	0.26	0.26	0,143.3	0,143.3	2.22	0.02
-M24	OnRamp	0.38	60.2	12.2	10.9	0.28	0.26	0,171.4	0,171.4	2.85	0.21
-B25	Basic	0.38	65.0	13.9	12.4	2.38	2.38	1,554.5	1,554.5	23.91	0.00
-D31	OffRamp	0.38	61.9	14.6	13.0	0.28	0.26	0,171.4	0,171.4	2.77	0.13
-B32	Basic	0.33	64.4	12.2	10.7	0.11	0.10	0,058.8	0,058.8	0.91	0.01
US 64 - 4 SEASONS BL-W33	Weaving	0.35	54.3	12.2	10.9	0.29	0.24	0,156.4	0,156.4	2.88	0.47
-B34	Basic	0.29	62.1	11.1	9.7	0.04	0.04	0,019.2	0,019.2	0.31	0.01
-M35	OnRamp	0.33	61.2	12.5	11.0	0.28	0.26	0,143.8	0,143.8	2.35	0.14
-B36	Basic	0.33	65.0	11.8	10.4	2.34	2.34	1,284.8	1,284.8	19.77	0.00
-D37	OffRamp	0.33	60.1	12.8	11.2	0.28	0.26	0,143.8	0,143.8	2.39	0.18
UPWARD RD-B38	Basic	0.26	64.8	9.3	8.0	0.40	0.40	0,168.6	0,168.6	2.60	0.01
-M39	OnRamp	0.30	60.5	11.5	10.0	0.27	0.25	0,122.9	0,122.9	2.03	0.14
-D40	OffRamp	0.30	60.0	11.6	10.1	0.27	0.25	0,122.9	0,122.9	2.05	0.16
US 25 SYSTEM ICHG-B41	Basic	0.30	64.8	10.8	9.4	0.48	0.48	0,156.5	0,156.5	2.41	0.01
-M42	OnRamp	0.30	59.9	11.9	10.2	0.28	0.26	0,087.4	0,087.4	1.46	0.11
-B43	Basic	0.30	65.0	11.0	9.5	3.78	3.78	1,260.4	1,260.4	19.39	0.00
-D44	OffRamp	0.30	57.8	12.3	10.7	0.29	0.26	0,087.4	0,087.4	1.51	0.17
HOLBERT COVE RD-B45	Basic	0.27	64.7	9.7	8.2	0.46	0.45	0,131.5	0,131.5	2.03	0.01
-M46	OnRamp	0.29	58.9	11.4	9.8	0.29	0.26	0,082.4	0,082.4	1.40	0.13

END PROJECT SB-B47	Basic	0.29	65.0	10.4	8.9	0.92	0.92	0,290.0	0,290.0	4.46	0.00
Freeway			64.0	13.7	12.3	27.17	26.73	18,155.9	18,155.9	0,283.7	0,004.4

Density-Based LOS by Segment															
Segment	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Time Step	Basic	Off Ramp	Basic	On Ramp	Basic	Off Ramp	Basic	On Ramp	Basic	Off Ramp	Basic	On Ramp	Basic	Off Ramp	Basic
1	B	B	B	B	B	B	B	B	B	B	A	B	B	B	B
Density-Based LOS by Segment															
Segment	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Time Step	On Ramp	Basic	Off Ramp	Basic	On Ramp	Basic	Off Ramp	Basic	On Ramp	Basic	Off Ramp	Basic	Weaving	Basic	On Ramp
1	B	B	B	B	B	B	B	A	B	B	B	B	B	B	B
Density-Based LOS by Segment															
Segment	31	32	33	34	35	36	37	38	39	40	41	42			
Time Step	Basic	Off Ramp	Basic	On Ramp	Off Ramp	Basic	On Ramp	Basic	Off Ramp	Basic	On Ramp	Basic			
1	B	B	A	B	B	A	B	A	B	A	B	A			
Demand-Based LOS by Segment															
Time Step	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Demand-Based LOS by Segment															
Time Step	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Demand-Based LOS by Segment															
Time Step	31	32	33	34	35	36	37	38	39	40	41	42			
1	.	.	.	.	.	.	.	.	.	.	.	.

2040 No-Build

HCS 2010 Freeway Facilities

Project Properties

Analyst		Freeway Name	TP 1-4600 I-4700 I-26 Widening	Analysis Period	AM Peak
Analysis Date	2/8/2013 10:12:36 AM	From	Exit 59 (Hobert Cove Road)	Version Date	10/10/2012
Agency	NHTB North Carolina, PC	To	Exit 33 (NC 191)		
Location	I-26	Analysis Direction	Northbound		
User Notes	2040 DYNB				
File Name	C:\Temp\preview.xml				

Facility-wide Values

Jam Density (pc/h/ln)	190	Time Period Duration (min)	15	Facility Length (mi)	29.10100
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Segment Input Data

Time Period 1

Seg #	From	To	Type	Length	Terrain	Adj. Demand	% Trucks	% RVs	# Lanes	FFS
1	BEGIN PROJECT NB	B48	Basic Segment	5280	Rolling	2369	10.00	0.00	2	70
2		D49	Off Ramp	1500	Rolling	2369	10.00	0.00	2	70
3	HOBERT COVE RD	B50	Basic Segment	2300	Rolling	2218	10.54	0.00	2	70
4		M51	On Ramp	1500	Rolling	2413	9.85	0.00	2	70
5		B52	Basic Segment	2350	Rolling	2413	9.85	0.00	2	70
6		D53	Off Ramp	1500	Rolling	2413	9.85	0.00	2	70
7	US 25 SYSTEM ICHG	B54	Basic Segment	1125	Rolling	2392	9.86	0.00	2	70
8		M55	On Ramp	1300	Rolling	3231	9.64	0.00	2	70
9		D56	Off Ramp	1300	Rolling	3231	9.64	0.00	2	70
10	UPWARD RD	B57	Basic Segment	2325	Rolling	2431	12.15	0.00	2	70
11		M58	On Ramp	1500	Rolling	3011	10.20	0.00	2	70
12		B59	Basic Segment	13525	Rolling	3011	10.20	0.00	2	70
13		D60	Off Ramp	1500	Rolling	3011	10.20	0.00	2	70
14		B61	Basic Segment	525	Rolling	2571	11.60	0.00	2	70
15	US 64 - 4 SEASONS BL	W62	Weaving	1375	Rolling	2972	10.45	0.00	3	70
16		B63	Basic Segment	550	Rolling	2538	11.72	0.00	2	70
17		M64	On Ramp	1500	Rolling	3048	10.10	0.00	2	70
18		B65	Basic Segment	925	Rolling	3048	10.10	0.00	2	70
19		D66	Off Ramp	1500	Rolling	3048	10.10	0.00	2	70
20		D67	Off Ramp	1500	Rolling	2788	10.85	0.00	2	70
21	BALFOUR PKWY	B68	Basic Segment	1000	Rolling	2126	13.61	0.00	2	70
22		M69	On Ramp	1500	Rolling	3113	9.93	0.00	2	70
23		B70	Basic Segment	6900	Rolling	3113	9.93	0.00	2	70
24		D71	Off Ramp	1500	Rolling	3113	9.93	0.00	2	70
25	WEIGH STATION NB	B72	Basic Segment	1700	Rolling	2845	1.44	0.00	2	70
26		M73	On Ramp	1500	Rolling	3113	9.93	0.00	2	70
27		B74	Basic Segment	7100	Rolling	3113	9.93	0.00	2	70
28		D75	Off Ramp	1500	Rolling	3113	9.93	0.00	2	65
29	US 25 ASHVILLE HWY	B76	Basic Segment	1925	Rolling	2420	11.62	0.00	2	65
30		M77	On Ramp	1500	Rolling	3442	9.36	0.00	2	65
31		B78	Basic Segment	6875	Rolling	3442	9.36	0.00	2	65
32		D79	Off Ramp	1500	Rolling	3442	9.36	0.00	2	65
33	REST AREA NB	B80	Basic Segment	1900	Rolling	3273	8.97	0.00	2	65
34		M81	On Ramp	1500	Rolling	3442	9.36	0.00	2	65
35		B82	Basic Segment	525	Rolling	3442	9.36	0.00	2	65
36		D83	Off Ramp	1500	Rolling	3442	9.36	0.00	2	65
37	NC 280 AIRPORT RD	B84	Basic Segment	2075	Rolling	2309	12.48	0.00	2	65
38		M85	On Ramp	1500	Rolling	3535	9.19	0.00	2	65
39		B86	Basic Segment	10800	Rolling	3535	9.19	0.00	2	65
40		D87	Off Ramp	1500	Rolling	3535	9.19	0.00	2	65
41	NC 146 - 10N SHIALS	B88	Basic Segment	2400	Rolling	2846	10.93	0.00	2	65
42		M89	On Ramp	1500	Rolling	3996	8.65	0.00	2	65
43		B90	Basic Segment	20650	Rolling	3996	8.65	0.00	2	65
44		D91	Off Ramp	1500	Rolling	3996	8.65	0.00	2	65
45	NC 191 BREVARD RD	B92	Basic Segment	1075	Rolling	3334	9.77	0.00	2	65
46		M93	On Ramp	1500	Rolling	3903	8.64	0.00	2	65
47	END PROJECT NB	B94	Basic Segment	3150	Rolling	3903	8.64	0.00	2	65

Seg #	Type	Adj. Demand	% Trucks	% RVs	Lanes	Accel/Decel Length	FFS
2	Off Ramp	151	2.00	0.00	1	425	45
4	On Ramp	195	2.00	0.00	1	825	45
6	Off Ramp	21	9.00	0.00	1	650	25
8	On Ramp	839	9.00	0.00	1	600	50
9	Off Ramp	800	2.00	0.00	1	225	45
11	On Ramp	580	2.00	0.00	1	850	45
13	Off Ramp	440	2.00	0.00	1	450	50
17	On Ramp	510	2.00	0.00	1	325	50
19	Off Ramp	260	2.00	0.00	1	450	45
20	Off Ramp	662	2.00	0.00	1	450	25
22	On Ramp	987	2.00	0.00	1	1000	45
24	Off Ramp	268	100.00	0.00	1	425	45
26	On Ramp	268	100.00	0.00	1	1150	45
28	Off Ramp	693	4.00	0.00	1	450	45
30	On Ramp	1022	4.00	0.00	1	550	45
32	Off Ramp	169	17.00	0.00	1	425	45
34	On Ramp	169	17.00	0.00	1	950	45
36	Off Ramp	1123	3.00	0.00	1	400	45
38	On Ramp	1226	3.00	0.00	1	1125	45
40	Off Ramp	689	2.00	0.00	1	250	45
42	On Ramp	1150	3.00	0.00	1	375	45
44	Off Ramp	562	3.00	0.00	1	400	25
46	On Ramp	569	2.00	0.00	1	325	45

Seg #	Ramp to Prop.	Adj. Demand	% Trucks	% RVs	Lanes	FFS	Adj. Demand	% Trucks	% RVs	Lanes	FFS
15	0.050	351	2.00	0.00	1	25	384	2.00	0.00	1	25

Time Period Independent Weaving Segment Data

Seg #	Configuration	Short Length	# Weaving Lanes	Min. Lane Changes Freeway Ramp	Min. Lane Changes Ramp-Freeway	Min. Lane Changes Ramp-Ramp
15	375	2	1	1	0	

Time Period Results

Time Period 1

Seg #	From	To	Type	Adj. Demand	Vol. Served	Capacity (pc/h)	Capacity (veh/h)	d/c Ratio	v/c ratio	Queue Length(ft)	Avg. Speed (mi/h)	Density (veh/mi/ln)	Avg. Travel Time (min/veh)	Free-Flow Travel Time (min/veh)	Mainline Delay (min/veh)	System Delay (min/veh)	VMT Demand (veh-mi)	VMT Volume (veh-mi)	VHT (veh-hrs)	VHD (veh-hrs)	LOS	
1	BEGIN PROJECT NB	B48	Basic Segment	2369	2369	4800	4174	0.57	0.57	0	69.7	19.5	17.0	0.86	0.86	0.0	0.0	592.3	592.3	8.5	0.0	C
2		D49	Off Ramp	2369	2369	4800	4174	0.57	0.57	0	61.3	22.2	19.3	0.28	0.24	0.0	0.0	168.3	168.3	2.7	0.3	C
3	HOBERT COVE RD	B50	Basic Segment	2218	2218	4800	4144	0.54	0.54	0	69.6	18.5	15.9	0.38	0.37	0.0	0.0	241.5	241.5	3.5	0.0	C
4		M51	On Ramp	2413	2413	4800	4182	0.58	0.58	0	61.4	22.5	19.6	0.28	0.24	0.0	0.0	171.4	171.4	2.8	0.3	C
5		B52	Basic Segment	2413	2413	4800	4182	0.58	0.58	0	69.6	19.9	17.3	0.34	0.32	0.0	0.0	2690.6	2690.6	38.7	0.2	C
6		D53	Off Ramp	2413	2413	4800	4182	0.58	0.58	0	54.3	25.5	22.2	0.31	0.24	0.1	0.1	171.4	171.4	3.2	0.7	C
7	US 25 SYSTEM ICHG	B54	Basic Segment	2392	2392	4800	4181	0.57	0.57	0	68.1	20.2	17.6	0.19	0.18	0.0	0.0	127.4	127.4	1.9	0.0	C
8		M55	On Ramp	3231	3231	4800	4194	0.77	0.77	0	58.8	30.3	26.5	0.25	0.21	0.0	0.0	198.9	198.9	3.4	0.5	D
9		D56	Off Ramp	3231	3231	4800	4194	0.77	0.77	0	59.6	31.0	27.1	0.25	0.21	0.0	0.0	198.9	198.9	3.3	0.5	D
10	UPWARD RD	B57	Basic Segment	2431	2431	4800	4660	0.60	0.60	0	69.3	20.7	17.5	0.38	0.38	0.0	0.0	267.6	267.6	3.9	0.0	C
11		M58	On Ramp	3011	3011	4800	4163	0.72	0.72	0	59.7	26.9	25.1	0.29	0.24	0.0	0.0	213.8	213.8	3.6	0.5	D
12		B59	Basic Segment	3011	3011	4800	4163	0.72	0.72	0	66.7	26.0	22.6	0.21	0.20	0.1	0.1	1928.2	1928.2	28.9	1.4	C
13		D60	Off Ramp	3011	3011	4800	4163	0.72	0.72	0	62.3	27.8	24.2	0.27	0.24	0.0	0.0	213.8	213.8	3.4	0.4	C
14		B61	Basic Segment	2571	2571	4800	4089	0.63	0.63	0	68.5	22.0	18.8	0.09	0.09	0.0	0.0	63.9	63.9	0.9	0.0	C
15	US 64 - 4 SEASONS BL	W62	Weaving	2972	2972	6215	5373	0.54	0.54	0	57.8	19.5	16.9	0.27	0.22	0.0	0.0	190.2	190.2	3.0	0.6	B
16		B63	Basic Segment	2538	2538	4800	4082	0.62	0.62	0	67.4	22.1	18.8	0.09	0.09	0.0	0.0	66.1	66.1	1.0	0.0	C
17		M64	On Ramp	3048	3048	4800	4169	0.73	0.73	0	58.3	29.9	26.0	0.29	0.24	0.0	0.0	216.5	216.5	3.7	0.6	D
18		B65	Basic Segment	3048	3048	4800	4169	0.73	0.73	0	66.4	26.4	22.9	0.16	0.15	0.0	0.0	133.5	133.5	2.0	0.1	D
19		D66	Off Ramp	3048	3048	4800	4169	0.73	0.73	0	61.0	28.8	25.0	0.28	0.24	0.0	0.0	216.5	216.5	3.5	0.5	D
20		D67	Off Ramp	2788	2788	4800	4128	0.68	0.68	0	52.7	30.8	26.5	0.32	0.24	0.1	0.1	198.0	198.0	3.8	0.9	D
21	BALFOUR PKWY	B68	Basic Segment	2126	2126	4800	3986	0.53	0.53	0	67.7	18.9	15.7	0.17	0.16	0.0	0.0	100.7	100.7	1.5	0.0	C
22		M69	On Ramp	3113	3113	4800	4178	0.75	0.75	0	59.8	29.6	25.1	0.29	0.24	0.0	0.0	221.1	221.1	3.7	0.5	D
23		B70	Basic Segment	3113	3113	4800	4178	0.75	0.75	0	66.0	27.1	23.6	0.19	0.12	0.1	0.1	1017.0	1017.0	15.4	0.9	D
24		D71	Off Ramp	3113	3113	4800	4178	0.75	0.75	0	60.0	29.8	26.0	0.28	0.24	0.0	0.0	221.1	221.1	3.7	0.5	D
25	WEIGH STATION NB	B72	Basic Segment	2845	2845	4800	4698	0.61														

M51	OnRamp	0.58	61.4	22.5	19.6	0.28	0.24	0.171.4	0.171.4	2.79	0.34
B52	Basic	0.58	69.6	19.9	17.3	3.84	3.82	2,690.6	2,690.6	38.66	0.22
O53	OffRamp	0.58	54.3	25.5	22.2	0.31	0.24	0.171.4	0.171.4	3.16	0.71
US 25 SPYGLASS I-95 NB	Basic	0.57	68.1	20.2	17.6	0.19	0.18	0.127.4	0.127.4	1.87	0.05
US 25 SPYGLASS I-95 SB	OnRamp	0.77	58.8	30.3	26.5	0.25	0.21	0.198.9	0.198.9	3.38	0.54
O56	OffRamp	0.77	59.6	31.0	27.1	0.25	0.21	0.198.9	0.198.9	3.34	0.50
UPWARD RD 457	Basic	0.60	69.3	20.7	17.5	0.38	0.38	0,267.6	0,267.6	3.86	0.04
M58	OnRamp	0.72	59.7	28.9	25.1	0.29	0.24	0.213.8	0.213.8	3.58	0.53
B59	Basic	0.72	66.7	26.0	22.6	2.31	2.20	1,928.2	1,928.2	28.92	1.38
O60	OffRamp	0.72	62.3	27.8	24.2	0.27	0.24	0.213.8	0.213.8	3.43	0.38
B61	Basic	0.63	68.5	22.0	18.8	0.09	0.09	0,063.9	0,063.9	0.93	0.02
US 54 + 4 SEASONS BLVD	Weaving	0.54	57.8	19.5	16.9	0.27	0.22	0.190.2	0.190.2	3.29	0.57
B63	Basic	0.62	67.4	22.1	18.8	0.09	0.09	0,066.1	0,066.1	0.98	0.04
M64	OnRamp	0.73	58.3	29.9	26.0	0.29	0.24	0.216.5	0.216.5	3.71	0.62
B65	Basic	0.73	66.4	26.4	22.9	0.16	0.15	0.133.5	0.133.5	2.01	0.10
O66	OffRamp	0.73	61.0	28.8	25.0	0.28	0.24	0.216.5	0.216.5	3.55	0.46
O67	OffRamp	0.68	52.7	30.8	26.5	0.32	0.24	0.198.0	0.198.0	3.76	0.93
BAL FOUR POXY #68	Basic	0.53	67.7	18.9	15.7	0.17	0.16	0.100.7	0.100.7	1.49	0.05
M69	OnRamp	0.75	59.8	29.6	25.8	0.29	0.24	0.221.1	0.221.1	3.70	0.54
B70	Basic	0.75	66.0	27.1	23.6	1.19	1.12	1,017.0	1,017.0	15.41	0.88
O71	OffRamp	0.75	60.0	29.8	26.0	0.28	0.24	0.221.1	0.221.1	3.69	0.53
WILSON STATION NB 872	Basic	0.61	69.2	21.0	20.5	0.28	0.28	0,229.0	0,229.0	3.31	0.04
M73	OnRamp	0.75	61.3	25.8	22.5	0.28	0.24	0.221.1	0.221.1	3.61	0.45
B74	Basic	0.75	66.0	27.1	23.6	1.22	1.15	1,046.5	1,046.5	15.86	0.91
O75	OffRamp	0.76	56.6	31.6	27.5	0.30	0.26	0.221.1	0.221.1	3.90	0.50
US 25 ASHEVILLE HWY 476	Basic	0.60	64.5	22.0	18.8	0.34	0.34	0,220.6	0,220.6	3.42	0.03
M77	OnRamp	0.84	54.5	35.3	31.0	0.31	0.26	0,244.5	0,244.5	4.48	0.72
B78	Basic	0.84	60.5	32.4	28.4	1.29	1.20	1,120.4	1,120.4	18.52	1.28
O79	OffRamp	0.84	57.7	34.0	29.8	0.30	0.26	0,244.5	0,244.5	4.24	0.48
BEST AREA NB 880	Basic	0.79	62.0	29.9	26.4	0.35	0.33	0,294.4	0,294.4	4.75	0.22
M81	OnRamp	0.84	55.3	35.1	30.8	0.31	0.26	0,244.5	0,244.5	4.42	0.66
B82	Basic	0.84	60.5	32.4	28.4	0.10	0.09	0,085.6	0,085.6	1.41	0.10
O83	OffRamp	0.84	55.7	35.2	30.9	0.31	0.26	0,244.5	0,244.5	4.39	0.63
NC 260 AIRPORT RD 884	Basic	0.58	64.5	21.3	17.9	0.37	0.36	0,226.9	0,226.9	3.52	0.03
M85	OnRamp	0.86	55.3	35.8	31.5	0.31	0.26	0,251.1	0,251.1	4.54	0.68
B86	Basic	0.86	59.7	33.7	29.6	2.06	1.89	1,807.7	1,807.7	30.28	2.47
O87	OffRamp	0.86	56.7	35.5	31.2	0.30	0.26	0,251.1	0,251.1	4.43	0.57
NC 146 - LONG SHALS- 888	Basic	0.70	64.1	25.9	22.2	0.43	0.42	0,323.4	0,323.4	5.05	0.07
M89	OnRamp	0.96	50.7	43.9	38.9	0.34	0.26	0,283.8	0,283.8	5.60	1.23
B90	Basic	0.96	54.6	41.4	36.6	4.30	3.61	3,907.1	3,907.1	71.59	11.48
O91	OffRamp	0.96	50.7	44.5	39.4	0.34	0.26	0,283.8	0,283.8	5.59	1.23
NC 191 - BREWARD RD 892	Basic	0.81	61.3	31.2	27.2	0.20	0.19	0,169.7	0,169.7	2.77	0.16
M93	OnRamp	0.94	51.1	43.0	38.0	0.33	0.26	0,277.2	0,277.2	5.43	1.16
END PROJECT NB 894	Basic	0.94	55.8	39.5	35.0	0.64	0.55	0,582.1	0,582.1	10.43	1.47
Freeway			60.8	29.0	25.4	28.29	25.77	22,609.0	22,609.0	0,371.8	0,036.4

Density-Based LOS by Segment															
Segment	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Time Step	Basic	Off Ramp	Basic	On Ramp	Basic	Off Ramp	Basic	On Ramp	Basic	Off Ramp	Basic	On Ramp	Basic	Off Ramp	Basic
1	C	C	C	C	C	C	C	D	D	C	D	C	C	C	B
Segment	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Time Step	Basic	On Ramp	Basic	Off Ramp	Off Ramp	Basic	On Ramp	Basic	Off Ramp	Basic	On Ramp	Basic	Off Ramp	Basic	On Ramp
1	C	D	D	D	D	C	D	D	D	C	C	D	D	C	E
Segment	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Time Step	Basic	Off Ramp	Basic	On Ramp	Basic	Off Ramp	Basic	On Ramp	Basic	Off Ramp	Basic	On Ramp	Basic	Off Ramp	Basic
1	D	D	D	E	D	E	C	E	D	E	C	E	E	E	D
Segment	46	47													
Time Step	On Ramp	Basic													
1	E	E													
Segment	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Time Step	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Segment	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Time Step	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Segment	46	47													
Time Step	-	-													

HCS 2010 Freeway Facilities

Project Properties

Analyst	TP 1-4600 1-4700 1-26 Widening		Analysis Period	PM Peak	
Analysis Date	2/8/2013 10:12:36 AM	From	Exit 59 (Hobert Cove Road)	Version Date	10/10/2012
Agency	NTTB North Carolina, PC	To	Exit 33 (NC 191)		
Location	I-26	Analysis Direction	Northbound		
User Notes	2040 DYNB				
File Name	C:\Temp\preview.xml				

Facility-wide Values

Jam Density (pc/h/ln)	190	Time Period Duration (min)	15	Facility Length (mi)	29.10100
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Segment Input Data

Time Period 1

Seg #	From	To	Type	Length	Terrain	Adj. Demand	% Trucks	% RVs	# Lanes	FFS
1	BEGIN PROJECT NB	B48	Basic Segment	5280	Rolling	2935	10.00	0.00	2	70
2		D49	Off Ramp	1500	Rolling	2935	10.00	0.00	2	70
3	HOBERT COVE RD	B50	Basic Segment	2300	Rolling	2732	10.59	0.00	2	70
4		M51	On Ramp	1500	Rolling	2911	10.07	0.00	2	70
5		B52	Basic Segment	2350	Rolling	2911	10.07	0.00	2	70
6		D53	Off Ramp	1500	Rolling	2911	10.07	0.00	2	70
7	US 25 SYSTEM ICHG	B54	Basic Segment	1125	Rolling	2889	10.07	0.00	2	70
8		M55	On Ramp	1300	Rolling	3917	9.79	0.00	2	70
9		D56	Off Ramp	1300	Rolling	3917	9.79	0.00	2	70
10	LPWARD RD	B57	Basic Segment	2325	Rolling	3091	11.87	0.00	2	70
11		M58	On Ramp	1500	Rolling	3802	10.03	0.00	2	70
12		B59	Basic Segment	13525	Rolling	3802	10.03	0.00	2	70
13		D60	Off Ramp	1500	Rolling	3802	10.03	0.00	2	70
14		B61	Basic Segment	525	Rolling	3243	11.41	0.00	2	70
15	US 64 - 4 SEASONS BL	W62	Weaving	1375	Rolling	3688	10.28	0.00	3	70
16		B63	Basic Segment	550	Rolling	3308	11.23	0.00	2	70
17		M64	On Ramp	1500	Rolling	3813	10.00	0.00	2	70
18		B65	Basic Segment	925	Rolling	3813	10.00	0.00	2	70
19		D66	Off Ramp	1500	Rolling	3813	10.00	0.00	2	70
20		D67	Off Ramp	1500	Rolling	3467	10.80	0.00	2	70
21	BALFOUR PKWY	B68	Basic Segment	1000	Rolling	2826	12.80	0.00	2	70
22		M69	On Ramp	1500	Rolling	3865	9.90	0.00	2	70
23		B70	Basic Segment	6900	Rolling	3865	9.90	0.00	2	70
24		D71	Off Ramp	1500	Rolling	3865	9.90	0.00	2	70
25	WEIGH STATION NB	B72	Basic Segment	1700	Rolling	3533	1.43	0.00	2	70
26		M73	On Ramp	1500	Rolling	3865	9.90	0.00	2	70
27		B74	Basic Segment	7100	Rolling	3865	9.90	0.00	2	70
28		D75	Off Ramp	1500	Rolling	3865	9.90	0.00	2	65
29	US 25 ASHVILLE HWY	B76	Basic Segment	1925	Rolling	3071	11.42	0.00	2	65
30		M77	On Ramp	1500	Rolling	4287	9.32	0.00	2	65
31		B78	Basic Segment	6875	Rolling	4287	9.32	0.00	2	65
32		D79	Off Ramp	1500	Rolling	4287	9.32	0.00	2	65
33	REST AREA NB	B80	Basic Segment	1900	Rolling	4118	9.00	0.00	2	65
34		M81	On Ramp	1500	Rolling	4287	9.32	0.00	2	65
35		B82	Basic Segment	525	Rolling	4287	9.32	0.00	2	65
36		D83	Off Ramp	1500	Rolling	4287	9.32	0.00	2	65
37	NC 280 AIRPORT RD	B84	Basic Segment	2075	Rolling	3044	11.90	0.00	2	65
38		M85	On Ramp	1500	Rolling	4437	9.10	0.00	2	65
39		B86	Basic Segment	10800	Rolling	4437	9.10	0.00	2	65
40		D87	Off Ramp	1500	Rolling	4437	9.10	0.00	2	65
41	NC 146 - LONG SIGNALS	B88	Basic Segment	2400	Rolling	3636	10.67	0.00	2	65
42		M89	On Ramp	1500	Rolling	4843	8.76	0.00	2	65
43		B90	Basic Segment	20650	Rolling	4843	8.76	0.00	2	65
44		D91	Off Ramp	1500	Rolling	4843	8.76	0.00	2	65
45	NC 191 - BREVARD RD	B92	Basic Segment	1075	Rolling	4120	9.77	0.00	2	65
46		M93	On Ramp	1500	Rolling	4813	8.65	0.00	2	65
47	END PROJECT NB	B94	Basic Segment	3150	Rolling	4813	8.65	0.00	2	65

Seg #	Type	Adj. Demand	% Trucks	% RVs	Lanes	Accel/Decel Length	FFS
2	Off Ramp	2933	2.00	0.00	1	425	45
4	On Ramp	179	2.00	0.00	1	825	45
6	Off Ramp	22	9.00	0.00	1	650	25
8	On Ramp	1028	9.00	0.00	1	600	50
9	Off Ramp	526	2.00	0.00	1	225	45
11	On Ramp	711	2.00	0.00	1	850	45
13	Off Ramp	559	2.00	0.00	1	450	50
17	On Ramp	505	2.00	0.00	1	325	50
19	Off Ramp	346	2.00	0.00	1	450	45
20	Off Ramp	641	2.00	0.00	1	450	25
22	On Ramp	1039	2.00	0.00	1	1000	45
24	Off Ramp	332	100.00	0.00	1	425	45
26	On Ramp	332	100.00	0.00	1	1150	45
28	Off Ramp	794	4.00	0.00	1	450	45
30	On Ramp	1216	4.00	0.00	1	550	45
32	Off Ramp	169	17.00	0.00	1	425	45
34	On Ramp	169	17.00	0.00	1	950	45
36	Off Ramp	1242	3.00	0.00	1	400	45
38	On Ramp	1393	3.00	0.00	1	1125	45
40	Off Ramp	801	2.00	0.00	1	250	45
42	On Ramp	1207	3.00	0.00	1	375	45
44	Off Ramp	723	3.00	0.00	1	400	25
46	On Ramp	693	2.00	0.00	1	325	45

Seg #	Ramp to Ramp Prop.	Adj. Demand	% Trucks	% RVs	Lanes	FFS	Adj. Demand	% Trucks	% RVs	Lanes	FFS
15	0.050	445	2.00	0.00	1	25	380	2.00	0.00	1	25

Time Period Independent Weaving Segment Data

Seg #	Configuration	Short Length	# Weaving Lanes	Min. Lane Changes Freeway Ramp	Min. Lane Changes Ramp-Freeway	Min. Lane Changes Ramp-Ramp
15	375	2	1	1	0	

Time Period Results

Time Period 1

Seg #	From	To	Type	Adj. Demand	Vol. Served	Capacity (pc/h)	Capacity (veh/h)	d/c Ratio	v/c ratio	Queue Length(ft)	Avg. Speed (mi/h)	Density (pc/mi/ln)	Avg. Travel Time (min/veh)	Free-Flow Travel Time (min/veh)	Mainline Delay (min/veh)	System Delay (min/veh)	VMT Demand (veh-mi)	VMT Volume (veh-mi)	VHT (veh-hrs)	VHD (veh-hrs)	LOS	
1	BEGIN PROJECT NB	B48	Basic Segment	2935	2940	4800	4174	0.70	0.70	0	67.2	25.2	21.9	0.89	0.86	0.0	0.0	733.8	735.0	10.9	0.4	C
2		D49	Off Ramp	2935	2940	4800	4174	0.70	0.70	0	59.3	28.5	24.8	0.29	0.24	0.0	0.0	208.5	208.8	3.5	0.5	D
3	HOBERT COVE RD	B50	Basic Segment	2732	2760	4800	4142	0.66	0.67	0	68.2	23.5	20.2	0.38	0.37	0.0	0.0	297.5	300.6	4.4	0.1	C
4		M51	On Ramp	2911	2940	4800	4170	0.70	0.70	0	60.0	28.0	24.3	0.28	0.24	0.0	0.0	206.7	208.8	3.5	0.5	C
5		B52	Basic Segment	2911	2940	4800	4170	0.70	0.70	0	67.2	25.2	21.9	0.98	0.82	0.2	0.2	3245.9	3278.3	48.8	2.0	C
6		D53	Off Ramp	2911	2940	4800	4170	0.70	0.70	0	59.8	28.3	24.6	0.29	0.24	0.0	0.0	206.7	208.8	3.5	0.5	D
7	US 25 SYSTEM ICHG	B54	Basic Segment	2889	2880	4800	4170	0.69	0.69	0	67.6	24.5	21.3	0.19	0.18	0.0	0.0	153.9	153.4	2.3	0.1	C
8		M55	On Ramp	3917	3900	4800	4185	0.94	0.93	0	54.6	39.4	33.8	0.27	0.21	0.1	0.1	241.1	240.1	4.4	1.0	E
9		D56	Off Ramp	3917	3900	4800	4185	0.94	0.93	0	57.7	38.8	33.8	0.26	0.21	0.0	0.0	241.1	240.1	4.2	0.7	E
10	LPWARD RD	B57	Basic Segment	3091	3120	4800	4074	0.76	0.77	0	65.3	28.2	23.9	0.40	0.38	0.0	0.0	340.3	343.5	5.3	0.4	D
11		M58	On Ramp	3802	3780	4800	4172	0.91	0.91	0	55.6	33.1	33.1	0.31	0.24	0.1	0.1	270.0	268.5	4.8	1.0	E
12		B59	Basic Segment	3802	3780	4800	4172	0.91	0.91	0	59.0	36.9	32.0	0.26	0.20	0.4	0.4	2434.8	2420.7	41.0	6.5	E
13		D60	Off Ramp	3802	3780	4800	4172	0.91	0.91	0	58.4	37.2	32.4	0.29	0.24	0.0	0.0	270.0	268.5	4.6	0.8	E
14		B61	Basic Segment	3243	3240	4800	4098	0.79	0.79	0	64.4	29.5	25.2	0.09	0.09	0.0	0.0	80.6	80.5	1.3	0.1	D
15	US 64 - 4 SEASONS BL	W62	Weaving	3688	3660	6272	5434	0.68	0.67	0	55.2	29.0	25.2	0.28	0.22	0.1	0.1	240.1	238.3	4.3	0.9	D
16		B63	Basic Segment	3308	3300	4800	4108	0.81	0.80	0	63.9	30.2	25.8	0.10	0.09	0.0	0.0	86.1	85.9	1.3	0.1	D
17		M64	On Ramp	3813	3840	4800	4174	0.91	0.92	0	53.6	40.5	35.2	0.32	0.24	0.1	0.1	270.8	272.7	5.1	1.2	E
18		B65	Basic Segment	3813	3840	4800	4174	0.91	0.92	0	58.2	37.9	33.0	0.18	0.15	0.0	0.0	167.0	168.2	2.9	0.5	E
19		D66	Off Ramp	3813	3840	4800	4174	0.91	0.92	0	58.9	37.5	32.6	0.29	0.24	0.0	0.0	270.8	272.7	4.6	0.7	E
20		D67	Off Ramp	3467	3450	4800	4131	0.84	0.84	0	58.2	34.8	29.9	0.29	0.24	0.0	0.0	246.2	247.2	4.2	0.7	D
21	BALFOUR PKWY	B68	Basic Segment	2826	2820	4800	4027	0.70	0.70	0	67.3	25.0	20.9	0.17	0.16	0.0	0.0	133.8	133.5	2.0	0.1	C
22		M69	On Ramp	3865	3840	4800	4180	0.92	0.92	0	55.9	38.0	33.1	0.31	0.24	0.1	0.1	274.5	272.7	4.9	1.0	E
23		B70	Basic Segment	3865	3840	4800	4180	0.92	0.92	0	58.3	37.8	32.9	1.35	1.12	0.2	0.2	1262.7	1254.5	21.5	3.6	E
24		D71	Off Ramp	3865	3840	4800	4180	0.92	0.92	0	57.7	38.2	33.2	0.30	0.24	0.1	0.1	274.5	272.7	4.7	0.8	E
25	WEIGH STATION NB	B72	Basic Segment	3533	3540	4800	4699	0.														

#51	OnRamp	0.70	60.0	28.0	24.3	0.29	0.24	0.206.7	0.209.8	3.48	0.59
#52	Basic	0.70	67.2	25.2	21.0	3.98	3.82	3,245.9	3,278.3	48.79	1.96
#53	OffRamp	0.70	59.8	28.3	24.6	0.29	0.24	0,206.7	0,208.8	3.49	0.51
US 25 SPYRITH I-95#54	Basic	0.69	67.6	24.5	21.3	0.19	0.18	0,153.9	0,153.4	2.27	0.08
#55	OnRamp	0.94	54.8	39.4	34.3	0.27	0.21	0,341.1	0,340.1	4.39	0.96
#56	OffRamp	0.94	57.7	38.8	33.8	0.26	0.21	0,241.1	0,240.1	4.16	0.73
UPWARD RD #57	Basic	0.76	65.3	28.2	23.9	0.40	0.38	0,340.3	0,343.5	5.26	0.35
#58	OnRamp	0.91	55.6	38.1	33.1	0.31	0.24	0,270.0	0,268.5	4.83	0.99
#59	Basic	0.91	59.0	36.9	32.0	2.61	2.20	2,434.8	2,420.7	41.04	6.46
#60	OffRamp	0.91	58.4	37.2	32.4	0.29	0.24	0,270.0	0,268.5	4.60	0.76
#61	Basic	0.79	64.4	29.5	25.2	0.09	0.09	0,080.6	0,080.5	1.25	0.10
US 54 + 4 SEASONS BLVD#2	Weaving	0.68	55.2	29.0	25.2	0.28	0.22	0,240.1	0,238.3	4.32	0.91
#63	Basic	0.81	63.9	30.2	25.8	0.10	0.09	0,086.1	0,085.9	1.35	0.12
#64	OnRamp	0.91	53.6	40.5	35.2	0.32	0.24	0,270.8	0,272.7	5.09	1.20
#65	Basic	0.91	58.2	37.9	33.0	0.18	0.15	0,167.0	0,168.2	2.89	0.49
#66	OnRamp	0.91	58.9	37.5	32.6	0.29	0.24	0,270.8	0,272.7	4.63	0.73
#67	OffRamp	0.84	58.2	34.8	29.9	0.29	0.24	0,246.2	0,247.2	4.25	0.72
BAL FOUR PKWY #68	Basic	0.70	67.3	25.0	20.9	0.17	0.16	0,133.8	0,133.5	1.98	0.08
#69	OnRamp	0.92	55.9	38.0	33.1	0.31	0.24	0,274.5	0,272.7	4.88	0.99
#70	Basic	0.92	58.3	37.8	32.9	1.35	1.12	1,262.7	1,254.5	21.53	3.60
#71	OffRamp	0.92	57.7	38.2	33.2	0.30	0.24	0,274.5	0,272.7	4.72	0.83
WILSON STATION NB #72	Basic	0.75	65.7	27.5	26.9	0.29	0.28	0,284.4	0,284.9	4.34	0.27
#73	OnRamp	0.92	56.0	38.3	33.3	0.30	0.24	0,274.5	0,272.7	4.87	0.98
#74	Basic	0.92	58.3	37.8	32.9	1.38	1.15	1,299.3	1,290.9	22.15	3.71
#75	OffRamp	0.94	54.9	40.2	35.0	0.31	0.26	0,274.5	0,272.7	4.97	0.77
US 25 ASHEVILLE HWY #76	Basic	0.77	62.8	28.5	24.4	0.35	0.34	0,279.9	0,278.9	4.44	0.15
#77	OnRamp	1.04	50.4	45.1	39.5	0.34	0.26	0,304.5	0,294.0	5.94	1.31
#78	Basic	1.04	52.0	45.4	39.8	1.50	1.20	1,395.5	1,347.7	25.94	5.21
#79	OffRamp	1.04	56.2	42.0	36.8	0.30	0.26	0,304.5	0,294.0	5.23	0.71
EAST AREA NB #80	Basic	0.99	53.3	37.2	32.7	0.41	0.33	0,370.5	0,356.3	6.69	1.21
#81	OnRamp	1.04	49.8	47.0	41.3	0.34	0.26	0,304.5	0,294.0	5.90	1.38
#82	Basic	1.04	52.0	45.4	39.8	0.11	0.09	0,106.6	0,102.9	1.98	0.40
#83	OffRamp	1.04	54.0	43.7	38.4	0.32	0.26	0,304.5	0,294.0	5.45	0.93
NC 289 ADNPORT RD #84	Basic	0.76	63.4	27.3	23.2	0.37	0.36	0,299.1	0,288.8	4.55	0.11
#85	OnRamp	1.07	51.8	43.5	38.3	0.33	0.26	0,315.1	0,294.0	5.67	1.15
#86	Basic	1.07	50.9	40.0	35.2	2.41	1.89	2,268.9	2,083.3	40.95	8.89
#87	OffRamp	1.07	44.3	45.6	40.1	0.38	0.26	0,315.1	0,288.8	6.47	2.06
NC 146 - LONG SHALS- #88	Basic	0.90	25.4	61.5	53.0	1.08	0.42	0,413.2	0,354.5	13.98	8.52
#89	OnRamp	1.17	50.2	45.0	39.8	0.34	0.26	0,344.0	0,294.0	5.86	1.34
#90	Basic	1.17	52.0	39.8	35.2	4.51	3.61	4,735.2	4,046.9	77.81	15.55
#91	OnRamp	1.17	44.5	46.5	41.1	0.38	0.26	0,344.0	0,293.8	6.60	2.08
NC 191 - BREWARD RD #92	Basic	1.01	35.4	49.2	42.9	0.35	0.19	0,209.7	0,177.1	5.01	2.28
#93	OnRamp	1.16	49.5	46.3	41.0	0.34	0.26	0,341.8	0,294.0	5.94	1.42
END PROJECT NB #94	Basic	1.16	52.5	44.5	39.4	0.68	0.55	0,717.8	0,617.5	11.76	2.26
Freeway			55.3	36.0	31.5	31.25	25.77	27,864.6	26,588.0	0,480.5	0,086.8

Density-Based LOS by Segment															
Segment	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Time Step	Basic	Off Ramp	Basic	On Ramp	Basic	Off Ramp	Basic	On Ramp	Basic	Off Ramp	Basic	On Ramp	Basic	Off Ramp	Basic
1	C	D	C	C	C	D	C	E	E	D	E	E	E	D	D
Density-Based LOS by Segment															
Segment	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Time Step	Basic	On Ramp	Basic	Off Ramp	Basic	On Ramp	Basic	Off Ramp	Basic	On Ramp	Basic	Off Ramp	Basic	On Ramp	Basic
1	D	E	E	E	D	C	E	E	E	D	E	E	E	D	E
Density-Based LOS by Segment															
Segment	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Time Step	Basic	Off Ramp	Basic	On Ramp	Basic	Off Ramp	Basic	On Ramp	Basic	Off Ramp	Basic	On Ramp	Basic	Off Ramp	Basic
1	F	E	E	E	F	E	D	E	E	F	F	E	E	F	F
Density-Based LOS by Segment															
Segment	46	47													
Time Step	On Ramp	Basic													
1	E	E													
Demand-Based LOS by Segment															
Segment	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Time Step	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Demand-Based LOS by Segment															
Segment	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Time Step	-	-	-	-	-	-	-	-	-	-	-	-	-	-	F
Demand-Based LOS by Segment															
Segment	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Time Step	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F
Demand-Based LOS by Segment															
Segment	46	47													
Time Step	F	F													

HCS 2010 Freeway Facilities

Project Properties

Analyst		Freeway Name	TP 1-4600 I-4700 I-26 Widening	Analysis Period	AM Peak
Analysis Date	2/8/2013 3:14:33 PM	From	Exit 33 (NC 191)	Version Date	10/10/2012
Agency	NHTB North Carolina, PC	To	Exit 59 (Hobert Cove Rd)		
Location	I-26	Analysis Direction	Southbound		
User Notes	2040 DYNB				
File Name	C:\Temp\preview.xml				

Facility-wide Values

Jam Density (pc/h/ln)	190	Time Period Duration (min)	15	Facility Length (mi)	28.95900
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Segment Input Data

Time Period 1

Seg #	From	To	Type	Length	Terrain	Adj. Demand	% Trucks	% RVs	# Lanes	FFS
1	BEGIN PROJECT SB	B1	Basic Segment	4600	Rolling	4927	8.65	0.00	2	65
2	D2	Off Ramp	1500	Rolling	4927	8.65	0.00	2	65	
3	NC 191 - BREVARD RD	B3	Basic Segment	975	Rolling	4234	9.57	0.00	2	65
4	M4	On Ramp	1500	Rolling	4957	8.62	0.00	2	65	
5	B5	Basic Segment	18750	Rolling	4957	8.62	0.00	2	65	
6	D6	Off Ramp	1500	Rolling	4957	8.62	0.00	2	65	
7	NC 146 - LONG SHOALS	B7	Basic Segment	2500	Rolling	3750	10.42	0.00	2	65
8	M8	On Ramp	1500	Rolling	4551	9.12	0.00	2	65	
9	B9	Basic Segment	10500	Rolling	4551	9.12	0.00	2	65	
10	D10	Off Ramp	1500	Rolling	4551	9.12	0.00	2	65	
11	NC 280 - AIRPORT RD	B11	Basic Segment	2275	Rolling	3158	11.81	0.00	2	65
12	M12	On Ramp	1500	Rolling	4401	9.33	0.00	2	65	
13	B13	Basic Segment	525	Rolling	4401	9.33	0.00	2	65	
14	D14	Off Ramp	1500	Rolling	4401	9.33	0.00	2	65	
15	REST AREA SB	B15	Basic Segment	1725	Rolling	4233	9.02	0.00	2	65
16	M16	On Ramp	1500	Rolling	4401	9.33	0.00	2	65	
17	B17	Basic Segment	7050	Rolling	4401	9.33	0.00	2	65	
18	D18	Off Ramp	1500	Rolling	4401	9.33	0.00	2	65	
19	US 25 - ASHEVILLE HWY	B19	Basic Segment	2075	Rolling	3185	11.36	0.00	2	65
20	M20	On Ramp	1500	Rolling	3979	9.89	0.00	2	70	
21	B21	Basic Segment	6825	Rolling	3979	9.89	0.00	2	70	
22	D22	Off Ramp	1500	Rolling	3979	9.89	0.00	2	70	
23	WEIGH STATION SB	B23	Basic Segment	1500	Rolling	3637	1.42	0.00	2	70
24	M24	On Ramp	1500	Rolling	3979	9.89	0.00	2	70	
25	B25	Basic Segment	6675	Rolling	3979	9.89	0.00	2	70	
26	D26	Off Ramp	1500	Rolling	3979	9.89	0.00	2	70	
27	BALFOUR PKWY	B27	Basic Segment	1500	Rolling	3675	10.54	0.00	2	70
28	M28	On Ramp	1000	Rolling	2940	12.68	0.00	2	70	
29	B29	Basic Segment	3927	Rolling	3927	9.99	0.00	2	70	
30	D31	Off Ramp	1500	Rolling	3927	9.99	0.00	2	70	
31	B31	Basic Segment	600	Rolling	3482	11.02	0.00	2	70	
32	D32	Off Ramp	1500	Rolling	3482	11.02	0.00	2	70	
33	US 64 - 4 SEASONS BL	B33	Weaving	1400	Rolling	4041	9.77	0.00	3	70
34	B34	Basic Segment	225	Rolling	3536	10.88	0.00	2	70	
35	M35	On Ramp	1500	Rolling	3916	10.02	0.00	2	70	
36	B36	Basic Segment	13400	Rolling	3916	10.02	0.00	2	70	
37	D37	Off Ramp	1500	Rolling	3916	10.02	0.00	2	70	
38	UPWARD RD	B38	Basic Segment	2300	Rolling	3205	11.80	0.00	2	70
39	M39	On Ramp	1425	Rolling	4031	9.79	0.00	2	70	
40	D40	Off Ramp	1425	Rolling	4031	9.79	0.00	2	70	
41	US 25 SYSTEM (O&G)	B41	Basic Segment	2725	Rolling	3010	10.06	0.00	2	70
42	M42	On Ramp	1500	Rolling	3031	10.05	0.00	2	70	
43	B43	Basic Segment	21625	Rolling	3031	10.05	0.00	2	70	
44	D44	Off Ramp	1500	Rolling	3031	10.05	0.00	2	70	
45	HOLBERT COVE RD	B45	Basic Segment	2600	Rolling	2851	10.43	0.00	2	70
46	M46	On Ramp	1500	Rolling	3054	10.00	0.00	2	70	
47	END PROJECT SB	B47	Basic Segment	5280	Rolling	3054	10.00	0.00	2	70

Seg #	Type	Adj. Demand	% Trucks	% RVs	Lanes	Accel/Decel Length	FFS
2	Off Ramp	693	3.00	0.00	1	600	25
4	On Ramp	723	3.00	0.00	1	525	45
6	Off Ramp	1207	3.00	0.00	2	575	45
8	On Ramp	801	3.00	0.00	1	650	45
10	On Ramp	1393	3.00	0.00	1	425	45
12	On Ramp	1245	3.00	0.00	1	475	45
14	Off Ramp	168	17.00	0.00	1	425	45
16	On Ramp	168	17.00	0.00	1	950	45
18	Off Ramp	1216	4.00	0.00	1	700	45
20	On Ramp	794	4.00	0.00	1	600	45
22	Off Ramp	342	100.00	0.00	1	375	45
24	On Ramp	342	100.00	0.00	1	975	45
26	Off Ramp	304	2.00	0.00	1	450	45
27	Off Ramp	735	2.00	0.00	1	450	25
29	On Ramp	987	2.00	0.00	1	1000	45
31	Off Ramp	445	2.00	0.00	1	475	50
35	On Ramp	380	2.00	0.00	1	450	50
37	Off Ramp	711	2.00	0.00	1	225	45
39	On Ramp	826	2.00	0.00	1	800	45
40	On Ramp	1021	9.00	0.00	1	675	50
42	On Ramp	21	9.00	0.00	1	1300	45
44	Off Ramp	180	4.00	0.00	1	300	45
46	On Ramp	203	4.00	0.00	1	800	45

Seg #	Ramp to Ramp Prop.	Adj. Demand	% Trucks	% RVs	Lanes	FFS	Adj. Demand	% Trucks	% RVs	Lanes	FFS
33	0.050	559	2.00	0.00	1	25	505	2.00	0.00	1	25

Time Period Independent Weaving Segment Data

Seg #	Configuration	Short Length	# Weaving Lanes	Min. Lane Changes Freeway-Ramp	Min. Lane Changes Ramp-Freeway	Min. Lane Changes Ramp-Ramp
33	400	2	1	1	0	

Time Period Results

Time Period 1

Seg #	From	To	Type	Adj. Demand	Vol. Served	Capacity (pc/h)	Capacity (veh/h)	d/c Ratio	v/c ratio	Queue Length(ft)	Avg. Speed (mi/h)	Density (pc/mi/ln)	Density (veh/mi/ln)	Avg. Travel Time (min/veh)	Free-Flow Travel Time (min/veh)	Mainline Delay (min/veh)	System Delay (min/veh)	VMT Demand (veh-mi)	VMT Volume (veh-mi)	VHT (veh-hrs)	VHD (veh-hrs)	LOS
1	BEGIN PROJECT SB	B1	Basic Segment	4927	4080	4700	4160	1.18	0.98	-3599	53.4	43.2	38.2	0.98	0.80	0.2	0.2	1073.1	888.6	16.6	3.0	E
2	D2	Off Ramp	1500	4927	4072	4700	4160	1.18	0.98	1500	41.9	48.6	43.0	0.41	0.26	0.1	0.1	349.9	289.2	6.9	2.5	F
3	NC 191 - BREVARD RD	B3	Basic Segment	4234	3420	4700	4110	1.03	0.83	975	28.3	60.4	52.8	0.39	0.17	0.2	0.2	195.5	157.9	5.6	3.1	F
4	M4	On Ramp	1500	4957	4140	4700	4162	1.19	0.99	0	50.0	45.8	40.6	0.34	0.26	0.1	0.1	352.1	294.0	5.9	1.4	E
5	B5	Basic Segment	18750	4957	4140	4700	4162	1.19	0.99	0	52.5	44.5	39.4	0.46	0.28	0.8	0.8	4400.7	3675.4	70.0	13.4	E
6	D6	Off Ramp	1500	4957	4140	4700	4162	1.19	0.99	0	54.0	43.3	38.3	0.32	0.26	0.1	0.1	352.1	294.0	5.4	0.9	E
7	NC 146 - LONG SHOALS	B7	Basic Segment	3750	3120	4700	4065	0.92	0.77	0	62.7	28.8	24.9	0.45	0.44	0.0	0.0	443.9	369.3	5.9	0.2	D
8	M8	On Ramp	1500	4551	3960	4700	4135	1.10	0.96	0	51.8	42.4	37.3	0.33	0.26	0.1	0.1	323.2	281.3	5.4	1.1	E
9	B9	Basic Segment	10500	4551	3960	4700	4135	1.10	0.96	0	54.7	41.1	36.2	0.28	0.18	0.3	0.3	2262.6	1968.8	36.0	5.7	E
10	D10	Off Ramp	1500	4551	3960	4700	4135	1.10	0.96	0	53.6	42.0	36.9	0.32	0.26	0.1	0.1	323.2	281.3	5.2	0.9	E
11	NC 280 - AIRPORT RD	B11	Basic Segment	3158	2760	4700	3992	0.79	0.69	0	64.3	25.3	21.5	0.40	0.40	0.0	0.0	340.2	297.3	4.6	0.1	C
12	M12	On Ramp	1500	4401	3960	4700	4123	1.07	0.96	0	51.8	41.8	36.7	0.33	0.26	0.1	0.1	312.6	281.3	5.4	1.1	E
13	B13	Basic Segment	525	4401	3960	4700	4123	1.07	0.96	0	54.6	41.3	36.3	0.11	0.09	0.0	0.0	109.4	98.4	1.8	0.3	E
14	D14	Off Ramp	1500	4401	3960	4700	4123	1.07	0.96	0	56.2	40.1	35.2	0.30	0.26	0.0	0.0	312.6	281.3	5.0	0.7	E
15	REST AREA SB	B15	Basic Segment	4233	3840	4700	4140	1.02	0.93	0	56.4	38.7	34.1	0.35	0.30	0.0	0.0	345.7	313.6	5.6	0.7	E
16	M16	On Ramp	1500	4401	4020	4700	4123	1.07	0.97	0	51.1	44.6	39.4	0.33	0.26	0.1	0.1	312.6	285.5	5.6	1.2	E
17	B17	Basic Segment	7050	4401	4020	4700	4123	1.07	0.97	0	53.7	42.6	37.4	0.29	0.23	0.3	0.3	1469.1	1341.9	25.0	4.3	E
18	D18	Off Ramp	1500	4401	4020	4700	4123	1.07	0.97	0	54.0	42.4	37.2	0.32	0.26	0.1	0.1	312.6	285.5	5.3	0.9	E
19	US 25 - ASHEVILLE HWY	B19	Basic Segment	3185	2880	4700	4016	0.79	0.72	0	63.8	26.4	22.6	0.37	0.36	0.0	0.0	312.9	280.0	4.4	0.1	D
20	M20	On Ramp	1500	3979	3660	4700	4093	0.97	0.89	0	53.6	38.1	33.1	0.32	0.26	0.1	0.1	282.6	259.9	4.9	0.9	E
21	B21	Basic Segment	6825	3979	3660	4800	4180	0.95	0.88	0	60.6	34.7	30.2	0.28	0.11	0.2	0.2	1285.8	1182.7	19.5	2.6	D
22	D22	Off Ramp	1500	3979	3660	4800	4180	0.95	0.88	0	57.7	36.4	31.7	0.30	0.24	0.1	0.1	282.6	259.9	4.5	0.8	E
23	WEIGH STATION SB	B23	Basic Segment	3637	3360	4800	4700	0.77	0.71	0	66.9	25.6	25.1	0.25	0.24	0.0	0.0	258.3	238.6	3.6	0.2	C
24	M24	On Ramp	1500	3979	3720	4800	4180	0.95	0.89	0	56.6	36.6	31.9	0.30	0.24	0.1	0.1	282.6	264.2	4.7	0.9	E
25	B25	Basic Segment	6675	3979	3720	4800	4180	0.95	0.89													

M4	OnRamp	1.19	50.0	45.8	40.6	0.34	0.26	0.352.1	0.294.0	5.88	1.36
B5	Basic	1.19	52.5	44.5	39.4	4.06	3.28	4,400.7	3,675.4	69.96	13.41
D6	OffRamp	1.19	54.0	43.3	38.3	0.32	0.26	0.352.1	0.294.0	5.44	0.92
NC 146 - LONG SHOALS- B7	Basic	0.92	62.7	28.8	24.9	0.45	0.44	0,443.9	0,369.3	5.89	0.21
M8	OnRamp	1.10	51.8	42.4	37.3	0.33	0.26	0.323.2	0.281.3	5.43	1.11
B9	Basic	1.10	54.7	41.1	36.2	2.18	1.84	2,262.6	1,968.8	35.97	5.68
D10	OffRamp	1.10	53.6	42.0	36.9	0.30	0.26	0.323.2	0.281.3	5.24	0.92
NC 280 - AIRPORT RD-B11	Basic	0.79	64.3	25.3	21.5	0.40	0.40	0,340.2	0,297.3	4.62	0.05
M12	OnRamp	1.07	51.8	41.8	36.7	0.33	0.26	0.312.6	0.281.3	5.43	1.11
B13	Basic	1.07	54.6	41.3	36.3	0.11	0.09	0,109.4	0,098.4	1.80	0.29
D14	OffRamp	1.07	56.2	40.1	35.2	0.30	0.26	0.312.6	0,281.3	5.00	0.88
AREA SB B15	Basic	1.02	56.4	38.7	34.1	0.35	0.30	0,345.7	0,313.6	5.56	0.74
M16	OnRamp	1.07	51.1	44.6	39.1	0.33	0.26	0.312.6	0,285.5	5.99	1.20
B17	Basic	1.07	53.7	42.6	37.4	1.49	1.23	1,469.1	1,341.9	24.97	4.33
D18	OffRamp	1.07	54.0	42.4	37.2	0.32	0.26	0.312.6	0,285.5	5.29	0.90
US 25 - ASHEVILLE HWY-B19	Basic	0.79	63.8	26.4	22.6	0.37	0.36	0,312.9	0,283.0	4.43	0.08
M20	OnRamp	0.97	53.6	38.1	33.1	0.32	0.26	0,282.6	0,259.9	4.85	0.85
B21	Basic	0.95	60.6	34.7	30.2	1.28	1.11	1,285.8	1,182.7	19.53	2.63
D22	OffRamp	0.95	57.7	36.4	31.7	0.30	0.24	0,282.6	0,259.9	4.51	0.79
WILSON STATION SB-B23	Basic	0.77	66.9	25.6	25.1	0.25	0.24	0,258.3	0,238.6	3.57	0.16
M24	OnRamp	0.95	56.6	36.6	31.9	0.30	0.24	0,282.6	0,264.2	4.67	0.90
B25	Basic	0.95	59.8	35.7	31.1	1.27	1.08	1,257.6	1,175.7	19.65	2.85
D26	OffRamp	0.95	59.0	36.2	31.5	0.29	0.24	0,282.6	0,264.2	4.47	0.70
D27	OffRamp	0.89	57.9	34.2	29.5	0.29	0.24	0,261.8	0,242.8	4.39	0.72
BALFOUR PROXY-B28	Basic	0.73	67.7	24.3	20.4	0.17	0.16	0,139.2	0,130.7	1.93	0.06
M29	OnRamp	0.94	56.8	36.3	31.6	0.30	0.24	0,278.9	0,264.2	4.65	0.88
B30	Basic	0.94	59.8	35.8	31.1	0.27	0.23	0,265.0	0,251.0	4.20	0.61
D31	OffRamp	0.94	58.7	36.4	31.7	0.29	0.24	0,278.9	0,264.2	4.50	0.73
B32	Basic	0.85	63.9	30.1	25.8	0.11	0.10	0,098.9	0,093.8	1.47	0.13
US 14 - 4 SEASONS BL-W33	Weaving	0.75	53.3	30.4	26.5	0.30	0.23	0,267.9	0,254.5	4.78	1.14
B34	Basic	0.86	63.4	30.8	26.5	0.04	0.04	0,037.7	0,035.8	0.56	0.05
M35	OnRamp	0.94	54.3	39.5	34.3	0.31	0.24	0,278.1	0,268.5	4.94	1.11
B36	Basic	0.94	59.0	36.8	32.0	2.58	2.18	2,484.6	2,398.3	40.65	6.39
D37	OffRamp	0.94	58.0	37.5	32.6	0.29	0.24	0,278.1	0,268.5	4.63	0.79
UPWARD RD-B38	Basic	0.79	65.8	27.4	23.2	0.40	0.37	0,349.0	0,333.2	5.06	0.30
M39	OnRamp	0.96	54.6	39.8	34.7	0.30	0.23	0,272.8	0,263.1	4.87	1.06
D40	OffRamp	0.96	56.9	39.3	34.3	0.28	0.23	0,272.0	0,263.1	4.62	0.86
US 25 - STYER RD-B41	Basic	0.72	67.2	25.2	21.9	0.46	0.44	0,388.4	0,379.3	5.65	0.23
M42	OnRamp	0.73	61.1	27.7	24.0	0.28	0.24	0,215.3	0,208.8	3.42	0.44
B43	Basic	0.73	67.2	25.2	21.9	3.66	3.51	3,103.5	3,010.3	44.80	1.79
D44	OffRamp	0.73	59.4	28.5	24.8	0.29	0.24	0,215.3	0,208.8	3.52	0.53
HOLBERT COVE RD- B45	Basic	0.69	68.2	23.4	20.2	0.43	0.42	0,351.0	0,339.8	4.98	0.13
M46	OnRamp	0.73	59.9	27.9	24.3	0.28	0.24	0,216.9	0,208.8	3.48	0.50
END PROJECT SB-B47	Basic	0.73	67.2	25.2	21.9	0.89	0.86	0,763.5	0,735.0	10.94	0.44
Freeway			57.3	35.5	31.1	30.01	25.65	28,651.0	26,035.6	0,454.7	0,069.3

Density-Based LOS by Segment															
Segment	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Time Step	Basic	Off Ramp	Basic	On Ramp	Basic	Off Ramp	Basic	On Ramp	Basic	Off Ramp	Basic	On Ramp	Basic	Off Ramp	Basic
1	E	F	F	F	E	E	D	E	E	E	C	E	E	E	E
Density-Based LOS by Segment															
Segment	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Time Step	On Ramp	Basic	Off Ramp	Basic	On Ramp	Basic	Off Ramp	Basic	On Ramp	Basic	Off Ramp	Off Ramp	Basic	On Ramp	Basic
1	E	E	E	E	D	E	D	E	C	E	E	E	D	C	E
Density-Based LOS by Segment															
Segment	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Time Step	Off Ramp	Basic	Weaving	Basic	On Ramp	Basic	Off Ramp	Basic	On Ramp	Basic	Off Ramp	Basic	On Ramp	Basic	Off Ramp
1	E	D	D	D	E	E	E	D	E	E	C	C	C	D	C
Density-Based LOS by Segment															
Segment	46	47													
Time Step	On Ramp	Basic													
1	C	C													
Demand-Based LOS by Segment															
Time Step	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F
Demand-Based LOS by Segment															
Time Step	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
1	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F
Demand-Based LOS by Segment															
Time Step	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Demand-Based LOS by Segment															
Time Step	46	47													
1	-	-													

HCS 2010 Freeway Facilities

Project Properties

Analyst		Freeway Name	TP 1-4600 I-4700 I-26 Widening	Analysis Period	PM Peak
Analysis Date	2/8/2013 3:14:33 PM	From	Exit 33 (NC 191)	Version Date	10/10/2012
Agency	NHTB North Carolina, PC	To	Exit 59 (Hobert Cove Rd)		
Location	I-26	Analysis Direction	Southbound		
User Notes	2040 DYNB				
File Name	C:\Temp\preview.xml				

Facility-wide Values

Jam Density (pc/h/ln)	190	Time Period Duration (min)	15	Facility Length (mi)	28.95900
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Segment Input Data

Time Period 1

Mainline Data										
Seg #	From	To	Type	Length	Terrain	Adj. Demand	% Trucks	% RVs	# Lanes	FFS
1	BEGIN PROJECT SB	B1	Basic Segment	4600	Rolling	3997	8.65	0.00	2	65
2	D2	Off Ramp	1500	Rolling	3997	8.65	0.00	2	65	
3	NC 191 - BREVARD RD	B3	Basic Segment	975	Rolling	3428	9.59	0.00	2	65
4	M4	On Ramp	1500	Rolling	4090	8.52	0.00	2	65	
5	B5	Segment	18750	Rolling	4090	8.52	0.00	2	65	
6	D6	Off Ramp	1500	Rolling	4090	8.52	0.00	2	65	
7	NC 146 - LONG SHOALS	B7	Basic Segment	2500	Rolling	2940	10.68	0.00	2	65
8	M8	On Ramp	1500	Rolling	3629	9.22	0.00	2	65	
9	B9	Segment	10500	Rolling	3629	9.22	0.00	2	65	
10	D10	Off Ramp	1500	Rolling	3629	9.22	0.00	2	65	
11	NC 280 - AIRPORT RD	B11	Basic Segment	2275	Rolling	2403	12.40	0.00	2	65
12	M12	On Ramp	1500	Rolling	3536	9.39	0.00	2	65	
13	B13	Segment	525	Rolling	3536	9.39	0.00	2	65	
14	D14	Off Ramp	1500	Rolling	3536	9.39	0.00	2	65	
15	REST AREA SB	B15	Basic Segment	1725	Rolling	3368	9.01	0.00	2	65
16	M16	On Ramp	1500	Rolling	3536	9.39	0.00	2	65	
17	B17	Segment	7050	Rolling	3536	9.39	0.00	2	65	
18	D18	Off Ramp	1500	Rolling	3536	9.39	0.00	2	65	
19	US 25 - ASHVILLE HWY	B19	Basic Segment	2075	Rolling	2514	11.58	0.00	2	65
20	M20	On Ramp	1500	Rolling	3207	9.94	0.00	2	70	
21	B21	Segment	6825	Rolling	3207	9.94	0.00	2	70	
22	D22	Off Ramp	1500	Rolling	3207	9.94	0.00	2	70	
23	WEIGH STATION SB	B23	Basic Segment	1500	Rolling	2930	1.42	0.00	2	70
24	M24	On Ramp	1500	Rolling	3207	9.94	0.00	2	70	
25	B25	Segment	6675	Rolling	3207	9.94	0.00	2	70	
26	D26	Off Ramp	1500	Rolling	3207	9.94	0.00	2	70	
27	D27	Off Ramp	1500	Rolling	2979	10.55	0.00	2	70	
28	BALFOUR PKWY	B28	Basic Segment	1000	Rolling	2220	13.47	0.00	2	70
29	M29	On Ramp	1500	Rolling	3142	10.10	0.00	2	70	
30	B30	Segment	1425	Rolling	3142	10.10	0.00	2	70	
31	D31	Off Ramp	1500	Rolling	3142	10.10	0.00	2	70	
32	B32	Basic Segment	600	Rolling	2791	11.12	0.00	2	70	
33	US 64 - 4 SEASONS BL	B33	Weaving	1400	Rolling	3231	9.88	0.00	3	70
34	B34	Basic Segment	225	Rolling	2721	11.36	0.00	2	70	
35	M35	On Ramp	1500	Rolling	3105	10.20	0.00	2	70	
36	B36	Basic Segment	13400	Rolling	3105	10.20	0.00	2	70	
37	D37	Off Ramp	1500	Rolling	3105	10.20	0.00	2	70	
38	UPWARD RD	B38	Basic Segment	2300	Rolling	2525	12.08	0.00	2	70
39	M39	On Ramp	1425	Rolling	3325	9.66	0.00	2	70	
40	D40	Off Ramp	1425	Rolling	3325	9.66	0.00	2	70	
41	US 25 SYSTEM (O&G)	B41	Basic Segment	2725	Rolling	2494	9.88	0.00	2	70
42	M42	On Ramp	1500	Rolling	2516	9.87	0.00	2	70	
43	B43	Basic Segment	21625	Rolling	2516	9.87	0.00	2	70	
44	D44	Off Ramp	1500	Rolling	2516	9.87	0.00	2	70	
45	HOLBERT COVE RD	B45	Basic Segment	2600	Rolling	2321	10.36	0.00	2	70
46	M46	On Ramp	1500	Rolling	2472	9.97	0.00	2	70	
47	END PROJECT SB	B47	Basic Segment	5280	Rolling	2472	9.97	0.00	2	70

Ramp Data									
Seg #	Type	Adj. Demand	% Trucks	% RVs	Lanes	Accel/Decel Length	FFS		
2	Off Ramp	559	3.00	0.00	1	600	25		
4	On Ramp	662	3.00	0.00	1	525	45		
6	Off Ramp	1150	3.00	0.00	2	575	45		
8	On Ramp	689	3.00	0.00	1	650	45		
10	On Ramp	1225	3.00	0.00	1	425	45		
12	On Ramp	1123	3.00	0.00	1	475	45		
14	Off Ramp	168	17.00	0.00	1	425	45		
16	On Ramp	168	17.00	0.00	1	950	45		
18	Off Ramp	1022	4.00	0.00	1	700	45		
20	On Ramp	693	4.00	0.00	1	600	45		
22	Off Ramp	277	100.00	0.00	1	375	45		
24	On Ramp	277	100.00	0.00	1	975	45		
26	Off Ramp	228	2.00	0.00	1	450	45		
27	Off Ramp	799	2.00	0.00	1	450	25		
29	On Ramp	922	2.00	0.00	1	1000	45		
31	Off Ramp	351	2.00	0.00	1	475	50		
35	On Ramp	384	2.00	0.00	1	450	50		
37	Off Ramp	580	2.00	0.00	1	225	45		
39	On Ramp	800	2.00	0.00	1	800	45		
40	Off Ramp	831	9.00	0.00	1	675	50		
42	On Ramp	22	9.00	0.00	1	1300	45		
44	Off Ramp	195	4.00	0.00	1	300	45		
46	On Ramp	151	4.00	0.00	1	800	45		

Weaving Segment Data											
Seg #	Ramp to Ramp Prop.	Adj. Demand	% Trucks	% RVs	Lanes	FFS	Adj. Demand	% Trucks	% RVs	Lanes	FFS
33	0.050	440	2.00	0.00	1	25	510	2.00	0.00	1	25

Time Period Independent Weaving Segment Data

Seg #	Configuration	Short Length	# Weaving Lanes	Min. Lane Changes Freeway Ramp	Min. Lane Changes Ramp-Freeway	Min. Lane Changes Ramp-Ramp
33	400	2	1	1	0	

Time Period Results

Time Period 1

Seg #	From	To	Type	Adj. Demand	Vol. Served	Capacity (pc/h)	Capacity (veh/h)	d/c Ratio	v/c ratio	Queue Length(ft)	Avg. Speed (mi/h)	Density (pc/mi/ln)	Density (veh/mi/ln)	Avg. Travel Time (min/veh)	Free-Flow Travel Time (min/veh)	Mainline Delay (min/veh)	System Delay (min/veh)	VMT Demand (veh-mi)	VMT Volume (veh-mi)	VHT (veh-hrs)	VHD (veh-hrs)	LOS
1	BEGIN PROJECT SB	B1	Basic Segment	3997	3997	4700	4160	0.96	0.96	0	54.6	41.4	36.6	0.96	0.80	0.2	0.2	870.6	870.6	18.0	2.6	E
2	D2	Off Ramp	3997	3997	4700	4160	0.96	0.96	0	50.9	44.3	39.2	0.33	0.26	0.1	0.1	283.9	283.9	5.6	1.2	E	
3	NC 191 - BREVARD RD	B3	Basic Segment	3428	3428	4700	4109	0.83	0.83	0	60.5	32.4	28.3	0.18	0.17	0.0	0.0	158.3	158.3	2.6	0.2	D
4	M4	On Ramp	4090	4090	4700	4167	0.98	0.98	0	50.0	45.8	40.6	0.34	0.26	0.1	0.1	290.3	290.3	5.8	1.3	E	
5	B5	Segment	4090	4090	4700	4167	0.98	0.98	0	53.4	43.2	38.3	0.39	0.28	0.7	0.7	363.0	363.0	6.1	1.2	E	
6	D6	Off Ramp	4090	4090	4700	4167	0.98	0.98	0	55.7	41.4	36.7	0.31	0.26	0.0	0.0	290.5	290.5	5.2	0.8	E	
7	NC 146 - LONG SHOALS	B7	Basic Segment	2940	2940	4700	4051	0.73	0.73	0	63.7	28.8	23.1	0.45	0.44	0.0	0.0	348.0	348.0	5.5	0.1	D
8	M8	On Ramp	3629	3629	4700	4129	0.88	0.88	0	53.6	38.2	33.6	0.32	0.26	0.1	0.1	257.7	257.7	4.8	0.8	E	
9	B9	Segment	3629	3629	4700	4129	0.88	0.88	0	58.7	35.2	30.9	2.03	1.84	0.2	0.2	1804.2	1804.2	30.7	3.0	E	
10	D10	Off Ramp	3629	3629	4700	4129	0.88	0.88	0	55.5	37.2	32.7	0.31	0.26	0.0	0.0	257.7	257.7	4.6	0.7	E	
11	NC 280 - AIRPORT RD	B11	Basic Segment	2403	2403	4700	3963	0.61	0.61	0	64.6	22.1	18.6	0.40	0.40	0.0	0.0	258.8	258.8	4.0	0.0	C
12	M12	On Ramp	3536	3536	4700	4120	0.86	0.86	0	53.8	36.9	32.4	0.32	0.26	0.1	0.1	251.1	251.1	4.7	0.8	E	
13	B13	Segment	3536	3536	4700	4120	0.86	0.86	0	59.6	32.8	29.7	0.10	0.09	0.0	0.0	87.9	87.9	1.5	0.1	D	
14	D14	Off Ramp	3536	3536	4700	4120	0.86	0.86	0	57.7	34.9	30.6	0.30	0.26	0.0	0.0	251.1	251.1	4.4	0.5	D	
15	REST AREA SB	B15	Basic Segment	3368	3368	4700	4141	0.81	0.81	0	61.3	31.2	27.5	0.32	0.30	0.0	0.0	275.1	275.1	4.5	0.3	D
16	M16	On Ramp	3536	3536	4700	4120	0.86	0.86	0	54.8	36.4	31.9	0.31	0.26	0.0	0.0	251.1	251.1	4.6	0.7	E	
17	B17	Segment	3536	3536	4700	4120	0.86	0.86	0	59.6	32.8	29.7	1.34	1.23	0.1	0.1	1180.3	1180.3	19.8	1.6	D	
18	D18	Off Ramp	3536	3536	4700	4120	0.86	0.86	0	55.9	36.1	31.6	0.30	0.26	0.0	0.0	251.1	251.1	4.5	0.6	E	
19	US 25 - ASHVILLE HWY	B19	Basic Segment	2514	2514	4700	4005	0.63	0.63	0	64.5	22.9	19.5	0.37	0.36	0.0	0.0	247.0	247.0	3.8	0.0	C
20	M20	On Ramp	3207	3207	4700	4090	0.78	0.78	0	55.5	32.8	28.5	0.31	0.26	0.0	0.0	227.8	227.8	4.1	0.6	D	
21	B21	Segment	3207	3207	4800	4177	0.77	0.77	0	65.2	28.3	24.6	1.19	1.11	0.1	0.1	1036.4	1036.4	15.9	1.1	D	
22	D22	Off Ramp	3207	3207	4800	4177	0.77	0.77	0	59.9	30.8	26.8	0.28	0.24	0.0	0.0	227.8	227.8	3.8	0.5	D	
23	WEIGH STATION SB	B23	Basic Segment	2930	2930	4800	4700	0.62	0.62	0	69.0	21.7	21.2	0.25	0.24	0.0	0.0	208.1	208.1	3.0	0.0	C
24	M24	On Ramp	3207	3207	4800	4177	0.77	0.77	0	60.6	26.9	23.4	0.28	0.24	0.0	0.0	227.8	227.8	3.8	0.5	C	
25	B25	Segment	3207	3207	4800	4177	0.77	0.77	0	65.2	28.3	24.6	1.16	1.08	0.1	0.1	1013.6	1013.6	15.5	1.1	D	
26	D26	Off Ramp</																				

M4	OnRamp	0.98	50.0	45.8	40.6	0.34	0.26	0.290.5	0.290.5	5.81	1.34
B5	Basic	0.98	53.4	43.2	38.3	3.99	3.28	3,631.0	3,631.0	68.06	12.20
D6	OffRamp	0.98	55.7	41.4	36.7	0.31	0.26	0.290.5	0.290.5	5.22	0.75
NC 146 - LONG SHOALS- B7	Basic	0.73	63.7	26.8	23.1	0.45	0.44	0,348.0	0,348.0	5.47	0.11
M8	OnRamp	0.88	53.6	38.2	33.6	0.32	0.26	0.257.7	0.257.7	4.81	0.85
B9	Basic	0.88	58.7	35.2	30.9	2.03	1.84	1,804.2	1,804.2	30.73	2.97
D10	OffRamp	0.88	55.5	37.2	32.7	0.31	0.26	0.257.7	0.257.7	4.64	0.68
NC 280 - AIRPORT RD-B11	Basic	0.61	64.6	22.1	18.6	0.40	0.40	0,258.8	0,258.8	4.01	0.03
M12	OnRamp	0.86	53.8	36.9	32.4	0.32	0.26	0.251.1	0.251.1	4.67	0.80
B13	Basic	0.86	59.6	33.8	29.7	0.10	0.09	0,087.9	0,087.9	1.47	0.12
D14	OffRamp	0.86	57.7	34.9	30.6	0.30	0.26	0.251.1	0.251.1	4.35	0.49
AREA SB B15	Basic	0.81	61.3	31.2	27.5	0.32	0.30	0,275.1	0,275.1	4.49	0.26
M16	OnRamp	0.86	54.8	36.4	31.9	0.31	0.26	0.251.1	0.251.1	4.59	0.72
B17	Basic	0.86	59.6	33.8	29.7	1.34	1.23	1,180.3	1,180.3	19.80	1.64
D18	OffRamp	0.86	55.9	36.1	31.6	0.30	0.26	0.251.1	0.251.1	4.49	0.63
US 25 - ASHEVILLE HWY-B19	Basic	0.63	64.5	22.9	19.5	0.37	0.36	0,247.0	0,247.0	3.83	0.03
M20	OnRamp	0.78	55.5	32.8	28.5	0.31	0.26	0.227.8	0.227.8	4.11	0.60
B21	Basic	0.77	65.2	28.3	24.6	1.19	1.11	1,036.4	1,036.4	15.89	1.09
D22	OffRamp	0.77	59.9	30.8	26.8	0.28	0.24	0,227.8	0,227.8	3.80	0.55
WILSON STATION SB-B23	Basic	0.62	69.0	21.7	21.2	0.25	0.24	0,208.1	0,208.1	3.02	0.04
M24	OnRamp	0.77	60.6	26.9	23.4	0.28	0.24	0,227.8	0,227.8	3.76	0.50
B25	Basic	0.77	65.2	28.3	24.6	1.16	1.08	1,013.6	1,013.6	15.54	1.06
D26	OffRamp	0.77	61.1	30.2	26.3	0.28	0.24	0,227.8	0,227.8	3.73	0.48
D27	OffRamp	0.72	53.4	32.9	28.4	0.32	0.24	0,213.6	0,213.6	4.04	0.91
BALFOUR PROXY-B28	Basic	0.56	67.7	19.7	16.4	0.17	0.16	0,105.1	0,105.1	1.55	0.05
M29	OnRamp	0.75	59.6	30.1	26.1	0.29	0.24	0,232.2	0,232.2	3.74	0.56
B30	Basic	0.75	65.7	27.5	23.9	0.25	0.23	0,212.0	0,212.0	3.23	0.20
D31	OffRamp	0.75	62.6	28.9	25.1	0.27	0.24	0,222.2	0,222.2	3.57	0.38
B32	Basic	0.68	67.9	24.0	20.6	0.10	0.10	0,079.3	0,079.3	1.17	0.04
US 14 - 4 SEASONS BL-W33	Weaving	0.61	55.6	22.3	19.4	0.29	0.23	0,214.2	0,214.2	3.85	0.80
B34	Basic	0.66	66.1	24.1	20.6	0.04	0.04	0,029.0	0,029.0	0.44	0.02
M35	OnRamp	0.75	58.4	30.5	26.5	0.29	0.24	0,220.5	0,220.5	3.78	0.63
B36	Basic	0.75	66.0	27.1	23.5	2.31	2.18	1,970.0	1,970.0	29.87	1.72
D37	OffRamp	0.75	60.2	29.8	25.8	0.28	0.24	0,220.5	0,220.5	3.67	0.52
UPWARD RD-B38	Basic	0.62	69.0	21.6	18.3	0.38	0.37	0,275.0	0,275.0	3.98	0.06
M39	OnRamp	0.79	58.3	32.4	28.3	0.28	0.23	0,224.3	0,224.3	3.85	0.65
D40	OffRamp	0.79	61.1	31.2	27.2	0.27	0.23	0,224.3	0,224.3	3.67	0.47
US 25 - STYER RD-B41	Basic	0.60	69.4	20.6	18.0	0.45	0.44	0,321.8	0,321.8	4.64	0.04
M42	OnRamp	0.60	62.3	23.1	20.2	0.27	0.24	0,178.7	0,178.7	2.87	0.31
B43	Basic	0.60	69.3	20.8	18.2	3.55	3.51	2,576.2	2,576.2	37.17	0.37
D44	OffRamp	0.60	61.1	23.6	20.6	0.28	0.24	0,178.7	0,178.7	2.82	0.37
HOLBERT COVE RD- B45	Basic	0.56	69.7	19.2	16.7	0.42	0.42	0,285.7	0,285.7	4.10	0.02
M46	OnRamp	0.59	61.2	23.1	20.1	0.28	0.24	0,175.6	0,175.6	2.87	0.36
END PROJECT SB-B47	Basic	0.59	69.4	20.5	17.8	0.86	0.86	0,618.0	0,618.0	8.90	0.07
Freeway			60.3	30.1	26.4	28.37	25.65	23,182.0	23,182.0	0,384.3	0,040.5

Density-Based LOS by Segment															
Segment	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Time Step	Basic	Off Ramp	Basic	On Ramp	Basic	Off Ramp	Basic	On Ramp	Basic	Off Ramp	Basic	On Ramp	Basic	Off Ramp	Basic
1	E	E	D	E	E	E	D	E	E	E	C	E	D	D	D
Density-Based LOS by Segment															
Segment	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Time Step	On Ramp	Basic	Off Ramp	Basic	On Ramp	Basic	Off Ramp	Basic	On Ramp	Basic	Off Ramp	Off Ramp	Basic	On Ramp	Basic
1	E	D	E	E	C	D	D	D	C	C	D	D	D	D	D
Density-Based LOS by Segment															
Segment	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Time Step	Off Ramp	Basic	Weaving	Basic	On Ramp	Basic	Off Ramp	Basic	On Ramp	Basic	Off Ramp	Basic	On Ramp	Basic	Off Ramp
1	D	C	C	C	C	D	D	D	C	D	D	C	C	C	C
Density-Based LOS by Segment															
Segment	46	47													
Time Step	On Ramp	Basic													
1	C	C													
Demand-Based LOS by Segment															
Time Step	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Demand-Based LOS by Segment															
Time Step	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Demand-Based LOS by Segment															
Time Step	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Demand-Based LOS by Segment															
Time Step	46	47													
1	-	-													

2040 Build 8/6 Lane

HCS 2010 Freeway Facilities

Project Properties

Analyst	CRS	Freeway Name	STIP I-4400 I-4700 I-26 Widening	Analysis Period	AM Peak
Analysis Date	2/4/2014 10:12:36 AM	From	Exit 59 (Holbert Cove Road)	Version Date	10/10/2012
Agency	HNTB North Carolina, PC	To	Exit 33 (NC 191)		
Location	I-26	Analysis Direction	Northbound		
User Notes	2040 Design Year - Build 6/8 Lane Combination Alternative				
File Name	C:\Temp\preview.xml				

Facility-wide Values

Jam Density (pc/h/ln)	190	Time Period Duration (min)	15	Facility Length (mi)	29.10100
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Segment Input Data

Time Period 1

Mainline Data										
Seg #	From	To	Type	Length	Terrain	Adj. Demand	% Trucks	% RVs	# Lanes	FFS
1	BEGIN PROJECT NB	B48	Basic Segment	5280	Rolling	2467	10.00	0.00	2	65
2		D49	Off Ramp	1500	Rolling	2467	10.00	0.00	2	65
3	HOLBERT COVE RD	B50	Basic Segment	2300	Rolling	2316	10.52	0.00	2	65
4		M51	On Ramp	1500	Rolling	2511	9.86	0.00	2	65
5		B52	Basic Segment	23550	Rolling	2511	9.86	0.00	2	65
6		D53	Off Ramp	1500	Rolling	2511	9.86	0.00	2	65
7	US 25 SYSTEM ICHG	B54	Basic Segment	1125	Rolling	2490	9.87	0.00	2	65
8		M55	On Ramp	1300	Rolling	3451	9.63	0.00	3	65
9		D56	Off Ramp	1300	Rolling	3451	9.63	0.00	3	65
10	UPWARD RD	B57	Basic Segment	2325	Rolling	2786	11.45	0.00	3	65
11		M58	On Ramp	1500	Rolling	3569	9.37	0.00	3	65
12		B59	Basic Segment	13525	Rolling	3569	9.37	0.00	3	65
13		D60	Off Ramp	1500	Rolling	3569	9.37	0.00	3	65
14		B61	Basic Segment	525	Rolling	3102	10.48	0.00	3	65
15	US 64 - 4 SEASONS BL	W62	Weaving	1375	Rolling	3503	9.51	0.00	4	65
16		B63	Basic Segment	550	Rolling	3133	10.40	0.00	3	65
17		M64	On Ramp	1500	Rolling	3765	8.99	0.00	3	65
18		B65	Basic Segment	925	Rolling	3765	8.99	0.00	3	65
19		D66	Off Ramp	1500	Rolling	3765	8.99	0.00	3	65
20		D67	Off Ramp	1500	Rolling	3552	9.41	0.00	3	65
21	BALFOUR PKWY	B68	Basic Segment	1000	Rolling	2825	11.32	0.00	3	65
22		M69	On Ramp	1500	Rolling	4004	8.57	0.00	3	65
23		B70	Basic Segment	6900	Rolling	4004	8.57	0.00	3	65
24		D71	Off Ramp	1500	Rolling	4004	8.57	0.00	3	65
25	WEIGH STATION NB	B72	Basic Segment	1700	Rolling	3290	-11.27	0.00	3	65
26		M73	On Ramp	1500	Rolling	4004	8.57	0.00	3	65
27		B74	Basic Segment	7100	Rolling	4004	8.57	0.00	3	65
28		D75	Off Ramp	1500	Rolling	4004	8.57	0.00	3	65
29	US 25 - ASHEVILLE HWY	B76	Basic Segment	1925	Rolling	3343	9.48	0.00	3	65
30		M77	On Ramp	1500	Rolling	4396	8.16	0.00	4	65
31		B78	Basic Segment	6875	Rolling	4396	8.16	0.00	4	65
32		D79	Off Ramp	1500	Rolling	4396	8.16	0.00	4	65
33	REST AREA NB	B80	Basic Segment	1900	Rolling	4227	7.81	0.00	4	65
34		M81	On Ramp	1500	Rolling	4396	8.16	0.00	4	65
35		B82	Basic Segment	525	Rolling	4396	8.16	0.00	4	65
36		D83	Off Ramp	1500	Rolling	4396	8.16	0.00	4	65
37	NC 280 - AIRPORT RD	B84	Basic Segment	2075	Rolling	3465	9.55	0.00	4	65
38		M85	On Ramp	1500	Rolling	4924	7.61	0.00	4	65
39		B86	Basic	10800	Rolling	4924	7.61	0.00	4	65

RampData							
Seg #	Type	Adj. Demand	% Trucks	% RVs	Lanes	Accel/Decel Length	FFS
2	Off Ramp	151	2.00	0.00	1	425	45
4	On Ramp	195	2.00	0.00	1	825	45
6	Off Ramp	21	9.00	0.00	1	650	25
8	On Ramp	961	9.00	0.00	1	0	50
9	Off Ramp	665	2.00	0.00	1	250	45
11	On Ramp	783	2.00	0.00	1	900	45
13	Off Ramp	467	2.00	0.00	1	650	50
17	On Ramp	632	2.00	0.00	1	900	50
19	Off Ramp	213	2.00	0.00	1	450	45
20	Off Ramp	727	2.00	0.00	1	450	25
22	On Ramp	1179	2.00	0.00	1	1000	45
24	Off Ramp	714	100.00	0.00	1	650	45
26	On Ramp	714	100.00	0.00	1	1200	45
28	Off Ramp	661	4.00	0.00	1	650	45
30	On Ramp	1053	4.00	0.00	1	0	45
32	Off Ramp	169	17.00	0.00	1	650	45
34	On Ramp	169	17.00	0.00	1	900	45
36	Off Ramp	931	3.00	0.00	1	650	45
38	On Ramp	1459	3.00	0.00	1	900	45
40	Off Ramp	836	2.00	0.00	1	650	45
42	On Ramp	1227	3.00	0.00	1	900	45
44	Off Ramp	742	3.00	0.00	1	775	25
46	On Ramp	569	2.00	0.00	1	1075	45

			Segment							
40		D87	Off Ramp	1500	Rolling	4924	7.61	0.00	4	65
41	NC 146 - LONG SHOALS	B88	Basic Segment	2400	Rolling	4088	8.76	0.00	4	65
42		M89	On Ramp	1500	Rolling	5315	7.43	0.00	4	65
43		B90	Basic Segment	20650	Rolling	5315	7.43	0.00	4	65
44		D91	Off Ramp	1500	Rolling	5315	7.43	0.00	4	65
45	NC 191 - BREVARD RD	B92	Basic Segment	1075	Rolling	4573	8.15	0.00	4	65
46		M93	On Ramp	1500	Rolling	5142	7.47	0.00	4	65
47	END PROJECT NB	B94	Basic Segment	3150	Rolling	5142	7.47	0.00	4	65

Weaving Segment Data											
Seg #	Ramp to Ramp Prop.	On-Ramp					Off-Ramp				
		Adj. Demand	% Trucks	% RVs	Lanes	FFS	Adj. Demand	% Trucks	% RVs	Lanes	FFS
15	0.050	401	2.00	0.00	1	25	370	2.00	0.00	1	25

Time Period Independent Weaving Segment Data

Seg #	Configuration	Short Length	# Weaving Lanes	Min. Lane Changes Freeway-Ramp	Min. Lane Changes Ramp-Freeway	Min. Lane Changes Ramp-Ramp
15	375	2	1	1	0	

Time Period Results

Time Period 1

Seg #	From	To	Type	Adj. Demand	Vol. Served	Capacity (pc/h)	Capacity (veh/h)	d/c Ratio	v/c ratio	Queue Length (ft)	Avg. Speed (mi/h)	Density (pc/mi/in)	Density (veh/mi/in)	Avg. Travel Time (min/veh)	Free-Flow Travel Time (min/veh)	Mainline Delay (min/veh)	System Delay (min/veh)	VMT Demand (veh-min)	VMT Volume (veh-min)	VHT (veh-hrs)	VHD (veh-hrs)	LOS
1	BEGIN PROJECT NB	B48	Basic Segment	2467	2467	4700	4087	0.60	0.60	0	65.0	21.8	19.0	0.92	0.92	0.0	0.0	616.8	616.8	9.5	0.0	C
2		D49	Off Ramp	2467	2467	4700	4087	0.60	0.60	0	57.8	24.5	21.3	0.29	0.26	0.0	0.0	175.2	175.2	3.0	0.3	C
3	HOLBERT COVE RD	B50	Basic Segment	2316	2316	4700	4059	0.57	0.57	0	64.7	20.7	17.9	0.40	0.40	0.0	0.0	252.2	252.2	3.9	0.0	C
4		M51	On Ramp	2511	2511	4700	4094	0.61	0.61	0	57.7	24.9	21.7	0.30	0.26	0.0	0.0	178.3	178.3	3.1	0.3	C
5		B52	Basic Segment	2511	2511	4700	4094	0.61	0.61	0	65.0	22.2	19.3	4.12	4.12	0.0	0.0	2799.9	2799.9	43.1	0.0	C
6		D53	Off Ramp	2511	2511	4700	4094	0.61	0.61	0	52.1	27.7	24.1	0.33	0.26	0.1	0.1	178.3	178.3	3.4	0.7	C
7	US 25 SYSTEM ICHG	B54	Basic Segment	2490	2490	4700	4094	0.61	0.61	0	63.5	22.5	19.6	0.20	0.20	0.0	0.0	132.6	132.6	2.1	0.0	C
8		M55	On Ramp	3451	3451	7050	6161	0.56	0.56	0	57.5	22.0	19.3	0.26	0.23	0.0	0.0	212.4	212.4	3.7	0.4	C
9		D56	Off Ramp	3451	3451	7050	6161	0.56	0.56	0	56.1	23.5	20.5	0.26	0.23	0.0	0.0	212.4	212.4	3.8	0.5	C
10	UPWARD RD	B57	Basic Segment	2786	2786	7050	6017	0.46	0.46	0	64.5	16.9	14.4	0.41	0.41	0.0	0.0	306.7	306.7	4.8	0.0	B
11		M58	On Ramp	3569	3569	7050	6181	0.58	0.58	0	59.3	22.7	19.9	0.29	0.26	0.0	0.0	253.5	253.5	4.3	0.4	C
12		B59	Basic Segment	3569	3569	7050	6181	0.58	0.58	0	65.0	20.9	18.3	2.36	2.36	0.0	0.0	2285.5	2285.5	35.2	0.0	C
13		D60	Off Ramp	3569	3569	7050	6181	0.58	0.58	0	61.9	21.9	19.2	0.28	0.26	0.0	0.0	253.5	253.5	4.1	0.2	C
14		B61	Basic Segment	3102	3102	7050	6092	0.51	0.51	0	64.4	18.6	16.1	0.09	0.09	0.0	0.0	77.1	77.1	1.2	0.0	C
15	US 64 - 4 SEASONS BL	W62	Weaving	3503	3503	8164	7145	0.49	0.49	0	53.6	18.7	16.3	0.29	0.24	0.1	0.1	228.1	228.1	4.3	0.7	B
16		B63	Basic Segment	3133	3133	7050	6099	0.51	0.51	0	62.6	19.3	16.7	0.10	0.10	0.0	0.0	81.6	81.6	1.3	0.0	C
17		M64	On Ramp	3765	3765	7050	6212	0.61	0.61	0	59.3	23.9	21.1	0.29	0.26	0.0	0.0	267.4	267.4	4.5	0.4	C
18		B65	Basic Segment	3765	3765	7050	6212	0.61	0.61	0	64.2	22.2	19.5	0.16	0.16	0.0	0.0	164.9	164.9	2.6	0.0	C
19		D66	Off Ramp	3765	3765	7050	6212	0.61	0.61	0	61.2	23.3	20.5	0.28	0.26	0.0	0.0	267.4	267.4	4.4	0.3	C
20		D67	Off Ramp	3552	3552	7050	6178	0.57	0.57	0	54.7	24.7	21.6	0.31	0.26	0.0	0.0	252.3	252.3	4.6	0.7	C
21	BALFOUR PKWY	B68	Basic Segment	2825	2825	7050	6027	0.47	0.47	0	63.6	17.3	14.8	0.18	0.17	0.0	0.0	133.8	133.8	2.1	0.0	B
22		M69	On Ramp	4004	4004	7050	6247	0.64	0.64	0	58.8	25.4	22.5	0.29	0.26	0.0	0.0	284.4	284.4	4.8	0.5	C
23		B70	Basic Segment	4004	4004	7050	6247	0.64	0.64	0	64.8	23.2	20.6	1.21	1.21	0.0	0.0	1308.1	1308.1	20.2	0.0	C
24		D71	Off Ramp	4004	4004	7050	6247	0.64	0.64	0	57.3	26.3	23.3	0.30	0.26	0.0	0.0	284.4	284.4	5.0	0.6	C
25	WEIGH STATION NB	B72	Basic Segment	3290	3290	7050	8484	0.39	0.39	0	64.4	14.1	17.0	0.30	0.30	0.0	0.0	264.8	264.8	4.1	0.0	B
26		M73	On Ramp	4004	4004	7050	6247	0.64	0.64	0	59.5	20.3	18.0	0.29	0.26	0.0	0.0	284.4	284.4	4.8	0.4	C
27		B74	Basic Segment	4004	4004	7050	6247	0.64	0.64	0	64.8	23.2	20.6	1.24	1.24	0.0	0.0	1346.0	1346.0	20.8	0.1	C
28		D75	Off Ramp	4004	4004	7050	6247	0.64	0.64	0	60.1	25.1	22.2	0.28	0.26	0.0	0.0	284.4	284.4	4.7	0.4	C

29	US 25 - ASHEVILLE HWY	B76	Basic Segment	3343	3343	7050	6173	0.54	0.54	0	64.7	19.7	17.2	0.34	0.34	0.0	0.0	304.7	304.7	4.7	0.0	C
30		M77	On Ramp	4396	4396	9400	8374	0.52	0.52	0	59.2	20.5	18.3	0.29	0.26	0.0	0.0	312.2	312.2	5.3	0.5	C
31		B78	Basic Segment	4396	4396	9400	8374	0.52	0.52	0	65.0	19.0	16.9	1.20	1.20	0.0	0.0	1431.0	1431.0	22.0	0.0	C
32		D79	Off Ramp	4396	4396	9400	8374	0.52	0.52	0	63.8	19.3	17.2	0.27	0.26	0.0	0.0	312.2	312.2	4.9	0.1	B
33	REST AREA NB	B80	Basic Segment	4227	4227	9400	8414	0.50	0.50	0	64.9	18.2	16.3	0.33	0.33	0.0	0.0	380.3	380.3	5.9	0.0	C
34		M81	On Ramp	4396	4396	9400	8374	0.52	0.52	0	60.4	20.2	18.0	0.28	0.26	0.0	0.0	312.2	312.2	5.2	0.4	C
35		B82	Basic Segment	4396	4396	9400	8374	0.52	0.52	0	64.1	19.2	17.1	0.09	0.09	0.0	0.0	109.3	109.3	1.7	0.0	C
36		D83	Off Ramp	4396	4396	9400	8374	0.52	0.52	0	62.0	19.9	17.7	0.28	0.26	0.0	0.0	312.2	312.2	5.0	0.2	B
37	NC 280 - AIRPORT RD	B84	Basic Segment	3465	3465	9400	8222	0.42	0.42	0	64.8	15.3	13.4	0.36	0.36	0.0	0.0	340.4	340.4	5.3	0.0	B
38		M85	On Ramp	4924	4924	9400	8437	0.58	0.58	0	59.6	22.7	20.4	0.29	0.26	0.0	0.0	349.7	349.7	5.9	0.5	C
39		B86	Basic Segment	4924	4924	9400	8437	0.58	0.58	0	65.0	21.1	18.9	1.89	1.89	0.0	0.0	2518.0	2518.0	38.7	0.0	C
40		D87	Off Ramp	4924	4924	9400	8437	0.58	0.58	0	62.2	22.1	19.8	0.27	0.26	0.0	0.0	349.7	349.7	5.6	0.2	C
41	NC 146 - LONG SHOALS	B88	Basic Segment	4088	4088	9400	8308	0.49	0.49	0	64.9	17.8	15.8	0.42	0.42	0.0	0.0	464.5	464.5	7.2	0.0	B
42		M89	On Ramp	5315	5315	9400	8458	0.63	0.63	0	59.5	24.6	22.1	0.29	0.26	0.0	0.0	377.5	377.5	6.3	0.5	C
43		B90	Basic Segment	5315	5315	9400	8458	0.63	0.63	0	64.9	22.7	20.5	3.61	3.61	0.0	0.0	5196.7	5196.7	80.1	0.1	C
44		D91	Off Ramp	5315	5315	9400	8458	0.63	0.63	0	58.4	25.3	22.8	0.29	0.26	0.0	0.0	377.5	377.5	6.5	0.7	C
45	NC 191 - BREVARD RD	B92	Basic Segment	4573	4573	9400	8376	0.55	0.55	0	64.2	20.0	17.8	0.19	0.19	0.0	0.0	232.8	232.8	3.6	0.0	C
46		M93	On Ramp	5142	5142	9400	8453	0.61	0.61	0	60.0	23.7	21.3	0.28	0.26	0.0	0.0	365.2	365.2	6.1	0.5	C
47	END PROJECT NB	B94	Basic Segment	5142	5142	9400	8453	0.61	0.61	0	64.9	22.0	19.8	0.55	0.55	0.0	0.0	766.9	766.9	11.8	0.0	C

Overall Results

Segment	Segment Type	Maximum d/c Ratio	Avg. Speed (mi/h)	Density (pc/mi/in)	Density (veh/mi/in)	Avg. Travel Time (min/veh)	Free-Flow Travel Time (min/veh)	VMT Demand (veh-min)	VMT Volume (veh-min)	VHT (veh-hrs)	VHD (veh-hrs)
BEGIN PROJECT NB-B48	Basic	0.60	65.0	21.8	19.0	0.92	0.92	0,616.8	0,616.8	9.49	0.00
-D49	OffRamp	0.60	57.8	24.5	21.3	0.29	0.26	0,175.2	0,175.2	3.03	0.33
HOLBERT COVE RD-B50	Basic	0.57	64.7	20.7	17.9	0.40	0.40	0,252.2	0,252.2	3.90	0.02
-M51	OnRamp	0.61	57.7	24.9	21.7	0.30	0.26	0,178.3	0,178.3	3.09	0.35
-B52	Basic	0.61	65.0	22.2	19.3	4.12	4.12	2,799.9	2,799.9	43.09	0.02
-D53	OffRamp	0.61	52.1	27.7	24.1	0.33	0.26	0,178.3	0,178.3	3.42	0.68
US 25 SYSTEM ICHG-B54	Basic	0.61	63.5	22.5	19.6	0.20	0.20	0,132.6	0,132.6	2.09	0.05
-M55	OnRamp	0.56	57.5	22.0	19.3	0.26	0.23	0,212.4	0,212.4	3.70	0.43
-D56	OffRamp	0.56	56.1	23.5	20.5	0.26	0.23	0,212.4	0,212.4	3.79	0.52
UPWARD RD-B57	Basic	0.46	64.5	16.9	14.4	0.41	0.41	0,306.7	0,306.7	4.75	0.03
-M58	OnRamp	0.58	59.3	22.7	19.9	0.29	0.26	0,253.5	0,253.5	4.27	0.37
-B59	Basic	0.58	65.0	20.9	18.3	2.36	2.36	2,285.5	2,285.5	35.16	0.00
-D60	OffRamp	0.58	61.9	21.9	19.2	0.28	0.26	0,253.5	0,253.5	4.10	0.20
-B61	Basic	0.51	64.4	18.6	16.1	0.09	0.09	0,077.1	0,077.1	1.20	0.01
US 64 - 4 SEASONS BL-W62	Weaving	0.49	53.6	18.7	16.3	0.29	0.24	0,228.1	0,228.1	4.25	0.74
-B63	Basic	0.51	62.6	19.3	16.7	0.10	0.10	0,081.6	0,081.6	1.30	0.05
-M64	OnRamp	0.61	59.3	23.9	21.1	0.29	0.26	0,267.4	0,267.4	4.51	0.40
-B65	Basic	0.61	64.2	22.2	19.5	0.16	0.16	0,164.9	0,164.9	2.57	0.03
-D66	OffRamp	0.61	61.2	23.3	20.5	0.28	0.26	0,267.4	0,267.4	4.37	0.26
-D67	OffRamp	0.57	54.7	24.7	21.6	0.31	0.26	0,252.3	0,252.3	4.61	0.73
BALFOUR PKWY-B68	Basic	0.47	63.6	17.3	14.8	0.18	0.17	0,133.8	0,133.8	2.10	0.04
-M69	OnRamp	0.64	58.8	25.4	22.5	0.29	0.26	0,284.4	0,284.4	4.84	0.46
-B70	Basic	0.64	64.8	23.2	20.6	1.21	1.21	1,308.1	1,308.1	20.17	0.05
-D71	OffRamp	0.64	57.3	26.3	23.3	0.30	0.26	0,284.4	0,284.4	4.96	0.59
WEIGH STATION NB-B72	Basic	0.39	64.4	14.1	17.0	0.30	0.30	0,264.8	0,264.8	4.11	0.04
-M73	OnRamp	0.64	59.5	20.3	18.0	0.29	0.26	0,284.4	0,284.4	4.78	0.40
-B74	Basic	0.64	64.8	23.2	20.6	1.24	1.24	1,346.0	1,346.0	20.76	0.05
-D75	OffRamp	0.64	60.1	25.1	22.2	0.28	0.26	0,284.4	0,284.4	4.73	0.36
US 25 - ASHEVILLE HWY-B76	Basic	0.54	64.7	19.7	17.2	0.34	0.34	0,304.7	0,304.7	4.71	0.02
-M77	OnRamp	0.52	59.2	20.5	18.3	0.29	0.26	0,312.2	0,312.2	5.28	0.47
-B78	Basic	0.52	65.0	19.0	16.9	1.20	1.20	1,431.0	1,431.0	22.02	0.00

-D79	OffRamp	0.52	63.8	19.3	17.2	0.27	0.26	0,312.2	0,312.2	4.90	0.09
REST AREA NB- B80	Basic	0.50	64.9	18.2	16.3	0.33	0.33	0,380.3	0,380.3	5.86	0.01
-M81	OnRamp	0.52	60.4	20.2	18.0	0.28	0.26	0,312.2	0,312.2	5.17	0.36
-B82	Basic	0.52	64.1	19.2	17.1	0.09	0.09	0,109.3	0,109.3	1.70	0.02
-D83	OffRamp	0.52	62.0	19.9	17.7	0.28	0.26	0,312.2	0,312.2	5.04	0.24
NC 280 - AIRPORT RD-B84	Basic	0.42	64.8	15.3	13.4	0.36	0.36	0,340.4	0,340.4	5.25	0.01
-M85	OnRamp	0.58	59.6	22.7	20.4	0.29	0.26	0,349.7	0,349.7	5.87	0.49
-B86	Basic	0.58	65.0	21.1	18.9	1.89	1.89	2,518.0	2,518.0	38.74	0.00
-D87	OffRamp	0.58	62.2	22.1	19.8	0.27	0.26	0,349.7	0,349.7	5.63	0.25
NC 146 - LONG SHOALS- B88	Basic	0.49	64.9	17.8	15.8	0.42	0.42	0,464.5	0,464.5	7.16	0.01
-M89	OnRamp	0.63	59.5	24.6	22.1	0.29	0.26	0,377.5	0,377.5	6.35	0.54
-B90	Basic	0.63	64.9	22.7	20.5	3.61	3.61	5,196.7	5,196.7	80.05	0.10
-D91	OffRamp	0.63	58.4	25.3	22.8	0.29	0.26	0,377.5	0,377.5	6.47	0.66
NC 191 - BREVARD RD-B92	Basic	0.55	64.2	20.0	17.8	0.19	0.19	0,232.8	0,232.8	3.63	0.05
-M93	OnRamp	0.61	60.0	23.7	21.3	0.28	0.26	0,365.2	0,365.2	6.09	0.47
END PROJECT NB-B94	Basic	0.61	64.9	22.0	19.8	0.55	0.55	0,766.9	0,766.9	11.82	0.02
Freeway			63.4	21.6	19.2	27.57	26.86	28,199.4	28,199.4	0,444.9	0,011.0

Density-Based LOS by Segment															
Segment	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Time Step	Basic	Off Ramp	Basic	On Ramp	Basic	Off Ramp	Basic	On Ramp	Off Ramp	Basic	On Ramp	Basic	Off Ramp	Basic	Weaving
1	C	C	C	C	C	C	C	C	C	B	C	C	C	C	B
Density-Based LOS by Segment															
Segment	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Time Step	Basic	On Ramp	Basic	Off Ramp	Off Ramp	Basic	On Ramp	Basic	Off Ramp	Basic	On Ramp	Basic	Off Ramp	Basic	On Ramp
1	C	C	C	C	C	B	C	C	C	B	C	C	C	C	C
Density-Based LOS by Segment															
Segment	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Time Step	Basic	Off Ramp	Basic	On Ramp	Basic	Off Ramp	Basic	On Ramp	Basic	Off Ramp	Basic	On Ramp	Basic	Off Ramp	Basic
1	C	B	C	C	C	B	B	C	C	C	B	C	C	C	C
Density-Based LOS by Segment															
Segment	46	47													
Time Step	On Ramp	Basic													
1	C	C													
Demand-Based LOS by Segment															
Time Step	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Demand-Based LOS by Segment															
Time Step	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Demand-Based LOS by Segment															
Time Step	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Demand-Based LOS by Segment															
Time Step	46	47													
1	.	.													

HCS 2010 Freeway Facilities

Project Properties

Analyst	CRS	Freeway Name	STIP I-4400 I-4700 I-26 Widening	Analysis Period	PM Peak
Analysis Date	2/4/2014 10:12:36 AM	From	Exit 59 (Holbert Cove Road)	Version Date	10/10/2012
Agency	HNTB North Carolina, PC	To	Exit 33 (NC 191)		
Location	I-26	Analysis Direction	Northbound		
User Notes	2040 Design Year - Build 6/8 Lane Combination Alternative				
File Name	C:\Temp\preview.xml				

Facility-wide Values

Jam Density (pc/h/ln)	190	Time Period Duration (min)	15	Facility Length (mi)	29.10100
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Segment Input Data

Time Period 1

Mainline Data										
Seg #	From	To	Type	Length	Terrain	Adj. Demand	% Trucks	% RVs	# Lanes	FFS
1	BEGIN PROJECT NB	B48	Basic Segment	5280	Rolling	3054	10.00	0.00	2	65
2		D49	Off Ramp	1500	Rolling	3054	10.00	0.00	2	65
3	HOLBERT COVE RD	B50	Basic Segment	2300	Rolling	2851	10.57	0.00	2	65
4		M51	On Ramp	1500	Rolling	3030	10.06	0.00	2	65
5		B52	Basic Segment	23550	Rolling	3030	10.06	0.00	2	65
6		D53	Off Ramp	1500	Rolling	3030	10.06	0.00	2	65
7	US 25 SYSTEM ICHG	B54	Basic Segment	1125	Rolling	3008	10.07	0.00	2	65
8		M55	On Ramp	1300	Rolling	4184	9.77	0.00	3	65
9		D56	Off Ramp	1300	Rolling	4184	9.77	0.00	3	65
10	UPWARD RD	B57	Basic Segment	2325	Rolling	3495	11.30	0.00	3	65
11		M58	On Ramp	1500	Rolling	4449	9.31	0.00	3	65
12		B59	Basic Segment	13525	Rolling	4449	9.31	0.00	3	65
13		D60	Off Ramp	1500	Rolling	4449	9.31	0.00	3	65
14		B61	Basic Segment	525	Rolling	3852	10.44	0.00	3	65
15	US 64 - 4 SEASONS BL	W62	Weaving	1375	Rolling	4360	9.46	0.00	4	65
16		B63	Basic Segment	550	Rolling	3993	10.14	0.00	3	65
17		M64	On Ramp	1500	Rolling	4615	9.04	0.00	3	65
18		B65	Basic Segment	925	Rolling	4615	9.04	0.00	3	65
19		D66	Off Ramp	1500	Rolling	4615	9.04	0.00	3	65
20		D67	Off Ramp	1500	Rolling	4328	9.51	0.00	3	65
21	BALFOUR PKWY	B68	Basic Segment	1000	Rolling	3624	10.97	0.00	3	65
22		M69	On Ramp	1500	Rolling	4874	8.67	0.00	3	65
23		B70	Basic Segment	6900	Rolling	4874	8.67	0.00	3	65
24		D71	Off Ramp	1500	Rolling	4874	8.67	0.00	3	65
25	WEIGH STATION NB	B72	Basic Segment	1700	Rolling	4160	-7.01	0.00	3	65
26		M73	On Ramp	1500	Rolling	4874	8.67	0.00	3	65
27		B74	Basic Segment	7100	Rolling	4874	8.67	0.00	3	65
28		D75	Off Ramp	1500	Rolling	4874	8.67	0.00	3	65
29	US 25 - ASHEVILLE HWY	B76	Basic Segment	1925	Rolling	4089	9.57	0.00	3	65
30		M77	On Ramp	1500	Rolling	5308	8.29	0.00	4	65
31		B78	Basic Segment	6875	Rolling	5308	8.29	0.00	4	65
32		D79	Off Ramp	1500	Rolling	5308	8.29	0.00	4	65
33	REST AREA NB	B80	Basic Segment	1900	Rolling	5139	8.00	0.00	4	65
34		M81	On Ramp	1500	Rolling	5308	8.29	0.00	4	65
35		B82	Basic Segment	525	Rolling	5308	8.29	0.00	4	65
36		D83	Off Ramp	1500	Rolling	5308	8.29	0.00	4	65
37	NC 280 - AIRPORT RD	B84	Basic Segment	2075	Rolling	4282	9.56	0.00	4	65
38		M85	On Ramp	1500	Rolling	5904	7.75	0.00	4	65
39		B86	Basic	10800	Rolling	5904	7.75	0.00	4	65

RampData							
Seg #	Type	Adj. Demand	% Trucks	% RVs	Lanes	Accel/Decel Length	FFS
2	Off Ramp	203	2.00	0.00	1	425	45
4	On Ramp	179	2.00	0.00	1	825	45
6	Off Ramp	22	9.00	0.00	1	650	25
8	On Ramp	1176	9.00	0.00	1	0	50
9	Off Ramp	689	2.00	0.00	1	250	45
11	On Ramp	954	2.00	0.00	1	900	45
13	Off Ramp	597	2.00	0.00	1	650	50
17	On Ramp	622	2.00	0.00	1	900	50
19	Off Ramp	287	2.00	0.00	1	450	45
20	Off Ramp	704	2.00	0.00	1	450	25
22	On Ramp	1250	2.00	0.00	1	1000	45
24	Off Ramp	714	100.00	0.00	1	650	45
26	On Ramp	714	100.00	0.00	1	1200	45
28	Off Ramp	785	4.00	0.00	1	650	45
30	On Ramp	1219	4.00	0.00	1	0	45
32	Off Ramp	169	17.00	0.00	1	650	45
34	On Ramp	169	17.00	0.00	1	900	45
36	Off Ramp	1026	3.00	0.00	1	650	45
38	On Ramp	1622	3.00	0.00	1	900	45
40	Off Ramp	965	2.00	0.00	1	650	45
42	On Ramp	1290	3.00	0.00	1	900	45
44	Off Ramp	812	3.00	0.00	1	775	25
46	On Ramp	693	2.00	0.00	1	1075	45

			Segment							
40		D87	Off Ramp	1500	Rolling	5904	7.75	0.00	4	65
41	NC 146 - LONG SHOALS	B88	Basic Segment	2400	Rolling	4939	8.88	0.00	4	65
42		M89	On Ramp	1500	Rolling	6229	7.66	0.00	4	65
43		B90	Basic Segment	20650	Rolling	6229	7.66	0.00	4	65
44		D91	Off Ramp	1500	Rolling	6229	7.66	0.00	4	65
45	NC 191 - BREVARD RD	B92	Basic Segment	1075	Rolling	5417	8.36	0.00	4	65
46		M93	On Ramp	1500	Rolling	6110	7.64	0.00	4	65
47	END PROJECT NB	B94	Basic Segment	3150	Rolling	6110	7.64	0.00	4	65

Weaving Segment Data											
Seg #	Ramp to Ramp Prop.	On-Ramp					Off-Ramp				
		Adj. Demand	% Trucks	% RVs	Lanes	FFS	Adj. Demand	% Trucks	% RVs	Lanes	FFS
15	0.050	508	2.00	0.00	1	25	367	2.00	0.00	1	25

Time Period Independent Weaving Segment Data

Seg #	Configuration	Short Length	# Weaving Lanes	Min. Lane Changes Freeway-Ramp	Min. Lane Changes Ramp-Freeway	Min. Lane Changes Ramp-Ramp
15	375	2	1	1	0	

Time Period Results

Time Period 1

Seg #	From	To	Type	Adj. Demand	Vol. Served	Capacity (pc/h)	Capacity (veh/h)	d/c Ratio	v/c ratio	Queue Length (ft)	Avg. Speed (mi/h)	Density (pc/mi/in)	Density (veh/mi/in)	Avg. Travel Time (min/veh)	Free-Flow Travel Time (min/veh)	Mainline Delay (min/veh)	System Delay (min/veh)	VMT Demand (veh-min)	VMT Volume (veh-min)	VHT (veh-hrs)	VHD (veh-hrs)	LOS
1	BEGIN PROJECT NB	B48	Basic Segment	3054	3054	4700	4087	0.75	0.75	0	63.2	27.8	24.2	0.95	0.92	0.0	0.0	763.5	763.5	12.1	0.3	D
2		D49	Off Ramp	3054	3054	4700	4087	0.75	0.75	0	57.7	30.4	26.5	0.30	0.26	0.0	0.0	216.9	216.9	3.8	0.4	D
3	HOLBERT COVE RD	B50	Basic Segment	2851	2851	4700	4057	0.70	0.70	0	64.1	25.8	22.2	0.41	0.40	0.0	0.0	310.5	310.5	4.8	0.1	C
4		M51	On Ramp	3030	3030	4700	4084	0.74	0.74	0	56.4	30.9	26.8	0.30	0.26	0.0	0.0	215.2	215.2	3.8	0.5	D
5		B52	Basic Segment	3030	3030	4700	4084	0.74	0.74	0	63.3	27.5	23.9	4.23	4.12	0.1	0.1	3378.6	3378.6	53.4	1.4	D
6		D53	Off Ramp	3030	3030	4700	4084	0.74	0.74	0	52.1	33.5	29.1	0.33	0.26	0.1	0.1	215.2	215.2	4.1	0.8	D
7	US 25 SYSTEM ICHG	B54	Basic Segment	3008	3008	4700	4083	0.74	0.74	0	63.4	27.3	23.7	0.20	0.20	0.0	0.0	160.2	160.2	2.5	0.1	D
8		M55	On Ramp	4184	4184	7050	6149	0.68	0.68	0	56.0	27.4	23.9	0.26	0.23	0.0	0.0	257.5	257.5	4.6	0.6	C
9		D56	Off Ramp	4184	4184	7050	6149	0.68	0.68	0	55.2	29.0	25.3	0.27	0.23	0.0	0.0	257.5	257.5	4.7	0.7	D
10	UPWARD RD	B57	Basic Segment	3495	3495	7050	6028	0.58	0.58	0	64.5	21.1	18.1	0.41	0.41	0.0	0.0	384.7	384.7	6.0	0.0	C
11		M58	On Ramp	4449	4449	7050	6186	0.72	0.72	0	58.0	28.9	25.4	0.29	0.26	0.0	0.0	316.0	316.0	5.4	0.6	D
12		B59	Basic Segment	4449	4449	7050	6186	0.72	0.72	0	63.8	26.5	23.2	2.41	2.36	0.0	0.0	2849.1	2849.1	44.7	0.8	D
13		D60	Off Ramp	4449	4449	7050	6186	0.72	0.72	0	61.4	27.5	24.2	0.28	0.26	0.0	0.0	316.0	316.0	5.1	0.3	C
14		B61	Basic Segment	3852	3852	7050	6095	0.63	0.63	0	64.3	23.1	20.0	0.09	0.09	0.0	0.0	95.8	95.8	1.5	0.0	C
15	US 64 - 4 SEASONS BL	W62	Weaving	4360	4360	8219	7198	0.61	0.61	0	51.8	24.0	21.1	0.30	0.24	0.1	0.1	283.9	283.9	5.5	1.1	C
16		B63	Basic Segment	3993	3993	7050	6119	0.65	0.65	0	62.2	24.6	21.4	0.10	0.10	0.0	0.0	104.0	104.0	1.7	0.1	C
17		M64	On Ramp	4615	4615	7050	6208	0.74	0.74	0	58.1	30.0	26.4	0.29	0.26	0.0	0.0	327.8	327.8	5.6	0.6	D
18		B65	Basic Segment	4615	4615	7050	6208	0.74	0.74	0	63.3	27.6	24.3	0.17	0.16	0.0	0.0	202.1	202.1	3.2	0.1	D
19		D66	Off Ramp	4615	4615	7050	6208	0.74	0.74	0	60.9	28.7	25.3	0.28	0.26	0.0	0.0	327.8	327.8	5.4	0.3	D
20		D67	Off Ramp	4328	4328	7050	6170	0.70	0.70	0	54.9	30.0	26.3	0.31	0.26	0.0	0.0	307.4	307.4	5.6	0.9	D
21	BALFOUR PKWY	B68	Basic Segment	3624	3624	7050	6054	0.60	0.60	0	63.7	22.1	19.0	0.18	0.17	0.0	0.0	171.6	171.6	2.7	0.1	C
22		M69	On Ramp	4874	4874	7050	6239	0.78	0.78	0	57.1	31.9	28.2	0.30	0.26	0.0	0.0	346.2	346.2	6.1	0.7	D
23		B70	Basic Segment	4874	4874	7050	6239	0.78	0.78	0	62.3	29.5	26.1	1.26	1.21	0.1	0.1	1592.4	1592.4	25.6	1.1	D
24		D71	Off Ramp	4874	4874	7050	6239	0.78	0.78	0	57.6	31.9	28.2	0.30	0.26	0.0	0.0	346.2	346.2	6.0	0.7	D
25	WEIGH STATION NB	B72	Basic Segment	4160	4160	7050	7878	0.53	0.53	0	64.4	19.3	21.5	0.30	0.30	0.0	0.0	334.8	334.8	5.2	0.0	C
26		M73	On Ramp	4874	4874	7050	6239	0.78	0.78	0	58.5	25.9	23.0	0.29	0.26	0.0	0.0	346.2	346.2	5.9	0.6	C
27		B74	Basic Segment	4874	4874	7050	6239	0.78	0.78	0	62.3	29.5	26.1	1.29	1.24	0.1	0.1	1638.5	1638.5	26.3	1.1	D
28		D75	Off Ramp	4874	4874	7050	6239	0.78	0.78	0	59.8	30.7	27.2	0.28	0.26	0.0	0.0	346.2	346.2	5.8	0.5	D

29	US 25 - ASHEVILLE HWY	B76	Basic Segment	4089	4089	7050	6165	0.66	0.66	0	64.6	24.1	21.1	0.34	0.34	0.0	0.0	372.7	372.7	5.8	0.0	C
30		M77	On Ramp	5308	5308	9400	8361	0.63	0.63	0	58.3	25.2	22.4	0.29	0.26	0.0	0.0	377.0	377.0	6.5	0.7	C
31		B78	Basic Segment	5308	5308	9400	8361	0.63	0.63	0	64.9	23.0	20.5	1.20	1.20	0.0	0.0	1727.9	1727.9	26.6	0.0	C
32		D79	Off Ramp	5308	5308	9400	8361	0.63	0.63	0	63.3	23.6	21.0	0.27	0.26	0.0	0.0	377.0	377.0	6.0	0.2	C
33	REST AREA NB	B80	Basic Segment	5139	5139	9400	8393	0.61	0.61	0	64.9	22.2	19.8	0.33	0.33	0.0	0.0	462.3	462.3	7.1	0.0	C
34		M81	On Ramp	5308	5308	9400	8361	0.63	0.63	0	59.7	24.8	22.1	0.29	0.26	0.0	0.0	377.0	377.0	6.3	0.5	C
35		B82	Basic Segment	5308	5308	9400	8361	0.63	0.63	0	64.0	23.3	20.7	0.09	0.09	0.0	0.0	131.9	131.9	2.1	0.0	C
36		D83	Off Ramp	5308	5308	9400	8361	0.63	0.63	0	61.6	24.2	21.5	0.28	0.26	0.0	0.0	377.0	377.0	6.1	0.3	C
37	NC 280 - AIRPORT RD	B84	Basic Segment	4282	4282	9400	8222	0.52	0.52	0	64.8	18.9	16.5	0.36	0.36	0.0	0.0	420.7	420.7	6.5	0.0	C
38		M85	On Ramp	5904	5904	9400	8421	0.70	0.70	0	58.4	27.8	24.9	0.29	0.26	0.0	0.0	419.3	419.3	7.2	0.7	C
39		B86	Basic Segment	5904	5904	9400	8421	0.70	0.70	0	64.1	25.7	23.0	1.91	1.89	0.0	0.0	3019.1	3019.1	47.1	0.6	C
40		D87	Off Ramp	5904	5904	9400	8421	0.70	0.70	0	61.6	26.7	23.9	0.28	0.26	0.0	0.0	419.3	419.3	6.8	0.4	C
41	NC 146 - LONG SHOALS	B88	Basic Segment	4939	4939	9400	8295	0.60	0.60	0	64.9	21.6	19.0	0.42	0.42	0.0	0.0	561.3	561.3	8.7	0.0	C
42		M89	On Ramp	6229	6229	9400	8431	0.74	0.74	0	58.4	29.4	26.4	0.29	0.26	0.0	0.0	442.4	442.4	7.6	0.8	D
43		B90	Basic Segment	6229	6229	9400	8431	0.74	0.74	0	63.4	27.4	24.6	3.70	3.61	0.1	0.1	6090.4	6090.4	96.1	2.4	D
44		D91	Off Ramp	6229	6229	9400	8431	0.74	0.74	0	58.0	29.9	26.9	0.29	0.26	0.0	0.0	442.4	442.4	7.6	0.8	D
45	NC 191 - BREVARD RD	B92	Basic Segment	5417	5417	9400	8353	0.65	0.65	0	64.1	23.8	21.1	0.19	0.19	0.0	0.0	275.7	275.7	4.3	0.1	C
46		M93	On Ramp	6110	6110	9400	8434	0.72	0.72	0	59.1	28.7	25.8	0.29	0.26	0.0	0.0	433.9	433.9	7.3	0.7	D
47	END PROJECT NB	B94	Basic Segment	6110	6110	9400	8434	0.72	0.72	0	63.7	26.7	24.0	0.56	0.55	0.0	0.0	911.3	911.3	14.3	0.3	D

Overall Results

Segment	Segment Type	Maximum d/c Ratio	Avg. Speed (mi/h)	Density (pc/mi/in)	Density (veh/mi/in)	Avg. Travel Time (min/veh)	Free-Flow Travel Time (min/veh)	VTM Demand (veh-min)	VTM Volume (veh-min)	VHT (veh-hrs)	VHD (veh-hrs)
BEGIN PROJECT NB-B48	Basic	0.75	63.2	27.8	24.2	0.95	0.92	0,763.5	0,763.5	12.08	0.33
-D49	OffRamp	0.75	57.7	30.4	26.5	0.30	0.26	0,216.9	0,216.9	3.76	0.42
HOLBERT COVE RD-B50	Basic	0.70	64.1	25.8	22.2	0.41	0.40	0,310.5	0,310.5	4.84	0.07
-M51	OnRamp	0.74	56.4	30.9	26.8	0.30	0.26	0,215.2	0,215.2	3.81	0.50
-B52	Basic	0.74	63.3	27.5	23.9	4.23	4.12	3,378.6	3,378.6	53.35	1.37
-D53	OffRamp	0.74	52.1	33.5	29.1	0.33	0.26	0,215.2	0,215.2	4.13	0.82
US 25 SYSTEM ICHG-B54	Basic	0.74	63.4	27.3	23.7	0.20	0.20	0,160.2	0,160.2	2.53	0.06
-M55	OnRamp	0.68	56.0	27.4	23.9	0.26	0.23	0,257.5	0,257.5	4.60	0.63
-D56	OffRamp	0.68	55.2	29.0	25.3	0.27	0.23	0,257.5	0,257.5	4.66	0.70
UPWARD RD-B57	Basic	0.58	64.5	21.1	18.1	0.41	0.41	0,384.7	0,384.7	5.97	0.05
-M58	OnRamp	0.72	58.0	28.9	25.4	0.29	0.26	0,316.0	0,316.0	5.45	0.58
-B59	Basic	0.72	63.8	26.5	23.2	2.41	2.36	2,849.1	2,849.1	44.65	0.82
-D60	OffRamp	0.72	61.4	27.5	24.2	0.28	0.26	0,316.0	0,316.0	5.15	0.29
-B61	Basic	0.63	64.3	23.1	20.0	0.09	0.09	0,095.8	0,095.8	1.49	0.02
US 64 - 4 SEASONS BL-W62	Weaving	0.61	51.8	24.0	21.1	0.30	0.24	0,283.9	0,283.9	5.48	1.11
-B63	Basic	0.65	62.2	24.6	21.4	0.10	0.10	0,104.0	0,104.0	1.67	0.07
-M64	OnRamp	0.74	58.1	30.0	26.4	0.29	0.26	0,327.8	0,327.8	5.64	0.60
-B65	Basic	0.74	63.3	27.6	24.3	0.17	0.16	0,202.1	0,202.1	3.19	0.08
-D66	OffRamp	0.74	60.9	28.7	25.3	0.28	0.26	0,327.8	0,327.8	5.38	0.34
-D67	OffRamp	0.70	54.9	30.0	26.3	0.31	0.26	0,307.4	0,307.4	5.60	0.87
BALFOUR PKWY-B68	Basic	0.60	63.7	22.1	19.0	0.18	0.17	0,171.6	0,171.6	2.70	0.06
-M69	OnRamp	0.78	57.1	31.9	28.2	0.30	0.26	0,346.2	0,346.2	6.06	0.74
-B70	Basic	0.78	62.3	29.5	26.1	1.26	1.21	1,592.4	1,592.4	25.56	1.06
-D71	OffRamp	0.78	57.6	31.9	28.2	0.30	0.26	0,346.2	0,346.2	6.01	0.68
WEIGH STATION NB-B72	Basic	0.53	64.4	19.3	21.5	0.30	0.30	0,334.8	0,334.8	5.20	0.04
-M73	OnRamp	0.78	58.5	25.9	23.0	0.29	0.26	0,346.2	0,346.2	5.92	0.60
-B74	Basic	0.78	62.3	29.5	26.1	1.29	1.24	1,638.5	1,638.5	26.30	1.09
-D75	OffRamp	0.78	59.8	30.7	27.2	0.28	0.26	0,346.2	0,346.2	5.79	0.46
US 25 - ASHEVILLE HWY-B76	Basic	0.66	64.6	24.1	21.1	0.34	0.34	0,372.7	0,372.7	5.77	0.03
-M77	OnRamp	0.63	58.3	25.2	22.4	0.29	0.26	0,377.0	0,377.0	6.46	0.66
-B78	Basic	0.63	64.9	23.0	20.5	1.20	1.20	1,727.9	1,727.9	26.63	0.05

-D79	OffRamp	0.63	63.3	23.6	21.0	0.27	0.26	0,377.0	0,377.0	5.96	0.16
REST AREA NB- B80	Basic	0.61	64.9	22.2	19.8	0.33	0.33	0,462.3	0,462.3	7.12	0.01
-M81	OnRamp	0.63	59.7	24.8	22.1	0.29	0.26	0,377.0	0,377.0	6.32	0.52
-B82	Basic	0.63	64.0	23.3	20.7	0.09	0.09	0,131.9	0,131.9	2.06	0.03
-D83	OffRamp	0.63	61.6	24.2	21.5	0.28	0.26	0,377.0	0,377.0	6.12	0.32
NC 280 - AIRPORT RD-B84	Basic	0.52	64.8	18.9	16.5	0.36	0.36	0,420.7	0,420.7	6.49	0.02
-M85	OnRamp	0.70	58.4	27.8	24.9	0.29	0.26	0,419.3	0,419.3	7.18	0.72
-B86	Basic	0.70	64.1	25.7	23.0	1.91	1.89	3,019.1	3,019.1	47.08	0.63
-D87	OffRamp	0.70	61.6	26.7	23.9	0.28	0.26	0,419.3	0,419.3	6.80	0.35
NC 146 - LONG SHOALS- B88	Basic	0.60	64.9	21.6	19.0	0.42	0.42	0,561.3	0,561.3	8.65	0.02
-M89	OnRamp	0.74	58.4	29.4	26.4	0.29	0.26	0,442.4	0,442.4	7.57	0.77
-B90	Basic	0.74	63.4	27.4	24.6	3.70	3.61	6,090.4	6,090.4	96.07	2.37
-D91	OffRamp	0.74	58.0	29.9	26.9	0.29	0.26	0,442.4	0,442.4	7.63	0.82
NC 191 - BREVARD RD-B92	Basic	0.65	64.1	23.8	21.1	0.19	0.19	0,275.7	0,275.7	4.30	0.06
-M93	OnRamp	0.72	59.1	28.7	25.8	0.29	0.26	0,433.9	0,433.9	7.35	0.67
END PROJECT NB-B94	Basic	0.72	63.7	26.7	24.0	0.56	0.55	0,911.3	0,911.3	14.31	0.29
Freeway			62.3	26.6	23.6	28.06	26.86	34,050.2	34,050.2	0,546.8	0,023.0

Density-Based LOS by Segment															
Segment	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Time Step	Basic	Off Ramp	Basic	On Ramp	Basic	Off Ramp	Basic	On Ramp	Off Ramp	Basic	On Ramp	Basic	Off Ramp	Basic	Weaving
1	D	D	C	D	D	D	D	C	D	C	D	D	C	C	C
Density-Based LOS by Segment															
Segment	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Time Step	Basic	On Ramp	Basic	Off Ramp	Off Ramp	Basic	On Ramp	Basic	Off Ramp	Basic	On Ramp	Basic	Off Ramp	Basic	On Ramp
1	C	D	D	D	D	C	D	D	D	C	C	D	D	C	C
Density-Based LOS by Segment															
Segment	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Time Step	Basic	Off Ramp	Basic	On Ramp	Basic	Off Ramp	Basic	On Ramp	Basic	Off Ramp	Basic	On Ramp	Basic	Off Ramp	Basic
1	C	C	C	C	C	C	C	C	C	C	C	D	D	D	C
Density-Based LOS by Segment															
Segment	46	47													
Time Step	On Ramp	Basic													
1	D	D													
Demand-Based LOS by Segment															
Time Step	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Demand-Based LOS by Segment															
Time Step	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Demand-Based LOS by Segment															
Time Step	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Demand-Based LOS by Segment															
Time Step	46	47													
1	.	.													

HCS 2010 Freeway Facilities

Project Properties

Analyst	CRS	Freeway Name	STIP I-4400 I-4700 I-26 Widening	Analysis Period	AM Peak
Analysis Date	2/4/2014 3:14:33 PM	From	Exit 33 (NC 191)	Version Date	10/10/2012
Agency	HNTB North Carolina, PC	To	Exit 59 (Holbert Cove Rd)		
Location	I-26	Analysis Direction	Southbound		
User Notes	2040 Design Year - Build 6/8 Lane Combination Alternative				
File Name	C:\Temp\preview.xml				

Facility-wide Values

Jam Density (pc/h/In)	190	Time Period Duration (min)	15	Facility Length (mi)	28.95900
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Segment Input Data

Time Period 1

Mainline Data										
Seg #	From	To	Type	Length	Terrain	Adj. Demand	% Trucks	% RVs	# Lanes	FFS
1	BEGIN PROJECT SB	B1	Basic Segment	4600	Rolling	6342	7.95	0.00	4	65
2		D2	Off Ramp	1500	Rolling	6342	7.95	0.00	4	65
3	NC 191 - BREVARD RD	B3	Basic Segment	975	Rolling	5649	8.56	0.00	4	65
4		M4	On Ramp	1500	Rolling	6461	7.86	0.00	4	65
5		B5	Basic Segment	18750	Rolling	6461	7.86	0.00	4	65
6		D6	Off Ramp	1500	Rolling	6461	7.86	0.00	4	65
7	NC 146 - LONG SHOALS	B7	Basic Segment	2500	Rolling	5171	9.07	0.00	4	65
8		M8	On Ramp	1500	Rolling	6136	8.12	0.00	4	65
9		B9	Basic Segment	10500	Rolling	6136	8.12	0.00	4	65
10		D10	Off Ramp	1500	Rolling	6136	8.12	0.00	4	65
11	NC 280 - AIRPORT RD	B11	Basic Segment	2275	Rolling	4514	9.95	0.00	4	65
12		M12	On Ramp	1500	Rolling	5540	8.67	0.00	4	65
13		B13	Basic Segment	525	Rolling	5540	8.67	0.00	4	65
14		D14	Off Ramp	1500	Rolling	5540	8.67	0.00	4	65
15	REST AREA SB	B15	Basic Segment	1725	Rolling	5372	8.41	0.00	4	65
16		M16	On Ramp	1500	Rolling	5540	8.67	0.00	4	65
17		B17	Basic Segment	7050	Rolling	5540	8.67	0.00	4	65
18		D18	Off Ramp	1500	Rolling	5540	8.67	0.00	4	65
19	US 25 - ASHEVILLE HWY	B19	Basic Segment	2075	Rolling	4321	9.98	0.00	3	65
20		M20	On Ramp	1500	Rolling	5106	9.06	0.00	3	65
21		B21	Basic Segment	6825	Rolling	5106	9.06	0.00	3	65
22		D22	Off Ramp	1500	Rolling	5106	9.06	0.00	3	65
23	WEIGH STATION SB	B23	Basic Segment	1500	Rolling	4554	-1.96	0.00	3	65
24		M24	On Ramp	1500	Rolling	5106	9.06	0.00	3	65
25		B25	Basic Segment	6675	Rolling	5106	9.06	0.00	3	65
26		D26	Off Ramp	1500	Rolling	5106	9.06	0.00	3	65
27		D27	Off Ramp	1500	Rolling	4652	9.75	0.00	3	65
28	BALFOUR PKWY	B28	Basic Segment	1000	Rolling	3856	11.35	0.00	3	65
29		M29	On Ramp	1500	Rolling	4847	9.44	0.00	3	65
30		B30	Basic Segment	1425	Rolling	4847	9.44	0.00	3	65
31		D31	Off Ramp	1500	Rolling	4847	9.44	0.00	3	65
32		B32	Basic Segment	600	Rolling	4339	10.31	0.00	3	65
33	US 64 - 4 SEASONS BL	W33	Weaving	1400	Rolling	4936	9.31	0.00	4	65
34		B34	Basic Segment	225	Rolling	4314	10.36	0.00	3	65
35		M35	On Ramp	1500	Rolling	4681	9.70	0.00	3	65
36		B36	Basic Segment	13400	Rolling	4681	9.70	0.00	3	65
37		D37	Off Ramp	1500	Rolling	4681	9.70	0.00	3	65
38	UPWARD RD	B38	Basic Segment	2300	Rolling	3727	11.68	0.00	3	65

RampData							
Seg #	Type	Adj. Demand	% Trucks	% RVs	Lanes	Accel/Decel Length	FFS
2	Off Ramp	693	3.00	0.00	1	800	25
4	On Ramp	812	3.00	0.00	1	975	45
6	Off Ramp	1290	3.00	0.00	2	650	45
8	On Ramp	965	3.00	0.00	1	900	45
10	Off Ramp	1622	3.00	0.00	1	650	45
12	On Ramp	1026	3.00	0.00	1	900	45
14	Off Ramp	168	17.00	0.00	1	650	45
16	On Ramp	168	17.00	0.00	1	900	45
18	Off Ramp	1219	4.00	0.00	1	0	45
20	On Ramp	785	4.00	0.00	1	900	45
22	Off Ramp	552	100.00	0.00	1	650	45
24	On Ramp	552	100.00	0.00	1	900	45
26	Off Ramp	454	2.00	0.00	1	450	45
27	Off Ramp	796	2.00	0.00	1	450	25
29	On Ramp	991	2.00	0.00	1	1000	45
31	Off Ramp	508	2.00	0.00	1	650	50
35	On Ramp	367	2.00	0.00	1	1125	50
37	Off Ramp	954	2.00	0.00	1	225	45
39	On Ramp	689	2.00	0.00	1	900	45
40	Off Ramp	1168	9.00	0.00	1	0	50
42	On Ramp	21	9.00	0.00	1	1300	45
44	Off Ramp	180	4.00	0.00	1	300	45
46	On Ramp	203	4.00	0.00	1	800	45

39		M39	On Ramp	1425	Rolling	4416	10.17	0.00	3	65
40		D40	Off Ramp	1425	Rolling	4416	10.17	0.00	3	65
41	US 25 SYSTEM ICHG	B41	Basic Segment	2725	Rolling	3248	10.59	0.00	2	65
42		M42	On Ramp	1500	Rolling	3269	10.58	0.00	2	65
43		B43	Basic Segment	21625	Rolling	3269	10.58	0.00	2	65
44		D44	Off Ramp	1500	Rolling	3269	10.58	0.00	2	65
45	HOLBERT COVE RD	B45	Basic Segment	2600	Rolling	3089	10.96	0.00	2	65
46		M46	On Ramp	1500	Rolling	3292	10.53	0.00	2	65
47	END PROJECT SB	B47	Basic Segment	5280	Rolling	3292	10.53	0.00	2	65

Weaving Segment Data											
Seg #	Ramp to Ramp Prop.	On-Ramp					Off-Ramp				
		Adj. Demand	% Trucks	% RVs	Lanes	FFS	Adj. Demand	% Trucks	% RVs	Lanes	FFS
33	0.050	597	2.00	0.00	1	25	622	2.00	0.00	1	25

Time Period Independent Weaving Segment Data

Seg #	Configuration	Short Length	# Weaving Lanes	Min. Lane Changes Freeway-Ramp	Min. Lane Changes Ramp-Freeway	Min. Lane Changes Ramp-Ramp
33	400	2	1	1	0	

Time Period Results

Time Period 1

Seg #	From	To	Type	Adj. Demand	Vol. Served	Capacity (pc/h)	Capacity (veh/h)	d/c Ratio	v/c ratio	Queue Length (ft)	Avg. Speed (mi/h)	Density (pc/mi/in)	Density (veh/mi/in)	Avg. Travel Time (min/veh)	Free-Flow Travel Time (min/veh)	Mainline Delay (min/veh)	System Delay (min/veh)	VMT Demand (veh-min)	VMT Volume (veh-min)	VHT (veh-hrs)	VHD (veh-hrs)	LOS
1	BEGIN PROJECT SB	B1	Basic Segment	6342	6342	9400	8398	0.76	0.76	0	63.0	28.2	25.2	0.83	0.80	0.0	0.0	1381.3	1381.3	21.9	0.7	D
2		D2	Off Ramp	6342	6342	9400	8398	0.76	0.76	0	58.2	30.5	27.2	0.29	0.26	0.0	0.0	450.4	450.4	7.7	0.8	D
3	NC 191 - BREVARD RD	B3	Basic Segment	5649	5649	9400	8331	0.68	0.68	0	64.1	24.9	22.0	0.17	0.17	0.0	0.0	260.8	260.8	4.1	0.1	C
4		M4	On Ramp	6461	6461	9400	8409	0.77	0.77	0	56.8	31.6	28.3	0.30	0.26	0.0	0.0	458.9	458.9	8.1	1.0	D
5		B5	Basic Segment	6461	6461	9400	8409	0.77	0.77	0	62.7	28.8	25.8	3.40	3.28	0.1	0.1	5736.0	5736.0	91.5	3.3	D
6		D6	Off Ramp	6461	6461	9400	8409	0.77	0.77	0	61.7	29.3	26.2	0.28	0.26	0.0	0.0	458.9	458.9	7.4	0.4	D
7	NC 146 - LONG SHOALS	B7	Basic Segment	5171	5171	9400	8274	0.62	0.62	0	64.9	22.6	19.9	0.44	0.44	0.0	0.0	612.1	612.1	9.4	0.0	C
8		M8	On Ramp	6136	6136	9400	8380	0.73	0.73	0	58.7	29.1	25.9	0.29	0.26	0.0	0.0	435.8	435.8	7.4	0.7	D
9		B9	Basic Segment	6136	6136	9400	8380	0.73	0.73	0	63.5	27.1	24.1	1.88	1.84	0.0	0.0	3050.6	3050.6	48.0	1.1	D
10		D10	Off Ramp	6136	6136	9400	8380	0.73	0.73	0	60.1	28.6	25.5	0.28	0.26	0.0	0.0	435.8	435.8	7.3	0.5	D
11	NC 280 - AIRPORT RD	B11	Basic Segment	4514	4514	9400	8179	0.55	0.55	0	64.8	20.0	17.4	0.40	0.40	0.0	0.0	486.2	486.2	7.5	0.0	C
12		M12	On Ramp	5540	5540	9400	8319	0.67	0.67	0	59.3	26.2	23.2	0.29	0.26	0.0	0.0	393.5	393.5	6.6	0.6	C
13		B13	Basic Segment	5540	5540	9400	8319	0.67	0.67	0	63.9	24.5	21.7	0.09	0.09	0.0	0.0	137.7	137.7	2.2	0.0	C
14		D14	Off Ramp	5540	5540	9400	8319	0.67	0.67	0	63.2	24.8	21.9	0.27	0.26	0.0	0.0	393.5	393.5	6.2	0.2	C
15	REST AREA SB	B15	Basic Segment	5372	5372	9400	8347	0.64	0.64	0	64.8	23.3	20.7	0.30	0.30	0.0	0.0	438.8	438.8	6.8	0.0	C
16		M16	On Ramp	5540	5540	9400	8319	0.67	0.67	0	59.4	26.1	23.1	0.29	0.26	0.0	0.0	393.5	393.5	6.6	0.6	C
17		B17	Basic Segment	5540	5540	9400	8319	0.67	0.67	0	64.6	24.2	21.4	1.24	1.23	0.0	0.0	1849.3	1849.3	28.6	0.2	C
18		D18	Off Ramp	5540	5540	9400	8319	0.67	0.67	0	61.1	25.6	22.7	0.28	0.26	0.0	0.0	393.5	393.5	6.4	0.4	C
19	US 25 - ASHEVILLE HWY	B19	Basic Segment	4321	4321	7050	6132	0.70	0.70	0	64.1	25.8	22.5	0.37	0.36	0.0	0.0	424.5	424.5	6.6	0.1	C
20		M20	On Ramp	5106	5106	7050	6206	0.82	0.82	0	56.9	33.7	29.6	0.30	0.26	0.0	0.0	362.6	362.6	6.4	0.8	D
21		B21	Basic Segment	5106	5106	7050	6206	0.82	0.82	0	61.0	31.7	27.9	1.27	1.19	0.1	0.1	1650.0	1650.0	27.1	1.7	D
22		D22	Off Ramp	5106	5106	7050	6206	0.82	0.82	0	58.7	33.0	29.0	0.29	0.26	0.0	0.0	362.6	362.6	6.2	0.6	D
23	WEIGH STATION SB	B23	Basic Segment	4554	4554	7050	7263	0.63	0.63	0	64.4	22.9	23.6	0.26	0.26	0.0	0.0	323.4	323.4	5.0	0.0	C
24		M24	On Ramp	5106	5106	7050	6206	0.82	0.82	0	57.8	28.8	25.4	0.30	0.26	0.0	0.0	362.6	362.6	6.3	0.7	D
25		B25	Basic Segment	5106	5106	7050	6206	0.82	0.82	0	61.0	31.7	27.9	1.24	1.17	0.1	0.1	1613.8	1613.8	26.5	1.6	D
26		D26	Off Ramp	5106	5106	7050	6206	0.82	0.82	0	60.4	32.0	28.2	0.28	0.26	0.0	0.0	362.6	362.6	6.0	0.4	D
27		D27	Off Ramp	4652	4652	7050	6150	0.76	0.76	0	55.0	32.3	28.2	0.31	0.26	0.0	0.0	330.4	330.4	6.0	0.9	D
28	BALFOUR PKWY	B28	Basic Segment	3856	3856	7050	6024	0.64	0.64	0	63.7	23.6	20.2	0.18	0.17	0.0	0.0	182.6	182.6	2.9	0.1	C

29		M29	On Ramp	4847	4847	7050	6175	0.78	0.78	0	57.3	32.0	28.0	0.30	0.26	0.0	0.0	344.2	344.2	6.0	0.7	D
30		B30	Basic Segment	4847	4847	7050	6175	0.78	0.78	0	62.2	29.7	26.0	0.26	0.25	0.0	0.0	327.0	327.0	5.3	0.2	D
31		D31	Off Ramp	4847	4847	7050	6175	0.78	0.78	0	61.4	30.1	26.3	0.28	0.26	0.0	0.0	344.2	344.2	5.6	0.3	D
32		B32	Basic Segment	4339	4339	7050	6106	0.71	0.71	0	64.0	26.1	22.6	0.11	0.10	0.0	0.0	123.3	123.3	1.9	0.0	D
33	US 64 - 4 SEASONS BL	W33	Weaving	4936	4936	8097	7105	0.69	0.69	0	48.5	29.0	25.4	0.33	0.24	0.1	0.1	327.2	327.2	6.7	1.7	D
34		B34	Basic Segment	4314	4314	7050	6102	0.71	0.71	0	60.6	27.4	23.7	0.04	0.04	0.0	0.0	46.0	46.0	0.8	0.1	D
35		M35	On Ramp	4681	4681	7050	6154	0.76	0.76	0	58.3	30.6	26.7	0.29	0.26	0.0	0.0	332.5	332.5	5.7	0.6	D
36		B36	Basic Segment	4681	4681	7050	6154	0.76	0.76	0	62.9	28.4	24.8	2.42	2.34	0.1	0.1	2970.0	2970.0	47.2	1.5	D
37		D37	Off Ramp	4681	4681	7050	6154	0.76	0.76	0	59.7	29.9	26.1	0.29	0.26	0.0	0.0	332.5	332.5	5.6	0.5	D
38	UPWARD RD	B38	Basic Segment	3727	3727	7050	5999	0.62	0.62	0	64.8	22.5	19.2	0.40	0.40	0.0	0.0	405.9	405.9	6.3	0.0	C
39		M39	On Ramp	4416	4416	7050	6117	0.72	0.72	0	55.2	30.6	26.5	0.29	0.25	0.0	0.0	298.0	298.0	5.4	0.8	D
40		D40	Off Ramp	4416	4416	7050	6117	0.72	0.72	0	58.5	29.0	25.2	0.28	0.25	0.0	0.0	298.0	298.0	5.1	0.5	D
41	US 25 SYSTEM ICHG	B41	Basic Segment	3248	3248	4700	4056	0.80	0.80	0	61.7	30.5	26.3	0.50	0.48	0.0	0.0	419.1	419.1	6.8	0.3	D
42		M42	On Ramp	3269	3269	4700	4056	0.81	0.81	0	56.4	33.6	29.0	0.30	0.26	0.0	0.0	232.2	232.2	4.1	0.5	D
43		B43	Basic Segment	3269	3269	4700	4056	0.81	0.81	0	61.5	30.8	26.6	3.99	3.78	0.2	0.2	3347.2	3347.2	54.4	2.9	D
44		D44	Off Ramp	3269	3269	4700	4056	0.81	0.81	0	57.8	32.8	28.3	0.30	0.26	0.0	0.0	232.2	232.2	4.0	0.4	D
45	HOLBERT COVE RD	B45	Basic Segment	3089	3089	4700	4036	0.77	0.77	0	62.7	28.7	24.6	0.47	0.45	0.0	0.0	380.3	380.3	6.1	0.2	D
46		M46	On Ramp	3292	3292	4700	4059	0.81	0.81	0	55.3	34.4	29.7	0.31	0.26	0.0	0.0	233.8	233.8	4.2	0.6	D
47	END PROJECT SB	B47	Basic Segment	3292	3292	4700	4059	0.81	0.81	0	61.4	31.1	26.8	0.98	0.92	0.1	0.1	823.0	823.0	13.4	0.7	D

Overall Results

Segment	Segment Type	Maximum d/c Ratio	Avg. Speed (mi/h)	Density (pc/mi/in)	Density (veh/mi/in)	Avg. Travel Time (min/veh)	Free-Flow Travel Time (min/veh)	VTM Demand (veh-min)	VTM Volume (veh-min)	VHT (veh-hrs)	VHD (veh-hrs)
BEGIN PROJECT SB-B1	Basic	0.76	63.0	28.2	25.2	0.83	0.80	1,381.3	1,381.3	21.92	0.67
-D2	OffRamp	0.76	58.2	30.5	27.2	0.29	0.26	0,450.4	0,450.4	7.73	0.80
NC 191 - BREVARD RD-B3	Basic	0.68	64.1	24.9	22.0	0.17	0.17	0,260.8	0,260.8	4.07	0.06
-M4	OnRamp	0.77	56.8	31.6	28.3	0.30	0.26	0,458.9	0,458.9	8.08	1.02
-B5	Basic	0.77	62.7	28.8	25.8	3.40	3.28	5,736.0	5,736.0	91.53	3.29
-D6	OffRamp	0.77	61.7	29.3	26.2	0.28	0.26	0,458.9	0,458.9	7.44	0.38
NC 146 - LONG SHOALS-B7	Basic	0.62	64.9	22.6	19.9	0.44	0.44	0,612.1	0,612.1	9.44	0.02
-M8	OnRamp	0.73	58.7	29.1	25.9	0.29	0.26	0,435.8	0,435.8	7.42	0.72
-B9	Basic	0.73	63.5	27.1	24.1	1.88	1.84	3,050.6	3,050.6	48.01	1.08
-D10	OffRamp	0.73	60.1	28.6	25.5	0.28	0.26	0,435.8	0,435.8	7.25	0.55
NC 280 - AIRPORT RD-B11	Basic	0.55	64.8	20.0	17.4	0.40	0.40	0,486.2	0,486.2	7.51	0.03
-M12	OnRamp	0.67	59.3	26.2	23.2	0.29	0.26	0,393.5	0,393.5	6.64	0.59
-B13	Basic	0.67	63.9	24.5	21.7	0.09	0.09	0,137.7	0,137.7	2.16	0.04
-D14	OffRamp	0.67	63.2	24.8	21.9	0.27	0.26	0,393.5	0,393.5	6.23	0.18
REST AREA SB-B15	Basic	0.64	64.8	23.3	20.7	0.30	0.30	0,438.8	0,438.8	6.77	0.02
-M16	OnRamp	0.67	59.4	26.1	23.1	0.29	0.26	0,393.5	0,393.5	6.62	0.57
-B17	Basic	0.67	64.6	24.2	21.4	1.24	1.23	1,849.3	1,849.3	28.62	0.17
-D18	OffRamp	0.67	61.1	25.6	22.7	0.28	0.26	0,393.5	0,393.5	6.44	0.39
US 25 - ASHEVILLE HWY-B19	Basic	0.70	64.1	25.8	22.5	0.37	0.36	0,424.5	0,424.5	6.63	0.09
-M20	OnRamp	0.82	56.9	33.7	29.6	0.30	0.26	0,362.6	0,362.6	6.38	0.80
-B21	Basic	0.82	61.0	31.7	27.9	1.27	1.19	1,650.0	1,650.0	27.06	1.68
-D22	OffRamp	0.82	58.7	33.0	29.0	0.29	0.26	0,362.6	0,362.6	6.18	0.60
WEIGH STATION SB-B23	Basic	0.63	64.4	22.9	23.6	0.26	0.26	0,323.4	0,323.4	5.02	0.04
-M24	OnRamp	0.82	57.8	28.8	25.4	0.30	0.26	0,362.6	0,362.6	6.28	0.70
-B25	Basic	0.82	61.0	31.7	27.9	1.24	1.17	1,613.8	1,613.8	26.47	1.64
-D26	OffRamp	0.82	60.4	32.0	28.2	0.28	0.26	0,362.6	0,362.6	6.00	0.42
-D27	OffRamp	0.76	55.0	32.3	28.2	0.31	0.26	0,330.4	0,330.4	6.00	0.92
BALFOUR PKWY-B28	Basic	0.64	63.7	23.6	20.2	0.18	0.17	0,182.6	0,182.6	2.87	0.06
-M29	OnRamp	0.78	57.3	32.0	28.0	0.30	0.26	0,344.2	0,344.2	6.01	0.71
-B30	Basic	0.78	62.2	29.7	26.0	0.26	0.25	0,327.0	0,327.0	5.26	0.23
-D31	OffRamp	0.78	61.4	30.1	26.3	0.28	0.26	0,344.2	0,344.2	5.61	0.31

-B32	Basic	0.71	64.0	26.1	22.6	0.11	0.10	0,123.3	0,123.3	1.93	0.03
US 64 - 4 SEASONS BL-W33	Weaving	0.69	48.5	29.0	25.4	0.33	0.24	0,327.2	0,327.2	6.75	1.71
-B34	Basic	0.71	60.6	27.4	23.7	0.04	0.04	0,046.0	0,046.0	0.76	0.05
-M35	OnRamp	0.76	58.3	30.6	26.7	0.29	0.26	0,332.5	0,332.5	5.70	0.59
-B36	Basic	0.76	62.9	28.4	24.8	2.42	2.34	2,970.0	2,970.0	47.24	1.55
-D37	OffRamp	0.76	59.7	29.9	26.1	0.29	0.26	0,332.5	0,332.5	5.57	0.45
UPWARD RD-B38	Basic	0.62	64.8	22.5	19.2	0.40	0.40	0,405.9	0,405.9	6.27	0.02
-M39	OnRamp	0.72	55.2	30.6	26.5	0.29	0.25	0,298.0	0,298.0	5.39	0.81
-D40	OffRamp	0.72	58.5	29.0	25.2	0.28	0.25	0,298.0	0,298.0	5.10	0.51
US 25 SYSTEM ICHG-B41	Basic	0.80	61.7	30.5	26.3	0.50	0.48	0,419.1	0,419.1	6.79	0.34
-M42	OnRamp	0.81	56.4	33.6	29.0	0.30	0.26	0,232.2	0,232.2	4.12	0.55
-B43	Basic	0.81	61.5	30.8	26.6	3.99	3.78	3,347.2	3,347.2	54.39	2.89
-D44	OffRamp	0.81	57.8	32.8	28.3	0.30	0.26	0,232.2	0,232.2	4.02	0.45
HOLBERT COVE RD-B45	Basic	0.77	62.7	28.7	24.6	0.47	0.45	0,380.3	0,380.3	6.06	0.21
-M46	OnRamp	0.81	55.3	34.4	29.7	0.31	0.26	0,233.8	0,233.8	4.23	0.63
END PROJECT SB-B47	Basic	0.81	61.4	31.1	26.8	0.98	0.92	0,823.0	0,823.0	13.41	0.75
Freeway			61.6	28.4	25.0	28.26	26.73	35,557.9	35,557.9	0,577.4	0,030.3

Density-Based LOS by Segment															
Segment	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Time Step	Basic	Off Ramp	Basic	On Ramp	Basic	Off Ramp	Basic	On Ramp	Basic	Off Ramp	Basic	On Ramp	Basic	Off Ramp	Basic
1	D	D	C	D	D	D	C	D	D	D	C	C	C	C	C
Density-Based LOS by Segment															
Segment	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Time Step	On Ramp	Basic	Off Ramp	Basic	On Ramp	Basic	Off Ramp	Basic	On Ramp	Basic	Off Ramp	Off Ramp	Basic	On Ramp	Basic
1	C	C	C	C	D	D	D	C	D	D	D	D	C	D	D
Density-Based LOS by Segment															
Segment	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Time Step	Off Ramp	Basic	Weaving	Basic	On Ramp	Basic	Off Ramp	Basic	On Ramp	Off Ramp	Basic	On Ramp	Basic	Off Ramp	Basic
1	D	D	D	D	D	D	D	C	D	D	D	D	D	D	D
Density-Based LOS by Segment															
Segment	46	47													
Time Step	On Ramp	Basic													
1	D	D													
Demand-Based LOS by Segment															
Time Step	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Demand-Based LOS by Segment															
Time Step	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Demand-Based LOS by Segment															
Time Step	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Demand-Based LOS by Segment															
Time Step	46	47													
1	.	.													

HCS 2010 Freeway Facilities

Project Properties

Analyst	CRS	Freeway Name	STIP I-4400 I-4700 I-26 Widening	Analysis Period	PM Peak
Analysis Date	2/4/2014 3:14:33 PM	From	Exit 33 (NC 191)	Version Date	10/10/2012
Agency	HNTB North Carolina, PC	To	Exit 59 (Holbert Cove Rd)		
Location	I-26	Analysis Direction	Southbound		
User Notes	2040 Design Year - Build 6/8 Lane Combination Alternative				
File Name	C:\Temp\preview.xml				

Facility-wide Values

Jam Density (pc/h/In)	190	Time Period Duration (min)	15	Facility Length (mi)	28.95900
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Segment Input Data

Time Period 1

Mainline Data										
Seg #	From	To	Type	Length	Terrain	Adj. Demand	% Trucks	% RVs	# Lanes	FFS
1	BEGIN PROJECT SB	B1	Basic Segment	4600	Rolling	5152	7.75	0.00	4	65
2		D2	Off Ramp	1500	Rolling	5152	7.75	0.00	4	65
3	NC 191 - BREVARD RD	B3	Basic Segment	975	Rolling	4583	8.34	0.00	4	65
4		M4	On Ramp	1500	Rolling	5325	7.60	0.00	4	65
5		B5	Basic Segment	18750	Rolling	5325	7.60	0.00	4	65
6		D6	Off Ramp	1500	Rolling	5325	7.60	0.00	4	65
7	NC 146 - LONG SHOALS	B7	Basic Segment	2500	Rolling	4098	8.97	0.00	4	65
8		M8	On Ramp	1500	Rolling	4934	7.96	0.00	4	65
9		B9	Basic Segment	10500	Rolling	4934	7.96	0.00	4	65
10		D10	Off Ramp	1500	Rolling	4934	7.96	0.00	4	65
11	NC 280 - AIRPORT RD	B11	Basic Segment	2275	Rolling	3475	10.04	0.00	4	65
12		M12	On Ramp	1500	Rolling	4406	8.55	0.00	4	65
13		B13	Basic Segment	525	Rolling	4406	8.55	0.00	4	65
14		D14	Off Ramp	1500	Rolling	4406	8.55	0.00	4	65
15	REST AREA SB	B15	Basic Segment	1725	Rolling	4238	8.22	0.00	4	65
16		M16	On Ramp	1500	Rolling	4406	8.55	0.00	4	65
17		B17	Basic Segment	7050	Rolling	4406	8.55	0.00	4	65
18		D18	Off Ramp	1500	Rolling	4406	8.55	0.00	4	65
19	US 25 - ASHEVILLE HWY	B19	Basic Segment	2075	Rolling	3353	9.98	0.00	3	65
20		M20	On Ramp	1500	Rolling	4014	9.00	0.00	3	65
21		B21	Basic Segment	6825	Rolling	4014	9.00	0.00	3	65
22		D22	Off Ramp	1500	Rolling	4014	9.00	0.00	3	65
23	WEIGH STATION SB	B23	Basic Segment	1500	Rolling	3462	-5.51	0.00	3	65
24		M24	On Ramp	1500	Rolling	4014	9.00	0.00	3	65
25		B25	Basic Segment	6675	Rolling	4014	9.00	0.00	3	65
26		D26	Off Ramp	1500	Rolling	4014	9.00	0.00	3	65
27		D27	Off Ramp	1500	Rolling	3671	9.65	0.00	3	65
28	BALFOUR PKWY	B28	Basic Segment	1000	Rolling	2835	11.91	0.00	3	65
29		M29	On Ramp	1500	Rolling	3775	9.44	0.00	3	65
30		B30	Basic Segment	1425	Rolling	3775	9.44	0.00	3	65
31		D31	Off Ramp	1500	Rolling	3775	9.44	0.00	3	65
32		B32	Basic Segment	600	Rolling	3374	10.33	0.00	3	65
33	US 64 - 4 SEASONS BL	W33	Weaving	1400	Rolling	3841	9.31	0.00	4	65
34		B34	Basic Segment	225	Rolling	3209	10.75	0.00	3	65
35		M35	On Ramp	1500	Rolling	3579	9.85	0.00	3	65
36		B36	Basic Segment	13400	Rolling	3579	9.85	0.00	3	65
37		D37	Off Ramp	1500	Rolling	3579	9.85	0.00	3	65
38	UPWARD RD	B38	Basic Segment	2300	Rolling	2796	12.05	0.00	3	65

RampData							
Seg #	Type	Adj. Demand	% Trucks	% RVs	Lanes	Accel/Decel Length	FFS
2	Off Ramp	569	3.00	0.00	1	800	25
4	On Ramp	742	3.00	0.00	1	975	45
6	Off Ramp	1227	3.00	0.00	2	650	45
8	On Ramp	836	3.00	0.00	1	900	45
10	Off Ramp	1459	3.00	0.00	1	650	45
12	On Ramp	931	3.00	0.00	1	900	45
14	Off Ramp	168	17.00	0.00	1	650	45
16	On Ramp	168	17.00	0.00	1	900	45
18	Off Ramp	1053	4.00	0.00	1	0	45
20	On Ramp	661	4.00	0.00	1	900	45
22	Off Ramp	552	100.00	0.00	1	650	45
24	On Ramp	552	100.00	0.00	1	900	45
26	Off Ramp	343	2.00	0.00	1	450	45
27	Off Ramp	836	2.00	0.00	1	450	25
29	On Ramp	940	2.00	0.00	1	1000	45
31	Off Ramp	401	2.00	0.00	1	650	50
35	On Ramp	370	2.00	0.00	1	1125	50
37	Off Ramp	783	2.00	0.00	1	225	45
39	On Ramp	665	2.00	0.00	1	900	45
40	Off Ramp	951	9.00	0.00	1	0	50
42	On Ramp	22	9.00	0.00	1	1300	45
44	Off Ramp	195	4.00	0.00	1	300	45
46	On Ramp	151	4.00	0.00	1	800	45

39		M39	On Ramp	1425	Rolling	3461	10.12	0.00	3	65
40		D40	Off Ramp	1425	Rolling	3461	10.12	0.00	3	65
41	US 25 SYSTEM ICHG	B41	Basic Segment	2725	Rolling	2510	10.54	0.00	2	65
42		M42	On Ramp	1500	Rolling	2532	10.53	0.00	2	65
43		B43	Basic Segment	21625	Rolling	2532	10.53	0.00	2	65
44		D44	Off Ramp	1500	Rolling	2532	10.53	0.00	2	65
45	HOLBERT COVE RD	B45	Basic Segment	2600	Rolling	2337	11.07	0.00	2	65
46		M46	On Ramp	1500	Rolling	2488	10.64	0.00	2	65
47	END PROJECT SB	B47	Basic Segment	5280	Rolling	2488	10.64	0.00	2	65

Weaving Segment Data											
Seg #	Ramp to Ramp Prop.	On-Ramp					Off-Ramp				
		Adj. Demand	% Trucks	% RVs	Lanes	FFS	Adj. Demand	% Trucks	% RVs	Lanes	FFS
33	0.050	467	2.00	0.00	1	25	632	2.00	0.00	1	25

Time Period Independent Weaving Segment Data

Seg #	Configuration	Short Length	# Weaving Lanes	Min. Lane Changes Freeway-Ramp	Min. Lane Changes Ramp-Freeway	Min. Lane Changes Ramp-Ramp
33	400	2	1	1	0	

Time Period Results

Time Period 1

Seg #	From	To	Type	Adj. Demand	Vol. Served	Capacity (pc/h)	Capacity (veh/h)	d/c Ratio	v/c ratio	Queue Length (ft)	Avg. Speed (mi/h)	Density (pc/mi/in)	Density (veh/mi/in)	Avg. Travel Time (min/veh)	Free-Flow Travel Time (min/veh)	Mainline Delay (min/veh)	System Delay (min/veh)	VMT Demand (veh-min)	VMT Volume (veh-min)	VHT (veh-hrs)	VHD (veh-hrs)	LOS
1	BEGIN PROJECT SB	B1	Basic Segment	5152	5152	9400	8421	0.61	0.61	0	65.0	22.1	19.8	0.80	0.80	0.0	0.0	1122.1	1122.1	17.3	0.0	C
2		D2	Off Ramp	5152	5152	9400	8421	0.61	0.61	0	58.9	24.4	21.9	0.29	0.26	0.0	0.0	365.9	365.9	6.2	0.6	C
3	NC 191 - BREVARD RD	B3	Basic Segment	4583	4583	9400	8355	0.55	0.55	0	64.2	20.1	17.9	0.17	0.17	0.0	0.0	211.6	211.6	3.3	0.0	C
4		M4	On Ramp	5325	5325	9400	8439	0.63	0.63	0	59.7	24.7	22.1	0.29	0.26	0.0	0.0	378.2	378.2	6.3	0.5	C
5		B5	Basic Segment	5325	5325	9400	8439	0.63	0.63	0	64.9	22.8	20.5	3.28	3.28	0.0	0.0	4727.5	4727.5	72.8	0.1	C
6		D6	Off Ramp	5325	5325	9400	8439	0.63	0.63	0	62.4	23.8	21.3	0.27	0.26	0.0	0.0	378.2	378.2	6.1	0.2	C
7	NC 146 - LONG SHOALS	B7	Basic Segment	4098	4098	9400	8285	0.49	0.49	0	64.9	17.9	15.8	0.44	0.44	0.0	0.0	485.1	485.1	7.5	0.0	B
8		M8	On Ramp	4934	4934	9400	8397	0.59	0.59	0	59.9	22.9	20.4	0.28	0.26	0.0	0.0	350.4	350.4	5.8	0.5	C
9		B9	Basic Segment	4934	4934	9400	8397	0.59	0.59	0	65.0	21.2	19.0	1.84	1.84	0.0	0.0	2453.0	2453.0	37.7	0.0	C
10		D10	Off Ramp	4934	4934	9400	8397	0.59	0.59	0	60.5	22.8	20.4	0.28	0.26	0.0	0.0	350.4	350.4	5.8	0.4	C
11	NC 280 - AIRPORT RD	B11	Basic Segment	3475	3475	9400	8169	0.43	0.43	0	64.8	15.4	13.4	0.40	0.40	0.0	0.0	374.3	374.3	5.8	0.0	B
12		M12	On Ramp	4406	4406	9400	8331	0.53	0.53	0	60.3	20.4	18.1	0.28	0.26	0.0	0.0	312.9	312.9	5.2	0.4	C
13		B13	Basic Segment	4406	4406	9400	8331	0.53	0.53	0	64.1	19.4	17.2	0.09	0.09	0.0	0.0	109.5	109.5	1.7	0.0	C
14		D14	Off Ramp	4406	4406	9400	8331	0.53	0.53	0	63.7	19.5	17.3	0.27	0.26	0.0	0.0	312.9	312.9	4.9	0.1	B
15	REST AREA SB	B15	Basic Segment	4238	4238	9400	8368	0.51	0.51	0	64.9	18.3	16.3	0.30	0.30	0.0	0.0	346.1	346.1	5.3	0.0	C
16		M16	On Ramp	4406	4406	9400	8331	0.53	0.53	0	60.4	20.4	18.1	0.28	0.26	0.0	0.0	312.9	312.9	5.2	0.4	C
17		B17	Basic Segment	4406	4406	9400	8331	0.53	0.53	0	65.0	19.1	16.9	1.23	1.23	0.0	0.0	1470.8	1470.8	22.6	0.0	C
18		D18	Off Ramp	4406	4406	9400	8331	0.53	0.53	0	61.6	20.2	17.9	0.28	0.26	0.0	0.0	312.9	312.9	5.1	0.3	C
19	US 25 - ASHEVILLE HWY	B19	Basic Segment	3353	3353	7050	6132	0.55	0.55	0	64.8	19.8	17.2	0.36	0.36	0.0	0.0	329.4	329.4	5.1	0.0	C
20		M20	On Ramp	4014	4014	7050	6212	0.65	0.65	0	58.9	25.5	22.5	0.29	0.26	0.0	0.0	285.1	285.1	4.8	0.5	C
21		B21	Basic Segment	4014	4014	7050	6212	0.65	0.65	0	64.8	23.4	20.6	1.20	1.19	0.0	0.0	1297.1	1297.1	20.0	0.1	C
22		D22	Off Ramp	4014	4014	7050	6212	0.65	0.65	0	58.5	25.9	22.9	0.29	0.26	0.0	0.0	285.1	285.1	4.9	0.5	C
23	WEIGH STATION SB	B23	Basic Segment	3462	3462	7050	7685	0.45	0.45	0	64.4	16.4	17.9	0.26	0.26	0.0	0.0	245.9	245.9	3.8	0.0	B
24		M24	On Ramp	4014	4014	7050	6212	0.65	0.65	0	59.2	21.4	18.8	0.29	0.26	0.0	0.0	285.1	285.1	4.8	0.4	C
25		B25	Basic Segment	4014	4014	7050	6212	0.65	0.65	0	64.8	23.4	20.6	1.17	1.17	0.0	0.0	1268.6	1268.6	19.6	0.1	C
26		D26	Off Ramp	4014	4014	7050	6212	0.65	0.65	0	60.9	24.9	22.0	0.28	0.26	0.0	0.0	285.1	285.1	4.7	0.3	C
27		D27	Off Ramp	3671	3671	7050	6158	0.60	0.60	0	54.8	25.6	22.3	0.31	0.26	0.0	0.0	260.7	260.7	4.8	0.7	C
28	BALFOUR PKWY	B28	Basic Segment	2835	2835	7050	5981	0.47	0.47	0	63.6	17.5	14.8	0.18	0.17	0.0	0.0	134.2	134.2	2.1	0.0	B

29		M29	On Ramp	3775	3775	7050	6175	0.61	0.61	0	59.1	24.1	21.1	0.29	0.26	0.0	0.0	268.1	268.1	4.5	0.4	C
30		B30	Basic Segment	3775	3775	7050	6175	0.61	0.61	0	64.5	22.3	19.5	0.25	0.25	0.0	0.0	254.7	254.7	4.0	0.0	C
31		D31	Off Ramp	3775	3775	7050	6175	0.61	0.61	0	61.7	23.3	20.4	0.28	0.26	0.0	0.0	268.1	268.1	4.3	0.2	C
32		B32	Basic Segment	3374	3374	7050	6104	0.55	0.55	0	64.4	20.2	17.5	0.11	0.10	0.0	0.0	95.9	95.9	1.5	0.0	C
33	US 64 - 4 SEASONS BL	W33	Weaving	3841	3841	7985	7006	0.55	0.55	0	50.6	21.6	19.0	0.31	0.24	0.1	0.1	254.6	254.6	5.0	1.1	C
34		B34	Basic Segment	3209	3209	7050	6071	0.53	0.53	0	61.1	20.3	17.5	0.04	0.04	0.0	0.0	34.2	34.2	0.6	0.0	C
35		M35	On Ramp	3579	3579	7050	6142	0.58	0.58	0	59.9	22.8	19.9	0.28	0.26	0.0	0.0	254.2	254.2	4.2	0.3	C
36		B36	Basic Segment	3579	3579	7050	6142	0.58	0.58	0	65.0	21.1	18.4	2.34	2.34	0.0	0.0	2270.8	2270.8	34.9	0.0	C
37		D37	Off Ramp	3579	3579	7050	6142	0.58	0.58	0	60.1	22.8	19.9	0.28	0.26	0.0	0.0	254.2	254.2	4.2	0.3	C
38	UPWARD RD	B38	Basic Segment	2796	2796	7050	5971	0.47	0.47	0	64.8	17.0	14.4	0.40	0.40	0.0	0.0	304.5	304.5	4.7	0.0	B
39		M39	On Ramp	3461	3461	7050	6121	0.57	0.57	0	58.6	22.5	19.6	0.28	0.25	0.0	0.0	233.5	233.5	4.0	0.4	C
40		D40	Off Ramp	3461	3461	7050	6121	0.57	0.57	0	58.6	22.7	19.7	0.28	0.25	0.0	0.0	233.5	233.5	4.0	0.4	C
41	US 25 SYSTEM ICHG	B41	Basic Segment	2510	2510	4700	4058	0.62	0.62	0	64.8	22.4	19.4	0.48	0.48	0.0	0.0	323.9	323.9	5.0	0.0	C
42		M42	On Ramp	2532	2532	4700	4059	0.62	0.62	0	58.6	25.0	21.6	0.29	0.26	0.0	0.0	179.8	179.8	3.1	0.3	C
43		B43	Basic Segment	2532	2532	4700	4059	0.62	0.62	0	64.9	22.6	19.5	3.78	3.78	0.0	0.0	2592.5	2592.5	39.9	0.0	C
44		D44	Off Ramp	2532	2532	4700	4059	0.62	0.62	0	57.7	25.4	21.9	0.30	0.26	0.0	0.0	179.8	179.8	3.1	0.3	C
45	HOLBERT COVE RD	B45	Basic Segment	2337	2337	4700	4031	0.58	0.58	0	64.7	21.0	18.0	0.46	0.45	0.0	0.0	287.7	287.7	4.4	0.0	C
46		M46	On Ramp	2488	2488	4700	4053	0.61	0.61	0	57.7	24.9	21.5	0.30	0.26	0.0	0.0	176.7	176.7	3.1	0.3	C
47	END PROJECT SB	B47	Basic Segment	2488	2488	4700	4053	0.61	0.61	0	65.0	22.2	19.1	0.92	0.92	0.0	0.0	622.0	622.0	9.6	0.0	C

Overall Results

Segment	Segment Type	Maximum d/c Ratio	Avg. Speed (mi/h)	Density (pc/mi/in)	Density (veh/mi/in)	Avg. Travel Time (min/veh)	Free-Flow Travel Time (min/veh)	VTM Demand (veh-min)	VTM Volume (veh-min)	VHT (veh-hrs)	VHD (veh-hrs)
BEGIN PROJECT SB-B1	Basic	0.61	65.0	22.1	19.8	0.80	0.80	1,122.1	1,122.1	17.27	0.01
-D2	OffRamp	0.61	58.9	24.4	21.9	0.29	0.26	0,365.9	0,365.9	6.21	0.58
NC 191 - BREVARD RD-B3	Basic	0.55	64.2	20.1	17.9	0.17	0.17	0,211.6	0,211.6	3.30	0.04
-M4	OnRamp	0.63	59.7	24.7	22.1	0.29	0.26	0,378.2	0,378.2	6.33	0.51
-B5	Basic	0.63	64.9	22.8	20.5	3.28	3.28	4,727.5	4,727.5	72.84	0.11
-D6	OffRamp	0.63	62.4	23.8	21.3	0.27	0.26	0,378.2	0,378.2	6.06	0.25
NC 146 - LONG SHOALS-B7	Basic	0.49	64.9	17.9	15.8	0.44	0.44	0,485.1	0,485.1	7.47	0.01
-M8	OnRamp	0.59	59.9	22.9	20.4	0.28	0.26	0,350.4	0,350.4	5.85	0.46
-B9	Basic	0.59	65.0	21.2	19.0	1.84	1.84	2,453.0	2,453.0	37.74	0.00
-D10	OffRamp	0.59	60.5	22.8	20.4	0.28	0.26	0,350.4	0,350.4	5.79	0.40
NC 280 - AIRPORT RD-B11	Basic	0.43	64.8	15.4	13.4	0.40	0.40	0,374.3	0,374.3	5.78	0.02
-M12	OnRamp	0.53	60.3	20.4	18.1	0.28	0.26	0,312.9	0,312.9	5.19	0.38
-B13	Basic	0.53	64.1	19.4	17.2	0.09	0.09	0,109.5	0,109.5	1.71	0.02
-D14	OffRamp	0.53	63.7	19.5	17.3	0.27	0.26	0,312.9	0,312.9	4.91	0.10
REST AREA SB-B15	Basic	0.51	64.9	18.3	16.3	0.30	0.30	0,346.1	0,346.1	5.33	0.01
-M16	OnRamp	0.53	60.4	20.4	18.1	0.28	0.26	0,312.9	0,312.9	5.18	0.37
-B17	Basic	0.53	65.0	19.1	16.9	1.23	1.23	1,470.8	1,470.8	22.63	0.00
-D18	OffRamp	0.53	61.6	20.2	17.9	0.28	0.26	0,312.9	0,312.9	5.08	0.27
US 25 - ASHEVILLE HWY-B19	Basic	0.55	64.8	19.8	17.2	0.36	0.36	0,329.4	0,329.4	5.08	0.01
-M20	OnRamp	0.65	58.9	25.5	22.5	0.29	0.26	0,285.1	0,285.1	4.84	0.46
-B21	Basic	0.65	64.8	23.4	20.6	1.20	1.19	1,297.1	1,297.1	20.02	0.06
-D22	OffRamp	0.65	58.5	25.9	22.9	0.29	0.26	0,285.1	0,285.1	4.87	0.48
WEIGH STATION SB-B23	Basic	0.45	64.4	16.4	17.9	0.26	0.26	0,245.9	0,245.9	3.82	0.03
-M24	OnRamp	0.65	59.2	21.4	18.8	0.29	0.26	0,285.1	0,285.1	4.81	0.43
-B25	Basic	0.65	64.8	23.4	20.6	1.17	1.17	1,268.6	1,268.6	19.58	0.06
-D26	OffRamp	0.65	60.9	24.9	22.0	0.28	0.26	0,285.1	0,285.1	4.68	0.29
-D27	OffRamp	0.60	54.8	25.6	22.3	0.31	0.26	0,260.7	0,260.7	4.76	0.75
BALFOUR PKWY-B28	Basic	0.47	63.6	17.5	14.8	0.18	0.17	0,134.2	0,134.2	2.11	0.04
-M29	OnRamp	0.61	59.1	24.1	21.1	0.29	0.26	0,268.1	0,268.1	4.53	0.41
-B30	Basic	0.61	64.5	22.3	19.5	0.25	0.25	0,254.7	0,254.7	3.95	0.03
-D31	OffRamp	0.61	61.7	23.3	20.4	0.28	0.26	0,268.1	0,268.1	4.34	0.22

-B32	Basic	0.55	64.4	20.2	17.5	0.11	0.10	0,095.9	0,095.9	1.49	0.01
US 64 - 4 SEASONS BL-W33	Weaving	0.55	50.6	21.6	19.0	0.31	0.24	0,254.6	0,254.6	5.03	1.12
-B34	Basic	0.53	61.1	20.3	17.5	0.04	0.04	0,034.2	0,034.2	0.56	0.03
-M35	OnRamp	0.58	59.9	22.8	19.9	0.28	0.26	0,254.2	0,254.2	4.25	0.34
-B36	Basic	0.58	65.0	21.1	18.4	2.34	2.34	2,270.8	2,270.8	34.93	0.00
-D37	OffRamp	0.58	60.1	22.8	19.9	0.28	0.26	0,254.2	0,254.2	4.23	0.32
UPWARD RD-B38	Basic	0.47	64.8	17.0	14.4	0.40	0.40	0,304.5	0,304.5	4.70	0.02
-M39	OnRamp	0.57	58.6	22.5	19.6	0.28	0.25	0,233.5	0,233.5	3.98	0.39
-D40	OffRamp	0.57	58.6	22.7	19.7	0.28	0.25	0,233.5	0,233.5	3.98	0.39
US 25 SYSTEM ICHG-B41	Basic	0.62	64.8	22.4	19.4	0.48	0.48	0,323.9	0,323.9	5.00	0.02
-M42	OnRamp	0.62	58.6	25.0	21.6	0.29	0.26	0,179.8	0,179.8	3.07	0.30
-B43	Basic	0.62	64.9	22.6	19.5	3.78	3.78	2,592.5	2,592.5	39.92	0.04
-D44	OffRamp	0.62	57.7	25.4	21.9	0.30	0.26	0,179.8	0,179.8	3.12	0.35
HOLBERT COVE RD-B45	Basic	0.58	64.7	21.0	18.0	0.46	0.45	0,287.7	0,287.7	4.44	0.02
-M46	OnRamp	0.61	57.7	24.9	21.5	0.30	0.26	0,176.7	0,176.7	3.06	0.34
END PROJECT SB-B47	Basic	0.61	65.0	22.2	19.1	0.92	0.92	0,622.0	0,622.0	9.57	0.00
Freeway			63.5	21.8	19.2	27.39	26.73	28,139.9	28,139.9	0,443.4	0,010.5

Density-Based LOS by Segment															
Segment	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Time Step	Basic	Off Ramp	Basic	On Ramp	Basic	Off Ramp	Basic	On Ramp	Basic	Off Ramp	Basic	On Ramp	Basic	Off Ramp	Basic
1	C	C	C	C	C	C	B	C	C	C	B	C	C	B	C
Density-Based LOS by Segment															
Segment	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Time Step	On Ramp	Basic	Off Ramp	Basic	On Ramp	Basic	Off Ramp	Basic	On Ramp	Basic	Off Ramp	Off Ramp	Basic	On Ramp	Basic
1	C	C	C	C	C	C	C	B	C	C	C	C	B	C	C
Density-Based LOS by Segment															
Segment	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Time Step	Off Ramp	Basic	Weaving	Basic	On Ramp	Basic	Off Ramp	Basic	On Ramp	Off Ramp	Basic	On Ramp	Basic	Off Ramp	Basic
1	C	C	C	C	C	C	C	B	C	C	C	C	C	C	C
Density-Based LOS by Segment															
Segment	46	47													
Time Step	On Ramp	Basic													
1	C	C													
Demand-Based LOS by Segment															
Time Step	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Demand-Based LOS by Segment															
Time Step	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Demand-Based LOS by Segment															
Time Step	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Demand-Based LOS by Segment															
Time Step	46	47													
1	.	.													

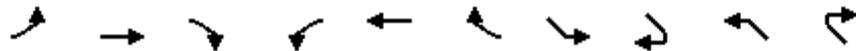
Appendix D – SYNCHRO Signalized Analysis Output

2011 No-Build

Lanes, Volumes, Timings
 1: NC 146 (Long Shoals Rd) & I-26 NB On-Ramp

2011 Base Year - No Build

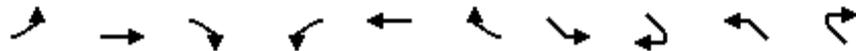
Timing Plan: AM Peak



Lane Group	EBL	EBT	EBR2	WBL	WBT	WBR2	SEL	SER2	NWL	NWR2
Lane Configurations	↖↗	↕	↖	↖↗	↕	↖	↖↗	↖	↖↗	↖
Volume (vph)	141	466	178	495	618	663	637	179	181	379
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		3%			-7%					
Storage Length (ft)	450			350			0		675	
Storage Lanes	1			2			2		1	
Taper Length (ft)	100			100			100		100	
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	1.00	0.97	1.00
Frt			0.850			0.850		0.850		0.850
Flt Protected	0.950			0.950			0.950		0.950	
Satd. Flow (prot)	3224	3486	1487	3387	3628	1562	3519	1607	3434	1599
Flt Permitted	0.950			0.950			0.950		0.950	
Satd. Flow (perm)	3224	3486	1487	3387	3628	1562	3519	1607	3434	1599
Right Turn on Red			No			No		No		No
Satd. Flow (RTOR)										
Link Speed (mph)		45			45					
Link Distance (ft)		1009			964					
Travel Time (s)		15.3			14.6					
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	7%	2%	7%	7%	3%	7%	2%	3%	3%	2%
Adj. Flow (vph)	157	518	198	550	687	737	708	199	201	421
Shared Lane Traffic (%)										
Lane Group Flow (vph)	157	518	198	550	687	737	708	199	201	421
Turn Type	Prot		Free	Prot		Free	Prot	custom	Prot	Free
Protected Phases	5	2		1	6		4		8	
Permitted Phases			Free			Free		4		Free
Detector Phase	5	2		1	6		4	4	8	
Switch Phase										
Minimum Initial (s)	7.0	12.0		7.0	12.0		7.0	7.0	7.0	
Minimum Split (s)	16.0	20.0		15.0	21.0		16.0	16.0	15.0	
Total Split (s)	20.0	38.0	0.0	22.0	40.0	0.0	30.0	30.0	30.0	0.0
Total Split (%)	22.2%	42.2%	0.0%	24.4%	44.4%	0.0%	33.3%	33.3%	33.3%	0.0%
Maximum Green (s)	11.8	30.5		14.3	31.0		21.9	21.9	22.0	
Yellow Time (s)	3.4	4.3		4.0	5.2		3.8	3.8	3.7	
All-Red Time (s)	4.8	3.2		3.7	3.8		4.3	4.3	4.3	
Lost Time Adjust (s)	-3.2	-2.5	-2.5	-2.7	-4.0	-4.0	-3.1	-3.1	-3.0	0.0
Total Lost Time (s)	5.0	5.0	1.5	5.0	5.0	0.0	5.0	5.0	5.0	4.0
Lead/Lag	Lead	Lag		Lead	Lag					
Lead-Lag Optimize?	Yes	Yes		Yes	Yes					
Vehicle Extension (s)	2.0	6.0		2.0	6.0		2.0	2.0	2.0	
Minimum Gap (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	
Time Before Reduce (s)	0.0	15.0		0.0	15.0		0.0	0.0	0.0	
Time To Reduce (s)	0.0	30.0		0.0	30.0		0.0	0.0	0.0	
Recall Mode	None	C-Max		None	C-Max		None	None	None	
Act Effct Green (s)	12.1	33.9	90.0	17.4	39.2	90.0	23.6	23.6	23.6	90.0
Actuated g/C Ratio	0.13	0.38	1.00	0.19	0.44	1.00	0.26	0.26	0.26	1.00
v/c Ratio	0.36	0.39	0.13	0.84	0.43	0.47	0.77	0.47	0.22	0.26
Control Delay	37.4	21.9	0.2	48.2	19.4	1.0	36.7	31.8	26.3	0.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Lanes, Volumes, Timings
 1: NC 146 (Long Shoals Rd) & I-26 NB On-Ramp

2011 Base Year - No Build
 Timing Plan: AM Peak

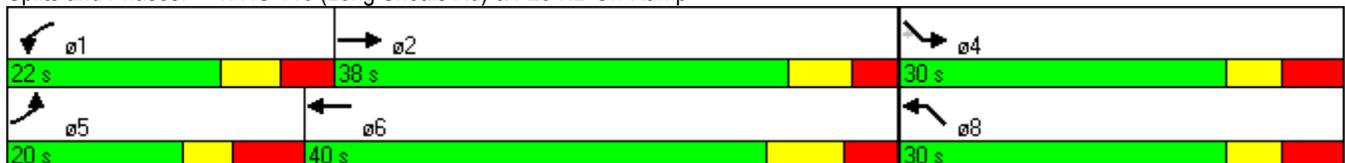


Lane Group	EBL	EBT	EBR2	WBL	WBT	WBR2	SEL	SER2	NWL	NWR2
Total Delay	37.4	21.9	0.2	48.2	19.4	1.0	36.7	31.8	26.3	0.4
LOS	D	C	A	D	B	A	D	C	C	A
Approach Delay	19.8			20.6						
Approach LOS	B			C						
Queue Length 50th (ft)	42	113	0	157	142	0	187	93	44	0
Queue Length 95th (ft)	69	157	0	#243	202	0	250	158	73	0
Internal Link Dist (ft)	929			884						
Turn Bay Length (ft)	450		300	350		300		425	675	575
Base Capacity (vph)	537	1314	1487	656	1581	1562	978	446	954	1599
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.29	0.39	0.13	0.84	0.43	0.47	0.72	0.45	0.21	0.26

Intersection Summary

Area Type: Other
 Cycle Length: 90
 Actuated Cycle Length: 90
 Offset: 52 (58%), Referenced to phase 2:EBT and 6:WBT, Start of Green
 Natural Cycle: 60
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.84
 Intersection Signal Delay: 21.8
 Intersection LOS: C
 Intersection Capacity Utilization 57.7%
 ICU Level of Service B
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 1: NC 146 (Long Shoals Rd) & I-26 NB On-Ramp



Lanes, Volumes, Timings
2: I-26 NB On-Ramp & US 25 (Asheville Highway)

2011 Base Year - No Build

Timing Plan: AM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				↙		↗	↗	↗	↗		↗	↗
Volume (vph)	0	0	0	123	0	320	465	860	0	0	1244	193
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			2%			-1%			2%	
Storage Length (ft)	0		0	0		150	0		0	0		300
Storage Lanes	0		0	1		2	1		0	0		1
Taper Length (ft)	100		100	100		100	100		100	100		100
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	0.88	1.00	0.95	1.00	1.00	0.95	1.00
Frt						0.850						0.850
Flt Protected				0.950			0.950					
Satd. Flow (prot)	0	0	0	1735	0	2706	1680	3489	0	0	3436	1480
Flt Permitted				0.950			0.950					
Satd. Flow (perm)	0	0	0	1735	0	2706	1680	3489	0	0	3436	1480
Right Turn on Red			No			Yes			No			No
Satd. Flow (RTOR)						356						
Link Speed (mph)		45			35			45			45	
Link Distance (ft)		533			612			601			596	
Travel Time (s)		8.1			11.9			9.1			9.0	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	5%	5%	5%	3%	5%	4%	8%	4%	5%	5%	4%	8%
Adj. Flow (vph)	0	0	0	137	0	356	517	956	0	0	1382	214
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	137	0	356	517	956	0	0	1382	214
Turn Type				Prot		custom	Prot					Free
Protected Phases				4			5	2			6	
Permitted Phases						4						Free
Detector Phase				4		4	5	2			6	
Switch Phase												
Minimum Initial (s)				7.0		7.0	7.0	12.0			12.0	
Minimum Split (s)				13.0		13.0	14.0	19.0			18.0	
Total Split (s)	0.0	0.0	0.0	20.0	0.0	20.0	48.0	90.0	0.0	0.0	42.0	0.0
Total Split (%)	0.0%	0.0%	0.0%	18.2%	0.0%	18.2%	43.6%	81.8%	0.0%	0.0%	38.2%	0.0%
Maximum Green (s)				14.0		14.0	41.6	83.9			36.7	
Yellow Time (s)				3.7		3.7	3.0	4.6			4.3	
All-Red Time (s)				2.3		2.3	3.4	1.5			1.0	
Lost Time Adjust (s)	-2.0	0.0	0.0	-1.0	0.0	-1.0	-1.4	-1.1	0.0	0.0	-0.3	0.0
Total Lost Time (s)	2.0	4.0	4.0	5.0	4.0	5.0	5.0	5.0	4.0	4.0	5.0	4.0
Lead/Lag							Lag				Lead	
Lead-Lag Optimize?							Yes				Yes	
Vehicle Extension (s)				2.0		2.0	2.0	8.0			8.0	
Minimum Gap (s)				3.0		3.0	3.0	5.5			5.5	
Time Before Reduce (s)				0.0		0.0	0.0	15.0			15.0	
Time To Reduce (s)				0.0		0.0	0.0	50.0			50.0	
Recall Mode				None		None	None	C-Max			C-Max	
Act Effct Green (s)				12.9		12.9	43.0	87.1			39.1	110.0
Actuated g/C Ratio				0.12		0.12	0.39	0.79			0.36	1.00
v/c Ratio				0.67		0.56	0.79	0.35			1.13	0.14
Control Delay				62.8		8.3	24.4	0.1			103.7	0.2
Queue Delay				0.0		0.0	0.0	0.0			0.0	0.0

Lanes, Volumes, Timings
 2: I-26 NB On-Ramp & US 25 (Asheville Highway)

2011 Base Year - No Build
 Timing Plan: AM Peak

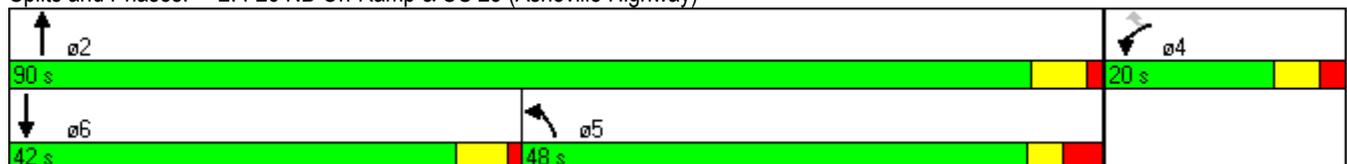


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay				62.8		8.3	24.5	0.1			103.7	0.2
LOS				E		A	C	A			F	A
Approach Delay								8.7			89.9	
Approach LOS								A			F	
Queue Length 50th (ft)				93		0	395	0			~611	0
Queue Length 95th (ft)				157		46	m430	m0			#760	0
Internal Link Dist (ft)		453			532			521			516	
Turn Bay Length (ft)						150						300
Base Capacity (vph)				237		676	657	2763			1222	1480
Starvation Cap Reductn				0		0	2	0			0	0
Spillback Cap Reductn				0		0	0	0			0	0
Storage Cap Reductn				0		0	0	0			0	0
Reduced v/c Ratio				0.58		0.53	0.79	0.35			1.13	0.14

Intersection Summary

Area Type: Other
 Cycle Length: 110
 Actuated Cycle Length: 110
 Offset: 103 (94%), Referenced to phase 2:NBT and 6:SBT, Start of Green
 Natural Cycle: 90
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.13
 Intersection Signal Delay: 47.1
 Intersection LOS: D
 Intersection Capacity Utilization 79.5%
 ICU Level of Service D
 Analysis Period (min) 15
 ~ Volume exceeds capacity, queue is theoretically infinite.
 Queue shown is maximum after two cycles.
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: I-26 NB On-Ramp & US 25 (Asheville Highway)



Lanes, Volumes, Timings
 3: I-26 SB Off-Ramp & US 25 (Asheville Highway)

2011 Base Year - No Build

Timing Plan: AM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖		↗					↕	↗	↖	↕	↖
Volume (vph)	190	0	576	0	0	0	0	1135	123	401	966	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		3%			0%			4%			1%	
Storage Length (ft)	0		100	0		0	0		500	0		0
Storage Lanes	1		1	0		0	0		1	1		0
Taper Length (ft)	100		100	100		100	100		100	100		100
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt			0.850						0.850			
Flt Protected	0.950									0.950		
Satd. Flow (prot)	1710	0	1544	0	0	0	0	3435	1465	1663	3487	0
Flt Permitted	0.950									0.950		
Satd. Flow (perm)	1710	0	1544	0	0	0	0	3435	1465	1663	3487	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		35			45			45			45	
Link Distance (ft)		471			598			795			601	
Travel Time (s)		9.2			9.1			12.0			9.1	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	4%	5%	3%	5%	5%	5%	5%	3%	8%	8%	3%	5%
Adj. Flow (vph)	211	0	640	0	0	0	0	1261	137	446	1073	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	211	0	640	0	0	0	0	1261	137	446	1073	0
Turn Type	Prot		custom						Free	Prot		
Protected Phases	4		4					2		1	6	
Permitted Phases									Free			
Detector Phase	4		4					2		1	6	
Switch Phase												
Minimum Initial (s)	7.0		7.0					12.0		7.0	12.0	
Minimum Split (s)	13.0		13.0					18.0		14.0	18.0	
Total Split (s)	22.0	0.0	22.0	0.0	0.0	0.0	0.0	48.0	0.0	40.0	88.0	0.0
Total Split (%)	20.0%	0.0%	20.0%	0.0%	0.0%	0.0%	0.0%	43.6%	0.0%	36.4%	80.0%	0.0%
Maximum Green (s)	16.0		16.0					42.3		33.5	82.3	
Yellow Time (s)	4.0		4.0					4.7		4.0	4.7	
All-Red Time (s)	2.0		2.0					1.0		2.5	1.0	
Lost Time Adjust (s)	-1.0	-2.0	-1.0	-2.0	-2.0	-2.0	-2.0	-0.7	-0.7	-1.5	-0.7	-2.0
Total Lost Time (s)	5.0	2.0	5.0	2.0	2.0	2.0	2.0	5.0	3.3	5.0	5.0	2.0
Lead/Lag								Lead		Lag		
Lead-Lag Optimize?								Yes		Yes		
Vehicle Extension (s)	2.0		2.0					8.0		2.0	8.0	
Minimum Gap (s)	3.0		3.0					5.5		3.0	5.5	
Time Before Reduce (s)	0.0		0.0					15.0		0.0	15.0	
Time To Reduce (s)	0.0		0.0					50.0		0.0	50.0	
Recall Mode	None		None					C-Max		None	C-Max	
Act Effct Green (s)	17.0		17.0					43.0	110.0	35.0	83.0	
Actuated g/C Ratio	0.15		0.15					0.39	1.00	0.32	0.75	
v/c Ratio	0.80		2.68					0.94	0.09	0.84	0.41	
Control Delay	67.7		787.4					46.6	0.1	56.2	9.1	
Queue Delay	0.0		0.0					0.0	0.0	0.0	1.7	

Lanes, Volumes, Timings
 3: I-26 SB Off-Ramp & US 25 (Asheville Highway)

2011 Base Year - No Build

Timing Plan: AM Peak

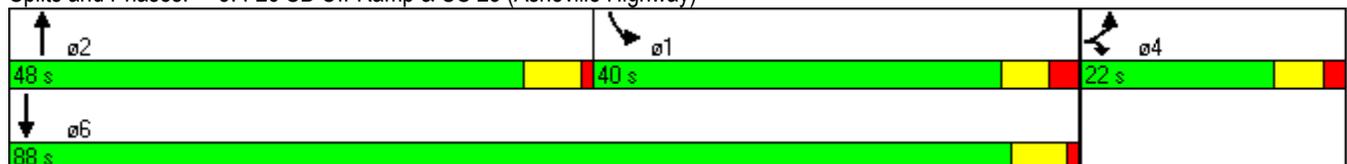


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay	67.7		787.4					46.6	0.1	56.2	10.8	
LOS	E		F					D	A	E	B	
Approach Delay								42.0			24.2	
Approach LOS								D			C	
Queue Length 50th (ft)	145		~767					444	0	341	256	
Queue Length 95th (ft)	#266		#988					#592	0	m314	m143	
Internal Link Dist (ft)		391			518			715				521
Turn Bay Length (ft)			100						500			
Base Capacity (vph)	264		239					1343	1465	529	2631	
Starvation Cap Reductn	0		0					0	0	0	1322	
Spillback Cap Reductn	0		0					0	0	0	0	
Storage Cap Reductn	0		0					0	0	0	0	
Reduced v/c Ratio	0.80		2.68					0.94	0.09	0.84	0.82	

Intersection Summary

Area Type: Other
 Cycle Length: 110
 Actuated Cycle Length: 110
 Offset: 8 (7%), Referenced to phase 2:NBT and 6:SBT, Start of Green
 Natural Cycle: 130
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 2.68
 Intersection Signal Delay: 162.9
 Intersection LOS: F
 Intersection Capacity Utilization 79.5%
 ICU Level of Service D
 Analysis Period (min) 15
 ~ Volume exceeds capacity, queue is theoretically infinite.
 Queue shown is maximum after two cycles.
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: I-26 SB Off-Ramp & US 25 (Asheville Highway)



Lanes, Volumes, Timings
6: US 64 & SR 1516 (Francis Rd)

2011 Base Year - No Build
Timing Plan: AM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	117	1470	375	89	1863	27	333	5	62	19	5	103
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		-1%			4%			-1%			2%	
Storage Length (ft)	150		0	125		0	150		150	0		150
Storage Lanes	1		1	1		0	1		1	0		1
Taper Length (ft)	100		100	100		100	100		100	100		100
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00
Frt			0.850		0.998				0.850			0.850
Flt Protected	0.950			0.950			0.950	0.954			0.963	
Satd. Flow (prot)	1778	3557	1591	1734	3461	0	1690	1697	1591	0	1776	1567
Flt Permitted	0.950			0.950			0.950	0.954			0.963	
Satd. Flow (perm)	1778	3557	1591	1734	3461	0	1690	1697	1591	0	1776	1567
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			45			35			35	
Link Distance (ft)		835			622			375			406	
Travel Time (s)		12.7			9.4			7.3			7.9	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	130	1633	417	99	2070	30	370	6	69	21	6	114
Shared Lane Traffic (%)							49%					
Lane Group Flow (vph)	130	1633	417	99	2100	0	189	187	69	0	27	114
Turn Type	Prot		Perm	Prot			Split		pm+ov	Split		pm+ov
Protected Phases	5	2		1	6		4	4	1	3	3	5
Permitted Phases			2						4			3
Detector Phase	5	2	2	1	6		4	4	1	3	3	5
Switch Phase												
Minimum Initial (s)	7.0	12.0	12.0	7.0	12.0		7.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	13.0	18.0	18.0	13.0	18.0		14.0	14.0	13.0	14.0	14.0	13.0
Total Split (s)	20.0	60.0	60.0	18.0	58.0	0.0	20.0	20.0	18.0	22.0	22.0	20.0
Total Split (%)	16.7%	50.0%	50.0%	15.0%	48.3%	0.0%	16.7%	16.7%	15.0%	18.3%	18.3%	16.7%
Maximum Green (s)	14.4	54.0	54.0	12.6	52.4		13.4	13.4	12.6	15.5	15.5	14.4
Yellow Time (s)	3.2	4.6	4.6	3.0	4.2		3.9	3.9	3.0	3.7	3.7	3.2
All-Red Time (s)	2.4	1.4	1.4	2.4	1.4		2.7	2.7	2.4	2.8	2.8	2.4
Lost Time Adjust (s)	-0.6	-1.0	-1.0	-0.4	-0.6	-2.0	-1.6	-1.6	-0.4	-2.0	-1.5	-0.6
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	2.0	5.0	5.0	5.0	4.5	5.0	5.0
Lead/Lag	Lag	Lag	Lag	Lead	Lead		Lag	Lag	Lead	Lead	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	1.0	2.0	2.0	1.0	2.0		1.0	1.0	1.0	1.0	1.0	1.0
Recall Mode	None	C-Max	C-Max	None	C-Max		None	None	None	None	None	None
Act Effct Green (s)	15.0	66.7	66.7	10.5	62.2		19.6	19.6	35.0		8.6	23.2
Actuated g/C Ratio	0.12	0.56	0.56	0.09	0.52		0.16	0.16	0.29		0.07	0.19
v/c Ratio	0.59	0.83	0.47	0.65	1.17		0.68	0.68	0.15		0.21	0.38
Control Delay	53.6	23.0	16.1	72.6	111.6		60.1	59.5	30.4		56.6	44.0
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0		0.0	0.0
Total Delay	53.6	23.0	16.1	72.6	111.6		60.1	59.5	30.4		56.6	44.0
LOS	D	C	B	E	F		E	E	C		E	D
Approach Delay		23.5			109.9			55.2			46.4	

Lanes, Volumes, Timings
6: US 64 & SR 1516 (Francis Rd)

2011 Base Year - No Build
Timing Plan: AM Peak

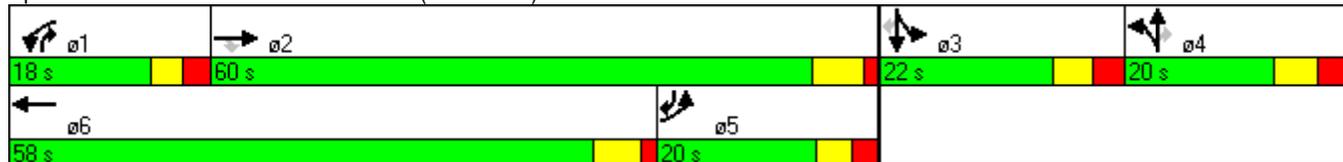


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach LOS	C			F			E			D		
Queue Length 50th (ft)	95	503	128	75	~1096		145	144	39		20	73
Queue Length 95th (ft)	159	#825	259	132	#1270		225	223	72		51	127
Internal Link Dist (ft)		755			542			295			326	
Turn Bay Length (ft)	150			125			150		150			150
Base Capacity (vph)	222	1978	884	188	1794		278	279	498		252	303
Starvation Cap Reductn	0	0	0	0	0		0	0	0		0	0
Spillback Cap Reductn	0	0	0	0	0		0	0	0		0	0
Storage Cap Reductn	0	0	0	0	0		0	0	0		0	0
Reduced v/c Ratio	0.59	0.83	0.47	0.53	1.17		0.68	0.67	0.14		0.11	0.38

Intersection Summary

Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 82 (68%), Referenced to phase 2:EBT and 6:WBT, Start of Green
 Natural Cycle: 130
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.17
 Intersection Signal Delay: 65.2
 Intersection LOS: E
 Intersection Capacity Utilization 87.4%
 ICU Level of Service E
 Analysis Period (min) 15
 ~ Volume exceeds capacity, queue is theoretically infinite.
 Queue shown is maximum after two cycles.
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

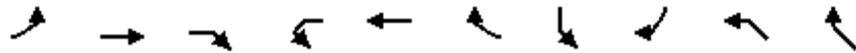
Splits and Phases: 6: US 64 & SR 1516 (Francis Rd)



Lanes, Volumes, Timings
7: US 64 & I-26 SB Off-Ramp

2011 Base Year - No Build

Timing Plan: AM Peak

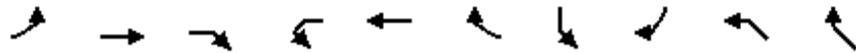


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	SBL	SBR	NWL	NWR
Lane Configurations		↑↑	↑		↑↑			↑↑		
Volume (vph)	0	1440	253	0	1716	0	0	373	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		3%			-3%		-3%		0%	
Storage Length (ft)	0		400	0		0	0	500	0	0
Storage Lanes	0		1	0		0	0	1	0	0
Taper Length (ft)	100		100	100		100	100	100	100	100
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.88	1.00	1.00
Frt			0.850					0.850		
Flt Protected										
Satd. Flow (prot)	0	3486	1473	0	3592	0	0	2828	0	0
Flt Permitted										
Satd. Flow (perm)	0	3486	1473	0	3592	0	0	2828	0	0
Right Turn on Red			No			No		No		
Satd. Flow (RTOR)										
Link Speed (mph)		45			45		35		45	
Link Distance (ft)		728			791		804		308	
Travel Time (s)		11.0			12.0		15.7		4.7	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	5%	2%	8%	5%	2%	5%	5%	2%	5%	5%
Adj. Flow (vph)	0	1600	281	0	1907	0	0	414	0	0
Shared Lane Traffic (%)										
Lane Group Flow (vph)	0	1600	281	0	1907	0	0	414	0	0
Turn Type			Perm					custom		
Protected Phases		Free			6			4		
Permitted Phases			Free							
Detector Phase					6			4		
Switch Phase										
Minimum Initial (s)					12.0			7.0		
Minimum Split (s)					18.0			13.0		
Total Split (s)	0.0	0.0	0.0	0.0	90.0	0.0	0.0	30.0	0.0	0.0
Total Split (%)	0.0%	0.0%	0.0%	0.0%	75.0%	0.0%	0.0%	25.0%	0.0%	0.0%
Maximum Green (s)					84.2			24.9		
Yellow Time (s)					4.8			4.1		
All-Red Time (s)					1.0			1.0		
Lost Time Adjust (s)	-2.0	0.0	-2.0	-2.0	-0.8	-2.0	-2.0	-0.1	-2.0	-2.0
Total Lost Time (s)	2.0	4.0	2.0	2.0	5.0	2.0	2.0	5.0	2.0	2.0
Lead/Lag										
Lead-Lag Optimize?										
Vehicle Extension (s)					2.0			1.0		
Recall Mode					C-Max			None		
Act Effct Green (s)		120.0	120.0		89.3			20.7		
Actuated g/C Ratio		1.00	1.00		0.74			0.17		
v/c Ratio		0.46	0.19		0.71			0.85		
Control Delay		0.2	0.1		16.3			64.6		
Queue Delay		0.0	0.0		0.0			0.0		
Total Delay		0.2	0.1		16.3			64.6		
LOS		A	A		B			E		
Approach Delay		0.2			16.3					

Lanes, Volumes, Timings
7: US 64 & I-26 SB Off-Ramp

2011 Base Year - No Build

Timing Plan: AM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	SBL	SBR	NWL	NWR
Approach LOS		A				B				
Queue Length 50th (ft)		0	0		703			177		
Queue Length 95th (ft)		m0	m0		m677			232		
Internal Link Dist (ft)		648			711		724		228	
Turn Bay Length (ft)			400					500		
Base Capacity (vph)		3486	1473		2674			589		
Starvation Cap Reductn		0	0		0			0		
Spillback Cap Reductn		0	0		38			0		
Storage Cap Reductn		0	0		0			0		
Reduced v/c Ratio		0.46	0.19		0.72			0.70		

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 0 (0%), Referenced to phase 6:WBT, Start of Green, Master Intersection

Natural Cycle: 60

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.85

Intersection Signal Delay: 13.9

Intersection LOS: B

Intersection Capacity Utilization 75.1%

ICU Level of Service D

Analysis Period (min) 15

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 7: US 64 & I-26 SB Off-Ramp



Lanes, Volumes, Timings
8: US 64 & SR 1634 (Carolina Village Rd)

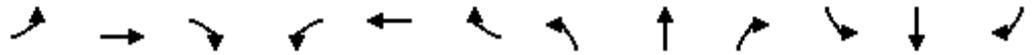
2011 Base Year - No Build
Timing Plan: AM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	58	1481	69	139	1829	106	66	15	107	117	22	79
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		1%			-3%			3%				-1%
Storage Length (ft)	100		0	100		0	0		0	0		150
Storage Lanes	1		0	1		1	0		0	0		1
Taper Length (ft)	100		100	100		100	100		100	100		100
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.993				0.850		0.923				0.850
Flt Protected	0.950			0.950				0.983			0.960	
Satd. Flow (prot)	1761	3497	0	1796	3592	1607	0	1665	0	0	1797	1591
Flt Permitted	0.950			0.950				0.655			0.497	
Satd. Flow (perm)	1761	3497	0	1796	3592	1607	0	1109	0	0	930	1591
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		560			728			219			359	
Travel Time (s)		8.5			11.0			5.0			8.2	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	64	1646	77	154	2032	118	73	17	119	130	24	88
Shared Lane Traffic (%)												
Lane Group Flow (vph)	64	1723	0	154	2032	118	0	209	0	0	154	88
Turn Type	Prot			Prot		Perm	Perm			Perm		pm+ov
Protected Phases	5	2		1	6			8			4	5
Permitted Phases						6	8			4		4
Detector Phase	5	2		1	6	6	8	8		4	4	5
Switch Phase												
Minimum Initial (s)	7.0	12.0		7.0	12.0	12.0	7.0	7.0		7.0	7.0	7.0
Minimum Split (s)	13.0	18.0		13.0	19.0	19.0	13.0	13.0		13.0	13.0	13.0
Total Split (s)	23.0	71.0	0.0	23.0	71.0	71.0	26.0	26.0	0.0	26.0	26.0	23.0
Total Split (%)	19.2%	59.2%	0.0%	19.2%	59.2%	59.2%	21.7%	21.7%	0.0%	21.7%	21.7%	19.2%
Maximum Green (s)	17.1	65.4		17.6	64.8	64.8	20.2	20.2		20.1	20.1	17.1
Yellow Time (s)	3.0	4.4		3.0	4.8	4.8	3.4	3.4		3.6	3.6	3.0
All-Red Time (s)	2.9	1.2		2.4	1.4	1.4	2.4	2.4		2.3	2.3	2.9
Lost Time Adjust (s)	-0.9	-0.6	-2.0	-0.4	-1.2	-1.2	-2.0	-0.8	-2.0	-2.0	-0.9	-0.9
Total Lost Time (s)	5.0	5.0	2.0	5.0	5.0	5.0	3.8	5.0	2.0	3.9	5.0	5.0
Lead/Lag	Lag	Lag		Lead	Lead	Lead						Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes						Yes
Vehicle Extension (s)	1.0	2.0		1.0	2.0	2.0	1.0	1.0		1.0	1.0	1.0
Recall Mode	None	C-Max		None	C-Max	C-Max	None	None		None	None	None
Act Effct Green (s)	18.0	70.3		13.7	66.0	66.0		21.0			21.0	44.0
Actuated g/C Ratio	0.15	0.59		0.11	0.55	0.55		0.18			0.18	0.37
v/c Ratio	0.24	0.84		0.75	1.03	0.13		1.08			0.94	0.15
Control Delay	47.8	25.9		72.0	46.9	8.3		133.7			107.1	26.4
Queue Delay	0.0	0.0		0.0	12.0	0.0		0.0			0.0	0.0
Total Delay	47.8	25.9		72.0	58.9	8.3		133.7			107.1	26.4
LOS	D	C		E	E	A		F			F	C
Approach Delay		26.7			57.2			133.7			77.8	

Lanes, Volumes, Timings
 8: US 64 & SR 1634 (Carolina Village Rd)

2011 Base Year - No Build
 Timing Plan: AM Peak

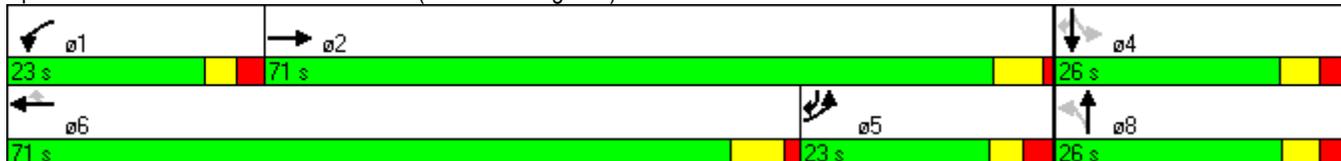


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach LOS	C			E			F			E		
Queue Length 50th (ft)	44	547		110	~911	26		~180		119		45
Queue Length 95th (ft)	87	718		m157	#1015	m41		#335		#254		84
Internal Link Dist (ft)		480			648			139			279	
Turn Bay Length (ft)	100			100								150
Base Capacity (vph)	264	2048		269	1976	884		194		163		583
Starvation Cap Reductn	0	0		0	59	0		0		0		0
Spillback Cap Reductn	0	0		0	0	0		0		0		0
Storage Cap Reductn	0	0		0	0	0		0		0		0
Reduced v/c Ratio	0.24	0.84		0.57	1.06	0.13		1.08		0.94		0.15

Intersection Summary

Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 31 (26%), Referenced to phase 2:EBT and 6:WBT, Start of Green
 Natural Cycle: 90
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.08
 Intersection Signal Delay: 49.8
 Intersection LOS: D
 Intersection Capacity Utilization 86.6%
 ICU Level of Service E
 Analysis Period (min) 15
 ~ Volume exceeds capacity, queue is theoretically infinite.
 Queue shown is maximum after two cycles.
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 8: US 64 & SR 1634 (Carolina Village Rd)



Lanes, Volumes, Timings
 9: SR 1783 (Upward Rd) & I-26 NB On-Ramp

2011 Base Year - No Build
 Timing Plan: AM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↑	↗	↗		↗			
Volume (vph)	329	318	0	0	369	118	212	0	78	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		50	150		0	0		0
Storage Lanes	0		0	0		1	1		1	0		0
Taper Length (ft)	100		100	100		100	100		100	100		100
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Fr _t						0.850			0.850			
Fl _t Protected		0.975					0.950					
Satd. Flow (prot)	0	1763	0	0	1863	1495	1770	0	1583	0	0	0
Fl _t Permitted		0.620					0.950					
Satd. Flow (perm)	0	1121	0	0	1863	1495	1770	0	1583	0	0	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			45			45				45
Link Distance (ft)		630			322			446				658
Travel Time (s)		9.5			4.9			6.8				10.0
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	8%	2%	5%	5%	2%	8%	2%	5%	2%	5%	5%	5%
Adj. Flow (vph)	366	353	0	0	410	131	236	0	87	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	719	0	0	410	131	236	0	87	0	0	0
Turn Type	Perm					Perm	Prot		custom			
Protected Phases		2			6		8					
Permitted Phases	2					6			8			
Detector Phase	2	2			6	6	8		8			
Switch Phase												
Minimum Initial (s)	12.0	12.0			12.0	12.0	7.0		7.0			
Minimum Split (s)	21.0	21.0			21.0	21.0	14.0		14.0			
Total Split (s)	71.0	71.0	0.0	0.0	71.0	71.0	19.0	0.0	19.0	0.0	0.0	0.0
Total Split (%)	78.9%	78.9%	0.0%	0.0%	78.9%	78.9%	21.1%	0.0%	21.1%	0.0%	0.0%	0.0%
Maximum Green (s)	64.0	64.0			64.0	64.0	12.0		12.0			
Yellow Time (s)	5.0	5.0			5.0	5.0	5.0		5.0			
All-Red Time (s)	2.0	2.0			2.0	2.0	2.0		2.0			
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	5.0	5.0	2.0	2.0	5.0	5.0	5.0	2.0	5.0	2.0	2.0	2.0
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0		3.0			
Recall Mode	C-Max	C-Max			C-Max	C-Max	None		None			
Act Effct Green (s)		66.0			66.0	66.0	14.0		14.0			
Actuated g/C Ratio		0.73			0.73	0.73	0.16		0.16			
v/c Ratio		0.87			0.30	0.12	0.86		0.35			
Control Delay		19.3			4.8	3.8	66.5		38.6			
Queue Delay		0.0			0.0	0.0	0.0		0.0			
Total Delay		19.3			4.8	3.8	66.5		38.6			
LOS		B			A	A	E		D			
Approach Delay		19.3			4.5							
Approach LOS		B			A							

Lanes, Volumes, Timings
 9: SR 1783 (Upward Rd) & I-26 NB On-Ramp

2011 Base Year - No Build
 Timing Plan: AM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 50th (ft)		314			66	18	132		45			
Queue Length 95th (ft)		#575			100	33	#261		90			
Internal Link Dist (ft)		550			242			366			578	
Turn Bay Length (ft)						50	150					
Base Capacity (vph)		822			1366	1096	275		246			
Starvation Cap Reductn		0			0	0	0		0			
Spillback Cap Reductn		0			0	0	0		0			
Storage Cap Reductn		0			0	0	0		0			
Reduced v/c Ratio		0.87			0.30	0.12	0.86		0.35			

Intersection Summary

Area Type: Other
 Cycle Length: 90
 Actuated Cycle Length: 90
 Offset: 9 (10%), Referenced to phase 2:EBTL and 6:WBT, Start of Green
 Natural Cycle: 90
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.87
 Intersection Signal Delay: 22.3
 Intersection LOS: C
 Intersection Capacity Utilization 77.8%
 ICU Level of Service D
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 9: SR 1783 (Upward Rd) & I-26 NB On-Ramp



Lanes, Volumes, Timings
10: SR 1783 (Upward Rd) & I-26 SB Off-Ramp

2011 Base Year - No Build
Timing Plan: AM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑	↗		↖					↘		↗
Volume (vph)	0	553	207	100	481	0	0	0	0	114	0	418
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		200	0		0	0		0	0		100
Storage Lanes	0		1	0		0	0		0	1		1
Taper Length (ft)	100		100	100		100	100		100	100		100
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Fr _t			0.850									0.850
Fl _t Protected					0.991					0.950		
Satd. Flow (prot)	0	1863	1495	0	1827	0	0	0	0	1770	0	1583
Fl _t Permitted					0.656					0.950		
Satd. Flow (perm)	0	1863	1495	0	1210	0	0	0	0	1770	0	1583
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			45			45			45	
Link Distance (ft)		549			630			547			651	
Travel Time (s)		8.3			9.5			8.3			9.9	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	5%	2%	8%	8%	2%	5%	5%	5%	5%	2%	5%	2%
Adj. Flow (vph)	0	614	230	111	534	0	0	0	0	127	0	464
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	614	230	0	645	0	0	0	0	127	0	464
Turn Type			Perm	Perm						Prot		custom
Protected Phases		2			6					4		
Permitted Phases			2	6								4
Detector Phase		2	2	6	6					4		4
Switch Phase												
Minimum Initial (s)		12.0	12.0	12.0	12.0					7.0		7.0
Minimum Split (s)		21.0	21.0	21.0	21.0					14.0		14.0
Total Split (s)	0.0	57.0	57.0	57.0	57.0	0.0	0.0	0.0	0.0	33.0	0.0	33.0
Total Split (%)	0.0%	63.3%	63.3%	63.3%	63.3%	0.0%	0.0%	0.0%	0.0%	36.7%	0.0%	36.7%
Maximum Green (s)		50.0	50.0	50.0	50.0					26.0		26.0
Yellow Time (s)		5.0	5.0	5.0	5.0					5.0		5.0
All-Red Time (s)		2.0	2.0	2.0	2.0					2.0		2.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	2.0	5.0	5.0	5.0	5.0	2.0	2.0	2.0	2.0	5.0	2.0	5.0
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)		3.0	3.0	3.0	3.0					3.0		3.0
Recall Mode		C-Max	C-Max	C-Max	C-Max					None		None
Act Effct Green (s)		52.0	52.0		52.0					28.0		28.0
Actuated g/C Ratio		0.58	0.58		0.58					0.31		0.31
v/c Ratio		0.57	0.27		0.92					0.23		0.94
Control Delay		14.6	10.5		34.9					24.4		60.8
Queue Delay		0.0	0.0		0.0					0.0		0.0
Total Delay		14.6	10.5		34.9					24.4		60.8
LOS		B	B		C					C		E
Approach Delay		13.5			34.9							
Approach LOS		B			C							

Lanes, Volumes, Timings
 10: SR 1783 (Upward Rd) & I-26 SB Off-Ramp

2011 Base Year - No Build
 Timing Plan: AM Peak

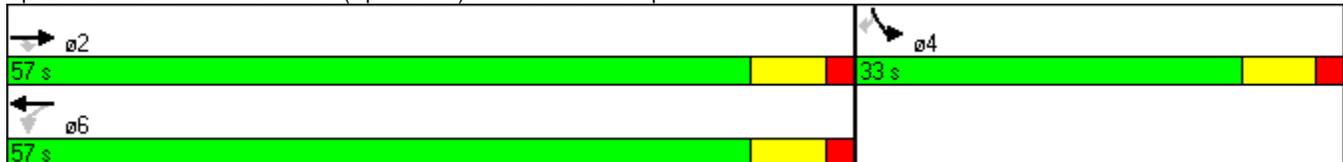


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 50th (ft)		204	60		360					53		255
Queue Length 95th (ft)		302	101		m#541					98		#446
Internal Link Dist (ft)		469			550			467			571	
Turn Bay Length (ft)			200									100
Base Capacity (vph)		1076	864		699					551		492
Starvation Cap Reductn		0	0		0					0		0
Spillback Cap Reductn		0	0		0					0		0
Storage Cap Reductn		0	0		0					0		0
Reduced v/c Ratio		0.57	0.27		0.92					0.23		0.94

Intersection Summary

Area Type: Other
 Cycle Length: 90
 Actuated Cycle Length: 90
 Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBTL, Start of Green
 Natural Cycle: 80
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.94
 Intersection Signal Delay: 31.4
 Intersection LOS: C
 Intersection Capacity Utilization 77.9%
 ICU Level of Service D
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 10: SR 1783 (Upward Rd) & I-26 SB Off-Ramp



Lanes, Volumes, Timings
1: NC 146 (Long Shoals Rd) & I-26 NB On-Ramp

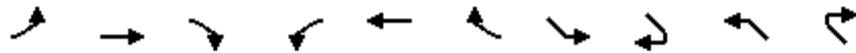
2011 Base Year - No Build
Timing Plan: PM Peak



Lane Group	EBL	EBT	EBR2	WBL	WBT	WBR2	SEL	SER2	NWL	NWR2
Lane Configurations										
Volume (vph)	179	618	181	379	466	637	663	141	178	495
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		3%			-7%					
Storage Length (ft)	450			350			0		675	
Storage Lanes	1			2			2		1	
Taper Length (ft)	100			100			100		100	
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	1.00	0.97	1.00
Frt			0.850			0.850		0.850		0.850
Flt Protected	0.950			0.950			0.950		0.950	
Satd. Flow (prot)	3224	3452	1487	3387	3663	1562	3519	1607	3434	1599
Flt Permitted	0.950			0.950			0.950		0.950	
Satd. Flow (perm)	3224	3452	1487	3387	3663	1562	3519	1607	3434	1599
Right Turn on Red			No			No		No		No
Satd. Flow (RTOR)										
Link Speed (mph)		45			45					
Link Distance (ft)		1009			964					
Travel Time (s)		15.3			14.6					
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	7%	3%	7%	7%	2%	7%	2%	3%	3%	2%
Adj. Flow (vph)	199	687	201	421	518	708	737	157	198	550
Shared Lane Traffic (%)										
Lane Group Flow (vph)	199	687	201	421	518	708	737	157	198	550
Turn Type	Prot		Free	Prot		Free	Prot	custom	Prot	Free
Protected Phases	5	2		1	6		4		8	
Permitted Phases			Free			Free		4		Free
Detector Phase	5	2		1	6		4	4	8	
Switch Phase										
Minimum Initial (s)	7.0	12.0		7.0	12.0		7.0	7.0	7.0	
Minimum Split (s)	15.2	19.5		14.7	21.0		15.1	15.1	15.0	
Total Split (s)	25.0	35.0	0.0	25.0	35.0	0.0	40.0	40.0	40.0	0.0
Total Split (%)	25.0%	35.0%	0.0%	25.0%	35.0%	0.0%	40.0%	40.0%	40.0%	0.0%
Maximum Green (s)	16.8	27.5		17.3	26.0		31.9	31.9	32.0	
Yellow Time (s)	3.4	4.3		4.0	5.2		3.8	3.8	3.7	
All-Red Time (s)	4.8	3.2		3.7	3.8		4.3	4.3	4.3	
Lost Time Adjust (s)	-3.2	-2.5	-2.5	-2.7	-4.0	-4.0	-3.1	-3.1	-3.0	0.0
Total Lost Time (s)	5.0	5.0	1.5	5.0	5.0	0.0	5.0	5.0	5.0	4.0
Lead/Lag	Lead	Lag		Lead	Lag					
Lead-Lag Optimize?	Yes	Yes		Yes	Yes					
Vehicle Extension (s)	2.0	6.0		2.0	6.0		2.0	2.0	2.0	
Minimum Gap (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	
Time Before Reduce (s)	0.0	15.0		0.0	15.0		0.0	0.0	0.0	
Time To Reduce (s)	0.0	30.0		0.0	30.0		0.0	0.0	0.0	
Recall Mode	None	C-Max		None	C-Max		None	None	None	
Act Effct Green (s)	13.7	37.6	100.0	18.6	42.5	100.0	28.8	28.8	28.8	100.0
Actuated g/C Ratio	0.14	0.38	1.00	0.19	0.42	1.00	0.29	0.29	0.29	1.00
v/c Ratio	0.45	0.53	0.14	0.67	0.33	0.45	0.73	0.34	0.20	0.34
Control Delay	42.5	27.6	0.2	43.2	21.4	1.0	36.3	29.3	26.4	0.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Lanes, Volumes, Timings
 1: NC 146 (Long Shoals Rd) & I-26 NB On-Ramp

2011 Base Year - No Build
 Timing Plan: PM Peak

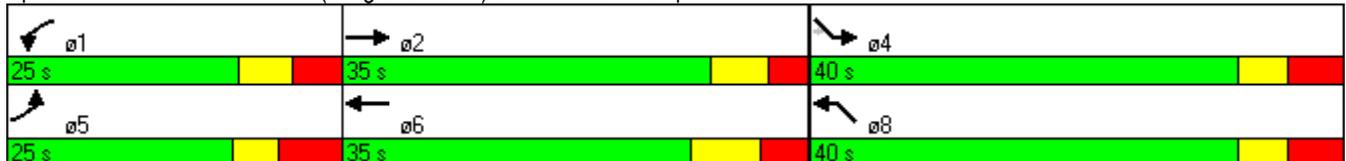


Lane Group	EBL	EBT	EBR2	WBL	WBT	WBR2	SEL	SER2	NWL	NWR2
Total Delay	42.5	27.6	0.2	43.2	21.4	1.0	36.3	29.3	26.4	0.6
LOS	D	C	A	D	C	A	D	C	C	A
Approach Delay	25.2			18.2						
Approach LOS	C			B						
Queue Length 50th (ft)	60	178	0	128	113	0	218	79	48	0
Queue Length 95th (ft)	92	264	0	177	182	0	258	124	70	0
Internal Link Dist (ft)	929			884						
Turn Bay Length (ft)	450		300	350		300		425	675	575
Base Capacity (vph)	645	1298	1487	687	1557	1562	1232	562	1202	1599
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.31	0.53	0.14	0.61	0.33	0.45	0.60	0.28	0.16	0.34

Intersection Summary

Area Type: Other
 Cycle Length: 100
 Actuated Cycle Length: 100
 Offset: 9 (9%), Referenced to phase 2:EBT and 6:WBT, Start of Green
 Natural Cycle: 55
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.73
 Intersection Signal Delay: 21.5
 Intersection LOS: C
 Intersection Capacity Utilization 59.3%
 ICU Level of Service B
 Analysis Period (min) 15

Splits and Phases: 1: NC 146 (Long Shoals Rd) & I-26 NB On-Ramp



Lanes, Volumes, Timings
2: I-26 NB On-Ramp & US 25 (Asheville Highway)

2011 Base Year - No Build
Timing Plan: PM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				↙		↗	↗	↗	↗		↗	↗
Volume (vph)	0	0	0	123	0	401	576	1036	0	0	990	190
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			2%			-1%			2%	
Storage Length (ft)	0		0	0		150	0		0	0		300
Storage Lanes	0		0	1		2	1		0	0		1
Taper Length (ft)	100		100	100		100	100		100	100		100
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	0.88	1.00	0.95	1.00	1.00	0.95	1.00
Frt						0.850						0.850
Flt Protected				0.950			0.950					
Satd. Flow (prot)	0	0	0	1735	0	2706	1680	3489	0	0	3436	1480
Flt Permitted				0.950			0.950					
Satd. Flow (perm)	0	0	0	1735	0	2706	1680	3489	0	0	3436	1480
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			35			45			45	
Link Distance (ft)		533			612			601			596	
Travel Time (s)		8.1			11.9			9.1			9.0	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	5%	5%	5%	3%	5%	4%	8%	4%	5%	5%	4%	8%
Adj. Flow (vph)	0	0	0	137	0	446	640	1151	0	0	1100	211
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	137	0	446	640	1151	0	0	1100	211
Turn Type				Prot		custom	Prot					Free
Protected Phases				4			5	2			6	
Permitted Phases						4						Free
Detector Phase				4		4	5	2			6	
Switch Phase												
Minimum Initial (s)				7.0		7.0	7.0	12.0			12.0	
Minimum Split (s)				13.0		13.0	14.0	19.0			18.0	
Total Split (s)	0.0	0.0	0.0	20.0	0.0	20.0	40.0	110.0	0.0	0.0	70.0	0.0
Total Split (%)	0.0%	0.0%	0.0%	15.4%	0.0%	15.4%	30.8%	84.6%	0.0%	0.0%	53.8%	0.0%
Maximum Green (s)				14.0		14.0	33.6	103.9			64.7	
Yellow Time (s)				3.7		3.7	3.0	4.6			4.3	
All-Red Time (s)				2.3		2.3	3.4	1.5			1.0	
Lost Time Adjust (s)	0.0	0.0	-2.0	-2.0	0.0	-2.0	-1.4	-1.1	0.0	-2.0	-0.3	0.0
Total Lost Time (s)	4.0	4.0	2.0	4.0	4.0	4.0	5.0	5.0	4.0	2.0	5.0	4.0
Lead/Lag							Lag				Lead	
Lead-Lag Optimize?							Yes				Yes	
Vehicle Extension (s)				2.0		2.0	2.0	8.0			8.0	
Minimum Gap (s)				3.0		3.0	3.0	5.5			5.5	
Time Before Reduce (s)				0.0		0.0	0.0	15.0			15.0	
Time To Reduce (s)				0.0		0.0	0.0	50.0			50.0	
Recall Mode				None		None	None	C-Max			C-Max	
Act Effct Green (s)				16.0		16.0	35.0	105.0			65.0	130.0
Actuated g/C Ratio				0.12		0.12	0.27	0.81			0.50	1.00
v/c Ratio				0.64		1.34	1.42	0.41			0.64	0.14
Control Delay				68.8		214.7	232.9	1.8			26.1	0.2
Queue Delay				0.0		0.0	0.0	0.9			0.0	0.0

Lanes, Volumes, Timings
 2: I-26 NB On-Ramp & US 25 (Asheville Highway)

2011 Base Year - No Build
 Timing Plan: PM Peak

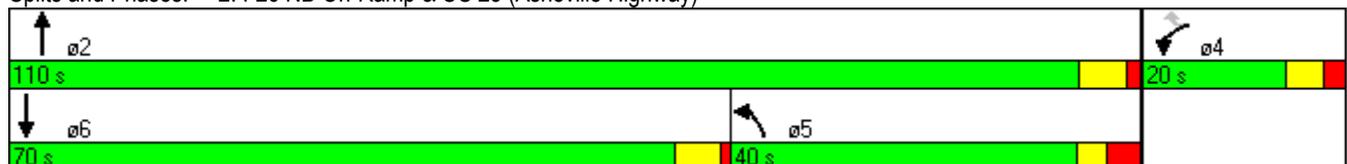


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay				68.8		214.7	232.9	2.7			26.1	0.2
LOS				E		F	F	A			C	A
Approach Delay								85.0			21.9	
Approach LOS								F			C	
Queue Length 50th (ft)				112		~277	~747	64			348	0
Queue Length 95th (ft)				#184		#397	m#794	m63			422	0
Internal Link Dist (ft)		453				532		521			516	
Turn Bay Length (ft)						150						300
Base Capacity (vph)				214		333	452	2818			1718	1480
Starvation Cap Reductn				0		0	0	1285			0	0
Spillback Cap Reductn				0		0	0	0			0	0
Storage Cap Reductn				0		0	0	0			0	0
Reduced v/c Ratio				0.64		1.34	1.42	0.75			0.64	0.14

Intersection Summary

Area Type: Other
 Cycle Length: 130
 Actuated Cycle Length: 130
 Offset: 95 (73%), Referenced to phase 2:NBT and 6:SBT, Start of Green
 Natural Cycle: 100
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.42
 Intersection Signal Delay: 77.6
 Intersection LOS: E
 Intersection Capacity Utilization 80.1%
 ICU Level of Service D
 Analysis Period (min) 15
 ~ Volume exceeds capacity, queue is theoretically infinite.
 Queue shown is maximum after two cycles.
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: I-26 NB On-Ramp & US 25 (Asheville Highway)



Lanes, Volumes, Timings
3: I-26 SB Off-Ramp & US 25 (Asheville Highway)

2011 Base Year - No Build
Timing Plan: PM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖		↖					↗	↖	↖	↗	
Volume (vph)	193	0	465	0	0	0	0	1419	123	320	793	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		3%			0%			4%			1%	
Storage Length (ft)	0		100	0		0	0		500	0		0
Storage Lanes	1		1	0		0	0		1	1		0
Taper Length (ft)	100		100	100		100	100		100	100		100
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt			0.850						0.850			
Flt Protected	0.950									0.950		
Satd. Flow (prot)	1710	0	1544	0	0	0	0	3435	1465	1663	3487	0
Flt Permitted	0.950									0.950		
Satd. Flow (perm)	1710	0	1544	0	0	0	0	3435	1465	1663	3487	0
Right Turn on Red			Yes			No			No			No
Satd. Flow (RTOR)			253									
Link Speed (mph)		35			45			45			45	
Link Distance (ft)		471			598			795			601	
Travel Time (s)		9.2			9.1			12.0			9.1	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	4%	5%	3%	5%	5%	5%	5%	3%	8%	8%	3%	5%
Adj. Flow (vph)	214	0	517	0	0	0	0	1577	137	356	881	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	214	0	517	0	0	0	0	1577	137	356	881	0
Turn Type	Prot		custom						Free	Prot		
Protected Phases	4		4					2		1	6	
Permitted Phases									Free			
Detector Phase	4		4					2		1	6	
Switch Phase												
Minimum Initial (s)	7.0		7.0					12.0		7.0	12.0	
Minimum Split (s)	14.0		14.0					19.0		14.0	19.0	
Total Split (s)	24.0	0.0	24.0	0.0	0.0	0.0	0.0	66.0	0.0	40.0	106.0	0.0
Total Split (%)	18.5%	0.0%	18.5%	0.0%	0.0%	0.0%	0.0%	50.8%	0.0%	30.8%	81.5%	0.0%
Maximum Green (s)	18.0		18.0					60.3		33.5	100.3	
Yellow Time (s)	4.0		4.0					4.7		4.0	4.7	
All-Red Time (s)	2.0		2.0					1.0		2.5	1.0	
Lost Time Adjust (s)	-1.0	-2.0	-1.0	-2.0	-2.0	-2.0	-2.0	-0.7	-0.7	-1.5	-1.7	-2.0
Total Lost Time (s)	5.0	2.0	5.0	2.0	2.0	2.0	2.0	5.0	3.3	5.0	4.0	2.0
Lead/Lag								Lead		Lag		
Lead-Lag Optimize?								Yes		Yes		
Vehicle Extension (s)	2.0		2.0					8.0		2.0	8.0	
Minimum Gap (s)	3.0		3.0					5.5		3.0	5.5	
Time Before Reduce (s)	0.0		0.0					15.0		0.0	15.0	
Time To Reduce (s)	0.0		0.0					50.0		0.0	50.0	
Recall Mode	None		None					C-Max		None	C-Max	
Act Effct Green (s)	19.0		19.0					61.0	130.0	35.0	102.0	
Actuated g/C Ratio	0.15		0.15					0.47	1.00	0.27	0.78	
v/c Ratio	0.86		1.17					0.98	0.09	0.79	0.32	
Control Delay	84.0		123.0					51.9	0.1	58.1	0.6	
Queue Delay	0.0		0.0					0.0	0.0	0.0	0.2	

Lanes, Volumes, Timings
 3: I-26 SB Off-Ramp & US 25 (Asheville Highway)

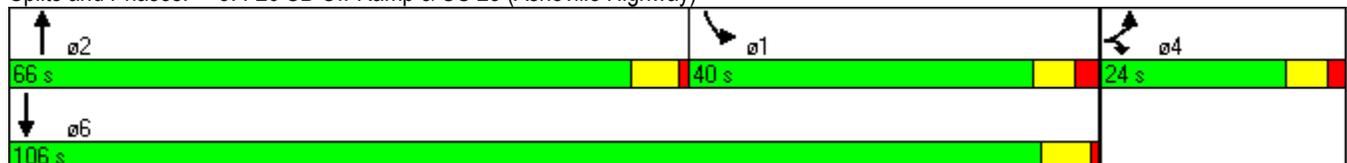
2011 Base Year - No Build
 Timing Plan: PM Peak

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay	84.0		123.0					51.9	0.1	58.1	0.8	
LOS	F		F					D	A	E	A	
Approach Delay								47.8			17.3	
Approach LOS								D			B	
Queue Length 50th (ft)	178		~326					671	0	322	6	
Queue Length 95th (ft)	#319		#550					#850	0	#439	4	
Internal Link Dist (ft)		391			518			715			521	
Turn Bay Length (ft)			100						500			
Base Capacity (vph)	250		442					1612	1465	448	2736	
Starvation Cap Reductn	0		0					0	0	0	930	
Spillback Cap Reductn	0		0					0	0	0	0	
Storage Cap Reductn	0		0					0	0	0	0	
Reduced v/c Ratio	0.86		1.17					0.98	0.09	0.79	0.49	

Intersection Summary

Area Type: Other
 Cycle Length: 130
 Actuated Cycle Length: 130
 Offset: 91 (70%), Referenced to phase 2:NBT and 6:SBT, Start of Green
 Natural Cycle: 110
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.17
 Intersection Signal Delay: 50.2
 Intersection LOS: D
 Intersection Capacity Utilization 80.1%
 ICU Level of Service D
 Analysis Period (min) 15
 ~ Volume exceeds capacity, queue is theoretically infinite.
 Queue shown is maximum after two cycles.
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 3: I-26 SB Off-Ramp & US 25 (Asheville Highway)



Lanes, Volumes, Timings
6: US 64 & SR 1516 (Francis Rd)

2011 Base Year - No Build
Timing Plan: PM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	103	1863	333	62	1470	19	375	5	88	27	5	117
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		-1%			4%			-1%			2%	
Storage Length (ft)	150		0	125		0	150		150	0		150
Storage Lanes	1		1	1		0	1		1	0		1
Taper Length (ft)	100		100	100		100	100		100	100		100
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00
Frt			0.850		0.998				0.850			0.850
Flt Protected	0.950			0.950			0.950	0.954			0.960	
Satd. Flow (prot)	1778	3557	1591	1734	3461	0	1690	1697	1591	0	1770	1567
Flt Permitted	0.950			0.950			0.950	0.954			0.960	
Satd. Flow (perm)	1778	3557	1591	1734	3461	0	1690	1697	1591	0	1770	1567
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			45			35				35
Link Distance (ft)		836			622			375				406
Travel Time (s)		12.7			9.4			7.3				7.9
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	114	2070	370	69	1633	21	417	6	98	30	6	130
Shared Lane Traffic (%)							49%					
Lane Group Flow (vph)	114	2070	370	69	1654	0	213	210	98	0	36	130
Turn Type	Prot		Perm	Prot			Split		pm+ov	Split		pm+ov
Protected Phases	5	2		1	6		4	4	1	3	3	5
Permitted Phases			2						4			3
Detector Phase	5	2	2	1	6		4	4	1	3	3	5
Switch Phase												
Minimum Initial (s)	7.0	12.0	12.0	7.0	12.0		7.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	13.0	18.0	18.0	13.0	18.0		14.0	14.0	13.0	14.0	14.0	13.0
Total Split (s)	20.0	80.0	80.0	20.0	80.0	0.0	30.0	30.0	20.0	30.0	30.0	20.0
Total Split (%)	12.5%	50.0%	50.0%	12.5%	50.0%	0.0%	18.8%	18.8%	12.5%	18.8%	18.8%	12.5%
Maximum Green (s)	14.4	74.0	74.0	14.6	74.4		23.4	23.4	14.6	23.5	23.5	14.4
Yellow Time (s)	3.2	4.6	4.6	3.0	4.2		3.9	3.9	3.0	3.7	3.7	3.2
All-Red Time (s)	2.4	1.4	1.4	2.4	1.4		2.7	2.7	2.4	2.8	2.8	2.4
Lost Time Adjust (s)	-0.6	-1.0	-1.0	-0.4	-0.6	-2.0	-1.6	-1.6	-0.4	-2.0	-1.5	-0.6
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	2.0	5.0	5.0	5.0	4.5	5.0	5.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lag	Lag	Lead	Lead	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	1.0	2.0	2.0	1.0	2.0		1.0	1.0	1.0	1.0	1.0	1.0
Recall Mode	None	C-Max	C-Max	None	C-Max		None	None	None	None	None	None
Act Effct Green (s)	14.8	97.1	97.1	10.6	92.9		25.7	25.7	41.3		9.3	22.4
Actuated g/C Ratio	0.09	0.61	0.61	0.07	0.58		0.16	0.16	0.26		0.06	0.14
v/c Ratio	0.70	0.96	0.38	0.60	0.82		0.78	0.77	0.24		0.35	0.59
Control Delay	98.1	37.0	13.2	93.4	33.6		83.6	82.1	46.2		81.7	52.9
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0		0.0	0.0
Total Delay	98.1	37.0	13.2	93.4	33.6		83.6	82.1	46.2		81.7	52.9
LOS	F	D	B	F	C		F	F	D		F	D
Approach Delay		36.3			36.0			76.0				59.2

Lanes, Volumes, Timings
6: US 64 & SR 1516 (Francis Rd)

2011 Base Year - No Build
Timing Plan: PM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach LOS	D			D			E			E		
Queue Length 50th (ft)	116	1126	158	72	730		228	224	82		37	94
Queue Length 95th (ft)	178	#1484	293	126	#1094		314	310	123		78	124
Internal Link Dist (ft)	756			542			295			326		
Turn Bay Length (ft)	150			125			150			150		
Base Capacity (vph)	183	2159	965	163	2009		292	294	455		277	235
Starvation Cap Reductn	0	0	0	0	0		0	0	0		0	0
Spillback Cap Reductn	0	0	0	0	0		0	0	0		0	0
Storage Cap Reductn	0	0	0	0	0		0	0	0		0	0
Reduced v/c Ratio	0.62	0.96	0.38	0.42	0.82		0.73	0.71	0.22		0.13	0.55

Intersection Summary

Area Type: Other
 Cycle Length: 160
 Actuated Cycle Length: 160
 Offset: 144 (90%), Referenced to phase 2:EBT and 6:WBT, Start of Green
 Natural Cycle: 120
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.96
 Intersection Signal Delay: 41.1
 Intersection LOS: D
 Intersection Capacity Utilization 87.0%
 ICU Level of Service E
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

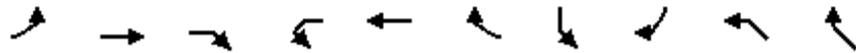
Splits and Phases: 6: US 64 & SR 1516 (Francis Rd)



Lanes, Volumes, Timings
7: US 64 & I-26 SB Off-Ramp

2011 Base Year - No Build

Timing Plan: PM Peak

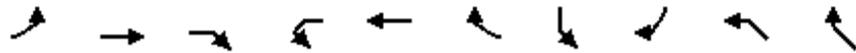


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	SBL	SBR	NWL	NWR
Lane Configurations		↑↑	↑		↑↑			↑↑		
Volume (vph)	0	1835	254	0	1399	0	0	294	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		3%			-3%		-3%		0%	
Storage Length (ft)	0		0	0		0	0	500	0	0
Storage Lanes	0		1	0		0	0	1	0	0
Taper Length (ft)	100		100	100		100	100	100	100	100
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.88	1.00	1.00
Frt			0.850					0.850		
Flt Protected										
Satd. Flow (prot)	0	3486	1473	0	3592	0	0	2828	0	0
Flt Permitted										
Satd. Flow (perm)	0	3486	1473	0	3592	0	0	2828	0	0
Right Turn on Red			No			No		No		
Satd. Flow (RTOR)										
Link Speed (mph)		45			45		35		45	
Link Distance (ft)		728			745		807		350	
Travel Time (s)		11.0			11.3		15.7		5.3	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	5%	2%	8%	5%	2%	5%	5%	2%	5%	5%
Adj. Flow (vph)	0	2039	282	0	1554	0	0	327	0	0
Shared Lane Traffic (%)										
Lane Group Flow (vph)	0	2039	282	0	1554	0	0	327	0	0
Turn Type			Perm					custom		
Protected Phases		Free			6			4		
Permitted Phases			Free							
Detector Phase					6			4		
Switch Phase										
Minimum Initial (s)					12.0			7.0		
Minimum Split (s)					18.0			13.0		
Total Split (s)	0.0	0.0	0.0	0.0	120.0	0.0	0.0	40.0	0.0	0.0
Total Split (%)	0.0%	0.0%	0.0%	0.0%	75.0%	0.0%	0.0%	25.0%	0.0%	0.0%
Maximum Green (s)					114.2			34.9		
Yellow Time (s)					4.8			4.1		
All-Red Time (s)					1.0			1.0		
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	-0.8	0.0	0.0	-0.1	-2.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	5.0	4.0	4.0	5.0	2.0	4.0
Lead/Lag										
Lead-Lag Optimize?										
Vehicle Extension (s)					2.0			1.0		
Recall Mode					C-Max			None		
Act Effct Green (s)		160.0	160.0		127.8			22.2		
Actuated g/C Ratio		1.00	1.00		0.80			0.14		
v/c Ratio		0.58	0.19		0.54			0.83		
Control Delay		1.1	0.1		5.1			85.2		
Queue Delay		0.0	0.0		0.1			0.0		
Total Delay		1.1	0.1		5.2			85.2		
LOS		A	A		A			F		
Approach Delay		1.0			5.2					

Lanes, Volumes, Timings
7: US 64 & I-26 SB Off-Ramp

2011 Base Year - No Build

Timing Plan: PM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	SBL	SBR	NWL	NWR
Approach LOS		A			A					
Queue Length 50th (ft)		0	0		196			192		
Queue Length 95th (ft)		m0	m0		218			245		
Internal Link Dist (ft)		648			665		727		270	
Turn Bay Length (ft)								500		
Base Capacity (vph)		3486	1473		2870			619		
Starvation Cap Reductn		0	0		0			0		
Spillback Cap Reductn		0	0		287			0		
Storage Cap Reductn		0	0		0			0		
Reduced v/c Ratio		0.58	0.19		0.60			0.53		

Intersection Summary

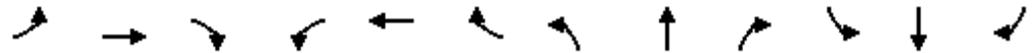
Area Type: Other
 Cycle Length: 160
 Actuated Cycle Length: 160
 Offset: 0 (0%), Referenced to phase 6:WBT, Start of Green, Master Intersection
 Natural Cycle: 40
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.83
 Intersection Signal Delay: 9.1
 Intersection LOS: A
 Intersection Capacity Utilization 86.2%
 ICU Level of Service E
 Analysis Period (min) 15
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 7: US 64 & I-26 SB Off-Ramp



Lanes, Volumes, Timings
8: US 64 & SR 1634 (Carolina Village Rd)

2011 Base Year - No Build
Timing Plan: PM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	79	1829	66	107	1481	117	69	22	139	106	15	58
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		1%			-3%			3%				-1%
Storage Length (ft)	100		0	100		0	0		0	0		150
Storage Lanes	1		0	1		1	0		0	0		1
Taper Length (ft)	100		100	100		100	100		100	100		100
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.995				0.850		0.918				0.850
Flt Protected	0.950			0.950				0.985			0.958	
Satd. Flow (prot)	1761	3504	0	1796	3592	1607	0	1659	0	0	1793	1591
Flt Permitted	0.950			0.950				0.727			0.450	
Satd. Flow (perm)	1761	3504	0	1796	3592	1607	0	1225	0	0	842	1591
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		560			728			219			359	
Travel Time (s)		8.5			11.0			5.0			8.2	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	88	2032	73	119	1646	130	77	24	154	118	17	64
Shared Lane Traffic (%)												
Lane Group Flow (vph)	88	2105	0	119	1646	130	0	255	0	0	135	64
Turn Type	Prot			Prot		Perm	Perm			Perm		pm+ov
Protected Phases	5	2		1	6			8			4	5
Permitted Phases						6	8			4		4
Detector Phase	5	2		1	6	6	8	8		4	4	5
Switch Phase												
Minimum Initial (s)	7.0	12.0		7.0	12.0	12.0	7.0	7.0		7.0	7.0	7.0
Minimum Split (s)	13.0	18.0		13.0	19.0	19.0	13.0	13.0		13.0	13.0	13.0
Total Split (s)	20.0	90.0	0.0	20.0	90.0	90.0	50.0	50.0	0.0	50.0	50.0	20.0
Total Split (%)	12.5%	56.3%	0.0%	12.5%	56.3%	56.3%	31.3%	31.3%	0.0%	31.3%	31.3%	12.5%
Maximum Green (s)	14.1	84.4		14.6	83.8	83.8	44.2	44.2		44.1	44.1	14.1
Yellow Time (s)	3.0	4.4		3.0	4.8	4.8	3.4	3.4		3.6	3.6	3.0
All-Red Time (s)	2.9	1.2		2.4	1.4	1.4	2.4	2.4		2.3	2.3	2.9
Lost Time Adjust (s)	-0.9	-0.6	-2.0	-0.4	-1.2	-1.2	-2.0	-0.8	-2.0	-2.0	-0.9	-0.9
Total Lost Time (s)	5.0	5.0	2.0	5.0	5.0	5.0	3.8	5.0	2.0	3.9	5.0	5.0
Lead/Lag	Lag	Lag		Lead	Lead	Lead						Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes						Yes
Vehicle Extension (s)	1.0	2.0		1.0	2.0	2.0	1.0	1.0		1.0	1.0	1.0
Recall Mode	None	C-Max		None	C-Max	C-Max	None	None		None	None	None
Act Effct Green (s)	15.0	97.0		13.6	95.6	95.6		34.4			34.4	54.4
Actuated g/C Ratio	0.09	0.61		0.08	0.60	0.60		0.22			0.22	0.34
v/c Ratio	0.53	0.99		0.78	0.77	0.14		0.97			0.75	0.12
Control Delay	81.7	48.7		97.7	30.7	15.2		109.4			81.9	34.6
Queue Delay	0.0	0.0		0.0	0.3	0.0		0.0			0.0	0.0
Total Delay	81.7	48.7		97.7	31.1	15.2		109.4			81.9	34.6
LOS	F	D		F	C	B		F			F	C
Approach Delay		50.0			34.2			109.4			66.7	

Lanes, Volumes, Timings
 8: US 64 & SR 1634 (Carolina Village Rd)

2011 Base Year - No Build
 Timing Plan: PM Peak

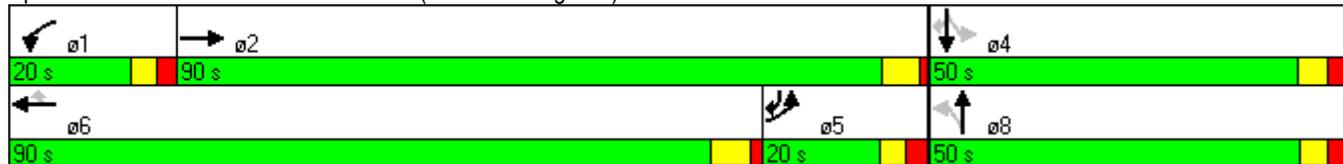


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Approach LOS	D			C			F			E			
Queue Length 50th (ft)	90	~1142		121	828	61	267			133	46		
Queue Length 95th (ft)	153	#1467		#215	945	92	359			203	75		
Internal Link Dist (ft)	480			648			139			279			
Turn Bay Length (ft)	100	100									150		
Base Capacity (vph)	165	2125		173	2147	961	345			237	541		
Starvation Cap Reductn	0	0		0	121	0	0			0	0		
Spillback Cap Reductn	0	0		0	0	0	0			0	0		
Storage Cap Reductn	0	0		0	0	0	0			0	0		
Reduced v/c Ratio	0.53	0.99		0.69	0.81	0.14	0.74			0.57	0.12		

Intersection Summary

Area Type: Other
 Cycle Length: 160
 Actuated Cycle Length: 160
 Offset: 57 (36%), Referenced to phase 2:EBT and 6:WBT, Start of Green
 Natural Cycle: 110
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.99
 Intersection Signal Delay: 47.5
 Intersection LOS: D
 Intersection Capacity Utilization 91.3%
 ICU Level of Service F
 Analysis Period (min) 15
 ~ Volume exceeds capacity, queue is theoretically infinite.
 Queue shown is maximum after two cycles.
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 8: US 64 & SR 1634 (Carolina Village Rd)



Lanes, Volumes, Timings
9: SR 1783 (Upward Rd) & I-26 NB On-Ramp

2011 Base Year - No Build
Timing Plan: PM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↑	↗	↗		↗			
Volume (vph)	418	387	0	0	282	114	207	0	100	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		50	150		0	0		0
Storage Lanes	0		0	0		1	1		1	0		0
Taper Length (ft)	100		100	100		100	100		100	100		100
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Fr _t						0.850			0.850			
Fl _t Protected		0.975					0.950					
Satd. Flow (prot)	0	1762	0	0	1863	1495	1770	0	1583	0	0	0
Fl _t Permitted		0.680					0.950					
Satd. Flow (perm)	0	1229	0	0	1863	1495	1770	0	1583	0	0	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			45			45				45
Link Distance (ft)		630			322			446				658
Travel Time (s)		9.5			4.9			6.8				10.0
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	8%	2%	5%	5%	2%	8%	2%	5%	2%	5%	5%	5%
Adj. Flow (vph)	464	430	0	0	313	127	230	0	111	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	894	0	0	313	127	230	0	111	0	0	0
Turn Type	Perm					Perm	Prot		custom			
Protected Phases		2			6		8					
Permitted Phases	2					6			8			
Detector Phase	2	2			6	6	8		8			
Switch Phase												
Minimum Initial (s)	12.0	12.0			12.0	12.0	7.0		7.0			
Minimum Split (s)	21.0	21.0			21.0	21.0	14.0		14.0			
Total Split (s)	74.0	74.0	0.0	0.0	74.0	74.0	16.0	0.0	16.0	0.0	0.0	0.0
Total Split (%)	82.2%	82.2%	0.0%	0.0%	82.2%	82.2%	17.8%	0.0%	17.8%	0.0%	0.0%	0.0%
Maximum Green (s)	67.0	67.0			67.0	67.0	9.0		9.0			
Yellow Time (s)	5.0	5.0			5.0	5.0	5.0		5.0			
All-Red Time (s)	2.0	2.0			2.0	2.0	2.0		2.0			
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	5.0	5.0	2.0	2.0	5.0	5.0	5.0	2.0	5.0	2.0	2.0	2.0
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0		3.0			
Recall Mode	C-Max	C-Max			C-Max	C-Max	None		None			
Act Effct Green (s)		69.0			69.0	69.0	11.0		11.0			
Actuated g/C Ratio		0.77			0.77	0.77	0.12		0.12			
v/c Ratio		0.95			0.22	0.11	1.06		0.58			
Control Delay		26.1			3.4	2.9	119.7		50.1			
Queue Delay		2.6			0.0	0.0	0.0		0.0			
Total Delay		28.7			3.4	2.9	119.7		50.1			
LOS		C			A	A	F		D			
Approach Delay		28.7			3.2							
Approach LOS		C			A							

Lanes, Volumes, Timings
 9: SR 1783 (Upward Rd) & I-26 NB On-Ramp

2011 Base Year - No Build
 Timing Plan: PM Peak

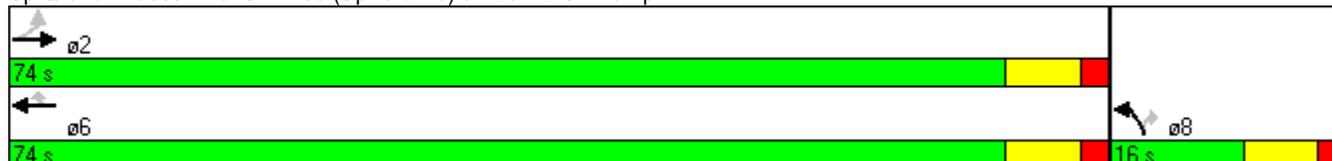


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 50th (ft)		453			39	15	~146		61			
Queue Length 95th (ft)		#736			61	27	#288		#119			
Internal Link Dist (ft)		550			242			366			578	
Turn Bay Length (ft)						50	150					
Base Capacity (vph)		942			1428	1146	216		193			
Starvation Cap Reductn		20			0	0	0		0			
Spillback Cap Reductn		0			0	0	0		0			
Storage Cap Reductn		0			0	0	0		0			
Reduced v/c Ratio		0.97			0.22	0.11	1.06		0.58			

Intersection Summary

Area Type: Other
 Cycle Length: 90
 Actuated Cycle Length: 90
 Offset: 13 (14%), Referenced to phase 2:EBTL and 6:WBT, Start of Green
 Natural Cycle: 90
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.06
 Intersection Signal Delay: 35.9
 Intersection LOS: D
 Intersection Capacity Utilization 81.5%
 ICU Level of Service D
 Analysis Period (min) 15
 ~ Volume exceeds capacity, queue is theoretically infinite.
 Queue shown is maximum after two cycles.
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 9: SR 1783 (Upward Rd) & I-26 NB On-Ramp



Lanes, Volumes, Timings
 10: SR 1783 (Upward Rd) & I-26 SB Off-Ramp

2011 Base Year - No Build

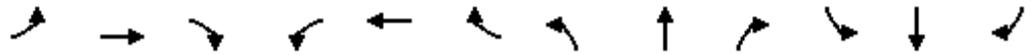
Timing Plan: PM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑	↗		↖					↘		↗
Volume (vph)	0	687	212	78	411	0	0	0	0	118	0	329
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		200	0		0	0		0	0		100
Storage Lanes	0		1	0		0	0		0	1		1
Taper Length (ft)	100		100	100		100	100		100	100		100
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850									0.850
Flt Protected					0.992					0.950		
Satd. Flow (prot)	0	1863	1495	0	1831	0	0	0	0	1770	0	1583
Flt Permitted					0.626					0.950		
Satd. Flow (perm)	0	1863	1495	0	1155	0	0	0	0	1770	0	1583
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			45			45			45	
Link Distance (ft)		549			630			547			651	
Travel Time (s)		8.3			9.5			8.3			9.9	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	5%	2%	8%	8%	2%	5%	5%	5%	5%	2%	5%	2%
Adj. Flow (vph)	0	763	236	87	457	0	0	0	0	131	0	366
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	763	236	0	544	0	0	0	0	131	0	366
Turn Type			Perm	Perm						Prot		custom
Protected Phases		2			6					4		
Permitted Phases			2	6								4
Detector Phase		2	2	6	6					4		4
Switch Phase												
Minimum Initial (s)		12.0	12.0	12.0	12.0					7.0		7.0
Minimum Split (s)		21.0	21.0	21.0	21.0					14.0		14.0
Total Split (s)	0.0	59.0	59.0	59.0	59.0	0.0	0.0	0.0	0.0	31.0	0.0	31.0
Total Split (%)	0.0%	65.6%	65.6%	65.6%	65.6%	0.0%	0.0%	0.0%	0.0%	34.4%	0.0%	34.4%
Maximum Green (s)		52.0	52.0	52.0	52.0					24.0		24.0
Yellow Time (s)		5.0	5.0	5.0	5.0					5.0		5.0
All-Red Time (s)		2.0	2.0	2.0	2.0					2.0		2.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	2.0	5.0	5.0	5.0	5.0	2.0	2.0	2.0	2.0	5.0	2.0	5.0
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)		3.0	3.0	3.0	3.0					3.0		3.0
Recall Mode		C-Max	C-Max	C-Max	C-Max					None		None
Act Effct Green (s)		55.4	55.4		55.4					24.6		24.6
Actuated g/C Ratio		0.62	0.62		0.62					0.27		0.27
v/c Ratio		0.67	0.26		0.77					0.27		0.85
Control Delay		15.3	9.2		19.2					26.8		49.8
Queue Delay		0.3	0.0		0.0					0.0		0.0
Total Delay		15.6	9.2		19.2					26.8		49.8
LOS		B	A		B					C		D
Approach Delay		14.1			19.2							
Approach LOS		B			B							

Lanes, Volumes, Timings
 10: SR 1783 (Upward Rd) & I-26 SB Off-Ramp

2011 Base Year - No Build
 Timing Plan: PM Peak

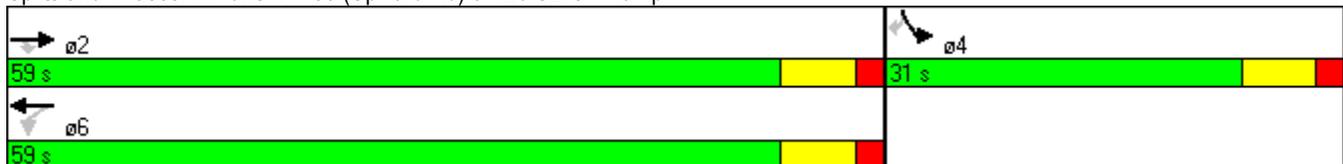


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 50th (ft)		269	58		287					57		192
Queue Length 95th (ft)		400	98		m348					104		#335
Internal Link Dist (ft)		469			550			467			571	
Turn Bay Length (ft)			200									100
Base Capacity (vph)		1147	920		711					511		457
Starvation Cap Reductn		0	0		0					0		0
Spillback Cap Reductn		80	0		0					13		0
Storage Cap Reductn		0	0		0					0		0
Reduced v/c Ratio		0.72	0.26		0.77					0.26		0.80

Intersection Summary

Area Type: Other
 Cycle Length: 90
 Actuated Cycle Length: 90
 Offset: 4 (4%), Referenced to phase 2:EBT and 6:WBTL, Start of Green
 Natural Cycle: 60
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.85
 Intersection Signal Delay: 22.7
 Intersection LOS: C
 Intersection Capacity Utilization 80.3%
 ICU Level of Service D
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 10: SR 1783 (Upward Rd) & I-26 SB Off-Ramp



2011 Build 8/6 Lane

Lanes, Volumes, Timings

2011 Base Year - Build 8/6 Lanes Combination

1: NC 146 (Long Shoals Rd) & I-26 NB On-Ramp

Timing Plan: AM Peak

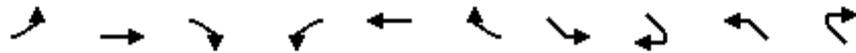


Lane Group	EBL	EBT	EBR2	WBL	WBT	WBR2	SEL	SER2	NWL	NWR2
Lane Configurations	↗↘	↑↑	↗	↗↘	↑↑	↗	↗↘	↗	↗↘	↗
Volume (vph)	185	460	183	464	614	783	744	234	185	351
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		3%			-7%					
Storage Length (ft)	450			350			0		675	
Storage Lanes	1			2			2		1	
Taper Length (ft)	100			100			100		100	
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	1.00	0.97	1.00
Frt			0.850			0.850		0.850		0.850
Flt Protected	0.950			0.950			0.950		0.950	
Satd. Flow (prot)	3224	3452	1487	3387	3663	1562	3519	1607	3434	1599
Flt Permitted	0.950			0.950			0.950		0.950	
Satd. Flow (perm)	3224	3452	1487	3387	3663	1562	3519	1607	3434	1599
Right Turn on Red			No			No		No		No
Satd. Flow (RTOR)										
Link Speed (mph)		45			45					
Link Distance (ft)		1009			964					
Travel Time (s)		15.3			14.6					
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	7%	3%	7%	7%	2%	7%	2%	3%	3%	2%
Adj. Flow (vph)	206	511	203	516	682	870	827	260	206	390
Shared Lane Traffic (%)										
Lane Group Flow (vph)	206	511	203	516	682	870	827	260	206	390
Enter Blocked Intersection	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Right	Left	Right
Median Width(ft)		24			24					
Link Offset(ft)		0			0					
Crosswalk Width(ft)		16			16					
Two way Left Turn Lane										
Headway Factor	1.02	1.02	1.02	0.96	0.96	0.96	0.97	0.97	0.99	0.99
Turning Speed (mph)	15		9	15		9	15	9	15	9
Turn Type	Prot		Free	Prot		Free	Prot	custom	Prot	Free
Protected Phases	5	2		1	6		4		8	
Permitted Phases			Free			Free		4		Free
Detector Phase	5	2		1	6		4	4	8	
Switch Phase										
Minimum Initial (s)	7.0	12.0		7.0	12.0		7.0	7.0	7.0	
Minimum Split (s)	16.0	20.0		15.0	21.0		16.0	16.0	15.0	
Total Split (s)	16.0	45.0	0.0	28.0	57.0	0.0	27.0	27.0	27.0	0.0
Total Split (%)	16.0%	45.0%	0.0%	28.0%	57.0%	0.0%	27.0%	27.0%	27.0%	0.0%
Maximum Green (s)	7.8	37.5		20.3	48.0		18.9	18.9	19.0	
Yellow Time (s)	3.4	4.3		4.0	5.2		3.8	3.8	3.7	
All-Red Time (s)	4.8	3.2		3.7	3.8		4.3	4.3	4.3	
Lost Time Adjust (s)	-3.2	-2.5	-2.5	-2.7	-4.0	-4.0	-3.1	-3.1	-3.0	0.0
Total Lost Time (s)	5.0	5.0	1.5	5.0	5.0	0.0	5.0	5.0	5.0	4.0
Lead/Lag	Lead	Lag		Lead	Lag					
Lead-Lag Optimize?	Yes	Yes		Yes	Yes					
Vehicle Extension (s)	2.0	6.0		2.0	6.0		2.0	2.0	2.0	
Minimum Gap (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	

Lanes, Volumes, Timings
 1: NC 146 (Long Shoals Rd) & I-26 NB On-Ramp

2011 Base Year - Build 8/6 Lanes Combination

Timing Plan: AM Peak

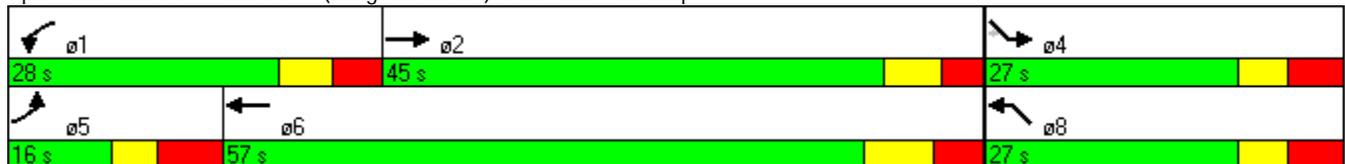


Lane Group	EBL	EBT	EBR2	WBL	WBT	WBR2	SEL	SER2	NWL	NWR2
Time Before Reduce (s)	0.0	15.0		0.0	15.0		0.0	0.0	0.0	
Time To Reduce (s)	0.0	30.0		0.0	30.0		0.0	0.0	0.0	
Recall Mode	None	C-Max		None	C-Max		None	None	None	
Act Effect Green (s)	10.9	41.9	100.0	21.1	52.1	100.0	22.0	22.0	22.0	100.0
Actuated g/C Ratio	0.11	0.42	1.00	0.21	0.52	1.00	0.22	0.22	0.22	1.00
v/c Ratio	0.59	0.35	0.14	0.72	0.36	0.56	1.07	0.73	0.27	0.24
Control Delay	49.7	21.1	0.2	42.9	14.8	1.4	90.5	50.1	33.5	0.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	49.7	21.1	0.2	42.9	14.8	1.4	90.5	50.1	33.5	0.4
LOS	D	C	A	D	B	A	F	D	C	A
Approach Delay		22.9			16.2					
Approach LOS		C			B					
Queue Length 50th (ft)	65	116	0	156	128	0	~302	155	56	0
Queue Length 95th (ft)	103	161	0	210	168	0	#421	#267	88	0
Internal Link Dist (ft)		929			884					
Turn Bay Length (ft)	450		300	350		300		425	675	575
Base Capacity (vph)	355	1448	1487	779	1908	1562	774	354	755	1599
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.58	0.35	0.14	0.66	0.36	0.56	1.07	0.73	0.27	0.24

Intersection Summary

Area Type: Other
 Cycle Length: 100
 Actuated Cycle Length: 100
 Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green
 Natural Cycle: 60
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.07
 Intersection Signal Delay: 32.0
 Intersection LOS: C
 Intersection Capacity Utilization 59.7%
 ICU Level of Service B
 Analysis Period (min) 15
 ~ Volume exceeds capacity, queue is theoretically infinite.
 Queue shown is maximum after two cycles.
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 1: NC 146 (Long Shoals Rd) & I-26 NB On-Ramp

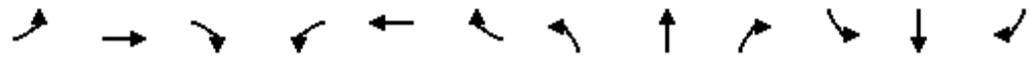


Lanes, Volumes, Timings

2011 Base Year - Build 8/6 Lanes Combination

2: I-26 NB On-Ramp & US 25 (Asheville Highway)

Timing Plan: AM Peak

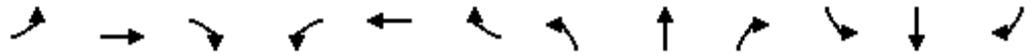


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				↙		↗	↗	↗	↗		↗	↗
Volume (vph)	0	0	0	94	0	328	495	909	0	0	1248	252
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			2%			-1%			2%	
Storage Length (ft)	0		0	0		150	0		0	0		300
Storage Lanes	0		0	1		2	1		0	0		1
Taper Length (ft)	100		100	100		100	100		100	100		100
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	0.88	1.00	0.95	1.00	1.00	0.95	1.00
Frt						0.850						0.850
Flt Protected				0.950			0.950					
Satd. Flow (prot)	0	0	0	1735	0	2706	1680	3489	0	0	3436	1480
Flt Permitted				0.950			0.950					
Satd. Flow (perm)	0	0	0	1735	0	2706	1680	3489	0	0	3436	1480
Right Turn on Red			No			Yes			No			No
Satd. Flow (RTOR)						364						
Link Speed (mph)		45			35			45			45	
Link Distance (ft)		533			612			601			596	
Travel Time (s)		8.1			11.9			9.1			9.0	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	5%	5%	5%	3%	5%	4%	8%	4%	5%	5%	4%	8%
Adj. Flow (vph)	0	0	0	104	0	364	550	1010	0	0	1387	280
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	104	0	364	550	1010	0	0	1387	280
Enter Blocked Intersection	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.01	1.01	1.01	0.99	0.99	0.99	1.01	1.01	1.01
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type				Prot		custom	Prot					Free
Protected Phases				4			5	2			6	
Permitted Phases						4						Free
Detector Phase				4		4	5	2			6	
Switch Phase												
Minimum Initial (s)				7.0		7.0	7.0	12.0			12.0	
Minimum Split (s)				13.0		13.0	14.0	19.0			18.0	
Total Split (s)	0.0	0.0	0.0	14.0	0.0	14.0	43.0	96.0	0.0	0.0	53.0	0.0
Total Split (%)	0.0%	0.0%	0.0%	12.7%	0.0%	12.7%	39.1%	87.3%	0.0%	0.0%	48.2%	0.0%
Maximum Green (s)				8.0		8.0	36.6	89.9			47.7	
Yellow Time (s)				3.7		3.7	3.0	4.6			4.3	
All-Red Time (s)				2.3		2.3	3.4	1.5			1.0	
Lost Time Adjust (s)	-2.0	0.0	0.0	-1.0	0.0	-1.0	-1.4	-1.1	0.0	0.0	-0.3	0.0
Total Lost Time (s)	2.0	4.0	4.0	5.0	4.0	5.0	5.0	5.0	4.0	4.0	5.0	4.0
Lead/Lag							Lag				Lead	
Lead-Lag Optimize?							Yes				Yes	
Vehicle Extension (s)				2.0		2.0	2.0	8.0			8.0	
Minimum Gap (s)				3.0		3.0	3.0	5.5			5.5	

Lanes, Volumes, Timings
 2: I-26 NB On-Ramp & US 25 (Asheville Highway)

2011 Base Year - Build 8/6 Lanes Combination

Timing Plan: AM Peak

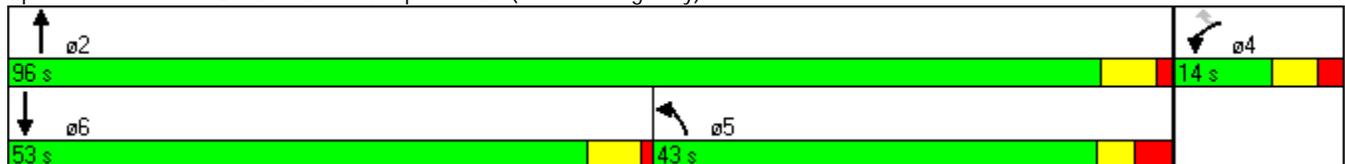


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Time Before Reduce (s)				0.0		0.0	0.0	15.0			15.0	
Time To Reduce (s)				0.0		0.0	0.0	50.0			50.0	
Recall Mode				None		None	None	C-Max			C-Max	
Act Effect Green (s)				8.8		8.8	38.0	91.2			48.2	110.0
Actuated g/C Ratio				0.08		0.08	0.35	0.83			0.44	1.00
v/c Ratio				0.75		0.66	0.95	0.35			0.92	0.19
Control Delay				81.0		11.4	19.1	1.4			40.5	0.3
Queue Delay				0.0		0.0	0.0	0.0			0.0	0.0
Total Delay				81.0		11.4	19.1	1.4			40.5	0.3
LOS				F		B	B	A			D	A
Approach Delay								7.6			33.7	
Approach LOS								A			C	
Queue Length 50th (ft)				73		0	74	52			476	0
Queue Length 95th (ft)				#161		49	m67	m27			#630	0
Internal Link Dist (ft)		453				532		521			516	
Turn Bay Length (ft)						150						300
Base Capacity (vph)				142		556	580	2892			1505	1480
Starvation Cap Reductn				0		0	0	0			0	0
Spillback Cap Reductn				0		0	0	0			0	0
Storage Cap Reductn				0		0	0	0			0	0
Reduced v/c Ratio				0.73		0.65	0.95	0.35			0.92	0.19

Intersection Summary

Area Type: Other
 Cycle Length: 110
 Actuated Cycle Length: 110
 Offset: 14 (13%), Referenced to phase 2:NBT and 6:SBT, Start of Green
 Natural Cycle: 90
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.95
 Intersection Signal Delay: 21.8 Intersection LOS: C
 Intersection Capacity Utilization 81.0% ICU Level of Service D
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: I-26 NB On-Ramp & US 25 (Asheville Highway)



Lanes, Volumes, Timings
 3: I-26 SB Off-Ramp & US 25 (Asheville Highway)

2011 Base Year - Build 8/6 Lanes Combination

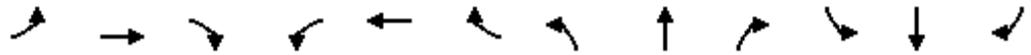
Timing Plan: AM Peak

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations								 			 	
Volume (vph)	247	0	611	0	0	0	0	1157	94	413	929	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		3%			0%			4%			1%	
Storage Length (ft)	0		100	0		0	0		500	0		0
Storage Lanes	1		1	0		0	0		1	1		0
Taper Length (ft)	100		100	100		100	100		100	100		100
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt			0.850						0.850			
Flt Protected	0.950									0.950		
Satd. Flow (prot)	1710	0	1544	0	0	0	0	3435	1465	1663	3487	0
Flt Permitted	0.950									0.950		
Satd. Flow (perm)	1710	0	1544	0	0	0	0	3435	1465	1663	3487	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		35			45			45			45	
Link Distance (ft)		471			598			795			601	
Travel Time (s)		9.2			9.1			12.0			9.1	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	4%	5%	3%	5%	5%	5%	5%	3%	8%	8%	3%	5%
Adj. Flow (vph)	274	0	679	0	0	0	0	1286	104	459	1032	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	274	0	679	0	0	0	0	1286	104	459	1032	0
Enter Blocked Intersection	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.02	1.02	1.02	1.00	1.00	1.00	1.03	1.03	1.03	1.01	1.01	1.01
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Prot		custom						Free	Prot		
Protected Phases	4		4					2		1	6	
Permitted Phases									Free			
Detector Phase	4		4					2		1	6	
Switch Phase												
Minimum Initial (s)	7.0		7.0					12.0		7.0	12.0	
Minimum Split (s)	13.0		13.0					18.0		14.0	18.0	
Total Split (s)	42.0	0.0	42.0	0.0	0.0	0.0	0.0	39.0	0.0	29.0	68.0	0.0
Total Split (%)	38.2%	0.0%	38.2%	0.0%	0.0%	0.0%	0.0%	35.5%	0.0%	26.4%	61.8%	0.0%
Maximum Green (s)	36.0		36.0					33.3		22.5	62.3	
Yellow Time (s)	4.0		4.0					4.7		4.0	4.7	
All-Red Time (s)	2.0		2.0					1.0		2.5	1.0	
Lost Time Adjust (s)	-1.0	-2.0	-1.0	-2.0	-2.0	-2.0	-2.0	-0.7	-0.7	-1.5	-0.7	-2.0
Total Lost Time (s)	5.0	2.0	5.0	2.0	2.0	2.0	2.0	5.0	3.3	5.0	5.0	2.0
Lead/Lag								Lag		Lead		
Lead-Lag Optimize?								Yes		Yes		
Vehicle Extension (s)	2.0		2.0					8.0		2.0	8.0	
Minimum Gap (s)	3.0		3.0					5.5		3.0	5.5	

Lanes, Volumes, Timings
 3: I-26 SB Off-Ramp & US 25 (Asheville Highway)

2011 Base Year - Build 8/6 Lanes Combination

Timing Plan: AM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Time Before Reduce (s)	0.0		0.0					15.0		0.0	15.0	
Time To Reduce (s)	0.0		0.0					50.0		0.0	50.0	
Recall Mode	None		None				C-Max		None		C-Max	
Act Effect Green (s)	37.0		37.0					34.0	110.0	24.0	63.0	
Actuated g/C Ratio	0.34		0.34					0.31	1.00	0.22	0.57	
v/c Ratio	0.48		1.31					1.21	0.07	1.26	0.52	
Control Delay	32.3		184.3					138.4	0.1	154.9	6.5	
Queue Delay	0.0		0.0					0.0	0.0	0.0	1.2	
Total Delay	32.3		184.3					138.4	0.1	154.9	7.8	
LOS	C		F				F		A		F	
Approach Delay							128.0			53.1		
Approach LOS							F			D		
Queue Length 50th (ft)	152		~618					~585	0	-395	173	
Queue Length 95th (ft)	233		#843					#721	0	m#466	m184	
Internal Link Dist (ft)	391				518				715		521	
Turn Bay Length (ft)			100						500			
Base Capacity (vph)	575		519					1062	1465	363	1997	
Starvation Cap Reductn	0		0					0	0	0	688	
Spillback Cap Reductn	0		0					0	0	0	0	
Storage Cap Reductn	0		0					0	0	0	0	
Reduced v/c Ratio	0.48		1.31					1.21	0.07	1.26	0.79	

Intersection Summary

Area Type: Other
 Cycle Length: 110
 Actuated Cycle Length: 110
 Offset: 61 (55%), Referenced to phase 2:NBT and 6:SBT, Start of Green
 Natural Cycle: 160
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.31
 Intersection Signal Delay: 102.0 Intersection LOS: F
 Intersection Capacity Utilization 81.0% ICU Level of Service D
 Analysis Period (min) 15
 ~ Volume exceeds capacity, queue is theoretically infinite.
 Queue shown is maximum after two cycles.
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: I-26 SB Off-Ramp & US 25 (Asheville Highway)



Lanes, Volumes, Timings
6: US 64 & SR 1516 (Francis Rd)

2011 Base Year - Build 8/6 Lanes Combination

Timing Plan: AM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	113	1499	390	79	1901	23	345	0	55	16	0	100
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		-1%			4%			-1%			2%	
Storage Length (ft)	150		0	125		0	150		150	0		150
Storage Lanes	1		1	1		0	1		1	0		1
Taper Length (ft)	100		100	100		100	100		100	100		100
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00
Frt			0.850		0.998				0.850			0.850
Flt Protected	0.950			0.950			0.950	0.950			0.950	
Satd. Flow (prot)	1778	3557	1591	1734	3461	0	1690	1690	1591	0	1752	1567
Flt Permitted	0.950			0.950			0.950	0.950			0.950	
Satd. Flow (perm)	1778	3557	1591	1734	3461	0	1690	1690	1591	0	1752	1567
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			45			35			35	
Link Distance (ft)		835			622			375			406	
Travel Time (s)		12.7			9.4			7.3			7.9	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	126	1666	433	88	2112	26	383	0	61	18	0	111
Shared Lane Traffic (%)							50%					
Lane Group Flow (vph)	126	1666	433	88	2138	0	191	192	61	0	18	111
Enter Blocked Intersection	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	0.99	0.99	0.99	1.03	1.03	1.03	0.99	0.99	0.99	1.01	1.01	1.01
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Prot		Perm	Prot			Split		pm+ov	Split		pm+ov
Protected Phases	5	2		1	6		4	4	1	3	3	5
Permitted Phases			2						4			3
Detector Phase	5	2	2	1	6		4	4	1	3	3	5
Switch Phase												
Minimum Initial (s)	7.0	12.0	12.0	7.0	12.0		7.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	13.0	18.0	18.0	13.0	18.0		14.0	14.0	13.0	14.0	14.0	13.0
Total Split (s)	14.0	83.0	83.0	14.0	83.0	0.0	19.0	19.0	14.0	14.0	14.0	14.0
Total Split (%)	10.8%	63.8%	63.8%	10.8%	63.8%	0.0%	14.6%	14.6%	10.8%	10.8%	10.8%	10.8%
Maximum Green (s)	8.4	77.0	77.0	8.6	77.4		12.4	12.4	8.6	7.5	7.5	8.4
Yellow Time (s)	3.2	4.6	4.6	3.0	4.2		3.9	3.9	3.0	3.7	3.7	3.2
All-Red Time (s)	2.4	1.4	1.4	2.4	1.4		2.7	2.7	2.4	2.8	2.8	2.4
Lost Time Adjust (s)	-0.6	-1.0	-1.0	-0.4	-0.6	-2.0	-1.6	-1.6	-0.4	-2.0	-1.5	-0.6
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	2.0	5.0	5.0	5.0	4.5	5.0	5.0
Lead/Lag	Lag	Lag	Lag	Lead	Lead		Lag	Lag	Lead	Lead	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	1.0	2.0	2.0	1.0	2.0		1.0	1.0	1.0	1.0	1.0	1.0
Recall Mode	None	C-Max	C-Max	None	C-Max		None	None	None	None	None	None

Lanes, Volumes, Timings
6: US 64 & SR 1516 (Francis Rd)

2011 Base Year - Build 8/6 Lanes Combination

Timing Plan: AM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Act Effect Green (s)	9.0	80.9	80.9	9.1	81.0		19.6	19.6	33.7		8.5	14.4
Actuated g/C Ratio	0.07	0.62	0.62	0.07	0.62		0.15	0.15	0.26		0.07	0.11
v/c Ratio	1.02	0.75	0.44	0.73	0.99		0.75	0.75	0.15		0.16	0.64
Control Delay	143.5	17.8	10.8	90.5	42.1		71.9	72.2	39.9		60.8	70.6
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0		0.0	0.0
Total Delay	143.5	17.8	10.8	90.5	42.1		71.9	72.2	39.9		60.8	70.6
LOS	F	B	B	F	D		E	E	D		E	E
Approach Delay		23.5			44.0			67.6			69.3	
Approach LOS		C			D			E			E	
Queue Length 50th (ft)	~114	579	153	73	846		157	158	37		15	-99
Queue Length 95th (ft)	#247	706	243	#161	#1147		#342	#344	83		41	145
Internal Link Dist (ft)		755			542			295			326	
Turn Bay Length (ft)	150			125			150		150			150
Base Capacity (vph)	123	2213	990	126	2156		255	255	417		121	173
Starvation Cap Reductn	0	0	0	0	0		0	0	0		0	0
Spillback Cap Reductn	0	0	0	0	0		0	0	0		0	0
Storage Cap Reductn	0	0	0	0	0		0	0	0		0	0
Reduced v/c Ratio	1.02	0.75	0.44	0.70	0.99		0.75	0.75	0.15		0.15	0.64

Intersection Summary

Area Type: Other
 Cycle Length: 130
 Actuated Cycle Length: 130
 Offset: 99 (76%), Referenced to phase 2:EBT and 6:WBT, Start of Green
 Natural Cycle: 140
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.02
 Intersection Signal Delay: 37.7 Intersection LOS: D
 Intersection Capacity Utilization 88.3% ICU Level of Service E
 Analysis Period (min) 15
 ~ Volume exceeds capacity, queue is theoretically infinite.
 Queue shown is maximum after two cycles.
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

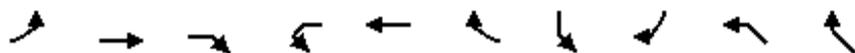
Splits and Phases: 6: US 64 & SR 1516 (Francis Rd)



Lanes, Volumes, Timings
7: US 64 & I-26 SB Off-Ramp

2011 Base Year - Build 8/6 Lanes Combination

Timing Plan: AM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	SBL	SBR	NWL	NWR
Lane Configurations		↑↑	↗		↑↑			↖↖		
Volume (vph)	0	1477	225	0	1674	0	0	437	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		3%			-3%		-3%		0%	
Storage Length (ft)	0		400	0		0	0	500	0	0
Storage Lanes	0		1	0		0	0	1	0	0
Taper Length (ft)	100		100	100		100	100	100	100	100
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.88	1.00	1.00
Frt			0.850					0.850		
Flt Protected										
Satd. Flow (prot)	0	3486	1473	0	3592	0	0	2828	0	0
Flt Permitted										
Satd. Flow (perm)	0	3486	1473	0	3592	0	0	2828	0	0
Right Turn on Red			No			No		No		
Satd. Flow (RTOR)										
Link Speed (mph)		45			45		35		45	
Link Distance (ft)		728			791		804		308	
Travel Time (s)		11.0			12.0		15.7		4.7	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	5%	2%	8%	5%	2%	5%	5%	2%	5%	5%
Adj. Flow (vph)	0	1641	250	0	1860	0	0	486	0	0
Shared Lane Traffic (%)										
Lane Group Flow (vph)	0	1641	250	0	1860	0	0	486	0	0
Enter Blocked Intersection	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Right	Left	Right
Median Width(ft)		12			12		0		0	
Link Offset(ft)		0			0		0		0	
Crosswalk Width(ft)		16			16		16		16	
Two way Left Turn Lane										
Headway Factor	1.02	1.02	1.02	0.98	0.98	0.98	0.98	0.98	1.00	1.00
Turning Speed (mph)	15		9	15		9	15	9	15	9
Turn Type			Perm					custom		
Protected Phases		Free			6			4		
Permitted Phases			Free							
Detector Phase					6			4		
Switch Phase										
Minimum Initial (s)					12.0			7.0		
Minimum Split (s)					18.0			13.0		
Total Split (s)	0.0	0.0	0.0	0.0	92.0	0.0	0.0	38.0	0.0	0.0
Total Split (%)	0.0%	0.0%	0.0%	0.0%	70.8%	0.0%	0.0%	29.2%	0.0%	0.0%
Maximum Green (s)					86.2			32.9		
Yellow Time (s)					4.8			4.1		
All-Red Time (s)					1.0			1.0		
Lost Time Adjust (s)	-2.0	0.0	-2.0	-2.0	-0.8	-2.0	-2.0	-0.1	-2.0	-2.0
Total Lost Time (s)	2.0	4.0	2.0	2.0	5.0	2.0	2.0	5.0	2.0	2.0
Lead/Lag										
Lead-Lag Optimize?										
Vehicle Extension (s)					2.0			1.0		
Recall Mode					C-Max			None		

Lanes, Volumes, Timings
7: US 64 & I-26 SB Off-Ramp

2011 Base Year - Build 8/6 Lanes Combination

Timing Plan: AM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	SBL	SBR	NWL	NWR
Act Effect Green (s)		130.0	130.0		94.0			26.0		
Actuated g/C Ratio		1.00	1.00		0.72			0.20		
v/c Ratio		0.47	0.17		0.72			0.86		
Control Delay		0.2	0.1		8.0			65.4		
Queue Delay		0.0	0.0		0.3			0.0		
Total Delay		0.2	0.1		8.3			65.4		
LOS		A	A		A			E		
Approach Delay		0.2			8.3					
Approach LOS		A			A					
Queue Length 50th (ft)		0	0		312			226		
Queue Length 95th (ft)		0	m0		m467			280		
Internal Link Dist (ft)		648			711		724		228	
Turn Bay Length (ft)			400					500		
Base Capacity (vph)		3486	1473		2598			718		
Starvation Cap Reductn		0	0		0			0		
Spillback Cap Reductn		0	0		219			0		
Storage Cap Reductn		0	0		0			0		
Reduced v/c Ratio		0.47	0.17		0.78			0.68		

Intersection Summary

Area Type: Other
 Cycle Length: 130
 Actuated Cycle Length: 130
 Offset: 0 (0%), Referenced to phase 6:WBT, Start of Green, Master Intersection
 Natural Cycle: 60
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.86
 Intersection Signal Delay: 11.2
 Intersection LOS: B
 Intersection Capacity Utilization 81.7%
 ICU Level of Service D
 Analysis Period (min) 15
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 7: US 64 & I-26 SB Off-Ramp



Lanes, Volumes, Timings
8: US 64 & SR 1634 (Carolina Village Rd)

2011 Base Year - Build 8/6 Lanes Combination

Timing Plan: AM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	58	1484	70	146	1834	111	66	10	112	123	15	79
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		1%			-3%			3%				-1%
Storage Length (ft)	100		0	100		0	0		0	0		150
Storage Lanes	1		0	1		1	0		0	0		1
Taper Length (ft)	100		100	100		100	100		100	100		100
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.993				0.850		0.920				0.850
Flt Protected	0.950			0.950				0.983			0.957	
Satd. Flow (prot)	1761	3497	0	1796	3592	1607	0	1659	0	0	1792	1591
Flt Permitted	0.950			0.950				0.663			0.499	
Satd. Flow (perm)	1761	3497	0	1796	3592	1607	0	1119	0	0	934	1591
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		560			728			219			359	
Travel Time (s)		8.5			11.0			5.0			8.2	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	64	1649	78	162	2038	123	73	11	124	137	17	88
Shared Lane Traffic (%)												
Lane Group Flow (vph)	64	1727	0	162	2038	123	0	208	0	0	154	88
Enter Blocked Intersection	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	0.98	0.98	0.98	1.02	1.02	1.02	0.99	0.99	0.99
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Prot			Prot		Perm	Perm			Perm		pm+ov
Protected Phases	5	2		1	6			8			4	5
Permitted Phases						6	8			4		4
Detector Phase	5	2		1	6	6	8	8		4	4	5
Switch Phase												
Minimum Initial (s)	7.0	12.0		7.0	12.0	12.0	7.0	7.0		7.0	7.0	7.0
Minimum Split (s)	13.0	18.0		13.0	19.0	19.0	13.0	13.0		13.0	13.0	13.0
Total Split (s)	13.0	78.0	0.0	20.0	85.0	85.0	32.0	32.0	0.0	32.0	32.0	13.0
Total Split (%)	10.0%	60.0%	0.0%	15.4%	65.4%	65.4%	24.6%	24.6%	0.0%	24.6%	24.6%	10.0%
Maximum Green (s)	7.1	72.4		14.6	78.8	78.8	26.2	26.2		26.1	26.1	7.1
Yellow Time (s)	3.0	4.4		3.0	4.8	4.8	3.4	3.4		3.6	3.6	3.0
All-Red Time (s)	2.9	1.2		2.4	1.4	1.4	2.4	2.4		2.3	2.3	2.9
Lost Time Adjust (s)	-0.9	-0.6	-2.0	-0.4	-1.2	-1.2	-2.0	-0.8	-2.0	-2.0	-0.9	-0.9
Total Lost Time (s)	5.0	5.0	2.0	5.0	5.0	5.0	3.8	5.0	2.0	3.9	5.0	5.0
Lead/Lag	Lag	Lag		Lead	Lead	Lead						Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes						Yes
Vehicle Extension (s)	1.0	2.0		1.0	2.0	2.0	1.0	1.0		1.0	1.0	1.0
Recall Mode	None	C-Max		None	C-Max	C-Max	None	None		None	None	None

Lanes, Volumes, Timings
9: SR 1783 (Upward Rd) & I-26 NB On-Ramp

2011 Base Year - Build 8/6 Lanes Combination

Timing Plan: AM Peak

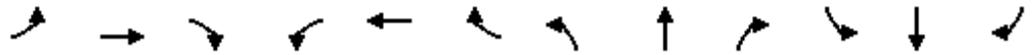


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↑	↗	↖		↗			
Volume (vph)	363	302	0	0	342	114	205	0	69	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		50	150		0	0		0
Storage Lanes	0		0	0		1	1		1	0		0
Taper Length (ft)	100		100	100		100	100		100	100		100
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Fr _t						0.850			0.850			
Fl _t Protected		0.973					0.950					
Satd. Flow (prot)	0	1756	0	0	1863	1495	1770	0	1583	0	0	0
Fl _t Permitted		0.624					0.950					
Satd. Flow (perm)	0	1126	0	0	1863	1495	1770	0	1583	0	0	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			45			45				45
Link Distance (ft)		630			322			446				658
Travel Time (s)		9.5			4.9			6.8				10.0
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	8%	2%	5%	5%	2%	8%	2%	5%	2%	5%	5%	5%
Adj. Flow (vph)	403	336	0	0	380	127	228	0	77	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	739	0	0	380	127	228	0	77	0	0	0
Enter Blocked Intersection	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			12				12
Link Offset(ft)		0			0			0				0
Crosswalk Width(ft)		16			16			16				16
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Perm					Perm	Prot		custom			
Protected Phases		2			6		8					
Permitted Phases	2					6			8			
Detector Phase	2	2			6	6	8		8			
Switch Phase												
Minimum Initial (s)	12.0	12.0			12.0	12.0	7.0		7.0			
Minimum Split (s)	21.0	21.0			21.0	21.0	14.0		14.0			
Total Split (s)	71.0	71.0	0.0	0.0	71.0	71.0	19.0	0.0	19.0	0.0	0.0	0.0
Total Split (%)	78.9%	78.9%	0.0%	0.0%	78.9%	78.9%	21.1%	0.0%	21.1%	0.0%	0.0%	0.0%
Maximum Green (s)	64.0	64.0			64.0	64.0	12.0		12.0			
Yellow Time (s)	5.0	5.0			5.0	5.0	5.0		5.0			
All-Red Time (s)	2.0	2.0			2.0	2.0	2.0		2.0			
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	5.0	5.0	2.0	2.0	5.0	5.0	5.0	2.0	5.0	2.0	2.0	2.0
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0		3.0			
Recall Mode	C-Max	C-Max			C-Max	C-Max	None		None			
Act Effect Green (s)		66.0			66.0	66.0	14.0		14.0			

Lanes, Volumes, Timings
 9: SR 1783 (Upward Rd) & I-26 NB On-Ramp

2011 Base Year - Build 8/6 Lanes Combination

Timing Plan: AM Peak

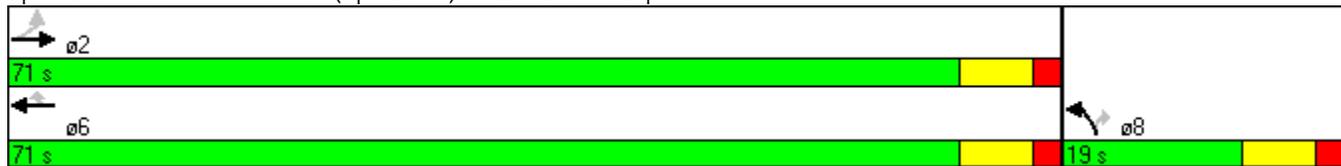


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Actuated g/C Ratio		0.73			0.73	0.73	0.16		0.16			
v/c Ratio		0.89			0.28	0.12	0.83		0.31			
Control Delay		21.3			4.6	3.8	62.7		37.7			
Queue Delay		0.0			0.0	0.0	0.0		0.0			
Total Delay		21.3			4.6	3.8	62.7		37.7			
LOS		C			A	A	E		D			
Approach Delay		21.3			4.4							
Approach LOS		C			A							
Queue Length 50th (ft)		336			60	17	127		39			
Queue Length 95th (ft)		#601			92	32	#250		81			
Internal Link Dist (ft)		550			242			366			578	
Turn Bay Length (ft)						50	150					
Base Capacity (vph)		826			1366	1096	275		246			
Starvation Cap Reductn		0			0	0	0		0			
Spillback Cap Reductn		0			0	0	0		0			
Storage Cap Reductn		0			0	0	0		0			
Reduced v/c Ratio		0.89			0.28	0.12	0.83		0.31			

Intersection Summary

Area Type: Other
 Cycle Length: 90
 Actuated Cycle Length: 90
 Offset: 9 (10%), Referenced to phase 2:EBTL and 6:WBT, Start of Green
 Natural Cycle: 90
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.89
 Intersection Signal Delay: 22.7
 Intersection LOS: C
 Intersection Capacity Utilization 77.0%
 ICU Level of Service D
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

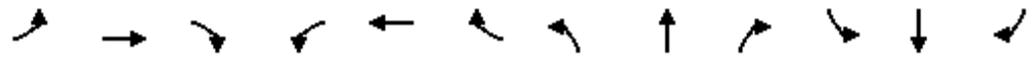
Splits and Phases: 9: SR 1783 (Upward Rd) & I-26 NB On-Ramp



Lanes, Volumes, Timings
 10: SR 1783 (Upward Rd) & I-26 SB Off-Ramp

2011 Base Year - Build 8/6 Lanes Combination

Timing Plan: AM Peak

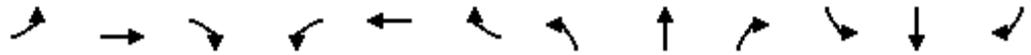


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑	↗		↖					↘		↗
Volume (vph)	0	555	201	89	458	0	0	0	0	110	0	460
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		200	0		0	0		0	0		100
Storage Lanes	0		1	0		0	0		0	1		1
Taper Length (ft)	100		100	100		100	100		100	100		100
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Fr _t			0.850									0.850
Fl _t Protected					0.992					0.950		
Satd. Flow (prot)	0	1863	1495	0	1830	0	0	0	0	1770	0	1583
Fl _t Permitted					0.683					0.950		
Satd. Flow (perm)	0	1863	1495	0	1260	0	0	0	0	1770	0	1583
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			45			45			45	
Link Distance (ft)		549			630			547			651	
Travel Time (s)		8.3			9.5			8.3			9.9	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	5%	2%	8%	8%	2%	5%	5%	5%	5%	2%	5%	2%
Adj. Flow (vph)	0	617	223	99	509	0	0	0	0	122	0	511
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	617	223	0	608	0	0	0	0	122	0	511
Enter Blocked Intersection	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type			Perm	Perm						Prot		custom
Protected Phases		2			6					4		
Permitted Phases			2	6								4
Detector Phase		2	2	6	6					4		4
Switch Phase												
Minimum Initial (s)		12.0	12.0	12.0	12.0					7.0		7.0
Minimum Split (s)		21.0	21.0	21.0	21.0					14.0		14.0
Total Split (s)	0.0	57.0	57.0	57.0	57.0	0.0	0.0	0.0	0.0	33.0	0.0	33.0
Total Split (%)	0.0%	63.3%	63.3%	63.3%	63.3%	0.0%	0.0%	0.0%	0.0%	36.7%	0.0%	36.7%
Maximum Green (s)		50.0	50.0	50.0	50.0					26.0		26.0
Yellow Time (s)		5.0	5.0	5.0	5.0					5.0		5.0
All-Red Time (s)		2.0	2.0	2.0	2.0					2.0		2.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	2.0	5.0	5.0	5.0	5.0	2.0	2.0	2.0	2.0	5.0	2.0	5.0
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)		3.0	3.0	3.0	3.0					3.0		3.0
Recall Mode		C-Max	C-Max	C-Max	C-Max					None		None
Act Effect Green (s)		52.0	52.0		52.0					28.0		28.0

Lanes, Volumes, Timings
 10: SR 1783 (Upward Rd) & I-26 SB Off-Ramp

2011 Base Year - Build 8/6 Lanes Combination

Timing Plan: AM Peak

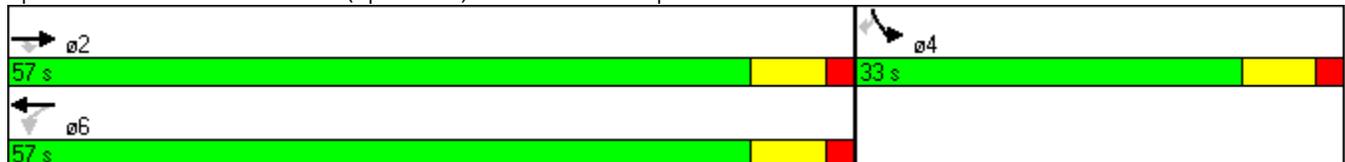


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Actuated g/C Ratio		0.58	0.58		0.58					0.31		0.31
v/c Ratio		0.57	0.26		0.84					0.22		1.04
Control Delay		14.7	10.4		24.7					24.3		83.5
Queue Delay		0.0	0.0		0.0					0.0		0.0
Total Delay		14.7	10.4		24.7					24.3		83.5
LOS		B	B		C					C		F
Approach Delay		13.5			24.7							
Approach LOS		B			C							
Queue Length 50th (ft)		205	58		325					51		-316
Queue Length 95th (ft)		304	98		m#484					94		#508
Internal Link Dist (ft)		469			550			467			571	
Turn Bay Length (ft)			200									100
Base Capacity (vph)		1076	864		728					551		492
Starvation Cap Reductn		0	0		0					0		0
Spillback Cap Reductn		0	0		0					0		0
Storage Cap Reductn		0	0		0					0		0
Reduced v/c Ratio		0.57	0.26		0.84					0.22		1.04

Intersection Summary

Area Type: Other
 Cycle Length: 90
 Actuated Cycle Length: 90
 Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBTL, Start of Green
 Natural Cycle: 75
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.04
 Intersection Signal Delay: 34.6
 Intersection LOS: C
 Intersection Capacity Utilization 76.0%
 ICU Level of Service D
 Analysis Period (min) 15
 ~ Volume exceeds capacity, queue is theoretically infinite.
 Queue shown is maximum after two cycles.
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 10: SR 1783 (Upward Rd) & I-26 SB Off-Ramp

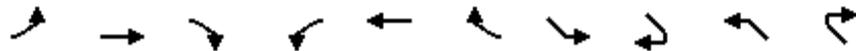


Lanes, Volumes, Timings

2011 Base Year - Build 8/6 Lanes Combination

1: NC 146 (Long Shoals Rd) & I-26 NB On-Ramp

Timing Plan: PM Peak

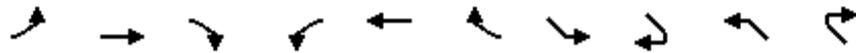


Lane Group	EBL	EBT	EBR2	WBL	WBT	WBR2	SEL	SER2	NWL	NWR2
Lane Configurations	↖↗	↑↑	↖	↖↗	↑↑	↖	↖↗	↖	↖↗	↖
Volume (vph)	234	614	185	351	460	744	783	185	183	464
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		3%			-7%					
Storage Length (ft)	450			350			0		675	
Storage Lanes	1			2			2		1	
Taper Length (ft)	100			100			100		100	
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	1.00	0.97	1.00
Frt			0.850			0.850		0.850		0.850
Flt Protected	0.950			0.950			0.950		0.950	
Satd. Flow (prot)	3224	3452	1487	3387	3663	1562	3519	1607	3434	1599
Flt Permitted	0.950			0.950			0.950		0.950	
Satd. Flow (perm)	3224	3452	1487	3387	3663	1562	3519	1607	3434	1599
Right Turn on Red			No			No		No		No
Satd. Flow (RTOR)										
Link Speed (mph)		45			45					
Link Distance (ft)		1009			964					
Travel Time (s)		15.3			14.6					
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	7%	3%	7%	7%	2%	7%	2%	3%	3%	2%
Adj. Flow (vph)	260	682	206	390	511	827	870	206	203	516
Shared Lane Traffic (%)										
Lane Group Flow (vph)	260	682	206	390	511	827	870	206	203	516
Enter Blocked Intersection	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Right	Left	Right
Median Width(ft)		24			24					
Link Offset(ft)		0			0					
Crosswalk Width(ft)		16			16					
Two way Left Turn Lane										
Headway Factor	1.02	1.02	1.02	0.96	0.96	0.96	0.97	0.97	0.99	0.99
Turning Speed (mph)	15		9	15		9	15	9	15	9
Turn Type	Prot		Free	Prot		Free	Prot	custom	Prot	Free
Protected Phases	5	2		1	6		4		8	
Permitted Phases			Free			Free		4		Free
Detector Phase	5	2		1	6		4	4	8	
Switch Phase										
Minimum Initial (s)	7.0	12.0		7.0	12.0		7.0	7.0	7.0	
Minimum Split (s)	16.0	20.0		15.0	21.0		16.0	16.0	15.0	
Total Split (s)	16.0	49.0	0.0	23.0	56.0	0.0	28.0	28.0	28.0	0.0
Total Split (%)	16.0%	49.0%	0.0%	23.0%	56.0%	0.0%	28.0%	28.0%	28.0%	0.0%
Maximum Green (s)	7.8	41.5		15.3	47.0		19.9	19.9	20.0	
Yellow Time (s)	3.4	4.3		4.0	5.2		3.8	3.8	3.7	
All-Red Time (s)	4.8	3.2		3.7	3.8		4.3	4.3	4.3	
Lost Time Adjust (s)	-3.2	-2.5	-2.5	-2.7	-4.0	-4.0	-3.1	-3.1	-3.0	0.0
Total Lost Time (s)	5.0	5.0	1.5	5.0	5.0	0.0	5.0	5.0	5.0	4.0
Lead/Lag	Lead	Lag		Lead	Lag					
Lead-Lag Optimize?	Yes	Yes		Yes	Yes					
Vehicle Extension (s)	2.0	6.0		2.0	6.0		2.0	2.0	2.0	
Minimum Gap (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	

Lanes, Volumes, Timings
 1: NC 146 (Long Shoals Rd) & I-26 NB On-Ramp

2011 Base Year - Build 8/6 Lanes Combination

Timing Plan: PM Peak

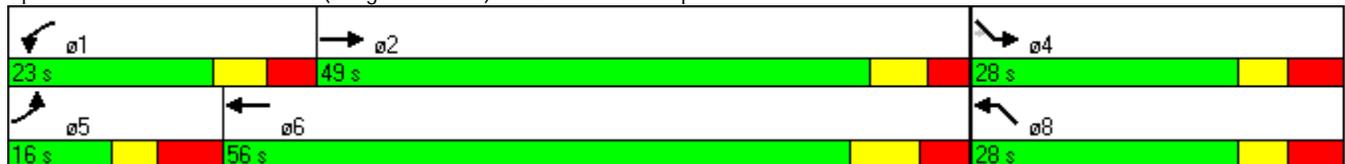


Lane Group	EBL	EBT	EBR2	WBL	WBT	WBR2	SEL	SER2	NWL	NWR2
Time Before Reduce (s)	0.0	15.0		0.0	15.0		0.0	0.0	0.0	
Time To Reduce (s)	0.0	30.0		0.0	30.0		0.0	0.0	0.0	
Recall Mode	None	C-Max		None	C-Max		None	None	None	
Act Effect Green (s)	11.0	45.0	100.0	17.0	51.0	100.0	23.0	23.0	23.0	100.0
Actuated g/C Ratio	0.11	0.45	1.00	0.17	0.51	1.00	0.23	0.23	0.23	1.00
v/c Ratio	0.73	0.44	0.14	0.68	0.27	0.53	1.08	0.56	0.26	0.32
Control Delay	56.3	20.2	0.2	45.3	14.4	1.3	91.6	40.7	32.6	0.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	56.3	20.2	0.2	45.3	14.4	1.3	91.6	40.7	32.6	0.5
LOS	E	C	A	D	B	A	F	D	C	A
Approach Delay		24.8			15.1					
Approach LOS		C			B					
Queue Length 50th (ft)	84	155	0	120	93	0	~320	117	54	0
Queue Length 95th (ft)	#137	204	0	170	126	0	#440	192	86	0
Internal Link Dist (ft)		929			884					
Turn Bay Length (ft)	450		300	350		300		425	675	575
Base Capacity (vph)	355	1555	1487	610	1868	1562	809	370	790	1599
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.73	0.44	0.14	0.64	0.27	0.53	1.08	0.56	0.26	0.32

Intersection Summary

Area Type: Other
 Cycle Length: 100
 Actuated Cycle Length: 100
 Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green
 Natural Cycle: 60
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.08
 Intersection Signal Delay: 32.0
 Intersection LOS: C
 Intersection Capacity Utilization 61.8%
 ICU Level of Service B
 Analysis Period (min) 15
 ~ Volume exceeds capacity, queue is theoretically infinite.
 Queue shown is maximum after two cycles.
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 1: NC 146 (Long Shoals Rd) & I-26 NB On-Ramp



Lanes, Volumes, Timings

2011 Base Year - Build 8/6 Lanes Combination

2: I-26 NB On-Ramp & US 25 (Asheville Highway)

Timing Plan: PM Peak

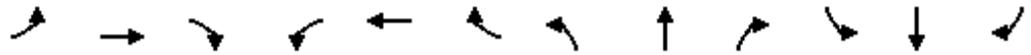


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				↙		↗	↗	↗			↗	↗
Volume (vph)	0	0	0	94	0	413	611	1087	0	0	990	247
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			2%			-1%			2%	
Storage Length (ft)	0		0	0		150	0		0	0		300
Storage Lanes	0		0	1		2	1		0	0		1
Taper Length (ft)	100		100	100		100	100		100	100		100
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	0.88	1.00	0.95	1.00	1.00	0.95	1.00
Frt						0.850						0.850
Flt Protected				0.950			0.950					
Satd. Flow (prot)	0	0	0	1735	0	2706	1680	3489	0	0	3436	1480
Flt Permitted				0.950			0.950					
Satd. Flow (perm)	0	0	0	1735	0	2706	1680	3489	0	0	3436	1480
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			35			45			45	
Link Distance (ft)		533			612			601			596	
Travel Time (s)		8.1			11.9			9.1			9.0	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	5%	5%	5%	3%	5%	4%	8%	4%	5%	5%	4%	8%
Adj. Flow (vph)	0	0	0	104	0	459	679	1208	0	0	1100	274
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	104	0	459	679	1208	0	0	1100	274
Enter Blocked Intersection	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.01	1.01	1.01	0.99	0.99	0.99	1.01	1.01	1.01
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type				Prot		custom	Prot					Free
Protected Phases				4			5	2				6
Permitted Phases						4						Free
Detector Phase				4		4	5	2				6
Switch Phase												
Minimum Initial (s)				7.0		7.0	7.0	12.0				12.0
Minimum Split (s)				13.0		13.0	14.0	19.0				18.0
Total Split (s)	0.0	0.0	0.0	21.0	0.0	21.0	43.0	79.0	0.0	0.0	36.0	0.0
Total Split (%)	0.0%	0.0%	0.0%	21.0%	0.0%	21.0%	43.0%	79.0%	0.0%	0.0%	36.0%	0.0%
Maximum Green (s)				15.0		15.0	36.6	72.9				30.7
Yellow Time (s)				3.7		3.7	3.0	4.6				4.3
All-Red Time (s)				2.3		2.3	3.4	1.5				1.0
Lost Time Adjust (s)	0.0	0.0	-2.0	-2.0	0.0	-2.0	-1.4	-1.1	0.0	-2.0	-0.3	0.0
Total Lost Time (s)	4.0	4.0	2.0	4.0	4.0	4.0	5.0	5.0	4.0	2.0	5.0	4.0
Lead/Lag							Lag				Lead	
Lead-Lag Optimize?							Yes				Yes	
Vehicle Extension (s)				2.0		2.0	2.0	8.0			8.0	
Minimum Gap (s)				3.0		3.0	3.0	5.5			5.5	

Lanes, Volumes, Timings
 2: I-26 NB On-Ramp & US 25 (Asheville Highway)

2011 Base Year - Build 8/6 Lanes Combination

Timing Plan: PM Peak

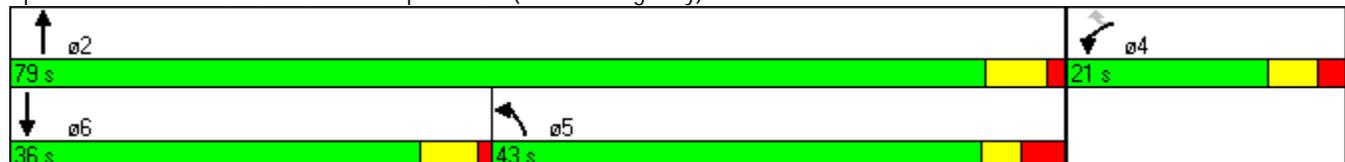


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Time Before Reduce (s)				0.0		0.0	0.0	15.0			15.0	
Time To Reduce (s)				0.0		0.0	0.0	50.0			50.0	
Recall Mode				None		None	None	C-Max			C-Max	
Act Effect Green (s)				17.0		17.0	38.0	74.0			31.0	100.0
Actuated g/C Ratio				0.17		0.17	0.38	0.74			0.31	1.00
v/c Ratio				0.35		1.00	1.06	0.47			1.03	0.19
Control Delay				40.6		84.2	56.0	0.4			71.2	0.3
Queue Delay				0.0		0.0	0.0	0.3			0.0	0.0
Total Delay				40.6		84.2	56.0	0.7			71.2	0.3
LOS				D		F	E	A			E	A
Approach Delay								20.6			57.1	
Approach LOS								C			E	
Queue Length 50th (ft)				59		168	~500	5			~398	0
Queue Length 95th (ft)				111		#282	m#483	m4			#527	0
Internal Link Dist (ft)		453				532		521			516	
Turn Bay Length (ft)						150						300
Base Capacity (vph)				295		460	638	2582			1065	1480
Starvation Cap Reductn				0		0	0	680			0	0
Spillback Cap Reductn				0		0	0	0			0	0
Storage Cap Reductn				0		0	0	0			0	0
Reduced v/c Ratio				0.35		1.00	1.06	0.64			1.03	0.19

Intersection Summary

Area Type: Other
 Cycle Length: 100
 Actuated Cycle Length: 100
 Offset: 91 (91%), Referenced to phase 2:NBT and 6:SBT, Start of Green
 Natural Cycle: 120
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.06
 Intersection Signal Delay: 41.9
 Intersection LOS: D
 Intersection Capacity Utilization 84.6%
 ICU Level of Service E
 Analysis Period (min) 15
 ~ Volume exceeds capacity, queue is theoretically infinite.
 Queue shown is maximum after two cycles.
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: I-26 NB On-Ramp & US 25 (Asheville Highway)



Lanes, Volumes, Timings
3: I-26 SB Off-Ramp & US 25 (Asheville Highway)

2011 Base Year - Build 8/6 Lanes Combination

Timing Plan: PM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	252	0	495	0	0	0	0	1446	94	328	756	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		3%			0%			4%			1%	
Storage Length (ft)	0		100	0		0	0		500	0		0
Storage Lanes	1		1	0		0	0		1	1		0
Taper Length (ft)	100		100	100		100	100		100	100		100
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt			0.850						0.850			
Flt Protected	0.950									0.950		
Satd. Flow (prot)	1710	0	1544	0	0	0	0	3435	1465	1663	3487	0
Flt Permitted	0.950									0.950		
Satd. Flow (perm)	1710	0	1544	0	0	0	0	3435	1465	1663	3487	0
Right Turn on Red			Yes			No			No			No
Satd. Flow (RTOR)			233									
Link Speed (mph)		35			45			45			45	
Link Distance (ft)		471			598			795			601	
Travel Time (s)		9.2			9.1			12.0			9.1	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	4%	5%	3%	5%	5%	5%	5%	3%	8%	8%	3%	5%
Adj. Flow (vph)	280	0	550	0	0	0	0	1607	104	364	840	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	280	0	550	0	0	0	0	1607	104	364	840	0
Enter Blocked Intersection	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.02	1.02	1.02	1.00	1.00	1.00	1.03	1.03	1.03	1.01	1.01	1.01
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Prot		custom						Free	Prot		
Protected Phases	4		4					2		1	6	
Permitted Phases									Free			
Detector Phase	4		4					2		1	6	
Switch Phase												
Minimum Initial (s)	7.0		7.0					12.0		7.0	12.0	
Minimum Split (s)	14.0		14.0					19.0		14.0	19.0	
Total Split (s)	25.0	0.0	25.0	0.0	0.0	0.0	0.0	49.0	0.0	26.0	75.0	0.0
Total Split (%)	25.0%	0.0%	25.0%	0.0%	0.0%	0.0%	0.0%	49.0%	0.0%	26.0%	75.0%	0.0%
Maximum Green (s)	19.0		19.0					43.3		19.5	69.3	
Yellow Time (s)	4.0		4.0					4.7		4.0	4.7	
All-Red Time (s)	2.0		2.0					1.0		2.5	1.0	
Lost Time Adjust (s)	-1.0	-2.0	-1.0	-2.0	-2.0	-2.0	-2.0	-0.7	-0.7	-1.5	-1.7	-2.0
Total Lost Time (s)	5.0	2.0	5.0	2.0	2.0	2.0	2.0	5.0	3.3	5.0	4.0	2.0
Lead/Lag								Lead		Lag		
Lead-Lag Optimize?								Yes		Yes		
Vehicle Extension (s)	2.0		2.0					8.0		2.0	8.0	
Minimum Gap (s)	3.0		3.0					5.5		3.0	5.5	

Lanes, Volumes, Timings
6: US 64 & SR 1516 (Francis Rd)

2011 Base Year - Build 8/6 Lanes Combination

Timing Plan: PM Peak

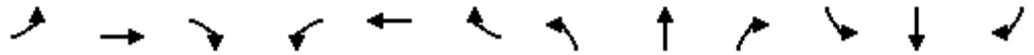


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	100	1901	345	55	1500	16	390	0	79	23	0	113
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		-1%			4%			-1%			2%	
Storage Length (ft)	150		0	125		0	150		150	0		150
Storage Lanes	1		1	1		0	1		1	0		1
Taper Length (ft)	100		100	100		100	100		100	100		100
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00
Frt			0.850		0.998				0.850			0.850
Flt Protected	0.950			0.950			0.950	0.950			0.950	
Satd. Flow (prot)	1778	3557	1591	1734	3461	0	1690	1690	1591	0	1752	1567
Flt Permitted	0.950			0.950			0.950	0.950			0.950	
Satd. Flow (perm)	1778	3557	1591	1734	3461	0	1690	1690	1591	0	1752	1567
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			45			35			35	
Link Distance (ft)		836			622			375			406	
Travel Time (s)		12.7			9.4			7.3			7.9	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	111	2112	383	61	1667	18	433	0	88	26	0	126
Shared Lane Traffic (%)							50%					
Lane Group Flow (vph)	111	2112	383	61	1685	0	216	217	88	0	26	126
Enter Blocked Intersection	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	0.99	0.99	0.99	1.03	1.03	1.03	0.99	0.99	0.99	1.01	1.01	1.01
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Prot		Perm	Prot			Split		pm+ov	Split		pm+ov
Protected Phases	5	2		1	6		4	4	1	3	3	5
Permitted Phases			2						4			3
Detector Phase	5	2	2	1	6		4	4	1	3	3	5
Switch Phase												
Minimum Initial (s)	7.0	12.0	12.0	7.0	12.0		7.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	13.0	18.0	18.0	13.0	18.0		14.0	14.0	13.0	14.0	14.0	13.0
Total Split (s)	18.0	97.0	97.0	13.0	92.0	0.0	26.0	26.0	13.0	14.0	14.0	18.0
Total Split (%)	12.0%	64.7%	64.7%	8.7%	61.3%	0.0%	17.3%	17.3%	8.7%	9.3%	9.3%	12.0%
Maximum Green (s)	12.4	91.0	91.0	7.6	86.4		19.4	19.4	7.6	7.5	7.5	12.4
Yellow Time (s)	3.2	4.6	4.6	3.0	4.2		3.9	3.9	3.0	3.7	3.7	3.2
All-Red Time (s)	2.4	1.4	1.4	2.4	1.4		2.7	2.7	2.4	2.8	2.8	2.4
Lost Time Adjust (s)	-0.6	-1.0	-1.0	-0.4	-0.6	-2.0	-1.6	-1.6	-0.4	-2.0	-1.5	-0.6
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	2.0	5.0	5.0	5.0	4.5	5.0	5.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lag	Lag	Lead	Lead	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	1.0	2.0	2.0	1.0	2.0		1.0	1.0	1.0	1.0	1.0	1.0
Recall Mode	None	C-Max	C-Max	None	C-Max		None	None	None	None	None	None

Lanes, Volumes, Timings
6: US 64 & SR 1516 (Francis Rd)

2011 Base Year - Build 8/6 Lanes Combination

Timing Plan: PM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Act Effect Green (s)	12.4	97.5	97.5	7.8	93.0		21.4	21.4	34.3		8.6	17.6
Actuated g/C Ratio	0.08	0.65	0.65	0.05	0.62		0.14	0.14	0.23		0.06	0.12
v/c Ratio	0.76	0.91	0.37	0.68	0.79		0.90	0.90	0.24		0.26	0.68
Control Delay	103.1	22.0	9.9	103.1	25.9		98.8	99.4	49.3		74.3	68.1
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0		0.0	0.0
Total Delay	103.1	22.0	9.9	103.1	25.9		98.8	99.4	49.3		74.3	68.1
LOS	F	C	A	F	C		F	F	D		E	E
Approach Delay		23.7			28.6			90.7			69.2	
Approach LOS		C			C			F			E	
Queue Length 50th (ft)	113	774	102	60	683		222	223	71		25	87
Queue Length 95th (ft)	#204	#1212	142	#133	794		#390	#392	125		58	140
Internal Link Dist (ft)		756			542			295			326	
Turn Bay Length (ft)	150			125			150		150			150
Base Capacity (vph)	155	2313	1035	92	2146		246	246	365		105	191
Starvation Cap Reductn	0	0	0	0	0		0	0	0		0	0
Spillback Cap Reductn	0	0	0	0	0		0	0	0		0	0
Storage Cap Reductn	0	0	0	0	0		0	0	0		0	0
Reduced v/c Ratio	0.72	0.91	0.37	0.66	0.79		0.88	0.88	0.24		0.25	0.66

Intersection Summary

Area Type: Other
 Cycle Length: 150
 Actuated Cycle Length: 150
 Offset: 19 (13%), Referenced to phase 2:EBT and 6:WBT, Start of Green
 Natural Cycle: 120
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.91
 Intersection Signal Delay: 33.7
 Intersection LOS: C
 Intersection Capacity Utilization 88.4%
 ICU Level of Service E
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

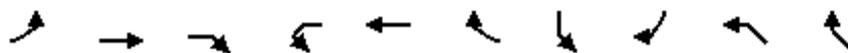
Splits and Phases: 6: US 64 & SR 1516 (Francis Rd)



Lanes, Volumes, Timings
7: US 64 & I-26 SB Off-Ramp

2011 Base Year - Build 8/6 Lanes Combination

Timing Plan: PM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	SBL	SBR	NWL	NWR
Lane Configurations		↑↑	↗		↑↑			↖↖		
Volume (vph)	0	1886	225	0	1357	0	0	345	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		3%			-3%		-3%		0%	
Storage Length (ft)	0		0	0		0	0	500	0	0
Storage Lanes	0		1	0		0	0	1	0	0
Taper Length (ft)	100		100	100		100	100	100	100	100
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.88	1.00	1.00
Frt			0.850					0.850		
Flt Protected										
Satd. Flow (prot)	0	3486	1473	0	3592	0	0	2828	0	0
Flt Permitted										
Satd. Flow (perm)	0	3486	1473	0	3592	0	0	2828	0	0
Right Turn on Red			No			No		No		
Satd. Flow (RTOR)										
Link Speed (mph)		45			45		35		45	
Link Distance (ft)		728			745		807		350	
Travel Time (s)		11.0			11.3		15.7		5.3	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	5%	2%	8%	5%	2%	5%	5%	2%	5%	5%
Adj. Flow (vph)	0	2096	250	0	1508	0	0	383	0	0
Shared Lane Traffic (%)										
Lane Group Flow (vph)	0	2096	250	0	1508	0	0	383	0	0
Enter Blocked Intersection	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Right	Left	Right
Median Width(ft)		12			12		0		0	
Link Offset(ft)		0			0		0		0	
Crosswalk Width(ft)		16			16		16		16	
Two way Left Turn Lane										
Headway Factor	1.02	1.02	1.02	0.98	0.98	0.98	0.98	0.98	1.00	1.00
Turning Speed (mph)	15		9	15		9	15	9	15	9
Turn Type			Perm					custom		
Protected Phases		Free			6			4		
Permitted Phases			Free							
Detector Phase					6			4		
Switch Phase										
Minimum Initial (s)					12.0			7.0		
Minimum Split (s)					18.0			13.0		
Total Split (s)	0.0	0.0	0.0	0.0	107.0	0.0	0.0	43.0	0.0	0.0
Total Split (%)	0.0%	0.0%	0.0%	0.0%	71.3%	0.0%	0.0%	28.7%	0.0%	0.0%
Maximum Green (s)					101.2			37.9		
Yellow Time (s)					4.8			4.1		
All-Red Time (s)					1.0			1.0		
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	-0.8	0.0	0.0	-0.1	-2.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	5.0	4.0	4.0	5.0	2.0	4.0
Lead/Lag										
Lead-Lag Optimize?										
Vehicle Extension (s)					2.0			1.0		
Recall Mode					C-Max			None		

Lanes, Volumes, Timings
7: US 64 & I-26 SB Off-Ramp

2011 Base Year - Build 8/6 Lanes Combination

Timing Plan: PM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	SBL	SBR	NWL	NWR
Act Effect Green (s)		150.0	150.0		115.9			24.1		
Actuated g/C Ratio		1.00	1.00		0.77			0.16		
v/c Ratio		0.60	0.17		0.54			0.85		
Control Delay		0.2	0.1		8.5			78.0		
Queue Delay		0.0	0.0		0.0			0.0		
Total Delay		0.2	0.1		8.5			78.0		
LOS		A	A		A			E		
Approach Delay		0.2			8.5					
Approach LOS		A			A					
Queue Length 50th (ft)		0	0		267			209		
Queue Length 95th (ft)		m0	m0		366			263		
Internal Link Dist (ft)		648			665		727		270	
Turn Bay Length (ft)								500		
Base Capacity (vph)		3486	1473		2776			716		
Starvation Cap Reductn		0	0		0			0		
Spillback Cap Reductn		0	0		0			0		
Storage Cap Reductn		0	0		0			0		
Reduced v/c Ratio		0.60	0.17		0.54			0.53		

Intersection Summary

Area Type: Other
 Cycle Length: 150
 Actuated Cycle Length: 150
 Offset: 0 (0%), Referenced to phase 6:WBT, Start of Green, Master Intersection
 Natural Cycle: 45
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.85
 Intersection Signal Delay: 10.2
 Intersection LOS: B
 Intersection Capacity Utilization 93.4%
 ICU Level of Service F
 Analysis Period (min) 15
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 7: US 64 & I-26 SB Off-Ramp



Lanes, Volumes, Timings
8: US 64 & SR 1634 (Carolina Village Rd)

2011 Base Year - Build 8/6 Lanes Combination

Timing Plan: PM Peak

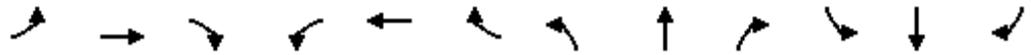


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	79	1834	66	112	1484	123	70	15	146	111	10	58
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		1%			-3%			3%				-1%
Storage Length (ft)	100		0	100		0	0		0	0		150
Storage Lanes	1		0	1		1	0		0	0		1
Taper Length (ft)	100		100	100		100	100		100	100		100
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.995				0.850		0.915				0.850
Flt Protected	0.950			0.950				0.985			0.956	
Satd. Flow (prot)	1761	3504	0	1796	3592	1607	0	1654	0	0	1790	1591
Flt Permitted	0.950			0.950				0.724			0.431	
Satd. Flow (perm)	1761	3504	0	1796	3592	1607	0	1215	0	0	807	1591
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		560			728			219			359	
Travel Time (s)		8.5			11.0			5.0			8.2	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	88	2038	73	124	1649	137	78	17	162	123	11	64
Shared Lane Traffic (%)												
Lane Group Flow (vph)	88	2111	0	124	1649	137	0	257	0	0	134	64
Enter Blocked Intersection	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	0.98	0.98	0.98	1.02	1.02	1.02	0.99	0.99	0.99
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Prot			Prot		Perm	Perm			Perm		pm+ov
Protected Phases	5	2		1	6			8			4	5
Permitted Phases						6	8			4		4
Detector Phase	5	2		1	6	6	8	8		4	4	5
Switch Phase												
Minimum Initial (s)	7.0	12.0		7.0	12.0	12.0	7.0	7.0		7.0	7.0	7.0
Minimum Split (s)	13.0	18.0		13.0	19.0	19.0	13.0	13.0		13.0	13.0	13.0
Total Split (s)	20.0	98.0	0.0	16.0	94.0	94.0	36.0	36.0	0.0	36.0	36.0	20.0
Total Split (%)	13.3%	65.3%	0.0%	10.7%	62.7%	62.7%	24.0%	24.0%	0.0%	24.0%	24.0%	13.3%
Maximum Green (s)	14.1	92.4		10.6	87.8	87.8	30.2	30.2		30.1	30.1	14.1
Yellow Time (s)	3.0	4.4		3.0	4.8	4.8	3.4	3.4		3.6	3.6	3.0
All-Red Time (s)	2.9	1.2		2.4	1.4	1.4	2.4	2.4		2.3	2.3	2.9
Lost Time Adjust (s)	-0.9	-0.6	-2.0	-0.4	-1.2	-1.2	-2.0	-0.8	-2.0	-2.0	-0.9	-0.9
Total Lost Time (s)	5.0	5.0	2.0	5.0	5.0	5.0	3.8	5.0	2.0	3.9	5.0	5.0
Lead/Lag	Lag	Lag		Lead	Lead	Lead						Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes						Yes
Vehicle Extension (s)	1.0	2.0		1.0	2.0	2.0	1.0	1.0		1.0	1.0	1.0
Recall Mode	None	C-Max		None	C-Max	C-Max	None	None		None	None	None

Lanes, Volumes, Timings
 8: US 64 & SR 1634 (Carolina Village Rd)

2011 Base Year - Build 8/6 Lanes Combination

Timing Plan: PM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Act Effect Green (s)	15.0	93.0		11.0	89.0	89.0		31.0			31.0	51.0
Actuated g/C Ratio	0.10	0.62		0.07	0.59	0.59		0.21			0.21	0.34
v/c Ratio	0.50	0.97		0.94	0.77	0.14		1.02			0.80	0.12
Control Delay	74.5	41.2		127.8	18.6	9.8		120.3			89.4	34.9
Queue Delay	0.0	0.0		0.0	0.4	0.0		0.0			0.0	0.0
Total Delay	74.5	41.2		127.8	19.0	9.8		120.3			89.4	34.9
LOS	E	D		F	B	A		F			F	C
Approach Delay		42.5			25.4			120.3			71.8	
Approach LOS		D			C			F			E	
Queue Length 50th (ft)	83	990		122	503	41		-267			126	43
Queue Length 95th (ft)	145	#1224		#259	497	68		#449			#245	80
Internal Link Dist (ft)		480			648			139			279	
Turn Bay Length (ft)	100			100								150
Base Capacity (vph)	176	2172		132	2131	953		251			167	541
Starvation Cap Reductn	0	0		0	135	0		0			0	0
Spillback Cap Reductn	0	0		0	0	0		0			0	0
Storage Cap Reductn	0	0		0	0	0		0			0	0
Reduced v/c Ratio	0.50	0.97		0.94	0.83	0.14		1.02			0.80	0.12

Intersection Summary

Area Type: Other
 Cycle Length: 150
 Actuated Cycle Length: 150
 Offset: 118 (79%), Referenced to phase 2:EBT and 6:WBT, Start of Green
 Natural Cycle: 110
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.02
 Intersection Signal Delay: 41.0 Intersection LOS: D
 Intersection Capacity Utilization 91.8% ICU Level of Service F
 Analysis Period (min) 15
 ~ Volume exceeds capacity, queue is theoretically infinite.
 Queue shown is maximum after two cycles.
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 8: US 64 & SR 1634 (Carolina Village Rd)



Lanes, Volumes, Timings
9: SR 1783 (Upward Rd) & I-26 NB On-Ramp

2011 Base Year - Build 8/6 Lanes Combination

Timing Plan: PM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↑	↗	↖		↗			
Volume (vph)	460	367	0	0	261	110	201	0	89	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		50	150		0	0		0
Storage Lanes	0		0	0		1	1		1	0		0
Taper Length (ft)	100		100	100		100	100		100	100		100
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt						0.850			0.850			
Flt Protected		0.973					0.950					
Satd. Flow (prot)	0	1755	0	0	1863	1495	1770	0	1583	0	0	0
Flt Permitted		0.676					0.950					
Satd. Flow (perm)	0	1219	0	0	1863	1495	1770	0	1583	0	0	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			45			45				45
Link Distance (ft)		630			322			446				658
Travel Time (s)		9.5			4.9			6.8				10.0
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	8%	2%	5%	5%	2%	8%	2%	5%	2%	5%	5%	5%
Adj. Flow (vph)	511	408	0	0	290	122	223	0	99	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	919	0	0	290	122	223	0	99	0	0	0
Enter Blocked Intersection	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			12				12
Link Offset(ft)		0			0			0				0
Crosswalk Width(ft)		16			16			16				16
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Perm					Perm	Prot		custom			
Protected Phases		2			6		8					
Permitted Phases	2					6			8			
Detector Phase	2	2			6	6	8		8			
Switch Phase												
Minimum Initial (s)	12.0	12.0			12.0	12.0	7.0		7.0			
Minimum Split (s)	21.0	21.0			21.0	21.0	14.0		14.0			
Total Split (s)	74.0	74.0	0.0	0.0	74.0	74.0	16.0	0.0	16.0	0.0	0.0	0.0
Total Split (%)	82.2%	82.2%	0.0%	0.0%	82.2%	82.2%	17.8%	0.0%	17.8%	0.0%	0.0%	0.0%
Maximum Green (s)	67.0	67.0			67.0	67.0	9.0		9.0			
Yellow Time (s)	5.0	5.0			5.0	5.0	5.0		5.0			
All-Red Time (s)	2.0	2.0			2.0	2.0	2.0		2.0			
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	5.0	5.0	2.0	2.0	5.0	5.0	5.0	2.0	5.0	2.0	2.0	2.0
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0		3.0			
Recall Mode	C-Max	C-Max			C-Max	C-Max	None		None			
Act Effect Green (s)		69.0			69.0	69.0	11.0		11.0			

Lanes, Volumes, Timings
 9: SR 1783 (Upward Rd) & I-26 NB On-Ramp

2011 Base Year - Build 8/6 Lanes Combination

Timing Plan: PM Peak

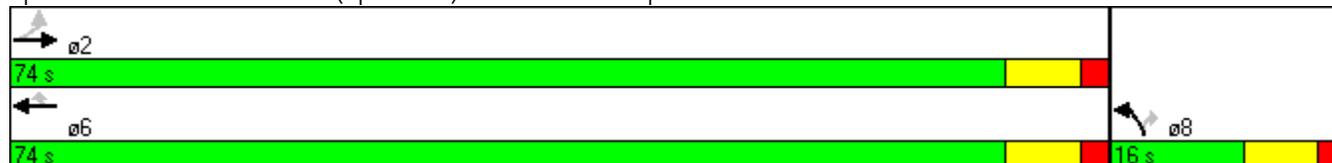


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Actuated g/C Ratio		0.77			0.77	0.77	0.12		0.12			
v/c Ratio		0.98			0.20	0.11	1.03		0.51			
Control Delay		32.4			3.3	2.9	111.2		47.2			
Queue Delay		4.2			0.0	0.0	0.0		0.0			
Total Delay		36.6			3.3	2.9	111.2		47.2			
LOS		D			A	A	F		D			
Approach Delay		36.6			3.2							
Approach LOS		D			A							
Queue Length 50th (ft)		505			36	14	~137		54			
Queue Length 95th (ft)		#775			57	26	#277		105			
Internal Link Dist (ft)		550			242			366			578	
Turn Bay Length (ft)						50	150					
Base Capacity (vph)		935			1428	1146	216		193			
Starvation Cap Reductn		18			0	0	0		0			
Spillback Cap Reductn		0			0	0	0		0			
Storage Cap Reductn		0			0	0	0		0			
Reduced v/c Ratio		1.00			0.20	0.11	1.03		0.51			

Intersection Summary

Area Type: Other
 Cycle Length: 90
 Actuated Cycle Length: 90
 Offset: 13 (14%), Referenced to phase 2:EBTL and 6:WBT, Start of Green
 Natural Cycle: 90
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.03
 Intersection Signal Delay: 39.0
 Intersection LOS: D
 Intersection Capacity Utilization 81.3%
 ICU Level of Service D
 Analysis Period (min) 15
 ~ Volume exceeds capacity, queue is theoretically infinite.
 Queue shown is maximum after two cycles.
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 9: SR 1783 (Upward Rd) & I-26 NB On-Ramp



Lanes, Volumes, Timings
 10: SR 1783 (Upward Rd) & I-26 SB Off-Ramp

2011 Base Year - Build 8/6 Lanes Combination

Timing Plan: PM Peak



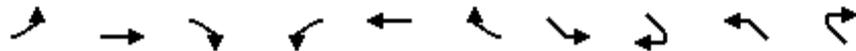
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑	↗		↖					↘		↗
Volume (vph)	0	713	205	69	393	0	0	0	0	114	0	363
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		200	0		0	0		0	0		100
Storage Lanes	0		1	0		0	0		0	1		1
Taper Length (ft)	100		100	100		100	100		100	100		100
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Flt			0.850									0.850
Flt Protected					0.993					0.950		
Satd. Flow (prot)	0	1863	1495	0	1834	0	0	0	0	1770	0	1583
Flt Permitted					0.616					0.950		
Satd. Flow (perm)	0	1863	1495	0	1137	0	0	0	0	1770	0	1583
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			45			45			45	
Link Distance (ft)		549			630			547			651	
Travel Time (s)		8.3			9.5			8.3			9.9	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	5%	2%	8%	8%	2%	5%	5%	5%	5%	2%	5%	2%
Adj. Flow (vph)	0	792	228	77	437	0	0	0	0	127	0	403
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	792	228	0	514	0	0	0	0	127	0	403
Enter Blocked Intersection	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type			Perm	Perm						Prot		custom
Protected Phases		2			6					4		
Permitted Phases			2	6								4
Detector Phase		2	2	6	6					4		4
Switch Phase												
Minimum Initial (s)		12.0	12.0	12.0	12.0					7.0		7.0
Minimum Split (s)		21.0	21.0	21.0	21.0					14.0		14.0
Total Split (s)	0.0	59.0	59.0	59.0	59.0	0.0	0.0	0.0	0.0	31.0	0.0	31.0
Total Split (%)	0.0%	65.6%	65.6%	65.6%	65.6%	0.0%	0.0%	0.0%	0.0%	34.4%	0.0%	34.4%
Maximum Green (s)		52.0	52.0	52.0	52.0					24.0		24.0
Yellow Time (s)		5.0	5.0	5.0	5.0					5.0		5.0
All-Red Time (s)		2.0	2.0	2.0	2.0					2.0		2.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	2.0	5.0	5.0	5.0	5.0	2.0	2.0	2.0	2.0	5.0	2.0	5.0
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)		3.0	3.0	3.0	3.0					3.0		3.0
Recall Mode		C-Max	C-Max	C-Max	C-Max					None		None
Act Effect Green (s)		54.6	54.6		54.6					25.4		25.4

2040 No-Build

Lanes, Volumes, Timings
 1: NC 146 (Long Shoals Rd) & I-26 NB On-Ramp

2040 Design Year - No Build

Timing Plan: AM Peak

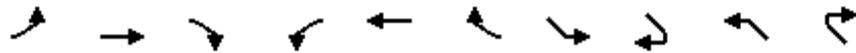


Lane Group	EBL	EBT	EBR2	WBL	WBT	WBR2	SEL	SER2	NWL	NWR2
Lane Configurations	↗↗	↑↑	↖	↗↗	↑↑	↖	↗↗	↖	↗↗	↖
Volume (vph)	308	884	307	494	1162	842	815	392	310	379
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		3%			-7%					
Storage Length (ft)	450			350			0		675	
Storage Lanes	1			2			2		1	
Taper Length (ft)	100			100			100		100	
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	1.00	0.97	1.00
Frt			0.850			0.850		0.850		0.850
Flt Protected	0.950			0.950			0.950		0.950	
Satd. Flow (prot)	3224	3452	1487	3387	3663	1562	3519	1607	3434	1599
Flt Permitted	0.950			0.950			0.950		0.950	
Satd. Flow (perm)	3224	3452	1487	3387	3663	1562	3519	1607	3434	1599
Right Turn on Red			No			No		No		No
Satd. Flow (RTOR)										
Link Speed (mph)		45			45					
Link Distance (ft)		1009			964					
Travel Time (s)		15.3			14.6					
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	7%	3%	7%	7%	2%	7%	2%	3%	3%	2%
Adj. Flow (vph)	342	982	341	549	1291	936	906	436	344	421
Shared Lane Traffic (%)										
Lane Group Flow (vph)	342	982	341	549	1291	936	906	436	344	421
Turn Type	Prot		Free	Prot		Free	Prot	custom	Prot	Free
Protected Phases	5	2		1	6		4		8	
Permitted Phases			Free			Free		4		Free
Detector Phase	5	2		1	6		4	4	8	
Switch Phase										
Minimum Initial (s)	7.0	12.0		7.0	12.0		7.0	7.0	7.0	
Minimum Split (s)	16.0	20.0		15.0	21.0		16.0	16.0	15.0	
Total Split (s)	18.0	39.0	0.0	24.0	45.0	0.0	37.0	37.0	37.0	0.0
Total Split (%)	18.0%	39.0%	0.0%	24.0%	45.0%	0.0%	37.0%	37.0%	37.0%	0.0%
Maximum Green (s)	9.8	31.5		16.3	36.0		28.9	28.9	29.0	
Yellow Time (s)	3.4	4.3		4.0	5.2		3.8	3.8	3.7	
All-Red Time (s)	4.8	3.2		3.7	3.8		4.3	4.3	4.3	
Lost Time Adjust (s)	-3.2	-2.5	-2.5	-2.7	-4.0	-4.0	-3.1	-3.1	-3.0	0.0
Total Lost Time (s)	5.0	5.0	1.5	5.0	5.0	0.0	5.0	5.0	5.0	4.0
Lead/Lag	Lead	Lag		Lead	Lag					
Lead-Lag Optimize?	Yes	Yes		Yes	Yes					
Vehicle Extension (s)	2.0	6.0		2.0	6.0		2.0	2.0	2.0	
Minimum Gap (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	
Time Before Reduce (s)	0.0	15.0		0.0	15.0		0.0	0.0	0.0	
Time To Reduce (s)	0.0	30.0		0.0	30.0		0.0	0.0	0.0	
Recall Mode	None	C-Max		None	C-Max		None	None	None	
Act Effct Green (s)	13.2	35.2	100.0	18.9	40.8	100.0	30.9	30.9	30.9	100.0
Actuated g/C Ratio	0.13	0.35	1.00	0.19	0.41	1.00	0.31	0.31	0.31	1.00
v/c Ratio	0.80	0.81	0.23	0.86	0.86	0.60	0.83	0.88	0.32	0.26
Control Delay	57.6	36.2	0.4	53.8	34.7	1.7	39.7	52.8	27.2	0.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Lanes, Volumes, Timings
 1: NC 146 (Long Shoals Rd) & I-26 NB On-Ramp

2040 Design Year - No Build

Timing Plan: AM Peak

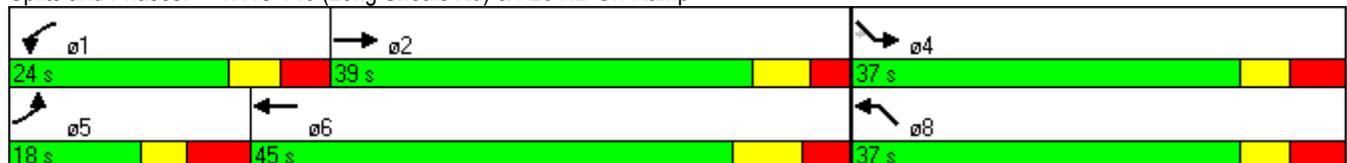


Lane Group	EBL	EBT	EBR2	WBL	WBT	WBR2	SEL	SER2	NWL	NWR2
Total Delay	57.6	36.2	0.4	53.8	34.7	1.7	39.7	52.8	27.2	0.4
LOS	E	D	A	D	C	A	D	D	C	A
Approach Delay	33.2			27.4						
Approach LOS	C			C						
Queue Length 50th (ft)	110	301	0	175	393	0	270	258	85	0
Queue Length 95th (ft)	#180	384	0	#261	#500	0	347	#428	122	0
Internal Link Dist (ft)	929			884						
Turn Bay Length (ft)	450		300	350		300		425	675	575
Base Capacity (vph)	427	1214	1487	644	1495	1562	1126	514	1099	1599
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.80	0.81	0.23	0.85	0.86	0.60	0.80	0.85	0.31	0.26

Intersection Summary

Area Type: Other
 Cycle Length: 100
 Actuated Cycle Length: 100
 Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green
 Natural Cycle: 80
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.88
 Intersection Signal Delay: 30.5
 Intersection LOS: C
 Intersection Capacity Utilization 76.9%
 ICU Level of Service D
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 1: NC 146 (Long Shoals Rd) & I-26 NB On-Ramp



Lanes, Volumes, Timings
2: I-26 NB On-Ramp & US 25 (Asheville Highway)

2040 Design Year - No Build

Timing Plan: AM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				↙		↗	↗	↗			↗	↗
Volume (vph)	0	0	0	287	0	406	801	1246	0	0	1802	221
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			2%			-1%			2%	
Storage Length (ft)	0		0	0		150	0		0	0		300
Storage Lanes	0		0	1		2	1		0	0		1
Taper Length (ft)	100		100	100		100	100		100	100		100
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	0.88	1.00	0.95	1.00	1.00	0.95	1.00
Frt						0.850						0.850
Flt Protected				0.950			0.950					
Satd. Flow (prot)	0	0	0	1735	0	2706	1680	3489	0	0	3436	1480
Flt Permitted				0.950			0.950					
Satd. Flow (perm)	0	0	0	1735	0	2706	1680	3489	0	0	3436	1480
Right Turn on Red			No			Yes			No			No
Satd. Flow (RTOR)						179						
Link Speed (mph)		45			35			45				45
Link Distance (ft)		533			612			601				596
Travel Time (s)		8.1			11.9			9.1				9.0
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	5%	5%	5%	3%	5%	4%	8%	4%	5%	5%	4%	8%
Adj. Flow (vph)	0	0	0	319	0	451	890	1384	0	0	2002	246
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	319	0	451	890	1384	0	0	2002	246
Turn Type				Prot		custom	Prot					Free
Protected Phases				4			5	2				6
Permitted Phases						4						Free
Detector Phase				4		4	5	2				6
Switch Phase												
Minimum Initial (s)				7.0		7.0	7.0	12.0				12.0
Minimum Split (s)				13.0		13.0	14.0	19.0				18.0
Total Split (s)	0.0	0.0	0.0	20.0	0.0	20.0	42.0	90.0	0.0	0.0	48.0	0.0
Total Split (%)	0.0%	0.0%	0.0%	18.2%	0.0%	18.2%	38.2%	81.8%	0.0%	0.0%	43.6%	0.0%
Maximum Green (s)				14.0		14.0	35.6	83.9				42.7
Yellow Time (s)				3.7		3.7	3.0	4.6				4.3
All-Red Time (s)				2.3		2.3	3.4	1.5				1.0
Lost Time Adjust (s)	-2.0	0.0	0.0	-1.0	0.0	-1.0	-1.4	-1.1	0.0	0.0	-0.3	0.0
Total Lost Time (s)	2.0	4.0	4.0	5.0	4.0	5.0	5.0	5.0	4.0	4.0	5.0	4.0
Lead/Lag							Lag					Lead
Lead-Lag Optimize?							Yes					Yes
Vehicle Extension (s)				2.0		2.0	2.0	8.0				8.0
Minimum Gap (s)				3.0		3.0	3.0	5.5				5.5
Time Before Reduce (s)				0.0		0.0	0.0	15.0				15.0
Time To Reduce (s)				0.0		0.0	0.0	50.0				50.0
Recall Mode				None		None	None	C-Max				C-Max
Act Effct Green (s)				15.0		15.0	37.0	85.0				43.0
Actuated g/C Ratio				0.14		0.14	0.34	0.77				0.39
v/c Ratio				1.35		0.86	1.58	0.51				1.49
Control Delay				218.9		45.1	282.5	2.1				253.1
Queue Delay				0.0		0.0	0.0	0.7				0.0

Lanes, Volumes, Timings
 2: I-26 NB On-Ramp & US 25 (Asheville Highway)

2040 Design Year - No Build

Timing Plan: AM Peak

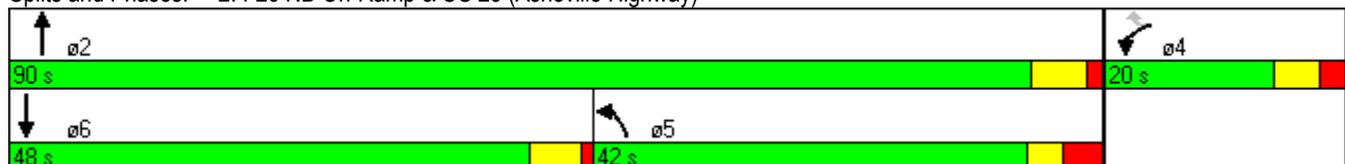


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay				218.9		45.1	282.5	2.8			253.1	0.2
LOS				F		D	F	A			F	A
Approach Delay								112.3			225.4	
Approach LOS								F			F	
Queue Length 50th (ft)				~296		109	~926	23			~1031	0
Queue Length 95th (ft)				#471		#205	m417	m6			#1170	0
Internal Link Dist (ft)		453			532			521			516	
Turn Bay Length (ft)						150						300
Base Capacity (vph)				237		524	565	2696			1343	1480
Starvation Cap Reductn				0		0	0	868			0	0
Spillback Cap Reductn				0		0	0	0			0	0
Storage Cap Reductn				0		0	0	0			0	0
Reduced v/c Ratio				1.35		0.86	1.58	0.76			1.49	0.17

Intersection Summary

Area Type: Other
 Cycle Length: 110
 Actuated Cycle Length: 110
 Offset: 49 (45%), Referenced to phase 2:NBT and 6:SBT, Start of Green
 Natural Cycle: 200
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.58
 Intersection Signal Delay: 161.1
 Intersection LOS: F
 Intersection Capacity Utilization 122.6%
 ICU Level of Service H
 Analysis Period (min) 15
 ~ Volume exceeds capacity, queue is theoretically infinite.
 Queue shown is maximum after two cycles.
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: I-26 NB On-Ramp & US 25 (Asheville Highway)



Lanes, Volumes, Timings
 3: I-26 SB Off-Ramp & US 25 (Asheville Highway)

2040 Design Year - No Build
 Timing Plan: AM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	219	0	997	0	0	0	0	1828	285	509	1580	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		3%			0%			4%			1%	
Storage Length (ft)	0		100	0		0	0		500	0		0
Storage Lanes	1		1	0		0	0		1	1		0
Taper Length (ft)	100		100	100		100	100		100	100		100
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt			0.850						0.850			
Flt Protected	0.950									0.950		
Satd. Flow (prot)	1710	0	1544	0	0	0	0	3435	1465	1663	3487	0
Flt Permitted	0.950									0.950		
Satd. Flow (perm)	1710	0	1544	0	0	0	0	3435	1465	1663	3487	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		35			45			45			45	
Link Distance (ft)		471			598			795			601	
Travel Time (s)		9.2			9.1			12.0			9.1	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	4%	5%	3%	5%	5%	5%	5%	3%	8%	8%	3%	5%
Adj. Flow (vph)	243	0	1108	0	0	0	0	2031	317	566	1756	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	243	0	1108	0	0	0	0	2031	317	566	1756	0
Turn Type	Prot		custom						Free	Prot		
Protected Phases	4		4					2		1	6	
Permitted Phases									Free			
Detector Phase	4		4					2		1	6	
Switch Phase												
Minimum Initial (s)	7.0		7.0					12.0		7.0	12.0	
Minimum Split (s)	13.0		13.0					18.0		14.0	18.0	
Total Split (s)	43.0	0.0	43.0	0.0	0.0	0.0	0.0	42.0	0.0	25.0	67.0	0.0
Total Split (%)	39.1%	0.0%	39.1%	0.0%	0.0%	0.0%	0.0%	38.2%	0.0%	22.7%	60.9%	0.0%
Maximum Green (s)	37.0		37.0					36.3		18.5	61.3	
Yellow Time (s)	4.0		4.0					4.7		4.0	4.7	
All-Red Time (s)	2.0		2.0					1.0		2.5	1.0	
Lost Time Adjust (s)	-1.0	-2.0	-1.0	-2.0	-2.0	-2.0	-2.0	-0.7	-0.7	-1.5	-0.7	-2.0
Total Lost Time (s)	5.0	2.0	5.0	2.0	2.0	2.0	2.0	5.0	3.3	5.0	5.0	2.0
Lead/Lag								Lag		Lead		
Lead-Lag Optimize?								Yes		Yes		
Vehicle Extension (s)	2.0		2.0					8.0		2.0	8.0	
Minimum Gap (s)	3.0		3.0					5.5		3.0	5.5	
Time Before Reduce (s)	0.0		0.0					15.0		0.0	15.0	
Time To Reduce (s)	0.0		0.0					50.0		0.0	50.0	
Recall Mode	None		None					C-Max		None	C-Max	
Act Effct Green (s)	38.0		38.0					37.0	110.0	20.0	62.0	
Actuated g/C Ratio	0.35		0.35					0.34	1.00	0.18	0.56	
v/c Ratio	0.41		2.08					1.76	0.22	1.87	0.89	
Control Delay	30.1		515.2					371.4	0.3	428.5	8.5	
Queue Delay	0.0		0.0					0.0	0.0	0.0	5.0	

Lanes, Volumes, Timings
 3: I-26 SB Off-Ramp & US 25 (Asheville Highway)

2040 Design Year - No Build
 Timing Plan: AM Peak

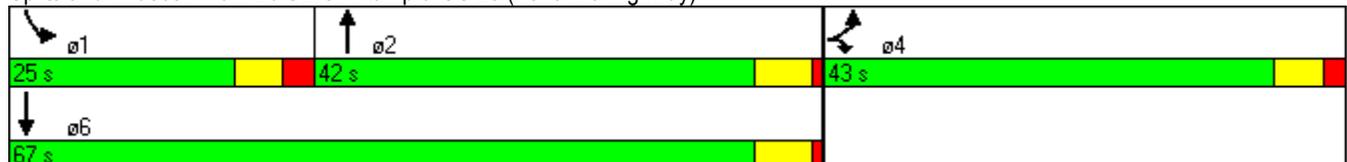


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay	30.1		515.2					371.4	0.3	428.5	13.6	
LOS	C		F					F	A	F	B	
Approach Delay								321.3			114.7	
Approach LOS								F			F	
Queue Length 50th (ft)	130		~1239					~1126	0	~625	62	
Queue Length 95th (ft)	202		#1491					#1265	0	m#352	m0	
Internal Link Dist (ft)		391			518			715				521
Turn Bay Length (ft)			100						500			
Base Capacity (vph)	591		533					1155	1465	302	1965	
Starvation Cap Reductn	0		0					0	0	0	165	
Spillback Cap Reductn	0		0					0	0	0	0	
Storage Cap Reductn	0		0					0	0	0	0	
Reduced v/c Ratio	0.41		2.08					1.76	0.22	1.87	0.98	

Intersection Summary

Area Type: Other
 Cycle Length: 110
 Actuated Cycle Length: 110
 Offset: 64 (58%), Referenced to phase 2:NBT and 6:SBT, Start of Green
 Natural Cycle: 240
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 2.08
 Intersection Signal Delay: 265.6
 Intersection LOS: F
 Intersection Capacity Utilization 122.6%
 ICU Level of Service H
 Analysis Period (min) 15
 ~ Volume exceeds capacity, queue is theoretically infinite.
 Queue shown is maximum after two cycles.
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: I-26 SB Off-Ramp & US 25 (Asheville Highway)



Lanes, Volumes, Timings
4: I-26 NB Ramps & Balfour Pkwy

2040 Design Year - No Build
Timing Plan: AM Peak

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	662	0	0	260	228	1412	0	0	1277	759
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	250		0	0		250
Storage Lanes	0		2	0		1	1		0	0		1
Taper Length (ft)	100		100	100		100	100		100	100		100
Lane Util. Factor	1.00	1.00	0.88	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt			0.850			0.865						0.850
Flt Protected							0.950					
Satd. Flow (prot)	0	0	2787	0	0	1611	1671	3539	0	0	3539	1495
Flt Permitted							0.950					
Satd. Flow (perm)	0	0	2787	0	0	1611	1671	3539	0	0	3539	1495
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		25			45			45				45
Link Distance (ft)		393			429			690				522
Travel Time (s)		10.7			6.5			10.5				7.9
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	5%	5%	2%	5%	5%	2%	8%	2%	5%	5%	2%	8%
Adj. Flow (vph)	0	0	736	0	0	289	253	1569	0	0	1419	843
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	736	0	0	289	253	1569	0	0	1419	843
Turn Type			Over			Free	Prot					Perm
Protected Phases			5				5	Free				6
Permitted Phases						Free						6
Detector Phase			5				5					6
Switch Phase												
Minimum Initial (s)			7.0				7.0				12.0	12.0
Minimum Split (s)			14.0				14.0				19.0	19.0
Total Split (s)	0.0	0.0	30.0	0.0	0.0	0.0	30.0	0.0	0.0	0.0	60.0	60.0
Total Split (%)	0.0%	0.0%	33.3%	0.0%	0.0%	0.0%	33.3%	0.0%	0.0%	0.0%	66.7%	66.7%
Maximum Green (s)			23.0				23.0				53.0	53.0
Yellow Time (s)			5.0				5.0				5.0	5.0
All-Red Time (s)			2.0				2.0				2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	2.0	2.0	5.0	2.0	2.0	2.0	5.0	2.0	2.0	2.0	5.0	5.0
Lead/Lag			Lead				Lead				Lag	Lag
Lead-Lag Optimize?			Yes				Yes				Yes	Yes
Vehicle Extension (s)			3.0				3.0				3.0	3.0
Recall Mode			None				None				C-Max	C-Max
Act Effct Green (s)			25.0			90.0	25.0	90.0			55.0	55.0
Actuated g/C Ratio			0.28			1.00	0.28	1.00			0.61	0.61
v/c Ratio			0.95			0.18	0.55	0.44			0.66	0.92
Control Delay			55.6			0.2	25.3	0.3			13.2	33.5
Queue Delay			0.0			0.0	0.0	0.0			0.0	0.0
Total Delay			55.6			0.2	25.3	0.3			13.2	33.5
LOS			E			A	C	A			B	C
Approach Delay								3.8			20.8	
Approach LOS								A			C	

Lanes, Volumes, Timings
 4: I-26 NB Ramps & Balfour Pkwy

2040 Design Year - No Build
 Timing Plan: AM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 50th (ft)			232			0	108	0			251	390
Queue Length 95th (ft)			#359			0	m154	0			320	#686
Internal Link Dist (ft)		313			349			610			442	
Turn Bay Length (ft)							250					250
Base Capacity (vph)			774			1611	464	3539			2163	914
Starvation Cap Reductn			0			0	0	0			0	0
Spillback Cap Reductn			0			0	0	0			0	0
Storage Cap Reductn			0			0	0	0			0	0
Reduced v/c Ratio			0.95			0.18	0.55	0.44			0.66	0.92

Intersection Summary

Area Type: Other
 Cycle Length: 90
 Actuated Cycle Length: 90
 Offset: 41 (46%), Referenced to phase 6:SBT, Start of Green
 Natural Cycle: 80
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.95
 Intersection Signal Delay: 18.6
 Intersection LOS: B
 Intersection Capacity Utilization 68.0%
 ICU Level of Service C
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: I-26 NB Ramps & Balfour Pkwy



Lanes, Volumes, Timings
5: I-26 SB Ramps & Balfour Pkwy

2040 Design Year - No Build
Timing Plan: AM Peak

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	304	0	0	735	0	905	641	346	1593	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	0		250	250		0
Storage Lanes	0		1	0		2	0		1	1		0
Taper Length (ft)	100		100	100		100	100		100	100		100
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	0.88	1.00	0.95	1.00	1.00	0.95	1.00
Frt			0.865			0.850			0.850			
Flt Protected										0.950		
Satd. Flow (prot)	0	0	1611	0	0	2787	0	3539	1495	1671	3539	0
Flt Permitted										0.950		
Satd. Flow (perm)	0	0	1611	0	0	2787	0	3539	1495	1671	3539	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			25			45			45	
Link Distance (ft)		642			361			480			690	
Travel Time (s)		9.7			9.8			7.3			10.5	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	5%	5%	2%	5%	5%	2%	5%	2%	8%	8%	2%	5%
Adj. Flow (vph)	0	0	338	0	0	817	0	1006	712	384	1770	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	338	0	0	817	0	1006	712	384	1770	0
Turn Type			Free			Over			Perm	Prot		
Protected Phases						1		2		1	Free	
Permitted Phases			Free						2			
Detector Phase						1		2	2	1		
Switch Phase												
Minimum Initial (s)						7.0		12.0	12.0	7.0		
Minimum Split (s)						14.0		19.0	19.0	14.0		
Total Split (s)	0.0	0.0	0.0	0.0	0.0	35.0	0.0	55.0	55.0	35.0	0.0	0.0
Total Split (%)	0.0%	0.0%	0.0%	0.0%	0.0%	38.9%	0.0%	61.1%	61.1%	38.9%	0.0%	0.0%
Maximum Green (s)						28.0		48.0	48.0	28.0		
Yellow Time (s)						5.0		5.0	5.0	5.0		
All-Red Time (s)						2.0		2.0	2.0	2.0		
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	2.0	2.0	2.0	2.0	2.0	5.0	2.0	5.0	5.0	5.0	2.0	2.0
Lead/Lag						Lead		Lag	Lag	Lead		
Lead-Lag Optimize?						Yes		Yes	Yes	Yes		
Vehicle Extension (s)						3.0		3.0	3.0	3.0		
Recall Mode						None		C-Max	C-Max	None		
Act Effct Green (s)			90.0			29.6		50.4	50.4	29.6	90.0	
Actuated g/C Ratio			1.00			0.33		0.56	0.56	0.33	1.00	
v/c Ratio			0.21			0.89		0.51	0.85	0.70	0.50	
Control Delay			0.3			42.4		13.4	28.8	25.9	0.3	
Queue Delay			0.0			0.0		0.0	0.0	0.0	0.0	
Total Delay			0.3			42.4		13.4	28.8	25.9	0.3	
LOS			A			D		B	C	C	A	
Approach Delay								19.8			4.9	
Approach LOS								B			A	

Lanes, Volumes, Timings
 5: I-26 SB Ramps & Balfour Pkwy

2040 Design Year - No Build
 Timing Plan: AM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 50th (ft)			0			246		174	321	175	0	
Queue Length 95th (ft)			0			#365		226	#569	m231	m0	
Internal Link Dist (ft)		562			281			400				610
Turn Bay Length (ft)									250	250		
Base Capacity (vph)			1611			929		1983	838	557	3539	
Starvation Cap Reductn			0			0		0	0	0	0	
Spillback Cap Reductn			0			0		0	0	0	0	
Storage Cap Reductn			0			0		0	0	0	0	
Reduced v/c Ratio			0.21			0.88		0.51	0.85	0.69	0.50	

Intersection Summary

Area Type: Other
 Cycle Length: 90
 Actuated Cycle Length: 90
 Offset: 0 (0%), Referenced to phase 2:NBT, Start of Green
 Natural Cycle: 65
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.89
 Intersection Signal Delay: 15.8
 Intersection LOS: B
 Intersection Capacity Utilization 67.2%
 ICU Level of Service C
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 5: I-26 SB Ramps & Balfour Pkwy



Lanes, Volumes, Timings
6: US 64 & SR 1516 (Francis Rd)

2040 Design Year - No Build

Timing Plan: AM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	161	1630	471	99	2074	33	419	5	69	23	5	143
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		-1%			4%			-1%			2%	
Storage Length (ft)	150		0	125		0	150		150	0		150
Storage Lanes	1		1	1		0	1		1	0		1
Taper Length (ft)	100		100	100		100	100		100	100		100
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00
Frt			0.850		0.998				0.850			0.850
Flt Protected	0.950			0.950			0.950	0.954			0.961	
Satd. Flow (prot)	1778	3557	1591	1734	3461	0	1690	1697	1591	0	1772	1567
Flt Permitted	0.950			0.950			0.950	0.954			0.961	
Satd. Flow (perm)	1778	3557	1591	1734	3461	0	1690	1697	1591	0	1772	1567
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			45			35			35	
Link Distance (ft)		835			622			375			406	
Travel Time (s)		12.7			9.4			7.3			7.9	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	179	1811	523	110	2304	37	466	6	77	26	6	159
Shared Lane Traffic (%)							49%					
Lane Group Flow (vph)	179	1811	523	110	2341	0	238	234	77	0	32	159
Turn Type	Prot		Perm	Prot			Split		pm+ov	Split		pm+ov
Protected Phases	5	2		1	6		4	4	1	3	3	5
Permitted Phases			2						4			3
Detector Phase	5	2	2	1	6		4	4	1	3	3	5
Switch Phase												
Minimum Initial (s)	7.0	12.0	12.0	7.0	12.0		7.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	13.0	18.0	18.0	13.0	18.0		14.0	14.0	13.0	14.0	14.0	13.0
Total Split (s)	17.0	95.0	95.0	18.0	96.0	0.0	23.0	23.0	18.0	14.0	14.0	17.0
Total Split (%)	11.3%	63.3%	63.3%	12.0%	64.0%	0.0%	15.3%	15.3%	12.0%	9.3%	9.3%	11.3%
Maximum Green (s)	11.4	89.0	89.0	12.6	90.4		16.4	16.4	12.6	7.5	7.5	11.4
Yellow Time (s)	3.2	4.6	4.6	3.0	4.2		3.9	3.9	3.0	3.7	3.7	3.2
All-Red Time (s)	2.4	1.4	1.4	2.4	1.4		2.7	2.7	2.4	2.8	2.8	2.4
Lost Time Adjust (s)	-0.6	-1.0	-1.0	-0.4	-0.6	-2.0	-1.6	-1.6	-0.4	-2.0	-1.5	-0.6
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	2.0	5.0	5.0	5.0	4.5	5.0	5.0
Lead/Lag	Lag	Lag	Lag	Lead	Lead		Lag	Lag	Lead	Lead	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	1.0	2.0	2.0	1.0	2.0		1.0	1.0	1.0	1.0	1.0	1.0
Recall Mode	None	C-Max	C-Max	None	C-Max		None	None	None	None	None	None
Act Effct Green (s)	12.0	91.3	91.3	11.7	91.0		23.7	23.7	40.5		8.7	20.3
Actuated g/C Ratio	0.08	0.61	0.61	0.08	0.61		0.16	0.16	0.27		0.06	0.14
v/c Ratio	1.26	0.84	0.54	0.81	1.11		0.89	0.87	0.18		0.31	0.75
Control Delay	206.3	18.1	13.5	106.5	88.2		93.5	90.7	45.2		76.2	82.8
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0		0.0	0.0
Total Delay	206.3	18.1	13.5	106.5	88.2		93.5	90.7	45.2		76.2	82.8
LOS	F	B	B	F	F		F	F	D		E	F
Approach Delay		30.6			89.0			85.5			81.7	

Lanes, Volumes, Timings
6: US 64 & SR 1516 (Francis Rd)

2040 Design Year - No Build
Timing Plan: AM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach LOS	C			F			F			F		
Queue Length 50th (ft)	~218	399	171	107	~1378		~285	~275	60		31	146
Queue Length 95th (ft)	#380	512	216	#205	#1503		#480	#468	109		68	227
Internal Link Dist (ft)	755			542			295			326		
Turn Bay Length (ft)	150			125			150		150			150
Base Capacity (vph)	142	2164	968	150	2100		267	268	442		106	212
Starvation Cap Reductn	0	0	0	0	0		0	0	0		0	0
Spillback Cap Reductn	0	0	0	0	0		0	0	0		0	0
Storage Cap Reductn	0	0	0	0	0		0	0	0		0	0
Reduced v/c Ratio	1.26	0.84	0.54	0.73	1.11		0.89	0.87	0.17		0.30	0.75

Intersection Summary

Area Type: Other
 Cycle Length: 150
 Actuated Cycle Length: 150
 Offset: 32 (21%), Referenced to phase 2:EBT and 6:WBT, Start of Green
 Natural Cycle: 220
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.26
 Intersection Signal Delay: 62.7
 Intersection Capacity Utilization 98.2%
 Analysis Period (min) 15
 Intersection LOS: E
 ICU Level of Service F

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

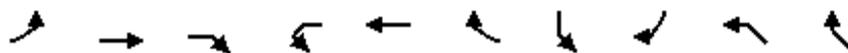
95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 6: US 64 & SR 1516 (Francis Rd)



Lanes, Volumes, Timings
7: US 64 & I-26 SB Off-Ramp

2040 Design Year - No Build
Timing Plan: AM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	SBL	SBR	NWL	NWR
Lane Configurations		↑↑	↗		↑↑			↖↖		
Volume (vph)	0	1618	380	0	2007	0	0	445	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		3%			-3%		-3%		0%	
Storage Length (ft)	0		400	0		0	0	500	0	0
Storage Lanes	0		1	0		0	0	1	0	0
Taper Length (ft)	100		100	100		100	100	100	100	100
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.88	1.00	1.00
Frt			0.850					0.850		
Flt Protected										
Satd. Flow (prot)	0	3486	1473	0	3592	0	0	2828	0	0
Flt Permitted										
Satd. Flow (perm)	0	3486	1473	0	3592	0	0	2828	0	0
Right Turn on Red			No			No		No		
Satd. Flow (RTOR)										
Link Speed (mph)		45			45		35		45	
Link Distance (ft)		728			791		804		308	
Travel Time (s)		11.0			12.0		15.7		4.7	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	5%	2%	8%	5%	2%	5%	5%	2%	5%	5%
Adj. Flow (vph)	0	1798	422	0	2230	0	0	494	0	0
Shared Lane Traffic (%)										
Lane Group Flow (vph)	0	1798	422	0	2230	0	0	494	0	0
Turn Type			Perm					custom		
Protected Phases		Free			6			4		
Permitted Phases			Free							
Detector Phase					6			4		
Switch Phase										
Minimum Initial (s)					12.0			7.0		
Minimum Split (s)					18.0			13.0		
Total Split (s)	0.0	0.0	0.0	0.0	111.0	0.0	0.0	39.0	0.0	0.0
Total Split (%)	0.0%	0.0%	0.0%	0.0%	74.0%	0.0%	0.0%	26.0%	0.0%	0.0%
Maximum Green (s)					105.2			33.9		
Yellow Time (s)					4.8			4.1		
All-Red Time (s)					1.0			1.0		
Lost Time Adjust (s)	-2.0	0.0	-2.0	-2.0	-0.8	-2.0	-2.0	-0.1	-2.0	-2.0
Total Lost Time (s)	2.0	4.0	2.0	2.0	5.0	2.0	2.0	5.0	2.0	2.0
Lead/Lag										
Lead-Lag Optimize?										
Vehicle Extension (s)					2.0			1.0		
Recall Mode					C-Max			None		
Act Effct Green (s)		150.0	150.0		110.8			29.2		
Actuated g/C Ratio		1.00	1.00		0.74			0.19		
v/c Ratio		0.52	0.29		0.84			0.90		
Control Delay		0.0	0.0		16.1			78.8		
Queue Delay		0.0	0.0		0.0			0.0		
Total Delay		0.0	0.0		16.1			78.8		
LOS		A	A		B			E		
Approach Delay		0.0			16.1					

Lanes, Volumes, Timings
7: US 64 & I-26 SB Off-Ramp

2040 Design Year - No Build

Timing Plan: AM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	SBL	SBR	NWL	NWR
Approach LOS		A				B				
Queue Length 50th (ft)		0	0		511			269		
Queue Length 95th (ft)		m0	m0		m488			334		
Internal Link Dist (ft)		648			711		724		228	
Turn Bay Length (ft)			400					500		
Base Capacity (vph)		3486	1473		2654			641		
Starvation Cap Reductn		0	0		0			0		
Spillback Cap Reductn		0	0		0			0		
Storage Cap Reductn		0	0		0			0		
Reduced v/c Ratio		0.52	0.29		0.84			0.77		

Intersection Summary

Area Type: Other
 Cycle Length: 150
 Actuated Cycle Length: 150
 Offset: 0 (0%), Referenced to phase 6:WBT, Start of Green, Master Intersection
 Natural Cycle: 70
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.90
 Intersection Signal Delay: 15.2
 Intersection LOS: B
 Intersection Capacity Utilization 82.7%
 ICU Level of Service E
 Analysis Period (min) 15
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 7: US 64 & I-26 SB Off-Ramp



Lanes, Volumes, Timings
8: US 64 & SR 1634 (Carolina Village Rd)

2040 Design Year - No Build

Timing Plan: AM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	70	1593	86	243	1982	208	81	15	184	237	5	100
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		1%			-3%			3%			-1%	
Storage Length (ft)	100		0	100		0	0		0	0		150
Storage Lanes	1		0	1		1	0		0	0		1
Taper Length (ft)	100		100	100		100	100		100	100		100
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.992				0.850		0.911				0.850
Flt Protected	0.950			0.950				0.986			0.953	
Satd. Flow (prot)	1761	3493	0	1796	3592	1607	0	1648	0	0	1784	1591
Flt Permitted	0.950			0.950				0.568			0.430	
Satd. Flow (perm)	1761	3493	0	1796	3592	1607	0	949	0	0	805	1591
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		560			728			219			359	
Travel Time (s)		8.5			11.0			5.0			8.2	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	78	1770	96	270	2202	231	90	17	204	263	6	111
Shared Lane Traffic (%)												
Lane Group Flow (vph)	78	1866	0	270	2202	231	0	311	0	0	269	111
Turn Type	Prot			Prot		Perm	Perm			Perm		pm+ov
Protected Phases	5	2		1	6			8			4	5
Permitted Phases						6	8			4		4
Detector Phase	5	2		1	6	6	8	8		4	4	5
Switch Phase												
Minimum Initial (s)	7.0	12.0		7.0	12.0	12.0	7.0	7.0		7.0	7.0	7.0
Minimum Split (s)	13.0	18.0		13.0	19.0	19.0	13.0	13.0		13.0	13.0	13.0
Total Split (s)	13.0	78.0	0.0	24.0	89.0	89.0	48.0	48.0	0.0	48.0	48.0	13.0
Total Split (%)	8.7%	52.0%	0.0%	16.0%	59.3%	59.3%	32.0%	32.0%	0.0%	32.0%	32.0%	8.7%
Maximum Green (s)	7.1	72.4		18.6	82.8	82.8	42.2	42.2		42.1	42.1	7.1
Yellow Time (s)	3.0	4.4		3.0	4.8	4.8	3.4	3.4		3.6	3.6	3.0
All-Red Time (s)	2.9	1.2		2.4	1.4	1.4	2.4	2.4		2.3	2.3	2.9
Lost Time Adjust (s)	-0.9	-0.6	-2.0	-0.4	-1.2	-1.2	-2.0	-0.8	-2.0	-2.0	-0.9	-0.9
Total Lost Time (s)	5.0	5.0	2.0	5.0	5.0	5.0	3.8	5.0	2.0	3.9	5.0	5.0
Lead/Lag	Lag	Lag		Lead	Lead	Lead						Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes						Yes
Vehicle Extension (s)	1.0	2.0		1.0	2.0	2.0	1.0	1.0		1.0	1.0	1.0
Recall Mode	None	C-Max		None	C-Max	C-Max	None	None		None	None	None
Act Effct Green (s)	8.0	73.0		19.0	84.0	84.0		43.0			43.0	56.0
Actuated g/C Ratio	0.05	0.49		0.13	0.56	0.56		0.29			0.29	0.37
v/c Ratio	0.83	1.10		1.19	1.09	0.26		1.14			1.16	0.19
Control Delay	123.7	90.4		160.9	76.8	17.1		146.1			157.3	32.8
Queue Delay	0.0	0.0		0.0	40.0	0.0		0.0			0.0	0.0
Total Delay	123.7	90.4		160.9	116.8	17.1		146.1			157.3	32.8
LOS	F	F		F	F	B		F			F	C
Approach Delay		91.7			112.7			146.1			120.9	

Lanes, Volumes, Timings
 8: US 64 & SR 1634 (Carolina Village Rd)

2040 Design Year - No Build
 Timing Plan: AM Peak

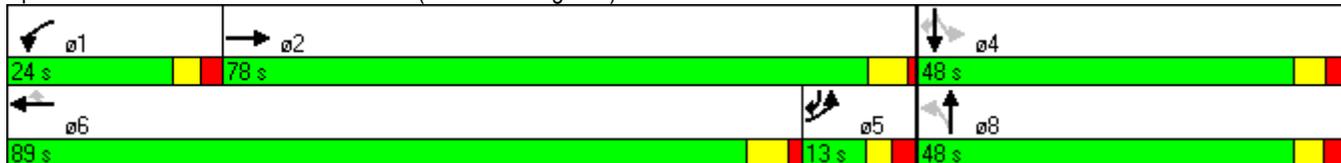


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach LOS	F			F			F			F		
Queue Length 50th (ft)	77	~1084		~318	~1271	97	~355			~312	73	
Queue Length 95th (ft)	#177	#1220		m#438	#1403	m147	#552			#498	121	
Internal Link Dist (ft)	480			648			139			279		
Turn Bay Length (ft)	100			100						150		
Base Capacity (vph)	94	1700		227	2012	900	272			231	594	
Starvation Cap Reductn	0	0		0	155	0	0			0	0	
Spillback Cap Reductn	0	0		0	0	0	0			0	0	
Storage Cap Reductn	0	0		0	0	0	0			0	0	
Reduced v/c Ratio	0.83	1.10		1.19	1.19	0.26	1.14			1.16	0.19	

Intersection Summary

Area Type: Other
 Cycle Length: 150
 Actuated Cycle Length: 150
 Offset: 147 (98%), Referenced to phase 2:EBT and 6:WBT, Start of Green
 Natural Cycle: 160
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.19
 Intersection Signal Delay: 107.6 Intersection LOS: F
 Intersection Capacity Utilization 107.3% ICU Level of Service G
 Analysis Period (min) 15
 ~ Volume exceeds capacity, queue is theoretically infinite.
 Queue shown is maximum after two cycles.
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 8: US 64 & SR 1634 (Carolina Village Rd)



Lanes, Volumes, Timings
 9: SR 1783 (Upward Rd) & I-26 NB On-Ramp

2040 Design Year - No Build

Timing Plan: AM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↗↘	↗↗			↖↗		↖	↖	↖			
Volume (vph)	446	578	0	0	821	134	612	0	188	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		-3%			3%			4%			0%	
Storage Length (ft)	275		0	0		0	250		175	0		0
Storage Lanes	1		0	0		0	1		1	0		0
Taper Length (ft)	100		100	100		100	100		100	100		100
Lane Util. Factor	0.97	0.95	1.00	1.00	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00
Frt					0.979				0.850			
Flt Protected	0.950						0.950	0.950				
Satd. Flow (prot)	3291	3592	0	0	3385	0	1648	1648	1552	0	0	0
Flt Permitted	0.950						0.950	0.950				
Satd. Flow (perm)	3291	3592	0	0	3385	0	1648	1648	1552	0	0	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			45			35			45	
Link Distance (ft)		630			322			532			658	
Travel Time (s)		9.5			4.9			10.4			10.0	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	8%	2%	5%	5%	2%	8%	2%	2%	2%	5%	5%	5%
Adj. Flow (vph)	496	642	0	0	912	149	680	0	209	0	0	0
Shared Lane Traffic (%)							50%					
Lane Group Flow (vph)	496	642	0	0	1061	0	340	340	209	0	0	0
Turn Type	Prot						Split		Prot			
Protected Phases	5	2			6		8	8	8			
Permitted Phases												
Detector Phase	5	2			6		8	8	8			
Switch Phase												
Minimum Initial (s)	7.0	14.0			14.0		7.0	7.0	7.0			
Minimum Split (s)	14.0	22.0			21.0		19.0	19.0	19.0			
Total Split (s)	21.0	61.0	0.0	0.0	40.0	0.0	29.0	29.0	29.0	0.0	0.0	0.0
Total Split (%)	23.3%	67.8%	0.0%	0.0%	44.4%	0.0%	32.2%	32.2%	32.2%	0.0%	0.0%	0.0%
Maximum Green (s)	14.7	54.8			34.4		22.9	22.9	22.9			
Yellow Time (s)	3.0	5.1			4.6		3.6	3.6	3.6			
All-Red Time (s)	3.3	1.1			1.0		2.5	2.5	2.5			
Lost Time Adjust (s)	-1.3	-1.2	0.0	0.0	-0.6	-2.0	-1.1	-1.1	-1.1	-2.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	4.0	4.0	5.0	2.0	5.0	5.0	5.0	2.0	4.0	4.0
Lead/Lag	Lag				Lead							
Lead-Lag Optimize?	Yes				Yes							
Vehicle Extension (s)	2.0	2.0			2.0		2.0	2.0	2.0			
Minimum Gap (s)	3.0	3.1			3.1		3.0	3.0	3.0			
Time Before Reduce (s)	0.0	15.0			15.0		0.0	0.0	0.0			
Time To Reduce (s)	0.0	45.0			45.0		0.0	0.0	0.0			
Recall Mode	None	C-Max			C-Max		None	None	None			
Act Effct Green (s)	16.0	57.9			36.9		22.1	22.1	22.1			
Actuated g/C Ratio	0.18	0.64			0.41		0.25	0.25	0.25			
v/c Ratio	0.85	0.28			0.76		0.84	0.84	0.55			
Control Delay	51.5	3.3			27.9		51.3	51.3	35.0			
Queue Delay	0.0	0.0			0.0		0.0	0.0	0.0			

Lanes, Volumes, Timings
 9: SR 1783 (Upward Rd) & I-26 NB On-Ramp

2040 Design Year - No Build
 Timing Plan: AM Peak

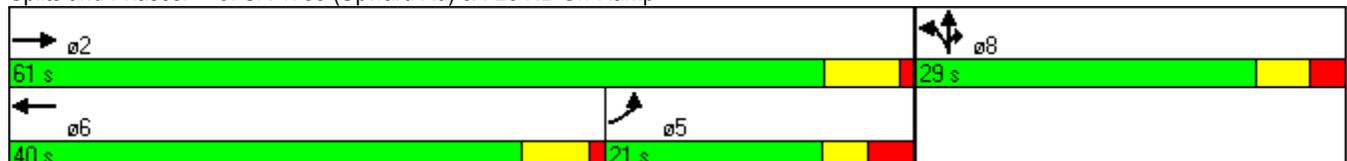


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay	51.5	3.3			27.9		51.3	51.3	35.0			
LOS	D	A			C		D	D	D			
Approach Delay		24.3			27.9			47.5				
Approach LOS		C			C			D				
Queue Length 50th (ft)	159	27			276		188	188	101			
Queue Length 95th (ft)	#233	34			360		#326	#326	170			
Internal Link Dist (ft)		550			242			452			578	
Turn Bay Length (ft)	275						250		175			
Base Capacity (vph)	585	2310			1387		439	439	414			
Starvation Cap Reductn	0	0			0		0	0	0			
Spillback Cap Reductn	0	0			0		0	0	0			
Storage Cap Reductn	0	0			0		0	0	0			
Reduced v/c Ratio	0.85	0.28			0.76		0.77	0.77	0.50			

Intersection Summary

Area Type: Other
 Cycle Length: 90
 Actuated Cycle Length: 90
 Offset: 7 (8%), Referenced to phase 2:EBT and 6:WBT, Start of Green
 Natural Cycle: 60
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.85
 Intersection Signal Delay: 32.2
 Intersection LOS: C
 Intersection Capacity Utilization 69.4%
 ICU Level of Service C
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

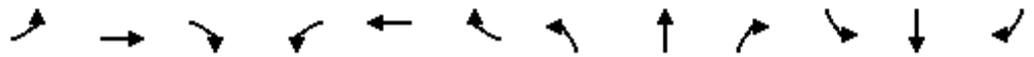
Splits and Phases: 9: SR 1783 (Upward Rd) & I-26 NB On-Ramp



Lanes, Volumes, Timings
 10: SR 1783 (Upward Rd) & I-26 SB Off-Ramp

2040 Design Year - No Build

Timing Plan: AM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑	↗	↖	↑↑						↖	↗↗
Volume (vph)	0	892	589	237	1196	0	0	0	0	132	0	579
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		4%			-4%			0%			5%	
Storage Length (ft)	275		0	150		0	0		0	250		0
Storage Lanes	1		1	1		0	0		0	1		2
Taper Length (ft)	100		100	100		100	100		100	100		100
Lane Util. Factor	1.00	0.91	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	0.88
Frt		0.850										0.850
Flt Protected				0.950							0.950	
Satd. Flow (prot)	0	4841	1507	1753	3507	0	0	0	0	0	1676	2639
Flt Permitted				0.237							0.950	
Satd. Flow (perm)	0	4841	1507	437	3507	0	0	0	0	0	1676	2639
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			45			45			35	
Link Distance (ft)		549			630			547			651	
Travel Time (s)		8.3			9.5			8.3			12.7	
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
Adj. Flow (vph)	0	991	654	263	1329	0	0	0	0	147	0	643
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	991	654	263	1329	0	0	0	0	0	147	643
Turn Type			Perm		pm+pt					Split		Prot
Protected Phases		2		1	6					4	4	4
Permitted Phases			2	6								
Detector Phase		2	2	1	6					4	4	4
Switch Phase												
Minimum Initial (s)		14.0	14.0	7.0	14.0					7.0	7.0	7.0
Minimum Split (s)		20.0	20.0	14.0	21.0					13.0	13.0	13.0
Total Split (s)	0.0	48.0	48.0	14.0	62.0	0.0	0.0	0.0	0.0	28.0	28.0	28.0
Total Split (%)	0.0%	53.3%	53.3%	15.6%	68.9%	0.0%	0.0%	0.0%	0.0%	31.1%	31.1%	31.1%
Maximum Green (s)		42.4	42.4	7.6	55.6					22.1	22.1	22.1
Yellow Time (s)		4.5	4.5	3.0	5.2					3.6	3.6	3.6
All-Red Time (s)		1.1	1.1	3.4	1.2					2.3	2.3	2.3
Lost Time Adjust (s)	-2.0	-0.6	-0.6	-1.4	-1.4	-2.0	0.0	0.0	0.0	-2.0	-0.9	-0.9
Total Lost Time (s)	2.0	5.0	5.0	5.0	5.0	2.0	4.0	4.0	4.0	3.9	5.0	5.0
Lead/Lag		Lead	Lead	Lag								
Lead-Lag Optimize?		Yes	Yes	Yes								
Vehicle Extension (s)		2.0	2.0	2.0	2.0					2.0	2.0	2.0
Minimum Gap (s)		3.1	3.1	3.0	3.1					3.0	3.0	3.0
Time Before Reduce (s)		15.0	15.0	0.0	15.0					0.0	0.0	0.0
Time To Reduce (s)		45.0	45.0	0.0	45.0					0.0	0.0	0.0
Recall Mode		C-Max	C-Max	None	C-Max					None	None	None
Act Effct Green (s)		43.0	43.0	57.0	57.0						23.0	23.0
Actuated g/C Ratio		0.48	0.48	0.63	0.63						0.26	0.26
v/c Ratio		0.43	0.91	0.64	0.60						0.34	0.95
Control Delay		16.2	40.8	14.8	4.4						30.1	59.5
Queue Delay		0.0	0.0	0.0	0.0						0.0	0.0
Total Delay		16.2	40.8	14.8	4.4						30.1	59.5

Lanes, Volumes, Timings
 10: SR 1783 (Upward Rd) & I-26 SB Off-Ramp

2040 Design Year - No Build
 Timing Plan: AM Peak

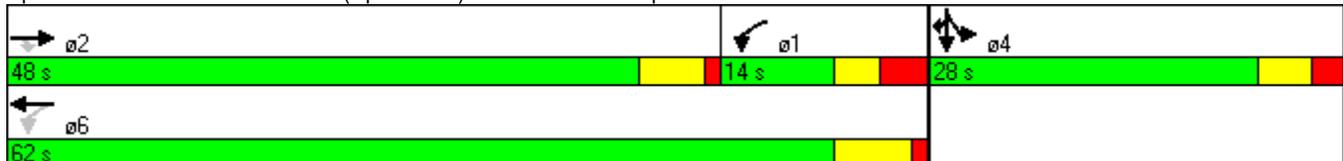


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS		B	D	B	A						C	E
Approach Delay		26.0			6.1						54.0	
Approach LOS		C			A						D	
Queue Length 50th (ft)		130	330	43	174						68	204
Queue Length 95th (ft)		164	#559	m49	138						122	#325
Internal Link Dist (ft)		469			550			467			571	
Turn Bay Length (ft)				150								
Base Capacity (vph)		2313	720	408	2221						428	674
Starvation Cap Reductn		0	0	0	0						0	0
Spillback Cap Reductn		0	0	0	0						0	0
Storage Cap Reductn		0	0	0	0						0	0
Reduced v/c Ratio		0.43	0.91	0.64	0.60						0.34	0.95

Intersection Summary

Area Type: Other
 Cycle Length: 90
 Actuated Cycle Length: 90
 Offset: 88 (98%), Referenced to phase 2:EBT and 6:WBTL, Start of Green
 Natural Cycle: 90
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.95
 Intersection Signal Delay: 23.6
 Intersection LOS: C
 Intersection Capacity Utilization 69.4%
 ICU Level of Service C
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.

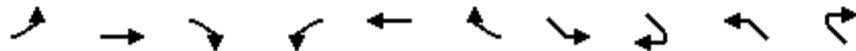
Splits and Phases: 10: SR 1783 (Upward Rd) & I-26 SB Off-Ramp



Lanes, Volumes, Timings
 1: NC 146 (Long Shoals Rd) & I-26 NB On-Ramp

2040 Design Year - No-Build

Timing Plan: PM Peak



Lane Group	EBL	EBT	EBR2	WBL	WBT	WBR2	SEL	SER2	NWL	NWR2
Lane Configurations										
Volume (vph)	392	1162	310	379	884	815	842	308	307	494
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		3%			-7%					
Storage Length (ft)	450			350			0		675	
Storage Lanes	1			2			2		1	
Taper Length (ft)	100			100			100		100	
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	1.00	0.97	1.00
Frt			0.850			0.850		0.850		0.850
Flt Protected	0.950			0.950			0.950		0.950	
Satd. Flow (prot)	3224	3452	1487	3387	3663	1562	3519	1607	3434	1599
Flt Permitted	0.950			0.950			0.950		0.950	
Satd. Flow (perm)	3224	3452	1487	3387	3663	1562	3519	1607	3434	1599
Right Turn on Red			No			No		No		No
Satd. Flow (RTOR)										
Link Speed (mph)		45			45					
Link Distance (ft)		1009			964					
Travel Time (s)		15.3			14.6					
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	7%	3%	7%	7%	2%	7%	2%	3%	3%	2%
Adj. Flow (vph)	436	1291	344	421	982	906	936	342	341	549
Shared Lane Traffic (%)										
Lane Group Flow (vph)	436	1291	344	421	982	906	936	342	341	549
Turn Type	Prot		Free	Prot		Free	Prot	custom	Prot	Free
Protected Phases	5	2		1	6		4		8	
Permitted Phases			Free			Free		4		Free
Detector Phase	5	2		1	6		4	4	8	
Switch Phase										
Minimum Initial (s)	7.0	12.0		7.0	12.0		7.0	7.0	7.0	
Minimum Split (s)	16.0	20.0		15.0	21.0		16.0	16.0	15.0	
Total Split (s)	24.0	47.0	0.0	19.0	42.0	0.0	34.0	34.0	34.0	0.0
Total Split (%)	24.0%	47.0%	0.0%	19.0%	42.0%	0.0%	34.0%	34.0%	34.0%	0.0%
Maximum Green (s)	15.8	39.5		11.3	33.0		25.9	25.9	26.0	
Yellow Time (s)	3.4	4.3		4.0	5.2		3.8	3.8	3.7	
All-Red Time (s)	4.8	3.2		3.7	3.8		4.3	4.3	4.3	
Lost Time Adjust (s)	-3.2	-2.5	-2.5	-2.7	-4.0	-4.0	-3.1	-3.1	-3.0	0.0
Total Lost Time (s)	5.0	5.0	1.5	5.0	5.0	0.0	5.0	5.0	5.0	4.0
Lead/Lag	Lead	Lag		Lead	Lag					
Lead-Lag Optimize?	Yes	Yes		Yes	Yes					
Vehicle Extension (s)	2.0	6.0		2.0	6.0		2.0	2.0	2.0	
Minimum Gap (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	
Time Before Reduce (s)	0.0	15.0		0.0	15.0		0.0	0.0	0.0	
Time To Reduce (s)	0.0	30.0		0.0	30.0		0.0	0.0	0.0	
Recall Mode	None	C-Max		None	C-Max		None	None	None	
Act Effct Green (s)	18.4	42.0	100.0	14.1	37.7	100.0	28.9	28.9	28.9	100.0
Actuated g/C Ratio	0.18	0.42	1.00	0.14	0.38	1.00	0.29	0.29	0.29	1.00
v/c Ratio	0.74	0.89	0.23	0.88	0.71	0.58	0.92	0.74	0.34	0.34
Control Delay	46.6	36.1	0.4	63.6	30.2	1.6	49.6	43.0	29.2	0.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Lanes, Volumes, Timings
 1: NC 146 (Long Shoals Rd) & I-26 NB On-Ramp

2040 Design Year - No-Build
 Timing Plan: PM Peak



Lane Group	EBL	EBT	EBR2	WBL	WBT	WBR2	SEL	SER2	NWL	NWR2
Total Delay	46.6	36.1	0.4	63.6	30.2	1.6	49.6	43.0	29.2	0.6
LOS	D	D	A	E	C	A	D	D	C	A
Approach Delay	32.4			25.1						
Approach LOS	C			C						
Queue Length 50th (ft)	135	392	0	137	279	0	296	196	88	0
Queue Length 95th (ft)	189	#531	0	#223	354	0	#414	#309	126	0
Internal Link Dist (ft)	929			884						
Turn Bay Length (ft)	450		300	350		300		425	675	575
Base Capacity (vph)	613	1450	1487	477	1381	1562	1021	466	996	1599
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.71	0.89	0.23	0.88	0.71	0.58	0.92	0.73	0.34	0.34

Intersection Summary

Area Type: Other
 Cycle Length: 100
 Actuated Cycle Length: 100
 Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green
 Natural Cycle: 80
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.92
 Intersection Signal Delay: 30.0
 Intersection LOS: C
 Intersection Capacity Utilization 79.5%
 ICU Level of Service D
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

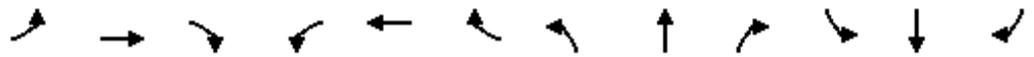
Splits and Phases: 1: NC 146 (Long Shoals Rd) & I-26 NB On-Ramp



Lanes, Volumes, Timings
 2: I-26 NB On-Ramp & US 25 (Asheville Highway)

2040 Design Year - No-Build

Timing Plan: PM Peak

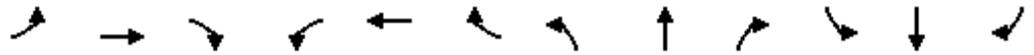


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				↙		↗↗	↙	↗↗			↗↗	↙
Volume (vph)	0	0	0	285	0	509	997	1514	0	0	1433	219
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			2%			-1%			2%	
Storage Length (ft)	0		0	0		150	0		0	0		300
Storage Lanes	0		0	1		2	1		0	0		1
Taper Length (ft)	100		100	100		100	100		100	100		100
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	0.88	1.00	0.95	1.00	1.00	0.95	1.00
Frt						0.850						0.850
Flt Protected				0.950			0.950					
Satd. Flow (prot)	0	0	0	1735	0	2706	1680	3489	0	0	3436	1480
Flt Permitted				0.950			0.950					
Satd. Flow (perm)	0	0	0	1735	0	2706	1680	3489	0	0	3436	1480
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			35			45			45	
Link Distance (ft)		533			612			601			596	
Travel Time (s)		8.1			11.9			9.1			9.0	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	5%	5%	5%	3%	5%	4%	8%	4%	5%	5%	4%	8%
Adj. Flow (vph)	0	0	0	317	0	566	1108	1682	0	0	1592	243
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	317	0	566	1108	1682	0	0	1592	243
Turn Type				Prot		custom	Prot					Free
Protected Phases				4			5	2			6	
Permitted Phases						4						Free
Detector Phase				4		4	5	2			6	
Switch Phase												
Minimum Initial (s)				7.0		7.0	7.0	12.0			12.0	
Minimum Split (s)				13.0		13.0	14.0	19.0			18.0	
Total Split (s)	0.0	0.0	0.0	20.0	0.0	20.0	50.0	90.0	0.0	0.0	40.0	0.0
Total Split (%)	0.0%	0.0%	0.0%	18.2%	0.0%	18.2%	45.5%	81.8%	0.0%	0.0%	36.4%	0.0%
Maximum Green (s)				14.0		14.0	43.6	83.9			34.7	
Yellow Time (s)				3.7		3.7	3.0	4.6			4.3	
All-Red Time (s)				2.3		2.3	3.4	1.5			1.0	
Lost Time Adjust (s)	0.0	0.0	-2.0	-2.0	0.0	-2.0	-1.4	-1.1	0.0	-2.0	-0.3	0.0
Total Lost Time (s)	4.0	4.0	2.0	4.0	4.0	4.0	5.0	5.0	4.0	2.0	5.0	4.0
Lead/Lag							Lag				Lead	
Lead-Lag Optimize?							Yes				Yes	
Vehicle Extension (s)				2.0		2.0	2.0	8.0			8.0	
Minimum Gap (s)				3.0		3.0	3.0	5.5			5.5	
Time Before Reduce (s)				0.0		0.0	0.0	15.0			15.0	
Time To Reduce (s)				0.0		0.0	0.0	50.0			50.0	
Recall Mode				None		None	None	C-Max			C-Max	
Act Effct Green (s)				16.0		16.0	45.0	85.0			35.0	110.0
Actuated g/C Ratio				0.15		0.15	0.41	0.77			0.32	1.00
v/c Ratio				1.26		1.44	1.61	0.62			1.46	0.16
Control Delay				183.8		246.0	299.5	9.9			241.1	0.2
Queue Delay				0.0		0.0	5.3	1.2			14.7	0.0

Lanes, Volumes, Timings
 2: I-26 NB On-Ramp & US 25 (Asheville Highway)

2040 Design Year - No-Build

Timing Plan: PM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay				183.8		246.0	304.8	11.1			255.8	0.2
LOS				F		F	F	B			F	A
Approach Delay								127.7			222.0	
Approach LOS								F			F	
Queue Length 50th (ft)				~281		~309	~1104	209			~810	0
Queue Length 95th (ft)				#458		#430	m#279	m131			#948	0
Internal Link Dist (ft)		453				532		521			516	
Turn Bay Length (ft)						150						300
Base Capacity (vph)				252		394	687	2696			1093	1480
Starvation Cap Reductn				0		0	5	720			0	0
Spillback Cap Reductn				0		0	0	0			24	0
Storage Cap Reductn				0		0	0	0			0	0
Reduced v/c Ratio				1.26		1.44	1.62	0.85			1.49	0.16

Intersection Summary

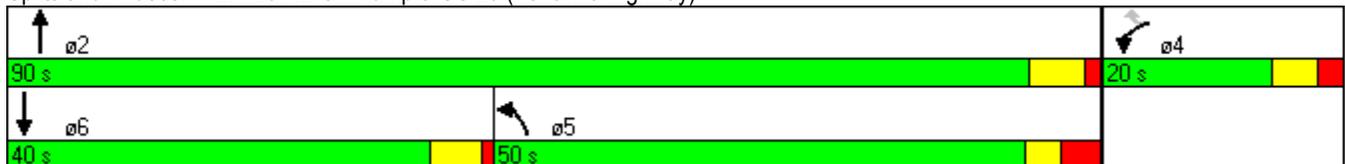
Area Type: Other
 Cycle Length: 110
 Actuated Cycle Length: 110
 Offset: 66 (60%), Referenced to phase 2:NBT and 6:SBT, Start of Green
 Natural Cycle: 200
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.61
 Intersection Signal Delay: 174.5
 Intersection Capacity Utilization 122.3%
 Analysis Period (min) 15
 Intersection LOS: F
 ICU Level of Service H

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

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

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: I-26 NB On-Ramp & US 25 (Asheville Highway)



Lanes, Volumes, Timings
 3: I-26 SB Off-Ramp & US 25 (Asheville Highway)

2040 Design Year - No-Build
 Timing Plan: PM Peak

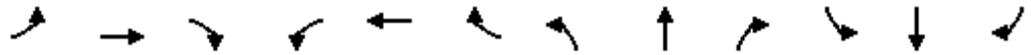


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	221	0	801	0	0	0	0	2290	287	406	1312	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		3%			0%			4%			1%	
Storage Length (ft)	0		100	0		0	0		500	0		0
Storage Lanes	1		1	0		0	0		1	1		0
Taper Length (ft)	100		100	100		100	100		100	100		100
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt			0.850						0.850			
Flt Protected	0.950									0.950		
Satd. Flow (prot)	1710	0	1544	0	0	0	0	3435	1465	1663	3487	0
Flt Permitted	0.950									0.950		
Satd. Flow (perm)	1710	0	1544	0	0	0	0	3435	1465	1663	3487	0
Right Turn on Red			Yes			No			No			No
Satd. Flow (RTOR)			53									
Link Speed (mph)		35			45			45			45	
Link Distance (ft)		471			598			795			601	
Travel Time (s)		9.2			9.1			12.0			9.1	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	4%	5%	3%	5%	5%	5%	5%	3%	8%	8%	3%	5%
Adj. Flow (vph)	246	0	890	0	0	0	0	2544	319	451	1458	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	246	0	890	0	0	0	0	2544	319	451	1458	0
Turn Type	Prot		custom						Free	Prot		
Protected Phases	4		4					2		1	6	
Permitted Phases									Free			
Detector Phase	4		4					2		1	6	
Switch Phase												
Minimum Initial (s)	7.0		7.0					12.0		7.0	12.0	
Minimum Split (s)	14.0		14.0					19.0		14.0	19.0	
Total Split (s)	35.0	0.0	35.0	0.0	0.0	0.0	0.0	53.0	0.0	22.0	75.0	0.0
Total Split (%)	31.8%	0.0%	31.8%	0.0%	0.0%	0.0%	0.0%	48.2%	0.0%	20.0%	68.2%	0.0%
Maximum Green (s)	29.0		29.0					47.3		15.5	69.3	
Yellow Time (s)	4.0		4.0					4.7		4.0	4.7	
All-Red Time (s)	2.0		2.0					1.0		2.5	1.0	
Lost Time Adjust (s)	-1.0	-2.0	-1.0	-2.0	-2.0	-2.0	-2.0	-0.7	-0.7	-1.5	-1.7	-2.0
Total Lost Time (s)	5.0	2.0	5.0	2.0	2.0	2.0	2.0	5.0	3.3	5.0	4.0	2.0
Lead/Lag								Lead		Lag		
Lead-Lag Optimize?								Yes		Yes		
Vehicle Extension (s)	2.0		2.0					8.0		2.0	8.0	
Minimum Gap (s)	3.0		3.0					5.5		3.0	5.5	
Time Before Reduce (s)	0.0		0.0					15.0		0.0	15.0	
Time To Reduce (s)	0.0		0.0					50.0		0.0	50.0	
Recall Mode	None		None					C-Max		None	C-Max	
Act Effct Green (s)	30.0		30.0					48.0	110.0	17.0	71.0	
Actuated g/C Ratio	0.27		0.27					0.44	1.00	0.15	0.65	
v/c Ratio	0.53		1.93					1.70	0.22	1.75	0.65	
Control Delay	38.9		453.0					341.9	0.3	377.5	30.9	
Queue Delay	0.6		0.0					9.8	0.0	0.0	8.1	

Lanes, Volumes, Timings
 3: I-26 SB Off-Ramp & US 25 (Asheville Highway)

2040 Design Year - No-Build

Timing Plan: PM Peak

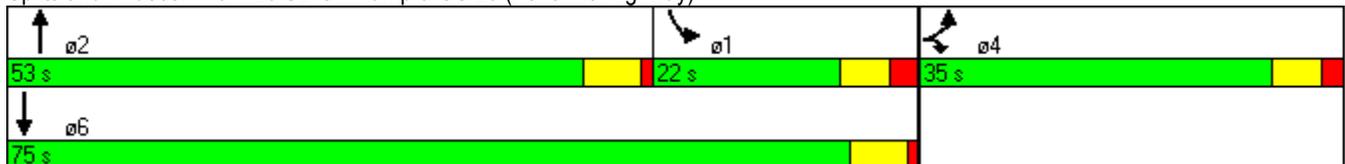


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay	39.5		453.0					351.7	0.3	377.5	39.0	
LOS	D		F					F	A	F	D	
Approach Delay								312.5			119.0	
Approach LOS								F			F	
Queue Length 50th (ft)	148		~955					~1391	0	~478	488	
Queue Length 95th (ft)	230		#1201					#1525	0	m#279	m344	
Internal Link Dist (ft)		391			518			715				521
Turn Bay Length (ft)			100						500			
Base Capacity (vph)	466		460					1499	1465	257	2251	
Starvation Cap Reductn	0		0					0	0	0	759	
Spillback Cap Reductn	51		0					19	0	0	0	
Storage Cap Reductn	0		0					0	0	0	0	
Reduced v/c Ratio	0.59		1.93					1.72	0.22	1.75	0.98	

Intersection Summary

Area Type: Other
 Cycle Length: 110
 Actuated Cycle Length: 110
 Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green
 Natural Cycle: 220
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.93
 Intersection Signal Delay: 259.8
 Intersection LOS: F
 Intersection Capacity Utilization 122.3%
 ICU Level of Service H
 Analysis Period (min) 15
 ~ Volume exceeds capacity, queue is theoretically infinite.
 Queue shown is maximum after two cycles.
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: I-26 SB Off-Ramp & US 25 (Asheville Highway)



Lanes, Volumes, Timings
4: I-26 NB Ramps & Balfour Pkwy

2040 Design Year - No-Build
Timing Plan: PM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations			↗↗			↗	↗	↗↗			↗↗	↗
Volume (vph)	0	0	641	0	0	346	304	1690	0	0	937	735
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	250		0	0		250
Storage Lanes	0		2	0		1	1		0	0		1
Taper Length (ft)	100		100	100		100	100		100	100		100
Lane Util. Factor	1.00	1.00	0.88	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt			0.850			0.865						0.850
Flt Protected							0.950					
Satd. Flow (prot)	0	0	2787	0	0	1611	1671	3539	0	0	3539	1495
Flt Permitted							0.950					
Satd. Flow (perm)	0	0	2787	0	0	1611	1671	3539	0	0	3539	1495
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		25			45			45				45
Link Distance (ft)		393			429			690				522
Travel Time (s)		10.7			6.5			10.5				7.9
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	5%	5%	2%	5%	5%	2%	8%	2%	5%	5%	2%	8%
Adj. Flow (vph)	0	0	712	0	0	384	338	1878	0	0	1041	817
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	712	0	0	384	338	1878	0	0	1041	817
Turn Type			Over			Free	Prot					Perm
Protected Phases			5				5	Free				6
Permitted Phases						Free						6
Detector Phase			5				5					6
Switch Phase												
Minimum Initial (s)			7.0				7.0				12.0	12.0
Minimum Split (s)			14.0				14.0				19.0	19.0
Total Split (s)	0.0	0.0	30.0	0.0	0.0	0.0	30.0	0.0	0.0	0.0	60.0	60.0
Total Split (%)	0.0%	0.0%	33.3%	0.0%	0.0%	0.0%	33.3%	0.0%	0.0%	0.0%	66.7%	66.7%
Maximum Green (s)			23.0				23.0				53.0	53.0
Yellow Time (s)			5.0				5.0				5.0	5.0
All-Red Time (s)			2.0				2.0				2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	2.0	2.0	5.0	2.0	2.0	2.0	5.0	2.0	2.0	2.0	5.0	5.0
Lead/Lag			Lead				Lead				Lag	Lag
Lead-Lag Optimize?			Yes				Yes				Yes	Yes
Vehicle Extension (s)			3.0				3.0				3.0	3.0
Recall Mode			None				None				C-Max	C-Max
Act Effct Green (s)			25.0			90.0	25.0	90.0			55.0	55.0
Actuated g/C Ratio			0.28			1.00	0.28	1.00			0.61	0.61
v/c Ratio			0.92			0.24	0.73	0.53			0.48	0.89
Control Delay			50.7			0.3	31.7	0.3			10.6	29.7
Queue Delay			0.0			0.0	0.0	0.0			0.0	0.0
Total Delay			50.7			0.3	31.7	0.3			10.6	29.7
LOS			D			A	C	A			B	C
Approach Delay								5.1			19.0	
Approach LOS								A			B	

Lanes, Volumes, Timings
 4: I-26 NB Ramps & Balfour Pkwy

2040 Design Year - No-Build
 Timing Plan: PM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 50th (ft)			222			0	175	0			156	363
Queue Length 95th (ft)			#342			0	m228	m0			202	#653
Internal Link Dist (ft)		313			349			610			442	
Turn Bay Length (ft)							250					250
Base Capacity (vph)			774			1611	464	3539			2164	914
Starvation Cap Reductn			0			0	0	0			0	0
Spillback Cap Reductn			0			0	0	0			0	0
Storage Cap Reductn			0			0	0	0			0	0
Reduced v/c Ratio			0.92			0.24	0.73	0.53			0.48	0.89

Intersection Summary

Area Type: Other
 Cycle Length: 90
 Actuated Cycle Length: 90
 Offset: 51 (57%), Referenced to phase 6:SBT, Start of Green
 Natural Cycle: 80
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.92
 Intersection Signal Delay: 16.0 Intersection LOS: B
 Intersection Capacity Utilization 70.7% ICU Level of Service C
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: I-26 NB Ramps & Balfour Pkwy



Lanes, Volumes, Timings
5: I-26 SB Ramps & Balfour Pkwy

2040 Design Year - No-Build

Timing Plan: PM Peak

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	228	0	0	759	0	1235	662	260	1318	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	0		250	250		0
Storage Lanes	0		1	0		2	0		1	1		0
Taper Length (ft)	100		100	100		100	100		100	100		100
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	0.88	1.00	0.95	1.00	1.00	0.95	1.00
Frt			0.865			0.850			0.850			
Flt Protected										0.950		
Satd. Flow (prot)	0	0	1611	0	0	2787	0	3539	1495	1671	3539	0
Flt Permitted										0.950		
Satd. Flow (perm)	0	0	1611	0	0	2787	0	3539	1495	1671	3539	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			25			45			45	
Link Distance (ft)		642			361			480			690	
Travel Time (s)		9.7			9.8			7.3			10.5	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	5%	5%	2%	5%	5%	2%	5%	2%	8%	8%	2%	5%
Adj. Flow (vph)	0	0	253	0	0	843	0	1372	736	289	1464	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	253	0	0	843	0	1372	736	289	1464	0
Turn Type			Free			Over			Perm	Prot		
Protected Phases						1		2		1	Free	
Permitted Phases			Free						2			
Detector Phase						1		2	2	1		
Switch Phase												
Minimum Initial (s)						7.0		12.0	12.0	7.0		
Minimum Split (s)						14.0		19.0	19.0	14.0		
Total Split (s)	0.0	0.0	0.0	0.0	0.0	35.0	0.0	55.0	55.0	35.0	0.0	0.0
Total Split (%)	0.0%	0.0%	0.0%	0.0%	0.0%	38.9%	0.0%	61.1%	61.1%	38.9%	0.0%	0.0%
Maximum Green (s)						28.0		48.0	48.0	28.0		
Yellow Time (s)						5.0		5.0	5.0	5.0		
All-Red Time (s)						2.0		2.0	2.0	2.0		
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	2.0	2.0	2.0	2.0	2.0	5.0	2.0	5.0	5.0	5.0	2.0	2.0
Lead/Lag						Lead		Lag	Lag	Lead		
Lead-Lag Optimize?						Yes		Yes	Yes	Yes		
Vehicle Extension (s)						3.0		3.0	3.0	3.0		
Recall Mode						None		C-Max	C-Max	None		
Act Effct Green (s)			90.0			29.8		50.2	50.2	29.8	90.0	
Actuated g/C Ratio			1.00			0.33		0.56	0.56	0.33	1.00	
v/c Ratio			0.16			0.91		0.70	0.88	0.52	0.41	
Control Delay			0.2			44.8		16.8	32.1	20.4	0.3	
Queue Delay			0.0			0.0		0.0	0.0	0.0	0.0	
Total Delay			0.2			44.8		16.8	32.1	20.4	0.3	
LOS			A			D		B	C	C	A	
Approach Delay								22.1			3.6	
Approach LOS								C			A	

Lanes, Volumes, Timings
 5: I-26 SB Ramps & Balfour Pkwy

2040 Design Year - No-Build
 Timing Plan: PM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 50th (ft)			0			257		278	343	111		0
Queue Length 95th (ft)			0			#384		355	#598	m145		m0
Internal Link Dist (ft)		562			281			400				610
Turn Bay Length (ft)									250	250		
Base Capacity (vph)			1611			929		1974	834	557		3539
Starvation Cap Reductn			0			0		0	0	0		0
Spillback Cap Reductn			0			0		0	0	0		0
Storage Cap Reductn			0			0		0	0	0		0
Reduced v/c Ratio			0.16			0.91		0.70	0.88	0.52		0.41

Intersection Summary

Area Type: Other
 Cycle Length: 90
 Actuated Cycle Length: 90
 Offset: 0 (0%), Referenced to phase 2:NBT, Start of Green
 Natural Cycle: 70
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.91
 Intersection Signal Delay: 18.3
 Intersection LOS: B
 Intersection Capacity Utilization 69.0%
 ICU Level of Service C
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 5: I-26 SB Ramps & Balfour Pkwy



Lanes, Volumes, Timings
6: US 64 & SR 1516 (Francis Rd)

2040 Design Year - No-Build

Timing Plan: PM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	143	2074	419	69	1630	23	471	5	99	33	5	161
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		-1%			4%			-1%			2%	
Storage Length (ft)	150		0	125		0	150		150	0		150
Storage Lanes	1		1	1		0	1		1	0		1
Taper Length (ft)	100		100	100		100	100		100	100		100
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00
Frt			0.850		0.998				0.850			0.850
Flt Protected	0.950			0.950			0.950	0.953			0.959	
Satd. Flow (prot)	1778	3557	1591	1734	3461	0	1690	1695	1591	0	1769	1567
Flt Permitted	0.950			0.950			0.950	0.953			0.959	
Satd. Flow (perm)	1778	3557	1591	1734	3461	0	1690	1695	1591	0	1769	1567
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			45			35			35	
Link Distance (ft)		836			622			375			406	
Travel Time (s)		12.7			9.4			7.3			7.9	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	159	2304	466	77	1811	26	523	6	110	37	6	179
Shared Lane Traffic (%)							49%					
Lane Group Flow (vph)	159	2304	466	77	1837	0	267	262	110	0	43	179
Turn Type	Prot		Perm	Prot			Split		pm+ov	Split		pm+ov
Protected Phases	5	2		1	6		4	4	1	3	3	5
Permitted Phases			2						4			3
Detector Phase	5	2	2	1	6		4	4	1	3	3	5
Switch Phase												
Minimum Initial (s)	7.0	12.0	12.0	7.0	12.0		7.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	13.0	18.0	18.0	13.0	18.0		14.0	14.0	13.0	14.0	14.0	13.0
Total Split (s)	21.0	112.0	112.0	13.0	104.0	0.0	31.0	31.0	13.0	14.0	14.0	21.0
Total Split (%)	12.4%	65.9%	65.9%	7.6%	61.2%	0.0%	18.2%	18.2%	7.6%	8.2%	8.2%	12.4%
Maximum Green (s)	15.4	106.0	106.0	7.6	98.4		24.4	24.4	7.6	7.5	7.5	15.4
Yellow Time (s)	3.2	4.6	4.6	3.0	4.2		3.9	3.9	3.0	3.7	3.7	3.2
All-Red Time (s)	2.4	1.4	1.4	2.4	1.4		2.7	2.7	2.4	2.8	2.8	2.4
Lost Time Adjust (s)	-0.6	-1.0	-1.0	-0.4	-0.6	-2.0	-1.6	-1.6	-0.4	-2.0	-1.5	-0.6
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	2.0	5.0	5.0	5.0	4.5	5.0	5.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lag	Lag	Lead	Lead	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	1.0	2.0	2.0	1.0	2.0		1.0	1.0	1.0	1.0	1.0	1.0
Recall Mode	None	C-Max	C-Max	None	C-Max		None	None	None	None	None	None
Act Effct Green (s)	16.0	107.7	107.7	8.3	99.9		28.0	28.0	41.2		8.8	23.1
Actuated g/C Ratio	0.09	0.63	0.63	0.05	0.59		0.16	0.16	0.24		0.05	0.14
v/c Ratio	0.95	1.02	0.46	0.91	0.90		0.96	0.94	0.28		0.47	0.84
Control Delay	135.7	44.6	13.0	151.8	38.5		113.6	109.2	55.9		95.2	88.9
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0		0.0	0.0
Total Delay	135.7	44.6	13.0	151.8	38.5		113.6	109.2	55.9		95.2	88.9
LOS	F	D	B	F	D		F	F	E		F	F
Approach Delay		44.5			43.1			101.9			90.1	

Lanes, Volumes, Timings
6: US 64 & SR 1516 (Francis Rd)

2040 Design Year - No-Build
Timing Plan: PM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach LOS		D			D			F			F	
Queue Length 50th (ft)	185	~1432	148	87	930		~334	~316	103		47	145
Queue Length 95th (ft)	#340	#1549	227	#203	1055		#541	#527	165		95	#243
Internal Link Dist (ft)		756			542			295			326	
Turn Bay Length (ft)	150			125			150		150			150
Base Capacity (vph)	167	2253	1007	85	2035		278	279	386		94	213
Starvation Cap Reductn	0	0	0	0	0		0	0	0		0	0
Spillback Cap Reductn	0	0	0	0	0		0	0	0		0	0
Storage Cap Reductn	0	0	0	0	0		0	0	0		0	0
Reduced v/c Ratio	0.95	1.02	0.46	0.91	0.90		0.96	0.94	0.28		0.46	0.84

Intersection Summary

Area Type: Other
 Cycle Length: 170
 Actuated Cycle Length: 170
 Offset: 33 (19%), Referenced to phase 2:EBT and 6:WBT, Start of Green
 Natural Cycle: 180
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.02
 Intersection Signal Delay: 52.2
 Intersection Capacity Utilization 95.5%
 Analysis Period (min) 15
 Intersection LOS: D
 ICU Level of Service F

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

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

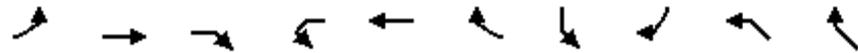
Splits and Phases: 6: US 64 & SR 1516 (Francis Rd)

ø1	ø2	ø3	ø4
13 s	112 s	14 s	31 s
ø5	ø6		
21 s	104 s		

Lanes, Volumes, Timings
7: US 64 & I-26 SB Off-Ramp

2040 Design Year - No-Build

Timing Plan: PM Peak

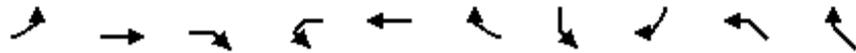


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	SBL	SBR	NWL	NWR
Lane Configurations		↑↑	↗		↑↑			↖↖		
Volume (vph)	0	2068	384	0	1647	0	0	351	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		3%			-3%		-3%		0%	
Storage Length (ft)	0		0	0		0	0	500	0	0
Storage Lanes	0		1	0		0	0	1	0	0
Taper Length (ft)	100		100	100		100	100	100	100	100
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.88	1.00	1.00
Frt			0.850					0.850		
Flt Protected										
Satd. Flow (prot)	0	3486	1473	0	3592	0	0	2828	0	0
Flt Permitted										
Satd. Flow (perm)	0	3486	1473	0	3592	0	0	2828	0	0
Right Turn on Red			No			No		No		
Satd. Flow (RTOR)										
Link Speed (mph)		45			45		35		45	
Link Distance (ft)		728			745		807		350	
Travel Time (s)		11.0			11.3		15.7		5.3	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	5%	2%	8%	5%	2%	5%	5%	2%	5%	5%
Adj. Flow (vph)	0	2298	427	0	1830	0	0	390	0	0
Shared Lane Traffic (%)										
Lane Group Flow (vph)	0	2298	427	0	1830	0	0	390	0	0
Turn Type			Perm					custom		
Protected Phases		Free			6			4		
Permitted Phases			Free							
Detector Phase					6			4		
Switch Phase										
Minimum Initial (s)					12.0			7.0		
Minimum Split (s)					18.0			13.0		
Total Split (s)	0.0	0.0	0.0	0.0	126.0	0.0	0.0	44.0	0.0	0.0
Total Split (%)	0.0%	0.0%	0.0%	0.0%	74.1%	0.0%	0.0%	25.9%	0.0%	0.0%
Maximum Green (s)					120.2			38.9		
Yellow Time (s)					4.8			4.1		
All-Red Time (s)					1.0			1.0		
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	-0.8	0.0	0.0	-0.1	-2.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	5.0	4.0	4.0	5.0	2.0	4.0
Lead/Lag										
Lead-Lag Optimize?										
Vehicle Extension (s)					2.0			1.0		
Recall Mode					C-Max			None		
Act Effct Green (s)		170.0	170.0		132.9			27.1		
Actuated g/C Ratio		1.00	1.00		0.78			0.16		
v/c Ratio		0.66	0.29		0.65			0.86		
Control Delay		1.5	0.0		11.3			88.4		
Queue Delay		0.0	0.0		0.1			0.0		
Total Delay		1.5	0.0		11.4			88.4		
LOS		A	A		B			F		
Approach Delay		1.3			11.4					

Lanes, Volumes, Timings
7: US 64 & I-26 SB Off-Ramp

2040 Design Year - No-Build

Timing Plan: PM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	SBL	SBR	NWL	NWR
Approach LOS		A						B		
Queue Length 50th (ft)		0	0		422			244		
Queue Length 95th (ft)		m0	m0		m623			300		
Internal Link Dist (ft)		648			665		727		270	
Turn Bay Length (ft)								500		
Base Capacity (vph)		3486	1473		2807			649		
Starvation Cap Reductn		0	0		0			0		
Spillback Cap Reductn		0	0		149			0		
Storage Cap Reductn		0	0		0			0		
Reduced v/c Ratio		0.66	0.29		0.69			0.60		

Intersection Summary

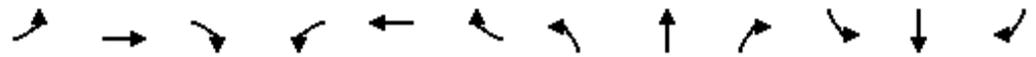
Area Type: Other
 Cycle Length: 170
 Actuated Cycle Length: 170
 Offset: 0 (0%), Referenced to phase 6:WBT, Start of Green, Master Intersection
 Natural Cycle: 60
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.86
 Intersection Signal Delay: 11.9
 Intersection LOS: B
 Intersection Capacity Utilization 95.4%
 ICU Level of Service F
 Analysis Period (min) 15
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 7: US 64 & I-26 SB Off-Ramp



Lanes, Volumes, Timings
8: US 64 & SR 1634 (Carolina Village Rd)

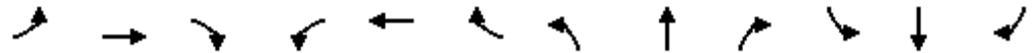
2040 Design Year - No-Build
Timing Plan: PM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	100	1982	81	184	1593	237	86	5	243	208	5	70
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		1%			-3%			3%			-1%	
Storage Length (ft)	100		0	100		0	0		0	0		150
Storage Lanes	1		0	1		1	0		0	0		1
Taper Length (ft)	100		100	100		100	100		100	100		100
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.994				0.850		0.902				0.850
Flt Protected	0.950			0.950				0.987			0.954	
Satd. Flow (prot)	1761	3500	0	1796	3592	1607	0	1633	0	0	1786	1591
Flt Permitted	0.950			0.950				0.612			0.379	
Satd. Flow (perm)	1761	3500	0	1796	3592	1607	0	1013	0	0	710	1591
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		560			728			219			359	
Travel Time (s)		8.5			11.0			5.0			8.2	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	111	2202	90	204	1770	263	96	6	270	231	6	78
Shared Lane Traffic (%)												
Lane Group Flow (vph)	111	2292	0	204	1770	263	0	372	0	0	237	78
Turn Type	Prot			Prot		Perm	Perm			Perm		pm+ov
Protected Phases	5	2		1	6			8			4	5
Permitted Phases						6	8			4		4
Detector Phase	5	2		1	6	6	8	8		4	4	5
Switch Phase												
Minimum Initial (s)	7.0	12.0		7.0	12.0	12.0	7.0	7.0		7.0	7.0	7.0
Minimum Split (s)	13.0	18.0		13.0	19.0	19.0	13.0	13.0		13.0	13.0	13.0
Total Split (s)	16.0	96.0	0.0	20.0	100.0	100.0	54.0	54.0	0.0	54.0	54.0	16.0
Total Split (%)	9.4%	56.5%	0.0%	11.8%	58.8%	58.8%	31.8%	31.8%	0.0%	31.8%	31.8%	9.4%
Maximum Green (s)	10.1	90.4		14.6	93.8	93.8	48.2	48.2		48.1	48.1	10.1
Yellow Time (s)	3.0	4.4		3.0	4.8	4.8	3.4	3.4		3.6	3.6	3.0
All-Red Time (s)	2.9	1.2		2.4	1.4	1.4	2.4	2.4		2.3	2.3	2.9
Lost Time Adjust (s)	-0.9	-0.6	-2.0	-0.4	-1.2	-1.2	-2.0	-0.8	-2.0	-2.0	-0.9	-0.9
Total Lost Time (s)	5.0	5.0	2.0	5.0	5.0	5.0	3.8	5.0	2.0	3.9	5.0	5.0
Lead/Lag	Lag	Lag		Lead	Lead	Lead						Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes						Yes
Vehicle Extension (s)	1.0	2.0		1.0	2.0	2.0	1.0	1.0		1.0	1.0	1.0
Recall Mode	None	C-Max		None	C-Max	C-Max	None	None		None	None	None
Act Effct Green (s)	11.0	91.0		15.0	95.0	95.0		49.0			49.0	65.0
Actuated g/C Ratio	0.06	0.54		0.09	0.56	0.56		0.29			0.29	0.38
v/c Ratio	0.97	1.22		1.29	0.88	0.29		1.27			1.16	0.13
Control Delay	153.6	140.8		219.7	30.1	15.4		194.4			162.8	34.9
Queue Delay	0.0	0.0		0.0	5.3	0.0		0.0			0.0	0.0
Total Delay	153.6	140.8		219.7	35.5	15.4		194.4			162.8	34.9
LOS	F	F		F	D	B		F			F	C
Approach Delay		141.3			49.9			194.4			131.1	

Lanes, Volumes, Timings
 8: US 64 & SR 1634 (Carolina Village Rd)

2040 Design Year - No-Build
 Timing Plan: PM Peak

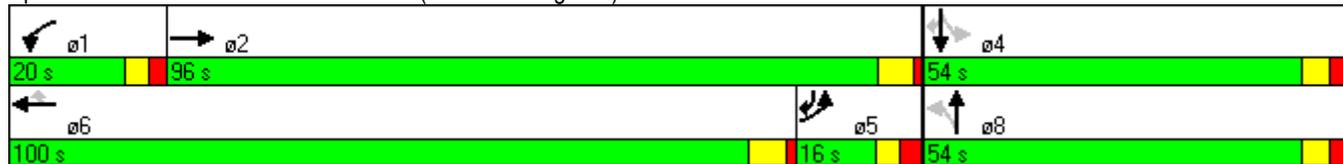


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach LOS		F				D				F		
Queue Length 50th (ft)	126	~1645			~289	864	118		~521		~311	56
Queue Length 95th (ft)	#265	#1762			#469	711	167		#738		#500	98
Internal Link Dist (ft)		480				648			139		279	
Turn Bay Length (ft)	100			100								150
Base Capacity (vph)	114	1874			158	2007	898		292		205	608
Starvation Cap Reductn	0	0			0	194	0		0		0	0
Spillback Cap Reductn	0	0			0	0	0		0		0	0
Storage Cap Reductn	0	0			0	0	0		0		0	0
Reduced v/c Ratio	0.97	1.22			1.29	0.98	0.29		1.27		1.16	0.13

Intersection Summary

Area Type: Other
 Cycle Length: 170
 Actuated Cycle Length: 170
 Offset: 158 (93%), Referenced to phase 2:EBT and 6:WBT, Start of Green
 Natural Cycle: 170
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.29
 Intersection Signal Delay: 106.1
 Intersection LOS: F
 Intersection Capacity Utilization 115.8%
 ICU Level of Service H
 Analysis Period (min) 15
 ~ Volume exceeds capacity, queue is theoretically infinite.
 Queue shown is maximum after two cycles.
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 8: US 64 & SR 1634 (Carolina Village Rd)



Lanes, Volumes, Timings
9: SR 1783 (Upward Rd) & I-26 NB On-Ramp

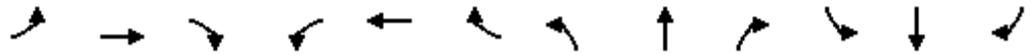
2040 Design Year - No-Build
Timing Plan: PM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖↗	↑↑			↑↓		↖	↗	↗			
Volume (vph)	579	718	0	0	634	132	589	0	237	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		-3%			3%			4%			0%	
Storage Length (ft)	275		0	0		0	250		175	0		0
Storage Lanes	1		0	0		0	1		1	0		0
Taper Length (ft)	100		100	100		100	100		100	100		100
Lane Util. Factor	0.97	0.95	1.00	1.00	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00
Frt					0.974				0.850			
Flt Protected	0.950						0.950	0.950				
Satd. Flow (prot)	3291	3592	0	0	3378	0	1648	1648	1552	0	0	0
Flt Permitted	0.950						0.950	0.950				
Satd. Flow (perm)	3291	3592	0	0	3378	0	1648	1648	1552	0	0	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			45			35			45	
Link Distance (ft)		630			322			532			658	
Travel Time (s)		9.5			4.9			10.4			10.0	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	8%	2%	5%	5%	2%	5%	2%	2%	2%	5%	5%	5%
Adj. Flow (vph)	643	798	0	0	704	147	654	0	263	0	0	0
Shared Lane Traffic (%)							50%					
Lane Group Flow (vph)	643	798	0	0	851	0	327	327	263	0	0	0
Turn Type	Prot						Split		Prot			
Protected Phases	5	2			6		8	8	8			
Permitted Phases												
Detector Phase	5	2			6		8	8	8			
Switch Phase												
Minimum Initial (s)	7.0	14.0			14.0		7.0	7.0	7.0			
Minimum Split (s)	14.0	22.0			21.0		19.0	19.0	19.0			
Total Split (s)	27.0	61.0	0.0	0.0	34.0	0.0	29.0	29.0	29.0	0.0	0.0	0.0
Total Split (%)	30.0%	67.8%	0.0%	0.0%	37.8%	0.0%	32.2%	32.2%	32.2%	0.0%	0.0%	0.0%
Maximum Green (s)	20.7	54.8			28.4		22.9	22.9	22.9			
Yellow Time (s)	3.0	5.1			4.6		3.6	3.6	3.6			
All-Red Time (s)	3.3	1.1			1.0		2.5	2.5	2.5			
Lost Time Adjust (s)	-1.3	-1.2	0.0	0.0	-0.6	0.0	-1.1	-1.1	-1.1	-2.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	4.0	4.0	5.0	4.0	5.0	5.0	5.0	2.0	4.0	4.0
Lead/Lag	Lag				Lead							
Lead-Lag Optimize?	Yes				Yes							
Vehicle Extension (s)	2.0	2.0			2.0		2.0	2.0	2.0			
Minimum Gap (s)	3.0	3.1			3.1		3.0	3.0	3.0			
Time Before Reduce (s)	0.0	15.0			15.0		0.0	0.0	0.0			
Time To Reduce (s)	0.0	45.0			45.0		0.0	0.0	0.0			
Recall Mode	None	C-Max			C-Max		None	None	None			
Act Effct Green (s)	22.0	58.2			31.2		21.8	21.8	21.8			
Actuated g/C Ratio	0.24	0.65			0.35		0.24	0.24	0.24			
v/c Ratio	0.80	0.34			0.73		0.82	0.82	0.70			
Control Delay	31.7	2.8			30.7		49.5	49.5	41.4			
Queue Delay	0.0	0.0			0.0		0.0	0.0	0.0			

Lanes, Volumes, Timings
 9: SR 1783 (Upward Rd) & I-26 NB On-Ramp

2040 Design Year - No-Build
 Timing Plan: PM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay	31.7	2.8			30.7		49.5	49.5	41.4			
LOS	C	A			C		D	D	D			
Approach Delay		15.7			30.7			47.2				
Approach LOS		B			C			D				
Queue Length 50th (ft)	181	27			228		178	178	132			
Queue Length 95th (ft)	#250	33			302		#307	#307	216			
Internal Link Dist (ft)		550			242			452			578	
Turn Bay Length (ft)	275						250		175			
Base Capacity (vph)	804	2323			1171		439	439	414			
Starvation Cap Reductn	0	0			0		0	0	0			
Spillback Cap Reductn	0	0			0		0	0	0			
Storage Cap Reductn	0	0			0		0	0	0			
Reduced v/c Ratio	0.80	0.34			0.73		0.74	0.74	0.64			

Intersection Summary

Area Type: Other
 Cycle Length: 90
 Actuated Cycle Length: 90
 Offset: 1 (1%), Referenced to phase 2:EBT and 6:WBT, Start of Green
 Natural Cycle: 60
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.82
 Intersection Signal Delay: 28.7
 Intersection LOS: C
 Intersection Capacity Utilization 68.2%
 ICU Level of Service C
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

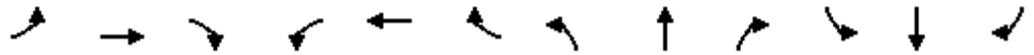
Splits and Phases: 9: SR 1783 (Upward Rd) & I-26 NB On-Ramp



Lanes, Volumes, Timings
 10: SR 1783 (Upward Rd) & I-26 SB Off-Ramp

2040 Design Year - No-Build

Timing Plan: PM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑	↗	↘	↑↑						↖	↗↗
Volume (vph)	0	1163	612	188	1035	0	0	0	0	134	0	446
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		4%			-4%			0%			5%	
Storage Length (ft)	275		0	150		0	0		0	250		0
Storage Lanes	1		1	1		0	0		0	1		2
Taper Length (ft)	100		100	100		100	100		100	100		100
Lane Util. Factor	1.00	0.91	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	0.88
Frt			0.850									0.850
Flt Protected				0.950							0.950	
Satd. Flow (prot)	0	4984	1465	1705	3610	0	0	0	0	0	1725	2717
Flt Permitted				0.144							0.950	
Satd. Flow (perm)	0	4984	1465	258	3610	0	0	0	0	0	1725	2717
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			45			45			35	
Link Distance (ft)		549			630			547			651	
Travel Time (s)		8.3			9.5			8.3			12.7	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	5%	2%	8%	8%	2%	5%	5%	5%	5%	2%	2%	2%
Adj. Flow (vph)	0	1292	680	209	1150	0	0	0	0	149	0	496
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1292	680	209	1150	0	0	0	0	0	149	496
Turn Type			Perm		pm+pt					Split		Prot
Protected Phases		2		1		6				4		4
Permitted Phases			2		6							
Detector Phase		2		2		1		6			4	
Switch Phase												
Minimum Initial (s)		14.0		14.0		7.0		14.0		7.0		7.0
Minimum Split (s)		20.0		20.0		14.0		21.0		13.0		13.0
Total Split (s)	0.0	52.0	52.0	14.0	66.0	0.0	0.0	0.0	0.0	24.0	24.0	24.0
Total Split (%)	0.0%	57.8%	57.8%	15.6%	73.3%	0.0%	0.0%	0.0%	0.0%	26.7%	26.7%	26.7%
Maximum Green (s)		46.4		46.4		7.6		59.6		18.1		18.1
Yellow Time (s)		4.5		4.5		3.0		5.2		3.6		3.6
All-Red Time (s)		1.1		1.1		3.4		1.2		2.3		2.3
Lost Time Adjust (s)	0.0	-0.6	-0.6	-1.4	-1.4	-2.0	0.0	0.0	0.0	-2.0	-0.9	-0.9
Total Lost Time (s)	4.0	5.0	5.0	5.0	5.0	2.0	4.0	4.0	4.0	3.9	5.0	5.0
Lead/Lag		Lag		Lag		Lead						
Lead-Lag Optimize?		Yes		Yes		Yes						
Vehicle Extension (s)		2.0		2.0		2.0		2.0		2.0		2.0
Minimum Gap (s)		3.1		3.1		3.0		3.1		3.0		3.0
Time Before Reduce (s)		15.0		15.0		0.0		15.0		0.0		0.0
Time To Reduce (s)		45.0		45.0		0.0		45.0		0.0		0.0
Recall Mode		C-Max		C-Max		None		C-Max		None		None
Act Effct Green (s)		47.6		47.6		61.5		61.5				18.5
Actuated g/C Ratio		0.53		0.53		0.68		0.68				0.21
v/c Ratio		0.49		0.88		0.66		0.47				0.89
Control Delay		14.4		34.0		16.4		1.5				35.0
Queue Delay		0.0		0.0		0.0		0.0				0.0

Lanes, Volumes, Timings
 10: SR 1783 (Upward Rd) & I-26 SB Off-Ramp

2040 Design Year - No-Build
 Timing Plan: PM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay		14.4	34.0	16.4	1.5						35.0	54.0
LOS		B	C	B	A						D	D
Approach Delay		21.2			3.8						49.6	
Approach LOS		C			A						D	
Queue Length 50th (ft)		164	327	19	0						74	155
Queue Length 95th (ft)		201	#566	m46	0						131	#250
Internal Link Dist (ft)		469			550			467			571	
Turn Bay Length (ft)				150								
Base Capacity (vph)		2635	774	321	2465						364	574
Starvation Cap Reductn		0	0	0	0						0	0
Spillback Cap Reductn		0	0	0	0						0	0
Storage Cap Reductn		0	0	0	0						0	0
Reduced v/c Ratio		0.49	0.88	0.65	0.47						0.41	0.86

Intersection Summary

Area Type: Other
 Cycle Length: 90
 Actuated Cycle Length: 90
 Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBTL, Start of Green
 Natural Cycle: 80
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.89
 Intersection Signal Delay: 19.8
 Intersection LOS: B
 Intersection Capacity Utilization 68.2%
 ICU Level of Service C
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 10: SR 1783 (Upward Rd) & I-26 SB Off-Ramp



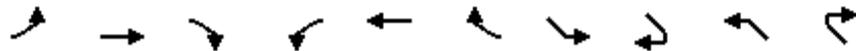
2040 Build 8/6 Lane

Lanes, Volumes, Timings

2040 Design Year - Build 8/6 Lanes Combination

1: NC 146 (Long Shoals Rd) & I-26 NB On-Ramp

Timing Plan: AM Peak

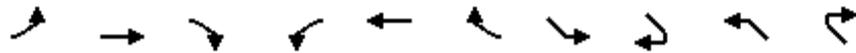


Lane Group	EBL	EBT	EBR2	WBL	WBT	WBR2	SEL	SER2	NWL	NWR2
Lane Configurations	↗↘	↑↑	↗	↗↘	↑↑	↗	↗↘	↗	↗↘	↗
Volume (vph)	352	886	386	579	1170	875	842	448	391	445
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		3%			-7%					
Storage Length (ft)	450			350			0		675	
Storage Lanes	1			2			2		1	
Taper Length (ft)	100			100			100		100	
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	1.00	0.97	1.00
Frt			0.850			0.850		0.850		0.850
Flt Protected	0.950			0.950			0.950		0.950	
Satd. Flow (prot)	3224	3452	1487	3387	3663	1562	3519	1607	3434	1599
Flt Permitted	0.950			0.950			0.950		0.950	
Satd. Flow (perm)	3224	3452	1487	3387	3663	1562	3519	1607	3434	1599
Right Turn on Red			No			No		No		No
Satd. Flow (RTOR)										
Link Speed (mph)		45			45					
Link Distance (ft)		1009			964					
Travel Time (s)		15.3			14.6					
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	7%	3%	7%	7%	2%	7%	2%	3%	3%	2%
Adj. Flow (vph)	391	984	429	643	1300	972	936	498	434	494
Shared Lane Traffic (%)										
Lane Group Flow (vph)	391	984	429	643	1300	972	936	498	434	494
Enter Blocked Intersection	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Right	Left	Right
Median Width(ft)		24			24					
Link Offset(ft)		0			0					
Crosswalk Width(ft)		16			16					
Two way Left Turn Lane										
Headway Factor	1.02	1.02	1.02	0.96	0.96	0.96	0.97	0.97	0.99	0.99
Turning Speed (mph)	15		9	15		9	15	9	15	9
Turn Type	Prot		Free	Prot		Free	Prot	custom	Prot	Free
Protected Phases	5	2		1	6		4		8	
Permitted Phases			Free			Free		4		Free
Detector Phase	5	2		1	6		4	4	8	
Switch Phase										
Minimum Initial (s)	7.0	12.0		7.0	12.0		7.0	7.0	7.0	
Minimum Split (s)	16.0	20.0		15.0	21.0		16.0	16.0	15.0	
Total Split (s)	18.0	39.0	0.0	24.0	45.0	0.0	37.0	37.0	37.0	0.0
Total Split (%)	18.0%	39.0%	0.0%	24.0%	45.0%	0.0%	37.0%	37.0%	37.0%	0.0%
Maximum Green (s)	9.8	31.5		16.3	36.0		28.9	28.9	29.0	
Yellow Time (s)	3.4	4.3		4.0	5.2		3.8	3.8	3.7	
All-Red Time (s)	4.8	3.2		3.7	3.8		4.3	4.3	4.3	
Lost Time Adjust (s)	-3.2	-2.5	-2.5	-2.7	-4.0	-4.0	-3.1	-3.1	-3.0	0.0
Total Lost Time (s)	5.0	5.0	1.5	5.0	5.0	0.0	5.0	5.0	5.0	4.0
Lead/Lag	Lead	Lag		Lead	Lag					
Lead-Lag Optimize?	Yes	Yes		Yes	Yes					
Vehicle Extension (s)	2.0	6.0		2.0	6.0		2.0	2.0	2.0	
Minimum Gap (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	

Lanes, Volumes, Timings
 1: NC 146 (Long Shoals Rd) & I-26 NB On-Ramp

2040 Design Year - Build 8/6 Lanes Combination

Timing Plan: AM Peak

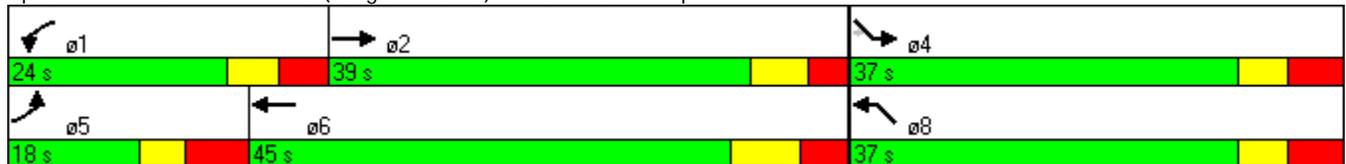


Lane Group	EBL	EBT	EBR2	WBL	WBT	WBR2	SEL	SER2	NWL	NWR2
Time Before Reduce (s)	0.0	15.0		0.0	15.0		0.0	0.0	0.0	
Time To Reduce (s)	0.0	30.0		0.0	30.0		0.0	0.0	0.0	
Recall Mode	None	C-Max		None	C-Max		None	None	None	
Act Effect Green (s)	13.0	34.0	100.0	19.0	40.0	100.0	32.0	32.0	32.0	100.0
Actuated g/C Ratio	0.13	0.34	1.00	0.19	0.40	1.00	0.32	0.32	0.32	1.00
v/c Ratio	0.93	0.84	0.29	1.00	0.89	0.62	0.83	0.97	0.39	0.31
Control Delay	74.2	38.3	0.5	76.7	36.8	1.9	39.2	67.7	27.8	0.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	74.2	38.3	0.5	76.7	36.8	1.9	39.2	67.7	27.8	0.5
LOS	E	D	A	E	D	A	D	E	C	A
Approach Delay		37.1			34.0					
Approach LOS		D			C					
Queue Length 50th (ft)	129	302	0	212	397	0	282	311	110	0
Queue Length 95th (ft)	#218	385	0	#331	#510	0	361	#519	153	0
Internal Link Dist (ft)		929			884					
Turn Bay Length (ft)	450		300	350		300		425	675	575
Base Capacity (vph)	419	1174	1487	644	1465	1562	1126	514	1099	1599
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.93	0.84	0.29	1.00	0.89	0.62	0.83	0.97	0.39	0.31

Intersection Summary

Area Type: Other
 Cycle Length: 100
 Actuated Cycle Length: 100
 Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green
 Natural Cycle: 90
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.00
 Intersection Signal Delay: 35.1
 Intersection LOS: D
 Intersection Capacity Utilization 82.9%
 ICU Level of Service E
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 1: NC 146 (Long Shoals Rd) & I-26 NB On-Ramp



Lanes, Volumes, Timings
2: I-26 NB On-Ramp & US 25 (Asheville Highway)

2040 Design Year - Build 8/6 Lanes Combination

Timing Plan: AM Peak

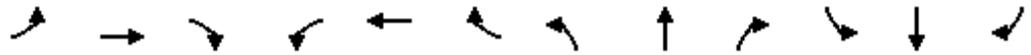


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				↙		↗	↗	↗			↗	↗
Volume (vph)	0	0	0	187	0	474	724	1207	0	0	1718	329
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			2%			-1%			2%	
Storage Length (ft)	0		0	0		150	0		0	0		300
Storage Lanes	0		0	1		2	1		0	0		1
Taper Length (ft)	100		100	100		100	100		100	100		100
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	0.88	1.00	0.95	1.00	1.00	0.95	1.00
Frt						0.850						0.850
Flt Protected				0.950			0.950					
Satd. Flow (prot)	0	0	0	1735	0	2706	1680	3489	0	0	3436	1480
Flt Permitted				0.950			0.950					
Satd. Flow (perm)	0	0	0	1735	0	2706	1680	3489	0	0	3436	1480
Right Turn on Red			No			Yes			No			No
Satd. Flow (RTOR)						193						
Link Speed (mph)		45			35			45			45	
Link Distance (ft)		533			612			601			596	
Travel Time (s)		8.1			11.9			9.1			9.0	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	5%	5%	5%	3%	5%	4%	8%	4%	5%	5%	4%	8%
Adj. Flow (vph)	0	0	0	208	0	527	804	1341	0	0	1909	366
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	208	0	527	804	1341	0	0	1909	366
Enter Blocked Intersection	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.01	1.01	1.01	0.99	0.99	0.99	1.01	1.01	1.01
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type				Prot		custom	Prot					Free
Protected Phases				4			5	2				6
Permitted Phases						4						Free
Detector Phase				4		4	5	2				6
Switch Phase												
Minimum Initial (s)				7.0		7.0	7.0	12.0				12.0
Minimum Split (s)				13.0		13.0	14.0	19.0				18.0
Total Split (s)	0.0	0.0	0.0	20.0	0.0	20.0	42.0	90.0	0.0	0.0	48.0	0.0
Total Split (%)	0.0%	0.0%	0.0%	18.2%	0.0%	18.2%	38.2%	81.8%	0.0%	0.0%	43.6%	0.0%
Maximum Green (s)				14.0		14.0	35.6	83.9				42.7
Yellow Time (s)				3.7		3.7	3.0	4.6				4.3
All-Red Time (s)				2.3		2.3	3.4	1.5				1.0
Lost Time Adjust (s)	-2.0	0.0	0.0	-1.0	0.0	-1.0	-1.4	-1.1	0.0	0.0	-0.3	0.0
Total Lost Time (s)	2.0	4.0	4.0	5.0	4.0	5.0	5.0	5.0	4.0	4.0	5.0	4.0
Lead/Lag							Lag					Lead
Lead-Lag Optimize?							Yes					Yes
Vehicle Extension (s)				2.0		2.0	2.0	8.0				8.0
Minimum Gap (s)				3.0		3.0	3.0	5.5				5.5

Lanes, Volumes, Timings
 2: I-26 NB On-Ramp & US 25 (Asheville Highway)

2040 Design Year - Build 8/6 Lanes Combination

Timing Plan: AM Peak

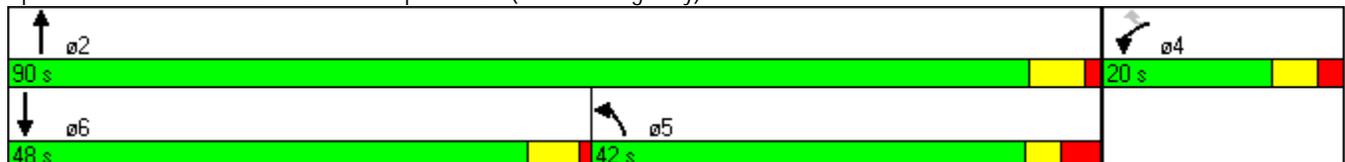


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Time Before Reduce (s)				0.0		0.0	0.0	15.0			15.0	
Time To Reduce (s)				0.0		0.0	0.0	50.0			50.0	
Recall Mode				None		None	None	C-Max			C-Max	
Act Effct Green (s)				15.0		15.0	37.0	85.0			43.0	110.0
Actuated g/C Ratio				0.14		0.14	0.34	0.77			0.39	1.00
v/c Ratio				0.88		0.98	1.42	0.50			1.42	0.25
Control Delay				81.4		65.7	214.9	1.5			223.1	0.4
Queue Delay				0.0		0.0	0.0	0.5			0.0	0.0
Total Delay				81.4		65.7	214.9	2.0			223.1	0.4
LOS				F		E	F	A			F	A
Approach Delay								81.8			187.3	
Approach LOS								F			F	
Queue Length 50th (ft)				146		140	~779	15			~959	0
Queue Length 95th (ft)				#282		#265	m#467	m26			#1097	0
Internal Link Dist (ft)		453				532		521			516	
Turn Bay Length (ft)						150						300
Base Capacity (vph)				237		536	565	2696			1343	1480
Starvation Cap Reductn				0		0	0	821			0	0
Spillback Cap Reductn				0		0	0	0			0	0
Storage Cap Reductn				0		0	0	0			0	0
Reduced v/c Ratio				0.88		0.98	1.42	0.72			1.42	0.25

Intersection Summary

Area Type: Other
 Cycle Length: 110
 Actuated Cycle Length: 110
 Offset: 49 (45%), Referenced to phase 2:NBT and 6:SBT, Start of Green
 Natural Cycle: 220
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.42
 Intersection Signal Delay: 126.7 Intersection LOS: F
 Intersection Capacity Utilization 110.5% ICU Level of Service H
 Analysis Period (min) 15
 ~ Volume exceeds capacity, queue is theoretically infinite.
 Queue shown is maximum after two cycles.
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: I-26 NB On-Ramp & US 25 (Asheville Highway)



Lanes, Volumes, Timings
 3: I-26 SB Off-Ramp & US 25 (Asheville Highway)

2040 Design Year - Build 8/6 Lanes Combination

Timing Plan: AM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	322	0	897	0	0	0	0	1609	187	598	1307	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		3%			0%			4%			1%	
Storage Length (ft)	0		100	0		0	0		500	0		0
Storage Lanes	1		1	0		0	0		1	1		0
Taper Length (ft)	100		100	100		100	100		100	100		100
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt			0.850						0.850			
Flt Protected	0.950									0.950		
Satd. Flow (prot)	1710	0	1544	0	0	0	0	3435	1465	1663	3487	0
Flt Permitted	0.950									0.950		
Satd. Flow (perm)	1710	0	1544	0	0	0	0	3435	1465	1663	3487	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		35			45			45			45	
Link Distance (ft)		471			598			795			601	
Travel Time (s)		9.2			9.1			12.0			9.1	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	4%	5%	3%	5%	5%	5%	5%	3%	8%	8%	3%	5%
Adj. Flow (vph)	358	0	997	0	0	0	0	1788	208	664	1452	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	358	0	997	0	0	0	0	1788	208	664	1452	0
Enter Blocked Intersection	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.02	1.02	1.02	1.00	1.00	1.00	1.03	1.03	1.03	1.01	1.01	1.01
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Prot		custom						Free	Prot		
Protected Phases	4		4					2		1	6	
Permitted Phases									Free			
Detector Phase	4		4					2		1	6	
Switch Phase												
Minimum Initial (s)	7.0		7.0					12.0		7.0	12.0	
Minimum Split (s)	13.0		13.0					18.0		14.0	18.0	
Total Split (s)	43.0	0.0	43.0	0.0	0.0	0.0	0.0	42.0	0.0	25.0	67.0	0.0
Total Split (%)	39.1%	0.0%	39.1%	0.0%	0.0%	0.0%	0.0%	38.2%	0.0%	22.7%	60.9%	0.0%
Maximum Green (s)	37.0		37.0					36.3		18.5	61.3	
Yellow Time (s)	4.0		4.0					4.7		4.0	4.7	
All-Red Time (s)	2.0		2.0					1.0		2.5	1.0	
Lost Time Adjust (s)	-1.0	-2.0	-1.0	-2.0	-2.0	-2.0	-2.0	-0.7	-0.7	-1.5	-0.7	-2.0
Total Lost Time (s)	5.0	2.0	5.0	2.0	2.0	2.0	2.0	5.0	3.3	5.0	5.0	2.0
Lead/Lag								Lag		Lead		
Lead-Lag Optimize?								Yes		Yes		
Vehicle Extension (s)	2.0		2.0					8.0		2.0	8.0	
Minimum Gap (s)	3.0		3.0					5.5		3.0	5.5	

Lanes, Volumes, Timings
 3: I-26 SB Off-Ramp & US 25 (Asheville Highway)

2040 Design Year - Build 8/6 Lanes Combination

Timing Plan: AM Peak

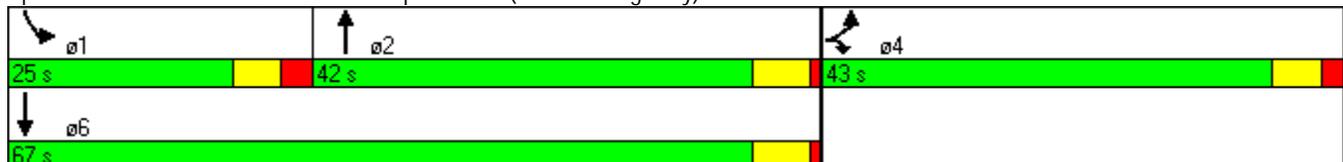


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Time Before Reduce (s)	0.0		0.0					15.0		0.0	15.0	
Time To Reduce (s)	0.0		0.0					50.0		0.0	50.0	
Recall Mode	None		None				C-Max		None		C-Max	
Act Effect Green (s)	38.0		38.0					37.0	110.0	20.0	62.0	
Actuated g/C Ratio	0.35		0.35					0.34	1.00	0.18	0.56	
v/c Ratio	0.61		1.87					1.55	0.14	2.20	0.74	
Control Delay	35.1		424.1					279.9	0.2	569.7	2.8	
Queue Delay	0.0		0.0					0.0	0.0	0.0	0.7	
Total Delay	35.1		424.1					279.9	0.2	569.7	3.5	
LOS	D		F				F		A		F	
Approach Delay							250.7			181.2		
Approach LOS							F			F		
Queue Length 50th (ft)	207		~1076					~938	0	~774	0	
Queue Length 95th (ft)	308		#1323					#1076	0	m#518	m0	
Internal Link Dist (ft)	391				518				715		521	
Turn Bay Length (ft)			100						500			
Base Capacity (vph)	591		533					1155	1465	302	1965	
Starvation Cap Reductn	0		0					0	0	0	209	
Spillback Cap Reductn	0		0					0	0	0	0	
Storage Cap Reductn	0		0					0	0	0	0	
Reduced v/c Ratio	0.61		1.87					1.55	0.14	2.20	0.83	

Intersection Summary

Area Type: Other
 Cycle Length: 110
 Actuated Cycle Length: 110
 Offset: 64 (58%), Referenced to phase 2:NBT and 6:SBT, Start of Green
 Natural Cycle: 240
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 2.20
 Intersection Signal Delay: 241.3
 Intersection LOS: F
 Intersection Capacity Utilization 110.5%
 ICU Level of Service H
 Analysis Period (min) 15
 ~ Volume exceeds capacity, queue is theoretically infinite.
 Queue shown is maximum after two cycles.
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: I-26 SB Off-Ramp & US 25 (Asheville Highway)



Lanes, Volumes, Timings
4: I-26 NB Ramps & Balfour Pkwy

2040 Design Year - Build 8/6 Lanes Combination

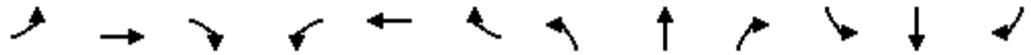
Timing Plan: AM Peak

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	727	0	0	213	343	1415	0	0	1148	836
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	250		0	0		250
Storage Lanes	0		2	0		1	1		0	0		1
Taper Length (ft)	100		100	100		100	100		100	100		100
Lane Util. Factor	1.00	1.00	0.88	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt			0.850			0.865						0.850
Flt Protected							0.950					
Satd. Flow (prot)	0	0	2787	0	0	1611	1671	3539	0	0	3539	1495
Flt Permitted							0.950					
Satd. Flow (perm)	0	0	2787	0	0	1611	1671	3539	0	0	3539	1495
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		25			45			45			45	
Link Distance (ft)		393			429			690			522	
Travel Time (s)		10.7			6.5			10.5			7.9	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	5%	5%	2%	5%	5%	2%	8%	2%	5%	5%	2%	8%
Adj. Flow (vph)	0	0	808	0	0	237	381	1572	0	0	1276	929
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	808	0	0	237	381	1572	0	0	1276	929
Enter Blocked Intersection	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type			Over			Free	Prot					Perm
Protected Phases			5				5	Free			6	
Permitted Phases						Free						6
Detector Phase			5				5				6	6
Switch Phase												
Minimum Initial (s)			7.0				7.0				12.0	12.0
Minimum Split (s)			14.0				14.0				19.0	19.0
Total Split (s)	0.0	0.0	30.0	0.0	0.0	0.0	30.0	0.0	0.0	0.0	60.0	60.0
Total Split (%)	0.0%	0.0%	33.3%	0.0%	0.0%	0.0%	33.3%	0.0%	0.0%	0.0%	66.7%	66.7%
Maximum Green (s)			23.0				23.0				53.0	53.0
Yellow Time (s)			5.0				5.0				5.0	5.0
All-Red Time (s)			2.0				2.0				2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	2.0	2.0	5.0	2.0	2.0	2.0	5.0	2.0	2.0	2.0	5.0	5.0
Lead/Lag			Lead				Lead				Lag	Lag
Lead-Lag Optimize?			Yes				Yes				Yes	Yes
Vehicle Extension (s)			3.0				3.0				3.0	3.0
Recall Mode			None				None				C-Max	C-Max
Act Effect Green (s)			25.0			90.0	25.0	90.0			55.0	55.0

Lanes, Volumes, Timings
4: I-26 NB Ramps & Balfour Pkwy

2040 Design Year - Build 8/6 Lanes Combination

Timing Plan: AM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Actuated g/C Ratio			0.28			1.00	0.28	1.00			0.61	0.61
v/c Ratio			1.04			0.15	0.82	0.44			0.59	1.02
Control Delay			77.7			0.2	36.1	0.3			12.1	53.6
Queue Delay			0.0			0.0	0.0	0.0			0.0	0.0
Total Delay			77.7			0.2	36.1	0.3			12.1	53.6
LOS			E			A	D	A			B	D
Approach Delay								7.3			29.5	
Approach LOS								A			C	
Queue Length 50th (ft)			~285			0	199	0			212	~518
Queue Length 95th (ft)			#411			0	m#260	m0			270	#794
Internal Link Dist (ft)		313			349			610			442	
Turn Bay Length (ft)							250					250
Base Capacity (vph)			774			1611	464	3539			2163	914
Starvation Cap Reductn			0			0	0	0			0	0
Spillback Cap Reductn			0			0	0	0			0	0
Storage Cap Reductn			0			0	0	0			0	0
Reduced v/c Ratio			1.04			0.15	0.82	0.44			0.59	1.02

Intersection Summary

Area Type: Other
 Cycle Length: 90
 Actuated Cycle Length: 90
 Offset: 41 (46%), Referenced to phase 6:SBT, Start of Green
 Natural Cycle: 100
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.04
 Intersection Signal Delay: 27.3
 Intersection LOS: C
 Intersection Capacity Utilization 79.1%
 ICU Level of Service D
 Analysis Period (min) 15
 ~ Volume exceeds capacity, queue is theoretically infinite.
 Queue shown is maximum after two cycles.
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: I-26 NB Ramps & Balfour Pkwy



Lanes, Volumes, Timings
5: I-26 SB Ramps & Balfour Pkwy

2040 Design Year - Build 8/6 Lanes Combination

Timing Plan: AM Peak

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations						 		 			 	 
Volume (vph)	0	0	454	0	0	796	0	962	704	287	1588	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	0		250	250		0
Storage Lanes	0		1	0		2	0		1	1		0
Taper Length (ft)	100		100	100		100	100		100	100		100
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	0.88	1.00	0.95	1.00	1.00	0.95	1.00
Frt			0.865			0.850			0.850			
Flt Protected										0.950		
Satd. Flow (prot)	0	0	1611	0	0	2787	0	3539	1495	1671	3539	0
Flt Permitted										0.950		
Satd. Flow (perm)	0	0	1611	0	0	2787	0	3539	1495	1671	3539	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			25			45			45	
Link Distance (ft)		642			361			480			690	
Travel Time (s)		9.7			9.8			7.3			10.5	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	5%	5%	2%	5%	5%	2%	5%	2%	8%	8%	2%	5%
Adj. Flow (vph)	0	0	504	0	0	884	0	1069	782	319	1764	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	504	0	0	884	0	1069	782	319	1764	0
Enter Blocked Intersection	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type			Free			Over			Perm	Prot		
Protected Phases						1		2		1	Free	
Permitted Phases			Free						2			
Detector Phase						1		2	2	1		
Switch Phase												
Minimum Initial (s)						7.0		12.0	12.0	7.0		
Minimum Split (s)						14.0		19.0	19.0	14.0		
Total Split (s)	0.0	0.0	0.0	0.0	0.0	35.0	0.0	55.0	55.0	35.0	0.0	0.0
Total Split (%)	0.0%	0.0%	0.0%	0.0%	0.0%	38.9%	0.0%	61.1%	61.1%	38.9%	0.0%	0.0%
Maximum Green (s)						28.0		48.0	48.0	28.0		
Yellow Time (s)						5.0		5.0	5.0	5.0		
All-Red Time (s)						2.0		2.0	2.0	2.0		
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	2.0	2.0	2.0	2.0	2.0	5.0	2.0	5.0	5.0	5.0	2.0	2.0
Lead/Lag						Lead		Lag	Lag	Lead		
Lead-Lag Optimize?						Yes		Yes	Yes	Yes		
Vehicle Extension (s)						3.0		3.0	3.0	3.0		
Recall Mode						None		C-Max	C-Max	None		
Act Effect Green (s)			90.0			30.0		50.0	50.0	30.0	90.0	

Lanes, Volumes, Timings
5: I-26 SB Ramps & Balfour Pkwy

2040 Design Year - Build 8/6 Lanes Combination

Timing Plan: AM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Actuated g/C Ratio			1.00			0.33		0.56	0.56	0.33	1.00	
v/c Ratio			0.31			0.95		0.54	0.94	0.57	0.50	
Control Delay			0.5			50.5		14.0	40.3	23.4	0.3	
Queue Delay			0.0			0.0		0.0	0.0	0.0	0.0	
Total Delay			0.5			50.5		14.0	40.3	23.4	0.3	
LOS			A			D		B	D	C	A	
Approach Delay								25.2				3.8
Approach LOS								C				A
Queue Length 50th (ft)			0			276		190	387	144	0	
Queue Length 95th (ft)			0			#413		245	#658	m184	m0	
Internal Link Dist (ft)		562			281			400				610
Turn Bay Length (ft)									250	250		
Base Capacity (vph)			1611			929		1966	831	557	3539	
Starvation Cap Reductn			0			0		0	0	0	0	
Spillback Cap Reductn			0			0		0	0	0	0	
Storage Cap Reductn			0			0		0	0	0	0	
Reduced v/c Ratio			0.31			0.95		0.54	0.94	0.57	0.50	

Intersection Summary

Area Type: Other
 Cycle Length: 90
 Actuated Cycle Length: 90
 Offset: 0 (0%), Referenced to phase 2:NBT, Start of Green
 Natural Cycle: 80
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.95
 Intersection Signal Delay: 18.7 Intersection LOS: B
 Intersection Capacity Utilization 67.8% ICU Level of Service C
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.

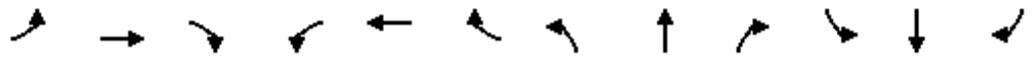
Splits and Phases: 5: I-26 SB Ramps & Balfour Pkwy



Lanes, Volumes, Timings
6: US 64 & SR 1516 (Francis Rd)

2040 Design Year - Build 8/6 Lanes Combination

Timing Plan: AM Peak

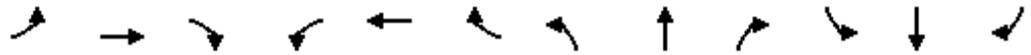


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	136	1725	506	34	2207	11	436	30	23	8	30	115
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		-1%			4%			-1%			2%	
Storage Length (ft)	150		0	125		0	150		150	0		150
Storage Lanes	1		1	1		0	1		1	0		1
Taper Length (ft)	100		100	100		100	100		100	100		100
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00
Frt			0.850		0.999				0.850			0.850
Flt Protected	0.950			0.950			0.950	0.958			0.989	
Satd. Flow (prot)	1778	3557	1591	1734	3465	0	1690	1704	1591	0	1824	1567
Flt Permitted	0.950			0.950			0.950	0.958			0.989	
Satd. Flow (perm)	1778	3557	1591	1734	3465	0	1690	1704	1591	0	1824	1567
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			45			35			35	
Link Distance (ft)		835			622			375			406	
Travel Time (s)		12.7			9.4			7.3			7.9	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	151	1917	562	38	2452	12	484	33	26	9	33	128
Shared Lane Traffic (%)							47%					
Lane Group Flow (vph)	151	1917	562	38	2464	0	257	260	26	0	42	128
Enter Blocked Intersection	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	0.99	0.99	0.99	1.03	1.03	1.03	0.99	0.99	0.99	1.01	1.01	1.01
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Prot		Perm	Prot			Split		pm+ov	Split		pm+ov
Protected Phases	5	2		1	6		4	4	1	3	3	5
Permitted Phases			2						4			3
Detector Phase	5	2	2	1	6		4	4	1	3	3	5
Switch Phase												
Minimum Initial (s)	7.0	12.0	12.0	7.0	12.0		7.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	13.0	18.0	18.0	13.0	18.0		14.0	14.0	13.0	14.0	14.0	13.0
Total Split (s)	18.0	98.0	98.0	14.0	94.0	0.0	24.0	24.0	14.0	14.0	14.0	18.0
Total Split (%)	12.0%	65.3%	65.3%	9.3%	62.7%	0.0%	16.0%	16.0%	9.3%	9.3%	9.3%	12.0%
Maximum Green (s)	12.4	92.0	92.0	8.6	88.4		17.4	17.4	8.6	7.5	7.5	12.4
Yellow Time (s)	3.2	4.6	4.6	3.0	4.2		3.9	3.9	3.0	3.7	3.7	3.2
All-Red Time (s)	2.4	1.4	1.4	2.4	1.4		2.7	2.7	2.4	2.8	2.8	2.4
Lost Time Adjust (s)	-0.6	-1.0	-1.0	-0.4	-0.6	-2.0	-1.6	-1.6	-0.4	-2.0	-1.5	-0.6
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	2.0	5.0	5.0	5.0	4.5	5.0	5.0
Lead/Lag	Lag	Lag	Lag	Lead	Lead		Lag	Lag	Lead	Lead	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	1.0	2.0	2.0	1.0	2.0		1.0	1.0	1.0	1.0	1.0	1.0
Recall Mode	None	C-Max	C-Max	None	C-Max		None	None	None	None	None	None

Lanes, Volumes, Timings
6: US 64 & SR 1516 (Francis Rd)

2040 Design Year - Build 8/6 Lanes Combination

Timing Plan: AM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Act Effect Green (s)	13.0	96.5	96.5	7.9	89.0		22.0	22.0	34.9		8.7	24.0
Actuated g/C Ratio	0.09	0.64	0.64	0.05	0.59		0.15	0.15	0.23		0.06	0.16
v/c Ratio	0.98	0.84	0.55	0.41	1.20		1.04	1.04	0.07		0.40	0.51
Control Delay	123.4	16.6	12.3	82.2	123.8		127.1	127.5	47.6		79.6	64.2
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0		0.0	0.0
Total Delay	123.4	16.6	12.3	82.2	123.8		127.1	127.5	47.6		79.6	64.2
LOS	F	B	B	F	F		F	F	D		E	E
Approach Delay		21.8			123.2			123.5			68.0	
Approach LOS		C			F			F			E	
Queue Length 50th (ft)	147	357	181	37	~1533		~313	~318	21		40	114
Queue Length 95th (ft)	#301	524	230	78	#1654		#512	#518	48		84	183
Internal Link Dist (ft)		755			542			295			326	
Turn Bay Length (ft)	150			125			150		150			150
Base Capacity (vph)	154	2289	1024	104	2056		248	250	382		109	251
Starvation Cap Reductn	0	0	0	0	0		0	0	0		0	0
Spillback Cap Reductn	0	0	0	0	0		0	0	0		0	0
Storage Cap Reductn	0	0	0	0	0		0	0	0		0	0
Reduced v/c Ratio	0.98	0.84	0.55	0.37	1.20		1.04	1.04	0.07		0.39	0.51

Intersection Summary

Area Type: Other
 Cycle Length: 150
 Actuated Cycle Length: 150
 Offset: 27 (18%), Referenced to phase 2:EBT and 6:WBT, Start of Green
 Natural Cycle: 240
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.20
 Intersection Signal Delay: 76.0
 Intersection LOS: E
 Intersection Capacity Utilization 100.9%
 ICU Level of Service G
 Analysis Period (min) 15
 ~ Volume exceeds capacity, queue is theoretically infinite.
 Queue shown is maximum after two cycles.
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

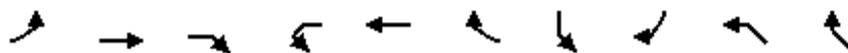
Splits and Phases: 6: US 64 & SR 1516 (Francis Rd)



Lanes, Volumes, Timings
7: US 64 & I-26 SB Off-Ramp

2040 Design Year - Build 8/6 Lanes Combination

Timing Plan: AM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	SBL	SBR	NWL	NWR
Lane Configurations		↑↑	↗		↑↑			↖↖		
Volume (vph)	0	1632	367	0	1955	0	0	508	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		3%			-3%		-3%		0%	
Storage Length (ft)	0		400	0		0	0	500	0	0
Storage Lanes	0		1	0		0	0	1	0	0
Taper Length (ft)	100		100	100		100	100	100	100	100
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.88	1.00	1.00
Frt			0.850					0.850		
Flt Protected										
Satd. Flow (prot)	0	3486	1473	0	3592	0	0	2828	0	0
Flt Permitted										
Satd. Flow (perm)	0	3486	1473	0	3592	0	0	2828	0	0
Right Turn on Red			No			No		No		
Satd. Flow (RTOR)										
Link Speed (mph)		45			45		35		45	
Link Distance (ft)		728			791		804		308	
Travel Time (s)		11.0			12.0		15.7		4.7	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	5%	2%	8%	5%	2%	5%	5%	2%	5%	5%
Adj. Flow (vph)	0	1813	408	0	2172	0	0	564	0	0
Shared Lane Traffic (%)										
Lane Group Flow (vph)	0	1813	408	0	2172	0	0	564	0	0
Enter Blocked Intersection	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Right	Left	Right
Median Width(ft)		12			12		0		0	
Link Offset(ft)		0			0		0		0	
Crosswalk Width(ft)		16			16		16		16	
Two way Left Turn Lane										
Headway Factor	1.02	1.02	1.02	0.98	0.98	0.98	0.98	0.98	1.00	1.00
Turning Speed (mph)	15		9	15		9	15	9	15	9
Turn Type			Perm					custom		
Protected Phases		Free			6			4		
Permitted Phases			Free							
Detector Phase					6			4		
Switch Phase										
Minimum Initial (s)					12.0			7.0		
Minimum Split (s)					18.0			13.0		
Total Split (s)	0.0	0.0	0.0	0.0	109.0	0.0	0.0	41.0	0.0	0.0
Total Split (%)	0.0%	0.0%	0.0%	0.0%	72.7%	0.0%	0.0%	27.3%	0.0%	0.0%
Maximum Green (s)					103.2			35.9		
Yellow Time (s)					4.8			4.1		
All-Red Time (s)					1.0			1.0		
Lost Time Adjust (s)	-2.0	0.0	-2.0	-2.0	-0.8	-2.0	-2.0	-0.1	-2.0	-2.0
Total Lost Time (s)	2.0	4.0	2.0	2.0	5.0	2.0	2.0	5.0	2.0	2.0
Lead/Lag										
Lead-Lag Optimize?										
Vehicle Extension (s)					2.0			1.0		
Recall Mode					C-Max			None		

Lanes, Volumes, Timings
7: US 64 & I-26 SB Off-Ramp

2040 Design Year - Build 8/6 Lanes Combination

Timing Plan: AM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	SBL	SBR	NWL	NWR
Act Effect Green (s)		150.0	150.0		107.4			32.6		
Actuated g/C Ratio		1.00	1.00		0.72			0.22		
v/c Ratio		0.52	0.28		0.84			0.92		
Control Delay		0.1	0.0		17.1			78.0		
Queue Delay		0.0	0.0		0.0			0.0		
Total Delay		0.1	0.0		17.1			78.0		
LOS		A	A		B			E		
Approach Delay		0.0			17.1					
Approach LOS		A			B					
Queue Length 50th (ft)		0	0		495			306		
Queue Length 95th (ft)		m0	m0		m442			#382		
Internal Link Dist (ft)		648			711		724		228	
Turn Bay Length (ft)			400					500		
Base Capacity (vph)		3486	1473		2572			679		
Starvation Cap Reductn		0	0		0			0		
Spillback Cap Reductn		0	0		0			0		
Storage Cap Reductn		0	0		0			0		
Reduced v/c Ratio		0.52	0.28		0.84			0.83		

Intersection Summary

Area Type: Other
 Cycle Length: 150
 Actuated Cycle Length: 150
 Offset: 0 (0%), Referenced to phase 6:WBT, Start of Green, Master Intersection
 Natural Cycle: 75
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.92
 Intersection Signal Delay: 16.4
 Intersection LOS: B
 Intersection Capacity Utilization 90.3%
 ICU Level of Service E
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.

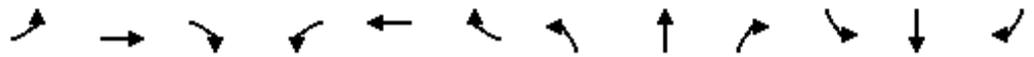
Splits and Phases: 7: US 64 & I-26 SB Off-Ramp



Lanes, Volumes, Timings
8: US 64 & SR 1634 (Carolina Village Rd)

2040 Design Year - Build 8/6 Lanes Combination

Timing Plan: AM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	65	1609	79	234	2002	203	75	11	180	230	15	92
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		1%			-3%			3%				-1%
Storage Length (ft)	100		0	100		0	0		0	0		150
Storage Lanes	1		0	1		1	0		0	0		1
Taper Length (ft)	100		100	100		100	100		100	100		100
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.993				0.850		0.908				0.850
Flt Protected	0.950			0.950				0.986			0.955	
Satd. Flow (prot)	1761	3497	0	1796	3592	1607	0	1643	0	0	1788	1591
Flt Permitted	0.950			0.950				0.578			0.447	
Satd. Flow (perm)	1761	3497	0	1796	3592	1607	0	963	0	0	837	1591
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		560			728			219			359	
Travel Time (s)		8.5			11.0			5.0			8.2	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	72	1788	88	260	2224	226	83	12	200	256	17	102
Shared Lane Traffic (%)												
Lane Group Flow (vph)	72	1876	0	260	2224	226	0	295	0	0	273	102
Enter Blocked Intersection	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	0.98	0.98	0.98	1.02	1.02	1.02	0.99	0.99	0.99
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Prot			Prot		Perm	Perm			Perm		pm+ov
Protected Phases	5	2		1	6			8			4	5
Permitted Phases						6	8			4		4
Detector Phase	5	2		1	6	6	8	8		4	4	5
Switch Phase												
Minimum Initial (s)	7.0	12.0		7.0	12.0	12.0	7.0	7.0		7.0	7.0	7.0
Minimum Split (s)	13.0	18.0		13.0	19.0	19.0	13.0	13.0		13.0	13.0	13.0
Total Split (s)	13.0	78.0	0.0	24.0	89.0	89.0	48.0	48.0	0.0	48.0	48.0	13.0
Total Split (%)	8.7%	52.0%	0.0%	16.0%	59.3%	59.3%	32.0%	32.0%	0.0%	32.0%	32.0%	8.7%
Maximum Green (s)	7.1	72.4		18.6	82.8	82.8	42.2	42.2		42.1	42.1	7.1
Yellow Time (s)	3.0	4.4		3.0	4.8	4.8	3.4	3.4		3.6	3.6	3.0
All-Red Time (s)	2.9	1.2		2.4	1.4	1.4	2.4	2.4		2.3	2.3	2.9
Lost Time Adjust (s)	-0.9	-0.6	-2.0	-0.4	-1.2	-1.2	-2.0	-0.8	-2.0	-2.0	-0.9	-0.9
Total Lost Time (s)	5.0	5.0	2.0	5.0	5.0	5.0	3.8	5.0	2.0	3.9	5.0	5.0
Lead/Lag	Lag	Lag		Lead	Lead	Lead						Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes						Yes
Vehicle Extension (s)	1.0	2.0		1.0	2.0	2.0	1.0	1.0		1.0	1.0	1.0
Recall Mode	None	C-Max		None	C-Max	C-Max	None	None		None	None	None

Lanes, Volumes, Timings
 8: US 64 & SR 1634 (Carolina Village Rd)

2040 Design Year - Build 8/6 Lanes Combination

Timing Plan: AM Peak

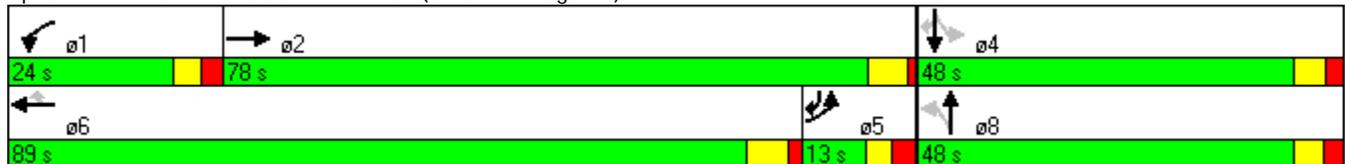


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Act Effct Green (s)	8.0	73.0		19.0	84.0	84.0		43.0			43.0	56.0
Actuated g/C Ratio	0.05	0.49		0.13	0.56	0.56		0.29			0.29	0.37
v/c Ratio	0.77	1.10		1.15	1.11	0.25		1.07			1.14	0.17
Control Delay	113.6	92.1		145.3	81.5	17.4		123.5			147.5	32.5
Queue Delay	0.0	0.0		0.0	39.7	0.0		0.0			0.0	0.0
Total Delay	113.6	92.1		145.3	121.3	17.4		123.5			147.5	32.5
LOS	F	F		F	F	B		F			F	C
Approach Delay		92.9			114.9			123.5			116.2	
Approach LOS		F			F			F			F	
Queue Length 50th (ft)	71	~1094		~298	~1293	98		~318			~310	67
Queue Length 95th (ft)	#160	#1230		m#399	#1427	m139		#511			#497	113
Internal Link Dist (ft)		480			648			139			279	
Turn Bay Length (ft)	100			100								150
Base Capacity (vph)	94	1702		227	2012	900		276			240	594
Starvation Cap Reductn	0	0		0	152	0		0			0	0
Spillback Cap Reductn	0	0		0	0	0		0			0	0
Storage Cap Reductn	0	0		0	0	0		0			0	0
Reduced v/c Ratio	0.77	1.10		1.15	1.20	0.25		1.07			1.14	0.17

Intersection Summary

Area Type: Other
 Cycle Length: 150
 Actuated Cycle Length: 150
 Offset: 145 (97%), Referenced to phase 2:EBT and 6:WBT, Start of Green
 Natural Cycle: 200
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.15
 Intersection Signal Delay: 107.4 Intersection LOS: F
 Intersection Capacity Utilization 107.2% ICU Level of Service G
 Analysis Period (min) 15
 ~ Volume exceeds capacity, queue is theoretically infinite.
 Queue shown is maximum after two cycles.
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.

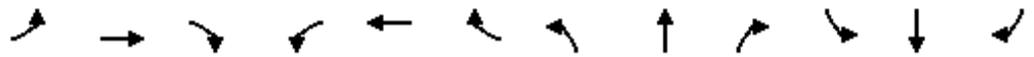
Splits and Phases: 8: US 64 & SR 1634 (Carolina Village Rd)



Lanes, Volumes, Timings
 9: SR 1783 (Upward Rd) & I-26 NB On-Ramp

2040 Design Year - Build 8/6 Lanes Combination

Timing Plan: AM Peak

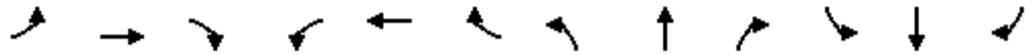


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖↖	↑↑			↑↑		↖	↖	↖			
Volume (vph)	621	558	0	0	705	162	523	0	142	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		-3%			3%			4%			0%	
Storage Length (ft)	275		0	0		0	250		175	0		0
Storage Lanes	1		0	0		0	1		1	0		0
Taper Length (ft)	100		100	100		100	100		100	100		100
Lane Util. Factor	0.97	0.95	1.00	1.00	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00
Frt					0.972				0.850			
Flt Protected	0.950						0.950	0.950				
Satd. Flow (prot)	3291	3592	0	0	3352	0	1648	1648	1552	0	0	0
Flt Permitted	0.950						0.950	0.950				
Satd. Flow (perm)	3291	3592	0	0	3352	0	1648	1648	1552	0	0	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			45			35			45	
Link Distance (ft)		630			322			532			658	
Travel Time (s)		9.5			4.9			10.4			10.0	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	8%	2%	5%	5%	2%	8%	2%	2%	2%	5%	5%	5%
Adj. Flow (vph)	690	620	0	0	783	180	581	0	158	0	0	0
Shared Lane Traffic (%)							50%					
Lane Group Flow (vph)	690	620	0	0	963	0	290	291	158	0	0	0
Enter Blocked Intersection	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		28			28			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	0.98	0.98	0.98	1.02	1.02	1.02	1.03	1.03	1.03	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Prot						Split		Prot			
Protected Phases	5	2			6		8	8	8			
Permitted Phases												
Detector Phase	5	2			6		8	8	8			
Switch Phase												
Minimum Initial (s)	7.0	14.0			14.0		7.0	7.0	7.0			
Minimum Split (s)	14.0	22.0			21.0		19.0	19.0	19.0			
Total Split (s)	27.0	65.0	0.0	0.0	38.0	0.0	25.0	25.0	25.0	0.0	0.0	0.0
Total Split (%)	30.0%	72.2%	0.0%	0.0%	42.2%	0.0%	27.8%	27.8%	27.8%	0.0%	0.0%	0.0%
Maximum Green (s)	20.7	58.8			32.4		18.9	18.9	18.9			
Yellow Time (s)	3.0	5.1			4.6		3.6	3.6	3.6			
All-Red Time (s)	3.3	1.1			1.0		2.5	2.5	2.5			
Lost Time Adjust (s)	-1.3	-1.2	0.0	0.0	-0.6	-2.0	-1.1	-1.1	-1.1	-2.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	4.0	4.0	5.0	2.0	5.0	5.0	5.0	2.0	4.0	4.0
Lead/Lag	Lag				Lead							
Lead-Lag Optimize?	Yes				Yes							
Vehicle Extension (s)	2.0	2.0			2.0		2.0	2.0	2.0			
Minimum Gap (s)	3.0	3.1			3.1		3.0	3.0	3.0			

Lanes, Volumes, Timings
 9: SR 1783 (Upward Rd) & I-26 NB On-Ramp

2040 Design Year - Build 8/6 Lanes Combination

Timing Plan: AM Peak

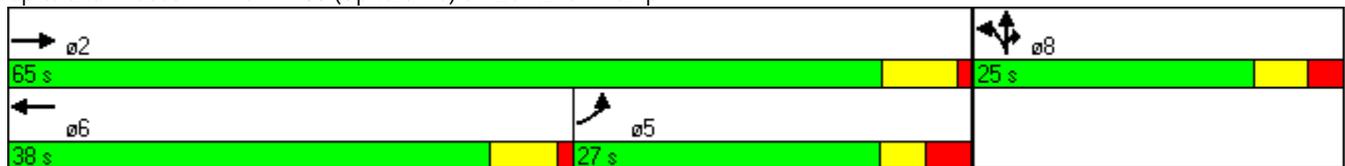


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Time Before Reduce (s)	0.0	15.0			15.0		0.0	0.0	0.0			
Time To Reduce (s)	0.0	45.0			45.0		0.0	0.0	0.0			
Recall Mode	None	C-Max			C-Max		None	None	None			
Act Effct Green (s)	22.0	61.3			34.3		18.7	18.7	18.7			
Actuated g/C Ratio	0.24	0.68			0.38		0.21	0.21	0.21			
v/c Ratio	0.86	0.25			0.75		0.85	0.85	0.49			
Control Delay	33.3	1.8			29.2		57.2	57.6	36.7			
Queue Delay	0.0	0.0			0.0		0.0	0.0	0.0			
Total Delay	33.3	1.8			29.2		57.2	57.6	36.7			
LOS	C	A			C		E	E	D			
Approach Delay		18.4			29.2			53.0				
Approach LOS		B			C			D				
Queue Length 50th (ft)	206	14			251		164	165	78			
Queue Length 95th (ft)	#289	24			329		#297	#298	139			
Internal Link Dist (ft)		550			242			452			578	
Turn Bay Length (ft)	275						250		175			
Base Capacity (vph)	804	2447			1277		366	366	345			
Starvation Cap Reductn	0	0			0		0	0	0			
Spillback Cap Reductn	0	0			0		0	0	0			
Storage Cap Reductn	0	0			0		0	0	0			
Reduced v/c Ratio	0.86	0.25			0.75		0.79	0.80	0.46			

Intersection Summary

Area Type: Other
 Cycle Length: 90
 Actuated Cycle Length: 90
 Offset: 7 (8%), Referenced to phase 2:EBT and 6:WBT, Start of Green
 Natural Cycle: 65
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.86
 Intersection Signal Delay: 30.3
 Intersection LOS: C
 Intersection Capacity Utilization 69.4%
 ICU Level of Service C
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 9: SR 1783 (Upward Rd) & I-26 NB On-Ramp



Lanes, Volumes, Timings

2040 Design Year - Build 8/6 Lanes Combination

10: SR 1783 (Upward Rd) & I-26 SB Off-Ramp

Timing Plan: AM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑	↗	↖	↑↑						↖	↗↗
Volume (vph)	0	1021	508	181	1047	0	0	0	0	158	0	796
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		4%			-4%			0%			5%	
Storage Length (ft)	275		0	150		0	0		0	250		0
Storage Lanes	1		1	1		0	0		0	1		2
Taper Length (ft)	100		100	100		100	100		100	100		100
Lane Util. Factor	1.00	0.91	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	0.88
Frt		0.850										0.850
Flt Protected				0.950							0.950	
Satd. Flow (prot)	0	4841	1507	1753	3507	0	0	0	0	0	1676	2639
Flt Permitted				0.145							0.950	
Satd. Flow (perm)	0	4841	1507	268	3507	0	0	0	0	0	1676	2639
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			45			45			35	
Link Distance (ft)		549			630			547			651	
Travel Time (s)		8.3			9.5			8.3			12.7	
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
Adj. Flow (vph)	0	1134	564	201	1163	0	0	0	0	176	0	884
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1134	564	201	1163	0	0	0	0	0	176	884
Enter Blocked Intersection	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		16			16			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.03	1.03	1.03	0.97	0.97	0.97	1.00	1.00	1.00	1.03	1.03	1.03
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type			Perm	pm+pt						Split		Prot
Protected Phases		2		1	6					4	4	4
Permitted Phases			2	6								
Detector Phase		2	2	1	6					4	4	4
Switch Phase												
Minimum Initial (s)		14.0	14.0	7.0	14.0					7.0	7.0	7.0
Minimum Split (s)		20.0	20.0	14.0	21.0					13.0	13.0	13.0
Total Split (s)	0.0	41.0	41.0	14.0	55.0	0.0	0.0	0.0	0.0	35.0	35.0	35.0
Total Split (%)	0.0%	45.6%	45.6%	15.6%	61.1%	0.0%	0.0%	0.0%	0.0%	38.9%	38.9%	38.9%
Maximum Green (s)		35.4	35.4	7.6	48.6					29.1	29.1	29.1
Yellow Time (s)		4.5	4.5	3.0	5.2					3.6	3.6	3.6
All-Red Time (s)		1.1	1.1	3.4	1.2					2.3	2.3	2.3
Lost Time Adjust (s)	-2.0	-0.6	-0.6	-1.4	-1.4	-2.0	0.0	0.0	0.0	-2.0	-0.9	-0.9
Total Lost Time (s)	2.0	5.0	5.0	5.0	5.0	2.0	4.0	4.0	4.0	3.9	5.0	5.0
Lead/Lag		Lag	Lag	Lead								
Lead-Lag Optimize?		Yes	Yes	Yes								
Vehicle Extension (s)		2.0	2.0	2.0	2.0					2.0	2.0	2.0
Minimum Gap (s)		3.1	3.1	3.0	3.1					3.0	3.0	3.0
Time Before Reduce (s)		15.0	15.0	0.0	15.0					0.0	0.0	0.0

Lanes, Volumes, Timings
 10: SR 1783 (Upward Rd) & I-26 SB Off-Ramp

2040 Design Year - Build 8/6 Lanes Combination

Timing Plan: AM Peak

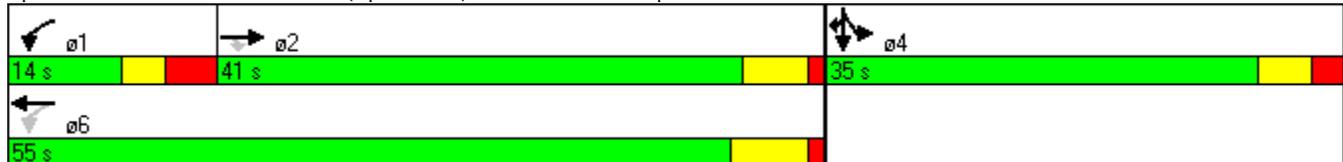


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Time To Reduce (s)		45.0	45.0	0.0	45.0					0.0	0.0	0.0
Recall Mode		C-Max	C-Max	None	C-Max					None	None	None
Act Effect Green (s)		36.1	36.1	50.0	50.0						30.0	30.0
Actuated g/C Ratio		0.40	0.40	0.56	0.56						0.33	0.33
v/c Ratio		0.58	0.93	0.68	0.60						0.31	1.00
Control Delay		22.6	51.0	19.2	3.6						24.3	62.9
Queue Delay		0.0	0.0	0.0	0.0						0.0	0.0
Total Delay		22.6	51.0	19.2	3.6						24.3	62.9
LOS		C	D	B	A						C	E
Approach Delay		32.0			5.9						56.5	
Approach LOS		C			A						E	
Queue Length 50th (ft)		180	301	21	47						74	-285
Queue Length 95th (ft)		225	#512	m51	56						128	#430
Internal Link Dist (ft)		469			550			467			571	
Turn Bay Length (ft)				150								
Base Capacity (vph)		1943	605	297	1948						559	880
Starvation Cap Reductn		0	0	0	0						0	0
Spillback Cap Reductn		0	0	0	0						0	0
Storage Cap Reductn		0	0	0	0						0	0
Reduced v/c Ratio		0.58	0.93	0.68	0.60						0.31	1.00

Intersection Summary

Area Type: Other
 Cycle Length: 90
 Actuated Cycle Length: 90
 Offset: 12 (13%), Referenced to phase 2:EBT and 6:WBTL, Start of Green
 Natural Cycle: 90
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.00
 Intersection Signal Delay: 29.7
 Intersection LOS: C
 Intersection Capacity Utilization 69.4%
 ICU Level of Service C
 Analysis Period (min) 15
 ~ Volume exceeds capacity, queue is theoretically infinite.
 Queue shown is maximum after two cycles.
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 10: SR 1783 (Upward Rd) & I-26 SB Off-Ramp

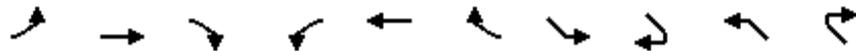


Lanes, Volumes, Timings

2040 Design Year - Build 8/6 Lanes Combination

1: NC 146 (Long Shoals Rd) & I-26 NB On-Ramp

Timing Plan: PM Peak

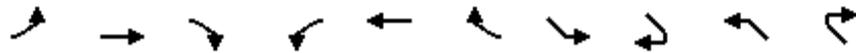


Lane Group	EBL	EBT	EBR2	WBL	WBT	WBR2	SEL	SER2	NWL	NWR2
Lane Configurations										
Volume (vph)	448	1170	391	445	886	842	875	352	386	579
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		3%			-7%					
Storage Length (ft)	450			350			0		675	
Storage Lanes	1			2			2		1	
Taper Length (ft)	100			100			100		100	
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	1.00	0.97	1.00
Frt			0.850			0.850		0.850		0.850
Flt Protected	0.950			0.950			0.950		0.950	
Satd. Flow (prot)	3224	3452	1487	3387	3663	1562	3519	1607	3434	1599
Flt Permitted	0.950			0.950			0.950		0.950	
Satd. Flow (perm)	3224	3452	1487	3387	3663	1562	3519	1607	3434	1599
Right Turn on Red			No			No		No		No
Satd. Flow (RTOR)										
Link Speed (mph)		45			45					
Link Distance (ft)		1009			964					
Travel Time (s)		15.3			14.6					
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	7%	3%	7%	7%	2%	7%	2%	3%	3%	2%
Adj. Flow (vph)	498	1300	434	494	984	936	972	391	429	643
Shared Lane Traffic (%)										
Lane Group Flow (vph)	498	1300	434	494	984	936	972	391	429	643
Enter Blocked Intersection	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Right	Left	Right
Median Width(ft)		24			24					
Link Offset(ft)		0			0					
Crosswalk Width(ft)		16			16					
Two way Left Turn Lane										
Headway Factor	1.02	1.02	1.02	0.96	0.96	0.96	0.97	0.97	0.99	0.99
Turning Speed (mph)	15		9	15		9	15	9	15	9
Turn Type	Prot		Free	Prot		Free	Prot	custom	Prot	Free
Protected Phases	5	2		1	6		4		8	
Permitted Phases			Free			Free		4		Free
Detector Phase	5	2		1	6		4	4	8	
Switch Phase										
Minimum Initial (s)	7.0	12.0		7.0	12.0		7.0	7.0	7.0	
Minimum Split (s)	16.0	20.0		15.0	21.0		16.0	16.0	15.0	
Total Split (s)	24.0	47.0	0.0	19.0	42.0	0.0	34.0	34.0	34.0	0.0
Total Split (%)	24.0%	47.0%	0.0%	19.0%	42.0%	0.0%	34.0%	34.0%	34.0%	0.0%
Maximum Green (s)	15.8	39.5		11.3	33.0		25.9	25.9	26.0	
Yellow Time (s)	3.4	4.3		4.0	5.2		3.8	3.8	3.7	
All-Red Time (s)	4.8	3.2		3.7	3.8		4.3	4.3	4.3	
Lost Time Adjust (s)	-3.2	-2.5	-2.5	-2.7	-4.0	-4.0	-3.1	-3.1	-3.0	0.0
Total Lost Time (s)	5.0	5.0	1.5	5.0	5.0	0.0	5.0	5.0	5.0	4.0
Lead/Lag	Lead	Lag		Lead	Lag					
Lead-Lag Optimize?	Yes	Yes		Yes	Yes					
Vehicle Extension (s)	2.0	6.0		2.0	6.0		2.0	2.0	2.0	
Minimum Gap (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	

Lanes, Volumes, Timings
 1: NC 146 (Long Shoals Rd) & I-26 NB On-Ramp

2040 Design Year - Build 8/6 Lanes Combination

Timing Plan: PM Peak

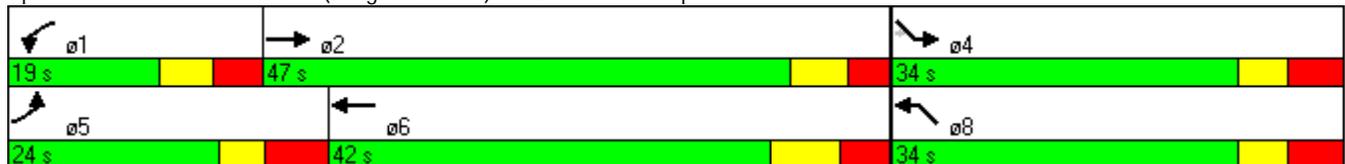


Lane Group	EBL	EBT	EBR2	WBL	WBT	WBR2	SEL	SER2	NWL	NWR2
Time Before Reduce (s)	0.0	15.0		0.0	15.0		0.0	0.0	0.0	
Time To Reduce (s)	0.0	30.0		0.0	30.0		0.0	0.0	0.0	
Recall Mode	None	C-Max		None	C-Max		None	None	None	
Act Effect Green (s)	18.8	42.0	100.0	14.0	37.2	100.0	29.0	29.0	29.0	100.0
Actuated g/C Ratio	0.19	0.42	1.00	0.14	0.37	1.00	0.29	0.29	0.29	1.00
v/c Ratio	0.82	0.90	0.29	1.04	0.72	0.60	0.95	0.84	0.43	0.40
Control Delay	51.5	36.7	0.5	95.6	30.7	1.7	54.4	51.0	30.5	0.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	51.5	36.7	0.5	95.6	30.7	1.7	54.4	51.0	30.5	0.8
LOS	D	D	A	F	C	A	D	D	C	A
Approach Delay	32.9			32.7						
Approach LOS	C			C						
Queue Length 50th (ft)	158	396	0	~176	280	0	312	233	114	0
Queue Length 95th (ft)	#233	#537	0	#278	355	0	#441	#392	159	0
Internal Link Dist (ft)	929			884						
Turn Bay Length (ft)	450		300	350		300		425	675	575
Base Capacity (vph)	613	1450	1487	474	1362	1562	1021	466	996	1599
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.81	0.90	0.29	1.04	0.72	0.60	0.95	0.84	0.43	0.40

Intersection Summary

Area Type: Other
 Cycle Length: 100
 Actuated Cycle Length: 100
 Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green
 Natural Cycle: 90
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.04
 Intersection Signal Delay: 33.7
 Intersection LOS: C
 Intersection Capacity Utilization 82.5%
 ICU Level of Service E
 Analysis Period (min) 15
 ~ Volume exceeds capacity, queue is theoretically infinite.
 Queue shown is maximum after two cycles.
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 1: NC 146 (Long Shoals Rd) & I-26 NB On-Ramp



Lanes, Volumes, Timings
2: I-26 NB On-Ramp & US 25 (Asheville Highway)

2040 Design Year - Build 8/6 Lanes Combination

Timing Plan: PM Peak

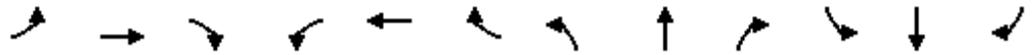


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				↖		↖↖	↖	↕↕			↕↕	↖
Volume (vph)	0	0	0	187	0	598	897	1449	0	0	1359	322
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			2%			-1%			2%	
Storage Length (ft)	0		0	0		150	0		0	0		300
Storage Lanes	0		0	1		2	1		0	0		1
Taper Length (ft)	100		100	100		100	100		100	100		100
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	0.88	1.00	0.95	1.00	1.00	0.95	1.00
Frt						0.850						0.850
Flt Protected				0.950			0.950					
Satd. Flow (prot)	0	0	0	1735	0	2706	1680	3489	0	0	3436	1480
Flt Permitted				0.950			0.950					
Satd. Flow (perm)	0	0	0	1735	0	2706	1680	3489	0	0	3436	1480
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			35			45			45	
Link Distance (ft)		533			612			601			596	
Travel Time (s)		8.1			11.9			9.1			9.0	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	5%	5%	5%	3%	5%	4%	8%	4%	5%	5%	4%	8%
Adj. Flow (vph)	0	0	0	208	0	664	997	1610	0	0	1510	358
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	208	0	664	997	1610	0	0	1510	358
Enter Blocked Intersection	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.01	1.01	1.01	0.99	0.99	0.99	1.01	1.01	1.01
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type				Prot		custom	Prot					Free
Protected Phases				4			5	2			6	
Permitted Phases						4						Free
Detector Phase				4		4	5	2			6	
Switch Phase												
Minimum Initial (s)				7.0		7.0	7.0	12.0			12.0	
Minimum Split (s)				13.0		13.0	14.0	19.0			18.0	
Total Split (s)	0.0	0.0	0.0	20.0	0.0	20.0	50.0	90.0	0.0	0.0	40.0	0.0
Total Split (%)	0.0%	0.0%	0.0%	18.2%	0.0%	18.2%	45.5%	81.8%	0.0%	0.0%	36.4%	0.0%
Maximum Green (s)				14.0		14.0	43.6	83.9			34.7	
Yellow Time (s)				3.7		3.7	3.0	4.6			4.3	
All-Red Time (s)				2.3		2.3	3.4	1.5			1.0	
Lost Time Adjust (s)	0.0	0.0	-2.0	-2.0	0.0	-2.0	-1.4	-1.1	0.0	-2.0	-0.3	0.0
Total Lost Time (s)	4.0	4.0	2.0	4.0	4.0	4.0	5.0	5.0	4.0	2.0	5.0	4.0
Lead/Lag							Lag				Lead	
Lead-Lag Optimize?							Yes				Yes	
Vehicle Extension (s)				2.0		2.0	2.0	8.0			8.0	
Minimum Gap (s)				3.0		3.0	3.0	5.5			5.5	

Lanes, Volumes, Timings
 2: I-26 NB On-Ramp & US 25 (Asheville Highway)

2040 Design Year - Build 8/6 Lanes Combination

Timing Plan: PM Peak

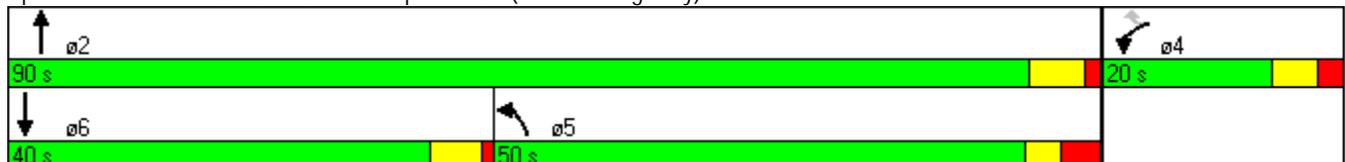


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Time Before Reduce (s)				0.0		0.0	0.0	15.0			15.0	
Time To Reduce (s)				0.0		0.0	0.0	50.0			50.0	
Recall Mode				None		None	None	C-Max			C-Max	
Act Effect Green (s)				16.0		16.0	45.0	85.0			35.0	110.0
Actuated g/C Ratio				0.15		0.15	0.41	0.77			0.32	1.00
v/c Ratio				0.83		1.69	1.45	0.60			1.38	0.24
Control Delay				72.1		350.3	227.9	7.7			209.1	0.4
Queue Delay				0.0		0.0	5.7	0.8			0.0	0.0
Total Delay				72.1		350.3	233.7	8.5			209.1	0.4
LOS				E		F	F	A			F	A
Approach Delay								94.6			169.1	
Approach LOS								F			F	
Queue Length 50th (ft)				145		~390	~944	186			~746	0
Queue Length 95th (ft)				#271		#517	m#562	m136			#884	0
Internal Link Dist (ft)		453				532		521			516	
Turn Bay Length (ft)						150						300
Base Capacity (vph)				252		394	687	2696			1093	1480
Starvation Cap Reductn				0		0	6	704			0	0
Spillback Cap Reductn				0		0	0	0			0	0
Storage Cap Reductn				0		0	0	0			0	0
Reduced v/c Ratio				0.83		1.69	1.46	0.81			1.38	0.24

Intersection Summary

Area Type: Other
 Cycle Length: 110
 Actuated Cycle Length: 110
 Offset: 66 (60%), Referenced to phase 2:NBT and 6:SBT, Start of Green
 Natural Cycle: 170
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.69
 Intersection Signal Delay: 151.5 Intersection LOS: F
 Intersection Capacity Utilization 112.7% ICU Level of Service H
 Analysis Period (min) 15
 ~ Volume exceeds capacity, queue is theoretically infinite.
 Queue shown is maximum after two cycles.
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: I-26 NB On-Ramp & US 25 (Asheville Highway)



Lanes, Volumes, Timings
3: I-26 SB Off-Ramp & US 25 (Asheville Highway)

2040 Design Year - Build 8/6 Lanes Combination

Timing Plan: PM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘		↘					↕	↘	↘	↕	
Volume (vph)	329	0	724	0	0	0	0	2017	187	474	1072	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		3%			0%			4%			1%	
Storage Length (ft)	0		100	0		0	0		500	0		0
Storage Lanes	1		1	0		0	0		1	1		0
Taper Length (ft)	100		100	100		100	100		100	100		100
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt			0.850						0.850			
Flt Protected	0.950									0.950		
Satd. Flow (prot)	1710	0	1544	0	0	0	0	3435	1465	1663	3487	0
Flt Permitted	0.950									0.950		
Satd. Flow (perm)	1710	0	1544	0	0	0	0	3435	1465	1663	3487	0
Right Turn on Red			Yes			No			No			No
Satd. Flow (RTOR)			94									
Link Speed (mph)		35			45			45			45	
Link Distance (ft)		471			598			795			601	
Travel Time (s)		9.2			9.1			12.0			9.1	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	4%	5%	3%	5%	5%	5%	5%	3%	8%	8%	3%	5%
Adj. Flow (vph)	366	0	804	0	0	0	0	2241	208	527	1191	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	366	0	804	0	0	0	0	2241	208	527	1191	0
Enter Blocked Intersection	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.02	1.02	1.02	1.00	1.00	1.00	1.03	1.03	1.03	1.01	1.01	1.01
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Prot		custom						Free	Prot		
Protected Phases	4		4					2		1	6	
Permitted Phases									Free			
Detector Phase	4		4					2		1	6	
Switch Phase												
Minimum Initial (s)	7.0		7.0					12.0		7.0	12.0	
Minimum Split (s)	14.0		14.0					19.0		14.0	19.0	
Total Split (s)	35.0	0.0	35.0	0.0	0.0	0.0	0.0	53.0	0.0	22.0	75.0	0.0
Total Split (%)	31.8%	0.0%	31.8%	0.0%	0.0%	0.0%	0.0%	48.2%	0.0%	20.0%	68.2%	0.0%
Maximum Green (s)	29.0		29.0					47.3		15.5	69.3	
Yellow Time (s)	4.0		4.0					4.7		4.0	4.7	
All-Red Time (s)	2.0		2.0					1.0		2.5	1.0	
Lost Time Adjust (s)	-1.0	-2.0	-1.0	-2.0	-2.0	-2.0	-2.0	-0.7	-0.7	-1.5	-1.7	-2.0
Total Lost Time (s)	5.0	2.0	5.0	2.0	2.0	2.0	2.0	5.0	3.3	5.0	4.0	2.0
Lead/Lag								Lead		Lag		
Lead-Lag Optimize?								Yes		Yes		
Vehicle Extension (s)	2.0		2.0					8.0		2.0	8.0	
Minimum Gap (s)	3.0		3.0					5.5		3.0	5.5	

Lanes, Volumes, Timings
4: I-26 NB Ramps & Balfour Pkwy

2040 Design Year - Build 8/6 Lanes Combination

Timing Plan: PM Peak

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations			 			 	 	 			 	 
Volume (vph)	0	0	704	0	0	287	454	1697	0	0	832	796
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	250		0	0		250
Storage Lanes	0		2	0		1	1		0	0		1
Taper Length (ft)	100		100	100		100	100		100	100		100
Lane Util. Factor	1.00	1.00	0.88	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt			0.850			0.865						0.850
Flt Protected							0.950					
Satd. Flow (prot)	0	0	2787	0	0	1611	1671	3539	0	0	3539	1495
Flt Permitted							0.950					
Satd. Flow (perm)	0	0	2787	0	0	1611	1671	3539	0	0	3539	1495
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		25			45			45			45	
Link Distance (ft)		393			429			690			522	
Travel Time (s)		10.7			6.5			10.5			7.9	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	5%	5%	2%	5%	5%	2%	8%	2%	5%	5%	2%	8%
Adj. Flow (vph)	0	0	782	0	0	319	504	1886	0	0	924	884
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	782	0	0	319	504	1886	0	0	924	884
Enter Blocked Intersection	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type			Over			Free	Prot					Perm
Protected Phases			5				5	Free			6	
Permitted Phases						Free						6
Detector Phase			5				5				6	6
Switch Phase												
Minimum Initial (s)			7.0				7.0				12.0	12.0
Minimum Split (s)			14.0				14.0				19.0	19.0
Total Split (s)	0.0	0.0	30.0	0.0	0.0	0.0	30.0	0.0	0.0	0.0	60.0	60.0
Total Split (%)	0.0%	0.0%	33.3%	0.0%	0.0%	0.0%	33.3%	0.0%	0.0%	0.0%	66.7%	66.7%
Maximum Green (s)			23.0				23.0				53.0	53.0
Yellow Time (s)			5.0				5.0				5.0	5.0
All-Red Time (s)			2.0				2.0				2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	2.0	2.0	5.0	2.0	2.0	2.0	5.0	2.0	2.0	2.0	5.0	5.0
Lead/Lag			Lead				Lead				Lag	Lag
Lead-Lag Optimize?			Yes				Yes				Yes	Yes
Vehicle Extension (s)			3.0				3.0				3.0	3.0
Recall Mode			None				None				C-Max	C-Max
Act Effect Green (s)			25.0			90.0	25.0	90.0			55.0	55.0

Lanes, Volumes, Timings
4: I-26 NB Ramps & Balfour Pkwy

2040 Design Year - Build 8/6 Lanes Combination

Timing Plan: PM Peak

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Actuated g/C Ratio			0.28			1.00	0.28	1.00			0.61	0.61
v/c Ratio			1.01			0.20	1.09	0.53			0.43	0.97
Control Delay			68.8			0.3	85.7	0.3			10.0	41.5
Queue Delay			0.0			0.0	0.0	0.0			0.0	0.0
Total Delay			68.8			0.3	85.7	0.3			10.0	41.5
LOS			E			A	F	A			A	D
Approach Delay								18.3			25.4	
Approach LOS								B			C	
Queue Length 50th (ft)			~256			0	~332	0			132	436
Queue Length 95th (ft)			#393			0	m#442	m0			173	#738
Internal Link Dist (ft)		313			349			610			442	
Turn Bay Length (ft)							250					250
Base Capacity (vph)			774			1611	464	3539			2163	914
Starvation Cap Reductn			0			0	0	0			0	0
Spillback Cap Reductn			0			0	0	0			0	0
Storage Cap Reductn			0			0	0	0			0	0
Reduced v/c Ratio			1.01			0.20	1.09	0.53			0.43	0.97

Intersection Summary

Area Type: Other
 Cycle Length: 90
 Actuated Cycle Length: 90
 Offset: 51 (57%), Referenced to phase 6:SBT, Start of Green
 Natural Cycle: 90
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.09
 Intersection Signal Delay: 27.1 Intersection LOS: C
 Intersection Capacity Utilization 82.8% ICU Level of Service E
 Analysis Period (min) 15
 ~ Volume exceeds capacity, queue is theoretically infinite.
 Queue shown is maximum after two cycles.
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: I-26 NB Ramps & Balfour Pkwy



Lanes, Volumes, Timings
5: I-26 SB Ramps & Balfour Pkwy

2040 Design Year - Build 8/6 Lanes Combination

Timing Plan: PM Peak

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations						 		 			 	
Volume (vph)	0	0	343	0	0	836	0	1315	727	213	1323	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	0		250	250		0
Storage Lanes	0		1	0		2	0		1	1		0
Taper Length (ft)	100		100	100		100	100		100	100		100
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	0.88	1.00	0.95	1.00	1.00	0.95	1.00
Frt			0.865			0.850			0.850			
Flt Protected										0.950		
Satd. Flow (prot)	0	0	1611	0	0	2787	0	3539	1495	1671	3539	0
Flt Permitted										0.950		
Satd. Flow (perm)	0	0	1611	0	0	2787	0	3539	1495	1671	3539	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			25			45			45	
Link Distance (ft)		642			361			480			690	
Travel Time (s)		9.7			9.8			7.3			10.5	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	5%	5%	2%	5%	5%	2%	5%	2%	8%	8%	2%	5%
Adj. Flow (vph)	0	0	381	0	0	929	0	1461	808	237	1470	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	381	0	0	929	0	1461	808	237	1470	0
Enter Blocked Intersection	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type			Free			Over			Perm	Prot		
Protected Phases						1		2		1	Free	
Permitted Phases			Free						2			
Detector Phase						1		2	2	1		
Switch Phase												
Minimum Initial (s)						7.0		12.0	12.0	7.0		
Minimum Split (s)						14.0		19.0	19.0	14.0		
Total Split (s)	0.0	0.0	0.0	0.0	0.0	35.0	0.0	55.0	55.0	35.0	0.0	0.0
Total Split (%)	0.0%	0.0%	0.0%	0.0%	0.0%	38.9%	0.0%	61.1%	61.1%	38.9%	0.0%	0.0%
Maximum Green (s)						28.0		48.0	48.0	28.0		
Yellow Time (s)						5.0		5.0	5.0	5.0		
All-Red Time (s)						2.0		2.0	2.0	2.0		
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	2.0	2.0	2.0	2.0	2.0	5.0	2.0	5.0	5.0	5.0	2.0	2.0
Lead/Lag						Lead		Lag	Lag	Lead		
Lead-Lag Optimize?						Yes		Yes	Yes	Yes		
Vehicle Extension (s)						3.0		3.0	3.0	3.0		
Recall Mode						None		C-Max	C-Max	None		
Act Effect Green (s)			90.0			30.0		50.0	50.0	30.0	90.0	

Lanes, Volumes, Timings
5: I-26 SB Ramps & Balfour Pkwy

2040 Design Year - Build 8/6 Lanes Combination

Timing Plan: PM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Actuated g/C Ratio			1.00			0.33		0.56	0.56	0.33	1.00	
v/c Ratio			0.24			1.00		0.74	0.97	0.43	0.42	
Control Delay			0.3			61.0		18.1	46.5	18.6	0.3	
Queue Delay			0.0			0.0		0.0	0.0	0.0	0.0	
Total Delay			0.3			61.0		18.1	46.5	18.6	0.3	
LOS			A			E		B	D	B	A	
Approach Delay								28.2				2.8
Approach LOS								C				A
Queue Length 50th (ft)			0			297		309	416	96	0	
Queue Length 95th (ft)			0			#446		394	#692	m122	m0	
Internal Link Dist (ft)		562			281			400				610
Turn Bay Length (ft)									250	250		
Base Capacity (vph)			1611			929		1966	831	557	3539	
Starvation Cap Reductn			0			0		0	0	0	0	
Spillback Cap Reductn			0			0		0	0	0	0	
Storage Cap Reductn			0			0		0	0	0	0	
Reduced v/c Ratio			0.24			1.00		0.74	0.97	0.43	0.42	

Intersection Summary

Area Type: Other
 Cycle Length: 90
 Actuated Cycle Length: 90
 Offset: 0 (0%), Referenced to phase 2:NBT, Start of Green
 Natural Cycle: 90
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.00
 Intersection Signal Delay: 23.8 Intersection LOS: C
 Intersection Capacity Utilization 73.9% ICU Level of Service D
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 5: I-26 SB Ramps & Balfour Pkwy



Lanes, Volumes, Timings
6: US 64 & SR 1516 (Francis Rd)

2040 Design Year - Build 8/6 Lanes Combination

Timing Plan: PM Peak

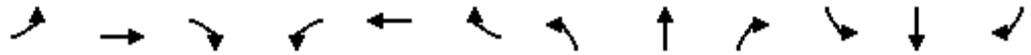


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	115	2206	436	23	1726	7	507	29	33	11	30	136
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		-1%			4%			-1%			2%	
Storage Length (ft)	150		0	125		0	150		150	0		150
Storage Lanes	1		1	1		0	1		1	0		1
Taper Length (ft)	100		100	100		100	100		100	100		100
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00
Ped Bike Factor	0.94											
Frt			0.850		0.999				0.850			0.850
Flt Protected	0.950			0.950			0.950	0.957			0.987	
Satd. Flow (prot)	1778	3557	1591	1734	3465	0	1690	1702	1591	0	1820	1567
Flt Permitted	0.950			0.950			0.950	0.957			0.987	
Satd. Flow (perm)	1668	3557	1591	1734	3465	0	1690	1702	1591	0	1820	1567
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			45			35				35
Link Distance (ft)		836			622			375				406
Travel Time (s)		12.7			9.4			7.3				7.9
Confl. Peds. (#/hr)	1700											
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	128	2451	484	26	1918	8	563	32	37	12	33	151
Shared Lane Traffic (%)							47%					
Lane Group Flow (vph)	128	2451	484	26	1926	0	298	297	37	0	45	151
Enter Blocked Intersection	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			12				12
Link Offset(ft)		0			0			0				0
Crosswalk Width(ft)		16			16			16				16
Two way Left Turn Lane												
Headway Factor	0.99	0.99	0.99	1.03	1.03	1.03	0.99	0.99	0.99	1.01	1.01	1.01
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Prot		Perm	Prot			Split		pm+ov	Split		pm+ov
Protected Phases	5	2		1	6		4	4	1	3	3	5
Permitted Phases			2						4			3
Detector Phase	5	2	2	1	6		4	4	1	3	3	5
Switch Phase												
Minimum Initial (s)	7.0	12.0	12.0	7.0	12.0		7.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	13.0	18.0	18.0	13.0	18.0		14.0	14.0	13.0	14.0	14.0	13.0
Total Split (s)	21.0	112.0	112.0	13.0	104.0	0.0	31.0	31.0	13.0	14.0	14.0	21.0
Total Split (%)	12.4%	65.9%	65.9%	7.6%	61.2%	0.0%	18.2%	18.2%	7.6%	8.2%	8.2%	12.4%
Maximum Green (s)	15.4	106.0	106.0	7.6	98.4		24.4	24.4	7.6	7.5	7.5	15.4
Yellow Time (s)	3.2	4.6	4.6	3.0	4.2		3.9	3.9	3.0	3.7	3.7	3.2
All-Red Time (s)	2.4	1.4	1.4	2.4	1.4		2.7	2.7	2.4	2.8	2.8	2.4
Lost Time Adjust (s)	-0.6	-1.0	-1.0	-0.4	-0.6	-2.0	-1.6	-1.6	-0.4	-2.0	-1.5	-0.6
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	2.0	5.0	5.0	5.0	4.5	5.0	5.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lag	Lag	Lead	Lead	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes

Lanes, Volumes, Timings
6: US 64 & SR 1516 (Francis Rd)

2040 Design Year - Build 8/6 Lanes Combination

Timing Plan: PM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vehicle Extension (s)	1.0	2.0	2.0	1.0	2.0		1.0	1.0	1.0	1.0	1.0	1.0
Recall Mode	None	C-Max	C-Max	None	C-Max		None	None	None	None	None	None
Act Effct Green (s)	15.0	109.9	109.9	7.6	100.0		28.9	28.9	41.5		8.8	22.1
Actuated g/C Ratio	0.09	0.65	0.65	0.04	0.59		0.17	0.17	0.24		0.05	0.13
v/c Ratio	0.82	1.07	0.47	0.34	0.95		1.04	1.03	0.10		0.48	0.74
Control Delay	115.2	59.6	13.1	90.8	43.4		128.6	126.1	52.8		95.4	76.7
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0		0.0	0.0
Total Delay	115.2	59.6	13.1	90.8	43.4		128.6	126.1	52.8		95.4	76.7
LOS	F	E	B	F	D		F	F	D		F	E
Approach Delay		54.6			44.0			123.0			81.0	
Approach LOS		D			D			F			F	
Queue Length 50th (ft)	148	~1601	160	29	1031		~409	~405	33		50	120
Queue Length 95th (ft)	m#254	#1724	249	66	#1187		#623	#615	68		97	183
Internal Link Dist (ft)		756			542			295			326	
Turn Bay Length (ft)	150			125			150		150			150
Base Capacity (vph)	167	2300	1029	82	2038		287	289	392		96	213
Starvation Cap Reductn	0	0	0	0	0		0	0	0		0	0
Spillback Cap Reductn	0	0	0	0	0		0	0	0		0	0
Storage Cap Reductn	0	0	0	0	0		0	0	0		0	0
Reduced v/c Ratio	0.77	1.07	0.47	0.32	0.95		1.04	1.03	0.09		0.47	0.71

Intersection Summary

Area Type: Other
 Cycle Length: 170
 Actuated Cycle Length: 170
 Offset: 33 (19%), Referenced to phase 2:EBT and 6:WBT, Start of Green
 Natural Cycle: 240
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.07
 Intersection Signal Delay: 59.3
 Intersection LOS: E
 Intersection Capacity Utilization 100.8%
 ICU Level of Service G
 Analysis Period (min) 15
 ~ Volume exceeds capacity, queue is theoretically infinite.
 Queue shown is maximum after two cycles.
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.

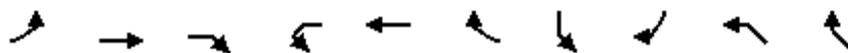
Splits and Phases: 6: US 64 & SR 1516 (Francis Rd)



Lanes, Volumes, Timings
7: US 64 & I-26 SB Off-Ramp

2040 Design Year - Build 8/6 Lanes Combination

Timing Plan: PM Peak

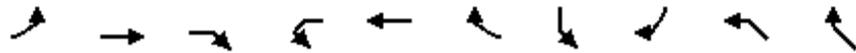


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	SBL	SBR	NWL	NWR
Lane Configurations		↑↑	↗		↑↑			↖↖		
Volume (vph)	0	2093	370	0	1598	0	0	401	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		3%			-3%		-3%		0%	
Storage Length (ft)	0		0	0		0	0	500	0	0
Storage Lanes	0		1	0		0	0	1	0	0
Taper Length (ft)	100		100	100		100	100	100	100	100
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.88	1.00	1.00
Frt			0.850					0.850		
Flt Protected										
Satd. Flow (prot)	0	3486	1473	0	3592	0	0	2828	0	0
Flt Permitted										
Satd. Flow (perm)	0	3486	1473	0	3592	0	0	2828	0	0
Right Turn on Red			No			No		No		
Satd. Flow (RTOR)										
Link Speed (mph)		45			45		35		45	
Link Distance (ft)		728			745		807		350	
Travel Time (s)		11.0			11.3		15.7		5.3	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	5%	2%	8%	5%	2%	5%	5%	2%	5%	5%
Adj. Flow (vph)	0	2326	411	0	1776	0	0	446	0	0
Shared Lane Traffic (%)										
Lane Group Flow (vph)	0	2326	411	0	1776	0	0	446	0	0
Enter Blocked Intersection	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Right	Left	Right
Median Width(ft)		12			12		0		0	
Link Offset(ft)		0			0		0		0	
Crosswalk Width(ft)		16			16		16		16	
Two way Left Turn Lane										
Headway Factor	1.02	1.02	1.02	0.98	0.98	0.98	0.98	0.98	1.00	1.00
Turning Speed (mph)	15		9	15		9	15	9	15	9
Turn Type			Perm					custom		
Protected Phases		Free			6			4		
Permitted Phases			Free							
Detector Phase					6			4		
Switch Phase										
Minimum Initial (s)					12.0			7.0		
Minimum Split (s)					18.0			13.0		
Total Split (s)	0.0	0.0	0.0	0.0	126.0	0.0	0.0	44.0	0.0	0.0
Total Split (%)	0.0%	0.0%	0.0%	0.0%	74.1%	0.0%	0.0%	25.9%	0.0%	0.0%
Maximum Green (s)					120.2			38.9		
Yellow Time (s)					4.8			4.1		
All-Red Time (s)					1.0			1.0		
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	-0.8	0.0	0.0	-0.1	-2.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	5.0	4.0	4.0	5.0	2.0	4.0
Lead/Lag										
Lead-Lag Optimize?										
Vehicle Extension (s)					2.0			1.0		
Recall Mode					C-Max			None		

Lanes, Volumes, Timings
7: US 64 & I-26 SB Off-Ramp

2040 Design Year - Build 8/6 Lanes Combination

Timing Plan: PM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	SBL	SBR	NWL	NWR
Act Effect Green (s)		170.0	170.0		129.5			30.5		
Actuated g/C Ratio		1.00	1.00		0.76			0.18		
v/c Ratio		0.67	0.28		0.65			0.88		
Control Delay		2.0	0.0		13.0			86.8		
Queue Delay		0.0	0.0		0.1			0.6		
Total Delay		2.0	0.0		13.1			87.4		
LOS		A	A		B			F		
Approach Delay		1.7			13.1					
Approach LOS		A			B					
Queue Length 50th (ft)		21	0		443			278		
Queue Length 95th (ft)		m0	m0		m651			336		
Internal Link Dist (ft)		648			665		727		270	
Turn Bay Length (ft)								500		
Base Capacity (vph)		3486	1473		2737			649		
Starvation Cap Reductn		0	0		0			0		
Spillback Cap Reductn		0	0		106			41		
Storage Cap Reductn		0	0		0			0		
Reduced v/c Ratio		0.67	0.28		0.68			0.73		

Intersection Summary

Area Type: Other
 Cycle Length: 170
 Actuated Cycle Length: 170
 Offset: 0 (0%), Referenced to phase 6:WBT, Start of Green, Master Intersection
 Natural Cycle: 60
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.88
 Intersection Signal Delay: 13.5
 Intersection LOS: B
 Intersection Capacity Utilization 103.7%
 ICU Level of Service G
 Analysis Period (min) 15
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 7: US 64 & I-26 SB Off-Ramp



Lanes, Volumes, Timings
8: US 64 & SR 1634 (Carolina Village Rd)

2040 Design Year - Build 8/6 Lanes Combination

Timing Plan: PM Peak

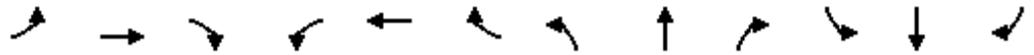


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	92	2002	75	180	1609	230	79	15	234	203	11	65
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		1%			-3%			3%				-1%
Storage Length (ft)	100		0	100		0	0		0	0		150
Storage Lanes	1		0	1		1	0		0	0		1
Taper Length (ft)	100		100	100		100	100		100	100		100
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.995				0.850		0.904				0.850
Flt Protected	0.950			0.950				0.988				0.955
Satd. Flow (prot)	1761	3504	0	1796	3592	1607	0	1639	0	0	1788	1591
Flt Permitted	0.950			0.950				0.630				0.381
Satd. Flow (perm)	1761	3504	0	1796	3592	1607	0	1045	0	0	713	1591
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			45			30				30
Link Distance (ft)		560			728			219				359
Travel Time (s)		8.5			11.0			5.0				8.2
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	102	2224	83	200	1788	256	88	17	260	226	12	72
Shared Lane Traffic (%)												
Lane Group Flow (vph)	102	2307	0	200	1788	256	0	365	0	0	238	72
Enter Blocked Intersection	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0				0
Link Offset(ft)		0			0			0				0
Crosswalk Width(ft)		16			16			16				16
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	0.98	0.98	0.98	1.02	1.02	1.02	0.99	0.99	0.99
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Prot			Prot		Perm	Perm			Perm		pm+ov
Protected Phases	5	2		1	6			8			4	5
Permitted Phases						6	8			4		4
Detector Phase	5	2		1	6	6	8	8		4	4	5
Switch Phase												
Minimum Initial (s)	7.0	12.0		7.0	12.0	12.0	7.0	7.0		7.0	7.0	7.0
Minimum Split (s)	13.0	18.0		13.0	19.0	19.0	13.0	13.0		13.0	13.0	13.0
Total Split (s)	16.0	96.0	0.0	20.0	100.0	100.0	54.0	54.0	0.0	54.0	54.0	16.0
Total Split (%)	9.4%	56.5%	0.0%	11.8%	58.8%	58.8%	31.8%	31.8%	0.0%	31.8%	31.8%	9.4%
Maximum Green (s)	10.1	90.4		14.6	93.8	93.8	48.2	48.2		48.1	48.1	10.1
Yellow Time (s)	3.0	4.4		3.0	4.8	4.8	3.4	3.4		3.6	3.6	3.0
All-Red Time (s)	2.9	1.2		2.4	1.4	1.4	2.4	2.4		2.3	2.3	2.9
Lost Time Adjust (s)	-0.9	-0.6	-2.0	-0.4	-1.2	-1.2	-2.0	-0.8	-2.0	-2.0	-0.9	-0.9
Total Lost Time (s)	5.0	5.0	2.0	5.0	5.0	5.0	3.8	5.0	2.0	3.9	5.0	5.0
Lead/Lag	Lag	Lag		Lead	Lead	Lead						Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes						Yes
Vehicle Extension (s)	1.0	2.0		1.0	2.0	2.0	1.0	1.0		1.0	1.0	1.0
Recall Mode	None	C-Max		None	C-Max	C-Max	None	None		None	None	None

Lanes, Volumes, Timings
 8: US 64 & SR 1634 (Carolina Village Rd)

2040 Design Year - Build 8/6 Lanes Combination

Timing Plan: PM Peak

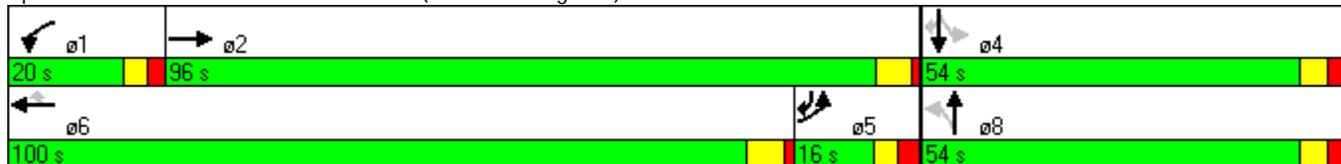


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Act Effect Green (s)	11.0	91.0		15.0	95.0	95.0		49.0			49.0	65.0
Actuated g/C Ratio	0.06	0.54		0.09	0.56	0.56		0.29			0.29	0.38
v/c Ratio	0.89	1.23		1.27	0.89	0.29		1.21			1.16	0.12
Control Delay	136.0	143.5		211.3	29.2	14.7		171.7			162.4	34.7
Queue Delay	0.0	0.0		0.0	6.1	0.0		0.0			0.0	0.0
Total Delay	136.0	143.5		211.3	35.3	14.7		171.7			162.4	34.7
LOS	F	F		F	D	B		F			F	C
Approach Delay		143.2			48.7			171.7			132.8	
Approach LOS		F			D			F			F	
Queue Length 50th (ft)	115	~1662		~278	725	105		~494			~312	52
Queue Length 95th (ft)	#238	#1779		#458	747	165		#711			#501	91
Internal Link Dist (ft)		480			648			139			279	
Turn Bay Length (ft)	100			100								150
Base Capacity (vph)	114	1876		158	2007	898		301			206	608
Starvation Cap Reductn	0	0		0	188	0		0			0	0
Spillback Cap Reductn	0	0		0	0	0		0			0	0
Storage Cap Reductn	0	0		0	0	0		0			0	0
Reduced v/c Ratio	0.89	1.23		1.27	0.98	0.29		1.21			1.16	0.12

Intersection Summary

Area Type: Other
 Cycle Length: 170
 Actuated Cycle Length: 170
 Offset: 158 (93%), Referenced to phase 2:EBT and 6:WBT, Start of Green
 Natural Cycle: 150
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.27
 Intersection Signal Delay: 104.7 Intersection LOS: F
 Intersection Capacity Utilization 115.8% ICU Level of Service H
 Analysis Period (min) 15
 ~ Volume exceeds capacity, queue is theoretically infinite.
 Queue shown is maximum after two cycles.
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 8: US 64 & SR 1634 (Carolina Village Rd)



Lanes, Volumes, Timings
 9: SR 1783 (Upward Rd) & I-26 NB On-Ramp

2040 Design Year - Build 8/6 Lanes Combination

Timing Plan: PM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖↖	↗↗			↖↖		↖	↗	↗			
Volume (vph)	796	686	0	0	542	158	508	0	181	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		-3%			3%			4%			0%	
Storage Length (ft)	275		0	0		0	250		175	0		0
Storage Lanes	1		0	0		0	1		1	0		0
Taper Length (ft)	100		100	100		100	100		100	100		100
Lane Util. Factor	0.97	0.95	1.00	1.00	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00
Frt					0.966				0.850			
Flt Protected	0.950						0.950	0.950				
Satd. Flow (prot)	3291	3592	0	0	3345	0	1648	1648	1552	0	0	0
Flt Permitted	0.950						0.950	0.950				
Satd. Flow (perm)	3291	3592	0	0	3345	0	1648	1648	1552	0	0	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			45			35			45	
Link Distance (ft)		630			322			532			658	
Travel Time (s)		9.5			4.9			10.4			10.0	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	8%	2%	5%	5%	2%	5%	2%	2%	2%	5%	5%	5%
Adj. Flow (vph)	884	762	0	0	602	176	564	0	201	0	0	0
Shared Lane Traffic (%)							50%					
Lane Group Flow (vph)	884	762	0	0	778	0	282	282	201	0	0	0
Enter Blocked Intersection	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		28			28			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	0.98	0.98	0.98	1.02	1.02	1.02	1.03	1.03	1.03	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Prot						Split		Prot			
Protected Phases	5	2			6		8	8	8			
Permitted Phases												
Detector Phase	5	2			6		8	8	8			
Switch Phase												
Minimum Initial (s)	7.0	14.0			14.0		7.0	7.0	7.0			
Minimum Split (s)	14.0	22.0			21.0		19.0	19.0	19.0			
Total Split (s)	33.0	66.0	0.0	0.0	33.0	0.0	24.0	24.0	24.0	0.0	0.0	0.0
Total Split (%)	36.7%	73.3%	0.0%	0.0%	36.7%	0.0%	26.7%	26.7%	26.7%	0.0%	0.0%	0.0%
Maximum Green (s)	26.7	59.8			27.4		17.9	17.9	17.9			
Yellow Time (s)	3.0	5.1			4.6		3.6	3.6	3.6			
All-Red Time (s)	3.3	1.1			1.0		2.5	2.5	2.5			
Lost Time Adjust (s)	-1.3	-1.2	0.0	0.0	-0.6	0.0	-1.1	-1.1	-1.1	-2.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	4.0	4.0	5.0	4.0	5.0	5.0	5.0	2.0	4.0	4.0
Lead/Lag	Lag				Lead							
Lead-Lag Optimize?	Yes				Yes							
Vehicle Extension (s)	2.0	2.0			2.0		2.0	2.0	2.0			
Minimum Gap (s)	3.0	3.1			3.1		3.0	3.0	3.0			

Lanes, Volumes, Timings
 9: SR 1783 (Upward Rd) & I-26 NB On-Ramp

2040 Design Year - Build 8/6 Lanes Combination

Timing Plan: PM Peak

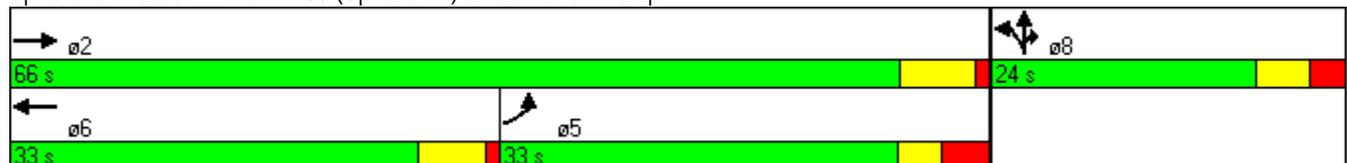


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Time Before Reduce (s)	0.0	15.0			15.0		0.0	0.0	0.0			
Time To Reduce (s)	0.0	45.0			45.0		0.0	0.0	0.0			
Recall Mode	None	C-Max			C-Max		None	None	None			
Act Effct Green (s)	28.0	62.0			29.0		18.0	18.0	18.0			
Actuated g/C Ratio	0.31	0.69			0.32		0.20	0.20	0.20			
v/c Ratio	0.86	0.31			0.72		0.85	0.85	0.65			
Control Delay	25.5	2.3			31.9		59.2	59.2	43.3			
Queue Delay	0.0	0.0			0.0		0.0	0.0	0.0			
Total Delay	25.5	2.3			31.9		59.2	59.2	43.3			
LOS	C	A			C		E	E	D			
Approach Delay		14.8			31.9			55.0				
Approach LOS		B			C			E				
Queue Length 50th (ft)	250	25			207		162	162	104			
Queue Length 95th (ft)	#350	32			275		#297	#297	178			
Internal Link Dist (ft)		550			242			452				578
Turn Bay Length (ft)	275						250		175			
Base Capacity (vph)	1024	2473			1077		348	348	328			
Starvation Cap Reductn	0	0			0		0	0	0			
Spillback Cap Reductn	0	0			0		0	0	0			
Storage Cap Reductn	0	0			0		0	0	0			
Reduced v/c Ratio	0.86	0.31			0.72		0.81	0.81	0.61			

Intersection Summary

Area Type: Other
 Cycle Length: 90
 Actuated Cycle Length: 90
 Offset: 80 (89%), Referenced to phase 2:EBT and 6:WBT, Start of Green
 Natural Cycle: 65
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.86
 Intersection Signal Delay: 28.6
 Intersection LOS: C
 Intersection Capacity Utilization 69.3%
 ICU Level of Service C
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 9: SR 1783 (Upward Rd) & I-26 NB On-Ramp



Lanes, Volumes, Timings

2040 Design Year - Build 8/6 Lanes Combination

10: SR 1783 (Upward Rd) & I-26 SB Off-Ramp

Timing Plan: PM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑	↗	↘	↑↑						↖	↗↗
Volume (vph)	0	1320	523	142	908	0	0	0	0	162	0	621
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		4%			-4%			0%			5%	
Storage Length (ft)	275		0	150		0	0		0	250		0
Storage Lanes	1		1	1		0	0		0	1		2
Taper Length (ft)	100		100	100		100	100		100	100		100
Lane Util. Factor	1.00	0.91	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	0.88
Frt			0.850									0.850
Flt Protected				0.950							0.950	
Satd. Flow (prot)	0	4984	1465	1705	3610	0	0	0	0	0	1725	2717
Flt Permitted				0.094							0.950	
Satd. Flow (perm)	0	4984	1465	169	3610	0	0	0	0	0	1725	2717
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			45			45			35	
Link Distance (ft)		549			630			547			651	
Travel Time (s)		8.3			9.5			8.3			12.7	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	5%	2%	8%	8%	2%	5%	5%	5%	5%	2%	2%	2%
Adj. Flow (vph)	0	1467	581	158	1009	0	0	0	0	180	0	690
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1467	581	158	1009	0	0	0	0	0	180	690
Enter Blocked Intersection	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		16			16			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.03	1.03	1.03	0.97	0.97	0.97	1.00	1.00	1.00	1.03	1.03	1.03
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type			Perm	pm+pt						Split		Prot
Protected Phases		2		1	6					4	4	4
Permitted Phases			2	6								
Detector Phase		2	2	1	6					4	4	4
Switch Phase												
Minimum Initial (s)		14.0	14.0	7.0	14.0					7.0	7.0	7.0
Minimum Split (s)		20.0	20.0	14.0	21.0					13.0	13.0	13.0
Total Split (s)	0.0	46.0	46.0	14.0	60.0	0.0	0.0	0.0	0.0	30.0	30.0	30.0
Total Split (%)	0.0%	51.1%	51.1%	15.6%	66.7%	0.0%	0.0%	0.0%	0.0%	33.3%	33.3%	33.3%
Maximum Green (s)		40.4	40.4	7.6	53.6					24.1	24.1	24.1
Yellow Time (s)		4.5	4.5	3.0	5.2					3.6	3.6	3.6
All-Red Time (s)		1.1	1.1	3.4	1.2					2.3	2.3	2.3
Lost Time Adjust (s)	0.0	-0.6	-0.6	-1.4	-1.4	-2.0	0.0	0.0	0.0	-2.0	-0.9	-0.9
Total Lost Time (s)	4.0	5.0	5.0	5.0	5.0	2.0	4.0	4.0	4.0	3.9	5.0	5.0
Lead/Lag		Lag	Lag	Lead								
Lead-Lag Optimize?		Yes	Yes	Yes								
Vehicle Extension (s)		2.0	2.0	2.0	2.0					2.0	2.0	2.0
Minimum Gap (s)		3.1	3.1	3.0	3.1					3.0	3.0	3.0

Appendix E – Highway Capacity Software
Unsignalized Analysis Output

2011 No-Build

TWO-WAY STOP CONTROL SUMMARY									
General Information				Site Information					
Analyst	JEC			Intersection	11				
Agency/Co.	HNTB North Carolina, PC			Jurisdiction	Polk County				
Date Performed	3/15/2013			Analysis Year	2011 Base Year - No Build				
Analysis Time Period	2011 AM Peak								
Project Description STIP I4400/I-4700 - I-26 Widening									
East/West Street: SR 1142 (Holbert Cove Rd)				North/South Street: I-26 SB Ramps					
Intersection Orientation: East-West				Study Period (hrs): 0.25					
Vehicle Volumes and Adjustments									
Major Street		Eastbound			Westbound				
Movement	1	2	3	4	5	6			
	L	T	R	L	T	R			
Volume (veh/h)	126	57			32	37			
Peak-Hour Factor, PHF	0.90	0.90	1.00	1.00	0.90	0.90			
Hourly Flow Rate, HFR (veh/h)	140	63	0	0	35	41			
Percent Heavy Vehicles	5	--	--	0	--	--			
Median Type	Undivided								
RT Channelized			0					0	
Lanes	0	1	0	0	1	1			
Configuration	LT				T	R			
Upstream Signal		0			0				
Minor Street		Northbound			Southbound				
Movement	7	8	9	10	11	12			
	L	T	R	L	T	R			
Volume (veh/h)	63	0	29						
Peak-Hour Factor, PHF	0.90	0.90	0.90	1.00	1.00	1.00			
Hourly Flow Rate, HFR (veh/h)	70	0	32	0	0	0			
Percent Heavy Vehicles	5	5	5	5	0	0			
Percent Grade (%)	0			0					
Flared Approach		N			N				
Storage		0			0				
RT Channelized			0					0	
Lanes	1	1	1	0	0	0			
Configuration	L	T	R						
Delay, Queue Length, and Level of Service									
Approach	Eastbound	Westbound	Northbound			Southbound			
Movement	1	4	7	8	9	10	11	12	
Lane Configuration	LT		L	T	R				
v (veh/h)	140		70	0	32				
C (m) (veh/h)	1504		545	471	993				
v/c	0.09		0.13	0.00	0.03				
95% queue length	0.31		0.44	0.00	0.10				
Control Delay (s/veh)	7.6		12.6	12.6	8.7				
LOS	A		B	B	A				
Approach Delay (s/veh)	--	--	11.4						
Approach LOS	--	--	B						

TWO-WAY STOP CONTROL SUMMARY								
General Information				Site Information				
Analyst	JEC			Intersection	11			
Agency/Co.	HNTB North Carolina, PC			Jurisdiction	Polk County			
Date Performed	3/15/2013			Analysis Year	2011 Base Year - No Build			
Analysis Time Period	PM Peak							
Project Description STIP I4400/I-4700 - I-26 Widening								
East/West Street: SR 1142 (Holbert Cove Rd)				North/South Street: I-26 NB Ramps				
Intersection Orientation: East-West				Study Period (hrs): 0.25				
Vehicle Volumes and Adjustments								
Major Street	Eastbound			Westbound				
Movement	1	2	3	4	5	6		
	L	T	R	L	T	R		
Volume (veh/h)	95	42			37	49		
Peak-Hour Factor, PHF	0.90	0.90	1.00	1.00	0.90	0.90		
Hourly Flow Rate, HFR (veh/h)	105	46	0	0	41	54		
Percent Heavy Vehicles	5	--	--	0	--	--		
Median Type	Undivided							
RT Channelized			0				0	
Lanes	0	1	0	0	1	1		
Configuration	LT				T	R		
Upstream Signal		0			0			
Minor Street	Northbound			Southbound				
Movement	7	8	9	10	11	12		
	L	T	R	L	T	R		
Volume (veh/h)	103	0	27					
Peak-Hour Factor, PHF	0.90	0.90	0.90	1.00	1.00	1.00		
Hourly Flow Rate, HFR (veh/h)	114	0	30	0	0	0		
Percent Heavy Vehicles	5	5	5	5	0	0		
Percent Grade (%)	0			0				
Flared Approach		N			N			
Storage		0			0			
RT Channelized			0				0	
Lanes	1	1	1	0	0	0		
Configuration	L	T	R					
Delay, Queue Length, and Level of Service								
Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	LT		L	T	R			
v (veh/h)	105		114	0	30			
C (m) (veh/h)	1480		617	528	1015			
v/c	0.07		0.18	0.00	0.03			
95% queue length	0.23		0.67	0.00	0.09			
Control Delay (s/veh)	7.6		12.2	11.8	8.7			
LOS	A		B	B	A			
Approach Delay (s/veh)	--	--	11.4					
Approach LOS	--	--	B					

TWO-WAY STOP CONTROL SUMMARY								
General Information					Site Information			
Analyst	JEC				Intersection	12		
Agency/Co.	HNTB North Carolina, PC				Jurisdiction	Polk County		
Date Performed	3/15/2013				Analysis Year	2011 Base Year - No Build		
Analysis Time Period	2011 AM Peak							
Project Description STIP I4400/I-4700 - I-26 Widening								
East/West Street: SR 1142 (Holbert Cove Rd)					North/South Street: I-26 SB Ramps			
Intersection Orientation: East-West					Study Period (hrs): 0.25			
Vehicle Volumes and Adjustments								
Major Street		Eastbound			Westbound			
Movement	1	2	3	4	5	6		
	L	T	R	L	T	R		
Volume (veh/h)		134	103	27	68			
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90		
Hourly Flow Rate, HFR (veh/h)	0	148	114	30	75	0		
Percent Heavy Vehicles	0	--	--	5	--	--		
Median Type	Undivided							
RT Channelized			0					0
Lanes	0	1	1	0	1	0		
Configuration		T	R	LT				
Upstream Signal		0			0			
Minor Street		Northbound			Southbound			
Movement	7	8	9	10	11	12		
	L	T	R	L	T	R		
Volume (veh/h)				49		95		
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90		
Hourly Flow Rate, HFR (veh/h)	0	0	0	54	0	105		
Percent Heavy Vehicles	0	0	0	5	5	5		
Percent Grade (%)		0			0			
Flared Approach		N			N			
Storage		0			0			
RT Channelized			0					0
Lanes	0	0	0	1	0	1		
Configuration				L		R		
Delay, Queue Length, and Level of Service								
Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		LT				L		R
v (veh/h)		30				54		105
C (m) (veh/h)		1285				635		978
v/c		0.02				0.09		0.11
95% queue length		0.07				0.28		0.36
Control Delay (s/veh)		7.9				11.2		9.1
LOS		A				B		A
Approach Delay (s/veh)	--	--				9.8		
Approach LOS	--	--				A		

TWO-WAY STOP CONTROL SUMMARY								
General Information				Site Information				
Analyst	JEC			Intersection	12			
Agency/Co.	HNTB North Carolina, PC			Jurisdiction	Polk County			
Date Performed	3/15/2013			Analysis Year	2011 Base Year - No Build			
Analysis Time Period	2011 PM Peak							
Project Description STIP I4400/I-4700 - I-26 Widening								
East/West Street: SR 1142 (Holbert Cove Rd)				North/South Street: I-26 SB Ramps				
Intersection Orientation: East-West				Study Period (hrs): 0.25				
Vehicle Volumes and Adjustments								
Major Street		Eastbound			Westbound			
Movement	1	2	3	4	5	6		
	L	T	R	L	T	R		
Volume (veh/h)		100	63	29	111			
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90		
Hourly Flow Rate, HFR (veh/h)	0	111	70	32	123	0		
Percent Heavy Vehicles	0	--	--	5	--	--		
Median Type	Undivided							
RT Channelized			0			0		
Lanes	0	1	1	0	1	0		
Configuration		T	R	LT				
Upstream Signal		0			0			
Minor Street		Northbound			Southbound			
Movement	7	8	9	10	11	12		
	L	T	R	L	T	R		
Volume (veh/h)				37	0	126		
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90		
Hourly Flow Rate, HFR (veh/h)	0	0	0	41	0	140		
Percent Heavy Vehicles	0	0	0	5	5	5		
Percent Grade (%)		0			0			
Flared Approach		N			N			
Storage		0			0			
RT Channelized			0			0		
Lanes	0	0	0	1	1	1		
Configuration				L	T	R		
Delay, Queue Length, and Level of Service								
Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		LT				L	T	R
v (veh/h)		32				41	0	140
C (m) (veh/h)		1376				641	542	920
v/c		0.02				0.06	0.00	0.15
95% queue length		0.07				0.20	0.00	0.54
Control Delay (s/veh)		7.7				11.0	11.6	9.6
LOS		A				B	B	A
Approach Delay (s/veh)	--	--				9.9		
Approach LOS	--	--				A		

2011 Build 8/6 Lane

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	JEC	Intersection	11
Agency/Co.	HNTB North Carolina, PC	Jurisdiction	
Date Performed	3/15/2013	Analysis Year	2011 Base Year - 8 Lane
Analysis Time Period	2011 AM Peak		

Project Description <i>STIP I4400/I-4700 - I-26 Widening</i>	
East/West Street: <i>SR 1142 (Holbert Cove Rd)</i>	North/South Street: <i>I-26 SB Ramps</i>
Intersection Orientation: <i>East-West</i>	Study Period (hrs): <i>0.25</i>

Vehicle Volumes and Adjustments						
Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)	126	57			32	37
Peak-Hour Factor, PHF	0.90	0.90	1.00	1.00	0.90	0.90
Hourly Flow Rate, HFR (veh/h)	140	63	0	0	35	41
Percent Heavy Vehicles	5	--	--	0	--	--
Median Type	<i>Undivided</i>					
RT Channelized			0			0
Lanes	0	1	0	0	1	1
Configuration	<i>LT</i>				<i>T</i>	<i>R</i>
Upstream Signal		0			0	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)	63	0	29			
Peak-Hour Factor, PHF	0.90	0.90	0.90	1.00	1.00	1.00
Hourly Flow Rate, HFR (veh/h)	70	0	32	0	0	0
Percent Heavy Vehicles	5	5	5	5	0	0
Percent Grade (%)	0			0		
Flared Approach		<i>N</i>			<i>N</i>	
Storage		0			0	
RT Channelized			0			0
Lanes	1	1	1	0	0	0
Configuration	<i>L</i>	<i>T</i>	<i>R</i>			

Delay, Queue Length, and Level of Service								
Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	<i>LT</i>		<i>L</i>	<i>T</i>	<i>R</i>			
v (veh/h)	140		70	0	32			
C (m) (veh/h)	1504		545	471	993			
v/c	0.09		0.13	0.00	0.03			
95% queue length	0.31		0.44	0.00	0.10			
Control Delay (s/veh)	7.6		12.6	12.6	8.7			
LOS	<i>A</i>		<i>B</i>	<i>B</i>	<i>A</i>			
Approach Delay (s/veh)	--	--	11.4					
Approach LOS	--	--	<i>B</i>					

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	JEC	Intersection	11
Agency/Co.	HNTB North Carolina, PC	Jurisdiction	Polk County
Date Performed	3/15/2013	Analysis Year	2011 Base Year - 8 Lane
Analysis Time Period	2011 PM Peak		

Project Description <i>STIP I4400/I-4700 - I-26 Widening</i>	
East/West Street: <i>SR 1142 (Holbert Cove Rd)</i>	North/South Street: <i>I-26 NB Ramps</i>
Intersection Orientation: <i>East-West</i>	Study Period (hrs): <i>0.25</i>

Vehicle Volumes and Adjustments						
Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)	95	42			37	49
Peak-Hour Factor, PHF	0.90	0.90	1.00	1.00	0.90	0.90
Hourly Flow Rate, HFR (veh/h)	105	46	0	0	41	54
Percent Heavy Vehicles	5	--	--	0	--	--
Median Type	<i>Undivided</i>					
RT Channelized			0			0
Lanes	0	1	0	0	1	1
Configuration	<i>LT</i>				<i>T</i>	<i>R</i>
Upstream Signal		0			0	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)	103	0	27			
Peak-Hour Factor, PHF	0.90	0.90	0.90	1.00	1.00	1.00
Hourly Flow Rate, HFR (veh/h)	114	0	30	0	0	0
Percent Heavy Vehicles	5	5	5	5	0	0
Percent Grade (%)		0			0	
Flared Approach		<i>N</i>			<i>N</i>	
Storage		0			0	
RT Channelized			0			0
Lanes	1	1	1	0	0	0
Configuration	<i>L</i>	<i>T</i>	<i>R</i>			

Delay, Queue Length, and Level of Service								
Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	<i>LT</i>		<i>L</i>	<i>T</i>	<i>R</i>			
v (veh/h)	105		114	0	30			
C (m) (veh/h)	1480		617	528	1015			
v/c	0.07		0.18	0.00	0.03			
95% queue length	0.23		0.67	0.00	0.09			
Control Delay (s/veh)	7.6		12.2	11.8	8.7			
LOS	<i>A</i>		<i>B</i>	<i>B</i>	<i>A</i>			
Approach Delay (s/veh)	--	--	11.4					
Approach LOS	--	--	<i>B</i>					

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	JEC	Intersection	12
Agency/Co.	HNTB North Carolina, PC	Jurisdiction	Polk County
Date Performed	3/15/2013	Analysis Year	2011 Base Year - 8 Lane
Analysis Time Period	2011 AM Peak		

Project Description <i>STIP I4400/I-4700 - I-26 Widening</i>	
East/West Street: <i>SR 1142 (Holbert Cove Rd)</i>	North/South Street: <i>I-26 SB Ramps</i>
Intersection Orientation: <i>East-West</i>	Study Period (hrs): <i>0.25</i>

Vehicle Volumes and Adjustments						
Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)		134	103	27	68	
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR (veh/h)	0	148	114	30	75	0
Percent Heavy Vehicles	0	--	--	5	--	--
Median Type	<i>Undivided</i>					
RT Channelized			0			0
Lanes	0	1	1	0	1	0
Configuration		T	R	LT		
Upstream Signal		0			0	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)				49	0	95
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR (veh/h)	0	0	0	54	0	105
Percent Heavy Vehicles	0	0	0	5	5	5
Percent Grade (%)		0			0	
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	0	0	1	1	1
Configuration				L	T	R

Delay, Queue Length, and Level of Service								
Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		LT				L	T	R
v (veh/h)		30				54	0	105
C (m) (veh/h)		1285				635	523	978
v/c		0.02				0.09	0.00	0.11
95% queue length		0.07				0.28	0.00	0.36
Control Delay (s/veh)		7.9				11.2	11.9	9.1
LOS		A				B	B	A
Approach Delay (s/veh)	--	--				9.8		
Approach LOS	--	--				A		

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	JEC	Intersection	12
Agency/Co.	HNTB North Carolina, PC	Jurisdiction	Henderson County
Date Performed	3/15/2013	Analysis Year	2011 Base Year - 8 Lane
Analysis Time Period	2011 PM Peak		

Project Description: STIP I4400/I-4700 - I-26 Widening	
East/West Street: SR 1142 (Holbert Cove Rd)	North/South Street: I-26 SB Ramps
Intersection Orientation: East-West	Study Period (hrs): 0.25

Vehicle Volumes and Adjustments						
Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)		100	63	29	111	
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR (veh/h)	0	111	70	32	123	0
Percent Heavy Vehicles	0	--	--	5	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	0	1	1	0	1	0
Configuration		T	R	LT		
Upstream Signal		0			0	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)				37	0	126
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR (veh/h)	0	0	0	41	0	140
Percent Heavy Vehicles	0	0	0	5	5	5
Percent Grade (%)		0			0	
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	0	0	1	1	1
Configuration				L	T	R

Delay, Queue Length, and Level of Service								
Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		LT				L	T	R
v (veh/h)		32				41	0	140
C (m) (veh/h)		1376				641	542	920
v/c		0.02				0.06	0.00	0.15
95% queue length		0.07				0.20	0.00	0.54
Control Delay (s/veh)		7.7				11.0	11.6	9.6
LOS		A				B	B	A
Approach Delay (s/veh)	--	--				9.9		
Approach LOS	--	--				A		

2040 No-Build

TWO-WAY STOP CONTROL SUMMARY								
General Information				Site Information				
Analyst	JEC			Intersection	11			
Agency/Co.	HNTB North Carolina, PC			Jurisdiction	Polk County			
Date Performed	3/15/2013			Analysis Year	2040 Design Year - No Build			
Analysis Time Period	2040 AM Peak							
Project Description STIP I4400/I-4700 - I-26 Widening								
East/West Street: SR 1142 (Holbert Cove Rd)				North/South Street: I-26 SB Ramps				
Intersection Orientation: East-West				Study Period (hrs): 0.25				
Vehicle Volumes and Adjustments								
Major Street	Eastbound			Westbound				
Movement	1	2	3	4	5	6		
	L	T	R	L	T	R		
Volume (veh/h)	139	60			62	56		
Peak-Hour Factor, PHF	0.90	0.90	1.00	1.00	0.90	0.90		
Hourly Flow Rate, HFR (veh/h)	154	66	0	0	68	62		
Percent Heavy Vehicles	5	--	--	0	--	--		
Median Type	Undivided							
RT Channelized			0				0	
Lanes	0	1	0	0	1	1		
Configuration	LT				T	R		
Upstream Signal		0			0			
Minor Street	Northbound			Southbound				
Movement	7	8	9	10	11	12		
	L	T	R	L	T	R		
Volume (veh/h)	88	0	63					
Peak-Hour Factor, PHF	0.90	0.90	0.90	1.00	1.00	1.00		
Hourly Flow Rate, HFR (veh/h)	97	0	70	0	0	0		
Percent Heavy Vehicles	5	5	5	5	0	0		
Percent Grade (%)	0			0				
Flared Approach		N			N			
Storage		0			0			
RT Channelized			0				0	
Lanes	1	1	1	0	0	0		
Configuration	L	T	R					
Delay, Queue Length, and Level of Service								
Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	LT		L	T	R			
v (veh/h)	154		97	0	70			
C (m) (veh/h)	1437		486	414	989			
v/c	0.11		0.20	0.00	0.07			
95% queue length	0.36		0.74	0.00	0.23			
Control Delay (s/veh)	7.8		14.2	13.7	8.9			
LOS	A		B	B	A			
Approach Delay (s/veh)	--	--	12.0					
Approach LOS	--	--	B					

TWO-WAY STOP CONTROL SUMMARY								
General Information				Site Information				
Analyst	JEC			Intersection	11			
Agency/Co.	HNTB North Carolina, PC			Jurisdiction	Polk County			
Date Performed	3/15/2013			Analysis Year	2040 Design Year - No Build			
Analysis Time Period	2040 PM Peak							
Project Description STIP I4400/I-4700 - I-26 Widening								
East/West Street: SR 1142 (Holbert Cove Rd)				North/South Street: I-26 SB Ramps				
Intersection Orientation: East-West				Study Period (hrs): 0.25				
Vehicle Volumes and Adjustments								
Major Street	Eastbound			Westbound				
Movement	1	2	3	4	5	6		
	L	T	R	L	T	R		
Volume (veh/h)	104	83			71	75		
Peak-Hour Factor, PHF	0.90	0.90	1.00	1.00	0.90	0.90		
Hourly Flow Rate, HFR (veh/h)	115	92	0	0	78	83		
Percent Heavy Vehicles	5	--	--	0	--	--		
Median Type	Undivided							
RT Channelized			0			0		
Lanes	0	1	0	0	1	1		
Configuration	LT				T	R		
Upstream Signal		0			0			
Minor Street	Northbound			Southbound				
Movement	7	8	9	10	11	12		
	L	T	R	L	T	R		
Volume (veh/h)	145	0	58					
Peak-Hour Factor, PHF	0.90	0.90	0.90	1.00	1.00	1.00		
Hourly Flow Rate, HFR (veh/h)	161	0	64	0	0	0		
Percent Heavy Vehicles	5	5	5	5	0	0		
Percent Grade (%)	0			0				
Flared Approach		N			N			
Storage		0			0			
RT Channelized			0			0		
Lanes	1	1	1	0	0	0		
Configuration	L	T	R					
Delay, Queue Length, and Level of Service								
Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	LT		L	T	R			
v (veh/h)	115		161	0	64			
C (m) (veh/h)	1400		520	437	957			
v/c	0.08		0.31	0.00	0.07			
95% queue length	0.27		1.31	0.00	0.21			
Control Delay (s/veh)	7.8		15.0	13.2	9.0			
LOS	A		B	B	A			
Approach Delay (s/veh)	--	--	13.3					
Approach LOS	--	--	B					

TWO-WAY STOP CONTROL SUMMARY								
General Information				Site Information				
Analyst	JEC			Intersection	12			
Agency/Co.	HNTB North Carolina, PC			Jurisdiction	Polk County			
Date Performed	3/15/2013			Analysis Year	2040 Design Year - No Build			
Analysis Time Period	2040 AM Peak							
Project Description STIP I4400/I-4700 - I-26 Widening								
East/West Street: SR 1142 (Holbert Cove Rd)				North/South Street: I-26 SB Ramps				
Intersection Orientation: East-West				Study Period (hrs): 0.25				
Vehicle Volumes and Adjustments								
Major Street	Eastbound			Westbound				
Movement	1	2	3	4	5	6		
	L	T	R	L	T	R		
Volume (veh/h)		147	145	58	92			
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90		
Hourly Flow Rate, HFR (veh/h)	0	163	161	64	102	0		
Percent Heavy Vehicles	0	--	--	5	--	--		
Median Type	Undivided							
RT Channelized			0			0		
Lanes	0	1	1	0	1	0		
Configuration		T	R	LT				
Upstream Signal		0			0			
Minor Street	Northbound			Southbound				
Movement	7	8	9	10	11	12		
	L	T	R	L	T	R		
Volume (veh/h)				75	0	105		
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90		
Hourly Flow Rate, HFR (veh/h)	0	0	0	83	0	116		
Percent Heavy Vehicles	0	0	0	5	5	5		
Percent Grade (%)	0			0				
Flared Approach		N			N			
Storage		0			0			
RT Channelized			0			0		
Lanes	0	0	0	1	1	1		
Configuration				L	T	R		
Delay, Queue Length, and Level of Service								
Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		LT				L	T	R
v (veh/h)		64				83	0	116
C (m) (veh/h)		1219				515	412	945
v/c		0.05				0.16	0.00	0.12
95% queue length		0.17				0.57	0.00	0.42
Control Delay (s/veh)		8.1				13.3	13.7	9.3
LOS		A				B	B	A
Approach Delay (s/veh)	--	--				11.0		
Approach LOS	--	--				B		

TWO-WAY STOP CONTROL SUMMARY								
General Information				Site Information				
Analyst	JEC			Intersection	12			
Agency/Co.	HNTB North Carolina, PC			Jurisdiction	Polk County			
Date Performed	3/15/2013			Analysis Year	2040 Design Year - No Build			
Analysis Time Period	2040 PM Peak							
Project Description STIP I4400/I-4700 - I-26 Widening								
East/West Street: SR 1142 (Holbert Cove Rd)				North/South Street: I-26 SB Ramps				
Intersection Orientation: East-West				Study Period (hrs): 0.25				
Vehicle Volumes and Adjustments								
Major Street	Eastbound			Westbound				
Movement	1	2	3	4	5	6		
	L	T	R	L	T	R		
Volume (veh/h)		108	88	63	153			
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90		
Hourly Flow Rate, HFR (veh/h)	0	120	97	70	170	0		
Percent Heavy Vehicles	0	--	--	5	--	--		
Median Type	Undivided							
RT Channelized			0			0		
Lanes	0	1	1	0	1	0		
Configuration		T	R	LT				
Upstream Signal		0			0			
Minor Street	Northbound			Southbound				
Movement	7	8	9	10	11	12		
	L	T	R	L	T	R		
Volume (veh/h)				56	0	139		
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90		
Hourly Flow Rate, HFR (veh/h)	0	0	0	62	0	154		
Percent Heavy Vehicles	0	0	0	5	5	5		
Percent Grade (%)	0			0				
Flared Approach		N			N			
Storage		0			0			
RT Channelized			0			0		
Lanes	0	0	0	1	1	1		
Configuration				L	T	R		
Delay, Queue Length, and Level of Service								
Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		LT				L	T	R
v (veh/h)		70				62	0	154
C (m) (veh/h)		1335				513	426	866
v/c		0.05				0.12	0.00	0.18
95% queue length		0.17				0.41	0.00	0.64
Control Delay (s/veh)		7.8				13.0	13.5	10.1
LOS		A				B	B	B
Approach Delay (s/veh)	--	--				10.9		
Approach LOS	--	--				B		

2040 Build 8/6 Lane

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	JEC	Intersection	11
Agency/Co.	HNTB North Carolina, PC	Jurisdiction	Henderson County
Date Performed	3/15/2013	Analysis Year	2040 Design Year - 8/6 Lane
Analysis Time Period	2040 AM Peak		

Project Description <i>STIP I4400/I-4700 - I-26 Widening</i>	
East/West Street: <i>SR 1142 (Holbert Cove Rd)</i>	North/South Street: <i>I-26 SB Ramps</i>
Intersection Orientation: <i>East-West</i>	Study Period (hrs): <i>0.25</i>

Vehicle Volumes and Adjustments						
Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)	139	83			62	56
Peak-Hour Factor, PHF	0.90	0.90	1.00	1.00	0.90	0.90
Hourly Flow Rate, HFR (veh/h)	154	92	0	0	68	62
Percent Heavy Vehicles	5	--	--	0	--	--
Median Type	<i>Undivided</i>					
RT Channelized			0			0
Lanes	0	1	0	0	1	1
Configuration	<i>LT</i>				<i>T</i>	<i>R</i>
Upstream Signal		0			0	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)	88	0	63			
Peak-Hour Factor, PHF	0.90	0.90	0.90	1.00	1.00	1.00
Hourly Flow Rate, HFR (veh/h)	97	0	70	0	0	0
Percent Heavy Vehicles	5	5	5	5	0	0
Percent Grade (%)	0			0		
Flared Approach		<i>N</i>			<i>N</i>	
Storage		0			0	
RT Channelized			0			0
Lanes	1	1	1	0	0	0
Configuration	<i>L</i>	<i>T</i>	<i>R</i>			

Delay, Queue Length, and Level of Service								
Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	<i>LT</i>		<i>L</i>	<i>T</i>	<i>R</i>			
v (veh/h)	154		97	0	70			
C (m) (veh/h)	1437		470	399	957			
v/c	0.11		0.21	0.00	0.07			
95% queue length	0.36		0.77	0.00	0.24			
Control Delay (s/veh)	7.8		14.6	14.0	9.1			
LOS	<i>A</i>		<i>B</i>	<i>B</i>	<i>A</i>			
Approach Delay (s/veh)	--	--	12.3					
Approach LOS	--	--	<i>B</i>					

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	JEC	Intersection	11
Agency/Co.	HNTB North Carolina, PC	Jurisdiction	Henderson County
Date Performed	3/15/2013	Analysis Year	2040 Design Year - 8 Lane
Analysis Time Period	2040 PM Peak		

Project Description <i>STIP I4400/I-4700 - I-26 Widening</i>	
East/West Street: <i>SR 1142 (Holbert Cove Rd)</i>	North/South Street: <i>I-26 NB Ramps</i>
Intersection Orientation: <i>East-West</i>	Study Period (hrs): <i>0.25</i>

Vehicle Volumes and Adjustments						
Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)	104	60			71	75
Peak-Hour Factor, PHF	0.90	0.90	1.00	1.00	0.90	0.90
Hourly Flow Rate, HFR (veh/h)	115	66	0	0	78	83
Percent Heavy Vehicles	5	--	--	0	--	--
Median Type	<i>Undivided</i>					
RT Channelized			0			0
Lanes	0	1	0	0	1	1
Configuration	<i>LT</i>				<i>T</i>	<i>R</i>
Upstream Signal		0			0	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)	145	0	58			
Peak-Hour Factor, PHF	0.90	0.90	0.90	1.00	1.00	1.00
Hourly Flow Rate, HFR (veh/h)	161	0	64	0	0	0
Percent Heavy Vehicles	5	5	5	5	0	0
Percent Grade (%)		0			0	
Flared Approach		<i>N</i>			<i>N</i>	
Storage		0			0	
RT Channelized			0			0
Lanes	1	1	1	0	0	0
Configuration	<i>L</i>	<i>T</i>	<i>R</i>			

Delay, Queue Length, and Level of Service								
Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	<i>LT</i>		<i>L</i>	<i>T</i>	<i>R</i>			
v (veh/h)	115		161	0	64			
C (m) (veh/h)	1400		539	453	989			
v/c	0.08		0.30	0.00	0.06			
95% queue length	0.27		1.24	0.00	0.21			
Control Delay (s/veh)	7.8		14.5	12.9	8.9			
LOS	<i>A</i>		<i>B</i>	<i>B</i>	<i>A</i>			
Approach Delay (s/veh)	--	--	12.9					
Approach LOS	--	--	<i>B</i>					

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	JEC	Intersection	12
Agency/Co.	HNTB North Carolina, PC	Jurisdiction	Henderson County
Date Performed	3/15/2013	Analysis Year	
Analysis Time Period	2040 AM Peak		

Project Description <i>STIP I4400/I-4700 - I-26 Widening</i>	
East/West Street: <i>SR 1142 (Holbert Cove Rd)</i>	North/South Street: <i>I-26 SB Ramps</i>
Intersection Orientation: <i>East-West</i>	Study Period (hrs): <i>0.25</i>

Vehicle Volumes and Adjustments						
Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)		147	145	58	92	
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR (veh/h)	0	163	161	64	102	0
Percent Heavy Vehicles	0	--	--	5	--	--
Median Type	<i>Undivided</i>					
RT Channelized			0			0
Lanes	0	1	1	0	1	0
Configuration		<i>T</i>	<i>R</i>	<i>LT</i>		
Upstream Signal		0			0	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)				75	0	105
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR (veh/h)	0	0	0	83	0	116
Percent Heavy Vehicles	0	0	0	5	5	5
Percent Grade (%)		0			0	
Flared Approach		<i>N</i>			<i>N</i>	
Storage		0			0	
RT Channelized			0			0
Lanes	0	0	0	1	1	1
Configuration				<i>L</i>	<i>T</i>	<i>R</i>

Delay, Queue Length, and Level of Service								
Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		<i>LT</i>				<i>L</i>	<i>T</i>	<i>R</i>
v (veh/h)		64				83	0	116
C (m) (veh/h)		1219				515	412	945
v/c		0.05				0.16	0.00	0.12
95% queue length		0.17				0.57	0.00	0.42
Control Delay (s/veh)		8.1				13.3	13.7	9.3
LOS		<i>A</i>				<i>B</i>	<i>B</i>	<i>A</i>
Approach Delay (s/veh)	--	--				11.0		
Approach LOS	--	--				<i>B</i>		

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	JEC	Intersection	12
Agency/Co.	HNTB North Carolina, PC	Jurisdiction	Henderson County
Date Performed	3/15/2013	Analysis Year	2040 Design Year - 8/6 Lane
Analysis Time Period	2040 PM Peak		

Project Description <i>STIP I4400/I-4700 - I-26 Widening</i>	
East/West Street: <i>SR 1142 (Holbert Cove Rd)</i>	North/South Street: <i>I-26 SB Ramps</i>
Intersection Orientation: <i>East-West</i>	Study Period (hrs): <i>0.25</i>

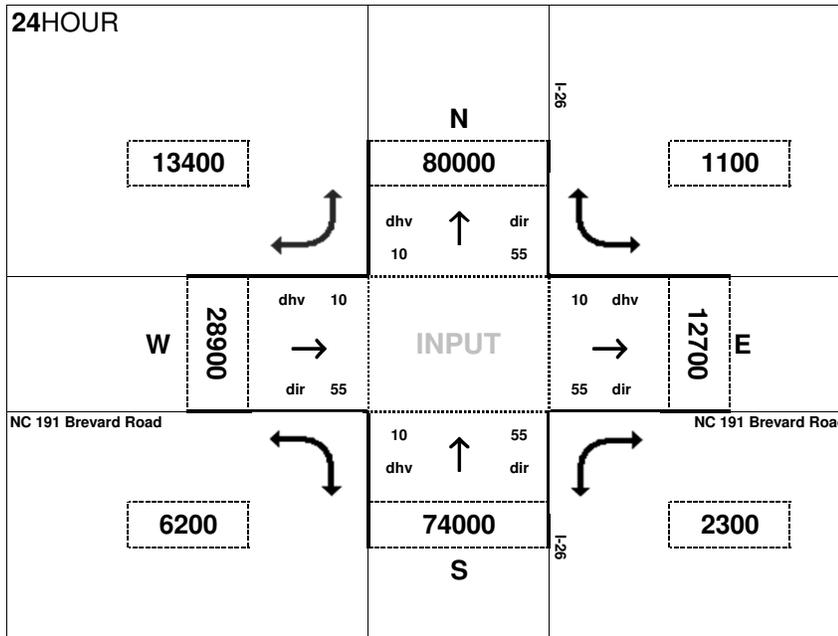
Vehicle Volumes and Adjustments						
Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)		108	88	63	153	
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR (veh/h)	0	120	97	70	170	0
Percent Heavy Vehicles	0	--	--	5	--	--
Median Type	<i>Undivided</i>					
RT Channelized			0			0
Lanes	0	1	1	0	1	0
Configuration		T	R	LT		
Upstream Signal		0			0	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)				56	0	139
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR (veh/h)	0	0	0	62	0	154
Percent Heavy Vehicles	0	0	0	5	5	5
Percent Grade (%)		0			0	
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	0	0	1	1	1
Configuration				L	T	R

Delay, Queue Length, and Level of Service								
Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		LT				L	T	R
v (veh/h)		70				62	0	154
C (m) (veh/h)		1335				513	426	866
v/c		0.05				0.12	0.00	0.18
95% queue length		0.17				0.41	0.00	0.64
Control Delay (s/veh)		7.8				13.0	13.5	10.1
LOS		A				B	B	B
Approach Delay (s/veh)	--	--				10.9		
Approach LOS	--	--				B		

Appendix F – 2040 Peak Hour Breakout Spreadsheets

2011 No-Build

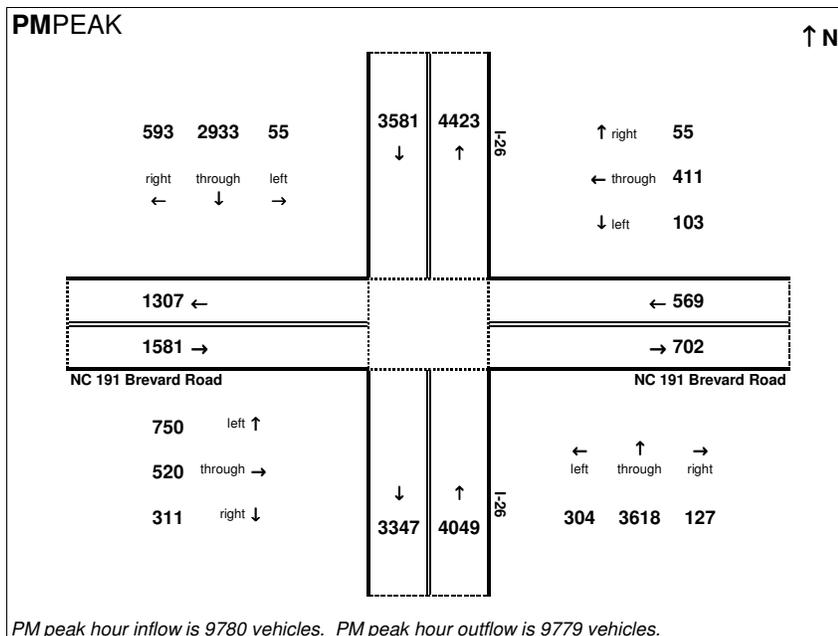
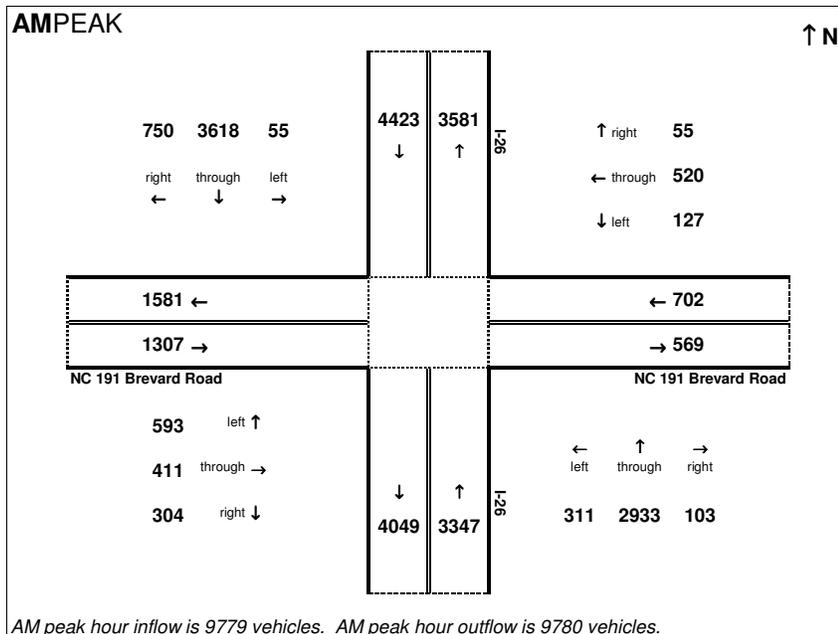


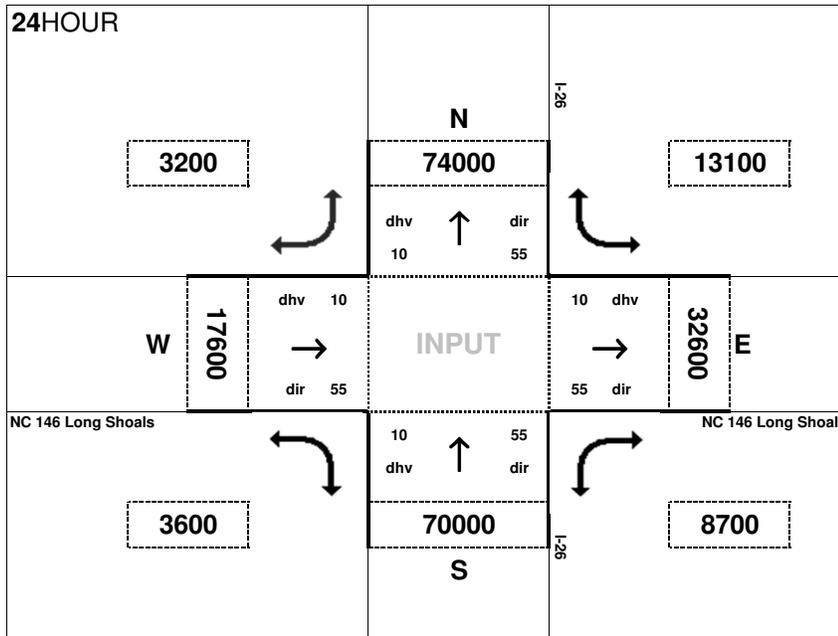
Peak Hour Volume Breakouts Report:
6. I-26 & NC 191 Interchange

Traffic Forecast Release Date:
February-12

Traffic Data Year:
2011 BY - No-Build

Project:
STIP I-4400/4700 - I-26 Widening



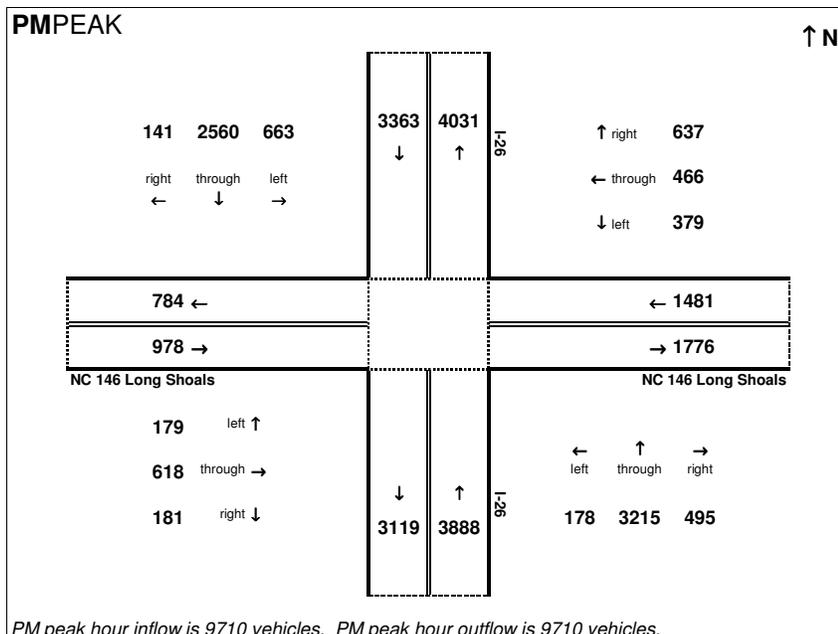
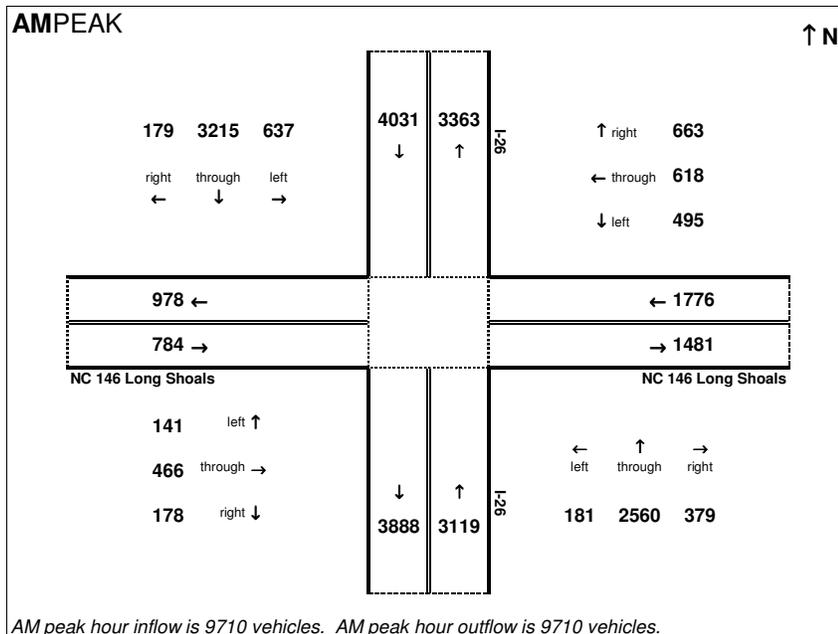


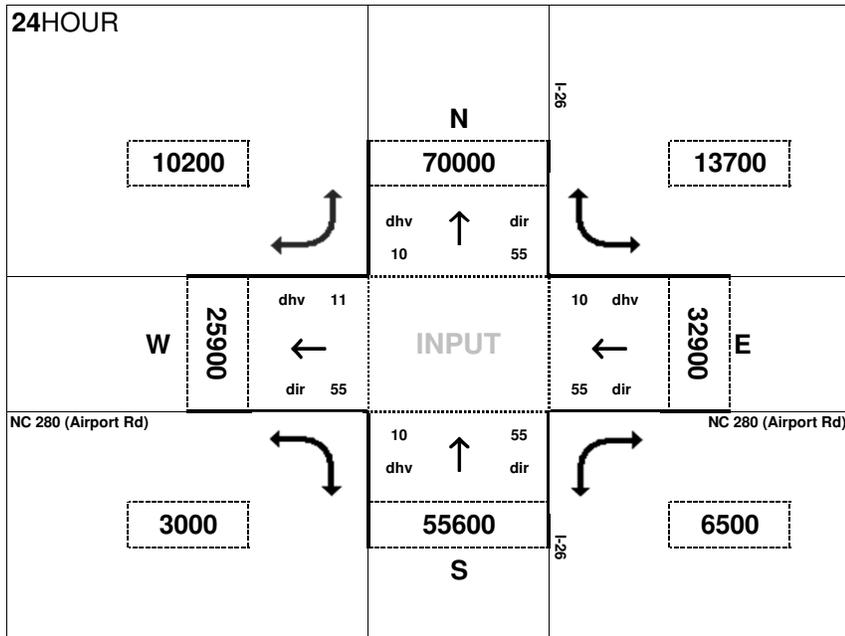
Peak Hour Volume Breakouts Report:
7. I-26 & NC 146 Interchange

Traffic Forecast Release Date:
February-12

Traffic Data Year:
2011 BY - No-Build

Project:
STIP I-4400/4700 - I-26 Widening



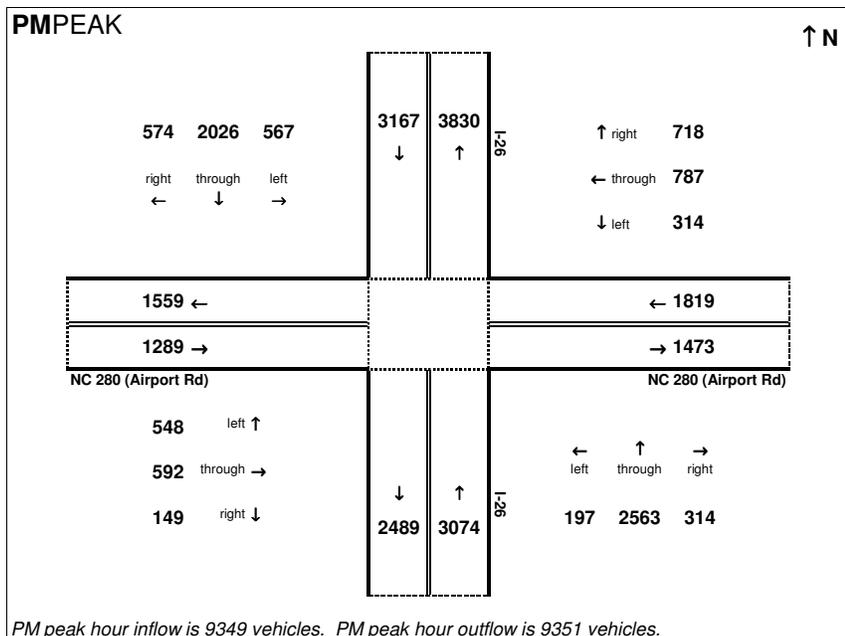
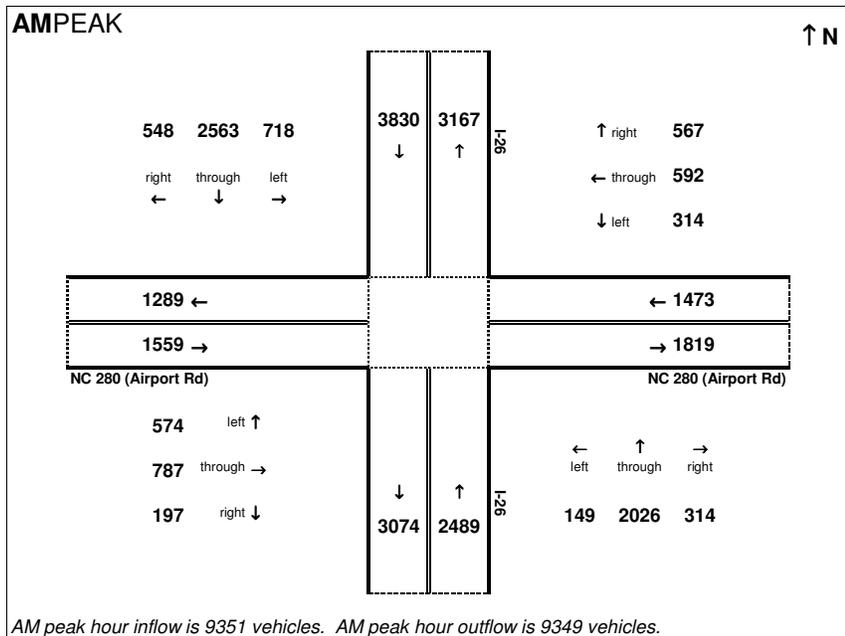


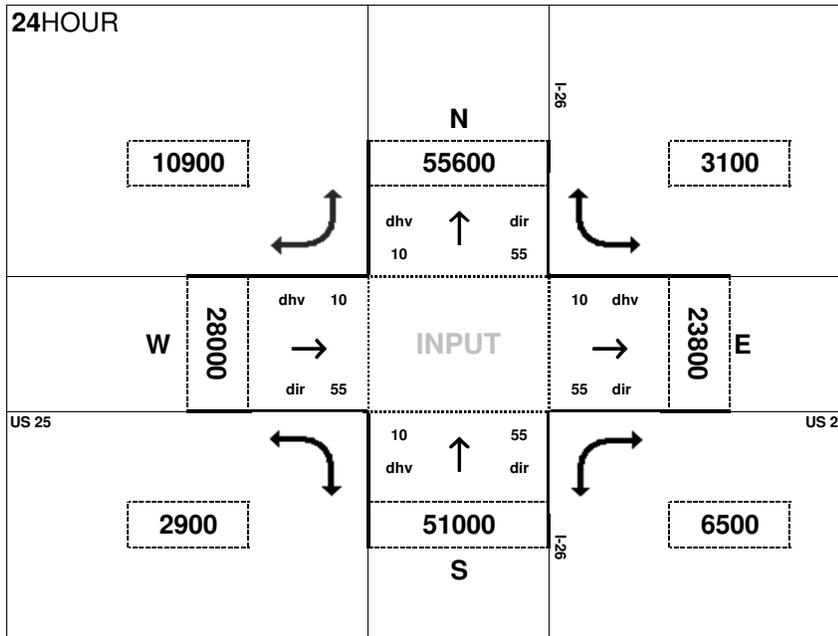
Peak Hour Volume Breakouts Report:
8. I-26 & NC 280 Interchange

Traffic Forecast Release Date:
February-12

Traffic Data Year:
2011 BY - No-Build

Project:
STIP I-4400/4700 - I-26 Widening



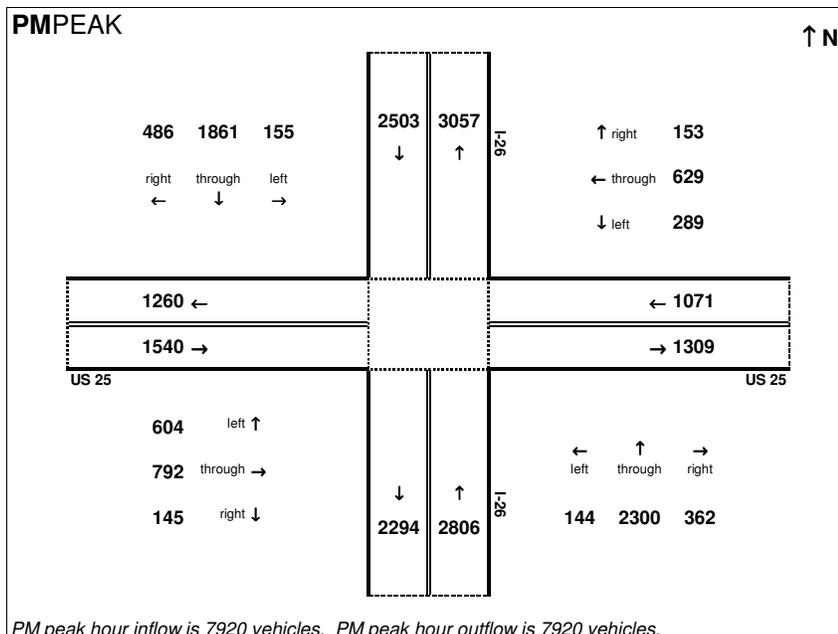
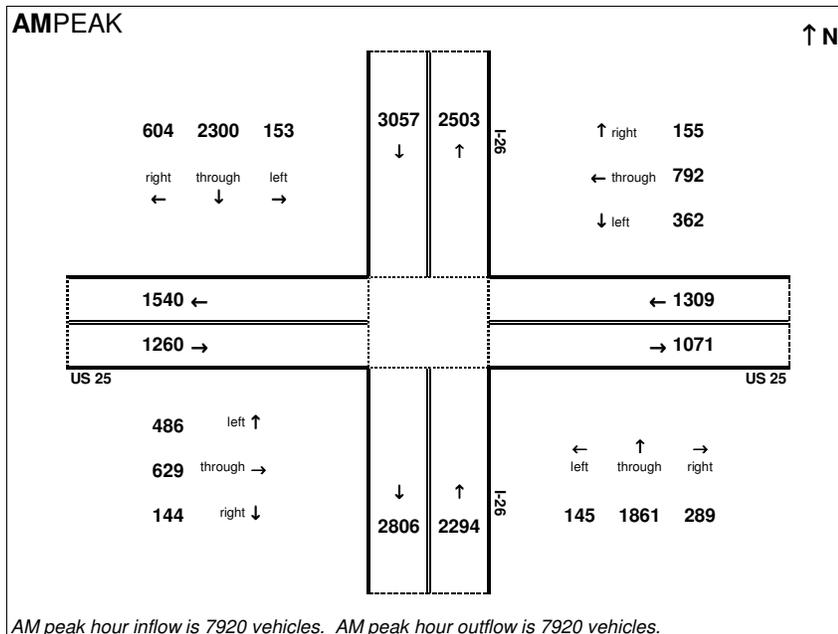


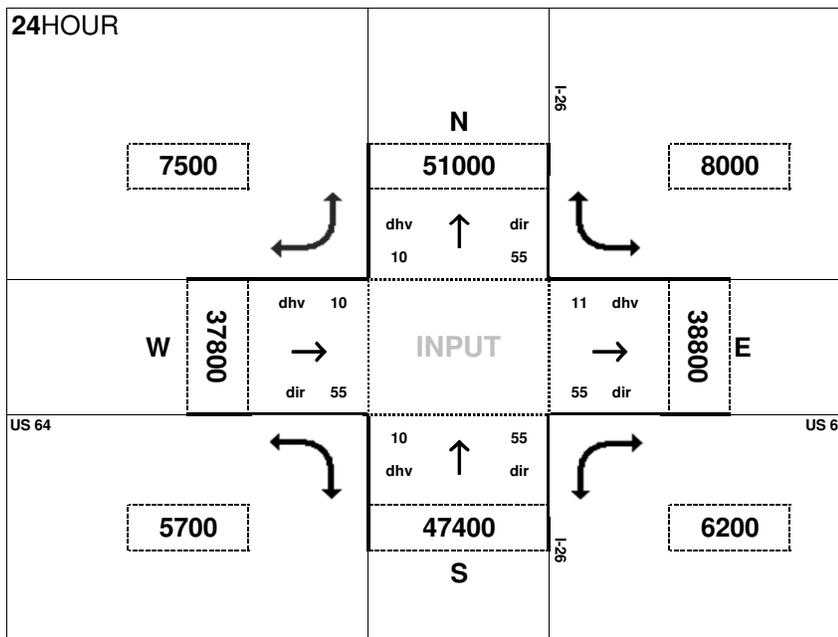
Peak Hour Volume Breakouts Report:
10. I-26 & US 25 Interchange

Traffic Forecast Release Date:
February-12

Traffic Data Year:
2011 BY - No-Build

Project:
STIP I-4400/4700 - I-26 Widening



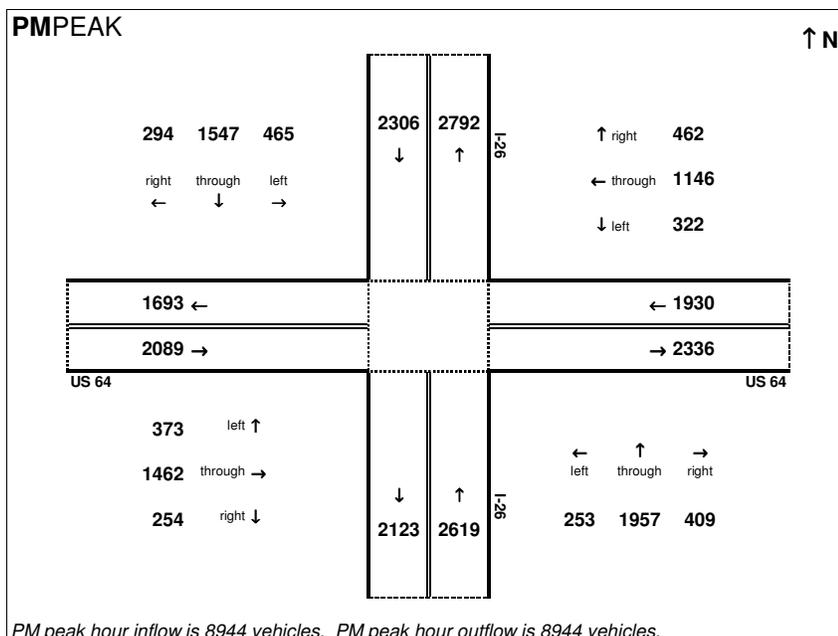
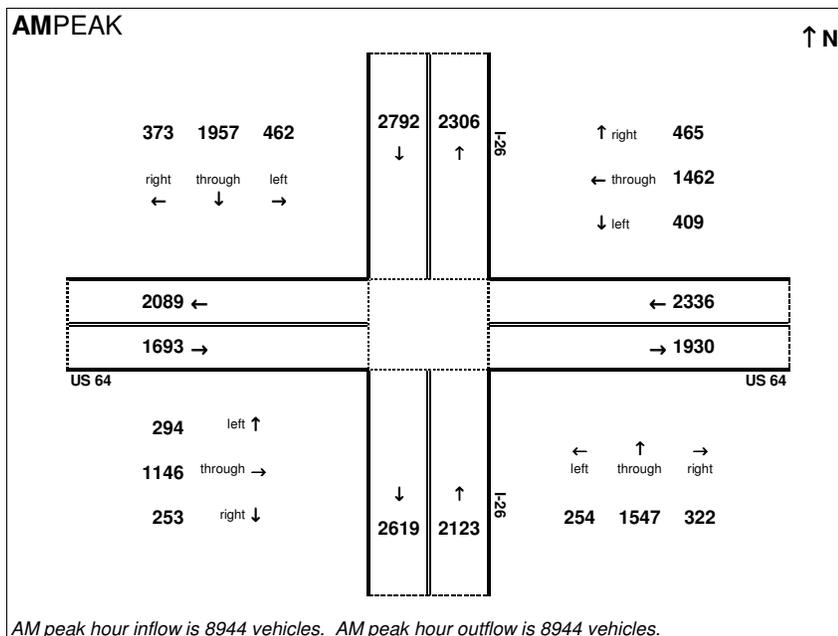


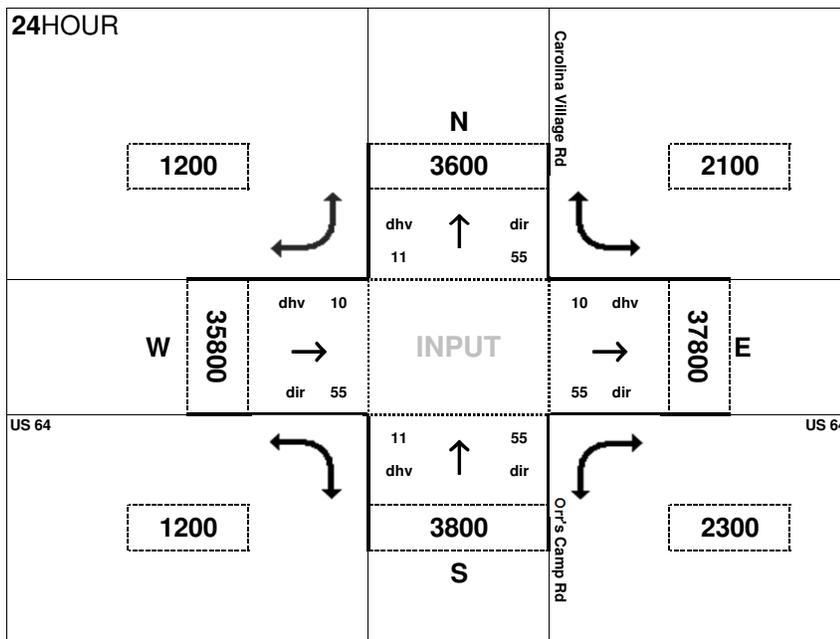
Peak Hour Volume Breakouts Report:
12. I-26 & US 64 System Interchange

Traffic Forecast Release Date:
February-12

Traffic Data Year:
2011 BY - No-Build

Project:
STIP I-4400/4700 - I-26 Widening





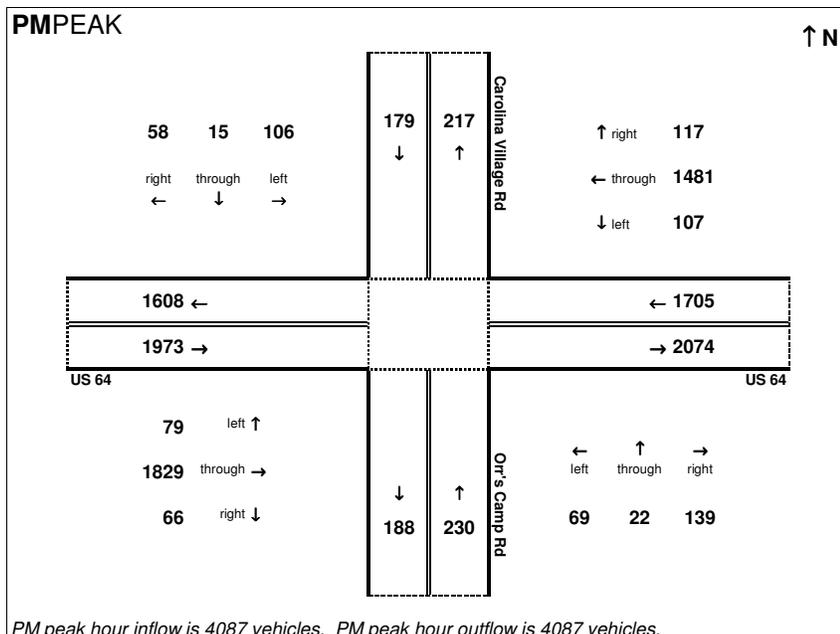
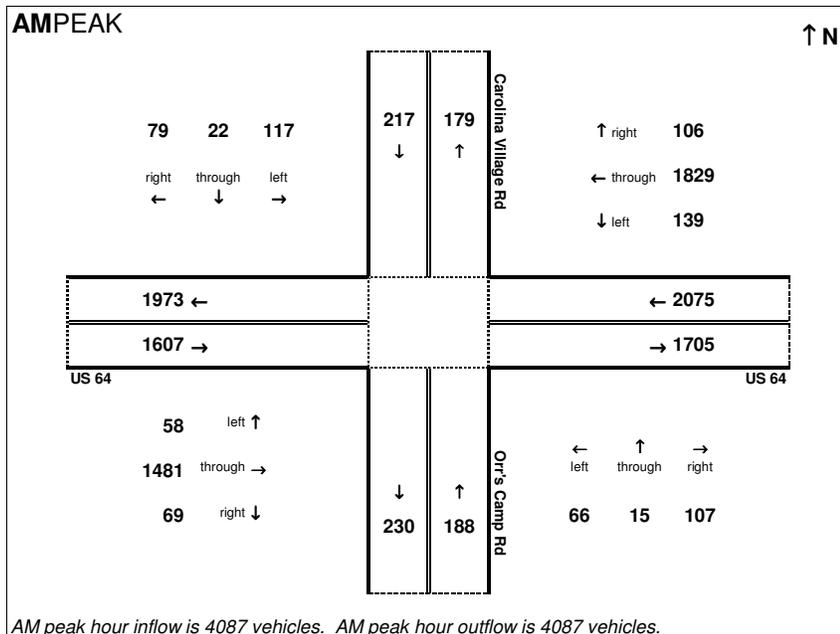
Peak Hour Volume Breakouts Report:

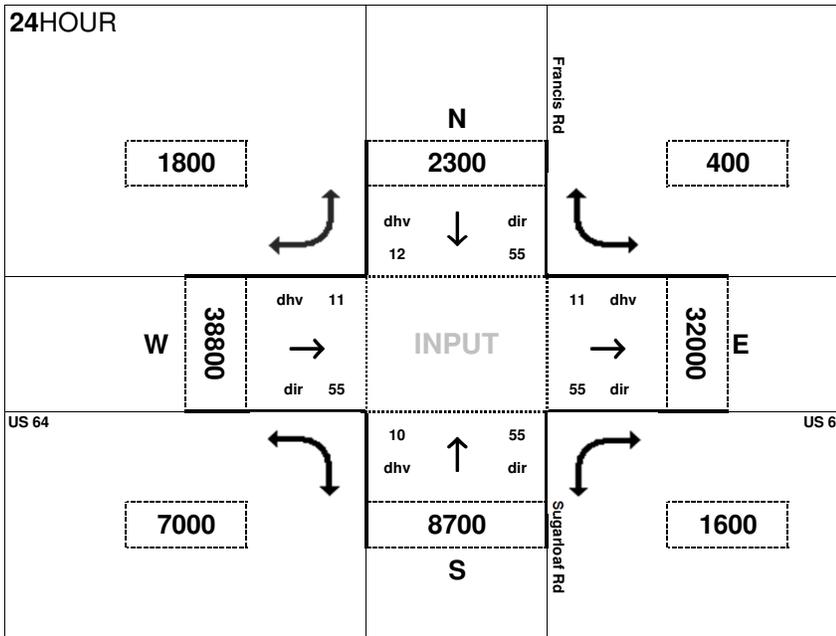
12a. US 64 & Carolina Village Rd / Orr's Camp Rd

Traffic Forecast Release Date:
February-12

Traffic Data Year:
2011 BY - No-Build

Project:
STIP I-4400/4700 - I-26 Widening



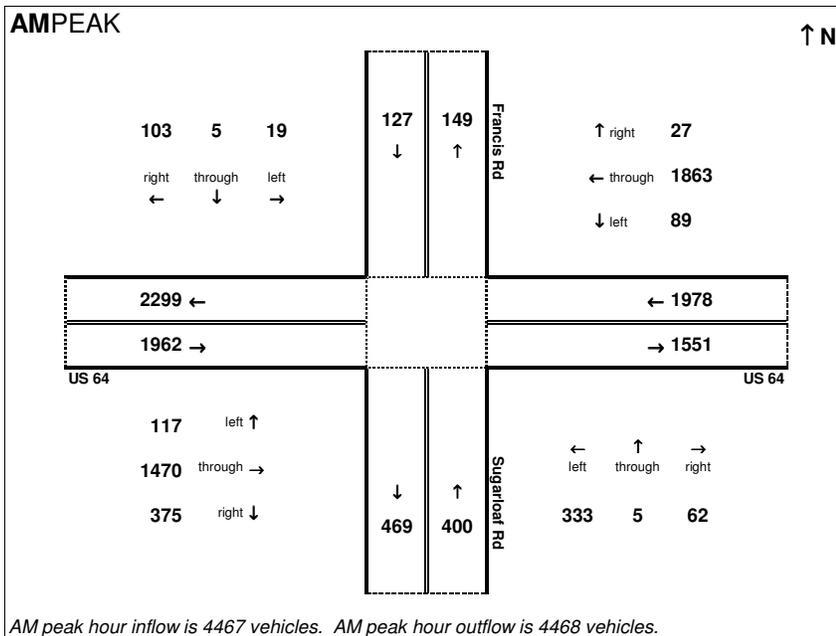


Peak Hour Volume Breakouts Report:
12b. US 64 & Francis Rd / Sugarloaf Rd

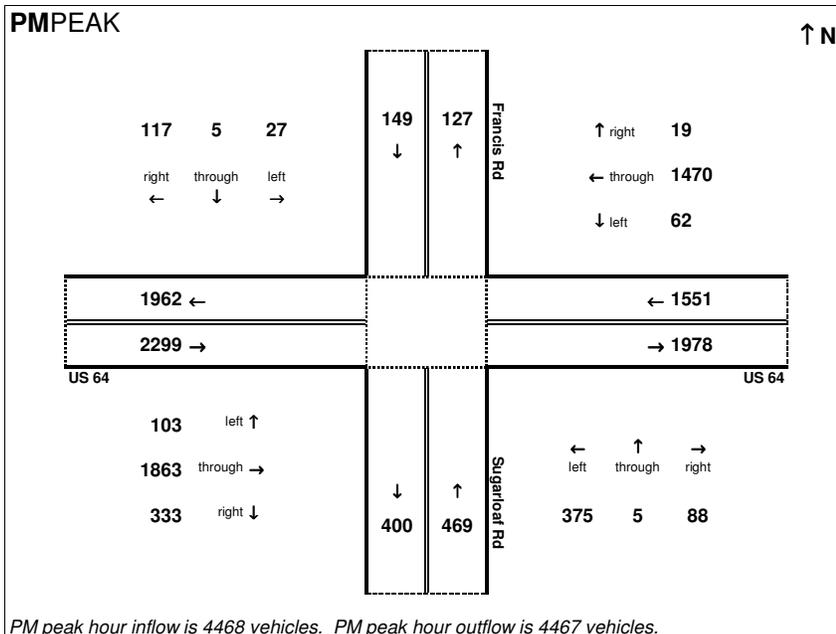
Traffic Forecast Release Date:
February-12

Traffic Data Year:
2011 BY - No-Build

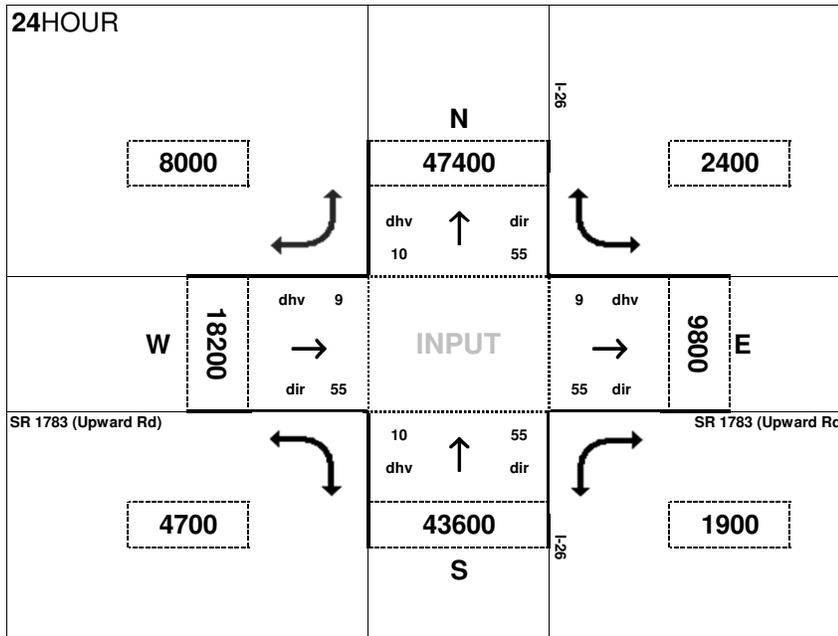
Project:
STIP I-4400/4700 - I-26 Widening



AM peak hour inflow is 4467 vehicles. AM peak hour outflow is 4468 vehicles.



PM peak hour inflow is 4468 vehicles. PM peak hour outflow is 4467 vehicles.

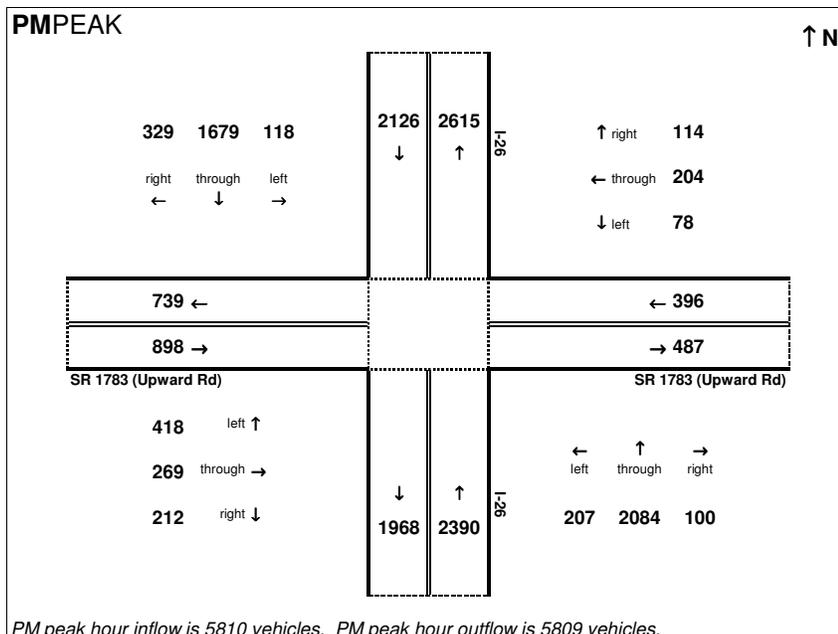
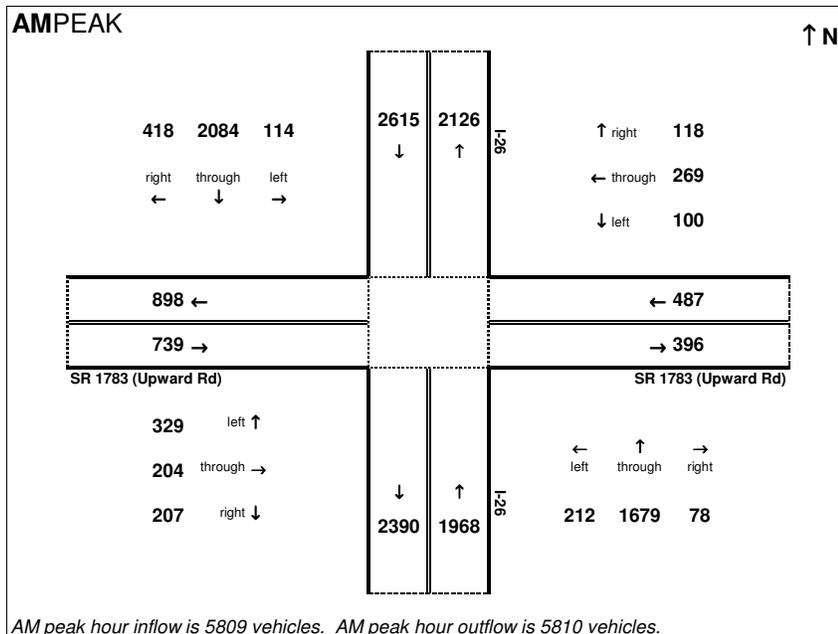


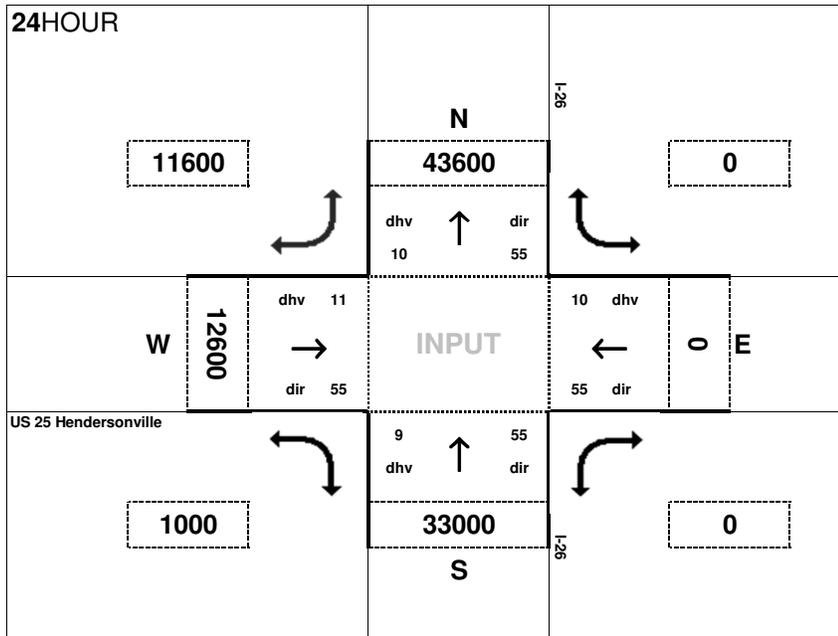
Peak Hour Volume Breakouts Report:
13. I-26 & Upward Road Interchange

Traffic Forecast Release Date:
February-12

Traffic Data Year:
2011 BY - No-Build

Project:
STIP I-4400/4700 - I-26 Widening



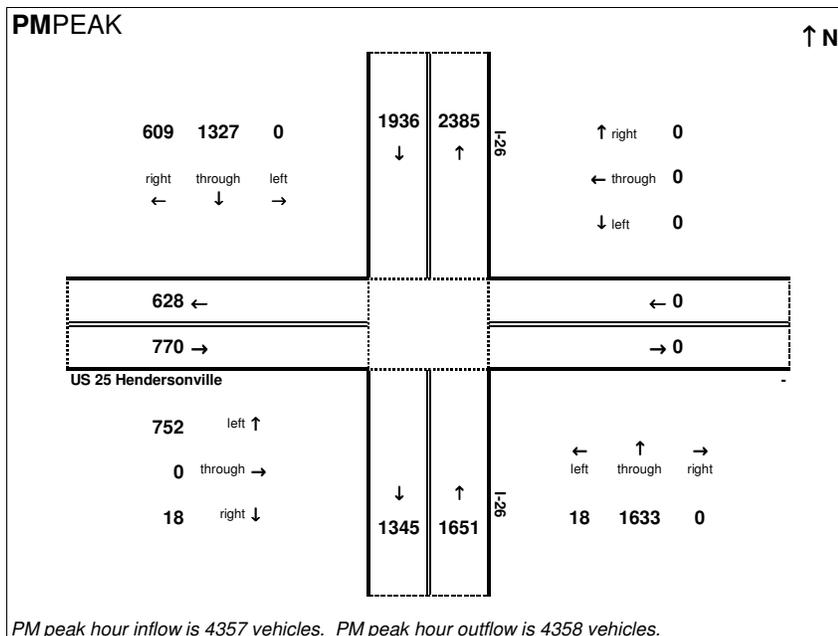
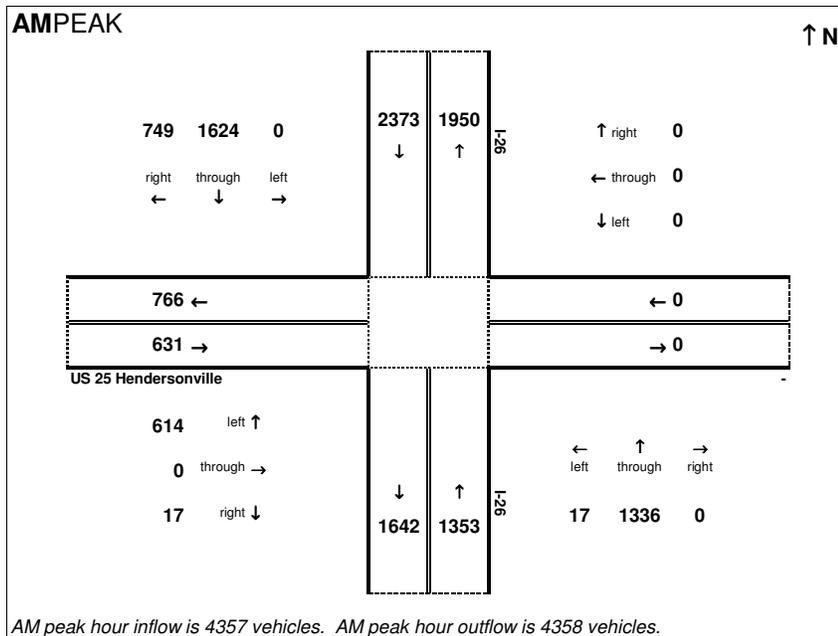


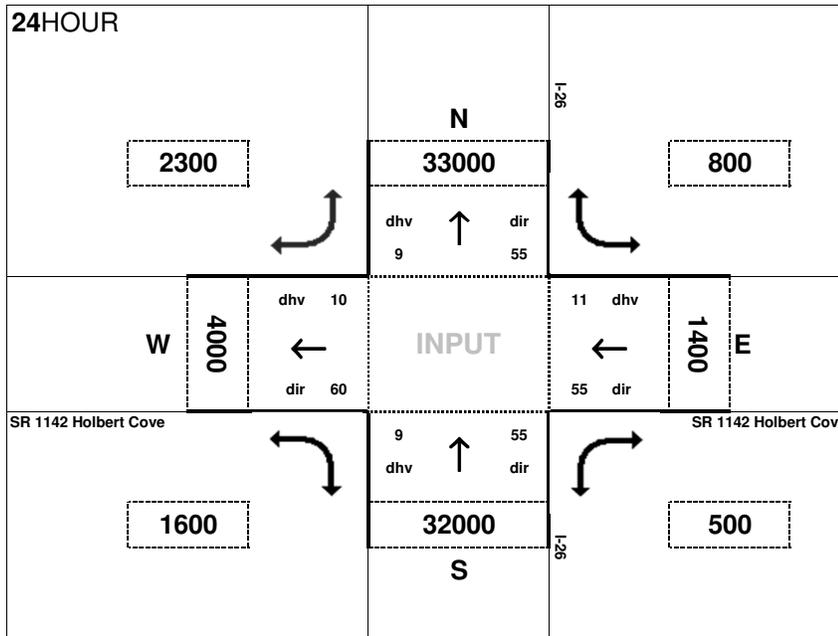
Peak Hour Volume Breakouts Report:
14. I-26 & US 25 Hendersonville Interchange

Traffic Forecast Release Date:
February-12

Traffic Data Year:
2011 BY - No-Build

Project:
STIP I-4400/4700 - I-26 Widening



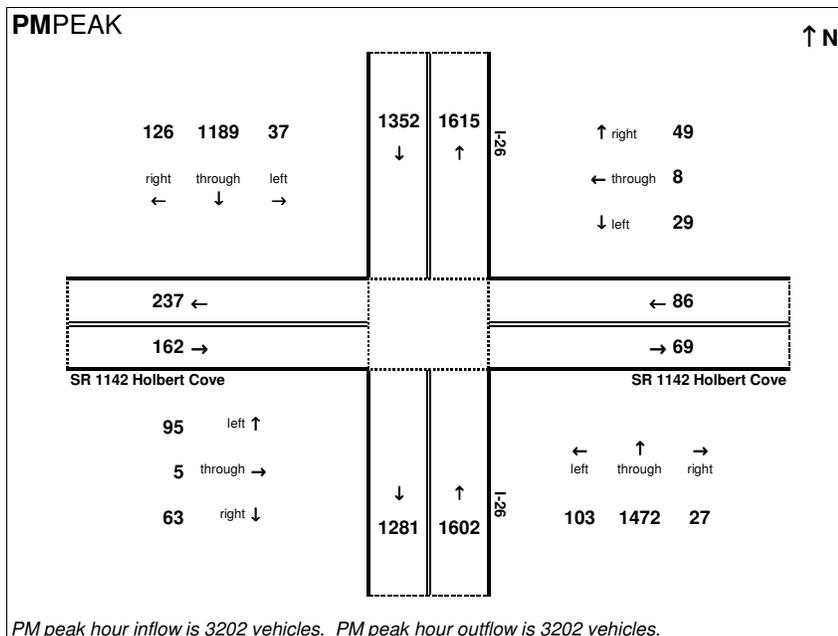
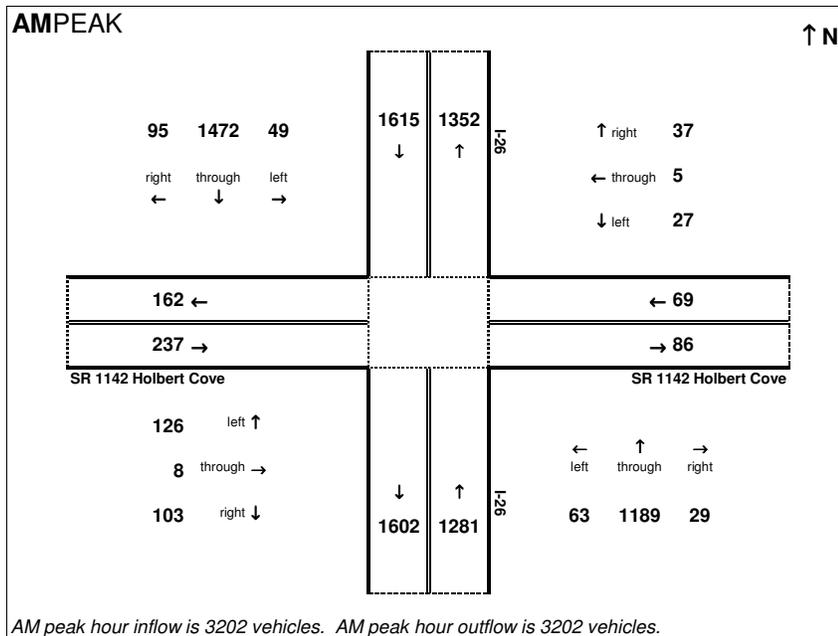


Peak Hour Volume Breakouts Report:
15. I-26 & Holbert Cove Rd Interchange

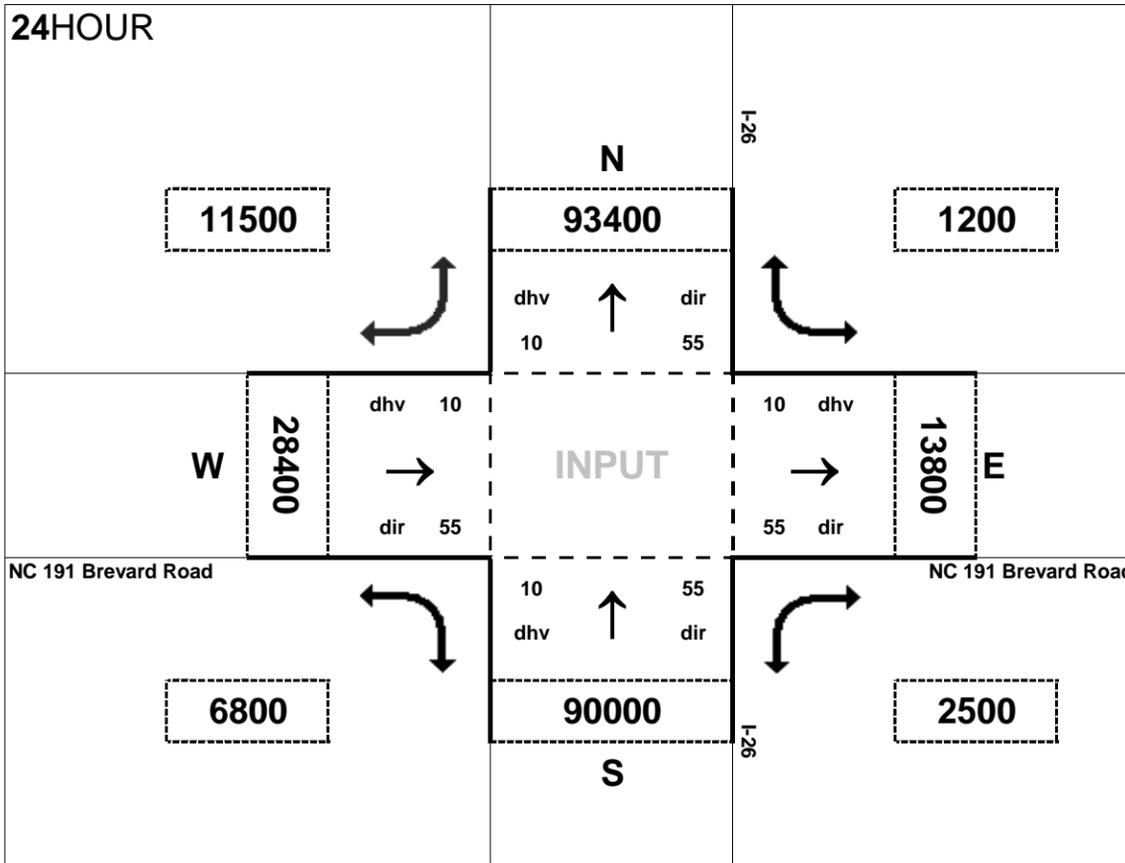
Traffic Forecast Release Date:
February-12

Traffic Data Year:
2011 BY - No-Build

Project:
STIP I-4400/4700 - I-26 Widening



2011 Build 8/6 Lane



Peak Hour Volume Breakouts Report:

1. I-26 & NC 191 Interchange

Traffic Forecast Release Date:

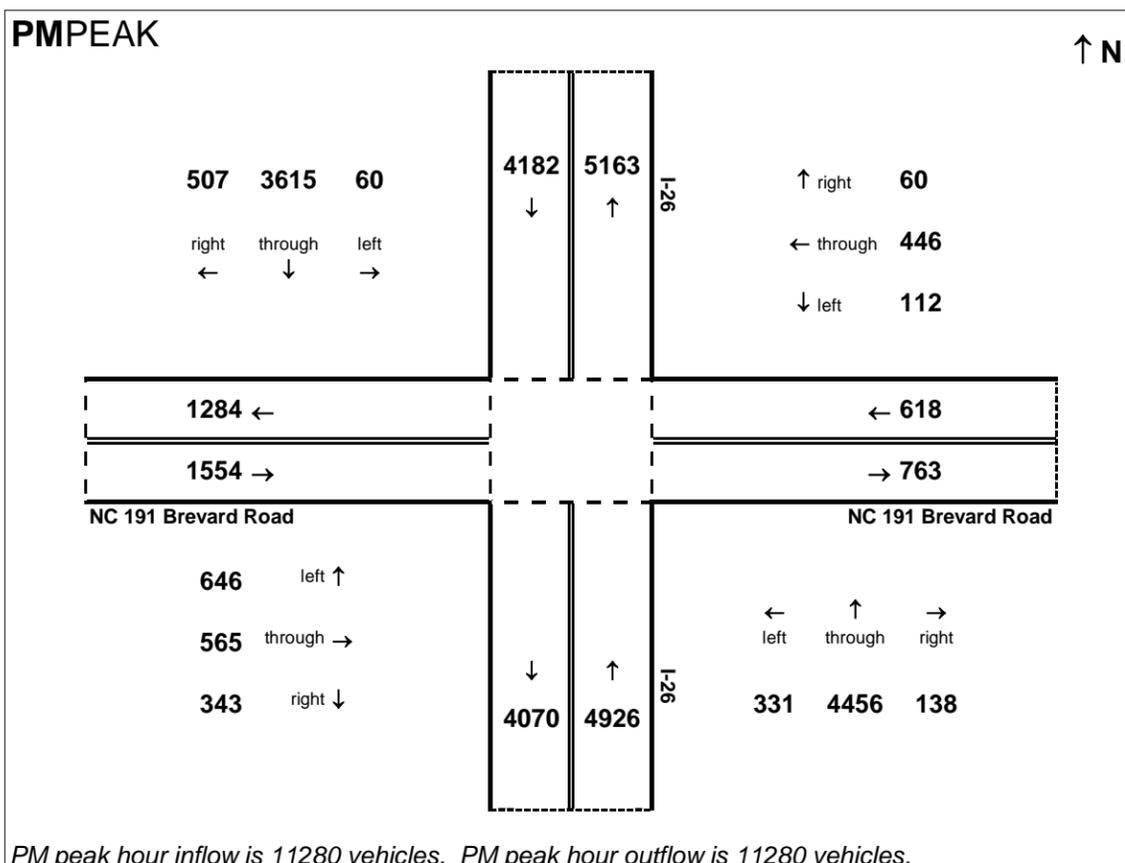
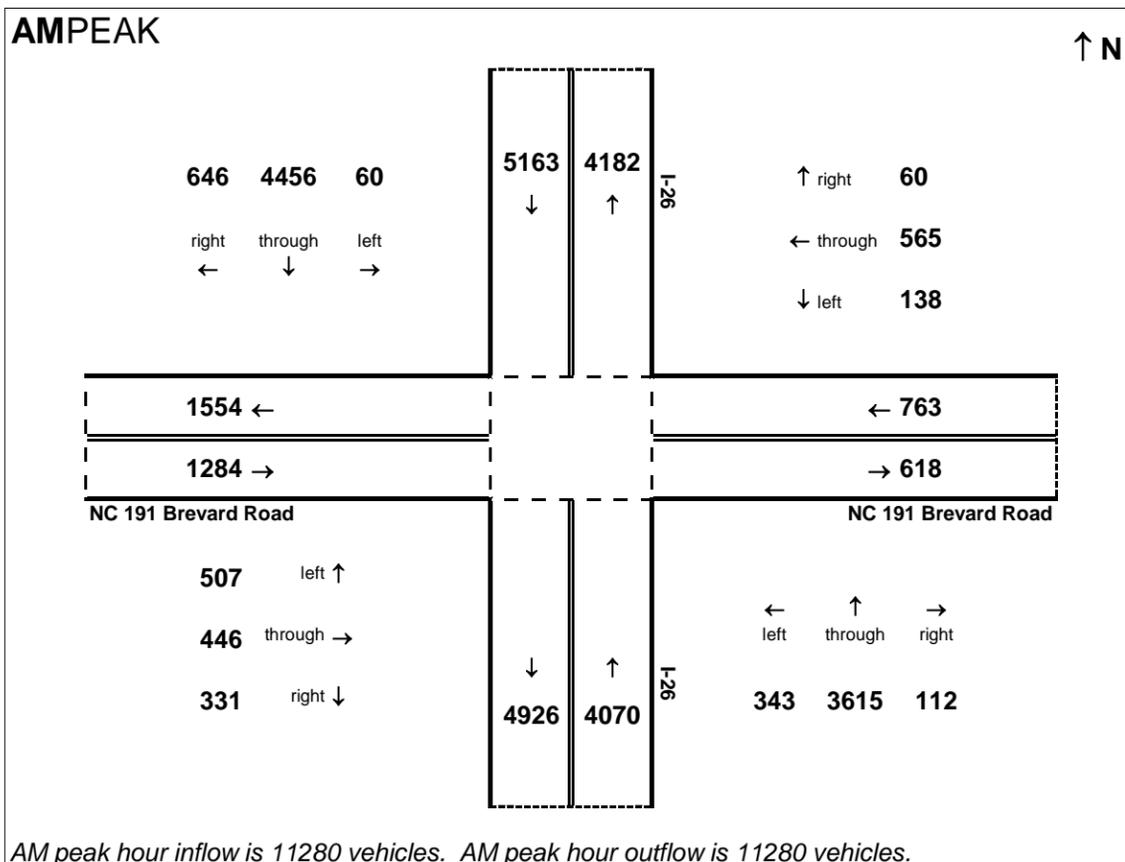
December-13

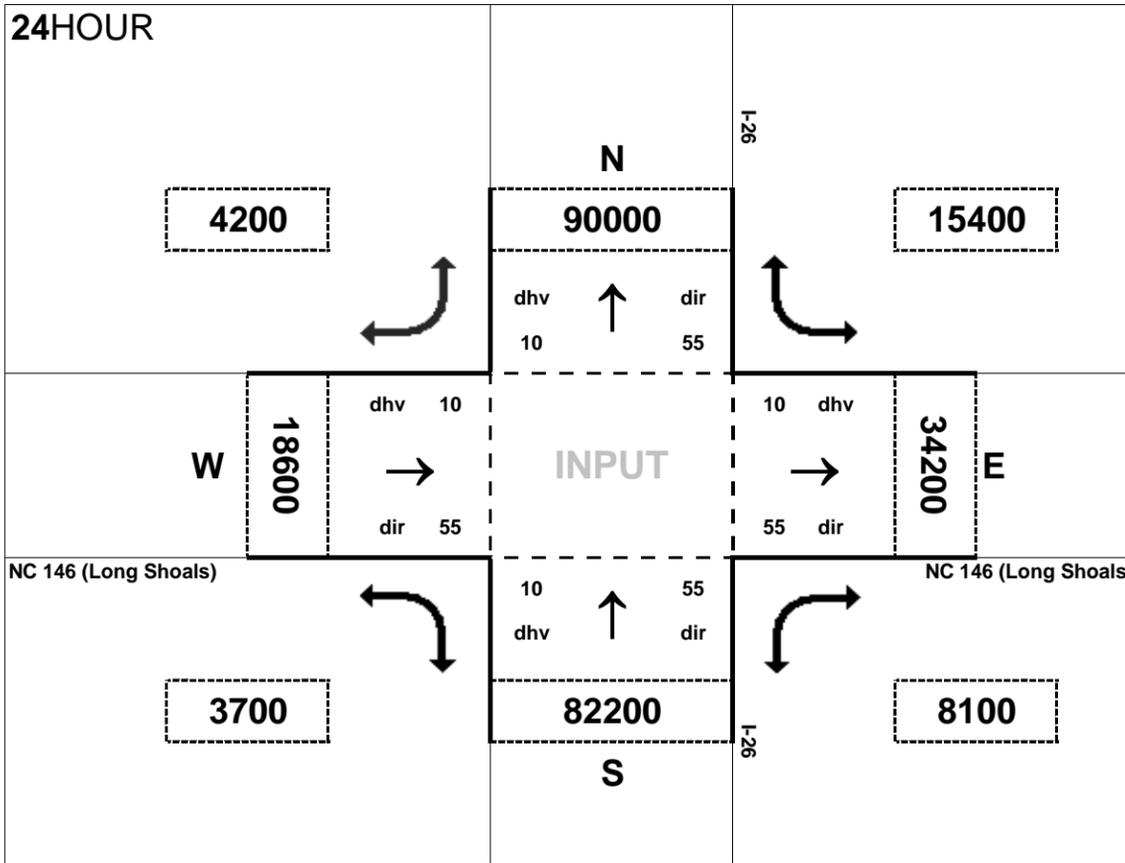
Traffic Data Year:

2011 BY - Bld 6/8 Ln

Project:

STIP I-4400/4700 - I-26 Widening





Peak Hour Volume Breakouts Report:

2. I-26 & NC 146 Interchange

Traffic Forecast Release Date:

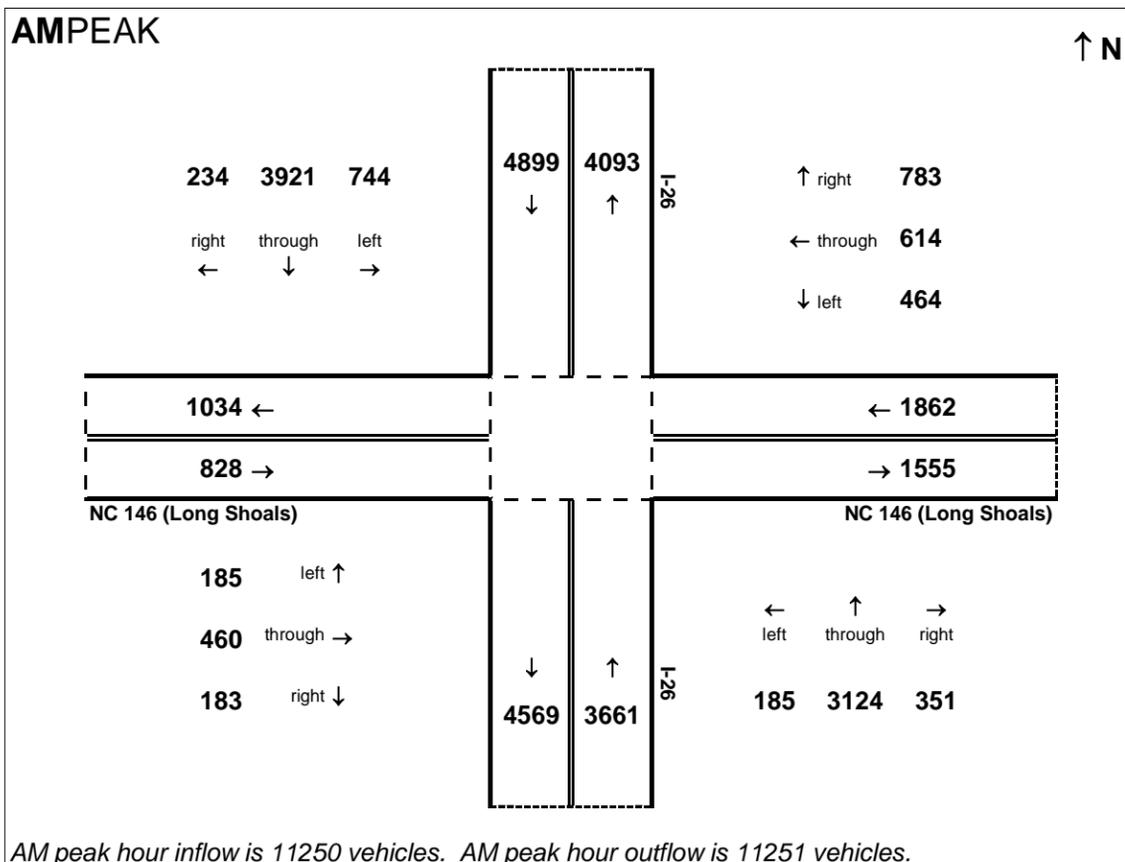
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Traffic Data Year:

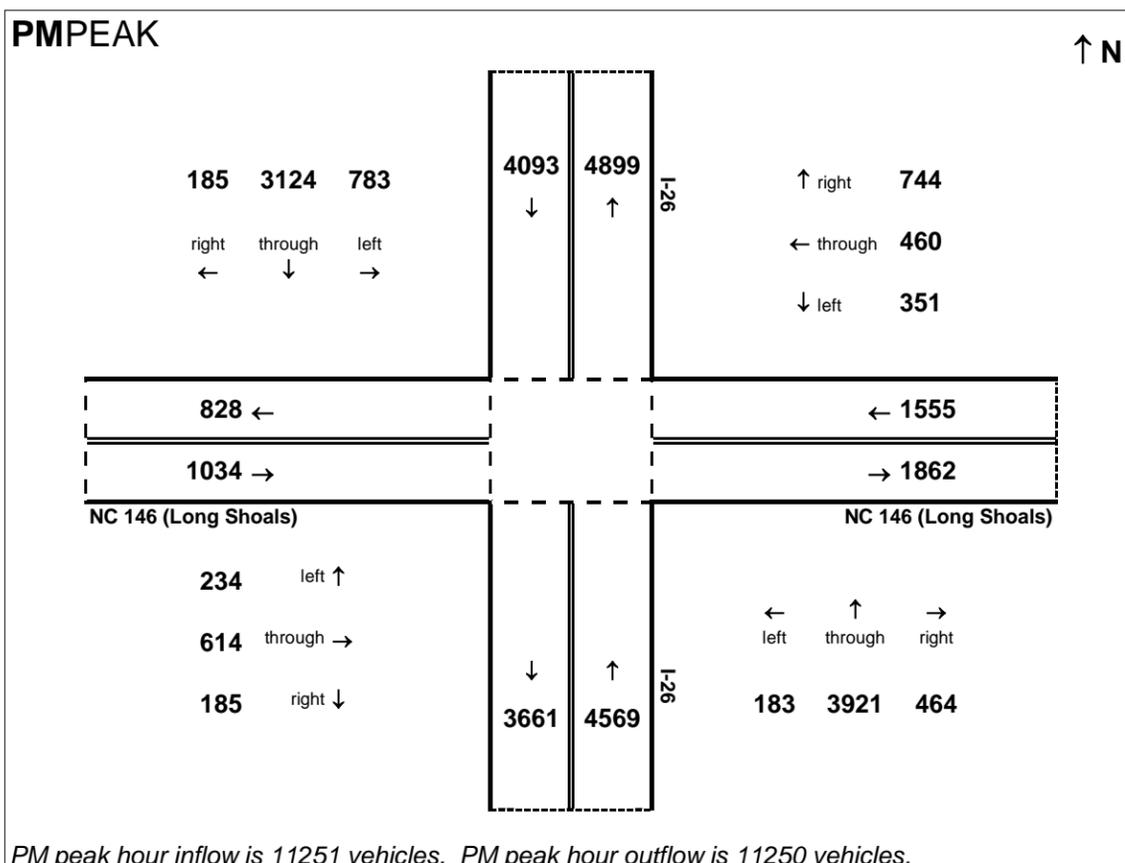
2011 BY - Bld 6/8 Ln

Project:

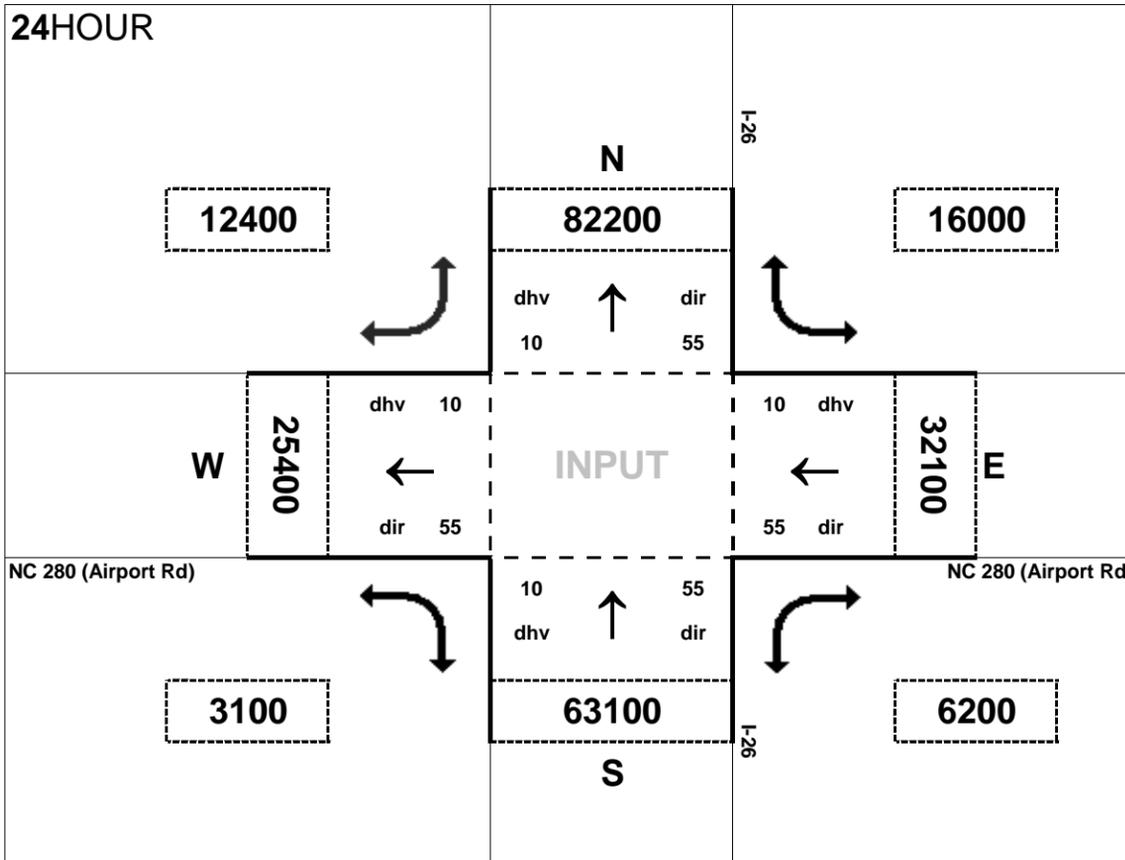
STIP I-4400/4700 - I-26 Widening



AM peak hour inflow is 11250 vehicles. AM peak hour outflow is 11251 vehicles.



PM peak hour inflow is 11251 vehicles. PM peak hour outflow is 11250 vehicles.

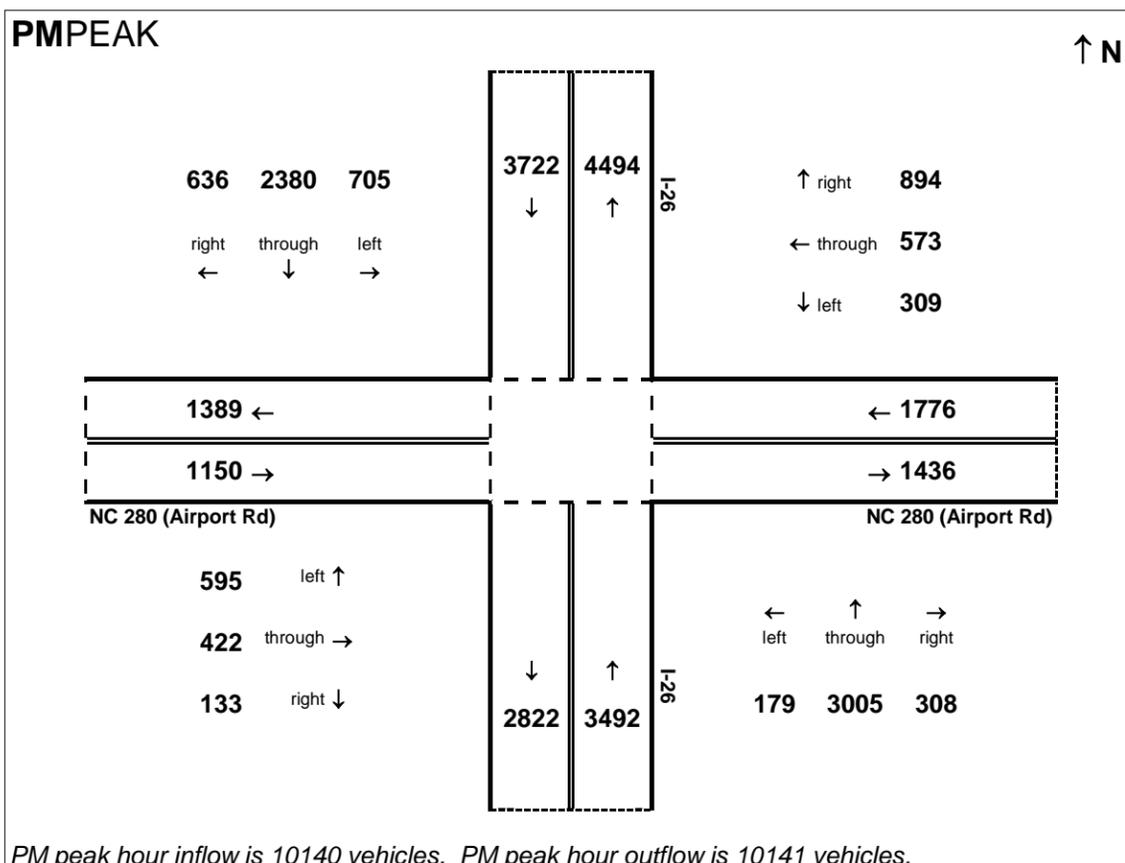
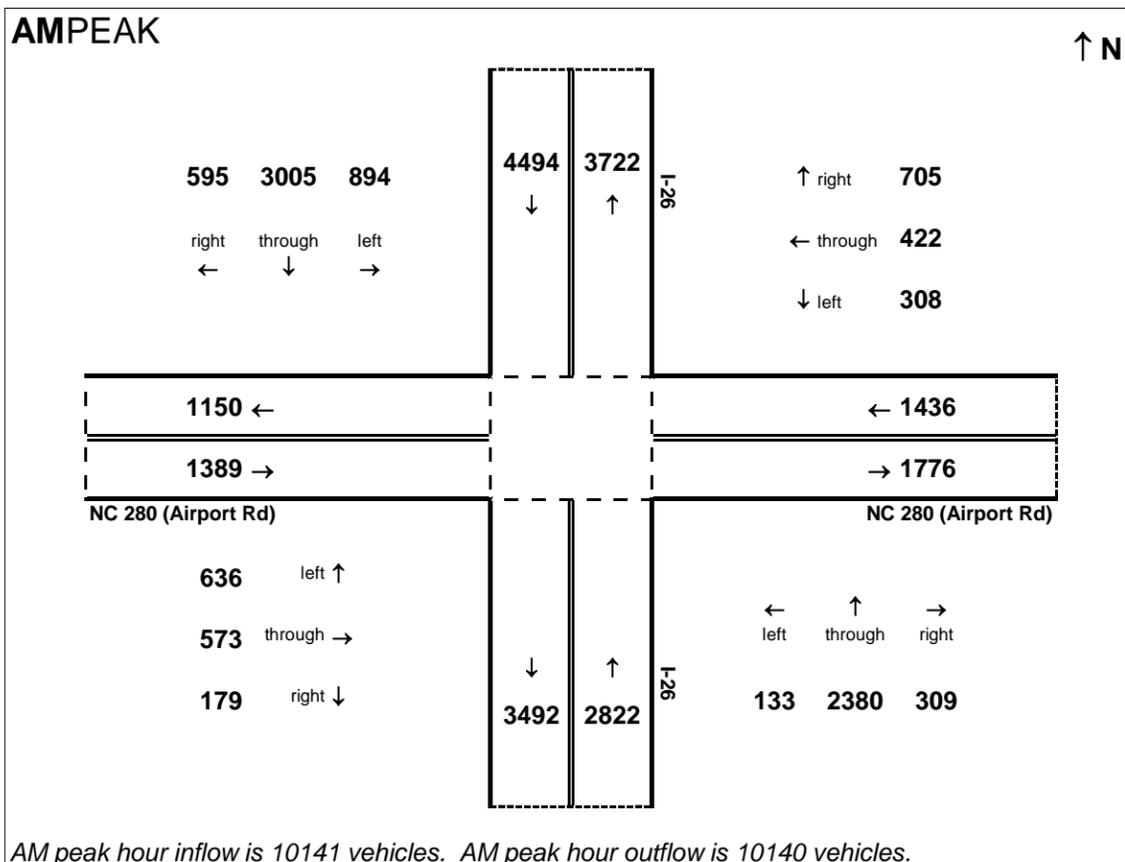


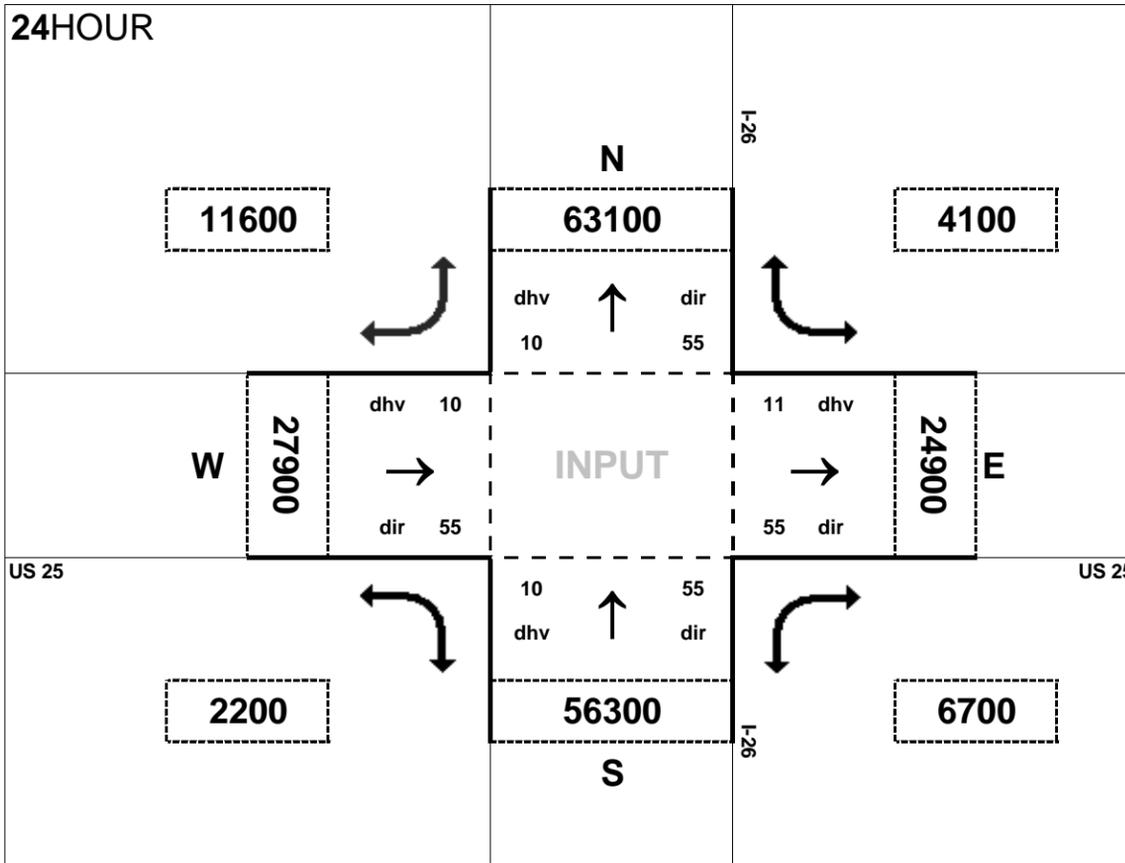
Peak Hour Volume Breakouts Report:
3. I-26 & NC 280 Interchange

Traffic Forecast Release Date:
December-13

Traffic Data Year:
2011 BY - Bld 6/8 Ln

Project:
STIP I-4400/4700 - I-26 Widening



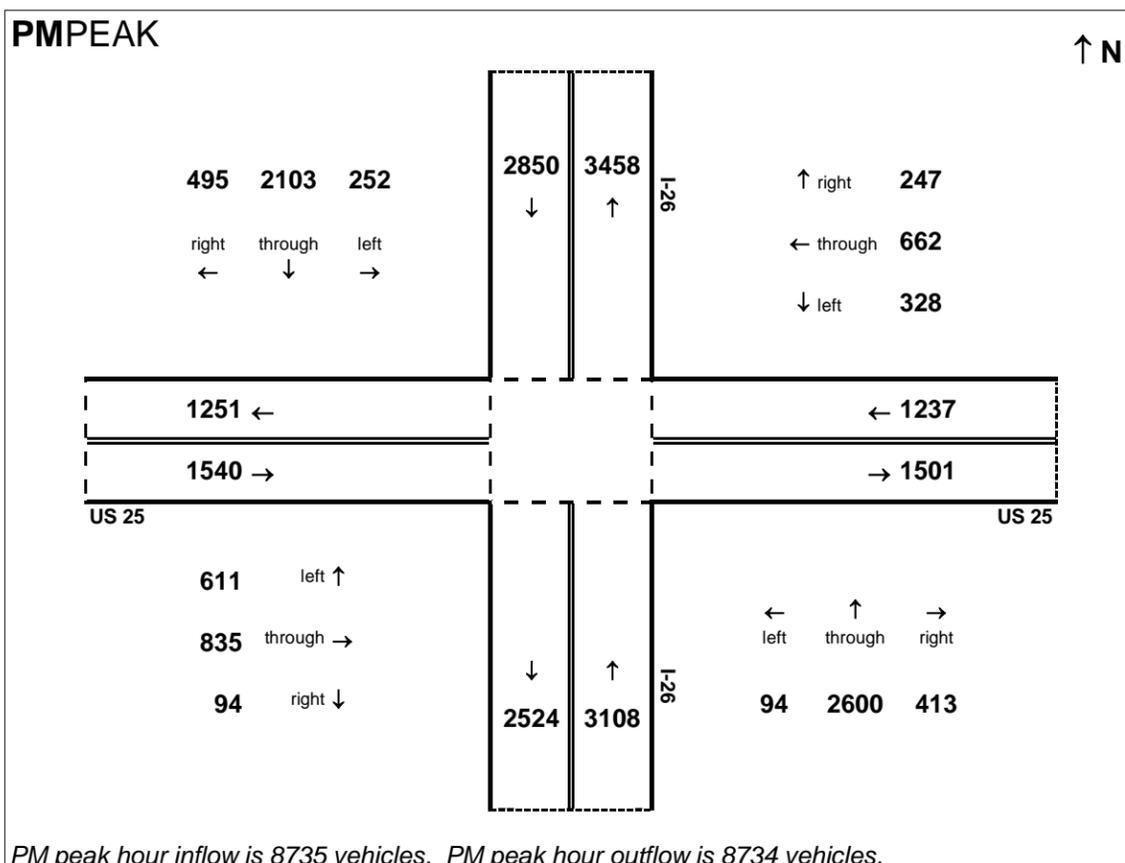
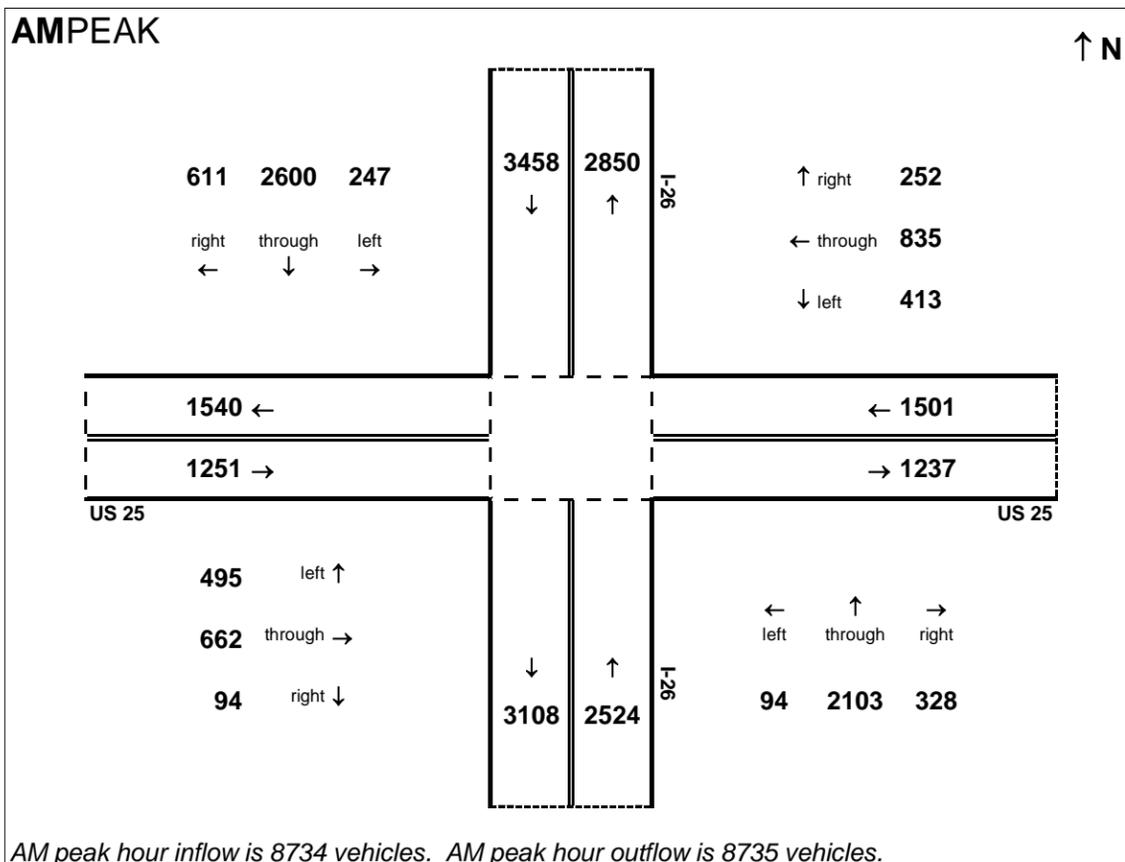


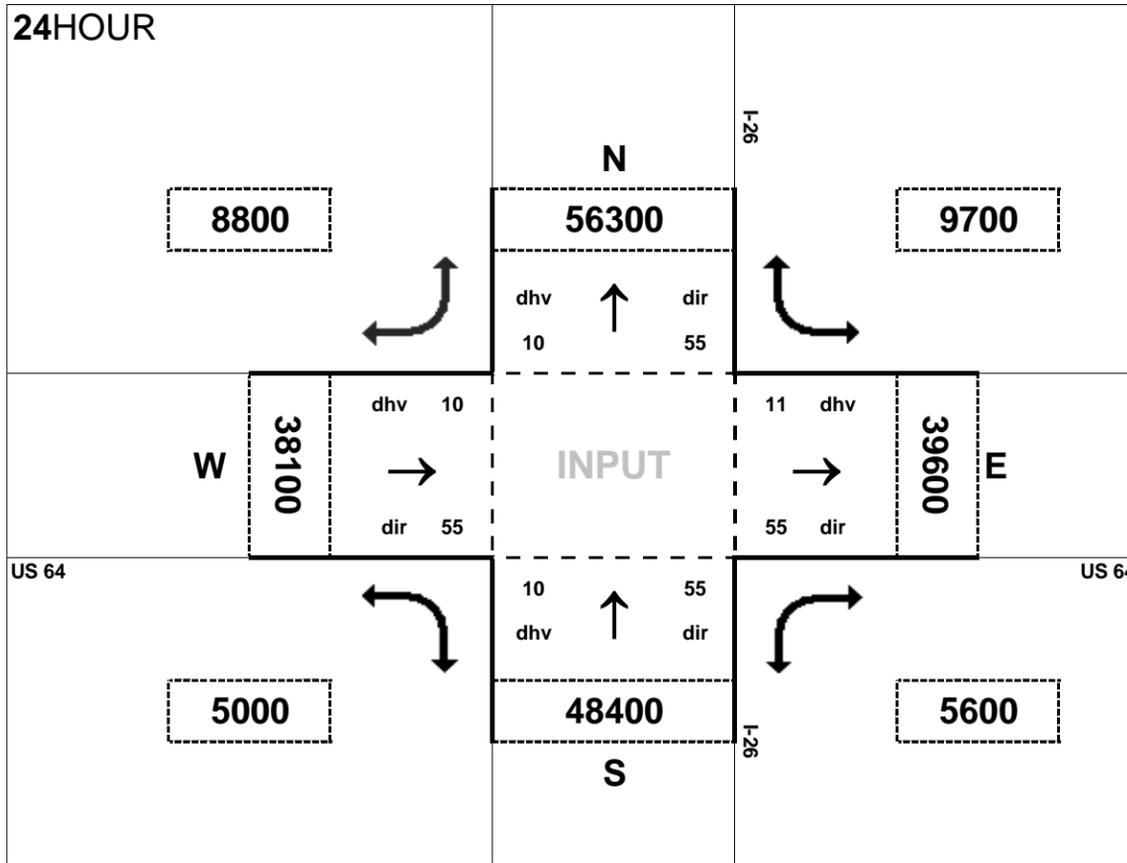
Peak Hour Volume Breakouts Report:
5. I-26 & US 25 Interchange

Traffic Forecast Release Date:
December-13

Traffic Data Year:
2011 BY - Bld 6/8 Ln

Project:
STIP I-4400/4700 - I-26 Widening



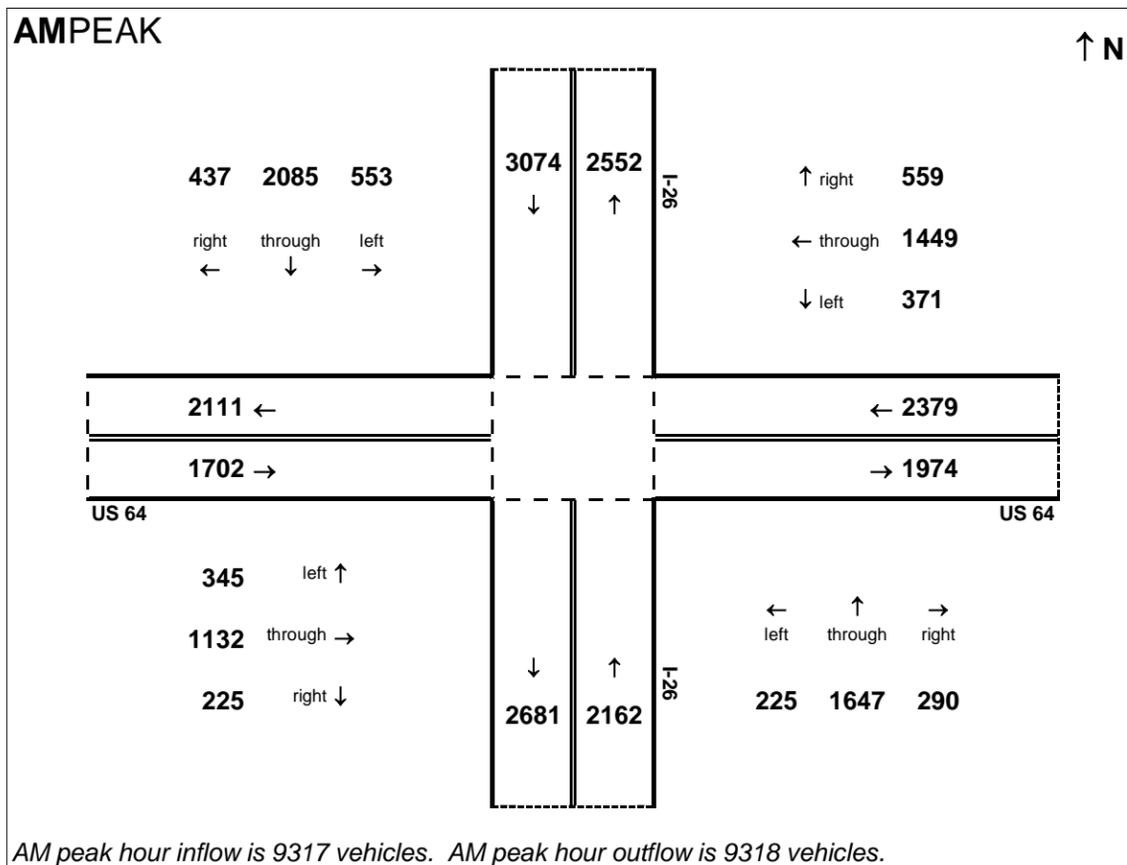


Peak Hour Volume Breakouts Report:
8. I-26 & US 64 System Interchange

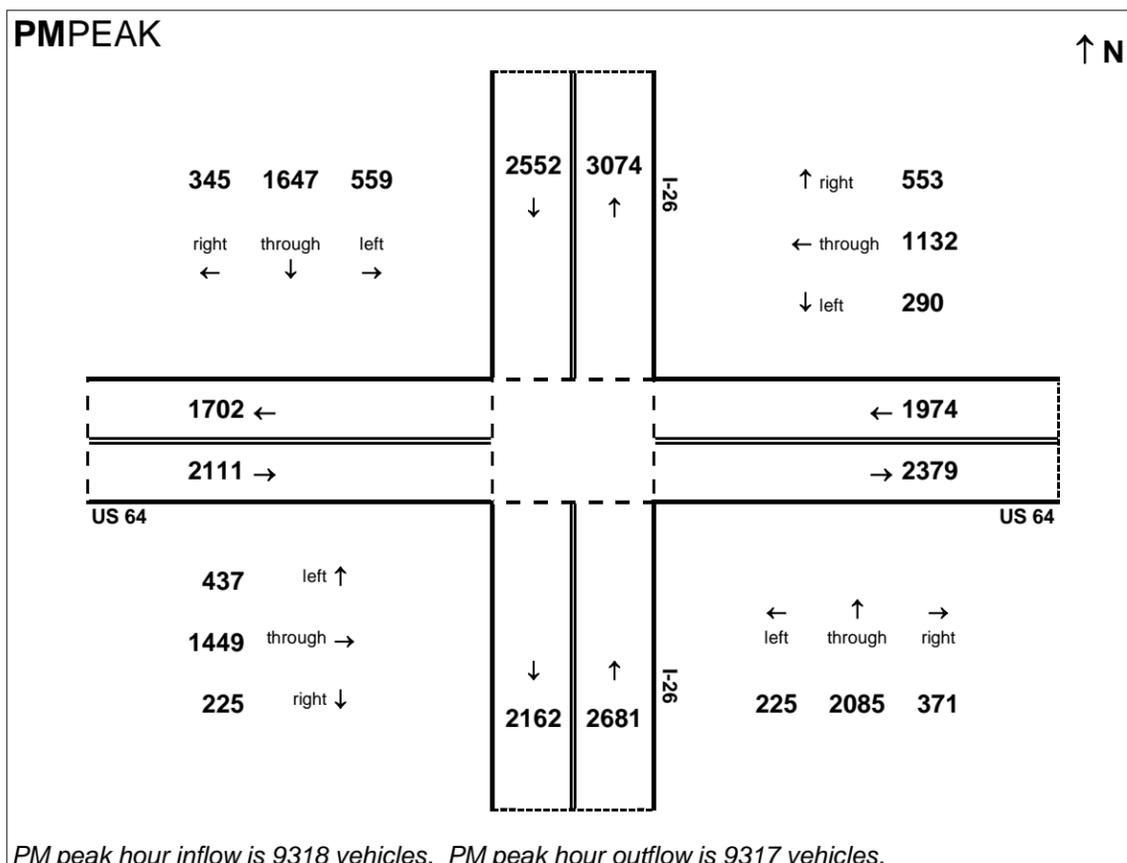
Traffic Forecast Release Date:
December-13

Traffic Data Year:
2011 BY - Bld 6/8 Ln

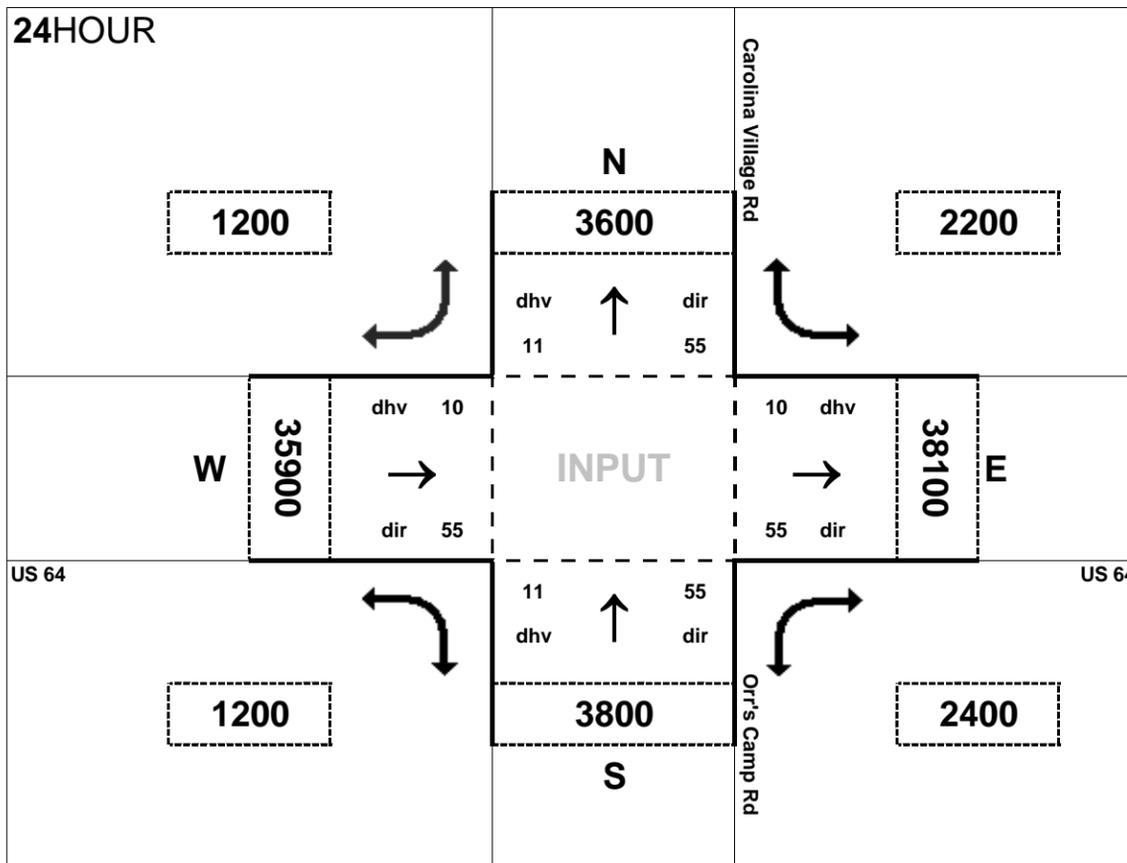
Project:
STIP I-4400/4700 - I-26 Widening



AM peak hour inflow is 9317 vehicles. AM peak hour outflow is 9318 vehicles.



PM peak hour inflow is 9318 vehicles. PM peak hour outflow is 9317 vehicles.



Peak Hour Volume Breakouts Report:

8a. US 64 & Carolina Village Rd / Orr's Camp Rd

Traffic Forecast Release Date:

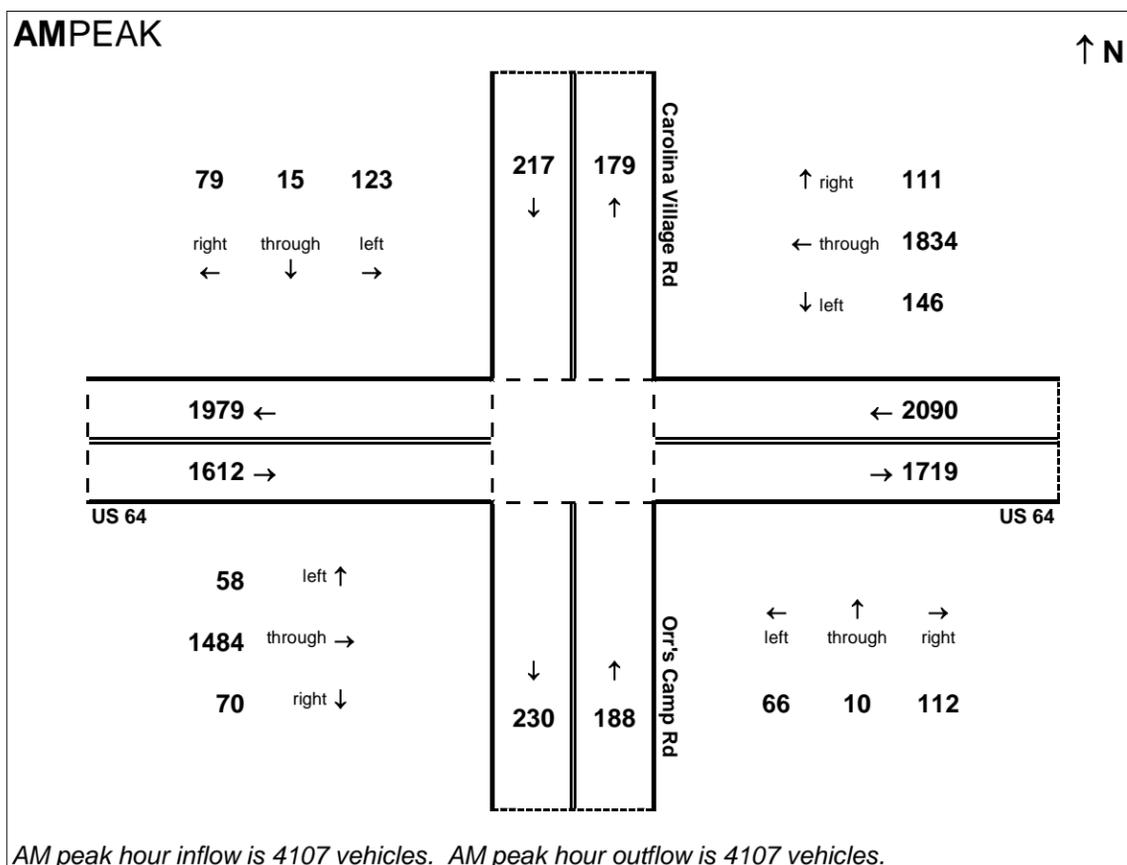
December-13

Traffic Data Year:

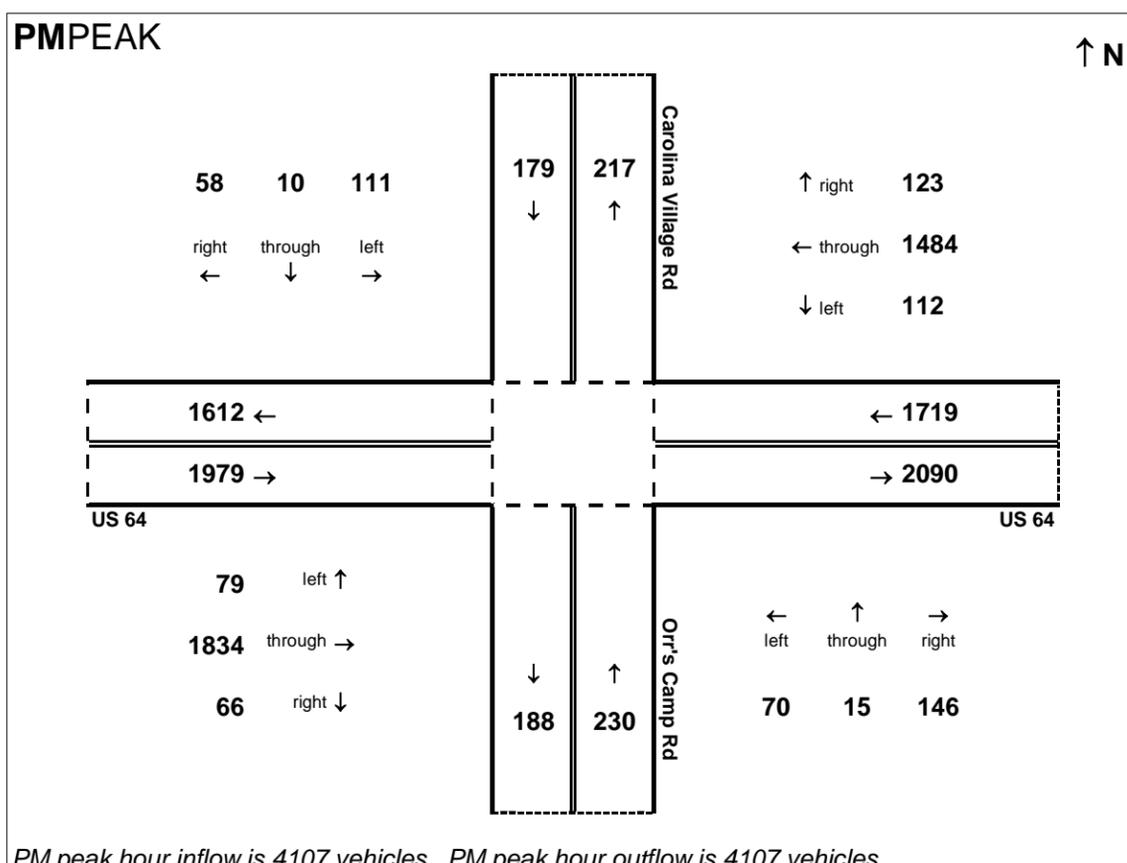
2011 BY - Bld 6/8 Ln

Project:

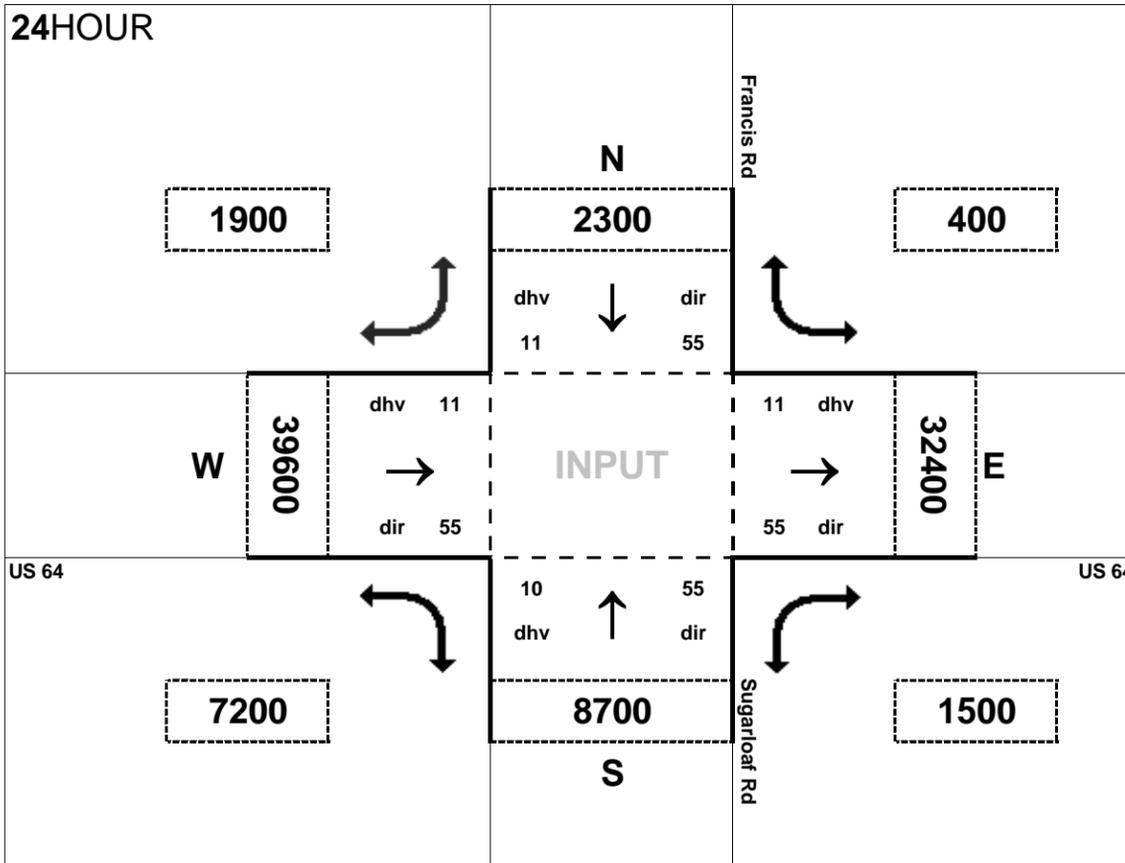
STIP I-4400/4700 - I-26 Widening



AM peak hour inflow is 4107 vehicles. AM peak hour outflow is 4107 vehicles.



PM peak hour inflow is 4107 vehicles. PM peak hour outflow is 4107 vehicles.

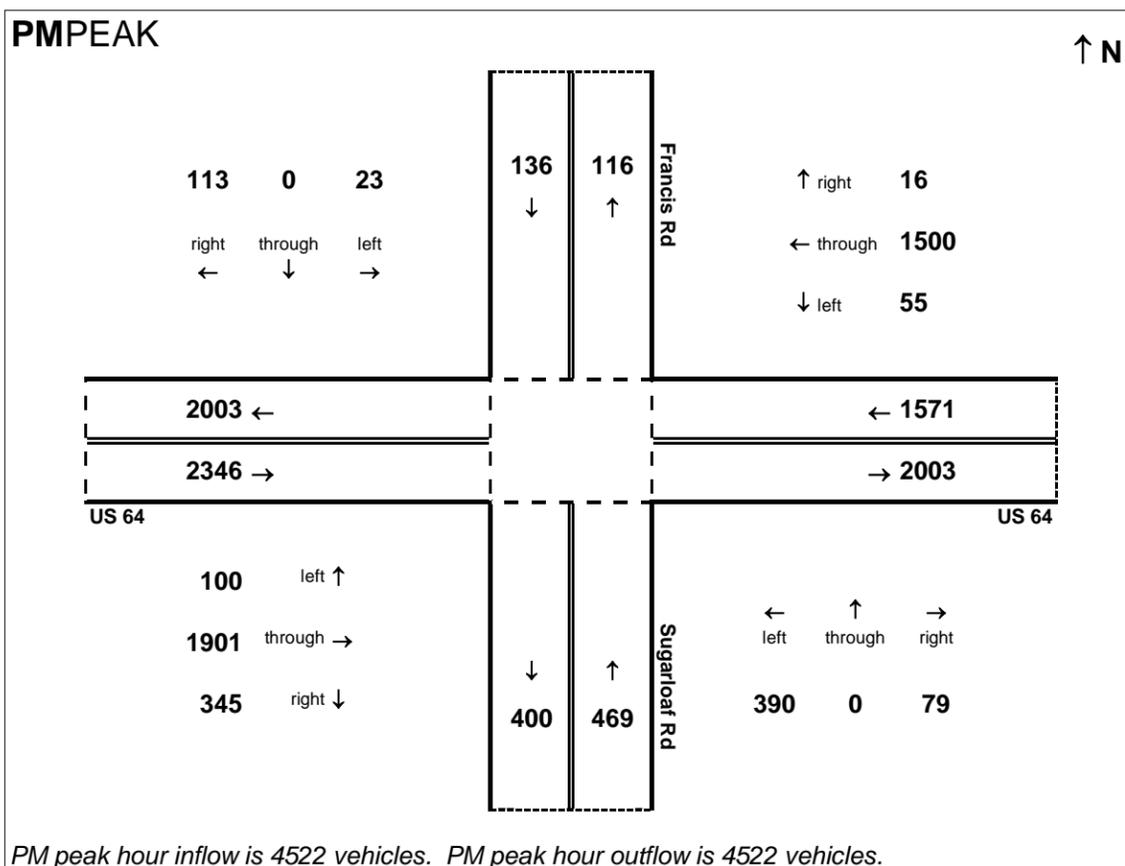
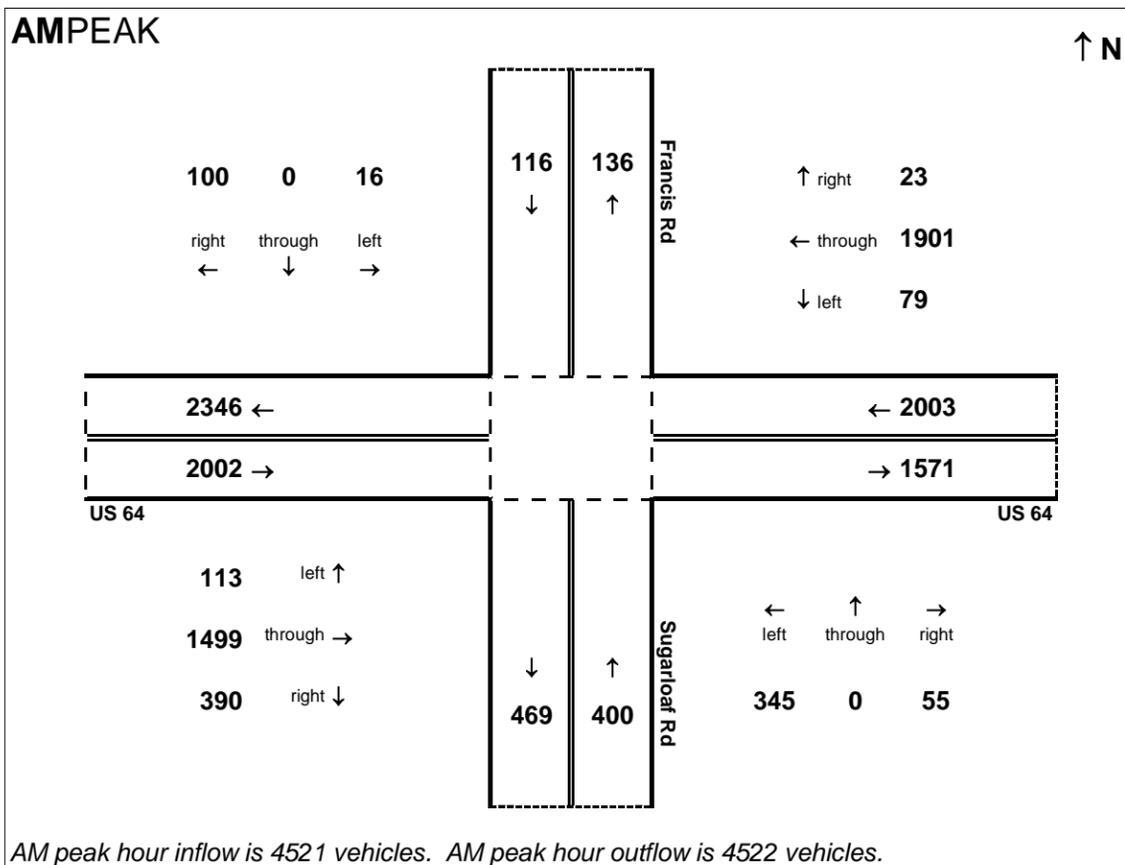


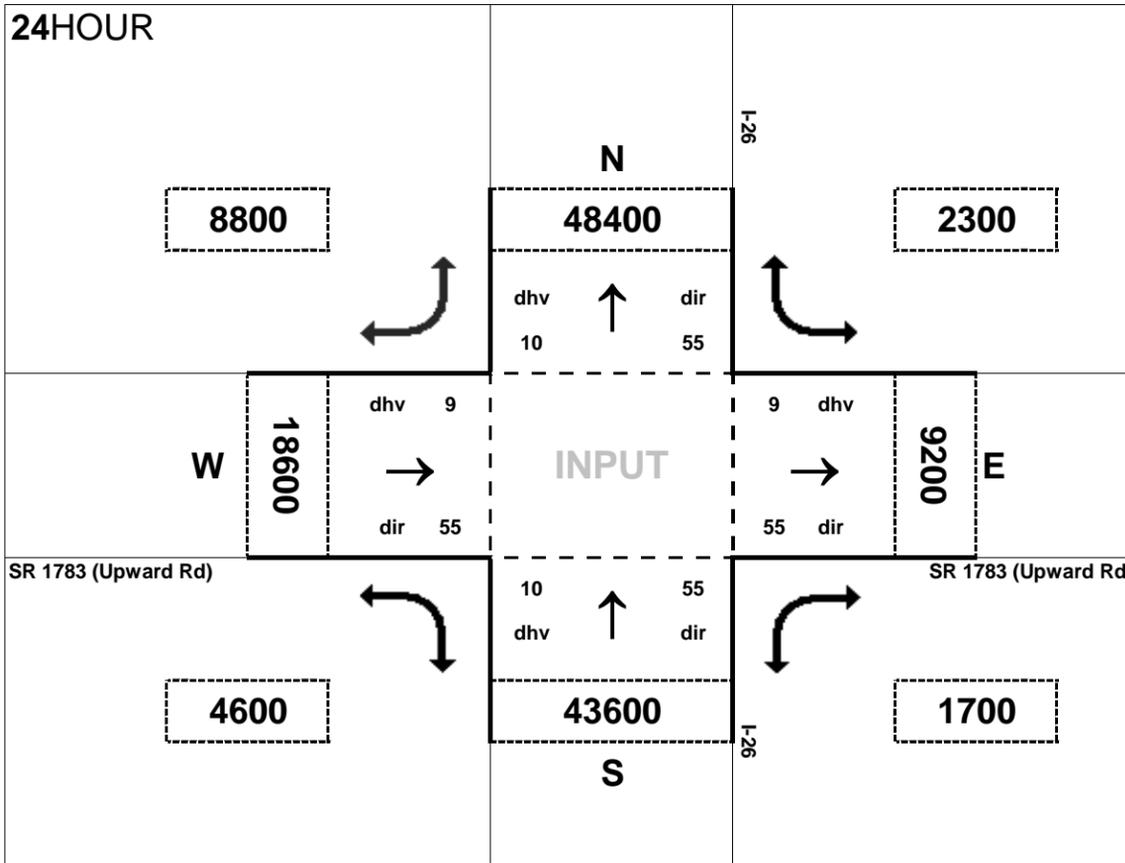
Peak Hour Volume Breakouts Report:
8b. US 64 & Francis Rd / Sugarloaf Rd

Traffic Forecast Release Date:
December-13

Traffic Data Year:
2011 BY - Bld 6/8 Ln

Project:
STIP I-4400/4700 - I-26 Widening



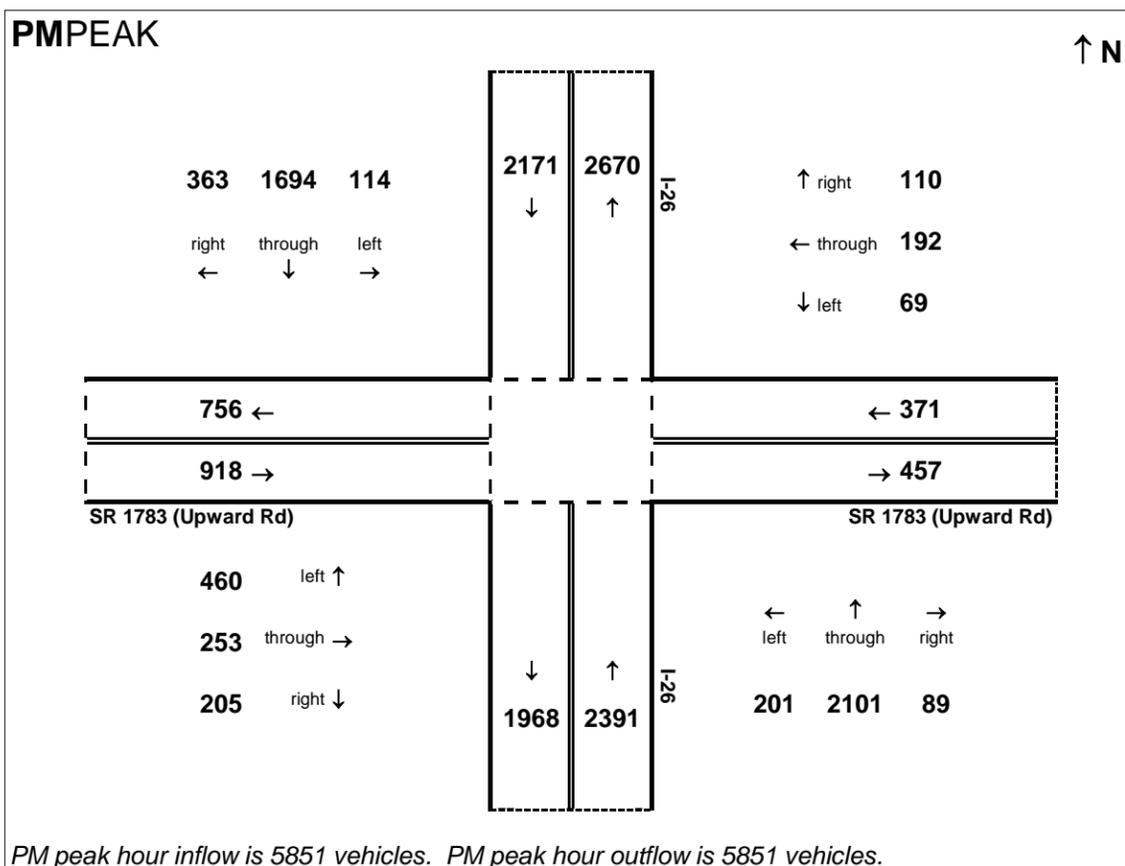
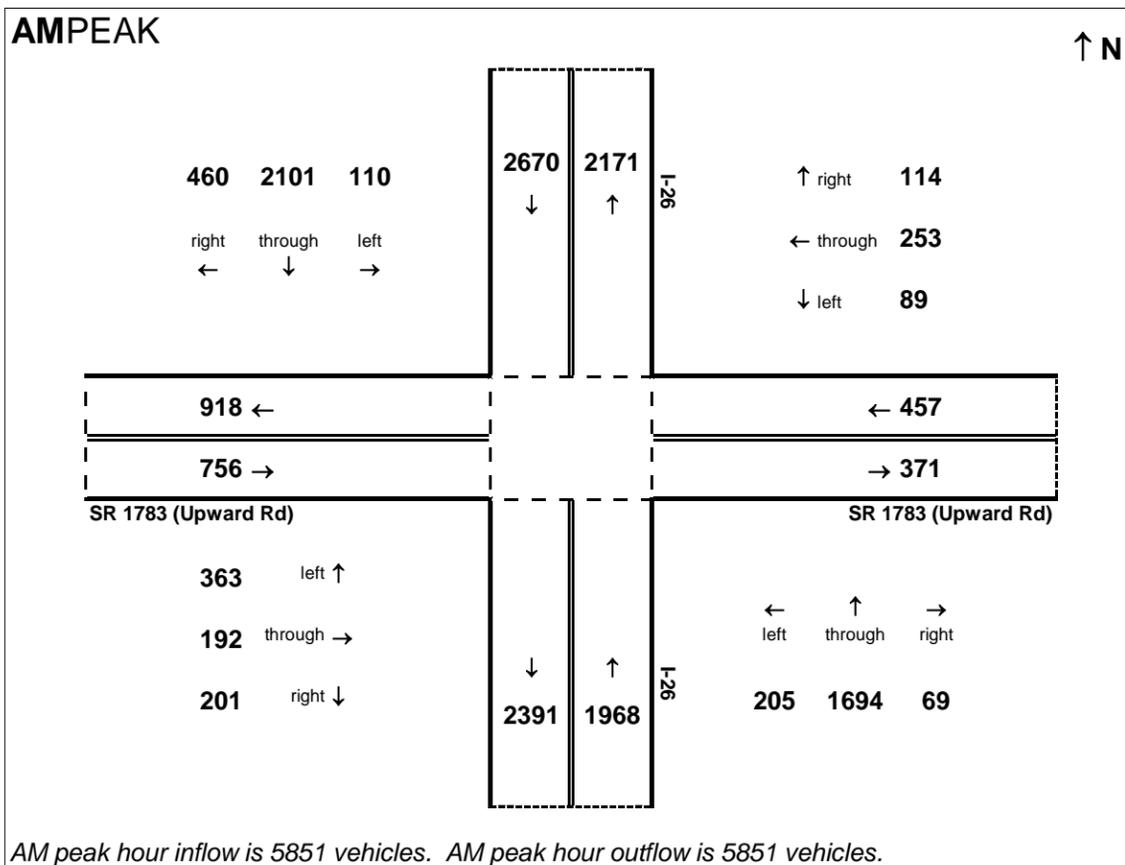


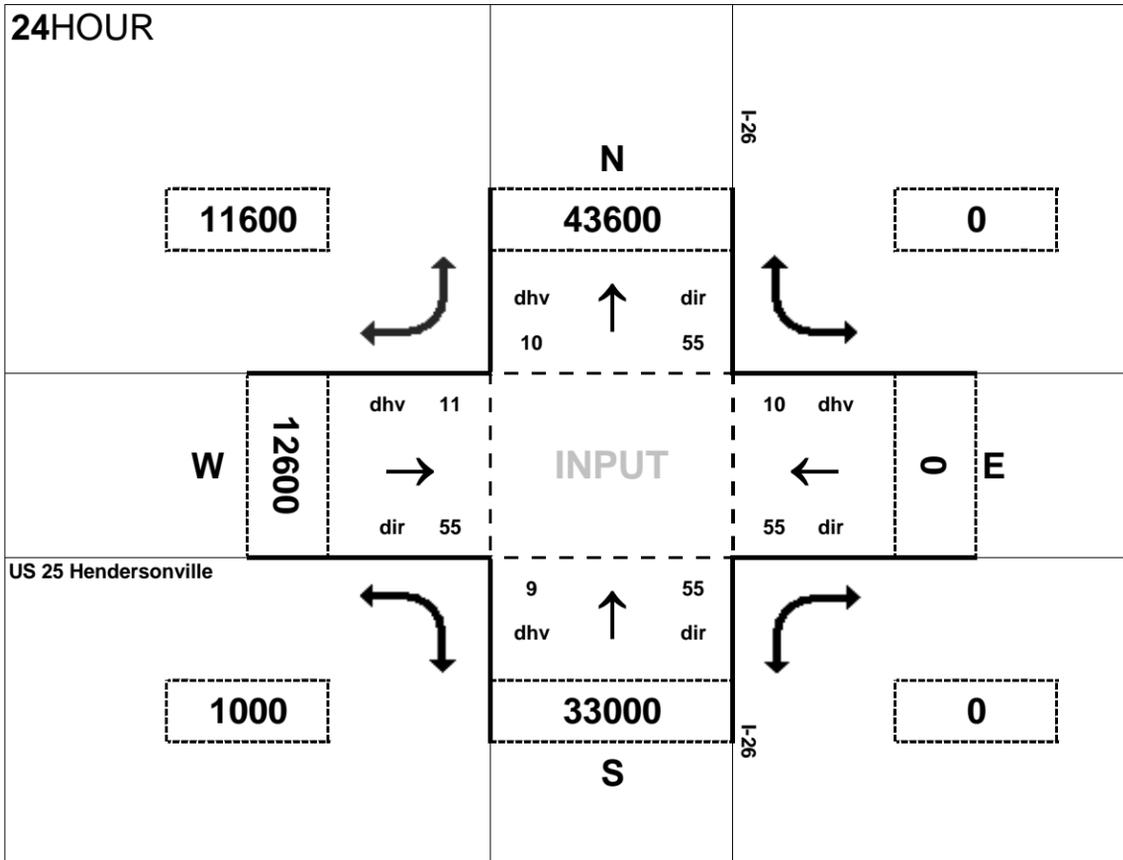
Peak Hour Volume Breakouts Report:
9. I-26 & Upward Road Interchange

Traffic Forecast Release Date:
December-13

Traffic Data Year:
2011 BY - Bld 6/8 Ln

Project:
STIP I-4400/4700 - I-26 Widening



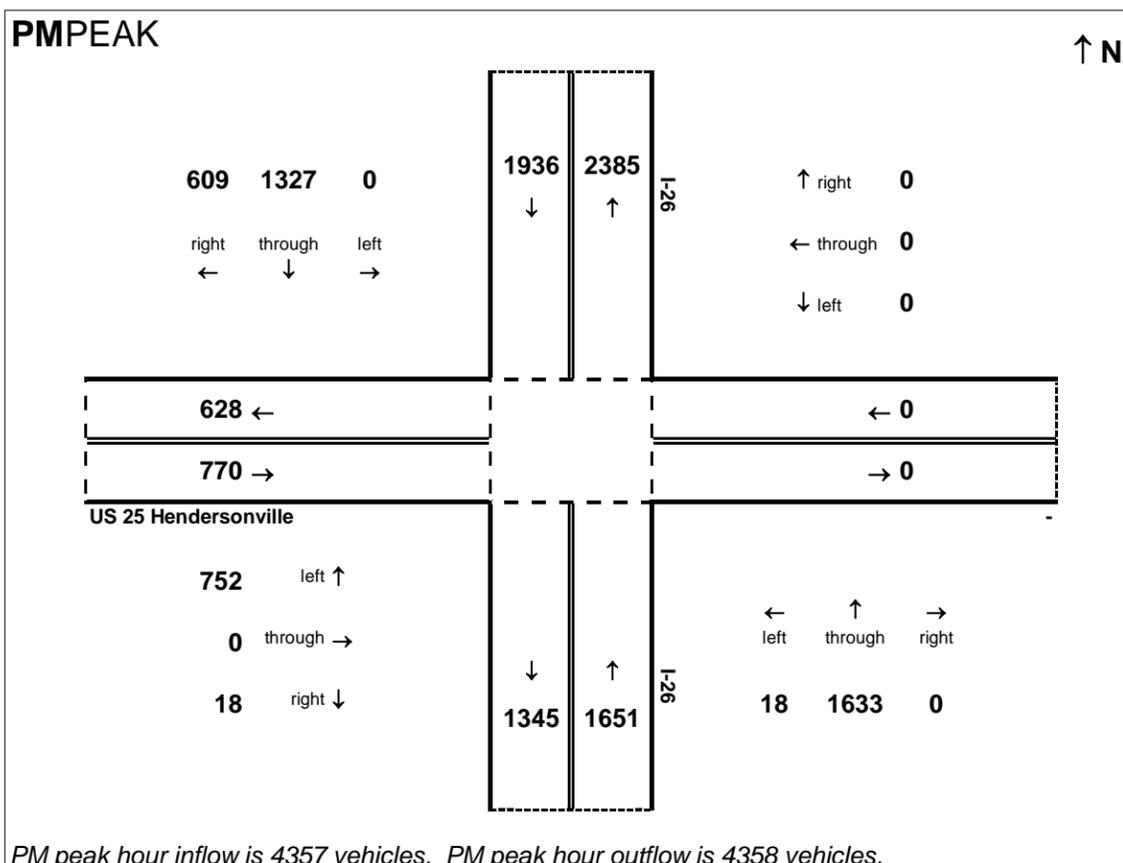
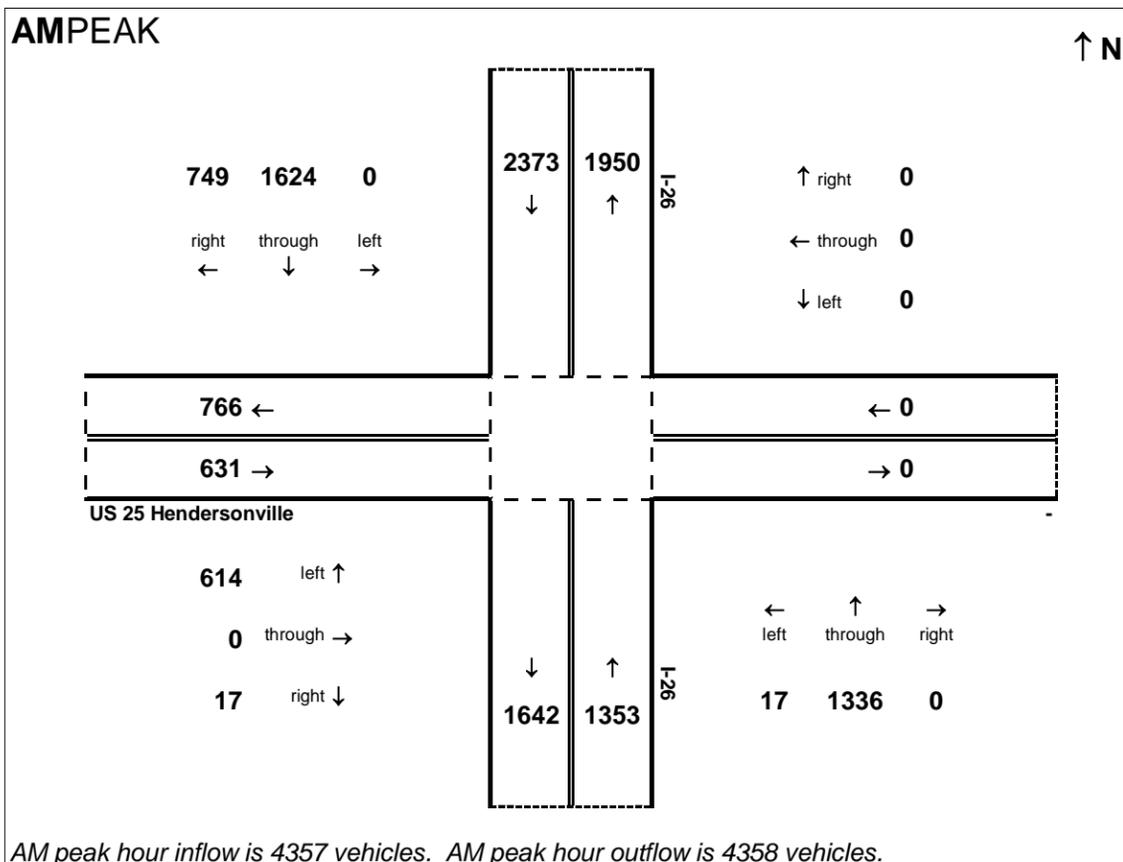


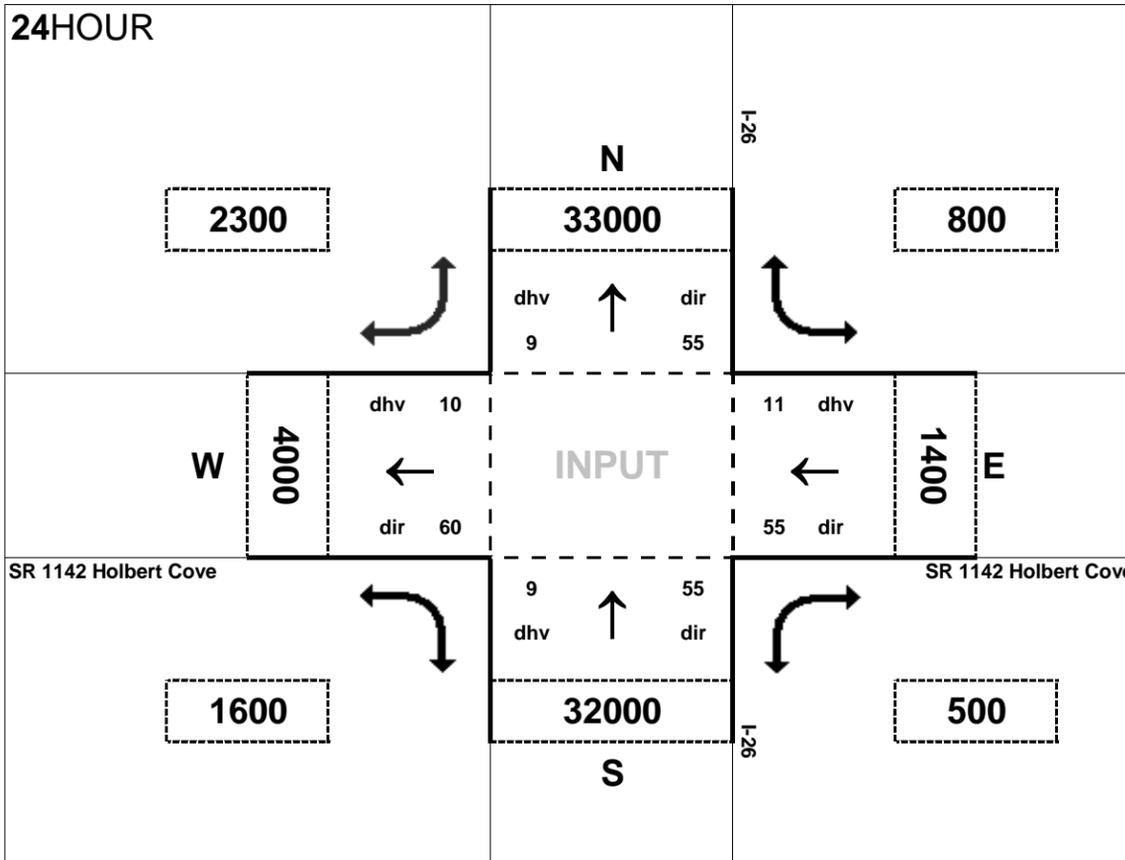
Peak Hour Volume Breakouts Report:
10. I-26 & US 25 Hendersonville Interchange

Traffic Forecast Release Date:
December-13

Traffic Data Year:
2011 BY - Bld 6/8 Ln

Project:
STIP I-4400/4700 - I-26 Widening



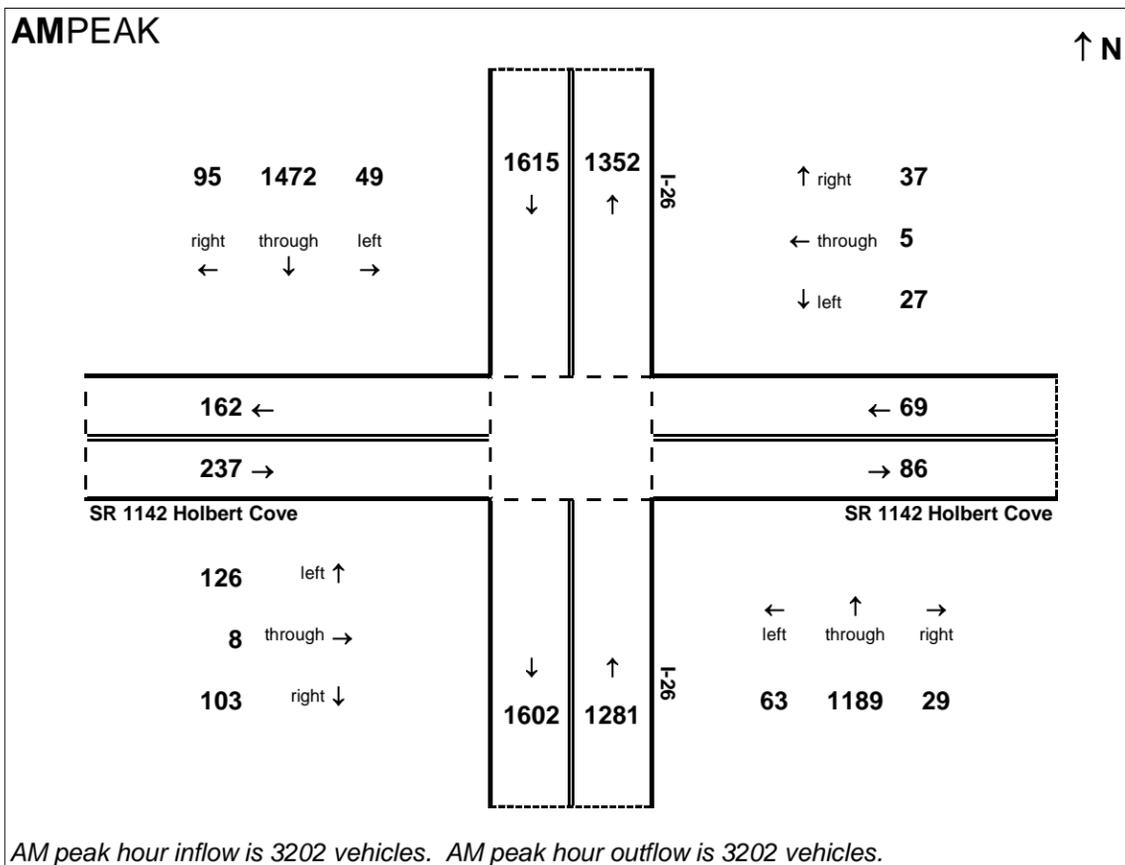


Peak Hour Volume Breakouts Report:
11. I-26 & Holbert Cove Rd Interchange

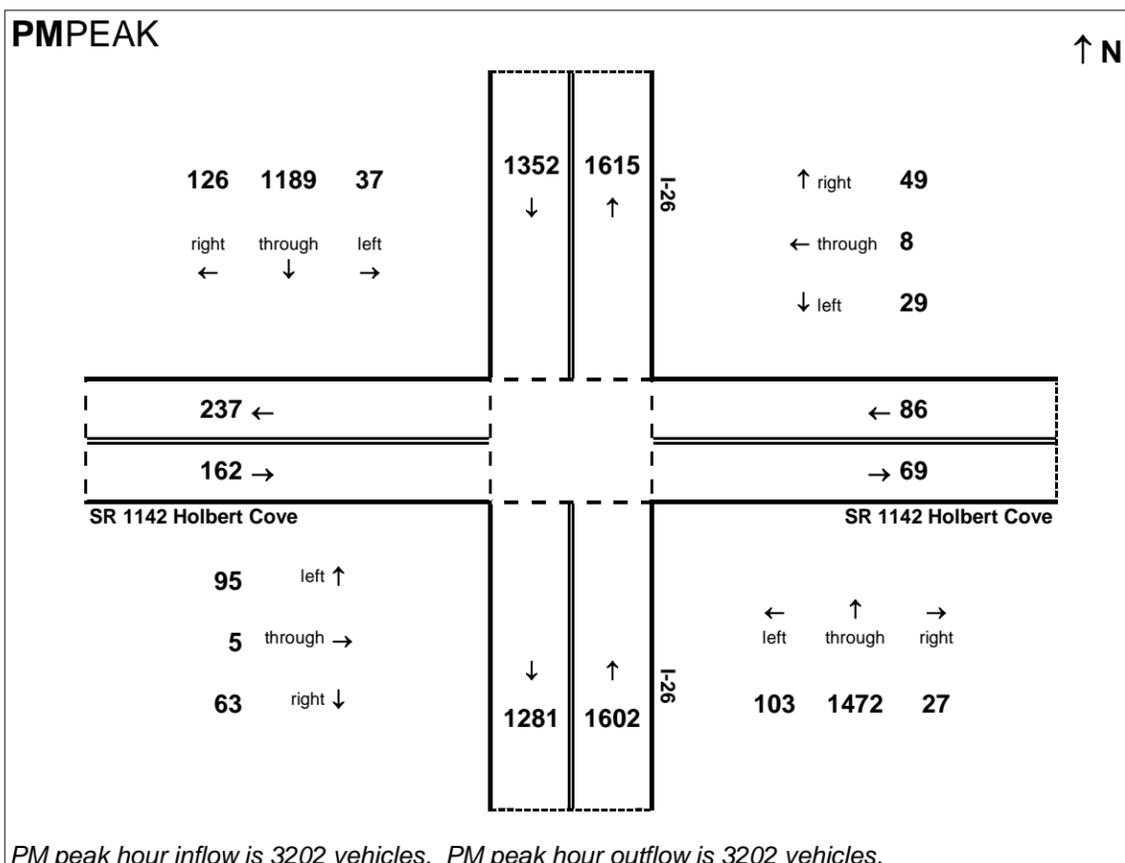
Traffic Forecast Release Date:
December-13

Traffic Data Year:
2011 BY - Bld 6/8 Ln

Project:
STIP I-4400/4700 - I-26 Widening

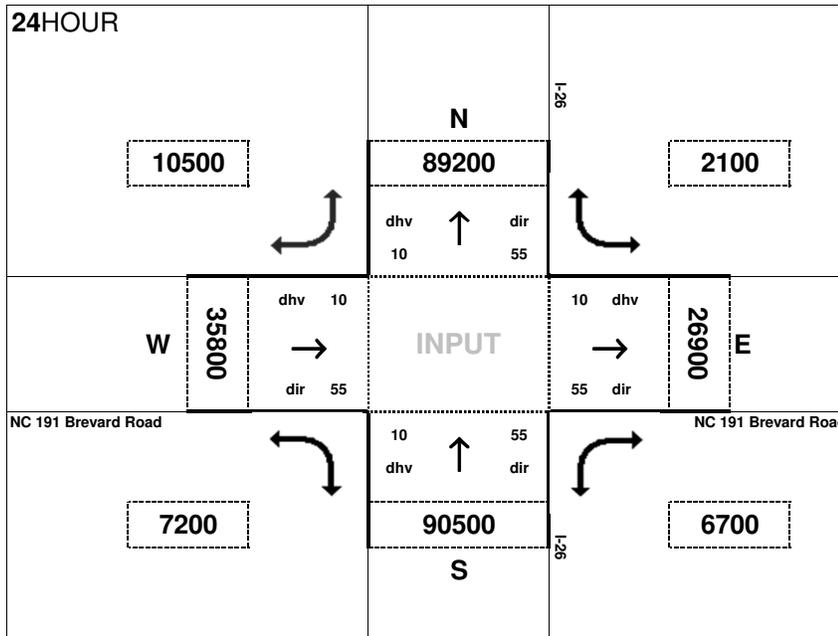


AM peak hour inflow is 3202 vehicles. AM peak hour outflow is 3202 vehicles.



PM peak hour inflow is 3202 vehicles. PM peak hour outflow is 3202 vehicles.

2040 No-Build

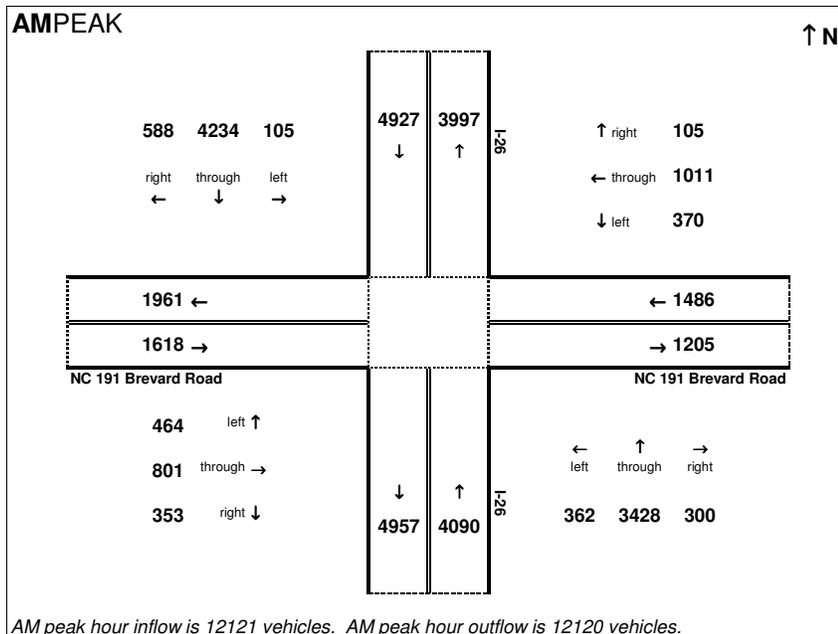


Peak Hour Volume Breakouts Report:
6. I-26 & NC 191 Interchange

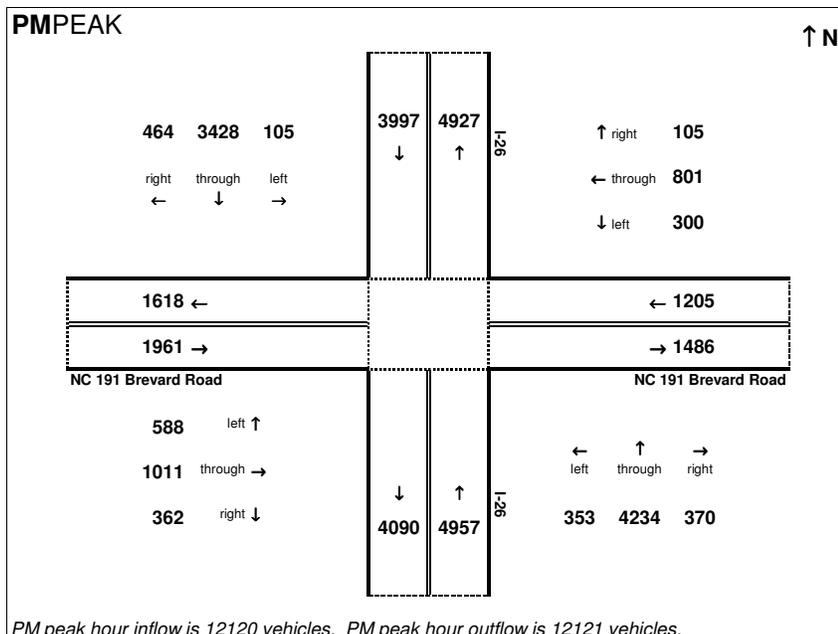
Traffic Forecast Release Date:
February-12

Traffic Data Year:
2040 DY - No-Build

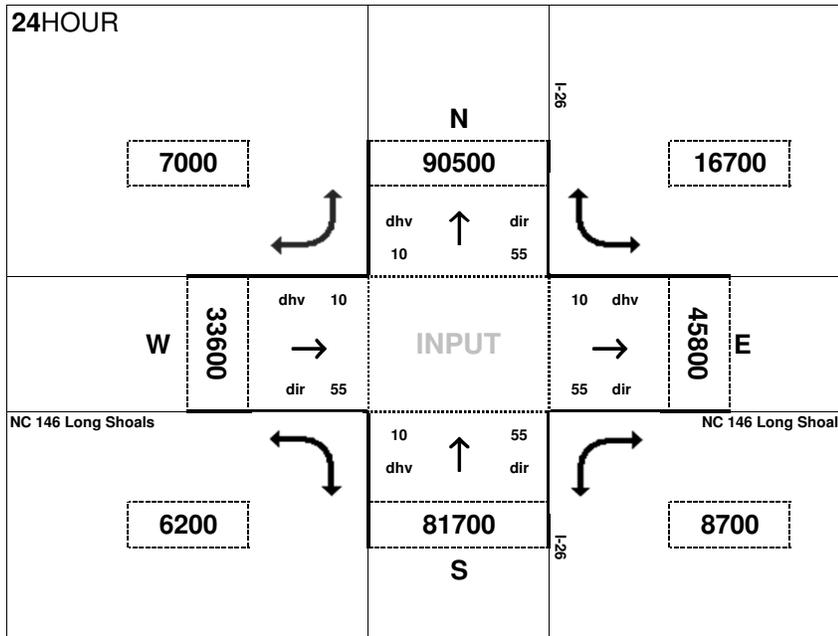
Project:
STIP I-4400/4700 - I-26 Widening



AM peak hour inflow is 12121 vehicles. AM peak hour outflow is 12120 vehicles.



PM peak hour inflow is 12120 vehicles. PM peak hour outflow is 12121 vehicles.

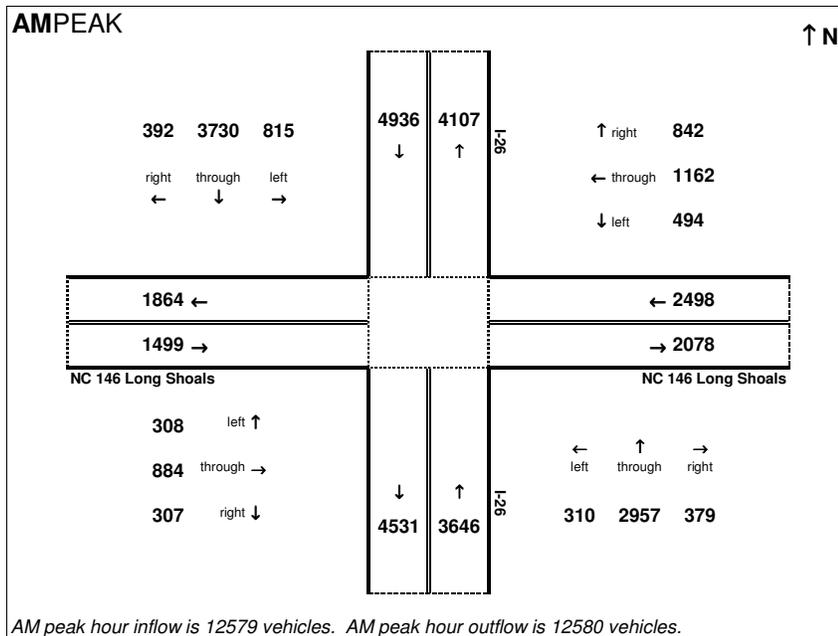


Peak Hour Volume Breakouts Report:
7. I-26 & NC 146 Interchange

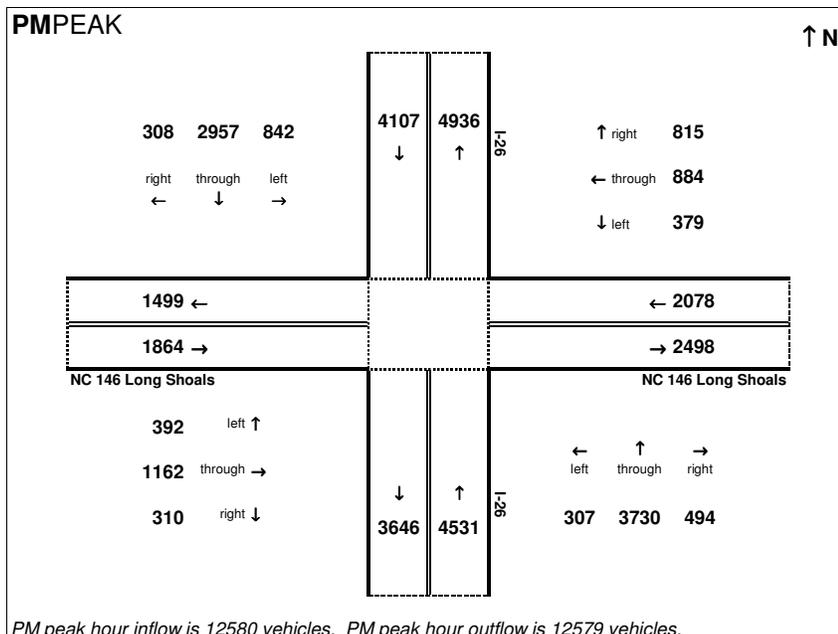
Traffic Forecast Release Date:
February-12

Traffic Data Year:
2040 DY - No-Build

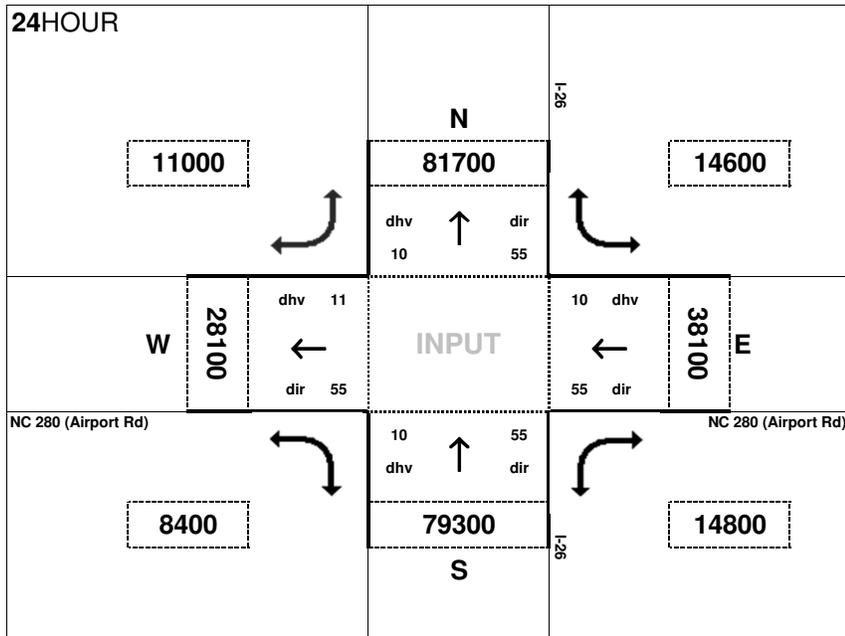
Project:
STIP I-4400/4700 - I-26 Widening



AM peak hour inflow is 12579 vehicles. AM peak hour outflow is 12580 vehicles.



PM peak hour inflow is 12580 vehicles. PM peak hour outflow is 12579 vehicles.

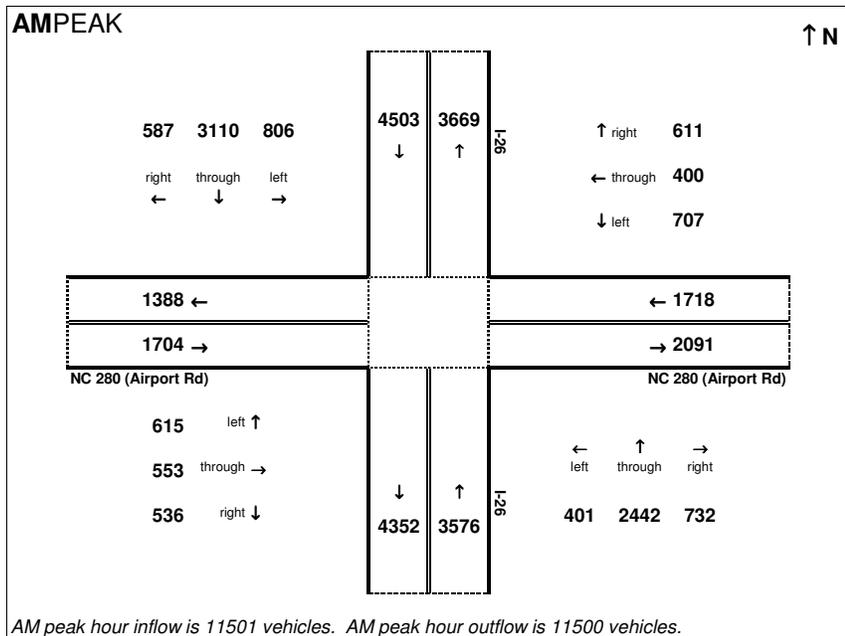


Peak Hour Volume Breakouts Report:
8. I-26 & NC 280 Interchange

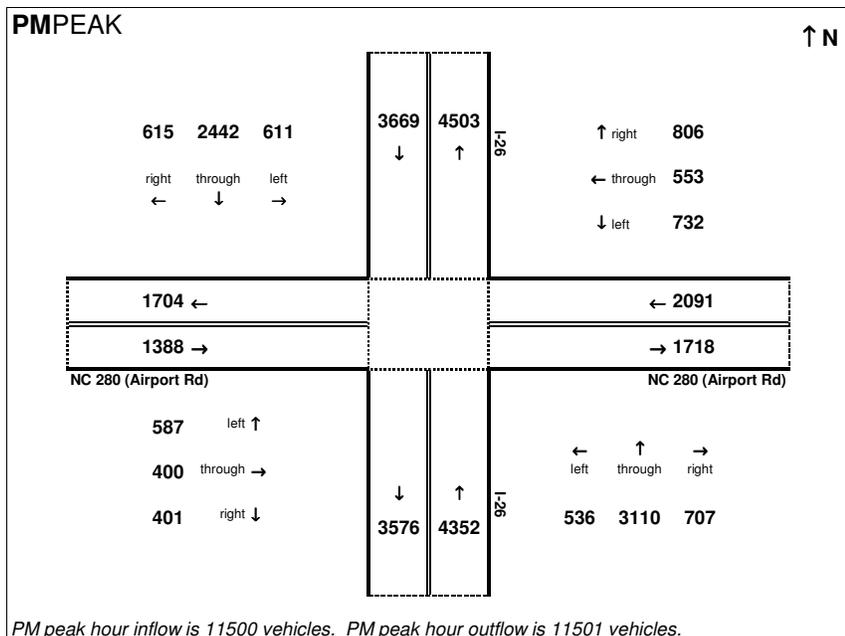
Traffic Forecast Release Date:
February-12

Traffic Data Year:
2040 DY - No-Build

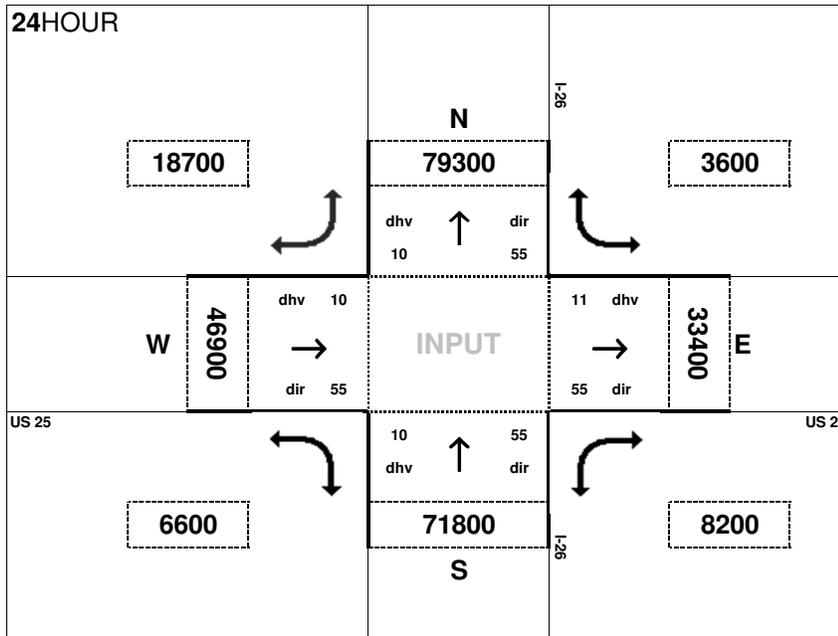
Project:
STIP I-4400/4700 - I-26 Widening



AM peak hour inflow is 11501 vehicles. AM peak hour outflow is 11500 vehicles.



PM peak hour inflow is 11500 vehicles. PM peak hour outflow is 11501 vehicles.

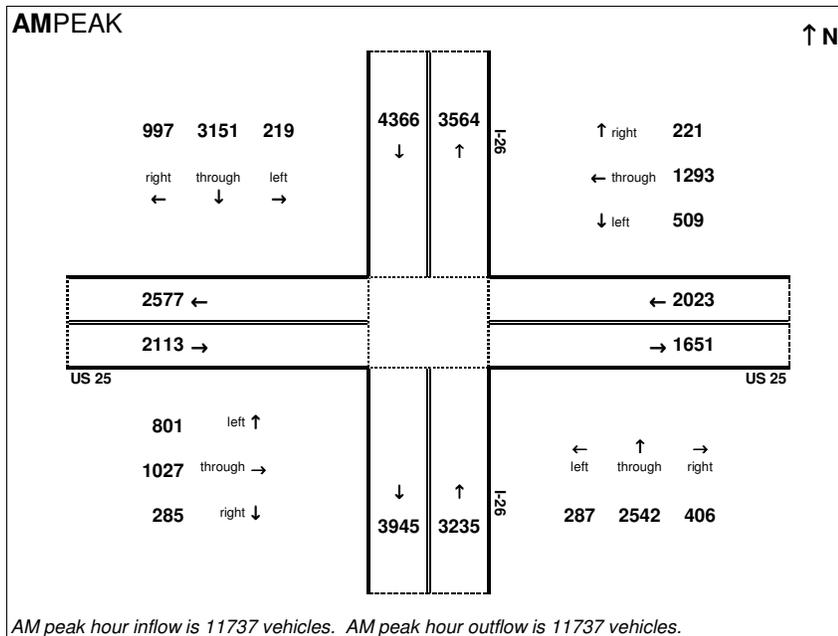


Peak Hour Volume Breakouts Report:
10. I-26 & US 25 Interchange

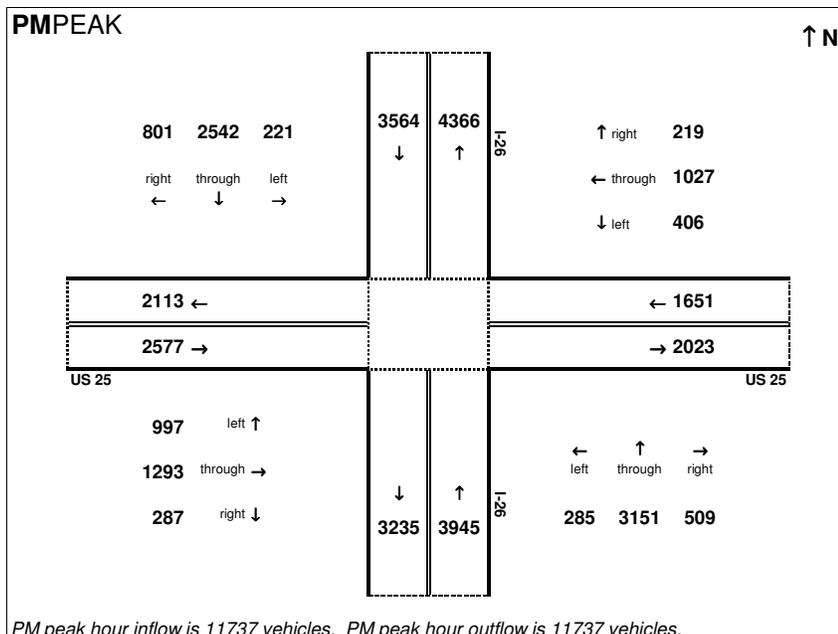
Traffic Forecast Release Date:
February-12

Traffic Data Year:
2040 DY - No-Build

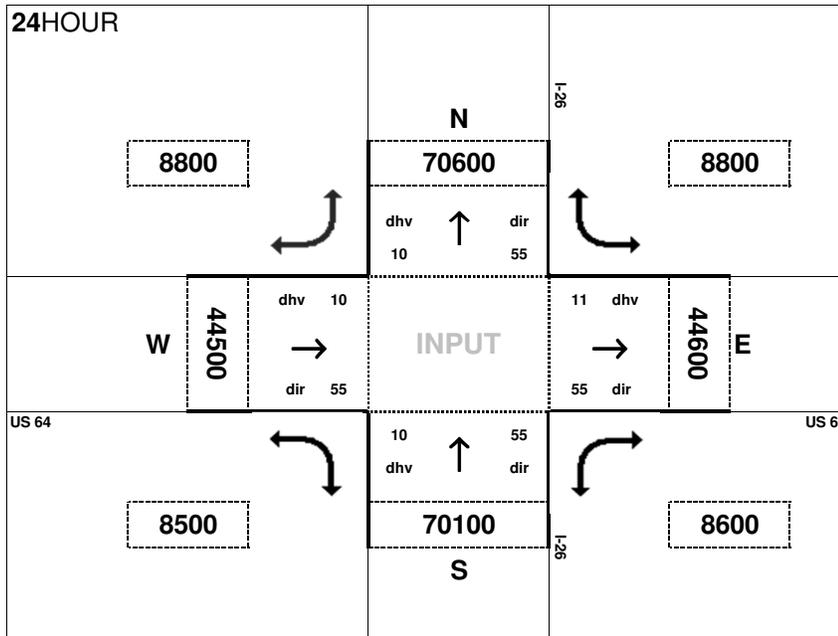
Project:
STIP I-4400/4700 - I-26 Widening



AM peak hour inflow is 11737 vehicles. AM peak hour outflow is 11737 vehicles.



PM peak hour inflow is 11737 vehicles. PM peak hour outflow is 11737 vehicles.

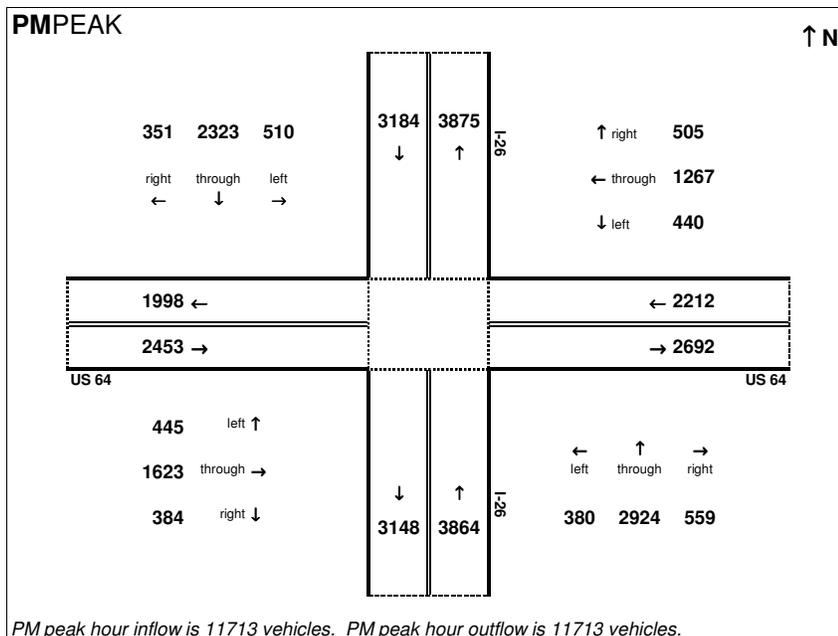
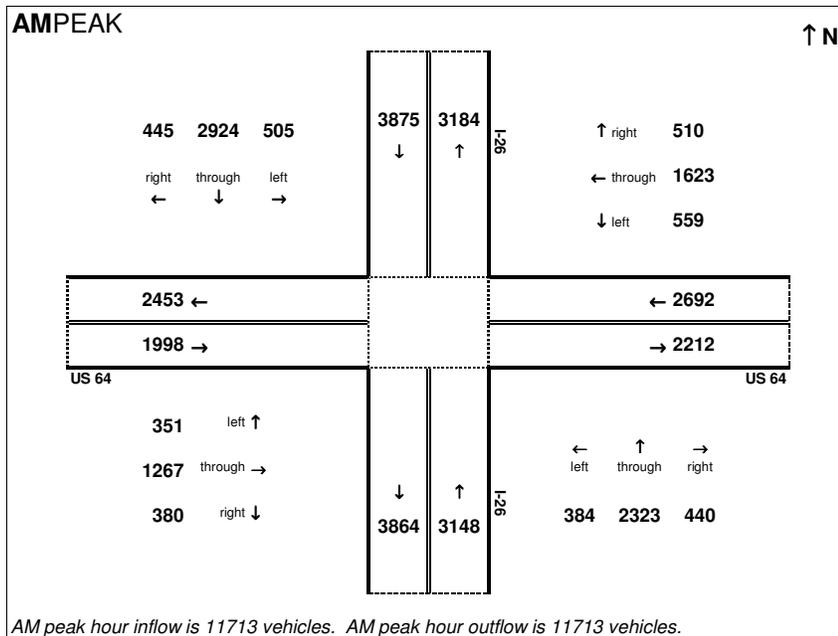


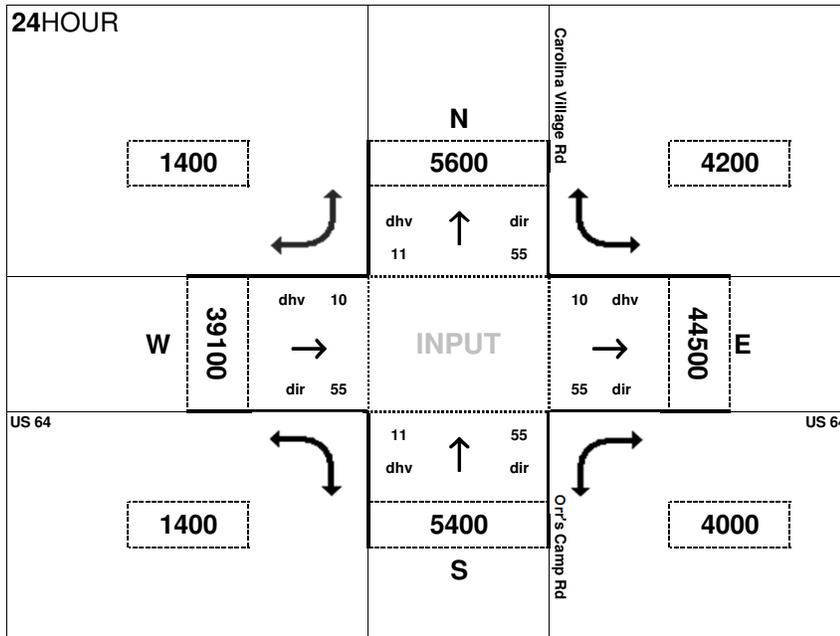
Peak Hour Volume Breakouts Report:
12. I-26 & US 64 System Interchange

Traffic Forecast Release Date:
February-12

Traffic Data Year:
2040 DY - No-Build

Project:
STIP I-4400/4700 - I-26 Widening





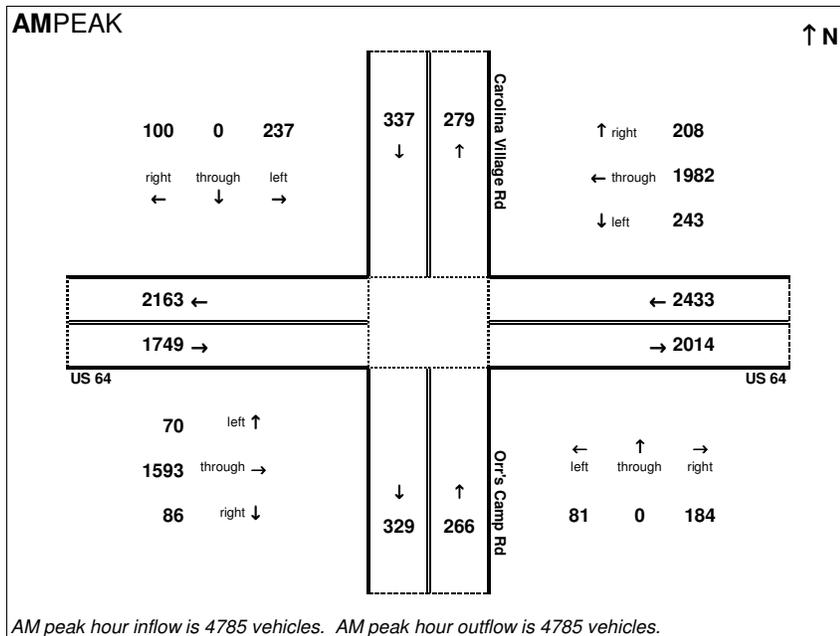
Peak Hour Volume Breakouts Report:

12a. US 64 & Carolina Village Rd / Orr's Camp Rd

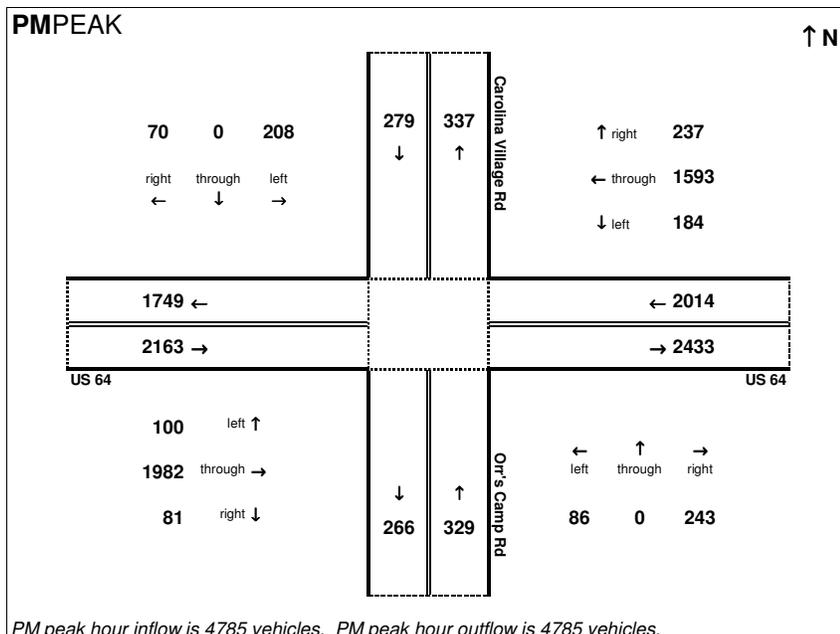
Traffic Forecast Release Date:
February-12

Traffic Data Year:
2040 BY - No Build

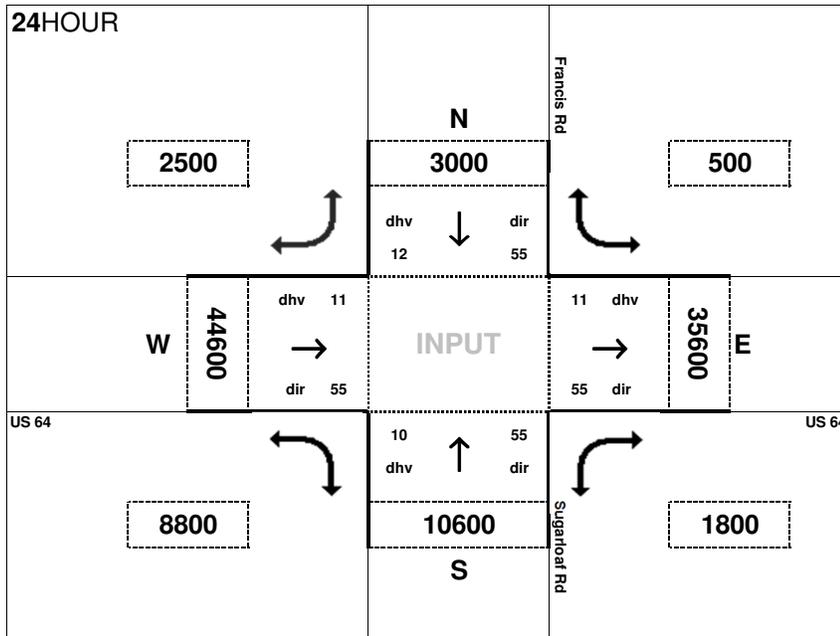
Project:
STIP I-4400/4700 - I-26 Widening



AM peak hour inflow is 4785 vehicles. AM peak hour outflow is 4785 vehicles.



PM peak hour inflow is 4785 vehicles. PM peak hour outflow is 4785 vehicles.

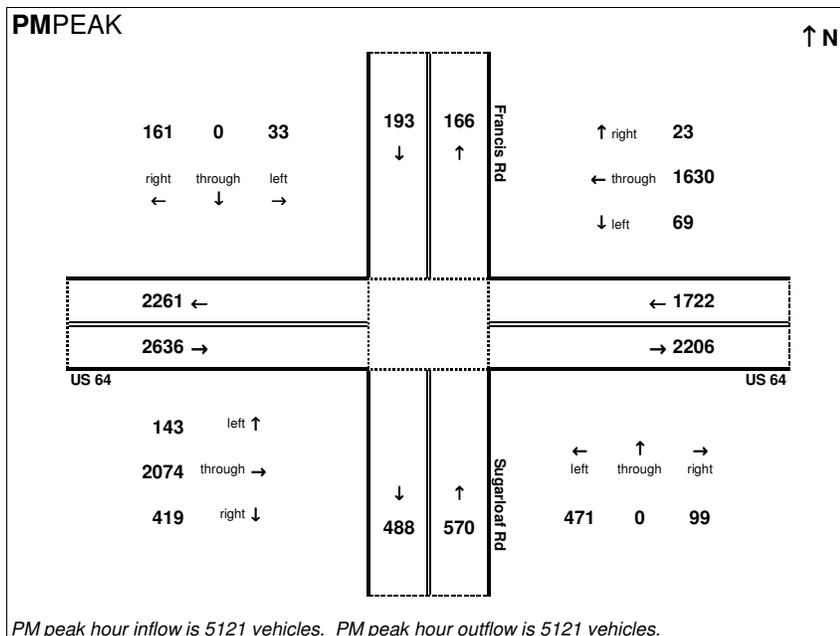
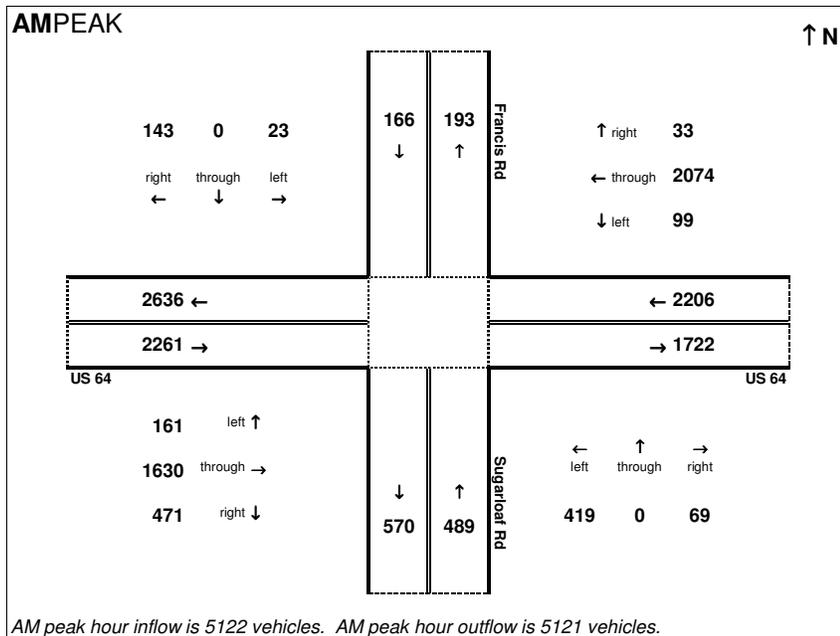


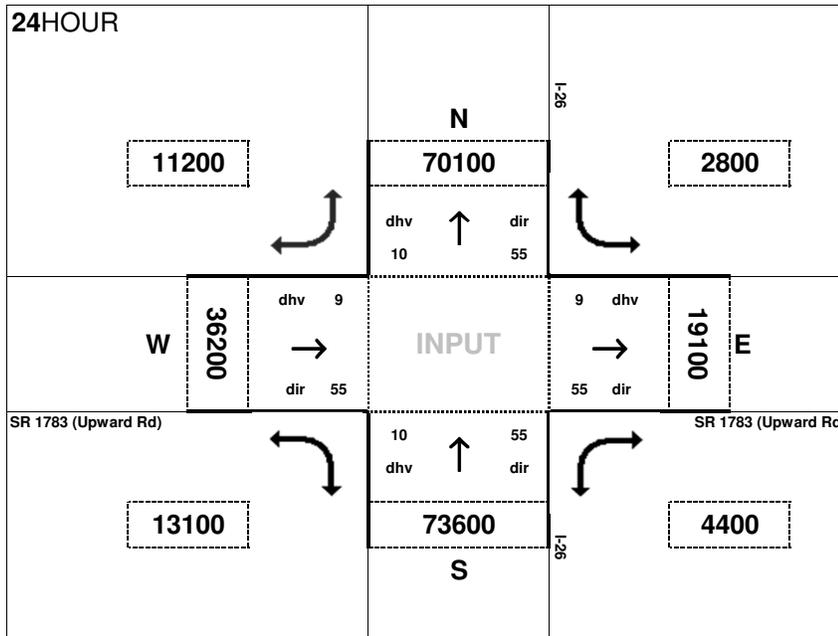
Peak Hour Volume Breakouts Report:
12b. US 64 & Francis Rd / Sugarloaf Rd

Traffic Forecast Release Date:
February-12

Traffic Data Year:
2040 BY - No Build

Project:
STIP I-4400/4700 - I-26 Widening



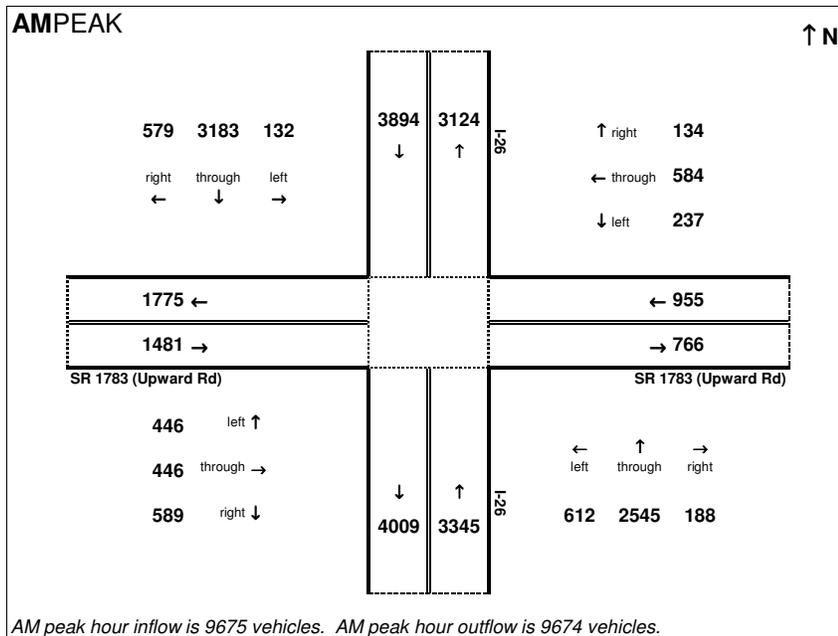


Peak Hour Volume Breakouts Report:
13. I-26 & Upward Road Interchange

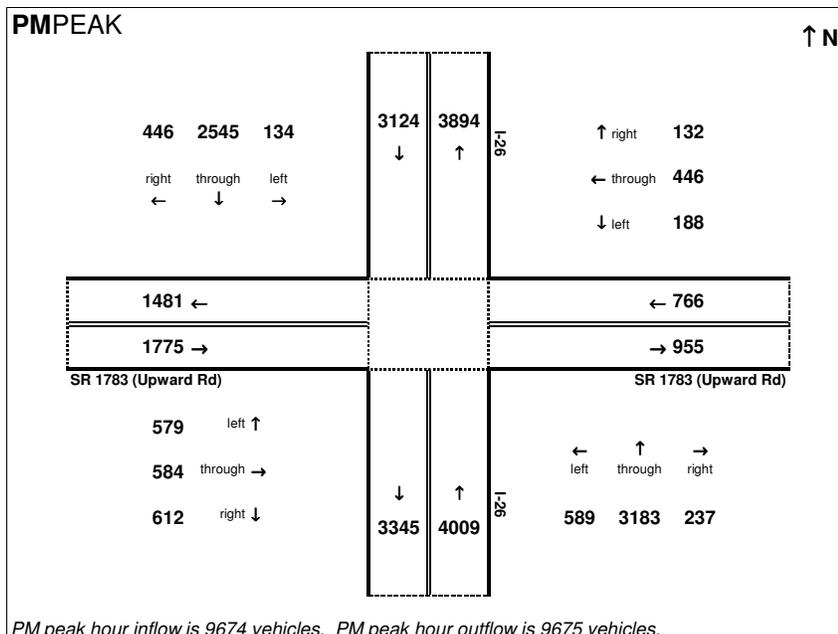
Traffic Forecast Release Date:
February-12

Traffic Data Year:
2040 DY - No-Build

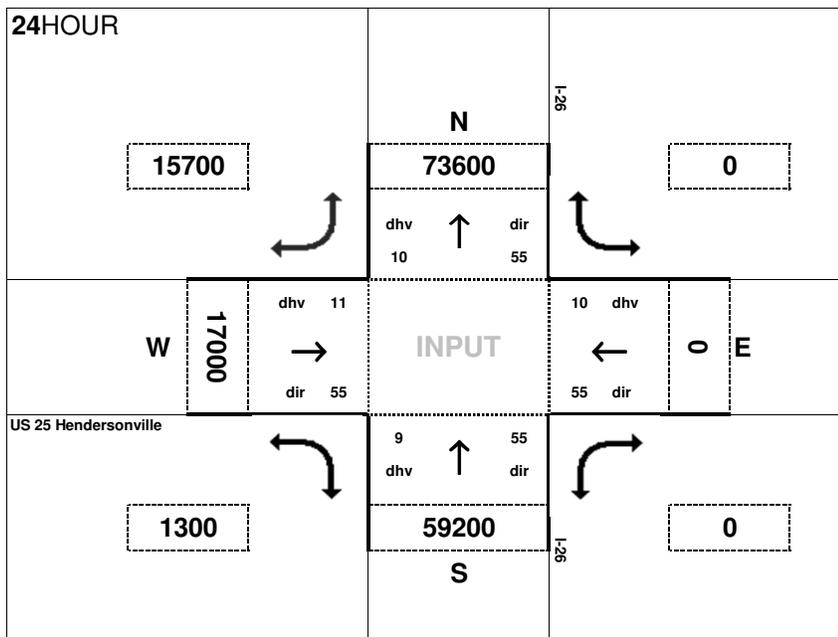
Project:
STIP I-4400/4700 - I-26 Widening



AM peak hour inflow is 9675 vehicles. AM peak hour outflow is 9674 vehicles.



PM peak hour inflow is 9674 vehicles. PM peak hour outflow is 9675 vehicles.

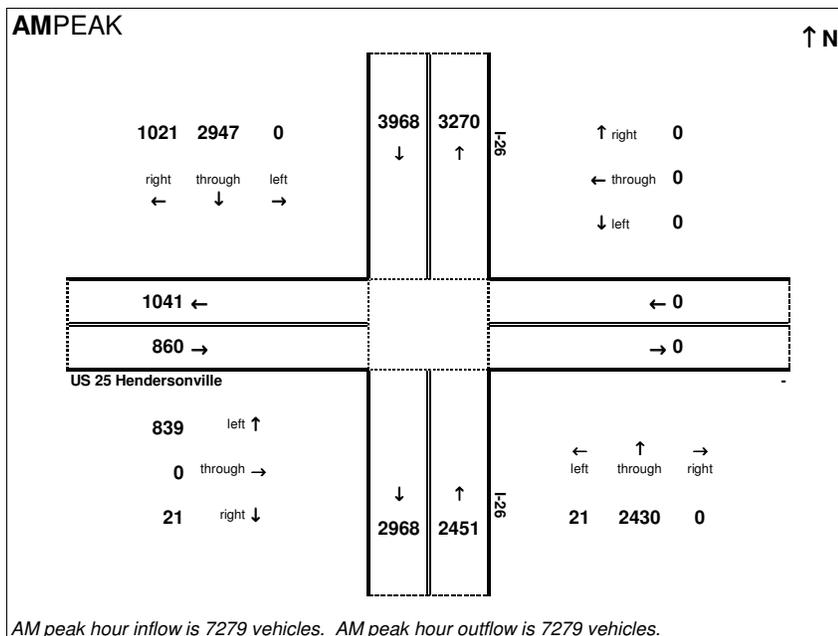


Peak Hour Volume Breakouts Report:
14. I-26 & US 25 Hendersonville Interchange

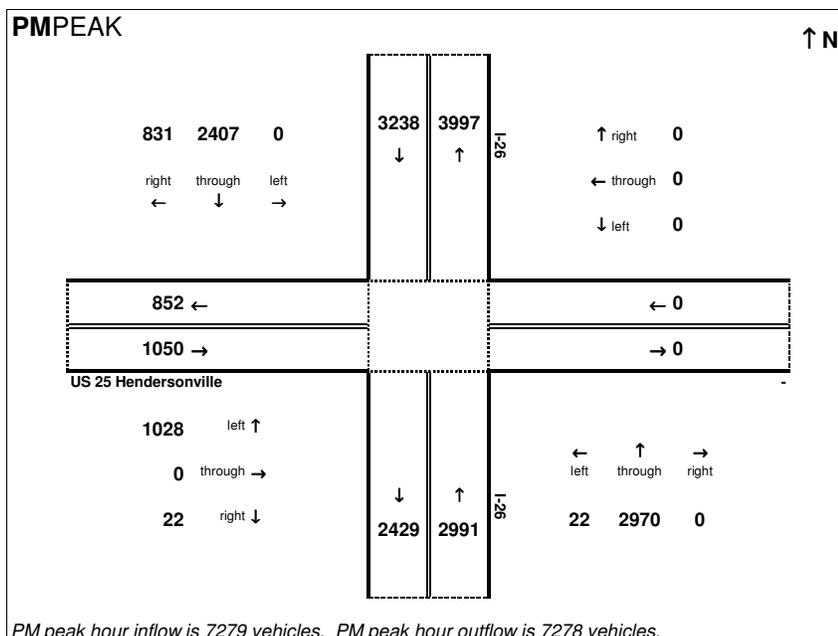
Traffic Forecast Release Date:
February-12

Traffic Data Year:
2040 DY - No-Build

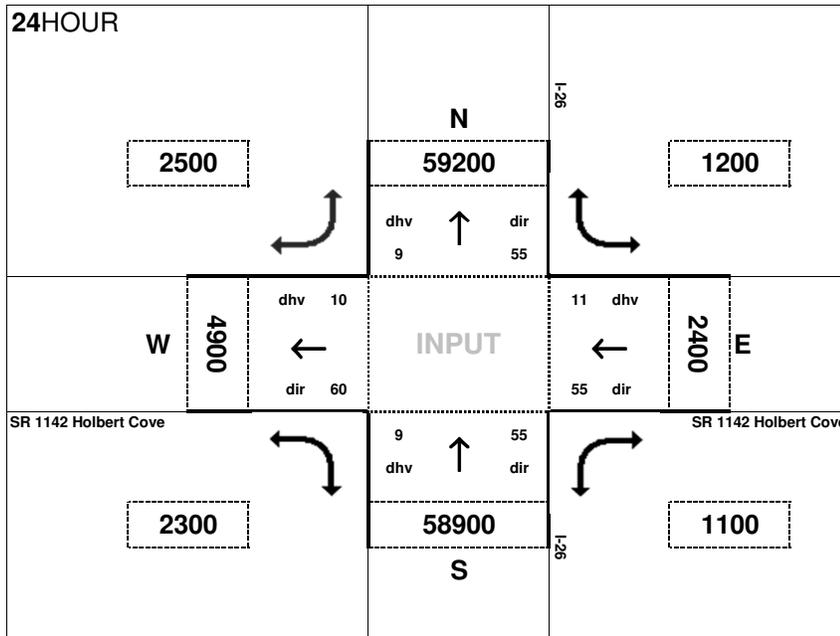
Project:
STIP I-4400/4700 - I-26 Widening



AM peak hour inflow is 7279 vehicles. AM peak hour outflow is 7279 vehicles.



PM peak hour inflow is 7279 vehicles. PM peak hour outflow is 7278 vehicles.

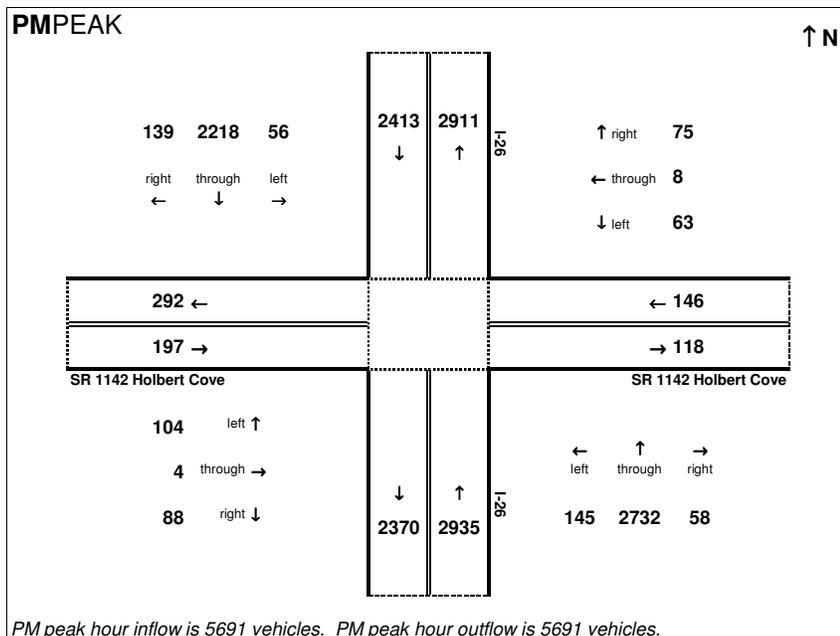
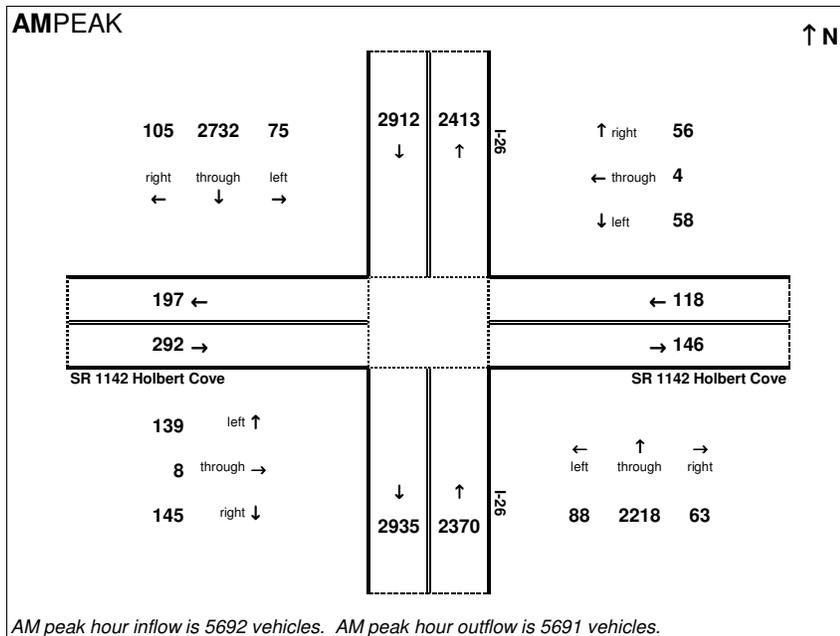


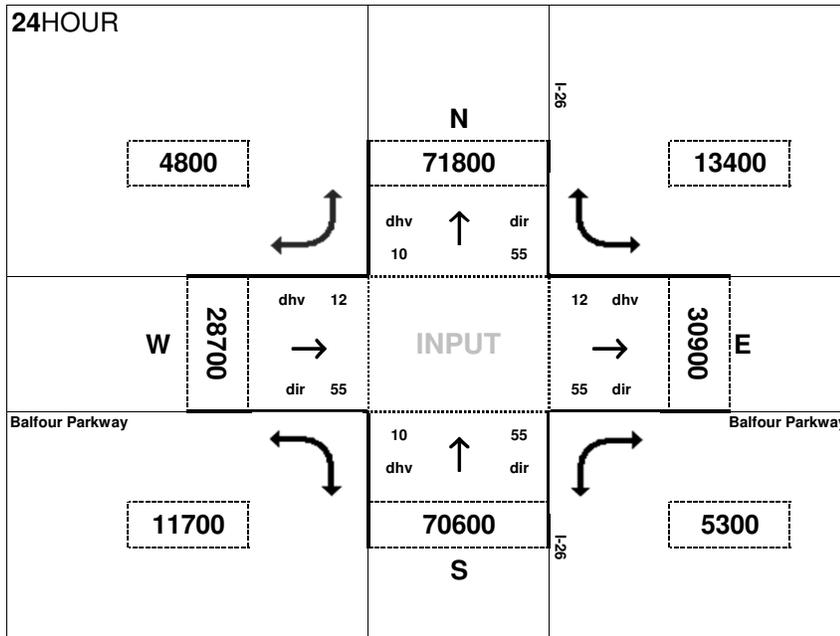
Peak Hour Volume Breakouts Report:
15. I-26 & Holbert Cove Rd Interchange

Traffic Forecast Release Date:
February-12

Traffic Data Year:
2040 DY - No-Build

Project:
STIP I-4400/4700 - I-26 Widening





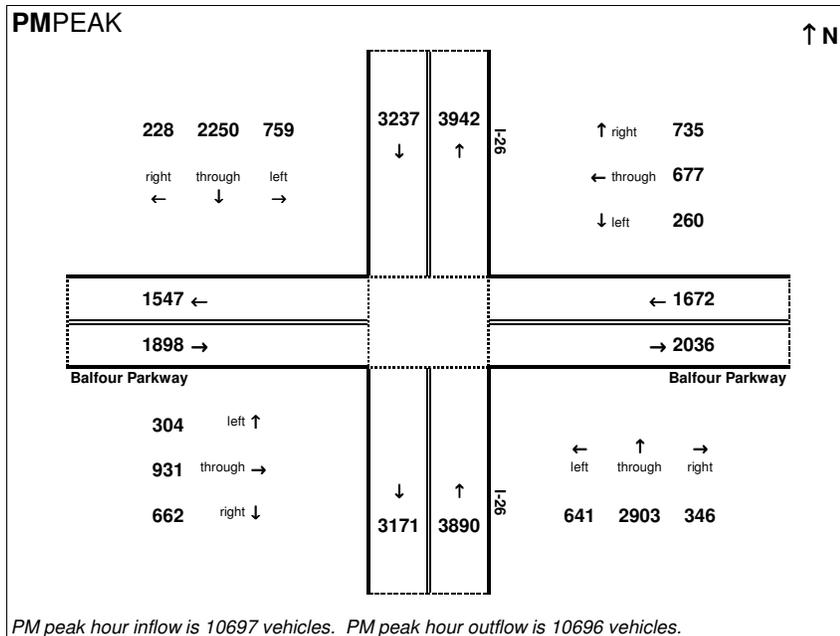
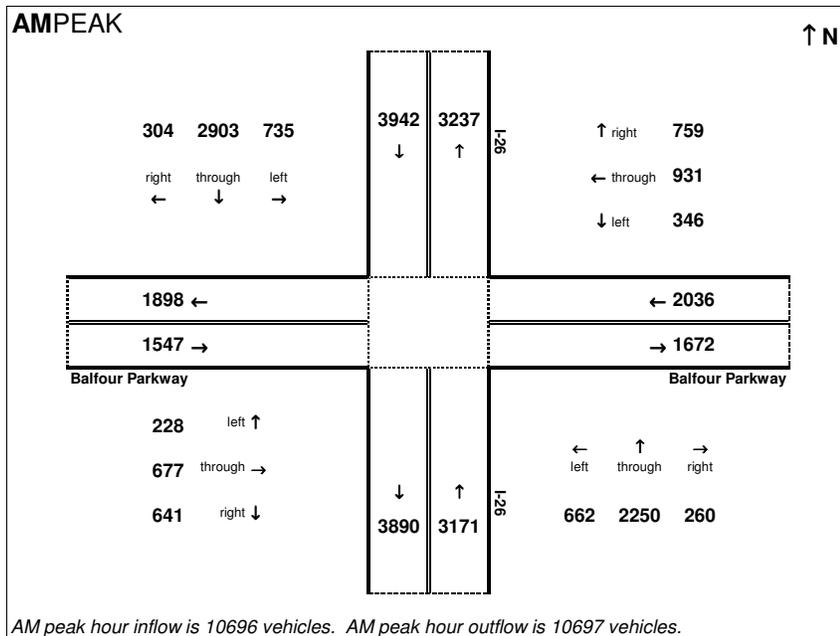
Peak Hour Volume Breakouts Report:

16. I-26 & Future Balfour Parkway Interchange

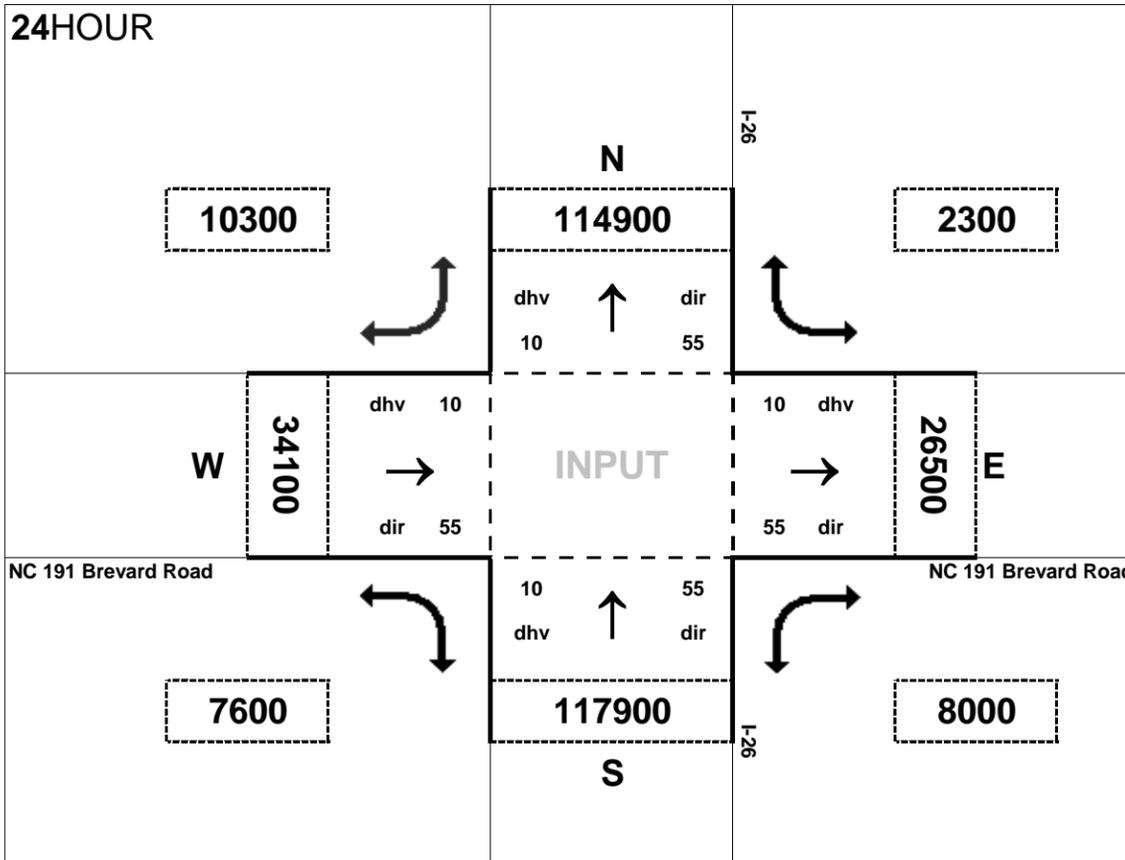
Traffic Forecast Release Date:
February-12

Traffic Data Year:
2040 DY - No-Build

Project:
STIP I-4400/4700 - I-26 Widening



2040 Build 8/6 Lane



Peak Hour Volume Breakouts Report:

1. I-26 & NC 191 Interchange

Traffic Forecast Release Date:

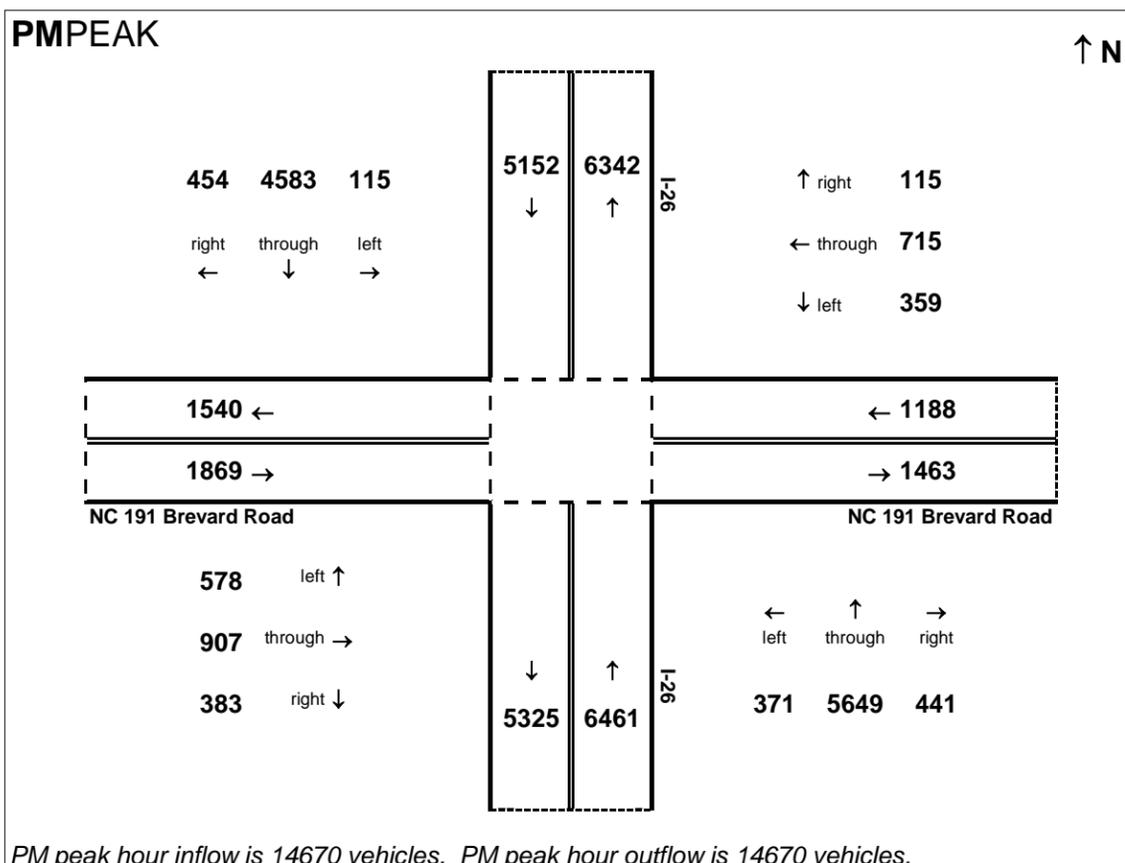
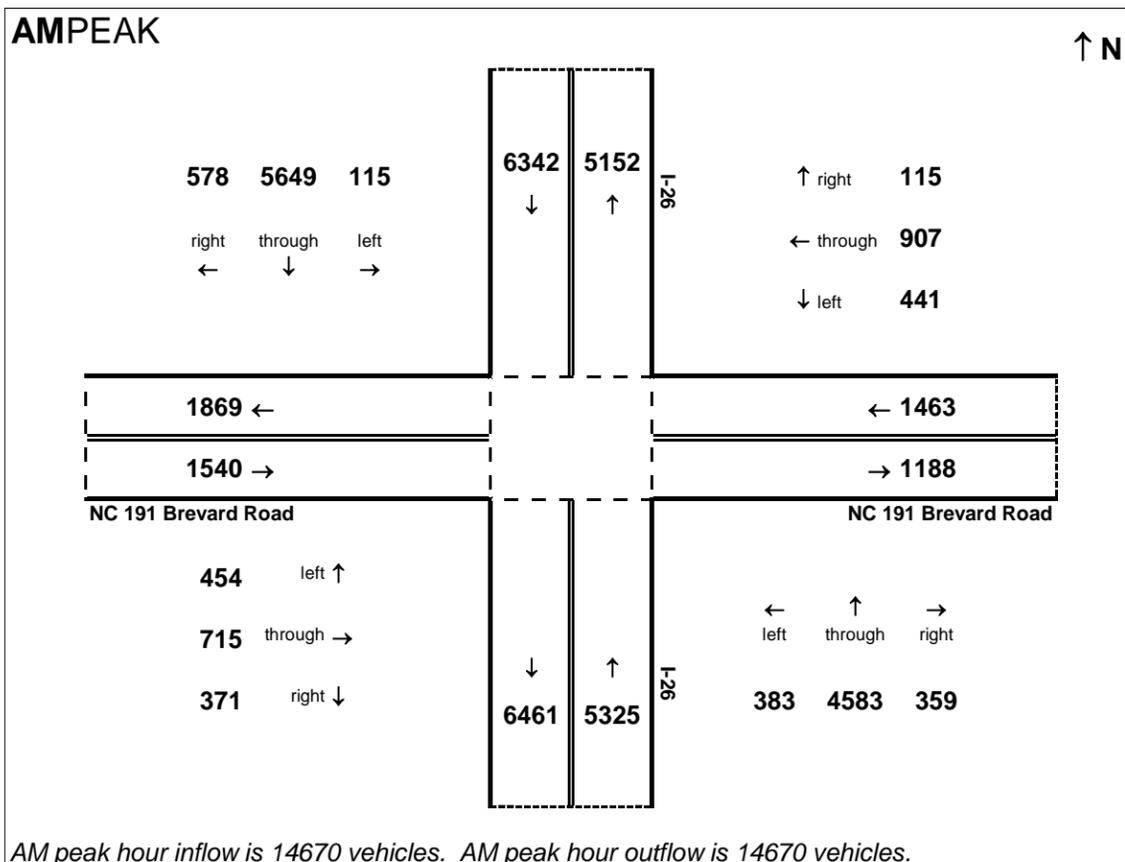
December-13

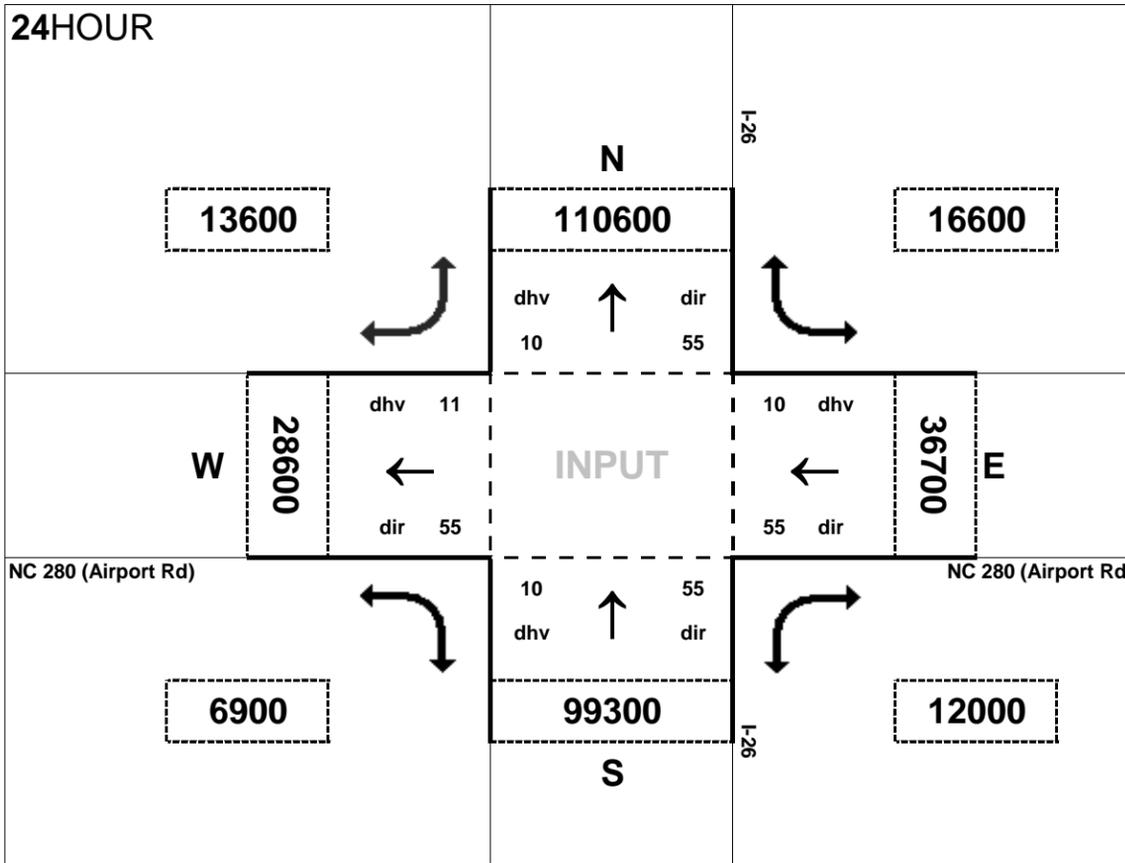
Traffic Data Year:

2040 DY - Bld 6/8 Ln

Project:

STIP I-4400/4700 - I-26 Widening



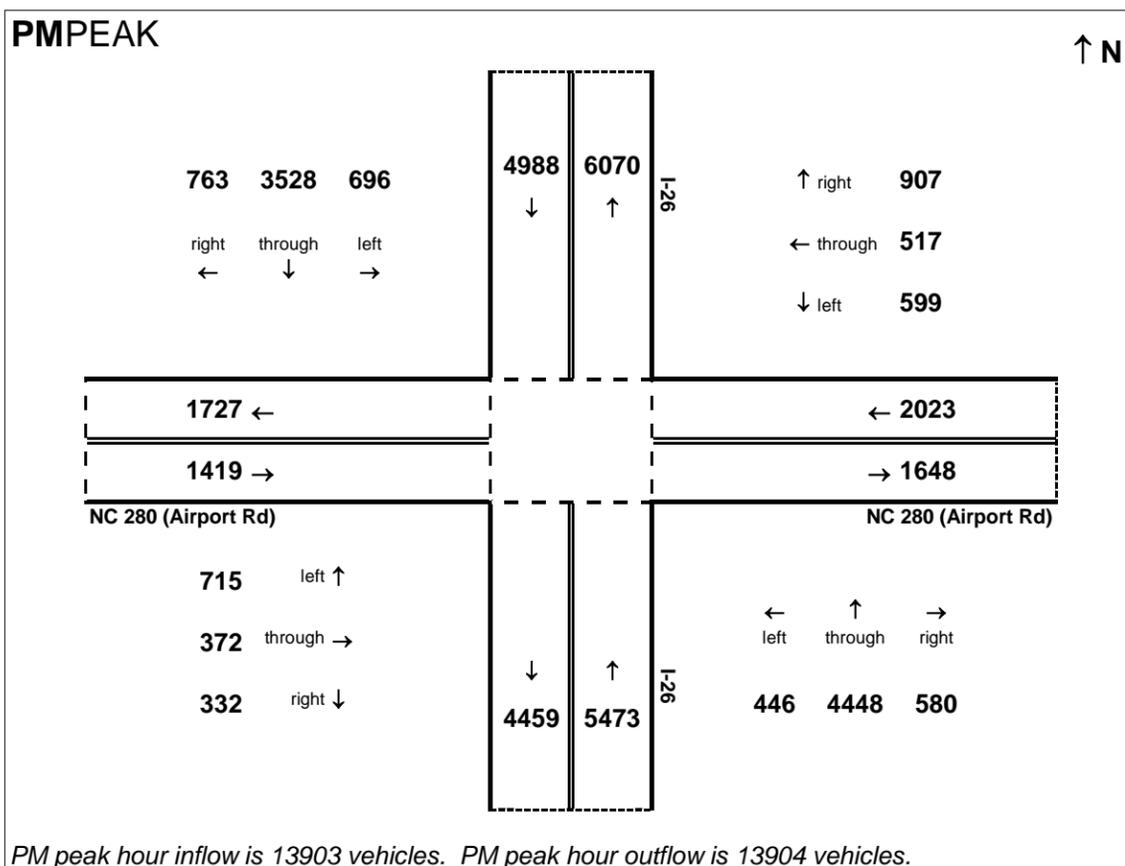
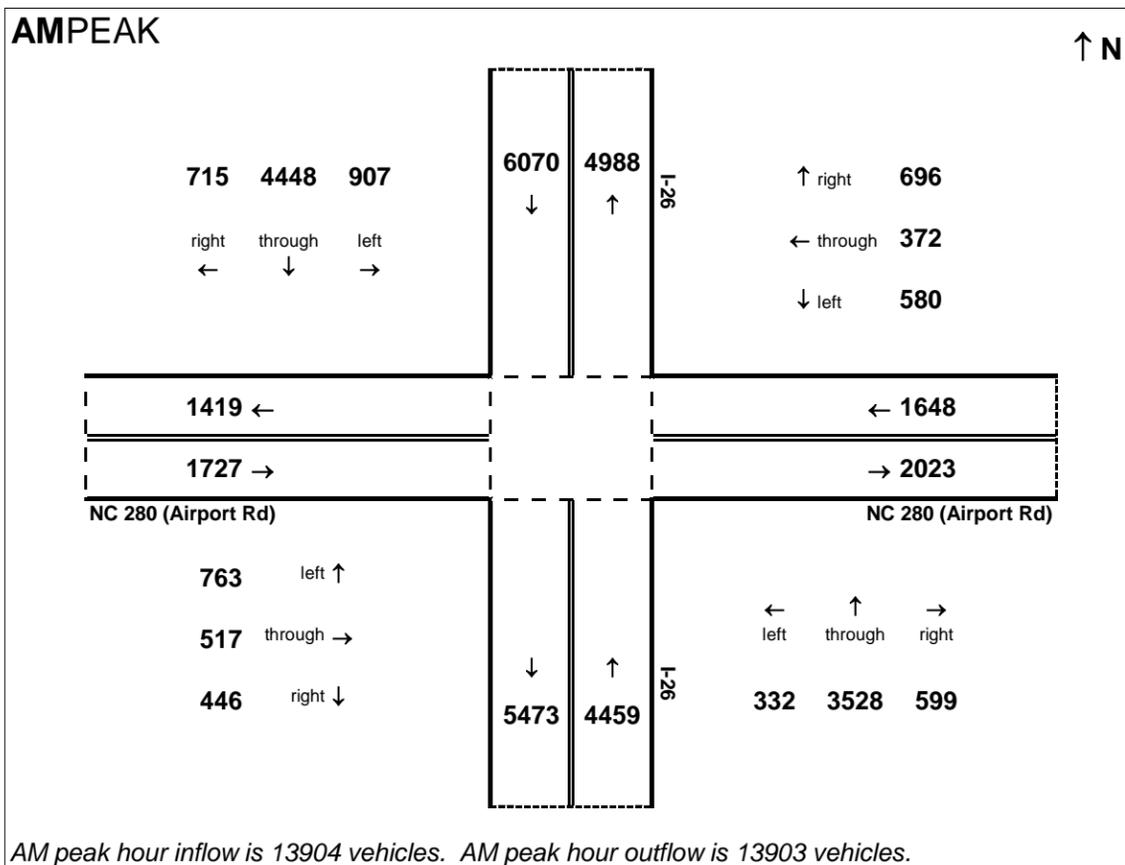


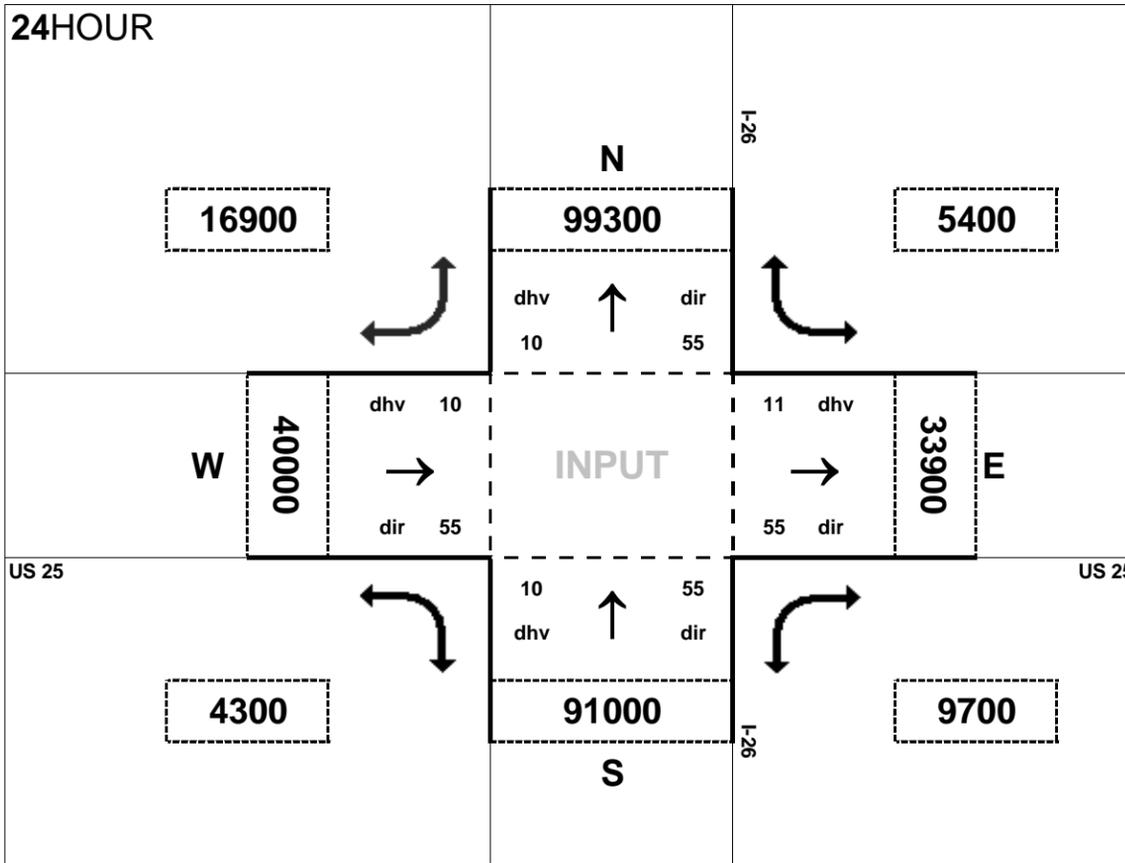
Peak Hour Volume Breakouts Report:
3. I-26 & NC 280 Interchange

Traffic Forecast Release Date:
December-13

Traffic Data Year:
2040 DY - Bld 6/8 Ln

Project:
STIP I-4400/4700 - I-26 Widening



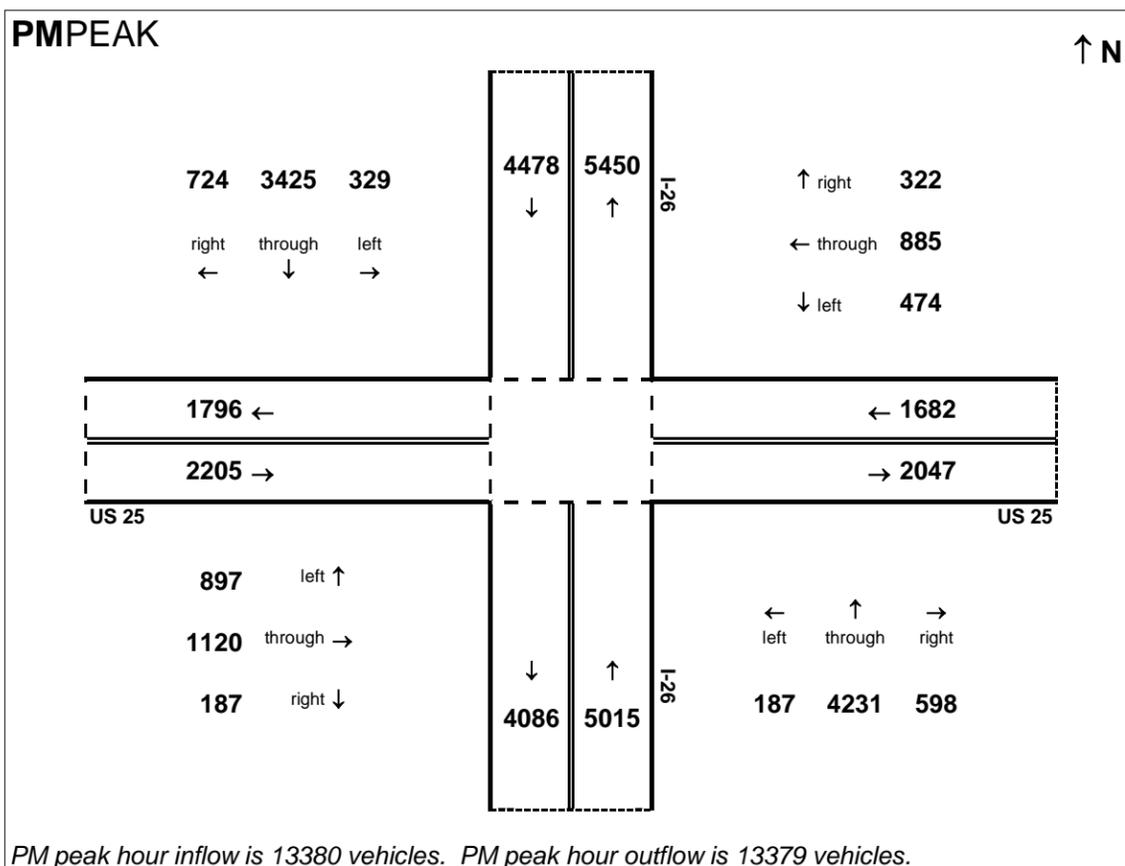
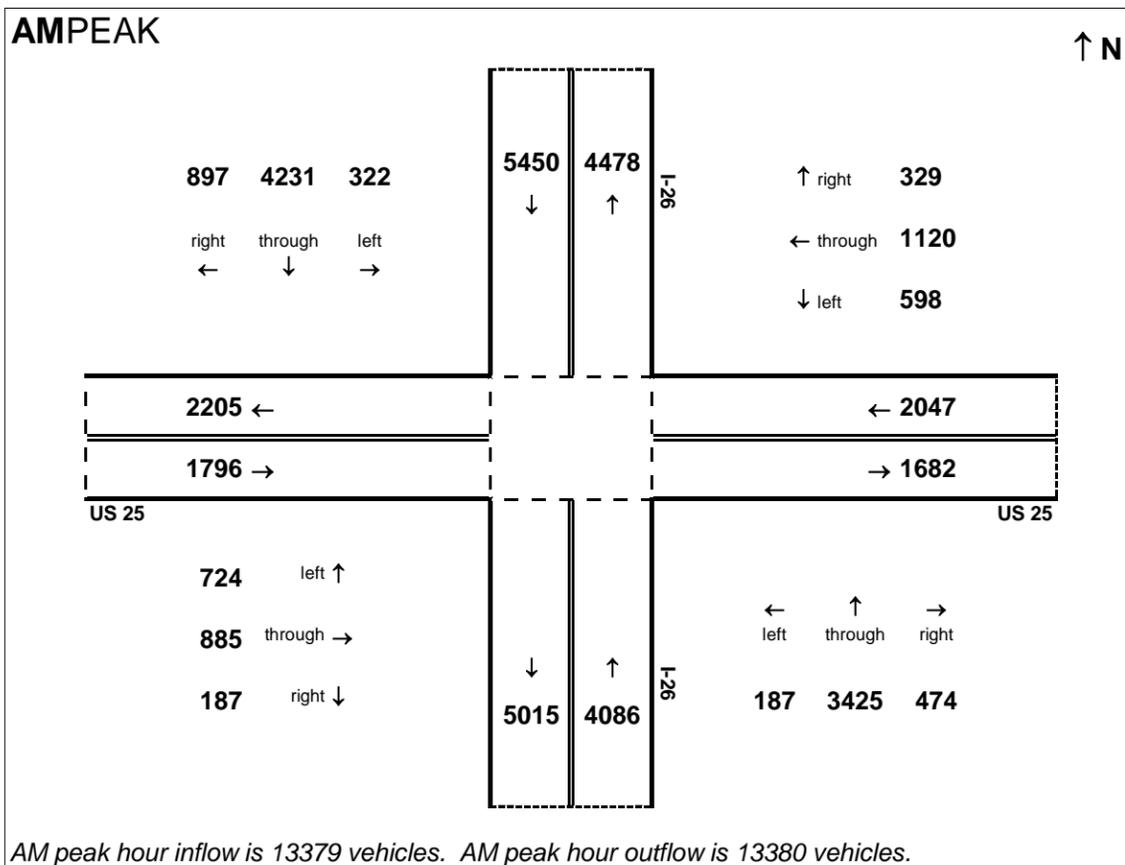


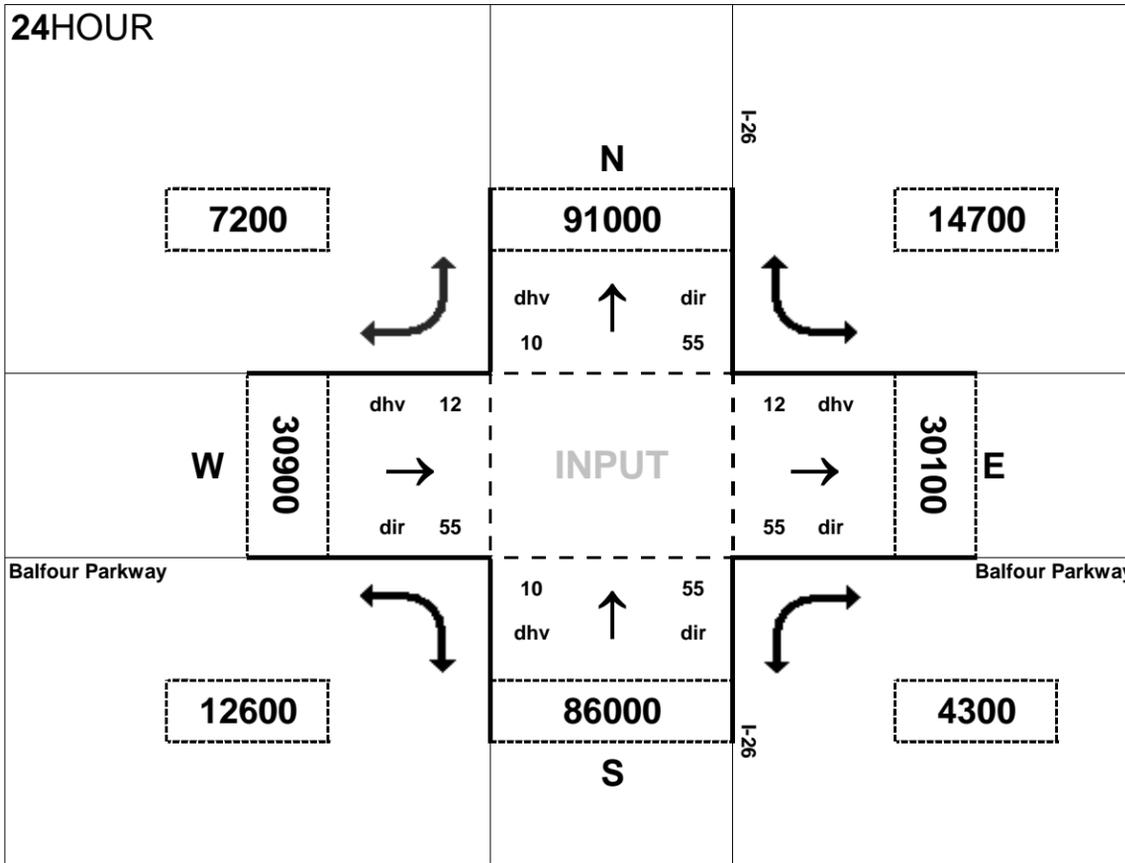
Peak Hour Volume Breakouts Report:
5. I-26 & US 25 Interchange

Traffic Forecast Release Date:
December-13

Traffic Data Year:
2040 DY - Bld 6/8 Ln

Project:
STIP I-4400/4700 - I-26 Widening



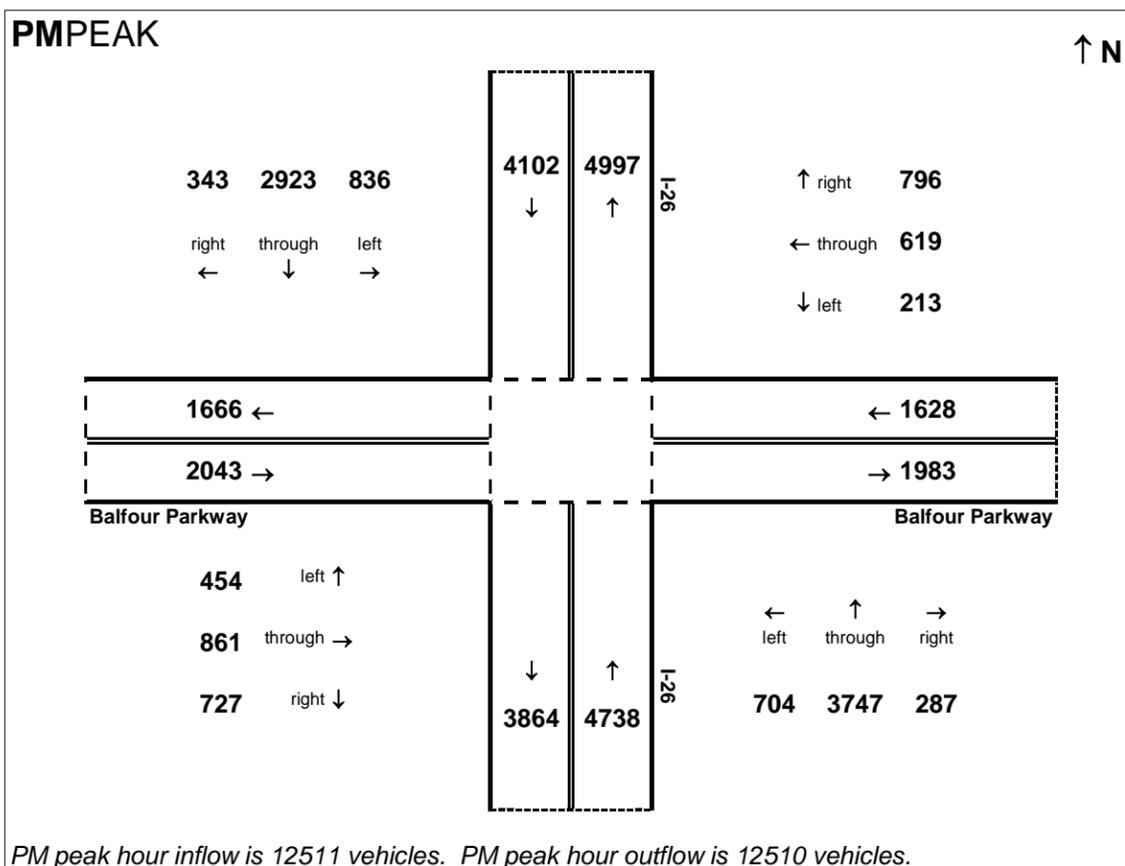
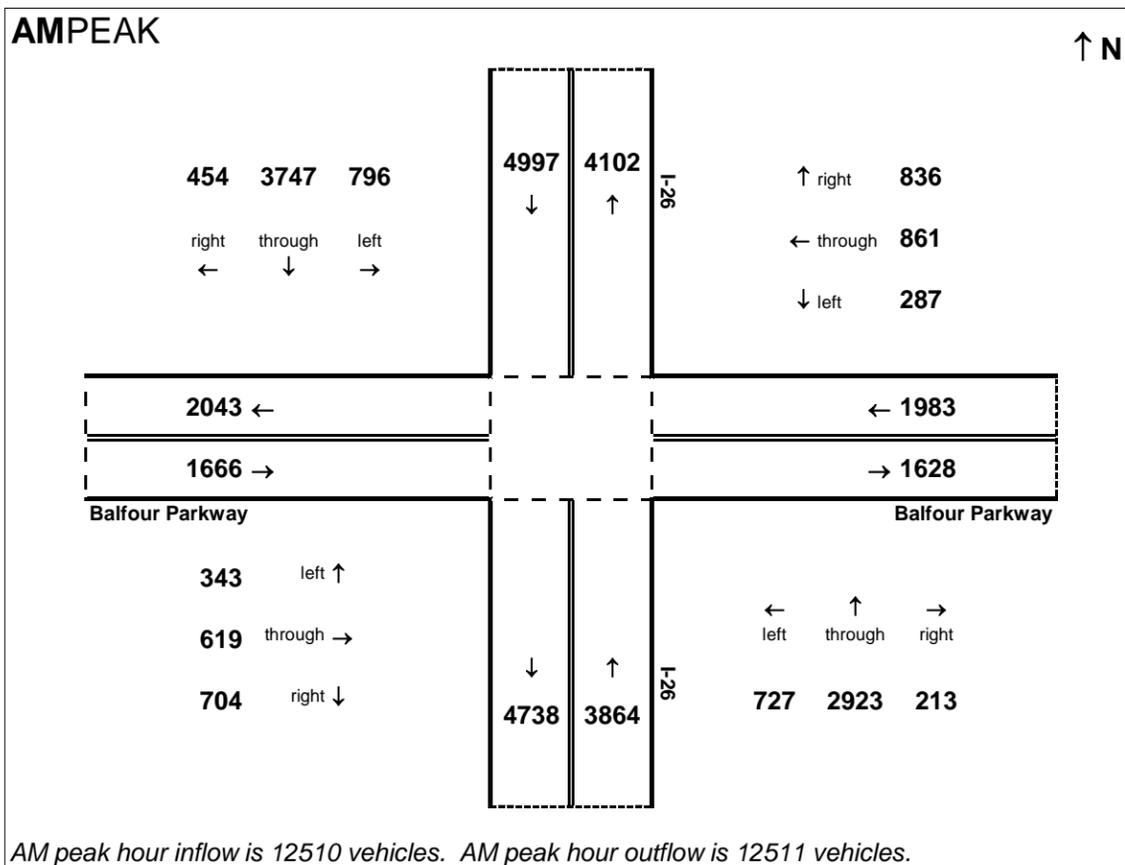


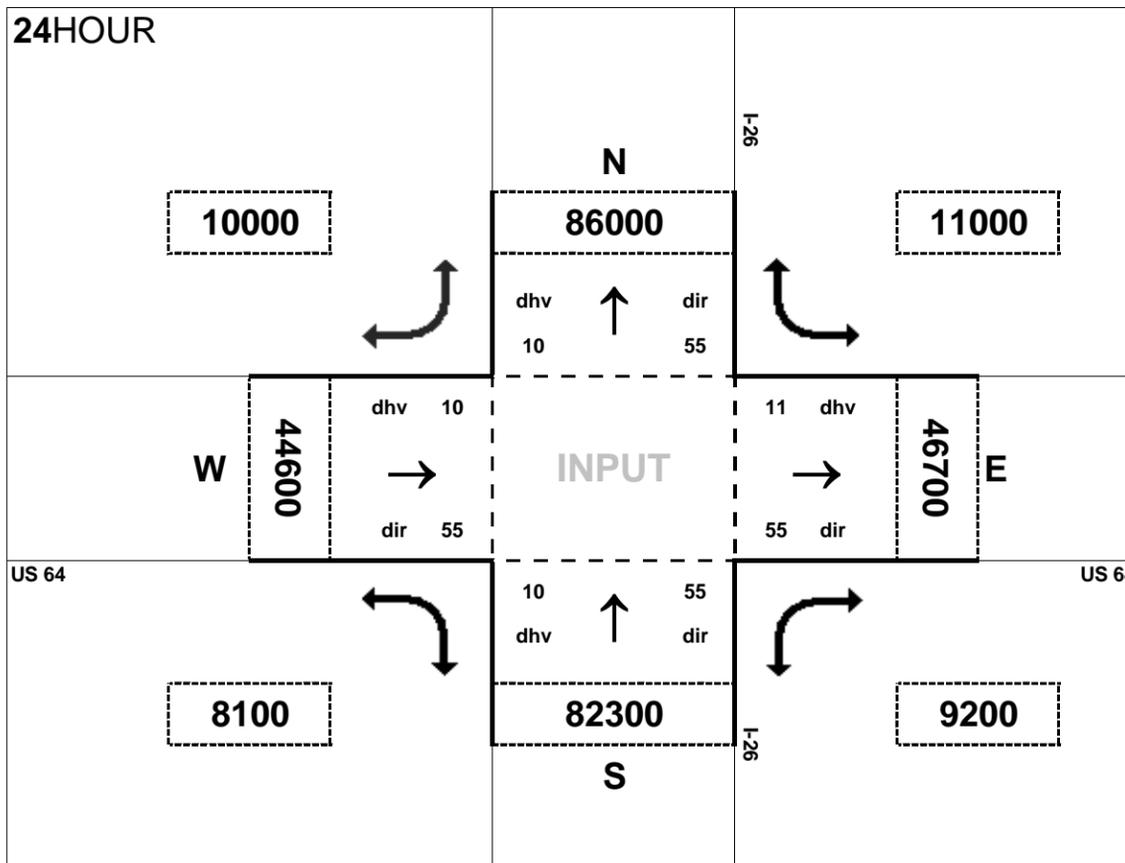
Peak Hour Volume Breakouts Report:
7. I-26 & Future Balfour Parkway Interchange

Traffic Forecast Release Date:
December-13

Traffic Data Year:
2040 DY - Bld 6/8 Ln

Project:
STIP I-4400/4700 - I-26 Widening



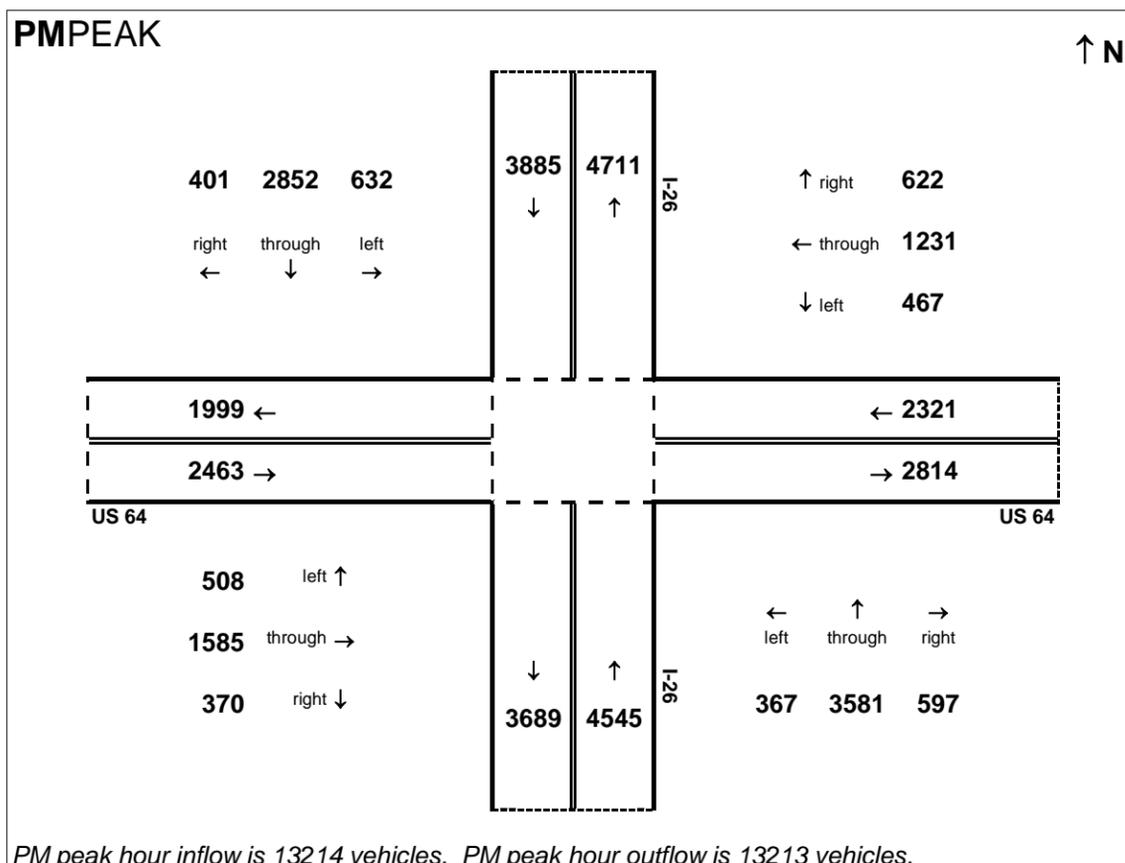
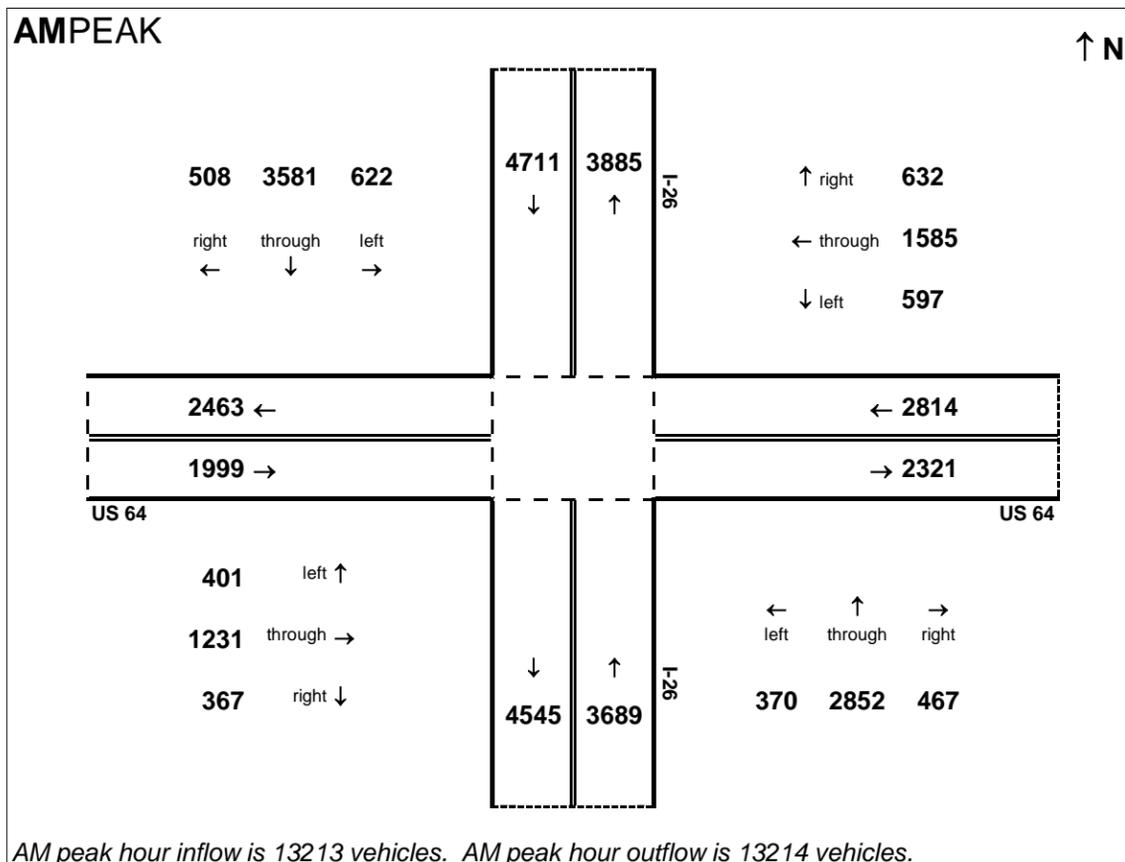


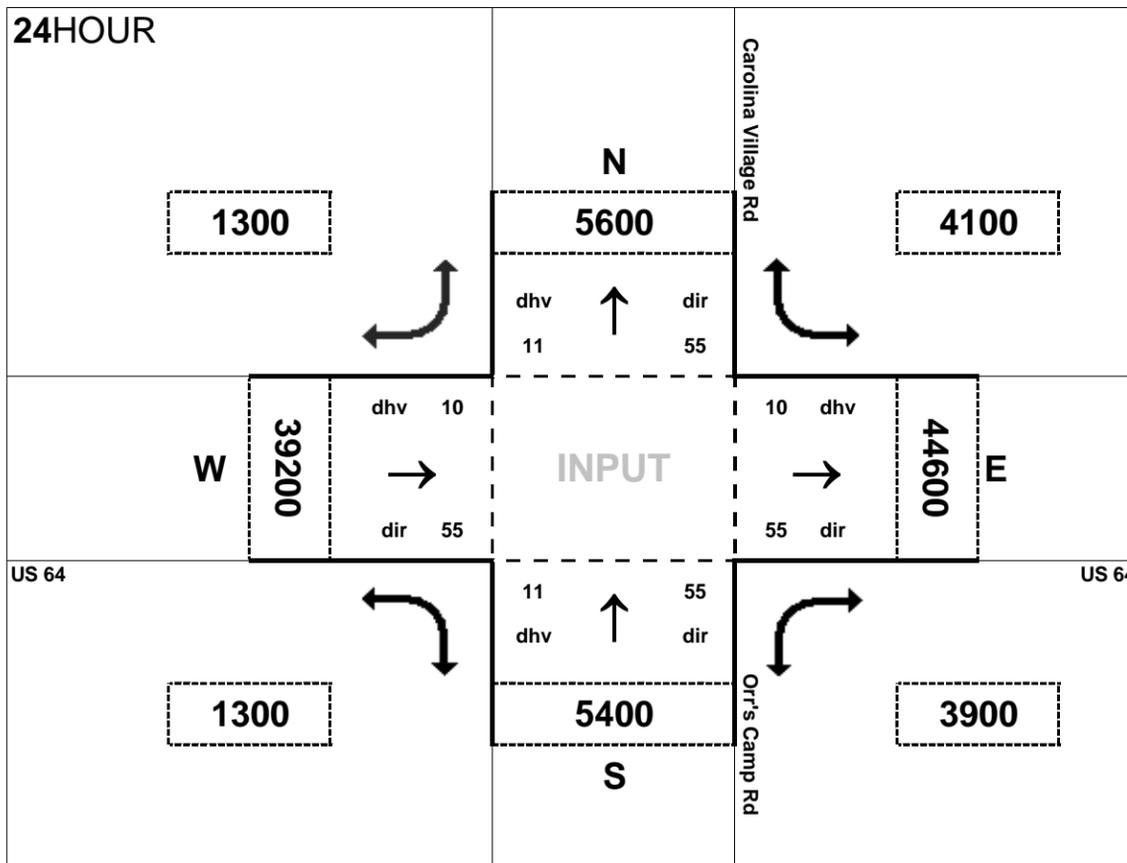
Peak Hour Volume Breakouts Report:
8. I-26 & US 64 System Interchange

Traffic Forecast Release Date:
December-13

Traffic Data Year:
2040 DY - Bld 6/8 Ln

Project:
STIP I-4400/4700 - I-26 Widening





Peak Hour Volume Breakouts Report:

8a. US 64 & Carolina Village Rd / Orr's Camp Rd

Traffic Forecast Release Date:

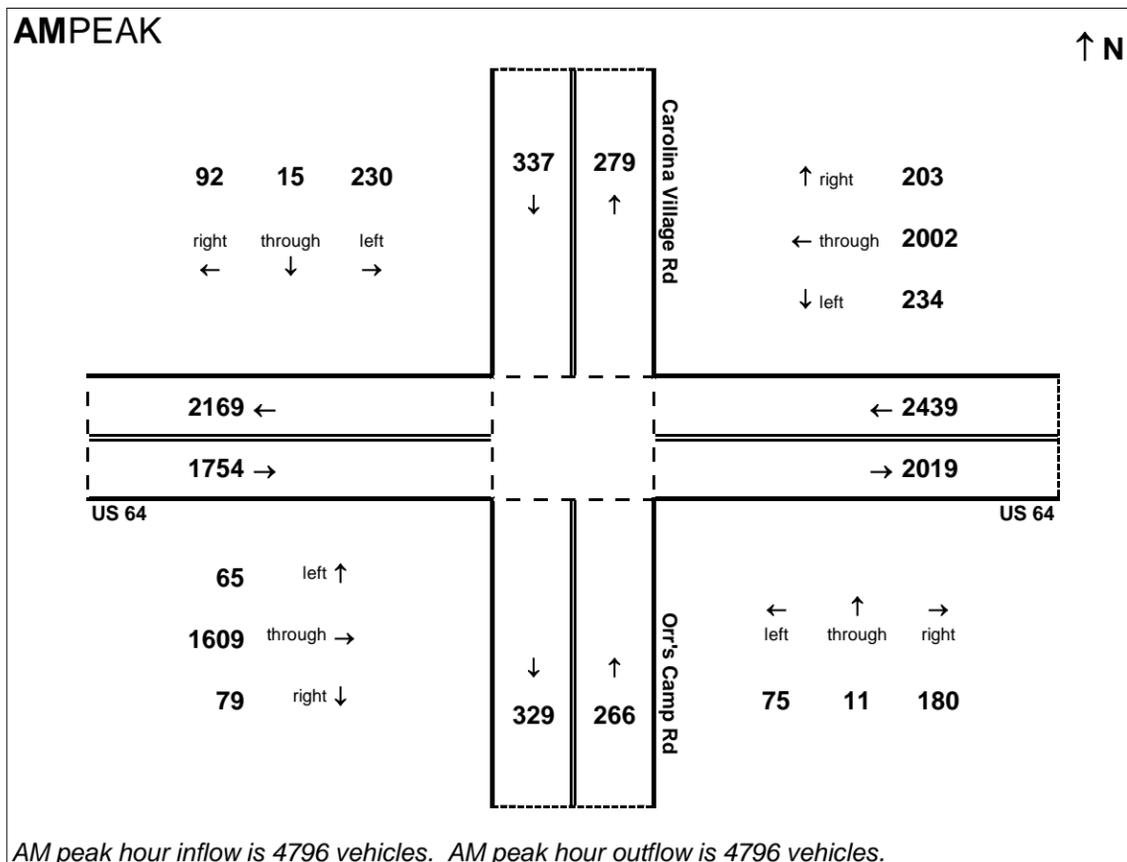
December-13

Traffic Data Year:

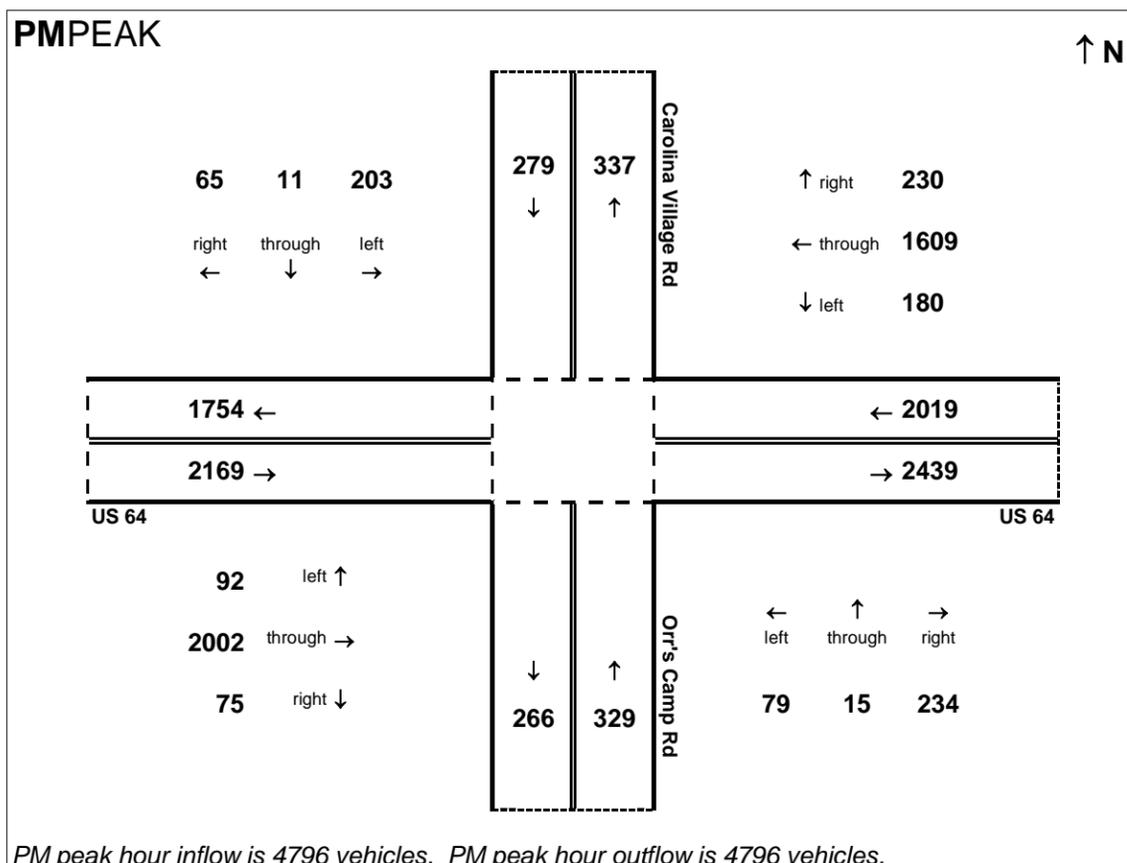
2040 DY - Bld 6/8 Ln

Project:

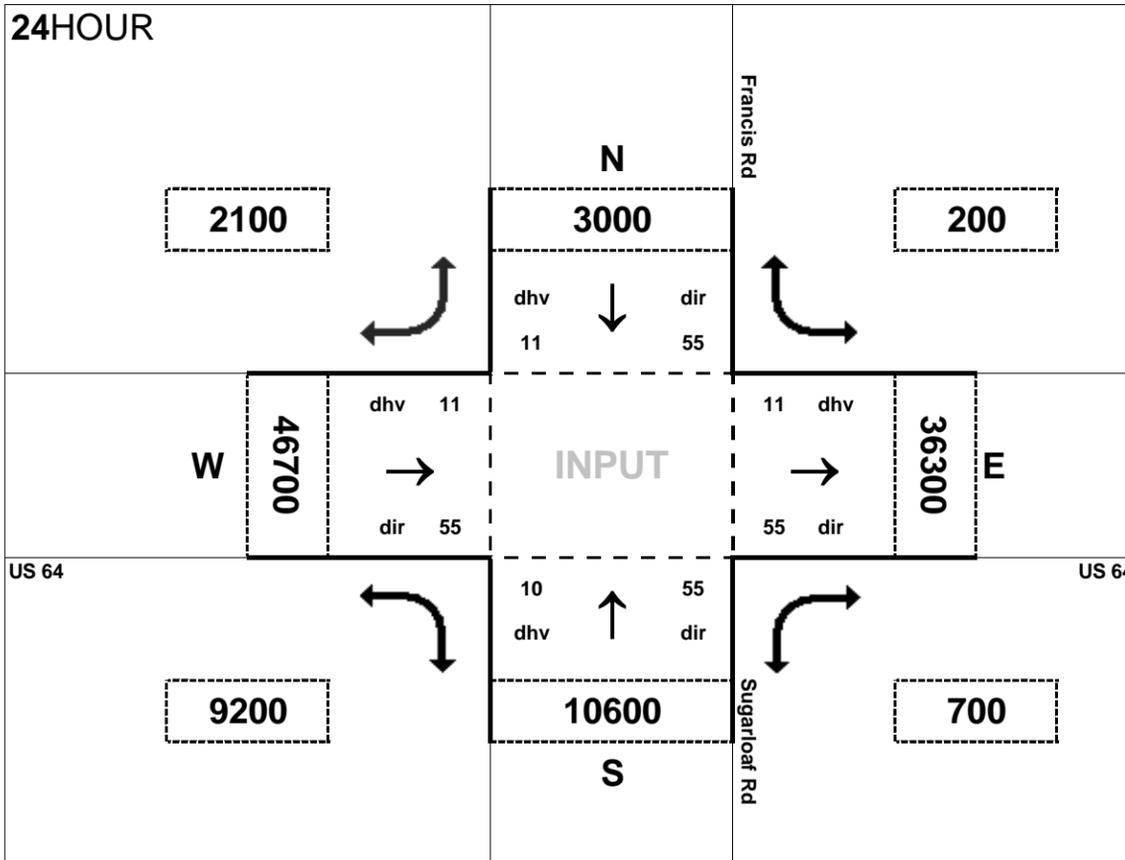
STIP I-4400/4700 - I-26 Widening



AM peak hour inflow is 4796 vehicles. AM peak hour outflow is 4796 vehicles.



PM peak hour inflow is 4796 vehicles. PM peak hour outflow is 4796 vehicles.

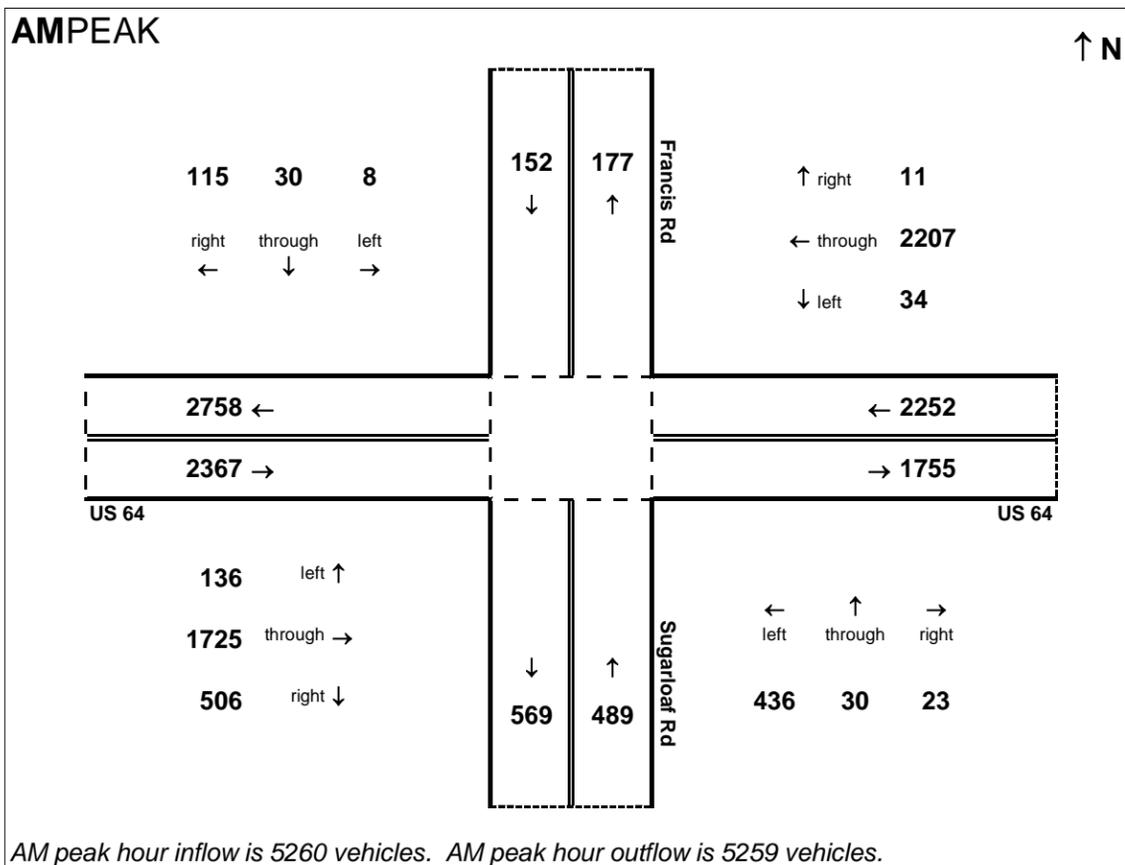


Peak Hour Volume Breakouts Report:
8b. US 64 & Francis Rd / Sugarloaf Rd

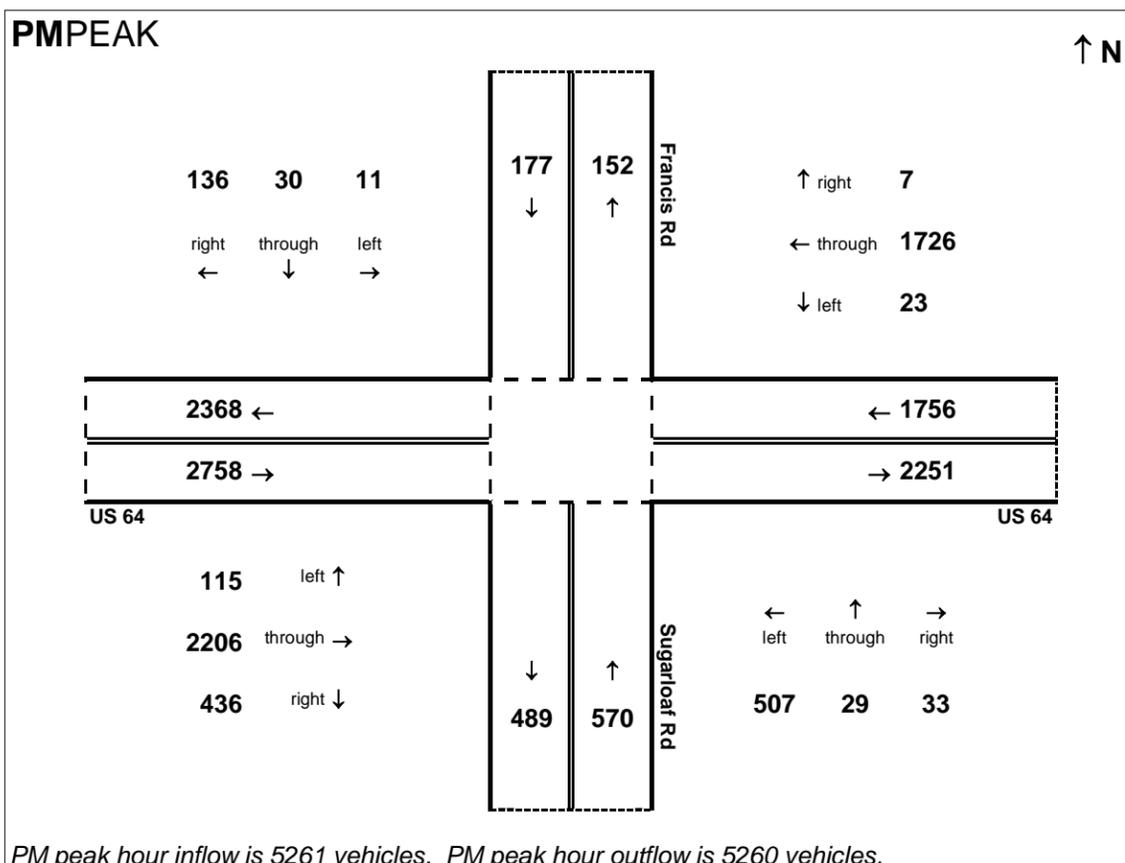
Traffic Forecast Release Date:
December-13

Traffic Data Year:
2040 DY - Bld 6/8 Ln

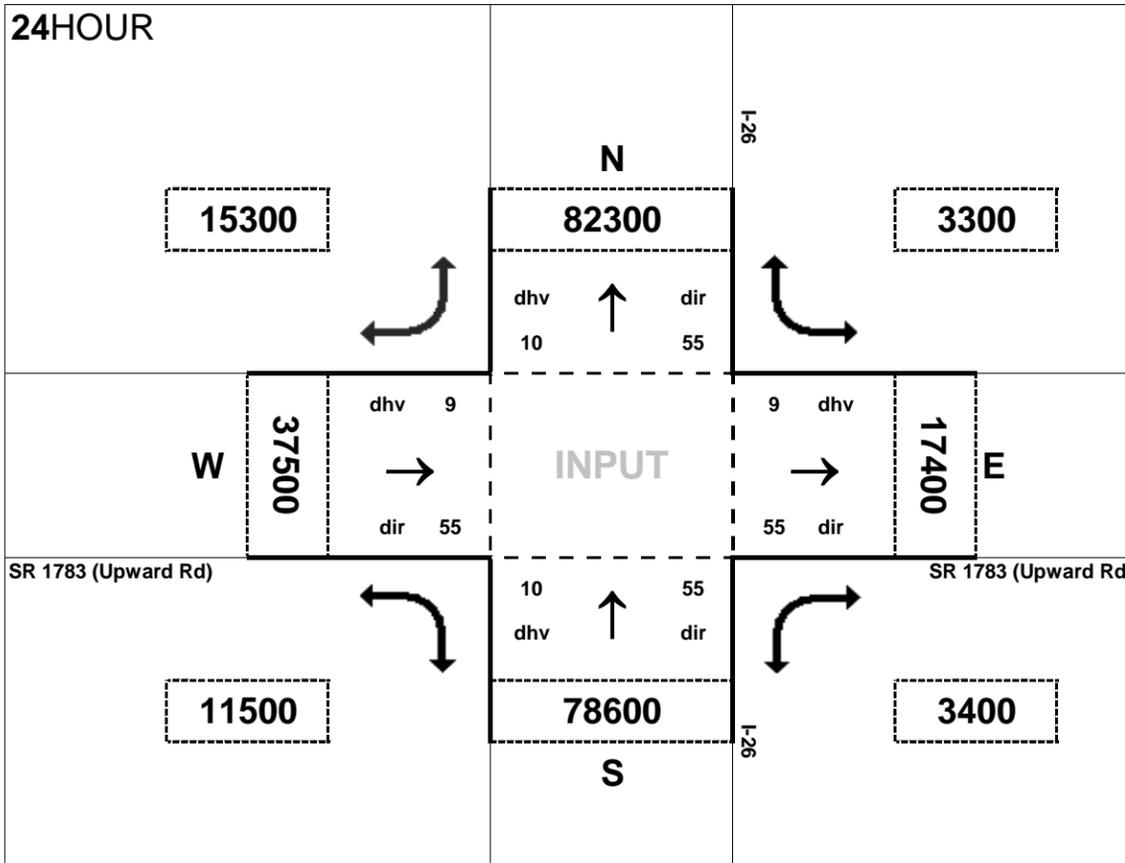
Project:
STIP I-4400/4700 - I-26 Widening



AM peak hour inflow is 5260 vehicles. AM peak hour outflow is 5259 vehicles.



PM peak hour inflow is 5261 vehicles. PM peak hour outflow is 5260 vehicles.

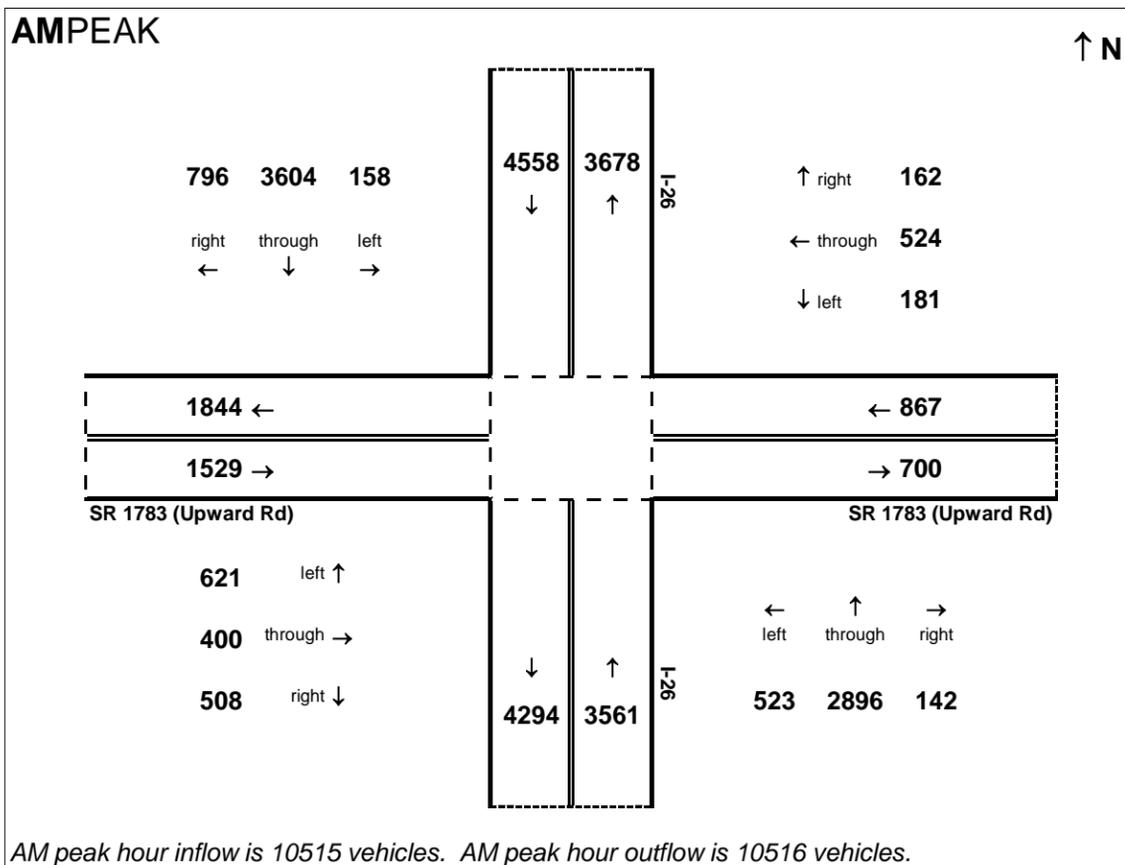


Peak Hour Volume Breakouts Report:
9. I-26 & Upward Road Interchange

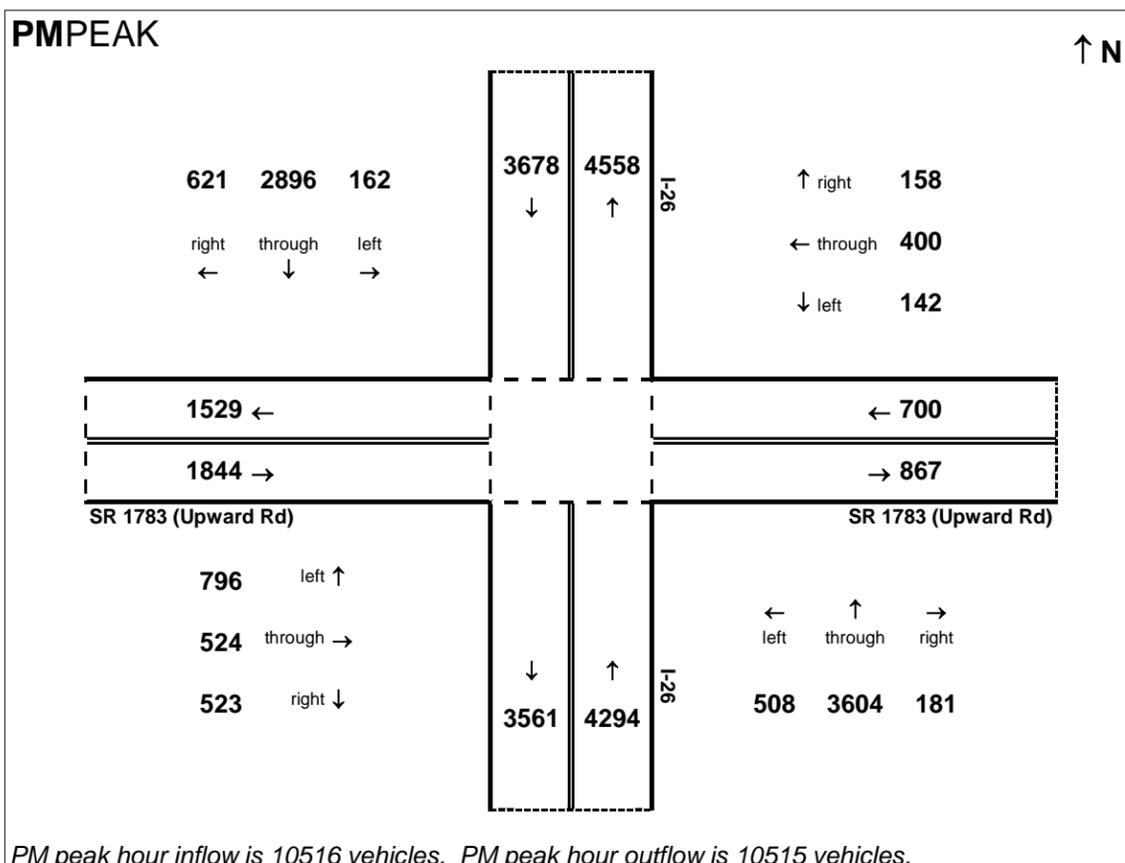
Traffic Forecast Release Date:
December-13

Traffic Data Year:
2040 DY - Bld 6/8 Ln

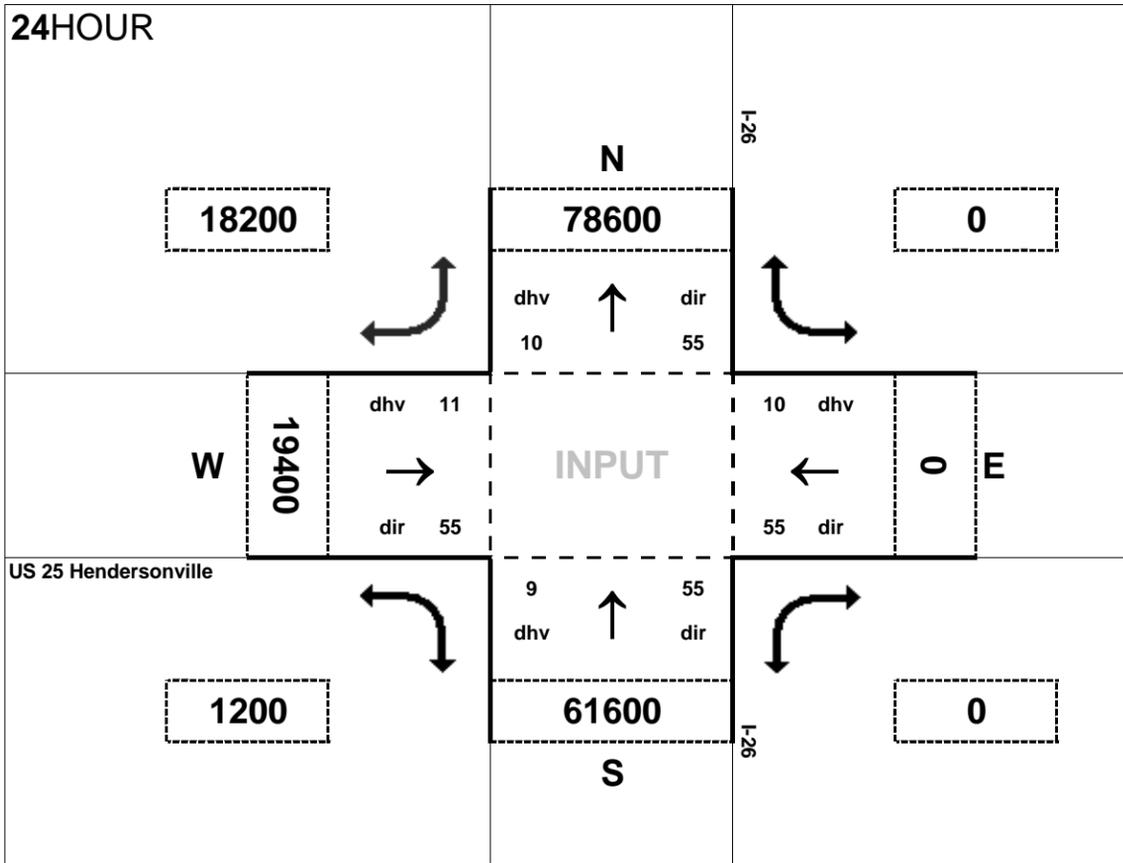
Project:
STIP I-4400/4700 - I-26 Widening



AM peak hour inflow is 10515 vehicles. AM peak hour outflow is 10516 vehicles.



PM peak hour inflow is 10516 vehicles. PM peak hour outflow is 10515 vehicles.

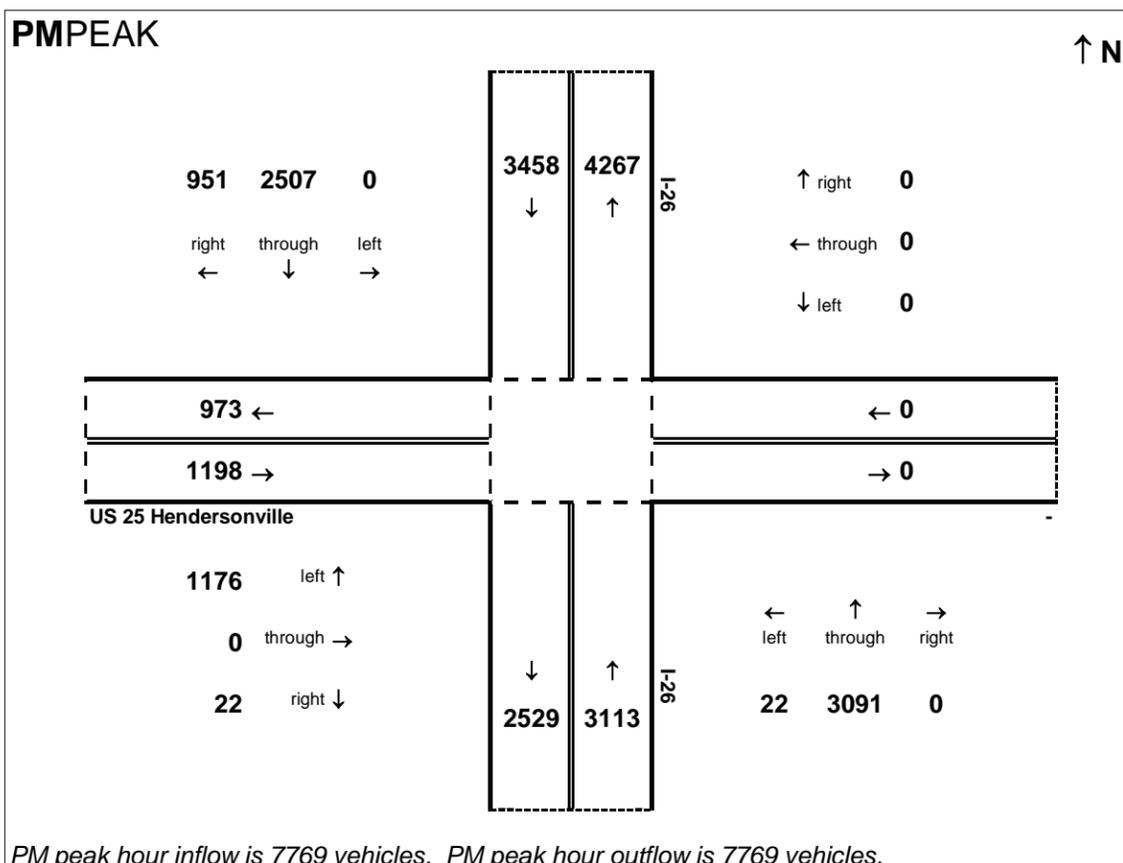
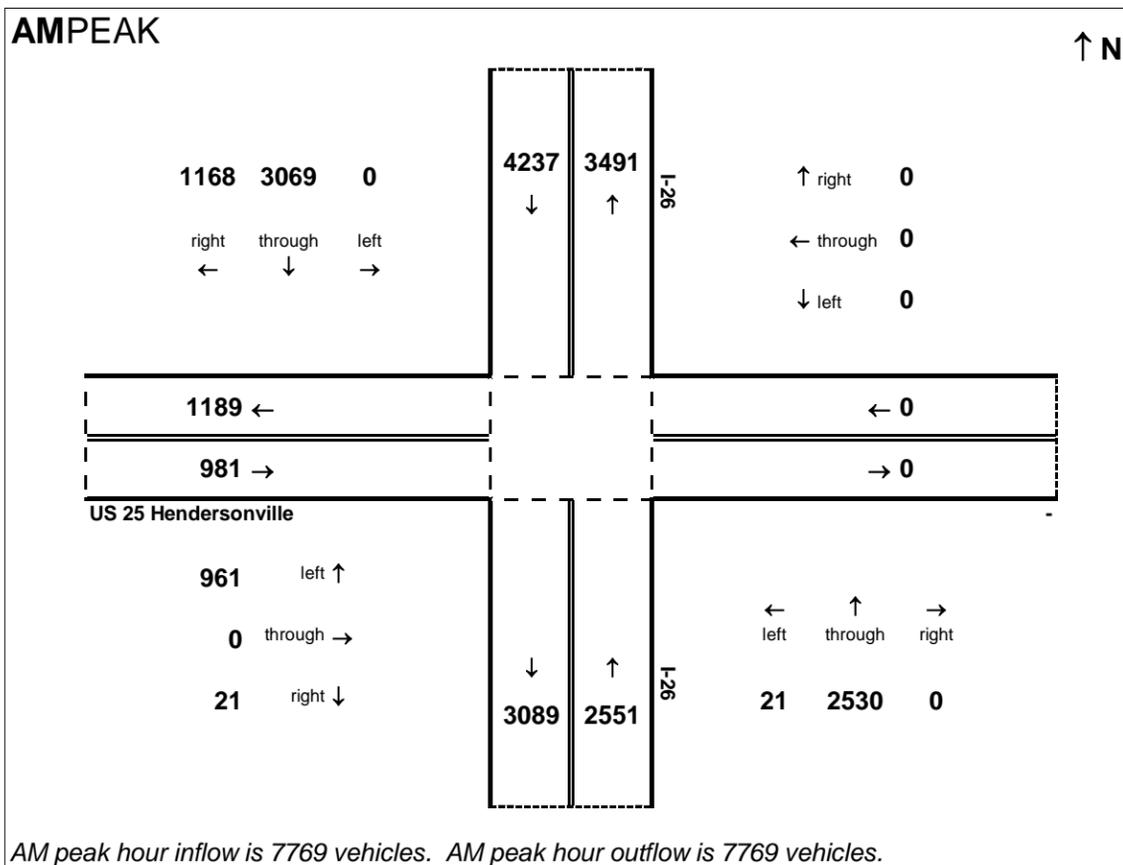


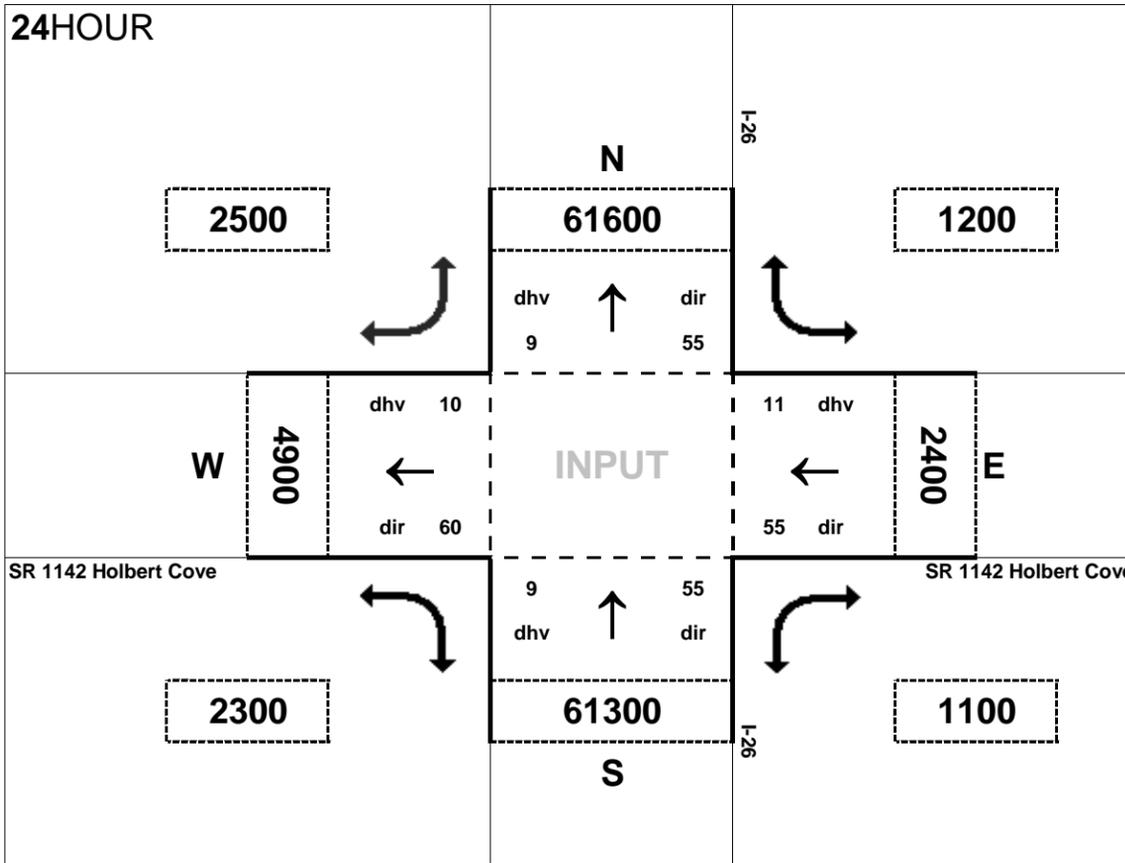
Peak Hour Volume Breakouts Report:
10. I-26 & US 25 Hendersonville Interchange

Traffic Forecast Release Date:
December-13

Traffic Data Year:
2040 DY - Bld 6/8 Ln

Project:
STIP I-4400/4700 - I-26 Widening



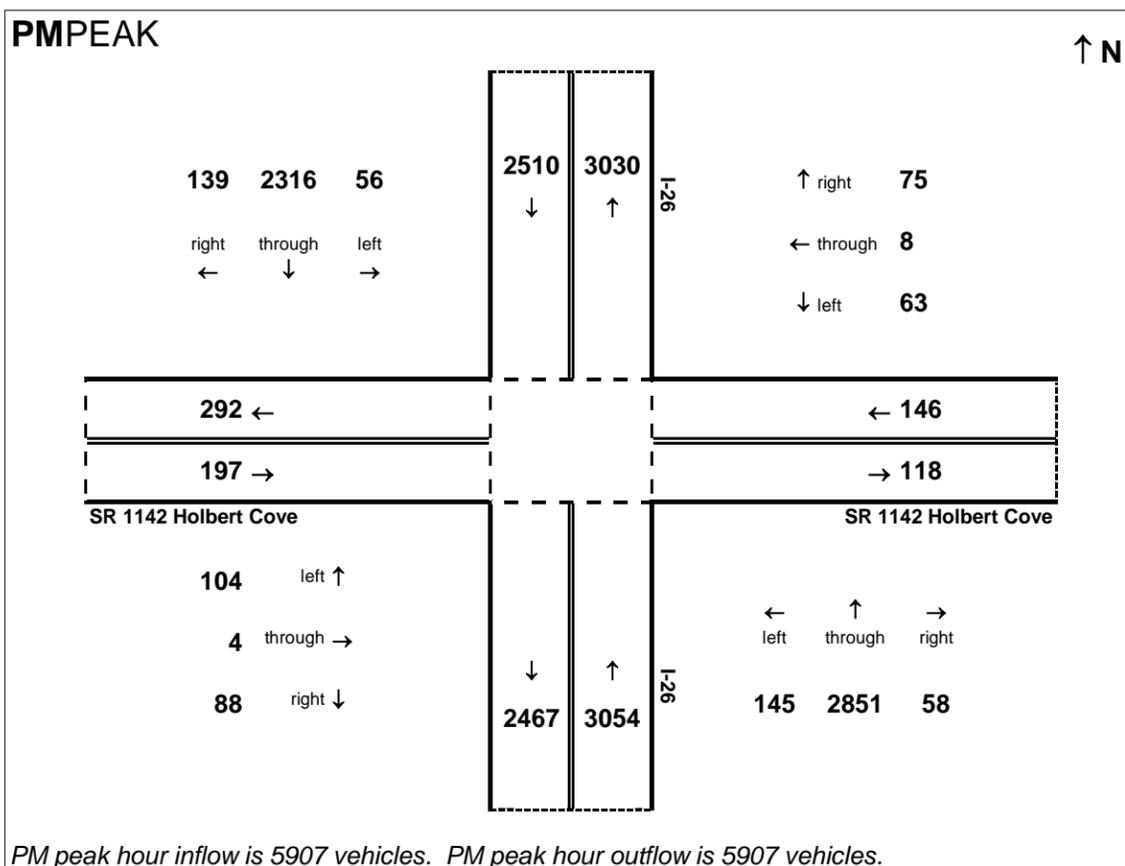
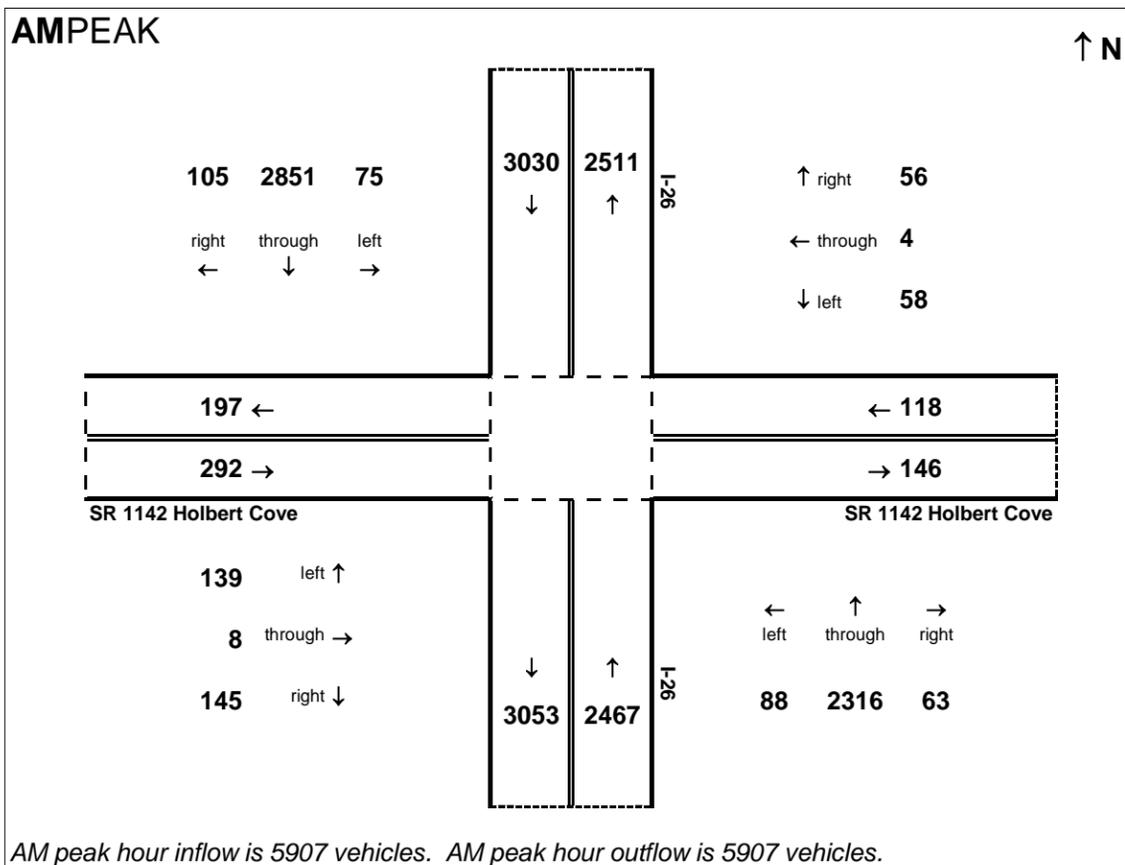


Peak Hour Volume Breakouts Report:
11. I-26 & Holbert Cove Rd Interchange

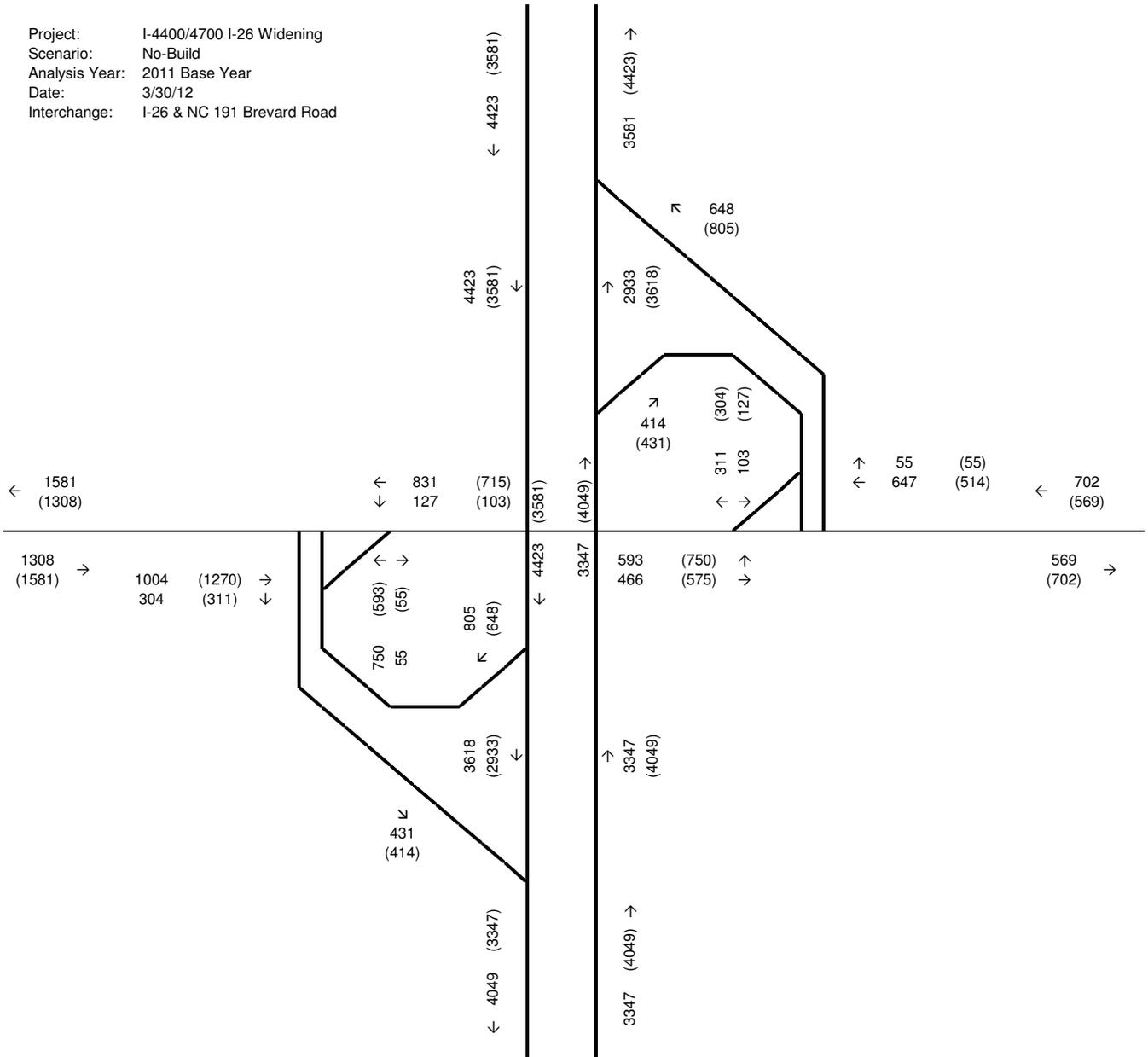
Traffic Forecast Release Date:
December-13

Traffic Data Year:
2040 DY - Bld 6/8 Ln

Project:
STIP I-4400/4700 - I-26 Widening



Project: I-4400/4700 I-26 Widening
 Scenario: No-Build
 Analysis Year: 2011 Base Year
 Date: 3/30/12
 Interchange: I-26 & NC 191 Brevard Road



North/South Mainline:
 East-West Y-Line:
 West Tie-In Street:
 East Tie-In Street:

I-26
 NC 191
 Rocky Ridge
 -

From:		Rocky Ridge		AM	PM
To:	NC 191	WB	EB	43	46
AM	PM			79	102
31%	33% NC 191	E		25	34
45%	47% I-26	N		36	48
23%	20% I-26	S		18	20
100%	100%			Y	Y

To:		Rocky Ridge		AM	PM
From:	NC 191	WB	EB	46	43
AM	PM			102	78
33%	31% NC 191	W		34	25
47%	45% I-26	N		48	35
20%	23% I-26	S		20	18
100%	100%			Y	Y

From: -		Rocky Ridge		AM	PM
To:	NC 191	S			
1%	1% NC 191	N		0	0
1%	1% I-26	E		0	0
1%	1% I-26	W		0	0
				Y	Y

To: -		Rocky Ridge		AM	PM
From:	NC 191	S			
1%	1% NC 191	N		0	0
1%	1% I-26	E		0	0
1%	1% I-26	W		0	0
				Y	Y

Values from Modified Main Interchange Breakout Sheet

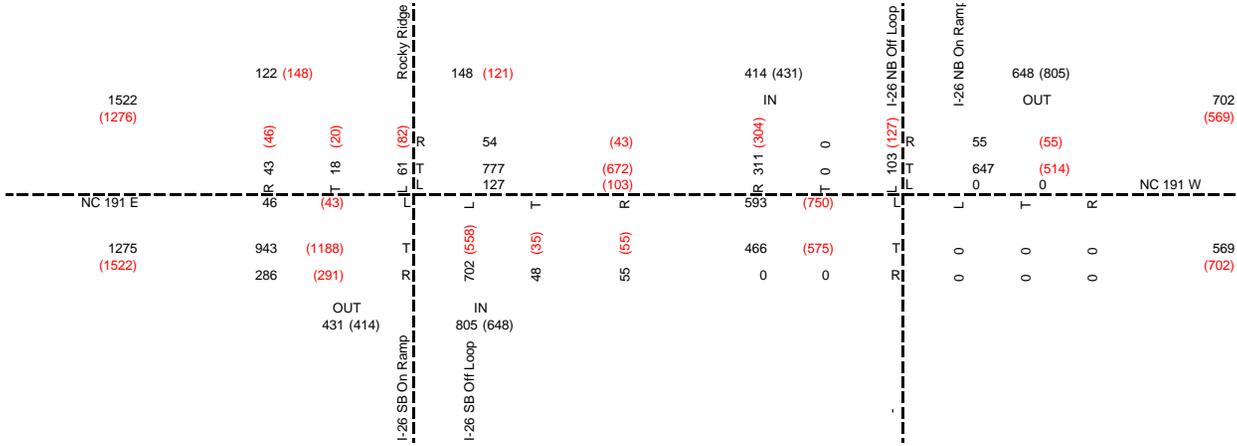
AM Peak	R	T	L	I-26
L	593	750	55	55
T	411			520
R	304			127
NC 191	311		103	

PM Peak	R	T	L	I-26
L	750	593	55	55
T	520			411
R	311			103
NC 191	304		127	

Values from Tie-In Street Breakout Sheet

AM Peak	R	T	L	Rocky Ridge
L	46	43	79	102
T	1218			1492
R	0			0
NC 191	0		0	

PM Peak	R	T	L	Rocky Ridge
L	43	46	102	78
T	1492			1218
R	0			0
NC 191	0		0	



North/South Mainline:
 East-West Y-Line:
 West Tie-In Street:
 East Tie-In Street:

I-26
 NC 191
 Rocky Ridge
 -

From:		Rocky Ridge		AM	PM
To:	NC 191	WB	EB	43	46
AM	PM			79	102
35%	36% NC 191	E		27	37
39%	42% I-26	N		32	42
26%	22% I-26	S		20	23
100%	100%			Y	Y

To:		Rocky Ridge		AM	PM
From:	NC 191	WB	EB	46	43
AM	PM			102	78
36%	35% NC 191	W		37	27
42%	39% I-26	N		42	31
22%	26% I-26	S		23	20
100%	100%			Y	Y

From: -		To: NC 191		AM	PM
To:	NC 191	S			
1%	1% NC 191	N		0	0
1%	1% I-26	E		0	0
1%	1% I-26	W		0	0
				Y	Y

To: -		From: NC 191		AM	PM
To:	NC 191	S			
1%	1% NC 191	N		0	0
1%	1% I-26	E		0	0
1%	1% I-26	W		0	0
				Y	Y

Values from Modified Main Interchange Breakout Sheet

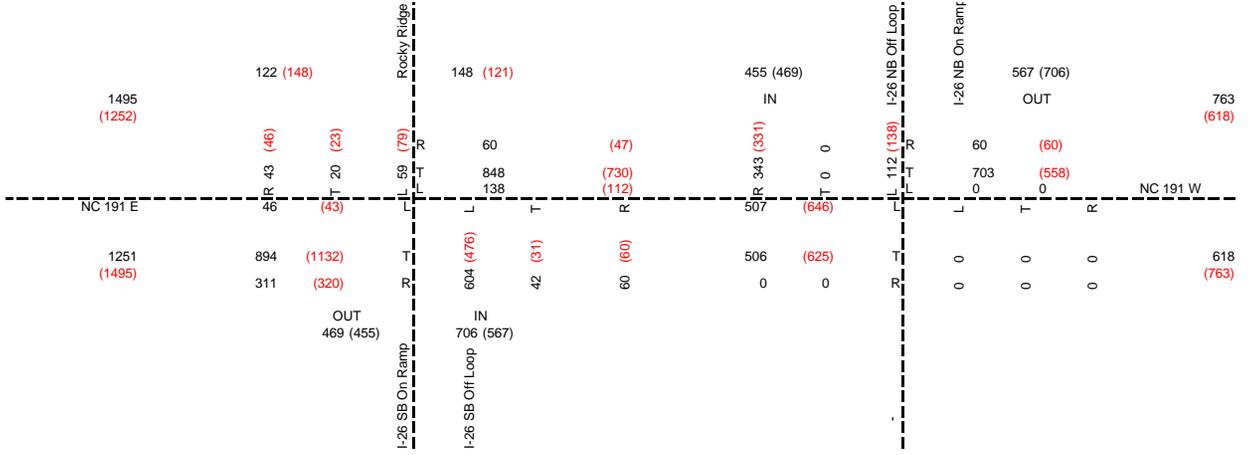
AM Peak	R	T	L	I-26
L	507	646	60	60
T	446			565
R	331			138
NC 191	343		112	

PM Peak	R	T	L	I-26
L	646	507	60	60
T	565			446
R	343			112
NC 191	331		138	

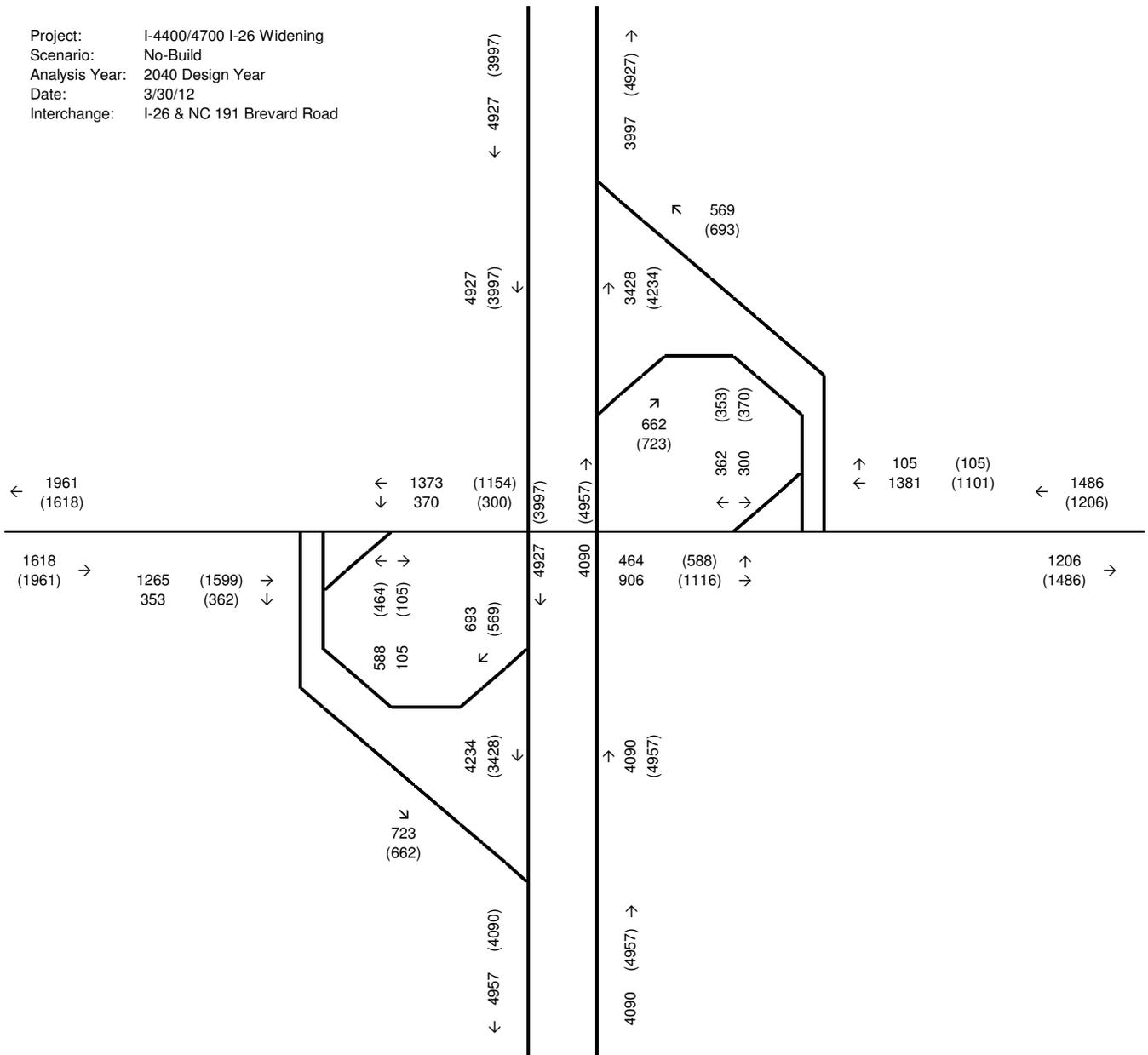
Values from Tie-In Street Breakout Sheet

AM Peak	R	T	L	Rocky Ridge
L	46	43	79	102
T	1195			1465
R	0			0
NC 191	0		0	

PM Peak	R	T	L	Rocky Ridge
L	43	46	102	78
T	1465			1195
R	0			0
NC 191	0		0	



Project: I-4400/4700 I-26 Widening
 Scenario: No-Build
 Analysis Year: 2040 Design Year
 Date: 3/30/12
 Interchange: I-26 & NC 191 Brevard Road



North/South Mainline:
 East-West Y-Line:
 West Tie-In Street:
 East Tie-In Street:

I-26
 NC 191
 Rocky Ridge
 -

From:		Rocky Ridge		AM	PM
To:	NC 191	WB	EB		
AM	PM			62	67
50%	52% NC 191	E		100	131
29%	30% I-26	N		49	68
22%	18% I-26	S		29	39
100%	100%			22	24
				Y	Y

To:		Rocky Ridge		AM	PM
From:	NC 191	WB	EB		
AM	PM			66	63
52%	50% NC 191	W		131	100
30%	29% I-26	N		68	49
18%	22% I-26	S		39	29
100%	100%			24	22
				Y	Y

From: -		To: NC 191		AM	PM
To:	NC 191	S			
AM	PM				
1%	1% NC 191	N		0	0
1%	1% I-26	E		0	0
1%	1% I-26	W		0	0
				Y	Y

To: -		From: NC 191		AM	PM
From:	NC 191	S			
AM	PM				
1%	1% NC 191	N		0	0
1%	1% I-26	E		0	0
1%	1% I-26	W		0	0
				Y	Y

Values from Modified Main Interchange Breakout Sheet

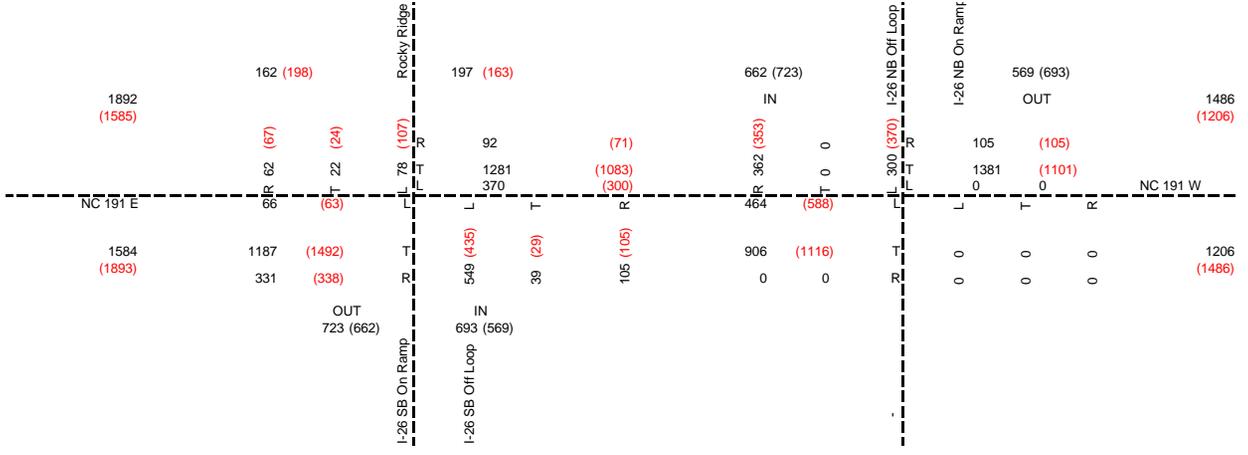
AM Peak	R	T	L	I-26
L	464	588	105	105
T	801			1011
R	353			370
NC 191	362		300	

PM Peak	R	T	L	I-26
L	588	464	105	105
T	1011			801
R	362			300
NC 191	353		370	

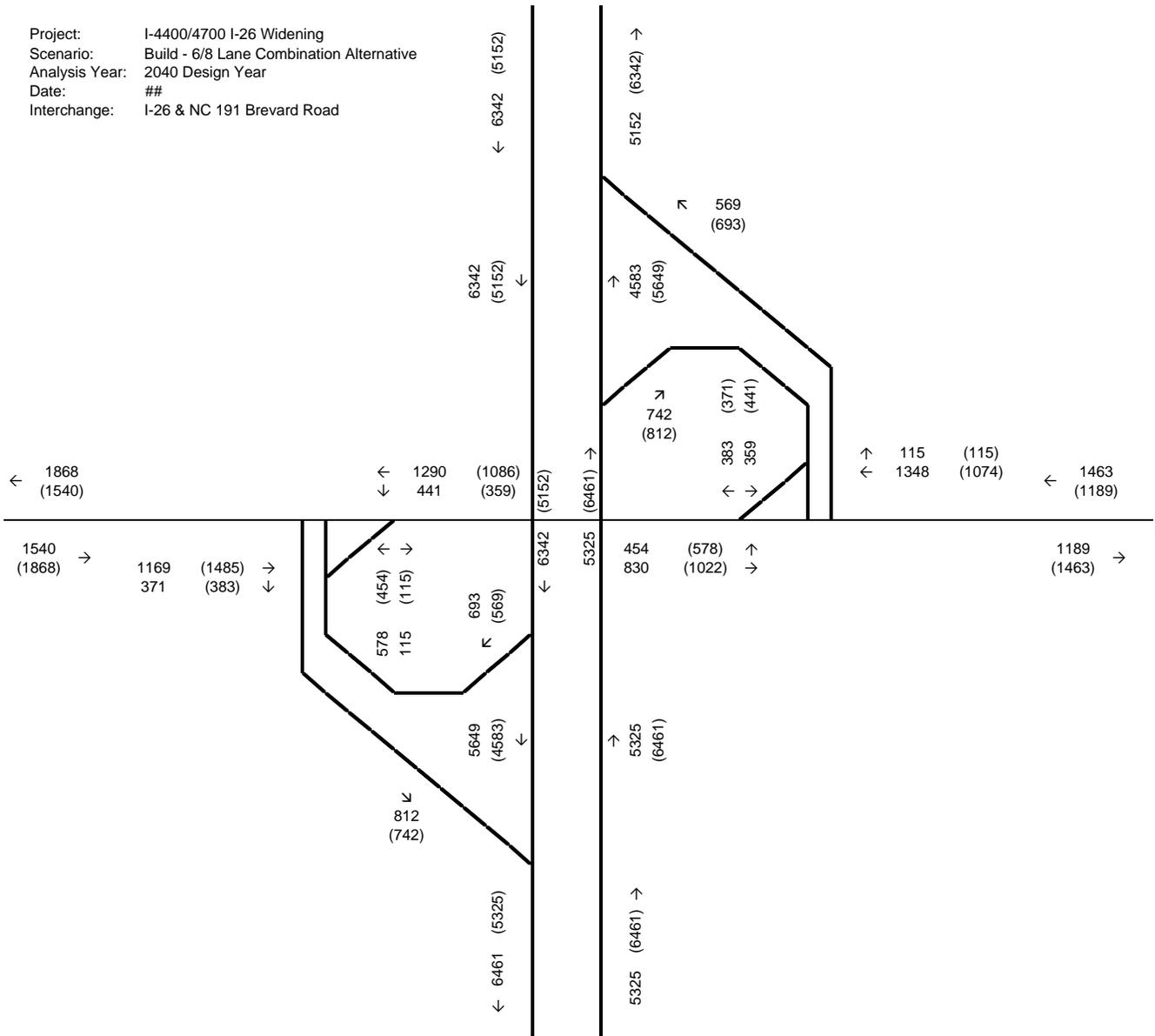
Values from Tie-In Street Breakout Sheet

AM Peak	R	T	L	Rocky Ridge
L	66	62	100	131
T	1505			1845
R	0			0
NC 191	0		0	

PM Peak	R	T	L	Rocky Ridge
L	63	67	131	100
T	1845			1505
R	0			0
NC 191	0		0	



Project: I-4400/4700 I-26 Widening
 Scenario: Build - 6/8 Lane Combination Alternative
 Analysis Year: 2040 Design Year
 Date: ##
 Interchange: I-26 & NC 191 Brevard Road



North/South Mainline:
 East-West Y-Line:
 West Tie-In Street:
 East Tie-In Street:

I-26
 NC 191
 Rocky Ridge
 -

From:		Rocky Ridge		AM	PM
To:	NC 191	WB	EB	67	72
AM	PM			96	125
46%	49%	NC 191	E	45	61
29%	31%	I-26	N	28	39
24%	21%	I-26	S	23	25
100%	100%			Y	Y

To:		Rocky Ridge		AM	PM
From:	NC 191	WB	EB	71	67
AM	PM			126	95
49%	46%	NC 191	W	61	44
31%	29%	I-26	N	39	28
21%	24%	I-26	S	26	23
100%	100%			Y	Y

From: -		To: NC 191		AM	PM
		S			
		1% NC 191	N	0	0
		1% I-26	E	0	0
		1% I-26	W	0	0
				Y	Y

To: -		From: NC 191		AM	PM
		S			
		1% NC 191	N	0	0
		1% I-26	E	0	0
		1% I-26	W	0	0
				Y	Y

Values from Modified Main Interchange Breakout Sheet

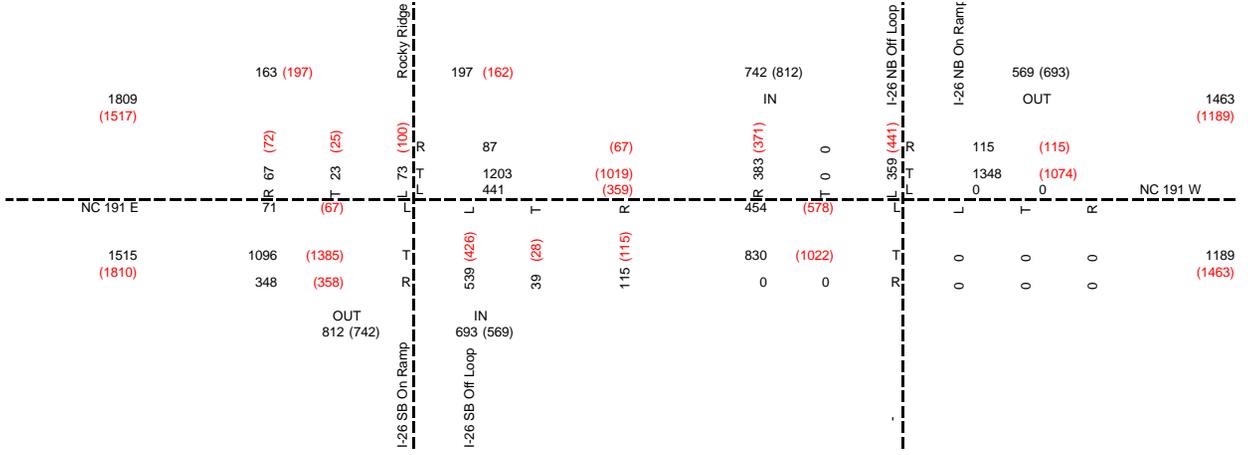
AM Peak	R	T	L	I-26
L	454	578	115	115
T	715			907
R	371			441
NC 191		383	359	I-26

PM Peak	R	T	L	I-26
L	578	454	115	115
T	907			715
R	383			359
NC 191		371	441	I-26

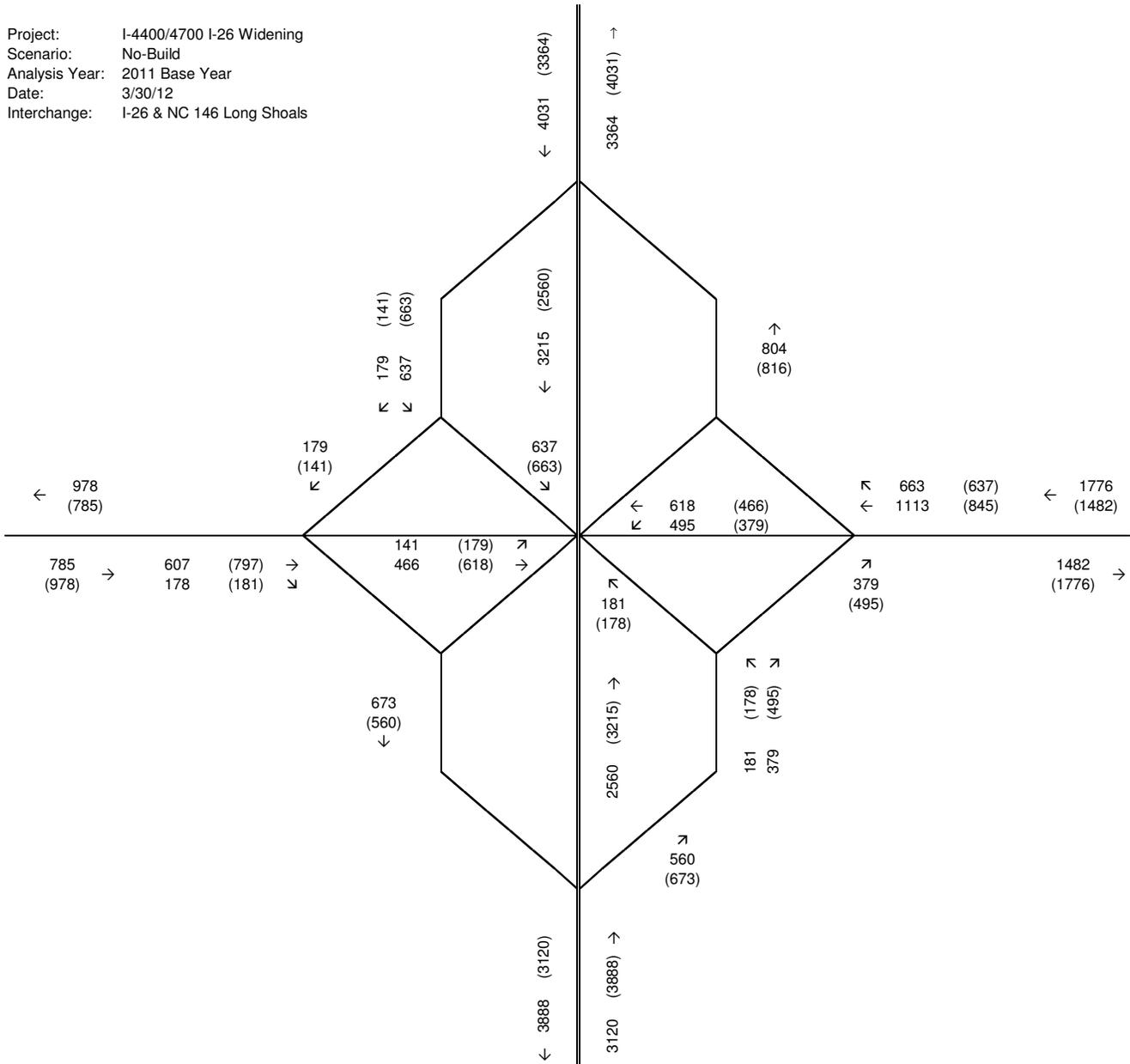
Values from Tie-In Street Breakout Sheet

AM Peak	R	T	L	Rocky Ridge
L	71	67	96	126
T	1433			1757
R	0			0
NC 191		0	0	0

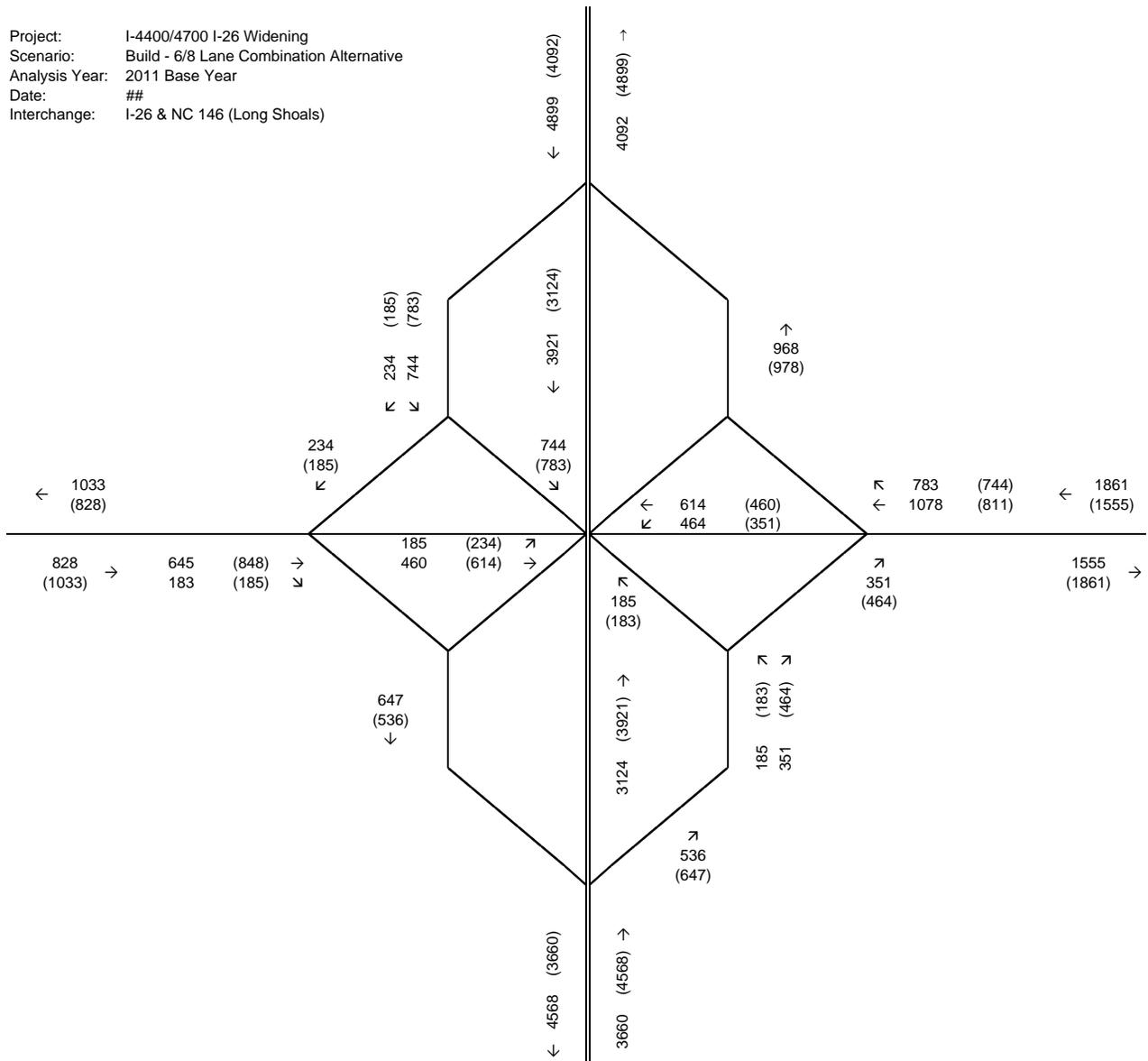
PM Peak	R	T	L	Rocky Ridge
L	67	72	125	95
T	1757			1433
R	0			0
NC 191		0	0	0



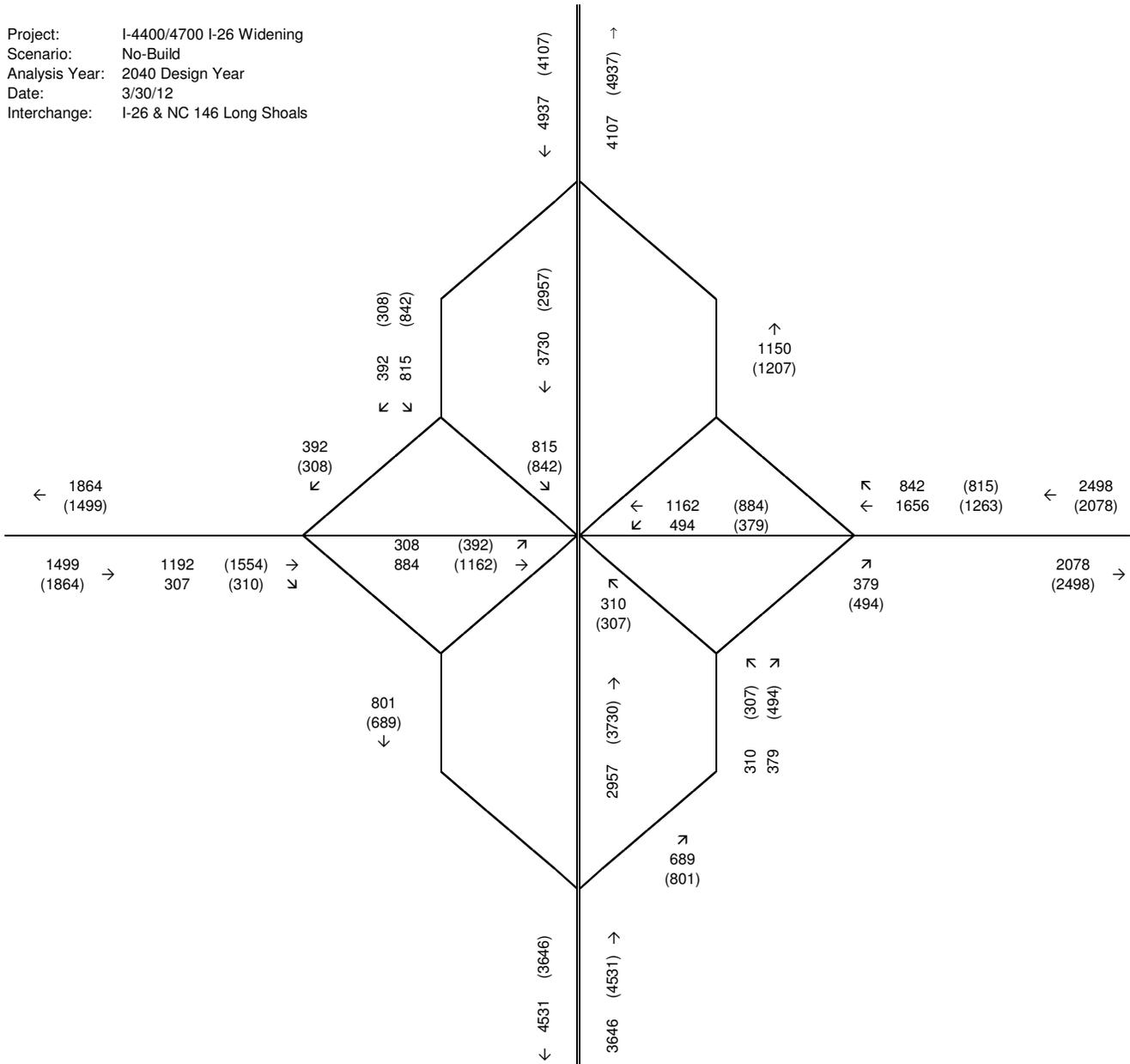
Project: I-4400/4700 I-26 Widening
 Scenario: No-Build
 Analysis Year: 2011 Base Year
 Date: 3/30/12
 Interchange: I-26 & NC 146 Long Shoals



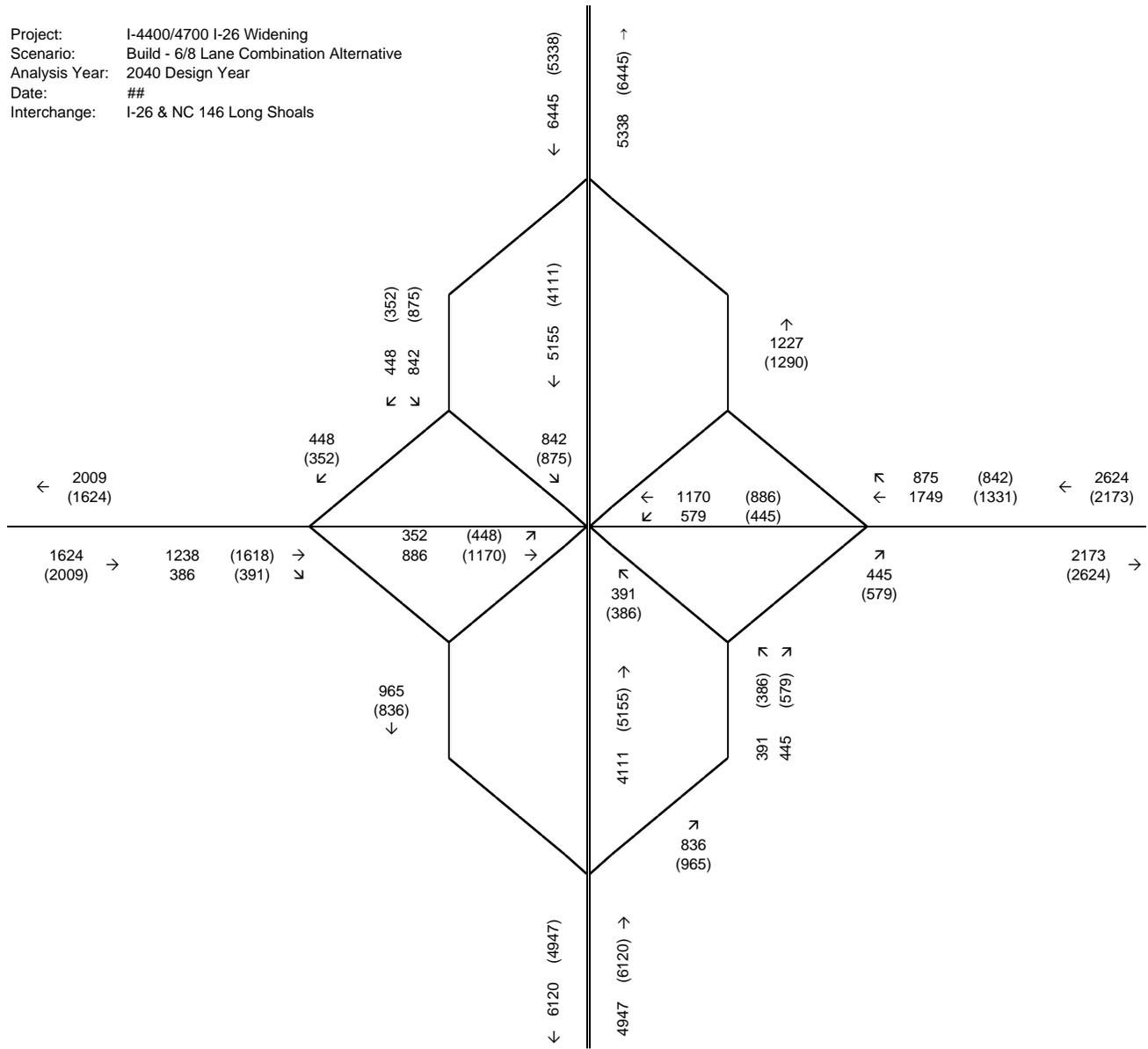
Project: I-4400/4700 I-26 Widening
 Scenario: Build - 6/8 Lane Combination Alternative
 Analysis Year: 2011 Base Year
 Date: ##
 Interchange: I-26 & NC 146 (Long Shoals)



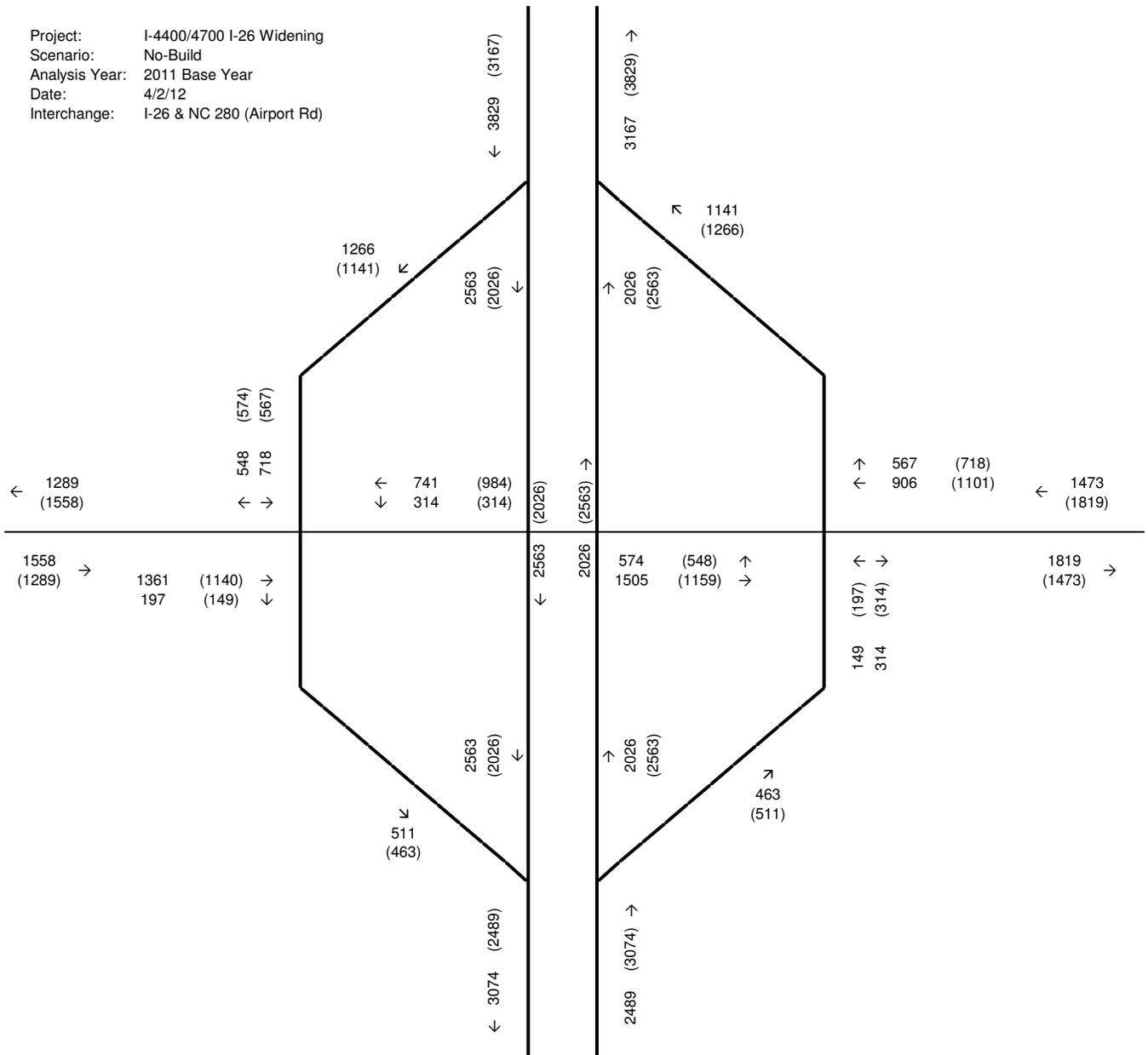
Project: I-4400/4700 I-26 Widening
 Scenario: No-Build
 Analysis Year: 2040 Design Year
 Date: 3/30/12
 Interchange: I-26 & NC 146 Long Shoals



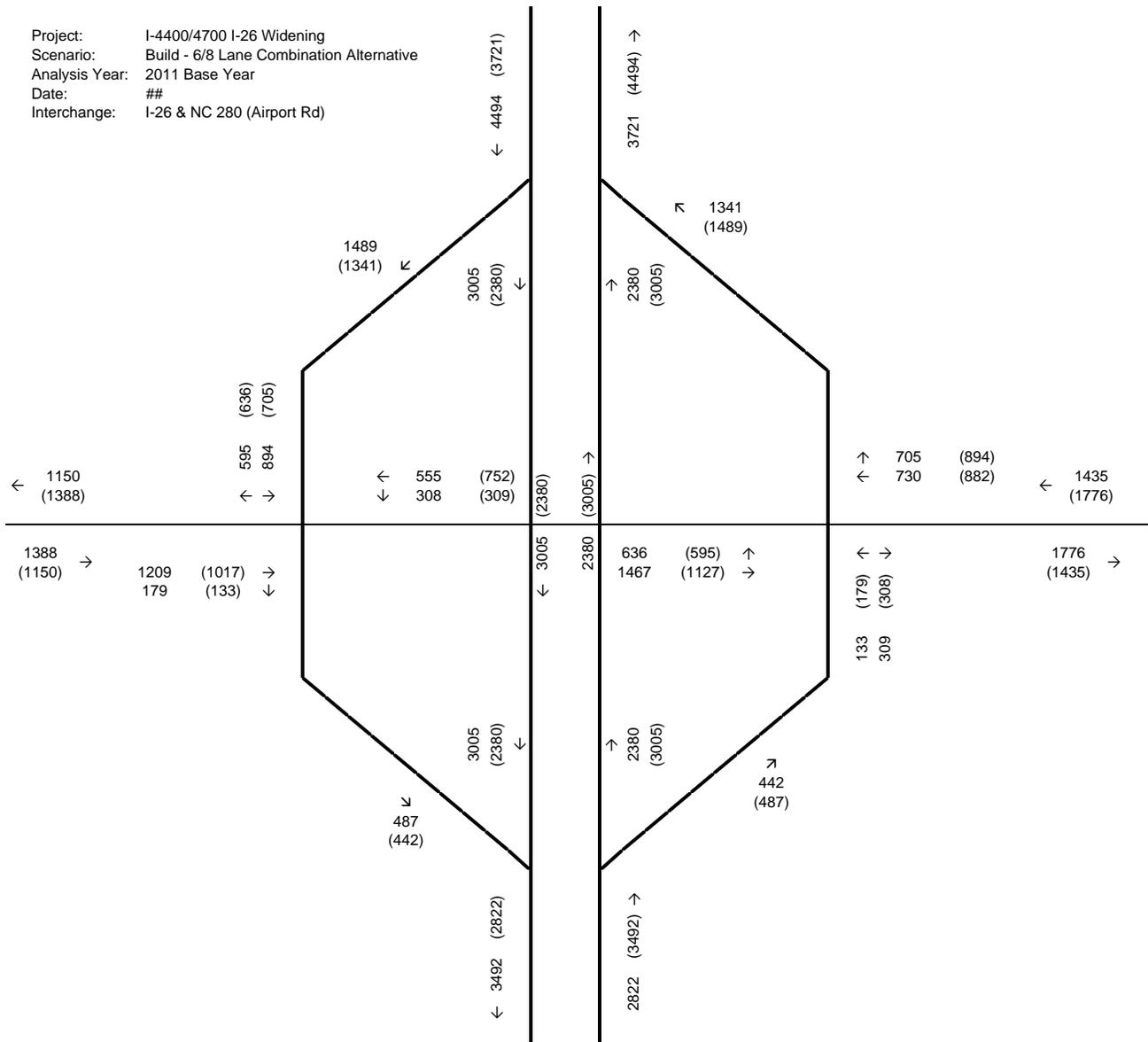
Project: I-4400/4700 I-26 Widening
 Scenario: Build - 6/8 Lane Combination Alternative
 Analysis Year: 2040 Design Year
 Date: ##
 Interchange: I-26 & NC 146 Long Shoals



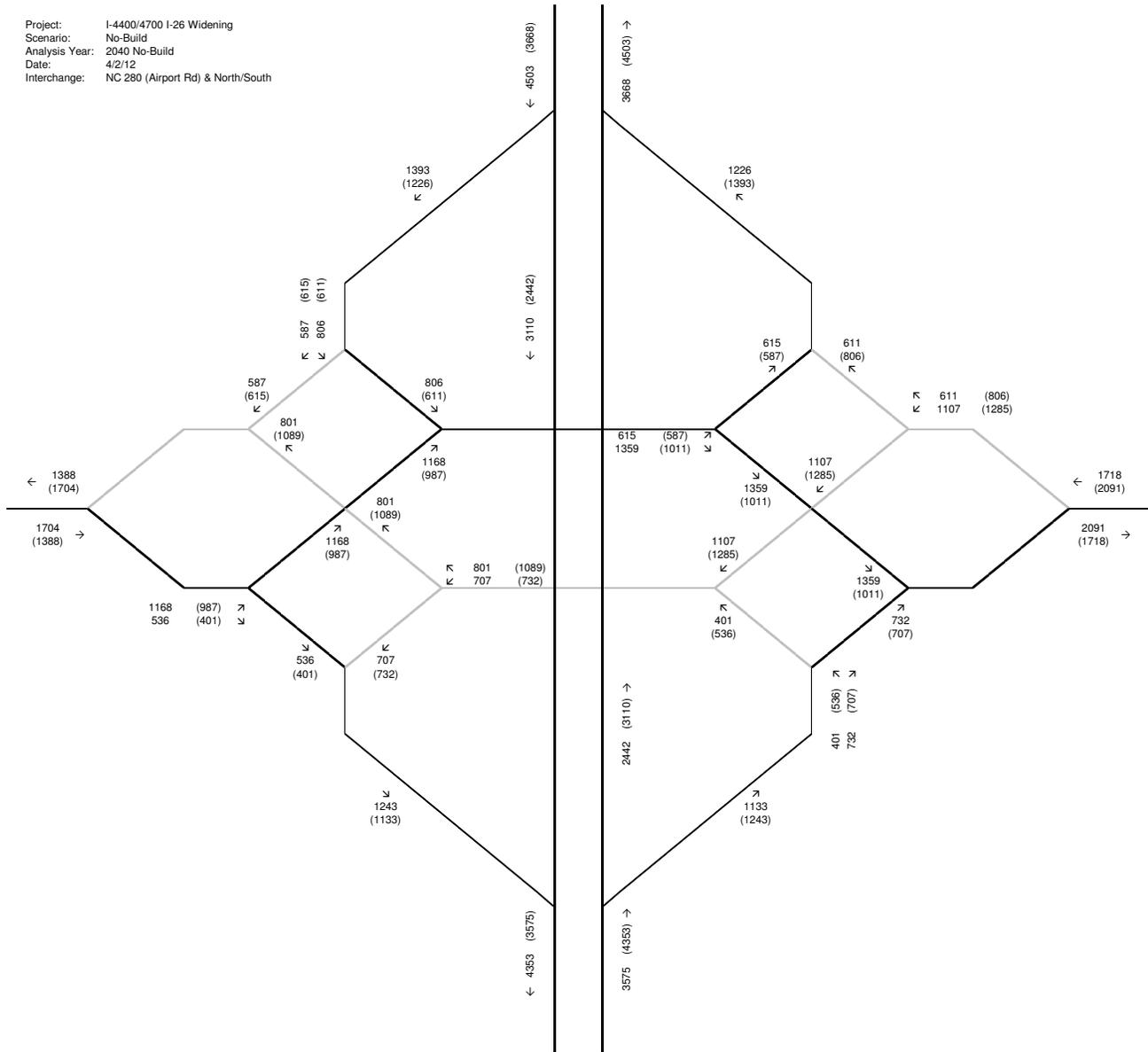
Project: I-4400/4700 I-26 Widening
 Scenario: No-Build
 Analysis Year: 2011 Base Year
 Date: 4/2/12
 Interchange: I-26 & NC 280 (Airport Rd)



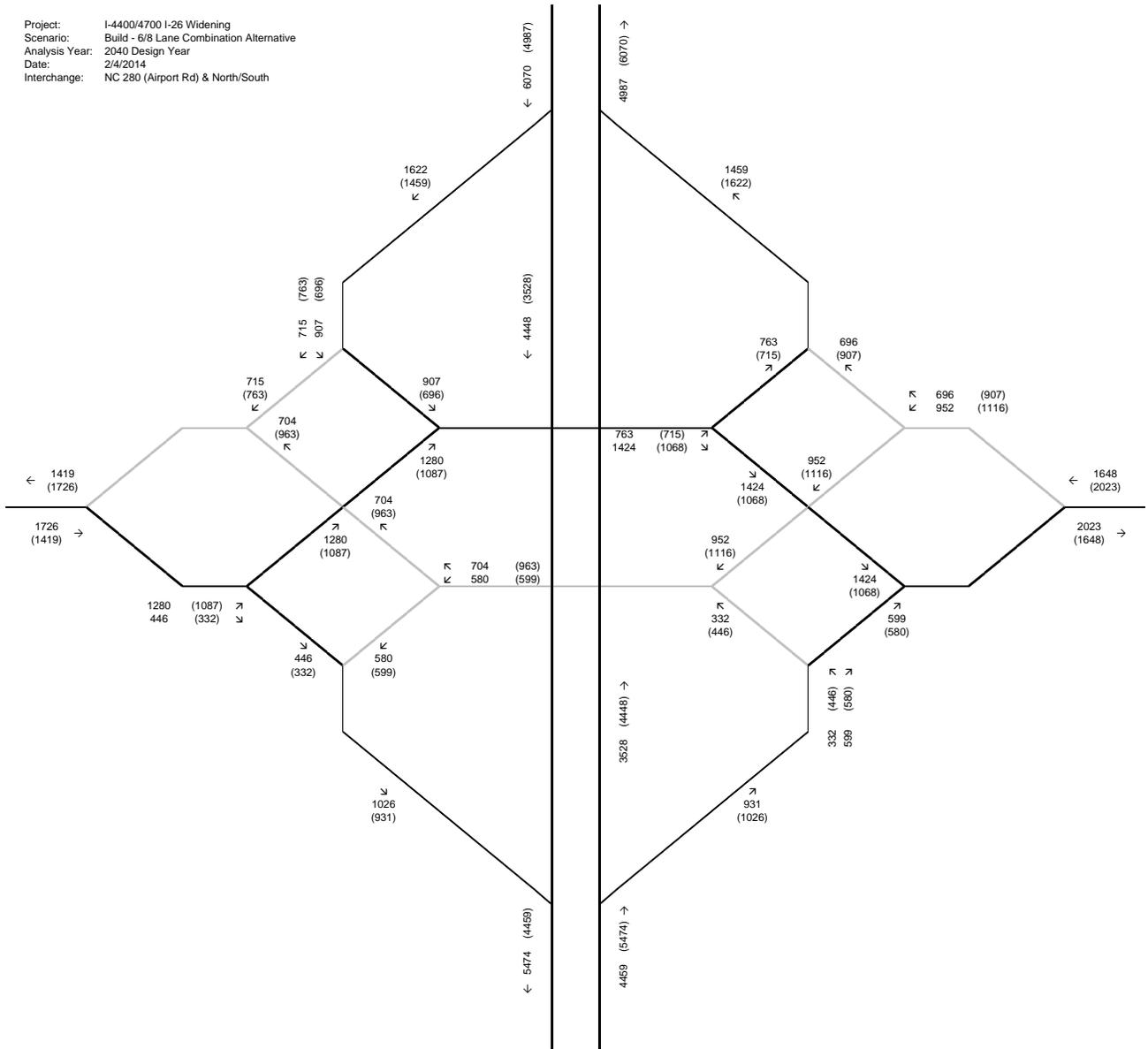
Project: I-4400/4700 I-26 Widening
 Scenario: Build - 6/8 Lane Combination Alternative
 Analysis Year: 2011 Base Year
 Date: ##
 Interchange: I-26 & NC 280 (Airport Rd)



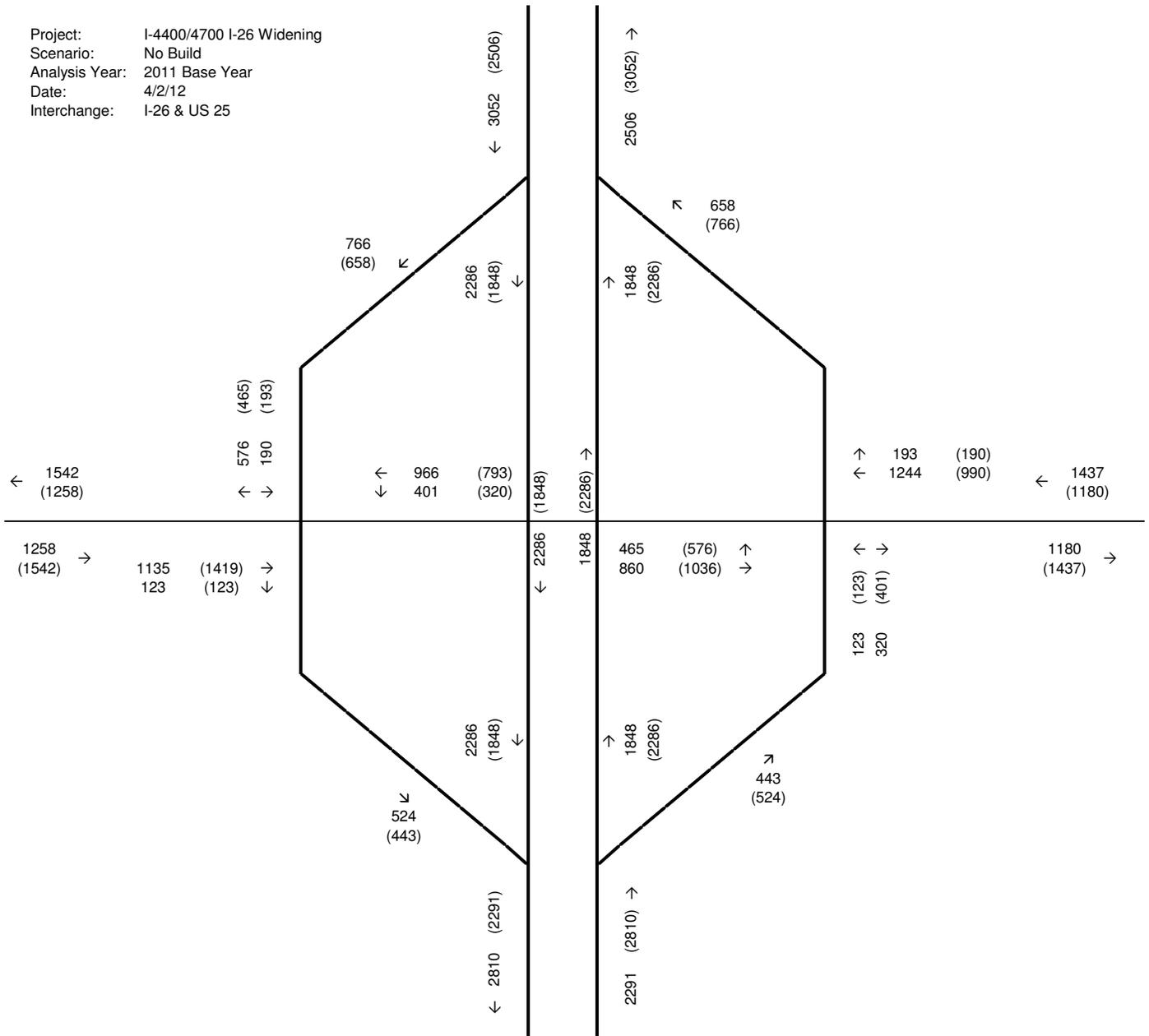
Project: I-4400/4700 I-26 Widening
 Scenario: No-Build
 Analysis Year: 2040 No-Build
 Date: 4/2/12
 Interchange: NC 280 (Airport Rd) & North/South



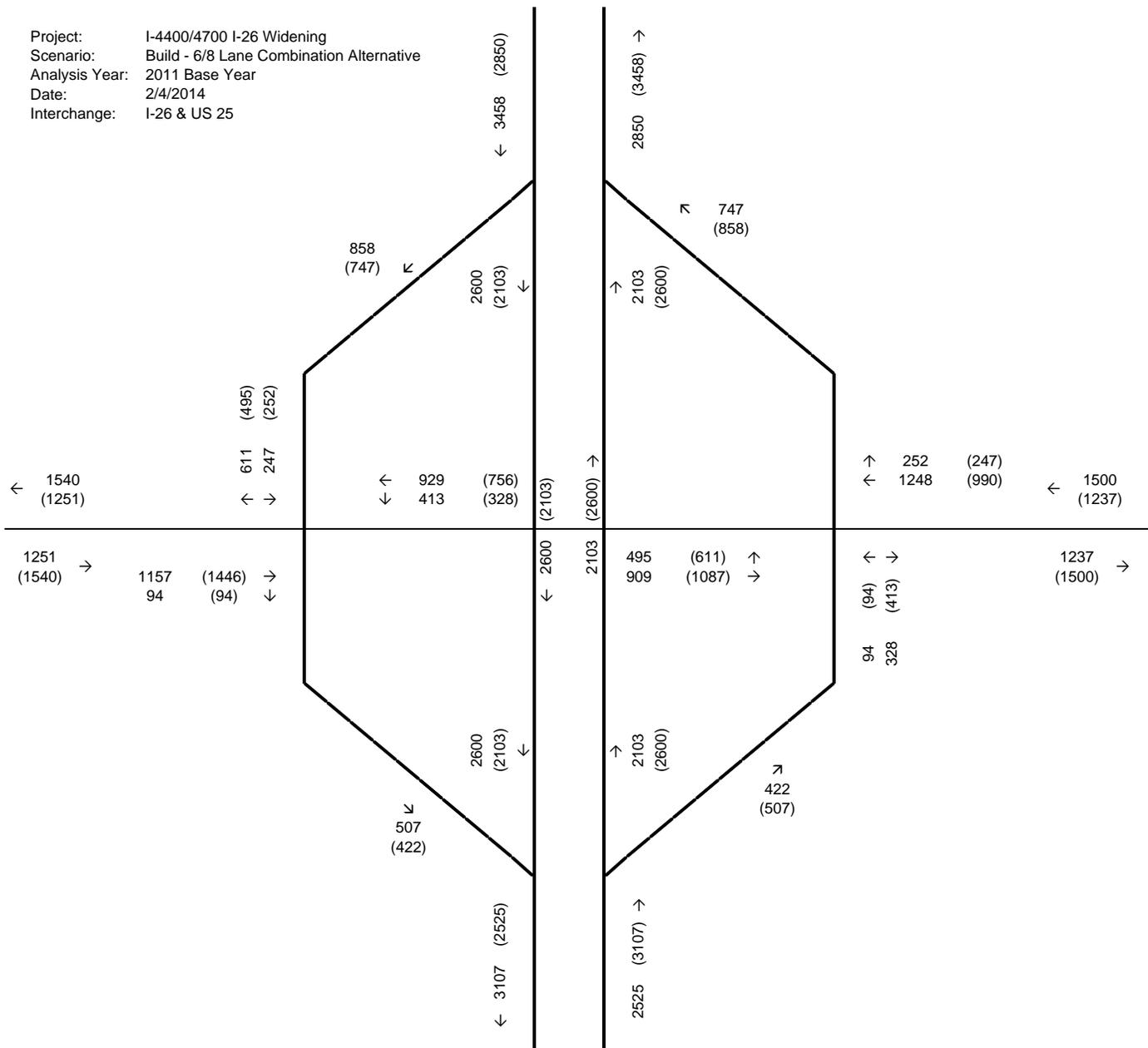
Project: I-4400/4700 I-26 Widening
 Scenario: Build - 6/8 Lane Combination Alternative
 Analysis Year: 2040 Design Year
 Date: 2/4/2014
 Interchange: NC 280 (Airport Rd) & North/South



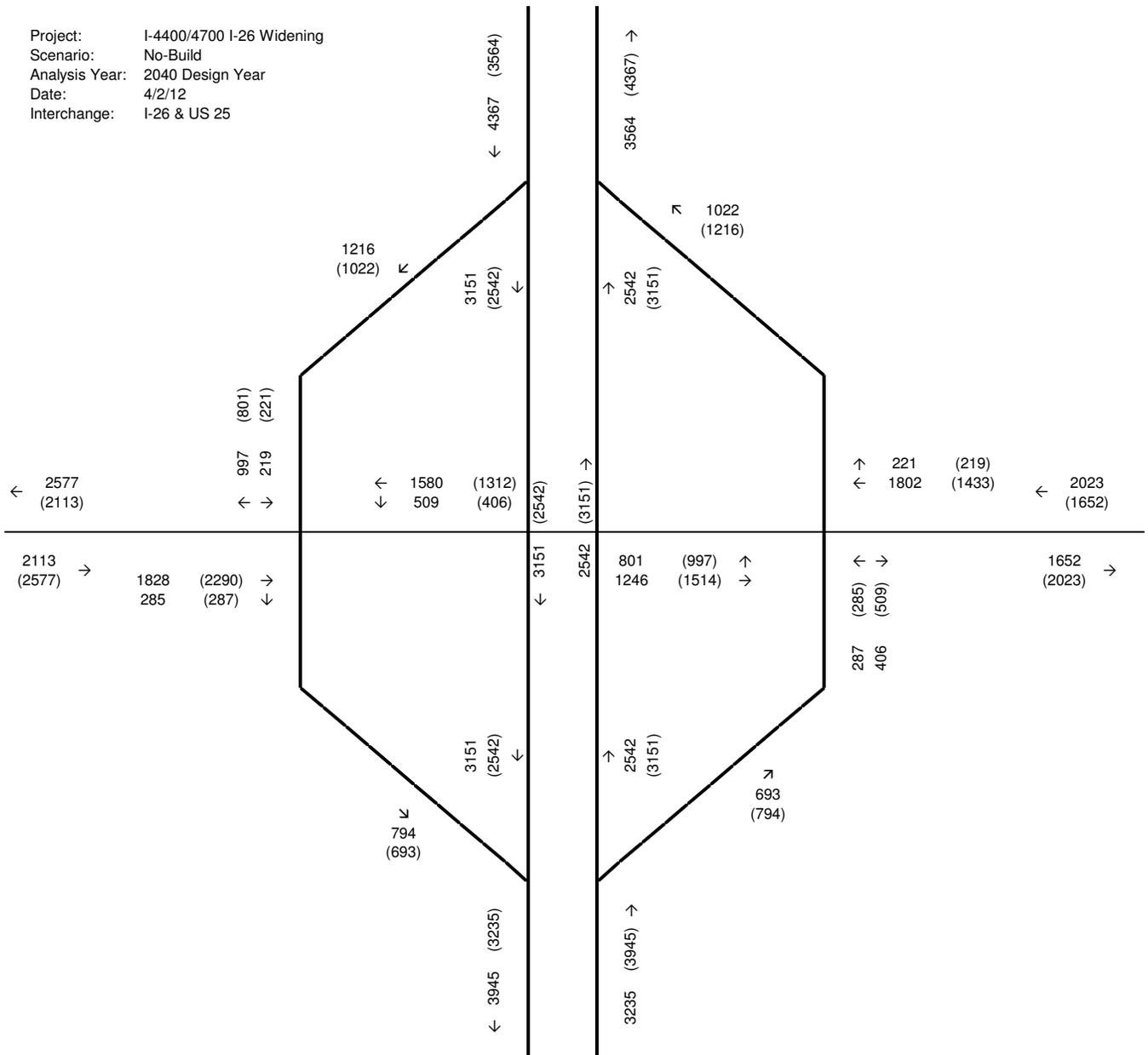
Project: I-4400/4700 I-26 Widening
 Scenario: No Build
 Analysis Year: 2011 Base Year
 Date: 4/2/12
 Interchange: I-26 & US 25



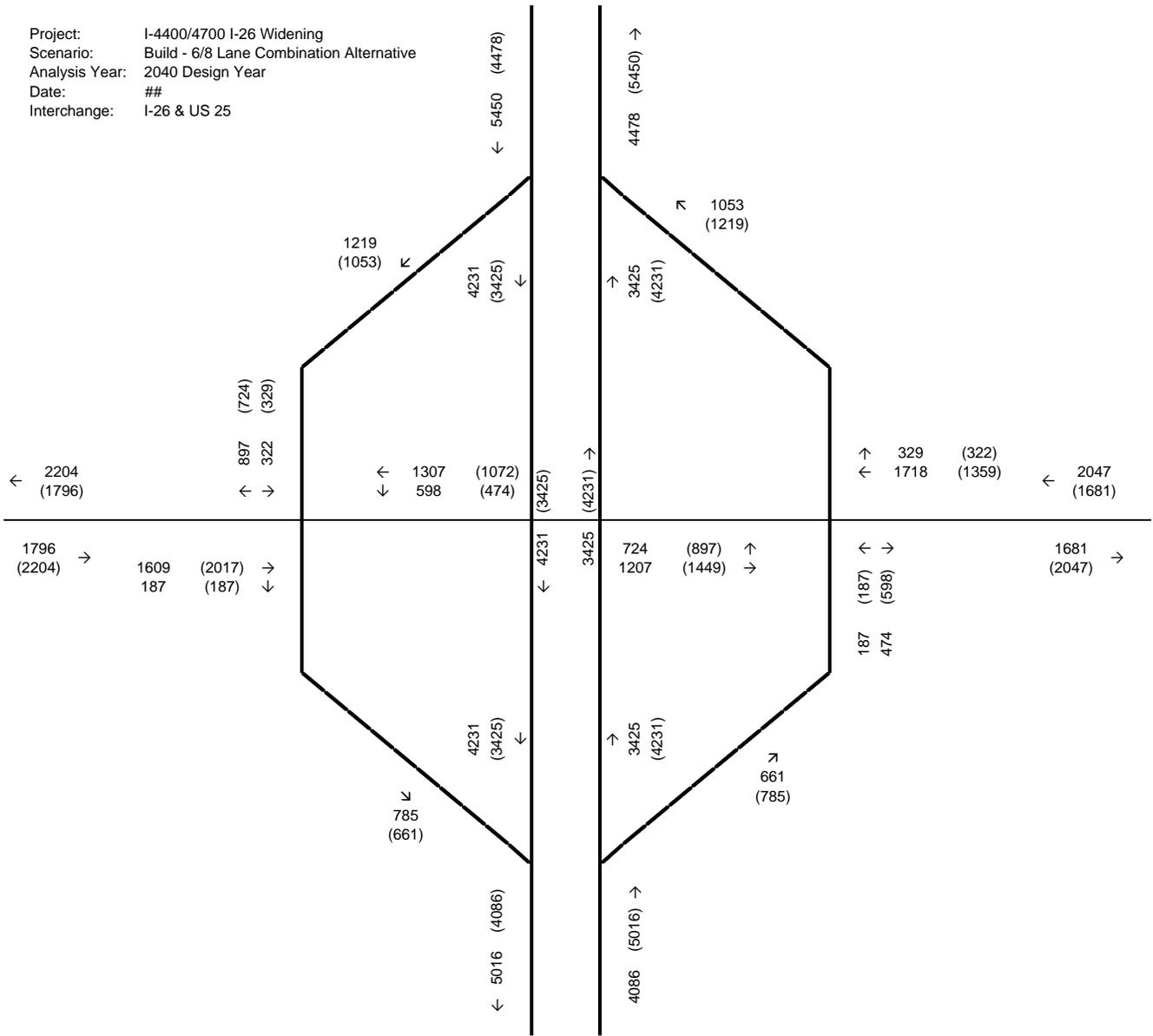
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 Scenario: Build - 6/8 Lane Combination Alternative
 Analysis Year: 2011 Base Year
 Date: 2/4/2014
 Interchange: I-26 & US 25



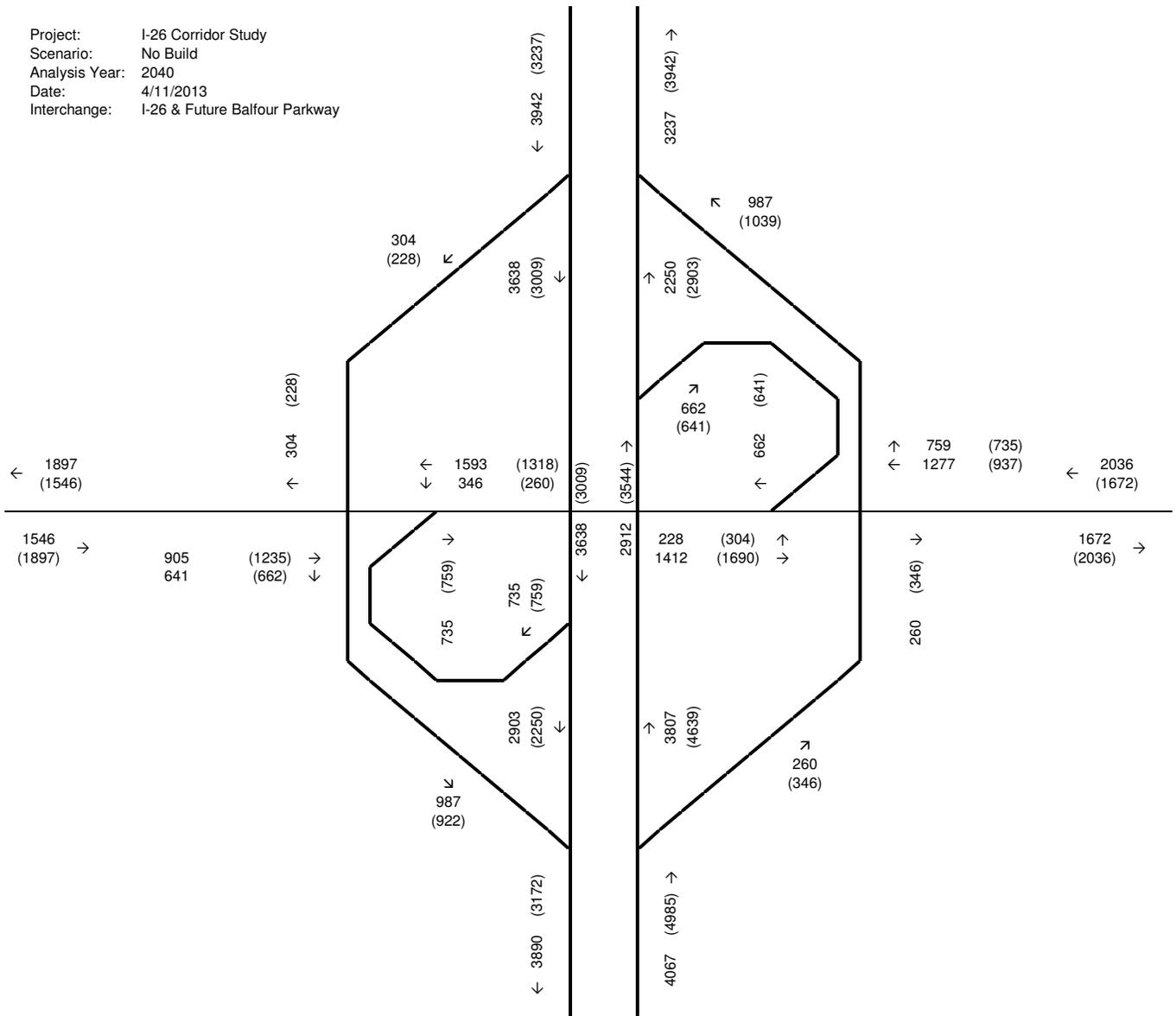
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 Scenario: No-Build
 Analysis Year: 2040 Design Year
 Date: 4/2/12
 Interchange: I-26 & US 25



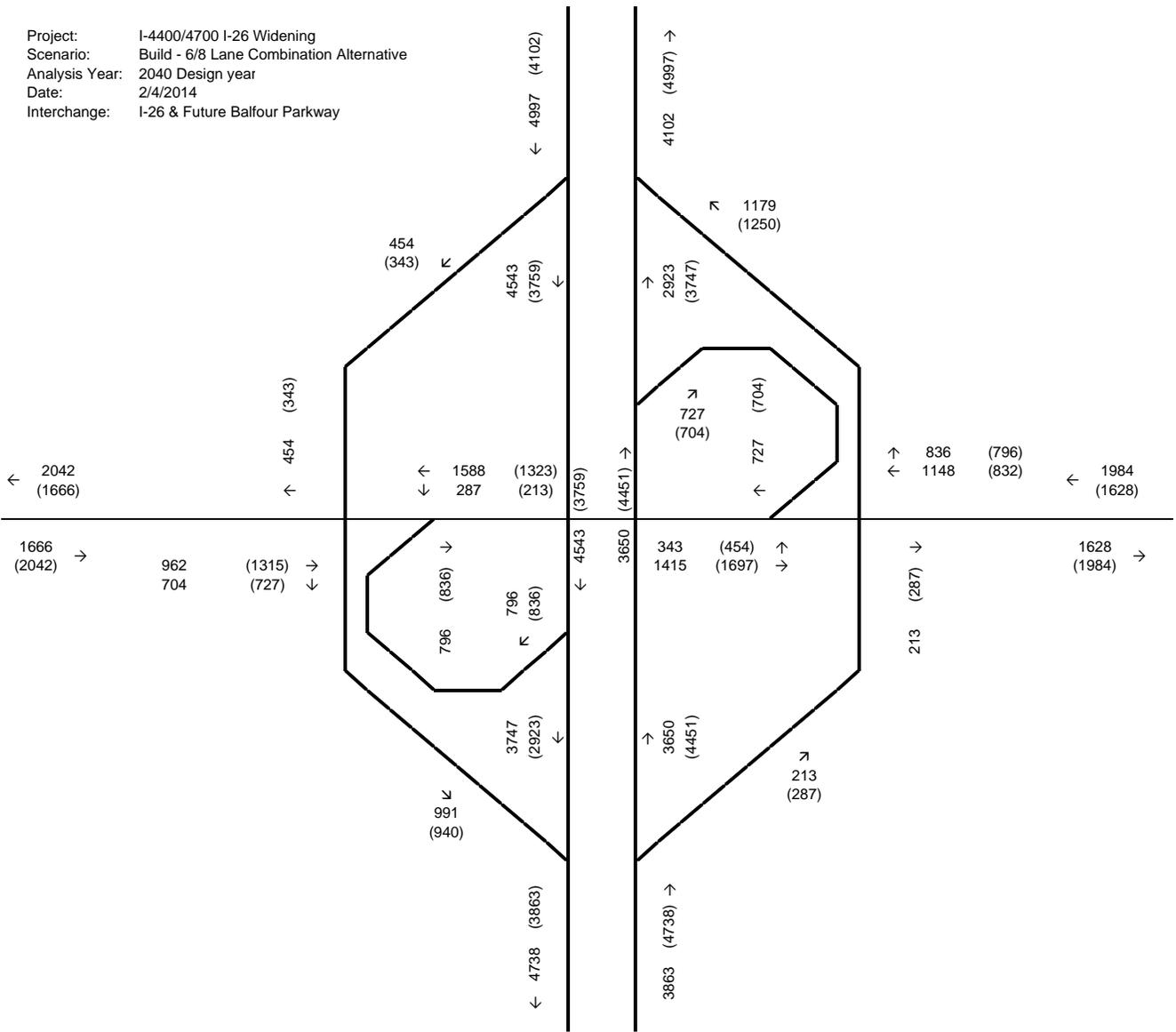
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 Scenario: Build - 6/8 Lane Combination Alternative
 Analysis Year: 2040 Design Year
 Date: ##
 Interchange: I-26 & US 25



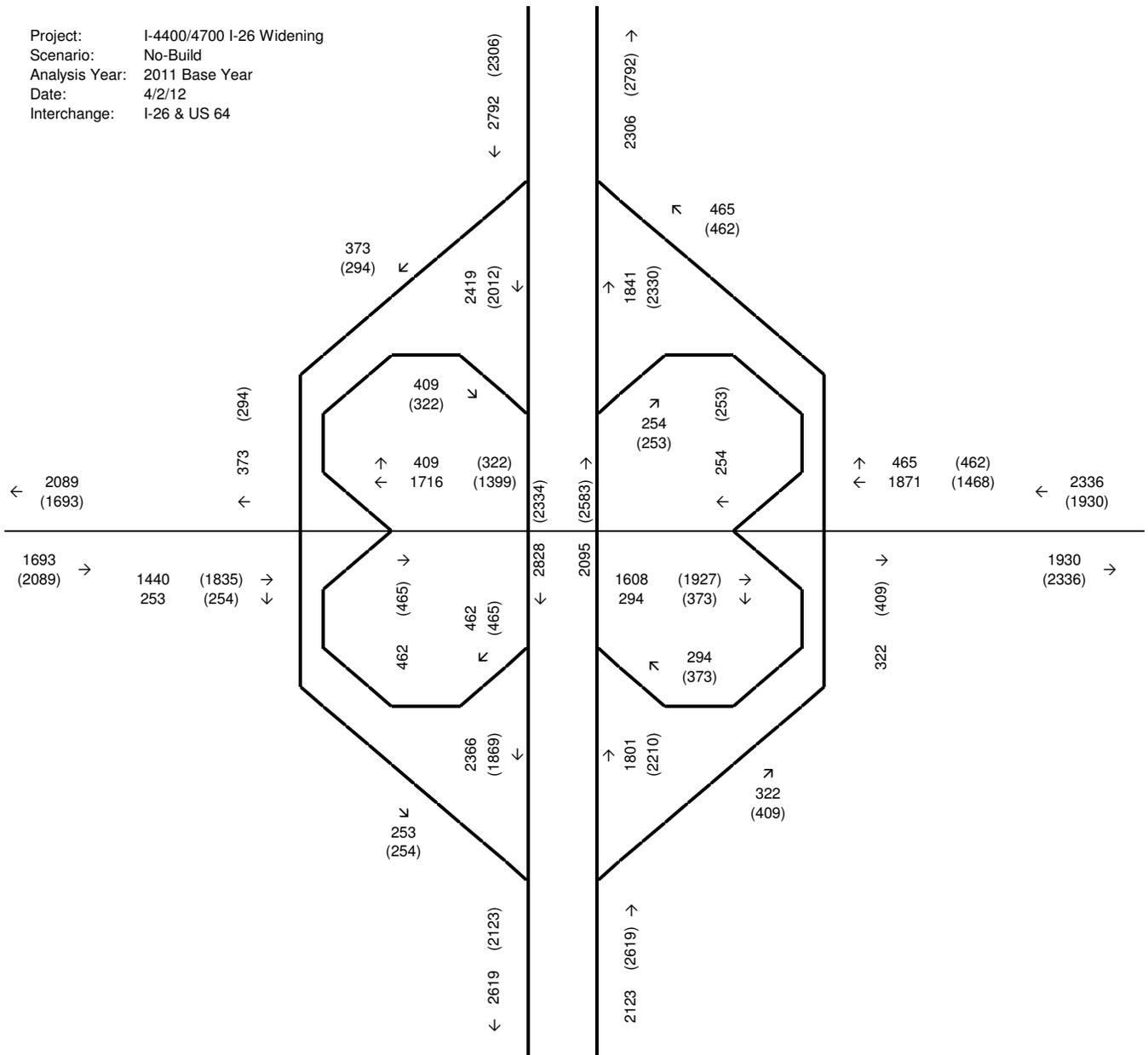
Project: I-26 Corridor Study
 Scenario: No Build
 Analysis Year: 2040
 Date: 4/11/2013
 Interchange: I-26 & Future Balfour Parkway



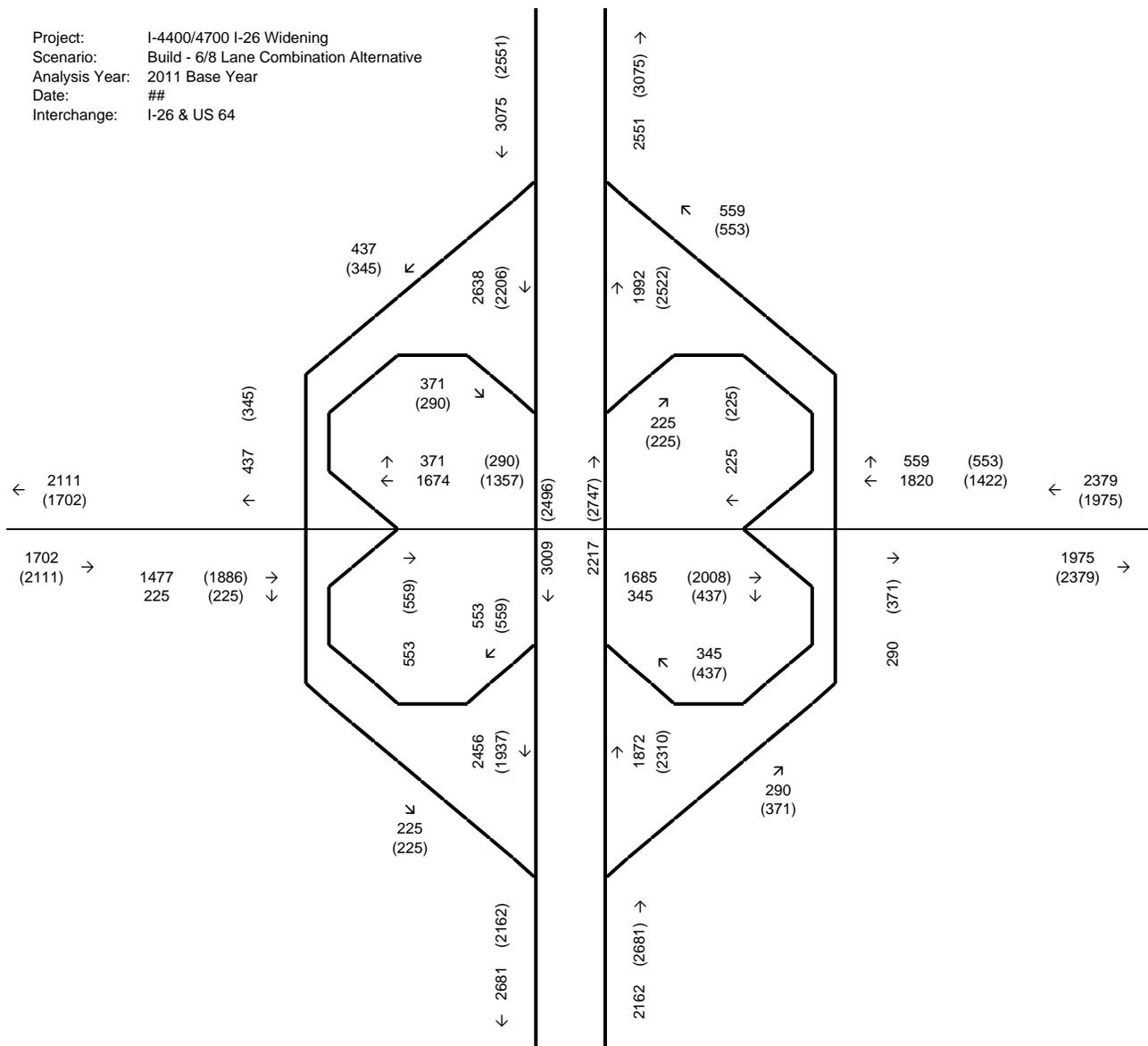
Project: I-4400/4700 I-26 Widening
 Scenario: Build - 6/8 Lane Combination Alternative
 Analysis Year: 2040 Design year
 Date: 2/4/2014
 Interchange: I-26 & Future Balfour Parkway



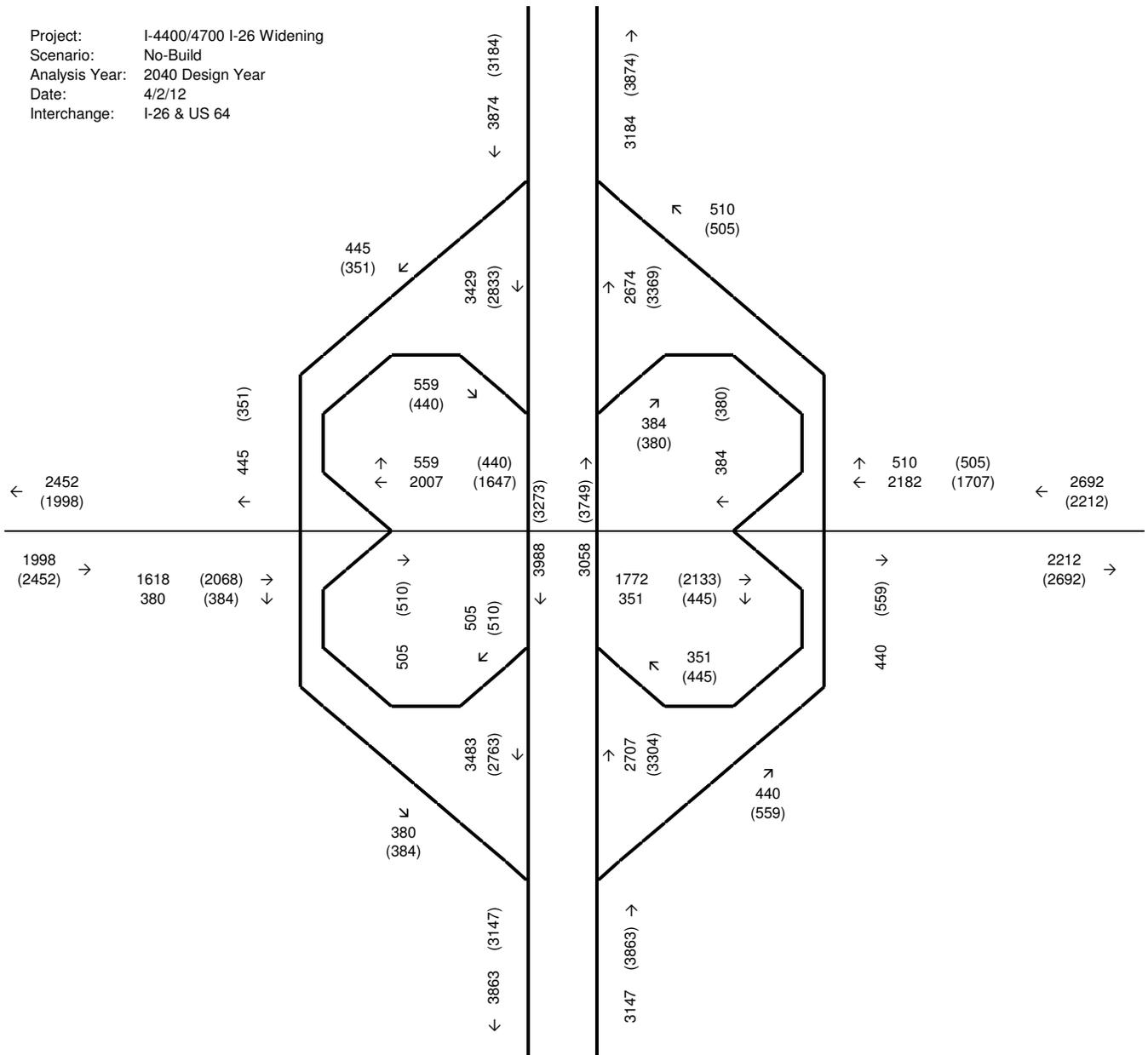
Project: I-4400/4700 I-26 Widening
 Scenario: No-Build
 Analysis Year: 2011 Base Year
 Date: 4/2/12
 Interchange: I-26 & US 64



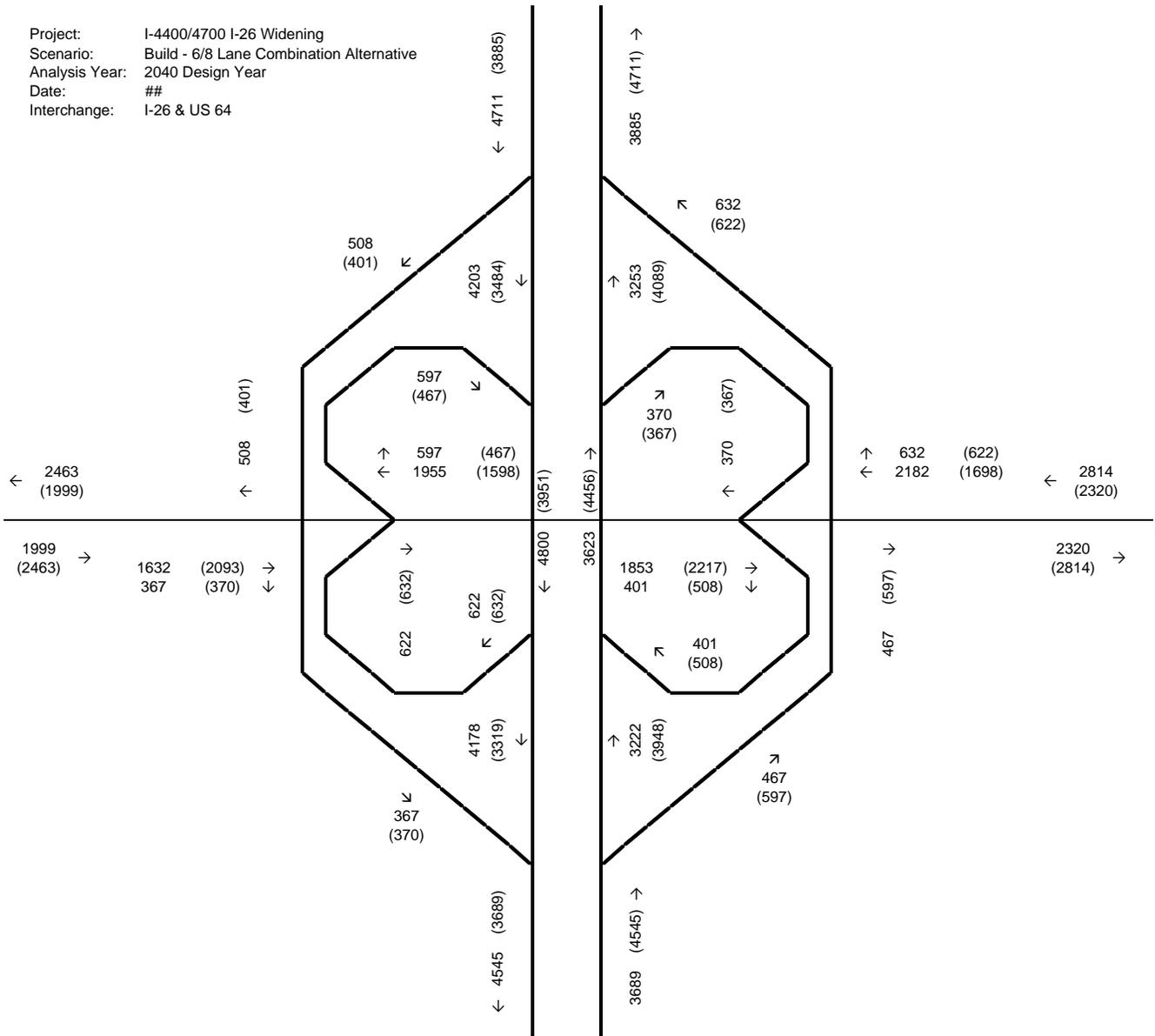
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 Scenario: Build - 6/8 Lane Combination Alternative
 Analysis Year: 2011 Base Year
 Date: ##
 Interchange: I-26 & US 64



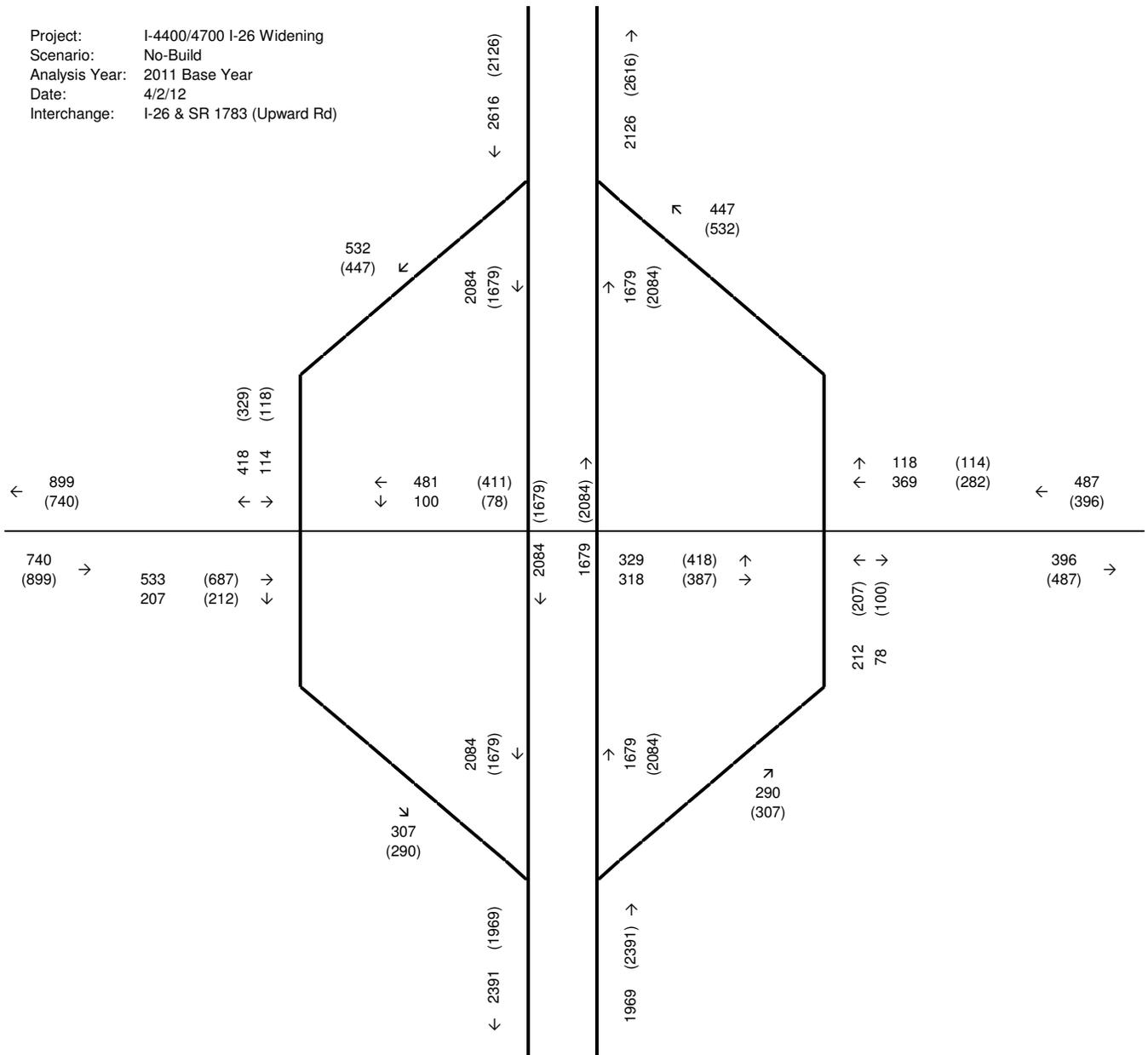
Project: I-4400/4700 I-26 Widening
 Scenario: No-Build
 Analysis Year: 2040 Design Year
 Date: 4/2/12
 Interchange: I-26 & US 64



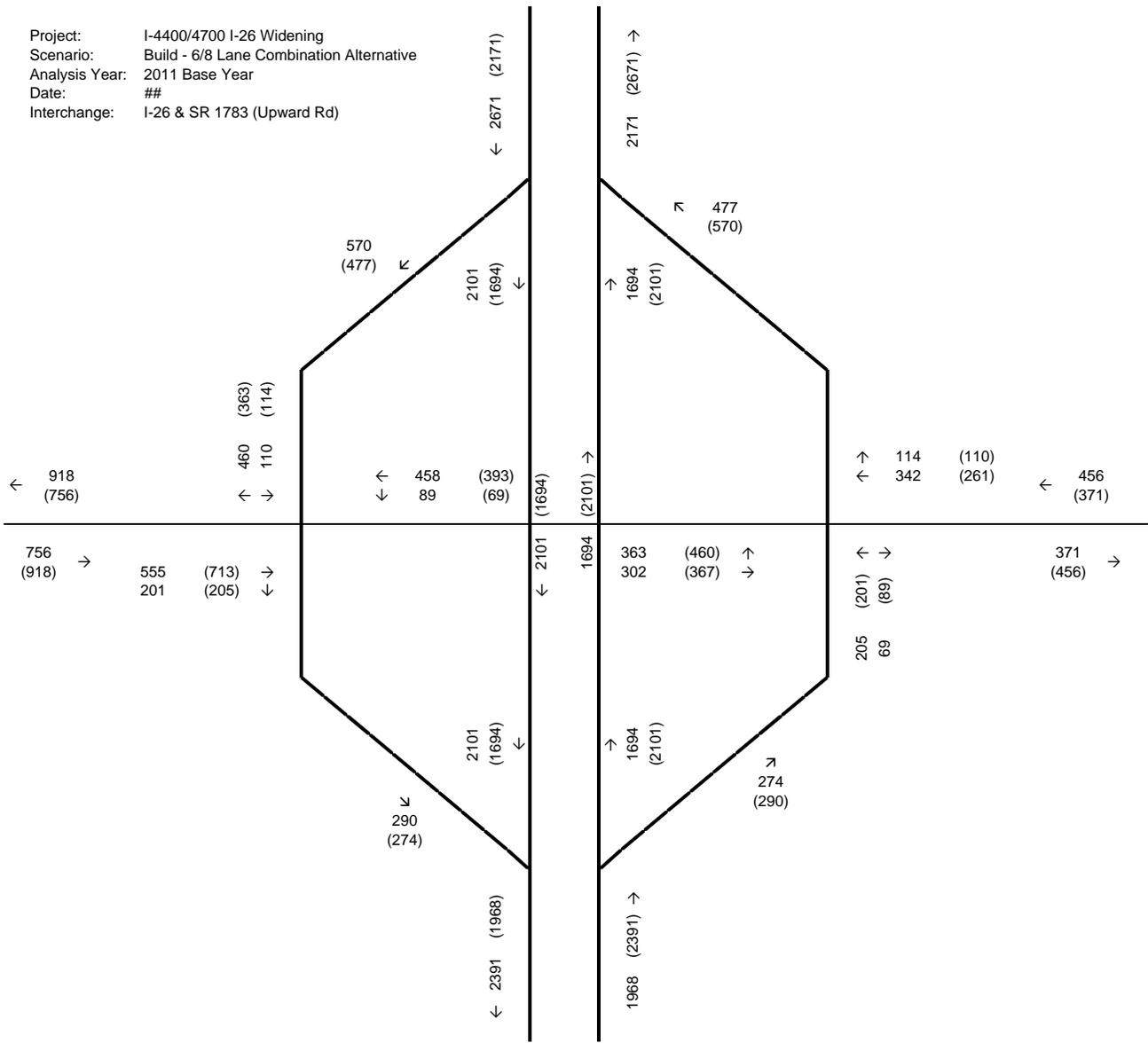
Project: I-4400/4700 I-26 Widening
 Scenario: Build - 6/8 Lane Combination Alternative
 Analysis Year: 2040 Design Year
 Date: ##
 Interchange: I-26 & US 64



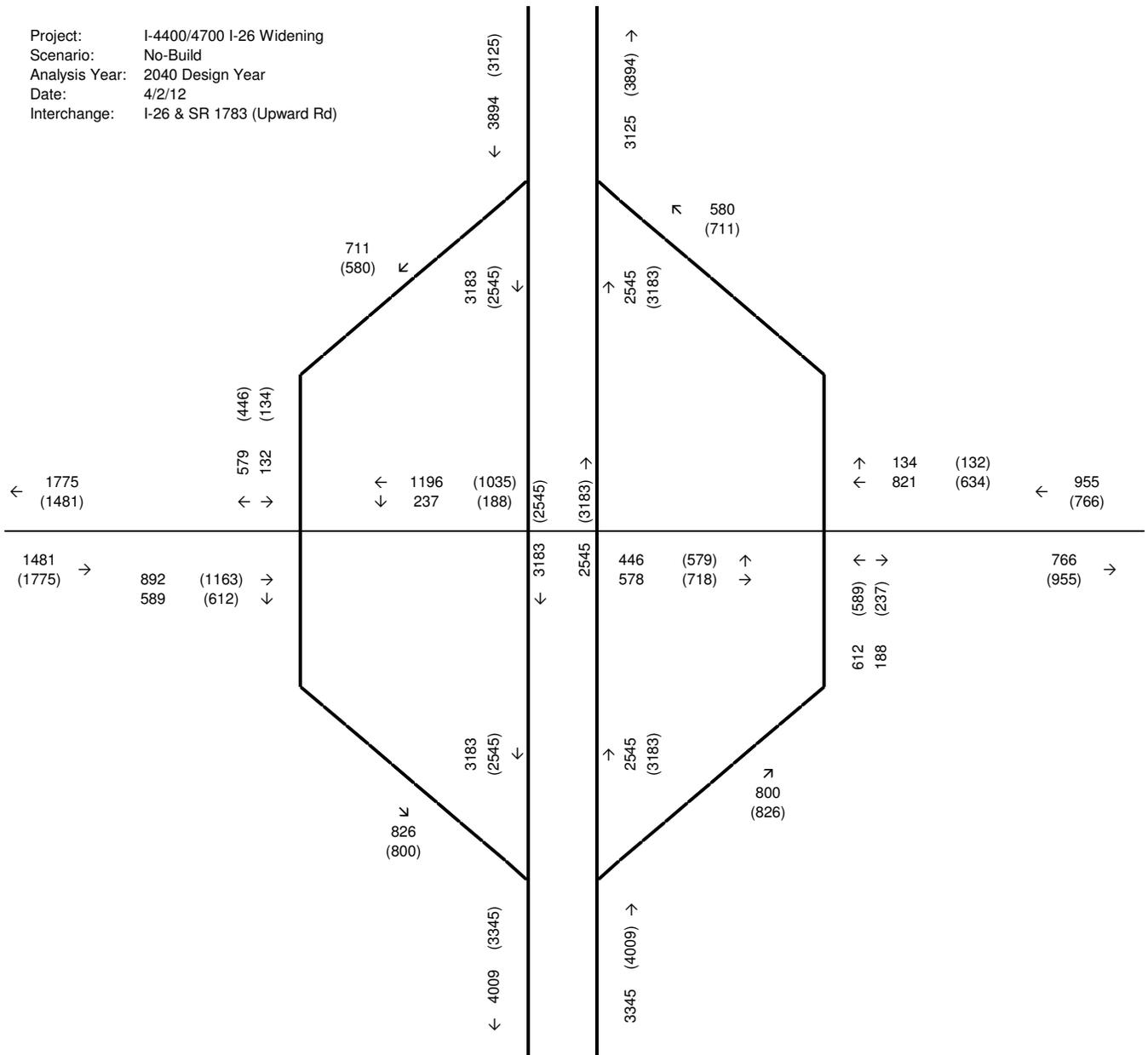
Project: I-4400/4700 I-26 Widening
 Scenario: No-Build
 Analysis Year: 2011 Base Year
 Date: 4/2/12
 Interchange: I-26 & SR 1783 (Upward Rd)



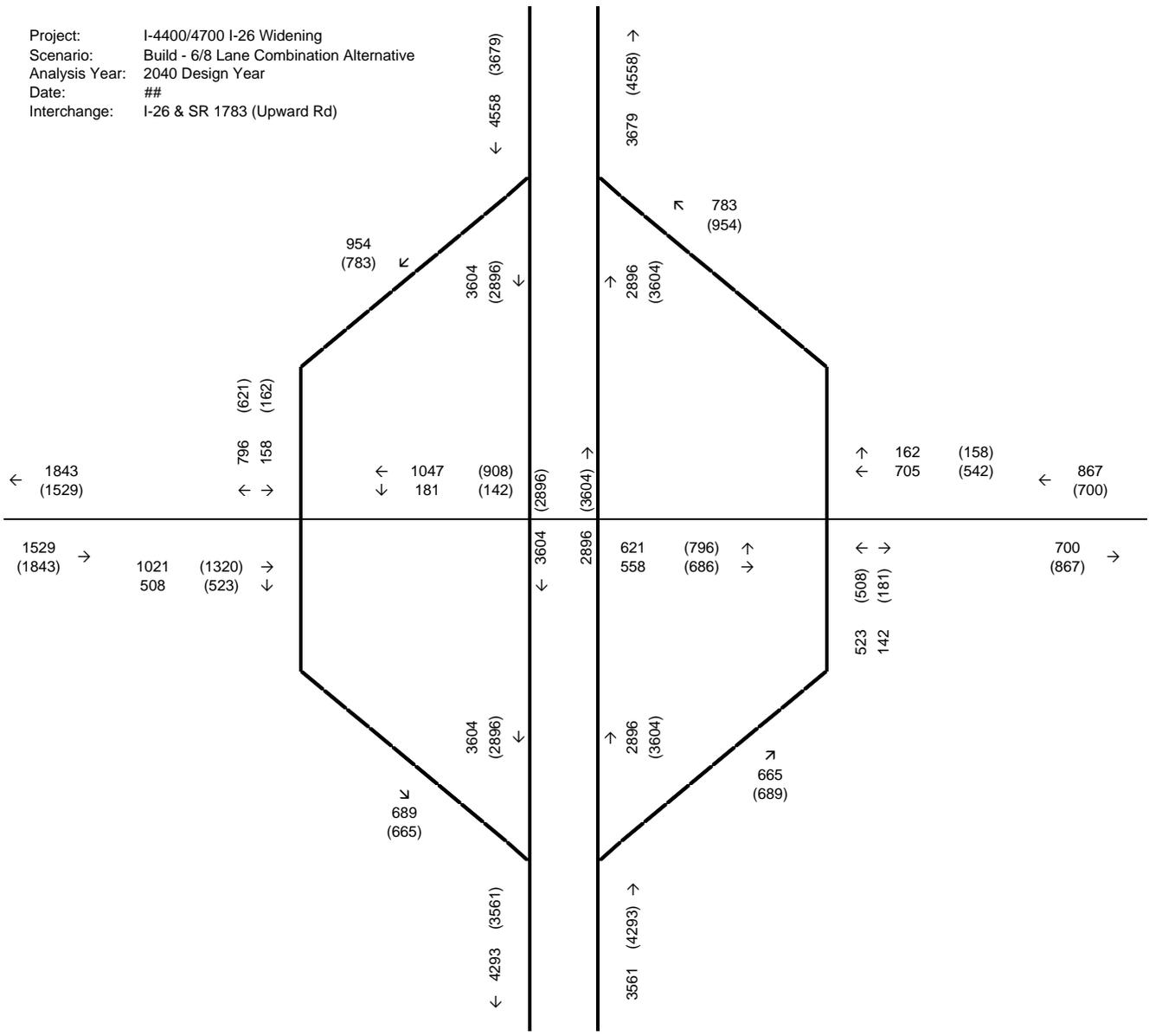
Project: I-4400/4700 I-26 Widening
 Scenario: Build - 6/8 Lane Combination Alternative
 Analysis Year: 2011 Base Year
 Date: ##
 Interchange: I-26 & SR 1783 (Upward Rd)



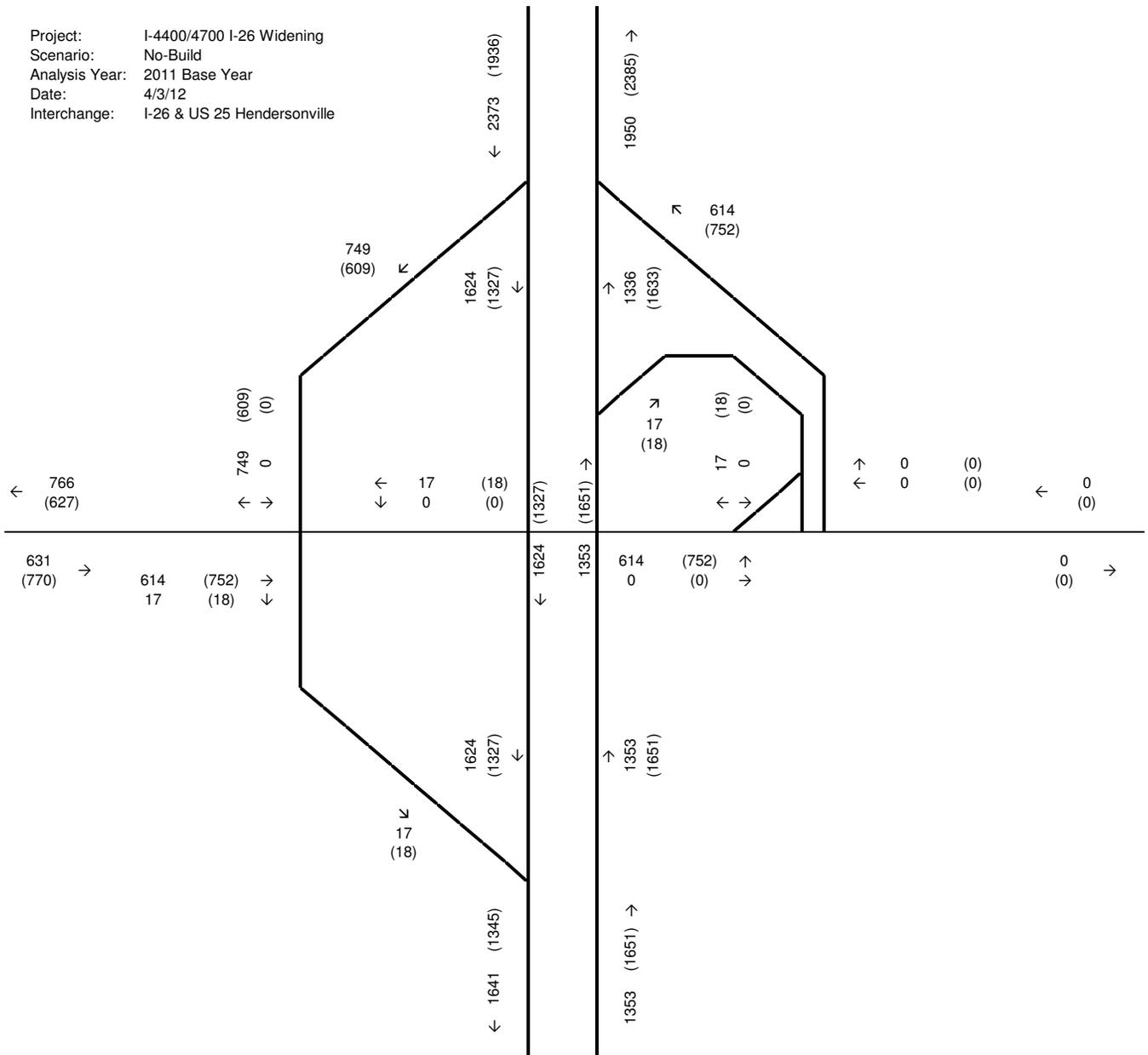
Project: I-4400/4700 I-26 Widening
 Scenario: No-Build
 Analysis Year: 2040 Design Year
 Date: 4/2/12
 Interchange: I-26 & SR 1783 (Upward Rd)



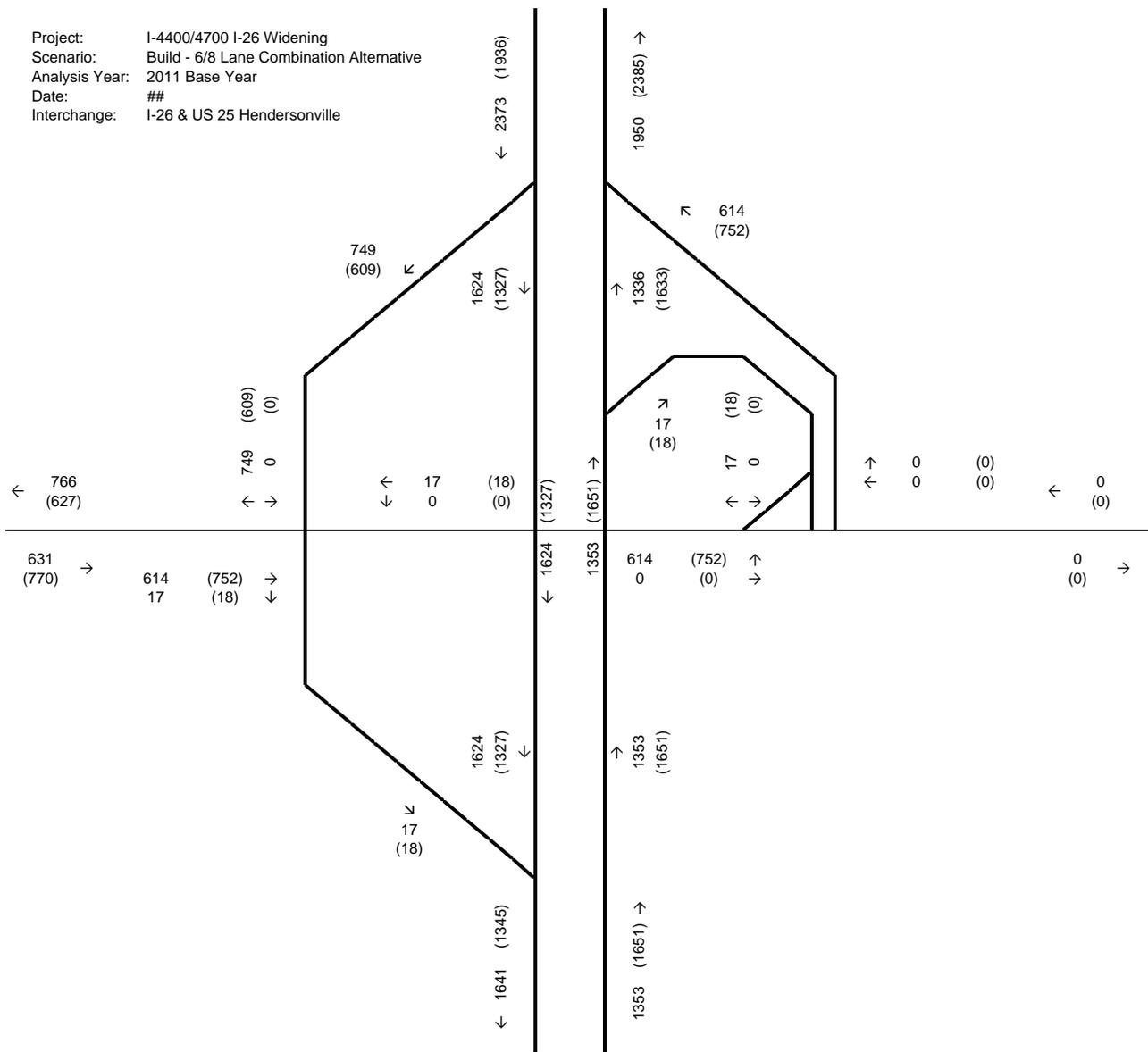
Project: I-4400/4700 I-26 Widening
 Scenario: Build - 6/8 Lane Combination Alternative
 Analysis Year: 2040 Design Year
 Date: ##
 Interchange: I-26 & SR 1783 (Upward Rd)



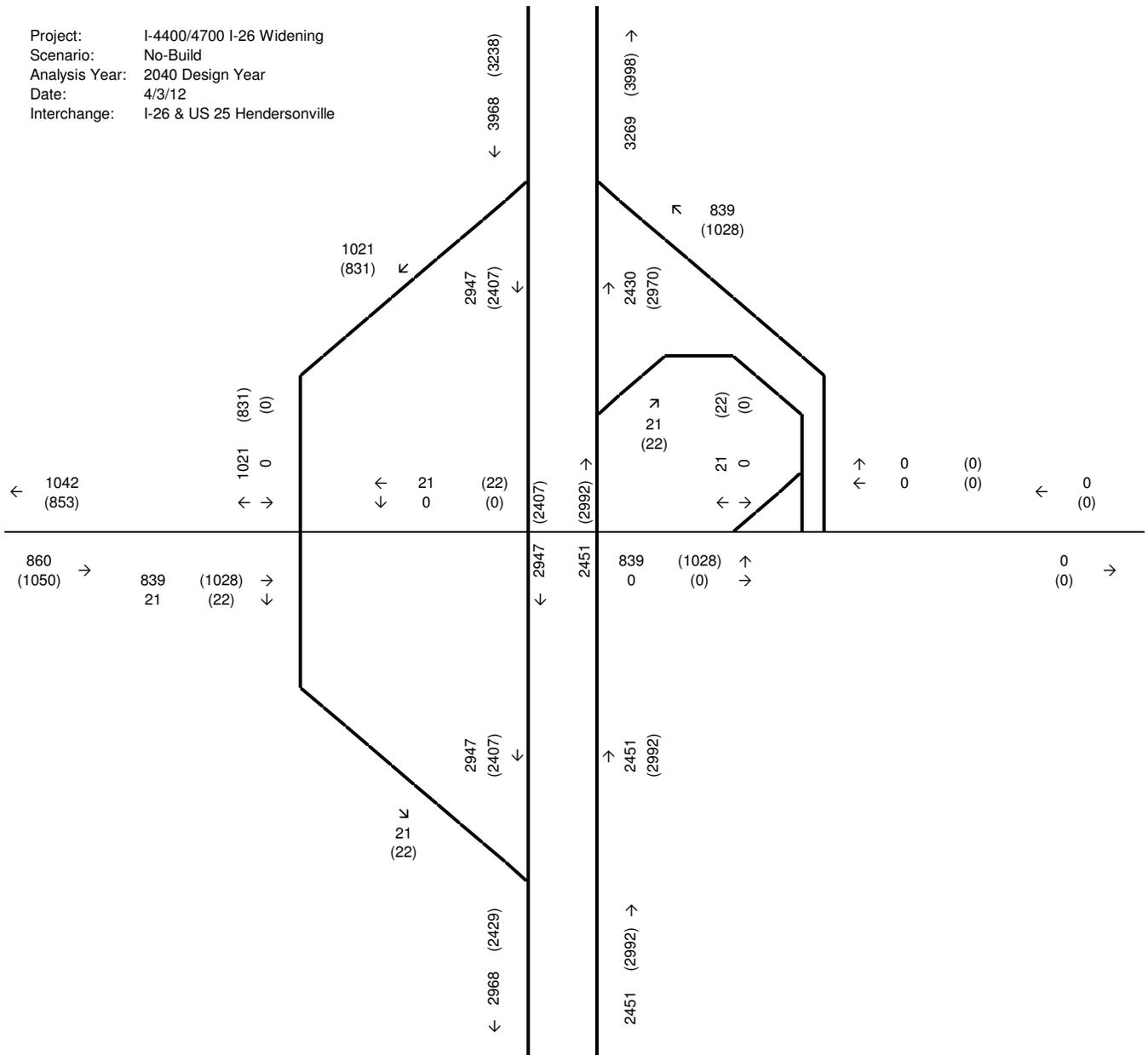
Project: I-4400/4700 I-26 Widening
 Scenario: No-Build
 Analysis Year: 2011 Base Year
 Date: 4/3/12
 Interchange: I-26 & US 25 Hendersonville



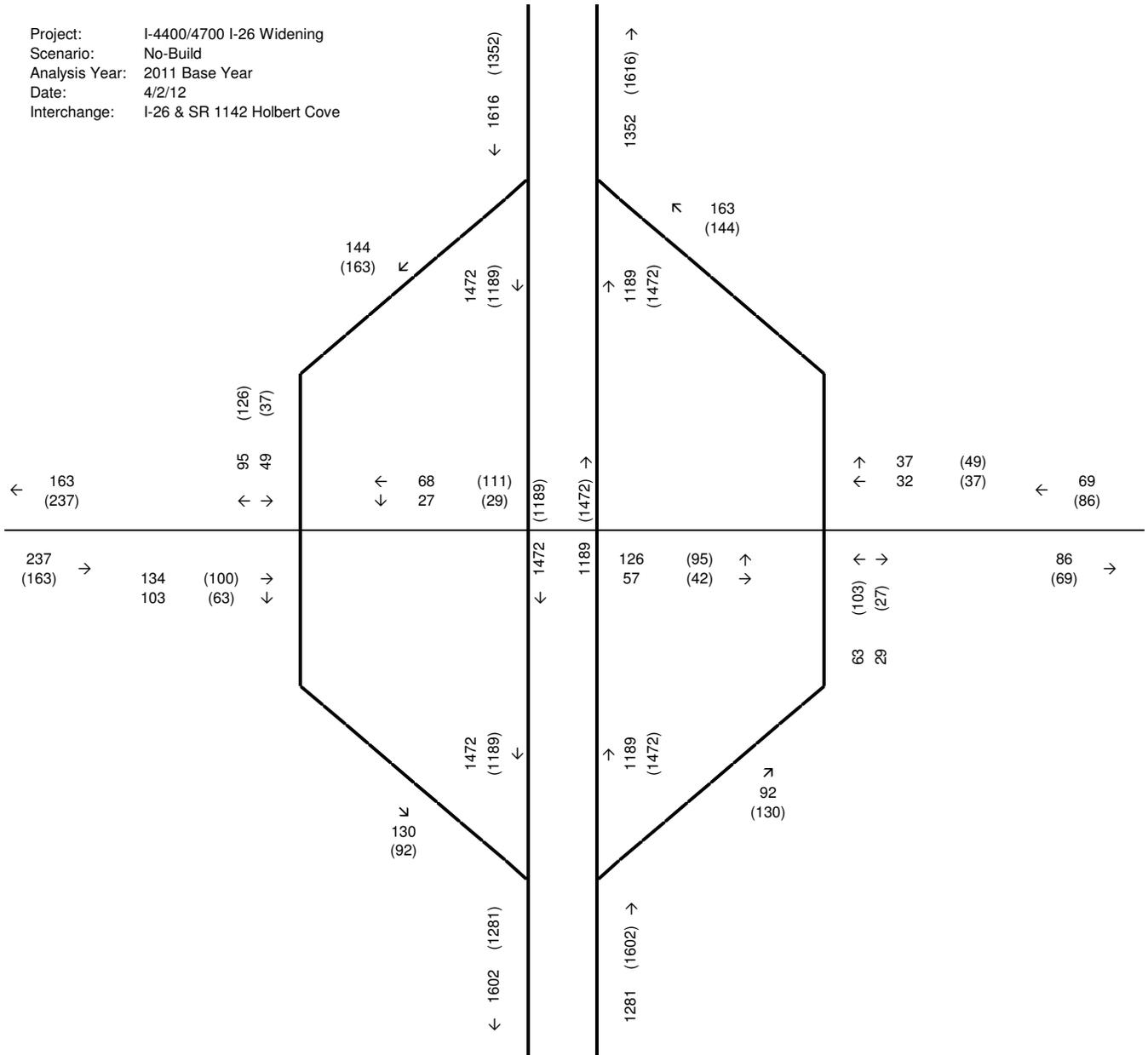
Project: I-4400/4700 I-26 Widening
 Scenario: Build - 6/8 Lane Combination Alternative
 Analysis Year: 2011 Base Year
 Date: ##
 Interchange: I-26 & US 25 Hendersonville



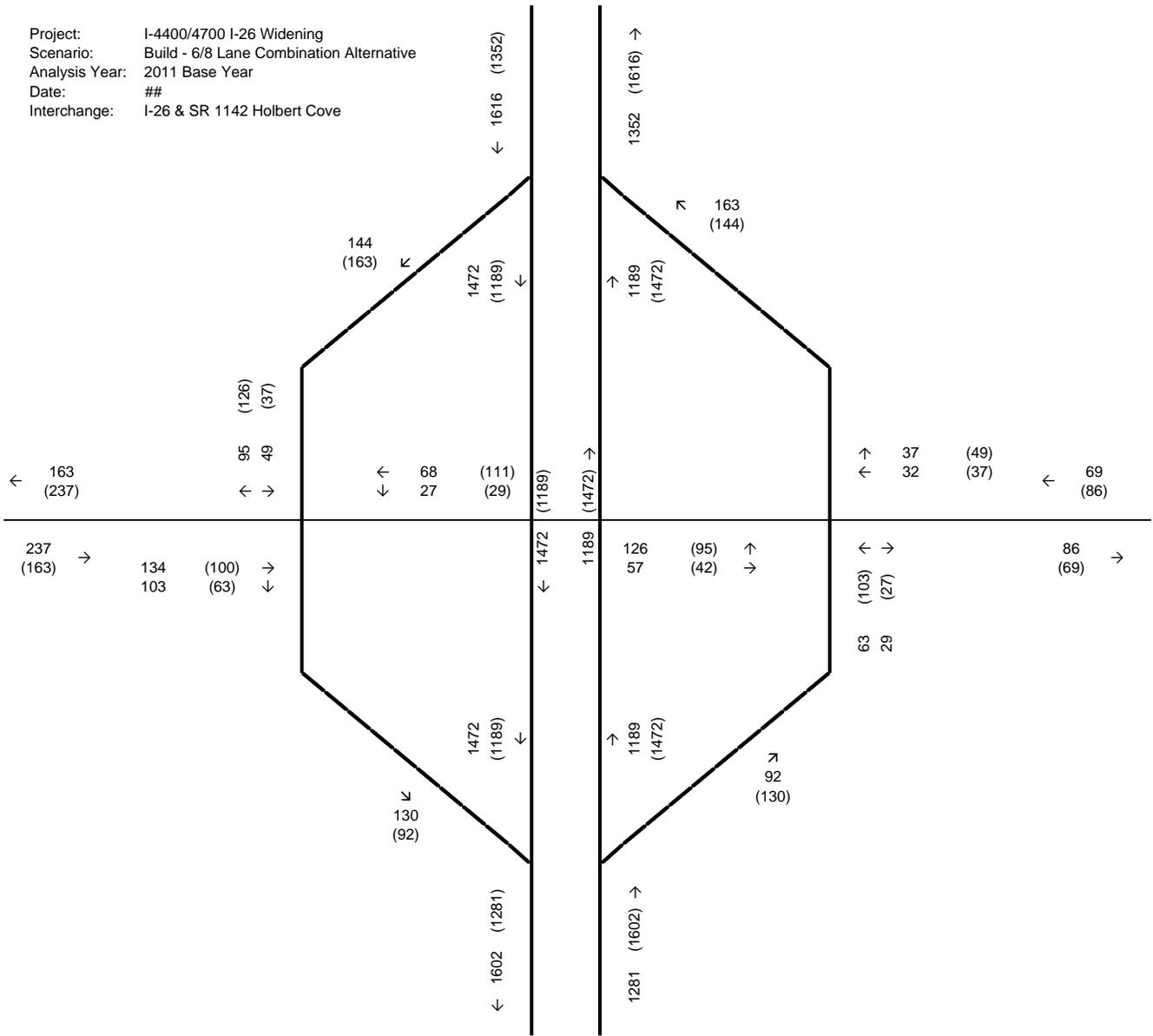
Project: I-4400/4700 I-26 Widening
 Scenario: No-Build
 Analysis Year: 2040 Design Year
 Date: 4/3/12
 Interchange: I-26 & US 25 Hendersonville



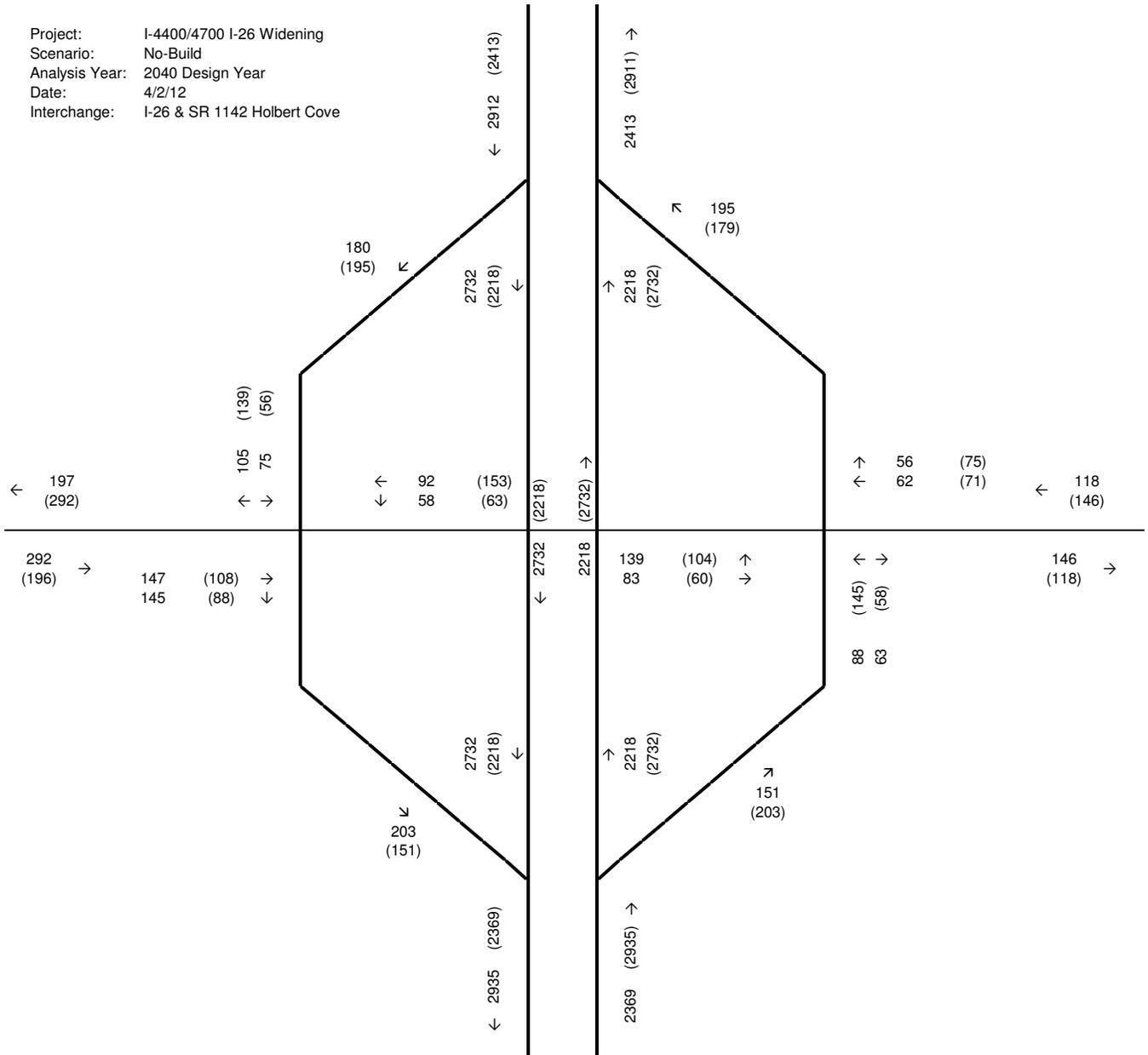
Project: I-4400/4700 I-26 Widening
 Scenario: No-Build
 Analysis Year: 2011 Base Year
 Date: 4/2/12
 Interchange: I-26 & SR 1142 Holbert Cove



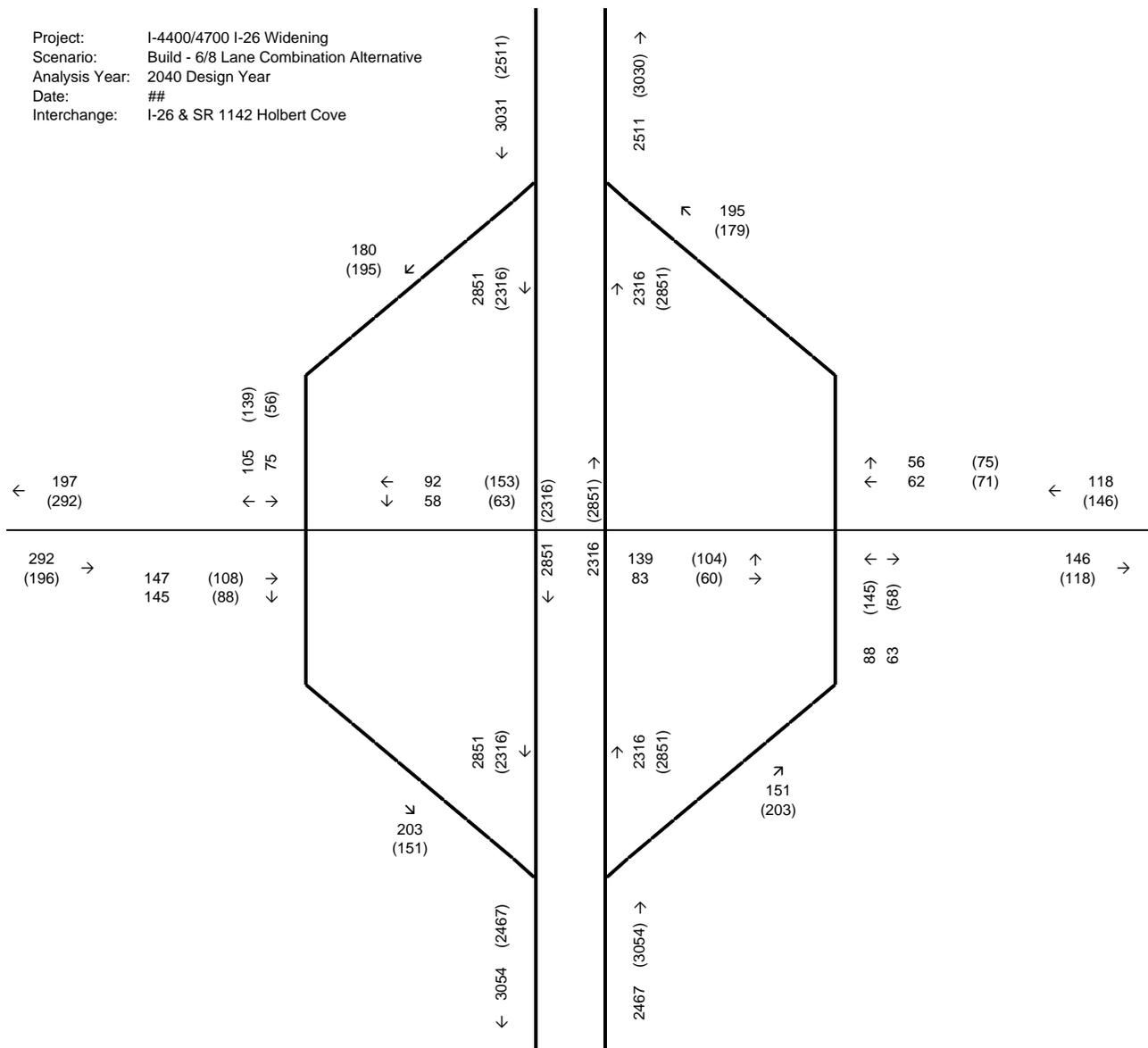
Project: I-4400/4700 I-26 Widening
 Scenario: Build - 6/8 Lane Combination Alternative
 Analysis Year: 2011 Base Year
 Date: ##
 Interchange: I-26 & SR 1142 Holbert Cove



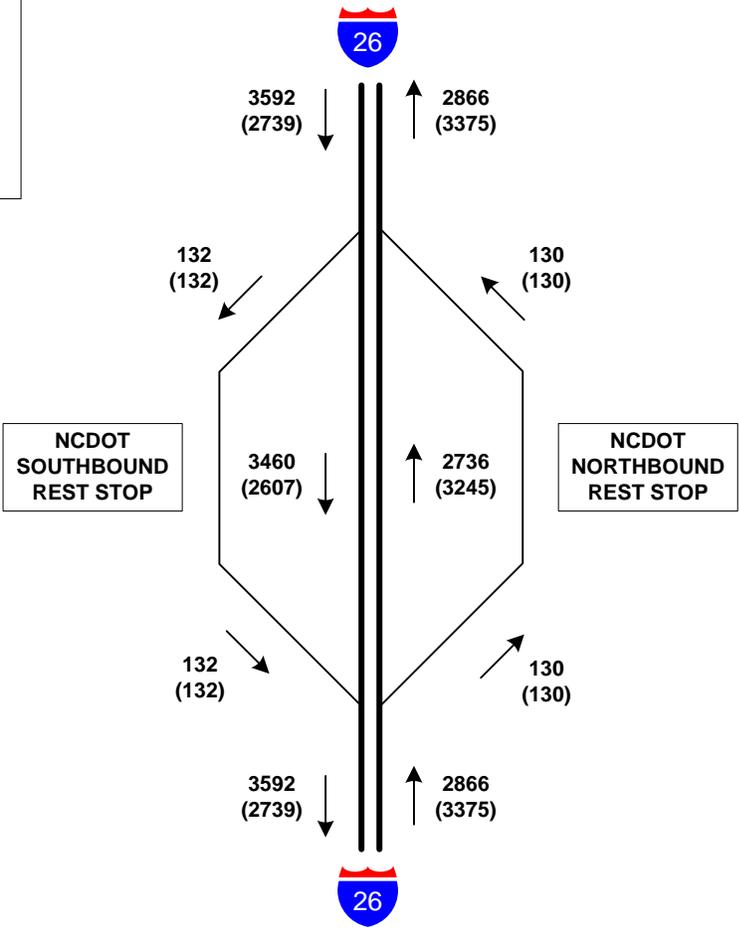
Project: I-4400/4700 I-26 Widening
 Scenario: No-Build
 Analysis Year: 2040 Design Year
 Date: 4/2/12
 Interchange: I-26 & SR 1142 Holbert Cove



Project: I-4400/4700 I-26 Widening
 Scenario: Build - 6/8 Lane Combination Alternative
 Analysis Year: 2040 Design Year
 Date: ##
 Interchange: I-26 & SR 1142 Holbert Cove



**Interchange 9.
2011 BASE YEAR
BUILD 6/8 LANE
COMBINATION
ALTERNATIVE**

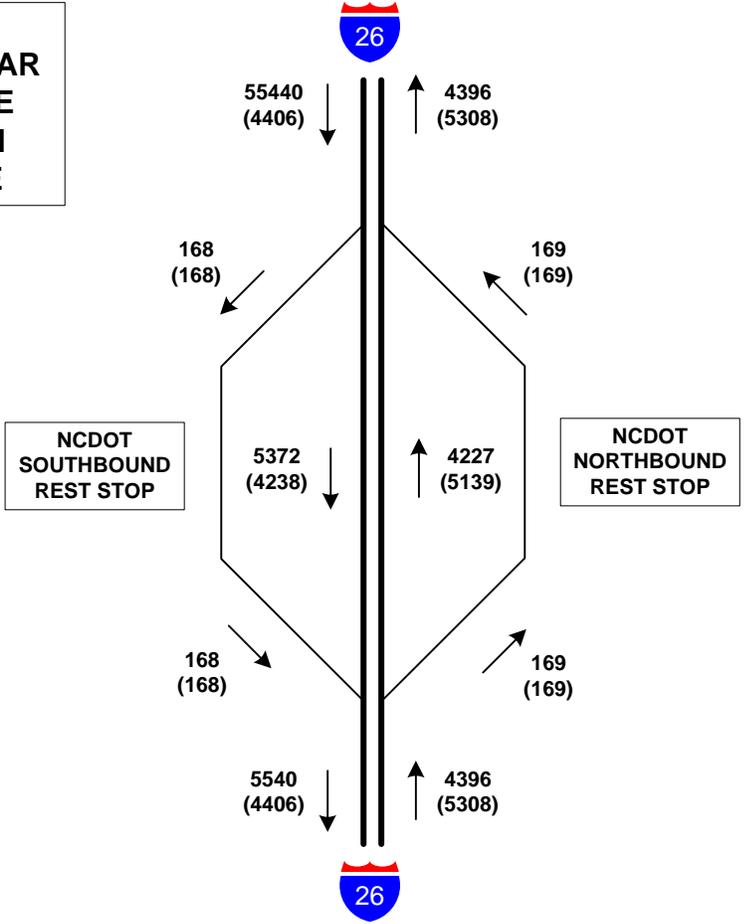


**NOT
TO
SCALE**

I-26 Widening (STIP Project I-4400/4700)

TRAFFIC FORECAST - PEAK HOUR BREAKOUTS

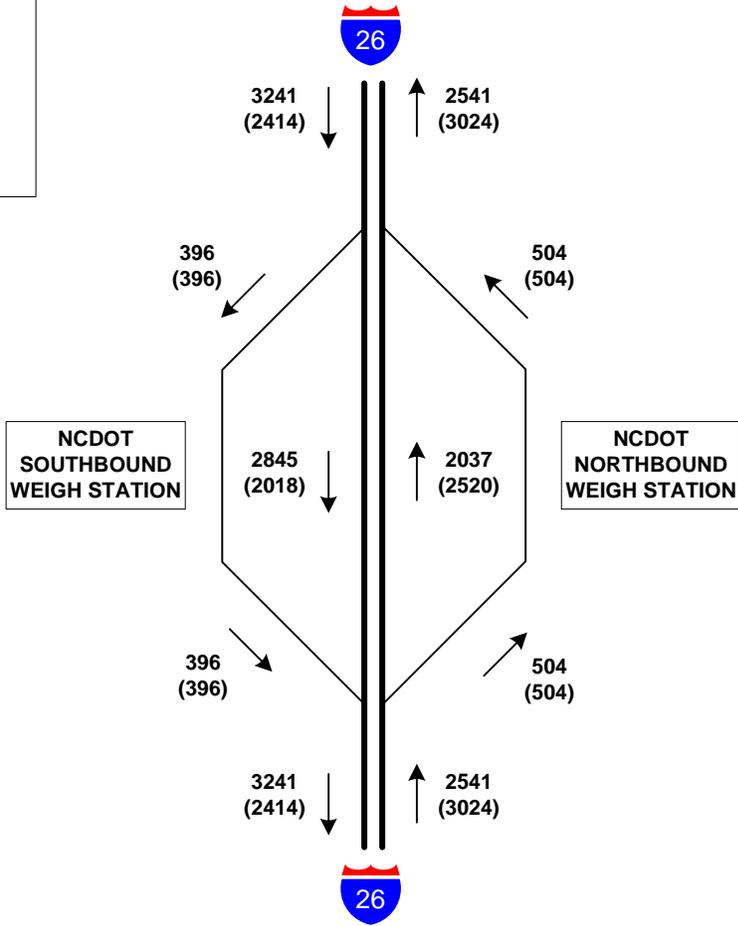
**Interchange 9.
2040 DESIGN YEAR
BUILD 6/8 LANE
COMBINATION
ALTERNATIVE**



DATE:
August 2014

FIGURE F-1

**Interchange 11.
2011 BASE YEAR
BUILD 6/8 LANE
COMBINATION
ALTERNATIVE**

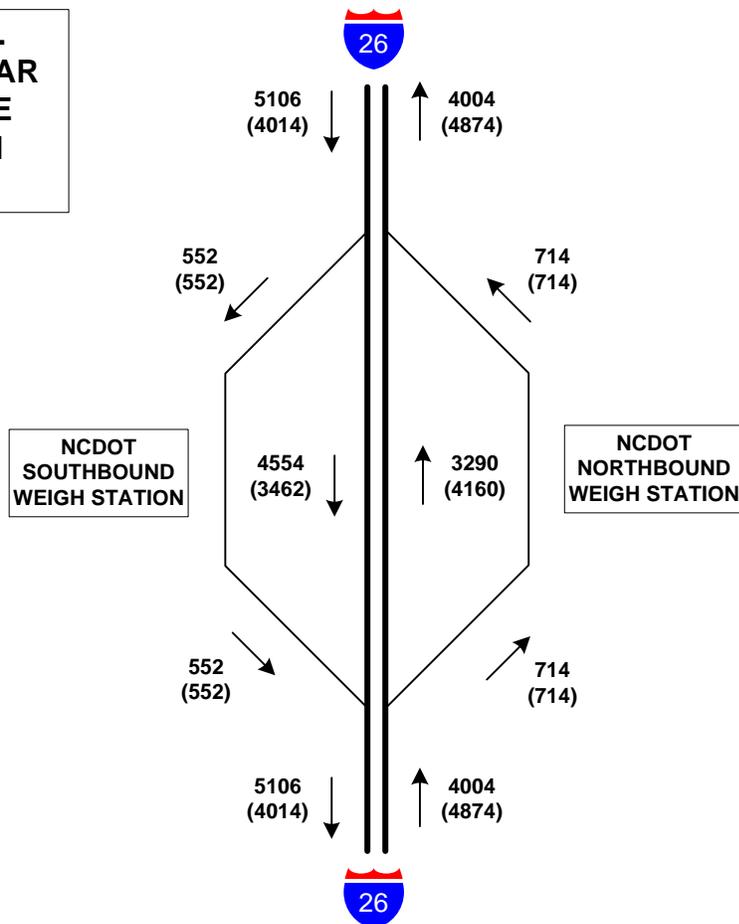


**NOT
TO
SCALE**

I-26 Widening (STIP Project I-4400/4700)

TRAFFIC FORECAST - PEAK HOUR BREAKOUTS

**Interchange 11.
2040 DESIGN YEAR
BUILD 6/8 LANE
COMBINATION
ALTERNATIVE**



DATE:
August 2014

FIGURE F-2

Appendix G – I-26 Mainline Failure Year Analysis

I-26 Mainline Segment Capacity Check

I-26 Basic Freeway Segment	ID #	No-Build LOS							Build 8/6 Lane LOS						
		2011	2015	2020	2025	2030	2035	2040	2011	2015	2020	2025	2030	2035	2040
I-40 to NC 191	B1	F	F	F	F	F	F	F	C	C	D	D	D	D	D
		64.0	67.6	72.5	78.1	84.6	92.3	101.4	24.2	25.1	26.2	27.4	28.6	30.0	31.4
NC 146 to NC 280	B2	E	F	F	F	F	F	F	C	C	C	C	D	D	D
		43.9	46.1	49.2	52.6	56.6	61.1	66.3	21.0	22.0	23.3	24.6	26.1	27.6	29.3
NC 280 to US 25	B3	D	D	E	E	F	F	F	B	B	C	C	C	C	C
		30.0	32.6	36.3	40.7	46.1	52.8	61.4	16.3	17.5	19.1	20.7	22.3	24.0	25.9
US 25 to US 64 (Balfour Pkwy in 2040)	B4	C	D	D	D	E	E	E	C	C	C	C	D	D	D
		25.4	27.3	29.9	32.8	36.2	40.0	44.6	19.3	20.9	23	25.3	27.8	30.7	34.1
US 64 to Upward Road	B5	C	C	D	D	D	E	E	B	B	C	C	C	D	D
		23.2	25.2	27.9	30.9	34.4	38.5	43.3	16.6	18.3	20.3	22.3	24.5	26.9	29.6

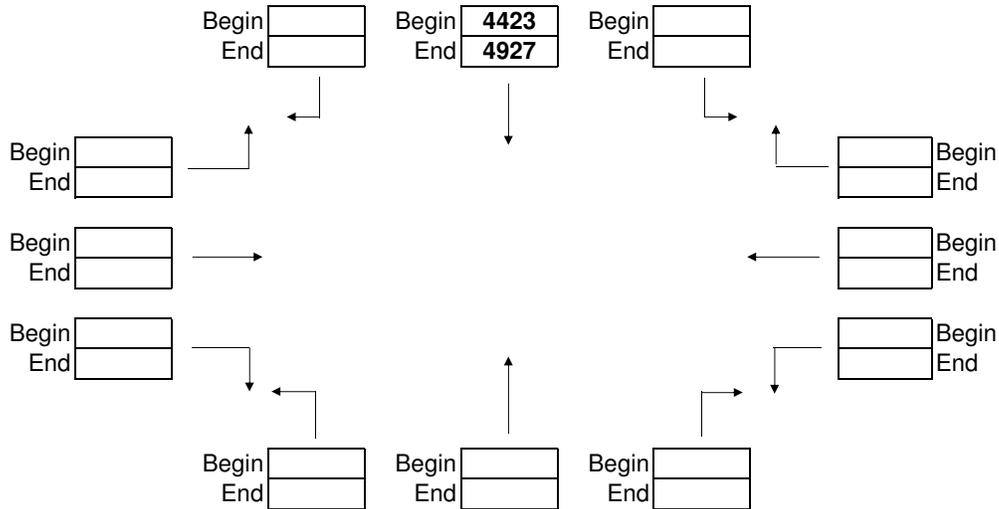
Basic Freeway Segment	Name	No-Build Volume							Build 8/6 Lane Volume						
		2011	2015	2020	2025	2030	2035	2040	2011	2015	2020	2025	2030	2035	2040
I-40 to NC 191	B1	4,423	4,493	4,579	4,666	4,753	4,840	4,927	5,163	5,326	5,529	5,732	5,935	6,139	6,342
NC 146 to NC 280	B2	3,888	3,977	4,088	4,198	4,309	4,420	4,531	4,569	4,783	5,050	5,318	5,585	5,853	6,120
NC 280 to US 25	B3	3,074	3,252	3,475	3,698	3,920	4,143	4,366	3,492	3,765	4,107	4,448	4,790	5,131	5,473
US 25 to US 64 (Balfour Pkwy in 2040)	B4	2,810	2,967	3,162	3,358	3,554	3,749	3,945	3,108	3,371	3,700	4,029	4,357	4,686	5,015
US 64 to Upward Road	B5	2,619	2,795	3,015	3,235	3,454	3,674	3,894	2,681	2,940	3,264	3,587	3,911	4,234	4,558

* HCS basic freeway segment volume based on highest AM/PM EB/WB peak hour breakout volume between adjacent interchanges to present worst case LOS/delay.

Interpolating Intermediate Traffic Volumes

Location : I-26
Description : No-Build I-40 to NC 191

Input Beginning Year = Beginning Avg Delay =
 Input Ending Year = Ending Avg Delay =



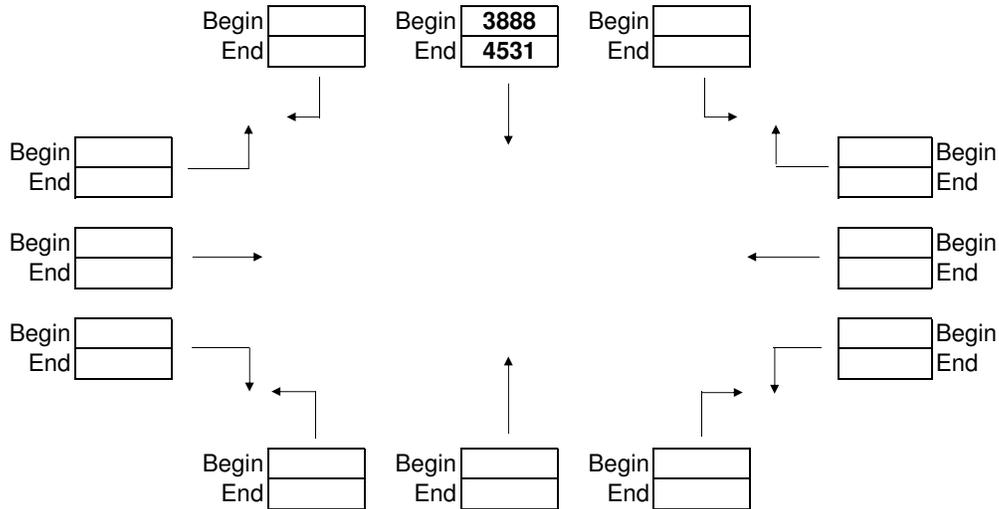
Year	Avg Delay in secs.	EB LT Volume	EB TH Volume	EB RT Volume	WB LT Volume	WB TH Volume	WB RT Volume	NB LT Volume	NB TH Volume	NB RT Volume	SB LT Volume	SB TH Volume	SB RT Volume
2011	0	0	0	0	0	0	0	0	0	0	0	4423	0
2012	0.0	0	0	0	0	0	0	0	0	0	0	4440	0
2013	0.0	0	0	0	0	0	0	0	0	0	0	4458	0
2014	0.0	0	0	0	0	0	0	0	0	0	0	4475	0
2015	0.0	0	0	0	0	0	0	0	0	0	0	4493	0
2016	0.0	0	0	0	0	0	0	0	0	0	0	4510	0
2017	0.0	0	0	0	0	0	0	0	0	0	0	4527	0
2018	0.0	0	0	0	0	0	0	0	0	0	0	4545	0
2019	0.0	0	0	0	0	0	0	0	0	0	0	4562	0
2020	0.0	0	0	0	0	0	0	0	0	0	0	4579	0
2021	0.0	0	0	0	0	0	0	0	0	0	0	4597	0
2022	0.0	0	0	0	0	0	0	0	0	0	0	4614	0
2023	0.0	0	0	0	0	0	0	0	0	0	0	4632	0
2024	0.0	0	0	0	0	0	0	0	0	0	0	4649	0
2025	0.0	0	0	0	0	0	0	0	0	0	0	4666	0
2026	0.0	0	0	0	0	0	0	0	0	0	0	4684	0
2027	0.0	0	0	0	0	0	0	0	0	0	0	4701	0
2028	0.0	0	0	0	0	0	0	0	0	0	0	4718	0
2029	0.0	0	0	0	0	0	0	0	0	0	0	4736	0
2030	0.0	0	0	0	0	0	0	0	0	0	0	4753	0
2031	0.0	0	0	0	0	0	0	0	0	0	0	4771	0
2032	0.0	0	0	0	0	0	0	0	0	0	0	4788	0
2033	0.0	0	0	0	0	0	0	0	0	0	0	4805	0
2034	0.0	0	0	0	0	0	0	0	0	0	0	4823	0
2035	0.0	0	0	0	0	0	0	0	0	0	0	4840	0
2036	0.0	0	0	0	0	0	0	0	0	0	0	4857	0
2037	0.0	0	0	0	0	0	0	0	0	0	0	4875	0
2038	0.0	0	0	0	0	0	0	0	0	0	0	4892	0
2039	0.0	0	0	0	0	0	0	0	0	0	0	4910	0

Note : Average Delay in seconds is not a straight line interpolation and should only be used as a reference.

Interpolating Intermediate Traffic Volumes

Location : I-26
Description : No-Build NC 146 to NC 280

Input Beginning Year = Beginning Avg Delay =
 Input Ending Year = Ending Avg Delay =



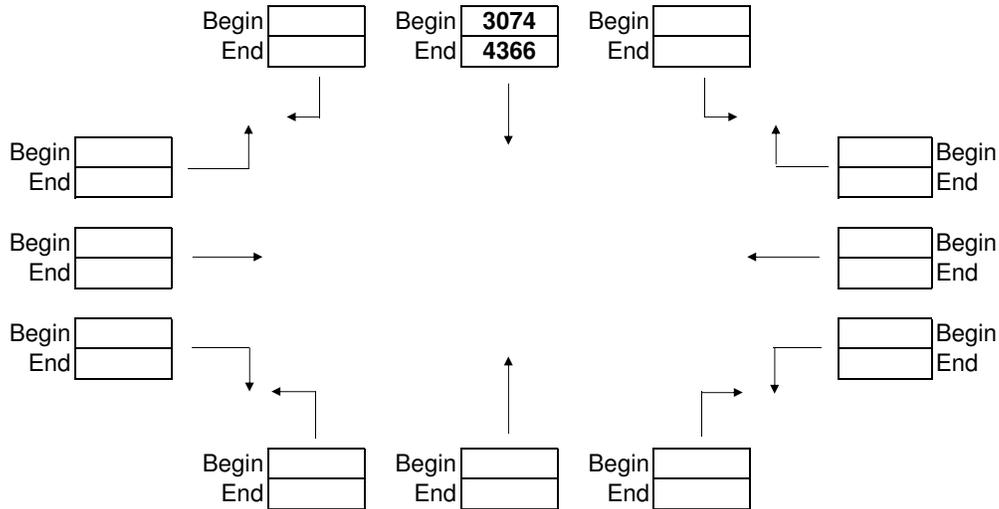
Year	Avg Delay in secs.	EB LT Volume	EB TH Volume	EB RT Volume	WB LT Volume	WB TH Volume	WB RT Volume	NB LT Volume	NB TH Volume	NB RT Volume	SB LT Volume	SB TH Volume	SB RT Volume
2011	0	0	0	0	0	0	0	0	0	0	0	3888	0
2012	0.0	0	0	0	0	0	0	0	0	0	0	3910	0
2013	0.0	0	0	0	0	0	0	0	0	0	0	3932	0
2014	0.0	0	0	0	0	0	0	0	0	0	0	3955	0
2015	0.0	0	0	0	0	0	0	0	0	0	0	3977	0
2016	0.0	0	0	0	0	0	0	0	0	0	0	3999	0
2017	0.0	0	0	0	0	0	0	0	0	0	0	4021	0
2018	0.0	0	0	0	0	0	0	0	0	0	0	4043	0
2019	0.0	0	0	0	0	0	0	0	0	0	0	4065	0
2020	0.0	0	0	0	0	0	0	0	0	0	0	4088	0
2021	0.0	0	0	0	0	0	0	0	0	0	0	4110	0
2022	0.0	0	0	0	0	0	0	0	0	0	0	4132	0
2023	0.0	0	0	0	0	0	0	0	0	0	0	4154	0
2024	0.0	0	0	0	0	0	0	0	0	0	0	4176	0
2025	0.0	0	0	0	0	0	0	0	0	0	0	4198	0
2026	0.0	0	0	0	0	0	0	0	0	0	0	4221	0
2027	0.0	0	0	0	0	0	0	0	0	0	0	4243	0
2028	0.0	0	0	0	0	0	0	0	0	0	0	4265	0
2029	0.0	0	0	0	0	0	0	0	0	0	0	4287	0
2030	0.0	0	0	0	0	0	0	0	0	0	0	4309	0
2031	0.0	0	0	0	0	0	0	0	0	0	0	4331	0
2032	0.0	0	0	0	0	0	0	0	0	0	0	4354	0
2033	0.0	0	0	0	0	0	0	0	0	0	0	4376	0
2034	0.0	0	0	0	0	0	0	0	0	0	0	4398	0
2035	0.0	0	0	0	0	0	0	0	0	0	0	4420	0
2036	0.0	0	0	0	0	0	0	0	0	0	0	4442	0
2037	0.0	0	0	0	0	0	0	0	0	0	0	4464	0
2038	0.0	0	0	0	0	0	0	0	0	0	0	4487	0
2039	0.0	0	0	0	0	0	0	0	0	0	0	4509	0

Note : Average Delay in seconds is not a straight line interpolation and should only be used as a reference.

Interpolating Intermediate Traffic Volumes

Location : I-26
Description : No-Build NC 280 to US 25

Input Beginning Year = Beginning Avg Delay =
Input Ending Year = Ending Avg Delay =



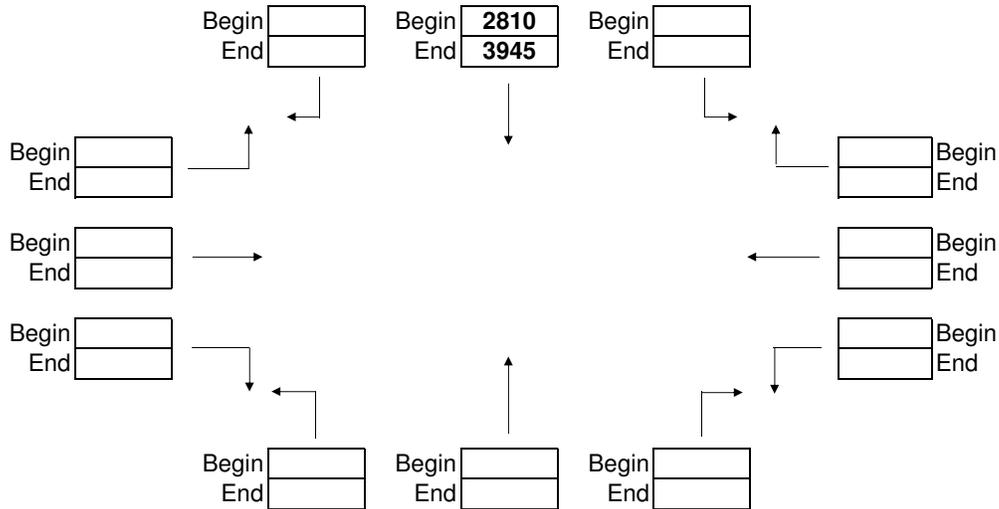
Year	Avg Delay in secs.	EB LT Volume	EB TH Volume	EB RT Volume	WB LT Volume	WB TH Volume	WB RT Volume	NB LT Volume	NB TH Volume	NB RT Volume	SB LT Volume	SB TH Volume	SB RT Volume
2011	0	0	0	0	0	0	0	0	0	0	0	3074	0
2012	0.0	0	0	0	0	0	0	0	0	0	0	3119	0
2013	0.0	0	0	0	0	0	0	0	0	0	0	3163	0
2014	0.0	0	0	0	0	0	0	0	0	0	0	3208	0
2015	0.0	0	0	0	0	0	0	0	0	0	0	3252	0
2016	0.0	0	0	0	0	0	0	0	0	0	0	3297	0
2017	0.0	0	0	0	0	0	0	0	0	0	0	3341	0
2018	0.0	0	0	0	0	0	0	0	0	0	0	3386	0
2019	0.0	0	0	0	0	0	0	0	0	0	0	3430	0
2020	0.0	0	0	0	0	0	0	0	0	0	0	3475	0
2021	0.0	0	0	0	0	0	0	0	0	0	0	3520	0
2022	0.0	0	0	0	0	0	0	0	0	0	0	3564	0
2023	0.0	0	0	0	0	0	0	0	0	0	0	3609	0
2024	0.0	0	0	0	0	0	0	0	0	0	0	3653	0
2025	0.0	0	0	0	0	0	0	0	0	0	0	3698	0
2026	0.0	0	0	0	0	0	0	0	0	0	0	3742	0
2027	0.0	0	0	0	0	0	0	0	0	0	0	3787	0
2028	0.0	0	0	0	0	0	0	0	0	0	0	3831	0
2029	0.0	0	0	0	0	0	0	0	0	0	0	3876	0
2030	0.0	0	0	0	0	0	0	0	0	0	0	3920	0
2031	0.0	0	0	0	0	0	0	0	0	0	0	3965	0
2032	0.0	0	0	0	0	0	0	0	0	0	0	4010	0
2033	0.0	0	0	0	0	0	0	0	0	0	0	4054	0
2034	0.0	0	0	0	0	0	0	0	0	0	0	4099	0
2035	0.0	0	0	0	0	0	0	0	0	0	0	4143	0
2036	0.0	0	0	0	0	0	0	0	0	0	0	4188	0
2037	0.0	0	0	0	0	0	0	0	0	0	0	4232	0
2038	0.0	0	0	0	0	0	0	0	0	0	0	4277	0
2039	0.0	0	0	0	0	0	0	0	0	0	0	4321	0

Note : Average Delay in seconds is not a straight line interpolation and should only be used as a reference.

Interpolating Intermediate Traffic Volumes

Location : I-26
Description : No-Build US 25 to US 64

Input Beginning Year = Beginning Avg Delay =
 Input Ending Year = Ending Avg Delay =



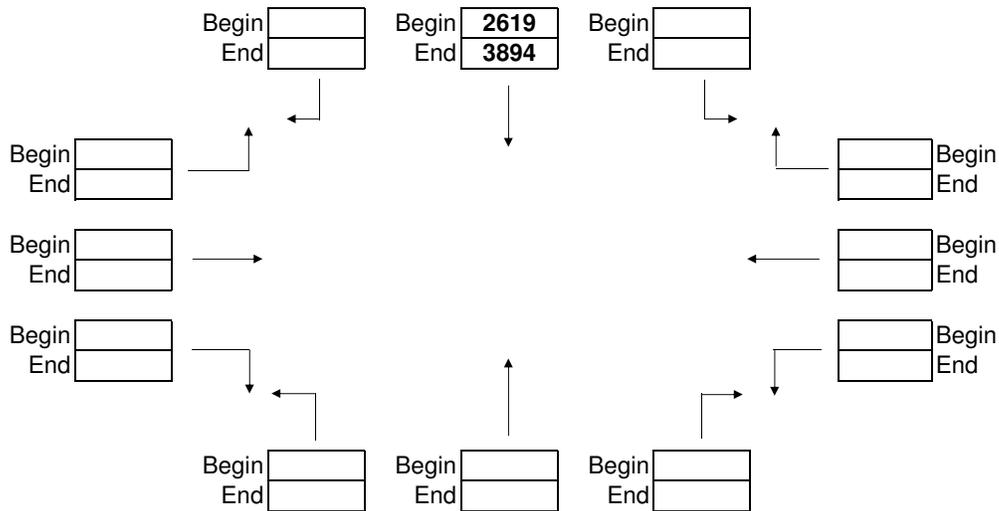
Year	Avg Delay in secs.	EB LT Volume	EB TH Volume	EB RT Volume	WB LT Volume	WB TH Volume	WB RT Volume	NB LT Volume	NB TH Volume	NB RT Volume	SB LT Volume	SB TH Volume	SB RT Volume
2011	0	0	0	0	0	0	0	0	0	0	0	2810	0
2012	0.0	0	0	0	0	0	0	0	0	0	0	2849	0
2013	0.0	0	0	0	0	0	0	0	0	0	0	2888	0
2014	0.0	0	0	0	0	0	0	0	0	0	0	2927	0
2015	0.0	0	0	0	0	0	0	0	0	0	0	2967	0
2016	0.0	0	0	0	0	0	0	0	0	0	0	3006	0
2017	0.0	0	0	0	0	0	0	0	0	0	0	3045	0
2018	0.0	0	0	0	0	0	0	0	0	0	0	3084	0
2019	0.0	0	0	0	0	0	0	0	0	0	0	3123	0
2020	0.0	0	0	0	0	0	0	0	0	0	0	3162	0
2021	0.0	0	0	0	0	0	0	0	0	0	0	3201	0
2022	0.0	0	0	0	0	0	0	0	0	0	0	3241	0
2023	0.0	0	0	0	0	0	0	0	0	0	0	3280	0
2024	0.0	0	0	0	0	0	0	0	0	0	0	3319	0
2025	0.0	0	0	0	0	0	0	0	0	0	0	3358	0
2026	0.0	0	0	0	0	0	0	0	0	0	0	3397	0
2027	0.0	0	0	0	0	0	0	0	0	0	0	3436	0
2028	0.0	0	0	0	0	0	0	0	0	0	0	3475	0
2029	0.0	0	0	0	0	0	0	0	0	0	0	3514	0
2030	0.0	0	0	0	0	0	0	0	0	0	0	3554	0
2031	0.0	0	0	0	0	0	0	0	0	0	0	3593	0
2032	0.0	0	0	0	0	0	0	0	0	0	0	3632	0
2033	0.0	0	0	0	0	0	0	0	0	0	0	3671	0
2034	0.0	0	0	0	0	0	0	0	0	0	0	3710	0
2035	0.0	0	0	0	0	0	0	0	0	0	0	3749	0
2036	0.0	0	0	0	0	0	0	0	0	0	0	3788	0
2037	0.0	0	0	0	0	0	0	0	0	0	0	3828	0
2038	0.0	0	0	0	0	0	0	0	0	0	0	3867	0
2039	0.0	0	0	0	0	0	0	0	0	0	0	3906	0

Note : Average Delay in seconds is not a straight line interpolation and should only be used as a reference.

Interpolating Intermediate Traffic Volumes

Location : I-26
Description : No-Build US 64 to Upward Rd

Input Beginning Year = Beginning Avg Delay =
 Input Ending Year = Ending Avg Delay =



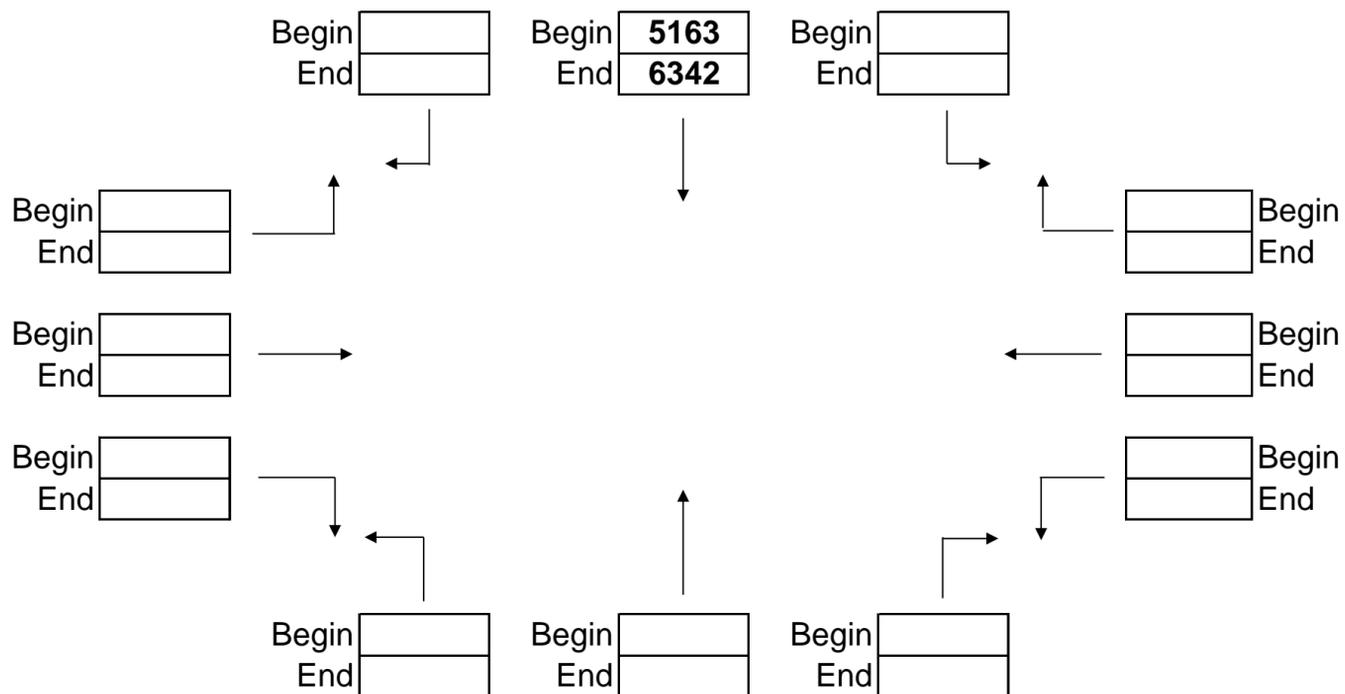
Year	Avg Delay in secs.	EB LT Volume	EB TH Volume	EB RT Volume	WB LT Volume	WB TH Volume	WB RT Volume	NB LT Volume	NB TH Volume	NB RT Volume	SB LT Volume	SB TH Volume	SB RT Volume
2011	0	0	0	0	0	0	0	0	0	0	0	2619	0
2012	0.0	0	0	0	0	0	0	0	0	0	0	2663	0
2013	0.0	0	0	0	0	0	0	0	0	0	0	2707	0
2014	0.0	0	0	0	0	0	0	0	0	0	0	2751	0
2015	0.0	0	0	0	0	0	0	0	0	0	0	2795	0
2016	0.0	0	0	0	0	0	0	0	0	0	0	2839	0
2017	0.0	0	0	0	0	0	0	0	0	0	0	2883	0
2018	0.0	0	0	0	0	0	0	0	0	0	0	2927	0
2019	0.0	0	0	0	0	0	0	0	0	0	0	2971	0
2020	0.0	0	0	0	0	0	0	0	0	0	0	3015	0
2021	0.0	0	0	0	0	0	0	0	0	0	0	3059	0
2022	0.0	0	0	0	0	0	0	0	0	0	0	3103	0
2023	0.0	0	0	0	0	0	0	0	0	0	0	3147	0
2024	0.0	0	0	0	0	0	0	0	0	0	0	3191	0
2025	0.0	0	0	0	0	0	0	0	0	0	0	3235	0
2026	0.0	0	0	0	0	0	0	0	0	0	0	3278	0
2027	0.0	0	0	0	0	0	0	0	0	0	0	3322	0
2028	0.0	0	0	0	0	0	0	0	0	0	0	3366	0
2029	0.0	0	0	0	0	0	0	0	0	0	0	3410	0
2030	0.0	0	0	0	0	0	0	0	0	0	0	3454	0
2031	0.0	0	0	0	0	0	0	0	0	0	0	3498	0
2032	0.0	0	0	0	0	0	0	0	0	0	0	3542	0
2033	0.0	0	0	0	0	0	0	0	0	0	0	3586	0
2034	0.0	0	0	0	0	0	0	0	0	0	0	3630	0
2035	0.0	0	0	0	0	0	0	0	0	0	0	3674	0
2036	0.0	0	0	0	0	0	0	0	0	0	0	3718	0
2037	0.0	0	0	0	0	0	0	0	0	0	0	3762	0
2038	0.0	0	0	0	0	0	0	0	0	0	0	3806	0
2039	0.0	0	0	0	0	0	0	0	0	0	0	3850	0

Note : Average Delay in seconds is not a straight line interpolation and should only be used as a reference.

Interpolating Intermediate Traffic Volumes

Location : I-26
 Description : Build 8/6 Lane I-40 to NC 191

Input Beginning Year = Beginning Avg Delay =
 Input Ending Year = Ending Avg Delay =



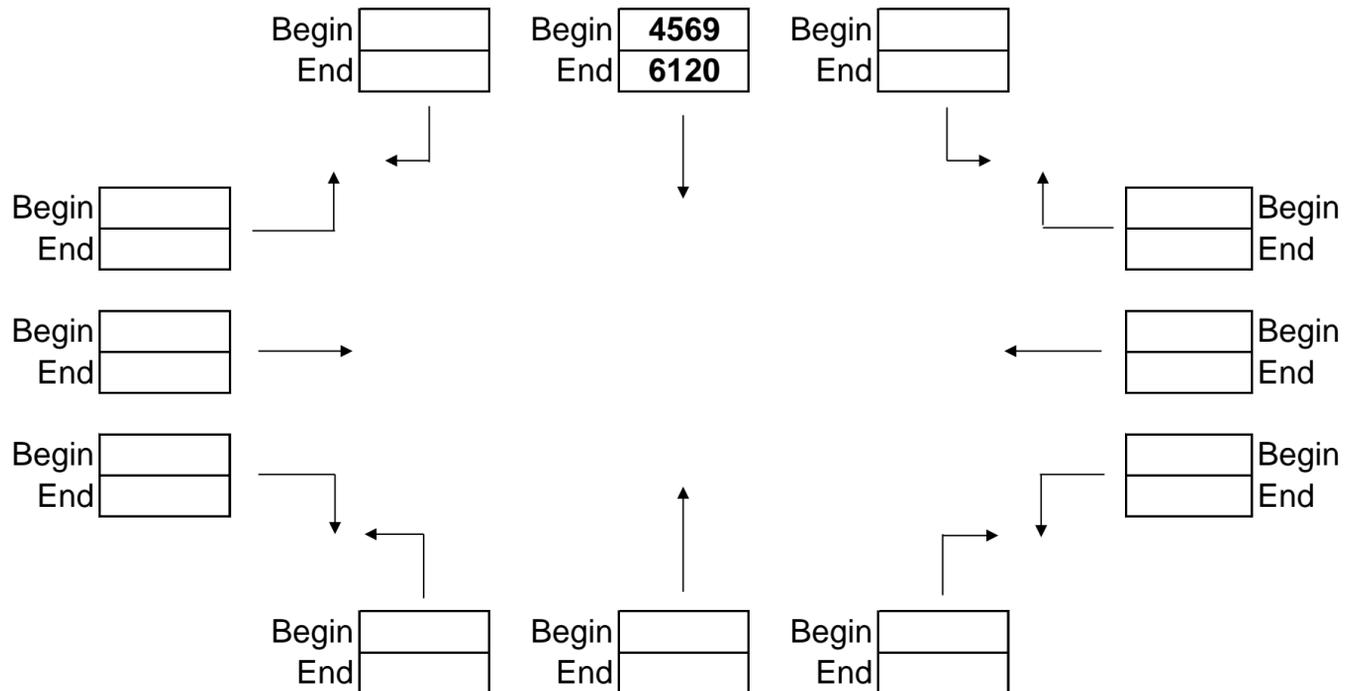
Year	Avg Delay in secs.	EB LT Volume	EB TH Volume	EB RT Volume	WB LT Volume	WB TH Volume	WB RT Volume	NB LT Volume	NB TH Volume	NB RT Volume	SB LT Volume	SB TH Volume	SB RT Volume
2011	0	0	0	0	0	0	0	0	0	0	0	5163	0
2012	0.0	0	0	0	0	0	0	0	0	0	0	5204	0
2013	0.0	0	0	0	0	0	0	0	0	0	0	5244	0
2014	0.0	0	0	0	0	0	0	0	0	0	0	5285	0
2015	0.0	0	0	0	0	0	0	0	0	0	0	5326	0
2016	0.0	0	0	0	0	0	0	0	0	0	0	5366	0
2017	0.0	0	0	0	0	0	0	0	0	0	0	5407	0
2018	0.0	0	0	0	0	0	0	0	0	0	0	5448	0
2019	0.0	0	0	0	0	0	0	0	0	0	0	5488	0
2020	0.0	0	0	0	0	0	0	0	0	0	0	5529	0
2021	0.0	0	0	0	0	0	0	0	0	0	0	5570	0
2022	0.0	0	0	0	0	0	0	0	0	0	0	5610	0
2023	0.0	0	0	0	0	0	0	0	0	0	0	5651	0
2024	0.0	0	0	0	0	0	0	0	0	0	0	5692	0
2025	0.0	0	0	0	0	0	0	0	0	0	0	5732	0
2026	0.0	0	0	0	0	0	0	0	0	0	0	5773	0
2027	0.0	0	0	0	0	0	0	0	0	0	0	5813	0
2028	0.0	0	0	0	0	0	0	0	0	0	0	5854	0
2029	0.0	0	0	0	0	0	0	0	0	0	0	5895	0
2030	0.0	0	0	0	0	0	0	0	0	0	0	5935	0
2031	0.0	0	0	0	0	0	0	0	0	0	0	5976	0
2032	0.0	0	0	0	0	0	0	0	0	0	0	6017	0
2033	0.0	0	0	0	0	0	0	0	0	0	0	6057	0
2034	0.0	0	0	0	0	0	0	0	0	0	0	6098	0
2035	0.0	0	0	0	0	0	0	0	0	0	0	6139	0
2036	0.0	0	0	0	0	0	0	0	0	0	0	6179	0
2037	0.0	0	0	0	0	0	0	0	0	0	0	6220	0
2038	0.0	0	0	0	0	0	0	0	0	0	0	6261	0
2039	0.0	0	0	0	0	0	0	0	0	0	0	6301	0

Note : Average Delay in seconds is not a straight line interpolation and should only be used as a reference.

Interpolating Intermediate Traffic Volumes

Location : I-26
 Description : Build 8/6 Lane NC 146 to NC 280

Input Beginning Year = Beginning Avg Delay =
 Input Ending Year = Ending Avg Delay =



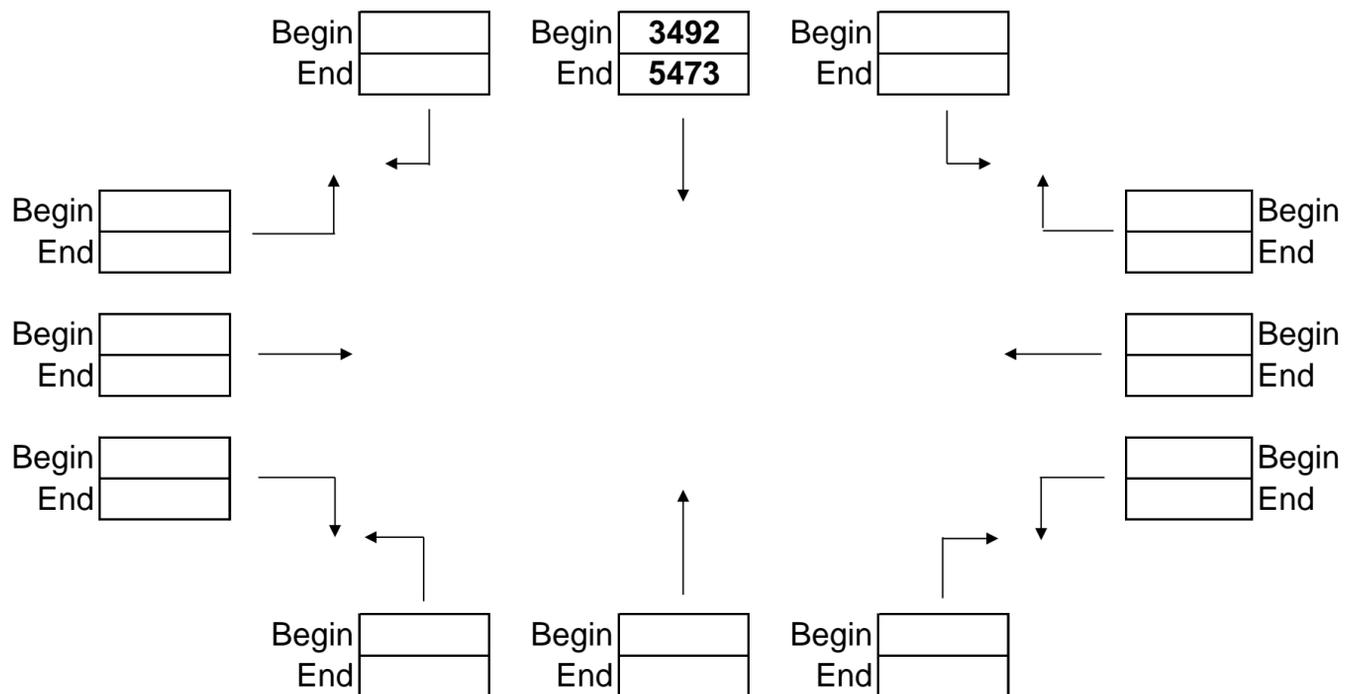
Year	Avg Delay in secs.	EB LT Volume	EB TH Volume	EB RT Volume	WB LT Volume	WB TH Volume	WB RT Volume	NB LT Volume	NB TH Volume	NB RT Volume	SB LT Volume	SB TH Volume	SB RT Volume
2011	0	0	0	0	0	0	0	0	0	0	0	4569	0
2012	0.0	0	0	0	0	0	0	0	0	0	0	4622	0
2013	0.0	0	0	0	0	0	0	0	0	0	0	4676	0
2014	0.0	0	0	0	0	0	0	0	0	0	0	4729	0
2015	0.0	0	0	0	0	0	0	0	0	0	0	4783	0
2016	0.0	0	0	0	0	0	0	0	0	0	0	4836	0
2017	0.0	0	0	0	0	0	0	0	0	0	0	4890	0
2018	0.0	0	0	0	0	0	0	0	0	0	0	4943	0
2019	0.0	0	0	0	0	0	0	0	0	0	0	4997	0
2020	0.0	0	0	0	0	0	0	0	0	0	0	5050	0
2021	0.0	0	0	0	0	0	0	0	0	0	0	5104	0
2022	0.0	0	0	0	0	0	0	0	0	0	0	5157	0
2023	0.0	0	0	0	0	0	0	0	0	0	0	5211	0
2024	0.0	0	0	0	0	0	0	0	0	0	0	5264	0
2025	0.0	0	0	0	0	0	0	0	0	0	0	5318	0
2026	0.0	0	0	0	0	0	0	0	0	0	0	5371	0
2027	0.0	0	0	0	0	0	0	0	0	0	0	5425	0
2028	0.0	0	0	0	0	0	0	0	0	0	0	5478	0
2029	0.0	0	0	0	0	0	0	0	0	0	0	5532	0
2030	0.0	0	0	0	0	0	0	0	0	0	0	5585	0
2031	0.0	0	0	0	0	0	0	0	0	0	0	5639	0
2032	0.0	0	0	0	0	0	0	0	0	0	0	5692	0
2033	0.0	0	0	0	0	0	0	0	0	0	0	5746	0
2034	0.0	0	0	0	0	0	0	0	0	0	0	5799	0
2035	0.0	0	0	0	0	0	0	0	0	0	0	5853	0
2036	0.0	0	0	0	0	0	0	0	0	0	0	5906	0
2037	0.0	0	0	0	0	0	0	0	0	0	0	5960	0
2038	0.0	0	0	0	0	0	0	0	0	0	0	6013	0
2039	0.0	0	0	0	0	0	0	0	0	0	0	6067	0

Note : Average Delay in seconds is not a straight line interpolation and should only be used as a reference.

Interpolating Intermediate Traffic Volumes

Location : I-26
Description : Build 6 Lane NC 280 to US 25

Input Beginning Year = Beginning Avg Delay =
 Input Ending Year = Ending Avg Delay =



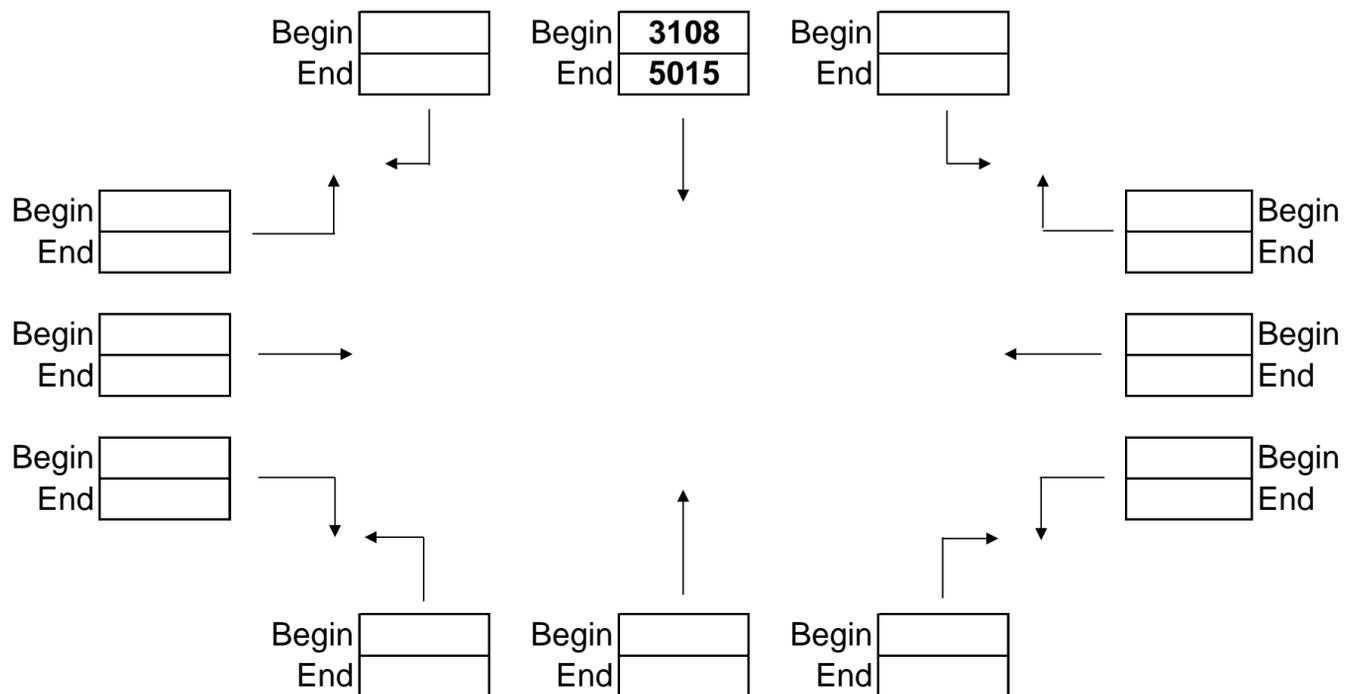
Year	Avg Delay in secs.	EB LT Volume	EB TH Volume	EB RT Volume	WB LT Volume	WB TH Volume	WB RT Volume	NB LT Volume	NB TH Volume	NB RT Volume	SB LT Volume	SB TH Volume	SB RT Volume
2011	0	0	0	0	0	0	0	0	0	0	0	3492	0
2012	0.0	0	0	0	0	0	0	0	0	0	0	3560	0
2013	0.0	0	0	0	0	0	0	0	0	0	0	3629	0
2014	0.0	0	0	0	0	0	0	0	0	0	0	3697	0
2015	0.0	0	0	0	0	0	0	0	0	0	0	3765	0
2016	0.0	0	0	0	0	0	0	0	0	0	0	3834	0
2017	0.0	0	0	0	0	0	0	0	0	0	0	3902	0
2018	0.0	0	0	0	0	0	0	0	0	0	0	3970	0
2019	0.0	0	0	0	0	0	0	0	0	0	0	4038	0
2020	0.0	0	0	0	0	0	0	0	0	0	0	4107	0
2021	0.0	0	0	0	0	0	0	0	0	0	0	4175	0
2022	0.0	0	0	0	0	0	0	0	0	0	0	4243	0
2023	0.0	0	0	0	0	0	0	0	0	0	0	4312	0
2024	0.0	0	0	0	0	0	0	0	0	0	0	4380	0
2025	0.0	0	0	0	0	0	0	0	0	0	0	4448	0
2026	0.0	0	0	0	0	0	0	0	0	0	0	4517	0
2027	0.0	0	0	0	0	0	0	0	0	0	0	4585	0
2028	0.0	0	0	0	0	0	0	0	0	0	0	4653	0
2029	0.0	0	0	0	0	0	0	0	0	0	0	4722	0
2030	0.0	0	0	0	0	0	0	0	0	0	0	4790	0
2031	0.0	0	0	0	0	0	0	0	0	0	0	4858	0
2032	0.0	0	0	0	0	0	0	0	0	0	0	4927	0
2033	0.0	0	0	0	0	0	0	0	0	0	0	4995	0
2034	0.0	0	0	0	0	0	0	0	0	0	0	5063	0
2035	0.0	0	0	0	0	0	0	0	0	0	0	5131	0
2036	0.0	0	0	0	0	0	0	0	0	0	0	5200	0
2037	0.0	0	0	0	0	0	0	0	0	0	0	5268	0
2038	0.0	0	0	0	0	0	0	0	0	0	0	5336	0
2039	0.0	0	0	0	0	0	0	0	0	0	0	5405	0

Note : Average Delay in seconds is not a straight line interpolation and should only be used as a reference.

Interpolating Intermediate Traffic Volumes

Location : I-26
Description : Build 6 Lane US 25 to US 64

Input Beginning Year = Beginning Avg Delay =
 Input Ending Year = Ending Avg Delay =



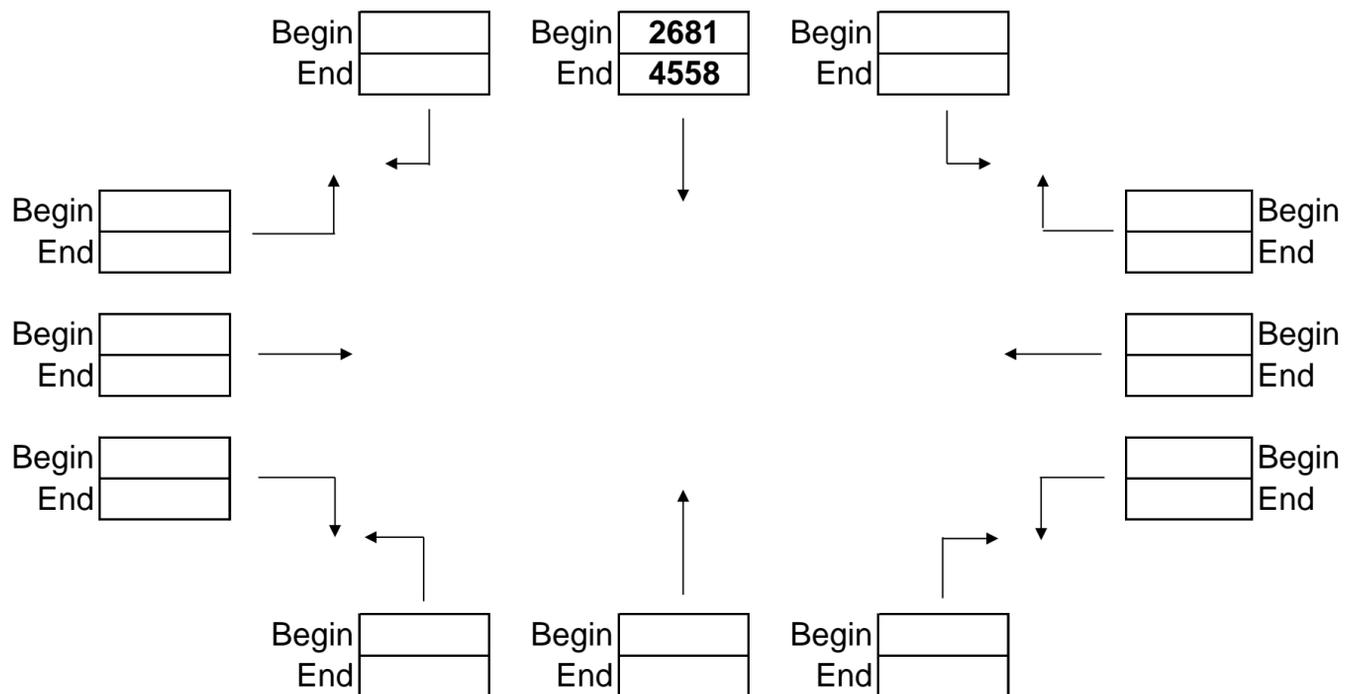
Year	Avg Delay in secs.	EB LT Volume	EB TH Volume	EB RT Volume	WB LT Volume	WB TH Volume	WB RT Volume	NB LT Volume	NB TH Volume	NB RT Volume	SB LT Volume	SB TH Volume	SB RT Volume
2011	0	0	0	0	0	0	0	0	0	0	0	3108	0
2012	0.0	0	0	0	0	0	0	0	0	0	0	3174	0
2013	0.0	0	0	0	0	0	0	0	0	0	0	3240	0
2014	0.0	0	0	0	0	0	0	0	0	0	0	3305	0
2015	0.0	0	0	0	0	0	0	0	0	0	0	3371	0
2016	0.0	0	0	0	0	0	0	0	0	0	0	3437	0
2017	0.0	0	0	0	0	0	0	0	0	0	0	3503	0
2018	0.0	0	0	0	0	0	0	0	0	0	0	3568	0
2019	0.0	0	0	0	0	0	0	0	0	0	0	3634	0
2020	0.0	0	0	0	0	0	0	0	0	0	0	3700	0
2021	0.0	0	0	0	0	0	0	0	0	0	0	3766	0
2022	0.0	0	0	0	0	0	0	0	0	0	0	3831	0
2023	0.0	0	0	0	0	0	0	0	0	0	0	3897	0
2024	0.0	0	0	0	0	0	0	0	0	0	0	3963	0
2025	0.0	0	0	0	0	0	0	0	0	0	0	4029	0
2026	0.0	0	0	0	0	0	0	0	0	0	0	4094	0
2027	0.0	0	0	0	0	0	0	0	0	0	0	4160	0
2028	0.0	0	0	0	0	0	0	0	0	0	0	4226	0
2029	0.0	0	0	0	0	0	0	0	0	0	0	4292	0
2030	0.0	0	0	0	0	0	0	0	0	0	0	4357	0
2031	0.0	0	0	0	0	0	0	0	0	0	0	4423	0
2032	0.0	0	0	0	0	0	0	0	0	0	0	4489	0
2033	0.0	0	0	0	0	0	0	0	0	0	0	4555	0
2034	0.0	0	0	0	0	0	0	0	0	0	0	4620	0
2035	0.0	0	0	0	0	0	0	0	0	0	0	4686	0
2036	0.0	0	0	0	0	0	0	0	0	0	0	4752	0
2037	0.0	0	0	0	0	0	0	0	0	0	0	4818	0
2038	0.0	0	0	0	0	0	0	0	0	0	0	4883	0
2039	0.0	0	0	0	0	0	0	0	0	0	0	4949	0

Note : Average Delay in seconds is not a straight line interpolation and should only be used as a reference.

Interpolating Intermediate Traffic Volumes

Location : I-26
Description : Build 6 Lane US 64 to Upward Rd

Input Beginning Year = Beginning Avg Delay =
 Input Ending Year = Ending Avg Delay =



Year	Avg Delay in secs.	EB LT Volume	EB TH Volume	EB RT Volume	WB LT Volume	WB TH Volume	WB RT Volume	NB LT Volume	NB TH Volume	NB RT Volume	SB LT Volume	SB TH Volume	SB RT Volume
2011	0	0	0	0	0	0	0	0	0	0	0	2681	0
2012	0.0	0	0	0	0	0	0	0	0	0	0	2746	0
2013	0.0	0	0	0	0	0	0	0	0	0	0	2810	0
2014	0.0	0	0	0	0	0	0	0	0	0	0	2875	0
2015	0.0	0	0	0	0	0	0	0	0	0	0	2940	0
2016	0.0	0	0	0	0	0	0	0	0	0	0	3005	0
2017	0.0	0	0	0	0	0	0	0	0	0	0	3069	0
2018	0.0	0	0	0	0	0	0	0	0	0	0	3134	0
2019	0.0	0	0	0	0	0	0	0	0	0	0	3199	0
2020	0.0	0	0	0	0	0	0	0	0	0	0	3264	0
2021	0.0	0	0	0	0	0	0	0	0	0	0	3328	0
2022	0.0	0	0	0	0	0	0	0	0	0	0	3393	0
2023	0.0	0	0	0	0	0	0	0	0	0	0	3458	0
2024	0.0	0	0	0	0	0	0	0	0	0	0	3522	0
2025	0.0	0	0	0	0	0	0	0	0	0	0	3587	0
2026	0.0	0	0	0	0	0	0	0	0	0	0	3652	0
2027	0.0	0	0	0	0	0	0	0	0	0	0	3717	0
2028	0.0	0	0	0	0	0	0	0	0	0	0	3781	0
2029	0.0	0	0	0	0	0	0	0	0	0	0	3846	0
2030	0.0	0	0	0	0	0	0	0	0	0	0	3911	0
2031	0.0	0	0	0	0	0	0	0	0	0	0	3975	0
2032	0.0	0	0	0	0	0	0	0	0	0	0	4040	0
2033	0.0	0	0	0	0	0	0	0	0	0	0	4105	0
2034	0.0	0	0	0	0	0	0	0	0	0	0	4170	0
2035	0.0	0	0	0	0	0	0	0	0	0	0	4234	0
2036	0.0	0	0	0	0	0	0	0	0	0	0	4299	0
2037	0.0	0	0	0	0	0	0	0	0	0	0	4364	0
2038	0.0	0	0	0	0	0	0	0	0	0	0	4429	0
2039	0.0	0	0	0	0	0	0	0	0	0	0	4493	0

Note : Average Delay in seconds is not a straight line interpolation and should only be used as a reference.

No-Build

BASIC FREEWAY SEGMENTS WORKSHEET			
General Information		Site Information	
Analyst	BAR	Highway/Direction of Travel	I-26
Agency or Company	HNTB North Carolina, PC	From/To	I-40 to NC 191
Date Performed	7/12/2013	Jurisdiction	Buncombe County
Analysis Time Period	Peak	Analysis Year	2011 No Build
Project Description <i>STIP I4400/I-4700 - I-26 Widening</i>			
<input checked="" type="checkbox"/> Oper.(LOS)		<input type="checkbox"/> Des.(N)	
<input type="checkbox"/> Planning Data			
Flow Inputs			
Volume, V	4423	veh/h	Peak-Hour Factor, PHF
AADT		veh/day	0.90
Peak-Hr Prop. of AADT, K			%Trucks and Buses, P _T
Peak-Hr Direction Prop, D			6
DDHV = AADT x K x D		veh/h	%RVs, P _R
			0
			General Terrain:
			Rolling
			Grade % Length
			mi
			Up/Down %
Calculate Flow Adjustments			
f _p	1.00	E _R	2.0
E _T	2.5	f _{HV} = 1/[1+P _T (E _T - 1) + P _R (E _R - 1)]	
Speed Inputs		Calc Speed Adj and FFS	
Lane Width	ft		
Rt-Side Lat. Clearance	ft	f _{LW}	mph
Number of Lanes, N	2	f _{LC}	mph
Total Ramp Density, TRD	ramps/mi	TRD Adjustment	mph
FFS (measured)	65.0	FFS	65.0
Base free-flow Speed, BFFS	mph		mph
LOS and Performance Measures		Design (N)	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v _p = (V or DDHV) / (PHF x N x f _{HV})		Design LOS	
2678	pc/h/ln	v _p = (V or DDHV) / (PHF x N x f _{HV})	
x f _p)		pc/h/ln	
S	41.8	x f _p)	
S	mph	S	mph
D = v _p / S	64.0	D = v _p / S	pc/mi/ln
64.0	pc/mi/ln	Required Number of Lanes, N	
LOS	F		
Glossary		Factor Location	
N - Number of lanes	S - Speed	E _R - Exhibits 11-10, 11-12	f _{LW} - Exhibit 11-8
V - Hourly volume	D - Density	E _T - Exhibits 11-10, 11-11, 11-13	f _{LC} - Exhibit 11-9
v _p - Flow rate	FFS - Free-flow speed	f _p - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v _p - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

BASIC FREEWAY SEGMENTS WORKSHEET			
General Information		Site Information	
Analyst	BAR	Highway/Direction of Travel I-26	
Agency or Company	HNTB North Carolina, PC	From/To	NC 146 to NC 280
Date Performed	7/12/2013	Jurisdiction	Buncombe County
Analysis Time Period	Peak	Analysis Year	2011 No Build
Project Description STIP I4400/I-4700 - I-26 Widening			
<input checked="" type="checkbox"/> Oper.(LOS)		<input type="checkbox"/> Des.(N)	
<input type="checkbox"/> Planning Data			
Flow Inputs			
Volume, V	3888	veh/h	Peak-Hour Factor, PHF 0.90
AADT		veh/day	%Trucks and Buses, P _T 5
Peak-Hr Prop. of AADT, K			%RVs, P _R 0
Peak-Hr Direction Prop, D			General Terrain: Rolling
DDHV = AADT x K x D		veh/h	Grade % Length mi
			Up/Down %
Calculate Flow Adjustments			
f _p	1.00	E _R	2.0
E _T	2.5	f _{HV} = 1/[1+P _T (E _T - 1) + P _R (E _R - 1)] 0.930	
Speed Inputs		Calc Speed Adj and FFS	
Lane Width	ft		
Rt-Side Lat. Clearance	ft	f _{LW}	mph
Number of Lanes, N	2	f _{LC}	mph
Total Ramp Density, TRD	ramps/mi	TRD Adjustment	mph
FFS (measured)	65.0	FFS	65.0
Base free-flow Speed, BFFS	mph		mph
LOS and Performance Measures		Design (N)	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v _p = (V or DDHV) / (PHF x N x f _{HV} x f _p)	2322 pc/h/ln	Design LOS	
S	52.9 mph	v _p = (V or DDHV) / (PHF x N x f _{HV} x f _p)	pc/h/ln
D = v _p / S	43.9 pc/mi/ln	S	mph
LOS	E	D = v _p / S	pc/mi/ln
		Required Number of Lanes, N	
Glossary		Factor Location	
N - Number of lanes	S - Speed	E _R - Exhibits 11-10, 11-12	f _{LW} - Exhibit 11-8
V - Hourly volume	D - Density	E _T - Exhibits 11-10, 11-11, 11-13	f _{LC} - Exhibit 11-9
v _p - Flow rate	FFS - Free-flow speed	f _p - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v _p - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

BASIC FREEWAY SEGMENTS WORKSHEET			
General Information		Site Information	
Analyst	BAR	Highway/Direction of Travel	I-26
Agency or Company	HNTB North Carolina, PC	From/To	NC 280 to US 25
Date Performed	7/12/2013	Jurisdiction	Buncombe County
Analysis Time Period	Peak	Analysis Year	2011 No Build
Project Description STIP I4400/I-4700 - I-26 Widening			
<input checked="" type="checkbox"/> Oper.(LOS)		<input type="checkbox"/> Des.(N)	
<input type="checkbox"/> Planning Data			
Flow Inputs			
Volume, V	3074	veh/h	Peak-Hour Factor, PHF 0.90
AADT		veh/day	%Trucks and Buses, P _T 6
Peak-Hr Prop. of AADT, K			%RVs, P _R 0
Peak-Hr Direction Prop, D			General Terrain: Rolling
DDHV = AADT x K x D		veh/h	Grade % Length mi
			Up/Down %
Calculate Flow Adjustments			
f _p	1.00	E _R	2.0
E _T	2.5	f _{HV} = 1/[1+P _T (E _T - 1) + P _R (E _R - 1)]	0.917
Speed Inputs		Calc Speed Adj and FFS	
Lane Width		ft	
Rt-Side Lat. Clearance		ft	f _{LW} mph
Number of Lanes, N	2		f _{LC} mph
Total Ramp Density, TRD		ramps/mi	TRD Adjustment mph
FFS (measured)	65.0	mph	FFS 65.0 mph
Base free-flow Speed, BFFS		mph	
LOS and Performance Measures		Design (N)	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v _p = (V or DDHV) / (PHF x N x f _{HV} x f _p)	1861	pc/h/ln	v _p = (V or DDHV) / (PHF x N x f _{HV} x f _p)
S	62.0	mph	S
D = v _p / S	30.0	pc/mi/ln	D = v _p / S
LOS	D		Required Number of Lanes, N
Glossary		Factor Location	
N - Number of lanes	S - Speed	E _R - Exhibits 11-10, 11-12	f _{LW} - Exhibit 11-8
V - Hourly volume	D - Density	E _T - Exhibits 11-10, 11-11, 11-13	f _{LC} - Exhibit 11-9
v _p - Flow rate	FFS - Free-flow speed	f _p - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v _p - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

BASIC FREEWAY SEGMENTS WORKSHEET			
General Information		Site Information	
Analyst	BAR	Highway/Direction of Travel	I-26
Agency or Company	HNTB North Carolina, PC	From/To	US 25 to US 64
Date Performed	7/12/2013	Jurisdiction	Buncombe County
Analysis Time Period	Peak	Analysis Year	2011 No Build
Project Description <i>STIP I4400/I-4700 - I-26 Widening</i>			
<input checked="" type="checkbox"/> Oper.(LOS)		<input type="checkbox"/> Des.(N)	
<input type="checkbox"/> Planning Data			
Flow Inputs			
Volume, V	2810	veh/h	Peak-Hour Factor, PHF
AADT		veh/day	0.90
Peak-Hr Prop. of AADT, K			%Trucks and Buses, P _T
Peak-Hr Direction Prop, D			6
DDHV = AADT x K x D		veh/h	%RVs, P _R
			0
			General Terrain:
			Rolling
			Grade % Length
			mi
			Up/Down %
Calculate Flow Adjustments			
f _p	1.00	E _R	2.0
E _T	2.5	f _{HV} = 1/[1+P _T (E _T - 1) + P _R (E _R - 1)]	0.917
Speed Inputs		Calc Speed Adj and FFS	
Lane Width	ft		
Rt-Side Lat. Clearance	ft	f _{LW}	mph
Number of Lanes, N	2	f _{LC}	mph
Total Ramp Density, TRD	ramps/mi	TRD Adjustment	mph
FFS (measured)	70.0	FFS	70.0
Base free-flow Speed, BFFS	mph		mph
LOS and Performance Measures		Design (N)	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v _p = (V or DDHV) / (PHF x N x f _{HV} x f _p)		Design LOS	
1702	pc/h/ln	v _p = (V or DDHV) / (PHF x N x f _{HV} x f _p)	
S	67.1	mph	pc/h/ln
D = v _p / S	25.4	pc/mi/ln	S
LOS	C		mph
			pc/mi/ln
			D = v _p / S
			pc/mi/ln
			Required Number of Lanes, N
Glossary		Factor Location	
N - Number of lanes	S - Speed	E _R - Exhibits 11-10, 11-12	f _{LW} - Exhibit 11-8
V - Hourly volume	D - Density	E _T - Exhibits 11-10, 11-11, 11-13	f _{LC} - Exhibit 11-9
v _p - Flow rate	FFS - Free-flow speed	f _p - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v _p - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

BASIC FREEWAY SEGMENTS WORKSHEET			
General Information		Site Information	
Analyst	BAR	Highway/Direction of Travel	I-26
Agency or Company	HNTB North Carolina, PC	From/To	US 64 to Upward Road
Date Performed	7/12/2013	Jurisdiction	Buncombe County
Analysis Time Period	Peak	Analysis Year	2011 No Build
Project Description <i>STIP I4400/I-4700 - I-26 Widening</i>			
<input checked="" type="checkbox"/> Oper.(LOS)		<input type="checkbox"/> Des.(N)	
<input type="checkbox"/> Planning Data			
Flow Inputs			
Volume, V	2619	veh/h	Peak-Hour Factor, PHF
AADT		veh/day	0.90
Peak-Hr Prop. of AADT, K			%Trucks and Buses, P _T
Peak-Hr Direction Prop, D			6
DDHV = AADT x K x D		veh/h	%RVs, P _R
			0
			General Terrain:
			Rolling
			Grade % Length
			mi
			Up/Down %
Calculate Flow Adjustments			
f _p	1.00	E _R	2.0
E _T	2.5	f _{HV} = 1/[1+P _T (E _T - 1) + P _R (E _R - 1)]	
Speed Inputs		Calc Speed Adj and FFS	
Lane Width	ft		
Rt-Side Lat. Clearance	ft	f _{LW}	mph
Number of Lanes, N	2	f _{LC}	mph
Total Ramp Density, TRD	ramps/mi	TRD Adjustment	mph
FFS (measured)	70.0	FFS	70.0
Base free-flow Speed, BFFS	mph		
LOS and Performance Measures		Design (N)	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v _p = (V or DDHV) / (PHF x N x f _{HV} x f _p)		Design LOS	
1586	pc/h/ln	v _p = (V or DDHV) / (PHF x N x f _{HV} x f _p)	
S	68.3	pc/h/ln	
D = v _p / S	23.2	S	
LOS	C	mph	
		D = v _p / S	
		pc/mi/ln	
		Required Number of Lanes, N	
Glossary		Factor Location	
N - Number of lanes	S - Speed	E _R - Exhibits 11-10, 11-12	f _{LW} - Exhibit 11-8
V - Hourly volume	D - Density	E _T - Exhibits 11-10, 11-11, 11-13	f _{LC} - Exhibit 11-9
v _p - Flow rate	FFS - Free-flow speed	f _p - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v _p - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

BASIC FREEWAY SEGMENTS WORKSHEET			
General Information		Site Information	
Analyst	BAR	Highway/Direction of Travel	I-26
Agency or Company	HNTB North Carolina, PC	From/To	I 40 to NC 191
Date Performed	7/12/2013	Jurisdiction	Buncombe County
Analysis Time Period	Peak	Analysis Year	2015 No Build
Project Description <i>STIP I4400/I-4700 - I-26 Widening</i>			
<input checked="" type="checkbox"/> Oper.(LOS)		<input type="checkbox"/> Des.(N)	
<input type="checkbox"/> Planning Data			
Flow Inputs			
Volume, V	4493	veh/h	Peak-Hour Factor, PHF
AADT		veh/day	0.90
Peak-Hr Prop. of AADT, K			%Trucks and Buses, P _T
Peak-Hr Direction Prop, D			6
DDHV = AADT x K x D		veh/h	%RVs, P _R
			0
			General Terrain:
			Rolling
			Grade % Length
			mi
			Up/Down %
Calculate Flow Adjustments			
f _p	1.00	E _R	2.0
E _T	2.5	f _{HV} = 1/[1+P _T (E _T - 1) + P _R (E _R - 1)]	
Speed Inputs			
Lane Width		Calc Speed Adj and FFS	
Rt-Side Lat. Clearance	ft	f _{LW}	mph
Number of Lanes, N	2	f _{LC}	mph
Total Ramp Density, TRD	ramps/mi	TRD Adjustment	mph
FFS (measured)	65.0	FFS	65.0
Base free-flow Speed, BFFS	mph		mph
LOS and Performance Measures		Design (N)	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v _p = (V or DDHV) / (PHF x N x f _{HV} x f _p)	2721 pc/h/ln	Design LOS	
S	40.3 mph	v _p = (V or DDHV) / (PHF x N x f _{HV} x f _p)	pc/h/ln
D = v _p / S	67.6 pc/mi/ln	S	mph
LOS	F	D = v _p / S	pc/mi/ln
		Required Number of Lanes, N	
Glossary		Factor Location	
N - Number of lanes	S - Speed	E _R - Exhibits 11-10, 11-12	f _{LW} - Exhibit 11-8
V - Hourly volume	D - Density	E _T - Exhibits 11-10, 11-11, 11-13	f _{LC} - Exhibit 11-9
v _p - Flow rate	FFS - Free-flow speed	f _p - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v _p - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

BASIC FREEWAY SEGMENTS WORKSHEET			
General Information		Site Information	
Analyst	BAR	Highway/Direction of Travel	I-26
Agency or Company	HNTB North Carolina, PC	From/To	NC 146 to NC 280
Date Performed	7/12/2013	Jurisdiction	Buncombe County
Analysis Time Period	Peak	Analysis Year	2015 No Build
Project Description <i>STIP I4400/I-4700 - I-26 Widening</i>			
<input checked="" type="checkbox"/> Oper.(LOS)		<input type="checkbox"/> Des.(N)	
<input type="checkbox"/> Planning Data			
Flow Inputs			
Volume, V	3977	veh/h	Peak-Hour Factor, PHF
AADT		veh/day	0.90
Peak-Hr Prop. of AADT, K			%Trucks and Buses, P _T
Peak-Hr Direction Prop, D			5
DDHV = AADT x K x D		veh/h	%RVs, P _R
			0
			General Terrain:
			Rolling
			Grade % Length
			mi
			Up/Down %
Calculate Flow Adjustments			
f _p	1.00	E _R	2.0
E _T	2.5	f _{HV} = 1/[1+P _T (E _T - 1) + P _R (E _R - 1)]	0.930
Speed Inputs		Calc Speed Adj and FFS	
Lane Width	ft		
Rt-Side Lat. Clearance	ft	f _{LW}	mph
Number of Lanes, N	2	f _{LC}	mph
Total Ramp Density, TRD	ramps/mi	TRD Adjustment	mph
FFS (measured)	65.0	FFS	65.0
Base free-flow Speed, BFFS	mph		mph
LOS and Performance Measures		Design (N)	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v _p = (V or DDHV) / (PHF x N x f _{HV})		Design LOS	
2375	pc/h/ln	v _p = (V or DDHV) / (PHF x N x f _{HV})	
x f _p)		pc/h/ln	
S	51.5	x f _p)	
S	mph	S	mph
D = v _p / S	46.1	D = v _p / S	pc/mi/ln
46.1	pc/mi/ln	Required Number of Lanes, N	
LOS	F		
Glossary		Factor Location	
N - Number of lanes	S - Speed	E _R - Exhibits 11-10, 11-12	f _{LW} - Exhibit 11-8
V - Hourly volume	D - Density	E _T - Exhibits 11-10, 11-11, 11-13	f _{LC} - Exhibit 11-9
v _p - Flow rate	FFS - Free-flow speed	f _p - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v _p - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

BASIC FREEWAY SEGMENTS WORKSHEET			
General Information		Site Information	
Analyst	BAR	Highway/Direction of Travel I-26	
Agency or Company	HNTB North Carolina, PC	From/To	NC 280 to US 25
Date Performed	7/12/2013	Jurisdiction	Buncombe County
Analysis Time Period	Peak	Analysis Year	2015 No Build
Project Description STIP I4400/I-4700 - I-26 Widening			
<input checked="" type="checkbox"/> Oper.(LOS)		<input type="checkbox"/> Des.(N)	
<input type="checkbox"/> Planning Data			
Flow Inputs			
Volume, V	3252	veh/h	Peak-Hour Factor, PHF 0.90
AADT		veh/day	%Trucks and Buses, P _T 6
Peak-Hr Prop. of AADT, K			%RVs, P _R 0
Peak-Hr Direction Prop, D			General Terrain: Rolling
DDHV = AADT x K x D		veh/h	Grade % Length mi
			Up/Down %
Calculate Flow Adjustments			
f _p	1.00	E _R	2.0
E _T	2.5	f _{HV} = 1/[1+P _T (E _T - 1) + P _R (E _R - 1)] 0.917	
Speed Inputs		Calc Speed Adj and FFS	
Lane Width	ft		
Rt-Side Lat. Clearance	ft	f _{LW}	mph
Number of Lanes, N	2	f _{LC}	mph
Total Ramp Density, TRD	ramps/mi	TRD Adjustment	mph
FFS (measured)	65.0	FFS	65.0
Base free-flow Speed, BFFS	mph		mph
LOS and Performance Measures		Design (N)	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v _p = (V or DDHV) / (PHF x N x f _{HV})		Design LOS	
1969	pc/h/ln	v _p = (V or DDHV) / (PHF x N x f _{HV})	
x f _p)		pc/h/ln	
S	60.4	x f _p)	
S	mph	S	mph
D = v _p / S	32.6	D = v _p / S	pc/mi/ln
32.6	pc/mi/ln	Required Number of Lanes, N	
LOS	D		
Glossary		Factor Location	
N - Number of lanes	S - Speed	E _R - Exhibits 11-10, 11-12	f _{LW} - Exhibit 11-8
V - Hourly volume	D - Density	E _T - Exhibits 11-10, 11-11, 11-13	f _{LC} - Exhibit 11-9
v _p - Flow rate	FFS - Free-flow speed	f _p - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v _p - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

BASIC FREEWAY SEGMENTS WORKSHEET			
General Information		Site Information	
Analyst	BAR	Highway/Direction of Travel	I-26
Agency or Company	HNTB North Carolina, PC	From/To	US 25 to US 64
Date Performed	7/12/2013	Jurisdiction	Buncombe County
Analysis Time Period	Peak	Analysis Year	2015 No Build
Project Description <i>STIP I4400/I-4700 - I-26 Widening</i>			
<input checked="" type="checkbox"/> Oper.(LOS)		<input type="checkbox"/> Des.(N)	
<input type="checkbox"/> Planning Data			
Flow Inputs			
Volume, V	2967	veh/h	Peak-Hour Factor, PHF
AADT		veh/day	0.90
Peak-Hr Prop. of AADT, K			%Trucks and Buses, P _T
Peak-Hr Direction Prop, D			6
DDHV = AADT x K x D		veh/h	%RVs, P _R
			0
			General Terrain:
			Rolling
			Grade % Length
			mi
			Up/Down %
Calculate Flow Adjustments			
f _p	1.00	E _R	2.0
E _T	2.5	f _{HV} = 1/[1+P _T (E _T - 1) + P _R (E _R - 1)]	0.917
Speed Inputs		Calc Speed Adj and FFS	
Lane Width	ft		
Rt-Side Lat. Clearance	ft	f _{LW}	mph
Number of Lanes, N	2	f _{LC}	mph
Total Ramp Density, TRD	ramps/mi	TRD Adjustment	mph
FFS (measured)	70.0	FFS	70.0
Base free-flow Speed, BFFS	mph		mph
LOS and Performance Measures		Design (N)	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v _p = (V or DDHV) / (PHF x N x f _{HV} x f _p)		Design LOS	
1797	pc/h/ln	v _p = (V or DDHV) / (PHF x N x f _{HV} x f _p)	
S	65.9	mph	pc/h/ln
D = v _p / S	27.3	pc/mi/ln	mph
LOS	D	D = v _p / S	
		pc/mi/ln	
		Required Number of Lanes, N	
Glossary		Factor Location	
N - Number of lanes	S - Speed	E _R - Exhibits 11-10, 11-12	f _{LW} - Exhibit 11-8
V - Hourly volume	D - Density	E _T - Exhibits 11-10, 11-11, 11-13	f _{LC} - Exhibit 11-9
v _p - Flow rate	FFS - Free-flow speed	f _p - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v _p - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

BASIC FREEWAY SEGMENTS WORKSHEET			
General Information		Site Information	
Analyst	BAR	Highway/Direction of Travel	I-26
Agency or Company	HNTB North Carolina, PC	From/To	US 64 to Upward Road
Date Performed	7/12/2013	Jurisdiction	Buncombe County
Analysis Time Period	Peak	Analysis Year	2015 No Build
Project Description <i>STIP I4400/I-4700 - I-26 Widening</i>			
<input checked="" type="checkbox"/> Oper.(LOS)		<input type="checkbox"/> Des.(N)	
<input type="checkbox"/> Planning Data			
Flow Inputs			
Volume, V	2795	veh/h	Peak-Hour Factor, PHF
AADT		veh/day	0.90
Peak-Hr Prop. of AADT, K			%Trucks and Buses, P _T
Peak-Hr Direction Prop, D			6
DDHV = AADT x K x D		veh/h	%RVs, P _R
			0
			General Terrain:
			Rolling
			Grade % Length
			mi
			Up/Down %
Calculate Flow Adjustments			
f _p	1.00	E _R	2.0
E _T	2.5	f _{HV} = 1/[1+P _T (E _T - 1) + P _R (E _R - 1)]	
Speed Inputs		Calc Speed Adj and FFS	
Lane Width	ft		
Rt-Side Lat. Clearance	ft	f _{LW}	mph
Number of Lanes, N	2	f _{LC}	mph
Total Ramp Density, TRD	ramps/mi	TRD Adjustment	mph
FFS (measured)	70.0	FFS	70.0
Base free-flow Speed, BFFS	mph		
LOS and Performance Measures		Design (N)	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v _p = (V or DDHV) / (PHF x N x f _{HV} x f _p)		Design LOS	
1693	pc/h/ln	v _p = (V or DDHV) / (PHF x N x f _{HV} x f _p)	
S	67.2	mph	pc/h/ln
D = v _p / S	25.2	pc/mi/ln	S
LOS	C	D = v _p / S	
		Required Number of Lanes, N	
Glossary		Factor Location	
N - Number of lanes	S - Speed	E _R - Exhibits 11-10, 11-12	f _{LW} - Exhibit 11-8
V - Hourly volume	D - Density	E _T - Exhibits 11-10, 11-11, 11-13	f _{LC} - Exhibit 11-9
v _p - Flow rate	FFS - Free-flow speed	f _p - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v _p - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

BASIC FREEWAY SEGMENTS WORKSHEET			
General Information		Site Information	
Analyst	BAR	Highway/Direction of Travel	I-26
Agency or Company	HNTB North Carolina, PC	From/To	I 40 to NC 191
Date Performed	7/12/2013	Jurisdiction	Buncombe County
Analysis Time Period	Peak	Analysis Year	2020 No Build
Project Description <i>STIP I4400/I-4700 - I-26 Widening</i>			
<input checked="" type="checkbox"/> Oper.(LOS)		<input type="checkbox"/> Des.(N)	
<input type="checkbox"/> Planning Data			
Flow Inputs			
Volume, V	4579	veh/h	Peak-Hour Factor, PHF
AADT		veh/day	0.90
Peak-Hr Prop. of AADT, K			%Trucks and Buses, P _T
Peak-Hr Direction Prop, D			6
DDHV = AADT x K x D		veh/h	%RVs, P _R
			0
			General Terrain:
			Rolling
			Grade % Length
			mi
			Up/Down %
Calculate Flow Adjustments			
f _p	1.00	E _R	2.0
E _T	2.5	f _{HV} = 1/[1+P _T (E _T - 1) + P _R (E _R - 1)]	
Speed Inputs		Calc Speed Adj and FFS	
Lane Width	ft		
Rt-Side Lat. Clearance	ft	f _{LW}	mph
Number of Lanes, N	2	f _{LC}	mph
Total Ramp Density, TRD	ramps/mi	TRD Adjustment	mph
FFS (measured)	65.0	FFS	65.0
Base free-flow Speed, BFFS	mph		mph
LOS and Performance Measures		Design (N)	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v _p = (V or DDHV) / (PHF x N x f _{HV})		Design LOS	
2773	pc/h/ln	v _p = (V or DDHV) / (PHF x N x f _{HV})	
x f _p)		pc/h/ln	
S	38.3	x f _p)	
S	mph	S	mph
D = v _p / S	72.5	D = v _p / S	pc/mi/ln
72.5	pc/mi/ln	Required Number of Lanes, N	
LOS	F		
Glossary		Factor Location	
N - Number of lanes	S - Speed	E _R - Exhibits 11-10, 11-12	f _{LW} - Exhibit 11-8
V - Hourly volume	D - Density	E _T - Exhibits 11-10, 11-11, 11-13	f _{LC} - Exhibit 11-9
v _p - Flow rate	FFS - Free-flow speed	f _p - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v _p - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

BASIC FREEWAY SEGMENTS WORKSHEET			
General Information		Site Information	
Analyst	BAR	Highway/Direction of Travel	I-26
Agency or Company	HNTB North Carolina, PC	From/To	NC 146 to NC 280
Date Performed	7/12/2013	Jurisdiction	Buncombe County
Analysis Time Period	Peak	Analysis Year	2020 No Build
Project Description STIP I4400/I-4700 - I-26 Widening			
<input checked="" type="checkbox"/> Oper.(LOS)		<input type="checkbox"/> Des.(N)	<input type="checkbox"/> Planning Data
Flow Inputs			
Volume, V	4088	veh/h	Peak-Hour Factor, PHF 0.90
AADT		veh/day	%Trucks and Buses, P _T 5
Peak-Hr Prop. of AADT, K			%RVs, P _R 0
Peak-Hr Direction Prop, D			General Terrain: Rolling
DDHV = AADT x K x D		veh/h	Grade % Length mi
			Up/Down %
Calculate Flow Adjustments			
f _p	1.00	E _R	2.0
E _T	2.5	f _{HV} = 1/[1+P _T (E _T - 1) + P _R (E _R - 1)]	0.930
Speed Inputs		Calc Speed Adj and FFS	
Lane Width		ft	
Rt-Side Lat. Clearance		ft	f _{LW} mph
Number of Lanes, N	2		f _{LC} mph
Total Ramp Density, TRD		ramps/mi	TRD Adjustment mph
FFS (measured)	65.0	mph	FFS 65.0 mph
Base free-flow Speed, BFFS		mph	
LOS and Performance Measures		Design (N)	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v _p = (V or DDHV) / (PHF x N x f _{HV} x f _p)	2441	pc/h/ln	
S	49.6	mph	v _p = (V or DDHV) / (PHF x N x f _{HV} x f _p) pc/h/ln
D = v _p / S	49.2	pc/mi/ln	S mph
LOS	F		D = v _p / S pc/mi/ln
			Required Number of Lanes, N
Glossary		Factor Location	
N - Number of lanes	S - Speed	E _R - Exhibits 11-10, 11-12	f _{LW} - Exhibit 11-8
V - Hourly volume	D - Density	E _T - Exhibits 11-10, 11-11, 11-13	f _{LC} - Exhibit 11-9
v _p - Flow rate	FFS - Free-flow speed	f _p - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v _p - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

BASIC FREEWAY SEGMENTS WORKSHEET			
General Information		Site Information	
Analyst	BAR	Highway/Direction of Travel I-26	
Agency or Company	HNTB North Carolina, PC	From/To	NC 280 to US 25
Date Performed	7/12/2013	Jurisdiction	Buncombe County
Analysis Time Period	Peak	Analysis Year	2020 No Build
Project Description STIP I4400/I-4700 - I-26 Widening			
<input checked="" type="checkbox"/> Oper.(LOS)		<input type="checkbox"/> Des.(N)	
<input type="checkbox"/> Planning Data			
Flow Inputs			
Volume, V	3475	veh/h	Peak-Hour Factor, PHF 0.90
AADT		veh/day	%Trucks and Buses, P _T 6
Peak-Hr Prop. of AADT, K			%RVs, P _R 0
Peak-Hr Direction Prop, D			General Terrain: Rolling
DDHV = AADT x K x D		veh/h	Grade % Length mi
			Up/Down %
Calculate Flow Adjustments			
f _p	1.00	E _R	2.0
E _T	2.5	f _{HV} = 1/[1+P _T (E _T - 1) + P _R (E _R - 1)] 0.917	
Speed Inputs		Calc Speed Adj and FFS	
Lane Width	ft		
Rt-Side Lat. Clearance	ft	f _{LW}	mph
Number of Lanes, N	2	f _{LC}	mph
Total Ramp Density, TRD	ramps/mi	TRD Adjustment	mph
FFS (measured)	65.0	FFS	65.0
Base free-flow Speed, BFFS	mph		mph
LOS and Performance Measures		Design (N)	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v _p = (V or DDHV) / (PHF x N x f _{HV} x f _p)	2104 pc/h/ln	Design LOS	
S	58.0 mph	v _p = (V or DDHV) / (PHF x N x f _{HV} x f _p)	pc/h/ln
D = v _p / S	36.3 pc/mi/ln	S	mph
LOS	E	D = v _p / S	pc/mi/ln
		Required Number of Lanes, N	
Glossary		Factor Location	
N - Number of lanes	S - Speed	E _R - Exhibits 11-10, 11-12	f _{LW} - Exhibit 11-8
V - Hourly volume	D - Density	E _T - Exhibits 11-10, 11-11, 11-13	f _{LC} - Exhibit 11-9
v _p - Flow rate	FFS - Free-flow speed	f _p - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v _p - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

BASIC FREEWAY SEGMENTS WORKSHEET			
General Information		Site Information	
Analyst	BAR	Highway/Direction of Travel	I-26
Agency or Company	HNTB North Carolina, PC	From/To	US 25 to US 64
Date Performed	7/12/2013	Jurisdiction	Buncombe County
Analysis Time Period	Peak	Analysis Year	2020 No Build
Project Description <i>STIP I4400/I-4700 - I-26 Widening</i>			
<input checked="" type="checkbox"/> Oper.(LOS)		<input type="checkbox"/> Des.(N)	
<input type="checkbox"/> Planning Data			
Flow Inputs			
Volume, V	3162	veh/h	Peak-Hour Factor, PHF
AADT		veh/day	0.90
Peak-Hr Prop. of AADT, K			%Trucks and Buses, P _T
Peak-Hr Direction Prop, D			6
DDHV = AADT x K x D		veh/h	%RVs, P _R
			0
			General Terrain:
			Rolling
			Grade % Length
			mi
			Up/Down %
Calculate Flow Adjustments			
f _p	1.00	E _R	2.0
E _T	2.5	f _{HV} = 1/[1+P _T (E _T - 1) + P _R (E _R - 1)]	0.917
Speed Inputs		Calc Speed Adj and FFS	
Lane Width	ft		
Rt-Side Lat. Clearance	ft	f _{LW}	mph
Number of Lanes, N	2	f _{LC}	mph
Total Ramp Density, TRD	ramps/mi	TRD Adjustment	mph
FFS (measured)	70.0	FFS	70.0
Base free-flow Speed, BFFS	mph		mph
LOS and Performance Measures		Design (N)	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v _p = (V or DDHV) / (PHF x N x f _{HV} x f _p)		Design LOS	
1915	pc/h/ln	v _p = (V or DDHV) / (PHF x N x f _{HV} x f _p)	
S	64.1	mph	pc/h/ln
D = v _p / S	29.9	pc/mi/ln	S
LOS	D		mph
			pc/mi/ln
			D = v _p / S
			Required Number of Lanes, N
Glossary		Factor Location	
N - Number of lanes	S - Speed	E _R - Exhibits 11-10, 11-12	f _{LW} - Exhibit 11-8
V - Hourly volume	D - Density	E _T - Exhibits 11-10, 11-11, 11-13	f _{LC} - Exhibit 11-9
v _p - Flow rate	FFS - Free-flow speed	f _p - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v _p - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

BASIC FREEWAY SEGMENTS WORKSHEET			
General Information		Site Information	
Analyst	BAR	Highway/Direction of Travel	I-26
Agency or Company	HNTB North Carolina, PC	From/To	US 64 to Upward Road
Date Performed	7/12/2013	Jurisdiction	Buncombe County
Analysis Time Period	Peak	Analysis Year	2020 No Build
Project Description <i>STIP I4400/I-4700 - I-26 Widening</i>			
<input checked="" type="checkbox"/> Oper.(LOS)		<input type="checkbox"/> Des.(N)	
<input type="checkbox"/> Planning Data			
Flow Inputs			
Volume, V	3015	veh/h	Peak-Hour Factor, PHF
AADT		veh/day	0.90
Peak-Hr Prop. of AADT, K			%Trucks and Buses, P _T
Peak-Hr Direction Prop, D			6
DDHV = AADT x K x D		veh/h	%RVs, P _R
			0
			General Terrain:
			Rolling
			Grade % Length
			mi
			Up/Down %
Calculate Flow Adjustments			
f _p	1.00	E _R	2.0
E _T	2.5	f _{HV} = 1/[1+P _T (E _T - 1) + P _R (E _R - 1)]	
Speed Inputs		Calc Speed Adj and FFS	
Lane Width	ft		
Rt-Side Lat. Clearance	ft	f _{LW}	mph
Number of Lanes, N	2	f _{LC}	mph
Total Ramp Density, TRD	ramps/mi	TRD Adjustment	mph
FFS (measured)	70.0	FFS	70.0
Base free-flow Speed, BFFS	mph		
LOS and Performance Measures		Design (N)	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v _p = (V or DDHV) / (PHF x N x f _{HV} x f _p)		Design LOS	
1826	pc/h/ln	v _p = (V or DDHV) / (PHF x N x f _{HV} x f _p)	
S	65.5	mph	pc/h/ln
D = v _p / S	27.9	pc/mi/ln	S
LOS	D	D = v _p / S	
		Required Number of Lanes, N	
Glossary		Factor Location	
N - Number of lanes	S - Speed	E _R - Exhibits 11-10, 11-12	f _{LW} - Exhibit 11-8
V - Hourly volume	D - Density	E _T - Exhibits 11-10, 11-11, 11-13	f _{LC} - Exhibit 11-9
v _p - Flow rate	FFS - Free-flow speed	f _p - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v _p - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

BASIC FREEWAY SEGMENTS WORKSHEET			
General Information		Site Information	
Analyst	BAR	Highway/Direction of Travel I-26	
Agency or Company	HNTB North Carolina, PC	From/To	I-40 to NC 191
Date Performed	7/12/2013	Jurisdiction	Buncombe County
Analysis Time Period	Peak	Analysis Year	2025 No Build
Project Description STIP I4400/I-4700 - I-26 Widening			
<input checked="" type="checkbox"/> Oper.(LOS)		<input type="checkbox"/> Des.(N)	
<input type="checkbox"/> Planning Data			
Flow Inputs			
Volume, V	4666	veh/h	Peak-Hour Factor, PHF 0.90
AADT		veh/day	%Trucks and Buses, P _T 6
Peak-Hr Prop. of AADT, K			%RVs, P _R 0
Peak-Hr Direction Prop, D			General Terrain: Rolling
DDHV = AADT x K x D		veh/h	Grade % Length mi
			Up/Down %
Calculate Flow Adjustments			
f _p	1.00	E _R	2.0
E _T	2.5	f _{HV} = 1/[1+P _T (E _T - 1) + P _R (E _R - 1)] 0.917	
Speed Inputs		Calc Speed Adj and FFS	
Lane Width	ft		
Rt-Side Lat. Clearance	ft	f _{LW}	mph
Number of Lanes, N	2	f _{LC}	mph
Total Ramp Density, TRD	ramps/mi	TRD Adjustment	mph
FFS (measured)	65.0	FFS	65.0
Base free-flow Speed, BFFS	mph		mph
LOS and Performance Measures		Design (N)	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v _p = (V or DDHV) / (PHF x N x f _{HV} x f _p)	2826	Design LOS	
S	36.2	v _p = (V or DDHV) / (PHF x N x f _{HV} x f _p)	pc/h/ln
D = v _p / S	78.1	S	mph
LOS	F	D = v _p / S	pc/mi/ln
		Required Number of Lanes, N	
Glossary		Factor Location	
N - Number of lanes	S - Speed	E _R - Exhibits 11-10, 11-12	f _{LW} - Exhibit 11-8
V - Hourly volume	D - Density	E _T - Exhibits 11-10, 11-11, 11-13	f _{LC} - Exhibit 11-9
v _p - Flow rate	FFS - Free-flow speed	f _p - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v _p - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

BASIC FREEWAY SEGMENTS WORKSHEET			
General Information		Site Information	
Analyst	BAR	Highway/Direction of Travel I-26	
Agency or Company	HNTB North Carolina, PC	From/To	NC 146 to NC 280
Date Performed	7/12/2013	Jurisdiction	Buncombe County
Analysis Time Period	Peak	Analysis Year	2025 No Build
Project Description STIP I4400/I-4700 - I-26 Widening			
<input checked="" type="checkbox"/> Oper.(LOS)		<input type="checkbox"/> Des.(N)	
<input type="checkbox"/> Planning Data			
Flow Inputs			
Volume, V	4198	veh/h	Peak-Hour Factor, PHF 0.90
AADT		veh/day	%Trucks and Buses, P _T 5
Peak-Hr Prop. of AADT, K			%RVs, P _R 0
Peak-Hr Direction Prop, D			General Terrain: Rolling
DDHV = AADT x K x D		veh/h	Grade % Length mi
			Up/Down %
Calculate Flow Adjustments			
f _p	1.00	E _R	2.0
E _T	2.5	f _{HV} = 1/[1+P _T (E _T - 1) + P _R (E _R - 1)] 0.930	
Speed Inputs		Calc Speed Adj and FFS	
Lane Width	ft		
Rt-Side Lat. Clearance	ft	f _{LW}	mph
Number of Lanes, N	2	f _{LC}	mph
Total Ramp Density, TRD	ramps/mi	TRD Adjustment	mph
FFS (measured)	65.0	FFS	65.0
Base free-flow Speed, BFFS	mph		mph
LOS and Performance Measures		Design (N)	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v _p = (V or DDHV) / (PHF x N x f _{HV} x f _p)		Design LOS	
2507	pc/h/ln	v _p = (V or DDHV) / (PHF x N x f _{HV} x f _p)	
S	47.6	mph	pc/h/ln
D = v _p / S	52.6	S	mph
LOS	F	D = v _p / S	pc/mi/ln
		Required Number of Lanes, N	
Glossary		Factor Location	
N - Number of lanes	S - Speed	E _R - Exhibits 11-10, 11-12	f _{LW} - Exhibit 11-8
V - Hourly volume	D - Density	E _T - Exhibits 11-10, 11-11, 11-13	f _{LC} - Exhibit 11-9
v _p - Flow rate	FFS - Free-flow speed	f _p - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v _p - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

BASIC FREEWAY SEGMENTS WORKSHEET			
General Information		Site Information	
Analyst	BAR	Highway/Direction of Travel I-26	
Agency or Company	HNTB North Carolina, PC	From/To	NC 280 to US 25
Date Performed	7/12/2013	Jurisdiction	Buncombe County
Analysis Time Period	Peak	Analysis Year	2025 No Build
Project Description STIP I4400/I-4700 - I-26 Widening			
<input checked="" type="checkbox"/> Oper.(LOS)		<input type="checkbox"/> Des.(N)	
<input type="checkbox"/> Planning Data			
Flow Inputs			
Volume, V	3698	veh/h	Peak-Hour Factor, PHF 0.90
AADT		veh/day	%Trucks and Buses, P _T 6
Peak-Hr Prop. of AADT, K			%RVs, P _R 0
Peak-Hr Direction Prop, D			General Terrain: Rolling
DDHV = AADT x K x D		veh/h	Grade % Length mi
			Up/Down %
Calculate Flow Adjustments			
f _p	1.00	E _R	2.0
E _T	2.5	f _{HV} = 1/[1+P _T (E _T - 1) + P _R (E _R - 1)] 0.917	
Speed Inputs		Calc Speed Adj and FFS	
Lane Width	ft		
Rt-Side Lat. Clearance	ft	f _{LW}	mph
Number of Lanes, N	2	f _{LC}	mph
Total Ramp Density, TRD	ramps/mi	TRD Adjustment	mph
FFS (measured)	65.0	FFS	65.0
Base free-flow Speed, BFFS	mph		mph
LOS and Performance Measures		Design (N)	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v _p = (V or DDHV) / (PHF x N x f _{HV} x f _p)	2239	pc/h/ln	Design LOS
S	55.0	mph	v _p = (V or DDHV) / (PHF x N x f _{HV} x f _p)
D = v _p / S	40.7	pc/mi/ln	S
LOS	E		D = v _p / S
			Required Number of Lanes, N
Glossary		Factor Location	
N - Number of lanes	S - Speed	E _R - Exhibits 11-10, 11-12	f _{LW} - Exhibit 11-8
V - Hourly volume	D - Density	E _T - Exhibits 11-10, 11-11, 11-13	f _{LC} - Exhibit 11-9
v _p - Flow rate	FFS - Free-flow speed	f _p - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v _p - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

BASIC FREEWAY SEGMENTS WORKSHEET			
General Information		Site Information	
Analyst	BAR	Highway/Direction of Travel	I-26
Agency or Company	HNTB North Carolina, PC	From/To	US 25 to US 64
Date Performed	7/12/2013	Jurisdiction	Buncombe County
Analysis Time Period	Peak	Analysis Year	2025 No Build
Project Description <i>STIP I4400/I-4700 - I-26 Widening</i>			
<input checked="" type="checkbox"/> Oper.(LOS)		<input type="checkbox"/> Des.(N)	
<input type="checkbox"/> Planning Data			
Flow Inputs			
Volume, V	3358	veh/h	Peak-Hour Factor, PHF
AADT		veh/day	0.90
Peak-Hr Prop. of AADT, K			%Trucks and Buses, P _T
Peak-Hr Direction Prop, D			6
DDHV = AADT x K x D		veh/h	%RVs, P _R
			0
			General Terrain:
			Rolling
			Grade % Length
			mi
			Up/Down %
Calculate Flow Adjustments			
f _p	1.00	E _R	2.0
E _T	2.5	f _{HV} = 1/[1+P _T (E _T - 1) + P _R (E _R - 1)]	
Speed Inputs		Calc Speed Adj and FFS	
Lane Width	ft		
Rt-Side Lat. Clearance	ft	f _{LW}	mph
Number of Lanes, N	2	f _{LC}	mph
Total Ramp Density, TRD	ramps/mi	TRD Adjustment	mph
FFS (measured)	70.0	FFS	70.0
Base free-flow Speed, BFFS	mph		
LOS and Performance Measures		Design (N)	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v _p = (V or DDHV) / (PHF x N x f _{HV} x f _p)		Design LOS	
2033	pc/h/ln	v _p = (V or DDHV) / (PHF x N x f _{HV} x f _p)	
S	62.0	S	mph
D = v _p / S	32.8	D = v _p / S	pc/mi/ln
LOS	D	Required Number of Lanes, N	
Glossary		Factor Location	
N - Number of lanes	S - Speed	E _R - Exhibits 11-10, 11-12	f _{LW} - Exhibit 11-8
V - Hourly volume	D - Density	E _T - Exhibits 11-10, 11-11, 11-13	f _{LC} - Exhibit 11-9
v _p - Flow rate	FFS - Free-flow speed	f _p - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v _p - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

BASIC FREEWAY SEGMENTS WORKSHEET			
General Information		Site Information	
Analyst	BAR	Highway/Direction of Travel	I-26
Agency or Company	HNTB North Carolina, PC	From/To	US 64 to Upward Road
Date Performed	7/12/2013	Jurisdiction	Buncombe County
Analysis Time Period	Peak	Analysis Year	2025 No Build
Project Description <i>STIP I4400/I-4700 - I-26 Widening</i>			
<input checked="" type="checkbox"/> Oper.(LOS)		<input type="checkbox"/> Des.(N)	
<input type="checkbox"/> Planning Data			
Flow Inputs			
Volume, V	3235	veh/h	Peak-Hour Factor, PHF
AADT		veh/day	0.90
Peak-Hr Prop. of AADT, K			%Trucks and Buses, P _T
Peak-Hr Direction Prop, D			6
DDHV = AADT x K x D		veh/h	%RVs, P _R
			0
			General Terrain:
			Rolling
			Grade % Length
			mi
			Up/Down %
Calculate Flow Adjustments			
f _p	1.00	E _R	2.0
E _T	2.5	f _{HV} = 1/[1+P _T (E _T - 1) + P _R (E _R - 1)]	0.917
Speed Inputs		Calc Speed Adj and FFS	
Lane Width	ft		
Rt-Side Lat. Clearance	ft	f _{LW}	mph
Number of Lanes, N	2	f _{LC}	mph
Total Ramp Density, TRD	ramps/mi	TRD Adjustment	mph
FFS (measured)	70.0	FFS	70.0
Base free-flow Speed, BFFS	mph		mph
LOS and Performance Measures		Design (N)	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v _p = (V or DDHV) / (PHF x N x f _{HV} x f _p)		Design LOS	
1959	pc/h/ln	v _p = (V or DDHV) / (PHF x N x f _{HV} x f _p)	
S	63.3	mph	pc/h/ln
D = v _p / S	30.9	pc/mi/ln	S
LOS	D	D = v _p / S	pc/mi/ln
		Required Number of Lanes, N	
Glossary		Factor Location	
N - Number of lanes	S - Speed	E _R - Exhibits 11-10, 11-12	f _{LW} - Exhibit 11-8
V - Hourly volume	D - Density	E _T - Exhibits 11-10, 11-11, 11-13	f _{LC} - Exhibit 11-9
v _p - Flow rate	FFS - Free-flow speed	f _p - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v _p - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

BASIC FREEWAY SEGMENTS WORKSHEET			
General Information		Site Information	
Analyst	BAR	Highway/Direction of Travel	I-26
Agency or Company	HNTB North Carolina, PC	From/To	I 40 to NC 191
Date Performed	7/12/2013	Jurisdiction	Buncombe County
Analysis Time Period	Peak	Analysis Year	2030 No Build
Project Description <i>STIP I4400/I-4700 - I-26 Widening</i>			
<input checked="" type="checkbox"/> Oper.(LOS)		<input type="checkbox"/> Des.(N)	
<input type="checkbox"/> Planning Data			
Flow Inputs			
Volume, V	4753	veh/h	Peak-Hour Factor, PHF
AADT		veh/day	0.90
Peak-Hr Prop. of AADT, K			%Trucks and Buses, P _T
Peak-Hr Direction Prop, D			6
DDHV = AADT x K x D		veh/h	%RVs, P _R
			0
			General Terrain:
			Rolling
			Grade % Length
			mi
			Up/Down %
Calculate Flow Adjustments			
f _p	1.00	E _R	2.0
E _T	2.5	f _{HV} = 1/[1+P _T (E _T - 1) + P _R (E _R - 1)]	
Speed Inputs		Calc Speed Adj and FFS	
Lane Width	ft		
Rt-Side Lat. Clearance	ft	f _{LW}	mph
Number of Lanes, N	2	f _{LC}	mph
Total Ramp Density, TRD	ramps/mi	TRD Adjustment	mph
FFS (measured)	65.0	FFS	65.0
Base free-flow Speed, BFFS	mph		mph
LOS and Performance Measures		Design (N)	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v _p = (V or DDHV) / (PHF x N x f _{HV})		Design LOS	
2878	pc/h/ln	v _p = (V or DDHV) / (PHF x N x f _{HV})	
x f _p)		pc/h/ln	
S	34.0	x f _p)	
S	mph	S	mph
D = v _p / S	84.6	D = v _p / S	pc/mi/ln
84.6	pc/mi/ln	Required Number of Lanes, N	
LOS	F		
Glossary		Factor Location	
N - Number of lanes	S - Speed	E _R - Exhibits 11-10, 11-12	f _{LW} - Exhibit 11-8
V - Hourly volume	D - Density	E _T - Exhibits 11-10, 11-11, 11-13	f _{LC} - Exhibit 11-9
v _p - Flow rate	FFS - Free-flow speed	f _p - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v _p - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

BASIC FREEWAY SEGMENTS WORKSHEET			
General Information		Site Information	
Analyst	BAR	Highway/Direction of Travel	I-26
Agency or Company	HNTB North Carolina, PC	From/To	NC 146 to NC 280
Date Performed	7/12/2013	Jurisdiction	Buncombe County
Analysis Time Period	Peak	Analysis Year	2030 No Build
Project Description <i>STIP I4400/I-4700 - I-26 Widening</i>			
<input checked="" type="checkbox"/> Oper.(LOS)		<input type="checkbox"/> Des.(N)	<input type="checkbox"/> Planning Data
Flow Inputs			
Volume, V	4309	veh/h	Peak-Hour Factor, PHF
AADT		veh/day	0.90
Peak-Hr Prop. of AADT, K			%Trucks and Buses, P _T
Peak-Hr Direction Prop, D			5
DDHV = AADT x K x D		veh/h	%RVs, P _R
			0
			General Terrain:
			Rolling
			Grade % Length
			mi
			Up/Down %
Calculate Flow Adjustments			
f _p	1.00	E _R	2.0
E _T	2.5	f _{HV} = 1/[1+P _T (E _T - 1) + P _R (E _R - 1)]	0.930
Speed Inputs		Calc Speed Adj and FFS	
Lane Width	ft		
Rt-Side Lat. Clearance	ft	f _{LW}	mph
Number of Lanes, N	2	f _{LC}	mph
Total Ramp Density, TRD	ramps/mi	TRD Adjustment	mph
FFS (measured)	65.0	FFS	65.0
Base free-flow Speed, BFFS	mph		mph
LOS and Performance Measures		Design (N)	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v _p = (V or DDHV) / (PHF x N x f _{HV} x f _p)		Design LOS	
2573	pc/h/ln	v _p = (V or DDHV) / (PHF x N x f _{HV} x f _p)	
S	45.5	pc/h/ln	
D = v _p / S	56.6	S	
LOS	F	mph	
		D = v _p / S	
		pc/mi/ln	
		Required Number of Lanes, N	
Glossary		Factor Location	
N - Number of lanes	S - Speed	E _R - Exhibits 11-10, 11-12	f _{LW} - Exhibit 11-8
V - Hourly volume	D - Density	E _T - Exhibits 11-10, 11-11, 11-13	f _{LC} - Exhibit 11-9
v _p - Flow rate	FFS - Free-flow speed	f _p - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v _p - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

BASIC FREEWAY SEGMENTS WORKSHEET			
General Information		Site Information	
Analyst	BAR	Highway/Direction of Travel I-26	
Agency or Company	HNTB North Carolina, PC	From/To	NC 280 to US 25
Date Performed	7/12/2013	Jurisdiction	Buncombe County
Analysis Time Period	Peak	Analysis Year	2030 No Build
Project Description STIP I4400/I-4700 - I-26 Widening			
<input checked="" type="checkbox"/> Oper.(LOS)		<input type="checkbox"/> Des.(N)	
<input type="checkbox"/> Planning Data			
Flow Inputs			
Volume, V	3920	veh/h	Peak-Hour Factor, PHF 0.90
AADT		veh/day	%Trucks and Buses, P _T 6
Peak-Hr Prop. of AADT, K			%RVs, P _R 0
Peak-Hr Direction Prop, D			General Terrain: Rolling
DDHV = AADT x K x D		veh/h	Grade % Length mi
			Up/Down %
Calculate Flow Adjustments			
f _p	1.00	E _R	2.0
E _T	2.5	f _{HV} = 1/[1+P _T (E _T - 1) + P _R (E _R - 1)] 0.917	
Speed Inputs		Calc Speed Adj and FFS	
Lane Width	ft		
Rt-Side Lat. Clearance	ft	f _{LW}	mph
Number of Lanes, N	2	f _{LC}	mph
Total Ramp Density, TRD	ramps/mi	TRD Adjustment	mph
FFS (measured)	65.0	FFS	65.0
Base free-flow Speed, BFFS	mph		mph
LOS and Performance Measures		Design (N)	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v _p = (V or DDHV) / (PHF x N x f _{HV} x f _p)	2374	pc/h/ln	Design LOS
S	51.5	mph	v _p = (V or DDHV) / (PHF x N x f _{HV} x f _p)
D = v _p / S	46.1	pc/mi/ln	S
LOS	F		D = v _p / S
			Required Number of Lanes, N
Glossary		Factor Location	
N - Number of lanes	S - Speed	E _R - Exhibits 11-10, 11-12	f _{LW} - Exhibit 11-8
V - Hourly volume	D - Density	E _T - Exhibits 11-10, 11-11, 11-13	f _{LC} - Exhibit 11-9
v _p - Flow rate	FFS - Free-flow speed	f _p - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v _p - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

BASIC FREEWAY SEGMENTS WORKSHEET			
General Information		Site Information	
Analyst	BAR	Highway/Direction of Travel	I-26
Agency or Company	HNTB North Carolina, PC	From/To	US 25 to US 64
Date Performed	7/12/2013	Jurisdiction	Buncombe County
Analysis Time Period	Peak	Analysis Year	2030 No Build
Project Description <i>STIP I4400/I-4700 - I-26 Widening</i>			
<input checked="" type="checkbox"/> Oper.(LOS)		<input type="checkbox"/> Des.(N)	
<input type="checkbox"/> Planning Data			
Flow Inputs			
Volume, V	3554	veh/h	Peak-Hour Factor, PHF
AADT		veh/day	0.90
Peak-Hr Prop. of AADT, K			%Trucks and Buses, P _T
Peak-Hr Direction Prop, D			6
DDHV = AADT x K x D		veh/h	%RVs, P _R
			0
			General Terrain:
			Rolling
			Grade % Length
			mi
			Up/Down %
Calculate Flow Adjustments			
f _p	1.00	E _R	2.0
E _T	2.5	f _{HV} = 1/[1+P _T (E _T - 1) + P _R (E _R - 1)]	
Speed Inputs		Calc Speed Adj and FFS	
Lane Width	ft		
Rt-Side Lat. Clearance	ft	f _{LW}	mph
Number of Lanes, N	2	f _{LC}	mph
Total Ramp Density, TRD	ramps/mi	TRD Adjustment	mph
FFS (measured)	70.0	FFS	70.0
Base free-flow Speed, BFFS	mph		
LOS and Performance Measures		Design (N)	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v _p = (V or DDHV) / (PHF x N x f _{HV} x f _p)		Design LOS	
2152	pc/h/ln	v _p = (V or DDHV) / (PHF x N x f _{HV} x f _p)	
S	59.5	pc/h/ln	
D = v _p / S	36.2	S	
LOS	E	mph	
		D = v _p / S	
		pc/mi/ln	
		Required Number of Lanes, N	
Glossary		Factor Location	
N - Number of lanes	S - Speed	E _R - Exhibits 11-10, 11-12	f _{LW} - Exhibit 11-8
V - Hourly volume	D - Density	E _T - Exhibits 11-10, 11-11, 11-13	f _{LC} - Exhibit 11-9
v _p - Flow rate	FFS - Free-flow speed	f _p - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v _p - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

BASIC FREEWAY SEGMENTS WORKSHEET			
General Information		Site Information	
Analyst	BAR	Highway/Direction of Travel	I-26
Agency or Company	HNTB North Carolina, PC	From/To	US 64 to Upward Road
Date Performed	7/12/2013	Jurisdiction	Buncombe County
Analysis Time Period	Peak	Analysis Year	2030 No Build
Project Description <i>STIP I4400/I-4700 - I-26 Widening</i>			
<input checked="" type="checkbox"/> Oper.(LOS)		<input type="checkbox"/> Des.(N)	
<input type="checkbox"/> Planning Data			
Flow Inputs			
Volume, V	3454	veh/h	Peak-Hour Factor, PHF
AADT		veh/day	0.90
Peak-Hr Prop. of AADT, K			%Trucks and Buses, P _T
Peak-Hr Direction Prop, D			6
DDHV = AADT x K x D		veh/h	%RVs, P _R
			0
			General Terrain:
			Rolling
			Grade % Length
			mi
			Up/Down %
Calculate Flow Adjustments			
f _p	1.00	E _R	2.0
E _T	2.5	f _{HV} = 1/[1+P _T (E _T - 1) + P _R (E _R - 1)]	
Speed Inputs		Calc Speed Adj and FFS	
Lane Width	ft		
Rt-Side Lat. Clearance	ft	f _{LW}	mph
Number of Lanes, N	2	f _{LC}	mph
Total Ramp Density, TRD	ramps/mi	TRD Adjustment	mph
FFS (measured)	70.0	FFS	70.0
Base free-flow Speed, BFFS	mph		
LOS and Performance Measures		Design (N)	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v _p = (V or DDHV) / (PHF x N x f _{HV} x f _p)		Design LOS	
2092	pc/h/ln	v _p = (V or DDHV) / (PHF x N x f _{HV} x f _p)	
S	60.8	pc/h/ln	
D = v _p / S	34.4	S	
LOS	D	mph	
		D = v _p / S	
		pc/mi/ln	
		Required Number of Lanes, N	
Glossary		Factor Location	
N - Number of lanes	S - Speed	E _R - Exhibits 11-10, 11-12	f _{LW} - Exhibit 11-8
V - Hourly volume	D - Density	E _T - Exhibits 11-10, 11-11, 11-13	f _{LC} - Exhibit 11-9
v _p - Flow rate	FFS - Free-flow speed	f _p - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v _p - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

BASIC FREEWAY SEGMENTS WORKSHEET			
General Information		Site Information	
Analyst	BAR	Highway/Direction of Travel I-26	
Agency or Company	HNTB North Carolina, PC	From/To	I-40 to NC 191
Date Performed	7/12/2013	Jurisdiction	Buncombe County
Analysis Time Period	Peak	Analysis Year	2035 No Build
Project Description STIP I4400/I-4700 - I-26 Widening			
<input checked="" type="checkbox"/> Oper.(LOS)		<input type="checkbox"/> Des.(N)	
<input type="checkbox"/> Planning Data			
Flow Inputs			
Volume, V	4840	veh/h	Peak-Hour Factor, PHF 0.90
AADT		veh/day	%Trucks and Buses, P _T 6
Peak-Hr Prop. of AADT, K			%RVs, P _R 0
Peak-Hr Direction Prop, D			General Terrain: Rolling
DDHV = AADT x K x D		veh/h	Grade % Length mi
			Up/Down %
Calculate Flow Adjustments			
f _p	1.00	E _R	2.0
E _T	2.5	f _{HV} = 1/[1+P _T (E _T - 1) + P _R (E _R - 1)] 0.917	
Speed Inputs		Calc Speed Adj and FFS	
Lane Width	ft		
Rt-Side Lat. Clearance	ft	f _{LW}	mph
Number of Lanes, N	2	f _{LC}	mph
Total Ramp Density, TRD	ramps/mi	TRD Adjustment	mph
FFS (measured)	65.0	FFS	65.0
Base free-flow Speed, BFFS	mph		mph
LOS and Performance Measures		Design (N)	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v _p = (V or DDHV) / (PHF x N x f _{HV} x f _p)	2931 pc/h/ln	Design LOS	
S	31.8 mph	v _p = (V or DDHV) / (PHF x N x f _{HV} x f _p)	pc/h/ln
D = v _p / S	92.3 pc/mi/ln	S	mph
LOS	F	D = v _p / S	pc/mi/ln
		Required Number of Lanes, N	
Glossary		Factor Location	
N - Number of lanes	S - Speed	E _R - Exhibits 11-10, 11-12	f _{LW} - Exhibit 11-8
V - Hourly volume	D - Density	E _T - Exhibits 11-10, 11-11, 11-13	f _{LC} - Exhibit 11-9
v _p - Flow rate	FFS - Free-flow speed	f _p - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v _p - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

BASIC FREEWAY SEGMENTS WORKSHEET			
General Information		Site Information	
Analyst	BAR	Highway/Direction of Travel I-26	
Agency or Company	HNTB North Carolina, PC	From/To	NC 146 to NC 280
Date Performed	7/12/2013	Jurisdiction	Buncombe County
Analysis Time Period	Peak	Analysis Year	2035 No Build
Project Description STIP I4400/I-4700 - I-26 Widening			
<input checked="" type="checkbox"/> Oper.(LOS)		<input type="checkbox"/> Des.(N)	
<input type="checkbox"/> Planning Data			
Flow Inputs			
Volume, V	4420	veh/h	Peak-Hour Factor, PHF 0.90
AADT		veh/day	%Trucks and Buses, P _T 5
Peak-Hr Prop. of AADT, K			%RVs, P _R 0
Peak-Hr Direction Prop, D			General Terrain: Rolling
DDHV = AADT x K x D		veh/h	Grade % Length mi
			Up/Down %
Calculate Flow Adjustments			
f _p	1.00	E _R	2.0
E _T	2.5	f _{HV} = 1/[1+P _T (E _T - 1) + P _R (E _R - 1)] 0.930	
Speed Inputs		Calc Speed Adj and FFS	
Lane Width	ft		
Rt-Side Lat. Clearance	ft	f _{LW}	mph
Number of Lanes, N	2	f _{LC}	mph
Total Ramp Density, TRD	ramps/mi	TRD Adjustment	mph
FFS (measured)	65.0	FFS	65.0
Base free-flow Speed, BFFS	mph		mph
LOS and Performance Measures		Design (N)	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v _p = (V or DDHV) / (PHF x N x f _{HV} x f _p)	2640 pc/h/ln	Design LOS	
S	43.2 mph	v _p = (V or DDHV) / (PHF x N x f _{HV} x f _p)	pc/h/ln
D = v _p / S	61.1 pc/mi/ln	S	mph
LOS	F	D = v _p / S	pc/mi/ln
		Required Number of Lanes, N	
Glossary		Factor Location	
N - Number of lanes	S - Speed	E _R - Exhibits 11-10, 11-12	f _{LW} - Exhibit 11-8
V - Hourly volume	D - Density	E _T - Exhibits 11-10, 11-11, 11-13	f _{LC} - Exhibit 11-9
v _p - Flow rate	FFS - Free-flow speed	f _p - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v _p - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

BASIC FREEWAY SEGMENTS WORKSHEET			
General Information		Site Information	
Analyst	BAR	Highway/Direction of Travel I-26	
Agency or Company	HNTB North Carolina, PC	From/To	NC 280 to US 25
Date Performed	7/12/2013	Jurisdiction	Buncombe County
Analysis Time Period	Peak	Analysis Year	2035 No Build
Project Description STIP I4400/I-4700 - I-26 Widening			
<input checked="" type="checkbox"/> Oper.(LOS)		<input type="checkbox"/> Des.(N)	
<input type="checkbox"/> Planning Data			
Flow Inputs			
Volume, V	4143	veh/h	Peak-Hour Factor, PHF 0.90
AADT		veh/day	%Trucks and Buses, P _T 6
Peak-Hr Prop. of AADT, K			%RVs, P _R 0
Peak-Hr Direction Prop, D			General Terrain: Rolling
DDHV = AADT x K x D		veh/h	Grade % Length mi
			Up/Down %
Calculate Flow Adjustments			
f _p	1.00	E _R	2.0
E _T	2.5	f _{HV} = 1/[1+P _T (E _T - 1) + P _R (E _R - 1)] 0.917	
Speed Inputs		Calc Speed Adj and FFS	
Lane Width	ft		
Rt-Side Lat. Clearance	ft	f _{LW}	mph
Number of Lanes, N	2	f _{LC}	mph
Total Ramp Density, TRD	ramps/mi	TRD Adjustment	mph
FFS (measured)	65.0	FFS	65.0
Base free-flow Speed, BFFS	mph		
LOS and Performance Measures		Design (N)	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v _p = (V or DDHV) / (PHF x N x f _{HV} x f _p)	2509	pc/h/ln	
S	47.6	mph	v _p = (V or DDHV) / (PHF x N x f _{HV} x f _p)
D = v _p / S	52.8	pc/mi/ln	pc/h/ln
LOS	F		S
			mph
			D = v _p / S
			pc/mi/ln
			Required Number of Lanes, N
Glossary		Factor Location	
N - Number of lanes	S - Speed	E _R - Exhibits 11-10, 11-12	f _{LW} - Exhibit 11-8
V - Hourly volume	D - Density	E _T - Exhibits 11-10, 11-11, 11-13	f _{LC} - Exhibit 11-9
v _p - Flow rate	FFS - Free-flow speed	f _p - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v _p - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

BASIC FREEWAY SEGMENTS WORKSHEET			
General Information		Site Information	
Analyst	BAR	Highway/Direction of Travel	I-26
Agency or Company	HNTB North Carolina, PC	From/To	US 25 to US 64
Date Performed	7/12/2013	Jurisdiction	Buncombe County
Analysis Time Period	Peak	Analysis Year	2035 No Build
Project Description <i>STIP I4400/I-4700 - I-26 Widening</i>			
<input checked="" type="checkbox"/> Oper.(LOS)		<input type="checkbox"/> Des.(N)	
<input type="checkbox"/> Planning Data			
Flow Inputs			
Volume, V	3749	veh/h	Peak-Hour Factor, PHF
AADT		veh/day	0.90
Peak-Hr Prop. of AADT, K			%Trucks and Buses, P _T
Peak-Hr Direction Prop, D			6
DDHV = AADT x K x D		veh/h	%RVs, P _R
			0
			General Terrain:
			Rolling
			Grade % Length
			mi
			Up/Down %
Calculate Flow Adjustments			
f _p	1.00	E _R	2.0
E _T	2.5	f _{HV} = 1/[1+P _T (E _T - 1) + P _R (E _R - 1)]	
Speed Inputs		Calc Speed Adj and FFS	
Lane Width	ft		
Rt-Side Lat. Clearance	ft	f _{LW}	mph
Number of Lanes, N	2	f _{LC}	mph
Total Ramp Density, TRD	ramps/mi	TRD Adjustment	mph
FFS (measured)	70.0	FFS	70.0
Base free-flow Speed, BFFS	mph		
LOS and Performance Measures		Design (N)	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v _p = (V or DDHV) / (PHF x N x f _{HV} x f _p)		Design LOS	
2270	pc/h/ln	v _p = (V or DDHV) / (PHF x N x f _{HV} x f _p)	
S	56.7	mph	pc/h/ln
D = v _p / S	40.0	pc/mi/ln	S
LOS	E	D = v _p / S	
		pc/mi/ln	
		Required Number of Lanes, N	
Glossary		Factor Location	
N - Number of lanes	S - Speed	E _R - Exhibits 11-10, 11-12	f _{LW} - Exhibit 11-8
V - Hourly volume	D - Density	E _T - Exhibits 11-10, 11-11, 11-13	f _{LC} - Exhibit 11-9
v _p - Flow rate	FFS - Free-flow speed	f _p - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v _p - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

BASIC FREEWAY SEGMENTS WORKSHEET			
General Information		Site Information	
Analyst	BAR	Highway/Direction of Travel	I-26
Agency or Company	HNTB North Carolina, PC	From/To	US 64 to Upward Road
Date Performed	7/12/2013	Jurisdiction	Buncombe County
Analysis Time Period	Peak	Analysis Year	2035 No Build
Project Description <i>STIP I4400/I-4700 - I-26 Widening</i>			
<input checked="" type="checkbox"/> Oper.(LOS)		<input type="checkbox"/> Des.(N)	
<input type="checkbox"/> Planning Data			
Flow Inputs			
Volume, V	3674	veh/h	Peak-Hour Factor, PHF
AADT		veh/day	0.90
Peak-Hr Prop. of AADT, K			%Trucks and Buses, P _T
Peak-Hr Direction Prop, D			6
DDHV = AADT x K x D		veh/h	%RVs, P _R
			0
			General Terrain:
			Rolling
			Grade % Length
			mi
			Up/Down %
Calculate Flow Adjustments			
f _p	1.00	E _R	2.0
E _T	2.5	f _{HV} = 1/[1+P _T (E _T - 1) + P _R (E _R - 1)]	
Speed Inputs		Calc Speed Adj and FFS	
Lane Width	ft		
Rt-Side Lat. Clearance	ft	f _{LW}	mph
Number of Lanes, N	2	f _{LC}	mph
Total Ramp Density, TRD	ramps/mi	TRD Adjustment	mph
FFS (measured)	70.0	FFS	70.0
Base free-flow Speed, BFFS	mph		mph
LOS and Performance Measures		Design (N)	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v _p = (V or DDHV) / (PHF x N x f _{HV} x f _p)		Design LOS	
2225	pc/h/ln	v _p = (V or DDHV) / (PHF x N x f _{HV} x f _p)	
S	57.8	mph	pc/h/ln
D = v _p / S	38.5	pc/mi/ln	S
LOS	E	D = v _p / S	
		pc/mi/ln	
		Required Number of Lanes, N	
Glossary		Factor Location	
N - Number of lanes	S - Speed	E _R - Exhibits 11-10, 11-12	f _{LW} - Exhibit 11-8
V - Hourly volume	D - Density	E _T - Exhibits 11-10, 11-11, 11-13	f _{LC} - Exhibit 11-9
v _p - Flow rate	FFS - Free-flow speed	f _p - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v _p - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

BASIC FREEWAY SEGMENTS WORKSHEET			
General Information		Site Information	
Analyst	BAR	Highway/Direction of Travel	I-26
Agency or Company	HNTB North Carolina, PC	From/To	I 40 to NC 191
Date Performed	7/12/2013	Jurisdiction	Buncombe County
Analysis Time Period	Peak	Analysis Year	2040 No Build
Project Description <i>STIP I4400/I-4700 - I-26 Widening</i>			
<input checked="" type="checkbox"/> Oper.(LOS)		<input type="checkbox"/> Des.(N)	
<input type="checkbox"/> Planning Data			
Flow Inputs			
Volume, V	4927	veh/h	Peak-Hour Factor, PHF
AADT		veh/day	0.90
Peak-Hr Prop. of AADT, K			%Trucks and Buses, P _T
Peak-Hr Direction Prop, D			6
DDHV = AADT x K x D		veh/h	%RVs, P _R
			0
			General Terrain:
			Rolling
			Grade % Length
			mi
			Up/Down %
Calculate Flow Adjustments			
f _p	1.00	E _R	2.0
E _T	2.5	f _{HV} = 1/[1+P _T (E _T - 1) + P _R (E _R - 1)]	
Speed Inputs		Calc Speed Adj and FFS	
Lane Width	ft		
Rt-Side Lat. Clearance	ft	f _{LW}	mph
Number of Lanes, N	2	f _{LC}	mph
Total Ramp Density, TRD	ramps/mi	TRD Adjustment	mph
FFS (measured)	65.0	FFS	65.0
Base free-flow Speed, BFFS	mph		mph
LOS and Performance Measures		Design (N)	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v _p = (V or DDHV) / (PHF x N x f _{HV})		Design LOS	
x f _p)	2984	v _p = (V or DDHV) / (PHF x N x f _{HV})	pc/h/ln
S	29.4	x f _p)	pc/h/ln
D = v _p / S	101.4	S	mph
LOS	F	D = v _p / S	pc/mi/ln
		Required Number of Lanes, N	
Glossary		Factor Location	
N - Number of lanes	S - Speed	E _R - Exhibits 11-10, 11-12	f _{LW} - Exhibit 11-8
V - Hourly volume	D - Density	E _T - Exhibits 11-10, 11-11, 11-13	f _{LC} - Exhibit 11-9
v _p - Flow rate	FFS - Free-flow speed	f _p - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v _p - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

BASIC FREEWAY SEGMENTS WORKSHEET			
General Information		Site Information	
Analyst	BAR	Highway/Direction of Travel I-26	
Agency or Company	HNTB North Carolina, PC	From/To	NC 146 to NC 280
Date Performed	7/12/2013	Jurisdiction	Buncombe County
Analysis Time Period	Peak	Analysis Year	2040 No Build
Project Description STIP I4400/I-4700 - I-26 Widening			
<input checked="" type="checkbox"/> Oper.(LOS)		<input type="checkbox"/> Des.(N)	
<input type="checkbox"/> Planning Data			
Flow Inputs			
Volume, V	4531	veh/h	Peak-Hour Factor, PHF 0.90
AADT		veh/day	%Trucks and Buses, P _T 5
Peak-Hr Prop. of AADT, K			%RVs, P _R 0
Peak-Hr Direction Prop, D			General Terrain: Rolling
DDHV = AADT x K x D		veh/h	Grade % Length mi
			Up/Down %
Calculate Flow Adjustments			
f _p	1.00	E _R	2.0
E _T	2.5	f _{HV} = 1/[1+P _T (E _T - 1) + P _R (E _R - 1)] 0.930	
Speed Inputs		Calc Speed Adj and FFS	
Lane Width	ft		
Rt-Side Lat. Clearance	ft	f _{LW}	mph
Number of Lanes, N	2	f _{LC}	mph
Total Ramp Density, TRD	ramps/mi	TRD Adjustment	mph
FFS (measured)	65.0	FFS	65.0
Base free-flow Speed, BFFS	mph		mph
LOS and Performance Measures		Design (N)	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v _p = (V or DDHV) / (PHF x N x f _{HV})		Design LOS	
2706	pc/h/ln	v _p = (V or DDHV) / (PHF x N x f _{HV})	
x f _p)		pc/h/ln	
S	40.8	x f _p)	
S	mph	S	mph
D = v _p / S	66.3	D = v _p / S	pc/mi/ln
66.3	pc/mi/ln	Required Number of Lanes, N	
LOS	F		
Glossary		Factor Location	
N - Number of lanes	S - Speed	E _R - Exhibits 11-10, 11-12	f _{LW} - Exhibit 11-8
V - Hourly volume	D - Density	E _T - Exhibits 11-10, 11-11, 11-13	f _{LC} - Exhibit 11-9
v _p - Flow rate	FFS - Free-flow speed	f _p - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v _p - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

BASIC FREEWAY SEGMENTS WORKSHEET			
General Information		Site Information	
Analyst	BAR	Highway/Direction of Travel I-26	
Agency or Company	HNTB North Carolina, PC	From/To	NC 280 to US 25
Date Performed	7/12/2013	Jurisdiction	Buncombe County
Analysis Time Period	Peak	Analysis Year	2040 No Build
Project Description STIP I4400/I-4700 - I-26 Widening			
<input checked="" type="checkbox"/> Oper.(LOS)		<input type="checkbox"/> Des.(N)	
<input type="checkbox"/> Planning Data			
Flow Inputs			
Volume, V	4366	veh/h	Peak-Hour Factor, PHF 0.90
AADT		veh/day	%Trucks and Buses, P _T 6
Peak-Hr Prop. of AADT, K			%RVs, P _R 0
Peak-Hr Direction Prop, D			General Terrain: Rolling
DDHV = AADT x K x D		veh/h	Grade % Length mi
			Up/Down %
Calculate Flow Adjustments			
f _p	1.00	E _R	2.0
E _T	2.5	f _{HV} = 1/[1+P _T (E _T - 1) + P _R (E _R - 1)] 0.917	
Speed Inputs		Calc Speed Adj and FFS	
Lane Width	ft		
Rt-Side Lat. Clearance	ft	f _{LW}	mph
Number of Lanes, N	2	f _{LC}	mph
Total Ramp Density, TRD	ramps/mi	TRD Adjustment	mph
FFS (measured)	65.0	FFS	65.0
Base free-flow Speed, BFFS	mph		mph
LOS and Performance Measures		Design (N)	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v _p = (V or DDHV) / (PHF x N x f _{HV} x f _p)	2644	Design LOS	
S	43.1	v _p = (V or DDHV) / (PHF x N x f _{HV} x f _p)	pc/h/ln
D = v _p / S	61.4	S	mph
LOS	F	D = v _p / S	pc/mi/ln
		Required Number of Lanes, N	
Glossary		Factor Location	
N - Number of lanes	S - Speed	E _R - Exhibits 11-10, 11-12	f _{LW} - Exhibit 11-8
V - Hourly volume	D - Density	E _T - Exhibits 11-10, 11-11, 11-13	f _{LC} - Exhibit 11-9
v _p - Flow rate	FFS - Free-flow speed	f _p - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v _p - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

BASIC FREEWAY SEGMENTS WORKSHEET			
General Information		Site Information	
Analyst	BAR	Highway/Direction of Travel	I-26
Agency or Company	HNTB North Carolina, PC	From/To	US 25 to US 64
Date Performed	7/12/2013	Jurisdiction	Buncombe County
Analysis Time Period	Peak	Analysis Year	2040 No Build
Project Description STIP I4400/I-4700 - I-26 Widening			
<input checked="" type="checkbox"/> Oper.(LOS)		<input type="checkbox"/> Des.(N)	<input type="checkbox"/> Planning Data
Flow Inputs			
Volume, V	3945	veh/h	Peak-Hour Factor, PHF 0.90
AADT		veh/day	%Trucks and Buses, P _T 6
Peak-Hr Prop. of AADT, K			%RVs, P _R 0
Peak-Hr Direction Prop, D			General Terrain: Rolling
DDHV = AADT x K x D		veh/h	Grade % Length mi
			Up/Down %
Calculate Flow Adjustments			
f _p	1.00	E _R	2.0
E _T	2.5	f _{HV} = 1/[1+P _T (E _T - 1) + P _R (E _R - 1)]	0.917
Speed Inputs		Calc Speed Adj and FFS	
Lane Width		ft	
Rt-Side Lat. Clearance		ft	f _{LW} mph
Number of Lanes, N	2		f _{LC} mph
Total Ramp Density, TRD		ramps/mi	TRD Adjustment mph
FFS (measured)	70.0	mph	FFS 70.0 mph
Base free-flow Speed, BFFS		mph	
LOS and Performance Measures		Design (N)	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v _p = (V or DDHV) / (PHF x N x f _{HV} x f _p)	2389	pc/h/ln	v _p = (V or DDHV) / (PHF x N x f _{HV} x f _p)
S	53.6	mph	S
D = v _p / S	44.6	pc/mi/ln	D = v _p / S
LOS	E		Required Number of Lanes, N
Glossary		Factor Location	
N - Number of lanes	S - Speed	E _R - Exhibits 11-10, 11-12	f _{LW} - Exhibit 11-8
V - Hourly volume	D - Density	E _T - Exhibits 11-10, 11-11, 11-13	f _{LC} - Exhibit 11-9
v _p - Flow rate	FFS - Free-flow speed	f _p - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v _p - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

BASIC FREEWAY SEGMENTS WORKSHEET			
General Information		Site Information	
Analyst	BAR	Highway/Direction of Travel	I-26
Agency or Company	HNTB North Carolina, PC	From/To	US 64 to Upward Road
Date Performed	7/12/2013	Jurisdiction	Buncombe County
Analysis Time Period	Peak	Analysis Year	2040 No Build
Project Description <i>STIP I4400/I-4700 - I-26 Widening</i>			
<input checked="" type="checkbox"/> Oper.(LOS)		<input type="checkbox"/> Des.(N)	
<input type="checkbox"/> Planning Data			
Flow Inputs			
Volume, V	3894	veh/h	Peak-Hour Factor, PHF
AADT		veh/day	0.90
Peak-Hr Prop. of AADT, K			%Trucks and Buses, P _T
Peak-Hr Direction Prop, D			6
DDHV = AADT x K x D		veh/h	%RVs, P _R
			0
			General Terrain:
			Rolling
			Grade % Length
			mi
			Up/Down %
Calculate Flow Adjustments			
f _p	1.00	E _R	2.0
E _T	2.5	f _{HV} = 1/[1+P _T (E _T - 1) + P _R (E _R - 1)]	0.917
Speed Inputs		Calc Speed Adj and FFS	
Lane Width	ft		
Rt-Side Lat. Clearance	ft	f _{LW}	mph
Number of Lanes, N	2	f _{LC}	mph
Total Ramp Density, TRD	ramps/mi	TRD Adjustment	mph
FFS (measured)	70.0	FFS	70.0
Base free-flow Speed, BFFS	mph		mph
LOS and Performance Measures		Design (N)	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v _p = (V or DDHV) / (PHF x N x f _{HV} x f _p)		Design LOS	
2358	pc/h/ln	v _p = (V or DDHV) / (PHF x N x f _{HV} x f _p)	
S	54.4	mph	pc/h/ln
D = v _p / S	43.3	pc/mi/ln	S
LOS	E		mph
			pc/mi/ln
			D = v _p / S
			pc/mi/ln
			Required Number of Lanes, N
Glossary		Factor Location	
N - Number of lanes	S - Speed	E _R - Exhibits 11-10, 11-12	f _{LW} - Exhibit 11-8
V - Hourly volume	D - Density	E _T - Exhibits 11-10, 11-11, 11-13	f _{LC} - Exhibit 11-9
v _p - Flow rate	FFS - Free-flow speed	f _p - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v _p - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

2011 Build 8/6 Lane

BASIC FREEWAY SEGMENTS WORKSHEET

General Information				Site Information			
Analyst	RR			Highway/Direction of Travel	I-26		
Agency or Company	HNTB North Carolina, PC			From/To	I-40 to NC 191		
Date Performed	2/21/2014			Jurisdiction	Buncombe County		
Analysis Time Period	Peak			Analysis Year	2011 Build 8/6 Lanes		
Project Description STIP I4400/I-4700 - I-26 Widening							
<input checked="" type="checkbox"/> Oper.(LOS)		<input type="checkbox"/> Des.(N)		<input type="checkbox"/> Planning Data			
Flow Inputs							
Volume, V	5163	veh/h	Peak-Hour Factor, PHF	0.90			
AADT		veh/day	%Trucks and Buses, P _T	6			
Peak-Hr Prop. of AADT, K			%RVs, P _R	0			
Peak-Hr Direction Prop, D			General Terrain:	Rolling			
DDHV = AADT x K x D		veh/h	Grade % Length	mi			
			Up/Down %				
Calculate Flow Adjustments							
f _p	1.00		E _R	2.0			
E _T	2.5		f _{HV} = 1/[1+P _T (E _T - 1) + P _R (E _R - 1)]	0.917			
Speed Inputs				Calc Speed Adj and FFS			
Lane Width		ft	f _{LW}	mph			
Rt-Side Lat. Clearance		ft	f _{LC}	mph			
Number of Lanes, N	4		TRD Adjustment	mph			
Total Ramp Density, TRD		ramps/mi	FFS	65.0	mph		
FFS (measured)	65.0	mph					
Base free-flow Speed, BFFS		mph					
LOS and Performance Measures				Design (N)			
<u>Operational (LOS)</u>				<u>Design (N)</u>			
v _p = (V or DDHV) / (PHF x N x f _{HV} x f _p)	1563	pc/h/ln	Design LOS				
S	64.6	mph	v _p = (V or DDHV) / (PHF x N x f _{HV} x f _p)	pc/h/ln			
D = v _p / S	24.2	pc/mi/ln	S	mph			
LOS	C		D = v _p / S	pc/mi/ln			
				Required Number of Lanes, N			
Glossary				Factor Location			
N - Number of lanes	S - Speed			E _R - Exhibits 11-10, 11-12	f _{LW} - Exhibit 11-8		
V - Hourly volume	D - Density			E _T - Exhibits 11-10, 11-11, 11-13	f _{LC} - Exhibit 11-9		
v _p - Flow rate	FFS - Free-flow speed			f _p - Page 11-18	TRD - Page 11-11		
LOS - Level of service	BFFS - Base free-flow speed			LOS, S, FFS, v _p - Exhibits 11-2, 11-3			
DDHV - Directional design hour volume							

BASIC FREEWAY SEGMENTS WORKSHEET

General Information				Site Information			
Analyst	RR			Highway/Direction of Travel	I-26		
Agency or Company	HNTB North Carolina, PC			From/To	I 40 to NC 191		
Date Performed	2/21/14			Jurisdiction	Buncombe County		
Analysis Time Period	Peak			Analysis Year	2015 Build 8/6 Lanes		
Project Description STIP I4400/I-4700 - I-26 Widening							
<input checked="" type="checkbox"/> Oper.(LOS)		<input type="checkbox"/> Des.(N)		<input type="checkbox"/> Planning Data			
Flow Inputs							
Volume, V	5326	veh/h	Peak-Hour Factor, PHF	0.90			
AADT		veh/day	%Trucks and Buses, P _T	6			
Peak-Hr Prop. of AADT, K			%RVs, P _R	0			
Peak-Hr Direction Prop, D			General Terrain:	Rolling			
DDHV = AADT x K x D		veh/h	Grade % Length	mi			
			Up/Down %				
Calculate Flow Adjustments							
f _p	1.00		E _R	2.0			
E _T	2.5		f _{HV} = 1/[1+P _T (E _T - 1) + P _R (E _R - 1)]	0.917			
Speed Inputs				Calc Speed Adj and FFS			
Lane Width		ft	f _{LW}	mph			
Rt-Side Lat. Clearance		ft	f _{LC}	mph			
Number of Lanes, N	4		TRD Adjustment	mph			
Total Ramp Density, TRD		ramps/mi	FFS	65.0	mph		
FFS (measured)	65.0	mph					
Base free-flow Speed, BFFS		mph					
LOS and Performance Measures				Design (N)			
<u>Operational (LOS)</u>				<u>Design (N)</u>			
v _p = (V or DDHV) / (PHF x N x f _{HV} x f _p)	1613	pc/h/ln	Design LOS				
S	64.4	mph	v _p = (V or DDHV) / (PHF x N x f _{HV} x f _p)	pc/h/ln			
D = v _p / S	25.1	pc/mi/ln	S	mph			
LOS	C		D = v _p / S	pc/mi/ln			
			Required Number of Lanes, N				
Glossary				Factor Location			
N - Number of lanes	S - Speed			E _R - Exhibits 11-10, 11-12	f _{LW} - Exhibit 11-8		
V - Hourly volume	D - Density			E _T - Exhibits 11-10, 11-11, 11-13	f _{LC} - Exhibit 11-9		
v _p - Flow rate	FFS - Free-flow speed			f _p - Page 11-18	TRD - Page 11-11		
LOS - Level of service	BFFS - Base free-flow speed			LOS, S, FFS, v _p - Exhibits 11-2, 11-3			
DDHV - Directional design hour volume							

BASIC FREEWAY SEGMENTS WORKSHEET

General Information				Site Information			
Analyst	RR	Highway/Direction of Travel	I-26	Agency or Company	HNTB North Carolina, PC	From/To	I 40 to NC 191
Date Performed	2/21/14	Jurisdiction	Buncombe County	Analysis Time Period	Peak	Analysis Year	2020 Build 8/6 Lanes
Project Description <i>STIP I4400/I-4700 - I-26 Widening</i>							
<input checked="" type="checkbox"/> Oper.(LOS)		<input type="checkbox"/> Des.(N)		<input type="checkbox"/> Planning Data			
Flow Inputs							
Volume, V	5529	veh/h	Peak-Hour Factor, PHF	0.90			
AADT		veh/day	%Trucks and Buses, P _T	6			
Peak-Hr Prop. of AADT, K			%RVs, P _R	0			
Peak-Hr Direction Prop, D			General Terrain:	Rolling			
DDHV = AADT x K x D		veh/h	Grade % Length	mi			
			Up/Down %				
Calculate Flow Adjustments							
f _p	1.00		E _R	2.0			
E _T	2.5		f _{HV} = 1/[1+P _T (E _T - 1) + P _R (E _R - 1)]	0.917			
Speed Inputs				Calc Speed Adj and FFS			
Lane Width		ft	f _{LW}		mph		
Rt-Side Lat. Clearance		ft	f _{LC}		mph		
Number of Lanes, N	4		TRD Adjustment		mph		
Total Ramp Density, TRD		ramps/mi	FFS	65.0	mph		
FFS (measured)	65.0	mph					
Base free-flow Speed, BFFS		mph					
LOS and Performance Measures				Design (N)			
<u>Operational (LOS)</u>				<u>Design (N)</u>			
v _p = (V or DDHV) / (PHF x N x f _{HV} x f _p)	1674	pc/h/ln	Design LOS		pc/h/ln		
S	63.9	mph	v _p = (V or DDHV) / (PHF x N x f _{HV} x f _p)		mph		
D = v _p / S	26.2	pc/mi/ln	S		pc/mi/ln		
LOS	D		D = v _p / S		Required Number of Lanes, N		
Glossary				Factor Location			
N - Number of lanes	S - Speed			E _R - Exhibits 11-10, 11-12	f _{LW} - Exhibit 11-8		
V - Hourly volume	D - Density			E _T - Exhibits 11-10, 11-11, 11-13	f _{LC} - Exhibit 11-9		
v _p - Flow rate	FFS - Free-flow speed			f _p - Page 11-18	TRD - Page 11-11		
LOS - Level of service	BFFS - Base free-flow speed			LOS, S, FFS, v _p - Exhibits 11-2, 11-3			
DDHV - Directional design hour volume							

BASIC FREEWAY SEGMENTS WORKSHEET

General Information				Site Information			
Analyst	RR	Highway/Direction of Travel	I-26	From/To	I-40 to NC 191		
Agency or Company	HNTB North Carolina, PC	Jurisdiction	Buncombe County	Analysis Year	2025 Build 8/6 Lanes		
Date Performed	2/21/14						
Analysis Time Period	Peak						
Project Description <i>STIP I4400/I-4700 - I-26 Widening</i>							
<input checked="" type="checkbox"/> Oper.(LOS)		<input type="checkbox"/> Des.(N)		<input type="checkbox"/> Planning Data			
Flow Inputs							
Volume, V	5732	veh/h	Peak-Hour Factor, PHF	0.90			
AADT		veh/day	%Trucks and Buses, P _T	6			
Peak-Hr Prop. of AADT, K			%RVs, P _R	0			
Peak-Hr Direction Prop, D			General Terrain:	Rolling			
DDHV = AADT x K x D		veh/h	Grade % Length	mi			
			Up/Down %				
Calculate Flow Adjustments							
f _p	1.00		E _R	2.0			
E _T	2.5		f _{HV} = 1/[1+P _T (E _T - 1) + P _R (E _R - 1)]	0.917			
Speed Inputs				Calc Speed Adj and FFS			
Lane Width		ft	f _{LW}	mph			
Rt-Side Lat. Clearance		ft	f _{LC}	mph			
Number of Lanes, N	4		TRD Adjustment	mph			
Total Ramp Density, TRD		ramps/mi	FFS	65.0 mph			
FFS (measured)	65.0	mph					
Base free-flow Speed, BFFS		mph					
LOS and Performance Measures				Design (N)			
<u>Operational (LOS)</u>				<u>Design (N)</u>			
v _p = (V or DDHV) / (PHF x N x f _{HV} x f _p)	1736	pc/h/ln	Design LOS				
S	63.4	mph	v _p = (V or DDHV) / (PHF x N x f _{HV} x f _p)	pc/h/ln			
D = v _p / S	27.4	pc/mi/ln	S	mph			
LOS	D		D = v _p / S	pc/mi/ln			
				Required Number of Lanes, N			
Glossary				Factor Location			
N - Number of lanes	S - Speed			E _R - Exhibits 11-10, 11-12	f _{LW} - Exhibit 11-8		
V - Hourly volume	D - Density			E _T - Exhibits 11-10, 11-11, 11-13	f _{LC} - Exhibit 11-9		
v _p - Flow rate	FFS - Free-flow speed			f _p - Page 11-18	TRD - Page 11-11		
LOS - Level of service	BFFS - Base free-flow speed			LOS, S, FFS, v _p - Exhibits 11-2, 11-3			
DDHV - Directional design hour volume							

BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Site Information

Analyst	RR	Highway/Direction of Travel	I-26
Agency or Company	HNTB North Carolina, PC	From/To	I 40 to NC 191
Date Performed	2/21/2014	Jurisdiction	Buncombe County
Analysis Time Period	Peak	Analysis Year	2030 Build 8/6 Lanes

Project Description *STIP I4400/I-4700 - I-26 Widening*

Oper.(LOS) Des.(N) Planning Data

Flow Inputs

Volume, V	5935	veh/h	Peak-Hour Factor, PHF	0.90
AADT		veh/day	%Trucks and Buses, P _T	6
Peak-Hr Prop. of AADT, K			%RVs, P _R	0
Peak-Hr Direction Prop, D			General Terrain:	Rolling
DDHV = AADT x K x D		veh/h	Grade % Length	mi
			Up/Down %	

Calculate Flow Adjustments

f _p	1.00	E _R	2.0
E _T	2.5	f _{HV} = 1/[1+P _T (E _T - 1) + P _R (E _R - 1)]	0.917

Speed Inputs

Calc Speed Adj and FFS

Lane Width		ft		
Rt-Side Lat. Clearance		ft	f _{LW}	mph
Number of Lanes, N	4		f _{LC}	mph
Total Ramp Density, TRD		ramps/mi	TRD Adjustment	mph
FFS (measured)	65.0	mph	FFS	65.0 mph
Base free-flow Speed, BFFS		mph		

LOS and Performance Measures

Design (N)

<u>Operational (LOS)</u>			<u>Design (N)</u>	
v _p = (V or DDHV) / (PHF x N x f _{HV} x f _p)	1797	pc/h/ln	Design LOS	
S	62.8	mph	v _p = (V or DDHV) / (PHF x N x f _{HV} x f _p)	pc/h/ln
D = v _p / S	28.6	pc/mi/ln	S	mph
LOS	D		D = v _p / S	pc/mi/ln
			Required Number of Lanes, N	

Glossary

Factor Location

N - Number of lanes	S - Speed	E _R - Exhibits 11-10, 11-12	f _{LW} - Exhibit 11-8
V - Hourly volume	D - Density	E _T - Exhibits 11-10, 11-11, 11-13	f _{LC} - Exhibit 11-9
v _p - Flow rate	FFS - Free-flow speed	f _p - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v _p - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

BASIC FREEWAY SEGMENTS WORKSHEET

General Information				Site Information			
Analyst	RR	Highway/Direction of Travel	I-26	Agency or Company	HNTB North Carolina, PC	From/To	I-40 to NC 191
Date Performed	2/21/2014	Jurisdiction	Buncombe County	Analysis Time Period	Peak	Analysis Year	2035 Build 8/6 Lanes
Project Description <i>STIP I4400/I-4700 - I-26 Widening</i>							
<input checked="" type="checkbox"/> Oper.(LOS)		<input type="checkbox"/> Des.(N)		<input type="checkbox"/> Planning Data			
Flow Inputs							
Volume, V	6139	veh/h	Peak-Hour Factor, PHF	0.90			
AADT		veh/day	%Trucks and Buses, P _T	6			
Peak-Hr Prop. of AADT, K			%RVs, P _R	0			
Peak-Hr Direction Prop, D			General Terrain:	Rolling			
DDHV = AADT x K x D		veh/h	Grade % Length	mi			
			Up/Down %				
Calculate Flow Adjustments							
f _p	1.00		E _R	2.0			
E _T	2.5		f _{HV} = 1/[1+P _T (E _T - 1) + P _R (E _R - 1)]	0.917			
Speed Inputs				Calc Speed Adj and FFS			
Lane Width		ft	f _{LW}		mph		
Rt-Side Lat. Clearance		ft	f _{LC}		mph		
Number of Lanes, N	4		TRD Adjustment		mph		
Total Ramp Density, TRD		ramps/mi	FFS	65.0	mph		
FFS (measured)	65.0	mph					
Base free-flow Speed, BFFS		mph					
LOS and Performance Measures				Design (N)			
<u>Operational (LOS)</u>				<u>Design (N)</u>			
v _p = (V or DDHV) / (PHF x N x f _{HV} x f _p)	1859	pc/h/ln	Design LOS		pc/h/ln		
S	62.0	mph	v _p = (V or DDHV) / (PHF x N x f _{HV} x f _p)		mph		
D = v _p / S	30.0	pc/mi/ln	S		pc/mi/ln		
LOS	D		D = v _p / S		Required Number of Lanes, N		
Glossary				Factor Location			
N - Number of lanes	S - Speed			E _R - Exhibits 11-10, 11-12	f _{LW} - Exhibit 11-8		
V - Hourly volume	D - Density			E _T - Exhibits 11-10, 11-11, 11-13	f _{LC} - Exhibit 11-9		
v _p - Flow rate	FFS - Free-flow speed			f _p - Page 11-18	TRD - Page 11-11		
LOS - Level of service	BFFS - Base free-flow speed			LOS, S, FFS, v _p - Exhibits 11-2, 11-3			
DDHV - Directional design hour volume							

BASIC FREEWAY SEGMENTS WORKSHEET

General Information				Site Information			
Analyst	RR	Highway/Direction of Travel	I-26	Agency or Company	HNTB North Carolina, PC	From/To	I 40 to NC 191
Date Performed	2/21/2014	Jurisdiction	Buncombe County	Analysis Time Period	Peak	Analysis Year	2040 Build 8/6 Lanes
Project Description <i>STIP I4400/I-4700 - I-26 Widening</i>							
<input checked="" type="checkbox"/> Oper.(LOS)		<input type="checkbox"/> Des.(N)		<input type="checkbox"/> Planning Data			
Flow Inputs							
Volume, V	6342	veh/h	Peak-Hour Factor, PHF	0.90			
AADT		veh/day	%Trucks and Buses, P _T	6			
Peak-Hr Prop. of AADT, K			%RVs, P _R	0			
Peak-Hr Direction Prop, D			General Terrain:	Rolling			
DDHV = AADT x K x D		veh/h	Grade % Length	mi			
			Up/Down %				
Calculate Flow Adjustments							
f _p	1.00		E _R	2.0			
E _T	2.5		f _{HV} = 1/[1+P _T (E _T - 1) + P _R (E _R - 1)]	0.917			
Speed Inputs				Calc Speed Adj and FFS			
Lane Width		ft	f _{LW}	mph			
Rt-Side Lat. Clearance		ft	f _{LC}	mph			
Number of Lanes, N	4		TRD Adjustment	mph			
Total Ramp Density, TRD		ramps/mi	FFS	65.0 mph			
FFS (measured)	65.0	mph					
Base free-flow Speed, BFFS		mph					
LOS and Performance Measures				Design (N)			
<u>Operational (LOS)</u>				<u>Design (N)</u>			
v _p = (V or DDHV) / (PHF x N x f _{HV} x f _p)	1920	pc/h/ln	Design LOS				
S	61.2	mph	v _p = (V or DDHV) / (PHF x N x f _{HV} x f _p)	pc/h/ln			
D = v _p / S	31.4	pc/mi/ln	S	mph			
LOS	D		D = v _p / S	pc/mi/ln			
			Required Number of Lanes, N				
Glossary				Factor Location			
N - Number of lanes	S - Speed			E _R - Exhibits 11-10, 11-12	f _{LW} - Exhibit 11-8		
V - Hourly volume	D - Density			E _T - Exhibits 11-10, 11-11, 11-13	f _{LC} - Exhibit 11-9		
v _p - Flow rate	FFS - Free-flow speed			f _p - Page 11-18	TRD - Page 11-11		
LOS - Level of service	BFFS - Base free-flow speed			LOS, S, FFS, v _p - Exhibits 11-2, 11-3			
DDHV - Directional design hour volume							

BASIC FREEWAY SEGMENTS WORKSHEET

General Information				Site Information			
Analyst	RR	Highway/Direction of Travel	I-26	Agency or Company	HNTB North Carolina, PC	From/To	NC 146 to NC 280
Date Performed	2/21/2014	Jurisdiction	Buncombe County	Analysis Time Period	Peak	Analysis Year	2011 Build 8/6 Lanes
Project Description <i>STIP I4400/I-4700 - I-26 Widening</i>							
<input checked="" type="checkbox"/> Oper.(LOS)		<input type="checkbox"/> Des.(N)		<input type="checkbox"/> Planning Data			
Flow Inputs							
Volume, V	4569	veh/h	Peak-Hour Factor, PHF	0.90			
AADT		veh/day	%Trucks and Buses, P _T	5			
Peak-Hr Prop. of AADT, K			%RVs, P _R	0			
Peak-Hr Direction Prop, D			General Terrain:	Rolling			
DDHV = AADT x K x D		veh/h	Grade % Length	mi			
			Up/Down %				
Calculate Flow Adjustments							
f _p	1.00		E _R	2.0			
E _T	2.5		f _{HV} = 1/[1+P _T (E _T - 1) + P _R (E _R - 1)]	0.930			
Speed Inputs				Calc Speed Adj and FFS			
Lane Width		ft	f _{LW}		mph		
Rt-Side Lat. Clearance		ft	f _{LC}		mph		
Number of Lanes, N	4		TRD Adjustment		mph		
Total Ramp Density, TRD		ramps/mi	FFS	65.0	mph		
FFS (measured)	65.0	mph					
Base free-flow Speed, BFFS		mph					
LOS and Performance Measures				Design (N)			
<u>Operational (LOS)</u>				<u>Design (N)</u>			
v _p = (V or DDHV) / (PHF x N x f _{HV} x f _p)	1364	pc/h/ln	Design LOS		pc/h/ln		
S	65.0	mph	v _p = (V or DDHV) / (PHF x N x f _{HV} x f _p)		mph		
D = v _p / S	21.0	pc/mi/ln	S		pc/mi/ln		
LOS	C		D = v _p / S		Required Number of Lanes, N		
Glossary				Factor Location			
N - Number of lanes	S - Speed			E _R - Exhibits 11-10, 11-12	f _{LW} - Exhibit 11-8		
V - Hourly volume	D - Density			E _T - Exhibits 11-10, 11-11, 11-13	f _{LC} - Exhibit 11-9		
v _p - Flow rate	FFS - Free-flow speed			f _p - Page 11-18	TRD - Page 11-11		
LOS - Level of service	BFFS - Base free-flow speed			LOS, S, FFS, v _p - Exhibits 11-2, 11-3			
DDHV - Directional design hour volume							

BASIC FREEWAY SEGMENTS WORKSHEET

General Information				Site Information			
Analyst	RR			Highway/Direction of Travel	I-26		
Agency or Company	HNTB North Carolina, PC			From/To	NC 146 to NC 280		
Date Performed	2/21/2014			Jurisdiction	Buncombe County		
Analysis Time Period	Peak			Analysis Year	2015 Build 8/6 Lanes		
Project Description <i>STIP I4400/I-4700 - I-26 Widening</i>							
<input checked="" type="checkbox"/> Oper.(LOS)		<input type="checkbox"/> Des.(N)		<input type="checkbox"/> Planning Data			
Flow Inputs							
Volume, V	4783	veh/h	Peak-Hour Factor, PHF	0.90			
AADT		veh/day	%Trucks and Buses, P _T	5			
Peak-Hr Prop. of AADT, K			%RVs, P _R	0			
Peak-Hr Direction Prop, D			General Terrain:	Rolling			
DDHV = AADT x K x D		veh/h	Grade % Length	mi			
			Up/Down %				
Calculate Flow Adjustments							
f _p	1.00		E _R	2.0			
E _T	2.5		f _{HV} = 1/[1+P _T (E _T - 1) + P _R (E _R - 1)]	0.930			
Speed Inputs				Calc Speed Adj and FFS			
Lane Width		ft	f _{LW}	mph			
Rt-Side Lat. Clearance		ft	f _{LC}	mph			
Number of Lanes, N	4		TRD Adjustment	mph			
Total Ramp Density, TRD		ramps/mi	FFS	65.0	mph		
FFS (measured)	65.0	mph					
Base free-flow Speed, BFFS		mph					
LOS and Performance Measures				Design (N)			
<u>Operational (LOS)</u>				<u>Design (N)</u>			
v _p = (V or DDHV) / (PHF x N x f _{HV} x f _p)	1428	pc/h/ln	Design LOS				
S	65.0	mph	v _p = (V or DDHV) / (PHF x N x f _{HV} x f _p)	pc/h/ln			
D = v _p / S	22.0	pc/mi/ln	S	mph			
LOS	C		D = v _p / S	pc/mi/ln			
			Required Number of Lanes, N				
Glossary				Factor Location			
N - Number of lanes	S - Speed			E _R - Exhibits 11-10, 11-12	f _{LW} - Exhibit 11-8		
V - Hourly volume	D - Density			E _T - Exhibits 11-10, 11-11, 11-13	f _{LC} - Exhibit 11-9		
v _p - Flow rate	FFS - Free-flow speed			f _p - Page 11-18	TRD - Page 11-11		
LOS - Level of service	BFFS - Base free-flow speed			LOS, S, FFS, v _p - Exhibits 11-2, 11-3			
DDHV - Directional design hour volume							

BASIC FREEWAY SEGMENTS WORKSHEET

General Information				Site Information			
Analyst	RR	Highway/Direction of Travel	I-26	Agency or Company	HNTB North Carolina, PC	From/To	NC 146 to NC 280
Date Performed	2/21/2014	Jurisdiction	Buncombe County	Analysis Time Period	Peak	Analysis Year	2020 Build 8/6 Lanes
Project Description <i>STIP I4400/I-4700 - I-26 Widening</i>							
<input checked="" type="checkbox"/> Oper.(LOS)		<input type="checkbox"/> Des.(N)		<input type="checkbox"/> Planning Data			
Flow Inputs							
Volume, V	5050	veh/h	Peak-Hour Factor, PHF	0.90			
AADT		veh/day	%Trucks and Buses, P _T	5			
Peak-Hr Prop. of AADT, K			%RVs, P _R	0			
Peak-Hr Direction Prop, D			General Terrain:	Rolling			
DDHV = AADT x K x D		veh/h	Grade % Length	mi			
			Up/Down %				
Calculate Flow Adjustments							
f _p	1.00		E _R	2.0			
E _T	2.5		f _{HV} = 1/[1+P _T (E _T - 1) + P _R (E _R - 1)]	0.930			
Speed Inputs				Calc Speed Adj and FFS			
Lane Width		ft	f _{LW}		mph		
Rt-Side Lat. Clearance		ft	f _{LC}		mph		
Number of Lanes, N	4		TRD Adjustment		mph		
Total Ramp Density, TRD		ramps/mi	FFS	65.0	mph		
FFS (measured)	65.0	mph					
Base free-flow Speed, BFFS		mph					
LOS and Performance Measures				Design (N)			
<u>Operational (LOS)</u>				<u>Design (N)</u>			
v _p = (V or DDHV) / (PHF x N x f _{HV} x f _p)	1508	pc/h/ln	Design LOS		pc/h/ln		
S	64.8	mph	v _p = (V or DDHV) / (PHF x N x f _{HV} x f _p)		mph		
D = v _p / S	23.3	pc/mi/ln	S		pc/mi/ln		
LOS	C		D = v _p / S		Required Number of Lanes, N		
Glossary				Factor Location			
N - Number of lanes	S - Speed			E _R - Exhibits 11-10, 11-12	f _{LW} - Exhibit 11-8		
V - Hourly volume	D - Density			E _T - Exhibits 11-10, 11-11, 11-13	f _{LC} - Exhibit 11-9		
v _p - Flow rate	FFS - Free-flow speed			f _p - Page 11-18	TRD - Page 11-11		
LOS - Level of service	BFFS - Base free-flow speed			LOS, S, FFS, v _p - Exhibits 11-2, 11-3			
DDHV - Directional design hour volume							

BASIC FREEWAY SEGMENTS WORKSHEET

General Information				Site Information			
Analyst	RR	Highway/Direction of Travel	I-26	Agency or Company	HNTB North Carolina, PC	From/To	NC 146 to NC 280
Date Performed	2/21/2014	Jurisdiction	Buncombe County	Analysis Time Period	Peak	Analysis Year	2025 Build 8/6 Lanes
Project Description <i>STIP I4400/I-4700 - I-26 Widening</i>							
<input checked="" type="checkbox"/> Oper.(LOS)		<input type="checkbox"/> Des.(N)		<input type="checkbox"/> Planning Data			
Flow Inputs							
Volume, V	5318	veh/h	Peak-Hour Factor, PHF	0.90			
AADT		veh/day	%Trucks and Buses, P _T	5			
Peak-Hr Prop. of AADT, K			%RVs, P _R	0			
Peak-Hr Direction Prop, D			General Terrain:	Rolling			
DDHV = AADT x K x D		veh/h	Grade % Length	mi			
			Up/Down %				
Calculate Flow Adjustments							
f _p	1.00		E _R	2.0			
E _T	2.5		f _{HV} = 1/[1+P _T (E _T - 1) + P _R (E _R - 1)]	0.930			
Speed Inputs				Calc Speed Adj and FFS			
Lane Width		ft	f _{LW}		mph		
Rt-Side Lat. Clearance		ft	f _{LC}		mph		
Number of Lanes, N	4		TRD Adjustment		mph		
Total Ramp Density, TRD		ramps/mi	FFS	65.0	mph		
FFS (measured)	65.0	mph					
Base free-flow Speed, BFFS		mph					
LOS and Performance Measures				Design (N)			
<u>Operational (LOS)</u>				<u>Design (N)</u>			
v _p = (V or DDHV) / (PHF x N x f _{HV} x f _p)	1588	pc/h/ln	Design LOS		pc/h/ln		
S	64.5	mph	v _p = (V or DDHV) / (PHF x N x f _{HV} x f _p)		mph		
D = v _p / S	24.6	pc/mi/ln	S		pc/mi/ln		
LOS	C		D = v _p / S		Required Number of Lanes, N		
Glossary				Factor Location			
N - Number of lanes	S - Speed			E _R - Exhibits 11-10, 11-12	f _{LW} - Exhibit 11-8		
V - Hourly volume	D - Density			E _T - Exhibits 11-10, 11-11, 11-13	f _{LC} - Exhibit 11-9		
v _p - Flow rate	FFS - Free-flow speed			f _p - Page 11-18	TRD - Page 11-11		
LOS - Level of service	BFFS - Base free-flow speed			LOS, S, FFS, v _p - Exhibits 11-2, 11-3			
DDHV - Directional design hour volume							

BASIC FREEWAY SEGMENTS WORKSHEET

General Information				Site Information			
Analyst	RR	Highway/Direction of Travel	I-26	Agency or Company	HNTB North Carolina, PC	From/To	NC 146 to NC 280
Date Performed	2/21/2014	Jurisdiction	Buncombe County	Analysis Time Period	Peak	Analysis Year	2030 Build 8/6 Lanes
Project Description <i>STIP I4400/I-4700 - I-26 Widening</i>							
<input checked="" type="checkbox"/> Oper.(LOS)		<input type="checkbox"/> Des.(N)		<input type="checkbox"/> Planning Data			
Flow Inputs							
Volume, V	5585	veh/h	Peak-Hour Factor, PHF	0.90			
AADT		veh/day	%Trucks and Buses, P _T	5			
Peak-Hr Prop. of AADT, K			%RVs, P _R	0			
Peak-Hr Direction Prop, D			General Terrain:	Rolling			
DDHV = AADT x K x D		veh/h	Grade % Length	mi			
			Up/Down %				
Calculate Flow Adjustments							
f _p	1.00		E _R	2.0			
E _T	2.5		f _{HV} = 1/[1+P _T (E _T - 1) + P _R (E _R - 1)]	0.930			
Speed Inputs				Calc Speed Adj and FFS			
Lane Width		ft	f _{LW}		mph		
Rt-Side Lat. Clearance		ft	f _{LC}		mph		
Number of Lanes, N	4		TRD Adjustment		mph		
Total Ramp Density, TRD		ramps/mi	FFS	65.0	mph		
FFS (measured)	65.0	mph					
Base free-flow Speed, BFFS		mph					
LOS and Performance Measures				Design (N)			
<u>Operational (LOS)</u>				<u>Design (N)</u>			
v _p = (V or DDHV) / (PHF x N x f _{HV} x f _p)	1668	pc/h/ln	Design LOS		pc/h/ln		
S	64.0	mph	v _p = (V or DDHV) / (PHF x N x f _{HV} x f _p)		pc/h/ln		
D = v _p / S	26.1	pc/mi/ln	S		mph		
LOS	D		D = v _p / S		pc/mi/ln		
			Required Number of Lanes, N				
Glossary				Factor Location			
N - Number of lanes	S - Speed			E _R - Exhibits 11-10, 11-12	f _{LW} - Exhibit 11-8		
V - Hourly volume	D - Density			E _T - Exhibits 11-10, 11-11, 11-13	f _{LC} - Exhibit 11-9		
v _p - Flow rate	FFS - Free-flow speed			f _p - Page 11-18	TRD - Page 11-11		
LOS - Level of service	BFFS - Base free-flow speed			LOS, S, FFS, v _p - Exhibits 11-2, 11-3			
DDHV - Directional design hour volume							

BASIC FREEWAY SEGMENTS WORKSHEET

General Information				Site Information			
Analyst	RR	Highway/Direction of Travel	I-26	Agency or Company	HNTB North Carolina, PC	From/To	NC 146 to NC 280
Date Performed	2/21/2014	Jurisdiction	Buncombe County	Analysis Time Period	Peak	Analysis Year	2035 Build 8/6 Lanes
Project Description <i>STIP I4400/I-4700 - I-26 Widening</i>							
<input checked="" type="checkbox"/> Oper.(LOS)		<input type="checkbox"/> Des.(N)		<input type="checkbox"/> Planning Data			
Flow Inputs							
Volume, V	5853	veh/h	Peak-Hour Factor, PHF	0.90			
AADT		veh/day	%Trucks and Buses, P _T	5			
Peak-Hr Prop. of AADT, K			%RVs, P _R	0			
Peak-Hr Direction Prop, D			General Terrain:	Rolling			
DDHV = AADT x K x D		veh/h	Grade % Length	mi			
			Up/Down %				
Calculate Flow Adjustments							
f _p	1.00		E _R	2.0			
E _T	2.5		f _{HV} = 1/[1+P _T (E _T - 1) + P _R (E _R - 1)]	0.930			
Speed Inputs				Calc Speed Adj and FFS			
Lane Width		ft	f _{LW}	mph			
Rt-Side Lat. Clearance		ft	f _{LC}	mph			
Number of Lanes, N	4		TRD Adjustment	mph			
Total Ramp Density, TRD		ramps/mi	FFS	65.0			
FFS (measured)	65.0	mph		mph			
Base free-flow Speed, BFFS		mph					
LOS and Performance Measures				Design (N)			
<u>Operational (LOS)</u>				<u>Design (N)</u>			
v _p = (V or DDHV) / (PHF x N x f _{HV} x f _p)	1748	pc/h/ln	Design LOS				
S	63.3	mph	v _p = (V or DDHV) / (PHF x N x f _{HV} x f _p)	pc/h/ln			
D = v _p / S	27.6	pc/mi/ln	S	mph			
LOS	D		D = v _p / S	pc/mi/ln			
			Required Number of Lanes, N				
Glossary				Factor Location			
N - Number of lanes	S - Speed			E _R - Exhibits 11-10, 11-12	f _{LW} - Exhibit 11-8		
V - Hourly volume	D - Density			E _T - Exhibits 11-10, 11-11, 11-13	f _{LC} - Exhibit 11-9		
v _p - Flow rate	FFS - Free-flow speed			f _p - Page 11-18	TRD - Page 11-11		
LOS - Level of service	BFFS - Base free-flow speed			LOS, S, FFS, v _p - Exhibits 11-2, 11-3			
DDHV - Directional design hour volume							

BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Site Information

Analyst *RR*
 Agency or Company *HNTB North Carolina, PC*
 Date Performed *2/21/2014*
 Analysis Time Period *Peak*

Highway/Direction of Travel *I-26*
 From/To *NC 146 to NC 280*
 Jurisdiction *Buncombe County*
 Analysis Year *2040 Build 8/6 Lanes*

Project Description *STIP I4400/I-4700 - I-26 Widening*

Oper.(LOS)

Des.(N)

Planning Data

Flow Inputs

Volume, V	<i>6120</i>	veh/h	Peak-Hour Factor, PHF	<i>0.90</i>
AADT		veh/day	%Trucks and Buses, P _T	<i>5</i>
Peak-Hr Prop. of AADT, K			%RVs, P _R	<i>0</i>
Peak-Hr Direction Prop, D			General Terrain:	<i>Rolling</i>
DDHV = AADT x K x D		veh/h	Grade % Length	<i>mi</i>
			Up/Down %	

Calculate Flow Adjustments

f _p	<i>1.00</i>	E _R	<i>2.0</i>
E _T	<i>2.5</i>	f _{HV} = 1/[1+P _T (E _T - 1) + P _R (E _R - 1)]	<i>0.930</i>

Speed Inputs

Calc Speed Adj and FFS

Lane Width		ft		
Rt-Side Lat. Clearance		ft	f _{LW}	mph
Number of Lanes, N	<i>4</i>		f _{LC}	mph
Total Ramp Density, TRD		ramps/mi	TRD Adjustment	mph
FFS (measured)	<i>65.0</i>	mph	FFS	<i>65.0</i> mph
Base free-flow Speed, BFFS		mph		

LOS and Performance Measures

Design (N)

<u>Operational (LOS)</u>			<u>Design (N)</u>	
v _p = (V or DDHV) / (PHF x N x f _{HV} x f _p)	<i>1827</i>	pc/h/ln	Design LOS	
S	<i>62.4</i>	mph	v _p = (V or DDHV) / (PHF x N x f _{HV} x f _p)	pc/h/ln
D = v _p / S	<i>29.3</i>	pc/mi/ln	S	mph
LOS	<i>D</i>		D = v _p / S	pc/mi/ln
			Required Number of Lanes, N	

Glossary

Factor Location

N - Number of lanes	S - Speed	E _R - Exhibits 11-10, 11-12	f _{LW} - Exhibit 11-8
V - Hourly volume	D - Density	E _T - Exhibits 11-10, 11-11, 11-13	f _{LC} - Exhibit 11-9
v _p - Flow rate	FFS - Free-flow speed	f _p - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v _p - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Site Information

Analyst *RR*
 Agency or Company *HNTB North Carolina, PC*
 Date Performed *2/21/2014*
 Analysis Time Period *Peak*

Highway/Direction of Travel *I-26*
 From/To *NC 280 to US 25*
 Jurisdiction *Buncombe County*
 Analysis Year *2011 Build 8/6 Lanes*

Project Description *STIP I4400/I-4700 - I-26 Widening*

Oper.(LOS)

Des.(N)

Planning Data

Flow Inputs

Volume, V	<i>3492</i>	veh/h	Peak-Hour Factor, PHF	<i>0.90</i>
AADT		veh/day	%Trucks and Buses, P _T	<i>6</i>
Peak-Hr Prop. of AADT, K			%RVs, P _R	<i>0</i>
Peak-Hr Direction Prop, D			General Terrain:	<i>Rolling</i>
DDHV = AADT x K x D		veh/h	Grade % Length	<i>mi</i>
			Up/Down %	

Calculate Flow Adjustments

f _p	<i>1.00</i>	E _R	<i>2.0</i>
E _T	<i>2.5</i>	f _{HV} = 1/[1+P _T (E _T - 1) + P _R (E _R - 1)]	<i>0.917</i>

Speed Inputs

Calc Speed Adj and FFS

Lane Width		ft	f _{LW}	mph
Rt-Side Lat. Clearance		ft	f _{LC}	mph
Number of Lanes, N	<i>4</i>		TRD Adjustment	mph
Total Ramp Density, TRD		ramps/mi	FFS	<i>65.0</i> mph
FFS (measured)	<i>65.0</i>	mph		
Base free-flow Speed, BFFS		mph		

LOS and Performance Measures

Design (N)

<u>Operational (LOS)</u>			<u>Design (N)</u>	
v _p = (V or DDHV) / (PHF x N x f _{HV} x f _p)	<i>1057</i>	pc/h/ln	Design LOS	
S	<i>65.0</i>	mph	v _p = (V or DDHV) / (PHF x N x f _{HV} x f _p)	pc/h/ln
D = v _p / S	<i>16.3</i>	pc/mi/ln	S	mph
LOS	<i>B</i>		D = v _p / S	pc/mi/ln
			Required Number of Lanes, N	

Glossary

Factor Location

N - Number of lanes	S - Speed	E _R - Exhibits 11-10, 11-12	f _{LW} - Exhibit 11-8
V - Hourly volume	D - Density	E _T - Exhibits 11-10, 11-11, 11-13	f _{LC} - Exhibit 11-9
v _p - Flow rate	FFS - Free-flow speed	f _p - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v _p - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

BASIC FREEWAY SEGMENTS WORKSHEET

General Information				Site Information			
Analyst	RR	Highway/Direction of Travel	I-26	Agency or Company	HNTB North Carolina, PC	From/To	NC 280 to US 25
Date Performed	2/21/2014	Jurisdiction	Buncombe County	Analysis Time Period	Peak	Analysis Year	2015 Build 8/6 Lanes
Project Description <i>STIP I4400/I-4700 - I-26 Widening</i>							
<input checked="" type="checkbox"/> Oper.(LOS)		<input type="checkbox"/> Des.(N)		<input type="checkbox"/> Planning Data			
Flow Inputs							
Volume, V	3765	veh/h	Peak-Hour Factor, PHF	0.90			
AADT		veh/day	%Trucks and Buses, P _T	6			
Peak-Hr Prop. of AADT, K			%RVs, P _R	0			
Peak-Hr Direction Prop, D			General Terrain:	Rolling			
DDHV = AADT x K x D		veh/h	Grade % Length	mi			
			Up/Down %				
Calculate Flow Adjustments							
f _p	1.00		E _R	2.0			
E _T	2.5		f _{HV} = 1/[1+P _T (E _T - 1) + P _R (E _R - 1)]	0.917			
Speed Inputs				Calc Speed Adj and FFS			
Lane Width		ft	f _{LW}	mph			
Rt-Side Lat. Clearance		ft	f _{LC}	mph			
Number of Lanes, N	4		TRD Adjustment	mph			
Total Ramp Density, TRD		ramps/mi	FFS	65.0 mph			
FFS (measured)	65.0	mph					
Base free-flow Speed, BFFS		mph					
LOS and Performance Measures				Design (N)			
<u>Operational (LOS)</u>				<u>Design (N)</u>			
v _p = (V or DDHV) / (PHF x N x f _{HV} x f _p)	1140	pc/h/ln	Design LOS				
S	65.0	mph	v _p = (V or DDHV) / (PHF x N x f _{HV} x f _p)	pc/h/ln			
D = v _p / S	17.5	pc/mi/ln	S	mph			
LOS	B		D = v _p / S	pc/mi/ln			
			Required Number of Lanes, N				
Glossary				Factor Location			
N - Number of lanes	S - Speed			E _R - Exhibits 11-10, 11-12	f _{LW} - Exhibit 11-8		
V - Hourly volume	D - Density			E _T - Exhibits 11-10, 11-11, 11-13	f _{LC} - Exhibit 11-9		
v _p - Flow rate	FFS - Free-flow speed			f _p - Page 11-18	TRD - Page 11-11		
LOS - Level of service	BFFS - Base free-flow speed			LOS, S, FFS, v _p - Exhibits 11-2, 11-3			
DDHV - Directional design hour volume							

BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Site Information

Analyst	RR	Highway/Direction of Travel	I-26
Agency or Company	HNTB North Carolina, PC	From/To	NC 280 to US 25
Date Performed	2/21/2014	Jurisdiction	Buncombe County
Analysis Time Period	Peak	Analysis Year	2020 Build 8/6 Lanes

Project Description *STIP I4400/I-4700 - I-26 Widening*

Oper.(LOS) Des.(N) Planning Data

Flow Inputs

Volume, V	4107	veh/h	Peak-Hour Factor, PHF	0.90
AADT		veh/day	%Trucks and Buses, P _T	6
Peak-Hr Prop. of AADT, K			%RVs, P _R	0
Peak-Hr Direction Prop, D			General Terrain:	Rolling
DDHV = AADT x K x D		veh/h	Grade % Length	mi
			Up/Down %	

Calculate Flow Adjustments

f _p	1.00	E _R	2.0
E _T	2.5	f _{HV} = 1/[1+P _T (E _T - 1) + P _R (E _R - 1)]	0.917

Speed Inputs

Calc Speed Adj and FFS

Lane Width		ft	f _{LW}	mph
Rt-Side Lat. Clearance		ft	f _{LC}	mph
Number of Lanes, N	4		TRD Adjustment	mph
Total Ramp Density, TRD		ramps/mi	FFS	65.0
FFS (measured)	65.0	mph		mph
Base free-flow Speed, BFFS		mph		

LOS and Performance Measures

Design (N)

<u>Operational (LOS)</u>			<u>Design (N)</u>	
v _p = (V or DDHV) / (PHF x N x f _{HV} x f _p)	1244	pc/h/ln	Design LOS	
S	65.0	mph	v _p = (V or DDHV) / (PHF x N x f _{HV} x f _p)	pc/h/ln
D = v _p / S	19.1	pc/mi/ln	S	mph
LOS	C		D = v _p / S	pc/mi/ln
			Required Number of Lanes, N	

Glossary

Factor Location

N - Number of lanes	S - Speed	E _R - Exhibits 11-10, 11-12	f _{LW} - Exhibit 11-8
V - Hourly volume	D - Density	E _T - Exhibits 11-10, 11-11, 11-13	f _{LC} - Exhibit 11-9
v _p - Flow rate	FFS - Free-flow speed	f _p - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v _p - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Site Information

Analyst	RR	Highway/Direction of Travel	I-26
Agency or Company	HNTB North Carolina, PC	From/To	NC 280 to US 25
Date Performed	2/21/2014	Jurisdiction	Buncombe County
Analysis Time Period	Peak	Analysis Year	2025 Build 8/6 Lanes

Project Description *STIP I4400/I-4700 - I-26 Widening*

Oper.(LOS) Des.(N) Planning Data

Flow Inputs

Volume, V	4448	veh/h	Peak-Hour Factor, PHF	0.90
AADT		veh/day	%Trucks and Buses, P _T	6
Peak-Hr Prop. of AADT, K			%RVs, P _R	0
Peak-Hr Direction Prop, D			General Terrain:	Rolling
DDHV = AADT x K x D		veh/h	Grade % Length	mi
			Up/Down %	

Calculate Flow Adjustments

f _p	1.00	E _R	2.0
E _T	2.5	f _{HV} = 1/[1+P _T (E _T - 1) + P _R (E _R - 1)]	0.917

Speed Inputs

Calc Speed Adj and FFS

Lane Width		ft	f _{LW}	mph
Rt-Side Lat. Clearance		ft	f _{LC}	mph
Number of Lanes, N	4		TRD Adjustment	mph
Total Ramp Density, TRD		ramps/mi	FFS	65.0 mph
FFS (measured)	65.0	mph		
Base free-flow Speed, BFFS		mph		

LOS and Performance Measures

Design (N)

<u>Operational (LOS)</u>			<u>Design (N)</u>	
v _p = (V or DDHV) / (PHF x N x f _{HV} x f _p)	1347	pc/h/ln	Design LOS	
S	65.0	mph	v _p = (V or DDHV) / (PHF x N x f _{HV} x f _p)	pc/h/ln
D = v _p / S	20.7	pc/mi/ln	S	mph
LOS	C		D = v _p / S	pc/mi/ln
			Required Number of Lanes, N	

Glossary

Factor Location

N - Number of lanes	S - Speed	E _R - Exhibits 11-10, 11-12	f _{LW} - Exhibit 11-8
V - Hourly volume	D - Density	E _T - Exhibits 11-10, 11-11, 11-13	f _{LC} - Exhibit 11-9
v _p - Flow rate	FFS - Free-flow speed	f _p - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v _p - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst *RR*
 Agency or Company *HNTB North Carolina, PC*
 Date Performed *2/21/2014*
 Analysis Time Period *Peak*

Site Information

Highway/Direction of Travel *I-26*
 From/To *NC 280 to US 25*
 Jurisdiction *Buncombe County*
 Analysis Year *2030 Build 8/6 Lanes*

Project Description *STIP I4400/I-4700 - I-26 Widening*

Oper.(LOS)

Des.(N)

Planning Data

Flow Inputs

Volume, V	<i>4790</i>	veh/h	Peak-Hour Factor, PHF	<i>0.90</i>
AADT		veh/day	%Trucks and Buses, P _T	<i>6</i>
Peak-Hr Prop. of AADT, K			%RVs, P _R	<i>0</i>
Peak-Hr Direction Prop, D			General Terrain:	<i>Rolling</i>
DDHV = AADT x K x D		veh/h	Grade % Length	<i>mi</i>
			Up/Down %	

Calculate Flow Adjustments

f _p	<i>1.00</i>	E _R	<i>2.0</i>
E _T	<i>2.5</i>	f _{HV} = 1/[1+P _T (E _T - 1) + P _R (E _R - 1)]	<i>0.917</i>

Speed Inputs

Lane Width *ft*
 Rt-Side Lat. Clearance *ft*
 Number of Lanes, N *4*
 Total Ramp Density, TRD *ramps/mi*
 FFS (measured) *65.0* mph
 Base free-flow Speed, BFFS *mph*

Calc Speed Adj and FFS

f_{LW} *mph*
 f_{LC} *mph*
 TRD Adjustment *mph*
 FFS *65.0* mph

LOS and Performance Measures

Operational (LOS)
 $v_p = (V \text{ or } DDHV) / (PHF \times N \times f_{HV} \times f_p)$ *1450* pc/h/ln
 S *65.0* mph
 D = v_p / S *22.3* pc/mi/ln
 LOS *C*

Design (N)

Design (N)
 Design LOS
 $v_p = (V \text{ or } DDHV) / (PHF \times N \times f_{HV} \times f_p)$ *pc/h/ln*
 S *mph*
 D = v_p / S *pc/mi/ln*
 Required Number of Lanes, N

Glossary

N - Number of lanes S - Speed
 V - Hourly volume D - Density
 v_p - Flow rate FFS - Free-flow speed
 LOS - Level of service BFFS - Base free-flow speed
 DDHV - Directional design hour volume

Factor Location

E_R - Exhibits 11-10, 11-12 f_{LW} - Exhibit 11-8
 E_T - Exhibits 11-10, 11-11, 11-13 f_{LC} - Exhibit 11-9
 f_p - Page 11-18 TRD - Page 11-11
 LOS, S, FFS, v_p - Exhibits 11-2, 11-3

BASIC FREEWAY SEGMENTS WORKSHEET

General Information				Site Information			
Analyst	RR			Highway/Direction of Travel	I-26		
Agency or Company	HNTB North Carolina, PC			From/To	NC 280 to US 25		
Date Performed	2/21/2014			Jurisdiction	Buncombe County		
Analysis Time Period	Peak			Analysis Year	2035 Build 8/6 Lanes		
Project Description <i>STIP I4400/I-4700 - I-26 Widening</i>							
<input checked="" type="checkbox"/> Oper.(LOS)		<input type="checkbox"/> Des.(N)		<input type="checkbox"/> Planning Data			
Flow Inputs							
Volume, V	5131	veh/h	Peak-Hour Factor, PHF	0.90			
AADT		veh/day	%Trucks and Buses, P _T	6			
Peak-Hr Prop. of AADT, K			%RVs, P _R	0			
Peak-Hr Direction Prop, D			General Terrain:	Rolling			
DDHV = AADT x K x D		veh/h	Grade % Length	mi			
			Up/Down %				
Calculate Flow Adjustments							
f _p	1.00		E _R	2.0			
E _T	2.5		f _{HV} = 1/[1+P _T (E _T - 1) + P _R (E _R - 1)]	0.917			
Speed Inputs				Calc Speed Adj and FFS			
Lane Width		ft	f _{LW}	mph			
Rt-Side Lat. Clearance		ft	f _{LC}	mph			
Number of Lanes, N	4		TRD Adjustment	mph			
Total Ramp Density, TRD		ramps/mi	FFS	65.0	mph		
FFS (measured)	65.0	mph					
Base free-flow Speed, BFFS		mph					
LOS and Performance Measures				Design (N)			
<u>Operational (LOS)</u>				<u>Design (N)</u>			
v _p = (V or DDHV) / (PHF x N x f _{HV} x f _p)	1554	pc/h/ln	Design LOS				
S	64.7	mph	v _p = (V or DDHV) / (PHF x N x f _{HV} x f _p)	pc/h/ln			
D = v _p / S	24.0	pc/mi/ln	S	mph			
LOS	C		D = v _p / S	pc/mi/ln			
			Required Number of Lanes, N				
Glossary				Factor Location			
N - Number of lanes	S - Speed			E _R - Exhibits 11-10, 11-12	f _{LW} - Exhibit 11-8		
V - Hourly volume	D - Density			E _T - Exhibits 11-10, 11-11, 11-13	f _{LC} - Exhibit 11-9		
v _p - Flow rate	FFS - Free-flow speed			f _p - Page 11-18	TRD - Page 11-11		
LOS - Level of service	BFFS - Base free-flow speed			LOS, S, FFS, v _p - Exhibits 11-2, 11-3			
DDHV - Directional design hour volume							

BASIC FREEWAY SEGMENTS WORKSHEET

General Information				Site Information			
Analyst	RR	Highway/Direction of Travel	I-26	Agency or Company	HNTB North Carolina, PC	From/To	NC 280 to US 25
Date Performed	2/21/2014	Jurisdiction	Buncombe County	Analysis Time Period	Peak	Analysis Year	2040 Build 8/6 Lanes
Project Description <i>STIP I4400/I-4700 - I-26 Widening</i>							
<input checked="" type="checkbox"/> Oper.(LOS)		<input type="checkbox"/> Des.(N)		<input type="checkbox"/> Planning Data			
Flow Inputs							
Volume, V	5473	veh/h	Peak-Hour Factor, PHF	0.90			
AADT		veh/day	%Trucks and Buses, P _T	6			
Peak-Hr Prop. of AADT, K			%RVs, P _R	0			
Peak-Hr Direction Prop, D			General Terrain:	Rolling			
DDHV = AADT x K x D		veh/h	Grade % Length	mi			
			Up/Down %				
Calculate Flow Adjustments							
f _p	1.00		E _R	2.0			
E _T	2.5		f _{HV} = 1/[1+P _T (E _T - 1) + P _R (E _R - 1)]	0.917			
Speed Inputs				Calc Speed Adj and FFS			
Lane Width		ft	f _{LW}	mph			
Rt-Side Lat. Clearance		ft	f _{LC}	mph			
Number of Lanes, N	4		TRD Adjustment	mph			
Total Ramp Density, TRD		ramps/mi	FFS	65.0 mph			
FFS (measured)	65.0	mph					
Base free-flow Speed, BFFS		mph					
LOS and Performance Measures				Design (N)			
<u>Operational (LOS)</u>				<u>Design (N)</u>			
v _p = (V or DDHV) / (PHF x N x f _{HV} x f _p)	1657	pc/h/ln	Design LOS				
S	64.1	mph	v _p = (V or DDHV) / (PHF x N x f _{HV} x f _p)	pc/h/ln			
D = v _p / S	25.9	pc/mi/ln	S	mph			
LOS	C		D = v _p / S	pc/mi/ln			
			Required Number of Lanes, N				
Glossary				Factor Location			
N - Number of lanes	S - Speed			E _R - Exhibits 11-10, 11-12	f _{LW} - Exhibit 11-8		
V - Hourly volume	D - Density			E _T - Exhibits 11-10, 11-11, 11-13	f _{LC} - Exhibit 11-9		
v _p - Flow rate	FFS - Free-flow speed			f _p - Page 11-18	TRD - Page 11-11		
LOS - Level of service	BFFS - Base free-flow speed			LOS, S, FFS, v _p - Exhibits 11-2, 11-3			
DDHV - Directional design hour volume							

BASIC FREEWAY SEGMENTS WORKSHEET

General Information				Site Information			
Analyst	RR	Highway/Direction of Travel	I-26	Agency or Company	HNTB North Carolina, PC	From/To	US 25 to US 64
Date Performed	2/21/2014	Jurisdiction	Buncombe County	Analysis Time Period	Peak	Analysis Year	2011 Build 8/6 Lanes
Project Description <i>STIP I4400/I-4700 - I-26 Widening</i>							
<input checked="" type="checkbox"/> Oper.(LOS)		<input type="checkbox"/> Des.(N)		<input type="checkbox"/> Planning Data			
Flow Inputs							
Volume, V	3108	veh/h	Peak-Hour Factor, PHF	0.90			
AADT		veh/day	%Trucks and Buses, P _T	6			
Peak-Hr Prop. of AADT, K			%RVs, P _R	0			
Peak-Hr Direction Prop, D			General Terrain:	Rolling			
DDHV = AADT x K x D		veh/h	Grade % Length	mi			
			Up/Down %				
Calculate Flow Adjustments							
f _p	1.00		E _R	2.0			
E _T	2.5		f _{HV} = 1/[1+P _T (E _T - 1) + P _R (E _R - 1)]	0.917			
Speed Inputs				Calc Speed Adj and FFS			
Lane Width		ft	f _{LW}		mph		
Rt-Side Lat. Clearance		ft	f _{LC}		mph		
Number of Lanes, N	3		TRD Adjustment		mph		
Total Ramp Density, TRD		ramps/mi	FFS	65.0	mph		
FFS (measured)	65.0	mph					
Base free-flow Speed, BFFS		mph					
LOS and Performance Measures				Design (N)			
<u>Operational (LOS)</u>				<u>Design (N)</u>			
v _p = (V or DDHV) / (PHF x N x f _{HV} x f _p)	1255	pc/h/ln	Design LOS		pc/h/ln		
S	65.0	mph	v _p = (V or DDHV) / (PHF x N x f _{HV} x f _p)		mph		
D = v _p / S	19.3	pc/mi/ln	S		pc/mi/ln		
LOS	C		D = v _p / S		Required Number of Lanes, N		
Glossary				Factor Location			
N - Number of lanes	S - Speed			E _R - Exhibits 11-10, 11-12	f _{LW} - Exhibit 11-8		
V - Hourly volume	D - Density			E _T - Exhibits 11-10, 11-11, 11-13	f _{LC} - Exhibit 11-9		
v _p - Flow rate	FFS - Free-flow speed			f _p - Page 11-18	TRD - Page 11-11		
LOS - Level of service	BFFS - Base free-flow speed			LOS, S, FFS, v _p - Exhibits 11-2, 11-3			
DDHV - Directional design hour volume							

BASIC FREEWAY SEGMENTS WORKSHEET

General Information				Site Information			
Analyst	RR	Highway/Direction of Travel	I-26	From/To	US 25 to US 64		
Agency or Company	HNTB North Carolina, PC	Jurisdiction	Buncombe County	Analysis Year	2015 Build 8/6 Lanes		
Date Performed	2/21/2014						
Analysis Time Period	Peak						
Project Description <i>STIP I4400/I-4700 - I-26 Widening</i>							
<input checked="" type="checkbox"/> Oper.(LOS)		<input type="checkbox"/> Des.(N)		<input type="checkbox"/> Planning Data			
Flow Inputs							
Volume, V	3371	veh/h	Peak-Hour Factor, PHF	0.90			
AADT		veh/day	%Trucks and Buses, P _T	6			
Peak-Hr Prop. of AADT, K			%RVs, P _R	0			
Peak-Hr Direction Prop, D			General Terrain:	Rolling			
DDHV = AADT x K x D		veh/h	Grade % Length	mi			
			Up/Down %				
Calculate Flow Adjustments							
f _p	1.00		E _R	2.0			
E _T	2.5		f _{HV} = 1/[1+P _T (E _T - 1) + P _R (E _R - 1)]	0.917			
Speed Inputs				Calc Speed Adj and FFS			
Lane Width		ft	f _{LW}	mph			
Rt-Side Lat. Clearance		ft	f _{LC}	mph			
Number of Lanes, N	3		TRD Adjustment	mph			
Total Ramp Density, TRD		ramps/mi	FFS	65.0 mph			
FFS (measured)	65.0	mph					
Base free-flow Speed, BFFS		mph					
LOS and Performance Measures				Design (N)			
<u>Operational (LOS)</u>				<u>Design (N)</u>			
v _p = (V or DDHV) / (PHF x N x f _{HV} x f _p)	1361	pc/h/ln	Design LOS				
S	65.0	mph	v _p = (V or DDHV) / (PHF x N x f _{HV} x f _p)	pc/h/ln			
D = v _p / S	20.9	pc/mi/ln	S	mph			
LOS	C		D = v _p / S	pc/mi/ln			
				Required Number of Lanes, N			
Glossary				Factor Location			
N - Number of lanes	S - Speed			E _R - Exhibits 11-10, 11-12	f _{LW} - Exhibit 11-8		
V - Hourly volume	D - Density			E _T - Exhibits 11-10, 11-11, 11-13	f _{LC} - Exhibit 11-9		
v _p - Flow rate	FFS - Free-flow speed			f _p - Page 11-18	TRD - Page 11-11		
LOS - Level of service	BFFS - Base free-flow speed			LOS, S, FFS, v _p - Exhibits 11-2, 11-3			
DDHV - Directional design hour volume							

BASIC FREEWAY SEGMENTS WORKSHEET

General Information				Site Information			
Analyst	RR	Highway/Direction of Travel	I-26	From/To	US 25 to US 64		
Agency or Company	HNTB North Carolina, PC	Jurisdiction	Buncombe County	Analysis Year	2020 Build 8/6 Lanes		
Date Performed	2/21/2014						
Analysis Time Period	Peak						
Project Description <i>STIP I4400/I-4700 - I-26 Widening</i>							
<input checked="" type="checkbox"/> Oper.(LOS)		<input type="checkbox"/> Des.(N)		<input type="checkbox"/> Planning Data			
Flow Inputs							
Volume, V	3700	veh/h	Peak-Hour Factor, PHF	0.90			
AADT		veh/day	%Trucks and Buses, P _T	6			
Peak-Hr Prop. of AADT, K			%RVs, P _R	0			
Peak-Hr Direction Prop, D			General Terrain:	Rolling			
DDHV = AADT x K x D		veh/h	Grade % Length	mi			
			Up/Down %				
Calculate Flow Adjustments							
f _p	1.00		E _R	2.0			
E _T	2.5		f _{HV} = 1/[1+P _T (E _T - 1) + P _R (E _R - 1)]	0.917			
Speed Inputs				Calc Speed Adj and FFS			
Lane Width		ft	f _{LW}	mph			
Rt-Side Lat. Clearance		ft	f _{LC}	mph			
Number of Lanes, N	3		TRD Adjustment	mph			
Total Ramp Density, TRD		ramps/mi	FFS	65.0 mph			
FFS (measured)	65.0	mph					
Base free-flow Speed, BFFS		mph					
LOS and Performance Measures				Design (N)			
<u>Operational (LOS)</u>				<u>Design (N)</u>			
v _p = (V or DDHV) / (PHF x N x f _{HV} x f _p)	1494	pc/h/ln	Design LOS				
S	64.9	mph	v _p = (V or DDHV) / (PHF x N x f _{HV} x f _p)	pc/h/ln			
D = v _p / S	23.0	pc/mi/ln	S	mph			
LOS	C		D = v _p / S	pc/mi/ln			
			Required Number of Lanes, N				
Glossary				Factor Location			
N - Number of lanes	S - Speed			E _R - Exhibits 11-10, 11-12	f _{LW} - Exhibit 11-8		
V - Hourly volume	D - Density			E _T - Exhibits 11-10, 11-11, 11-13	f _{LC} - Exhibit 11-9		
v _p - Flow rate	FFS - Free-flow speed			f _p - Page 11-18	TRD - Page 11-11		
LOS - Level of service	BFFS - Base free-flow speed			LOS, S, FFS, v _p - Exhibits 11-2, 11-3			
DDHV - Directional design hour volume							

BASIC FREEWAY SEGMENTS WORKSHEET

General Information				Site Information			
Analyst	RR		Highway/Direction of Travel	I-26		From/To	
Agency or Company	HNTB North Carolina, PC		Jurisdiction	US 25 to US 64		Analysis Year	
Date Performed	2/21/2014		Analysis Year	Buncombe County		2025 Build 8/6 Lanes	
Analysis Time Period	Peak		Project Description STIP I4400/I-4700 - I-26 Widening				
<input checked="" type="checkbox"/> Oper.(LOS)		<input type="checkbox"/> Des.(N)		<input type="checkbox"/> Planning Data			
Flow Inputs							
Volume, V	4029	veh/h	Peak-Hour Factor, PHF	0.90			
AADT		veh/day	%Trucks and Buses, P _T	6			
Peak-Hr Prop. of AADT, K			%RVs, P _R	0			
Peak-Hr Direction Prop, D			General Terrain:	Rolling			
DDHV = AADT x K x D		veh/h	Grade % Length	mi			
			Up/Down %				
Calculate Flow Adjustments							
f _p	1.00		E _R	2.0			
E _T	2.5		f _{HV} = 1/[1+P _T (E _T - 1) + P _R (E _R - 1)]	0.917			
Speed Inputs				Calc Speed Adj and FFS			
Lane Width		ft	f _{LW}	mph			
Rt-Side Lat. Clearance		ft	f _{LC}	mph			
Number of Lanes, N	3		TRD Adjustment	mph			
Total Ramp Density, TRD		ramps/mi	FFS	65.0	mph		
FFS (measured)	65.0	mph					
Base free-flow Speed, BFFS		mph					
LOS and Performance Measures				Design (N)			
<u>Operational (LOS)</u>				<u>Design (N)</u>			
v _p = (V or DDHV) / (PHF x N x f _{HV} x f _p)	1627	pc/h/ln	Design LOS		pc/h/ln		
S	64.3	mph	v _p = (V or DDHV) / (PHF x N x f _{HV} x f _p)		mph		
D = v _p / S	25.3	pc/mi/ln	S		pc/mi/ln		
LOS	C		D = v _p / S		Required Number of Lanes, N		
Glossary				Factor Location			
N - Number of lanes	S - Speed	E _R - Exhibits 11-10, 11-12		f _{LW} - Exhibit 11-8			
V - Hourly volume	D - Density	E _T - Exhibits 11-10, 11-11, 11-13		f _{LC} - Exhibit 11-9			
v _p - Flow rate	FFS - Free-flow speed	f _p - Page 11-18		TRD - Page 11-11			
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v _p - Exhibits 11-2, 11-3					
DDHV - Directional design hour volume							

BASIC FREEWAY SEGMENTS WORKSHEET

General Information				Site Information			
Analyst	RR	Highway/Direction of Travel	I-26	Agency or Company	HNTB North Carolina, PC	From/To	US 25 to US 64
Date Performed	2/21/2014	Jurisdiction	Buncombe County	Analysis Time Period	Peak	Analysis Year	2030 Build 8/6 Lanes
Project Description <i>STIP I4400/I-4700 - I-26 Widening</i>							
<input checked="" type="checkbox"/> Oper.(LOS)		<input type="checkbox"/> Des.(N)		<input type="checkbox"/> Planning Data			
Flow Inputs							
Volume, V	4357	veh/h	Peak-Hour Factor, PHF	0.90			
AADT		veh/day	%Trucks and Buses, P _T	6			
Peak-Hr Prop. of AADT, K			%RVs, P _R	0			
Peak-Hr Direction Prop, D			General Terrain:	Rolling			
DDHV = AADT x K x D		veh/h	Grade % Length	mi			
			Up/Down %				
Calculate Flow Adjustments							
f _p	1.00		E _R	2.0			
E _T	2.5		f _{HV} = 1/[1+P _T (E _T - 1) + P _R (E _R - 1)]	0.917			
Speed Inputs				Calc Speed Adj and FFS			
Lane Width		ft	f _{LW}	mph			
Rt-Side Lat. Clearance		ft	f _{LC}	mph			
Number of Lanes, N	3		TRD Adjustment	mph			
Total Ramp Density, TRD		ramps/mi	FFS	65.0 mph			
FFS (measured)	65.0	mph					
Base free-flow Speed, BFFS		mph					
LOS and Performance Measures				Design (N)			
<u>Operational (LOS)</u>				<u>Design (N)</u>			
v _p = (V or DDHV) / (PHF x N x f _{HV} x f _p)	1759	pc/h/ln	Design LOS				
S	63.2	mph	v _p = (V or DDHV) / (PHF x N x f _{HV} x f _p)	pc/h/ln			
D = v _p / S	27.8	pc/mi/ln	S	mph			
LOS	D		D = v _p / S	pc/mi/ln			
			Required Number of Lanes, N				
Glossary				Factor Location			
N - Number of lanes	S - Speed			E _R - Exhibits 11-10, 11-12	f _{LW} - Exhibit 11-8		
V - Hourly volume	D - Density			E _T - Exhibits 11-10, 11-11, 11-13	f _{LC} - Exhibit 11-9		
v _p - Flow rate	FFS - Free-flow speed			f _p - Page 11-18	TRD - Page 11-11		
LOS - Level of service	BFFS - Base free-flow speed			LOS, S, FFS, v _p - Exhibits 11-2, 11-3			
DDHV - Directional design hour volume							

BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst *RR*
 Agency or Company *HNTB North Carolina, PC*
 Date Performed *2/21/2014*
 Analysis Time Period *Peak*

Site Information

Highway/Direction of Travel *I-26*
 From/To *US 25 to US 64*
 Jurisdiction *Buncombe County*
 Analysis Year *2035 Build 8/6 Lanes*

Project Description *STIP I4400/I-4700 - I-26 Widening*

Oper.(LOS)

Des.(N)

Planning Data

Flow Inputs

Volume, V	<i>4686</i>	veh/h	Peak-Hour Factor, PHF	<i>0.90</i>
AADT		veh/day	%Trucks and Buses, P _T	<i>6</i>
Peak-Hr Prop. of AADT, K			%RVs, P _R	<i>0</i>
Peak-Hr Direction Prop, D			General Terrain:	<i>Rolling</i>
DDHV = AADT x K x D		veh/h	Grade % Length	<i>mi</i>
			Up/Down %	

Calculate Flow Adjustments

f _p	<i>1.00</i>	E _R	<i>2.0</i>
E _T	<i>2.5</i>	f _{HV} = 1/[1+P _T (E _T - 1) + P _R (E _R - 1)]	<i>0.917</i>

Speed Inputs

Lane Width *ft*
 Rt-Side Lat. Clearance *ft*
 Number of Lanes, N *3*
 Total Ramp Density, TRD *ramps/mi*
 FFS (measured) *65.0* mph
 Base free-flow Speed, BFFS *mph*

Calc Speed Adj and FFS

f_{LW} *mph*
 f_{LC} *mph*
 TRD Adjustment *mph*
 FFS *65.0* mph

LOS and Performance Measures

Operational (LOS)
 $v_p = (V \text{ or } DDHV) / (PHF \times N \times f_{HV} \times f_p)$ *1892* pc/h/ln
 S *61.6* mph
 D = v_p / S *30.7* pc/mi/ln
 LOS *D*

Design (N)

Design (N)
 Design LOS
 $v_p = (V \text{ or } DDHV) / (PHF \times N \times f_{HV} \times f_p)$ *pc/h/ln*
 S *mph*
 D = v_p / S *pc/mi/ln*
 Required Number of Lanes, N

Glossary

N - Number of lanes S - Speed
 V - Hourly volume D - Density
 v_p - Flow rate FFS - Free-flow speed
 LOS - Level of service BFFS - Base free-flow speed
 DDHV - Directional design hour volume

Factor Location

E_R - Exhibits 11-10, 11-12 f_{LW} - Exhibit 11-8
 E_T - Exhibits 11-10, 11-11, 11-13 f_{LC} - Exhibit 11-9
 f_p - Page 11-18 TRD - Page 11-11
 LOS, S, FFS, v_p - Exhibits 11-2, 11-3

BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Site Information

Analyst *RR*
 Agency or Company *HNTB North Carolina, PC*
 Date Performed *2/21/2014*
 Analysis Time Period *Peak*

Highway/Direction of Travel *I-26*
 From/To *US 25 to US 64*
 Jurisdiction *Buncombe County*
 Analysis Year *2040 Build 8/6 Lanes*

Project Description *STIP I4400/I-4700 - I-26 Widening*

Oper.(LOS)

Des.(N)

Planning Data

Flow Inputs

Volume, V	<i>5015</i>	veh/h	Peak-Hour Factor, PHF	<i>0.90</i>
AADT		veh/day	%Trucks and Buses, P _T	<i>6</i>
Peak-Hr Prop. of AADT, K			%RVs, P _R	<i>0</i>
Peak-Hr Direction Prop, D			General Terrain:	<i>Rolling</i>
DDHV = AADT x K x D		veh/h	Grade % Length	<i>mi</i>
			Up/Down %	

Calculate Flow Adjustments

f _p	<i>1.00</i>	E _R	<i>2.0</i>
E _T	<i>2.5</i>	f _{HV} = 1/[1+P _T (E _T - 1) + P _R (E _R - 1)]	<i>0.917</i>

Speed Inputs

Calc Speed Adj and FFS

Lane Width		ft	f _{LW}	mph
Rt-Side Lat. Clearance		ft	f _{LC}	mph
Number of Lanes, N	<i>3</i>		TRD Adjustment	mph
Total Ramp Density, TRD		ramps/mi	FFS	<i>65.0</i> mph
FFS (measured)	<i>65.0</i>	mph		
Base free-flow Speed, BFFS		mph		

LOS and Performance Measures

Design (N)

<u>Operational (LOS)</u>			<u>Design (N)</u>	
v _p = (V or DDHV) / (PHF x N x f _{HV} x f _p)	<i>2025</i>	pc/h/ln	Design LOS	
S	<i>59.5</i>	mph	v _p = (V or DDHV) / (PHF x N x f _{HV} x f _p)	pc/h/ln
D = v _p / S	<i>34.1</i>	pc/mi/ln	S	mph
LOS	<i>D</i>		D = v _p / S	pc/mi/ln
			Required Number of Lanes, N	

Glossary

Factor Location

N - Number of lanes	S - Speed	E _R - Exhibits 11-10, 11-12	f _{LW} - Exhibit 11-8
V - Hourly volume	D - Density	E _T - Exhibits 11-10, 11-11, 11-13	f _{LC} - Exhibit 11-9
v _p - Flow rate	FFS - Free-flow speed	f _p - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v _p - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Site Information

Analyst	RR	Highway/Direction of Travel	I-26
Agency or Company	HNTB North Carolina, PC	From/To	US 64 to Upward Road
Date Performed	2/21/2014	Jurisdiction	Buncombe County
Analysis Time Period	Peak	Analysis Year	2011 Build 8/6 Lanes

Project Description *STIP I4400/I-4700 - I-26 Widening*

Oper.(LOS) Des.(N) Planning Data

Flow Inputs

Volume, V	2681	veh/h	Peak-Hour Factor, PHF	0.90
AADT		veh/day	%Trucks and Buses, P _T	6
Peak-Hr Prop. of AADT, K			%RVs, P _R	0
Peak-Hr Direction Prop, D			General Terrain:	Rolling
DDHV = AADT x K x D		veh/h	Grade % Length	mi
			Up/Down %	

Calculate Flow Adjustments

f _p	1.00	E _R	2.0
E _T	2.5	f _{HV} = 1/[1+P _T (E _T - 1) + P _R (E _R - 1)]	0.917

Speed Inputs

Calc Speed Adj and FFS

Lane Width		ft		
Rt-Side Lat. Clearance		ft	f _{LW}	mph
Number of Lanes, N	3		f _{LC}	mph
Total Ramp Density, TRD		ramps/mi	TRD Adjustment	mph
FFS (measured)	65.0	mph	FFS	65.0 mph
Base free-flow Speed, BFFS		mph		

LOS and Performance Measures

Design (N)

<u>Operational (LOS)</u>			<u>Design (N)</u>	
v _p = (V or DDHV) / (PHF x N x f _{HV} x f _p)	1082	pc/h/ln	Design LOS	
S	65.0	mph	v _p = (V or DDHV) / (PHF x N x f _{HV} x f _p)	pc/h/ln
D = v _p / S	16.6	pc/mi/ln	S	mph
LOS	B		D = v _p / S	pc/mi/ln
			Required Number of Lanes, N	

Glossary

Factor Location

N - Number of lanes	S - Speed	E _R - Exhibits 11-10, 11-12	f _{LW} - Exhibit 11-8
V - Hourly volume	D - Density	E _T - Exhibits 11-10, 11-11, 11-13	f _{LC} - Exhibit 11-9
v _p - Flow rate	FFS - Free-flow speed	f _p - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v _p - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

BASIC FREEWAY SEGMENTS WORKSHEET

General Information				Site Information			
Analyst	RR	Highway/Direction of Travel	I-26	From/To	US 64 to Upward Road		
Agency or Company	HNTB North Carolina, PC	Jurisdiction	Buncombe County	Analysis Year	2015 Build 8/6 Lanes		
Date Performed	2/21/2014						
Analysis Time Period	Peak						
Project Description <i>STIP I4400/I-4700 - I-26 Widening</i>							
<input checked="" type="checkbox"/> Oper.(LOS)		<input type="checkbox"/> Des.(N)		<input type="checkbox"/> Planning Data			
Flow Inputs							
Volume, V	2940	veh/h	Peak-Hour Factor, PHF	0.90			
AADT		veh/day	%Trucks and Buses, P _T	6			
Peak-Hr Prop. of AADT, K			%RVs, P _R	0			
Peak-Hr Direction Prop, D			General Terrain:	Rolling			
DDHV = AADT x K x D		veh/h	Grade % Length	mi			
			Up/Down %				
Calculate Flow Adjustments							
f _p	1.00		E _R	2.0			
E _T	2.5		f _{HV} = 1/[1+P _T (E _T - 1) + P _R (E _R - 1)]	0.917			
Speed Inputs				Calc Speed Adj and FFS			
Lane Width		ft	f _{LW}	mph			
Rt-Side Lat. Clearance		ft	f _{LC}	mph			
Number of Lanes, N	3		TRD Adjustment	mph			
Total Ramp Density, TRD		ramps/mi	FFS	65.0 mph			
FFS (measured)	65.0	mph					
Base free-flow Speed, BFFS		mph					
LOS and Performance Measures				Design (N)			
<u>Operational (LOS)</u>				<u>Design (N)</u>			
v _p = (V or DDHV) / (PHF x N x f _{HV} x f _p)	1187	pc/h/ln	Design LOS				
S	65.0	mph	v _p = (V or DDHV) / (PHF x N x f _{HV} x f _p)	pc/h/ln			
D = v _p / S	18.3	pc/mi/ln	S	mph			
LOS	C		D = v _p / S	pc/mi/ln			
			Required Number of Lanes, N				
Glossary				Factor Location			
N - Number of lanes	S - Speed			E _R - Exhibits 11-10, 11-12	f _{LW} - Exhibit 11-8		
V - Hourly volume	D - Density			E _T - Exhibits 11-10, 11-11, 11-13	f _{LC} - Exhibit 11-9		
v _p - Flow rate	FFS - Free-flow speed			f _p - Page 11-18	TRD - Page 11-11		
LOS - Level of service	BFFS - Base free-flow speed			LOS, S, FFS, v _p - Exhibits 11-2, 11-3			
DDHV - Directional design hour volume							

BASIC FREEWAY SEGMENTS WORKSHEET

General Information				Site Information			
Analyst	RR			Highway/Direction of Travel	I-26		
Agency or Company	HNTB North Carolina, PC			From/To	US 64 to Upward Road		
Date Performed	2/21/2014			Jurisdiction	Buncombe County		
Analysis Time Period	Peak			Analysis Year	2020 Build 8/6 Lanes		
Project Description <i>STIP I4400/I-4700 - I-26 Widening</i>							
<input checked="" type="checkbox"/> Oper.(LOS)		<input type="checkbox"/> Des.(N)		<input type="checkbox"/> Planning Data			
Flow Inputs							
Volume, V	3264	veh/h	Peak-Hour Factor, PHF	0.90			
AADT		veh/day	%Trucks and Buses, P _T	6			
Peak-Hr Prop. of AADT, K			%RVs, P _R	0			
Peak-Hr Direction Prop, D			General Terrain:	Rolling			
DDHV = AADT x K x D		veh/h	Grade % Length	mi			
			Up/Down %				
Calculate Flow Adjustments							
f _p	1.00		E _R	2.0			
E _T	2.5		f _{HV} = 1/[1+P _T (E _T - 1) + P _R (E _R - 1)]	0.917			
Speed Inputs				Calc Speed Adj and FFS			
Lane Width		ft	f _{LW}	mph			
Rt-Side Lat. Clearance		ft	f _{LC}	mph			
Number of Lanes, N	3		TRD Adjustment	mph			
Total Ramp Density, TRD		ramps/mi	FFS	65.0	mph		
FFS (measured)	65.0	mph					
Base free-flow Speed, BFFS		mph					
LOS and Performance Measures				Design (N)			
<u>Operational (LOS)</u>				<u>Design (N)</u>			
v _p = (V or DDHV) / (PHF x N x f _{HV} x f _p)	1318	pc/h/ln	Design LOS				
S	65.0	mph	v _p = (V or DDHV) / (PHF x N x f _{HV} x f _p)	pc/h/ln			
D = v _p / S	20.3	pc/mi/ln	S	mph			
LOS	C		D = v _p / S	pc/mi/ln			
				Required Number of Lanes, N			
Glossary				Factor Location			
N - Number of lanes	S - Speed			E _R - Exhibits 11-10, 11-12	f _{LW} - Exhibit 11-8		
V - Hourly volume	D - Density			E _T - Exhibits 11-10, 11-11, 11-13	f _{LC} - Exhibit 11-9		
v _p - Flow rate	FFS - Free-flow speed			f _p - Page 11-18	TRD - Page 11-11		
LOS - Level of service	BFFS - Base free-flow speed			LOS, S, FFS, v _p - Exhibits 11-2, 11-3			
DDHV - Directional design hour volume							

BASIC FREEWAY SEGMENTS WORKSHEET

General Information				Site Information			
Analyst	RR	Highway/Direction of Travel	I-26	From/To	US 64 to Upward Road		
Agency or Company	HNTB North Carolina, PC	Jurisdiction	Buncombe County	Analysis Year	2025 Build 8/6 Lanes		
Date Performed	2/21/2014						
Analysis Time Period	Peak						
Project Description <i>STIP I4400/I-4700 - I-26 Widening</i>							
<input checked="" type="checkbox"/> Oper.(LOS)		<input type="checkbox"/> Des.(N)		<input type="checkbox"/> Planning Data			
Flow Inputs							
Volume, V	3587	veh/h	Peak-Hour Factor, PHF	0.90			
AADT		veh/day	%Trucks and Buses, P _T	6			
Peak-Hr Prop. of AADT, K			%RVs, P _R	0			
Peak-Hr Direction Prop, D			General Terrain:	Rolling			
DDHV = AADT x K x D		veh/h	Grade % Length	mi			
			Up/Down %				
Calculate Flow Adjustments							
f _p	1.00		E _R	2.0			
E _T	2.5		f _{HV} = 1/[1+P _T (E _T - 1) + P _R (E _R - 1)]	0.917			
Speed Inputs				Calc Speed Adj and FFS			
Lane Width		ft	f _{LW}	mph			
Rt-Side Lat. Clearance		ft	f _{LC}	mph			
Number of Lanes, N	3		TRD Adjustment	mph			
Total Ramp Density, TRD		ramps/mi	FFS	65.0 mph			
FFS (measured)	65.0	mph					
Base free-flow Speed, BFFS		mph					
LOS and Performance Measures				Design (N)			
<u>Operational (LOS)</u>				<u>Design (N)</u>			
v _p = (V or DDHV) / (PHF x N x f _{HV} x f _p)	1448	pc/h/ln	Design LOS				
S	65.0	mph	v _p = (V or DDHV) / (PHF x N x f _{HV} x f _p)	pc/h/ln			
D = v _p / S	22.3	pc/mi/ln	S	mph			
LOS	C		D = v _p / S	pc/mi/ln			
			Required Number of Lanes, N				
Glossary				Factor Location			
N - Number of lanes	S - Speed			E _R - Exhibits 11-10, 11-12	f _{LW} - Exhibit 11-8		
V - Hourly volume	D - Density			E _T - Exhibits 11-10, 11-11, 11-13	f _{LC} - Exhibit 11-9		
v _p - Flow rate	FFS - Free-flow speed			f _p - Page 11-18	TRD - Page 11-11		
LOS - Level of service	BFFS - Base free-flow speed			LOS, S, FFS, v _p - Exhibits 11-2, 11-3			
DDHV - Directional design hour volume							

BASIC FREEWAY SEGMENTS WORKSHEET

General Information				Site Information			
Analyst	RR	Highway/Direction of Travel	I-26	From/To	US 64 to Upward Road		
Agency or Company	HNTB North Carolina, PC	Jurisdiction	Buncombe County	Analysis Year	2030 Build 8/6 Lanes		
Date Performed	2/21/2014						
Analysis Time Period	Peak						
Project Description <i>STIP I4400/I-4700 - I-26 Widening</i>							
<input checked="" type="checkbox"/> Oper.(LOS)		<input type="checkbox"/> Des.(N)		<input type="checkbox"/> Planning Data			
Flow Inputs							
Volume, V	3911	veh/h	Peak-Hour Factor, PHF	0.90			
AADT		veh/day	%Trucks and Buses, P _T	6			
Peak-Hr Prop. of AADT, K			%RVs, P _R	0			
Peak-Hr Direction Prop, D			General Terrain:	Rolling			
DDHV = AADT x K x D		veh/h	Grade % Length	mi			
			Up/Down %				
Calculate Flow Adjustments							
f _p	1.00		E _R	2.0			
E _T	2.5		f _{HV} = 1/[1+P _T (E _T - 1) + P _R (E _R - 1)]	0.917			
Speed Inputs				Calc Speed Adj and FFS			
Lane Width		ft	f _{LW}	mph			
Rt-Side Lat. Clearance		ft	f _{LC}	mph			
Number of Lanes, N	3		TRD Adjustment	mph			
Total Ramp Density, TRD		ramps/mi	FFS	65.0 mph			
FFS (measured)	65.0	mph					
Base free-flow Speed, BFFS		mph					
LOS and Performance Measures				Design (N)			
<u>Operational (LOS)</u>				<u>Design (N)</u>			
v _p = (V or DDHV) / (PHF x N x f _{HV} x f _p)	1579	pc/h/ln	Design LOS				
S	64.5	mph	v _p = (V or DDHV) / (PHF x N x f _{HV} x f _p)	pc/h/ln			
D = v _p / S	24.5	pc/mi/ln	S	mph			
LOS	C		D = v _p / S	pc/mi/ln			
				Required Number of Lanes, N			
Glossary				Factor Location			
N - Number of lanes	S - Speed			E _R - Exhibits 11-10, 11-12	f _{LW} - Exhibit 11-8		
V - Hourly volume	D - Density			E _T - Exhibits 11-10, 11-11, 11-13	f _{LC} - Exhibit 11-9		
v _p - Flow rate	FFS - Free-flow speed			f _p - Page 11-18	TRD - Page 11-11		
LOS - Level of service	BFFS - Base free-flow speed			LOS, S, FFS, v _p - Exhibits 11-2, 11-3			
DDHV - Directional design hour volume							

BASIC FREEWAY SEGMENTS WORKSHEET

General Information				Site Information			
Analyst	RR	Highway/Direction of Travel	I-26	From/To	US 64 to Upward Road		
Agency or Company	HNTB North Carolina, PC	Jurisdiction	Buncombe County	Analysis Year	2035 Build 8/6 Lanes		
Date Performed	2/21/2014						
Analysis Time Period	Peak						
Project Description <i>STIP I4400/I-4700 - I-26 Widening</i>							
<input checked="" type="checkbox"/> Oper.(LOS)		<input type="checkbox"/> Des.(N)		<input type="checkbox"/> Planning Data			
Flow Inputs							
Volume, V	4234	veh/h	Peak-Hour Factor, PHF	0.90			
AADT		veh/day	%Trucks and Buses, P _T	6			
Peak-Hr Prop. of AADT, K			%RVs, P _R	0			
Peak-Hr Direction Prop, D			General Terrain:	Rolling			
DDHV = AADT x K x D		veh/h	Grade % Length	mi			
			Up/Down %				
Calculate Flow Adjustments							
f _p	1.00		E _R	2.0			
E _T	2.5		f _{HV} = 1/[1+P _T (E _T - 1) + P _R (E _R - 1)]	0.917			
Speed Inputs				Calc Speed Adj and FFS			
Lane Width		ft	f _{LW}	mph			
Rt-Side Lat. Clearance		ft	f _{LC}	mph			
Number of Lanes, N	3		TRD Adjustment	mph			
Total Ramp Density, TRD		ramps/mi	FFS	65.0 mph			
FFS (measured)	65.0	mph					
Base free-flow Speed, BFFS		mph					
LOS and Performance Measures				Design (N)			
<u>Operational (LOS)</u>				<u>Design (N)</u>			
v _p = (V or DDHV) / (PHF x N x f _{HV} x f _p)	1709	pc/h/ln	Design LOS				
S	63.6	mph	v _p = (V or DDHV) / (PHF x N x f _{HV} x f _p)	pc/h/ln			
D = v _p / S	26.9	pc/mi/ln	S	mph			
LOS	D		D = v _p / S	pc/mi/ln			
				Required Number of Lanes, N			
Glossary				Factor Location			
N - Number of lanes	S - Speed			E _R - Exhibits 11-10, 11-12	f _{LW} - Exhibit 11-8		
V - Hourly volume	D - Density			E _T - Exhibits 11-10, 11-11, 11-13	f _{LC} - Exhibit 11-9		
v _p - Flow rate	FFS - Free-flow speed			f _p - Page 11-18	TRD - Page 11-11		
LOS - Level of service	BFFS - Base free-flow speed			LOS, S, FFS, v _p - Exhibits 11-2, 11-3			
DDHV - Directional design hour volume							

BASIC FREEWAY SEGMENTS WORKSHEET

General Information				Site Information			
Analyst	RR	Highway/Direction of Travel	I-26	From/To	US 64 to Upward Road		
Agency or Company	HNTB North Carolina, PC	Jurisdiction	Buncombe County	Analysis Year	2040 Build 8/6 Lanes		
Date Performed	2/21/2014						
Analysis Time Period	Peak						
Project Description <i>STIP I4400/I-4700 - I-26 Widening</i>							
<input checked="" type="checkbox"/> Oper.(LOS)		<input type="checkbox"/> Des.(N)		<input type="checkbox"/> Planning Data			
Flow Inputs							
Volume, V	4558	veh/h	Peak-Hour Factor, PHF	0.90			
AADT		veh/day	%Trucks and Buses, P _T	6			
Peak-Hr Prop. of AADT, K			%RVs, P _R	0			
Peak-Hr Direction Prop, D			General Terrain:	Rolling			
DDHV = AADT x K x D		veh/h	Grade % Length	mi			
			Up/Down %				
Calculate Flow Adjustments							
f _p	1.00		E _R	2.0			
E _T	2.5		f _{HV} = 1/[1+P _T (E _T - 1) + P _R (E _R - 1)]	0.917			
Speed Inputs				Calc Speed Adj and FFS			
Lane Width		ft	f _{LW}	mph			
Rt-Side Lat. Clearance		ft	f _{LC}	mph			
Number of Lanes, N	3		TRD Adjustment	mph			
Total Ramp Density, TRD		ramps/mi	FFS	65.0 mph			
FFS (measured)	65.0	mph					
Base free-flow Speed, BFFS		mph					
LOS and Performance Measures				Design (N)			
<u>Operational (LOS)</u>				<u>Design (N)</u>			
v _p = (V or DDHV) / (PHF x N x f _{HV} x f _p)	1840	pc/h/ln	Design LOS				
S	62.3	mph	v _p = (V or DDHV) / (PHF x N x f _{HV} x f _p)	pc/h/ln			
D = v _p / S	29.6	pc/mi/ln	S	mph			
LOS	D		D = v _p / S	pc/mi/ln			
				Required Number of Lanes, N			
Glossary				Factor Location			
N - Number of lanes	S - Speed			E _R - Exhibits 11-10, 11-12	f _{LW} - Exhibit 11-8		
V - Hourly volume	D - Density			E _T - Exhibits 11-10, 11-11, 11-13	f _{LC} - Exhibit 11-9		
v _p - Flow rate	FFS - Free-flow speed			f _p - Page 11-18	TRD - Page 11-11		
LOS - Level of service	BFFS - Base free-flow speed			LOS, S, FFS, v _p - Exhibits 11-2, 11-3			
DDHV - Directional design hour volume							

Appendix H – US 25 - I-26 Speed and Travel Time Data

US 25 (Asheville Hwy) and I-26 Speed Distribution Summary

Deviation from Speed Limit (mph)	Driver Population			
	US 25 NB	US 25 SB	I-26 NB	I-26 SB
-20	0.0%	0.0%	0.0%	0.0%
-15	1.0%	0.9%	0.0%	0.0%
-10	0.0%	4.7%	0.0%	0.0%
-5	26.9%	55.7%	2.9%	1.0%
0	57.7%	34.9%	49.5%	19.0%
5	14.4%	3.8%	36.2%	44.8%
10	0.0%	0.0%	10.5%	25.7%
15	0.0%	0.0%	1.0%	7.6%
20	0.0%	0.0%	0.0%	1.9%
25	0.0%	0.0%	0.0%	0.0%

Average Speed (mph)	49.1	46.8	67.3	66.5
Speed Limit (mph)	50	50	65	60
# of Observations	104	106	105	105

Peak Periods Average Travel Speeds

Number of Time Stamps 4

NORTHBOUND US 25 AM

Y Line	Location	Run 1	Run 2	Run 3	Run 4	Run 5	Run 6	Run 7	Run 8	Run 9	Run 10	Avg Travel Time (min:sec)	Avg. Total Travel Time (min)
Cureton Place	Stop Bar	7:14:51	7:22:26	7:27:51	7:33:27	7:39:27	7:47:56	7:55:34	7:59:59	8:05:18	8:10:37	-	1.12
I-26 SB Ramps	Stop Bar	7:15:04	7:22:39	7:28:13	7:33:47	7:40:44	7:49:50	7:55:53	8:01:00	8:06:21	8:11:40	00:46.5	
I-26 NB Ramps	Stop Bar	7:15:13	7:22:49	7:28:24	7:33:59	7:40:58	7:50:06	7:56:05	8:01:13	8:06:32	8:11:54	00:12.2	
Maxwell Drive	Stop Bar	7:15:20	7:22:57	7:28:32	7:34:09	7:41:07	7:50:14	7:56:14	8:01:22	8:06:40	8:12:02	00:08.4	
Total		0:00:29	0:00:31	0:00:41	0:00:42	0:01:40	0:02:18	0:00:40	0:01:23	0:01:22	0:01:25	01:07.1	

SOUTHBOUND US 25 AM

Y Line	Location	Run 1	Run 2	Run 3	Run 4	Run 5	Run 6	Run 7	Run 8	Run 9	Run 10	Avg Travel Time (min:sec)	Avg. Total Travel Time (min)
Maxwell Drive	Stop Bar	7:17:57	7:24:40	7:30:23	7:36:07	7:43:15	7:52:39	7:57:54	8:03:00	8:08:25	8:14:17	-	1.03
I-26 NB Ramps	Stop Bar	7:18:50	7:25:23	7:31:08	7:36:14	7:44:51	7:52:50	7:58:03	8:03:07	8:08:33	8:14:23	00:28.5	
I-26 SB Ramps	Stop Bar	7:19:04	7:25:49	7:31:25	7:36:51	7:45:04	7:53:25	7:58:13	8:03:18	8:08:43	8:14:33	00:18.3	
Cureton Place	Stop Bar	7:19:19	7:26:06	7:31:41	7:37:10	7:45:17	7:53:44	7:58:26	8:03:31	8:08:56	8:14:46	00:15.1	
Total		0:01:22	0:01:26	0:01:18	0:01:03	0:02:02	0:01:05	0:00:32	0:00:31	0:00:31	0:00:29	01:01.9	

NORTHBOUND US 25 PM

Y Line	Location	Run 1	Run 2	Run 3	Run 4	Run 5	Run 6	Run 7	Run 8	Run 9	Run 10	Avg Travel Time (min:sec)	Avg. Total Travel Time (min)
Cureton Place	Stop Bar	16:08:38	16:17:19	16:24:45	16:31:29	16:39:24	16:45:05	16:51:39	16:58:03	17:03:48	17:10:10	-	0.99
I-26 SB Ramps	Stop Bar	16:09:31	16:17:45	16:24:57	16:31:42	16:39:57	16:46:16	16:52:44	16:58:58	17:04:00	17:10:25	00:35.5	
I-26 NB Ramps	Stop Bar	16:09:47	16:18:06	16:25:06	16:31:51	16:40:11	16:46:29	16:53:02	16:59:21	17:04:11	17:10:39	00:14.8	
Maxwell Drive	Stop Bar	16:09:56	16:18:16	16:25:14	16:32:00	16:40:20	16:46:39	16:53:10	16:59:31	17:04:19	17:10:48	00:09.0	
Total		0:01:18	0:00:57	0:00:29	0:00:31	0:00:56	0:01:34	0:01:31	0:01:28	0:00:31	0:00:38	00:59.3	

SOUTHBOUND US 25 PM

Y Line	Location	Run 1	Run 2	Run 3	Run 4	Run 5	Run 6	Run 7	Run 8	Run 9	Run 10	Avg Travel Time (min:sec)	Avg. Total Travel Time (min)
Maxwell Drive	Stop Bar	16:14:33	16:22:40	16:29:33	16:37:30	16:42:39	16:48:53	16:55:56	17:01:12	17:07:13	17:13:28	-	0.73
I-26 NB Ramps	Stop Bar	16:14:40	16:22:50	16:29:40	16:37:39	16:42:45	16:48:59	16:56:03	17:01:40	17:08:01	17:14:31	00:19.1	
I-26 SB Ramps	Stop Bar	16:14:49	16:23:00	16:29:49	16:37:50	16:42:55	16:49:08	16:56:12	17:01:53	17:08:15	17:14:44	00:10.7	
Cureton Place	Stop Bar	16:15:03	16:23:13	16:30:03	16:38:04	16:43:09	16:49:21	16:56:25	17:02:07	17:08:29	17:14:59	00:13.8	
Total		0:00:30	0:00:33	0:00:30	0:00:34	0:00:30	0:00:28	0:00:29	0:00:55	0:01:16	0:01:31	00:43.6	