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RAMEY KEMP & ASSOCIATES
TRANSPORTATION ENGINEERS

WEST PIEDMONT PDC 12

SEAL OF PITTSYLVANIA COUNTY 1767 VIRGINIA

CITY OF DANVILLE VIRGINIA FOUNDED 1793 SEAL CHARTERED 1890

VDOT
Virginia Department of Transportation

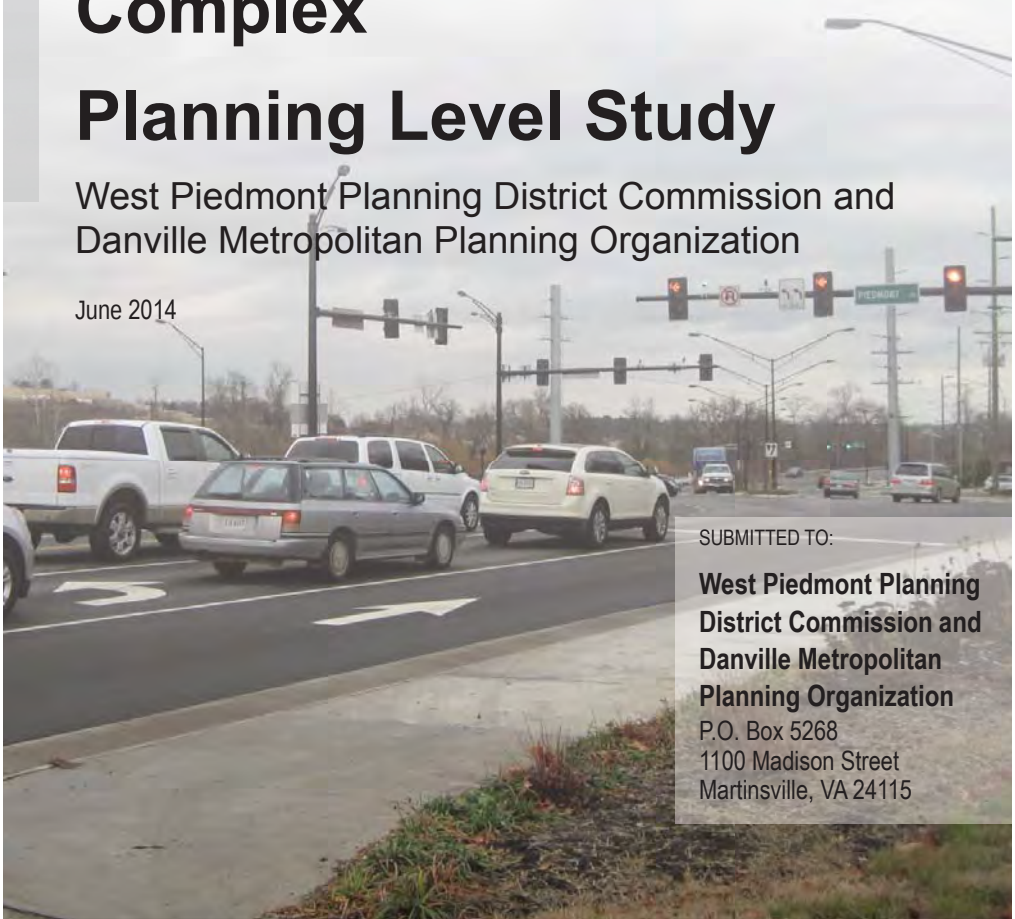
Increasing Safety and Capacity

Schoolfield Industrial Complex

Planning Level Study

West Piedmont Planning District Commission and Danville Metropolitan Planning Organization

June 2014



SUBMITTED TO:

West Piedmont Planning District Commission and Danville Metropolitan Planning Organization
P.O. Box 5268
1100 Madison Street
Martinsville, VA 24115

Planning Document – Schoolfield Industrial Complex

FINAL REPORT

Danville, Virginia

June 20, 2014

Prepared for:
West Piedmont Planning District Commission and
Danville Metropolitan Planning Organization

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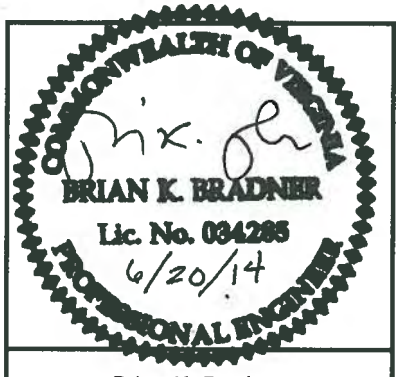

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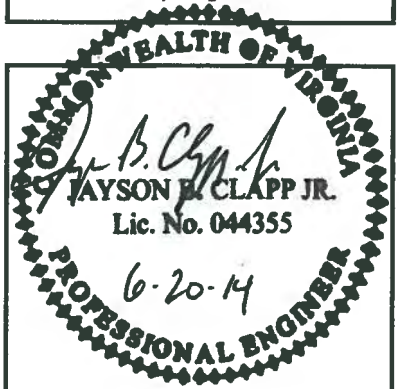

Jayson B. Clapp, Jr.
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Ramey Kemp & Associates, Inc.

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Executive Summary

Dewberry Engineers Inc. (Dewberry) and Ramey Kemp & Associates Inc. (RKA) have completed the evaluation of the existing roadway network serving the 93 acre Schoolfield Industrial Complex property for the West Piedmont Planning District Commission (WPPDC) and the Danville Pittsylvania Metropolitan Planning Organization (MPO) in cooperation with the Virginia Department of Transportation (VDOT), the City of Danville, and Pittsylvania County. The intent of this study is to identify the capacity of the existing roadway network that serves the complex, and if additional capacity is available for the redevelopment of the Schoolfield Industrial Complex. Below is a summary of the findings and conclusions from this study.

1. Five of the six existing intersections are controlled by a traffic signal. Utilizing existing peak hour traffic volumes obtained from turning movement counts performed in September of 2013, all intersection approaches operate at LOS C or better.

2. The existing roadway network serving the 93 acre Schoolfield Industrial Complex property operates at acceptable levels of service under current peak hour volumes and projected 2035 and 2040 traffic volumes generated from the regional traffic model received from VDOT for this area.

3. Traffic was generated and distributed utilizing a 2008 Conceptual Master Plan to estimate a maximum build-out level of the 93 acre Complex property. This analysis determined that the study intersections have adequate capacity to accommodate up to 22,000 vehicles per day and still operate at acceptable levels of service.

4. Almost half of the 31 total accidents reported in this area occurred at the intersection of US 29 Business and Bishop Road. The majority of these accidents involved left turning vehicles and opposing traffic on US 29 Business. The installation of a traffic signal at this intersection could potentially reduce the number of accidents at this location.

SCHOOLFIELD INDUSTRIAL COMPLEX – PLANNING DOCUMENT

I. INTRODUCTION

The Schoolfield Industrial Complex, home to the former Schoolfield Complex of Dan River Mills, is bound by Park Avenue to the East, West Main Street to the South, Bishop Road to the West, and Memorial Drive to the North. The complex is currently vacant and not generating any traffic. See Figure 1, located in Appendix A, for the location of the Schoolfield Complex and the limits of the analysis. This complex is completely located within the City of Danville boundaries. With the exception of the Robertson Street Bridge widening and reconfiguration of the intersections of Piedmont Drive and Memorial Drive and Park Avenue and Memorial Drive recently completed in 2013, no other projects are proposed in the vicinity of this site within the *Year 2035 Long Range Transportation Plan.*

The following is addressed within this study:

1. Identification of the Existing Conditions;
2. Analysis of the No-Build Alternative (Years 2035 and 2040);
3. Analysis of the Future Build-Out Alternative;
4. Estimate of Maximum Build-Out Level of the Schoolfield Site

II. EXISTING TRAFFIC CONDITIONS

A description of each existing road within the study area is listed below.

Memorial Drive (US 29) is classified as Urban Principal Arterial within the limits of this project. The posted speed limit along this road is 40 miles per hour (MPH). This road serves as a north-south business route through the City of Danville. The road typical section includes four (4) 11 foot lanes with curb and gutter. The horizontal and vertical alignments follow the natural terrain.

Piedmont Drive (Robertson Bridge) is classified as an Urban Minor Arterial with a posted speed limit of 35 miles per hour. This road/bridge connects Riverside Dr (US 58) to Memorial Drive (US 29) across the Dan River. The road typical section includes a four (4) lane divided roadway (two lanes each direction) with lane widths of 12 feet. The horizontal alignment is primarily straight with very subtle horizontal curves. The vertical alignment generally approximates the adjacent rolling terrain.

Park Avenue is classified as an Urban Minor Arterial with a posted speed limit of 35 miles per hour. The road typical section includes a four (4) lane undivided roadway (two lanes each direction) with lane widths of 12 feet. The horizontal alignment follows a windy path with multiple horizontal curves.

West Main Street is classified as an Urban Minor Arterial with a posted speed limit of 25 miles per hour. This road serves as an east-west route for local traffic. The road typical section includes 11 foot lanes. The horizontal alignment follows the natural terrain with a rolling vertical alignment.

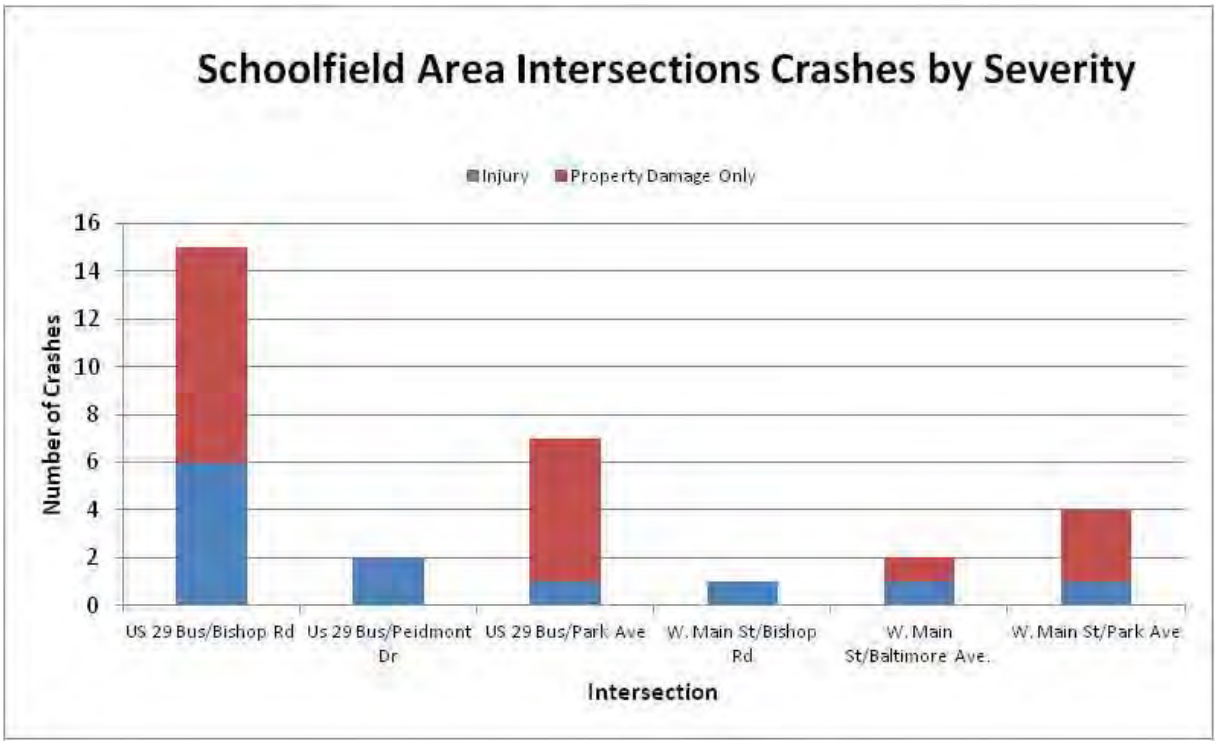
Bishop Road is classified as an Urban Minor Arterial with a posted speed limit of 30 miles per hour. This road serves as a north-south route for local traffic in this area and connects Memorial Drive to West Main Street. The road typical section includes 10 foot lanes with curb and gutter. The horizontal and vertical alignments follow the natural terrain.

Wood Avenue is the main entrance to the existing Schoolfield Industrial Complex and has an assumed speed limit of 25 miles per hour. The typical road section includes 12 foot lanes.

Crash Data Analysis

Crash data from the most recent three year period (2010 to 2012) for the study intersections were provided by VDOT. During this period, 31 reported crashes occurred at the six (6) study intersections. Of the 31 total reported crashes, 19 resulted in property damage only (PDO) and 12 involved at least one injury. The locations and severity of the accidents are graphically presented in Table I and Figure 3. Appendix B contains the crash data summary sheet.

Table I
Severity of Crashes per Intersection



Upon review of the crash data for the Schoolfield Area intersections, almost half of the accidents occurred at the intersection of US 29 Business and Bishop Road. Of the 15 total accidents, 6 involved an injury. Upon further review of the crash data for this intersection, the majority (12) of accidents involved left turning vehicles and opposing traffic on US 29 Business. The number of right-angle crashes as well as the severity could potentially be reduced with the installation of a traffic signal at this location, while accommodating all existing movements. If installed, the signal should be coordinated with the existing traffic signal at Piedmont Drive considering the spacing between the two intersections, and the fact that approximately half of these accidents occurred while traffic was backed up from the Piedmont Drive intersection. Coordination should reduce the possibility of queues extending back past the Bishop Road intersection. A more restrictive alternative would be to install a median on US 29

Business, which would help to reduce the number of angle crashes and severity by prohibiting left turn movements at this intersection.

Existing Roadway Volumes and Levels of Service

To determine the peak hour volumes within the study area, turning movement counts for the AM and PM peak hours were conducted by Quality Counts on September 17th, which are included in Appendix C for reference. A review of the traffic counts indicates the AM and PM peak hours occurred at different times at each intersection. It should be noted that for the purpose of this study, the peak hour volumes at each intersection were assumed to occur simultaneously. The turning movement counts were taken at the following intersections.

1. Memorial Drive and Piedmont Drive
2. Memorial Drive and Park Avenue
3. West Main Street and Park Avenue
4. West Main Street and Baltimore Avenue/Wood Avenue
5. West Main Street and Augusta Avenue/Bishop Road
6. Memorial Drive and Bishop Road

Five of these six existing intersections are controlled by a traffic signal. In order to understand these signals, the phasing for each signal was obtained and shown in Appendix D for reference. The existing intersection geometry and traffic control devices are presented in Figure 2; and the existing (2013) traffic volumes are presented in Figure 4.

Using the existing traffic volumes shown in Figure 4 the existing levels of service were determined for each intersection.

The levels of service (LOS) for each intersection are shown in Figure 5. As can be seen in this figure, all approaches currently operate at acceptable levels of service C or better.

Table II also shows the existing LOS for each intersection.

Table II
Year 2013 – Existing Intersection LOS

			AM PEAK HOUR		PM PEAK HOUR	
INTERSECTION	TYPE OF CONTROL	MOVEMENT APPROACH	LEVEL OF SERVICE*	DELAY (SEC/VEH)	LEVEL OF SERVICE*	DELAY (SEC/VEH)
Memorial Drive and Piedmont Drive	Signalized	EB	C	21.4	B	18.0
		WB	A	8.4	A	9.6
		SB	B	18.7	A	9.4
Memorial Drive and Park Avenue	Signalized	EB	A	5.7	A	5.7
		WB	A	5.0	A	6.4
		SB	B	16.5	B	18.2
West Main Street and Park Avenue	Signalized	EB	B	10.1	B	13.0
		WB	A	9.1	B	17.3
		NB	A	1.4	A	7.8
		SB	C	27.2	C	26.7
West Main Street and Baltimore Avenue/Wood Avenue	Signalized	EB	A	2.4	A	2.5
		WB	A	2.5	A	2.7
		NB	A	1.0	A	1.8
		SB	A	0.0	A	0.0
West Main Street and Augusta Avenue/Bishop Road	Signalized	EB	B	12.8	A	9.9
		WB	B	10.7	A	9.7
		NB	C	32.4	C	24.0
		SB	B	10.6	B	14.4
Memorial Drive and Bishop Road	Unsignalized	EB	A	0.0	A	0.0
		WB	A	9.4	A	9.0
		NB	B	11.6	B	11.0

* Please note that the levels of service are reported in accordance with the HCM designations.

The complete LOS analysis for the existing condition is included in Appendix E for reference.

All analysis was performed utilizing the methodologies as defined in the Highway Capacity Manual (HCM). The measurement used to define the performance of an intersection is determined by LOS A through F. A LOS of D or better will be considered an acceptable LOS for this area. See Appendix F for a more detailed explanation of the methodology and criteria used for the Levels of Service analysis.

III. FUTURE NO-BUILD ALTERNATIVE (YEARS 2035 AND 2040)

Utilizing information obtained from the regional traffic model received from VDOT for this area, Ramey Kemp & Associates, Inc. projected the future no-build traffic volumes. Through this model, it was determined that the majority of traffic is anticipated to decrease within the study area; therefore, the following annual growth rates were approximated for the associated movements at the following intersections while the remainder of movements were held constant based on 2006 and 2035 ADT data.

Intersection of Memorial Drive and Piedmont Drive
Eastbound left turn movement on Memorial Drive and southbound right turn movement on Piedmont Drive: 1.6% annual growth rate

Intersection of Memorial Drive and Bishop Road
Eastbound and westbound through movements on Memorial Drive: 1.7% annual growth rate

From the approximated annual growth rates, the future no-build traffic volumes for the years 2035 and 2040 were determined as shown in Figures 6 and 8. Utilizing these traffic volumes, the future no-build intersection levels of service analysis was completed. As shown in Figures 7 and 9, all intersections have additional capacity available. All approaches are expected to operate at acceptable LOS C or better with the exception of the PM Peak Hour EB movement at the intersection of Memorial and Piedmont Drives which is expected to operate at an acceptable LOS D or better. The levels of service for the no-build alternative are also shown in Tables III and IV below for the years 2035 and 2040, respectively.

Table III
Year 2035 – Future No-Build Intersection LOS

			AM PEAK HOUR		PM PEAK HOUR	
INTERSECTION	TYPE OF CONTROL	MOVEMENT APPROACH	LEVEL OF SERVICE*	DELAY (SEC/VEH)	LEVEL OF SERVICE*	DELAY (SEC/VEH)
Memorial Drive and Piedmont Drive	Signalized	EB	C	22.0	C	29.4
		WB	B	10.5	A	9.7
		SB	C	20.2	A	7.9
Memorial Drive and Park Avenue	Signalized	EB	A	5.7	A	5.7
		WB	A	5.0	A	6.4
		SB	B	16.5	B	18.2
West Main Street and Park Avenue	Signalized	EB	B	10.1	B	13.0
		WB	A	9.1	A	17.3
		NB	A	1.4	A	7.8
		SB	C	27.2	C	26.7
West Main Street and Baltimore Avenue/Wood Avenue	Signalized	EB	A	2.4	A	2.5
		WB	A	2.4	A	2.7
		NB	A	1.0	A	1.8
		SB	A	0.0	A	0.0
West Main Street and Augusta Avenue/Bishop Road	Signalized	EB	B	12.8	A	9.9
		WB	B	10.7	A	9.7
		NB	C	32.4	C	24.0
		SB	B	10.6	B	14.4
Memorial Drive and Bishop Road	Unsignalized	EB	A	0.0	A	0.0
		WB	B	10.9	B	10.0
		NB	B	13.4	B	12.5

* Please note that the levels of service are reported in accordance with the HCM designations.

Table IV
Year 2040 – Future No-Build Intersection LOS

INTERSECTION	TYPE OF CONTROL	MOVEMENT APPROACH	AM PEAK HOUR LEVEL OF SERVICE*	AM PEAK HOUR DELAY (SEC/VEH)	PM PEAK HOUR LEVEL OF SERVICE*	PM PEAK HOUR DELAY (SEC/VEH)
Memorial Drive and Piedmont Drive	Signalized	EB	C	22.8	D	38.3
		WB	B	11.0	A	9.7
		SB	C	20.2	A	7.6
Memorial Drive and Park Avenue	Signalized	EB	A	5.7	A	5.7
		WB	A	5.0	A	6.4
		SB	B	16.5	B	18.2
West Main Street and Park Avenue	Signalized	EB	B	10.1	B	13.0
		WB	A	9.1	A	17.3
		NB	A	1.4	A	7.8
		SB	C	27.2	C	26.7
West Main Street and Baltimore Avenue/Wood Avenue	Signalized	EB	A	2.4	A	2.5
		WB	A	2.4	A	2.7
		NB	A	1.0	A	1.8
		SB	A	0.0	A	0.0
West Main Street and Augusta Avenue/Bishop Road	Signalized	EB	B	12.8	A	9.9
		WB	B	10.7	A	9.7
		NB	C	32.4	C	24.0
		SB	B	10.6	B	14.4
Memorial Drive and Bishop Road	Unsignalized	EB	A	0.0	A	0.0
		WB	B	11.4	B	10.4
		NB	B	14.1	B	12.9

* Please note that the levels of service are reported in accordance with the HCM designations.

The complete LOS analysis for the future no-build condition is included in Appendix G for reference.

IV. FUTURE BUILD ALTERNATIVE (YEARS 2035 AND 2040)

Traffic was generated and distributed utilizing a 2008 Conceptual Master Plan for the Schoolfield Industrial Complex (Figure 10), previously developed by Dewberry, as a conservative baseline to estimate the maximum build-out level of the 93 acre Complex property. This Plan includes a mixture of industrial (2,000 employees), residential (5 single-family units and 180 multi-family units), office (227,900 square feet), and retail (206,900) uses. The analysis determined that the study intersections have adequate capacity to accommodate a development consisting of a similar mixture of land uses that generates approximately 22,000 vehicles per day.

The future build traffic volumes for the years 2035 and 2040 were determined as shown in Figures 11 and 13. Utilizing these traffic volumes, the future build intersection LOS analysis was completed. As shown in Figures 12 and 14, all approaches are expected to operate at acceptable LOS D or better with the one exception being the northbound stop-controlled approach of Bishop Road at Memorial Drive during the PM peak hour under future 2040 traffic conditions; however, greater delays and poorer levels

of operation are typical at unsignalized intersections. The LOS for the build alternative are also shown in Tables V and VI below for the years 2035 and 2040, respectively.

Table V
Year 2035 – Future Build Intersection LOS

			AM PEAK HOUR		PM PEAK HOUR	
INTERSECTION	TYPE OF CONTROL	MOVEMENT APPROACH	LEVEL OF SERVICE*	DELAY (SEC/VEH)	LEVEL OF SERVICE*	DELAY (SEC/VEH)
Memorial Drive and Piedmont Drive	Signalized	EB	C	25.3	C	34.5
		WB	A	9.6	B	14.6
		SB	B	18.7	C	21.8
Memorial Drive and Park Avenue	Signalized	EB	A	8.1	A	6.5
		WB	A	11.5	B	11.7
		SB	B	19.6	C	20.5
West Main Street and Park Avenue	Signalized	EB	A	10.0	B	13.0
		WB	B	12.5	B	18.0
		NB	A	1.7	A	9.7
		SB	C	24.7	D	38.9
West Main Street and Baltimore Avenue/Wood Avenue	Signalized	EB	A	3.7	A	6.8
		WB	A	3.8	A	7.2
		NB	B	13.7	B	14.8
		SB	B	12.5	B	12.9
West Main Street and Augusta Avenue/Bishop Road	Signalized	EB	C	24.4	D	46.4
		WB	A	9.7	B	13.7
		NB	D	49.5	D	53.6
		SB	B	14.5	B	18.8
Memorial Drive and Bishop Road	Unsignalized	EB	A	0.0	A	0.0
		WB	C	16.0	B	12.3
		NB	C	17.1	D	31.5

* Please note that the levels of service are reported in accordance with the HCM designation

Table VI
Year 2040 – Future Build Intersection LOS

INTERSECTION	TYPE OF CONTROL	MOVEMENT APPROACH	AM PEAK HOUR LEVEL OF SERVICE*	AM PEAK HOUR DELAY (SEC/VEH)	PM PEAK HOUR LEVEL OF SERVICE*	PM PEAK HOUR DELAY (SEC/VEH)
Memorial Drive and Piedmont Drive	Signalized	EB	C	28.8	C	34.5
		WB	A	9.7	B	15.6
		SB	B	18.4	C	21.3
Memorial Drive and Park Avenue	Signalized	EB	A	8.1	A	6.5
		WB	B	11.5	B	11.7
		SB	B	19.6	C	20.5
West Main Street and Park Avenue	Signalized	EB	A	10.0	B	13.0
		WB	B	12.5	B	18.0
		NB	A	1.7	A	9.7
		SB	C	24.7	D	38.9
West Main Street and Baltimore Avenue/Wood Avenue	Signalized	EB	A	3.7	A	6.8
		WB	A	3.8	A	7.2
		NB	B	13.7	B	14.8
		SB	B	12.5	B	12.9
West Main Street and Augusta Avenue/Bishop Road	Signalized	EB	C	24.4	D	46.4
		WB	A	9.7	B	13.7
		NB	D	49.5	D	53.6
		SB	B	14.5	B	18.8
Memorial Drive and Bishop Road	Unsignalized	EB	A	0.0	A	0.0
		WB	C	17.7	B	13.1
		NB	C	18.3	E	37.6

* Please note that the levels of service are reported in accordance with the HCM designations.

The complete LOS analysis for the future build condition is included in Appendix H for reference.

V. CONCLUSION

The results of this Study indicate the existing roadway network serving the 93 acre Schoolfield Industrial Complex property operates at acceptable levels of service under current peak hour volumes and projected 2035 and 2040 traffic volumes. An analysis of projected traffic impacts from a potential maximum build-out scenario of the Complex property demonstrates the existing roadway network can accommodate traffic impacts from such development and still operate at acceptable levels of service.

APPENDIX A
FIGURES

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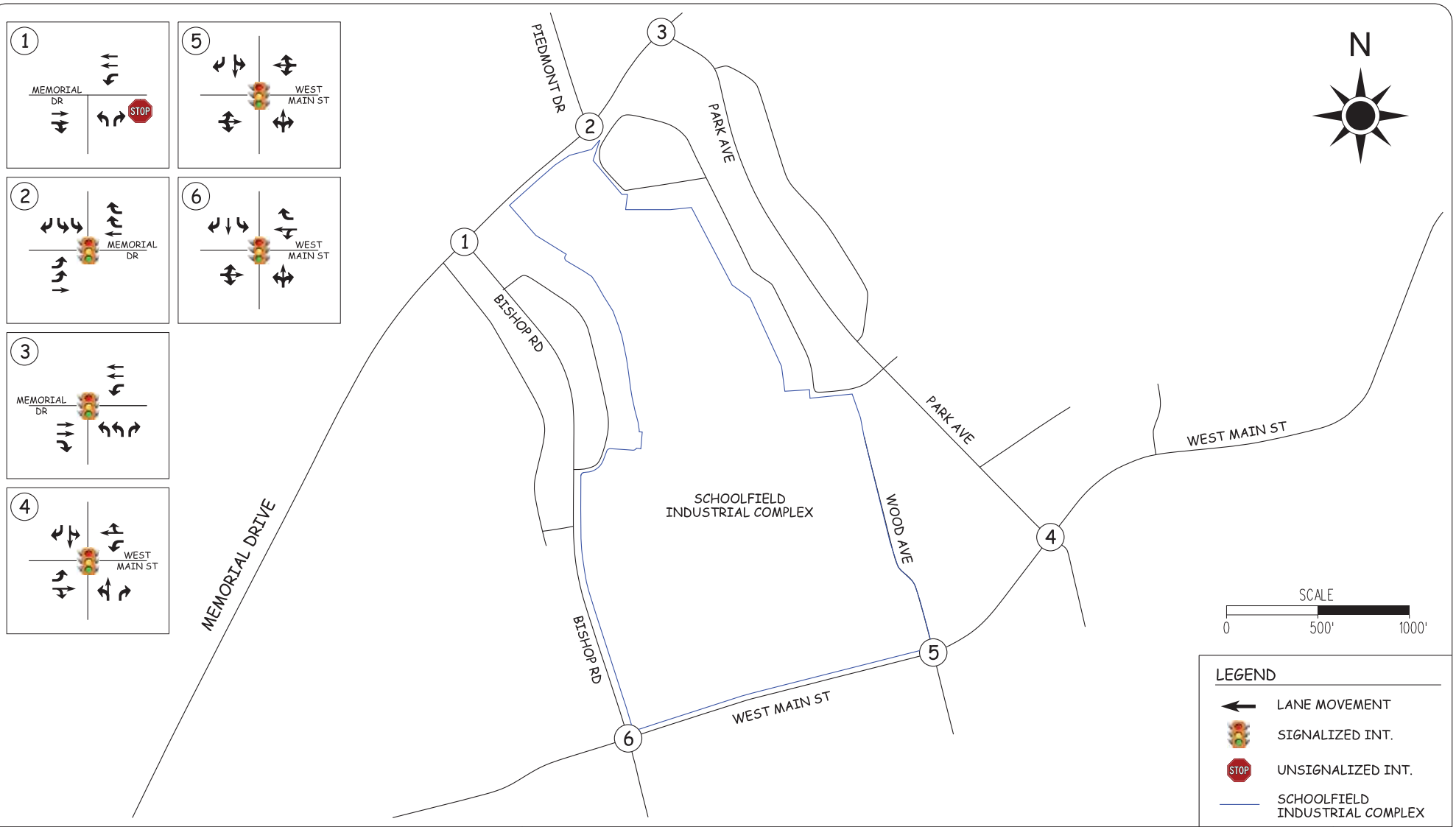
SCHOOLFIELD INDUSTRIAL COMPLEX VICINITY MAP AND PROJECT LIMITS

DANVILLE, VIRGINIA

FIGURE 1



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SCHOOLFIELD INDUSTRIAL COMPLEX EXISTING GEOMETRY AND TRAFFIC CONTROL

DANVILLE, VIRGINIA

FIGURE
2

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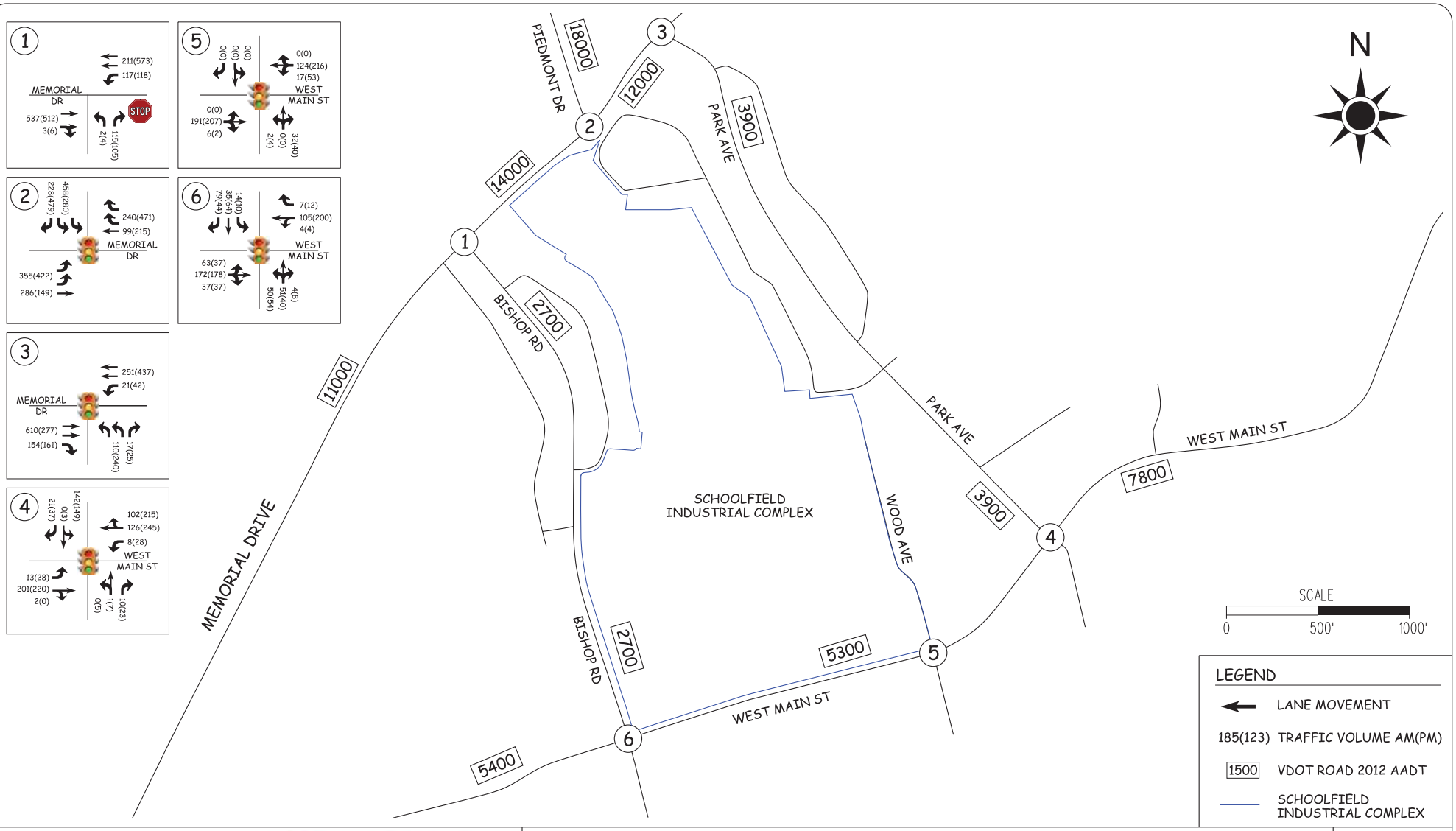
SCHOOLFIELD INDUSTRIAL COMPLEX EXISTING CRASH LOCATIONS AND SEVERITY

DANVILLE, VIRGINIA

FIGURE 3



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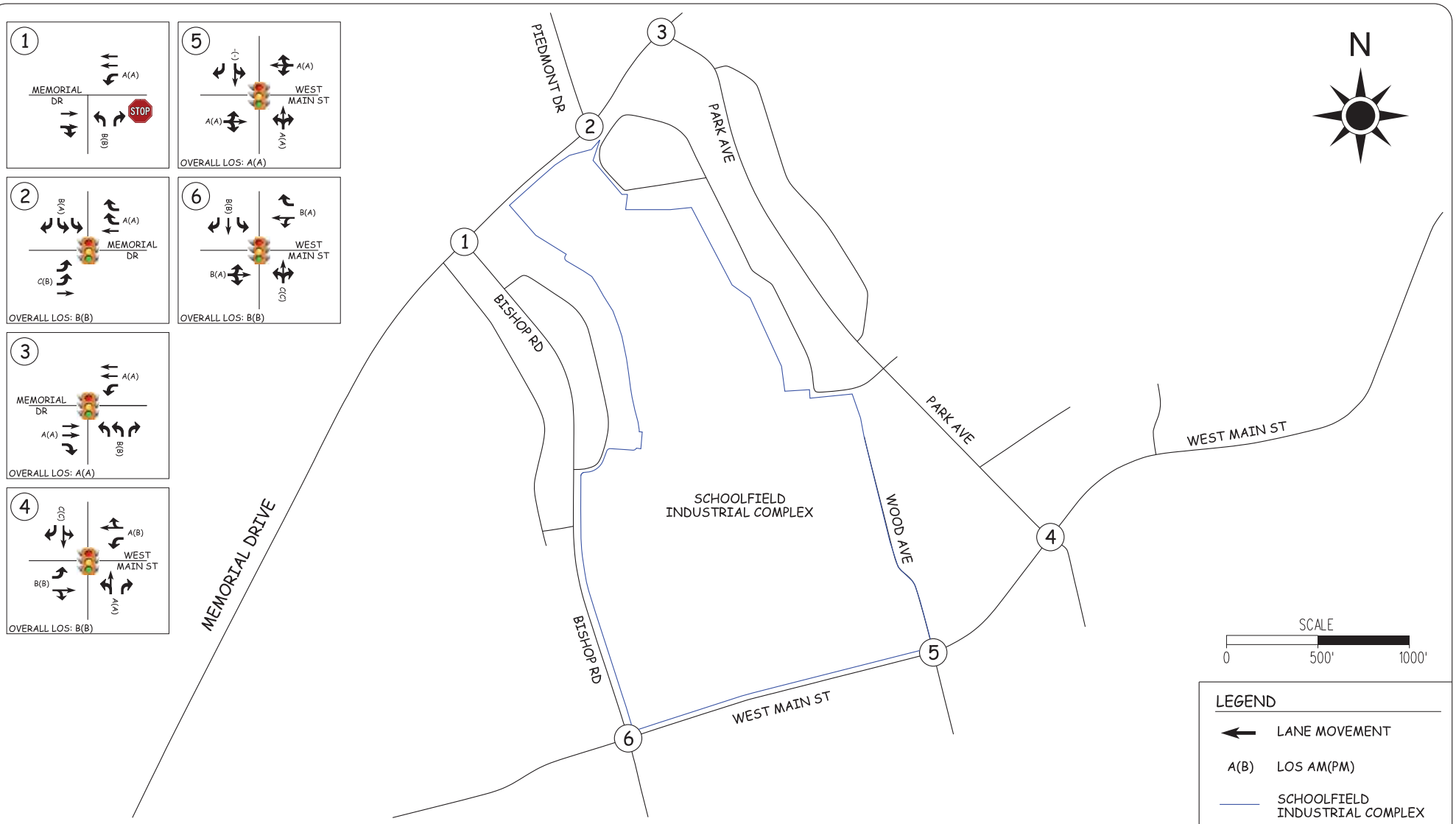
SCHOOLFIELD INDUSTRIAL COMPLEX EXISTING TRAFFIC VOLUMES
AM AND PM PEAK HOUR

DANVILLE, VIRGINIA

FIGURE
4



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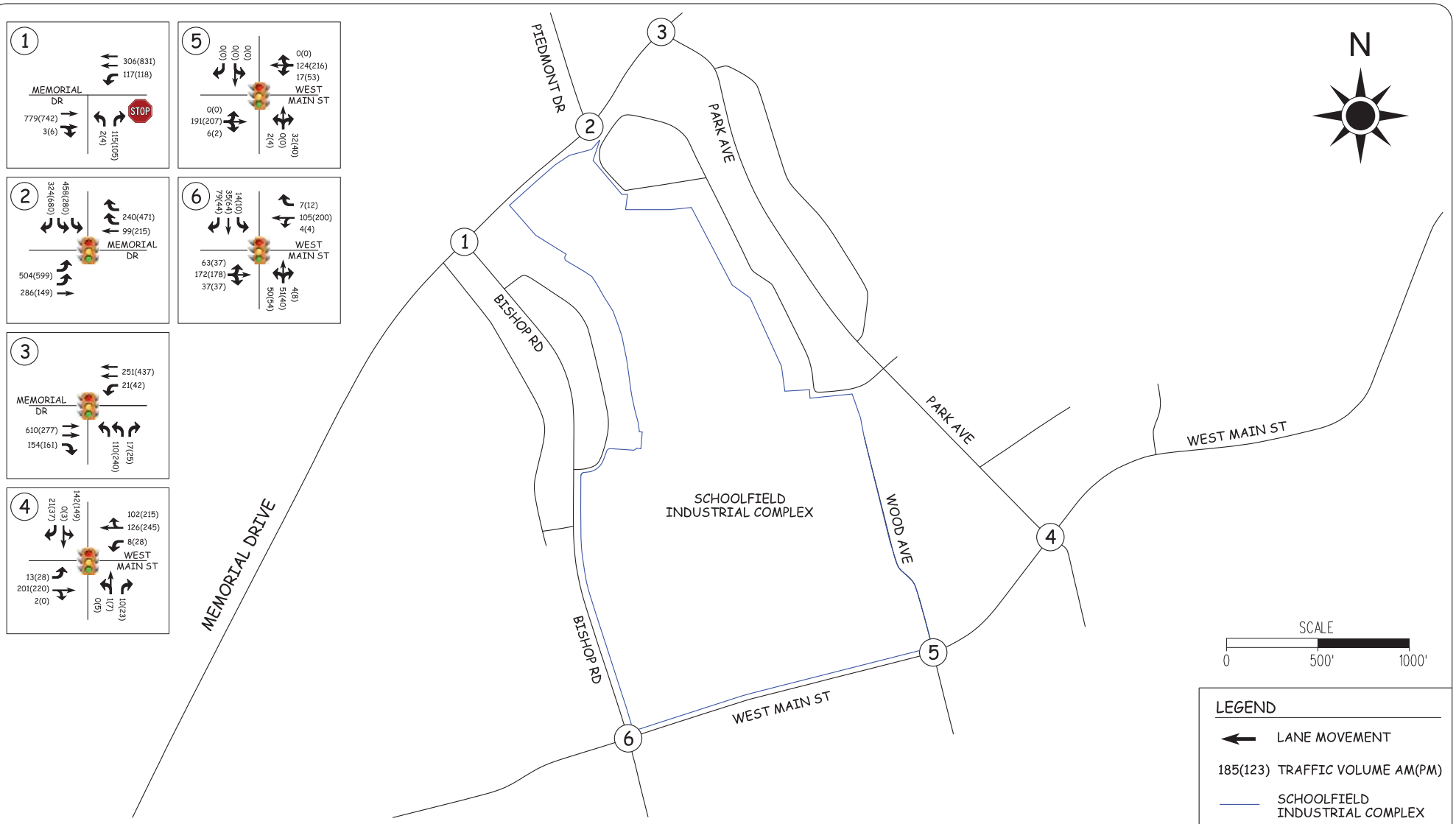
SCHOOLFIELD INDUSTRIAL COMPLEX EXISTING LOS
AM AND PM PEAK HOUR

DANVILLE, VIRGINIA

FIGURE
5



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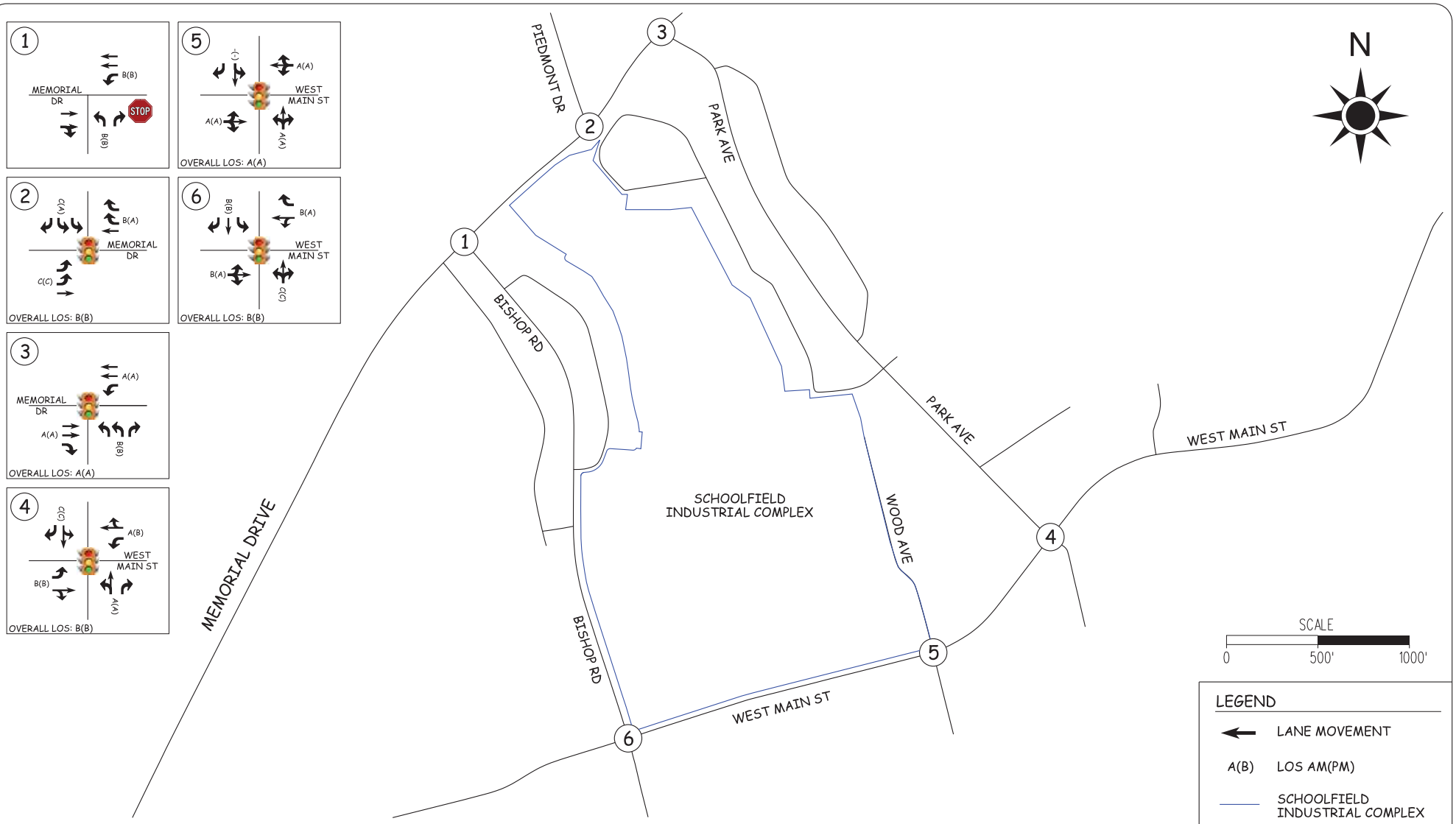
SCHOOLFIELD INDUSTRIAL COMPLEX FUTURE NO BUILD (YEAR 2035) TRAFFIC VOLUMES

DANVILLE, VIRGINIA

FIGURE
6



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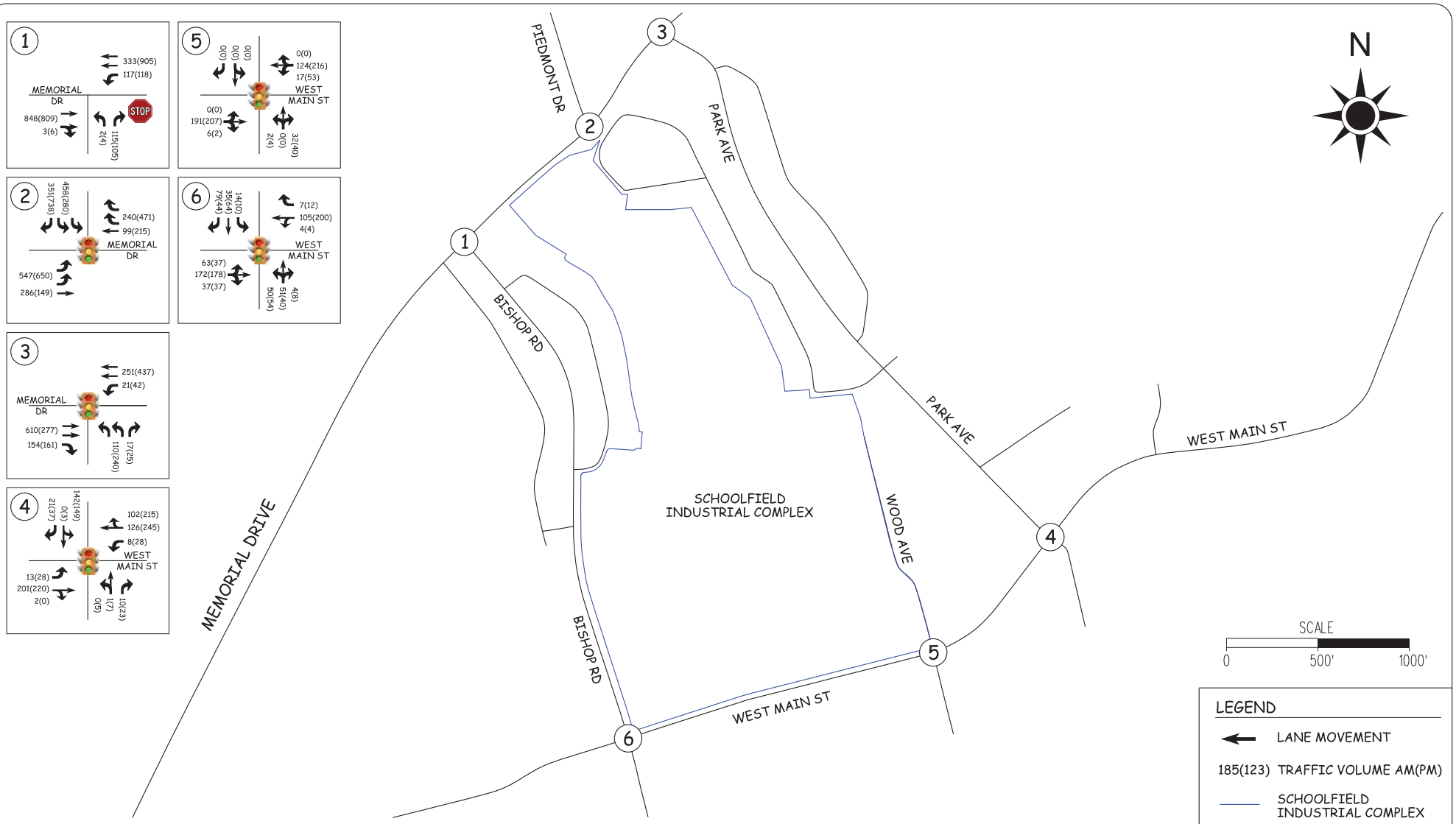
SCHOOLFIELD INDUSTRIAL COMPLEX FUTURE NO BUILD (YEAR 2035) LEVELS OF SERVICE

DANVILLE, VIRGINIA

FIGURE 7



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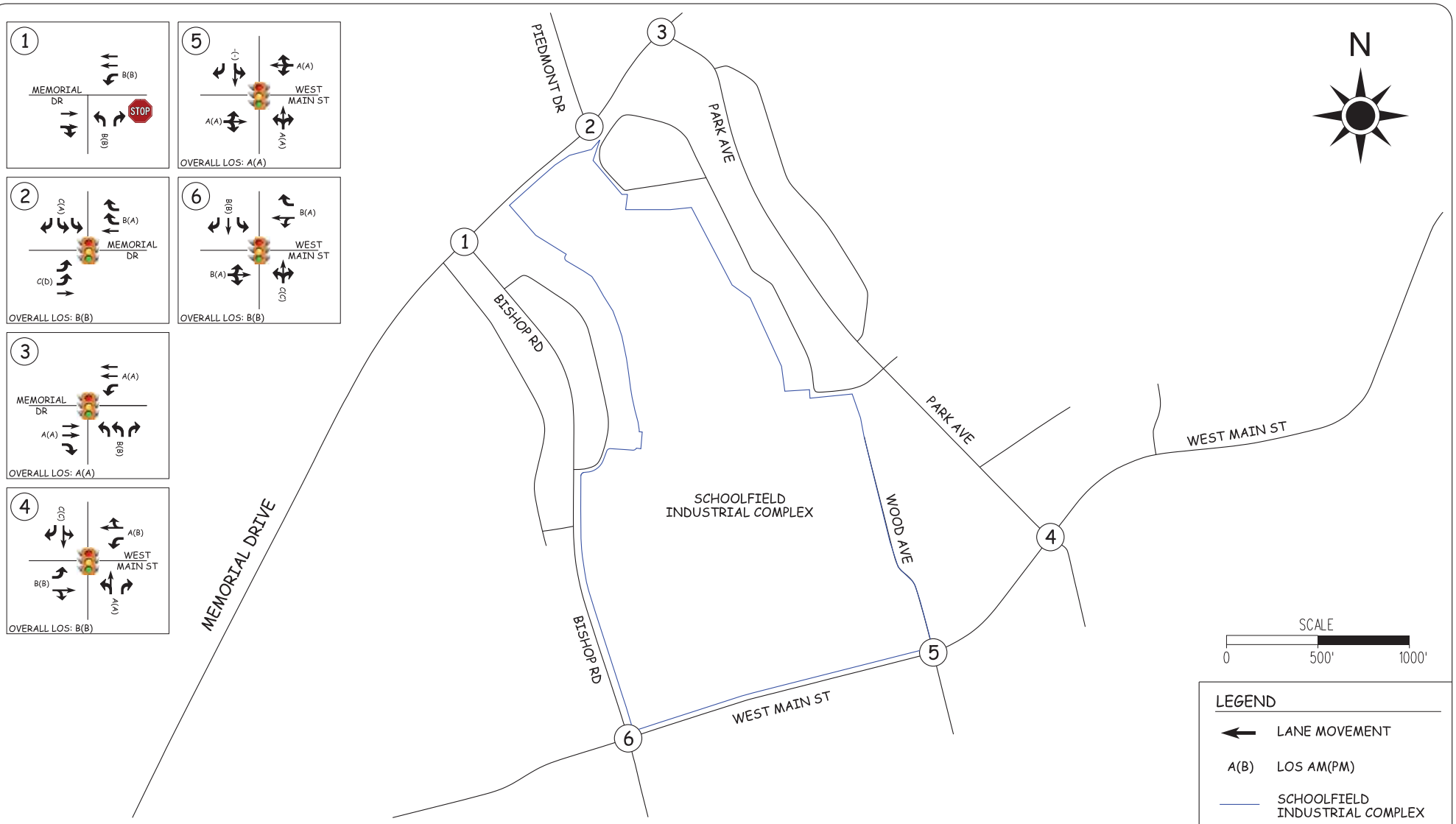
SCHOOLFIELD INDUSTRIAL COMPLEX FUTURE NO BUILD (YEAR 2040) TRAFFIC VOLUMES

DANVILLE, VIRGINIA

FIGURE 8



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SCHOOLFIELD INDUSTRIAL COMPLEX FUTURE NO BUILD (YEAR 2040) LEVELS OF SERVICE

DANVILLE, VIRGINIA

FIGURE
9

SCHOOLFIELD INDUSTRIAL COMPLEX CONCEPTUAL MASTER PLAN
DANVILLE, VIRGINIA

FIGURE 10

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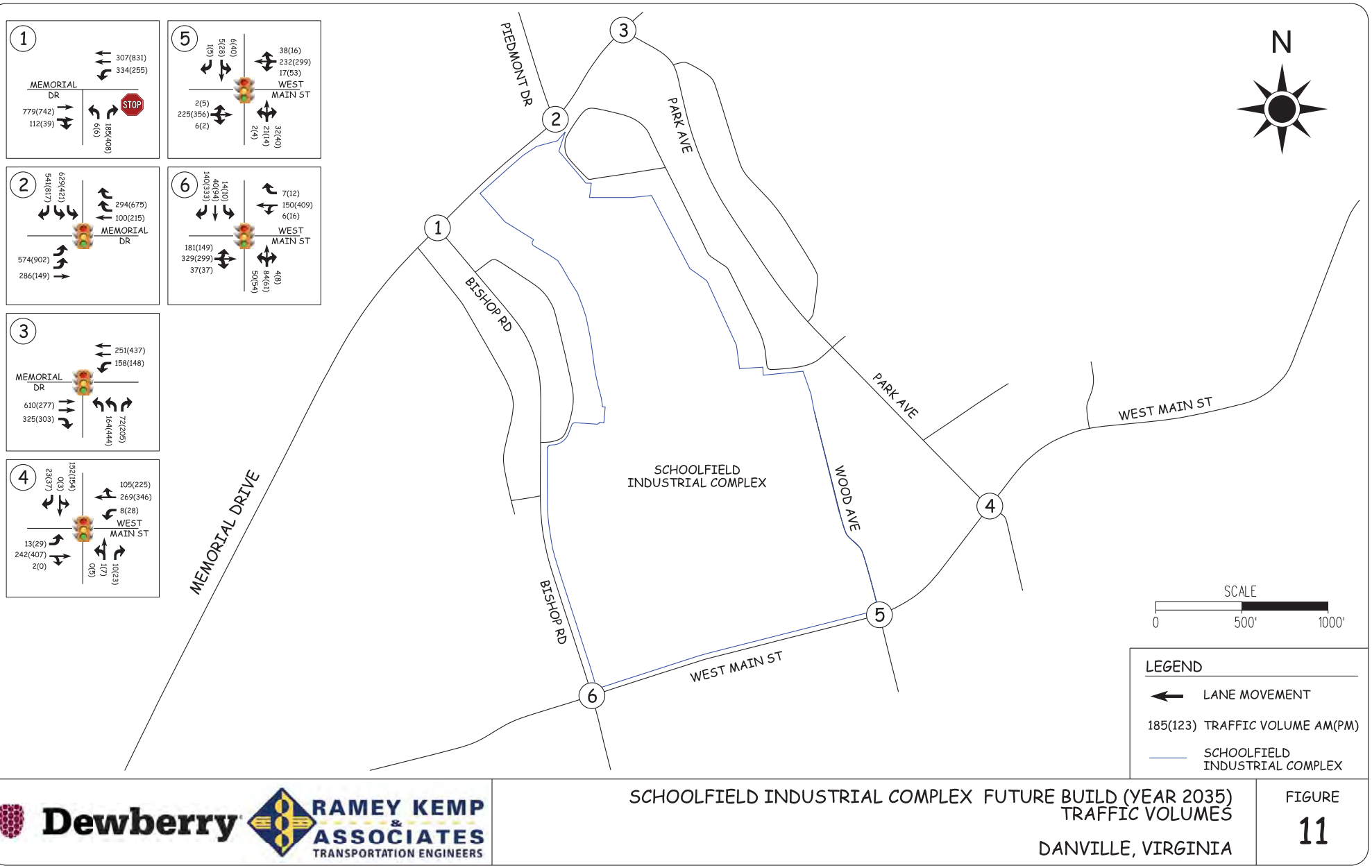

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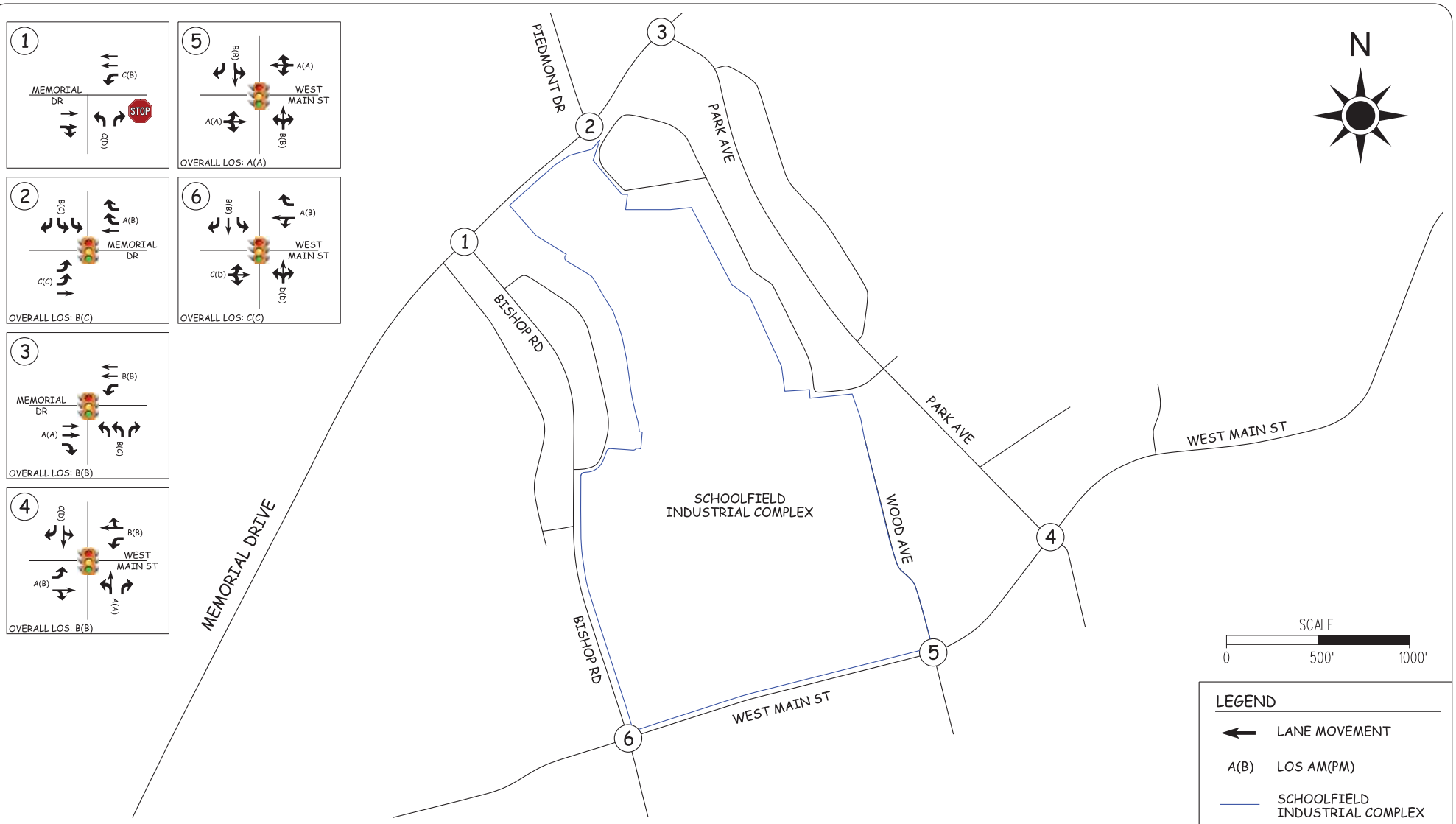
SCHOOLFIELD INDUSTRIAL COMPLEX FUTURE BUILD (YEAR 2035) TRAFFIC VOLUMES

DANVILLE, VIRGINIA

FIGURE
11



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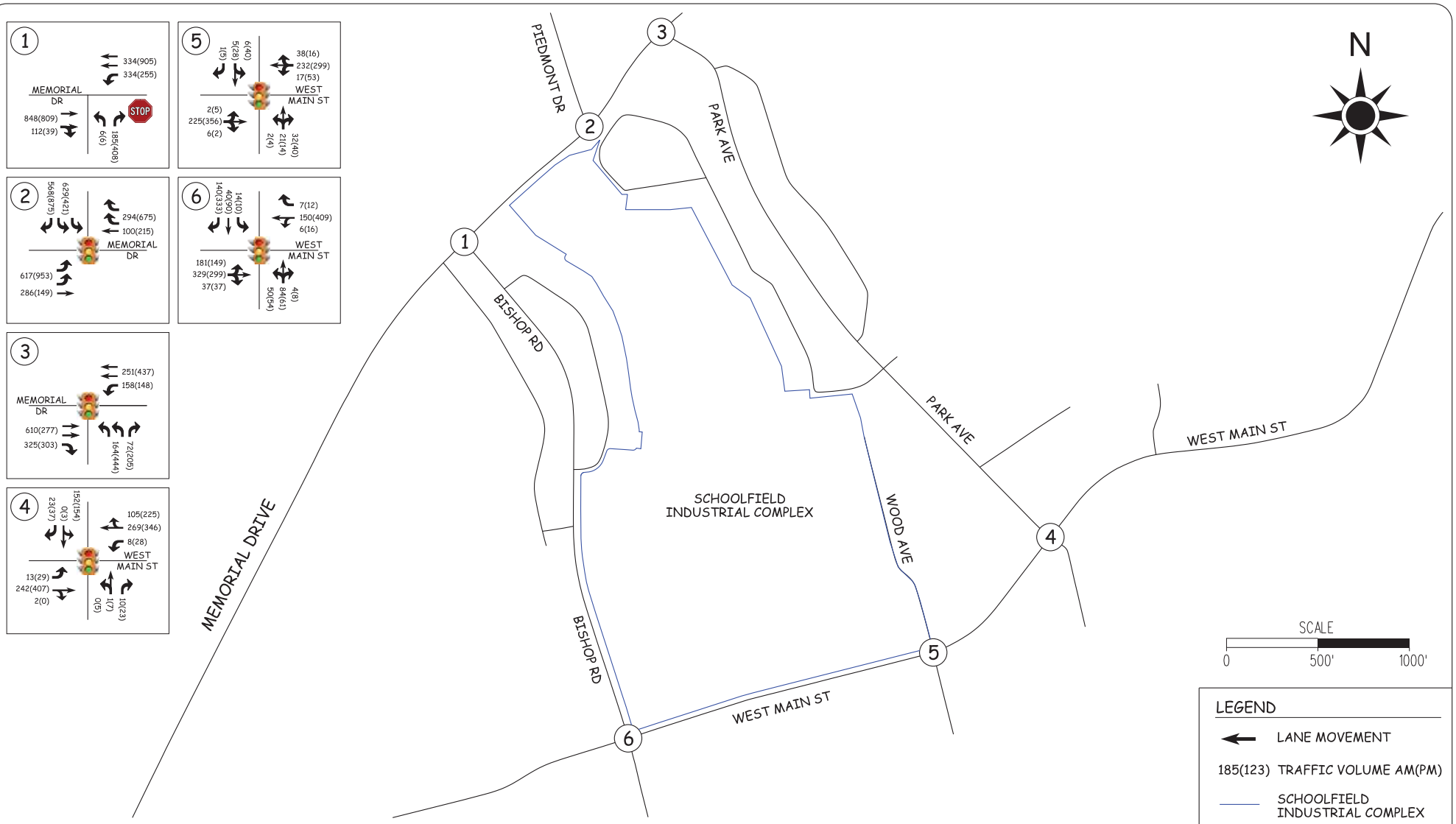
SCHOOLFIELD INDUSTRIAL COMPLEX FUTURE BUILD (YEAR 2035)
LEVELS OF SERVICE

DANVILLE, VIRGINIA

FIGURE
12



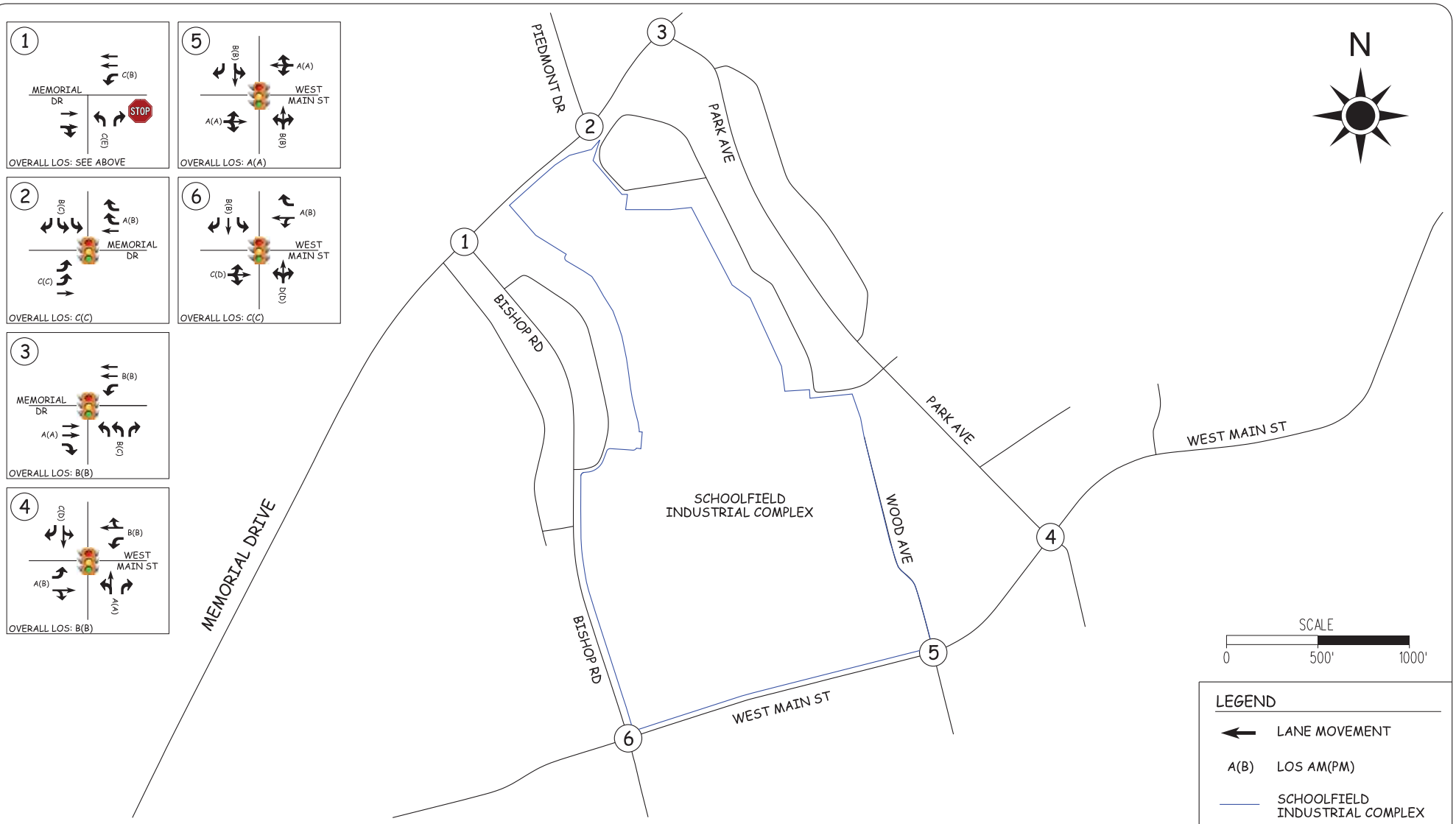
Dewberry

RAMEY KEMP & ASSOCIATES
TRANSPORTATION ENGINEERS

SCHOOLFIELD INDUSTRIAL COMPLEX FUTURE BUILD (YEAR 2040) TRAFFIC VOLUMES

DANVILLE, VIRGINIA

FIGURE
13



Dewberry

RAMEY KEMP & ASSOCIATES
TRANSPORTATION ENGINEERS

SCHOOLFIELD INDUSTRIAL COMPLEX FUTURE BUILD (YEAR 2040)
LEVELS OF SERVICE

DANVILLE, VIRGINIA

FIGURE
14

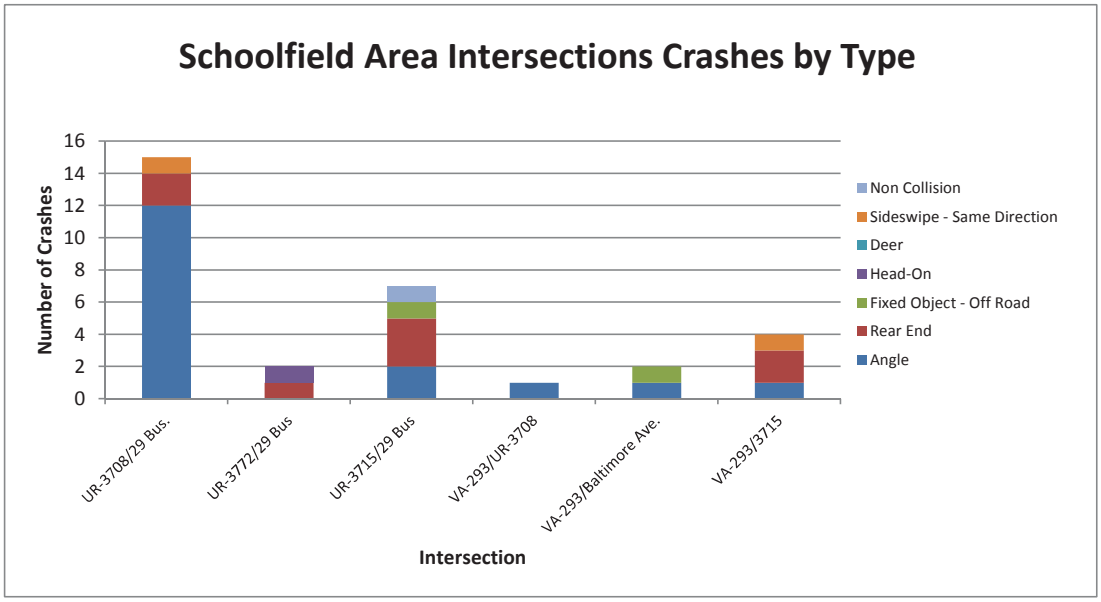
APPENDIX B

CRASH DATA SUMMARY

Summary

Schoolfield Area - Intersections

Intersection	Total Crashes	Angle	Rear End	Fixed Object - Off Road	Head-On	Deer	Sideswipe - Same Direction	Non Collision
UR-3708/29 Bus.	15	12	2	0	0	0	1	0
UR-3772/29 Bus	2	0	1	0	1	0	0	0
UR-3715/29 Bus	7	2	3	1	0	0	0	1
VA-293/UR-3708	1	1	0	0	0	0	0	0
VA-293/Baltimore Ave.	2	1	0	1	0	0	0	0
VA-293/3715	4	1	2	0	0	0	1	0



APPENDIX C

MANUAL TRAFFIC COUNTS

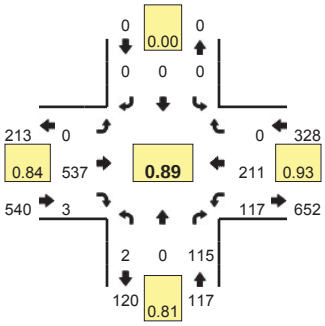
Type of peak hour being reported: Intersection Peak

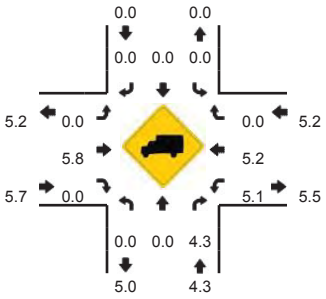
Method for determining peak hour: Total Entering Volume

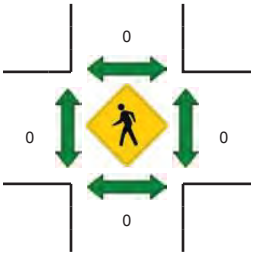
LOCATION: Bishop Rd -- Memorial Dr
CITY/STATE: Danville, VA

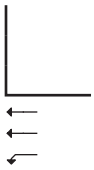
QC JOB #: 11205805
DATE: Tue, Sep 17 2013

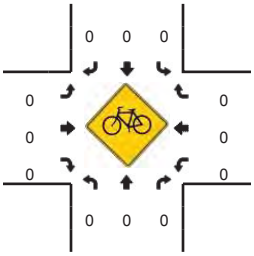
Peak-Hour: 7:15 AM -- 8:15 AM
Peak 15-Min: 7:45 AM -- 8:00 AM

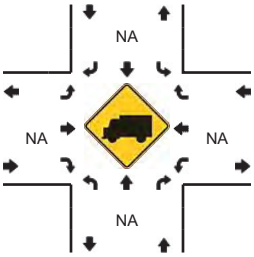


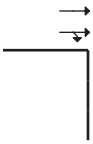


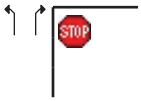


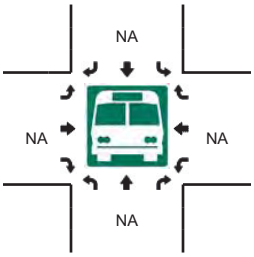












15-Min Count Period Beginning At	Bishop Rd (Northbound)				Bishop Rd (Southbound)				Memorial Dr (Eastbound)				Memorial Dr (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	0	0	18	0	0	0	0	0	0	65	1	0	13	67	0	0	164	
7:15 AM	0	0	29	0	0	0	0	0	0	110	0	0	29	47	0	0	215	
7:30 AM	0	0	25	0	0	0	0	0	0	144	1	0	33	55	0	0	258	
7:45 AM	0	0	36	0	0	0	0	0	0	159	2	0	32	48	0	0	277	914
8:00 AM	2	0	25	0	0	0	0	0	0	124	0	0	23	61	0	0	235	985
8:15 AM	0	0	18	0	0	0	0	0	0	97	0	0	15	55	0	0	185	955
8:30 AM	0	0	26	0	0	0	0	0	0	99	2	0	19	56	0	0	202	899
8:45 AM	0	0	20	0	0	0	0	0	0	112	1	0	23	61	0	0	217	839

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	0	144	0	0	0	0	0	0	636	8	0	128	192	0	0	1108
Heavy Trucks	0	0	0		0	0	0		0	16	0		4	4	0		24
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

Report generated on 9/24/2013 7:28 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

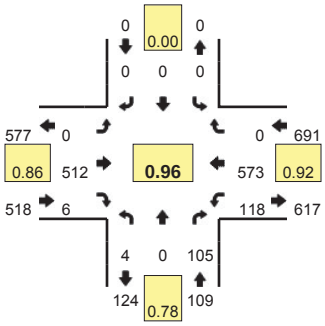
Type of peak hour being reported: Intersection Peak

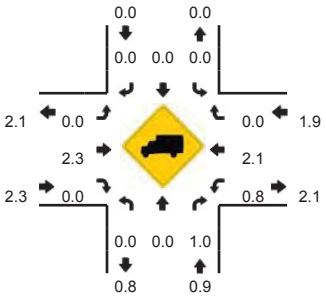
Method for determining peak hour: Total Entering Volume

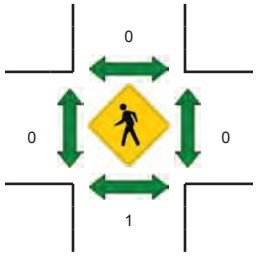
LOCATION: Bishop Rd -- Memorial Dr
CITY/STATE: Danville, VA

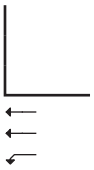
QC JOB #: 11205806
DATE: Tue, Sep 17 2013

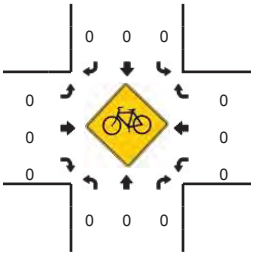
Peak-Hour: 4:45 PM -- 5:45 PM
Peak 15-Min: 5:30 PM -- 5:45 PM

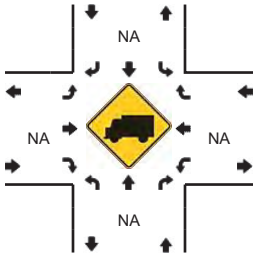


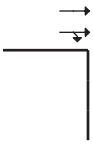


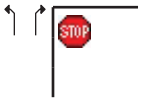


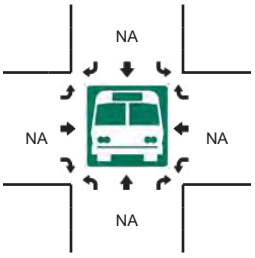












15-Min Count Period Beginning At	Bishop Rd (Northbound)				Bishop Rd (Southbound)				Memorial Dr (Eastbound)				Memorial Dr (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	0	0	35	0	0	0	0	0	0	126	1	0	22	102	0	0	286	
4:15 PM	2	0	17	0	0	0	0	0	0	119	0	0	30	103	0	0	271	
4:30 PM	1	0	25	0	0	0	0	0	0	111	5	0	24	130	0	0	296	
4:45 PM	2	0	36	0	0	0	0	0	0	147	1	0	34	118	0	0	338	1191
5:00 PM	1	0	25	0	0	0	0	0	0	107	2	0	29	160	0	0	324	1229
5:15 PM	0	0	28	0	0	0	0	0	0	109	2	0	28	144	0	0	311	1269
5:30 PM	1	0	16	0	0	0	0	0	0	149	1	0	27	151	0	0	345	1318
5:45 PM	1	0	27	0	0	0	0	0	0	124	1	0	34	125	0	0	312	1292

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	4	0	64	0	0	0	0	0	0	596	4	0	108	604	0	0	1380
Heavy Trucks	0	0	0		0	0	0		0	12	0		4	12	0		28
Pedestrians		4				0				0				0			4
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

Report generated on 9/24/2013 7:28 AM

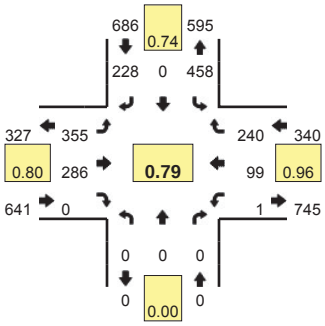
SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: Intersection Peak

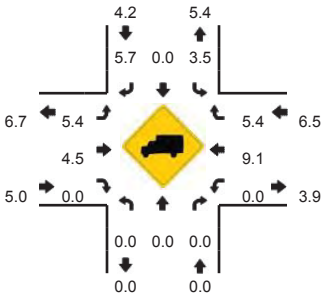
Method for determining peak hour: Total Entering Volume

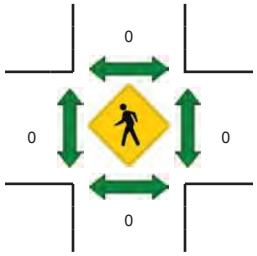
LOCATION: Peidmont Dr -- Memorial Dr
CITY/STATE: Danville, VA

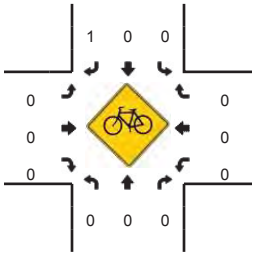
QC JOB #: 11205803
DATE: Tue, Sep 17 2013

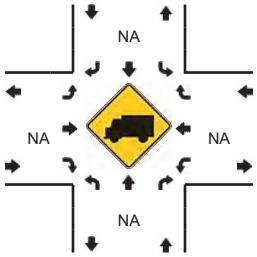


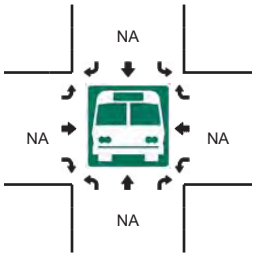
Peak-Hour: 7:30 AM -- 8:30 AM
Peak 15-Min: 7:45 AM -- 8:00 AM











15-Min Count Period Beginning At	Peidmont Dr (Northbound)				Peidmont Dr (Southbound)				Memorial Dr (Eastbound)				Memorial Dr (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	0	0	0	0	25	0	56	0	57	23	0	0	0	30	36	0	227	
7:15 AM	0	0	0	0	59	0	56	0	83	52	0	0	0	23	35	0	308	
7:30 AM	0	0	0	0	104	0	51	0	87	78	0	0	0	32	52	1	405	
7:45 AM	0	0	0	0	168	0	63	0	100	105	0	0	0	24	65	0	525	1465
8:00 AM	0	0	0	0	105	0	67	0	89	62	0	0	0	17	64	0	404	1642
8:15 AM	0	0	0	0	81	0	47	0	79	41	0	0	0	26	59	0	333	1667
8:30 AM	0	0	0	0	64	0	48	0	81	43	0	0	0	26	49	0	311	1573
8:45 AM	0	0	0	0	62	0	61	0	81	51	0	0	0	24	48	0	327	1375

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	0	0	0	672	0	252	0	400	420	0	0	0	96	260	0	2100
Heavy Trucks	0	0	0		32	0	8		28	12	0		0	8	8		96
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

Report generated on 9/24/2013 7:28 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

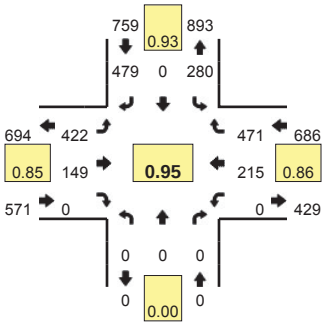
Type of peak hour being reported: Intersection Peak

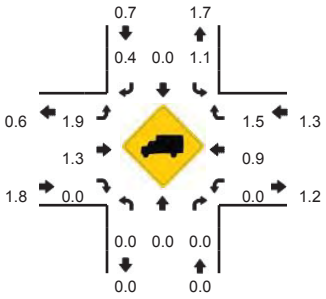
Method for determining peak hour: Total Entering Volume

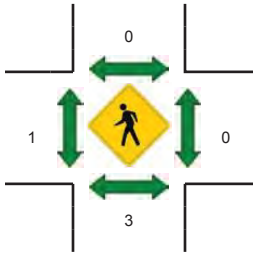
LOCATION: Peidmont Dr -- Memorial Dr
CITY/STATE: Danville, VA

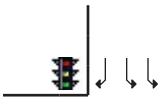
QC JOB #: 11205804
DATE: Tue, Sep 17 2013

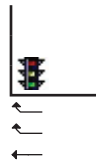
Peak-Hour: 5:00 PM -- 6:00 PM
Peak 15-Min: 5:00 PM -- 5:15 PM

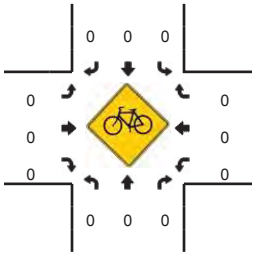


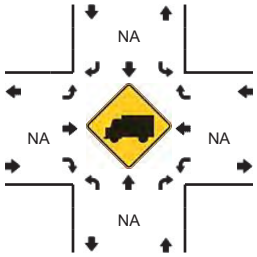


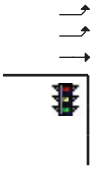


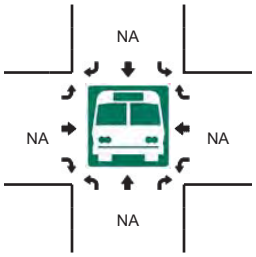












15-Min Count Period Beginning At	Peidmont Dr (Northbound)				Peidmont Dr (Southbound)				Memorial Dr (Eastbound)				Memorial Dr (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	0	0	0	0	52	0	91	0	124	39	0	0	0	39	103	0	448	
4:15 PM	0	0	0	0	61	0	86	0	100	40	0	0	0	40	115	0	442	
4:30 PM	0	0	0	0	61	0	113	0	103	32	0	0	0	48	110	0	467	
4:45 PM	0	0	0	0	74	0	104	0	131	52	0	0	0	48	87	0	496	1853
5:00 PM	0	0	0	0	78	0	126	0	94	34	0	0	0	56	143	0	531	1936
5:15 PM	0	0	0	0	74	0	116	0	100	33	0	0	0	60	131	0	514	2008
5:30 PM	0	0	0	0	61	0	123	0	99	41	0	0	0	47	102	0	473	2014
5:45 PM	0	0	0	0	67	0	114	0	129	41	0	0	0	52	95	0	498	2016

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	0	0	0	312	0	504	0	376	136	0	0	0	224	572	0	2124
Heavy Trucks	0	0	0		8	0	0		12	0	0		0	0	8		28
Pedestrians		4				0				4				0			8
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

Report generated on 9/24/2013 7:28 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

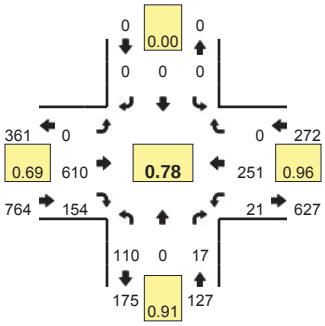
Type of peak hour being reported: Intersection Peak

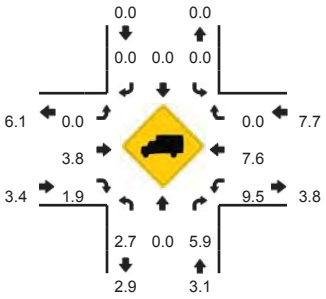
Method for determining peak hour: Total Entering Volume

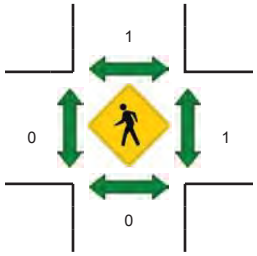
LOCATION: Park Ave -- Memorial Dr
CITY/STATE: Danville, VA

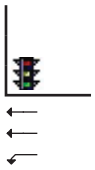
QC JOB #: 11205801
DATE: Tue, Sep 17 2013

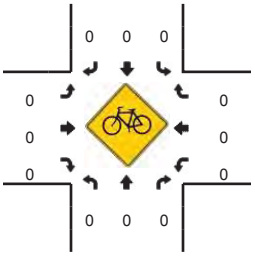
Peak-Hour: 7:30 AM -- 8:30 AM
Peak 15-Min: 7:45 AM -- 8:00 AM

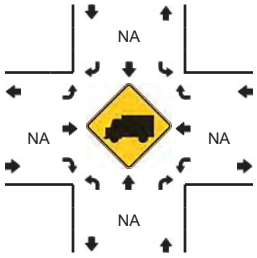


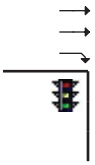


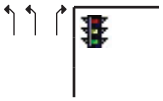


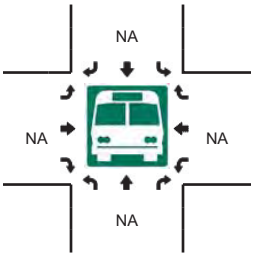












15-Min Count Period Beginning At	Park Ave (Northbound)				Park Ave (Southbound)				Memorial Dr (Eastbound)				Memorial Dr (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	10	0	1	0	0	0	0	0	0	37	13	0	4	52	0	0	117	
7:15 AM	19	0	3	0	0	0	0	0	0	85	18	0	3	40	0	0	168	
7:30 AM	28	0	3	0	0	0	0	0	0	149	34	0	5	63	0	0	282	
7:45 AM	26	0	4	0	0	0	0	0	0	218	60	0	3	61	0	0	372	939
8:00 AM	27	0	4	0	0	0	0	0	0	138	35	0	8	63	0	0	275	1097
8:15 AM	29	0	6	0	0	0	0	0	0	105	25	0	5	64	0	0	234	1163
8:30 AM	21	0	3	0	0	0	0	0	0	87	17	0	5	51	0	0	184	1065
8:45 AM	18	0	6	0	0	0	0	0	0	92	21	1	10	54	0	0	202	895

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	104	0	16	0	0	0	0	0	0	872	240	0	12	244	0	0	1488
Heavy Trucks	0	0	4		0	0	0		0	32	4		0	4	0		44
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

Report generated on 9/24/2013 7:27 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

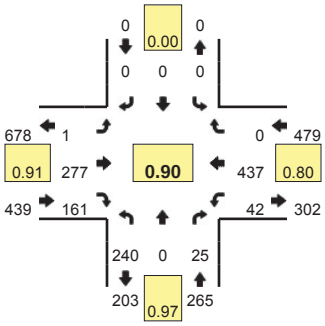
Type of peak hour being reported: Intersection Peak

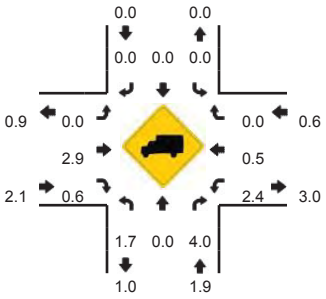
Method for determining peak hour: Total Entering Volume

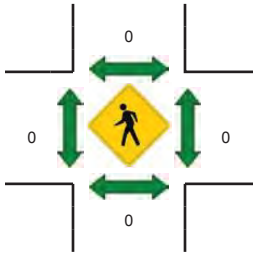
LOCATION: Park Ave -- Memorial Dr
CITY/STATE: Danville, VA

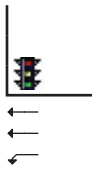
QC JOB #: 11205802
DATE: Tue, Sep 17 2013

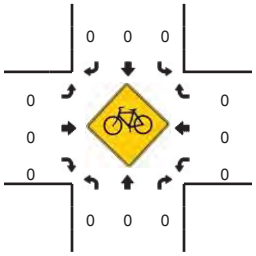
Peak-Hour: 4:30 PM -- 5:30 PM
Peak 15-Min: 5:00 PM -- 5:15 PM

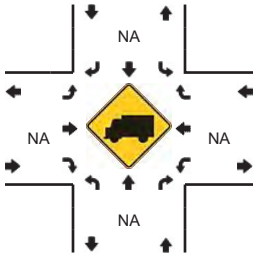


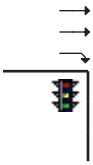


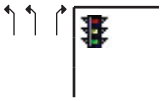


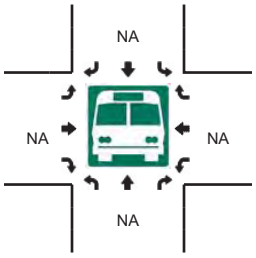












15-Min Count Period Beginning At	Park Ave (Northbound)				Park Ave (Southbound)				Memorial Dr (Eastbound)				Memorial Dr (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	49	0	7	0	0	0	0	0	0	67	26	0	9	104	0	0	262	
4:15 PM	65	0	4	0	0	0	0	0	0	67	29	0	11	96	0	0	272	
4:30 PM	55	0	8	0	0	0	0	0	0	60	34	1	10	91	0	0	259	
4:45 PM	62	0	7	0	0	0	0	0	0	76	47	0	7	79	0	0	278	1071
5:00 PM	61	0	6	0	0	0	0	0	0	70	42	0	15	136	0	0	330	1139
5:15 PM	62	0	4	0	0	0	0	0	0	71	38	0	10	131	0	0	316	1183
5:30 PM	50	0	10	0	0	0	0	0	0	65	38	0	4	92	0	0	259	1183
5:45 PM	55	0	6	0	0	0	0	0	0	69	34	0	6	91	0	0	261	1166

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	244	0	24	0	0	0	0	0	0	280	168	0	60	544	0	0	1320
Heavy Trucks	4	0	0		0	0	0		0	4	4		0	0	0		12
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

Report generated on 9/24/2013 7:28 AM

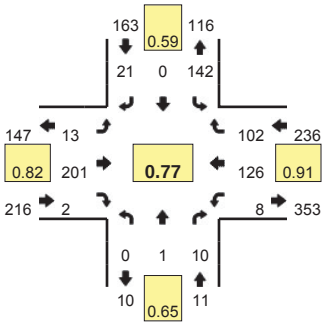
SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: Intersection Peak

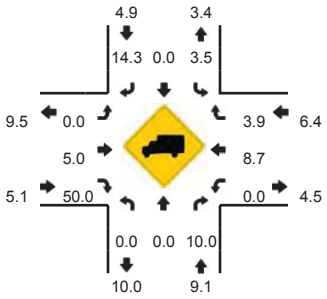
Method for determining peak hour: Total Entering Volume

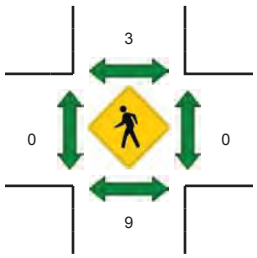
LOCATION: Park Ave -- W Main St
CITY/STATE: Danville, VA

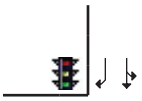
QC JOB #: 11205811
DATE: Tue, Sep 17 2013

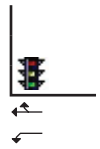


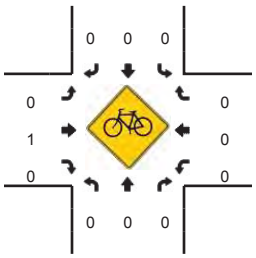
Peak-Hour: 7:30 AM -- 8:30 AM
Peak 15-Min: 7:45 AM -- 8:00 AM

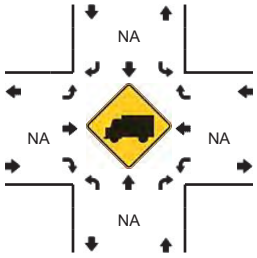


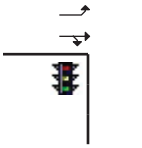


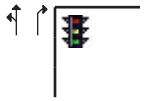


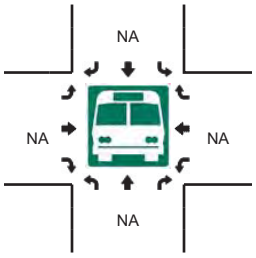












15-Min Count Period Beginning At	Park Ave (Northbound)				Park Ave (Southbound)				W Main St (Eastbound)				W Main St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	0	0	1	0	12	0	3	0	4	23	0	0	1	23	9	0	76	
7:15 AM	0	0	0	0	16	0	5	0	5	35	0	0	1	30	19	0	111	
7:30 AM	0	0	2	0	33	0	6	0	3	54	0	0	2	24	29	0	153	
7:45 AM	0	0	3	0	62	0	7	0	4	60	2	0	3	39	23	0	203	543
8:00 AM	0	0	1	0	22	0	6	0	4	37	0	0	1	26	21	0	118	585
8:15 AM	0	1	4	0	25	0	2	0	2	50	0	0	2	37	29	0	152	626
8:30 AM	0	1	1	0	15	1	1	0	5	30	0	0	1	42	23	0	120	593
8:45 AM	2	0	3	0	21	1	4	0	4	47	0	0	4	28	18	0	132	522

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	0	12	0	248	0	28	0	16	240	8	0	12	156	92	0	812
Heavy Trucks	0	0	0		8	0	0		0	8	4		0	0	0		20
Pedestrians		8				4				0				0			12
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

Report generated on 9/24/2013 7:28 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

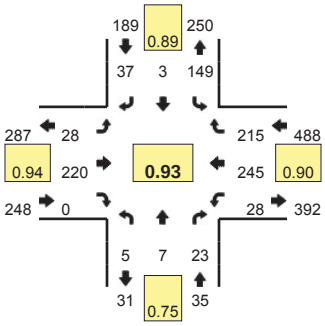
Type of peak hour being reported: Intersection Peak

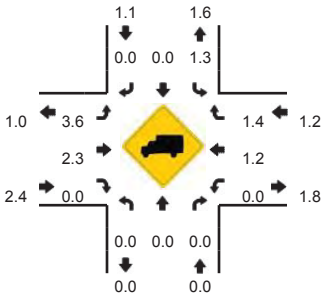
Method for determining peak hour: Total Entering Volume

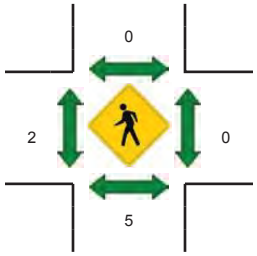
LOCATION: Park Ave -- W Main St
CITY/STATE: Danville, VA

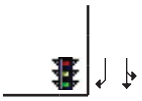
QC JOB #: 11205812
DATE: Tue, Sep 17 2013

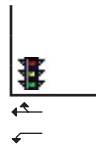
Peak-Hour: 4:45 PM -- 5:45 PM
Peak 15-Min: 5:00 PM -- 5:15 PM

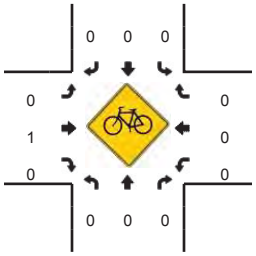


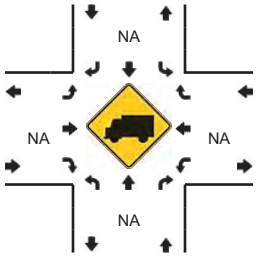


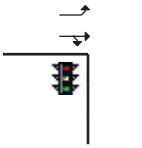


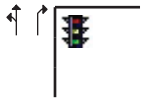


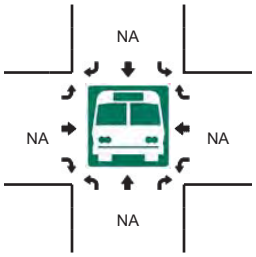












15-Min Count Period Beginning At	Park Ave (Northbound)				Park Ave (Southbound)				W Main St (Eastbound)				W Main St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	1	1	6	0	29	2	12	0	5	51	0	0	6	61	56	0	230	
4:15 PM	0	0	4	0	33	0	8	0	8	39	1	0	5	52	56	0	206	
4:30 PM	1	3	6	0	32	4	9	0	11	34	0	0	5	57	53	0	215	
4:45 PM	0	0	6	0	41	1	11	0	10	56	0	0	6	49	61	0	241	892
5:00 PM	3	2	8	0	36	0	13	0	7	53	0	0	8	73	55	0	258	920
5:15 PM	2	2	3	0	36	1	4	0	8	53	0	0	6	55	53	0	223	937
5:30 PM	0	3	6	0	36	1	9	0	3	58	0	0	8	68	46	0	238	960
5:45 PM	1	3	6	0	35	1	2	0	2	44	0	0	6	48	51	0	199	918

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	12	8	32	0	144	0	52	0	28	212	0	0	32	292	220	0	1032
Heavy Trucks	0	0	0		4	0	0		0	0	0		0	12	0		16
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

Report generated on 9/24/2013 7:28 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

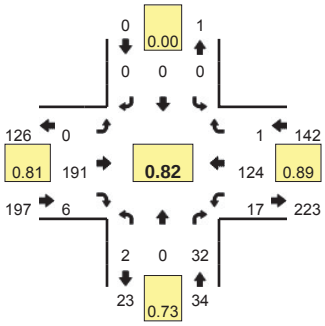
Type of peak hour being reported: Intersection Peak

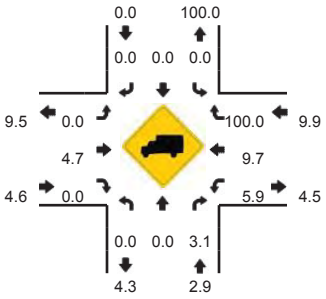
Method for determining peak hour: Total Entering Volume

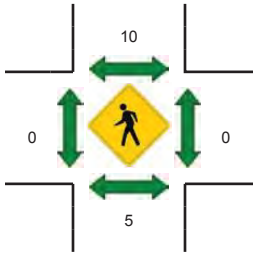
LOCATION: Wood Ave -- W Main St
CITY/STATE: Danville, VA

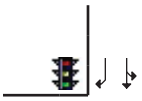
QC JOB #: 11205807
DATE: Tue, Sep 17 2013

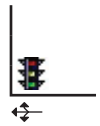
Peak-Hour: 7:30 AM -- 8:30 AM
Peak 15-Min: 7:45 AM -- 8:00 AM

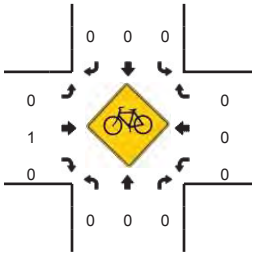


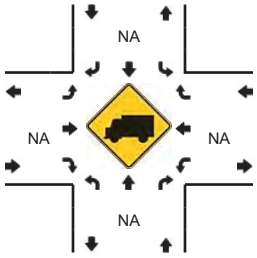


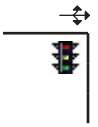


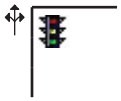


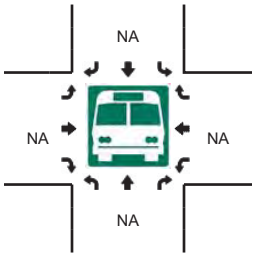












15-Min Count Period Beginning At	Wood Ave (Northbound)				Wood Ave (Southbound)				W Main St (Eastbound)				W Main St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	0	0	8	0	0	0	0	0	0	19	1	0	0	23	0	0	51	
7:15 AM	0	1	13	0	0	0	0	0	0	28	1	0	3	33	0	0	79	
7:30 AM	0	0	11	0	0	0	0	0	0	50	2	0	1	25	1	0	90	
7:45 AM	1	0	7	0	0	0	0	0	0	60	1	0	7	38	0	0	114	334
8:00 AM	0	0	7	0	0	0	0	0	0	33	2	0	6	29	0	0	77	360
8:15 AM	1	0	7	0	0	0	0	0	0	48	1	0	3	32	0	0	92	373
8:30 AM	0	0	7	0	0	0	0	0	0	28	2	0	7	38	0	0	82	365
8:45 AM	0	0	6	0	0	0	0	0	0	48	0	0	5	28	0	0	87	338

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	4	0	28	0	0	0	0	0	0	240	4	0	28	152	0	0	456
Heavy Trucks	0	0	4		0	0	0		0	8	0		0	0	0		12
Pedestrians		4				4				0				0			8
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

Report generated on 9/24/2013 7:28 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

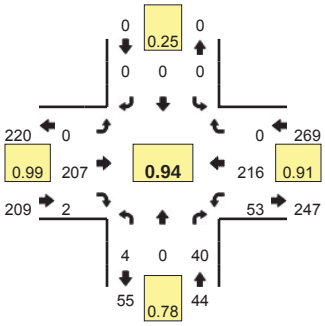
Type of peak hour being reported: Intersection Peak

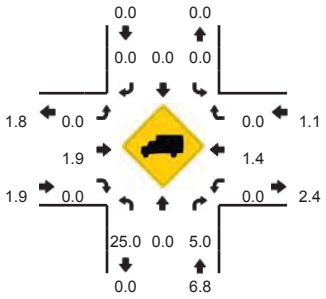
Method for determining peak hour: Total Entering Volume

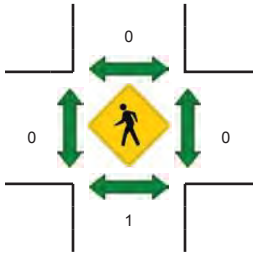
LOCATION: Wood Ave -- W Main St
CITY/STATE: Danville, VA

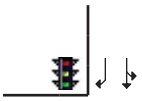
QC JOB #: 11205808
DATE: Tue, Sep 17 2013

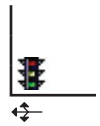
Peak-Hour: 4:45 PM -- 5:45 PM
Peak 15-Min: 5:00 PM -- 5:15 PM

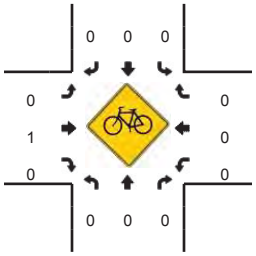


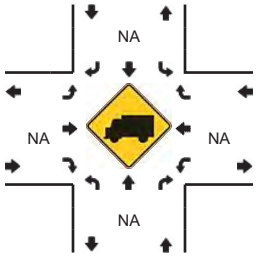


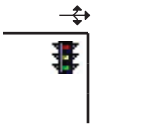


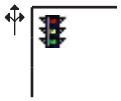


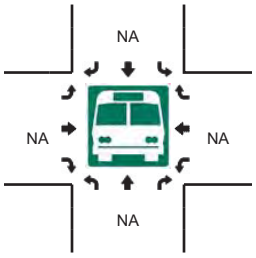












15-Min Count Period Beginning At	Wood Ave (Northbound)				Wood Ave (Southbound)				W Main St (Eastbound)				W Main St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	1	0	8	0	0	1	1	0	2	53	2	0	6	70	0	0	144	
4:15 PM	1	0	11	0	0	0	0	0	0	36	2	0	6	54	0	0	110	
4:30 PM	1	0	9	0	0	0	0	0	0	36	2	0	15	58	0	0	121	
4:45 PM	2	0	14	0	0	0	0	0	0	51	1	0	16	40	0	0	124	499
5:00 PM	0	0	12	0	0	0	0	0	0	52	0	0	10	65	0	0	139	494
5:15 PM	1	0	9	0	0	0	0	0	0	52	0	0	19	49	0	0	130	514
5:30 PM	1	0	5	0	0	0	0	0	0	52	1	0	8	62	0	0	129	522
5:45 PM	2	0	8	0	0	0	0	0	0	39	0	0	8	43	0	0	100	498

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	0	48	0	0	0	0	0	0	208	0	0	40	260	0	0	556
Heavy Trucks	0	0	0		0	0	0		0	0	0		0	12	0		12
Pedestrians		4				0				0				0			4
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

Report generated on 9/24/2013 7:28 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

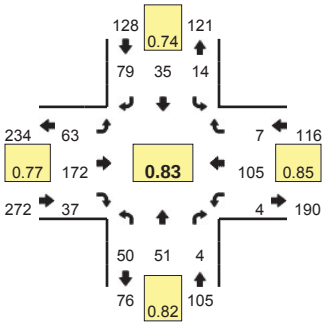
Type of peak hour being reported: Intersection Peak

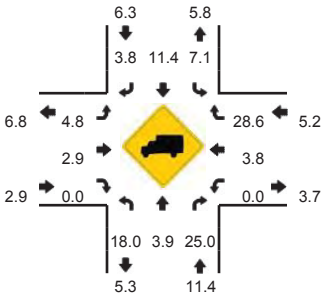
Method for determining peak hour: Total Entering Volume

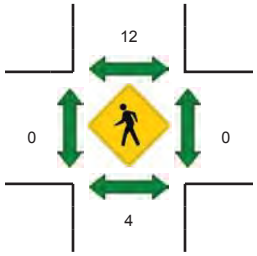
LOCATION: Bishop Rd/Augusta Ave -- W Main St
CITY/STATE: Danville, VA

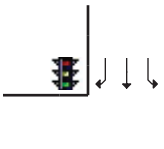
QC JOB #: 11205809
DATE: Tue, Sep 17 2013

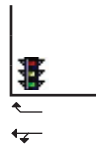
Peak-Hour: 7:15 AM -- 8:15 AM
Peak 15-Min: 7:45 AM -- 8:00 AM

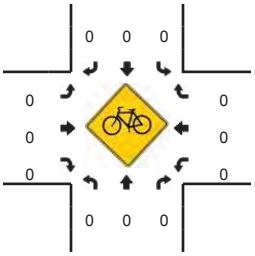


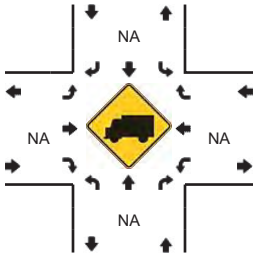


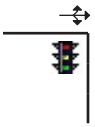


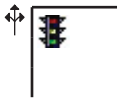


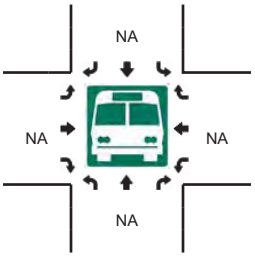












15-Min Count Period Beginning At	Bishop Rd/Augusta Ave (Northbound)				Bishop Rd/Augusta Ave (Southbound)				W Main St (Eastbound)				W Main St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	3	7	1	0	2	1	9	0	12	17	2	0	0	19	2	0	75	
7:15 AM	14	15	3	0	0	8	17	0	11	29	3	0	1	31	1	0	133	
7:30 AM	8	11	1	0	6	6	31	0	19	53	7	0	1	23	2	0	168	
7:45 AM	17	13	0	0	4	12	17	0	20	54	19	0	1	26	3	0	186	562
8:00 AM	11	12	0	0	4	9	14	0	13	36	8	0	1	25	1	0	134	621
8:15 AM	10	7	1	0	3	6	12	0	10	38	9	0	0	31	3	0	130	618
8:30 AM	4	12	0	0	1	2	14	0	14	37	11	0	1	33	4	0	133	583
8:45 AM	8	8	1	0	5	5	16	0	10	47	6	0	2	22	3	0	133	530

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	68	52	0	0	16	48	68	0	80	216	76	0	4	104	12	0	744
Heavy Trucks	0	0	0		0	8	0		4	4	0		0	0	0		16
Pedestrians		4				28				0				0			32
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

Report generated on 9/24/2013 7:28 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

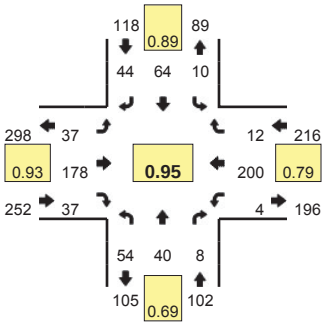
Type of peak hour being reported: Intersection Peak

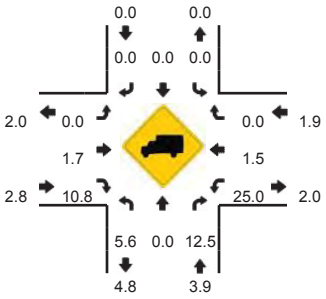
Method for determining peak hour: Total Entering Volume

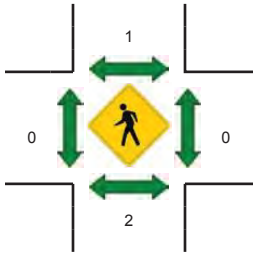
LOCATION: Bishop Rd/Augusta Ave -- W Main St
CITY/STATE: Danville, VA

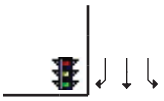
QC JOB #: 11205810
DATE: Tue, Sep 17 2013

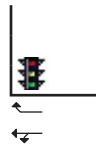
Peak-Hour: 4:45 PM -- 5:45 PM
Peak 15-Min: 5:00 PM -- 5:15 PM

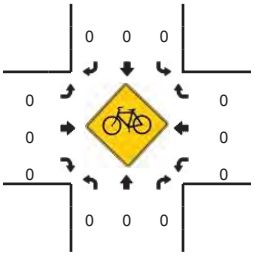


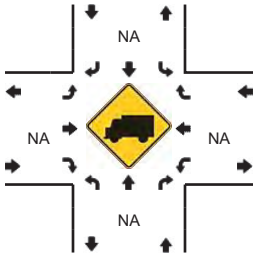


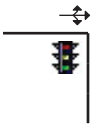


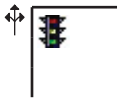


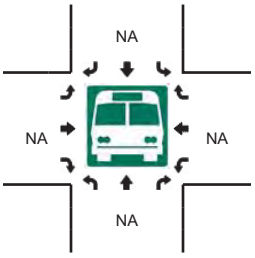












15-Min Count Period Beginning At	Bishop Rd/Augusta Ave (Northbound)				Bishop Rd/Augusta Ave (Southbound)				W Main St (Eastbound)				W Main St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	15	18	1	0	4	9	9	0	13	40	15	0	0	66	6	0	196	
4:15 PM	9	7	1	0	0	13	14	0	9	37	10	0	2	48	5	0	155	
4:30 PM	10	8	0	0	0	9	12	0	17	40	12	0	2	57	2	0	169	
4:45 PM	10	13	2	0	4	15	11	0	10	43	6	0	2	35	2	0	153	673
5:00 PM	16	7	1	0	3	12	15	0	11	44	8	0	1	59	5	0	182	659
5:15 PM	21	14	3	0	1	16	8	0	9	46	11	0	1	49	1	0	180	684
5:30 PM	7	6	2	0	2	21	10	0	7	45	12	0	0	57	4	0	173	688
5:45 PM	6	14	0	0	1	15	13	0	9	34	6	0	1	42	3	0	144	679

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	64	28	4	0	12	48	60	0	44	176	32	0	4	236	20	0	728
Heavy Trucks	0	0	0		0	0	0		0	0	8		4	8	0		20
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

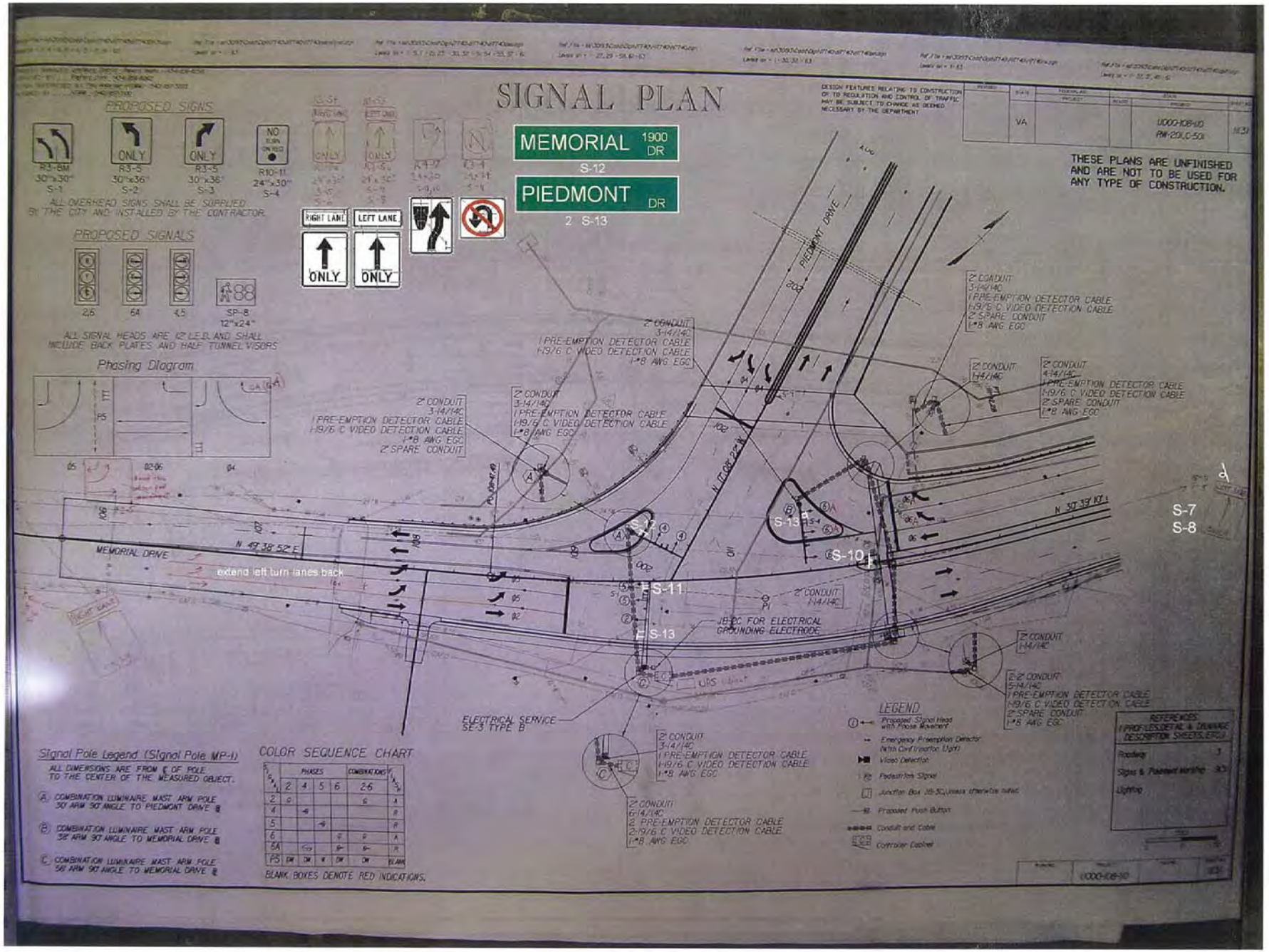
Comments:

Report generated on 9/24/2013 7:28 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

APPENDIX D

EXISTING SIGNAL PHASING


SIGNAL PLAN
PROPOSED SIGNS
R3-8M 30"x30" S-1
R3-5 30"x36" S-2
R3-5 30"x36" S-3
R10-11 24"x30" S-4
ALL OVERHEAD SIGNS SHALL BE SUPPLIED BY THE CITY AND INSTALLED BY THE CONTRACTOR.
PROPOSED SIGNALS
2,6
6A
4,5
SP-8 12"x24"
ALL SIGNAL HEADS ARE 12" LED, AND SHALL INCLUDE BACK PLATES AND HALF TUNNEL VISORS
Phasing Diagram
MEMORIAL 1900 DR
S-12
PIEDMONT DR
2 S-13
RIGHT LANE
LEFT LANE
ONLY
ONLY
THESE PLANS ARE UNFINISHED AND ARE NOT TO BE USED FOR ANY TYPE OF CONSTRUCTION.
2" CONDUIT 3-14/14C 1 PRE-EMPTION DETECTOR CABLE 1-19/6 C VIDEO DETECTION CABLE 1-#8 AWG EGC
2" CONDUIT 3-14/14C 1 PRE-EMPTION DETECTOR CABLE 1-19/6 C VIDEO DETECTION CABLE 1-#8 AWG EGC 2" SPARE CONDUIT
2" CONDUIT 1-14/14C
2" CONDUIT 4-14/14C 1 PRE-EMPTION DETECTOR CABLE 1-19/6 C VIDEO DETECTION CABLE 2" SPARE CONDUIT 1-#8 AWG EGC
MEMORIAL DRIVE
PIEDMONT DRIVE
N 47° 38' 52" E
N 37° 39' 10" W
extend left turn lanes back
S-7
S-8
S-10
S-11
S-13
JB-EC FOR ELECTRICAL GROUNDING ELECTRODE
ELECTRICAL SERVICE SE-3 TYPE B
2" CONDUIT 5-14/14C 1 PRE-EMPTION DETECTOR CABLE 1-19/6 C VIDEO DETECTION CABLE 2" SPARE CONDUIT 1-#8 AWG EGC
2" CONDUIT 6-14/14C 2 PRE-EMPTION DETECTOR CABLE 2-19/6 C VIDEO DETECTION CABLE 1-#8 AWG EGC
LEGEND
Proposed Signal Head with Phase Movement
Emergency Preemption Detector (With Confirmation Light)
Video Detection
Pedestrian Signal
Junction Box JB-3C (Unless otherwise noted)
Proposed Push Button
Conduit and Cable
Controller Cabinet
Signal Pole Legend (Signal Pole MP-1)
ALL DIMENSIONS ARE FROM ℄ OF POLE TO THE CENTER OF THE MEASURED OBJECT.
(A) COMBINATION LUMINAIRE MAST ARM POLE 50' ARM 90° ANGLE TO PIEDMONT DRIVE ℄
(B) COMBINATION LUMINAIRE MAST ARM POLE 38' ARM 90° ANGLE TO MEMORIAL DRIVE ℄
(C) COMBINATION LUMINAIRE MAST ARM POLE 56' ARM 90° ANGLE TO MEMORIAL DRIVE ℄
COLOR SEQUENCE CHART
PHASES 2 4 5 6 COMBINATIONS 2-6
2 G A
4 R B
5 R B
6 Y R A
6A Y R A
PS DK DK Y DK DK BLANK
BLANK BOXES DENOTE RED INDICATIONS.
REFERENCES
1 PROFILES, DETAILS & DRAWING DESCRIPTION SHEETS, ETC.
Roadway 3
Signs & Pavement Marking 30
Lighting
VA
U000-108-110
PM-201,C-501
U000-108-130

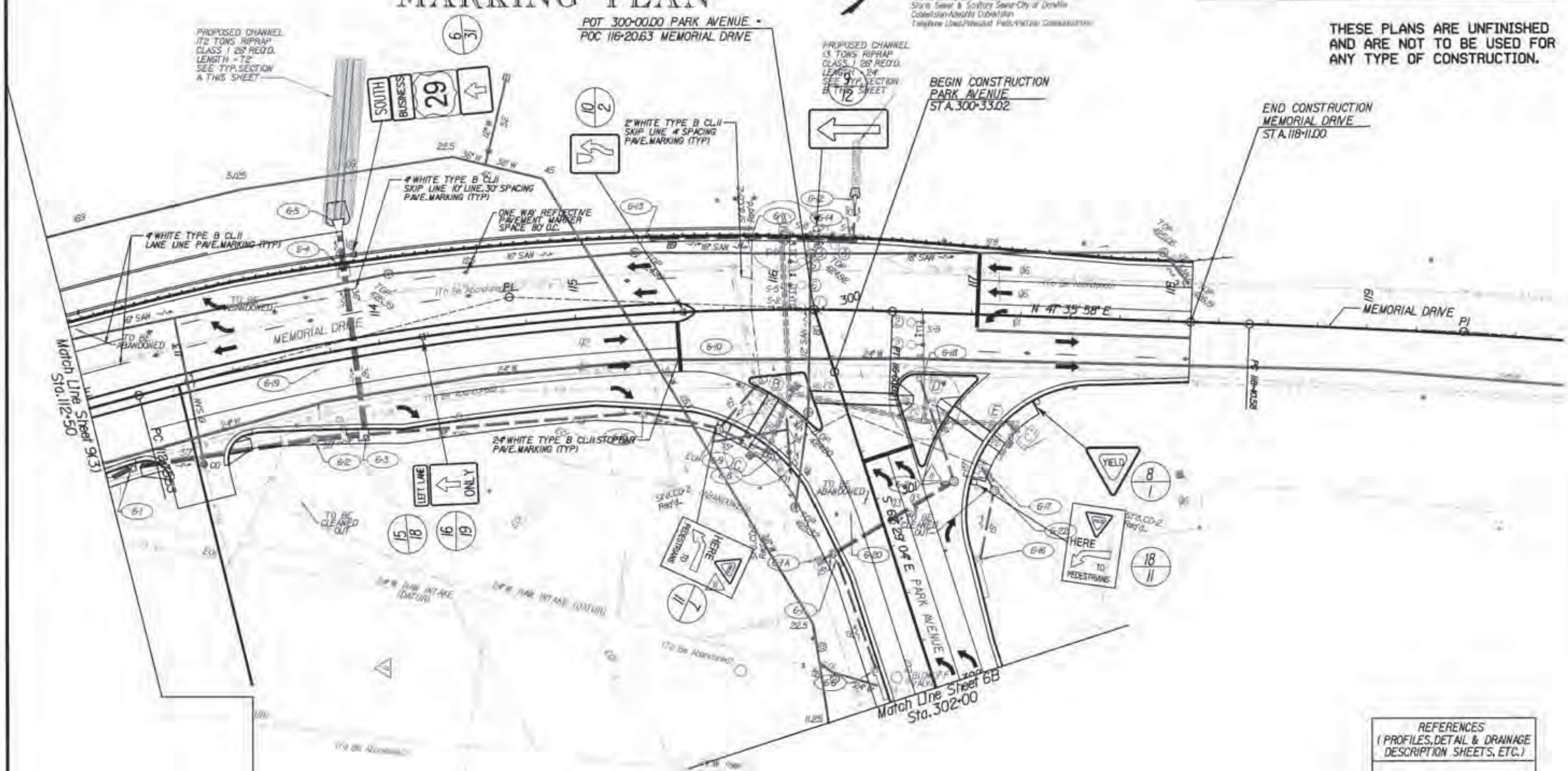
PROJECT MANAGER Lynchburg District - Ronald Yadts - (434) 856-8258
SURVEYED BY ... Radford Clark (434) 856-8262
DESIGN SUPERVISED BY Paul Anderson (HSMM) - (540) 857-3203
DESIGNED BY ..... HSMM - (540) 857-3100

SIGNING AND PAVEMENT MARKING PLAN

DESIGN FEATURES RELATING TO CONSTRUCTION OR TO REGULATION AND CONTROL OF TRAFFIC MAY BE SUBJECT TO CHANGE AS DEEMED NECESSARY BY THE DEPARTMENT

REVISED	STATE	FEDERAL AID PROJECT	ROUTE	STATE PROJECT	SHEET NO.
	VA.			U000-108-110 RW-201, C-501	9(6)

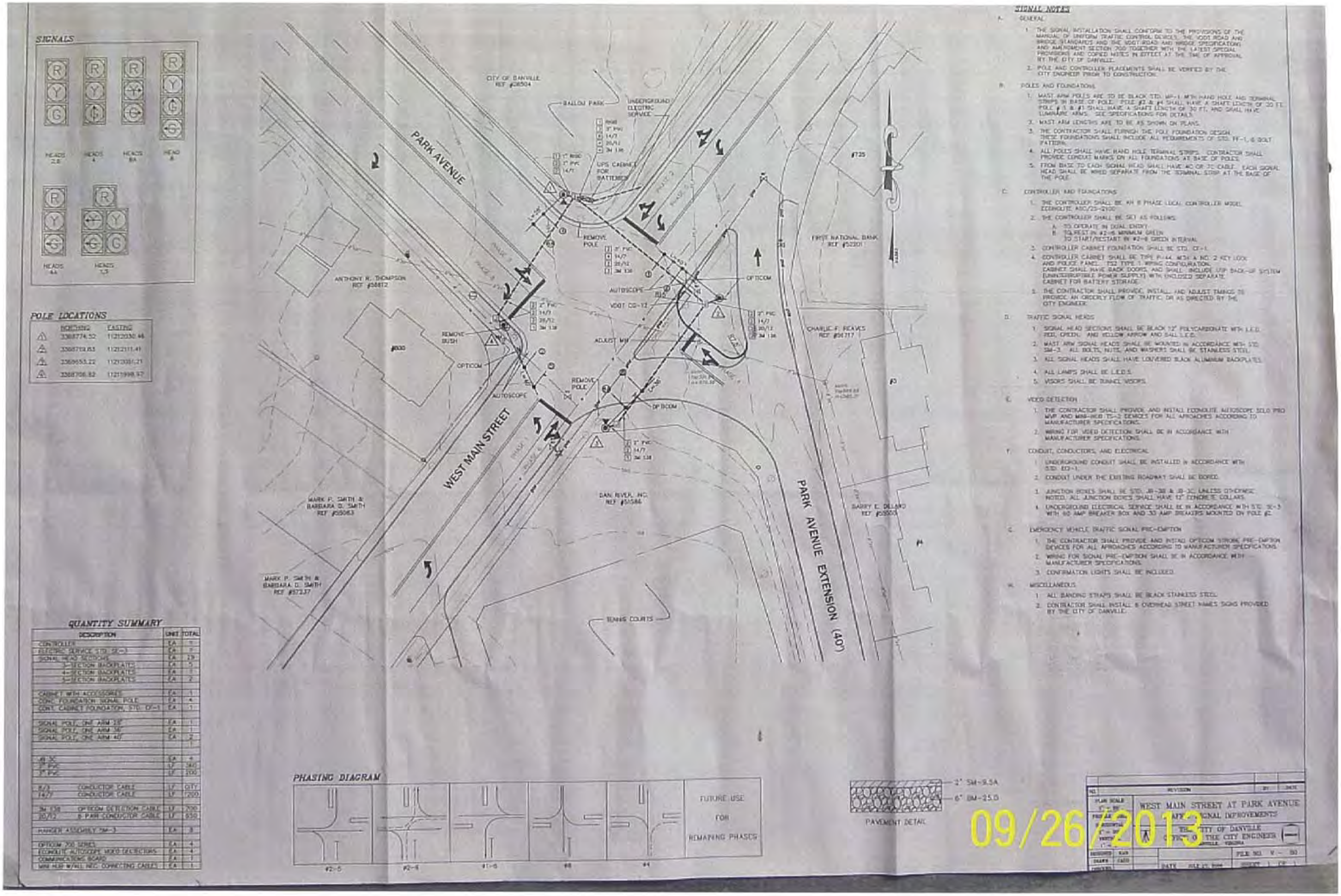
THESE PLANS ARE UNFINISHED AND ARE NOT TO BE USED FOR ANY TYPE OF CONSTRUCTION.



REFERENCES (PROFILES, DETAIL & DRAINAGE DESCRIPTION SHEETS, ETC.)	
Roadway	6
Lighting	10(6)
Signal	11(6)

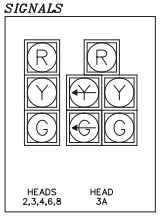
SCALE 0 25' 50'

PLAN NO.	PROJECT	FILE NO.	SHEET NO.
	U000-108-110		9(6)



SIGNALS
POLE LOCATIONS
NORTHING
EASTING
PARK AVENUE
WEST MAIN STREET
PARK AVENUE EXTENSION (40')
CITY OF DANVILLE
BALLOU PARK
UNDERGROUND ELECTRIC SERVICE
UPS CABINET FOR BATTERIES
REMOVE POLE
REMOVE BUSH
AUTOSCOPE
OPTICOM
ADJUST MH
FIRST NATIONAL BANK
ANTHONY R. THOMPSON
MARK P. SMITH & BARBARA D. SMITH
DAN RIVER, INC.
CHARLIE F. REAVES
BARRY E. DILLARD
TENNIS COURTS
QUANTITY SUMMARY
DESCRIPTION
UNIT
TOTAL
CONTROLLER
PHASING DIAGRAM
FUTURE USE FOR REMAINING PHASES
PAVEMENT DETAIL
2" SM-9.5A
6" BM-25.0
SIGNAL NOTES
A. GENERAL
1. THE SIGNAL INSTALLATION SHALL CONFORM TO THE PROVISIONS OF THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES, THE VDOT ROAD AND BRIDGE STANDARDS AND THE VDOT ROAD AND BRIDGE SPECIFICATIONS AND AMENDMENT SECTION 700 TOGETHER WITH THE LATEST SPECIAL PROVISIONS AND COPIED NOTES IN EFFECT AT THE TIME OF APPROVAL BY THE CITY OF DANVILLE.
2. POLE AND CONTROLLER PLACEMENTS SHALL BE VERIFIED BY THE CITY ENGINEER PRIOR TO CONSTRUCTION.
B. POLES AND FOUNDATIONS
1. MAST ARM POLES ARE TO BE BLACK STD. MP-1 WITH HAND HOLE AND TERMINAL STRIPS IN BASE OF POLE. POLE #2 & #4 SHALL HAVE A SHAFT LENGTH OF 20 FT. POLE #1 & #3 SHALL HAVE A SHAFT LENGTH OF 30 FT. AND SHALL HAVE LUMINAIRE ARMS. SEE SPECIFICATIONS FOR DETAILS.
2. MAST ARM LENGTHS ARE TO BE AS SHOWN ON PLANS.
3. THE CONTRACTOR SHALL FURNISH THE POLE FOUNDATION DESIGN. THESE FOUNDATIONS SHALL INCLUDE ALL REQUIREMENTS OF STD. PF-1, 6 BOLT PATTERN.
4. ALL POLES SHALL HAVE HAND HOLE TERMINAL STRIPS. CONTRACTOR SHALL PROVIDE CONDUIT MARKS ON ALL FOUNDATIONS AT BASE OF POLES.
5. FROM BASE TO EACH SIGNAL HEAD SHALL HAVE 4C OR 7C CABLE. EACH SIGNAL HEAD SHALL BE WIRED SEPARATE FROM THE TERMINAL STRIP AT THE BASE OF THE POLE.
C. CONTROLLER AND FOUNDATIONS
1. THE CONTROLLER SHALL BE AN 8 PHASE LOCAL CONTROLLER MODEL ECONOLITE ASC/2S-2100.
2. THE CONTROLLER SHALL BE SET AS FOLLOWS:
A. TO OPERATE IN DUAL ENTRY
B. TO REST IN #2-6 MINIMUM GREEN TO START/RESTART IN #2-6 GREEN INTERVAL
3. CONTROLLER CABINET FOUNDATION SHALL BE STD. CF-1.
4. CONTROLLER CABINET SHALL BE TYPE P-44 WITH A NO. 2 KEY LOCK AND POLICE PANEL. TS2 TYPE 1 WIRING CONFIGURATION. CABINET SHALL HAVE BACK DOORS, AND SHALL INCLUDE UPS BACK-UP SYSTEM (UNINTERRUPTIBLE POWER SUPPLY) WITH ENCLOSED SEPARATE CABINET FOR BATTERY STORAGE.
5. THE CONTRACTOR SHALL PROVIDE, INSTALL, AND ADJUST TIMINGS TO PROVIDE AN ORDERLY FLOW OF TRAFFIC OR AS DIRECTED BY THE CITY ENGINEER.
D. TRAFFIC SIGNAL HEADS
1. SIGNAL HEAD SECTIONS SHALL BE BLACK 12" POLYCARBONATE WITH L.E.D. RED, GREEN, AND YELLOW ARROW AND BALL L.E.D.
2. MAST ARM SIGNAL HEADS SHALL BE MOUNTED IN ACCORDANCE WITH STD. SM-3. ALL BOLTS, NUTS, AND WASHERS SHALL BE STAINLESS STEEL.
3. ALL SIGNAL HEADS SHALL HAVE LOUVERED BLACK ALUMINUM BACKPLATES.
4. ALL LAMPS SHALL BE L.E.D.S.
5. VISORS SHALL BE TUNNEL VISORS.
E. VIDEO DETECTION
1. THE CONTRACTOR SHALL PROVIDE AND INSTALL ECONOLITE AUTOSCOPE SOLO PRO MVP AND MINI-HUB TS-2 DEVICES FOR ALL APPROACHES ACCORDING TO MANUFACTURER SPECIFICATIONS.
2. WIRING FOR VIDEO DETECTION SHALL BE IN ACCORDANCE WITH MANUFACTURER SPECIFICATIONS.
F. CONDUIT, CONDUCTORS, AND ELECTRICAL
1. UNDERGROUND CONDUIT SHALL BE INSTALLED IN ACCORDANCE WITH STD. ED-1.
2. CONDUIT UNDER THE EXISTING ROADWAY SHALL BE BORED.
3. JUNCTION BOXES SHALL BE STD. JB-3B & JB-3C UNLESS OTHERWISE NOTED. ALL JUNCTION BOXES SHALL HAVE 12" CONCRETE COLLARS.
4. UNDERGROUND ELECTRICAL SERVICE SHALL BE IN ACCORDANCE WITH STD. SE-3 WITH 60 AMP BREAKER BOX AND 30 AMP BREAKERS MOUNTED ON POLE #2.
G. EMERGENCY VEHICLE TRAFFIC SIGNAL PRE-EMPTION
1. THE CONTRACTOR SHALL PROVIDE AND INSTALL OPTICOM STROBE PRE-EMPTION DEVICES FOR ALL APPROACHES ACCORDING TO MANUFACTURER SPECIFICATIONS.
2. WIRING FOR SIGNAL PRE-EMPTION SHALL BE IN ACCORDANCE WITH MANUFACTURER SPECIFICATIONS.
3. CONFIRMATION LIGHTS SHALL BE INCLUDED.
H. MISCELLANEOUS
1. ALL BANDING STRAPS SHALL BE BLACK STAINLESS STEEL.
2. CONTRACTOR SHALL INSTALL 8 OVERHEAD STREET NAMES SIGNS PROVIDED BY THE CITY OF DANVILLE.
WEST MAIN STREET AT PARK AVENUE
SIGNAL IMPROVEMENTS
CITY OF DANVILLE
THE CITY ENGINEER
09/26/2013

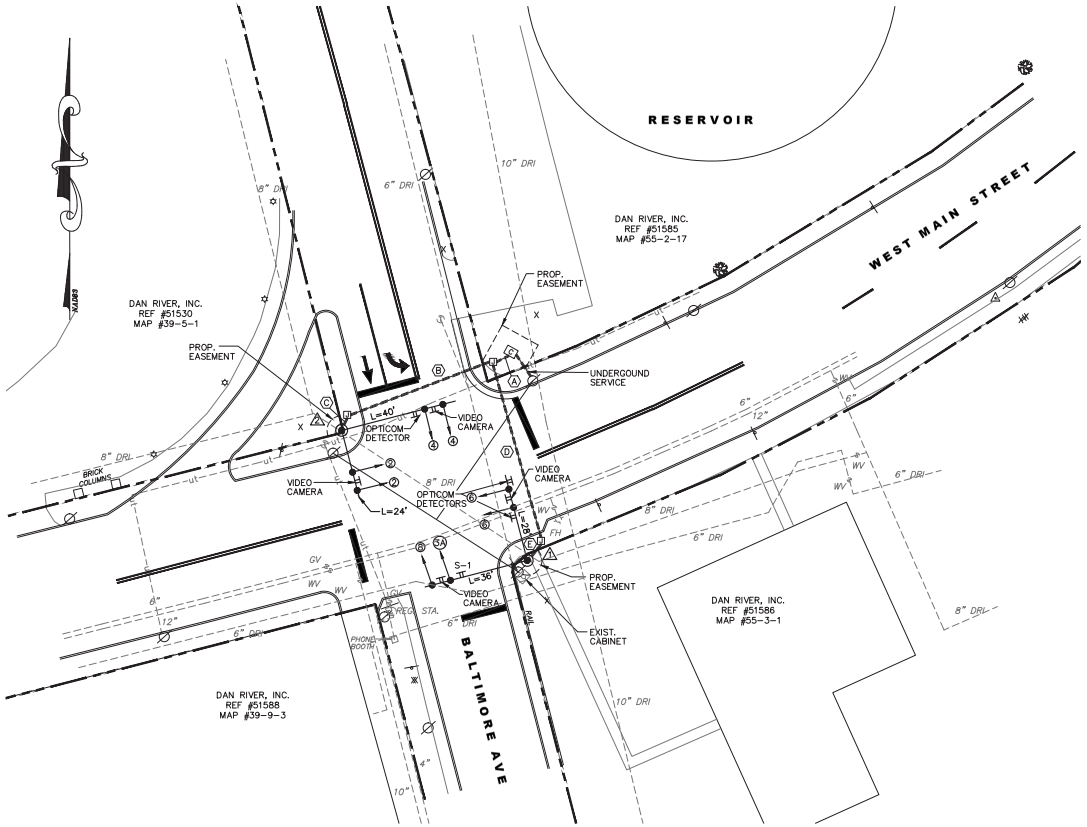
SIGNALS



SIGN

POLE LOCATIONS

	NORTHING	EASTING
1	3368057.25	11211439.98
2	3368101.58	11211376.70



CABLE AND CONDUIT RUNS

(A) 1-3" CONDUIT
1-7C FOR HEADS 2
1-7C FOR HEADS 3
2-7C FOR HEADS 4,4A
1-7C FOR HEADS 6
1-#8 AWG SYSTEM BOND
4-3M 138 FOR VIDEO DETECTORS
4-MODEL 739 FOR OPTICOM DETECTORS

(B) 1-3" CONDUIT
1-7C FOR HEADS 3
1-7C FOR HEADS 6
1-#8 AWG SYSTEM BOND
2-3M 138 FOR VIDEO DETECTORS
1-MODEL 739 FOR OPTICOM DETECTORS

(C) 2-2" CONDUIT
1-7C FOR HEADS 3
1-7C FOR HEADS 6
1-#8 AWG SYSTEM BOND
2-3M 138 FOR VIDEO DETECTORS
1-MODEL 739 FOR OPTICOM DETECTORS

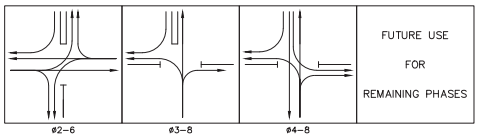
(D) 1-3" CONDUIT
1-7C FOR HEADS 2
2-7C FOR HEADS 4,4A
1-#8 AWG SYSTEM BOND
2-3M 138 FOR VIDEO DETECTORS
3-MODEL 739 FOR OPTICOM DETECTORS

(E) 2-2" CONDUIT
1-7C FOR HEADS 2
2-7C FOR HEADS 4,4A
1-#8 AWG SYSTEM BOND
2-3M 138 FOR VIDEO DETECTORS
3-MODEL 739 FOR OPTICOM DETECTORS

QUANTITY SUMMARY

DESCRIPTION		UNIT	TOTAL
CONTROLLER		EA	1
ELECTRIC SERVICE STD. SE-3		EA	1
SIGNAL HEAD SECTIONS		EA	26
3-SECTION BACKPLATES		EA	7
5-SECTION BACKPLATES		EA	1
CABINET WITH ACCESSORIES		EA	1
CONC. FOUNDATION SIGNAL POLE		EA	2
CONC. FOUNDATION STD. CF-1		EA	1
SIGNAL POLE, ONE ARM 24'		EA	1
ONE ARM 40'		EA	1
SIGNAL POLE, ONE ARM 28'		EA	1
ONE ARM 36'		EA	1
JB-3C		EA	3
8/3	CONDUCTOR CABLE	LF	50
14/7	CONDUCTOR CABLE	LF	650
3M 138	VIDEO DETECTION CABLE	LF	500
MODEL 739	OPTICOM DETECTOR CABLE	LF	500
ECONOLITE VIDEO DETECTION CAMERAS		EA	4
OPTICOM DETECTORS		EA	4
HANGER ASSEMBLY SM-3		EA	8
R10-12 SIGN (LEFT TURN)		EA	1

PHASING DIAGRAM



SIGNAL NOTES

A. GENERAL
1. THE SIGNAL INSTALLATION SHALL CONFORM TO THE PROVISIONS OF THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES, THE VDOT ROAD AND BRIDGE STANDARDS AND THE VDOT ROAD AND BRIDGE SPECIFICATIONS TOGETHER WITH THE LATEST SPECIAL PROVISIONS AND COPIED NOTES IN EFFECT AT THE TIME OF APPROVAL BY THE CITY OF DANVILLE.
2. POLE AND CONTROLLER PLACEMENTS SHALL BE VERIFIED BY THE CITY ENGINEER PRIOR TO CONSTRUCTION.

B. POLES AND FOUNDATIONS
1. MAST ARM POLES ARE TO BE BLACK STD. MP-1 WITH HAND HOLE IN BASE OF POLE. POLES SHALL HAVE A SHAFT LENGTH OF 20 FT.
2. MAST ARM LENGTHS ARE TO BE AS SHOWN ON PLANS.
3. THE CONTRACTOR SHALL FURNISH THE POLE FOUNDATION DESIGN. THESE FOUNDATIONS SHALL INCLUDE ALL REQUIREMENTS OF STD. PF-1.
4. HAND HOLE TERMINAL STRIPS PROVIDE CONDUIT MARKS ON ALL FOUNDATIONS AT BASE OF POLES.
5. FROM BASE TO EACH SIGNAL HEAD SHALL HAVE 4C OR 7C CABLE.

C. CONTROLLER AND FOUNDATIONS
1. THE CONTROLLER SHALL BE A TCT 8 PHASE LOCAL CONTROLLER MODEL LMD 9200.
2. THE CONTROLLER SHALL BE SET AS FOLLOWS:
   A. TO OPERATE IN DUAL ENTRY
   B. TO REST IN ø2-6 MINIMUM GREEN TO START/RESTART IN ø2-6 GREEN INTERVAL
3. CONTROLLER CABINET FOUNDATION SHALL BE STD. CF-1.
4. CONTROLLER CABINET SHALL BE TYPE P-44. WITH A NO. 2 KEY LOCK AND POLICE PANEL.
5. THE CONTRACTOR SHALL PROVIDE, INSTALL, AND ADJUST TIMINGS TO PROVIDE AN ORDERLY FLOW OF TRAFFIC, OR AS DIRECTED BY THE CITY ENGINEER.

D. TRAFFIC SIGNAL HEADS
1. SIGNAL HEAD SECTIONS SHALL BE 12" BLACK ALUMINUM WITH L.E.D. RED AND GREEN (BALL AND ARROW), GLASS YELLOW
2. MAST ARM SIGNAL HEADS SHALL BE MOUNTED IN ACCORDANCE WITH STD. SM-3. ALL BOLTS, NUTS, AND WASHERS SHALL BE STAINLESS STEEL.
3. ALL SIGNAL HEADS SHALL HAVE LOVERED BLACK POLYCARBONATE BACKPLATES.
4. LAMPS SHALL BE L.E.D. IN RED AND GREEN (BALL AND ARROW) 135 WATT IN YELLOW GLASS LENSES.

E. VIDEO DETECTION
1. THE CONTRACTOR SHALL PROVIDE AND INSTALL ECONOLITE AUTOSCOPE SOLO PRO MVP AND MINI-HUB TS-1 DEVICES FOR ALL APROACHES ACCORDING TO MANUFACTURER SPECIFICATIONS.
2. WIRING FOR VIDEO DETECTION SHALL BE IN ACCORDANCE WITH MANUFACTURER SPECIFICATIONS.

F. CONDUIT, CONDUCTORS, AND ELECTRICAL
1. UNDERGROUND CONDUIT SHALL BE INSTALLED IN ACCORDANCE WITH STD. ECI-1.
2. CONDUIT UNDER THE EXISTING ROADWAY SHALL BE OPEN CUT. SAW CUT TRENCHES WITH SMOOTH STRAIGHT JOINTS. BACKFILL TRENCHES WITH COMPACTED VDOT NO. 21A AGGREGATE. PAVEMENT REPAIR SHALL CONSIST OF 6 INCHES BASE ASPHALT, BM-25.0, AND 2 INCHES OF SURFACE APSHALT MATERIAL, SM-9.5D
3. JUNCTION BOXES SHALL BE STD. JB-3C.
4. UNDERGROUND ELECTRICAL SERVICE SHALL BE IN ACCORDANCE WITH STD. SE-3 WITH 60 AMP BREAKER BOX AND 30 AMP BREAKERS. METER & BREAKER BOX SHALL BE MOUNTED ON CONTROLLER CABINET

G. EMERGENCY VEHICLE TRAFFIC SIGNAL PRE-EMPTION
1. THE CONTRACTOR SHALL PROVIDE AND INSTALL OPTICOM STROBE PRE-EMPTION DEVICES FOR ALL APROACHES ACCORDING TO MANUFACTURER SPECIFICATIONS.
2. WIRING FOR SIGNAL PRE-EMPTION SHALL BE IN ACCORDANCE WITH MANUFACTURER SPECIFICATIONS.
3. OLD EQUIPMENT IS TO BE REMOVED BY THE CONTRACTOR.

NOTE: LOCATION OF D.R.I. WATER LINES ARE APPROXIMATE AND SHOULD BE LOCATED PRIOR TO CONSTRUCTION

NO.	REVISION	BY	DATE

PLAN SCALE 1" = 20'
PROFILE SCALE HORIZONTAL 1" = 20' VERTICAL 1" = 5'

W. MAIN ST./BALTIMORE AVE.
SIGNAL IMPROVEMENTS

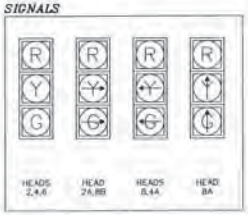
THE CITY OF DANVILLE
OFFICE OF THE CITY ENGINEER
DANVILLE, VIRGINIA

DESIGNED KAB
DRAWN CADD
CHECKED

FILE NO. V - 30
DATE OCTOBER 21, 2002
SHEET 1 OF 1

DRAWING NUMBER V-91 Sheet 1 of 1

SIGNALS

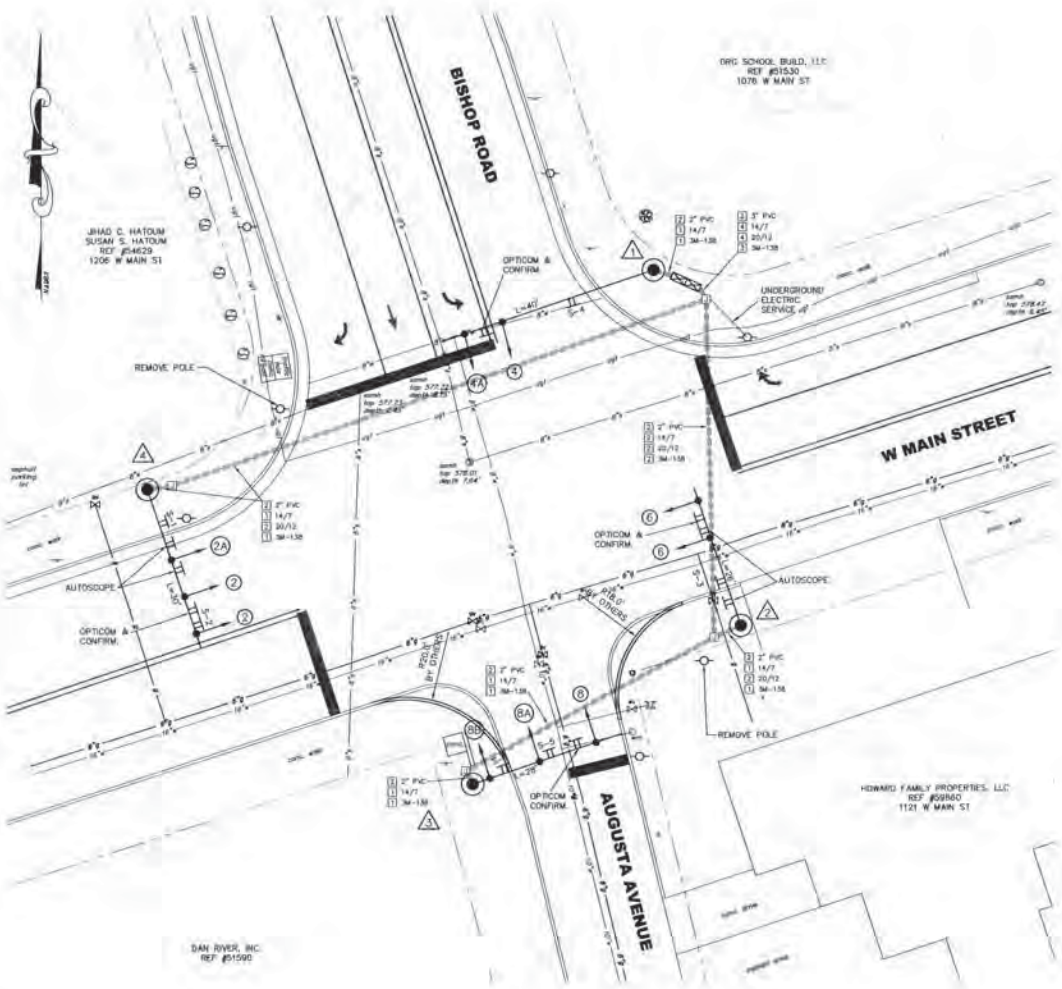


POLE LOCATIONS

	NORTHING	EASTING
1	3367659.45	11209767.40
2	3367595.66	11209782.71
3	3367567.41	11209734.71
4	3367620.58	11209678.82

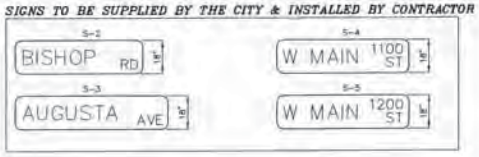
QUANTITY SUMMARY

DESCRIPTION		UNIT	TOTAL
CONTROLLER		EA	1
ELECTRIC SERVICE, STD. SE-3		EA	1
SIGNAL HEAD SECTIONS (BLACK)		EA	30
3-SECTION BACKPLATES		EA	10
CABINET WITH ACCESSORIES		EA	1
UPS CABINET (FOR BATTERIES)		EA	1
CONC. CABINET FOUNDATION, STD. CF-1		EA	1
CONC. UPS CAB. FOUNDATION, STD. CF-2		EA	1
CONC. FOUNDATION SIGNAL POLE		EA	4
SIGNAL POLE, ONE ARM 26' (BLACK)		EA	1
SIGNAL POLE, ONE ARM 28' (BLACK)		EA	1
SIGNAL POLE, ONE ARM 30' (BLACK)		EA	1
SIGNAL POLE, ONE ARM 40' (BLACK)		EA	1
LUMINAIRE ARMS, LA-1		EA	4
#8 3C		EA	8
8/3	CONDUCTOR CABLE	LF	200
14/7	CONDUCTOR CABLE	LF	1700
3M 130	OPTICOM DETECTION CABLE	LF	1000
20/12	6 PAIR CONDUCTOR CABLE	LF	1200
2" PVC		LF	750
3" PVC		LF	500
OPTICOM 700 SERIES		EA	4
ECONOLITE AUTOSCOPE VIDEO DECTECTORS		EA	4
COMMUNICATIONS BOARD		EA	1
MINI HUB W/ALL NEC. CONNECTING CABLES		EA	1
SIGN R3-5R		EA	2
STREET NAME SIGNS		EA	QTY
SMD-2		EA	10



SIGN TO BE SUPPLIED BY THE CONTRACTOR

SIGNS TO BE SUPPLIED BY THE CITY & INSTALLED BY CONTRACTOR



PHASING DIAGRAM

SIGNAL NOTES

A. GENERAL
1. THE SIGNAL INSTALLATION SHALL CONFORM TO THE PROVISIONS OF THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES, THE VDOT ROAD AND BRIDGE STANDARDS AND THE VDOT ROAD AND BRIDGE SPECIFICATIONS TOGETHER WITH THE LATEST SPECIAL PROVISIONS AND COPIED NOTES IN EFFECT AT THE TIME OF APPROVAL BY THE CITY OF DANVILLE.
2. POLE AND CONTROLLER PLACEMENTS SHALL BE VERIFIED BY THE CITY ENGINEER PRIOR TO CONSTRUCTION.

B. POLES AND FOUNDATIONS
1. MAST ARM POLES ARE TO BE BLACK STD. MP-1 WITH HAND HOLE AND TERMINAL STRIPS IN BASE OF POLE. POLES SHALL HAVE A SHAFT LENGTH OF 20 FT.
2. MAST ARM LENGTHS ARE TO BE AS SHOWN ON PLANS.
3. THE CONTRACTOR SHALL FURNISH THE POLE FOUNDATION DESIGN. THESE FOUNDATIONS SHALL INCLUDE ALL REQUIREMENTS OF STD. FF-1.
4. PROVIDE CONDUIT MARKS ON ALL FOUNDATIONS AT BASE OF POLES.
5. FROM BASE TO EACH SIGNAL HEAD SHALL HAVE 4C OR 7C CABLE. EACH SIGNAL HEAD SHALL BE WIRED SEPARATE FROM THE TERMINAL STRIP AT THE BASE OF THE POLE.

C. CONTROLLER AND FOUNDATIONS
1. THE CONTROLLER SHALL BE AN 8 PHASE LOCAL CONTROLLER MODEL ECONOLITE ASC/3-2100.
2. THE CONTROLLER SHALL BE SET AS FOLLOWS:
   A. TO OPERATE IN DUAL ENTRY
   B. TO REST IN #2-6 MINIMUM GREEN
   TO START/RESTART IN #2-6 GREEN INTERVAL
3. CONTROLLER CABINET FOUNDATION SHALL BE STD. CF-1.
4. CONTROLLER CABINET SHALL BE TYPE P-44, WITH A NO. 2 KEY LOCK AND POLICE PANEL. TS2 TYPE 1 WIRING CONFIGURATION.
5. THE CONTRACTOR SHALL PROVIDE, INSTALL, AND ADJUST TIMINGS TO PROVIDE AN ORDERLY FLOW OF TRAFFIC, OR AS DIRECTED BY THE CITY ENGINEER.

D. TRAFFIC SIGNAL HEADS
1. SIGNAL HEAD SECTIONS SHALL BE BLACK 12" POLYCARBONATE WITH ALL L.E.D.'S
2. MAST ARM SIGNAL HEADS SHALL BE MOUNTED IN ACCORDANCE WITH STD. SM-3. ALL BOLTS, NUTS, AND WASHERS SHALL BE STAINLESS STEEL.
3. ALL SIGNAL HEADS SHALL HAVE LOUVERED BLACK ALUMINUM BACKPLATES.
4. ALL LAMPS SHALL BE L.E.D. BY "DIALITE."
5. VISORS SHALL BE TUNNEL VISORS.

E. VIDEO DETECTION
1. THE CONTRACTOR SHALL PROVIDE AND INSTALL ECONOLITE AUTOSCOPE SOLO PRO MVP AND MINI-HUB TS-2 DEVICES FOR ALL APPROACHES ACCORDING TO MANUFACTURER SPECIFICATIONS.
2. WIRING FOR VIDEO DETECTION SHALL BE IN ACCORDANCE WITH MANUFACTURER SPECIFICATIONS.

F. CONDUIT, CONDUCTORS, AND ELECTRICAL
1. UNDERGROUND CONDUIT SHALL BE INSTALLED IN ACCORDANCE WITH STD. EQ-1.
2. JUNCTION BOXES SHALL BE STD. JB-3C, UNLESS OTHERWISE NOTED. INSTALL CONCRETE COLLARS ON ALL BOXES.
3. UNDERGROUND ELECTRICAL SERVICE SHALL BE IN ACCORDANCE WITH STD. SE-3 WITH 60 AMP BREAKER BOX AND 30 AMP BREAKERS MOUNTED ON CABINET SE-6

G. EMERGENCY VEHICLE TRAFFIC SIGNAL PRE-EMPTION/CONFIRMATION LIGHTS
1. THE CONTRACTOR SHALL PROVIDE AND INSTALL OPTICOM STROBE PRE-EMPTION DEVICES FOR ALL APPROACHES ACCORDING TO MANUFACTURER SPECIFICATIONS.
2. WIRING FOR SIGNAL PRE-EMPTION SHALL BE IN ACCORDANCE WITH MANUFACTURER SPECIFICATIONS.

H. MISCELLANEOUS
1. ALL BANDING STRAPS SHALL BE BLACK STAINLESS STEEL.
2. CONTRACTOR SHALL INSTALL 4 OVERHEAD STREET NAMES SIGNS PROVIDED BY THE CITY OF DANVILLE.

NO.	REVISION	BY	DATE

PLAN SCALE 1" = 10'
PROFILE SCALE HORIZONTAL 1" = 10' VERTICAL 1" = 5'

W MAIN ST @ BISHOP RD/AUGUSTA AVE SIGNAL IMPROVEMENTS

THE CITY OF DANVILLE
OFFICE OF THE CITY ENGINEER
DANVILLE, VIRGINIA

DESIGNED KAR
DRAWN CADD
CHECKED

DATE AUGUST 22, 2007

FILE NO. V - 91

SHEET 1 OF 1

APPENDIX E

EXISTING (YEAR 2013)
INTERSECTION LEVEL OF SERVICE ANALYSIS

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	355	286	99	240	458	228
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	185			275	0	0
Storage Lanes	1			1	2	1
Taper Length (ft)	300				25	
Lane Util. Factor	0.97	1.00	1.00	0.88	0.97	1.00
Frt				0.850		0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	3335	1810	1743	2707	3367	1524
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	3335	1810	1743	2707	3367	1524
Right Turn on Red				No		Yes
Satd. Flow (RTOR)						289
Link Speed (mph)		40	40		35	
Link Distance (ft)		880	355		860	
Travel Time (s)		15.0	6.1		16.8	
Peak Hour Factor	0.79	0.79	0.79	0.79	0.79	0.79
Heavy Vehicles (%)	5%	5%	9%	5%	4%	6%
Adj. Flow (vph)	449	362	125	304	580	289
Shared Lane Traffic (%)						
Lane Group Flow (vph)	449	362	125	304	580	289
Turn Type	Prot	NA	NA	pt+ov	Prot	Free
Protected Phases	5	2	6	6 4	4	
Permitted Phases						Free
Detector Phase	5	2	6	6 4	4	
Switch Phase						
Minimum Initial (s)	7.0	15.0	15.0		7.0	
Minimum Split (s)	13.0	21.0	21.0		13.0	
Total Split (s)	15.0	37.0	22.0		18.0	
Total Split (%)	27.3%	67.3%	40.0%		32.7%	
Yellow Time (s)	4.5	5.0	5.0		4.5	
All-Red Time (s)	1.0	1.0	1.0		1.0	
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	
Total Lost Time (s)	5.5	6.0	6.0		5.5	
Lead/Lag	Lead		Lag			
Lead-Lag Optimize?	Yes		Yes			
Recall Mode	None	Min	Min		None	
Act Effct Green (s)	9.4	30.1	15.2	32.8	12.1	53.7
Actuated g/C Ratio	0.18	0.56	0.28	0.61	0.23	1.00
v/c Ratio	0.77	0.36	0.25	0.18	0.77	0.19
Control Delay	32.3	7.8	16.8	4.9	27.9	0.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	32.3	7.8	16.8	4.9	27.9	0.3
LOS	C	A	B	A	C	A
Approach Delay		21.4	8.4		18.7	
Approach LOS		C	A		B	
Queue Length 50th (ft)	71	57	31	20	89	0
Queue Length 95th (ft)	#98	83	57	29	118	0

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Internal Link Dist (ft)		800	275		780	
Turn Bay Length (ft)	185			275		
Base Capacity (vph)	589	1044	519	1470	783	1524
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	0.76	0.35	0.24	0.21	0.74	0.19

Intersection Summary

Area Type: Other
Cycle Length: 55
Actuated Cycle Length: 53.7
Natural Cycle: 55
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.77
Intersection Signal Delay: 17.6 Intersection LOS: B
Intersection Capacity Utilization 39.4% ICU Level of Service A
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: Memorial Drive & Piedmont Drive

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	610	154	21	251	110	17
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	11	11	11	11
Storage Length (ft)		190	375		0	155
Storage Lanes		1	1		2	1
Taper Length (ft)			300		25	
Lane Util. Factor	0.95	1.00	1.00	0.95	0.97	1.00
Frt		0.850				0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	3471	1583	1586	3231	3286	1473
Flt Permitted			0.950		0.950	
Satd. Flow (perm)	3471	1583	1586	3231	3286	1473
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		197				22
Link Speed (mph)	40			40	35	
Link Distance (ft)	319			492	324	
Travel Time (s)	5.4			8.4	6.3	
Peak Hour Factor	0.78	0.78	0.78	0.78	0.78	0.78
Heavy Vehicles (%)	4%	2%	10%	8%	3%	6%
Adj. Flow (vph)	782	197	27	322	141	22
Shared Lane Traffic (%)						
Lane Group Flow (vph)	782	197	27	322	141	22
Turn Type	NA	Free	Prot	NA	Prot	Perm
Protected Phases	2		1	6	3	
Permitted Phases		Free				3
Detector Phase	2		1	6	3	3
Switch Phase						
Minimum Initial (s)	18.0		7.0	18.0	5.0	5.0
Minimum Split (s)	24.0		12.0	24.0	11.0	11.0
Total Split (s)	27.0		12.0	39.0	11.0	11.0
Total Split (%)	54.0%		24.0%	78.0%	22.0%	22.0%
Yellow Time (s)	5.0		4.0	5.0	4.0	4.0
All-Red Time (s)	1.0		1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0		5.0	6.0	5.0	5.0
Lead/Lag	Lag		Lead			
Lead-Lag Optimize?	Yes		Yes			
Recall Mode	Min		None	Min	None	None
Act Effct Green (s)	23.8	39.5	7.1	25.7	6.0	6.0
Actuated g/C Ratio	0.60	1.00	0.18	0.65	0.15	0.15
v/c Ratio	0.37	0.12	0.09	0.15	0.28	0.09
Control Delay	7.1	0.2	16.2	4.0	17.5	10.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	7.1	0.2	16.2	4.0	17.5	10.1
LOS	A	A	B	A	B	B
Approach Delay	5.7			5.0	16.5	
Approach LOS	A			A	B	
Queue Length 50th (ft)	40	0	4	14	12	0

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Queue Length 95th (ft)	104	0	21	21	35	13
Internal Link Dist (ft)	239			412	244	
Turn Bay Length (ft)		190	375			155
Base Capacity (vph)	2206	1583	286	2845	507	246
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	0.35	0.12	0.09	0.11	0.28	0.09

Intersection Summary

Area Type: Other
Cycle Length: 50
Actuated Cycle Length: 39.5
Natural Cycle: 50
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.37
Intersection Signal Delay: 6.7 Intersection LOS: A
Intersection Capacity Utilization 30.8% ICU Level of Service A
Analysis Period (min) 15

Splits and Phases: 2: Park Avenue & Memorial Drive

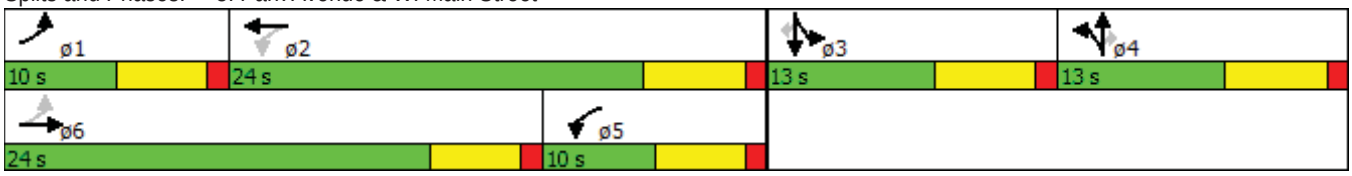
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	13	201	2	8	126	102	0	1	10	142	0	21
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	11	11	12	12	12	12	12	11	12
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.998			0.933				0.850			0.850
Flt Protected	0.950			0.950							0.950	
Satd. Flow (prot)	1805	1797	0	1745	1605	0	0	1900	1468	0	1678	1417
Flt Permitted	0.427			0.596							0.950	
Satd. Flow (perm)	811	1797	0	1095	1605	0	0	1900	1468	0	1678	1417
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		1			70				327			327
Link Speed (mph)		25			25			20			35	
Link Distance (ft)		614			447			270			840	
Travel Time (s)		16.7			12.2			9.2			16.4	
Peak Hour Factor	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77
Heavy Vehicles (%)	0%	5%	50%	0%	9%	4%	0%	0%	10%	4%	0%	14%
Adj. Flow (vph)	17	261	3	10	164	132	0	1	13	184	0	27
Shared Lane Traffic (%)												
Lane Group Flow (vph)	17	264	0	10	296	0	0	1	13	0	184	27
Turn Type	pm+pt	NA		pm+pt	NA			NA	Perm	Split	NA	Perm
Protected Phases	1	6		5	2		4	4		3	3	
Permitted Phases	6			2					4			3
Detector Phase	1	6		5	2		4	4	4	3	3	3
Switch Phase												
Minimum Initial (s)	5.0	18.0		5.0	18.0		7.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	10.0	23.0		10.0	24.0		13.0	13.0	13.0	13.0	13.0	13.0
Total Split (s)	10.0	24.0		10.0	24.0		13.0	13.0	13.0	13.0	13.0	13.0
Total Split (%)	16.7%	40.0%		16.7%	40.0%		21.7%	21.7%	21.7%	21.7%	21.7%	21.7%
Yellow Time (s)	4.0	4.0		4.0	4.5		4.5	4.5	4.5	4.5	4.5	4.5
All-Red Time (s)	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
Total Lost Time (s)	5.0	5.0		5.0	5.5			5.5	5.5		5.5	5.5
Lead/Lag	Lead	Lead		Lag	Lag		Lag	Lag	Lag	Lead	Lead	Lead
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	Min		None	Min		None	None	None	None	None	None
Act Effct Green (s)	22.0	22.0		26.4	21.4			7.3	7.3		7.8	7.8
Actuated g/C Ratio	0.50	0.50		0.60	0.49			0.17	0.17		0.18	0.18
v/c Ratio	0.03	0.29		0.01	0.36			0.00	0.03		0.62	0.05
Control Delay	9.6	10.1		8.4	9.1			19.0	0.1		31.2	0.2
Queue Delay	0.0	0.0		0.0	0.0			0.0	0.0		0.0	0.0
Total Delay	9.6	10.1		8.4	9.1			19.0	0.1		31.2	0.2
LOS	A	B		A	A			B	A		C	A
Approach Delay		10.1			9.1			1.4			27.2	
Approach LOS		B			A			A			C	
Queue Length 50th (ft)	1	26		1	23			0	0		33	0
Queue Length 95th (ft)	13	109		10	102			4	0		#131	0
Internal Link Dist (ft)		534			367			190			760	
Turn Bay Length (ft)												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Base Capacity (vph)	521	910		733	829			337	529		297	520
Starvation Cap Reductn	0	0		0	0			0	0		0	0
Spillback Cap Reductn	0	0		0	0			0	0		0	0
Storage Cap Reductn	0	0		0	0			0	0		0	0
Reduced v/c Ratio	0.03	0.29		0.01	0.36			0.00	0.02		0.62	0.05

Intersection Summary

Area Type: Other
Cycle Length: 60
Actuated Cycle Length: 44.1
Natural Cycle: 60
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.62
Intersection Signal Delay: 14.0 Intersection LOS: B
Intersection Capacity Utilization 42.0% ICU Level of Service A
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 3: Park Avenue & W. Main Street



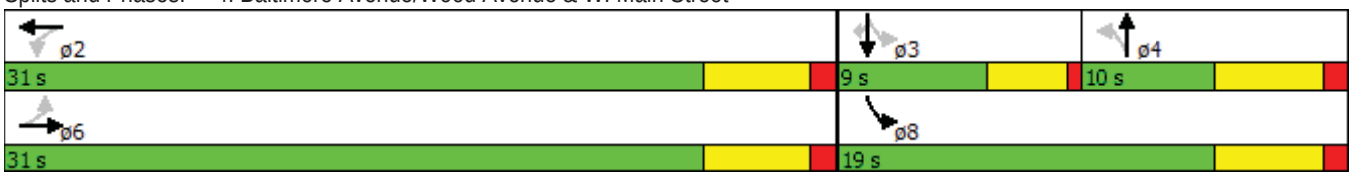
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	191	6	17	124	0	2	0	32	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.996						0.872				
Flt Protected					0.994			0.998				
Satd. Flow (prot)	0	1805	0	0	1725	0	0	1608	0	0	1900	1900
Flt Permitted					0.960			0.950				
Satd. Flow (perm)	0	1805	0	0	1666	0	0	1530	0	0	1900	1900
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		5						120				
Link Speed (mph)		25			25			25			20	
Link Distance (ft)		1744			294			483			436	
Travel Time (s)		47.6			8.0			13.2			14.9	
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Heavy Vehicles (%)	0%	5%	0%	6%	10%	0%	0%	0%	3%	0%	0%	0%
Adj. Flow (vph)	0	233	7	21	151	0	2	0	39	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	240	0	0	172	0	0	41	0	0	0	0
Turn Type		NA		Perm	NA		Perm	NA				Perm
Protected Phases		6			2			4!		8!	3	
Permitted Phases	6			2			4			3		3
Detector Phase	6	6		2	2		4	4		8	3	3
Switch Phase												
Minimum Initial (s)	25.0	25.0		25.0	25.0		5.0	5.0		5.0	5.0	5.0
Minimum Split (s)	30.0	30.0		30.0	30.0		10.0	10.0		10.0	9.0	9.0
Total Split (s)	31.0	31.0		31.0	31.0		10.0	10.0		19.0	9.0	9.0
Total Split (%)	62.0%	62.0%		62.0%	62.0%		20.0%	20.0%		38.0%	18.0%	18.0%
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	3.0	3.0
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	0.5	0.5
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	0.0
Total Lost Time (s)		5.0			5.0			5.0			3.5	3.5
Lead/Lag							Lag	Lag			Lead	Lead
Lead-Lag Optimize?							Yes	Yes			Yes	Yes
Recall Mode	Min	Min		Min	Min		None	None		None	None	None
Act Effct Green (s)		37.2			37.2			5.2				
Actuated g/C Ratio		0.85			0.85			0.12				
v/c Ratio		0.16			0.12			0.14				
Control Delay		2.4			2.5			1.0				
Queue Delay		0.0			0.0			0.0				
Total Delay		2.4			2.5			1.0				
LOS		A			A			A				
Approach Delay		2.4			2.5			1.0				
Approach LOS		A			A			A				
Queue Length 50th (ft)		0			0			0				
Queue Length 95th (ft)		33			25			0				
Internal Link Dist (ft)		1664			214			403			356	
Turn Bay Length (ft)												
Base Capacity (vph)		1547			1427			288				

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Starvation Cap Reductn		0			0			0				
Spillback Cap Reductn		0			0			0				
Storage Cap Reductn		0			0			0				
Reduced v/c Ratio		0.16			0.12			0.14				

Intersection Summary

Area Type: Other
Cycle Length: 50
Actuated Cycle Length: 43.7
Natural Cycle: 50
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.16
Intersection Signal Delay: 2.3 Intersection LOS: A
Intersection Capacity Utilization 33.3% ICU Level of Service A
Analysis Period (min) 15
! Phase conflict between lane groups.

Splits and Phases: 4: Baltimore Avenue/Wood Avenue & W. Main Street



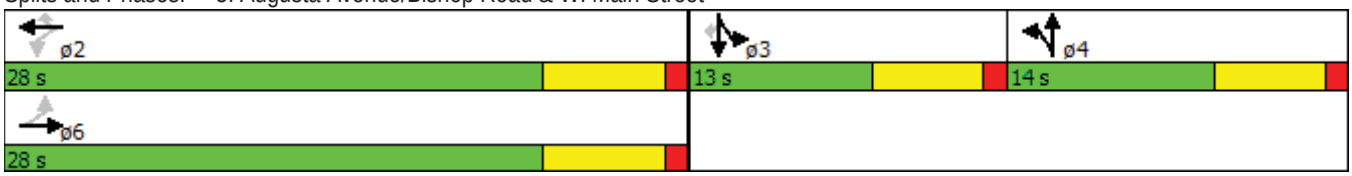
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	63	172	37	4	105	7	50	51	4	14	35	79
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	10	8	12	8	12	10	10	12
Storage Length (ft)	0		0	0		0	0		0	125		0
Storage Lanes	0		0	0		1	0		0	1		1
Taper Length (ft)	25			25			25			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		0.981				0.850		0.995				0.850
Flt Protected		0.989			0.998			0.977		0.950		
Satd. Flow (prot)	0	1789	0	0	1704	1085	0	1436	0	1574	1598	1553
Flt Permitted		0.900			0.987			0.977		0.950		
Satd. Flow (perm)	0	1628	0	0	1685	1085	0	1436	0	1574	1598	1553
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		17				159		3				169
Link Speed (mph)		25			25			25			30	
Link Distance (ft)		555			1744			400			838	
Travel Time (s)		15.1			47.6			10.9			19.0	
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Heavy Vehicles (%)	5%	3%	0%	0%	4%	29%	18%	4%	25%	7%	11%	4%
Adj. Flow (vph)	76	207	45	5	127	8	60	61	5	17	42	95
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	328	0	0	132	8	0	126	0	17	42	95
Turn Type	Perm	NA		Perm	NA	Perm	Split	NA		Split	NA	Perm
Protected Phases		6			2		4	4		3	3	
Permitted Phases	6			2		2						3
Detector Phase	6	6		2	2	2	4	4		3	3	3
Switch Phase												
Minimum Initial (s)	22.0	22.0		22.0	22.0	22.0	7.0	7.0		7.0	7.0	7.0
Minimum Split (s)	28.0	28.0		28.0	28.0	28.0	13.0	13.0		13.0	13.0	13.0
Total Split (s)	28.0	28.0		28.0	28.0	28.0	14.0	14.0		13.0	13.0	13.0
Total Split (%)	50.9%	50.9%		50.9%	50.9%	50.9%	25.5%	25.5%		23.6%	23.6%	23.6%
Yellow Time (s)	5.0	5.0		5.0	5.0	5.0	4.5	4.5		4.5	4.5	4.5
All-Red Time (s)	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
Total Lost Time (s)		6.0			6.0	6.0		5.5		5.5	5.5	5.5
Lead/Lag							Lag	Lag		Lead	Lead	Lead
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	Yes
Recall Mode	Min	Min		Min	Min	Min	None	None		None	None	None
Act Effct Green (s)		27.3			27.3	27.3		8.2		7.3	7.3	7.3
Actuated g/C Ratio		0.52			0.52	0.52		0.16		0.14	0.14	0.14
v/c Ratio		0.38			0.15	0.01		0.56		0.08	0.19	0.26
Control Delay		12.8			11.4	0.0		32.4		21.9	23.5	2.9
Queue Delay		0.0			0.0	0.0		0.0		0.0	0.0	0.0
Total Delay		12.8			11.4	0.0		32.4		21.9	23.5	2.9
LOS		B			B	A		C		C	C	A
Approach Delay		12.8			10.7			32.4			10.6	
Approach LOS		B			B			C			B	
Queue Length 50th (ft)		71			26	0		37		5	12	0

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)		119			52	0		#77		18	33	5
Internal Link Dist (ft)		475			1664			320			758	
Turn Bay Length (ft)										125		
Base Capacity (vph)		857			879	642		237		227	230	369
Starvation Cap Reductn		0			0	0		0		0	0	0
Spillback Cap Reductn		0			0	0		0		0	0	0
Storage Cap Reductn		0			0	0		0		0	0	0
Reduced v/c Ratio		0.38			0.15	0.01		0.53		0.07	0.18	0.26

Intersection Summary

Area Type: Other
Cycle Length: 55
Actuated Cycle Length: 52.4
Natural Cycle: 55
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.56
Intersection Signal Delay: 15.3 Intersection LOS: B
Intersection Capacity Utilization 57.1% 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: 5: Augusta Avenue/Bishop Road & W. Main Street



Intersection	
Int Delay, s/veh	2.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	537	3	117	211	2	115
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	270	-	0	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	89	89	89	89	89	89
Heavy Vehicles, %	6	0	5	5	0	4
Mvmt Flow	603	3	131	237	2	129

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	607	0	986	303
Stage 1	-	-	-	-	605	-
Stage 2	-	-	-	-	381	-
Critical Hdwy	-	-	4.2	-	6.8	6.98
Critical Hdwy Stg 1	-	-	-	-	5.8	-
Critical Hdwy Stg 2	-	-	-	-	5.8	-
Follow-up Hdwy	-	-	2.25	-	3.5	3.34
Pot Cap-1 Maneuver	-	-	947	-	248	687
Stage 1	-	-	-	-	513	-
Stage 2	-	-	-	-	666	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	947	-	214	687
Mov Cap-2 Maneuver	-	-	-	-	344	-
Stage 1	-	-	-	-	513	-
Stage 2	-	-	-	-	574	-

Approach	EB	WB	NB
HCM Control Delay, s	0	3.4	11.6
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	344	687	-	-	947	-
HCM Lane V/C Ratio	0.007	0.188	-	-	0.139	-
HCM Control Delay (s)	15.5	11.5	-	-	9.4	-
HCM Lane LOS	C	B	-	-	A	-
HCM 95th %tile Q(veh)	0	0.7	-	-	0.5	-

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	422	149	215	471	280	479
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	185			275	0	0
Storage Lanes	1			1	2	1
Taper Length (ft)	300				25	
Lane Util. Factor	0.97	1.00	1.00	0.88	0.97	1.00
Frt				0.850		0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	3433	1881	1881	2787	3467	1599
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	3433	1881	1881	2787	3467	1599
Right Turn on Red				No		Yes
Satd. Flow (RTOR)						504
Link Speed (mph)		40	40		35	
Link Distance (ft)		880	355		860	
Travel Time (s)		15.0	6.1		16.8	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	2%	1%	1%	2%	1%	1%
Adj. Flow (vph)	444	157	226	496	295	504
Shared Lane Traffic (%)						
Lane Group Flow (vph)	444	157	226	496	295	504
Turn Type	Prot	NA	NA	pt+ov	Prot	Free
Protected Phases	5	2	6	6 4	4	
Permitted Phases						Free
Detector Phase	5	2	6	6 4	4	
Switch Phase						
Minimum Initial (s)	7.0	15.0	15.0		7.0	
Minimum Split (s)	13.0	21.0	21.0		13.0	
Total Split (s)	16.0	37.0	21.0		13.0	
Total Split (%)	32.0%	74.0%	42.0%		26.0%	
Yellow Time (s)	4.5	5.0	5.0		4.5	
All-Red Time (s)	1.0	1.0	1.0		1.0	
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	
Total Lost Time (s)	5.5	6.0	6.0		5.5	
Lead/Lag	Lead		Lag			
Lead-Lag Optimize?	Yes		Yes			
Recall Mode	None	Min	Min		None	
Act Effct Green (s)	10.0	30.5	15.0	27.9	7.4	49.4
Actuated g/C Ratio	0.20	0.62	0.30	0.56	0.15	1.00
v/c Ratio	0.64	0.14	0.40	0.31	0.57	0.32
Control Delay	22.9	4.3	16.4	6.5	24.5	0.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	22.9	4.3	16.4	6.5	24.5	0.5
LOS	C	A	B	A	C	A
Approach Delay		18.0	9.6		9.4	
Approach LOS		B	A		A	
Queue Length 50th (ft)	61	16	52	38	42	0
Queue Length 95th (ft)	98	32	100	61	73	0

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Internal Link Dist (ft)		800	275		780	
Turn Bay Length (ft)	185			275		
Base Capacity (vph)	730	1181	571	1581	527	1599
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	0.61	0.13	0.40	0.31	0.56	0.32

Intersection Summary

Area Type: Other
Cycle Length: 50
Actuated Cycle Length: 49.4
Natural Cycle: 50
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.64
Intersection Signal Delay: 11.9 Intersection LOS: B
Intersection Capacity Utilization 46.7% ICU Level of Service A
Analysis Period (min) 15

Splits and Phases: 1: Memorial Drive & Piedmont Drive

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	277	161	42	437	240	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	11	11	11	11
Storage Length (ft)		190	375		0	155
Storage Lanes		1	1		2	1
Taper Length (ft)			300		25	
Lane Util. Factor	0.95	1.00	1.00	0.95	0.97	1.00
Frt		0.850				0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	3505	1599	1711	3455	3319	1501
Flt Permitted			0.950		0.950	
Satd. Flow (perm)	3505	1599	1711	3455	3319	1501
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		179				28
Link Speed (mph)	40			40	35	
Link Distance (ft)	319			492	324	
Travel Time (s)	5.4			8.4	6.3	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	3%	1%	2%	1%	2%	4%
Adj. Flow (vph)	308	179	47	486	267	28
Shared Lane Traffic (%)						
Lane Group Flow (vph)	308	179	47	486	267	28
Turn Type	NA	Free	Prot	NA	Prot	Perm
Protected Phases	2		1	6	3	
Permitted Phases		Free				3
Detector Phase	2		1	6	3	3
Switch Phase						
Minimum Initial (s)	18.0		7.0	18.0	5.0	5.0
Minimum Split (s)	24.0		12.0	24.0	11.0	11.0
Total Split (s)	25.0		12.0	37.0	13.0	13.0
Total Split (%)	50.0%		24.0%	74.0%	26.0%	26.0%
Yellow Time (s)	5.0		4.0	5.0	4.0	4.0
All-Red Time (s)	1.0		1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0		5.0	6.0	5.0	5.0
Lead/Lag	Lag		Lead			
Lead-Lag Optimize?	Yes		Yes			
Recall Mode	Min		None	Min	None	None
Act Effct Green (s)	19.3	42.3	7.1	23.4	7.7	7.7
Actuated g/C Ratio	0.46	1.00	0.17	0.55	0.18	0.18
v/c Ratio	0.19	0.11	0.16	0.25	0.44	0.09
Control Delay	8.9	0.1	18.8	5.2	19.1	9.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	8.9	0.1	18.8	5.2	19.1	9.3
LOS	A	A	B	A	B	A
Approach Delay	5.7			6.4	18.2	
Approach LOS	A			A	B	
Queue Length 50th (ft)	16	0	8	26	23	0

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Queue Length 95th (ft)	53	0	35	43	64	17
Internal Link Dist (ft)	239			412	244	
Turn Bay Length (ft)		190	375			155
Base Capacity (vph)	1664	1599	288	2690	639	311
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	0.19	0.11	0.16	0.18	0.42	0.09

Intersection Summary

Area Type: Other
Cycle Length: 50
Actuated Cycle Length: 42.3
Natural Cycle: 50
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.44
Intersection Signal Delay: 8.8 Intersection LOS: A
Intersection Capacity Utilization 41.0% ICU Level of Service A
Analysis Period (min) 15

Splits and Phases: 2: Park Avenue & Memorial Drive

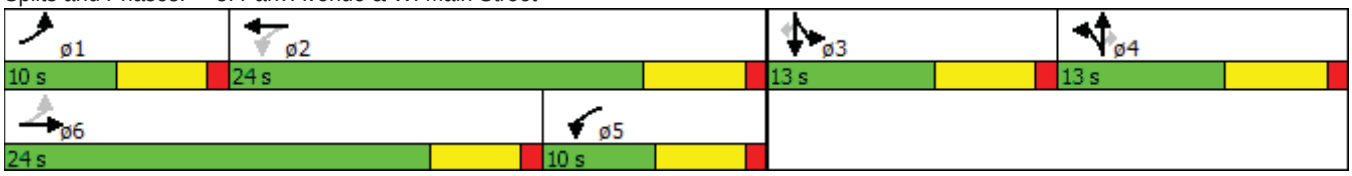
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	28	220	0	28	245	215	5	7	23	149	3	37
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	11	11	12	12	12	12	12	11	12
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.930				0.850			0.850
Flt Protected	0.950			0.950				0.981			0.953	
Satd. Flow (prot)	1736	1863	0	1745	1691	0	0	1864	1615	0	1733	1615
Flt Permitted	0.203			0.611				0.981			0.953	
Satd. Flow (perm)	371	1863	0	1122	1691	0	0	1864	1615	0	1733	1615
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					76				327			327
Link Speed (mph)		25			25			20			35	
Link Distance (ft)		614			447			270			840	
Travel Time (s)		16.7			12.2			9.2			16.4	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	4%	2%	0%	0%	1%	1%	0%	0%	0%	1%	0%	0%
Adj. Flow (vph)	30	237	0	30	263	231	5	8	25	160	3	40
Shared Lane Traffic (%)												
Lane Group Flow (vph)	30	237	0	30	494	0	0	13	25	0	163	40
Turn Type	pm+pt	NA		pm+pt	NA		Split	NA	Perm	Split	NA	Perm
Protected Phases	1	6		5	2		4	4		3	3	
Permitted Phases	6			2					4			3
Detector Phase	1	6		5	2		4	4	4	3	3	3
Switch Phase												
Minimum Initial (s)	5.0	18.0		5.0	18.0		7.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	10.0	23.0		10.0	24.0		13.0	13.0	13.0	13.0	13.0	13.0
Total Split (s)	10.0	24.0		10.0	24.0		13.0	13.0	13.0	13.0	13.0	13.0
Total Split (%)	16.7%	40.0%		16.7%	40.0%		21.7%	21.7%	21.7%	21.7%	21.7%	21.7%
Yellow Time (s)	4.0	4.0		4.0	4.5		4.5	4.5	4.5	4.5	4.5	4.5
All-Red Time (s)	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
Total Lost Time (s)	5.0	5.0		5.0	5.5			5.5	5.5		5.5	5.5
Lead/Lag	Lead	Lead		Lag	Lag		Lag	Lag	Lag	Lead	Lead	Lead
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	Min		None	Min		None	None	None	None	None	None
Act Effct Green (s)	22.4	22.4		26.2	22.0			7.3	7.3		7.8	7.8
Actuated g/C Ratio	0.46	0.46		0.54	0.45			0.15	0.15		0.16	0.16
v/c Ratio	0.09	0.28		0.04	0.61			0.05	0.05		0.59	0.08
Control Delay	13.2	13.0		12.2	17.6			22.3	0.2		33.2	0.3
Queue Delay	0.0	0.0		0.0	0.0			0.0	0.0		0.0	0.0
Total Delay	13.2	13.0		12.2	17.6			22.3	0.2		33.2	0.3
LOS	B	B		B	B			C	A		C	A
Approach Delay		13.0			17.3			7.8			26.7	
Approach LOS		B			B			A			C	
Queue Length 50th (ft)	3	23		1	48			2	0		29	0
Queue Length 95th (ft)	23	119		23	#299			18	0		#142	0
Internal Link Dist (ft)		534			367			190			760	
Turn Bay Length (ft)												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Base Capacity (vph)	317	866		670	809			300	534		279	534
Starvation Cap Reductn	0	0		0	0			0	0		0	0
Spillback Cap Reductn	0	0		0	0			0	0		0	0
Storage Cap Reductn	0	0		0	0			0	0		0	0
Reduced v/c Ratio	0.09	0.27		0.04	0.61			0.04	0.05		0.58	0.07

Intersection Summary

Area Type: Other
Cycle Length: 60
Actuated Cycle Length: 48.8
Natural Cycle: 60
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.61
Intersection Signal Delay: 17.7 Intersection LOS: B
Intersection Capacity Utilization 51.5% ICU Level of Service A
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 3: Park Avenue & W. Main Street



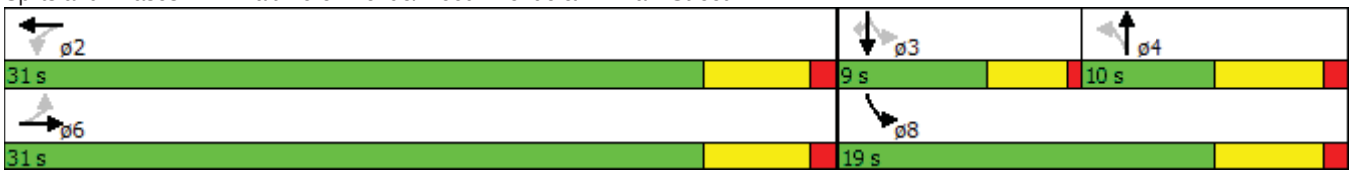
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	207	2	53	216	0	4	0	40	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.999						0.876				
Flt Protected					0.990			0.996				
Satd. Flow (prot)	0	1861	0	0	1866	0	0	1554	0	0	1900	1900
Flt Permitted					0.918			0.950				
Satd. Flow (perm)	0	1861	0	0	1730	0	0	1482	0	0	1900	1900
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		1						120				
Link Speed (mph)		25			25			25			20	
Link Distance (ft)		1744			294			483			436	
Travel Time (s)		47.6			8.0			13.2			14.9	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	0%	2%	0%	0%	1%	0%	25%	0%	5%	0%	0%	0%
Adj. Flow (vph)	0	220	2	56	230	0	4	0	43	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	222	0	0	286	0	0	47	0	0	0	0
Turn Type		NA		Perm	NA		Perm	NA				Perm
Protected Phases		6			2			4!		8!	3	
Permitted Phases	6			2			4			3		3
Detector Phase	6	6		2	2		4	4		8	3	3
Switch Phase												
Minimum Initial (s)	25.0	25.0		25.0	25.0		5.0	5.0		5.0	5.0	5.0
Minimum Split (s)	30.0	30.0		30.0	30.0		10.0	10.0		10.0	9.0	9.0
Total Split (s)	31.0	31.0		31.0	31.0		10.0	10.0		19.0	9.0	9.0
Total Split (%)	62.0%	62.0%		62.0%	62.0%		20.0%	20.0%		38.0%	18.0%	18.0%
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	3.0	3.0
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	0.5	0.5
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	0.0
Total Lost Time (s)		5.0			5.0			5.0			3.5	3.5
Lead/Lag							Lag	Lag			Lead	Lead
Lead-Lag Optimize?							Yes	Yes			Yes	Yes
Recall Mode	Min	Min		Min	Min		None	None		None	None	None
Act Effct Green (s)		36.6			36.6			5.2				
Actuated g/C Ratio		0.85			0.85			0.12				
v/c Ratio		0.14			0.20			0.17				
Control Delay		2.5			2.7			1.8				
Queue Delay		0.0			0.0			0.0				
Total Delay		2.5			2.7			1.8				
LOS		A			A			A				
Approach Delay		2.5			2.7			1.8				
Approach LOS		A			A			A				
Queue Length 50th (ft)		0			0			0				
Queue Length 95th (ft)		34			46			4				
Internal Link Dist (ft)		1664			214			403			356	
Turn Bay Length (ft)												
Base Capacity (vph)		1595			1482			284				

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Starvation Cap Reductn		0			0			0				
Spillback Cap Reductn		0			0			0				
Storage Cap Reductn		0			0			0				
Reduced v/c Ratio		0.14			0.19			0.17				

Intersection Summary

Area Type: Other
Cycle Length: 50
Actuated Cycle Length: 43.2
Natural Cycle: 50
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.20
Intersection Signal Delay: 2.5 Intersection LOS: A
Intersection Capacity Utilization 58.3% ICU Level of Service B
Analysis Period (min) 15
! Phase conflict between lane groups.

Splits and Phases: 4: Baltimore Avenue/Wood Avenue & W. Main Street



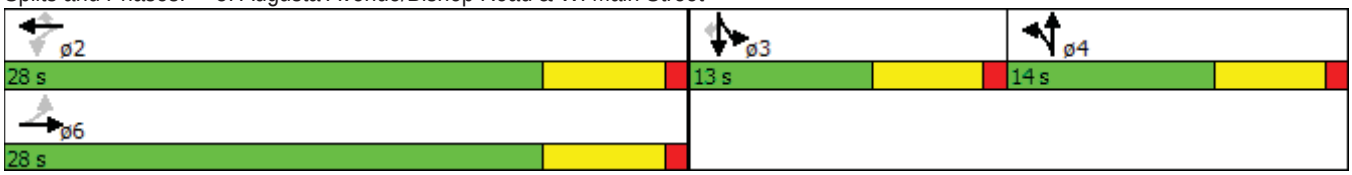
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	37	178	37	4	200	12	54	40	8	10	64	44
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	10	8	12	8	12	10	10	12
Storage Length (ft)	0		0	0		0	0		0	125		0
Storage Lanes	0		0	0		1	0		0	1		1
Taper Length (ft)	25			25			25			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		0.980				0.850		0.990				0.850
Flt Protected		0.993			0.999			0.974		0.950		
Satd. Flow (prot)	0	1795	0	0	1730	1400	0	1524	0	1685	1773	1615
Flt Permitted		0.935			0.995			0.974		0.950		
Satd. Flow (perm)	0	1690	0	0	1723	1400	0	1524	0	1685	1773	1615
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		19				159		6				169
Link Speed (mph)		25			25			25			30	
Link Distance (ft)		555			1744			400			838	
Travel Time (s)		15.1			47.6			10.9			19.0	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	0%	2%	11%	25%	2%	0%	6%	0%	13%	0%	0%	0%
Adj. Flow (vph)	39	187	39	4	211	13	57	42	8	11	67	46
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	265	0	0	215	13	0	107	0	11	67	46
Turn Type	Perm	NA		Perm	NA	Perm	Split	NA		Split	NA	Perm
Protected Phases		6			2		4	4		3	3	
Permitted Phases	6			2		2						3
Detector Phase	6	6		2	2	2	4	4		3	3	3
Switch Phase												
Minimum Initial (s)	22.0	22.0		22.0	22.0	22.0	7.0	7.0		7.0	7.0	7.0
Minimum Split (s)	28.0	28.0		28.0	28.0	28.0	13.0	13.0		13.0	13.0	13.0
Total Split (s)	28.0	28.0		28.0	28.0	28.0	14.0	14.0		13.0	13.0	13.0
Total Split (%)	50.9%	50.9%		50.9%	50.9%	50.9%	25.5%	25.5%		23.6%	23.6%	23.6%
Yellow Time (s)	5.0	5.0		5.0	5.0	5.0	4.5	4.5		4.5	4.5	4.5
All-Red Time (s)	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
Total Lost Time (s)		6.0			6.0	6.0		5.5		5.5	5.5	5.5
Lead/Lag							Lag	Lag		Lead	Lead	Lead
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	Yes
Recall Mode	Min	Min		Min	Min	Min	None	None		None	None	None
Act Effct Green (s)		30.2			30.2	30.2		8.3		7.7	7.7	7.7
Actuated g/C Ratio		0.64			0.64	0.64		0.18		0.16	0.16	0.16
v/c Ratio		0.24			0.19	0.01		0.39		0.04	0.23	0.11
Control Delay		9.9			10.3	0.0		24.0		21.2	22.8	0.6
Queue Delay		0.0			0.0	0.0		0.0		0.0	0.0	0.0
Total Delay		9.9			10.3	0.0		24.0		21.2	22.8	0.6
LOS		A			B	A		C		C	C	A
Approach Delay		9.9			9.7			24.0			14.4	
Approach LOS		A			A			C			B	
Queue Length 50th (ft)		54			46	0		30		3	20	0

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)		104			88	0		70		15	50	0
Internal Link Dist (ft)		475			1664			320			758	
Turn Bay Length (ft)										125		
Base Capacity (vph)		1088			1103	953		299		286	301	415
Starvation Cap Reductn		0			0	0		0		0	0	0
Spillback Cap Reductn		0			0	0		0		0	0	0
Storage Cap Reductn		0			0	0		0		0	0	0
Reduced v/c Ratio		0.24			0.19	0.01		0.36		0.04	0.22	0.11

Intersection Summary

Area Type: Other
Cycle Length: 55
Actuated Cycle Length: 47.2
Natural Cycle: 55
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.39
Intersection Signal Delay: 12.7 Intersection LOS: B
Intersection Capacity Utilization 63.5% ICU Level of Service B
Analysis Period (min) 15

Splits and Phases: 5: Augusta Avenue/Bishop Road & W. Main Street



Intersection	
Int Delay, s/veh	1.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	512	6	118	573	4	105
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	270	-	0	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	2	0	1	2	0	1
Mvmt Flow	533	6	123	597	4	109

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	540	0	1080	270
Stage 1	-	-	-	-	536	-
Stage 2	-	-	-	-	544	-
Critical Hdwy	-	-	4.12	-	6.8	6.92
Critical Hdwy Stg 1	-	-	-	-	5.8	-
Critical Hdwy Stg 2	-	-	-	-	5.8	-
Follow-up Hdwy	-	-	2.21	-	3.5	3.31
Pot Cap-1 Maneuver	-	-	1032	-	216	731
Stage 1	-	-	-	-	556	-
Stage 2	-	-	-	-	551	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1032	-	190	731
Mov Cap-2 Maneuver	-	-	-	-	323	-
Stage 1	-	-	-	-	556	-
Stage 2	-	-	-	-	485	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.5	11
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	323	731	-	-	1032	-
HCM Lane V/C Ratio	0.013	0.15	-	-	0.119	-
HCM Control Delay (s)	16.3	10.8	-	-	9	-
HCM Lane LOS	C	B	-	-	A	-
HCM 95th %tile Q(veh)	0	0.5	-	-	0.4	-

APPENDIX F

LEVEL OF SERVICE METHODS AND CRITERIA

METHODOLOGY AND CRITERIA USED FOR THE LEVEL OF SERVICE ANALYSIS

All analyses were completed using the methodology outlined in the Highway Capacity Manual (HCM) 2010 published by the Transportation Research Board. The computer software package of Synchro (Version 8) was utilized to perform all signalized and unsignalized analyses at the study intersections.

The HCM 2010 defines capacity as "the maximum sustainable hourly flow rate at which persons or vehicles reasonably can be expected to traverse a point or a uniform section of a lane or roadway during a given time period under prevailing roadway, environmental, traffic, and control conditions". Level of service (LOS) is a term used to represent different driving conditions, and is defined as "a qualitative stratification of a performance measure or measures that represent quality of service". Level of service varies from Level "A" representing free flow to Level "F" where greater vehicle delays are evident. Refer to the Table below for a summary of levels of service and related average control delay per vehicle for both signalized and unsignalized intersections. Control delay as defined by the HCM includes "vehicles slowing in advance of an intersection, the time spent stopped on an intersection approach, the time spent as vehicles move up in the queue, and the time needed for vehicles to accelerate to their desired speed". As shown in the Table, a control delay of 40 seconds at a signalized intersection results in a LOS D operation.

TABLE
HCM Levels of Service and Delay

Level of Service (LOS)	Control Delays (sec/vehc)	
	Signalized	**Unsignalized**
A	≤ 10	0-10
B	> 10-20	> 10-15
C	> 20-35	> 15-25
D	> 35-55	> 25-35
E	> 55-80	> 35-50
F	> 80	> 50

APPENDIX G

FUTURE NO BUILD (YEAR 2035 AND 2040) INTERSECTION LEVEL OF SERVICE ANALYSIS

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	504	286	99	240	458	324
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	185			275	0	0
Storage Lanes	1			1	2	1
Taper Length (ft)	300				25	
Lane Util. Factor	0.97	1.00	1.00	0.88	0.97	1.00
Frt				0.850		0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	3335	1810	1743	2707	3367	1524
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	3335	1810	1743	2707	3367	1524
Right Turn on Red				No		Yes
Satd. Flow (RTOR)						410
Link Speed (mph)		40	40		35	
Link Distance (ft)		880	355		860	
Travel Time (s)		15.0	6.1		16.8	
Peak Hour Factor	0.79	0.79	0.79	0.79	0.79	0.79
Heavy Vehicles (%)	5%	5%	9%	5%	4%	6%
Adj. Flow (vph)	638	362	125	304	580	410
Shared Lane Traffic (%)						
Lane Group Flow (vph)	638	362	125	304	580	410
Turn Type	Prot	NA	NA	pt+ov	Prot	Free
Protected Phases	5	2	6	6 4	4	
Permitted Phases						Free
Detector Phase	5	2	6	6 4	4	
Switch Phase						
Minimum Initial (s)	7.0	15.0	15.0		7.0	
Minimum Split (s)	13.0	21.0	21.0		13.0	
Total Split (s)	20.0	42.0	22.0		18.0	
Total Split (%)	33.3%	70.0%	36.7%		30.0%	
Yellow Time (s)	4.5	5.0	5.0		4.5	
All-Red Time (s)	1.0	1.0	1.0		1.0	
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	
Total Lost Time (s)	5.5	6.0	6.0		5.5	
Lead/Lag	Lead		Lag			
Lead-Lag Optimize?	Yes		Yes			
Recall Mode	None	Min	Min		None	
Act Effct Green (s)	14.0	34.6	15.2	32.9	12.3	58.4
Actuated g/C Ratio	0.24	0.59	0.26	0.56	0.21	1.00
v/c Ratio	0.80	0.34	0.28	0.20	0.82	0.27
Control Delay	30.3	7.2	19.6	6.8	34.1	0.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	30.3	7.2	19.6	6.8	34.1	0.4
LOS	C	A	B	A	C	A
Approach Delay		22.0	10.5		20.2	
Approach LOS		C	B		C	
Queue Length 50th (ft)	108	57	36	27	101	0
Queue Length 95th (ft)	138	82	64	38	130	0

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Internal Link Dist (ft)		800	275		780	
Turn Bay Length (ft)	185			275		
Base Capacity (vph)	829	1117	478	1299	721	1524
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	0.77	0.32	0.26	0.23	0.80	0.27

Intersection Summary

Area Type: Other
Cycle Length: 60
Actuated Cycle Length: 58.4
Natural Cycle: 60
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.82
Intersection Signal Delay: 19.2 Intersection LOS: B
Intersection Capacity Utilization 43.7% ICU Level of Service A
Analysis Period (min) 15

Splits and Phases: 1: Memorial Drive & Piedmont Drive

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	610	154	21	251	110	17
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	11	11	11	11
Storage Length (ft)		190	375		0	155
Storage Lanes		1	1		2	1
Taper Length (ft)			300		25	
Lane Util. Factor	0.95	1.00	1.00	0.95	0.97	1.00
Frt		0.850				0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	3471	1583	1586	3231	3286	1473
Flt Permitted			0.950		0.950	
Satd. Flow (perm)	3471	1583	1586	3231	3286	1473
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		197				22
Link Speed (mph)	40			40	35	
Link Distance (ft)	319			492	324	
Travel Time (s)	5.4			8.4	6.3	
Peak Hour Factor	0.78	0.78	0.78	0.78	0.78	0.78
Heavy Vehicles (%)	4%	2%	10%	8%	3%	6%
Adj. Flow (vph)	782	197	27	322	141	22
Shared Lane Traffic (%)						
Lane Group Flow (vph)	782	197	27	322	141	22
Turn Type	NA	Free	Prot	NA	Prot	Perm
Protected Phases	2		1	6	3	
Permitted Phases		Free				3
Detector Phase	2		1	6	3	3
Switch Phase						
Minimum Initial (s)	18.0		7.0	18.0	5.0	5.0
Minimum Split (s)	24.0		12.0	24.0	11.0	11.0
Total Split (s)	27.0		12.0	39.0	11.0	11.0
Total Split (%)	54.0%		24.0%	78.0%	22.0%	22.0%
Yellow Time (s)	5.0		4.0	5.0	4.0	4.0
All-Red Time (s)	1.0		1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0		5.0	6.0	5.0	5.0
Lead/Lag	Lag		Lead			
Lead-Lag Optimize?	Yes		Yes			
Recall Mode	Min		None	Min	None	None
Act Effct Green (s)	23.8	39.5	7.1	25.7	6.0	6.0
Actuated g/C Ratio	0.60	1.00	0.18	0.65	0.15	0.15
v/c Ratio	0.37	0.12	0.09	0.15	0.28	0.09
Control Delay	7.1	0.2	16.2	4.0	17.5	10.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	7.1	0.2	16.2	4.0	17.5	10.1
LOS	A	A	B	A	B	B
Approach Delay	5.7			5.0	16.5	
Approach LOS	A			A	B	
Queue Length 50th (ft)	40	0	4	14	12	0

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Queue Length 95th (ft)	104	0	21	21	35	13
Internal Link Dist (ft)	239			412	244	
Turn Bay Length (ft)		190	375			155
Base Capacity (vph)	2206	1583	286	2845	507	246
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	0.35	0.12	0.09	0.11	0.28	0.09

Intersection Summary

Area Type: Other
Cycle Length: 50
Actuated Cycle Length: 39.5
Natural Cycle: 50
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.37
Intersection Signal Delay: 6.7 Intersection LOS: A
Intersection Capacity Utilization 30.8% ICU Level of Service A
Analysis Period (min) 15

Splits and Phases: 2: Park Avenue & Memorial Drive

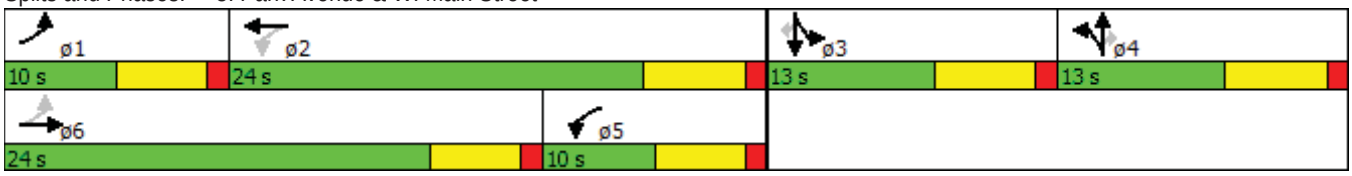
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	13	201	2	8	126	102	0	1	10	142	0	21
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	11	11	12	12	12	12	12	11	12
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.998			0.933				0.850			0.850
Flt Protected	0.950			0.950							0.950	
Satd. Flow (prot)	1805	1797	0	1745	1605	0	0	1900	1468	0	1678	1417
Flt Permitted	0.427			0.596							0.950	
Satd. Flow (perm)	811	1797	0	1095	1605	0	0	1900	1468	0	1678	1417
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		1			70				327			327
Link Speed (mph)		25			25			20			35	
Link Distance (ft)		614			447			270			840	
Travel Time (s)		16.7			12.2			9.2			16.4	
Peak Hour Factor	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77
Heavy Vehicles (%)	0%	5%	50%	0%	9%	4%	0%	0%	10%	4%	0%	14%
Adj. Flow (vph)	17	261	3	10	164	132	0	1	13	184	0	27
Shared Lane Traffic (%)												
Lane Group Flow (vph)	17	264	0	10	296	0	0	1	13	0	184	27
Turn Type	pm+pt	NA		pm+pt	NA			NA	Perm	Split	NA	Perm
Protected Phases	1	6		5	2		4	4		3	3	
Permitted Phases	6			2					4			3
Detector Phase	1	6		5	2		4	4	4	3	3	3
Switch Phase												
Minimum Initial (s)	5.0	18.0		5.0	18.0		7.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	10.0	23.0		10.0	24.0		13.0	13.0	13.0	13.0	13.0	13.0
Total Split (s)	10.0	24.0		10.0	24.0		13.0	13.0	13.0	13.0	13.0	13.0
Total Split (%)	16.7%	40.0%		16.7%	40.0%		21.7%	21.7%	21.7%	21.7%	21.7%	21.7%
Yellow Time (s)	4.0	4.0		4.0	4.5		4.5	4.5	4.5	4.5	4.5	4.5
All-Red Time (s)	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
Total Lost Time (s)	5.0	5.0		5.0	5.5			5.5	5.5		5.5	5.5
Lead/Lag	Lead	Lead		Lag	Lag		Lag	Lag	Lag	Lead	Lead	Lead
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	Min		None	Min		None	None	None	None	None	None
Act Effct Green (s)	22.0	22.0		26.4	21.4			7.3	7.3		7.8	7.8
Actuated g/C Ratio	0.50	0.50		0.60	0.49			0.17	0.17		0.18	0.18
v/c Ratio	0.03	0.29		0.01	0.36			0.00	0.03		0.62	0.05
Control Delay	9.6	10.1		8.4	9.1			19.0	0.1		31.2	0.2
Queue Delay	0.0	0.0		0.0	0.0			0.0	0.0		0.0	0.0
Total Delay	9.6	10.1		8.4	9.1			19.0	0.1		31.2	0.2
LOS	A	B		A	A			B	A		C	A
Approach Delay		10.1			9.1			1.4			27.2	
Approach LOS		B			A			A			C	
Queue Length 50th (ft)	1	26		1	23			0	0		33	0
Queue Length 95th (ft)	13	109		10	102			4	0		#131	0
Internal Link Dist (ft)		534			367			190			760	
Turn Bay Length (ft)												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Base Capacity (vph)	521	910		733	829			337	529		297	520
Starvation Cap Reductn	0	0		0	0			0	0		0	0
Spillback Cap Reductn	0	0		0	0			0	0		0	0
Storage Cap Reductn	0	0		0	0			0	0		0	0
Reduced v/c Ratio	0.03	0.29		0.01	0.36			0.00	0.02		0.62	0.05

Intersection Summary

Area Type: Other
Cycle Length: 60
Actuated Cycle Length: 44.1
Natural Cycle: 60
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.62
Intersection Signal Delay: 14.0 Intersection LOS: B
Intersection Capacity Utilization 42.0% ICU Level of Service A
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 3: Park Avenue & W. Main Street



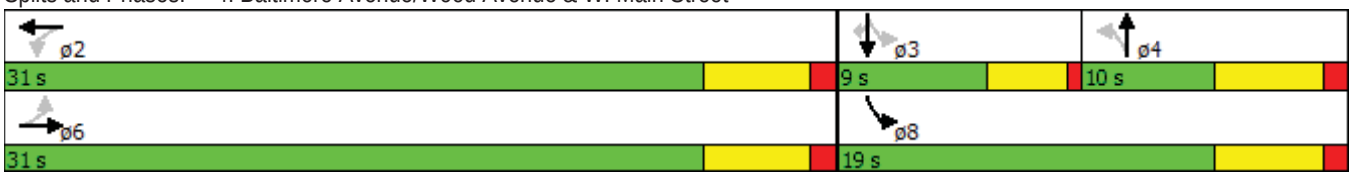
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	191	6	17	124	1	2	0	32	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.996			0.999			0.872				
Flt Protected					0.994			0.998				
Satd. Flow (prot)	0	1805	0	0	1724	0	0	1608	0	0	1900	1900
Flt Permitted					0.961			0.950				
Satd. Flow (perm)	0	1805	0	0	1666	0	0	1530	0	0	1900	1900
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		5			1			120				
Link Speed (mph)		25			25			25			20	
Link Distance (ft)		1744			294			483			436	
Travel Time (s)		47.6			8.0			13.2			14.9	
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Heavy Vehicles (%)	0%	5%	0%	6%	10%	0%	0%	0%	3%	0%	0%	0%
Adj. Flow (vph)	0	233	7	21	151	1	2	0	39	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	240	0	0	173	0	0	41	0	0	0	0
Turn Type		NA		Perm	NA		Perm	NA				Perm
Protected Phases		6			2			4!		8!	3	
Permitted Phases	6			2			4			3		3
Detector Phase	6	6		2	2		4	4		8	3	3
Switch Phase												
Minimum Initial (s)	25.0	25.0		25.0	25.0		5.0	5.0		5.0	5.0	5.0
Minimum Split (s)	30.0	30.0		30.0	30.0		10.0	10.0		10.0	9.0	9.0
Total Split (s)	31.0	31.0		31.0	31.0		10.0	10.0		19.0	9.0	9.0
Total Split (%)	62.0%	62.0%		62.0%	62.0%		20.0%	20.0%		38.0%	18.0%	18.0%
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	3.0	3.0
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	0.5	0.5
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	0.0
Total Lost Time (s)		5.0			5.0			5.0			3.5	3.5
Lead/Lag							Lag	Lag			Lead	Lead
Lead-Lag Optimize?							Yes	Yes			Yes	Yes
Recall Mode	Min	Min		Min	Min		None	None		None	None	None
Act Effct Green (s)		37.2			37.2			5.2				
Actuated g/C Ratio		0.85			0.85			0.12				
v/c Ratio		0.16			0.12			0.14				
Control Delay		2.4			2.4			1.0				
Queue Delay		0.0			0.0			0.0				
Total Delay		2.4			2.4			1.0				
LOS		A			A			A				
Approach Delay		2.4			2.4			1.0				
Approach LOS		A			A			A				
Queue Length 50th (ft)		0			0			0				
Queue Length 95th (ft)		33			25			0				
Internal Link Dist (ft)		1664			214			403			356	
Turn Bay Length (ft)												
Base Capacity (vph)		1547			1427			288				

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Starvation Cap Reductn		0			0			0				
Spillback Cap Reductn		0			0			0				
Storage Cap Reductn		0			0			0				
Reduced v/c Ratio		0.16			0.12			0.14				

Intersection Summary

Area Type: Other
Cycle Length: 50
Actuated Cycle Length: 43.7
Natural Cycle: 50
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.16
Intersection Signal Delay: 2.3 Intersection LOS: A
Intersection Capacity Utilization 33.4% ICU Level of Service A
Analysis Period (min) 15
! Phase conflict between lane groups.

Splits and Phases: 4: Baltimore Avenue/Wood Avenue & W. Main Street



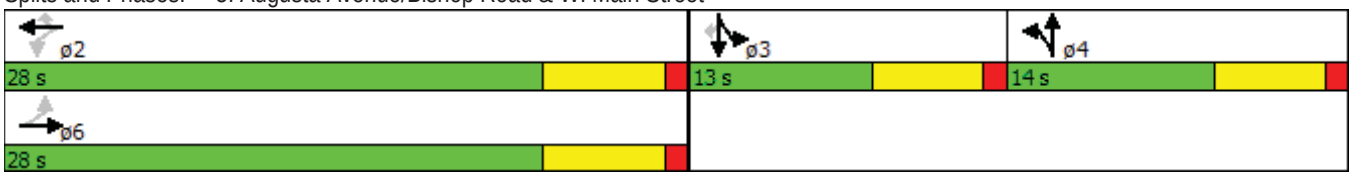
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	63	172	37	4	105	7	50	51	4	14	35	79
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	10	8	12	8	12	10	10	12
Storage Length (ft)	0		0	0		0	0		0	125		0
Storage Lanes	0		0	0		1	0		0	1		1
Taper Length (ft)	25			25			25			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		0.981				0.850		0.995				0.850
Flt Protected		0.989			0.998			0.977		0.950		
Satd. Flow (prot)	0	1789	0	0	1704	1085	0	1436	0	1574	1598	1553
Flt Permitted		0.900			0.987			0.977		0.950		
Satd. Flow (perm)	0	1628	0	0	1685	1085	0	1436	0	1574	1598	1553
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		17				159		3				169
Link Speed (mph)		25			25			25			30	
Link Distance (ft)		555			1744			400			838	
Travel Time (s)		15.1			47.6			10.9			19.0	
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Heavy Vehicles (%)	5%	3%	0%	0%	4%	29%	18%	4%	25%	7%	11%	4%
Adj. Flow (vph)	76	207	45	5	127	8	60	61	5	17	42	95
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	328	0	0	132	8	0	126	0	17	42	95
Turn Type	Perm	NA		Perm	NA	Perm	Split	NA		Split	NA	Perm
Protected Phases		6			2		4	4		3	3	
Permitted Phases	6			2		2						3
Detector Phase	6	6		2	2	2	4	4		3	3	3
Switch Phase												
Minimum Initial (s)	22.0	22.0		22.0	22.0	22.0	7.0	7.0		7.0	7.0	7.0
Minimum Split (s)	28.0	28.0		28.0	28.0	28.0	13.0	13.0		13.0	13.0	13.0
Total Split (s)	28.0	28.0		28.0	28.0	28.0	14.0	14.0		13.0	13.0	13.0
Total Split (%)	50.9%	50.9%		50.9%	50.9%	50.9%	25.5%	25.5%		23.6%	23.6%	23.6%
Yellow Time (s)	5.0	5.0		5.0	5.0	5.0	4.5	4.5		4.5	4.5	4.5
All-Red Time (s)	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
Total Lost Time (s)		6.0			6.0	6.0		5.5		5.5	5.5	5.5
Lead/Lag							Lag	Lag		Lead	Lead	Lead
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	Yes
Recall Mode	Min	Min		Min	Min	Min	None	None		None	None	None
Act Effct Green (s)		27.3			27.3	27.3		8.2		7.3	7.3	7.3
Actuated g/C Ratio		0.52			0.52	0.52		0.16		0.14	0.14	0.14
v/c Ratio		0.38			0.15	0.01		0.56		0.08	0.19	0.26
Control Delay		12.8			11.4	0.0		32.4		21.9	23.5	2.9
Queue Delay		0.0			0.0	0.0		0.0		0.0	0.0	0.0
Total Delay		12.8			11.4	0.0		32.4		21.9	23.5	2.9
LOS		B			B	A		C		C	C	A
Approach Delay		12.8			10.7			32.4			10.6	
Approach LOS		B			B			C			B	
Queue Length 50th (ft)		71			26	0		37		5	12	0

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)		119			52	0		#77		18	33	5
Internal Link Dist (ft)		475			1664			320			758	
Turn Bay Length (ft)										125		
Base Capacity (vph)		857			879	642		237		227	230	369
Starvation Cap Reductn		0			0	0		0		0	0	0
Spillback Cap Reductn		0			0	0		0		0	0	0
Storage Cap Reductn		0			0	0		0		0	0	0
Reduced v/c Ratio		0.38			0.15	0.01		0.53		0.07	0.18	0.26

Intersection Summary

Area Type: Other
Cycle Length: 55
Actuated Cycle Length: 52.4
Natural Cycle: 55
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.56
Intersection Signal Delay: 15.3 Intersection LOS: B
Intersection Capacity Utilization 57.1% 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: 5: Augusta Avenue/Bishop Road & W. Main Street



Intersection	
Int Delay, s/veh	2.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	779	3	117	306	2	115
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	270	-	0	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	89	89	89	89	89	89
Heavy Vehicles, %	6	0	5	5	0	4
Mvmt Flow	875	3	131	344	2	129

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	879	0	1312	439
Stage 1	-	-	-	-	877	-
Stage 2	-	-	-	-	435	-
Critical Hdwy	-	-	4.2	-	6.8	6.98
Critical Hdwy Stg 1	-	-	-	-	5.8	-
Critical Hdwy Stg 2	-	-	-	-	5.8	-
Follow-up Hdwy	-	-	2.25	-	3.5	3.34
Pot Cap-1 Maneuver	-	-	746	-	153	560
Stage 1	-	-	-	-	372	-
Stage 2	-	-	-	-	626	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	746	-	126	560
Mov Cap-2 Maneuver	-	-	-	-	253	-
Stage 1	-	-	-	-	372	-
Stage 2	-	-	-	-	516	-

Approach	EB	WB	NB
HCM Control Delay, s	0	3	13.4
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	253	560	-	-	746	-
HCM Lane V/C Ratio	0.009	0.231	-	-	0.176	-
HCM Control Delay (s)	19.4	13.3	-	-	10.9	-
HCM Lane LOS	C	B	-	-	B	-
HCM 95th %tile Q(veh)	0	0.9	-	-	0.6	-

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	599	149	215	471	280	680
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	185			275	0	0
Storage Lanes	1			1	2	1
Taper Length (ft)	300				25	
Lane Util. Factor	0.97	1.00	1.00	0.88	0.97	1.00
Frt				0.850		0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	3433	1881	1881	2787	3467	1599
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	3433	1881	1881	2787	3467	1599
Right Turn on Red				No		Yes
Satd. Flow (RTOR)						716
Link Speed (mph)		40	40		35	
Link Distance (ft)		880	355		860	
Travel Time (s)		15.0	6.1		16.8	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	2%	1%	1%	2%	1%	1%
Adj. Flow (vph)	631	157	226	496	295	716
Shared Lane Traffic (%)						
Lane Group Flow (vph)	631	157	226	496	295	716
Turn Type	Prot	NA	NA	pt+ov	Prot	Free
Protected Phases	5	2	6	6 4	4	
Permitted Phases						Free
Detector Phase	5	2	6	6 4	4	
Switch Phase						
Minimum Initial (s)	7.0	15.0	15.0		7.0	
Minimum Split (s)	13.0	21.0	21.0		13.0	
Total Split (s)	16.0	37.0	21.0		13.0	
Total Split (%)	32.0%	74.0%	42.0%		26.0%	
Yellow Time (s)	4.5	5.0	5.0		4.5	
All-Red Time (s)	1.0	1.0	1.0		1.0	
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	
Total Lost Time (s)	5.5	6.0	6.0		5.5	
Lead/Lag	Lead		Lag			
Lead-Lag Optimize?	Yes		Yes			
Recall Mode	None	Min	Min		None	
Act Effct Green (s)	10.5	31.0	15.0	27.9	7.4	49.9
Actuated g/C Ratio	0.21	0.62	0.30	0.56	0.15	1.00
v/c Ratio	0.87	0.13	0.40	0.32	0.57	0.45
Control Delay	35.7	4.3	16.5	6.6	24.7	0.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	35.7	4.3	16.5	6.6	24.7	0.9
LOS	D	A	B	A	C	A
Approach Delay		29.4	9.7		7.9	
Approach LOS		C	A		A	
Queue Length 50th (ft)	92	16	52	38	42	0
Queue Length 95th (ft)	#172	32	100	61	73	0

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Internal Link Dist (ft)		800	275		780	
Turn Bay Length (ft)	185			275		
Base Capacity (vph)	722	1168	565	1563	521	1599
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	0.87	0.13	0.40	0.32	0.57	0.45

Intersection Summary

Area Type: Other
Cycle Length: 50
Actuated Cycle Length: 49.9
Natural Cycle: 50
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.87
Intersection Signal Delay: 15.1 Intersection LOS: B
Intersection Capacity Utilization 51.7% ICU Level of Service A
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: Memorial Drive & Piedmont Drive

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	277	161	42	437	240	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	11	11	11	11
Storage Length (ft)		190	375		0	155
Storage Lanes		1	1		2	1
Taper Length (ft)			300		25	
Lane Util. Factor	0.95	1.00	1.00	0.95	0.97	1.00
Frt		0.850				0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	3505	1599	1711	3455	3319	1501
Flt Permitted			0.950		0.950	
Satd. Flow (perm)	3505	1599	1711	3455	3319	1501
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		179				28
Link Speed (mph)	40			40	35	
Link Distance (ft)	319			492	324	
Travel Time (s)	5.4			8.4	6.3	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	3%	1%	2%	1%	2%	4%
Adj. Flow (vph)	308	179	47	486	267	28
Shared Lane Traffic (%)						
Lane Group Flow (vph)	308	179	47	486	267	28
Turn Type	NA	Free	Prot	NA	Prot	Perm
Protected Phases	2		1	6	3	
Permitted Phases		Free				3
Detector Phase	2		1	6	3	3
Switch Phase						
Minimum Initial (s)	18.0		7.0	18.0	5.0	5.0
Minimum Split (s)	24.0		12.0	24.0	11.0	11.0
Total Split (s)	25.0		12.0	37.0	13.0	13.0
Total Split (%)	50.0%		24.0%	74.0%	26.0%	26.0%
Yellow Time (s)	5.0		4.0	5.0	4.0	4.0
All-Red Time (s)	1.0		1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0		5.0	6.0	5.0	5.0
Lead/Lag	Lag		Lead			
Lead-Lag Optimize?	Yes		Yes			
Recall Mode	Min		None	Min	None	None
Act Effct Green (s)	19.3	42.3	7.1	23.4	7.7	7.7
Actuated g/C Ratio	0.46	1.00	0.17	0.55	0.18	0.18
v/c Ratio	0.19	0.11	0.16	0.25	0.44	0.09
Control Delay	8.9	0.1	18.8	5.2	19.1	9.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	8.9	0.1	18.8	5.2	19.1	9.3
LOS	A	A	B	A	B	A
Approach Delay	5.7			6.4	18.2	
Approach LOS	A			A	B	
Queue Length 50th (ft)	16	0	8	26	23	0

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Queue Length 95th (ft)	53	0	35	43	64	17
Internal Link Dist (ft)	239			412	244	
Turn Bay Length (ft)		190	375			155
Base Capacity (vph)	1664	1599	288	2690	639	311
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	0.19	0.11	0.16	0.18	0.42	0.09

Intersection Summary

Area Type: Other
Cycle Length: 50
Actuated Cycle Length: 42.3
Natural Cycle: 50
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.44
Intersection Signal Delay: 8.8 Intersection LOS: A
Intersection Capacity Utilization 41.0% ICU Level of Service A
Analysis Period (min) 15

Splits and Phases: 2: Park Avenue & Memorial Drive

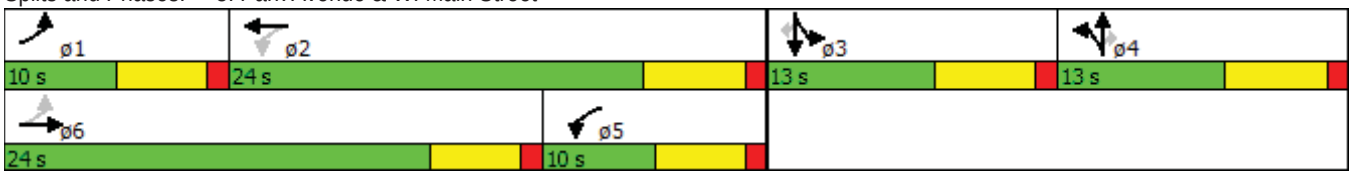
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	28	220	0	28	245	215	5	7	23	149	3	37
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	11	11	12	12	12	12	12	11	12
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.930				0.850			0.850
Flt Protected	0.950			0.950				0.981			0.953	
Satd. Flow (prot)	1736	1863	0	1745	1691	0	0	1864	1615	0	1733	1615
Flt Permitted	0.203			0.611				0.981			0.953	
Satd. Flow (perm)	371	1863	0	1122	1691	0	0	1864	1615	0	1733	1615
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					76				327			327
Link Speed (mph)		25			25			20			35	
Link Distance (ft)		614			447			270			840	
Travel Time (s)		16.7			12.2			9.2			16.4	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	4%	2%	0%	0%	1%	1%	0%	0%	0%	1%	0%	0%
Adj. Flow (vph)	30	237	0	30	263	231	5	8	25	160	3	40
Shared Lane Traffic (%)												
Lane Group Flow (vph)	30	237	0	30	494	0	0	13	25	0	163	40
Turn Type	pm+pt	NA		pm+pt	NA		Split	NA	Perm	Split	NA	Perm
Protected Phases	1	6		5	2		4	4		3	3	
Permitted Phases	6			2					4			3
Detector Phase	1	6		5	2		4	4	4	3	3	3
Switch Phase												
Minimum Initial (s)	5.0	18.0		5.0	18.0		7.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	10.0	23.0		10.0	24.0		13.0	13.0	13.0	13.0	13.0	13.0
Total Split (s)	10.0	24.0		10.0	24.0		13.0	13.0	13.0	13.0	13.0	13.0
Total Split (%)	16.7%	40.0%		16.7%	40.0%		21.7%	21.7%	21.7%	21.7%	21.7%	21.7%
Yellow Time (s)	4.0	4.0		4.0	4.5		4.5	4.5	4.5	4.5	4.5	4.5
All-Red Time (s)	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
Total Lost Time (s)	5.0	5.0		5.0	5.5			5.5	5.5		5.5	5.5
Lead/Lag	Lead	Lead		Lag	Lag		Lag	Lag	Lag	Lead	Lead	Lead
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	Min		None	Min		None	None	None	None	None	None
Act Effct Green (s)	22.4	22.4		26.2	22.0			7.3	7.3		7.8	7.8
Actuated g/C Ratio	0.46	0.46		0.54	0.45			0.15	0.15		0.16	0.16
v/c Ratio	0.09	0.28		0.04	0.61			0.05	0.05		0.59	0.08
Control Delay	13.2	13.0		12.2	17.6			22.3	0.2		33.2	0.3
Queue Delay	0.0	0.0		0.0	0.0			0.0	0.0		0.0	0.0
Total Delay	13.2	13.0		12.2	17.6			22.3	0.2		33.2	0.3
LOS	B	B		B	B			C	A		C	A
Approach Delay		13.0			17.3			7.8			26.7	
Approach LOS		B			B			A			C	
Queue Length 50th (ft)	3	23		1	48			2	0		29	0
Queue Length 95th (ft)	23	119		23	#299			18	0		#142	0
Internal Link Dist (ft)		534			367			190			760	
Turn Bay Length (ft)												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Base Capacity (vph)	317	866		670	809			300	534		279	534
Starvation Cap Reductn	0	0		0	0			0	0		0	0
Spillback Cap Reductn	0	0		0	0			0	0		0	0
Storage Cap Reductn	0	0		0	0			0	0		0	0
Reduced v/c Ratio	0.09	0.27		0.04	0.61			0.04	0.05		0.58	0.07

Intersection Summary

Area Type: Other
Cycle Length: 60
Actuated Cycle Length: 48.8
Natural Cycle: 60
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.61
Intersection Signal Delay: 17.7 Intersection LOS: B
Intersection Capacity Utilization 51.5% ICU Level of Service A
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 3: Park Avenue & W. Main Street



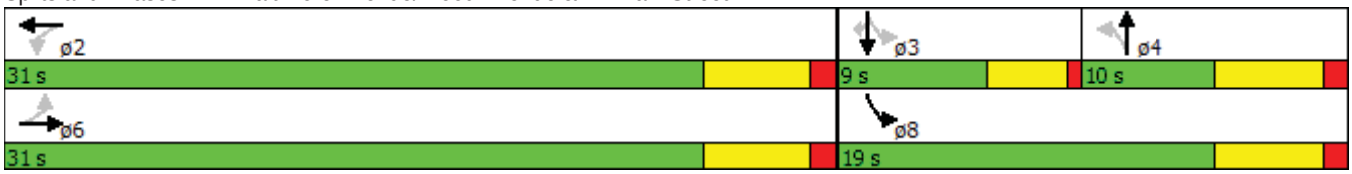
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	207	2	53	216	0	4	0	40	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.999						0.876				
Flt Protected					0.990			0.996				
Satd. Flow (prot)	0	1861	0	0	1866	0	0	1554	0	0	1900	1900
Flt Permitted					0.918			0.950				
Satd. Flow (perm)	0	1861	0	0	1730	0	0	1482	0	0	1900	1900
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		1						120				
Link Speed (mph)		25			25			25			20	
Link Distance (ft)		1744			294			483			436	
Travel Time (s)		47.6			8.0			13.2			14.9	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	0%	2%	0%	0%	1%	0%	25%	0%	5%	0%	0%	0%
Adj. Flow (vph)	0	220	2	56	230	0	4	0	43	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	222	0	0	286	0	0	47	0	0	0	0
Turn Type		NA		Perm	NA		Perm	NA				Perm
Protected Phases		6			2			4!		8!	3	
Permitted Phases	6			2			4			3		3
Detector Phase	6	6		2	2		4	4		8	3	3
Switch Phase												
Minimum Initial (s)	25.0	25.0		25.0	25.0		5.0	5.0		5.0	5.0	5.0
Minimum Split (s)	30.0	30.0		30.0	30.0		10.0	10.0		10.0	9.0	9.0
Total Split (s)	31.0	31.0		31.0	31.0		10.0	10.0		19.0	9.0	9.0
Total Split (%)	62.0%	62.0%		62.0%	62.0%		20.0%	20.0%		38.0%	18.0%	18.0%
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	3.0	3.0
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	0.5	0.5
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	0.0
Total Lost Time (s)		5.0			5.0			5.0			3.5	3.5
Lead/Lag							Lag	Lag			Lead	Lead
Lead-Lag Optimize?							Yes	Yes			Yes	Yes
Recall Mode	Min	Min		Min	Min		None	None		None	None	None
Act Effct Green (s)		36.6			36.6			5.2				
Actuated g/C Ratio		0.85			0.85			0.12				
v/c Ratio		0.14			0.20			0.17				
Control Delay		2.5			2.7			1.8				
Queue Delay		0.0			0.0			0.0				
Total Delay		2.5			2.7			1.8				
LOS		A			A			A				
Approach Delay		2.5			2.7			1.8				
Approach LOS		A			A			A				
Queue Length 50th (ft)		0			0			0				
Queue Length 95th (ft)		34			46			4				
Internal Link Dist (ft)		1664			214			403			356	
Turn Bay Length (ft)												
Base Capacity (vph)		1595			1482			284				

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Starvation Cap Reductn		0			0			0				
Spillback Cap Reductn		0			0			0				
Storage Cap Reductn		0			0			0				
Reduced v/c Ratio		0.14			0.19			0.17				

Intersection Summary

Area Type: Other
Cycle Length: 50
Actuated Cycle Length: 43.2
Natural Cycle: 50
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.20
Intersection Signal Delay: 2.5 Intersection LOS: A
Intersection Capacity Utilization 58.3% ICU Level of Service B
Analysis Period (min) 15
! Phase conflict between lane groups.

Splits and Phases: 4: Baltimore Avenue/Wood Avenue & W. Main Street



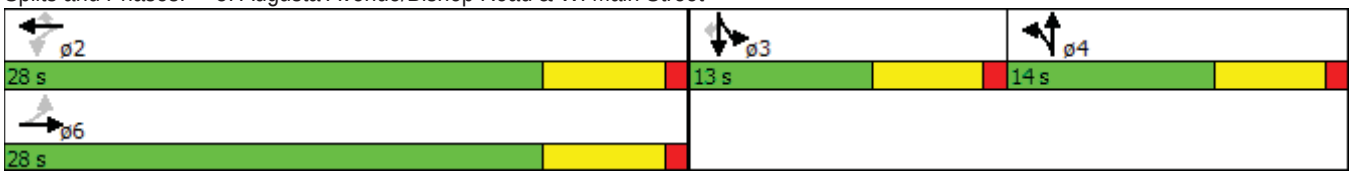
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	37	178	37	4	200	12	54	40	8	10	64	44
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	10	8	12	8	12	10	10	12
Storage Length (ft)	0		0	0		0	0		0	125		0
Storage Lanes	0		0	0		1	0		0	1		1
Taper Length (ft)	25			25			25			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		0.980				0.850		0.990				0.850
Flt Protected		0.993			0.999			0.974		0.950		
Satd. Flow (prot)	0	1795	0	0	1730	1400	0	1524	0	1685	1773	1615
Flt Permitted		0.935			0.995			0.974		0.950		
Satd. Flow (perm)	0	1690	0	0	1723	1400	0	1524	0	1685	1773	1615
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		19				159		6				169
Link Speed (mph)		25			25			25			30	
Link Distance (ft)		555			1744			400			838	
Travel Time (s)		15.1			47.6			10.9			19.0	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	0%	2%	11%	25%	2%	0%	6%	0%	13%	0%	0%	0%
Adj. Flow (vph)	39	187	39	4	211	13	57	42	8	11	67	46
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	265	0	0	215	13	0	107	0	11	67	46
Turn Type	Perm	NA		Perm	NA	Perm	Split	NA		Split	NA	Perm
Protected Phases		6			2		4	4		3	3	
Permitted Phases	6			2		2						3
Detector Phase	6	6		2	2	2	4	4		3	3	3
Switch Phase												
Minimum Initial (s)	22.0	22.0		22.0	22.0	22.0	7.0	7.0		7.0	7.0	7.0
Minimum Split (s)	28.0	28.0		28.0	28.0	28.0	13.0	13.0		13.0	13.0	13.0
Total Split (s)	28.0	28.0		28.0	28.0	28.0	14.0	14.0		13.0	13.0	13.0
Total Split (%)	50.9%	50.9%		50.9%	50.9%	50.9%	25.5%	25.5%		23.6%	23.6%	23.6%
Yellow Time (s)	5.0	5.0		5.0	5.0	5.0	4.5	4.5		4.5	4.5	4.5
All-Red Time (s)	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
Total Lost Time (s)		6.0			6.0	6.0		5.5		5.5	5.5	5.5
Lead/Lag							Lag	Lag		Lead	Lead	Lead
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	Yes
Recall Mode	Min	Min		Min	Min	Min	None	None		None	None	None
Act Effct Green (s)		30.2			30.2	30.2		8.3		7.7	7.7	7.7
Actuated g/C Ratio		0.64			0.64	0.64		0.18		0.16	0.16	0.16
v/c Ratio		0.24			0.19	0.01		0.39		0.04	0.23	0.11
Control Delay		9.9			10.3	0.0		24.0		21.2	22.8	0.6
Queue Delay		0.0			0.0	0.0		0.0		0.0	0.0	0.0
Total Delay		9.9			10.3	0.0		24.0		21.2	22.8	0.6
LOS		A			B	A		C		C	C	A
Approach Delay		9.9			9.7			24.0			14.4	
Approach LOS		A			A			C			B	
Queue Length 50th (ft)		54			46	0		30		3	20	0

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)		104			88	0		70		15	50	0
Internal Link Dist (ft)		475			1664			320			758	
Turn Bay Length (ft)										125		
Base Capacity (vph)		1088			1103	953		299		286	301	415
Starvation Cap Reductn		0			0	0		0		0	0	0
Spillback Cap Reductn		0			0	0		0		0	0	0
Storage Cap Reductn		0			0	0		0		0	0	0
Reduced v/c Ratio		0.24			0.19	0.01		0.36		0.04	0.22	0.11

Intersection Summary

Area Type: Other
Cycle Length: 55
Actuated Cycle Length: 47.2
Natural Cycle: 55
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.39
Intersection Signal Delay: 12.7 Intersection LOS: B
Intersection Capacity Utilization 63.5% ICU Level of Service B
Analysis Period (min) 15

Splits and Phases: 5: Augusta Avenue/Bishop Road & W. Main Street



Intersection	
Int Delay, s/veh	1.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	742	6	118	831	4	105
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	270	-	0	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	2	0	1	2	0	1
Mvmt Flow	773	6	123	866	4	109

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	779	0	1455	390
Stage 1	-	-	-	-	776	-
Stage 2	-	-	-	-	679	-
Critical Hdwy	-	-	4.12	-	6.8	6.92
Critical Hdwy Stg 1	-	-	-	-	5.8	-
Critical Hdwy Stg 2	-	-	-	-	5.8	-
Follow-up Hdwy	-	-	2.21	-	3.5	3.31
Pot Cap-1 Maneuver	-	-	840	-	123	612
Stage 1	-	-	-	-	420	-
Stage 2	-	-	-	-	471	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	840	-	105	612
Mov Cap-2 Maneuver	-	-	-	-	235	-
Stage 1	-	-	-	-	420	-
Stage 2	-	-	-	-	402	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.2	12.5
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	235	612	-	-	840	-
HCM Lane V/C Ratio	0.018	0.179	-	-	0.146	-
HCM Control Delay (s)	20.6	12.2	-	-	10	-
HCM Lane LOS	C	B	-	-	B	-
HCM 95th %tile Q(veh)	0.1	0.6	-	-	0.5	-

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	547	286	99	240	458	351
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	185			275	0	0
Storage Lanes	1			1	2	1
Taper Length (ft)	300				25	
Lane Util. Factor	0.97	1.00	1.00	0.88	0.97	1.00
Frt				0.850		0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	3335	1810	1743	2707	3367	1524
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	3335	1810	1743	2707	3367	1524
Right Turn on Red				No		Yes
Satd. Flow (RTOR)						444
Link Speed (mph)		40	40		35	
Link Distance (ft)		880	355		860	
Travel Time (s)		15.0	6.1		16.8	
Peak Hour Factor	0.79	0.79	0.79	0.79	0.79	0.79
Heavy Vehicles (%)	5%	5%	9%	5%	4%	6%
Adj. Flow (vph)	692	362	125	304	580	444
Shared Lane Traffic (%)						
Lane Group Flow (vph)	692	362	125	304	580	444
Turn Type	Prot	NA	NA	pt+ov	Prot	Free
Protected Phases	5	2	6	6 4	4	
Permitted Phases						Free
Detector Phase	5	2	6	6 4	4	
Switch Phase						
Minimum Initial (s)	7.0	15.0	15.0		7.0	
Minimum Split (s)	13.0	21.0	21.0		13.0	
Total Split (s)	21.0	42.0	21.0		18.0	
Total Split (%)	35.0%	70.0%	35.0%		30.0%	
Yellow Time (s)	4.5	5.0	5.0		4.5	
All-Red Time (s)	1.0	1.0	1.0		1.0	
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	
Total Lost Time (s)	5.5	6.0	6.0		5.5	
Lead/Lag	Lead		Lag			
Lead-Lag Optimize?	Yes		Yes			
Recall Mode	None	Min	Min		None	
Act Effct Green (s)	14.9	35.4	15.0	32.8	12.3	59.2
Actuated g/C Ratio	0.25	0.60	0.25	0.55	0.21	1.00
v/c Ratio	0.82	0.33	0.28	0.20	0.83	0.29
Control Delay	31.0	7.1	20.3	7.2	35.3	0.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	31.0	7.1	20.3	7.2	35.3	0.5
LOS	C	A	C	A	D	A
Approach Delay		22.8	11.0		20.2	
Approach LOS		C	B		C	
Queue Length 50th (ft)	120	57	37	28	104	0
Queue Length 95th (ft)	147	81	65	40	131	0

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Internal Link Dist (ft)		800	275		780	
Turn Bay Length (ft)	185			275		
Base Capacity (vph)	873	1101	441	1508	710	1524
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	0.79	0.33	0.28	0.20	0.82	0.29

Intersection Summary

Area Type: Other
Cycle Length: 60
Actuated Cycle Length: 59.2
Natural Cycle: 60
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.83
Intersection Signal Delay: 19.7
Intersection LOS: B
Intersection Capacity Utilization 44.9%
ICU Level of Service A
Analysis Period (min) 15

Splits and Phases: 1: Memorial Drive & Piedmont Drive

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	610	154	21	251	110	17
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	11	11	11	11
Storage Length (ft)		190	375		0	155
Storage Lanes		1	1		2	1
Taper Length (ft)			300		25	
Lane Util. Factor	0.95	1.00	1.00	0.95	0.97	1.00
Frt		0.850				0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	3471	1583	1586	3231	3286	1473
Flt Permitted			0.950		0.950	
Satd. Flow (perm)	3471	1583	1586	3231	3286	1473
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		197				22
Link Speed (mph)	40			40	35	
Link Distance (ft)	319			492	324	
Travel Time (s)	5.4			8.4	6.3	
Peak Hour Factor	0.78	0.78	0.78	0.78	0.78	0.78
Heavy Vehicles (%)	4%	2%	10%	8%	3%	6%
Adj. Flow (vph)	782	197	27	322	141	22
Shared Lane Traffic (%)						
Lane Group Flow (vph)	782	197	27	322	141	22
Turn Type	NA	Free	Prot	NA	Prot	Perm
Protected Phases	2		1	6	3	
Permitted Phases		Free				3
Detector Phase	2		1	6	3	3
Switch Phase						
Minimum Initial (s)	18.0		7.0	18.0	5.0	5.0
Minimum Split (s)	24.0		12.0	24.0	11.0	11.0
Total Split (s)	27.0		12.0	39.0	11.0	11.0
Total Split (%)	54.0%		24.0%	78.0%	22.0%	22.0%
Yellow Time (s)	5.0		4.0	5.0	4.0	4.0
All-Red Time (s)	1.0		1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0		5.0	6.0	5.0	5.0
Lead/Lag	Lag		Lead			
Lead-Lag Optimize?	Yes		Yes			
Recall Mode	Min		None	Min	None	None
Act Effct Green (s)	23.8	39.5	7.1	25.7	6.0	6.0
Actuated g/C Ratio	0.60	1.00	0.18	0.65	0.15	0.15
v/c Ratio	0.37	0.12	0.09	0.15	0.28	0.09
Control Delay	7.1	0.2	16.2	4.0	17.5	10.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	7.1	0.2	16.2	4.0	17.5	10.1
LOS	A	A	B	A	B	B
Approach Delay	5.7			5.0	16.5	
Approach LOS	A			A	B	
Queue Length 50th (ft)	40	0	4	14	12	0

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Queue Length 95th (ft)	104	0	21	21	35	13
Internal Link Dist (ft)	239			412	244	
Turn Bay Length (ft)		190	375			155
Base Capacity (vph)	2206	1583	286	2845	507	246
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	0.35	0.12	0.09	0.11	0.28	0.09

Intersection Summary

Area Type: Other
Cycle Length: 50
Actuated Cycle Length: 39.5
Natural Cycle: 50
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.37
Intersection Signal Delay: 6.7 Intersection LOS: A
Intersection Capacity Utilization 30.8% ICU Level of Service A
Analysis Period (min) 15

Splits and Phases: 2: Park Avenue & Memorial Drive

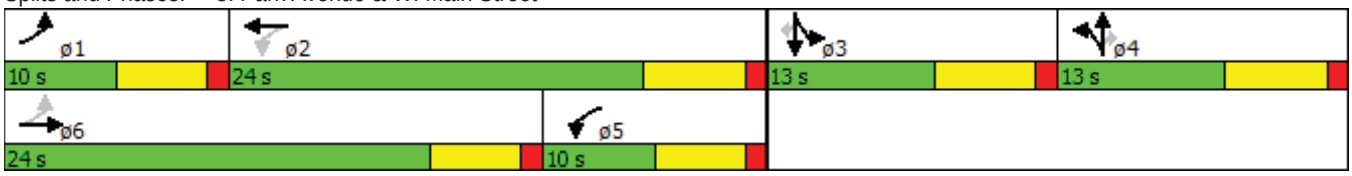
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	13	201	2	8	126	102	0	1	10	142	0	21
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	11	11	12	12	12	12	12	11	12
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.998			0.933				0.850			0.850
Flt Protected	0.950			0.950							0.950	
Satd. Flow (prot)	1805	1797	0	1745	1605	0	0	1900	1468	0	1678	1417
Flt Permitted	0.427			0.596							0.950	
Satd. Flow (perm)	811	1797	0	1095	1605	0	0	1900	1468	0	1678	1417
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		1			70				327			327
Link Speed (mph)		25			25			20			35	
Link Distance (ft)		614			447			270			840	
Travel Time (s)		16.7			12.2			9.2			16.4	
Peak Hour Factor	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77
Heavy Vehicles (%)	0%	5%	50%	0%	9%	4%	0%	0%	10%	4%	0%	14%
Adj. Flow (vph)	17	261	3	10	164	132	0	1	13	184	0	27
Shared Lane Traffic (%)												
Lane Group Flow (vph)	17	264	0	10	296	0	0	1	13	0	184	27
Turn Type	pm+pt	NA		pm+pt	NA			NA	Perm	Split	NA	Perm
Protected Phases	1	6		5	2		4	4		3	3	
Permitted Phases	6			2					4			3
Detector Phase	1	6		5	2		4	4	4	3	3	3
Switch Phase												
Minimum Initial (s)	5.0	18.0		5.0	18.0		7.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	10.0	23.0		10.0	24.0		13.0	13.0	13.0	13.0	13.0	13.0
Total Split (s)	10.0	24.0		10.0	24.0		13.0	13.0	13.0	13.0	13.0	13.0
Total Split (%)	16.7%	40.0%		16.7%	40.0%		21.7%	21.7%	21.7%	21.7%	21.7%	21.7%
Yellow Time (s)	4.0	4.0		4.0	4.5		4.5	4.5	4.5	4.5	4.5	4.5
All-Red Time (s)	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
Total Lost Time (s)	5.0	5.0		5.0	5.5			5.5	5.5		5.5	5.5
Lead/Lag	Lead	Lead		Lag	Lag		Lag	Lag	Lag	Lead	Lead	Lead
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	Min		None	Min		None	None	None	None	None	None
Act Effct Green (s)	22.0	22.0		26.4	21.4			7.3	7.3		7.8	7.8
Actuated g/C Ratio	0.50	0.50		0.60	0.49			0.17	0.17		0.18	0.18
v/c Ratio	0.03	0.29		0.01	0.36			0.00	0.03		0.62	0.05
Control Delay	9.6	10.1		8.4	9.1			19.0	0.1		31.2	0.2
Queue Delay	0.0	0.0		0.0	0.0			0.0	0.0		0.0	0.0
Total Delay	9.6	10.1		8.4	9.1			19.0	0.1		31.2	0.2
LOS	A	B		A	A			B	A		C	A
Approach Delay		10.1			9.1			1.4			27.2	
Approach LOS		B			A			A			C	
Queue Length 50th (ft)	1	26		1	23			0	0		33	0
Queue Length 95th (ft)	13	109		10	102			4	0		#131	0
Internal Link Dist (ft)		534			367			190			760	
Turn Bay Length (ft)												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Base Capacity (vph)	521	910		733	829			337	529		297	520
Starvation Cap Reductn	0	0		0	0			0	0		0	0
Spillback Cap Reductn	0	0		0	0			0	0		0	0
Storage Cap Reductn	0	0		0	0			0	0		0	0
Reduced v/c Ratio	0.03	0.29		0.01	0.36			0.00	0.02		0.62	0.05

Intersection Summary

Area Type: Other
Cycle Length: 60
Actuated Cycle Length: 44.1
Natural Cycle: 60
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.62
Intersection Signal Delay: 14.0 Intersection LOS: B
Intersection Capacity Utilization 42.0% ICU Level of Service A
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 3: Park Avenue & W. Main Street



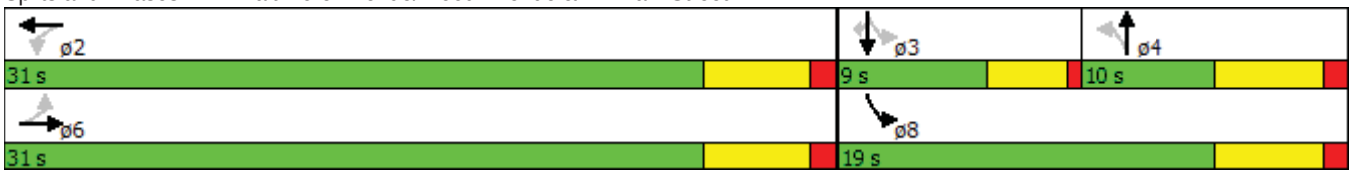
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	191	6	17	124	1	2	0	32	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.996			0.999			0.872				
Flt Protected					0.994			0.998				
Satd. Flow (prot)	0	1805	0	0	1724	0	0	1608	0	0	1900	1900
Flt Permitted					0.961			0.950				
Satd. Flow (perm)	0	1805	0	0	1666	0	0	1530	0	0	1900	1900
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		5			1			120				
Link Speed (mph)		25			25			25			20	
Link Distance (ft)		1744			294			483			436	
Travel Time (s)		47.6			8.0			13.2			14.9	
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Heavy Vehicles (%)	0%	5%	0%	6%	10%	0%	0%	0%	3%	0%	0%	0%
Adj. Flow (vph)	0	233	7	21	151	1	2	0	39	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	240	0	0	173	0	0	41	0	0	0	0
Turn Type		NA		Perm	NA		Perm	NA				Perm
Protected Phases		6			2			4!		8!	3	
Permitted Phases	6			2			4			3		3
Detector Phase	6	6		2	2		4	4		8	3	3
Switch Phase												
Minimum Initial (s)	25.0	25.0		25.0	25.0		5.0	5.0		5.0	5.0	5.0
Minimum Split (s)	30.0	30.0		30.0	30.0		10.0	10.0		10.0	9.0	9.0
Total Split (s)	31.0	31.0		31.0	31.0		10.0	10.0		19.0	9.0	9.0
Total Split (%)	62.0%	62.0%		62.0%	62.0%		20.0%	20.0%		38.0%	18.0%	18.0%
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	3.0	3.0
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	0.5	0.5
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	0.0
Total Lost Time (s)		5.0			5.0			5.0			3.5	3.5
Lead/Lag							Lag	Lag			Lead	Lead
Lead-Lag Optimize?							Yes	Yes			Yes	Yes
Recall Mode	Min	Min		Min	Min		None	None		None	None	None
Act Effct Green (s)		37.2			37.2			5.2				
Actuated g/C Ratio		0.85			0.85			0.12				
v/c Ratio		0.16			0.12			0.14				
Control Delay		2.4			2.4			1.0				
Queue Delay		0.0			0.0			0.0				
Total Delay		2.4			2.4			1.0				
LOS		A			A			A				
Approach Delay		2.4			2.4			1.0				
Approach LOS		A			A			A				
Queue Length 50th (ft)		0			0			0				
Queue Length 95th (ft)		33			25			0				
Internal Link Dist (ft)		1664			214			403			356	
Turn Bay Length (ft)												
Base Capacity (vph)		1547			1427			288				

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Starvation Cap Reductn		0			0			0				
Spillback Cap Reductn		0			0			0				
Storage Cap Reductn		0			0			0				
Reduced v/c Ratio		0.16			0.12			0.14				

Intersection Summary

Area Type: Other
Cycle Length: 50
Actuated Cycle Length: 43.7
Natural Cycle: 50
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.16
Intersection Signal Delay: 2.3 Intersection LOS: A
Intersection Capacity Utilization 33.4% ICU Level of Service A
Analysis Period (min) 15
! Phase conflict between lane groups.

Splits and Phases: 4: Baltimore Avenue/Wood Avenue & W. Main Street



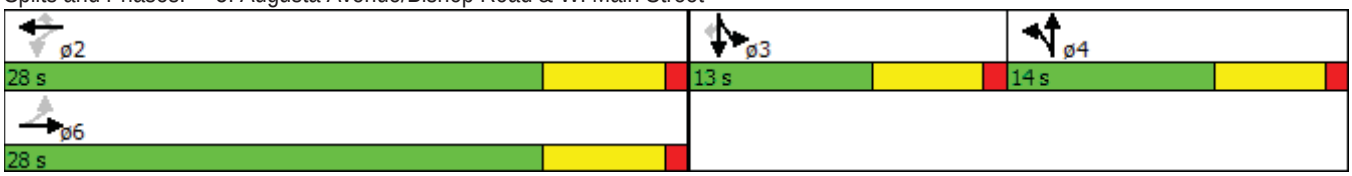
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	63	172	37	4	105	7	50	51	4	14	35	79
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	10	8	12	8	12	10	10	12
Storage Length (ft)	0		0	0		0	0		0	125		0
Storage Lanes	0		0	0		1	0		0	1		1
Taper Length (ft)	25			25			25			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		0.981				0.850		0.995				0.850
Flt Protected		0.989			0.998			0.977		0.950		
Satd. Flow (prot)	0	1789	0	0	1704	1085	0	1436	0	1574	1598	1553
Flt Permitted		0.900			0.987			0.977		0.950		
Satd. Flow (perm)	0	1628	0	0	1685	1085	0	1436	0	1574	1598	1553
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		17				159		3				169
Link Speed (mph)		25			25			25			30	
Link Distance (ft)		555			1744			400			838	
Travel Time (s)		15.1			47.6			10.9			19.0	
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Heavy Vehicles (%)	5%	3%	0%	0%	4%	29%	18%	4%	25%	7%	11%	4%
Adj. Flow (vph)	76	207	45	5	127	8	60	61	5	17	42	95
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	328	0	0	132	8	0	126	0	17	42	95
Turn Type	Perm	NA		Perm	NA	Perm	Split	NA		Split	NA	Perm
Protected Phases		6			2		4	4		3	3	
Permitted Phases	6			2		2						3
Detector Phase	6	6		2	2	2	4	4		3	3	3
Switch Phase												
Minimum Initial (s)	22.0	22.0		22.0	22.0	22.0	7.0	7.0		7.0	7.0	7.0
Minimum Split (s)	28.0	28.0		28.0	28.0	28.0	13.0	13.0		13.0	13.0	13.0
Total Split (s)	28.0	28.0		28.0	28.0	28.0	14.0	14.0		13.0	13.0	13.0
Total Split (%)	50.9%	50.9%		50.9%	50.9%	50.9%	25.5%	25.5%		23.6%	23.6%	23.6%
Yellow Time (s)	5.0	5.0		5.0	5.0	5.0	4.5	4.5		4.5	4.5	4.5
All-Red Time (s)	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
Total Lost Time (s)		6.0			6.0	6.0		5.5		5.5	5.5	5.5
Lead/Lag							Lag	Lag		Lead	Lead	Lead
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	Yes
Recall Mode	Min	Min		Min	Min	Min	None	None		None	None	None
Act Effct Green (s)		27.3			27.3	27.3		8.2		7.3	7.3	7.3
Actuated g/C Ratio		0.52			0.52	0.52		0.16		0.14	0.14	0.14
v/c Ratio		0.38			0.15	0.01		0.56		0.08	0.19	0.26
Control Delay		12.8			11.4	0.0		32.4		21.9	23.5	2.9
Queue Delay		0.0			0.0	0.0		0.0		0.0	0.0	0.0
Total Delay		12.8			11.4	0.0		32.4		21.9	23.5	2.9
LOS		B			B	A		C		C	C	A
Approach Delay		12.8			10.7			32.4			10.6	
Approach LOS		B			B			C			B	
Queue Length 50th (ft)		71			26	0		37		5	12	0

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)		119			52	0		#77		18	33	5
Internal Link Dist (ft)		475			1664			320			758	
Turn Bay Length (ft)										125		
Base Capacity (vph)		857			879	642		237		227	230	369
Starvation Cap Reductn		0			0	0		0		0	0	0
Spillback Cap Reductn		0			0	0		0		0	0	0
Storage Cap Reductn		0			0	0		0		0	0	0
Reduced v/c Ratio		0.38			0.15	0.01		0.53		0.07	0.18	0.26

Intersection Summary

Area Type: Other
Cycle Length: 55
Actuated Cycle Length: 52.4
Natural Cycle: 55
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.56
Intersection Signal Delay: 15.3 Intersection LOS: B
Intersection Capacity Utilization 57.1% 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: 5: Augusta Avenue/Bishop Road & W. Main Street



Intersection	
Int Delay, s/veh	2.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	848	3	117	333	2	115
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	270	-	0	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	89	89	89	89	89	89
Heavy Vehicles, %	6	0	5	5	0	4
Mvmt Flow	953	3	131	374	2	129

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	956	0	1404	478
Stage 1	-	-	-	-	954	-
Stage 2	-	-	-	-	450	-
Critical Hdwy	-	-	4.2	-	6.8	6.98
Critical Hdwy Stg 1	-	-	-	-	5.8	-
Critical Hdwy Stg 2	-	-	-	-	5.8	-
Follow-up Hdwy	-	-	2.25	-	3.5	3.34
Pot Cap-1 Maneuver	-	-	697	-	133	528
Stage 1	-	-	-	-	339	-
Stage 2	-	-	-	-	615	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	697	-	108	528
Mov Cap-2 Maneuver	-	-	-	-	231	-
Stage 1	-	-	-	-	339	-
Stage 2	-	-	-	-	499	-

Approach	EB	WB	NB
HCM Control Delay, s	0	3	14.1
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	231	528	-	-	697	-
HCM Lane V/C Ratio	0.01	0.245	-	-	0.189	-
HCM Control Delay (s)	20.7	14	-	-	11.4	-
HCM Lane LOS	C	B	-	-	B	-
HCM 95th %tile Q(veh)	0	1	-	-	0.7	-

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	650	149	215	471	280	738
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	185			275	0	0
Storage Lanes	1			1	2	1
Taper Length (ft)	300				25	
Lane Util. Factor	0.97	1.00	1.00	0.88	0.97	1.00
Frt				0.850		0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	3433	1881	1881	2787	3467	1599
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	3433	1881	1881	2787	3467	1599
Right Turn on Red				No		Yes
Satd. Flow (RTOR)						777
Link Speed (mph)		40	40		35	
Link Distance (ft)		880	355		860	
Travel Time (s)		15.0	6.1		16.8	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	2%	1%	1%	2%	1%	1%
Adj. Flow (vph)	684	157	226	496	295	777
Shared Lane Traffic (%)						
Lane Group Flow (vph)	684	157	226	496	295	777
Turn Type	Prot	NA	NA	pt+ov	Prot	Free
Protected Phases	5	2	6	6 4	4	
Permitted Phases						Free
Detector Phase	5	2	6	6 4	4	
Switch Phase						
Minimum Initial (s)	7.0	15.0	15.0		7.0	
Minimum Split (s)	13.0	21.0	21.0		13.0	
Total Split (s)	16.0	37.0	21.0		13.0	
Total Split (%)	32.0%	74.0%	42.0%		26.0%	
Yellow Time (s)	4.5	5.0	5.0		4.5	
All-Red Time (s)	1.0	1.0	1.0		1.0	
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	
Total Lost Time (s)	5.5	6.0	6.0		5.5	
Lead/Lag	Lead		Lag			
Lead-Lag Optimize?	Yes		Yes			
Recall Mode	None	Min	Min		None	
Act Effct Green (s)	10.5	31.0	15.0	27.9	7.4	49.9
Actuated g/C Ratio	0.21	0.62	0.30	0.56	0.15	1.00
v/c Ratio	0.95	0.13	0.40	0.32	0.57	0.49
Control Delay	46.0	4.3	16.5	6.6	24.7	1.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	46.0	4.3	16.5	6.6	24.7	1.1
LOS	D	A	B	A	C	A
Approach Delay		38.3	9.7		7.6	
Approach LOS		D	A		A	
Queue Length 50th (ft)	102	16	52	38	42	0
Queue Length 95th (ft)	#192	32	100	61	73	0

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Internal Link Dist (ft)		800	275		780	
Turn Bay Length (ft)	185			275		
Base Capacity (vph)	722	1168	565	1563	521	1599
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	0.13	0.40	0.32	0.57	0.49

Intersection Summary

Area Type: Other
Cycle Length: 50
Actuated Cycle Length: 49.9
Natural Cycle: 50
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.95
Intersection Signal Delay: 17.9 Intersection LOS: B
Intersection Capacity Utilization 53.2% ICU Level of Service A
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: Memorial Drive & Piedmont Drive

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	277	161	42	437	240	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	11	11	11	11
Storage Length (ft)		190	375		0	155
Storage Lanes		1	1		2	1
Taper Length (ft)			300		25	
Lane Util. Factor	0.95	1.00	1.00	0.95	0.97	1.00
Frt		0.850				0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	3505	1599	1711	3455	3319	1501
Flt Permitted			0.950		0.950	
Satd. Flow (perm)	3505	1599	1711	3455	3319	1501
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		179				28
Link Speed (mph)	40			40	35	
Link Distance (ft)	319			492	324	
Travel Time (s)	5.4			8.4	6.3	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	3%	1%	2%	1%	2%	4%
Adj. Flow (vph)	308	179	47	486	267	28
Shared Lane Traffic (%)						
Lane Group Flow (vph)	308	179	47	486	267	28
Turn Type	NA	Free	Prot	NA	Prot	Perm
Protected Phases	2		1	6	3	
Permitted Phases		Free				3
Detector Phase	2		1	6	3	3
Switch Phase						
Minimum Initial (s)	18.0		7.0	18.0	5.0	5.0
Minimum Split (s)	24.0		12.0	24.0	11.0	11.0
Total Split (s)	25.0		12.0	37.0	13.0	13.0
Total Split (%)	50.0%		24.0%	74.0%	26.0%	26.0%
Yellow Time (s)	5.0		4.0	5.0	4.0	4.0
All-Red Time (s)	1.0		1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0		5.0	6.0	5.0	5.0
Lead/Lag	Lag		Lead			
Lead-Lag Optimize?	Yes		Yes			
Recall Mode	Min		None	Min	None	None
Act Effct Green (s)	19.3	42.3	7.1	23.4	7.7	7.7
Actuated g/C Ratio	0.46	1.00	0.17	0.55	0.18	0.18
v/c Ratio	0.19	0.11	0.16	0.25	0.44	0.09
Control Delay	8.9	0.1	18.8	5.2	19.1	9.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	8.9	0.1	18.8	5.2	19.1	9.3
LOS	A	A	B	A	B	A
Approach Delay	5.7			6.4	18.2	
Approach LOS	A			A	B	
Queue Length 50th (ft)	16	0	8	26	23	0

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Queue Length 95th (ft)	53	0	35	43	64	17
Internal Link Dist (ft)	239			412	244	
Turn Bay Length (ft)		190	375			155
Base Capacity (vph)	1664	1599	288	2690	639	311
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	0.19	0.11	0.16	0.18	0.42	0.09

Intersection Summary

Area Type: Other
Cycle Length: 50
Actuated Cycle Length: 42.3
Natural Cycle: 50
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.44
Intersection Signal Delay: 8.8 Intersection LOS: A
Intersection Capacity Utilization 41.0% ICU Level of Service A
Analysis Period (min) 15

Splits and Phases: 2: Park Avenue & Memorial Drive

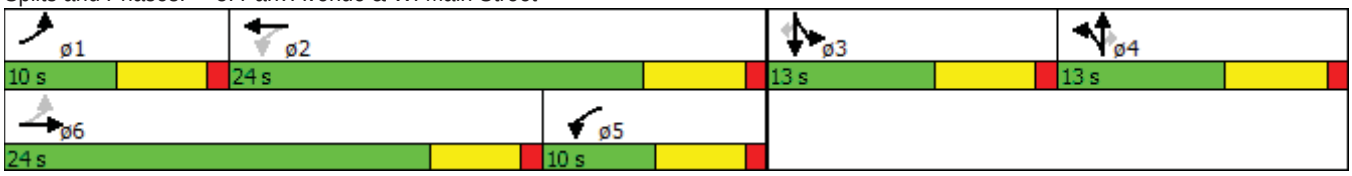
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	28	220	0	28	245	215	5	7	23	149	3	37
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	11	11	12	12	12	12	12	11	12
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.930				0.850			0.850
Flt Protected	0.950			0.950				0.981			0.953	
Satd. Flow (prot)	1736	1863	0	1745	1691	0	0	1864	1615	0	1733	1615
Flt Permitted	0.203			0.611				0.981			0.953	
Satd. Flow (perm)	371	1863	0	1122	1691	0	0	1864	1615	0	1733	1615
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					76				327			327
Link Speed (mph)		25			25			20			35	
Link Distance (ft)		614			447			270			840	
Travel Time (s)		16.7			12.2			9.2			16.4	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	4%	2%	0%	0%	1%	1%	0%	0%	0%	1%	0%	0%
Adj. Flow (vph)	30	237	0	30	263	231	5	8	25	160	3	40
Shared Lane Traffic (%)												
Lane Group Flow (vph)	30	237	0	30	494	0	0	13	25	0	163	40
Turn Type	pm+pt	NA		pm+pt	NA		Split	NA	Perm	Split	NA	Perm
Protected Phases	1	6		5	2		4	4		3	3	
Permitted Phases	6			2					4			3
Detector Phase	1	6		5	2		4	4	4	3	3	3
Switch Phase												
Minimum Initial (s)	5.0	18.0		5.0	18.0		7.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	10.0	23.0		10.0	24.0		13.0	13.0	13.0	13.0	13.0	13.0
Total Split (s)	10.0	24.0		10.0	24.0		13.0	13.0	13.0	13.0	13.0	13.0
Total Split (%)	16.7%	40.0%		16.7%	40.0%		21.7%	21.7%	21.7%	21.7%	21.7%	21.7%
Yellow Time (s)	4.0	4.0		4.0	4.5		4.5	4.5	4.5	4.5	4.5	4.5
All-Red Time (s)	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
Total Lost Time (s)	5.0	5.0		5.0	5.5			5.5	5.5		5.5	5.5
Lead/Lag	Lead	Lead		Lag	Lag		Lag	Lag	Lag	Lead	Lead	Lead
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	Min		None	Min		None	None	None	None	None	None
Act Effct Green (s)	22.4	22.4		26.2	22.0			7.3	7.3		7.8	7.8
Actuated g/C Ratio	0.46	0.46		0.54	0.45			0.15	0.15		0.16	0.16
v/c Ratio	0.09	0.28		0.04	0.61			0.05	0.05		0.59	0.08
Control Delay	13.2	13.0		12.2	17.6			22.3	0.2		33.2	0.3
Queue Delay	0.0	0.0		0.0	0.0			0.0	0.0		0.0	0.0
Total Delay	13.2	13.0		12.2	17.6			22.3	0.2		33.2	0.3
LOS	B	B		B	B			C	A		C	A
Approach Delay		13.0			17.3			7.8			26.7	
Approach LOS		B			B			A			C	
Queue Length 50th (ft)	3	23		1	48			2	0		29	0
Queue Length 95th (ft)	23	119		23	#299			18	0		#142	0
Internal Link Dist (ft)		534			367			190			760	
Turn Bay Length (ft)												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Base Capacity (vph)	317	866		670	809			300	534		279	534
Starvation Cap Reductn	0	0		0	0			0	0		0	0
Spillback Cap Reductn	0	0		0	0			0	0		0	0
Storage Cap Reductn	0	0		0	0			0	0		0	0
Reduced v/c Ratio	0.09	0.27		0.04	0.61			0.04	0.05		0.58	0.07

Intersection Summary

Area Type: Other
Cycle Length: 60
Actuated Cycle Length: 48.8
Natural Cycle: 60
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.61
Intersection Signal Delay: 17.7 Intersection LOS: B
Intersection Capacity Utilization 51.5% ICU Level of Service A
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 3: Park Avenue & W. Main Street



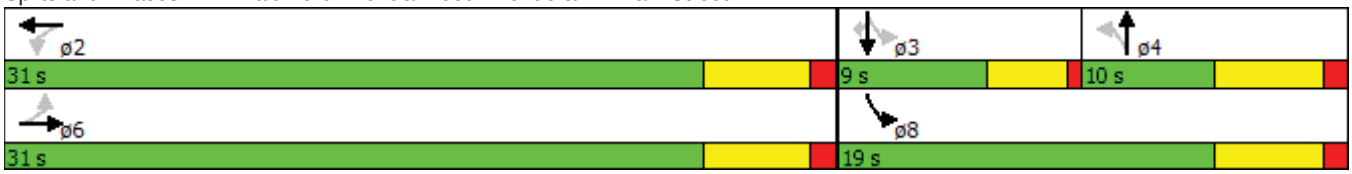
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	207	2	53	216	0	4	0	40	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.999						0.876				
Flt Protected					0.990			0.996				
Satd. Flow (prot)	0	1861	0	0	1866	0	0	1554	0	0	1900	1900
Flt Permitted					0.918			0.950				
Satd. Flow (perm)	0	1861	0	0	1730	0	0	1482	0	0	1900	1900
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		1						120				
Link Speed (mph)		25			25			25			20	
Link Distance (ft)		1744			294			483			436	
Travel Time (s)		47.6			8.0			13.2			14.9	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	0%	2%	0%	0%	1%	0%	25%	0%	5%	0%	0%	0%
Adj. Flow (vph)	0	220	2	56	230	0	4	0	43	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	222	0	0	286	0	0	47	0	0	0	0
Turn Type		NA		Perm	NA		Perm	NA				Perm
Protected Phases		6			2			4!		8!	3	
Permitted Phases	6			2			4			3		3
Detector Phase	6	6		2	2		4	4		8	3	3
Switch Phase												
Minimum Initial (s)	25.0	25.0		25.0	25.0		5.0	5.0		5.0	5.0	5.0
Minimum Split (s)	30.0	30.0		30.0	30.0		10.0	10.0		10.0	9.0	9.0
Total Split (s)	31.0	31.0		31.0	31.0		10.0	10.0		19.0	9.0	9.0
Total Split (%)	62.0%	62.0%		62.0%	62.0%		20.0%	20.0%		38.0%	18.0%	18.0%
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	3.0	3.0
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	0.5	0.5
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	0.0
Total Lost Time (s)		5.0			5.0			5.0			3.5	3.5
Lead/Lag							Lag	Lag			Lead	Lead
Lead-Lag Optimize?							Yes	Yes			Yes	Yes
Recall Mode	Min	Min		Min	Min		None	None		None	None	None
Act Effct Green (s)		36.6			36.6			5.2				
Actuated g/C Ratio		0.85			0.85			0.12				
v/c Ratio		0.14			0.20			0.17				
Control Delay		2.5			2.7			1.8				
Queue Delay		0.0			0.0			0.0				
Total Delay		2.5			2.7			1.8				
LOS		A			A			A				
Approach Delay		2.5			2.7			1.8				
Approach LOS		A			A			A				
Queue Length 50th (ft)		0			0			0				
Queue Length 95th (ft)		34			46			4				
Internal Link Dist (ft)		1664			214			403			356	
Turn Bay Length (ft)												
Base Capacity (vph)		1595			1482			284				

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Starvation Cap Reductn		0			0			0				
Spillback Cap Reductn		0			0			0				
Storage Cap Reductn		0			0			0				
Reduced v/c Ratio		0.14			0.19			0.17				

Intersection Summary

Area Type: Other
Cycle Length: 50
Actuated Cycle Length: 43.2
Natural Cycle: 50
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.20
Intersection Signal Delay: 2.5 Intersection LOS: A
Intersection Capacity Utilization 58.3% ICU Level of Service B
Analysis Period (min) 15
! Phase conflict between lane groups.

Splits and Phases: 4: Baltimore Avenue/Wood Avenue & W. Main Street



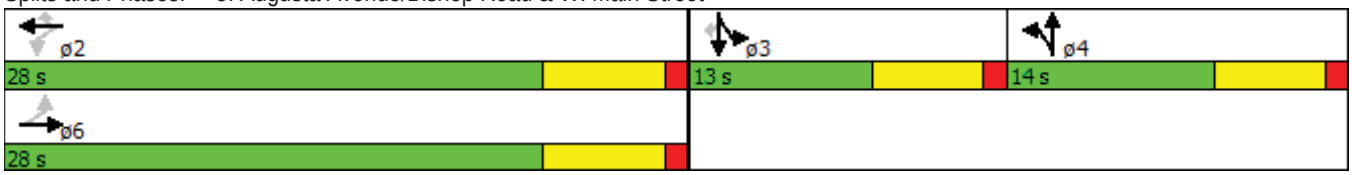
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	37	178	37	4	200	12	54	40	8	10	64	44
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	10	8	12	8	12	10	10	12
Storage Length (ft)	0		0	0		0	0		0	125		0
Storage Lanes	0		0	0		1	0		0	1		1
Taper Length (ft)	25			25			25			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		0.980				0.850		0.990				0.850
Flt Protected		0.993			0.999			0.974		0.950		
Satd. Flow (prot)	0	1795	0	0	1730	1400	0	1524	0	1685	1773	1615
Flt Permitted		0.935			0.995			0.974		0.950		
Satd. Flow (perm)	0	1690	0	0	1723	1400	0	1524	0	1685	1773	1615
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		19				159		6				169
Link Speed (mph)		25			25			25			30	
Link Distance (ft)		555			1744			400			838	
Travel Time (s)		15.1			47.6			10.9			19.0	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	0%	2%	11%	25%	2%	0%	6%	0%	13%	0%	0%	0%
Adj. Flow (vph)	39	187	39	4	211	13	57	42	8	11	67	46
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	265	0	0	215	13	0	107	0	11	67	46
Turn Type	Perm	NA		Perm	NA	Perm	Split	NA		Split	NA	Perm
Protected Phases		6			2		4	4		3	3	
Permitted Phases	6			2		2						3
Detector Phase	6	6		2	2	2	4	4		3	3	3
Switch Phase												
Minimum Initial (s)	22.0	22.0		22.0	22.0	22.0	7.0	7.0		7.0	7.0	7.0
Minimum Split (s)	28.0	28.0		28.0	28.0	28.0	13.0	13.0		13.0	13.0	13.0
Total Split (s)	28.0	28.0		28.0	28.0	28.0	14.0	14.0		13.0	13.0	13.0
Total Split (%)	50.9%	50.9%		50.9%	50.9%	50.9%	25.5%	25.5%		23.6%	23.6%	23.6%
Yellow Time (s)	5.0	5.0		5.0	5.0	5.0	4.5	4.5		4.5	4.5	4.5
All-Red Time (s)	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
Total Lost Time (s)		6.0			6.0	6.0		5.5		5.5	5.5	5.5
Lead/Lag							Lag	Lag		Lead	Lead	Lead
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	Yes
Recall Mode	Min	Min		Min	Min	Min	None	None		None	None	None
Act Effct Green (s)		30.2			30.2	30.2		8.3		7.7	7.7	7.7
Actuated g/C Ratio		0.64			0.64	0.64		0.18		0.16	0.16	0.16
v/c Ratio		0.24			0.19	0.01		0.39		0.04	0.23	0.11
Control Delay		9.9			10.3	0.0		24.0		21.2	22.8	0.6
Queue Delay		0.0			0.0	0.0		0.0		0.0	0.0	0.0
Total Delay		9.9			10.3	0.0		24.0		21.2	22.8	0.6
LOS		A			B	A		C		C	C	A
Approach Delay		9.9			9.7			24.0			14.4	
Approach LOS		A			A			C			B	
Queue Length 50th (ft)		54			46	0		30		3	20	0

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)		104			88	0		70		15	50	0
Internal Link Dist (ft)		475			1664			320			758	
Turn Bay Length (ft)										125		
Base Capacity (vph)		1088			1103	953		299		286	301	415
Starvation Cap Reductn		0			0	0		0		0	0	0
Spillback Cap Reductn		0			0	0		0		0	0	0
Storage Cap Reductn		0			0	0		0		0	0	0
Reduced v/c Ratio		0.24			0.19	0.01		0.36		0.04	0.22	0.11

Intersection Summary

Area Type: Other
Cycle Length: 55
Actuated Cycle Length: 47.2
Natural Cycle: 55
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.39
Intersection Signal Delay: 12.7
Intersection LOS: B
Intersection Capacity Utilization 63.5%
ICU Level of Service B
Analysis Period (min) 15

Splits and Phases: 5: Augusta Avenue/Bishop Road & W. Main Street



Intersection	
Int Delay, s/veh	1.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	809	6	118	905	4	105
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	270	-	0	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	2	0	1	2	0	1
Mvmt Flow	843	6	123	943	4	109

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	849	0	1563	424
Stage 1	-	-	-	-	846	-
Stage 2	-	-	-	-	717	-
Critical Hdwy	-	-	4.12	-	6.8	6.92
Critical Hdwy Stg 1	-	-	-	-	5.8	-
Critical Hdwy Stg 2	-	-	-	-	5.8	-
Follow-up Hdwy	-	-	2.21	-	3.5	3.31
Pot Cap-1 Maneuver	-	-	791	-	104	581
Stage 1	-	-	-	-	386	-
Stage 2	-	-	-	-	450	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	791	-	88	581
Mov Cap-2 Maneuver	-	-	-	-	215	-
Stage 1	-	-	-	-	386	-
Stage 2	-	-	-	-	380	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.2	12.9
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	215	581	-	-	791	-
HCM Lane V/C Ratio	0.019	0.188	-	-	0.155	-
HCM Control Delay (s)	22.1	12.6	-	-	10.4	-
HCM Lane LOS	C	B	-	-	B	-
HCM 95th %tile Q(veh)	0.1	0.7	-	-	0.5	-

APPENDIX H

FUTURE BUILD (YEAR 2035 AND 2040) INTERSECTION LEVEL OF SERVICE ANALYSIS

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	574	286	100	294	629	541
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	185			275	0	0
Storage Lanes	1			1	2	1
Taper Length (ft)	300				25	
Lane Util. Factor	0.97	1.00	1.00	0.88	0.97	1.00
Frt				0.850		0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	3433	1863	1863	2787	3433	1583
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	3433	1863	1863	2787	3433	1583
Right Turn on Red				No		Yes
Satd. Flow (RTOR)						601
Link Speed (mph)		40	40		35	
Link Distance (ft)		880	355		860	
Travel Time (s)		15.0	6.1		16.8	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	638	318	111	327	699	601
Shared Lane Traffic (%)						
Lane Group Flow (vph)	638	318	111	327	699	601
Turn Type	Prot	NA	NA	pt+ov	Prot	Free
Protected Phases	5	2	6	6 4	4	
Permitted Phases						Free
Detector Phase	5	2	6	6 4	4	
Switch Phase						
Minimum Initial (s)	7.0	15.0	15.0		7.0	
Minimum Split (s)	13.0	21.0	21.0		13.0	
Total Split (s)	19.0	40.0	21.0		20.0	
Total Split (%)	31.7%	66.7%	35.0%		33.3%	
Yellow Time (s)	4.5	5.0	5.0		4.5	
All-Red Time (s)	1.0	1.0	1.0		1.0	
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	
Total Lost Time (s)	5.5	6.0	6.0		5.5	
Lead/Lag	Lead		Lag			
Lead-Lag Optimize?	Yes		Yes			
Recall Mode	None	Min	Min		None	
Act Effct Green (s)	13.2	33.7	15.0	34.7	14.2	59.4
Actuated g/C Ratio	0.22	0.57	0.25	0.58	0.24	1.00
v/c Ratio	0.84	0.30	0.24	0.20	0.85	0.38
Control Delay	34.1	7.7	19.6	6.3	34.1	0.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	34.1	7.7	19.6	6.3	34.1	0.7
LOS	C	A	B	A	C	A
Approach Delay		25.3	9.6		18.7	
Approach LOS		C	A		B	
Queue Length 50th (ft)	113	53	32	27	124	0
Queue Length 95th (ft)	#191	93	68	46	#207	0
Internal Link Dist (ft)		800	275		780	

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Turn Bay Length (ft)	185			275		
Base Capacity (vph)	780	1066	470	1642	837	1583
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	0.82	0.30	0.24	0.20	0.84	0.38

Intersection Summary

Area Type: Other
Cycle Length: 60
Actuated Cycle Length: 59.4
Natural Cycle: 60
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.85
Intersection Signal Delay: 19.6 Intersection LOS: B
Intersection Capacity Utilization 50.6% ICU Level of Service A
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: Memorial Drive & Piedmont Drive

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	610	325	158	251	164	72
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	11	11	11	11
Storage Length (ft)		190	375		0	155
Storage Lanes		1	1		2	1
Taper Length (ft)			300		25	
Lane Util. Factor	0.95	1.00	1.00	0.95	0.97	1.00
Frt		0.850				0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	3539	1583	1711	3421	3319	1531
Flt Permitted			0.950		0.950	
Satd. Flow (perm)	3539	1583	1711	3421	3319	1531
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		361				80
Link Speed (mph)	40			40	35	
Link Distance (ft)	319			492	324	
Travel Time (s)	5.4			8.4	6.3	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	678	361	176	279	182	80
Shared Lane Traffic (%)						
Lane Group Flow (vph)	678	361	176	279	182	80
Turn Type	NA	Free	Prot	NA	Prot	Perm
Protected Phases	2		1	6	3	
Permitted Phases		Free				3
Detector Phase	2		1	6	3	3
Switch Phase						
Minimum Initial (s)	18.0		7.0	18.0	5.0	5.0
Minimum Split (s)	24.0		12.0	24.0	11.0	11.0
Total Split (s)	24.0		15.0	39.0	11.0	11.0
Total Split (%)	48.0%		30.0%	78.0%	22.0%	22.0%
Yellow Time (s)	5.0		4.0	5.0	4.0	4.0
All-Red Time (s)	1.0		1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0		5.0	6.0	5.0	5.0
Lead/Lag	Lag		Lead			
Lead-Lag Optimize?	Yes		Yes			
Recall Mode	Min		None	Min	None	None
Act Effct Green (s)	23.3	47.5	9.1	34.5	6.0	6.0
Actuated g/C Ratio	0.49	1.00	0.19	0.73	0.13	0.13
v/c Ratio	0.39	0.23	0.54	0.11	0.43	0.30
Control Delay	12.3	0.3	24.8	3.1	23.9	9.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	12.3	0.3	24.8	3.1	23.9	9.7
LOS	B	A	C	A	C	A
Approach Delay	8.1			11.5	19.6	
Approach LOS	A			B	B	
Queue Length 50th (ft)	79	0	46	12	26	0
Queue Length 95th (ft)	121	0	95	21	50	30

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Internal Link Dist (ft)	239			412	244	
Turn Bay Length (ft)		190	375			155
Base Capacity (vph)	1734	1583	363	2503	423	265
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	0.39	0.23	0.48	0.11	0.43	0.30

Intersection Summary

Area Type: Other
Cycle Length: 50
Actuated Cycle Length: 47.5
Natural Cycle: 50
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.54
Intersection Signal Delay: 10.7
Intersection LOS: B
Intersection Capacity Utilization 43.6%
ICU Level of Service A
Analysis Period (min) 15

Splits and Phases: 2: Park Avenue & Memorial Drive

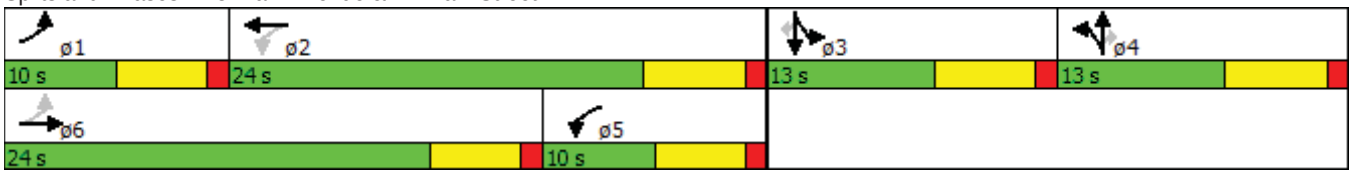
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	13	242	2	8	269	105	0	1	10	152	0	23
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	11	11	12	12	12	12	12	11	12
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.999			0.958				0.850			0.850
Flt Protected	0.950			0.950							0.950	
Satd. Flow (prot)	1770	1861	0	1711	1725	0	0	1863	1583	0	1711	1583
Flt Permitted	0.304			0.593							0.950	
Satd. Flow (perm)	566	1861	0	1068	1725	0	0	1863	1583	0	1711	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		1			34				327			327
Link Speed (mph)		25			25			20			35	
Link Distance (ft)		614			447			270			840	
Travel Time (s)		16.7			12.2			9.2			16.4	
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)	14	269	2	9	299	117	0	1	11	169	0	26
Shared Lane Traffic (%)												
Lane Group Flow (vph)	14	271	0	9	416	0	0	1	11	0	169	26
Turn Type	pm+pt	NA		pm+pt	NA			NA	Perm	Split	NA	Perm
Protected Phases	1	6		5	2		4	4		3	3	
Permitted Phases	6			2					4			3
Detector Phase	1	6		5	2		4	4	4	3	3	3
Switch Phase												
Minimum Initial (s)	5.0	18.0		5.0	18.0		7.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	10.0	23.0		10.0	24.0		13.0	13.0	13.0	13.0	13.0	13.0
Total Split (s)	10.0	24.0		10.0	24.0		13.0	13.0	13.0	13.0	13.0	13.0
Total Split (%)	16.7%	40.0%		16.7%	40.0%		21.7%	21.7%	21.7%	21.7%	21.7%	21.7%
Yellow Time (s)	4.0	4.0		4.0	4.5		4.5	4.5	4.5	4.5	4.5	4.5
All-Red Time (s)	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
Total Lost Time (s)	5.0	5.0		5.0	5.5			5.5	5.5		5.5	5.5
Lead/Lag	Lead	Lead		Lag	Lag		Lag	Lag	Lag	Lead	Lead	Lead
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	Min		None	Min		None	None	None	None	None	None
Act Effct Green (s)	22.0	22.0		26.5	21.5			7.3	7.3		7.8	7.8
Actuated g/C Ratio	0.50	0.50		0.60	0.49			0.17	0.17		0.18	0.18
v/c Ratio	0.03	0.29		0.01	0.49			0.00	0.02		0.56	0.05
Control Delay	9.7	10.0		8.4	12.6			19.0	0.1		28.5	0.2
Queue Delay	0.0	0.0		0.0	0.0			0.0	0.0		0.0	0.0
Total Delay	9.7	10.0		8.4	12.6			19.0	0.1		28.5	0.2
LOS	A	A		A	B			B	A		C	A
Approach Delay		10.0			12.5			1.7			24.7	
Approach LOS		A			B			A			C	
Queue Length 50th (ft)	1	26		1	43			0	0		30	0
Queue Length 95th (ft)	14	135		10	#246			4	0		#150	0
Internal Link Dist (ft)		534			367			190			760	
Turn Bay Length (ft)												
Base Capacity (vph)	424	941		716	869			330	549		303	549

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Starvation Cap Reductn	0	0		0	0			0	0		0	0
Spillback Cap Reductn	0	0		0	0			0	0		0	0
Storage Cap Reductn	0	0		0	0			0	0		0	0
Reduced v/c Ratio	0.03	0.29		0.01	0.48			0.00	0.02		0.56	0.05

Intersection Summary

Area Type: Other
Cycle Length: 60
Actuated Cycle Length: 44.1
Natural Cycle: 60
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.56
Intersection Signal Delay: 14.2 Intersection LOS: B
Intersection Capacity Utilization 46.0% ICU Level of Service A
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 3: Park Avenue & W. Main Street



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	2	225	6	17	232	38	2	21	32	6	5	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
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		0.996			0.982			0.920				0.850
Flt Protected					0.997			0.998			0.974	
Satd. Flow (prot)	0	1855	0	0	1824	0	0	1710	0	0	1814	1583
Flt Permitted		0.998			0.979						0.000	
Satd. Flow (perm)	0	1852	0	0	1791	0	0	1714	0	0	0	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		4			23			36				153
Link Speed (mph)		25			25			25			20	
Link Distance (ft)		1744			294			483			436	
Travel Time (s)		47.6			8.0			13.2			14.9	
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
Adj. Flow (vph)	2	250	7	19	258	42	2	23	36	7	6	1
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	259	0	0	319	0	0	61	0	0	13	1
Turn Type	Perm	NA		Perm	NA		Perm	NA		pm+pt	NA	Perm
Protected Phases		6			2			4!		8!	3	
Permitted Phases	6			2			4			3		3
Detector Phase	6	6		2	2		4	4		8	3	3
Switch Phase												
Minimum Initial (s)	25.0	25.0		25.0	25.0		5.0	5.0		5.0	5.0	5.0
Minimum Split (s)	30.0	30.0		30.0	30.0		10.0	10.0		10.0	9.0	9.0
Total Split (s)	31.0	31.0		31.0	31.0		10.0	10.0		19.0	9.0	9.0
Total Split (%)	62.0%	62.0%		62.0%	62.0%		20.0%	20.0%		38.0%	18.0%	18.0%
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	3.0	3.0
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	0.5	0.5
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	0.0
Total Lost Time (s)		5.0			5.0			5.0			3.5	3.5
Lead/Lag							Lag	Lag			Lead	Lead
Lead-Lag Optimize?							Yes	Yes			Yes	Yes
Recall Mode	Min	Min		Min	Min		None	None		None	None	None
Act Effct Green (s)		35.5			35.5			5.2			4.2	5.4
Actuated g/C Ratio		0.83			0.83			0.12			0.10	0.13
v/c Ratio		0.17			0.22			0.26			0.07	0.00
Control Delay		3.7			3.8			13.7			13.4	0.0
Queue Delay		0.0			0.0			0.0			0.0	0.0
Total Delay		3.7			3.8			13.7			13.4	0.0
LOS		A			A			B			B	A
Approach Delay		3.7			3.8			13.7			12.5	
Approach LOS		A			A			B			B	
Queue Length 50th (ft)		0			0			4			~6	0
Queue Length 95th (ft)		71			85			34			12	0
Internal Link Dist (ft)		1664			214			403			356	
Turn Bay Length (ft)												
Base Capacity (vph)		1546			1498			237			177	338
Starvation Cap Reductn		0			0			0			0	0

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Spillback Cap Reductn		0			0			0			0	0
Storage Cap Reductn		0			0			0			0	0
Reduced v/c Ratio		0.17			0.21			0.26			0.07	0.00

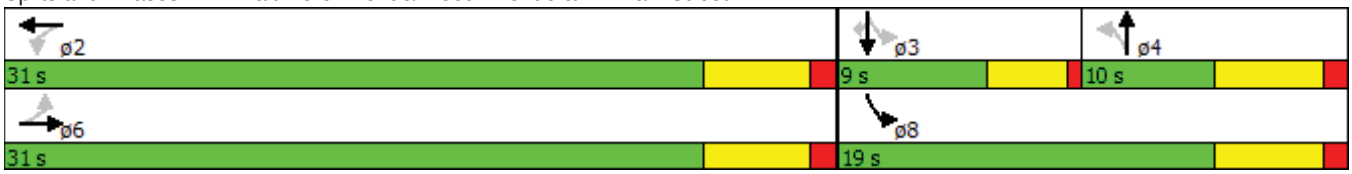
Intersection Summary

Area Type: Other
Cycle Length: 50
Actuated Cycle Length: 43
Natural Cycle: 50
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.26
Intersection Signal Delay: 4.9 Intersection LOS: A
Intersection Capacity Utilization 40.8% ICU Level of Service A
Analysis Period (min) 15

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

! Phase conflict between lane groups.

Splits and Phases: 4: Baltimore Avenue/Wood Avenue & W. Main Street



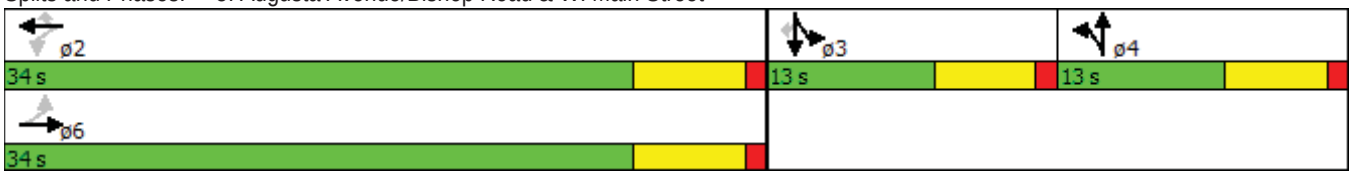
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	181	329	37	6	150	7	50	84	4	14	40	140
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	10	8	12	8	12	10	10	12
Storage Length (ft)	0		0	0		0	0		0	125		0
Storage Lanes	0		0	0		1	0		0	1		1
Taper Length (ft)	25			25			25			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		0.991				0.850		0.996				0.850
Flt Protected		0.984			0.998			0.982		0.950		
Satd. Flow (prot)	0	1816	0	0	1735	1372	0	1579	0	1652	1739	1583
Flt Permitted		0.822			0.976			0.982		0.950		
Satd. Flow (perm)	0	1517	0	0	1697	1372	0	1579	0	1652	1739	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		8				145		2				156
Link Speed (mph)		25			25			25			30	
Link Distance (ft)		555			1744			400			838	
Travel Time (s)		15.1			47.6			10.9			19.0	
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
Adj. Flow (vph)	201	366	41	7	167	8	56	93	4	16	44	156
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	608	0	0	174	8	0	153	0	16	44	156
Turn Type	Perm	NA		Perm	NA	Perm	Split	NA		Split	NA	Perm
Protected Phases		6			2		4	4		3	3	
Permitted Phases	6			2		2						3
Detector Phase	6	6		2	2	2	4	4		3	3	3
Switch Phase												
Minimum Initial (s)	22.0	22.0		22.0	22.0	22.0	7.0	7.0		7.0	7.0	7.0
Minimum Split (s)	28.0	28.0		28.0	28.0	28.0	13.0	13.0		13.0	13.0	13.0
Total Split (s)	34.0	34.0		34.0	34.0	34.0	13.0	13.0		13.0	13.0	13.0
Total Split (%)	56.7%	56.7%		56.7%	56.7%	56.7%	21.7%	21.7%		21.7%	21.7%	21.7%
Yellow Time (s)	5.0	5.0		5.0	5.0	5.0	4.5	4.5		4.5	4.5	4.5
All-Red Time (s)	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
Total Lost Time (s)		6.0			6.0	6.0		5.5		5.5	5.5	5.5
Lead/Lag							Lag	Lag		Lead	Lead	Lead
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	Yes
Recall Mode	Min	Min		Min	Min	Min	None	None		None	None	None
Act Effct Green (s)		28.5			28.5	28.5		7.5		7.2	7.2	7.2
Actuated g/C Ratio		0.50			0.50	0.50		0.13		0.13	0.13	0.13
v/c Ratio		0.80			0.21	0.01		0.74		0.08	0.20	0.46
Control Delay		24.4			10.2	0.0		49.5		24.3	26.2	10.2
Queue Delay		0.0			0.0	0.0		0.0		0.0	0.0	0.0
Total Delay		24.4			10.2	0.0		49.5		24.3	26.2	10.2
LOS		C			B	A		D		C	C	B
Approach Delay		24.4			9.7			49.5			14.5	
Approach LOS		C			A			D			B	
Queue Length 50th (ft)		177			34	0		53		5	15	0
Queue Length 95th (ft)		#370			68	0		#142		20	40	45

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		475			1664			320			758	
Turn Bay Length (ft)										125		
Base Capacity (vph)		757			842	754		209		217	229	343
Starvation Cap Reductn		0			0	0		0		0	0	0
Spillback Cap Reductn		0			0	0		0		0	0	0
Storage Cap Reductn		0			0	0		0		0	0	0
Reduced v/c Ratio		0.80			0.21	0.01		0.73		0.07	0.19	0.45

Intersection Summary

Area Type: Other
Cycle Length: 60
Actuated Cycle Length: 57.4
Natural Cycle: 60
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.80
Intersection Signal Delay: 23.6 Intersection LOS: C
Intersection Capacity Utilization 76.6% ICU Level of Service D
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 5: Augusta Avenue/Bishop Road & W. Main Street



Intersection	
Int Delay, s/veh	5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	779	112	334	307	6	185
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	270	-	0	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	866	124	371	341	7	206

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	990	0	1841	495
Stage 1	-	-	-	-	928	-
Stage 2	-	-	-	-	913	-
Critical Hdwy	-	-	4.14	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	2.22	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	694	-	67	520
Stage 1	-	-	-	-	345	-
Stage 2	-	-	-	-	352	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	694	-	31	520
Mov Cap-2 Maneuver	-	-	-	-	114	-
Stage 1	-	-	-	-	345	-
Stage 2	-	-	-	-	164	-

Approach	EB	WB	NB
HCM Control Delay, s	0	8.3	17.1
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	114	520	-	-	694	-
HCM Lane V/C Ratio	0.058	0.395	-	-	0.535	-
HCM Control Delay (s)	38.5	16.4	-	-	16	-
HCM Lane LOS	E	C	-	-	C	-
HCM 95th %tile Q(veh)	0.2	1.9	-	-	3.2	-

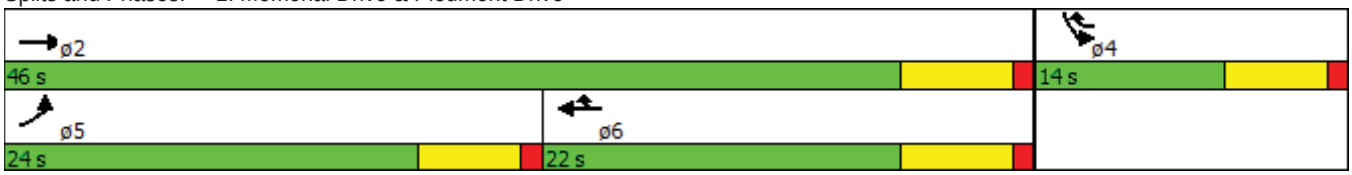
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	902	149	215	675	421	817
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	185			275	0	0
Storage Lanes	1			1	2	1
Taper Length (ft)	300				25	
Lane Util. Factor	0.97	1.00	1.00	0.88	0.97	1.00
Frt				0.850		0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	3433	1863	1863	2787	3433	1583
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	3433	1863	1863	2787	3433	1583
Right Turn on Red				No		Yes
Satd. Flow (RTOR)						812
Link Speed (mph)		40	40		35	
Link Distance (ft)		880	355		860	
Travel Time (s)		15.0	6.1		16.8	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	1002	166	239	750	468	908
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1002	166	239	750	468	908
Turn Type	Prot	NA	NA	pt+ov	Prot	Free
Protected Phases	5	2	6	6 4	4	
Permitted Phases						Free
Detector Phase	5	2	6	6 4	4	
Switch Phase						
Minimum Initial (s)	7.0	15.0	15.0		7.0	
Minimum Split (s)	13.0	21.0	21.0		13.0	
Total Split (s)	24.0	46.0	22.0		14.0	
Total Split (%)	40.0%	76.7%	36.7%		23.3%	
Yellow Time (s)	4.5	5.0	5.0		4.5	
All-Red Time (s)	1.0	1.0	1.0		1.0	
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	
Total Lost Time (s)	5.5	6.0	6.0		5.5	
Lead/Lag	Lead		Lag			
Lead-Lag Optimize?	Yes		Yes			
Recall Mode	None	Min	Min		None	
Act Effct Green (s)	18.5	39.8	15.8	29.8	8.5	59.8
Actuated g/C Ratio	0.31	0.67	0.26	0.50	0.14	1.00
v/c Ratio	0.94	0.13	0.49	0.54	0.96	0.57
Control Delay	39.5	4.0	22.5	12.1	61.1	1.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	39.5	4.0	22.5	12.1	61.1	1.5
LOS	D	A	C	B	E	A
Approach Delay		34.5	14.6		21.8	
Approach LOS		C	B		C	
Queue Length 50th (ft)	180	18	72	97	88	0
Queue Length 95th (ft)	#295	34	131	146	#171	0
Internal Link Dist (ft)		800	275		780	

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Turn Bay Length (ft)	185			275		
Base Capacity (vph)	1062	1246	498	1341	488	1583
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	0.94	0.13	0.48	0.56	0.96	0.57

Intersection Summary

Area Type: Other
Cycle Length: 60
Actuated Cycle Length: 59.8
Natural Cycle: 60
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.96
Intersection Signal Delay: 24.0 Intersection LOS: C
Intersection Capacity Utilization 64.4% 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: 1: Memorial Drive & Piedmont Drive



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	277	303	148	437	444	205
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	11	11	11	11
Storage Length (ft)		190	375		0	155
Storage Lanes		1	1		2	1
Taper Length (ft)			300		25	
Lane Util. Factor	0.95	1.00	1.00	0.95	0.97	1.00
Frt		0.850				0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	3539	1583	1711	3421	3319	1531
Flt Permitted			0.950		0.950	
Satd. Flow (perm)	3539	1583	1711	3421	3319	1531
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		337				228
Link Speed (mph)	40			40	35	
Link Distance (ft)	319			492	324	
Travel Time (s)	5.4			8.4	6.3	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	308	337	164	486	493	228
Shared Lane Traffic (%)						
Lane Group Flow (vph)	308	337	164	486	493	228
Turn Type	NA	Free	Prot	NA	Prot	Perm
Protected Phases	2		1	6	3	
Permitted Phases		Free				3
Detector Phase	2		1	6	3	3
Switch Phase						
Minimum Initial (s)	18.0		7.0	18.0	5.0	5.0
Minimum Split (s)	24.0		12.0	24.0	11.0	11.0
Total Split (s)	25.0		14.0	39.0	16.0	16.0
Total Split (%)	45.5%		25.5%	70.9%	29.1%	29.1%
Yellow Time (s)	5.0		4.0	5.0	4.0	4.0
All-Red Time (s)	1.0		1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0		5.0	6.0	5.0	5.0
Lead/Lag	Lag		Lead			
Lead-Lag Optimize?	Yes		Yes			
Recall Mode	Min		None	Min	None	None
Act Effct Green (s)	18.4	50.7	8.6	28.9	10.5	10.5
Actuated g/C Ratio	0.36	1.00	0.17	0.57	0.21	0.21
v/c Ratio	0.24	0.21	0.56	0.25	0.71	0.46
Control Delay	13.4	0.3	29.7	5.7	26.8	6.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	13.4	0.3	29.7	5.7	26.8	6.8
LOS	B	A	C	A	C	A
Approach Delay	6.5			11.7	20.5	
Approach LOS	A			B	C	
Queue Length 50th (ft)	36	0	49	33	76	0
Queue Length 95th (ft)	62	0	#111	52	#134	46

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Internal Link Dist (ft)	239			412	244	
Turn Bay Length (ft)		190	375			155
Base Capacity (vph)	1356	1583	310	2276	736	517
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	0.23	0.21	0.53	0.21	0.67	0.44

Intersection Summary

Area Type: Other
Cycle Length: 55
Actuated Cycle Length: 50.7
Natural Cycle: 55
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.71
Intersection Signal Delay: 13.2 Intersection LOS: B
Intersection Capacity Utilization 49.2% ICU Level of Service A
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 2: Park Avenue & Memorial Drive

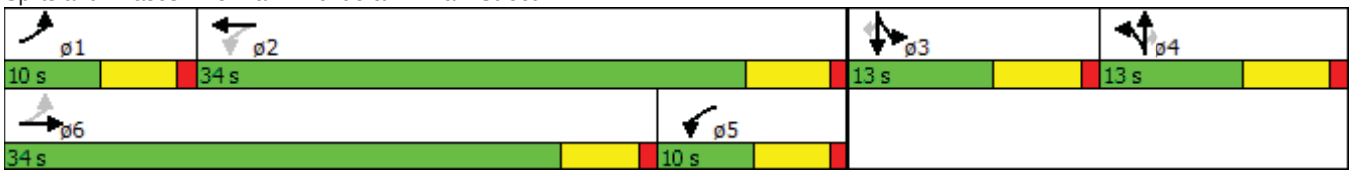
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	29	407	0	28	346	225	5	7	23	154	3	37
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	11	11	12	12	12	12	12	11	12
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.941				0.850			0.850
Flt Protected	0.950			0.950				0.979			0.953	
Satd. Flow (prot)	1770	1863	0	1711	1694	0	0	1824	1583	0	1716	1583
Flt Permitted	0.157			0.502				0.979			0.953	
Satd. Flow (perm)	292	1863	0	904	1694	0	0	1824	1583	0	1716	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					56				281			281
Link Speed (mph)		25			25			20			35	
Link Distance (ft)		614			447			270			840	
Travel Time (s)		16.7			12.2			9.2			16.4	
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)	32	452	0	31	384	250	6	8	26	171	3	41
Shared Lane Traffic (%)												
Lane Group Flow (vph)	32	452	0	31	634	0	0	14	26	0	174	41
Turn Type	pm+pt	NA		pm+pt	NA		Split	NA	Perm	Split	NA	Perm
Protected Phases	1	6		5	2		4	4		3	3	
Permitted Phases	6			2					4			3
Detector Phase	1	6		5	2		4	4	4	3	3	3
Switch Phase												
Minimum Initial (s)	5.0	18.0		5.0	18.0		7.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	10.0	23.0		10.0	24.0		13.0	13.0	13.0	13.0	13.0	13.0
Total Split (s)	10.0	34.0		10.0	34.0		13.0	13.0	13.0	13.0	13.0	13.0
Total Split (%)	14.3%	48.6%		14.3%	48.6%		18.6%	18.6%	18.6%	18.6%	18.6%	18.6%
Yellow Time (s)	4.0	4.0		4.0	4.5		4.5	4.5	4.5	4.5	4.5	4.5
All-Red Time (s)	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
Total Lost Time (s)	5.0	5.0		5.0	5.5			5.5	5.5		5.5	5.5
Lead/Lag	Lead	Lead		Lag	Lag		Lag	Lag	Lag	Lead	Lead	Lead
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	Min		None	Min		None	None	None	None	None	None
Act Effct Green (s)	29.5	29.5		32.3	29.1			7.4	7.4		7.8	7.8
Actuated g/C Ratio	0.53	0.53		0.58	0.52			0.13	0.13		0.14	0.14
v/c Ratio	0.11	0.46		0.05	0.70			0.06	0.06		0.72	0.09
Control Delay	11.4	13.1		11.0	18.3			27.3	0.3		48.0	0.4
Queue Delay	0.0	0.0		0.0	0.0			0.0	0.0		0.0	0.0
Total Delay	11.4	13.1		11.0	18.3			27.3	0.3		48.0	0.4
LOS	B	B		B	B			C	A		D	A
Approach Delay		13.0			18.0			9.7			38.9	
Approach LOS		B			B			A			D	
Queue Length 50th (ft)	3	50		2	77			3	0		45	0
Queue Length 95th (ft)	23	231		22	#422			21	0		#187	0
Internal Link Dist (ft)		534			367			190			760	
Turn Bay Length (ft)												
Base Capacity (vph)	293	1047		602	961			257	464		241	464

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Starvation Cap Reductn	0	0		0	0			0	0		0	0
Spillback Cap Reductn	0	0		0	0			0	0		0	0
Storage Cap Reductn	0	0		0	0			0	0		0	0
Reduced v/c Ratio	0.11	0.43		0.05	0.66			0.05	0.06		0.72	0.09

Intersection Summary

Area Type: Other
Cycle Length: 70
Actuated Cycle Length: 55.7
Natural Cycle: 70
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.72
Intersection Signal Delay: 19.2 Intersection LOS: B
Intersection Capacity Utilization 57.4% 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: 3: Park Avenue & W. Main Street



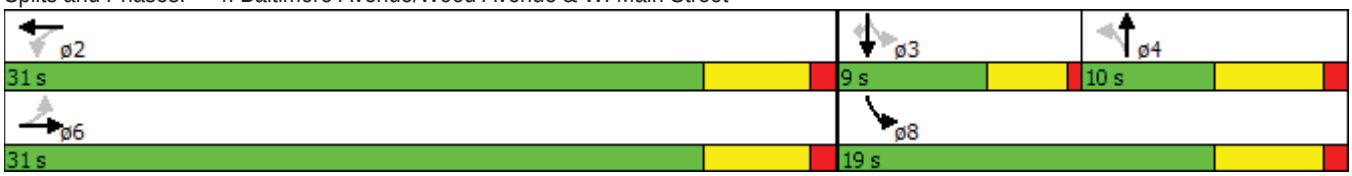
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	5	356	2	53	299	16	4	14	40	40	28	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.999			0.994			0.907				0.850
Flt Protected		0.999			0.993			0.997			0.972	
Satd. Flow (prot)	0	1859	0	0	1839	0	0	1684	0	0	1811	1583
Flt Permitted		0.995			0.906			0.970			0.000	
Satd. Flow (perm)	0	1852	0	0	1678	0	0	1639	0	0	0	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		1			7			44				153
Link Speed (mph)		25			25			25			20	
Link Distance (ft)		1744			294			483			436	
Travel Time (s)		47.6			8.0			13.2			14.9	
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
Adj. Flow (vph)	6	396	2	59	332	18	4	16	44	44	31	6
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	404	0	0	409	0	0	64	0	0	75	6
Turn Type	Perm	NA		Perm	NA		Perm	NA		pm+pt	NA	Perm
Protected Phases		6			2			4!		8!	3	
Permitted Phases	6			2			4			3		3
Detector Phase	6	6		2	2		4	4		8	3	3
Switch Phase												
Minimum Initial (s)	25.0	25.0		25.0	25.0		5.0	5.0		5.0	5.0	5.0
Minimum Split (s)	30.0	30.0		30.0	30.0		10.0	10.0		10.0	9.0	9.0
Total Split (s)	31.0	31.0		31.0	31.0		10.0	10.0		19.0	9.0	9.0
Total Split (%)	62.0%	62.0%		62.0%	62.0%		20.0%	20.0%		38.0%	18.0%	18.0%
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	3.0	3.0
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	0.5	0.5
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	0.0
Total Lost Time (s)		5.0			5.0			5.0			3.5	3.5
Lead/Lag							Lag	Lag			Lead	Lead
Lead-Lag Optimize?							Yes	Yes			Yes	Yes
Recall Mode	Min	Min		Min	Min		None	None		None	None	None
Act Effct Green (s)		32.9			32.9			5.0			8.8	5.4
Actuated g/C Ratio		0.71			0.71			0.11			0.19	0.12
v/c Ratio		0.31			0.34			0.30			0.22	0.02
Control Delay		6.8			7.2			14.8			13.9	0.2
Queue Delay		0.0			0.0			0.0			0.0	0.0
Total Delay		6.8			7.2			14.8			13.9	0.2
LOS		A			A			B			B	A
Approach Delay		6.8			7.2			14.8			12.9	
Approach LOS		A			A			B			B	
Queue Length 50th (ft)		65			66			5			15	0
Queue Length 95th (ft)		116			123			33			38	0
Internal Link Dist (ft)		1664			214			403			356	
Turn Bay Length (ft)												
Base Capacity (vph)		1329			1206			215			343	322
Starvation Cap Reductn		0			0			0			0	0

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Spillback Cap Reductn		0			0			0			0	0
Storage Cap Reductn		0			0			0			0	0
Reduced v/c Ratio		0.30			0.34			0.30			0.22	0.02

Intersection Summary

Area Type: Other
Cycle Length: 50
Actuated Cycle Length: 46.6
Natural Cycle: 50
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.34
Intersection Signal Delay: 8.0 Intersection LOS: A
Intersection Capacity Utilization 63.7% ICU Level of Service B
Analysis Period (min) 15
! Phase conflict between lane groups.

Splits and Phases: 4: Baltimore Avenue/Wood Avenue & W. Main Street



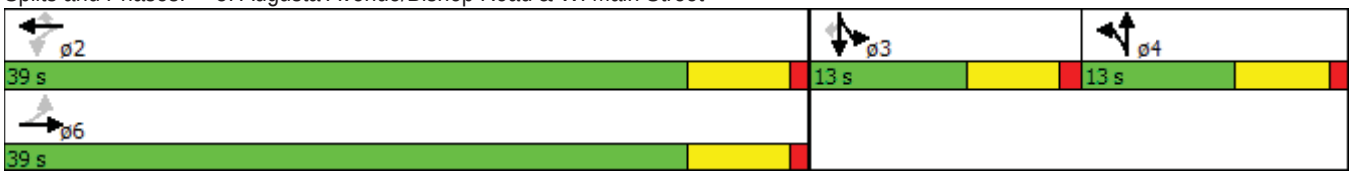
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	149	299	37	16	409	12	54	61	8	10	94	333
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	10	8	12	8	12	10	10	12
Storage Length (ft)	0		0	0		0	0		0	125		0
Storage Lanes	0		0	0		1	0		0	1		1
Taper Length (ft)	25			25			25			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		0.990				0.850		0.991				0.850
Flt Protected		0.985			0.998			0.979		0.950		
Satd. Flow (prot)	0	1816	0	0	1735	1372	0	1566	0	1652	1739	1583
Flt Permitted		0.605			0.973			0.979		0.950		
Satd. Flow (perm)	0	1116	0	0	1692	1372	0	1566	0	1652	1739	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		9				134		4				370
Link Speed (mph)		25			25			25			30	
Link Distance (ft)		555			1744			400			838	
Travel Time (s)		15.1			47.6			10.9			19.0	
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
Adj. Flow (vph)	166	332	41	18	454	13	60	68	9	11	104	370
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	539	0	0	472	13	0	137	0	11	104	370
Turn Type	Perm	NA		Perm	NA	Perm	Split	NA		Split	NA	Perm
Protected Phases		6			2		4	4		3	3	
Permitted Phases	6			2		2						3
Detector Phase	6	6		2	2	2	4	4		3	3	3
Switch Phase												
Minimum Initial (s)	22.0	22.0		22.0	22.0	22.0	7.0	7.0		7.0	7.0	7.0
Minimum Split (s)	28.0	28.0		28.0	28.0	28.0	13.0	13.0		13.0	13.0	13.0
Total Split (s)	39.0	39.0		39.0	39.0	39.0	13.0	13.0		13.0	13.0	13.0
Total Split (%)	60.0%	60.0%		60.0%	60.0%	60.0%	20.0%	20.0%		20.0%	20.0%	20.0%
Yellow Time (s)	5.0	5.0		5.0	5.0	5.0	4.5	4.5		4.5	4.5	4.5
All-Red Time (s)	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
Total Lost Time (s)		6.0			6.0	6.0		5.5		5.5	5.5	5.5
Lead/Lag							Lag	Lag		Lead	Lead	Lead
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	Yes
Recall Mode	Min	Min		Min	Min	Min	None	None		None	None	None
Act Effct Green (s)		32.2			32.2	32.2		7.4		7.4	7.4	7.4
Actuated g/C Ratio		0.50			0.50	0.50		0.12		0.12	0.12	0.12
v/c Ratio		0.95			0.55	0.02		0.74		0.06	0.52	0.73
Control Delay		46.4			14.1	0.0		53.6		26.5	37.1	13.5
Queue Delay		0.0			0.0	0.0		0.0		0.0	0.0	0.0
Total Delay		46.4			14.1	0.0		53.6		26.5	37.1	13.5
LOS		D			B	A		D		C	D	B
Approach Delay		46.4			13.7			53.6			18.8	
Approach LOS		D			B			D			B	
Queue Length 50th (ft)		185			118	0		52		4	40	0
Queue Length 95th (ft)		#389			198	0		#136		17	#86	#99

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		475			1664			320			758	
Turn Bay Length (ft)										125		
Base Capacity (vph)		580			873	772		187		193	203	511
Starvation Cap Reductn		0			0	0		0		0	0	0
Spillback Cap Reductn		0			0	0		0		0	0	0
Storage Cap Reductn		0			0	0		0		0	0	0
Reduced v/c Ratio		0.93			0.54	0.02		0.73		0.06	0.51	0.72

Intersection Summary

Area Type: Other
Cycle Length: 65
Actuated Cycle Length: 64
Natural Cycle: 65
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.95
Intersection Signal Delay: 29.3 Intersection LOS: C
Intersection Capacity Utilization 76.6% ICU Level of Service D
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 5: Augusta Avenue/Bishop Road & W. Main Street



Intersection	
Int Delay, s/veh	7.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	742	39	255	831	6	408
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	270	-	0	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	824	43	283	923	7	453

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	868	0	1874	434
Stage 1	-	-	-	-	846	-
Stage 2	-	-	-	-	1028	-
Critical Hdwy	-	-	4.14	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	2.22	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	772	-	63	570
Stage 1	-	-	-	-	381	-
Stage 2	-	-	-	-	306	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	772	-	40	570
Mov Cap-2 Maneuver	-	-	-	-	133	-
Stage 1	-	-	-	-	381	-
Stage 2	-	-	-	-	194	-

Approach	EB	WB	NB
HCM Control Delay, s	0	2.9	31.5
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	133	570	-	-	772	-
HCM Lane V/C Ratio	0.05	0.795	-	-	0.367	-
HCM Control Delay (s)	33.5	31.5	-	-	12.3	-
HCM Lane LOS	D	D	-	-	B	-
HCM 95th %tile Q(veh)	0.2	7.6	-	-	1.7	-

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	617	286	100	294	629	568
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	185			275	0	0
Storage Lanes	1			1	2	1
Taper Length (ft)	300				25	
Lane Util. Factor	0.97	1.00	1.00	0.88	0.97	1.00
Frt				0.850		0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	3433	1863	1863	2787	3433	1583
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	3433	1863	1863	2787	3433	1583
Right Turn on Red				No		Yes
Satd. Flow (RTOR)						631
Link Speed (mph)		40	40		35	
Link Distance (ft)		880	355		860	
Travel Time (s)		15.0	6.1		16.8	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	686	318	111	327	699	631
Shared Lane Traffic (%)						
Lane Group Flow (vph)	686	318	111	327	699	631
Turn Type	Prot	NA	NA	pt+ov	Prot	Free
Protected Phases	5	2	6	6 4	4	
Permitted Phases						Free
Detector Phase	5	2	6	6 4	4	
Switch Phase						
Minimum Initial (s)	7.0	15.0	15.0		7.0	
Minimum Split (s)	13.0	21.0	21.0		13.0	
Total Split (s)	19.0	40.0	21.0		20.0	
Total Split (%)	31.7%	66.7%	35.0%		33.3%	
Yellow Time (s)	4.5	5.0	5.0		4.5	
All-Red Time (s)	1.0	1.0	1.0		1.0	
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	
Total Lost Time (s)	5.5	6.0	6.0		5.5	
Lead/Lag	Lead		Lag			
Lead-Lag Optimize?	Yes		Yes			
Recall Mode	None	Min	Min		None	
Act Effct Green (s)	13.5	34.0	15.0	34.7	14.2	59.7
Actuated g/C Ratio	0.23	0.57	0.25	0.58	0.24	1.00
v/c Ratio	0.89	0.30	0.24	0.20	0.86	0.40
Control Delay	38.5	7.7	19.6	6.3	34.3	0.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	38.5	7.7	19.6	6.3	34.3	0.8
LOS	D	A	B	A	C	A
Approach Delay		28.8	9.7		18.4	
Approach LOS		C	A		B	
Queue Length 50th (ft)	124	53	32	27	124	0
Queue Length 95th (ft)	#213	93	68	46	#207	0
Internal Link Dist (ft)		800	275		780	

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Turn Bay Length (ft)	185			275		
Base Capacity (vph)	775	1060	467	1632	833	1583
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	0.89	0.30	0.24	0.20	0.84	0.40

Intersection Summary

Area Type: Other
Cycle Length: 60
Actuated Cycle Length: 59.7
Natural Cycle: 60
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.89
Intersection Signal Delay: 20.8 Intersection LOS: C
Intersection Capacity Utilization 51.8% ICU Level of Service A
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: Memorial Drive & Piedmont Drive

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	610	325	158	251	164	72
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	11	11	11	11
Storage Length (ft)		190	375		0	155
Storage Lanes		1	1		2	1
Taper Length (ft)			300		25	
Lane Util. Factor	0.95	1.00	1.00	0.95	0.97	1.00
Frt		0.850				0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	3539	1583	1711	3421	3319	1531
Flt Permitted			0.950		0.950	
Satd. Flow (perm)	3539	1583	1711	3421	3319	1531
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		361				80
Link Speed (mph)	40			40	35	
Link Distance (ft)	319			492	324	
Travel Time (s)	5.4			8.4	6.3	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	678	361	176	279	182	80
Shared Lane Traffic (%)						
Lane Group Flow (vph)	678	361	176	279	182	80
Turn Type	NA	Free	Prot	NA	Prot	Perm
Protected Phases	2		1	6	3	
Permitted Phases		Free				3
Detector Phase	2		1	6	3	3
Switch Phase						
Minimum Initial (s)	18.0		7.0	18.0	5.0	5.0
Minimum Split (s)	24.0		12.0	24.0	11.0	11.0
Total Split (s)	24.0		15.0	39.0	11.0	11.0
Total Split (%)	48.0%		30.0%	78.0%	22.0%	22.0%
Yellow Time (s)	5.0		4.0	5.0	4.0	4.0
All-Red Time (s)	1.0		1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0		5.0	6.0	5.0	5.0
Lead/Lag	Lag		Lead			
Lead-Lag Optimize?	Yes		Yes			
Recall Mode	Min		None	Min	None	None
Act Effct Green (s)	23.3	47.5	9.1	34.5	6.0	6.0
Actuated g/C Ratio	0.49	1.00	0.19	0.73	0.13	0.13
v/c Ratio	0.39	0.23	0.54	0.11	0.43	0.30
Control Delay	12.3	0.3	24.8	3.1	23.9	9.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	12.3	0.3	24.8	3.1	23.9	9.7
LOS	B	A	C	A	C	A
Approach Delay	8.1			11.5	19.6	
Approach LOS	A			B	B	
Queue Length 50th (ft)	79	0	46	12	26	0
Queue Length 95th (ft)	121	0	95	21	50	30

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Internal Link Dist (ft)	239			412	244	
Turn Bay Length (ft)		190	375			155
Base Capacity (vph)	1734	1583	363	2503	423	265
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	0.39	0.23	0.48	0.11	0.43	0.30

Intersection Summary

Area Type: Other
Cycle Length: 50
Actuated Cycle Length: 47.5
Natural Cycle: 50
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.54
Intersection Signal Delay: 10.7
Intersection LOS: B
Intersection Capacity Utilization 43.6%
ICU Level of Service A
Analysis Period (min) 15

Splits and Phases: 2: Park Avenue & Memorial Drive

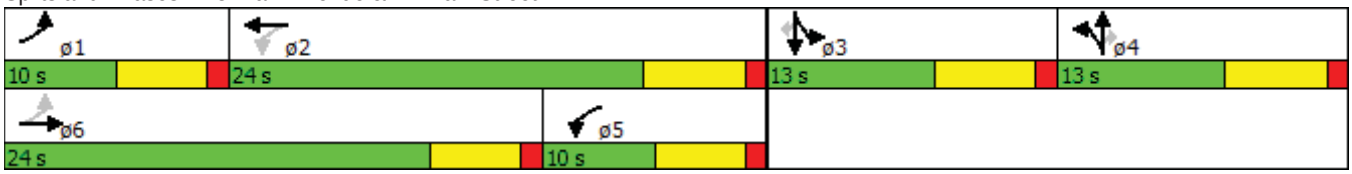
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	13	242	2	8	269	105	0	1	10	152	0	23
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	11	11	12	12	12	12	12	11	12
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.999			0.958				0.850			0.850
Flt Protected	0.950			0.950							0.950	
Satd. Flow (prot)	1770	1861	0	1711	1725	0	0	1863	1583	0	1711	1583
Flt Permitted	0.304			0.593							0.950	
Satd. Flow (perm)	566	1861	0	1068	1725	0	0	1863	1583	0	1711	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		1			34				327			327
Link Speed (mph)		25			25			20			35	
Link Distance (ft)		614			447			270			840	
Travel Time (s)		16.7			12.2			9.2			16.4	
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)	14	269	2	9	299	117	0	1	11	169	0	26
Shared Lane Traffic (%)												
Lane Group Flow (vph)	14	271	0	9	416	0	0	1	11	0	169	26
Turn Type	pm+pt	NA		pm+pt	NA			NA	Perm	Split	NA	Perm
Protected Phases	1	6		5	2		4	4		3	3	
Permitted Phases	6			2					4			3
Detector Phase	1	6		5	2		4	4	4	3	3	3
Switch Phase												
Minimum Initial (s)	5.0	18.0		5.0	18.0		7.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	10.0	23.0		10.0	24.0		13.0	13.0	13.0	13.0	13.0	13.0
Total Split (s)	10.0	24.0		10.0	24.0		13.0	13.0	13.0	13.0	13.0	13.0
Total Split (%)	16.7%	40.0%		16.7%	40.0%		21.7%	21.7%	21.7%	21.7%	21.7%	21.7%
Yellow Time (s)	4.0	4.0		4.0	4.5		4.5	4.5	4.5	4.5	4.5	4.5
All-Red Time (s)	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
Total Lost Time (s)	5.0	5.0		5.0	5.5			5.5	5.5		5.5	5.5
Lead/Lag	Lead	Lead		Lag	Lag		Lag	Lag	Lag	Lead	Lead	Lead
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	Min		None	Min		None	None	None	None	None	None
Act Effct Green (s)	22.0	22.0		26.5	21.5			7.3	7.3		7.8	7.8
Actuated g/C Ratio	0.50	0.50		0.60	0.49			0.17	0.17		0.18	0.18
v/c Ratio	0.03	0.29		0.01	0.49			0.00	0.02		0.56	0.05
Control Delay	9.7	10.0		8.4	12.6			19.0	0.1		28.5	0.2
Queue Delay	0.0	0.0		0.0	0.0			0.0	0.0		0.0	0.0
Total Delay	9.7	10.0		8.4	12.6			19.0	0.1		28.5	0.2
LOS	A	A		A	B			B	A		C	A
Approach Delay		10.0			12.5			1.7			24.7	
Approach LOS		A			B			A			C	
Queue Length 50th (ft)	1	26		1	43			0	0		30	0
Queue Length 95th (ft)	14	135		10	#246			4	0		#150	0
Internal Link Dist (ft)		534			367			190			760	
Turn Bay Length (ft)												
Base Capacity (vph)	424	941		716	869			330	549		303	549

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Starvation Cap Reductn	0	0		0	0			0	0		0	0
Spillback Cap Reductn	0	0		0	0			0	0		0	0
Storage Cap Reductn	0	0		0	0			0	0		0	0
Reduced v/c Ratio	0.03	0.29		0.01	0.48			0.00	0.02		0.56	0.05

Intersection Summary

Area Type: Other
Cycle Length: 60
Actuated Cycle Length: 44.1
Natural Cycle: 60
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.56
Intersection Signal Delay: 14.2 Intersection LOS: B
Intersection Capacity Utilization 46.0% ICU Level of Service A
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 3: Park Avenue & W. Main Street



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	2	225	6	17	232	38	2	21	32	6	5	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
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		0.996			0.982			0.920				0.850
Flt Protected					0.997			0.998			0.974	
Satd. Flow (prot)	0	1855	0	0	1824	0	0	1710	0	0	1814	1583
Flt Permitted		0.998			0.979						0.000	
Satd. Flow (perm)	0	1852	0	0	1791	0	0	1714	0	0	0	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		4			23			36				153
Link Speed (mph)		25			25			25			20	
Link Distance (ft)		1744			294			483			436	
Travel Time (s)		47.6			8.0			13.2			14.9	
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
Adj. Flow (vph)	2	250	7	19	258	42	2	23	36	7	6	1
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	259	0	0	319	0	0	61	0	0	13	1
Turn Type	Perm	NA		Perm	NA		Perm	NA		pm+pt	NA	Perm
Protected Phases		6			2			4!		8!	3	
Permitted Phases	6			2			4			3		3
Detector Phase	6	6		2	2		4	4		8	3	3
Switch Phase												
Minimum Initial (s)	25.0	25.0		25.0	25.0		5.0	5.0		5.0	5.0	5.0
Minimum Split (s)	30.0	30.0		30.0	30.0		10.0	10.0		10.0	9.0	9.0
Total Split (s)	31.0	31.0		31.0	31.0		10.0	10.0		19.0	9.0	9.0
Total Split (%)	62.0%	62.0%		62.0%	62.0%		20.0%	20.0%		38.0%	18.0%	18.0%
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	3.0	3.0
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	0.5	0.5
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	0.0
Total Lost Time (s)		5.0			5.0			5.0			3.5	3.5
Lead/Lag							Lag	Lag			Lead	Lead
Lead-Lag Optimize?							Yes	Yes			Yes	Yes
Recall Mode	Min	Min		Min	Min		None	None		None	None	None
Act Effct Green (s)		35.5			35.5			5.2			4.2	5.4
Actuated g/C Ratio		0.83			0.83			0.12			0.10	0.13
v/c Ratio		0.17			0.22			0.26			0.07	0.00
Control Delay		3.7			3.8			13.7			13.4	0.0
Queue Delay		0.0			0.0			0.0			0.0	0.0
Total Delay		3.7			3.8			13.7			13.4	0.0
LOS		A			A			B			B	A
Approach Delay		3.7			3.8			13.7			12.5	
Approach LOS		A			A			B			B	
Queue Length 50th (ft)		0			0			4			~6	0
Queue Length 95th (ft)		71			85			34			12	0
Internal Link Dist (ft)		1664			214			403			356	
Turn Bay Length (ft)												
Base Capacity (vph)		1546			1498			237			177	338
Starvation Cap Reductn		0			0			0			0	0

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Spillback Cap Reductn		0			0			0			0	0
Storage Cap Reductn		0			0			0			0	0
Reduced v/c Ratio		0.17			0.21			0.26			0.07	0.00

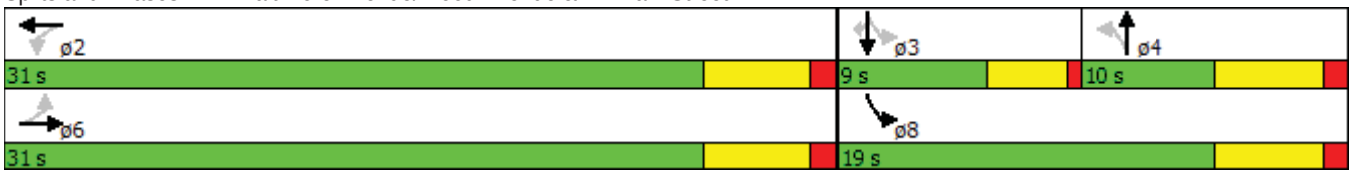
Intersection Summary

Area Type: Other
Cycle Length: 50
Actuated Cycle Length: 43
Natural Cycle: 50
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.26
Intersection Signal Delay: 4.9 Intersection LOS: A
Intersection Capacity Utilization 40.8% ICU Level of Service A
Analysis Period (min) 15

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

! Phase conflict between lane groups.

Splits and Phases: 4: Baltimore Avenue/Wood Avenue & W. Main Street



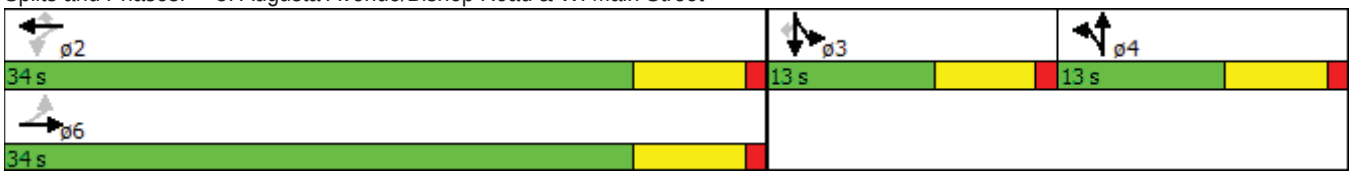
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	181	329	37	6	150	7	50	84	4	14	40	140
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	10	8	12	8	12	10	10	12
Storage Length (ft)	0		0	0		0	0		0	125		0
Storage Lanes	0		0	0		1	0		0	1		1
Taper Length (ft)	25			25			25			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		0.991				0.850		0.996				0.850
Flt Protected		0.984			0.998			0.982		0.950		
Satd. Flow (prot)	0	1816	0	0	1735	1372	0	1579	0	1652	1739	1583
Flt Permitted		0.822			0.976			0.982		0.950		
Satd. Flow (perm)	0	1517	0	0	1697	1372	0	1579	0	1652	1739	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		8				145		2				156
Link Speed (mph)		25			25			25			30	
Link Distance (ft)		555			1744			400			838	
Travel Time (s)		15.1			47.6			10.9			19.0	
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
Adj. Flow (vph)	201	366	41	7	167	8	56	93	4	16	44	156
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	608	0	0	174	8	0	153	0	16	44	156
Turn Type	Perm	NA		Perm	NA	Perm	Split	NA		Split	NA	Perm
Protected Phases		6			2		4	4		3	3	
Permitted Phases	6			2		2						3
Detector Phase	6	6		2	2	2	4	4		3	3	3
Switch Phase												
Minimum Initial (s)	22.0	22.0		22.0	22.0	22.0	7.0	7.0		7.0	7.0	7.0
Minimum Split (s)	28.0	28.0		28.0	28.0	28.0	13.0	13.0		13.0	13.0	13.0
Total Split (s)	34.0	34.0		34.0	34.0	34.0	13.0	13.0		13.0	13.0	13.0
Total Split (%)	56.7%	56.7%		56.7%	56.7%	56.7%	21.7%	21.7%		21.7%	21.7%	21.7%
Yellow Time (s)	5.0	5.0		5.0	5.0	5.0	4.5	4.5		4.5	4.5	4.5
All-Red Time (s)	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
Total Lost Time (s)		6.0			6.0	6.0		5.5		5.5	5.5	5.5
Lead/Lag							Lag	Lag		Lead	Lead	Lead
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	Yes
Recall Mode	Min	Min		Min	Min	Min	None	None		None	None	None
Act Effct Green (s)		28.5			28.5	28.5		7.5		7.2	7.2	7.2
Actuated g/C Ratio		0.50			0.50	0.50		0.13		0.13	0.13	0.13
v/c Ratio		0.80			0.21	0.01		0.74		0.08	0.20	0.46
Control Delay		24.4			10.2	0.0		49.5		24.3	26.2	10.2
Queue Delay		0.0			0.0	0.0		0.0		0.0	0.0	0.0
Total Delay		24.4			10.2	0.0		49.5		24.3	26.2	10.2
LOS		C			B	A		D		C	C	B
Approach Delay		24.4			9.7			49.5			14.5	
Approach LOS		C			A			D			B	
Queue Length 50th (ft)		177			34	0		53		5	15	0
Queue Length 95th (ft)		#370			68	0		#142		20	40	45

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		475			1664			320			758	
Turn Bay Length (ft)										125		
Base Capacity (vph)		757			842	754		209		217	229	343
Starvation Cap Reductn		0			0	0		0		0	0	0
Spillback Cap Reductn		0			0	0		0		0	0	0
Storage Cap Reductn		0			0	0		0		0	0	0
Reduced v/c Ratio		0.80			0.21	0.01		0.73		0.07	0.19	0.45

Intersection Summary

Area Type: Other
Cycle Length: 60
Actuated Cycle Length: 57.4
Natural Cycle: 60
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.80
Intersection Signal Delay: 23.6 Intersection LOS: C
Intersection Capacity Utilization 76.6% ICU Level of Service D
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 5: Augusta Avenue/Bishop Road & W. Main Street



Intersection	
Int Delay, s/veh	5.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	848	112	334	334	6	185
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	270	-	0	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	942	124	371	371	7	206

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1067	0	1932	533
Stage 1	-	-	-	-	1004	-
Stage 2	-	-	-	-	928	-
Critical Hdwy	-	-	4.14	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	2.22	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	649	-	58	491
Stage 1	-	-	-	-	315	-
Stage 2	-	-	-	-	345	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	649	-	25	491
Mov Cap-2 Maneuver	-	-	-	-	102	-
Stage 1	-	-	-	-	315	-
Stage 2	-	-	-	-	148	-

Approach	EB	WB	NB
HCM Control Delay, s	0	8.8	18.3
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	102	491	-	-	649	-
HCM Lane V/C Ratio	0.065	0.419	-	-	0.572	-
HCM Control Delay (s)	42.7	17.5	-	-	17.7	-
HCM Lane LOS	E	C	-	-	C	-
HCM 95th %tile Q(veh)	0.2	2	-	-	3.6	-

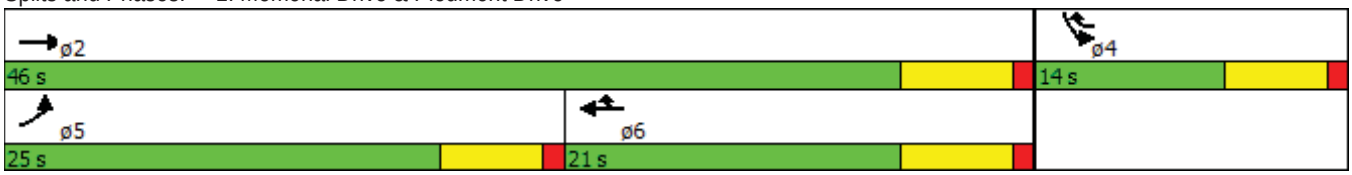
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	953	149	215	675	421	875
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	185			275	0	0
Storage Lanes	1			1	2	1
Taper Length (ft)	300				25	
Lane Util. Factor	0.97	1.00	1.00	0.88	0.97	1.00
Frt				0.850		0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	3433	1863	1863	2787	3433	1583
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	3433	1863	1863	2787	3433	1583
Right Turn on Red				No		Yes
Satd. Flow (RTOR)						820
Link Speed (mph)		40	40		35	
Link Distance (ft)		880	355		860	
Travel Time (s)		15.0	6.1		16.8	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	1059	166	239	750	468	972
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1059	166	239	750	468	972
Turn Type	Prot	NA	NA	pt+ov	Prot	Free
Protected Phases	5	2	6	6 4	4	
Permitted Phases						Free
Detector Phase	5	2	6	6 4	4	
Switch Phase						
Minimum Initial (s)	7.0	15.0	15.0		7.0	
Minimum Split (s)	13.0	21.0	21.0		13.0	
Total Split (s)	25.0	46.0	21.0		14.0	
Total Split (%)	41.7%	76.7%	35.0%		23.3%	
Yellow Time (s)	4.5	5.0	5.0		4.5	
All-Red Time (s)	1.0	1.0	1.0		1.0	
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	
Total Lost Time (s)	5.5	6.0	6.0		5.5	
Lead/Lag	Lead		Lag			
Lead-Lag Optimize?	Yes		Yes			
Recall Mode	None	Min	Min		None	
Act Effct Green (s)	19.5	40.0	15.0	29.0	8.5	60.0
Actuated g/C Ratio	0.32	0.67	0.25	0.48	0.14	1.00
v/c Ratio	0.95	0.13	0.51	0.56	0.96	0.61
Control Delay	39.3	4.0	24.0	13.0	61.8	1.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	39.3	4.0	24.0	13.0	61.8	1.8
LOS	D	A	C	B	E	A
Approach Delay		34.5	15.6		21.3	
Approach LOS		C	B		C	
Queue Length 50th (ft)	189	18	74	101	88	0
Queue Length 95th (ft)	#308	34	134	151	#171	0
Internal Link Dist (ft)		800	275		780	

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Turn Bay Length (ft)	185			275		
Base Capacity (vph)	1115	1242	465	1347	486	1583
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	0.13	0.51	0.56	0.96	0.61

Intersection Summary

Area Type: Other
Cycle Length: 60
Actuated Cycle Length: 60
Natural Cycle: 60
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.96
Intersection Signal Delay: 24.2 Intersection LOS: C
Intersection Capacity Utilization 65.9% 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: 1: Memorial Drive & Piedmont Drive



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	277	303	148	437	444	205
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	11	11	11	11
Storage Length (ft)		190	375		0	155
Storage Lanes		1	1		2	1
Taper Length (ft)			300		25	
Lane Util. Factor	0.95	1.00	1.00	0.95	0.97	1.00
Frt		0.850				0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	3539	1583	1711	3421	3319	1531
Flt Permitted			0.950		0.950	
Satd. Flow (perm)	3539	1583	1711	3421	3319	1531
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		337				228
Link Speed (mph)	40			40	35	
Link Distance (ft)	319			492	324	
Travel Time (s)	5.4			8.4	6.3	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	308	337	164	486	493	228
Shared Lane Traffic (%)						
Lane Group Flow (vph)	308	337	164	486	493	228
Turn Type	NA	Free	Prot	NA	Prot	Perm
Protected Phases	2		1	6	3	
Permitted Phases		Free				3
Detector Phase	2		1	6	3	3
Switch Phase						
Minimum Initial (s)	18.0		7.0	18.0	5.0	5.0
Minimum Split (s)	24.0		12.0	24.0	11.0	11.0
Total Split (s)	25.0		14.0	39.0	16.0	16.0
Total Split (%)	45.5%		25.5%	70.9%	29.1%	29.1%
Yellow Time (s)	5.0		4.0	5.0	4.0	4.0
All-Red Time (s)	1.0		1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0		5.0	6.0	5.0	5.0
Lead/Lag	Lag		Lead			
Lead-Lag Optimize?	Yes		Yes			
Recall Mode	Min		None	Min	None	None
Act Effct Green (s)	18.4	50.7	8.6	28.9	10.5	10.5
Actuated g/C Ratio	0.36	1.00	0.17	0.57	0.21	0.21
v/c Ratio	0.24	0.21	0.56	0.25	0.71	0.46
Control Delay	13.4	0.3	29.7	5.7	26.8	6.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	13.4	0.3	29.7	5.7	26.8	6.8
LOS	B	A	C	A	C	A
Approach Delay	6.5			11.7	20.5	
Approach LOS	A			B	C	
Queue Length 50th (ft)	36	0	49	33	76	0
Queue Length 95th (ft)	62	0	#111	52	#134	46

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Internal Link Dist (ft)	239			412	244	
Turn Bay Length (ft)		190	375			155
Base Capacity (vph)	1356	1583	310	2276	736	517
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	0.23	0.21	0.53	0.21	0.67	0.44

Intersection Summary

Area Type: Other
Cycle Length: 55
Actuated Cycle Length: 50.7
Natural Cycle: 55
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.71
Intersection Signal Delay: 13.2 Intersection LOS: B
Intersection Capacity Utilization 49.2% ICU Level of Service A
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 2: Park Avenue & Memorial Drive

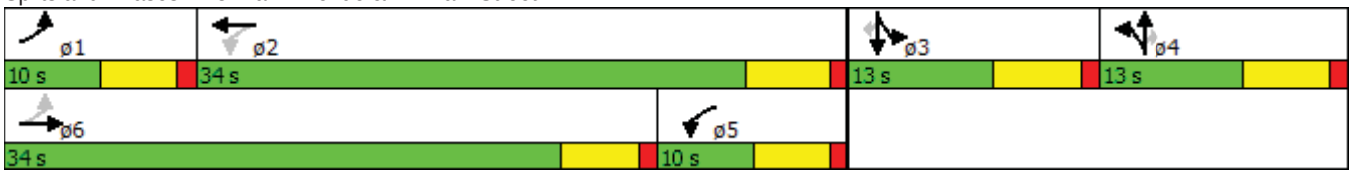
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	29	407	0	28	346	225	5	7	23	154	3	37
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	11	11	12	12	12	12	12	11	12
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.941				0.850			0.850
Flt Protected	0.950			0.950				0.979			0.953	
Satd. Flow (prot)	1770	1863	0	1711	1694	0	0	1824	1583	0	1716	1583
Flt Permitted	0.157			0.502				0.979			0.953	
Satd. Flow (perm)	292	1863	0	904	1694	0	0	1824	1583	0	1716	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					56				281			281
Link Speed (mph)		25			25			20			35	
Link Distance (ft)		614			447			270			840	
Travel Time (s)		16.7			12.2			9.2			16.4	
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)	32	452	0	31	384	250	6	8	26	171	3	41
Shared Lane Traffic (%)												
Lane Group Flow (vph)	32	452	0	31	634	0	0	14	26	0	174	41
Turn Type	pm+pt	NA		pm+pt	NA		Split	NA	Perm	Split	NA	Perm
Protected Phases	1	6		5	2		4	4		3	3	
Permitted Phases	6			2					4			3
Detector Phase	1	6		5	2		4	4	4	3	3	3
Switch Phase												
Minimum Initial (s)	5.0	18.0		5.0	18.0		7.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	10.0	23.0		10.0	24.0		13.0	13.0	13.0	13.0	13.0	13.0
Total Split (s)	10.0	34.0		10.0	34.0		13.0	13.0	13.0	13.0	13.0	13.0
Total Split (%)	14.3%	48.6%		14.3%	48.6%		18.6%	18.6%	18.6%	18.6%	18.6%	18.6%
Yellow Time (s)	4.0	4.0		4.0	4.5		4.5	4.5	4.5	4.5	4.5	4.5
All-Red Time (s)	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
Total Lost Time (s)	5.0	5.0		5.0	5.5			5.5	5.5		5.5	5.5
Lead/Lag	Lead	Lead		Lag	Lag		Lag	Lag	Lag	Lead	Lead	Lead
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	Min		None	Min		None	None	None	None	None	None
Act Effct Green (s)	29.5	29.5		32.3	29.1			7.4	7.4		7.8	7.8
Actuated g/C Ratio	0.53	0.53		0.58	0.52			0.13	0.13		0.14	0.14
v/c Ratio	0.11	0.46		0.05	0.70			0.06	0.06		0.72	0.09
Control Delay	11.4	13.1		11.0	18.3			27.3	0.3		48.0	0.4
Queue Delay	0.0	0.0		0.0	0.0			0.0	0.0		0.0	0.0
Total Delay	11.4	13.1		11.0	18.3			27.3	0.3		48.0	0.4
LOS	B	B		B	B			C	A		D	A
Approach Delay		13.0			18.0			9.7			38.9	
Approach LOS		B			B			A			D	
Queue Length 50th (ft)	3	50		2	77			3	0		45	0
Queue Length 95th (ft)	23	231		22	#422			21	0		#187	0
Internal Link Dist (ft)		534			367			190			760	
Turn Bay Length (ft)												
Base Capacity (vph)	293	1047		602	961			257	464		241	464

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Starvation Cap Reductn	0	0		0	0			0	0		0	0
Spillback Cap Reductn	0	0		0	0			0	0		0	0
Storage Cap Reductn	0	0		0	0			0	0		0	0
Reduced v/c Ratio	0.11	0.43		0.05	0.66			0.05	0.06		0.72	0.09

Intersection Summary

Area Type: Other
Cycle Length: 70
Actuated Cycle Length: 55.7
Natural Cycle: 70
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.72
Intersection Signal Delay: 19.2 Intersection LOS: B
Intersection Capacity Utilization 57.4% 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: 3: Park Avenue & W. Main Street



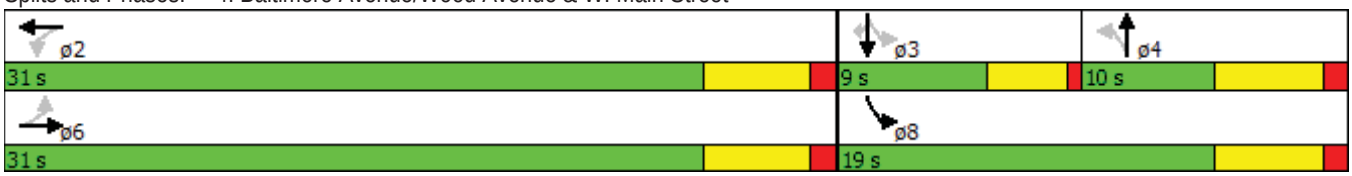
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	5	356	2	53	299	16	4	14	40	40	28	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.999			0.994			0.907				0.850
Flt Protected		0.999			0.993			0.997			0.972	
Satd. Flow (prot)	0	1859	0	0	1839	0	0	1684	0	0	1811	1583
Flt Permitted		0.995			0.906			0.970			0.000	
Satd. Flow (perm)	0	1852	0	0	1678	0	0	1639	0	0	0	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		1			7			44				153
Link Speed (mph)		25			25			25			20	
Link Distance (ft)		1744			294			483			436	
Travel Time (s)		47.6			8.0			13.2			14.9	
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
Adj. Flow (vph)	6	396	2	59	332	18	4	16	44	44	31	6
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	404	0	0	409	0	0	64	0	0	75	6
Turn Type	Perm	NA		Perm	NA		Perm	NA		pm+pt	NA	Perm
Protected Phases		6			2			4!		8!	3	
Permitted Phases	6			2			4			3		3
Detector Phase	6	6		2	2		4	4		8	3	3
Switch Phase												
Minimum Initial (s)	25.0	25.0		25.0	25.0		5.0	5.0		5.0	5.0	5.0
Minimum Split (s)	30.0	30.0		30.0	30.0		10.0	10.0		10.0	9.0	9.0
Total Split (s)	31.0	31.0		31.0	31.0		10.0	10.0		19.0	9.0	9.0
Total Split (%)	62.0%	62.0%		62.0%	62.0%		20.0%	20.0%		38.0%	18.0%	18.0%
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	3.0	3.0
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	0.5	0.5
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	0.0
Total Lost Time (s)		5.0			5.0			5.0			3.5	3.5
Lead/Lag							Lag	Lag			Lead	Lead
Lead-Lag Optimize?							Yes	Yes			Yes	Yes
Recall Mode	Min	Min		Min	Min		None	None		None	None	None
Act Effct Green (s)		32.9			32.9			5.0			8.8	5.4
Actuated g/C Ratio		0.71			0.71			0.11			0.19	0.12
v/c Ratio		0.31			0.34			0.30			0.22	0.02
Control Delay		6.8			7.2			14.8			13.9	0.2
Queue Delay		0.0			0.0			0.0			0.0	0.0
Total Delay		6.8			7.2			14.8			13.9	0.2
LOS		A			A			B			B	A
Approach Delay		6.8			7.2			14.8			12.9	
Approach LOS		A			A			B			B	
Queue Length 50th (ft)		65			66			5			15	0
Queue Length 95th (ft)		116			123			33			38	0
Internal Link Dist (ft)		1664			214			403			356	
Turn Bay Length (ft)												
Base Capacity (vph)		1329			1206			215			343	322
Starvation Cap Reductn		0			0			0			0	0

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Spillback Cap Reductn		0			0			0			0	0
Storage Cap Reductn		0			0			0			0	0
Reduced v/c Ratio		0.30			0.34			0.30			0.22	0.02

Intersection Summary

Area Type: Other
Cycle Length: 50
Actuated Cycle Length: 46.6
Natural Cycle: 50
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.34
Intersection Signal Delay: 8.0 Intersection LOS: A
Intersection Capacity Utilization 63.7% ICU Level of Service B
Analysis Period (min) 15
! Phase conflict between lane groups.

Splits and Phases: 4: Baltimore Avenue/Wood Avenue & W. Main Street



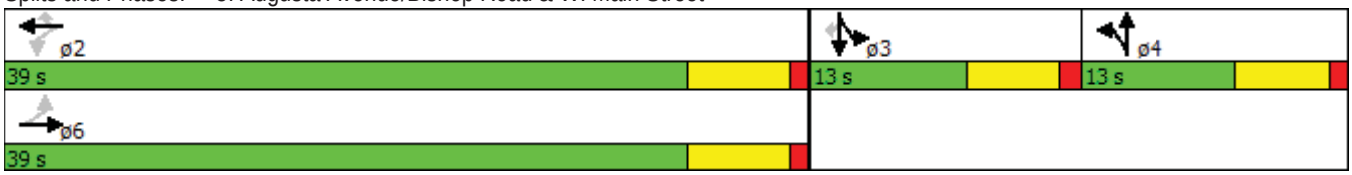
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	149	299	37	16	409	12	54	61	8	10	94	333
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	10	8	12	8	12	10	10	12
Storage Length (ft)	0		0	0		0	0		0	125		0
Storage Lanes	0		0	0		1	0		0	1		1
Taper Length (ft)	25			25			25			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		0.990				0.850		0.991				0.850
Flt Protected		0.985			0.998			0.979		0.950		
Satd. Flow (prot)	0	1816	0	0	1735	1372	0	1566	0	1652	1739	1583
Flt Permitted		0.605			0.973			0.979		0.950		
Satd. Flow (perm)	0	1116	0	0	1692	1372	0	1566	0	1652	1739	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		9				134		4				370
Link Speed (mph)		25			25			25			30	
Link Distance (ft)		555			1744			400			838	
Travel Time (s)		15.1			47.6			10.9			19.0	
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
Adj. Flow (vph)	166	332	41	18	454	13	60	68	9	11	104	370
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	539	0	0	472	13	0	137	0	11	104	370
Turn Type	Perm	NA		Perm	NA	Perm	Split	NA		Split	NA	Perm
Protected Phases		6			2		4	4		3	3	
Permitted Phases	6			2		2						3
Detector Phase	6	6		2	2	2	4	4		3	3	3
Switch Phase												
Minimum Initial (s)	22.0	22.0		22.0	22.0	22.0	7.0	7.0		7.0	7.0	7.0
Minimum Split (s)	28.0	28.0		28.0	28.0	28.0	13.0	13.0		13.0	13.0	13.0
Total Split (s)	39.0	39.0		39.0	39.0	39.0	13.0	13.0		13.0	13.0	13.0
Total Split (%)	60.0%	60.0%		60.0%	60.0%	60.0%	20.0%	20.0%		20.0%	20.0%	20.0%
Yellow Time (s)	5.0	5.0		5.0	5.0	5.0	4.5	4.5		4.5	4.5	4.5
All-Red Time (s)	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
Total Lost Time (s)		6.0			6.0	6.0		5.5		5.5	5.5	5.5
Lead/Lag							Lag	Lag		Lead	Lead	Lead
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	Yes
Recall Mode	Min	Min		Min	Min	Min	None	None		None	None	None
Act Effct Green (s)		32.2			32.2	32.2		7.4		7.4	7.4	7.4
Actuated g/C Ratio		0.50			0.50	0.50		0.12		0.12	0.12	0.12
v/c Ratio		0.95			0.55	0.02		0.74		0.06	0.52	0.73
Control Delay		46.4			14.1	0.0		53.6		26.5	37.1	13.5
Queue Delay		0.0			0.0	0.0		0.0		0.0	0.0	0.0
Total Delay		46.4			14.1	0.0		53.6		26.5	37.1	13.5
LOS		D			B	A		D		C	D	B
Approach Delay		46.4			13.7			53.6			18.8	
Approach LOS		D			B			D			B	
Queue Length 50th (ft)		185			118	0		52		4	40	0
Queue Length 95th (ft)		#389			198	0		#136		17	#86	#99

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		475			1664			320			758	
Turn Bay Length (ft)										125		
Base Capacity (vph)		580			873	772		187		193	203	511
Starvation Cap Reductn		0			0	0		0		0	0	0
Spillback Cap Reductn		0			0	0		0		0	0	0
Storage Cap Reductn		0			0	0		0		0	0	0
Reduced v/c Ratio		0.93			0.54	0.02		0.73		0.06	0.51	0.72

Intersection Summary

Area Type: Other
Cycle Length: 65
Actuated Cycle Length: 64
Natural Cycle: 65
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.95
Intersection Signal Delay: 29.3 Intersection LOS: C
Intersection Capacity Utilization 76.6% ICU Level of Service D
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 5: Augusta Avenue/Bishop Road & W. Main Street



Intersection	
Int Delay, s/veh	7.8

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	809	39	255	905	6	408
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	270	-	0	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	899	43	283	1006	7	453

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	942	0	1990	471
Stage 1	-	-	-	-	921	-
Stage 2	-	-	-	-	1069	-
Critical Hdwy	-	-	4.14	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	2.22	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	724	-	53	539
Stage 1	-	-	-	-	348	-
Stage 2	-	-	-	-	291	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	724	-	32	539
Mov Cap-2 Maneuver	-	-	-	-	120	-
Stage 1	-	-	-	-	348	-
Stage 2	-	-	-	-	177	-

Approach	EB	WB	NB
HCM Control Delay, s	0	2.9	37.6
HCM LOS			E

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	120	539	-	-	724	-
HCM Lane V/C Ratio	0.056	0.841	-	-	0.391	-
HCM Control Delay (s)	36.8	37.6	-	-	13.1	-
HCM Lane LOS	E	E	-	-	B	-
HCM 95th %tile Q(veh)	0.2	8.7	-	-	1.9	-