FRESENIUS DISTRIBUTION CENTER

TRAFFIC IMPACT STUDY

5304 E. GOVERNOR JOHN SEVIER HIGHWAY (SR 168)
KNOXVILLE, TN

CCI PROJECT NO. 01403-0000

PREPARED FOR:
Fresenius USD Manufacturing, Inc.
1909 Tyler Street
Hollywood, FL 33020

SUBMITTED BY
Cannon & Cannon, Inc.
8550 Kingston Pike
Knoxville, TN 37919
865.670.8555

CANNON & CANNON INC
CONSULTING ENGINEERS
FIELD SURVEYORS

May 9
2018

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EXECUTIVE SUMMARY

This report provides a summary of a traffic impact study that was performed for a proposed warehouse/distribution center facility to be located on John Sevier Highway (SR 168) just south of the Interstate 40 overpass in east Knox County. The project site is located on the east side of John Sevier Highway between Roscoe Lane and Hammer Road.

The purpose of this study was the evaluation of the traffic operational and safety impacts of the proposed development upon roadways in the vicinity of the site. Of particular interest were the intersections of John Sevier Highway with Roscoe Lane, the truck access driveway intersection on John Sevier Highway, and the nearby intersection of John Sevier Highway with Asheville Highway (US 70). Appropriate intersection evaluations were conducted at these locations, both with and without traffic volumes generated from the proposed development, in order to determine the anticipated impacts and to establish recommended measures to mitigate these impacts. These evaluations included intersection capacity analyses, corner sight distance reviews, and others as appropriate.

The primary conclusion of this study is that the traffic generated from the proposed development will have very minimal impacts on the study intersections. Capacity analyses indicate that acceptable levels-of-service will be maintained during both peak traffic hours, and no additional turn lanes will be warranted based on traffic volumes. The following listing is a summary of the improvements and recommendations that resulted from this study:

1. Although a right-turn lane is not warranted by traffic volumes at the two site access locations on John Sevier Highway (Roscoe Lane and the truck driveway), it is recommended that a right-turn deceleration lane be considered for the truck driveway entrance. This is because trucks take significant time and distance to slow and turn, so a deceleration taper with short storage for this location would likely enhance intersection operations and safety. Such a lane should be designed for a minimum design speed of 50 mph.

2. Improve intersection corner sight distances at the proposed site access locations by trimming back any existing vegetation that inhibits sight lines, especially on the north side of Roscoe Lane. In addition, any site grading, landscaping, and signage that are installed for this project should be positioned such that sight lines are not restricted. It is recommended that these sight distances be established for approach speeds of 50 mph, requiring corner sight distances of at least 500 feet.

3. The pavement condition on Roscoe Lane should be evaluated and appropriate recommendations for improvement made.

INTRODUCTION & PURPOSE OF STUDY

This report provides a summary of a traffic impact study that was performed for a proposed warehouse/distribution center facility to be located on John Sevier Highway (SR 168) just south of the Interstate 40 overpass in east Knox County. The project site is located on the east side of John Sevier Highway between Roscoe Lane and Hammer Road. FIGURE 1 is a location map identifying the major roadways in the vicinity of the site.

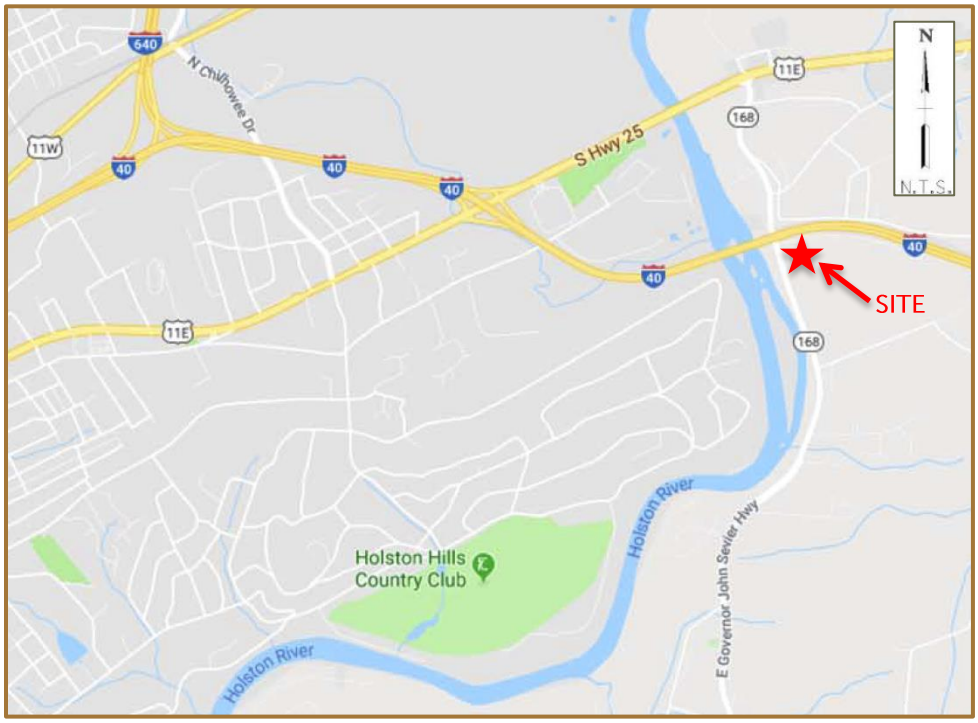


FIGURE 1
LOCATION MAP

The conceptual development plan for this proposed warehouse/distribution center involves a 618,000 square foot facility that includes warehouse and office space. This project will be owned by the Fresenius Corp., and it will serve to receive product from a manufacturing facility located to the south in the Forks-of-the-River industrial site and distribute that product from the warehouse to various sites nationwide. The project is to have two access driveways: one located on John Sevier Highway, which will be primarily for trucks, and one located off of Roscoe Lane. The Roscoe Lane driveway will be primarily for office personnel and associated activities. FIGURE 2 is a Conceptual Site Plan, which illustrates the proposed site configuration.

The purpose of this study was the evaluation of the traffic operational and safety impacts of the proposed development upon roadways in the vicinity of the site. Of particular interest were the intersections of John Sevier Highway with Roscoe Lane, the truck access driveway intersection on John Sevier Highway, and the nearby intersection of John Sevier Highway with Asheville Highway (US 70). Appropriate intersection evaluations were conducted at these locations, both with and without traffic volumes generated from the proposed development, in order to determine the anticipated impacts and to establish recommended measures to mitigate these impacts. These evaluations included intersection capacity analyses, corner sight distance reviews, and others as appropriate.

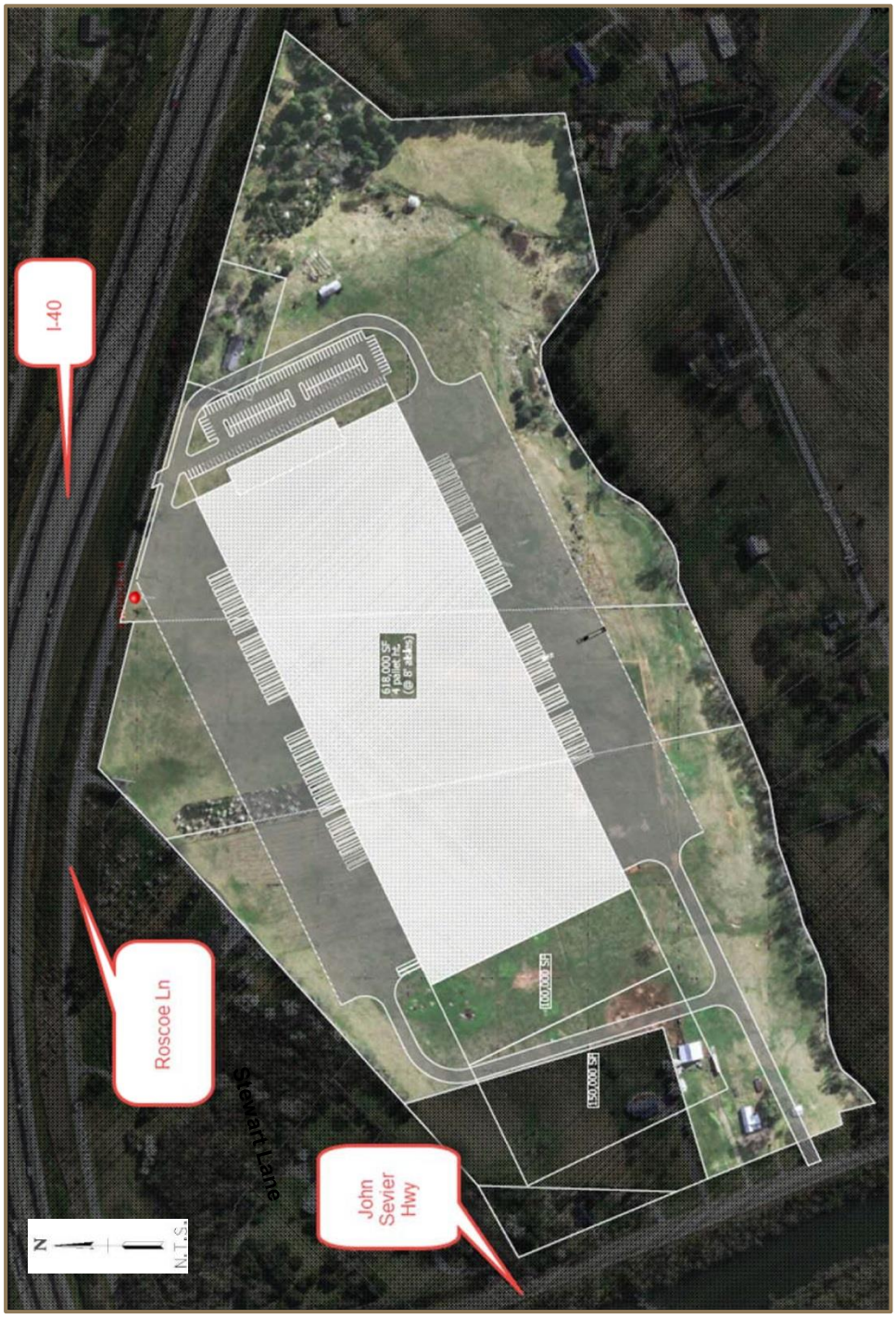


FIGURE 2
CONCEPTUAL SITE PLAN

EXISTING CONDITIONS

EXISTING ROADWAY CONDITIONS

John Sevier Highway (SR 168) is a Minor Arterial state highway that is maintained by the Tennessee Department of Transportation. It provides circumferential access around the southeastern portions of the City of Knoxville, and it helps provide access from these areas to Interstate 40. The roadway consists of one through travel lane in each direction, a center two-way left-turn lane, and varying width shoulders. The three travel lanes total approximately 36 feet in width. A small amount of curb and gutter is present on the east side of the roadway just south of Roscoe Lane. The speed limit on John Sevier Highway in the vicinity of the proposed development is posted as 45 mph. The 2016 ADT on John Sevier Highway south of the site was 12,947.

Asheville Highway (US 70), which is north of the project site, is a Major Arterial state highway maintained by the Tennessee Department of Transportation. From its signalized intersection with John Sevier Highway, this roadway provides direct access to Interstate 40 to the west. In the vicinity of John Sevier Highway, Asheville Highway is a four lane median-divided facility. A variety of left and right turn lanes are provided at the intersection of these two roadways, and the traffic signal provides east-west left turn phasing on Asheville Highway and split phasing north-south. The speed limit on Asheville Highway is posted as 45 mph. The 2016 ADT on Asheville Highway between John Sevier Highway and Interstate 40 was 35,401.

Roscoe Lane is a Local Street with only a few residences located on it. The roadway is approximately 2600 feet in length, ending in a dead end at its eastern terminus. The majority of the roadway consists of approximately 20 feet of asphalt paved surface, which is fairly rough and appears to be of a lower quality than most roadway pavements in Knox County.

EXISTING SITE CONDITIONS

As noted previously, the project site is located on the east side of John Sevier Highway between Roscoe Lane and Hammer Road. The majority of the site is an open field that has been used for farming/pasture in the past. A few trees and small buildings are also present. FIGURE 3 provides an overview of the area in the immediate vicinity of the project site.

FIGURE 3
EXISTING SITE CONDITIONS

EXISTING TRAFFIC DATA

Current traffic data was gathered for this study. The Tennessee Department of Transportation (TDOT) and the Knoxville Regional Transportation Planning Organization (TPO) collect annual average daily traffic (AADT) data annually on roadways in the study area. Two counts stations were found near the project site that were felt to have particular relevance for this study. The most currently available data from these stations are contained in Table 1.

TABLE 1: ANNUAL AVERAGE DAILY TRAFFIC COUNT SUMMARY

COUNT YEAR	TDOT COUNT STATION 385 ASHEVILLE HIGHWAY (SR 9) EAST OF HOLSTON RIVER	TDOT COUNT STATION 271 JOHN SEVIER HWY (SR 168) SOUTH OF ARMSTRONG ROAD
2016	35,401	12,947
2015	34,571	13,127
2014	32,770	11,472
2013	32,390	12,037
2012	32,016	12,174
2011	31,581	11,420

In addition to the available AADT data, intersection turning movement traffic counts were conducted at the intersections of John Sevier Highway with Roscoe Lane and Asheville Highway with John Sevier Highway. These counts were utilized to determine the current AM and PM peak hour operating volumes. The existing traffic counts are summarized on FIGURE 4, and the raw data traffic count summary sheets are contained in APPENDIX A.

EXISTING CAPACITY ANALYSES / LEVELS-OF-SERVICE

Capacity analyses employing the methods of the Highway Capacity Manual (HCM2010) were utilized to determine existing traffic operational conditions for this study. The capacity analyses were performed utilizing the 2018 existing traffic volumes, existing intersection traffic control, and existing lane configurations. Existing analyses indicate that both existing study intersections are operating at acceptable levels-of-service (LOS) of "C" or better for both peak traffic hours.

The EVALUATIONS section of this report may be referenced for tabular summaries of these analyses, while more detailed summaries are presented on the computer printouts contained in APPENDIX C. Also contained in APPENDIX C is a section entitled "Capacity and Level of Service Concepts", which provides a description of the utilized procedures.

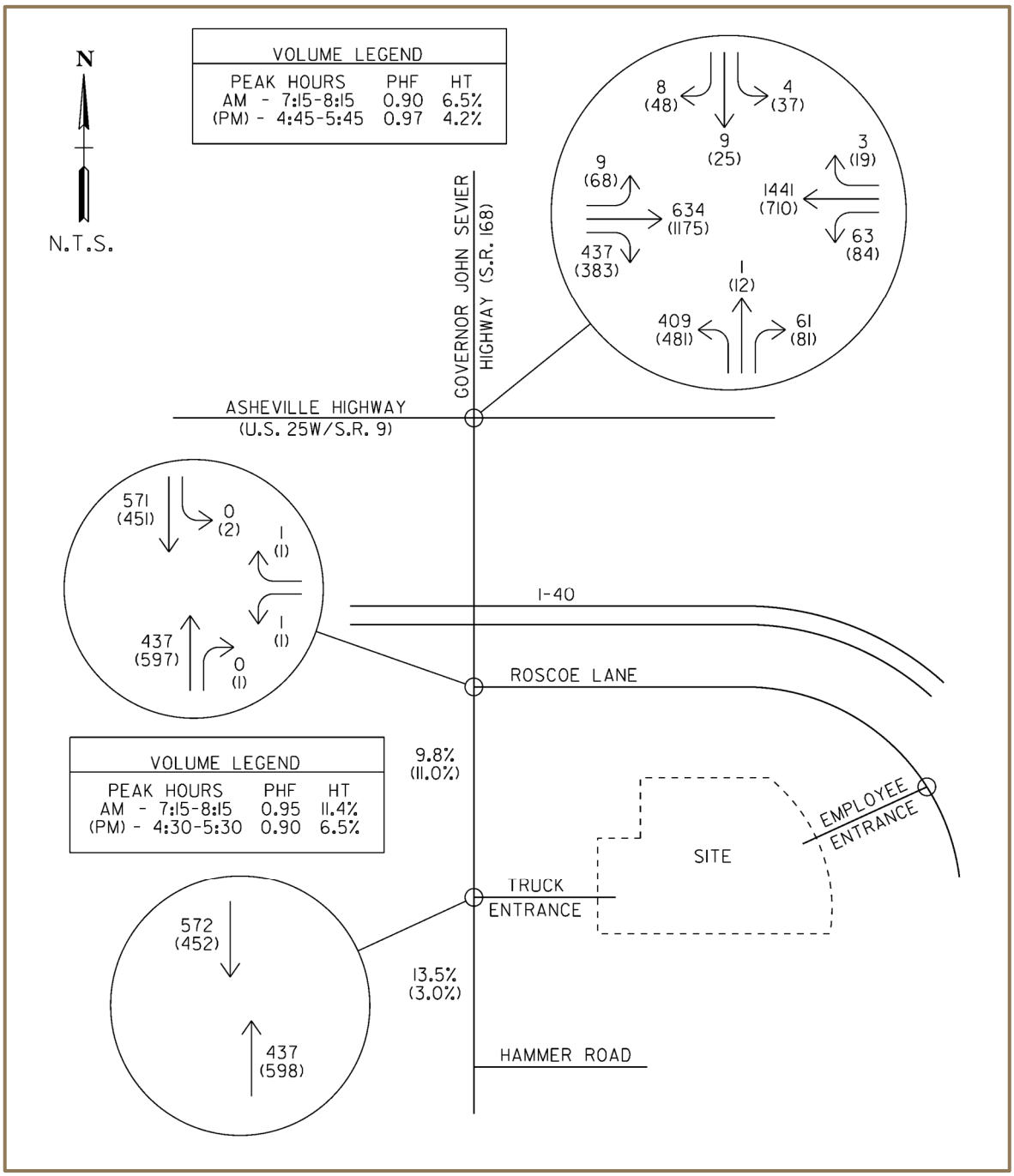


FIGURE 4
2018 EXISTING TRAFFIC VOLUMES

BACKGROUND CONDITIONS

BACKGROUND TRAFFIC GROWTH

The proposed development is anticipated to be constructed in one general phase with anticipated completion in approximately 2 years. Therefore, year 2020 was established as the appropriate analysis year for this study. In order to determine traffic volumes resulting solely from background traffic growth to year 2020, it was necessary to establish an annual growth rate for existing traffic. Based on the TDOT ADT traffic counts as well as knowledge of the area, a background annual traffic growth rate of 2.5% was established. Figure 5 contains the background traffic volumes that would result from a 2.5% annual growth rate from year 2018, when the counts were conducted, to year 2020. The background traffic volumes shown on FIGURE 5 represent year 2020 background growth conditions without traffic related to the proposed development.

BACKGROUND CAPACITY ANALYSES / LEVELS-OF-SERVICE

Capacity analyses as described in the EXISTING CONDITIONS section of this report were conducted utilizing the Year 2020 background volumes shown in FIGURES 5, existing intersection traffic control, and existing lane configurations. Existing analyses indicate that both existing study intersections would be expected to operate at acceptable levels-of-service (LOS) of "D" or better for both peak traffic hours.

The EVALUATIONS section of this report may be referenced for tabular summaries of these analyses, while more detailed summaries are presented on the computer printouts contained in APPENDIX C. Also contained in APPENDIX C is a section entitled "Capacity and Level of Service Concepts", which provides a description of the utilized procedures.

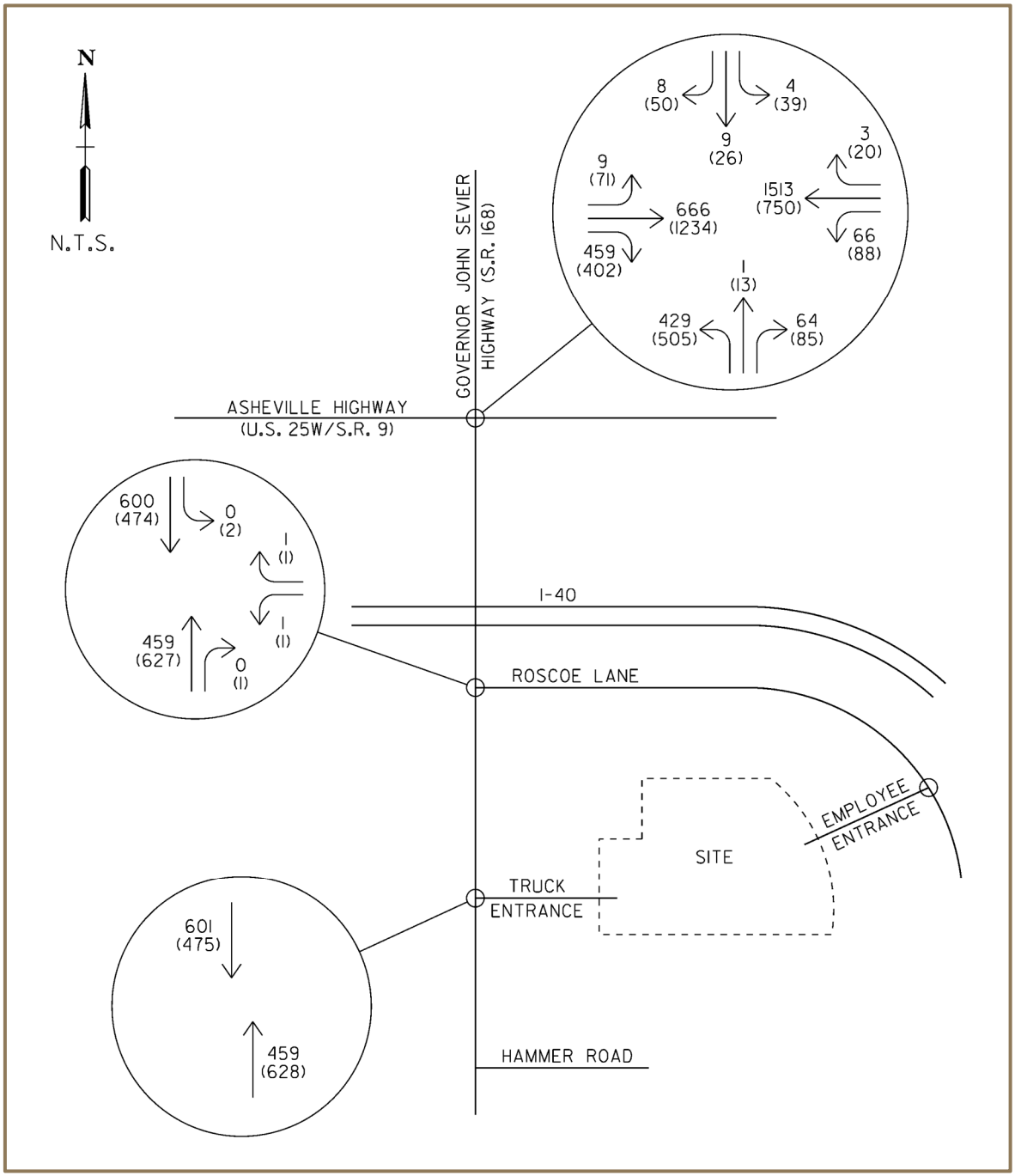


FIGURE 5
2020 BACKGROUND TRAFFIC VOLUMES

FUTURE CONDITIONS

TRIP GENERATION

In order to estimate the expected traffic volumes to be generated by the proposed development, the data and procedures of Trip Generation, Tenth Edition (Institute of Transportation Engineers, 2017) were utilized. The proposed development will include approximately 618,000 square feet of warehousing / distribution space. ITE Land Use Code 154 (High-Cube Transload and Short-Term Storage Warehouse) was utilized to derive trip generation volumes expected to be associated with the proposed distribution center development. The generated traffic volumes were determined based on the data for the peak hours of adjacent street traffic. See TABLE 2 for a summary of the traffic generated for this project. More detailed information is contained in APPENDIX B.

TABLE 2: TRIP GENERATION SUMMARY

LAND USE	ITE CODE	SIZE (SF)	WEEKDAY (TRIPS/DAY)	AM PEAK HOUR (TRIPS/HR)	PM PEAK HOUR (TRIPS/HR)
High-Cube Transload / Short-Term Storage Warehouse	154	618,000			
Entering Trips			433	38	17
Exiting Trips			433	11	45
TOTAL			866	49	62

TRIP DISTRIBUTION AND ASSIGNMENT

FIGURE 6 provides a summary of the trip distribution patterns assumed for this study. These patterns were based on the existing traffic patterns derived from the traffic counts conducted for this study as well as knowledge of the area. FIGURE 7 provides a summary of the anticipated trips as assigned to the study intersections and proposed site driveways utilizing the external trip generation data from TABLE 2 and the distribution patterns shown on FIGURE 6.

FUTURE TRAFFIC VOLUMES

Future projected traffic volumes were developed by adding the generated trips shown in FIGURE 7 to the 2020 background traffic volumes developed in the previous section (FIGURE 5). These combined Year 2020 volumes reflect the existing traffic, the background traffic growth, and the newly generated traffic from the proposed development. FIGURE 8 represents the 2020 combined traffic data with trips generated from the proposed development. The volumes shown in FIGURE 8 are the combined volumes used in the analysis of the future conditions.

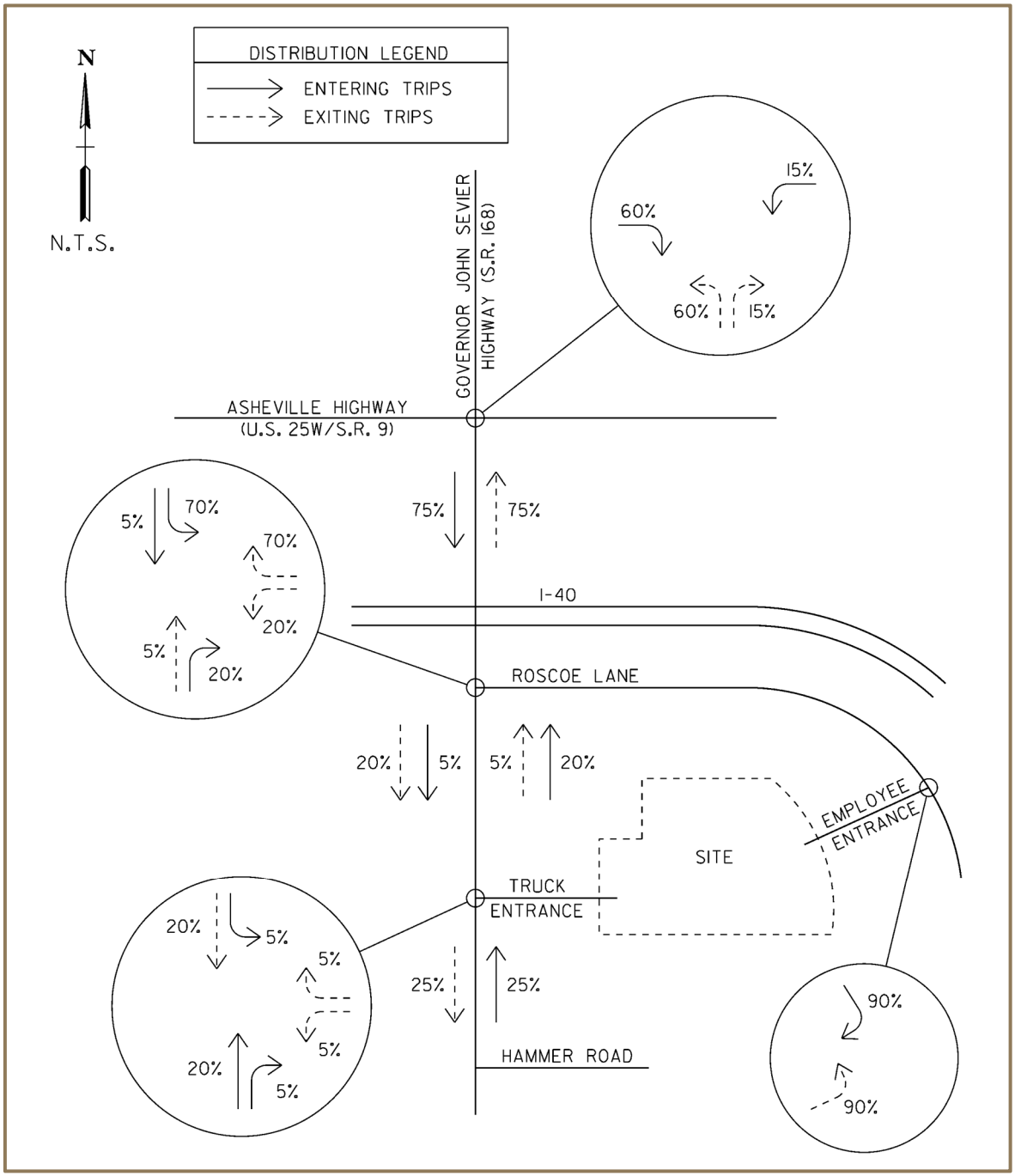


FIGURE 6
TRIP DISTRIBUTION PATTERNS

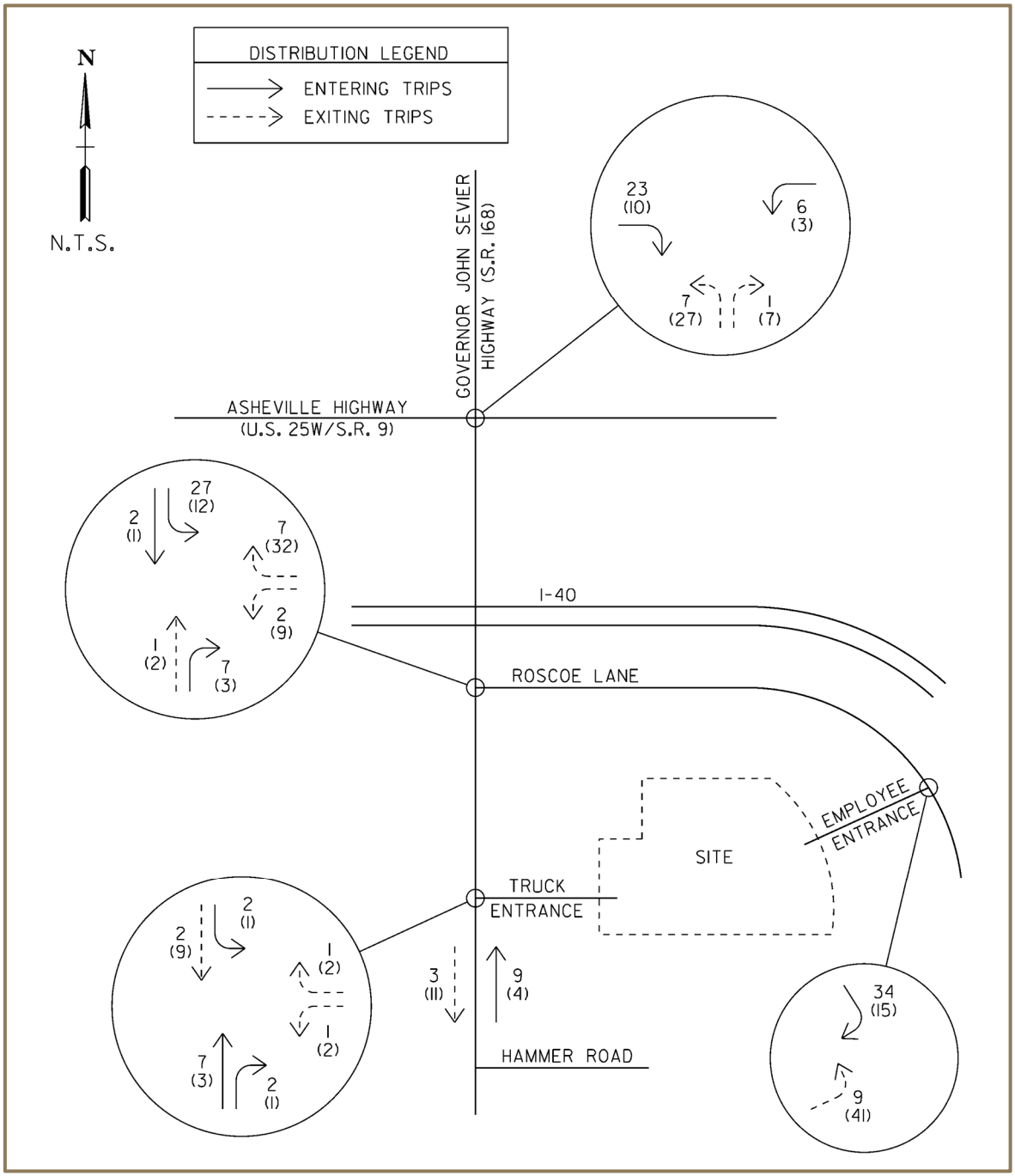


FIGURE 7
GENERATED TRIPS

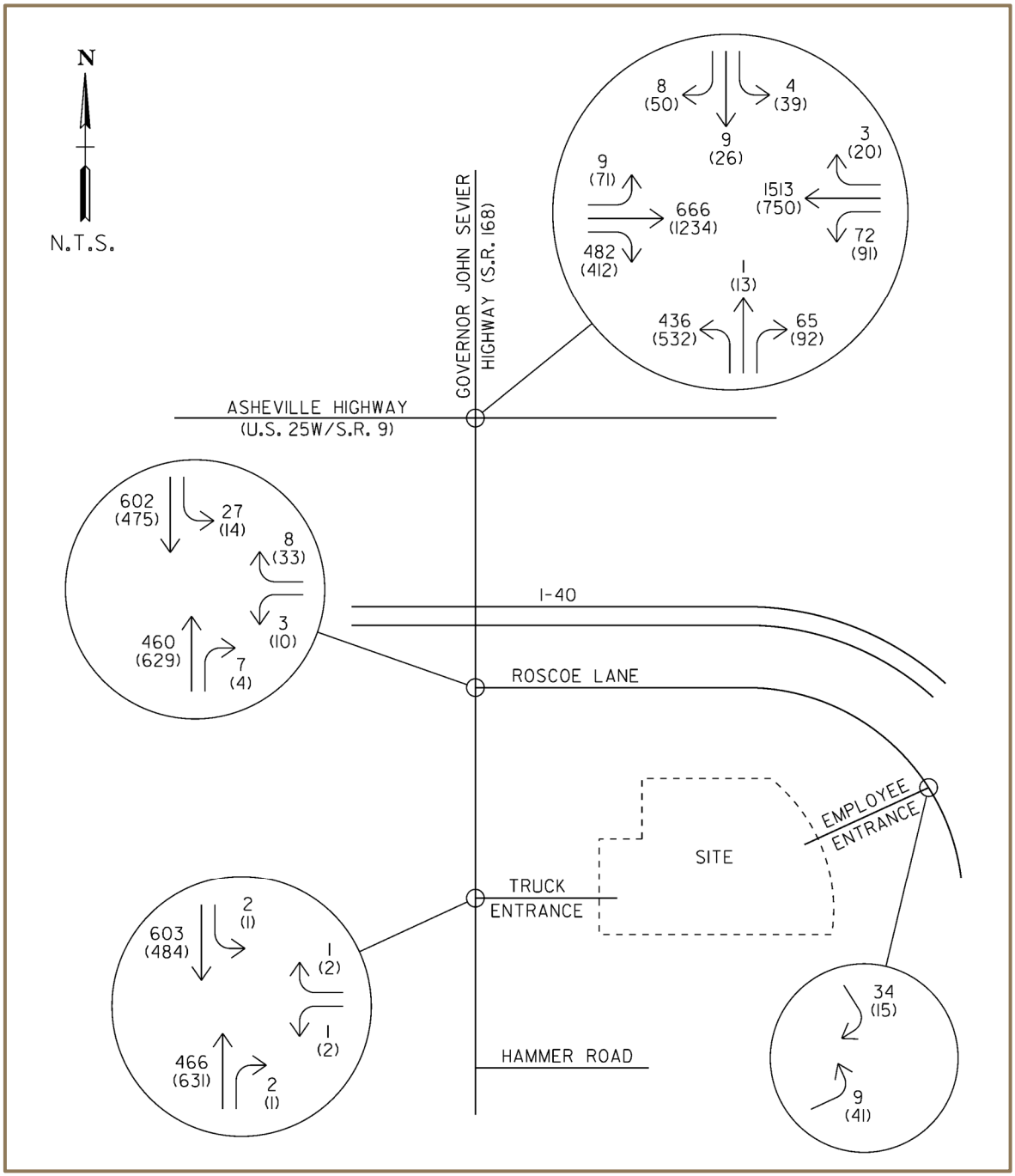


FIGURE 8
2020 COMBINED TRAFFIC VOLUMES

FUTURE CAPACITY ANALYSES / LEVELS-OF-SERVICE

Capacity analyses as described in the EXISTING CONDITIONS section of this report were conducted for 2020 full build-out conditions utilizing the Year 2020 combined traffic volumes shown in FIGURE 8, existing intersection traffic control, and existing lane configurations. These combined traffic analyses indicate that all three project study intersections would be expected to operate at acceptable levels-of-service (LOS) of "D" or better for both peak traffic hours.

The EVALUATIONS section of this report may be referenced for tabular summaries of these analyses, while more detailed summaries are presented on the computer printouts contained in APPENDIX C. Also contained in APPENDIX C is a section entitled "Capacity and Level of Service Concepts", which provides a description of the utilized procedures.

EVALUATIONS

INTERSECTION CAPACITY ANALYSES

As discussed in the preceding sections of this report, capacity analyses employing the methods of the Highway Capacity Manual (HCM2020) were conducted for the study intersections. These analyses were performed for 2018 existing, 2020 background, and anticipated 2020 combined traffic conditions, with existing intersection traffic control and existing lane configurations. A summary of the capacity analysis results for the Year 2018 Existing Conditions, Year 2020 Background Conditions, and Year 2020 Combined Conditions is shown in TABLE 3.

TABLE 3: CAPACITY ANALYSES SUMMARY

INTERSECTION	TIME PERIOD	YEAR 2018 EXISTING (LOS/DELAY)	YEAR 2020 BACKGROUND (LOS/DELAY)	YEAR 2020 COMBINED (LOS/DELAY)
John Sevier Highway at Roscoe Lane (SIDE STREET STOP CONTROL)[1]	A.M. P.M.	B 12.8 B 14.2	B 13.1 B 14.6	B 12.6 C 15.1
John Sevier Highway at Truck Entrance (SIDE STREET STOP CONTROL)[1]	A.M. P.M.	n/a	n/a	B 18.8 C 16.4
John Sevier Highway at Asheville Highway (SIGNALIZED CONTROL)[2]	A.M. P.M.	C 27.0 C 34.1	C 28.4 D 35.7	C 28.6 D 36.8

[1] SIDE-STREET STOP CONTROL – Data provided are Level-of-Service (LOS) and Average Vehicular Delay (seconds) for the side street approach utilizing HCM methodology.
[2] SIGNALIZED CONTROL – Data provided are Level-of-Service (LOS) and Average Vehicular Delay (seconds) for the full intersection utilizing HCM methodology. Timing is existing for EXISTING and BACKGROUND analyses, splits optimized with existing cycle lengths for COMBINED.
See Appendix for detailed computer print-out summaries and discussion of Capacity and Level-of-Service concepts.

SIGHT DISTANCE ASSESSMENT

Intersection corner sight distance was field assessed looking both directions along John Sevier Highway from both the Roscoe Lane intersection and the proposed truck access driveway. The posted speed limit along John Sevier Highway is 45 mph, so the minimum required sight distance to oncoming traffic is 450 feet in accordance with Knox County and Knoxville/Knox County MPC regulations. The estimated sight distances are as follows:

1) Roscoe Lane – Approximately 490 feet looking right and exceeding 600 feet looking left.
2) Truck Access - Exceeding 600 feet looking right and exceeding 700 feet looking left.

The sight distance at Roscoe Lane looking right is inhibited by a curve and some trees and vegetation on the inside of the curve. The sight distance could be increased to well over 500 feet by cutting this vegetation, which appears to be on the roadway right-of-way.

TURN LANE ASSESSMENT

A center two-way left-turn lane exists at the two primary study intersections on John Sevier Highway. In addition, all of the Year 2020 Combined right-turn volumes at these two intersections fall well short of the minimum of 25 vehicles per hour needed to even consider a right-turn lane. Therefore, no formal turn lane assessments were conducted.

ROSCOE LANE PAVEMENT

The majority of Roscoe Lane is a low type asphalt pavement. The pavement condition and need for some type of pavement upgrade should be assessed. This is beyond the scope of this traffic study.

CONCLUSIONS & RECOMMENDATIONS

The primary conclusion of this study is that the traffic generated from the proposed development will have very minimal impacts on the study intersections. Capacity analyses indicate that acceptable levels-of-service will be maintained during both peak traffic hours, and no additional turn lanes will be warranted based on traffic volumes. The following listing is a summary of the improvements and recommendations that resulted from this study:

1. Although a right-turn lane is not warranted by traffic volumes at the two site access locations on John Sevier Highway (Roscoe Lane and the truck driveway), it is recommended that a right-turn deceleration lane be considered for the truck driveway entrance. This is because trucks take significant time and distance to slow and turn, so a deceleration taper with short storage for this location would likely enhance intersection operations and safety. Such a lane should be designed for a minimum design speed of 50 mph.

2. Improve intersection corner sight distances at the proposed site access locations by trimming back any existing vegetation that inhibits sight lines, especially on the north side of Roscoe Lane. In addition, any site grading, landscaping, and signage that are installed for this project should be positioned such that sight lines are not restricted. It is recommended that these sight distances be established for approach speeds of 50 mph, requiring corner sight distances of at least 500 feet.

3. The pavement condition on Roscoe Lane should be evaluated and appropriate recommendations for improvement made.

APPENDIX

APPENDIX A – TRAFFIC DATA

APPENDIX B – TRIP GENERATION

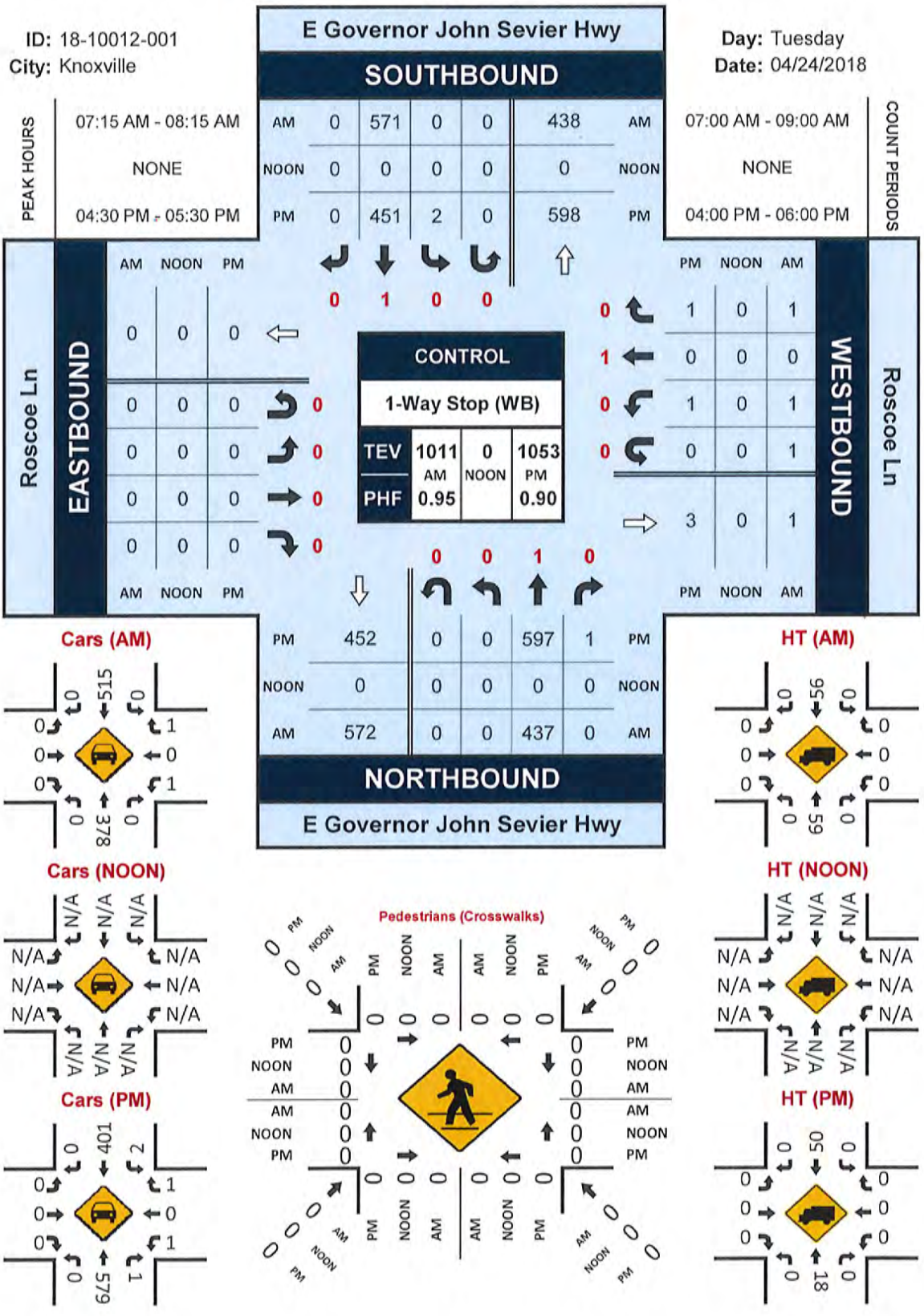
APPENDIX C – ANALYSES

APPENDIX A – TRAFFIC DATA

Prepared by National Data & Surveying Services

E Governor John Sevier Hwy & Roscoe Ln

Peak Hour Turning Movement Count



Project ID: 18-10012-001
Location: E Governor John Sevier Hwy & Roscoe Ln
City: Knoxville

Day: Tuesday
Date: 04/24/2018

Groups Printed - Cars, PU, Vans - Heavy Trucks

	E Governor John Sevier Hwy Northbound						E Governor John Sevier Hwy Southbound						Roscoe Ln Eastbound						Roscoe Ln Westbound						
Start Time	Left	Thru	Rgt	Uturn	Peds	App. Total	Left	Thru	Rgt	Uturn	Peds	App. Total	Left	Thru	Rgt	Uturn	Peds	App. Total	Left	Thru	Rgt	Uturn	Peds	App. Total	Int. Total
7:00 AM	0	82	0	0	0	82	0	115	0	0	0	115	0	0	0	0	0	0	0	0	0	0	0	0	197
7:15 AM	0	122	0	0	0	122	0	131	0	0	0	131	0	0	0	0	0	0	0	0	0	0	0	0	253
7:30 AM	0	133	0	0	0	133	0	131	0	0	0	131	0	0	0	0	0	0	0	0	1	1	0	2	266
7:45 AM	0	91	0	0	0	91	0	168	0	0	0	168	0	0	0	0	0	0	1	0	0	0	0	1	260
Total	0	428	0	0	0	428	0	545	0	0	0	545	0	0	0	0	0	0	1	0	1	1	0	3	976
8:00 AM	0	91	0	0	0	91	0	141	0	0	0	141	0	0	0	0	0	0	0	0	0	0	0	0	232
8:15 AM	0	65	0	0	0	65	0	125	0	0	0	125	0	0	0	0	0	0	0	0	0	0	0	0	190
8:30 AM	0	87	0	0	0	87	0	105	0	0	0	105	0	0	0	0	0	0	0	0	0	0	0	0	192
8:45 AM	0	74	0	0	0	74	0	69	0	0	0	69	0	0	0	0	0	0	0	0	0	0	0	0	143
Total	0	317	0	0	0	317	0	440	0	0	0	440	0	0	0	0	0	0	0	0	0	0	0	0	757
BREAK																									
4:00 PM	0	119	0	0	0	119	0	92	0	0	0	92	0	0	0	0	0	0	0	0	0	0	0	0	211
4:15 PM	0	124	0	0	0	124	1	98	0	0	0	99	0	0	0	0	0	0	0	0	0	0	0	0	223
4:30 PM	0	145	0	0	0	145	0	112	0	0	0	112	0	0	0	0	0	0	1	0	0	0	0	1	258
4:45 PM	0	146	0	0	0	146	0	100	0	0	0	100	0	0	0	0	0	0	0	0	1	0	0	1	247
Total	0	534	0	0	0	534	1	402	0	0	0	403	0	0	0	0	0	0	1	0	1	0	0	2	939
5:00 PM	0	138	1	0	0	139	1	116	0	0	0	117	0	0	0	0	0	0	0	0	0	0	0	0	256
5:15 PM	0	168	0	0	0	168	1	123	0	0	0	124	0	0	0	0	0	0	0	0	0	0	0	0	292
5:30 PM	0	121	0	0	0	121	0	118	0	0	0	118	0	0	0	0	0	0	0	0	1	0	0	1	240
5:45 PM	0	124	1	0	0	125	0	97	0	0	0	97	0	0	0	0	0	0	0	0	1	0	0	1	223
Total	0	551	2	0	0	553	2	454	0	0	0	456	0	0	0	0	0	0	0	0	2	0	0	2	1011
Grand Total	0	1830	2	0	0	1832	3	1841	0	0	0	1844	0	0	0	0	0	0	2	0	4	1	0	7	3683
Apprch %	0.0	99.9	0.1	0.0	0.0		0.2	99.8	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		28.6	0.0	57.1	14.3	0.0		
Total %	0.0	49.7	0.1	0.0	0.0	49.7	0.1	50.0	0.0	0.0	0.0	50.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.0	0.0	0.2	
Cars, PU, Vans	0	1656	2	0	0	1658	3	1598	0		0	1601	0	0	0	0		0	2	0	4		0	7	3266
% Cars, PU, Vans	0.0	90.5	100.0	0.0	0.0	90.5	100.0	86.8	0.0	0.0	0.0	86.8	0.0	0.0	0.0	0.0	0.0	0.0	100.0	0.0	100.0	0.0	0.0	100.0	88.7
Heavy Trucks	0	174	0	0		174	0	243	0	0		243	0	0	0	0		0	0	0	0	0		0	417
%Heavy Trucks	0.0	9.5	0.0	0.0	0.0	9.5	0.0	13.2	0.0	0.0	0.0	13.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	11.3

Project ID: 18-10012-001
Location: E Governor John Sevier Hwy & Roscoe Ln
City: Knoxville

PEAK HOURS

Day: Tuesday
Date: 04/24/2018

AM

	E Governor John Sevier Hwy Northbound					E Governor John Sevier Hwy Southbound					Roscoe Ln Eastbound					Roscoe Ln Westbound					
Start Time	Left	Thru	Rgt	Uturn	App. Total	Left	Thru	Rgt	Uturn	App. Total	Left	Thru	Rgt	Uturn	App. Total	Left	Thru	Rgt	Uturn	App. Total	Int. Total
Peak Hour Analysis from 07:00 AM to 09:00 AM																					
Peak Hour for Entire Intersection Begins at 07:15 AM																					
7:15 AM	0	122	0	0	122	0	131	0	0	131	0	0	0	0	0	0	0	0	0	0	253
7:30 AM	0	133	0	0	133	0	131	0	0	131	0	0	0	0	0	0	0	1	1	2	266
7:45 AM	0	91	0	0	91	0	168	0	0	168	0	0	0	0	0	1	0	0	0	1	260
8:00 AM	0	91	0	0	91	0	141	0	0	141	0	0	0	0	0	0	0	0	0	0	232
Total Volume	0	437	0	0	437	0	571	0	0	571	0	0	0	0	0	1	0	1	1	3	1011
% App. Total	0.0	100.0	0.0	0.0	100	0.0	100.0	0.0	0.0	100	0.0	0.0	0.0	0.0	0	33.3	0.0	33.3	33.3	100	
PHF					0.821					0.850										0.375	0.950
Cars, PU, Vans	0	378	0	0	378	0	515	0	0	515	0	0	0	0	0	1	0	1	1	3	896
% Cars, PU, Vans	0.0	86.5	0.0	0.0	86.5	0.0	90.2	0.0	0.0	90.2	0.0	0.0	0.0	0.0	0.0	100.0	0.0	100.0	100.0	100.0	88.6
Heavy Trucks	0	59	0	0	59	0	56	0	0	56	0	0	0	0	0	0	0	0	0	0	115
%Heavy Trucks	0.0	13.5	0.0	0.0	13.5	0.0	9.8	0.0	0.0	9.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	11.4

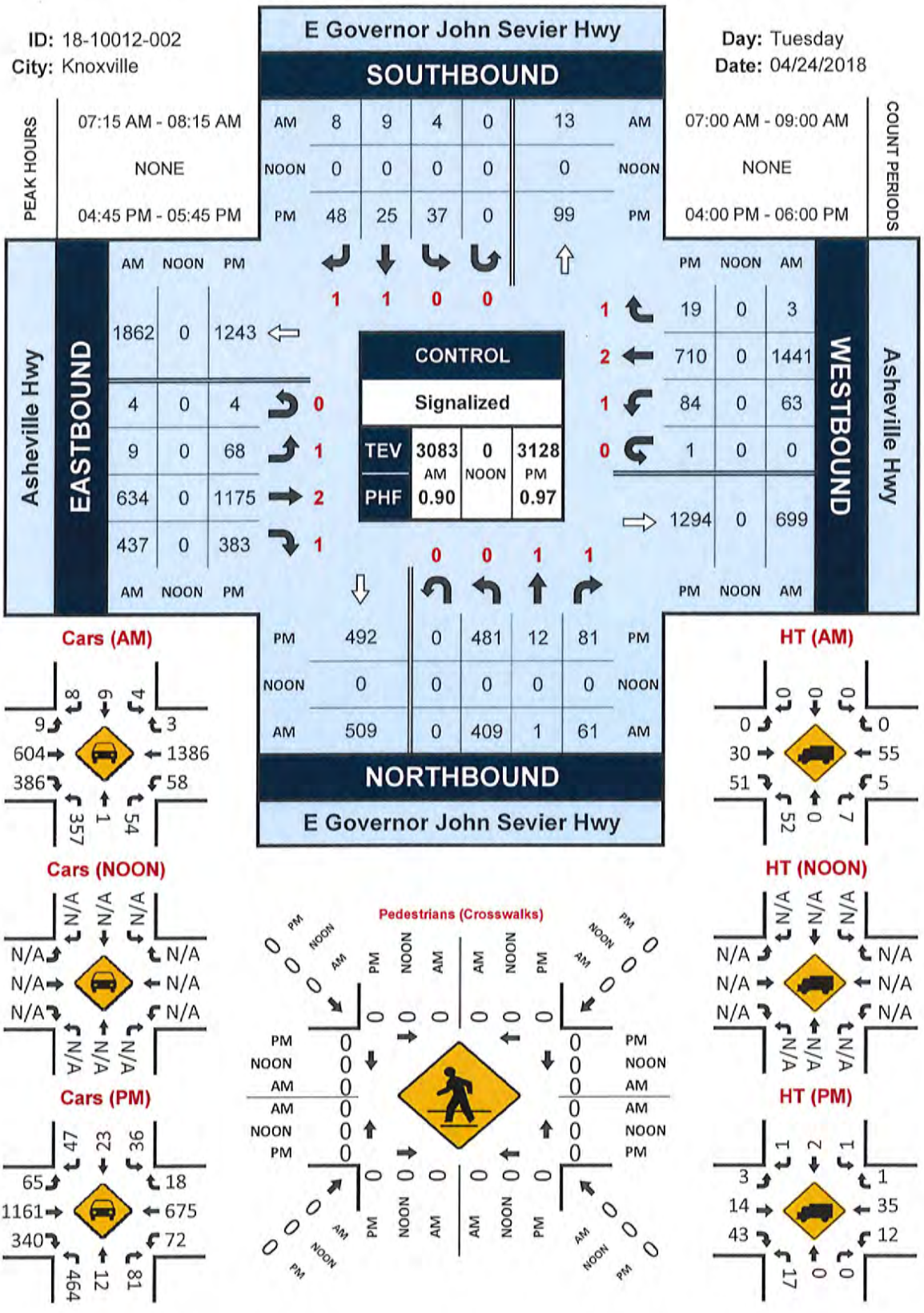
PM

	E Governor John Sevier Hwy Northbound					E Governor John Sevier Hwy Southbound					Roscoe Ln Eastbound					Roscoe Ln Westbound					
Start Time	Left	Thru	Rgt	Uturn	App. Total	Left	Thru	Rgt	Uturn	App. Total	Left	Thru	Rgt	Uturn	App. Total	Left	Thru	Rgt	Uturn	App. Total	Int. Total
Peak Hour Analysis from 04:00 PM to 06:00 PM																					
Peak Hour for Entire Intersection Begins at 04:30 PM																					
4:30 PM	0	145	0	0	145	0	112	0	0	112	0	0	0	0	0	1	0	0	0	1	258
4:45 PM	0	146	0	0	146	0	100	0	0	100	0	0	0	0	0	0	0	1	0	1	247
5:00 PM	0	138	1	0	139	1	116	0	0	117	0	0	0	0	0	0	0	0	0	0	256
5:15 PM	0	168	0	0	168	1	123	0	0	124	0	0	0	0	0	0	0	0	0	0	292
Total Volume	0	597	1	0	598	2	451	0	0	453	0	0	0	0	0	1	0	1	0	2	1053
% App. Total	0.0	99.8	0.2	0.0	100	0.4	99.6	0.0	0.0	100	0.0	0.0	0.0	0.0	0	50.0	0.0	50.0	0.0	100	
PHF					0.890					0.913										0.500	0.902
Cars, PU, Vans	0	579	1	0	580	2	401	0	0	403	0	0	0	0	0	1	0	1	0	2	985
% Cars, PU, Vans	0.0	97.0	100.0	0.0	97.0	100.0	88.9	0.0	0.0	89.0	0.0	0.0	0.0	0.0	0.0	100.0	0.0	100.0	0.0	100.0	93.5
Heavy Trucks	0	18	0	0	18	0	50	0	0	50	0	0	0	0	0	0	0	0	0	0	68
%Heavy Trucks	0.0	3.0	0.0	0.0	3.0	0.0	11.1	0.0	0.0	11.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.5

Prepared by National Data & Surveying Services

E Governor John Sevier Hwy & Asheville Hwy

Peak Hour Turning Movement Count



Project ID: 18-10012-002
Location: E Governor John Sevier Hwy & Asheville Hwy
City: Knoxville

Day: Tuesday
Date: 04/24/2018

Groups Printed - Cars, PU, Vans - Heavy Trucks

	E Governor John Sevier Hwy Northbound						E Governor John Sevier Hwy Southbound						Asheville Hwy Eastbound						Asheville Hwy Westbound						
Start Time	Left	Thru	Rgt	Uturn	Peds	App. Total	Left	Thru	Rgt	Uturn	Peds	App. Total	Left	Thru	Rgt	Uturn	Peds	App. Total	Left	Thru	Rgt	Uturn	Peds	App. Total	Int. Total
7:00 AM	77	0	14	0	0	91	1	0	1	0	0	2	0	116	99	0	0	215	17	308	1	0	0	326	634
7:15 AM	107	0	17	0	0	124	0	0	1	0	0	1	1	159	116	1	0	277	13	387	1	0	0	401	803
7:30 AM	114	0	19	0	0	133	0	1	1	0	0	2	2	170	116	2	0	290	16	415	0	0	0	431	856
7:45 AM	106	0	10	0	0	116	0	4	2	0	0	6	5	166	116	1	0	288	17	287	2	0	0	306	716
Total	404	0	60	0	0	464	1	5	5	0	0	11	8	611	447	4	0	1070	63	1397	4	0	0	1464	3009
8:00 AM	82	1	15	0	0	98	4	4	4	0	0	12	1	139	89	0	0	229	17	352	0	0	0	369	708
8:15 AM	58	0	12	0	0	70	0	0	6	0	0	6	1	118	114	1	0	234	12	324	1	0	0	337	647
8:30 AM	78	1	18	0	0	97	1	1	5	0	0	7	4	130	84	0	0	218	15	247	1	0	0	263	585
8:45 AM	64	0	11	0	0	75	1	0	1	0	0	2	1	106	64	1	0	172	14	186	2	1	0	203	452
Total	282	2	56	0	0	340	6	5	16	0	0	27	7	493	351	2	0	853	58	1109	4	1	0	1172	2392
BREAK																									
4:00 PM	97	2	22	0	0	121	7	2	9	0	0	18	9	267	72	0	0	348	21	189	5	0	0	215	702
4:15 PM	100	4	25	0	0	129	5	3	12	0	0	20	8	288	83	0	0	379	20	176	2	0	0	198	726
4:30 PM	112	0	23	0	0	135	8	5	8	0	0	21	8	253	94	0	0	355	20	182	3	0	0	205	716
4:45 PM	137	2	27	0	0	166	14	3	11	0	0	28	18	313	76	1	0	408	23	176	5	1	0	205	807
Total	446	8	97	0	0	551	34	13	40	0	0	87	43	1121	325	1	0	1490	84	723	15	1	0	823	2951
5:00 PM	111	4	17	0	0	132	10	7	14	0	0	31	17	244	94	1	0	356	24	186	2	0	0	212	731
5:15 PM	133	1	19	0	0	153	7	9	12	0	0	28	10	313	107	0	0	430	16	158	6	0	0	180	791
5:30 PM	100	5	18	0	0	123	6	6	11	0	0	23	23	305	106	2	0	436	21	190	6	0	0	217	799
5:45 PM	93	4	25	0	0	122	7	6	12	0	0	25	7	210	77	0	0	294	16	124	10	1	0	151	592
Total	437	14	79	0	0	530	30	28	49	0	0	107	57	1072	384	3	0	1516	77	658	24	1	0	760	2913
Grand Total	1569	24	292	0	0	1885	71	51	110	0	0	232	115	3297	1507	10	0	4929	282	3887	47	3	0	4219	11265
Apprch %	83.2	1.3	15.5	0.0	0.0		30.6	22.0	47.4	0.0	0.0		2.3	66.9	30.6	0.2	0.0		6.7	92.1	1.1	0.1	0.0		
Total %	13.9	0.2	2.6	0.0	0.0	16.7	0.6	0.5	1.0	0.0	0.0	2.1	1.0	29.3	13.4	0.1	0.0	43.8	2.5	34.5	0.4	0.0	0.0	37.5	
Cars, PU, Vans	1409	24	277	0	0	1710	70	48	107		0	225	110	3195	1303	7		4615	252	3711	46		0	4012	10562
% Cars, PU, Vans	89.8	100.0	94.9	0.0	0.0	90.7	98.6	94.1	97.3	0.0	0.0	97.0	95.7	96.9	86.5	70.0	0.0	93.6	89.4	95.5	97.9	0.0	0.0	95.1	93.8
Heavy Trucks	160	0	15	0		175	1	3	3	0		7	5	102	204	3		314	30	176	1	0		207	703
%Heavy Trucks	10.2	0.0	5.1	0.0	0.0	9.3	1.4	5.9	2.7	0.0	0.0	3.0	4.3	3.1	13.5	30.0	0.0	6.4	10.6	4.5	2.1	0.0	0.0	4.9	6.2

Project ID: 18-10012-002
Location: E Governor John Sevier Hwy & Asheville Hwy
City: Knoxville

PEAK HOURS

Day: Tuesday
Date: 04/24/2018

AM

	E Governor John Sevier Hwy Northbound					E Governor John Sevier Hwy Southbound					Asheville Hwy Eastbound					Asheville Hwy Westbound					
Start Time	Left	Thru	Rgt	Uturn	App. Total	Left	Thru	Rgt	Uturn	App. Total	Left	Thru	Rgt	Uturn	App. Total	Left	Thru	Rgt	Uturn	App. Total	Int. Total
Peak Hour Analysis from 07:00 AM to 09:00 AM																					
Peak Hour for Entire Intersection Begins at 07:15 AM																					
7:15 AM	107	0	17	0	124	0	0	1	0	1	1	159	116	1	277	13	387	1	0	401	803
7:30 AM	114	0	19	0	133	0	1	1	0	2	2	170	116	2	290	16	415	0	0	431	856
7:45 AM	106	0	10	0	116	0	4	2	0	6	5	166	116	1	288	17	287	2	0	306	716
8:00 AM	82	1	15	0	98	4	4	4	0	12	1	139	89	0	229	17	352	0	0	369	708
Total Volume	409	1	61	0	471	4	9	8	0	21	9	634	437	4	1084	63	1441	3	0	1507	3083
% App. Total	86.8	0.2	13.0	0.0	100	19.0	42.9	38.1	0.0	100	0.8	58.5	40.3	0.4	100	4.2	95.6	0.2	0.0	100	
PHF					0.885					0.438					0.934					0.874	0.900
Cars, PU, Vans	357	1	54	0	412	4	9	8	0	21	9	604	386	4	1003	58	1386	3	0	1447	2883
% Cars, PU, Vans	87.3	100.0	88.5	0.0	87.5	100.0	100.0	100.0	0.0	100.0	100.0	95.3	88.3	100.0	92.5	92.1	96.2	100.0	0.0	96.0	93.5
Heavy Trucks	52	0	7	0	59	0	0	0	0	0	0	30	51	0	81	5	55	0	0	60	200
%Heavy Trucks	12.7	0.0	11.5	0.0	12.5	0.0	0.0	0.0	0.0	0.0	0.0	4.7	11.7	0.0	7.5	7.9	3.8	0.0	0.0	4.0	6.5

PM

	E Governor John Sevier Hwy Northbound					E Governor John Sevier Hwy Southbound					Asheville Hwy Eastbound					Asheville Hwy Westbound					
Start Time	Left	Thru	Rgt	Uturn	App. Total	Left	Thru	Rgt	Uturn	App. Total	Left	Thru	Rgt	Uturn	App. Total	Left	Thru	Rgt	Uturn	App. Total	Int. Total
Peak Hour Analysis from 04:00 PM to 06:00 PM																					
Peak Hour for Entire Intersection Begins at 04:45 PM																					
4:45 PM	137	2	27	0	166	14	3	11	0	28	18	313	76	1	408	23	176	5	1	205	807
5:00 PM	111	4	17	0	132	10	7	14	0	31	17	244	94	1	356	24	186	2	0	212	731
5:15 PM	133	1	19	0	153	7	9	12	0	28	10	313	107	0	430	16	158	6	0	180	791
5:30 PM	100	5	18	0	123	6	6	11	0	23	23	305	106	2	436	21	190	6	0	217	799
Total Volume	481	12	81	0	574	37	25	48	0	110	68	1175	383	4	1630	84	710	19	1	814	3128
% App. Total	83.8	2.1	14.1	0.0	100	33.6	22.7	43.6	0.0	100	4.2	72.1	23.5	0.2	100	10.3	87.2	2.3	0.1	100	
PHF					0.864					0.887					0.935					0.938	0.969
Cars, PU, Vans	464	12	81	0	557	36	23	47	0	106	65	1161	340	2	1568	72	675	18	1	766	2997
% Cars, PU, Vans	96.5	100.0	100.0	0.0	97.0	97.3	92.0	97.9	0.0	96.4	95.6	98.8	88.8	50.0	96.2	85.7	95.1	94.7	100.0	94.1	95.8
Heavy Trucks	17	0	0	0	17	1	2	1	0	4	3	14	43	2	62	12	35	1	0	48	131
%Heavy Trucks	3.5	0.0	0.0	0.0	3.0	2.7	8.0	2.1	0.0	3.6	4.4	1.2	11.2	50.0	3.8	14.3	4.9	5.3	0.0	5.9	4.2

TRAFFIC GROWTH

Source:	TDOT
Location:	Asheville Hwy
	East of Holston River
Route #:	SR 9
Route Type:	Arterial
Station:	TDOT 385
Capacity:	

Count Year	Volume	Growth Rate
1996		
1997		#DIV/0!
1998		#DIV/0!
1999		#DIV/0!
2000		#DIV/0!
2001	36626	#DIV/0!
2002	39337	7.40
2003	39984	1.64
2004	35975	-10.03
2005	39355	9.40
2006	34847	-11.45
2007	36193	3.86
2008	34495	-4.69
2009	31188	-9.59
2010	31145	-0.14
2011	31581	1.40
2012	32016	1.38
2013	32390	1.17
2014	32770	1.17
2015	34571	5.50
2016	35401	2.40

Avg. 1 Year Rate 1996-2016	#DIV/0!
Avg. 1 Year Rate 2006-2016	-0.82
Avg. 1 Year Rate 2011-2016	2.17

Source:	TDOT
Location:	John Sevier Hwy
	S of Arnstrong Rd
Route #:	SR 168
Route Type:	
Station:	TDOT 271
Capacity:	

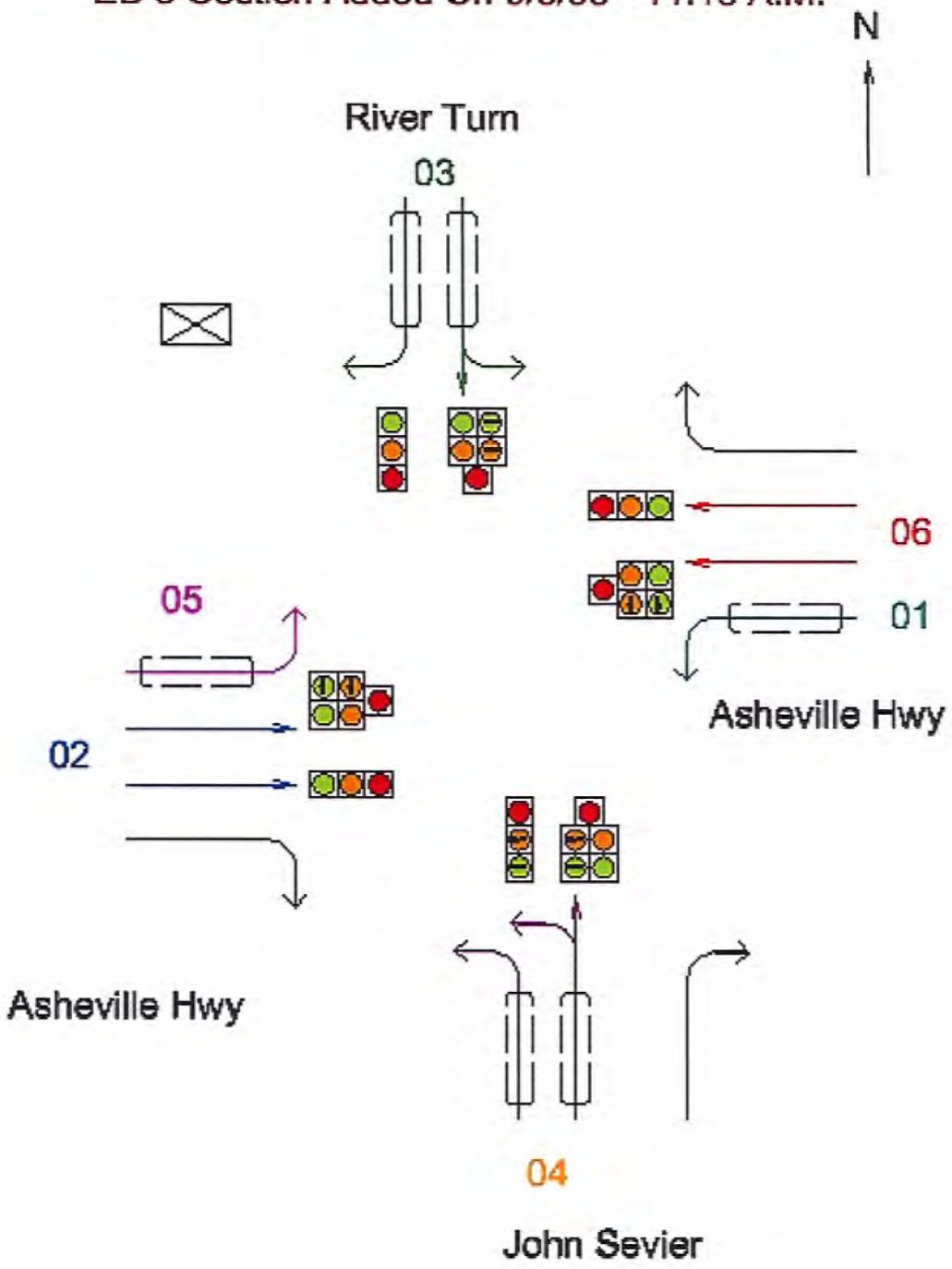
Count Year	Volume	Growth Rate
1996		
1997		#DIV/0!
1998		#DIV/0!
1999		#DIV/0!
2000		#DIV/0!
2001	12781	#DIV/0!
2002	11958	-6.44
2003	11815	-1.20
2004	13560	14.77
2005	13833	2.01
2006	12091	-12.59
2007	12481	3.23
2008	11836	-5.17
2009	10806	-8.70
2010	10562	-2.26
2011	11420	8.12
2012	12174	6.60
2013	12037	-1.13
2014	11472	-4.69
2015	13127	14.43
2016	12947	-1.37

Avg. 1 Year Rate 1996-2016	#DIV/0!
Avg. 1 Year Rate 2006-2016	-0.32
Avg. 1 Year Rate 2011-2016	3.66

use 2.5%
for 2 years
2018 → 2020

Asheville Hwy & John Sevier

EB 5-Section Added On 9/8/98 - 11:15 A.M.



Database Printout of 1880EL Local Page: 1
Filename: DATA\INT#2601.UP
Intersection: ASHEVILLE HWY/JOHN SEVIER Sun Jun 12 15:24:22 2005

Startup Data:

	Ring 1	2
Start Phases	2	6
UCF Entry Phases	4	0
UCF Exit Phases	2	6

Start Overlaps Yellow at Power-up?	NO
Start in All Red at Power-up?	NO
Zone ID:	0
Controller ID:	0
Hold 2 sec. Minimum Red Revert?	NO
Override Holds if Uniform Code Flash Active?	YES
Dual Entry 1256?	YES
Dual Entry 3478?	YES
Passage Interval Sequential?	YES
Simultaneous Gap?	NO
Conditional Service set by Input?	NO
Conditional Service 1256?	NO
Conditional Service 3478?	NO

Red Revert Time: 0.0 sec.

Timing Data:

Interval	Time by Phase (sec.) 1	2	3	4	5	6	7	8
Initial	6	15	6	6	6	15	0	0
Passage	2.0	3.0	2.0	5.0	2.0	3.0	0.0	0.0
Yellow	4.0	4.0	4.0	4.0	4.0	4.0	0.0	0.0
Red Clear	1.0	1.0	1.0	1.0	1.0	1.0	0.0	0.0
Max 1	20	55	20	25	20	55	0	0
Max 2	25	55	25	30	25	55	0	0
Walk	0	15	0	0	0	15	0	0
Ped Clear	0	0	0	0	0	0	0	0

Max 3 Parameters

	1	2	3	4	5	6	7	8
Adjust (sec.)	0	0	0	20	0	0	0	0
Limit (sec.)	0	0	0	85	0	0	0	0
Set (max outs)	0	0	0	1	0	0	0	0
Clr (gap outs)	0	0	0	1	0	0	0	0

Functions:

	1	2	3	4	5	6	7	8
Min. Recall	N	Y	N	N	N	Y	N	N
Max. Recall	N	Y	N	N	N	Y	N	N
Ped. Recall	N	N	N	N	N	N	N	N
Det. Non-lock	Y	N	Y	Y	Y	N	N	N
CNA I Active	N	Y	N	N	N	Y	N	N

Database Printout of 1880EL Local Page: 2
Filename: DATA\INT#2601.UP
Intersection: ASHEVILLE HWY/JOHN SEVIER Sun Jun 12 15:24:22 2005

CNA II Active	N	N	N	N	N	N	N	N
Flashing Walks	N	N	N	N	N	N	N	N
Phase Omitted	N	N	N	N	N	N	Y	Y
Ped Omitted	Y	N	Y	Y	Y	N	Y	Y
Soft Recall	N	N	N	N	N	N	N	N

Ped Cl thru Yel	N	N	N	N	N	N	N	N
Ped Cl thru Red	N	N	N	N	N	N	N	N

Density:

Last Car Passage Active: NO

	1	2	3	4	5	6	7	8
Density Active	N	N	N	N	N	N	N	N
Added Initial	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Max. Initial	0	0	0	0	0	0	0	0
Time to Reduce	0	0	0	0	0	0	0	0
Time bef. Red.	0	0	0	0	0	0	0	0
Minimum Gap	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Begin Daylight Savings in week: 15
End Daylight Savings in week: 45

Time of Day Changepoints:
Base Day Plan 0

Time	Cycle	Offset	Ckt 1 (Flash)	Ckt 0 (Free)	Ckt 9
06:00	6	1	.	.	.
08:30	5	1	.	.	.
11:30	6	1	.	.	.
12:30	5	1	.	.	.
13:30	6	1	.	.	.
18:45	3	1	.	.	.
20:30	1	1	.	X	.

Base Day Plan 1

Time	Cycle	Offset	Ckt 1 (Flash)	Ckt 0 (Free)	Ckt 9
09:00	1	1	.	X	.
11:30	6	1	.	.	.
18:30	1	1	.	X	.

Week Plan:

	Sun	Mon	Tue	Wed	Thu	Fri	Sat
Plan: 0	1	0	0	0	0	0	0
Plan: 1	0	0	0	0	0	0	0
Plan: 2	0	0	0	0	0	0	0
Plan: 3	0	0	0	0	0	0	0
Plan: 4	0	0	0	0	0	0	0

Plan: 5	0	0	0	0	0	0	0
Plan: 6	0	0	0	0	0	0	0
Plan: 7	0	0	0	0	0	0	0
Plan: 8	0	0	0	0	0	0	0
Plan: 9	0	0	0	0	0	0	0

Week Plan Implementation:

Week 1: 0	Week 14: 0	Week 27: 0	Week 40: 0
Week 2: 0	Week 15: 0	Week 28: 0	Week 41: 0
Week 3: 0	Week 16: 0	Week 29: 0	Week 42: 0
Week 4: 0	Week 17: 0	Week 30: 0	Week 43: 0
Week 5: 0	Week 18: 0	Week 31: 15	Week 44: 0
Week 6: 0	Week 19: 0	Week 32: 0	Week 45: 0

Week 7: 0	Week 20: 0	Week 33: 0	Week 46: 0
Week 8: 0	Week 21: 0	Week 34: 0	Week 47: 0
Week 9: 0	Week 22: 0	Week 35: 0	Week 48: 15
Week 10: 0	Week 23: 0	Week 36: 0	Week 49: 0
Week 11: 0	Week 24: 0	Week 37: 0	Week 50: 0
Week 12: 0	Week 25: 0	Week 38: 0	Week 51: 0
Week 13: 0	Week 26: 0	Week 39: 0	Week 52: 0

Special Day Plan Implementation (Plan-Week-Day):

Slot 1 0 - 0 - 0	Slot 18 0 - 0 - 0	Slot 35 0 - 0 - 0
Slot 2 0 - 0 - 0	Slot 19 0 - 0 - 0	Slot 36 0 - 0 - 0
Slot 3 0 - 0 - 0	Slot 20 0 - 0 - 0	Slot 37 0 - 0 - 0
Slot 4 0 - 0 - 0	Slot 21 0 - 0 - 0	Slot 38 0 - 0 - 0
Slot 5 0 - 0 - 0	Slot 22 0 - 0 - 0	Slot 39 0 - 0 - 0
Slot 6 0 - 0 - 0	Slot 23 0 - 0 - 0	Slot 40 0 - 0 - 0
Slot 7 0 - 0 - 0	Slot 24 0 - 0 - 0	Slot 41 0 - 0 - 0
Slot 8 0 - 0 - 0	Slot 25 0 - 0 - 0	Slot 42 0 - 0 - 0
Slot 9 0 - 0 - 0	Slot 26 0 - 0 - 0	Slot 43 0 - 0 - 0
Slot 10 0 - 0 - 0	Slot 27 0 - 0 - 0	Slot 44 0 - 0 - 0
Slot 11 0 - 0 - 0	Slot 28 0 - 0 - 0	Slot 45 0 - 0 - 0
Slot 12 0 - 0 - 0	Slot 29 0 - 0 - 0	Slot 46 0 - 0 - 0
Slot 13 0 - 0 - 0	Slot 30 0 - 0 - 0	Slot 47 0 - 0 - 0
Slot 14 0 - 0 - 0	Slot 31 0 - 0 - 0	Slot 48 0 - 0 - 0
Slot 15 0 - 0 - 0	Slot 32 0 - 0 - 0	Slot 49 0 - 0 - 0
Slot 16 0 - 0 - 0	Slot 33 0 - 0 - 0	Slot 50 0 - 0 - 0
Slot 17 0 - 0 - 0	Slot 34 0 - 0 - 0	

Coordination Operating Modes:

4 Splits / 4 Cycles?	NO
Unused Cycle Time to Side St.?	NO
Ckt 4 enables Aux TOD?	NO
Offset Interruption?	NO

♀

Cycle 4 = 2 A.M. Sync?	NO
Split 2 = 2 A.M. Sync?	NO
Flash with Ckt 1?	NO
Invert Free Output?	NO
Auto Permissive?	NO
Cycle 4 = Flash?	NO
Enable Max 2 with Ckt 9?	NO
Conditional Service with Ckt 9?	NO
Invert Free Input?	NO
Activate CNA 1?	YES
Activate Walk Rest Modifier?	YES
Inhibit Max Termination?	YES
Enhanced Permissive?	NO
Use Split Matrix?	YES
Use Yellow Offset Timer?	NO
Interconnect?	NO
Maximum Dwell Time:	25 sec.
Full Dwell?	NO
Short Route?	YES

Phase Relationships:

	Ring 1 - 2
Hold 1 Phases	2 - 6

Hold 1 Omit Phases	0 - 0
Hold 2 Omit Phases	0 - 0
Hold 3 Omit Phases	0 - 0
Hold 3 Omit Phases	0 - 0
Hold 3 Omit Phases	0 - 0
Hold 3 Ped Omit	0 - 0
Non Early Release Phases	0 - 0
Non Early Release Phases	0 - 0
Non Early Release Phases	0 - 0
Phases Omitted w/ Ckt 9	0 - 0
Phases Omitted w/ Ckt 9	0 - 0
Peds Omitted w/ Ckt 9	0 - 0

Phase Reverse by	Cyc - Ofst
1 - 2	0 - 0
1 - 2	0 - 0
5 - 6	0 - 0
5 - 6	0 - 0
3 - 4	0 - 0
3 - 4	0 - 0
7 - 8	0 - 0
7 - 8	0 - 0

Split Plans:

♀
Database Printout of 1880EL Local Page: 5
Filename: DATA\INT#2601.UP
Intersection: ASHEVILLE HWY/JOHN SEVIER Sun Jun 12 15:24:22 2005

	Percent per Phase								Permissives					
	1	2	3	4	5	6	7	8	Begin	End	Begin	End	Begin	End
Split 1	17	34	24	25	17	34	24	25	0	20	0	30	0	40
Split 2	15	43	20	22	15	43	20	22	0	20	0	30	0	40
Split 3	14	36	14	36	14	36	14	36	0	20	0	30	0	40
Split 4	13	46	16	25	13	46	16	25	0	20	0	30	0	40
Split 5	13	40	14	33	13	40	14	33	0	20	0	30	0	40
Split 6	9	40	11	40	9	40	11	40	0	20	0	30	0	40
Split 7	9	40	11	40	9	40	11	40	0	20	0	30	0	40
Split 8	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Split 9	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Split 10	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Split 11	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Split 12	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Split 13	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Split 14	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Split 15	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Split 16	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Split Matrix:

	Offset				
Cycle	1	2	3	4	5
1	1	0	0	0	0
2	2	0	0	0	0
3	3	0	0	0	0
4	4	0	0	0	0
5	5	0	0	0	0
6	6	7	0	0	0

Offset Times:

Cycle	Offset 1	2	3	4	5
1	0	0	0	0	0
2	0	0	0	0	0
3	0	0	0	0	0
4	0	0	0	0	0
5	0	0	0	0	0
6	0	0	0	0	0

Cycle Times:

Cycle	
1	90 sec.
2	100 sec.
3	120 sec.
4	120 sec.

♀

5	130 sec.
6	180 sec.

Sync Reference:

Time: 00:00
Sync with Event Time? NO

City Zero:

Active? NO

Cycle	Reference Time
1	0
2	0
3	0
4	0
5	0
6	0

Closed Loop Options:

TOD Flash/Aux? NO
Free w/ Ckt 0? YES

Report Channel Failures to Central

Conflict Flash	(3) Occurence and Resume Normal
Manual/Auto Flash	(3) Occurence and Resume Normal
MCE	(3) Occurence and Resume Normal
Preempt	(0) Auto-log only
Channel# 5	(0) Auto-log only
Channel# 6	(0) Auto-log only
Channel# 7	(0) Auto-log only
Channel# 8	(0) Auto-log only
Door Open	(3) Occurence and Resume Normal

Main Street Phs for Out of Step Test
Ring 1 - 2
2 - 6

Speed Trap Sensor Pairs

1-2	3-4	5-6	7-8
NO	NO	NO	NO

```
Standard Overlaps:

Internal Overlap Program?       YES

             Phase
Program 1 2 3 4 5 6 7 8
Ovl A    . . . . . . . . ♀
Database Printout of 1880EL Local                                        Page: 7
Filename: DATA\INT#2601.UP
Intersection:   ASHEVILLE HWY/JOHN SEVIER              Sun Jun 12 15:24:22 2005
ÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍ

Ovl B    . . . . . . . .
Ovl C    . . . . . . . .
Ovl D    . . . . . . . .

Reverse Phases  1 - 2  3 - 4  5 - 6  7 - 8
                 NO     NO     NO     NO

Detector Switching:

Programmed Active?      NO
No Detector Switching is Programmed

♀
```

APPENDIX B – TRIP GENERATION

Land Use: 154
High-Cube Transload and Short-Term Storage Warehouse

Description

A high-cube warehouse (HCW) is a building that typically has at least 200,000 gross square feet of floor area, has a ceiling height of 24 feet or more, and is used primarily for the storage and/or consolidation of manufactured goods (and to a lesser extent, raw materials) prior to their distribution to retail locations or other warehouses. A typical HCW has a high level of on-site automation and logistics management. The automation and logistics enable highly-efficient processing of goods through the HCW. The HCWs included in this land use include transload and short-term facilities. Transload facilities have a primary function of consolidation and distribution of pallet loads (or larger) for manufacturers, wholesalers, or retailers. They typically have little storage duration, high throughput, and are high-efficiency facilities. Short-term HCWs are high-efficiency distribution facilities often with custom/special features built into structure for movement of large volumes of freight with only short-term storage of products. Warehousing (Land Use 150), high-cube fulfillment center warehouse (Land Use 155), high-cube parcel hub warehouse (Land Use 156), and high-cube cold storage warehouse (Land Use 157) are related land uses.

Additional Data

The High-Cube Warehouse/Distribution Center-related land uses underwent specialized consideration through a commissioned study titled *High-Cube Warehouse Vehicle Trip Generation Analysis*, published in October 2016. The results of this study have been incorporated into the 10th Edition *Trip Generation Manual* and are published on the ITE website at http://library.ite.org/pub/a3e6679a-e3a8-bf38-7f29-2961becdd498 where the study is posted.

Time-of-day distribution data for this land use are presented in Appendix A. For the three general urban/suburban sites with data, the overall highest vehicle volumes during the AM and PM on a weekday were counted between 9:00 and 10:00 a.m. and 3:00 and 4:00 p.m., respectively.

The sites were surveyed in the 1980s, the 2000s, and the 2010s in Alberta (CAN), California, Florida, Michigan, New Jersey, Texas, and Washington.

Source Numbers

331, 605, 619, 642, 645, 649, 739, 750, 752, 903, 904, 941, 942, 943, 969

High-Cube Transload and Short-Term Storage Warehouse
(154)

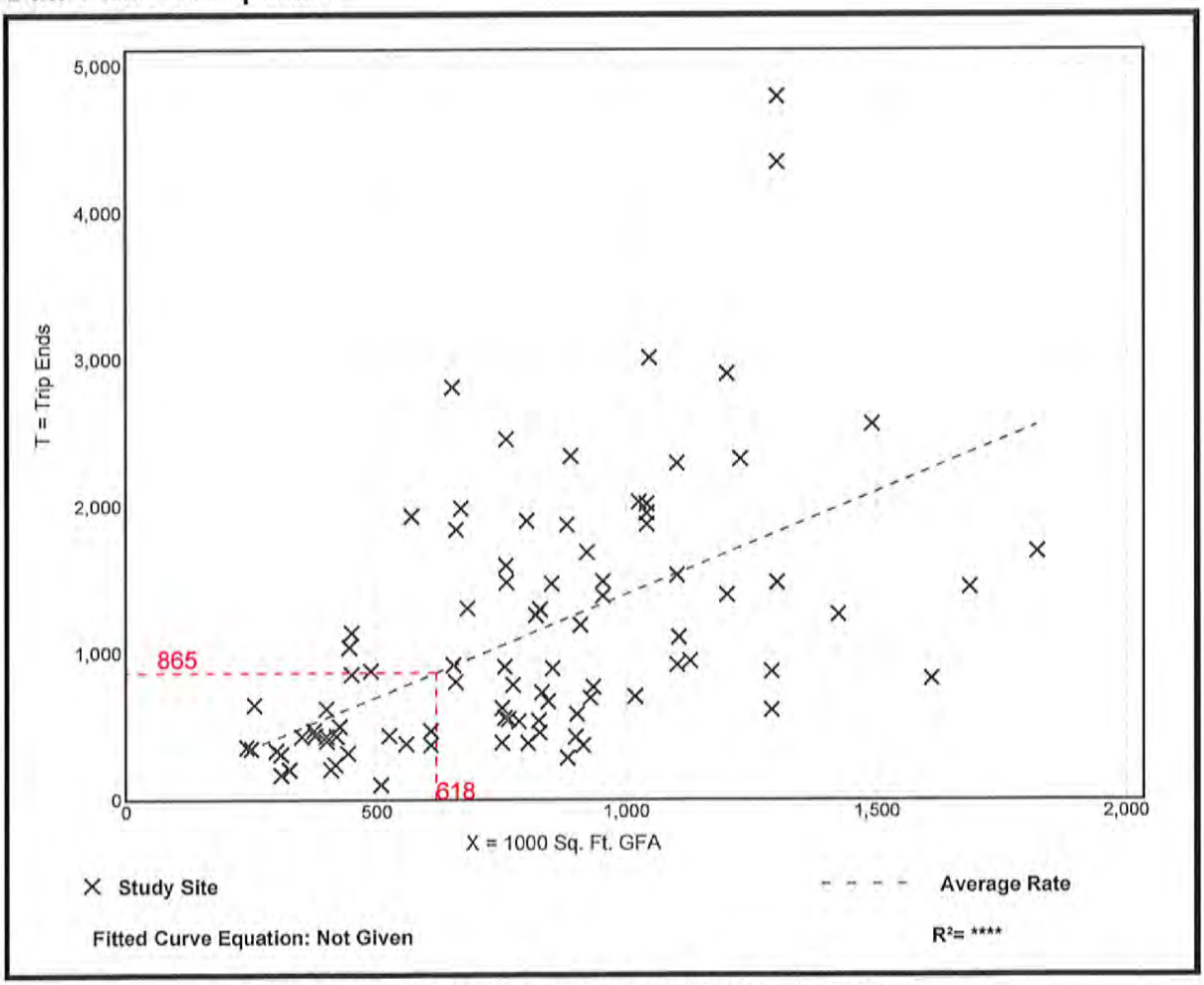
Vehicle Trip Ends vs: **1000 Sq. Ft. GFA**
On a: **Weekday**

Setting/Location: **General Urban/Suburban**
Number of Studies: 91
Avg. 1000 Sq. Ft. GFA: 798
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
1.40	0.20 - 4.32	0.86

Data Plot and Equation



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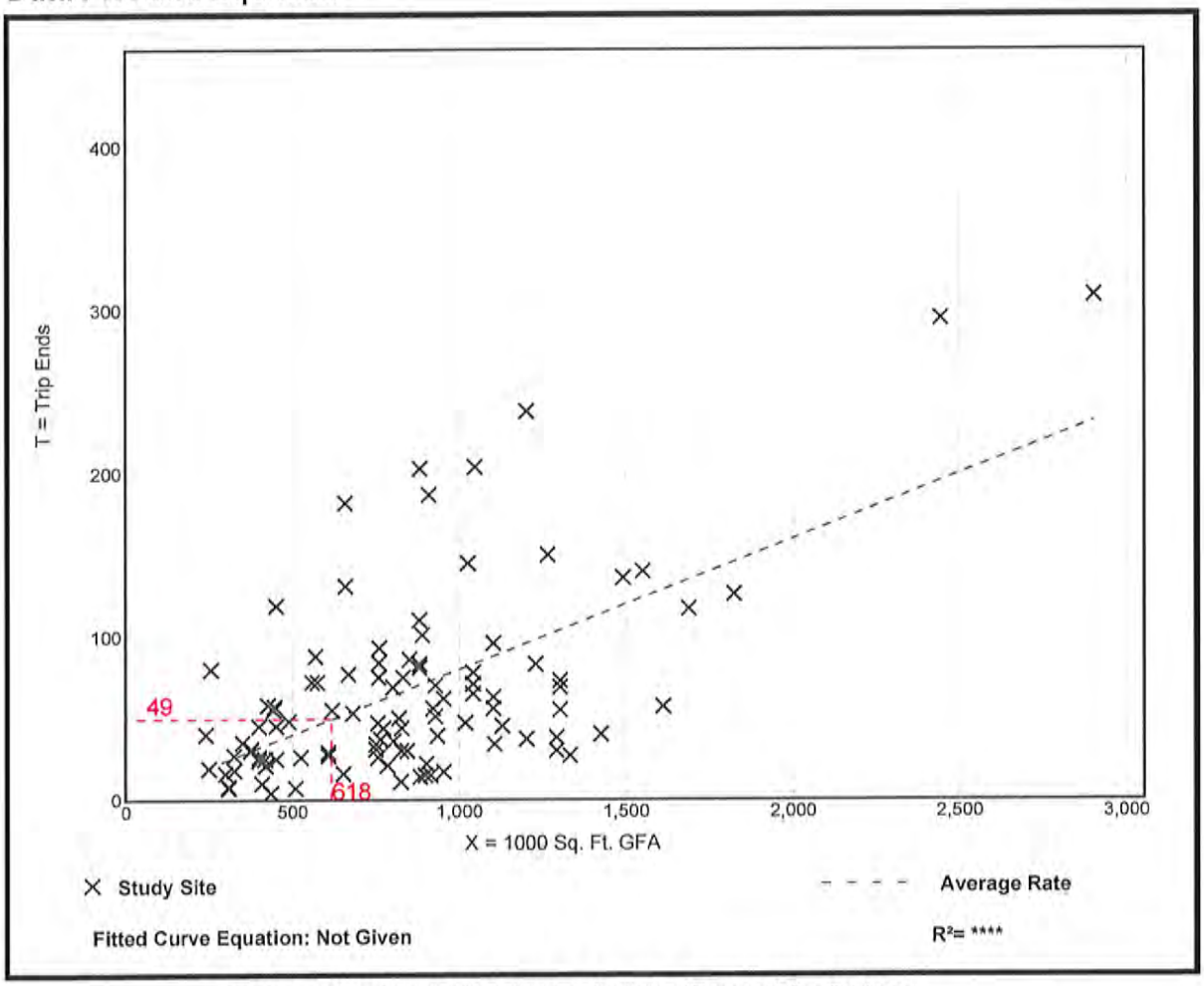
High-Cube Transload and Short-Term Storage Warehouse
(154)

Vehicle Trip Ends vs: 1000 Sq. Ft. GFA
On a: Weekday,
Peak Hour of Adjacent Street Traffic,
One Hour Between 7 and 9 a.m.
Setting/Location: General Urban/Suburban
Number of Studies: 102
Avg. 1000 Sq. Ft. GFA: 846
Directional Distribution: 77% entering, 23% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
0.08	0.01 - 0.31	0.05

Data Plot and Equation



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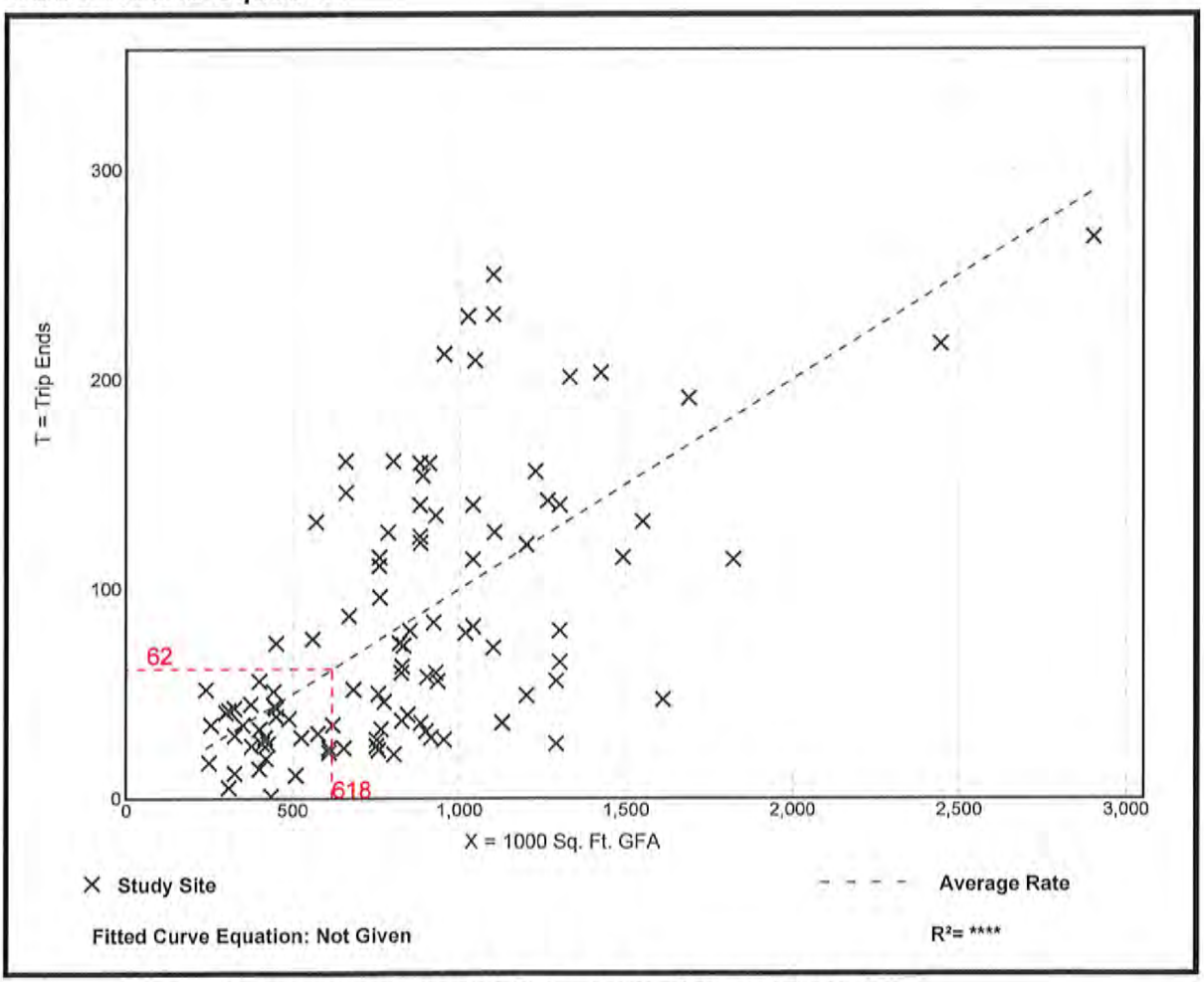
High-Cube Transload and Short-Term Storage Warehouse
(154)

Vehicle Trip Ends vs:	**1000 Sq. Ft. GFA**
On a:	**Weekday,**
	Peak Hour of Adjacent Street Traffic,
	One Hour Between 4 and 6 p.m.
Setting/Location:	**General Urban/Suburban**
Number of Studies:	103
Avg. 1000 Sq. Ft. GFA:	840
Directional Distribution:	28% entering, 72% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
0.10	0.00 - 0.25	0.06

Data Plot and Equation



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APPENDIX C - ANALYSES

CAPACITY AND LEVEL-OF-SERVICE CONCEPTS

In a general sense, a roadway is similar to a pipeline or other material carrying conduit in that it has a certain capacity for the amount of material (vehicles) that it can efficiently carry. As the number of vehicles in a given time period gradually increases, the quality of traffic flow gradually decreases. On roadway sections this results in increasing turbulence in the traffic stream, and at intersections it results in increasing stops and delay. As the volumes begin to approach the capacity of the facility, these problems rapidly magnify, with resulting serious levels of congestion, stops, delay, excess fuel consumption, pollutant emissions, etc.

The Transportation Research Board has published the Year 2010 Highway Capacity Manual (HCM2010), which establishes theoretical techniques to quantify the capacity conditions on all types of roadways, intersections, ramps, pedestrian facilities, etc. A basic concept that is applicable to most of these techniques is the idea of level of service (LOS). This concept establishes a rating system that quantifies the quality of traffic flow, as perceived by motorists and/or passengers. The general system is similar to a school grade scale, and is outlined as follows:

Level of Service (LOS)	General Quality of Traffic Flow	Description of Corresponding Conditions
A	Excellent	Roadways – Free flow, high maneuverability Intersections – Very few stops, very low delay
B	Very Good	Roadways – Free flow, slightly lower maneuverability Intersections – Minor stops, low delay
C	Good	Roadways – Stable flow, restricted maneuverability Intersections – Significant stops, significant delay
D	Fair	Roadways – Marginally stable flow, congestion seriously restricts maneuverability Intersections – High stops, long but tolerable delay
E	Poor	Roadways – Unstable flow*, lower operating speeds, congestion severely restricts maneuverability Intersections – All vehicles stop, very long queues and very long intolerable delay
F	Very Poor	Roadways – Forced flow, stoppages may be lengthy, congestion severely restricts maneuverability Intersections – All vehicles stop, extensive queues and extremely long intolerable delay

*Unstable flow is such that minor fluctuations or disruptions can result in rapid degradation to LOS F.

LOS CRITERIA: SIGNALIZED & UNSIGNALIZED INTERSECTIONS

LOS	CONTROL DELAY (S/VEH)		
	SIGNALIZED	UNSIGNALIZED	ROUNDABOUT
A	≤10	≤10	≤10
B	>10-20	>10-15	>10-15
C	>20-35	>15-25	>15-25
D	>35-55	>25-35	>25-35
E	>55-80	>35-50	>35-50
F	>80	>50	>50

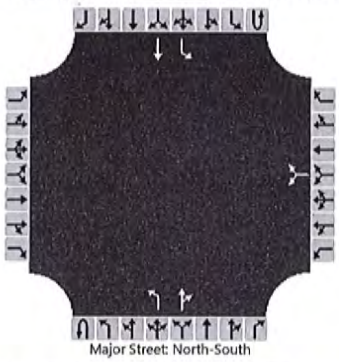
Another measure of intersection capacity that is often used in the evaluation of intersection operations is the volume to capacity (V/C) ratio. This ratio is defined as "the ratio of flow rate to capacity", and is a good measure of how much of an intersection's available capacity has been used up by the analysis volumes. Conversely, it also provides an indication of the reserve capacity available for future growth in traffic volumes.

The Intersection Capacity Utilization (ICU) is another measure that expresses a value similar to the V/C ratio. Specifically, the ICU method "sums the amount of the time required to serve all movements at saturation for a given cycle length and divides by that reference cycle length." The ICU is considered a more accurate measure of volume to capacity conditions for a signalized intersection, primarily because it accounts for the effects of the signal timing on intersection capacity.

HCS7 Two-Way Stop-Control Report

General Information		Site Information	
Analyst	RCB	Intersection	J.S. Hwy at Roscoe Lane
Agency/Co.	Cannon & Cannon, Inc.	Jurisdiction	City of Knoxville
Date Performed	5/3/2018	East/West Street	Roscoe Lane
Analysis Year	2018	North/South Street	John Sevier Highway
Time Analyzed	AM - 2018 Existing	Peak Hour Factor	0.95
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description	Fresenius Dist Ctr - JSHwy		

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		0	1	0	0	1	1	0	0	1	1	0
Configuration							LR			L		TR		L	T	
Volume (veh/h)						1		1		0	437	0		0	571	
Percent Heavy Vehicles (%)						3		3		13				10		
Proportion Time Blocked																
Percent Grade (%)						0										
Right Turn Channelized																
Median Type | Storage	Left Only								1							

Critical and Follow-up Headways

Base Critical Headway (sec)						7.1		6.2		4.1				4.1		
Critical Headway (sec)						6.43		6.23		4.23				4.20		
Base Follow-Up Headway (sec)						3.5		3.3		2.2				2.2		
Follow-Up Headway (sec)						3.53		3.33		2.32				2.29		

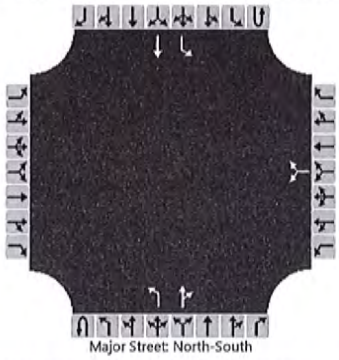
Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)							2			0				0		
Capacity, c (veh/h)							464			925				1061		
v/c Ratio							0.00			0.00				0.00		
95% Queue Length, Q_{95} (veh)							0.0			0.0				0.0		
Control Delay (s/veh)							12.8			8.9				8.4		
Level of Service (LOS)							B			A				A		
Approach Delay (s/veh)					12.8				0.0				0.0			
Approach LOS					B											

HCS7 Two-Way Stop-Control Report

General Information		Site Information	
Analyst	RCB	Intersection	J.S. Hwy at Roscoe Lane
Agency/Co.	Cannon & Cannon, Inc.	Jurisdiction	City of Knoxville
Date Performed	5/3/2018	East/West Street	Roscoe Lane
Analysis Year	2018	North/South Street	John Sevier Highway
Time Analyzed	PM - 2018 Existing	Peak Hour Factor	0.90
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description	Fresenius Dist Ctr - JSHwy		

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		0	1	0	0	1	1	0	0	1	1	0
Configuration							LR			L		TR		L	T	
Volume (veh/h)						1		1		0	597	1		2	451	
Percent Heavy Vehicles (%)						3		3		3				11		
Proportion Time Blocked																
Percent Grade (%)						0										
Right Turn Channelized																
Median Type | Storage	Left Only								1							

Critical and Follow-up Headways

Base Critical Headway (sec)						7.1		6.2		4.1				4.1		
Critical Headway (sec)						6.43		6.23		4.13				4.21		
Base Follow-Up Headway (sec)						3.5		3.3		2.2				2.2		
Follow-Up Headway (sec)						3.53		3.33		2.23				2.30		

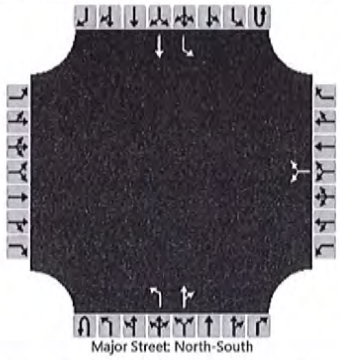
Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)							2			0				2		
Capacity, c (veh/h)							396			1058				883		
v/c Ratio							0.01			0.00				0.00		
95% Queue Length, Q_{95} (veh)							0.0			0.0				0.0		
Control Delay (s/veh)							14.2			8.4				9.1		
Level of Service (LOS)							B			A				A		
Approach Delay (s/veh)					14.2				0.0				0.0			
Approach LOS					B											

HCS7 Two-Way Stop-Control Report

General Information		Site Information	
Analyst	RCB	Intersection	J.S. Hwy at Roscoe Lane
Agency/Co.	Cannon & Cannon, Inc.	Jurisdiction	City of Knoxville
Date Performed	5/3/2018	East/West Street	Roscoe Lane
Analysis Year	2020	North/South Street	John Sevier Highway
Time Analyzed	AM - 2020 Background	Peak Hour Factor	0.95
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description	Fresenius Dist Ctr - JSHwy		

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		0	1	0	0	1	1	0	0	1	1	0
Configuration							LR			L		TR		L	T	
Volume (veh/h)						1		1		0	459	0		0	600	
Percent Heavy Vehicles (%)						3		3		13				10		
Proportion Time Blocked																
Percent Grade (%)						0										
Right Turn Channelized																
Median Type | Storage	Left Only								1							

Critical and Follow-up Headways

Base Critical Headway (sec)						7.1		6.2		4.1				4.1		
Critical Headway (sec)						6.43		6.23		4.23				4.20		
Base Follow-Up Headway (sec)						3.5		3.3		2.2				2.2		
Follow-Up Headway (sec)						3.53		3.33		2.32				2.29		

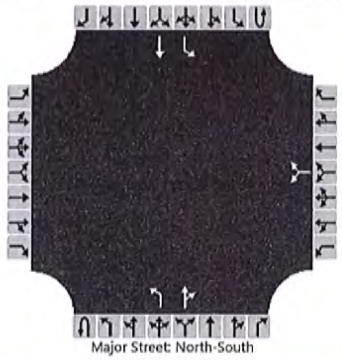
Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)							2			0				0		
Capacity, c (veh/h)							447			900				1040		
v/c Ratio							0.00			0.00				0.00		
95% Queue Length, Q_{95} (veh)							0.0			0.0				0.0		
Control Delay (s/veh)							13.1			9.0				8.5		
Level of Service (LOS)							B			A				A		
Approach Delay (s/veh)					13.1				0.0				0.0			
Approach LOS					B											

HCS7 Two-Way Stop-Control Report

General Information		Site Information	
Analyst	RCB	Intersection	J.S. Hwy at Roscoe Lane
Agency/Co.	Cannon & Cannon, Inc.	Jurisdiction	City of Knoxville
Date Performed	5/3/2018	East/West Street	Roscoe Lane
Analysis Year	2020	North/South Street	John Sevier Highway
Time Analyzed	PM - 2020 Background	Peak Hour Factor	0.90
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description	Fresenius Dist Ctr - JSHwy		

Lanes



Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		0	1	0	0	1	1	0	0	1	1	0
Configuration							LR			L		TR		L	T	
Volume (veh/h)						1		1		0	627	1		2	474	
Percent Heavy Vehicles (%)						3		3		3				11		
Proportion Time Blocked																
Percent Grade (%)						0										
Right Turn Channelized																
Median Type | Storage		Left Only								1						

Critical and Follow-up Headways

Base Critical Headway (sec)						7.1		6.2		4.1				4.1		
Critical Headway (sec)						6.43		6.23		4.13				4.21		
Base Follow-Up Headway (sec)						3.5		3.3		2.2				2.2		
Follow-Up Headway (sec)						3.53		3.33		2.23				2.30		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)							2			0				2		
Capacity, c (veh/h)							378			1035				858		
v/c Ratio							0.01			0.00				0.00		
95% Queue Length, Q_{95} (veh)							0.0			0.0				0.0		
Control Delay (s/veh)							14.6			8.5				9.2		
Level of Service (LOS)							B			A				A		
Approach Delay (s/veh)						14.6				0.0				0.0		
Approach LOS						B										

HCS7 Two-Way Stop-Control Report

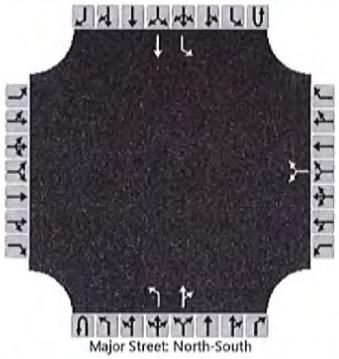
General Information

Analyst	RCB
Agency/Co.	Cannon & Cannon, Inc.
Date Performed	5/3/2018
Analysis Year	2020
Time Analyzed	AM - 2020 Combined
Intersection Orientation	North-South
Project Description	Fresenius Dist Ctr - JSHwy

Site Information

Intersection	J.S. Hwy at Roscoe Lane
Jurisdiction	City of Knoxville
East/West Street	Roscoe Lane
North/South Street	John Sevier Highway
Peak Hour Factor	0.95
Analysis Time Period (hrs)	0.25

Lanes


Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		0	1	0	0	1	1	0	0	1	1	0
Configuration							LR			L		TR		L	T	
Volume (veh/h)						3		8		0	460	7		27	602	
Percent Heavy Vehicles (%)						3		3		13				10		
Proportion Time Blocked																
Percent Grade (%)						0										
Right Turn Channelized																
Median Type | Storage	Left Only								1							

Critical and Follow-up Headways

Base Critical Headway (sec)						7.1		6.2		4.1				4.1		
Critical Headway (sec)						6.43		6.23		4.23				4.20		
Base Follow-Up Headway (sec)						3.5		3.3		2.2				2.2		
Follow-Up Headway (sec)						3.53		3.33		2.32				2.29		

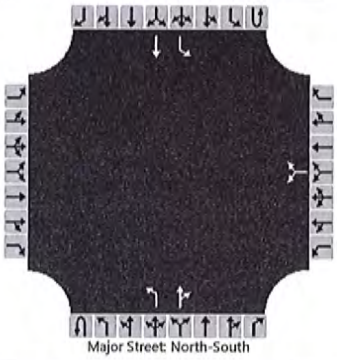
Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)							12			0				28		
Capacity, c (veh/h)							484			899				1033		
v/c Ratio							0.02			0.00				0.03		
95% Queue Length, Q_{95} (veh)							0.1			0.0				0.1		
Control Delay (s/veh)							12.6			9.0				8.6		
Level of Service (LOS)							B			A				A		
Approach Delay (s/veh)					12.6				0.0				0.4			
Approach LOS					B											

HCS7 Two-Way Stop-Control Report

General Information		Site Information	
Analyst	RCB	Intersection	J.S. Hwy at Roscoe Lane
Agency/Co.	Cannon & Cannon, Inc.	Jurisdiction	City of Knoxville
Date Performed	5/3/2018	East/West Street	Roscoe Lane
Analysis Year	2020	North/South Street	John Sevier Highway
Time Analyzed	PM - 2020 Combined	Peak Hour Factor	0.90
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description	Fresenius Dist Ctr - JSHwy		

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		0	1	0	0	1	1	0	0	1	1	0
Configuration							LR			L		TR		L	T	
Volume (veh/h)						10		33		0	629	4		14	475	
Percent Heavy Vehicles (%)						3		3		3				11		
Proportion Time Blocked																
Percent Grade (%)						0										
Right Turn Channelized																
Median Type | Storage	Left Only								1							

Critical and Follow-up Headways

Base Critical Headway (sec)						7.1		6.2		4.1				4.1		
Critical Headway (sec)						6.43		6.23		4.13				4.21		
Base Follow-Up Headway (sec)						3.5		3.3		2.2				2.2		
Follow-Up Headway (sec)						3.53		3.33		2.23				2.30		

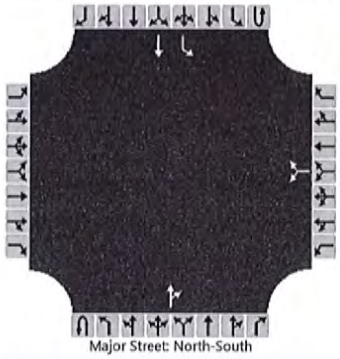
Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)							48			0				16		
Capacity, c (veh/h)							403			1034				854		
v/c Ratio							0.12			0.00				0.02		
95% Queue Length, Q_{95} (veh)							0.4			0.0				0.1		
Control Delay (s/veh)							15.1			8.5				9.3		
Level of Service (LOS)							C			A				A		
Approach Delay (s/veh)					15.1				0.0				0.3			
Approach LOS					C											

HCS7 Two-Way Stop-Control Report

General Information		Site Information	
Analyst	RCB	Intersection	J.S. Hwy at Truck Entr.
Agency/Co.	Cannon & Cannon, Inc.	Jurisdiction	City of Knoxville
Date Performed	5/3/2018	East/West Street	Truck Entrance to Site
Analysis Year	2020	North/South Street	John Sevier Highway
Time Analyzed	PM - 2020 Combined	Peak Hour Factor	0.90
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description	Fresenius Dist Ctr - JSHwy		

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		0	1	0	0	0	1	0	0	1	1	0
Configuration							LR					TR		L	T	
Volume (veh/h)						2		2			631	1		1	484	
Percent Heavy Vehicles (%)						100		100						11		
Proportion Time Blocked																
Percent Grade (%)						0										
Right Turn Channelized																
Median Type | Storage	Left Only								1							

Critical and Follow-up Headways

Base Critical Headway (sec)						7.1		6.2						4.1		
Critical Headway (sec)						7.40		7.20						4.21		
Base Follow-Up Headway (sec)						3.5		3.3						2.2		
Follow-Up Headway (sec)						4.40		4.20						2.30		

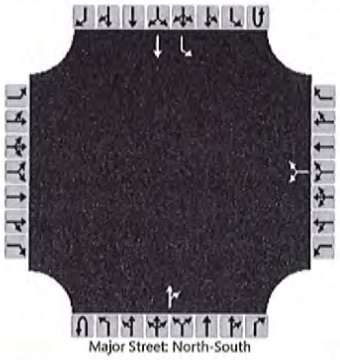
Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)							4							1		
Capacity, c (veh/h)							264							855		
v/c Ratio							0.02							0.00		
95% Queue Length, Q_{95} (veh)							0.1							0.0		
Control Delay (s/veh)							18.8							9.2		
Level of Service (LOS)							C							A		
Approach Delay (s/veh)					18.8								0.0			
Approach LOS					C											

HCS7 Two-Way Stop-Control Report

General Information		Site Information	
Analyst	RCB	Intersection	J.S. Hwy at Truck Entr.
Agency/Co.	Cannon & Cannon, Inc.	Jurisdiction	City of Knoxville
Date Performed	5/3/2018	East/West Street	Truck Entrance to Site
Analysis Year	2020	North/South Street	John Sevier Highway
Time Analyzed	AM - 2020 Combined	Peak Hour Factor	0.95
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description	Fresenius Dist Ctr - JSHwy		

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		0	1	0	0	0	1	0	0	1	1	0
Configuration							LR					TR		L	T	
Volume (veh/h)						1		1			466	2		2	603	
Percent Heavy Vehicles (%)						100		100						10		
Proportion Time Blocked																
Percent Grade (%)						0										
Right Turn Channelized																
Median Type | Storage	Left Only								1							

Critical and Follow-up Headways

Base Critical Headway (sec)						7.1		6.2						4.1		
Critical Headway (sec)						7.40		7.20						4.20		
Base Follow-Up Headway (sec)						3.5		3.3						2.2		
Follow-Up Headway (sec)						4.40		4.20						2.29		

Delay, Queue Length, and Level of Service

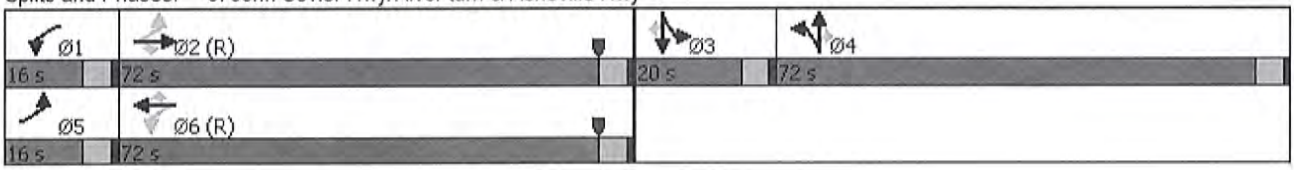
Flow Rate, v (veh/h)							2							2		
Capacity, c (veh/h)							317							1031		
v/c Ratio							0.01							0.00		
95% Queue Length, Q_{95} (veh)							0.0							0.0		
Control Delay (s/veh)							16.4							8.5		
Level of Service (LOS)							C							A		
Approach Delay (s/veh)					16.4								0.0			
Approach LOS					C											

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	9	634	437	63	1441	3	409	1	61	4	9	8
Future Volume (vph)	9	634	437	63	1441	3	409	1	61	4	9	8
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950	0.953			0.986	
Satd. Flow (prot)	1671	3343	1495	1703	3406	1524	1531	1536	1442	0	1837	1583
Flt Permitted	0.093			0.327			0.950	0.953			0.986	
Satd. Flow (perm)	164	3343	1495	586	3406	1524	1531	1536	1442	0	1837	1583
Satd. Flow (RTOR)			376			73			73			73
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%	8%	8%	6%	6%	6%	12%	12%	12%	2%	2%	2%
Shared Lane Traffic (%)							50%					
Lane Group Flow (vph)	10	704	486	70	1601	3	227	228	68	0	14	9
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Split	NA	Perm	Split	NA	Perm
Protected Phases	5	2		1	6		4	4		3	3	
Permitted Phases	2		2	6		6			4			3
Detector Phase	5	2	2	1	6	6	4	4	4	3	3	3
Switch Phase												
Minimum Initial (s)	6.0	15.0	15.0	6.0	15.0	15.0	6.0	6.0	6.0	6.0	6.0	6.0
Minimum Split (s)	12.0	21.0	21.0	12.0	21.0	21.0	12.0	12.0	12.0	12.0	12.0	12.0
Total Split (s)	16.0	72.0	72.0	16.0	72.0	72.0	72.0	72.0	72.0	20.0	20.0	20.0
Total Split (%)	8.9%	40.0%	40.0%	8.9%	40.0%	40.0%	40.0%	40.0%	40.0%	11.1%	11.1%	11.1%
Maximum Green (s)	11.0	67.0	67.0	11.0	67.0	67.0	67.0	67.0	67.0	15.0	15.0	15.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lag	Lag	Lag	Lead	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	2.0	3.0	3.0	2.0	3.0	3.0	5.0	5.0	5.0	2.0	2.0	2.0
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	None	None	None	None	None
Act Effct Green (s)	120.4	114.4	114.4	125.9	122.3	122.3	36.2	36.2	36.2		6.5	6.5
Actuated g/C Ratio	0.67	0.64	0.64	0.70	0.68	0.68	0.20	0.20	0.20		0.04	0.04
v/c Ratio	0.06	0.33	0.45	0.15	0.69	0.00	0.74	0.74	0.20		0.21	0.07
Control Delay	12.9	17.8	6.0	11.6	23.3	0.0	80.9	80.9	9.6		91.5	1.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0
Total Delay	12.9	17.8	6.0	11.6	23.3	0.0	80.9	80.9	9.6		91.5	1.1
LOS	B	B	A	B	C	A	F	F	A		F	A
Approach Delay		13.0			22.8			71.6			56.1	
Approach LOS		B			C			E			E	
Queue Length 50th (ft)	4	205	52	26	564	0	268	269	0		16	0
Queue Length 95th (ft)	14	313	163	58	954	0	347	348	39		45	0
Internal Link Dist (ft)		1355			1498			1060			407	
Turn Bay Length (ft)	100		200	175		130	180		180			
Base Capacity (vph)	206	2124	1087	480	2314	1058	569	571	582		153	198
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0		0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0		0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0		0	0

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Reduced v/c Ratio	0.05	0.33	0.45	0.15	0.69	0.00	0.40	0.40	0.12		0.09	0.05

Intersection Summary	
Cycle Length: 180	
Actuated Cycle Length: 180	
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow	
Natural Cycle: 90	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.74	
Intersection Signal Delay: 27.0	Intersection LOS: C
Intersection Capacity Utilization 75.4%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 3: John Sevier Hwy/River turn & Asheville Hwy

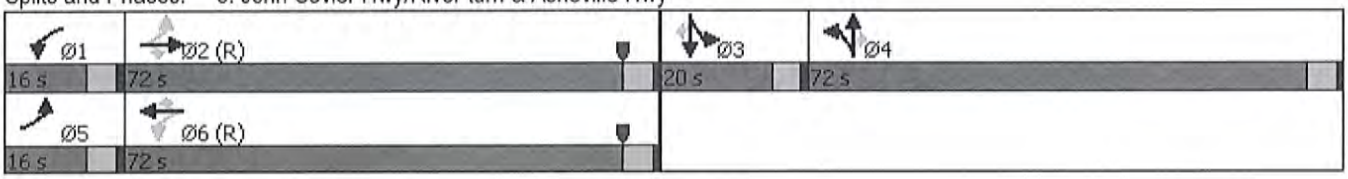


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	68	1175	383	84	710	19	481	12	81	37	25	48
Future Volume (vph)	68	1175	383	84	710	19	481	12	81	37	25	48
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950	0.955			0.971	
Satd. Flow (prot)	1736	3471	1553	1703	3406	1524	1665	1674	1568	0	1774	1553
Flt Permitted	0.324			0.143			0.950	0.955			0.971	
Satd. Flow (perm)	592	3471	1553	256	3406	1524	1665	1674	1568	0	1774	1553
Satd. Flow (RTOR)			178			73			84			73
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	4%	4%	4%	6%	6%	6%	3%	3%	3%	4%	4%	4%
Shared Lane Traffic (%)							49%					
Lane Group Flow (vph)	70	1211	395	87	732	20	253	255	84	0	64	49
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Split	NA	Perm	Split	NA	Perm
Protected Phases	5	2		1	6		4	4		3	3	
Permitted Phases	2		2	6		6			4			3
Detector Phase	5	2	2	1	6	6	4	4	4	3	3	3
Switch Phase												
Minimum Initial (s)	6.0	15.0	15.0	6.0	15.0	15.0	6.0	6.0	6.0	6.0	6.0	6.0
Minimum Split (s)	12.0	21.0	21.0	12.0	21.0	21.0	12.0	12.0	12.0	12.0	12.0	12.0
Total Split (s)	16.0	72.0	72.0	16.0	72.0	72.0	72.0	72.0	72.0	20.0	20.0	20.0
Total Split (%)	8.9%	40.0%	40.0%	8.9%	40.0%	40.0%	40.0%	40.0%	40.0%	11.1%	11.1%	11.1%
Maximum Green (s)	11.0	67.0	67.0	11.0	67.0	67.0	67.0	67.0	67.0	15.0	15.0	15.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lag	Lag	Lag	Lead	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	2.0	3.0	3.0	2.0	3.0	3.0	5.0	5.0	5.0	2.0	2.0	2.0
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	None	None	None	None	None
Act Effct Green (s)	109.3	101.8	101.8	113.7	104.0	104.0	37.7	37.7	37.7		10.8	10.8
Actuated g/C Ratio	0.61	0.57	0.57	0.63	0.58	0.58	0.21	0.21	0.21		0.06	0.06
v/c Ratio	0.17	0.62	0.41	0.36	0.37	0.02	0.73	0.73	0.21		0.60	0.30
Control Delay	15.3	30.4	14.9	18.4	23.0	0.1	77.7	77.7	10.2		104.7	9.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0
Total Delay	15.3	30.4	14.9	18.4	23.0	0.1	77.7	77.7	10.2		104.7	9.8
LOS	B	C	B	B	C	A	E	E	B		F	A
Approach Delay		26.1			22.0			68.1			63.6	
Approach LOS		C			C			E			E	
Queue Length 50th (ft)	29	487	135	37	237	0	297	300	0		75	0
Queue Length 95th (ft)	65	728	282	78	362	0	377	380	46		131	19
Internal Link Dist (ft)		1355			1498			1060			407	
Turn Bay Length (ft)	100		200	175		130	180		180			
Base Capacity (vph)	440	1962	955	260	1967	910	619	623	636		147	196
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0		0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0		0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0		0	0

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Reduced v/c Ratio	0.16	0.62	0.41	0.33	0.37	0.02	0.41	0.41	0.13		0.44	0.25

Intersection Summary	
Cycle Length: 180	
Actuated Cycle Length: 180	
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow	
Natural Cycle: 75	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.73	
Intersection Signal Delay: 34.1	Intersection LOS: C
Intersection Capacity Utilization 70.3%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 3: John Sevier Hwy/River turn & Asheville Hwy

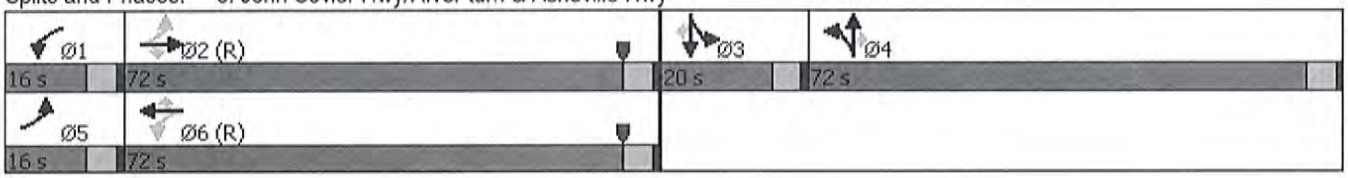


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	9	666	459	66	1513	3	429	1	64	4	9	8
Future Volume (vph)	9	666	459	66	1513	3	429	1	64	4	9	8
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950	0.953			0.986	
Satd. Flow (prot)	1671	3343	1495	1703	3406	1524	1531	1536	1442	0	1837	1583
Flt Permitted	0.076			0.309			0.950	0.953			0.986	
Satd. Flow (perm)	134	3343	1495	554	3406	1524	1531	1536	1442	0	1837	1583
Satd. Flow (RTOR)			376			73			73			73
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%	8%	8%	6%	6%	6%	12%	12%	12%	2%	2%	2%
Shared Lane Traffic (%)							50%					
Lane Group Flow (vph)	10	740	510	73	1681	3	238	240	71	0	14	9
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Split	NA	Perm	Split	NA	Perm
Protected Phases	5	2		1	6		4	4		3	3	
Permitted Phases	2		2	6		6			4			3
Detector Phase	5	2	2	1	6	6	4	4	4	3	3	3
Switch Phase												
Minimum Initial (s)	6.0	15.0	15.0	6.0	15.0	15.0	6.0	6.0	6.0	6.0	6.0	6.0
Minimum Split (s)	12.0	21.0	21.0	12.0	21.0	21.0	12.0	12.0	12.0	12.0	12.0	12.0
Total Split (s)	16.0	72.0	72.0	16.0	72.0	72.0	72.0	72.0	72.0	20.0	20.0	20.0
Total Split (%)	8.9%	40.0%	40.0%	8.9%	40.0%	40.0%	40.0%	40.0%	40.0%	11.1%	11.1%	11.1%
Maximum Green (s)	11.0	67.0	67.0	11.0	67.0	67.0	67.0	67.0	67.0	15.0	15.0	15.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lag	Lag	Lag	Lead	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	2.0	3.0	3.0	2.0	3.0	3.0	5.0	5.0	5.0	2.0	2.0	2.0
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	None	None	None	None	None
Act Effct Green (s)	118.3	112.3	112.3	124.1	120.4	120.4	38.1	38.1	38.1		6.5	6.5
Actuated g/C Ratio	0.66	0.62	0.62	0.69	0.67	0.67	0.21	0.21	0.21		0.04	0.04
v/c Ratio	0.07	0.35	0.47	0.17	0.74	0.00	0.74	0.74	0.20		0.21	0.07
Control Delay	14.0	19.2	7.1	12.5	25.8	0.0	78.8	79.0	10.1		91.5	1.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0
Total Delay	14.0	19.2	7.1	12.5	25.8	0.0	78.8	79.0	10.1		91.5	1.1
LOS	B	B	A	B	C	A	E	E	B		F	A
Approach Delay		14.2			25.2			70.0			56.1	
Approach LOS		B			C			E			E	
Queue Length 50th (ft)	4	224	68	28	637	0	281	284	0		16	0
Queue Length 95th (ft)	14	343	199	62	1080	0	357	362	42		45	0
Internal Link Dist (ft)		1355			1498			1060			407	
Turn Bay Length (ft)	100		200	175		130	180		180			
Base Capacity (vph)	185	2086	1074	454	2278	1043	569	571	582		153	198
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0		0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0		0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0		0	0

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Reduced v/c Ratio	0.05	0.35	0.47	0.16	0.74	0.00	0.42	0.42	0.12		0.09	0.05

Intersection Summary	
Cycle Length: 180	
Actuated Cycle Length: 180	
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow	
Natural Cycle: 90	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.74	
Intersection Signal Delay: 28.4	Intersection LOS: C
Intersection Capacity Utilization 77.9%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 3: John Sevier Hwy/River turn & Asheville Hwy

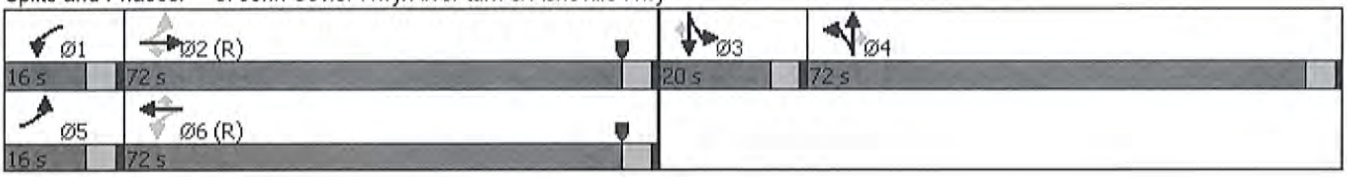


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	71	1234	402	88	750	20	505	13	85	39	26	50
Future Volume (vph)	71	1234	402	88	750	20	505	13	85	39	26	50
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950	0.955			0.971	
Satd. Flow (prot)	1736	3471	1553	1703	3406	1524	1665	1674	1568	0	1774	1553
Flt Permitted	0.303			0.122			0.950	0.955			0.971	
Satd. Flow (perm)	554	3471	1553	219	3406	1524	1665	1674	1568	0	1774	1553
Satd. Flow (RTOR)			177			73			86			73
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	4%	4%	4%	6%	6%	6%	3%	3%	3%	4%	4%	4%
Shared Lane Traffic (%)							49%					
Lane Group Flow (vph)	73	1272	414	91	773	21	266	268	88	0	67	52
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Split	NA	Perm	Split	NA	Perm
Protected Phases	5	2		1	6		4	4		3	3	
Permitted Phases	2		2	6		6			4			3
Detector Phase	5	2	2	1	6	6	4	4	4	3	3	3
Switch Phase												
Minimum Initial (s)	6.0	15.0	15.0	6.0	15.0	15.0	6.0	6.0	6.0	6.0	6.0	6.0
Minimum Split (s)	12.0	21.0	21.0	12.0	21.0	21.0	12.0	12.0	12.0	12.0	12.0	12.0
Total Split (s)	16.0	72.0	72.0	16.0	72.0	72.0	72.0	72.0	72.0	20.0	20.0	20.0
Total Split (%)	8.9%	40.0%	40.0%	8.9%	40.0%	40.0%	40.0%	40.0%	40.0%	11.1%	11.1%	11.1%
Maximum Green (s)	11.0	67.0	67.0	11.0	67.0	67.0	67.0	67.0	67.0	15.0	15.0	15.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lag	Lag	Lag	Lead	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	2.0	3.0	3.0	2.0	3.0	3.0	5.0	5.0	5.0	2.0	2.0	2.0
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	None	None	None	None	None
Act Effct Green (s)	107.2	99.4	99.4	112.0	101.8	101.8	39.4	39.4	39.4		11.0	11.0
Actuated g/C Ratio	0.60	0.55	0.55	0.62	0.57	0.57	0.22	0.22	0.22		0.06	0.06
v/c Ratio	0.19	0.66	0.44	0.41	0.40	0.02	0.73	0.73	0.21		0.62	0.32
Control Delay	16.3	33.4	16.7	20.7	24.7	0.1	76.4	76.4	10.3		105.5	11.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0
Total Delay	16.3	33.4	16.7	20.7	24.7	0.1	76.4	76.4	10.3		105.5	11.0
LOS	B	C	B	C	C	A	E	E	B		F	B
Approach Delay		28.8			23.7			67.1			64.2	
Approach LOS		C			C			E			E	
Queue Length 50th (ft)	31	542	156	40	261	0	312	314	2		79	0
Queue Length 95th (ft)	69	808	318	84	397	0	390	393	48		135	25
Internal Link Dist (ft)		1355			1498			1060			407	
Turn Bay Length (ft)	100		200	175		130	180		180			
Base Capacity (vph)	411	1917	937	238	1927	894	619	623	637		147	196
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0		0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0		0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0		0	0

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Reduced v/c Ratio	0.18	0.66	0.44	0.38	0.40	0.02	0.43	0.43	0.14		0.46	0.27

Intersection Summary	
Cycle Length: 180	
Actuated Cycle Length: 180	
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow	
Natural Cycle: 80	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.73	
Intersection Signal Delay: 35.7	Intersection LOS: D
Intersection Capacity Utilization 72.6%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 3: John Sevier Hwy/River turn & Asheville Hwy

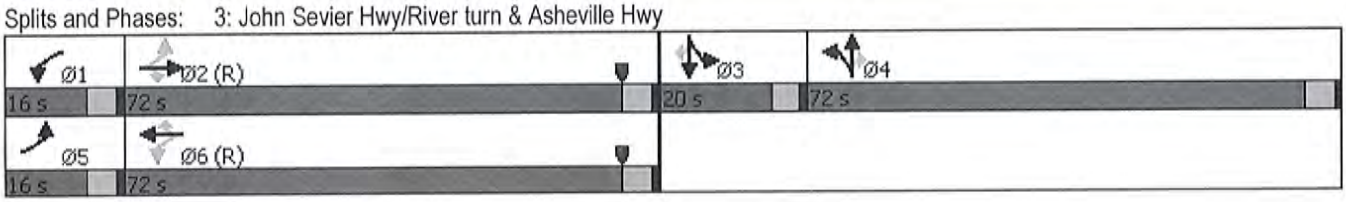


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	9	666	482	72	1513	3	436	1	65	4	9	8
Future Volume (vph)	9	666	482	72	1513	3	436	1	65	4	9	8
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950	0.953			0.986	
Satd. Flow (prot)	1671	3343	1495	1703	3406	1524	1531	1536	1442	0	1837	1583
Flt Permitted	0.075			0.308			0.950	0.953			0.986	
Satd. Flow (perm)	132	3343	1495	552	3406	1524	1531	1536	1442	0	1837	1583
Satd. Flow (RTOR)			395			73			73			73
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%	8%	8%	6%	6%	6%	12%	12%	12%	2%	2%	2%
Shared Lane Traffic (%)							50%					
Lane Group Flow (vph)	10	740	536	80	1681	3	242	243	72	0	14	9
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Split	NA	Perm	Split	NA	Perm
Protected Phases	5	2		1	6		4	4		3	3	
Permitted Phases	2		2	6		6			4			3
Detector Phase	5	2	2	1	6	6	4	4	4	3	3	3
Switch Phase												
Minimum Initial (s)	6.0	15.0	15.0	6.0	15.0	15.0	6.0	6.0	6.0	6.0	6.0	6.0
Minimum Split (s)	12.0	21.0	21.0	12.0	21.0	21.0	12.0	12.0	12.0	12.0	12.0	12.0
Total Split (s)	16.0	72.0	72.0	16.0	72.0	72.0	72.0	72.0	72.0	20.0	20.0	20.0
Total Split (%)	8.9%	40.0%	40.0%	8.9%	40.0%	40.0%	40.0%	40.0%	40.0%	11.1%	11.1%	11.1%
Maximum Green (s)	11.0	67.0	67.0	11.0	67.0	67.0	67.0	67.0	67.0	15.0	15.0	15.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lag	Lag	Lag	Lead	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	2.0	3.0	3.0	2.0	3.0	3.0	5.0	5.0	5.0	2.0	2.0	2.0
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	None	None	None	None	None
Act Effct Green (s)	117.6	111.6	111.6	123.8	119.9	119.9	38.6	38.6	38.6		6.5	6.5
Actuated g/C Ratio	0.65	0.62	0.62	0.69	0.67	0.67	0.21	0.21	0.21		0.04	0.04
v/c Ratio	0.07	0.36	0.50	0.19	0.74	0.00	0.74	0.74	0.20		0.21	0.07
Control Delay	14.2	19.6	7.4	12.7	26.2	0.0	78.6	78.7	10.3		91.5	1.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0
Total Delay	14.2	19.6	7.4	12.7	26.2	0.0	78.6	78.7	10.3		91.5	1.1
LOS	B	B	A	B	C	A	E	E	B		F	A
Approach Delay		14.5			25.5			69.8			56.1	
Approach LOS		B			C			E			E	
Queue Length 50th (ft)	4	229	76	31	651	0	284	285	0		16	0
Queue Length 95th (ft)	14	346	214	67	1084	0	363	365	42		45	0
Internal Link Dist (ft)		1355			1498			1060			407	
Turn Bay Length (ft)	100		200	175		130	180		180			
Base Capacity (vph)	184	2072	1076	451	2269	1039	569	571	582		153	198
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0		0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0		0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0		0	0

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Reduced v/c Ratio	0.05	0.36	0.50	0.18	0.74	0.00	0.43	0.43	0.12		0.09	0.05

Intersection Summary	
Cycle Length: 180	
Actuated Cycle Length: 180	
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow	
Natural Cycle: 90	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.74	
Intersection Signal Delay: 28.6	Intersection LOS: C
Intersection Capacity Utilization 78.1%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 3: John Sevier Hwy/River turn & Asheville Hwy



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	71	1234	412	91	750	20	532	13	92	39	26	50
Future Volume (vph)	71	1234	412	91	750	20	532	13	92	39	26	50
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950	0.954			0.971	
Satd. Flow (prot)	1736	3471	1553	1703	3406	1524	1665	1672	1568	0	1774	1553
Flt Permitted	0.300			0.116			0.950	0.954			0.971	
Satd. Flow (perm)	548	3471	1553	208	3406	1524	1665	1672	1568	0	1774	1553
Satd. Flow (RTOR)			182			73			88			73
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	4%	4%	4%	6%	6%	6%	3%	3%	3%	4%	4%	4%
Shared Lane Traffic (%)							49%					
Lane Group Flow (vph)	73	1272	425	94	773	21	279	282	95	0	67	52
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Split	NA	Perm	Split	NA	Perm
Protected Phases	5	2		1	6		4	4		3	3	
Permitted Phases	2		2	6		6			4			3
Detector Phase	5	2	2	1	6	6	4	4	4	3	3	3
Switch Phase												
Minimum Initial (s)	6.0	15.0	15.0	6.0	15.0	15.0	6.0	6.0	6.0	6.0	6.0	6.0
Minimum Split (s)	12.0	21.0	21.0	12.0	21.0	21.0	12.0	12.0	12.0	12.0	12.0	12.0
Total Split (s)	16.0	72.0	72.0	16.0	72.0	72.0	72.0	72.0	72.0	20.0	20.0	20.0
Total Split (%)	8.9%	40.0%	40.0%	8.9%	40.0%	40.0%	40.0%	40.0%	40.0%	11.1%	11.1%	11.1%
Maximum Green (s)	11.0	67.0	67.0	11.0	67.0	67.0	67.0	67.0	67.0	15.0	15.0	15.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lag	Lag	Lag	Lead	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	2.0	3.0	3.0	2.0	3.0	3.0	5.0	5.0	5.0	2.0	2.0	2.0
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	None	None	None	None	None
Act Effct Green (s)	105.0	97.1	97.1	110.2	99.7	99.7	41.4	41.4	41.4		11.0	11.0
Actuated g/C Ratio	0.58	0.54	0.54	0.61	0.55	0.55	0.23	0.23	0.23		0.06	0.06
v/c Ratio	0.20	0.68	0.46	0.44	0.41	0.02	0.73	0.73	0.22		0.62	0.32
Control Delay	17.3	35.2	17.8	22.3	26.0	0.1	74.5	74.8	11.2		105.5	11.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0
Total Delay	17.3	35.2	17.8	22.3	26.0	0.1	74.5	74.8	11.2		105.5	11.0
LOS	B	D	B	C	C	A	E	E	B		F	B
Approach Delay		30.3			25.0			65.5			64.2	
Approach LOS		C			C			E			E	
Queue Length 50th (ft)	33	563	168	43	270	0	325	328	7		79	0
Queue Length 95th (ft)	71	832	337	89	408	0	404	408	54		135	25
Internal Link Dist (ft)		1355			1498			1060			407	
Turn Bay Length (ft)	100		200	175		130	180		180			
Base Capacity (vph)	401	1872	921	231	1887	877	619	622	638		147	196
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0		0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0		0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0		0	0

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Reduced v/c Ratio	0.18	0.68	0.46	0.41	0.41	0.02	0.45	0.45	0.15		0.46	0.27

Intersection Summary	
Cycle Length: 180	
Actuated Cycle Length: 180	
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow	
Natural Cycle: 80	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.73	
Intersection Signal Delay: 36.8	Intersection LOS: D
Intersection Capacity Utilization 73.4%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 3: John Sevier Hwy/River turn & Asheville Hwy