



**Marion County  
Board of County Commissioners**

Office of the County Engineer

412 SE 25th Ave.  
Ocala, FL 34471  
Phone: 352-671-8686  
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October 14, 2024

KIMLEY-HORN  
AMBER GARTNER  
1700 SE 17TH STREET  
OCALA, FL 34471

**SUBJECT: TRAFFIC STUDY APPROVAL LETTER**  
**PROJECT NAME: JUNIPER LOOP DEVELOPMENT**  
**PROJECT #2024040016 APPLICATION: #32014 PARCEL #36640-004-00**

Dear Amber,

The Traffic Study dated September 2024 for the above referenced project was approved by Marion County on October 14, 2024.

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

Sincerely,

*Your Development Review Team*  
**Office of the County Engineer**



TRAFFIC STUDY

# JUNIPER LOOP DEVELOPMENT

MARION COUNTY, FLORIDA

SEPTEMBER 2024

*Prepared for:*

**D.R. HORTON, INC.**

*Prepared by:*

**KIMLEY-HORN AND ASSOCIATES, INC.**

**Kimley»»Horn**

TRAFFIC STUDY

# JUNIPER LOOP DEVELOPMENT

MARION COUNTY, FLORIDA

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**KIMLEY-HORN AND ASSOCIATES, INC.**

142800027  
September 2024  
© 2024 Kimley-Horn and Associates, Inc.  
1700 SE 17<sup>th</sup> Street, Suite 200  
Ocala, FL 34471  
352 438 3000



**CONTENTS**

INTRODUCTION ..... 1

PROJECT TRAFFIC..... 2

VOLUME DEVELOPMENT..... 5

PM PEAK HOUR ROADWAY SEGMENT ANALYSIS ..... 7

INTERSECTION OPERATIONAL ANALYSIS ..... 9

TURN LANE ANALYSIS ..... 11

MULTIMODAL CONNECTIVITY ..... 12

CONCLUSION ..... 13

**LIST OF TABLES**

Table 1: Trip Generation ..... 2

Table 2: PM Peak Hour Roadway Segment Analysis ..... 8

Table 3: Intersection Analysis Summary ..... 10

**LIST OF FIGURES**

Figure 1: Project Location, Trip Distribution, and Study Area ..... 4

Figure 2: AM & PM Peak Hour Buildout Traffic Volumes ..... 6

**APPENDICES**

- APPENDIX A: Approved Methodology and Correspondence
- APPENDIX B: Traffic Data
- APPENDIX C: Intersection Volume Development Worksheets
- APPENDIX D: Signal Timings & Committed Improvements
- APPENDIX E: NCHRP 457 Output
- APPENDIX F: Synchro Output
  - F1: Existing AM Peak Hour Traffic (2024)
  - F2: Existing PM Peak Hour Traffic (2024)
  - F3: Background AM Peak Hour Traffic (2027)
  - F4: Background PM Peak Hour Traffic (2027)
  - F5: Background AM Peak Hour Traffic w/ Improvements (2027)
  - F6: Background PM Peak Hour Traffic w/ Improvements (2027)
  - F7: Buildout AM Peak Hour Traffic (2027)
  - F8: Buildout PM Peak Hour Traffic (2027)
  - F9: Buildout AM Peak Hour Traffic w/ Improvements (2027)
  - F10: Buildout PM Peak Hour Traffic w/ Improvements (2027)

## INTRODUCTION

Kimley-Horn and Associates, Inc. has performed a Traffic Study for the proposed development of 157 single-family residential dwelling units located on parcel number 36640-004-00 in Marion County, Florida. The site is generally located on the west side of Juniper Road at the intersection with Juniper Pass. A preliminary plat and Master PUD Plan are being submitted to Marion County. The conceptual PUD plan is provided in the **Appendix** within the approved methodology.

Primary access to the development will be provided as a new west leg of the intersection of Juniper Pass at Juniper Road. An emergency access point will be provided on the south side of the development to the Legacy Elementary School property. The access points were reviewed with Marion County Office of the County Engineer and with Marion County Public Schools on July 29<sup>th</sup>, 2024.

This analysis has been performed in accordance with the Marion County *Traffic Impact Analysis (TIA) Guidelines* and the methodology, which was approved by Marion County. The approved methodology and correspondence are provided in the **Appendix**.

The Traffic Study evaluates traffic operating conditions and identifies transportation improvement needs within the study area under existing, future background (without project), and future buildout (with project) traffic conditions.

This traffic analysis is based on traffic data collected in the field and supplemented by information obtained from the City of Ocala, Marion County, and Florida Department of Transportation (FDOT) sources. The study observed the established procedures found in Institute of Transportation Engineers (ITE) sources, FDOT sources, and the *Highway Capacity Manual 7* (HCM 7).

A buildout year of 2027 was utilized for the study.

## PROJECT TRAFFIC

### TRIP GENERATION

Trip generation for the development was determined using data found in the ITE *Trip Generation Manual, 11<sup>th</sup> Edition*. ITE land use code 210, Single-Family Detached Housing, was applied in the trip generation calculations. No internal capture or pass-by reductions were applied.

**Table 1** summarizes the trip generation calculations for the site, which was approved during the methodology process.

**Table 1: Trip Generation**

Land Use	Intensity	Daily Trips	AM Peak Hour of Adjacent Street			PM Peak Hour of Adjacent Street		
			Total	In	Out	Total	In	Out
<b>Proposed Development</b>								
Single-Family Detached Housing	157 DU	1,528	112	29	83	152	96	56

Note 1: Trip Generation volumes were derived from the ITE Trip Generation Manual, 11th Edition.

**Single-Family Detached Housing [ITE 210]**

Daily	$Ln(T) = 0.92 * Ln(X) + 2.68$ (X is the Number of Dwelling Units)
AM Peak Hour of Adjacent Street	$Ln(T) = 0.91 * Ln(X) + 0.12$ (X is the Number of Dwelling Units; 26% in, 74% out)
PM Peak Hour of Adjacent Street	$Ln(T) = 0.94 * Ln(X) + 0.27$ (X is the Number of Dwelling Units; 63% in, 37% out)

### TRIP DISTRIBUTION, ASSIGNMENT, AND STUDY AREA

The project’s trip distribution was developed based on output from the Central Florida Regional Planning Model (CFRPM), version 7, which is based on the Florida Standard Urban Transportation Model Structure (FSUTMS). **Figure 1** illustrates the trip distribution used for the analysis per the approved methodology. The CFRPM model output is included within the approved methodology in the **Appendix**.

Project traffic was assigned within the study area by applying the external trip distribution to the peak hour trip generation potential. The study area was determined based on the Marion County TIA Guidelines, which states that roadway segments with a 3% or greater impact to their peak hour directional service volume, plus one segment beyond, are to be included in the study area. The study area roadway segments and intersections were approved during the methodology process.

The following roadway segments are included in the study area and evaluated for the PM peak hour:

- Juniper Road from SR 35 to Chestnut Road
- Juniper Road from Chestnut Road to Project Access
- Juniper Road from Project Access to SR 35
- Chestnut Road from Juniper Road to SR 35 (adjacent segment, <3% impact)
- SE 80<sup>th</sup> Street from US 441 to SE 41<sup>st</sup> Court (per Marion County request)

The following intersections were included in the study area and evaluated for the AM peak hour and PM peak hour:

- Juniper Pass at Juniper Road (unsignalized) – site access
- Juniper Road at Chestnut Road (unsignalized)
- Juniper Road at SR 35 (unsignalized, signalized as a committed improvement)
- Juniper Road at SE 79<sup>th</sup> Street (unsignalized)
- SE 80<sup>th</sup> Street/ SE 41<sup>st</sup> Court at SE 79<sup>th</sup> Street (unsignalized)
- US 441 at SE 80<sup>th</sup> Street (PM analysis only, signalized)

**Figure 1** illustrates the site location, trip distribution, and study area for the traffic analysis.

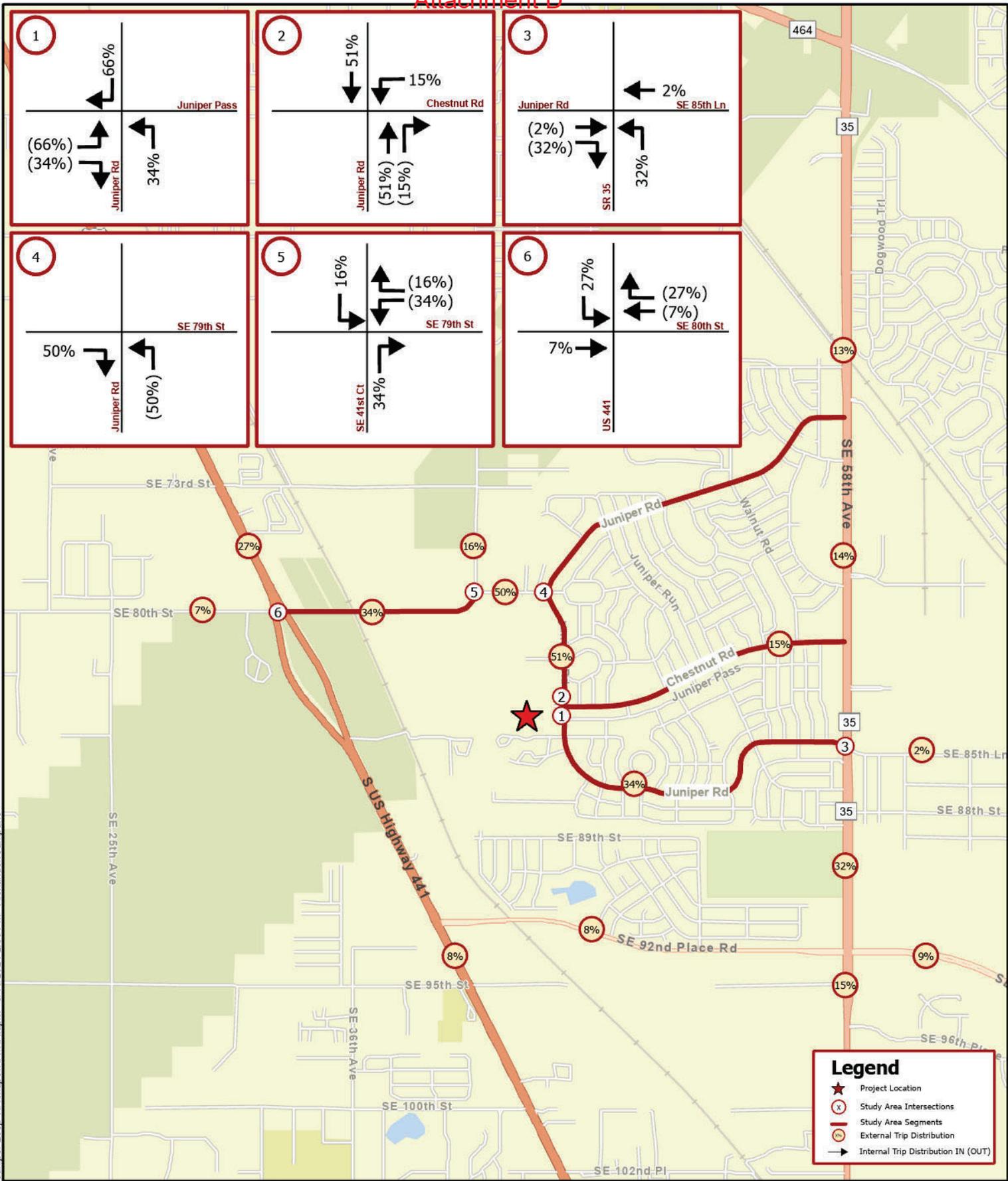


FIGURE 1 - PROJECT LOCATION, TRIP DISTRIBUTION, AND STUDY AREA

**JUNIPER LOOP DEVELOPMENT  
MARION COUNTY, FLORIDA**

D-8



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Not To Scale

Project No.: 142800027

September 2024

Page 4

## VOLUME DEVELOPMENT

AM peak period (7 AM – 9 AM) and PM peak period (4 PM – 6 PM) turning movement counts were collected at the following study area intersections:

- US 441 at SE 80th Street (PM only)
- SE 79th Street at SE 41st Court
- Juniper Road at SE 79<sup>th</sup> Street
- Juniper Road at Chestnut Road
- Juniper Road at Juniper Pass (project access)
- SR 35 at Juniper Road / SE 85<sup>th</sup> Lane

The observed turning movement counts were adjusted to peak season using the 2023 peak season conversion factors (minimum 1.0) published by FDOT. The existing peak season volumes were adjusted to background traffic by applying the methodology approved background growth rate. Project traffic was then added to background traffic to generate future buildout traffic volumes.

The observed approach and departure volumes at the study area intersections (adjusted to peak season) were utilized for the roadway segment analysis. Per the approved methodology a 6.2% growth rate was utilized for SE 80<sup>th</sup> Street, and a 2% growth rate was utilized for the other segments.

An area wide 1% growth rate was utilized for the intersection analysis. The observed heavy vehicle percentages, peak hour factors, and right turn on red percentages were utilized for the intersection analysis.

Excerpts from Ocala Marion CMP and Ocala Marion Traffic Counts Report are provided in the attached methodology. The observed turning movement count, FDOT peak season factors, and intersection volume development sheets are provided in the **Appendix**.

**Figure 2** illustrates the AM and PM peak hour buildout traffic volumes at the study area intersections.



## PM PEAK HOUR ROADWAY SEGMENT ANALYSIS

The study area roadway segments were evaluated for level of service (LOS) and volume-to-maximum service volume (V/MSV) ratios for existing, future background (without project), and future buildout (with project) traffic conditions during the PM peak hour.

PM peak hour directional traffic volumes on the study area roadway segments were compared to the adopted LOS standards derived from the Ocala Marion CMP and roadway service volumes from the FDOT Quality/Level of Service (Q/LOS) Handbook. The Ocala Marion CMP uses the 2023 FDOT Q/LOS Tables for state roadways and 2020 FDOT Q/LOS Tables for non-state roadways.

All study area roadway segments are anticipated to operate within the adopted level of service standard for existing, background, and buildout PM peak hour traffic conditions.

**Table 2** details the findings from the roadway segment analysis.

Table 2: PM Peak Hour Roadway Segment Analysis

Roadway From To	TPO CMP Station	FDOT Classification <sup>2</sup>	ROADWAY ATTRIBUTES <sup>1</sup>				EXISTING CONDITIONS (2024) <sup>3</sup>						BACKGROUND CONDITIONS (2027) <sup>3</sup>						PM PEAK HOUR PROJECT TRAFFIC						BUILDOUT CONDITIONS (2027)						
			Area Type	Adopted LOS	Number of Lanes	Pk. Hr. Dir. Service Volume	Methodology Approved Growth Rate	Volumes	LOS <sup>4</sup>	VMSV	NI/EB	SB/WB	SI/WB	NI/EB	SB/WB	SI/WB	VMSV	NI/EB	SB/WB	SI/WB	NI/EB	SB/WB	SI/WB	VMSV	NI/EB	SB/WB	SI/WB	NI/EB	SB/WB	SI/WB	LOS <sup>4</sup>
								NI/EB	SB/WB	SI/WB	NI/EB	SB/WB	SI/WB	NI/EB	SB/WB	SI/WB	NI/EB	SB/WB	SI/WB	NI/EB	SB/WB	SI/WB	NI/EB	SB/WB	SI/WB	NI/EB	SB/WB	SI/WB	NI/EB	SB/WB	SI/WB
SE 60TH STREET US 441	4130	NS-SCC2	Rural	D	2	533	6.2%	267	190	0.50	0.36	C	C	0.60	0.43	C	C	33	19	34.0%	33	19	6.2%	353	247	0.66	0.46	C	C		
JUNIPER ROAD SR 35	-	NS-UC2	Urban	E	2	576	2.0%	153	198	0.27	0.34	C	C	0.28	0.36	C	C	29	40	51.0%	29	40	8.6%	101	260	0.33	0.45	C	C		
JUNIPER ROAD SR 35	-	NS-UC2	Urban	E	2	576	2.0%	88	145	0.15	0.15	C	C	0.16	0.17	C	C	37	63	54.0%	37	63	10.9%	130	279	0.33	0.38	C	C		
JUNIPER ROAD SR 35	-	NS-UC2	Urban	E	2	576	2.0%	116	102	0.20	0.18	C	C	0.21	0.19	C	C	33	19	34.0%	33	19	5.7%	156	127	0.27	0.22	C	C		
JUNIPER ROAD SR 35	8800	NS-SCC2	Urban	E	2	576	2.0%	66	77	0.11	0.13	C	C	0.12	0.14	C	C	8	14	15.0%	8	14	2.4%	78	96	0.14	0.17	C	C		

FCID24\_Civil/142800027-Juniper Loop T/A/ask071A/Juniper Loop V09\_kimjhgj.LOS

- Notes:
- The roadway attributes were obtained from the 2023 Ocala Marion TPO CMP Database, 2023 Ocala Marion TPO CMP Database, 2023 Ocala Marion Traffic Counts Report, and FDOT Quality/Level of Service Handbook.
  - The 2023 Ocala Marion TPO CMP Database, 2023 Ocala Marion Traffic Counts Report, and FDOT Quality/Level of Service Handbook were used to determine the roadway segment service volumes in the Ocala Marion TPO Database, road segment, and roadway attributes.
  - The existing volumes were derived from the traffic movement counts (adjacent to peak season).
  - The LOS was derived using the Ocala Marion CMP and FDOT Quality/Level of Service Handbook.
  - Background volumes were derived by applying the methodology approved growth rates to the existing volumes.
  - Project traffic assignment was derived from the approved methodology.

## INTERSECTION OPERATIONAL ANALYSIS

Intersection operational analyses were performed for the study area intersections. The signal timings utilized in the analysis were obtained from Marion County. The Synchro 12 software, which is based on the methodology of the HCM 7, was utilized to perform the intersection analyses. The existing geometry, signal timings and control were utilized for the intersection analyses, with the exception of SR 35 at Juniper Road. A traffic signal is planned at the intersection by FDOT (FPID 440816-4-52-03), and signalization was assumed for the background and buildout traffic scenarios. The FDOT signal plans were used for the signal timing and phasing at the intersection.

The Synchro output reports and signal timing data (provided by Marion County) are provided in the **Appendix**.

The following study area intersections were evaluated for AM and PM peak hour existing, background, and buildout traffic conditions:

- US 441 at SE 80th Street
- SE 79th Street at SE 41st Court
- Juniper Road at SE 79th Street
- Juniper Road at Chestnut Road
- Juniper Road at Juniper Pass (project driveway)
- SR 35 at Juniper Road / SE 85th Lane

All study area intersections were found to operate acceptably for all scenarios, with the exception of Juniper Road at SE 79th Street. Juniper Road at SE 79th Street operates with an eastbound approach LOS F for existing and background AM peak hour traffic conditions and volume to capacity ratio over 1.0 for background AM peak hour traffic conditions. The intersection operates with minor street stop control in existing conditions. Implementing an all-way stop-control at the intersection is shown to correct the background deficiency and provide acceptable traffic operations with buildout traffic conditions.

The addition of project traffic does not create any additional deficiencies at the study area intersections. With the background improvement at the intersection of Juniper Road at SE 79<sup>th</sup> Street, all study area intersections operate acceptably with buildout traffic conditions.

**Table 3** details the findings from the intersection analysis. The operations at the intersection of Juniper Road at SE 79<sup>th</sup> Street are reported with existing traffic control (two-way stop-control) and improved traffic control (all-way stop-control) for the background and buildout traffic scenarios.

**Table 3: Intersection Analysis Summary**

Intersection	Stop-Controlled Approach	Existing (2024)			Future Background (2027)			Future Buildout (2027)		
		LOS	Delay (s)	Max V/C	LOS	Delay (s)	Max V/C	LOS	Delay (s)	Max V/C
<b>AM Peak Hour</b> Juniper Pass at Juniper Road (project driveway) Juniper Road at Chestnut Road SR 35 at Juniper Rd / SE 85 Ln Juniper Road at SE 79th Street (TWSC) Juniper Road at SE 79th Street (AWSC) SE 80th Street at SE 79th Street	EB/WB	B	11.26	0.19	B	11.4	0.20	C/B	22.7 / 11.6	0.36
	EB/WB	C/C	16.6 / 24.2	0.55	C/D	17.1 / 26.4	0.59	C/E	18.7 / 35.1	0.68
	--	E/F	46.4 / 75.4	0.88	C	26.2	0.84	C	28.0	0.85
	EB/WB	F/D	91.3 / 34.4	0.995	F/E	121.2 / 37.4	1.09	F/E	217.0 / 46.6	1.33
	--	--	--	--	C	17.3	0.67	C	20.2	0.76
<b>PM Peak Hour</b> Juniper Pass at Juniper Road (project driveway) Juniper Road at Chestnut Road SR 35 at Juniper Rd / SE 85 Ln Juniper Road at SE 79th Street (TWSC) Juniper Road at SE 79th Street (AWSC) SE 80th Street at SE 79th Street US 441 SB at SE 80th Street US 441 NB at SE 80th Street	EB/WB	A	8.8	0.02	A	8.8	0.02	B/A	11.3 / 8.8	0.09
	EB/WB	B/A	11.8 / 9.5	0.09	B/A	11.9 / 9.5	0.10	B/B	12.8 / 10.6	0.14
	--	E/F	49.5 / 66.7	0.74	C	22.0	0.82	C	23.1	0.82
	EB/WB	C/B	24.0 / 13.1	0.71	D/B	26.6 / 13.3	0.74	E/B	37.9 / 14.1	0.86
	--	--	--	--	B	12.0	0.57	B	13.9	0.65
	EB/WB	A/C	8.8 / 20.9	0.54	A/C	8.8 / 22.5	0.58	A/D	8.8 / 30.8	0.73
	--	C	33.3	0.85	C	35.0	0.88	D	35.8	0.91
	--	C	27.3	0.54	C	27.8	0.68	C	28.2	0.68

**Notes:**

1. For unsignalized intersections LOS, delay, and v/c were reported for the stop-controlled approaches only.
2. For signalized intersections, LOS and delay were reported for the entire intersection.

## TURN LANE ANALYSIS

The proposed project driveway was evaluated to assess the need for ingress turn lanes into the site using the procedures outlined in National Highway Cooperative Research Program (NCHRP) Report 457.

For right turn lanes, the NCHRP criteria evaluates the advancing volume, right turning volume and speed limit. For left turn lanes, the NCHRP criteria evaluates the advancing volume, opposing volumes, left turning volume, and posted speed limit. The following ingress volumes are projected for the southbound right-turn and northbound left-turn movements at the project driveway during the AM and PM peak hour:

- Southbound left-turn volume = 19 during the AM peak hour, 63 during the PM peak hour
- Northbound left-turn volume = 10 during the AM peak hour, 33 during the PM peak hour

Based on the projected future buildout traffic volumes at the driveway, exclusive ingress left and right turn lanes are not warranted.

The NCHRP Report 457 worksheets are provided in the **Appendix**.

## MULTIMODAL CONNECTIVITY

A multimodal analysis was conducted to evaluate transit, pedestrian, and bicycle facilities within the study area and their connectivity to the development.

There are no SunTran bus routes within the vicinity of the project site. There are no bicycle lanes on Juniper Pass or Juniper Road adjacent to the proposed development.

There is a sidewalk on the east side of Juniper Road fronting the site. There is a crosswalk across Juniper Road at the Legacy Elementary School driveway, south of Juniper Trail Loop. The project will include sidewalk extensions from the site to the Legacy Elementary School.

## CONCLUSION

Kimley-Horn and Associates, Inc. has performed a Traffic Study for the proposed development of 157 single-family residential dwelling units located on Juniper Road at the intersection with Juniper Pass in Marion County, Florida. The Traffic Study has been performed to support a preliminary plat and Master PUD Plan submittal to Marion County.

Per the approved methodology, study area roadway segments and intersections were evaluated for AM and PM peak hour existing, background, and buildout operations. The analysis found that all roadway segments are projected to operate within the adopted level of service for PM peak hour buildout traffic conditions. Additionally, all study area intersections were found to have acceptable traffic operations under existing, background, and buildout traffic conditions with the exception of Juniper Road at SE 79<sup>th</sup> Street.

Juniper Road at SE 79<sup>th</sup> Street operates with LOS F for the eastbound approach with AM peak hour existing traffic conditions, and LOS F and volume to capacity over 1.0 with AM peak hour background traffic conditions. The intersection currently operates with two-way stop-control in the eastbound and westbound direction. Converting the intersection to an all-way stop control provides for acceptable traffic operations in the background and buildout traffic scenarios.

The project driveway was evaluated to assess the need for ingress turn lanes, and it was determined that ingress turn lanes are not needed.

Traffic from the proposed development does not create additional transportation deficiencies when compared to the background traffic condition. The proposed development does not have a significant and adverse impact on the surrounding transportation network.

# APPENDICES

**APPENDIX A:  
Approved Methodology and  
Correspondence**



**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

August 16, 2024

KIMLEY-HORN  
AMBER GARTNER  
1700 SE 17TH STREET  
OCALA, FL 34471

**SUBJECT: TRAFFIC METHODOLOGY APPROVAL LETTER**  
PROJECT NAME: JUNIPER LOOP DEVELOPMENT  
PROJECT #2024040016 APPLICATION: #31371 PARCEL #36640-004-00

Dear Amber,

The Traffic Methodology dated August 12, 2024 for the above referenced project was approved by Marion County on August 16, 2024. Please submit the Traffic Study in accordance with this approved Methodology. The following comments are for your review. You need not reply to the comments, and if the comments have been previously completed, simply disregard.

DEPARTMENT: LUCURR - LAND USE CURRENT REVIEW  
REVIEW ITEM: Additional Planning comments  
STATUS OF REVIEW: INFO  
REMARKS:

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

Sincerely,

*Your Development Review Team*  
**Office of the County Engineer**



August 12<sup>th</sup>, 2024

Development Review  
Marion County Office of the County Engineer  
412 SE 25<sup>th</sup> Avenue  
Ocala, FL 34471

**RE: *Juniper Loop Development (AR 31371); Response to Comments  
Kimley-Horn Project No. 142800027***

Dear Development Review Team:

Kimley-Horn and Associates, Inc. received comments dated August 12<sup>th</sup>, 2024, for the above referenced project. Below are the comments and associated responses:

DEPARTMENT: ENGTRF – TRAFFIC REVIEW – Traffic Methodology

1. Response to Original Comment #5 – The revised trip distribution assumes 8% of trips to/from the north will use SE 92<sup>nd</sup> PI Rd to enter/exit the site. The travel time for this route is longer than simply using SE 80<sup>th</sup> St. Revise the trip distribution as follows: Decrease the 8% on US 441 between SE 80<sup>th</sup> St and SE 92<sup>nd</sup> PI Rd to 0%. Decrease the 16% on SE 92<sup>nd</sup> PI Rd between US 441 and SR 35 to 8%. Increase the 26% on SE 80<sup>th</sup> St between US 441 and SE 79<sup>th</sup> St to 34%.

**Response: Acknowledged; the methodology has been updated to include the above-mentioned trip distribution.**

We trust these responses, along with the revised methodology, will provide the additional information as requested. Please feel free to contact our office if you have any questions.

Sincerely,  
**KIMLEY-HORN**

A handwritten signature in blue ink, appearing to read "Amber L. Gartner".

Amber L. Gartner, PE

ALG/mmf

Attachments: Revised Traffic Study Methodology

K:\OCA\_Civil\142800027-Juniper Loop TIA\doc\methodology\Submittal 3\RLmcd240812alg.docx



August 12<sup>th</sup>, 2024

Mr. Christopher Zeigler  
 Engineering Project Manager  
 Marion County Office of the County Engineer  
 412 SE 25<sup>th</sup> Avenue  
 Ocala, FL. 34471

**RE: *Juniper Loop Development – Traffic Study Methodology; Marion County, Florida  
 Kimley-Horn Project No. 142800027***

Dear Mr. Zeigler:

Kimley-Horn and Associates, Inc. is pleased to submit this methodology for the forthcoming traffic study for the Juniper Loop Development. The project site is located on parcel number 36640-004-00, north of Legacy Elementary School and west of the intersection of Juniper Pass and Juniper Road in Marion County, Florida. The forthcoming traffic study is being performed to support a PUD request. A PUD has previously been approved (October 2018, project number 20160504z), but has since expired. The prior rezoning allowed 4 dwelling units/acre for a total of 157 dwelling units. The proposed development will consist of a maximum of 157 single-family residential dwelling units. The concept PUD plan is provided as an attachment.

The development is projected to generate more than 100 peak hour trips and therefore a “Traffic Study” is required per the Marion County Traffic Impact Analysis (TIA) Guidelines. A buildout year of 2027 will be used for the traffic study.

**TRIP GENERATION**

Trip generation for the proposed development was determined using the Institute of Transportation Engineer’s (ITE) *Trip Generation Manual*, 11<sup>th</sup> Edition. ITE land use code (LUC) 210 (Single-Family Detached Housing) was used for the trip generation calculations. The development is anticipated to generated 1,528 daily, 112 AM peak hour (29 in/83 out), and 152 PM peak hour (96 in/56 out) net new trips.

**Table 1** summarizes the trip generation potential at project buildout.

**Table 1 – Buildout Trip Generation**

Land Use	Intensity	Daily Trips	AM Peak Hour of Adjacent Street			PM Peak Hour of Adjacent Street		
			Total	In	Out	Total	In	Out
<b>Proposed Development</b> Single-Family Detached Housing	157 DU	1,528	112	29	83	152	96	56
Note 1: Trip Generation volumes were derived from the ITE Trip Generation Manual, 11th Edition. <b>Single-Family Detached Housing [ITE 210]</b> Daily $Ln(T) = 0.92 * Ln(X) + 2.68$ (X is the Number of Dwelling Units) AM Peak Hour of Adjacent Street $Ln(T) = 0.91 * Ln(X) + 0.12$ (X is the Number of Dwelling Units; 26% in, 74% out) PM Peak Hour of Adjacent Street $Ln(T) = 0.94 * Ln(X) + 0.27$ (X is the Number of Dwelling Units; 63% in, 37% out)								

## PROJECT TRIP DISTRIBUTION

The project's trip distribution was determined using the Central Florida Regional Planning Model (CFRPM v7), which is based on the Florida Standard Urban Transportation Modeling Structure (FSUTMS). The project's trip distribution was manually adjusted based on local knowledge of the area and engineering judgment.

The attached **Figure 1** illustrates the proposed trip distribution. The CFRPM model output with manual adjustments is provided as an attachment.

## SITE ACCESS

Primary access to the development will be provided as a new west leg of the intersection of Juniper Pass at Juniper Road. An emergency access point will be provided on the south side of the development to the Legacy Elementary school property. The access points were reviewed with Marion County Office of the County Engineer and with Marion County Public Schools on July 29<sup>th</sup>, 2024. The attached concept plan details the access connections.

## STUDY AREA

The study area (illustrated in **Figure 1**) was determined based on the Marion County TIA Guidelines, which states that the roadway segments with a 3% or greater project impact to the peak hour directional service volume are considered significantly impacted. Significantly impacted roadway segments, plus one segment beyond, are included in the study area per the Marion County TIA Guidelines. Additional road segments and intersections were included based on comments provided by Marion County.

The project impact was calculated as the PM peak hour net new project traffic multiplied by the maximum trip distribution along the segment, divided by the peak hour peak direction service volume. The peak hour peak direction service volumes were obtained from the 2023 Ocala Marion Transportation Planning Organization (TPO) Congestion Management Process (CMP). The project impact calculations are provided in the attached **Table 2**. Excerpts from the Ocala Marion TPO CMP are provided in the attachments.

The following study area roadway segments will be evaluated during the PM peak hour:

- Juniper Road from SR 35 to Chestnut Road (significant impact, > 3%)
- Juniper Road from Chestnut Road to Project Access (significant impact, > 3%)
- Juniper Road from Project Access to SR 35 (significant impact, > 3%)
- Chestnut Road from Juniper Road to SR 35 (not significant impact, adjacent segment, < 3%)
- SE 80<sup>th</sup> Street from US 441 to SE 41<sup>st</sup> Court (per Marion County request)

The following intersections will be included in the study area and evaluated for the AM peak hour and PM peak hour:

- Juniper Pass at Juniper Road (unsignalized) – site access
- Juniper Road at Chestnut Road (unsignalized)
- Juniper Road at SR 35 (currently unsignalized– signalized in future background)
- Juniper Road at SE 79<sup>th</sup> Street (unsignalized)
- SE 80<sup>th</sup> Street/ SE 41<sup>st</sup> Court at SE 79<sup>th</sup> Street (unsignalized)
- US 441 at SE 80<sup>th</sup> Street (PM analysis only, signalized)

## EXISTING CONDITIONS INVENTORY

An existing conditions inventory for the adjacent roadway network is included in the attached **Table 2**. The existing conditions evaluation includes the daily service volume, existing Annual Average Daily Traffic (AADT), Volume to Maximum Service Volume (V/MSV), and Level of Service (LOS). The daily service volume and AADT were obtained from the Ocala Marion TPO CMP Database.

## PLANNED IMPROVEMENTS

The Ocala Marion TPO 2045 Long Range Transportation Plan (LRTP), the Ocala Marion TPO Transportation Improvement Program (TIP), the Marion County TIP, and the FDOT Five-Year Work Program were reviewed to identify planned or programmed capacity improvements within the project study area. Per Marion County, the signalization of the Juniper Road/ SE 85<sup>th</sup> Lane at SR 35/ Baseline Road intersection (FPID 440816-4-52-03) will be included as a planned background improvement. No other planned or programmed improvements were identified in the vicinity of the project.

## MULTIMODAL CONNECTIVITY

The forthcoming analysis will provide a discussion of available pedestrian and bicyclist facilities and the proposed connectivity of the proposed development to the surrounding pedestrian and bicycle network.

## VOLUME DEVELOPMENT

AM peak period (7 AM – 9 AM) and PM peak period (4 PM – 6 PM) turning movement counts will be collected at the study area intersections mid-week (Tuesday-Thursday) while Marion County Schools are in session.

- Juniper Pass at Juniper Road (unsignalized)
- Juniper Road and Chestnut Road (unsignalized)
- Juniper Road at SR 35 (unsignalized)
- Juniper Road at SE 79<sup>th</sup> Street (unsignalized)
- SE 80<sup>th</sup> Street/ SE 41<sup>st</sup> Court at SE 79<sup>th</sup> Street (unsignalized)
- US 441 at SE 80<sup>th</sup> Street (PM peak period only, signalized)

The observed turning movement counts will be adjusted to peak season using the 2023 peak season conversion factors (minimum 1.0) published by FDOT.

Future background traffic volumes will be derived by applying an annual background growth rate to the existing peak season peak hour traffic volumes over the three-year buildout time frame. Committed/vested projects, if any, provided by Marion County will be added to the future (2027) background traffic volumes.

The PM peak hour peak season intersection approach and departure volumes will be utilized to estimate the PM peak hour traffic volumes for the roadway segment analysis. The observed heavy vehicle percentages, peak hour factors, and right turn on red percentages will be utilized for the intersection analysis.

## HISTORICAL GROWTH RATE

Historical growth rates were calculated based on traffic data within the 2023 Ocala Marion TPO Congestion Management Process (CMP), the 2024 Ocala Marion TPO Traffic Counts Report, and information published from FDOT Florida Traffic Online for the study area roadways.

Per Marion County's request, a growth rate of 6.2% will be used for the segment of SE 80<sup>th</sup> Street from US 441 to SE 41<sup>st</sup> Court, and a 2% historical growth rate will be utilized for the remaining roadway segments. The attached **Table 3** details the growth rate calculations. Information on the historical growth patterns is also provided as attachments.

## OPERATIONAL ANALYSIS

The study area intersections will be evaluated during the AM peak hour and PM peak hour for existing conditions, future background (without project) conditions, and future buildout conditions (with project). *Synchro* software, which utilizes the *Highways Capacity Manual (HCM)* methodologies, will be used for the analysis. The intersection of US 441 at SE 80<sup>th</sup> Street will only be evaluated during the PM peak hour, per Marion County's request.

The existing traffic conditions analysis and the future background (without project) traffic conditions analysis will be evaluated assuming the existing intersection geometries and traffic controls. The future buildout (with project) traffic conditions will be evaluated assuming that the improvements needed to accommodate future background (without project) traffic conditions are in place. If further mitigation is needed to accommodate project traffic, the improvements needed to accommodate project traffic will be reported.

Study area roadway segments will be evaluated for PM peak hour, peak direction traffic conditions. The existing, future background (without project), and future buildout (with project) peak hour, peak direction traffic volumes will be compared against the allowable service volume as reported in **Table 2**. The level of service and V/MSV will be reported.

The proposed access connection at the intersection of Juniper Pass and Juniper Road will be evaluated for the need for appropriate traffic control and the need for ingress turn lanes according to the National Cooperative Highway Research Project (NCHRP) Report 457, Marion County Land Development Code and the FDOT Multimodal Access Management Guidebook.

Please review the enclosed information and provide feedback and/or approval. Should you have any questions, please do not hesitate to contact me directly.

Sincerely,

**KIMLEY-HORN**



Amber L. Gartner, P.E.

Attachments: Conceptual Plan  
 ITE Trip Generation Manual Excerpts  
 CFRPM Model Output  
 Figure 1 – Project Location, Trip Distribution, and Study Area  
 Table 2 – Study Area Determination  
 Table 3 – Historical Growth Rate Calculations  
 FDOT Traffic Online Historical AADT Data  
 Ocala Marion TPO CMP Database Excerpts  
 2024 TPO Count Report

CC: File

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# ATTACHMENTS

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## CONCEPTUAL PLAN

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## **ITE TRIP GENERATION EXCERPTS**

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# Land Use: 210

## Single-Family Detached Housing

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### Description

A single-family detached housing site includes any single-family detached home on an individual lot. A typical site surveyed is a suburban subdivision.

### Specialized Land Use

Data have been submitted for several single-family detached housing developments with homes that are commonly referred to as patio homes. A patio home is a detached housing unit that is located on a small lot with little (or no) front or back yard. In some subdivisions, communal maintenance of outside grounds is provided for the patio homes. The three patio home sites total 299 dwelling units with overall weighted average trip generation rates of 5.35 vehicle trips per dwelling unit for weekday, 0.26 for the AM adjacent street peak hour, and 0.47 for the PM adjacent street peak hour. These patio home rates based on a small sample of sites are lower than those for single-family detached housing (Land Use 210), lower than those for single-family attached housing (Land Use 251), and higher than those for senior adult housing -- single-family (Land Use 251). Further analysis of this housing type will be conducted in a future edition of *Trip Generation Manual*.

### Additional Data

The technical appendices provide supporting information on time-of-day distributions for this land use. The appendices can be accessed through either the ITETripGen web app or the trip generation resource page on the ITE website (<https://www.ite.org/technical-resources/topics/trip-and-parking-generation/>).

For 30 of the study sites, data on the number of residents and number of household vehicles are available. The overall averages for the 30 sites are 3.6 residents per dwelling unit and 1.5 vehicles per dwelling unit.

The sites were surveyed in the 1980s, the 1990s, the 2000s, and the 2010s in Arizona, California, Connecticut, Delaware, Illinois, Indiana, Kentucky, Maryland, Massachusetts, Minnesota, Montana, New Jersey, North Carolina, Ohio, Ontario (CAN), Oregon, Pennsylvania, South Carolina, South Dakota, Tennessee, Vermont, Virginia, and West Virginia.

### Source Numbers

100, 105, 114, 126, 157, 167, 177, 197, 207, 211, 217, 267, 275, 293, 300, 319, 320, 356, 357, 367, 384, 387, 407, 435, 522, 550, 552, 579, 598, 601, 603, 614, 637, 711, 716, 720, 728, 735, 868, 869, 903, 925, 936, 1005, 1007, 1008, 1010, 1033, 1066, 1077, 1078, 1079

# Single-Family Detached Housing (210)

Vehicle Trip Ends vs: Dwelling Units  
On a: Weekday

Setting/Location: General Urban/Suburban

Number of Studies: 174

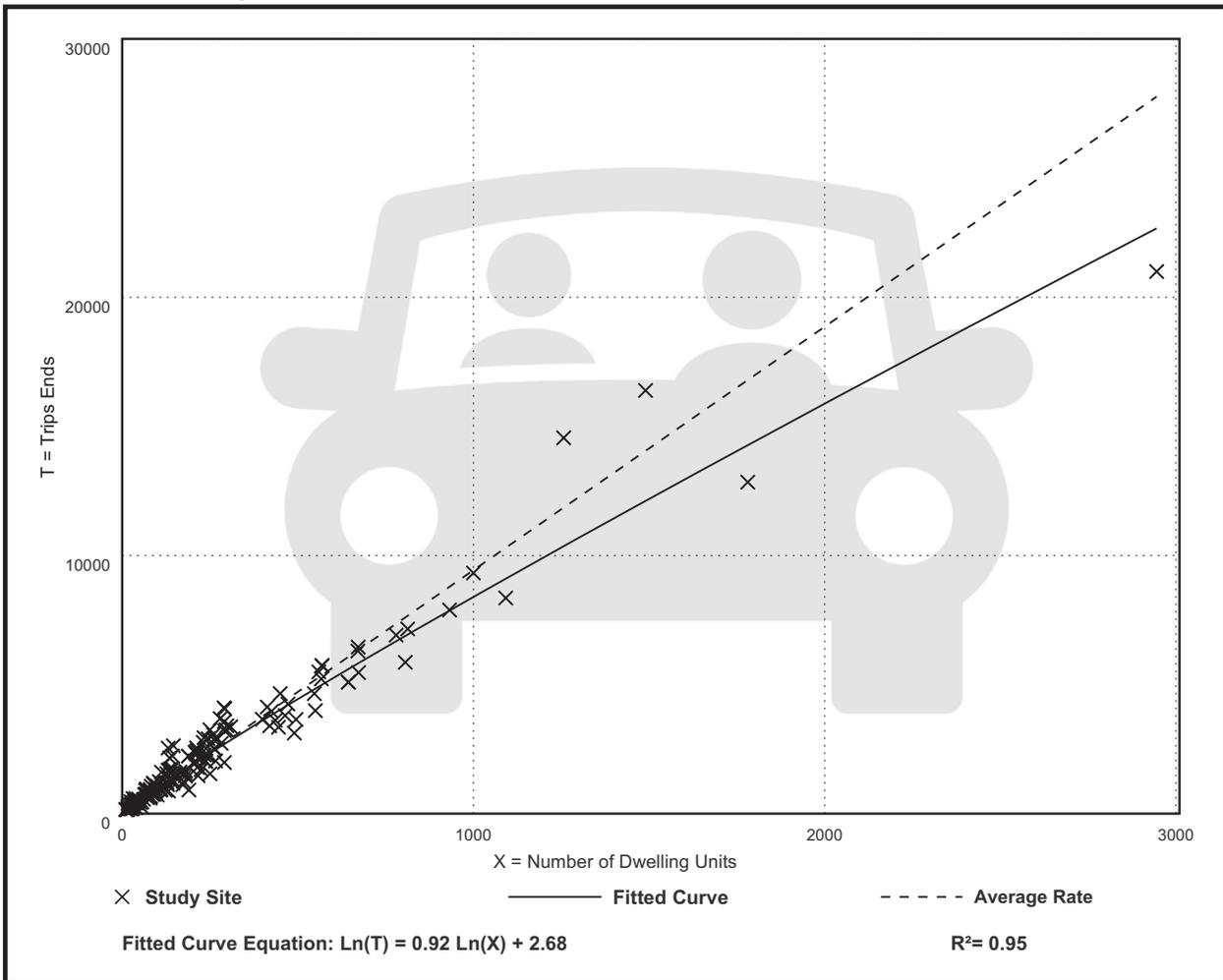
Avg. Num. of Dwelling Units: 246

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



# 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

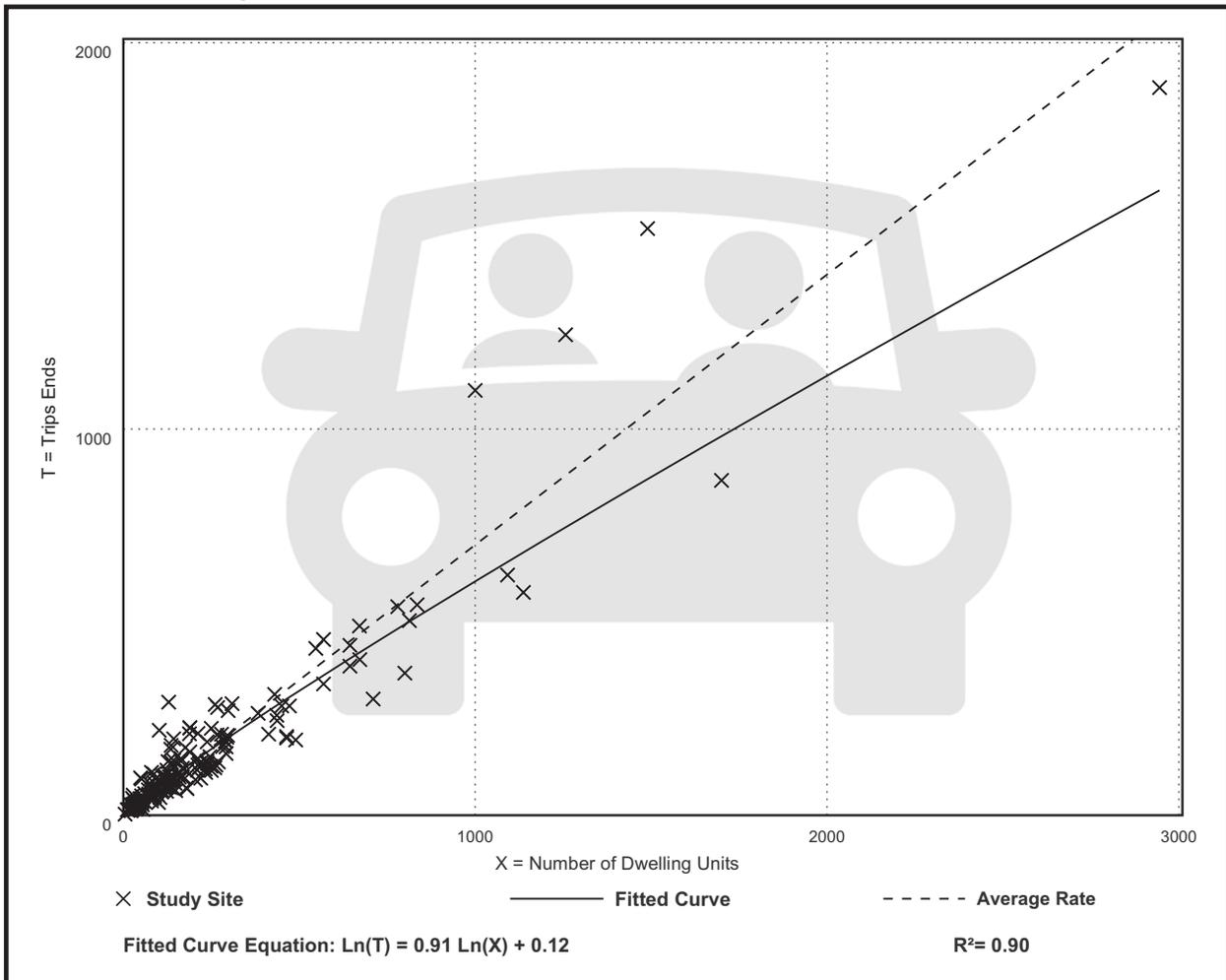
Avg. Num. of Dwelling Units: 226

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

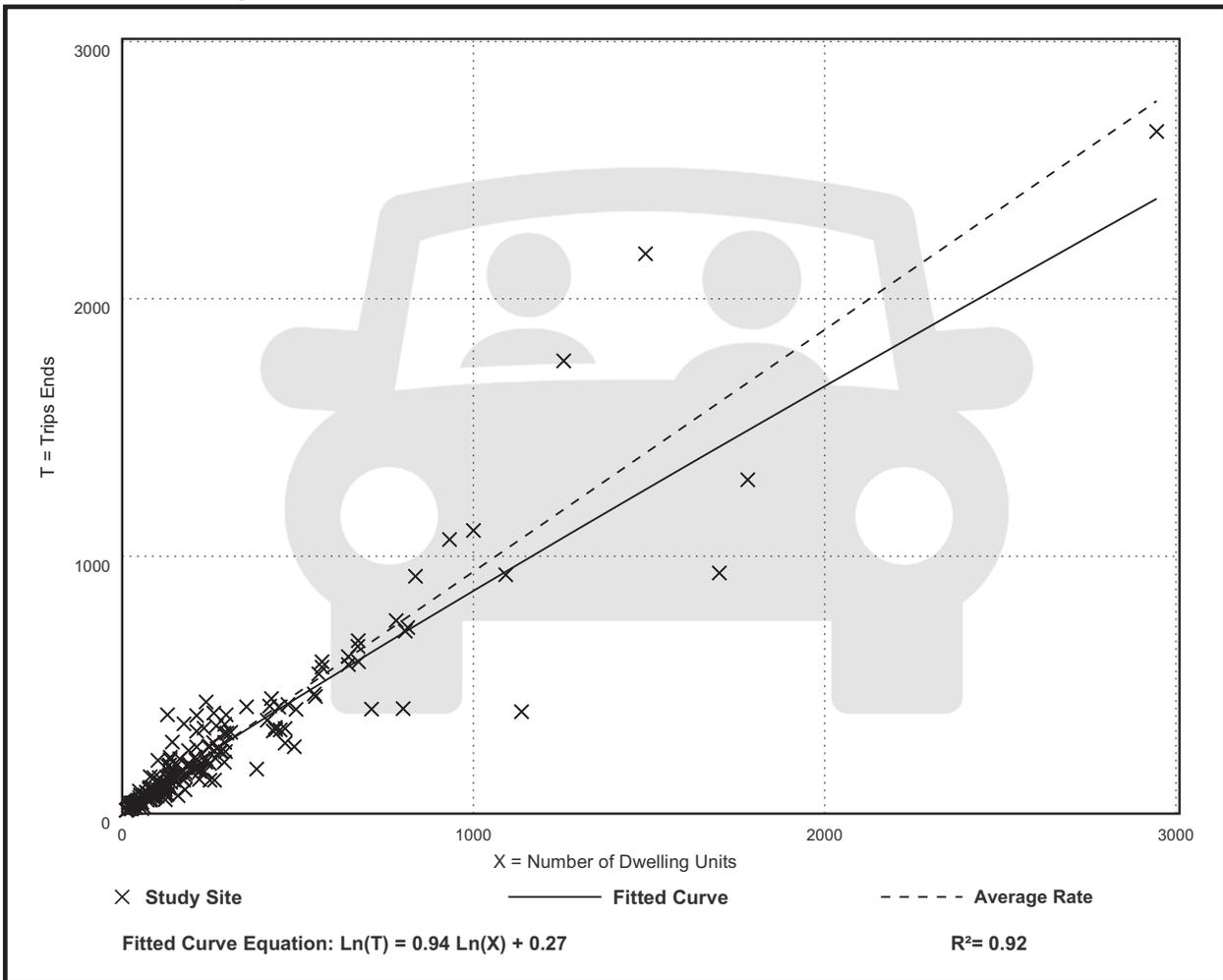
Avg. Num. of Dwelling Units: 248

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



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## CFRPM MODEL OUTPUT

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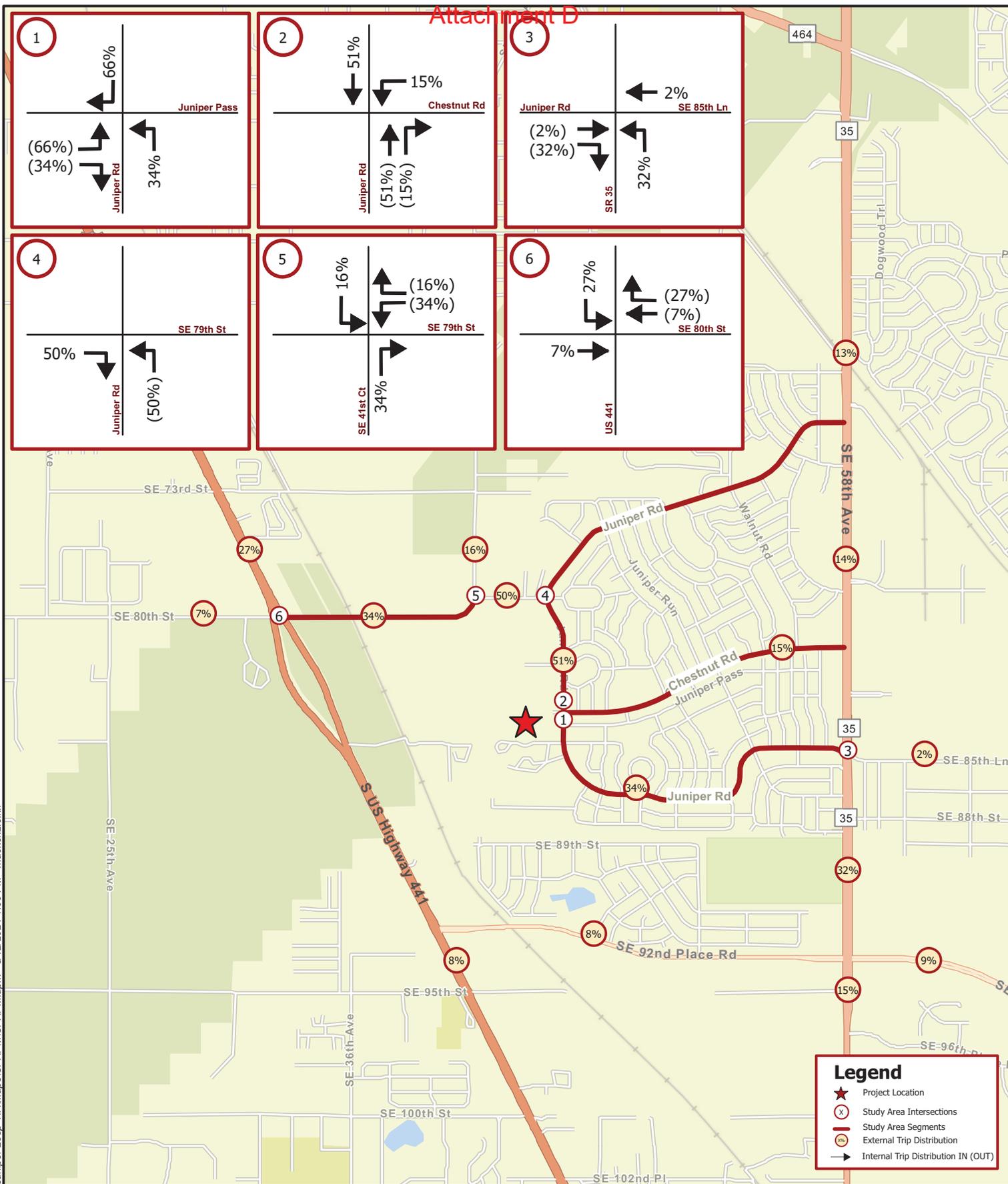
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**FIGURE 1 – PROJECT LOCATION, TRIP  
DISTRIBUTION, AND STUDY AREA**

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 1700 SE 17th Street, Suite 200, Ocala FL 34471  
 Phone: (352) 438-3000  
 www.kimley-horn.com Registry No. 35106

FIGURE 1 - PROJECT LOCATION, TRIP DISTRIBUTION, AND STUDY AREA

**JUNIPER LOOP DEVELOPMENT  
 MARION COUNTY, FLORIDA**

D-37

Not To Scale

Project No.: 142800027

August 2024

Figure 1

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**TABLE 2 – STUDY AREA DETERMINATION  
TABLE**

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Table 2: Study Area Determination Table

Roadway	From		To		ROADWAY ATTRIBUTES <sup>1</sup>						EXISTING DAILY TRAFFIC CONDITIONS (2023)				PM PEAK HOUR SIGNIFICANCE CALCULATIONS				Include in Study Area? <sup>5</sup>
	TPO CMP Station	FDOT Classification <sup>2</sup>	Area Type	Adopted LOS	# of Lanes	Daily Service Volume	Pk. Hr. Dir. Service Volume	TPO CMP Growth Rate	TPO Counts Growth Rate	AADT <sup>1</sup>	V/MSV	LOS <sup>1</sup>	% Project Traffic Assignment <sup>3</sup>	NB / EB	SB / WB	Project % Impact	Significant Impact? <sup>4</sup>		
SE 44 AV RD	SR 464	NS-SC-C2	Urban	E	2	11,794	605	3.76%	3.30%	8,600	0.73	D	13.0%	7	12	1.98%	--	NO	
	SE 44 AV																		
SE 80 ST	US 441(E)	NS-SC-C2	Rural	D	2	10,224	533	5.49%	0.60%	6,800	0.67	C	7.0%	7	4	1.31%	--	NO	
	SE 25 AV																		
SE 92 PL RD	SR 35	NS-SC-C2	Rural	D	2	10,224	533	6.17%	10.00%	6,200	0.61	C	34.0%	33	19	6.19%	YES	YES	
	US 441																		
SR 35	SE 92ND PL	NS-SA-C1	Urban	E	2	12,744	634	5.00%	13.10%	10,900	0.86	C	8.0%	8	4	1.26%	--	NO	
	SE 92ND PL																		
US 441	SE 92ND PL	C2	Urban	D	4	32,970	1,722	1.00%	5.40%	12,700	0.39	C	15.0%	14	8	0.81%	--	NO	
	SE 92ND PL																		
JUNIPER RD	SR 35	C2	Urban	D	4	58,485	3,056	4.27%	1.40%	27,600	0.47	B	32.0%	31	18	1.01%	--	NO	
	SR 35																		
CHESTNUT RD	SR 35	C2	Urban	D	4	55,700	2,910	4.27%	1.40%	27,600	0.50	B	13.0%	7	12	0.41%	--	NO	
	SR 35																		
CHESTNUT RD	SR 35	C3C	Urban	D	4	38,430	1,901	1.13%	2.80%	27,800	0.72	C	27.0%	15	26	1.37%	--	NO	
	SR 35																		
CHESTNUT RD	SR 35	C3C	Urban	D	4	36,430	1,901	1.00%	2.80%	27,800	0.72	C	8.0%	8	4	0.42%	--	NO	
	SR 35																		
CHESTNUT RD	SR 35	NS-UC-C2	Urban	E	2	11,232	576	0.75%	-	3,400	0.30	C	51.0%	29	49	8.51%	YES	YES	
	SR 35																		
CHESTNUT RD	SR 35	NS-UC-C2	Urban	E	2	11,232	576	0.75%	-	3,400	0.30	C	66.0%	37	63	10.94%	YES	YES	
	SR 35																		
CHESTNUT RD	SR 35	NS-UC-C2	Urban	E	2	11,232	576	0.75%	-	3,400	0.30	C	34.0%	33	19	5.73%	YES	YES	
	SR 35																		
CHESTNUT RD	SR 35	NS-SC-C2	Urban	E	2	11,232	576	1.00%	-	3,100	0.28	C	15.0%	8	14	2.43%	--	YES	
	SR 35																		

K:\COA\_Civil\42800027-Juniper Loop TIA\ok\mtr\roadway\31\2408 Methodology Calc1 - Juniper Loop Atg54077max

Notes:  
 1. The roadway attributes and daily volumes were obtained from the Ocala Marion TPO CMP Database, the 2020 FDOT Quality/Level of Service Tables for non-state roads and the 2023 FDOT Quality/Level of Service Tables for state roads. For roadway segments not included in the Ocala Marion TPO Database, FDOT Traffic Online, the Marion County Comprehensive Plan, 2020 Quality/Level of Service Tables, and the Marion County Functional Classification Map were used.  
 2. For the purpose of determining the roadway segment service volumes in the Ocala Marion TPO Database the roadways were categorized into state or non-state maintained (ST, NS), interrupted or uninterrupted flow (S, U), arterial or collector (A, C), and Class 1 or Class 2 (C1, C2) (speed limit >= 40 mph or <= 35 mph). C2 = Rural, C3C = Suburban, Commercial  
 3. Project traffic assignment was calculated as the maximum across the segment based on the trip distribution and assignment.  
 4. A segment is considered significantly impacted if the project impact is 3% or greater.  
 5. All significantly impacted roadway segments, plus one segment beyond, are included in the study area per the Marion County TIA guidelines.

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**TABLE 3 – HISTORICAL GROWTH RATE  
CALCULATIONS**

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## Attachment D

**Table 3. Historical Growth Rate Calculations**

Roadway	From	To	AADT	CMP Growth Rate
<b>JUNIPER RD</b>	SR 35	CHESTNUT RD	3,400	0.75%
	CHESTNUT RD	SR 35	3,400	0.75%
<b>CHESTNUT RD</b>	JUNIPER RD	SR 35	3,100	1.00%
<b>Weighted Average Annual Growth Rate:</b>				0.83%
Notes:				
1. The AADT and growth rates were derived from the Ocala Marion CMP. AADT and growth rates for Juniper Road were derived from FDOT Traffic Online Historical AADT Reports.				
2. The average CMP growth rates were weighted by AADT.				

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**FDOT TRAFFIC ONLINE HISTORICAL AADT  
DATA**

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# Attachment D

FLORIDA DEPARTMENT OF TRANSPORTATION  
TRANSPORTATION STATISTICS OFFICE  
2022 HISTORICAL AADT REPORT

COUNTY: 36 - MARION

SITE: 8129 - JUMIPER RD, 100' S OF ASPEN RD - OFF SYSTEM

YEAR	AADT	DIRECTION 1	DIRECTION 2	*K FACTOR	D FACTOR	T FACTOR
2022	3400 F	E 1700	W 1700	9.00	55.10	6.90
2021	3400 C	E 1700	W 1700	9.00	53.20	8.50
2020	3300 S	E 1700	W 1600	9.00	53.40	8.50
2019	3300 F	E 1700	W 1600	9.00	53.80	8.00
2018	3300 C	E 1700	W 1600	9.00	54.30	7.90
2017	2700 T	E 1500	W 1200	9.00	55.50	7.40
2016	2600 S	E 1400	W 1200	9.00	56.10	7.60
2015	2500 F	E 1300	W 1200	9.00	56.30	7.80
2014	2500 C	E 1300	W 1200	9.00	56.80	7.10

AADT FLAGS: C = COMPUTED; E = MANUAL ESTIMATE; F = FIRST YEAR ESTIMATE  
 S = SECOND YEAR ESTIMATE; T = THIRD YEAR ESTIMATE; R = FOURTH YEAR ESTIMATE  
 V = FIFTH YEAR ESTIMATE; 6 = SIXTH YEAR ESTIMATE; X = UNKNOWN  
 \*K FACTOR: STARTING WITH YEAR 2011 IS STANDARDK, PRIOR YEARS ARE K30 VALUES

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**OCALA MARION TPO CMP DATABASE  
EXCERPTS**

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## 2024 TPO COUNTS REPORT

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## Attachment D

Location	Source	Count Type	2019	2020	2021	2022	2023	Ave Annual Growth Rate (%)
SE 24th Street								
SR 464 to SE 36th Avenue	OCA	3	9,600	8,200	9,600	10,100	9,400	0.2%
SE 36th Avenue to SE 44th Court	OCA	3	9,600	7,300	NC	NC	NC	N/A
SE 25th Avenue								
SE 14th Street to SR 464	OCA		NC	NC	NC	NC	18,600	N/A
SE 14th Street to Fort King	OCA	2	NC	NC	NC	NC	17,900	N/A
SE 30th Avenue								
SE Ft King Street to SE 17th Street	OCA	3	4,200	2,800	3,400	3,800	3,600	-1.4%
SR 464 to SE 17th Street	OCA	3	NC	NC	NC	NC	3,500	N/A
SE 31st Street								
CR 475 to US 441	OCA	2	NC	NC	18,400	24,100	25,400	N/A
US 441 to Lake Weir	OCA	2	18,300	19,200	23,900	17,900	18,100	1.4%
SE 36th Avenue to SR 464	OCA	2	NC	NC	7,800	7,800	5,400	N/A
SW 7th Avenue to CR 475	OCA	3	NC	NC	NC	NC	33,600	N/A
SE 22nd Avenue to SE 36th Avenue	OCA	3	NC	NC	NC	NC	7,600	N/A
SE 38st Street								
W of SE 36th Avenue	MC	3	6,000	6,400	5,400	5,400	5,200	-3.2%
SE 44th Avenue Road								
N of SE 52nd Street	MC	3	7,500	7,600	8,100	8,300	8,200	2.3%
SE 52nd Street								
E of US 441	MC	3	6,100	6,700	5,500	6,000	5,100	-3.5%
W of US 441	MC	3	3,100	3,000	3,100	3,400	3,300	1.7%
SE 62nd Street								
W of SE 30th Court (Before RxR)	MC		NC	NC	NC	NC	1,100	N/A
SE 73rd Street								
W of SE 36th Avenue (Before RxR)	MC		NC	NC	NC	NC	1,600	N/A
SE 80th Street								
W of US 441	MC	3	5,000	4,800	6,200	6,400	6,800	8.7%
E of US 441	MC	3	4,400	4,300	5,900	5,800	6,200	10.0%

Attachment D

Location	Source	Count Type	2019	2020	2021	2022	2023	Ave Annual Growth Rate (%)
SR 19								
SE of CR 314	FDOT	4	1,900	1,900	1,900	2,200	2,200	3.9%
N of CR 316	FDOT	4	3,500	3,800	3,800	3,800	3,800	2.1%
N of SR 40	FDOT	4	1,700	1,900	1,900	1,900	2,000	4.3%
S of CR 316	FDOT	4	4,200	4,300	4,300	4,300	4,700	2.9%
SR 35								
S of SR 464	FDOT	4	26,000	26,000	27,000	26,500	27,500	1.4%
N of SR 464	FDOT	4	21,000	20,400	20,500	20,500	21,400	0.5%
N of SR 25	FDOT	4	11,800	12,400	12,600	12,600	14,500	5.4%
S of SR 40	FDOT	4	12,200	12,000	12,200	15,800	16,400	8.3%
N of SE 92nd	FDOT	4	26,000	26,000	27,000	26,500	27,500	1.4%
SR 40								
W of CR 314A	FDOT	4	13,400	13,200	13,400	13,000	13,600	0.4%
SE 183rd to Lake County	FDOT	4	6,300	6,100	6,300	5,200	5,400	-3.4%
NE 36th Avenue to City Limits	FDOT	4	22,500	22,500	21,800	22,100	22,300	-0.2%
E of NE 24th (Telemetered)	FDOT	T	21,700	20,200	21,800	22,100	22,300	0.8%
N Magnolia to NE 8th Avenue	FDOT	4	32,000	31,000	32,000	29,000	30,000	-1.5%
ML King to SW 27th Avenue	FDOT	4	25,500	23,000	23,000	23,000	21,500	-4.1%
SW 27th to SW 33rd	FDOT	4	34,000	33,000	32,500	32,500	30,000	-3.0%
E of CR 314A	FDOT	4	8,600	8,100	8,300	8,300	8,000	-1.7%
NE 25th Avenue to NE 36th	FDOT	4	24,500	24,500	25,000	28,500	29,500	4.9%
E of CR 314	FDOT	4	13,400	13,200	13,400	13,000	13,600	0.4%
NE of US 41	FDOT	4	8,800	8,200	8,400	8,400	8,600	-0.5%
W of I-75	FDOT	4	31,000	30,000	31,000	31,000	28,500	-2.0%
W of CR 225A	FDOT	4	20,500	18,700	19,100	19,100	20,200	-0.2%
NE 11th Avenue to NE 25th	FDOT	4	30,500	27,000	28,000	28,000	27,500	-2.4%
0.9 mi E of SR 35	FDOT	4	14,600	12,800	13,000	13,000	14,600	0.4%

**APPENDIX B:  
Traffic Data**

## Attachment D

2023 PEAK SEASON FACTOR CATEGORY REPORT - REPORT TYPE: ALL  
 CATEGORY: 3600 MARION COUNTYWIDE

MOCF: 0.96  
 PSCF

WEEK	DATES	SF	PSCF
1	01/01/2023 - 01/07/2023	1.02	1.06
2	01/08/2023 - 01/14/2023	1.01	1.05
3	01/15/2023 - 01/21/2023	1.01	1.05
4	01/22/2023 - 01/28/2023	1.00	1.04
5	01/29/2023 - 02/04/2023	0.98	1.02
* 6	02/05/2023 - 02/11/2023	0.97	1.01
* 7	02/12/2023 - 02/18/2023	0.96	1.00
* 8	02/19/2023 - 02/25/2023	0.95	0.99
* 9	02/26/2023 - 03/04/2023	0.95	0.99
*10	03/05/2023 - 03/11/2023	0.95	0.99
*11	03/12/2023 - 03/18/2023	0.95	0.99
*12	03/19/2023 - 03/25/2023	0.95	0.99
*13	03/26/2023 - 04/01/2023	0.95	0.99
*14	04/02/2023 - 04/08/2023	0.96	1.00
*15	04/09/2023 - 04/15/2023	0.96	1.00
*16	04/16/2023 - 04/22/2023	0.97	1.01
*17	04/23/2023 - 04/29/2023	0.97	1.01
*18	04/30/2023 - 05/06/2023	0.98	1.02
19	05/07/2023 - 05/13/2023	0.98	1.02
20	05/14/2023 - 05/20/2023	0.99	1.03
21	05/21/2023 - 05/27/2023	1.00	1.04
22	05/28/2023 - 06/03/2023	1.01	1.05
23	06/04/2023 - 06/10/2023	1.02	1.06
24	06/11/2023 - 06/17/2023	1.03	1.07
25	06/18/2023 - 06/24/2023	1.03	1.07
26	06/25/2023 - 07/01/2023	1.03	1.07
27	07/02/2023 - 07/08/2023	1.03	1.07
28	07/09/2023 - 07/15/2023	1.03	1.07
29	07/16/2023 - 07/22/2023	1.03	1.07
30	07/23/2023 - 07/29/2023	1.03	1.07
31	07/30/2023 - 08/05/2023	1.04	1.08
32	08/06/2023 - 08/12/2023	1.04	1.08
33	08/13/2023 - 08/19/2023	1.04	1.08
34	08/20/2023 - 08/26/2023	1.04	1.08
35	08/27/2023 - 09/02/2023	1.03	1.07
36	09/03/2023 - 09/09/2023	1.03	1.07
37	09/10/2023 - 09/16/2023	1.03	1.07
38	09/17/2023 - 09/23/2023	1.02	1.06
39	09/24/2023 - 09/30/2023	1.02	1.06
40	10/01/2023 - 10/07/2023	1.01	1.05
41	10/08/2023 - 10/14/2023	1.00	1.04
42	10/15/2023 - 10/21/2023	1.00	1.04
43	10/22/2023 - 10/28/2023	1.00	1.04
44	10/29/2023 - 11/04/2023	1.00	1.04
45	11/05/2023 - 11/11/2023	1.00	1.04
46	11/12/2023 - 11/18/2023	1.00	1.04
47	11/19/2023 - 11/25/2023	1.01	1.05
48	11/26/2023 - 12/02/2023	1.01	1.05
49	12/03/2023 - 12/09/2023	1.01	1.05
50	12/10/2023 - 12/16/2023	1.02	1.06
51	12/17/2023 - 12/23/2023	1.01	1.05
52	12/24/2023 - 12/30/2023	1.01	1.05
53	12/31/2023 - 12/31/2023	1.01	1.05

\* PEAK SEASON

09-MAR-2024 18:41:41

830UPD

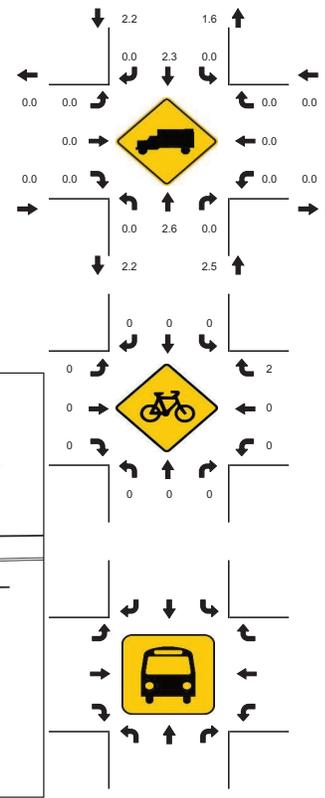
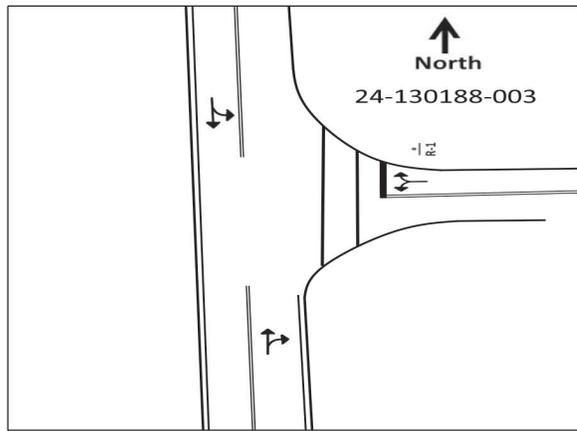
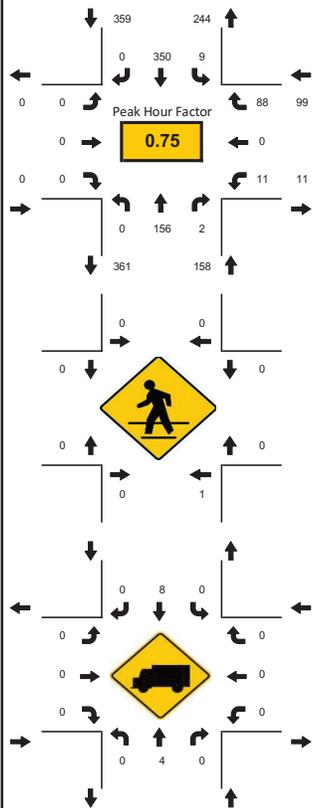
5\_3600\_PKSEASON.TXT

# Attachment D

LOCATION: Juniper Rd & Juniper Pass  
 CITY/STATE: Ocala, FL

PROJECT ID: 24-130188-003  
 DATE: Thu, May 23, 2024

Peak-Hour: 07:00 AM - 08:00 AM  
 Peak 15-Minute: 07:15 AM - 07:30 AM



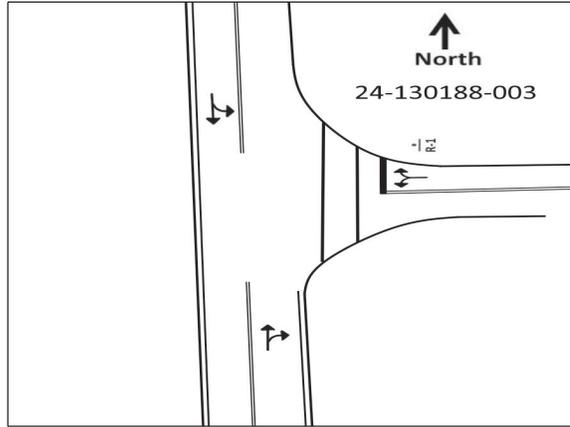
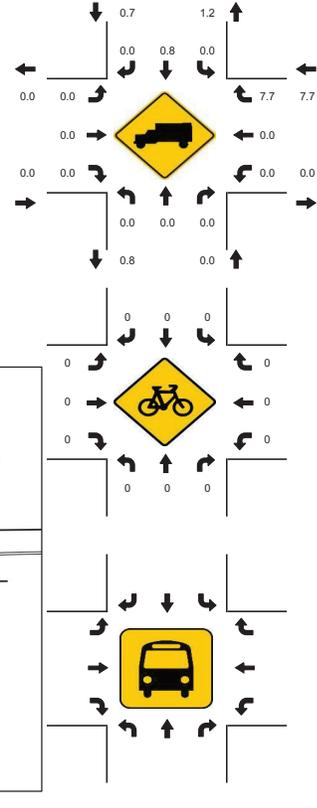
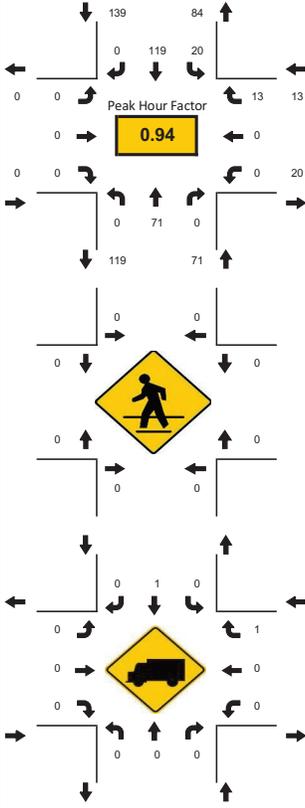
15-Min Count Period Beginning At	Juniper Rd Northbound					Juniper Rd Southbound					Juniper Pass Eastbound					Juniper Pass Westbound					Total	Hourly Total
	Left	Thru	Rgt	U	R*	Left	Thru	Rgt	U	R*	Left	Thru	Rgt	U	R*	Left	Thru	Rgt	U	R*		
7:00 AM	0	35	1	0		2	63	0	0		0	0	0	0		2	0	12	0		115	616
7:15 AM	0	44	0	0		5	121	0	0		0	0	0	0		5	0	29	0		204	582
7:30 AM	0	41	0	0		1	96	0	0		0	0	0	0		1	0	34	0		173	428
7:45 AM	0	36	1	0		1	70	0	0		0	0	0	0		3	0	13	0		124	292
8:00 AM	0	28	1	0		2	45	0	0		0	0	0	0		2	0	3	0		81	194
8:15 AM	0	20	1	0		1	20	0	0		0	0	0	0		1	0	7	0		50	113
8:30 AM	0	20	1	0		2	12	0	0		0	0	0	0		0	0	2	0		37	63
8:45 AM	0	10	0	0		0	15	0	0		0	0	0	0		0	0	1	0		26	26
<b>Peak 15-Min Flowrates</b>	<b>Northbound</b>					<b>Southbound</b>					<b>Eastbound</b>					<b>Westbound</b>					<b>Total</b>	
All Vehicles	0	176	4	0		20	484	0	0		0	0	0	0		20	0	136	0		<b>840</b>	
Heavy Trucks	0	8	0	0		0	16	0	0		0	0	0	0		0	0	0	0		<b>24</b>	
Pedestrians	4					0					0					0					<b>4</b>	
Bicycles	0	0	0	0		0	0	0	0		0	0	0	0		0	0	4	0		<b>4</b>	
Buses																						
Stopped Buses																						

# Attachment D

LOCATION: Juniper Rd & Juniper Pass  
 CITY/STATE: Ocala, FL

PROJECT ID: 24-130188-003  
 DATE: Thu, May 23, 2024

Peak-Hour: 05:00 PM - 06:00 PM  
 Peak 15-Minute: 05:15 PM - 05:30 PM



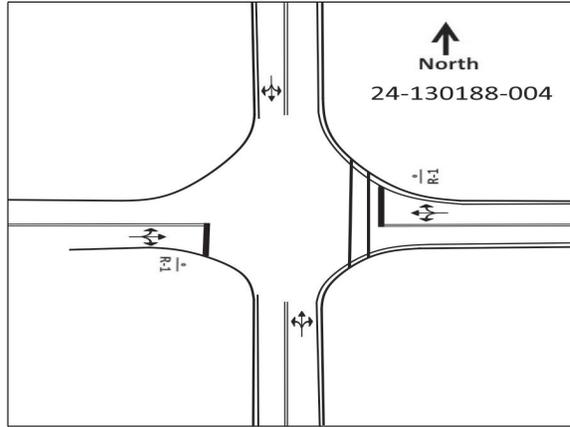
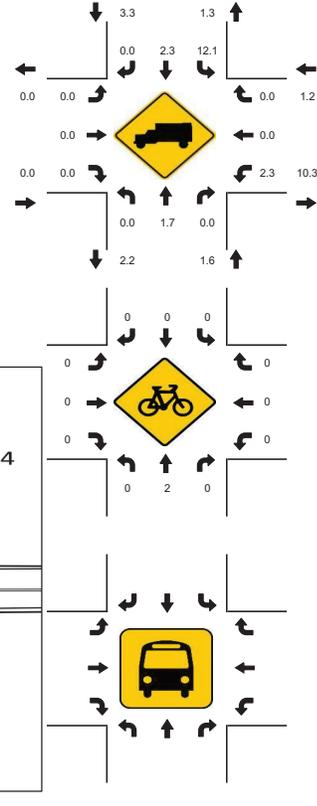
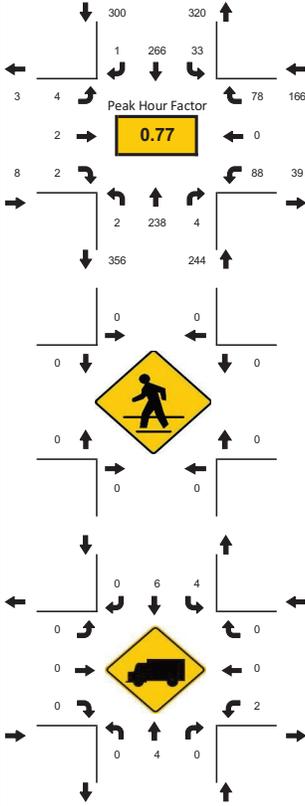
15-Min Count Period Beginning At	Juniper Rd Northbound					Juniper Rd Southbound					Juniper Pass Eastbound					Juniper Pass Westbound					Total	Hourly Total
	Left	Thru	Rgt	U	R*	Left	Thru	Rgt	U	R*	Left	Thru	Rgt	U	R*	Left	Thru	Rgt	U	R*		
4:00 PM	0	15	0	0		6	28	0	0		0	0	0	0		0	0	1	0		50	204
4:15 PM	0	16	0	0		6	23	0	0		0	0	0	0		2	0	2	0		49	206
4:30 PM	0	17	1	0		6	23	0	1		0	0	0	0		0	0	3	0		51	216
4:45 PM	0	22	0	0		2	24	0	0		0	0	0	0		0	0	6	0		54	221
5:00 PM	0	16	0	0		5	28	0	0		0	0	0	0		0	0	3	0		52	223
5:15 PM	0	19	0	0		3	33	0	0		0	0	0	0		0	0	4	0		59	171
5:30 PM	0	20	0	0		7	27	0	0		0	0	0	0		0	0	2	0		56	112
5:45 PM	0	16	0	0		5	31	0	0		0	0	0	0		0	0	4	0		56	56
<b>Peak 15-Min Flowrates</b>	<b>Northbound</b>					<b>Southbound</b>					<b>Eastbound</b>					<b>Westbound</b>					<b>Total</b>	
All Vehicles	0	80	0	0		28	132	0	0		0	0	0	0		0	0	16	0		256	
Heavy Trucks	0	0	0	0		0	4	0	0		0	0	0	0		0	0	4	0		8	
Pedestrians	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0		0	
Bicycles	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0		0	
Buses	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0		0	
Stopped Buses	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0		0	

# Attachment D

LOCATION: Juniper Rd & Chestnut Rd  
CITY/STATE: Ocala, FL

PROJECT ID: 24-130188-004  
DATE: Thu, May 23, 2024

Peak-Hour: 07:00 AM - 08:00 AM  
Peak 15-Minute: 07:15 AM - 07:30 AM

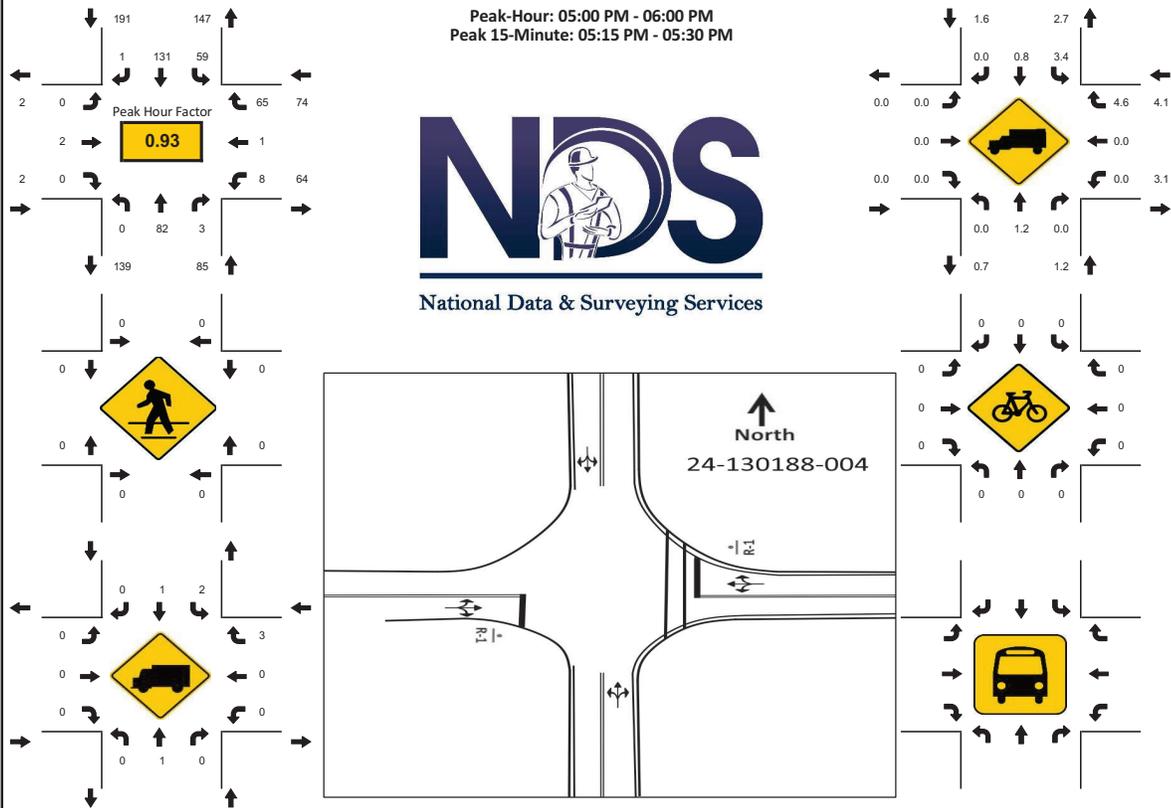


15-Min Count Period Beginning At	Juniper Rd Northbound					Juniper Rd Southbound					Chestnut Rd Eastbound					Chestnut Rd Westbound					Total	Hourly Total
	Left	Thru	Rgt	U	R*	Left	Thru	Rgt	U	R*	Left	Thru	Rgt	U	R*	Left	Thru	Rgt	U	R*		
7:00 AM	0	47	0	0	0	5	48	0	0	0	0	1	1	0	0	13	0	23	0	0	138	718
7:15 AM	1	69	1	0	0	11	99	1	0	0	1	0	0	0	0	27	0	22	0	0	232	679
7:30 AM	1	76	0	0	0	4	72	0	0	0	2	1	0	0	0	27	0	18	0	0	201	526
7:45 AM	0	46	3	0	0	13	47	0	0	0	1	0	1	0	0	21	0	15	0	0	147	387
8:00 AM	0	26	4	0	0	6	39	0	0	0	0	0	0	0	0	8	1	15	0	0	99	281
8:15 AM	0	25	2	0	0	13	17	1	0	0	2	0	0	0	0	4	0	15	0	0	79	182
8:30 AM	0	23	0	0	0	4	15	0	0	0	1	0	0	0	0	1	0	18	0	0	62	103
8:45 AM	0	9	1	0	0	9	12	0	0	0	0	2	0	0	0	1	0	7	0	0	41	41
<b>Peak 15-Min Flowrates</b>	<b>Northbound</b>					<b>Southbound</b>					<b>Eastbound</b>					<b>Westbound</b>					<b>Total</b>	
All Vehicles	4	304	12	0	0	52	396	4	0	0	8	4	4	0	0	108	0	92	0	0	<b>988</b>	
Heavy Trucks	0	8	0	0	0	8	12	0	0	0	0	0	0	0	0	4	0	0	0	0	<b>32</b>	
Pedestrians	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	<b>0</b>	
Bicycles	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	<b>4</b>	
Buses																						
Stopped Buses																						

# Attachment D

LOCATION: Juniper Rd & Chestnut Rd  
 CITY/STATE: Ocala, FL

PROJECT ID: 24-130188-004  
 DATE: Thu, May 23, 2024



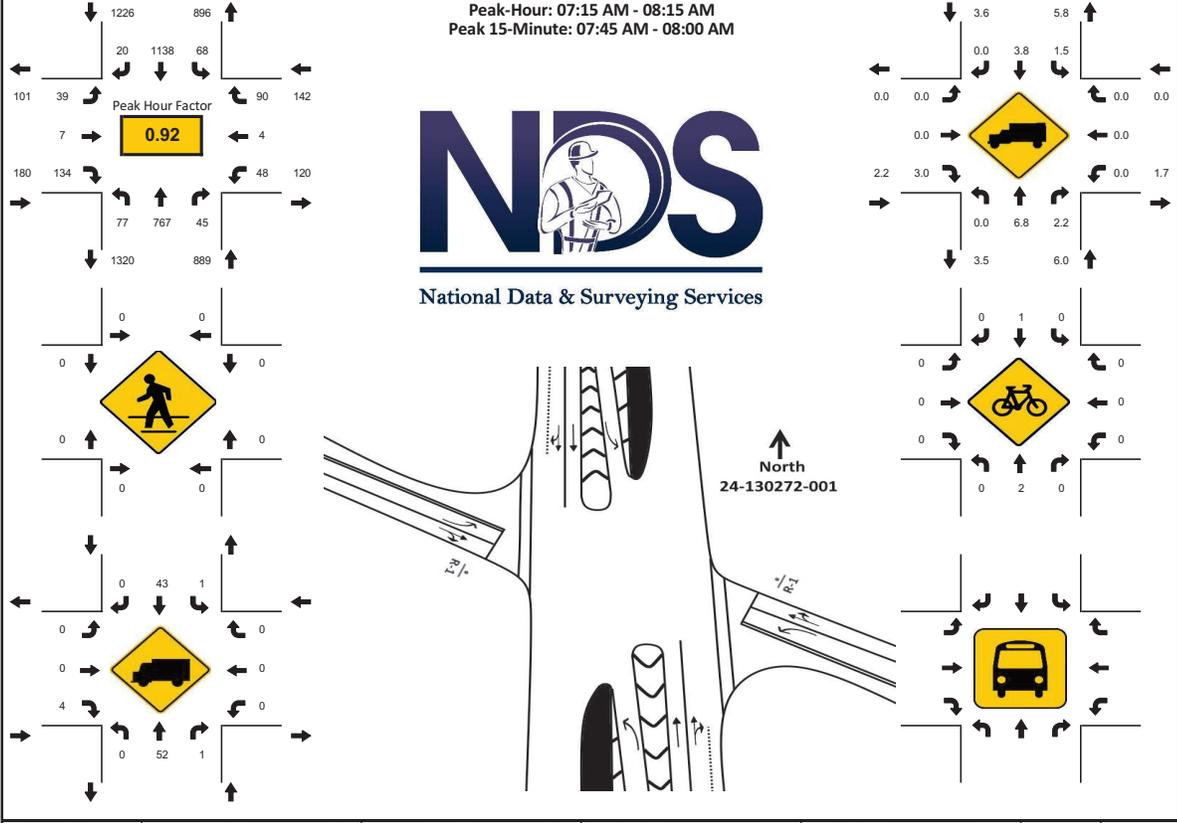
15-Min Count Period Beginning At	Juniper Rd Northbound					Juniper Rd Southbound					Chestnut Rd Eastbound					Chestnut Rd Westbound					Total	Hourly Total
	Left	Thru	Rgt	U	R*	Left	Thru	Rgt	U	R*	Left	Thru	Rgt	U	R*	Left	Thru	Rgt	U	R*		
4:00 PM	0	14	2	0		15	31	0	0		0	0	0	0		3	2	14	0		81	326
4:15 PM	1	17	0	0		12	30	2	0		1	2	0	0		1	1	11	0		78	319
4:30 PM	1	19	1	0		9	28	0	0		0	0	0	0		1	0	20	0		79	336
4:45 PM	0	26	1	0		18	22	0	0		1	0	0	0		3	0	17	0		88	346
5:00 PM	0	19	1	0		6	31	1	0		0	0	0	0		2	0	14	0		74	352
5:15 PM	0	22	1	0		17	34	0	0		0	1	0	0		2	0	18	0		95	278
5:30 PM	0	22	0	0		15	33	0	0		0	0	0	0		2	0	17	0		89	183
5:45 PM	0	19	1	0		21	33	0	0		0	1	0	0		2	1	16	0		94	94
<b>Peak 15-Min Flowrates</b>	<b>Northbound</b>					<b>Southbound</b>					<b>Eastbound</b>					<b>Westbound</b>					<b>Total</b>	
All Vehicles	0	88	4	0		84	136	4	0		0	4	0	0		8	4	72	0		<b>404</b>	
Heavy Trucks	0	4	0	0		4	4	0	0		0	0	0	0		0	0	8	0		<b>20</b>	
Pedestrians	0							0									0				<b>0</b>	
Bicycles	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0		<b>0</b>	
Buses																					<b>0</b>	
Stopped Buses																					<b>0</b>	

# Attachment D

LOCATION: SR 35/Baseline Rd/SE 58th Ave & Juniper Rd/SE 85th Ln  
 CITY/STATE: Ocala, FL

PROJECT ID: 24-130272-001  
 DATE: Tue, Aug 13, 2024

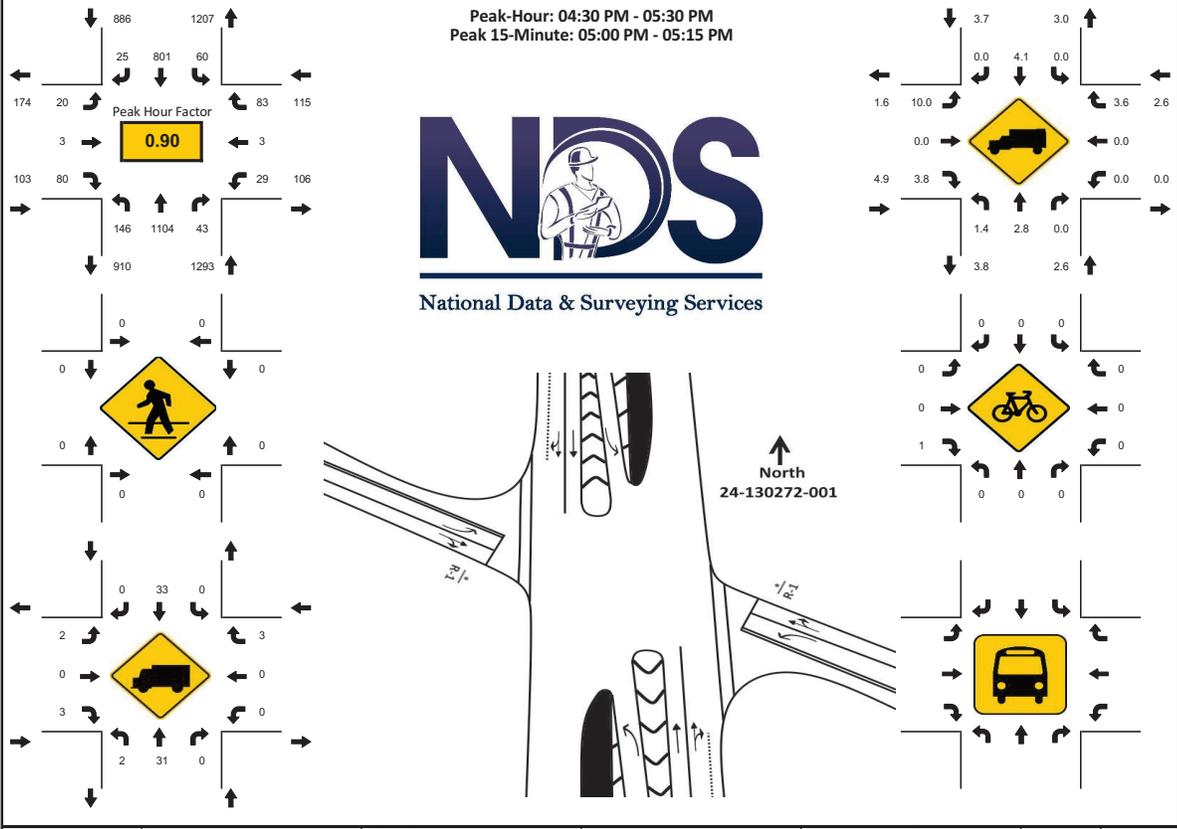
Peak-Hour: 07:15 AM - 08:15 AM  
 Peak 15-Minute: 07:45 AM - 08:00 AM



15-Min Count Period Beginning At	SR 35/Baseline Rd/SE 58th Ave Northbound					SR 35/Baseline Rd/SE 58th Ave Southbound					Juniper Rd/SE 85th Ln Eastbound					Juniper Rd/SE 85th Ln Westbound					Total	Hourly Total	
	Left	Thru	Rgt	U	R*	Left	Thru	Rgt	U	R*	Left	Thru	Rgt	U	R*	Left	Thru	Rgt	U	R*			
7:00 AM	24	144	6	0		13	237	3	0		7	3	23	0		13	0	25	0		498	2370	
7:15 AM	18	189	8	6		8	251	3	0		7	1	37	0		12	1	19	0		560	2437	
7:30 AM	15	206	8	5		19	297	5	0		14	5	42	0		9	0	27	0		652	2401	
7:45 AM	13	202	22	3		24	312	5	1		12	1	35	0		16	1	13	0		660	2192	
8:00 AM	7	170	7	10		16	278	7	0		6	0	20	0		11	2	31	0		565	1925	
8:15 AM	13	179	3	6		12	265	4	0		2	1	20	0		6	1	12	0		524	1360	
8:30 AM	11	166	7	4		8	207	3	0		2	1	12	0		13	0	9	0		443	836	
8:45 AM	16	155	1	3		6	178	1	0		4	0	11	0		9	0	9	0		393	393	
<b>Peak 15-Min Flowrates</b>																							
	Left	Thru	Rgt	U	R*	Left	Thru	Rgt	U	R*	Left	Thru	Rgt	U	R*	Left	Thru	Rgt	U	R*	Total		
All Vehicles	72	824	88	40		96	1248	28	4		56	20	168	0		64	8	124	0		2840		
Heavy Trucks	0	56	4	0		4	64	0	0		0	0	8	0		0	0	0	0		136		
Pedestrians	0							0			0					0					0		
Bicycles	0	8	0	0		0	4	0	0		0	0	0	0		0	0	0	0		12		
Buses																							
Stopped Buses																							

# Attachment D

LOCATION: SR 35/Baseline Rd/SE 58th Ave & Juniper Rd/SE 85th Ln  
 CITY/STATE: Ocala, FL  
 PROJECT ID: 24-130272-001  
 DATE: Tue, Aug 13, 2024



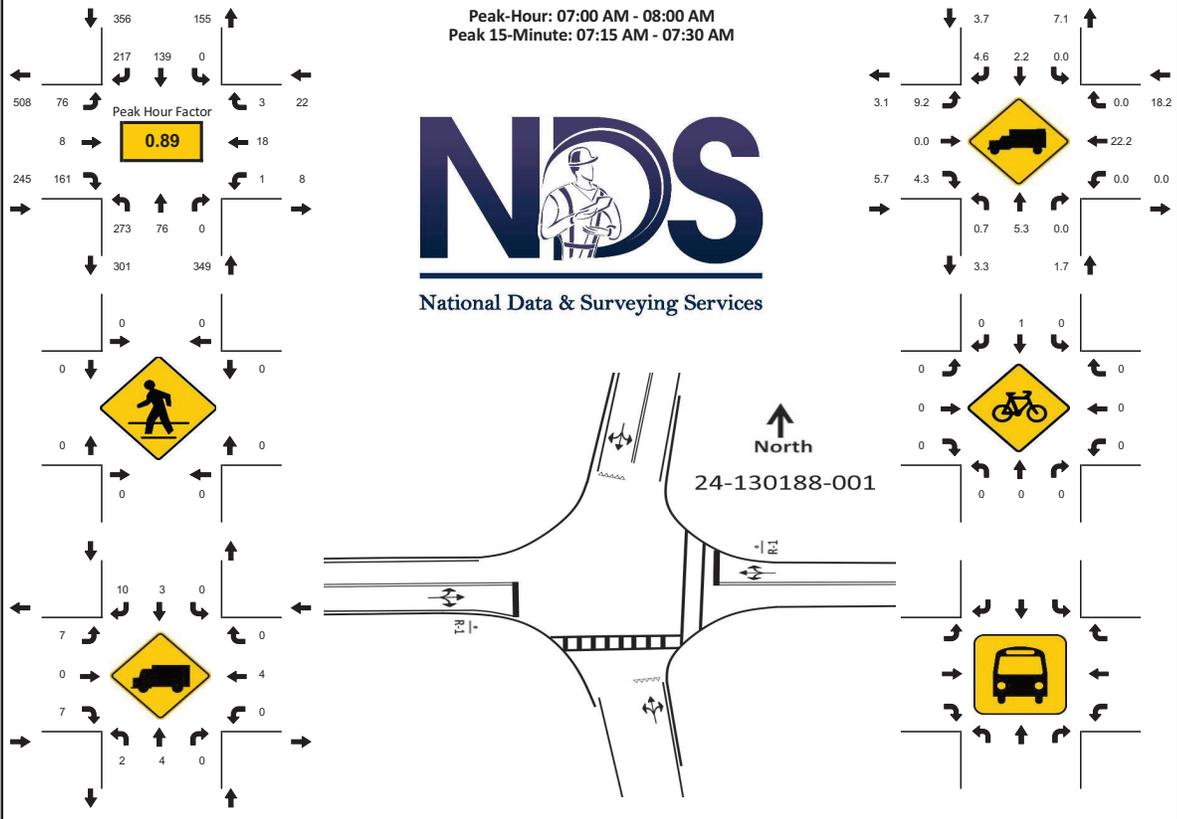
15-Min Count Period Beginning At	SR 35/Baseline Rd/SE 58th Ave Northbound					SR 35/Baseline Rd/SE 58th Ave Southbound					Juniper Rd/SE 85th Ln Eastbound					Juniper Rd/SE 85th Ln Westbound					Total	Hourly Total
	Left	Thru	Rgt	U	R*	Left	Thru	Rgt	U	R*	Left	Thru	Rgt	U	R*	Left	Thru	Rgt	U	R*		
3:00 PM	15	177	4	3		12	187	4	1		1	0	21	0		8	0	7	0		440	1942
3:15 PM	22	219	10	4		12	193	3	0		4	0	16	0		7	1	9	0		500	2019
3:30 PM	31	213	8	1		14	206	8	0		4	1	19	0		2	0	14	0		521	2030
3:45 PM	15	216	3	4		9	195	9	0		5	0	15	0		2	1	7	0		481	2082
4:00 PM	19	232	10	1		17	192	4	0		3	1	13	0		10	0	15	0		517	2160
4:15 PM	22	232	14	4		19	171	5	1		2	0	20	0		5	1	15	0		511	2311
4:30 PM	29	258	12	9		17	188	6	2		2	2	22	0		4	1	21	0		573	2397
4:45 PM	18	236	18	15		19	191	3	1		8	0	14	0		13	1	22	0		559	2373
5:00 PM	27	326	9	14		10	209	8	1		2	0	26	0		7	0	29	0		668	2298
5:15 PM	22	284	4	12		10	213	8	0		8	1	18	0		5	1	11	0		597	1630
5:30 PM	22	266	6	4		9	200	4	2		3	0	16	0		7	0	10	0		549	1033
5:45 PM	31	210	2	5		5	197	9	0		2	0	17	0		3	0	3	0		484	484
<b>Peak 15-Min Flowrates</b>	<b>Northbound</b>					<b>Southbound</b>					<b>Eastbound</b>					<b>Westbound</b>					<b>Total</b>	
All Vehicles	116	1304	72	60		76	852	32	8		32	8	104	0		52	4	116	0		<b>2836</b>	
Heavy Trucks	4	56	0	0		0	52	0	0		4	0	4	0		0	0	8	0		<b>128</b>	
Pedestrians	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0		<b>0</b>	
Bicycles	0	0	0	0		0	0	0	0		0	0	4	0		0	0	0	0		<b>4</b>	
Buses																					<b>0</b>	
Stopped Buses																					<b>0</b>	

# Attachment D

LOCATION: Juniper Rd & SE 79th St  
 CITY/STATE: Ocala, FL

PROJECT ID: 24-130188-001  
 DATE: Thu, May 23, 2024

Peak-Hour: 07:00 AM - 08:00 AM  
 Peak 15-Minute: 07:15 AM - 07:30 AM

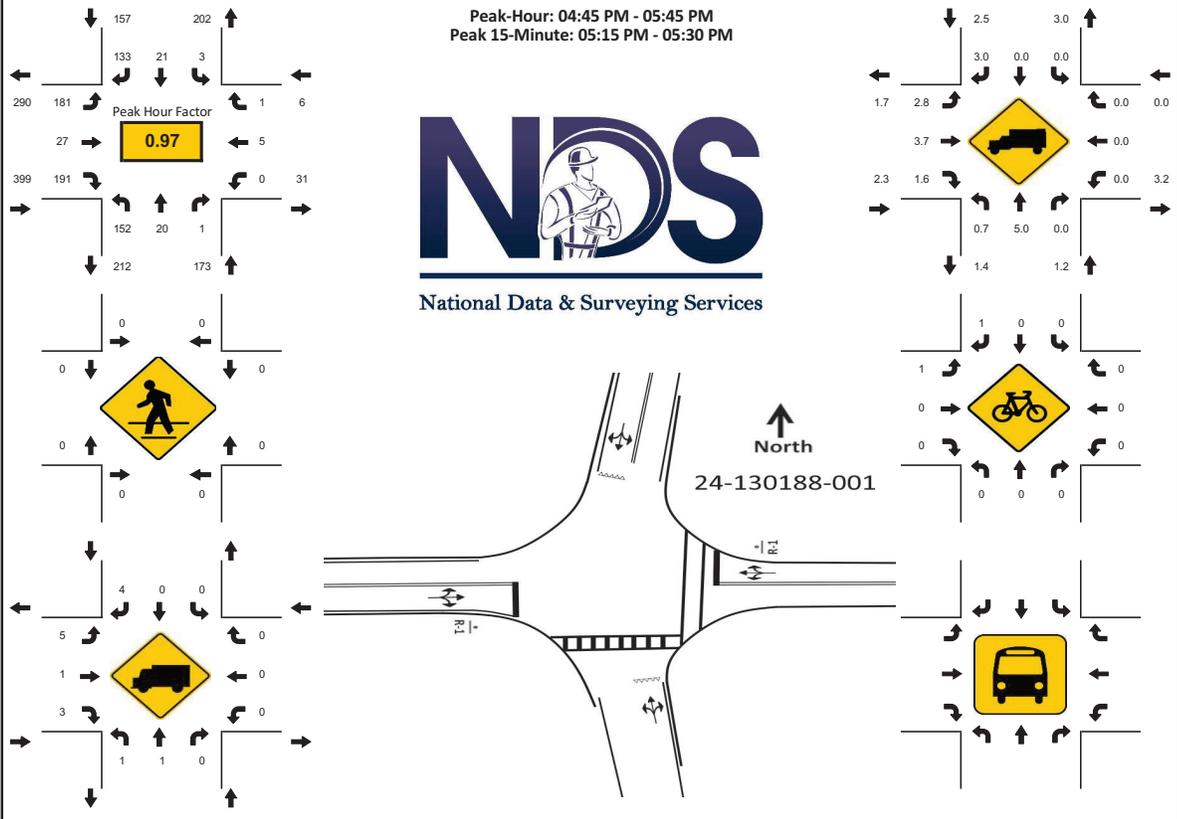


15-Min Count Period Beginning At	Juniper Rd Northbound					Juniper Rd Southbound					SE 79th St Eastbound					SE 79th St Westbound					Total	Hourly Total
	Left	Thru	Rgt	U	R*	Left	Thru	Rgt	U	R*	Left	Thru	Rgt	U	R*	Left	Thru	Rgt	U	R*		
7:00 AM	75	6	0	0		0	26	48	0		16	2	37	0		1	6	0	0		217	972
7:15 AM	66	31	0	0		0	47	63	0		12	0	51	0		0	3	0	0		273	908
7:30 AM	74	22	0	0		0	36	64	0		29	1	40	0		0	5	2	0		273	778
7:45 AM	58	17	0	0		0	30	42	0		19	5	33	0		0	4	1	0		209	619
8:00 AM	42	4	0	0		1	19	46	0		14	3	20	0		0	3	1	0		153	517
8:15 AM	38	6	0	0		1	2	40	0		22	3	28	0		0	3	0	0		143	364
8:30 AM	40	5	0	0		0	4	38	0		11	2	11	0		0	3	0	0		114	221
8:45 AM	22	4	0	0		0	5	30	0		21	4	18	0		0	3	0	0		107	107
<b>Peak 15-Min Flowrates</b>																						
	<b>Left</b>	<b>Thru</b>	<b>Rgt</b>	<b>U</b>	<b>R*</b>	<b>Left</b>	<b>Thru</b>	<b>Rgt</b>	<b>U</b>	<b>R*</b>	<b>Left</b>	<b>Thru</b>	<b>Rgt</b>	<b>U</b>	<b>R*</b>	<b>Left</b>	<b>Thru</b>	<b>Rgt</b>	<b>U</b>	<b>R*</b>	<b>Total</b>	
All Vehicles	300	124	0	0		0	188	256	0		116	20	204	0		4	24	8	0		1244	
Heavy Trucks	8	8	0	0		0	4	12	0		12	0	12	0		0	8	0	0		64	
Pedestrians	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0		0	
Bicycles	0	0	0	0		0	4	0	0		0	0	0	0		0	0	0	0		4	
Buses																						
Stopped Buses																						

# Attachment D

LOCATION: Juniper Rd & SE 79th St  
 CITY/STATE: Ocala, FL

PROJECT ID: 24-130188-001  
 DATE: Thu, May 23, 2024



15-Min Count Period Beginning At	Juniper Rd Northbound					Juniper Rd Southbound					SE 79th St Eastbound					SE 79th St Westbound					Total	Hourly Total
	Left	Thru	Rgt	U	R*	Left	Thru	Rgt	U	R*	Left	Thru	Rgt	U	R*	Left	Thru	Rgt	U	R*		
4:00 PM	18	6	0	0		0	11	32	0		51	5	43	0		0	3	1	0		170	686
4:15 PM	24	7	1	0		0	5	25	0		51	3	43	0		0	1	1	0		161	697
4:30 PM	32	6	0	0		0	5	39	0		46	5	37	0		0	1	0	0		171	725
4:45 PM	43	5	0	0		0	9	35	0		48	4	40	0		0	0	0	0		184	735
5:00 PM	35	4	1	0		1	7	45	0		43	5	39	0		0	1	0	0		181	715
5:15 PM	36	6	0	0		2	3	23	0		46	11	58	0		0	3	1	0		189	534
5:30 PM	38	5	0	0		0	2	30	0		44	7	54	0		0	1	0	0		181	345
5:45 PM	32	6	0	0		1	2	19	0		37	7	55	0		0	3	2	0		164	164
<b>Peak 15-Min Flowrates</b>	<b>Northbound</b>					<b>Southbound</b>					<b>Eastbound</b>					<b>Westbound</b>					<b>Total</b>	
All Vehicles	172	24	4	0		8	36	180	0		192	44	232	0		0	12	4	0		908	
Heavy Trucks	4	4	0	0		0	0	8	0		8	4	8	0		0	0	0	0		36	
Pedestrians	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0		0	
Bicycles	0	0	0	0		0	0	4	0		4	0	0	0		0	0	0	0		8	
Buses																						
Stopped Buses																						

# Attachment D

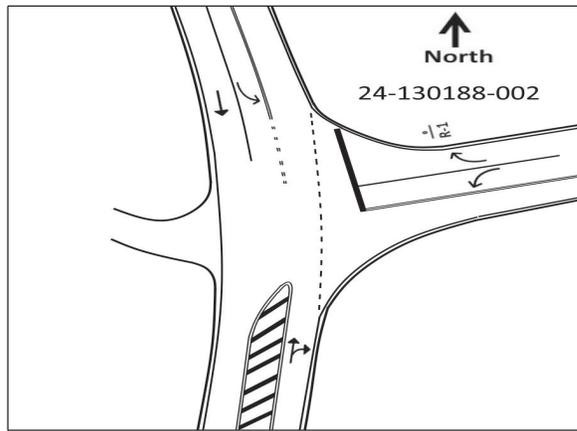
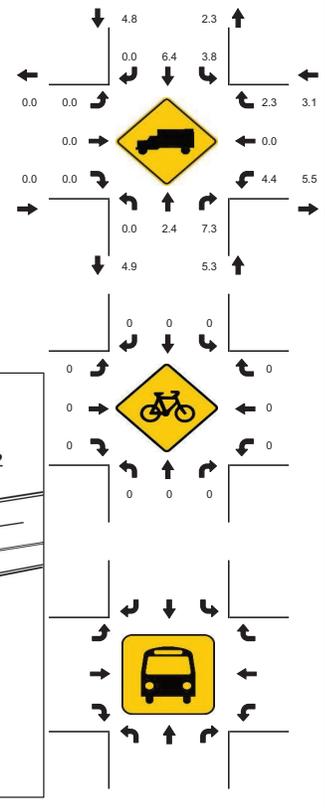
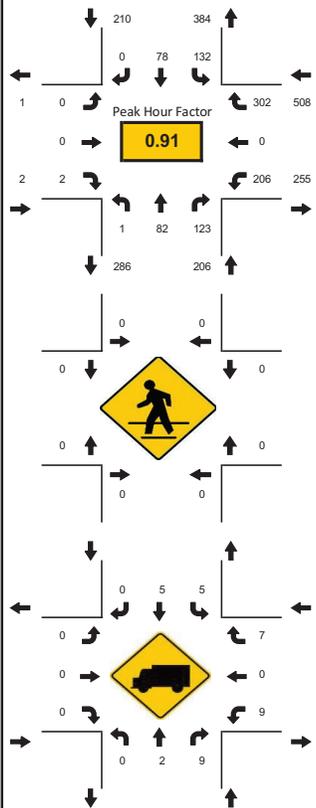
LOCATION: SE 80th St/SE 41st Ct/Florida Nat'l Scenic Trl & SE 79th St  
 CITY/STATE: Ocala, FL

PROJECT ID: 24-130188-002  
 DATE: Thu, May 23, 2024

Peak-Hour: 07:00 AM - 08:00 AM  
 Peak 15-Minute: 07:30 AM - 07:45 AM



National Data & Surveying Services

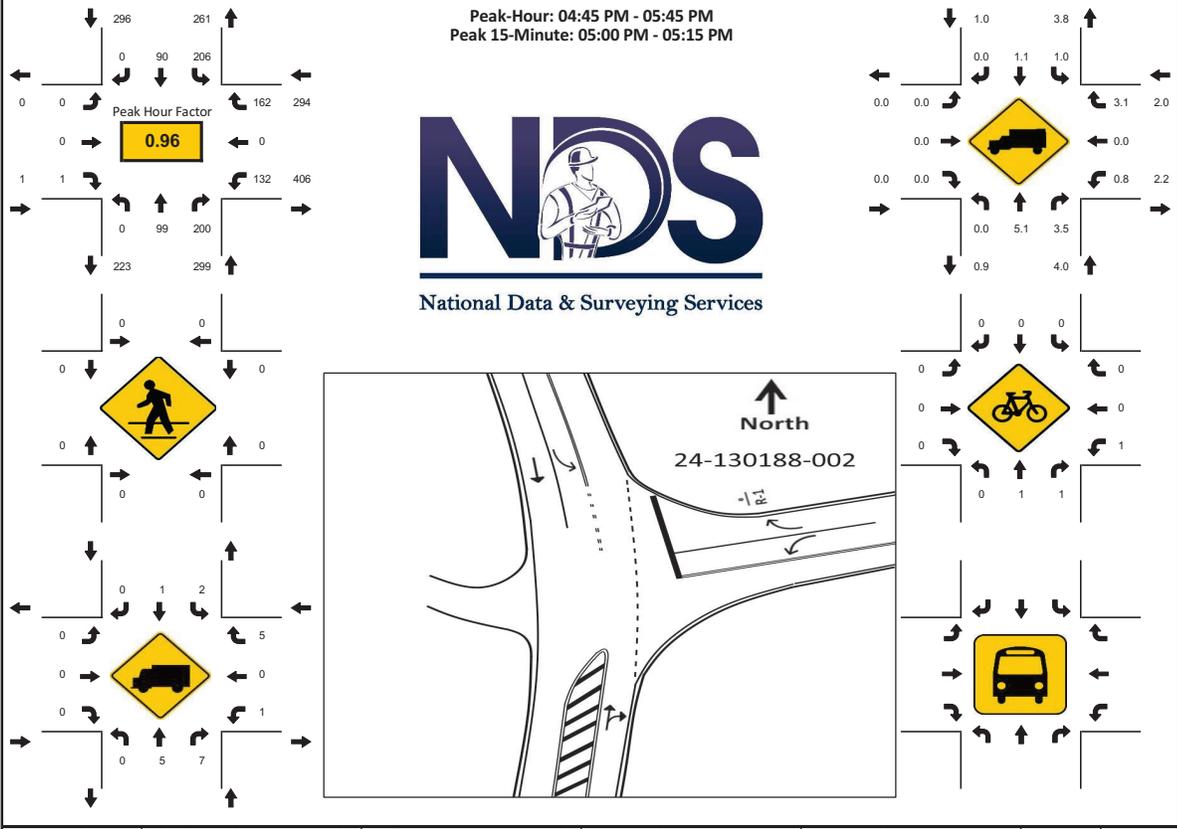


15-Min Count Period Beginning At	SE 41st Ct/Florida Nat'l Scenic Trl Northbound					SE 41st Ct/Florida Nat'l Scenic Trl Southbound					SE 79th St Eastbound					SE 79th St Westbound					Total	Hourly Total
	Left	Thru	Rgt	U	R*	Left	Thru	Rgt	U	R*	Left	Thru	Rgt	U	R*	Left	Thru	Rgt	U	R*		
7:00 AM	0	12	26	0		29	19	0	0		0	0	1	0		60	0	67	0		214	926
7:15 AM	0	24	41	0		33	19	0	0		0	0	0	0		53	0	75	0		245	882
7:30 AM	1	24	32	0		39	20	0	0		0	0	0	0		50	0	88	0		254	832
7:45 AM	0	22	24	0		31	20	0	0		0	0	1	0		43	0	72	0		213	738
8:00 AM	0	31	22	0		19	18	0	0		0	0	0	0		36	0	44	0		170	656
8:15 AM	0	21	24	0		31	25	0	0		0	0	0	0		47	0	47	0		195	486
8:30 AM	0	23	18	0		14	22	0	0		0	0	0	0		36	0	47	0		160	291
8:45 AM	0	23	12	0		23	21	0	0		0	0	0	0		26	0	26	0		131	131
<b>Peak 15-Min Flowrates</b>	<b>Northbound</b>					<b>Southbound</b>					<b>Eastbound</b>					<b>Westbound</b>					<b>Total</b>	
All Vehicles	4	96	164	0		156	80	0	0		0	0	4	0		240	0	352	0		<b>1096</b>	
Heavy Trucks	0	8	12	0		8	12	0	0		0	0	0	0		12	0	12	0		<b>64</b>	
Pedestrians	0																				<b>0</b>	
Bicycles	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0		<b>0</b>	
Buses																					<b>0</b>	
Stopped Buses																					<b>0</b>	

# Attachment D

LOCATION: SE 80th St/SE 41st Ct/Florida Nat'l Scenic Trl & SE 79th St  
 CITY/STATE: Ocala, FL

PROJECT ID: 24-130188-002  
 DATE: Thu, May 23, 2024

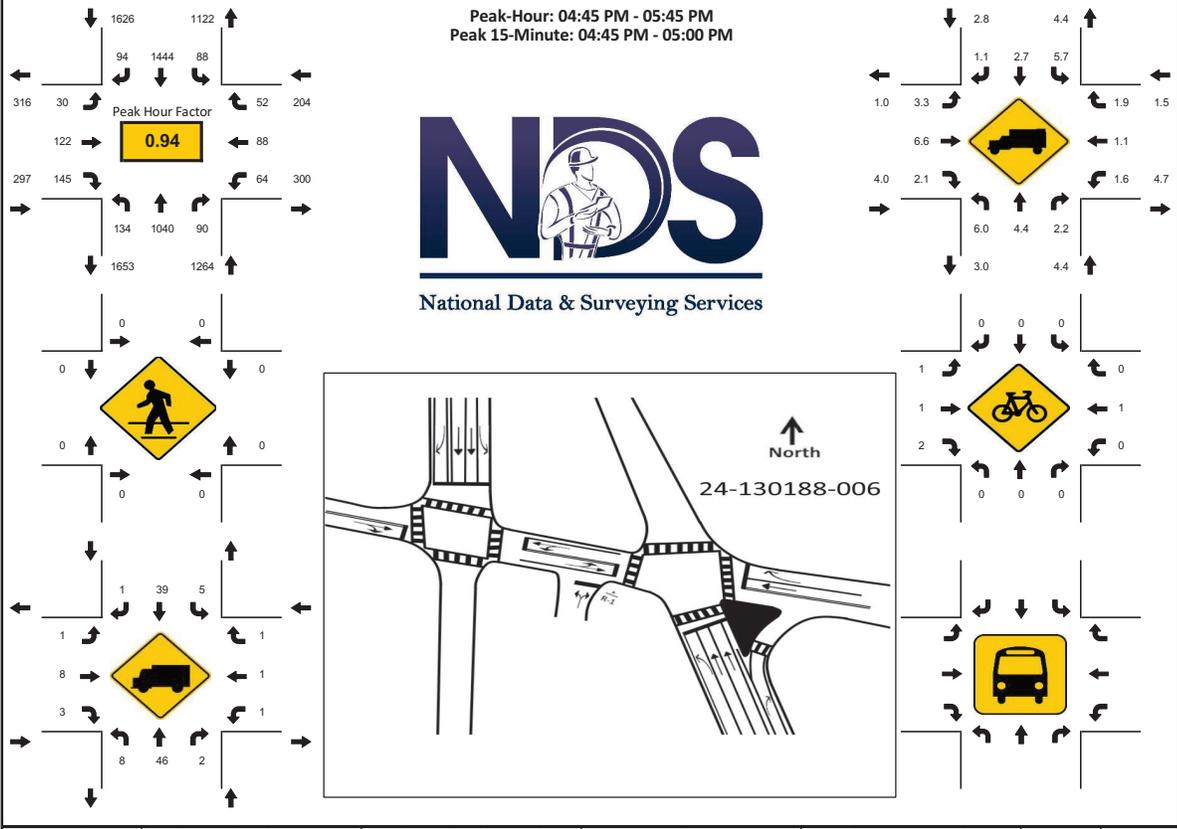


15-Min Count Period Beginning At	SE 41st Ct/Florida Nat'l Scenic Trl Northbound					SE 41st Ct/Florida Nat'l Scenic Trl Southbound					SE 79th St Eastbound					SE 79th St Westbound					Total	Hourly Total
	Left	Thru	Rgt	U	R*	Left	Thru	Rgt	U	R*	Left	Thru	Rgt	U	R*	Left	Thru	Rgt	U	R*		
4:00 PM	0	31	65	0		42	17	0	0		0	0	0	0		22	0	32	0		209	835
4:15 PM	0	33	57	0		38	23	0	0		0	0	0	0		22	1	23	0		197	857
4:30 PM	0	16	47	0		49	19	0	0		0	0	0	0		39	0	37	0		207	881
4:45 PM	0	31	39	0		50	24	0	0		0	0	0	0		37	0	41	0		222	890
5:00 PM	0	27	47	0		49	25	0	0		0	0	0	0		32	0	51	0		231	866
5:15 PM	0	18	58	0		64	18	0	0		0	0	0	0		29	0	34	0		221	635
5:30 PM	0	23	56	0		43	23	0	0		0	0	1	0		34	0	36	0		216	414
5:45 PM	0	30	41	0		57	16	0	0		0	0	0	0		20	0	34	0		198	198
<b>Peak 15-Min Flowrates</b>	<b>Northbound</b>					<b>Southbound</b>					<b>Eastbound</b>					<b>Westbound</b>					<b>Total</b>	
All Vehicles	0	124	232	0		256	100	0	0		0	0	4	0		148	0	204	0		1068	
Heavy Trucks	0	12	12	0		4	4	0	0		0	0	0	0		4	0	8	0		44	
Pedestrians	0																				0	
Bicycles	0	4	4	0		0	0	0	0		0	0	0	0		4	0	0	0		12	
Buses																						
Stopped Buses																						

# Attachment D

LOCATION: US 441/US 301/US 27/SR 500/S Pine Ave & CR 328/SE 80th St  
 CITY/STATE: Ocala, FL

PROJECT ID: 24-130188-006  
 DATE: Thu, May 23, 2024



15-Min Count Period Beginning At	441/US 301/US 27/SR 500/S Pine Northbound					441/US 301/US 27/SR 500/S Pine Southbound					CR 328/SE 80th St Eastbound					CR 328/SE 80th St Westbound					Total	Hourly Total	
	Left	Thru	Rgt	U	R*	Left	Thru	Rgt	U	R*	Left	Thru	Rgt	U	R*	Left	Thru	Rgt	U	R*			
4:00 PM	20	264	34	2		19	285	14	0		10	41	24	1		14	17	9	0		754	3168	
4:15 PM	38	256	27	2		27	299	20	0		9	32	26	0		13	26	10	0		785	3210	
4:30 PM	23	203	13	1		13	331	13	1		4	36	28	0		13	33	15	0		727	3270	
4:45 PM	38	322	26	0		18	356	18	0		7	28	34	0		13	22	20	0		902	3391	
5:00 PM	32	229	25	2		16	329	30	0		9	33	35	0		11	34	11	0		796	3217	
5:15 PM	29	225	20	0		31	392	26	1		9	20	38	0		25	19	10	0		845	2421	
5:30 PM	25	264	19	8		22	367	20	0		5	41	38	0		15	13	11	0		848	1576	
5:45 PM	31	204	26	8		14	304	24	0		10	28	28	0		17	23	11	0		728	728	
<b>Peak 15-Min Flowrates</b>	<b>Northbound</b>					<b>Southbound</b>					<b>Eastbound</b>					<b>Westbound</b>					<b>Total</b>		
	Left	Thru	Rgt	U	R*	Left	Thru	Rgt	U	R*	Left	Thru	Rgt	U	R*	Left	Thru	Rgt	U	R*			
All Vehicles	152	1288	104	32		124	1568	120	4		36	164	152	0		100	136	80	0		4060		
Heavy Trucks	4	76	4	#		8	48	4	4		4	12	8	0		4	4	4	0		180		
Pedestrians	0										0						0					0	
Bicycles	0	0	0	0		0	0	0	0		4	4	4	0		0	4	0	0		16		
Buses																							
Stopped Buses																							

**APPENDIX C:  
Intersection Volume Development  
Worksheets**

# Attachment D

## TRAFFIC VOLUMES AT STUDY INTERSECTIONS

**INTERSECTION:** Juniper Road at Juniper Pass / Project Driveway  
**COUNT DATE:** May 23, 2024  
**AM PEAK HOUR FACTOR:** 0.75  
**PM PEAK HOUR FACTOR:** 0.94

"AM EXISTING TRAFFIC"		EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR		
AM Raw Turning Movements			0	0	0		11	0	88		0	156	2		9	350	0		
Peak Season Conversion Factor		1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04		
AM EXISTING CONDITIONS			0	0	0		11	0	92		0	162	2		9	364	0		
"PM EXISTING TRAFFIC"		EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR		
PM Raw Turning Movements			0	0	0		0	0	13		0	71	0		20	119	0		
Peak Season Conversion Factor		1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04		
PM EXISTING CONDITIONS			0	0	0		0	0	14		0	74	0		21	124	0		
"AM BACKGROUND TRAFFIC"		EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR		
Years To Buildout		3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3		
Yearly Growth Rate		1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%		
AM BACKGROUND TRAFFIC GROWTH			0	0	0		0	0	3		0	5	0		0	11	0		
AM NON-PROJECT TRAFFIC			0	0	0		11	0	95		0	167	2		9	375	0		
"PM BACKGROUND TRAFFIC"		EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR		
Years To Buildout		3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3		
Yearly Growth Rate		1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%		
PM BACKGROUND TRAFFIC GROWTH			0	0	0		0	0	0		0	2	0		1	4	0		
PM NON-PROJECT TRAFFIC			0	0	0		0	0	14		0	76	0		22	128	0		
"PROJECT DISTRIBUTION"		LAND USE	TYPE	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Net New Distribution	Entering												34.0%						66.0%
	Exiting		66.0%		34.0%														
"AM PROJECT TRAFFIC"		LAND USE	TYPE	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
AM TRAFFIC DIVERSIONS																			
Project	Net New		55		28								10						19
AM TOTAL PROJECT TRAFFIC					55	0	28		0	0	0		10	0	0		0	0	19
AM TOTAL TRAFFIC			55	0	28		11	0	95		10	167	2		9	375	19		
"PM PROJECT TRAFFIC"		LAND USE	TYPE	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
PM TRAFFIC DIVERSIONS																			
Project	Net New		37		19								33						63
PM TOTAL PROJECT TRAFFIC					37	0	19		0	0	0		33	0	0		0	0	63
PM TOTAL TRAFFIC			37	0	19		0	0	14		33	76	0		22	128	63		

## TRAFFIC VOLUMES AT STUDY INTERSECTIONS

INTERSECTION: Juniper Road at Chestnut Road  
 COUNT DATE: May 23, 2024  
 AM PEAK HOUR FACTOR: 0.77  
 PM PEAK HOUR FACTOR: 0.93

"AM EXISTING TRAFFIC"		EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR			
AM Raw Turning Movements			4	2	2		88	0	78		2	238	4		33	266	1			
Peak Season Conversion Factor		1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04			
AM EXISTING CONDITIONS			4	2	2		92	0	81		2	248	4		34	277	1			
"PM EXISTING TRAFFIC"		EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR			
PM Raw Turning Movements			0	2	0		8	1	65		0	82	3		59	131	1			
Peak Season Conversion Factor		1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04			
PM EXISTING CONDITIONS			0	2	0		8	1	68		0	85	3		61	136	1			
"AM BACKGROUND TRAFFIC"		EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR			
Years To Buildout		3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3			
Yearly Growth Rate		1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%			
AM BACKGROUND TRAFFIC GROWTH			0	0	0		3	0	2		0	8	0		1	8	0			
AM NON-PROJECT TRAFFIC			4	2	2		95	0	83		2	256	4		35	285	1			
"PM BACKGROUND TRAFFIC"		EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR			
Years To Buildout		3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3			
Yearly Growth Rate		1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%			
PM BACKGROUND TRAFFIC GROWTH			0	0	0		0	0	2		0	3	0		2	4	0			
PM NON-PROJECT TRAFFIC			0	2	0		8	1	70		0	88	3		63	140	1			
"PROJECT DISTRIBUTION"		LAND USE	TYPE		EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Net New Distribution	Entering									15.0%									51.0%	
	Exiting														51.0%	15.0%				
"AM PROJECT TRAFFIC"		LAND USE	TYPE		EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
AM TRAFFIC DIVERSIONS																				
Project	Net New								4						42	12			15	
AM TOTAL PROJECT TRAFFIC			0	0	0		4	0	0		0	42	12		0	15	0			
AM TOTAL TRAFFIC			4	2	2		99	0	83		2	298	16		35	300	1			
"PM PROJECT TRAFFIC"		LAND USE	TYPE		EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
PM TRAFFIC DIVERSIONS																				
Project	Net New								14						29	8			49	
PM TOTAL PROJECT TRAFFIC			0	0	0		14	0	0		0	29	8		0	49	0			
PM TOTAL TRAFFIC			0	2	0		22	1	70		0	117	11		63	189	1			

## TRAFFIC VOLUMES AT STUDY INTERSECTIONS

INTERSECTION: Juniper Road at SR 35  
 COUNT DATE: May 23, 2024  
 AM PEAK HOUR FACTOR: 0.92  
 PM PEAK HOUR FACTOR: 0.9

"AM EXISTING TRAFFIC"		EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR			
AM Raw Turning Movements			39	7	134		48	4	90	24	53	767	45	1	67	1,138	20			
Peak Season Conversion Factor		1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04			
AM EXISTING CONDITIONS			41	7	139		50	4	94	25	55	798	47	1	70	1,184	21			
"PM EXISTING TRAFFIC"		EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR			
PM Raw Turning Movements			20	3	80		29	3	83	50	96	1,104	43	4	56	801	25			
Peak Season Conversion Factor		1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04			
PM EXISTING CONDITIONS			21	3	83		30	3	86	52	100	1,148	45	4	58	833	26			
"AM BACKGROUND TRAFFIC"		EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR			
Years To Buildout		3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3			
Yearly Growth Rate		1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%			
AM BACKGROUND TRAFFIC GROWTH			1	0	4		2	0	3	1	2	24	1	0	2	36	1			
AM NON-PROJECT TRAFFIC			42	7	143		52	4	97	26	57	822	48	1	72	1,220	22			
"PM BACKGROUND TRAFFIC"		EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR			
Years To Buildout		3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3			
Yearly Growth Rate		1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%			
PM BACKGROUND TRAFFIC GROWTH			1	0	3		1	0	3	2	3	35	1	0	2	25	1			
PM NON-PROJECT TRAFFIC			22	3	86		31	3	89	54	103	1,183	46	4	60	858	27			
"PROJECT DISTRIBUTION"		LAND USE	TYPE		EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Net New Distribution	Entering										2.0%			32.0%						
	Exiting			2.0%	32.0%															
"AM PROJECT TRAFFIC"		LAND USE	TYPE		EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
AM TRAFFIC DIVERSIONS																				
Project	Net New			2	27				1				9							
AM TOTAL PROJECT TRAFFIC				0	2	27			0	1	0	0	9	0	0	0	0	0	0	0
AM TOTAL TRAFFIC				42	9	170			52	5	97	26	66	822	48	1	72	1,220	22	
"PM PROJECT TRAFFIC"		LAND USE	TYPE		EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
PM TRAFFIC DIVERSIONS																				
Project	Net New			1	18				2				31							
PM TOTAL PROJECT TRAFFIC				0	1	18			0	2	0	0	31	0	0	0	0	0	0	0
PM TOTAL TRAFFIC				22	4	104			31	5	89	54	134	1,183	46	4	60	858	27	

## TRAFFIC VOLUMES AT STUDY INTERSECTIONS

INTERSECTION: Juniper Road at SE 79th Street  
 COUNT DATE: May 23, 2024  
 AM PEAK HOUR FACTOR: 0.89  
 PM PEAK HOUR FACTOR: 0.97

"AM EXISTING TRAFFIC"		EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR			
AM Raw Turning Movements			76	8	161		1	18	3		273	76	0		0	139	217			
Peak Season Conversion Factor		1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04			
AM EXISTING CONDITIONS			79	8	167		1	19	3		284	79	0		0	145	226			
"PM EXISTING TRAFFIC"		EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR			
PM Raw Turning Movements			181	27	191		0	5	1		152	20	1		3	21	133			
Peak Season Conversion Factor		1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04			
PM EXISTING CONDITIONS			188	28	199		0	5	1		158	21	1		3	22	138			
"AM BACKGROUND TRAFFIC"		EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR			
Years To Buildout		3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3			
Yearly Growth Rate		1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%			
AM BACKGROUND TRAFFIC GROWTH			2	0	5		0	1	0		9	2	0		0	4	7			
AM NON-PROJECT TRAFFIC			81	8	172		1	20	3		293	81	0		0	149	233			
"PM BACKGROUND TRAFFIC"		EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR			
Years To Buildout		3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3			
Yearly Growth Rate		1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%			
PM BACKGROUND TRAFFIC GROWTH			6	1	6		0	0	0		5	1	0		0	1	4			
PM NON-PROJECT TRAFFIC			194	29	205		0	5	1		163	22	1		3	23	142			
"PROJECT DISTRIBUTION"		LAND USE	TYPE		EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Net New Distribution	Entering							50.0%												
	Exiting													50.0%						
"AM PROJECT TRAFFIC"		LAND USE	TYPE		EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
AM TRAFFIC DIVERSIONS																				
Project	Net New				15								42							
AM TOTAL PROJECT TRAFFIC			0	0	15		0	0	0		42	0	0		0	0	0			
AM TOTAL TRAFFIC			81	8	187		1	20	3		335	81	0		0	149	233			
"PM PROJECT TRAFFIC"		LAND USE	TYPE		EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
PM TRAFFIC DIVERSIONS																				
Project	Net New				48								28							
PM TOTAL PROJECT TRAFFIC			0	0	48		0	0	0		28	0	0		0	0	0			
PM TOTAL TRAFFIC			194	29	253		0	5	1		191	22	1		3	23	142			

## TRAFFIC VOLUMES AT STUDY INTERSECTIONS

INTERSECTION: SE 80th Street/SE 41st Court at SE 79th Street  
 COUNT DATE: May 23, 2024  
 AM PEAK HOUR FACTOR: 0.91  
 PM PEAK HOUR FACTOR: 0.96

"AM EXISTING TRAFFIC"		EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR		
AM Raw Turning Movements			0	0	2		206	0	302		1	82	123		132	78	0		
Peak Season Conversion Factor		1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04		
AM EXISTING CONDITIONS			0	0	2		214	0	314		1	85	128		137	81	0		
"PM EXISTING TRAFFIC"		EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR		
PM Raw Turning Movements			0	0	1		132	0	162		0	99	200		206	90	0		
Peak Season Conversion Factor		1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04		
PM EXISTING CONDITIONS			0	0	1		137	0	168		0	103	208		214	94	0		
"AM BACKGROUND TRAFFIC"		EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR		
Years To Buildout		3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3		
Yearly Growth Rate		1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%		
AM BACKGROUND TRAFFIC GROWTH			0	0	0		6	0	10		0	3	4		4	2	0		
AM NON-PROJECT TRAFFIC			0	0	2		220	0	324		1	88	132		141	83	0		
"PM BACKGROUND TRAFFIC"		EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR		
Years To Buildout		3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3		
Yearly Growth Rate		1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%		
PM BACKGROUND TRAFFIC GROWTH			0	0	0		4	0	5		0	3	6		6	3	0		
PM NON-PROJECT TRAFFIC			0	0	1		141	0	173		0	106	214		220	97	0		
"PROJECT DISTRIBUTION"		LAND USE	TYPE	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Net New Distribution	Entering														34.0%		16.0%		
	Exiting							34.0%		16.0%									
"AM PROJECT TRAFFIC"		LAND USE	TYPE	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
AM TRAFFIC DIVERSIONS																			
Project	Net New							28		13				10		5			
AM TOTAL PROJECT TRAFFIC					0	0	0	28	0	13		0	0	10		5	0	0	
AM TOTAL TRAFFIC			0	0	2		248	0	337		1	88	142		146	83	0		
"PM PROJECT TRAFFIC"		LAND USE	TYPE	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
PM TRAFFIC DIVERSIONS																			
Project	Net New							19		9				33		15			
PM TOTAL PROJECT TRAFFIC					0	0	0	19	0	9		0	0	33		15	0	0	
PM TOTAL TRAFFIC			0	0	1		160	0	182		0	106	247		235	97	0		

## TRAFFIC VOLUMES AT STUDY INTERSECTIONS

INTERSECTION: US 441 at SE 80th Street (W)  
 COUNT DATE: May 24, 2024  
 PM PEAK HOUR FACTOR: 0.94

"PM EXISTING TRAFFIC"		EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
PM Raw Turning Movements			0	124	145		75	90	0		0	0	0		89	1,444	94
Peak Season Conversion Factor		1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
PM EXISTING CONDITIONS			0	129	151		78	94	0		0	0	0		93	1,502	98
"PM BACKGROUND TRAFFIC"		EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Years To Buildout		3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Yearly Growth Rate		1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%
PM BACKGROUND TRAFFIC GROWTH			0	4	5		2	3	0		0	0	0		3	46	3
PM NON-PROJECT TRAFFIC			0	133	156		80	97	0		0	0	0		96	1,548	101
"PROJECT DISTRIBUTION"		EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Net New Distribution	Entering			7.0%											27.0%		
	Exiting							7.0%									
"PM PROJECT TRAFFIC"		EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
PM TRAFFIC DIVERSIONS																	
Project	Net New			7				4							26		
PM TOTAL PROJECT TRAFFIC			0	7	0		0	4	0		0	0	0		26	0	0
PM TOTAL TRAFFIC			0	140	156		80	101	0		0	0	0		122	1,548	101

# Attachment D

## TRAFFIC VOLUMES AT STUDY INTERSECTIONS

INTERSECTION: US 441 at SE 80th Street (E)  
 COUNT DATE: May 24, 2024  
 PM PEAK HOUR FACTOR: 0.94

"PM EXISTING TRAFFIC"		EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
PM Raw Turning Movements			34	123	0		0	89	52		135	1,040	90		0	0	0
Peak Season Conversion Factor		1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
PM EXISTING CONDITIONS			35	128	0		0	93	54		140	1,082	94		0	0	0
"PM BACKGROUND TRAFFIC"		EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Years To Buildout		3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Yearly Growth Rate		1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%
PM BACKGROUND TRAFFIC GROWTH			1	4	0		0	3	2		4	33	3		0	0	0
PM NON-PROJECT TRAFFIC			36	132	0		0	96	56		144	1,115	97		0	0	0
"PROJECT DISTRIBUTION"		EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Net New Distribution	Entering			34.0%													
	Exiting							7.0%	27.0%								
"PM PROJECT TRAFFIC"		EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
PM TRAFFIC DIVERSIONS																	
Project	Net New			33				4	15								
PM TOTAL PROJECT TRAFFIC			0	33	0		0	4	15		0	0	0		0	0	0
PM TOTAL TRAFFIC			36	165	0		0	100	71		144	1,115	97		0	0	0

**APPENDIX D:  
Signal Timings & Committed  
Improvements**

# Attachment D



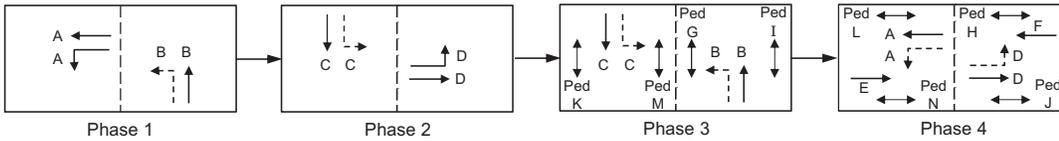
## Marion County Office of the County Engineer

Signal ID	Major Street	Minor Street	Date	Technician
93	US 441	SE 80th St	6/15/2023	United Signs & Signals (FDOT Contractor)

### Basic Timing

PHASE	Φ 1	Φ 2	Φ 3	Φ 4	Φ 5	Φ 6	Φ 7	Φ 8
<b>DIRECTION</b>	WBLT/NBLT	EBLT/SBLT	NB/SB	EB/WB				
<b>MIN GRN</b>	8	8	22	10				
<b>GAP EXT</b>	6.0	6.0	3.0	4.0				
<b>MAX 1</b>	15	15	55	25				
<b>MAX 2</b>								
<b>YEL CLR</b>	5.5	5.5	5.5	4.8				
<b>RED CLR</b>	2.0	2.0	2.0	2.0				
<b>WALK</b>			7	7				
<b>PED CLR</b>			25	18				
<b>MIN RECALL</b>			X					
<b>MAX RECALL</b>								
<b>PED RECALL</b>								
<b>NON-LOCK CALL</b>	X	X						
<b>DUAL ENTRY</b>								
<b>REST IN WALK</b>								

### Signal Operating Plan



### Additional Notes (Turning Restrictions?, Overlaps?, Etc.)

- 1) 5-second delay on loop for WB right turn only lane (Detector #10).
- 2) Veh Overlap A = Phases 1 & 4      Ped Overlap G = Phase 3
- Veh Overlap B = Phases 1 & 3      Ped Overlap H = Phase 4
- Veh Overlap C = Phases 2 & 3      Ped Overlap I = Phase 3
- Veh Overlap D = Phases 2 & 4      Ped Overlap J = Phase 4
- Veh Overlap E = Phase 4              Ped Overlap K = Phase 3
- Veh Overlap F = Phase 4              Ped Overlap L = Phase 4
- Ped Overlap M = Phase 3
- Ped Overlap N = Phase 4

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



DETECTOR ASSIGNMENTS						
DETECTOR UNIT #	ASSIGNED TO MOVEMENT	ZONE	ZONE SIZE	DET. BITU #	CHANNEL #	DETECTOR DELAY TYPE (SEC)
	2	R2D	6' X 15'	1	6	AD
	2	R2E	6' X 15'	1	7	AD
	2	R2F	6' X 15'	1	8	AD
	2	R2G	6' X 15'	1	9	AD
R1/V1	2	VDZ2A	6' X 40'	1	2	PD
	2	VDZ2B	6' X 40'	1	3	PD
	2	VDZ2C	2' X 40'	1	4	PD/B
	5	R5B	6' X 15'	1	5	OD
	5	VDZ5A	6' X 40'	1	1	PD
	6	R6D	6' X 15'	2	22	AD
	6	R6E	6' X 15'	2	23	AD
	6	R6F	6' X 15'	2	24	AD
	6	R6G	6' X 15'	2	25	AD
R2/V2	6	VDZ6A	6' X 40'	2	18	PD
	6	VDZ6B	6' X 40'	2	19	PD
	6	VDZ6C	2' X 40'	2	20	PD/B
	1	RTB	6' X 15'	2	21	OD
	1	VDZ1A	6' X 40'	2	17	PD
N2	8	VDZ8A	6' X 40'	1	11	PD
	3	VDZ3A	6' X 40'	1	10	PD
R3/V3	8	R8B	6' X 15'	1	13	AD
	3	R3B	6' X 15'	1	12	OD
	4	VDZ4A	6' X 40'	2	27	PD
	7	VDZ7A	6' X 40'	2	26	PD
R4/V4	4	R4B	6' X 15'	2	29	AD
	7	R7B	6' X 15'	2	28	OD

NOTE: ALL CHANNELS NOT SHOWN WILL BE SPARES.

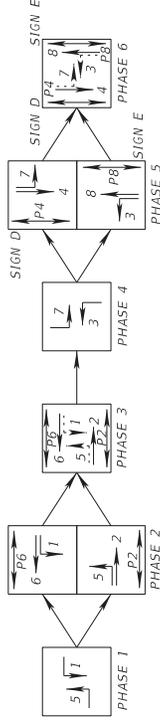
LEGEND:  
 V-VIDEO  
 PD-PRESENCE DETECTION  
 R-RADAR  
 OD-QUEUE DETECTION  
 B-BIKE DETECTION  
 AD-ADVANCE DETECTION

UTILITY CONTACTS:

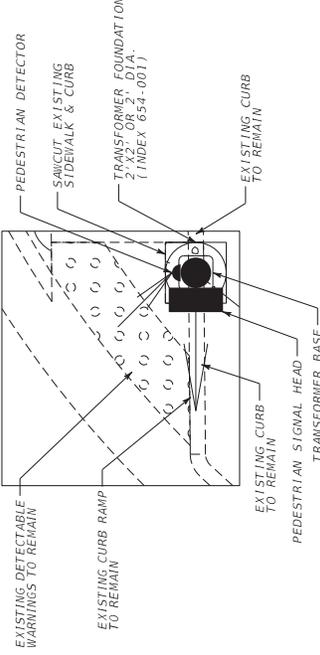
CITY OF BELLEVUE	BOB TITERINGTON	352-2333-2110
CITY OF OCALA TELECOMMUNICATION	JASON COHEN	352-401-3999
COX CABLE MARION	MATTHEW BERRY	602-859-8672
COMCAST	SCOTT OSEBOLD	352-267-7620
DUKE ENERGY DISTRIBUTION	YANI MIKEDIS	352-694-8811
LUMEN	PAUL BUTLER	352-844-3151
TECO PEOPLES GAS OCALA	LONDON MEAHL	904-443-7308

CONTROLLER TIMINGS										
TIMING FUNCTION		1	2	3	4	5	6	7	8	
MOVEMENT NUMBER		6	5	1	2	3	4	5	6	7
MINIMUM GREEN		7	20	7	7	7	7	20	7	7
EXTENSION		3	3	3	3	3	3	3	3	3
MAXIMUM GREEN 1		20	60	20	30	20	60	20	30	30
MAXIMUM GREEN 2		4	8	4	8	3	7	3	8	4
YELLOW CLEARANCE		4	8	4	8	3	7	3	8	4
ALL RED		3	5	2	0	2	5	2	0	2
PEDESTRIAN WALK		7	7	7	7	7	7	7	7	7
PED. CLEARANCE		25	33	26	34					
LPI										
RECALL										
DET. FUNCTION		INL	L	INL	INL	L	INL	INL	L	INL

S.O.P. 10



TRANSFORMER BASE DETAIL (NTS)



SIGNALIZATION PLAN

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION		ROAD NO. 35		FINANCIAL PROJECT ID 440816-4-52-03		SHEET NO. D75	
COUNTY MARION		COUNTY MARION		SECTION 36009-000 M.P. 2.606		MARION COUNTY	
DEBORAH GRAEBER, P.E. P.E. LICENSE NUMBER 58624 ASPIREON CONSULTING GROUP, INC. 821 PALMETTO TERRACE OWIEDO, FL 32765		87/ae		1/20/2024		9-09-25 PM C:\Users\jgare@windriver - aspireon\inc\aspireon\proj\sees\parsons\warc\01\par-001-03	
SR 35 AT SE 85th LN/JUNIPER RD		SECTION 36009-000 M.P. 2.606		MARION COUNTY		SIGNALIZATION PLAN	

**APPENDIX E:  
NCHRP 457 Output**

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

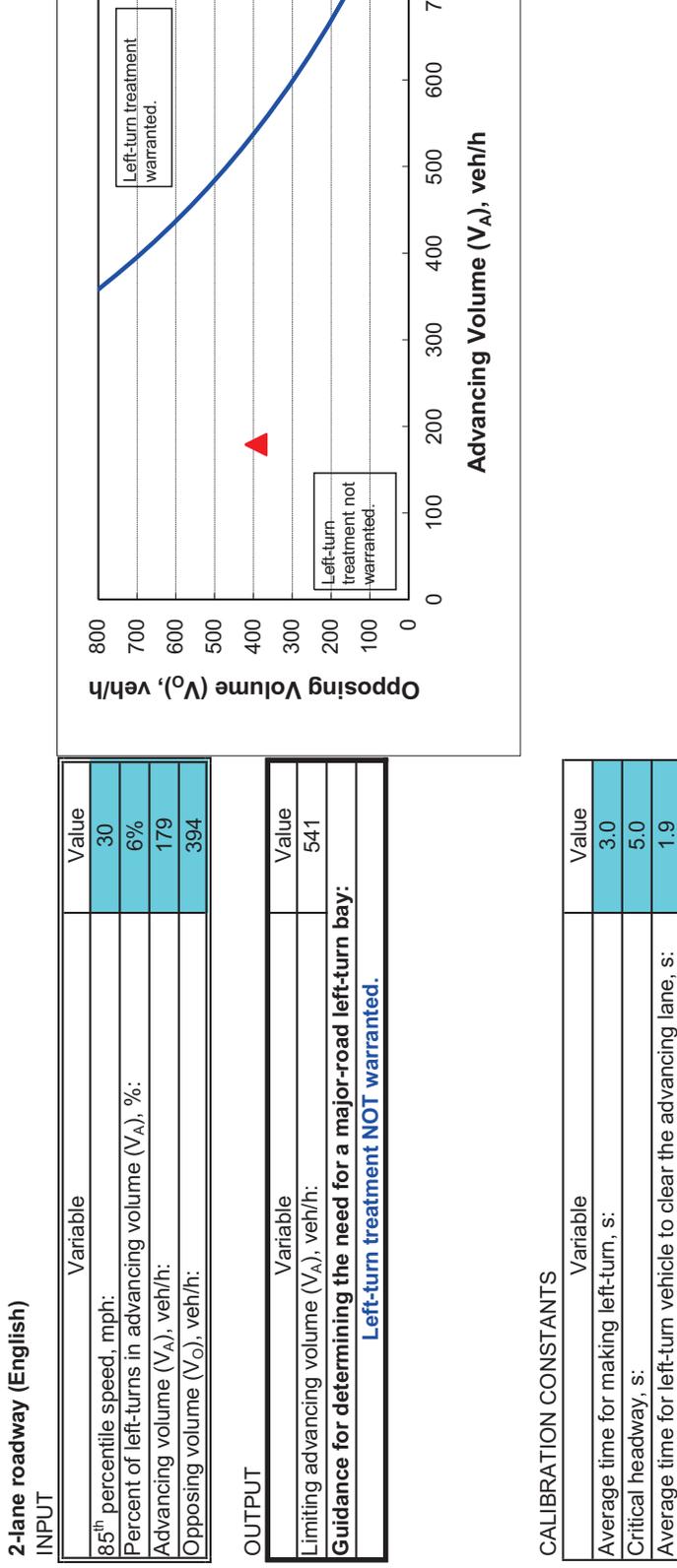


Figure 2 - 5. Guideline for determining the need for a major-road left-turn bay at a two-way stop-controlled intersection.

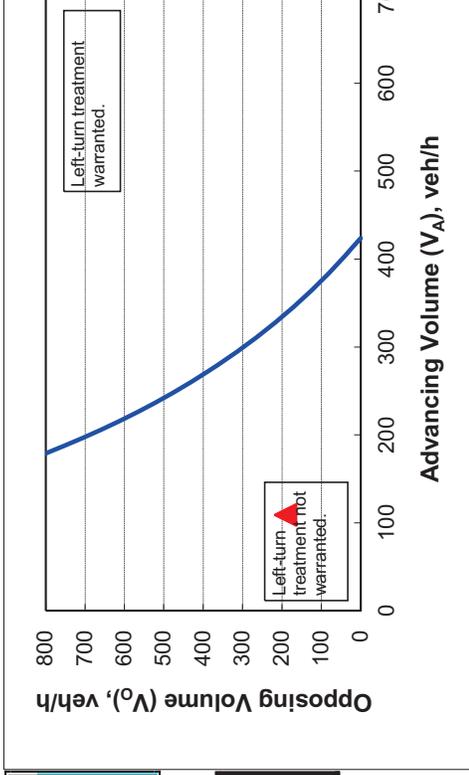
2-lane roadway (English)

INPUT

Variable	Value
85 <sup>th</sup> percentile speed, mph:	30
Percent of left-turns in advancing volume ( $V_A$ ), %:	30%
Advancing volume ( $V_A$ ), veh/h:	109
Opposing volume ( $V_O$ ), veh/h:	191

OUTPUT

Variable	Value
Limiting advancing volume ( $V_A$ ), veh/h:	338
<b>Guidance for determining the need for a major-road left-turn bay:</b>	
<b>Left-turn treatment NOT warranted.</b>	



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

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

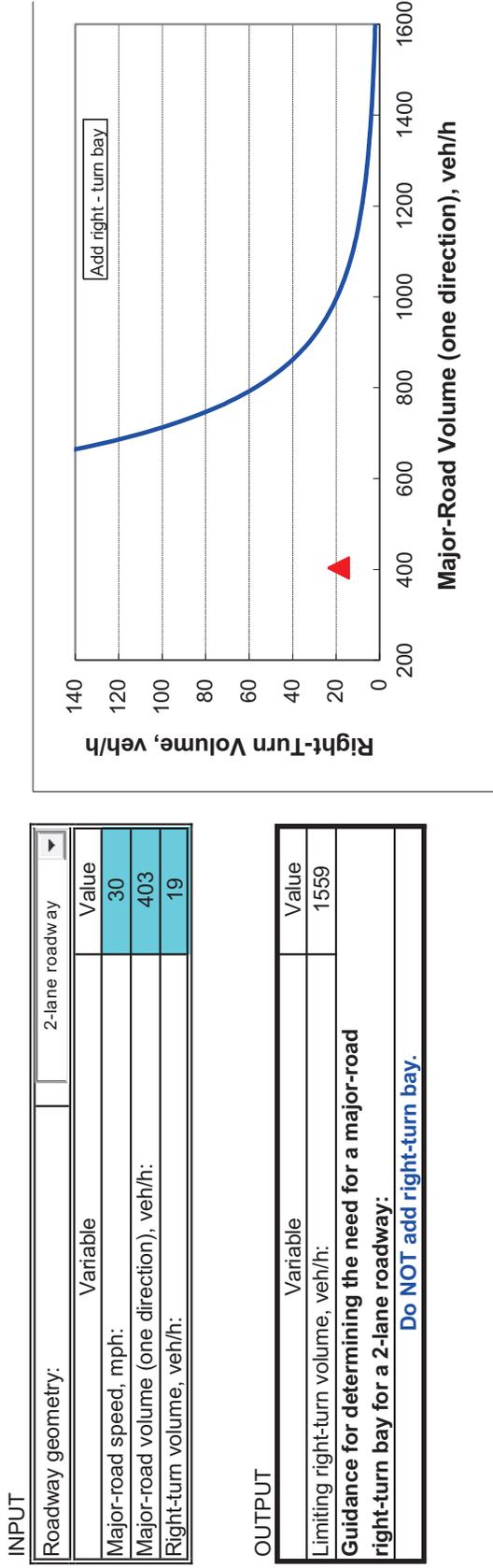
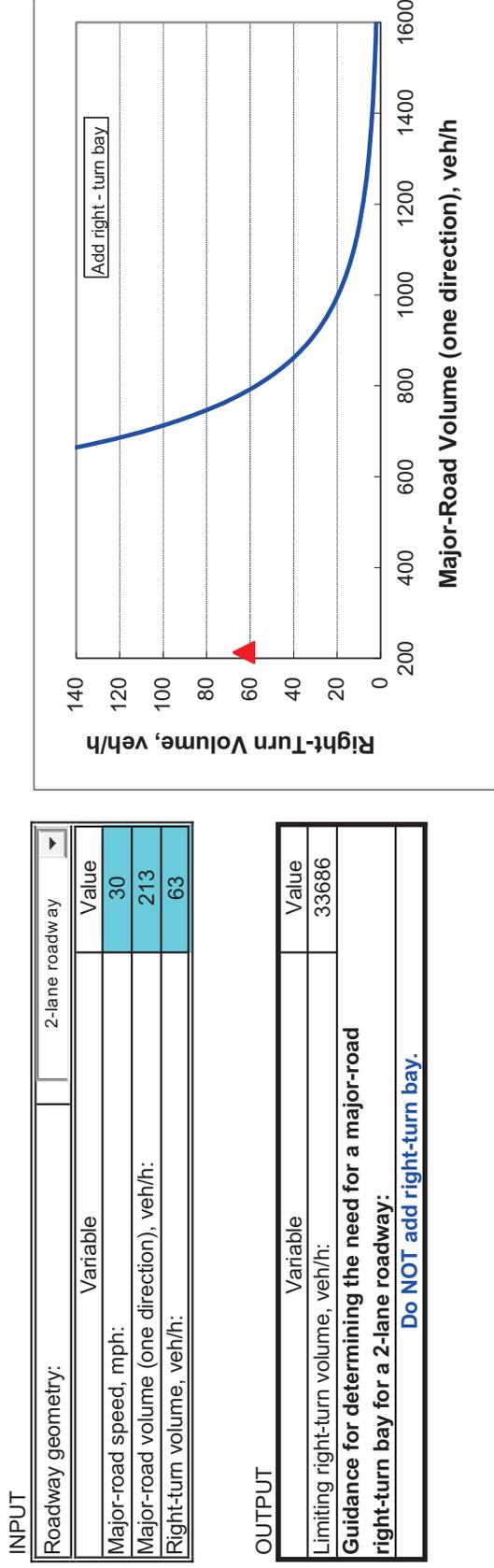


Figure 2 - 6. Guideline for determining the need for a major-road right-turn bay at a two-way stop-controlled intersection.



# APPENDIX F: Synchro Output

## F1: Existing AM Peak Hour Traffic (2024)

## Attachment D

### Lanes, Volumes, Timings

Existing Conditions

#### 1: Juniper Rd & Project Dwy/Juniper Pass

Timing Plan: AM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		+			+			+			+		
Traffic Volume (vph)	0	0	0	11	0	92	0	162	2	9	364	0	
Future Volume (vph)	0	0	0	11	0	92	0	162	2	9	364	0	
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	3%	3%	3%	2%	2%	2%	
Adj. Flow (vph)	0	0	0	15	0	123	0	216	3	12	485	0	
Shared Lane Traffic (%)													
Lane Group Flow (vph)	0	0	0	0	138	0	0	219	0	0	497	0	
Sign Control		Stop				Stop			Free			Free	

#### Intersection Summary

Control Type: Unsignalized

# Attachment D

HCM 7th TWSC  
1: Juniper Rd & Project Dwy/Juniper Pass

Existing Conditions  
Timing Plan: AM Peak Hour

Intersection												
Int Delay, s/veh	1.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		+			+			+			+	
Traffic Vol, veh/h	0	0	0	11	0	92	0	162	2	9	364	0
Future Vol, veh/h	0	0	0	11	0	92	0	162	2	9	364	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None									
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	75	75	75	75	75	75	75	75	75	75	75	75
Heavy Vehicles, %	2	2	2	2	2	2	3	3	3	2	2	2
Mvmt Flow	0	0	0	15	0	123	0	216	3	12	485	0

Major/Minor	Minor2		Minor1		Major1			Major2				
Conflicting Flow All	725	728	485	727	727	217	485	0	0	219	0	0
Stage 1	509	509	-	217	217	-	-	-	-	-	-	-
Stage 2	216	219	-	509	509	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.13	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.227	-	-	2.218	-	-
Pot Cap-1 Maneuver	340	350	582	340	351	822	1072	-	-	1351	-	-
Stage 1	546	538	-	785	723	-	-	-	-	-	-	-
Stage 2	786	722	-	546	538	-	-	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	286	346	582	335	346	822	1072	-	-	1351	-	-
Mov Cap-2 Maneuver	286	346	-	335	346	-	-	-	-	-	-	-
Stage 1	540	531	-	785	723	-	-	-	-	-	-	-
Stage 2	669	722	-	540	531	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v	0	11.26	0	0.19
HCM LOS	A	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1072	-	-	-	712	43	-	-
HCM Lane V/C Ratio	-	-	-	-	0.193	0.009	-	-
HCM Control Delay (s/veh)	0	-	-	0	11.3	7.7	0	-
HCM Lane LOS	A	-	-	A	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	-	0.7	0	-	-

## Attachment D

Lanes, Volumes, Timings  
2: Juniper Rd & Chestnut Road

Existing Conditions  
Timing Plan: AM Peak Hour

													
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		+			+			+			+		
Traffic Volume (vph)	4	2	2	92	0	81	2	248	4	34	277	1	
Future Volume (vph)	4	2	2	92	0	81	2	248	4	34	277	1	
Peak Hour Factor	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	3%	3%	3%	
Adj. Flow (vph)	5	3	3	119	0	105	3	322	5	44	360	1	
Shared Lane Traffic (%)													
Lane Group Flow (vph)	0	11	0	0	224	0	0	330	0	0	405	0	
Sign Control		Stop				Stop					Free		
<b>Intersection Summary</b>													
Control Type: Unsignalized													

## Attachment D

HCM 7th TWSC  
2: Juniper Rd & Chestnut Road

Existing Conditions  
Timing Plan: AM Peak Hour

Intersection												
Int Delay, s/veh	6.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		+			+			+			+	
Traffic Vol, veh/h	4	2	2	92	0	81	2	248	4	34	277	1
Future Vol, veh/h	4	2	2	92	0	81	2	248	4	34	277	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None									
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	77	77	77	77	77	77	77	77	77	77	77	77
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	3	3	3
Mvmt Flow	5	3	3	119	0	105	3	322	5	44	360	1

Major/Minor	Minor2		Minor1		Major1			Major2				
Conflicting Flow All	776	781	360	779	779	325	361	0	0	327	0	0
Stage 1	449	449	-	330	330	-	-	-	-	-	-	-
Stage 2	327	332	-	449	449	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.13	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.227	-	-
Pot Cap-1 Maneuver	315	326	684	313	327	716	1198	-	-	1227	-	-
Stage 1	589	572	-	683	646	-	-	-	-	-	-	-
Stage 2	685	644	-	589	572	-	-	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	256	311	684	295	312	716	1198	-	-	1227	-	-
Mov Cap-2 Maneuver	256	311	-	295	312	-	-	-	-	-	-	-
Stage 1	563	547	-	681	644	-	-	-	-	-	-	-
Stage 2	583	642	-	558	546	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v	16.63	24.23	0.06	0.88
HCM LOS	C	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	14	-	-	320	407	196	-	-
HCM Lane V/C Ratio	0.002	-	-	0.032	0.552	0.036	-	-
HCM Control Delay (s/veh)	8	0	-	16.6	24.2	8	0	-
HCM Lane LOS	A	A	-	C	C	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.1	3.2	0.1	-	-

## Attachment D

Lanes, Volumes, Timings  
3: SR 35 & Juniper Rd

Existing Conditions  
Timing Plan: AM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR	
Lane Configurations															
Traffic Volume (vph)	41	7	139	50	4	94	25	55	798	47	1	70	1184	21	
Future Volume (vph)	41	7	139	50	4	94	25	55	798	47	1	70	1184	21	
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	0.92	0.92	
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	6%	6%	6%	6%	4%	4%	4%	4%	
Adj. Flow (vph)	45	8	151	54	4	102	27	60	867	51	1	76	1287	23	
Shared Lane Traffic (%)															
Lane Group Flow (vph)	45	159	0	54	106	0	0	87	918	0	0	77	1310	0	
Sign Control	Stop			Stop					Free				Free		

**Intersection Summary**  
Control Type: Unsignalized

## Attachment D

HCM 7th TWSC  
3: SR 35 & Juniper Rd

Existing Conditions  
Timing Plan: AM Peak Hour

Intersection														
Int Delay, s/veh	8.9													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Lane Configurations	↔	↔		↔	↔			↔	↔			↔	↔	
Traffic Vol, veh/h	41	7	139	50	4	94	25	55	798	47	1	70	1184	21
Future Vol, veh/h	41	7	139	50	4	94	25	55	798	47	1	70	1184	21
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free							
RT Channelized	-	-	None	-	-	None	-	-	-	None	-	-	-	None
Storage Length	214	-	-	214	-	-	-	214	-	-	-	214	-	-
Veh in Median Storage, #	-	1	-	-	1	-	-	-	0	-	-	-	0	-
Grade, %	-	0	-	-	0	-	-	-	0	-	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	6	6	6	6	4	4	4	4
Mvmt Flow	45	8	151	54	4	102	27	60	867	51	1	76	1287	23

Major/Minor	Minor2		Minor1		Major1				Major2					
Conflicting Flow All	2062	2545	655	1868	2531	459	1310	1310	0	0	918	918	0	0
Stage 1	1453	1453	-	1067	1067	-	-	-	-	-	-	-	-	-
Stage 2	610	1092	-	802	1464	-	-	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	6.52	4.22	-	-	6.48	4.18	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.56	2.26	-	-	2.54	2.24	-	-
Pot Cap-1 Maneuver	~ 32	27	409	~ 44	27	549	202	503	-	-	369	726	-	-
Stage 1	137	194	-	237	297	-	-	-	-	-	-	-	-	-
Stage 2	448	289	-	344	191	-	-	-	-	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	~ 15	16	409	~ 16	16	549	261	261	-	-	712	712	-	-
Mov Cap-2 Maneuver	70	70	-	62	60	-	-	-	-	-	-	-	-	-
Stage 1	122	173	-	158	198	-	-	-	-	-	-	-	-	-
Stage 2	238	193	-	185	170	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v	46.44	75.37	2.2	0.59
HCM LOS	E	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	261	-	-	70	332	62	411	712	-	-
HCM Lane V/C Ratio	0.333	-	-	0.638	0.478	0.879	0.259	0.108	-	-
HCM Control Delay (s/veh)	25.5	-	-	121.3	25.4	190.2	16.8	10.7	-	-
HCM Lane LOS	D	-	-	F	D	F	C	B	-	-
HCM 95th %tile Q(veh)	1.4	-	-	2.8	2.5	4.1	1	0.4	-	-

Notes										
~: Volume exceeds capacity    \$: Delay exceeds 300s    +: Computation Not Defined    *: All major volume in platoon										

## Attachment D

Lanes, Volumes, Timings  
4: Juniper Rd & SE 79th St

Existing Conditions  
Timing Plan: AM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		+			+			+			+	
Traffic Volume (vph)	79	8	167	1	19	3	284	79	0	0	145	226
Future Volume (vph)	79	8	167	1	19	3	284	79	0	0	145	226
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	6%	6%	6%	18%	18%	18%	2%	2%	2%	4%	4%	4%
Adj. Flow (vph)	89	9	188	1	21	3	319	89	0	0	163	254
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	286	0	0	25	0	0	408	0	0	417	0
Sign Control		Stop			Stop			Free			Free	

**Intersection Summary**

Control Type: Unsignalized

## Attachment D

HCM 7th TWSC  
4: Juniper Rd & SE 79th St

Existing Conditions  
Timing Plan: AM Peak Hour

Intersection												
Int Delay, s/veh	26.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		+			+			+			+	
Traffic Vol, veh/h	79	8	167	1	19	3	284	79	0	0	145	226
Future Vol, veh/h	79	8	167	1	19	3	284	79	0	0	145	226
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
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, %	6	6	6	18	18	18	2	2	2	4	4	4
Mvmt Flow	89	9	188	1	21	3	319	89	0	0	163	254
Major/Minor	Minor2		Minor1		Major1			Major2				
Conflicting Flow All	1028	1017	290	894	1144	89	417	0	0	89	0	0
Stage 1	290	290	-	727	727	-	-	-	-	-	-	-
Stage 2	738	727	-	167	417	-	-	-	-	-	-	-
Critical Hdwy	7.16	6.56	6.26	7.28	6.68	6.38	4.12	-	-	4.14	-	-
Critical Hdwy Stg 1	6.16	5.56	-	6.28	5.68	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.16	5.56	-	6.28	5.68	-	-	-	-	-	-	-
Follow-up Hdwy	3.554	4.054	3.354	3.662	4.162	3.462	2.218	-	-	2.236	-	-
Pot Cap-1 Maneuver	209	234	740	245	187	927	1142	-	-	1494	-	-
Stage 1	709	665	-	391	406	-	-	-	-	-	-	-
Stage 2	404	423	-	798	565	-	-	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	129	165	740	124	132	927	1142	-	-	1494	-	-
Mov Cap-2 Maneuver	129	165	-	124	132	-	-	-	-	-	-	-
Stage 1	709	665	-	276	287	-	-	-	-	-	-	-
Stage 2	263	299	-	588	565	-	-	-	-	-	-	-
Approach	EB		WB		NB			SB				
HCM Control Delay, s/v	91.25		34.4		7.33			0				
HCM LOS	F		D									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	1086	-	-	287	148	1494	-	-				
HCM Lane V/C Ratio	0.279	-	-	0.995	0.175	-	-	-				
HCM Control Delay (s/veh)	9.4	0	-	91.3	34.4	0	-	-				
HCM Lane LOS	A	A	-	F	D	A	-	-				
HCM 95th %tile Q(veh)	1.2	-	-	10.2	0.6	0	-	-				

## Attachment D

Lanes, Volumes, Timings  
5: SE 80th St & SE 79th St

Existing Conditions  
Timing Plan: AM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		+			+	+		+		+	+	
Traffic Volume (vph)	0	0	2	214	0	314	1	85	128	137	81	0
Future Volume (vph)	0	0	2	214	0	314	1	85	128	137	81	0
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	2%	2%	2%	3%	3%	3%	5%	5%	5%	5%	5%	5%
Adj. Flow (vph)	0	0	2	235	0	345	1	93	141	151	89	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	2	0	0	235	345	0	235	0	151	89	0
Sign Control		Stop			Stop			Free			Free	

**Intersection Summary**

Control Type: Unsignalized

## Attachment D

HCM 7th TWSC  
5: SE 80th St & SE 79th St

Existing Conditions  
Timing Plan: AM Peak Hour

Intersection												
Int Delay, s/veh	11.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		+				+				+		+
Traffic Vol, veh/h	0	0	2	214	0	314	1	85	128	137	81	0
Future Vol, veh/h	0	0	2	214	0	314	1	85	128	137	81	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None									
Storage Length	-	-	-	-	-	150	-	-	-	214	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	2	2	2	3	3	3	5	5	5	5	5	5
Mvmt Flow	0	0	2	235	0	345	1	93	141	151	89	0

Major/Minor	Minor2		Minor1		Major1			Major2				
Conflicting Flow All	486	626	89	556	556	164	89	0	0	234	0	0
Stage 1	390	390	-	166	166	-	-	-	-	-	-	-
Stage 2	96	236	-	390	390	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.13	6.53	6.23	4.15	-	-	4.15	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.13	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.13	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.527	4.027	3.327	2.245	-	-	2.245	-	-
Pot Cap-1 Maneuver	492	401	969	440	438	878	1488	-	-	1316	-	-
Stage 1	634	608	-	834	759	-	-	-	-	-	-	-
Stage 2	911	710	-	632	606	-	-	-	-	-	-	-
Platoon blocked, %												
Mov Cap-1 Maneuver	264	354	969	389	387	878	1488	-	-	1316	-	-
Mov Cap-2 Maneuver	264	354	-	389	387	-	-	-	-	-	-	-
Stage 1	562	538	-	833	758	-	-	-	-	-	-	-
Stage 2	553	709	-	558	537	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v	8.72	18.11	0.03	5.08
HCM LOS	A	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	8	-	-	969	389	878	1316	-	-
HCM Lane V/C Ratio	0.001	-	-	0.002	0.605	0.393	0.114	-	-
HCM Control Delay (s/veh)	7.4	0	-	8.7	27.5	11.7	8.1	-	-
HCM Lane LOS	A	A	-	A	D	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0	3.8	1.9	0.4	-	-

## F2: Existing PM Peak Hour Traffic (2024)

## Attachment D

### Lanes, Volumes, Timings

### Existing Conditions

#### 1: Juniper Rd & Project Dwy/Juniper Pass

Timing Plan: PM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		+			+			+			+	
Traffic Volume (vph)	0	0	0	0	0	14	0	74	0	21	124	0
Future Volume (vph)	0	0	0	0	0	14	0	74	0	21	124	0
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	2%	2%	2%	8%	8%	8%	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	0	0	0	0	0	15	0	79	0	22	132	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	15	0	0	79	0	0	154	0
Sign Control		Stop				Stop		Free			Free	

#### Intersection Summary

Control Type: Unsignalized

## Attachment D

HCM 7th TWSC  
1: Juniper Rd & Project Dwy/Juniper Pass

Existing Conditions  
Timing Plan: PM Peak Hour

Intersection												
Int Delay, s/veh	1.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		+			+			+			+	
Traffic Vol, veh/h	0	0	0	0	0	14	0	74	0	21	124	0
Future Vol, veh/h	0	0	0	0	0	14	0	74	0	21	124	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None									
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	8	8	8	2	2	2	2	2	2
Mvmt Flow	0	0	0	0	0	15	0	79	0	22	132	0

Major/Minor	Minor2		Minor1		Major1			Major2				
Conflicting Flow All	255	255	132	255	255	79	132	0	0	79	0	0
Stage 1	177	177	-	79	79	-	-	-	-	-	-	-
Stage 2	79	79	-	177	177	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.18	6.58	6.28	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.18	5.58	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.18	5.58	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.572	4.072	3.372	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	698	648	917	686	638	965	1453	-	-	1520	-	-
Stage 1	825	753	-	915	818	-	-	-	-	-	-	-
Stage 2	930	829	-	811	742	-	-	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	676	638	917	675	628	965	1453	-	-	1520	-	-
Mov Cap-2 Maneuver	676	638	-	675	628	-	-	-	-	-	-	-
Stage 1	812	741	-	915	818	-	-	-	-	-	-	-
Stage 2	916	829	-	799	730	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v	0	8.79	0	1.07
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1453	-	-	-	965	261	-	-
HCM Lane V/C Ratio	-	-	-	-	0.015	0.015	-	-
HCM Control Delay (s/veh)	0	-	-	0	8.8	7.4	0	-
HCM Lane LOS	A	-	-	A	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	-	0	0	-	-

## Attachment D

Lanes, Volumes, Timings  
2: Juniper Rd & Chestnut Road

Existing Conditions  
Timing Plan: PM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		+			+			+			+	
Traffic Volume (vph)	0	2	0	8	1	68	0	85	3	61	136	1
Future Volume (vph)	0	2	0	8	1	68	0	85	3	61	136	1
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	2%	2%	2%	4%	4%	4%	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	0	2	0	9	1	73	0	91	3	66	146	1
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	2	0	0	83	0	0	94	0	0	213	0
Sign Control		Stop			Stop			Free		Free		

**Intersection Summary**

Control Type: Unsignalized

## Attachment D

HCM 7th TWSC  
2: Juniper Rd & Chestnut Road

Existing Conditions  
Timing Plan: PM Peak Hour

Intersection												
Int Delay, s/veh	3.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		+			+			+			+	
Traffic Vol, veh/h	0	2	0	8	1	68	0	85	3	61	136	1
Future Vol, veh/h	0	2	0	8	1	68	0	85	3	61	136	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None									
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	4	4	4	2	2	2	2	2	2
Mvmt Flow	0	2	0	9	1	73	0	91	3	66	146	1

Major/Minor	Minor2		Minor1		Major1			Major2				
Conflicting Flow All	370	373	147	372	372	93	147	0	0	95	0	0
Stage 1	278	278	-	93	93	-	-	-	-	-	-	-
Stage 2	92	95	-	278	278	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.14	6.54	6.24	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.14	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.14	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.536	4.036	3.336	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	587	558	900	582	555	959	1434	-	-	1499	-	-
Stage 1	729	680	-	909	814	-	-	-	-	-	-	-
Stage 2	915	817	-	724	676	-	-	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	515	531	900	552	529	959	1434	-	-	1499	-	-
Mov Cap-2 Maneuver	515	531	-	552	529	-	-	-	-	-	-	-
Stage 1	694	648	-	909	814	-	-	-	-	-	-	-
Stage 2	844	817	-	687	644	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v	11.81	9.51	0	2.31
HCM LOS	B	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1434	-	-	531	882	554	-	-
HCM Lane V/C Ratio	-	-	-	0.004	0.094	0.044	-	-
HCM Control Delay (s/veh)	0	-	-	11.8	9.5	7.5	0	-
HCM Lane LOS	A	-	-	B	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0	0.3	0.1	-	-

## Attachment D

Lanes, Volumes, Timings  
3: SR 35 & Juniper Rd

Existing Conditions  
Timing Plan: PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR	
Lane Configurations															
Traffic Volume (vph)	21	3	83	30	3	86	52	100	1148	45	4	58	833	26	
Future Volume (vph)	21	3	83	30	3	86	52	100	1148	45	4	58	833	26	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	
Heavy Vehicles (%)	5%	5%	5%	3%	3%	3%	3%	3%	3%	3%	4%	4%	4%	4%	
Adj. Flow (vph)	23	3	92	33	3	96	58	111	1276	50	4	64	926	29	
Shared Lane Traffic (%)															
Lane Group Flow (vph)	23	95	0	33	99	0	0	169	1326	0	0	68	955	0	
Sign Control		Stop			Stop				Free				Free		

**Intersection Summary**

Control Type: Unsignalized

## Attachment D

HCM 7th TWSC  
3: SR 35 & Juniper Rd

Existing Conditions  
Timing Plan: PM Peak Hour

Intersection														
Int Delay, s/veh	6.7													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗			↖	↗			↖	↗	
Traffic Vol, veh/h	21	3	83	30	3	86	52	100	1148	45	4	58	833	26
Future Vol, veh/h	21	3	83	30	3	86	52	100	1148	45	4	58	833	26
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free							
RT Channelized	-	-	None	-	-	None	-	-	-	None	-	-	-	None
Storage Length	214	-	-	214	-	-	-	214	-	-	-	214	-	-
Veh in Median Storage, #	-	1	-	-	1	-	-	-	0	-	-	-	0	-
Grade, %	-	0	-	-	0	-	-	-	0	-	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	5	5	5	3	3	3	3	3	3	3	4	4	4	4
Mvmt Flow	23	3	92	33	3	96	58	111	1276	50	4	64	926	29

Major/Minor	Minor2		Minor1		Major1			Major2						
Conflicting Flow All	2055	2741	477	2241	2731	663	954	954	0	0	1326	1326	0	0
Stage 1	1078	1078	-	1638	1638	-	-	-	-	-	-	-	-	-
Stage 2	977	1663	-	602	1092	-	-	-	-	-	-	-	-	-
Critical Hdwy	7.6	6.6	7	7.56	6.56	6.96	6.46	4.16	-	-	6.48	4.18	-	-
Critical Hdwy Stg 1	6.6	5.6	-	6.56	5.56	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.6	5.6	-	6.56	5.56	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	3.55	4.05	3.35	3.53	4.03	3.33	2.53	2.23	-	-	2.54	2.24	-	-
Pot Cap-1 Maneuver	31	19	526	~23	20	402	352	710	-	-	201	506	-	-
Stage 1	228	287	-	104	155	-	-	-	-	-	-	-	-	-
Stage 2	263	148	-	451	287	-	-	-	-	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	~12	10	526	~9	11	402	475	475	-	-	441	441	-	-
Mov Cap-2 Maneuver	43	23	-	45	43	-	-	-	-	-	-	-	-	-
Stage 1	193	242	-	67	100	-	-	-	-	-	-	-	-	-
Stage 2	125	95	-	309	242	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v	49.45	66.69	1.89	0.99
HCM LOS	E	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	475	-	-	43	299	45	314	441	-	-
HCM Lane V/C Ratio	0.355	-	-	0.537	0.319	0.741	0.315	0.156	-	-
HCM Control Delay (s/veh)	16.7	-	-	159.6	22.6	200.3	21.7	14.7	-	-
HCM Lane LOS	C	-	-	F	C	F	C	B	-	-
HCM 95th %tile Q(veh)	1.6	-	-	2	1.3	2.9	1.3	0.5	-	-

Notes  
 ~: Volume exceeds capacity    \$: Delay exceeds 300s    +: Computation Not Defined    \*: All major volume in platoon

## Attachment D

Lanes, Volumes, Timings  
4: Juniper Rd & SE 79th St

Existing Conditions  
Timing Plan: PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		+			+			+			+	
Traffic Volume (vph)	188	28	199	0	5	1	158	21	1	3	22	138
Future Volume (vph)	188	28	199	0	5	1	158	21	1	3	22	138
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	3%	3%	3%
Adj. Flow (vph)	194	29	205	0	5	1	163	22	1	3	23	142
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	428	0	0	6	0	0	186	0	0	168	0
Sign Control		Stop			Stop			Free			Free	
<b>Intersection Summary</b>												
Control Type: Unsignalized												

## Attachment D

HCM 7th TWSC  
4: Juniper Rd & SE 79th St

Existing Conditions  
Timing Plan: PM Peak Hour

Intersection												
Int Delay, s/veh	14.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		+			+			+			+	
Traffic Vol, veh/h	188	28	199	0	5	1	158	21	1	3	22	138
Future Vol, veh/h	188	28	199	0	5	1	158	21	1	3	22	138
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None									
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	97	97	97	97	97	97	97	97	97	97	97	97
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	3	3	3
Mvmt Flow	194	29	205	0	5	1	163	22	1	3	23	142

Major/Minor	Minor2		Minor1		Major1			Major2				
Conflicting Flow All	450	448	94	391	519	22	165	0	0	23	0	0
Stage 1	100	100	-	348	348	-	-	-	-	-	-	-
Stage 2	350	348	-	43	171	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.13	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.227	-	-
Pot Cap-1 Maneuver	519	506	963	568	461	1055	1413	-	-	1586	-	-
Stage 1	906	812	-	668	634	-	-	-	-	-	-	-
Stage 2	666	634	-	971	757	-	-	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	452	446	963	371	406	1055	1413	-	-	1586	-	-
Mov Cap-2 Maneuver	452	446	-	371	406	-	-	-	-	-	-	-
Stage 1	904	811	-	590	560	-	-	-	-	-	-	-
Stage 2	583	560	-	735	755	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v	23.97	13.06	6.92	0.13
HCM LOS	C	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1395	-	-	606	453	28	-	-
HCM Lane V/C Ratio	0.115	-	-	0.706	0.014	0.002	-	-
HCM Control Delay (s/veh)	7.9	0	-	24	13.1	7.3	0	-
HCM Lane LOS	A	A	-	C	B	A	A	-
HCM 95th %tile Q(veh)	0.4	-	-	5.7	0	0	-	-

## Attachment D

Lanes, Volumes, Timings  
5: SE 80th St & SE 79th St

Existing Conditions  
Timing Plan: PM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		+			+	+		+		+	+	
Traffic Volume (vph)	0	0	1	137	0	168	0	103	208	214	94	0
Future Volume (vph)	0	0	1	137	0	168	0	103	208	214	94	0
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%	2%	2%	2%	2%	2%	4%	4%	4%	2%	2%	2%
Adj. Flow (vph)	0	0	1	143	0	175	0	107	217	223	98	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1	0	0	143	175	0	324	0	223	98	0
Sign Control		Stop			Stop			Free			Free	

**Intersection Summary**

Control Type: Unsignalized

## Attachment D

HCM 7th TWSC  
5: SE 80th St & SE 79th St

Existing Conditions  
Timing Plan: PM Peak Hour

Intersection												
Int Delay, s/veh	8.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		+			+	+		+		+	+	
Traffic Vol, veh/h	0	0	1	137	0	168	0	103	208	214	94	0
Future Vol, veh/h	0	0	1	137	0	168	0	103	208	214	94	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None									
Storage Length	-	-	-	-	-	150	-	-	-	214	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	96	96	96	96	96	96	96	96	96	96	96	96
Heavy Vehicles, %	2	2	2	2	2	2	4	4	4	2	2	2
Mvmt Flow	0	0	1	143	0	175	0	107	217	223	98	0

Major/Minor	Minor2		Minor1		Major1			Major2				
Conflicting Flow All	651	868	98	759	759	216	98	0	0	324	0	0
Stage 1	544	544	-	216	216	-	-	-	-	-	-	-
Stage 2	107	324	-	544	544	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.14	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.236	-	-	2.218	-	-
Pot Cap-1 Maneuver	382	291	958	323	336	824	1483	-	-	1236	-	-
Stage 1	523	519	-	787	724	-	-	-	-	-	-	-
Stage 2	898	650	-	523	519	-	-	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	246	238	958	264	275	824	1483	-	-	1236	-	-
Mov Cap-2 Maneuver	246	238	-	264	275	-	-	-	-	-	-	-
Stage 1	429	426	-	787	724	-	-	-	-	-	-	-
Stage 2	707	650	-	429	426	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v	8.76	20.87	0	5.94
HCM LOS	A	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1483	-	-	958	264	824	1236	-	-
HCM Lane V/C Ratio	-	-	-	0.001	0.54	0.212	0.18	-	-
HCM Control Delay (s/veh)	0	-	-	8.8	33.5	10.5	8.6	-	-
HCM Lane LOS	A	-	-	A	D	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0	2.9	0.8	0.7	-	-

## Attachment D

Lanes, Volumes, Timings  
6: SE 80th St & US 441

Existing Conditions  
Timing Plan: PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Ø2	Ø3
Lane Configurations		↔			↔					↔	↔↔	↔		
Traffic Volume (vph)	0	129	151	78	94	0	0	0	0	93	1502	98		
Future Volume (vph)	0	129	151	78	94	0	0	0	0	93	1502	98		
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94		
Heavy Vehicles (%)	4%	4%	4%	2%	2%	2%	4%	4%	4%	3%	3%	3%		
Adj. Flow (vph)	0	137	161	83	100	0	0	0	0	99	1598	104		
Shared Lane Traffic (%)														
Lane Group Flow (vph)	0	298	0	0	183	0	0	0	0	99	1598	104		
Turn Type		NA		pm+pt	NA					Perm	NA	Perm		
Protected Phases		4		1	4 1						2 3		2	3
Permitted Phases				4 1						2 3		2 3		
Detector Phase		4		1	4 1					2 3	2 3	2 3		
Switch Phase														
Minimum Initial (s)		10.0		8.0									8.0	22.0
Minimum Split (s)		15.8		15.5									14.5	29.5
Total Split (s)		31.8		22.5									22.5	62.5
Total Split (%)		22.8%		16.2%									16%	45%
Yellow Time (s)		4.8		5.5									5.5	5.5
All-Red Time (s)		1.0		2.0									1.0	2.0
Lost Time Adjust (s)		0.0												
Total Lost Time (s)		5.8												
Lead/Lag		Lag		Lead									Lag	Lead
Lead-Lag Optimize?		Yes		Yes									Yes	Yes
Recall Mode		None		None									None	Min
v/c Ratio		0.86		0.57						0.10	0.81	0.11		
Control Delay (s/veh)		72.2		33.0						14.4	28.5	4.6		
Queue Delay		0.0		0.0						0.0	0.0	0.0		
Total Delay (s/veh)		72.2		33.0						14.4	28.5	4.6		
Queue Length 50th (ft)		234		70						40	588	9		
Queue Length 95th (ft)		#395		120						69	691	36		
Internal Link Dist (ft)		156		413				497			510			
Turn Bay Length (ft)										214		214		
Base Capacity (vph)		346		320						988	1977	919		
Starvation Cap Reductn		0		0						0	0	0		
Spillback Cap Reductn		0		0						0	0	0		
Storage Cap Reductn		0		0						0	0	0		
Reduced v/c Ratio		0.86		0.57						0.10	0.81	0.11		

**Intersection Summary**  
 Cycle Length: 139.3  
 Actuated Cycle Length: 139.2  
 Natural Cycle: 80  
 Control Type: Actuated-Uncoordinated  
 # 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.

Splits and Phases: 6: SE 80th St & US 441



## Attachment D

HCM Signalized Intersection Capacity Analysis  
6: SE 80th St & US 441

Existing Conditions  
Timing Plan: PM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔					↔	↔	↔
Traffic Volume (vph)	0	129	151	78	94	0	0	0	0	93	1502	98
Future Volume (vph)	0	129	151	78	94	0	0	0	0	93	1502	98
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.8			5.8					6.5	6.5	6.5
Lane Util. Factor		1.00			1.00					1.00	0.95	1.00
Frt		0.93			1.00					1.00	1.00	0.85
Flt Protected		1.00			0.98					0.95	1.00	1.00
Satd. Flow (prot)		1694			1821					1752	3505	1568
Flt Permitted		1.00			0.29					0.95	1.00	1.00
Satd. Flow (perm)		1694			548					1752	3505	1568
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	0	137	161	83	100	0	0	0	0	99	1598	104
RTOR Reduction (vph)	0	30	0	0	0	0	0	0	0	0	0	36
Lane Group Flow (vph)	0	268	0	0	183	0	0	0	0	99	1598	68
Heavy Vehicles (%)	4%	4%	4%	2%	2%	2%	4%	4%	4%	3%	3%	3%
Turn Type		NA		pm+pt	NA					Perm	NA	Perm
Protected Phases		4		1	4 1						2 3	
Permitted Phases				4 1							2 3	2 3
Actuated Green, G (s)		25.9			40.9					77.5	77.5	77.5
Effective Green, g (s)		25.9			40.9					77.5	77.5	77.5
Actuated g/C Ratio		0.19			0.29					0.56	0.56	0.56
Clearance Time (s)		5.8										
Vehicle Extension (s)		4.0										
Lane Grp Cap (vph)		315			298					975	1951	872
v/s Ratio Prot		c0.16			c0.07						c0.46	
v/s Ratio Perm					0.11					0.06		0.04
v/c Ratio		0.85			0.61					0.10	0.82	0.08
Uniform Delay, d1		54.8			42.4					14.5	25.1	14.3
Progression Factor		1.00			0.57					1.00	1.00	1.00
Incremental Delay, d2		19.8			4.2					0.1	3.3	0.1
Delay (s)		74.6			28.4					14.6	28.5	14.4
Level of Service		E			C					B	C	B
Approach Delay (s/veh)		74.6			28.4			0.0			26.9	
Approach LOS		E			C			A			C	
<b>Intersection Summary</b>												
HCM 2000 Control Delay (s/veh)			33.3			HCM 2000 Level of Service						C
HCM 2000 Volume to Capacity ratio			0.85									
Actuated Cycle Length (s)			139.2			Sum of lost time (s)					27.3	
Intersection Capacity Utilization			81.9%			ICU Level of Service						D
Analysis Period (min)			15									
c Critical Lane Group												

# Attachment D

HCM 7th Signalized Intersection Summary  
6: SE 80th St & US 441

Existing Conditions  
Timing Plan: PM Peak Hour

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HCM 7th Edition methodology does not support clustered intersections.

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## Attachment D

Lanes, Volumes, Timings  
7: US 441 & SE 80th St

Existing Conditions  
Timing Plan: PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Ø1	Ø3
Lane Configurations		↖			↖	↖	↖	↖	↖					
Traffic Volume (vph)	35	128	0	0	93	54	140	1082	94	0	0	0		
Future Volume (vph)	35	128	0	0	93	54	140	1082	94	0	0	0		
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94		
Heavy Vehicles (%)	4%	4%	4%	2%	2%	2%	4%	4%	4%	3%	3%	3%		
Adj. Flow (vph)	37	136	0	0	99	57	149	1151	100	0	0	0		
Shared Lane Traffic (%)														
Lane Group Flow (vph)	0	173	0	0	99	57	149	1151	100	0	0	0		
Turn Type	pm+pt	NA			NA	Perm	Perm	NA	Perm					
Protected Phases	2	4.2			4			1.3					1	3
Permitted Phases	4.2					4	1.3		1.3					
Detector Phase	2	4.2			4	4	1.3	1.3	1.3					
Switch Phase														
Minimum Initial (s)	8.0				10.0	10.0							8.0	22.0
Minimum Split (s)	14.5				15.8	15.8							15.5	29.5
Total Split (s)	22.5				31.8	31.8							22.5	62.5
Total Split (%)	16.2%				22.8%	22.8%							16%	45%
Yellow Time (s)	5.5				4.8	4.8							5.5	5.5
All-Red Time (s)	1.0				1.0	1.0							2.0	2.0
Lost Time Adjust (s)					0.0	0.0								
Total Lost Time (s)					5.8	5.8								
Lead/Lag	Lag				Lag	Lag							Lead	Lead
Lead-Lag Optimize?	Yes				Yes	Yes							Yes	Yes
Recall Mode	None				None	None							None	Min
v/c Ratio		0.32			0.29	0.14	0.17	0.66	0.12					
Control Delay (s/veh)		14.0			51.3	0.7	10.1	18.4	2.4					
Queue Delay		0.0			0.0	0.0	0.0	0.0	0.0					
Total Delay (s/veh)		14.0			51.3	0.7	10.1	18.4	2.4					
Queue Length 50th (ft)		39			78	0	38	209	2					
Queue Length 95th (ft)		m50			134	0	60	264	18					
Internal Link Dist (ft)		413			4337			355				286		
Turn Bay Length (ft)						214	194		244					
Base Capacity (vph)		534			347	413	873	1745	827					
Starvation Cap Reductn		0			0	0	0	0	0					
Spillback Cap Reductn		0			0	0	0	0	0					
Storage Cap Reductn		0			0	0	0	0	0					
Reduced v/c Ratio		0.32			0.29	0.14	0.17	0.66	0.12					

**Intersection Summary**  
 Cycle Length: 139.3  
 Actuated Cycle Length: 139.2  
 Natural Cycle: 80  
 Control Type: Actuated-Uncoordinated  
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 7: US 441 & SE 80th St



## Attachment D

HCM Signalized Intersection Capacity Analysis  
7: US 441 & SE 80th St

Existing Conditions  
Timing Plan: PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↑	↔	↔	↑↑	↔			
Traffic Volume (vph)	35	128	0	0	93	54	140	1082	94	0	0	0
Future Volume (vph)	35	128	0	0	93	54	140	1082	94	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.8				5.8	5.8	7.5	7.5	7.5			
Lane Util. Factor	1.00				1.00	1.00	1.00	0.95	1.00			
Frt	1.00				1.00	0.85	1.00	1.00	0.85			
Flt Protected	0.99				1.00	1.00	0.95	1.00	1.00			
Satd. Flow (prot)	1808				1863	1583	1736	3471	1553			
Flt Permitted	0.93				1.00	1.00	0.95	1.00	1.00			
Satd. Flow (perm)	1702				1863	1583	1736	3471	1553			
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	37	136	0	0	99	57	149	1151	100	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	46	0	0	46	0	0	0
Lane Group Flow (vph)	0	173	0	0	99	11	149	1151	54	0	0	0
Heavy Vehicles (%)	4%	4%	4%	2%	2%	2%	4%	4%	4%	3%	3%	3%
Turn Type	pm+pt	NA			NA	Perm	Perm	NA	Perm			
Protected Phases	2	4 2			4			1 3				
Permitted Phases	4 2					4	1 3		1 3			
Actuated Green, G (s)		41.9			25.9	25.9	70.0	70.0	70.0			
Effective Green, g (s)		41.9			25.9	25.9	70.0	70.0	70.0			
Actuated g/C Ratio		0.30			0.19	0.19	0.50	0.50	0.50			
Clearance Time (s)					5.8	5.8						
Vehicle Extension (s)					4.0	4.0						
Lane Grp Cap (vph)		524			346	294	872	1745	780			
v/s Ratio Prot		c0.04			0.05			c0.33				
v/s Ratio Perm		c0.06				0.01	0.09		0.03			
v/c Ratio		0.33			0.29	0.04	0.17	0.66	0.07			
Uniform Delay, d1		37.8			48.7	46.4	18.8	25.7	17.8			
Progression Factor		0.57			1.00	1.00	1.00	1.00	1.00			
Incremental Delay, d2		0.4			0.6	0.1	0.3	1.5	0.1			
Delay (s)		21.9			49.3	46.5	19.1	27.2	17.9			
Level of Service		C			D	D	B	C	B			
Approach Delay (s/veh)		21.9			48.3			25.7		0.0		
Approach LOS		C			D			C		A		
<b>Intersection Summary</b>												
HCM 2000 Control Delay (s/veh)			27.3		HCM 2000 Level of Service				C			
HCM 2000 Volume to Capacity ratio		0.54										
Actuated Cycle Length (s)		139.2			Sum of lost time (s)				27.3			
Intersection Capacity Utilization		62.8%			ICU Level of Service				B			
Analysis Period (min)		15										
c Critical Lane Group												

# Attachment D

HCM 7th Signalized Intersection Summary  
7: US 441 & SE 80th St

Existing Conditions  
Timing Plan: PM Peak Hour

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HCM 7th Edition methodology does not support clustered intersections.

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## F3: Background AM Peak Hour Traffic (2027)

## Attachment D

### Lanes, Volumes, Timings

### Background Conditions

1: Juniper Rd & Project Dwyw/Juniper Pass

Timing Plan: AM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		+			+			+			+		
Traffic Volume (vph)	0	0	0	11	0	95	0	167	2	9	375	0	
Future Volume (vph)	0	0	0	11	0	95	0	167	2	9	375	0	
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	3%	3%	3%	2%	2%	2%	
Adj. Flow (vph)	0	0	0	15	0	127	0	223	3	12	500	0	
Shared Lane Traffic (%)													
Lane Group Flow (vph)	0	0	0	0	142	0	0	226	0	0	512	0	
Sign Control		Stop				Stop			Free			Free	

#### Intersection Summary

Control Type: Unsignalized

Intersection												
Int Delay, s/veh	1.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		+			+			+			+	
Traffic Vol, veh/h	0	0	0	11	0	95	0	167	2	9	375	0
Future Vol, veh/h	0	0	0	11	0	95	0	167	2	9	375	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	75	75	75	75	75	75	75	75	75	75	75	75
Heavy Vehicles, %	2	2	2	2	2	2	3	3	3	2	2	2
Mvmt Flow	0	0	0	15	0	127	0	223	3	12	500	0
Major/Minor	Minor2		Minor1		Major1			Major2				
Conflicting Flow All	747	749	500	748	748	224	500	0	0	225	0	0
Stage 1	524	524	-	224	224	-	-	-	-	-	-	-
Stage 2	223	225	-	524	524	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.13	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.227	-	-	2.218	-	-
Pot Cap-1 Maneuver	329	340	571	329	341	815	1059	-	-	1343	-	-
Stage 1	537	530	-	779	718	-	-	-	-	-	-	-
Stage 2	780	717	-	537	530	-	-	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	275	336	571	325	337	815	1059	-	-	1343	-	-
Mov Cap-2 Maneuver	275	336	-	325	337	-	-	-	-	-	-	-
Stage 1	530	523	-	779	718	-	-	-	-	-	-	-
Stage 2	659	717	-	530	523	-	-	-	-	-	-	-
Approach	EB		WB		NB			SB				
HCM Control Delay, s/v	0		11.38		0			0.18				
HCM LOS	A		B									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	1059	-	-	-	705	42	-	-				
HCM Lane V/C Ratio	-	-	-	-	0.201	0.009	-	-				
HCM Control Delay (s/veh)	0	-	-	0	11.4	7.7	0	-				
HCM Lane LOS	A	-	-	A	B	A	A	-				
HCM 95th %tile Q(veh)	0	-	-	-	0.7	0	-	-				

## Attachment D

Lanes, Volumes, Timings  
2: Juniper Rd & Chestnut Road

Background Conditions  
Timing Plan: AM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		+			+			+			+	
Traffic Volume (vph)	4	2	2	95	0	83	2	256	4	35	285	1
Future Volume (vph)	4	2	2	95	0	83	2	256	4	35	285	1
Peak Hour Factor	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	3%	3%	3%
Adj. Flow (vph)	5	3	3	123	0	108	3	332	5	45	370	1
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	11	0	0	231	0	0	340	0	0	416	0
Sign Control		Stop			Stop			Free			Free	

**Intersection Summary**

Control Type: Unsignalized

Intersection												
Int Delay, s/veh	6.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		+			+			+			+	
Traffic Vol, veh/h	4	2	2	95	0	83	2	256	4	35	285	1
Future Vol, veh/h	4	2	2	95	0	83	2	256	4	35	285	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None									
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	77	77	77	77	77	77	77	77	77	77	77	77
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	3	3	3
Mvmt Flow	5	3	3	123	0	108	3	332	5	45	370	1

Major/Minor	Minor2		Minor1		Major1			Major2				
Conflicting Flow All	799	805	371	803	803	335	371	0	0	338	0	0
Stage 1	462	462	-	340	340	-	-	-	-	-	-	-
Stage 2	338	343	-	462	462	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.13	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.227	-	-
Pot Cap-1 Maneuver	303	316	675	302	317	707	1187	-	-	1216	-	-
Stage 1	580	565	-	675	639	-	-	-	-	-	-	-
Stage 2	677	637	-	580	564	-	-	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	244	300	675	283	301	707	1187	-	-	1216	-	-
Mov Cap-2 Maneuver	244	300	-	283	301	-	-	-	-	-	-	-
Stage 1	553	538	-	673	637	-	-	-	-	-	-	-
Stage 2	572	636	-	547	538	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v	17.1	26.4	0.06	0.88
HCM LOS	C	D		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	14	-	-	308	393	196	-	-
HCM Lane V/C Ratio	0.002	-	-	0.034	0.588	0.037	-	-
HCM Control Delay (s/veh)	8	0	-	17.1	26.4	8.1	0	-
HCM Lane LOS	A	A	-	C	D	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.1	3.6	0.1	-	-

## Attachment D

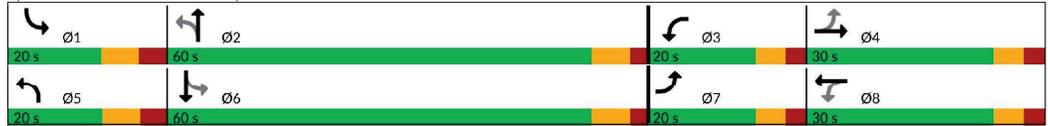
Lanes, Volumes, Timings  
3: SR 35 & Juniper Rd

Background Conditions  
Timing Plan: AM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	42	7	143	52	4	97	83	822	48	73	1220	22
Future Volume (vph)	42	7	143	52	4	97	83	822	48	73	1220	22
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
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	6%	6%	6%	4%	4%	4%
Adj. Flow (vph)	46	8	155	57	4	105	90	893	52	79	1326	24
Shared Lane Traffic (%)												
Lane Group Flow (vph)	46	163	0	57	109	0	90	945	0	79	1350	0
Turn Type	pm+pt	NA										
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	7	4		3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0		7.0	20.0		7.0	20.0	
Minimum Split (s)	15.1	26.8		15.3	26.8		15.1	27.5		15.3	27.5	
Total Split (s)	20.0	30.0		20.0	30.0		20.0	60.0		20.0	60.0	
Total Split (%)	15.4%	23.1%		15.4%	23.1%		15.4%	46.2%		15.4%	46.2%	
Yellow Time (s)	3.8	3.8		3.7	3.8		4.8	4.8		4.8	4.8	
All-Red Time (s)	2.5	2.7		2.5	2.7		3.3	2.0		3.5	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.3	6.5		6.2	6.5		8.1	6.8		8.3	6.8	
Lead/Lag	Lead	Lag										
Lead-Lag Optimize?	Yes	Yes										
Recall Mode	None	None		None	None		None	Min		None	Min	
v/c Ratio	0.19	0.56		0.25	0.44		0.36	0.54		0.23	0.77	
Control Delay (s/veh)	35.0	17.5		35.9	16.6		13.9	18.8		10.1	25.7	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay (s/veh)	35.0	17.5		35.9	16.6		13.9	18.8		10.1	25.7	
Queue Length 50th (ft)	24	5		30	2		20	210		17	368	
Queue Length 95th (ft)	57	71		67	56		52	328		43	566	
Internal Link Dist (ft)		6595			362			331			317	
Turn Bay Length (ft)	214			214			214			214		
Base Capacity (vph)	365	545		344	508		307	2077		423	2101	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.13	0.30		0.17	0.21		0.29	0.45		0.19	0.64	

Intersection Summary	
Cycle Length:	130
Actuated Cycle Length:	94.5
Natural Cycle:	105
Control Type:	Actuated-Uncoordinated

Splits and Phases: 3: SR 35 & Juniper Rd



## Attachment D

### HCM 7th Signalized Intersection Summary 3: SR 35 & Juniper Rd

Background Conditions  
Timing Plan: AM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	42	7	143	52	4	97	83	822	48	73	1220	22
Future Volume (veh/h)	42	7	143	52	4	97	83	822	48	73	1220	22
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	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	1870	1870	1870	1870	1870	1870	1811	1811	1811	1841	1841	1841
Adj Flow Rate, veh/h	46	8	155	57	4	105	90	893	52	79	1326	24
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, %	2	2	2	2	2	2	6	6	6	4	4	4
Cap, veh/h	259	10	194	216	8	204	240	1485	86	336	1578	29
Arrive On Green	0.05	0.13	0.13	0.06	0.13	0.13	0.07	0.45	0.45	0.07	0.45	0.45
Sat Flow, veh/h	1781	78	1519	1781	58	1535	1725	3305	192	1753	3514	64
Grp Volume(v), veh/h	46	0	163	57	0	109	90	465	480	79	659	691
Grp Sat Flow(s),veh/h/ln	1781	0	1597	1781	0	1594	1725	1721	1776	1753	1749	1829
Q Serve(g_s), s	2.0	0.0	9.2	2.5	0.0	5.9	2.5	19.0	19.0	2.1	31.0	31.0
Cycle Q Clear(g_c), s	2.0	0.0	9.2	2.5	0.0	5.9	2.5	19.0	19.0	2.1	31.0	31.0
Prop In Lane	1.00		0.95	1.00		0.96	1.00		0.11	1.00		0.03
Lane Grp Cap(c), veh/h	259	0	204	216	0	211	240	773	798	336	785	821
V/C Ratio(X)	0.18	0.00	0.80	0.26	0.00	0.52	0.38	0.60	0.60	0.24	0.84	0.84
Avail Cap(c_a), veh/h	429	0	404	377	0	403	343	985	1017	441	1001	1047
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	32.2	0.0	39.4	32.3	0.0	37.5	18.2	19.3	19.3	13.7	22.6	22.7
Incr Delay (d2), s/veh	0.3	0.0	7.0	0.6	0.0	1.9	1.0	0.8	0.7	0.4	5.2	5.0
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(50%),veh/ln	0.9	0.0	4.0	1.1	0.0	2.4	0.9	6.9	7.2	0.8	12.4	13.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	32.5	0.0	46.3	32.9	0.0	39.5	19.1	20.1	20.0	14.1	27.9	27.7
LnGrp LOS	C		D	C		D	B	C	C	B	C	C
Approach Vol, veh/h	209			166			1035			1429		
Approach Delay, s/veh	43.3			37.2			20.0			27.0		
Approach LOS	D			D			B			C		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	14.4	48.6	11.6	18.4	14.4	48.5	11.2	18.8				
Change Period (Y+Rc), s	8.3	6.8	6.2	6.5	8.1	6.8	6.3	6.5				
Max Green Setting (Gmax), s	11.7	53.2	13.8	23.5	11.9	53.2	13.7	23.5				
Max Q Clear Time (g_c+1), s	4.1	21.0	4.5	11.2	4.5	33.0	4.0	7.9				
Green Ext Time (p_c), s	0.1	6.2	0.1	0.7	0.1	8.7	0.0	0.5				
<b>Intersection Summary</b>												
HCM 7th Control Delay, s/veh	26.2											
HCM 7th LOS	C											

## Attachment D

Lanes, Volumes, Timings  
4: Juniper Rd & SE 79th St

Background Conditions  
Timing Plan: AM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		+			+			+			+	
Traffic Volume (vph)	81	8	172	1	20	3	293	81	0	0	149	233
Future Volume (vph)	81	8	172	1	20	3	293	81	0	0	149	233
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	6%	6%	6%	18%	18%	18%	2%	2%	2%	4%	4%	4%
Adj. Flow (vph)	91	9	193	1	22	3	329	91	0	0	167	262
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	293	0	0	26	0	0	420	0	0	429	0
Sign Control		Stop			Stop			Free			Free	

**Intersection Summary**

Control Type: Unsignalized

Intersection												
Int Delay, s/veh	33.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		+			+			+			+	
Traffic Vol, veh/h	81	8	172	1	20	3	293	81	0	0	149	233
Future Vol, veh/h	81	8	172	1	20	3	293	81	0	0	149	233
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
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, %	6	6	6	18	18	18	2	2	2	4	4	4
Mvmt Flow	91	9	193	1	22	3	329	91	0	0	167	262
Major/Minor	Minor2		Minor1		Major1			Major2				
Conflicting Flow All	1059	1048	298	921	1179	91	429	0	0	91	0	0
Stage 1	298	298	-	749	749	-	-	-	-	-	-	-
Stage 2	761	749	-	172	429	-	-	-	-	-	-	-
Critical Hdwy	7.16	6.56	6.26	7.28	6.68	6.38	4.12	-	-	4.14	-	-
Critical Hdwy Stg 1	6.16	5.56	-	6.28	5.68	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.16	5.56	-	6.28	5.68	-	-	-	-	-	-	-
Follow-up Hdwy	3.554	4.054	3.354	3.662	4.162	3.462	2.218	-	-	2.236	-	-
Pot Cap-1 Maneuver	199	224	732	235	178	924	1130	-	-	1491	-	-
Stage 1	702	660	-	380	396	-	-	-	-	-	-	-
Stage 2	392	413	-	794	557	-	-	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	119	155	732	115	123	924	1130	-	-	1491	-	-
Mov Cap-2 Maneuver	119	155	-	115	123	-	-	-	-	-	-	-
Stage 1	702	660	-	263	275	-	-	-	-	-	-	-
Stage 2	249	286	-	576	557	-	-	-	-	-	-	-
Approach	EB		WB		NB			SB				
HCM Control Delay, s/v	121.2		37.38		7.43			0				
HCM LOS	F		E									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	1073	-	-	270	138	1491	-	-				
HCM Lane V/C Ratio	0.291	-	-	1.087	0.196	-	-	-				
HCM Control Delay (s/veh)	9.5	0	-	121.2	37.4	0	-	-				
HCM Lane LOS	A	A	-	F	E	A	-	-				
HCM 95th %tile Q(veh)	1.2	-	-	12.1	0.7	0	-	-				

## Attachment D

Lanes, Volumes, Timings  
5: SE 80th St & SE 79th St

Background Conditions  
Timing Plan: AM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		+			+	+		+		+	+	
Traffic Volume (vph)	0	0	2	220	0	324	1	88	132	141	83	0
Future Volume (vph)	0	0	2	220	0	324	1	88	132	141	83	0
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	2%	2%	2%	3%	3%	3%	5%	5%	5%	5%	5%	5%
Adj. Flow (vph)	0	0	2	242	0	356	1	97	145	155	91	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	2	0	0	242	356	0	243	0	155	91	0
Sign Control		Stop			Stop			Free			Free	

**Intersection Summary**

Control Type: Unsignalized

## Attachment D

HCM 7th TWSC  
5: SE 80th St & SE 79th St

Background Conditions  
Timing Plan: AM Peak Hour

Intersection												
Int Delay, s/veh	11.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		+			+	+		+		+	+	
Traffic Vol, veh/h	0	0	2	220	0	324	1	88	132	141	83	0
Future Vol, veh/h	0	0	2	220	0	324	1	88	132	141	83	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None									
Storage Length	-	-	-	-	-	150	-	-	-	214	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	2	2	2	3	3	3	5	5	5	5	5	5
Mvmt Flow	0	0	2	242	0	356	1	97	145	155	91	0

Major/Minor	Minor2		Minor1		Major1			Major2				
Conflicting Flow All	500	645	91	573	573	169	91	0	0	242	0	0
Stage 1	401	401	-	171	171	-	-	-	-	-	-	-
Stage 2	99	244	-	401	401	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.13	6.53	6.23	4.15	-	-	4.15	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.13	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.13	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.527	4.027	3.327	2.245	-	-	2.245	-	-
Pot Cap-1 Maneuver	481	391	966	429	429	872	1485	-	-	1307	-	-
Stage 1	625	601	-	828	755	-	-	-	-	-	-	-
Stage 2	907	704	-	623	599	-	-	-	-	-	-	-
Platoon blocked, %												
Mov Cap-1 Maneuver	251	344	966	377	377	872	1485	-	-	1307	-	-
Mov Cap-2 Maneuver	251	344	-	377	377	-	-	-	-	-	-	-
Stage 1	551	530	-	827	754	-	-	-	-	-	-	-
Stage 2	536	703	-	548	528	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v	8.73	19.29	0.03	5.11
HCM LOS	A	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	7	-	-	966	377	872	1307	-	-
HCM Lane V/C Ratio	0.001	-	-	0.002	0.641	0.408	0.119	-	-
HCM Control Delay (s/veh)	7.4	0	-	8.7	30.1	11.9	8.1	-	-
HCM Lane LOS	A	A	-	A	D	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0	4.3	2	0.4	-	-

## F4: Background PM Peak Hour Traffic (2027)

## Attachment D

### Lanes, Volumes, Timings

### Background Conditions

#### 1: Juniper Rd & Project Dvwy/Juniper Pass

Timing Plan: PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	0	0	14	0	76	0	22	128	0
Future Volume (vph)	0	0	0	0	0	14	0	76	0	22	128	0
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	2%	2%	2%	8%	8%	8%	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	0	0	0	0	0	15	0	81	0	23	136	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	15	0	0	81	0	0	159	0
Sign Control		Stop			Stop			Free			Free	
<b>Intersection Summary</b>												

Control Type: Unsignalized

## Attachment D

HCM 7th TWSC  
1: Juniper Rd & Project Dvwy/Juniper Pass

Background Conditions  
Timing Plan: PM Peak Hour

Intersection												
Int Delay, s/veh	1.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	+			+			+			+		
Traffic Vol, veh/h	0	0	0	0	0	14	0	76	0	22	128	0
Future Vol, veh/h	0	0	0	0	0	14	0	76	0	22	128	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	8	8	8	2	2	2	2	2	2
Mvmt Flow	0	0	0	0	0	15	0	81	0	23	136	0
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	264	264	136	264	264	81	136	0	0	81	0	0
Stage 1	183	183	-	81	81	-	-	-	-	-	-	-
Stage 2	81	81	-	183	183	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.18	6.58	6.28	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.18	5.58	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.18	5.58	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.572	4.072	3.372	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	689	641	912	677	631	963	1448	-	-	1517	-	-
Stage 1	819	748	-	913	816	-	-	-	-	-	-	-
Stage 2	928	828	-	805	737	-	-	-	-	-	-	-
Platoon blocked, %												
Mov Cap-1 Maneuver	667	631	912	666	621	963	1448	-	-	1517	-	-
Mov Cap-2 Maneuver	667	631	-	666	621	-	-	-	-	-	-	-
Stage 1	805	736	-	913	816	-	-	-	-	-	-	-
Stage 2	913	828	-	792	725	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s/v	0		8.8		0		1.09					
HCM LOS	A		A									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	1448	-	-	-	963	264	-	-				
HCM Lane V/C Ratio	-	-	-	-	0.015	0.015	-	-				
HCM Control Delay (s/veh)	0	-	-	0	8.8	7.4	0	-				
HCM Lane LOS	A	-	-	A	A	A	A	-				
HCM 95th %tile Q(veh)	0	-	-	-	0	0	-	-				

## Attachment D

### Lanes, Volumes, Timings 2: Juniper Rd & Chestnut Road

Background Conditions  
Timing Plan: PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	2	0	8	1	70	0	88	3	63	140	1
Future Volume (vph)	0	2	0	8	1	70	0	88	3	63	140	1
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	2%	2%	2%	4%	4%	4%	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	0	2	0	9	1	75	0	95	3	68	151	1
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	2	0	0	85	0	0	98	0	0	220	0
Sign Control		Stop			Stop			Free			Free	

#### Intersection Summary

Control Type: Unsignalized

## Attachment D

HCM 7th TWSC  
2: Juniper Rd & Chestnut Road

Background Conditions  
Timing Plan: PM Peak Hour

Intersection												
Int Delay, s/veh	3.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		+			+			+			+	
Traffic Vol, veh/h	0	2	0	8	1	70	0	88	3	63	140	1
Future Vol, veh/h	0	2	0	8	1	70	0	88	3	63	140	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	4	4	4	2	2	2	2	2	2
Mvmt Flow	0	2	0	9	1	75	0	95	3	68	151	1
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	382	384	151	383	383	96	152	0	0	98	0	0
Stage 1	287	287	-	96	96	-	-	-	-	-	-	-
Stage 2	95	98	-	287	287	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.14	6.54	6.24	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.14	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.14	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.536	4.036	3.336	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	576	549	895	571	547	955	1429	-	-	1495	-	-
Stage 1	721	675	-	905	811	-	-	-	-	-	-	-
Stage 2	912	814	-	716	671	-	-	-	-	-	-	-
Platoon blocked, %												
Mov Cap-1 Maneuver	504	522	895	541	520	955	1429	-	-	1495	-	-
Mov Cap-2 Maneuver	504	522	-	541	520	-	-	-	-	-	-	-
Stage 1	685	641	-	905	811	-	-	-	-	-	-	-
Stage 2	839	814	-	678	637	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s/v	11.92		9.54		0		2.32					
HCM LOS	B		A									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	1429	-	-	522	877	555	-	-				
HCM Lane V/C Ratio	-	-	-	0.004	0.097	0.045	-	-				
HCM Control Delay (s/veh)	0	-	-	11.9	9.5	7.5	0	-				
HCM Lane LOS	A	-	-	B	A	A	A	-				
HCM 95th %tile Q(veh)	0	-	-	0	0.3	0.1	-	-				

# Attachment D

## Lanes, Volumes, Timings 3: SR 35 & Juniper Rd

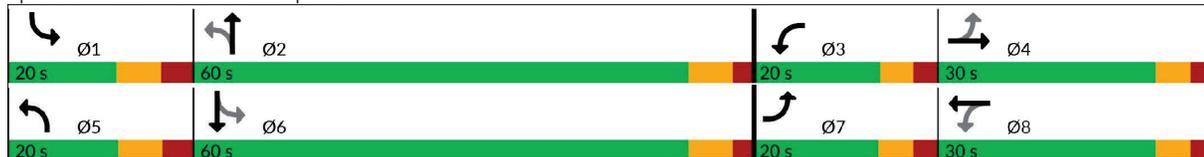
Background Conditions  
Timing Plan: PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	22	3	86	31	3	89	157	1183	46	64	858	27
Future Volume (vph)	22	3	86	31	3	89	157	1183	46	64	858	27
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	5%	5%	5%	3%	3%	3%	3%	3%	3%	4%	4%	4%
Adj. Flow (vph)	24	3	96	34	3	99	174	1314	51	71	953	30
Shared Lane Traffic (%)												
Lane Group Flow (vph)	24	99	0	34	102	0	174	1365	0	71	983	0
Turn Type	pm+pt	NA										
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	7	4		3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0		7.0	20.0		7.0	20.0	
Minimum Split (s)	15.1	26.8		15.3	26.8		15.1	27.5		15.3	27.5	
Total Split (s)	20.0	30.0		20.0	30.0		20.0	60.0		20.0	60.0	
Total Split (%)	15.4%	23.1%		15.4%	23.1%		15.4%	46.2%		15.4%	46.2%	
Yellow Time (s)	3.8	3.8		3.7	3.8		4.8	4.8		4.8	4.8	
All-Red Time (s)	2.5	2.7		2.5	2.7		3.3	2.0		3.5	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.3	6.5		6.2	6.5		8.1	6.8		8.3	6.8	
Lead/Lag	Lead	Lag										
Lead-Lag Optimize?	Yes	Yes										
Recall Mode	None	None		None	None		None	Min		None	Min	
v/c Ratio	0.11	0.41		0.14	0.35		0.45	0.65		0.26	0.60	
Control Delay (s/veh)	33.8	16.5		34.1	14.4		11.1	19.8		10.4	19.5	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay (s/veh)	33.8	16.5		34.1	14.4		11.1	19.8		10.4	19.5	
Queue Length 50th (ft)	12	2		17	2		39	350		15	226	
Queue Length 95th (ft)	35	53		45	53		76	513		35	334	
Internal Link Dist (ft)		6595			362			331			317	
Turn Bay Length (ft)	214			214			214			214		
Base Capacity (vph)	371	546		373	557		445	2279		366	2259	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.06	0.18		0.09	0.18		0.39	0.60		0.19	0.44	

### Intersection Summary

Cycle Length: 130  
 Actuated Cycle Length: 85.6  
 Natural Cycle: 105  
 Control Type: Actuated-Uncoordinated

### Splits and Phases: 3: SR 35 & Juniper Rd



## Attachment D

### HCM 7th Signalized Intersection Summary 3: SR 35 & Juniper Rd

Background Conditions  
Timing Plan: PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	22	3	86	31	3	89	157	1183	46	64	858	27
Future Volume (veh/h)	22	3	86	31	3	89	157	1183	46	64	858	27
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	1826	1826	1826	1856	1856	1856	1856	1856	1856	1841	1841	1841
Adj Flow Rate, veh/h	24	3	96	34	3	99	174	1314	51	71	953	30
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	5	5	5	3	3	3	3	3	3	4	4	4
Cap, veh/h	194	4	136	203	5	152	370	1610	62	258	1568	49
Arrive On Green	0.04	0.09	0.09	0.05	0.10	0.10	0.08	0.47	0.47	0.07	0.45	0.45
Sat Flow, veh/h	1739	47	1507	1767	46	1533	1767	3460	134	1753	3461	109
Grp Volume(v), veh/h	24	0	99	34	0	102	174	669	696	71	482	501
Grp Sat Flow(s),veh/h/ln	1739	0	1555	1767	0	1580	1767	1763	1831	1753	1749	1821
Q Serve(g_s), s	1.0	0.0	5.2	1.4	0.0	5.2	4.3	27.4	27.5	1.7	17.4	17.4
Cycle Q Clear(g_c), s	1.0	0.0	5.2	1.4	0.0	5.2	4.3	27.4	27.5	1.7	17.4	17.4
Prop In Lane	1.00		0.97	1.00		0.97	1.00		0.07	1.00		0.06
Lane Grp Cap(c), veh/h	194	0	140	203	0	156	370	820	852	258	792	825
V/C Ratio(X)	0.12	0.00	0.71	0.17	0.00	0.65	0.47	0.82	0.82	0.28	0.61	0.61
Avail Cap(c_a), veh/h	416	0	435	413	0	442	476	1118	1161	384	1109	1155
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(l)	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	32.6	0.0	37.1	32.1	0.0	36.4	12.7	19.3	19.4	15.2	17.3	17.3
Incr Delay (d2), s/veh	0.3	0.0	6.3	0.4	0.0	4.5	0.9	3.4	3.4	0.6	0.8	0.7
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	0.4	0.0	2.2	0.6	0.0	2.2	1.5	10.4	10.8	0.6	6.3	6.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	32.9	0.0	43.4	32.5	0.0	40.9	13.6	22.8	22.7	15.7	18.1	18.0
LnGrp LOS	C		D	C		D	B	C	C	B	B	B
Approach Vol, veh/h		123			136			1539			1054	
Approach Delay, s/veh		41.4			38.8			21.7			17.9	
Approach LOS		D			D			C			B	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	14.0	45.8	10.0	14.1	15.0	44.8	9.3	14.8				
Change Period (Y+Rc), s	8.3	6.8	6.2	6.5	8.1	6.8	6.3	6.5				
Max Green Setting (Gmax), s	11.7	53.2	13.8	23.5	11.9	53.2	13.7	23.5				
Max Q Clear Time (g_c+I1), s	3.7	29.5	3.4	7.2	6.3	19.4	3.0	7.2				
Green Ext Time (p_c), s	0.1	9.5	0.0	0.4	0.2	6.6	0.0	0.4				
<b>Intersection Summary</b>												
HCM 7th Control Delay, s/veh			22.0									
HCM 7th LOS			C									

## Attachment D

### Lanes, Volumes, Timings 4: Juniper Rd & SE 79th St

Background Conditions  
Timing Plan: PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	194	29	205	0	5	1	163	22	1	3	23	142
Future Volume (vph)	194	29	205	0	5	1	163	22	1	3	23	142
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	3%	3%	3%
Adj. Flow (vph)	200	30	211	0	5	1	168	23	1	3	24	146
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	441	0	0	6	0	0	192	0	0	173	0
Sign Control		Stop			Stop			Free			Free	
<b>Intersection Summary</b>												

Control Type: Unsignalized

## Attachment D

HCM 7th TWSC  
4: Juniper Rd & SE 79th St

Background Conditions  
Timing Plan: PM Peak Hour

Intersection												
Int Delay, s/veh	16.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		+			+			+			+	
Traffic Vol, veh/h	194	29	205	0	5	1	163	22	1	3	23	142
Future Vol, veh/h	194	29	205	0	5	1	163	22	1	3	23	142
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	97	97	97	97	97	97	97	97	97	97	97	97
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	3	3	3
Mvmt Flow	200	30	211	0	5	1	168	23	1	3	24	146
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	464	463	97	404	536	23	170	0	0	24	0	0
Stage 1	103	103	-	359	359	-	-	-	-	-	-	-
Stage 2	361	360	-	45	176	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.13	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.227	-	-
Pot Cap-1 Maneuver	508	496	959	557	451	1054	1407	-	-	1585	-	-
Stage 1	903	810	-	659	627	-	-	-	-	-	-	-
Stage 2	657	627	-	969	753	-	-	-	-	-	-	-
Platoon blocked, %												
Mov Cap-1 Maneuver	440	435	959	358	396	1054	1407	-	-	1585	-	-
Mov Cap-2 Maneuver	440	435	-	358	396	-	-	-	-	-	-	-
Stage 1	901	808	-	579	551	-	-	-	-	-	-	-
Stage 2	572	551	-	726	752	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s/v	26.57		13.27		6.93		0.13					
HCM LOS	D		B									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	1388	-	-	593	442	27	-	-				
HCM Lane V/C Ratio	0.119	-	-	0.743	0.014	0.002	-	-				
HCM Control Delay (s/veh)	7.9	0	-	26.6	13.3	7.3	0	-				
HCM Lane LOS	A	A	-	D	B	A	A	-				
HCM 95th %tile Q(veh)	0.4	-	-	6.5	0	0	-	-				

## Attachment D

Lanes, Volumes, Timings  
5: SE 80th St & SE 79th St

Background Conditions  
Timing Plan: PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	1	141	0	173	0	106	214	220	97	0
Future Volume (vph)	0	0	1	141	0	173	0	106	214	220	97	0
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%	2%	2%	2%	2%	2%	4%	4%	4%	2%	2%	2%
Adj. Flow (vph)	0	0	1	147	0	180	0	110	223	229	101	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1	0	0	147	180	0	333	0	229	101	0
Sign Control		Stop			Stop			Free			Free	

**Intersection Summary**

Control Type: Unsignalized

## Attachment D

HCM 7th TWSC  
5: SE 80th St & SE 79th St

Background Conditions  
Timing Plan: PM Peak Hour

Intersection												
Int Delay, s/veh	9.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕	↕		↕		↕	↕	
Traffic Vol, veh/h	0	0	1	141	0	173	0	106	214	220	97	0
Future Vol, veh/h	0	0	1	141	0	173	0	106	214	220	97	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None									
Storage Length	-	-	-	-	-	150	-	-	-	214	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	96	96	96	96	96	96	96	96	96	96	96	96
Heavy Vehicles, %	2	2	2	2	2	2	4	4	4	2	2	2
Mvmt Flow	0	0	1	147	0	180	0	110	223	229	101	0

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	670	893	101	781	781	222	101	0	0	333	0	0
Stage 1	559	559	-	222	222	-	-	-	-	-	-	-
Stage 2	110	333	-	559	559	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.14	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.236	-	-	2.218	-	-
Pot Cap-1 Maneuver	371	281	954	312	326	818	1479	-	-	1226	-	-
Stage 1	513	511	-	781	720	-	-	-	-	-	-	-
Stage 2	895	644	-	513	511	-	-	-	-	-	-	-
Platoon blocked, %												
Mov Cap-1 Maneuver	235	228	954	253	265	818	1479	-	-	1226	-	-
Mov Cap-2 Maneuver	235	228	-	253	265	-	-	-	-	-	-	-
Stage 1	417	415	-	781	720	-	-	-	-	-	-	-
Stage 2	698	644	-	417	415	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s/v	8.78		22.52		0		5.98	
HCM LOS	A		C					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1479	-	-	954	253	818	1226	-	-
HCM Lane V/C Ratio	-	-	-	0.001	0.579	0.22	0.187	-	-
HCM Control Delay (s/veh)	0	-	-	8.8	37.1	10.6	8.6	-	-
HCM Lane LOS	A	-	-	A	E	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0	3.3	0.8	0.7	-	-

Attachment D

Lanes, Volumes, Timings  
6: SE 80th St & US 441

Background Conditions  
Timing Plan: PM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Ø2	Ø3
Lane Configurations		↕			↕					↕	↕	↕		
Traffic Volume (vph)	0	133	156	80	97	0	0	0	0	96	1548	101		
Future Volume (vph)	0	133	156	80	97	0	0	0	0	96	1548	101		
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94		
Heavy Vehicles (%)	4%	4%	4%	2%	2%	2%	4%	4%	4%	3%	3%	3%		
Adj. Flow (vph)	0	141	166	85	103	0	0	0	0	102	1647	107		
Shared Lane Traffic (%)														
Lane Group Flow (vph)	0	307	0	0	188	0	0	0	0	102	1647	107		
Turn Type		NA		pm+pt	NA					Perm	NA	Perm		
Protected Phases		4		1	4						2	3	2	3
Permitted Phases				4	1					2	3		2	3
Detector Phase		4		1	4					2	3		2	3
Switch Phase														
Minimum Initial (s)		10.0		8.0									8.0	22.0
Minimum Split (s)		15.8		15.5									14.5	29.5
Total Split (s)		31.8		22.5									22.5	62.5
Total Split (%)		22.8%		16.2%									16%	45%
Yellow Time (s)		4.8		5.5									5.5	5.5
All-Red Time (s)		1.0		2.0									1.0	2.0
Lost Time Adjust (s)		0.0												
Total Lost Time (s)		5.8												
Lead/Lag		Lag		Lead									Lag	Lead
Lead-Lag Optimize?		Yes		Yes									Yes	Yes
Recall Mode		None		None									None	Min
v/c Ratio		0.89		0.61						0.10	0.83	0.12		
Control Delay (s/veh)		75.4		35.6						14.5	29.9	4.8		
Queue Delay		0.0		0.0						0.0	0.0	0.0		
Total Delay (s/veh)		75.4		35.6						14.5	29.9	4.8		
Queue Length 50th (ft)		244		81						41	622	10		
Queue Length 95th (ft)		#416		133						70	730	38		
Internal Link Dist (ft)		156		413				497			510			
Turn Bay Length (ft)										214		214		
Base Capacity (vph)		346		310						987	1975	918		
Starvation Cap Reductn		0		0						0	0	0		
Spillback Cap Reductn		0		0						0	0	0		
Storage Cap Reductn		0		0						0	0	0		
Reduced v/c Ratio		0.89		0.61						0.10	0.83	0.12		

**Intersection Summary**  
 Cycle Length: 139.3  
 Actuated Cycle Length: 139.3  
 Natural Cycle: 80  
 Control Type: Actuated-Uncoordinated  
 # 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.

Splits and Phases: 6: SE 80th St & US 441



	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement												
Lane Configurations		↔			↔					↔	↔	↔
Traffic Volume (vph)	0	133	156	80	97	0	0	0	0	96	1548	101
Future Volume (vph)	0	133	156	80	97	0	0	0	0	96	1548	101
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.8			5.8					6.5	6.5	6.5
Lane Util. Factor		1.00			1.00					1.00	0.95	1.00
Fr't		0.93			1.00					1.00	1.00	0.85
Flt Protected		1.00			0.98					0.95	1.00	1.00
Satd. Flow (prot)		1694			1822					1752	3505	1568
Flt Permitted		1.00			0.27					0.95	1.00	1.00
Satd. Flow (perm)		1694			495					1752	3505	1568
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	0	141	166	85	103	0	0	0	0	102	1647	107
RTOR Reduction (vph)	0	30	0	0	0	0	0	0	0	0	0	36
Lane Group Flow (vph)	0	277	0	0	188	0	0	0	0	102	1647	71
Heavy Vehicles (%)	4%	4%	4%	2%	2%	2%	4%	4%	4%	3%	3%	3%
Turn Type	NA		pm+pt	NA						Perm	NA	Perm
Protected Phases		4		1	4	1					2	3
Permitted Phases				4	1					2	3	3
Actuated Green, G (s)		26.0			41.0					77.5	77.5	77.5
Effective Green, g (s)		26.0			41.0					77.5	77.5	77.5
Actuated g/C Ratio		0.19			0.29					0.56	0.56	0.56
Clearance Time (s)		5.8										
Vehicle Extension (s)		4.0										
Lane Grp Cap (vph)		316			288					974	1950	872
v/s Ratio Prot		c0.16			c0.07						c0.47	
v/s Ratio Perm					0.12					0.06		0.05
w/c Ratio		0.88			0.65					0.10	0.84	0.08
Uniform Delay, d1		55.1			42.9					14.6	25.9	14.4
Progression Factor		1.00			0.58					1.00	1.00	1.00
Incremental Delay, d2		23.3			5.7					0.1	4.1	0.1
Delay (s)		78.4			30.6					14.7	30.0	14.5
Level of Service		E			C					B	C	B
Approach Delay (s/veh)		78.4			30.6			0.0			28.2	
Approach LOS		E			C			A			C	
<b>Intersection Summary</b>												
HCM 2000 Control Delay (s/veh)			35.0			HCM 2000 Level of Service						C
HCM 2000 Volume to Capacity ratio			0.87									
Actuated Cycle Length (s)			139.3			Sum of lost time (s)			27.3			
Intersection Capacity Utilization			84.0%			ICU Level of Service						E
Analysis Period (min)			15									
c Critical Lane Group												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Ø1	Ø3
Lane Configurations														
Traffic Volume (vph)	36	132	0	0	96	56	144	1115	97	0	0	0		
Future Volume (vph)	36	132	0	0	96	56	144	1115	97	0	0	0		
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94		
Heavy Vehicles (%)	4%	4%	4%	2%	2%	2%	4%	4%	4%	3%	3%	3%		
Adj. Flow (vph)	38	140	0	0	102	60	153	1186	103	0	0	0		
Shared Lane Traffic (%)														
Lane Group Flow (vph)	0	178	0	0	102	60	153	1186	103	0	0	0		
Turn Type	pm+pt	NA			NA	Perm	Perm	NA	Perm					
Protected Phases	2	4.2			4			1.3					1	3
Permitted Phases	4.2					4	1.3		1.3					
Detector Phase	2	4.2			4	4	1.3	1.3	1.3					
Switch Phase														
Minimum Initial (s)	8.0				10.0	10.0							8.0	22.0
Minimum Split (s)	14.5				15.8	15.8							15.5	29.5
Total Split (s)	22.5				31.8	31.8							22.5	62.5
Total Split (%)	16.2%				22.8%	22.8%							16%	45%
Yellow Time (s)	5.5				4.8	4.8							5.5	5.5
All-Red Time (s)	1.0				1.0	1.0							2.0	2.0
Lost Time Adjust (s)					0.0	0.0								
Total Lost Time (s)					5.8	5.8								
Lead/Lag	Lag				Lag	Lag							Lead	Lead
Lead-Lag Optimize?	Yes				Yes	Yes							Yes	Yes
Recall Mode	None				None	None							None	Min
v/c Ratio		0.33			0.29	0.15	0.18	0.68	0.12					
Control Delay (s/veh)		14.1			51.5	0.7	10.2	19.2	2.5					
Queue Delay		0.0			0.0	0.0	0.0	0.0	0.0					
Total Delay (s/veh)		14.1			51.5	0.7	10.2	19.2	2.5					
Queue Length 50th (ft)		40			80	0	39	219	3					
Queue Length 95th (ft)		m50			137	0	61	283	19					
Internal Link Dist (ft)		413			4337			355			286			
Turn Bay Length (ft)						214	194		244					
Base Capacity (vph)		533			347	413	872	1744	826					
Starvation Cap Reductn		0			0	0	0	0	0					
Spillback Cap Reductn		0			0	0	0	0	0					
Storage Cap Reductn		0			0	0	0	0	0					
Reduced v/c Ratio		0.33			0.29	0.15	0.18	0.68	0.12					

**Intersection Summary**  
 Cycle Length: 139.3  
 Actuated Cycle Length: 139.3  
 Natural Cycle: 80  
 Control Type: Actuated-Uncoordinated  
 m Volume for 95th percentile queue is metered by upstream signal.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		↔			↔	↔	↔	↔	↔				
Traffic Volume (vph)	36	132	0	0	96	56	144	1115	97	0	0	0	
Future Volume (vph)	36	132	0	0	96	56	144	1115	97	0	0	0	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)		5.8			5.8	5.8	7.5	7.5	7.5				
Lane Util. Factor		1.00			1.00	1.00	1.00	0.95	1.00				
Fr't		1.00			1.00	0.85	1.00	1.00	0.85				
Flt Protected		0.99			1.00	1.00	0.95	1.00	1.00				
Satd. Flow (prot)		1808			1863	1583	1736	3471	1553				
Flt Permitted		0.93			1.00	1.00	0.95	1.00	1.00				
Satd. Flow (perm)		1699			1863	1583	1736	3471	1553				
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	
Adj. Flow (vph)	38	140	0	0	102	60	153	1186	103	0	0	0	
RTOR Reduction (vph)	0	0	0	0	0	49	0	46	0	0	0	0	
Lane Group Flow (vph)	0	178	0	0	102	11	153	1186	57	0	0	0	
Heavy Vehicles (%)	4%	4%	4%	2%	2%	2%	4%	4%	4%	3%	3%	3%	
Turn Type	pm+pt	NA			NA	Perm	Perm	NA	Perm				
Protected Phases	2	4 2			4			1 3					
Permitted Phases	4 2					4	1 3		1 3				
Actuated Green, G (s)		42.0			26.0	26.0	70.0	70.0	70.0				
Effective Green, g (s)		42.0			26.0	26.0	70.0	70.0	70.0				
Actuated g/C Ratio		0.30			0.19	0.19	0.50	0.50	0.50				
Clearance Time (s)					5.8	5.8							
Vehicle Extension (s)					4.0	4.0							
Lane Grp Cap (vph)		524			347	295	872	1744	780				
v/s Ratio Prot		c0.04			0.05			c0.34					
v/s Ratio Perm		c0.06				0.01	0.09		0.04				
w/c Ratio		0.34			0.29	0.04	0.18	0.68	0.07				
Uniform Delay, d1		37.9			48.8	46.4	18.9	26.2	17.9				
Progression Factor		0.57			1.00	1.00	1.00	1.00	1.00				
Incremental Delay, d2		0.4			0.6	0.1	0.3	1.7	0.1				
Delay (s)		22.1			49.4	46.5	19.2	27.9	18.0				
Level of Service		C			D	D	B	C	B				
Approach Delay (s/veh)		22.1			48.3			26.2			0.0		
Approach LOS		C			D			C			A		
<b>Intersection Summary</b>													
HCM 2000 Control Delay (s/veh)		27.8			HCM 2000 Level of Service				C				
HCM 2000 Volume to Capacity ratio		0.55											
Actuated Cycle Length (s)		139.3			Sum of lost time (s)				27.3				
Intersection Capacity Utilization		64.0%			ICU Level of Service				C				
Analysis Period (min)		15											
c Critical Lane Group													

**F5: Background AM Peak Hour Traffic  
w/ Improvements (2027)**

## Attachment D

Lanes, Volumes, Timings  
4: Juniper Rd & SE 79th St

Background Conditions w/ Imps  
Timing Plan: AM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		+			+			+			+	
Traffic Volume (vph)	81	8	172	1	20	3	293	81	0	0	149	233
Future Volume (vph)	81	8	172	1	20	3	293	81	0	0	149	233
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	6%	6%	6%	18%	18%	18%	2%	2%	2%	4%	4%	4%
Adj. Flow (vph)	91	9	193	1	22	3	329	91	0	0	167	262
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	293	0	0	26	0	0	420	0	0	429	0
Sign Control		Stop			Stop			Stop			Stop	

**Intersection Summary**

Control Type: Unsignalized

## Attachment D

HCM 7th AWSC  
4: Juniper Rd & SE 79th St

Background Conditions w/ Imps  
Timing Plan: AM Peak Hour

Intersection												
Intersection Delay, s/veh	17.3											
Intersection LOS	C											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		+			+			+			+	
Traffic Vol, veh/h	81	8	172	1	20	3	293	81	0	0	149	233
Future Vol, veh/h	81	8	172	1	20	3	293	81	0	0	149	233
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles, %	6	6	6	18	18	18	2	2	2	4	4	4
Mvmt Flow	91	9	193	1	22	3	329	91	0	0	167	262
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	14.5			10.7			19.9			17.1		
HCM LOS	B			B			C			C		
Lane	NBLn1	EBLn1	WBLn1	SBLn1								
Vol Left, %	78%	31%	4%	0%								
Vol Thru, %	22%	3%	83%	39%								
Vol Right, %	0%	66%	13%	61%								
Sign Control	Stop	Stop	Stop	Stop								
Traffic Vol by Lane	374	261	24	382								
LT Vol	293	81	1	0								
Through Vol	81	8	20	149								
RT Vol	0	172	3	233								
Lane Flow Rate	420	293	27	429								
Geometry Grp	1	1	1	1								
Degree of Util (X)	0.671	0.484	0.055	0.631								
Departure Headway (Hd)	5.748	5.942	7.28	5.294								
Convergence, Y/N	Yes	Yes	Yes	Yes								
Cap	626	601	495	678								
Service Time	3.822	4.023	5.28	3.369								
HCM Lane V/C Ratio	0.671	0.488	0.055	0.633								
HCM Control Delay, s/veh	19.9	14.5	10.7	17.1								
HCM Lane LOS	C	B	B	C								
HCM 95th-ile Q	5.1	2.6	0.2	4.5								

**F6: Background PM Peak Hour Traffic  
w/ Improvements (2027)**

## Attachment D

Lanes, Volumes, Timings  
4: Juniper Rd & SE 79th St

Background Conditions w/ Imps  
Timing Plan: PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	194	29	205	0	5	1	163	22	1	3	23	142
Future Volume (vph)	194	29	205	0	5	1	163	22	1	3	23	142
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	3%	3%	3%
Adj. Flow (vph)	200	30	211	0	5	1	168	23	1	3	24	146
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	441	0	0	6	0	0	192	0	0	173	0
Sign Control		Stop			Stop			Stop			Stop	

**Intersection Summary**

Control Type: Unsignalized

## Attachment D

HCM 7th AWSC  
4: Juniper Rd & SE 79th St

Background Conditions w/ Imps  
Timing Plan: PM Peak Hour

Intersection	
Intersection Delay, s/veh	12
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	194	29	205	0	5	1	163	22	1	3	23	142
Future Vol, veh/h	194	29	205	0	5	1	163	22	1	3	23	142
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	3	3	3
Mvmt Flow	200	30	211	0	5	1	168	23	1	3	24	146
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	13.7			8.5			10.7			9.3		
HCM LOS	B			A			B			A		

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	88%	45%	0%	2%
Vol Thru, %	12%	7%	83%	14%
Vol Right, %	1%	48%	17%	85%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	186	428	6	168
LT Vol	163	194	0	3
Through Vol	22	29	5	23
RT Vol	1	205	1	142
Lane Flow Rate	192	441	6	173
Geometry Grp	1	1	1	1
Degree of Util (X)	0.287	0.569	0.009	0.23
Departure Headway (Hd)	5.394	4.644	5.439	4.789
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	660	772	662	740
Service Time	3.489	2.714	3.439	2.883
HCM Lane V/C Ratio	0.291	0.571	0.009	0.234
HCM Control Delay, s/veh	10.7	13.7	8.5	9.3
HCM Lane LOS	B	B	A	A
HCM 95th-tile Q	1.2	3.6	0	0.9

## F7: Buildout AM Peak Hour Traffic (2027)

## Attachment D

### Lanes, Volumes, Timings

### Buildout Conditions

#### 1: Juniper Rd & Project Dvwy/Juniper Pass

Timing Plan: AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	55	0	28	11	0	95	10	167	2	9	375	19
Future Volume (vph)	55	0	28	11	0	95	10	167	2	9	375	19
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	3%	3%	3%	2%	2%	2%
Adj. Flow (vph)	73	0	37	15	0	127	13	223	3	12	500	25
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	110	0	0	142	0	0	239	0	0	537	0
Sign Control		Stop			Stop			Free			Free	
<b>Intersection Summary</b>												

Control Type: Unsignalized

## Attachment D

HCM 7th TWSC  
1: Juniper Rd & Project Dvwy/Juniper Pass

Buildout Conditions  
Timing Plan: AM Peak Hour

Intersection												
Int Delay, s/veh	4.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		+			+			+			+	
Traffic Vol, veh/h	55	0	28	11	0	95	10	167	2	9	375	19
Future Vol, veh/h	55	0	28	11	0	95	10	167	2	9	375	19
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None									
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	75	75	75	75	75	75	75	75	75	75	75	75
Heavy Vehicles, %	2	2	2	2	2	2	3	3	3	2	2	2
Mvmt Flow	73	0	37	15	0	127	13	223	3	12	500	25

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	786	789	513	775	800	224	525	0	0	225	0	0
Stage 1	537	537	-	251	251	-	-	-	-	-	-	-
Stage 2	249	252	-	524	549	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.13	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.227	-	-	2.218	-	-
Pot Cap-1 Maneuver	310	323	561	315	318	815	1036	-	-	1343	-	-
Stage 1	528	523	-	753	699	-	-	-	-	-	-	-
Stage 2	755	698	-	537	516	-	-	-	-	-	-	-
Platoon blocked, %												
Mov Cap-1 Maneuver	255	314	561	286	309	815	1036	-	-	1343	-	-
Mov Cap-2 Maneuver	255	314	-	286	309	-	-	-	-	-	-	-
Stage 1	521	516	-	742	689	-	-	-	-	-	-	-
Stage 2	628	688	-	495	510	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s/v	22.74		11.63		0.48		0.17	
HCM LOS	C		B					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	100	-	-	312	684	40	-	-
HCM Lane V/C Ratio	0.013	-	-	0.355	0.207	0.009	-	-
HCM Control Delay (s/veh)	8.5	0	-	22.7	11.6	7.7	0	-
HCM Lane LOS	A	A	-	C	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	1.6	0.8	0	-	-

## Attachment D

### Lanes, Volumes, Timings 2: Juniper Rd & Chestnut Road

Buildout Conditions  
Timing Plan: AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	4	2	2	99	0	83	2	298	16	35	300	1
Future Volume (vph)	4	2	2	99	0	83	2	298	16	35	300	1
Peak Hour Factor	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	3%	3%	3%
Adj. Flow (vph)	5	3	3	129	0	108	3	387	21	45	390	1
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	11	0	0	237	0	0	411	0	0	436	0
Sign Control		Stop			Stop			Free			Free	

#### Intersection Summary

Control Type: Unsignalized

## Attachment D

HCM 7th TWSC  
2: Juniper Rd & Chestnut Road

Buildout Conditions  
Timing Plan: AM Peak Hour

Intersection												
Int Delay, s/veh	8.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↕			↕			↕			↕		
Traffic Vol, veh/h	4	2	2	99	0	83	2	298	16	35	300	1
Future Vol, veh/h	4	2	2	99	0	83	2	298	16	35	300	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	77	77	77	77	77	77	77	77	77	77	77	77
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	3	3	3
Mvmt Flow	5	3	3	129	0	108	3	387	21	45	390	1
Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	873	894	390	884	884	397	391	0	0	408	0	0
Stage 1	481	481	-	403	403	-	-	-	-	-	-	-
Stage 2	392	413	-	482	482	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.13	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.227	-	-
Pot Cap-1 Maneuver	270	280	658	266	284	652	1168	-	-	1146	-	-
Stage 1	566	554	-	624	600	-	-	-	-	-	-	-
Stage 2	632	594	-	566	553	-	-	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	214	265	658	248	269	652	1168	-	-	1146	-	-
Mov Cap-2 Maneuver	214	265	-	248	269	-	-	-	-	-	-	-
Stage 1	537	526	-	623	598	-	-	-	-	-	-	-
Stage 2	526	592	-	532	525	-	-	-	-	-	-	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s/v	18.7			35.11			0.05			0.86		
HCM LOS	C			E								
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	11	-	-	273	346	187	-	-				
HCM Lane V/C Ratio	0.002	-	-	0.038	0.683	0.04	-	-				
HCM Control Delay (s/veh)	8.1	0	-	18.7	35.1	8.3	0	-				
HCM Lane LOS	A	A	-	C	E	A	A	-				
HCM 95th %tile Q(veh)	0	-	-	0.1	4.8	0.1	-	-				

# Attachment D

Lanes, Volumes, Timings  
3: SR 35 & Juniper Rd

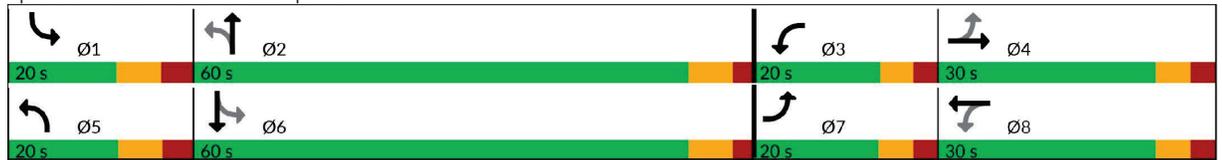
Buildout Conditions  
Timing Plan: AM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	42	9	170	52	5	97	92	822	48	73	1220	22
Future Volume (vph)	42	9	170	52	5	97	92	822	48	73	1220	22
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
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	6%	6%	6%	4%	4%	4%
Adj. Flow (vph)	46	10	185	57	5	105	100	893	52	79	1326	24
Shared Lane Traffic (%)												
Lane Group Flow (vph)	46	195	0	57	110	0	100	945	0	79	1350	0
Turn Type	pm+pt	NA										
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	7	4		3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0		7.0	20.0		7.0	20.0	
Minimum Split (s)	15.1	26.8		15.3	26.8		15.1	27.5		15.3	27.5	
Total Split (s)	20.0	30.0		20.0	30.0		20.0	60.0		20.0	60.0	
Total Split (%)	15.4%	23.1%		15.4%	23.1%		15.4%	46.2%		15.4%	46.2%	
Yellow Time (s)	3.8	3.8		3.7	3.8		4.8	4.8		4.8	4.8	
All-Red Time (s)	2.5	2.7		2.5	2.7		3.3	2.0		3.5	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.3	6.5		6.2	6.5		8.1	6.8		8.3	6.8	
Lead/Lag	Lead	Lag										
Lead-Lag Optimize?	Yes	Yes										
Recall Mode	None	None		None	None		None	Min		None	Min	
v/c Ratio	0.19	0.63		0.26	0.45		0.42	0.52		0.23	0.82	
Control Delay (s/veh)	35.1	18.1		36.4	16.8		17.5	18.7		10.3	28.6	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay (s/veh)	35.1	18.1		36.4	16.8		17.5	18.7		10.3	28.6	
Queue Length 50th (ft)	25	6		31	3		22	210		17	372	
Queue Length 95th (ft)	57	78		67	57		70	335		44	576	
Internal Link Dist (ft)		6595			362			331			317	
Turn Bay Length (ft)	214			214			214			214		
Base Capacity (vph)	345	536		318	475		286	1933		423	1949	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.13	0.36		0.18	0.23		0.35	0.49		0.19	0.69	

**Intersection Summary**

Cycle Length: 130  
 Actuated Cycle Length: 98.3  
 Natural Cycle: 105  
 Control Type: Actuated-Uncoordinated

Splits and Phases: 3: SR 35 & Juniper Rd



## Attachment D

### HCM 7th Signalized Intersection Summary 3: SR 35 & Juniper Rd

Buildout Conditions  
Timing Plan: AM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	42	9	170	52	5	97	92	822	48	73	1220	22
Future Volume (veh/h)	42	9	170	52	5	97	92	822	48	73	1220	22
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	1870	1870	1870	1870	1870	1870	1811	1811	1811	1841	1841	1841
Adj Flow Rate, veh/h	46	10	185	57	5	105	100	893	52	79	1326	24
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, %	2	2	2	2	2	2	6	6	6	4	4	4
Cap, veh/h	279	12	223	209	11	231	232	1472	86	326	1560	28
Arrive On Green	0.05	0.15	0.15	0.06	0.15	0.15	0.07	0.45	0.45	0.06	0.44	0.44
Sat Flow, veh/h	1781	82	1516	1781	73	1524	1725	3305	192	1753	3514	64
Grp Volume(v), veh/h	46	0	195	57	0	110	100	465	480	79	659	691
Grp Sat Flow(s),veh/h/ln	1781	0	1598	1781	0	1596	1725	1721	1776	1753	1749	1829
Q Serve(g_s), s	2.1	0.0	11.5	2.5	0.0	6.1	2.9	19.9	19.9	2.3	32.6	32.7
Cycle Q Clear(g_c), s	2.1	0.0	11.5	2.5	0.0	6.1	2.9	19.9	19.9	2.3	32.6	32.7
Prop In Lane	1.00		0.95	1.00		0.95	1.00		0.11	1.00		0.03
Lane Grp Cap(c), veh/h	279	0	235	209	0	242	232	767	791	326	776	812
V/C Ratio(X)	0.16	0.00	0.83	0.27	0.00	0.46	0.43	0.61	0.61	0.24	0.85	0.85
Avail Cap(c_a), veh/h	440	0	388	362	0	387	328	945	976	426	961	1005
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(l)	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	32.1	0.0	40.1	32.4	0.0	37.5	19.7	20.4	20.4	14.6	24.0	24.1
Incr Delay (d2), s/veh	0.3	0.0	7.5	0.7	0.0	1.3	1.3	0.8	0.8	0.4	6.1	5.9
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	0.9	0.0	4.9	1.1	0.0	2.4	1.1	7.4	7.6	0.8	13.4	14.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	32.4	0.0	47.6	33.1	0.0	38.8	20.9	21.2	21.2	15.0	30.2	30.0
LnGrp LOS	C		D	C		D	C	C	C	B	C	C
Approach Vol, veh/h		241			167			1045			1429	
Approach Delay, s/veh		44.7			36.9			21.1			29.2	
Approach LOS		D			D			C			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	14.5	50.0	11.7	20.7	14.6	49.8	11.3	21.2				
Change Period (Y+Rc), s	8.3	6.8	6.2	6.5	8.1	6.8	6.3	6.5				
Max Green Setting (Gmax), s	11.7	53.2	13.8	23.5	11.9	53.2	13.7	23.5				
Max Q Clear Time (g_c+I1), s	4.3	21.9	4.5	13.5	4.9	34.7	4.1	8.1				
Green Ext Time (p_c), s	0.1	6.2	0.1	0.8	0.1	8.3	0.0	0.5				
<b>Intersection Summary</b>												
HCM 7th Control Delay, s/veh			28.0									
HCM 7th LOS			C									

## Attachment D

Lanes, Volumes, Timings  
4: Juniper Rd & SE 79th St

Buildout Conditions  
Timing Plan: AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	81	8	187	1	20	3	335	81	0	0	149	233
Future Volume (vph)	81	8	187	1	20	3	335	81	0	0	149	233
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	6%	6%	6%	18%	18%	18%	2%	2%	2%	4%	4%	4%
Adj. Flow (vph)	91	9	210	1	22	3	376	91	0	0	167	262
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	310	0	0	26	0	0	467	0	0	429	0
Sign Control		Stop			Stop			Free			Free	

**Intersection Summary**

Control Type: Unsignalized

## Attachment D

HCM 7th TWSC  
4: Juniper Rd & SE 79th St

Buildout Conditions  
Timing Plan: AM Peak Hour

Intersection												
Int Delay, s/veh	58.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		+			+			+			+	
Traffic Vol, veh/h	81	8	187	1	20	3	335	81	0	0	149	233
Future Vol, veh/h	81	8	187	1	20	3	335	81	0	0	149	233
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	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, %	6	6	6	18	18	18	2	2	2	4	4	4
Mvmt Flow	91	9	210	1	22	3	376	91	0	0	167	262

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1153	1142	298	1016	1273	91	429	0	0	91	0	0
Stage 1	298	298	-	844	844	-	-	-	-	-	-	-
Stage 2	855	844	-	172	429	-	-	-	-	-	-	-
Critical Hdwy	7.16	6.56	6.26	7.28	6.68	6.38	4.12	-	-	4.14	-	-
Critical Hdwy Stg 1	6.16	5.56	-	6.28	5.68	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.16	5.56	-	6.28	5.68	-	-	-	-	-	-	-
Follow-up Hdwy	3.554	4.054	3.354	3.662	4.162	3.462	2.218	-	-	2.236	-	-
Pot Cap-1 Maneuver	171	197	732	202	156	924	1130	-	-	1491	-	-
Stage 1	702	660	-	336	358	-	-	-	-	-	-	-
Stage 2	347	374	-	794	557	-	-	-	-	-	-	-
Platoon blocked, %												
Mov Cap-1 Maneuver	93	128	732	89	101	924	1130	-	-	1491	-	-
Mov Cap-2 Maneuver	93	128	-	89	101	-	-	-	-	-	-	-
Stage 1	702	660	-	218	232	-	-	-	-	-	-	-
Stage 2	203	243	-	558	557	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v	217.04	46.56	7.87	0
HCM LOS	F	E		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1073	-	-	233	113	1491	-	-
HCM Lane V/C Ratio	0.333	-	-	1.332	0.239	-	-	-
HCM Control Delay (s/veh)	9.8	0	-	217	46.6	0	-	-
HCM Lane LOS	A	A	-	F	E	A	-	-
HCM 95th %tile Q(veh)	1.5	-	-	16.6	0.9	0	-	-

## Attachment D

Lanes, Volumes, Timings  
5: SE 80th St & SE 79th St

Buildout Conditions  
Timing Plan: AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	2	248	0	337	1	88	142	146	83	0
Future Volume (vph)	0	0	2	248	0	337	1	88	142	146	83	0
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	2%	2%	2%	3%	3%	3%	5%	5%	5%	5%	5%	5%
Adj. Flow (vph)	0	0	2	273	0	370	1	97	156	160	91	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	2	0	0	273	370	0	254	0	160	91	0
Sign Control		Stop			Stop			Free			Free	

**Intersection Summary**

Control Type: Unsignalized

## Attachment D

HCM 7th TWSC  
5: SE 80th St & SE 79th St

Buildout Conditions  
Timing Plan: AM Peak Hour

Intersection												
Int Delay, s/veh	14.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔	↔		↔		↔	↔	
Traffic Vol, veh/h	0	0	2	248	0	337	1	88	142	146	83	0
Future Vol, veh/h	0	0	2	248	0	337	1	88	142	146	83	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	150	-	-	-	214	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	2	2	2	3	3	3	5	5	5	5	5	5
Mvmt Flow	0	0	2	273	0	370	1	97	156	160	91	0
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	511	667	91	589	589	175	91	0	0	253	0	0
Stage 1	412	412	-	177	177	-	-	-	-	-	-	-
Stage 2	99	255	-	412	412	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.13	6.53	6.23	4.15	-	-	4.15	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.13	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.13	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.527	4.027	3.327	2.245	-	-	2.245	-	-
Pot Cap-1 Maneuver	473	380	966	418	419	866	1485	-	-	1295	-	-
Stage 1	617	594	-	823	751	-	-	-	-	-	-	-
Stage 2	907	696	-	615	592	-	-	-	-	-	-	-
Platoon blocked, %												
Mov Cap-1 Maneuver	237	332	966	365	367	866	1485	-	-	1295	-	-
Mov Cap-2 Maneuver	237	332	-	365	367	-	-	-	-	-	-	-
Stage 1	541	521	-	822	750	-	-	-	-	-	-	-
Stage 2	519	696	-	538	519	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s/v	8.73		23.48		0.03		5.21					
HCM LOS	A		C									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	WBLn2	SBL	SBT	SBR			
Capacity (veh/h)	7	-	-	966	365	866	1295	-	-			
HCM Lane V/C Ratio	0.001	-	-	0.002	0.746	0.428	0.124	-	-			
HCM Control Delay (s/veh)	7.4	0	-	8.7	38.8	12.2	8.2	-	-			
HCM Lane LOS	A	A	-	A	E	B	A	-	-			
HCM 95th %tile Q(veh)	0	-	-	0	5.9	2.2	0.4	-	-			

## F8: Buildout PM Peak Hour Traffic (2027)

## Attachment D

### Lanes, Volumes, Timings

### Buildout Conditions

#### 1: Juniper Rd & Project Dvwy/Juniper Pass

Timing Plan: PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	37	0	19	0	0	14	33	76	0	22	128	63
Future Volume (vph)	37	0	19	0	0	14	33	76	0	22	128	63
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	2%	2%	2%	8%	8%	8%	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	39	0	20	0	0	15	35	81	0	23	136	67
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	59	0	0	15	0	0	116	0	0	226	0
Sign Control		Stop			Stop			Free			Free	

#### Intersection Summary

Control Type: Unsignalized

## Attachment D

HCM 7th TWSC  
1: Juniper Rd & Project Dvwy/Juniper Pass

Buildout Conditions  
Timing Plan: PM Peak Hour

Intersection												
Int Delay, s/veh	3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		+			+			+			+	
Traffic Vol, veh/h	37	0	19	0	0	14	33	76	0	22	128	63
Future Vol, veh/h	37	0	19	0	0	14	33	76	0	22	128	63
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	8	8	8	2	2	2	2	2	2
Mvmt Flow	39	0	20	0	0	15	35	81	0	23	136	67
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	368	368	170	334	401	81	203	0	0	81	0	0
Stage 1	216	216	-	151	151	-	-	-	-	-	-	-
Stage 2	151	151	-	183	250	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.18	6.58	6.28	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.18	5.58	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.18	5.58	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.572	4.072	3.372	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	589	561	874	608	528	963	1369	-	-	1517	-	-
Stage 1	786	724	-	837	761	-	-	-	-	-	-	-
Stage 2	851	772	-	805	689	-	-	-	-	-	-	-
Platoon blocked, %												
Mov Cap-1 Maneuver	554	537	874	568	505	963	1369	-	-	1517	-	-
Mov Cap-2 Maneuver	554	537	-	568	505	-	-	-	-	-	-	-
Stage 1	772	711	-	815	741	-	-	-	-	-	-	-
Stage 2	816	752	-	773	677	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s/v	11.28		8.8		2.33		0.77					
HCM LOS	B		A									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	545	-	-	633	963	174	-	-				
HCM Lane V/C Ratio	0.026	-	-	0.094	0.015	0.015	-	-				
HCM Control Delay (s/veh)	7.7	0	-	11.3	8.8	7.4	0	-				
HCM Lane LOS	A	A	-	B	A	A	A	-				
HCM 95th %tile Q(veh)	0.1	-	-	0.3	0	0	-	-				

## Attachment D

### Lanes, Volumes, Timings 2: Juniper Rd & Chestnut Road

Buildout Conditions  
Timing Plan: PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	2	0	22	1	70	0	117	11	63	189	1
Future Volume (vph)	0	2	0	22	1	70	0	117	11	63	189	1
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	2%	2%	2%	4%	4%	4%	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	0	2	0	24	1	75	0	126	12	68	203	1
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	2	0	0	100	0	0	138	0	0	272	0
Sign Control		Stop			Stop			Free			Free	

#### Intersection Summary

Control Type: Unsignalized

## Attachment D

HCM 7th TWSC  
2: Juniper Rd & Chestnut Road

Buildout Conditions  
Timing Plan: PM Peak Hour

Intersection												
Int Delay, s/veh	3.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	+			+			+			+		
Traffic Vol, veh/h	0	2	0	22	1	70	0	117	11	63	189	1
Future Vol, veh/h	0	2	0	22	1	70	0	117	11	63	189	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	4	4	4	2	2	2	2	2	2
Mvmt Flow	0	2	0	24	1	75	0	126	12	68	203	1
Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	466	477	204	472	472	132	204	0	0	138	0	0
Stage 1	339	339	-	132	132	-	-	-	-	-	-	-
Stage 2	126	138	-	340	340	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.14	6.54	6.24	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.14	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.14	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.536	4.036	3.336	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	507	487	837	499	488	912	1367	-	-	1446	-	-
Stage 1	675	640	-	867	783	-	-	-	-	-	-	-
Stage 2	878	783	-	671	636	-	-	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	440	461	837	471	462	912	1367	-	-	1446	-	-
Mov Cap-2 Maneuver	440	461	-	471	462	-	-	-	-	-	-	-
Stage 1	640	606	-	867	783	-	-	-	-	-	-	-
Stage 2	804	783	-	633	602	-	-	-	-	-	-	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s/v	12.84			10.62			0			1.9		
HCM LOS	B			B								
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	1367	-	-	461	740	448	-	-				
HCM Lane V/C Ratio	-	-	-	0.005	0.135	0.047	-	-				
HCM Control Delay (s/veh)	0	-	-	12.8	10.6	7.6	0	-				
HCM Lane LOS	A	-	-	B	B	A	A	-				
HCM 95th %tile Q(veh)	0	-	-	0	0.5	0.1	-	-				

# Attachment D

Lanes, Volumes, Timings  
3: SR 35 & Juniper Rd

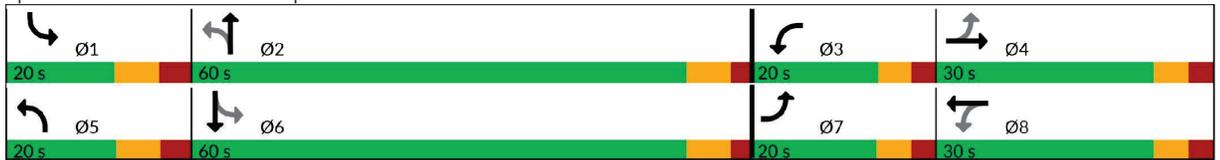
Buildout Conditions  
Timing Plan: PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	22	4	104	31	5	89	188	1183	46	64	858	27
Future Volume (vph)	22	4	104	31	5	89	188	1183	46	64	858	27
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	5%	5%	5%	3%	3%	3%	3%	3%	3%	4%	4%	4%
Adj. Flow (vph)	24	4	116	34	6	99	209	1314	51	71	953	30
Shared Lane Traffic (%)												
Lane Group Flow (vph)	24	120	0	34	105	0	209	1365	0	71	983	0
Turn Type	pm+pt	NA										
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	7	4		3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0		7.0	20.0		7.0	20.0	
Minimum Split (s)	15.1	26.8		15.3	26.8		15.1	27.5		15.3	27.5	
Total Split (s)	20.0	30.0		20.0	30.0		20.0	60.0		20.0	60.0	
Total Split (%)	15.4%	23.1%		15.4%	23.1%		15.4%	46.2%		15.4%	46.2%	
Yellow Time (s)	3.8	3.8		3.7	3.8		4.8	4.8		4.8	4.8	
All-Red Time (s)	2.5	2.7		2.5	2.7		3.3	2.0		3.5	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.3	6.5		6.2	6.5		8.1	6.8		8.3	6.8	
Lead/Lag	Lead	Lag										
Lead-Lag Optimize?	Yes	Yes										
Recall Mode	None	None		None	None		None	Min		None	Min	
v/c Ratio	0.11	0.48		0.15	0.38		0.56	0.74		0.30	0.64	
Control Delay (s/veh)	33.8	17.0		34.1	15.4		15.2	21.6		11.6	21.8	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay (s/veh)	33.8	17.0		34.1	15.4		15.2	21.6		11.6	21.8	
Queue Length 50th (ft)	12	2		17	3		48	350		15	235	
Queue Length 95th (ft)	35	58		45	56		105	520		36	338	
Internal Link Dist (ft)		6595			362			331			317	
Turn Bay Length (ft)	214			214			214			214		
Base Capacity (vph)	344	518		346	517		397	2222		325	2202	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.07	0.23		0.10	0.20		0.53	0.61		0.22	0.45	

**Intersection Summary**

Cycle Length: 130  
 Actuated Cycle Length: 88.8  
 Natural Cycle: 105  
 Control Type: Actuated-Uncoordinated

Splits and Phases: 3: SR 35 & Juniper Rd



## Attachment D

### HCM 7th Signalized Intersection Summary 3: SR 35 & Juniper Rd

Buildout Conditions  
Timing Plan: PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	22	4	104	31	5	89	188	1183	46	64	858	27
Future Volume (veh/h)	22	4	104	31	5	89	188	1183	46	64	858	27
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	1826	1826	1826	1856	1856	1856	1856	1856	1856	1841	1841	1841
Adj Flow Rate, veh/h	24	4	116	34	6	99	209	1314	51	71	953	30
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	5	5	5	3	3	3	3	3	3	4	4	4
Cap, veh/h	208	5	156	200	10	168	370	1598	62	252	1531	48
Arrive On Green	0.04	0.10	0.10	0.05	0.11	0.11	0.09	0.46	0.46	0.07	0.44	0.44
Sat Flow, veh/h	1739	52	1503	1767	91	1496	1767	3460	134	1753	3461	109
Grp Volume(v), veh/h	24	0	120	34	0	105	209	669	696	71	482	501
Grp Sat Flow(s),veh/h/ln	1739	0	1555	1767	0	1586	1767	1763	1831	1753	1749	1821
Q Serve(g_s), s	1.0	0.0	6.5	1.4	0.0	5.4	5.4	28.3	28.4	1.8	18.3	18.3
Cycle Q Clear(g_c), s	1.0	0.0	6.5	1.4	0.0	5.4	5.4	28.3	28.4	1.8	18.3	18.3
Prop In Lane	1.00		0.97	1.00		0.94	1.00		0.07	1.00		0.06
Lane Grp Cap(c), veh/h	208	0	162	200	0	178	370	814	846	252	774	806
V/C Ratio(X)	0.12	0.00	0.74	0.17	0.00	0.59	0.56	0.82	0.82	0.28	0.62	0.62
Avail Cap(c_a), veh/h	422	0	424	403	0	433	459	1088	1131	373	1080	1125
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(l)	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	32.5	0.0	37.5	32.0	0.0	36.3	13.8	20.1	20.1	15.9	18.5	18.5
Incr Delay (d2), s/veh	0.2	0.0	6.6	0.4	0.0	3.1	1.4	3.8	3.8	0.6	0.8	0.8
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	0.4	0.0	2.7	0.6	0.0	2.2	1.9	10.9	11.3	0.6	6.7	6.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	32.7	0.0	44.0	32.4	0.0	39.4	15.2	23.9	23.9	16.5	19.3	19.3
LnGrp LOS	C		D	C		D	B	C	C	B	B	B
Approach Vol, veh/h		144			139			1574			1054	
Approach Delay, s/veh		42.2			37.7			22.8			19.1	
Approach LOS		D			D			C			B	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	14.0	46.6	10.1	15.5	15.7	44.9	9.4	16.2				
Change Period (Y+Rc), s	8.3	6.8	6.2	6.5	8.1	6.8	6.3	6.5				
Max Green Setting (Gmax), s	11.7	53.2	13.8	23.5	11.9	53.2	13.7	23.5				
Max Q Clear Time (g_c+I1), s	3.8	30.4	3.4	8.5	7.4	20.3	3.0	7.4				
Green Ext Time (p_c), s	0.1	9.3	0.0	0.5	0.2	6.5	0.0	0.5				
<b>Intersection Summary</b>												
HCM 7th Control Delay, s/veh			23.1									
HCM 7th LOS			C									

## Attachment D

Lanes, Volumes, Timings  
4: Juniper Rd & SE 79th St

Buildout Conditions  
Timing Plan: PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	194	29	253	0	5	1	191	22	1	3	23	142
Future Volume (vph)	194	29	253	0	5	1	191	22	1	3	23	142
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	3%	3%	3%
Adj. Flow (vph)	200	30	261	0	5	1	197	23	1	3	24	146
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	491	0	0	6	0	0	221	0	0	173	0
Sign Control		Stop			Stop			Free			Free	
<b>Intersection Summary</b>												

Control Type: Unsignalized

## Attachment D

HCM 7th TWSC  
4: Juniper Rd & SE 79th St

Buildout Conditions  
Timing Plan: PM Peak Hour

Intersection												
Int Delay, s/veh	22.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	+				+				+			
Traffic Vol, veh/h	194	29	253	0	5	1	191	22	1	3	23	142
Future Vol, veh/h	194	29	253	0	5	1	191	22	1	3	23	142
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	97	97	97	97	97	97	97	97	97	97	97	97
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	3	3	3
Mvmt Flow	200	30	261	0	5	1	197	23	1	3	24	146
Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	522	521	97	462	593	23	170	0	0	24	0	0
Stage 1	103	103	-	417	417	-	-	-	-	-	-	-
Stage 2	419	418	-	45	176	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.13	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.227	-	-
Pot Cap-1 Maneuver	465	460	959	510	418	1054	1407	-	-	1585	-	-
Stage 1	903	810	-	613	591	-	-	-	-	-	-	-
Stage 2	612	591	-	969	753	-	-	-	-	-	-	-
Platoon blocked, %												
Mov Cap-1 Maneuver	393	394	959	297	358	1054	1407	-	-	1585	-	-
Mov Cap-2 Maneuver	393	394	-	297	358	-	-	-	-	-	-	-
Stage 1	901	808	-	526	507	-	-	-	-	-	-	-
Stage 2	519	507	-	678	752	-	-	-	-	-	-	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s/v	37.88			14.08			7.12			0.13		
HCM LOS	E			B								
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	1388	-	-	573	402	27	-	-				
HCM Lane V/C Ratio	0.14	-	-	0.857	0.015	0.002	-	-				
HCM Control Delay (s/veh)	8	0	-	37.9	14.1	7.3	0	-				
HCM Lane LOS	A	A	-	E	B	A	A	-				
HCM 95th %tile Q(veh)	0.5	-	-	9.4	0	0	-	-				

## Attachment D

Lanes, Volumes, Timings  
5: SE 80th St & SE 79th St

Buildout Conditions  
Timing Plan: PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	1	160	0	182	0	106	247	235	97	0
Future Volume (vph)	0	0	1	160	0	182	0	106	247	235	97	0
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%	2%	2%	2%	2%	2%	4%	4%	4%	2%	2%	2%
Adj. Flow (vph)	0	0	1	167	0	190	0	110	257	245	101	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1	0	0	167	190	0	367	0	245	101	0
Sign Control		Stop			Stop			Free			Free	

**Intersection Summary**

Control Type: Unsignalized

## Attachment D

HCM 7th TWSC  
5: SE 80th St & SE 79th St

Buildout Conditions  
Timing Plan: PM Peak Hour

Intersection												
Int Delay, s/veh	12.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔	↔		↔		↔	↔	
Traffic Vol, veh/h	0	0	1	160	0	182	0	106	247	235	97	0
Future Vol, veh/h	0	0	1	160	0	182	0	106	247	235	97	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	150	-	-	-	214	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	96	96	96	96	96	96	96	96	96	96	96	96
Heavy Vehicles, %	2	2	2	2	2	2	4	4	4	2	2	2
Mvmt Flow	0	0	1	167	0	190	0	110	257	245	101	0
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	701	958	101	830	830	239	101	0	0	368	0	0
Stage 1	591	591	-	239	239	-	-	-	-	-	-	-
Stage 2	110	368	-	591	591	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.14	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.236	-	-	2.218	-	-
Pot Cap-1 Maneuver	353	257	954	289	306	800	1479	-	-	1191	-	-
Stage 1	493	495	-	764	708	-	-	-	-	-	-	-
Stage 2	895	622	-	493	495	-	-	-	-	-	-	-
Platoon blocked, %												
Mov Cap-1 Maneuver	214	204	954	230	243	800	1479	-	-	1191	-	-
Mov Cap-2 Maneuver	214	204	-	230	243	-	-	-	-	-	-	-
Stage 1	392	393	-	764	708	-	-	-	-	-	-	-
Stage 2	683	622	-	392	393	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s/v	8.78		30.79		0		6.23					
HCM LOS	A		D									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	WBLn2	SBL	SBT	SBR			
Capacity (veh/h)	1479	-	-	954	230	800	1191	-	-			
HCM Lane V/C Ratio	-	-	-	0.001	0.726	0.237	0.206	-	-			
HCM Control Delay (s/veh)	0	-	-	8.8	53.4	10.9	8.8	-	-			
HCM Lane LOS	A	-	-	A	F	B	A	-	-			
HCM 95th %tile Q(veh)	0	-	-	0	4.9	0.9	0.8	-	-			

# Attachment D

Lanes, Volumes, Timings  
6: SE 80th St & US 441

Buildout Conditions  
Timing Plan: PM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Ø2	Ø3
Lane Configurations		↖			↗					↖	↗	↘		
Traffic Volume (vph)	0	140	156	80	101	0	0	0	0	122	1548	101		
Future Volume (vph)	0	140	156	80	101	0	0	0	0	122	1548	101		
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94		
Heavy Vehicles (%)	4%	4%	4%	2%	2%	2%	4%	4%	4%	3%	3%	3%		
Adj. Flow (vph)	0	149	166	85	107	0	0	0	0	130	1647	107		
Shared Lane Traffic (%)														
Lane Group Flow (vph)	0	315	0	0	192	0	0	0	0	130	1647	107		
Turn Type		NA		pm+pt	NA					Perm	NA	Perm		
Protected Phases		4		1	4 1						2 3		2	3
Permitted Phases				4 1						2 3		2 3		
Detector Phase		4		1	4 1					2 3	2 3	2 3		
Switch Phase														
Minimum Initial (s)		10.0		8.0									8.0	22.0
Minimum Split (s)		15.8		15.5									14.5	29.5
Total Split (s)		31.8		22.5									22.5	62.5
Total Split (%)		22.8%		16.2%									16%	45%
Yellow Time (s)		4.8		5.5									5.5	5.5
All-Red Time (s)		1.0		2.0									1.0	2.0
Lost Time Adjust (s)		0.0												
Total Lost Time (s)		5.8												
Lead/Lag		Lag		Lead									Lag	Lead
Lead-Lag Optimize?		Yes		Yes									Yes	Yes
Recall Mode		None		None									None	Min
v/c Ratio		0.91		0.63						0.13	0.83	0.12		
Control Delay (s/veh)		80.0		37.4						14.8	29.9	4.8		
Queue Delay		0.0		0.0						0.0	0.0	0.0		
Total Delay (s/veh)		80.0		37.4						14.8	29.9	4.8		
Queue Length 50th (ft)		254		88						53	622	10		
Queue Length 95th (ft)		#434		142						87	730	38		
Internal Link Dist (ft)		627		413				497			510			
Turn Bay Length (ft)										214		214		
Base Capacity (vph)		345		303						987	1975	918		
Starvation Cap Reductn		0		0						0	0	0		
Spillback Cap Reductn		0		0						0	0	0		
Storage Cap Reductn		0		0						0	0	0		
Reduced v/c Ratio		0.91		0.63						0.13	0.83	0.12		

**Intersection Summary**  
 Cycle Length: 139.3  
 Actuated Cycle Length: 139.3  
 Natural Cycle: 80  
 Control Type: Actuated-Uncoordinated  
 # 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.

Splits and Phases: 6: SE 80th St & US 441



## Attachment D

HCM Signalized Intersection Capacity Analysis  
6: SE 80th St & US 441

Buildout Conditions  
Timing Plan: PM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔					↔	↔	↔
Traffic Volume (vph)	0	140	156	80	101	0	0	0	0	122	1548	101
Future Volume (vph)	0	140	156	80	101	0	0	0	0	122	1548	101
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.8			5.8					6.5	6.5	6.5
Lane Util. Factor		1.00			1.00					1.00	0.95	1.00
Frt		0.93			1.00					1.00	1.00	0.85
Flt Protected		1.00			0.98					0.95	1.00	1.00
Satd. Flow (prot)		1697			1822					1752	3505	1568
Flt Permitted		1.00			0.25					0.95	1.00	1.00
Satd. Flow (perm)		1697			458					1752	3505	1568
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	0	149	166	85	107	0	0	0	0	130	1647	107
RTOR Reduction (vph)	0	28	0	0	0	0	0	0	0	0	0	36
Lane Group Flow (vph)	0	287	0	0	192	0	0	0	0	130	1647	71
Heavy Vehicles (%)		4%	4%	2%	2%	2%	4%	4%	4%	3%	3%	3%
Turn Type		NA		pm+pt	NA					Perm	NA	Perm
Protected Phases		4		1	4 1						2 3	
Permitted Phases				4 1							2 3	2 3
Actuated Green, G (s)		26.0			41.0					77.5	77.5	77.5
Effective Green, g (s)		26.0			41.0					77.5	77.5	77.5
Actuated g/C Ratio		0.19			0.29					0.56	0.56	0.56
Clearance Time (s)		5.8										
Vehicle Extension (s)		4.0										
Lane Grp Cap (vph)		316			281					974	1950	872
v/s Ratio Prot		c0.17			c0.07						c0.47	
v/s Ratio Perm					0.13					0.07		0.05
v/c Ratio		0.91			0.68					0.13	0.84	0.08
Uniform Delay, d1		55.5			43.4					14.8	25.9	14.4
Progression Factor		1.00			0.58					1.00	1.00	1.00
Incremental Delay, d2		28.4			7.2					0.2	4.1	0.1
Delay (s)		83.9			32.4					15.0	30.0	14.5
Level of Service		F			C					B	C	B
Approach Delay (s/veh)		83.9			32.4			0.0			28.1	
Approach LOS		F			C			A			C	
<b>Intersection Summary</b>												
HCM 2000 Control Delay (s/veh)			35.8			HCM 2000 Level of Service						D
HCM 2000 Volume to Capacity ratio			0.89									
Actuated Cycle Length (s)			139.3			Sum of lost time (s)						27.3
Intersection Capacity Utilization			84.5%			ICU Level of Service						E
Analysis Period (min)			15									
c Critical Lane Group												

## Attachment D

Lanes, Volumes, Timings  
7: US 441 & SE 80th St

Buildout Conditions  
Timing Plan: PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Ø1	Ø3
Lane Configurations		↖			↖	↖	↖	↖	↖					
Traffic Volume (vph)	36	165	0	0	100	71	144	1115	97	0	0	0		
Future Volume (vph)	36	165	0	0	100	71	144	1115	97	0	0	0		
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94		
Heavy Vehicles (%)	4%	4%	4%	2%	2%	2%	4%	4%	4%	3%	3%	3%		
Adj. Flow (vph)	38	176	0	0	106	76	153	1186	103	0	0	0		
Shared Lane Traffic (%)														
Lane Group Flow (vph)	0	214	0	0	106	76	153	1186	103	0	0	0		
Turn Type	pm+pt	NA			NA	Perm	Perm	NA	Perm					
Protected Phases	2	4.2			4			1.3					1	3
Permitted Phases	4.2					4	1.3		1.3					
Detector Phase	2	4.2			4	4	1.3	1.3	1.3					
Switch Phase														
Minimum Initial (s)	8.0				10.0	10.0							8.0	22.0
Minimum Split (s)	14.5				15.8	15.8							15.5	29.5
Total Split (s)	22.5				31.8	31.8							22.5	62.5
Total Split (%)	16.2%				22.8%	22.8%							16%	45%
Yellow Time (s)	5.5				4.8	4.8							5.5	5.5
All-Red Time (s)	1.0				1.0	1.0							2.0	2.0
Lost Time Adjust (s)					0.0	0.0								
Total Lost Time (s)					5.8	5.8								
Lead/Lag	Lag				Lag	Lag							Lead	Lead
Lead-Lag Optimize?	Yes				Yes	Yes							Yes	Yes
Recall Mode	None				None	None							None	Min
v/c Ratio		0.40			0.31	0.18	0.18	0.68	0.12					
Control Delay (s/veh)		15.6			51.7	1.0	10.2	19.2	2.5					
Queue Delay		0.0			0.0	0.0	0.0	0.0	0.0					
Total Delay (s/veh)		15.6			51.7	1.0	10.2	19.2	2.5					
Queue Length 50th (ft)		52			84	0	39	219	3					
Queue Length 95th (ft)		m72			142	0	61	283	19					
Internal Link Dist (ft)		413			4337			355			286			
Turn Bay Length (ft)						214	194		244					
Base Capacity (vph)		537			347	413	872	1744	826					
Starvation Cap Reductn		0			0	0	0	0	0					
Spillback Cap Reductn		0			0	0	0	0	0					
Storage Cap Reductn		0			0	0	0	0	0					
Reduced v/c Ratio		0.40			0.31	0.18	0.18	0.68	0.12					

**Intersection Summary**  
 Cycle Length: 139.3  
 Actuated Cycle Length: 139.3  
 Natural Cycle: 80  
 Control Type: Actuated-Uncoordinated  
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 7: US 441 & SE 80th St



## Attachment D

HCM Signalized Intersection Capacity Analysis  
7: US 441 & SE 80th St

Buildout Conditions  
Timing Plan: PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		↔			↔	↔	↔	↔	↔				
Traffic Volume (vph)	36	165	0	0	100	71	144	1115	97	0	0	0	
Future Volume (vph)	36	165	0	0	100	71	144	1115	97	0	0	0	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)		5.8			5.8	5.8	7.5	7.5	7.5				
Lane Util. Factor		1.00			1.00	1.00	1.00	0.95	1.00				
Flt		1.00			1.00	0.85	1.00	1.00	0.85				
Flt Protected		0.99			1.00	1.00	0.95	1.00	1.00				
Satd. Flow (prot)		1811			1863	1583	1736	3471	1553				
Flt Permitted		0.94			1.00	1.00	0.95	1.00	1.00				
Satd. Flow (perm)		1718			1863	1583	1736	3471	1553				
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	
Adj. Flow (vph)	38	176	0	0	106	76	153	1186	103	0	0	0	
RTOR Reduction (vph)	0	0	0	0	0	62	0	0	46	0	0	0	
Lane Group Flow (vph)	0	214	0	0	106	14	153	1186	57	0	0	0	
Heavy Vehicles (%)	4%	4%	4%	2%	2%	2%	4%	4%	4%	3%	3%	3%	
Turn Type	pm+pt	NA			NA	Perm	Perm	NA	Perm				
Protected Phases	2	4 2			4			1 3					
Permitted Phases	4 2					4	1 3		1 3				
Actuated Green, G (s)		42.0			26.0	26.0	70.0	70.0	70.0				
Effective Green, g (s)		42.0			26.0	26.0	70.0	70.0	70.0				
Actuated g/C Ratio		0.30			0.19	0.19	0.50	0.50	0.50				
Clearance Time (s)					5.8	5.8							
Vehicle Extension (s)					4.0	4.0							
Lane Grp Cap (vph)		528			347	295	872	1744	780				
v/s Ratio Prot		c0.05			0.06			c0.34					
v/s Ratio Perm		c0.08				0.01	0.09		0.04				
v/c Ratio		0.41			0.31	0.05	0.18	0.68	0.07				
Uniform Delay, d1		38.7			48.9	46.5	18.9	26.2	17.9				
Progression Factor		0.61			1.00	1.00	1.00	1.00	1.00				
Incremental Delay, d2		0.6			0.7	0.1	0.3	1.7	0.1				
Delay (s)		24.1			49.5	46.6	19.2	27.9	18.0				
Level of Service		C			D	D	B	C	B				
Approach Delay (s/veh)		24.1			48.3			26.2		0.0			
Approach LOS		C			D			C		A			
<b>Intersection Summary</b>													
HCM 2000 Control Delay (s/veh)			28.2		HCM 2000 Level of Service				C				
HCM 2000 Volume to Capacity ratio			0.58										
Actuated Cycle Length (s)			139.3		Sum of lost time (s)				27.3				
Intersection Capacity Utilization			65.7%		ICU Level of Service				C				
Analysis Period (min)			15										
c Critical Lane Group													

**F9: Buildout AM Peak Hour Traffic  
w/ Improvements (2027)**

## Attachment D

Lanes, Volumes, Timings  
4: Juniper Rd & SE 79th St

Buildout Conditions w/ Imps  
Timing Plan: AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	81	8	187	1	20	3	335	81	0	0	149	233
Future Volume (vph)	81	8	187	1	20	3	335	81	0	0	149	233
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	6%	6%	6%	18%	18%	18%	2%	2%	2%	4%	4%	4%
Adj. Flow (vph)	91	9	210	1	22	3	376	91	0	0	167	262
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	310	0	0	26	0	0	467	0	0	429	0
Sign Control		Stop			Stop			Stop			Stop	

**Intersection Summary**

Control Type: Unsignalized

## Attachment D

HCM 7th AWSC  
4: Juniper Rd & SE 79th St

Buildout Conditions w/ Imps  
Timing Plan: AM Peak Hour

Intersection	
Intersection Delay, s/veh	20.2
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	81	8	187	1	20	3	335	81	0	0	149	233
Future Vol, veh/h	81	8	187	1	20	3	335	81	0	0	149	233
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles, %	6	6	6	18	18	18	2	2	2	4	4	4
Mvmt Flow	91	9	210	1	22	3	376	91	0	0	167	262
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	15.8	11	25.3	18.4
HCM LOS	C	B	D	C

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	81%	29%	4%	0%
Vol Thru, %	19%	3%	83%	39%
Vol Right, %	0%	68%	13%	61%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	416	276	24	382
LT Vol	335	81	1	0
Through Vol	81	8	20	149
RT Vol	0	187	3	233
Lane Flow Rate	467	310	27	429
Geometry Grp	1	1	1	1
Degree of Util (X)	0.76	0.524	0.057	0.652
Departure Headway (Hd)	5.855	6.085	7.58	5.469
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	612	586	475	652
Service Time	3.944	4.183	5.58	3.562
HCM Lane V/C Ratio	0.763	0.529	0.057	0.658
HCM Control Delay, s/veh	25.3	15.8	11	18.4
HCM Lane LOS	D	C	B	C
HCM 95th-tile Q	6.9	3	0.2	4.8

**F10: Buildout PM Peak Hour Traffic  
w/ Improvements (2027)**

## Attachment D

Lanes, Volumes, Timings  
4: Juniper Rd & SE 79th St

Buildout Conditions w/ Imps  
Timing Plan: PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	194	29	253	0	5	1	191	22	1	3	23	142
Future Volume (vph)	194	29	253	0	5	1	191	22	1	3	23	142
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	3%	3%	3%
Adj. Flow (vph)	200	30	261	0	5	1	197	23	1	3	24	146
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	491	0	0	6	0	0	221	0	0	173	0
Sign Control		Stop			Stop			Stop			Stop	

**Intersection Summary**

Control Type: Unsignalized

## Attachment D

HCM 7th AWSC  
4: Juniper Rd & SE 79th St

Buildout Conditions w/ Imps  
Timing Plan: PM Peak Hour

Intersection	
Intersection Delay, s/veh	13.9
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	194	29	253	0	5	1	191	22	1	3	23	142
Future Vol, veh/h	194	29	253	0	5	1	191	22	1	3	23	142
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	3	3	3
Mvmt Flow	200	30	261	0	5	1	197	23	1	3	24	146
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	16.4	8.8	11.7	9.8
HCM LOS	C	A	B	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	89%	41%	0%	2%
Vol Thru, %	10%	6%	83%	14%
Vol Right, %	0%	53%	17%	85%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	214	476	6	168
LT Vol	191	194	0	3
Through Vol	22	29	5	23
RT Vol	1	253	1	142
Lane Flow Rate	221	491	6	173
Geometry Grp	1	1	1	1
Degree of Util (X)	0.346	0.655	0.01	0.245
Departure Headway (Hd)	5.651	4.806	5.655	5.091
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	635	756	632	705
Service Time	3.688	2.806	3.7	3.13
HCM Lane V/C Ratio	0.348	0.649	0.009	0.245
HCM Control Delay, s/veh	11.7	16.4	8.8	9.8
HCM Lane LOS	B	C	A	A
HCM 95th-tile Q	1.5	4.9	0	1