Hamlet on Jerome

Traffic Impact Study

American StructurePoint

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March 28, 2018

City of Dublin & Delaware County

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CARPENTER MARTY transportation

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I. Purpose of Report & Study Objectives

The purpose of this traffic analysis and report is to document the potential traffic impacts of a proposed residential development along Jerome/Manley Road in Dublin, OH. This study is being required by the City of Dublin and County of Delaware in accordance with the Memorandum of Understanding (MOU) dated 3/6/18. The approved MOU can be found in **Appendix A.**

II. Proposed Development

A. Off-Site Developments

The proposed site is mostly surrounded by single-family developments and golf courses. There is an elementary school and a middle school approximately a half mile southeast of the proposed site along Jerome/Manley Road.

B. On-Site Development

Location

The site is located in the northwest quadrant of the City of Dublin. Corazon Drive and proposed Roma Drive fall within City of Dublin city limits. Jerome/Manley Road at this location is controlled by Delaware County. Figure 1 shows the location of the proposed site in Ohio and Figure 2 shows its location in the City of Dublin / Delaware County.

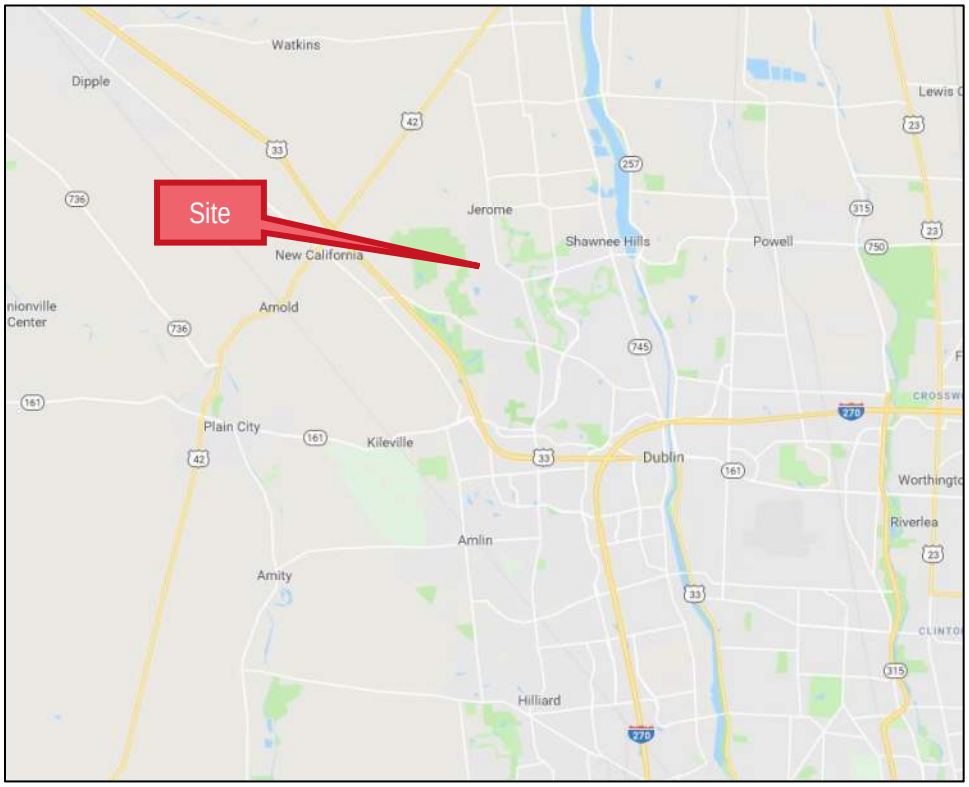

Figure 1 - Location in Ohio

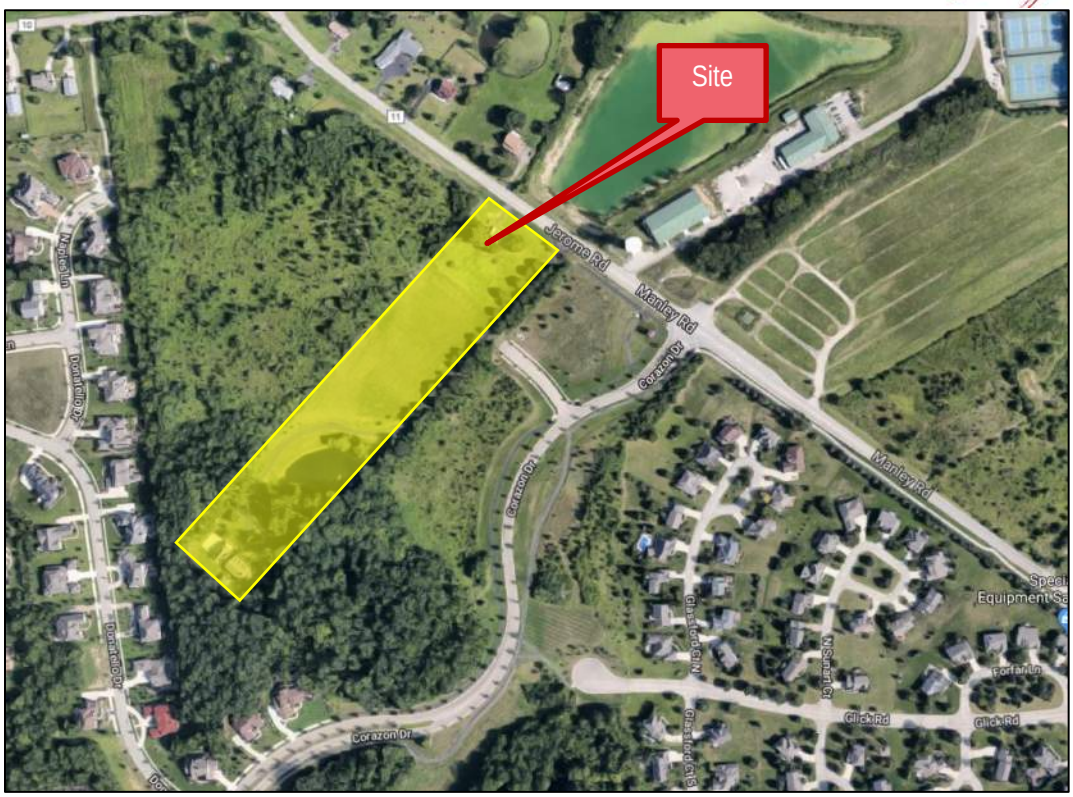

Figure 2 - Location in the City of Dublin / Delaware County (Yellow Shading)

Land Use & Intensity

The proposed site currently consists of one, single-family household. This single-family household will remain with the site development. The site is proposed to consist of 18 age-targeted units for a total of 19 units on site.

Site Plan

There is one proposed access point for this site. A full-movement access is proposed on the existing Roma Rd located on the northwest side of Corazon Drive. The site layout can be seen in Figure 3. The full site plan can be found in **Appendix B.**

Figure 3 - Site Plan[1]

Phasing & Timing

For analysis, the Opening Year for the development is 2019 and the Design or Horizon Year is 2029.

III. Area Conditions

A. Area of Influence

The study area includes the following intersections:

- Manley/Jerome Road and Corazon Drive
- Corazon Drive and Roma Drive

B. Jurisdictions

Delaware County has jurisdiction over Manley/Jerome Road intersection with Corazon Drive. The remaining portions of the study area are controlled by the City of Dublin. The residual land north of the proposed site is controlled by Union County.

C. Traffic Volumes & Conditions

AM and PM peak hour count data was collected at the Manley/Jerome Road and Corazon Drive study intersection. This count data can be found in **Appendix C**. Manley Road area is a two-lane undivided urban collector. Each lane is approximately 12 feet wide with a 1-foot shoulder. The posted speed limit is 45 mph. Corazon Drive is a local, two-lane roadway with a posted speed limit of 25 mph and lane widths of approximately 12 feet. The existing intersection has a northbound left and right turn lane, an eastbound left turn lane.

[1] The current site plan shows 19 age-targeted units. However, the plan is to only develop 18 age-targeted units.

IV. Projected Traffic

A. Background Traffic

Count data for the Corazon Drive and Manley Road intersection was compared to the counts taken at the same intersection in 2008 to determine a growth rate. The 2008 count data can also be seen in **Appendix C**. A 7% linear, annual growth rate was determined from these calculations. Though this growth rate seems high and abnormal, it is possible that this truly represents growth in the study area. This growth rate was maintained for this analysis to produce conservative results.

B. Site Traffic

Trip Generation

Trips for the existing and proposed site were generated using the Institute of Transportation Engineer's (ITE) OTISS software which uses the latest data (Volume 10 of *Trip Generation* and the 3rd Edition of *Trip Generation Handbook*). Trips were also generated for the residual land located to the northwest of the proposed site with a density of 1.5 single-family units/acre for an approximate total of 18 units. The residual land north of the proposed site is approximately 12.2 acres. Trips for proposed site and residual land utilized Land Use Code (LUC) *210 - Single Family Detached Housing.* Pass-by and internal capture do not apply to this development. Table 1 below shows a summary of the trip generation. The full trip generation can be found in **Appendix D**.

Land Use	Size	AM Peak		PM Peak	
		Entry	Exit	Entry	Exit
210 – Single Family Detached Housing	19 Dwelling Units	4	10	12	7
Non-pass-by		4	10	12	7
210 – Single Family Detached Housing	18 dwelling units	3	10	11	7
Non-pass-by		3	10	11	7
TOTAL		**7**	**20**	**23**	**14**
Non-pass-by		**7**	**20**	**23**	**14**

Table 1 - Trip Generation Summary for the Proposed Site

Trip Distribution & Assignment

All non-pass-by trips were distributed using the average of the AM and PM peak directional distributions of the adjacent roadways. The following distribution was determined:

- 15% to/from the north via Manley/Jerome Road
- 70% to/from the south via Manley/Jerome Road
- 15% to/from the west via Corazon Drive

Traffic Volumes

Once the calculations above were completed, Opening Year, Horizon Year, AM and PM peak volumes were produced for Build and No Build conditions. These datasets and their development steps can be seen in **Appendix E**.

Total Traffic

Total (Build) traffic was determined by adding site traffic to the No Build traffic for the AM and PM Peaks in the Opening and Horizon Years. These volumes can be seen in **Appendix E**.

V. Traffic Analysis

A. Turn Lanes

A turn lane warrant analysis was conducted using standard Ohio Department of Transportation (ODOT) turn lane warrant graphs. The intersection of Manley/Jerome Road and Corazon Drive as well as Corazon Drive and Roma Drive intersections were analyzed to determine if any turn lanes were required or if turn lanes needed lengthened. The lengths of these turn lanes, if required, were also calculated using methodologies in the ODOT Location and Design Manual.

B. Capacity & Level of Service

Capacity analysis for the intersections of Corazon Drive and Manley/Jerome Road as well as Corazon Drive and Roma Drive was conducted using HCS 7. A Level-of-Service (LOS) D or better for each intersection approach was considered acceptable. If any intersection fell below an acceptable LOS, mitigation strategies were developed to bring it back to an acceptable LOS.

VI.Results

A. Turn Lane Warrant Analysis

Based on the results of the turn lane analysis, no turn lanes are warranted the Roma Drive and Corazon Drive intersection. Additionally, the existing northbound left turn lane along Manley/Jerome Road meets ODOT criteria for turn lane length on a 45-mph road. No additional length is needed for storage. Finally, a southbound right turn lane is not warranted on Manley/Jerome Road at Corazon Drive. The turn lane warrant graphs leading to these results can be seen in **Appendix F**.

B. Capacity Analysis

Results of the capacity analysis for the study intersections can be seen in Table 2. The total delay for stop-controlled intersections are represented by the worst approach LOS.

Intersection	Approach	Opening Year				Horizon Year			
		AM		PM		AM		PM	
		No Build	Build	No Build	Build	No Build	Build	No Build	Build
Manley/Jerome Road and Corazon Drive	Eastbound	B/12.3	B/12.6	B/10.8	B/11.0	C/20.7	C/22.1	B/14.0	*B/14.4*
	Northbound	A/1.9	A/2.0	A/1.3	A/1.6	A/2.2	A/2.3	A/1.3	A/1.6
	Southbound	A/0.0	A/0.0	A/0.0	A/0.0	A/0.0	A/0.0	A/0.0	A/0.0
	Total	**B/12.3**	**B/12.6**	**B/10.8**	**B/11.0**	**C/20.7**	**C/22.1**	**B/14.0**	***B/14.4***
Corazon Drive and Roma Drive	Eastbound	---	A/0.1	---	A/0.4	---	A/0.0	---	A/0.2
	Westbound	---	A/0.0	---	A/0.0	---	A/0.0	---	A/0.0
	Southbound	---	A/9.6	---	A/9.3	---	B/10.4	---	A/9.8
	Total	**---**	**A/9.6**	**---**	**A/9.3**	**---**	**B/10.4**	**---**	**A/9.8**

Table 2 - Summary of Capacity Analysis (LOS/Delay in sec.)

As shown in Table 2, all approaches operate with an acceptable LOS in the Opening and Horizon Years. The full capacity analysis can be found in **Appendix G**.

VII. Recommendations & Conclusions

Based on the results of the capacity analysis and turn lane analysis, it is recommended that no improvements be required for the intersections of Manley/Jerome Road at Corazon Drive and Corazon Drive at Roma Drive as a part of this development. The results show that the intersections operate with an acceptable LOS in the Horizon Year Build and No Build conditions. Additionally, no turn lanes are warranted or need lengthened with this proposed development.

VIII. Appendices

Appendix A –MOU
Appendix B – Site Plan
Appendix C – Count Data & Growth Rate Information
Appendix D – Trip Generation
Appendix E – Volume Calculations
Appendix F – Turn Lane Warrants
Appendix G - Capacity Analysis

Appendix A
Memorandum of Understaning

Appendix A

CARPENTER MARTY transportation

Memorandum of Understanding Addendum

RE: Traffic Impact Study for The Hamlet on Jerome
TO: Tina Wawszkiewicz, City of Dublin, OH
FROM: Drew Laurent, Carpenter Marty Transportation
CC: Shawn Goodwin, American Structurepoint
Ben Miller, American Structurepoint
DATE: March 6, 2018

This memorandum of understanding (MOU) has been prepared to describe and obtain a consensus for the traffic study scope for the proposed Hamlet on Jerome development located on the northwest corner of Dublin, Ohio, along the Delaware and Union County lines. This proposed scope of work is based on the outcome of an email received from the City of Dublin on July 11, 2017, the original MOU submitted by American Structurepoint on July 31, 2017, and comments received from the City of Dublin regarding the original MOU.

Purpose of Study

- Evaluate the traffic impacts of the proposed development on the existing roadway network capacity.
- Identify necessary improvements to retain background or acceptable traffic operation levels.
- Identify the degree traffic control needed (i.e. signals, stop-control) at major access points to the development.
- Show mitigation to achieve LOS D or better per movement for each scenario (Background/Total/Opening Day/Horizon Year).

Proposed Development

- The proposed Hamlet on Jerome consists of a development expected to consist of 18 age-targeted lots plus the existing residence, for a total of 19 residential units.
- Expected Opening year of 2019, Design year of 2029.

Planning Documents & Traffic Studies to be considered in TIS

- Background traffic will be added to the study for the vacant parcel located northwest of the proposed development at 1.5 single-family units/acre.
- Planned improvements for Manley Road (provided by Delaware County) will be incorporated in the analysis.

If there is a legal age restriction on the lots (e.g. deed restriction), the ITE code proposed can be considered. If not, please use the ITE trip generation code for single family housing.
I'm assuming there is not an age restriction proposed on the existing home. The trip generation should reflect this condition

Trip Generation & Distribution

- Based on ITE Trip Generation (10th Edition). The proposed site will be generated using Land Use Code (LUC) 251 - Senior Adult Housing - Detached. The background traffic for the parcel north of the proposed site as well as the existing residence will be generated using LUC 210 - Single-Family Detached Housing.
- Weekday AM and PM peak hours for intersection analysis.
- External roadway network trip distributions will be determined based on current traffic volume distributions.

Study Scenarios

- Opening Year Weekday AM & PM peak hour No-Build (without development) with existing lane configurations and traffic control.
- Opening Year Weekday AM & PM peak hour Build (with development) with proposed lane configurations and traffic control.
- Design Year Weekday AM & PM peak hour No-Build (without development) with existing lane configurations and traffic control.
- Design Year Weekday AM & PM peak hour Build (with development) with proposed lane configurations and traffic control.

Study Intersections

- Study intersections will include the 2 existing intersections in the roadway network that are most likely to be impacted. Capacity analysis will be performed for the following intersections.
    - Roma Drive and Corazon Drive (Stop control on Roma Drive).
    - Corazon Drive and Jerome (Manley) Road (maintain existing stop control).

Traffic Data

- Turning movement counts will be collected for AM (7am-9am) and PM (4pm-6pm) peak hours at the following intersections:
    - Jerome (Manley) Road and Corazon Drive
- Peak hour factor (PHF) to be calculated based on existing traffic counts.

Background Traffic Growth

- A growth rate will be calculated based on historical count data from 2008 at the intersection of Manley Road & Corazon Drive. Present day count data at the intersection of Manley Road/Corazon Drive will be used to calculate a growth rate for Manley Road.

Capacity Analysis for Study Intersections

- Capacity analysis will be performed following HCM 2010 methodologies using HCS 7 software to estimate the delay and Level-of-service (LOS) for stop-control intersections.
- Intersections shall operate at LOS D or better with no movements operating at less than LOS D.
- A layout showing the proposed improvements on Manley Road and the turn lane needs for Manley Road and Corazon Drive.

Turn Lane Warrant Analysis

- Turn lane lengths will be evaluated at the intersection of Corazon Drive/Manley Road per methodologies in the ODOT L&D Manual.
- An eastbound right turn lane warrant will be conducted for the intersection of Corazon Drive/Manley Road per the ODOT L&D Manual.
- Turn Lane Warrants will be evaluated at the intersection of Roma Drive/Corazon Drive per the ODOT L&D Manual.

Concurrence to this Memorandum of Understanding, by signing below and returning to the preparer, is requested of the following individuals:

Name	**Organization**	**Role**
Tina Wawszkiewicz	City of Dublin	Reviewer
Mike Love	Delaware County	Reviewer

I concur with this Memorandum of Understanding for The Hamlet on Jerome TIS.

With comments on page 2

Tina Wawszkiewicz, PE *3/16/18*

City of Dublin Date

Delaware County Date

Capacity Analysis for Study Intersections

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Mike Love	Delaware County	Reviewer

I concur with this Memorandum of Understanding for The Hamlet on Jerome TIS.

City of Dublin Date

Delaware County 3/22/18 Date

Appendix B
Site Plan

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This site plan shows 19 additional units. However, only 18 are planned.

The Hamlet on Jerome

3.65 Lots and Roads
2.72 Common Acres
6.37 Total Developed Acres
2.32 Remainder Acres
8.69 Total Acres

Appendix C
Count Data

CARPENTER MARTY transportation

Jerome Rd and Corazon Dr - TMC
Wed Feb 14, 2018
Full Length (4PM-6PM, 7AM-9AM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 494754, Location: 40.149646, -83.1693

Provided by: Carpenter Marty (CM) Transportation Inc.
6612 Singletree Drive, Columbus, OH, 43229, US

Leg / Direction	Corazon Dr Eastbound					East Westbound					Jerome Rd/ Manley Rd Northbound					Jerome Rd/Manley Rd Southbound					
Time	L	T	R	U	**App**	L	T	R	U	**App**	L	T	R	U	**App**	L	T	R	U	**App**	**Int**
2018-02-14 4:00PM	3	0	12	0	**15**	0	0	0	0	**0**	8	59	0	0	**67**	0	49	2	0	**51**	**133**
4:15PM	3	0	9	0	**12**	0	0	1	0	**1**	8	56	0	0	**64**	2	58	2	0	**62**	**139**
4:30PM	0	0	13	0	**13**	0	0	0	0	**0**	11	61	1	0	**73**	0	56	1	0	**57**	**143**
4:45PM	1	0	11	0	**12**	0	0	0	0	**0**	8	61	0	0	**69**	0	65	0	0	**65**	**146**
Hourly Total	7	0	45	0	**52**	0	0	1	0	**1**	35	237	1	0	**273**	2	228	5	0	**235**	**561**
5:00PM	2	0	15	0	**17**	1	0	0	0	**1**	11	67	0	0	**78**	0	67	2	0	**69**	**165**
5:15PM	2	0	10	0	**12**	0	0	0	0	**0**	12	64	0	0	**76**	0	69	2	0	**71**	**159**
5:30PM	1	0	14	0	**15**	1	0	0	0	**1**	17	70	0	1	**88**	0	63	2	0	**65**	**169**
5:45PM	3	0	9	0	**12**	1	0	0	0	**1**	11	75	1	0	**87**	0	48	1	0	**49**	**149**
Hourly Total	8	0	48	0	**56**	3	0	0	0	**3**	51	276	1	1	**329**	0	247	7	0	**254**	**642**
2018-02-15 7:00AM	0	0	2	0	**2**	0	0	0	0	**0**	3	18	0	0	**21**	0	52	3	0	**55**	**78**
7:15AM	1	0	15	0	**16**	0	0	0	0	**0**	11	32	0	0	**43**	0	58	0	0	**58**	**117**
7:30AM	0	0	20	0	**20**	0	0	0	0	**0**	29	36	0	0	**65**	0	95	1	0	**96**	**181**
7:45AM	0	0	49	0	**49**	0	0	0	0	**0**	22	57	0	0	**79**	0	85	1	0	**86**	**214**
Hourly Total	1	0	86	0	**87**	0	0	0	0	**0**	65	143	0	0	**208**	0	290	5	0	**295**	**590**
8:00AM	2	0	14	0	**16**	0	0	0	0	**0**	6	61	0	0	**67**	0	78	0	0	**78**	**161**
8:15AM	1	0	13	0	**14**	0	0	0	0	**0**	6	65	0	0	**71**	0	56	2	0	**58**	**143**
8:30AM	0	0	4	0	**4**	0	0	0	0	**0**	3	25	0	0	**28**	0	35	2	0	**37**	**69**
8:45AM	1	0	8	0	**9**	0	0	1	0	**1**	4	29	0	0	**33**	0	59	4	0	**63**	**106**
Hourly Total	4	0	39	0	**43**	0	0	1	0	**1**	19	180	0	0	**199**	0	228	8	0	**236**	**479**
Total	20	0	218	0	**238**	3	0	2	0	**5**	170	836	2	1	**1009**	2	993	25	0	**1020**	**2272**
% Approach	8.4%	0%	91.6%	0%	-	60.0%	0%	40.0%	0%	-	16.8%	82.9%	0.2%	0.1%	-	0.2%	97.4%	2.5%	0%	-	-
% Total	0.9%	0%	9.6%	0%	**10.5%**	0.1%	0%	0.1%	0%	**0.2%**	7.5%	36.8%	0.1%	0%	**44.4%**	0.1%	43.7%	1.1%	0%	**44.9%**	-
Lights	19	0	211	0	**230**	3	0	2	0	**5**	169	812	2	1	**984**	1	969	20	0	**990**	2209
% Lights	95.0%	0%	96.8%	0%	**96.6%**	100%	0%	100%	0%	**100%**	99.4%	97.1%	100%	100%	**97.5%**	50.0%	97.6%	80.0%	0%	**97.1%**	97.2%
Articulated Trucks	0	0	0	0	**0**	0	0	0	0	**0**	0	1	0	0	**1**	0	1	1	0	**2**	3
% Articulated Trucks	0%	0%	0%	0%	**0%**	0%	0%	0%	0%	**0%**	0%	0.1%	0%	0%	**0.1%**	0%	0.1%	4.0%	0%	**0.2%**	0.1%
Buses and Single-Unit Trucks	1	0	7	0	**8**	0	0	0	0	**0**	1	23	0	0	**24**	1	23	4	0	**28**	60
% Buses and Single-Unit Trucks	5.0%	0%	3.2%	0%	**3.4%**	0%	0%	0%	0%	**0%**	0.6%	2.8%	0%	0%	**2.4%**	50.0%	2.3%	16.0%	0%	**2.7%**	2.6%

*L: Left, R: Right, T: Thru, U: U-Turn

Jerome Rd and Corazon Dr - TMC
Wed Feb 14, 2018
Full Length (4PM-6PM, 7AM-9AM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 494754, Location: 40.149646, -83.1693

Provided by: Carpenter Marty (CM) Transportation Inc.
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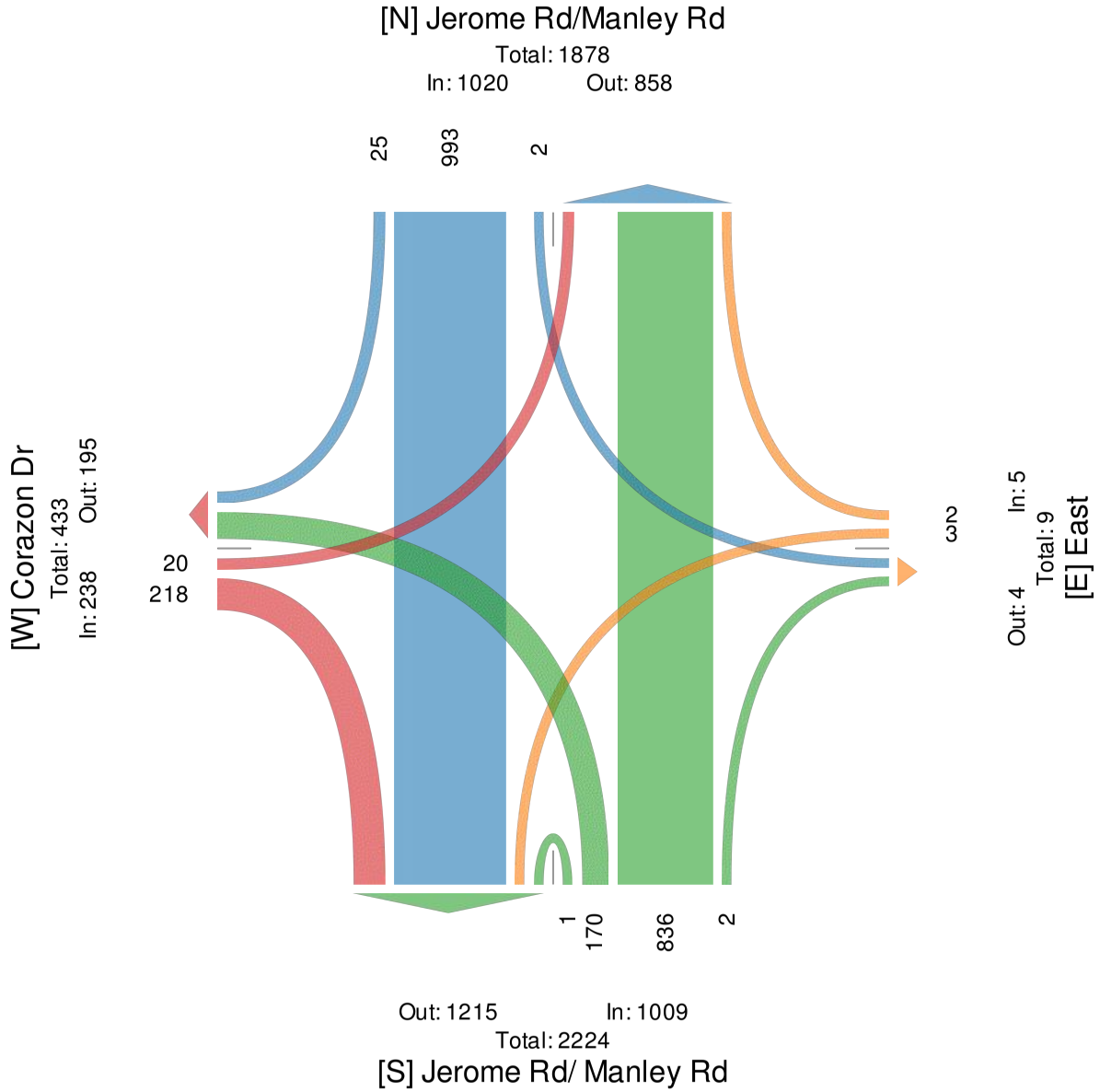

Jerome Rd and Corazon Dr - TMC
Wed Feb 14, 2018
PM Peak (Feb 14 2018 5PM - 6PM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 494754, Location: 40.149646, -83.1693

Provided by: Carpenter Marty (CM) Transportation Inc.
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Leg	Corazon Dr					East					Jerome Rd/ Manley Rd					Jerome Rd/Manley Rd					
Direction	Eastbound					Westbound					Northbound					Southbound					
Time	L	T	R	U	App	L	T	R	U	App	L	T	R	U	App	L	T	R	U	App	Int
2018-02-14 5:00PM	2	0	15	0	**17**	1	0	0	0	**1**	11	67	0	0	**78**	0	67	2	0	**69**	**165**
5:15PM	2	0	10	0	**12**	0	0	0	0	**0**	12	64	0	0	**76**	0	69	2	0	**71**	**159**
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5:45PM	3	0	9	0	**12**	1	0	0	0	**1**	11	75	1	0	**87**	0	48	1	0	**49**	**149**
Total	8	0	48	0	**56**	3	0	0	0	**3**	51	276	1	1	**329**	0	247	7	0	**254**	**642**
% Approach	14.3%	0%	85.7%	0%	-	100%	0%	0%	0%	-	15.5%	83.9%	0.3%	0.3%	-	0%	97.2%	2.8%	0%	-	-
% Total	1.2%	0%	7.5%	0%	**8.7%**	0.5%	0%	0%	0%	**0.5%**	7.9%	43.0%	0.2%	0.2%	**51.2%**	0%	38.5%	1.1%	0%	**39.6%**	-
PHF	0.667	-	0.800	-	**0.824**	0.750	-	-	-	**0.750**	0.750	0.920	0.250	0.250	**0.935**	-	0.895	0.875	-	**0.894**	0.950
Lights	8	0	48	0	**56**	3	0	0	0	**3**	51	276	1	1	**329**	0	245	7	0	**252**	640
% Lights	100%	0%	100%	0%	**100%**	100%	0%	0%	0%	**100%**	100%	100%	100%	100%	**100%**	0%	99.2%	100%	0%	**99.2%**	99.7%
Articulated Trucks	0	0	0	0	**0**	0	0	0	0	**0**	0	0	0	0	**0**	0	0	0	0	**0**	0
% Articulated Trucks	0%	0%	0%	0%	**0%**	0%	0%	0%	0%	**0%**	0%	0%	0%	0%	**0%**	0%	0%	0%	0%	**0%**	0%
Buses and Single-Unit Trucks	0	0	0	0	**0**	0	0	0	0	**0**	0	0	0	0	**0**	0	2	0	0	**2**	2
% Buses and Single-Unit Trucks	0%	0%	0%	0%	**0%**	0%	0%	0%	0%	**0%**	0%	0%	0%	0%	**0%**	0%	0.8%	0%	0%	**0.8%**	0.3%

*L: Left, R: Right, T: Thru, U: U-Turn

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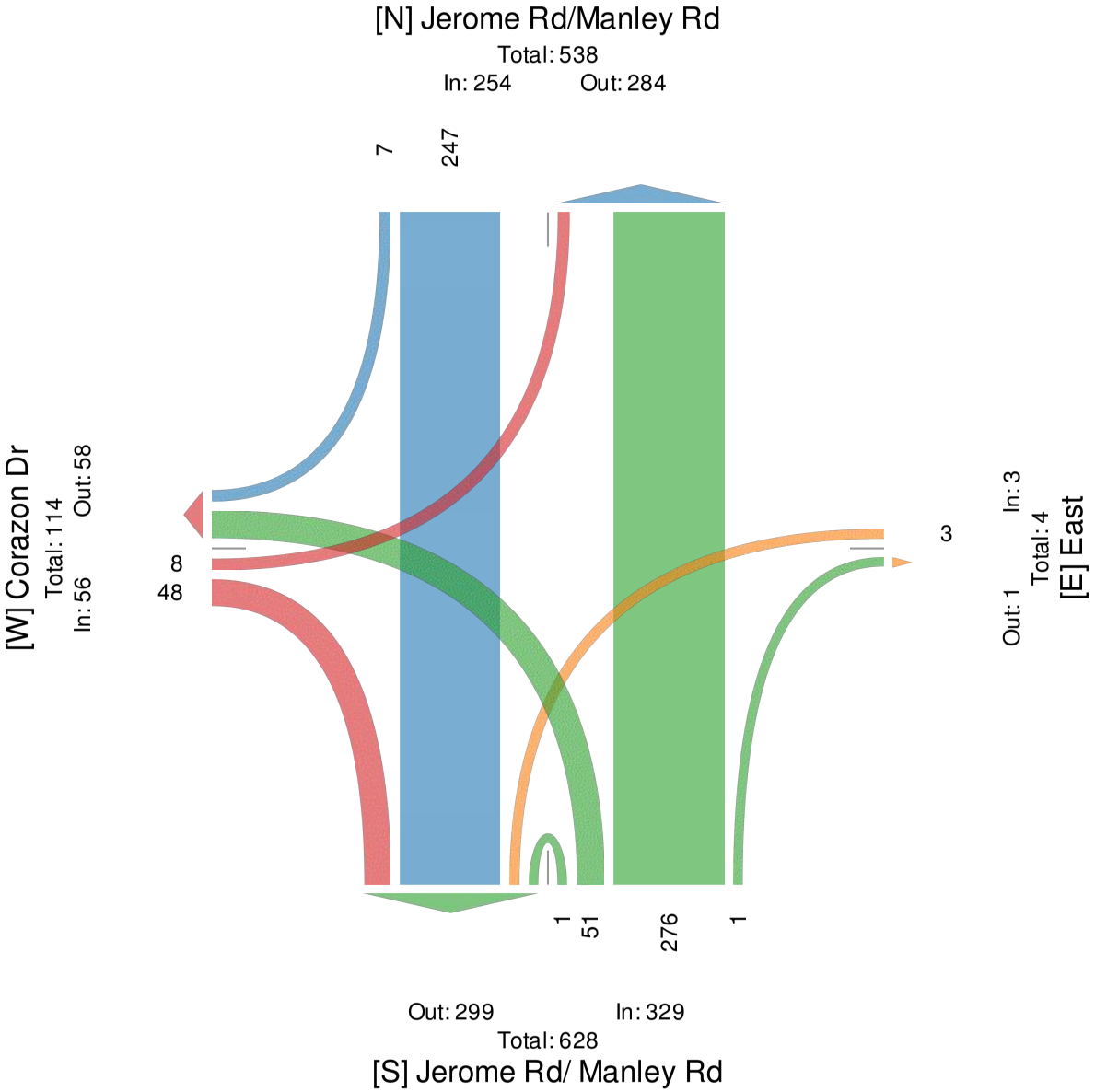

Jerome Rd and Corazon Dr - TMC

Thu Feb 15, 2018
AM Peak (Feb 15 2018 7:30AM - 8:30AM) - Overall Peak Hour
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 494754, Location: 40.149646, -83.1693

Provided by: Carpenter Marty (CM) Transportation Inc.
6612 Singletree Drive, Columbus, OH, 43229, US

Leg / Direction	Corazon Dr Eastbound					East Westbound					Jerome Rd/ Manley Rd Northbound					Jerome Rd/Manley Rd Southbound					
Time	L	T	R	U	**App**	L	T	R	U	**App**	L	T	R	U	**App**	L	T	R	U	**App**	**Int**
2018-02-15 7:30AM	0	0	20	0	**20**	0	0	0	0	**0**	29	36	0	0	**65**	0	95	1	0	**96**	**181**
7:45AM	0	0	49	0	**49**	0	0	0	0	**0**	22	57	0	0	**79**	0	85	1	0	**86**	**214**
8:00AM	2	0	14	0	**16**	0	0	0	0	**0**	6	61	0	0	**67**	0	78	0	0	**78**	**161**
8:15AM	1	0	13	0	**14**	0	0	0	0	**0**	6	65	0	0	**71**	0	56	2	0	**58**	**143**
Total	3	0	96	0	**99**	0	0	0	0	**0**	63	219	0	0	**282**	0	314	4	0	**318**	**699**
% Approach	3.0%	0%	97.0%	0%	-	0%	0%	0%	0%	-	22.3%	77.7%	0%	0%	-	0%	98.7%	1.3%	0%	-	-
% Total	0.4%	0%	13.7%	0%	**14.2%**	0%	0%	0%	0%	**0%**	9.0%	31.3%	0%	0%	**40.3%**	0%	44.9%	0.6%	0%	**45.5%**	-
PHF	0.375	-	0.490	-	**0.505**	-	-	-	-	-	0.543	0.842	-	-	**0.892**	-	0.826	0.500	-	**0.828**	0.817
Lights	3	0	94	0	**97**	0	0	0	0	**0**	63	210	0	0	**273**	0	305	4	0	**309**	679
% Lights	100%	0%	97.9%	0%	**98.0%**	0%	0%	0%	0%	-	100%	95.9%	0%	0%	**96.8%**	0%	97.1%	100%	0%	**97.2%**	97.1%
Articulated Trucks	0	0	0	0	**0**	0	0	0	0	**0**	0	0	0	0	**0**	0	1	0	0	**1**	1
% Articulated Trucks	0%	0%	0%	0%	**0%**	0%	0%	0%	0%	-	0%	0%	0%	0%	**0%**	0%	0.3%	0%	0%	**0.3%**	0.1%
Buses and Single-Unit Trucks	0	0	2	0	**2**	0	0	0	0	**0**	0	9	0	0	**9**	0	8	0	0	**8**	19
% Buses and Single-Unit Trucks	0%	0%	2.1%	0%	**2.0%**	0%	0%	0%	0%	-	0%	4.1%	0%	0%	**3.2%**	0%	2.5%	0%	0%	**2.5%**	2.7%

* L: Left, R: Right, T: Thru, U: U-Turn

Jerome Rd and Corazon Dr - TMC
Thu Feb 15, 2018
AM Peak (Feb 15 2018 7:30AM - 8:30AM) - Overall Peak Hour
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 494754, Location: 40.149646, -83.1693

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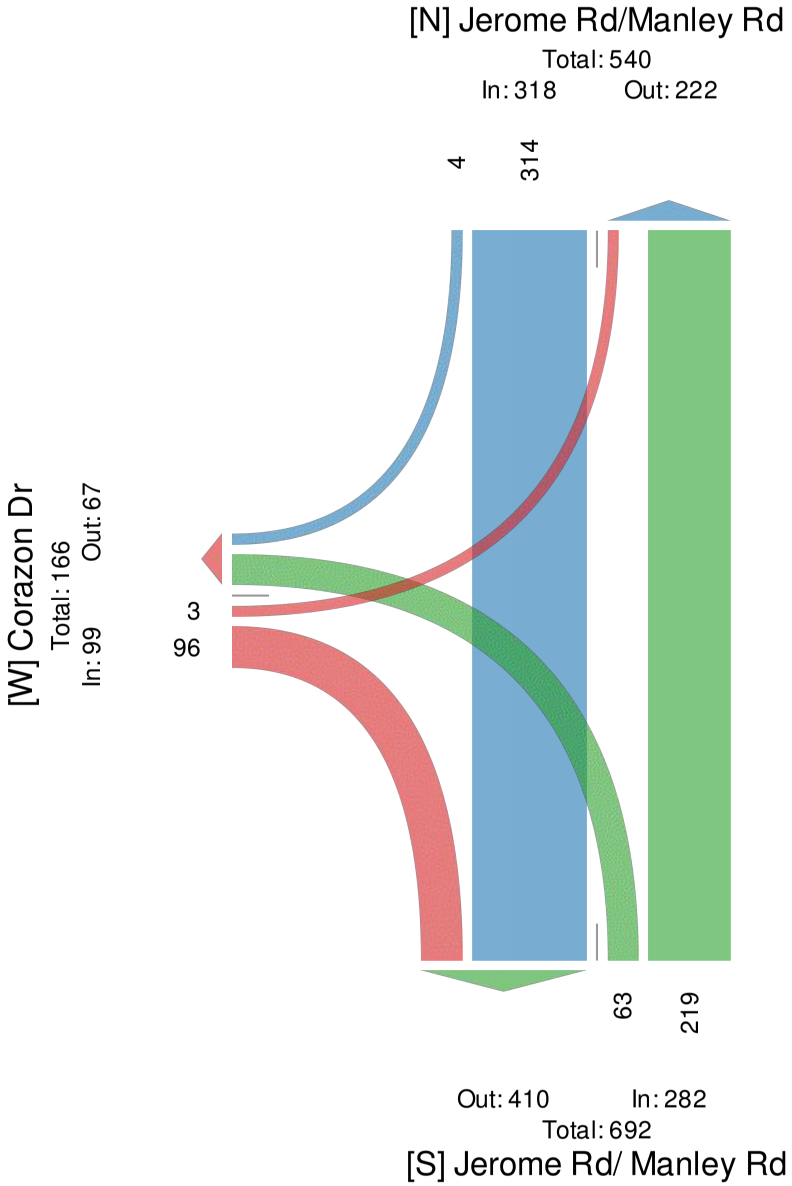


Peak Hour Data for Intersection

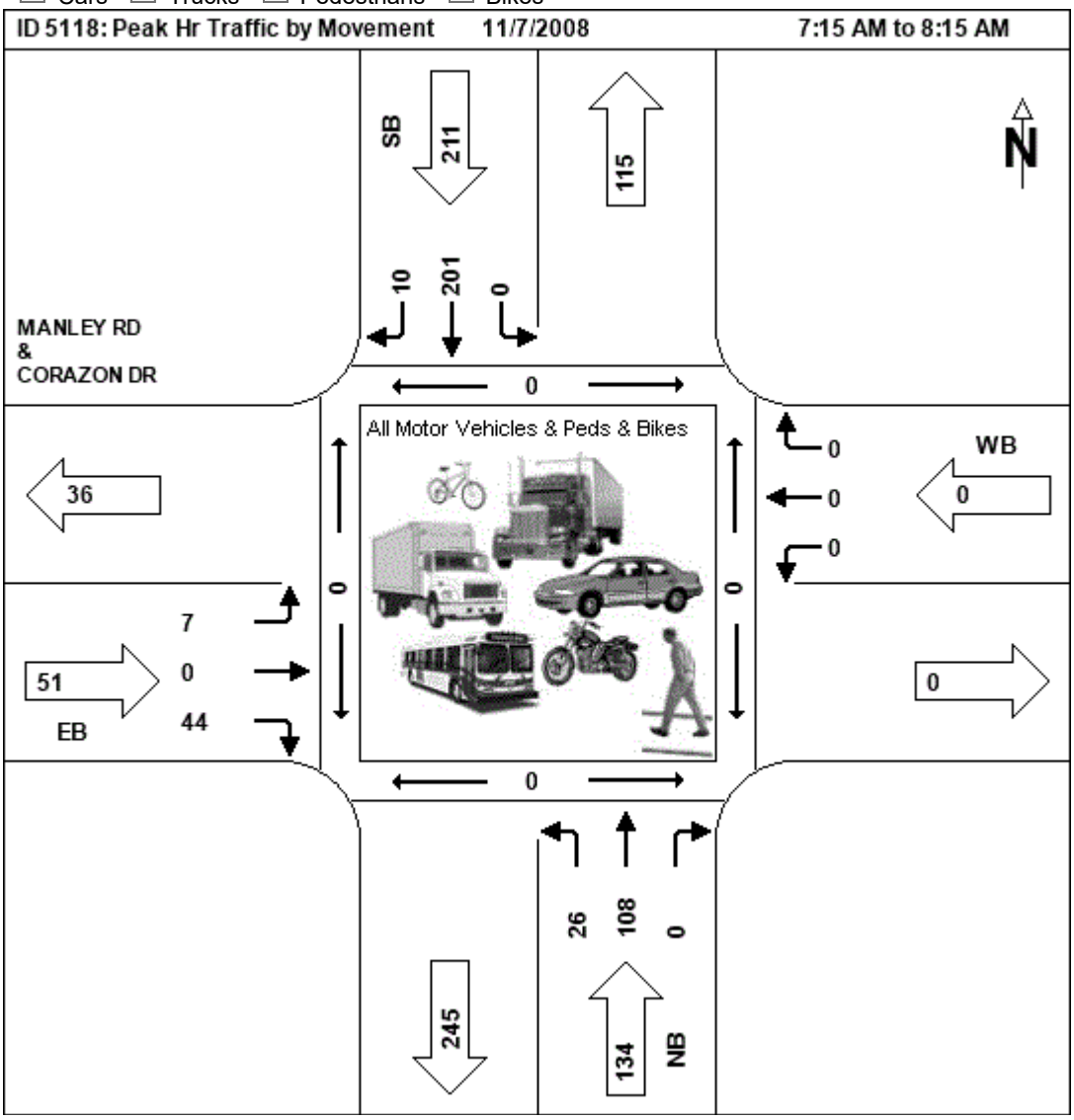
Int ID: 5118
Community: DUBLIN
Road 1: MANLEY RD
Road 2: CORAZON DR
Corridor:
Road 3:
Road 4:

|<< < > >>| 1-2 of 2

AM Peak Hour
11/07/2008

Start Time	NB Left	NB Thru	NB Right	NB Ped	NB App Total	EB Left	EB Thru	EB Right	EB Ped	EB App Total	SB Left	SB Thru	SB Right	SB Ped	SB App Total	Int Total
7:15 AM	10	23	0	0	33	2	0	22	0	24	0	49	1	0	50	107
7:30 AM	1	30	0	0	31	2	0	8	0	10	0	52	2	0	54	95
7:45 AM	7	26	0	0	33	1	0	7	0	8	0	62	3	0	65	106
8:00 AM	8	29	0	0	37	2	0	7	0	9	0	38	4	0	42	88
Total	26	108	0	0	134	7	0	44	0	51	0	201	10	0	211	396
PHF	0.65	0.90			0.91	0.88		0.50		0.53		0.81	0.63		0.81	
HV %	0	0				0		0				0	0			

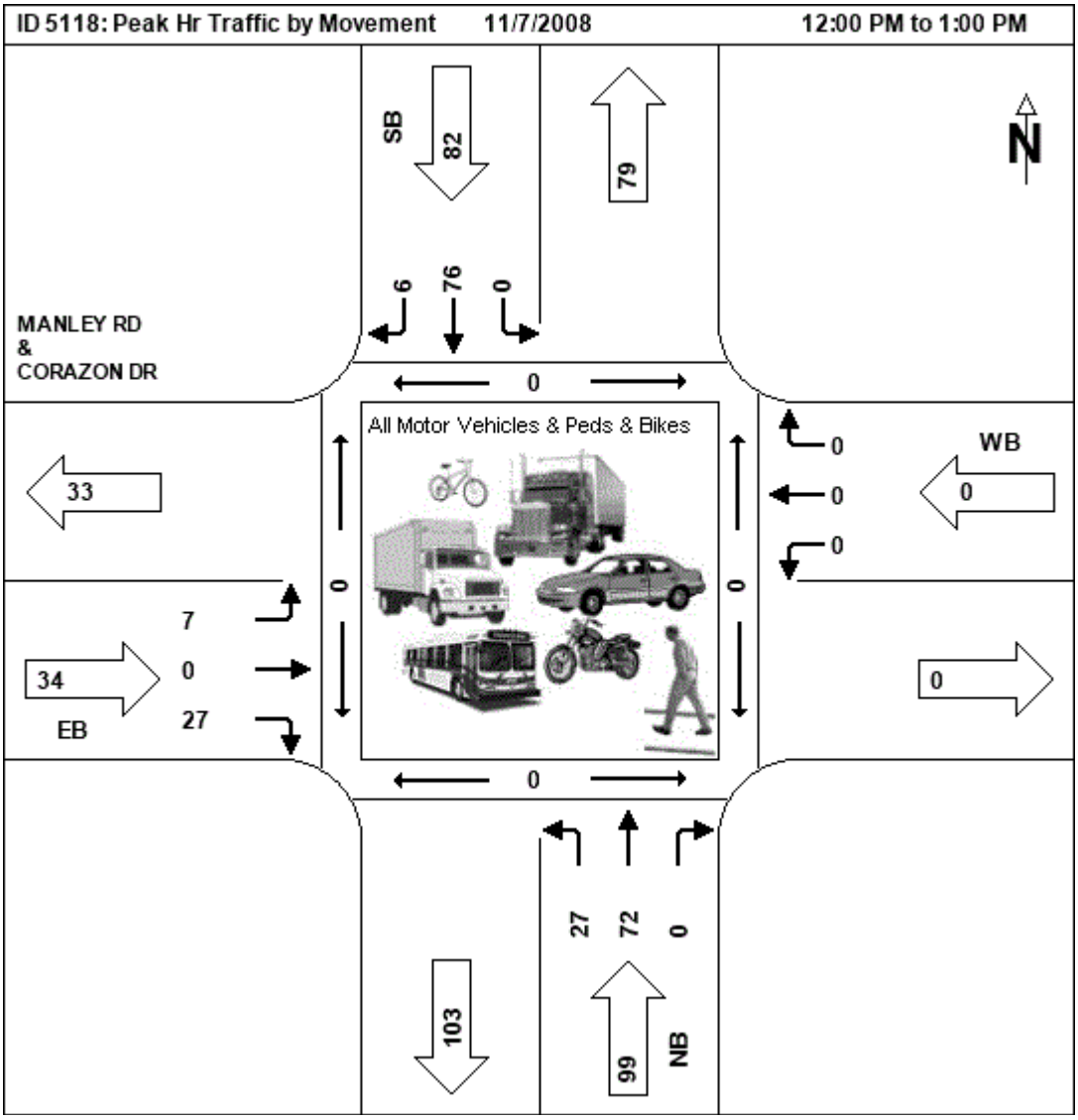
☑ Cars ☑ Trucks ☑ Pedestrians ☑ Bikes



Midday Peak Hour
11/07/2008

Start Time	NB Left	NB Thru	NB Right	NB Ped	NB App Total	EB Left	EB Thru	EB Right	EB Ped	EB App Total	SB Left	SB Thru	SB Right	SB Ped	SB App Total	Int Total
12:00 PM	7	18	0	0	25	2	0	8	0	10	0	20	0	0	20	55
12:15 PM	6	12	0	0	18	3	0	8	0	11	0	13	1	0	14	43
12:30 PM	6	24	0	0	30	0	0	8	0	8	0	19	3	0	22	60
12:45 PM	8	18	0	0	26	2	0	3	0	5	0	24	2	0	26	57
Total	27	72	0	0	99	7	0	27	0	34	0	76	6	0	82	215
PHF	0.84	0.75			0.83	0.58		0.84		0.77		0.79	0.50		0.79	
HV %	0	0				0		0				0	0			

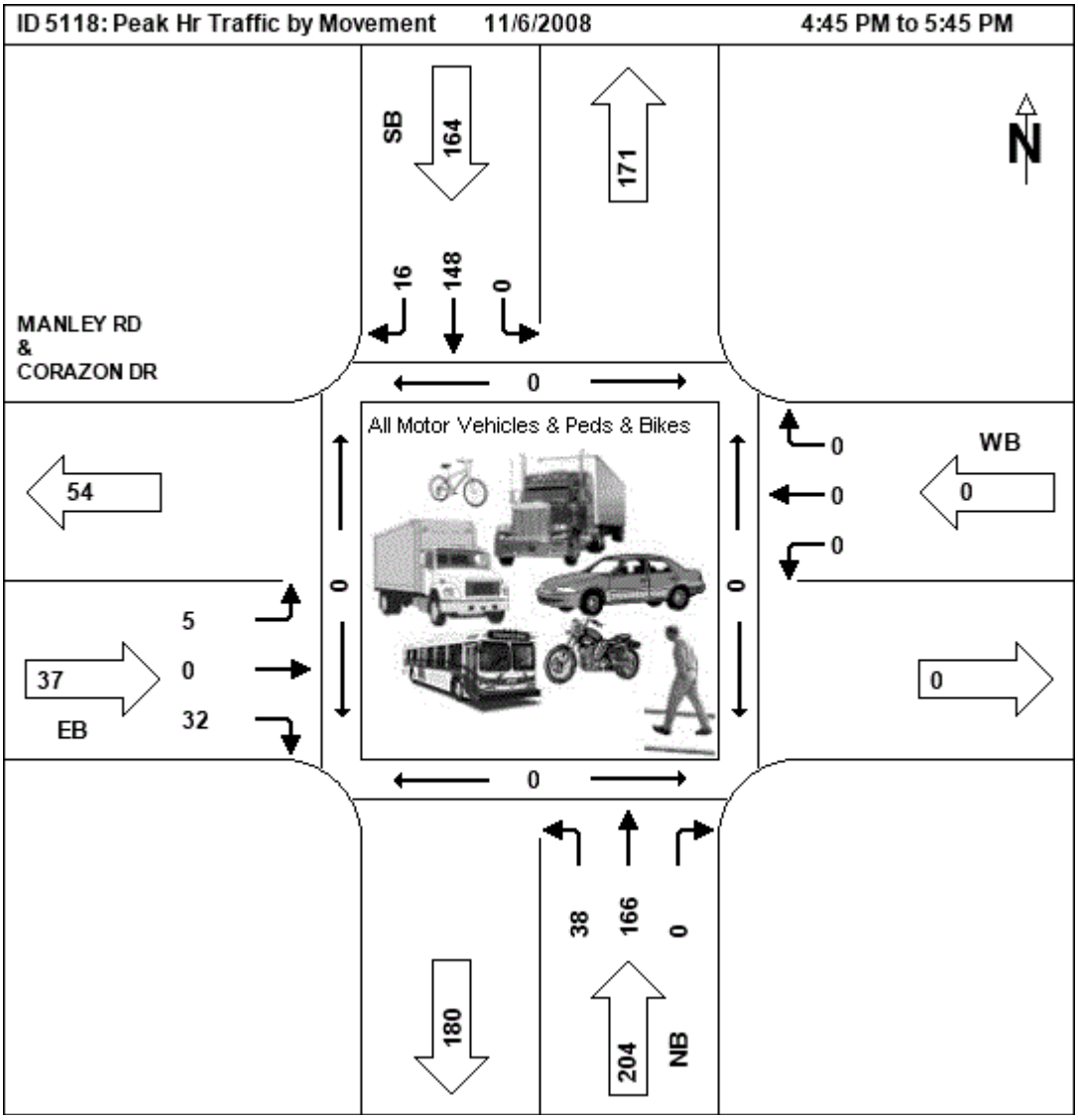
☑ Cars ☑ Trucks ☑ Pedestrians ☑ Bikes



PM Peak Hour
11/06/2008

Start Time	NB Left	NB Thru	NB Right	NB Ped	NB App Total	EB Left	EB Thru	EB Right	EB Ped	EB App Total	SB Left	SB Thru	SB Right	SB Ped	SB App Total	Int Total
4:45 PM	7	42	0	0	49	1	0	4	0	5	0	45	5	0	50	104
5:00 PM	11	54	0	0	65	2	0	10	0	12	0	43	7	0	50	127
5:15 PM	12	40	0	0	52	0	0	8	0	8	0	33	2	0	35	95
5:30 PM	8	30	0	0	38	2	0	10	0	12	0	27	2	0	29	79
Total	38	166	0	0	204	5	0	32	0	37	0	148	16	0	164	405
PHF	0.79	0.77			0.78	0.63		0.80		0.77		0.82	0.57		0.82	
HV %	0	0				0		0				0	0			

☑ Cars ☑ Trucks ☑ Pedestrians ☑ Bikes



Appendix D
Trip Generation

CARPENTER MARTY transportation

Project Information	
Project Name:	Hamlet on Jerome
No:	
Date:	2/15/2018
City:	
State/Province:	
Zip/Postal Code:	
Country:	
Client Name:	
Analyst's Name:	
Edition:	ITE-TGM 10th Edition

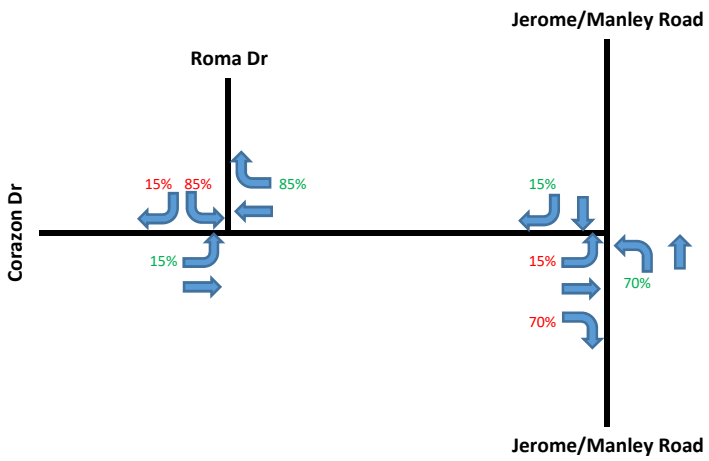
Land Use	Size	AM Peak		PM Peak	
		Entry	Exit	Entry	Exit
210 - Single-Family Detached Housing (General Urban/Suburban)	19 Dwelling Units	4	10	12	7
Reduction		0	0	0	0
Internal		0	0	0	0
Pass-by		0	0	0	0
Non-pass-by		4	10	12	7
210 - Single-Family Detached Housing - 1 (General Urban/Suburban)	18 Dwelling Units	3	10	11	7
Reduction		0	0	0	0
Internal		0	0	0	0
Pass-by		0	0	0	0
Non-pass-by		3	10	11	7
Total		7	20	23	14
Total Reduction		0	0	0	0
Total Internal		0	0	0	0
Total Pass-by		0	0	0	0
Total Non-pass-by		7	20	23	14

Appendix E
Volume Calculations

Appendix E

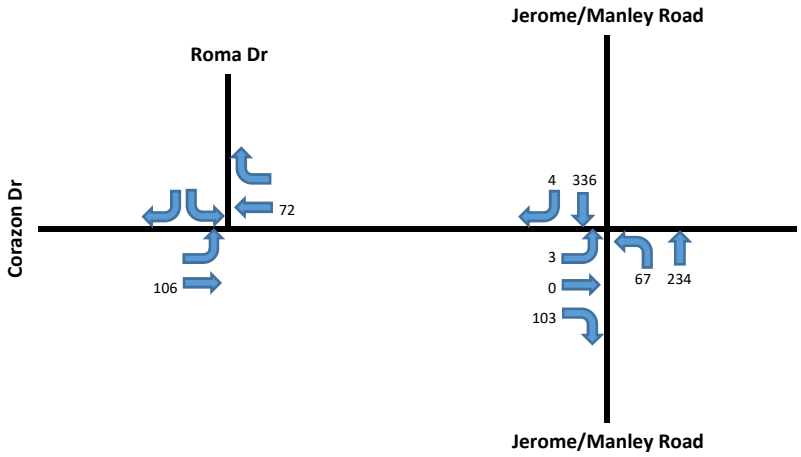
CARPENTER MARTY transportation

CARPENTER MARTY transportation	Year	Period	Scenario	Plate
			Distribution	



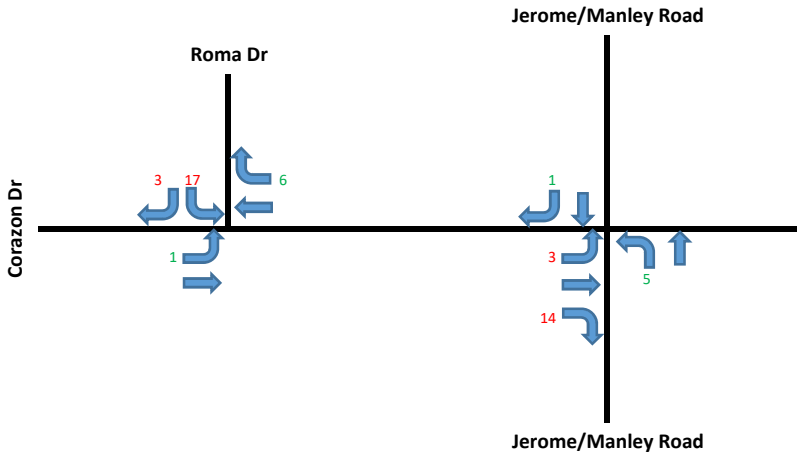
CARPENTER MARTY transportation	Year	Period	Scenario	Plate
	2019	AM	Background	A

Growth Rate 7%

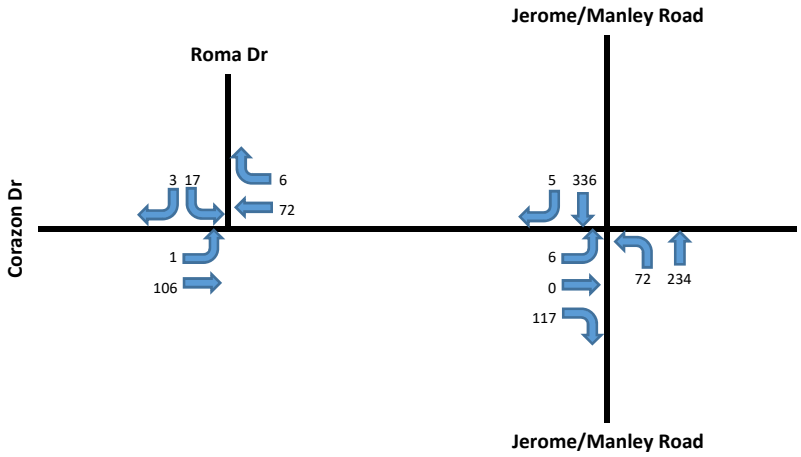


CARPENTER MARTY transportation	Year	Period	Scenario	Plate
		AM	Non Pass By Traffic	B

Entry	Exit
7	20

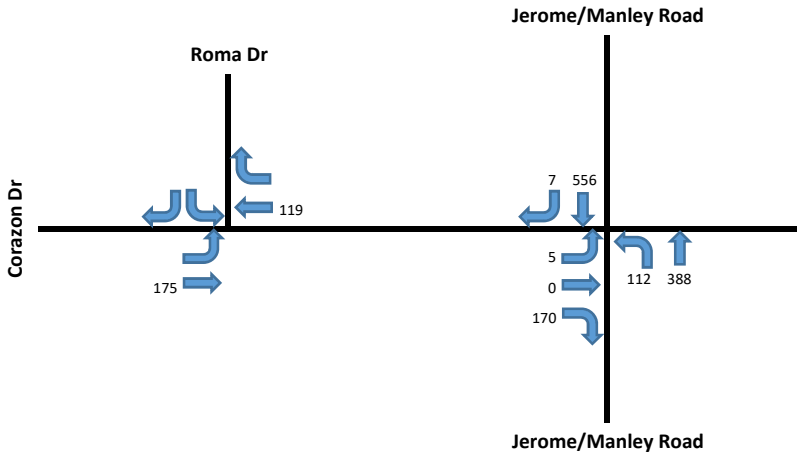


CARPENTER MARTY transportation	Year	Period	Scenario	Plate
	2019	AM	Build	C = A + B

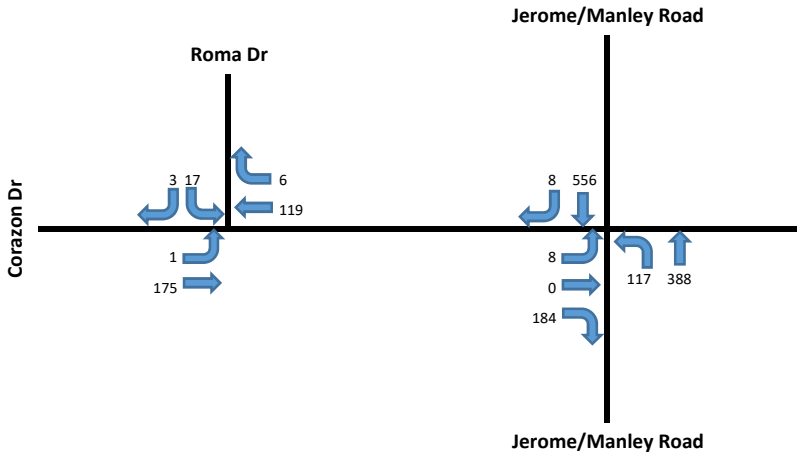


	Year	Period	Scenario	Plate
CARPENTER MARTY transportation	2029	AM	Background	D

Growth Rate 7%

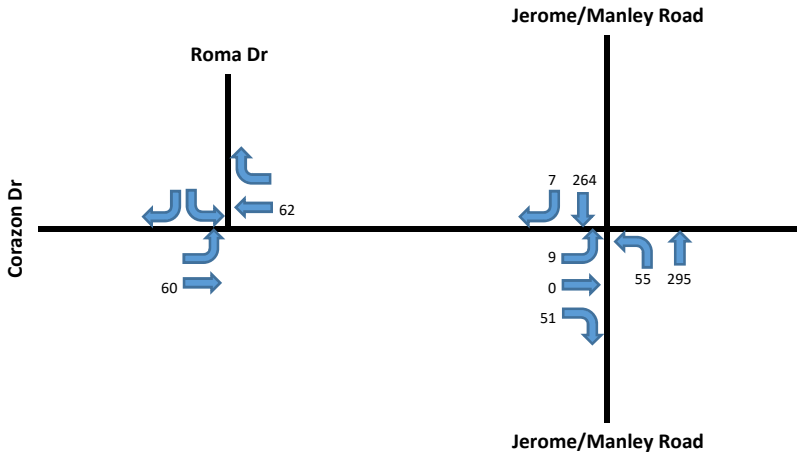


CARPENTER MARTY transportation	Year	Period	Scenario	Plate
	2029	AM	Build	E = D + B



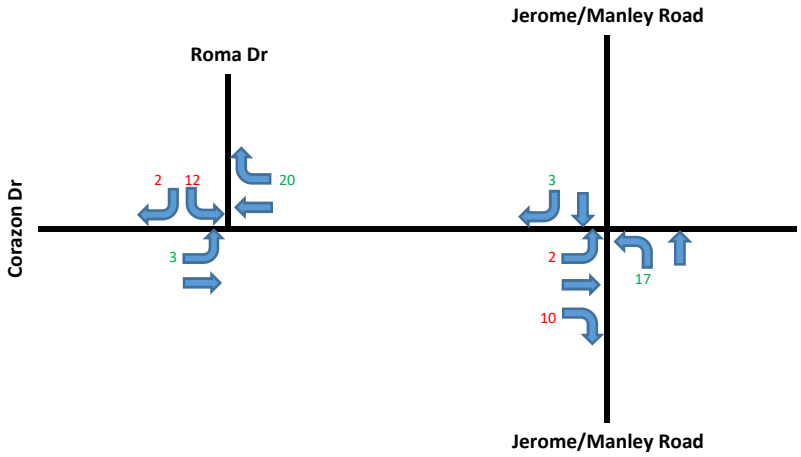
CARPENTER MARTY transportation	Year	Period	Scenario	Plate
	2019	PM	Background	A

Growth Rate 7%

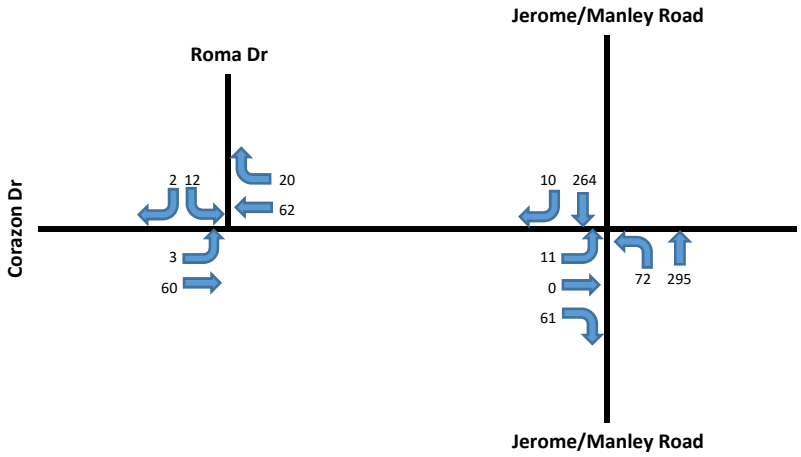


CARPENTER MARTY transportation	Year	Period	Scenario	Plate
		PM	Non Pass By Traffic	B

Entry	Exit
23	14

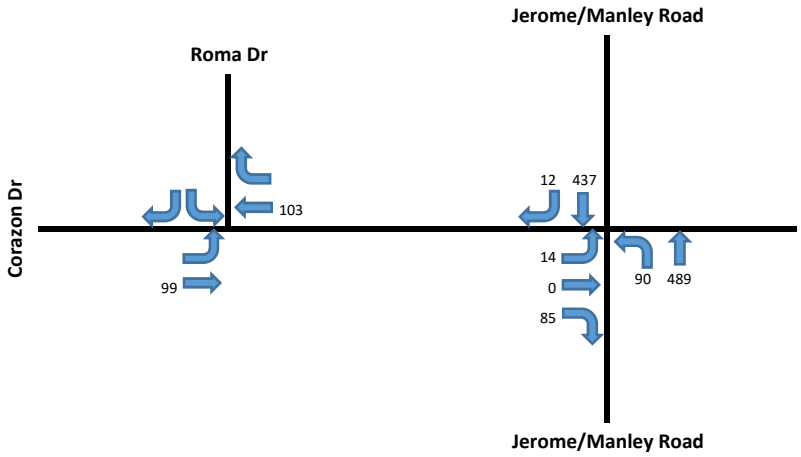


CARPENTER MARTY transportation	Year	Period	Scenario	Plate
	2019	PM	Build	C = A + B

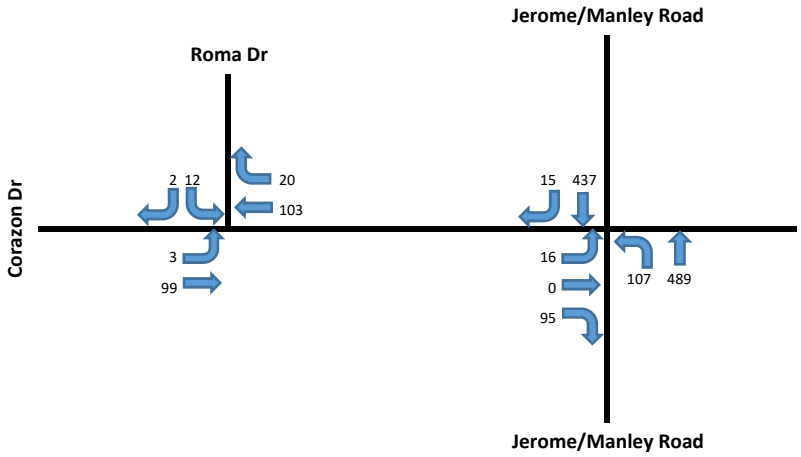


CARPENTER MARTY transportation	Year	Period	Scenario	Plate
	2029	PM	Background	D

Growth Rate 7%



	Year	Period	Scenario	Plate
CARPENTER MARTY transportation	2029	PM	Build	E = D + B

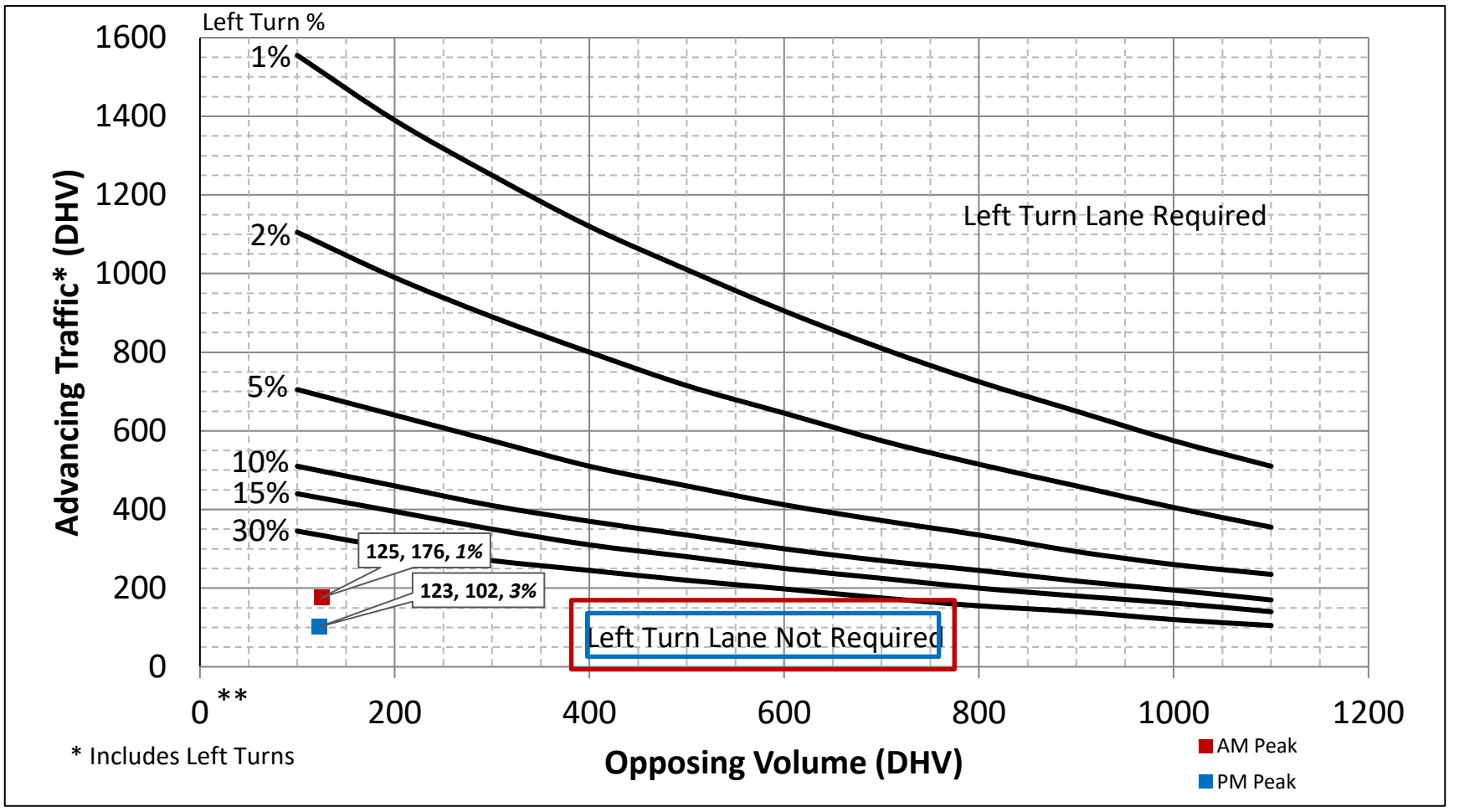


Appendix F
Turn Lane Analysis

CARPENTER MARTY transportation

2-Lane Highway Left Turn Lane Warrant

(= < 40 mph or 70 kph Posted Speed)

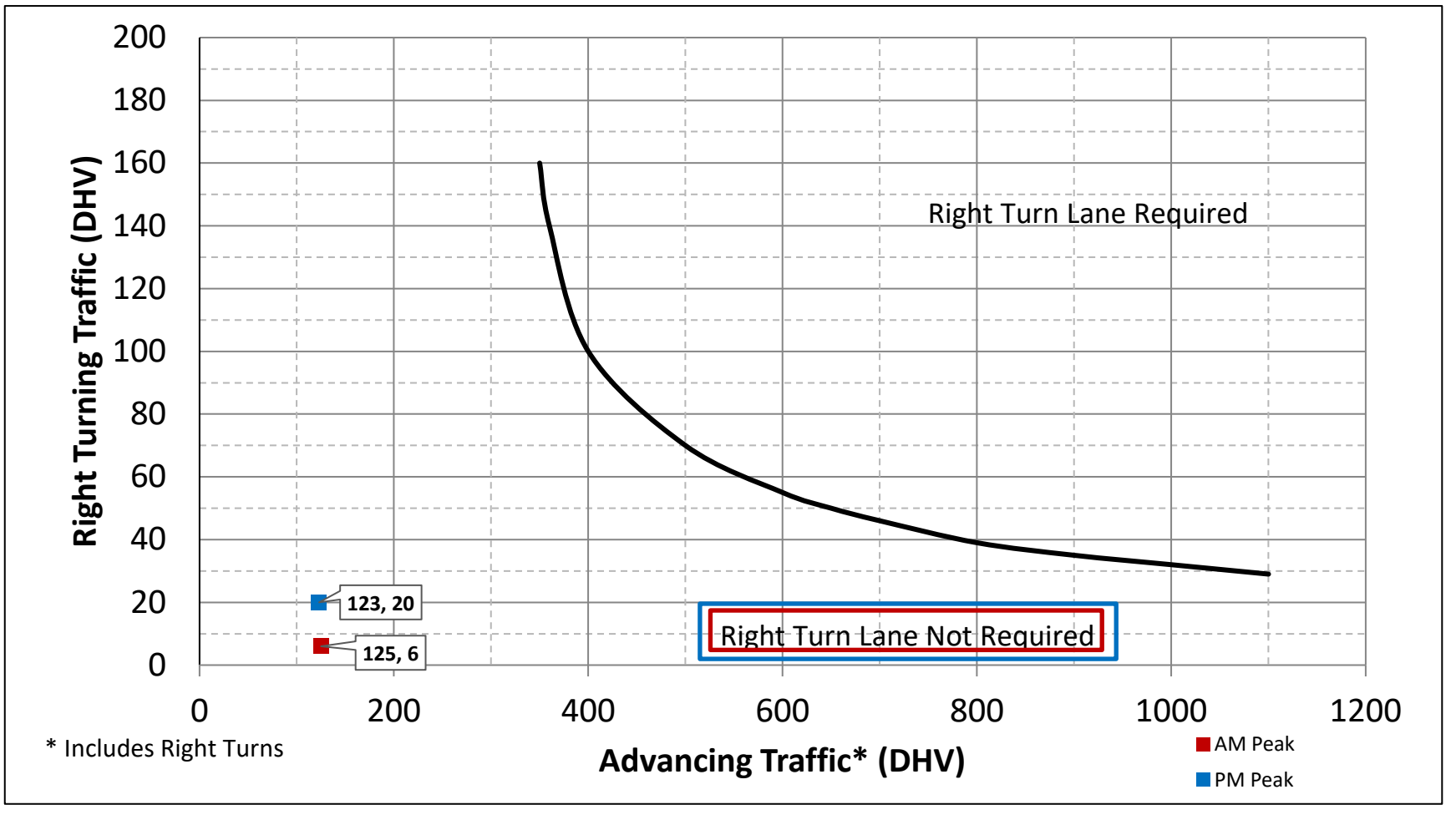


Turn Lane Length Calculations

AM Peak	**Design Speed**	25	**mph**	
	Traffic Control	Unsignalized		
	Cycle Length	Unsignalized		
	Cycles Per Hour	60	***Assume 60***	
	Turn Lane Volume	1	**VPH**	
	Advancing Traffic	176	**VPH**	
	Opposing Volume	125	**VPH**	
	Left Turn Percentage	1%		
	Location Type	Intersection		
	Condition	A		
	Vehicles/Cycle	1		
	Turn Lane Length	100		** Turn Lane Length includes 50 ft diverging taper*
	Offset Width	12		
	Approach Taper	125		
PM Peak	**Design Speed**	25	**mph**	
	Traffic Control	Unsignalized		
	Cycle Length	Unsignalized		
	Cycles Per Hour	60	***Assume 60***	
	Turn Lane Volume	3	**VPH**	
	Advancing Traffic	102	**VPH**	
	Opposing Volume	123	**VPH**	
	Left Turn Percentage	3%		
	Location Type	Through Road		
	Condition	A		
	Vehicles/Cycle	1		
	Turn Lane Length	100		** Turn Lane Length includes 50 ft diverging taper*
	Offset Width	12		
	Approach Taper	125		
Is Left Turn Warrant Met		No	**No Left Turn Lane Required**	

2-Lane Highway Right Turn Lane Warrant

(= < 40 mph or 70 kph Posted Speed)

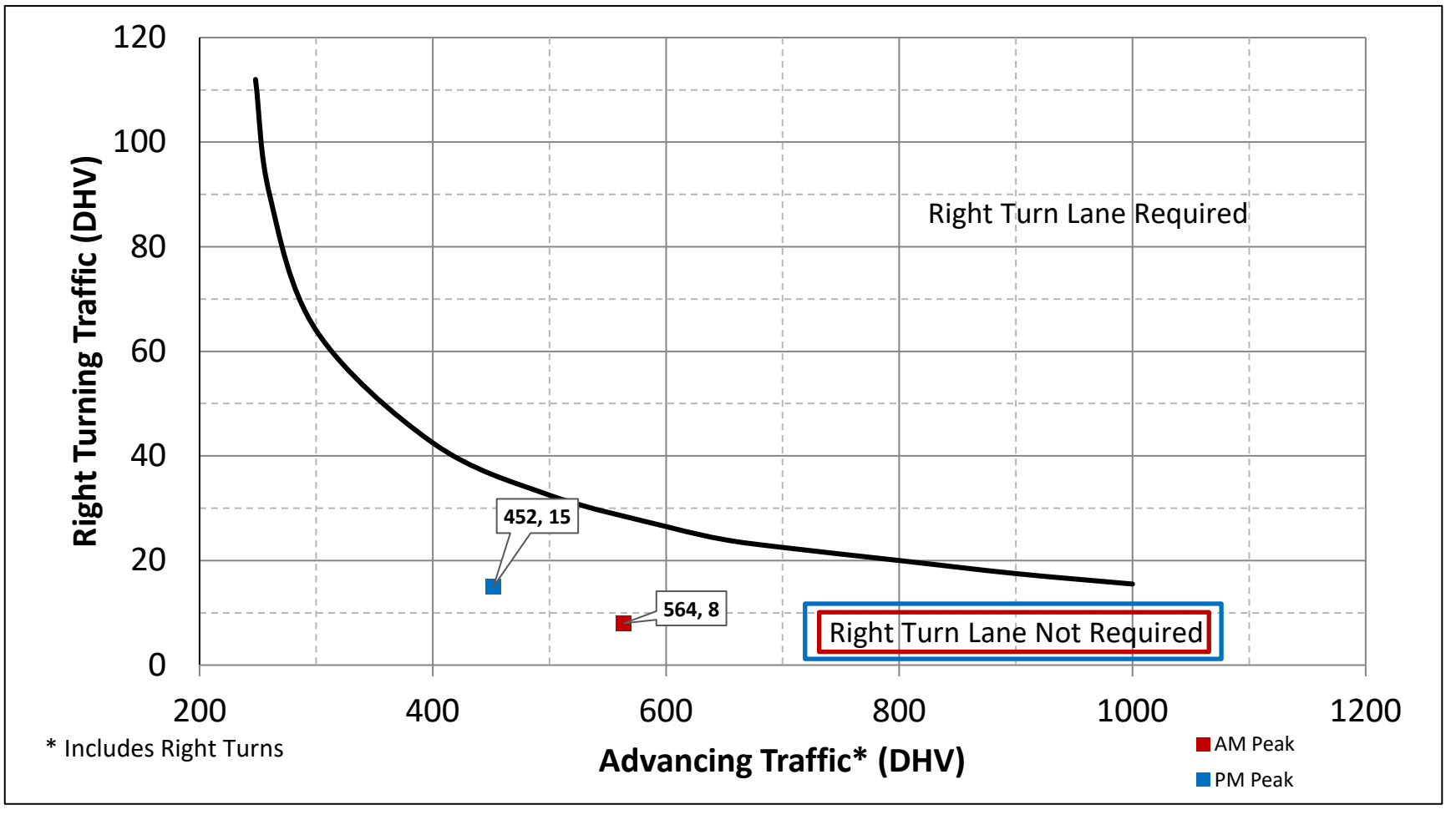


Turn Lane Length Calculations

AM Peak	Design Speed	25	mph	
	Traffic Control	Unsignalized		
	Cycle Length	Unsignalized		
	Cycles Per Hour	60	*Assume 60*	
	Turn Lane Volume	6	VPH	
	Advancing Traffic	125	VPH	
	Right Turn Percentage	5%		
	Location Type	Through Road		
	Condition	A		
	Vehicles/Cycle	1		
	Turn Lane Length	100		* Turn Lane Length includes 50 ft diverging taper
PM Peak	Design Speed	25	mph	
	Traffic Control	Unsignalized		
	Cycle Length	Unsignalized		
	Cycles Per Hour	60	*Assume 60*	
	Turn Lane Volume	20	VPH	
	Advancing Traffic	123	VPH	
	Right Turn Percentage	16%		
	Location Type	Through Road		
	Condition	A		
	Vehicles/Cycle	1		
	Turn Lane Length	100		* Turn Lane Length includes 50 ft diverging taper
Is Right Turn Warrant Met		No	No Right Turn Lane Required	

2-Lane Highway Right Turn Lane Warrant

(> 40 mph or 70 kph Posted Speed)



Turn Lane Length Calculations

AM Peak	Design Speed	45	mph	
	Traffic Control	Unsignalized		
	Cycle Length	Unsignalized		
	Cycles Per Hour	60	*Assume 60*	
	Turn Lane Volume	8	VPH	
	Advancing Traffic	564	VPH	
	Right Turn Percentage	1%		
	Location Type	Through Road		
	Condition	B		
	Vehicles/Cycle	1		
	Turn Lane Length	175		* Turn Lane Length includes 50 ft diverging taper
PM Peak	Design Speed	45	mph	
	Traffic Control	Unsignalized		
	Cycle Length	Unsignalized		
	Cycles Per Hour	60	*Assume 60*	
	Turn Lane Volume	15	VPH	
	Advancing Traffic	452	VPH	
	Right Turn Percentage	3%		
	Location Type	Through Road		
	Condition	B		
	Vehicles/Cycle	1		
	Turn Lane Length	175		* Turn Lane Length includes 50 ft diverging taper
Is Right Turn Warrant Met		No	No Right Turn Lane Required	

Left Turn Lane Length Calculations

AM Peak	**Design Speed**	45	**mph**
	Traffic Control	Unsignalized	
	Cycle Length	Unsignalized	
	Cycles Per Hour	60	***Assume 60***
	Turn Lane Volume	117	**VPH**
	Advancing Traffic	505	**VPH**
	Left Turn Percentage	23%	
	Location Type	Through Road	
	Condition	C	
	Vehicles/Cycle	2	
	Turn Lane Length	225	
	Offset Width	12	
	Approach Taper	405	
PM Peak	**Design Speed**	45	**mph**
	Traffic Control	Unsignalized	
	Cycle Length	Unknown	
	Cycles Per Hour	60	***Assume 60***
	Turn Lane Volume	107	**VPH**
	Advancing Traffic	596	**VPH**
	Left Turn Percentage	18%	
	Location Type	Through Road	
	Condition	C	
	Vehicles/Cycle	2	
	Turn Lane Length	225	
	Offset Width	12	
	Approach Taper	405	

Appendix F
Capacity Analysis

CARPENTER MARTY transportation

HCS7 Two-Way Stop-Control Report

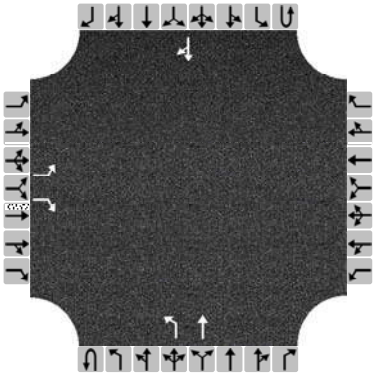
General Information

Analyst	GRS
Agency/Co.	
Date Performed	2/21/2018
Analysis Year	2019
Time Analyzed	Opening Year AM No Build
Intersection Orientation	North-South
Project Description	Hamlet on Jerome

Site Information

Intersection	Manley and Corazon Dr
Jurisdiction	
East/West Street	Corazon Dr.
North/South Street	Manley Rd
Peak Hour Factor	0.81
Analysis Time Period (hrs)	0.25

Lanes



Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		1	0	1		0	0	0	0	1	1	0	0	0	1	0
Configuration		L		R						L	T					TR
Volume, V (veh/h)		3		103						67	234				336	4
Percent Heavy Vehicles (%)		3		3						3						
Proportion Time Blocked																
Percent Grade (%)		0														
Right Turn Channelized		No				No				No				No		
Median Type/Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)																
Critical Headway (sec)																
Base Follow-Up Headway (sec)																
Follow-Up Headway (sec)																

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		4		127						83						
Capacity, c (veh/h)		296		633						1133						
v/c Ratio		0.01		0.20						0.07						
95% Queue Length, Q_{95} (veh)		0.0		0.7						0.2						
Control Delay (s/veh)		17.3		12.1						8.4						
Level of Service, LOS		C		B						A						
Approach Delay (s/veh)		12.3								1.9						
Approach LOS		B														

HCS7 Two-Way Stop-Control Report

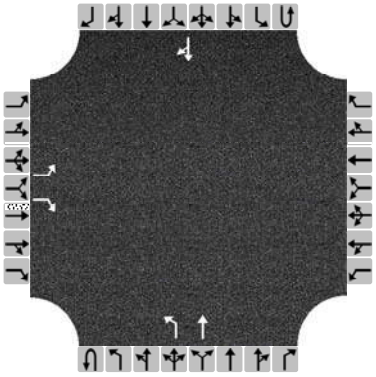
General Information

Analyst	GRS
Agency/Co.	
Date Performed	2/21/2018
Analysis Year	2019
Time Analyzed	Opening Year AM Build
Intersection Orientation	North-South
Project Description	Hamlet on Jerome

Site Information

Intersection	Manley and Corazon Dr
Jurisdiction	
East/West Street	Corazon Dr.
North/South Street	Manley Rd
Peak Hour Factor	0.81
Analysis Time Period (hrs)	0.25

Lanes



Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		1	0	1		0	0	0	0	1	1	0	0	0	1	0
Configuration		L		R						L	T					TR
Volume, V (veh/h)		6		117						72	234				336	5
Percent Heavy Vehicles (%)		3		3						3						
Proportion Time Blocked																
Percent Grade (%)		0														
Right Turn Channelized		No				No				No				No		
Median Type/Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)																
Critical Headway (sec)																
Base Follow-Up Headway (sec)																
Follow-Up Headway (sec)																

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		7		144						89						
Capacity, c (veh/h)		289		632						1132						
v/c Ratio		0.03		0.23						0.08						
95% Queue Length, Q_{95} (veh)		0.1		0.9						0.3						
Control Delay (s/veh)		17.8		12.4						8.5						
Level of Service, LOS		C		B						A						
Approach Delay (s/veh)		12.6								2.0						
Approach LOS		B														

HCS7 Two-Way Stop-Control Report

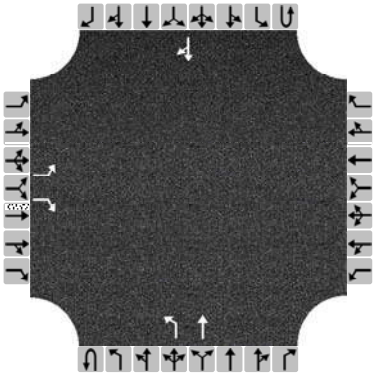
General Information

Analyst	GRS
Agency/Co.	
Date Performed	2/14/2018
Analysis Year	2019
Time Analyzed	Opening Year PM No Build
Intersection Orientation	North-South
Project Description	Hamlet on Jerome

Site Information

Intersection	Jerome and Corazon Dr
Jurisdiction	
East/West Street	Corazon Dr
North/South Street	Manley Rd
Peak Hour Factor	0.95
Analysis Time Period (hrs)	0.25

Lanes



Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		1	0	1		0	0	0	0	1	1	0	0	0	1	0
Configuration		L		R						L	T					TR
Volume, V (veh/h)		9		51						55	295				264	7
Percent Heavy Vehicles (%)		3		3						3						
Proportion Time Blocked																
Percent Grade (%)		0														
Right Turn Channelized		No				No				No				No		
Median Type/Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)																
Critical Headway (sec)																
Base Follow-Up Headway (sec)																
Follow-Up Headway (sec)																

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		9		54						58						
Capacity, c (veh/h)		381		754						1270						
v/c Ratio		0.02		0.07						0.05						
95% Queue Length, Q_{95} (veh)		0.1		0.2						0.1						
Control Delay (s/veh)		14.7		10.1						8.0						
Level of Service, LOS		B		B						A						
Approach Delay (s/veh)		10.8								1.3						
Approach LOS		B														

HCS7 Two-Way Stop-Control Report

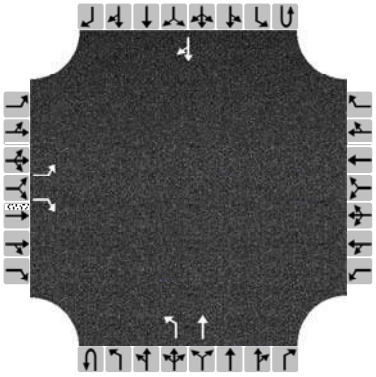
General Information

Analyst	GRS
Agency/Co.	
Date Performed	2/14/2018
Analysis Year	2019
Time Analyzed	Opening Year PM Build
Intersection Orientation	North-South
Project Description	Hamlet on Jerome

Site Information

Intersection	Jerome and Corazon Dr
Jurisdiction	
East/West Street	Corazon Dr
North/South Street	Manley Rd
Peak Hour Factor	0.95
Analysis Time Period (hrs)	0.25

Lanes



Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		1	0	1		0	0	0	0	1	1	0	0	0	1	0
Configuration		L		R						L	T					TR
Volume, V (veh/h)		11		61						72	295				264	10
Percent Heavy Vehicles (%)		3		3						3						
Proportion Time Blocked																
Percent Grade (%)		0														
Right Turn Channelized		No				No				No				No		
Median Type/Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)																
Critical Headway (sec)																
Base Follow-Up Headway (sec)																
Follow-Up Headway (sec)																

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		12		64						76						
Capacity, c (veh/h)		357		753						1267						
v/c Ratio		0.03		0.09						0.06						
95% Queue Length, Q_{95} (veh)		0.1		0.3						0.2						
Control Delay (s/veh)		15.4		10.2						8.0						
Level of Service, LOS		C		B						A						
Approach Delay (s/veh)		11.0								1.6						
Approach LOS		B														

HCS7 Two-Way Stop-Control Report

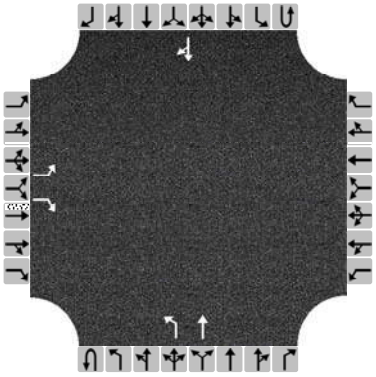
General Information

Analyst	GRS
Agency/Co.	
Date Performed	2/21/2018
Analysis Year	2029
Time Analyzed	Horizon Year AM No Build
Intersection Orientation	North-South
Project Description	Hamlet on Jerome

Site Information

Intersection	Manley and Corazon Dr
Jurisdiction	
East/West Street	Corazon Dr.
North/South Street	Manley Rd
Peak Hour Factor	0.81
Analysis Time Period (hrs)	0.25

Lanes



Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		1	0	1		0	0	0	0	1	1	0	0	0	1	0
Configuration		L		R						L	T					TR
Volume, V (veh/h)		5		170						112	388				556	7
Percent Heavy Vehicles (%)		3		3						3						
Proportion Time Blocked																
Percent Grade (%)		0														
Right Turn Channelized		No				No				No				No		
Median Type/Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)																
Critical Headway (sec)																
Base Follow-Up Headway (sec)																
Follow-Up Headway (sec)																

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		6		210						138						
Capacity, c (veh/h)		122		443						895						
v/c Ratio		0.05		0.47						0.15						
95% Queue Length, Q_{95} (veh)		0.2		2.5						0.5						
Control Delay (s/veh)		36.1		20.3						9.8						
Level of Service, LOS		E		C						A						
Approach Delay (s/veh)		20.7								2.2						
Approach LOS		C														

HCS7 Two-Way Stop-Control Report

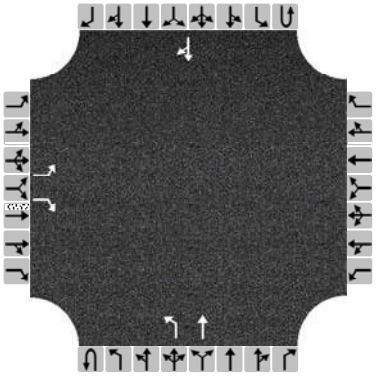
General Information

Analyst	GRS
Agency/Co.	
Date Performed	2/21/2018
Analysis Year	2029
Time Analyzed	Horizon Year AM Build
Intersection Orientation	North-South
Project Description	Hamlet on Jerome

Site Information

Intersection	Manley and Corazon Dr
Jurisdiction	
East/West Street	Corazon Dr.
North/South Street	Manley Rd
Peak Hour Factor	0.81
Analysis Time Period (hrs)	0.25

Lanes



Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		1	0	1		0	0	0	0	1	1	0	0	0	1	0
Configuration		L		R						L	T					TR
Volume, V (veh/h)		8		184						117	388				556	8
Percent Heavy Vehicles (%)		3		3						3						
Proportion Time Blocked																
Percent Grade (%)		0														
Right Turn Channelized		No				No				No				No		
Median Type/Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)																
Critical Headway (sec)																
Base Follow-Up Headway (sec)																
Follow-Up Headway (sec)																

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		10		227						144						
Capacity, c (veh/h)		119		443						894						
v/c Ratio		0.08		0.51						0.16						
95% Queue Length, Q_{95} (veh)		0.3		2.9						0.6						
Control Delay (s/veh)		38.0		21.4						9.8						
Level of Service, LOS		E		C						A						
Approach Delay (s/veh)		22.1								2.3						
Approach LOS		C														

HCS7 Two-Way Stop-Control Report

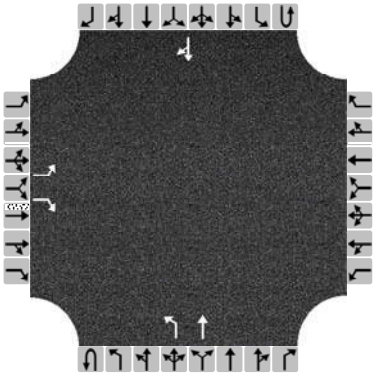
General Information

Analyst	GRS
Agency/Co.	
Date Performed	2/14/2018
Analysis Year	2029
Time Analyzed	Horizon Year PM No Build
Intersection Orientation	North-South
Project Description	Hamlet on Jerome

Site Information

Intersection	Jerome and Corazon Dr
Jurisdiction	
East/West Street	Corazon Dr
North/South Street	Manley Rd
Peak Hour Factor	0.95
Analysis Time Period (hrs)	0.25

Lanes



Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		1	0	1		0	0	0	0	1	1	0	0	0	1	0
Configuration		L		R						L	T					TR
Volume, V (veh/h)		14		85						90	489				437	12
Percent Heavy Vehicles (%)		3		3						3						
Proportion Time Blocked																
Percent Grade (%)		0														
Right Turn Channelized		No				No				No				No		
Median Type/Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1		6.2						4.1						
Critical Headway (sec)		7.13		6.23						4.13						
Base Follow-Up Headway (sec)		3.5		3.3						2.2						
Follow-Up Headway (sec)		3.53		3.33						2.23						

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		15		89						95						
Capacity, c (veh/h)		193		594						1083						
v/c Ratio		0.08		0.15						0.09						
95% Queue Length, Q_{95} (veh)		0.2		0.5						0.3						
Control Delay (s/veh)		25.2		12.1						8.6						
Level of Service, LOS		D		B						A						
Approach Delay (s/veh)		14.0								1.3						
Approach LOS		B														

HCS7 Two-Way Stop-Control Report

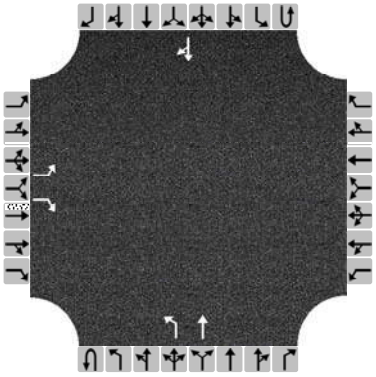
General Information

Analyst	GRS
Agency/Co.	
Date Performed	2/14/2018
Analysis Year	2029
Time Analyzed	Horizon Year PM Build
Intersection Orientation	North-South
Project Description	Hamlet on Jerome

Site Information

Intersection	Jerome and Corazon Dr
Jurisdiction	
East/West Street	Corazon Dr
North/South Street	Manley Rd
Peak Hour Factor	0.95
Analysis Time Period (hrs)	0.25

Lanes



Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		1	0	1		0	0	0	0	1	1	0	0	0	1	0
Configuration		L		R						L	T					TR
Volume, V (veh/h)		16		95						107	489				437	15
Percent Heavy Vehicles (%)		3		3						3						
Proportion Time Blocked																
Percent Grade (%)		0														
Right Turn Channelized		No				No				No				No		
Median Type/Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)																
Critical Headway (sec)																
Base Follow-Up Headway (sec)																
Follow-Up Headway (sec)																

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		17		100						113						
Capacity, c (veh/h)		180		593						1080						
v/c Ratio		0.09		0.17						0.10						
95% Queue Length, Q_{95} (veh)		0.3		0.6						0.3						
Control Delay (s/veh)		27.0		12.3						8.7						
Level of Service, LOS		D		B						A						
Approach Delay (s/veh)		14.4								1.6						
Approach LOS		B														

HCS7 Two-Way Stop-Control Report

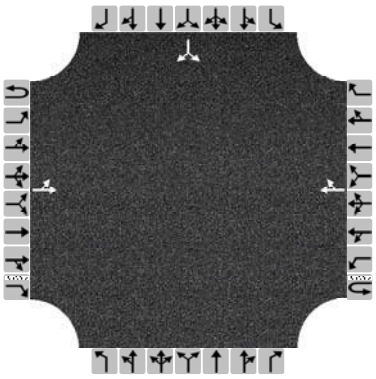
General Information

Analyst	
Agency/Co.	
Date Performed	2/14/2018
Analysis Year	2019
Time Analyzed	Opening Year AM Build
Intersection Orientation	East-West
Project Description	Hamlet on Jerome

Site Information

Intersection	Roma and Corazon
Jurisdiction	
East/West Street	Corazon Drive
North/South Street	Roma Drive
Peak Hour Factor	0.92
Analysis Time Period (hrs)	0.25

Lanes



Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	1	0		0	0	0		0	1	0
Configuration		LT						TR							LR	
Volume, V (veh/h)		1	106				72	6						17		3
Percent Heavy Vehicles (%)		3												3		3
Proportion Time Blocked																
Percent Grade (%)														0		
Right Turn Channelized		No				No				No				No		
Median Type/Storage		Undivided														

Critical and Follow-up Headways

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

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		1													22	
Capacity, c (veh/h)		1503													810	
v/c Ratio		0.00													0.03	
95% Queue Length, Q_{95} (veh)		0.0													0.1	
Control Delay (s/veh)		7.4													9.6	
Level of Service, LOS		A													A	
Approach Delay (s/veh)		0.1												9.6		
Approach LOS														A		

HCS7 Two-Way Stop-Control Report

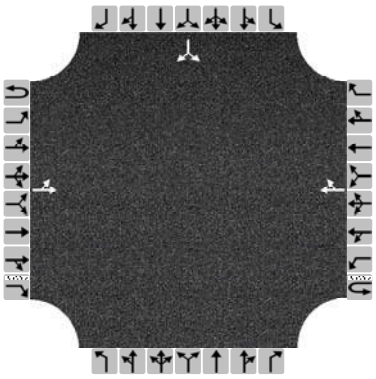
General Information

Analyst	
Agency/Co.	
Date Performed	2/14/2018
Analysis Year	2019
Time Analyzed	Opening Year PM Build
Intersection Orientation	East-West
Project Description	Hamlet on Jerome

Site Information

Intersection	Roma and Corazon
Jurisdiction	
East/West Street	Corazon Drive
North/South Street	Roma Drive
Peak Hour Factor	0.92
Analysis Time Period (hrs)	0.25

Lanes



Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	1	0		0	0	0		0	1	0
Configuration		LT						TR							LR	
Volume, V (veh/h)		3	60				62	20						12		2
Percent Heavy Vehicles (%)		3												3		3
Proportion Time Blocked																
Percent Grade (%)														0		
Right Turn Channelized		No				No				No				No		
Median Type/Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)																
Critical Headway (sec)																
Base Follow-Up Headway (sec)																
Follow-Up Headway (sec)																

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		3													15	
Capacity, c (veh/h)		1498													855	
v/c Ratio		0.00													0.02	
95% Queue Length, Q_{95} (veh)		0.0													0.1	
Control Delay (s/veh)		7.4													9.3	
Level of Service, LOS		A													A	
Approach Delay (s/veh)		0.4												9.3		
Approach LOS														A		

HCS7 Two-Way Stop-Control Report

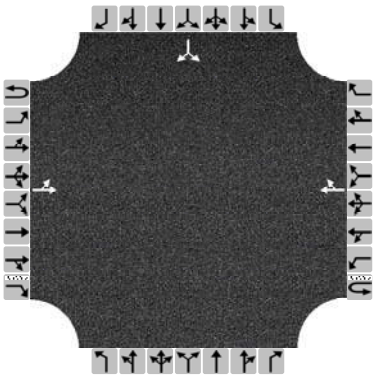
General Information

Analyst	
Agency/Co.	
Date Performed	2/14/2018
Analysis Year	2029
Time Analyzed	Horizon Year AM Build
Intersection Orientation	East-West
Project Description	Hamlet on Jerome

Site Information

Intersection	Roma and Corazon
Jurisdiction	
East/West Street	Corazon Drive
North/South Street	Roma Drive
Peak Hour Factor	0.92
Analysis Time Period (hrs)	0.25

Lanes



Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	1	0		0	0	0		0	1	0
Configuration		LT						TR							LR	
Volume, V (veh/h)		1	175				119	6						17		3
Percent Heavy Vehicles (%)		3												3		3
Proportion Time Blocked																
Percent Grade (%)														0		
Right Turn Channelized		No				No				No				No		
Median Type/Storage		Undivided														

Critical and Follow-up Headways

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

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		1													22	
Capacity, c (veh/h)		1440													694	
v/c Ratio		0.00													0.03	
95% Queue Length, Q_{95} (veh)		0.0													0.1	
Control Delay (s/veh)		7.5													10.4	
Level of Service, LOS		A													B	
Approach Delay (s/veh)		0.0												10.4		
Approach LOS														B		

HCS7 Two-Way Stop-Control Report

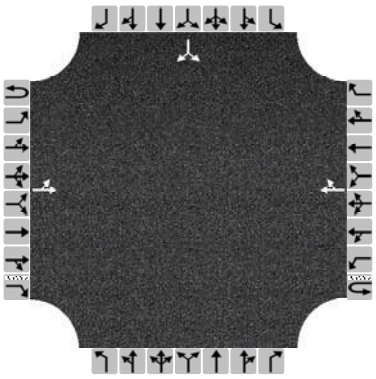
General Information

Analyst	
Agency/Co.	
Date Performed	2/14/2018
Analysis Year	2029
Time Analyzed	Horizon Year PM Build
Intersection Orientation	East-West
Project Description	Hamlet on Jerome

Site Information

Intersection	Roma and Corazon
Jurisdiction	
East/West Street	Corazon Drive
North/South Street	Roma Drive
Peak Hour Factor	0.92
Analysis Time Period (hrs)	0.25

Lanes



Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	1	0		0	0	0		0	1	0
Configuration		LT						TR							LR	
Volume, V (veh/h)		3	99				103	20						12		2
Percent Heavy Vehicles (%)		3												3		3
Proportion Time Blocked																
Percent Grade (%)														0		
Right Turn Channelized		No				No				No				No		
Median Type/Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)																
Critical Headway (sec)																
Base Follow-Up Headway (sec)																
Follow-Up Headway (sec)																

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		3													15	
Capacity, c (veh/h)		1443													768	
v/c Ratio		0.00													0.02	
95% Queue Length, Q_{95} (veh)		0.0													0.1	
Control Delay (s/veh)		7.5													9.8	
Level of Service, LOS		A													A	
Approach Delay (s/veh)		0.2												9.8		
Approach LOS														A		