ATTACHMENT F

Marion County
Board of County Commissioners
Office of the County Engineer
412 SE 25th Ave.
Ocala, FL 34471
Phone: 352-671-8686
Fax: 352-671-8687

January 16, 2025

KITTLESON & ASSOCIATES
MICHAEL RUIZ-LEON
851 SW 6TH AVE #600
PORTLAND, OR 97204

SUBJECT: **TRAFFIC STUDY APPROVAL LETTER**
PROJECT NAME: WOODRIDGE PLACE SOUTH
PROJECT #2024080064 APPLICATION: #32171 PARCEL #14976-004-00

Dear Michael,

The Traffic Study dated January 3, 2025 for the above referenced project was approved by Marion County on January 16, 2025.

Feel free to contact the Office of the County Engineer at (352) 671-8686 or DevelopmentReview@marionfl.org should you have questions.

Sincerely,

Your Development Review Team
Office of the County Engineer

KITTELSON & ASSOCIATES

WOODRIDGE PLACE SOUTH TRAFFIC IMPACT STUDY

Marion County, Florida

January 3, 2025

Inside front cover

Page intentionally blank.

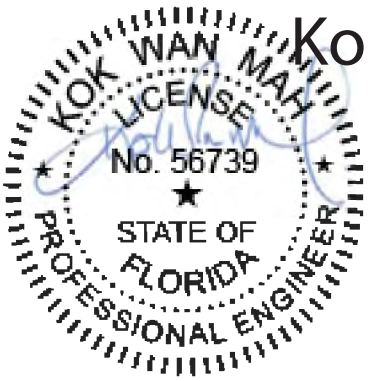
PROFESSIONAL ENGINEER CERTIFICATE

I hereby certify that I am a registered professional engineer in the State of Florida, practicing with Kittelson & Associates, a corporation authorized to operate as a Professional Engineering business by the State of Florida Department of Professional Regulation, Board of Professional Engineers, and that I have approved the Woodridge Place South TIA dated January 2025.

PROJECT:	Woodridge Place South
LOCATION:	Marion County, Florida
CLIENT:	Jax Road, LLC

I acknowledge that the procedures and references used to develop the results contained in this report are standard to the professional practice of transportation engineering as applied through professional judgment and experience.

NAME:	Kok Wan Mah
P.E. NUMBER:	56739
DATE:	January 6, 2025



Kok Wan Mah

Digitally signed by Kok Wan Mah
Date: 2025.01.07 08:18:12 -05'00'

The item has been digitally signed and sealed by Kok Wan Mah on the date adjacent to the seal.

PRINTED COPIES OF THIS DOCUMENT ARE NOT CONSIDERED SIGNED AND SEALED AND THE SIGNATURE MUST BE VERIFIED ON ANY ELECTRONIC COPIES.

Page intentionally blank.

Woodridge Place South Development

Marion County, Florida

Prepared for:
Jax Road LLC
4349 SE 20th Street
Ocala, FL 34471

Prepared by:
Kittelson & Associates, Inc.
225 East Robinson Street, Suite 355
Orlando, FL 32801
407.540.0555

Project Manager:
Michael Ruiz-Leon
Engineer/Planner

Project Principal:
Kok Wan Mah
Principal Engineer

Project Number 30767

January 3, 2025

Page intentionally blank.

CONTENTS

Introduction 6

Project Description 6

Study Area 6

Planned and Programmed Improvements 7

Vested Development 7

Existing Conditions 10

Data Collection 10

Existing Roadway Capacity Analysis 10

Existing Intersection Capacity Analysis 14

Future Volume Development 18

Background Growth 18

Vested Development 19

2029 No-Build Volumes 19

Trip Generation 22

Trip Distribution and Assignment 22

Future Build Volumes 25

Future Conditions 31

2029 No-Build Roadway Capacity Analysis 31

2029 No-Build Intersection Capacity Analysis 33

2029 Build Roadway Capacity Analysis 35

2029 Build Intersection Capacity Analysis 37

Driveway Turn Lane Evaluation 40

Multimodal Assessment 40

Conclusions 42

LIST OF FIGURES

Figure 1: Project Location....8
Figure 2A: Existing Traffic Volumes – Weekday AM Peak Hour....11
Figure 2B: Existing Traffic Volumes – Weekday PM Peak Hour....12
Figure 3: Existing Lane Configurations....15
Figure 4A: 2029 No-Build Volumes – Weekday AM Peak Hour....20
Figure 4B: 2029 No-Build Volumes – Weekday PM Peak Hour....21
Figure 5: Project Distribution....24
Figure 6A: Project Trips in Study Area – Weekday AM Peak Hour....26
Figure 6B: Project Trips in Study Area – Weekday PM Peak Hour....27
Figure 7A: 2029 Build Traffic Volumes – Weekday AM Peak Hour....28
Figure 7B: 2029 Build Traffic Volumes – Weekday PM Peak Hour....29

LIST OF TABLES

Table 1: Existing Roadway Capacity Analysis 13
Table 2: Existing Conditions Intersection Capacity Analysis 16
Table 3: 2029 Background Traffic 18
Table 4: Project Trip Generation 23
Table 5: 2029 Future No-Build Roadway Capacity Analysis 32
Table 6: 2029 No-Build Intersection Capacity Analysis 34
Table 7: 2029 Future Build Roadway Capacity Analysis 36
Table 8: 2029 Build Intersection Capacity Analysis 38

APPENDICES

A. Site Plan
B. Methodology Memo
C. Turning Movement Counts
D. CMP Database
E. Signal Timing Sheets
F. Existing Synchro Reports
G. Volume Development Spreadsheet for No-Build and Build Volumes
H. Vested Trip Documentation
I. ITE Land Use
J. Model Output
K. 2029 No-Build Synchro Reports
L. 2029 Build Roadway HCM Reports
M. 2029 Build Synchro Reports
N. Turn Lane Warrants

Page intentionally blank.

Section 1
Introduction

Introduction

Kittelson & Associates, Inc. has been retained by Jax Road LLC to conduct a Transportation Impact Analysis (TIA) for the proposed Woodridge Place South residential development. The 29.51-acre site consists of parcel 14976-004-00 and is located on the north side of NE 49th Street, east of Jacksonville Road (Old US 301) in Marion County, Florida. The project location with site boundary is shown in **Figure 1.**

Access to the development will be provided via two full access driveways to NE 49th Street. The site will be located to the north of NE 49th Street. The access point and the development location are depicted in the site plan provided in **Appendix A**.

The purpose of this study is to evaluate the roadway capacity and operating conditions on the roadways and intersections likely to be impacted by traffic generated by the development to determine how impacts should be mitigated. The following analysis was prepared in accordance with the Marion County Traffic Impact Analysis Guidelines (September 2022).

PROJECT DESCRIPTION

The 29.51-acre site consists of parcel 14976-004-00 and is located on the north side of NE 49th Street, east of Jacksonville Road (Old US 301) in Marion County, Florida. The development is planned to include 170 single-family homes. Access to the development will be provided via two full access driveways to NE 49th Street. The site will be located to the north of NE 49th Street. The development will be constructed in a single phase with an anticipated buildout year of 2029.

STUDY AREA

The study area was determined using a test for significance documented in the methodology provided as **Appendix B**. The following roadway segments and intersections are included in the analysis:

Roadway Segments:

- CR200 A / NE Jacksonville Rd
  - SR 326 to NE 49th Street
  - NE 49th Street to NW 35th Street
- NE 49th Street
  - CR 200A to NE 25th Avenue
- NE 25th Avenue
  - SR 326 to NE 49th Street
  - NE 49th Street to NW 35th Street

Intersections:

- CR200 A / NE Jacksonville Road at NE 49th Street
- NE 25th Avenue at NE 49th Street
- CR200 A / NE Jacksonville Road at NE 35th Street
- NE 25th Avenue at NE 35th Street
- Site Access A/ NE 49th Street
- Site Access B/ NE 49th Street

Intersection counts were collected on a weekday when schools were in session, on September 24, 2024.

PLANNED AND PROGRAMMED IMPROVEMENTS

A verification of the Ocala Marion Transportation Planning Organization (TPO) Transportation Improvement Program (TIP) (2025 to 2029) and Florida Department of Transportation's (FDOT) website CFLRoads.com shows that there are no planned or programmed capacity improvements within the study area.

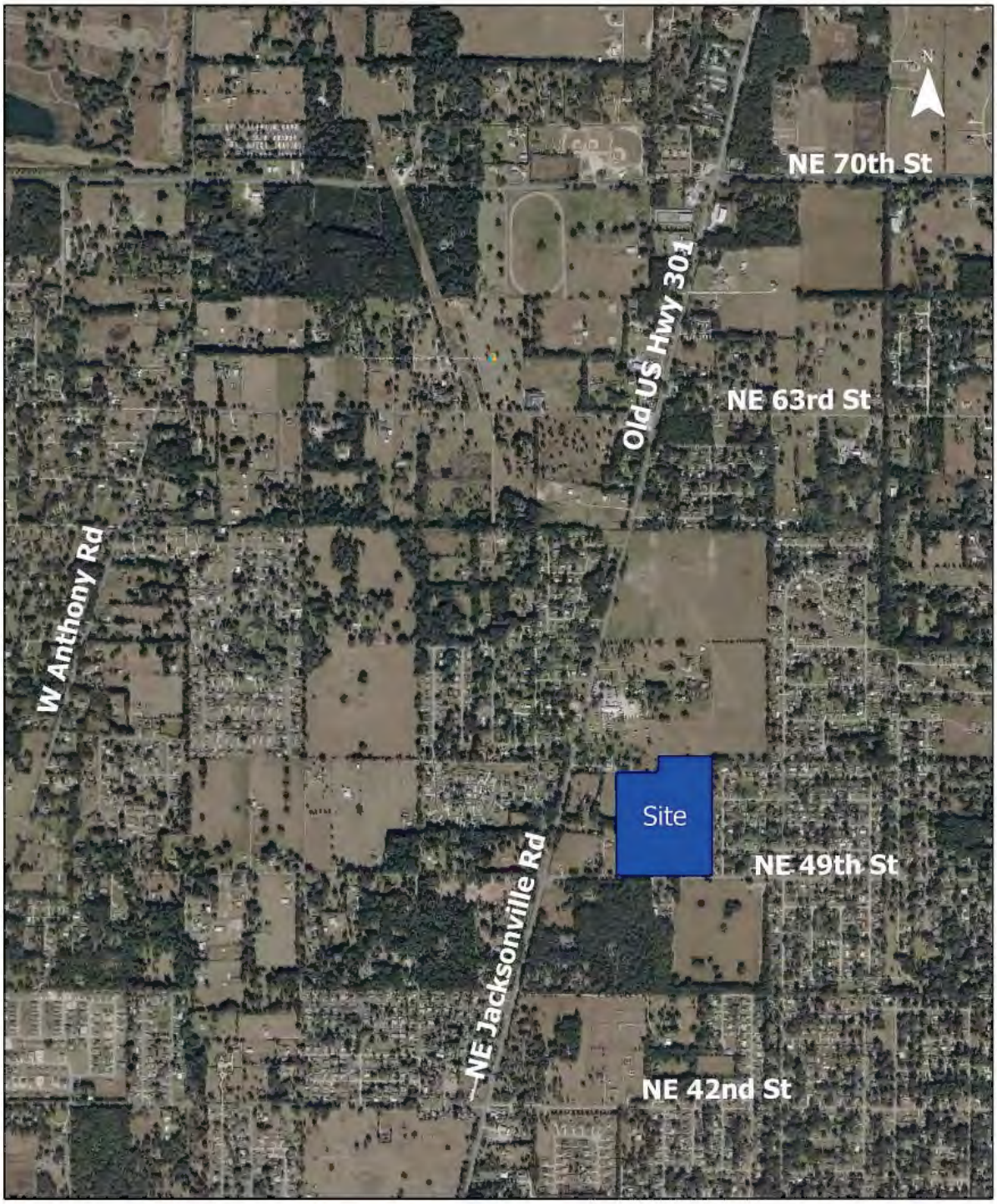
VESTED DEVELOPMENT

Future vested trips will be accounted for in the development of build traffic volumes. Traffic impact analyses from nearby developments will be used for this purpose, including:

- Woodridge Development
    - A development with 254 residential units located on the east side of CR 200A/NE Jacksonville Road, between NE 49th Street and NW 63rd Street. Units will be on the north side of CR 200A/NE Jacksonville Road.

The impacts of these developments will be discussed further in the **Future Volume Development** section.

Figure 1: Project Location



Section 2
Existing Conditions

Existing Conditions

Evaluation of the traffic impacts associated with the proposed development first requires an assessment of the existing roadway conditions in the vicinity of the site. The existing conditions section summarizes the existing transportation conditions including geometry and existing traffic control observed in the study area, collection of existing peak hour traffic volumes, and an assessment of the study area roadways and intersections.

DATA COLLECTION

Existing turning movement counts (TMCs) were collected on September 24, 2024 for the AM (7:00 to 9:00) and PM (4:00 to 6:00) peak hour periods at the five study intersections. The existing TMCs were adjusted using the corresponding seasonal factor of 1.02 based on the 2023 data from FDOT's Florida Traffic Online (FTO) Web Application. Raw turning movement counts are provided in **Appendix C**. **Figure 2A** and **Figure 2B** illustrate the seasonal factor adjusted existing AM and PM peak hour traffic volumes. Heavy truck percentages were also calculated from the turning movement volumes and applied to each study intersection in each study period.

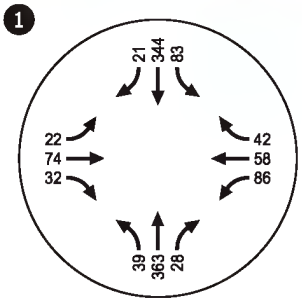
EXISTING ROADWAY CAPACITY ANALYSIS

To determine the operational conditions along the study area roadway segments, Kittelson conducted a roadway capacity analysis to help quantify the existing level of service (LOS) of the study roadways for the AM and PM peak hour conditions.

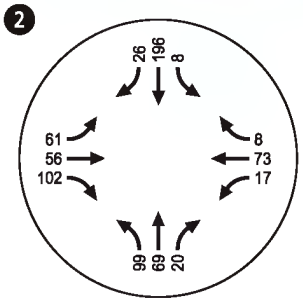
The level of service and remaining capacity for each of the study roadways were determined based on the Ocala Marion TPO 2023 Congestion Management Process (CMP) Database, which is shown in **Appendix D**, and the 2024 turning moving counts were used for existing roadway segment volumes. A comparison of the peak hour peak direction (PHPD) roadway traffic volumes was made against the roadway capacities to determine the existing level of service. The existing roadway capacity analysis was performed for all roadways within the study area as shown in **Table 1**.

In summary, the study roadway segments operate acceptably and are shown to have sufficient capacity under existing conditions.

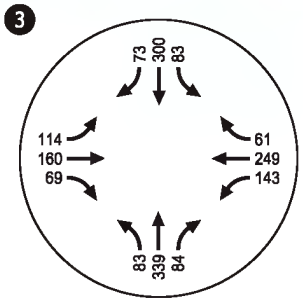
NE JACKSONVILLE ROAD / NE 49TH STREET



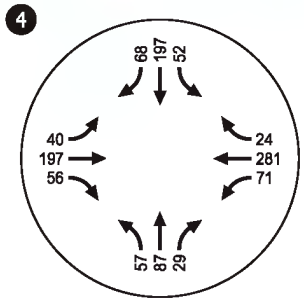
NE 25TH AVENUE / NE 49TH STREET



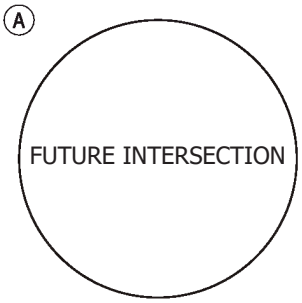
NE JACKSONVILLE ROAD / NE 35TH STREET



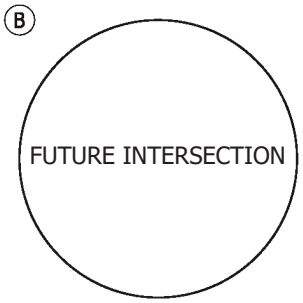
NE 25TH AVENUE / NE 35TH STREET



SITE ACCESS A / NE 49TH STREET



SITE ACCESS B / NE 49TH STREET



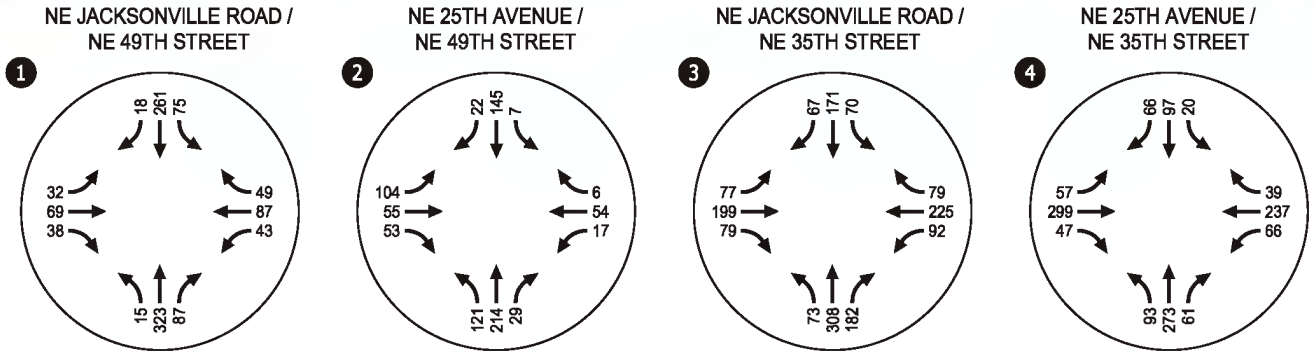
(#) - Study Intersections

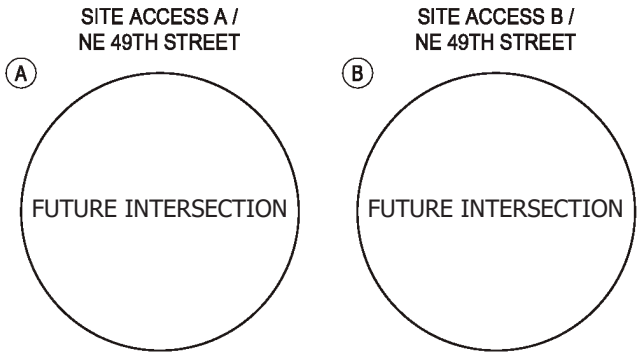
(X) - Site Access

Year 2024 Existing Traffic Volumes
Weekday AM Peak Hour
Marion County, FL

Figure
2A

KITTELSON & ASSOCIATES





(#) - Study Intersections

(X) - Site Access

Year 2024 Existing Traffic Volumes
Weekday PM Peak Hour
Marion County, FL

Figure
2B

KITTELSON & ASSOCIATES

Table 1: Existing Roadway Capacity Analysis

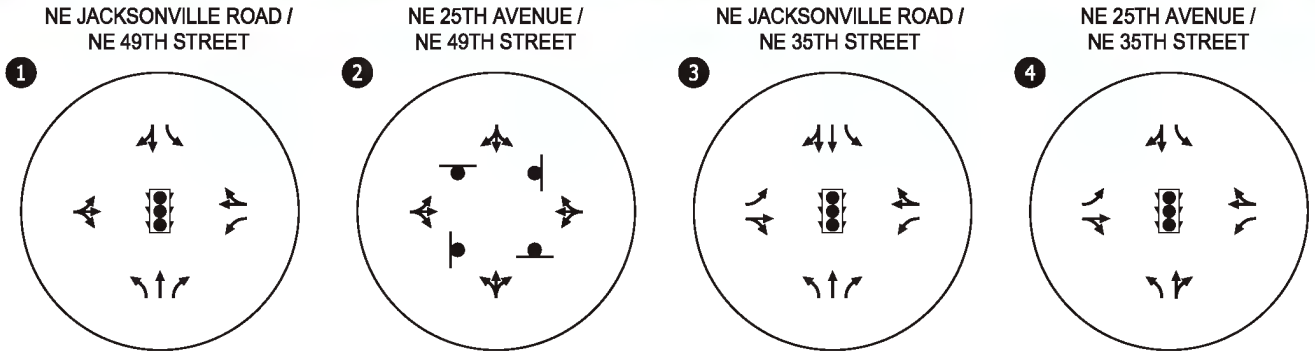
Segment	Limits	# Lanes	Classification	LOS Std.	Daily Capacity	Pk Hr Pk Dir Capacity	2023 AADT	PM PH NB/EB Vol[1]	PM PH SB/WB Vol[1]	v/c
CR 200 A / NE Jacksonville Road	SR 326 to NE 49th Street	2	Arterial	E	12,744	634	7,900	404	354	0.64
	NE 49th Street to NW 35th Street	2	Arterial	E	12,744	634	9,500	464	342	0.73
NE 49th Street[2]	CR 200 A to NE 25th Avenue	2	Major Local	E	11,232	576	7,865[3]	231	197	0.40
NE 25th Avenue	SR 326 to NE 49th Street	2	Collector	E	11,232	576	3,500	324	174	0.56

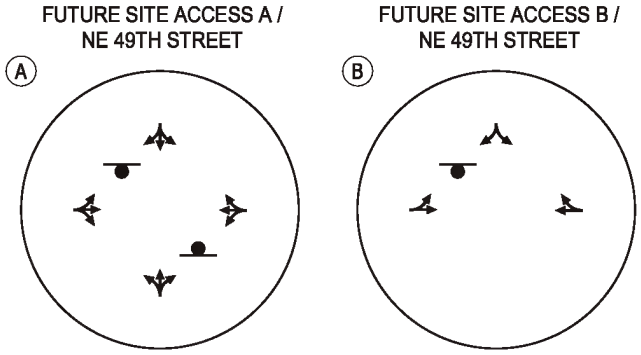
Source: Roadway characteristics, daily/peak hour directional capacities, and 2023 AADT from the Ocala Marion TPO CMP Database.
[1]The PM peak hour peak directional volumes were estimated from the turning movement counts collected on September 24, 2024.
[2]Data with the exception of the 2023 AADT for the NE 49th Street road segment (CR 200A to NE 25th Avenue) is not available for the NE 49th Street roadway segments and the information was estimated to be the same as the available NE 35th Street road segment data (NE 25th Avenue to NE 36th Avenue).
[3]AADT data is not available for this roadway segment and the information was estimated to be the same as the available NE 49th Street road segment data (CR 200A to NE 25th Avenue).

EXISTING INTERSECTION CAPACITY ANALYSIS

The existing intersections were evaluated using the methodology outlined in the Highway Capacity Manual 7th Edition and using Synchro 12 Software. The existing lane configurations are shown in **Figure 3**. Signal timings were provided by Marion County and are shown in **Appendix E**. The results of the study area existing conditions intersection capacity analysis for the AM and PM peak hour are shown in **Table 2**. The Synchro analysis printouts can be found in **Appendix F**.

As shown in **Table 2**, the study area intersections are operating at an overall LOS of C or better under existing conditions during the weekday AM and PM peak hours.





ANTICIPATED LANE CONFIGURATION SHOWN FOR FUTURE INTERSECTIONS

(#) - Study Intersections
(X) - Site Access
- Traffic Signal
- Stop Sign

Existing Lane Configurations & Traffic Control Devices
Marion County, FL

Figure 3

KITTELSON & ASSOCIATES

Table 2: Existing Conditions Intersection Capacity Analysis

Intersection	Control Type	Performance Measure	AM Peak Period					PM Peak Period				
			Overall	EB	WB	NB	SB	Overall	EB	WB	NB	SB
1 – NE Jacksonville Rd at NE 49th St	Signal	Delay (s/veh)	11.0	18.4	17.9	11.4	5.8	11.4	18.3	18.1	11.2	5.9
		LOS	B	B	B	B	A	B	B	B	B	A
		v/c ratio*	--	0.39	0.40	0.56	0.36	--	0.41	0.47	0.51	0.29
2 – NE 25th Ave at NE 49th St	All-Way Stop	Delay (s/veh)	10.5	10.4	9.4	10.4	11.1	12.4	11.5	9.8	14.2	10.7
		LOS	B	B	A	B	B	B	B	A	B	B
		v/c ratio*	--	0.32	0.15	0.29	0.35	--	0.34	0.13	0.55	0.28
3 – NE Jacksonville Rd at NE 3rd St	Signal	Delay (s/veh)	27.0	27.7	29.8	27.1	24.1	27.3	30.1	30.3	26.0	22.4
		LOS	C	C	C	C	C	C	C	C	C	C
		v/c ratio*	--	0.63	0.81	0.77	0.42	--	0.78	0.81	0.73	0.29
4 – NE 25th Ave at NE 35th Ave	Signal	Delay (s/veh)	21.1	21.9	21.5	18.1	21.8	22.4	23.9	20.6	22.6	21.9
		LOS	C	C	C	B	C	C	C	C	C	C
		v/c ratio*	--	0.67	0.73	0.32	0.67	--	0.78	0.60	0.73	0.40

*v/c ratio reported for the highest movement

Section 3
Future Volume Development

Future Volume Development

Build-out of the proposed development is anticipated by the year 2029. Traffic volumes for the future year were developed by growing the existing roadway volumes and adding proposed project volumes. The following sections describe the development of the future traffic volumes. The volume development spreadsheet used to develop no-build and build volumes is provided in **Table 3.**

BACKGROUND GROWTH

The Ocala Marion TPO CMP Database provides preferred growth rates for the study roadways as documented in the traffic methodology in **Appendix B.** Road segment data for the NE 49th Street segment is provided in the 2023 Ocala Marion TPO 2023 Traffic Counts Map and 2023 AADT received from the County, as shown in **Appendix D.**

An annual composite growth rate of 1.11% was calculated for the study area. This is based on the weighted average growth rates for the study area roadways with road segment data available. The calculation of the composite rate is shown in **Table 3**. Growth used for future background conditions is proposed to use the background growth of 1.11% per year plus vested trips. Figures illustrating the growth rate trips are provided in **Appendix D.**

Table 3: 2029 Background Traffic

Segment	Limits	2023 AADT	Annual Growth Rate	Weighted Growth
CR200A/ NE Jacksonville Road	SR 326 to NE 49th Street	7,900	1.00%	474
	NE 49th Street to NW 35th Street	9,500	1.56%	889
NE 49th Street	CR200A to NE 25th Avenue	7,865	1.60%	374
NE 25th Street	SR 326 to NE 49th Street	3,500	1.00%	210
	NE 49th Street to NW 35th Street	5,100	1.00%	306
Composite Growth Rate				**1.11%**

VESTED DEVELOPMENT

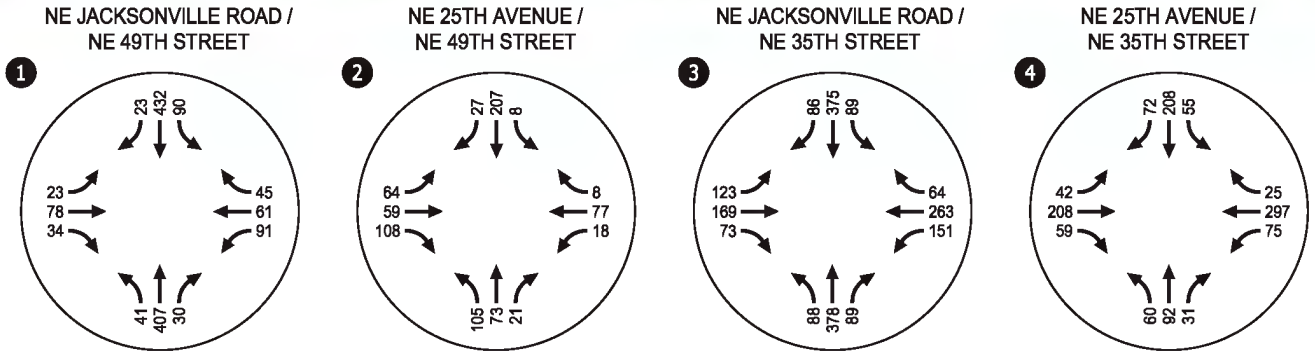
Future vested trips will be accounted for in the development of build traffic volumes. Traffic impact analyses (TIAs) from nearby developments will be used for this purpose, including:

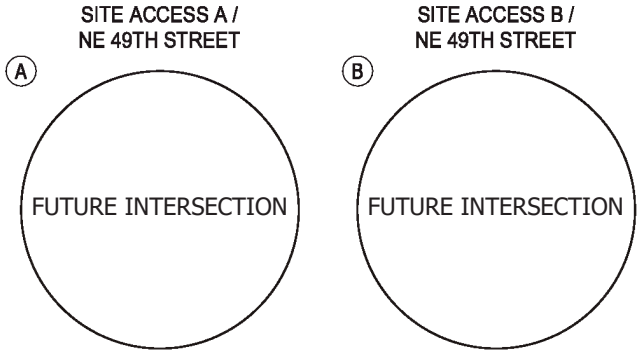
- Woodridge Development
    - A development with 254 residential units located on the east side of CR 200A/NE Jacksonville Road, between NE 49th Street and NW 63rd Street. Units will be on the north side of CR 200A/NE Jacksonville Road.

The traffic impact analyses associated with these developments are provided in **Appendix H**. Figures illustrating the vested trip assignment is provided in **Appendix H**.

2029 NO-BUILD VOLUMES

The selected 1.30 percent annual growth rate was applied to the existing 2024 segment volumes and 2024 turning movement volumes (shown in **Figure 2A** and **Figure 2B**) and vested trips were accounted for to develop the 2029 no-build volumes, as shown in **Fiugre 4A** and **Figure 4B**.





Note: Year 2029 No-Build Traffic Volumes reflect Vested Trips + Grown Existing Traffic Volumes

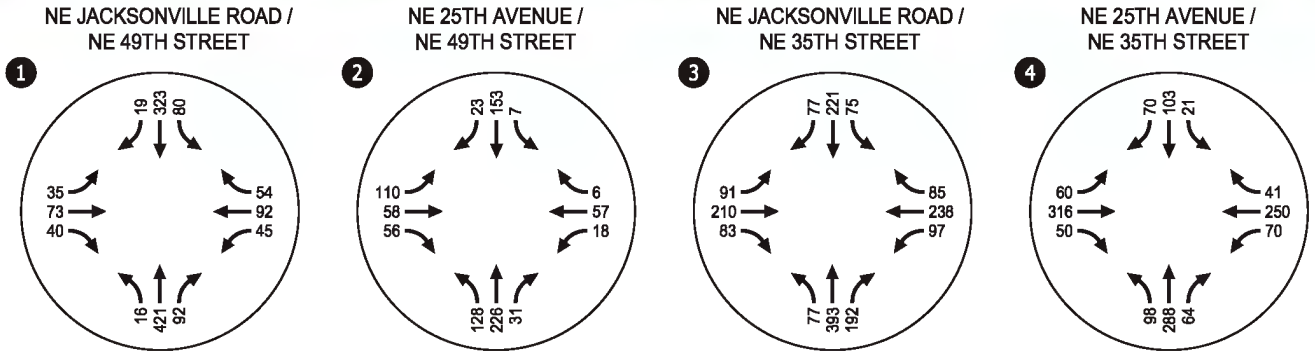
(#) - Study Intersections

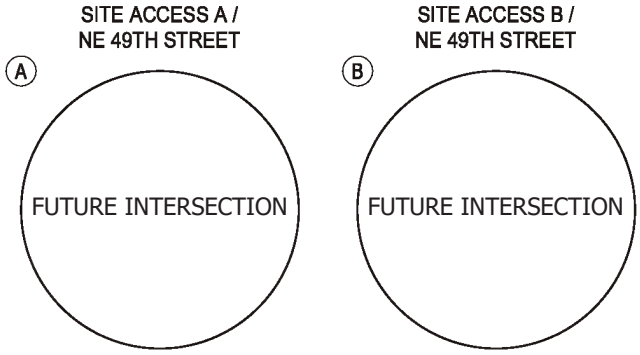
(X) - Site Access

Year 2029 No-Build Traffic Volumes
Weekday AM Peak Hour
Marion County, FL

Figure 4A

KITTELSON & ASSOCIATES





Note: Year 2029 No-Build Traffic Volumes reflect Vested Trips + Grown Existing Traffic Volumes

(#) - Study Intersections

(X) - Site Access

Year 2029 No-Build Traffic Volumes
Weekday PM Peak Hour
Marion County, FL

Figure 4B

KITTELSON & ASSOCIATES

TRIP GENERATION

Table 4 summarizes the Daily, AM, and PM peak hour trip generation for the proposed development based on equations contained in the Institute of Transportation Engineers (ITE) Trip Generation Manual, 11th Edition. The proposed development will consist of 170 dwelling units of Single Family Detached Housing (ITE code 210). As shown in **Table 4**, the proposed development is expected to generate 1,644 new daily trips, 121 new AM peak hour trips, and 164 new PM peak hour trips for the buildout condition. The ITE Trip Generation summary sheet can be found in **Appendix I**.

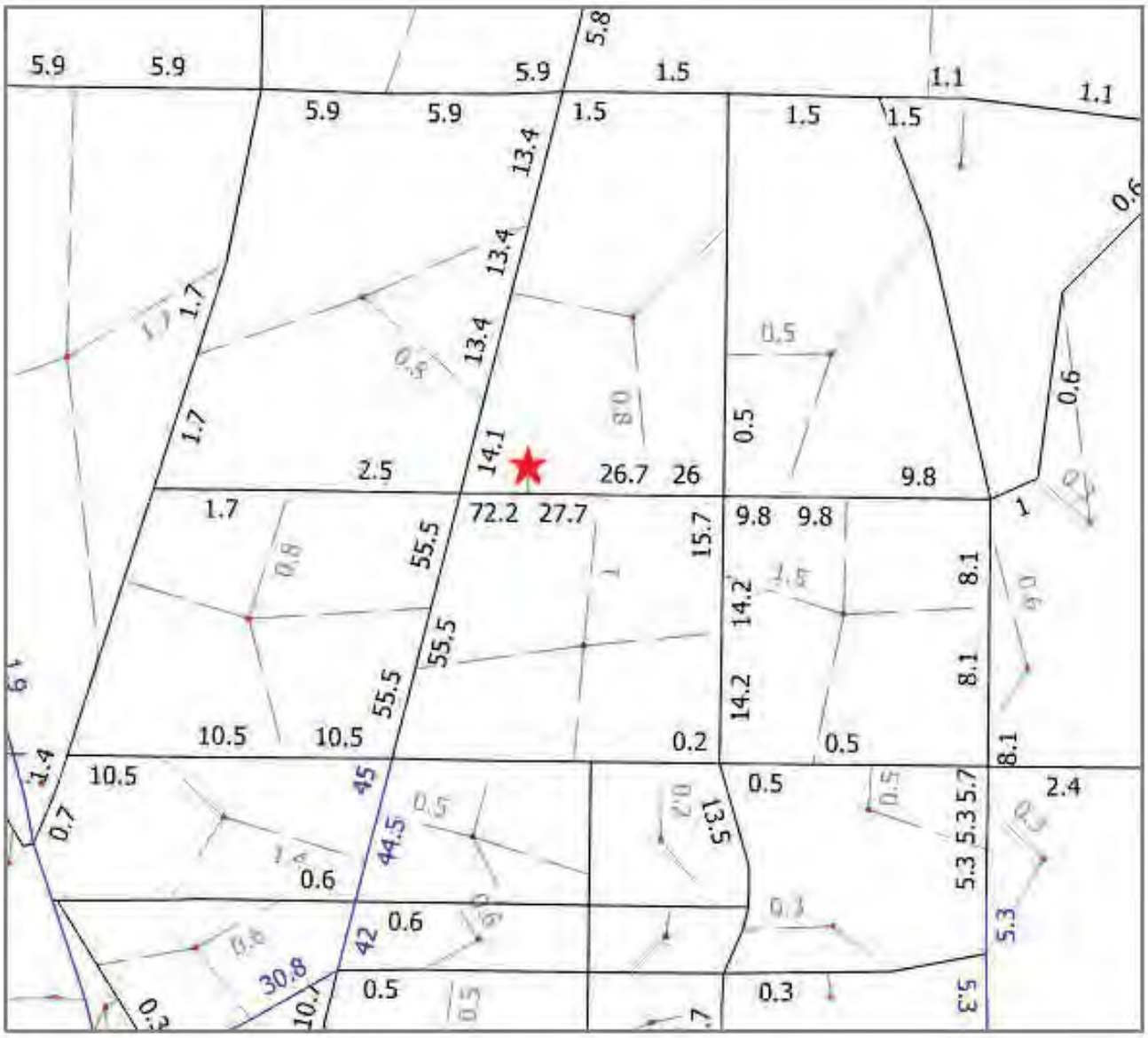
TRIP DISTRIBUTION AND ASSIGNMENT

The distribution of site generated traffic is a function of population in surrounding areas, existing travel patterns, ease of access to the site, and traffic conditions on area roadways. The primary project traffic to and from the site will be distributed to the adjacent roadways and intersections based on the existing plus committed Central Florida Regional Planning Model (CFRPMv7) results, utilizing the existing and committed network. The model output is provided in **Figure 5** and **Appendix J**.

Table 4: Project Trip Generation

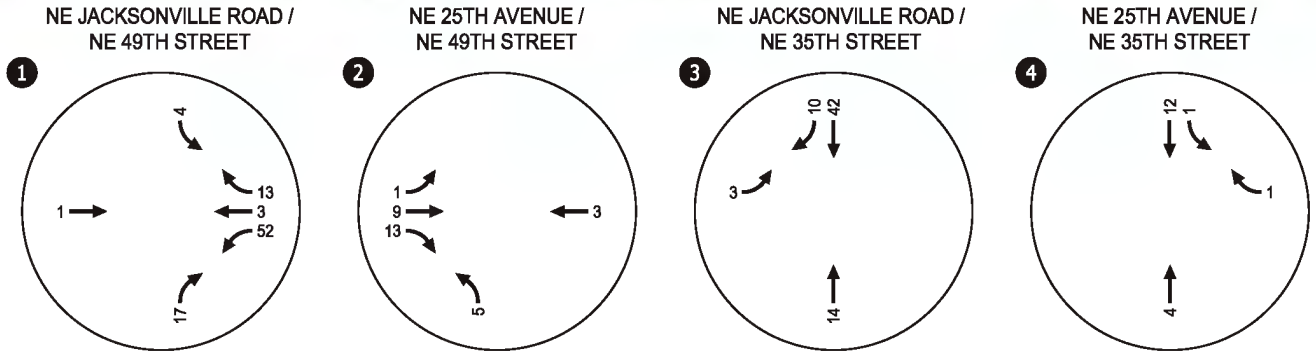
Land Use	ITE Code	Intensity		Daily Trips	AM Peak Period						PM Peak Period					
					In		Out		Total		In		Out		Total	
					%	Trips	%	Trips	Rate	Trips	%	Trips	%	Trips	Rate	Trips
Single Family Detached Housing	210	170	DUs	1,644	25%	30	75%	91	0.67	121	63%	103	37%	61	0.92	164
Total				**1,644**		**30**		**91**		**121**		**103**		**61**		**164**

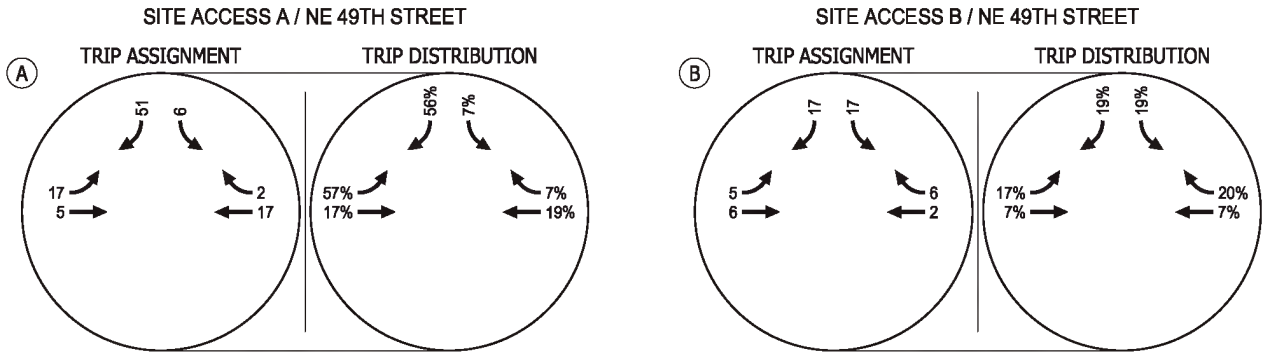
Figure 5: Project Distribution



FUTURE BUILD VOLUMES

The project trips were distributed according to the model results shown in **Figure 5** and added to the 2029 no-build volumes shown in **Figure 4A** and **Figure 4B** to develop the 2029 build volumes. The project trips for the larger study area are shown in **Figure 6A** and **Figure 6B,** which includes the project trip distribution and total project trips at the site driveway and the forecasted lane configuration for the site driveway. The 2029 build volumes are shown in **Figure 7A** and **Figure 7B**.





#- Study Intersections - Stop Sign

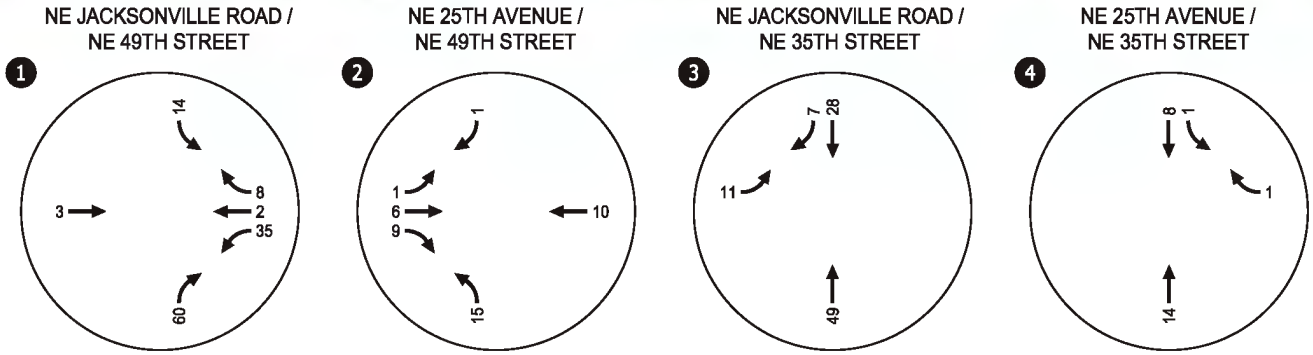
(X)- Site Access

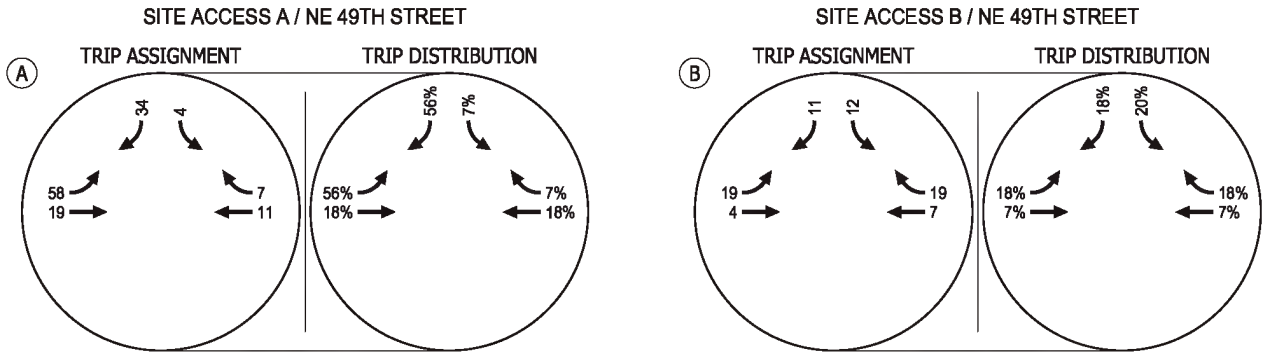
- Trip Distribution Percentage

Project Trips in Study Area
Weekday AM Peak Hour
Marion County, FL

Figure
6A

KITTELSON & ASSOCIATES





#- Study Intersections

- Stop Sign

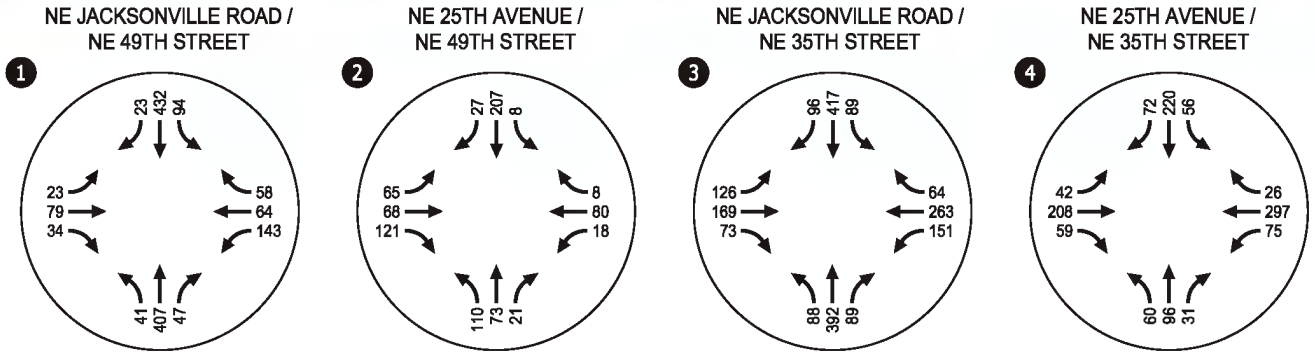
(X)- Site Access

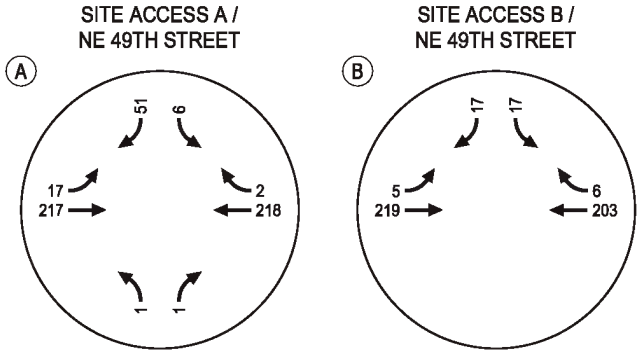
- Trip Distribution Percentage

Project Trips in Study Area
Weekday PM Peak Hour
Marion County, FL

Figure
6B

KITTELSON & ASSOCIATES



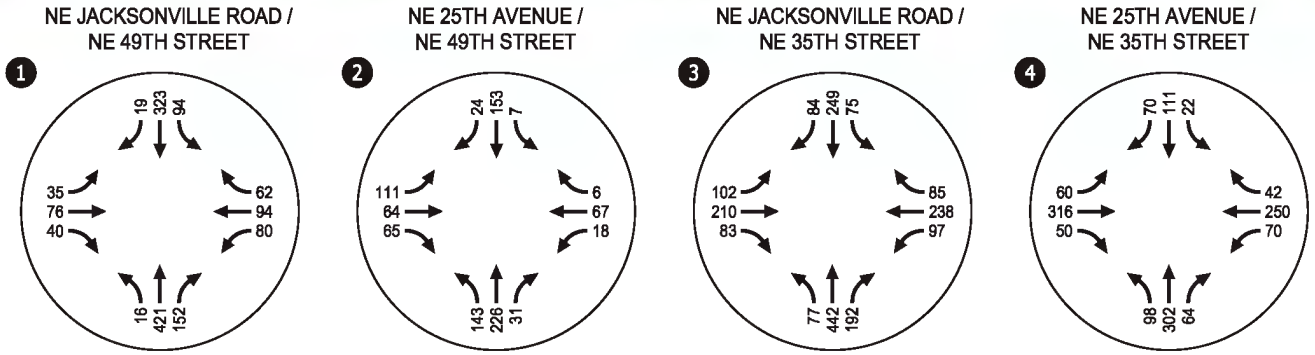


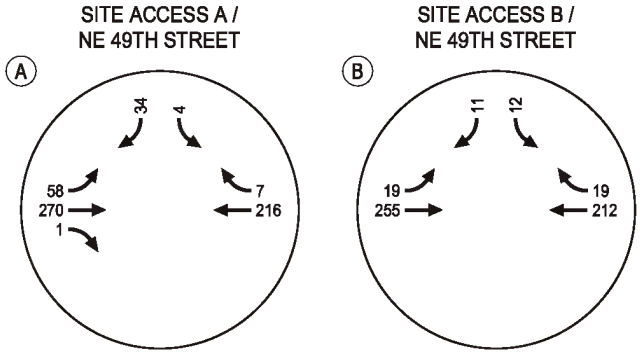
(#) - Study Intersections

(X) - Site Access

Year 2029 Build Traffic Volumes
Weekday AM Peak Hour
Marion County, FL

Figure
7A





- Study Intersections

X - Site Access

Year 2029 Build Traffic Volumes
Weekday PM Peak Hour
Marion County, FL

Figure
7B

KITTELSON & ASSOCIATES

Section 4
Future Conditions

Future Conditions

To determine the impacts of the site-generated traffic volumes on the surrounding roadways and study intersections, future traffic conditions were analyzed.

2029 NO-BUILD ROADWAY CAPACITY ANALYSIS

The PM peak hour 2029 future background capacity analysis for the study area roadways is shown in **Table 5**. As seen in **Table 5**, the analysis concludes none of the study segments operate overcapacity in the no-build condition.

Table 5: 2029 Future No-Build Roadway Capacity Analysis

Roadway	Limits	No. of Lanes	Fun Class	LOS Std.	Daily Capacity	Pk Hr Pk Dir Capacity	Historical Growth	Background PM PH NB/EB Vol	Background PM PH SB/WB Vol	Vested PM PH NB/EB Vol	Vested PM PH SB/WB Vol	Total No-Build PM PH NB/EB Vol	Total No-Build PM PH SB/WB Vol	No-Build v/c
CR200A/ NE Jacksonville Road	SR 326 to NE 49th Street	2	Arterial	E	12,744	634	1.11%	427	374	83	48	510	422	0.80
	NE 49th Street to NW 35th Street	2	Arterial	E	12,744	634	1.11%	489	361	80	47	569	408	0.90
NE 49th Street	CR 200 A to NE 25th Avenue	2	Collector	E	11,232	576	1.11%	244	208	1	2	245	210	0.43
NE 25th Street	SR 326 to NE 49th Street	2	Collector	E	11,232	576	1.11%	342	183	0	0	342	183	0.59

2029 NO-BUILD INTERSECTION CAPACITY ANALYSIS

The no-build intersection lane configurations are the same as the existing condition and are shown in **Figure 3**. The results of the intersection capacity analysis for the AM and PM peak hours are shown in **Table 6**. The analysis reflects the v/c ratios, delays per turning movement (in seconds), and the operating LOS. **Table 6** shows that under future no-build conditions (which does not include project traffic), all of the study intersections are projected to operate with an overall LOS of C or better during the weekday AM and PM peak hours.

The future no-build Synchro intersection report printouts are provided in **Appendix K**.

Table 6: 2029 No-Build Intersection Capacity Analysis

Intersection	Control Type	Performance Measure	AM Peak Period					PM Peak Period				
			Overall	EB	WB	NB	SB	Overall	EB	WB	NB	SB
1 – NE Jacksonville Rd at NE 49th St	Signal	Delay (s/veh)	11.4	18.5	18.0	12.3	6.5	12.5	18.5	18.2	13.4	6.8
		LOS	B	B	B	B	A	B	B	B	B	A
		v/c ratio*	--	0.42	0.44	0.63	0.47	--	0.45	0.51	0.68	0.37
2 – NE 25th Ave at NE 49th St	All-Way Stop	Delay (s/veh)	10.8	10.8	9.7	10.7	11.5	13.2	12.0	10.0	15.5	11.1
		LOS	B	B	A	B	B	B	B	A	C	B
		v/c ratio*	--	0.34	0.17	0.31	0.37	--	0.37	0.14	0.59	0.30
3 – NE Jacksonville Rd at NE 3rd St	Signal	Delay (s/veh)	28.8	28.0	31.1	29.8	26.4	30.7	32.2	35.7	30.2	24.8
		LOS	C	C	C	C	C	C	C	D	C	C
		v/c ratio*	--	0.63	0.84	0.84	0.53	--	0.78	0.86	0.85	0.34
4 – NE 25th Ave at NE 35th Ave	Signal	Delay (s/veh)	22.8	24.0	23.5	18.6	23.1	24.1	26.7	21.9	24.0	23.2
		LOS	C	C	C	B	C	C	C	C	C	C
		v/c ratio*	--	0.72	0.77	0.31	0.71	--	0.81	0.63	0.76	0.47

*v/c ratio reported for the highest movement

2029 BUILD ROADWAY CAPACITY ANALYSIS

The 2029 build PM peak hour roadway capacity analysis for the study area roadways can be found in **Table 7**. As seen in **Table 7**, the analysis concludes none of the study segments operate overcapacity in the no-build condition. The CR200A/NE Jacksonville Road segment between NE 49th Street to NW 35th Street operates at a volume-to-capacity ratio of 0.99. The volume-to-capacity and capacity shown in **Table 7** is based on the 2020 FDOT generalize LOS tables. A more detailed capacity analysis of the CR200A/NE Jacksonville Road segment between NE 49th Street to NW 35th Street was conducted using the "Simplified HCM Segment Analysis Method" per methodologies described in NCHRP Report 825, Chapter K, Section 6 for. Using the "Simplified HCM Segment Analysis Method", the peak hour directional capacity would be 774 for one lane resulting in a volume-to-capacity ratio of 0.81. The "Simplified HCM Segment Analysis Method" spreadsheet output worksheet is provided in **Appendix L.**

Table 7: 2029 Future Build Roadway Capacity Analysis

Roadway	Limits	No. of Lanes	Fun Class	LOS Std.	Daily Capacity	Pk Hr Pk Dir Capacity	Total No-Build PM PH NB/EB Vol	Total No-Build PM PH SB/WB Vol	Model Distribution	PM PH NB/EB Project Trips	PM PH SB/WB Project Trips	Total Build PM PH NB/EB Vol	Total Build PM PH SB/WB Vol	Build v/c
CR200A/ NE Jacksonville Road	SR 326 to NE 49th Street	2	Arterial	E	12,744	634	510	422	14%	8	14	518	436	0.82
	NE 49th Street to NW 35th Street	2	Arterial	E	12,744	774*	569	408	58%	60	35	629	443	0.81
NE 49th Street	CR 200 A to NE 25th Avenue	2	Collector	E	11,232	576	245	210	100%	76	45	321	255	0.56
NE 25th Street	SR 326 to NE 49th Street	2	Collector	E	11,232	576	342	183	1%	1	1	343	184	0.60

* Revised capacity based on methodologies described in NCHRP Report 825

2029 BUILD INTERSECTION CAPACITY ANALYSIS

The build intersection analysis used the no-build lane configurations shown in **Figure 3** for the study intersections. The results of the build intersection capacity analysis are shown in **Table 7**.

The project site access was analyzed in the buildout condition:

- Site Access A at NE 49th St
    - One stop controlled full access intersection with stop-controlled movements in the northbound and southbound direction.
- Site Access B at NE 49th St
    - One stop controlled full access three-legged intersection with stop-controlled movements in the southbound direction.
- Single Driveway Scenario
    - In addition to the two site accesses noted above for the Build condition, a single driveway scenario was conducted in the event that Site Access B is not approved. This scenario analyzed a situation in which Site Access A is full access and Site Access B is for emergency-only access.

As shown in **Table 8**, the study intersections operate at LOS C or better and without overcapacity movements. The future build conditions Synchro intersection report printouts are provided in **Appendix M.**

Table 8: 2029 Build Intersection Capacity Analysis

Intersection	Control Type	Performance Measure	AM Peak Period					PM Peak Period				
			Overall	EB	WB	NB	SB	Overall	EB	WB	NB	SB
1 – NE Jacksonville Rd at NE 49th St	Signalized	Delay (s/veh)	12.0	18.3	18.4	12.6	6.8	12.9	19.0	18.7	13.4	7.0
		LOS	B	B	B	B	A	B	B	B	B	A
		v/c ratio*	--	0.40	0.47	0.64	0.47	--	0.46	0.53	0.68	0.37
2 – NE 25th Ave at NE 49th St	All-Way Stop Control	Delay (s/veh)	11.2	11.3	9.8	11.0	11.8	14.0	12.6	10.4	16.9	11.4
		LOS	B	B	A	B	B	B	B	B	C	B
		v/c ratio*	--	0.38	0.17	0.32	0.38	--	0.41	0.16	0.63	0.31
3 – NE Jacksonville Rd at NE 3rd St	Signalized	Delay (s/veh)	29.2	28.4	31.7	30.0	26.9	32.7	34.6	39.4	32.1	24.9
		LOS	C	C	C	C	C	C	C	D	C	C
		v/c ratio*	--	0.63	0.84	0.85	0.57	--	0.78	0.87	0.43	0.35
4 – NE 25th Ave at NE 35th Ave	Signalized	Delay (s/veh)	23.0	24.4	23.9	18.6	23.2	24.5	27.4	22.4	24.1	23.1
		LOS	C	C	C	B	C	C	C	C	C	C
		v/c ratio*	--	0.72	0.77	0.31	0.72	--	0.81	0.63	0.76	0.47

*v/c ratio reported for the highest movement

Table 8: 2029 Build Intersection Capacity Analysis

Intersection	Control Type	Performance Measure	AM Peak Period					PM Peak Period				
			Overall	EB	WB	NB	SB	Overall	EB	WB	NB	SB
A – Site Access at NE 49th St	Two-Way Stop Control	Delay (s/veh)	1.4	0.6	0.0	11.5	10.3	1.4	1.4	0.0	0.0	10.4
		LOS	--	--	--	B	B	--	--	--	A	B
		v/c ratio*	--	0.01	--	0.01	0.09	--	0.05	--	--	0.06
B – Site Access at NE 49th St	Two-Way Stop Control	Delay (s/veh)	0.9	0.2	0.00	--	10.9	0.8	0.5	0.0	--	11.4
		LOS	--	--	--	--	B	--	--	--	--	B
		v/c ratio*	--	0.01	--	--	0.06	--	0.02	--	--	0.04
Single Site Access at NE 49th St	Two-Way Stop Control	Delay (s/veh)	2.3	0.7	0.0	11.5	11.2	2.2	1.9	0.0	0.0	11.9
		LOS	--	--	--	B	B	--	--	--	A	B
		v/c ratio*	--	0.02	--	0.01	0.15	--	0.07	--	--	0.12

*v/c ratio reported for the highest movement

DRIVEWAY TURN LANE EVALUATION

A site driveway evaluation was conducted to determine if a right-turn or left-turn bay was required on NE 49th Street for the site accesses, based on the National Cooperative Highway Research Program (NCHRP) Report 457: Evaluating Intersection Improvements, An Engineering Study Guide. This evaluation was conducted for the typical build scenario (two driveways) and for the single driveway scenario described earlier.

The evaluation concluded that under the typical build scenario (two driveways), the site accesses do not necessitate a right-turn or left-turn bay on NE 49th Street. However, under the single access scenario, Site Access A is within five additional eastbound vehicles from meeting left-turn bay warrants under the weekday PM peak hour. Due to how close the volume is to the threshold, it is recommended that a left turn lane be constructed. The turn lane warrant worksheets are provided in **Appendix N**.

MULTIMODAL ASSESSMENT

A multimodal assessment was conducted to determine existing and proposed alternate modes of transportation within the immediate project study area. The following is a summary of transit, pedestrian, and bicycle facilities:

Transit

Transit services within Marion County are provided by Marion Transit. Marion Transit only provides paratransit services and does not operate fixed route services.

Pedestrian Facilities

There are no existing sidewalks on either side of NE 49th Street adjacent to the site. The development is expected to provide sidewalks along the access roads on NE 49th Street and internal to the residential development. Marion County will be working with the developer on the provisions of sidewalks for the site and this will be included in the Developer's Agreement.

Bicycle Facilities

There are no existing bicycle facilities on either side of NE 49th Street adjacent to the street. No bicycle lanes or shared use path are planned.

Section 5
Conclusions

Conclusions

This traffic analysis has been prepared to evaluate the traffic impacts associated with the Woodridge Place South residential development to be located north of NE 49th Street in support of obtaining concurrency through Marion County.

The following is a summary of the study findings:

Trip Generation

- The proposed development is projected to generate 1,644 daily trips of which 121 trips occur during the AM peak hour and 164 trips occur during the PM peak hour.

Proposed Access

- Access to the development will be provided via two full access driveways to NE 49th Street.
- In the event that the eastern access (Site Access B) is not approved, a single driveway scenario was conducted in which Site Access A is full access and Site Access B is for emergency-only access.
    - Under the single driveway scenario, it is recommended an eastbound left-turn lane be constructed at Site Access A.

Existing Conditions

- All study roadway segments operate acceptably and are shown to have sufficient capacity under existing conditions.
- The study intersections operate at acceptable levels of service and without overcapacity movements.

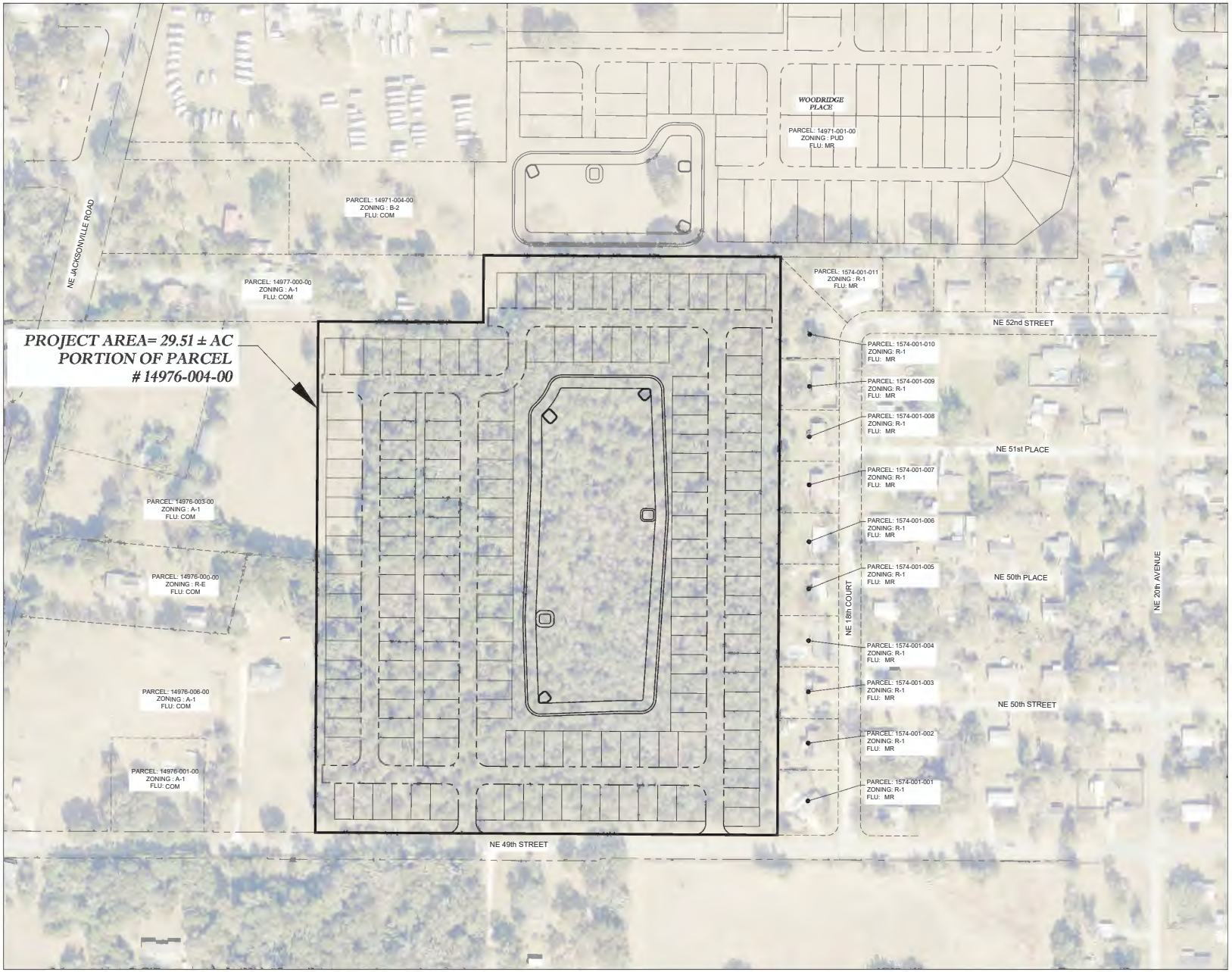
No-Build Conditions

- All study roadway segments operate acceptably and are shown to have sufficient capacity under no-build conditions.
- The analysis concludes that in the no-build condition, the study intersections operate at acceptable levels of service and without overcapacity movements.

Buildout Conditions

- All study roadway segments operate acceptably and are shown to have sufficient capacity under buildout conditions.
- The analysis concludes that in the build condition, the study intersections operate at acceptable levels of service and without overcapacity movements.

Appendix A Site Plan



Marion County Approval Stamp

100' 50' 0 100' 200'
SCALE IN FEET
1" = 100'

Tillman & Associates
ENGINEERING, LLC.
CIVIL ENGINEERING - PLANNING - LANDSCAPE ARCHITECTURE - ENVIRONMENTAL
1720 SE 16th Ave, Bldg 100, Ocala, FL 34471
Office: (352) 387-4540 Fax: (352) 387-4545
CERTIFICATE OF AUTHORIZATION #2056

REVISIONS

DATE:

IMPROVEMENT PLANS
WOODRIDGE SOUTH
MARION COUNTY, FLORIDA

AERIAL PHOTOGRAPH

DATE 10/16/2024
DRAWN BY AS
CHKD. BY JMM
JOB NO. 23-8423

SHT. 03.01

NOT VALID UNLESS SIGNED AND SEALED BY A PROFESSIONAL ENGINEER

Appendix B Methodology Memo

KITTELSON & ASSOCIATES
225 East Robinson Street, Suite 355
Orlando, FL 32801
P 407.540.0555

MEMORANDUM

September 26, 2024 Project# 30767

To: Development Review
Marion County Office of the County Engineer
601 SE 25th Avenue
Ocala, FL 34471

From: Michael Ruiz-Leon, Karen Phan & Kok Wan Mah, P.E.

Project: Woodridge Place South Development

Subject: Proposed Methodology for Woodridge Place South Development TIA

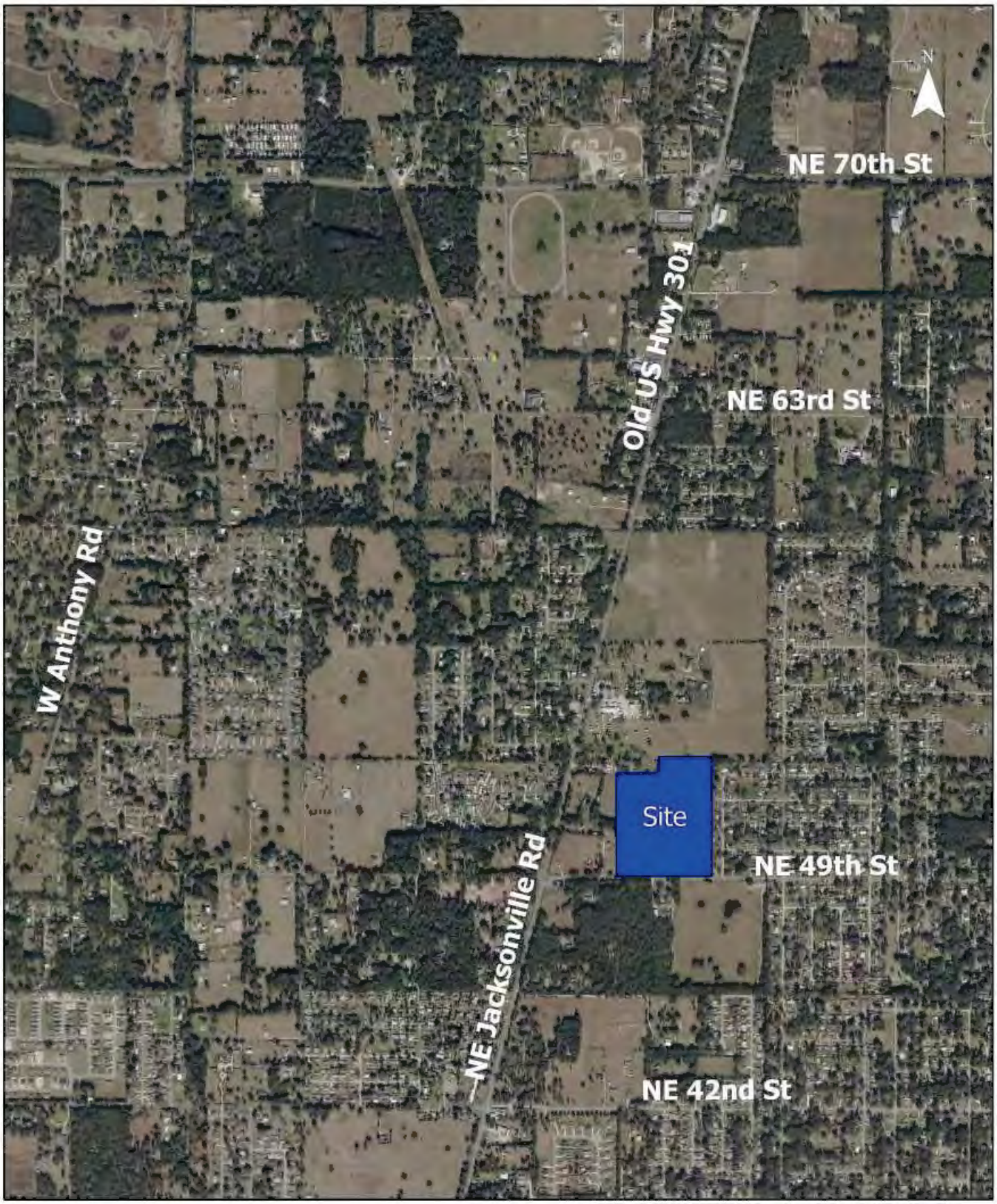
INTRODUCTION AND PROJECT DESCRIPTION

This technical memorandum provides a recommended Transportation Impact Study (TIS) methodology for the proposed Woodridge Place South residential development in Marion County near Ocala, Florida. The 29.51-acre site consists of parcel 14976-004-00 and is located on the north side of NE 49th Street, east of Jacksonville Road (Old US 301) in Marion County, Florida. The project location with site boundary in blue is shown in **Figure 1.**

The development is planned to include 170 single family homes. Based upon the generated project trips, a Transportation Impact Study (TIS) will be conducted per the *MARION COUNTY TRAFFIC IMPACT ANALYSIS GUIDELINES (September 2022)*.

The development will be constructed in a single phase with an anticipated buildout year of 2029. Access to the development will be provided via two full access driveways to NE 49th Street. The site will be located to the north of NE 49th Street. The access points and the development location are depicted in the site plan provided in **Appendix A**.

Figure 1: Project Location



TRIP GENERATION

The trip generation analysis was conducted using information published by the Institute of Transportation Engineers (ITE) Trip Generation (11th Edition) and Trip Generation Handbook (3rd Edition). **Table 1** summarizes the resulting trip generation analysis. The ITE trip generation information sheets are included in **Appendix B.**

The proposed development is projected to generate 1,644 daily trips of which 121 trips occur during the AM peak hour and 164 trips occur during the PM peak hour. No reduction was made for internal capture or pass-by.

Table 1: Trip Generation

Land Use	ITE Code	Size		Daily Trip Ends	AM Peak Hour			PM Peak Hour		
					In Trips	Out Trips	Total Trips	In Trips	Out Trips	Total Trips
Single Family Detached Housing	210	170	DUs	1,644	30	91	121	103	61	164
Total Trips				**1,644**	**30**	**91**	**121**	**103**	**61**	**164**

TRIP DISTRIBUTION AND ASSIGNMENT

The project trip distribution and assignment were estimated based on a select zone analysis using the Central Florida Regional Planning Model Version 7.0 project driveway distribution and local traffic patterns. The daily select zone model plot for the future year is included in **Figure 2** with larger scales included in **Appendix C**. The trip distribution on the study segments is also shown in **Figure 3**.

Figure 2: Trip Distribution and Assignment

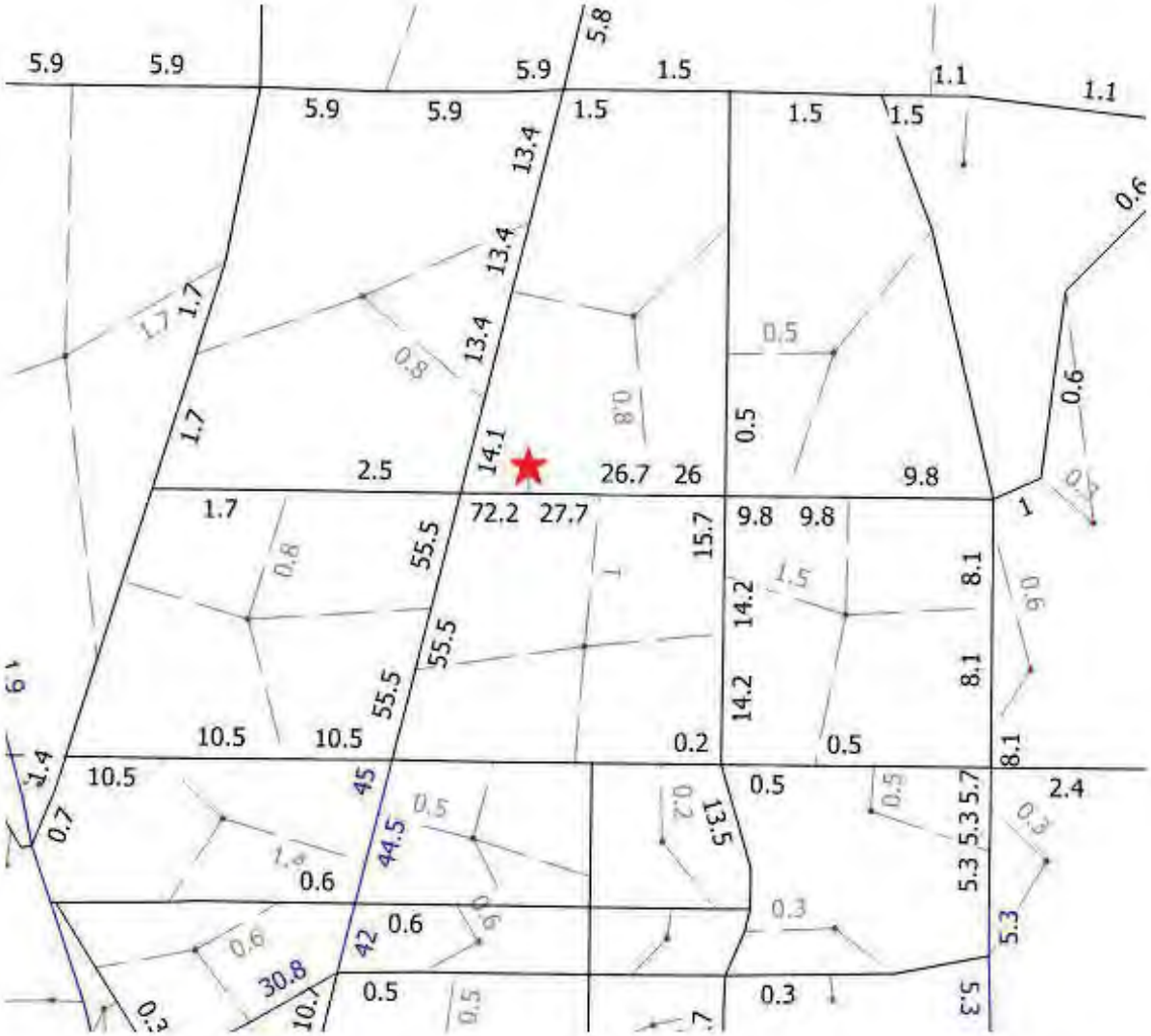


Figure 3: Study Area Trip Distribution

STUDY AREA DETERMINATION

Per *MARION COUNTY TRAFFIC IMPACT ANALYSIS GUIDELINES (September 2022)*, a study area for a Traffic Study level of analysis includes any public roadway where the net new project's traffic consumes at least three percent of the maximum service volume based on the adopted level of service plus one segment beyond. In addition, all roadways having a LOS below the adopted LOS standard shall be included in the study area unless they meet state statutory thresholds for 'de minimis' developments.

Table 2 presents the project's significance review, which indicates that three segments are projected to have project trips that consume at least three percent of its maximum service volume or are adjacent to the site. Roadway characteristics, daily/peak hour directional capacities, and 2023 Annual Average Daily Traffic (AADT) were obtained from the Ocala Marion Transportation Planning Organization (TPO) Congestion Management Process (CMP) Database. The Ocala Marion TPO CMP Database does not provide data on NE 49th Street roadway segments within the site vicinity. AADT data from NE 49th Street east of CR 200A was received from Marion County. Roadway data used is shown in **Appendix D.**

Project trips were calculated by using trips generated by the proposed development and trip distribution presented in **Appendix C**.

Based on the expected trip generation, distribution, assignment, and significance review, it is recommended that the following roadway segments and intersections to be evaluated in the TIA.

Roadway segments:

- CR200 A / NE Jacksonville Rd
    - SR 326 to NE 49th Street
    - NE 49th Street to NW 35th Street
- NE 49th Street
    - CR 200A to NE 25th Avenue
- NE 25th Avenue
    - SR 326 to NE 49th Street
    - NE 49th Street to NW 35th Street

Intersections:

- CR200 A / NE Jacksonville Road at NE 49th Street
- NE 25th Avenue at NE 49th Street
- CR200 A / NE Jacksonville Road at NE 35th Street
- NE 25th Avenue at NE 35th Street
- Site Access/ NE 49th Street (two locations)

Counts from the intersection turning movements will be used to develop existing baseline volumes.

Table 2: Project Trip Significance

Segment	Limits	# Lanes	Classification	LOS Std.	Daily Capacity	Pk Hr Pk Dir Capacity	2023 AADT	% of Project Trips	# of PM Project Trips	Project Sig	v/c	Significant?	Adjacent to Site?	In Study Area?
CR 200 A / NE Jacksonville Road	SR 326 to NE 49th Street	2	Arterial	E	12,744	634	7,900	14.2%	15	2.4%	0.62	No	**Yes**	**Yes**
	NE 49th Street to NW 35th Street	2	Arterial	E	12,744	634	9,500	55.5%	57	9.0%	0.75	**Yes**	**Yes**	**Yes**
	NW 39th Street to NE 28th Street	4	Arterial	E	35,820	1,800	10,700	47.0%	48	2.7%	0.30	No	No	No
NE 49th Street[1]	W Anthony Road to CR200A	2	Major Local	E	11,232	576	7,865	2.5%	3	0.5%	0.70	No	No	No
	CR 200 A to NE 25th Avenue	2	Major Local	E	11,232	576	7,865[2]	72.2%	74	12.8%	0.70	**Yes**	**Yes**	**Yes**
	NE 25th Avenue to NE 36th Avenue	2	Major Local	E	11,232	576	7,865[2]	9.8%	10	1.7%	0.70	No	No	No
NE 25th Avenue	SR 326 to NE 49th Street	2	Collector	E	11,232	576	3,500	0.5%	1	0.2%	0.31	No	**Yes**	**Yes**
	NE 49th Street to NW 35th Street	2	Collector	E	11,232	576	5,100	15.7%	16	2.8%	0.45	No	No	No
	NW 35th Street to NE 24th Street	2	Collector	E	11,232	576	8,000	13.5%	14	2.4%	0.71	No	No	No
NE 35th Street	CR 200 A to NE 25th Avenue	2	Collector	E	11,232	576	10,100	0.6%	1	0.2%	0.90	No	No	No
	NE 25th Avenue to NE 36th Avenue	2	Collector	E	11,232	576	8,000	0.0%	0	0.0%	0.71	No	No	No

Source: Roadway characteristics, daily/peak hour directional capacities, and 2023 AADT from the Ocala Marion TPO CMP Database.

[1]Data with the exception of the 2023 AADT for the NE 49th Street road segment (CR 200A to NE 25th Avenue) is not available for the NE 49th Street roadway segments and the information was estimated to be the same as the available NE 35th Street road segment data (NE 25th Avenue to NE 36th Avenue).

[2]AADT data is not available for this roadway segment and the information was estimated to be the same as the available NE 49th Street road segment data (CR 200A to NE 25th Avenue).

FUTURE VOLUMES BUILDOUT (2029)

Traffic counts will be collected at the study intersections, including heavy vehicle percentages. The seasonal factor will be applied to the existing peak hour traffic data. If the seasonal factor is less than 1.0, then the counts will not be seasonally adjusted.

The Ocala Marion TPO CMP Database provides preferred growth rates for the study roadways, as shown in **Appendix D.** Road segment data for the NE 49th Street segment is provided in the 2023 Ocala Marion TPO 2023 Traffic Counts Map and 2023 AADT received from the County, as shown in **Appendix D.**

An annual composite growth rate of 1.30% was calculated for the study area. This is based on the weighted average growth rates for the study area roadways with road segment data available. The calculation of the composite rate is shown in **Table 3**. Growth used for future background conditions is proposed to use the background growth of 1.30% per year plus vested trips.

Table 3: 2029 Background Traffic

Segment	Limits	2023 AADT	Annual Growth Rate	Weighted Growth
CR200A/ NE Jacksonville Road	SR 326 to NE 49th Street	7,900	1.00%	474
	NE 49th Street to NW 35th Street	9,500	1.56%	889
NE 49th Street	CR200A to NE 25th Avenue	3,900	1.60%	755
NE 25th Avenue	SR 326 to NE 49th Street	3,500	1.00%	210
	NE 49th Street to NW 35th Street	5,100	1.00%	306
Composite Growth Rate				**1.30%**

In addition to background growth, future vested trips will be accounted for in the development of build traffic volumes. Traffic impact analyses from nearby developments will be used for this purpose, including:

- Woodridge Development
    - A development with 254 residential units located on the east side of CR 200A/NE Jacksonville Road, between NE 49th Street and NW 63rd Street. Units will be on the north side of CR 200A/NE Jacksonville Road.

These developments are documented in more detail in **Appendix E.**

FUTURE CONDITIONS OPERATIONAL ANALYSIS

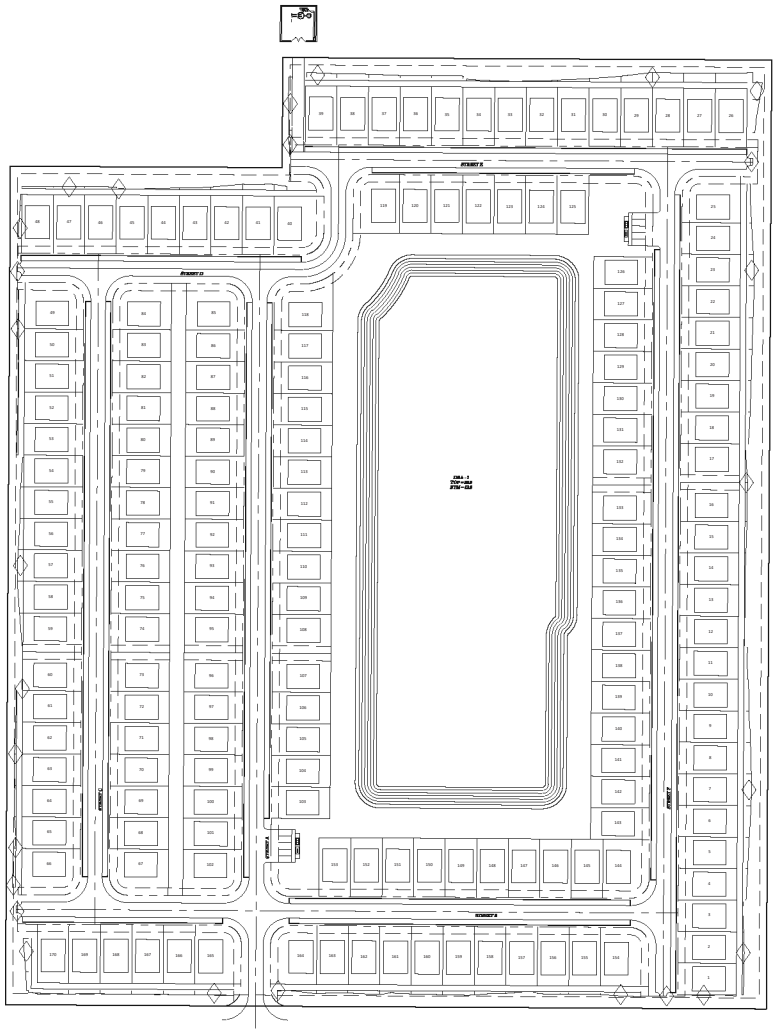
The Traffic Impact Study will provide an analysis of weekday PM peak hour traffic operations at study intersections and driveways within the study area for Future Background and Buildout conditions. AM analysis will be included at the site access driveways and the intersection of CR 200A and NE 49th Street. HCM 7th Edition methodology included in Synchro 12 software will be used for intersection operational analyses.

The intersection operational analyses will include an assessment of overall intersection delay and level of service (LOS), as well as queues, delays, and LOS by movement, for the study intersections.

Roadway segments will be analyzed for Future Background and Future Buildout conditions using roadway capacities provided from the latest adopted Ocala Marion CMP Database. For roadways or intersections found to be operating deficiently due to the addition of project trips, recommendations will be provided to address the identified deficiencies.

The study will also analyze the need for left and right turn lanes at the project driveway using guidance from Chapter 6 of the Florida Department of Transportation's (FDOT) Multimodal Access Management Guidebook (2023).

Appendix A Site Plan



SITE DATA

PARCELS:
14976-004-00

PROJECT AREA:
14976-004-00 = 29.5 ± AC.

DENSITY:
RESIDENTIAL ALLOWED -
14976-004-00 (29.5 X 4) = (xx.xx)
TOTAL ALLOWABLE = (xx.xx)
TOTAL PROPOSED = 170 UNITS

LAND USE & ZONING:
EXISTING LAND USE: P (PUBLIC)
EXISTING ZONING: A-1
PROPOSED ZONING: PUD

80' 40' 0 80' 160'
SCALE IN FEET
1" = 80'

Tillman & Associates
ENGINEERING, LLC.
CIVIL ENGINEERING - PLANNING - LANDSCAPE ARCHITECTURE - ENVIRONMENTAL
1720 SE 16th Ave, Bldg 100, Ocala, FL 34471
Office: (352) 387-4540 Fax: (352) 387-4545

REVISIONS

DATE

WOODRIDGE PLACE SOUTH
MARION COUNTY, FL

LAYOUT

DATE 8/1/24
DRAWN BY SAS
CHKD. BY JMP
JOB NO.

SHT. 1 of 1

S:\Marion County\Harvey Woodridge South\CORRESPONDENCE\To Kok Wan 20240801\23-8423 Woodridge South Base.dwg, 8/1/2024 4:27:18 PM

Appendix B Trip Generation

Single-Family Detached Housing
(210)

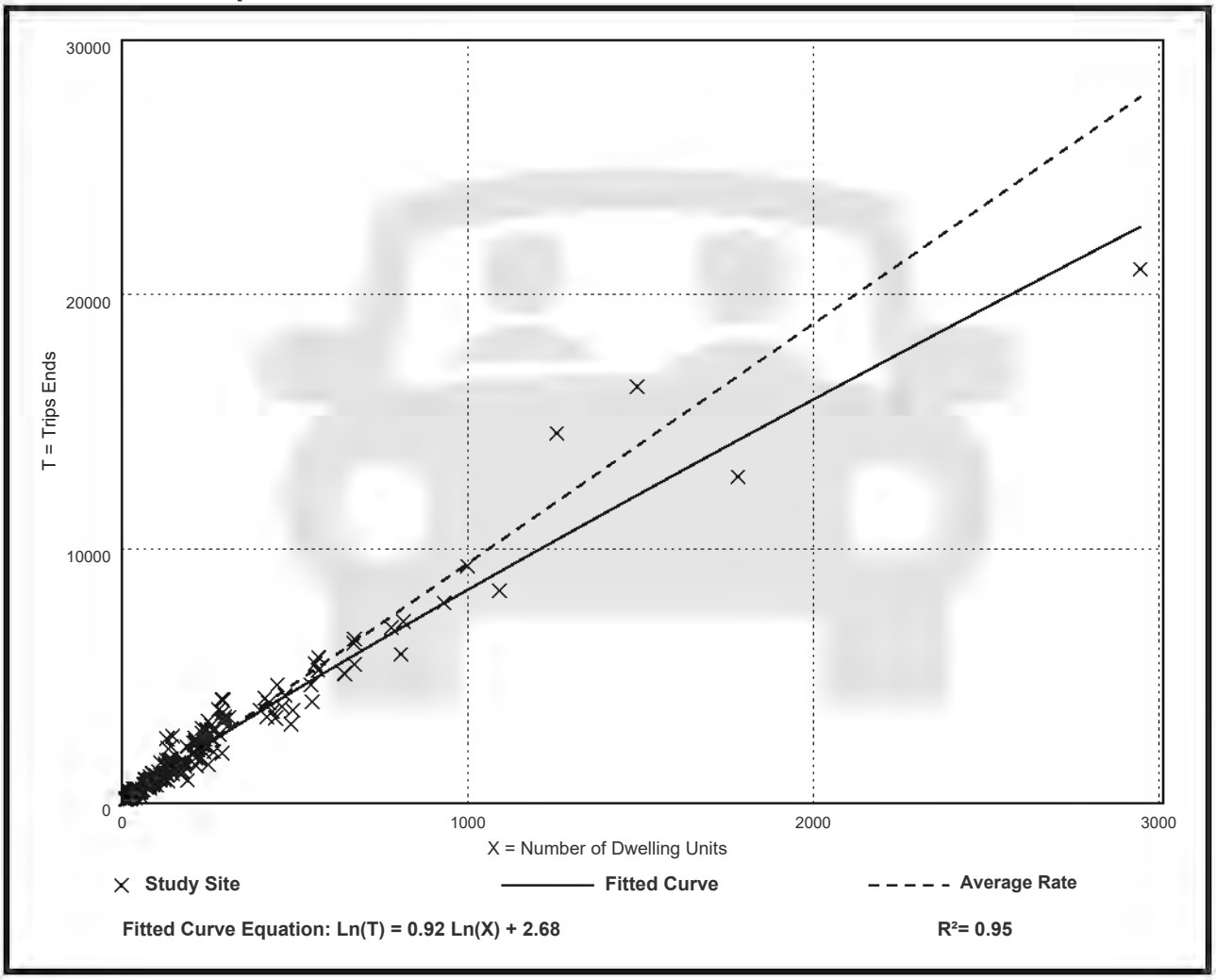
Vehicle Trip Ends vs: Dwelling Units
On a: Weekday

Setting/Location: General Urban/Suburban
Number of Studies: 174
Avg. Num. of Dwelling Units: 246
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
9.43	4.45 - 22.61	2.13

Data Plot and Equation



Fitted Curve Equation: Ln(T) = 0.92 Ln(X) + 2.68

R^2= 0.95

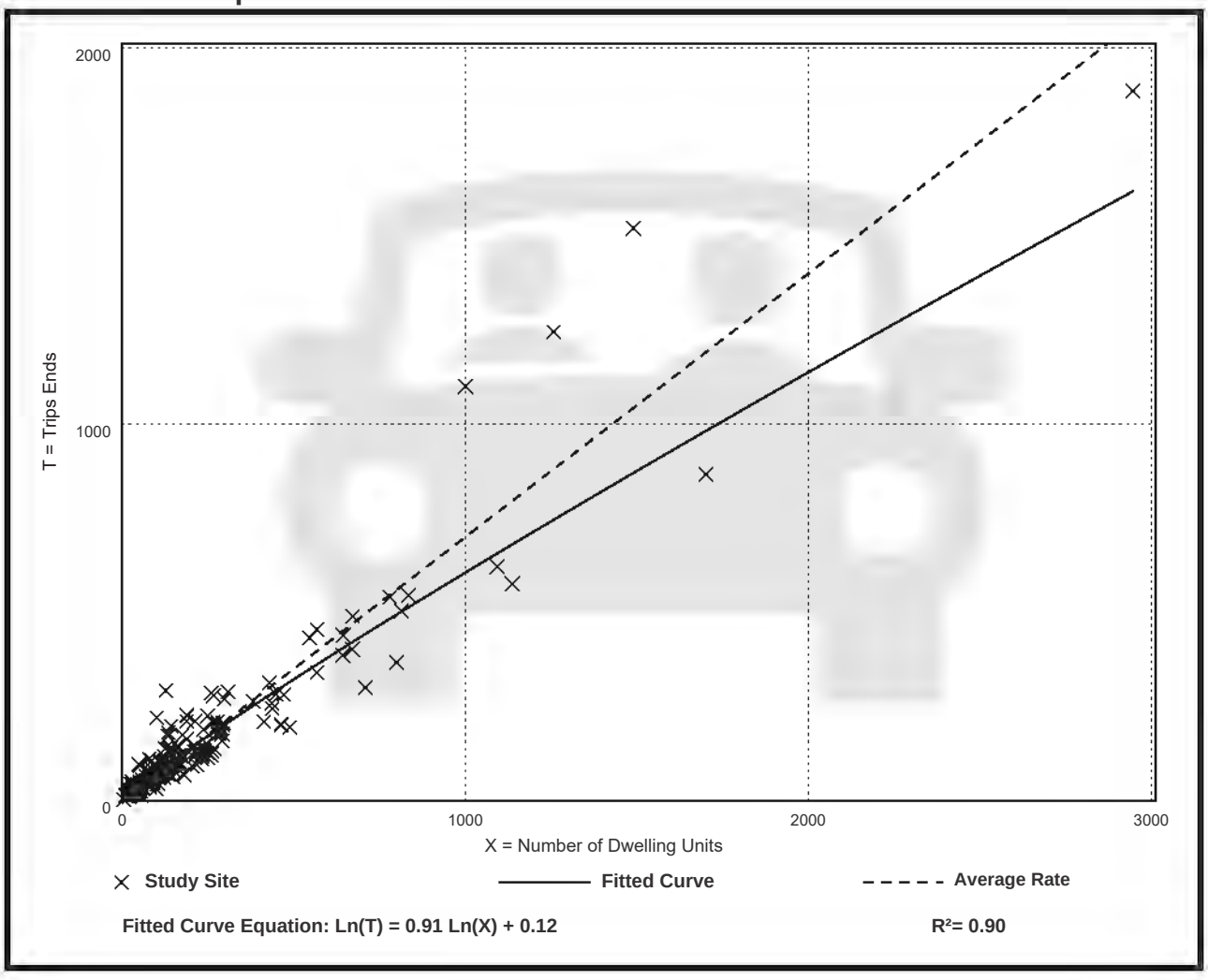
Single-Family Detached Housing
(210)

Vehicle Trip Ends vs: Dwelling Units
On a: Weekday,
Peak Hour of Adjacent Street Traffic,
One Hour Between 7 and 9 a.m.
Setting/Location: General Urban/Suburban
Number of Studies: 192
Avg. Num. of Dwelling Units: 226
Directional Distribution: 26% entering, 74% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.70	0.27 - 2.27	0.24

Data Plot and Equation



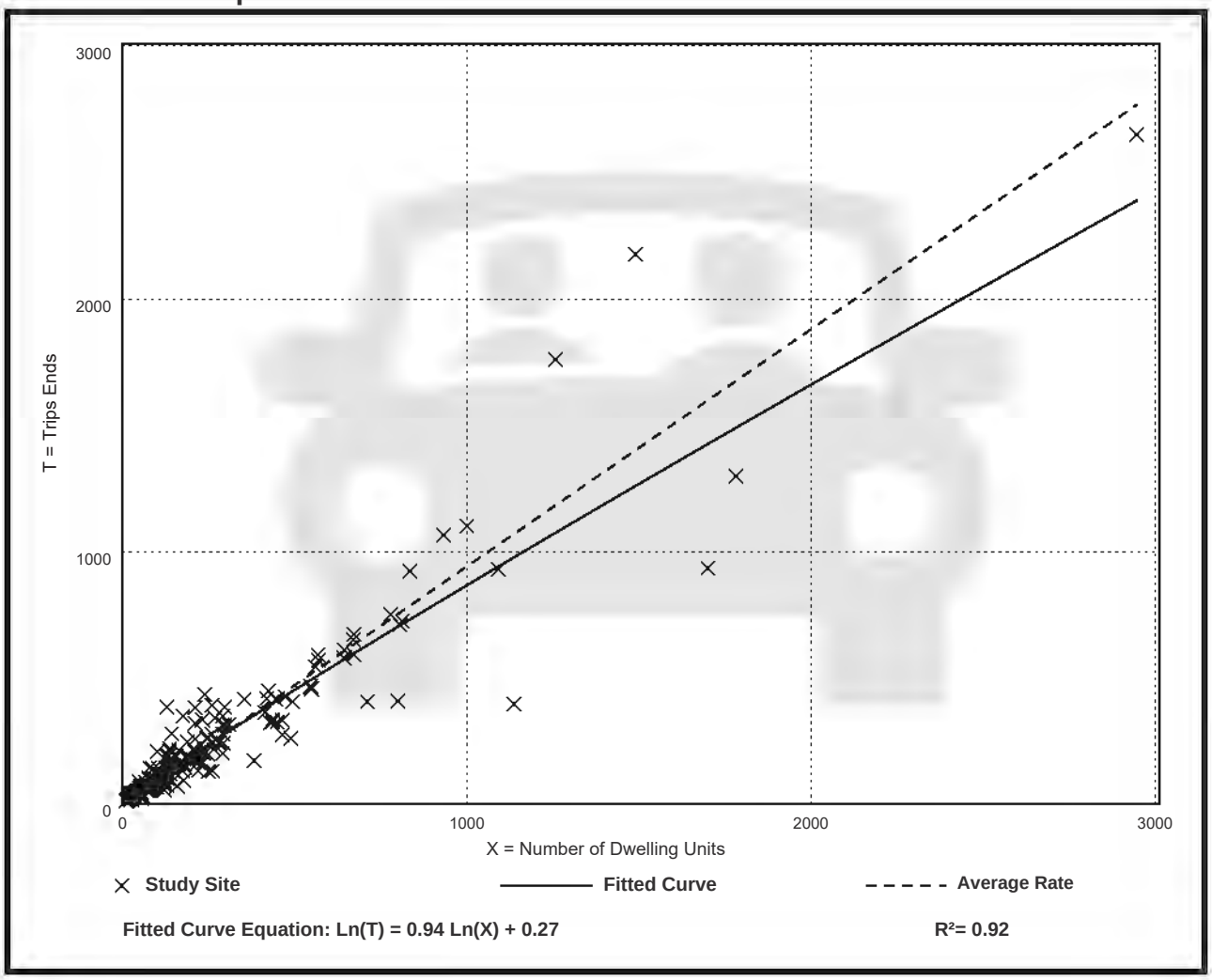
Single-Family Detached Housing
(210)

Vehicle Trip Ends vs: Dwelling Units
On a: Weekday,
Peak Hour of Adjacent Street Traffic,
One Hour Between 4 and 6 p.m.
Setting/Location: General Urban/Suburban
Number of Studies: 208
Avg. Num. of Dwelling Units: 248
Directional Distribution: 63% entering, 37% exiting

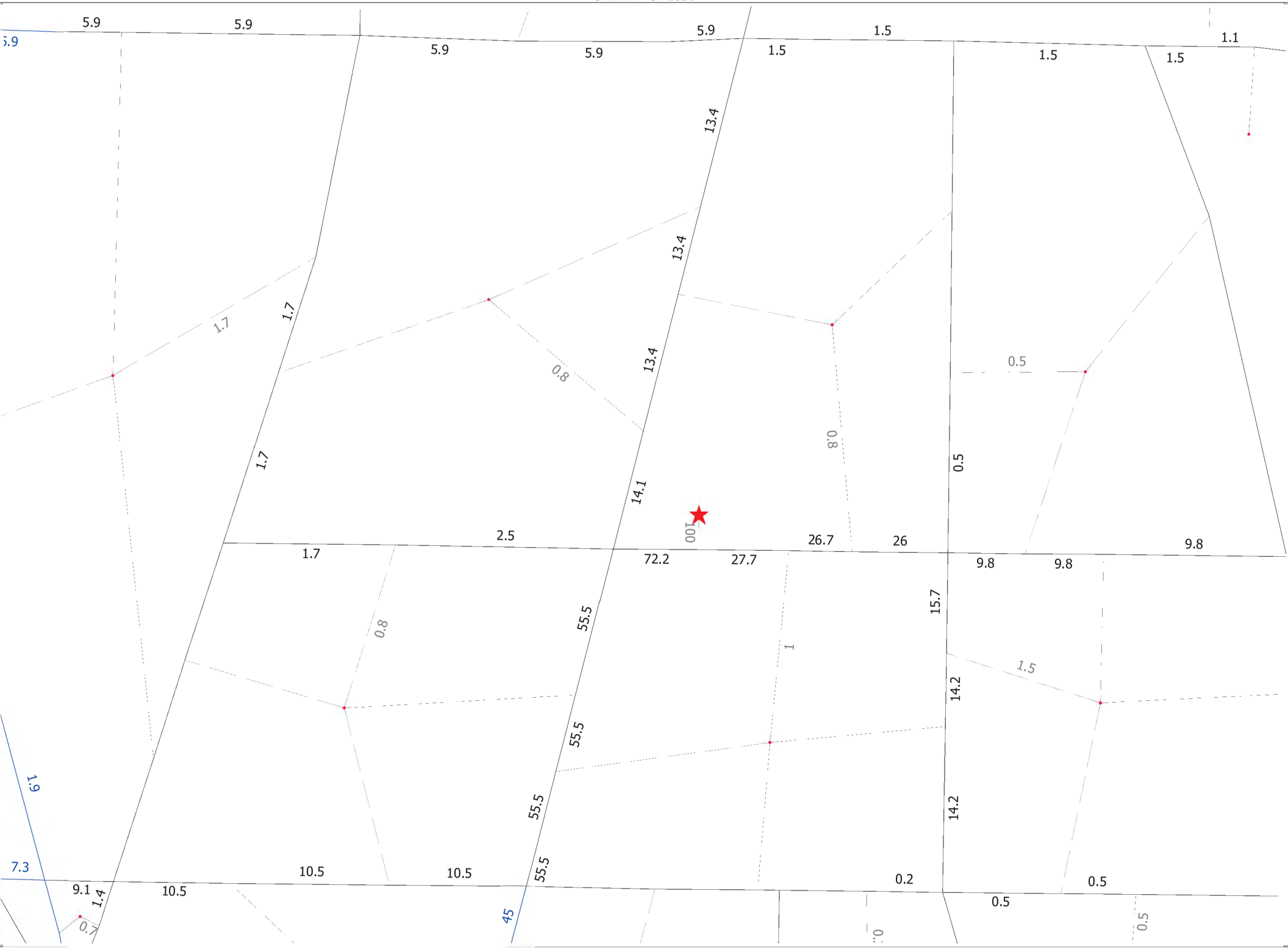
Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.94	0.35 - 2.98	0.31

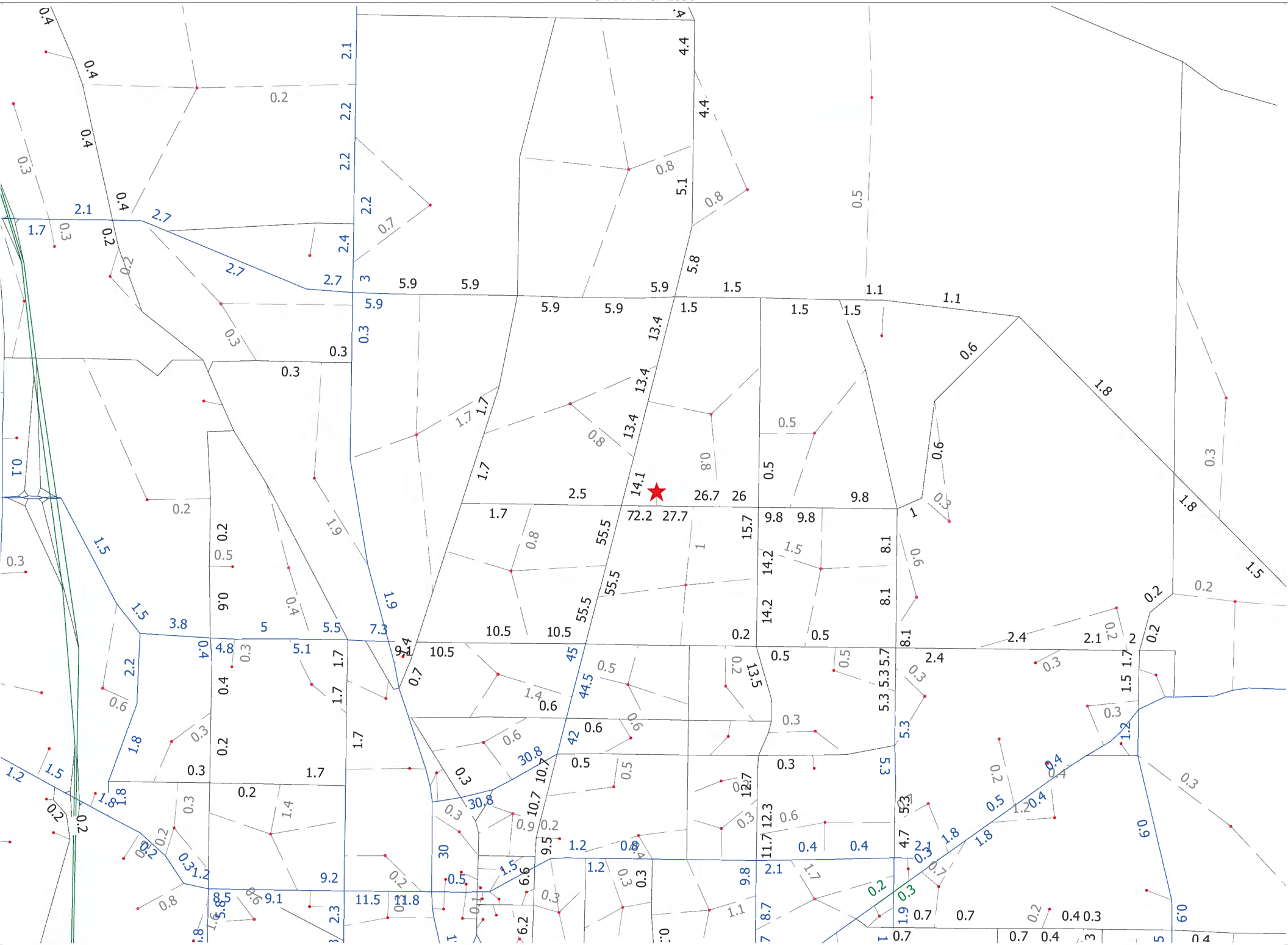
Data Plot and Equation

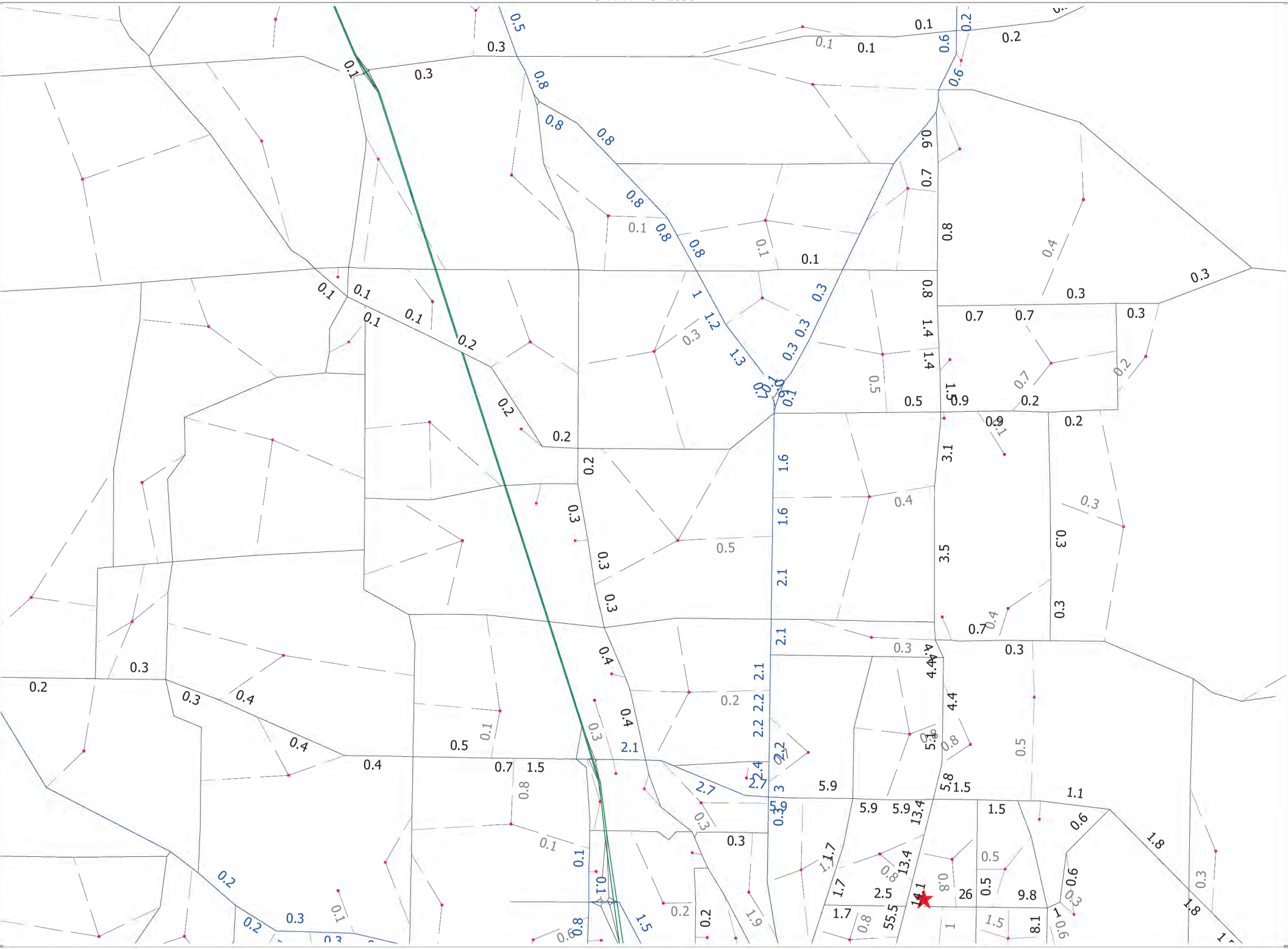


Appendix C Model Plots

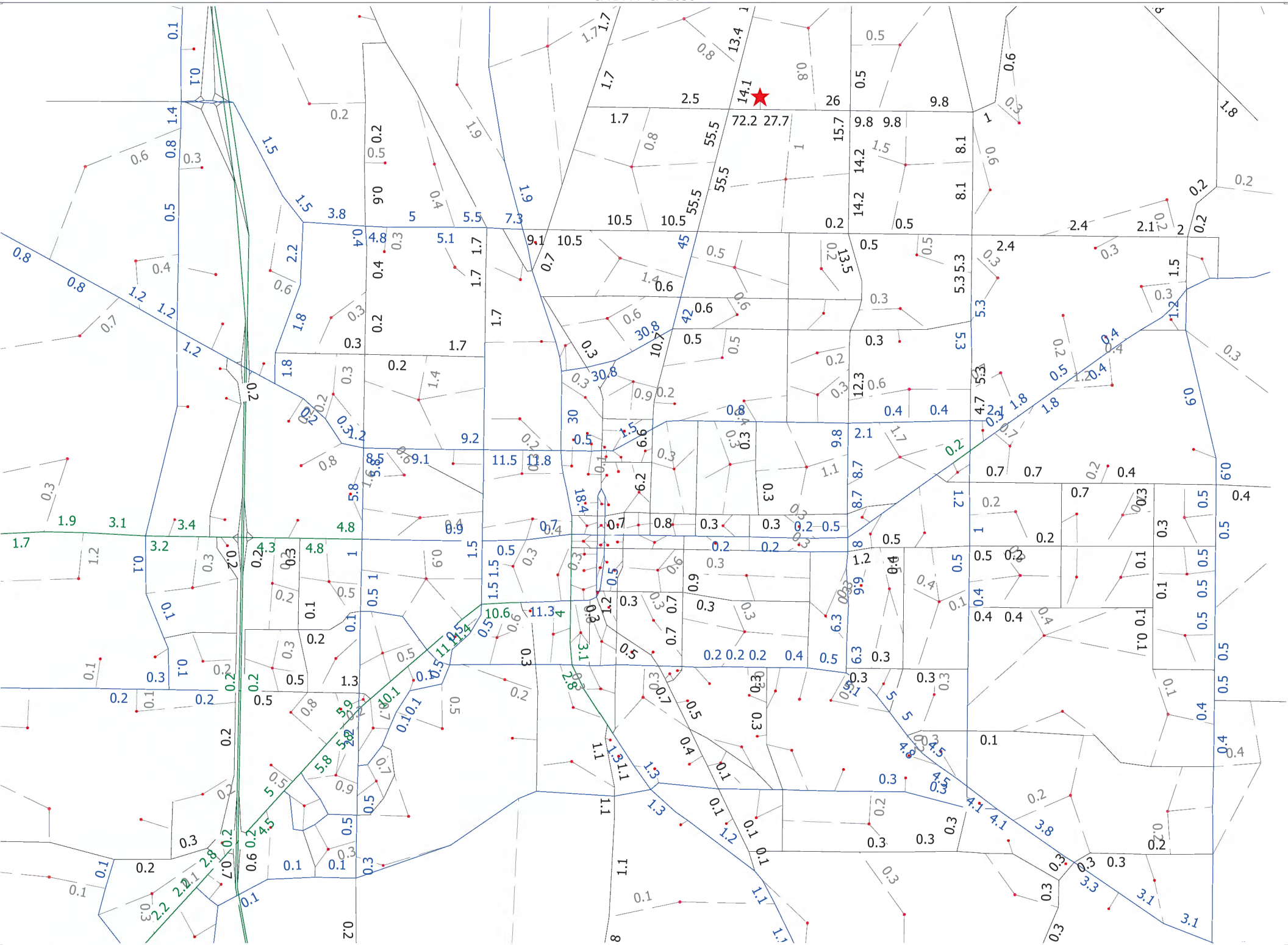


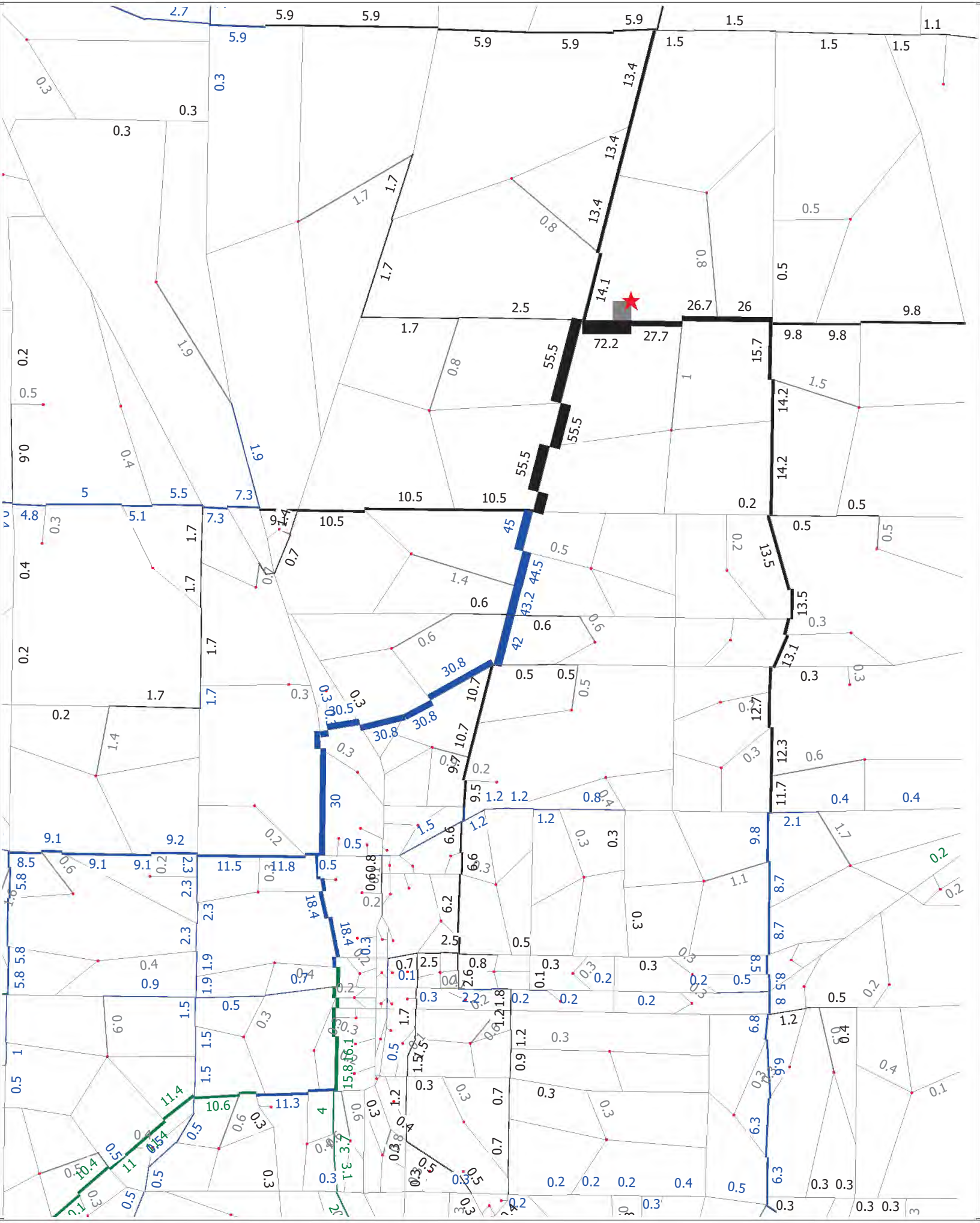
CFRPM 7 CF 2030





CFRPM 7 CF 2030





Appendix D Historical Traffic Data

SEGMENT ID	ROAD NAME	FROM	TO	LANES (2023)	FUNCTIONAL CLASSIFICATION	FLOW	FDOT CLASS	DAILY SERVICE VOLUME (2023)	PEAK HOUR DIRECTIONAL SERVICE VOLUME (2023)	LANES (2028)	DAILY SERVICE VOLUME (2028)	PEAK HOUR DIRECTIONAL SERVICE VOLUME (2028)	URBAN / RURAL	DIVIDED / UNDIVIDED	MAINTAINING AGENCY	NHS	ADOPTED LOS STANDARD	2023 AADT	2023 DAILY V/MSV	2023 DAILY LOS	GROWTH RATE	2028 AADT	2028 DAILY V/MSV	2028 DAILY LOS
2380	CR 200A / JACKSONVILLE RD	NE 49 ST	SR 326	2	ARTERIAL	INTERRUPTED	1	12,744	634	2	12,744	634	Urban	U	COUNTY	Other CMP Network Roadway	E	7,900	0.62	C	1.00%	8,300	0.65	C
2370	CR 200A / JACKSONVILLE RD	NW 35 ST	NE 49 ST	2	ARTERIAL	INTERRUPTED	1	12,744	634	2	12,744	634	Urban	U	COUNTY	Other CMP Network Roadway	E	9,500	0.75	C	1.56%	10,300	0.81	C
2360	CR 200A / JACKSONVILLE RD	NE 28 ST	NE 35 ST	4	ARTERIAL	INTERRUPTED	1	35,820	1,800	4	35,820	1,800	Urban	D	COUNTY	Other CMP Network Roadway	E	10,700	0.3	C	1.00%	11,300	0.32	C
2790	NE 25 AV	NE 49 ST	SR 326	2	COLLECTOR	INTERRUPTED	2	11,232	576	2	11,232	576	Urban	U	COUNTY	Other CMP Network Roadway	E	3,500	0.31	C	1.00%	3,700	0.33	C
2780	NE 25 AV	NE 35 ST	NE 49 ST	2	COLLECTOR	INTERRUPTED	2	11,232	576	2	11,232	576	Urban	U	COUNTY	Other CMP Network Roadway	E	5,100	0.45	C	1.00%	5,300	0.47	D
2770	NE 25 AV	NE 24 ST	NE 35 ST	2	COLLECTOR	INTERRUPTED	2	11,232	576	2	11,232	576	Urban	U	COUNTY	Other CMP Network Roadway	E	8,000	0.71	D	1.00%	8,400	0.75	D
2870	NE 35 ST	CR 200A	NE 25 AV	2	COLLECTOR	INTERRUPTED	2	11,232	576	2	11,232	576	Urban	U	COUNTY	Other CMP Network Roadway	E	10,100	0.9	D	3.38%	12,000	1.07	F
2880.1	NE 35 ST	NE 25 AV	NE 36 AV	2	COLLECTOR	INTERRUPTED	2	11,232	576	2	11,232	576	Urban	U	COUNTY	Other CMP Network Roadway	E	8,000	0.71	D	1.00%	8,400	0.75	D

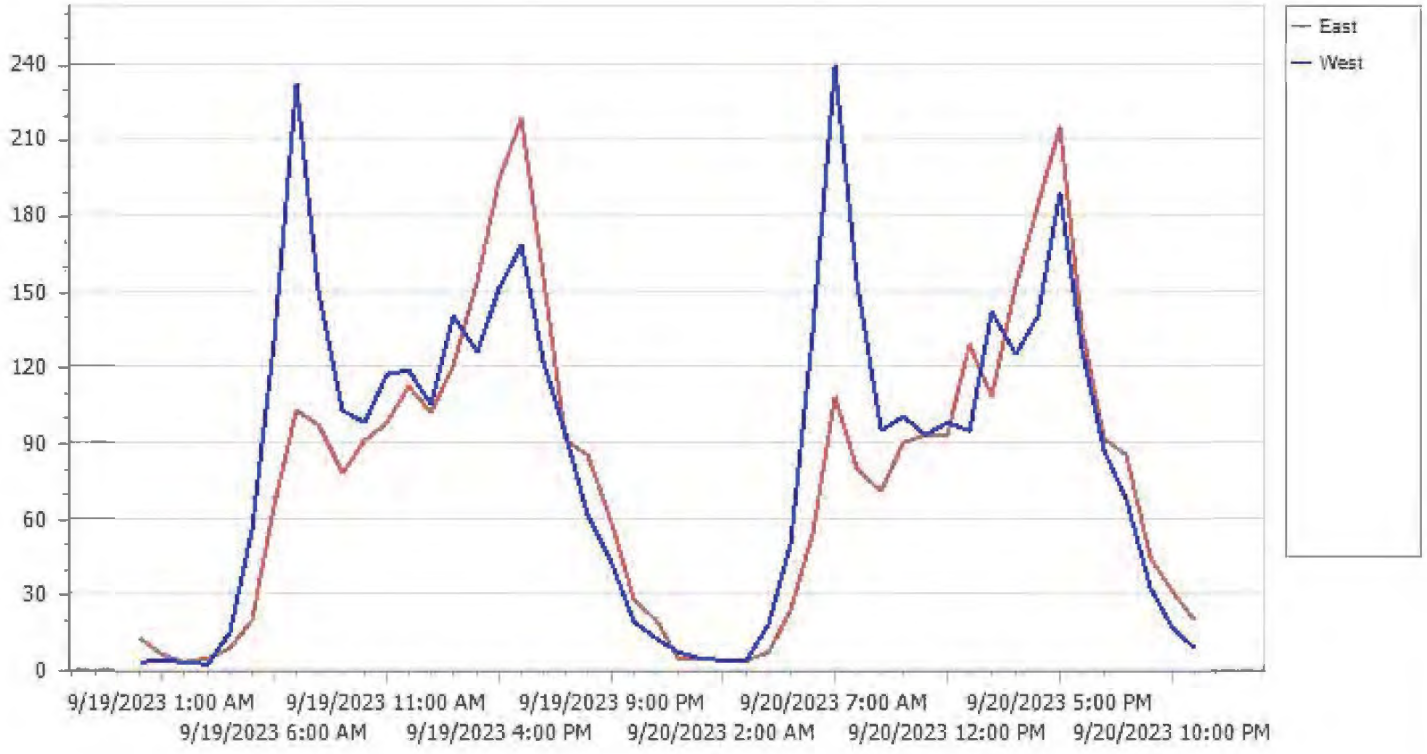
Volume by Lane

Name: 2023 118 - NE 49th St East of CR-200A - PURPLE

Latitude: Unknown Longitude: Unknown

Started: 9/19/2023 12:00:00 AM Ended: 9/20/2023 11:59:59 PM

TPO I(STA-27) A=E (35)



Report Generated Monday, September 25, 2023 09:13 AM

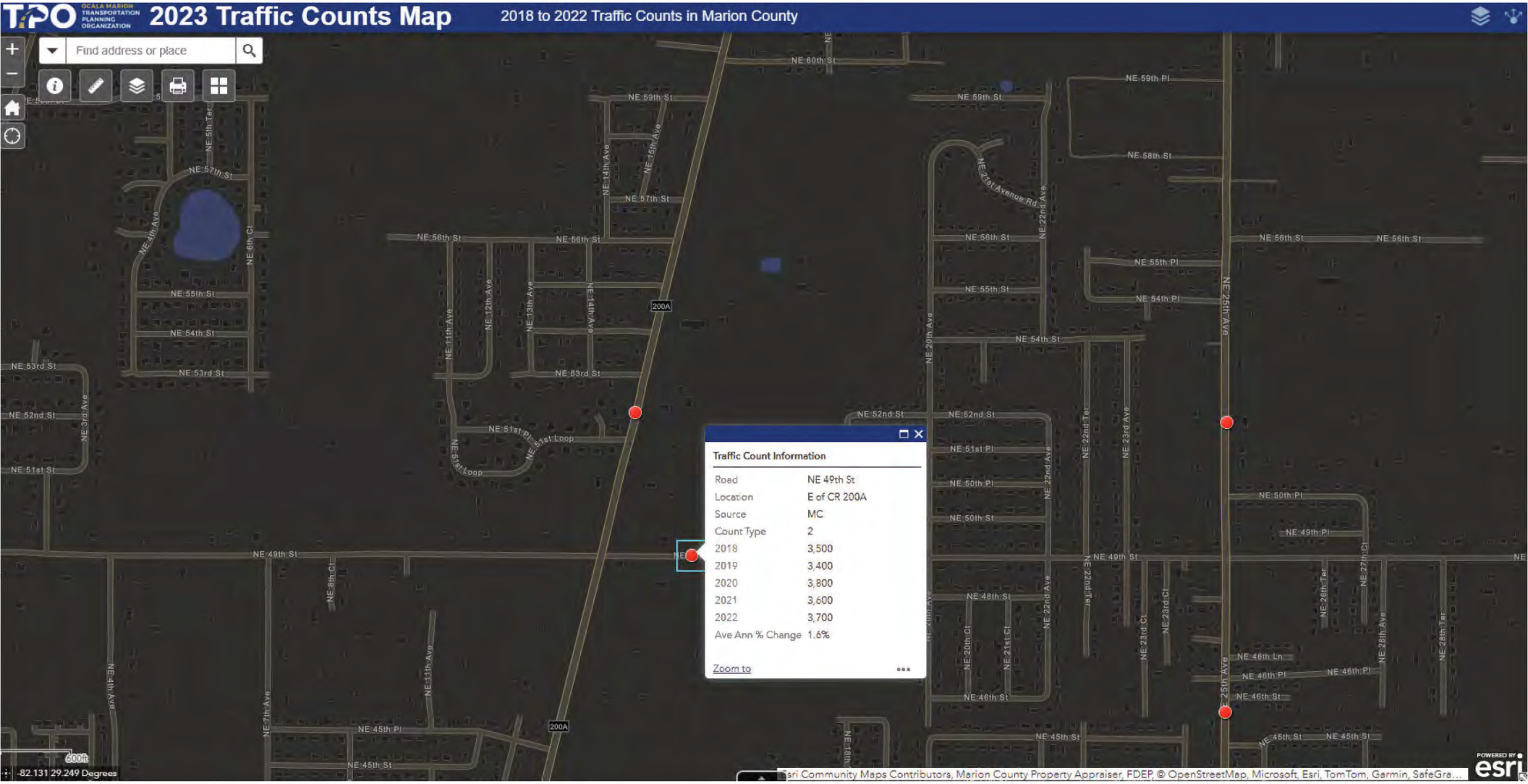
Tuesday, September 19, 2023

Interval	East	West	Total
00:00	13	3	16
01:00	6	4	10
02:00	3	3	6
03:00	5	2	7
04:00	9	15	24
05:00	20	56	76
06:00	65	131	196
07:00	103	232	335
08:00	97	150	247
09:00	78	103	181
10:00	91	98	189
11:00	98	117	215
12:00	112	119	231
13:00	102	105	207
14:00	120	140	260
15:00	154	126	280
16:00	194	151	345
17:00	218	168	386
18:00	155	122	277
19:00	91	93	184
20:00	85	61	146
21:00	58	42	100
22:00	28	19	47
23:00	20	13	33
Daily Total	**1925**	**2073**	**3998**
AM Peak	**335 (starting at 07:00:00)**		
PM Peak	**386 (starting at 17:00:00)**		

Wednesday, September 20, 2023

Interval	East	West	Total
00:00	5	7	12
01:00	5	5	10
02:00	4	4	8
03:00	4	4	8
04:00	7	18	25
05:00	24	50	74
06:00	54	134	188
07:00	108	239	347
08:00	80	154	234
09:00	71	95	166
10:00	90	100	190
11:00	93	93	186
12:00	93	98	191
13:00	129	95	224
14:00	108	142	250
15:00	152	125	277
16:00	184	140	324
17:00	215	189	404
18:00	135	127	262
19:00	92	87	179
20:00	85	68	153
21:00	45	33	78
22:00	31	17	48
23:00	20	9	29
Daily Total	**1834**	**2033**	**3867**
AM Peak	**347 (starting at 07:00:00)**		
PM Peak	**404 (starting at 17:00:00)**		
Average Interval	**78**	**86**	**164**
Maximum in one Interval	**218**	**239**	**404**
Grand Total	**3759**	**4106**	**7865**

Array Type: Tube - Tube,
Deadtime (in ms): 40,
Maximum vehicle length: 110.0 ft,
Maximum inter-axle spacing: 45.0 ft,
Classification Scheme: FHWA-USA,
Sensor Spacing: 2.0 ft,


TPO OCALA MARION TRANSPORTATION PLANNING ORGANIZATION
2023 Traffic Counts Map
2018 to 2022 Traffic Counts in Marion County
Find address or place
Traffic Count Information
Road NE 49th St
Location E of CR 200A
Source MC
Count Type 2
2018 3,500
2019 3,400
2020 3,800
2021 3,600
2022 3,700
Ave Ann % Change 1.6%
Zoom to
200A
-82.131 29.249 Degrees
Esri Community Maps Contributors, Marion County Property Appraiser, FDEP, © OpenStreetMap, Microsoft, Esri, TomTom, Garmin, SafeGra…
POWERED BY esri

Appendix E Vested Trip Documentation

Woodridge

Marion County, Florida

PREPARED FOR

Harvey Vandeven
352.266.2834
harveyvandeven@gmail.com

PREPARED BY

225 East Robinson Street, Suite 300
Landmark Center Two
Orlando FL 32801
407.839.4006

December 2022

Trip Generation

The daily and peak hour trips were calculated based on the Institute of Transportation Engineers' (ITE) *Trip Generation Manual*, 11th Edition. As shown in **Table 1**, ITE Land Use Codes 210 – Single Family Detached Housing was deemed the most appropriate for the proposed development. The proposed development is expected to generate 2,379 new daily external trips, and 239 new PM peak hour external trips for the Buildout conditions. The ITE Land Use sheets can be found in **Appendix B**.

Table 1 Trip Generation

AM Peak

ITE Code	Land Use	Size / Units	% In	Total Trips: Daily Trips	AM Peak: Total	AM Peak: Enter	AM Peak: Exit
210	Single Family Detached Housing	254 D.U.	26%	2,379	174	45	129
		Totals:		**2,379**	**174**	**45**	**129**

PM Peak

ITE Code	Land Use	Size / Units	% In	Total Trips: Daily Trips	PM Peak: Total	PM Peak: Enter	PM Peak: Exit
210	Single Family Detached Housing	254 D.U.	63%	2,379	239	150	89
		Totals:		**2,379**	**239**	**150**	**89**

Notes:
Institute of Transportation (ITE) Trip Generation Manual 11th Edition

Trip Distribution and Assignment

The distribution of site generated traffic is a function of population in surrounding areas, shopping opportunities, existing travel patterns, ease of access to the site, and traffic conditions on area roadways. The trip distribution is shown in **Figure 2**.

Figure 2 Trip Distribution

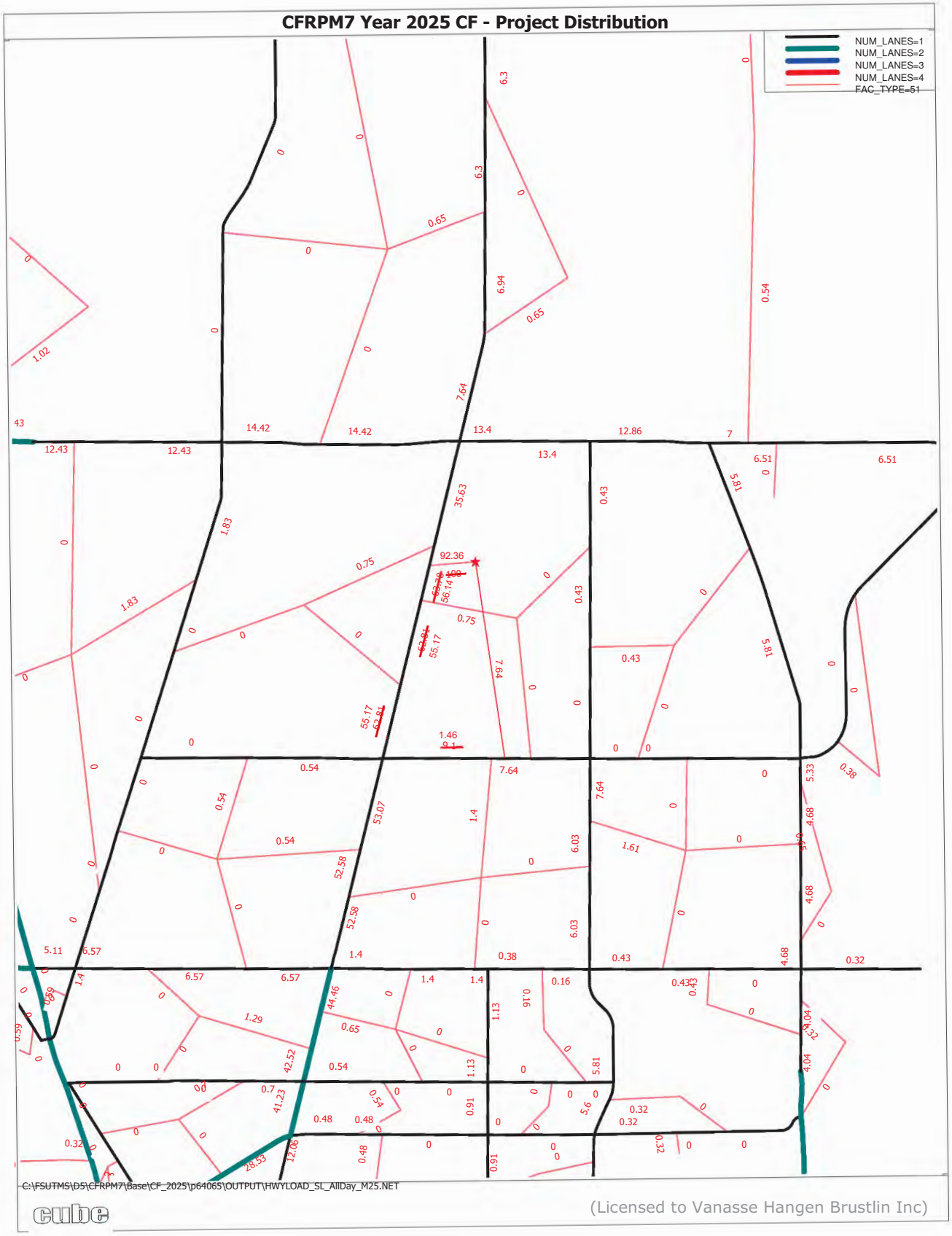


Figure 3 Existing Peak Hour Turning Movement Volumes

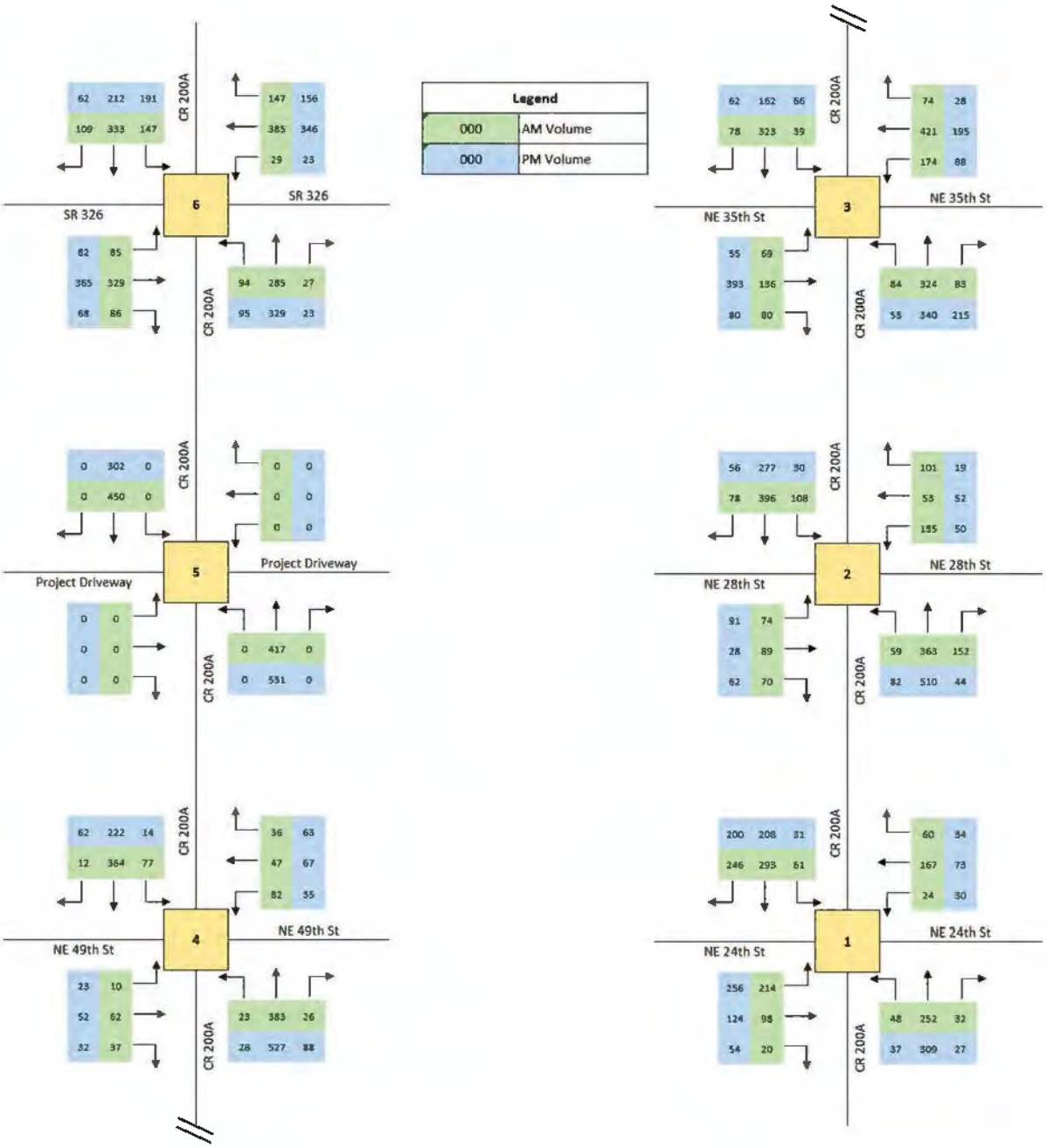


Figure 4 Future Turning Movement Volumes - PM Peak Hour

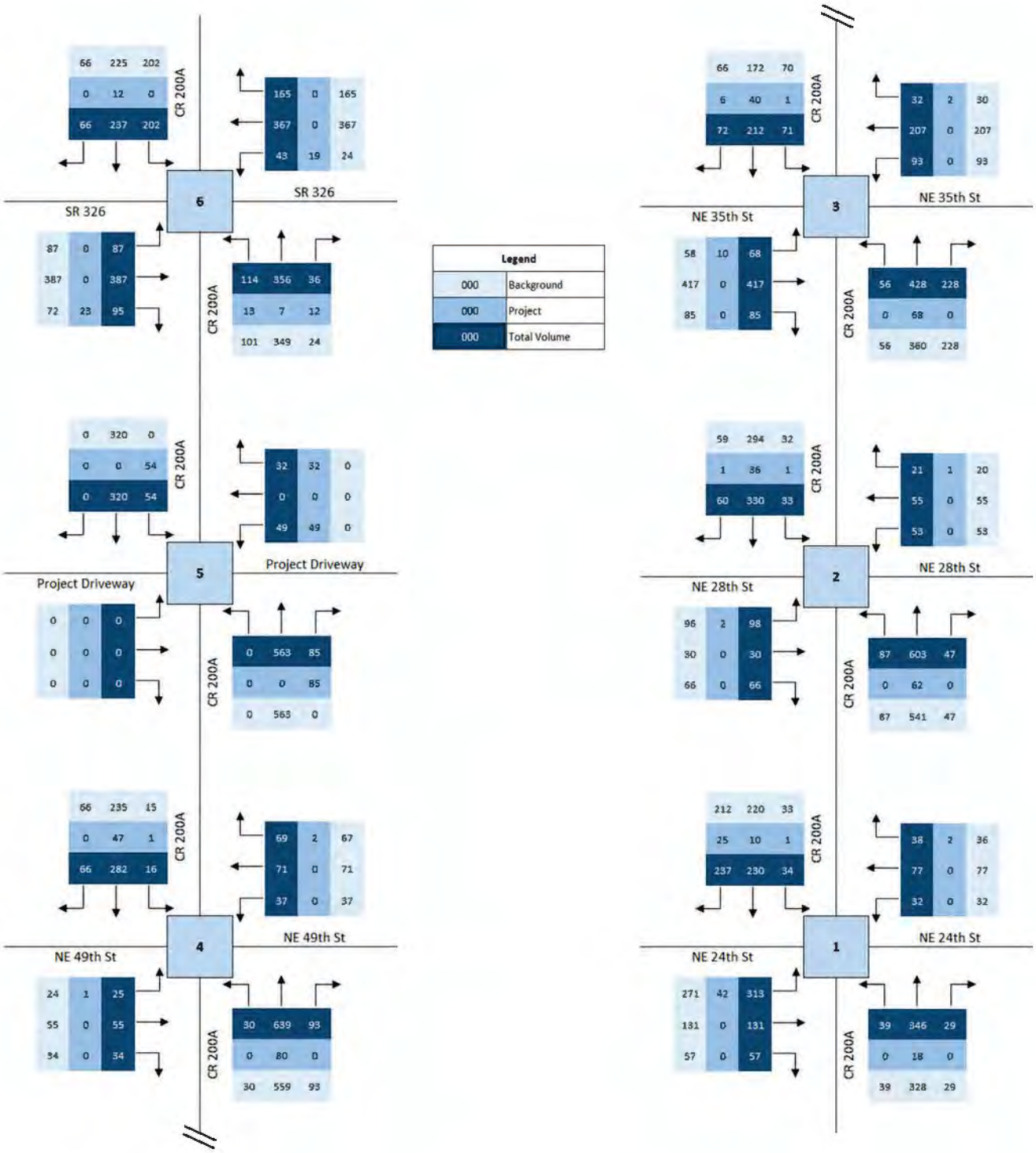
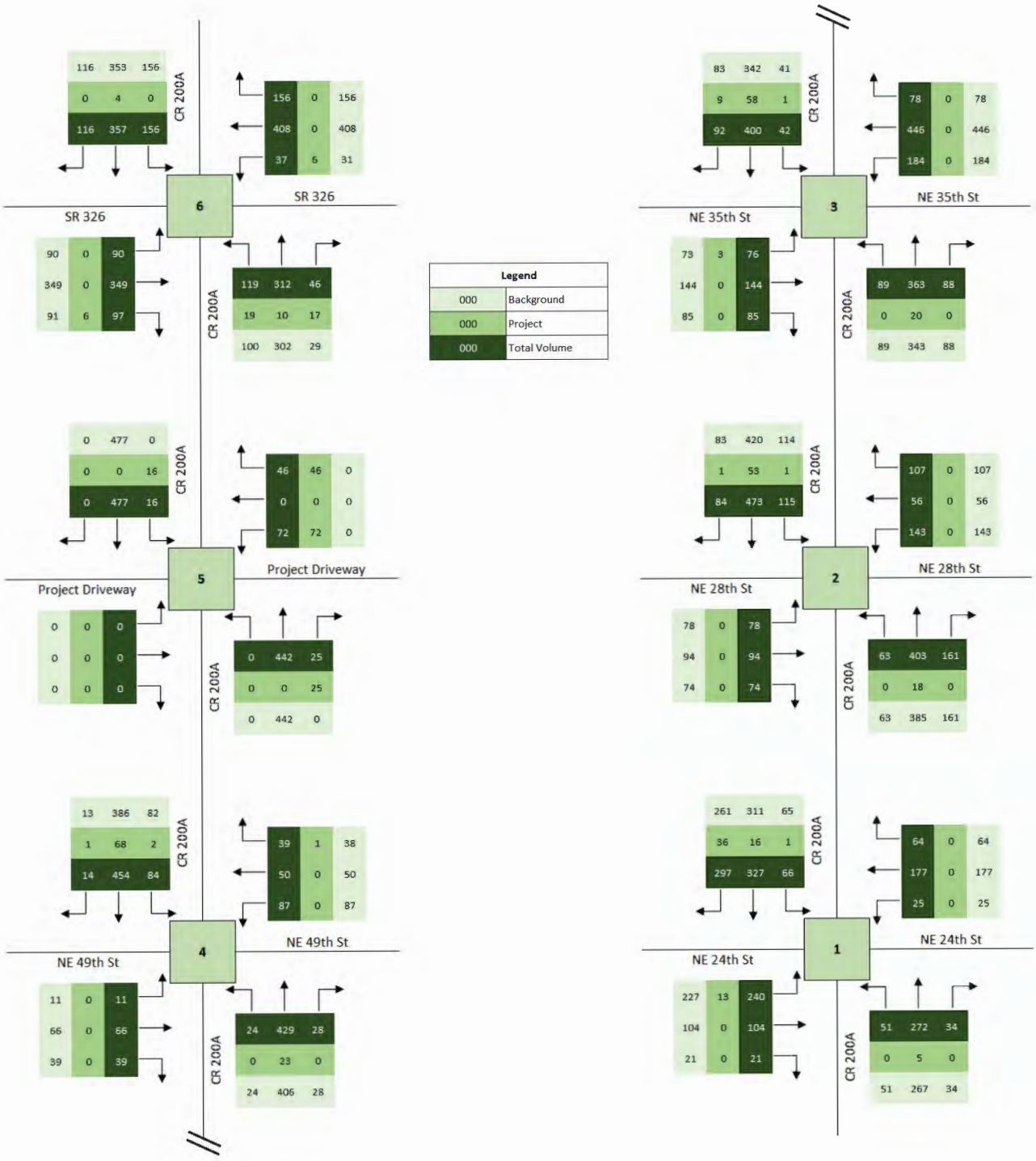


Figure 5 Future Turning Movement Volumes - AM Peak Hour



Appendix C Turning Movement Counts

DE TRAFFIC

detraffic.com
(386) 341-4186
CR 200A at NE 35th St
Marion County, FL

File Name : CR 200A at 35th
Site Code : 00000001
Start Date : 9/24/2024
Page No : 1

Groups Printed- Automobiles - Commercial

	CR 200A Southbound					NE 35th St Westbound					CR 200A Northbound					NE 35th St Eastbound					
Start Time	Left	Thru	Right	R/R	App. Total	Left	Thru	Right	R/R	App. Total	Left	Thru	Right	R/R	App. Total	Left	Thru	Right	R/R	App. Total	Int. Total
07:00 AM	14	47	10	2	73	23	44	11	3	81	10	58	11	3	82	12	27	10	3	52	288
07:15 AM	17	66	16	2	101	33	47	12	2	94	17	76	19	3	115	19	36	12	2	69	379
07:30 AM	18	80	16	3	117	37	57	15	3	112	17	79	20	2	118	24	42	20	3	89	436
07:45 AM	21	65	18	2	106	39	66	16	4	125	21	89	24	4	138	34	36	16	0	86	455
Total	70	258	60	9	397	132	214	54	12	412	65	302	74	12	453	89	141	58	8	296	1558
08:00 AM	19	70	19	3	111	35	66	15	4	120	21	83	19	4	127	29	44	14	2	89	447
08:15 AM	23	79	19	5	126	29	55	14	5	103	22	81	19	4	126	25	35	18	5	83	438
08:30 AM	19	74	21	4	118	33	46	16	4	99	18	71	20	4	113	21	27	21	4	73	403
08:45 AM	17	56	14	2	89	28	35	10	2	75	15	58	17	3	93	14	27	12	6	59	316
Total	78	279	73	14	444	125	202	55	15	397	76	293	75	15	459	89	133	65	17	304	1604
04:00 PM	11	24	18	3	56	20	48	9	6	83	12	57	34	6	109	19	44	18	3	84	332
04:15 PM	15	33	20	3	71	24	65	19	4	112	16	68	44	4	132	20	36	17	4	77	392
04:30 PM	17	37	20	2	76	21	57	17	8	103	20	77	35	5	137	22	42	18	6	88	404
04:45 PM	20	43	15	2	80	24	44	20	7	95	18	89	53	8	168	20	63	21	4	108	451
Total	63	137	73	10	283	89	214	65	25	393	66	291	166	23	546	81	185	74	17	357	1579
05:00 PM	17	55	11	4	87	21	55	21	8	105	18	68	46	4	136	13	54	21	5	93	421
05:15 PM	20	48	16	6	90	22	47	19	4	92	16	59	33	8	116	21	42	20	5	88	386
05:30 PM	18	38	14	4	74	21	36	13	9	79	18	70	33	7	128	17	36	17	2	72	353
05:45 PM	18	32	12	3	65	18	46	17	7	88	17	59	27	8	111	13	27	17	4	61	325
Total	73	173	53	17	316	82	184	70	28	364	69	256	139	27	491	64	159	75	16	314	1485
Grand Total	284	847	259	50	1440	428	814	244	80	1566	276	1142	454	77	1949	323	618	272	58	1271	6226
Apprch %	19.7	58.8	18	3.5		27.3	52	15.6	5.1		14.2	58.6	23.3	4		25.4	48.6	21.4	4.6		
Total %	4.6	13.6	4.2	0.8	23.1	6.9	13.1	3.9	1.3	25.2	4.4	18.3	7.3	1.2	31.3	5.2	9.9	4.4	0.9	20.4	
Automobiles	263	784	241	50	1338	410	764	224	80	1478	259	1049	438	77	1823	308	599	253	58	1218	5857
% Automobiles	92.6	92.6	93.1	100	92.9	95.8	93.9	91.8	100	94.4	93.8	91.9	96.5	100	93.5	95.4	96.9	93	100	95.8	94.1
Commercial	21	63	18	0	102	18	50	20	0	88	17	93	16	0	126	15	19	19	0	53	369
% Commercial	7.4	7.4	6.9	0	7.1	4.2	6.1	8.2	0	5.6	6.2	8.1	3.5	0	6.5	4.6	3.1	7	0	4.2	5.9

DE TRAFFIC

detraffic.com
(386) 341-4186
CR 200A at NE 35th St
Marion County, FL

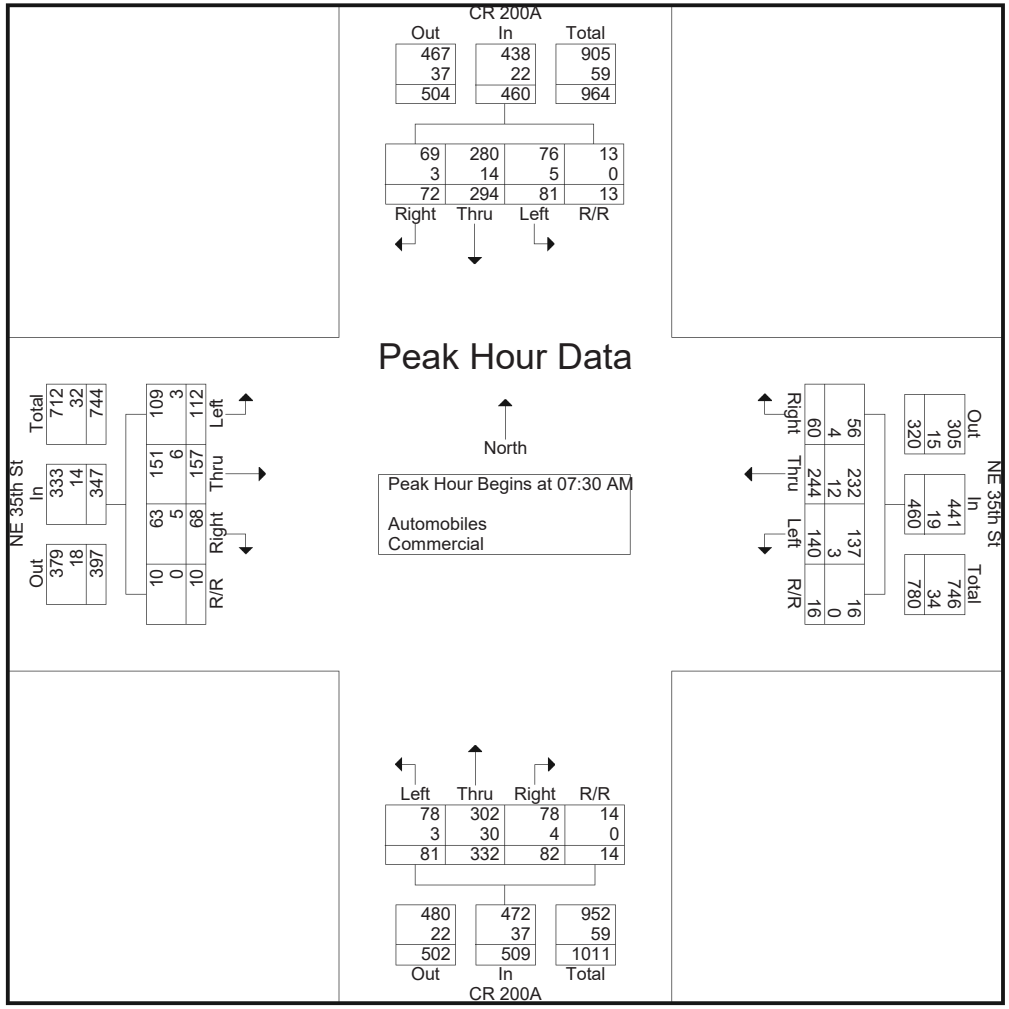
File Name : CR 200A at 35th
Site Code : 00000001
Start Date : 9/24/2024
Page No : 2

	CR 200A Southbound					NE 35th St Westbound					CR 200A Northbound					NE 35th St Eastbound					
Start Time	Left	Thru	Right	R/R	App. Total	Left	Thru	Right	R/R	App. Total	Left	Thru	Right	R/R	App. Total	Left	Thru	Right	R/R	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:30 AM																					
07:30 AM	18	80	16	3	117	37	57	15	3	112	17	79	20	2	118	24	42	20	3	89	436
07:45 AM	21	65	18	2	106	39	66	16	4	125	21	89	24	4	138	34	36	16	0	86	455
08:00 AM	19	70	19	3	111	35	66	15	4	120	21	83	19	4	127	29	44	14	2	89	447
08:15 AM	23	79	19	5	126	29	55	14	5	103	22	81	19	4	126	25	35	18	5	83	438
Total Volume	81	294	72	13	460	140	244	60	16	460	81	332	82	14	509	112	157	68	10	347	1776
% App. Total	17.6	63.9	15.7	2.8		30.4	53	13	3.5		15.9	65.2	16.1	2.8		32.3	45.2	19.6	2.9		
PHF	.880	.919	.947	.650	.913	.897	.924	.938	.800	.920	.920	.933	.854	.875	.922	.824	.892	.850	.500	.975	.976
Automobiles	76	280	69	13	438	137	232	56	16	441	78	302	78	14	472	109	151	63	10	333	1684
% Automobiles	93.8	95.2	95.8	100	95.2	97.9	95.1	93.3	100	95.9	96.3	91.0	95.1	100	92.7	97.3	96.2	92.6	100	96.0	94.8
Commercial	5	14	3	0	22	3	12	4	0	19	3	30	4	0	37	3	6	5	0	14	92
% Commercial	6.2	4.8	4.2	0	4.8	2.1	4.9	6.7	0	4.1	3.7	9.0	4.9	0	7.3	2.7	3.8	7.4	0	4.0	5.2

DE TRAFFIC

detraffic.com
(386) 341-4186
CR 200A at NE 35th St
Marion County, FL

File Name : CR 200A at 35th
Site Code : 00000001
Start Date : 9/24/2024
Page No : 3



DE TRAFFIC

detraffic.com
(386) 341-4186
CR 200A at NE 35th St
Marion County, FL

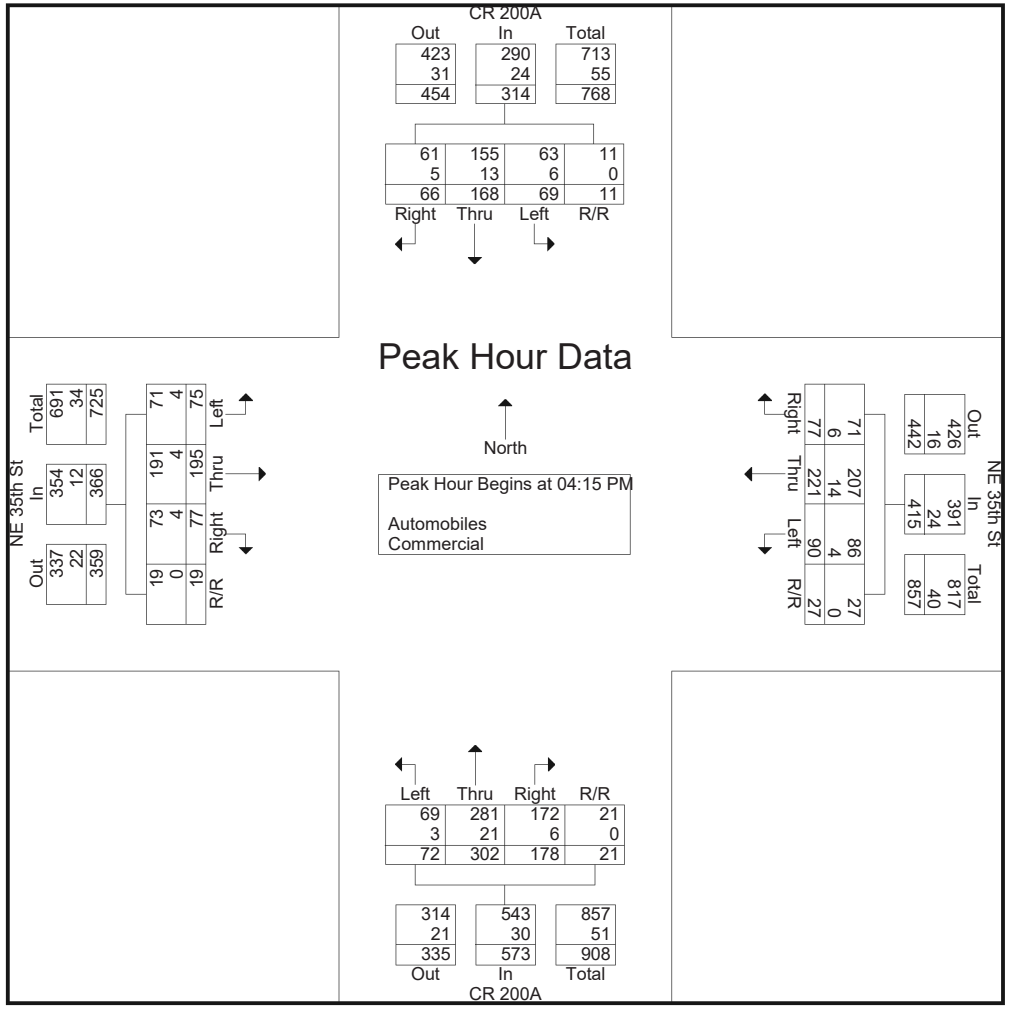
File Name : CR 200A at 35th
Site Code : 00000001
Start Date : 9/24/2024
Page No : 4

	CR 200A Southbound					NE 35th St Westbound					CR 200A Northbound					NE 35th St Eastbound					
Start Time	Left	Thru	Right	R/R	App. Total	Left	Thru	Right	R/R	App. Total	Left	Thru	Right	R/R	App. Total	Left	Thru	Right	R/R	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:15 PM																					
04:15 PM	15	33	20	3	71	24	65	19	4	112	16	68	44	4	132	20	36	17	4	77	392
04:30 PM	17	37	20	2	76	21	57	17	8	103	20	77	35	5	137	22	42	18	6	88	404
04:45 PM	20	43	15	2	80	24	44	20	7	95	18	89	53	8	168	20	63	21	4	108	451
05:00 PM	17	55	11	4	87	21	55	21	8	105	18	68	46	4	136	13	54	21	5	93	421
Total Volume	69	168	66	11	314	90	221	77	27	415	72	302	178	21	573	75	195	77	19	366	1668
% App. Total	22	53.5	21	3.5		21.7	53.3	18.6	6.5		12.6	52.7	31.1	3.7		20.5	53.3	21	5.2		
PHF	.863	.764	.825	.688	.902	.938	.850	.917	.844	.926	.900	.848	.840	.656	.853	.852	.774	.917	.792	.847	.925
Automobiles	63	155	61	11	290	86	207	71	27	391	69	281	172	21	543	71	191	73	19	354	1578
% Automobiles	91.3	92.3	92.4	100	92.4	95.6	93.7	92.2	100	94.2	95.8	93.0	96.6	100	94.8	94.7	97.9	94.8	100	96.7	94.6
Commercial	6	13	5	0	24	4	14	6	0	24	3	21	6	0	30	4	4	4	0	12	90
% Commercial	8.7	7.7	7.6	0	7.6	4.4	6.3	7.8	0	5.8	4.2	7.0	3.4	0	5.2	5.3	2.1	5.2	0	3.3	5.4

DE TRAFFIC

detraffic.com
(386) 341-4186
CR 200A at NE 35th St
Marion County, FL

File Name : CR 200A at 35th
Site Code : 00000001
Start Date : 9/24/2024
Page No : 5



DE TRAFFIC

detraffic.com
(386) 341-4186
CR 200A at NE 35th St
Marion County, FL

File Name : CR 200A at 35th
Site Code : 00000001
Start Date : 9/24/2024
Page No : 6

Groups Printed- Peds

	CR 200A Southbound					NE 35th St Westbound					CR 200A Northbound					NE 35th St Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	1
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	1
08:15 AM	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	1	1	2
08:30 AM	0	0	0	1	1	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	2
Total	0	0	0	1	1	0	0	0	2	2	0	0	0	0	0	0	0	0	1	1	4
04:00 PM	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
04:15 PM	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	1
04:45 PM	0	0	0	1	1	0	0	0	1	1	0	0	0	0	0	0	0	0	1	1	3
Total	0	0	0	2	2	0	0	0	2	2	0	0	0	0	0	0	0	0	1	1	5
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	1
05:30 PM	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	1
Total	0	0	0	0	0	0	0	0	1	1	0	0	0	1	1	0	0	0	0	0	2
Grand Total	0	0	0	3	3	0	0	0	5	5	0	0	0	2	2	0	0	0	2	2	12
Apprch %	0	0	0	100		0	0	0	100		0	0	0	100		0	0	0	100		
Total %	0	0	0	25	25	0	0	0	41.7	41.7	0	0	0	16.7	16.7	0	0	0	16.7	16.7	

DE TRAFFIC

detraffic.com
(386) 341-4186
NE 25th Ave at NE 35th St
Marion County, FL

File Name : 25th at 35th
Site Code : 00000002
Start Date : 9/24/2024
Page No : 1

Groups Printed- Automobiles - Commercial

	NE 25th Ave Southbound					NE 35th St Westbound					NE 25th Ave Northbound					NE 35th St Eastbound					
Start Time	Left	Thru	Right	R/R	App. Total	Left	Thru	Right	R/R	App. Total	Left	Thru	Right	R/R	App. Total	Left	Thru	Right	R/R	App. Total	Int. Total
07:00 AM	6	36	8	3	53	11	62	5	3	81	9	16	6	2	33	6	44	10	2	62	229
07:15 AM	8	47	15	4	74	16	67	3	1	87	13	18	4	3	38	4	55	11	6	76	275
07:30 AM	8	53	19	9	89	16	68	6	2	92	16	22	8	1	47	10	50	14	4	78	306
07:45 AM	11	47	18	7	83	20	73	7	3	103	19	17	4	2	42	7	55	15	4	81	309
Total	33	183	60	23	299	63	270	21	9	363	57	73	22	8	160	27	204	50	16	297	1119
08:00 AM	16	41	16	8	81	18	75	5	4	102	12	16	9	1	38	10	50	13	3	76	297
08:15 AM	16	52	14	7	89	16	59	6	2	83	9	30	7	2	48	12	38	13	6	69	289
08:30 AM	11	42	11	5	69	15	52	5	3	75	9	31	9	2	51	12	41	10	6	69	264
08:45 AM	9	35	10	4	58	12	55	6	3	76	8	25	7	3	43	10	34	13	3	60	237
Total	52	170	51	24	297	61	241	22	12	336	38	102	32	8	180	44	163	49	18	274	1087
04:00 PM	4	30	13	3	50	15	63	4	3	85	20	60	14	3	97	10	74	11	3	98	330
04:15 PM	8	24	12	4	48	13	65	6	2	86	25	77	15	4	121	15	68	7	3	93	348
04:30 PM	5	19	12	6	42	15	67	7	2	91	21	57	15	6	99	15	75	12	2	104	336
04:45 PM	4	25	16	4	49	18	61	6	4	89	20	75	15	4	114	16	68	12	3	99	351
Total	21	98	53	17	189	61	256	23	11	351	86	269	59	17	431	56	285	42	11	394	1365
05:00 PM	6	27	22	7	62	19	48	14	1	82	24	62	13	4	103	12	74	13	4	103	350
05:15 PM	5	24	15	8	52	13	56	11	2	82	26	74	17	2	119	13	76	9	2	100	353
05:30 PM	4	22	15	7	48	11	45	6	3	65	23	61	9	3	96	16	66	6	3	91	300
05:45 PM	6	19	15	5	45	13	42	5	4	64	16	61	12	4	93	13	61	6	2	82	284
Total	21	92	67	27	207	56	191	36	10	293	89	258	51	13	411	54	277	34	11	376	1287
Grand Total	127	543	231	91	992	241	958	102	42	1343	270	702	164	46	1182	181	929	175	56	1341	4858
Apprch %	12.8	54.7	23.3	9.2		17.9	71.3	7.6	3.1		22.8	59.4	13.9	3.9		13.5	69.3	13	4.2		
Total %	2.6	11.2	4.8	1.9	20.4	5	19.7	2.1	0.9	27.6	5.6	14.5	3.4	0.9	24.3	3.7	19.1	3.6	1.2	27.6	
Automobiles	125	536	225	91	977	234	897	97	42	1270	264	693	158	46	1161	175	859	169	56	1259	4667
% Automobiles	98.4	98.7	97.4	100	98.5	97.1	93.6	95.1	100	94.6	97.8	98.7	96.3	100	98.2	96.7	92.5	96.6	100	93.9	96.1
Commercial	2	7	6	0	15	7	61	5	0	73	6	9	6	0	21	6	70	6	0	82	191
% Commercial	1.6	1.3	2.6	0	1.5	2.9	6.4	4.9	0	5.4	2.2	1.3	3.7	0	1.8	3.3	7.5	3.4	0	6.1	3.9

DE TRAFFIC

detraffic.com
(386) 341-4186
NE 25th Ave at NE 35th St
Marion County, FL

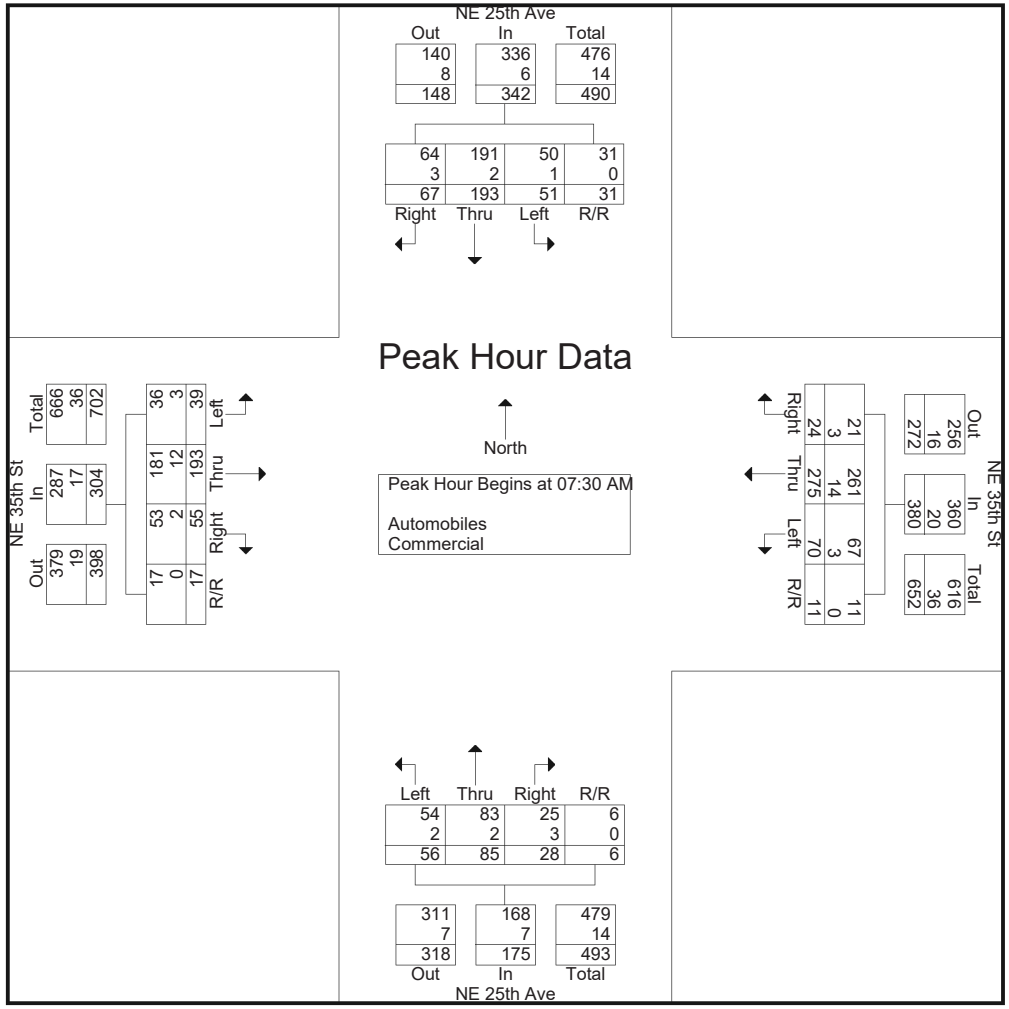
File Name : 25th at 35th
Site Code : 00000002
Start Date : 9/24/2024
Page No : 2

	NE 25th Ave Southbound					NE 35th St Westbound					NE 25th Ave Northbound					NE 35th St Eastbound					
Start Time	Left	Thru	Right	R/R	App. Total	Left	Thru	Right	R/R	App. Total	Left	Thru	Right	R/R	App. Total	Left	Thru	Right	R/R	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:30 AM																					
07:30 AM	8	53	19	9	89	16	68	6	2	92	16	22	8	1	47	10	50	14	4	78	306
07:45 AM	11	47	18	7	83	20	73	7	3	103	19	17	4	2	42	7	55	15	4	81	309
08:00 AM	16	41	16	8	81	18	75	5	4	102	12	16	9	1	38	10	50	13	3	76	297
08:15 AM	16	52	14	7	89	16	59	6	2	83	9	30	7	2	48	12	38	13	6	69	289
Total Volume	51	193	67	31	342	70	275	24	11	380	56	85	28	6	175	39	193	55	17	304	1201
% App. Total	14.9	56.4	19.6	9.1		18.4	72.4	6.3	2.9		32	48.6	16	3.4		12.8	63.5	18.1	5.6		
PHF	.797	.910	.882	.861	.961	.875	.917	.857	.688	.922	.737	.708	.778	.750	.911	.813	.877	.917	.708	.938	.972
Automobiles	50	191	64	31	336	67	261	21	11	360	54	83	25	6	168	36	181	53	17	287	1151
% Automobiles	98.0	99.0	95.5	100	98.2	95.7	94.9	87.5	100	94.7	96.4	97.6	89.3	100	96.0	92.3	93.8	96.4	100	94.4	95.8
Commercial	1	2	3	0	6	3	14	3	0	20	2	2	3	0	7	3	12	2	0	17	50
% Commercial	2.0	1.0	4.5	0	1.8	4.3	5.1	12.5	0	5.3	3.6	2.4	10.7	0	4.0	7.7	6.2	3.6	0	5.6	4.2

DE TRAFFIC

detraffic.com
(386) 341-4186
NE 25th Ave at NE 35th St
Marion County, FL

File Name : 25th at 35th
Site Code : 00000002
Start Date : 9/24/2024
Page No : 3



DE TRAFFIC

detraffic.com
(386) 341-4186
NE 25th Ave at NE 35th St
Marion County, FL

File Name : 25th at 35th
Site Code : 00000002
Start Date : 9/24/2024
Page No : 4

	NE 25th Ave Southbound					NE 35th St Westbound					NE 25th Ave Northbound					NE 35th St Eastbound					
Start Time	Left	Thru	Right	R/R	App. Total	Left	Thru	Right	R/R	App. Total	Left	Thru	Right	R/R	App. Total	Left	Thru	Right	R/R	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:30 PM																					
04:30 PM	5	19	12	6	42	15	67	7	2	91	21	57	15	6	99	15	75	12	2	104	336
04:45 PM	4	25	16	4	49	18	61	6	4	89	20	75	15	4	114	16	68	12	3	99	351
05:00 PM	6	27	22	7	62	19	48	14	1	82	24	62	13	4	103	12	74	13	4	103	350
05:15 PM	5	24	15	8	52	13	56	11	2	82	26	74	17	2	119	13	76	9	2	100	353
Total Volume	20	95	65	25	205	65	232	38	9	344	91	268	60	16	435	56	293	46	11	406	1390
% App. Total	9.8	46.3	31.7	12.2		18.9	67.4	11	2.6		20.9	61.6	13.8	3.7		13.8	72.2	11.3	2.7		
PHF	.833	.880	.739	.781	.827	.855	.866	.679	.563	.945	.875	.893	.882	.667	.914	.875	.964	.885	.688	.976	.984
Automobiles	20	93	64	25	202	65	217	37	9	328	90	265	59	16	430	55	271	44	11	381	1341
% Automobiles	100	97.9	98.5	100	98.5	100	93.5	97.4	100	95.3	98.9	98.9	98.3	100	98.9	98.2	92.5	95.7	100	93.8	96.5
Commercial	0	2	1	0	3	0	15	1	0	16	1	3	1	0	5	1	22	2	0	25	49
% Commercial	0	2.1	1.5	0	1.5	0	6.5	2.6	0	4.7	1.1	1.1	1.7	0	1.1	1.8	7.5	4.3	0	6.2	3.5

DE TRAFFIC

detraffic.com
(386) 341-4186
CR 200A at NE 35th St
Marion County, FL

File Name : CR 200A at 35th
Site Code : 00000001
Start Date : 9/24/2024
Page No : 6

Groups Printed- Peds

	CR 200A Southbound					NE 35th St Westbound					CR 200A Northbound					NE 35th St Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	1
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	1
08:15 AM	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	1	1	2
08:30 AM	0	0	0	1	1	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	2
Total	0	0	0	1	1	0	0	0	2	2	0	0	0	0	0	0	0	0	1	1	4
04:00 PM	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
04:15 PM	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	1
04:45 PM	0	0	0	1	1	0	0	0	1	1	0	0	0	0	0	0	0	0	1	1	3
Total	0	0	0	2	2	0	0	0	2	2	0	0	0	0	0	0	0	0	1	1	5
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	1
05:30 PM	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	1
Total	0	0	0	0	0	0	0	0	1	1	0	0	0	1	1	0	0	0	0	0	2
Grand Total	0	0	0	3	3	0	0	0	5	5	0	0	0	2	2	0	0	0	2	2	12
Apprch %	0	0	0	100		0	0	0	100		0	0	0	100		0	0	0	100		
Total %	0	0	0	25	25	0	0	0	41.7	41.7	0	0	0	16.7	16.7	0	0	0	16.7	16.7	

DE TRAFFIC

detraffic.com
(386) 341-4186
NE 25th Ave at NE 35th St
Marion County, FL

File Name : 25th at 35th
Site Code : 00000002
Start Date : 9/24/2024
Page No : 1

Groups Printed- Automobiles - Commercial

	NE 25th Ave Southbound					NE 35th St Westbound					NE 25th Ave Northbound					NE 35th St Eastbound					
Start Time	Left	Thru	Right	R/R	App. Total	Left	Thru	Right	R/R	App. Total	Left	Thru	Right	R/R	App. Total	Left	Thru	Right	R/R	App. Total	Int. Total
07:00 AM	6	36	8	3	53	11	62	5	3	81	9	16	6	2	33	6	44	10	2	62	229
07:15 AM	8	47	15	4	74	16	67	3	1	87	13	18	4	3	38	4	55	11	6	76	275
07:30 AM	8	53	19	9	89	16	68	6	2	92	16	22	8	1	47	10	50	14	4	78	306
07:45 AM	11	47	18	7	83	20	73	7	3	103	19	17	4	2	42	7	55	15	4	81	309
Total	33	183	60	23	299	63	270	21	9	363	57	73	22	8	160	27	204	50	16	297	1119
08:00 AM	16	41	16	8	81	18	75	5	4	102	12	16	9	1	38	10	50	13	3	76	297
08:15 AM	16	52	14	7	89	16	59	6	2	83	9	30	7	2	48	12	38	13	6	69	289
08:30 AM	11	42	11	5	69	15	52	5	3	75	9	31	9	2	51	12	41	10	6	69	264
08:45 AM	9	35	10	4	58	12	55	6	3	76	8	25	7	3	43	10	34	13	3	60	237
Total	52	170	51	24	297	61	241	22	12	336	38	102	32	8	180	44	163	49	18	274	1087
04:00 PM	4	30	13	3	50	15	63	4	3	85	20	60	14	3	97	10	74	11	3	98	330
04:15 PM	8	24	12	4	48	13	65	6	2	86	25	77	15	4	121	15	68	7	3	93	348
04:30 PM	5	19	12	6	42	15	67	7	2	91	21	57	15	6	99	15	75	12	2	104	336
04:45 PM	4	25	16	4	49	18	61	6	4	89	20	75	15	4	114	16	68	12	3	99	351
Total	21	98	53	17	189	61	256	23	11	351	86	269	59	17	431	56	285	42	11	394	1365
05:00 PM	6	27	22	7	62	19	48	14	1	82	24	62	13	4	103	12	74	13	4	103	350
05:15 PM	5	24	15	8	52	13	56	11	2	82	26	74	17	2	119	13	76	9	2	100	353
05:30 PM	4	22	15	7	48	11	45	6	3	65	23	61	9	3	96	16	66	6	3	91	300
05:45 PM	6	19	15	5	45	13	42	5	4	64	16	61	12	4	93	13	61	6	2	82	284
Total	21	92	67	27	207	56	191	36	10	293	89	258	51	13	411	54	277	34	11	376	1287
Grand Total	127	543	231	91	992	241	958	102	42	1343	270	702	164	46	1182	181	929	175	56	1341	4858
Apprch %	12.8	54.7	23.3	9.2		17.9	71.3	7.6	3.1		22.8	59.4	13.9	3.9		13.5	69.3	13	4.2		
Total %	2.6	11.2	4.8	1.9	20.4	5	19.7	2.1	0.9	27.6	5.6	14.5	3.4	0.9	24.3	3.7	19.1	3.6	1.2	27.6	
Automobiles	125	536	225	91	977	234	897	97	42	1270	264	693	158	46	1161	175	859	169	56	1259	4667
% Automobiles	98.4	98.7	97.4	100	98.5	97.1	93.6	95.1	100	94.6	97.8	98.7	96.3	100	98.2	96.7	92.5	96.6	100	93.9	96.1
Commercial	2	7	6	0	15	7	61	5	0	73	6	9	6	0	21	6	70	6	0	82	191
% Commercial	1.6	1.3	2.6	0	1.5	2.9	6.4	4.9	0	5.4	2.2	1.3	3.7	0	1.8	3.3	7.5	3.4	0	6.1	3.9

DE TRAFFIC

detraffic.com
(386) 341-4186
NE 25th Ave at NE 35th St
Marion County, FL

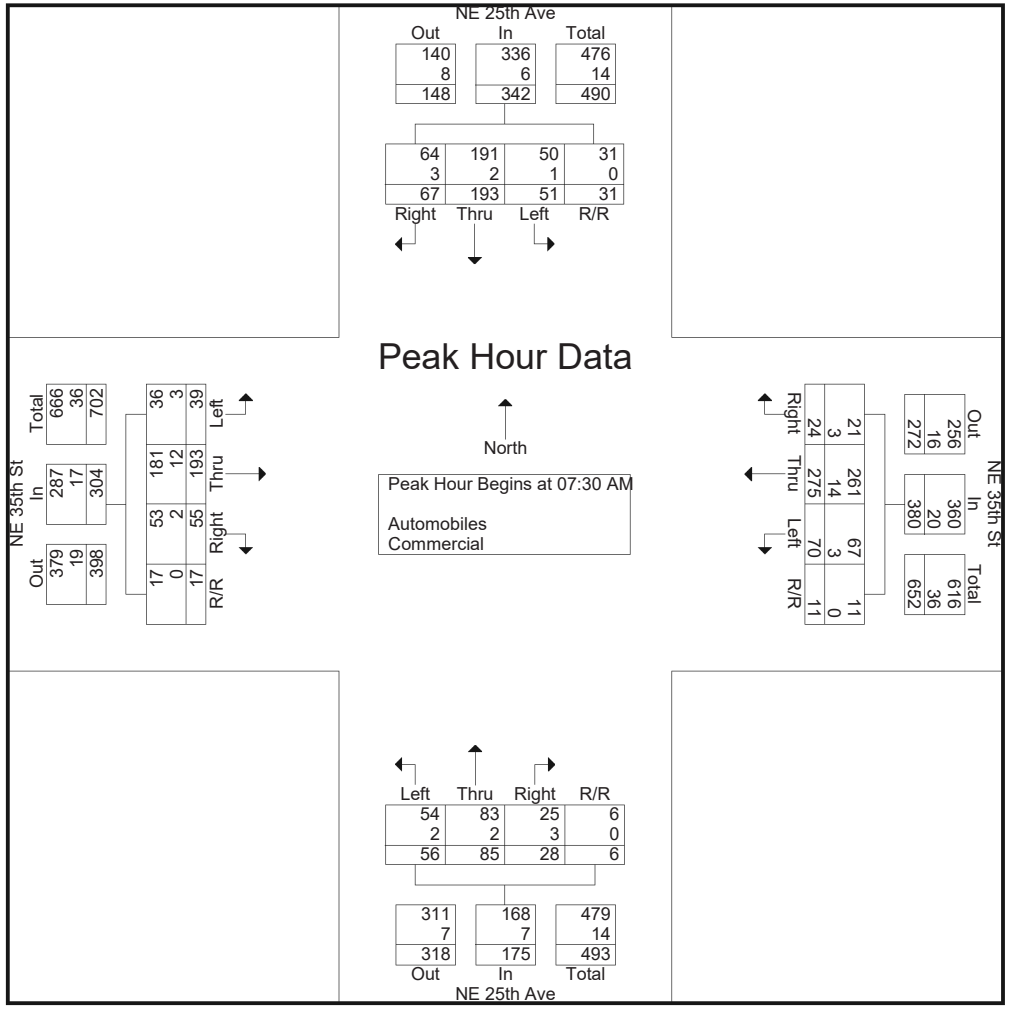
File Name : 25th at 35th
Site Code : 00000002
Start Date : 9/24/2024
Page No : 2

	NE 25th Ave Southbound					NE 35th St Westbound					NE 25th Ave Northbound					NE 35th St Eastbound					
Start Time	Left	Thru	Right	R/R	App. Total	Left	Thru	Right	R/R	App. Total	Left	Thru	Right	R/R	App. Total	Left	Thru	Right	R/R	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:30 AM																					
07:30 AM	8	53	19	9	89	16	68	6	2	92	16	22	8	1	47	10	50	14	4	78	306
07:45 AM	11	47	18	7	83	20	73	7	3	103	19	17	4	2	42	7	55	15	4	81	309
08:00 AM	16	41	16	8	81	18	75	5	4	102	12	16	9	1	38	10	50	13	3	76	297
08:15 AM	16	52	14	7	89	16	59	6	2	83	9	30	7	2	48	12	38	13	6	69	289
Total Volume	51	193	67	31	342	70	275	24	11	380	56	85	28	6	175	39	193	55	17	304	1201
% App. Total	14.9	56.4	19.6	9.1		18.4	72.4	6.3	2.9		32	48.6	16	3.4		12.8	63.5	18.1	5.6		
PHF	.797	.910	.882	.861	.961	.875	.917	.857	.688	.922	.737	.708	.778	.750	.911	.813	.877	.917	.708	.938	.972
Automobiles	50	191	64	31	336	67	261	21	11	360	54	83	25	6	168	36	181	53	17	287	1151
% Automobiles	98.0	99.0	95.5	100	98.2	95.7	94.9	87.5	100	94.7	96.4	97.6	89.3	100	96.0	92.3	93.8	96.4	100	94.4	95.8
Commercial	1	2	3	0	6	3	14	3	0	20	2	2	3	0	7	3	12	2	0	17	50
% Commercial	2.0	1.0	4.5	0	1.8	4.3	5.1	12.5	0	5.3	3.6	2.4	10.7	0	4.0	7.7	6.2	3.6	0	5.6	4.2

DE TRAFFIC

detraffic.com
(386) 341-4186
NE 25th Ave at NE 35th St
Marion County, FL

File Name : 25th at 35th
Site Code : 00000002
Start Date : 9/24/2024
Page No : 3



DE TRAFFIC

detraffic.com
(386) 341-4186
NE 25th Ave at NE 35th St
Marion County, FL

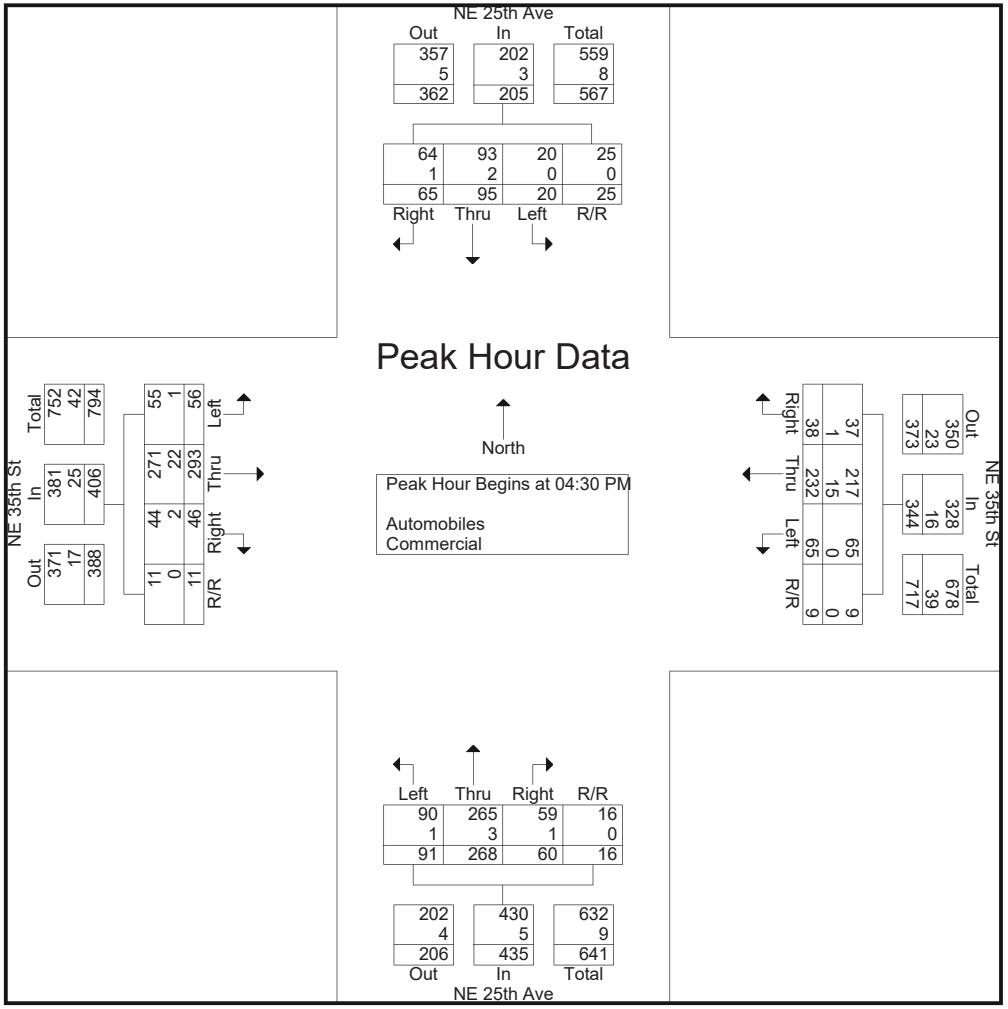
File Name : 25th at 35th
Site Code : 00000002
Start Date : 9/24/2024
Page No : 4

	NE 25th Ave Southbound					NE 35th St Westbound					NE 25th Ave Northbound					NE 35th St Eastbound					
Start Time	Left	Thru	Right	R/R	App. Total	Left	Thru	Right	R/R	App. Total	Left	Thru	Right	R/R	App. Total	Left	Thru	Right	R/R	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:30 PM																					
04:30 PM	5	19	12	6	42	15	67	7	2	91	21	57	15	6	99	15	75	12	2	104	336
04:45 PM	4	25	16	4	49	18	61	6	4	89	20	75	15	4	114	16	68	12	3	99	351
05:00 PM	6	27	22	7	62	19	48	14	1	82	24	62	13	4	103	12	74	13	4	103	350
05:15 PM	5	24	15	8	52	13	56	11	2	82	26	74	17	2	119	13	76	9	2	100	353
Total Volume	20	95	65	25	205	65	232	38	9	344	91	268	60	16	435	56	293	46	11	406	1390
% App. Total	9.8	46.3	31.7	12.2		18.9	67.4	11	2.6		20.9	61.6	13.8	3.7		13.8	72.2	11.3	2.7		
PHF	.833	.880	.739	.781	.827	.855	.866	.679	.563	.945	.875	.893	.882	.667	.914	.875	.964	.885	.688	.976	.984
Automobiles	20	93	64	25	202	65	217	37	9	328	90	265	59	16	430	55	271	44	11	381	1341
% Automobiles	100	97.9	98.5	100	98.5	100	93.5	97.4	100	95.3	98.9	98.9	98.3	100	98.9	98.2	92.5	95.7	100	93.8	96.5
Commercial	0	2	1	0	3	0	15	1	0	16	1	3	1	0	5	1	22	2	0	25	49
% Commercial	0	2.1	1.5	0	1.5	0	6.5	2.6	0	4.7	1.1	1.1	1.7	0	1.1	1.8	7.5	4.3	0	6.2	3.5

DE TRAFFIC

detraffic.com
(386) 341-4186
NE 25th Ave at NE 35th St
Marion County, FL

File Name : 25th at 35th
Site Code : 00000002
Start Date : 9/24/2024
Page No : 5



DE TRAFFIC

detraffic.com
(386) 341-4186
NE 25th Ave at NE 35th St
Marion County, FL

File Name : 25th at 35th
Site Code : 00000002
Start Date : 9/24/2024

Groups Printed- Peds

	NE 25th Ave Southbound					NE 35th St Westbound					NE 25th Ave Northbound					NE 35th St Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
07:45 AM	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	1
Total	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	1
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1
Grand Total	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	1	1	2
Apprch %	0	0	0	0		0	0	0	100		0	0	0	0		0	0	0	100		
Total %	0	0	0	0	0	0	0	0	50	50	0	0	0	0	0	0	0	0	50	50	

DE TRAFFIC

detraffic.com
(386) 341-4186
CR 200A at NE 49th St
Marion County, FL

File Name : CR 200A at 49th
Site Code : 00000005
Start Date : 9/24/2024
Page No : 1

	CR A					E					CR A					E					
Start Time	Left	Thru	Right	R/R	App. Total	Left	Thru	Right	R/R	App. Total	Left	Thru	Right	R/R	App. Total	Left	Thru	Right	R/R	App. Total	Int. Total
07:00 AM	9	66	5	1	81	9	6	8	1	24	6	74	10	5	95	3	8	3	2	16	216
07:15 AM	18	77	5	1	101	18	9	7	2	36	5	81	9	3	98	4	17	6	1	28	263
07:30 AM	18	92	6	2	118	19	10	10	3	42	9	86	9	4	108	6	18	5	2	31	299
07:45 AM	20	87	5	1	113	23	13	9	4	49	10	97	5	5	117	4	20	8	1	33	312
Total	65	322	21	5	413	69	38	34	10	151	30	338	33	17	418	17	63	22	6	108	1090
08:00 AM	24	77	4	2	107	25	16	13	1	55	8	95	8	4	115	5	17	10	2	34	311
08:15 AM	19	81	6	3	109	17	18	9	2	46	11	78	5	5	99	7	18	8	1	34	288
08:30 AM	23	76	3	4	106	19	13	13	2	47	12	85	5	6	108	4	16	13	2	35	296
08:45 AM	17	67	3	2	89	17	12	8	3	40	10	79	6	4	99	9	14	9	1	33	261
Total	83	301	16	11	411	78	59	43	8	188	41	337	24	19	421	25	65	40	6	136	1156
04:00 PM	14	47	3	1	65	6	17	7	4	34	6	73	18	3	100	6	8	9	1	24	223
04:15 PM	16	57	3	2	78	10	20	11	3	44	4	76	18	4	102	4	11	7	2	24	248
04:30 PM	19	59	3	1	82	13	24	16	2	55	5	86	21	6	118	5	16	9	1	31	286
04:45 PM	17	67	5	1	90	10	18	13	4	45	5	78	23	4	110	7	15	8	2	32	277
Total	66	230	14	5	315	39	79	47	13	178	20	313	80	17	430	22	50	33	6	111	1034
05:00 PM	22	71	4	2	99	9	24	8	6	47	2	80	18	5	105	9	20	10	6	45	296
05:15 PM	16	59	6	1	82	10	19	11	4	44	3	73	23	2	101	10	17	10	4	41	268
05:30 PM	11	53	4	3	71	9	11	13	5	38	5	78	19	5	107	9	14	8	4	35	251
05:45 PM	16	43	6	0	65	6	16	7	4	33	6	66	23	4	99	9	9	7	3	28	225
Total	65	226	20	6	317	34	70	39	19	162	16	297	83	16	412	37	60	35	17	149	1040
Grand Total	279	1079	71	27	1456	220	246	163	50	679	107	1285	220	69	1681	101	238	130	35	504	4320
Apprch %	19.2	74.1	4.9	1.9		32.4	36.2	24	7.4		6.4	76.4	13.1	4.1		20	47.2	25.8	6.9		
Total %	6.5	25	1.6	0.6	33.7	5.1	5.7	3.8	1.2	15.7	2.5	29.7	5.1	1.6	38.9	2.3	5.5	3	0.8	11.7	
Automobiles	270	998	67	26	1361	214	240	158	50	662	101	1206	207	69	1583	97	232	126	35	490	4096
% Automobiles	96.8	92.5	94.4	96.3	93.5	97.3	97.6	96.9	100	97.5	94.4	93.9	94.1	100	94.2	96	97.5	96.9	100	97.2	94.8
Commercial	9	81	4	1	95	6	6	5	0	17	6	79	13	0	98	4	6	4	0	14	224
% Commercial	3.2	7.5	5.6	3.7	6.5	2.7	2.4	3.1	0	2.5	5.6	6.1	5.9	0	5.8	4	2.5	3.1	0	2.8	5.2

DE TRAFFIC

detraffic.com
(386) 341-4186
CR 200A at NE 49th St
Marion County, FL

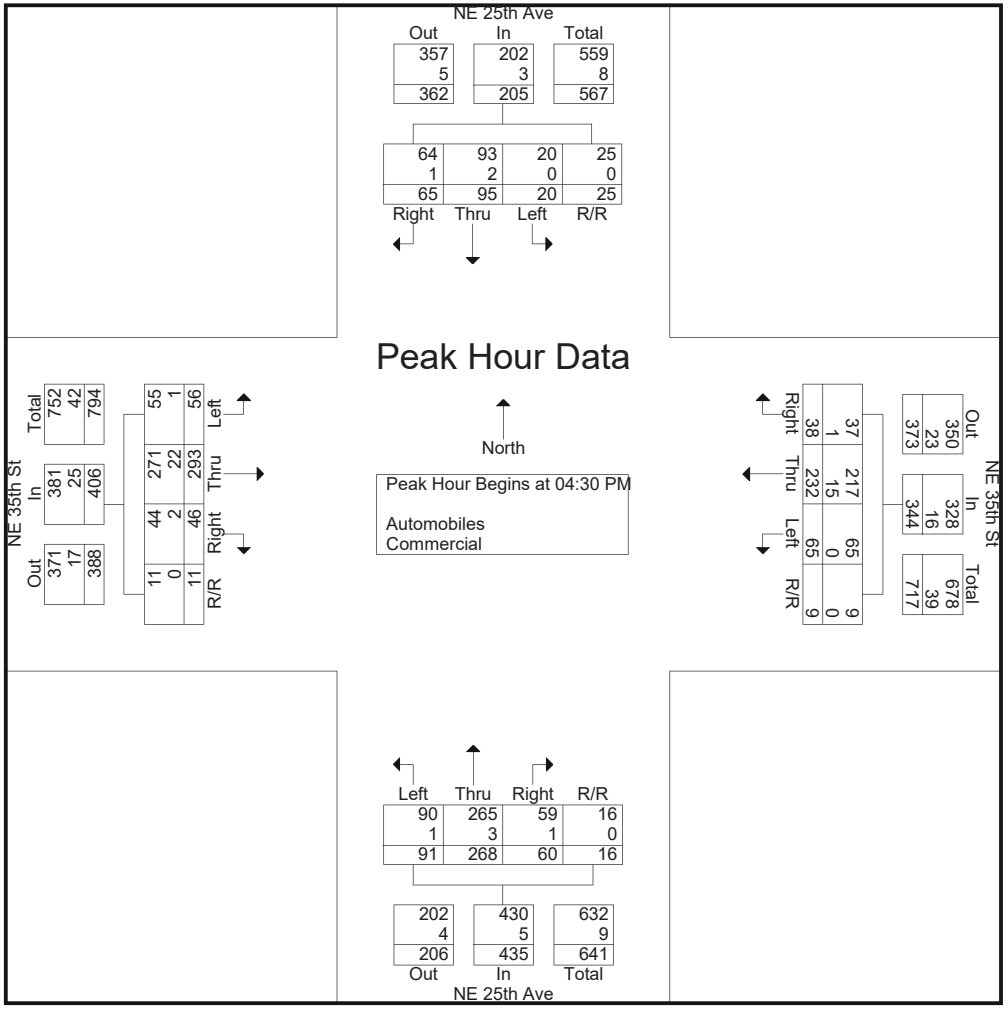
File Name : CR 200A at 49th
Site Code : 00000005
Start Date : 9/24/2024
Page No : 2

	CR A					E					CR A					E E					
Start Time	Left	Thru	Right	R/R	App. Total	Left	Thru	Right	R/R	App. Total	Left	Thru	Right	R/R	App. Total	Left	Thru	Right	R/R	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:30 AM																					
07:30 AM	18	92	6	2	118	19	10	10	3	42	9	86	9	4	108	6	18	5	2	31	299
07:45 AM	20	87	5	1	113	23	13	9	4	49	10	97	5	5	117	4	20	8	1	33	312
08:00 AM	24	77	4	2	107	25	16	13	1	55	8	95	8	4	115	5	17	10	2	34	311
08:15 AM	19	81	6	3	109	17	18	9	2	46	11	78	5	5	99	7	18	8	1	34	288
Total Volume	81	337	21	8	447	84	57	41	10	192	38	356	27	18	439	22	73	31	6	132	1210
% App. Total	18.1	75.4	4.7	1.8		43.8	29.7	21.4	5.2		8.7	81.1	6.2	4.1		16.7	55.3	23.5	4.5		
PHF	.844	.916	.875	.667	.947	.840	.792	.788	.625	.873	.864	.918	.750	.900	.938	.786	.913	.775	.750	.971	.970
Automobiles	78	317	21	8	424	84	55	40	10	189	36	336	23	18	413	21	71	30	6	128	1154
% Automobiles	96.3	94.1	100	100	94.9	100	96.5	97.6	100	98.4	94.7	94.4	85.2	100	94.1	95.5	97.3	96.8	100	97.0	95.4
Commercial	3	20	0	0	23	0	2	1	0	3	2	20	4	0	26	1	2	1	0	4	56
% Commercial	3.7	5.9	0	0	5.1	0	3.5	2.4	0	1.6	5.3	5.6	14.8	0	5.9	4.5	2.7	3.2	0	3.0	4.6

DE TRAFFIC

detraffic.com
(386) 341-4186
NE 25th Ave at NE 35th St
Marion County, FL

File Name : 25th at 35th
Site Code : 00000002
Start Date : 9/24/2024
Page No : 5



DE TRAFFIC

detraffic.com
(386) 341-4186
NE 25th Ave at NE 35th St
Marion County, FL

File Name : 25th at 35th
Site Code : 00000002
Start Date : 9/24/2024

Groups Printed- Peds

	NE 25th Ave Southbound					NE 35th St Westbound					NE 25th Ave Northbound					NE 35th St Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
07:45 AM	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	1
Total	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	1
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1
Grand Total	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	1	1	2
Apprch %	0	0	0	0		0	0	0	100		0	0	0	0		0	0	0	100		
Total %	0	0	0	0	0	0	0	0	50	50	0	0	0	0	0	0	0	0	50	50	

DE TRAFFIC

detraffic.com
(386) 341-4186
CR 200A at NE 49th St
Marion County, FL

File Name : CR 200A at 49th
Site Code : 00000005
Start Date : 9/24/2024
Page No : 1

	CR A					E					CR A					E					
Start Time	Left	Thru	Right	R/R	App. Total	Left	Thru	Right	R/R	App. Total	Left	Thru	Right	R/R	App. Total	Left	Thru	Right	R/R	App. Total	Int. Total
07:00 AM	9	66	5	1	81	9	6	8	1	24	6	74	10	5	95	3	8	3	2	16	216
07:15 AM	18	77	5	1	101	18	9	7	2	36	5	81	9	3	98	4	17	6	1	28	263
07:30 AM	18	92	6	2	118	19	10	10	3	42	9	86	9	4	108	6	18	5	2	31	299
07:45 AM	20	87	5	1	113	23	13	9	4	49	10	97	5	5	117	4	20	8	1	33	312
Total	65	322	21	5	413	69	38	34	10	151	30	338	33	17	418	17	63	22	6	108	1090
08:00 AM	24	77	4	2	107	25	16	13	1	55	8	95	8	4	115	5	17	10	2	34	311
08:15 AM	19	81	6	3	109	17	18	9	2	46	11	78	5	5	99	7	18	8	1	34	288
08:30 AM	23	76	3	4	106	19	13	13	2	47	12	85	5	6	108	4	16	13	2	35	296
08:45 AM	17	67	3	2	89	17	12	8	3	40	10	79	6	4	99	9	14	9	1	33	261
Total	83	301	16	11	411	78	59	43	8	188	41	337	24	19	421	25	65	40	6	136	1156
04:00 PM	14	47	3	1	65	6	17	7	4	34	6	73	18	3	100	6	8	9	1	24	223
04:15 PM	16	57	3	2	78	10	20	11	3	44	4	76	18	4	102	4	11	7	2	24	248
04:30 PM	19	59	3	1	82	13	24	16	2	55	5	86	21	6	118	5	16	9	1	31	286
04:45 PM	17	67	5	1	90	10	18	13	4	45	5	78	23	4	110	7	15	8	2	32	277
Total	66	230	14	5	315	39	79	47	13	178	20	313	80	17	430	22	50	33	6	111	1034
05:00 PM	22	71	4	2	99	9	24	8	6	47	2	80	18	5	105	9	20	10	6	45	296
05:15 PM	16	59	6	1	82	10	19	11	4	44	3	73	23	2	101	10	17	10	4	41	268
05:30 PM	11	53	4	3	71	9	11	13	5	38	5	78	19	5	107	9	14	8	4	35	251
05:45 PM	16	43	6	0	65	6	16	7	4	33	6	66	23	4	99	9	9	7	3	28	225
Total	65	226	20	6	317	34	70	39	19	162	16	297	83	16	412	37	60	35	17	149	1040
Grand Total	279	1079	71	27	1456	220	246	163	50	679	107	1285	220	69	1681	101	238	130	35	504	4320
Apprch %	19.2	74.1	4.9	1.9		32.4	36.2	24	7.4		6.4	76.4	13.1	4.1		20	47.2	25.8	6.9		
Total %	6.5	25	1.6	0.6	33.7	5.1	5.7	3.8	1.2	15.7	2.5	29.7	5.1	1.6	38.9	2.3	5.5	3	0.8	11.7	
Automobiles	270	998	67	26	1361	214	240	158	50	662	101	1206	207	69	1583	97	232	126	35	490	4096
% Automobiles	96.8	92.5	94.4	96.3	93.5	97.3	97.6	96.9	100	97.5	94.4	93.9	94.1	100	94.2	96	97.5	96.9	100	97.2	94.8
Commercial	9	81	4	1	95	6	6	5	0	17	6	79	13	0	98	4	6	4	0	14	224
% Commercial	3.2	7.5	5.6	3.7	6.5	2.7	2.4	3.1	0	2.5	5.6	6.1	5.9	0	5.8	4	2.5	3.1	0	2.8	5.2

DE TRAFFIC

detraffic.com
(386) 341-4186
CR 200A at NE 49th St
Marion County, FL

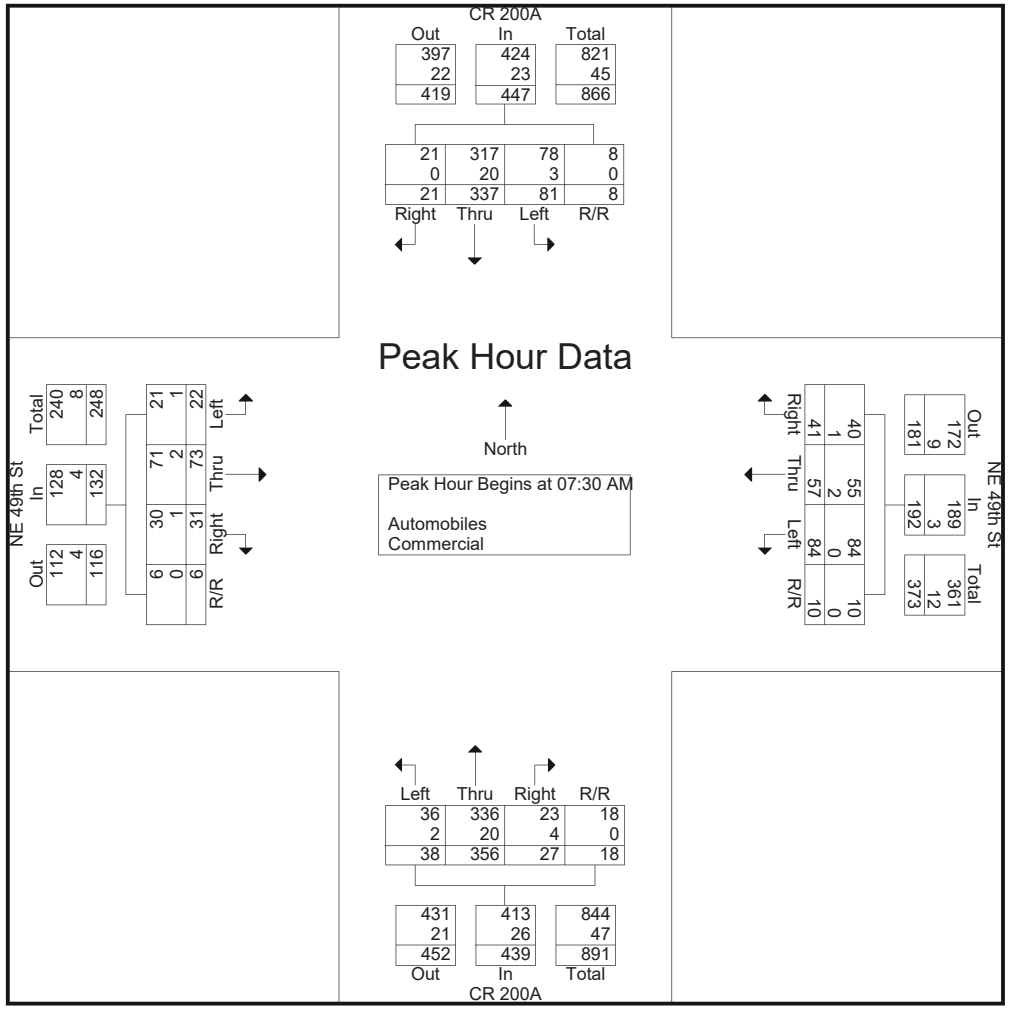
File Name : CR 200A at 49th
Site Code : 00000005
Start Date : 9/24/2024
Page No : 2

	CR A					E					CR A					E E					
Start Time	Left	Thru	Right	R/R	App. Total	Left	Thru	Right	R/R	App. Total	Left	Thru	Right	R/R	App. Total	Left	Thru	Right	R/R	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:30 AM																					
07:30 AM	18	92	6	2	118	19	10	10	3	42	9	86	9	4	108	6	18	5	2	31	299
07:45 AM	20	87	5	1	113	23	13	9	4	49	10	97	5	5	117	4	20	8	1	33	312
08:00 AM	24	77	4	2	107	25	16	13	1	55	8	95	8	4	115	5	17	10	2	34	311
08:15 AM	19	81	6	3	109	17	18	9	2	46	11	78	5	5	99	7	18	8	1	34	288
Total Volume	81	337	21	8	447	84	57	41	10	192	38	356	27	18	439	22	73	31	6	132	1210
% App. Total	18.1	75.4	4.7	1.8		43.8	29.7	21.4	5.2		8.7	81.1	6.2	4.1		16.7	55.3	23.5	4.5		
PHF	.844	.916	.875	.667	.947	.840	.792	.788	.625	.873	.864	.918	.750	.900	.938	.786	.913	.775	.750	.971	.970
Automobiles	78	317	21	8	424	84	55	40	10	189	36	336	23	18	413	21	71	30	6	128	1154
% Automobiles	96.3	94.1	100	100	94.9	100	96.5	97.6	100	98.4	94.7	94.4	85.2	100	94.1	95.5	97.3	96.8	100	97.0	95.4
Commercial	3	20	0	0	23	0	2	1	0	3	2	20	4	0	26	1	2	1	0	4	56
% Commercial	3.7	5.9	0	0	5.1	0	3.5	2.4	0	1.6	5.3	5.6	14.8	0	5.9	4.5	2.7	3.2	0	3.0	4.6

DE TRAFFIC

detraffic.com
(386) 341-4186
CR 200A at NE 49th St
Marion County, FL

File Name : CR 200A at 49th
Site Code : 00000005
Start Date : 9/24/2024
Page No : 3



DE TRAFFIC

detraffic.com
(386) 341-4186
CR 200A at NE 49th St
Marion County, FL

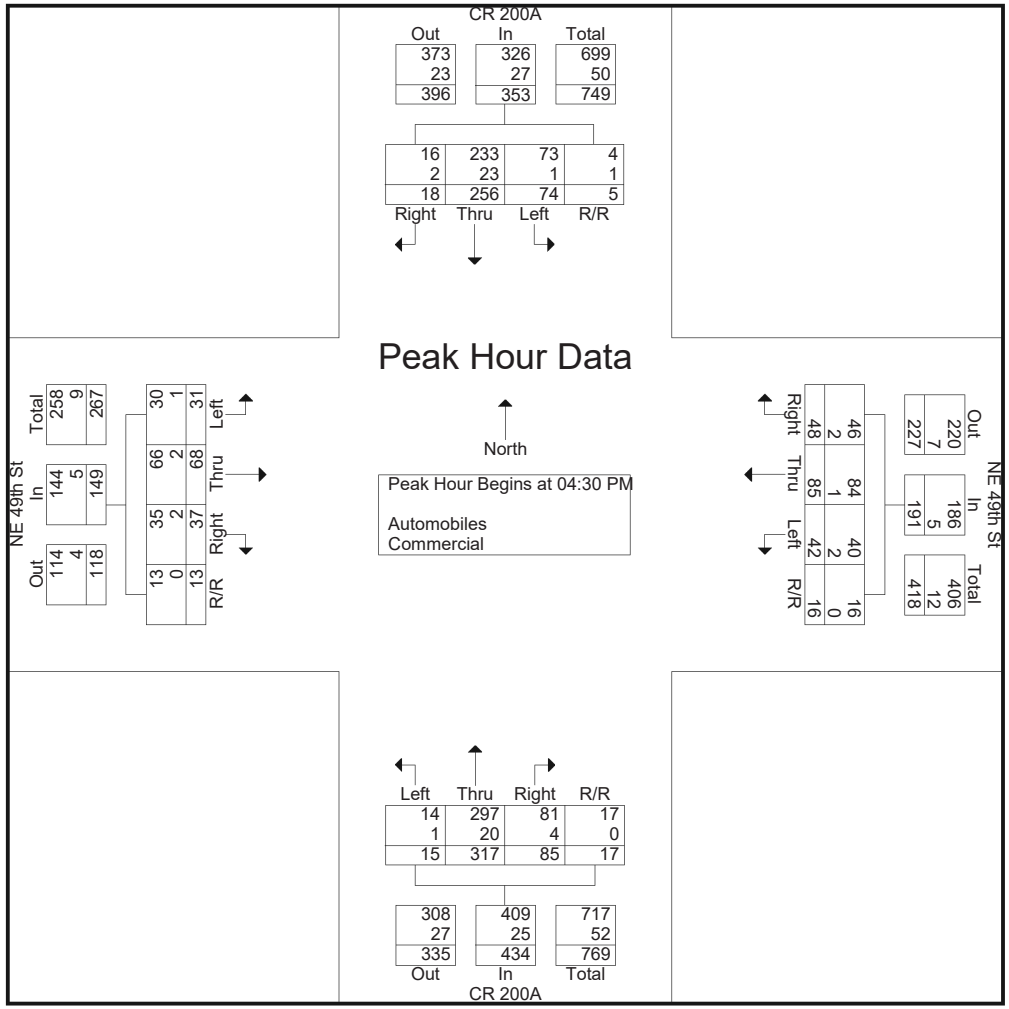
File Name : CR 200A at 49th
Site Code : 00000005
Start Date : 9/24/2024
Page No : 4

	CR A					E					CR A					E E					
Start Time	Left	Thru	Right	R/R	App. Total	Left	Thru	Right	R/R	App. Total	Left	Thru	Right	R/R	App. Total	Left	Thru	Right	R/R	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:30 PM																					
04:30 PM	19	59	3	1	82	13	24	16	2	55	5	86	21	6	118	5	16	9	1	31	286
04:45 PM	17	67	5	1	90	10	18	13	4	45	5	78	23	4	110	7	15	8	2	32	277
05:00 PM	22	71	4	2	99	9	24	8	6	47	2	80	18	5	105	9	20	10	6	45	296
05:15 PM	16	59	6	1	82	10	19	11	4	44	3	73	23	2	101	10	17	10	4	41	268
Total Volume	74	256	18	5	353	42	85	48	16	191	15	317	85	17	434	31	68	37	13	149	1127
% App. Total	21	72.5	5.1	1.4		22	44.5	25.1	8.4		3.5	73	19.6	3.9		20.8	45.6	24.8	8.7		
PHF	.841	.901	.750	.625	.891	.808	.885	.750	.667	.868	.750	.922	.924	.708	.919	.775	.850	.925	.542	.828	.952
Automobiles	73	233	16	4	326	40	84	46	16	186	14	297	81	17	409	30	66	35	13	144	1065
% Automobiles	98.6	91.0	88.9	80.0	92.4	95.2	98.8	95.8	100	97.4	93.3	93.7	95.3	100	94.2	96.8	97.1	94.6	100	96.6	94.5
Commercial	1	23	2	1	27	2	1	2	0	5	1	20	4	0	25	1	2	2	0	5	62
% Commercial	1.4	9.0	11.1	20.0	7.6	4.8	1.2	4.2	0	2.6	6.7	6.3	4.7	0	5.8	3.2	2.9	5.4	0	3.4	5.5

DE TRAFFIC

detraffic.com
(386) 341-4186
CR 200A at NE 49th St
Marion County, FL

File Name : CR 200A at 49th
Site Code : 00000005
Start Date : 9/24/2024
Page No : 5



DE TRAFFIC

detraffic.com
(386) 341-4186
CR 200A at NE 49th St
Marion County, FL

File Name : CR 200A at 49th
Site Code : 00000005
Start Date : 9/24/2024
Page No : 6

	CR A					E					CR A					E E					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
07:45 AM	0	0	0	1	1	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	2
Total	0	0	0	1	1	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	2
08:30 AM	0	0	0	1	1	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	2
Total	0	0	0	1	1	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	2
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	1
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	1
05:00 PM	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Total	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Grand Total	0	0	0	3	3	0	0	0	0	0	0	0	0	3	3	0	0	0	0	0	6
Apprch %	0	0	0	100		0	0	0	0		0	0	0	100		0	0	0	0		
Total %	0	0	0	50	50	0	0	0	0	0	0	0	0	50	50	0	0	0	0	0	

DE TRAFFIC

detraffic.com
(386) 341-4186
Site Access at NE 49th St
Marion County, FL

File Name : Site at 49th
Site Code : 00000004
Start Date : 9/24/2024
Page No : 1

								A	C								
	A				E				A				E				
													E				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	0	0	0	0	0	22	0	22	0	0	0	0	0	30	0	30	52
07:15 AM	0	0	0	0	0	34	0	34	0	0	0	0	0	45	0	45	79
07:30 AM	0	0	0	0	0	40	0	40	1	0	0	1	0	48	0	48	89
07:45 AM	0	0	0	0	0	46	0	46	0	0	0	0	0	47	0	47	93
Total	0	0	0	0	0	142	0	142	1	0	0	1	0	170	0	170	313
08:00 AM	0	0	0	0	0	52	0	52	0	0	1	1	0	54	0	54	107
08:15 AM	0	0	0	0	0	47	0	47	0	0	0	0	0	46	0	46	93
08:30 AM	0	0	0	0	0	44	0	44	0	0	0	0	0	45	0	45	89
08:45 AM	0	0	0	0	0	36	0	36	0	0	0	0	0	43	0	43	79
Total	0	0	0	0	0	179	0	179	0	0	1	1	0	188	0	188	368
04:00 PM	0	0	0	0	0	33	0	33	0	0	0	0	0	45	0	45	78
04:15 PM	0	0	0	0	0	41	0	41	0	0	0	0	0	46	0	46	87
04:30 PM	0	0	0	0	0	56	0	56	0	0	0	0	0	60	1	61	117
04:45 PM	0	0	0	0	0	47	0	47	0	0	0	0	0	55	0	55	102
Total	0	0	0	0	0	177	0	177	0	0	0	0	0	206	1	207	384
05:00 PM	0	0	0	0	0	44	0	44	0	0	0	0	0	62	0	62	106
05:15 PM	0	0	0	0	0	41	0	41	0	0	0	0	0	55	0	55	96
05:30 PM	0	0	0	0	0	39	0	39	0	0	0	0	0	47	0	47	86
05:45 PM	0	0	0	0	0	34	0	34	0	0	0	0	0	49	0	49	83
Total	0	0	0	0	0	158	0	158	0	0	0	0	0	213	0	213	371
Grand Total	0	0	0	0	0	656	0	656	1	0	1	2	0	777	1	778	1436
Apprch %	0	0	0		0	100	0		50	0	50		0	99.9	0.1		
Total %	0	0	0	0	0	45.7	0	45.7	0.1	0	0.1	0.1	0	54.1	0.1	54.2	
Automobiles	0	0	0	0	0	642	0	642	1	0	1	2	0	754	1	755	1399
% Automobiles	0	0	0	0	0	97.9	0	97.9	100	0	100	100	0	97	100	97	97.4
Commercial	0	0	0	0	0	14	0	14	0	0	0	0	0	23	0	23	37
% Commercial	0	0	0	0	0	2.1	0	2.1	0	0	0	0	0	3	0	3	2.6

DE TRAFFIC

detraffic.com
(386) 341-4186
Site Access at NE 49th St
Marion County, FL

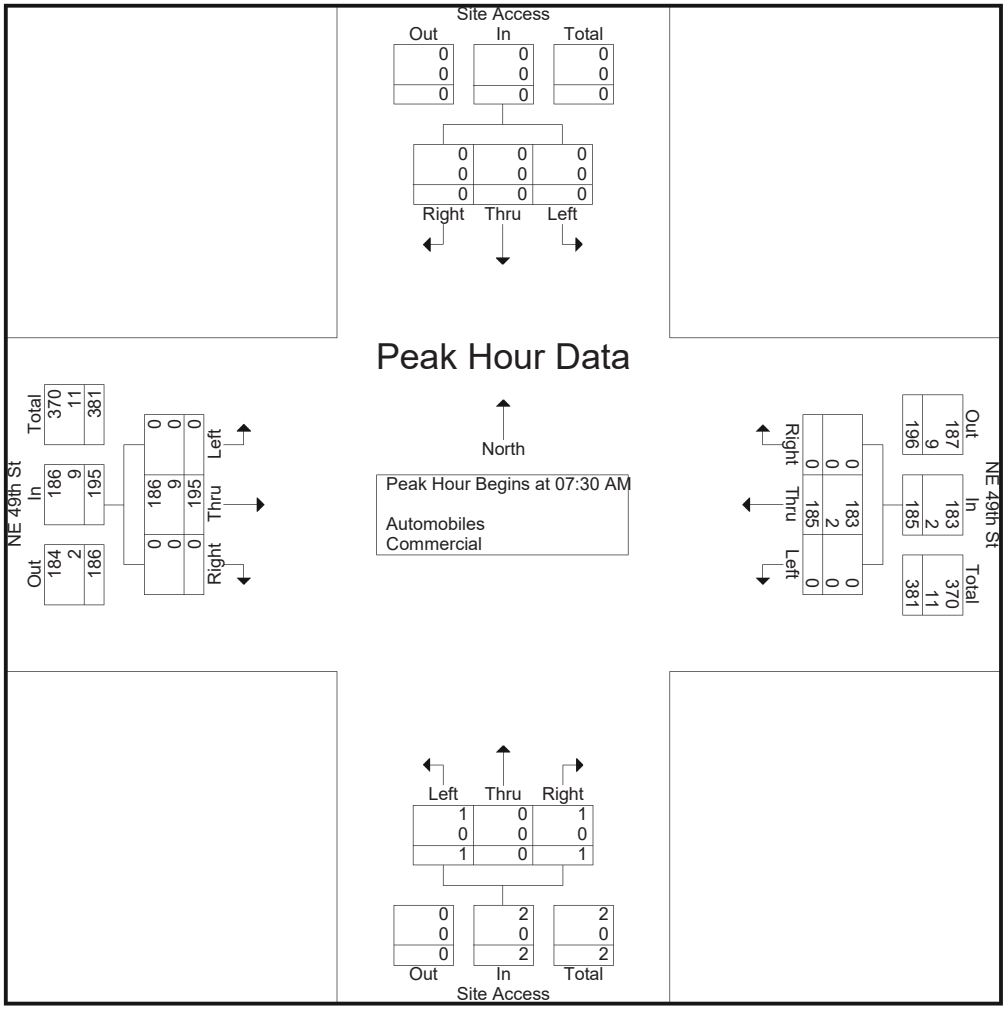
File Name : Site at 49th
Site Code : 00000004
Start Date : 9/24/2024
Page No : 2

	A				E				A				E E				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	0	0	0	0	0	40	0	40	1	0	0	1	0	48	0	48	89
07:45 AM	0	0	0	0	0	46	0	46	0	0	0	0	0	47	0	47	93
08:00 AM	0	0	0	0	0	52	0	52	0	0	1	1	0	54	0	54	107
08:15 AM	0	0	0	0	0	47	0	47	0	0	0	0	0	46	0	46	93
Total Volume	0	0	0	0	0	185	0	185	1	0	1	2	0	195	0	195	382
% App. Total	0	0	0		0	100	0		50	0	50		0	100	0		
PHF	.000	.000	.000	.000	.000	.889	.000	.889	.250	.000	.250	.500	.000	.903	.000	.903	.893
Automobiles	0	0	0	0	0	183	0	183	1	0	1	2	0	186	0	186	371
% Automobiles	0	0	0	0	0	98.9	0	98.9	100	0	100	100	0	95.4	0	95.4	97.1
Commercial	0	0	0	0	0	2	0	2	0	0	0	0	0	9	0	9	11
% Commercial	0	0	0	0	0	1.1	0	1.1	0	0	0	0	0	4.6	0	4.6	2.9

DE TRAFFIC

detraffic.com
(386) 341-4186
Site Access at NE 49th St
Marion County, FL

File Name : Site at 49th
Site Code : 00000004
Start Date : 9/24/2024
Page No : 3



DE TRAFFIC

detraffic.com
(386) 341-4186
Site Access at NE 49th St
Marion County, FL

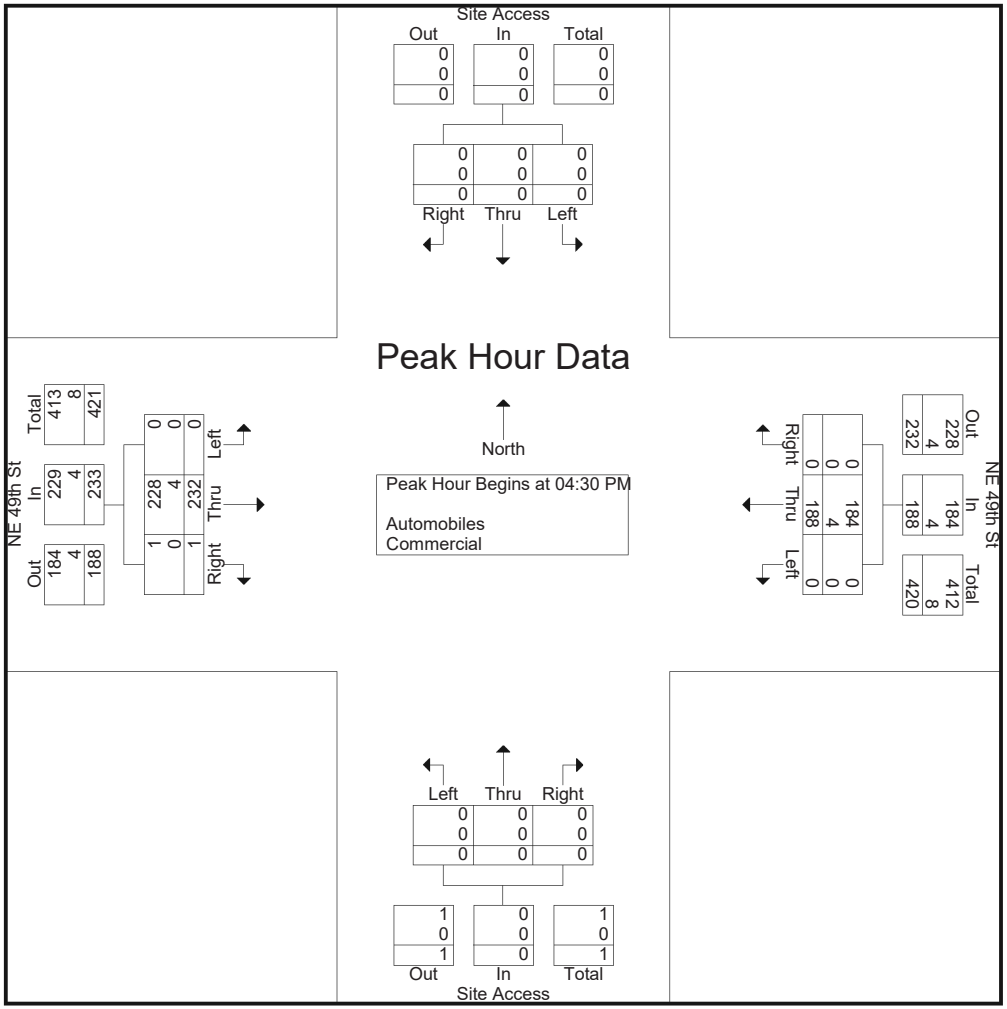
File Name : Site at 49th
Site Code : 00000004
Start Date : 9/24/2024
Page No : 4

	A				E				A				E E				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:30 PM																	
04:30 PM	0	0	0	0	0	56	0	56	0	0	0	0	0	60	1	61	117
04:45 PM	0	0	0	0	0	47	0	47	0	0	0	0	0	55	0	55	102
05:00 PM	0	0	0	0	0	44	0	44	0	0	0	0	0	62	0	62	106
05:15 PM	0	0	0	0	0	41	0	41	0	0	0	0	0	55	0	55	96
Total Volume	0	0	0	0	0	188	0	188	0	0	0	0	0	232	1	233	421
% App. Total	0	0	0		0	100	0		0	0	0		0	99.6	0.4		
PHF	.000	.000	.000	.000	.000	.839	.000	.839	.000	.000	.000	.000	.000	.935	.250	.940	.900
Automobiles	0	0	0	0	0	184	0	184	0	0	0	0	0	228	1	229	413
% Automobiles	0	0	0	0	0	97.9	0	97.9	0	0	0	0	0	98.3	100	98.3	98.1
Commercial	0	0	0	0	0	4	0	4	0	0	0	0	0	4	0	4	8
% Commercial	0	0	0	0	0	2.1	0	2.1	0	0	0	0	0	1.7	0	1.7	1.9

DE TRAFFIC

detraffic.com
(386) 341-4186
Site Access at NE 49th St
Marion County, FL

File Name : Site at 49th
Site Code : 00000004
Start Date : 9/24/2024
Page No : 5



DE TRAFFIC

detraffic.com
(386) 341-4186
Site Access at NE 49th St
Marion County, FL

File Name : Site at 49th
Site Code : 00000004
Start Date : 9/24/2024
Page No : 6

	A					E					A					E E					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Grand Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Apprch %	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0		
Total %																					

DE TRAFFIC

detraffic.com
(386) 341-4186
NE 25th Ave at NE 49th St
Marion County, FL

File Name : 25th at 49th
Site Code : 00000003
Start Date : 9/24/2024
Page No : 1

Groups Printed- Automobiles - Commercial

	NE 25th Ave Southbound				NE 49th St Westbound				NE 25th Ave Northbound				NE 49th St Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	0	34	3	37	3	11	2	16	11	15	3	29	13	10	10	33	115
07:15 AM	1	53	4	58	4	17	1	22	13	11	3	27	12	11	11	34	141
07:30 AM	3	47	6	56	6	15	3	24	27	17	6	50	13	15	26	54	184
07:45 AM	1	42	4	47	4	18	1	23	24	12	5	41	16	13	31	60	171
Total	5	176	17	198	17	61	7	85	75	55	17	147	54	49	78	181	611
08:00 AM	3	51	8	62	5	16	2	23	22	15	5	42	16	17	18	51	178
08:15 AM	1	52	7	60	2	23	2	27	24	24	4	52	15	10	25	50	189
08:30 AM	1	34	8	43	4	21	1	26	17	27	6	50	19	9	23	51	170
08:45 AM	2	29	7	38	5	16	3	24	13	25	3	41	16	8	13	37	140
Total	7	166	30	203	16	76	8	100	76	91	18	185	66	44	79	189	677
04:00 PM	1	24	3	28	4	15	1	20	26	41	5	72	11	16	19	46	166
04:15 PM	1	33	6	40	3	11	1	15	37	56	7	100	26	11	16	53	208
04:30 PM	1	32	5	38	3	13	1	17	38	42	6	86	18	11	13	42	183
04:45 PM	3	33	5	41	4	15	2	21	32	60	5	97	17	18	12	47	206
Total	6	122	19	147	14	54	5	73	133	199	23	355	72	56	60	188	763
05:00 PM	1	43	7	51	3	11	0	14	31	44	8	83	29	13	11	53	201
05:15 PM	2	34	5	41	4	14	1	19	32	56	7	95	29	13	16	58	213
05:30 PM	1	32	5	38	6	13	3	22	24	50	8	82	27	10	13	50	192
05:45 PM	2	31	2	35	4	9	1	14	21	47	9	77	20	9	12	41	167
Total	6	140	19	165	17	47	5	69	108	197	32	337	105	45	52	202	773
Grand Total	24	604	85	713	64	238	25	327	392	542	90	1024	297	194	269	760	2824
Apprch %	3.4	84.7	11.9		19.6	72.8	7.6		38.3	52.9	8.8		39.1	25.5	35.4		
Total %	0.8	21.4	3	25.2	2.3	8.4	0.9	11.6	13.9	19.2	3.2	36.3	10.5	6.9	9.5	26.9	
Automobiles	23	597	83	703	64	237	23	324	379	528	88	995	293	190	267	750	2772
% Automobiles	95.8	98.8	97.6	98.6	100	99.6	92	99.1	96.7	97.4	97.8	97.2	98.7	97.9	99.3	98.7	98.2
Commercial	1	7	2	10	0	1	2	3	13	14	2	29	4	4	2	10	52
% Commercial	4.2	1.2	2.4	1.4	0	0.4	8	0.9	3.3	2.6	2.2	2.8	1.3	2.1	0.7	1.3	1.8

DE TRAFFIC

detraffic.com
(386) 341-4186
NE 25th Ave at NE 49th St
Marion County, FL

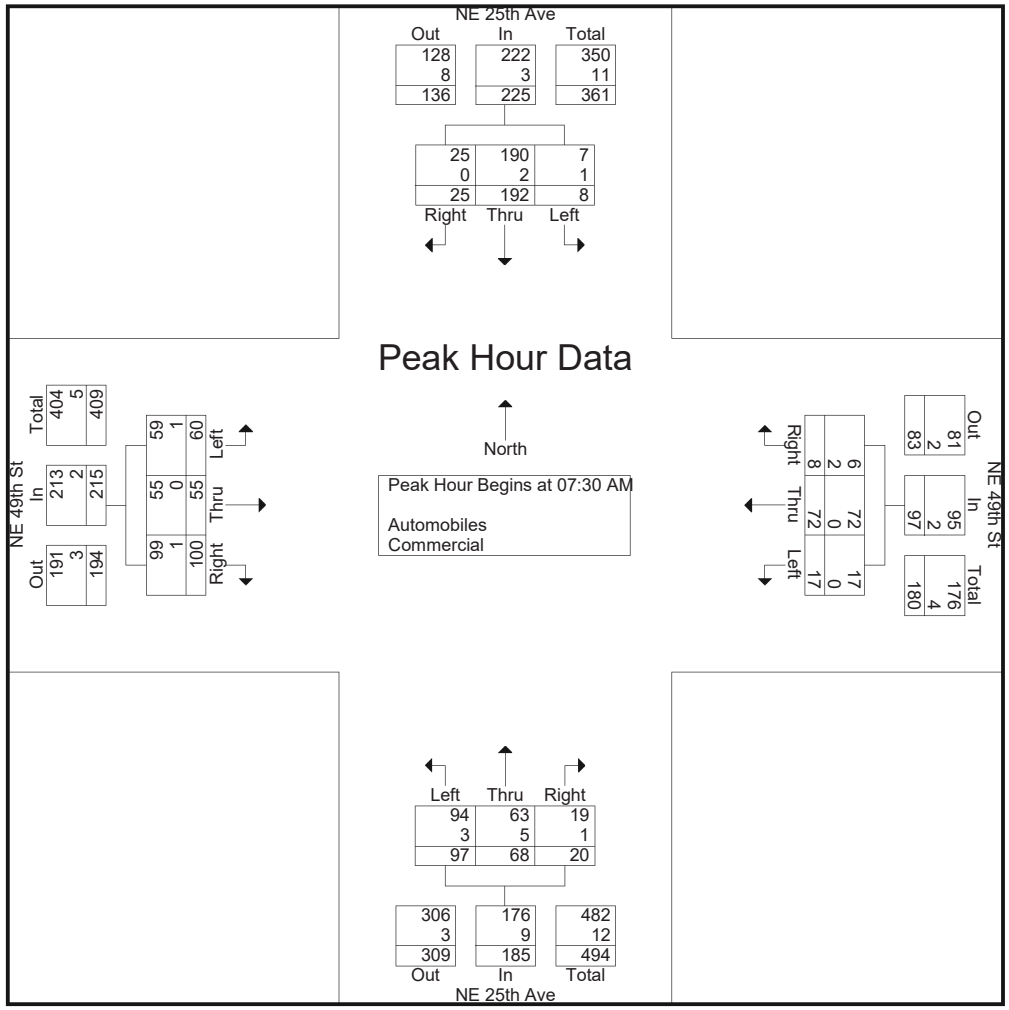
File Name : 25th at 49th
Site Code : 00000003
Start Date : 9/24/2024
Page No : 2

	NE 25th Ave Southbound				NE 49th St Westbound				NE 25th Ave Northbound				NE 49th St Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	3	47	6	56	6	15	3	24	27	17	6	50	13	15	26	54	184
07:45 AM	1	42	4	47	4	18	1	23	24	12	5	41	16	13	31	60	171
08:00 AM	3	51	8	62	5	16	2	23	22	15	5	42	16	17	18	51	178
08:15 AM	1	52	7	60	2	23	2	27	24	24	4	52	15	10	25	50	189
Total Volume	8	192	25	225	17	72	8	97	97	68	20	185	60	55	100	215	722
% App. Total	3.6	85.3	11.1		17.5	74.2	8.2		52.4	36.8	10.8		27.9	25.6	46.5		
PHF	.667	.923	.781	.907	.708	.783	.667	.898	.898	.708	.833	.889	.938	.809	.806	.896	.955
Automobiles	7	190	25	222	17	72	6	95	94	63	19	176	59	55	99	213	706
% Automobiles	87.5	99.0	100	98.7	100	100	75.0	97.9	96.9	92.6	95.0	95.1	98.3	100	99.0	99.1	97.8
Commercial	1	2	0	3	0	0	2	2	3	5	1	9	1	0	1	2	16
% Commercial	12.5	1.0	0	1.3	0	0	25.0	2.1	3.1	7.4	5.0	4.9	1.7	0	1.0	0.9	2.2

DE TRAFFIC

detraffic.com
(386) 341-4186
NE 25th Ave at NE 49th St
Marion County, FL

File Name : 25th at 49th
Site Code : 00000003
Start Date : 9/24/2024
Page No : 3



DE TRAFFIC

detraffic.com
(386) 341-4186
NE 25th Ave at NE 49th St
Marion County, FL

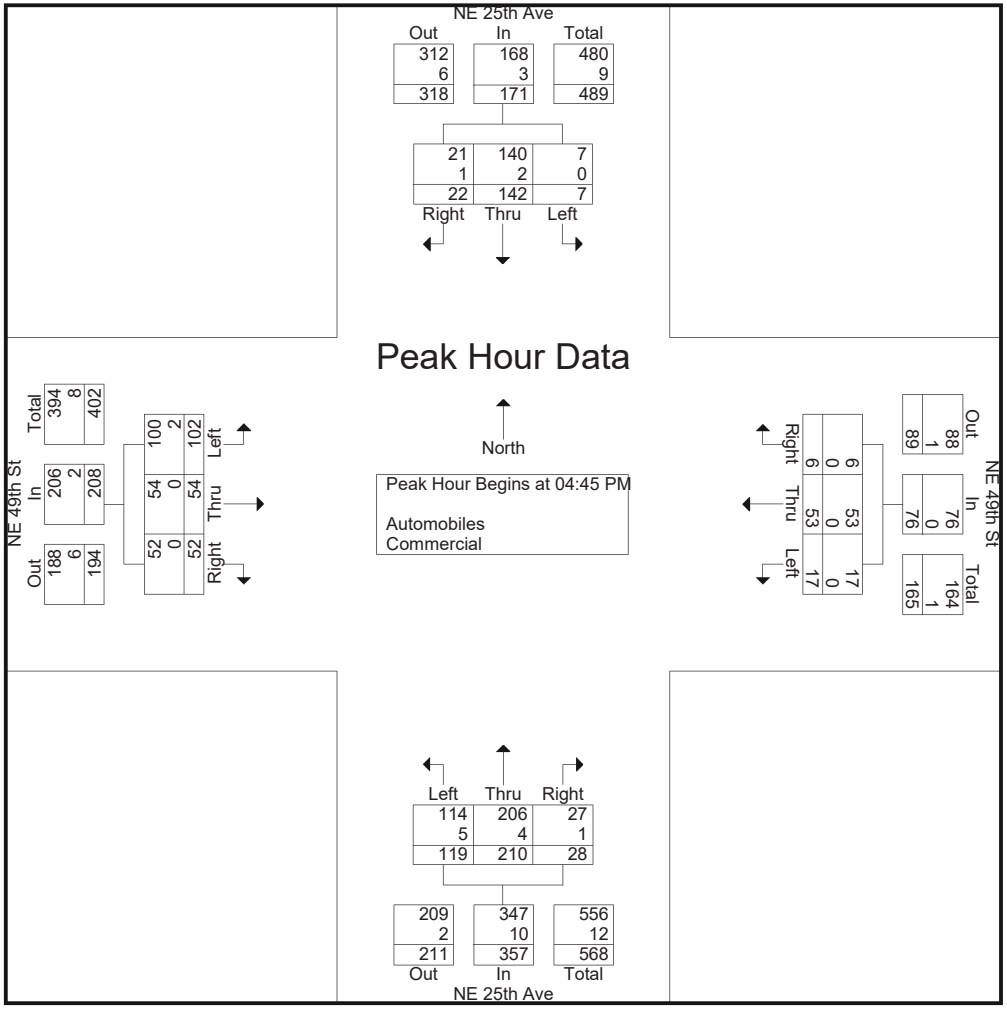
File Name : 25th at 49th
Site Code : 00000003
Start Date : 9/24/2024
Page No : 4

	NE 25th Ave Southbound				NE 49th St Westbound				NE 25th Ave Northbound				NE 49th St Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:45 PM																	
04:45 PM	3	33	5	41	4	15	2	21	32	60	5	97	17	18	12	47	206
05:00 PM	1	43	7	51	3	11	0	14	31	44	8	83	29	13	11	53	201
05:15 PM	2	34	5	41	4	14	1	19	32	56	7	95	29	13	16	58	213
05:30 PM	1	32	5	38	6	13	3	22	24	50	8	82	27	10	13	50	192
Total Volume	7	142	22	171	17	53	6	76	119	210	28	357	102	54	52	208	812
% App. Total	4.1	83	12.9		22.4	69.7	7.9		33.3	58.8	7.8		49	26	25		
PHF	.583	.826	.786	.838	.708	.883	.500	.864	.930	.875	.875	.920	.879	.750	.813	.897	.953
Automobiles	7	140	21	168	17	53	6	76	114	206	27	347	100	54	52	206	797
% Automobiles	100	98.6	95.5	98.2	100	100	100	100	95.8	98.1	96.4	97.2	98.0	100	100	99.0	98.2
Commercial	0	2	1	3	0	0	0	0	5	4	1	10	2	0	0	2	15
% Commercial	0	1.4	4.5	1.8	0	0	0	0	4.2	1.9	3.6	2.8	2.0	0	0	1.0	1.8

DE TRAFFIC

detraffic.com
(386) 341-4186
NE 25th Ave at NE 49th St
Marion County, FL

File Name : 25th at 49th
Site Code : 00000003
Start Date : 9/24/2024
Page No : 5



DE TRAFFIC

detraffic.com
(386) 341-4186
NE 25th Ave at NE 49th St
Marion County, FL

File Name : 25th at 49th
Site Code : 00000003
Start Date : 9/24/2024
Page No : 6

Groups Printed- Peds

	NE 25th Ave Southbound					NE 49th St Westbound					NE 25th Ave Northbound					NE 49th St Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	1
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	1
08:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	1	1	2
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	1	1	2
04:30 PM	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Total	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
05:00 PM	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Total	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Grand Total	0	0	0	2	2	0	0	0	0	0	0	0	0	2	2	0	0	0	1	1	5
Apprch %	0	0	0	100		0	0	0	0		0	0	0	100		0	0	0	100		
Total %	0	0	0	40	40	0	0	0	0	0	0	0	0	40	40	0	0	0	20	20	

NB Approach

SB Approach

EB Approach

WB Approach

de traffic	CR 200A at NE 35th St	Marion County
	detraffic.com	Project Number: KA-24-28 / Sheet Number: 1
	9239 Outlook Rock Trl. Windermere Fl. 34786	

NB Approach

SB Approach

EB Approach

WB Approach

de traffic	NE 25th Ave at NE 35th St	Marion County
	detraffic.com	Project Number: KA-24-28 / Sheet Number: 2
	9239 Outlook Rock Trl. Windermere Fl. 34786	

NB Approach

SB Approach

EB Approach

WB Approach

de traffic	CR 200A at NE 49th St	Marion County
	detraffic.com	Project Number: KA-24-28 / Sheet Number: 3
	9239 Outlook Rock Trl. Windermere Fl. 34786	

EB Approach

WB Approach

de traffic	Site Access at NE 49th St	Marion County
	detraffic.com	Project Number: KA-24-28 / Sheet Number: 4
	9239 Outlook Rock Trl. Windermere Fl. 34786	

NB Approach

SB Approach

EB Approach

WB Approach

de raffic	NE 25th Ave at NE 49th St	Marion County
	detraffic.com	Project Number: KA-24-28 / Sheet Number: 5
	9239 Outlook Rock Trl. Windermere Fl. 34786	

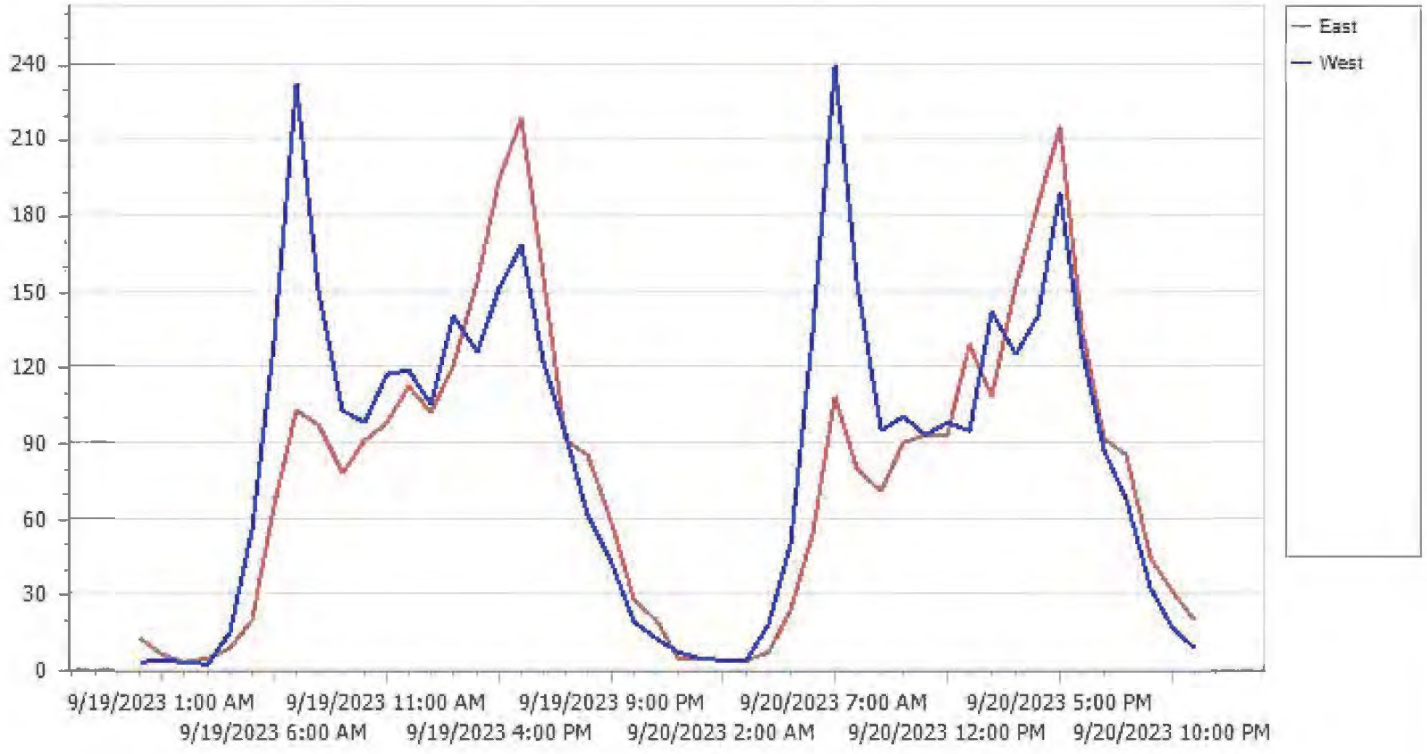
Appendix D CMP Database

SEGMENT ID	ROAD NAME	FROM	TO	LANES (2023)	FUNCTIONAL CLASSIFICATION	FLOW	FDOT CLASS	DAILY SERVICE VOLUME (2023)	PEAK HOUR DIRECTIONAL SERVICE VOLUME (2023)	LANES (2028)	DAILY SERVICE VOLUME (2028)	PEAK HOUR DIRECTIONAL SERVICE VOLUME (2028)	URBAN / RURAL	DIVIDED / UNDIVIDED	MAINTAINING AGENCY	NHS	ADOPTED LOS STANDARD	2023 AADT	2023 DAILY V/MSV	2023 DAILY LOS	GROWTH RATE	2028 AADT	2028 DAILY V/MSV	2028 DAILY LOS
2380	CR 200A / JACKSONVILLE RD	NE 49 ST	SR 326	2	ARTERIAL	INTERRUPTED	1	12,744	634	2	12,744	634	Urban	U	COUNTY	Other CMP Network Roadway	E	7,900	0.62	C	1.00%	8,300	0.65	C
2370	CR 200A / JACKSONVILLE RD	NW 35 ST	NE 49 ST	2	ARTERIAL	INTERRUPTED	1	12,744	634	2	12,744	634	Urban	U	COUNTY	Other CMP Network Roadway	E	9,500	0.75	C	1.56%	10,300	0.81	C
2360	CR 200A / JACKSONVILLE RD	NE 28 ST	NE 35 ST	4	ARTERIAL	INTERRUPTED	1	35,820	1,800	4	35,820	1,800	Urban	D	COUNTY	Other CMP Network Roadway	E	10,700	0.3	C	1.00%	11,300	0.32	C
2790	NE 25 AV	NE 49 ST	SR 326	2	COLLECTOR	INTERRUPTED	2	11,232	576	2	11,232	576	Urban	U	COUNTY	Other CMP Network Roadway	E	3,500	0.31	C	1.00%	3,700	0.33	C
2780	NE 25 AV	NE 35 ST	NE 49 ST	2	COLLECTOR	INTERRUPTED	2	11,232	576	2	11,232	576	Urban	U	COUNTY	Other CMP Network Roadway	E	5,100	0.45	C	1.00%	5,300	0.47	D
2770	NE 25 AV	NE 24 ST	NE 35 ST	2	COLLECTOR	INTERRUPTED	2	11,232	576	2	11,232	576	Urban	U	COUNTY	Other CMP Network Roadway	E	8,000	0.71	D	1.00%	8,400	0.75	D
2870	NE 35 ST	CR 200A	NE 25 AV	2	COLLECTOR	INTERRUPTED	2	11,232	576	2	11,232	576	Urban	U	COUNTY	Other CMP Network Roadway	E	10,100	0.9	D	3.38%	12,000	1.07	F
2880.1	NE 35 ST	NE 25 AV	NE 36 AV	2	COLLECTOR	INTERRUPTED	2	11,232	576	2	11,232	576	Urban	U	COUNTY	Other CMP Network Roadway	E	8,000	0.71	D	1.00%	8,400	0.75	D

Volume by Lane

Name:	2023 118 - NE 49th St East of CR-200A - PURPLE		
Latitude:	Unknown	Longitude:	Unknown
Started:	9/19/2023 12:00:00 AM	Ended:	9/20/2023 11:59:59 PM

TPO I(STA-27) A=E (35)



Report Generated Monday, September 25, 2023 09:13 AM

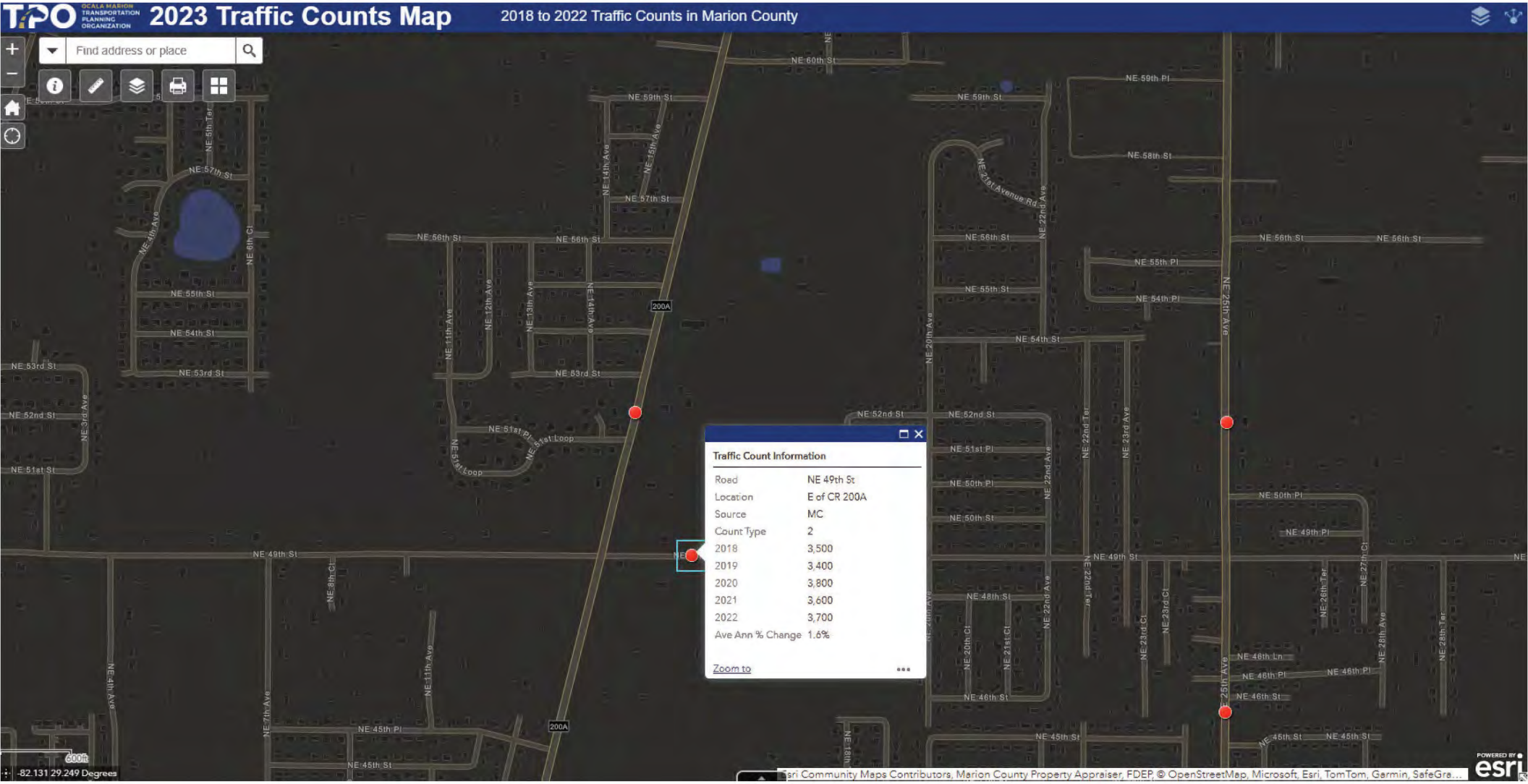
Tuesday, September 19, 2023

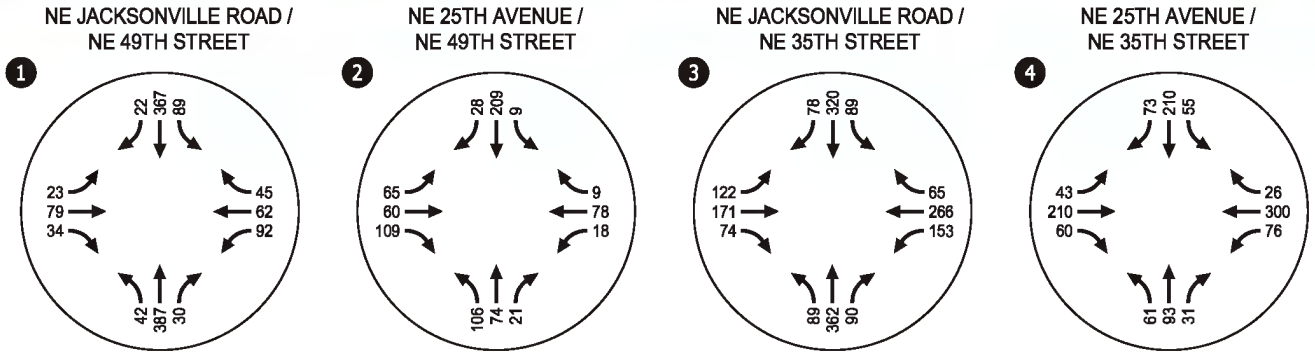
Interval	East	West	Total
00:00	13	3	16
01:00	6	4	10
02:00	3	3	6
03:00	5	2	7
04:00	9	15	24
05:00	20	56	76
06:00	65	131	196
07:00	103	232	335
08:00	97	150	247
09:00	78	103	181
10:00	91	98	189
11:00	98	117	215
12:00	112	119	231
13:00	102	105	207
14:00	120	140	260
15:00	154	126	280
16:00	194	151	345
17:00	218	168	386
18:00	155	122	277
19:00	91	93	184
20:00	85	61	146
21:00	58	42	100
22:00	28	19	47
23:00	20	13	33
Daily Total	**1925**	**2073**	**3998**
AM Peak	**335 (starting at 07:00:00)**		
PM Peak	**386 (starting at 17:00:00)**		

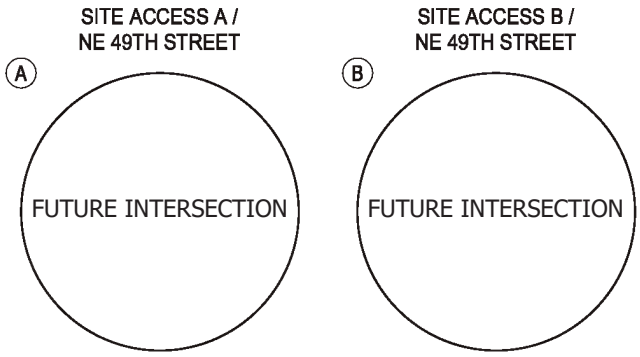
Wednesday, September 20, 2023

Interval	East	West	Total
00:00	5	7	12
01:00	5	5	10
02:00	4	4	8
03:00	4	4	8
04:00	7	18	25
05:00	24	50	74
06:00	54	134	188
07:00	108	239	347
08:00	80	154	234
09:00	71	95	166
10:00	90	100	190
11:00	93	93	186
12:00	93	98	191
13:00	129	95	224
14:00	108	142	250
15:00	152	125	277
16:00	184	140	324
17:00	215	189	404
18:00	135	127	262
19:00	92	87	179
20:00	85	68	153
21:00	45	33	78
22:00	31	17	48
23:00	20	9	29
Daily Total	**1834**	**2033**	**3867**
AM Peak	**347 (starting at 07:00:00)**		
PM Peak	**404 (starting at 17:00:00)**		
Average Interval	**78**	**86**	**164**
Maximum in one Interval	**218**	**239**	**404**
Grand Total	**3759**	**4106**	**7865**

Array Type: Tube - Tube,
Deadtime (in ms): 40,
Maximum vehicle length: 110.0 ft,
Maximum inter-axle spacing: 45.0 ft,
Classification Scheme: FHWA-USA,
Sensor Spacing: 2.0 ft,


TPO OCALA MARION TRANSPORTATION PLANNING ORGANIZATION
2023 Traffic Counts Map
2018 to 2022 Traffic Counts in Marion County
Find address or place
Traffic Count Information
Road NE 49th St
Location E of CR 200A
Source MC
Count Type 2
2018 3,500
2019 3,400
2020 3,800
2021 3,600
2022 3,700
Ave Ann % Change 1.6%
Zoom to
-82.131 29.249 Degrees
Esri Community Maps Contributors, Marion County Property Appraiser, FDEP, © OpenStreetMap, Microsoft, Esri, TomTom, Garmin, SafeGra...
POWERED BY esri





#- Study Intersections

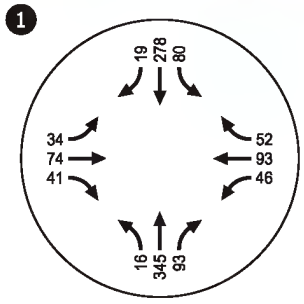
(X)- Site Access

Year 2029 No-Build Grown Existing Traffic Volumes
Weekday AM Peak Hour
Marion County, FL

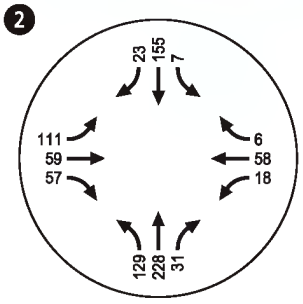
Figure
D1

KITTELSON & ASSOCIATES

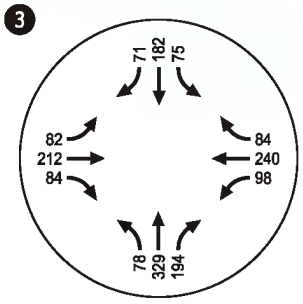
NE JACKSONVILLE ROAD / NE 49TH STREET



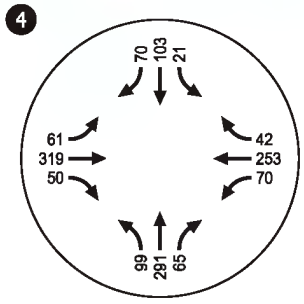
NE 25TH AVENUE / NE 49TH STREET



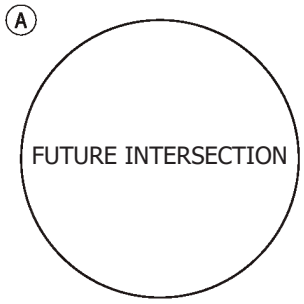
NE JACKSONVILLE ROAD / NE 35TH STREET



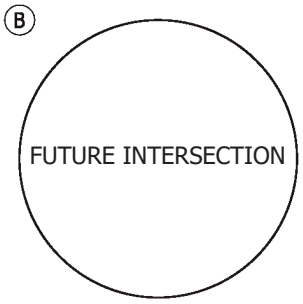
NE 25TH AVENUE / NE 35TH STREET



SITE ACCESS A / NE 49TH STREET



SITE ACCESS B / NE 49TH STREET



(#) - Study Intersections
(X) - Site Access

Year 2029 No-Build Grown Existing Traffic Volumes
Weekday PM Peak Hour
Marion County, FL

Figure
D2

KITTELSON & ASSOCIATES

Appendix E Signal Timing Sheets

Marion County
Office of the County Engineer

Signal ID	Major Street	Minor Street	Date	Technician
20	NE Jacksonville Rd (CR 200A)	NE 49th St	9/14/2022	Youman

Basic Timing

PHASE	Φ 1	Φ 2	Φ 3	Φ 4	Φ 5	Φ 6	Φ 7	Φ 8
DIRECTION		SB		WB	SBLT	NB		EB
MIN GRN		16		6	4	16		6
GAP EXT		4.0		4.0	3.5	4.0		4.0
MAX 1		50		28	18	50		28
MAX 2								
YEL CLR		4.8		4.0	3.7	4.8		4.0
RED CLR		2.0		2.1	2.0	2.0		2.1
WALK								
PED CLR								
MIN RECALL		X				X		
MAX RECALL								
PED RECALL								
NON-LOCK CALL				X	X			X
DUAL ENTRY				X				X
NO SIMUL GAP								
REST IN WALK								

Signal Operating Plan

Additional Notes (Turning Retrictions?, Overlaps?, Etc.)

Coordination? Yes (No)

Splits for Coordination

Plan	Phase Number								Cycle Length	Offset
	1	2	3	4	5	6	7	8		

Weekday Schedule (Mon-Fri)

Plan	Start Time

Weekend Schedule (Sat-Sun)

Plan	Start Time

General Coordination Data

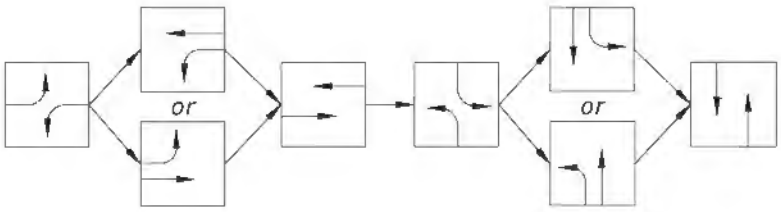
Coord Mode	Max Mode	Correction Mode	Offset Mode	Force Mode

C

C E

ID			D	T
18	NE 25th Ave	NE 35th St	12/6/2023	Solimando

A E								
DIRECTI	SBLT	NB	WBLT	EB	NBLT	SB	EBLT	WB
EFT T R DE	Prot-Perm		Prot-Perm		Prot-Perm		Prot-Perm	
I REE	6	10	6	10	6	10	6	10
A A E	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
A	16	40	16	25	16	40	16	25
A								
E	4.0	4.0	4.4	4.4	4.0	4.0	4.4	4.4
A RED	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
A								
ED C R								
E RECA		Min				Min		
C CA								
D A E TR								
I A								



A T R E

1) Phase 1 switched with Phase 2.
2) Phase 5 switched with Phase 6.
3) One of the 2 advance loops for Phase 2 was faulting. Temporarily disconnected the 1 faulty loop until it is fixed.

C Yes No

	C										F	C	F

T F

T	

T	

T	

T	

C D

C	
C	
F	

D D

D																	
	1	2	3	4	5	6	7	8									
D																	

D								
	1	2	3	4	5	6	7	8

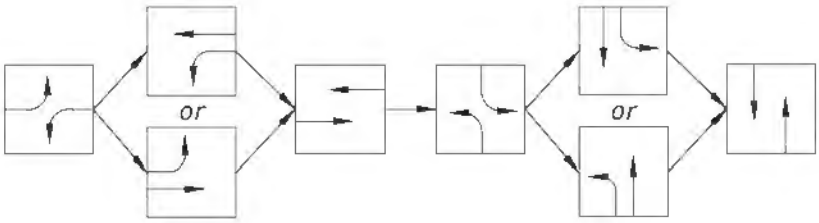
Marion County
Office of the County Engineer

Signal ID	Major Street	Minor Street	Date	Technician
17	NE Jacksonville Rd	NE 35th St	9/29/2021	Youman

Basic Timing

PHASE	Φ 1	Φ 2	Φ 3	Φ 4	Φ 5	Φ 6	Φ 7	Φ 8
DIRECTION	NBLT	SB	EBLT	WB	SBLT	NB	WBLT	EB
MIN GRN	8	20	10	15	8	20	10	15
GAP EXT	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
MAX 1	19	45	14	32	19	45	14	32
MAX 2								
YEL CLR	4.8	4.8	4.4	4.4	4.8	4.8	4.4	4.4
RED CLR	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
WALK		7		7		7		7
PED CLR		20		27		19		26
MIN RECALL		X				X		
MAX RECALL								
PED RECALL								
NON-LOCK CALL	X		X	X	X		X	X
DUAL ENTRY		X		X		X		X
REST IN WALK								

Signal Operating Plan



Additional Notes (Turning Retrictions?, Overlaps?, Etc.)

Coordination? Yes (No)

Splits for Coordination

Plan	Phase Number								Cycle Length	Offset
	1	2	3	4	5	6	7	8		

Time Patterns for Coordination

Plan	Start Time	End Time	Days of Week

General Coordination Data

Coord Mode	Max Mode	Correction Mode	Offset Mode	Force Mode

Appendix F Existing Synchro Reports

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	22	74	32	86	58	42	39	363	28	83	344	21
Future Volume (veh/h)	22	74	32	86	58	42	39	363	28	83	344	21
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1841	1870	1900	1841	1870	1826	1811	1678	1841	1811	1900
Adj Flow Rate, veh/h	23	76	27	89	60	33	40	374	10	86	355	14
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	0	4	2	0	4	2	5	6	15	4	6	0
Cap, veh/h	125	151	48	381	152	83	535	674	529	477	976	39
Arrive On Green	0.14	0.14	0.14	0.14	0.14	0.14	0.37	0.37	0.37	0.06	0.56	0.56
Sat Flow, veh/h	192	1109	355	1312	1116	614	989	1811	1422	1753	1731	68
Grp Volume(v), veh/h	126	0	0	89	0	93	40	374	10	86	0	369
Grp Sat Flow(s),veh/h/ln	1656	0	0	1312	0	1730	989	1811	1422	1753	0	1799
Q Serve(g_s), s	0.9	0.0	0.0	0.0	0.0	2.1	1.1	7.0	0.2	1.2	0.0	4.8
Cycle Q Clear(g_c), s	3.0	0.0	0.0	1.9	0.0	2.1	1.1	7.0	0.2	1.2	0.0	4.8
Prop In Lane	0.18		0.21	1.00		0.35	1.00		1.00	1.00		0.04
Lane Grp Cap(c), veh/h	324	0	0	381	0	235	535	674	529	477	0	1015
V/C Ratio(X)	0.39	0.00	0.00	0.23	0.00	0.40	0.07	0.56	0.02	0.18	0.00	0.36
Avail Cap(c_a), veh/h	1172	0	0	1056	0	1126	1317	2105	1653	1106	0	2091
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	17.3	0.0	0.0	16.9	0.0	17.0	8.8	10.7	8.5	7.2	0.0	5.1
Incr Delay (d2), s/veh	1.1	0.0	0.0	0.4	0.0	1.5	0.1	1.0	0.0	0.2	0.0	0.3
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	1.9	0.0	0.0	1.3	0.0	1.5	0.3	3.7	0.1	0.5	0.0	1.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	18.4	0.0	0.0	17.3	0.0	18.5	8.9	11.7	8.6	7.4	0.0	5.5
LnGrp LOS	B			B		B	A	B	A	A		A
Approach Vol, veh/h		126			182			424			455	
Approach Delay, s/veh		18.4			17.9			11.4			5.8	
Approach LOS		B			B			B			A	

Timer - Assigned Phs		2		4	5	6		8				
Phs Duration (G+Y+Rc), s		31.1		11.9	8.3	22.8		11.9				
Change Period (Y+Rc), s		6.8		6.1	5.7	6.8		6.1				
Max Green Setting (Gmax), s		50.0		28.0	18.0	50.0		28.0				
Max Q Clear Time (g_c+I1), s		6.8		4.1	3.2	9.0		5.0				
Green Ext Time (p_c), s		3.3		1.1	0.2	3.7		0.9				

Intersection Summary												
HCM 7th Control Delay, s/veh			11.0									
HCM 7th LOS			B									

Intersection	
Intersection Delay, s/veh	10.5
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	61	56	102	17	73	8	99	69	20	8	196	26
Future Vol, veh/h	61	56	102	17	73	8	99	69	20	8	196	26
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles, %	2	0	1	0	0	25	3	7	5	13	1	0
Mvmt Flow	64	58	106	18	76	8	103	72	21	8	204	27
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, s/veh	10.4	9.4	10.4	11.1
HCM LOS	B	A	B	B

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	53%	28%	17%	3%
Vol Thru, %	37%	26%	74%	85%
Vol Right, %	11%	47%	8%	11%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	188	219	98	230
LT Vol	99	61	17	8
Through Vol	69	56	73	196
RT Vol	20	102	8	26
Lane Flow Rate	196	228	102	240
Geometry Grp	1	1	1	1
Degree of Util (X)	0.285	0.32	0.153	0.349
Departure Headway (Hd)	5.238	5.053	5.411	5.251
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	687	714	663	688
Service Time	3.266	3.066	3.445	3.265
HCM Lane V/C Ratio	0.285	0.319	0.154	0.349
HCM Control Delay, s/veh	10.4	10.4	9.4	11.1
HCM Lane LOS	B	B	A	B
HCM 95th-tile Q	1.2	1.4	0.5	1.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	114	160	69	143	249	61	83	339	84	83	300	73
Future Volume (veh/h)	114	160	69	143	249	61	83	339	84	83	300	73
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1841	1796	1870	1826	1796	1841	1767	1826	1811	1826	1841
Adj Flow Rate, veh/h	116	163	60	146	254	46	85	346	72	85	306	61
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	3	4	7	2	5	7	4	9	5	6	5	4
Cap, veh/h	348	260	96	409	312	56	406	449	393	308	735	145
Arrive On Green	0.12	0.20	0.20	0.12	0.21	0.21	0.09	0.25	0.25	0.09	0.25	0.25
Sat Flow, veh/h	1767	1283	472	1781	1504	272	1753	1767	1547	1725	2890	569
Grp Volume(v), veh/h	116	0	223	146	0	300	85	346	72	85	182	185
Grp Sat Flow(s),veh/h/ln	1767	0	1756	1781	0	1777	1753	1767	1547	1725	1735	1724
Q Serve(g_s), s	3.8	0.0	9.1	4.7	0.0	12.7	2.6	14.3	2.9	2.7	6.9	7.0
Cycle Q Clear(g_c), s	3.8	0.0	9.1	4.7	0.0	12.7	2.6	14.3	2.9	2.7	6.9	7.0
Prop In Lane	1.00		0.27	1.00		0.15	1.00		1.00	1.00		0.33
Lane Grp Cap(c), veh/h	348	0	355	409	0	368	406	449	393	308	441	438
V/C Ratio(X)	0.33	0.00	0.63	0.36	0.00	0.81	0.21	0.77	0.18	0.28	0.41	0.42
Avail Cap(c_a), veh/h	455	0	714	509	0	723	679	1011	885	576	992	986
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	20.6	0.0	28.7	20.2	0.0	29.7	18.3	27.2	22.9	19.4	24.4	24.5
Incr Delay (d2), s/veh	0.6	0.0	1.8	0.5	0.0	4.4	0.3	2.8	0.2	0.5	0.6	0.6
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	2.7	0.0	6.8	3.5	0.0	9.6	1.8	9.8	1.8	1.8	4.8	4.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	21.1	0.0	30.5	20.7	0.0	34.2	18.6	30.0	23.2	19.9	25.1	25.1
LnGrp LOS	C		C	C		C	B	C	C	B	C	C
Approach Vol, veh/h		339			446			503			452	
Approach Delay, s/veh		27.3			29.8			27.1			24.1	
Approach LOS		C			C			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	13.6	26.8	15.6	22.7	13.6	26.8	16.0	22.3
Change Period (Y+Rc), s	6.8	6.8	6.4	6.4	6.8	6.8	6.4	6.4
Max Green Setting (Gmax), s	19.0	45.0	14.0	32.0	19.0	45.0	14.0	32.0
Max Q Clear Time (g_c+I1), s	14.7	9.0	5.8	14.7	4.7	16.3	6.7	11.1
Green Ext Time (p_c), s	0.1	2.0	0.2	1.6	0.1	2.2	0.2	1.1

Intersection Summary	
HCM 7th Control Delay, s/veh	27.0
HCM 7th LOS	C

Notes

User approved pedestrian interval to be less than phase max green.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	40	197	56	71	281	24	57	87	29	52	197	68
Future Volume (veh/h)	40	197	56	71	281	24	57	87	29	52	197	68
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1781	1811	1841	1841	1826	1707	1841	1870	1737	1870	1885	1826
Adj Flow Rate, veh/h	41	203	40	73	290	14	59	90	24	54	203	38
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	8	6	4	4	5	13	4	2	11	2	1	5
Cap, veh/h	294	302	60	350	395	19	332	285	76	430	304	57
Arrive On Green	0.05	0.21	0.21	0.07	0.23	0.23	0.07	0.20	0.20	0.06	0.20	0.20
Sat Flow, veh/h	1697	1469	290	1753	1727	83	1753	1423	379	1781	1544	289
Grp Volume(v), veh/h	41	0	243	73	0	304	59	0	114	54	0	241
Grp Sat Flow(s),veh/h/ln	1697	0	1759	1753	0	1811	1753	0	1802	1781	0	1833
Q Serve(g_s), s	1.0	0.0	6.9	1.7	0.0	8.4	1.4	0.0	2.9	1.3	0.0	6.6
Cycle Q Clear(g_c), s	1.0	0.0	6.9	1.7	0.0	8.4	1.4	0.0	2.9	1.3	0.0	6.6
Prop In Lane	1.00		0.16	1.00		0.05	1.00		0.21	1.00		0.16
Lane Grp Cap(c), veh/h	294	0	362	350	0	414	332	0	361	430	0	360
V/C Ratio(X)	0.14	0.00	0.67	0.21	0.00	0.73	0.18	0.00	0.32	0.13	0.00	0.67
Avail Cap(c_a), veh/h	710	0	813	739	0	837	736	0	1333	847	0	1356
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	15.8	0.0	19.8	15.1	0.0	19.3	15.7	0.0	18.5	15.4	0.0	20.1
Incr Delay (d2), s/veh	0.3	0.0	3.1	0.4	0.0	3.6	0.4	0.0	0.7	0.2	0.0	3.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.7	0.0	5.0	1.1	0.0	6.2	0.9	0.0	2.1	0.8	0.0	5.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	16.1	0.0	22.9	15.5	0.0	22.9	16.0	0.0	19.2	15.6	0.0	23.1
LnGrp LOS	B		C	B		C	B		B	B		C
Approach Vol, veh/h		284			377			173			295	
Approach Delay, s/veh		21.9			21.5			18.1			21.8	
Approach LOS		C			C			B			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.3	16.8	10.4	17.5	9.5	16.6	9.2	18.8
Change Period (Y+Rc), s	6.0	6.0	6.4	6.4	6.0	6.0	6.4	6.4
Max Green Setting (Gmax), s	16.0	40.0	16.0	25.0	16.0	40.0	16.0	25.0
Max Q Clear Time (g_c+I1), s	3.3	4.9	3.7	8.9	3.4	8.6	3.0	10.4
Green Ext Time (p_c), s	0.1	0.9	0.2	1.6	0.1	2.1	0.1	1.9

Intersection Summary	
HCM 7th Control Delay, s/veh	21.1
HCM 7th LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	32	69	38	43	87	49	15	323	87	75	261	18
Future Volume (veh/h)	32	69	38	43	87	49	15	323	87	75	261	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1841	1870	1900	1841	1870	1826	1811	1678	1841	1811	1900
Adj Flow Rate, veh/h	34	73	26	45	92	35	16	340	74	79	275	14
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	0	4	2	0	4	2	5	6	15	4	6	0
Cap, veh/h	139	145	44	405	195	74	553	662	519	473	943	48
Arrive On Green	0.15	0.15	0.15	0.15	0.15	0.15	0.37	0.37	0.37	0.06	0.55	0.55
Sat Flow, veh/h	231	945	286	1317	1270	483	1064	1811	1422	1753	1708	87
Grp Volume(v), veh/h	133	0	0	45	0	127	16	340	74	79	0	289
Grp Sat Flow(s),veh/h/ln	1462	0	0	1317	0	1754	1064	1811	1422	1753	0	1795
Q Serve(g_s), s	1.1	0.0	0.0	0.0	0.0	2.9	0.4	6.4	1.5	1.1	0.0	3.8
Cycle Q Clear(g_c), s	4.0	0.0	0.0	1.0	0.0	2.9	0.4	6.4	1.5	1.1	0.0	3.8
Prop In Lane	0.26		0.20	1.00		0.28	1.00		1.00	1.00		0.05
Lane Grp Cap(c), veh/h	328	0	0	405	0	269	553	662	519	473	0	991
V/C Ratio(X)	0.41	0.00	0.00	0.11	0.00	0.47	0.03	0.51	0.14	0.17	0.00	0.29
Avail Cap(c_a), veh/h	1100	0	0	1045	0	1121	1380	2068	1623	1094	0	2050
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	17.2	0.0	0.0	16.1	0.0	16.9	9.0	10.9	9.3	7.4	0.0	5.2
Incr Delay (d2), s/veh	1.2	0.0	0.0	0.2	0.0	1.8	0.0	0.9	0.2	0.2	0.0	0.2
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	2.0	0.0	0.0	0.6	0.0	2.0	0.1	3.4	0.6	0.5	0.0	1.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	18.3	0.0	0.0	16.3	0.0	18.7	9.0	11.7	9.5	7.6	0.0	5.5
LnGrp LOS	B			B		B	A	B	A	A		A
Approach Vol, veh/h		133			172			430			368	
Approach Delay, s/veh		18.3			18.1			11.2			5.9	
Approach LOS		B			B			B			A	

Timer - Assigned Phs		2		4	5	6		8				
Phs Duration (G+Y+Rc), s		31.0		12.8	8.2	22.8		12.8				
Change Period (Y+Rc), s		6.8		6.1	5.7	6.8		6.1				
Max Green Setting (Gmax), s		50.0		28.0	18.0	50.0		28.0				
Max Q Clear Time (g_c+I1), s		5.8		4.9	3.1	8.4		6.0				
Green Ext Time (p_c), s		2.5		1.1	0.2	3.5		0.9				

Intersection Summary												
HCM 7th Control Delay, s/veh			11.4									
HCM 7th LOS			B									

Intersection	
Intersection Delay, s/veh	12.4
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	104	55	53	17	54	6	121	214	29	7	145	22
Future Vol, veh/h	104	55	53	17	54	6	121	214	29	7	145	22
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles, %	2	0	1	0	0	25	3	7	5	13	1	0
Mvmt Flow	109	58	56	18	57	6	127	225	31	7	153	23
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, s/veh	11.5	9.8	14.2	10.7
HCM LOS	B	A	B	B

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	33%	49%	22%	4%
Vol Thru, %	59%	26%	70%	83%
Vol Right, %	8%	25%	8%	13%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	364	212	77	174
LT Vol	121	104	17	7
Through Vol	214	55	54	145
RT Vol	29	53	6	22
Lane Flow Rate	383	223	81	183
Geometry Grp	1	1	1	1
Degree of Util (X)	0.547	0.343	0.131	0.28
Departure Headway (Hd)	5.14	5.533	5.824	5.507
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	701	649	614	652
Service Time	3.172	3.573	3.872	3.546
HCM Lane V/C Ratio	0.546	0.344	0.132	0.281
HCM Control Delay, s/veh	14.2	11.5	9.8	10.7
HCM Lane LOS	B	B	A	B
HCM 95th-tile Q	3.3	1.5	0.4	1.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	77	199	79	92	225	79	73	308	182	70	171	67
Future Volume (veh/h)	77	199	79	92	225	79	73	308	182	70	171	67
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1841	1796	1870	1826	1796	1841	1767	1826	1811	1826	1841
Adj Flow Rate, veh/h	84	216	65	100	245	57	79	335	175	76	186	61
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	4	7	2	5	7	4	9	5	6	5	4
Cap, veh/h	334	277	83	354	301	70	462	457	401	310	667	212
Arrive On Green	0.11	0.20	0.20	0.11	0.21	0.21	0.08	0.26	0.26	0.08	0.26	0.26
Sat Flow, veh/h	1767	1358	409	1781	1433	333	1753	1767	1547	1725	2589	823
Grp Volume(v), veh/h	84	0	281	100	0	302	79	335	175	76	123	124
Grp Sat Flow(s),veh/h/ln	1767	0	1767	1781	0	1766	1753	1767	1547	1725	1735	1678
Q Serve(g_s), s	2.7	0.0	11.7	3.1	0.0	12.6	2.4	13.5	7.3	2.4	4.4	4.6
Cycle Q Clear(g_c), s	2.7	0.0	11.7	3.1	0.0	12.6	2.4	13.5	7.3	2.4	4.4	4.6
Prop In Lane	1.00		0.23	1.00		0.19	1.00		1.00	1.00		0.49
Lane Grp Cap(c), veh/h	334	0	360	354	0	371	462	457	401	310	447	432
V/C Ratio(X)	0.25	0.00	0.78	0.28	0.00	0.81	0.17	0.73	0.44	0.25	0.27	0.29
Avail Cap(c_a), veh/h	462	0	729	473	0	728	743	1024	897	589	1006	973
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	20.3	0.0	29.2	20.1	0.0	29.2	17.7	26.3	24.0	18.9	23.0	23.1
Incr Delay (d2), s/veh	0.4	0.0	3.7	0.4	0.0	4.4	0.2	2.3	0.8	0.4	0.3	0.4
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	1.9	0.0	8.6	2.3	0.0	9.5	1.6	9.2	4.6	1.6	3.0	3.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	20.7	0.0	32.9	20.5	0.0	33.6	17.9	28.6	24.8	19.3	23.3	23.5
LnGrp LOS	C		C	C		C	B	C	C	B	C	C
Approach Vol, veh/h		365			402			589			323	
Approach Delay, s/veh		30.1			30.3			26.0			22.4	
Approach LOS		C			C			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	13.3	26.8	14.8	22.7	13.2	26.9	15.2	22.2
Change Period (Y+Rc), s	6.8	6.8	6.4	6.4	6.8	6.8	6.4	6.4
Max Green Setting (Gmax), s	19.0	45.0	14.0	32.0	19.0	45.0	14.0	32.0
Max Q Clear Time (g_c+I1), s	4.4	6.6	4.7	14.6	4.4	15.5	5.1	13.7
Green Ext Time (p_c), s	0.1	1.3	0.1	1.7	0.1	2.5	0.1	1.4

Intersection Summary	
HCM 7th Control Delay, s/veh	27.3
HCM 7th LOS	C

Notes

User approved pedestrian interval to be less than phase max green.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	57	299	47	66	237	39	93	273	61	20	97	66
Future Volume (veh/h)	57	299	47	66	237	39	93	273	61	20	97	66
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1781	1811	1841	1841	1826	1707	1841	1870	1737	1870	1885	1826
Adj Flow Rate, veh/h	58	305	37	67	242	31	95	279	46	20	99	41
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	8	6	4	4	5	13	4	2	11	2	1	5
Cap, veh/h	350	393	48	307	401	51	412	383	63	255	245	101
Arrive On Green	0.06	0.25	0.25	0.07	0.25	0.25	0.08	0.24	0.24	0.03	0.19	0.19
Sat Flow, veh/h	1697	1584	192	1753	1586	203	1753	1566	258	1781	1266	524
Grp Volume(v), veh/h	58	0	342	67	0	273	95	0	325	20	0	140
Grp Sat Flow(s),veh/h/ln	1697	0	1776	1753	0	1789	1753	0	1824	1781	0	1791
Q Serve(g_s), s	1.5	0.0	10.8	1.6	0.0	8.1	2.5	0.0	9.9	0.5	0.0	4.1
Cycle Q Clear(g_c), s	1.5	0.0	10.8	1.6	0.0	8.1	2.5	0.0	9.9	0.5	0.0	4.1
Prop In Lane	1.00		0.11	1.00		0.11	1.00		0.14	1.00		0.29
Lane Grp Cap(c), veh/h	350	0	440	307	0	453	412	0	446	255	0	346
V/C Ratio(X)	0.17	0.00	0.78	0.22	0.00	0.60	0.23	0.00	0.73	0.08	0.00	0.40
Avail Cap(c_a), veh/h	696	0	738	656	0	743	740	0	1213	678	0	1191
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	15.4	0.0	21.1	15.7	0.0	19.8	17.0	0.0	20.9	18.8	0.0	21.2
Incr Delay (d2), s/veh	0.3	0.0	4.2	0.5	0.0	1.8	0.4	0.0	3.3	0.2	0.0	1.1
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	1.0	0.0	8.0	1.1	0.0	5.7	1.7	0.0	7.5	0.4	0.0	3.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	15.7	0.0	25.3	16.2	0.0	21.6	17.4	0.0	24.1	19.0	0.0	22.3
LnGrp LOS	B		C	B		C	B		C	B		C
Approach Vol, veh/h		400			340			420			160	
Approach Delay, s/veh		23.9			20.6			22.6			21.9	
Approach LOS		C			C			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	7.7	20.7	10.4	21.3	10.8	17.6	10.1	21.6
Change Period (Y+Rc), s	6.0	6.0	6.4	6.4	6.0	6.0	6.4	6.4
Max Green Setting (Gmax), s	16.0	40.0	16.0	25.0	16.0	40.0	16.0	25.0
Max Q Clear Time (g_c+I1), s	2.5	11.9	3.6	12.8	4.5	6.1	3.5	10.1
Green Ext Time (p_c), s	0.0	2.9	0.1	2.1	0.2	1.1	0.1	1.7

Intersection Summary	
HCM 7th Control Delay, s/veh	22.4
HCM 7th LOS	C

Appendix G Volume Development Spreadsheet

Roadway	Limits	No. of Lanes	Fun Class	Adopted LOS	Daily Capacity	Pk Hr Pk Dir Capacity	Historical Growth	Background Growth		In Process Trips		Total No-Build Trips		No-Build v/c
								PM PH NB/EB Volume	PM PH SB/WB Volume	PM PH NB/EB Volume	PM PH SB/WB Volume	PM PH NB/EB Volume	PM PH SB/WB Volume	
CR200A / NE Jacksonville Rd	SR 326 to NE 49th Street	2	ARTERIAL	E	12744	634	1.11%	427	374	83	48	510	422	0.80
CR200A / NE Jacksonville Rd	NE 49th Street to NW 35th Street	2	ARTERIAL	E	12744	634	1.11%	489	361	80	47	569	408	0.90
NE 49th Street	CR 200 A to NE 25th Avenue	2	MAJOR LOCAL	E	11232	576	1.11%	244	208	1	2	245	210	0.43
NE 25th Avenue	SR 326 to NE 49th Street	2	COLLECTOR	E	11232	576	1.11%	342	183	0	0	342	183	0.59

No Build Roadway Analysis

Roadway	Limits	No. of Lanes	Fun Class	Adopted LOS	Daily Capacity	Pk Hr Pk Dir Capacity	Total No-Build Volumes				Project Trips			Total Build Volumes		Build v/c
							PM PH NB/EB Volume	PM PH SB/WB Volume	Model Distribution	NB/EB Direction	PM PH NB/EB Volume	SB/WB Direction	PM PH SB/WB Volume	PM PH NB/EB Volume	PM PH SB/WB Volume	
CR200A / NE Jacksonville Rd	**SR 326 to NE 49th Street**	2	ARTERIAL	E	12744	634	510	422	14%	Out	8	Out	14	518	436	0.82
CR200A / NE Jacksonville Rd	**NE 49th Street to NW 35th Street**	2	ARTERIAL	E	12744	634	569	408	58%	In	60	Out	35	629	443	0.99
NE 49th Street	**CR 200 A to NE 25th Avenue**	2	MAJOR LOCAL	E	11232	576	245	210	100%	In	77	Out	45	322	255	0.56
NE 25th Avenue	**SR 326 to NE 49th Street**	2	COLLECTOR	E	11232	576	342	183	1%	Out	1	Out	1	343	184	0.60

Entering Trips	103
Exiting Trips	61

Build Roadway Analysis

Appendix H Vested Trip Documentation

Woodridge

Marion County, Florida

PREPARED FOR

Harvey Vandeven
352.266.2834
harveyvandeven@gmail.com

PREPARED BY

225 East Robinson Street, Suite 300
Landmark Center Two
Orlando FL 32801
407.839.4006

December 2022

Trip Generation

The daily and peak hour trips were calculated based on the Institute of Transportation Engineers' (ITE) *Trip Generation Manual*, 11th Edition. As shown in **Table 1**, ITE Land Use Codes 210 – Single Family Detached Housing was deemed the most appropriate for the proposed development. The proposed development is expected to generate 2,379 new daily external trips, and 239 new PM peak hour external trips for the Buildout conditions. The ITE Land Use sheets can be found in **Appendix B**.

Table 1 Trip Generation

AM Peak

ITE Code	Land Use	Size / Units		% In	Total Trips: Daily Trips	AM Peak: Total	AM Peak: Enter	AM Peak: Exit
210	Single Family Detached Housing	254	D.U.	26%	2,379	174	45	129
	Totals:				**2,379**	**174**	**45**	**129**

PM Peak

ITE Code	Land Use	Size / Units		% In	Total Trips: Daily Trips	PM Peak: Total	PM Peak: Enter	PM Peak: Exit
210	Single Family Detached Housing	254	D.U.	63%	2,379	239	150	89
	Totals:				**2,379**	**239**	**150**	**89**

Notes:
Institute of Transportation (ITE) Trip Generation Manual 11th Edition

Trip Distribution and Assignment

The distribution of site generated traffic is a function of population in surrounding areas, shopping opportunities, existing travel patterns, ease of access to the site, and traffic conditions on area roadways. The trip distribution is shown in **Figure 2**.

Figure 2 Trip Distribution

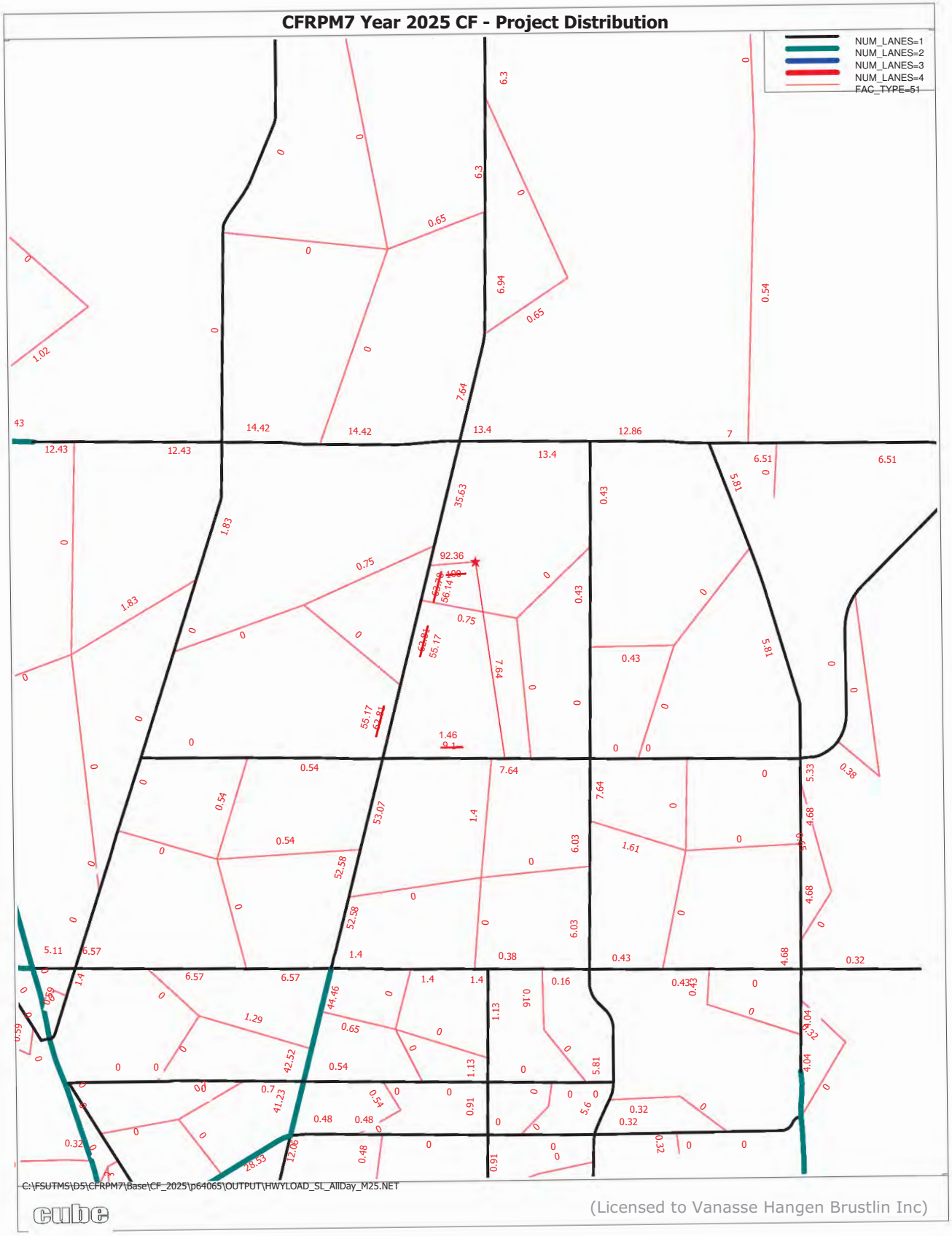


Figure 3 Existing Peak Hour Turning Movement Volumes

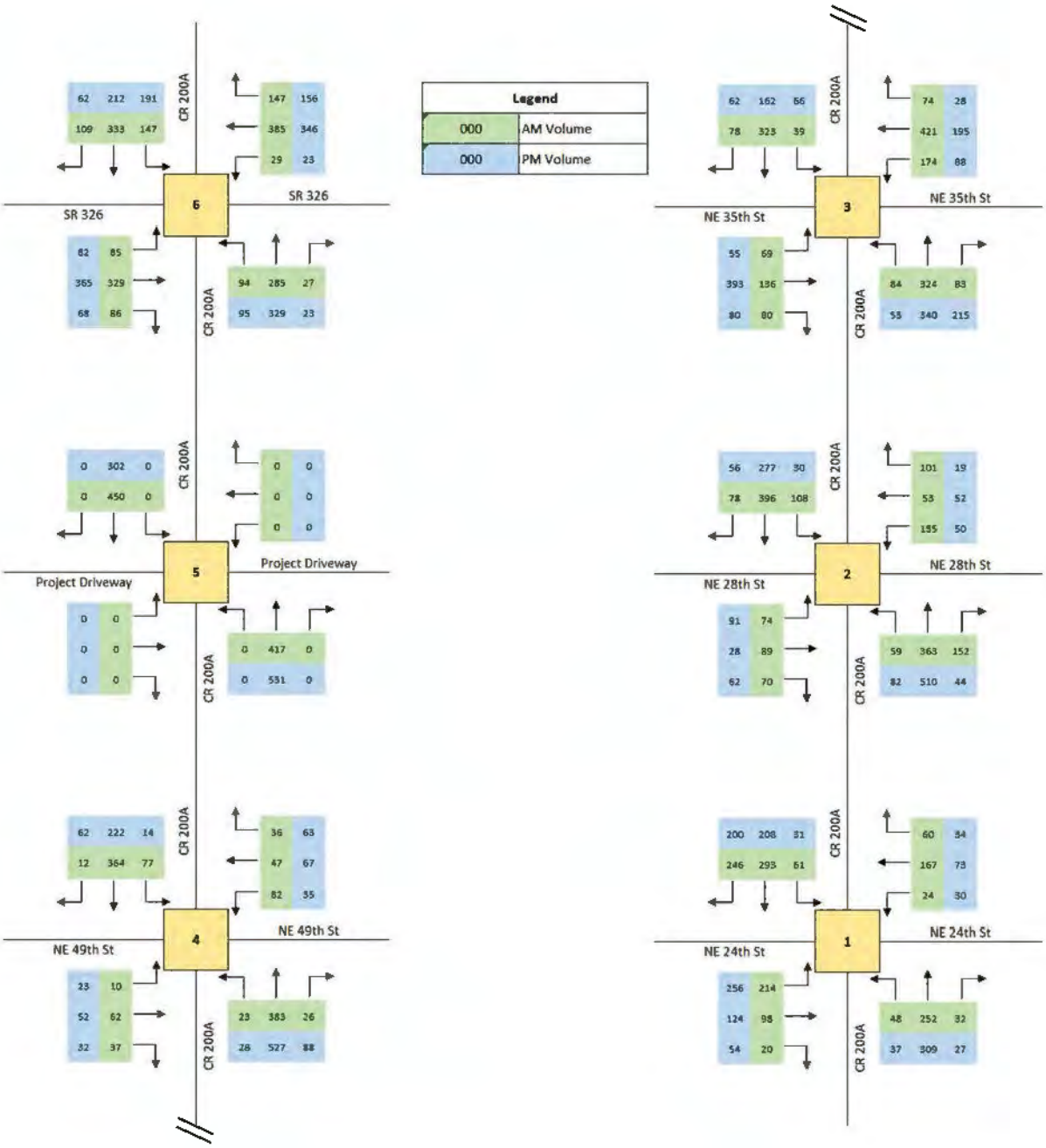


Figure 4 Future Turning Movement Volumes - PM Peak Hour

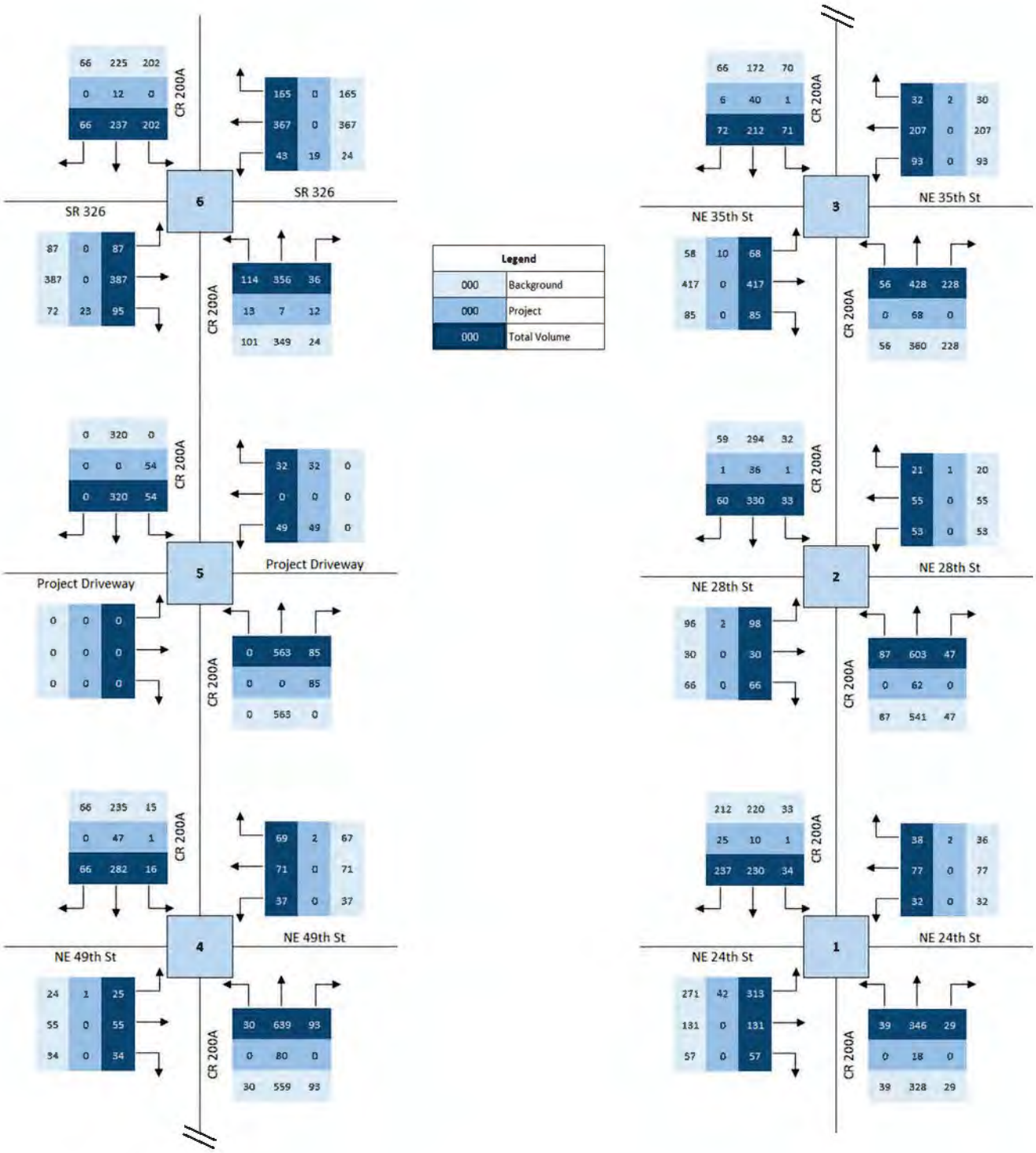
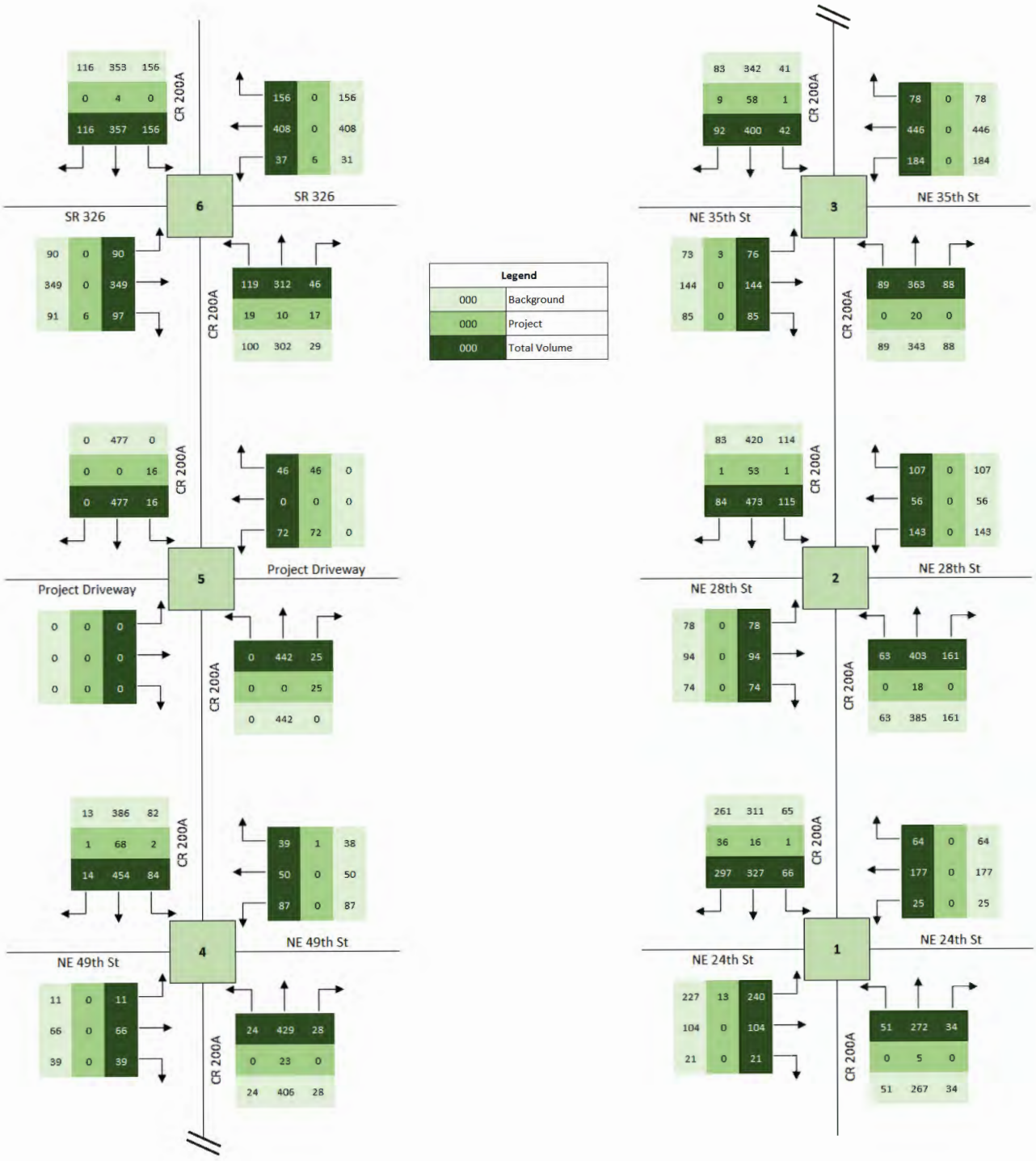
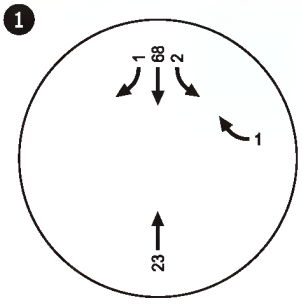


Figure 5 Future Turning Movement Volumes - AM Peak Hour

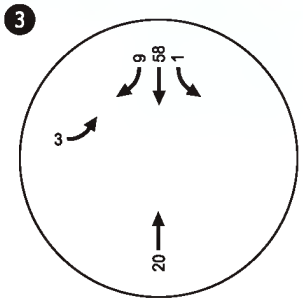


NE JACKSONVILLE ROAD / NE 49TH STREET

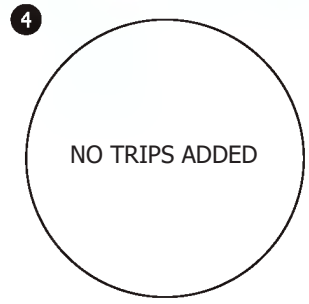


NE 25TH AVENUE / NE 49TH STREET

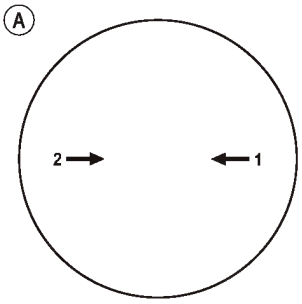
NE JACKSONVILLE ROAD / NE 35TH STREET



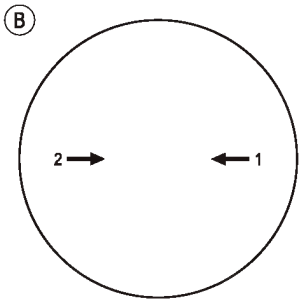
NE 25TH AVENUE / NE 35TH STREET



SITE ACCESS A / NE 49TH STREET



SITE ACCESS B / NE 49TH STREET



(#) - Study Intersections

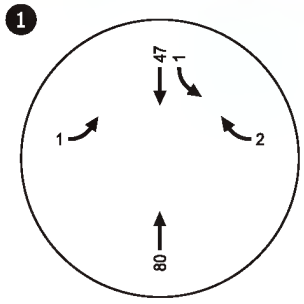
(X) - Site Access

Vested Trip Assignment
Weekday AM Peak Hour
Marion County, FL

Figure
H1

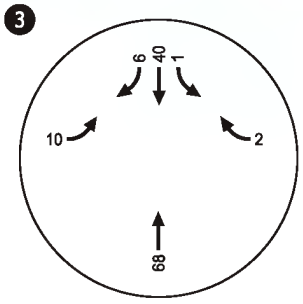
KITTELSON & ASSOCIATES

NE JACKSONVILLE ROAD / NE 49TH STREET

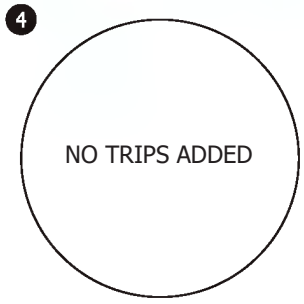


NE 25TH AVENUE / NE 49TH STREET

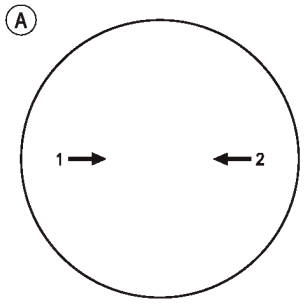
NE JACKSONVILLE ROAD / NE 35TH STREET



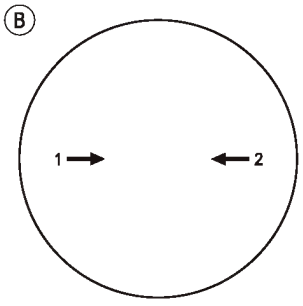
NE 25TH AVENUE / NE 35TH STREET



SITE ACCESS A / NE 49TH STREET



SITE ACCESS B / NE 49TH STREET



(#) - Study Intersections

(X) - Site Access

Vested Trip Assignment
Weekday PM Peak Hour
Marion County, FL

Figure
H2

KITTELSON & ASSOCIATES

Appendix I ITE Land Use

Single-Family Detached Housing
(210)

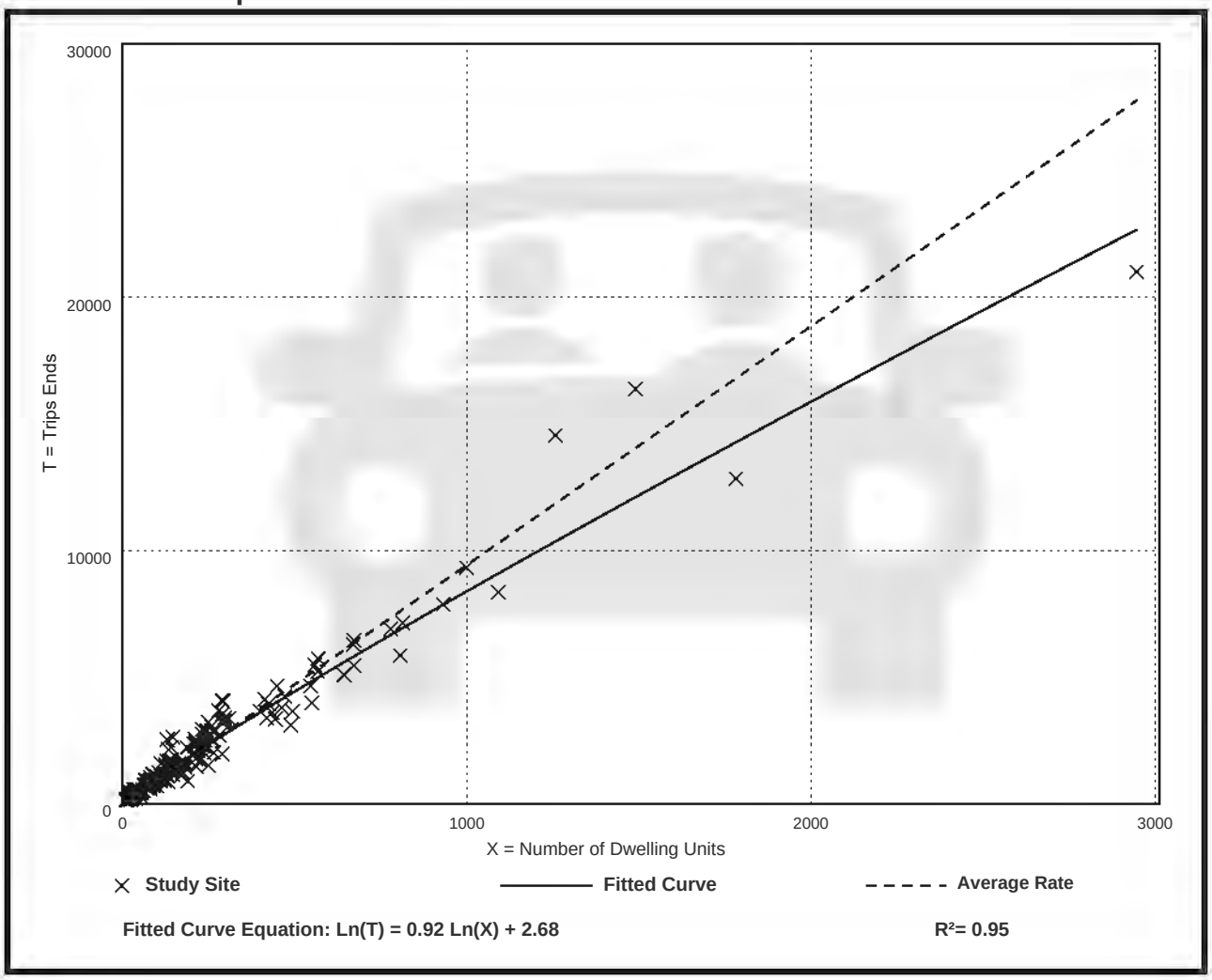
Vehicle Trip Ends vs: Dwelling Units
On a: Weekday

Setting/Location: General Urban/Suburban
Number of Studies: 174
Avg. Num. of Dwelling Units: 246
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
9.43	4.45 - 22.61	2.13

Data Plot and Equation



Fitted Curve Equation: Ln(T) = 0.92 Ln(X) + 2.68

R^2= 0.95

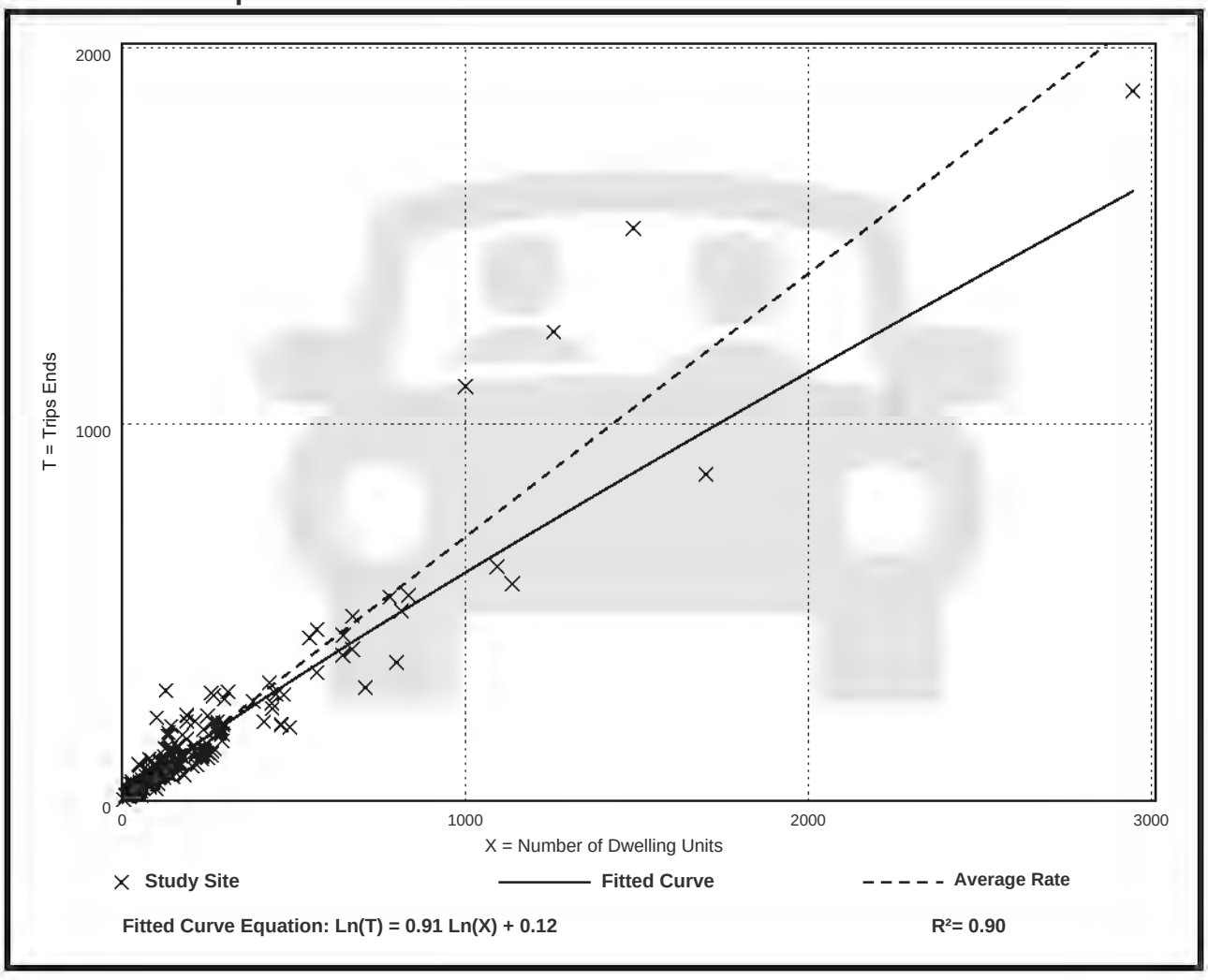
Single-Family Detached Housing
(210)

Vehicle Trip Ends vs: Dwelling Units
On a: Weekday,
Peak Hour of Adjacent Street Traffic,
One Hour Between 7 and 9 a.m.
Setting/Location: General Urban/Suburban
Number of Studies: 192
Avg. Num. of Dwelling Units: 226
Directional Distribution: 26% entering, 74% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.70	0.27 - 2.27	0.24

Data Plot and Equation



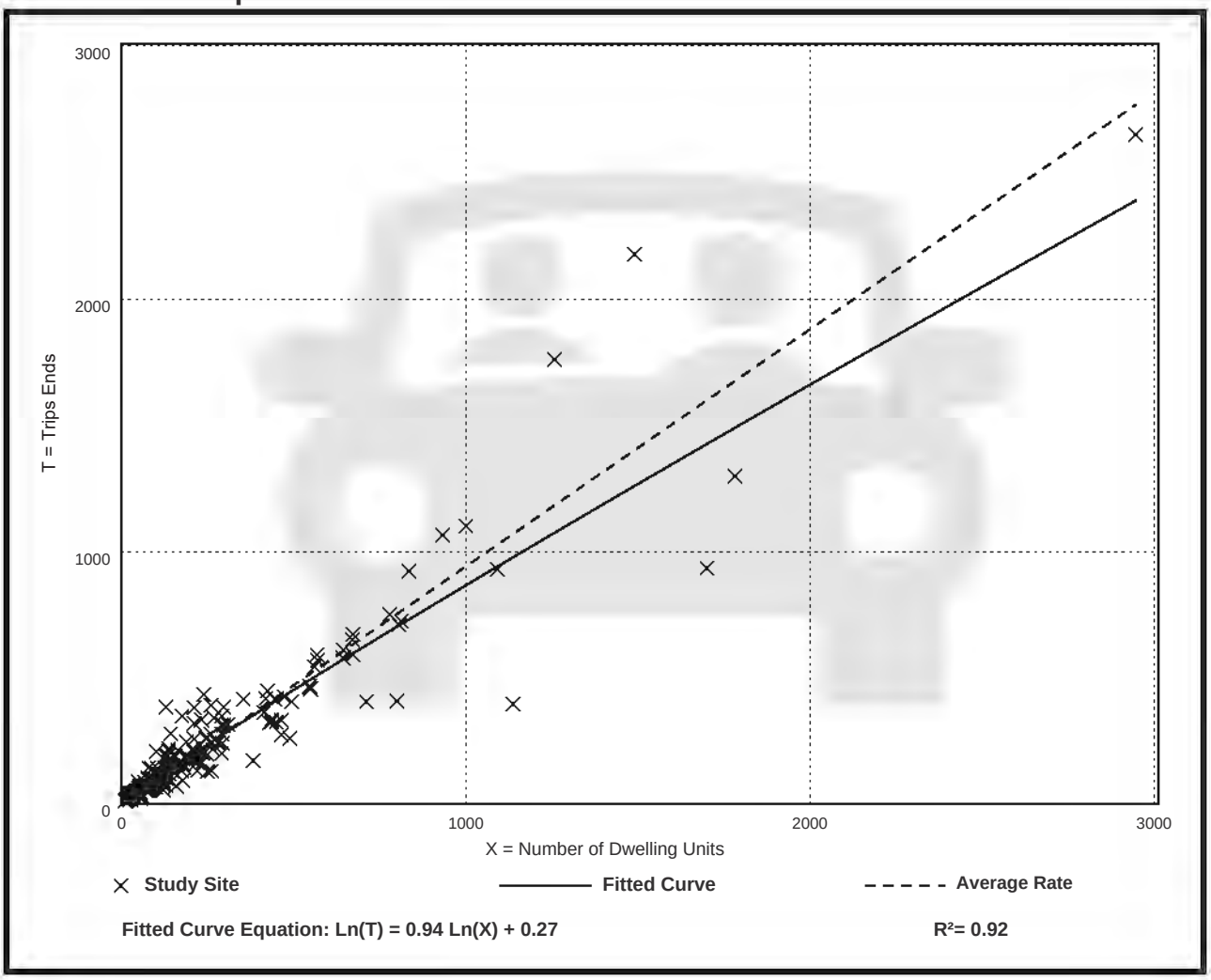
Single-Family Detached Housing
(210)

Vehicle Trip Ends vs: Dwelling Units
On a: Weekday,
Peak Hour of Adjacent Street Traffic,
One Hour Between 4 and 6 p.m.
Setting/Location: General Urban/Suburban
Number of Studies: 208
Avg. Num. of Dwelling Units: 248
Directional Distribution: 63% entering, 37% exiting

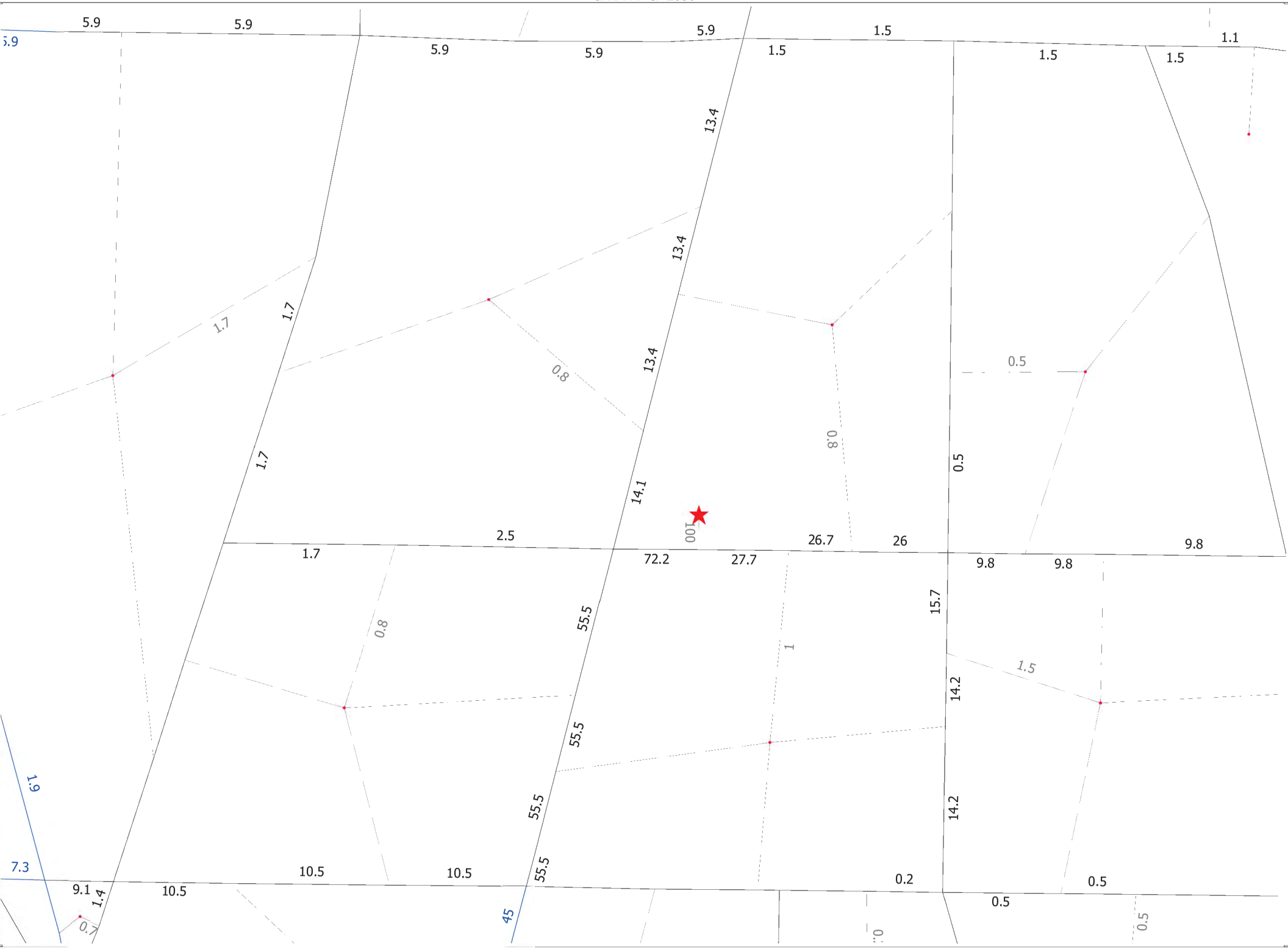
Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.94	0.35 - 2.98	0.31

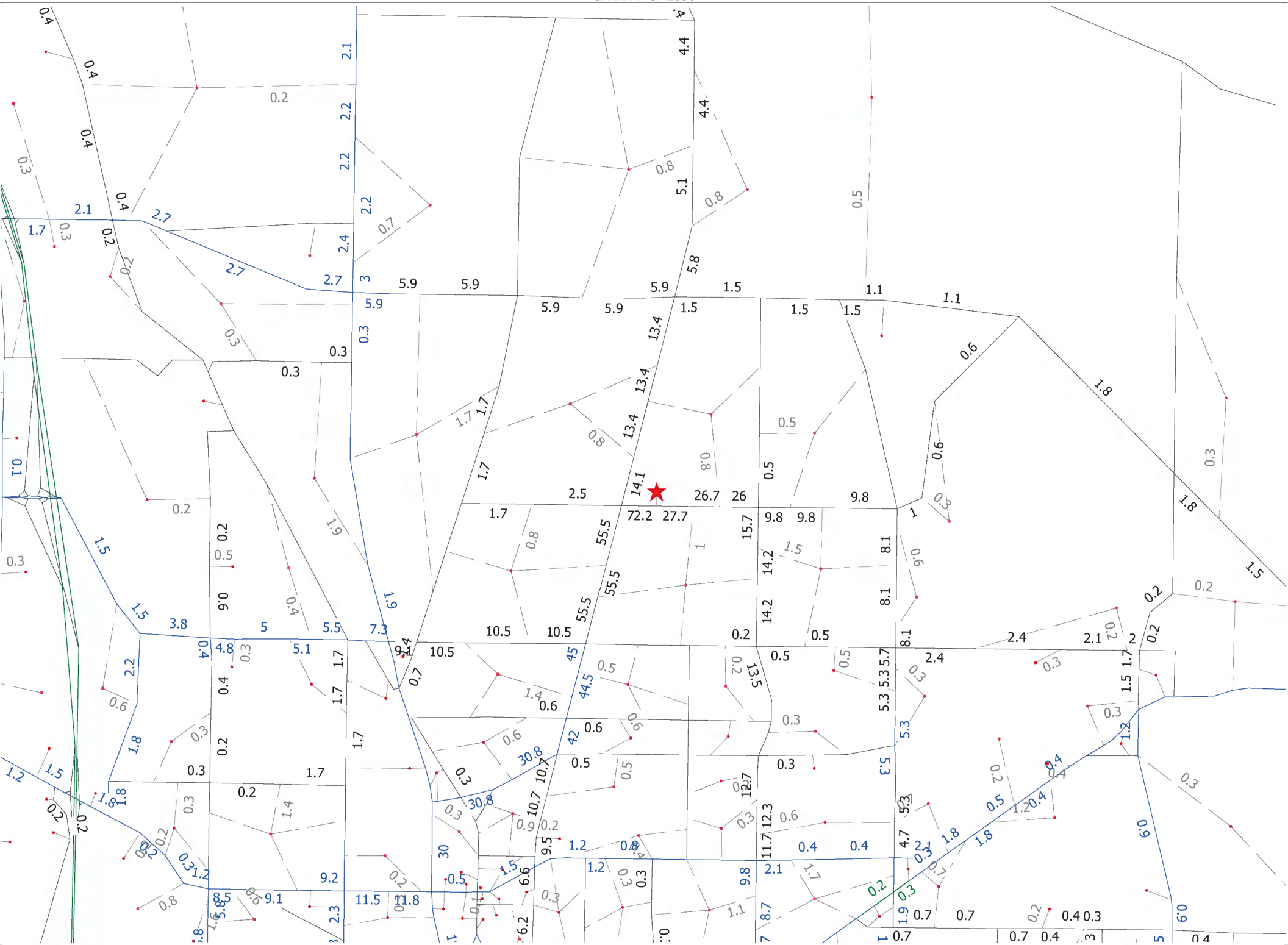
Data Plot and Equation



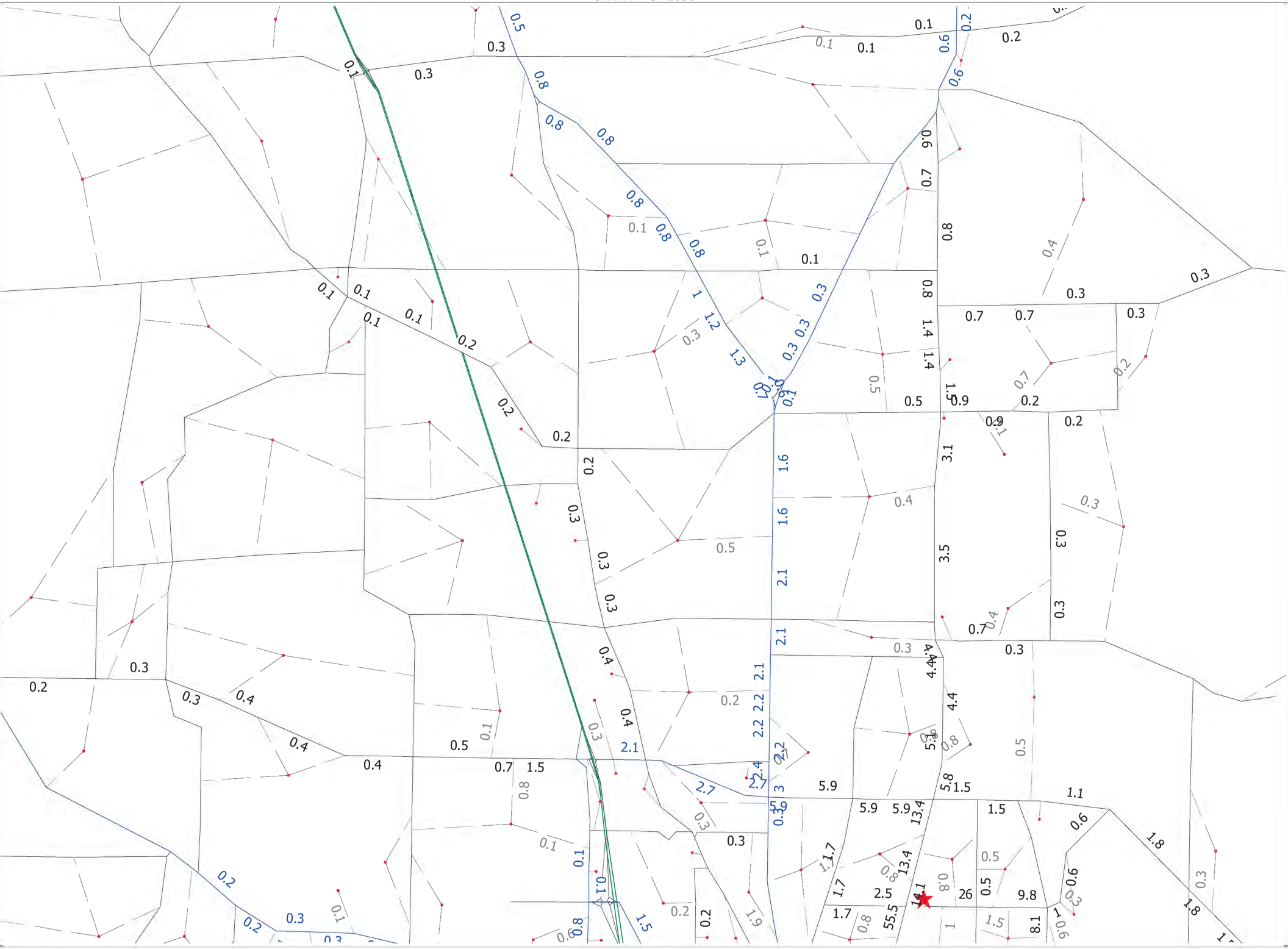
Appendix J Model Output



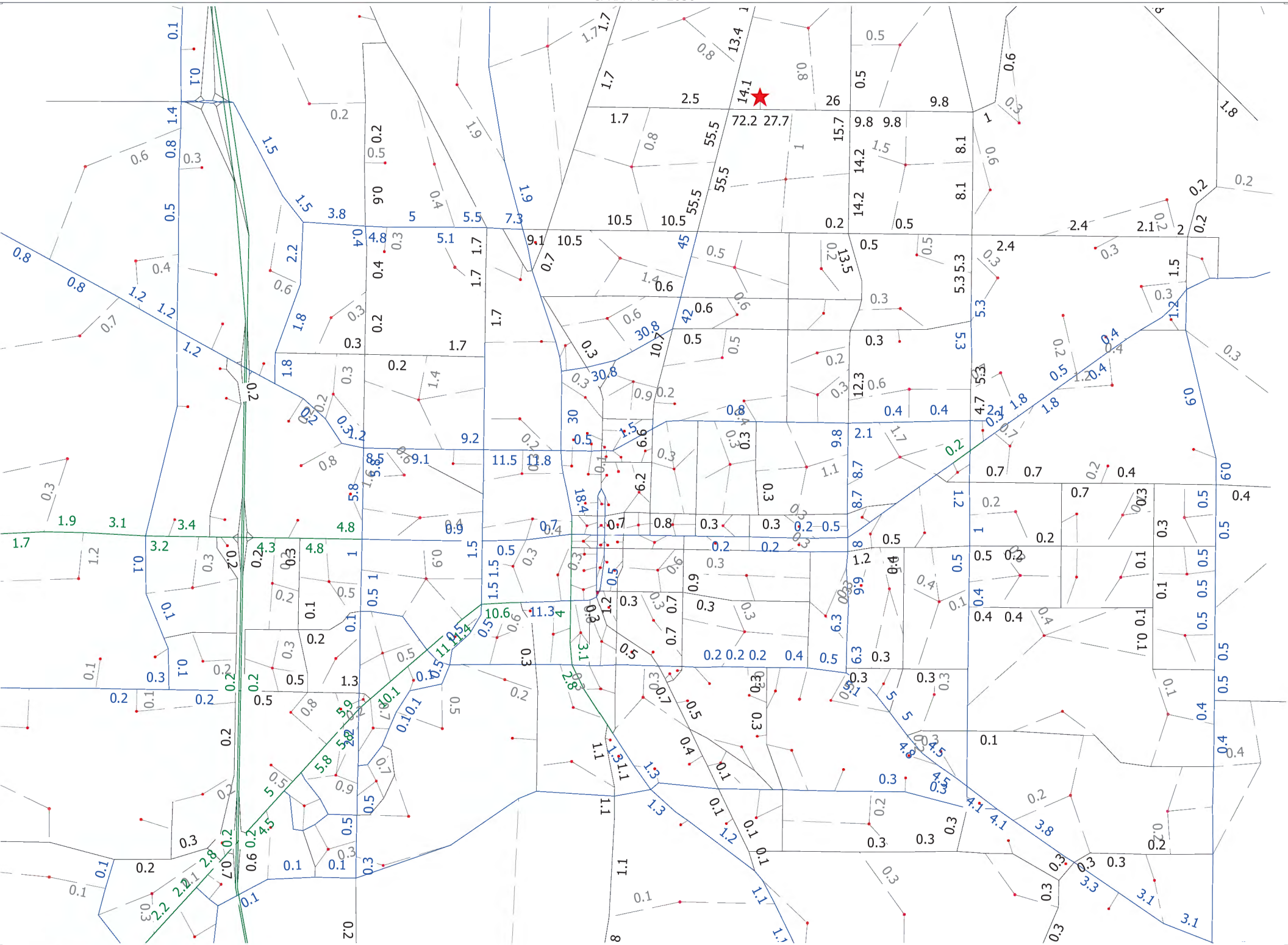
CFRPM 7 CF 2030

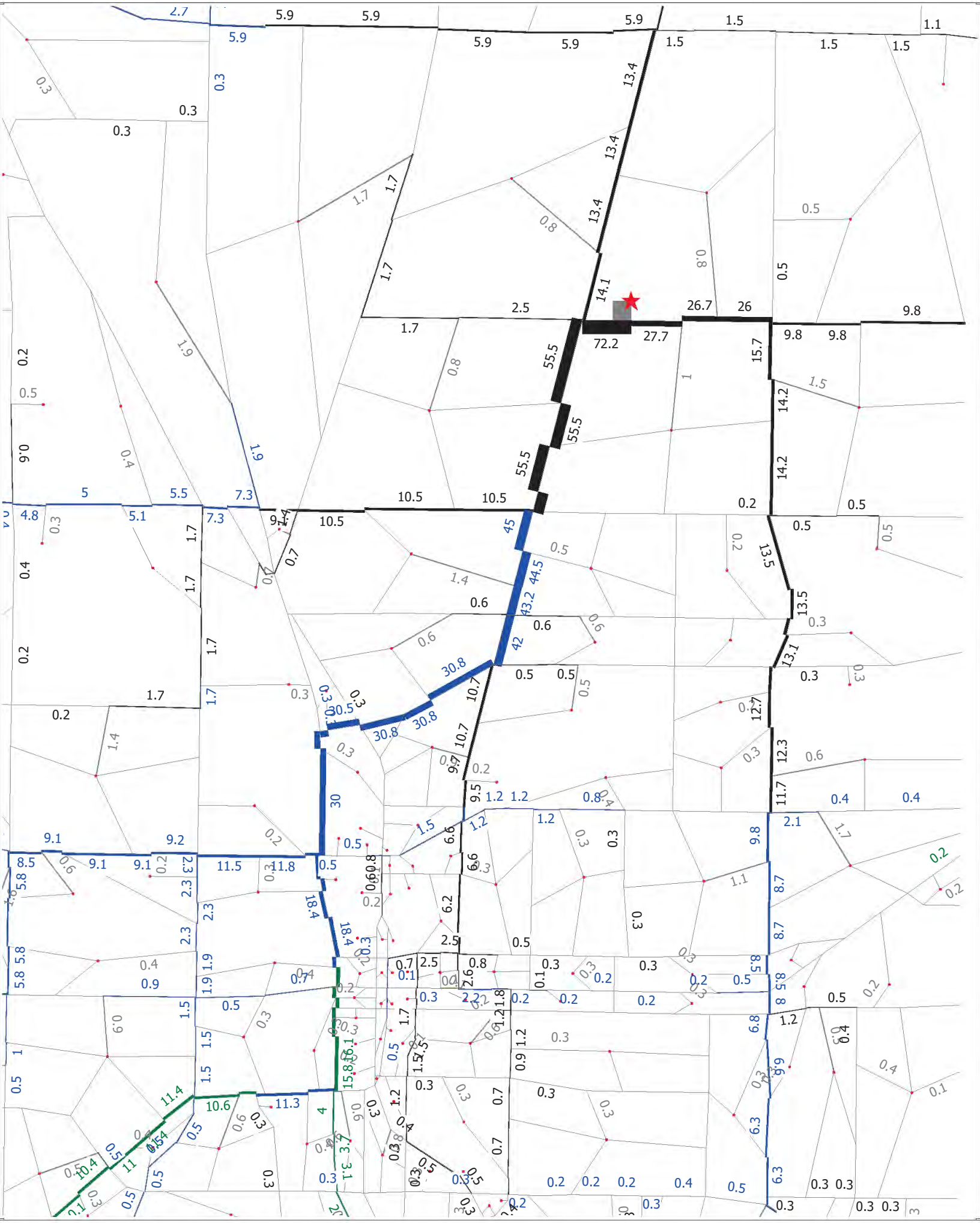


CFRPM 7 CF 2030



CFRPM 7 CF 2030





Appendix K 2029 No-Build Synchro Reports

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	23	78	34	91	61	45	41	407	30	90	432	23
Future Volume (veh/h)	23	78	34	91	61	45	41	407	30	90	432	23
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1841	1870	1900	1841	1870	1826	1811	1678	1841	1811	1900
Adj Flow Rate, veh/h	24	80	35	94	63	46	42	420	31	93	445	24
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	0	4	2	0	4	2	5	6	15	4	6	0
Cap, veh/h	122	153	60	396	145	106	495	663	521	435	951	51
Arrive On Green	0.15	0.15	0.15	0.15	0.15	0.15	0.37	0.37	0.37	0.06	0.56	0.56
Sat Flow, veh/h	171	1043	408	1298	989	722	902	1811	1422	1753	1703	92
Grp Volume(v), veh/h	139	0	0	94	0	109	42	420	31	93	0	469
Grp Sat Flow(s),veh/h/ln	1622	0	0	1298	0	1711	902	1811	1422	1753	0	1795
Q Serve(g_s), s	1.0	0.0	0.0	0.0	0.0	2.5	1.4	8.4	0.6	1.3	0.0	6.8
Cycle Q Clear(g_c), s	3.5	0.0	0.0	2.0	0.0	2.5	1.4	8.4	0.6	1.3	0.0	6.8
Prop In Lane	0.17		0.25	1.00		0.42	1.00		1.00	1.00		0.05
Lane Grp Cap(c), veh/h	334	0	0	396	0	250	495	663	521	435	0	1002
V/C Ratio(X)	0.42	0.00	0.00	0.24	0.00	0.44	0.08	0.63	0.06	0.21	0.00	0.47
Avail Cap(c_a), veh/h	1143	0	0	1037	0	1096	1197	2072	1627	1048	0	2053
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	17.4	0.0	0.0	16.8	0.0	17.0	9.2	11.4	9.0	7.8	0.0	5.8
Incr Delay (d2), s/veh	1.2	0.0	0.0	0.4	0.0	1.7	0.1	1.4	0.1	0.3	0.0	0.5
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	2.2	0.0	0.0	1.4	0.0	1.7	0.4	4.5	0.3	0.6	0.0	2.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	18.5	0.0	0.0	17.2	0.0	18.7	9.3	12.9	9.0	8.0	0.0	6.3
LnGrp LOS	B			B		B	A	B	A	A		A
Approach Vol, veh/h		139			203			493			562	
Approach Delay, s/veh		18.5			18.0			12.3			6.5	
Approach LOS		B			B			B			A	
Timer - Assigned Phs		2		4	5	6		8				
Phs Duration (G+Y+Rc), s		31.2		12.5	8.4	22.8		12.5				
Change Period (Y+Rc), s		6.8		6.1	5.7	6.8		6.1				
Max Green Setting (Gmax), s		50.0		28.0	18.0	50.0		28.0				
Max Q Clear Time (g_c+I1), s		8.8		4.5	3.3	10.4		5.5				
Green Ext Time (p_c), s		4.4		1.3	0.2	4.4		1.0				
Intersection Summary												
HCM 7th Control Delay, s/veh			11.4									
HCM 7th LOS			B									

Intersection	
Intersection Delay, s/veh	10.8
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	64	59	108	18	77	8	105	73	21	8	207	27
Future Vol, veh/h	64	59	108	18	77	8	105	73	21	8	207	27
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles, %	2	0	1	0	0	25	3	7	5	13	1	0
Mvmt Flow	67	61	113	19	80	8	109	76	22	8	216	28
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, s/veh	10.8	9.7	10.7	11.5
HCM LOS	B	A	B	B

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	53%	28%	17%	3%
Vol Thru, %	37%	26%	75%	86%
Vol Right, %	11%	47%	8%	11%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	199	231	103	242
LT Vol	105	64	18	8
Through Vol	73	59	77	207
RT Vol	21	108	8	27
Lane Flow Rate	207	241	107	252
Geometry Grp	1	1	1	1
Degree of Util (X)	0.307	0.343	0.165	0.373
Departure Headway (Hd)	5.333	5.132	5.529	5.33
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	674	700	648	676
Service Time	3.365	3.165	3.567	3.36
HCM Lane V/C Ratio	0.307	0.344	0.165	0.373
HCM Control Delay, s/veh	10.7	10.8	9.7	11.5
HCM Lane LOS	B	B	A	B
HCM 95th-tile Q	1.3	1.5	0.6	1.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	123	169	73	151	263	64	88	378	89	89	375	86
Future Volume (veh/h)	123	169	73	151	263	64	88	378	89	89	375	86
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1841	1796	1870	1826	1796	1841	1767	1826	1811	1826	1841
Adj Flow Rate, veh/h	126	172	74	154	268	65	90	386	91	91	383	88
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	3	4	7	2	5	7	4	9	5	6	5	4
Cap, veh/h	334	271	117	401	320	78	363	460	403	279	731	166
Arrive On Green	0.11	0.22	0.22	0.12	0.23	0.23	0.08	0.26	0.26	0.08	0.26	0.26
Sat Flow, veh/h	1767	1221	525	1781	1420	344	1753	1767	1547	1725	2807	638
Grp Volume(v), veh/h	126	0	246	154	0	333	90	386	91	91	235	236
Grp Sat Flow(s),veh/h/ln	1767	0	1746	1781	0	1764	1753	1767	1547	1725	1735	1711
Q Serve(g_s), s	4.3	0.0	10.6	5.2	0.0	15.0	3.0	17.2	3.9	3.0	9.7	9.9
Cycle Q Clear(g_c), s	4.3	0.0	10.6	5.2	0.0	15.0	3.0	17.2	3.9	3.0	9.7	9.9
Prop In Lane	1.00		0.30	1.00		0.20	1.00		1.00	1.00		0.37
Lane Grp Cap(c), veh/h	334	0	388	401	0	397	363	460	403	279	452	446
V/C Ratio(X)	0.38	0.00	0.63	0.38	0.00	0.84	0.25	0.84	0.23	0.33	0.52	0.53
Avail Cap(c_a), veh/h	430	0	670	493	0	677	615	954	835	527	936	924
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	21.3	0.0	29.4	20.7	0.0	30.8	19.5	29.2	24.2	20.9	26.4	26.4
Incr Delay (d2), s/veh	0.7	0.0	1.7	0.6	0.0	4.8	0.4	4.2	0.3	0.7	0.9	1.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	3.0	0.0	7.8	3.9	0.0	11.0	2.0	11.6	2.5	2.1	6.8	6.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	22.0	0.0	31.1	21.3	0.0	35.6	19.9	33.4	24.5	21.6	27.3	27.4
LnGrp LOS	C		C	C		D	B	C	C	C	C	C
Approach Vol, veh/h		372			487			567			562	
Approach Delay, s/veh		28.0			31.1			29.8			26.4	
Approach LOS		C			C			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	13.8	28.5	15.9	25.2	13.8	28.5	16.1	24.9
Change Period (Y+Rc), s	6.8	6.8	6.4	6.4	6.8	6.8	6.4	6.4
Max Green Setting (Gmax), s	19.0	45.0	14.0	32.0	19.0	45.0	14.0	32.0
Max Q Clear Time (g_c+I1), s	5.0	11.9	6.3	17.0	5.0	19.2	7.2	12.6
Green Ext Time (p_c), s	0.1	2.7	0.2	1.7	0.1	2.5	0.2	1.2

Intersection Summary	
HCM 7th Control Delay, s/veh	28.8
HCM 7th LOS	C

Notes

User approved pedestrian interval to be less than phase max green.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	42	208	59	75	297	25	60	92	31	55	208	72
Future Volume (veh/h)	42	208	59	75	297	25	60	92	31	55	208	72
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1781	1811	1841	1841	1826	1707	1841	1870	1737	1870	1885	1826
Adj Flow Rate, veh/h	43	214	61	77	306	26	62	95	32	57	214	74
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	8	6	4	4	5	13	4	2	11	2	1	5
Cap, veh/h	277	296	84	328	398	34	318	304	102	444	300	104
Arrive On Green	0.05	0.22	0.22	0.07	0.24	0.24	0.06	0.23	0.23	0.06	0.22	0.22
Sat Flow, veh/h	1697	1355	386	1753	1660	141	1753	1338	451	1781	1339	463
Grp Volume(v), veh/h	43	0	275	77	0	332	62	0	127	57	0	288
Grp Sat Flow(s),veh/h/ln	1697	0	1742	1753	0	1801	1753	0	1789	1781	0	1802
Q Serve(g_s), s	1.1	0.0	8.7	1.9	0.0	10.2	1.5	0.0	3.5	1.4	0.0	8.7
Cycle Q Clear(g_c), s	1.1	0.0	8.7	1.9	0.0	10.2	1.5	0.0	3.5	1.4	0.0	8.7
Prop In Lane	1.00		0.22	1.00		0.08	1.00		0.25	1.00		0.26
Lane Grp Cap(c), veh/h	277	0	381	328	0	432	318	0	407	444	0	404
V/C Ratio(X)	0.16	0.00	0.72	0.23	0.00	0.77	0.20	0.00	0.31	0.13	0.00	0.71
Avail Cap(c_a), veh/h	649	0	737	675	0	762	679	0	1211	817	0	1219
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	16.9	0.0	21.4	16.2	0.0	20.9	16.2	0.0	19.0	15.7	0.0	21.2
Incr Delay (d2), s/veh	0.4	0.0	3.7	0.5	0.0	4.1	0.4	0.0	0.6	0.2	0.0	3.3
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.8	0.0	6.4	1.3	0.0	7.6	1.1	0.0	2.5	0.9	0.0	6.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	17.2	0.0	25.1	16.7	0.0	25.0	16.6	0.0	19.6	15.9	0.0	24.5
LnGrp LOS	B		C	B		C	B		B	B		C
Approach Vol, veh/h		318			409			189			345	
Approach Delay, s/veh		24.0			23.5			18.6			23.1	
Approach LOS		C			C			B			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.6	19.4	10.7	19.3	9.8	19.2	9.4	20.6
Change Period (Y+Rc), s	6.0	6.0	6.4	6.4	6.0	6.0	6.4	6.4
Max Green Setting (Gmax), s	16.0	40.0	16.0	25.0	16.0	40.0	16.0	25.0
Max Q Clear Time (g_c+I1), s	3.5	5.5	3.9	10.7	3.5	10.7	3.1	12.2
Green Ext Time (p_c), s	0.1	1.0	0.2	1.8	0.1	2.5	0.1	2.0

Intersection Summary	
HCM 7th Control Delay, s/veh	22.8
HCM 7th LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	35	73	40	45	92	54	16	421	92	80	323	19
Future Volume (veh/h)	35	73	40	45	92	54	16	421	92	80	323	19
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1841	1870	1900	1841	1870	1826	1811	1678	1841	1811	1900
Adj Flow Rate, veh/h	37	77	42	47	97	57	17	443	97	84	340	20
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	0	4	2	0	4	2	5	6	15	4	6	0
Cap, veh/h	133	148	67	403	190	112	515	648	509	387	916	54
Arrive On Green	0.17	0.17	0.17	0.17	0.17	0.17	0.36	0.36	0.36	0.06	0.54	0.54
Sat Flow, veh/h	200	846	386	1293	1087	639	997	1811	1422	1753	1694	100
Grp Volume(v), veh/h	156	0	0	47	0	154	17	443	97	84	0	360
Grp Sat Flow(s),veh/h/ln	1432	0	0	1293	0	1726	997	1811	1422	1753	0	1793
Q Serve(g_s), s	1.2	0.0	0.0	0.0	0.0	3.7	0.5	9.4	2.1	1.2	0.0	5.2
Cycle Q Clear(g_c), s	4.9	0.0	0.0	1.2	0.0	3.7	0.5	9.4	2.1	1.2	0.0	5.2
Prop In Lane	0.24		0.27	1.00		0.37	1.00		1.00	1.00		0.06
Lane Grp Cap(c), veh/h	348	0	0	403	0	301	515	648	509	387	0	970
V/C Ratio(X)	0.45	0.00	0.00	0.12	0.00	0.51	0.03	0.68	0.19	0.22	0.00	0.37
Avail Cap(c_a), veh/h	1044	0	0	975	0	1065	1258	1996	1567	982	0	1976
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	17.2	0.0	0.0	16.0	0.0	17.0	9.5	12.4	10.0	8.6	0.0	6.0
Incr Delay (d2), s/veh	1.3	0.0	0.0	0.2	0.0	1.9	0.0	1.8	0.3	0.3	0.0	0.3
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.4	0.0	0.0	0.4	0.0	1.4	0.1	3.0	0.5	0.3	0.0	1.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	18.5	0.0	0.0	16.1	0.0	18.9	9.6	14.2	10.3	8.9	0.0	6.3
LnGrp LOS	B			B		B	A	B	B	A		A
Approach Vol, veh/h		156			201			557			444	
Approach Delay, s/veh		18.5			18.2			13.4			6.8	
Approach LOS		B			B			B			A	
Timer - Assigned Phs		2		4	5	6		8				
Phs Duration (G+Y+Rc), s		31.3		14.0	8.3	23.0		14.0				
Change Period (Y+Rc), s		6.8		6.1	5.7	6.8		6.1				
Max Green Setting (Gmax), s		50.0		28.0	18.0	50.0		28.0				
Max Q Clear Time (g_c+I1), s		7.2		5.7	3.2	11.4		6.9				
Green Ext Time (p_c), s		3.2		1.4	0.2	4.8		1.1				
Intersection Summary												
HCM 7th Control Delay, s/veh			12.5									
HCM 7th LOS			B									

Intersection	
Intersection Delay, s/veh	13.2
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	110	58	56	18	57	6	128	226	31	7	153	23
Future Vol, veh/h	110	58	56	18	57	6	128	226	31	7	153	23
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles, %	2	0	1	0	0	25	3	7	5	13	1	0
Mvmt Flow	116	61	59	19	60	6	135	238	33	7	161	24
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, s/veh	12	10	15.5	11.1
HCM LOS	B	A	C	B

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	33%	49%	22%	4%
Vol Thru, %	59%	26%	70%	84%
Vol Right, %	8%	25%	7%	13%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	385	224	81	183
LT Vol	128	110	18	7
Through Vol	226	58	57	153
RT Vol	31	56	6	23
Lane Flow Rate	405	236	85	193
Geometry Grp	1	1	1	1
Degree of Util (X)	0.589	0.37	0.142	0.301
Departure Headway (Hd)	5.231	5.653	5.977	5.625
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	689	634	598	638
Service Time	3.27	3.701	4.037	3.675
HCM Lane V/C Ratio	0.588	0.372	0.142	0.303
HCM Control Delay, s/veh	15.5	12	10	11.1
HCM Lane LOS	C	B	A	B
HCM 95th-tile Q	3.9	1.7	0.5	1.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	91	210	83	97	238	85	77	393	192	75	221	77
Future Volume (veh/h)	91	210	83	97	238	85	77	393	192	75	221	77
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1841	1796	1870	1826	1796	1841	1767	1826	1811	1826	1841
Adj Flow Rate, veh/h	99	228	90	105	259	92	84	427	209	82	240	84
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	4	7	2	5	7	4	9	5	6	5	4
Cap, veh/h	307	294	116	335	303	107	436	504	442	261	723	246
Arrive On Green	0.10	0.23	0.23	0.10	0.24	0.24	0.08	0.29	0.29	0.08	0.28	0.28
Sat Flow, veh/h	1767	1256	496	1781	1287	457	1753	1767	1547	1725	2539	866
Grp Volume(v), veh/h	99	0	318	105	0	351	84	427	209	82	162	162
Grp Sat Flow(s),veh/h/ln	1767	0	1751	1781	0	1744	1753	1767	1547	1725	1735	1670
Q Serve(g_s), s	3.5	0.0	15.1	3.7	0.0	17.1	2.8	20.2	9.9	2.8	6.5	6.8
Cycle Q Clear(g_c), s	3.5	0.0	15.1	3.7	0.0	17.1	2.8	20.2	9.9	2.8	6.5	6.8
Prop In Lane	1.00		0.28	1.00		0.26	1.00		1.00	1.00		0.52
Lane Grp Cap(c), veh/h	307	0	409	335	0	410	436	504	442	261	494	476
V/C Ratio(X)	0.32	0.00	0.78	0.31	0.00	0.86	0.19	0.85	0.47	0.31	0.33	0.34
Avail Cap(c_a), veh/h	404	0	633	431	0	630	674	898	786	496	882	849
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	22.4	0.0	31.8	22.0	0.0	32.4	19.1	29.8	26.1	21.4	25.0	25.1
Incr Delay (d2), s/veh	0.6	0.0	3.3	0.5	0.0	7.2	0.2	4.0	0.8	0.7	0.4	0.4
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.4	0.0	6.4	1.5	0.0	7.8	1.1	8.4	3.5	1.1	2.6	2.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	23.0	0.0	35.0	22.6	0.0	39.6	19.3	33.9	26.9	22.1	25.4	25.5
LnGrp LOS	C		D	C		D	B	C	C	C	C	C
Approach Vol, veh/h		417			456			720			406	
Approach Delay, s/veh		32.2			35.7			30.2			24.8	
Approach LOS		C			D			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	13.8	32.0	15.5	27.2	13.7	32.1	15.6	27.1
Change Period (Y+Rc), s	6.8	6.8	6.4	6.4	6.8	6.8	6.4	6.4
Max Green Setting (Gmax), s	19.0	45.0	14.0	32.0	19.0	45.0	14.0	32.0
Max Q Clear Time (g_c+I1), s	4.8	8.8	5.5	19.1	4.8	22.2	5.7	17.1
Green Ext Time (p_c), s	0.1	1.8	0.1	1.7	0.1	3.1	0.1	1.5

Intersection Summary	
HCM 7th Control Delay, s/veh	30.7
HCM 7th LOS	C

Notes

User approved pedestrian interval to be less than phase max green.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	60	316	50	70	250	41	98	288	64	21	103	70
Future Volume (veh/h)	60	316	50	70	250	41	98	288	64	21	103	70
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1781	1811	1841	1841	1826	1707	1841	1870	1737	1870	1885	1826
Adj Flow Rate, veh/h	61	322	51	71	255	42	100	294	65	21	105	71
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	8	6	4	4	5	13	4	2	11	2	1	5
Cap, veh/h	338	398	63	290	407	67	396	389	86	244	224	152
Arrive On Green	0.06	0.26	0.26	0.07	0.27	0.27	0.08	0.26	0.26	0.03	0.21	0.21
Sat Flow, veh/h	1697	1526	242	1753	1529	252	1753	1483	328	1781	1049	709
Grp Volume(v), veh/h	61	0	373	71	0	297	100	0	359	21	0	176
Grp Sat Flow(s),veh/h/ln	1697	0	1768	1753	0	1781	1753	0	1811	1781	0	1758
Q Serve(g_s), s	1.6	0.0	12.9	1.8	0.0	9.6	2.8	0.0	11.9	0.6	0.0	5.7
Cycle Q Clear(g_c), s	1.6	0.0	12.9	1.8	0.0	9.6	2.8	0.0	11.9	0.6	0.0	5.7
Prop In Lane	1.00		0.14	1.00		0.14	1.00		0.18	1.00		0.40
Lane Grp Cap(c), veh/h	338	0	461	290	0	474	396	0	474	244	0	376
V/C Ratio(X)	0.18	0.00	0.81	0.24	0.00	0.63	0.25	0.00	0.76	0.09	0.00	0.47
Avail Cap(c_a), veh/h	651	0	680	605	0	685	692	0	1114	630	0	1081
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	16.2	0.0	22.5	16.7	0.0	21.0	17.6	0.0	22.1	19.5	0.0	22.3
Incr Delay (d2), s/veh	0.4	0.0	5.8	0.6	0.0	1.9	0.5	0.0	3.5	0.2	0.0	1.3
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	0.0	5.6	0.7	0.0	3.8	1.1	0.0	5.0	0.2	0.0	2.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	16.5	0.0	28.3	17.3	0.0	23.0	18.1	0.0	25.6	19.7	0.0	23.6
LnGrp LOS	B		C	B		C	B		C	B		C
Approach Vol, veh/h		434			368			459			197	
Approach Delay, s/veh		26.7			21.9			24.0			23.2	
Approach LOS		C			C			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	7.9	23.0	10.7	23.4	11.0	19.9	10.4	23.7
Change Period (Y+Rc), s	6.0	6.0	6.4	6.4	6.0	6.0	6.4	6.4
Max Green Setting (Gmax), s	16.0	40.0	16.0	25.0	16.0	40.0	16.0	25.0
Max Q Clear Time (g_c+I1), s	2.6	13.9	3.8	14.9	4.8	7.7	3.6	11.6
Green Ext Time (p_c), s	0.0	3.2	0.2	2.1	0.2	1.5	0.1	1.8

Intersection Summary	
HCM 7th Control Delay, s/veh	24.1
HCM 7th LOS	C

Appendix L 2029 Build Roadway HCM Reports

Urban Street Segment Planning Method Computational Engine

Input Data (Segment)	Value	Units	Source
TH lane group volume	629	tpc/h	User specifies
TH lanes	1		User specifies
Segment length	5440	ft	User specifies
Speed limit	45	mph	User specifies
Progression	Average		User specifies

TH saturation flow rate	1800	tpc/h	Input
Effective green ratio	0.43		Input
Cycle length	115	s	Input
Analysis period	0.25	h	Input

Step 1. Running Time	Value	Units	Source
Free flow speed	50.0	mph	Calculated
Running time	74.2	s	Calculated

Step 2. Capacity	Value	Units	Source
Capacity (c)	774	tpc/h/ln	Calculated

Step 3. Volume-to-Capacity Ratio	Value	Units	Source
Degree of saturation (X)	0.81		Calculated

Step 4. Control Delay	Value	Units	Source
Uniform delay (d_1)	28.7	s	Calculated
Incremental delay (d_2)	9.0	s	Calculated
Progression factor (PF)	1.00		Calculated
Control delay	12.9	s	Input

Step 5. Travel Speed	Value	Units	Source
Travel time, T_T	87.1	s	Calculated
Travel speed, $S_{T,seg}$	42.6	mph	Calculated

Progression Factor	
Good	0.70
Average	1.00
Poor	1.25

Alternative method: Use data from signalized intersection planning method.

TH saturation flow rate	1800	tpc/h	User specifies
Effective green ratio	0.43		User specifies
Cycle length	115	s	User specifies
Analysis period	0.25	h	User specifies

Alternative method: Use control delay from signalized intersection planning method.

Step 4. Control Delay	**Value**	**Units**	**Source**
Control delay	12.9	s	User specifies

Appendix M 2029 Build Synchro Reports

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	23	79	34	143	64	58	41	407	47	94	432	23
Future Volume (veh/h)	23	79	34	143	64	58	41	407	47	94	432	23
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1841	1870	1900	1841	1870	1826	1811	1678	1841	1811	1900
Adj Flow Rate, veh/h	24	81	35	147	66	60	42	420	48	97	445	24
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	0	4	2	0	4	2	5	6	15	4	6	0
Cap, veh/h	120	164	63	408	139	127	488	653	513	425	940	51
Arrive On Green	0.16	0.16	0.16	0.16	0.16	0.16	0.36	0.36	0.36	0.06	0.55	0.55
Sat Flow, veh/h	159	1043	401	1296	888	807	902	1811	1422	1753	1703	92
Grp Volume(v), veh/h	140	0	0	147	0	126	42	420	48	97	0	469
Grp Sat Flow(s),veh/h/ln	1603	0	0	1296	0	1695	902	1811	1422	1753	0	1795
Q Serve(g_s), s	0.6	0.0	0.0	0.0	0.0	3.0	1.4	8.6	1.0	1.4	0.0	7.0
Cycle Q Clear(g_c), s	3.6	0.0	0.0	3.3	0.0	3.0	1.4	8.6	1.0	1.4	0.0	7.0
Prop In Lane	0.17		0.25	1.00		0.48	1.00		1.00	1.00		0.05
Lane Grp Cap(c), veh/h	347	0	0	408	0	266	488	653	513	425	0	991
V/C Ratio(X)	0.40	0.00	0.00	0.36	0.00	0.47	0.09	0.64	0.09	0.23	0.00	0.47
Avail Cap(c_a), veh/h	1122	0	0	1023	0	1071	1180	2042	1603	1027	0	2023
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	17.2	0.0	0.0	17.2	0.0	17.0	9.5	11.8	9.4	8.0	0.0	6.0
Incr Delay (d2), s/veh	1.1	0.0	0.0	0.8	0.0	1.9	0.1	1.5	0.1	0.3	0.0	0.5
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	2.2	0.0	0.0	2.3	0.0	2.0	0.4	4.7	0.4	0.6	0.0	2.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	18.3	0.0	0.0	17.9	0.0	18.9	9.6	13.3	9.5	8.4	0.0	6.5
LnGrp LOS	B			B		B	A	B	A	A		A
Approach Vol, veh/h		140			273			510			566	
Approach Delay, s/veh		18.3			18.4			12.6			6.8	
Approach LOS		B			B			B			A	
Timer - Assigned Phs		2		4	5	6		8				
Phs Duration (G+Y+Rc), s		31.3		13.1	8.5	22.8		13.1				
Change Period (Y+Rc), s		6.8		6.1	5.7	6.8		6.1				
Max Green Setting (Gmax), s		50.0		28.0	18.0	50.0		28.0				
Max Q Clear Time (g_c+I1), s		9.0		5.3	3.4	10.6		5.6				
Green Ext Time (p_c), s		4.4		1.7	0.2	4.5		1.0				
Intersection Summary												
HCM 7th Control Delay, s/veh			12.0									
HCM 7th LOS			B									

Intersection	
Intersection Delay, s/veh	11.2
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	65	68	121	18	80	8	110	73	21	8	207	27
Future Vol, veh/h	65	68	121	18	80	8	110	73	21	8	207	27
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles, %	2	0	1	0	0	25	3	7	5	13	1	0
Mvmt Flow	68	71	126	19	83	8	115	76	22	8	216	28
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, s/veh	11.3	9.8	11	11.8
HCM LOS	B	A	B	B

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	54%	26%	17%	3%
Vol Thru, %	36%	27%	75%	86%
Vol Right, %	10%	48%	8%	11%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	204	254	106	242
LT Vol	110	65	18	8
Through Vol	73	68	80	207
RT Vol	21	121	8	27
Lane Flow Rate	213	265	110	252
Geometry Grp	1	1	1	1
Degree of Util (X)	0.32	0.379	0.172	0.38
Departure Headway (Hd)	5.428	5.163	5.608	5.426
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	661	696	638	663
Service Time	3.465	3.2	3.652	3.461
HCM Lane V/C Ratio	0.322	0.381	0.172	0.38
HCM Control Delay, s/veh	11	11.3	9.8	11.8
HCM Lane LOS	B	B	A	B
HCM 95th-tile Q	1.4	1.8	0.6	1.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	126	169	73	151	263	64	88	392	89	89	417	96
Future Volume (veh/h)	126	169	73	151	263	64	88	392	89	89	417	96
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1841	1796	1870	1826	1796	1841	1767	1826	1811	1826	1841
Adj Flow Rate, veh/h	129	172	74	154	268	65	90	400	91	91	426	98
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	3	4	7	2	5	7	4	9	5	6	5	4
Cap, veh/h	330	271	117	397	319	77	348	473	414	276	752	172
Arrive On Green	0.11	0.22	0.22	0.11	0.22	0.22	0.08	0.27	0.27	0.08	0.27	0.27
Sat Flow, veh/h	1767	1221	525	1781	1420	344	1753	1767	1547	1725	2805	640
Grp Volume(v), veh/h	129	0	246	154	0	333	90	400	91	91	262	262
Grp Sat Flow(s),veh/h/ln	1767	0	1746	1781	0	1764	1753	1767	1547	1725	1735	1711
Q Serve(g_s), s	4.4	0.0	10.8	5.3	0.0	15.3	3.0	18.1	3.9	3.1	11.0	11.2
Cycle Q Clear(g_c), s	4.4	0.0	10.8	5.3	0.0	15.3	3.0	18.1	3.9	3.1	11.0	11.2
Prop In Lane	1.00		0.30	1.00		0.20	1.00		1.00	1.00		0.37
Lane Grp Cap(c), veh/h	330	0	388	397	0	396	348	473	414	276	465	459
V/C Ratio(X)	0.39	0.00	0.63	0.39	0.00	0.84	0.26	0.85	0.22	0.33	0.56	0.57
Avail Cap(c_a), veh/h	423	0	660	487	0	667	596	939	822	519	922	909
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	21.8	0.0	29.8	21.2	0.0	31.4	19.6	29.3	24.1	21.0	26.7	26.8
Incr Delay (d2), s/veh	0.8	0.0	1.7	0.6	0.0	4.9	0.4	4.2	0.3	0.7	1.1	1.1
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	3.2	0.0	7.9	4.0	0.0	11.1	2.1	12.1	2.5	2.1	7.8	7.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	22.5	0.0	31.5	21.8	0.0	36.2	20.0	33.6	24.4	21.7	27.8	27.9
LnGrp LOS	C		C	C		D	C	C	C	C	C	C
Approach Vol, veh/h		375			487			581			615	
Approach Delay, s/veh		28.4			31.7			30.0			26.9	
Approach LOS		C			C			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	13.8	29.5	15.9	25.4	13.9	29.5	16.1	25.2
Change Period (Y+Rc), s	6.8	6.8	6.4	6.4	6.8	6.8	6.4	6.4
Max Green Setting (Gmax), s	19.0	45.0	14.0	32.0	19.0	45.0	14.0	32.0
Max Q Clear Time (g_c+I1), s	15.0	13.2	6.4	17.3	5.1	20.1	7.3	12.8
Green Ext Time (p_c), s	0.1	3.0	0.2	1.7	0.1	2.5	0.2	1.2

Intersection Summary	
HCM 7th Control Delay, s/veh	29.2
HCM 7th LOS	C

Notes

User approved pedestrian interval to be less than phase max green.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	42	208	59	75	297	26	60	96	31	56	220	72
Future Volume (veh/h)	42	208	59	75	297	26	60	96	31	56	220	72
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1781	1811	1841	1841	1826	1707	1841	1870	1737	1870	1885	1826
Adj Flow Rate, veh/h	43	214	61	77	306	27	62	99	32	58	227	74
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	8	6	4	4	5	13	4	2	11	2	1	5
Cap, veh/h	274	296	84	325	396	35	315	316	102	449	315	103
Arrive On Green	0.05	0.22	0.22	0.07	0.24	0.24	0.06	0.23	0.23	0.06	0.23	0.23
Sat Flow, veh/h	1697	1355	386	1753	1654	146	1753	1354	438	1781	1361	444
Grp Volume(v), veh/h	43	0	275	77	0	333	62	0	131	58	0	301
Grp Sat Flow(s),veh/h/ln	1697	0	1742	1753	0	1800	1753	0	1792	1781	0	1805
Q Serve(g_s), s	1.1	0.0	8.8	2.0	0.0	10.4	1.5	0.0	3.6	1.4	0.0	9.2
Cycle Q Clear(g_c), s	1.1	0.0	8.8	2.0	0.0	10.4	1.5	0.0	3.6	1.4	0.0	9.2
Prop In Lane	1.00		0.22	1.00		0.08	1.00		0.24	1.00		0.25
Lane Grp Cap(c), veh/h	274	0	381	325	0	431	315	0	419	449	0	418
V/C Ratio(X)	0.16	0.00	0.72	0.24	0.00	0.77	0.20	0.00	0.31	0.13	0.00	0.72
Avail Cap(c_a), veh/h	639	0	726	666	0	750	670	0	1195	813	0	1204
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	17.1	0.0	21.7	16.5	0.0	21.3	16.2	0.0	19.0	15.6	0.0	21.3
Incr Delay (d2), s/veh	0.4	0.0	3.7	0.5	0.0	4.2	0.4	0.0	0.6	0.2	0.0	3.3
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.8	0.0	6.5	1.3	0.0	7.7	1.1	0.0	2.6	1.0	0.0	7.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	17.5	0.0	25.4	17.0	0.0	25.5	16.6	0.0	19.6	15.8	0.0	24.6
LnGrp LOS	B		C	B		C	B		B	B		C
Approach Vol, veh/h		318			410			193			359	
Approach Delay, s/veh		24.4			23.9			18.6			23.2	
Approach LOS		C			C			B			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.7	20.0	10.7	19.5	9.9	19.9	9.5	20.8
Change Period (Y+Rc), s	6.0	6.0	6.4	6.4	6.0	6.0	6.4	6.4
Max Green Setting (Gmax), s	16.0	40.0	16.0	25.0	16.0	40.0	16.0	25.0
Max Q Clear Time (g_c+I1), s	3.4	5.6	4.0	10.8	3.5	11.2	3.1	12.4
Green Ext Time (p_c), s	0.1	1.0	0.2	1.8	0.1	2.6	0.1	2.0

Intersection Summary	
HCM 7th Control Delay, s/veh	23.0
HCM 7th LOS	C

Intersection	
Int Delay, s/veh	1.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	17	217	0	0	218	2	1	0	1	6	0	51
Future Vol, veh/h	17	217	0	0	218	2	1	0	1	6	0	51
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	89	89	89	89	89	89	89	89	89	89	89	89
Heavy Vehicles, %	0	5	0	0	1	0	0	0	0	0	0	0
Mvmt Flow	19	244	0	0	245	2	1	0	1	7	0	57

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	247	0	0	244	0	0	527	529	244	528	528	246
Stage 1	-	-	-	-	-	-	282	282	-	246	246	-
Stage 2	-	-	-	-	-	-	245	247	-	282	282	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1330	-	-	1334	-	-	465	458	800	464	459	798
Stage 1	-	-	-	-	-	-	729	681	-	762	706	-
Stage 2	-	-	-	-	-	-	763	706	-	729	681	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1330	-	-	1334	-	-	424	450	800	456	451	798
Mov Cap-2 Maneuver	-	-	-	-	-	-	424	450	-	456	451	-
Stage 1	-	-	-	-	-	-	717	670	-	762	706	-
Stage 2	-	-	-	-	-	-	708	706	-	716	670	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v	0.56	0	11.52	10.33
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	555	131	-	-	1334	-	-	739
HCM Lane V/C Ratio	0.004	0.014	-	-	-	-	-	0.087
HCM Control Delay (s/veh)	11.5	7.7	0	-	0	-	-	10.3
HCM Lane LOS	B	A	A	-	A	-	-	B
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0.3

Intersection	
Int Delay, s/veh	0.9

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	5	219	203	6	17	17
Future Vol, veh/h	5	219	203	6	17	17
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	89	89	89	89	89	89
Heavy Vehicles, %	0	5	1	0	0	0
Mvmt Flow	6	246	228	7	19	19

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	235	0	-	0	489	231
Stage 1	-	-	-	-	231	-
Stage 2	-	-	-	-	257	-
Critical Hdwy	4.1	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	1344	-	-	-	542	813
Stage 1	-	-	-	-	812	-
Stage 2	-	-	-	-	790	-
Platoon blocked, %			-	-	-	
Mov Cap-1 Maneuver	1344	-	-	-	539	813
Mov Cap-2 Maneuver	-	-	-	-	539	-
Stage 1	-	-	-	-	808	-
Stage 2	-	-	-	-	790	-

Approach	EB	WB	SB
HCM Control Delay, s/v	0.17	0	10.9
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	40	-	-	-	648
HCM Lane V/C Ratio	0.004	-	-	-	0.059
HCM Control Delay (s/veh)	7.7	0	-	-	10.9
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	35	76	40	80	94	62	16	421	152	94	323	19
Future Volume (veh/h)	35	76	40	80	94	62	16	421	152	94	323	19
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1841	1870	1900	1841	1870	1826	1811	1678	1841	1811	1900
Adj Flow Rate, veh/h	37	80	42	84	99	65	17	443	160	99	340	20
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	0	4	2	0	4	2	5	6	15	4	6	0
Cap, veh/h	129	152	67	394	185	122	514	654	514	387	923	54
Arrive On Green	0.18	0.18	0.18	0.18	0.18	0.18	0.36	0.36	0.36	0.06	0.55	0.55
Sat Flow, veh/h	188	850	373	1289	1037	681	997	1811	1422	1753	1694	100
Grp Volume(v), veh/h	159	0	0	84	0	164	17	443	160	99	0	360
Grp Sat Flow(s),veh/h/ln	1411	0	0	1289	0	1718	997	1811	1422	1753	0	1793
Q Serve(g_s), s	1.2	0.0	0.0	0.0	0.0	4.0	0.5	9.7	3.8	1.5	0.0	5.3
Cycle Q Clear(g_c), s	5.3	0.0	0.0	2.5	0.0	4.0	0.5	9.7	3.8	1.5	0.0	5.3
Prop In Lane	0.23		0.26	1.00		0.40	1.00		1.00	1.00		0.06
Lane Grp Cap(c), veh/h	347	0	0	394	0	307	514	654	514	387	0	977
V/C Ratio(X)	0.46	0.00	0.00	0.21	0.00	0.53	0.03	0.68	0.31	0.26	0.00	0.37
Avail Cap(c_a), veh/h	1008	0	0	937	0	1030	1221	1938	1522	954	0	1919
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	17.6	0.0	0.0	16.8	0.0	17.4	9.7	12.6	10.7	8.7	0.0	6.0
Incr Delay (d2), s/veh	1.3	0.0	0.0	0.4	0.0	2.0	0.0	1.8	0.5	0.4	0.0	0.3
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	2.6	0.0	0.0	1.3	0.0	2.8	0.2	5.6	1.7	0.7	0.0	2.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	19.0	0.0	0.0	17.2	0.0	19.5	9.7	14.4	11.2	9.1	0.0	6.4
LnGrp LOS	B			B		B	A	B	B	A		A
Approach Vol, veh/h		159			248			620			459	
Approach Delay, s/veh		19.0			18.7			13.4			7.0	
Approach LOS		B			B			B			A	
Timer - Assigned Phs		2		4	5	6		8				
Phs Duration (G+Y+Rc), s		32.3		14.5	8.6	23.7		14.5				
Change Period (Y+Rc), s		6.8		6.1	5.7	6.8		6.1				
Max Green Setting (Gmax), s		50.0		28.0	18.0	50.0		28.0				
Max Q Clear Time (g_c+I1), s		7.3		6.0	3.5	11.7		7.3				
Green Ext Time (p_c), s		3.2		1.6	0.2	5.2		1.1				
Intersection Summary												
HCM 7th Control Delay, s/veh			12.9									
HCM 7th LOS			B									

Intersection	
Intersection Delay, s/veh	14
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	111	64	65	18	67	6	143	226	31	7	153	24
Future Vol, veh/h	111	64	65	18	67	6	143	226	31	7	153	24
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles, %	2	0	1	0	0	25	3	7	5	13	1	0
Mvmt Flow	117	67	68	19	71	6	151	238	33	7	161	25
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, s/veh	12.6	10.4	16.9	11.4
HCM LOS	B	B	C	B

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	36%	46%	20%	4%
Vol Thru, %	56%	27%	74%	83%
Vol Right, %	8%	27%	7%	13%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	400	240	91	184
LT Vol	143	111	18	7
Through Vol	226	64	67	153
RT Vol	31	65	6	24
Lane Flow Rate	421	253	96	194
Geometry Grp	1	1	1	1
Degree of Util (X)	0.625	0.403	0.162	0.31
Departure Headway (Hd)	5.344	5.736	6.101	5.768
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	674	624	584	620
Service Time	3.393	3.793	4.174	3.829
HCM Lane V/C Ratio	0.625	0.405	0.164	0.313
HCM Control Delay, s/veh	16.9	12.6	10.4	11.4
HCM Lane LOS	C	B	B	B
HCM 95th-tile Q	4.4	1.9	0.6	1.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	102	210	83	97	238	85	77	442	192	75	249	84
Future Volume (veh/h)	102	210	83	97	238	85	77	442	192	75	249	84
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1841	1796	1870	1826	1796	1841	1767	1826	1811	1826	1841
Adj Flow Rate, veh/h	111	228	90	105	259	92	84	480	209	82	271	91
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	4	7	2	5	7	4	9	5	6	5	4
Cap, veh/h	293	293	116	320	299	106	438	552	484	247	801	263
Arrive On Green	0.10	0.23	0.23	0.10	0.23	0.23	0.08	0.31	0.31	0.07	0.31	0.31
Sat Flow, veh/h	1767	1256	496	1781	1287	457	1753	1767	1547	1725	2566	843
Grp Volume(v), veh/h	111	0	318	105	0	351	84	480	209	82	181	181
Grp Sat Flow(s),veh/h/ln	1767	0	1751	1781	0	1744	1753	1767	1547	1725	1735	1674
Q Serve(g_s), s	4.2	0.0	16.0	3.9	0.0	18.3	2.9	24.2	10.1	2.9	7.6	7.9
Cycle Q Clear(g_c), s	4.2	0.0	16.0	3.9	0.0	18.3	2.9	24.2	10.1	2.9	7.6	7.9
Prop In Lane	1.00		0.28	1.00		0.26	1.00		1.00	1.00		0.50
Lane Grp Cap(c), veh/h	293	0	409	320	0	405	438	552	484	247	541	523
V/C Ratio(X)	0.38	0.00	0.78	0.33	0.00	0.87	0.19	0.87	0.43	0.33	0.33	0.35
Avail Cap(c_a), veh/h	378	0	594	408	0	592	659	843	738	465	828	799
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	24.4	0.0	33.9	23.9	0.0	34.8	18.9	30.6	25.8	22.1	24.9	25.0
Incr Delay (d2), s/veh	0.8	0.0	4.0	0.6	0.0	9.1	0.2	6.3	0.6	0.8	0.4	0.4
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	3.1	0.0	11.3	3.0	0.0	13.4	2.0	15.8	6.5	2.0	5.4	5.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	25.2	0.0	37.9	24.5	0.0	43.9	19.1	36.9	26.4	22.9	25.3	25.4
LnGrp LOS	C		D	C		D	B	D	C	C	C	C
Approach Vol, veh/h		429			456			773			444	
Approach Delay, s/veh		34.6			39.4			32.1			24.9	
Approach LOS		C			D			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	13.9	36.2	15.9	28.3	13.9	36.3	15.8	28.4
Change Period (Y+Rc), s	6.8	6.8	6.4	6.4	6.8	6.8	6.4	6.4
Max Green Setting (Gmax), s	19.0	45.0	14.0	32.0	19.0	45.0	14.0	32.0
Max Q Clear Time (g_c+I1), s	4.9	9.9	6.2	20.3	4.9	26.2	5.9	18.0
Green Ext Time (p_c), s	0.1	2.0	0.1	1.7	0.1	3.3	0.1	1.5

Intersection Summary	
HCM 7th Control Delay, s/veh	32.7
HCM 7th LOS	C

Notes

User approved pedestrian interval to be less than phase max green.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	60	316	50	70	250	42	98	302	64	22	111	70
Future Volume (veh/h)	60	316	50	70	250	42	98	302	64	22	111	70
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1781	1811	1841	1841	1826	1707	1841	1870	1737	1870	1885	1826
Adj Flow Rate, veh/h	61	322	51	71	255	43	100	308	65	22	113	71
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	8	6	4	4	5	13	4	2	11	2	1	5
Cap, veh/h	333	396	63	286	403	68	399	403	85	243	242	152
Arrive On Green	0.06	0.26	0.26	0.07	0.26	0.26	0.08	0.27	0.27	0.03	0.22	0.22
Sat Flow, veh/h	1697	1526	242	1753	1523	257	1753	1497	316	1781	1083	680
Grp Volume(v), veh/h	61	0	373	71	0	298	100	0	373	22	0	184
Grp Sat Flow(s),veh/h/ln	1697	0	1768	1753	0	1780	1753	0	1813	1781	0	1763
Q Serve(g_s), s	1.7	0.0	13.1	1.9	0.0	9.8	2.8	0.0	12.5	0.6	0.0	6.0
Cycle Q Clear(g_c), s	1.7	0.0	13.1	1.9	0.0	9.8	2.8	0.0	12.5	0.6	0.0	6.0
Prop In Lane	1.00		0.14	1.00		0.14	1.00		0.17	1.00		0.39
Lane Grp Cap(c), veh/h	333	0	459	286	0	471	399	0	488	243	0	393
V/C Ratio(X)	0.18	0.00	0.81	0.25	0.00	0.63	0.25	0.00	0.76	0.09	0.00	0.47
Avail Cap(c_a), veh/h	639	0	668	594	0	673	689	0	1097	620	0	1066
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	16.5	0.0	23.0	17.1	0.0	21.5	17.5	0.0	22.2	19.4	0.0	22.3
Incr Delay (d2), s/veh	0.4	0.0	6.2	0.6	0.0	2.0	0.5	0.0	3.6	0.2	0.0	1.2
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	1.1	0.0	9.7	1.3	0.0	7.0	2.0	0.0	9.1	0.5	0.0	4.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	16.9	0.0	29.1	17.7	0.0	23.5	18.0	0.0	25.8	19.6	0.0	23.5
LnGrp LOS	B		C	B		C	B		C	B		C
Approach Vol, veh/h		434			369			473			206	
Approach Delay, s/veh		27.4			22.4			24.1			23.1	
Approach LOS		C			C			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.0	23.8	10.8	23.6	11.0	20.8	10.4	23.9
Change Period (Y+Rc), s	6.0	6.0	6.4	6.4	6.0	6.0	6.4	6.4
Max Green Setting (Gmax), s	16.0	40.0	16.0	25.0	16.0	40.0	16.0	25.0
Max Q Clear Time (g_c+I1), s	2.0	14.5	3.9	15.1	4.8	8.0	3.7	11.8
Green Ext Time (p_c), s	0.0	3.3	0.2	2.1	0.2	1.5	0.1	1.8

Intersection Summary	
HCM 7th Control Delay, s/veh	24.5
HCM 7th LOS	C

Intersection	
Int Delay, s/veh	1.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	58	270	1	0	216	7	0	0	0	4	0	34
Future Vol, veh/h	58	270	1	0	216	7	0	0	0	4	0	34
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, %	0	5	0	0	1	0	0	0	0	0	0	0
Mvmt Flow	64	300	1	0	240	8	0	0	0	4	0	38

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	248	0	0	301	0	0	669	677	301	673	674	244
Stage 1	-	-	-	-	-	-	429	429	-	244	244	-
Stage 2	-	-	-	-	-	-	240	248	-	429	430	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1330	-	-	1271	-	-	374	377	744	372	379	800
Stage 1	-	-	-	-	-	-	608	587	-	764	708	-
Stage 2	-	-	-	-	-	-	768	705	-	608	587	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1330	-	-	1271	-	-	335	355	744	350	357	800
Mov Cap-2 Maneuver	-	-	-	-	-	-	335	355	-	350	357	-
Stage 1	-	-	-	-	-	-	572	553	-	764	708	-
Stage 2	-	-	-	-	-	-	732	705	-	573	553	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v	1.38	0	0	10.43
HCM LOS			A	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	-	317	-	-	1271	-	-	705
HCM Lane V/C Ratio	-	0.048	-	-	-	-	-	0.06
HCM Control Delay (s/veh)	0	7.8	0	-	0	-	-	10.4
HCM Lane LOS	A	A	A	-	A	-	-	B
HCM 95th %tile Q(veh)	-	0.2	-	-	0	-	-	0.2

Intersection	
Int Delay, s/veh	0.8

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	19	255	212	19	12	11
Future Vol, veh/h	19	255	212	19	12	11
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	0	5	1	0	0	0
Mvmt Flow	21	283	236	21	13	12

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	257	0	-	0	572	246
Stage 1	-	-	-	-	246	-
Stage 2	-	-	-	-	326	-
Critical Hdwy	4.1	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	1320	-	-	-	485	798
Stage 1	-	-	-	-	800	-
Stage 2	-	-	-	-	736	-
Platoon blocked, %			-	-	-	
Mov Cap-1 Maneuver	1320	-	-	-	476	798
Mov Cap-2 Maneuver	-	-	-	-	476	-
Stage 1	-	-	-	-	784	-
Stage 2	-	-	-	-	736	-

Approach	EB	WB	SB
HCM Control Delay, s/v	0.54	0	11.38
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	125	-	-	-	590
HCM Lane V/C Ratio	0.016	-	-	-	0.043
HCM Control Delay (s/veh)	7.8	0	-	-	11.4
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	23	79	34	143	64	58	41	407	47	94	432	23
Future Volume (veh/h)	23	79	34	143	64	58	41	407	47	94	432	23
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1841	1870	1900	1841	1870	1826	1811	1678	1841	1811	1900
Adj Flow Rate, veh/h	24	83	36	151	67	61	43	428	49	99	455	24
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	0	4	2	0	4	2	5	6	15	4	6	0
Cap, veh/h	119	168	65	411	142	129	483	651	511	418	939	50
Arrive On Green	0.16	0.16	0.16	0.16	0.16	0.16	0.36	0.36	0.36	0.06	0.55	0.55
Sat Flow, veh/h	156	1052	407	1293	887	808	894	1811	1422	1753	1705	90
Grp Volume(v), veh/h	143	0	0	151	0	128	43	428	49	99	0	479
Grp Sat Flow(s),veh/h/ln	1615	0	0	1293	0	1695	894	1811	1422	1753	0	1795
Q Serve(g_s), s	0.6	0.0	0.0	0.0	0.0	3.1	1.4	8.8	1.0	1.4	0.0	7.3
Cycle Q Clear(g_c), s	3.7	0.0	0.0	3.4	0.0	3.1	1.4	8.8	1.0	1.4	0.0	7.3
Prop In Lane	0.17		0.25	1.00		0.48	1.00		1.00	1.00		0.05
Lane Grp Cap(c), veh/h	352	0	0	411	0	270	483	651	511	418	0	989
V/C Ratio(X)	0.41	0.00	0.00	0.37	0.00	0.47	0.09	0.66	0.10	0.24	0.00	0.48
Avail Cap(c_a), veh/h	1119	0	0	1017	0	1066	1165	2034	1597	1016	0	2016
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	17.2	0.0	0.0	17.2	0.0	17.0	9.6	12.0	9.5	8.2	0.0	6.1
Incr Delay (d2), s/veh	1.1	0.0	0.0	0.8	0.0	1.8	0.1	1.6	0.1	0.3	0.0	0.5
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	2.2	0.0	0.0	2.3	0.0	2.1	0.4	4.9	0.4	0.6	0.0	2.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	18.2	0.0	0.0	17.9	0.0	18.8	9.7	13.6	9.6	8.5	0.0	6.7
LnGrp LOS	B			B		B	A	B	A	A		A
Approach Vol, veh/h		143			279			520			578	
Approach Delay, s/veh		18.2			18.4			12.9			7.0	
Approach LOS		B			B			B			A	
Timer - Assigned Phs		2		4	5	6		8				
Phs Duration (G+Y+Rc), s		31.3		13.2	8.5	22.8		13.2				
Change Period (Y+Rc), s		6.8		6.1	5.7	6.8		6.1				
Max Green Setting (Gmax), s		50.0		28.0	18.0	50.0		28.0				
Max Q Clear Time (g_c+I1), s		9.3		5.4	3.4	10.8		5.7				
Green Ext Time (p_c), s		4.6		1.7	0.2	4.6		1.0				
Intersection Summary												
HCM 7th Control Delay, s/veh			12.1									
HCM 7th LOS			B									

Intersection	
Intersection Delay, s/veh	11.3
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	65	68	121	18	80	8	110	73	21	8	207	27
Future Vol, veh/h	65	68	121	18	80	8	110	73	21	8	207	27
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles, %	2	0	1	0	0	25	3	7	5	13	1	0
Mvmt Flow	68	72	127	19	84	8	116	77	22	8	218	28
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, s/veh	11.5	9.9	11.1	11.9
HCM LOS	B	A	B	B

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	54%	26%	17%	3%
Vol Thru, %	36%	27%	75%	86%
Vol Right, %	10%	48%	8%	11%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	204	254	106	242
LT Vol	110	65	18	8
Through Vol	73	68	80	207
RT Vol	21	121	8	27
Lane Flow Rate	215	267	112	255
Geometry Grp	1	1	1	1
Degree of Util (X)	0.325	0.385	0.175	0.386
Departure Headway (Hd)	5.45	5.185	5.634	5.448
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	659	692	635	660
Service Time	3.49	3.225	3.682	3.485
HCM Lane V/C Ratio	0.326	0.386	0.176	0.386
HCM Control Delay, s/veh	11.1	11.5	9.9	11.9
HCM Lane LOS	B	B	A	B
HCM 95th-tile Q	1.4	1.8	0.6	1.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	126	169	73	151	263	64	88	392	89	89	417	96
Future Volume (veh/h)	126	169	73	151	263	64	88	392	89	89	417	96
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1841	1796	1870	1826	1796	1841	1767	1826	1811	1826	1841
Adj Flow Rate, veh/h	137	184	79	164	286	70	96	426	97	97	453	104
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	4	7	2	5	7	4	9	5	6	5	4
Cap, veh/h	314	285	122	385	333	82	341	496	434	265	788	180
Arrive On Green	0.11	0.23	0.23	0.11	0.24	0.24	0.08	0.28	0.28	0.08	0.28	0.28
Sat Flow, veh/h	1767	1222	525	1781	1417	347	1753	1767	1547	1725	2806	640
Grp Volume(v), veh/h	137	0	263	164	0	356	96	426	97	97	279	278
Grp Sat Flow(s),veh/h/ln	1767	0	1746	1781	0	1763	1753	1767	1547	1725	1735	1711
Q Serve(g_s), s	5.0	0.0	12.2	6.0	0.0	17.3	3.3	20.5	4.3	3.4	12.3	12.5
Cycle Q Clear(g_c), s	5.0	0.0	12.2	6.0	0.0	17.3	3.3	20.5	4.3	3.4	12.3	12.5
Prop In Lane	1.00		0.30	1.00		0.20	1.00		1.00	1.00		0.37
Lane Grp Cap(c), veh/h	314	0	408	385	0	415	341	496	434	265	487	481
V/C Ratio(X)	0.44	0.00	0.65	0.43	0.00	0.86	0.28	0.86	0.22	0.37	0.57	0.58
Avail Cap(c_a), veh/h	399	0	624	468	0	630	571	888	777	491	871	859
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	23.0	0.0	31.0	22.2	0.0	32.8	20.3	30.5	24.7	22.0	27.6	27.7
Incr Delay (d2), s/veh	1.0	0.0	1.7	0.7	0.0	7.5	0.4	4.5	0.3	0.8	1.1	1.1
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	3.6	0.0	8.8	4.5	0.0	12.7	2.3	13.5	2.8	2.4	8.5	8.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	23.9	0.0	32.7	23.0	0.0	40.3	20.7	35.0	25.0	22.8	28.7	28.8
LnGrp LOS	C		C	C		D	C	C	C	C	C	C
Approach Vol, veh/h		400			520			619			654	
Approach Delay, s/veh		29.7			34.8			31.2			27.8	
Approach LOS		C			C			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	14.1	32.0	16.1	27.5	14.1	31.9	16.2	27.3
Change Period (Y+Rc), s	6.8	6.8	6.4	6.4	6.8	6.8	6.4	6.4
Max Green Setting (Gmax), s	10.0	45.0	14.0	32.0	19.0	45.0	14.0	32.0
Max Q Clear Time (g_c+I1), s	7.3	14.5	7.0	19.3	5.4	22.5	8.0	14.2
Green Ext Time (p_c), s	0.2	3.2	0.2	1.7	0.2	2.7	0.2	1.3

Intersection Summary	
HCM 7th Control Delay, s/veh	30.8
HCM 7th LOS	C

Notes

User approved pedestrian interval to be less than phase max green.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	42	208	59	75	297	26	60	96	31	56	220	72
Future Volume (veh/h)	42	208	59	75	297	26	60	96	31	56	220	72
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1781	1811	1841	1841	1826	1707	1841	1870	1737	1870	1885	1826
Adj Flow Rate, veh/h	43	212	60	77	303	27	61	98	32	57	224	73
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	8	6	4	4	5	13	4	2	11	2	1	5
Cap, veh/h	276	295	83	327	394	35	316	313	102	447	312	102
Arrive On Green	0.05	0.22	0.22	0.07	0.24	0.24	0.06	0.23	0.23	0.06	0.23	0.23
Sat Flow, veh/h	1697	1358	384	1753	1652	147	1753	1350	441	1781	1362	444
Grp Volume(v), veh/h	43	0	272	77	0	330	61	0	130	57	0	297
Grp Sat Flow(s),veh/h/ln	1697	0	1742	1753	0	1799	1753	0	1791	1781	0	1805
Q Serve(g_s), s	1.1	0.0	8.6	1.9	0.0	10.2	1.5	0.0	3.6	1.4	0.0	9.0
Cycle Q Clear(g_c), s	1.1	0.0	8.6	1.9	0.0	10.2	1.5	0.0	3.6	1.4	0.0	9.0
Prop In Lane	1.00		0.22	1.00		0.08	1.00		0.25	1.00		0.25
Lane Grp Cap(c), veh/h	276	0	378	327	0	429	316	0	415	447	0	414
V/C Ratio(X)	0.16	0.00	0.72	0.24	0.00	0.77	0.19	0.00	0.31	0.13	0.00	0.72
Avail Cap(c_a), veh/h	645	0	732	671	0	756	675	0	1204	816	0	1214
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	17.0	0.0	21.6	16.4	0.0	21.1	16.1	0.0	18.9	15.6	0.0	21.1
Incr Delay (d2), s/veh	0.4	0.0	3.6	0.5	0.0	4.1	0.4	0.0	0.6	0.2	0.0	3.3
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.8	0.0	6.4	1.3	0.0	7.6	1.0	0.0	2.5	0.9	0.0	6.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	17.4	0.0	25.2	16.9	0.0	25.3	16.5	0.0	19.5	15.7	0.0	24.5
LnGrp LOS	B		C	B		C	B		B	B		C
Approach Vol, veh/h		315			407			191			354	
Approach Delay, s/veh		24.2			23.7			18.6			23.1	
Approach LOS		C			C			B			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.7	19.8	10.7	19.3	9.8	19.6	9.5	20.6
Change Period (Y+Rc), s	6.0	6.0	6.4	6.4	6.0	6.0	6.4	6.4
Max Green Setting (Gmax), s	16.0	40.0	16.0	25.0	16.0	40.0	16.0	25.0
Max Q Clear Time (g_c+I1), s	3.4	5.6	3.9	10.6	3.5	11.0	3.1	12.2
Green Ext Time (p_c), s	0.1	1.0	0.2	1.8	0.1	2.6	0.1	2.0

Intersection Summary	
HCM 7th Control Delay, s/veh	22.9
HCM 7th LOS	C

Intersection	
Int Delay, s/veh	2.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	22	210	0	0	200	8	1	0	1	23	0	68
Future Vol, veh/h	22	210	0	0	200	8	1	0	1	23	0	68
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	89	89	89	89	89	89	89	89	89	89	89	89
Heavy Vehicles, %	0	5	0	0	1	0	0	0	0	0	0	0
Mvmt Flow	25	236	0	0	225	9	1	0	1	26	0	76

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	234	0	0	236	0	0	510	519	236	515	515	229
Stage 1	-	-	-	-	-	-	285	285	-	229	229	-
Stage 2	-	-	-	-	-	-	225	234	-	285	285	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1346	-	-	1343	-	-	477	464	808	474	467	815
Stage 1	-	-	-	-	-	-	726	679	-	778	718	-
Stage 2	-	-	-	-	-	-	782	715	-	726	679	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1346	-	-	1343	-	-	423	454	808	463	457	815
Mov Cap-2 Maneuver	-	-	-	-	-	-	423	454	-	463	457	-
Stage 1	-	-	-	-	-	-	711	665	-	778	718	-
Stage 2	-	-	-	-	-	-	709	715	-	710	665	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v	0.73	0	11.51	11.19
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	555	171	-	-	1343	-	-	684
HCM Lane V/C Ratio	0.004	0.018	-	-	-	-	-	0.15
HCM Control Delay (s/veh)	11.5	7.7	0	-	0	-	-	11.2
HCM Lane LOS	B	A	A	-	A	-	-	B
HCM 95th %tile Q(veh)	0	0.1	-	-	0	-	-	0.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	35	76	40	80	94	62	16	421	152	94	323	19
Future Volume (veh/h)	35	76	40	80	94	62	16	421	152	94	323	19
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1841	1870	1900	1841	1870	1826	1811	1678	1841	1811	1900
Adj Flow Rate, veh/h	37	80	42	84	99	65	17	443	160	99	340	20
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	0	4	2	0	4	2	5	6	15	4	6	0
Cap, veh/h	129	152	67	394	185	122	514	654	514	387	923	54
Arrive On Green	0.18	0.18	0.18	0.18	0.18	0.18	0.36	0.36	0.36	0.06	0.55	0.55
Sat Flow, veh/h	188	850	373	1289	1037	681	997	1811	1422	1753	1694	100
Grp Volume(v), veh/h	159	0	0	84	0	164	17	443	160	99	0	360
Grp Sat Flow(s),veh/h/ln	1411	0	0	1289	0	1718	997	1811	1422	1753	0	1793
Q Serve(g_s), s	1.2	0.0	0.0	0.0	0.0	4.0	0.5	9.7	3.8	1.5	0.0	5.3
Cycle Q Clear(g_c), s	5.3	0.0	0.0	2.5	0.0	4.0	0.5	9.7	3.8	1.5	0.0	5.3
Prop In Lane	0.23		0.26	1.00		0.40	1.00		1.00	1.00		0.06
Lane Grp Cap(c), veh/h	347	0	0	394	0	307	514	654	514	387	0	977
V/C Ratio(X)	0.46	0.00	0.00	0.21	0.00	0.53	0.03	0.68	0.31	0.26	0.00	0.37
Avail Cap(c_a), veh/h	1008	0	0	937	0	1030	1221	1938	1522	954	0	1919
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	17.6	0.0	0.0	16.8	0.0	17.4	9.7	12.6	10.7	8.7	0.0	6.0
Incr Delay (d2), s/veh	1.3	0.0	0.0	0.4	0.0	2.0	0.0	1.8	0.5	0.4	0.0	0.3
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	2.6	0.0	0.0	1.3	0.0	2.8	0.2	5.6	1.7	0.7	0.0	2.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	19.0	0.0	0.0	17.2	0.0	19.5	9.7	14.4	11.2	9.1	0.0	6.4
LnGrp LOS	B			B		B	A	B	B	A		A
Approach Vol, veh/h		159			248			620			459	
Approach Delay, s/veh		19.0			18.7			13.4			7.0	
Approach LOS		B			B			B			A	
Timer - Assigned Phs		2		4	5	6		8				
Phs Duration (G+Y+Rc), s		32.3		14.5	8.6	23.7		14.5				
Change Period (Y+Rc), s		6.8		6.1	5.7	6.8		6.1				
Max Green Setting (Gmax), s		50.0		28.0	18.0	50.0		28.0				
Max Q Clear Time (g_c+I1), s		7.3		6.0	3.5	11.7		7.3				
Green Ext Time (p_c), s		3.2		1.6	0.2	5.2		1.1				
Intersection Summary												
HCM 7th Control Delay, s/veh			12.9									
HCM 7th LOS			B									

Intersection	
Intersection Delay, s/veh	14
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	111	64	65	18	67	6	143	226	31	7	153	24
Future Vol, veh/h	111	64	65	18	67	6	143	226	31	7	153	24
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles, %	2	0	1	0	0	25	3	7	5	13	1	0
Mvmt Flow	117	67	68	19	71	6	151	238	33	7	161	25
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, s/veh	12.6	10.4	16.9	11.4
HCM LOS	B	B	C	B

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	36%	46%	20%	4%
Vol Thru, %	56%	27%	74%	83%
Vol Right, %	8%	27%	7%	13%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	400	240	91	184
LT Vol	143	111	18	7
Through Vol	226	64	67	153
RT Vol	31	65	6	24
Lane Flow Rate	421	253	96	194
Geometry Grp	1	1	1	1
Degree of Util (X)	0.625	0.403	0.162	0.31
Departure Headway (Hd)	5.344	5.736	6.101	5.768
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	674	624	584	620
Service Time	3.393	3.793	4.174	3.829
HCM Lane V/C Ratio	0.625	0.405	0.164	0.313
HCM Control Delay, s/veh	16.9	12.6	10.4	11.4
HCM Lane LOS	C	B	B	B
HCM 95th-tile Q	4.4	1.9	0.6	1.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	102	210	83	97	238	85	77	442	192	75	249	84
Future Volume (veh/h)	102	210	83	97	238	85	77	442	192	75	249	84
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1841	1796	1870	1826	1796	1841	1767	1826	1811	1826	1841
Adj Flow Rate, veh/h	111	228	90	105	259	92	84	480	209	82	271	91
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	4	7	2	5	7	4	9	5	6	5	4
Cap, veh/h	293	293	116	320	299	106	438	552	484	247	801	263
Arrive On Green	0.10	0.23	0.23	0.10	0.23	0.23	0.08	0.31	0.31	0.07	0.31	0.31
Sat Flow, veh/h	1767	1256	496	1781	1287	457	1753	1767	1547	1725	2566	843
Grp Volume(v), veh/h	111	0	318	105	0	351	84	480	209	82	181	181
Grp Sat Flow(s),veh/h/ln	1767	0	1751	1781	0	1744	1753	1767	1547	1725	1735	1674
Q Serve(g_s), s	4.2	0.0	16.0	3.9	0.0	18.3	2.9	24.2	10.1	2.9	7.6	7.9
Cycle Q Clear(g_c), s	4.2	0.0	16.0	3.9	0.0	18.3	2.9	24.2	10.1	2.9	7.6	7.9
Prop In Lane	1.00		0.28	1.00		0.26	1.00		1.00	1.00		0.50
Lane Grp Cap(c), veh/h	293	0	409	320	0	405	438	552	484	247	541	523
V/C Ratio(X)	0.38	0.00	0.78	0.33	0.00	0.87	0.19	0.87	0.43	0.33	0.33	0.35
Avail Cap(c_a), veh/h	378	0	594	408	0	592	659	843	738	465	828	799
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	24.4	0.0	33.9	23.9	0.0	34.8	18.9	30.6	25.8	22.1	24.9	25.0
Incr Delay (d2), s/veh	0.8	0.0	4.0	0.6	0.0	9.1	0.2	6.3	0.6	0.8	0.4	0.4
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	3.1	0.0	11.3	3.0	0.0	13.4	2.0	15.8	6.5	2.0	5.4	5.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	25.2	0.0	37.9	24.5	0.0	43.9	19.1	36.9	26.4	22.9	25.3	25.4
LnGrp LOS	C		D	C		D	B	D	C	C	C	C
Approach Vol, veh/h		429			456			773			444	
Approach Delay, s/veh		34.6			39.4			32.1			24.9	
Approach LOS		C			D			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	13.9	36.2	15.9	28.3	13.9	36.3	15.8	28.4
Change Period (Y+Rc), s	6.8	6.8	6.4	6.4	6.8	6.8	6.4	6.4
Max Green Setting (Gmax), s	19.0	45.0	14.0	32.0	19.0	45.0	14.0	32.0
Max Q Clear Time (g_c+I1), s	4.9	9.9	6.2	20.3	4.9	26.2	5.9	18.0
Green Ext Time (p_c), s	0.1	2.0	0.1	1.7	0.1	3.3	0.1	1.5

Intersection Summary	
HCM 7th Control Delay, s/veh	32.7
HCM 7th LOS	C

Notes

User approved pedestrian interval to be less than phase max green.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	60	316	50	70	250	42	98	302	64	22	111	70
Future Volume (veh/h)	60	316	50	70	250	42	98	302	64	22	111	70
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1781	1811	1841	1841	1826	1707	1841	1870	1737	1870	1885	1826
Adj Flow Rate, veh/h	61	322	51	71	255	43	100	308	65	22	113	71
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	8	6	4	4	5	13	4	2	11	2	1	5
Cap, veh/h	333	396	63	286	403	68	399	403	85	243	242	152
Arrive On Green	0.06	0.26	0.26	0.07	0.26	0.26	0.08	0.27	0.27	0.03	0.22	0.22
Sat Flow, veh/h	1697	1526	242	1753	1523	257	1753	1497	316	1781	1083	680
Grp Volume(v), veh/h	61	0	373	71	0	298	100	0	373	22	0	184
Grp Sat Flow(s),veh/h/ln	1697	0	1768	1753	0	1780	1753	0	1813	1781	0	1763
Q Serve(g_s), s	1.7	0.0	13.1	1.9	0.0	9.8	2.8	0.0	12.5	0.6	0.0	6.0
Cycle Q Clear(g_c), s	1.7	0.0	13.1	1.9	0.0	9.8	2.8	0.0	12.5	0.6	0.0	6.0
Prop In Lane	1.00		0.14	1.00		0.14	1.00		0.17	1.00		0.39
Lane Grp Cap(c), veh/h	333	0	459	286	0	471	399	0	488	243	0	393
V/C Ratio(X)	0.18	0.00	0.81	0.25	0.00	0.63	0.25	0.00	0.76	0.09	0.00	0.47
Avail Cap(c_a), veh/h	639	0	668	594	0	673	689	0	1097	620	0	1066
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	16.5	0.0	23.0	17.1	0.0	21.5	17.5	0.0	22.2	19.4	0.0	22.3
Incr Delay (d2), s/veh	0.4	0.0	6.2	0.6	0.0	2.0	0.5	0.0	3.6	0.2	0.0	1.2
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	1.1	0.0	9.7	1.3	0.0	7.0	2.0	0.0	9.1	0.5	0.0	4.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	16.9	0.0	29.1	17.7	0.0	23.5	18.0	0.0	25.8	19.6	0.0	23.5
LnGrp LOS	B		C	B		C	B		C	B		C
Approach Vol, veh/h		434			369			473			206	
Approach Delay, s/veh		27.4			22.4			24.1			23.1	
Approach LOS		C			C			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.0	23.8	10.8	23.6	11.0	20.8	10.4	23.9
Change Period (Y+Rc), s	6.0	6.0	6.4	6.4	6.0	6.0	6.4	6.4
Max Green Setting (Gmax), s	16.0	40.0	16.0	25.0	16.0	40.0	16.0	25.0
Max Q Clear Time (g_c+I1), s	2.0	14.5	3.9	15.1	4.8	8.0	3.7	11.8
Green Ext Time (p_c), s	0.0	3.3	0.2	2.1	0.2	1.5	0.1	1.8

Intersection Summary	
HCM 7th Control Delay, s/veh	24.5
HCM 7th LOS	C

Intersection	
Int Delay, s/veh	2.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	77	250	1	0	203	26	0	0	0	16	0	45
Future Vol, veh/h	77	250	1	0	203	26	0	0	0	16	0	45
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, %	0	5	0	0	1	0	0	0	0	0	0	0
Mvmt Flow	86	278	1	0	226	29	0	0	0	18	0	50

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	254	0	0	279	0	0	675	704	278	689	690	240
Stage 1	-	-	-	-	-	-	449	449	-	240	240	-
Stage 2	-	-	-	-	-	-	226	254	-	449	450	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1322	-	-	1295	-	-	371	364	765	363	371	804
Stage 1	-	-	-	-	-	-	593	575	-	768	711	-
Stage 2	-	-	-	-	-	-	782	700	-	593	575	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1322	-	-	1295	-	-	321	336	765	335	342	804
Mov Cap-2 Maneuver	-	-	-	-	-	-	321	336	-	335	342	-
Stage 1	-	-	-	-	-	-	547	531	-	768	711	-
Stage 2	-	-	-	-	-	-	733	700	-	548	531	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v	1.86	0	0	11.92
HCM LOS			A	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	-	422	-	-	1295	-	-	588
HCM Lane V/C Ratio	-	0.065	-	-	-	-	-	0.115
HCM Control Delay (s/veh)	0	7.9	0	-	0	-	-	11.9
HCM Lane LOS	A	A	A	-	A	-	-	B
HCM 95th %tile Q(veh)	-	0.2	-	-	0	-	-	0.4

Appendix N Turn Lane Warrants

One Site Access

One Site Access
Site Access A @ NE 49th St
Left Turn Warrant (AM)

Figure 2 - 5. Guideline for determining the need for a major-road left-turn bay at a two-way stop-controlled intersection.

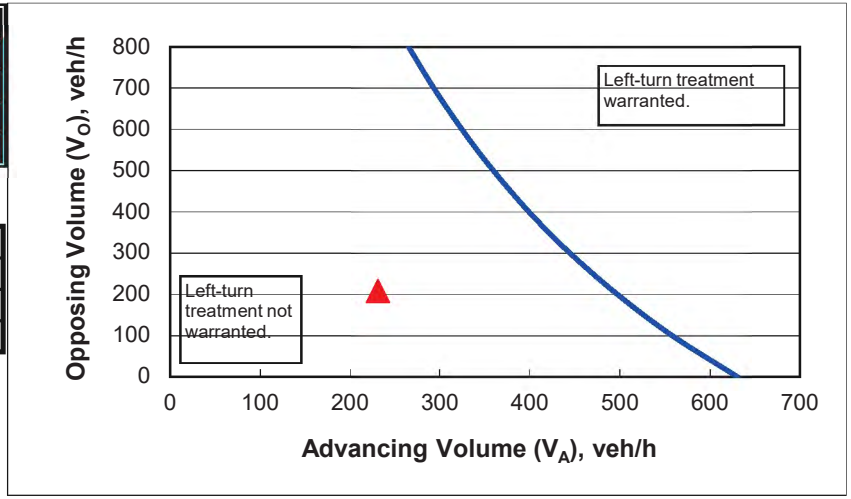
2-lane roadway (English)

INPUT

Variable	Value
85th percentile speed, mph:	35
Percent of left-turns in advancing volume (V_A), %:	9%
Advancing volume (V_A), veh/h:	232
Opposing volume (V_O), veh/h:	208

OUTPUT

Variable	Value
Limiting advancing volume (V_A), veh/h:	493
Guidance for determining the need for a major-road left-turn bay:	
Left-turn treatment NOT warranted.	



CALIBRATION CONSTANTS

Variable	Value
Average time for making left-turn, s:	3.0
Critical headway, s:	5.0
Average time for left-turn vehicle to clear the advancing lane, s:	1.9

Source: National Cooperative Highway Research Program (NCHRP) Report 457- Evaluating Intersection Improvements: An Engineering Study Guide

One Site Access
Site Access A @ NE 49th St
Left Turn Warrant (PM)

Figure 2 - 5. Guideline for determining the need for a major-road left-turn bay at a two-way stop-controlled intersection.

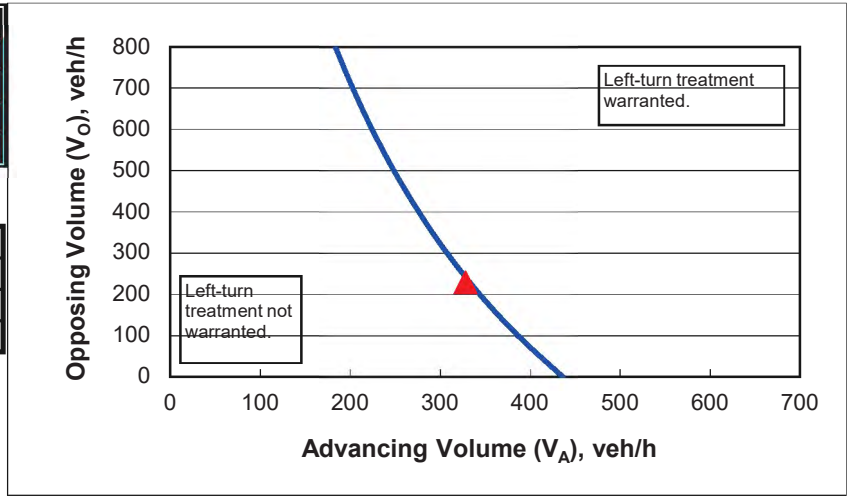
2-lane roadway (English)

INPUT

Variable	Value
85th percentile speed, mph:	35
Percent of left-turns in advancing volume (V_A), %:	23%
Advancing volume (V_A), veh/h:	328
Opposing volume (V_O), veh/h:	229

OUTPUT

Variable	Value
Limiting advancing volume (V_A), veh/h:	333
Guidance for determining the need for a major-road left-turn bay:	
Left-turn treatment NOT warranted.	



CALIBRATION CONSTANTS

Variable	Value
Average time for making left-turn, s:	3.0
Critical headway, s:	5.0
Average time for left-turn vehicle to clear the advancing lane, s:	1.9

Source: National Cooperative Highway Research Program (NCHRP) Report 457- Evaluating Intersection Improvements: An Engineering Study Guide

One Site Access
Site Access A @ NE 49th St
Right Turn Warrant (AM)

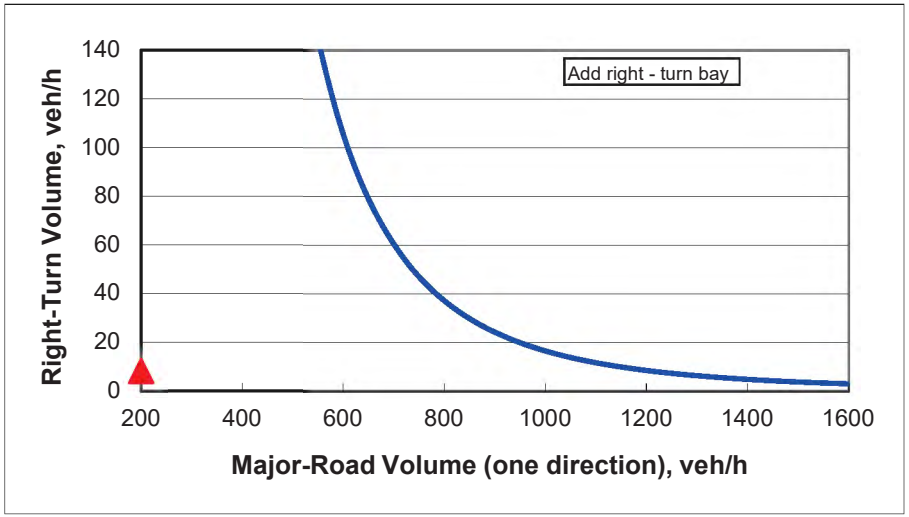
Figure 2 - 6. Guideline for determining the need for a major-road right-turn bay at a two-way stop-controlled intersection.

INPUT

Roadway geometry:	2-lane roadway
Variable	Value
Major-road speed, mph:	35
Major-road volume (one direction), veh/h:	200
Right-turn volume, veh/h:	8

OUTPUT

Variable	Value
Limiting right-turn volume, veh/h:	5753
Guidance for determining the need for a major-road right-turn bay for a 2-lane roadway:	
Do NOT add right-turn bay.	



Source: National Cooperative Highway Research Program (NCHRP) Report 457- Evaluating Intersection Improvements: An Engineering Study Guide

One Site Access
Site Access A @ NE 49th St
Right Turn Warrant (PM)

Figure 2 - 6. Guideline for determining the need for a major-road right-turn bay at a two-way stop-controlled intersection.

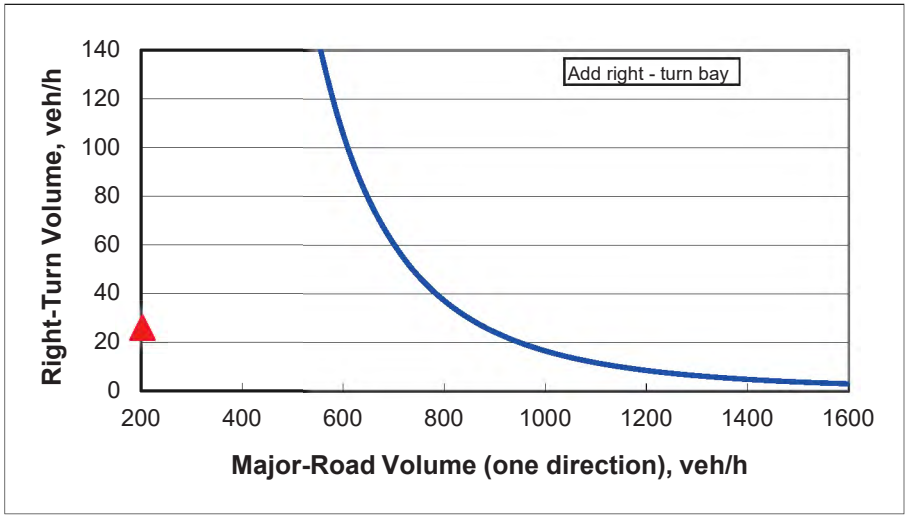
INPUT

Roadway geometry:	2-lane roadway

Variable	Value
Major-road speed, mph:	35
Major-road volume (one direction), veh/h:	203
Right-turn volume, veh/h:	26

OUTPUT

Variable	Value
Limiting right-turn volume, veh/h:	5449
Guidance for determining the need for a major-road right-turn bay for a 2-lane roadway:	
Do NOT add right-turn bay.	



Source: National Cooperative Highway Research Program (NCHRP) Report 457- Evaluating Intersection Improvements: An Engineering Study Guide

Two Site Accesses

Two Site Accesses
Site Access A @ NE 49th St
Left Turn Warrant (AM)

Figure 2 - 5. Guideline for determining the need for a major-road left-turn bay at a two-way stop-controlled intersection.

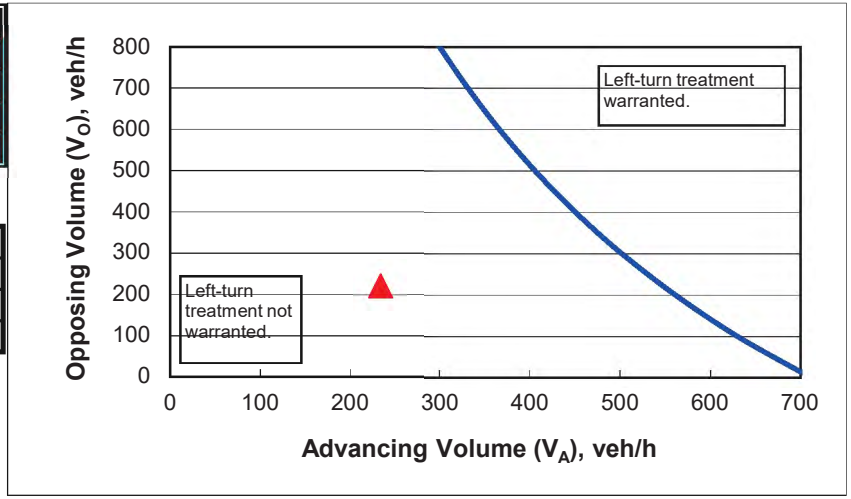
2-lane roadway (English)

INPUT

Variable	Value
85th percentile speed, mph:	35
Percent of left-turns in advancing volume (V_A), %:	7%
Advancing volume (V_A), veh/h:	234
Opposing volume (V_O), veh/h:	220

OUTPUT

Variable	Value
Limiting advancing volume (V_A), veh/h:	549
Guidance for determining the need for a major-road left-turn bay:	
Left-turn treatment NOT warranted.	



CALIBRATION CONSTANTS

Variable	Value
Average time for making left-turn, s:	3.0
Critical headway, s:	5.0
Average time for left-turn vehicle to clear the advancing lane, s:	1.9

Source: National Cooperative Highway Research Program (NCHRP) Report 457- Evaluating Intersection Improvements: An Engineering Study Guide

Two Site Accesses
Site Access A @ NE 49th St
Left Turn Warrant (PM)

Figure 2 - 5. Guideline for determining the need for a major-road left-turn bay at a two-way stop-controlled intersection.

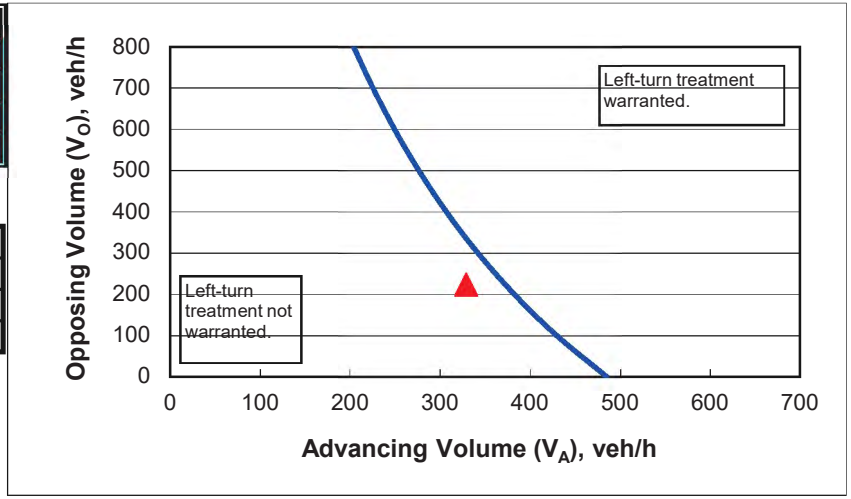
2-lane roadway (English)

INPUT

Variable	Value
85th percentile speed, mph:	35
Percent of left-turns in advancing volume (V_A), %:	18%
Advancing volume (V_A), veh/h:	329
Opposing volume (V_O), veh/h:	223

OUTPUT

Variable	Value
Limiting advancing volume (V_A), veh/h:	372
Guidance for determining the need for a major-road left-turn bay:	
Left-turn treatment NOT warranted.	



CALIBRATION CONSTANTS

Variable	Value
Average time for making left-turn, s:	3.0
Critical headway, s:	5.0
Average time for left-turn vehicle to clear the advancing lane, s:	1.9

Source: National Cooperative Highway Research Program (NCHRP) Report 457- Evaluating Intersection Improvements: An Engineering Study Guide

Two Site Accesses
Site Access B @ NE 49th St
Left Turn Warrant (AM)

Figure 2 - 5. Guideline for determining the need for a major-road left-turn bay at a two-way stop-controlled intersection.

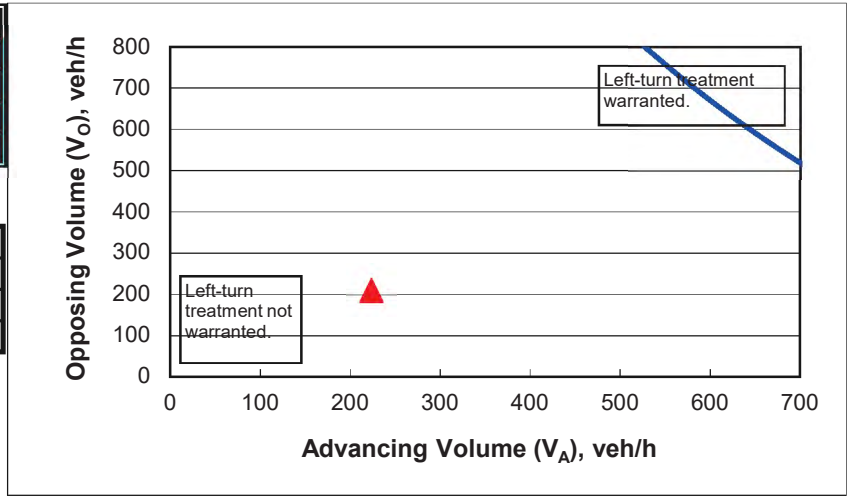
2-lane roadway (English)

INPUT

Variable	Value
85th percentile speed, mph:	35
Percent of left-turns in advancing volume (V_A), %:	2%
Advancing volume (V_A), veh/h:	224
Opposing volume (V_O), veh/h:	209

OUTPUT

Variable	Value
Limiting advancing volume (V_A), veh/h:	976
Guidance for determining the need for a major-road left-turn bay:	
Left-turn treatment NOT warranted.	



CALIBRATION CONSTANTS

Variable	Value
Average time for making left-turn, s:	3.0
Critical headway, s:	5.0
Average time for left-turn vehicle to clear the advancing lane, s:	1.9

Source: National Cooperative Highway Research Program (NCHRP) Report 457- Evaluating Intersection Improvements: An Engineering Study Guide

Two Site Accesses
Site Access B @ NE 49th St
Left Turn Warrant (PM)

Figure 2 - 5. Guideline for determining the need for a major-road left-turn bay at a two-way stop-controlled intersection.

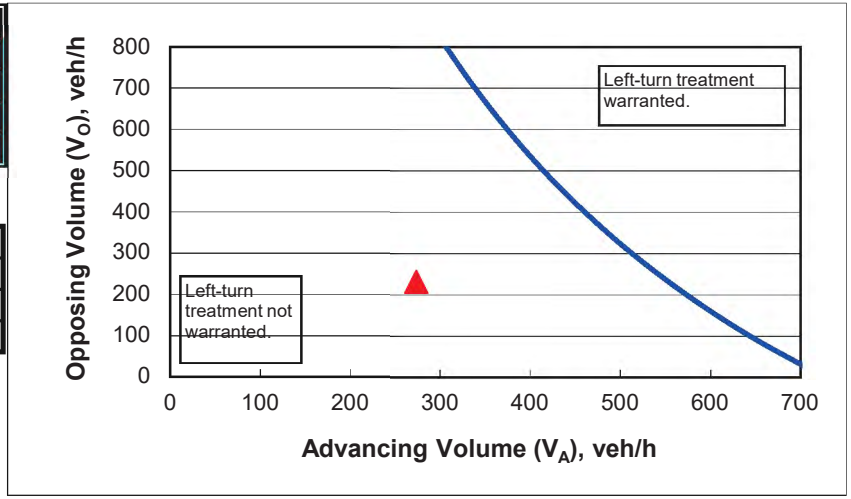
2-lane roadway (English)

INPUT

Variable	Value
85th percentile speed, mph:	35
Percent of left-turns in advancing volume (V_A), %:	7%
Advancing volume (V_A), veh/h:	274
Opposing volume (V_O), veh/h:	231

OUTPUT

Variable	Value
Limiting advancing volume (V_A), veh/h:	554
Guidance for determining the need for a major-road left-turn bay:	
Left-turn treatment NOT warranted.	



CALIBRATION CONSTANTS

Variable	Value
Average time for making left-turn, s:	3.0
Critical headway, s:	5.0
Average time for left-turn vehicle to clear the advancing lane, s:	1.9

Source: National Cooperative Highway Research Program (NCHRP) Report 457- Evaluating Intersection Improvements: An Engineering Study Guide

Two Site Accesses
Site Access A @ NE 49th St
Right Turn Warrant (AM)

Figure 2 - 6. Guideline for determining the need for a major-road right-turn bay at a two-way stop-controlled intersection.

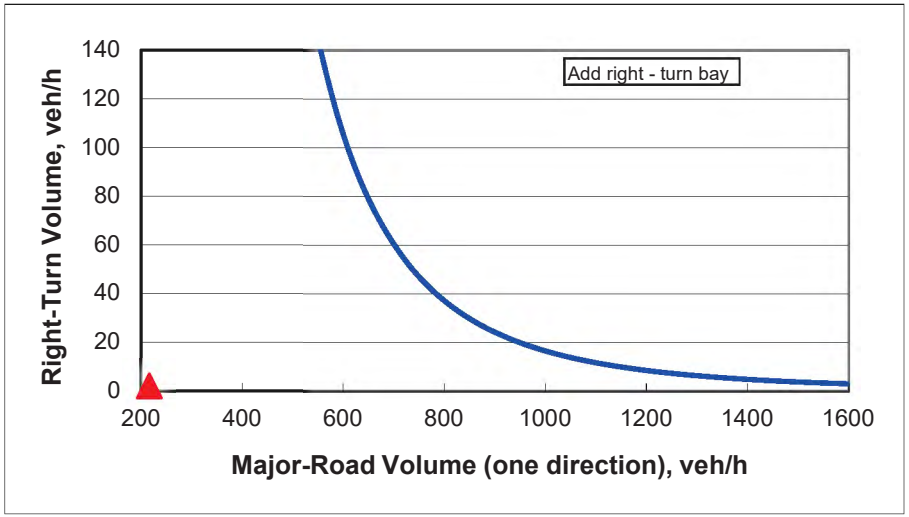
INPUT

Roadway geometry:	2-lane roadway

Variable	Value
Major-road speed, mph:	35
Major-road volume (one direction), veh/h:	217
Right-turn volume, veh/h:	2

OUTPUT

Variable	Value
Limiting right-turn volume, veh/h:	4276
Guidance for determining the need for a major-road right-turn bay for a 2-lane roadway:	
Do NOT add right-turn bay.	



Source: National Cooperative Highway Research Program (NCHRP) Report 457- Evaluating Intersection Improvements: An Engineering Study Guide

Two Site Accesses
Site Access A @ NE 49th St
Right Turn Warrant (PM)

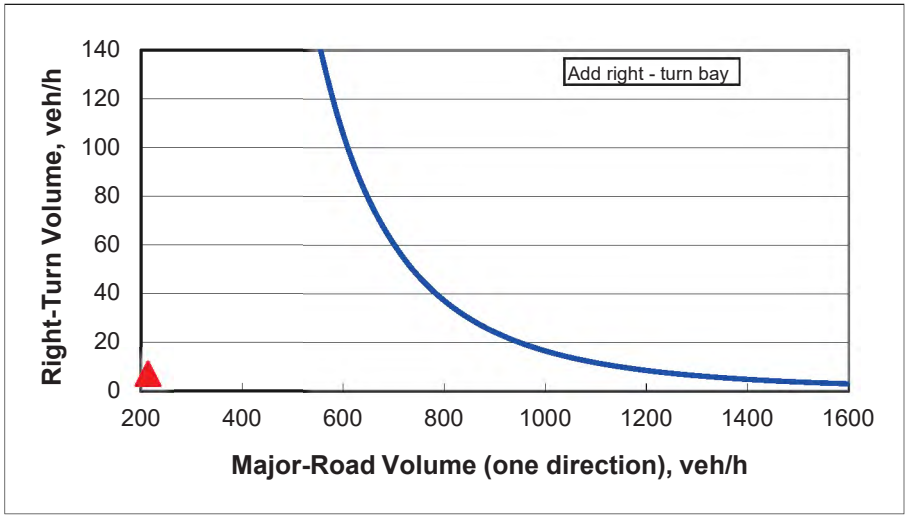
Figure 2 - 6. Guideline for determining the need for a major-road right-turn bay at a two-way stop-controlled intersection.

INPUT

Roadway geometry:	2-lane roadway
Variable	Value
Major-road speed, mph:	35
Major-road volume (one direction), veh/h:	214
Right-turn volume, veh/h:	7

OUTPUT

Variable	Value
Limiting right-turn volume, veh/h:	4498
Guidance for determining the need for a major-road right-turn bay for a 2-lane roadway:	
Do NOT add right-turn bay.	



Source: National Cooperative Highway Research Program (NCHRP) Report 457- Evaluating Intersection Improvements: An Engineering Study Guide

Two Site Accesses
Site Access B @ NE 49th St
Right Turn Warrant (AM)

Figure 2 - 6. Guideline for determining the need for a major-road right-turn bay at a two-way stop-controlled intersection.

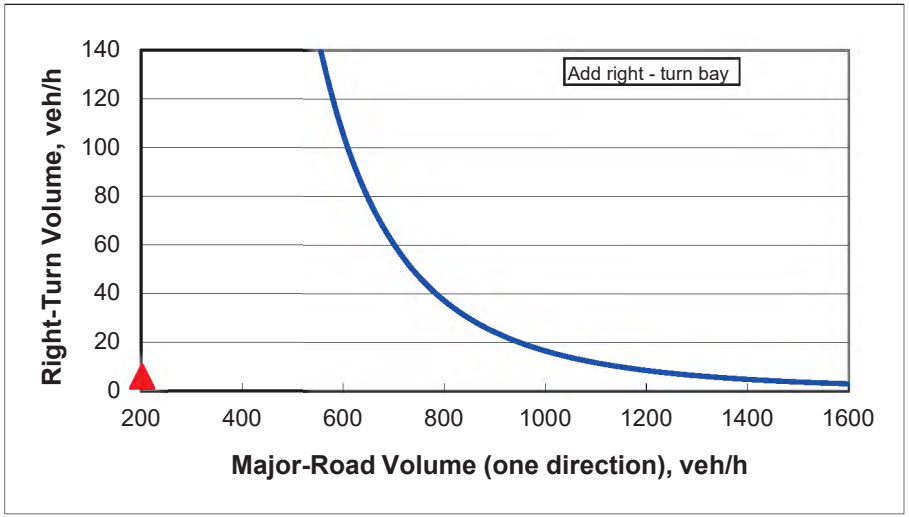
INPUT

Roadway geometry:	2-lane roadway

Variable	Value
Major-road speed, mph:	35
Major-road volume (one direction), veh/h:	202
Right-turn volume, veh/h:	6

OUTPUT

Variable	Value
Limiting right-turn volume, veh/h:	5548
Guidance for determining the need for a major-road right-turn bay for a 2-lane roadway:	
Do NOT add right-turn bay.	



Source: National Cooperative Highway Research Program (NCHRP) Report 457- Evaluating Intersection Improvements: An Engineering Study Guide

Two Site Accesses
Site Access B @ NE 49th St
Right Turn Warrant (PM)

Figure 2 - 6. Guideline for determining the need for a major-road right-turn bay at a two-way stop-controlled intersection.

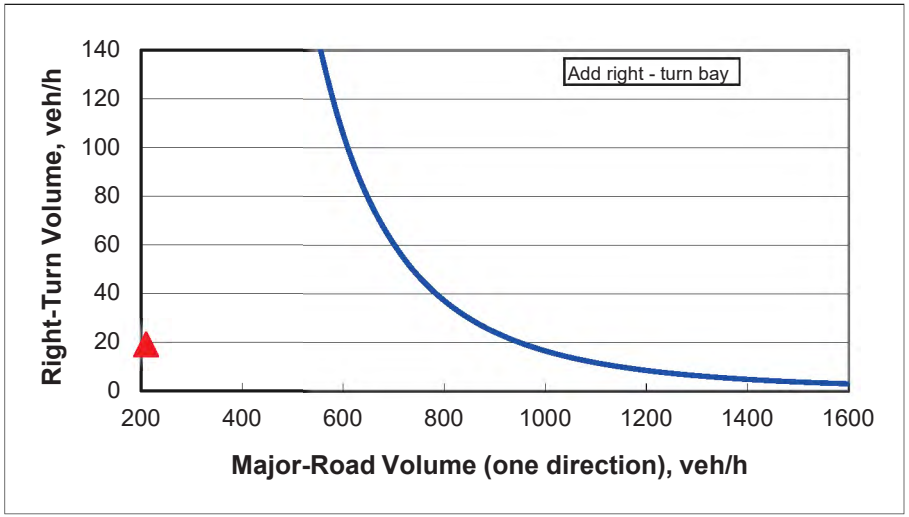
INPUT

Roadway geometry:	2-lane roadway

Variable	Value
Major-road speed, mph:	35
Major-road volume (one direction), veh/h:	210
Right-turn volume, veh/h:	19

OUTPUT

Variable	Value
Limiting right-turn volume, veh/h:	4817
Guidance for determining the need for a major-road right-turn bay for a 2-lane roadway:	
Do NOT add right-turn bay.	



Source: National Cooperative Highway Research Program (NCHRP) Report 457- Evaluating Intersection Improvements: An Engineering Study Guide