

July 13, 2022

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[Sent via Email]

Reference: Traffic Study - Pulaski, VA

Subject: Two-way Traffic Conversion Analysis

Mr. Smythers,

RKA was retained by the Town of Pulaski to conduct a study to determine the feasibility of converting 3rd Street and 2nd Street / Main Street from one-way traffic to two-way traffic between Jefferson Avenue and Duncan Avenue. As part of this study, the existing traffic control was also evaluated. This letter presents the results of the study.

Executive Summary

A study was conducted to assess existing traffic operations at six intersections along 2nd and 3rd Streets in downtown Pulaski, Virginia. Additionally, the anticipated traffic operations at the same intersections were analyzed with two-way traffic flow on 2nd and 3rd Streets. Traffic volume signal warrants were performed for the existing signalized intersections in the study area.

The following intersections were studied and are shown in the figure on the following page:

- East Main Street / 3rd Street / 2nd Street at Duncan Avenue (unsignalized)
- 3rd Street and Madison Avenue (unsignalized)
- 3rd Street and North Washington Avenue (signalized)
- 3rd Street and Jefferson Avenue (signalized)
- 2nd Street and Jefferson Avenue (signalized)
- 2nd Street and Washington Street (signalized)
- 2nd Street and Madison Avenue (unsignalized)

Traffic counts were collected at these intersections during the morning and afternoon peak periods in April of 2022. These intersections were analyzed under existing conditions - with one-way traffic patterns and existing signalization or stop sign control, as appropriate. It was found that all study intersections operate with favorable level of service and minimal queueing under existing conditions.

Figure: Study Intersections



A signal warrant analysis (SWA) was performed for each of the existing signalized intersections. This analysis used traffic volumes to determine if the signals were warranted under existing traffic conditions. It was found that none of the signal warrants were met for any intersection. The Town may determine if a change in traffic control is beneficial for the traveling public.

To help inform this decision, the existing signalized intersections were analyzed with all-way stop control under the two-way traffic pattern conditions. To analyze the study intersections with a two-way traffic pattern along 2nd and 3rd streets between Jefferson Avenue and Duncan Avenue, the existing east-west traffic volumes, as well as northbound and southbound turning movements were redistributed across the roadway network based on engineering judgement.

The intersection of East Main Street / 3rd Street / 2nd Street at Duncan Avenue was analyzed both as two-way stop control and as a roundabout with two-way traffic flow. All the intersections were found to operate at favorable levels of service with minimal queuing and delay. The intersections also have additional capacity to accommodate increases in traffic volume due to future development or redevelopment of the downtown area.

The results of this study indicate that a two-way traffic pattern along 2nd and 3rd streets from Jefferson Avenue to Duncan Avenue can be accommodated by the existing road network with restriping and modifications to existing traffic control. If the existing signalized intersection remain signalized with the traffic pattern conversion, they will need to be modified (additional signal heads, new timings, etc.) to accommodate the two-way traffic flow. Alternatively, the Town may elect to convert the signalized intersections to all-way stop control.

Study Area

The following existing intersections were considered in this study:

- East Main Street / 3rd Street / 2nd Street at Duncan Avenue (unsignalized)
- 3rd Street and Madison Avenue (unsignalized)
- 3rd Street and North Washington Avenue (signalized)
- 3rd Street and Jefferson Avenue (signalized)
- 2nd Street and Jefferson Avenue (signalized)
- 2nd Street and Washington Street (signalized)
- 2nd Street and Madison Avenue (unsignalized)

Refer to the figures, located in Appendix A, for a map highlighting the study intersections.

Data Collection

Existing peak hour traffic volumes were determined based on traffic count data collected at the study intersections in April of 2022, during a typical weekday AM (6:00AM – 8:00AM) and PM (3:30PM – 5:30PM) peak periods. Existing lane configurations (number of traffic lanes on each intersection approach), speed limits, storage capacities, and other intersection and roadway information within the study area are shown in the figures as well as 2022 existing weekday AM and PM peak hour traffic volumes. Signal timing information was obtained from the Town of Pulaski. A copy of the traffic count data and signal information is included in the Appendix B and C, respectively.

Two-Way Traffic Conversion Methodology

To develop an estimate for two-way traffic flow along 2nd and 3rd streets, existing traffic volumes were assumed to split approximately fifty percent in the east-west direction. Northbound and southbound turning movements were also divided equally between 2nd and 3rd streets. Northbound and southbound through movements were maintained as it is not expected they would be significantly impacted by the two-way traffic conversion. This approach provides a baseline of anticipated traffic operations at the study intersections with the new traffic pattern. These results can be referenced to determine the likelihood of extra capacity along the segments and at intersections that can be used to account for potential traffic increases and shifts due to future development along either 2nd or 3rd street.

Refer to the figures for the converted 2022 two-way traffic weekday AM and PM peak hour traffic volumes.

Signal Warrant Analysis

A signal warrant analysis (SWA) was completed for the four signalized intersections within the study area to determine if the signals are warranted based on current traffic volumes. The SWAs were performed using methodology contained in FHWA's Manual on Uniform Traffic Control Devices (MUTCD). For each signal location, the peak hour traffic counts were analyzed. If the peak hour traffic volumes do not meet the warrants,

it is unlikely volumes at other hours during the day would. No volume warrants were met at any of the intersections. The SWA reports are included in Appendix D.

The two-way traffic flow scenario analyses the existing signalized intersections as all-way stop control to provide anticipated operations should the Town decide to remove the existing traffic signals.

Capacity Analysis

Level-of-service (LOS) and delay are two measures used to determine how well an intersection is operating. Typically, LOS D is acceptable for most area. Some agencies accept LOS E or F in downtown business districts due to limited right-of-way and congestion or to encourage other modes of transportation such as walking, biking or transit.

Study intersections were analyzed using the methodology outlined in the *Highway Capacity Manual (HCM)*, 6th Edition published by the Transportation Research Board. Capacity and level of service are the design criteria for this traffic study. Synchro (Version 10.3) was used to complete the analyses for all study area intersections. Note that the unsignalized capacity analysis for two-way stop-control does not provide an overall level of service for an intersection; only delay for an approach with a conflicting movement. Refer to Table 1 for HCM levels of service and related average control delay per vehicle for both signalized and unsignalized intersections.

Table 1: Highway Capacity Manual – Levels of Service and Delay

UNIGNALIZED INTERSECTION		SIGNALIZED INTERSECTION	
LEVEL OF SERVICE	AVERAGE CONTROL DELAY PER VEHICLE (SECONDS)	LEVEL OF SERVICE	AVERAGE CONTROL DELAY PER VEHICLE (SECONDS)
A	0-10	A	0-10
B	10-15	B	10-20
C	15-25	C	20-35
D	25-35	D	35-55
E	35-50	E	55-80
F	>50	F	>80

East Main Street / 3rd Street / 2nd Street at Duncan Avenue

The unsignalized intersection of East Main Street / 3rd Street / 2nd Street at Duncan Avenue was analyzed under 2022 existing and 2022 two-way traffic conditions with the lane configurations and traffic control shown in Table 2. At the request of the Town and due to existing roadway geometry, this intersection was also analyzed as a roundabout. Refer to Table 2 for a summary of the analysis results during the weekday AM and PM peak hours. Refer to Appendix E for the Synchro capacity analysis reports and Sidra reports and Appendix L for the SimTraffic queuing reports.

Table 2: Analysis Summary of East Main Street / 3rd Street / 2nd Street at Duncan Avenue

ANALYSIS SCENARIO	APPROACH	LANE CONFIGURATIONS	WEEKDAY AM PEAK HOUR LEVEL OF SERVICE		WEEKDAY PM PEAK HOUR LEVEL OF SERVICE	
			Approach (seconds)	Overall (seconds)	Approach (seconds)	Overall (seconds)
2022 Existing Conditions	EB	1 LT*, 1 TH, 1 TH-RT	-	N/A	-	N/A
	WB	1 LT-TH, 1 TH	-			
	NB	1 TH, 1 RT	A (9) ²			
2022 Two-Way Traffic Flow (TWSC**)	EB	1 LT, 1 TH-RT	A (8) ¹	N/A	A (8) ¹	N/A
	WB	1 LT, 1 TH-RT	A (8) ¹			
	NB	1 LT-TH, 1 RT	A (9) ²			
	SB	1 LT-TH-RT	B (14) ²			
2022 Two-way Traffic Flow (Roundabout)	EB	1 LT-TH-RT	A (4)	A (4)	A (4)	A (5)
	WB	1 LT-TH-RT	A (4)			
	NB	1 LT-TH-RT	A (4)			
	SB	1 LT-TH-RT	A (4)			

1. Level of service for the major-street left-turn movement.

2. Level of service for the minor-street approach.

*Left turn operates under yield control outside of the main intersection

** Two-way stop control (minor approaches stop)

Capacity analysis of 2022 existing traffic conditions indicates that the northbound approach at the intersection of East Main Street / 3rd Street / 2nd Street at Duncan Avenue is expected to operate at LOS A during the weekday AM and PM peak hours. The configuration of this intersection in Synchro does not capture the eastbound left-turn because it is under yield control in the field; however, SimTraffic shows minimal queueing for this movement. In the field, the westbound approach of East Main Street is shown as a shared left and through lane and one through lane. Due to limitations of Synchro, the westbound approach was coded as a one right-turn lane onto 3rd Street and one left-turn lane onto Duncan Avenue. This is expected to provide conservative analysis results because only one lane was analyzed from East Main Street onto 3rd Street rather than two.

Under 2022 two-way traffic conditions, the major-street left-turn movements and minor street approaches are anticipated to operate at LOS C or better during the AM and PM peak hours. Under 2022 two-way traffic flow roundabout traffic conditions, the intersection is expected to operate at an overall LOS A during the weekday AM and PM peak hours. It should be noted that installing a roundabout at this intersection may require additional right-of-way from adjacent properties.

3rd Street and Madison Avenue

The unsignalized intersection of 3rd Street and Madison Avenue was analyzed under 2022 existing and 2022 two-way traffic conditions with the lane configurations and traffic control shown in Table 3. Refer to Table 3 for a summary of the analysis results. Refer to Appendix F for the Synchro capacity analysis reports and Appendix L for the SimTraffic queuing reports.

Table 3: Analysis Summary of 3rd Street and Madison Avenue

ANALYSIS SCENARIO	A P P R O A C H	LANE CONFIGURATIONS	WEEKDAY AM PEAK HOUR LEVEL OF SERVICE		WEEKDAY PM PEAK HOUR LEVEL OF SERVICE	
			Approach (seconds)	Overall (seconds)	Approach (seconds)	Overall (seconds)
2022 Existing Conditions	WB	1 LT-TH, 1 TH-RT	--	N/A	--	N/A
	NB	1 LT, 1 TH	A (10) ²		B (11) ²	
	SB	1 TH-RT	A (10) ²		B (11) ²	
2022 Two-Way Traffic Flow (TWSC ^{**})	EB	1 LT-TH-RT	A (7) ¹	N/A	A (8) ¹	N/A
	WB	1 LT-TH-RT	A (7) ¹		A (8) ¹	
	NB	1 LT, 1 TH-RT	A (10) ²		B (11) ²	
	SB	1 LT-TH-RT	A (10) ²		B (11) ²	

1. Level of service for the major-street left-turn movement.

2. Level of service for the minor-street approach.

** Two-way stop control (minor approaches stop)

Capacity analysis of 2022 existing traffic conditions indicates that the major-street left-turn movement and minor-street approaches at the intersection of 3rd Street and Madison Avenue are expected to operate at LOS A during the weekday AM peak hour and LOS B during the weekday PM peak hour. Under 2022 two-way traffic conditions, the major-street approaches are expected to operate at LOS A during the weekday AM and PM peak hours and the minor-street approaches are expected to operate at LOS B or better during the AM and PM peak hours. Based on SimTraffic queuing reports, minimal queuing is expected at the intersection.

3rd Street and North Washington Avenue

The intersection of 3rd Street and North Washington Avenue was analyzed under 2022 existing and 2022 two-way traffic conditions with the lane configurations and traffic control shown in Table 4. Refer to Table 4 for a summary of the analysis results. Refer to Appendix G for the Synchro capacity analysis reports and Appendix L for the SimTraffic queuing reports.

Table 4: Analysis Summary of 3rd Street and North Washington Avenue

ANALYSIS SCENARIO	A P P R O A C H	LANE CONFIGURATIONS	WEEKDAY AM PEAK HOUR LEVEL OF SERVICE		WEEKDAY PM PEAK HOUR LEVEL OF SERVICE	
			Approach (seconds)	Overall (seconds)	Approach (seconds)	Overall (seconds)
2022 Existing Conditions (Signalized)	WB	1 LT-TH, 1 TH-RT	C (23)	B (12)	C (24)	B (13)
	NB	1 LT, 1 TH	A (3)		A (4)	
	SB	1 TH-RT	A (6)		A (6)	
2022 Two-Way Traffic Flow (AWSC**)	EB	1 LT-TH-RT	A (8) ³	A (8)	A (9) ³	A (10)
	WB	1 LT-TH-RT	A (8) ³		A (9) ³	
	NB	1 LT, 1 TH-RT	A (8) ³		A (10) ³	
	SB	1 LT-TH-RT	A (8) ³		A (10) ³	

3. Level of service for all-way stop-controlled approaches.

** All-way Stop Control

Capacity analysis of 2022 existing traffic conditions indicates that the signalized intersection of 3rd Street and North Washington Street is currently operating at an overall LOS B during the weekday AM and PM peak hour. Under 2022 two-way traffic conditions, the intersection was analyzed as an all-way stop-controlled intersection. This intersection is expected to operate at an overall LOS A during the weekday AM and PM peak hours under stop control with a two-way traffic pattern. Based on SimTraffic queuing reports, minimal queuing is expected at the intersection. The improved levels of service are attributed to the redistribution of traffic due to the two-way pattern and there is no additional signal delay when all-way stop control is used.

3rd Street and Jefferson Avenue

The intersection of 3rd Street and Jefferson Avenue was analyzed under 2022 existing and 2022 two-way traffic conditions with the lane configurations and traffic control shown in Table 5. Refer to Table 5 for a summary of the analysis results. Refer to Appendix H for the Synchro capacity analysis reports and Appendix L for the SimTraffic queuing reports.

Table 5: Analysis Summary of 3rd Street and Jefferson Avenue

ANALYSIS SCENARIO	A P P R O A C H	LANE CONFIGURATIONS	WEEKDAY AM PEAK HOUR LEVEL OF SERVICE		WEEKDAY PM PEAK HOUR LEVEL OF SERVICE	
			Approach (seconds)	Overall (seconds)	Approach (seconds)	Overall (seconds)
2022 Existing Conditions (Signalized)	EB	1 LT, 1 RT	B (13)	B (11)	A (10)	A (9)
	WB	1 LT, 1 TH-RT	B (11)		A (8)	
	NB	1 LT-TH	B (12)		A (10)	
	SB	1 TH-RT	B (11)		A (9)	
2022 Two-Way Traffic Flow (AWSC ^{**})	EB	1 LT-TH-RT	A (7) ³	A (7)	A (8) ³	A (8)
	WB	1 LT-TH-RT	A (7) ³		A (8) ³	
	NB	1 LT-TH-RT	A (7) ³		A (8) ³	
	SB	1 LT-TH-RT	A (7) ³		A (8) ³	

3. Level of service for all-way stop-controlled approaches.

^{**} All-way Stop Control

Capacity analysis of 2022 existing traffic conditions indicates that the signalized intersection of 3rd Street and Jefferson Avenue currently operates at an overall LOS B during the weekday AM peak hour and LOS A during the weekday PM peak hour. Under 2022 two-way traffic conditions, the intersection was analyzed as an all-way stop-controlled intersection. This intersection is expected to operate at an overall LOS A during the weekday AM and PM peak hours under stop control with a two-way traffic pattern. Based on SimTraffic queuing reports, minimal queuing is expected at the intersection. The improved levels of service are attributed to the redistribution of traffic due to the two-way pattern and there is no additional signal delay when all-way stop control is used.

2nd Street and Jefferson Avenue

The intersection of 2nd Street and Jefferson Avenue was analyzed under 2022 existing and 2022 two-way traffic conditions with the lane configurations and traffic control shown in Table 6. Refer to Table 6 for a summary of the analysis results. Refer to Appendix I for the Synchro capacity analysis reports and Appendix L for the SimTraffic queuing reports.

Table 6: Analysis Summary of 2nd Street and Jefferson Avenue

ANALYSIS SCENARIO	A P P R O A C H	LANE CONFIGURATIONS	WEEKDAY AM PEAK HOUR LEVEL OF SERVICE		WEEKDAY PM PEAK HOUR LEVEL OF SERVICE	
			Approach (seconds)	Overall (seconds)	Approach (seconds)	Overall (seconds)
2022 Existing Conditions (Signalized)	EB	1 LT-TH-RT	B (11)	A (7)	B (12)	A (7)
	NB	1 LT, 1 TH-RT	A (4)		A (5)	
	SB	1 LT, 1 TH-RT	A (4)		A (5)	
2022 Two-Way Traffic Flow (AWSC**)	EB	1 LT-TH-RT	A (7) ³	A (8)	A (8) ³	A (8)
	WB	1 LT-TH-RT	A (8) ³		A (8) ³	
	NB	1 LT, 1 TH-RT	A (8) ³		A (8) ³	
	SB	1 LT, 1 TH-RT	A (8) ³		A (8) ³	

3. Level of service for all-way stop-controlled approaches.

** All-way Stop Control

Capacity analysis of 2022 existing traffic conditions indicates that the signalized intersection of 2nd Street and Jefferson Avenue currently operates at an overall LOS A during the weekday AM and PM peak hours. Under 2022 two-way traffic conditions, the intersection was analyzed as an all-way stop-controlled intersection. This intersection is expected to operate at an overall LOS A during the weekday AM and PM peak hours under stop control with a two-way traffic pattern. Based on SimTraffic queuing reports, minimal queuing is expected at the intersection. The improved levels of service are attributed to the redistribution of traffic due to the two-way pattern and there is no additional signal delay when all-way stop control is used.

2nd Street and Washington Street

The intersection of 2nd Street and Washington Street was analyzed under 2022 existing and 2022 two-way traffic conditions with the lane configurations and traffic control shown in Table 7. Refer to Table 7 for a summary of the analysis results. Refer to Appendix J for the Synchro capacity analysis reports and Appendix L for the SimTraffic queuing reports.

Table 7: Analysis Summary of 2nd Street and Washington Street

ANALYSIS SCENARIO	A P P R O A C H	LANE CONFIGURATIONS	WEEKDAY AM PEAK HOUR LEVEL OF SERVICE		WEEKDAY PM PEAK HOUR LEVEL OF SERVICE	
			Approach (seconds)	Overall (seconds)	Approach (seconds)	Overall (seconds)
2022 Existing Conditions (Signalized)	EB	1 LT-TH, 1 TH-RT	C (33)	B (11)	D (36)	B (13)
	NB	1 TH, 1 RT	A (6)		A (8)	
	SB	1 LT, 1 TH	A (2)		A (3)	
2022 Two-Way Traffic Flow (AWSC**)	EB	1 LT-TH-RT	A (8) ³	A (8)	A (9) ³	A (10)
	WB	1 LT-TH-RT	A (8) ³		A (9) ³	
	NB	1 LT-TH, 1 RT	A (8) ³		A (9) ³	
	SB	1 LT, 1 TH-RT	A (9) ³		B (11) ³	

3. Level of service for all-way stop-controlled approaches.

** All-way Stop Control

Capacity analysis of 2022 existing traffic conditions indicates that the signalized intersection of 2nd Street and Washington Street currently operates at an overall LOS B during the weekday AM and PM peak hour. The eastbound approach of 2nd Street is currently operating at LOS C during the weekday AM peak hour and LOS D during the weekday PM peak hour, which are considered acceptable levels of service.

Under 2022 two-way traffic conditions, the intersection was analyzed as an all-way stop-controlled intersection. This intersection is expected to operate at an overall LOS A during the weekday AM and PM peak hours under stop control with a two-way traffic pattern. Based on SimTraffic queuing reports, minimal queuing is expected at the intersection. The improved levels of service are attributed to the redistribution of traffic due to the two-way pattern and there is no additional signal delay when all-way stop control is used.

2nd Street and Madison Avenue

The unsignalized intersection of 2nd Street and Madison Avenue was analyzed under 2022 existing and 2022 two-way traffic conditions with the lane configurations and traffic control shown in Table 8. Refer to Table 8 for a summary of the analysis results. Refer to Appendix K for the Synchro capacity analysis reports and Appendix L for the SimTraffic queuing reports.

Table 8: Analysis Summary of 2nd Street and Washington Street

ANALYSIS SCENARIO	A P P R O A C H	LANE CONFIGURATIONS	WEEKDAY AM PEAK HOUR LEVEL OF SERVICE		WEEKDAY PM PEAK HOUR LEVEL OF SERVICE	
			Approach (seconds)	Overall (seconds)	Approach (seconds)	Overall (seconds)
2022 Existing Conditions	EB	1 LT-TH, 1 TH-RT	--	N/A	--	N/A
	NB	1 TH-RT	A (9) ²		A (10) ²	
	SB	1 LT-TH	A (9) ²		A (10) ²	
2022 Two-Way Traffic Flow (TWSC*)	EB	1 LT-TH-RT	A (7) ¹	N/A	A (8) ¹	N/A
	WB	1 LT-TH-RT	A (7) ¹		A (7) ¹	
	NB	1 LT-TH-RT	A (9) ²		B (10) ²	
	SB	1 LT-TH-RT	A (9) ²		B (10) ²	

1. Level of service for the major-street left-turn movement.
 2. Level of service for the minor-street approach.
- * Two-way stop control (minor approaches stop)

Capacity analysis of 2022 existing and 2022 two-way traffic conditions indicates that the major-street left-turn movement and minor-street approaches at the intersection of 2nd Street and Madison Avenue are expected to operate at LOS B or better during the weekday AM and PM peak hours. Based on SimTraffic queuing reports, minimal queuing is expected at the intersection.

Conclusions

Based on the analysis results, converting 3rd Street and 2nd Street / Main Street from one-way traffic to a two-way traffic pattern between Jefferson Avenue and Duncan Avenue is operationally feasible. Converting the signalized study intersections to all-way stop-controlled intersections could decrease the overall intersection delays and improve the approach levels of service. At the intersection of E Main Street / 3rd Street / 2nd Street at Duncan Avenue under two-way traffic conditions, the intersection is expected to operate at favorable levels of service as a two-way stop-controlled intersection or as a roundabout intersection. Installing a roundabout at this intersection may require additional right-of-way from adjacent properties.

The converted roadway network would carry existing traffic volumes without capacity issues and with additional capacity available to accommodate increases in traffic from future development.

If you should have any questions or comments regarding this letter, please feel free to contact me at (919) 872-5115.

Sincerely,
Ramey Kemp & Associates, Inc.



Jessica McClure, PE
State Traffic Engineering Lead



Attachments: Appendix A - Figures
Appendix B - Traffic Count Data
Appendix C - Signal Information
Appendix D - Signal Warrant Analyses
Appendix E - Capacity Calculations - E Main Street / 3rd Street / 2nd Street at Duncan Avenue
Appendix F - Capacity Calculations - 3rd Street and Madison Avenue
Appendix G - Capacity Calculations - 3rd Street and N Washington Avenue
Appendix H - Capacity Calculations - 3rd Street and Jefferson Avenue
Appendix I - Capacity Calculations - 2nd Street and Jefferson Avenue
Appendix J - Capacity Calculations - 2nd Street and Washington Avenue
Appendix K - Capacity Calculations - 2nd Street and Madison Avenue
Appendix L - SimTraffic Queuing Reports

TECHNICAL APPENDIX

APPENDIX A

FIGURES



LEGEND

- Study Intersection
- ▭ Study Area



RKA
RAMEY KEMP ASSOCIATES

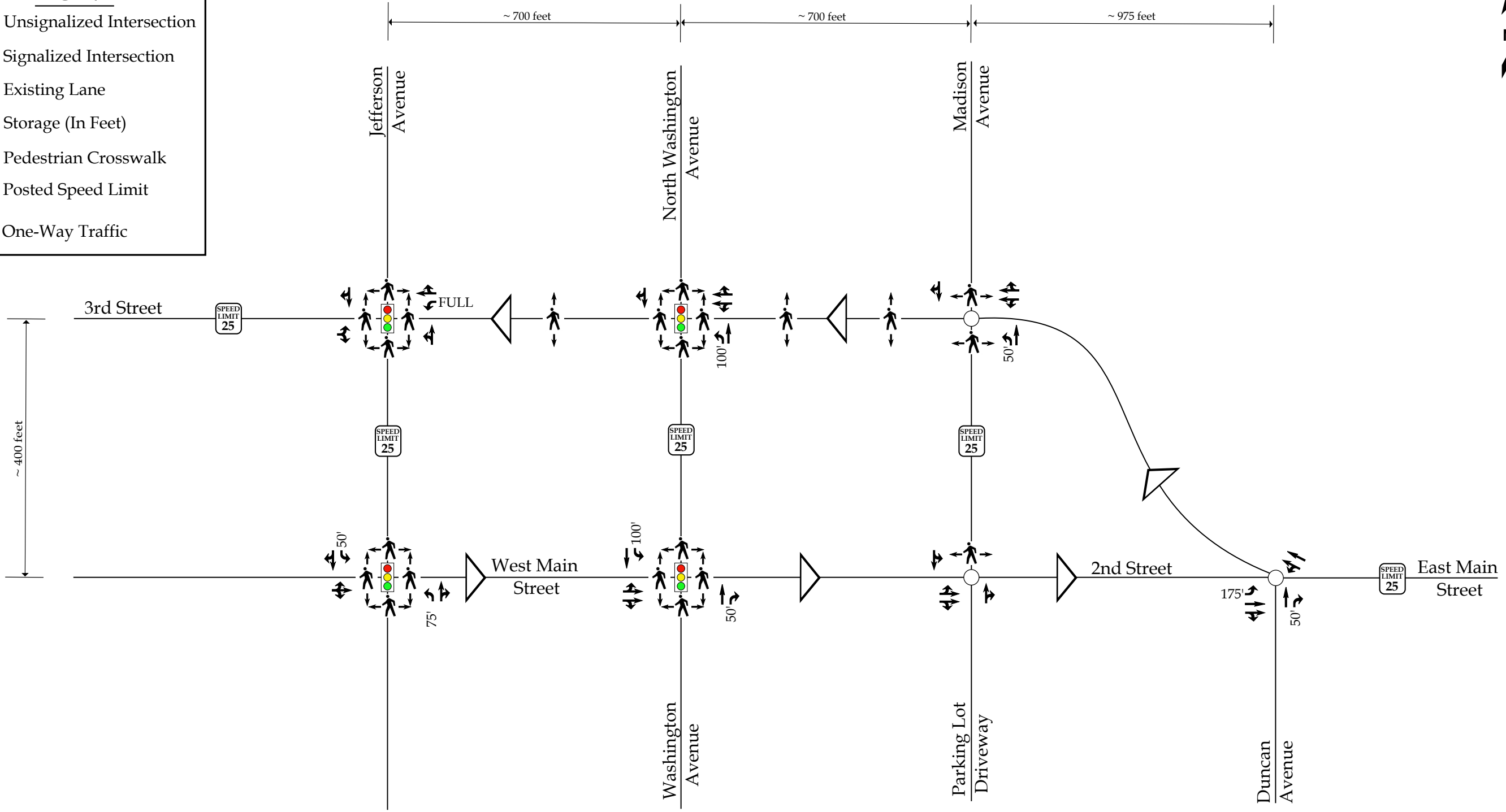
Traffic Study
Pulaski, VA

Site Location Map

Scale: Not to Scale

LEGEND

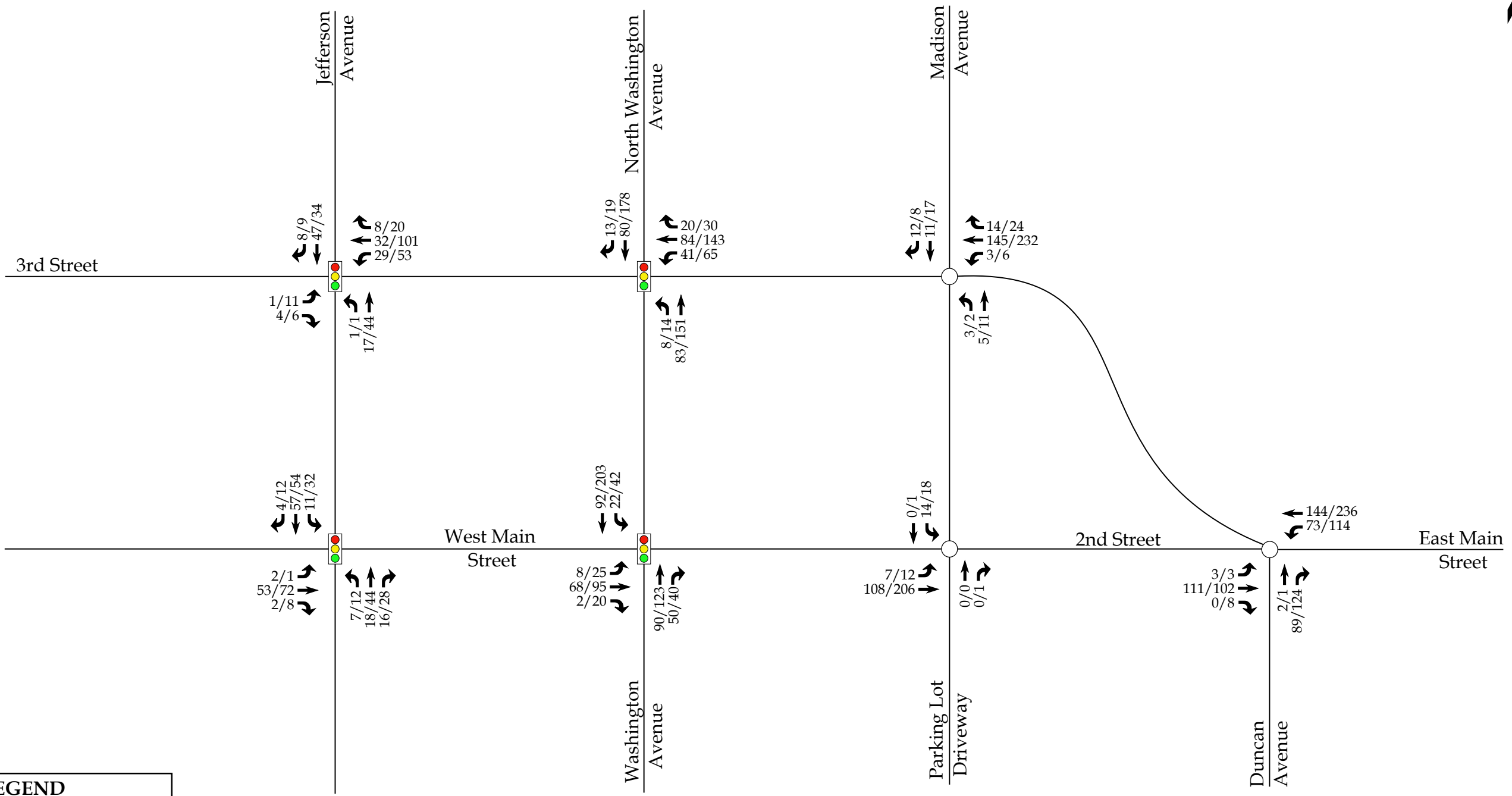
- Unsignalized Intersection
- 🚦 Signalized Intersection
- ➡ Existing Lane
- X' Storage (In Feet)
- 🚶 Pedestrian Crosswalk
- 🚫 SPEED LIMIT XX
- ▶ One-Way Traffic



Traffic Study
Pulaski, VA

2022 Existing
Lane Configurations

Scale: Not to Scale



LEGEND

- Unsignalized Intersection
- 🚦 Signalized Intersection
- X / Y → Weekday AM / PM Peak Hour Traffic

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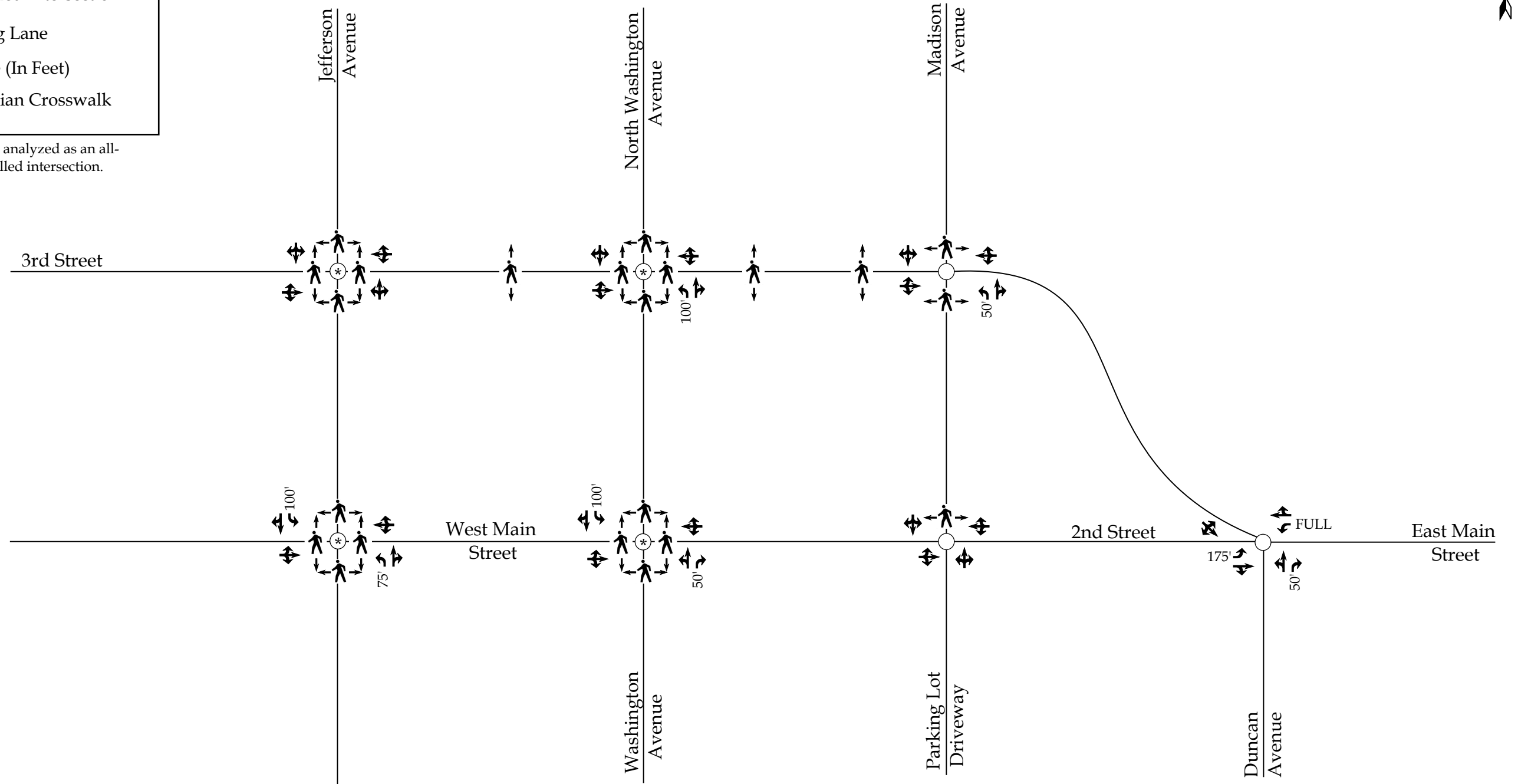
2022 Existing
Peak Hour Traffic

Scale: Not to Scale

LEGEND

- Unsignalized Intersection
- 🚦 Signalized Intersection
- ➡ Existing Lane
- x' Storage (In Feet)
- 🚶 Pedestrian Crosswalk

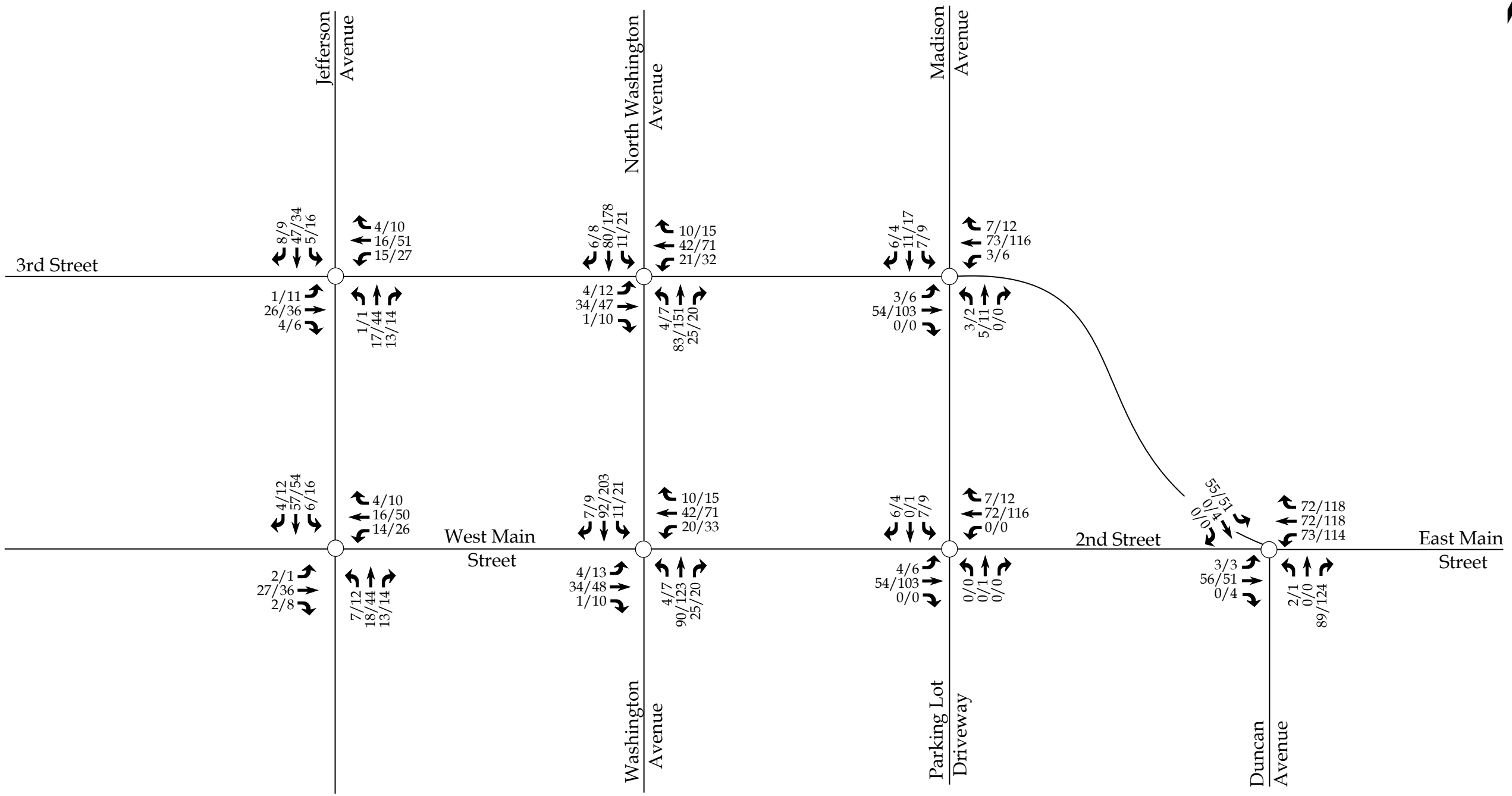
* Intersection was analyzed as an all-way stop-controlled intersection.



Traffic Study
Pulaski, VA

2022 Two-Way Traffic
Lane Configurations

Scale: Not to Scale



LEGEND

- Unsignalized Intersection
- X / Y → Weekday AM / PM Peak Hour Traffic



Traffic Study
Pulaski, VA

2022 Two-Way Traffic
Peak Hour Traffic

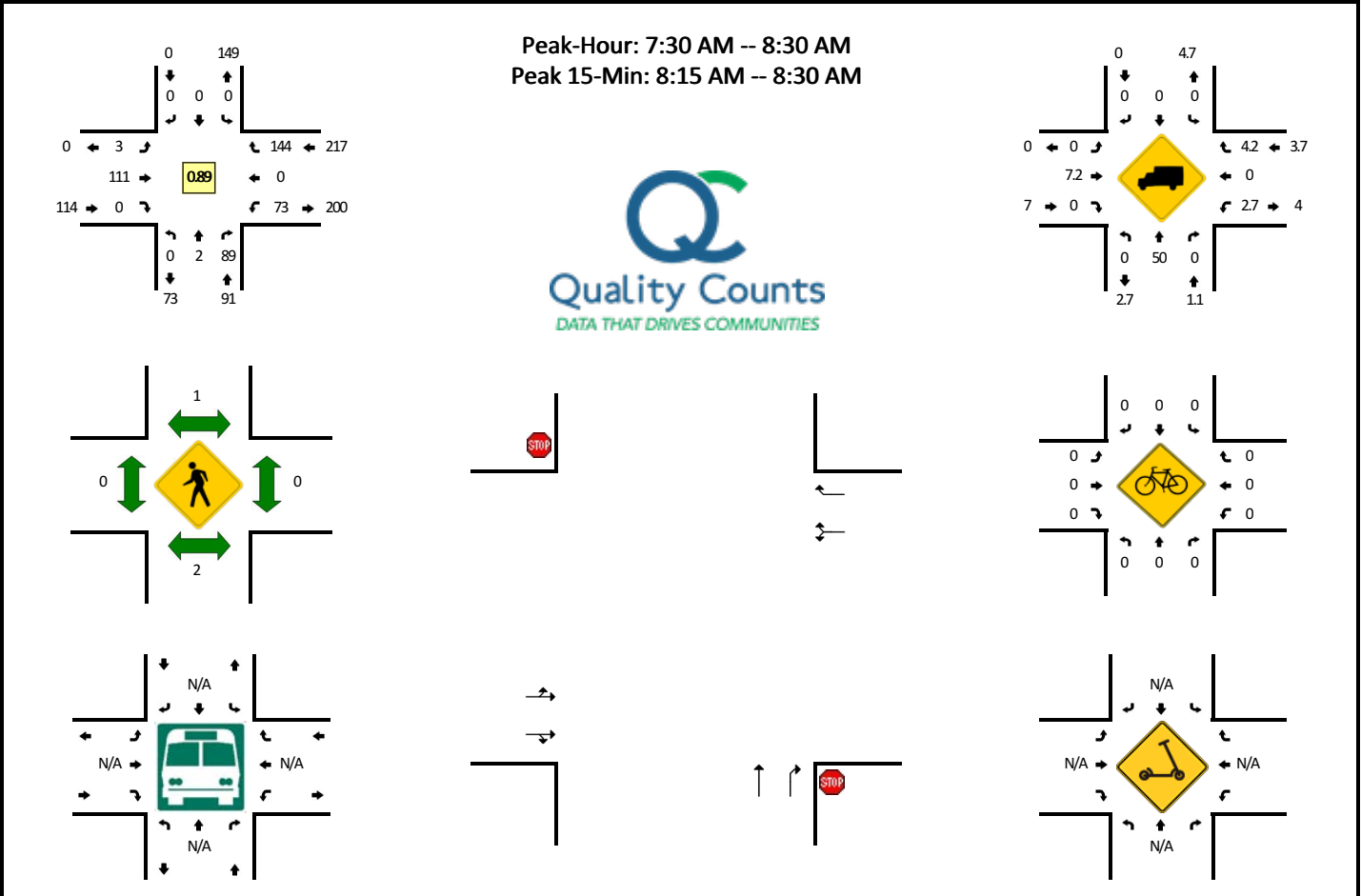
Scale: Not to Scale

APPENDIX B

TRAFFIC COUNT DATA

LOCATION: 3rd St NE/Duncan Ave -- 2nd St NE/E Main St
CITY/STATE: Pulaski, VA

QC JOB #: 15756401
DATE: Thu, Apr 28 2022

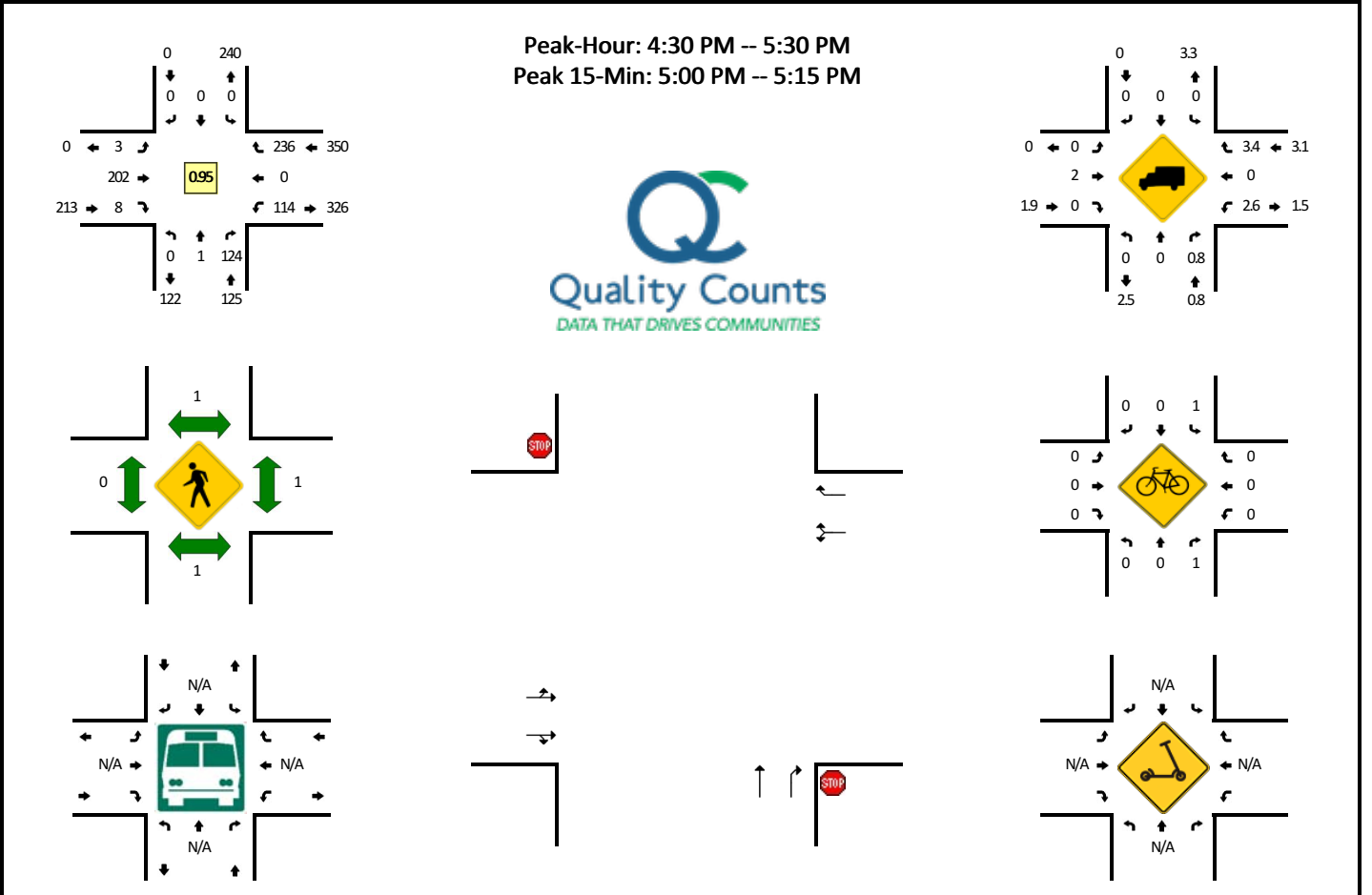


15-Min Count Period Beginning At	3rd St NE/Duncan Ave (Northbound)				3rd St NE/Duncan Ave (Southbound)				2nd St NE/E Main St (Eastbound)				2nd St NE/E Main St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	0	0	16	0	0	0	0	0	0	18	0	0	10	0	12	0	56	
7:15 AM	0	0	13	0	0	0	0	0	0	25	0	0	10	0	20	0	68	
7:30 AM	0	0	21	0	0	0	0	0	0	34	0	0	15	0	29	0	99	
7:45 AM	0	0	17	0	0	0	0	0	0	22	0	0	21	0	39	0	99	322
8:00 AM	0	1	25	0	0	0	0	0	2	30	0	0	13	0	34	0	105	371
8:15 AM	0	1	26	0	0	0	0	0	1	25	0	0	24	0	42	0	119	422
8:30 AM	0	0	17	0	0	0	0	0	1	13	0	0	21	0	39	0	91	414
8:45 AM	0	0	17	0	0	0	0	0	0	24	0	0	16	0	50	0	107	422
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	4	104	0	0	0	0	0	4	100	0	0	96	0	168	0	476	
Heavy Trucks	0	0	0		0	0	0		0	20	0		0	0	4		24	
Buses																		
Pedestrians		0				0				0				0			0	
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0	
Scooters																		

Comments:

LOCATION: 3rd St NE/Duncan Ave -- 2nd St NE/E Main St
CITY/STATE: Pulaski, VA

QC JOB #: 15756402
DATE: Thu, Apr 28 2022

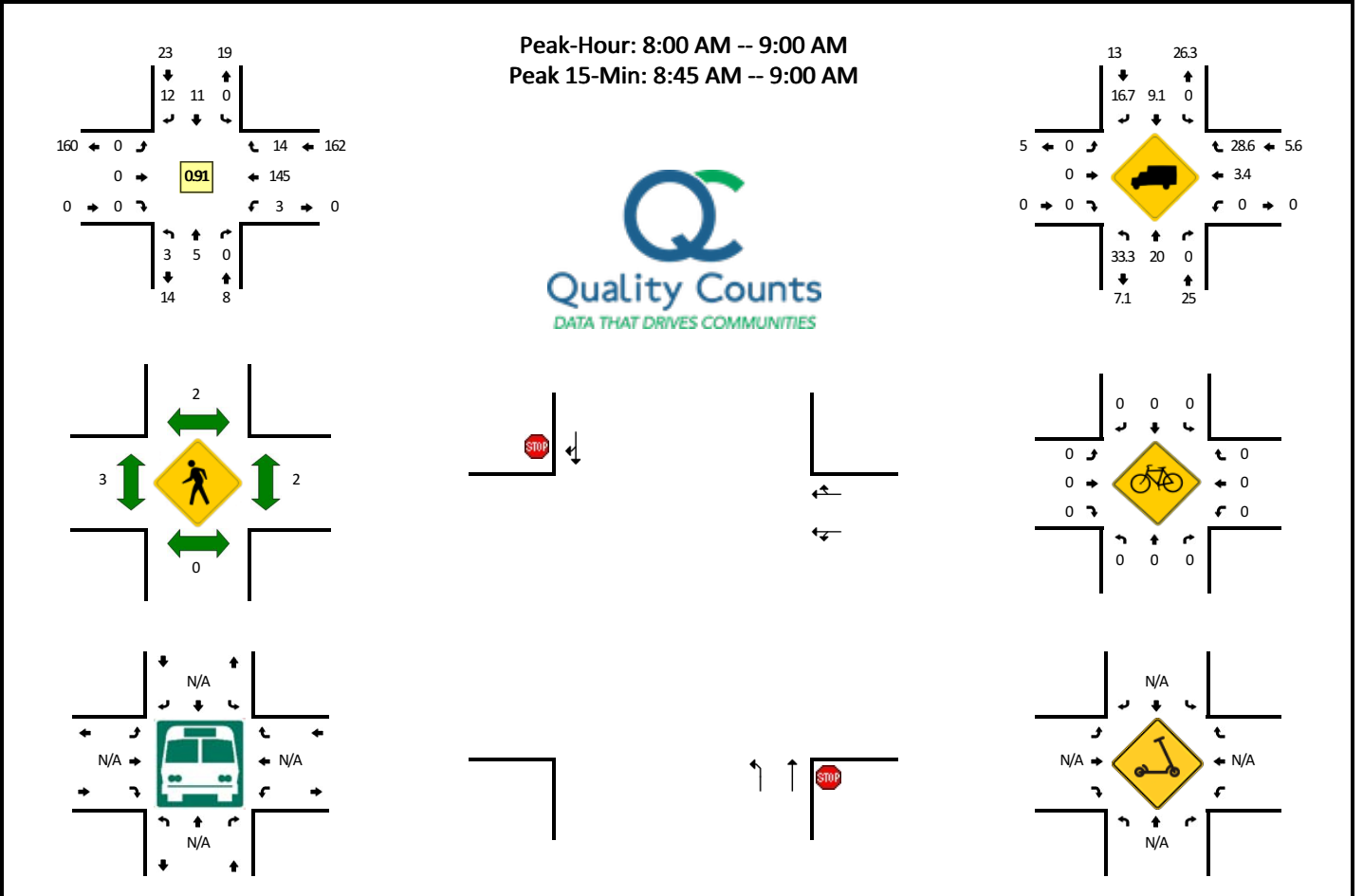


15-Min Count Period Beginning At	3rd St NE/Duncan Ave (Northbound)				3rd St NE/Duncan Ave (Southbound)				2nd St NE/E Main St (Eastbound)				2nd St NE/E Main St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	0	0	28	0	0	0	0	0	1	58	1	0	30	0	66	0	184	
4:15 PM	0	0	25	0	0	0	0	0	1	55	1	0	32	0	60	0	174	
4:30 PM	0	0	31	0	0	0	0	0	0	67	3	0	27	0	52	0	180	
4:45 PM	0	0	25	0	0	0	0	0	1	44	1	0	32	0	46	0	149	687
5:00 PM	0	0	40	0	0	0	0	0	2	39	1	0	26	0	73	0	181	684
5:15 PM	0	1	28	0	0	0	0	0	0	52	3	0	29	0	65	0	178	688
5:30 PM	0	0	24	0	0	0	0	0	0	40	0	0	23	0	63	0	150	658
5:45 PM	0	1	18	0	0	0	0	0	2	38	0	0	25	0	32	0	116	625
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	160	0	0	0	0	0	8	156	4	0	104	0	292	0	724	
Heavy Trucks	0	0	0		0	0	0		0	0	0		0	0	8		8	
Buses																		
Pedestrians		0				0				0				4			4	
Bicycles	0	0	4		4	0	0		0	0	0		0	0	0		8	
Scoters																		

Comments:

LOCATION: Madison Ave N -- 3rd St NE
CITY/STATE: Pulaski, VA

QC JOB #: 15756403
DATE: Thu, Apr 28 2022



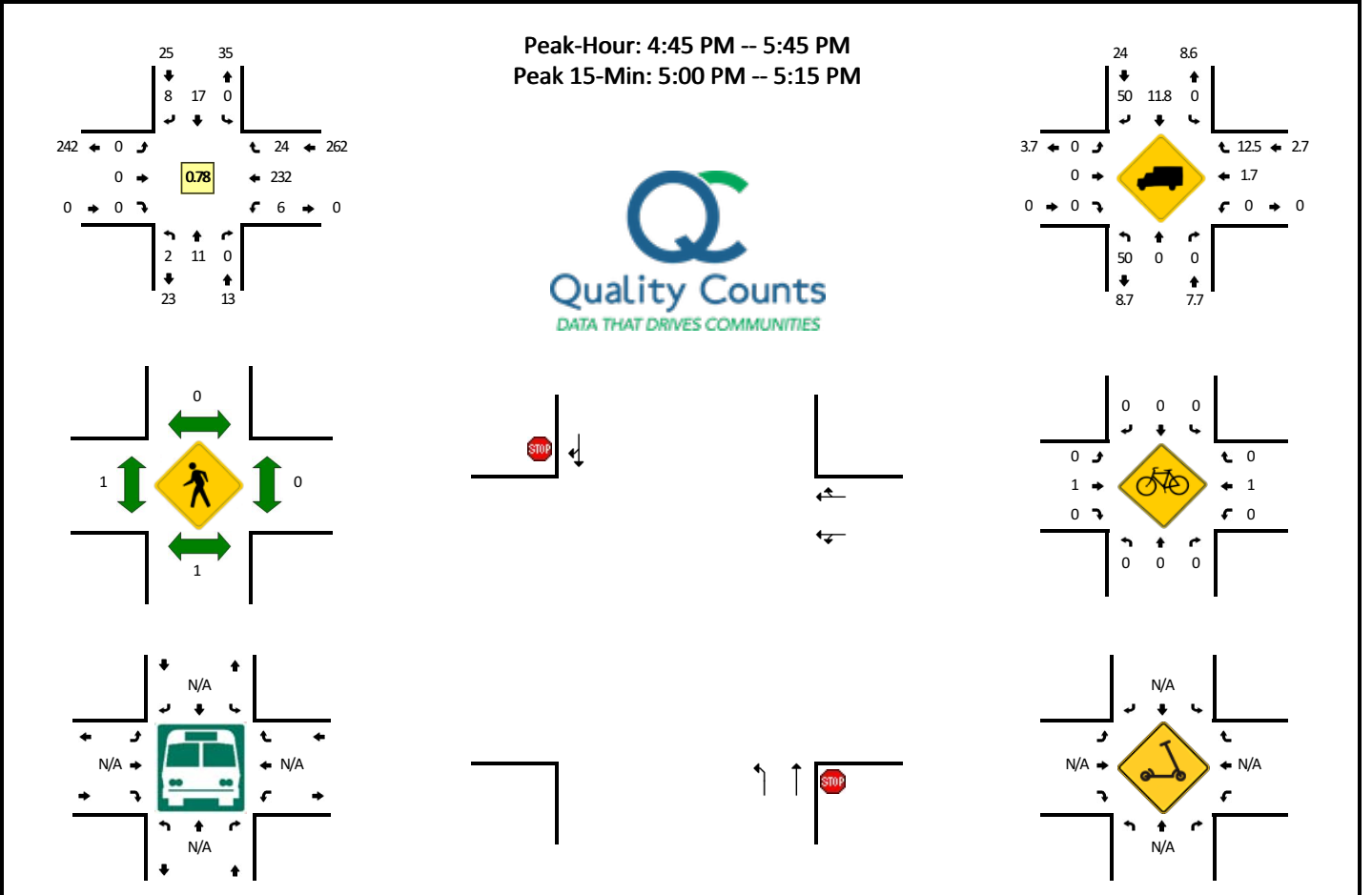
15-Min Count Period Beginning At	Madison Ave N (Northbound)				Madison Ave N (Southbound)				3rd St NE (Eastbound)				3rd St NE (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	0	0	0	0	0	1	1	0	0	0	0	0	1	10	2	0	15	
7:15 AM	0	3	0	0	0	7	2	0	0	0	0	0	1	15	2	0	30	
7:30 AM	0	0	0	0	0	6	4	0	0	0	0	0	0	25	3	0	38	
7:45 AM	0	1	0	0	0	2	5	0	0	0	0	0	0	33	3	0	44	127
8:00 AM	2	1	0	0	0	3	2	0	0	0	0	0	0	36	2	0	46	158
8:15 AM	0	3	0	0	0	4	5	0	0	0	0	0	1	33	4	0	50	178
8:30 AM	1	1	0	0	0	1	3	0	0	0	0	0	1	34	3	0	44	184
8:45 AM	0	0	0	0	0	3	2	0	0	0	0	0	1	42	5	0	53	193

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	0	12	8	0	0	0	0	0	4	168	20	0	212
Heavy Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	8	8	0	16
Buses																	
Pedestrians		0				4				0				0			4
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

Comments:

LOCATION: Madison Ave N -- 3rd St NE
CITY/STATE: Pulaski, VA

QC JOB #: 15756404
DATE: Thu, Apr 28 2022

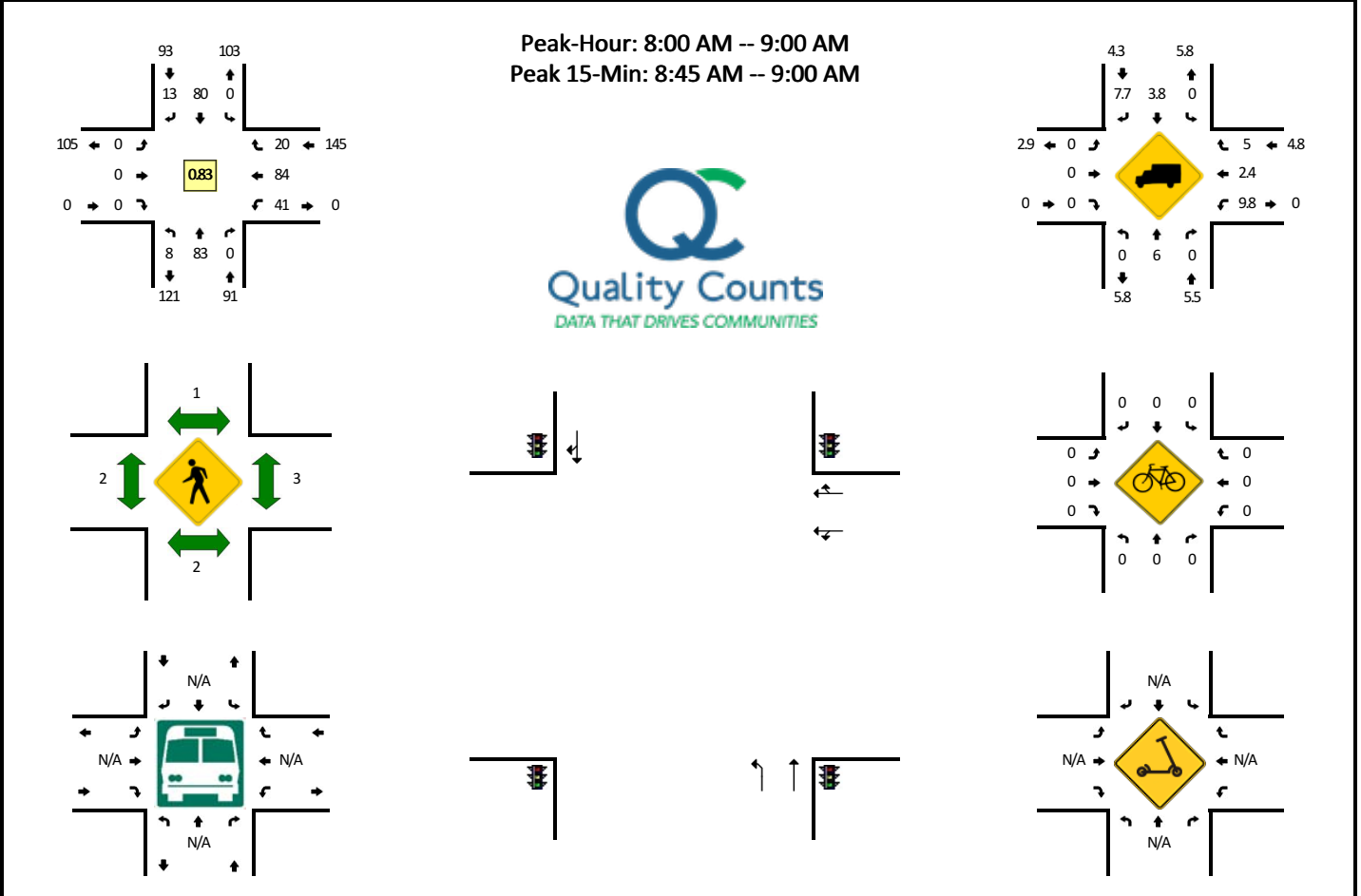


15-Min Count Period Beginning At	Madison Ave N (Northbound)				Madison Ave N (Southbound)				3rd St NE (Eastbound)				3rd St NE (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	2	2	0	0	0	4	4	0	0	0	0	0	1	60	8	0	81	
4:15 PM	0	2	0	0	0	2	1	0	0	0	0	0	0	57	7	0	69	
4:30 PM	0	4	0	0	0	4	2	0	0	0	0	0	3	42	7	0	62	
4:45 PM	0	4	0	0	0	3	4	0	0	0	0	0	2	41	5	0	59	271
5:00 PM	0	6	0	0	0	5	2	0	0	0	0	0	1	75	7	0	96	286
5:15 PM	0	0	0	0	0	3	1	0	0	0	0	0	3	60	7	0	74	291
5:30 PM	2	1	0	0	0	6	1	0	0	0	0	0	0	56	5	0	71	300
5:45 PM	1	1	0	0	0	5	0	0	0	0	0	0	0	34	8	0	49	290
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	24	0	0	0	20	8	0	0	0	0	0	4	300	28	0	384	
Heavy Trucks	0	0	0	0	0	0	4	0	0	0	0	0	0	4	4	0	12	
Buses																		
Pedestrians		0				0				0				0			0	
Bicycles	0	0	0		0	0	0		0	4	0		0	0	0		4	
Scoters																		

Comments:

LOCATION: US 11 -- 3rd St NE
CITY/STATE: Pulaski, VA

QC JOB #: 15756405
DATE: Thu, Apr 28 2022



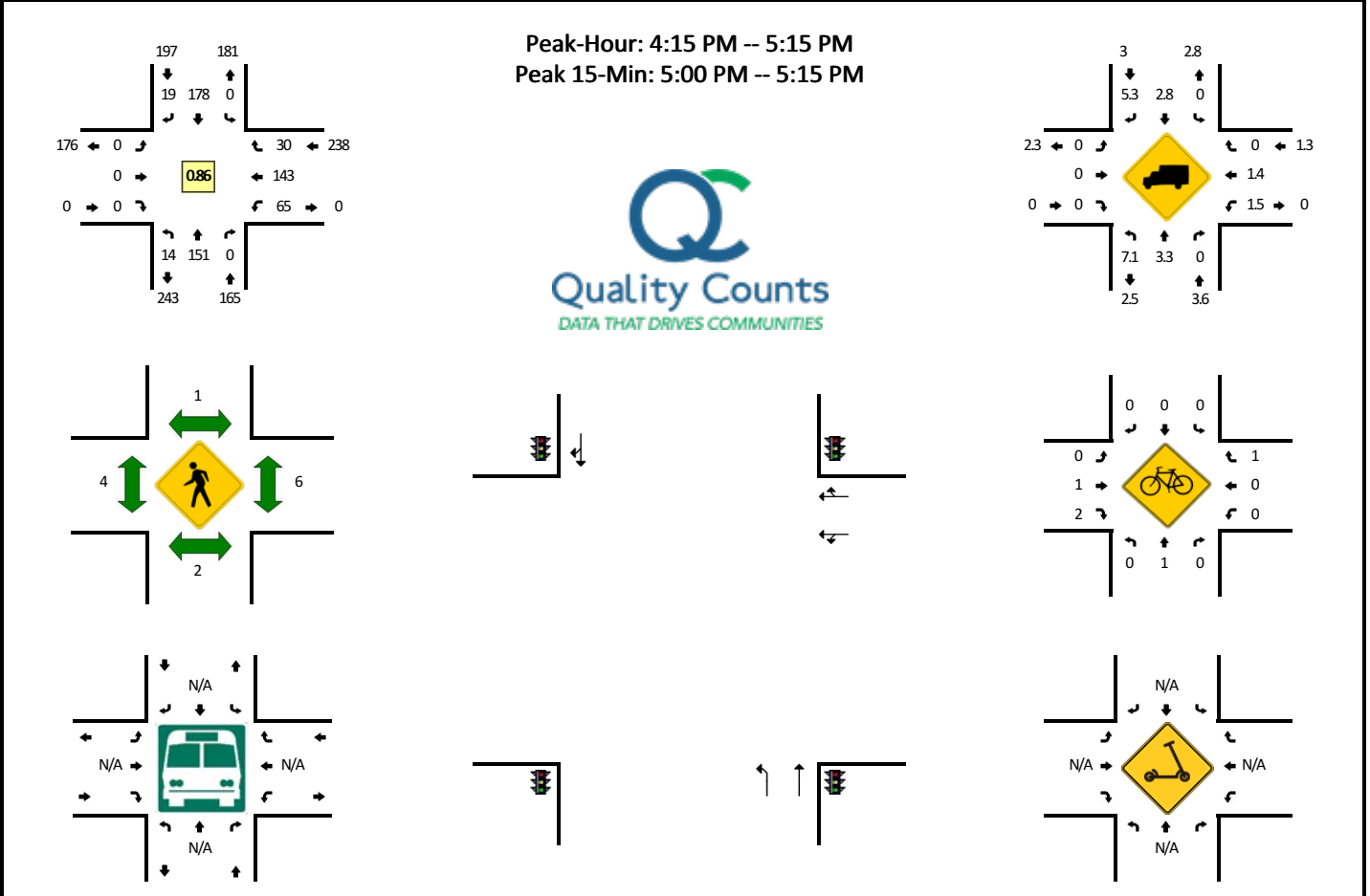
15-Min Count Period Beginning At	US 11 (Northbound)				US 11 (Southbound)				3rd St NE (Eastbound)				3rd St NE (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	1	15	0	0	0	13	0	0	0	0	0	0	3	6	1	0	39	
7:15 AM	0	14	0	0	0	14	1	0	0	0	0	0	3	7	6	0	45	
7:30 AM	2	25	0	0	0	25	1	0	0	0	0	0	6	14	0	0	73	
7:45 AM	2	23	0	0	0	22	2	0	0	0	0	0	11	18	3	0	81	238
8:00 AM	1	24	0	0	0	20	3	0	0	0	0	0	8	21	7	0	84	283
8:15 AM	2	18	0	0	0	16	3	0	0	0	0	0	13	18	5	0	75	313
8:30 AM	2	14	0	0	0	22	4	0	0	0	0	0	9	19	1	0	71	311
8:45 AM	3	27	0	0	0	22	3	0	0	0	0	0	11	26	7	0	99	329

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	108	0	0	0	88	12	0	0	0	0	0	44	104	28	0	396
Heavy Trucks	0	4	0	0	0	0	4	0	0	0	0	0	0	0	4	0	12
Buses																	
Pedestrians		4				4				4				0			12
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

Comments:

LOCATION: US 11 -- 3rd St NE
CITY/STATE: Pulaski, VA

QC JOB #: 15756406
DATE: Thu, Apr 28 2022



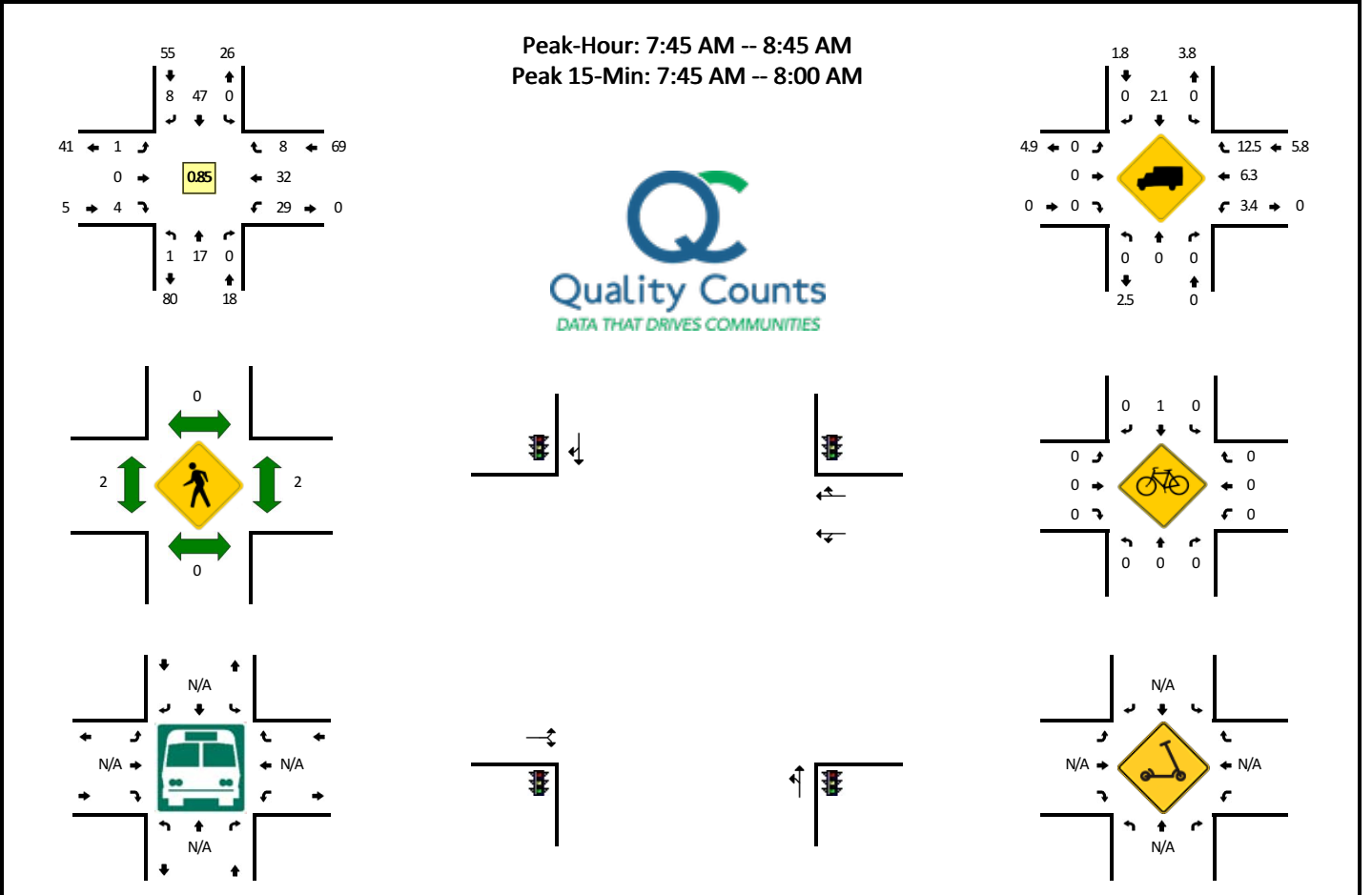
15-Min Count Period Beginning At	US 11 (Northbound)				US 11 (Southbound)				3rd St NE (Eastbound)				3rd St NE (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	6	20	0	0	0	41	7	0	0	0	0	0	20	33	11	0	138	
4:15 PM	3	25	0	0	0	36	9	0	0	0	0	0	14	38	4	0	129	
4:30 PM	4	49	0	0	0	51	6	0	0	0	0	0	14	33	3	0	160	
4:45 PM	3	33	0	0	0	51	3	0	0	0	0	0	12	25	9	0	136	563
5:00 PM	4	44	0	0	0	40	1	0	0	0	0	0	25	47	14	0	175	600
5:15 PM	1	27	0	0	0	33	1	0	0	0	0	0	13	36	8	0	119	590
5:30 PM	2	29	0	0	0	33	3	0	0	0	0	0	14	32	11	0	124	554
5:45 PM	0	19	0	0	0	26	1	0	0	0	0	0	12	24	6	0	88	506

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	16	176	0	0	0	160	4	0	0	0	0	0	100	188	56	0	700	
Heavy Trucks	0	8	0	0	0	0	0	0	0	0	0	0	4	0	0	0	12	
Buses																		
Pedestrians		4				0				0				16				20
Bicycles	0	4	0		0	0	0		0	4	8		0	0	0			16
Scooters																		

Comments:

LOCATION: Jefferson Ave N -- 3rd St NW
CITY/STATE: Pulaski, VA

QC JOB #: 15756407
DATE: Thu, Apr 28 2022

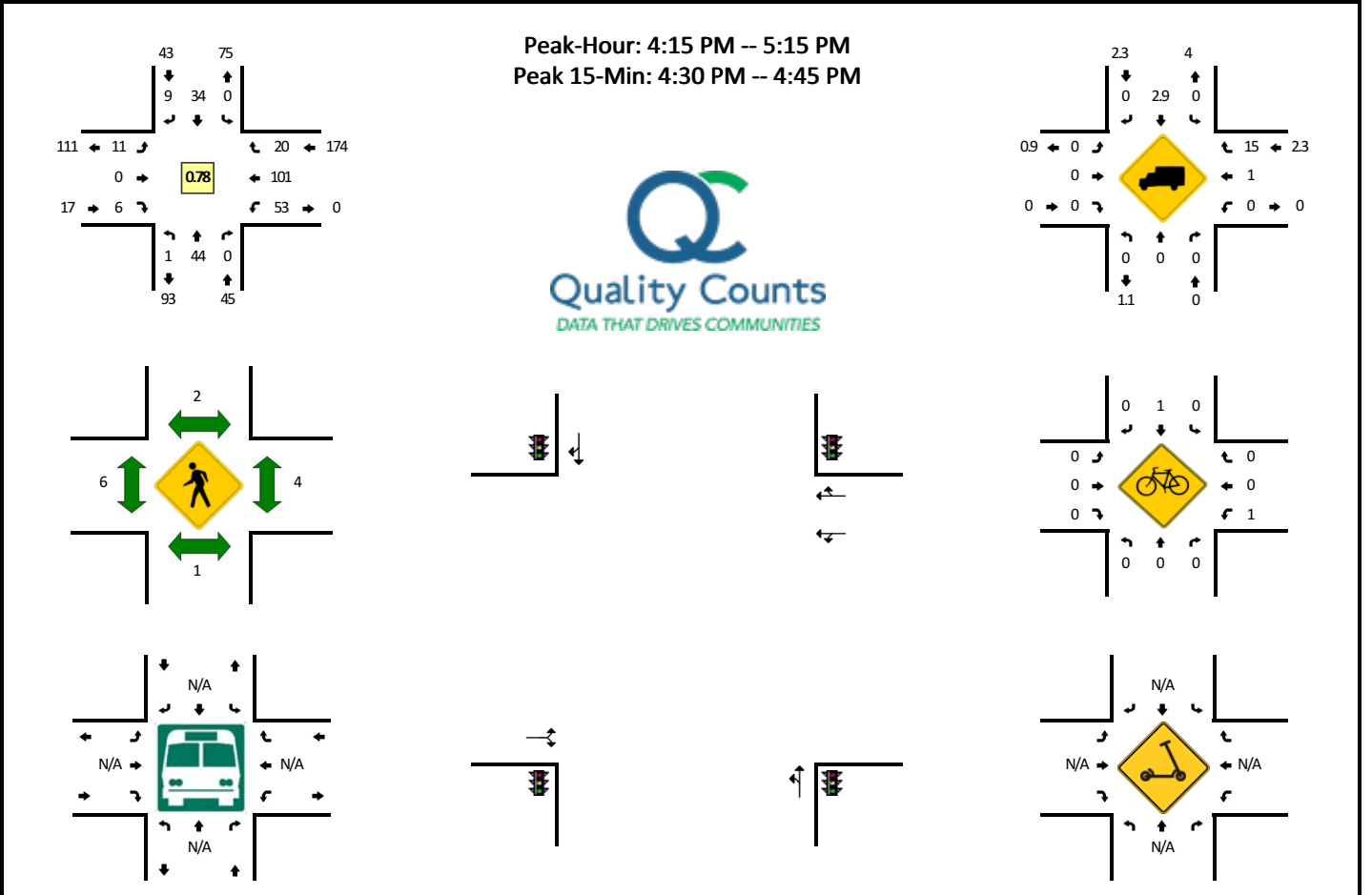


15-Min Count Period Beginning At	Jefferson Ave N (Northbound)				Jefferson Ave N (Southbound)				3rd St NW (Eastbound)				3rd St NW (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	0	1	0	0	0	2	1	0	1	0	1	0	1	4	0	0	11	
7:15 AM	0	5	0	0	0	5	0	0	0	0	0	0	3	2	3	0	18	
7:30 AM	0	7	0	0	0	13	0	0	0	0	1	0	2	10	2	0	35	
7:45 AM	1	6	0	0	0	17	4	0	0	0	1	0	7	6	1	0	43	107
8:00 AM	0	3	0	0	0	13	3	0	0	0	1	0	9	9	2	0	40	136
8:15 AM	0	5	0	0	0	6	0	0	0	0	2	0	6	5	2	0	26	144
8:30 AM	0	3	0	0	0	11	1	0	1	0	0	0	7	12	3	0	38	147
8:45 AM	1	6	0	0	0	4	5	0	2	0	0	0	7	12	5	0	42	146
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	24	0	0	0	68	16	0	0	0	4	0	28	24	4	0	172	
Heavy Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	4	4	0	8	
Buses																		
Pedestrians		0				0				8				0			8	
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0	
Scoters																		

Comments:

LOCATION: Jefferson Ave N -- 3rd St NW
CITY/STATE: Pulaski, VA

QC JOB #: 15756408
DATE: Thu, Apr 28 2022



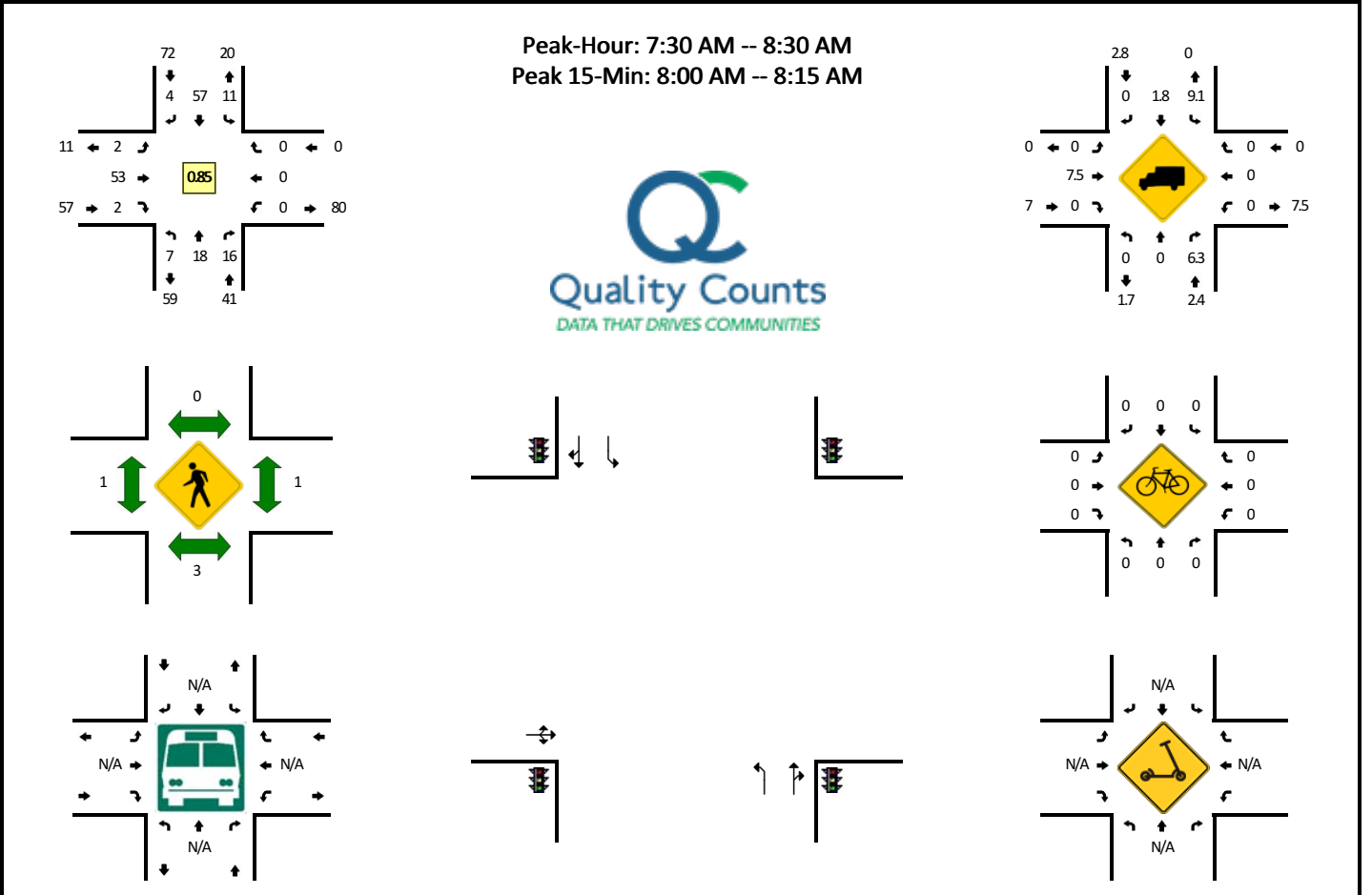
15-Min Count Period Beginning At	Jefferson Ave N (Northbound)				Jefferson Ave N (Southbound)				3rd St NW (Eastbound)				3rd St NW (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	1	8	0	0	0	10	3	0	3	0	3	0	15	25	4	0	72	
4:15 PM	0	7	0	0	0	7	5	0	3	0	2	0	15	29	3	0	71	
4:30 PM	1	20	0	0	0	13	1	0	4	0	3	0	18	24	5	0	89	
4:45 PM	0	7	0	0	0	7	1	0	1	0	1	0	6	17	4	0	44	276
5:00 PM	0	10	0	0	0	7	2	0	3	0	0	0	14	31	8	0	75	279
5:15 PM	0	8	0	0	0	10	1	0	0	0	0	0	9	29	5	0	62	270
5:30 PM	2	5	0	0	0	8	0	0	2	0	1	0	6	19	7	0	50	231
5:45 PM	0	5	0	0	0	8	1	0	0	0	0	0	7	16	4	0	41	228

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	80	0	0	0	52	4	0	16	0	12	0	72	96	20	0	356
Heavy Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8	0	8
Buses																	
Pedestrians		0				0				16				8			24
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scoters																	

Comments:

LOCATION: Jefferson Ave N -- 2nd St NW
CITY/STATE: Pulaski, VA

QC JOB #: 15756409
DATE: Thu, Apr 28 2022

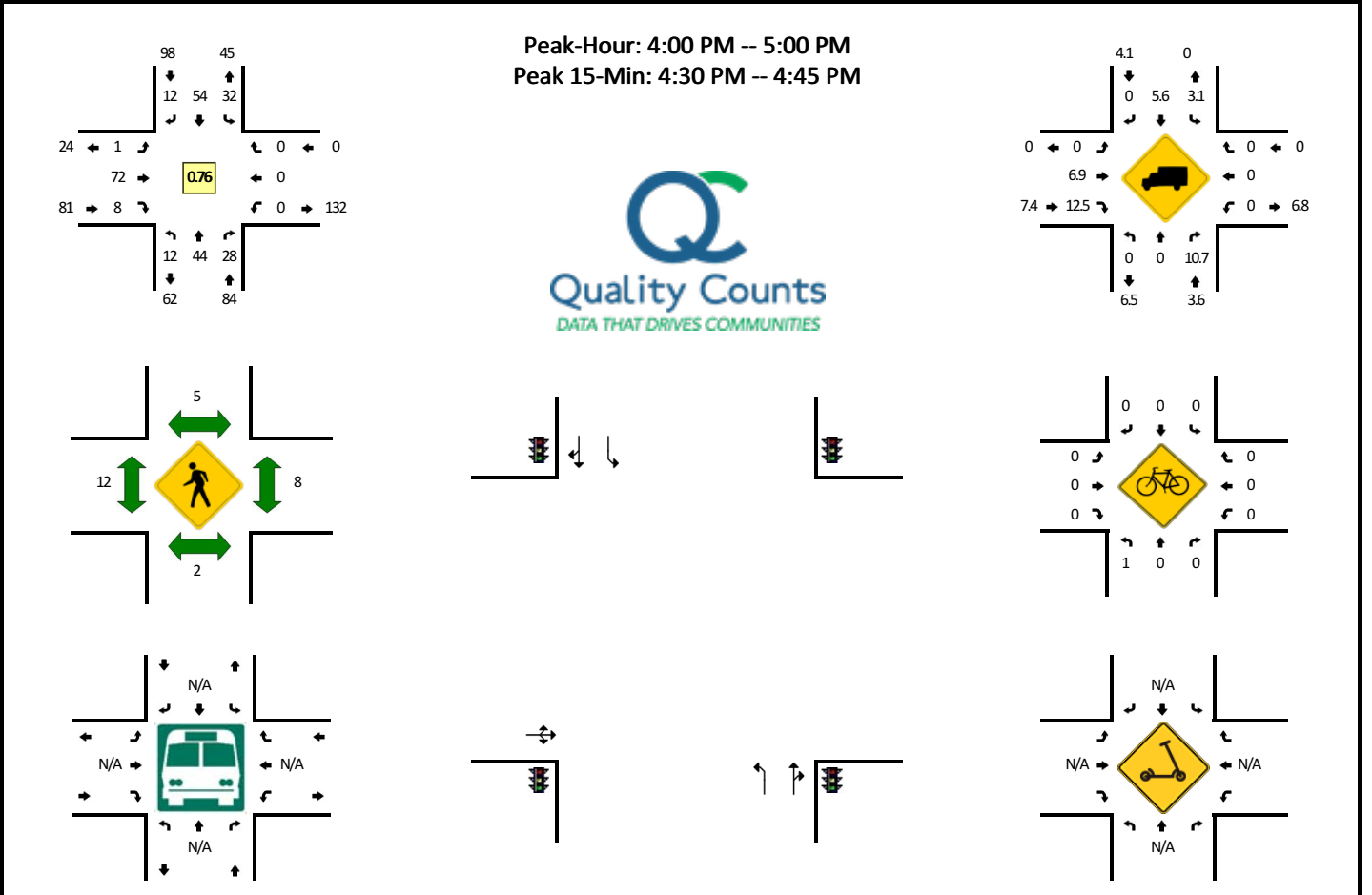


15-Min Count Period Beginning At	Jefferson Ave N (Northbound)				Jefferson Ave N (Southbound)				2nd St NW (Eastbound)				2nd St NW (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	0	1	2	0	1	3	0	0	0	15	0	0	0	0	0	0	22	
7:15 AM	0	6	5	0	2	4	2	0	1	10	1	0	0	0	0	0	31	
7:30 AM	1	6	1	0	4	11	1	0	1	15	0	0	0	0	0	0	40	
7:45 AM	3	4	4	0	1	21	1	0	1	12	1	0	0	0	0	0	48	141
8:00 AM	2	2	7	0	3	16	1	0	0	18	1	0	0	0	0	0	50	169
8:15 AM	1	6	4	0	3	9	1	0	0	8	0	0	0	0	0	0	32	170
8:30 AM	1	3	4	0	9	6	1	0	0	4	0	0	0	0	0	0	28	158
8:45 AM	0	7	7	0	5	5	1	0	0	8	0	0	0	0	0	0	33	143
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	8	8	28	0	12	64	4	0	0	72	4	0	0	0	0	0	200	
Heavy Trucks	0	0	4		0	0	0		0	4	0		0	0	0		8	
Buses																		
Pedestrians		4				0				0				0			4	
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0	
Scoters																		

Comments:

LOCATION: Jefferson Ave N -- 2nd St NW
CITY/STATE: Pulaski, VA

QC JOB #: 15756410
DATE: Thu, Apr 28 2022

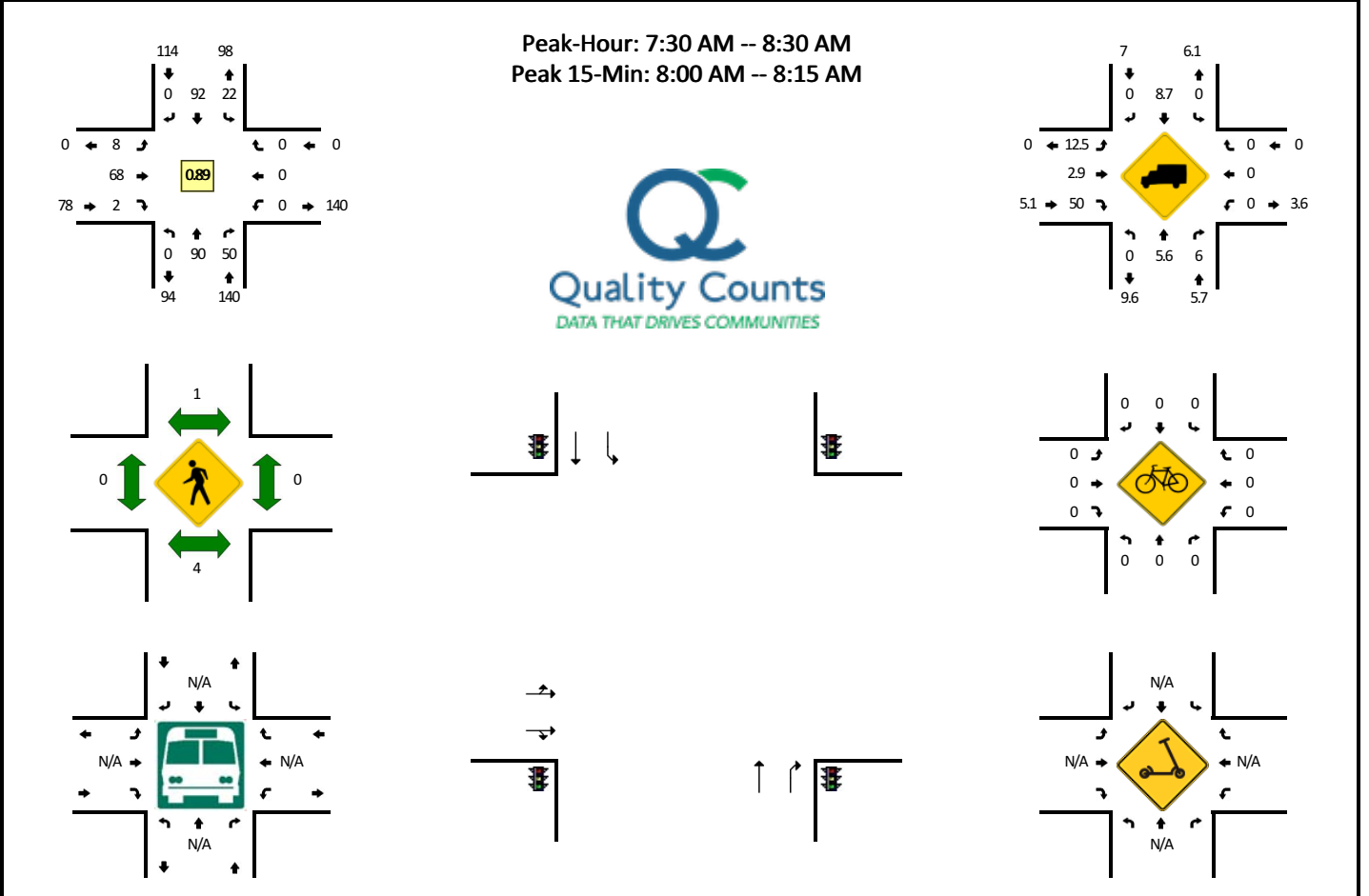


15-Min Count Period Beginning At	Jefferson Ave N (Northbound)				Jefferson Ave N (Southbound)				2nd St NW (Eastbound)				2nd St NW (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	6	10	4	0	13	11	3	0	0	19	0	0	0	0	0	0	66	
4:15 PM	1	7	8	0	5	13	5	0	1	18	5	0	0	0	0	0	63	
4:30 PM	3	17	9	0	11	19	4	0	0	21	3	0	0	0	0	0	87	
4:45 PM	2	10	7	0	3	11	0	0	0	14	0	0	0	0	0	0	47	263
5:00 PM	0	8	3	0	6	14	2	0	1	17	3	0	0	0	0	0	54	251
5:15 PM	2	6	4	0	4	12	3	0	1	14	1	0	0	0	0	0	47	235
5:30 PM	2	7	1	0	6	9	2	0	1	14	1	0	0	0	0	0	43	191
5:45 PM	0	3	3	0	6	8	0	0	1	14	0	0	0	0	0	0	35	179
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	68	36	0	44	76	16	0	0	84	12	0	0	0	0	0	348	
Heavy Trucks	0	0	4		0	0	0		0	8	4		0	0	0		16	
Buses																		
Pedestrians		0				8				8				12			28	
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0	
Scoters																		

Comments:

LOCATION: US 11 -- 2nd St NW
CITY/STATE: Pulaski, VA

QC JOB #: 15756411
DATE: Thu, Apr 28 2022

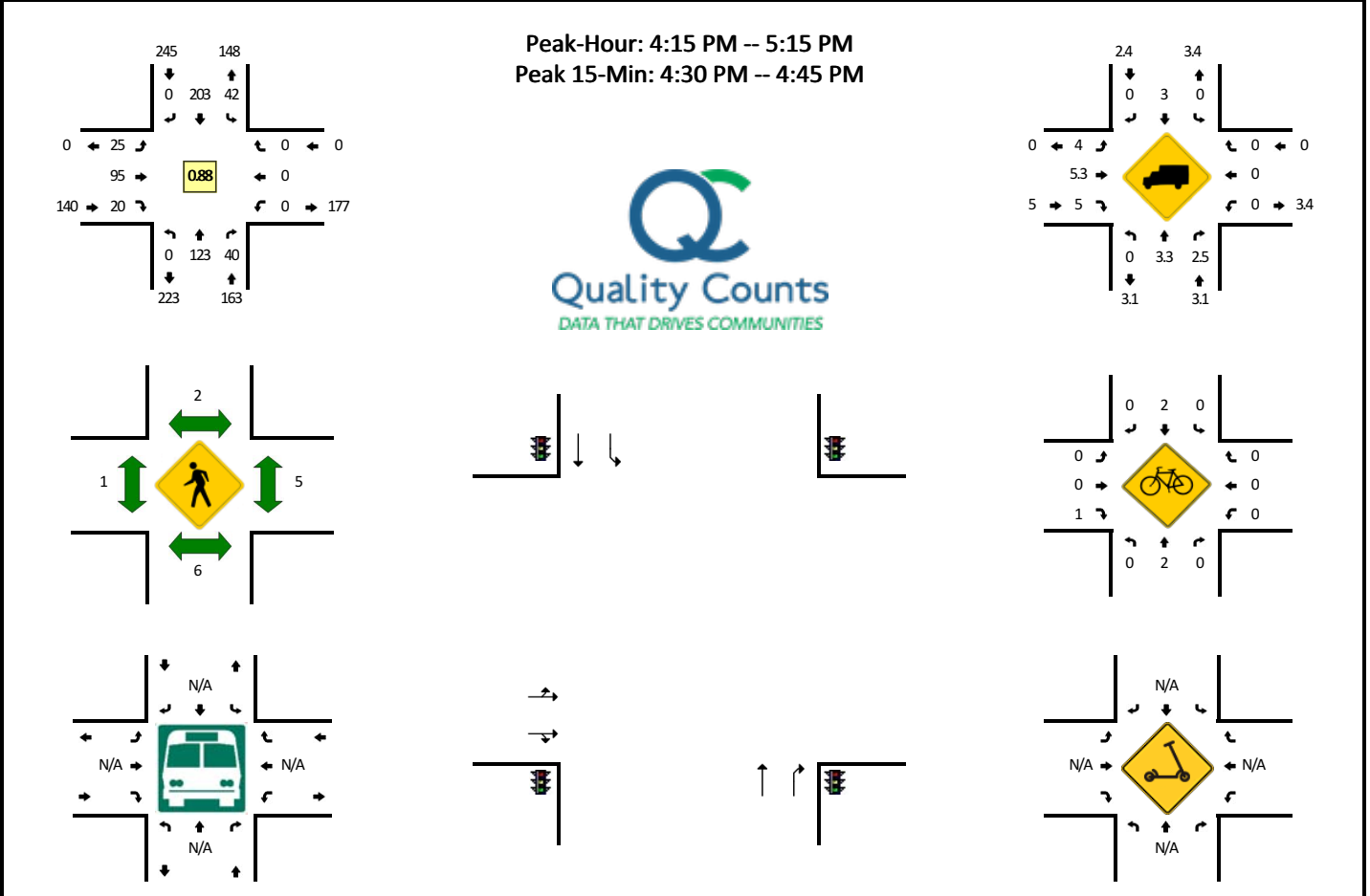


15-Min Count Period Beginning At	US 11 (Northbound)				US 11 (Southbound)				2nd St NW (Eastbound)				2nd St NW (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	0	14	5	0	0	15	0	0	2	14	2	0	0	0	0	0	52	
7:15 AM	0	14	10	0	2	16	0	0	1	17	1	0	0	0	0	0	61	
7:30 AM	0	25	14	0	7	24	0	0	1	20	0	0	0	0	0	0	91	
7:45 AM	0	26	11	0	9	20	0	0	0	16	0	0	0	0	0	0	82	286
8:00 AM	0	22	18	0	1	27	0	0	4	20	1	0	0	0	0	0	93	327
8:15 AM	0	17	7	0	5	21	0	0	3	12	1	0	0	0	0	0	66	332
8:30 AM	0	12	4	0	6	28	0	0	4	11	2	0	0	0	0	0	67	308
8:45 AM	0	25	10	0	7	23	0	0	6	12	4	0	0	0	0	0	87	313
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	88	72	0	4	108	0	0	16	80	4	0	0	0	0	0	372	
Heavy Trucks	0	8	4		0	20	0		0	4	4		0	0	0		40	
Buses																		
Pedestrians		4				0				0				0			4	
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0	
Scoters																		

Comments:

LOCATION: US 11 -- 2nd St NW
CITY/STATE: Pulaski, VA

QC JOB #: 15756412
DATE: Thu, Apr 28 2022



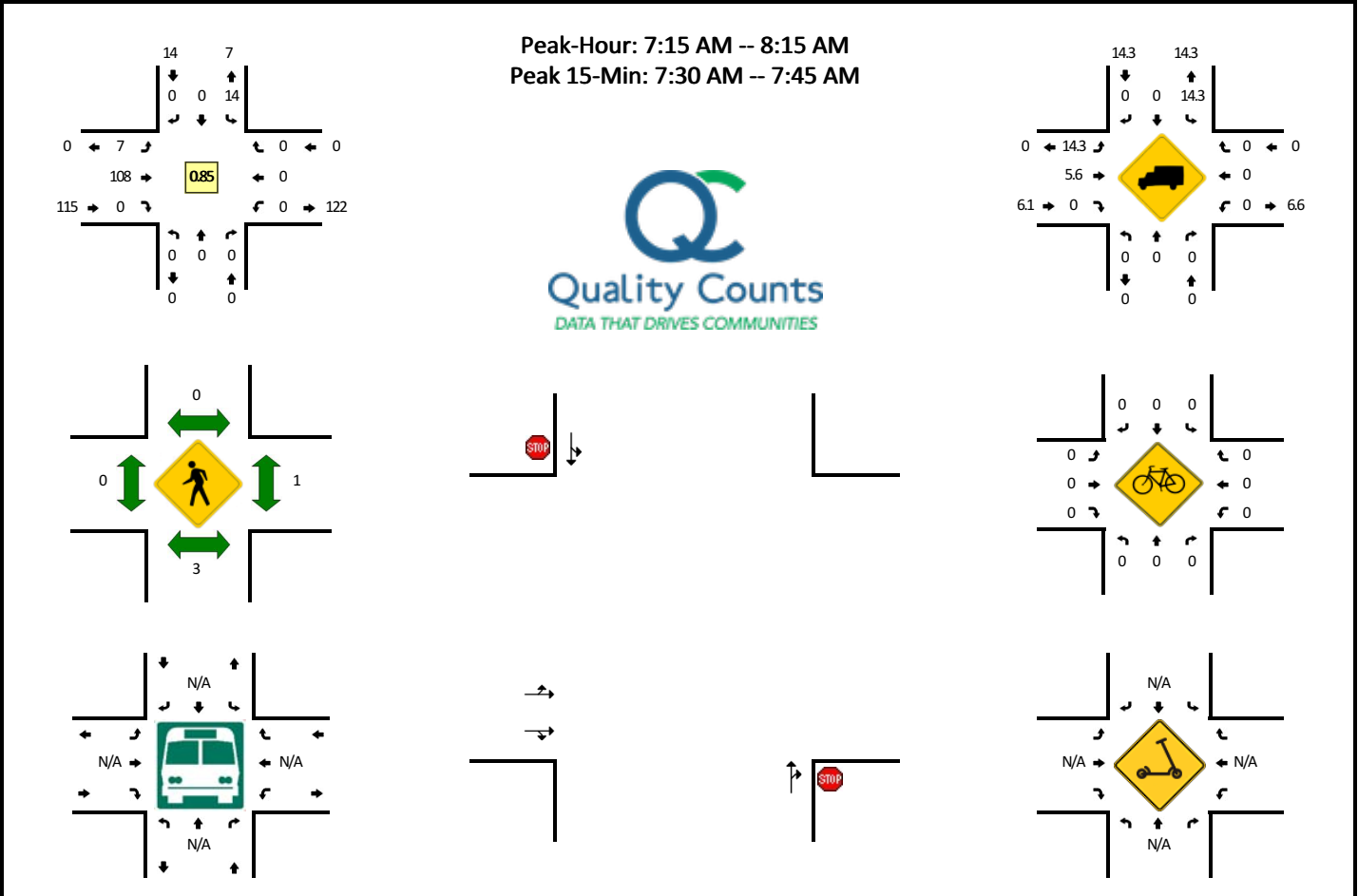
15-Min Count Period Beginning At	US 11 (Northbound)				US 11 (Southbound)				2nd St NW (Eastbound)				2nd St NW (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	0	21	13	0	11	48	0	0	8	27	4	0	0	0	0	0	132	
4:15 PM	0	21	15	0	8	44	0	0	4	22	2	0	0	0	0	0	116	
4:30 PM	0	37	9	0	18	48	0	0	11	28	5	0	0	0	0	0	156	
4:45 PM	0	31	10	0	9	53	0	0	4	22	10	0	0	0	0	0	139	543
5:00 PM	0	34	6	0	7	58	0	0	6	23	3	0	0	0	0	0	137	548
5:15 PM	0	23	13	0	13	34	0	0	4	20	4	0	0	0	0	0	111	543
5:30 PM	0	28	11	0	9	35	0	0	2	18	2	0	0	0	0	0	105	492
5:45 PM	0	18	11	0	6	33	0	0	2	22	2	0	0	0	0	0	94	447

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	148	36	0	72	192	0	0	44	112	20	0	0	0	0	0	624
Heavy Trucks	0	8	0		0	4	0		4	4	0		0	0	0		20
Buses																	
Pedestrians		12				0				0				0			12
Bicycles	0	0	0		0	4	0		0	0	0		0	0	0		4
Scoters																	

Comments:

LOCATION: Madison Ave N -- 2nd St NW
CITY/STATE: Pulaski, VA

QC JOB #: 15756413
DATE: Thu, Apr 28 2022

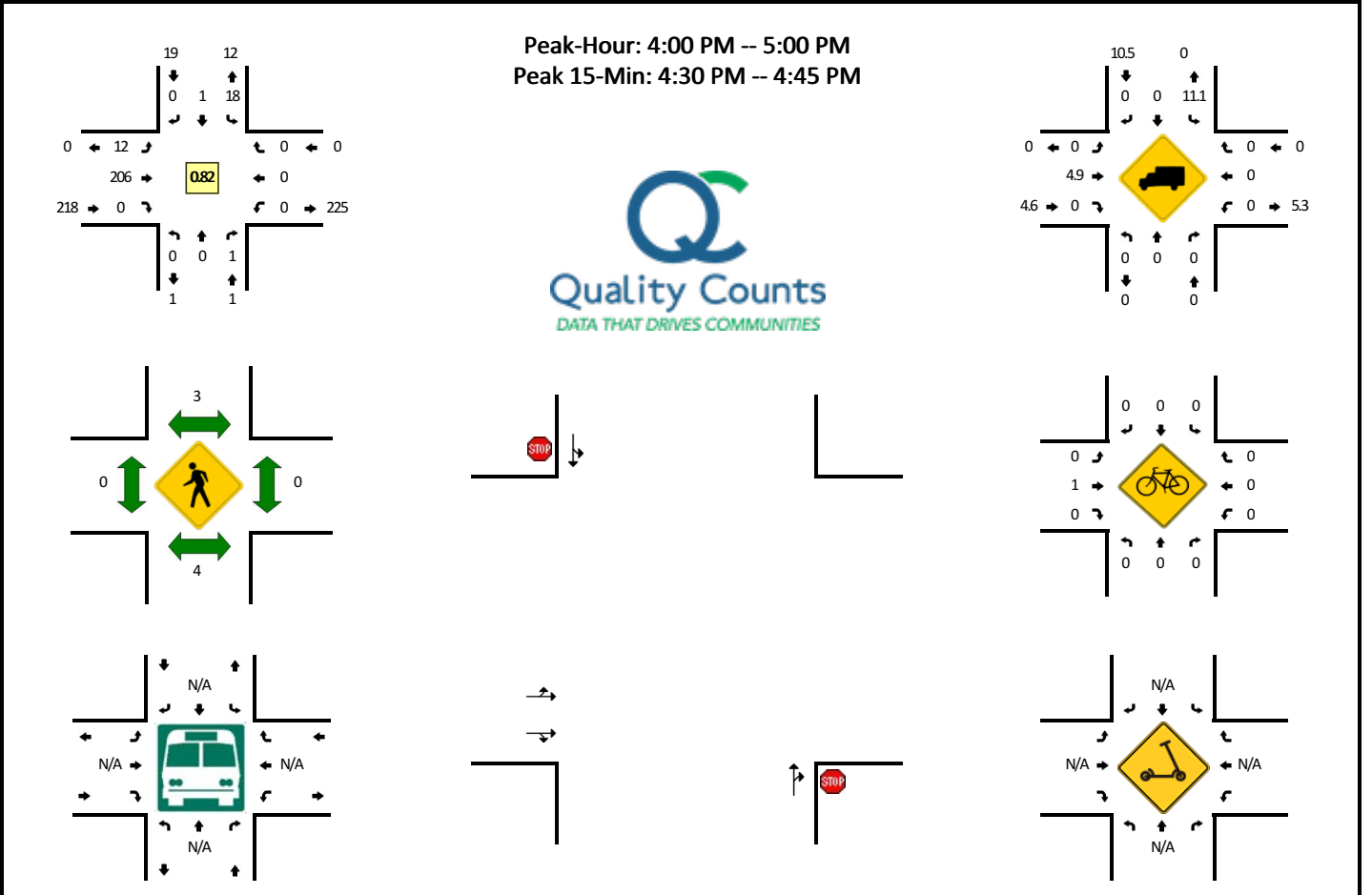


15-Min Count Period Beginning At	Madison Ave N (Northbound)				Madison Ave N (Southbound)				2nd St NW (Eastbound)				2nd St NW (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	0	0	0	0	1	0	0	0	0	19	0	0	0	0	0	0	20	
7:15 AM	0	0	0	0	5	0	0	0	1	23	0	0	0	0	0	0	29	
7:30 AM	0	0	0	0	5	0	0	0	0	33	0	0	0	0	0	0	38	
7:45 AM	0	0	0	0	2	0	0	0	2	20	0	0	0	0	0	0	24	111
8:00 AM	0	0	0	0	2	0	0	0	4	32	0	0	0	0	0	0	38	129
8:15 AM	0	0	0	0	4	0	0	0	2	23	0	0	0	0	0	0	29	129
8:30 AM	0	0	0	0	1	1	0	0	2	14	0	0	0	0	0	0	18	109
8:45 AM	0	0	0	0	4	0	0	0	1	26	0	0	0	0	0	0	31	116
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	20	0	0	0	0	132	0	0	0	0	0	0	152	
Heavy Trucks	0	0	0	0	0	0	0	0	0	4	0	0	0	0	0	0	4	
Buses																		
Pedestrians		4				0				0				0			4	
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0	
Scoters																		

Comments:

LOCATION: Madison Ave N -- 2nd St NW
CITY/STATE: Pulaski, VA

QC JOB #: 15756414
DATE: Thu, Apr 28 2022



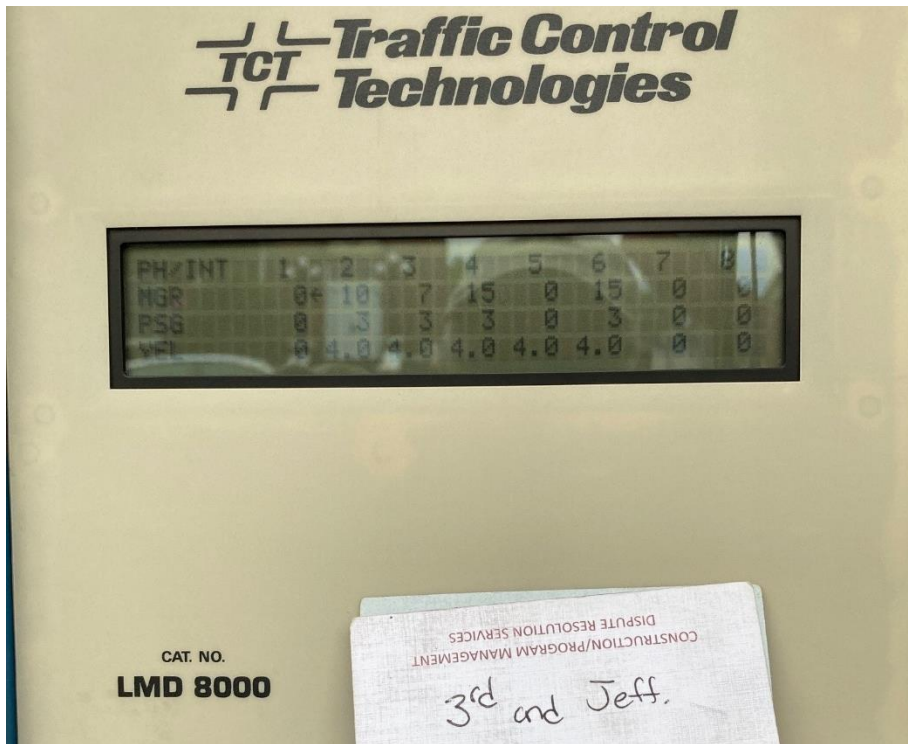
15-Min Count Period Beginning At	Madison Ave N (Northbound)				Madison Ave N (Southbound)				2nd St NW (Eastbound)				2nd St NW (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	0	0	1	0	3	1	0	0	3	53	0	0	0	0	0	0	61	
4:15 PM	0	0	0	0	2	0	0	0	1	51	0	0	0	0	0	0	54	
4:30 PM	0	0	0	0	7	0	0	0	4	62	0	0	0	0	0	0	73	
4:45 PM	0	0	0	0	6	0	0	0	4	40	0	0	0	0	0	0	50	238
5:00 PM	0	0	1	0	5	0	0	0	4	37	0	0	0	0	0	0	47	224
5:15 PM	0	0	0	0	7	0	0	0	0	50	0	0	0	0	0	0	57	227
5:30 PM	0	0	0	0	6	0	0	0	3	42	0	0	0	0	0	0	51	205
5:45 PM	0	0	0	0	3	0	0	0	1	34	0	0	0	0	0	0	38	193
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	28	0	0	0	16	248	0	0	0	0	0	0	292	
Heavy Trucks	0	0	0	0	4	0	0	0	0	4	0	0	0	0	0	0	8	
Buses																		
Pedestrians		16				0				0				0			16	
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0	
Scoters																		

Comments:

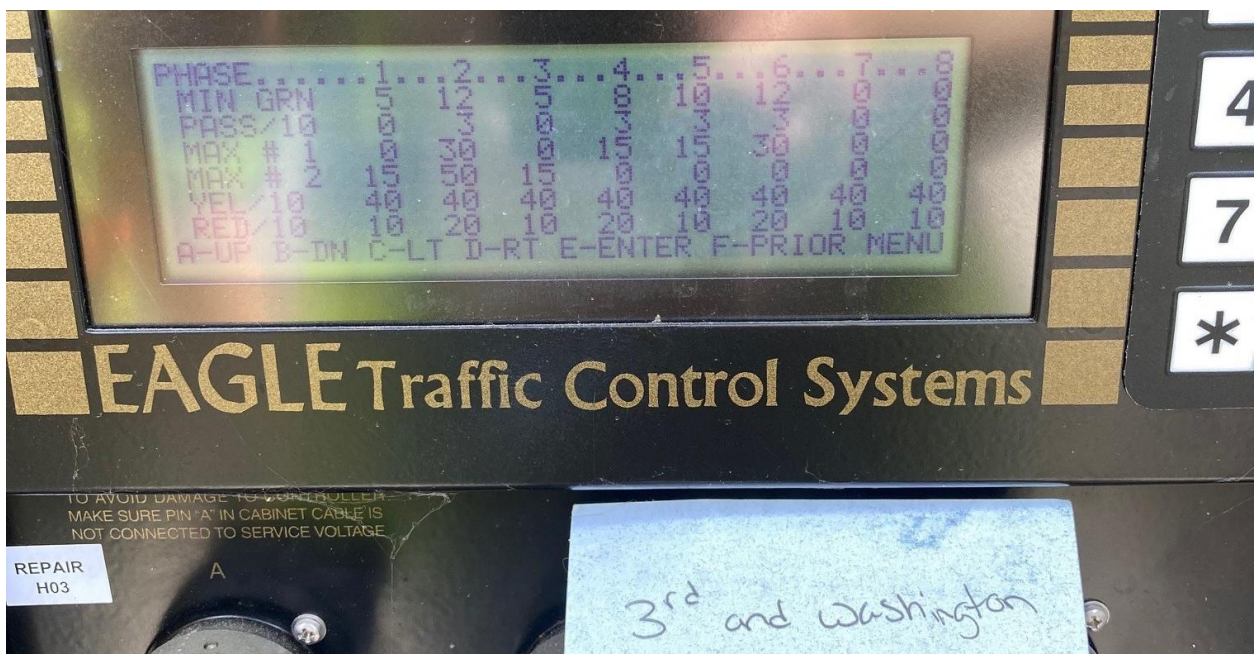
APPENDIX C

SIGNAL INFORMATION

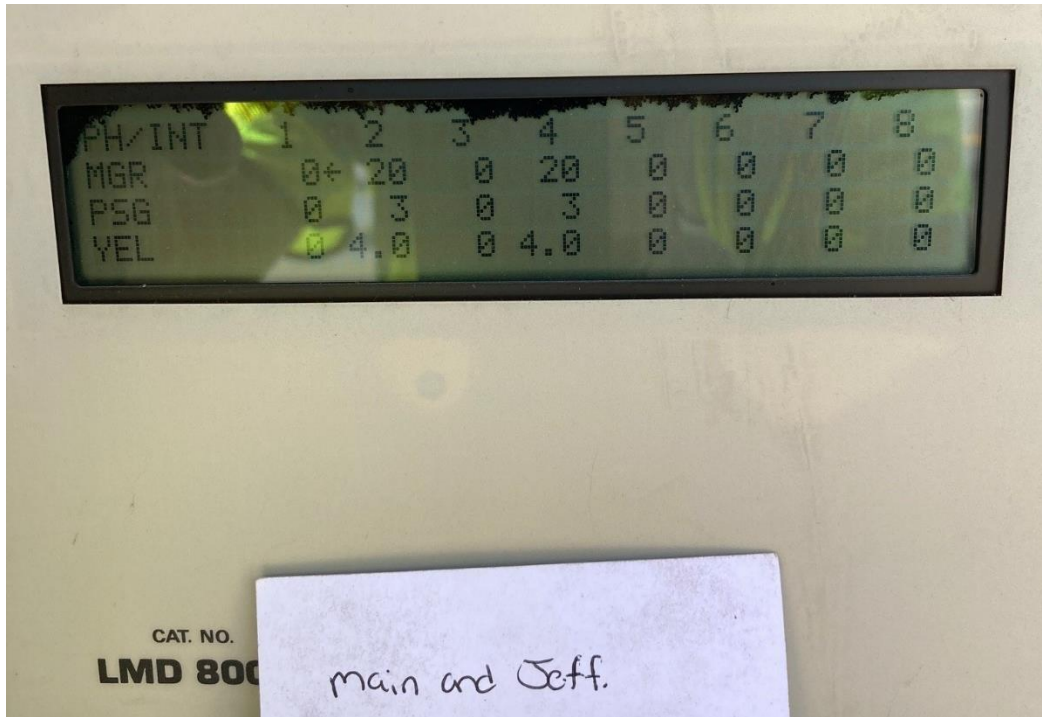
Signal timings: 3rd at Jefferson



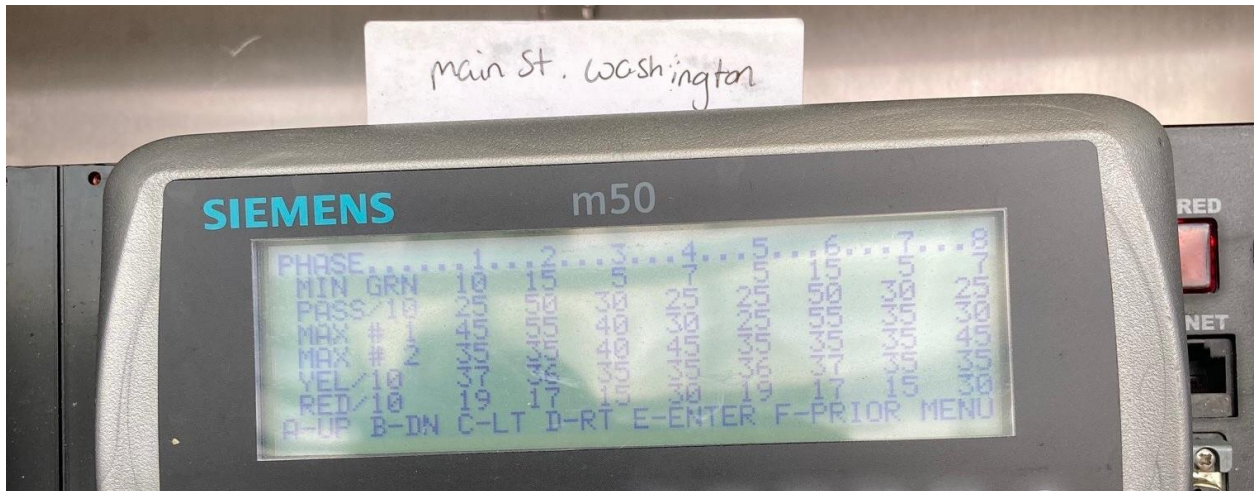
Signal timings: 3rd at Washington



Signal timings: Main at Jefferson



Signal timings: Main at Washington



APPENDIX D

SIGNAL WARRANT ANALYSES

Traffic Signal Warrant Analysis

Warrants 1 - 3 (Volume Warrants)

Project Name	Two-Way Traffic Pulaski VA
Project/File #	22239
Scenario	2022 Existing

Intersection Information			
Major Street (N/S Road)	Jefferson Avenue	Minor Street (E/W Road)	2nd Street
Analyzed with	2 or more approach lanes	Analyzed with	1 Approach Lane
Total Approach Volume	295 vehicles	Total Approach Volume	138 vehicles
Total Ped/Bike Volume	0 crossings	Total Ped/Bike Volume	0 crossings
Right turn reduction of	0 percent applied	Right turn reduction of	0 percent applied

No high speed or isolated community reduction applied to the Volume Warrant thresholds.

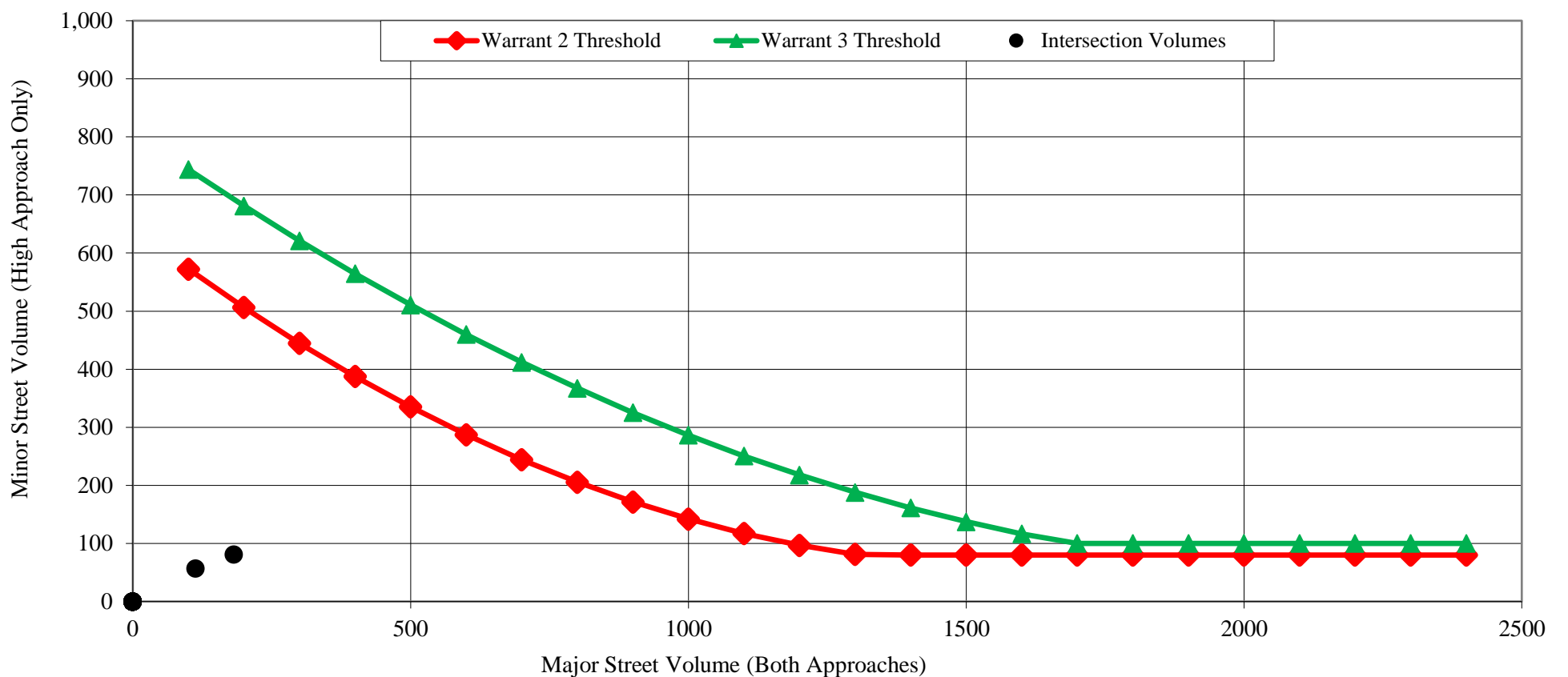
Warrant 1, Eight Hour Vehicular Volume			
	Condition A	Condition B	Condition A+B*
Condition Satisfied?	Not Satisfied	Not Satisfied	Not Satisfied
Required values reached for	0 hours	0 hours	0 (Cond. A) & 0 (Cond. B)
Criteria - Major Street (veh/hr)	600	900	480 (Cond. A) & 720 (Cond. B)
Criteria - Minor Street (veh/hr)	150	75	120 (Cond. A) & 60 (Cond. B)

* Should be applied only after an adequate trial of other alternatives that could cause less delay and inconvenience to traffic has failed to solve the traffic problems.

Warrant 2, Four Hour Vehicular Volume	
Condition Satisfied?	Not Satisfied
Required values reached for	0 hours
Criteria	See Figure Below

Warrant 3, Peak Hour Vehicular Volume		
	Condition A	Condition B
Condition Satisfied?	Not Satisfied	Not Satisfied
Required values reached for	0 total, minor, 0 delay	0 hours
Criteria - Total Approach Volume (veh in one hour)	800	See Figure Below
Criteria - Minor Street High Side Volume (veh in one hour)	100	
Criteria - Minor Street High Side Delay (veh-hrs)	4	

Figure 4C-1 (Warrant 2) & Figure 4C-3 (Warrant 3)



Traffic Signal Warrant Analysis

Warrants 1 - 3 (Volume Warrants)

Project Name	Two-Way Traffic Pulaski VA
Project/File #	22239
Scenario	2022 Existing

Intersection Information			
Major Street (N/S Road)	Jefferson Avenue	Minor Street (E/W Road)	3rd Street
Analyzed with	1 approach lane	Analyzed with	2 or more approach lanes
Total Approach Volume	161 vehicles	Total Approach Volume	265 vehicles
Total Ped/Bike Volume	0 crossings	Total Ped/Bike Volume	0 crossings
Right turn reduction of	0 percent applied	Right turn reduction of	0 percent applied

No high speed or isolated community reduction applied to the Volume Warrant thresholds.

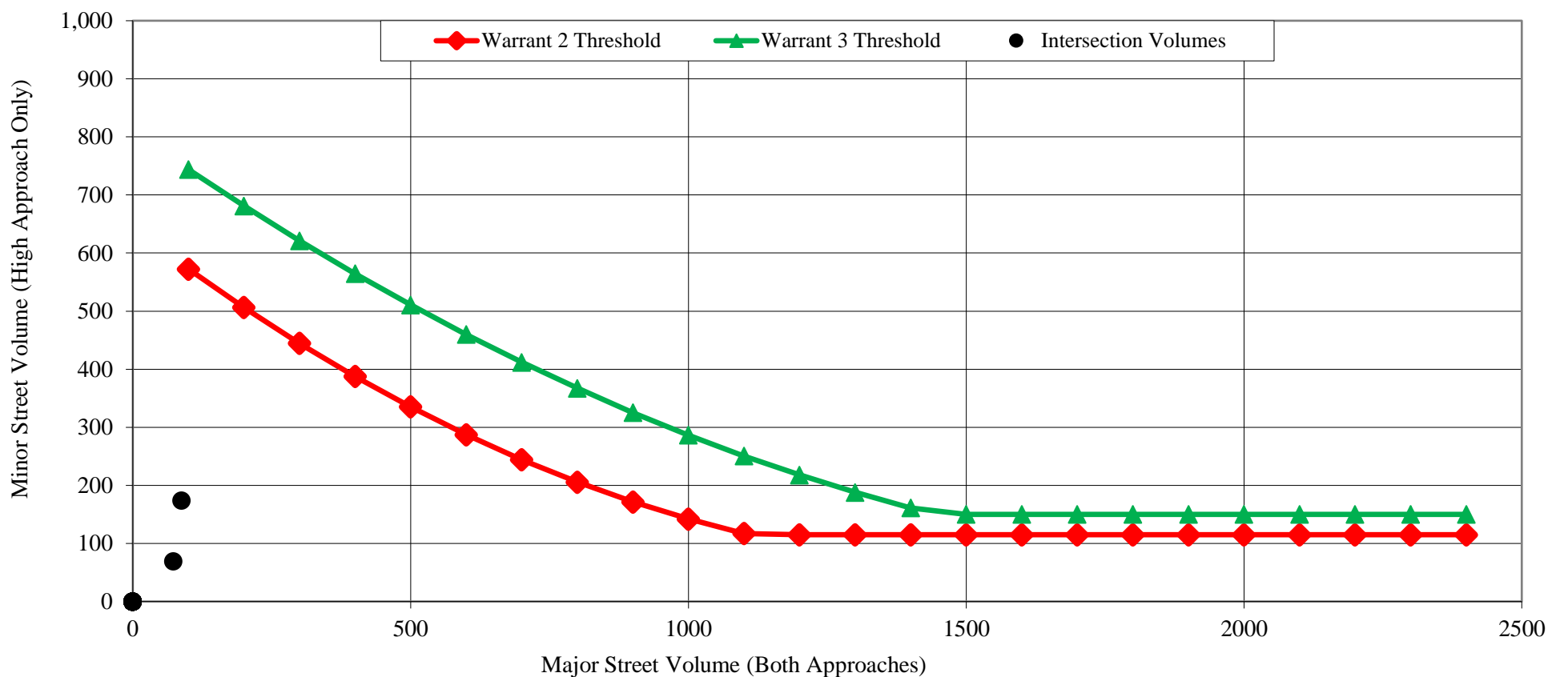
Warrant 1, Eight Hour Vehicular Volume			
	Condition A	Condition B	Condition A+B*
Condition Satisfied?	Not Satisfied	Not Satisfied	Not Satisfied
Required values reached for	0 hours	0 hours	0 (Cond. A) & 0 (Cond. B)
Criteria - Major Street (veh/hr)	500	750	400 (Cond. A) & 600 (Cond. B)
Criteria - Minor Street (veh/hr)	200	100	160 (Cond. A) & 80 (Cond. B)

* Should be applied only after an adequate trial of other alternatives that could cause less delay and inconvenience to traffic has failed to solve the traffic problems.

Warrant 2, Four Hour Vehicular Volume	
Condition Satisfied?	Not Satisfied
Required values reached for	0 hours
Criteria	See Figure Below

Warrant 3, Peak Hour Vehicular Volume		
	Condition A	Condition B
Condition Satisfied?	Not Satisfied	Not Satisfied
Required values reached for	0 total, minor, 0 delay	0 hours
Criteria - Total Approach Volume (veh in one hour)	800	See Figure Below
Criteria - Minor Street High Side Volume (veh in one hour)	100	
Criteria - Minor Street High Side Delay (veh-hrs)	4	

Figure 4C-1 (Warrant 2) & Figure 4C-3 (Warrant 3)



Traffic Signal Warrant Analysis

Warrants 1 - 3 (Volume Warrants)

Project Name	Two-Way Traffic Pulaski VA
Project/File #	22239
Scenario	2022 Existing

Intersection Information			
Major Street (N/S Road)	Washington Avenue / US 11	Minor Street (E/W Road)	2nd Street
Analyzed with	1 approach lane	Analyzed with	1 Approach Lane
Total Approach Volume	662 vehicles	Total Approach Volume	218 vehicles
Total Ped/Bike Volume	0 crossings	Total Ped/Bike Volume	0 crossings
Right turn reduction of	0 percent applied	Right turn reduction of	0 percent applied

No high speed or isolated community reduction applied to the Volume Warrant thresholds.

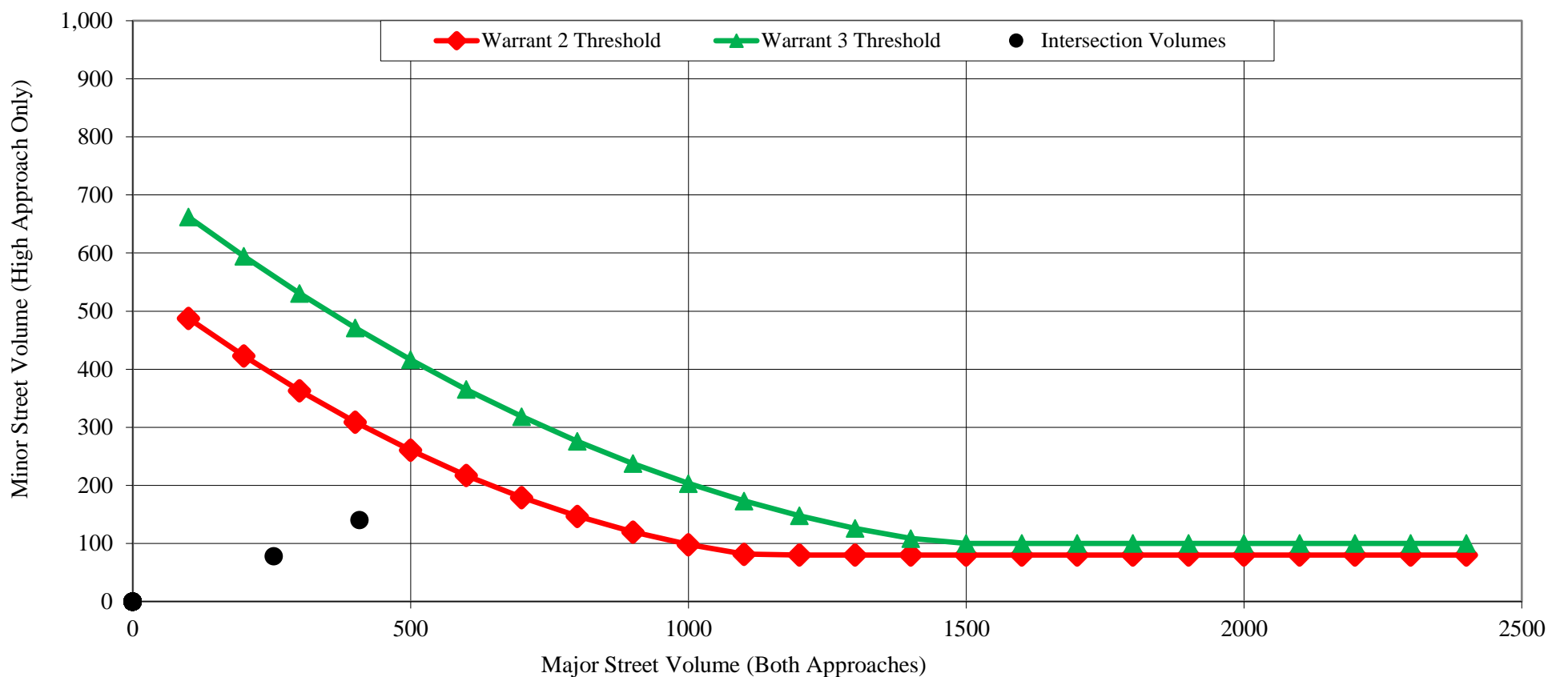
Warrant 1, Eight Hour Vehicular Volume			
	Condition A	Condition B	Condition A+B*
Condition Satisfied?	Not Satisfied	Not Satisfied	Not Satisfied
Required values reached for	0 hours	0 hours	1 (Cond. A) & 0 (Cond. B)
Criteria - Major Street (veh/hr)	500	750	400 (Cond. A) & 600 (Cond. B)
Criteria - Minor Street (veh/hr)	150	75	120 (Cond. A) & 60 (Cond. B)

* Should be applied only after an adequate trial of other alternatives that could cause less delay and inconvenience to traffic has failed to solve the traffic problems.

Warrant 2, Four Hour Vehicular Volume	
Condition Satisfied?	Not Satisfied
Required values reached for	0 hours
Criteria	See Figure Below

Warrant 3, Peak Hour Vehicular Volume		
	Condition A	Condition B
Condition Satisfied?	Not Satisfied	Not Satisfied
Required values reached for	0 total, minor, 0 delay	0 hours
Criteria - Total Approach Volume (veh in one hour)	650	See Figure Below
Criteria - Minor Street High Side Volume (veh in one hour)	100	
Criteria - Minor Street High Side Delay (veh-hrs)	4	

Figure 4C-1 (Warrant 2) & Figure 4C-3 (Warrant 3)



Traffic Signal Warrant Analysis

Warrants 1 - 3 (Volume Warrants)

Project Name	Two-Way Traffic Pulaski VA
Project/File #	22239
Scenario	2022 Existing

Intersection Information			
Major Street (N/S Road)	Washington Avenue / US 11	Minor Street (E/W Road)	3rd Street
Analyzed with	2 or more approach lanes	Analyzed with	2 or more approach lanes
Total Approach Volume	546 vehicles	Total Approach Volume	383 vehicles
Total Ped/Bike Volume	0 crossings	Total Ped/Bike Volume	0 crossings
Right turn reduction of	0 percent applied	Right turn reduction of	0 percent applied

No high speed or isolated community reduction applied to the Volume Warrant thresholds.

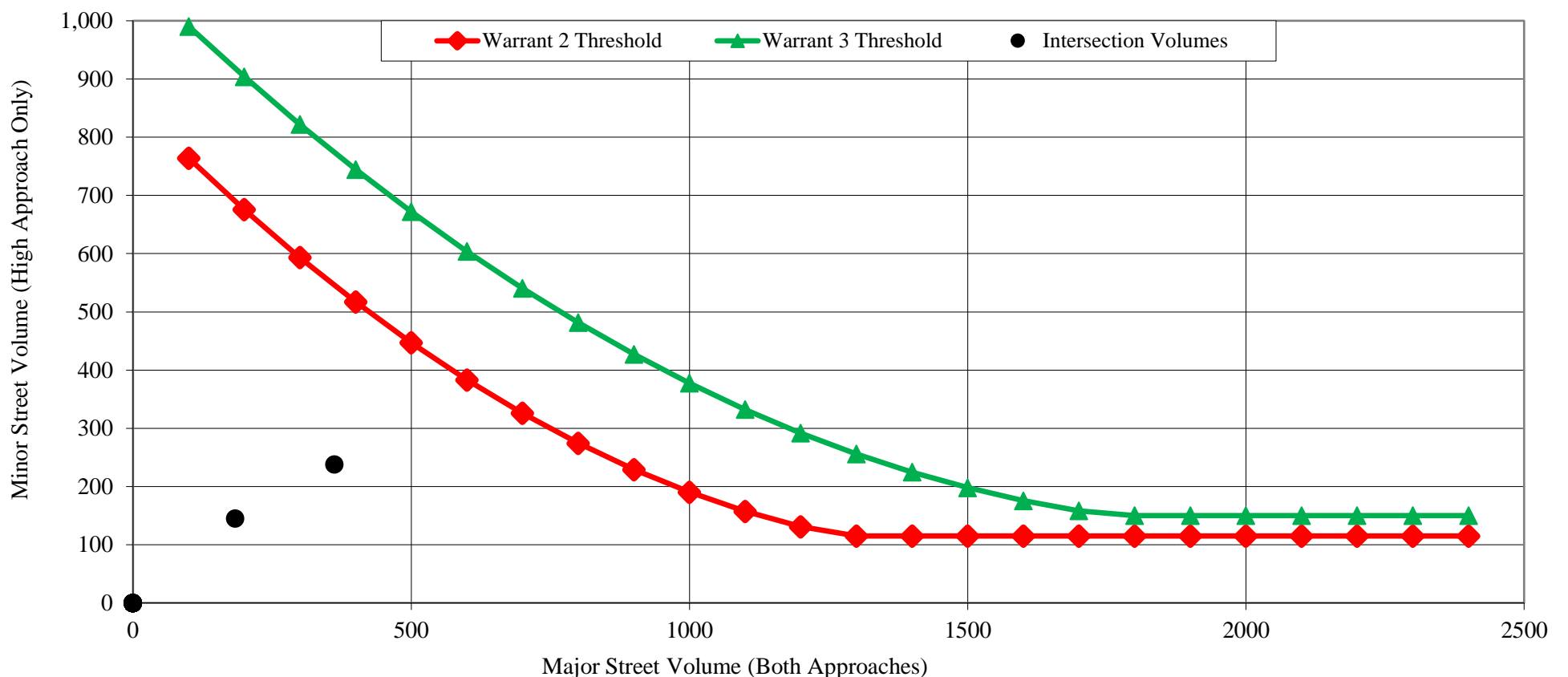
Warrant 1, Eight Hour Vehicular Volume			
	Condition A	Condition B	Condition A+B*
Condition Satisfied?	Not Satisfied	Not Satisfied	Not Satisfied
Required values reached for	0 hours	0 hours	0 (Cond. A) & 0 (Cond. B)
Criteria - Major Street (veh/hr)	600	900	480 (Cond. A) & 720 (Cond. B)
Criteria - Minor Street (veh/hr)	200	100	160 (Cond. A) & 80 (Cond. B)

* Should be applied only after an adequate trial of other alternatives that could cause less delay and inconvenience to traffic has failed to solve the traffic problems.

Warrant 2, Four Hour Vehicular Volume	
Condition Satisfied?	Not Satisfied
Required values reached for	0 hours
Criteria	See Figure Below

Warrant 3, Peak Hour Vehicular Volume		
	Condition A	Condition B
Condition Satisfied?	Not Satisfied	Not Satisfied
Required values reached for	0 total, minor, 0 delay	0 hours
Criteria - Total Approach Volume (veh in one hour)	800	See Figure Below
Criteria - Minor Street High Side Volume (veh in one hour)	150	
Criteria - Minor Street High Side Delay (veh-hrs)	5	

Figure 4C-1 (Warrant 2) & Figure 4C-3 (Warrant 3)



APPENDIX E

**CAPACITY CALCULATIONS -
E MAIN STREET / 3RD STREET / 2ND
STREET AT DUNCAN AVENUE**

Intersection												
Int Delay, s/veh	0											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑		↑		↑		↑	↑			
Traffic Vol, veh/h	0	111	1	73	0	144	0	2	89	0	0	0
Future Vol, veh/h	0	111	1	73	0	144	0	2	89	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	0	-	0	-	-	50	-	-	-
Veh in Median Storage, #	-	0	-	-	16983	-	-	0	-	-	16979	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	123	1	81	0	160	0	2	99	0	0	0

Major/Minor	Major1			Minor1		
Conflicting Flow All	-	0	0	-	124	62
Stage 1	-	-	-	-	124	-
Stage 2	-	-	-	-	0	-
Critical Hdwy	-	-	-	-	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	4.02	3.32
Pot Cap-1 Maneuver	0	-	-	0	766	990
Stage 1	0	-	-	0	792	-
Stage 2	0	-	-	0	-	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	-	-	0	990
Mov Cap-2 Maneuver	-	-	-	-	0	-
Stage 1	-	-	-	-	0	-
Stage 2	-	-	-	-	0	-

Approach	EB	NB
HCM Control Delay, s	0	
HCM LOS		-

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR
Capacity (veh/h)	-	990	-	-
HCM Lane V/C Ratio	-	0.1	-	-
HCM Control Delay (s)	-	9	-	-
HCM Lane LOS	-	A	-	-
HCM 95th %tile Q(veh)	-	0.3	-	-

Intersection												
Int Delay, s/veh	0											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑		↑		↑		↑	↑			
Traffic Vol, veh/h	0	202	8	114	0	236	0	1	124	0	0	0
Future Vol, veh/h	0	202	8	114	0	236	0	1	124	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	0	-	0	-	-	50	-	-	-
Veh in Median Storage, #	-	0	-	-	16983	-	-	0	-	-	16979	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	224	9	127	0	262	0	1	138	0	0	0

Major/Minor	Major1			Minor1		
Conflicting Flow All	-	0	0	-	229	117
Stage 1	-	-	-	-	229	-
Stage 2	-	-	-	-	0	-
Critical Hdwy	-	-	-	-	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	4.02	3.32
Pot Cap-1 Maneuver	0	-	-	0	669	913
Stage 1	0	-	-	0	713	-
Stage 2	0	-	-	0	-	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	-	-	0	913
Mov Cap-2 Maneuver	-	-	-	-	0	-
Stage 1	-	-	-	-	0	-
Stage 2	-	-	-	-	0	-

Approach	EB	NB
HCM Control Delay, s	0	
HCM LOS		-

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR
Capacity (veh/h)	-	913	-	-
HCM Lane V/C Ratio	-	0.151	-	-
HCM Control Delay (s)	-	9.6	-	-
HCM Lane LOS	-	A	-	-
HCM 95th %tile Q(veh)	-	0.5	-	-

HCM 6th TWSC
 1: Duncan Avenue/3rd Street & 2nd Street/East Main Street

2022 Two-Way Traffic
 Timing Plan: AM Peak Hour

Intersection												
Int Delay, s/veh	5.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	3	56	1	73	72	72	1	2	89	55	1	1
Future Vol, veh/h	3	56	1	73	72	72	1	2	89	55	1	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	175	-	-	0	-	-	-	-	50	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	3	62	1	81	80	80	1	2	99	61	1	1

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	160	0	0	63	0	0	352	391	63	401	351	120
Stage 1	-	-	-	-	-	-	69	69	-	282	282	-
Stage 2	-	-	-	-	-	-	283	322	-	119	69	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1419	-	-	1540	-	-	603	545	1002	560	573	931
Stage 1	-	-	-	-	-	-	941	837	-	725	678	-
Stage 2	-	-	-	-	-	-	724	651	-	885	837	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1419	-	-	1540	-	-	576	515	1002	482	541	931
Mov Cap-2 Maneuver	-	-	-	-	-	-	576	515	-	482	541	-
Stage 1	-	-	-	-	-	-	939	835	-	724	642	-
Stage 2	-	-	-	-	-	-	684	616	-	794	835	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.4			2.5			9.1			13.5		
HCM LOS							A			B		

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	534	1002	1419	-	-	1540	-	-	487
HCM Lane V/C Ratio	0.006	0.099	0.002	-	-	0.053	-	-	0.13
HCM Control Delay (s)	11.8	9	7.5	-	-	7.5	-	-	13.5
HCM Lane LOS	B	A	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0	0.3	0	-	-	0.2	-	-	0.4

Intersection												
Int Delay, s/veh	5.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗			↖	↗		↕	
Traffic Vol, veh/h	3	51	1	114	118	118	1	1	124	51	4	1
Future Vol, veh/h	3	51	1	114	118	118	1	1	124	51	4	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	175	-	-	0	-	-	-	-	50	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	3	57	1	127	131	131	1	1	138	57	4	1

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	262	0	0	58	0	0	517	580	58	584	515	197
Stage 1	-	-	-	-	-	-	64	64	-	451	451	-
Stage 2	-	-	-	-	-	-	453	516	-	133	64	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1302	-	-	1546	-	-	469	426	1008	423	464	844
Stage 1	-	-	-	-	-	-	947	842	-	588	571	-
Stage 2	-	-	-	-	-	-	586	534	-	870	842	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1302	-	-	1546	-	-	435	390	1008	341	425	844
Mov Cap-2 Maneuver	-	-	-	-	-	-	435	390	-	341	425	-
Stage 1	-	-	-	-	-	-	945	840	-	587	524	-
Stage 2	-	-	-	-	-	-	533	490	-	748	840	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.4			2.5			9.2			17.5		
HCM LOS							A			C		

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	411	1008	1302	-	-	1546	-	-	350
HCM Lane V/C Ratio	0.005	0.137	0.003	-	-	0.082	-	-	0.178
HCM Control Delay (s)	13.8	9.1	7.8	-	-	7.5	-	-	17.5
HCM Lane LOS	B	A	A	-	-	A	-	-	C
HCM 95th %tile Q(veh)	0	0.5	0	-	-	0.3	-	-	0.6

MOVEMENT SUMMARY

Site: 101 [E Main Street / 3rd Street / 2nd Street and Duncan Avenue AM (Site Folder: General)]

TwoWay Traffic AM
 Site Category: (None)
 Roundabout

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV %	[Total veh/h	HV %				[Veh. veh	Dist] ft				
South: Duncan Avenue														
3	L2	1	2.0	1	2.0	0.086	3.8	LOSA	0.4	9.5	0.27	0.14	0.27	25.2
8	T1	2	2.0	2	2.0	0.086	3.8	LOSA	0.4	9.5	0.27	0.14	0.27	24.7
18	R2	89	2.0	99	2.0	0.086	3.8	LOSA	0.4	9.5	0.27	0.14	0.27	24.1
Approach		92	2.0	102	2.0	0.086	3.8	LOSA	0.4	9.5	0.27	0.14	0.27	24.1
East: E Main Street														
1	L2	73	2.0	81	2.0	0.179	4.2	LOSA	0.9	22.7	0.05	0.01	0.05	24.8
6	T1	72	2.0	80	2.0	0.179	4.2	LOSA	0.9	22.7	0.05	0.01	0.05	24.3
16	R2	72	2.0	80	2.0	0.179	4.2	LOSA	0.9	22.7	0.05	0.01	0.05	23.7
Approach		217	2.0	241	2.0	0.179	4.2	LOSA	0.9	22.7	0.05	0.01	0.05	24.3
North: 3rd Street														
7	L2	55	2.0	61	2.0	0.055	3.6	LOSA	0.2	5.9	0.30	0.16	0.30	24.2
4	T1	1	2.0	1	2.0	0.055	3.6	LOSA	0.2	5.9	0.30	0.16	0.30	23.7
14	R2	1	2.0	1	2.0	0.055	3.6	LOSA	0.2	5.9	0.30	0.16	0.30	23.2
Approach		57	2.0	63	2.0	0.055	3.6	LOSA	0.2	5.9	0.30	0.16	0.30	24.1
West: 2nd Street														
5	L2	3	2.0	3	2.0	0.057	3.6	LOSA	0.2	6.1	0.28	0.15	0.28	25.4
2	T1	56	2.0	62	2.0	0.057	3.6	LOSA	0.2	6.1	0.28	0.15	0.28	24.9
12	R2	1	2.0	1	2.0	0.057	3.6	LOSA	0.2	6.1	0.28	0.15	0.28	24.3
Approach		60	2.0	67	2.0	0.057	3.6	LOSA	0.2	6.1	0.28	0.15	0.28	24.9
All Vehicles		426	2.0	473	2.0	0.179	3.9	LOSA	0.9	22.7	0.17	0.08	0.17	24.3

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Roundabout LOS Method: Same as Sign Control.

Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.

LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).

Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).

Roundabout Capacity Model: US HCM 6.

Delay Model: HCM Delay Formula (Geometric Delay is not included).

Queue Model: HCM Queue Formula.

Gap-Acceptance Capacity: Traditional M1.

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [E Main Street / 3rd Street / 2nd Street and Duncan Avenue PM (Site Folder: General)]

TwoWay Traffic AM
 Site Category: (None)
 Roundabout

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV %	[Total veh/h	HV %				[Veh. veh	Dist] ft				
South: Duncan Avenue														
3	L2	1	2.0	1	2.0	0.117	4.0	LOSA	0.5	13.4	0.27	0.14	0.27	25.1
8	T1	1	2.0	1	2.0	0.117	4.0	LOSA	0.5	13.4	0.27	0.14	0.27	24.6
18	R2	124	2.0	138	2.0	0.117	4.0	LOSA	0.5	13.4	0.27	0.14	0.27	24.0
Approach		126	2.0	140	2.0	0.117	4.0	LOSA	0.5	13.4	0.27	0.14	0.27	24.0
East: E Main Street														
1	L2	114	2.0	127	2.0	0.289	5.2	LOSA	1.7	42.0	0.06	0.01	0.06	24.5
6	T1	118	2.0	131	2.0	0.289	5.2	LOSA	1.7	42.0	0.06	0.01	0.06	24.0
16	R2	118	2.0	131	2.0	0.289	5.2	LOSA	1.7	42.0	0.06	0.01	0.06	23.5
Approach		350	2.0	389	2.0	0.289	5.2	LOSA	1.7	42.0	0.06	0.01	0.06	24.0
North: 3rd Street														
7	L2	51	2.0	57	2.0	0.060	4.0	LOSA	0.2	6.3	0.39	0.25	0.39	24.1
4	T1	4	2.0	4	2.0	0.060	4.0	LOSA	0.2	6.3	0.39	0.25	0.39	23.7
14	R2	1	2.0	1	2.0	0.060	4.0	LOSA	0.2	6.3	0.39	0.25	0.39	23.1
Approach		56	2.0	62	2.0	0.060	4.0	LOSA	0.2	6.3	0.39	0.25	0.39	24.1
West: 2nd Street														
5	L2	3	2.0	3	2.0	0.058	3.7	LOSA	0.2	6.2	0.33	0.19	0.33	25.4
2	T1	51	2.0	57	2.0	0.058	3.7	LOSA	0.2	6.2	0.33	0.19	0.33	24.9
12	R2	4	2.0	4	2.0	0.058	3.7	LOSA	0.2	6.2	0.33	0.19	0.33	24.2
Approach		58	2.0	64	2.0	0.058	3.7	LOSA	0.2	6.2	0.33	0.19	0.33	24.8
All Vehicles		590	2.0	656	2.0	0.289	4.7	LOSA	1.7	42.0	0.16	0.08	0.16	24.1

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Roundabout LOS Method: Same as Sign Control.

Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.

LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).

Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).

Roundabout Capacity Model: US HCM 6.

Delay Model: HCM Delay Formula (Geometric Delay is not included).

Queue Model: HCM Queue Formula.

Gap-Acceptance Capacity: Traditional M1.

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

APPENDIX F

CAPACITY CALCULATIONS -

3RD STREET

&

MADISON AVENUE

Intersection												
Int Delay, s/veh	1.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↕↕		↕	↑			↕	
Traffic Vol, veh/h	0	0	0	3	145	14	3	5	0	0	11	12
Future Vol, veh/h	0	0	0	3	145	14	3	5	0	0	11	12
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	50	-	-	-	-	-
Veh in Median Storage, #	-	2	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	3	161	16	3	6	0	0	12	13

Major/Minor	Major2	Minor1	Minor2
Conflicting Flow All	0	0	93
Stage 1	-	-	0
Stage 2	-	-	93
Critical Hdwy	4.14	-	7.54
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	6.54
Follow-up Hdwy	2.22	-	3.52
Pot Cap-1 Maneuver	-	-	881
Stage 1	-	-	-
Stage 2	-	-	904
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	857
Mov Cap-2 Maneuver	-	-	857
Stage 1	-	-	-
Stage 2	-	-	877

Approach	WB	NB	SB
HCM Control Delay, s		9.8	9.5
HCM LOS		A	A

Minor Lane/Major Mvmt	NBLn1	NBLn2	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	857	710	-	-	-	823
HCM Lane V/C Ratio	0.004	0.008	-	-	-	0.031
HCM Control Delay (s)	9.2	10.1	-	-	-	9.5
HCM Lane LOS	A	B	-	-	-	A
HCM 95th %tile Q(veh)	0	0	-	-	-	0.1

Intersection												
Int Delay, s/veh	1.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↕↕		↕	↕			↕	
Traffic Vol, veh/h	0	0	0	6	232	24	2	11	0	0	17	8
Future Vol, veh/h	0	0	0	6	232	24	2	11	0	0	17	8
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	50	-	-	-	-	-
Veh in Median Storage, #	-	2	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	7	258	27	2	12	0	0	19	9

Major/Minor	Major2	Minor1	Minor2
Conflicting Flow All	0	0	153
Stage 1	-	-	0
Stage 2	-	-	153
Critical Hdwy	4.14	-	7.54
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	6.54
Follow-up Hdwy	2.22	-	3.52
Pot Cap-1 Maneuver	-	-	799
Stage 1	-	-	-
Stage 2	-	-	834
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	773
Mov Cap-2 Maneuver	-	-	773
Stage 1	-	-	-
Stage 2	-	-	802

Approach	WB	NB	SB
HCM Control Delay, s		10.8	10.5
HCM LOS		B	B

Minor Lane/Major Mvmt	NBLn1	NBLn2	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	773	612	-	-	-	686
HCM Lane V/C Ratio	0.003	0.02	-	-	-	0.04
HCM Control Delay (s)	9.7	11	-	-	-	10.5
HCM Lane LOS	A	B	-	-	-	B
HCM 95th %tile Q(veh)	0	0.1	-	-	-	0.1

Intersection												
Int Delay, s/veh	2.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕			↕	
Traffic Vol, veh/h	3	54	1	3	73	7	3	5	1	7	11	6
Future Vol, veh/h	3	54	1	3	73	7	3	5	1	7	11	6
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	50	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	3	60	1	3	81	8	3	6	1	8	12	7

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	89	0	0	61	0	0	168	162	61	161	158	85
Stage 1	-	-	-	-	-	-	67	67	-	91	91	-
Stage 2	-	-	-	-	-	-	101	95	-	70	67	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1506	-	-	1542	-	-	796	730	1004	804	734	974
Stage 1	-	-	-	-	-	-	943	839	-	916	820	-
Stage 2	-	-	-	-	-	-	905	816	-	940	839	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1506	-	-	1542	-	-	778	727	1004	796	731	974
Mov Cap-2 Maneuver	-	-	-	-	-	-	778	727	-	796	731	-
Stage 1	-	-	-	-	-	-	941	837	-	914	818	-
Stage 2	-	-	-	-	-	-	884	814	-	931	837	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.4			0.3			9.7			9.7		
HCM LOS							A			A		

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	778	762	1506	-	-	1542	-	-	800
HCM Lane V/C Ratio	0.004	0.009	0.002	-	-	0.002	-	-	0.033
HCM Control Delay (s)	9.6	9.8	7.4	0	-	7.3	0	-	9.7
HCM Lane LOS	A	A	A	A	-	A	A	-	A
HCM 95th %tile Q(veh)	0	0	0	-	-	0	-	-	0.1

Intersection												
Int Delay, s/veh	1.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕			↕	
Traffic Vol, veh/h	6	103	1	6	116	12	2	11	1	9	17	4
Future Vol, veh/h	6	103	1	6	116	12	2	11	1	9	17	4
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	50	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	7	114	1	7	129	13	2	12	1	10	19	4

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	142	0	0	115	0	0	290	285	115	285	279	136
Stage 1	-	-	-	-	-	-	129	129	-	150	150	-
Stage 2	-	-	-	-	-	-	161	156	-	135	129	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1441	-	-	1474	-	-	662	624	937	667	629	913
Stage 1	-	-	-	-	-	-	875	789	-	853	773	-
Stage 2	-	-	-	-	-	-	841	769	-	868	789	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1441	-	-	1474	-	-	639	618	937	651	623	913
Mov Cap-2 Maneuver	-	-	-	-	-	-	639	618	-	651	623	-
Stage 1	-	-	-	-	-	-	871	785	-	849	769	-
Stage 2	-	-	-	-	-	-	812	765	-	849	785	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.4			0.3			10.8			10.8		
HCM LOS							B			B		

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	639	636	1441	-	-	1474	-	-	659
HCM Lane V/C Ratio	0.003	0.021	0.005	-	-	0.005	-	-	0.051
HCM Control Delay (s)	10.7	10.8	7.5	0	-	7.5	0	-	10.8
HCM Lane LOS	B	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0	0.1	0	-	-	0	-	-	0.2

APPENDIX G

CAPACITY CALCULATIONS -

3RD STREET

&

N WASHINGTON AVENUE

Lanes, Volumes, Timings
 3: Washington Avenue/North Washington Avenue & 3rd Street

2022 Existing
 Timing Plan: AM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↔↔		↗	↖			↖	↗
Traffic Volume (vph)	0	0	0	41	84	20	8	83	0	0	80	13
Future Volume (vph)	0	0	0	41	84	20	8	83	0	0	80	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	100		0	0		0
Storage Lanes	0		0	0		0	1		0	0		0
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.980							0.982
Flt Protected					0.986		0.950					
Satd. Flow (prot)	0	0	0	0	3420	0	1770	1863	0	0	1829	0
Flt Permitted					0.986		0.644					
Satd. Flow (perm)	0	0	0	0	3420	0	1200	1863	0	0	1829	0
Right Turn on Red				No		No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		701			708			417			1138	
Travel Time (s)		19.1			19.3			11.4			31.0	
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)	0	0	0	46	93	22	9	92	0	0	89	14
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	161	0	9	92	0	0	103	0
Turn Type				Perm	NA		pm+pt	NA			NA	
Protected Phases					4		5	2			6	
Permitted Phases				4			2					
Detector Phase				4	4		5	2			6	
Switch Phase												
Minimum Initial (s)				8.0	8.0		7.0	12.0			12.0	
Minimum Split (s)				14.0	14.0		12.0	18.0			18.0	
Total Split (s)				15.0	15.0		15.0	45.0			30.0	
Total Split (%)				25.0%	25.0%		25.0%	75.0%			50.0%	
Maximum Green (s)				9.0	9.0		10.0	39.0			24.0	
Yellow Time (s)				4.0	4.0		4.0	4.0			4.0	
All-Red Time (s)				2.0	2.0		1.0	2.0			2.0	
Lost Time Adjust (s)					-2.0		-2.0	-2.0			-2.0	
Total Lost Time (s)					4.0		3.0	4.0			4.0	
Lead/Lag							Lead				Lag	
Lead-Lag Optimize?							Yes				Yes	
Vehicle Extension (s)				3.0	3.0		3.0	3.0			3.0	
Recall Mode				None	None		None	Max			Max	
Act Effct Green (s)					10.4		45.0	44.8			42.4	
Actuated g/C Ratio					0.17		0.76	0.75			0.71	
v/c Ratio					0.27		0.01	0.07			0.08	
Control Delay					22.5		2.8	3.3			5.5	
Queue Delay					0.0		0.0	0.0			0.0	
Total Delay					22.5		2.8	3.3			5.5	
LOS					C		A	A			A	
Approach Delay					22.5			3.2			5.5	
Approach LOS					C			A			A	

Lanes, Volumes, Timings
 3: Washington Avenue/North Washington Avenue & 3rd Street

2022 Existing
 Timing Plan: AM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 50th (ft)					26		1	8			9	
Queue Length 95th (ft)					50		4	19			41	
Internal Link Dist (ft)		621			628			337			1058	
Turn Bay Length (ft)							100					
Base Capacity (vph)					631		1020	1399			1300	
Starvation Cap Reductn					0		0	0			0	
Spillback Cap Reductn					0		0	0			0	
Storage Cap Reductn					0		0	0			0	
Reduced v/c Ratio					0.26		0.01	0.07			0.08	

Intersection Summary

Area Type:	Other
Cycle Length:	60
Actuated Cycle Length:	59.6
Natural Cycle:	45
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.27
Intersection Signal Delay:	12.4
Intersection LOS:	B
Intersection Capacity Utilization	39.2%
ICU Level of Service	A
Analysis Period (min)	15

Splits and Phases: 3: Washington Avenue/North Washington Avenue & 3rd Street



Lanes, Volumes, Timings
 3: Washington Avenue/North Washington Avenue & 3rd Street

2022 Existing
 Timing Plan: PM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↔↔		↗	↖			↖	↗
Traffic Volume (vph)	0	0	0	65	143	30	14	151	0	0	178	19
Future Volume (vph)	0	0	0	65	143	30	14	151	0	0	178	19
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	100		0	0		0
Storage Lanes	0		0	0		0	1		0	0		0
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.981							0.987
Flt Protected					0.987		0.950					
Satd. Flow (prot)	0	0	0	0	3427	0	1770	1863	0	0	1839	0
Flt Permitted					0.987		0.577					
Satd. Flow (perm)	0	0	0	0	3427	0	1075	1863	0	0	1839	0
Right Turn on Red				No		No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		25			25			25				25
Link Distance (ft)		701			708			417				1138
Travel Time (s)		19.1			19.3			11.4				31.0
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)	0	0	0	72	159	33	16	168	0	0	198	21
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	264	0	16	168	0	0	219	0
Turn Type				Perm	NA		pm+pt	NA			NA	
Protected Phases					4		5	2				6
Permitted Phases				4			2					
Detector Phase				4	4		5	2				6
Switch Phase												
Minimum Initial (s)				8.0	8.0		7.0	12.0				12.0
Minimum Split (s)				14.0	14.0		12.0	18.0				18.0
Total Split (s)				15.0	15.0		15.0	45.0				30.0
Total Split (%)				25.0%	25.0%		25.0%	75.0%				50.0%
Maximum Green (s)				9.0	9.0		10.0	39.0				24.0
Yellow Time (s)				4.0	4.0		4.0	4.0				4.0
All-Red Time (s)				2.0	2.0		1.0	2.0				2.0
Lost Time Adjust (s)					-2.0		-2.0	-2.0				-2.0
Total Lost Time (s)					4.0		3.0	4.0				4.0
Lead/Lag							Lead					Lag
Lead-Lag Optimize?							Yes					Yes
Vehicle Extension (s)				3.0	3.0		3.0	3.0				3.0
Recall Mode				None	None		None	Max				Max
Act Effct Green (s)					10.7		42.0	41.0				38.6
Actuated g/C Ratio					0.18		0.70	0.69				0.65
v/c Ratio					0.43		0.02	0.13				0.18
Control Delay					24.2		2.8	3.6				5.9
Queue Delay					0.0		0.0	0.0				0.0
Total Delay					24.2		2.8	3.6				5.9
LOS					C		A	A				A
Approach Delay					24.2			3.5				5.9
Approach LOS					C			A				A

Lanes, Volumes, Timings
 3: Washington Avenue/North Washington Avenue & 3rd Street

2022 Existing
 Timing Plan: PM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 50th (ft)					44		1	17			22	
Queue Length 95th (ft)					76		5	32			80	
Internal Link Dist (ft)		621			628			337			1058	
Turn Bay Length (ft)							100					
Base Capacity (vph)					631		895	1278			1188	
Starvation Cap Reductn					0		0	0			0	
Spillback Cap Reductn					0		0	0			0	
Storage Cap Reductn					0		0	0			0	
Reduced v/c Ratio					0.42		0.02	0.13			0.18	

Intersection Summary	
Area Type:	Other
Cycle Length:	60
Actuated Cycle Length:	59.7
Natural Cycle:	45
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.43
Intersection Signal Delay:	12.5
Intersection LOS:	B
Intersection Capacity Utilization:	39.2%
ICU Level of Service:	A
Analysis Period (min):	15

Splits and Phases: 3: Washington Avenue/North Washington Avenue & 3rd Street



Intersection	
Intersection Delay, s/veh	8.2
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕			↕	
Traffic Vol, veh/h	4	34	1	21	42	10	4	83	25	11	80	6
Future Vol, veh/h	4	34	1	21	42	10	4	83	25	11	80	6
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	4	38	1	23	47	11	4	92	28	12	89	7
Number of Lanes	0	1	0	0	1	0	1	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	2	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	1	1	1
HCM Control Delay	7.9	8	8.4	8.2
HCM LOS	A	A	A	A

Lane	NBLn1	NBLn2	EBLn1	WBLn1	SBLn1
Vol Left, %	100%	0%	10%	29%	11%
Vol Thru, %	0%	77%	87%	58%	82%
Vol Right, %	0%	23%	3%	14%	6%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	4	108	39	73	97
LT Vol	4	0	4	21	11
Through Vol	0	83	34	42	80
RT Vol	0	25	1	10	6
Lane Flow Rate	4	120	43	81	108
Geometry Grp	7	7	2	2	5
Degree of Util (X)	0.007	0.158	0.055	0.102	0.133
Departure Headway (Hd)	5.414	4.75	4.585	4.511	4.458
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	663	757	783	797	806
Service Time	3.129	2.464	2.601	2.524	2.473
HCM Lane V/C Ratio	0.006	0.159	0.055	0.102	0.134
HCM Control Delay	8.2	8.4	7.9	8	8.2
HCM Lane LOS	A	A	A	A	A
HCM 95th-tile Q	0	0.6	0.2	0.3	0.5

HCM 6th AWSC
 3: Washington Avenue/North Washington Avenue & 3rd Street

2022 Two-Way Traffic
 Timing Plan: PM Peak Hour

Intersection	
Intersection Delay, s/veh	9.6
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↙	↘			↕	
Traffic Vol, veh/h	12	47	10	32	71	15	7	151	20	21	178	8
Future Vol, veh/h	12	47	10	32	71	15	7	151	20	21	178	8
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	13	52	11	36	79	17	8	168	22	23	198	9
Number of Lanes	0	1	0	0	1	0	1	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	2	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	1	1	1
HCM Control Delay	8.8	9.3	9.8	10
HCM LOS	A	A	A	A

Lane	NBLn1	NBLn2	EBLn1	WBLn1	SBLn1
Vol Left, %	100%	0%	17%	27%	10%
Vol Thru, %	0%	88%	68%	60%	86%
Vol Right, %	0%	12%	14%	13%	4%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	7	171	69	118	207
LT Vol	7	0	12	32	21
Through Vol	0	151	47	71	178
RT Vol	0	20	10	15	8
Lane Flow Rate	8	190	77	131	230
Geometry Grp	7	7	2	2	5
Degree of Util (X)	0.012	0.274	0.109	0.184	0.307
Departure Headway (Hd)	5.776	5.189	5.115	5.063	4.813
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	617	690	695	704	743
Service Time	3.534	2.948	3.185	3.126	2.871
HCM Lane V/C Ratio	0.013	0.275	0.111	0.186	0.31
HCM Control Delay	8.6	9.9	8.8	9.3	10
HCM Lane LOS	A	A	A	A	A
HCM 95th-tile Q	0	1.1	0.4	0.7	1.3

APPENDIX H

CAPACITY CALCULATIONS -

3RD STREET

&

JEFFERSON AVENUE

Lanes, Volumes, Timings
4: Jefferson Avenue & 3rd Street

2022 Existing
Timing Plan: AM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1	0	4	29	32	8	1	17	0	0	47	8
Future Volume (vph)	1	0	4	29	32	8	1	17	0	0	47	8
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
Fr _t			0.850		0.970							0.980
Fl _t Protected	0.950			0.950				0.998				
Satd. Flow (prot)	1770	0	1583	1770	1807	0	0	1859	0	0	1825	0
Fl _t Permitted				0.950				0.977				
Satd. Flow (perm)	1863	0	1583	1770	1807	0	0	1820	0	0	1825	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		25			25			25				25
Link Distance (ft)		1018			701			407				1086
Travel Time (s)		27.8			19.1			11.1				29.6
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)	1	0	4	32	36	9	1	19	0	0	52	9
Shared Lane Traffic (%)												
Lane Group Flow (vph)	1	0	4	32	45	0	0	20	0	0	61	0
Turn Type	Perm		Perm	Split	NA		Perm	NA			NA	
Protected Phases				8	8			2				6
Permitted Phases	4		4				2					
Detector Phase	4		4	8	8		2	2				6
Switch Phase												
Minimum Initial (s)	15.0		15.0	15.0	15.0		10.0	10.0				15.0
Minimum Split (s)	21.0		21.0	21.0	21.0		16.0	16.0				21.0
Total Split (s)	21.0		21.0	21.0	21.0		23.0	23.0				23.0
Total Split (%)	32.3%		32.3%	32.3%	32.3%		35.4%	35.4%				35.4%
Maximum Green (s)	15.0		15.0	15.0	15.0		17.0	17.0				17.0
Yellow Time (s)	4.0		4.0	4.0	4.0		4.0	4.0				4.0
All-Red Time (s)	2.0		2.0	2.0	2.0		2.0	2.0				2.0
Lost Time Adjust (s)	-1.0		-1.0	-1.0	-1.0		-1.0	-1.0				-1.0
Total Lost Time (s)	5.0		5.0	5.0	5.0		5.0	5.0				5.0
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0		3.0	3.0	3.0		3.0	3.0				3.0
Recall Mode	None		None	None	None		None	None				None
Act Effct Green (s)	21.4		21.4	21.4	21.4			17.9				21.4
Actuated g/C Ratio	0.68		0.68	0.68	0.68			0.57				0.68
v/c Ratio	0.00		0.00	0.03	0.04			0.02				0.05
Control Delay	13.0		12.8	11.6	11.1			11.9				10.9
Queue Delay	0.0		0.0	0.0	0.0			0.0				0.0
Total Delay	13.0		12.8	11.6	11.1			11.9				10.9
LOS	B		B	B	B			B				B
Approach Delay		12.8			11.3			11.9				10.9
Approach LOS		B			B			B				B
Queue Length 50th (ft)	0		0	0	0			0				0
Queue Length 95th (ft)	3		8	28	35			20				44
Internal Link Dist (ft)		938			621			327				1006

Lanes, Volumes, Timings
 4: Jefferson Avenue & 3rd Street

2022 Existing
 Timing Plan: AM Peak Hour

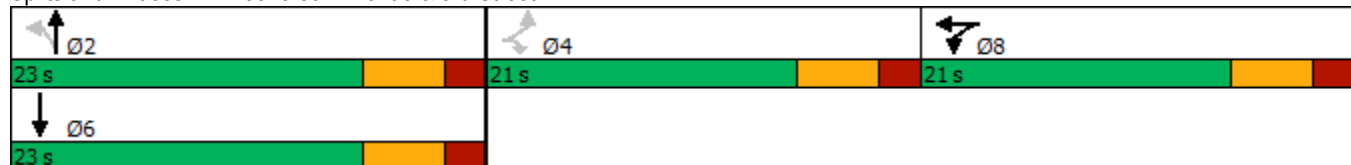


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Bay Length (ft)												
Base Capacity (vph)	1271		1080	1208	1233			1352				1356
Starvation Cap Reductn	0		0	0	0			0				0
Spillback Cap Reductn	0		0	0	0			0				0
Storage Cap Reductn	0		0	0	0			0				0
Reduced v/c Ratio	0.00		0.00	0.03	0.04			0.01				0.04

Intersection Summary

Area Type:	Other
Cycle Length:	65
Actuated Cycle Length:	31.4
Natural Cycle:	65
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.05
Intersection Signal Delay:	11.3
Intersection LOS:	B
Intersection Capacity Utilization:	50.0%
ICU Level of Service:	A
Analysis Period (min):	15

Splits and Phases: 4: Jefferson Avenue & 3rd Street



Lanes, Volumes, Timings
4: Jefferson Avenue & 3rd Street

2022 Existing
Timing Plan: PM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	11	0	6	53	101	20	1	44	0	0	34	9
Future Volume (vph)	11	0	6	53	101	20	1	44	0	0	34	9
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
Fr _t			0.850		0.975							0.972
Fl _t Protected	0.950			0.950				0.999				
Satd. Flow (prot)	1770	0	1583	1770	1816	0	0	1861	0	0	1811	0
Fl _t Permitted				0.950				0.991				
Satd. Flow (perm)	1863	0	1583	1770	1816	0	0	1846	0	0	1811	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		25			25			25				25
Link Distance (ft)		1018			701			407				1086
Travel Time (s)		27.8			19.1			11.1				29.6
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)	12	0	7	59	112	22	1	49	0	0	38	10
Shared Lane Traffic (%)												
Lane Group Flow (vph)	12	0	7	59	134	0	0	50	0	0	48	0
Turn Type	Perm		Perm	Split	NA		Perm	NA			NA	
Protected Phases				8	8			2				6
Permitted Phases	4		4				2					
Detector Phase	4		4	8	8		2	2				6
Switch Phase												
Minimum Initial (s)	15.0		15.0	15.0	15.0		10.0	10.0				15.0
Minimum Split (s)	21.0		21.0	21.0	21.0		16.0	16.0				21.0
Total Split (s)	21.0		21.0	21.0	21.0		23.0	23.0				23.0
Total Split (%)	32.3%		32.3%	32.3%	32.3%		35.4%	35.4%				35.4%
Maximum Green (s)	15.0		15.0	15.0	15.0		17.0	17.0				17.0
Yellow Time (s)	4.0		4.0	4.0	4.0		4.0	4.0				4.0
All-Red Time (s)	2.0		2.0	2.0	2.0		2.0	2.0				2.0
Lost Time Adjust (s)	-1.0		-1.0	-1.0	-1.0		-1.0	-1.0				-1.0
Total Lost Time (s)	5.0		5.0	5.0	5.0		5.0	5.0				5.0
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0		3.0	3.0	3.0		3.0	3.0				3.0
Recall Mode	None		None	None	None		None	None				None
Act Effct Green (s)	21.6		21.6	21.6	21.6			14.4				21.6
Actuated g/C Ratio	0.77		0.77	0.77	0.77			0.51				0.77
v/c Ratio	0.01		0.01	0.04	0.10			0.05				0.03
Control Delay	9.6		10.0	8.4	8.1			9.8				8.6
Queue Delay	0.0		0.0	0.0	0.0			0.0				0.0
Total Delay	9.6		10.0	8.4	8.1			9.8				8.6
LOS	A		A	A	A			A				A
Approach Delay		9.8			8.2			9.8				8.6
Approach LOS		A			A			A				A
Queue Length 50th (ft)	1		0	0	1			2				0
Queue Length 95th (ft)	15		11	43	83			38				37
Internal Link Dist (ft)		938			621			327				1006

Lanes, Volumes, Timings
 4: Jefferson Avenue & 3rd Street

2022 Existing
 Timing Plan: PM Peak Hour

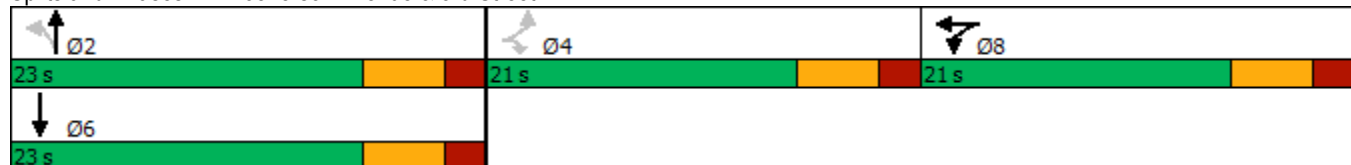


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Bay Length (ft)												
Base Capacity (vph)	1427		1212	1355	1390			1448			1420	
Starvation Cap Reductn	0		0	0	0			0			0	
Spillback Cap Reductn	0		0	0	0			0			0	
Storage Cap Reductn	0		0	0	0			0			0	
Reduced v/c Ratio	0.01		0.01	0.04	0.10			0.03			0.03	

Intersection Summary

Area Type:	Other
Cycle Length:	65
Actuated Cycle Length:	28.2
Natural Cycle:	65
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.10
Intersection Signal Delay:	8.6
Intersection LOS:	A
Intersection Capacity Utilization:	50.0%
ICU Level of Service:	A
Analysis Period (min):	15

Splits and Phases: 4: Jefferson Avenue & 3rd Street



Intersection	
Intersection Delay, s/veh	7.3
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	1	26	4	15	16	4	1	17	13	5	47	8
Future Vol, veh/h	1	26	4	15	16	4	1	17	13	5	47	8
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	1	29	4	17	18	4	1	19	14	6	52	9
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	7.3	7.4	7.1	7.4
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	3%	3%	43%	8%
Vol Thru, %	55%	84%	46%	78%
Vol Right, %	42%	13%	11%	13%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	31	31	35	60
LT Vol	1	1	15	5
Through Vol	17	26	16	47
RT Vol	13	4	4	8
Lane Flow Rate	34	34	39	67
Geometry Grp	1	1	1	1
Degree of Util (X)	0.037	0.039	0.045	0.075
Departure Headway (Hd)	3.868	4.069	4.153	4.026
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	920	874	857	887
Service Time	1.917	2.12	2.203	2.066
HCM Lane V/C Ratio	0.037	0.039	0.046	0.076
HCM Control Delay	7.1	7.3	7.4	7.4
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.1	0.1	0.1	0.2

Intersection	
Intersection Delay, s/veh	7.7
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	11	36	6	27	51	10	1	44	14	16	34	9
Future Vol, veh/h	11	36	6	27	51	10	1	44	14	16	34	9
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	12	40	7	30	57	11	1	49	16	18	38	10
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	7.6	7.8	7.6	7.7
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	2%	21%	31%	27%
Vol Thru, %	75%	68%	58%	58%
Vol Right, %	24%	11%	11%	15%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	59	53	88	59
LT Vol	1	11	27	16
Through Vol	44	36	51	34
RT Vol	14	6	10	9
Lane Flow Rate	66	59	98	66
Geometry Grp	1	1	1	1
Degree of Util (X)	0.077	0.071	0.114	0.079
Departure Headway (Hd)	4.219	4.312	4.198	4.319
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	854	836	840	833
Service Time	2.224	2.312	2.293	2.325
HCM Lane V/C Ratio	0.077	0.071	0.117	0.079
HCM Control Delay	7.6	7.6	7.8	7.7
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.2	0.2	0.4	0.3

APPENDIX I

CAPACITY CALCULATIONS -

2ND STREET

&

JEFFERSON AVENUE

Lanes, Volumes, Timings
5: Jefferson Avenue & West Main Street

2022 Existing
Timing Plan: AM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔					↔	↔		↔	↔	
Traffic Volume (vph)	2	53	2	0	0	0	7	18	16	11	57	4
Future Volume (vph)	2	53	2	0	0	0	7	18	16	11	57	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	75		0	50		0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.996						0.929			0.991	
Flt Protected		0.998					0.950			0.950		
Satd. Flow (prot)	0	1852	0	0	0	0	1770	1730	0	1770	1846	0
Flt Permitted		0.998					0.713			0.732		
Satd. Flow (perm)	0	1852	0	0	0	0	1328	1730	0	1364	1846	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		1079			704			1048			407	
Travel Time (s)		29.4			19.2			28.6			11.1	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	2	59	2	0	0	0	8	20	18	12	63	4
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	63	0	0	0	0	8	38	0	12	67	0
Turn Type	Perm	NA					Perm	NA		Perm	NA	
Protected Phases		4						2			6	
Permitted Phases	4						2			6		
Detector Phase	4	4					2	2		6	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0					7.0	7.0		7.0	7.0	
Minimum Split (s)	13.0	13.0					13.0	13.0		13.0	13.0	
Total Split (s)	20.0	20.0					20.0	20.0		20.0	20.0	
Total Split (%)	50.0%	50.0%					50.0%	50.0%		50.0%	50.0%	
Maximum Green (s)	14.0	14.0					14.0	14.0		14.0	14.0	
Yellow Time (s)	4.0	4.0					4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0					2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		-1.0					-1.0	-1.0		-1.0	-1.0	
Total Lost Time (s)		5.0					5.0	5.0		5.0	5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0					3.0	3.0		3.0	3.0	
Recall Mode	None	None					Max	Max		Max	Max	
Act Effct Green (s)		8.3					27.2	27.2		27.2	27.2	
Actuated g/C Ratio		0.24					0.78	0.78		0.78	0.78	
v/c Ratio		0.14					0.01	0.03		0.01	0.05	
Control Delay		11.1					4.7	4.4		4.6	4.2	
Queue Delay		0.0					0.0	0.0		0.0	0.0	
Total Delay		11.1					4.7	4.4		4.6	4.2	
LOS		B					A	A		A	A	
Approach Delay		11.1						4.4			4.3	
Approach LOS		B						A			A	

Lanes, Volumes, Timings
 5: Jefferson Avenue & West Main Street

2022 Existing
 Timing Plan: AM Peak Hour

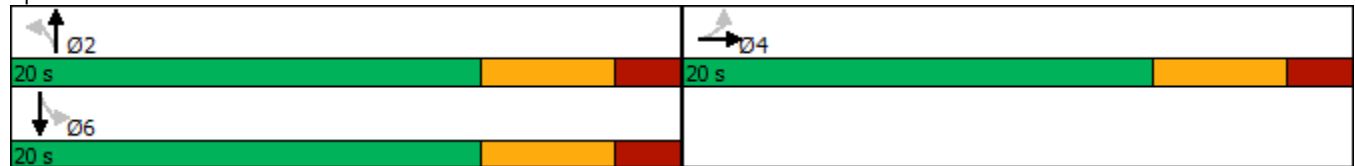


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 50th (ft)		10					0	0		0	0	
Queue Length 95th (ft)		24					5	12		6	18	
Internal Link Dist (ft)		999			624			968			327	
Turn Bay Length (ft)							75			50		
Base Capacity (vph)		799					1039	1354		1068	1445	
Starvation Cap Reductn		0					0	0		0	0	
Spillback Cap Reductn		0					0	0		0	0	
Storage Cap Reductn		0					0	0		0	0	
Reduced v/c Ratio		0.08					0.01	0.03		0.01	0.05	

Intersection Summary

Area Type:	Other
Cycle Length:	40
Actuated Cycle Length:	34.7
Natural Cycle:	40
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.14
Intersection Signal Delay:	6.6
Intersection LOS:	A
Intersection Capacity Utilization	21.4%
ICU Level of Service	A
Analysis Period (min)	15

Splits and Phases: 5: Jefferson Avenue & West Main Street



Lanes, Volumes, Timings
5: Jefferson Avenue & West Main Street

2022 Existing
Timing Plan: PM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕					↕	↕		↕	↕	
Traffic Volume (vph)	1	72	8	0	0	0	12	44	28	32	54	12
Future Volume (vph)	1	72	8	0	0	0	12	44	28	32	54	12
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	75		0	50		0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.986						0.942			0.973	
Flt Protected		0.999					0.950			0.950		
Satd. Flow (prot)	0	1835	0	0	0	0	1770	1755	0	1770	1812	0
Flt Permitted		0.999					0.709			0.705		
Satd. Flow (perm)	0	1835	0	0	0	0	1321	1755	0	1313	1812	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		1079			704			1048			407	
Travel Time (s)		29.4			19.2			28.6			11.1	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	1	80	9	0	0	0	13	49	31	36	60	13
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	90	0	0	0	0	13	80	0	36	73	0
Turn Type	Perm	NA					Perm	NA		Perm	NA	
Protected Phases		4						2			6	
Permitted Phases	4						2			6		
Detector Phase	4	4					2	2		6	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0					7.0	7.0		7.0	7.0	
Minimum Split (s)	13.0	13.0					13.0	13.0		13.0	13.0	
Total Split (s)	20.0	20.0					20.0	20.0		20.0	20.0	
Total Split (%)	50.0%	50.0%					50.0%	50.0%		50.0%	50.0%	
Maximum Green (s)	14.0	14.0					14.0	14.0		14.0	14.0	
Yellow Time (s)	4.0	4.0					4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0					2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		-1.0					-1.0	-1.0		-1.0	-1.0	
Total Lost Time (s)		5.0					5.0	5.0		5.0	5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0					3.0	3.0		3.0	3.0	
Recall Mode	None	None					Max	Max		Max	Max	
Act Effct Green (s)		8.6					24.0	24.0		24.0	24.0	
Actuated g/C Ratio		0.24					0.68	0.68		0.68	0.68	
v/c Ratio		0.20					0.01	0.07		0.04	0.06	
Control Delay		11.5					5.6	5.4		5.6	5.4	
Queue Delay		0.0					0.0	0.0		0.0	0.0	
Total Delay		11.5					5.6	5.4		5.6	5.4	
LOS		B					A	A		A	A	
Approach Delay		11.5						5.4			5.4	
Approach LOS		B						A			A	

Lanes, Volumes, Timings
 5: Jefferson Avenue & West Main Street

2022 Existing
 Timing Plan: PM Peak Hour

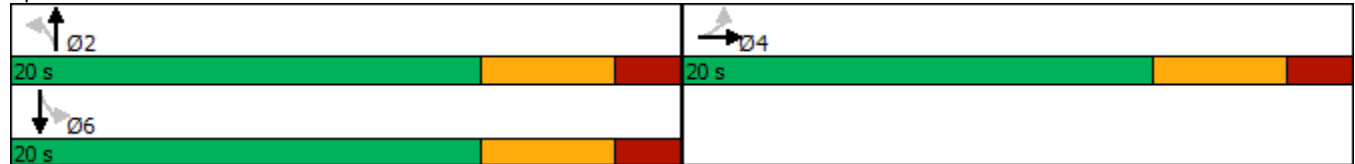


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 50th (ft)		16					1	7		3	7	
Queue Length 95th (ft)		32					6	22		13	20	
Internal Link Dist (ft)		999			624			968			327	
Turn Bay Length (ft)							75			50		
Base Capacity (vph)		779					897	1192		891	1230	
Starvation Cap Reductn		0					0	0		0	0	
Spillback Cap Reductn		0					0	0		0	0	
Storage Cap Reductn		0					0	0		0	0	
Reduced v/c Ratio		0.12					0.01	0.07		0.04	0.06	

Intersection Summary

Area Type:	Other
Cycle Length:	40
Actuated Cycle Length:	35.4
Natural Cycle:	40
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.20
Intersection Signal Delay:	7.3
Intersection LOS:	A
Intersection Capacity Utilization	22.6%
ICU Level of Service	A
Analysis Period (min)	15

Splits and Phases: 5: Jefferson Avenue & West Main Street



HCM 6th AWSC
5: Jefferson Avenue & West Main Street

2022 Two-Way Traffic
Timing Plan: AM Peak Hour

Intersection	
Intersection Delay, s/veh	7.6
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕		↕	↕	
Traffic Vol, veh/h	2	27	2	14	16	4	7	18	13	6	57	4
Future Vol, veh/h	2	27	2	14	16	4	7	18	13	6	57	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
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	2	30	2	16	18	4	8	20	14	7	63	4
Number of Lanes	0	1	0	0	1	0	1	1	0	1	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	2	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	2	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	2	1	1
HCM Control Delay	7.4	7.5	7.5	7.8
HCM LOS	A	A	A	A

Lane	NBLn1	NBLn2	EBLn1	WBLn1	SBLn1	SBLn2
Vol Left, %	100%	0%	6%	41%	100%	0%
Vol Thru, %	0%	58%	87%	47%	0%	93%
Vol Right, %	0%	42%	6%	12%	0%	7%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	7	31	31	34	6	61
LT Vol	7	0	2	14	6	0
Through Vol	0	18	27	16	0	57
RT Vol	0	13	2	4	0	4
Lane Flow Rate	8	34	34	38	7	68
Geometry Grp	7	7	2	2	7	7
Degree of Util (X)	0.011	0.042	0.04	0.044	0.01	0.087
Departure Headway (Hd)	5.201	4.406	4.134	4.169	5.185	4.638
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	685	807	852	845	688	769
Service Time	2.958	2.163	2.229	2.263	2.932	2.385
HCM Lane V/C Ratio	0.012	0.042	0.04	0.045	0.01	0.088
HCM Control Delay	8	7.4	7.4	7.5	8	7.8
HCM Lane LOS	A	A	A	A	A	A
HCM 95th-tile Q	0	0.1	0.1	0.1	0	0.3

HCM 6th AWSC
5: Jefferson Avenue & West Main Street

2022 Two-Way Traffic
Timing Plan: PM Peak Hour

Intersection	
Intersection Delay, s/veh	8
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↵	↵		↵	↵	
Traffic Vol, veh/h	2	36	8	26	50	10	12	44	14	16	54	12
Future Vol, veh/h	2	36	8	26	50	10	12	44	14	16	54	12
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	2	40	9	29	56	11	13	49	16	18	60	13
Number of Lanes	0	1	0	0	1	0	1	1	0	1	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	2	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	2	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	2	1	1
HCM Control Delay	7.7	8	8	8.1
HCM LOS	A	A	A	A

Lane	NBLn1	NBLn2	EBLn1	WBLn1	SBLn1	SBLn2
Vol Left, %	100%	0%	4%	30%	100%	0%
Vol Thru, %	0%	76%	78%	58%	0%	82%
Vol Right, %	0%	24%	17%	12%	0%	18%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	12	58	46	86	16	66
LT Vol	12	0	2	26	16	0
Through Vol	0	44	36	50	0	54
RT Vol	0	14	8	10	0	12
Lane Flow Rate	13	64	51	96	18	73
Geometry Grp	7	7	2	2	7	7
Degree of Util (X)	0.02	0.086	0.062	0.117	0.027	0.098
Departure Headway (Hd)	5.456	4.784	4.362	4.398	5.444	4.814
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	658	751	824	818	660	747
Service Time	3.17	2.498	2.374	2.409	3.157	2.527
HCM Lane V/C Ratio	0.02	0.085	0.062	0.117	0.027	0.098
HCM Control Delay	8.3	7.9	7.7	8	8.3	8.1
HCM Lane LOS	A	A	A	A	A	A
HCM 95th-tile Q	0.1	0.3	0.2	0.4	0.1	0.3

APPENDIX J

CAPACITY CALCULATIONS -

2ND STREET

&

WASHINGTON AVENUE

Lanes, Volumes, Timings
6: Washington Avenue & West Main Street/2nd Street

2022 Existing
Timing Plan: AM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕↕						↑	↗	↘	↑	
Traffic Volume (vph)	8	68	2	0	0	0	0	90	50	22	92	0
Future Volume (vph)	8	68	2	0	0	0	0	90	50	22	92	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	0		50	100		0
Storage Lanes	0		0	0		0	0		1	1		0
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.997							0.850			
Flt Protected		0.995								0.950		
Satd. Flow (prot)	0	3511	0	0	0	0	0	1863	1583	1770	1863	0
Flt Permitted		0.995								0.692		
Satd. Flow (perm)	0	3511	0	0	0	0	0	1863	1583	1289	1863	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		704			719			1098			417	
Travel Time (s)		19.2			19.6			29.9			11.4	
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)	9	76	2	0	0	0	0	100	56	24	102	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	87	0	0	0	0	0	100	56	24	102	0
Turn Type	Perm	NA						NA	Perm	pm+pt	NA	
Protected Phases		4						2		1	6	
Permitted Phases	4								2	6		
Detector Phase	4	4						2	2	1	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0						15.0	15.0	10.0	15.0	
Minimum Split (s)	13.5	13.5						20.3	20.3	15.6	20.4	
Total Split (s)	30.0	30.0						55.0	55.0	45.0	55.0	
Total Split (%)	23.1%	23.1%						42.3%	42.3%	34.6%	42.3%	
Maximum Green (s)	23.5	23.5						49.7	49.7	39.4	49.6	
Yellow Time (s)	3.5	3.5						3.6	3.6	3.7	3.7	
All-Red Time (s)	3.0	3.0						1.7	1.7	1.9	1.7	
Lost Time Adjust (s)		-1.5						-0.3	-2.0	-0.6	-0.4	
Total Lost Time (s)		5.0						5.0	3.3	5.0	5.0	
Lead/Lag								Lead	Lead	Lag		
Lead-Lag Optimize?								Yes	Yes	Yes		
Vehicle Extension (s)	2.5	2.5						5.0	5.0	2.5	5.0	
Recall Mode	None	None						Max	Max	None	Max	
Act Effct Green (s)		9.0						54.9	56.2	64.0	60.4	
Actuated g/C Ratio		0.12						0.73	0.74	0.85	0.80	
v/c Ratio		0.21						0.07	0.05	0.02	0.07	
Control Delay		33.4						6.2	5.7	2.0	2.6	
Queue Delay		0.0						0.0	0.0	0.0	0.0	
Total Delay		33.4						6.2	5.7	2.0	2.6	
LOS		C						A	A	A	A	
Approach Delay		33.4						6.0			2.4	
Approach LOS		C						A			A	

Lanes, Volumes, Timings
 6: Washington Avenue & West Main Street/2nd Street

2022 Existing
 Timing Plan: AM Peak Hour

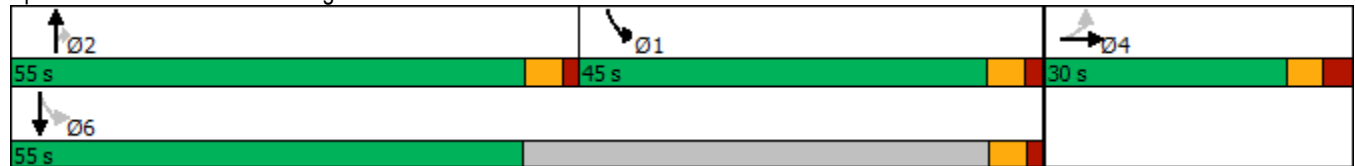


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 50th (ft)		17						9	4	1	9	
Queue Length 95th (ft)		44						43	26	7	20	
Internal Link Dist (ft)		624			639			1018			337	
Turn Bay Length (ft)									50	100		
Base Capacity (vph)		1175						1354	1179	1490	1863	
Starvation Cap Reductn		0						0	0	0	0	
Spillback Cap Reductn		0						0	0	0	0	
Storage Cap Reductn		0						0	0	0	0	
Reduced v/c Ratio		0.07						0.07	0.05	0.02	0.05	

Intersection Summary

Area Type:	Other
Cycle Length:	130
Actuated Cycle Length:	75.5
Natural Cycle:	50
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.21
Intersection Signal Delay:	11.2
Intersection LOS:	B
Intersection Capacity Utilization:	39.2%
ICU Level of Service:	A
Analysis Period (min):	15

Splits and Phases: 6: Washington Avenue & West Main Street/2nd Street



Lanes, Volumes, Timings
6: Washington Avenue & West Main Street/2nd Street

2022 Existing
Timing Plan: PM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕↕						↑	↗	↘	↑	
Traffic Volume (vph)	25	95	20	0	0	0	0	123	40	42	203	0
Future Volume (vph)	25	95	20	0	0	0	0	123	40	42	203	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	0		50	100		0
Storage Lanes	0		0	0		0	0		1	1		0
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.979							0.850			
Flt Protected		0.991								0.950		
Satd. Flow (prot)	0	3434	0	0	0	0	0	1863	1583	1770	1863	0
Flt Permitted		0.991								0.669		
Satd. Flow (perm)	0	3434	0	0	0	0	0	1863	1583	1246	1863	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		704			719			1098			417	
Travel Time (s)		19.2			19.6			29.9			11.4	
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)	28	106	22	0	0	0	0	137	44	47	226	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	156	0	0	0	0	0	137	44	47	226	0
Turn Type	Perm	NA						NA	Perm	pm+pt	NA	
Protected Phases		4						2		1	6	
Permitted Phases	4								2	6		
Detector Phase	4	4						2	2	1	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0						15.0	15.0	10.0	15.0	
Minimum Split (s)	13.5	13.5						20.3	20.3	15.6	20.4	
Total Split (s)	30.0	30.0						55.0	55.0	45.0	55.0	
Total Split (%)	23.1%	23.1%						42.3%	42.3%	34.6%	42.3%	
Maximum Green (s)	23.5	23.5						49.7	49.7	39.4	49.6	
Yellow Time (s)	3.5	3.5						3.6	3.6	3.7	3.7	
All-Red Time (s)	3.0	3.0						1.7	1.7	1.9	1.7	
Lost Time Adjust (s)		-1.5						-0.3	-2.0	-0.6	-0.4	
Total Lost Time (s)		5.0						5.0	3.3	5.0	5.0	
Lead/Lag								Lead	Lead	Lag		
Lead-Lag Optimize?								Yes	Yes	Yes		
Vehicle Extension (s)	2.5	2.5						5.0	5.0	2.5	5.0	
Recall Mode	None	None						Max	Max	None	Max	
Act Effct Green (s)		10.3						50.7	52.4	64.2	59.2	
Actuated g/C Ratio		0.13						0.64	0.66	0.81	0.74	
v/c Ratio		0.35						0.12	0.04	0.04	0.16	
Control Delay		35.5						7.9	7.2	2.7	3.3	
Queue Delay		0.0						0.0	0.0	0.0	0.0	
Total Delay		35.5						7.9	7.2	2.7	3.3	
LOS		D						A	A	A	A	
Approach Delay		35.5						7.7			3.2	
Approach LOS		D						A			A	

Lanes, Volumes, Timings
 6: Washington Avenue & West Main Street/2nd Street

2022 Existing
 Timing Plan: PM Peak Hour

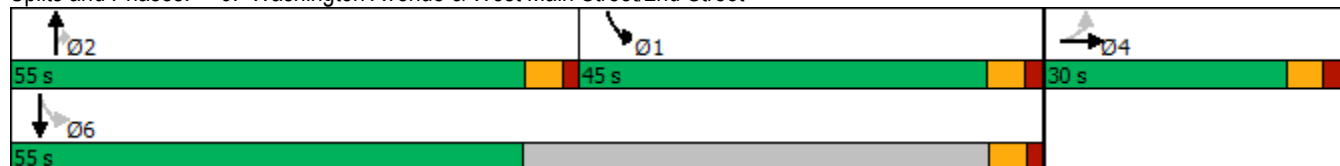


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 50th (ft)		41						31	9	5	25	
Queue Length 95th (ft)		71						59	23	13	49	
Internal Link Dist (ft)		624			639			1018			337	
Turn Bay Length (ft)									50	100		
Base Capacity (vph)		1091						1184	1040	1476	1863	
Starvation Cap Reductn		0						0	0	0	0	
Spillback Cap Reductn		0						0	0	0	0	
Storage Cap Reductn		0						0	0	0	0	
Reduced v/c Ratio		0.14						0.12	0.04	0.03	0.12	

Intersection Summary

Area Type:	Other
Cycle Length:	130
Actuated Cycle Length:	79.7
Natural Cycle:	50
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.35
Intersection Signal Delay:	12.8
Intersection LOS:	B
Intersection Capacity Utilization	39.2%
ICU Level of Service	A
Analysis Period (min)	15

Splits and Phases: 6: Washington Avenue & West Main Street/2nd Street



HCM 6th AWSC
6: Washington Avenue & West Main Street/2nd Street

2022 Two-Way Traffic
Timing Plan: AM Peak Hour

Intersection	
Intersection Delay, s/veh	8.2
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕	↕	↕	↕	
Traffic Vol, veh/h	4	34	1	20	42	10	4	90	25	11	92	7
Future Vol, veh/h	4	34	1	20	42	10	4	90	25	11	92	7
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	4	38	1	22	47	11	4	100	28	12	102	8
Number of Lanes	0	1	0	0	1	0	0	1	1	1	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	2	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	2	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	2	1	1
HCM Control Delay	7.9	8.1	8.2	8.5
HCM LOS	A	A	A	A

Lane	NBLn1	NBLn2	EBLn1	WBLn1	SBLn1	SBLn2
Vol Left, %	4%	0%	10%	28%	100%	0%
Vol Thru, %	96%	0%	87%	58%	0%	93%
Vol Right, %	0%	100%	3%	14%	0%	7%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	94	25	39	72	11	99
LT Vol	4	0	4	20	11	0
Through Vol	90	0	34	42	0	92
RT Vol	0	25	1	10	0	7
Lane Flow Rate	104	28	43	80	12	110
Geometry Grp	7	7	2	2	7	7
Degree of Util (X)	0.144	0.033	0.056	0.102	0.018	0.149
Departure Headway (Hd)	4.955	4.231	4.649	4.572	5.442	4.89
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	725	848	772	786	659	735
Service Time	2.674	1.949	2.669	2.589	3.162	2.61
HCM Lane V/C Ratio	0.143	0.033	0.056	0.102	0.018	0.15
HCM Control Delay	8.5	7.1	7.9	8.1	8.3	8.5
HCM Lane LOS	A	A	A	A	A	A
HCM 95th-tile Q	0.5	0.1	0.2	0.3	0.1	0.5

HCM 6th AWSC
6: Washington Avenue & West Main Street/2nd Street

2022 Two-Way Traffic
Timing Plan: PM Peak Hour

Intersection	
Intersection Delay, s/veh	9.7
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕	↕	↕	↕	
Traffic Vol, veh/h	13	48	10	33	71	15	7	123	20	21	203	9
Future Vol, veh/h	13	48	10	33	71	15	7	123	20	21	203	9
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	14	53	11	37	79	17	8	137	22	23	226	10
Number of Lanes	0	1	0	0	1	0	0	1	1	1	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	2	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	2	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	2	1	1
HCM Control Delay	8.9	9.3	9.3	10.5
HCM LOS	A	A	A	B

Lane	NBLn1	NBLn2	EBLn1	WBLn1	SBLn1	SBLn2
Vol Left, %	5%	0%	18%	28%	100%	0%
Vol Thru, %	95%	0%	68%	60%	0%	96%
Vol Right, %	0%	100%	14%	13%	0%	4%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	130	20	71	119	21	212
LT Vol	7	0	13	33	21	0
Through Vol	123	0	48	71	0	203
RT Vol	0	20	10	15	0	9
Lane Flow Rate	144	22	79	132	23	236
Geometry Grp	7	7	2	2	7	7
Degree of Util (X)	0.215	0.029	0.113	0.187	0.037	0.341
Departure Headway (Hd)	5.362	4.629	5.138	5.085	5.742	5.209
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	666	767	693	701	621	688
Service Time	3.129	2.396	3.209	3.148	3.504	2.97
HCM Lane V/C Ratio	0.216	0.029	0.114	0.188	0.037	0.343
HCM Control Delay	9.6	7.5	8.9	9.3	8.7	10.7
HCM Lane LOS	A	A	A	A	A	B
HCM 95th-tile Q	0.8	0.1	0.4	0.7	0.1	1.5

APPENDIX K

CAPACITY CALCULATIONS -

2ND STREET

&

MADISON AVENUE

HCM 6th TWSC
7: Parking Lot Driveway & 2nd Street

2022 Existing
Timing Plan: AM Peak Hour

Intersection												
Int Delay, s/veh	1.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔↔						↔			↔	
Traffic Vol, veh/h	7	108	1	0	0	0	0	1	1	14	1	0
Future Vol, veh/h	7	108	1	0	0	0	0	1	1	14	1	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	16979	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	8	120	1	0	0	0	0	1	1	16	1	0

Major/Minor	Major1			Minor1			Minor2		
Conflicting Flow All	0	0	0	-	137	61	77	137	-
Stage 1	-	-	-	-	137	-	0	0	-
Stage 2	-	-	-	-	0	-	77	137	-
Critical Hdwy	4.14	-	-	-	6.54	6.94	7.54	6.54	-
Critical Hdwy Stg 1	-	-	-	-	5.54	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	-	4.02	3.32	3.52	4.02	-
Pot Cap-1 Maneuver	-	-	-	0	753	991	904	753	0
Stage 1	-	-	-	0	782	-	-	-	0
Stage 2	-	-	-	0	-	-	923	782	0
Platoon blocked, %	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	-	-	753	991	902	753	-
Mov Cap-2 Maneuver	-	-	-	-	753	-	902	753	-
Stage 1	-	-	-	-	782	-	-	-	-
Stage 2	-	-	-	-	-	-	921	782	-

Approach	EB	NB	SB
HCM Control Delay, s		9.2	9.1
HCM LOS		A	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	SBLn1
Capacity (veh/h)	856	-	-	-	890
HCM Lane V/C Ratio	0.003	-	-	-	0.019
HCM Control Delay (s)	9.2	-	-	-	9.1
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.1

HCM 6th TWSC
7: Parking Lot Driveway & 2nd Street

2022 Existing
Timing Plan: PM Peak Hour

Intersection												
Int Delay, s/veh	0.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔↔						↔			↔	
Traffic Vol, veh/h	12	206	1	0	0	0	0	1	1	18	1	0
Future Vol, veh/h	12	206	1	0	0	0	0	1	1	18	1	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	16979	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	13	229	1	0	0	0	0	1	1	20	1	0

Major/Minor	Major1			Minor1			Minor2		
Conflicting Flow All	0	0	0	-	256	115	141	256	-
Stage 1	-	-	-	-	256	-	0	0	-
Stage 2	-	-	-	-	0	-	141	256	-
Critical Hdwy	4.14	-	-	-	6.54	6.94	7.54	6.54	-
Critical Hdwy Stg 1	-	-	-	-	5.54	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	-	4.02	3.32	3.52	4.02	-
Pot Cap-1 Maneuver	-	-	-	0	647	916	815	647	0
Stage 1	-	-	-	0	694	-	-	-	0
Stage 2	-	-	-	0	-	-	847	694	0
Platoon blocked, %	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	-	-	647	916	813	647	-
Mov Cap-2 Maneuver	-	-	-	-	647	-	813	647	-
Stage 1	-	-	-	-	694	-	-	-	-
Stage 2	-	-	-	-	-	-	845	694	-

Approach	EB	NB	SB
HCM Control Delay, s		9.8	9.6
HCM LOS		A	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	SBLn1
Capacity (veh/h)	758	-	-	-	802
HCM Lane V/C Ratio	0.003	-	-	-	0.026
HCM Control Delay (s)	9.8	-	-	-	9.6
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.1

HCM 6th TWSC
7: Parking Lot Driveway & 2nd Street

2022 Two-Way Traffic
Timing Plan: AM Peak Hour

Intersection												
Int Delay, s/veh	1.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	4	54	1	1	72	7	1	1	1	7	1	6
Future Vol, veh/h	4	54	1	1	72	7	1	1	1	7	1	6
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	4	60	1	1	80	8	1	1	1	8	1	7

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	88	0	0	61	0	0	159	159	61	156	155	84
Stage 1	-	-	-	-	-	-	69	69	-	86	86	-
Stage 2	-	-	-	-	-	-	90	90	-	70	69	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1508	-	-	1542	-	-	807	733	1004	810	737	975
Stage 1	-	-	-	-	-	-	941	837	-	922	824	-
Stage 2	-	-	-	-	-	-	917	820	-	940	837	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1508	-	-	1542	-	-	798	730	1004	806	734	975
Mov Cap-2 Maneuver	-	-	-	-	-	-	798	730	-	806	734	-
Stage 1	-	-	-	-	-	-	938	834	-	919	823	-
Stage 2	-	-	-	-	-	-	909	819	-	935	834	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.5			0.1			9.4			9.2		
HCM LOS							A			A		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	829	1508	-	-	1542	-	-	864
HCM Lane V/C Ratio	0.004	0.003	-	-	0.001	-	-	0.018
HCM Control Delay (s)	9.4	7.4	0	-	7.3	0	-	9.2
HCM Lane LOS	A	A	A	-	A	A	-	A
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0.1

HCM 6th TWSC
7: Parking Lot Driveway & 2nd Street

2022 Two-Way Traffic
Timing Plan: PM Peak Hour

Intersection												
Int Delay, s/veh	0.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	6	103	1	1	116	12	1	1	1	9	1	4
Future Vol, veh/h	6	103	1	1	116	12	1	1	1	9	1	4
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	7	114	1	1	129	13	1	1	1	10	1	4

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	142	0	0	115	0	0	269	273	115	268	267	136
Stage 1	-	-	-	-	-	-	129	129	-	138	138	-
Stage 2	-	-	-	-	-	-	140	144	-	130	129	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1441	-	-	1474	-	-	684	634	937	685	639	913
Stage 1	-	-	-	-	-	-	875	789	-	865	782	-
Stage 2	-	-	-	-	-	-	863	778	-	874	789	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1441	-	-	1474	-	-	676	630	937	680	635	913
Mov Cap-2 Maneuver	-	-	-	-	-	-	676	630	-	680	635	-
Stage 1	-	-	-	-	-	-	871	785	-	861	781	-
Stage 2	-	-	-	-	-	-	857	777	-	867	785	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.4			0.1			10			10		
HCM LOS							B			B		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	726	1441	-	-	1474	-	-	729
HCM Lane V/C Ratio	0.005	0.005	-	-	0.001	-	-	0.021
HCM Control Delay (s)	10	7.5	0	-	7.4	0	-	10
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0.1

APPENDIX L

SIMTRAFFIC QUEUING REPORTS

Queuing and Blocking Report
2022 Existing

AM Peak Hour

Intersection: 1: Duncan Avenue/3rd Street & 2nd Street/East Main Street

Movement	WB	NB	NB
Directions Served	L	T	R
Maximum Queue (ft)	39	28	73
Average Queue (ft)	8	2	30
95th Queue (ft)	30	13	54
Link Distance (ft)	1072	982	
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			50
Storage Blk Time (%)			0
Queuing Penalty (veh)			0

Intersection: 2: 3rd Street & Madison Avenue

Movement	NB	NB	SB
Directions Served	L	T	TR
Maximum Queue (ft)	30	31	39
Average Queue (ft)	2	6	16
95th Queue (ft)	14	27	42
Link Distance (ft)		375	1040
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)	50		
Storage Blk Time (%)	0	0	
Queuing Penalty (veh)	0	0	

Intersection: 3: Washington Avenue/North Washington Avenue & 3rd Street

Movement	WB	WB	NB	NB	SB
Directions Served	LT	TR	L	T	TR
Maximum Queue (ft)	107	87	31	56	67
Average Queue (ft)	40	40	3	14	21
95th Queue (ft)	84	76	18	44	58
Link Distance (ft)	640	640		384	1098
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)			100		
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 4: Jefferson Avenue & 3rd Street

Movement	EB	EB	WB	WB	NB	SB
Directions Served	L	R	L	TR	LT	TR
Maximum Queue (ft)	16	31	50	56	24	62
Average Queue (ft)	1	4	14	12	3	15
95th Queue (ft)	7	21	42	42	15	46
Link Distance (ft)	984	984	631	631	343	1050
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)						
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 5: Jefferson Avenue & West Main Street

Movement	EB	NB	NB	SB	SB
Directions Served	LTR	L	TR	L	TR
Maximum Queue (ft)	54	24	36	25	44
Average Queue (ft)	28	2	5	2	9
95th Queue (ft)	52	15	24	14	33
Link Distance (ft)	1045		1007		343
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)		75		50	
Storage Blk Time (%)					0
Queuing Penalty (veh)					0

Intersection: 6: Washington Avenue & West Main Street/2nd Street

Movement	EB	EB	NB	NB	SB	SB
Directions Served	LT	TR	T	R	L	T
Maximum Queue (ft)	64	60	59	49	39	76
Average Queue (ft)	29	19	14	9	6	17
95th Queue (ft)	55	49	45	34	28	50
Link Distance (ft)	635	635	1058			384
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)				50	100	
Storage Blk Time (%)			1	0		0
Queuing Penalty (veh)			0	0		0

Intersection: 7: Parking Lot Driveway & 2nd Street

Movement	NB	SB
Directions Served	TR	LT
Maximum Queue (ft)	34	35
Average Queue (ft)	2	12
95th Queue (ft)	16	37
Link Distance (ft)	1030	375
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 18: 3rd Street

Movement
Directions Served
Maximum Queue (ft)
Average Queue (ft)
95th Queue (ft)
Link Distance (ft)
Upstream Blk Time (%)
Queuing Penalty (veh)
Storage Bay Dist (ft)
Storage Blk Time (%)
Queuing Penalty (veh)

Intersection: 19: 2nd Street

Movement
Directions Served
Maximum Queue (ft)
Average Queue (ft)
95th Queue (ft)
Link Distance (ft)
Upstream Blk Time (%)
Queuing Penalty (veh)
Storage Bay Dist (ft)
Storage Blk Time (%)
Queuing Penalty (veh)

Network Summary

Network wide Queuing Penalty: 1

Intersection: 1: Duncan Avenue/3rd Street & 2nd Street/East Main Street

Movement	EB	WB	NB
Directions Served	TR	L	R
Maximum Queue (ft)	4	57	63
Average Queue (ft)	0	18	35
95th Queue (ft)	3	46	55
Link Distance (ft)	113	1072	
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			50
Storage Blk Time (%)			1
Queuing Penalty (veh)			0

Intersection: 2: 3rd Street & Madison Avenue

Movement	WB	NB	NB	SB
Directions Served	LT	L	T	TR
Maximum Queue (ft)	5	30	31	35
Average Queue (ft)	0	1	9	17
95th Queue (ft)	4	12	31	43
Link Distance (ft)	900		375	1040
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)		50		
Storage Blk Time (%)		0	0	
Queuing Penalty (veh)		0	0	

Intersection: 3: Washington Avenue/North Washington Avenue & 3rd Street

Movement	WB	WB	NB	NB	SB
Directions Served	LT	TR	L	T	TR
Maximum Queue (ft)	119	138	31	88	117
Average Queue (ft)	61	62	6	32	43
95th Queue (ft)	102	108	26	72	95
Link Distance (ft)	640	640		384	1098
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)			100		
Storage Blk Time (%)				0	
Queuing Penalty (veh)				0	

Intersection: 4: Jefferson Avenue & 3rd Street

Movement	EB	EB	WB	WB	NB	SB
Directions Served	L	R	L	TR	LT	TR
Maximum Queue (ft)	35	35	71	110	49	58
Average Queue (ft)	9	6	22	37	11	17
95th Queue (ft)	33	25	57	88	33	48
Link Distance (ft)	984	984	631	631	343	1050
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)						
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 5: Jefferson Avenue & West Main Street

Movement	EB	NB	NB	SB	SB
Directions Served	LTR	L	TR	L	TR
Maximum Queue (ft)	88	25	48	40	53
Average Queue (ft)	37	3	14	7	15
95th Queue (ft)	66	17	42	28	44
Link Distance (ft)	1045		1007		343
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)		75		50	
Storage Blk Time (%)				0	1
Queuing Penalty (veh)				0	0

Intersection: 6: Washington Avenue & West Main Street/2nd Street

Movement	EB	EB	NB	NB	SB	SB
Directions Served	LT	TR	T	R	L	T
Maximum Queue (ft)	94	82	75	48	57	98
Average Queue (ft)	47	40	26	9	14	37
95th Queue (ft)	78	74	64	34	43	83
Link Distance (ft)	635	635	1058			384
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)				50	100	
Storage Blk Time (%)			2	0		0
Queuing Penalty (veh)			1	0		0

Intersection: 7: Parking Lot Driveway & 2nd Street

Movement	NB	SB
Directions Served	TR	LT
Maximum Queue (ft)	20	35
Average Queue (ft)	2	14
95th Queue (ft)	14	40
Link Distance (ft)	1030	375
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 18: 3rd Street

Movement
Directions Served
Maximum Queue (ft)
Average Queue (ft)
95th Queue (ft)
Link Distance (ft)
Upstream Blk Time (%)
Queuing Penalty (veh)
Storage Bay Dist (ft)
Storage Blk Time (%)
Queuing Penalty (veh)

Intersection: 19: 2nd Street

Movement
Directions Served
Maximum Queue (ft)
Average Queue (ft)
95th Queue (ft)
Link Distance (ft)
Upstream Blk Time (%)
Queuing Penalty (veh)
Storage Bay Dist (ft)
Storage Blk Time (%)
Queuing Penalty (veh)

Network Summary

Network wide Queuing Penalty: 2

Intersection: 1: Duncan Avenue/3rd Street & 2nd Street/East Main Street

Movement	EB	WB	WB	NB	NB	SB
Directions Served	L	L	TR	LT	R	LTR
Maximum Queue (ft)	2	35	2	29	60	52
Average Queue (ft)	0	5	0	2	33	23
95th Queue (ft)	2	23	1	14	54	45
Link Distance (ft)		1072	1072	988		982
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)	175				50	
Storage Blk Time (%)					0	
Queuing Penalty (veh)					0	

Intersection: 2: 3rd Street & Madison Avenue

Movement	EB	WB	NB	NB	SB
Directions Served	LTR	LTR	L	TR	LTR
Maximum Queue (ft)	16	5	25	31	50
Average Queue (ft)	1	0	3	7	19
95th Queue (ft)	9	4	17	29	46
Link Distance (ft)	640	982		344	1052
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)			50		
Storage Blk Time (%)			0	0	
Queuing Penalty (veh)			0	0	

Intersection: 3: Washington Avenue/North Washington Avenue & 3rd Street

Movement	EB	WB	NB	NB	SB
Directions Served	LTR	LTR	L	TR	LTR
Maximum Queue (ft)	46	67	26	64	68
Average Queue (ft)	22	33	3	34	35
95th Queue (ft)	47	57	18	54	57
Link Distance (ft)	631	640		360	1110
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)			100		
Storage Blk Time (%)				0	
Queuing Penalty (veh)				0	

Queuing and Blocking Report
2022 Two-Way Traffic

AM Peak Hour

Intersection: 4: Jefferson Avenue & 3rd Street

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	46	42	35	66
Average Queue (ft)	21	21	19	30
95th Queue (ft)	47	46	44	52
Link Distance (ft)	984	631	351	1056
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 5: Jefferson Avenue & West Main Street

Movement	EB	WB	NB	NB	SB	SB
Directions Served	LTR	LTR	L	TR	L	TR
Maximum Queue (ft)	55	35	31	51	31	58
Average Queue (ft)	23	19	7	19	4	29
95th Queue (ft)	50	44	27	46	22	49
Link Distance (ft)	1045	635		1020		351
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)			75		50	
Storage Blk Time (%)					0	0
Queuing Penalty (veh)					0	0

Intersection: 6: Washington Avenue & West Main Street/2nd Street

Movement	EB	WB	NB	NB	SB	SB
Directions Served	LTR	LTR	LT	R	L	TR
Maximum Queue (ft)	56	52	72	54	31	60
Average Queue (ft)	23	23	35	21	10	33
95th Queue (ft)	49	44	59	49	33	50
Link Distance (ft)	635	636	1070			360
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)				50	100	
Storage Blk Time (%)			1	0		
Queuing Penalty (veh)			0	0		

Intersection: 7: Parking Lot Driveway & 2nd Street

Movement	EB	NB	SB
Directions Served	LTR	LTR	LTR
Maximum Queue (ft)	10	30	31
Average Queue (ft)	0	3	11
95th Queue (ft)	6	19	36
Link Distance (ft)	636	1042	344
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Network Summary

Network wide Queuing Penalty: 0

Queuing and Blocking Report
2022 Two-Way Traffic

PM Peak Hour

Intersection: 1: Duncan Avenue/3rd Street & 2nd Street/East Main Street

Movement	EB	WB	NB	NB	SB
Directions Served	L	L	LT	R	LTR
Maximum Queue (ft)	6	50	19	60	59
Average Queue (ft)	0	6	1	36	26
95th Queue (ft)	3	29	11	55	48
Link Distance (ft)		1072	988		982
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)	175			50	
Storage Blk Time (%)				1	
Queuing Penalty (veh)				0	

Intersection: 2: 3rd Street & Madison Avenue

Movement	EB	WB	NB	NB	SB
Directions Served	LTR	LTR	L	TR	LTR
Maximum Queue (ft)	26	23	25	38	54
Average Queue (ft)	1	1	1	13	21
95th Queue (ft)	12	14	12	40	48
Link Distance (ft)	640	982		344	1052
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)			50		
Storage Blk Time (%)				0	
Queuing Penalty (veh)				0	

Intersection: 3: Washington Avenue/North Washington Avenue & 3rd Street

Movement	EB	WB	NB	NB	SB
Directions Served	LTR	LTR	L	TR	LTR
Maximum Queue (ft)	66	79	31	81	89
Average Queue (ft)	31	40	5	40	49
95th Queue (ft)	53	65	24	62	77
Link Distance (ft)	631	640		360	1110
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)			100		
Storage Blk Time (%)				0	
Queuing Penalty (veh)				0	

Queuing and Blocking Report
2022 Two-Way Traffic

PM Peak Hour

Intersection: 4: Jefferson Avenue & 3rd Street

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	67	57	50	58
Average Queue (ft)	29	33	26	28
95th Queue (ft)	57	50	47	50
Link Distance (ft)	984	631	351	1056
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 5: Jefferson Avenue & West Main Street

Movement	EB	WB	NB	NB	SB	SB
Directions Served	LTR	LTR	L	TR	L	TR
Maximum Queue (ft)	56	69	31	63	31	51
Average Queue (ft)	25	34	9	30	12	28
95th Queue (ft)	52	59	32	51	37	47
Link Distance (ft)	1045	635		1020		351
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)			75		50	
Storage Blk Time (%)				0	0	0
Queuing Penalty (veh)				0	0	0

Intersection: 6: Washington Avenue & West Main Street/2nd Street

Movement	EB	WB	NB	NB	SB	SB
Directions Served	LTR	LTR	LT	R	L	TR
Maximum Queue (ft)	60	74	67	39	31	76
Average Queue (ft)	31	33	41	16	15	41
95th Queue (ft)	53	59	65	42	40	63
Link Distance (ft)	635	636	1070			360
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)				50	100	
Storage Blk Time (%)			2	0		0
Queuing Penalty (veh)			0	0		0

Queuing and Blocking Report
2022 Two-Way Traffic

PM Peak Hour

Intersection: 7: Parking Lot Driveway & 2nd Street

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	21	5	30	34
Average Queue (ft)	1	0	3	11
95th Queue (ft)	8	4	18	35
Link Distance (ft)	636	888	1042	344
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Network Summary

Network wide Queuing Penalty: 1