

# TRAFFIC IMPACT STUDY

For

**Space Village Filing No. 4**  
**El Paso County, Colorado**  
PCD File No. MS227

November 2022  
Revised March 2023  
Revised June 2023

Prepared for:

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22-101762

**Accepted for File**

By: Gilbert LaForce, P.E.  
Engineering Manager

Date: 04/08/2024 4:05:26 PM

El Paso County Department of Public Works



**Traffic Engineer's Statement**

The attached traffic report and supporting information were prepared under my responsible charge and they comport with the standard of care. So far as is consistent with the standard of care, said report was prepared in general conformance with the criteria established by the County for traffic reports.



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Fred Lantz, P.E. #23410

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06/15/2023

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Date**Developer's Statement**

I, the Developer, have read and will comply with all commitments made on my behalf within this report.



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11/29/23

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Date

Tucker Robinson  
Hampton Yard 11, LLC  
3200 Cherry Creek S Dr, Suite 630  
Denver, CO 80209

## Table of Contents

<b>I. Introduction .....</b>	<b>1</b>
Project Overview .....	1
Study Area Boundaries .....	1
Site Description .....	1
Existing and Committed Surface Transportation Network .....	5
<b>II. Existing Traffic Conditions .....</b>	<b>6</b>
Peak Hour Intersection Levels of Service – Existing Traffic .....	8
Existing Traffic Analysis Results .....	9
<b>III. Future Traffic Conditions Without Proposed Development.....</b>	<b>10</b>
Peak Hour Intersection Levels of Service – Background Traffic .....	13
Background Traffic Analysis Results – Year 2024 .....	13
Background Traffic Analysis Results – Year 2042 .....	14
<b>IV. Proposed Project Traffic .....</b>	<b>15</b>
Trip Generation .....	15
Adjustments to Trip Generation Rates .....	16
Trip Distribution .....	16
Trip Assignment .....	16
<b>V. Future Traffic Conditions With Proposed Developments .....</b>	<b>18</b>
<b>VI. Project Impacts .....</b>	<b>21</b>
Total Traffic Auxiliary Lane Analysis .....	21
Peak Hour Intersection Levels of Service – Total Traffic .....	21
Total Traffic Analysis Results Upon Development Build-Out .....	23
Pedestrian Circulation & Safety Analysis .....	24
<b>VII. Conclusion .....</b>	<b>25</b>

## List of Figures

Figure 1 – Location.....	3
Figure 2 – Site Plan.....	4
Figure 3 – Existing Traffic Volumes & Intersection Geometry .....	7
Figure 4 – Background Traffic Volumes & Intersection Geometry – Year 2024.....	11
Figure 5 – Background Traffic Volumes & Intersection Geometry – Year 2042.....	12
Figure 6 – Distribution and Site-Generated Assignment.....	17
Figure 7 – Total Traffic Volumes & Intersection Geometry – Year 2024.....	19
Figure 8 – Total Traffic Volumes & Intersection Geometry – Year 2042.....	20

## List of Tables

Table 1 – Intersection Capacity Analysis Summary – Existing Traffic .....	8
Table 2 – Intersection Capacity Analysis Summary – Background Traffic – Year 2024 .....	13
Table 3 – Intersection Capacity Analysis Summary – Background Traffic – Year 2042 .....	14
Table 4 – Trip Generation Rates .....	15
Table 5 – Trip Generation Summary .....	15
Table 6 – Intersection Capacity Analysis Summary – Total Traffic – Year 2024 .....	22
Table 7 – Intersection Capacity Analysis Summary – Total Traffic – Year 2042 .....	22

## Appendices

APPENDIX A	TRAFFIC COUNT DATA
	SIGNAL TIMING INFORMATION
APPENDIX B	LEVEL OF SERVICE DEFINITIONS
APPENDIX C	CAPACITY WORKSHEETS
APPENDIX D	INTERSECTION SIGHT DISTANCE EXHIBIT

## I. Introduction

### Project Overview

This traffic impact study is provided as a planning document and addresses the capacity, geometric, and control requirements associated with the development entitled Space Village Filing No. 4.

This traffic impact study has been revised to address County review comments made to the March 2023 traffic impact study, regarding information on ownership and the need for clarification on recommended intersection improvements.

This proposed industrial development consists of a contractor storage yard. The development is located near the southeast corner of Space Village Avenue and Peterson Boulevard in El Paso County, Colorado.

### Study Area Boundaries

The study area to be examined in this analysis encompasses the Space Village Avenue intersections with Peterson Boulevard, the eastbound U.S. Highway 24 on/off ramp, the Storage Sense access drive, and Marksheffel Road, as well as the proposed site accesses.

Figure 1 illustrates location of the site and study intersections.

### Site Description

Land for the development is currently vacant and surrounded by open space and a mix of military, commercial, industrial, and residential land uses.

The proposed development is understood to entail the new construction of a contractor yard outdoor storage, on two lots totaling approximately 22.82 acres of land.

Proposed access to the development is provided via two full-movement accesses onto Space Village Avenue (referred to as Access A and Access B). It is understood that Access A will provide sole access to Lot 1 (11.23 acres) and Access B will serve Lot 2 (11.59 acres). Access A is located approximately 565 feet east of Command View and Access B is located approximately 230 feet east of Access A.

For purposes of this study, it is anticipated that development construction would be completed by end of Year 2024.

General site and access locations are shown on Figure 1.

A site plan, as prepared by Sterling Design Associates, is shown on Figure 2. This plan is provided for illustrative purposes only.

A conceptual sight distance exhibit, illustrating approximate intersection sight distance triangles, is included for reference in Appendix D. This two-dimensional exhibit does not consider the potential for landscaping or utility obstructions and was prepared in accordance to Section 2.4.2 of the Engineering Criteria Manual (ECM)<sup>1</sup> and Section 9.5.3.2 of the American Association of State Highway and Transportation Officials' (AASHTO) A Policy on Geometric Design of Highway and Streets (Green Book)<sup>2</sup> and is provided for illustrative purposes only.

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<sup>1</sup> El Paso County Engineering Criteria Manual, El Paso County, December 2016.

<sup>2</sup> A Policy on Geometric Design of Highways and Streets (7<sup>th</sup> Edition), American Association of State Highway and Transportation Officials, 2018.





Figure 1  
SITE LOCATION

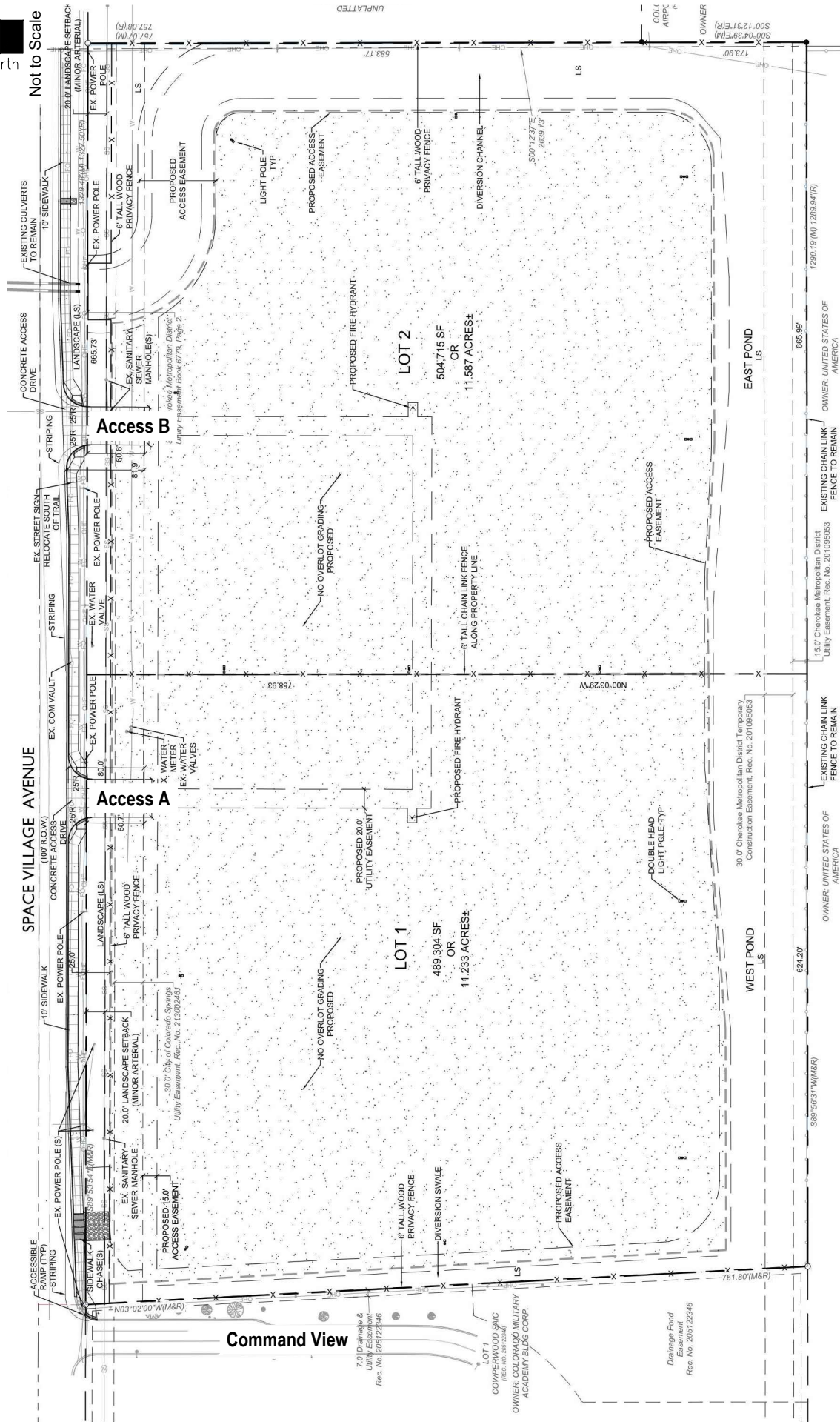






North

Not to Scale



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Figure 2  
SITE PLAN

June 2023

Page 4



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## Existing and Committed Surface Transportation Network

Within the study area, Space Village Avenue is the primary roadway that will accommodate traffic to and from the proposed development. The secondary roadways include Marksheffel Road, U.S. Highway 24, and Peterson Boulevard. A brief description of each roadway, based on the County's 2016 Major Transportation Corridors Plan (MTCP)<sup>3</sup> and the ECM, and the City of Colorado Springs' Major Thoroughfare Plan (MTP)<sup>4</sup>, is provided below:

Space Village Avenue is an east-west minor arterial roadway having two through lanes (one lane in each direction) with a combination of shared and exclusive turn lanes at the intersections within the study area. Space Village Avenue provides a posted speed limit of 45 MPH.

Marksheffel Road is a north-south principal arterial roadway having four through lanes (two lanes in each direction) with exclusive turn lanes at the intersection within the study area. Marksheffel Road provides a posted speed limit of 55 MPH.

Peterson Boulevard is a north-south minor arterial roadway having four through lanes (two lanes in each direction) with a combination of shared and exclusive turn lanes at the intersection within the study area. Peterson Boulevard provides a posted speed limit of 30 MPH.

U.S. Highway 24 at Space Village Avenue is an existing interchange with U.S. Highway 24 travel north of Space Village Avenue. The interchange is within the Colorado Department of Transportation's (CDOT) jurisdiction. The eastbound on / off ramp has a posted advisory speed limit of 15 MPH. Each interchange ramp has one travel lane with exclusive turn lanes at Space Village Avenue.

The study intersection of Space Village Avenue and Peterson Boulevard is signalized. All other study intersections operate under a stop-controlled condition. A stop-controlled intersection is defined as a roadway intersection where vehicle rights-of-way are controlled by one or more "STOP" signs.

No regional or specific improvements for the above-described roadways are known to be planned or committed at this time. The study area roadways appear to be built to their ultimate cross-sections.

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<sup>3</sup> El Paso County 2016 Major Transportation Corridors Plan Update, Felsburg Holt & Ullevig, December 2016.

<sup>4</sup> Major Thoroughfare Plan, City of Colorado Springs, August 2011.

## II. Existing Traffic Conditions

Morning (AM) and afternoon (PM) peak hour traffic counts were collected at the Space Village Avenue intersections with Peterson Boulevard, the U.S. Highway 24 eastbound on/off ramps, Marksheffel Road, and the Storage Sense access drive. Average daily traffic (ADT) volumes were collected over a 24-hour period on Space Village Avenue. Counts were collected on Wednesday, October 26, 2022, with AM peak hour counts being collected during the period of 7:00 a.m. to 9:00 a.m. and PM peak hour counts being collected during the period of 4:00 p.m. to 6:00 p.m.

It is important to note that at the time of count collection, the east leg of the Space Village Avenue and Marksheffel Road intersection was closed. Therefore, existing traffic volumes for Space Village Avenue, east of Marksheffel Road, were obtained from the Reagan Ranch Traffic Impact Study<sup>5</sup>.

It is also noted that Peterson Boulevard south of Space Village Avenue provides access to the North Gate of Peterson Space Force Base. Inbound lanes for the North Gate are open from 6:00 a.m. to 9:00 a.m., therefore there is little to no traffic traveling southbound on Space Village Avenue during the PM peak hour.

Existing volumes and intersection geometry are shown on Figure 3. Traffic count data is included for reference in Appendix A.

Existing signal timing parameters for Space Village Avenue and Peterson Boulevard were obtained from the City of Colorado Springs and used throughout this study to the best extent possible in order to remain consistent with existing signal coordination plans. City signal timing information received is included for reference in Appendix A.

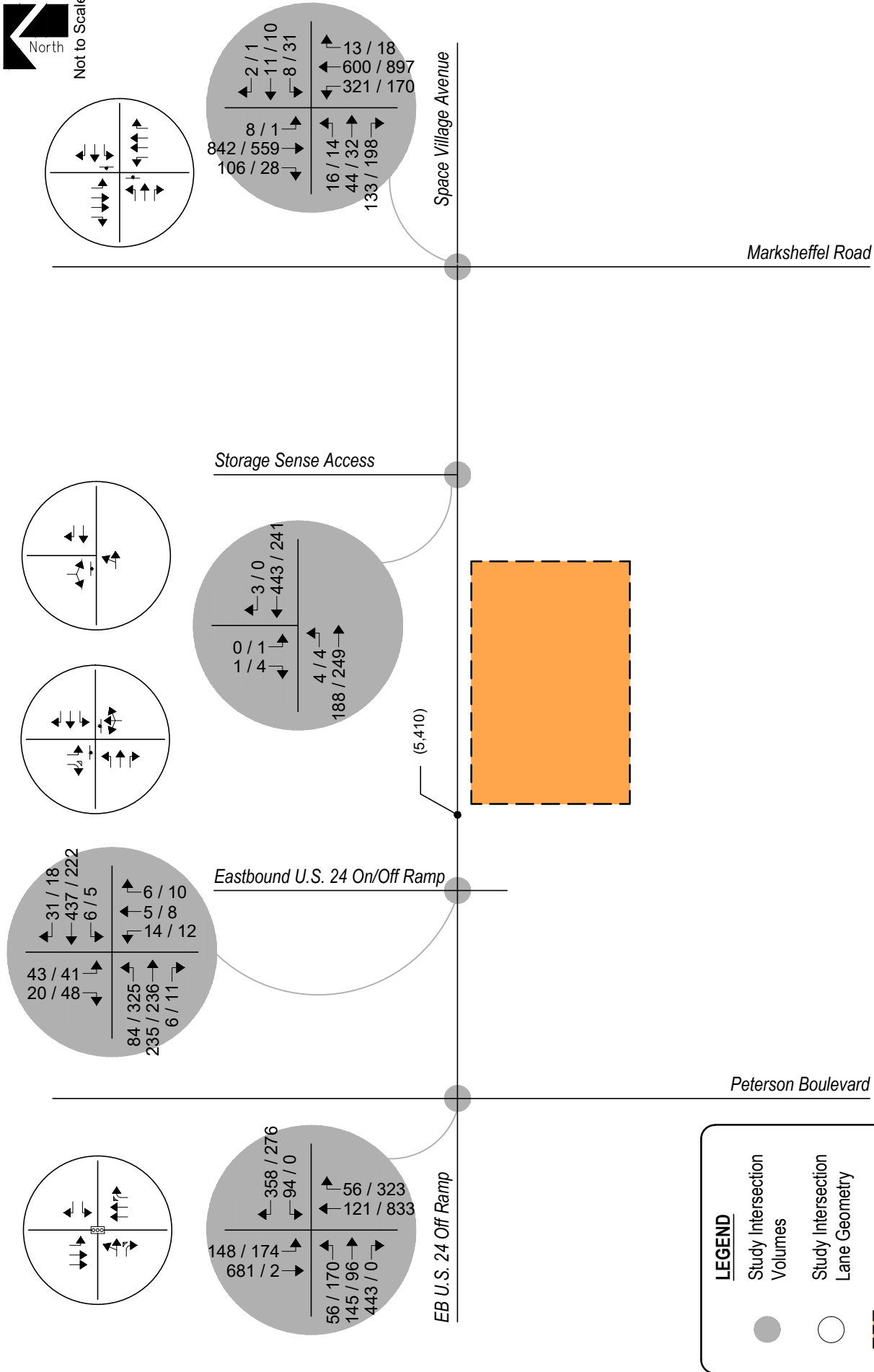
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<sup>5</sup> Reagan Ranch Traffic Impact Study, Kimley-Horn and Associates, Inc., November 2020.



North

Not to Scale



**Figure 3**  
**EXISTING TRAFFIC**  
 Volumes & Intersection Geometry  
 AM / PM Peak Hour  
 (ADT) : Average Daily Traffic

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### Peak Hour Intersection Levels of Service – Existing Traffic

The Signalized and Unsignalized Intersection Analysis techniques, as published in the Highway Capacity Manual (HCM), 6<sup>th</sup> Edition, by the Transportation Research Board and as incorporated into the SYNCHRO computer program, were used to analyze the study intersections for existing and future traffic conditions. These nationally accepted techniques allow for the determination of intersection level of service (LOS) based on the congestion and delay of each traffic movement.

Level of service is a method of measurement used by transportation professionals to quantify a driver's perception of travel conditions that include travel time, number of stops, and total amount of stopped delay experienced on a roadway network. The HCM categorizes level of service into a range from "A" which indicates little, if any, vehicle delay, to "F" which indicates a level of operation considered unacceptable to most drivers. These levels of service grades with brief descriptions of the operating condition, for unsignalized and signalized intersections, are included for reference in Appendix B and have been used throughout this study.

The level of service analyses results for existing conditions are summarized in Table 1.

Intersection capacity worksheets developed for this study are provided in Appendix C.

**Table 1 – Intersection Capacity Analysis Summary – Existing Traffic**

INTERSECTION LANE GROUPS	LEVEL OF SERVICE	
	AM PEAK HOUR	PM PEAK HOUR
Peterson Boulevard / Space Village Avenue (Signalized)	C (27.4)	C (27.5)
EB US 24 On/Off Ramp / Space Village Avenue (Stop-Controlled)		
Eastbound Left	A	A
Westbound Left	A	A
Northbound Left, Through and Right	C	D
Southbound Left	D	F
Storage Sense Access / Space Village Avenue (Stop-Controlled)		
Eastbound Left and Through	A	A
Southbound Left and Right	B	B
Marksheffel Road / Space Village Avenue (Stop-Controlled)		
Eastbound Left	F	F
Eastbound Through	F	F
Eastbound Right	B	B
Westbound Left	F	F
Westbound Through	F	F
Westbound Right	B	B
Northbound Left	C	A
Southbound Left	A	B

Key: Signalized Intersection: Level of Service (Control Delay in sec/veh)  
Stop-Controlled Intersection: Level of Service



## Existing Traffic Analysis Results

Under existing conditions, operational analysis shows that the signalized intersection of Peterson Boulevard with Space Village Avenue has overall operations at LOS C during the morning and afternoon peak traffic hours.

The stop-controlled intersection of Space Village Avenue with the eastbound U.S. Highway 24 On/Off Ramp has turn movement operations at or better than LOS D during both peak traffic hours. Exceptions would include the southbound left turning movement which operates at LOS F during the PM peak traffic hour. The LOS F operation is attributed to the through traffic volume along Space Village Avenue and the stop-controlled nature of the intersection.

The stop-controlled intersection of Space Village Avenue with the Storage Sense Access drive has turn movement operations at LOS B or better during both peak traffic hours.

The stop-controlled intersection of Marksheffel Road with Space Village Avenue has turn movement operations at LOS C or better during the morning peak traffic hour and LOS B or better during the afternoon peak traffic hour. Exceptions include the eastbound and westbound left and through movements which operate at LOS F during both peak traffic hours. The LOS F operations are attributed to the through traffic volume along Marksheffel Road and the stop-controlled nature of the intersection.

It is to be noted that it is not uncommon for unsignalized movements to or from an arterial roadway, in urban areas, to operate with noticeable delays during peak traffic hours. It is, however, likely that turn movements will operate better than the results obtained with this HCM Two-Way Stop-Control (TWSC) level of service analysis would indicate, as the HCM analysis may not accurately account for the effect of vehicle platooning and gaps caused by upstream signals. The upstream signal control along Space Village Avenue and Marksheffel Road may tend to create additional gaps in the traffic stream for turning movements along Space Village Avenue and will likely provide mitigation to the LOS F operations projected during both peak traffic hours.

### **III. Future Traffic Conditions Without Proposed Development**

Background traffic is the traffic projected to be on area roadways without consideration of the proposed development. Background traffic includes traffic generated by development of vacant parcels in the area.

To account for projected increases in background traffic for Years 2024 and 2042, a compounded annual growth rate was determined using historical traffic data for the surrounding area provided by CDOT's Online Transportation Information System (OTIS), which anticipates a 20-year growth rate between one and two percent. Therefore, in order to provide for a conservative analysis, a growth rate of two percent was applied to existing traffic volumes. This annual growth rate provides for a conservative analysis and is assumed to account for regional growth projections and the level of in-fill development expected within the area.

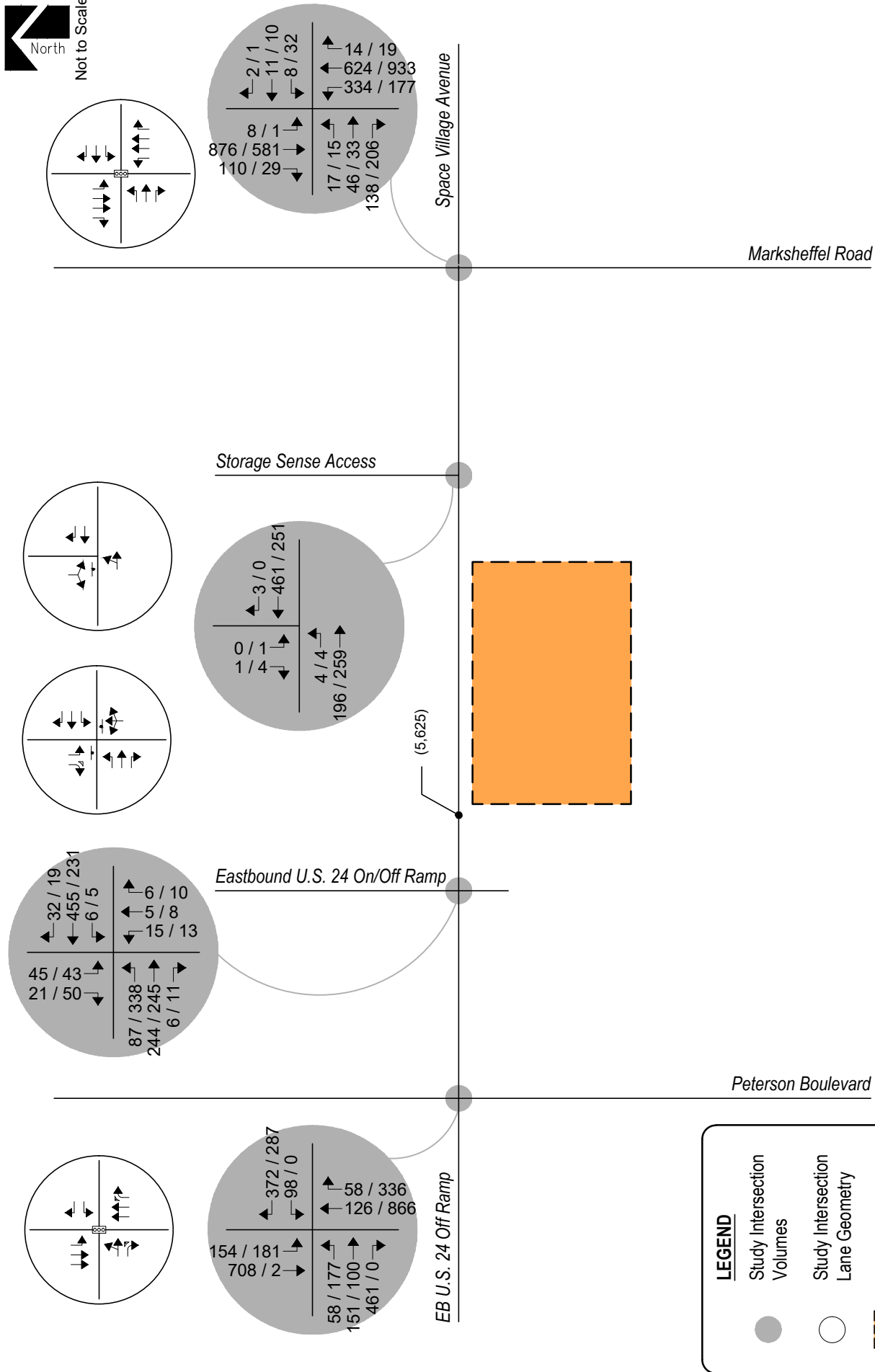
Pursuant to the non-committed area roadway improvements discussed in Section I, Year 2024 and Year 2042 background traffic conditions assume no roadway improvements to accommodate regional transportation demands. This assumption provides for a conservative analysis. In order to remain consistent with the Reagan Ranch Traffic Impact Study, Year 2024 and Year 2042 background traffic conditions assume the signalization of the Space Village Avenue and Marksheffel Road intersection. Year 2042 assumes existing signal timing parameters for Space Village Avenue and Peterson Boulevard with optimized intersection splits in effort to better long-term intersection performance.

Projected background traffic volumes and intersection geometry for Years 2024 and 2042 are shown on Figure 4 and Figure 5, respectively.



North

Not to Scale



**Figure 4**  
**BACKGROUND TRAFFIC - YEAR 2024**  
 Volumes & Intersection Geometry  
 AM / PM Peak Hour  
 (ADT) : Average Daily Traffic

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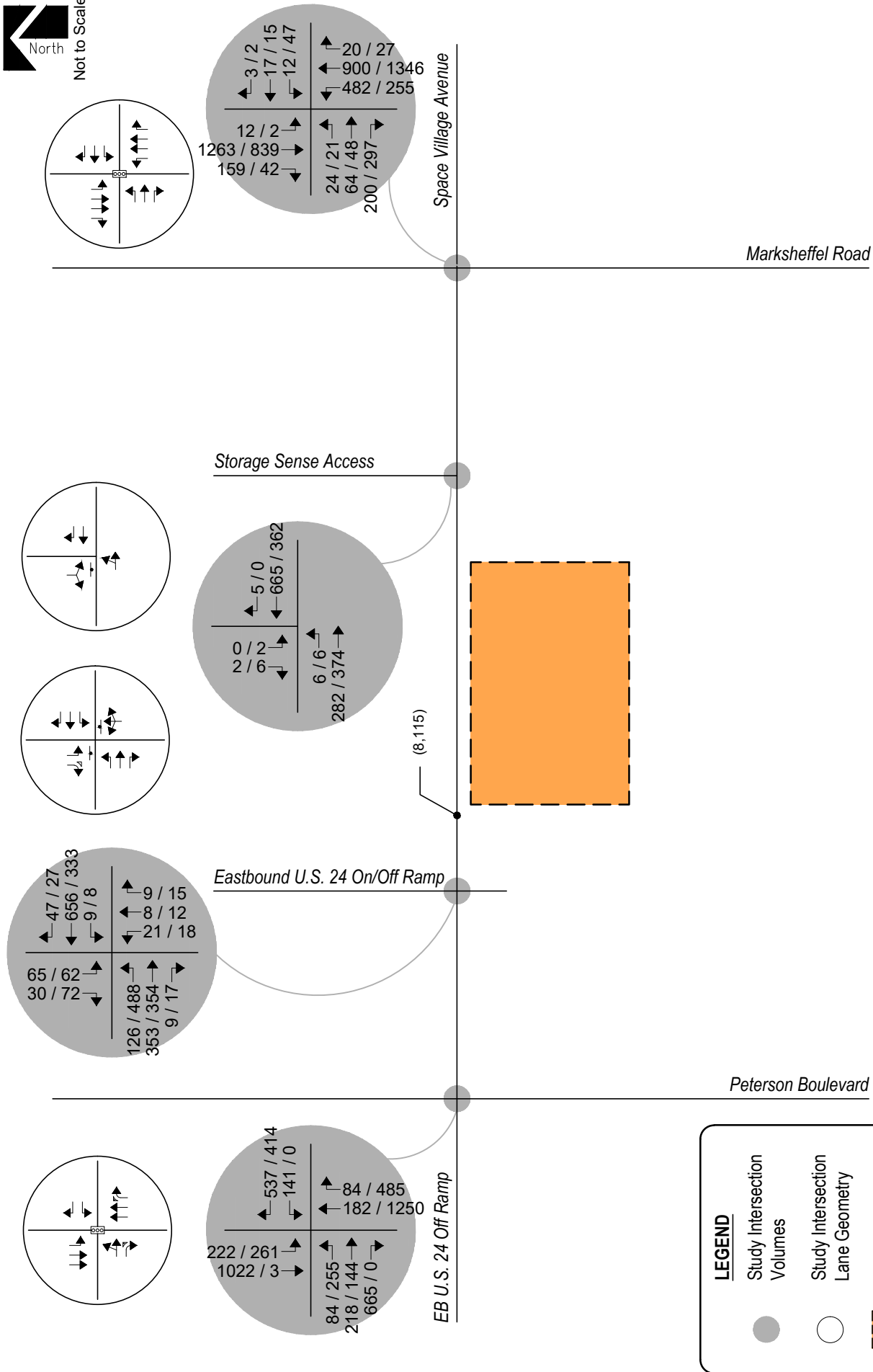


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North

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**Figure 5**  
**BACKGROUND TRAFFIC - YEAR 2042**  
 Volumes & Intersection Geometry  
 AM / PM Peak Hour  
 (ADT) : Average Daily Traffic

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### Peak Hour Intersection Levels of Service – Background Traffic

As with existing traffic conditions, the operations of study intersections were analyzed under background conditions, without the proposed development, using the SYNCHRO computer program.

Background traffic level of service analysis results for Year 2024 are listed in Table 2. Year 2042 operational results are summarized in Table 3.

Definitions of levels of service are given in Appendix B. Intersection capacity worksheets are provided in Appendix C.

**Table 2 – Intersection Capacity Analysis Summary – Background Traffic – Year 2024**

INTERSECTION LANE GROUPS	LEVEL OF SERVICE	
	AM PEAK HOUR	PM PEAK HOUR
Peterson Boulevard / Space Village Avenue (Signalized)	C (29.3)	C (29.9)
Marksheffel Road / Space Village Avenue (Signalized)	B (13.2)	B (11.1)
EB US 24 On/Off Ramp / Space Village Avenue (Stop-Controlled)		
Eastbound Left	A	A
Westbound Left	A	A
Northbound Left, Through and Right	C	D
Southbound Left	D	F
Storage Sense Access / Space Village Avenue (Stop-Controlled)		
Eastbound Left and Through	A	A
Southbound Left and Right	B	B

Key: Signalized Intersection: Level of Service (Control Delay in sec/veh)  
Stop-Controlled Intersection: Level of Service

### Background Traffic Analysis Results – Year 2024

Year 2024 background traffic analysis indicates that the signalized intersection of Peterson Boulevard with Space Village Avenue has overall operations at LOS C during the morning and afternoon peak traffic hours.

The signalized intersection of Marksheffel Road and Space Village Avenue projects overall operations at LOS B for both peak traffic hours.

The stop-controlled intersection of Space Village Avenue with the eastbound U.S. Highway 24 On/Off Ramp projects turn movement operations at or better than LOS D during both peak traffic hours. Exceptions would include the southbound left turning movement which operates at LOS F during the PM peak traffic hour. The LOS F operation is attributed to the through traffic volume along Space Village Avenue and the stop-controlled nature of the intersection.

The stop-controlled intersection of Space Village Avenue with the Storage Sense Access drive projects turn movement operations at LOS B or better during both peak traffic hours.

**Table 3 – Intersection Capacity Analysis Summary – Background Traffic – Year 2042**

INTERSECTION LANE GROUPS	LEVEL OF SERVICE	
	AM PEAK HOUR	PM PEAK HOUR
Peterson Boulevard / Space Village Avenue (Signalized)	D (53.5)	F (85.7)
Marksheffel Road / Space Village Avenue (Signalized)	C (29.5)	B (14.3)
EB US 24 On/Off Ramp / Space Village Avenue (Stop-Controlled)		
Eastbound Left	B	B
Westbound Left	A	A
Northbound Left, Through and Right	E	F
Southbound Left	F	F
Storage Sense Access / Space Village Avenue (Stop-Controlled)		
Eastbound Left and Through	A	A
Southbound Left and Right	B	B

Key: Signalized Intersection: Level of Service (Control Delay in sec/veh)  
 Stop-Controlled Intersection: Level of Service

### Background Traffic Analysis Results – Year 2042

By Year 2042 and without the proposed development, the signalized intersection of Peterson Boulevard with Space Village Avenue experiences LOS D operations during the AM peak traffic hour and LOS F operations during the PM peak traffic hour. The LOS F operation is attributed to the high volume of traffic traveling north on Peterson Boulevard and the conflicting southbound left and eastbound movements. To mitigate the anticipated LOS F operation, it is recommended adding an exclusive eastbound left turn lane and increasing the southbound left signal phase timing.

The signalized intersection of Marksheffel Road and Space Village Avenue projects overall operations at LOS C for the morning peak traffic hour and LOS B for the afternoon peak traffic hour.

The stop-controlled intersection of Space Village Avenue with the eastbound U.S. Highway 24 On/Off Ramp projects turn movement operations at or better than LOS B during both peak traffic hours. Exceptions would include the northbound and southbound turning movements which operate at LOS E and LOS F during their respective peak traffic hour. The LOS E and F operations are attributed to the through traffic volume along Space Village Avenue and the stop-controlled nature of the intersection.

The stop-controlled intersection of Space Village Avenue with the Storage Sense Access drive projects turn movement operations at LOS B or better during both peak traffic hours.

It is again noted that it is not uncommon for unsignalized movements to or from an arterial roadway, in urban areas, to operate with noticeable delays during peak traffic hours. It is, however, likely that turn movements will operate better than the results obtained with this HCM Two-Way Stop-Control (TWSC) level of service analysis would indicate, as the HCM analysis may not accurately account for the effect of vehicle platooning and gaps caused by upstream signals. The upstream signal control along Space Village Avenue may tend to create additional gaps in the traffic stream for turning movements at the eastbound U.S. Highway 24 On/Off Ramp and will likely provide mitigation to the LOS F operation projected during both peak traffic hours.

## IV. Proposed Project Traffic

### Trip Generation

Standard traffic generation characteristics compiled by the Institute of Transportation Engineers (ITE) in their report entitled Trip Generation Manual, 11<sup>th</sup> Edition, were considered for the proposed land use in order to estimate the average daily traffic (ADT) and peak hour vehicle trips. A vehicle trip is defined as a one-way vehicle movement from point of origin to point of destination.

However, ITE's Trip Generation Manual does not provide traffic generation information for this particular land use. As such, trip generation data was gathered from previous studies for similar land use projects<sup>6, 7, 8</sup> and used to estimate average daily and weekday peak hour trip information.

Table 4 presents trip generation rates from the referenced studies.

**Table 4 – Trip Generation Rates**

ITE CODELAND USEUNIT			TRIP GENERATION RATES						
			24 HOUR	AM PEAK HOUR			PM PEAK HOUR		
				ENTER	EXIT	TOTAL	ENTER	EXIT	TOTAL
<u>Count Data Research</u>									
-	165 Remington Contractor Yard (Mesa Cty, CO)	ACRE	16.92	1.49	0.50	1.99	0.99	0.50	1.49
-	Small Contractors Yard - US 6 and CR 240 (Garfield Cty, CO)	ACRE	10.14	-	-	-	-	-	-
-	Ute Creek Industrial Storage Yard (Eagle Cty, CO)	ACRE	-	-	-	-	0.50	0.85	1.35
Average Rates:			13.53	1.49	0.50	1.99	0.75	0.67	1.42

Key: ACRE = Acres.

Note: All data and calculations above are subject to being rounded to nearest value.

Table 5 illustrates projected ADT, AM Peak Hour, and PM Peak Hour traffic volumes likely generated by the proposed development upon build-out.

**Table 5 – Trip Generation Summary**

ITE CODELAND USESIZE			TOTAL TRIPS GENERATED							
			24 HOUR	AM PEAK HOUR			PM PEAK HOUR			
				ENTER	EXIT	TOTAL	ENTER	EXIT	TOTAL	
<u>Site Development - Proposed</u>										
-	Hampton Partners Contractor Yard and Storage (El Paso County, CO)	22.8 ACRE	309	34	11	45	17	15	32	
Proposed Total:			309	34	11	45	17	15	32	

Key: ACRE = Acres.

Note: All data and calculations above are subject to being rounded to nearest value.

<sup>6</sup> SH 141 & Springfield Road Transportation Impact Study, McDowell Engineering, LLC, January 2019.

<sup>7</sup> Small Contractors Yard Land Use Application, US Hwy 6 and County Road 240 (Bruce Road), Timberline Energy Inc., November 2013.

<sup>8</sup> Ute Creek Industrial Storage Facility Expansion Traffic Impact Assessment, TDA Colorado, Inc., November 2010.

Upon build-out, Table 5 illustrates that the proposed development has the potential to generate approximately 309 daily vehicle trips with 45 of those occurring during the morning peak hour and 32 during the afternoon peak hour.

### **Adjustments to Trip Generation Rates**

A development of this type is not likely to attract trips from within area land uses nor pass-by or diverted link trips from the adjacent roadway system, therefore no trip reduction was taken in this analysis.

### **Trip Distribution**

The overall directional distribution of site-generated traffic was determined based on the location of the development site within the County, proposed and existing area land uses, allowed turning movements, available road network, and in reference to historical traffic count data provided by CDOT's Traffic Count Database System (TCDS)<sup>9</sup>.

Overall trip distribution patterns for the development are shown on Figure 6.

### **Trip Assignment**

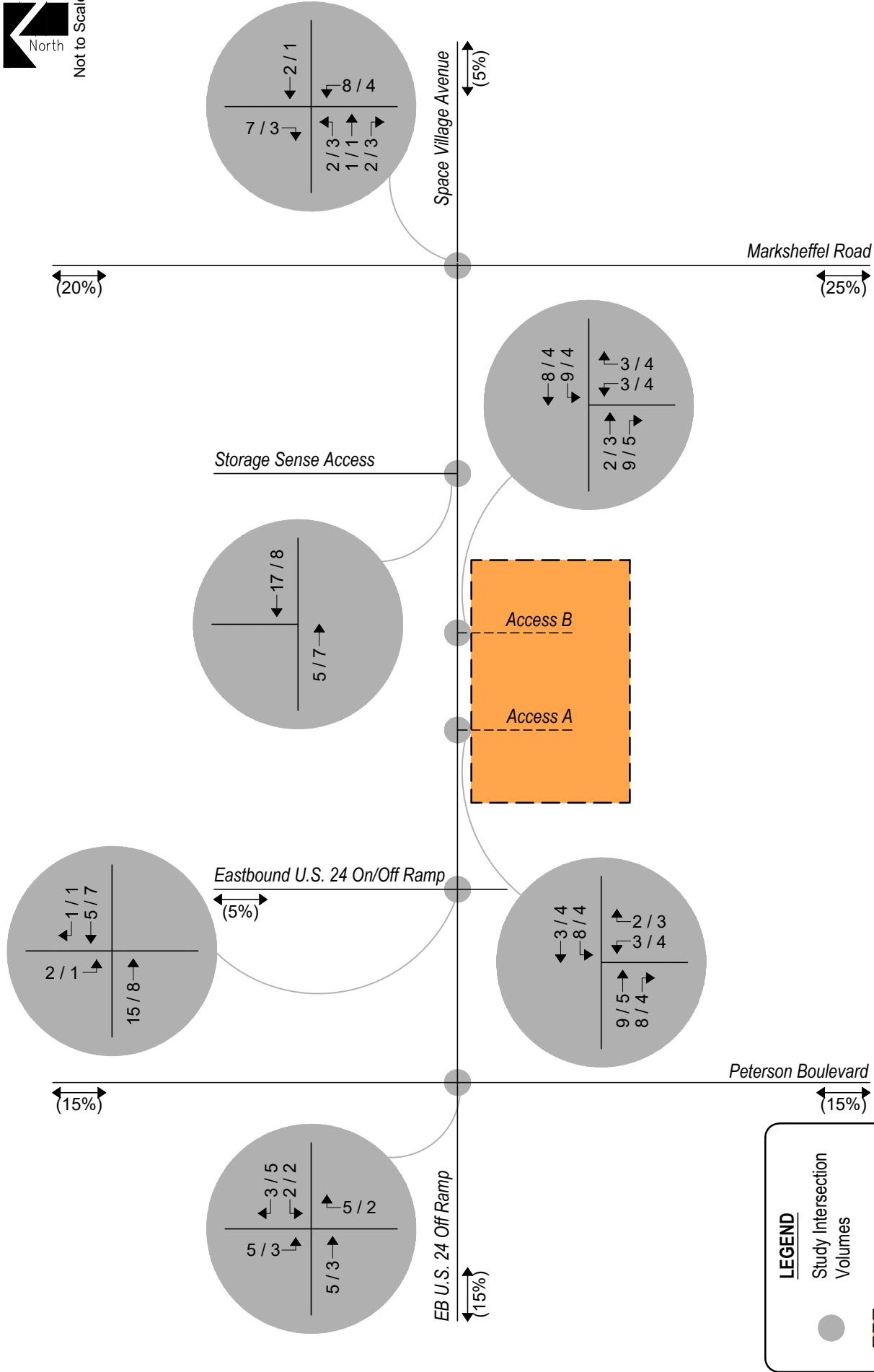
Trip assignment is how generated and distributed vehicle trips are expected to be loaded onto the available roadway network.

Applying trip distribution patterns to site-generated traffic provides the overall site-generated trip assignments shown on Figure 6.

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<sup>9</sup> Transportation Data Management System, MS2, 2022.





**Figure 6**  
**SITE DEVELOPMENT DISTRIBUTION**  
 (%): Overall  
**SITE-GENERATED**  
 AM / PM Peak Hour

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## **V. Future Traffic Conditions With Proposed Developments**

Total traffic is the traffic projected to be on area roadways with consideration of the proposed development. Total traffic includes background traffic projections for Years 2024 and 2042 with consideration of site-generated traffic. For analysis purposes, it was assumed that development construction would be completed by end of Year 2024.

Pursuant to area roadway improvement discussions provided in Section III, Year 2024 and Year 2042 total traffic conditions assume no roadway improvements to accommodate regional transportation demands. Roadway improvements associated with site development are expected to be limited to site access and frontage as required by the governing agency.

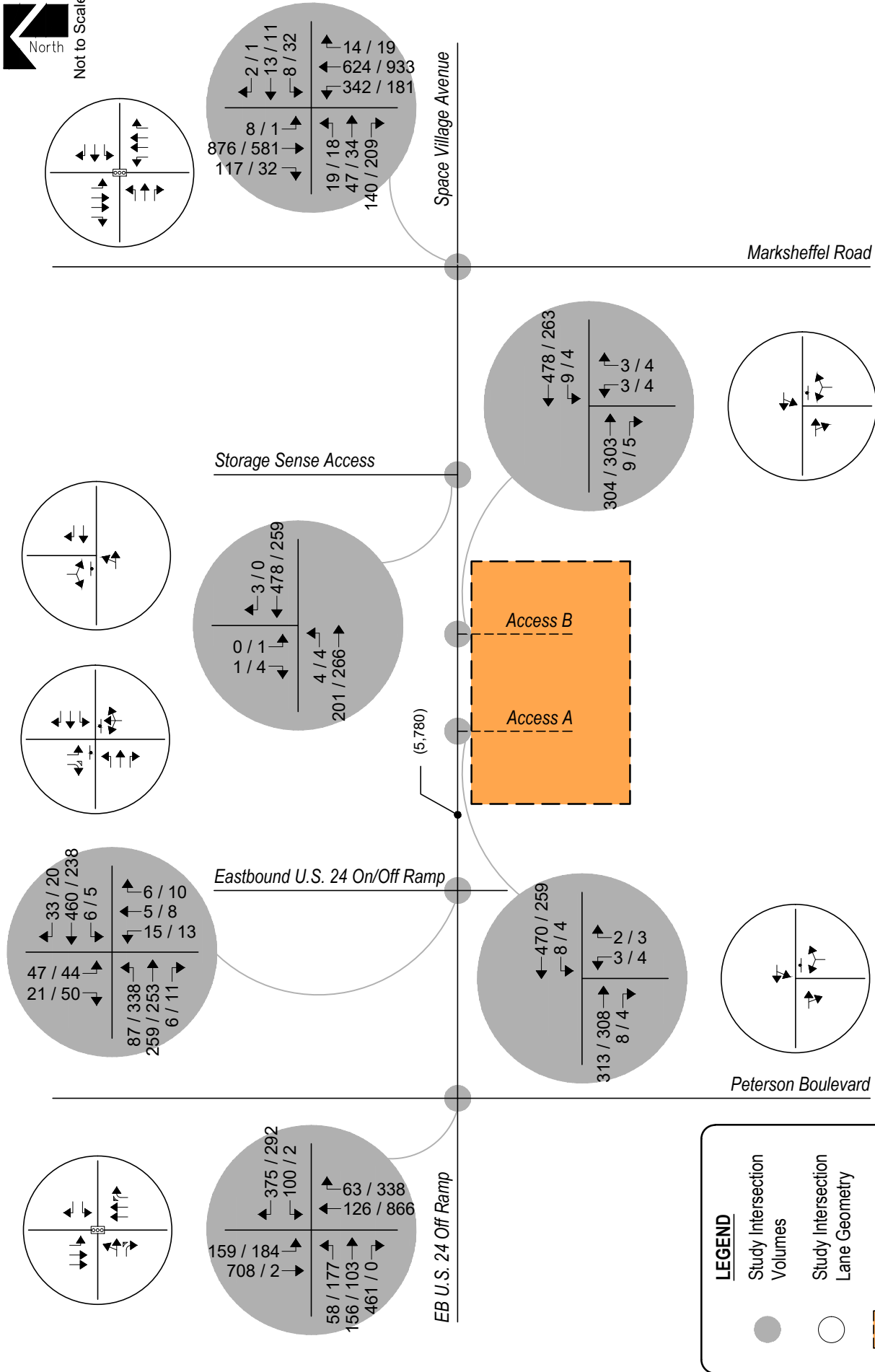
Projected Year 2024 total traffic volumes and intersection geometry are shown in Figure 7.

Figure 8 shows projected total traffic volumes and intersection geometry for Year 2042.



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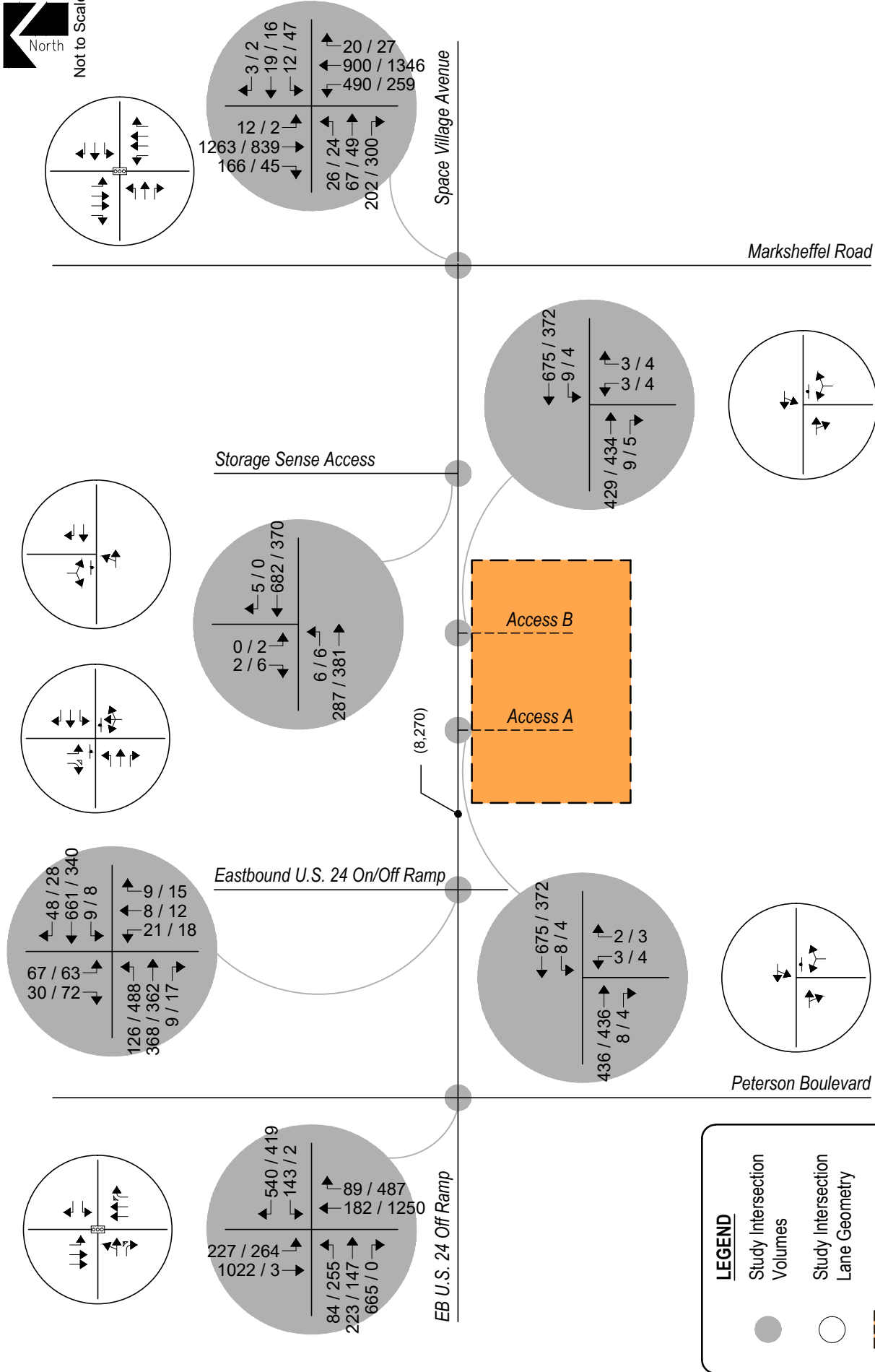
**Figure 7**  
**TOTAL TRAFFIC - YEAR 2024**  
 Volumes & Intersection Geometry  
 AM / PM Peak Hour  
 (ADT) : Average Daily Traffic





North

Not to Scale



**Figure 8**  
**TOTAL TRAFFIC - YEAR 2042**  
 Volumes & Intersection Geometry  
 AM / PM Peak Hour  
 (ADT) : Average Daily Traffic

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## **VI. Project Impacts**

The analyses and procedures described in this study were performed in accordance with the latest HCM and are based upon the worst-case conditions that occur during a typical weekday upon build-out of site development and analyzed land uses. Therefore, study intersections are likely to operate with traffic conditions better than those described within this study, which represent the peak hours of weekday operations only.

### **Total Traffic Auxiliary Lane Analysis**

Auxiliary lanes for site development accesses were based on the County's ECM.

Considering development build-out, an evaluation of auxiliary lane requirements, pursuant to Section 2.3.7.D of the County's ECM, reveals that this development does not warrant the need for right or left turn deceleration lanes along Space Village Avenue since ingress traffic volumes do not exceed design hourly volume thresholds. The County's ECM states that for a minor arterial roadway, a left turn deceleration lane is required if the development's projected peak hour ingress volume exceeds 25 vehicles, and a right turn deceleration lane is required if the ingress volume exceeds 50 vehicles. The largest projected peak hour ingress volume at either site access is nine vehicles, therefore no new turn lanes are required along Space Village Avenue.

### **Peak Hour Intersection Levels of Service – Total Traffic**

As with background traffic, the operations of the study intersections were analyzed under projected total traffic conditions using the SYNCHRO computer program. Total traffic level of service analysis results for Years 2024 and 2042 are summarized in Table 6 and Table 7, respectively.

Definitions of levels of service are given in Appendix B. Intersection capacity worksheets are provided in Appendix C.

**Table 6 – Intersection Capacity Analysis Summary – Total Traffic – Year 2024**

INTERSECTION LANE GROUPS	LEVEL OF SERVICE	
	AM PEAK HOUR	PM PEAK HOUR
Peterson Boulevard / Space Village Avenue (Signalized)	C (29.4)	C (30.9)
Marksheffel Road / Space Village Avenue (Signalized)	B (12.8)	B (11.5)
EB US 24 On/Off Ramp / Space Village Avenue (Stop-Controlled)		
Eastbound Left	A	A
Westbound Left	A	A
Northbound Left, Through and Right	C	E
Southbound Left	D	F
Storage Sense Access / Space Village Avenue (Stop-Controlled)		
Eastbound Left and Through	A	A
Southbound Left and Right	B	B
Access A / Space Village Avenue (Stop-Controlled)		
Westbound Left and Through	A	A
Northbound Left and Right	B	B
Access B / Space Village Avenue (Stop-Controlled)		
Westbound Left and Through	A	A
Northbound Left and Right	B	B

Key: Signalized Intersection: Level of Service (Control Delay in sec/veh)  
 Stop-Controlled Intersection: Level of Service

**Table 7 – Intersection Capacity Analysis Summary – Total Traffic – Year 2042**

INTERSECTION LANE GROUPS	LEVEL OF SERVICE	
	AM PEAK HOUR	PM PEAK HOUR
Peterson Boulevard / Space Village Avenue (Signalized)	C (52.5)	F (87.2)
Marksheffel Road / Space Village Avenue (Signalized)	C (29.9)	B (14.8)
EB US 24 On/Off Ramp / Space Village Avenue (Stop-Controlled)		
Eastbound Left	B	B
Westbound Left	A	A
Northbound Left, Through and Right	E	F
Southbound Left	F	F
Storage Sense Access / Space Village Avenue (Stop-Controlled)		
Eastbound Left and Through	A	A
Southbound Left and Right	B	B
Access A / Space Village Avenue (Stop-Controlled)		
Westbound Left and Through	A	A
Northbound Left and Right	C	B
Access B / Space Village Avenue (Stop-Controlled)		
Westbound Left and Through	A	A
Northbound Left and Right	C	B

Key: Signalized Intersection: Level of Service (Control Delay in sec/veh)  
 Stop-Controlled Intersection: Level of Service

### **Total Traffic Analysis Results Upon Development Build-Out**

Table 7 illustrates how, by Year 2042 and upon development build-out, the signalized intersection of Peterson Boulevard with Space Village Avenue experiences LOS C operations during the AM peak traffic hour and LOS F operations during the PM peak traffic hour. The LOS F operation is attributed to the high volume of traffic traveling north on Peterson Boulevard and the conflicting southbound left and eastbound movements. To mitigate the anticipated LOS F operation, it is recommended adding an exclusive eastbound left turn lane and increasing the southbound left signal phase timing.

The signalized intersection of Marksheffel Road and Space Village Avenue projects overall operations at LOS C for the morning peak traffic hour and LOS B for the afternoon peak traffic hour.

The stop-controlled intersection of Space Village Avenue with the eastbound U.S. Highway 24 On/Off Ramp projects turn movement operations at or better than LOS B during both peak traffic hours. Exceptions still include the northbound and southbound turning movements which operate at LOS E and LOS F during their respective peak traffic hour. The LOS E and F operations are attributed to the through traffic volume along Space Village Avenue and the stop-controlled nature of the intersection.

The stop-controlled intersection of Space Village Avenue with the Storage Sense Access drive projects turn movement operations at LOS B or better during both peak traffic hours.

The stop-controlled intersections of Access A and Access B with Space Village Avenue project turn movement operations at LOS C or better during the morning peak traffic hour and LOS B or better during the afternoon peak traffic hour.

It is again noted that it is not uncommon for unsignalized movements to or from an arterial roadway, in urban areas, to operate with noticeable delays during peak traffic hours. It is, however, likely that turn movements will operate better than the results obtained with this HCM Two-Way Stop-Control (TWSC) level of service analysis would indicate, as the HCM analysis may not accurately account for the effect of vehicle platooning and gaps caused by upstream signals. The upstream signal control along Space Village Avenue may tend to create additional gaps in the traffic stream for turning movements at the eastbound U.S. Highway 24 On/Off Ramp and will likely provide mitigation to the LOS F operation projected during both peak traffic hours.

Compared to the background traffic analysis, the traffic generated by the proposed development is not expected to significantly change the operations of the study intersection. These intersection operations are similar to background conditions.



### **Pedestrian Circulation & Safety Analysis**

In accordance with Section B.2.4.B of the County's ECM, an assessment to pedestrian connectivity and safety was considered.

The proposed development would accommodate pedestrians and bicyclists with sidewalks along Space Village Avenue which will connect to the existing pedestrian network.

With the assumption that future site plans are designed per the County's ECM, and pursuant to the Federal Highway Administration's (FHWA) Guide for Improving Pedestrian Safety at Uncontrolled Crossing Locations<sup>10</sup>, pedestrian safety is not expected to be of concern. Moreover, traffic calming and pedestrian crossing treatments are not applicable, and traffic calming is not recommended for the proposed conditions.

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<sup>10</sup> Guide for Improving Pedestrian Safety at Uncontrolled Crossing Locations, Federal Highway Administration, July 2018.

## **VII. Conclusion**

This traffic impact study addressed the capacity, geometric, and control requirements associated with the development entitled Space Village Filing No. 4. This proposed industrial development consists of a contractor storage yard. The development is located near the southeast corner of Space Village Avenue and Peterson Boulevard in El Paso County, Colorado.

The study area examined in this analysis encompassed the Space Village Avenue intersections with Peterson Boulevard, the eastbound U.S. Highway 24 on/off ramp, the Storage Sense access drive, and Marksheffel Road as well as the proposed site accesses.

Analysis was conducted for critical AM Peak Hour and PM Peak Hour traffic operations for existing traffic conditions, Year 2024 and Year 2042 background traffic conditions, and Year 2024 and Year 2042 total traffic conditions.

Analysis of existing traffic conditions indicates that the signalized intersection of Peterson Boulevard with Space Village Avenue has overall operations at LOS C during the morning and afternoon peak traffic hours. The stop-controlled intersection of Space Village Avenue with the eastbound U.S. Highway 24 On/Off Ramp has turn movement operations at or better than LOS D during both peak traffic hours. Exceptions would include the southbound left turning movement which operates at LOS F during the PM peak traffic hour. The stop-controlled intersection of Space Village Avenue with the Storage Sense Access drive has turn movement operations at LOS B or better during both peak traffic hours. The stop-controlled intersection of Marksheffel Road with Space Village Avenue has turn movement operations at LOS C or better during the morning peak traffic hour and LOS B or better during the afternoon peak traffic hour. Exceptions include the eastbound and westbound left and through movements which operate at LOS F during both peak traffic hours.

Without the proposed development, Year 2024 background operational analysis shows that the signalized intersection of Peterson Boulevard with Space Village Avenue has overall operations at LOS C during the morning and afternoon peak traffic hours. The signalized intersection of Marksheffel Road and Space Village Avenue projects overall operations at LOS B for both peak traffic hours. The stop-controlled intersection of Space Village Avenue with the eastbound U.S. Highway 24 On/Off Ramp projects turn movement operations at or better than LOS D during both peak traffic hours. Exceptions still include the southbound left turning movement which operates at LOS F during the PM peak traffic hour. The stop-controlled intersection of Space Village Avenue with the Storage Sense Access drive projects turn movement operations at LOS B or better during both peak traffic hours.

By Year 2042 and without the proposed development, the signalized intersection of Peterson Boulevard with Space Village Avenue experiences LOS D operations during the AM peak traffic hour and LOS F operations during the PM peak traffic hour. The signalized intersection of Marksheffel Road and Space Village Avenue projects overall operations at LOS C for the morning peak traffic hour and LOS B for the afternoon peak traffic hour. The stop-controlled intersection of Space Village Avenue with the eastbound U.S. Highway 24 On/Off Ramp projects turn movement operations at or better than LOS B during both peak traffic hours. Exceptions would include the northbound and southbound turning movements which operate at LOS E and LOS F during their respective peak traffic hour. The stop-controlled intersection of Space Village Avenue with the Storage Sense Access drive projects turn movement operations at LOS B or better during both peak traffic hours.

Analysis of future traffic conditions indicates that the addition of site-generated traffic is expected to create no negative impact to traffic operations for the existing and surrounding roadway system upon roadway and intersection control improvements assumed within this analysis. With all conservative assumptions defined in this analysis, the study intersections are projected to operate at future levels of service comparable to Year 2042 background traffic conditions. Proposed site accesses have long-term operations at LOS C or better during peak traffic periods and upon build-out.

This site is subject to the El Paso County Road Impact Fee Program (Resolution 19-471), as amended. An option for payment will be selected at the final land use approval stage.

## **APPENDIX A**

**Traffic Count Data  
Signal Timing Information**



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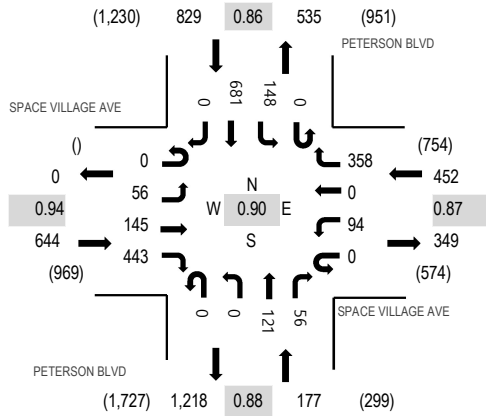
**Location:** 1 PETERSON BLVD & SPACE VILLAGE AVE AM

**Date:** Wednesday, October 26, 2022

**Peak Hour:** 07:00 AM - 08:00 AM

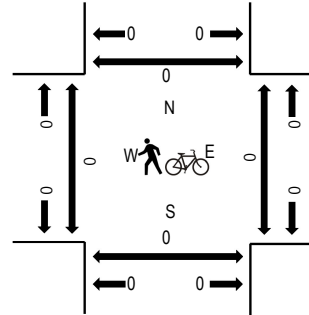
**Peak 15-Minutes:** 07:30 AM - 07:45 AM

### Peak Hour - All Vehicles



Note: Total study counts contained in parentheses.

### Peak Hour - Pedestrians/Bicycles on Crosswalk



### Traffic Counts

Interval Start Time	SPACE VILLAGE AVE Eastbound				SPACE VILLAGE AVE Westbound				PETERSON BLVD Northbound				PETERSON BLVD Southbound				Total	Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
7:00 AM	0	9	33	114	0	20	0	62	0	0	26	10	0	28	165	0	467	2,102	0	0	0	0
7:15 AM	0	18	43	111	0	23	0	85	0	0	31	16	0	34	180	0	541	2,020	0	0	0	0
7:30 AM	0	14	45	109	0	25	0	101	0	0	32	19	0	52	189	0	586	1,760	0	0	0	0
7:45 AM	0	15	24	109	0	26	0	110	0	0	32	11	0	34	147	0	508	1,443	0	0	0	0
8:00 AM	0	18	21	71	0	14	0	87	0	0	24	15	0	28	107	0	385	1,150	0	0	0	0
8:15 AM	0	18	14	52	0	10	0	70	0	0	15	8	0	28	66	0	281		0	0	0	0
8:30 AM	0	19	16	37	0	5	0	60	0	0	18	11	0	26	77	0	269		0	0	0	0
8:45 AM	0	18	12	29	0	6	0	50	0	0	19	12	0	34	35	0	215		0	0	0	0
Count Total	0	129	208	632	0	129	0	625	0	0	197	102	0	264	966	0	3,252		0	0	0	0
Peak Hour	0	56	145	443	0	94	0	358	0	0	121	56	0	148	681	0	2,102		0	0	0	0



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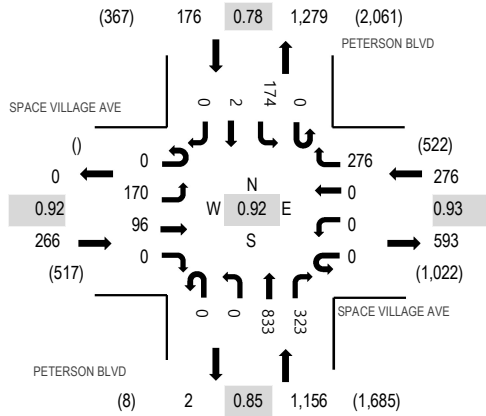
**Location:** 1 PETERSON BLVD & SPACE VILLAGE AVE PM

**Date:** Wednesday, October 26, 2022

**Peak Hour:** 04:00 PM - 05:00 PM

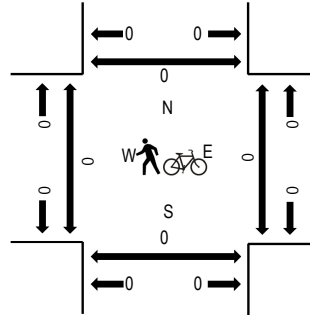
**Peak 15-Minutes:** 04:30 PM - 04:45 PM

### Peak Hour - All Vehicles



Note: Total study counts contained in parentheses.

### Peak Hour - Pedestrians/Bicycles on Crosswalk



### Traffic Counts

Interval Start Time	SPACE VILLAGE AVE Eastbound				SPACE VILLAGE AVE Westbound				PETERSON BLVD Northbound				PETERSON BLVD Southbound				Total	Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
4:00 PM	0	33	28	0	0	0	0	70	0	0	241	99	0	32	0	0	503	1,874	0	0	0	0
4:15 PM	0	47	25	0	0	0	0	67	0	0	204	79	0	54	1	0	477	1,752	0	0	0	0
4:30 PM	0	48	20	0	0	0	0	75	0	0	225	93	0	45	1	0	507	1,592	0	0	0	0
4:45 PM	0	42	23	0	0	0	0	64	0	0	163	52	0	43	0	0	387	1,368	0	0	0	0
5:00 PM	0	33	19	0	0	0	0	72	0	0	137	52	0	68	0	0	381	1,217	0	0	0	0
5:15 PM	0	43	31	2	0	0	0	53	0	0	95	42	0	51	0	0	317		0	0	0	0
5:30 PM	0	43	23	2	0	0	0	59	0	0	88	28	0	40	0	0	283		0	0	0	0
5:45 PM	0	38	15	2	0	0	0	62	0	0	59	28	0	32	0	0	236		0	0	0	0
Count Total	0	327	184	6	0	0	0	522	0	0	1,212	473	0	365	2	0	3,091		0	0	0	0
Peak Hour	0	170	96	0	0	0	0	276	0	0	833	323	0	174	2	0	1,874		0	0	0	0



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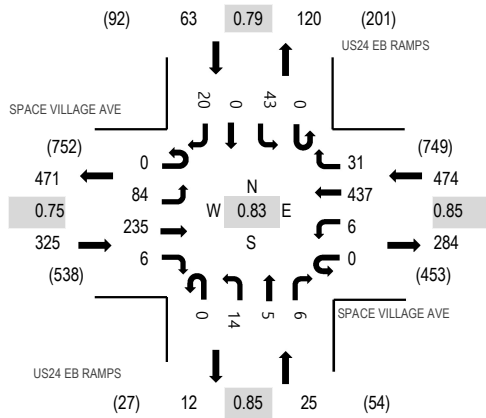
**Location:** 2 US24 EB RAMPS & SPACE VILLAGE AVE AM

**Date:** Wednesday, October 26, 2022

**Peak Hour:** 07:15 AM - 08:15 AM

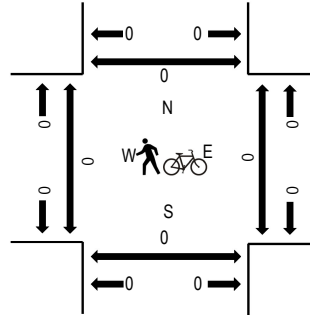
**Peak 15-Minutes:** 07:30 AM - 07:45 AM

### Peak Hour - All Vehicles



Note: Total study counts contained in parentheses.

### Peak Hour - Pedestrians/Bicycles on Crosswalk



### Traffic Counts

Interval Start Time	SPACE VILLAGE AVE Eastbound				SPACE VILLAGE AVE Westbound				US24 EB RAMPS Northbound				US24 EB RAMPS Southbound				Total	Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
7:00 AM	0	15	53	1	0	0	82	7	0	4	1	2	0	8	0	1	174	881	0	0	0	0
7:15 AM	0	23	63	2	0	1	102	6	0	2	0	0	0	8	0	6	213	887	0	0	0	0
7:30 AM	0	18	93	1	0	1	120	5	0	4	1	3	0	14	0	6	266	815	0	0	0	0
7:45 AM	0	16	48	1	0	2	128	9	0	3	1	2	0	12	0	6	228	664	0	0	0	0
8:00 AM	0	27	31	2	0	2	87	11	0	5	3	1	0	9	0	2	180	552	0	0	0	0
8:15 AM	0	19	27	1	0	1	70	1	0	7	1	2	0	7	0	5	141		0	0	0	0
8:30 AM	0	14	24	3	0	3	58	0	0	4	0	5	0	4	0	0	115		0	0	0	0
8:45 AM	0	19	34	3	0	3	47	3	0	1	1	1	0	2	0	2	116		0	0	0	0
Count Total	0	151	373	14	0	13	694	42	0	30	8	16	0	64	0	28	1,433		0	0	0	0
Peak Hour	0	84	235	6	0	6	437	31	0	14	5	6	0	43	0	20	887		0	0	0	0







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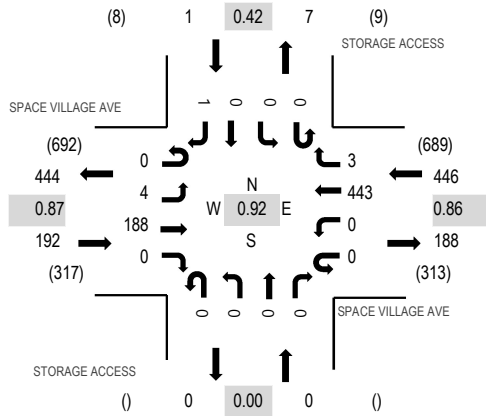
**Location:** 3 STORAGE ACCESS & SPACE VILLAGE AVE AM

**Date:** Wednesday, October 26, 2022

**Peak Hour:** 07:15 AM - 08:15 AM

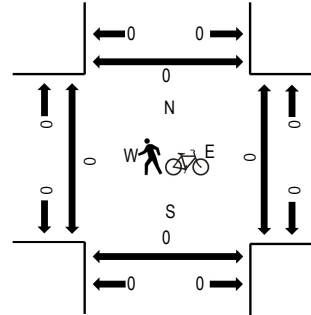
**Peak 15-Minutes:** 07:30 AM - 07:45 AM

### Peak Hour - All Vehicles



Note: Total study counts contained in parentheses.

### Peak Hour - Pedestrians/Bicycles on Crosswalk



### Traffic Counts

Interval Start Time	SPACE VILLAGE AVE Eastbound				SPACE VILLAGE AVE Westbound				STORAGE ACCESS Northbound				STORAGE ACCESS Southbound				Total	Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
7:00 AM	0	1	21	0	0	0	77	0	0	0	0	0	0	0	0	2	101	605	0	0	0	0
7:15 AM	0	0	32	0	0	0	129	0	0	0	0	0	0	0	0	0	161	639	0	0	0	0
7:30 AM	0	0	52	0	0	0	119	2	0	0	0	0	0	0	0	0	173	562	0	0	0	0
7:45 AM	0	1	50	0	0	0	118	0	0	0	0	0	0	0	0	1	170	482	0	0	0	0
8:00 AM	0	3	54	0	0	0	77	1	0	0	0	0	0	0	0	0	135	409	0	0	0	0
8:15 AM	0	0	38	0	0	0	46	0	0	0	0	0	0	0	0	0	84		0	0	0	0
8:30 AM	0	0	27	0	0	0	62	1	0	0	0	0	0	0	0	3	93		0	0	0	0
8:45 AM	0	0	38	0	0	0	57	0	0	0	0	0	0	1	0	1	97		0	0	0	0
Count Total	0	5	312	0	0	0	685	4	0	0	0	0	0	1	0	7	1,014		0	0	0	0
Peak Hour	0	4	188	0	0	0	443	3	0	0	0	0	0	0	0	1	639		0	0	0	0



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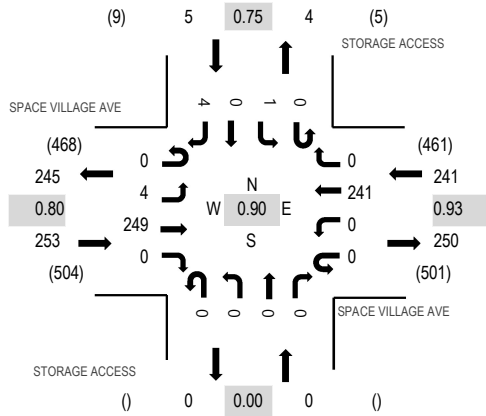
**Location:** 3 STORAGE ACCESS & SPACE VILLAGE AVE PM

**Date:** Wednesday, October 26, 2022

**Peak Hour:** 04:15 PM - 05:15 PM

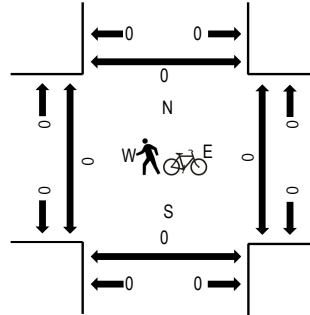
**Peak 15-Minutes:** 05:00 PM - 05:15 PM

### Peak Hour - All Vehicles



Note: Total study counts contained in parentheses.

### Peak Hour - Pedestrians/Bicycles on Crosswalk



### Traffic Counts

Interval Start Time	SPACE VILLAGE AVE Eastbound				SPACE VILLAGE AVE Westbound				STORAGE ACCESS Northbound				STORAGE ACCESS Southbound				Total	Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
4:00 PM	0	0	67	0	0	0	60	0	0	0	0	0	0	0	0	1	128	488	0	0	0	0
4:15 PM	0	0	64	0	0	0	60	0	0	0	0	0	0	0	0	1	125	499	0	0	0	0
4:30 PM	0	3	52	0	0	0	66	0	0	0	0	0	0	0	0	2	123	488	0	0	0	0
4:45 PM	0	1	50	0	0	0	59	0	0	0	0	0	0	1	0	1	112	494	0	0	0	0
5:00 PM	0	0	83	0	0	0	56	0	0	0	0	0	0	0	0	0	139	486	0	0	0	0
5:15 PM	0	0	60	0	0	0	54	0	0	0	0	0	0	0	0	0	114		0	0	0	0
5:30 PM	0	1	68	0	0	0	58	0	0	0	0	0	0	1	0	1	129		0	0	0	0
5:45 PM	0	0	55	0	0	0	48	0	0	0	0	0	0	0	0	1	104		0	0	0	0
Count Total	0	5	499	0	0	0	461	0	0	0	0	0	0	2	0	7	974		0	0	0	0
Peak Hour	0	4	249	0	0	0	241	0	0	0	0	0	0	1	0	4	499		0	0	0	0



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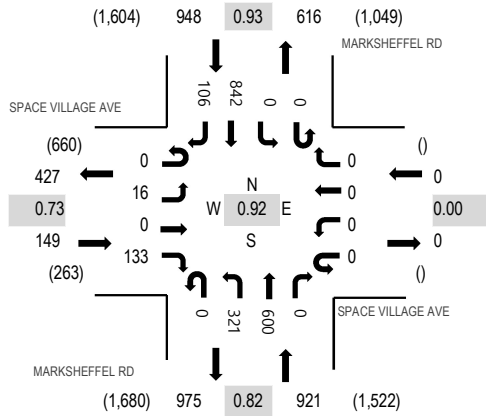
**Location:** 4 MARKSHEFFEL RD & SPACE VILLAGE AVE AM

**Date:** Wednesday, October 26, 2022

**Peak Hour:** 07:00 AM - 08:00 AM

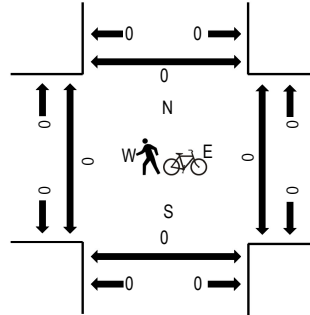
**Peak 15-Minutes:** 07:30 AM - 07:45 AM

### Peak Hour - All Vehicles



Note: Total study counts contained in parentheses.

### Peak Hour - Pedestrians/Bicycles on Crosswalk



### Traffic Counts

Interval Start Time	SPACE VILLAGE AVE Eastbound				SPACE VILLAGE AVE Westbound				MARKSHEFFEL RD Northbound				MARKSHEFFEL RD Southbound				Total	Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
7:00 AM	0	4	0	25	0	0	0	0	0	65	126	0	0	0	214	17	451	2,018	0	0	0	0
7:15 AM	0	4	0	15	0	0	0	0	0	90	156	0	0	0	225	26	516	1,950	0	0	0	0
7:30 AM	0	4	0	52	0	0	0	0	0	95	185	0	0	0	184	28	548	1,812	0	0	0	0
7:45 AM	0	4	0	41	0	0	0	0	0	71	133	0	0	0	219	35	503	1,597	0	0	0	0
8:00 AM	0	3	0	20	0	0	0	0	0	52	114	0	0	0	172	22	383	1,371	0	0	0	0
8:15 AM	0	8	0	32	0	0	0	0	0	47	114	0	0	0	165	12	378		0	0	0	0
8:30 AM	0	2	0	17	0	0	0	0	0	53	98	0	0	0	153	10	333		0	0	0	0
8:45 AM	0	6	0	26	0	0	0	0	0	35	88	0	0	0	120	2	277		0	0	0	0
Count Total	0	35	0	228	0	0	0	0	0	508	1,014	0	0	0	1,452	152	3,389		0	0	0	0
Peak Hour	0	16	0	133	0	0	0	0	0	321	600	0	0	0	842	106	2,018		0	0	0	0



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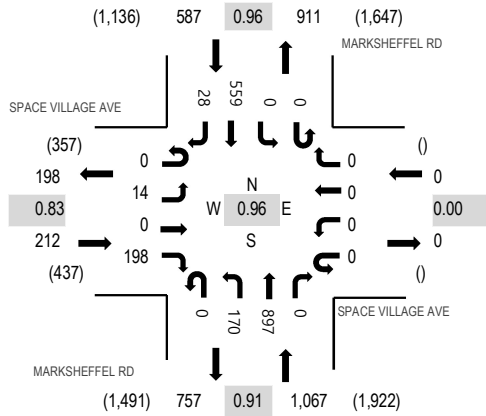
**Location:** 4 MARKSHEFFEL RD & SPACE VILLAGE AVE PM

**Date:** Wednesday, October 26, 2022

**Peak Hour:** 04:00 PM - 05:00 PM

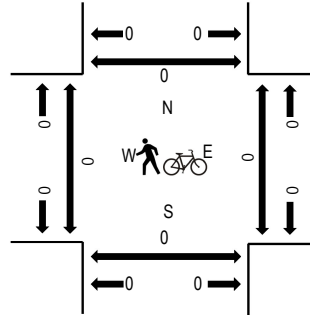
**Peak 15-Minutes:** 04:15 PM - 04:30 PM

### Peak Hour - All Vehicles



Note: Total study counts contained in parentheses.

### Peak Hour - Pedestrians/Bicycles on Crosswalk



### Traffic Counts

Interval Start Time	SPACE VILLAGE AVE Eastbound				SPACE VILLAGE AVE Westbound				MARKSHEFFEL RD Northbound				MARKSHEFFEL RD Southbound				Total	Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
4:00 PM	0	7	0	48	0	0	0	0	0	43	194	0	0	0	140	5	437	1,866	0	0	0	0
4:15 PM	0	3	0	61	0	0	0	0	0	36	234	0	0	0	138	15	487	1,866	0	0	0	0
4:30 PM	0	2	0	43	0	0	0	0	0	44	223	0	0	0	145	6	463	1,804	0	0	0	0
4:45 PM	0	2	0	46	0	0	0	0	0	47	246	0	0	0	136	2	479	1,753	0	0	0	0
5:00 PM	0	7	0	61	0	0	0	0	0	27	198	0	0	0	138	6	437	1,629	0	0	0	0
5:15 PM	0	7	0	63	0	0	0	0	1	28	200	0	0	0	119	7	425		0	0	0	0
5:30 PM	0	3	0	38	0	0	0	0	0	41	176	0	0	0	145	9	412		0	0	0	0
5:45 PM	0	2	0	44	0	0	0	0	0	41	143	0	0	0	125	0	355		0	0	0	0
Count Total	0	33	0	404	0	0	0	0	1	307	1,614	0	0	0	1,086	50	3,495		0	0	0	0
Peak Hour	0	14	0	198	0	0	0	0	0	170	897	0	0	0	559	28	1,866		0	0	0	0

Site Code: 5  
Station ID:  
SPACE VILLAGE AVE W.O. STORAGE SPACE ACC

Latitude: 0' 0.0000 Undefined

Start Time	26-Oct-22 Wed	EB	WB	Total
12:00 AM		6	4	10
01:00		10	2	12
02:00		3	8	11
03:00		1	7	8
04:00		4	21	25
05:00		33	66	99
06:00		105	182	287
07:00		157	446	603
08:00		160	246	406
09:00		147	130	277
10:00		118	146	264
11:00		158	166	324
12:00 PM		169	127	296
01:00		152	139	291
02:00		173	154	327
03:00		278	267	545
04:00		237	250	487
05:00		267	218	485
06:00		140	105	245
07:00		103	63	166
08:00		73	46	119
09:00		37	23	60
10:00		32	11	43
11:00		14	6	20
Total		2577	2833	5410
Percent		47.6%	52.4%	
AM Peak	-	08:00	07:00	-
Vol.	-	160	446	-
PM Peak	-	15:00	15:00	-
Vol.	-	278	267	-
Grand Total		2577	2833	5410
Percent		47.6%	52.4%	
ADT		ADT 5,410	AADT 5,410	

Intersection 266 at Highway 24 and Peterson Rd S - Timing table, page 1

Page 1	Phases											
	1	2	3	4	5	6	7	8	9	10	11	12
Min Green	4	4	4	4	0	4	0	0	0	0	0	0
Passage Time I	3.0	2.0	1.0	3.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0
Passage Time II	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Max Green I	8	15	30	20	0	15	0	0	0	0	0	0
Max Green II	0	0	0	0	0	0	0	0	0	0	0	0
Yellow Clearance	4.0	4.0	4.0	4.0	0.0	4.0	0.0	0.0	0.0	0.0	0.0	0.0
Red Clearance	2.0	2.0	2.0	2.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0
Added Initial	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Max Added Initial	0	0	0	0	0	0	0	0	0	0	0	0
Time Before Reduction	0	0	0	0	0	0	0	0	0	0	0	0
Cars Before Reduction	0	0	0	0	0	0	0	0	0	0	0	0
Time To Reduce	0	0	0	0	0	0	0	0	0	0	0	0
Min Passage	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Recall Green Time	0	0	0	0	0	0	0	0	0	0	0	0
Red Revert Time	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Walk Time	0	0	0	7	0	0	0	0	0	0	0	0
Pedestrian Clearance	0	0	0	20	0	0	0	0	0	0	0	0
Handicap Walk	0	0	0	0	0	0	0	0	0	0	0	0
Handicap Ped Clearance	0	0	0	0	0	0	0	0	0	0	0	0
Highway 24			X	X								
Peterson Rd S	X	X				X						
Compass Direction	S	N	W	E		S						
Through, Turn or XPed	Left,p/b	Thru	Thru	Thru		Thru						



**Intersection 266 at Highway 24 and Peterson Rd S - Sequence table, page 1**

Page 1	Ring 1 Phases				Ring 2 Phases				Ring 3 Phases			
	1	2	3	4	5	6	7	8	9	10	11	12
State 1		Vehicle										
Barrier 1												
State 2	Vehicle					Vehicle						
Barrier 2	XXXXXXXXXXXXXXXXXXXX	XXXXXXXXXXXXXXXXXXXX	XXXXXXXXXXXX	XXXXXXXXXXXX	XXXXXXXXXXXX	XXXXXXXXXXXX	XXXXXXXXXXXX	XXXXXXXXXXXX				
State 3			Vehicle									
Barrier 3												
State 4				V & P								
Barrier 4	XXXXXXXXXXXXXXXXXXXX	XXXXXXXXXXXXXXXXXXXX	XXXXXXXXXXXX	XXXXXXXXXXXX	XXXXXXXXXXXX	XXXXXXXXXXXX	XXXXXXXXXXXX	XXXXXXXXXXXX				
State 5												
Barrier 5												
State 6												
Barrier 6												
State 7												
Barrier 7												
State 8												
Barrier 8												
State 9												
Barrier 9												
State 10												
Barrier 10												
State 11												
Barrier 11												
State 12												
Barrier 12												

**Intersection 266 at Highway 24 and Peterson Rd S - Phases control table, page 1**

Page 1	Vehicle Phases			Ped Phases	
		111			111
		123456789012			123456789012
Min Recalls		2 6	Ped Recalls		
Max Recalls		2 6	Handicap Ped Recalls		
Recall If Maxed			Soft Ped Recalls		
Dual Entry			Do Not Recall Ped	2 4 6 8	
Do Not Skip			Allow Walk Reduction		
Simultaneous Gap Out			Hold In Walk		
Restricted Phases			Allow Ped Re-service		
Sequential Initial Timing			Rest In Walk	No	
Max Timer Starts For Call					
Reduction Starts For Call					
Red To Avoid Left Turn Trap					
Rest In Red		No			

**Intersection 266 at Highway 24 and Peterson Rd S - Schedule table, events 1-25**

Event Num	Enabled	Event Type	Event Parameters				Start			Duration			Stop		Repetition		Priority
			Param 1	Param 2	Param 1	Param 2	Mon	Day	Hour	Min	Sec	Minutes	Mon	Day	Repeat	Intervals	
1	Yes	Run Plan	Plan 1	Ofst #1	1	1	1	06	30	00	210	12	31	Weekly	MTWTF	Low	
2	Yes	Run Plan	Plan 2	Ofst #1	1	1	1	10	00	00	330	12	31	Weekly	MTWTF	Low	
3	Yes	Run Plan	Plan 4	Ofst #1	1	1	1	15	30	00	150	12	31	Weekly	MTWTF	Low	
4	Yes	Run Plan	Plan 2	Ofst #1	1	1	1	18	00	00	122	12	31	Weekly	MTWTF	Low	
5																	
6																	
7																	
8																	
9																	
10																	
11																	
12																	
13																	
14																	
15																	
16																	
17																	
18																	
19																	
20																	
21																	
22																	
23																	
24																	
25																	



**Intersection 266 at Highway 24 and Peterson Rd S - Coordination table, plans 3-4**

Plan 3	123456789012	111	Cycle Length		0		Phases	Splits	Alternate Mins	Alternate Passages	Alternate Maxes
			Offset 1								
Coordinated			Offset 1		0		1	0	0	0.0	0
Phases			Offset 2		0					0.0	0
			Offset 3		0		2	0	0	0.0	0
Secondary			Offset 4		0		3	0	0	0.0	0
Coordinated			Relative Secondary Offset		0		4	0	0	0.0	0
Phases			Permissive Period		Auto		5	0	0	0.0	0
Extra Time			Max Cycle Addition		0		6	0	0	0.0	0
Phases			Max Cycle Subtraction		0		7	0	0	0.0	0
Additional			Coord Actuated Period		0		8	0	0	0.0	0
Max Recalls			Top Of Cycle Green Point		End		9	0	0	0.0	0
Units	Seconds		Big Bang Preempt Recvry		No		10	0	0	0.0	0
			Big Bang Ped Recovery		No		11	0	0	0.0	0
			Min Lagging Left Split		0%		12	0	0	0.0	0
Plan 4	123456789012	111	Cycle Length		125		Phases	Splits	Alternate Mins	Alternate Passages	Alternate Maxes
			Offset 1								
Coordinated			Offset 1		1		1	24	0	0.0	25
Phases	2 6		Offset 2		0		2	47	0	0.0	53
			Offset 3		0		3	25	0	0.0	26
Secondary			Offset 4		0		4	29	0	0.0	31
Coordinated			Relative Secondary Offset		0		5	0	0	0.0	0
Phases			Permissive Period		Auto		6	71	0	0.0	83
Extra Time			Max Cycle Addition		31		7	0	0	0.0	0
Phases			Max Cycle Subtraction		31		8	0	0	0.0	0
Additional			Coord Actuated Period		0		9	0	0	0.0	0
Max Recalls			Top Of Cycle Green Point		End		10	0	0	0.0	0
Units	Seconds		Big Bang Preempt Recvry		No		11	0	0	0.0	0
			Big Bang Ped Recovery		No		12	0	0	0.0	0
			Min Lagging Left Split		0%						

## **APPENDIX B**

### **Level of Service Definitions**

The following information can be found in the Highway Capacity Manual, Transportation Research Board, 2016:  
Chapter 19 – Signalized Intersections and Chapter 20 – Two-Way Stop Controlled Intersections.

### **Automobile Level of Service (LOS) for Signalized Intersections**

Levels of service are defined to represent reasonable ranges in control delay.

#### **LOS A**

Describes operations with a control delay of 10 s/veh or less and a volume-to-capacity ratio no greater than 1.0. This level is typically assigned when the volume-to-capacity ratio is low and either progression is exceptionally favorable or the cycle length is very short. If it is due to favorable progression, most vehicles arrive during the green indication and travel through the intersection without stopping.

#### **LOS B**

Describes operations with control delay between 10 and 20 s/veh and a volume-to-capacity ratio no greater than 1.0. This level is typically assigned when the volume-to-capacity ratio is low and either progression is highly favorable or the cycle length is short. More vehicles stop than with LOS A.

#### **LOS C**

Describes operations with control delay between 20 and 35 s/veh and a volume-to-capacity ratio no greater than 1.0. This level is typically assigned when progression is favorable or the cycle length is moderate. Individual *cycle failures* (i.e., one or more queued vehicles are not able to depart as a result of insufficient capacity during the cycle) may begin to appear at this level. The number of vehicles stopping is significant, although many vehicles still pass through the intersection without stopping.

#### **LOS D**

Describes operations with control delay between 35 and 55 s/veh and a volume-to-capacity ratio no greater than 1.0. This level is typically assigned when the volume-to-capacity ratio is high and either progression is ineffective or the cycle length is long. Many vehicles stop and individual cycle failures are noticeable.

#### **LOS E**

Describes operations with control delay between 55 and 80 s/veh and a volume-to-capacity ratio no greater than 1.0. This level is typically assigned when the volume-to-capacity ratio is high, progression is unfavorable, and the cycle length is long. Individual cycle failures are frequent.

#### **LOS F**

Describes operations with control delay exceeding 80 s/veh or a volume-to-capacity ratio greater than 1.0. This level is typically assigned when the volume-to-capacity ratio is very high, progression is very poor, and the cycle length is long. Most cycles fail to clear the queue.

### **Level of Service (LOS) for Unsignalized TWSC Intersections**

Level of Service ( $v/c \leq 1.0$ )	Average Control Delay (s/veh)
A	0 - 10
B	> 10 - 15
C	> 15 - 25
D	> 25 - 35
E	> 35 - 50
F	> 50



## **APPENDIX C**






















### **Capacity Worksheets**

# Timings

## Existing Traffic Conditions

### 1: Peterson Boulevard & EB Highway 24 Off Ramp/Space Village Avenue

AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	56	145	443	94	0	358	0	121	56	148	681	0
Future Volume (vph)	56	145	443	94	0	358	0	121	56	148	681	0
Satd. Flow (prot)	0	1837	1583	1770	0	1583	0	3539	1583	1770	3539	0
Flt Permitted		0.986		0.621						0.567		
Satd. Flow (perm)	0	1837	1583	1157	0	1583	0	3539	1583	1056	3539	0
Satd. Flow (RTOR)			270			389			164			
Lane Group Flow (vph)	0	219	482	102	0	389	0	132	61	161	740	0
Turn Type	Split	NA	Perm	Perm		Perm		NA	Perm	pm+pt	NA	
Protected Phases	4	4						2		1	6	
Permitted Phases			4	8		8			2	6		
Detector Phase	4	4	4	8		8		2	2	1	6	
Switch Phase												
Minimum Initial (s)	4.0	4.0	4.0	4.0		4.0		4.0	4.0	4.0	4.0	
Minimum Split (s)	10.0	10.0	10.0	10.0		10.0		10.0	10.0	10.0	10.0	
Total Split (s)	26.0	26.0	26.0	26.0		26.0		30.0	30.0	18.0	48.0	
Total Split (%)	26.0%	26.0%	26.0%	26.0%		26.0%		30.0%	30.0%	18.0%	48.0%	
Yellow Time (s)	4.0	4.0	4.0	4.0		4.0		4.0	4.0	4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0		2.0		2.0	2.0	2.0	2.0	
Lost Time Adjust (s)		0.0	0.0	0.0		0.0		0.0	0.0	0.0	0.0	
Total Lost Time (s)		6.0	6.0	6.0		6.0		6.0	6.0	6.0	6.0	
Lead/Lag								Lag	Lag	Lead		
Lead-Lag Optimize?								Yes	Yes	Yes		
Recall Mode	None	None	None	None		None		C-Max	C-Max	None	C-Max	
Act Effct Green (s)		18.4	18.4	13.9		13.9		33.4	33.4	49.6	49.6	
Actuated g/C Ratio		0.18	0.18	0.14		0.14		0.33	0.33	0.50	0.50	
v/c Ratio		0.65	0.94	0.63		0.70		0.11	0.10	0.27	0.42	
Control Delay		47.0	46.2	57.1		11.2		26.5	0.3	17.2	18.2	
Queue Delay		0.0	0.0	0.0		0.0		0.0	0.0	0.0	0.0	
Total Delay		47.0	46.2	57.1		11.2		26.5	0.3	17.2	18.2	
LOS		D	D	E		B		C	A	B	B	
Approach Delay		46.4			20.8			18.2			18.1	
Approach LOS		D			C			B			B	
Queue Length 50th (ft)		128	141	62		0		31	0	57	157	
Queue Length 95th (ft)		206	#337	111		81		60	0	109	232	
Internal Link Dist (ft)		419			647			421			121	
Turn Bay Length (ft)									250	280		
Base Capacity (vph)		367	532	231		627		1182	638	610	1756	
Starvation Cap Reductn		0	0	0		0		0	0	0	0	
Spillback Cap Reductn		0	0	0		0		0	0	0	0	
Storage Cap Reductn		0	0	0		0		0	0	0	0	
Reduced v/c Ratio		0.60	0.91	0.44		0.62		0.11	0.10	0.26	0.42	

#### Intersection Summary

Cycle Length: 100

Actuated Cycle Length: 100

Offset: 20 (20%), Referenced to phase 2:NBT and 6:SBTL, Start of Green

Natural Cycle: 45

Control Type: Actuated-Coordinated

# Timings

# Existing Traffic Conditions

## 1: Peterson Boulevard & EB Highway 24 Off Ramp/Space Village Avenue

AM Peak Hour

Maximum v/c Ratio: 0.94

Intersection Signal Delay: 27.4

Intersection LOS: C

Intersection Capacity Utilization 64.8%






ICU Level of Service C

Analysis Period (min) 15

# 95th percentile volume exceeds capacity, queue may be longer.










Queue shown is maximum after two cycles.

Splits and Phases: 1: Peterson Boulevard & EB Highway 24 Off Ramp/Space Village Avenue

 Ø1	 Ø2 (R)	 Ø4	 Ø8
18 s	30 s	26 s	26 s
 Ø6 (R)			
48 s			

HCM 6th TWSC  
2: Space Village Avenue & EB US 24 On/Off Ramps

Existing Traffic Conditions  
AM Peak Hour

Intersection												
Int Delay, s/veh	2.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	84	235	6	6	437	31	14	5	6	43	0	20
Future Vol, veh/h	84	235	6	6	437	31	14	5	6	43	0	20
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	Free
Storage Length	295	-	155	490	-	105	-	-	-	65	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	91	255	7	7	475	34	15	5	7	47	0	22

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	509	0	0	262	0	0	943	960	255	936	-	-
Stage 1	-	-	-	-	-	-	437	437	-	489	-	-
Stage 2	-	-	-	-	-	-	506	523	-	447	-	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	-	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	-	-
Pot Cap-1 Maneuver	1056	-	-	1302	-	-	243	257	784	245	0	0
Stage 1	-	-	-	-	-	-	598	579	-	561	0	0
Stage 2	-	-	-	-	-	-	549	530	-	591	0	0
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1056	-	-	1302	-	-	226	234	784	222	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	226	234	-	222	-	-
Stage 1	-	-	-	-	-	-	547	529	-	513	-	-
Stage 2	-	-	-	-	-	-	546	527	-	530	-	-





Approach	EB			WB			NB			SB		
HCM Control Delay, s	2.3			0.1			19.5			25.5		
HCM LOS							C			D		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	275	1056	-	-	1302	-	-	222	-
HCM Lane V/C Ratio	0.099	0.086	-	-	0.005	-	-	0.211	-
HCM Control Delay (s)	19.5	8.7	-	-	7.8	-	-	25.5	0
HCM Lane LOS	C	A	-	-	A	-	-	D	A
HCM 95th %tile Q(veh)	0.3	0.3	-	-	0	-	-	0.8	-

HCM 6th TWSC  
3: Space Village Avenue & Storage Sense Access

Existing Traffic Conditions  
AM Peak Hour

Intersection						
Int Delay, s/veh	0.1					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	4	188	443	3	0	1
Future Vol, veh/h	4	188	443	3	0	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	125	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	4	204	482	3	0	1
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	485	0	-	0	694	482
Stage 1	-	-	-	-	482	-
Stage 2	-	-	-	-	212	-
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	1078	-	-	-	409	584
Stage 1	-	-	-	-	621	-
Stage 2	-	-	-	-	823	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1078	-	-	-	407	584
Mov Cap-2 Maneuver	-	-	-	-	407	-
Stage 1	-	-	-	-	619	-
Stage 2	-	-	-	-	823	-
Approach	EB	WB		SB		
HCM Control Delay, s	0.2	0		11.2		
HCM LOS				B		
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1078	-	-	-	-	584
HCM Lane V/C Ratio	0.004	-	-	-	-	0.002
HCM Control Delay (s)	8.4	0	-	-	-	11.2
HCM Lane LOS	A	A	-	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	-	0

HCM 6th TWSC  
4: Marksheffel Road & Space Village Avenue

Existing Traffic Conditions  
AM Peak Hour

Intersection												
Int Delay, s/veh	37.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑	↱	↰	↑	↱	↰	↑↑	↱	↰	↑↑	↱
Traffic Vol, veh/h	16	44	133	8	11	2	321	600	13	8	842	106
Future Vol, veh/h	16	44	133	8	11	2	321	600	13	8	842	106
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	215	-	250	290	-	220	390	-	430	390	-	415
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	17	48	145	9	12	2	349	652	14	9	915	115

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1963	2297	458	1850	2398	326	1030	0	0	666	0	0
Stage 1	933	933	-	1350	1350	-	-	-	-	-	-	-
Stage 2	1030	1364	-	500	1048	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	38	~ 38	550	46	33	670	670	-	-	919	-	-
Stage 1	286	343	-	159	217	-	-	-	-	-	-	-
Stage 2	250	214	-	521	303	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	~ 9	~ 18	550	-	16	670	670	-	-	919	-	-
Mov Cap-2 Maneuver	~ 9	~ 18	-	-	16	-	-	-	-	-	-	-
Stage 1	137	340	-	76	104	-	-	-	-	-	-	-
Stage 2	106	103	-	327	300	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s\$	384.4		5.5	0.1
HCM LOS	F	-		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	EBLn3	WBLn1	WBLn2	WBLn3	SBL	SBT	SBR
Capacity (veh/h)	670	-	-	9	18	550	-	16	670	919	-	-
HCM Lane V/C Ratio	0.521	-	-	1.932	2.657	0.263	-	0.747	0.003	0.009	-	-
HCM Control Delay (s)	16.1	-	-	\$ 1240	\$ 1192.7	13.9	-	\$ 454	10.4	9	-	-
HCM Lane LOS	C	-	-	F	F	B	-	F	B	A	-	-
HCM 95th %tile Q(veh)	3	-	-	3.1	6.5	1	-	1.9	0	0	-	-






















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

# Timings

# Existing Traffic Conditions

## 1: Peterson Boulevard & EB Highway 24 Off Ramp/Space Village Avenue

PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	170	96	0	0	0	276	0	833	323	174	2	0
Future Volume (vph)	170	96	0	0	0	276	0	833	323	174	2	0
Satd. Flow (prot)	0	1805	1863	1863	0	1583	0	3539	1583	1770	3539	0
Flt Permitted		0.969								0.201		
Satd. Flow (perm)	0	1805	1863	1863	0	1583	0	3539	1583	374	3539	0
Satd. Flow (RTOR)						335			348			
Lane Group Flow (vph)	0	289	0	0	0	300	0	905	351	189	2	0
Turn Type	Split	NA	Perm	Perm		Perm		NA	Perm	pm+pt	NA	
Protected Phases	4	4						2		1	6	
Permitted Phases			4	8		8			2	6		
Detector Phase	4	4	4	8		8		2	2	1	6	
Switch Phase												
Minimum Initial (s)	4.0	4.0	4.0	4.0		4.0		4.0	4.0	4.0	4.0	
Minimum Split (s)	10.0	10.0	10.0	10.0		10.0		10.0	10.0	10.0	10.0	
Total Split (s)	29.0	29.0	29.0	25.0		25.0		47.0	47.0	24.0	71.0	
Total Split (%)	23.2%	23.2%	23.2%	20.0%		20.0%		37.6%	37.6%	19.2%	56.8%	
Yellow Time (s)	4.0	4.0	4.0	4.0		4.0		4.0	4.0	4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0		2.0		2.0	2.0	2.0	2.0	
Lost Time Adjust (s)		0.0	0.0	0.0		0.0		0.0	0.0	0.0	0.0	
Total Lost Time (s)		6.0	6.0	6.0		6.0		6.0	6.0	6.0	6.0	
Lead/Lag								Lag	Lag	Lead		
Lead-Lag Optimize?								Yes	Yes	Yes		
Recall Mode	None	None	None	None		None		C-Max	C-Max	None	C-Max	
Act Effect Green (s)		22.2				7.4		59.3	59.3	77.4	77.4	
Actuated g/C Ratio		0.18				0.06		0.47	0.47	0.62	0.62	
v/c Ratio		0.90				0.74		0.54	0.38	0.51	0.00	
Control Delay		81.3				14.7		26.2	3.9	16.1	11.0	
Queue Delay		0.0				0.0		0.0	0.0	0.0	0.0	
Total Delay		81.3				14.7		26.2	3.9	16.1	11.0	
LOS		F				B		C	A	B	B	
Approach Delay		81.3			14.7			20.0			16.0	
Approach LOS		F			B			B			B	
Queue Length 50th (ft)		230				0		255	1	60	0	
Queue Length 95th (ft)		#385				56		402	64	112	2	
Internal Link Dist (ft)		419			647			421			121	
Turn Bay Length (ft)									250	280		
Base Capacity (vph)		332				524		1678	933	434	2191	
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		0.87				0.57		0.54	0.38	0.44	0.00	

### Intersection Summary

Cycle Length: 125

Actuated Cycle Length: 125

Offset: 1 (1%), Referenced to phase 2:NBT and 6:SBTL, Start of Green

Natural Cycle: 70

Control Type: Actuated-Coordinated

# Timings

## Existing Traffic Conditions

### 1: Peterson Boulevard & EB Highway 24 Off Ramp/Space Village Avenue

PM Peak Hour

Maximum v/c Ratio: 0.90

Intersection Signal Delay: 27.5

Intersection LOS: C

Intersection Capacity Utilization 69.6%







ICU Level of Service C

Analysis Period (min) 15

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.










Splits and Phases: 1: Peterson Boulevard & EB Highway 24 Off Ramp/Space Village Avenue

 Ø1	 Ø2 (R)	 Ø4	 Ø8
24 s	47 s	29 s	25 s
 Ø6 (R)			
71 s			



HCM 6th TWSC  
2: Space Village Avenue & EB US 24 On/Off Ramps

Existing Traffic Conditions  
PM Peak Hour

Intersection												
Int Delay, s/veh	6.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	325	236	11	5	222	18	12	8	10	41	0	48
Future Vol, veh/h	325	236	11	5	222	18	12	8	10	41	0	48
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	Free
Storage Length	295	-	155	490	-	105	-	-	-	65	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	353	257	12	5	241	20	13	9	11	45	0	52

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	261	0	0	269	0	0	1224	1234	257	1230	-	-
Stage 1	-	-	-	-	-	-	963	963	-	251	-	-
Stage 2	-	-	-	-	-	-	261	271	-	979	-	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	-	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	-	-
Pot Cap-1 Maneuver	1303	-	-	1295	-	-	156	177	782	154	0	0
Stage 1	-	-	-	-	-	-	307	334	-	753	0	0
Stage 2	-	-	-	-	-	-	744	685	-	301	0	0
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1303	-	-	1295	-	-	123	129	782	114	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	123	129	-	114	-	-
Stage 1	-	-	-	-	-	-	224	243	-	549	-	-
Stage 2	-	-	-	-	-	-	741	682	-	209	-	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	5			0.2			30.4			55.5		
HCM LOS							D			F		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	174	1303	-	-	1295	-	-	114	-
HCM Lane V/C Ratio	0.187	0.271	-	-	0.004	-	-	0.391	-
HCM Control Delay (s)	30.4	8.8	-	-	7.8	-	-	55.5	0
HCM Lane LOS	D	A	-	-	A	-	-	F	A
HCM 95th %tile Q(veh)	0.7	1.1	-	-	0	-	-	1.6	-

HCM 6th TWSC  
3: Space Village Avenue & Storage Sense Access

Existing Traffic Conditions  
PM Peak Hour

Intersection						
Int Delay, s/veh	0.2					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↑	↗	↘	
Traffic Vol, veh/h	4	249	241	0	1	4
Future Vol, veh/h	4	249	241	0	1	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	125	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	4	271	262	0	1	4

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	262	0	0	541	262
Stage 1	-	-	-	262	-
Stage 2	-	-	-	279	-
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	1302	-	-	502	777
Stage 1	-	-	-	782	-
Stage 2	-	-	-	768	-
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	1302	-	-	500	777
Mov Cap-2 Maneuver	-	-	-	500	-
Stage 1	-	-	-	779	-
Stage 2	-	-	-	768	-

Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	10.2
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1302	-	-	-	699
HCM Lane V/C Ratio	0.003	-	-	-	0.008
HCM Control Delay (s)	7.8	0	-	-	10.2
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0

HCM 6th TWSC  
4: Marksheffel Road & Space Village Avenue






















Existing Traffic Conditions  
PM Peak Hour

Intersection												
Int Delay, s/veh	22											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑	↱	↰	↑	↱	↰	↑↑	↱	↰	↑↑	↱
Traffic Vol, veh/h	14	32	198	31	10	1	170	897	18	1	559	28
Future Vol, veh/h	14	32	198	31	10	1	170	897	18	1	559	28
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	215	-	250	290	-	220	390	-	430	390	-	415
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	15	35	215	34	11	1	185	975	20	1	608	30
Major/Minor	Minor2		Minor1		Major1		Major2		Major2		Major2	
Conflicting Flow All	1473	1975	304	1669	1985	488	638	0	0	995	0	0
Stage 1	610	610	-	1345	1345	-	-	-	-	-	-	-
Stage 2	863	1365	-	324	640	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	88	61	692	63	61	526	942	-	-	691	-	-
Stage 1	448	483	-	160	218	-	-	-	-	-	-	-
Stage 2	316	214	-	662	468	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	62	49	692	~ 16	49	526	942	-	-	691	-	-
Mov Cap-2 Maneuver	62	49	-	~ 16	49	-	-	-	-	-	-	-
Stage 1	360	483	-	129	175	-	-	-	-	-	-	-
Stage 2	238	172	-	423	468	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB		SB		SB	
HCM Control Delay, s	38.4		\$ 764.3		1.5		0					
HCM LOS	E		F									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	EBLn3	WBLn1	WBLn2	WBLn3	SBL	SBT	SBR
Capacity (veh/h)	942	-	-	62	49	692	16	49	526	691	-	-
HCM Lane V/C Ratio	0.196	-	-	0.245	0.71	0.311	2.106	0.222	0.002	0.002	-	-
HCM Control Delay (s)	9.8	-	-	81	179.7	12.5	1003.4	98.3	11.9	10.2	-	-
HCM Lane LOS	A	-	-	F	F	B	F	F	B	B	-	-
HCM 95th %tile Q(veh)	0.7	-	-	0.9	2.8	1.3	4.8	0.7	0	0	-	-
Notes												
~: Volume exceeds capacity		\$: Delay exceeds 300s		+: Computation Not Defined		*: All major volume in platoon						

# Timings

# Background Traffic Conditions

1: Peterson Boulevard & EB Highway 24 Off Ramp/Space Village Avenue AM Peak Hour - Year 2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	58	151	461	98	0	372	0	126	58	154	708	0
Future Volume (vph)	58	151	461	98	0	372	0	126	58	154	708	0
Satd. Flow (prot)	0	1837	1583	1770	0	1583	0	3539	1583	1770	3539	0
Flt Permitted		0.986		0.617						0.560		
Satd. Flow (perm)	0	1837	1583	1149	0	1583	0	3539	1583	1043	3539	0
Satd. Flow (RTOR)			257			404			164			
Lane Group Flow (vph)	0	227	501	107	0	404	0	137	63	167	770	0
Turn Type	Split	NA	Perm	Perm		Perm		NA	Perm	pm+pt	NA	
Protected Phases	4	4						2		1	6	
Permitted Phases			4	8		8			2	6		
Detector Phase	4	4	4	8		8		2	2	1	6	
Switch Phase												
Minimum Initial (s)	4.0	4.0	4.0	4.0		4.0		4.0	4.0	4.0	4.0	
Minimum Split (s)	10.0	10.0	10.0	10.0		10.0		10.0	10.0	10.0	10.0	
Total Split (s)	26.0	26.0	26.0	26.0		26.0		30.0	30.0	18.0	48.0	
Total Split (%)	26.0%	26.0%	26.0%	26.0%		26.0%		30.0%	30.0%	18.0%	48.0%	
Yellow Time (s)	4.0	4.0	4.0	4.0		4.0		4.0	4.0	4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0		2.0		2.0	2.0	2.0	2.0	
Lost Time Adjust (s)		0.0	0.0	0.0		0.0		0.0	0.0	0.0	0.0	
Total Lost Time (s)		6.0	6.0	6.0		6.0		6.0	6.0	6.0	6.0	
Lead/Lag								Lag	Lag	Lead		
Lead-Lag Optimize?								Yes	Yes	Yes		
Recall Mode	None	None	None	None		None		C-Max	C-Max	None	C-Max	
Act Effct Green (s)		19.5	19.5	14.2		14.2		31.8	31.8	48.3	48.3	
Actuated g/C Ratio		0.20	0.20	0.14		0.14		0.32	0.32	0.48	0.48	
v/c Ratio		0.63	0.97	0.66		0.71		0.12	0.10	0.29	0.45	
Control Delay		45.7	54.0	58.4		11.2		27.1	0.3	17.7	19.1	
Queue Delay		0.0	0.0	0.0		0.0		0.0	0.0	0.0	0.0	
Total Delay		45.7	54.0	58.4		11.2		27.1	0.3	17.7	19.1	
LOS		D	D	E		B		C	A	B	B	
Approach Delay		51.4			21.1			18.6			18.9	
Approach LOS		D			C			B			B	
Queue Length 50th (ft)		133	168	65		0		33	0	60	167	
Queue Length 95th (ft)		213	#380	116		83		62	0	113	243	
Internal Link Dist (ft)		419			647			421			121	
Turn Bay Length (ft)									250	280		
Base Capacity (vph)		367	522	229		639		1126	615	591	1708	
Starvation Cap Reductn		0	0	0		0		0	0	0	0	
Spillback Cap Reductn		0	0	0		0		0	0	0	0	
Storage Cap Reductn		0	0	0		0		0	0	0	0	
Reduced v/c Ratio		0.62	0.96	0.47		0.63		0.12	0.10	0.28	0.45	
Intersection Summary												
Cycle Length: 100												
Actuated Cycle Length: 100												
Offset: 20 (20%), Referenced to phase 2:NBT and 6:SBTL, Start of Green												
Natural Cycle: 45												
Control Type: Actuated-Coordinated												

## Timings

## Background Traffic Conditions

1: Peterson Boulevard & EB Highway 24 Off Ramp/Space Village Avenue AM Peak Hour - Year 2024

Maximum v/c Ratio: 0.97

Intersection Signal Delay: 29.3

Intersection LOS: C

Intersection Capacity Utilization 66.9%







ICU Level of Service C

Analysis Period (min) 15

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.










Splits and Phases: 1: Peterson Boulevard & EB Highway 24 Off Ramp/Space Village Avenue

 Ø1	 Ø2 (R)	 Ø4	 Ø8
18 s	30 s	26 s	26 s
 Ø6 (R)			
48 s			

# HCM 6th TWSC

## 2: Space Village Avenue & EB US 24 On/Off Ramps

Background Traffic Conditions  
AM Peak Hour - Year 2024

Intersection												
Int Delay, s/veh	2.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	87	244	6	6	455	32	15	5	6	45	0	21
Future Vol, veh/h	87	244	6	6	455	32	15	5	6	45	0	21
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	Free
Storage Length	295	-	155	490	-	105	-	-	-	65	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	95	265	7	7	495	35	16	5	7	49	0	23

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	530	0	0	272	0	0	982	999	265	974	-	-
Stage 1	-	-	-	-	-	-	455	455	-	509	-	-
Stage 2	-	-	-	-	-	-	527	544	-	465	-	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	-	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	-	-
Pot Cap-1 Maneuver	1037	-	-	1291	-	-	228	243	774	231	0	0
Stage 1	-	-	-	-	-	-	585	569	-	547	0	0
Stage 2	-	-	-	-	-	-	535	519	-	578	0	0
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1037	-	-	1291	-	-	211	219	774	208	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	211	219	-	208	-	-
Stage 1	-	-	-	-	-	-	531	517	-	497	-	-
Stage 2	-	-	-	-	-	-	532	516	-	515	-	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	2.3			0.1			20.8			27.5		
HCM LOS							C			D		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	256	1037	-	-	1291	-	-	208	-
HCM Lane V/C Ratio	0.11	0.091	-	-	0.005	-	-	0.235	-
HCM Control Delay (s)	20.8	8.8	-	-	7.8	-	-	27.5	0
HCM Lane LOS	C	A	-	-	A	-	-	D	A
HCM 95th %tile Q(veh)	0.4	0.3	-	-	0	-	-	0.9	-

HCM 6th TWSC  
3: Space Village Avenue & Storage Sense Access

Background Traffic Conditions  
AM Peak Hour - Year 2024

Intersection						
Int Delay, s/veh	0.1					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↑	↗	↘	
Traffic Vol, veh/h	4	196	461	3	0	1
Future Vol, veh/h	4	196	461	3	0	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	125	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	4	213	501	3	0	1
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	504	0	-	0	722	501
Stage 1	-	-	-	-	501	-
Stage 2	-	-	-	-	221	-
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	1061	-	-	-	394	570
Stage 1	-	-	-	-	609	-
Stage 2	-	-	-	-	816	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1061	-	-	-	392	570
Mov Cap-2 Maneuver	-	-	-	-	392	-
Stage 1	-	-	-	-	607	-
Stage 2	-	-	-	-	816	-
Approach	EB	WB		SB		
HCM Control Delay, s	0.2	0		11.3		
HCM LOS	B					
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1061	-	-	-	570	
HCM Lane V/C Ratio	0.004	-	-	-	0.002	
HCM Control Delay (s)	8.4	0	-	-	11.3	
HCM Lane LOS	A	A	-	-	B	
HCM 95th %tile Q(veh)	0	-	-	-	0	

HCM 6th TWSC  
4: Marksheffel Road & Space Village Avenue

Background Traffic Conditions  
AM Peak Hour - Year 2024

Intersection												
Int Delay, s/veh	65.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑	↱	↰	↑	↱	↰	↑↑	↱	↰	↑↑	↱
Traffic Vol, veh/h	17	46	138	8	11	2	334	624	14	8	876	110
Future Vol, veh/h	17	46	138	8	11	2	334	624	14	8	876	110
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	215	-	250	290	-	220	390	-	430	390	-	415
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	18	50	150	9	12	2	363	678	15	9	952	120

Major/Minor	Minor2		Minor1		Major1		Major2		Major2		Major2	
Conflicting Flow All	2041	2389	476	1923	2494	339	1072	0	0	693	0	0
Stage 1	970	970	-	1404	1404	-	-	-	-	-	-	-
Stage 2	1071	1419	-	519	1090	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	33	~ 33	535	40	29	657	646	-	-	898	-	-
Stage 1	272	330	-	147	204	-	-	-	-	-	-	-
Stage 2	236	201	-	508	289	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	~ 4	~ 14	535	-	13	657	646	-	-	898	-	-
Mov Cap-2 Maneuver	~ 4	~ 14	-	-	13	-	-	-	-	-	-	-
Stage 1	119	327	-	64	89	-	-	-	-	-	-	-
Stage 2	89	88	-	307	286	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s\$	680.2		6	0.1
HCM LOS	F	-		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	EBLn3	WBLn1	WBLn2	WBLn3	SBL	SBT	SBR
Capacity (veh/h)	646	-	-	4	14	535	-	13	657	898	-	-
HCM Lane V/C Ratio	0.562	-	-	4.62	3.571	0.28	-	0.92	0.003	0.01	-	-
HCM Control Delay (s)	17.5	-	-	\$ 3311.	\$ 1705.6	14.3	-	\$ 602.9	10.5	9	-	-
HCM Lane LOS	C	-	-	F	F	B	-	F	B	A	-	-
HCM 95th %tile Q(veh)	3.5	-	-	3.7	7.1	1.1	-	2.1	0	0	-	-

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



























# Timings

## 4: Marksheffel Road & Space Village Avenue

### Background Traffic Conditions

AM Peak Hour - Year 2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	17	46	138	8	11	2	334	624	14	8	876	110
Future Volume (vph)	17	46	138	8	11	2	334	624	14	8	876	110
Satd. Flow (prot)	1770	1863	1583	1770	1863	1583	1770	3539	1583	1770	3539	1583
Flt Permitted	0.632			0.724			0.220			0.394		
Satd. Flow (perm)	1177	1863	1583	1349	1863	1583	410	3539	1583	734	3539	1583
Satd. Flow (RTOR)			183			183			131			183
Lane Group Flow (vph)	18	50	150	9	12	2	363	678	15	9	952	120
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Total Split (s)	10.0	19.0	19.0	10.0	19.0	19.0	38.0	86.0	86.0	10.0	58.0	58.0
Total Split (%)	8.0%	15.2%	15.2%	8.0%	15.2%	15.2%	30.4%	68.8%	68.8%	8.0%	46.4%	46.4%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	C-Min	C-Min	None	C-Min	C-Min
Act Effct Green (s)	12.4	10.8	10.8	10.6	7.9	7.9	99.6	97.2	97.2	81.8	76.1	76.1
Actuated g/C Ratio	0.10	0.09	0.09	0.08	0.06	0.06	0.80	0.78	0.78	0.65	0.61	0.61
v/c Ratio	0.12	0.31	0.50	0.07	0.10	0.01	0.70	0.25	0.01	0.02	0.44	0.12
Control Delay	47.1	57.3	9.4	45.2	56.2	0.0	14.0	5.6	0.0	7.4	17.0	0.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	47.1	57.3	9.4	45.2	56.2	0.0	14.0	5.6	0.0	7.4	17.0	0.7
LOS	D	E	A	D	E	A	B	A	A	A	B	A
Approach Delay		23.5			47.0			8.4			15.1	
Approach LOS		C			D			A			B	
Queue Length 50th (ft)	14	39	0	7	9	0	47	45	0	1	173	0
Queue Length 95th (ft)	34	79	38	21	30	0	179	167	0	7	392	6
Internal Link Dist (ft)		398			546			433			422	
Turn Bay Length (ft)	215		250	290		220	390		430	390		415
Base Capacity (vph)	148	215	344	135	193	328	674	2774	1269	527	2155	1035
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.12	0.23	0.44	0.07	0.06	0.01	0.54	0.24	0.01	0.02	0.44	0.12

### Intersection Summary

Cycle Length: 125

Actuated Cycle Length: 125

Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green

Natural Cycle: 60

Control Type: Actuated-Coordinated

# Timings 4: Marksheffel Road & Space Village Avenue

## Background Traffic Conditions

AM Peak Hour - Year 2024

Maximum v/c Ratio: 0.70

Intersection Signal Delay: 13.2









Intersection LOS: B

Intersection Capacity Utilization 65.3%

ICU Level of Service C

Analysis Period (min) 15






















Splits and Phases: 4: Marksheffel Road & Space Village Avenue

 Ø1	 Ø2 (R)		 Ø3	 Ø4
10 s	86 s		10 s	19 s
 Ø5	 Ø6 (R)		 Ø7	 Ø8
38 s	58 s		10 s	19 s

# Timings

# Background Traffic Conditions

1: Peterson Boulevard & EB Highway 24 Off Ramp/Space Village Avenue PM Peak Hour - Year 2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	177	100	0	0	0	287	0	866	336	181	2	0
Future Volume (vph)	177	100	0	0	0	287	0	866	336	181	2	0
Satd. Flow (prot)	0	1805	1863	1863	0	1583	0	3539	1583	1770	3539	0
Flt Permitted		0.969								0.179		
Satd. Flow (perm)	0	1805	1863	1863	0	1583	0	3539	1583	333	3539	0
Satd. Flow (RTOR)						329			348			
Lane Group Flow (vph)	0	301	0	0	0	312	0	941	365	197	2	0
Turn Type	Split	NA	Perm	Perm		Perm		NA	Perm	pm+pt	NA	
Protected Phases	4	4						2		1	6	
Permitted Phases			4	8		8			2	6		
Detector Phase	4	4	4	8		8		2	2	1	6	
Switch Phase												
Minimum Initial (s)	4.0	4.0	4.0	4.0		4.0		4.0	4.0	4.0	4.0	
Minimum Split (s)	10.0	10.0	10.0	10.0		10.0		10.0	10.0	10.0	10.0	
Total Split (s)	29.0	29.0	29.0	25.0		25.0		47.0	47.0	24.0	71.0	
Total Split (%)	23.2%	23.2%	23.2%	20.0%		20.0%		37.6%	37.6%	19.2%	56.8%	
Yellow Time (s)	4.0	4.0	4.0	4.0		4.0		4.0	4.0	4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0		2.0		2.0	2.0	2.0	2.0	
Lost Time Adjust (s)		0.0	0.0	0.0		0.0		0.0	0.0	0.0	0.0	
Total Lost Time (s)		6.0	6.0	6.0		6.0		6.0	6.0	6.0	6.0	
Lead/Lag								Lag	Lag	Lead		
Lead-Lag Optimize?								Yes	Yes	Yes		
Recall Mode	None	None	None	None		None		C-Max	C-Max	None	C-Max	
Act Effct Green (s)		22.5				8.2		57.1	57.1	76.3	76.3	
Actuated g/C Ratio		0.18				0.07		0.46	0.46	0.61	0.61	
v/c Ratio		0.93				0.76		0.58	0.40	0.55	0.00	
Control Delay		85.2				17.1		28.7	4.9	17.7	11.5	
Queue Delay		0.0				0.0		0.0	0.0	0.0	0.0	
Total Delay		85.2				17.1		28.7	4.9	17.7	11.5	
LOS		F				B		C	A	B	B	
Approach Delay		85.2			17.1			22.1			17.7	
Approach LOS		F			B			C			B	
Queue Length 50th (ft)		241				0		276	7	63	0	
Queue Length 95th (ft)		#409				71		444	82	122	2	
Internal Link Dist (ft)		419			647			421			121	
Turn Bay Length (ft)									250	280		
Base Capacity (vph)		332				519		1615	911	416	2161	
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		0.91				0.60		0.58	0.40	0.47	0.00	
Intersection Summary												
Cycle Length: 125												
Actuated Cycle Length: 125												
Offset: 1 (1%), Referenced to phase 2:NBT and 6:SBTL, Start of Green												
Natural Cycle: 80												
Control Type: Actuated-Coordinated												

## Timings

## Background Traffic Conditions

1: Peterson Boulevard & EB Highway 24 Off Ramp/Space Village Avenue PM Peak Hour - Year 2024

Maximum v/c Ratio: 0.93

Intersection Signal Delay: 29.9

Intersection LOS: C

Intersection Capacity Utilization 71.8%







ICU Level of Service C

Analysis Period (min) 15

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.










Splits and Phases: 1: Peterson Boulevard & EB Highway 24 Off Ramp/Space Village Avenue

 Ø1	 Ø2 (R)	 Ø4	 Ø8
24 s	47 s	29 s	25 s
 Ø6 (R)			
71 s			

# HCM 6th TWSC

## 2: Space Village Avenue & EB US 24 On/Off Ramps

Background Traffic Conditions  
PM Peak Hour - Year 2024

Intersection												
Int Delay, s/veh	7.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	338	245	11	5	231	19	13	8	10	43	0	50
Future Vol, veh/h	338	245	11	5	231	19	13	8	10	43	0	50
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	Free
Storage Length	295	-	155	490	-	105	-	-	-	65	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	367	266	12	5	251	21	14	9	11	47	0	54

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	272	0	0	278	0	0	1272	1282	266	1277	-	-
Stage 1	-	-	-	-	-	-	1000	1000	-	261	-	-
Stage 2	-	-	-	-	-	-	272	282	-	1016	-	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	-	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	-	-
Pot Cap-1 Maneuver	1291	-	-	1285	-	-	144	165	773	143	0	0
Stage 1	-	-	-	-	-	-	293	321	-	744	0	0
Stage 2	-	-	-	-	-	-	734	678	-	287	0	0
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1291	-	-	1285	-	-	112	118	773	104	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	112	118	-	104	-	-
Stage 1	-	-	-	-	-	-	210	230	-	533	-	-
Stage 2	-	-	-	-	-	-	731	675	-	195	-	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	5.1			0.2			33.9			65.2		
HCM LOS							D			F		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	158	1291	-	-	1285	-	-	104	-
HCM Lane V/C Ratio	0.213	0.285	-	-	0.004	-	-	0.449	-
HCM Control Delay (s)	33.9	8.9	-	-	7.8	-	-	65.2	0
HCM Lane LOS	D	A	-	-	A	-	-	F	A
HCM 95th %tile Q(veh)	0.8	1.2	-	-	0	-	-	1.9	-

# HCM 6th TWSC

## 3: Space Village Avenue & Storage Sense Access

Background Traffic Conditions  
PM Peak Hour - Year 2024

Intersection						
Int Delay, s/veh	0.1					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↑	↗	↘	
Traffic Vol, veh/h	4	259	251	0	1	4
Future Vol, veh/h	4	259	251	0	1	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	125	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	4	282	273	0	1	4
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	273	0	-	0	563	273
Stage 1	-	-	-	-	273	-
Stage 2	-	-	-	-	290	-
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	1290	-	-	-	487	766
Stage 1	-	-	-	-	773	-
Stage 2	-	-	-	-	759	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1290	-	-	-	485	766
Mov Cap-2 Maneuver	-	-	-	-	485	-
Stage 1	-	-	-	-	770	-
Stage 2	-	-	-	-	759	-
Approach	EB	WB		SB		
HCM Control Delay, s	0.1	0		10.3		
HCM LOS	B					
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1290	-	-	-	686	
HCM Lane V/C Ratio	0.003	-	-	-	0.008	
HCM Control Delay (s)	7.8	0	-	-	10.3	
HCM Lane LOS	A	A	-	-	B	
HCM 95th %tile Q(veh)	0	-	-	-	0	

# HCM 6th TWSC

## 4: Marksheffel Road & Space Village Avenue

Background Traffic Conditions  
PM Peak Hour - Year 2024

























Intersection												
Int Delay, s/veh	36.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑	↱	↰	↑	↱	↰	↑↑	↱	↰	↑↑	↱
Traffic Vol, veh/h	15	33	206	32	10	1	177	933	19	1	581	29
Future Vol, veh/h	15	33	206	32	10	1	177	933	19	1	581	29
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	215	-	250	290	-	220	390	-	430	390	-	415
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	16	36	224	35	11	1	192	1014	21	1	632	32
Major/Minor	Minor2		Minor1		Major1		Major2		Major2		Major2	
Conflicting Flow All	1531	2053	316	1734	2064	507	664	0	0	1035	0	0
Stage 1	634	634	-	1398	1398	-	-	-	-	-	-	-
Stage 2	897	1419	-	336	666	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	80	55	680	56	54	511	921	-	-	667	-	-
Stage 1	434	471	-	148	206	-	-	-	-	-	-	-
Stage 2	301	201	-	652	456	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	54	44	680	~ 10	43	511	921	-	-	667	-	-
Mov Cap-2 Maneuver	54	44	-	~ 10	43	-	-	-	-	-	-	-
Stage 1	344	471	-	117	163	-	-	-	-	-	-	-
Stage 2	222	159	-	403	456	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB		SB		SB	
HCM Control Delay, s	45.3		\$ 1409.5		1.6		0					
HCM LOS	E		F									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	EBLn3	WBLn1	WBLn2	WBLn3	SBL	SBT	SBR
Capacity (veh/h)	921	-	-	54	44	680	10	43	511	667	-	-
HCM Lane V/C Ratio	0.209	-	-	0.302	0.815	0.329	3.478	0.253	0.002	0.002	-	-
HCM Control Delay (s)	9.9	-	-	98.3	223.4	12.9	1857.7	115	12.1	10.4	-	-
HCM Lane LOS	A	-	-	F	F	B	F	F	B	B	-	-
HCM 95th %tile Q(veh)	0.8	-	-	1.1	3.2	1.4	5.5	0.8	0	0	-	-
Notes												
~: Volume exceeds capacity		\$: Delay exceeds 300s		+: Computation Not Defined		*: All major volume in platoon						

# Timings

## 4: Marksheffel Road & Space Village Avenue

# Background Traffic Conditions

PM Peak Hour - Year 2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	15	33	206	32	10	1	177	933	19	1	581	29
Future Volume (vph)	15	33	206	32	10	1	177	933	19	1	581	29
Satd. Flow (prot)	1770	1863	1583	1770	1863	1583	1770	3539	1583	1770	3539	1583
Flt Permitted	0.750			0.655			0.360			0.275		
Satd. Flow (perm)	1397	1863	1583	1220	1863	1583	671	3539	1583	512	3539	1583
Satd. Flow (RTOR)			224			183			131			183
Lane Group Flow (vph)	16	36	224	35	11	1	192	1014	21	1	632	32
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Total Split (s)	12.0	32.0	32.0	12.0	32.0	32.0	23.0	69.0	69.0	12.0	58.0	58.0
Total Split (%)	9.6%	25.6%	25.6%	9.6%	25.6%	25.6%	18.4%	55.2%	55.2%	9.6%	46.4%	46.4%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max
Act Effct Green (s)	12.4	8.8	8.8	13.6	11.2	11.2	97.0	94.7	94.7	87.2	81.7	81.7
Actuated g/C Ratio	0.10	0.07	0.07	0.11	0.09	0.09	0.78	0.76	0.76	0.70	0.65	0.65
v/c Ratio	0.10	0.27	0.70	0.22	0.07	0.00	0.32	0.38	0.02	0.00	0.27	0.03
Control Delay	43.3	57.2	18.5	47.3	51.0	0.0	6.0	7.3	0.0	6.0	11.0	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	43.3	57.2	18.5	47.3	51.0	0.0	6.0	7.3	0.0	6.0	11.0	0.0
LOS	D	E	B	D	D	A	A	A	A	A	B	A
Approach Delay		24.9			47.2			7.0			10.5	
Approach LOS		C			D			A			B	
Queue Length 50th (ft)	12	29	10	25	8	0	39	134	0	0	115	0
Queue Length 95th (ft)	m21	m55	m65	52	27	0	77	282	0	2	186	0
Internal Link Dist (ft)		396			546			433			422	
Turn Bay Length (ft)	215		250	290		220	390		430	390		415
Base Capacity (vph)	157	387	506	159	387	474	670	2680	1230	419	2313	1098
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.10	0.09	0.44	0.22	0.03	0.00	0.29	0.38	0.02	0.00	0.27	0.03

### Intersection Summary

Cycle Length: 125

Actuated Cycle Length: 125

Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green

Natural Cycle: 60

Control Type: Actuated-Coordinated



# Timings 4: Marksheffel Road & Space Village Avenue

Background Traffic Conditions  
PM Peak Hour - Year 2024

Maximum v/c Ratio: 0.70

Intersection Signal Delay: 11.1

Intersection LOS: B









Intersection Capacity Utilization 52.6%

ICU Level of Service A

Analysis Period (min) 15

m Volume for 95th percentile queue is metered by upstream signal.






















Splits and Phases: 4: Marksheffel Road & Space Village Avenue

 Ø1	 Ø2 (R)	 Ø3	 Ø4
12 s	69 s	12 s	32 s
 Ø5	 Ø6 (R)	 Ø7	 Ø8
23 s	58 s	12 s	32 s

# Timings

# Background Traffic Conditions

1: Peterson Boulevard & EB Highway 24 Off Ramp/Space Village Avenue AM Peak Hour - Year 2042

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	84	218	665	141	0	537	0	182	84	222	1022	0
Future Volume (vph)	84	218	665	141	0	537	0	182	84	222	1022	0
Satd. Flow (prot)	0	1837	1583	1770	0	1583	0	3539	1583	1770	3539	0
Flt Permitted		0.986		0.562						0.415		
Satd. Flow (perm)	0	1837	1583	1047	0	1583	0	3539	1583	773	3539	0
Satd. Flow (RTOR)			164			584			164			
Lane Group Flow (vph)	0	328	723	153	0	584	0	198	91	241	1111	0
Turn Type	Split	NA	Perm	Perm		Perm		NA	Perm	pm+pt	NA	
Protected Phases	4	4						2		1	6	
Permitted Phases			4	8		8			2	6		
Detector Phase	4	4	4	8		8		2	2	1	6	
Switch Phase												
Minimum Initial (s)	4.0	4.0	4.0	4.0		4.0		4.0	4.0	4.0	4.0	
Minimum Split (s)	10.0	10.0	10.0	10.0		10.0		10.0	10.0	10.0	10.0	
Total Split (s)	42.0	42.0	42.0	21.0		21.0		17.0	17.0	20.0	37.0	
Total Split (%)	42.0%	42.0%	42.0%	21.0%		21.0%		17.0%	17.0%	20.0%	37.0%	
Yellow Time (s)	4.0	4.0	4.0	4.0		4.0		4.0	4.0	4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0		2.0		2.0	2.0	2.0	2.0	
Lost Time Adjust (s)		0.0	0.0	0.0		0.0		0.0	0.0	0.0	0.0	
Total Lost Time (s)		6.0	6.0	6.0		6.0		6.0	6.0	6.0	6.0	
Lead/Lag								Lag	Lag	Lead		
Lead-Lag Optimize?								Yes	Yes	Yes		
Recall Mode	None	None	None	None		None		C-Max	C-Max	None	C-Max	
Act Effct Green (s)		36.0	36.0	15.0		15.0		11.7	11.7	31.0	31.0	
Actuated g/C Ratio		0.36	0.36	0.15		0.15		0.12	0.12	0.31	0.31	
v/c Ratio		0.50	1.07	0.97		0.80		0.48	0.28	0.65	1.01	
Control Delay		28.1	81.4	110.1		12.7		45.9	2.1	36.8	65.5	
Queue Delay		0.0	0.0	0.0		0.0		0.0	0.0	0.0	0.0	
Total Delay		28.1	81.4	110.1		12.7		45.9	2.1	36.8	65.5	
LOS		C	F	F		B		D	A	D	E	
Approach Delay		64.8			32.9			32.1			60.4	
Approach LOS		E			C			C			E	
Queue Length 50th (ft)		161	~443	98		0		63	0	122	~380	
Queue Length 95th (ft)		244	#669	#226		#126		100	2	194	#524	
Internal Link Dist (ft)		419			647			421			121	
Turn Bay Length (ft)									250	280		
Base Capacity (vph)		661	674	157		733		414	330	379	1097	
Starvation Cap Reductn		0	0	0		0		0	0	0	0	
Spillback Cap Reductn		0	0	0		0		0	0	0	0	
Storage Cap Reductn		0	0	0		0		0	0	0	0	
Reduced v/c Ratio		0.50	1.07	0.97		0.80		0.48	0.28	0.64	1.01	
Intersection Summary												
Cycle Length: 100												
Actuated Cycle Length: 100												
Offset: 20 (20%), Referenced to phase 2:NBT and 6:SBTL, Start of Green												
Natural Cycle: 110												
Control Type: Actuated-Coordinated												

## Timings

## Background Traffic Conditions

1: Peterson Boulevard & EB Highway 24 Off Ramp/Space Village Avenue AM Peak Hour - Year 2042

Maximum v/c Ratio: 1.07

Intersection Signal Delay: 53.5

Intersection LOS: D

Intersection Capacity Utilization 90.6%

ICU Level of Service E

Analysis Period (min) 15






~ 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.

Splits and Phases: 1: Peterson Boulevard & EB Highway 24 Off Ramp/Space Village Avenue

 Ø1	 Ø2 (R)	 Ø4	 Ø8
20 s	17 s	42 s	21 s
 Ø6 (R)			
37 s			

HCM 6th TWSC  
2: Space Village Avenue & EB US 24 On/Off Ramps

Background Traffic Conditions  
AM Peak Hour - Year 2042

Intersection												
Int Delay, s/veh	8.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	126	353	9	9	656	47	21	8	9	65	0	30
Future Vol, veh/h	126	353	9	9	656	47	21	8	9	65	0	30
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	Free
Storage Length	295	-	155	490	-	105	-	-	-	65	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	137	384	10	10	713	51	23	9	10	71	0	33

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	764	0	0	394	0	0	1417	1442	384	1406	-	-
Stage 1	-	-	-	-	-	-	658	658	-	733	-	-
Stage 2	-	-	-	-	-	-	759	784	-	673	-	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	-	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	-	-
Pot Cap-1 Maneuver	849	-	-	1165	-	-	115	132	664	117	0	0
Stage 1	-	-	-	-	-	-	453	461	-	412	0	0
Stage 2	-	-	-	-	-	-	399	404	-	445	0	0
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	849	-	-	1165	-	-	100	110	664	94	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	100	110	-	94	-	-
Stage 1	-	-	-	-	-	-	380	387	-	346	-	-
Stage 2	-	-	-	-	-	-	396	400	-	359	-	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	2.6			0.1			46			114.2		
HCM LOS							E			F		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	128	849	-	-	1165	-	-	94	-
HCM Lane V/C Ratio	0.323	0.161	-	-	0.008	-	-	0.752	-
HCM Control Delay (s)	46	10.1	-	-	8.1	-	-	114.2	0
HCM Lane LOS	E	B	-	-	A	-	-	F	A
HCM 95th %tile Q(veh)	1.3	0.6	-	-	0	-	-	3.9	-

HCM 6th TWSC  
3: Space Village Avenue & Storage Sense Access

Background Traffic Conditions  
AM Peak Hour - Year 2042

Intersection						
Int Delay, s/veh	0.1					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↑	↗	↘	
Traffic Vol, veh/h	6	282	665	5	0	2
Future Vol, veh/h	6	282	665	5	0	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	125	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	7	307	723	5	0	2
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	728	0	-	0	1044	723
Stage 1	-	-	-	-	723	-
Stage 2	-	-	-	-	321	-
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	876	-	-	-	254	426
Stage 1	-	-	-	-	481	-
Stage 2	-	-	-	-	735	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	876	-	-	-	251	426
Mov Cap-2 Maneuver	-	-	-	-	251	-
Stage 1	-	-	-	-	476	-
Stage 2	-	-	-	-	735	-
Approach	EB	WB		SB		
HCM Control Delay, s	0.2	0		13.5		
HCM LOS				B		
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	876	-	-	-	-	426
HCM Lane V/C Ratio	0.007	-	-	-	-	0.005
HCM Control Delay (s)	9.1	0	-	-	-	13.5
HCM Lane LOS	A	A	-	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	-	0

# HCM 6th TWSC

## 4: Marksheffel Road & Space Village Avenue

Background Traffic Conditions  
AM Peak Hour - Year 2042

Intersection												
Int Delay, s/veh	23.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑	↱	↰	↑	↱	↰	↑↑	↱	↰	↑↑	↱
Traffic Vol, veh/h	24	64	200	12	17	3	482	900	20	12	1263	159
Future Vol, veh/h	24	64	200	12	17	3	482	900	20	12	1263	159
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	215	-	250	290	-	220	390	-	430	390	-	415
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	26	70	217	13	18	3	524	978	22	13	1373	173

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	2945	3447	687	2774	3598	489	1546	0	0	1000	0	0
Stage 1	1399	1399	-	2026	2026	-	-	-	-	-	-	-
Stage 2	1546	2048	-	748	1572	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	~ 7	~ 7	389	~ 9	~ 5	525	~ 425	-	-	688	-	-
Stage 1	148	206	-	59	100	-	-	-	-	-	-	-
Stage 2	120	98	-	371	169	-	-	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	0	389	-	0	525	~ 425	-	-	688	-	-
Mov Cap-2 Maneuver	-	0	-	-	0	-	-	-	-	-	-	-
Stage 1	148	202	-	59	0	-	-	-	-	-	-	-
Stage 2	-	0	-	105	166	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s			52.3	0.1
HCM LOS	-	-		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	EBLn3	WBLn1	WBLn2	WBLn3	SBL	SBT	SBR
Capacity (veh/h)	~ 425	-	-	-	-	389	-	-	525	688	-	-
HCM Lane V/C Ratio	1.233	-	-	-	-	0.559	-	-	0.006	0.019	-	-
HCM Control Delay (s)	152.1	-	-	-	-	25.4	-	-	11.9	10.3	-	-
HCM Lane LOS	F	-	-	-	-	D	-	-	B	B	-	-
HCM 95th %tile Q(veh)	21.5	-	-	-	-	3.3	-	-	0	0.1	-	-

























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

# Timings

## 4: Marksheffel Road & Space Village Avenue

### Background Traffic Conditions

AM Peak Hour - Year 2042

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	24	64	200	12	17	3	482	900	20	12	1263	159
Future Volume (vph)	24	64	200	12	17	3	482	900	20	12	1263	159
Satd. Flow (prot)	1770	1863	1583	1770	1863	1583	1770	3539	1583	1770	3539	1583
Flt Permitted	0.666			0.711			0.065			0.293		
Satd. Flow (perm)	1241	1863	1583	1324	1863	1583	121	3539	1583	546	3539	1583
Satd. Flow (RTOR)			217			183			131			183
Lane Group Flow (vph)	26	70	217	13	18	3	524	978	22	13	1373	173
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Total Split (s)	11.0	13.0	13.0	11.0	13.0	13.0	41.0	90.0	90.0	11.0	60.0	60.0
Total Split (%)	8.8%	10.4%	10.4%	8.8%	10.4%	10.4%	32.8%	72.0%	72.0%	8.8%	48.0%	48.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max
Act Effct Green (s)	11.4	9.4	9.4	10.2	7.2	7.2	99.2	94.8	94.8	64.1	58.8	58.8
Actuated g/C Ratio	0.09	0.08	0.08	0.08	0.06	0.06	0.79	0.76	0.76	0.51	0.47	0.47
v/c Ratio	0.19	0.50	0.68	0.10	0.17	0.01	0.95	0.36	0.02	0.04	0.82	0.21
Control Delay	51.0	68.3	18.8	48.7	60.1	0.0	64.6	6.6	0.1	9.2	35.1	3.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	51.0	68.3	18.8	48.7	60.1	0.0	64.6	6.6	0.1	9.2	35.1	3.2
LOS	D	E	B	D	E	A	E	A	A	A	D	A
Approach Delay		32.6			50.4			26.5			31.3	
Approach LOS		C			D			C			C	
Queue Length 50th (ft)	19	51	0	9	14	0	361	116	0	3	533	0
Queue Length 95th (ft)	47	#131	#101	30	40	0	#585	212	0	9	#641	37
Internal Link Dist (ft)		398			546			433			422	
Turn Bay Length (ft)	215		250	290		220	390		430	390		415
Base Capacity (vph)	134	141	320	125	110	265	562	2683	1231	331	1665	841
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.19	0.50	0.68	0.10	0.16	0.01	0.93	0.36	0.02	0.04	0.82	0.21

### Intersection Summary

Cycle Length: 125

Actuated Cycle Length: 125

Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green

Natural Cycle: 90

Control Type: Actuated-Coordinated

# Timings 4: Marksheffel Road & Space Village Avenue

Background Traffic Conditions  
AM Peak Hour - Year 2042

Maximum v/c Ratio: 0.95

Intersection Signal Delay: 29.5

Intersection LOS: C

Intersection Capacity Utilization 84.6%









ICU Level of Service E

Analysis Period (min) 15

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 4: Marksheffel Road & Space Village Avenue






















 Ø1	 Ø2 (R)		 Ø3	 Ø4
11 s	90 s		11 s	13 s
 Ø5	 Ø6 (R)		 Ø7	 Ø8
41 s	60 s		11 s	13 s



# Timings

# Background Traffic Conditions

1: Peterson Boulevard & EB Highway 24 Off Ramp/Space Village Avenue PM Peak Hour - Year 2042

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	255	144	0	0	0	414	0	1250	485	261	3	0
Future Volume (vph)	255	144	0	0	0	414	0	1250	485	261	3	0
Satd. Flow (prot)	0	1805	1863	1863	0	1583	0	3539	1583	1770	3539	0
Flt Permitted		0.969								0.078		
Satd. Flow (perm)	0	1805	1863	1863	0	1583	0	3539	1583	145	3539	0
Satd. Flow (RTOR)						234			365			
Lane Group Flow (vph)	0	434	0	0	0	450	0	1359	527	284	3	0
Turn Type	Split	NA	Perm	Perm		Perm		NA	Perm	pm+pt	NA	
Protected Phases	4	4						2		1	6	
Permitted Phases			4	8		8			2	6		
Detector Phase	4	4	4	8		8		2	2	1	6	
Switch Phase												
Minimum Initial (s)	4.0	4.0	4.0	4.0		4.0		4.0	4.0	4.0	4.0	
Minimum Split (s)	10.0	10.0	10.0	10.0		10.0		10.0	10.0	10.0	10.0	
Total Split (s)	33.0	33.0	33.0	22.0		22.0		51.0	51.0	19.0	70.0	
Total Split (%)	26.4%	26.4%	26.4%	17.6%		17.6%		40.8%	40.8%	15.2%	56.0%	
Yellow Time (s)	4.0	4.0	4.0	4.0		4.0		4.0	4.0	4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0		2.0		2.0	2.0	2.0	2.0	
Lost Time Adjust (s)		0.0	0.0	0.0		0.0		0.0	0.0	0.0	0.0	
Total Lost Time (s)		6.0	6.0	6.0		6.0		6.0	6.0	6.0	6.0	
Lead/Lag								Lag	Lag	Lead		
Lead-Lag Optimize?								Yes	Yes	Yes		
Recall Mode	None	None	None	None		None		C-Max	C-Max	None	C-Max	
Act Effct Green (s)		27.0				16.0		45.0	45.0	64.0	64.0	
Actuated g/C Ratio		0.22				0.13		0.36	0.36	0.51	0.51	
v/c Ratio		1.12				1.11		1.07	0.66	1.17	0.00	
Control Delay		125.8				101.5		83.8	14.0	142.8	15.0	
Queue Delay		0.0				0.0		0.0	0.0	0.0	0.0	
Total Delay		125.8				101.5		83.8	14.0	142.8	15.0	
LOS		F				F		F	B	F	B	
Approach Delay		125.8			101.5			64.3			141.5	
Approach LOS		F			F			E			F	
Queue Length 50th (ft)		~402				~239		~638	102	~223	0	
Queue Length 95th (ft)		#607				#449		#777	231	#404	3	
Internal Link Dist (ft)		419			647			421			121	
Turn Bay Length (ft)									250	280		
Base Capacity (vph)		389				406		1274	803	243	1811	
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		1.12				1.11		1.07	0.66	1.17	0.00	

## Intersection Summary

Cycle Length: 125

Actuated Cycle Length: 125

Offset: 1 (1%), Referenced to phase 2:NBT and 6:SBTL, Start of Green

Natural Cycle: 150

Control Type: Actuated-Coordinated

## Timings

## Background Traffic Conditions

1: Peterson Boulevard & EB Highway 24 Off Ramp/Space Village Avenue PM Peak Hour - Year 2042

Maximum v/c Ratio: 1.17

Intersection Signal Delay: 85.7

Intersection LOS: F

Intersection Capacity Utilization 96.9%

ICU Level of Service F

Analysis Period (min) 15






~ 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.

Splits and Phases: 1: Peterson Boulevard & EB Highway 24 Off Ramp/Space Village Avenue

 Ø1	 Ø2 (R)	 Ø4	 Ø8
19 s	51 s	33 s	22 s
 Ø6 (R)			
70 s			

HCM 6th TWSC  
2: Space Village Avenue & EB US 24 On/Off Ramps

Background Traffic Conditions  
PM Peak Hour - Year 2042

Intersection												
Int Delay, s/veh	56.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	488	354	17	8	333	27	18	12	15	62	0	72
Future Vol, veh/h	488	354	17	8	333	27	18	12	15	62	0	72
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	Free
Storage Length	295	-	155	490	-	105	-	-	-	65	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	530	385	18	9	362	29	20	13	16	67	0	78

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	391	0	0	403	0	0	1840	1854	385	1849	-	-
Stage 1	-	-	-	-	-	-	1445	1445	-	380	-	-
Stage 2	-	-	-	-	-	-	395	409	-	1469	-	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	-	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	-	-
Pot Cap-1 Maneuver	1168	-	-	1156	-	-	58	74	663	~ 57	0	0
Stage 1	-	-	-	-	-	-	164	197	-	642	0	0
Stage 2	-	-	-	-	-	-	630	596	-	159	0	0
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1168	-	-	1156	-	-	37	40	663	~ 27	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	37	40	-	~ 27	-	-
Stage 1	-	-	-	-	-	-	90	108	-	351	-	-
Stage 2	-	-	-	-	-	-	625	591	-	74	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	6	0.2	202.3	\$ 987.8
HCM LOS			F	F





Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	56	1168	-	-	1156	-	-	27	-
HCM Lane V/C Ratio	0.873	0.454	-	-	0.008	-	-	2.496	-
HCM Control Delay (s)	202.3	10.6	-	-	8.1	-	-	\$ 987.8	0
HCM Lane LOS	F	B	-	-	A	-	-	F	A
HCM 95th %tile Q(veh)	3.9	2.4	-	-	0	-	-	8.2	-

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

# HCM 6th TWSC

## 3: Space Village Avenue & Storage Sense Access

Background Traffic Conditions  
PM Peak Hour - Year 2042

Intersection						
Int Delay, s/veh	0.2					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	6	374	362	0	2	6
Future Vol, veh/h	6	374	362	0	2	6
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	125	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	7	407	393	0	2	7
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	393	0	-	0	814	393
Stage 1	-	-	-	-	393	-
Stage 2	-	-	-	-	421	-
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	1166	-	-	-	347	656
Stage 1	-	-	-	-	682	-
Stage 2	-	-	-	-	662	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1166	-	-	-	344	656
Mov Cap-2 Maneuver	-	-	-	-	344	-
Stage 1	-	-	-	-	677	-
Stage 2	-	-	-	-	662	-
Approach	EB	WB		SB		
HCM Control Delay, s	0.1	0		11.8		
HCM LOS	B					
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1166	-	-	-	535	
HCM Lane V/C Ratio	0.006	-	-	-	0.016	
HCM Control Delay (s)	8.1	0	-	-	11.8	
HCM Lane LOS	A	A	-	-	B	
HCM 95th %tile Q(veh)	0	-	-	-	0.1	

HCM 6th TWSC  
4: Marksheffel Road & Space Village Avenue

Background Traffic Conditions  
PM Peak Hour - Year 2042

Intersection												
Int Delay, s/veh	1.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑	↱	↰	↑	↱	↰	↑↑	↱	↰	↑↑	↱
Traffic Vol, veh/h	21	48	297	47	15	2	255	1346	27	2	839	42
Future Vol, veh/h	21	48	297	47	15	2	255	1346	27	2	839	42
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	215	-	250	290	-	220	390	-	430	390	-	415
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	23	52	323	51	16	2	277	1463	29	2	912	46

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	2210	2962	456	2503	2979	732	958	0	0	1492	0	0
Stage 1	916	916	-	2017	2017	-	-	-	-	-	-	-
Stage 2	1294	2046	-	486	962	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	24	~ 14	551	~ 14	~ 14	364	714	-	-	446	-	-
Stage 1	293	349	-	60	101	-	-	-	-	-	-	-
Stage 2	172	98	-	531	332	-	-	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	~ 9	551	-	~ 9	364	714	-	-	446	-	-
Mov Cap-2 Maneuver	-	~ 9	-	-	~ 9	-	-	-	-	-	-	-
Stage 1	179	348	-	~ 37	62	-	-	-	-	-	-	-
Stage 2	77	60	-	186	331	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s			2.1	0
HCM LOS	-	-		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	EBLn3	WBLn1	WBLn2	WBLn3	SBL	SBT	SBR
Capacity (veh/h)	714	-	-	-	9	551	-	9	364	446	-	-
HCM Lane V/C Ratio	0.388	-	-	-	5.797	0.586	-	1.812	0.006	0.005	-	-
HCM Control Delay (s)	13.2	-	-	\$ 2970.4	20.4	\$ 1187.1	-	15	13.1	-	-	-
HCM Lane LOS	B	-	-	F	C	-	F	C	B	-	-	-
HCM 95th %tile Q(veh)	1.8	-	-	-	7.9	3.8	-	3	0	0	-	-

























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

# Timings

## 4: Marksheffel Road & Space Village Avenue

### Background Traffic Conditions

PM Peak Hour - Year 2042

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	21	48	297	47	15	2	255	1346	27	2	839	42
Future Volume (vph)	21	48	297	47	15	2	255	1346	27	2	839	42
Satd. Flow (prot)	1770	1863	1583	1770	1863	1583	1770	3539	1583	1770	3539	1583
Flt Permitted	0.747			0.644			0.236			0.146		
Satd. Flow (perm)	1391	1863	1583	1200	1863	1583	440	3539	1583	272	3539	1583
Satd. Flow (RTOR)			302			183			131			183
Lane Group Flow (vph)	23	52	323	51	16	2	277	1463	29	2	912	46
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Total Split (s)	10.0	30.0	30.0	10.0	30.0	30.0	26.0	75.0	75.0	10.0	59.0	59.0
Total Split (%)	8.0%	24.0%	24.0%	8.0%	24.0%	24.0%	20.8%	60.0%	60.0%	8.0%	47.2%	47.2%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max
Act Effct Green (s)	13.9	10.7	10.7	16.3	14.7	14.7	94.3	92.0	92.0	81.5	75.9	75.9
Actuated g/C Ratio	0.11	0.09	0.09	0.13	0.12	0.12	0.75	0.74	0.74	0.65	0.61	0.61
v/c Ratio	0.14	0.33	0.79	0.29	0.07	0.01	0.60	0.56	0.02	0.01	0.42	0.04
Control Delay	43.7	54.8	17.7	48.0	48.1	0.0	11.1	10.5	0.0	7.5	15.8	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	43.7	54.8	17.7	48.0	48.1	0.0	11.1	10.5	0.0	7.5	15.8	0.1
LOS	D	D	B	D	D	A	B	B	A	A	B	A
Approach Delay		24.0			46.6			10.4			15.0	
Approach LOS		C			D			B			B	
Queue Length 50th (ft)	14	36	12	37	11	0	57	226	0	0	188	0
Queue Length 95th (ft)	m20	m46	m37	68	33	0	119	513	0	3	341	0
Internal Link Dist (ft)		396			546			433			422	
Turn Bay Length (ft)	215		250	290		220	390		430	390		415
Base Capacity (vph)	166	357	547	174	357	451	545	2603	1199	243	2149	1033
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.14	0.15	0.59	0.29	0.04	0.00	0.51	0.56	0.02	0.01	0.42	0.04

### Intersection Summary

Cycle Length: 125

Actuated Cycle Length: 125

Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green

Natural Cycle: 70

Control Type: Actuated-Coordinated

# Timings 4: Marksheffel Road & Space Village Avenue

Background Traffic Conditions  
PM Peak Hour - Year 2042

Maximum v/c Ratio: 0.79

Intersection Signal Delay: 14.3

Intersection LOS: B

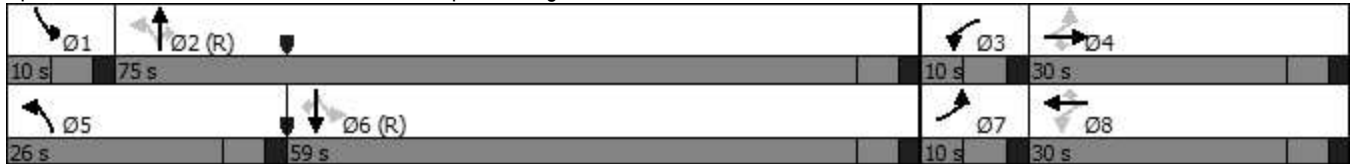
Intersection Capacity Utilization 64.8%

ICU Level of Service C

Analysis Period (min) 15

m Volume for 95th percentile queue is metered by upstream signal.






















Splits and Phases: 4: Marksheffel Road & Space Village Avenue



# Timings

# Total Traffic Conditions

1: Peterson Boulevard & EB Highway 24 Off Ramp/Space Village Avenue AM Peak Hour - Year 2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	58	156	461	100	0	375	0	126	63	159	708	0
Future Volume (vph)	58	156	461	100	0	375	0	126	63	159	708	0
Satd. Flow (prot)	0	1839	1583	1770	0	1583	0	3539	1583	1770	3539	0
Flt Permitted		0.987		0.613						0.558		
Satd. Flow (perm)	0	1839	1583	1142	0	1583	0	3539	1583	1039	3539	0
Satd. Flow (RTOR)			255			408			164			
Lane Group Flow (vph)	0	233	501	109	0	408	0	137	68	173	770	0
Turn Type	Split	NA	Perm	Perm		Perm		NA	Perm	pm+pt	NA	
Protected Phases	4	4						2		1	6	
Permitted Phases			4	8		8			2	6		
Detector Phase	4	4	4	8		8		2	2	1	6	
Switch Phase												
Minimum Initial (s)	4.0	4.0	4.0	4.0		4.0		4.0	4.0	4.0	4.0	
Minimum Split (s)	10.0	10.0	10.0	10.0		10.0		10.0	10.0	10.0	10.0	
Total Split (s)	26.0	26.0	26.0	26.0		26.0		30.0	30.0	18.0	48.0	
Total Split (%)	26.0%	26.0%	26.0%	26.0%		26.0%		30.0%	30.0%	18.0%	48.0%	
Yellow Time (s)	4.0	4.0	4.0	4.0		4.0		4.0	4.0	4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0		2.0		2.0	2.0	2.0	2.0	
Lost Time Adjust (s)		0.0	0.0	0.0		0.0		0.0	0.0	0.0	0.0	
Total Lost Time (s)		6.0	6.0	6.0		6.0		6.0	6.0	6.0	6.0	
Lead/Lag								Lag	Lag	Lead		
Lead-Lag Optimize?								Yes	Yes	Yes		
Recall Mode	None	None	None	None		None		C-Max	C-Max	None	C-Max	
Act Effct Green (s)		19.6	19.6	14.5		14.5		31.3	31.3	47.9	47.9	
Actuated g/C Ratio		0.20	0.20	0.14		0.14		0.31	0.31	0.48	0.48	
v/c Ratio		0.65	0.97	0.66		0.71		0.12	0.11	0.30	0.45	
Control Delay		46.2	54.3	58.5		11.0		27.4	0.4	18.0	19.3	
Queue Delay		0.0	0.0	0.0		0.0		0.0	0.0	0.0	0.0	
Total Delay		46.2	54.3	58.5		11.0		27.4	0.4	18.0	19.3	
LOS		D	D	E		B		C	A	B	B	
Approach Delay		51.7			21.0			18.4			19.1	
Approach LOS		D			C			B			B	
Queue Length 50th (ft)		137	170	66		0		33	0	62	168	
Queue Length 95th (ft)		219	#382	118		83		62	0	117	243	
Internal Link Dist (ft)		419			647			421			121	
Turn Bay Length (ft)									250	280		
Base Capacity (vph)		367	520	228		643		1107	608	587	1695	
Starvation Cap Reductn		0	0	0		0		0	0	0	0	
Spillback Cap Reductn		0	0	0		0		0	0	0	0	
Storage Cap Reductn		0	0	0		0		0	0	0	0	
Reduced v/c Ratio		0.63	0.96	0.48		0.63		0.12	0.11	0.29	0.45	
Intersection Summary												
Cycle Length: 100												
Actuated Cycle Length: 100												
Offset: 20 (20%), Referenced to phase 2:NBT and 6:SBTL, Start of Green												
Natural Cycle: 45												
Control Type: Actuated-Coordinated												



## Timings

## Total Traffic Conditions

1: Peterson Boulevard & EB Highway 24 Off Ramp/Space Village Avenue AM Peak Hour - Year 2024

Maximum v/c Ratio: 0.97

Intersection Signal Delay: 29.4

Intersection LOS: C

Intersection Capacity Utilization 67.0%







ICU Level of Service C

Analysis Period (min) 15

# 95th percentile volume exceeds capacity, queue may be longer.










Queue shown is maximum after two cycles.

Splits and Phases: 1: Peterson Boulevard & EB Highway 24 Off Ramp/Space Village Avenue

 Ø1	 Ø2 (R)	 Ø4	 Ø8
18 s	30 s	26 s	26 s
 Ø6 (R)			
48 s			

HCM 6th TWSC  
2: Space Village Avenue & EB US 24 On/Off Ramps

Total Traffic Conditions  
AM Peak Hour - Year 2024

Intersection												
Int Delay, s/veh	3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	87	259	6	6	460	33	15	5	6	47	0	21
Future Vol, veh/h	87	259	6	6	460	33	15	5	6	47	0	21
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	Free
Storage Length	295	-	155	720	-	105	-	-	-	65	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	95	282	7	7	500	36	16	5	7	51	0	23





Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	536	0	0	289	0	0	1004	1022	282	996	-	-
Stage 1	-	-	-	-	-	-	472	472	-	514	-	-
Stage 2	-	-	-	-	-	-	532	550	-	482	-	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	-	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	-	-
Pot Cap-1 Maneuver	1032	-	-	1273	-	-	220	236	757	223	0	0
Stage 1	-	-	-	-	-	-	573	559	-	543	0	0
Stage 2	-	-	-	-	-	-	531	516	-	565	0	0
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1032	-	-	1273	-	-	204	213	757	201	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	204	213	-	201	-	-
Stage 1	-	-	-	-	-	-	520	508	-	493	-	-
Stage 2	-	-	-	-	-	-	528	513	-	503	-	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	2.2			0.1			21.4			28.9		
HCM LOS							C			D		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	248	1032	-	-	1273	-	-	201	-
HCM Lane V/C Ratio	0.114	0.092	-	-	0.005	-	-	0.254	-
HCM Control Delay (s)	21.4	8.8	-	-	7.8	-	-	28.9	0
HCM Lane LOS	C	A	-	-	A	-	-	D	A
HCM 95th %tile Q(veh)	0.4	0.3	-	-	0	-	-	1	-













HCM 6th TWSC  
3: Space Village Avenue & Storage Sense Access

Total Traffic Conditions  
AM Peak Hour - Year 2024

Intersection						
Int Delay, s/veh	0.1					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	4	201	478	3	0	1
Future Vol, veh/h	4	201	478	3	0	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	125	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	4	218	520	3	0	1
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	523	0	-	0	746	520
Stage 1	-	-	-	-	520	-
Stage 2	-	-	-	-	226	-
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	1043	-	-	-	381	556
Stage 1	-	-	-	-	597	-
Stage 2	-	-	-	-	812	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1043	-	-	-	379	556
Mov Cap-2 Maneuver	-	-	-	-	379	-
Stage 1	-	-	-	-	595	-
Stage 2	-	-	-	-	812	-
Approach	EB	WB		SB		
HCM Control Delay, s	0.2	0		11.5		
HCM LOS				B		
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1043	-	-	-	556	
HCM Lane V/C Ratio	0.004	-	-	-	0.002	
HCM Control Delay (s)	8.5	0	-	-	11.5	
HCM Lane LOS	A	A	-	-	B	
HCM 95th %tile Q(veh)	0	-	-	-	0	




HCM 6th TWSC  
4: Marksheffel Road & Space Village Avenue

Total Traffic Conditions  
AM Peak Hour - Year 2024

Intersection												
Int Delay, s/veh	2.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	19	47	140	8	13	2	342	624	14	8	876	117
Future Vol, veh/h	19	47	140	8	13	2	342	624	14	8	876	117
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	215	-	250	290	-	220	390	-	430	390	-	415
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	21	51	152	9	14	2	372	678	15	9	952	127
Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	2060	2407	476	1942	2519	339	1079	0	0	693	0	0
Stage 1	970	970	-	1422	1422	-	-	-	-	-	-	-
Stage 2	1090	1437	-	520	1097	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	32	~ 33	535	39	28	657	642	-	-	898	-	-
Stage 1	272	330	-	143	200	-	-	-	-	-	-	-
Stage 2	230	197	-	507	287	-	-	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	~ 14	535	-	~ 12	657	642	-	-	898	-	-
Mov Cap-2 Maneuver	-	~ 14	-	-	~ 12	-	-	-	-	-	-	-
Stage 1	115	327	-	60	84	-	-	-	-	-	-	-
Stage 2	80	83	-	303	284	-	-	-	-	-	-	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s							6.3			0.1		
HCM LOS	-			-								
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	EBLn3	WBLn1	WBLn2	WBLn3	SBL	SBT	SBR
Capacity (veh/h)	642	-	-	-	14	535	-	12	657	898	-	-
HCM Lane V/C Ratio	0.579	-	-	-	3.649	0.284	-	1.178	0.003	0.01	-	-
HCM Control Delay (s)	18	-	-	-	\$ 1740	14.4	-	\$ 745.6	10.5	9	-	-
HCM Lane LOS	C	-	-	-	F	B	-	F	B	A	-	-
HCM 95th %tile Q(veh)	3.7	-	-	-	7.3	1.2	-	2.4	0	0	-	-
Notes												
~: Volume exceeds capacity    \$: Delay exceeds 300s    +: Computation Not Defined    *: All major volume in platoon												




HCM 6th TWSC  
5: Access A & Space Village Avenue

Total Traffic Conditions  
AM Peak Hour - Year 2024

Intersection						
Int Delay, s/veh	0.1					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	313	8	8	470	3	2
Future Vol, veh/h	313	8	8	470	3	2
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	340	9	9	511	3	2
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	349	0	874	345
Stage 1	-	-	-	-	345	-
Stage 2	-	-	-	-	529	-
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	-	-	1210	-	320	698
Stage 1	-	-	-	-	717	-
Stage 2	-	-	-	-	591	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1210	-	317	698
Mov Cap-2 Maneuver	-	-	-	-	317	-
Stage 1	-	-	-	-	717	-
Stage 2	-	-	-	-	585	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		0.1		14	
HCM LOS					B	
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	406	-	-	1210	-	
HCM Lane V/C Ratio	0.013	-	-	0.007	-	
HCM Control Delay (s)	14	-	-	8	0	
HCM Lane LOS	B	-	-	A	A	
HCM 95th %tile Q(veh)	0	-	-	0	-	

HCM 6th TWSC  
6: Access B & Space Village Avenue

Total Traffic Conditions  
AM Peak Hour - Year 2024

Intersection						
Int Delay, s/veh	0.2					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	304	9	9	478	3	3
Future Vol, veh/h	304	9	9	478	3	3
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	330	10	10	520	3	3

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	340	0	875
Stage 1	-	-	-	-	335
Stage 2	-	-	-	-	540
Critical Hdwy	-	-	4.12	-	6.42
Critical Hdwy Stg 1	-	-	-	-	5.42
Critical Hdwy Stg 2	-	-	-	-	5.42
Follow-up Hdwy	-	-	2.218	-	3.518
Pot Cap-1 Maneuver	-	-	1219	-	320
Stage 1	-	-	-	-	725
Stage 2	-	-	-	-	584
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1219	-	316
Mov Cap-2 Maneuver	-	-	-	-	316
Stage 1	-	-	-	-	725
Stage 2	-	-	-	-	577

























Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	13.4
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	437	-	-	1219	-
HCM Lane V/C Ratio	0.015	-	-	0.008	-
HCM Control Delay (s)	13.4	-	-	8	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0	-	-	0	-

# Timings

## 4: Marksheffel Road & Space Village Avenue

Total Traffic Conditions  
AM Peak Hour - Year 2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	19	47	140	8	13	2	342	624	14	8	876	117
Future Volume (vph)	19	47	140	8	13	2	342	624	14	8	876	117
Satd. Flow (prot)	1770	1863	1583	1770	1863	1583	1770	3539	1583	1770	3539	1583
Flt Permitted	0.690			0.724			0.222			0.394		
Satd. Flow (perm)	1285	1863	1583	1349	1863	1583	414	3539	1583	734	3539	1583
Satd. Flow (RTOR)			183			183			131			183
Lane Group Flow (vph)	21	51	152	9	14	2	372	678	15	9	952	127
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Total Split (s)	10.0	19.0	19.0	10.0	19.0	19.0	38.0	86.0	86.0	10.0	58.0	58.0
Total Split (%)	8.0%	15.2%	15.2%	8.0%	15.2%	15.2%	30.4%	68.8%	68.8%	8.0%	46.4%	46.4%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max
Act Effct Green (s)	11.0	10.2	10.2	9.8	8.2	8.2	100.8	98.6	98.6	82.5	77.0	77.0
Actuated g/C Ratio	0.09	0.08	0.08	0.08	0.07	0.07	0.81	0.79	0.79	0.66	0.62	0.62
v/c Ratio	0.16	0.34	0.51	0.08	0.11	0.01	0.71	0.24	0.01	0.02	0.44	0.12
Control Delay	50.4	58.9	10.2	47.6	55.8	0.0	13.7	4.8	0.0	6.8	16.0	0.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	50.4	58.9	10.2	47.6	55.8	0.0	13.7	4.8	0.0	6.8	16.0	0.9
LOS	D	E	B	D	E	A	B	A	A	A	B	A
Approach Delay		25.1			48.4			7.9			14.2	
Approach LOS		C			D			A			B	
Queue Length 50th (ft)	16	40	0	7	11	0	48	45	0	1	176	0
Queue Length 95th (ft)	38	81	40	22	32	0	174	151	0	6	374	9
Internal Link Dist (ft)		398			546			433			422	
Turn Bay Length (ft)	215		250	290		220	390		430	390		415
Base Capacity (vph)	128	205	337	119	193	328	680	2791	1276	529	2181	1045
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.16	0.25	0.45	0.08	0.07	0.01	0.55	0.24	0.01	0.02	0.44	0.12

### Intersection Summary

Cycle Length: 125

Actuated Cycle Length: 125

Offset: 54.5 (44%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green

Natural Cycle: 60

Control Type: Actuated-Coordinated

# Timings 4: Marksheffel Road & Space Village Avenue

Total Traffic Conditions  
AM Peak Hour - Year 2024

Maximum v/c Ratio: 0.71

Intersection Signal Delay: 12.8









Intersection LOS: B

Intersection Capacity Utilization 65.9%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 4: Marksheffel Road & Space Village Avenue






















 Ø1	 Ø2 (R)		 Ø3	 Ø4
10 s	86 s		10 s	19 s
 Ø5	 Ø6 (R)		 Ø7	 Ø8
38 s	58 s		10 s	19 s



# Timings

# Total Traffic Conditions

1: Peterson Boulevard & EB Highway 24 Off Ramp/Space Village Avenue PM Peak Hour - Year 2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	177	103	0	2	0	292	0	866	338	184	2	0
Future Volume (vph)	177	103	0	2	0	292	0	866	338	184	2	0
Satd. Flow (prot)	0	1805	1863	1770	0	1583	0	3539	1583	1770	3539	0
Flt Permitted		0.969		0.575						0.177		
Satd. Flow (perm)	0	1805	1863	1071	0	1583	0	3539	1583	330	3539	0
Satd. Flow (RTOR)						317			350			
Lane Group Flow (vph)	0	304	0	2	0	317	0	941	367	200	2	0
Turn Type	Split	NA	Perm	Perm		Perm		NA	Perm	pm+pt	NA	
Protected Phases	4	4						2		1	6	
Permitted Phases			4	8		8			2	6		
Detector Phase	4	4	4	8		8		2	2	1	6	
Switch Phase												
Minimum Initial (s)	4.0	4.0	4.0	4.0		4.0		4.0	4.0	4.0	4.0	
Minimum Split (s)	10.0	10.0	10.0	10.0		10.0		10.0	10.0	10.0	10.0	
Total Split (s)	29.0	29.0	29.0	25.0		25.0		47.0	47.0	24.0	71.0	
Total Split (%)	23.2%	23.2%	23.2%	20.0%		20.0%		37.6%	37.6%	19.2%	56.8%	
Yellow Time (s)	4.0	4.0	4.0	4.0		4.0		4.0	4.0	4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0		2.0		2.0	2.0	2.0	2.0	
Lost Time Adjust (s)		0.0	0.0	0.0		0.0		0.0	0.0	0.0	0.0	
Total Lost Time (s)		6.0	6.0	6.0		6.0		6.0	6.0	6.0	6.0	
Lead/Lag								Lag	Lag	Lead		
Lead-Lag Optimize?								Yes	Yes	Yes		
Recall Mode	None	None	None	None		None		C-Max	C-Max	None	C-Max	
Act Effect Green (s)		22.6		8.8		8.8		56.3	56.3	75.6	75.6	
Actuated g/C Ratio		0.18		0.07		0.07		0.45	0.45	0.60	0.60	
v/c Ratio		0.93		0.03		0.78		0.59	0.41	0.57	0.00	
Control Delay		86.1		50.5		19.5		29.5	5.0	18.6	12.0	
Queue Delay		0.0		0.0		0.0		0.0	0.0	0.0	0.0	
Total Delay		86.1		50.5		19.5		29.5	5.0	18.6	12.0	
LOS		F		D		B		C	A	B	B	
Approach Delay		86.1			19.7			22.6			18.5	
Approach LOS		F			B			C			B	
Queue Length 50th (ft)		244		2		0		277	7	64	0	
Queue Length 95th (ft)		#414		9		88		449	82	127	2	
Internal Link Dist (ft)		419			647			421			121	
Turn Bay Length (ft)									250	280		
Base Capacity (vph)		332		162		509		1593	904	411	2139	
Starvation Cap Reductn		0		0		0		0	0	0	0	
Spillback Cap Reductn		0		0		0		0	0	0	0	
Storage Cap Reductn		0		0		0		0	0	0	0	
Reduced v/c Ratio		0.92		0.01		0.62		0.59	0.41	0.49	0.00	
Intersection Summary												
Cycle Length: 125												
Actuated Cycle Length: 125												
Offset: 1 (1%), Referenced to phase 2:NBT and 6:SBTL, Start of Green												
Natural Cycle: 80												
Control Type: Actuated-Coordinated												

## Timings

## Total Traffic Conditions

1: Peterson Boulevard & EB Highway 24 Off Ramp/Space Village Avenue PM Peak Hour - Year 2024

Maximum v/c Ratio: 0.93

Intersection Signal Delay: 30.9

Intersection LOS: C

Intersection Capacity Utilization 72.2%







ICU Level of Service C

Analysis Period (min) 15

# 95th percentile volume exceeds capacity, queue may be longer.










Queue shown is maximum after two cycles.

Splits and Phases: 1: Peterson Boulevard & EB Highway 24 Off Ramp/Space Village Avenue

 Ø1	 Ø2 (R)	 Ø4	 Ø8
24 s	47 s	29 s	25 s
 Ø6 (R)			
71 s			

HCM 6th TWSC  
2: Space Village Avenue & EB US 24 On/Off Ramps

Total Traffic Conditions  
PM Peak Hour - Year 2024

Intersection												
Int Delay, s/veh	7.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	338	253	11	5	238	20	13	8	10	44	0	50
Future Vol, veh/h	338	253	11	5	238	20	13	8	10	44	0	50
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	Free
Storage Length	295	-	155	720	-	105	-	-	-	65	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	367	275	12	5	259	22	14	9	11	48	0	54





Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	281	0	0	287	0	0	1289	1300	275	1294	-	-
Stage 1	-	-	-	-	-	-	1009	1009	-	269	-	-
Stage 2	-	-	-	-	-	-	280	291	-	1025	-	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	-	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	-	-
Pot Cap-1 Maneuver	1282	-	-	1275	-	-	141	161	764	139	0	0
Stage 1	-	-	-	-	-	-	290	318	-	737	0	0
Stage 2	-	-	-	-	-	-	727	672	-	284	0	0
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1282	-	-	1275	-	-	109	114	764	100	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	109	114	-	100	-	-
Stage 1	-	-	-	-	-	-	207	227	-	526	-	-
Stage 2	-	-	-	-	-	-	724	669	-	192	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	5	0.1	35.1	70.3
HCM LOS			E	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	153	1282	-	-	1275	-	-	100	-
HCM Lane V/C Ratio	0.22	0.287	-	-	0.004	-	-	0.478	-
HCM Control Delay (s)	35.1	8.9	-	-	7.8	-	-	70.3	0
HCM Lane LOS	E	A	-	-	A	-	-	F	A
HCM 95th %tile Q(veh)	0.8	1.2	-	-	0	-	-	2.1	-













HCM 6th TWSC  
3: Space Village Avenue & Storage Sense Access

Total Traffic Conditions  
PM Peak Hour - Year 2024

Intersection						
Int Delay, s/veh	0.1					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	4	266	259	0	1	4
Future Vol, veh/h	4	266	259	0	1	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	125	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	4	289	282	0	1	4
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	282	0	-	0	579	282
Stage 1	-	-	-	-	282	-
Stage 2	-	-	-	-	297	-
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	1280	-	-	-	477	757
Stage 1	-	-	-	-	766	-
Stage 2	-	-	-	-	754	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1280	-	-	-	475	757
Mov Cap-2 Maneuver	-	-	-	-	475	-
Stage 1	-	-	-	-	763	-
Stage 2	-	-	-	-	754	-
Approach	EB	WB		SB		
HCM Control Delay, s	0.1	0		10.4		
HCM LOS				B		
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1280	-	-	-	677	
HCM Lane V/C Ratio	0.003	-	-	-	0.008	
HCM Control Delay (s)	7.8	0	-	-	10.4	
HCM Lane LOS	A	A	-	-	B	
HCM 95th %tile Q(veh)	0	-	-	-	0	

HCM 6th TWSC  
4: Marksheffel Road & Space Village Avenue

Total Traffic Conditions  
PM Peak Hour - Year 2024

Intersection												
Int Delay, s/veh	45.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	18	34	209	32	11	1	181	933	19	1	581	32
Future Vol, veh/h	18	34	209	32	11	1	181	933	19	1	581	32
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	215	-	250	290	-	220	390	-	430	390	-	415
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	20	37	227	35	12	1	197	1014	21	1	632	35

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1541	2063	316	1745	2077	507	667	0	0	1035	0	0
Stage 1	634	634	-	1408	1408	-	-	-	-	-	-	-
Stage 2	907	1429	-	337	669	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	79	54	680	55	53	511	919	-	-	667	-	-
Stage 1	434	471	-	146	204	-	-	-	-	-	-	-
Stage 2	297	199	-	651	454	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	52	42	680	~ 8	42	511	919	-	-	667	-	-
Mov Cap-2 Maneuver	52	42	-	~ 8	42	-	-	-	-	-	-	-
Stage 1	341	471	-	115	160	-	-	-	-	-	-	-
Stage 2	215	156	-	399	454	-	-	-	-	-	-	-




Approach	EB	WB	NB	SB
HCM Control Delay, s	50.5	\$ 1784.5	1.6	0
HCM LOS	F	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	EBLn3	WBLn1	WBLn2	WBLn3	SBL	SBT	SBR
Capacity (veh/h)	919	-	-	52	42	680	8	42	511	667	-	-
HCM Lane V/C Ratio	0.214	-	-	0.376	0.88	0.334	4.348	0.285	0.002	0.002	-	-
HCM Control Delay (s)	10	-	-	111.1	249.9	12.9	2411.5	121.8	12.1	10.4	-	-
HCM Lane LOS	A	-	-	F	F	B	F	F	B	B	-	-
HCM 95th %tile Q(veh)	0.8	-	-	1.4	3.4	1.5	5.7	1	0	0	-	-

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




HCM 6th TWSC  
5: Access A & Space Village Avenue

Total Traffic Conditions  
PM Peak Hour - Year 2024

Intersection						
Int Delay, s/veh	0.2					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	308	4	4	259	4	3
Future Vol, veh/h	308	4	4	259	4	3
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	335	4	4	282	4	3
Major/Minor	Major1	Major2		Minor1		
Conflicting Flow All	0	0	339	0	627	337
Stage 1	-	-	-	-	337	-
Stage 2	-	-	-	-	290	-
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	-	-	1220	-	447	705
Stage 1	-	-	-	-	723	-
Stage 2	-	-	-	-	759	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1220	-	445	705
Mov Cap-2 Maneuver	-	-	-	-	445	-
Stage 1	-	-	-	-	723	-
Stage 2	-	-	-	-	756	-
Approach	EB	WB		NB		
HCM Control Delay, s	0	0.1		11.9		
HCM LOS	B					
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	529	-	-	1220	-	
HCM Lane V/C Ratio	0.014	-	-	0.004	-	
HCM Control Delay (s)	11.9	-	-	8	0	
HCM Lane LOS	B	-	-	A	A	
HCM 95th %tile Q(veh)	0	-	-	0	-	

HCM 6th TWSC  
6: Access B & Space Village Avenue

























Total Traffic Conditions  
PM Peak Hour - Year 2024

Intersection						
Int Delay, s/veh	0.2					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	303	5	4	263	4	4
Future Vol, veh/h	303	5	4	263	4	4
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	329	5	4	286	4	4
Major/Minor	Major1	Major2		Minor1		
Conflicting Flow All	0	0	334	0	626	332
Stage 1	-	-	-	-	332	-
Stage 2	-	-	-	-	294	-
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	-	-	1225	-	448	710
Stage 1	-	-	-	-	727	-
Stage 2	-	-	-	-	756	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1225	-	446	710
Mov Cap-2 Maneuver	-	-	-	-	446	-
Stage 1	-	-	-	-	727	-
Stage 2	-	-	-	-	753	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		0.1		11.7	
HCM LOS					B	
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	548	-	-	1225	-	
HCM Lane V/C Ratio	0.016	-	-	0.004	-	
HCM Control Delay (s)	11.7	-	-	7.9	0	
HCM Lane LOS	B	-	-	A	A	
HCM 95th %tile Q(veh)	0	-	-	0	-	

# Timings

## 4: Marksheffel Road & Space Village Avenue

Total Traffic Conditions  
PM Peak Hour - Year 2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	18	34	209	32	11	1	181	933	19	1	581	32
Future Volume (vph)	18	34	209	32	11	1	181	933	19	1	581	32
Satd. Flow (prot)	1770	1863	1583	1770	1863	1583	1770	3539	1583	1770	3539	1583
Flt Permitted	0.750			0.655			0.360			0.275		
Satd. Flow (perm)	1397	1863	1583	1220	1863	1583	671	3539	1583	512	3539	1583
Satd. Flow (RTOR)			227			183			131			183
Lane Group Flow (vph)	20	37	227	35	12	1	197	1014	21	1	632	35
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Total Split (s)	12.0	32.0	32.0	12.0	32.0	32.0	23.0	69.0	69.0	12.0	58.0	58.0
Total Split (%)	9.6%	25.6%	25.6%	9.6%	25.6%	25.6%	18.4%	55.2%	55.2%	9.6%	46.4%	46.4%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max
Act Effct Green (s)	12.5	8.9	8.9	13.7	11.3	11.3	96.9	94.6	94.6	87.1	81.5	81.5
Actuated g/C Ratio	0.10	0.07	0.07	0.11	0.09	0.09	0.78	0.76	0.76	0.70	0.65	0.65
v/c Ratio	0.13	0.28	0.70	0.22	0.07	0.00	0.33	0.38	0.02	0.00	0.27	0.03
Control Delay	46.1	60.6	19.8	47.2	51.1	0.0	6.1	7.3	0.0	6.0	11.1	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	46.1	60.6	19.8	47.2	51.1	0.0	6.1	7.3	0.0	6.0	11.1	0.1
LOS	D	E	B	D	D	A	A	A	A	A	B	A
Approach Delay		27.0			47.2			7.0			10.6	
Approach LOS		C			D			A			B	
Queue Length 50th (ft)	14	30	7	25	8	0	40	134	0	0	116	0
Queue Length 95th (ft)	m30	m58	m68	52	29	0	79	283	0	2	186	0
Internal Link Dist (ft)		396			546			433			422	
Turn Bay Length (ft)	215		250	290		220	390		430	390		415
Base Capacity (vph)	158	387	509	160	387	474	669	2678	1230	418	2308	1096
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.13	0.10	0.45	0.22	0.03	0.00	0.29	0.38	0.02	0.00	0.27	0.03

### Intersection Summary

Cycle Length: 125  
 Actuated Cycle Length: 125  
 Offset: 54.5 (44%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green  
 Natural Cycle: 60  
 Control Type: Actuated-Coordinated



# Timings 4: Marksheffel Road & Space Village Avenue

Total Traffic Conditions  
PM Peak Hour - Year 2024

Maximum v/c Ratio: 0.70

Intersection Signal Delay: 11.5

Intersection LOS: B









Intersection Capacity Utilization 52.6%

ICU Level of Service A

Analysis Period (min) 15

m Volume for 95th percentile queue is metered by upstream signal.






















Splits and Phases: 4: Marksheffel Road & Space Village Avenue

 Ø1	 Ø2 (R)	 Ø3	 Ø4
12 s	69 s	12 s	32 s
 Ø5	 Ø6 (R)	 Ø7	 Ø8
23 s	58 s	12 s	32 s

# Timings

# Total Traffic Conditions

1: Peterson Boulevard & EB Highway 24 Off Ramp/Space Village Avenue AM Peak Hour - Year 2042

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	84	223	665	143	0	540	0	182	89	227	1022	0
Future Volume (vph)	84	223	665	143	0	540	0	182	89	227	1022	0
Satd. Flow (prot)	0	1839	1583	1770	0	1583	0	3539	1583	1770	3539	0
Flt Permitted		0.987		0.560						0.442		
Satd. Flow (perm)	0	1839	1583	1043	0	1583	0	3539	1583	823	3539	0
Satd. Flow (RTOR)			164			587			164			
Lane Group Flow (vph)	0	333	723	155	0	587	0	198	97	247	1111	0
Turn Type	Split	NA	Perm	Perm		Perm		NA	Perm	pm+pt	NA	
Protected Phases	4	4						2		1	6	
Permitted Phases			4	8		8			2	6		
Detector Phase	4	4	4	8		8		2	2	1	6	
Switch Phase												
Minimum Initial (s)	4.0	4.0	4.0	4.0		4.0		4.0	4.0	4.0	4.0	
Minimum Split (s)	10.0	10.0	10.0	10.0		10.0		10.0	10.0	10.0	10.0	
Total Split (s)	41.0	41.0	41.0	21.0		21.0		20.0	20.0	18.0	38.0	
Total Split (%)	41.0%	41.0%	41.0%	21.0%		21.0%		20.0%	20.0%	18.0%	38.0%	
Yellow Time (s)	4.0	4.0	4.0	4.0		4.0		4.0	4.0	4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0		2.0		2.0	2.0	2.0	2.0	
Lost Time Adjust (s)		0.0	0.0	0.0		0.0		0.0	0.0	0.0	0.0	
Total Lost Time (s)		6.0	6.0	6.0		6.0		6.0	6.0	6.0	6.0	
Lead/Lag								Lag	Lag	Lead		
Lead-Lag Optimize?								Yes	Yes	Yes		
Recall Mode	None	None	None	None		None		C-Max	C-Max	None	C-Max	
Act Effct Green (s)		35.0	35.0	15.0		15.0		14.3	14.3	32.0	32.0	
Actuated g/C Ratio		0.35	0.35	0.15		0.15		0.14	0.14	0.32	0.32	
v/c Ratio		0.52	1.10	0.99		0.80		0.39	0.27	0.66	0.98	
Control Delay		29.3	89.8	115.3		12.7		41.7	2.5	36.7	57.2	
Queue Delay		0.0	0.0	0.0		0.0		0.0	0.0	0.0	0.0	
Total Delay		29.3	89.8	115.3		12.7		41.7	2.5	36.7	57.2	
LOS		C	F	F		B		D	A	D	E	
Approach Delay		70.7			34.1			28.8			53.5	
Approach LOS		E			C			C			D	
Queue Length 50th (ft)		167	~452	100		0		61	0	124	367	
Queue Length 95th (ft)		253	#678	#229		#124		96	6	196	#512	
Internal Link Dist (ft)		419			647			421			121	
Turn Bay Length (ft)									250	280		
Base Capacity (vph)		643	660	156		736		504	366	377	1132	
Starvation Cap Reductn		0	0	0		0		0	0	0	0	
Spillback Cap Reductn		0	0	0		0		0	0	0	0	
Storage Cap Reductn		0	0	0		0		0	0	0	0	
Reduced v/c Ratio		0.52	1.10	0.99		0.80		0.39	0.27	0.66	0.98	
Intersection Summary												
Cycle Length: 100												
Actuated Cycle Length: 100												
Offset: 20 (20%), Referenced to phase 2:NBT and 6:SBTL, Start of Green												
Natural Cycle: 80												
Control Type: Actuated-Coordinated												

## Timings

## Total Traffic Conditions

1: Peterson Boulevard & EB Highway 24 Off Ramp/Space Village Avenue AM Peak Hour - Year 2042

Maximum v/c Ratio: 1.10

Intersection Signal Delay: 52.5

Intersection LOS: D

Intersection Capacity Utilization 90.7%

ICU Level of Service E

Analysis Period (min) 15






~ 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.

Splits and Phases: 1: Peterson Boulevard & EB Highway 24 Off Ramp/Space Village Avenue

 Ø1	 Ø2 (R)	 Ø4	 Ø8
18 s	20 s	41 s	21 s
 Ø6 (R)			
38 s			

HCM 6th TWSC  
2: Space Village Avenue & EB US 24 On/Off Ramps

Total Traffic Conditions  
AM Peak Hour - Year 2042

Intersection												
Int Delay, s/veh	8.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	126	368	9	9	661	48	21	8	9	67	0	30
Future Vol, veh/h	126	368	9	9	661	48	21	8	9	67	0	30
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	Free
Storage Length	295	-	155	720	-	105	-	-	-	65	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	137	400	10	10	718	52	23	9	10	73	0	33

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	770	0	0	410	0	0	1438	1464	400	1427	-	-
Stage 1	-	-	-	-	-	-	674	674	-	738	-	-
Stage 2	-	-	-	-	-	-	764	790	-	689	-	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	-	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	-	-
Pot Cap-1 Maneuver	844	-	-	1149	-	-	111	128	650	113	0	0
Stage 1	-	-	-	-	-	-	444	454	-	410	0	0
Stage 2	-	-	-	-	-	-	396	402	-	436	0	0
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	844	-	-	1149	-	-	97	106	650	91	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	97	106	-	91	-	-
Stage 1	-	-	-	-	-	-	372	380	-	344	-	-
Stage 2	-	-	-	-	-	-	393	398	-	351	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	2.5	0.1	47.9	127.2
HCM LOS			E	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	124	844	-	-	1149	-	-	91	-
HCM Lane V/C Ratio	0.333	0.162	-	-	0.009	-	-	0.8	-
HCM Control Delay (s)	47.9	10.1	-	-	8.2	-	-	127.2	0
HCM Lane LOS	E	B	-	-	A	-	-	F	A
HCM 95th %tile Q(veh)	1.3	0.6	-	-	0	-	-	4.2	-

HCM 6th TWSC  
3: Space Village Avenue & Storage Sense Access

Total Traffic Conditions  
AM Peak Hour - Year 2042

Intersection						
Int Delay, s/veh	0.1					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↑	↗	↘	
Traffic Vol, veh/h	6	287	682	5	0	2
Future Vol, veh/h	6	287	682	5	0	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	125	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	7	312	741	5	0	2
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	746	0	-	0	1067	741
Stage 1	-	-	-	-	741	-
Stage 2	-	-	-	-	326	-
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	862	-	-	-	246	416
Stage 1	-	-	-	-	471	-
Stage 2	-	-	-	-	731	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	862	-	-	-	244	416
Mov Cap-2 Maneuver	-	-	-	-	244	-
Stage 1	-	-	-	-	466	-
Stage 2	-	-	-	-	731	-
Approach	EB	WB		SB		
HCM Control Delay, s	0.2	0		13.7		
HCM LOS				B		
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	862	-	-	-	-	416
HCM Lane V/C Ratio	0.008	-	-	-	-	0.005
HCM Control Delay (s)	9.2	0	-	-	-	13.7
HCM Lane LOS	A	A	-	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	-	0




HCM 6th TWSC  
4: Marksheffel Road & Space Village Avenue

Total Traffic Conditions  
AM Peak Hour - Year 2042

Intersection												
Int Delay, s/veh	25.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑	↱	↰	↑	↱	↰	↑↑	↱	↰	↑↑	↱
Traffic Vol, veh/h	26	67	202	12	19	3	490	900	20	12	1263	166
Future Vol, veh/h	26	67	202	12	19	3	490	900	20	12	1263	166
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	215	-	250	290	-	220	390	-	430	390	-	415
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	28	73	220	13	21	3	533	978	22	13	1373	180
Major/Minor	Minor2		Minor1		Major1		Major2		Major2		Major2	
Conflicting Flow All	2965	3465	687	2793	3623	489	1553	0	0	1000	0	0
Stage 1	1399	1399	-	2044	2044	-	-	-	-	-	-	-
Stage 2	1566	2066	-	749	1579	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	~ 6	~ 7	389	~ 9	~ 5	525	~ 422	-	-	688	-	-
Stage 1	148	206	-	58	98	-	-	-	-	-	-	-
Stage 2	116	95	-	370	168	-	-	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	0	389	-	0	525	~ 422	-	-	688	-	-
Mov Cap-2 Maneuver	-	0	-	-	0	-	-	-	-	-	-	-
Stage 1	148	202	-	58	0	-	-	-	-	-	-	-
Stage 2	-	0	-	101	165	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB		SB		SB	
HCM Control Delay, s					56.9		0.1					
HCM LOS	-		-									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	EBLn3	WBLn1	WBLn2	WBLn3	SBL	SBT	SBR
Capacity (veh/h)	~ 422	-	-	-	-	389	-	-	525	688	-	-
HCM Lane V/C Ratio	1.262	-	-	-	-	0.564	-	-	0.006	0.019	-	-
HCM Control Delay (s)	163.7	-	-	-	-	25.6	-	-	11.9	10.3	-	-
HCM Lane LOS	F	-	-	-	-	D	-	-	B	B	-	-
HCM 95th %tile Q(veh)	22.6	-	-	-	-	3.4	-	-	0	0.1	-	-
Notes												
~: Volume exceeds capacity    \$: Delay exceeds 300s    +: Computation Not Defined    *: All major volume in platoon												

HCM 6th TWSC  
5: Access A & Space Village Avenue

Total Traffic Conditions  
AM Peak Hour - Year 2042

Intersection						
Int Delay, s/veh	0.1					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	436	8	8	675	3	2
Future Vol, veh/h	436	8	8	675	3	2
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	474	9	9	734	3	2




Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	483	0	1231
Stage 1	-	-	-	-	479
Stage 2	-	-	-	-	752
Critical Hdwy	-	-	4.12	-	6.42
Critical Hdwy Stg 1	-	-	-	-	5.42
Critical Hdwy Stg 2	-	-	-	-	5.42
Follow-up Hdwy	-	-	2.218	-	3.518
Pot Cap-1 Maneuver	-	-	1080	-	196
Stage 1	-	-	-	-	623
Stage 2	-	-	-	-	466
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1080	-	193
Mov Cap-2 Maneuver	-	-	-	-	193
Stage 1	-	-	-	-	623
Stage 2	-	-	-	-	459

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	18.9
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	264	-	-	1080	-
HCM Lane V/C Ratio	0.021	-	-	0.008	-
HCM Control Delay (s)	18.9	-	-	8.4	0
HCM Lane LOS	C	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0	-

HCM 6th TWSC  
6: Access B & Space Village Avenue

Total Traffic Conditions  
AM Peak Hour - Year 2042

Intersection						
Int Delay, s/veh	0.2					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	429	9	9	675	3	3
Future Vol, veh/h	429	9	9	675	3	3
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	466	10	10	734	3	3

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	476	0	1225
Stage 1	-	-	-	-	471
Stage 2	-	-	-	-	754
Critical Hdwy	-	-	4.12	-	6.42
Critical Hdwy Stg 1	-	-	-	-	5.42
Critical Hdwy Stg 2	-	-	-	-	5.42
Follow-up Hdwy	-	-	2.218	-	3.518
Pot Cap-1 Maneuver	-	-	1086	-	198
Stage 1	-	-	-	-	628
Stage 2	-	-	-	-	465
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1086	-	195
Mov Cap-2 Maneuver	-	-	-	-	195
Stage 1	-	-	-	-	628
Stage 2	-	-	-	-	458

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	17.6
HCM LOS			C

























Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	293	-	-	1086	-
HCM Lane V/C Ratio	0.022	-	-	0.009	-
HCM Control Delay (s)	17.6	-	-	8.3	0
HCM Lane LOS	C	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0	-



# Timings

## 4: Marksheffel Road & Space Village Avenue

Total Traffic Conditions  
AM Peak Hour - Year 2042

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	26	67	202	12	19	3	490	900	20	12	1263	166
Future Volume (vph)	26	67	202	12	19	3	490	900	20	12	1263	166
Satd. Flow (prot)	1770	1863	1583	1770	1863	1583	1770	3539	1583	1770	3539	1583
Flt Permitted	0.665			0.709			0.066			0.293		
Satd. Flow (perm)	1239	1863	1583	1321	1863	1583	123	3539	1583	546	3539	1583
Satd. Flow (RTOR)			220			183			131			183
Lane Group Flow (vph)	28	73	220	13	21	3	533	978	22	13	1373	180
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Total Split (s)	11.0	13.0	13.0	11.0	13.0	13.0	41.0	90.0	90.0	11.0	60.0	60.0
Total Split (%)	8.8%	10.4%	10.4%	8.8%	10.4%	10.4%	32.8%	72.0%	72.0%	8.8%	48.0%	48.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max
Act Effct Green (s)	11.5	9.5	9.5	10.3	7.3	7.3	99.1	94.7	94.7	63.3	58.1	58.1
Actuated g/C Ratio	0.09	0.08	0.08	0.08	0.06	0.06	0.79	0.76	0.76	0.51	0.46	0.46
v/c Ratio	0.21	0.51	0.68	0.10	0.19	0.01	0.96	0.36	0.02	0.04	0.84	0.22
Control Delay	51.3	68.9	18.6	48.6	60.6	0.0	64.2	6.6	0.1	9.3	35.9	3.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	51.3	68.9	18.6	48.6	60.6	0.0	64.2	6.6	0.1	9.3	35.9	3.5
LOS	D	E	B	D	E	A	E	A	A	A	D	A
Approach Delay		32.9			51.5			26.6			32.0	
Approach LOS		C			D			C			C	
Queue Length 50th (ft)	20	53	0	9	17	0	371	117	0	3	533	0
Queue Length 95th (ft)	50	#136	#102	30	44	0	#600	212	0	9	#641	41
Internal Link Dist (ft)		398			546			433			422	
Turn Bay Length (ft)	215		250	290		220	390		430	390		415
Base Capacity (vph)	135	142	324	127	110	266	567	2680	1230	327	1643	833
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.21	0.51	0.68	0.10	0.19	0.01	0.94	0.36	0.02	0.04	0.84	0.22

### Intersection Summary

Cycle Length: 125  
 Actuated Cycle Length: 125  
 Offset: 54.5 (44%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green  
 Natural Cycle: 90  
 Control Type: Actuated-Coordinated

# Timings 4: Marksheffel Road & Space Village Avenue

Total Traffic Conditions  
AM Peak Hour - Year 2042

Maximum v/c Ratio: 0.96

Intersection Signal Delay: 29.9

Intersection LOS: C

Intersection Capacity Utilization 85.2%









ICU Level of Service E

Analysis Period (min) 15

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.






















Splits and Phases: 4: Marksheffel Road & Space Village Avenue

 Ø1	 Ø2 (R)		 Ø3	 Ø4
11 s	90 s		11 s	13 s
 Ø5	 Ø6 (R)		 Ø7	 Ø8
41 s	60 s		11 s	13 s

# Timings

## Total Traffic Conditions

1: Peterson Boulevard & EB Highway 24 Off Ramp/Space Village Avenue PM Peak Hour - Year 2042

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	255	147	0	2	0	419	0	1250	487	264	3	0
Future Volume (vph)	255	147	0	2	0	419	0	1250	487	264	3	0
Satd. Flow (prot)	0	1805	1863	1770	0	1583	0	3539	1583	1770	3539	0
Flt Permitted		0.969		0.509						0.078		
Satd. Flow (perm)	0	1805	1863	948	0	1583	0	3539	1583	145	3539	0
Satd. Flow (RTOR)						234			366			
Lane Group Flow (vph)	0	437	0	2	0	455	0	1359	529	287	3	0
Turn Type	Split	NA	Perm	Perm		Perm		NA	Perm	pm+pt	NA	
Protected Phases	4	4						2		1	6	
Permitted Phases			4	8		8			2	6		
Detector Phase	4	4	4	8		8		2	2	1	6	
Switch Phase												
Minimum Initial (s)	4.0	4.0	4.0	4.0		4.0		4.0	4.0	4.0	4.0	
Minimum Split (s)	10.0	10.0	10.0	10.0		10.0		10.0	10.0	10.0	10.0	
Total Split (s)	33.0	33.0	33.0	22.0		22.0		51.0	51.0	19.0	70.0	
Total Split (%)	26.4%	26.4%	26.4%	17.6%		17.6%		40.8%	40.8%	15.2%	56.0%	
Yellow Time (s)	4.0	4.0	4.0	4.0		4.0		4.0	4.0	4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0		2.0		2.0	2.0	2.0	2.0	
Lost Time Adjust (s)		0.0	0.0	0.0		0.0		0.0	0.0	0.0	0.0	
Total Lost Time (s)		6.0	6.0	6.0		6.0		6.0	6.0	6.0	6.0	
Lead/Lag								Lag	Lag	Lead		
Lead-Lag Optimize?								Yes	Yes	Yes		
Recall Mode	None	None	None	None		None		C-Max	C-Max	None	C-Max	
Act Effct Green (s)		27.0		16.0		16.0		45.0	45.0	64.0	64.0	
Actuated g/C Ratio		0.22		0.13		0.13		0.36	0.36	0.51	0.51	
v/c Ratio		1.12		0.02		1.12		1.07	0.66	1.18	0.00	
Control Delay		128.2		48.0		105.9		83.8	14.0	147.2	15.0	
Queue Delay		0.0		0.0		0.0		0.0	0.0	0.0	0.0	
Total Delay		128.2		48.0		105.9		83.8	14.0	147.2	15.0	
LOS		F		D		F		F	B	F	B	
Approach Delay		128.2			105.6			64.2			145.9	
Approach LOS		F			F			E			F	
Queue Length 50th (ft)		~407		1		~247		~638	103	~228	0	
Queue Length 95th (ft)		#614		9		#459		#777	232	#409	3	
Internal Link Dist (ft)		419			647			421			121	
Turn Bay Length (ft)									250	280		
Base Capacity (vph)		389		121		406		1274	804	243	1811	
Starvation Cap Reductn		0		0		0		0	0	0	0	
Spillback Cap Reductn		0		0		0		0	0	0	0	
Storage Cap Reductn		0		0		0		0	0	0	0	
Reduced v/c Ratio		1.12		0.02		1.12		1.07	0.66	1.18	0.00	

### Intersection Summary

Cycle Length: 125

Actuated Cycle Length: 125

Offset: 1 (1%), Referenced to phase 2:NBT and 6:SBTL, Start of Green

Natural Cycle: 150

Control Type: Actuated-Coordinated

## Timings

## Total Traffic Conditions

1: Peterson Boulevard & EB Highway 24 Off Ramp/Space Village Avenue PM Peak Hour - Year 2042

Maximum v/c Ratio: 1.18

Intersection Signal Delay: 87.2

Intersection LOS: F

Intersection Capacity Utilization 97.3%

ICU Level of Service F

Analysis Period (min) 15






~ 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.

Splits and Phases: 1: Peterson Boulevard & EB Highway 24 Off Ramp/Space Village Avenue

 Ø1	 Ø2 (R)	 Ø4	 Ø8
19 s	51 s	33 s	22 s
 Ø6 (R)			
70 s			

# HCM 6th TWSC

## 2: Space Village Avenue & EB US 24 On/Off Ramps

Total Traffic Conditions  
PM Peak Hour - Year 2042

Intersection												
Int Delay, s/veh	60.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑	↱	↰	↑	↱		↕		↰		↱
Traffic Vol, veh/h	488	362	17	8	340	28	18	12	15	63	0	72
Future Vol, veh/h	488	362	17	8	340	28	18	12	15	63	0	72
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	Free
Storage Length	295	-	155	720	-	105	-	-	-	65	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	530	393	18	9	370	30	20	13	16	68	0	78

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	400	0	0	411	0	0	1856	1871	393	1865	-	-
Stage 1	-	-	-	-	-	-	1453	1453	-	388	-	-
Stage 2	-	-	-	-	-	-	403	418	-	1477	-	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	-	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	-	-
Pot Cap-1 Maneuver	1159	-	-	1148	-	-	56	72	656	~ 56	0	0
Stage 1	-	-	-	-	-	-	162	195	-	636	0	0
Stage 2	-	-	-	-	-	-	624	591	-	157	0	0
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1159	-	-	1148	-	-	36	39	656	~ 26	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	36	39	-	~ 26	-	-
Stage 1	-	-	-	-	-	-	88	106	-	345	-	-
Stage 2	-	-	-	-	-	-	619	586	-	73	-	-






Approach	EB	WB	NB	SB
HCM Control Delay, s	6	0.2	216.7	\$ 1058.1
HCM LOS			F	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	54	1159	-	-	1148	-	-	26	-
HCM Lane V/C Ratio	0.906	0.458	-	-	0.008	-	-	2.634	-
HCM Control Delay (s)	216.7	10.7	-	-	8.2	-	-	\$ 1058.1	0
HCM Lane LOS	F	B	-	-	A	-	-	F	A
HCM 95th %tile Q(veh)	4	2.5	-	-	0	-	-	8.4	-

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

HCM 6th TWSC  
3: Space Village Avenue & Storage Sense Access

Total Traffic Conditions  
PM Peak Hour - Year 2042

Intersection						
Int Delay, s/veh	0.2					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	6	381	370	0	2	6
Future Vol, veh/h	6	381	370	0	2	6
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	125	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	7	414	402	0	2	7
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	402	0	-	0	830	402
Stage 1	-	-	-	-	402	-
Stage 2	-	-	-	-	428	-
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	1157	-	-	-	340	648
Stage 1	-	-	-	-	676	-
Stage 2	-	-	-	-	657	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1157	-	-	-	337	648
Mov Cap-2 Maneuver	-	-	-	-	337	-
Stage 1	-	-	-	-	671	-
Stage 2	-	-	-	-	657	-
Approach	EB	WB		SB		
HCM Control Delay, s	0.1	0		11.9		
HCM LOS	B					
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1157	-	-	-	527	
HCM Lane V/C Ratio	0.006	-	-	-	0.017	
HCM Control Delay (s)	8.1	0	-	-	11.9	
HCM Lane LOS	A	A	-	-	B	
HCM 95th %tile Q(veh)	0	-	-	-	0.1	

# HCM 6th TWSC




## 4: Marksheffel Road & Space Village Avenue

Total Traffic Conditions  
PM Peak Hour - Year 2042

Intersection												
Int Delay, s/veh	1.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑	↱	↰	↑	↱	↰	↑↑	↱	↰	↑↑	↱
Traffic Vol, veh/h	24	49	300	47	16	2	259	1346	27	2	839	45
Future Vol, veh/h	24	49	300	47	16	2	259	1346	27	2	839	45
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	215	-	250	290	-	220	390	-	430	390	-	415
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	26	53	326	51	17	2	282	1463	29	2	912	49
Major/Minor	Minor2		Minor1		Major1		Major2		Major2		Major2	
Conflicting Flow All	2220	2972	456	2514	2992	732	961	0	0	1492	0	0
Stage 1	916	916	-	2027	2027	-	-	-	-	-	-	-
Stage 2	1304	2056	-	487	965	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	~ 24	~ 14	551	~ 14	~ 14	364	712	-	-	446	-	-
Stage 1	293	349	-	59	100	-	-	-	-	-	-	-
Stage 2	169	97	-	531	331	-	-	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	~ 8	551	-	~ 8	364	712	-	-	446	-	-
Mov Cap-2 Maneuver	-	~ 8	-	-	~ 8	-	-	-	-	-	-	-
Stage 1	177	348	-	~ 36	60	-	-	-	-	-	-	-
Stage 2	72	59	-	183	330	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB		SB		SB	
HCM Control Delay, s					2.1		0					
HCM LOS	-		-									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	EBLn3	WBLn1	WBLn2	WBLn3	SBL	SBT	SBR
Capacity (veh/h)	712	-	-	-	8	551	-	8	364	446	-	-
HCM Lane V/C Ratio	0.395	-	-	-	6.658	0.592	-	2.174	0.006	0.005	-	-
HCM Control Delay (s)	13.3	-	-	-	\$ 3450.9	20.6	-	\$ 1433.3	15	13.1	-	-
HCM Lane LOS	B	-	-	-	F	C	-	F	C	B	-	-
HCM 95th %tile Q(veh)	1.9	-	-	-	8.1	3.8	-	3.2	0	0	-	-
Notes												
~: Volume exceeds capacity    \$: Delay exceeds 300s    +: Computation Not Defined    *: All major volume in platoon												

HCM 6th TWSC  
5: Access A & Space Village Avenue




Total Traffic Conditions  
PM Peak Hour - Year 2042

Intersection						
Int Delay, s/veh	0.2					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	436	4	4	372	4	3
Future Vol, veh/h	436	4	4	372	4	3
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	474	4	4	404	4	3
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	478	0	888	476
Stage 1	-	-	-	-	476	-
Stage 2	-	-	-	-	412	-
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	-	-	1084	-	314	589
Stage 1	-	-	-	-	625	-
Stage 2	-	-	-	-	669	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1084	-	312	589
Mov Cap-2 Maneuver	-	-	-	-	312	-
Stage 1	-	-	-	-	625	-
Stage 2	-	-	-	-	666	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		0.1		14.4	
HCM LOS	B					
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	391	-	-	1084	-	
HCM Lane V/C Ratio	0.019	-	-	0.004	-	
HCM Control Delay (s)	14.4	-	-	8.3	0	
HCM Lane LOS	B	-	-	A	A	
HCM 95th %tile Q(veh)	0.1	-	-	0	-	



HCM 6th TWSC  
6: Access B & Space Village Avenue

Total Traffic Conditions  
PM Peak Hour - Year 2042

Intersection						
Int Delay, s/veh	0.2					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	434	5	4	372	4	4
Future Vol, veh/h	434	5	4	372	4	4
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	472	5	4	404	4	4

Major/Minor	Major1	Major2	Minor1			
Conflicting Flow All	0	0	477	0	887	475
Stage 1	-	-	-	-	475	-
Stage 2	-	-	-	-	412	-
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	-	-	1085	-	315	590
Stage 1	-	-	-	-	626	-
Stage 2	-	-	-	-	669	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1085	-	313	590
Mov Cap-2 Maneuver	-	-	-	-	313	-
Stage 1	-	-	-	-	626	-
Stage 2	-	-	-	-	666	-

























Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	14
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	409	-	-	1085	-
HCM Lane V/C Ratio	0.021	-	-	0.004	-
HCM Control Delay (s)	14	-	-	8.3	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0	-

# Timings

## 4: Marksheffel Road & Space Village Avenue

Total Traffic Conditions  
PM Peak Hour - Year 2042

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	24	49	300	47	16	2	259	1346	27	2	839	45
Future Volume (vph)	24	49	300	47	16	2	259	1346	27	2	839	45
Satd. Flow (prot)	1770	1863	1583	1770	1863	1583	1770	3539	1583	1770	3539	1583
Flt Permitted	0.622			0.722			0.235			0.146		
Satd. Flow (perm)	1159	1863	1583	1345	1863	1583	438	3539	1583	272	3539	1583
Satd. Flow (RTOR)			304			183			131			183
Lane Group Flow (vph)	26	53	326	51	17	2	282	1463	29	2	912	49
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Total Split (s)	10.0	30.0	30.0	10.0	30.0	30.0	26.0	75.0	75.0	10.0	59.0	59.0
Total Split (%)	8.0%	24.0%	24.0%	8.0%	24.0%	24.0%	20.8%	60.0%	60.0%	8.0%	47.2%	47.2%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max
Act Effct Green (s)	15.2	10.8	10.8	13.4	12.4	12.4	94.2	91.8	91.8	81.1	75.5	75.5
Actuated g/C Ratio	0.12	0.09	0.09	0.11	0.10	0.10	0.75	0.73	0.73	0.65	0.60	0.60
v/c Ratio	0.15	0.33	0.79	0.32	0.09	0.01	0.61	0.56	0.02	0.01	0.43	0.05
Control Delay	42.9	55.9	20.2	51.7	50.3	0.0	11.4	10.6	0.0	7.5	16.1	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	42.9	55.9	20.2	51.7	50.3	0.0	11.4	10.6	0.0	7.5	16.1	0.1
LOS	D	E	C	D	D	A	B	B	A	A	B	A
Approach Delay		26.3			49.9			10.6			15.3	
Approach LOS		C			D			B			B	
Queue Length 50th (ft)	20	43	46	42	13	0	58	226	0	0	189	0
Queue Length 95th (ft)	m25	m54	m87	68	34	0	122	516	0	3	346	0
Internal Link Dist (ft)		396			546			433			422	
Turn Bay Length (ft)	215		250	290		220	390		430	390		415
Base Capacity (vph)	175	357	549	158	357	451	545	2600	1198	242	2138	1029
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.15	0.15	0.59	0.32	0.05	0.00	0.52	0.56	0.02	0.01	0.43	0.05

### Intersection Summary

Cycle Length: 125

Actuated Cycle Length: 125

Offset: 54.5 (44%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green

Natural Cycle: 70

Control Type: Actuated-Coordinated

# Timings 4: Marksheffel Road & Space Village Avenue

Total Traffic Conditions  
PM Peak Hour - Year 2042

Maximum v/c Ratio: 0.79

Intersection Signal Delay: 14.8

Intersection LOS: B










Intersection Capacity Utilization 64.8%

ICU Level of Service C

Analysis Period (min) 15

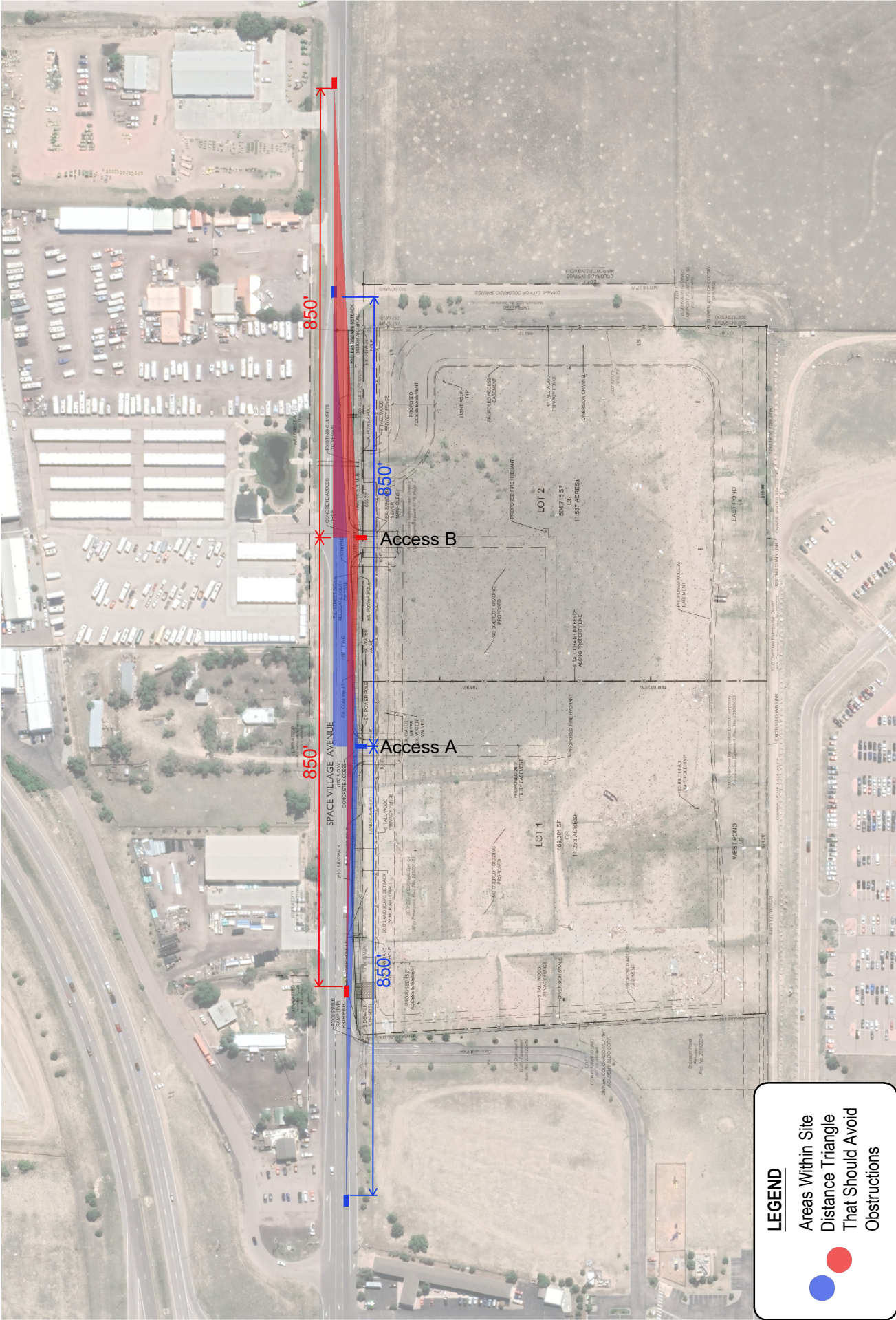
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: Marksheffel Road & Space Village Avenue

 Ø1	 Ø2 (R)		 Ø3	 Ø4
10 s	75 s		10 s	30 s
 Ø5	 Ø6 (R)		 Ø7	 Ø8
26 s	59 s		10 s	30 s

## **APPENDIX D**

### **Intersection Sight Distance Exhibit**



**LEGEND**

Areas Within Site  
Distance Triangle  
That Should Avoid  
Obstructions