

 **TRAFFIC IMPACT STUDY**

CHOCOLATE DRIVE

RENO, NEVADA

APN: 502-250-09

Prepared for:
Pedcor Investments, a Limited Liability Company
One Pedcor Square
770 3rd Avenue SW
Carmel, IN 46032

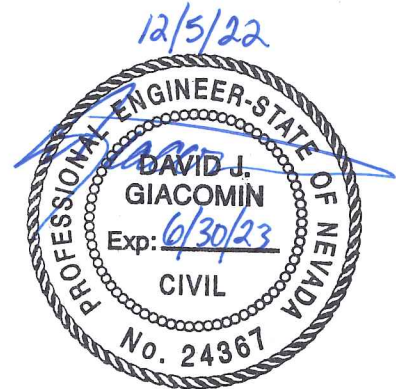
Prepared by:
Kimley»»Horn

December 2022
192233000
Copyright © Kimley-Horn and Associates, Inc.

TRAFFIC IMPACT STUDY

FOR

CHOCOLATE DRIVE



Prepared for:

Pedcor Investments, a Limited Liability Company
One Pedcor Square
770 3rd Avenue SW
Carmel, IN 46032

Prepared by:

Kimley-Horn and Associates, Inc.
7900 Rancharra Parkway
Suite 100
Reno, Nevada 89511
(775) 787-7552

This document, together with the concepts and designs presented herein, as an instrument of service, is intended only for the specific purpose and client for which it was prepared. Reuse of and improper reliance on this document without written authorization and adaptation by Kimley-Horn and Associates, Inc. shall be without liability to Kimley-Horn and Associates, Inc.

© November 2022
192233000

EXECUTIVE SUMMARY

The proposed residential development is to be generally located west of Chocolate Drive between 5th Street and Gepford Parkway on approximately 45.51 acres within APN 502-250-09 in Reno, Nevada. The site is currently undeveloped. Upon project completion in 2025, the proposed development is anticipated to consist of approximately 240 units of two-story low-income affordable multifamily housing.

Regional access to the residential development is expected to be provided via Sun Valley Boulevard. Primary access to the project is given by Chocolate Drive and 2nd Avenue. Direct access to the site is planned to be provided by one (1) full access driveway along Chocolate Drive at the intersection of Chocolate Drive and Gepford Parkway. Emergency Access is expected to be provided at the intersection of Chocolate Drive and 5th Avenue. This will be restricted with an emergency access gate.

The Washoe County scope of study, dated November 24, 2021, identified intersections for full analysis. Based on changes to the site plan and site circulation, two (2) additional intersections along 2nd Avenue were included for analysis:

- Chocolate Drive and 5th Avenue (#1)
- Sun Valley Boulevard and 5th Avenue (#2)
- Sun Valley Boulevard and 2nd Avenue (#3)
- Chocolate Drive and 2nd Avenue (#4)

The scope of study from Washoe County is included in **Appendix A**. The study area intersections are shown in **Figure E-1**.

Full buildout of the residential development is anticipated to generate approximately 96 AM peak hour trips and approximately 122 PM peak hour trips to the surrounding street network.

The proposed residential development traffic is anticipated to generate traffic volumes resulting in the following recommendations:

- The developer is recommended to install R1-1 “STOP” signs with appropriate pavement markings for the egressing access drive approaches along Chocolate Drive per current Manual on Uniform Traffic Control Devices (MUTCD) Guidelines.
- All on-site and off-site signing and striping improvements should be incorporated into the Civil Drawings and conform to the current MUTCD, as applicable.
- The developer is recommended to install R11-3a “Local Traffic Only” sign at the intersection of Chocolate Drive and Gepford Parkway to discourage residents of the multifamily development from exiting from 5th Avenue.
- The intersection of Sun Valley Boulevard and 2nd Avenue (#3) operates at LOS D in the Background AM and PM peak hour scenarios. With optimized signal timing, the intersection operates at LOS C in the 2025 Background plus Project AM and PM peak hours. Therefore, it is recommended that the County work with RTC Washoe to optimize the signal timing at the intersection of Sun Valley Boulevard and 2nd Avenue (#3) to accommodate future traffic volumes.
- The project is not anticipated to have significant impacts to the study intersections and the surrounding street network.

Figure E-1 – Project Access Drives and Study Area Intersections



TABLE OF CONTENTS

EXECUTIVE SUMMARY.....I

1. INTRODUCTION 1

2. EXISTING CONDITIONS 3

 2.1. Study Area Intersections 3

 2.2. Existing Land Uses 3

 2.3. Existing Lane Configurations and Control 3

 2.4. Existing Turning Movements 3

3. FUTURE CONDITIONS..... 6

 3.1. 2025 Background Lane Configuration and Control..... 6

 3.2. 2025 Background Traffic..... 6

 3.3. 2025 Background plus Project Lane Configuration and Control 6

 3.4. Project Trip Generation 9

 3.5. Project Trip Distribution..... 9

 3.6. Traffic Assignment 9

 3.7. 2025 Background Plus Project Traffic Volumes 9

4. TRAFFIC IMPACT ANALYSIS..... 13

 4.1. Analysis Methodology 13

 4.2. Peak Hour Operational Analysis 13

 4.3. Left Turn Storage Bay Analysis..... 15

5. BICYCLE/PEDESTRIAN/TRANSIT FACILITIES..... 16

 5.1. Local Bicycle/Pedestrian Access and School Walking Routes 16

 5.2. Public Transportation 16

6. CRASH DATA SUMMARY 17

7. CONCLUSIONS/RECOMMENDATIONS 18

LIST OF FIGURES

Figure E-1 – Project Access Drives and Study Area Intersections..... ii
 Figure 1 – Vicinity Map.....2
 Figure 2 – 2022 Existing Lane Configuration and Control4
 Figure 3 – 2022 Existing Peak Hour Traffic Volumes5
 Figure 4 – 2025 Background Peak Hour Traffic Volumes.....7
 Figure 5 – 2025 Background Plus Project Lane Configuration and Control8
 Figure 6 – Project Trip Distribution.....10
 Figure 7 – Project Traffic Assignment11
 Figure 8 – 2025 Background Plus Project Peak Hour Traffic Volumes.....12

LIST OF TABLES

Table 1 – Peak Hour Turning Movement Count Dates3
 Table 2 – Trip Generation9
 Table 3 – Level of Service Definitions13
 Table 4 – Peak Hour LOS Analysis.....14
 Table 5 – Left Turn Storage Bay Analysis Results15
 Table 6 – Crash Data Summary.....17

LIST OF APPENDICES

Appendix A Scope of Study
 Appendix B Count Data
 Appendix C Trip Generation Calculations
 Appendix D Key Intersection Peak Hour LOS Calculations
 Appendix E Left Turn Storage Calculations
 Appendix F Site Plan

1. INTRODUCTION

Kimley-Horn and Associates, Inc. has been retained by Pedcor Investments, a Limited Liability Company to prepare a traffic impact study for a proposed low income, multi-family residential development. The purpose of this traffic impact study is to identify traffic generation characteristics of the proposed development, identify potential traffic related impacts on the local street system, and develop mitigation measures required for the identified impacts.

The proposed residential development is to be generally located west of Chocolate Drive between 5th Street and Gepford Parkway on approximately 45.51 acres within APN 502-250-09 in Reno, Nevada. The site is currently undeveloped. Upon project completion in 2025, the proposed development is anticipated to consist of 240 units of low-rise multifamily housing. A site plan for the proposed development is located in **Appendix F**. The location of the project site with respect to the City of Reno is shown on **Figure 1**.

Regional access to the residential development is expected to be provided via Sun Valley Boulevard. Primary access to the project is given by Chocolate Drive and 2nd Avenue. Direct access to the site is planned to be provided by one (1) full access driveway along Chocolate Drive at the intersection with Gepford Parkway. Emergency Access is expected to be provided at the intersection of Chocolate Drive and 5th Avenue.

Figure 1 – Vicinity Map



Source: Nearmap

2. EXISTING CONDITIONS

This section of the report details existing conditions near the project site.

2.1. Study Area Intersections

The Washoe County scope of study, dated September 19, 2022, identified four (4) intersections for full analysis:

- Chocolate Drive and 5th Avenue/Drive A (#1)
- Sun Valley Boulevard and 5th Avenue (#2)
- Sun Valley Boulevard and 2nd Avenue (#3)
- Chocolate Drive and 2nd Avenue (#4)

The scope of study from Washoe County is included in **Appendix A**.

2.2. Existing Land Uses

The site of the proposed project is currently undeveloped. The area surrounding the project site is composed primarily of residential, commercial, and warehouse land uses. The location of the project site, study area intersections and existing land uses are shown on **Figure E-1**.

2.3. Existing Lane Configurations and Control

Regional access to the residential development is expected to be provided via Sun Valley Boulevard. The intersections of Chocolate Drive/5th Avenue (#1) and Chocolate Drive/2nd Avenue (#4) are currently rural intersections. Chocolate Drive and portions of 5th Avenue and 2nd Avenue are also currently unpaved, gravel roadways. Existing speed limits, lane configuration, and traffic control at the time of this study are illustrated in **Figure 2**.

2.4. Existing Turning Movements

AM and PM peak hour turning movement data was field counted on Tuesday, November 30, 2021, and Wednesday, September 28, 2022, summarized in **Table 1**. Count data sheets are provided in **Appendix B**.

Table 1 – Peak Hour Turning Movement Count Dates

Intersection	Count Date
Sun Valley Boulevard and 5 th Avenue (#2)	Thursday, November 30, 2021
Sun Valley Boulevard and 2 nd Avenue (#3)	Wednesday, September 28, 2022

Figure 4 illustrates the 2021 existing peak hour traffic volumes.

Existing Lane Configuration and Traffic Control



Project Basemap

LEGEND

Intersection ID

XX (XX) Storage (ft)

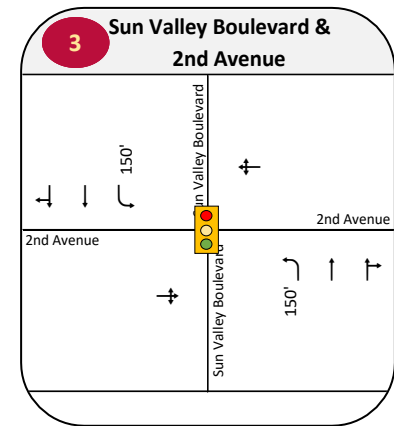
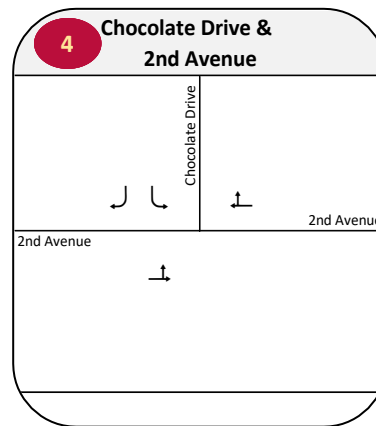
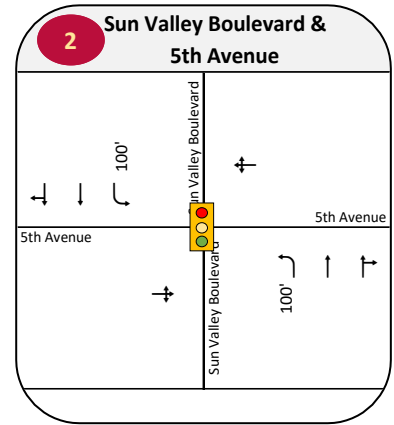
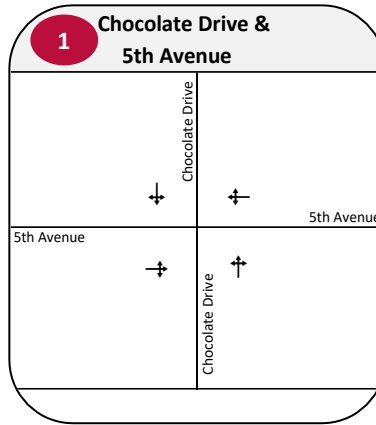
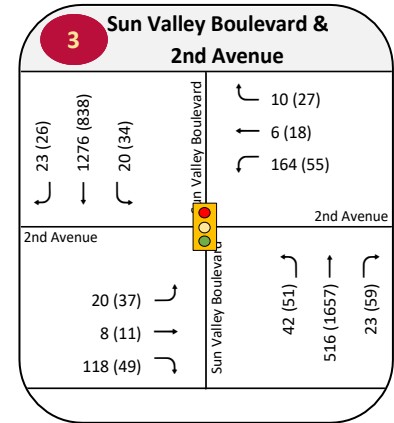
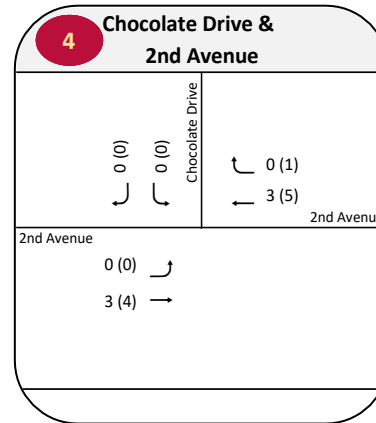
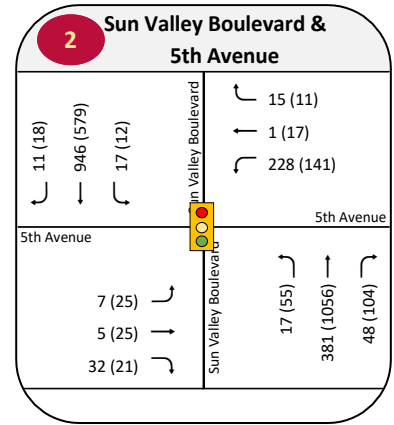
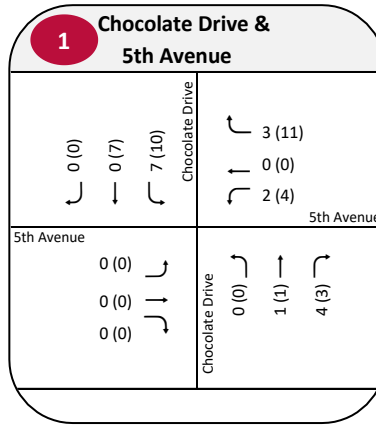


Figure 2 - 2022 Existing Lane Configuration and Traffic Control

Existing AM & PM Peak Hour Vehicle Volumes



LEGEND

- # Intersection ID
- XX (XX) AM (PM) Peak Hour Vehicle Volumes

Figure 3 - 2022 Existing AM & PM Peak Hour Volumes

3. FUTURE CONDITIONS

This section of the report details the conditions that are expected in the future at the time the proposed project is anticipated to be completed.

3.1. 2025 Background Lane Configuration and Control

Regional access to the residential development is expected to be provided via Sun Valley Boulevard. Expected speed limits, lane configuration, and traffic control in 2025 are expected remain the same as the 2022 existing speed limits, lane configuration and traffic control illustrated in **Figure 3** with the exception of the project access drive.

3.2. 2025 Background Traffic

To accurately determine the impact of project traffic, it is necessary to establish future baseline traffic volumes along roadways in the vicinity of the proposed development site. Evaluating a Nevada Department of Transportation (NDOT) count station in the vicinity of the project site resulted in a 2% growth rate. As such, a growth rate of 2% was used for this project site.

Existing year (2022) peak hour traffic volumes were grown for three (3) years at a 2 percent (2%) annual growth rate to obtain future background traffic volumes in 2025 when the proposed development is anticipated to be fully completed. The 2025 background peak hour traffic volumes at the key intersections are illustrated in **Figure 4**.

3.3. 2025 Background plus Project Lane Configuration and Control

Direct access to the site is planned to be provided by via Chocolate Drive and 2nd Avenue. Speed limits, lane configuration, and traffic control at the time of expected project completion in 2023 are expected to remain the same as the 2022 existing speed limits, lane configuration and traffic control, with the addition of the project access drives, as illustrated in **Figure 5**.

2025 Background AM & PM Peak Hour Vehicle Volumes



Project Basemap

LEGEND

- # Intersection ID
- XX (XX) AM (PM) Peak Hour Vehicle Volumes

1 Chocolate Drive & 5th Avenue	
Chocolate Drive ↘ 0 (0) ↓ 0 (7) ↙ 7 (11)	Chocolate Drive ↘ 3 (12) ↓ 0 (0) ↙ 2 (4)
5th Avenue ↘ 0 (0) ↓ 0 (0) ↙ 0 (0)	Chocolate Drive ↘ 0 (0) ↓ 1 (1) ↙ 4 (3)

2 Sun Valley Boulevard & 5th Avenue	
Sun Valley Boulevard ↘ 12 (19) ↓ 1004 (614) ↙ 18 (13)	Sun Valley Boulevard ↘ 16 (12) ↓ 1 (18) ↙ 242 (150)
5th Avenue ↘ 7 (26) ↓ 5 (27) ↙ 34 (22)	Sun Valley Boulevard ↘ 18 (58) ↓ 404 (1121) ↙ 51 (110)

4 Chocolate Drive & 2nd Avenue	
Chocolate Drive ↘ 0 (0) ↓ 0 (0)	Chocolate Drive ↘ 0 (1) ↓ 3 (5)
2nd Avenue ↘ 0 (0) ↓ 3 (4)	

3 Sun Valley Boulevard & 2nd Avenue	
Sun Valley Boulevard ↘ 24 (28) ↓ 1354 (889) ↙ 21 (36)	Sun Valley Boulevard ↘ 11 (29) ↓ 6 (19) ↙ 174 (58)
2nd Avenue ↘ 21 (39) ↓ 8 (12) ↙ 125 (52)	Sun Valley Boulevard ↘ 45 (54) ↓ 548 (1758) ↙ 24 (63)

Figure 4 - 2025 Background AM & PM Peak Hour Volumes

2025 Background Plus Project Lane Configuration and Traffic Control



Project Basemap

LEGEND

Intersection ID

XX (XX) Storage (ft)

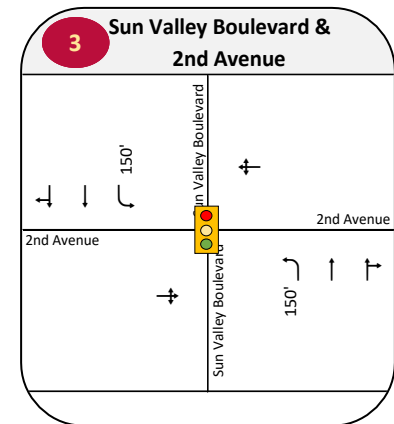
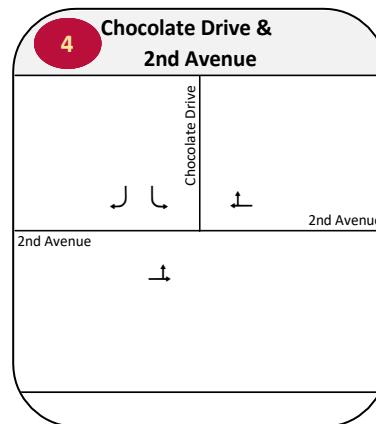
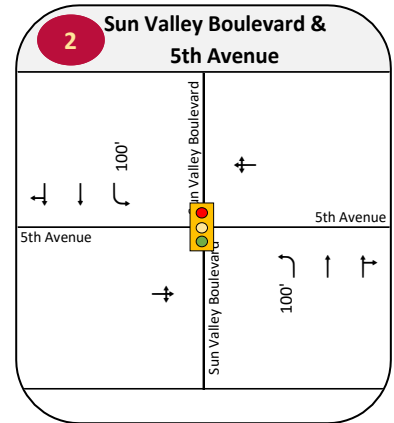
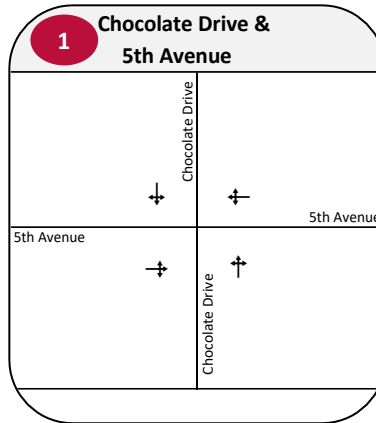


Figure 5 - 2025 Background Plus Project Lane Configuration and Traffic Control

3.4. Project Trip Generation

For purposes of estimating the number of new vehicle trips that are anticipated to be generated by the proposed residential development, the Institute of Transportation Engineers (ITE) Trip Generation Manual, 11th Edition (ITE Land Use Code 220 – Multifamily Housing (Low-Rise)) was used. The ITE Trip Generation Manual informational report is a standard reference used by jurisdictions throughout the country and is based on actual trip generation studies performed at numerous locations in areas of various populations.

Table 2 summarizes the estimated project trips. The proposed development is anticipated to generate 96 AM peak hour and 122 PM peak hour trips. Calculations are provided in **Appendix C**.

Table 2 – Trip Generation

ITE Code	Description	Size	AM Peak Hour			PM Peak Hour		
			In	Out	Total	In	Out	Total
220	Multifamily Housing (Low-Rise)	240 Units	23	73	96	77	45	122

3.5. Project Trip Distribution

The study area street network characteristics, including the existing traffic patterns, expected street network, and access to regional facilities were used to determine the distribution of site-generated traffic. The directional distribution of traffic is a means to quantify the percentage of project-generated traffic that approaches the development from a given direction and departs the site in the same or a different direction. **Figure 6** shows the project trip distribution at the study area intersections.

3.6. Traffic Assignment

Assignment of project traffic was obtained by applying the developed trip distribution in **Figure 6** to the estimated traffic generation in **Table 2**. Project traffic assignment is illustrated in **Figure 7** for the study area intersections.

The entering and exiting trips at the project access drives are rounded to the nearest whole number when assigned. Therefore, the number of trips assigned may differ slightly from the total trip generation.

3.7. 2025 Background Plus Project Traffic Volumes

The project generated traffic volumes in **Figure 7** were added to the 2025 background traffic volumes in **Figure 4** to represent estimated traffic conditions for full project development in 2025. The 2025 background plus project peak hour traffic volumes for the study area intersections are illustrated in **Figure 8**.

Project Trip Distribution



Project Basemap

LEGEND

- # Intersection ID
- XX (XX) Entering(Exiting)

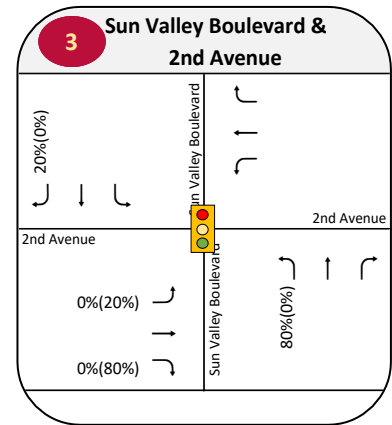
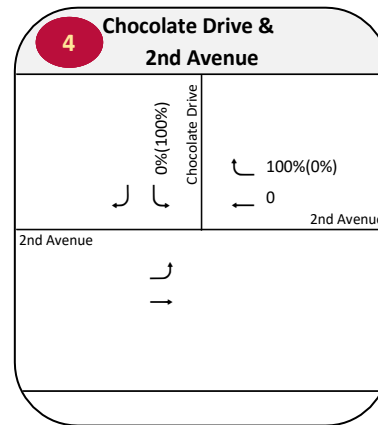
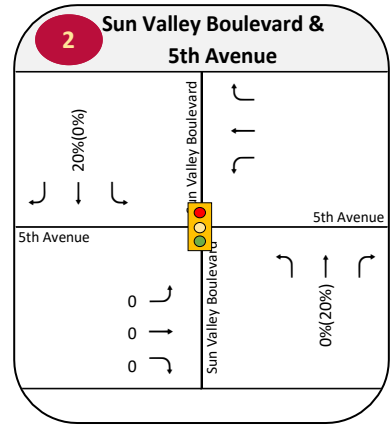
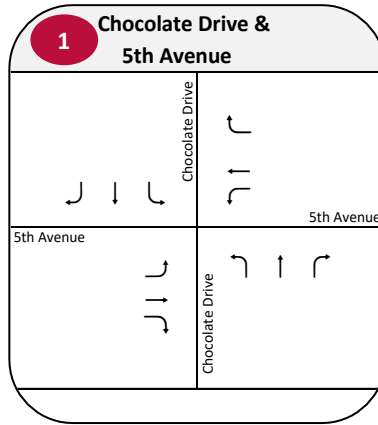


Figure 6 - Project Trip Distribution

Traffic Assignment AM & PM Peak Hour Vehicle Volumes



Project Basemap

LEGEND

- Intersection ID
- XX (XX) AM (PM) Peak Hour Vehicle Volumes

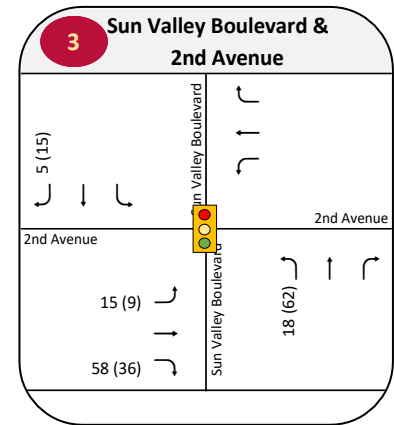
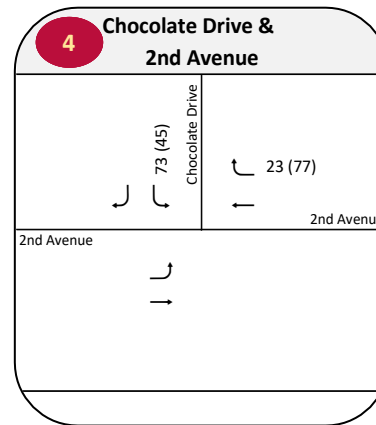
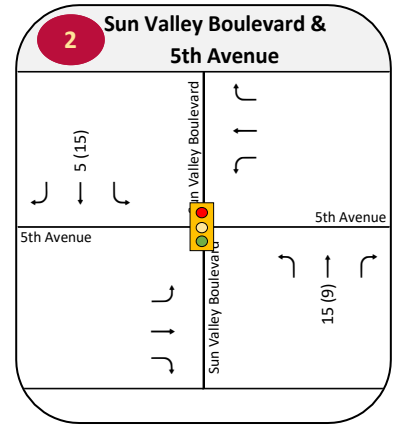
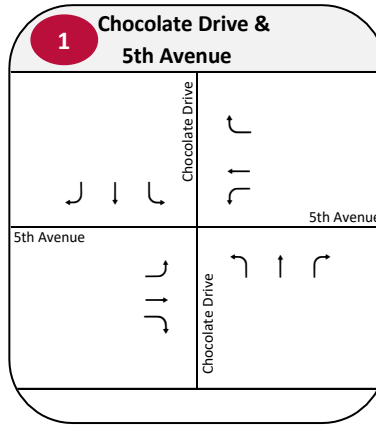


Figure 7 - Project Trip Assignment

2025 Background Plus Project AM & PM Peak Hour Vehicle Volumes



Project Basemap

LEGEND

- Intersection ID
- XX (XX) AM (PM) Peak Hour Vehicle Volumes

1 Chocolate Drive & 5th Avenue	
0 (0) ↓ 0 (7) ↓ 7 (11)	Chocolate Drive 3 (12) ↘ 0 (0) ↘ 2 (4) ↘ 5th Avenue
5th Avenue 0 (0) ↘ 0 (0) ↓ 0 (0) ↘	Chocolate Drive 0 (0) ↘ 1 (1) ↓ 4 (3) ↘

2 Sun Valley Boulevard & 5th Avenue	
12 (19) ↓ 1009 (629) ↓ 18 (11)	Sun Valley Boulevard 16 (12) ↘ 1 (18) ↘ 242 (148) ↘ 5th Avenue
5th Avenue 7 (25) ↘ 5 (27) ↓ 34 (22) ↘	Sun Valley Boulevard 18 (56) ↘ 419 (1130) ↓ 51 (110) ↘

4 Chocolate Drive & 2nd Avenue	
0 (0) ↓ 73 (45)	Chocolate Drive 23 (78) ↘ 3 (5) ↘ 2nd Avenue
2nd Avenue 0 (0) ↘ 3 (4) ↓	2nd Avenue 23 (78) ↘ 3 (5) ↘

3 Sun Valley Boulevard & 2nd Avenue	
29 (43) ↓ 1354 (889) ↓ 21 (36)	Sun Valley Boulevard 11 (29) ↘ 6 (19) ↘ 174 (58) ↘ 2nd Avenue
2nd Avenue 36 (48) ↘ 8 (12) ↓ 183 (88) ↘	Sun Valley Boulevard 63 (115) ↘ 548 (1758) ↓ 24 (63) ↘

Figure 8 - 2025 Background Plus Project AM & PM Peak Hour Volumes

4. TRAFFIC IMPACT ANALYSIS

Traffic analyses for 2022 existing, 2025 background, and 2025 background plus project scenarios were conducted at the identified key intersections to determine possible existing and/or future deficiencies in the street network.

4.1. Analysis Methodology

Study area intersections were analyzed based on average total delay analysis for signalized and unsignalized intersections presented in the Transportation Research Board’s “Highway Capacity Manual” 6th Edition (HCM 6). Under the unsignalized analysis, the level of service (LOS) for a two-way stop-controlled intersection is determined by the computed or measured control delay and is defined for each minor movement. LOS for a two-way stop-controlled intersection is not defined for the intersection as a whole. LOS for a signalized or four-way stop controlled intersection is defined for the intersection as a whole. **Table 3** shows the definition of LOS for intersections.

Table 3 – Level of Service Definitions

Level of Service	Signalized Intersection Average Total Delay (sec/veh)	Unsignalized Intersection Average Total Delay (sec/veh)
A	≤10	10
B	>10 and ≤20	>10 and ≤15
C	>20 and ≤35	>15 and ≤25
D	>35 and ≤55	>25 and ≤35
E	>55 and ≤80	>35 and ≤50
F	>80	>50

Definitions provided from the Highway Capacity Manual, 6th Edition, Transportation Research Board.

Synchro 11 was used to analyze the study area intersections and driveways for LOS. Synchro is an interactive computer program that enables planners and engineers to forecast the traffic impacts of new developments; conduct area-wide traffic forecasting studies; test different mitigation measures and compare different traffic scenarios. Synchro 11 utilizes HCM 6 methodology to analyze intersection delay and LOS.

4.2. Peak Hour Operational Analysis

Calculations for the LOS at the key intersections and project access drives are provided in **Appendix D**. The 2022 existing and 2025 background analyses are based on the lane geometry and intersection control shown in **Figure 2**, while the 2025 background plus project analyses are based on the lane configuration and intersection control shown in **Figure 5**. It should be noted that the signalized intersections were analyzed using optimized cycle lengths and splits. The results of the peak hour LOS analysis for existing, 2025 background, and 2025 background plus project scenarios are summarized in **Table 4**. The key intersections and project access drives are expected to operate at acceptable LOS under 2022 existing, 2025 background, and 2025 background plus project scenarios.

Table 4 – Peak Hour LOS Analysis

Intersection	2022 Existing		2025 Background		2025 Background plus Project	
	AM	PM	AM	PM	AM	PM
	Delay (s) (LOS)	Delay (s) (LOS)	Delay (s) (LOS)	Delay (s) (LOS)	Delay (s) (LOS)	Delay (s) (LOS)
Chocolate Drive and 5th Avenue/Drive A (#1) <i>All-Way Stop Controlled</i>	6.9 (A)	7.0 (A)	6.9 (A)	7.0 (A)	6.9 (A)	7.0 (A)
Sun Valley Boulevard and 5th Avenue (#2) <i>Signalized</i>	9.0 (A)	6.7 (A)	9.6 (A)	7.1 (A)	9.6 (A)	7.1 (A)
Sun Valley Boulevard and 2nd Avenue (#3) <i>Signalized</i>	75.8 (E)	38.5 (D)	38.1 (D)	49.1 (D)	34.2 (C)	34.2 (C)
Chocolate Drive and 2nd Avenue <i>2-Way stop Controlled</i>	0 (A)	6.9 (A)	0 (A)	6.9 (A)	6.4 (A)	7.1 (A)

4.3. Left Turn Storage Bay Analysis

Left turn storage bay analysis was conducted for signalized exclusive left turn movements anticipated to be impacted by the addition of project traffic at the study area intersections (Intersection #3). The analysis was conducted using the Synchro 11 software to obtain 95th percentile queues. The left turn storage bay calculations include AM and PM peak volumes. The length of the desired storage per lane was taken to be the maximum of the two peak hours. Calculations are provided in **Appendix E**. The calculated required left turn storage lengths in the existing, 2025 background, and 2025 background plus project conditions are summarized in **Table 4**. As evaluated, the existing signalized left turn storage bays were found to have adequate storage length to serve 2021 existing, 2025 background, and 2025 background plus project traffic volumes.

Table 5 – Left Turn Storage Bay Analysis Results

Intersection Left Turn Movement	Control and Storage Length	Desired Storage		
		2021 Existing	2023 Background	2023 Background Plus Project
Sun Valley Boulevard and 2nd Avenue (#3)	Signalized			
Northbound Left	225'	85'	97'	201'
Southbound Left	200'	66'	73'	73'

5. BICYCLE/PEDESTRIAN/TRANSIT FACILITIES

This section of the report details bicycle and pedestrian access to local attractions.

5.1. Local Bicycle/Pedestrian Access and School Walking Routes

The nearest pedestrian/bicycle attractions are located along Sun Valley Boulevard, about a half mile east of the project site. Pedestrian and bicycle facilities are minimal in the vicinity of the project site. Dedicated bicycle lanes are provided along Sun Valley Boulevard. Through the residential community, low-volume and low-speed streets are bicycle-friendly, however, portions of 5th Avenue and Chocolate Drive are currently unpaved. 2nd Avenue does not have existing dedicated bicycle lanes but does have sidewalks on one side of the road. The sidewalk is along the north side of 2nd street and then transitions to the south side of the street at the intersection of 2nd Avenue and Whittemore Way. The sidewalks are planned to be extended into the proposed development.

5.2. Public Transportation

Washoe County provides public transportation services through the Regional Transportation Commission of Washoe County, Nevada (RTC Washoe). RTC Washoe currently operates Bus Route 5 along Sun Valley Road. The nearest bus stops are located approximately a half mile from the project site near the intersections of Sun Valley Boulevard and 5th Street (#2) and Sun Valley Boulevard and 2nd Avenue (#3).

6. CRASH DATA SUMMARY

Crash data was requested for the four (4) existing study intersections from the NDOT Safety Engineering Division for the most recent four-year period (January 1, 2018 – December 31, 2021). The crash data for the study intersections is summarized in **Table 5**. The intersection crashes include those crashes on both the major and minor streets of the key intersections during the three-year analysis period. No crashes were reported at the intersection of Chocolate Drive and 2nd Avenue (#4).

Table 6 – Crash Data Summary

Int. Num.	Intersection Name	Total Crashes	Property Damage Only	Injury	Fatal
1	Chocolate Drive and 5th Avenue	1	1 (100%)	0 (0%)	0 (0%)
2	Sun Valley Boulevard and 5th Avenue	19	12 (63%)	7 (37%)	0 (0%)
3	Sun Valley Boulevard and 2th Avenue	24	13 (54%)	10 (42%)	1 (4%)
4	Chocolate Drive and 2nd Avenue	0	0 (0%)	0 (0%)	0 (0%)
Total		44	26 (59%)	17 (39%)	1 (2%)

A total of 44 crashes were recorded at the four (4) intersections in the most recent three-year period. Those 44 crashes resulted in 17 injury crashes (39%), 26 property damage only crashes (59%) and one fatal crash (2%).

7. CONCLUSIONS/RECOMMENDATIONS

The project traffic of the Chocolate Drive development is not anticipated to have significant impacts to the key study intersections. The proposed development is anticipated to generate traffic volumes resulting in the following recommendations:

- The developer is recommended to install R1-1 “STOP” signs with appropriate pavement markings for the egressing access drive approaches along Chocolate Drive per current Manual on Uniform Traffic Control Devices (MUTCD) Guidelines.
- All on-site and off-site signing and striping improvements should be incorporated into the Civil Drawings and conform to the current MUTCD, as applicable.
- The developer is recommended to install R11-3a “Local Traffic Only” sign at the intersection of Chocolate Drive and Gepford Parkway to discourage residents of the multifamily development from exiting from 5th Avenue.
- The intersection of Sun Valley Boulevard and 2nd Avenue (#3) operates at LOS D in the Background AM and PM peak hour scenarios. With optimized signal timing, the intersection operates at LOS C in the 2025 Background plus Project AM and PM peak hours. Therefore, it is recommended that the County work with RTC Washoe to optimize the signal timing at the intersection of Sun Valley Boulevard and 2nd Avenue (#3) to accommodate future traffic volumes.
- The project is not anticipated to have significant impacts to the study intersections and the surrounding street network.

APPENDIX A
SCOPE OF STUDY

Roberts, Emily

From: Giacomini, David
Sent: Tuesday, January 4, 2022 12:54 PM
To: Roberts, Emily
Subject: FW: Chocolate Drive Multi-Family Development Traffic Scope

From: Fink, Mitchell <MFink@washoecounty.gov>
Sent: Wednesday, November 24, 2021 1:55 PM
To: Giacomini, David <david.giacomini@kimley-horn.com>
Cc: Waechter, Chris <Chris.Waechter@kimley-horn.com>
Subject: RE: Chocolate Drive Multi-Family Development Traffic Scope

Hi David,

We would like to see the driveway access on Brownlee Lane analyzed as part of the Traffic Study and not the adjoining street.

Thanks.



Mitchell Fink, P.E. | Licensed Engineer
Community Services Department | Engineering & Capital Projects Division
mfink@washoecounty.gov | Office: 775.328.2050
1001 E. 9th Street, Reno, NV 89512



**Have some kudos to share about a Community Services Department employee or experience?
email: csdallstars@washoecounty.us*

The content of this email is the confidential property of Washoe County and should not be copied, modified, retransmitted, or used for any purpose except with written authorization. If you are not the intended recipient, please delete all copies and notify us immediately.

From: Giacomini, David <david.giacomini@kimley-horn.com>
Sent: Wednesday, November 24, 2021 12:34 PM
To: Fink, Mitchell <MFink@washoecounty.gov>
Cc: Waechter, Chris <Chris.Waechter@kimley-horn.com>
Subject: RE: Chocolate Drive Multi-Family Development Traffic Scope

[NOTICE: This message originated outside of Washoe County -- DO NOT CLICK on links or open attachments unless you are sure the content is safe.]

Mitch – I should clarify that Brownlee does not continue through to Sun Valley Boulevard.

David J Giacomini, P.E., PTOE, RSP₁
Kimley-Horn | 7900 Rancharrah Parkway, Suite 100, Reno, NV 89511
Direct: (775) 200-1981 | Mobile: (651) 497-8220

From: Giacomini, David
Sent: Wednesday, November 24, 2021 12:02 PM
To: Fink, Mitchell <MFink@washoecounty.gov>

Cc: Waechter, Chris <Chris.Waechter@kimley-horn.com>
Subject: RE: Chocolate Drive Multi-Family Development Traffic Scope

Mitch,

Thank you for the response. I forgot to follow-up with some clarification that there is also an access drive located at Brownlee Lane. It is harder to see due to the grading hatching on the site plan. Would you like to see that intersection as well as Brownlee and Sun Valley included in the traffic study as well? Six intersections seems like a lot of intersections for a project of this size, so I will defer to you.

Thank you and have a good Thanksgiving,

David J Giacomini, P.E., PTOE, RSP₁
Kimley-Horn | 7900 Rancharrah Parkway, Suite 100, Reno, NV 89511
Direct: (775) 200-1981 | Mobile: (651) 497-8220

From: Fink, Mitchell <MFink@washoecounty.gov>
Sent: Friday, November 12, 2021 11:11 AM
To: Giacomini, David <david.giacomini@kimley-horn.com>
Cc: Waechter, Chris <Chris.Waechter@kimley-horn.com>
Subject: RE: Chocolate Drive Multi-Family Development Traffic Scope

Hi David,

Washoe County's threshold for the requirement of a Traffic Impact Report (TIR) is if the development project will generate 80 or more weekday peak hour trips. For this project a TIR will be required.

Per the attached site map for the Chocolate Drive Project the driveway intersections with W 4th St. and W 5th St. will need to be evaluated as well as these roadway intersections with Sun Valley Blvd. If there are any driveway location changes to the attached site plan those driveway intersections and the corresponding roadway intersections with Sun Valley Blvd. will have to be analyzed as well.

I also attached RTC's Traffic Report Guidelines for your reference to help you with the TIR scope and requirements that is acceptable to Washoe County as well.

If you have any questions please let me know.

Thank you.



Mitchell Fink, P.E. | Licensed Engineer
Community Services Department | Engineering & Capital Projects Division
mfink@washoecounty.gov | Office: 775.328.2050
1001 E. 9th Street, Reno, NV 89512



**Have some kudos to share about a Community Services Department employee or experience?
email: csdallstars@washoecounty.us*

The content of this email is the confidential property of Washoe County and should not be copied, modified, retransmitted, or used for any purpose except with written authorization. If you are not the intended recipient, please delete all copies and notify us immediately.

From: Giacomini, David <david.giacomini@kimley-horn.com>
Sent: Thursday, November 11, 2021 8:02 AM
To: Fink, Mitchell <MFink@washoecounty.gov>

Cc: Waechter, Chris <Chris.Waechter@kimley-horn.com>
Subject: Chocolate Drive Multi-Family Development Traffic Scope

[NOTICE: This message originated outside of Washoe County -- DO NOT CLICK on links or open attachments unless you are sure the content is safe.]

Mitch,

Thank you for the call yesterday. I have attached a copy of the site plan for our client's project along Chocolate Drive. I am seeking a scope for a traffic study for this project. The project is tentatively 240 multi-family units. Please let me know if you would like me to propose a set of intersections and count hours for existing conditions.

Thank you,

David J Giacomini, P.E., PTOE, RSP₁

Kimley-Horn | 7900 Rancharrah Parkway, Suite 100, Reno, NV 89511

Direct: (775) 200-1981 | Mobile: (651) 497-8220

Connect with us: [Twitter](#) | [LinkedIn](#) | [Facebook](#) | [YouTube](#)

APPENDIX B
COUNT DATA

Chocolate Drive & West 5th Avenue - TMC

Tue Nov 30, 2021

Full Length (7 AM-9 AM, 4 PM-6 PM)

All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)

All Movements

ID: 904390, Location: 39.592728, -119.789247

Provided by: Kimley-Horn and Associates, Inc.
 767 Eustis Street, Suite 100, Saint Paul, MN, 55114, US

Leg Direction	Chocolate Drive Northbound				Chocolate Drive Southbound				W 5th Ave Westbound				Int
	R	T	U	App	T	L	U	App	R	L	U	App	
2021-11-30 7:00AM	0	0	0	0	0	0	1	1	0	0	0	0	1
7:15AM	2	0	0	2	0	0	0	0	1	0	0	0	3
7:30AM	0	1	0	1	0	3	0	3	0	0	0	0	4
7:45AM	1	0	0	1	0	2	0	2	0	2	0	2	5
Hourly Total	3	1	0	4	0	5	1	6	1	2	0	3	13
8:00AM	1	0	0	1	0	2	0	2	2	0	0	2	5
8:15AM	1	0	0	1	0	1	0	1	1	0	0	1	3
8:30AM	0	0	0	0	0	0	0	0	1	1	0	2	2
8:45AM	2	0	0	2	0	1	0	1	0	0	0	0	3
Hourly Total	4	0	0	4	0	4	0	4	4	1	0	5	13
4:00PM	2	0	0	2	1	2	0	3	2	1	0	3	8
4:15PM	0	1	0	1	0	2	0	2	2	2	0	4	7
4:30PM	1	0	0	1	4	4	0	8	5	0	0	5	14
4:45PM	0	0	0	0	2	2	0	4	2	1	0	3	7
Hourly Total	3	1	0	4	7	10	0	17	11	4	0	15	36
5:00PM	1	0	0	1	1	1	0	2	1	0	0	1	4
5:15PM	0	0	0	0	0	2	0	2	2	1	1	4	6
5:30PM	0	0	0	0	0	1	0	1	3	1	0	4	5
5:45PM	1	0	0	1	0	1	0	1	0	2	0	2	4
Hourly Total	2	0	0	2	1	5	0	6	6	4	1	11	19
Total	12	2	0	14	8	24	1	33	22	11	1	34	81
% Approach	85.7%	14.3%	0%	-	24.2%	72.7%	3.0%	-	64.7%	32.4%	2.9%	-	-
% Total	14.8%	2.5%	0%	17.3%	9.9%	29.6%	1.2%	40.7%	27.2%	13.6%	1.2%	42.0%	-
Lights	12	2	0	14	7	24	1	32	22	11	1	34	80
% Lights	100%	100%	0%	100%	87.5%	100%	100%	97.0%	100%	100%	100%	100%	98.8%
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0
% Articulated Trucks	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Buses and Single-Unit Trucks	0	0	0	0	1	0	0	1	0	0	0	0	1
% Buses and Single-Unit Trucks	0%	0%	0%	0%	12.5%	0%	0%	3.0%	0%	0%	0%	0%	1.2%

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

Chocolate Drive & West 5th Avenue - TMC

Tue Nov 30, 2021

Full Length (7 AM-9 AM, 4 PM-6 PM)

All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)

All Movements

ID: 904390, Location: 39.592728, -119.789247

Provided by: Kimley-Horn and Associates, Inc.
767 Eustis Street, Suite 100, Saint Paul, MN, 55114, US

[N] Chocolate Drive

Total: 58

In: 33

Out: 25

8

24

1



22

11

1

Out: 37 In: 34

Total: 71

[E] W 5th Ave

Out: 19

In: 14

Total: 33

[S] Chocolate Drive

Chocolate Drive & West 5th Avenue - TMC

Tue Nov 30, 2021

AM Peak (7:15 AM - 8:15 AM)

All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)

All Movements

ID: 904390, Location: 39.592728, -119.789247

Provided by: Kimley-Horn and Associates, Inc.
767 Eustis Street, Suite 100, Saint Paul, MN, 55114, US

Leg Direction	Chocolate Drive Northbound				Chocolate Drive Southbound				W 5th Ave Westbound				
Time	R	T	U	App	T	L	U	App	R	L	U	App	Int
2021-11-30 7:15AM	2	0	0	2	0	0	0	0	1	0	0	1	3
7:30AM	0	1	0	1	0	3	0	3	0	0	0	0	4
7:45AM	1	0	0	1	0	2	0	2	0	2	0	2	5
8:00AM	1	0	0	1	0	2	0	2	2	0	0	2	5
Total	4	1	0	5	0	7	0	7	3	2	0	5	17
% Approach	80.0%	20.0%	0%	-	0%	100%	0%	-	60.0%	40.0%	0%	-	-
% Total	23.5%	5.9%	0%	29.4%	0%	41.2%	0%	41.2%	17.6%	11.8%	0%	29.4%	-
PHF	0.500	0.250	-	0.625	-	0.583	-	0.583	0.375	0.250	-	0.625	0.850
Lights	4	1	0	5	0	7	0	7	3	2	0	5	17
% Lights	100%	100%	0%	100%	0%	100%	0%	100%	100%	100%	0%	100%	100%
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0
% Articulated Trucks	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Buses and Single-Unit Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0
% Buses and Single-Unit Trucks	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%

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

Chocolate Drive & West 5th Avenue - TMC

Tue Nov 30, 2021

AM Peak (7:15 AM - 8:15 AM)

All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)

All Movements

ID: 904390, Location: 39.592728, -119.789247

Provided by: Kimley-Horn and Associates, Inc.
767 Eustis Street, Suite 100, Saint Paul, MN, 55114, US

[N] Chocolate Drive

Total: 11
In: 7 Out: 4

7



3
2
1

Out: 11 In: 5
Total: 16
[E] W 5th Ave

Out: 2 In: 5
Total: 7

[S] Chocolate Drive

Chocolate Drive & West 5th Avenue - TMC

Tue Nov 30, 2021

PM Peak (4 PM - 5 PM) - Overall Peak Hour

All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)

All Movements

ID: 904390, Location: 39.592728, -119.789247

Provided by: Kimley-Horn and Associates, Inc.
767 Eustis Street, Suite 100, Saint Paul, MN, 55114, US

Leg Direction	Chocolate Drive Northbound				Chocolate Drive Southbound				W 5th Ave Westbound				Int
	R	T	U	App	T	L	U	App	R	L	U	App	
2021-11-30 4:00PM	2	0	0	2	1	2	0	3	2	1	0	3	8
4:15PM	0	1	0	1	0	2	0	2	2	2	0	4	7
4:30PM	1	0	0	1	4	4	0	8	5	0	0	5	14
4:45PM	0	0	0	0	2	2	0	4	2	1	0	3	7
Total	3	1	0	4	7	10	0	17	11	4	0	15	36
% Approach	75.0%	25.0%	0%	-	41.2%	58.8%	0%	-	73.3%	26.7%	0%	-	-
% Total	8.3%	2.8%	0%	11.1%	19.4%	27.8%	0%	47.2%	30.6%	11.1%	0%	41.7%	-
PHF	0.375	0.250	-	0.500	0.438	0.625	-	0.531	0.550	0.500	-	0.750	0.643
Lights	3	1	0	4	6	10	0	16	11	4	0	15	35
% Lights	100%	100%	0%	100%	85.7%	100%	0%	94.1%	100%	100%	0%	100%	97.2%
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0
% Articulated Trucks	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Buses and Single-Unit Trucks	0	0	0	0	1	0	0	1	0	0	0	0	1
% Buses and Single-Unit Trucks	0%	0%	0%	0%	14.3%	0%	0%	5.9%	0%	0%	0%	0%	2.8%

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

Chocolate Drive & West 5th Avenue - TMC

Tue Nov 30, 2021

PM Peak (4 PM - 5 PM) - Overall Peak Hour

All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)

All Movements

ID: 904390, Location: 39.592728, -119.789247

Provided by: Kimley-Horn and Associates, Inc.
767 Eustis Street, Suite 100, Saint Paul, MN, 55114, US

[N] Chocolate Drive

Total: 29

In: 17 Out: 12

7 10



11 In: 15
4 In: 13
Total: 28
[E] W 5th Ave

Out: 11 In: 4
Total: 15

[S] Chocolate Drive

5th and Sun Valley - TMC

Wed Sep 28, 2022

Full Length (7 AM-9 AM, 4 PM-6 PM)

All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)

All Movements

ID: 994558, Location: 39.59269, -119.780577

Provided by: Kimley-Horn and Associates, Inc.
767 Eustis Street, Suite 100, Saint Paul, MN, 55114, US

Leg Direction	Sun Valley Northbound					Sun Valley Southbound					5th Eastbound					5th Westbound					Int
	L	T	R	U	App	L	T	R	U	App	L	T	R	U	App	L	T	R	U	App	
2022-09-28 7:00AM	4	84	6	0	94	2	293	2	0	297	1	2	7	0	10	81	0	3	0	84	485
7:15AM	2	82	8	0	92	5	284	6	0	295	3	0	12	0	15	77	0	2	0	79	481
7:30AM	5	106	26	0	137	5	195	3	0	203	1	2	8	0	11	31	0	3	0	34	385
7:45AM	6	109	8	0	123	5	174	0	0	179	2	1	5	0	8	39	1	7	0	47	357
Hourly Total	17	381	48	0	446	17	946	11	0	974	7	5	32	0	44	228	1	15	0	244	1708
8:00AM	6	73	10	3	92	1	177	1	0	179	3	1	5	0	9	42	0	5	0	47	327
8:15AM	3	67	14	0	84	1	157	2	0	160	4	1	6	0	11	61	2	2	2	67	322
8:30AM	5	91	9	1	106	0	154	2	0	156	2	2	5	0	9	45	3	3	0	51	322
8:45AM	5	65	15	1	86	0	159	4	0	163	2	1	6	0	9	41	0	6	1	48	306
Hourly Total	19	296	48	5	368	2	647	9	0	658	11	5	22	0	38	189	5	16	3	213	1277
9:00AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hourly Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:00PM	11	264	27	0	302	5	137	4	0	146	6	2	1	0	9	24	4	3	0	31	488
4:15PM	15	254	15	0	284	2	129	2	0	133	5	3	6	0	14	28	5	0	0	33	464
4:30PM	11	237	15	1	264	0	137	4	1	142	5	7	7	0	19	37	7	0	1	45	470
4:45PM	19	253	21	1	294	2	138	3	0	143	5	8	10	0	23	34	2	1	0	37	497
Hourly Total	56	1008	78	2	1144	9	541	13	1	564	21	20	24	0	65	123	18	4	1	146	1919
5:00PM	10	274	22	1	307	3	158	1	1	163	3	2	4	1	10	33	7	2	0	42	522
5:15PM	12	266	32	0	310	1	146	4	0	151	6	7	5	0	18	29	5	2	1	37	516
5:30PM	12	263	29	0	304	4	137	10	1	152	10	8	2	0	20	43	3	6	1	53	529
5:45PM	16	258	25	0	299	5	113	7	1	126	10	4	2	0	16	44	4	4	1	53	494
Hourly Total	50	1061	108	1	1220	13	554	22	3	592	29	21	13	1	64	149	19	14	3	185	2061
6:00PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hourly Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	142	2746	282	8	3178	41	2688	55	4	2788	68	51	91	1	211	689	43	49	7	788	6965
% Approach	4.5%	86.4%	8.9%	0.3%	-	1.5%	96.4%	2.0%	0.1%	-	32.2%	24.2%	43.1%	0.5%	-	87.4%	5.5%	6.2%	0.9%	-	-
% Total	2.0%	39.4%	4.0%	0.1%	45.6%	0.6%	38.6%	0.8%	0.1%	40.0%	1.0%	0.7%	1.3%	0%	3.0%	9.9%	0.6%	0.7%	0.1%	11.3%	-
Lights	141	2699	277	7	3124	38	2647	53	4	2742	66	51	87	1	205	670	41	48	6	765	6836
% Lights	99.3%	98.3%	98.2%	87.5%	98.3%	92.7%	98.5%	96.4%	100%	98.4%	97.1%	100%	95.6%	100%	97.2%	97.2%	95.3%	98.0%	85.7%	97.1%	98.1%
Articulated Trucks	0	6	0	1	7	0	0	1	0	1	0	0	0	0	0	4	0	0	0	4	12
% Articulated Trucks	0%	0.2%	0%	12.5%	0.2%	0%	0%	1.8%	0%	0%	0%	0%	0%	0%	0%	0.6%	0%	0%	0%	0.5%	0.2%
Buses and Single-Unit Trucks	1	41	5	0	47	3	41	1	0	45	2	0	4	0	6	15	2	1	1	19	117
% Buses and Single-Unit Trucks	0.7%	1.5%	1.8%	0%	1.5%	7.3%	1.5%	1.8%	0%	1.6%	2.9%	0%	4.4%	0%	2.8%	2.2%	4.7%	2.0%	14.3%	2.4%	1.7%

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

5th and Sun Valley - TMC

Wed Sep 28, 2022

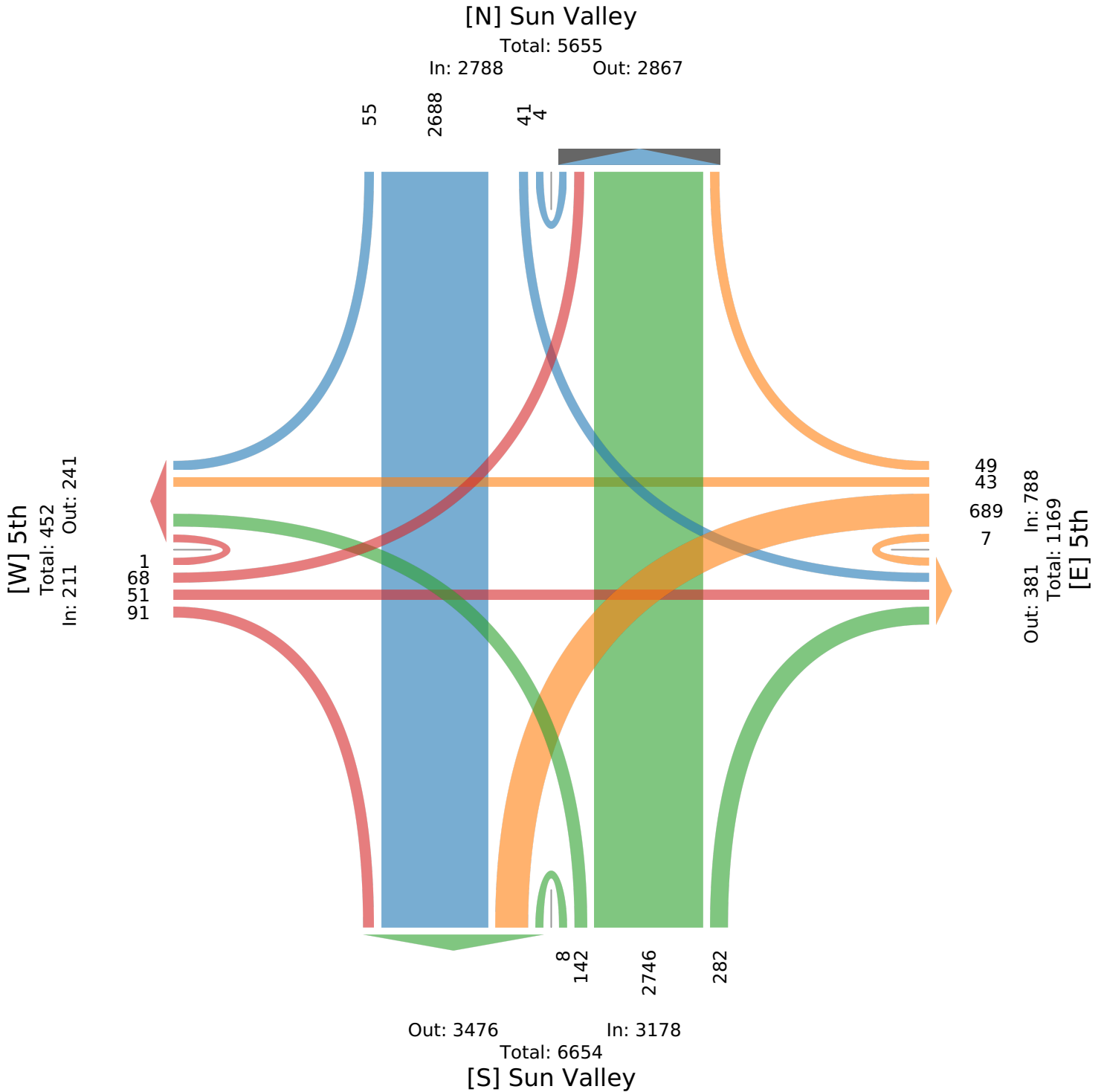
Full Length (7 AM-9 AM, 4 PM-6 PM)

All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)

All Movements

ID: 994558, Location: 39.59269, -119.780577

Provided by: Kimley-Horn and Associates, Inc.
767 Eustis Street, Suite 100, Saint Paul, MN, 55114, US



5th and Sun Valley - TMC

Wed Sep 28, 2022

AM Peak (7 AM - 8 AM)

All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)

All Movements

ID: 994558, Location: 39.59269, -119.780577

Provided by: Kimley-Horn and Associates, Inc.
767 Eustis Street, Suite 100, Saint Paul, MN, 55114, US

Leg Direction	Sun Valley Northbound					Sun Valley Southbound					5th Eastbound					5th Westbound					
Time	L	T	R	U	App	L	T	R	U	App	L	T	R	U	App	L	T	R	U	App	Int
2022-09-28 7:00AM	4	84	6	0	94	2	293	2	0	297	1	2	7	0	10	81	0	3	0	84	485
7:15AM	2	82	8	0	92	5	284	6	0	295	3	0	12	0	15	77	0	2	0	79	481
7:30AM	5	106	26	0	137	5	195	3	0	203	1	2	8	0	11	31	0	3	0	34	385
7:45AM	6	109	8	0	123	5	174	0	0	179	2	1	5	0	8	39	1	7	0	47	357
Total	17	381	48	0	446	17	946	11	0	974	7	5	32	0	44	228	1	15	0	244	1708
% Approach	3.8%	85.4%	10.8%	0%	-	1.7%	97.1%	1.1%	0%	-	15.9%	11.4%	72.7%	0%	-	93.4%	0.4%	6.1%	0%	-	-
% Total	1.0%	22.3%	2.8%	0%	26.1%	1.0%	55.4%	0.6%	0%	57.0%	0.4%	0.3%	1.9%	0%	2.6%	13.3%	0.1%	0.9%	0%	14.3%	-
PHF	0.708	0.874	0.462	-	0.814	0.850	0.807	0.458	-	0.820	0.583	0.625	0.667	-	0.733	0.704	0.250	0.536	-	0.726	0.880
Lights	16	370	48	0	434	15	933	10	0	958	6	5	29	0	40	222	1	15	0	238	1670
% Lights	94.1%	97.1%	100%	0%	97.3%	88.2%	98.6%	90.9%	0%	98.4%	85.7%	100%	90.6%	0%	90.9%	97.4%	100%	100%	0%	97.5%	97.8%
Articulated Trucks	0	2	0	0	2	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	3
% Articulated Trucks	0%	0.5%	0%	0%	0.4%	0%	0%	9.1%	0%	0.1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0.2%
Buses and Single-Unit Trucks	1	9	0	0	10	2	13	0	0	15	1	0	3	0	4	6	0	0	0	6	35
% Buses and Single-Unit Trucks	5.9%	2.4%	0%	0%	2.2%	11.8%	1.4%	0%	0%	1.5%	14.3%	0%	9.4%	0%	9.1%	2.6%	0%	0%	0%	2.5%	2.0%

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

5th and Sun Valley - TMC

Wed Sep 28, 2022

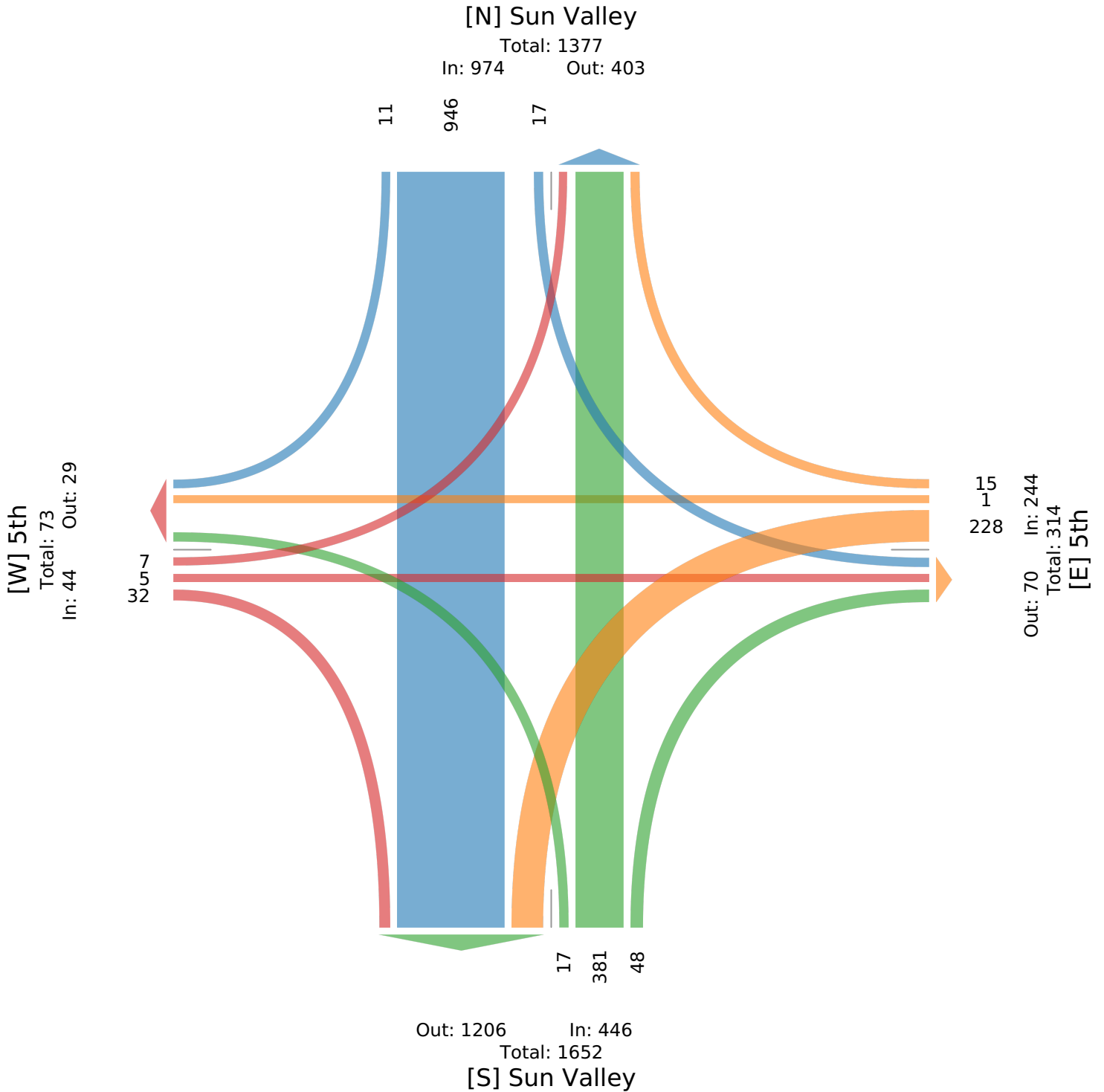
AM Peak (7 AM - 8 AM)

All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)

All Movements

ID: 994558, Location: 39.59269, -119.780577

Provided by: Kimley-Horn and Associates, Inc.
767 Eustis Street, Suite 100, Saint Paul, MN, 55114, US



5th and Sun Valley - TMC

Wed Sep 28, 2022

PM Peak (4:45 PM - 5:45 PM) - Overall Peak Hour

All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)

All Movements

ID: 994558, Location: 39.59269, -119.780577

Provided by: Kimley-Horn and Associates, Inc.
767 Eustis Street, Suite 100, Saint Paul, MN, 55114, US

Leg Direction	Sun Valley Northbound					Sun Valley Southbound					5th Eastbound					5th Westbound					
Time	L	T	R	U	App	L	T	R	U	App	L	T	R	U	App	L	T	R	U	App	Int
2022-09-28 4:45PM	19	253	21	1	294	2	138	3	0	143	5	8	10	0	23	34	2	1	0	37	497
5:00PM	10	274	22	1	307	3	158	1	1	163	3	2	4	1	10	33	7	2	0	42	522
5:15PM	12	266	32	0	310	1	146	4	0	151	6	7	5	0	18	29	5	2	1	37	516
5:30PM	12	263	29	0	304	4	137	10	1	152	10	8	2	0	20	43	3	6	1	53	529
Total	53	1056	104	2	1215	10	579	18	2	609	24	25	21	1	71	139	17	11	2	169	2064
% Approach	4.4%	86.9%	8.6%	0.2%	-	1.6%	95.1%	3.0%	0.3%	-	33.8%	35.2%	29.6%	1.4%	-	82.2%	10.1%	6.5%	1.2%	-	-
% Total	2.6%	51.2%	5.0%	0.1%	58.9%	0.5%	28.1%	0.9%	0.1%	29.5%	1.2%	1.2%	1.0%	0%	3.4%	6.7%	0.8%	0.5%	0.1%	8.2%	-
PHF	0.697	0.964	0.813	0.500	0.980	0.625	0.916	0.450	0.500	0.934	0.600	0.781	0.525	0.250	0.772	0.808	0.607	0.458	0.500	0.797	0.975
Lights	53	1047	102	2	1204	10	574	18	2	604	24	25	20	1	70	136	16	10	2	164	2042
% Lights	100%	99.1%	98.1%	100%	99.1%	100%	99.1%	100%	100%	99.2%	100%	100%	95.2%	100%	98.6%	97.8%	94.1%	90.9%	100%	97.0%	98.9%
Articulated Trucks	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	2
% Articulated Trucks	0%	0.1%	0%	0%	0.1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0.7%	0%	0%	0%	0.6%	0.1%
Buses and Single-Unit Trucks	0	8	2	0	10	0	5	0	0	5	0	0	1	0	1	2	1	1	0	4	20
% Buses and Single-Unit Trucks	0%	0.8%	1.9%	0%	0.8%	0%	0.9%	0%	0%	0.8%	0%	0%	4.8%	0%	1.4%	1.4%	5.9%	9.1%	0%	2.4%	1.0%

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

5th and Sun Valley - TMC

Wed Sep 28, 2022

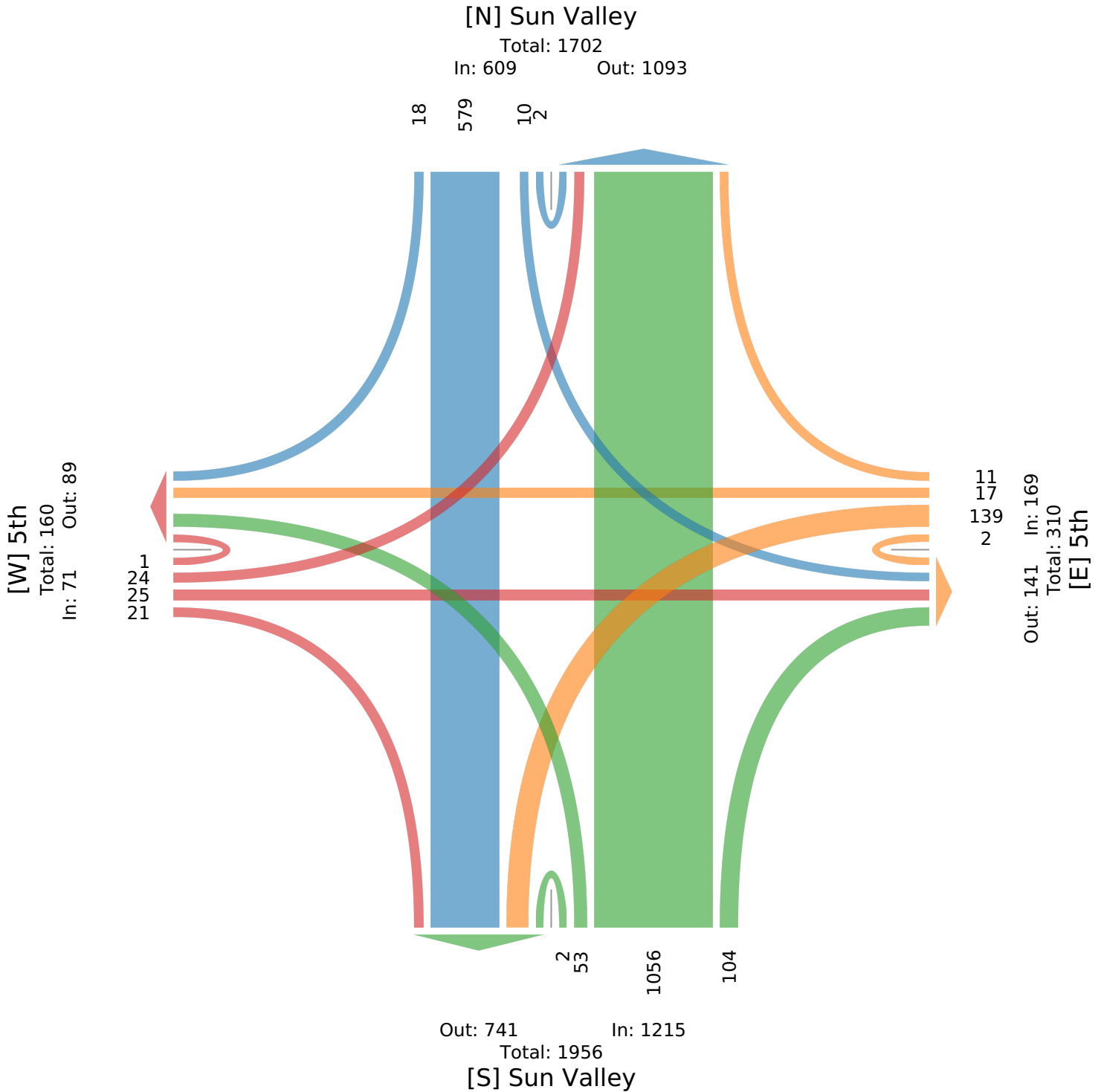
PM Peak (4:45 PM - 5:45 PM) - Overall Peak Hour

All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)

All Movements

ID: 994558, Location: 39.59269, -119.780577

Provided by: Kimley-Horn and Associates, Inc.
767 Eustis Street, Suite 100, Saint Paul, MN, 55114, US



2nd and Sun Valley - TMC

Wed Sep 28, 2022

Full Length (7 AM-9 AM, 4 PM-6 PM)

All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)

All Movements

ID: 994562, Location: 39.581928, -119.780309

Provided by: Kimley-Horn and Associates, Inc.
767 Eustis Street, Suite 100, Saint Paul, MN, 55114, US

Leg Direction	Sun Valley Northbound					Sun Valley Southbound					2nd Eastbound					2nd Westbound					Int
	L	T	R	U	App	L	T	R	U	App	L	T	R	U	App	L	T	R	U	App	
2022-09-28 7:00AM	11	90	8	0	109	10	387	6	0	403	4	1	26	0	31	22	1	4	0	27	570
7:15AM	9	114	5	0	128	2	335	2	0	339	3	1	36	0	40	65	2	3	0	70	577
7:30AM	7	154	5	0	166	4	304	2	0	310	7	5	31	0	43	59	2	1	0	62	581
7:45AM	15	158	5	0	178	4	250	13	0	267	6	1	25	0	32	18	1	2	0	21	498
Hourly Total	42	516	23	0	581	20	1276	23	0	1319	20	8	118	0	146	164	6	10	0	180	2226
8:00AM	8	116	4	0	128	10	241	5	0	256	5	1	8	0	14	12	0	2	0	14	412
8:15AM	3	110	3	0	116	4	228	3	0	235	1	0	14	0	15	16	2	4	0	22	388
8:30AM	3	112	10	0	125	7	231	3	0	241	4	2	9	0	15	12	2	2	0	16	397
8:45AM	6	109	4	0	119	5	224	1	0	230	2	1	12	0	15	15	1	1	0	17	381
Hourly Total	20	447	21	0	488	26	924	12	0	962	12	4	43	0	59	55	5	9	0	69	1578
9:00AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hourly Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:00PM	14	412	12	0	438	8	169	7	0	184	14	1	10	0	25	7	1	6	0	14	661
4:15PM	15	406	12	0	433	13	181	4	0	198	11	4	11	0	26	16	2	12	0	30	687
4:30PM	7	373	16	0	396	12	208	5	0	225	10	2	22	0	34	13	1	8	0	22	677
4:45PM	13	394	16	1	424	11	198	7	0	216	11	3	11	0	25	13	1	10	0	24	689
Hourly Total	49	1585	56	1	1691	44	756	23	0	823	46	10	54	0	110	49	5	36	0	90	2714
5:00PM	11	429	14	1	455	10	218	7	0	235	8	5	20	0	33	14	3	7	0	24	747
5:15PM	13	412	16	0	441	11	200	8	0	219	7	2	10	0	19	11	3	7	0	21	700
5:30PM	13	416	12	0	441	5	215	8	0	228	12	3	10	0	25	15	8	5	0	28	722
5:45PM	13	400	17	0	430	8	205	3	0	216	10	1	9	0	20	15	4	8	0	27	693
Hourly Total	50	1657	59	1	1767	34	838	26	0	898	37	11	49	0	97	55	18	27	0	100	2862
6:00PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hourly Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	161	4205	159	2	4527	124	3794	84	0	4002	115	33	264	0	412	323	34	82	0	439	9380
% Approach	3.6%	92.9%	3.5%	0%	-	3.1%	94.8%	2.1%	0%	-	27.9%	8.0%	64.1%	0%	-	73.6%	7.7%	18.7%	0%	-	-
% Total	1.7%	44.8%	1.7%	0%	48.3%	1.3%	40.4%	0.9%	0%	42.7%	1.2%	0.4%	2.8%	0%	4.4%	3.4%	0.4%	0.9%	0%	4.7%	-
Lights	160	4132	158	2	4452	123	3719	84	0	3926	114	33	262	0	409	317	34	81	0	432	9219
% Lights	99.4%	98.3%	99.4%	100%	98.3%	99.2%	98.0%	100%	0%	98.1%	99.1%	100%	99.2%	0%	99.3%	98.1%	100%	98.8%	0%	98.4%	98.3%
Articulated Trucks	0	12	0	0	12	0	12	0	0	12	1	0	0	0	1	2	0	0	0	2	27
% Articulated Trucks	0%	0.3%	0%	0%	0.3%	0%	0.3%	0%	0%	0.3%	0.9%	0%	0%	0%	0.2%	0.6%	0%	0%	0%	0.5%	0.3%
Buses and Single-Unit Trucks	1	61	1	0	63	1	63	0	0	64	0	0	2	0	2	4	0	1	0	5	134
% Buses and Single-Unit Trucks	0.6%	1.5%	0.6%	0%	1.4%	0.8%	1.7%	0%	0%	1.6%	0%	0%	0.8%	0%	0.5%	1.2%	0%	1.2%	0%	1.1%	1.4%

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

2nd and Sun Valley - TMC

Wed Sep 28, 2022

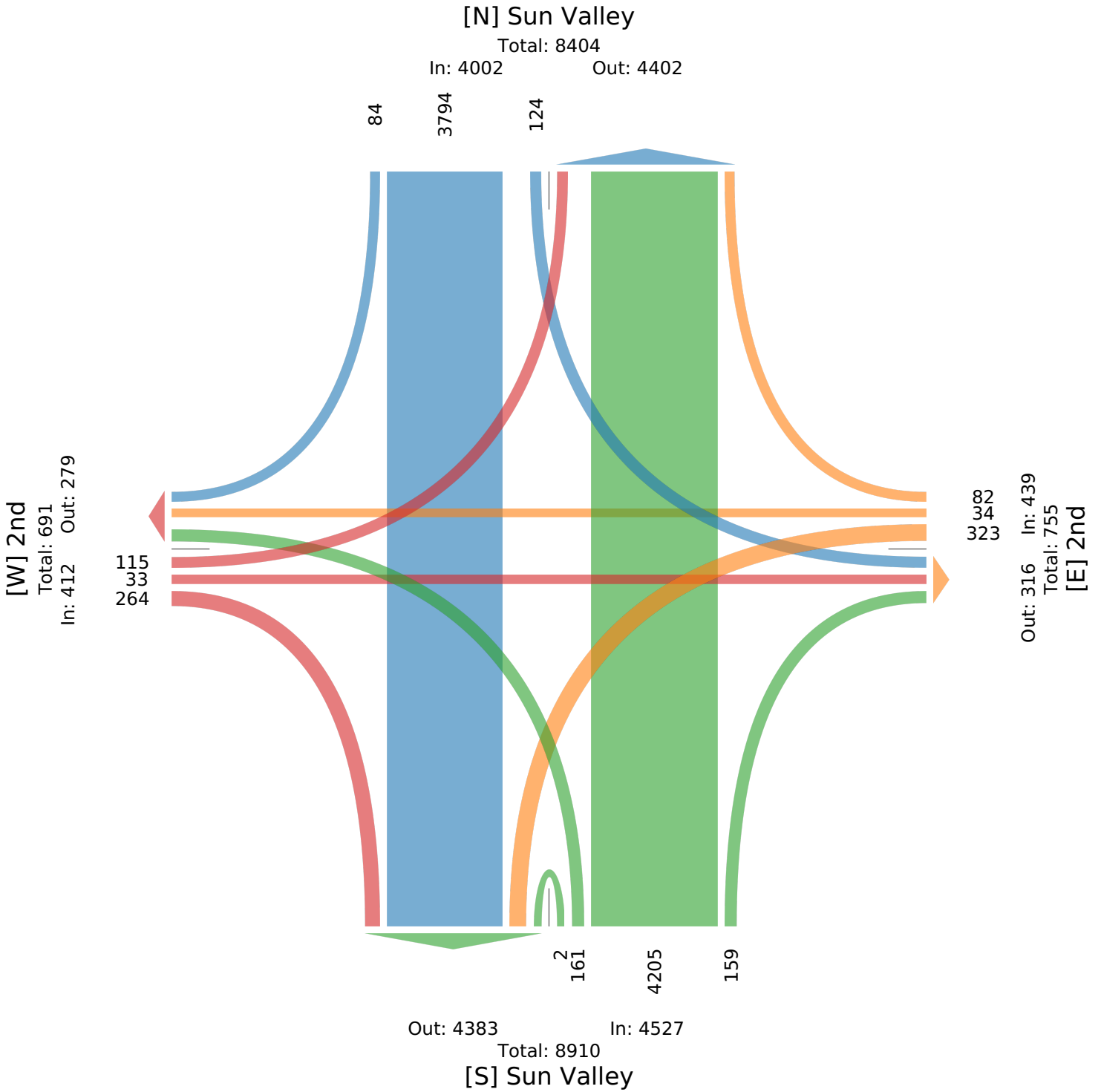
Full Length (7 AM-9 AM, 4 PM-6 PM)

All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)

All Movements

ID: 994562, Location: 39.581928, -119.780309

Provided by: Kimley-Horn and Associates, Inc.
767 Eustis Street, Suite 100, Saint Paul, MN, 55114, US



2nd and Sun Valley - TMC

Wed Sep 28, 2022

AM Peak (7 AM - 8 AM)

All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)

All Movements

ID: 994562, Location: 39.581928, -119.780309

Provided by: Kimley-Horn and Associates, Inc.
767 Eustis Street, Suite 100, Saint Paul, MN, 55114, US

Leg Direction	Sun Valley Northbound					Sun Valley Southbound					2nd Eastbound					2nd Westbound					Int
	L	T	R	U	App	L	T	R	U	App	L	T	R	U	App	L	T	R	U	App	
2022-09-28 7:00AM	11	90	8	0	109	10	387	6	0	403	4	1	26	0	31	22	1	4	0	27	570
7:15AM	9	114	5	0	128	2	335	2	0	339	3	1	36	0	40	65	2	3	0	70	577
7:30AM	7	154	5	0	166	4	304	2	0	310	7	5	31	0	43	59	2	1	0	62	581
7:45AM	15	158	5	0	178	4	250	13	0	267	6	1	25	0	32	18	1	2	0	21	498
Total	42	516	23	0	581	20	1276	23	0	1319	20	8	118	0	146	164	6	10	0	180	2226
% Approach	7.2%	88.8%	4.0%	0%	-	1.5%	96.7%	1.7%	0%	-	13.7%	5.5%	80.8%	0%	-	91.1%	3.3%	5.6%	0%	-	-
% Total	1.9%	23.2%	1.0%	0%	26.1%	0.9%	57.3%	1.0%	0%	59.3%	0.9%	0.4%	5.3%	0%	6.6%	7.4%	0.3%	0.4%	0%	8.1%	-
PHF	0.700	0.816	0.719	-	0.816	0.500	0.824	0.442	-	0.818	0.714	0.400	0.819	-	0.849	0.631	0.750	0.625	-	0.643	0.958
Lights	41	495	22	0	558	20	1248	23	0	1291	19	8	117	0	144	163	6	10	0	179	2172
% Lights	97.6%	95.9%	95.7%	0%	96.0%	100%	97.8%	100%	0%	97.9%	95.0%	100%	99.2%	0%	98.6%	99.4%	100%	100%	0%	99.4%	97.6%
Articulated Trucks	0	5	0	0	5	0	5	0	0	5	1	0	0	0	1	0	0	0	0	0	11
% Articulated Trucks	0%	1.0%	0%	0%	0.9%	0%	0.4%	0%	0%	0.4%	5.0%	0%	0%	0%	0.7%	0%	0%	0%	0%	0%	0.5%
Buses and Single-Unit Trucks	1	16	1	0	18	0	23	0	0	23	0	0	1	0	1	1	0	0	0	1	43
% Buses and Single-Unit Trucks	2.4%	3.1%	4.3%	0%	3.1%	0%	1.8%	0%	0%	1.7%	0%	0%	0.8%	0%	0.7%	0.6%	0%	0%	0%	0.6%	1.9%

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

2nd and Sun Valley - TMC

Wed Sep 28, 2022

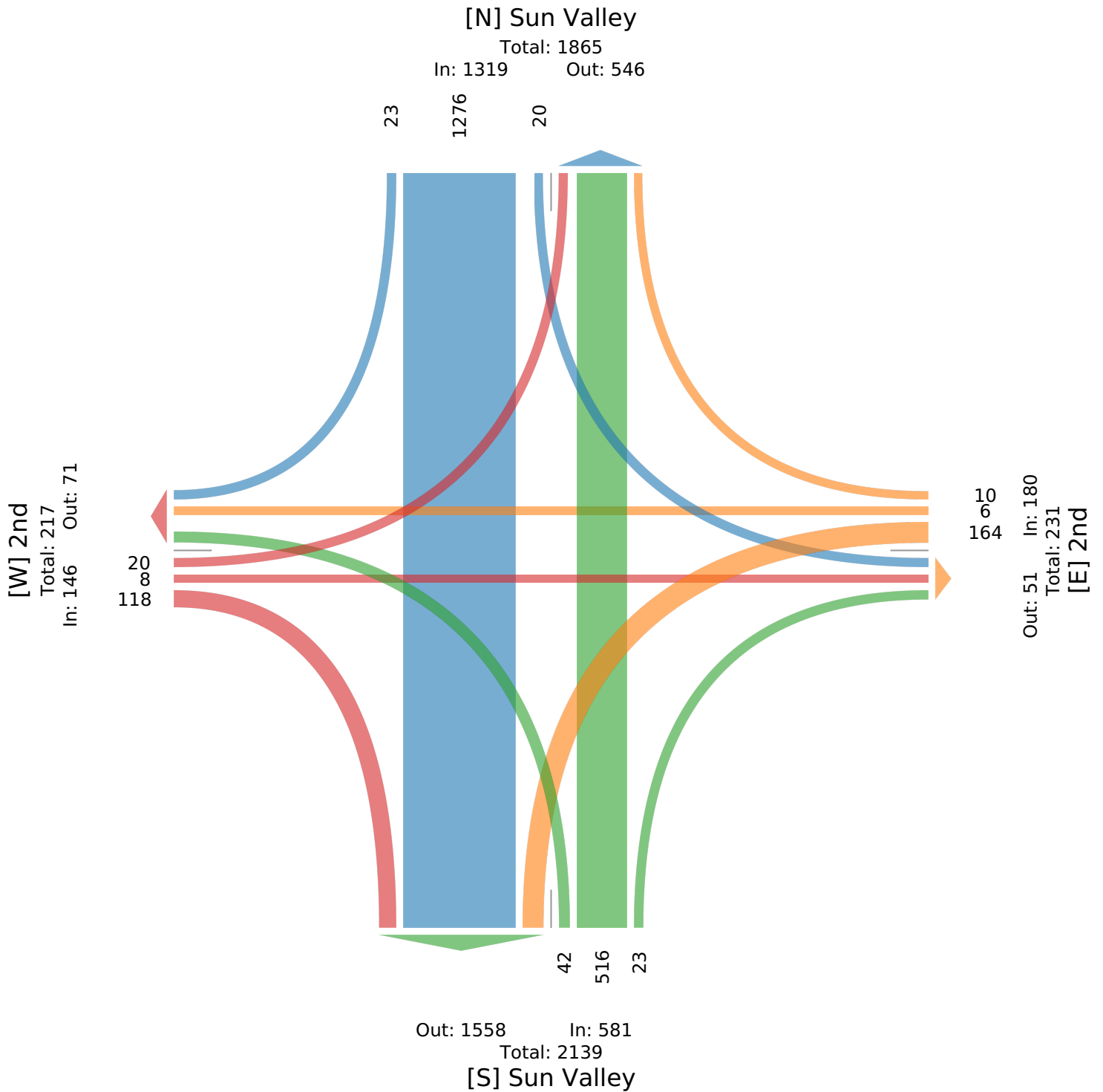
AM Peak (7 AM - 8 AM)

All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)

All Movements

ID: 994562, Location: 39.581928, -119.780309

Provided by: Kimley-Horn and Associates, Inc.
767 Eustis Street, Suite 100, Saint Paul, MN, 55114, US



2nd and Sun Valley - TMC

Wed Sep 28, 2022

PM Peak (5 PM - 6 PM) - Overall Peak Hour

All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)

All Movements

ID: 994562, Location: 39.581928, -119.780309

Provided by: Kimley-Horn and Associates, Inc.
767 Eustis Street, Suite 100, Saint Paul, MN, 55114, US

Leg Direction	Sun Valley Northbound					Sun Valley Southbound					2nd Eastbound					2nd Westbound					Int
	L	T	R	U	App	L	T	R	U	App	L	T	R	U	App	L	T	R	U	App	
2022-09-28 5:00PM	11	429	14	1	455	10	218	7	0	235	8	5	20	0	33	14	3	7	0	24	747
5:15PM	13	412	16	0	441	11	200	8	0	219	7	2	10	0	19	11	3	7	0	21	700
5:30PM	13	416	12	0	441	5	215	8	0	228	12	3	10	0	25	15	8	5	0	28	722
5:45PM	13	400	17	0	430	8	205	3	0	216	10	1	9	0	20	15	4	8	0	27	693
Total	50	1657	59	1	1767	34	838	26	0	898	37	11	49	0	97	55	18	27	0	100	2862
% Approach	2.8%	93.8%	3.3%	0.1%	-	3.8%	93.3%	2.9%	0%	-	38.1%	11.3%	50.5%	0%	-	55.0%	18.0%	27.0%	0%	-	-
% Total	1.7%	57.9%	2.1%	0%	61.7%	1.2%	29.3%	0.9%	0%	31.4%	1.3%	0.4%	1.7%	0%	3.4%	1.9%	0.6%	0.9%	0%	3.5%	-
PHF	0.962	0.966	0.868	0.250	0.971	0.773	0.961	0.813	-	0.955	0.771	0.550	0.613	-	0.735	0.917	0.563	0.844	-	0.893	0.958
Lights	50	1647	59	1	1757	34	827	26	0	887	37	11	48	0	96	55	18	27	0	100	2840
% Lights	100%	99.4%	100%	100%	99.4%	100%	98.7%	100%	0%	98.8%	100%	100%	98.0%	0%	99.0%	100%	100%	100%	0%	100%	99.2%
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Articulated Trucks	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Buses and Single-Unit Trucks	0	10	0	0	10	0	11	0	0	11	0	0	1	0	1	0	0	0	0	0	22
% Buses and Single-Unit Trucks	0%	0.6%	0%	0%	0.6%	0%	1.3%	0%	0%	1.2%	0%	0%	2.0%	0%	1.0%	0%	0%	0%	0%	0%	0.8%

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

2nd and Sun Valley - TMC

Wed Sep 28, 2022

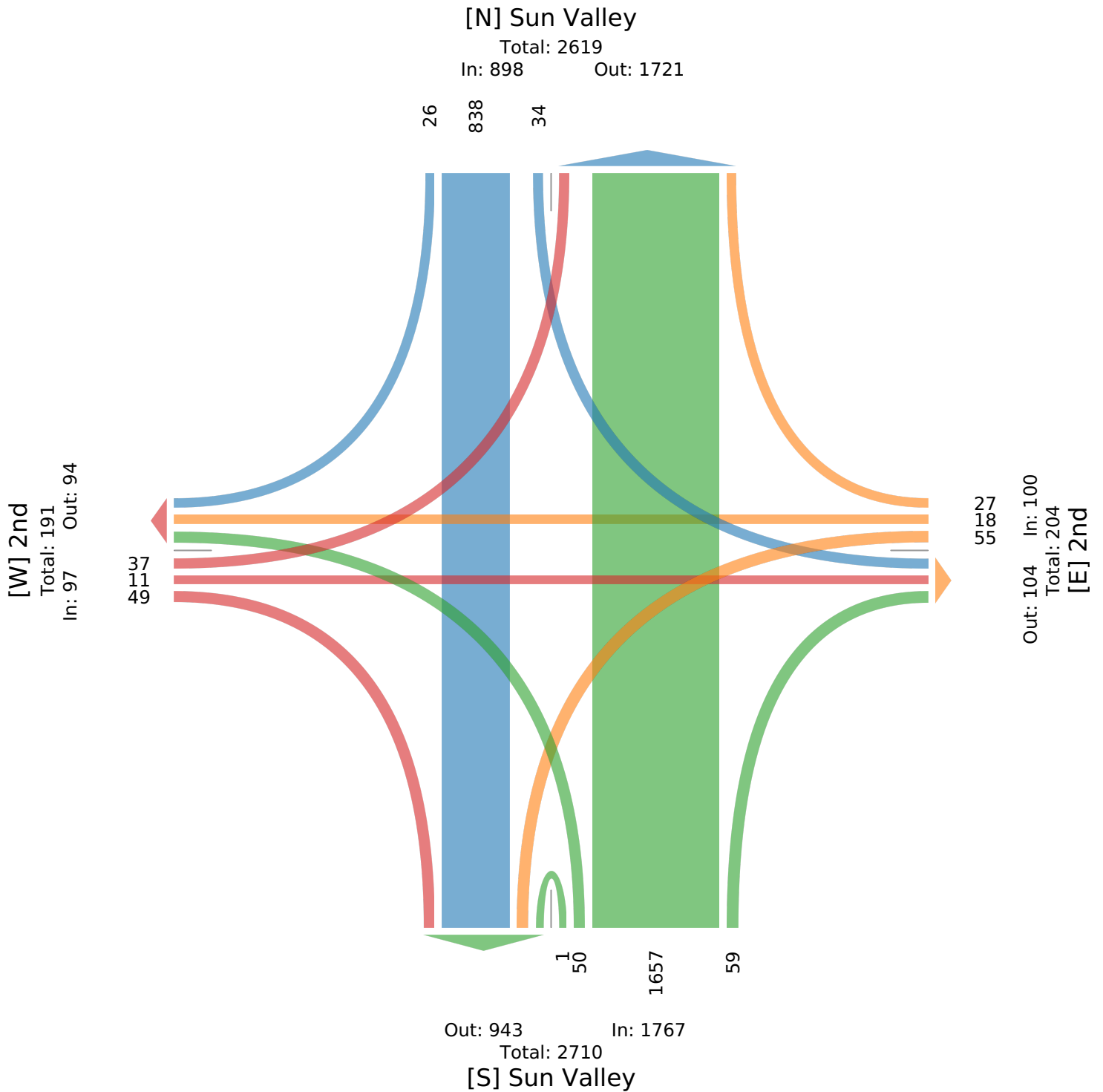
PM Peak (5 PM - 6 PM) - Overall Peak Hour

All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)

All Movements

ID: 994562, Location: 39.581928, -119.780309

Provided by: Kimley-Horn and Associates, Inc.
767 Eustis Street, Suite 100, Saint Paul, MN, 55114, US



2nd and Chocolate - TMC

Wed Sep 28, 2022

Full Length (7 AM-9 AM, 4 PM-6 PM)

All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)

All Movements

ID: 994547, Location: 39.581818, -119.789183

Provided by: Kimley-Horn and Associates, Inc.
 767 Eustis Street, Suite 100, Saint Paul, MN, 55114, US

Leg Direction	North Southbound				West Eastbound				East Westbound				Int
	L	R	U	App	L	T	U	App	T	R	U	App	
2022-09-28 7:00AM	0	0	0	0	0	1	0	1	0	0	0	0	1
7:15AM	0	0	0	0	0	0	0	0	2	0	0	0	2
7:30AM	0	0	0	0	0	1	0	1	0	0	0	0	1
7:45AM	0	0	0	0	0	1	0	1	1	0	0	0	2
Hourly Total	0	0	0	0	0	3	0	3	3	0	0	3	6
8:00AM	0	0	0	0	0	1	0	1	0	0	0	0	1
8:15AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30AM	0	0	0	0	0	0	0	0	0	0	1	1	1
8:45AM	0	0	0	0	0	1	0	1	0	0	0	0	1
Hourly Total	0	0	0	0	0	2	0	2	0	0	1	1	3
9:00AM	0	0	0	0	0	0	0	0	0	0	0	0	0
Hourly Total	0	0	0	0	0	0	0	0	0	0	0	0	0
4:00PM	0	0	0	0	0	2	0	2	3	0	1	4	6
4:15PM	0	0	0	0	0	1	0	1	1	1	0	2	3
4:30PM	0	0	0	0	0	1	0	1	1	0	0	1	2
4:45PM	0	0	0	0	0	0	0	0	0	0	0	0	0
Hourly Total	0	0	0	0	0	4	0	4	5	1	1	7	11
5:00PM	0	0	0	0	0	1	0	1	2	0	0	2	3
5:15PM	0	0	0	0	0	0	0	0	1	0	0	1	1
5:30PM	1	0	0	1	0	0	0	0	1	0	0	1	2
5:45PM	0	0	0	0	0	0	0	0	1	0	0	1	1
Hourly Total	1	0	0	1	0	1	0	1	5	0	0	5	7
6:00PM	0	0	0	0	0	0	0	0	0	0	0	0	0
Hourly Total	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	1	0	0	1	0	10	0	10	13	1	2	16	27
% Approach	100%	0%	0%	-	0%	100%	0%	-	81.3%	6.3%	12.5%	-	-
% Total	3.7%	0%	0%	3.7%	0%	37.0%	0%	37.0%	48.1%	3.7%	7.4%	59.3%	-
Lights	1	0	0	1	0	10	0	10	13	1	2	16	27
% Lights	100%	0%	0%	100%	0%	100%	0%	100%	100%	100%	100%	100%	100%
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0
% Articulated Trucks	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Buses and Single-Unit Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0
% Buses and Single-Unit Trucks	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%

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

2nd and Chocolate - TMC

Wed Sep 28, 2022

Full Length (7 AM-9 AM, 4 PM-6 PM)

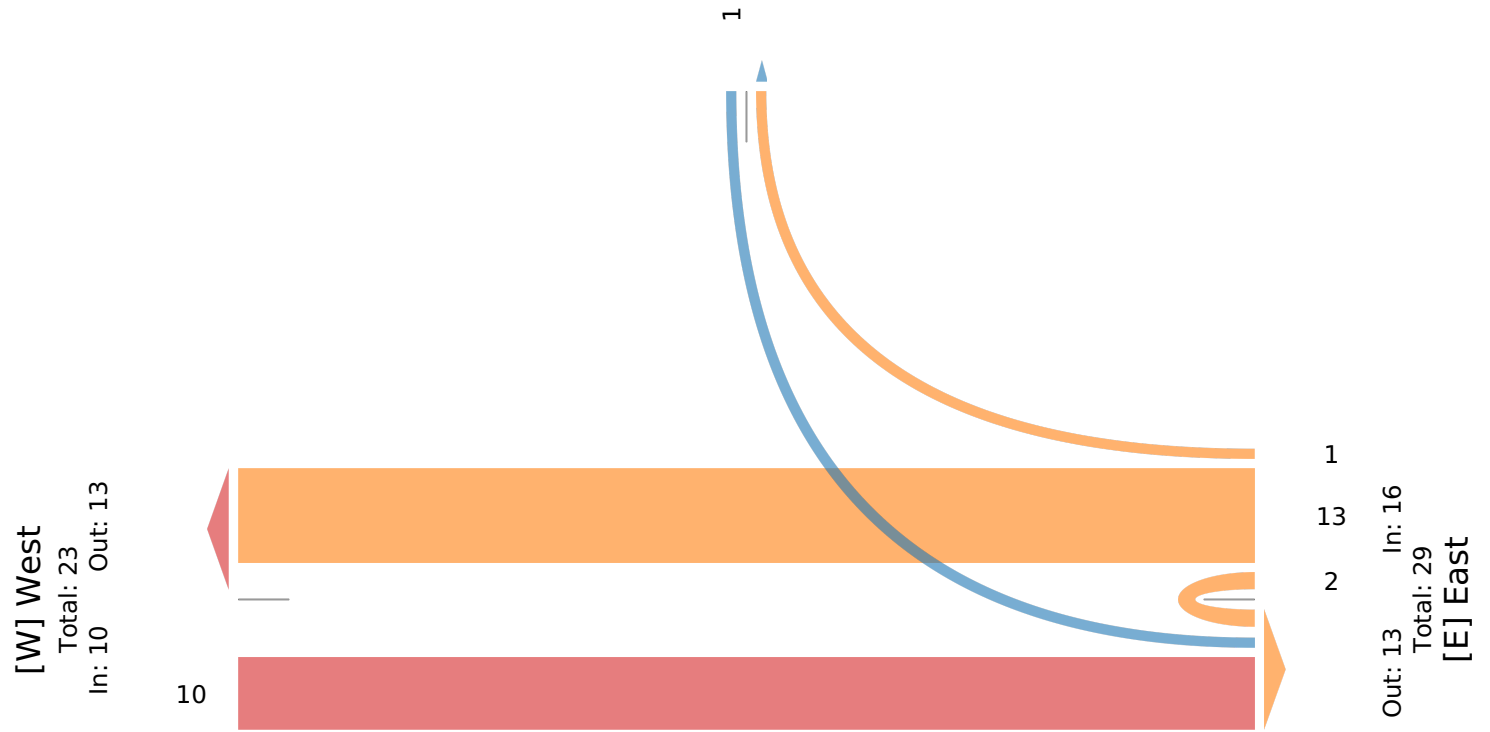
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)

All Movements

ID: 994547, Location: 39.581818, -119.789183

Provided by: Kimley-Horn and Associates, Inc.
767 Eustis Street, Suite 100, Saint Paul, MN, 55114, US

[N] North
Total: 2
In: 1 Out: 1



2nd and Chocolate - TMC

Wed Sep 28, 2022

AM Peak (7 AM - 8 AM)

All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)

All Movements

ID: 994547, Location: 39.581818, -119.789183

Provided by: Kimley-Horn and Associates, Inc.
767 Eustis Street, Suite 100, Saint Paul, MN, 55114, US

Leg Direction	North Southbound				West Eastbound				East Westbound				Int
	L	R	U	App	L	T	U	App	T	R	U	App	
2022-09-28 7:00AM	0	0	0	0	0	1	0	1	0	0	0	0	1
7:15AM	0	0	0	0	0	0	0	0	2	0	0	2	2
7:30AM	0	0	0	0	0	1	0	1	0	0	0	0	1
7:45AM	0	0	0	0	0	1	0	1	1	0	0	1	2
Total	0	0	0	0	0	3	0	3	3	0	0	3	6
% Approach	0%	0%	0%	-	0%	100%	0%	-	100%	0%	0%	-	-
% Total	0%	0%	0%	0%	0%	50.0%	0%	50.0%	50.0%	0%	0%	50.0%	-
PHF	-	-	-	-	-	0.750	-	0.750	0.375	-	-	0.375	0.750
Lights	0	0	0	0	0	3	0	3	3	0	0	3	6
% Lights	0%	0%	0%	-	0%	100%	0%	100%	100%	0%	0%	100%	100%
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0
% Articulated Trucks	0%	0%	0%	-	0%	0%	0%	0%	0%	0%	0%	0%	0%
Buses and Single-Unit Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0
% Buses and Single-Unit Trucks	0%	0%	0%	-	0%	0%	0%	0%	0%	0%	0%	0%	0%

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

2nd and Chocolate - TMC

Wed Sep 28, 2022

AM Peak (7 AM - 8 AM)

All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)

All Movements

ID: 994547, Location: 39.581818, -119.789183

Provided by: Kimley-Horn and Associates, Inc.
767 Eustis Street, Suite 100, Saint Paul, MN, 55114, US



2nd and Chocolate - TMC

Wed Sep 28, 2022

PM Peak (4 PM - 5 PM) - Overall Peak Hour

All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)

All Movements

ID: 994547, Location: 39.581818, -119.789183

Provided by: Kimley-Horn and Associates, Inc.
767 Eustis Street, Suite 100, Saint Paul, MN, 55114, US

Leg Direction	North Southbound				West Eastbound				East Westbound				Int
	L	R	U	App	L	T	U	App	T	R	U	App	
2022-09-28 4:00PM	0	0	0	0	0	2	0	2	3	0	1	4	6
4:15PM	0	0	0	0	0	1	0	1	1	1	0	2	3
4:30PM	0	0	0	0	0	1	0	1	1	0	0	1	2
4:45PM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	4	0	4	5	1	1	7	11
% Approach	0%	0%	0%	-	0%	100%	0%	-	71.4%	14.3%	14.3%	-	-
% Total	0%	0%	0%	0%	0%	36.4%	0%	36.4%	45.5%	9.1%	9.1%	63.6%	-
PHF	-	-	-	-	-	0.500	-	0.500	0.417	0.250	0.250	0.438	0.458
Lights	0	0	0	0	0	4	0	4	5	1	1	7	11
% Lights	0%	0%	0%	-	0%	100%	0%	100%	100%	100%	100%	100%	100%
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0
% Articulated Trucks	0%	0%	0%	-	0%	0%	0%	0%	0%	0%	0%	0%	0%
Buses and Single-Unit Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0
% Buses and Single-Unit Trucks	0%	0%	0%	-	0%	0%	0%	0%	0%	0%	0%	0%	0%

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

2nd and Chocolate - TMC

Wed Sep 28, 2022

PM Peak (4 PM - 5 PM) - Overall Peak Hour

All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)

All Movements

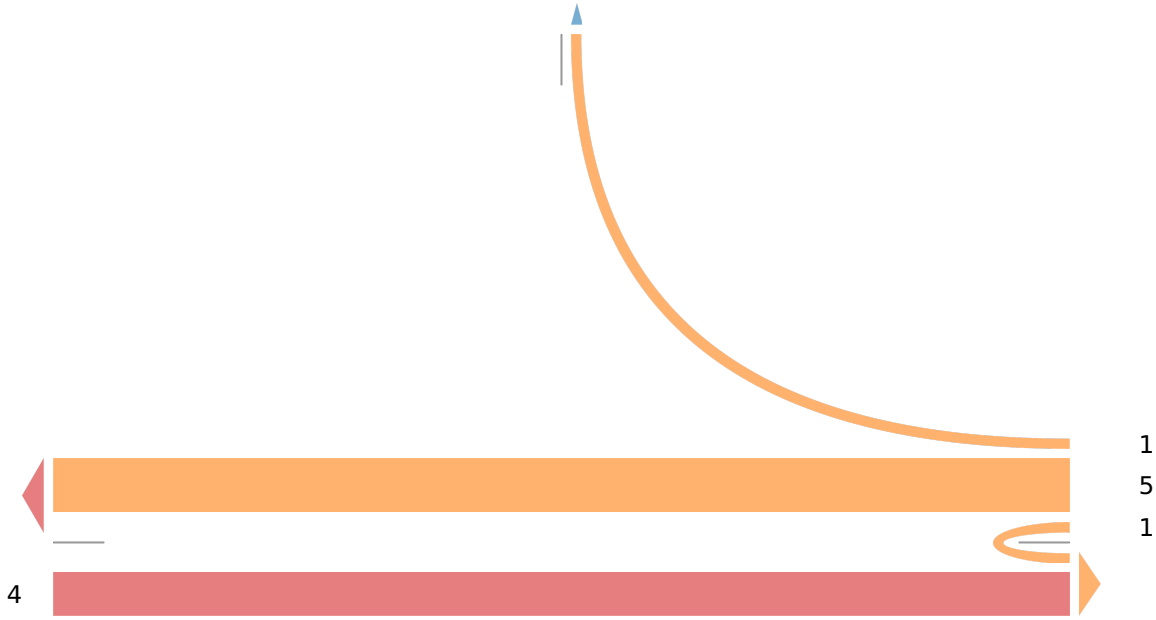
ID: 994547, Location: 39.581818, -119.789183

Provided by: Kimley-Horn and Associates, Inc.
767 Eustis Street, Suite 100, Saint Paul, MN, 55114, US

[N] North

Total: 1
In: 0 Out: 1

[W] West
Total: 9
In: 4 Out: 5



Out: 5 In: 7
Total: 12
[E] East

APPENDIX C
TRIP GENERATION CALCULATIONS

Project Ultra Clean Blue Diamond



Trip generation for Multifamily Housing (Low-Rise), Not Close to Rail Transit

Designed by AKT

Date October 20, 2022

Job No. 192178025

Checked by DJG

Date _____

Sheet No. 1 of 1

TRIP GENERATION MANUAL TECHNIQUES

ITE Trip Generation 10th Edition, Average Rate Equations

Land Use Code - **220** Multifamily Housing (Low-Rise)
 Land Use Sub Category Not Close to Rail Transit
 Setting/Location General Urban/Suburban
 Independent Variable - Dwelling Unit(s)
 Number of Units (X) - 240

T = Trip Ends

Peak Hour: Weekday, Adjacent Street Traffic

One Hour Between 7 and 9 AM

Average Rate
 $T = (X) * 0.4$
 T = 96

Trip Ends Per Dwelling Unit(s)
 Trip Ends

Directional Distribution:
 24% Entering 76% Exiting
 23 Entering 73 Exiting

Peak Hour: Weekday, Adjacent Street Traffic

One Hour Between 4 and 6 PM

Average Rate
 $T = (X) * 0.51$
 T = 122

Trip Ends Per Dwelling Unit(s)
 Trip Ends

Directional Distribution:
 63% Entering 37% Exiting
 77 Entering 45 Exiting

Daily Weekday

Average Rate
 $T = (X) * 6.74$
 T = 1618

Trip Ends Per Dwelling Unit(s)
 Trip Ends

Directional Distribution:
 50% Entering 50% Exiting
 809 Entering 809 Exiting

Non-Pass-By Trip Percentage

AM Peak 100%
 PM Peak 100%




Non-Pass-By Trip Volumes

AM Peak 23 Entering 73 Exiting
 PM Peak 77 Entering 45 Exiting

Note: Rounding may occur in calculations

APPENDIX D
KEY INTERSECTION PEAK HOUR LOS CALCULATIONS

Intersection	
Intersection Delay, s/veh	6.9
Intersection LOS	A

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	2	3	1	4	7	0
Future Vol, veh/h	2	3	1	4	7	0
Peak Hour Factor	0.62	0.62	0.62	0.62	0.58	0.58
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	3	5	2	6	12	0
Number of Lanes	1	0	1	0	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	1	1	0
HCM Control Delay	6.7	6.5	7.2
HCM LOS	A	A	A

Lane	NBLn1	WBLn1	SBLn1
Vol Left, %	0%	40%	100%
Vol Thru, %	20%	0%	0%
Vol Right, %	80%	60%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	5	5	7
LT Vol	0	2	7
Through Vol	1	0	0
RT Vol	4	3	0
Lane Flow Rate	8	8	12
Geometry Grp	1	1	1
Degree of Util (X)	0.008	0.008	0.014
Departure Headway (Hd)	3.477	3.689	4.154
Convergence, Y/N	Yes	Yes	Yes
Cap	1034	974	866
Service Time	1.481	1.697	2.157
HCM Lane V/C Ratio	0.008	0.008	0.014
HCM Control Delay	6.5	6.7	7.2
HCM Lane LOS	A	A	A
HCM 95th-tile Q	0	0	0

HCM 6th Signalized Intersection Summary
2: Sun Valley Boulevard & 5th Avenue

2022 AM Existing



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↙	↕		↙	↕	
Traffic Volume (veh/h)	7	5	32	228	1	15	17	381	48	17	946	11
Future Volume (veh/h)	7	5	32	228	1	15	17	381	48	17	946	11
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
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	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	10	7	46	317	1	21	20	448	56	19	1075	12
Peak Hour Factor	0.70	0.70	0.70	0.72	0.72	0.72	0.85	0.85	0.85	0.88	0.88	0.88
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	144	102	368	582	1	26	308	1459	181	521	1652	18
Arrive On Green	0.30	0.30	0.30	0.30	0.30	0.30	0.46	0.46	0.46	0.46	0.46	0.46
Sat Flow, veh/h	111	337	1212	1312	4	87	519	3180	396	895	3600	40
Grp Volume(v), veh/h	63	0	0	339	0	0	20	249	255	19	531	556
Grp Sat Flow(s),veh/h/ln	660	0	0	1403	0	0	519	1777	1799	895	1777	1863
Q Serve(g_s), s	0.0	0.0	0.0	7.2	0.0	0.0	1.2	3.3	3.4	0.5	8.7	8.7
Cycle Q Clear(g_c), s	1.0	0.0	0.0	8.3	0.0	0.0	9.9	3.3	3.4	3.9	8.7	8.7
Prop In Lane	0.16		0.73	0.94		0.06	1.00		0.22	1.00		0.02
Lane Grp Cap(c), veh/h	614	0	0	610	0	0	308	815	825	521	815	855
V/C Ratio(X)	0.10	0.00	0.00	0.56	0.00	0.00	0.06	0.31	0.31	0.04	0.65	0.65
Avail Cap(c_a), veh/h	946	0	0	898	0	0	433	1242	1258	736	1242	1303
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	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	9.6	0.0	0.0	11.9	0.0	0.0	11.7	6.5	6.5	7.7	7.9	7.9
Incr Delay (d2), s/veh	0.1	0.0	0.0	0.8	0.0	0.0	0.1	0.2	0.2	0.0	0.9	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(95%),veh/ln	0.5	0.0	0.0	3.8	0.0	0.0	0.2	1.6	1.6	0.1	4.2	4.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	9.6	0.0	0.0	12.7	0.0	0.0	11.8	6.7	6.7	7.7	8.8	8.8
LnGrp LOS	A	A	A	B	A	A	B	A	A	A	A	A
Approach Vol, veh/h		63			339			524			1106	
Approach Delay, s/veh		9.6			12.7			6.9			8.8	
Approach LOS		A			B			A			A	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		21.9		16.0		21.9		16.0				
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5				
Max Green Setting (Gmax), s		26.5		19.5		26.5		19.5				
Max Q Clear Time (g_c+l1), s		11.9		3.0		10.7		10.3				
Green Ext Time (p_c), s		2.8		0.2		6.7		1.4				
Intersection Summary												
HCM 6th Ctrl Delay				9.0								
HCM 6th LOS				A								

HCM 6th Signalized Intersection Summary
 3: Sun Valley Blvd & 2nd Ave

2022 AM Existing



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕		↕	↕	
Traffic Volume (veh/h)	20	8	118	164	6	10	42	516	23	20	1276	23
Future Volume (veh/h)	20	8	118	164	6	10	42	516	23	20	1276	23
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
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	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	22	9	128	178	7	11	46	561	25	22	1387	25
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	2	2	2	2	2	2
Cap, veh/h	105	58	563	529	21	30	182	1257	56	182	1295	23
Arrive On Green	0.43	0.43	0.43	0.43	0.43	0.43	0.10	0.36	0.36	0.10	0.36	0.36
Sat Flow, veh/h	180	134	1294	1111	49	69	1781	3465	154	1781	3571	64
Grp Volume(v), veh/h	159	0	0	196	0	0	46	287	299	22	690	722
Grp Sat Flow(s),veh/h/ln/608	0	0	0	1229	0	0	1781	1777	1843	1781	1777	1859
Q Serve(g_s), s	0.0	0.0	0.0	9.3	0.0	0.0	3.6	18.4	18.5	1.7	54.4	54.4
Cycle Q Clear(g_c), s	9.1	0.0	0.0	18.5	0.0	0.0	3.6	18.4	18.5	1.7	54.4	54.4
Prop In Lane	0.14		0.81	0.91		0.06	1.00		0.08	1.00		0.03
Lane Grp Cap(c), veh/h	726	0	0	580	0	0	182	644	668	182	644	674
V/C Ratio(X)	0.22	0.00	0.00	0.34	0.00	0.00	0.25	0.45	0.45	0.12	1.07	1.07
Avail Cap(c_a), veh/h	726	0	0	580	0	0	182	644	668	182	644	674
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	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	26.6	0.0	0.0	29.7	0.0	0.0	62.1	36.3	36.4	61.2	47.8	47.8
Incr Delay (d2), s/veh	0.7	0.0	0.0	1.6	0.0	0.0	3.3	2.2	2.2	1.4	55.7	55.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	10.8	0.0	0.0	8.9	0.0	0.0	3.2	13.3	13.7	1.5	45.6	47.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	27.2	0.0	0.0	31.3	0.0	0.0	65.4	38.6	38.5	62.6	103.5	103.2
LnGrp LOS	C	A	A	C	A	A	E	D	D	E	F	F
Approach Vol, veh/h		159			196			632			1434	
Approach Delay, s/veh		27.2			31.3			40.5			102.8	
Approach LOS		C			C			D			F	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	30.0	60.0		70.0	20.0	60.0		70.0				
Change Period (Y+Rc), s	4.7	5.6		* 4.8	* 4.7	5.6		* 4.8				
Max Green Setting (Gmax), s	15	54.4		* 65	* 15	54.4		* 65				
Max Q Clear Time (g_c+I), s	10.7	20.5		11.1	5.6	56.4		20.5				
Green Ext Time (p_c), s	0.0	3.9		1.1	0.0	0.0		1.4				

Intersection Summary

HCM 6th Ctrl Delay	75.8
HCM 6th LOS	E

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.




Intersection						
Int Delay, s/veh	0					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Vol, veh/h	0	3	3	0	0	0
Future Vol, veh/h	0	3	3	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	3	3	0	0	0

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	3	0	-	0	6 3
Stage 1	-	-	-	-	3 -
Stage 2	-	-	-	-	3 -
Critical Hdwy	4.12	-	-	-	6.42 6.22
Critical Hdwy Stg 1	-	-	-	-	5.42 -
Critical Hdwy Stg 2	-	-	-	-	5.42 -
Follow-up Hdwy	2.218	-	-	-	3.518 3.318
Pot Cap-1 Maneuver	1619	-	-	-	1015 1081
Stage 1	-	-	-	-	1020 -
Stage 2	-	-	-	-	1020 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1619	-	-	-	1015 1081
Mov Cap-2 Maneuver	-	-	-	-	1015 -
Stage 1	-	-	-	-	1020 -
Stage 2	-	-	-	-	1020 -

Approach	EB	WB	SB
HCM Control Delay, s	0	0	0
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1619	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	0	-	-	-	0
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	-

Intersection	
Intersection Delay, s/veh	7
Intersection LOS	A

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	4	11	1	3	10	7
Future Vol, veh/h	4	11	1	3	10	7
Peak Hour Factor	0.75	0.75	0.50	0.50	0.53	0.53
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	5	15	2	6	19	13
Number of Lanes	1	0	1	0	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	1	1	0
HCM Control Delay	6.7	6.6	7.3
HCM LOS	A	A	A

Lane	NBLn1	WBLn1	SBLn1
Vol Left, %	0%	27%	59%
Vol Thru, %	25%	0%	41%
Vol Right, %	75%	73%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	4	15	17
LT Vol	0	4	10
Through Vol	1	0	7
RT Vol	3	11	0
Lane Flow Rate	8	20	32
Geometry Grp	1	1	1
Degree of Util (X)	0.008	0.02	0.036
Departure Headway (Hd)	3.544	3.617	4.093
Convergence, Y/N	Yes	Yes	Yes
Cap	1013	991	879
Service Time	1.553	1.633	2.098
HCM Lane V/C Ratio	0.008	0.02	0.036
HCM Control Delay	6.6	6.7	7.3
HCM Lane LOS	A	A	A
HCM 95th-tile Q	0	0.1	0.1

HCM 6th Signalized Intersection Summary
2: Sun Valley Boulevard & 5th Avenue

2022 PM Existing



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↙	↕		↙	↕	
Traffic Volume (veh/h)	25	25	21	141	17	11	55	1056	104	12	579	18
Future Volume (veh/h)	25	25	21	141	17	11	55	1056	104	12	579	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
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	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	30	30	25	176	21	14	59	1135	112	13	643	20
Peak Hour Factor	0.83	0.83	0.83	0.80	0.80	0.80	0.93	0.93	0.93	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	205	168	100	421	33	19	550	1819	179	340	1958	61
Arrive On Green	0.20	0.20	0.20	0.20	0.20	0.20	0.56	0.56	0.56	0.56	0.56	0.56
Sat Flow, veh/h	366	853	508	1218	167	98	772	3267	322	446	3518	109
Grp Volume(v), veh/h	85	0	0	211	0	0	59	617	630	13	325	338
Grp Sat Flow(s),veh/h/ln	726	0	0	1483	0	0	772	1777	1812	446	1777	1851
Q Serve(g_s), s	0.0	0.0	0.0	3.2	0.0	0.0	1.6	8.6	8.6	0.7	3.6	3.6
Cycle Q Clear(g_c), s	1.5	0.0	0.0	4.7	0.0	0.0	5.3	8.6	8.6	9.4	3.6	3.6
Prop In Lane	0.35		0.29	0.83		0.07	1.00		0.18	1.00		0.06
Lane Grp Cap(c), veh/h	474	0	0	473	0	0	550	989	1009	340	989	1030
V/C Ratio(X)	0.18	0.00	0.00	0.45	0.00	0.00	0.11	0.62	0.62	0.04	0.33	0.33
Avail Cap(c_a), veh/h	962	0	0	905	0	0	806	1579	1610	488	1579	1644
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	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	12.4	0.0	0.0	13.6	0.0	0.0	5.8	5.5	5.5	8.7	4.4	4.4
Incr Delay (d2), s/veh	0.2	0.0	0.0	0.7	0.0	0.0	0.1	0.6	0.6	0.0	0.2	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.9	0.0	0.0	2.5	0.0	0.0	0.3	3.1	3.2	0.1	1.3	1.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	12.6	0.0	0.0	14.2	0.0	0.0	5.9	6.2	6.2	8.8	4.6	4.6
LnGrp LOS	B	A	A	B	A	A	A	A	A	A	A	A
Approach Vol, veh/h		85			211			1306			676	
Approach Delay, s/veh		12.6			14.2			6.1			4.7	
Approach LOS		B			B			A			A	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		24.9		11.7		24.9		11.7				
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5				
Max Green Setting (Gmax), s		32.5		18.5		32.5		18.5				
Max Q Clear Time (g_c+l1), s		10.6		3.5		11.4		6.7				
Green Ext Time (p_c), s		9.7		0.3		4.3		0.9				
Intersection Summary												
HCM 6th Ctrl Delay				6.7								
HCM 6th LOS				A								

HCM 6th Signalized Intersection Summary
 3: Sun Valley Blvd & 2nd Ave

2022 PM Existing



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↙	↕		↙	↕	
Traffic Volume (veh/h)	37	11	49	55	18	27	51	1657	59	34	838	26
Future Volume (veh/h)	37	11	49	55	18	27	51	1657	59	34	838	26
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
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	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	40	12	53	60	20	29	55	1801	64	37	911	28
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	2	2	2	2	2	2
Cap, veh/h	159	56	185	220	75	93	241	1970	70	182	1863	57
Arrive On Green	0.23	0.23	0.23	0.23	0.23	0.23	0.14	0.56	0.56	0.10	0.53	0.53
Sat Flow, veh/h	534	239	788	778	320	398	1781	3501	124	1781	3520	108
Grp Volume(v), veh/h	105	0	0	109	0	0	55	909	956	37	460	479
Grp Sat Flow(s),veh/h/ln	561	0	0	1496	0	0	1781	1777	1848	1781	1777	1851
Q Serve(g_s), s	0.0	0.0	0.0	1.1	0.0	0.0	4.1	68.8	70.2	2.9	24.7	24.7
Cycle Q Clear(g_c), s	7.5	0.0	0.0	8.6	0.0	0.0	4.1	68.8	70.2	2.9	24.7	24.7
Prop In Lane	0.38		0.50	0.55		0.27	1.00		0.07	1.00		0.06
Lane Grp Cap(c), veh/h	399	0	0	388	0	0	241	1000	1040	182	941	980
V/C Ratio(X)	0.26	0.00	0.00	0.28	0.00	0.00	0.23	0.91	0.92	0.20	0.49	0.49
Avail Cap(c_a), veh/h	399	0	0	388	0	0	241	1000	1040	182	941	980
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	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	46.8	0.0	0.0	47.1	0.0	0.0	57.9	29.4	29.7	61.8	22.4	22.4
Incr Delay (d2), s/veh	1.6	0.0	0.0	1.8	0.0	0.0	2.2	13.6	14.1	2.5	1.8	1.7
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(95%),veh/ln	16.2	0.0	0.0	6.5	0.0	0.0	3.6	41.6	44.0	2.6	16.2	16.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	48.4	0.0	0.0	48.9	0.0	0.0	60.1	43.0	43.8	64.3	24.2	24.2
LnGrp LOS	D	A	A	D	A	A	E	D	D	E	C	C
Approach Vol, veh/h		105			109			1920			976	
Approach Delay, s/veh		48.4			48.9			43.9			25.7	
Approach LOS		D			D			D			C	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	30.0	90.0		40.0	25.0	85.0		40.0				
Change Period (Y+Rc), s	4.7	5.6		* 4.8	* 4.7	5.6		* 4.8				
Max Green Setting (Gmax), s	15	84.4		* 35	* 20	79.4		* 35				
Max Q Clear Time (g_c+I), s	11.95	72.2		9.5	6.1	26.7		10.6				
Green Ext Time (p_c), s	0.0	9.6		0.6	0.1	7.6		0.6				

Intersection Summary

HCM 6th Ctrl Delay	38.5
HCM 6th LOS	D

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection




Intersection Delay, s/veh 6.9
Intersection LOS A

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Vol, veh/h	0	4	5	1	0	0
Future Vol, veh/h	0	4	5	1	0	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	4	5	1	0	0
Number of Lanes	0	1	1	0	1	0

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	1	1
HCM Control Delay	7	6.9	0
HCM LOS	A	A	-

Lane	EBLn1	WBLn1	SBLn1
Vol Left, %	0%	0%	0%
Vol Thru, %	100%	83%	100%
Vol Right, %	0%	17%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	4	6	0
LT Vol	0	0	0
Through Vol	4	5	0
RT Vol	0	1	0
Lane Flow Rate	4	7	0
Geometry Grp	1	1	1
Degree of Util (X)	0.005	0.007	0
Departure Headway (Hd)	3.939	3.837	3.954
Convergence, Y/N	Yes	Yes	Yes
Cap	914	938	0
Service Time	1.94	1.838	1.957
HCM Lane V/C Ratio	0.004	0.007	0
HCM Control Delay	7	6.9	7
HCM Lane LOS	A	A	N
HCM 95th-tile Q	0	0	0

Intersection	
Intersection Delay, s/veh	6.9
Intersection LOS	A

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	2	3	1	4	7	0
Future Vol, veh/h	2	3	1	4	7	0
Peak Hour Factor	0.62	0.62	0.62	0.62	0.58	0.58
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	3	5	2	6	12	0
Number of Lanes	1	0	1	0	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	1	1	0
HCM Control Delay	6.7	6.5	7.2
HCM LOS	A	A	A

Lane	NBLn1	WBLn1	SBLn1
Vol Left, %	0%	40%	100%
Vol Thru, %	20%	0%	0%
Vol Right, %	80%	60%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	5	5	7
LT Vol	0	2	7
Through Vol	1	0	0
RT Vol	4	3	0
Lane Flow Rate	8	8	12
Geometry Grp	1	1	1
Degree of Util (X)	0.008	0.008	0.014
Departure Headway (Hd)	3.477	3.689	4.154
Convergence, Y/N	Yes	Yes	Yes
Cap	1034	974	866
Service Time	1.481	1.697	2.157
HCM Lane V/C Ratio	0.008	0.008	0.014
HCM Control Delay	6.5	6.7	7.2
HCM Lane LOS	A	A	A
HCM 95th-tile Q	0	0	0

HCM 6th Signalized Intersection Summary
 2: Sun Valley Boulevard & 5th Avenue

2025 AM Background



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↗	↕		↗	↕	
Traffic Volume (veh/h)	7	5	34	242	1	16	18	404	51	18	1004	12
Future Volume (veh/h)	7	5	34	242	1	16	18	404	51	18	1004	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
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	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	10	7	49	336	1	22	21	475	60	20	1141	14
Peak Hour Factor	0.70	0.70	0.70	0.72	0.72	0.72	0.85	0.85	0.85	0.88	0.88	0.88
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	137	100	389	583	1	27	282	1476	186	499	1671	20
Arrive On Green	0.31	0.31	0.31	0.31	0.31	0.31	0.46	0.46	0.46	0.46	0.46	0.46
Sat Flow, veh/h	110	319	1238	1310	4	86	487	3176	399	870	3595	44
Grp Volume(v), veh/h	66	0	0	359	0	0	21	265	270	20	564	591
Grp Sat Flow(s),veh/h/ln	667	0	0	1400	0	0	487	1777	1798	870	1777	1862
Q Serve(g_s), s	0.0	0.0	0.0	8.3	0.0	0.0	1.4	3.8	3.8	0.6	10.1	10.1
Cycle Q Clear(g_c), s	1.2	0.0	0.0	9.5	0.0	0.0	11.6	3.8	3.8	4.4	10.1	10.1
Prop In Lane	0.15		0.74	0.94		0.06	1.00		0.22	1.00		0.02
Lane Grp Cap(c), veh/h	625	0	0	611	0	0	282	826	836	499	826	866
V/C Ratio(X)	0.11	0.00	0.00	0.59	0.00	0.00	0.07	0.32	0.32	0.04	0.68	0.68
Avail Cap(c_a), veh/h	887	0	0	836	0	0	373	1158	1172	662	1158	1214
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	10.0	0.0	0.0	12.7	0.0	0.0	13.1	6.8	6.9	8.3	8.5	8.5
Incr Delay (d2), s/veh	0.1	0.0	0.0	0.9	0.0	0.0	0.1	0.2	0.2	0.0	1.0	1.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.0	0.0	2.5	0.0	0.0	0.1	1.0	1.1	0.1	2.8	3.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	10.0	0.0	0.0	13.6	0.0	0.0	13.2	7.1	7.1	8.3	9.5	9.5
LnGrp LOS	B	A	A	B	A	A	B	A	A	A	A	A
Approach Vol, veh/h		66		359			556			1175		
Approach Delay, s/veh		10.0		13.6			7.3			9.5		
Approach LOS		B		B			A			A		
Timer - Assigned Phs		2		4		6	8					
Phs Duration (G+Y+Rc), s		23.4		17.3		23.4	17.3					
Change Period (Y+Rc), s		4.5		4.5		4.5	4.5					
Max Green Setting (Gmax), s		26.5		19.5		26.5	19.5					
Max Q Clear Time (g_c+l1), s		13.6		3.2		12.1	11.5					
Green Ext Time (p_c), s		2.9		0.2		6.8	1.4					
Intersection Summary												
HCM 6th Ctrl Delay				9.6								
HCM 6th LOS				A								

HCM 6th Signalized Intersection Summary
 3: Sun Valley Blvd & 2nd Ave

2025 AM Background



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↑↑		↕	↑↑	
Traffic Volume (veh/h)	21	8	125	174	6	11	45	548	24	21	1354	24
Future Volume (veh/h)	21	8	125	174	6	11	45	548	24	21	1354	24
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
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	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	23	9	136	189	7	12	49	596	26	23	1472	26
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	2	2	2	2	2	2
Cap, veh/h	80	48	394	368	14	20	223	1711	75	147	1611	28
Arrive On Green	0.29	0.29	0.29	0.29	0.29	0.29	0.13	0.49	0.49	0.08	0.45	0.45
Sat Flow, veh/h	151	164	1339	1049	49	67	1781	3469	151	1781	3573	63
Grp Volume(v), veh/h	168	0	0	208	0	0	49	305	317	23	731	767
Grp Sat Flow(s),veh/h/ln	1654	0	0	1165	0	0	1781	1777	1843	1781	1777	1859
Q Serve(g_s), s	0.0	0.0	0.0	10.1	0.0	0.0	2.9	12.2	12.2	1.4	44.7	44.8
Cycle Q Clear(g_c), s	9.4	0.0	0.0	19.5	0.0	0.0	2.9	12.2	12.2	1.4	44.7	44.8
Prop In Lane	0.14		0.81	0.91		0.06	1.00		0.08	1.00		0.03
Lane Grp Cap(c), veh/h	522	0	0	402	0	0	223	877	909	147	801	838
V/C Ratio(X)	0.32	0.00	0.00	0.52	0.00	0.00	0.22	0.35	0.35	0.16	0.91	0.91
Avail Cap(c_a), veh/h	522	0	0	402	0	0	280	877	909	280	801	838
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	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	32.3	0.0	0.0	36.6	0.0	0.0	45.7	18.0	18.0	49.6	29.8	29.8
Incr Delay (d2), s/veh	0.4	0.0	0.0	1.2	0.0	0.0	0.5	1.1	1.1	0.5	16.6	16.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.8	0.0	0.0	5.3	0.0	0.0	1.3	5.2	5.4	0.6	22.2	23.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	32.6	0.0	0.0	37.7	0.0	0.0	46.2	19.1	19.1	50.1	46.4	46.0
LnGrp LOS	C	A	A	D	A	A	D	B	B	D	D	D
Approach Vol, veh/h		168			208			671			1521	
Approach Delay, s/veh		32.6			37.7			21.1			46.3	
Approach LOS		C			D			C			D	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	64.3	62.9		39.0	19.2	58.0		39.0				
Change Period (Y+Rc), s	4.7	5.6		* 4.8	* 4.7	5.6		* 4.8				
Max Green Setting (Gmax), s	18	52.4		* 34	* 18	52.4		* 34				
Max Q Clear Time (g_c+I), s	14.2			11.4	4.9	46.8		21.5				
Green Ext Time (p_c), s	0.0	4.3		1.0	0.1	4.2		1.0				

Intersection Summary

HCM 6th Ctrl Delay	38.1
HCM 6th LOS	D

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.




Intersection						
Int Delay, s/veh	0					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Vol, veh/h	0	3	3	0	0	0
Future Vol, veh/h	0	3	3	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	3	3	0	0	0

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	3	0	-	0	6 3
Stage 1	-	-	-	-	3 -
Stage 2	-	-	-	-	3 -
Critical Hdwy	4.12	-	-	-	6.42 6.22
Critical Hdwy Stg 1	-	-	-	-	5.42 -
Critical Hdwy Stg 2	-	-	-	-	5.42 -
Follow-up Hdwy	2.218	-	-	-	3.518 3.318
Pot Cap-1 Maneuver	1619	-	-	-	1015 1081
Stage 1	-	-	-	-	1020 -
Stage 2	-	-	-	-	1020 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1619	-	-	-	1015 1081
Mov Cap-2 Maneuver	-	-	-	-	1015 -
Stage 1	-	-	-	-	1020 -
Stage 2	-	-	-	-	1020 -

Approach	EB	WB	SB
HCM Control Delay, s	0	0	0
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1619	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	0	-	-	-	0
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	-

Intersection	
Intersection Delay, s/veh	7
Intersection LOS	A

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	4	12	1	3	11	7
Future Vol, veh/h	4	12	1	3	11	7
Peak Hour Factor	0.75	0.75	0.50	0.50	0.53	0.53
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	5	16	2	6	21	13
Number of Lanes	1	0	1	0	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	1	1	0
HCM Control Delay	6.7	6.6	7.3
HCM LOS	A	A	A

Lane	NBLn1	WBLn1	SBLn1
Vol Left, %	0%	25%	61%
Vol Thru, %	25%	0%	39%
Vol Right, %	75%	75%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	4	16	18
LT Vol	0	4	11
Through Vol	1	0	7
RT Vol	3	12	0
Lane Flow Rate	8	21	34
Geometry Grp	1	1	1
Degree of Util (X)	0.008	0.021	0.039
Departure Headway (Hd)	3.546	3.606	4.1
Convergence, Y/N	Yes	Yes	Yes
Cap	1012	993	878
Service Time	1.558	1.625	2.104
HCM Lane V/C Ratio	0.008	0.021	0.039
HCM Control Delay	6.6	6.7	7.3
HCM Lane LOS	A	A	A
HCM 95th-tile Q	0	0.1	0.1

HCM 6th Signalized Intersection Summary
 2: Sun Valley Boulevard & 5th Avenue

2025 PM Background



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕		↕	↕	
Traffic Volume (veh/h)	26	27	22	150	18	12	58	1121	110	13	614	19
Future Volume (veh/h)	26	27	22	150	18	12	58	1121	110	13	614	19
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
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	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	31	33	27	188	22	15	62	1205	118	14	682	21
Peak Hour Factor	0.83	0.83	0.83	0.80	0.80	0.80	0.93	0.93	0.93	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	196	178	106	419	33	20	526	1846	180	312	1987	61
Arrive On Green	0.21	0.21	0.21	0.21	0.21	0.21	0.56	0.56	0.56	0.56	0.56	0.56
Sat Flow, veh/h	354	864	514	1219	162	99	744	3270	320	415	3519	108
Grp Volume(v), veh/h	91	0	0	225	0	0	62	654	669	14	344	359
Grp Sat Flow(s),veh/h/ln	732	0	0	1479	0	0	744	1777	1813	415	1777	1851
Q Serve(g_s), s	0.0	0.0	0.0	3.7	0.0	0.0	1.9	9.9	10.0	0.9	4.1	4.1
Cycle Q Clear(g_c), s	1.7	0.0	0.0	5.4	0.0	0.0	6.0	9.9	10.0	10.9	4.1	4.1
Prop In Lane	0.34		0.30	0.84		0.07	1.00		0.18	1.00		0.06
Lane Grp Cap(c), veh/h	479	0	0	473	0	0	526	1003	1024	312	1003	1045
V/C Ratio(X)	0.19	0.00	0.00	0.48	0.00	0.00	0.12	0.65	0.65	0.04	0.34	0.34
Avail Cap(c_a), veh/h	902	0	0	845	0	0	723	1473	1503	422	1473	1535
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	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	13.0	0.0	0.0	14.4	0.0	0.0	6.2	5.9	5.9	9.7	4.6	4.6
Incr Delay (d2), s/veh	0.2	0.0	0.0	0.7	0.0	0.0	0.1	0.7	0.7	0.1	0.2	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	0.0	0.0	1.6	0.0	0.0	0.2	2.1	2.2	0.1	0.8	0.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	13.2	0.0	0.0	15.1	0.0	0.0	6.3	6.6	6.6	9.7	4.8	4.8
LnGrp LOS	B	A	A	B	A	A	A	A	A	A	A	A
Approach Vol, veh/h		91		225			1385			717		
Approach Delay, s/veh		13.2		15.1			6.6			4.9		
Approach LOS		B		B			A			A		
Timer - Assigned Phs		2		4		6	8					
Phs Duration (G+Y+Rc), s		26.6		12.6		26.6	12.6					
Change Period (Y+Rc), s		4.5		4.5		4.5	4.5					
Max Green Setting (Gmax), s		32.5		18.5		32.5	18.5					
Max Q Clear Time (g_c+l1), s		12.0		3.7		12.9	7.4					
Green Ext Time (p_c), s		10.1		0.3		4.5	0.9					
Intersection Summary												
HCM 6th Ctrl Delay				7.1								
HCM 6th LOS				A								

HCM 6th Signalized Intersection Summary
 3: Sun Valley Blvd & 2nd Ave

2025 PM Background



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↙	↕		↙	↕	
Traffic Volume (veh/h)	39	12	52	58	19	29	54	1758	63	36	889	28
Future Volume (veh/h)	39	12	52	58	19	29	54	1758	63	36	889	28
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
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	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	42	13	57	63	21	32	59	1911	68	39	966	30
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	2	2	2	2	2	2
Cap, veh/h	161	59	193	224	77	100	249	1917	68	188	1805	56
Arrive On Green	0.24	0.24	0.24	0.24	0.24	0.24	0.14	0.55	0.55	0.11	0.51	0.51
Sat Flow, veh/h	524	242	794	764	316	411	1781	3501	124	1781	3518	109
Grp Volume(v), veh/h	112	0	0	116	0	0	59	964	1015	39	488	508
Grp Sat Flow(s),veh/h/ln	560	0	0	1492	0	0	1781	1777	1848	1781	1777	1851
Q Serve(g_s), s	0.0	0.0	0.0	1.1	0.0	0.0	4.3	77.8	79.4	2.9	26.7	26.7
Cycle Q Clear(g_c), s	7.8	0.0	0.0	8.9	0.0	0.0	4.3	77.8	79.4	2.9	26.7	26.7
Prop In Lane	0.37		0.51	0.54		0.28	1.00		0.07	1.00		0.06
Lane Grp Cap(c), veh/h	413	0	0	400	0	0	249	973	1012	188	912	950
V/C Ratio(X)	0.27	0.00	0.00	0.29	0.00	0.00	0.24	0.99	1.00	0.21	0.54	0.54
Avail Cap(c_a), veh/h	413	0	0	400	0	0	249	973	1012	188	912	950
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	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	44.5	0.0	0.0	44.8	0.0	0.0	55.5	32.4	32.8	59.3	23.7	23.7
Incr Delay (d2), s/veh	1.6	0.0	0.0	1.8	0.0	0.0	2.2	26.7	29.0	2.5	2.2	2.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.5	0.0	0.0	3.7	0.0	0.0	2.1	39.5	42.4	1.5	11.8	12.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	46.1	0.0	0.0	46.7	0.0	0.0	57.7	59.2	61.8	61.8	25.9	25.9
LnGrp LOS	D	A	A	D	A	A	E	E	F	E	C	C
Approach Vol, veh/h		112			116			2038			1035	
Approach Delay, s/veh		46.1			46.7			60.4			27.2	
Approach LOS		D			D			E			C	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	30.0	85.0		40.0	25.0	80.0		40.0				
Change Period (Y+Rc), s	4.7	5.6		* 4.8	* 4.7	5.6		* 4.8				
Max Green Setting (Gmax), s	15	79.4		* 35	* 20	74.4		* 35				
Max Q Clear Time (g_c+I), s	11.9	81.4		9.8	6.3	28.7		10.9				
Green Ext Time (p_c), s	0.0	0.0		0.6	0.1	8.2		0.6				

Intersection Summary

HCM 6th Ctrl Delay	49.1
HCM 6th LOS	D

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection

Intersection Delay, s/veh 6.9




Intersection LOS A

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↶	↷		↶	
Traffic Vol, veh/h	0	4	5	1	0	0
Future Vol, veh/h	0	4	5	1	0	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	4	5	1	0	0
Number of Lanes	0	1	1	0	1	0

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	1	1
HCM Control Delay	7	6.9	0
HCM LOS	A	A	-

Lane	EBLn1	WBLn1	SBLn1
Vol Left, %	0%	0%	0%
Vol Thru, %	100%	83%	100%
Vol Right, %	0%	17%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	4	6	0
LT Vol	0	0	0
Through Vol	4	5	0
RT Vol	0	1	0
Lane Flow Rate	4	7	0
Geometry Grp	1	1	1
Degree of Util (X)	0.005	0.007	0
Departure Headway (Hd)	3.939	3.837	3.954
Convergence, Y/N	Yes	Yes	Yes
Cap	914	938	0
Service Time	1.94	1.838	1.957
HCM Lane V/C Ratio	0.004	0.007	0
HCM Control Delay	7	6.9	7
HCM Lane LOS	A	A	N
HCM 95th-tile Q	0	0	0

Intersection	
Intersection Delay, s/veh	6.9
Intersection LOS	A

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	2	3	1	4	7	0
Future Vol, veh/h	2	3	1	4	7	0
Peak Hour Factor	0.62	0.62	0.62	0.62	0.58	0.58
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	3	5	2	6	12	0
Number of Lanes	1	0	1	0	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	1	1	0
HCM Control Delay	6.7	6.5	7.2
HCM LOS	A	A	A

Lane	NBLn1	WBLn1	SBLn1
Vol Left, %	0%	40%	100%
Vol Thru, %	20%	0%	0%
Vol Right, %	80%	60%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	5	5	7
LT Vol	0	2	7
Through Vol	1	0	0
RT Vol	4	3	0
Lane Flow Rate	8	8	12
Geometry Grp	1	1	1
Degree of Util (X)	0.008	0.008	0.014
Departure Headway (Hd)	3.477	3.689	4.154
Convergence, Y/N	Yes	Yes	Yes
Cap	1034	974	866
Service Time	1.481	1.697	2.157
HCM Lane V/C Ratio	0.008	0.008	0.014
HCM Control Delay	6.5	6.7	7.2
HCM Lane LOS	A	A	A
HCM 95th-tile Q	0	0	0

HCM 6th Signalized Intersection Summary
2: Sun Valley Boulevard & 5th Avenue

2025 AM Background Plus Project



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↙	↕		↙	↕	
Traffic Volume (veh/h)	7	5	34	242	1	16	18	419	51	18	1009	12
Future Volume (veh/h)	7	5	34	242	1	16	18	419	51	18	1009	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
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	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	10	7	49	336	1	22	21	493	60	20	1147	14
Peak Hour Factor	0.70	0.70	0.70	0.72	0.72	0.72	0.85	0.85	0.85	0.88	0.88	0.88
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	136	100	388	582	1	27	281	1486	180	491	1675	20
Arrive On Green	0.31	0.31	0.31	0.31	0.31	0.31	0.47	0.47	0.47	0.47	0.47	0.47
Sat Flow, veh/h	110	319	1238	1310	4	86	484	3191	387	855	3595	44
Grp Volume(v), veh/h	66	0	0	359	0	0	21	274	279	20	567	594
Grp Sat Flow(s),veh/h/ln	668	0	0	1400	0	0	484	1777	1801	855	1777	1862
Q Serve(g_s), s	0.0	0.0	0.0	8.4	0.0	0.0	1.5	4.0	4.0	0.6	10.2	10.2
Cycle Q Clear(g_c), s	1.2	0.0	0.0	9.5	0.0	0.0	11.7	4.0	4.0	4.6	10.2	10.2
Prop In Lane	0.15		0.74	0.94		0.06	1.00		0.21	1.00		0.02
Lane Grp Cap(c), veh/h	625	0	0	610	0	0	281	828	839	491	828	867
V/C Ratio(X)	0.11	0.00	0.00	0.59	0.00	0.00	0.07	0.33	0.33	0.04	0.68	0.68
Avail Cap(c_a), veh/h	884	0	0	834	0	0	370	1154	1170	648	1154	1210
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	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	10.0	0.0	0.0	12.7	0.0	0.0	13.1	6.9	6.9	8.4	8.5	8.5
Incr Delay (d2), s/veh	0.1	0.0	0.0	0.9	0.0	0.0	0.1	0.2	0.2	0.0	1.0	1.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	0.0	0.0	2.5	0.0	0.0	0.1	1.1	1.1	0.1	2.9	3.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	10.1	0.0	0.0	13.6	0.0	0.0	13.2	7.1	7.1	8.4	9.6	9.5
LnGrp LOS	B	A	A	B	A	A	B	A	A	A	A	A
Approach Vol, veh/h		66		359			574			1181		
Approach Delay, s/veh		10.1		13.6			7.3			9.5		
Approach LOS		B		B			A			A		
Timer - Assigned Phs		2		4		6	8					
Phs Duration (G+Y+Rc), s		23.5		17.3		23.5	17.3					
Change Period (Y+Rc), s		4.5		4.5		4.5	4.5					
Max Green Setting (Gmax), s		26.5		19.5		26.5	19.5					
Max Q Clear Time (g_c+l1), s		13.7		3.2		12.2	11.5					
Green Ext Time (p_c), s		3.0		0.2		6.8	1.4					
Intersection Summary												
HCM 6th Ctrl Delay				9.6								
HCM 6th LOS				A								

HCM 6th Signalized Intersection Summary
3: Sun Valley Blvd & 2nd Ave

2025 AM Background Plus Project



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↑↑		↕	↑↑	
Traffic Volume (veh/h)	36	8	183	174	6	11	63	548	24	21	1354	29
Future Volume (veh/h)	36	8	183	174	6	11	63	548	24	21	1354	29
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
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	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	39	9	199	189	7	12	68	596	26	23	1472	32
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	2	2	2	2	2	2
Cap, veh/h	90	39	393	305	12	16	272	1515	66	272	1553	34
Arrive On Green	0.28	0.28	0.28	0.28	0.28	0.28	0.15	0.44	0.44	0.15	0.44	0.44
Sat Flow, veh/h	194	139	1380	871	43	56	1781	3469	151	1781	3556	77
Grp Volume(v), veh/h	247	0	0	208	0	0	68	305	317	23	735	769
Grp Sat Flow(s),veh/h/ln	712	0	0	969	0	0	1781	1777	1843	1781	1777	1856
Q Serve(g_s), s	0.0	0.0	0.0	11.4	0.0	0.0	4.0	14.0	14.0	1.3	47.7	47.8
Cycle Q Clear(g_c), s	14.6	0.0	0.0	26.0	0.0	0.0	4.0	14.0	14.0	1.3	47.7	47.8
Prop In Lane	0.16		0.81	0.91		0.06	1.00		0.08	1.00		0.04
Lane Grp Cap(c), veh/h	523	0	0	333	0	0	272	776	805	272	776	811
V/C Ratio(X)	0.47	0.00	0.00	0.62	0.00	0.00	0.25	0.39	0.39	0.08	0.95	0.95
Avail Cap(c_a), veh/h	523	0	0	333	0	0	272	776	805	272	776	811
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	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	36.1	0.0	0.0	41.8	0.0	0.0	44.8	23.0	23.0	43.7	32.5	32.5
Incr Delay (d2), s/veh	3.0	0.0	0.0	8.5	0.0	0.0	2.2	1.5	1.4	0.6	21.7	21.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	16.5	0.0	0.0	6.5	0.0	0.0	2.0	6.2	6.4	0.6	24.6	25.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	39.1	0.0	0.0	50.3	0.0	0.0	47.0	24.5	24.4	44.3	54.2	53.9
LnGrp LOS	D	A	A	D	A	A	D	C	C	D	D	D
Approach Vol, veh/h		247			208			690			1527	
Approach Delay, s/veh		39.1			50.3			26.7			53.9	
Approach LOS		D			D			C			D	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	33.0	58.0		39.0	23.0	58.0		39.0				
Change Period (Y+Rc), s	4.7	5.6		* 4.8	* 4.7	5.6		* 4.8				
Max Green Setting (Gmax), s	18	52.4		* 34	* 18	52.4		* 34				
Max Q Clear Time (g_c+I), s	18	16.0		16.6	6.0	49.8		28.0				
Green Ext Time (p_c), s	0.0	4.3		1.4	0.1	2.1		0.6				

Intersection Summary

HCM 6th Ctrl Delay	45.2
HCM 6th LOS	D

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.




Intersection						
Int Delay, s/veh	6.4					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Vol, veh/h	0	3	3	23	73	0
Future Vol, veh/h	0	3	3	23	73	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	3	3	25	79	0

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	28	0	0	19	16
Stage 1	-	-	-	16	-
Stage 2	-	-	-	3	-
Critical Hdwy	4.12	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	3.518	3.318
Pot Cap-1 Maneuver	1585	-	-	998	1063
Stage 1	-	-	-	1007	-
Stage 2	-	-	-	1020	-
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	1585	-	-	998	1063
Mov Cap-2 Maneuver	-	-	-	998	-
Stage 1	-	-	-	1007	-
Stage 2	-	-	-	1020	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	8.9
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1585	-	-	-	998
HCM Lane V/C Ratio	-	-	-	-	0.08
HCM Control Delay (s)	0	-	-	-	8.9
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.3

Intersection	
Intersection Delay, s/veh	7
Intersection LOS	A

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	4	12	1	3	11	7
Future Vol, veh/h	4	12	1	3	11	7
Peak Hour Factor	0.75	0.75	0.50	0.50	0.53	0.53
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	5	16	2	6	21	13
Number of Lanes	1	0	1	0	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	1	1	0
HCM Control Delay	6.7	6.6	7.3
HCM LOS	A	A	A

Lane	NBLn1	WBLn1	SBLn1
Vol Left, %	0%	25%	61%
Vol Thru, %	25%	0%	39%
Vol Right, %	75%	75%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	4	16	18
LT Vol	0	4	11
Through Vol	1	0	7
RT Vol	3	12	0
Lane Flow Rate	8	21	34
Geometry Grp	1	1	1
Degree of Util (X)	0.008	0.021	0.039
Departure Headway (Hd)	3.546	3.606	4.1
Convergence, Y/N	Yes	Yes	Yes
Cap	1012	993	878
Service Time	1.558	1.625	2.104
HCM Lane V/C Ratio	0.008	0.021	0.039
HCM Control Delay	6.6	6.7	7.3
HCM Lane LOS	A	A	A
HCM 95th-tile Q	0	0.1	0.1

HCM 6th Signalized Intersection Summary
 2: Sun Valley Boulevard & 5th Avenue

2025 PM Background Plus Project



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↙	↕		↙	↕	
Traffic Volume (veh/h)	26	27	22	150	18	12	58	1130	110	13	629	19
Future Volume (veh/h)	26	27	22	150	18	12	58	1130	110	13	629	19
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
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	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	31	33	27	188	22	15	62	1215	118	14	699	21
Peak Hour Factor	0.83	0.83	0.83	0.80	0.80	0.80	0.93	0.93	0.93	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	195	177	106	418	33	20	519	1854	180	310	1995	60
Arrive On Green	0.21	0.21	0.21	0.21	0.21	0.21	0.57	0.57	0.57	0.57	0.57	0.57
Sat Flow, veh/h	355	864	514	1219	162	99	732	3273	317	411	3522	106
Grp Volume(v), veh/h	91	0	0	225	0	0	62	658	675	14	352	368
Grp Sat Flow(s),veh/h/ln	732	0	0	1480	0	0	732	1777	1813	411	1777	1851
Q Serve(g_s), s	0.0	0.0	0.0	3.7	0.0	0.0	2.0	10.1	10.1	1.0	4.2	4.2
Cycle Q Clear(g_c), s	1.7	0.0	0.0	5.4	0.0	0.0	6.2	10.1	10.1	11.1	4.2	4.2
Prop In Lane	0.34		0.30	0.84		0.07	1.00		0.17	1.00		0.06
Lane Grp Cap(c), veh/h	478	0	0	472	0	0	519	1006	1027	310	1006	1048
V/C Ratio(X)	0.19	0.00	0.00	0.48	0.00	0.00	0.12	0.65	0.66	0.05	0.35	0.35
Avail Cap(c_a), veh/h	897	0	0	839	0	0	707	1464	1494	415	1464	1526
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	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	13.1	0.0	0.0	14.5	0.0	0.0	6.3	5.9	5.9	9.7	4.6	4.6
Incr Delay (d2), s/veh	0.2	0.0	0.0	0.8	0.0	0.0	0.1	0.7	0.7	0.1	0.2	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	0.0	0.0	1.6	0.0	0.0	0.2	2.2	2.2	0.1	0.9	0.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	13.3	0.0	0.0	15.2	0.0	0.0	6.4	6.6	6.6	9.8	4.8	4.8
LnGrp LOS	B	A	A	B	A	A	A	A	A	A	A	A
Approach Vol, veh/h		91		225			1395			734		
Approach Delay, s/veh		13.3		15.2			6.6			4.9		
Approach LOS		B		B			A			A		
Timer - Assigned Phs		2		4			6			8		
Phs Duration (G+Y+Rc), s		26.8		12.6			26.8			12.6		
Change Period (Y+Rc), s		4.5		4.5			4.5			4.5		
Max Green Setting (Gmax), s		32.5		18.5			32.5			18.5		
Max Q Clear Time (g_c+l1), s		12.1		3.7			13.1			7.4		
Green Ext Time (p_c), s		10.2		0.3			4.6			0.9		
Intersection Summary												
HCM 6th Ctrl Delay				7.1								
HCM 6th LOS				A								

HCM 6th Signalized Intersection Summary
3: Sun Valley Blvd & 2nd Ave

2025 PM Background Plus Project



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↙	↕		↙	↕	
Traffic Volume (veh/h)	48	12	88	58	19	29	116	1758	63	36	889	43
Future Volume (veh/h)	48	12	88	58	19	29	116	1758	63	36	889	43
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
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	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	52	13	96	63	21	32	126	1911	68	39	966	47
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	2	2	2	2	2	2
Cap, veh/h	140	46	226	209	72	93	249	1917	68	188	1770	86
Arrive On Green	0.24	0.24	0.24	0.24	0.24	0.24	0.14	0.55	0.55	0.11	0.51	0.51
Sat Flow, veh/h	440	191	932	705	297	382	1781	3501	124	1781	3449	168
Grp Volume(v), veh/h	161	0	0	116	0	0	126	964	1015	39	498	515
Grp Sat Flow(s),veh/h/ln	564	0	0	1383	0	0	1781	1777	1848	1781	1777	1840
Q Serve(g_s), s	0.9	0.0	0.0	0.0	0.0	0.0	9.5	77.8	79.4	2.9	27.5	27.5
Cycle Q Clear(g_c), s	11.9	0.0	0.0	11.0	0.0	0.0	9.5	77.8	79.4	2.9	27.5	27.5
Prop In Lane	0.32		0.60	0.54		0.28	1.00		0.07	1.00		0.09
Lane Grp Cap(c), veh/h	412	0	0	374	0	0	249	973	1012	188	912	944
V/C Ratio(X)	0.39	0.00	0.00	0.31	0.00	0.00	0.51	0.99	1.00	0.21	0.55	0.55
Avail Cap(c_a), veh/h	412	0	0	374	0	0	249	973	1012	188	912	944
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	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	46.0	0.0	0.0	45.5	0.0	0.0	57.7	32.4	32.8	59.3	23.9	23.9
Incr Delay (d2), s/veh	2.8	0.0	0.0	2.1	0.0	0.0	7.1	26.7	29.0	2.5	2.3	2.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	15.2	0.0	0.0	3.7	0.0	0.0	4.8	39.5	42.4	1.5	12.1	12.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	48.8	0.0	0.0	47.6	0.0	0.0	64.8	59.2	61.8	61.8	26.2	26.1
LnGrp LOS	D	A	A	D	A	A	E	E	F	E	C	C
Approach Vol, veh/h		161			116			2105			1052	
Approach Delay, s/veh		48.8			47.6			60.8			27.5	
Approach LOS		D			D			E			C	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	30.0	85.0		40.0	25.0	80.0		40.0				
Change Period (Y+Rc), s	4.7	5.6		* 4.8	* 4.7	5.6		* 4.8				
Max Green Setting (Gmax), s	15	79.4		* 35	* 20	74.4		* 35				
Max Q Clear Time (g_c+I), s	11.9	81.4		13.9	11.5	29.5		13.0				
Green Ext Time (p_c), s	0.0	0.0		0.9	0.2	8.4		0.6				

Intersection Summary

HCM 6th Ctrl Delay	49.6
HCM 6th LOS	D

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection

Intersection Delay, s/veh 7.1

Intersection LOS A

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↶	↷		↶	
Traffic Vol, veh/h	0	4	5	78	45	0
Future Vol, veh/h	0	4	5	78	45	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	4	5	85	49	0
Number of Lanes	0	1	1	0	1	0

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	1	1
HCM Control Delay	7.1	6.8	7.6
HCM LOS	A	A	A

Lane	EBLn1	WBLn1	SBLn1
Vol Left, %	0%	0%	100%
Vol Thru, %	100%	6%	0%
Vol Right, %	0%	94%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	4	83	45
LT Vol	0	0	45
Through Vol	4	5	0
RT Vol	0	78	0
Lane Flow Rate	4	90	49
Geometry Grp	1	1	1
Degree of Util (X)	0.005	0.087	0.058
Departure Headway (Hd)	4.087	3.458	4.298
Convergence, Y/N	Yes	Yes	Yes
Cap	873	1034	835
Service Time	2.123	1.488	2.314
HCM Lane V/C Ratio	0.005	0.087	0.059
HCM Control Delay	7.1	6.8	7.6
HCM Lane LOS	A	A	A
HCM 95th-tile Q	0	0.3	0.2

APPENDIX E
LEFT TURN STORAGE CALCULATIONS

2: Sun Valley Boulevard & 5th Avenue



Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	63	339	20	504	19	1088
v/c Ratio	0.11	0.78	0.13	0.30	0.05	0.65
Control Delay	6.5	29.9	10.4	8.2	8.1	12.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	6.5	29.9	10.4	8.2	8.1	12.3
Queue Length 50th (ft)	3	88	3	44	3	128
Queue Length 95th (ft)	16	126	13	65	12	178
Internal Link Dist (ft)	2354	335		592		673
Turn Bay Length (ft)			100		100	
Base Capacity (vph)	668	528	185	1948	483	1964
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	0.09	0.64	0.11	0.26	0.04	0.55
Intersection Summary						

3: Sun Valley Blvd & 2nd Ave



Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	159	196	46	586	22	1412
v/c Ratio	0.30	0.65	0.17	0.38	0.08	0.92
Control Delay	10.4	48.8	46.2	23.5	44.6	42.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	10.4	48.8	46.2	23.5	44.6	42.2
Queue Length 50th (ft)	18	132	31	156	15	529
Queue Length 95th (ft)	71	220	68	203	40	#682
Internal Link Dist (ft)	2416	649		514		3210
Turn Bay Length (ft)						
Base Capacity (vph)	537	302	269	1539	269	1542
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	0.30	0.65	0.17	0.38	0.08	0.92

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

2: Sun Valley Boulevard & 5th Avenue



Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	85	211	59	1247	13	663
v/c Ratio	0.21	0.63	0.14	0.63	0.08	0.33
Control Delay	12.8	25.8	7.4	9.6	7.7	7.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	12.8	25.8	7.4	9.6	7.7	7.0
Queue Length 50th (ft)	13	51	7	111	2	47
Queue Length 95th (ft)	39	101	26	208	10	93
Internal Link Dist (ft)	2354	335		592		673
Turn Bay Length (ft)			100		100	
Base Capacity (vph)	585	480	468	2264	193	2277
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	0.15	0.44	0.13	0.55	0.07	0.29
Intersection Summary						

3: Sun Valley Blvd & 2nd Ave



Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	105	109	55	1865	37	939
v/c Ratio	0.25	0.28	0.21	1.03	0.18	0.56
Control Delay	27.1	37.2	52.6	61.5	56.8	26.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	27.1	37.2	52.6	61.5	56.8	26.7
Queue Length 50th (ft)	46	67	43	~918	30	301
Queue Length 95th (ft)	98	122	85	#1058	66	366
Internal Link Dist (ft)	2416	649		514		3210
Turn Bay Length (ft)						
Base Capacity (vph)	417	388	266	1812	200	1683
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	0.25	0.28	0.21	1.03	0.18	0.56

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Queues
2: Sun Valley Boulevard & 5th Avenue

2025 AM Background



Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	66	359	21	535	20	1155
v/c Ratio	0.12	0.82	0.14	0.32	0.05	0.68
Control Delay	6.8	33.8	10.9	8.4	8.1	13.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	6.8	33.8	10.9	8.4	8.1	13.0
Queue Length 50th (ft)	4	100	4	48	3	141
Queue Length 95th (ft)	17	135	14	70	12	193
Internal Link Dist (ft)	2354	335		592		673
Turn Bay Length (ft)			100		100	
Base Capacity (vph)	647	508	165	1881	446	1895
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	0.10	0.71	0.13	0.28	0.04	0.61
Intersection Summary						

3: Sun Valley Blvd & 2nd Ave



Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	168	208	49	622	23	1498
v/c Ratio	0.30	0.66	0.17	0.33	0.08	0.93
Control Delay	10.2	48.6	46.2	17.4	44.7	42.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	10.2	48.6	46.2	17.4	44.7	42.0
Queue Length 50th (ft)	18	142	33	105	16	585
Queue Length 95th (ft)	73	#241	71	217	41	#756
Internal Link Dist (ft)	2416	649		514		3210
Turn Bay Length (ft)						
Base Capacity (vph)	561	313	282	1881	282	1615
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	0.30	0.66	0.17	0.33	0.08	0.93

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Queues
2: Sun Valley Boulevard & 5th Avenue

2025 PM Background



Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	91	226	62	1323	14	703
v/c Ratio	0.22	0.67	0.16	0.66	0.09	0.35
Control Delay	13.0	28.2	7.7	10.2	8.3	7.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	13.0	28.2	7.7	10.2	8.3	7.1
Queue Length 50th (ft)	16	62	8	130	2	54
Queue Length 95th (ft)	41	109	28	229	11	99
Internal Link Dist (ft)	2354	335		592		673
Turn Bay Length (ft)			100		100	
Base Capacity (vph)	569	461	425	2182	163	2194
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	0.16	0.49	0.15	0.61	0.09	0.32
Intersection Summary						

3: Sun Valley Blvd & 2nd Ave



Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	112	116	59	1979	39	996
v/c Ratio	0.29	0.33	0.24	1.03	0.21	0.55
Control Delay	33.1	43.5	58.4	59.7	62.5	25.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	33.1	43.5	58.4	59.7	62.5	25.3
Queue Length 50th (ft)	59	81	50	~1045	34	326
Queue Length 95th (ft)	117	142	97	#1182	73	391
Internal Link Dist (ft)	2416	649		514		3210
Turn Bay Length (ft)						
Base Capacity (vph)	390	350	247	1930	186	1808
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	0.29	0.33	0.24	1.03	0.21	0.55

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Queues
2: Sun Valley Boulevard & 5th Avenue

2025 AM Background Plus Project



Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	66	359	21	553	20	1161
v/c Ratio	0.12	0.82	0.14	0.33	0.05	0.69
Control Delay	6.9	33.8	10.9	8.6	8.1	13.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	6.9	33.8	10.9	8.6	8.1	13.1
Queue Length 50th (ft)	5	100	4	50	3	142
Queue Length 95th (ft)	17	135	14	72	12	195
Internal Link Dist (ft)	2354	335		592		673
Turn Bay Length (ft)			100		100	
Base Capacity (vph)	646	508	165	1883	434	1895
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	0.10	0.71	0.13	0.29	0.05	0.61
Intersection Summary						

Queues
3: Sun Valley Blvd & 2nd Ave



Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	247	208	68	622	23	1504
v/c Ratio	0.52	1.21	0.25	0.36	0.09	0.86
Control Delay	18.7	176.3	47.7	19.2	44.7	32.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	18.7	176.3	47.7	19.2	44.7	32.9
Queue Length 50th (ft)	55	~196	47	149	16	522
Queue Length 95th (ft)	138	#353	92	192	41	630
Internal Link Dist (ft)	2416	649		514		3210
Turn Bay Length (ft)						
Base Capacity (vph)	477	172	269	1743	269	1748
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	0.52	1.21	0.25	0.36	0.09	0.86

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Queues
2: Sun Valley Boulevard & 5th Avenue



Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	91	226	62	1333	14	720
v/c Ratio	0.22	0.67	0.16	0.66	0.10	0.36
Control Delay	13.1	28.1	7.8	10.3	8.4	7.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	13.1	28.1	7.8	10.3	8.4	7.2
Queue Length 50th (ft)	16	63	8	132	2	56
Queue Length 95th (ft)	41	109	28	232	11	102
Internal Link Dist (ft)	2354	335		592		673
Turn Bay Length (ft)			100		100	
Base Capacity (vph)	568	462	415	2176	159	2189
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	0.16	0.49	0.15	0.61	0.09	0.33
Intersection Summary						

Queues
3: Sun Valley Blvd & 2nd Ave



Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	161	116	126	1979	39	1013
v/c Ratio	0.52	0.50	0.68	0.93	0.21	0.48
Control Delay	44.4	55.5	81.0	35.5	62.5	16.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	44.4	55.5	81.0	35.5	62.5	16.9
Queue Length 50th (ft)	99	89	117	850	34	266
Queue Length 95th (ft)	178	157	#201	991	73	319
Internal Link Dist (ft)	2416	649		514		3210
Turn Bay Length (ft)						
Base Capacity (vph)	311	233	186	2124	186	2120
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	0.52	0.50	0.68	0.93	0.21	0.48

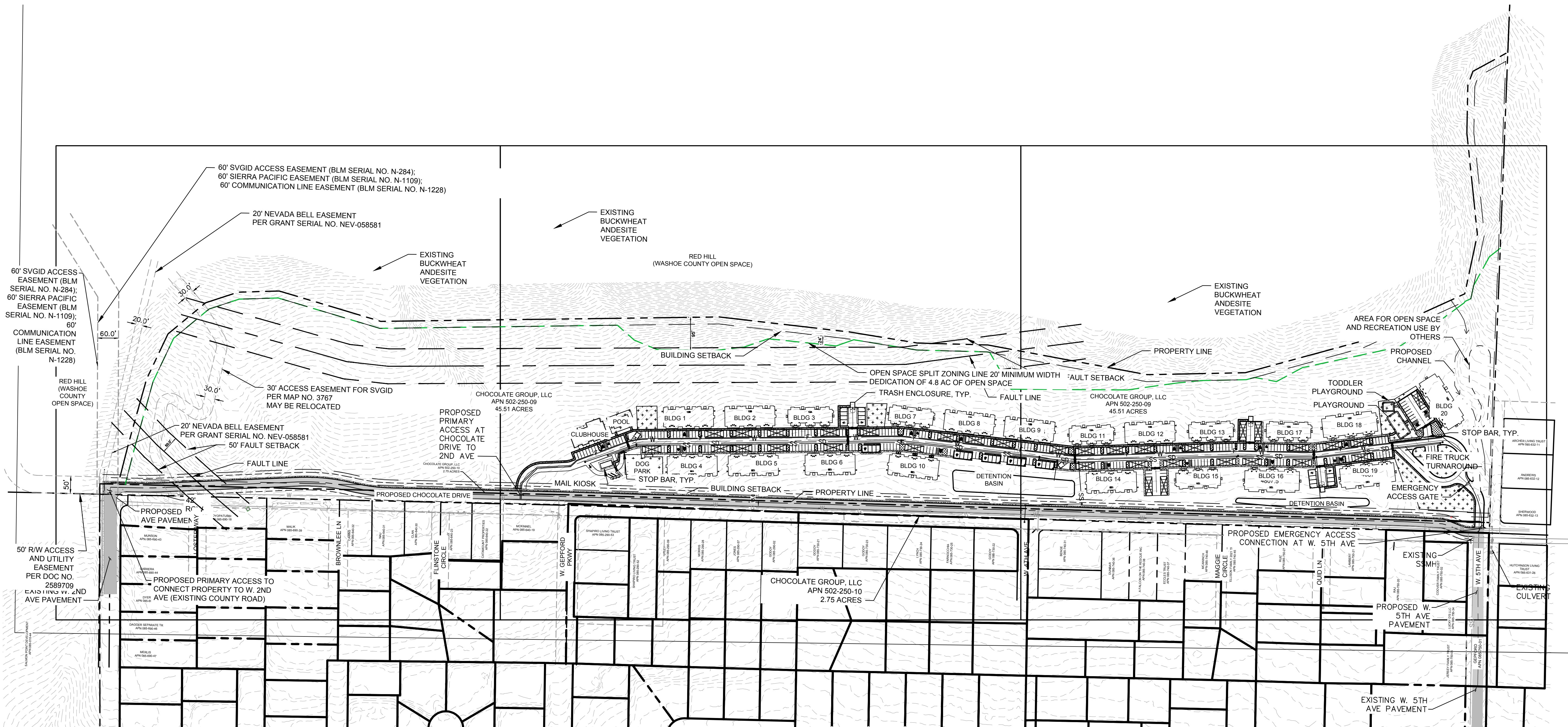
Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

APPENDIX F
SITE PLAN

Plotted By: WLF, Arizona Date: October 27, 2022 01:23:00pm File Path: K:\REN_Civil\192233000 - Padder Chocolate Drive\07 CAD\Exhibits\Admin_Review_Plans\Site Plan\Preliminary_Site_Plan.dwg

This document, together with the concepts and designs presented herein, is intended only for the specific purpose and client for which it was prepared. Reuse or improper reliance on this document without written authorization and approval by Kimley-Horn and Associates, Inc. shall be without liability to Kimley-Horn and Associates, Inc.



No.	REVISIONS	DATE	BY

Kimley-Horn
 © 2021 KIMLEY-HORN AND ASSOCIATES, INC.
 7900 RANCHARRAH PARKWAY, SUITE 100, RENO, NV 89511
 PHONE: 775-200-1967
 WWW.KIMLEY-HORN.COM

KHA PROJECT	1922-33000
DATE	10/27/2022
SCALE:	AS SHOWN
DESIGNED BY:	CW
DRAWN BY:	AW/ZF
CHECKED BY:	BN

CHOCOLATE DRIVE
WASHOE, NV

SHEET NUMBER