



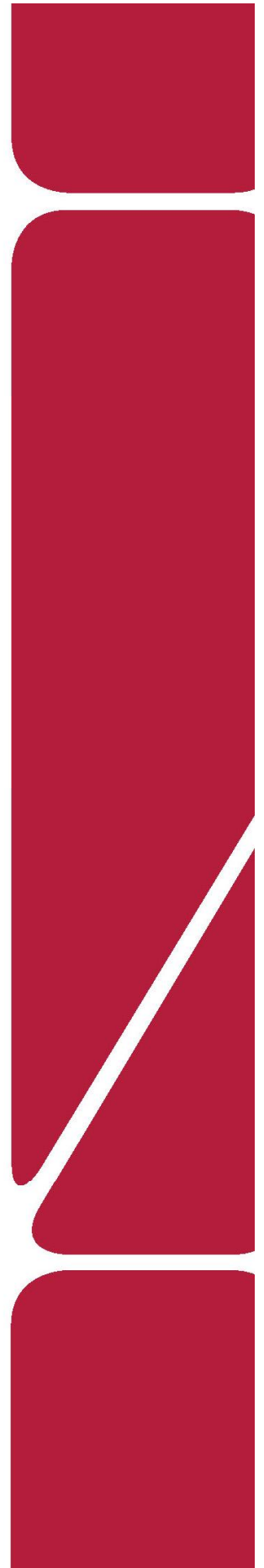
Traffic Impact Study

Skyview Village

Colorado Springs, Colorado

Prepared for:
Challenger Homes

Kimley»»Horn



T R A F F I C I M P A C T S T U D Y

Skyview Village

Colorado Springs, Colorado

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TABLE OF CONTENTS

TABLE OF CONTENTS	i
LIST OF TABLES	ii
LIST OF FIGURES	ii
1.0 EXECUTIVE SUMMARY	1
2.0 INTRODUCTION.....	3
3.0 EXISTING CONDITIONS	5
3.1 Existing Study Area	5
3.2 Existing Roadway Network.....	5
3.3 Existing Traffic Volumes	7
3.4 Unspecified Development Traffic Growth.....	11
4.0 PROJECT TRAFFIC CHARACTERISTICS.....	14
4.1 Trip Generation.....	14
4.2 Trip Distribution	14
4.3 Traffic Assignment.....	16
4.4 Total (Background Plus Project) Traffic.....	16
5.0 TRAFFIC OPERATIONS ANALYSIS	20
5.1 Analysis Methodology.....	20
5.2 Key Intersection Operational Analysis	21
5.3 Vehicle Queuing Analysis	24
6.0 CONCLUSIONS AND RECOMMENDATIONS	26

APPENDICES

- Appendix A – Intersection Count Sheets / Count Adjustment Calculations
- Appendix B – CDOT OTIS Traffic Growth Information
- Appendix C – Trip Generation Calculations
- Appendix D – Intersection Analysis Worksheets
- Appendix E – Vehicle Queuing Analysis Worksheets
- Appendix F – Conceptual Site Plan

LIST OF TABLES

Table 1 – Skyview Village Project Traffic Generation	14
Table 2 – Level of Service Definitions	20
Table 3 – Hancock Expressway & Powers Boulevard LOS Results	21
Table 4 – Hancock Expressway & Silver Hawk Avenue LOS Results	22
Table 5 – Painted Sky View & Silver Hawk Avenue LOS Results.....	23
Table 6 – Queuing Analysis Results and Recommendations	24

LIST OF FIGURES

Figure 1 – Vicinity Map.....	4
Figure 2 – Site Area	6
Figure 3 – Existing Lane Configurations.....	8
Figure 4 – 2021 Existing Traffic Volumes	9
Figure 5 – 2021 Existing Adjusted Traffic Volumes	10
Figure 6 – 2023 Background Traffic Volumes.....	12
Figure 7 – 2040 Background Traffic Volumes.....	13
Figure 8 – Project Trip Distribution	15
Figure 9 – Project Traffic Assignment	17
Figure 10 – 2023 Background Plus Project Traffic Volumes.....	18
Figure 11 – 2040 Background Plus Project Traffic Volumes.....	19
Figure 12 – Recommended Lane Configurations and Control	25

1.0 EXECUTIVE SUMMARY

Skyview Village is a proposed 74-home single-family residential neighborhood project to be located on the northwest corner of the Hancock Expressway and Powers Boulevard (SH-21) intersection in Colorado Springs, Colorado. The project is expected to be completed within the next couple years. Therefore, analysis was conducted for the 2023 short term horizon as well as the 2040 long term horizon.

The purpose of this study is to identify project traffic generation characteristics, to identify potential project traffic related impacts on the local street system, and to develop mitigation measures required for identified impacts. The following intersections were incorporated into this traffic study in accordance with the City of Colorado Springs standards and requirements:

- Hancock Expressway and Powers Boulevard (SH-21)
- Hancock Expressway and Silver Hawk Avenue
- Painted Sky View and Silver Hawk Avenue

Regional access will be provided by Interstate 25 (I-25), US Highway 24, Powers Boulevard (SH-21), and Milton E Proby Parkway. Primary access will be provided by Hancock Expressway. Direct access to the residential development will be provided from a proposed new east leg at the Painted Sky View and Silver Hawk Avenue intersection.

Skyview Village with 74 dwelling units is expected to generate approximately 788 weekday daily vehicle trips with 57 of these trips occurring during the morning peak hour and 76 trips occurring during the afternoon peak hour.

Distribution of project traffic on the street system was based on the area street system characteristics, existing traffic patterns, existing and anticipated surrounding development areas, and the proposed access system for the project. The directional distribution of traffic is a means to quantify the percentage of site-generated traffic that approaches the site from a given direction and departs the site back to the original source.

Based on the analysis presented in this report, Kimley-Horn believes the proposed Skyview Village project will be successfully incorporated into the existing and future roadway network.

The existing traffic volume analysis, proposed project development, and expected future traffic volumes resulted in the following conclusions and recommendations:

- The threshold for requiring an access permit along CDOT roadways occurs when project traffic is anticipated to increase the existing access traffic volumes by more than 20 percent. Based on traffic projections, the addition of project traffic on the west leg of Hancock Expressway at Powers Boulevard (SH-21) is not anticipated to increase existing access traffic volumes by more than 20 percent, with the expected increase of approximately 1 percent in both peak hours (41/3,936 AM Peak and 43/2,945 PM Peak). Therefore, a CDOT access permit is not anticipated to be required in association with this project.
- With completion of the Skyview Village development, a new east leg of the intersection of Painted Sky View and Silver Hawk Avenue will be constructed. It is recommended that the westbound approach out of Skyview Village operate with stop-control with the installation of a R1-1 "STOP" sign.
- Any on-site and off-site signing and striping improvements should be incorporated into the Civil Drawings and conform to the City of Colorado Springs standards as well as the Manual on Uniform Traffic Control Devices – 2009 Edition (MUTCD).

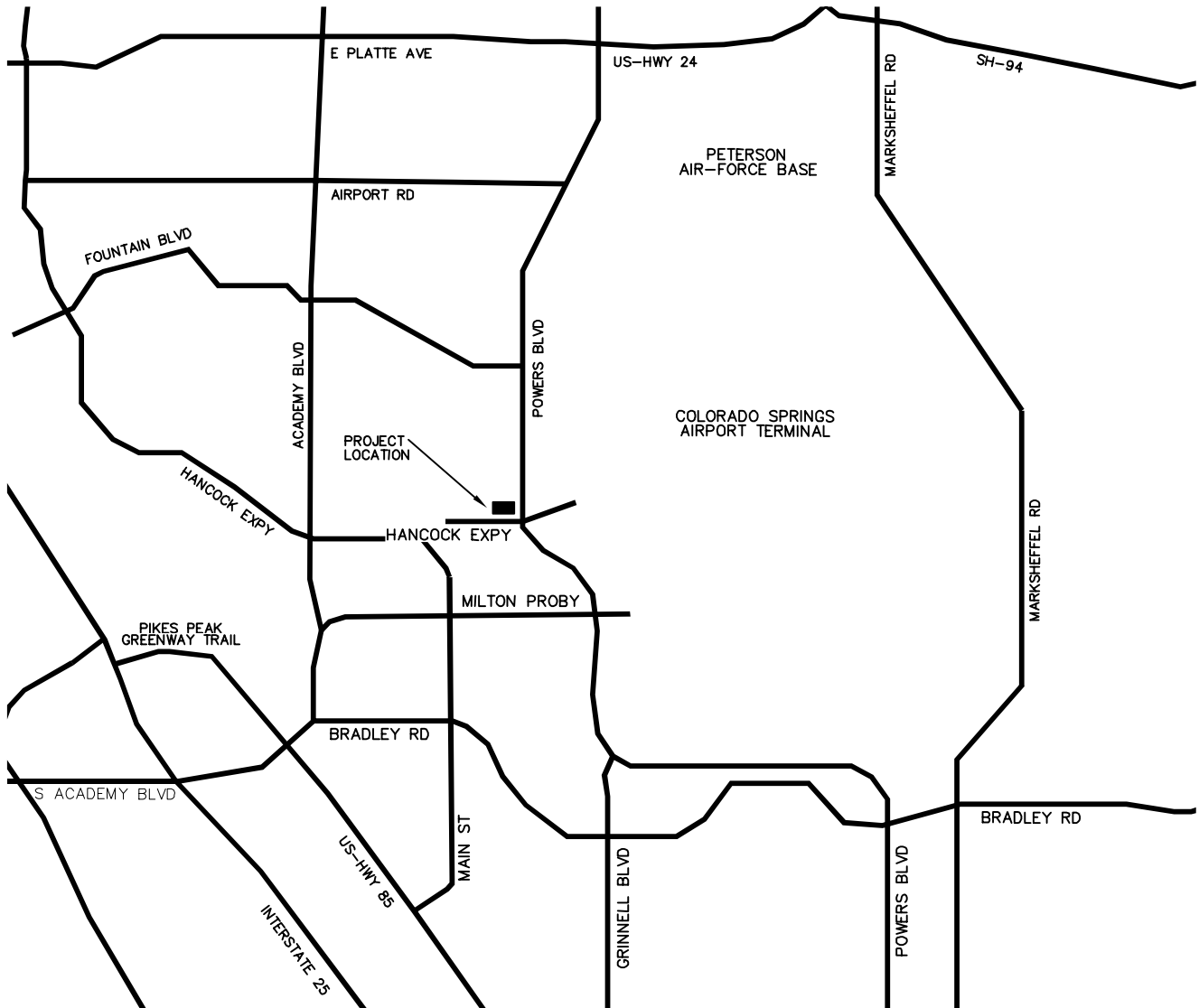
2.0 INTRODUCTION

Kimley-Horn has prepared this Traffic Impact Study to document the analysis results of future traffic conditions associated with Skyview Village, a 74-home single-family residential neighborhood project proposed to be located on the northwest corner of the Hancock Expressway and Powers Boulevard (SH-21) intersection in Colorado Springs, Colorado. A vicinity map illustrating the project location is shown in **Figure 1**. The project is expected to be completed within the next couple years. Therefore, analysis was conducted for the 2023 short term horizon as well as the 2040 long term horizon. A conceptual site plan illustrating the development and access is shown in **Appendix F**.

The purpose of this study is to identify project traffic generation characteristics, to identify potential project traffic related impacts on the local street system, and to develop mitigation measures required for identified impacts. The following intersections were incorporated into this traffic study in accordance with the City of Colorado Springs standards and requirements:

- Hancock Expressway and Powers Boulevard (SH-21)
- Hancock Expressway and Silver Hawk Avenue
- Painted Sky View and Silver Hawk Avenue

Regional access will be provided by Interstate 25 (I-25), US Highway 24, Powers Boulevard (SH-21), and Milton E Proby Parkway. Primary access will be provided by Hancock Expressway. Direct access to the residential development will be provided from a proposed new east leg at the Painted Sky View and Silver Hawk Avenue intersection.



SKYVIEW VILLAGE
COLORADO SPRINGS, COLORADO
VICINITY MAP

FIGURE 1

3.0 EXISTING CONDITIONS

3.1 Existing Study Area

The project site is currently vacant land. The surrounding area contains residential uses to the north, south, and west of the site. The Colorado Springs Airport is located further to the east of the site, east of Powers Boulevard (SH-21). The area and roadway network surrounding the project site are shown in the aerial of **Figure 2**.

3.2 Existing Roadway Network

Powers Boulevard (SH-21) is a four-lane divided roadway providing two through lanes of travel, northbound and southbound, with a posted speed limit of 55 miles per hour through the study area. Hancock Expressway is a four-lane divided roadway providing two through lanes of travel, eastbound and westbound, with a posted speed limit of 35 miles per hour. Hancock Expressway converts to Zeppelin Road and provides one through lane in each direction, east of Powers Boulevard (SH-21). Silver Hawk Avenue is a local roadway providing one through lane in each direction, northbound and southbound, with a posted speed limit of 30 miles per hour.

The intersection of Hancock Expressway and Powers Boulevard (SH-21) is signalized with protected-permitted left turn phasing on the northbound and southbound approaches and permissive only left turn phasing eastbound and westbound. The eastbound, westbound, and southbound right turns operate under free conditions. The northbound, southbound, and eastbound approaches consist of a left turn lane, two through lanes, and a right turn lane. The westbound approach consists of a left turn lane, a through lane, and a right turn lane.

The intersection of Hancock Expressway and Silver Hawk Avenue operates as an unsignalized intersection with stop-control on the northbound and southbound approaches of Silver Hawk Avenue. The eastbound and westbound approaches consist of a left turn lane, two through lanes, and a right turn lane. The northbound approach consists of one lane with shared movements while the southbound approach consists of a southbound left turn and a shared through/right turn lane.



SKYVIEW VILLAGE
COLORADO SPRINGS, COLORADO
SITE AREA

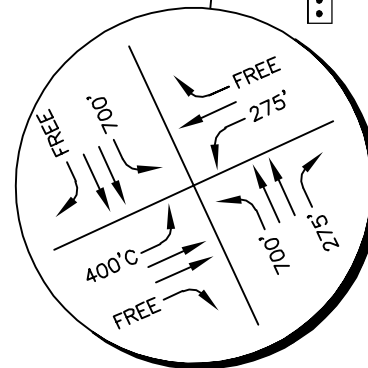
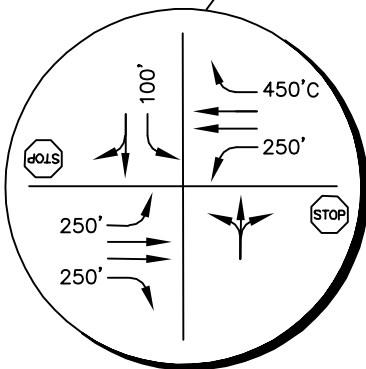
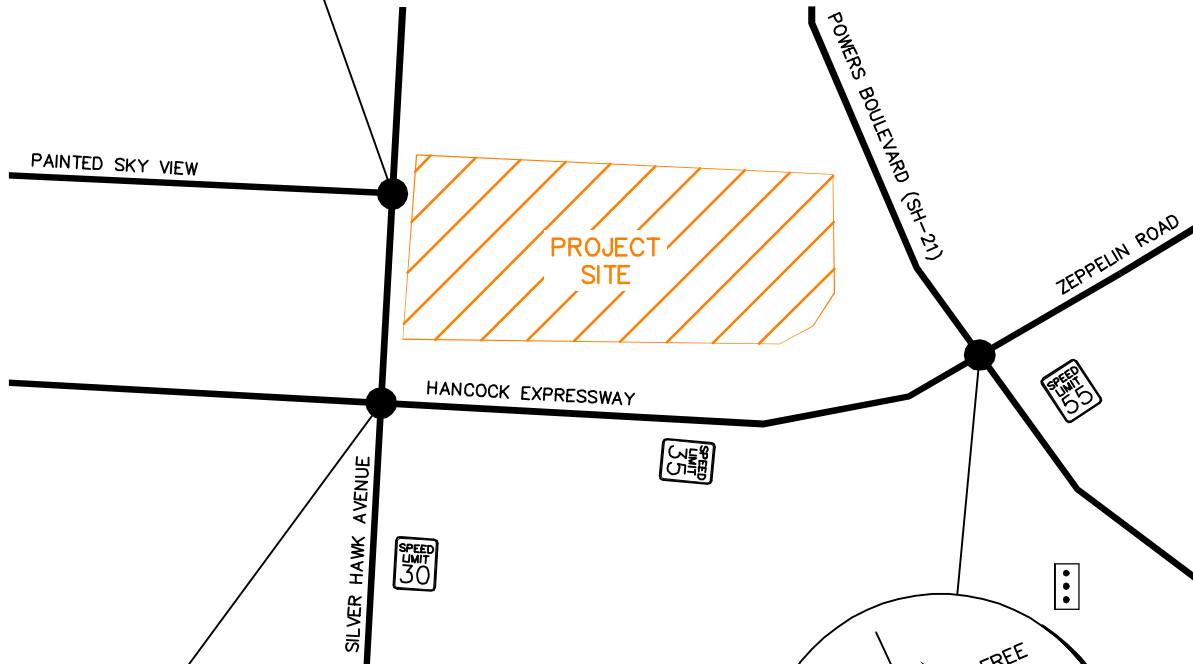
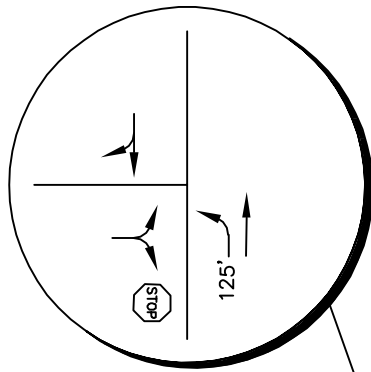
FIGURE 2

The T-intersection of Painted Sky View and Silver Hawk Avenue operates as an unsignalized intersection with stop-control on the eastbound approach of Painted Sky View. The northbound approach consists of a left turn lane and a through lane while the southbound approach consists of a shared through/right turn lane. The eastbound approach consists of a shared left turn/right turn lane. **Figure 3** shows the lane configuration and control for the study area key intersection.

3.3 Existing Traffic Volumes

Existing peak hour turning movement counts were conducted at the Hancock Expressway/Powers Boulevard (SH-21) and Hancock Expressway/Silver Hawk Avenue intersections on Wednesday, January 13, 2021 and at the Painted Sky View/Silver Hawk Avenue intersection on or Tuesday, January 19, 2021. The counts were conducted in 15-minute intervals during the morning and afternoon peak hours of adjacent street traffic from 7:00 AM to 9:00 AM and 4:00 PM to 6:00 PM on these count dates. Existing turning movement counts are shown in **Figure 4** with count sheets provided in **Appendix A**.

Due to the present COVID-19 pandemic, these counts were adjusted based off a comparison of peak hour northbound-southbound through volumes along Powers Boulevard (SH-21) between Hancock Expressway and Milton Proby Parkway. Pre-COVID volumes were collected in November 2019 as part of the *Innovation Peak Park Traffic Impact Study* prepared by Kimley-Horn and Associates. The through volumes along Powers Boulevard (SH-21) were adjusted to 2021 volumes and compared to the existing counts collected in January 2021. It was determined that the existing 2021 traffic volumes needed to be increased by approximately 23 percent during the morning peak hour and 17 percent during the afternoon to identify the normal condition traffic volumes to account for COVID-19. Therefore, a 1.23 factor was applied to the 2021 morning peak hour counts and a 1.17 factor was applied to the 2021 afternoon peak hour counts. Existing adjusted turning movement counts are shown in **Figure 5** with the comparison counts and the count adjustment calculations also provided in **Appendix A**.

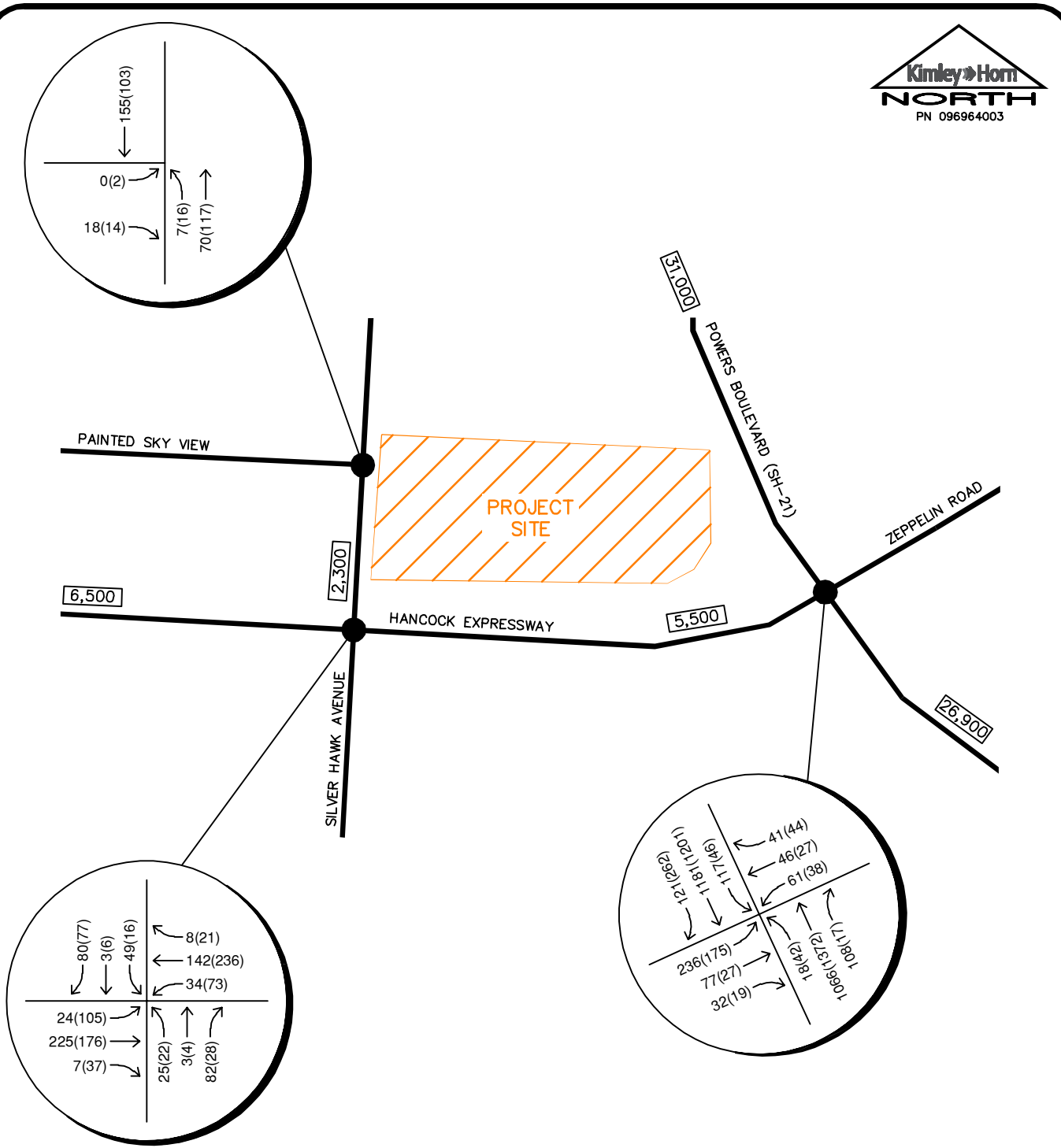


LEGEND

- Study Area Key Intersection
- ⋮ Signalized Intersection
- STOP Stop Controlled Approach
- XX Roadway Speed Limit
- ↪ 100' Turn Lane Length (feet)

SKYVIEW VILLAGE
 COLORADO SPRINGS, COLORADO
 EXISTING LANE CONFIGURATIONS

FIGURE 3

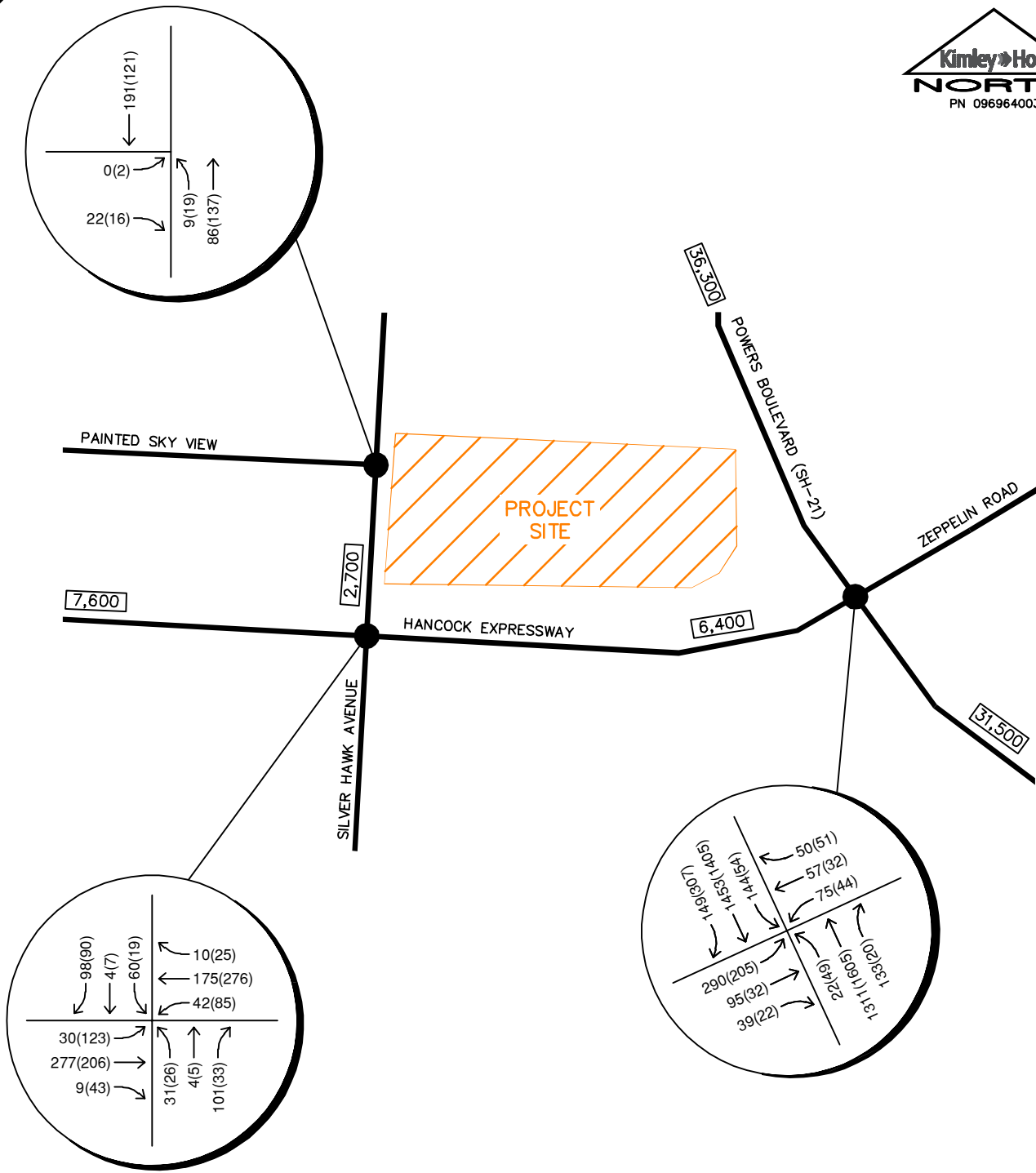


LEGEND

- Study Area Key Intersection
- XXX(XXX) Weekday AM(PM) Peak Hour Traffic Volumes
- XX,X00 Daily Traffic Volume

SKYVIEW VILLAGE
 COLORADO SPRINGS, COLORADO
 2021 EXISTING TRAFFIC VOLUMES

FIGURE 4



LEGEND

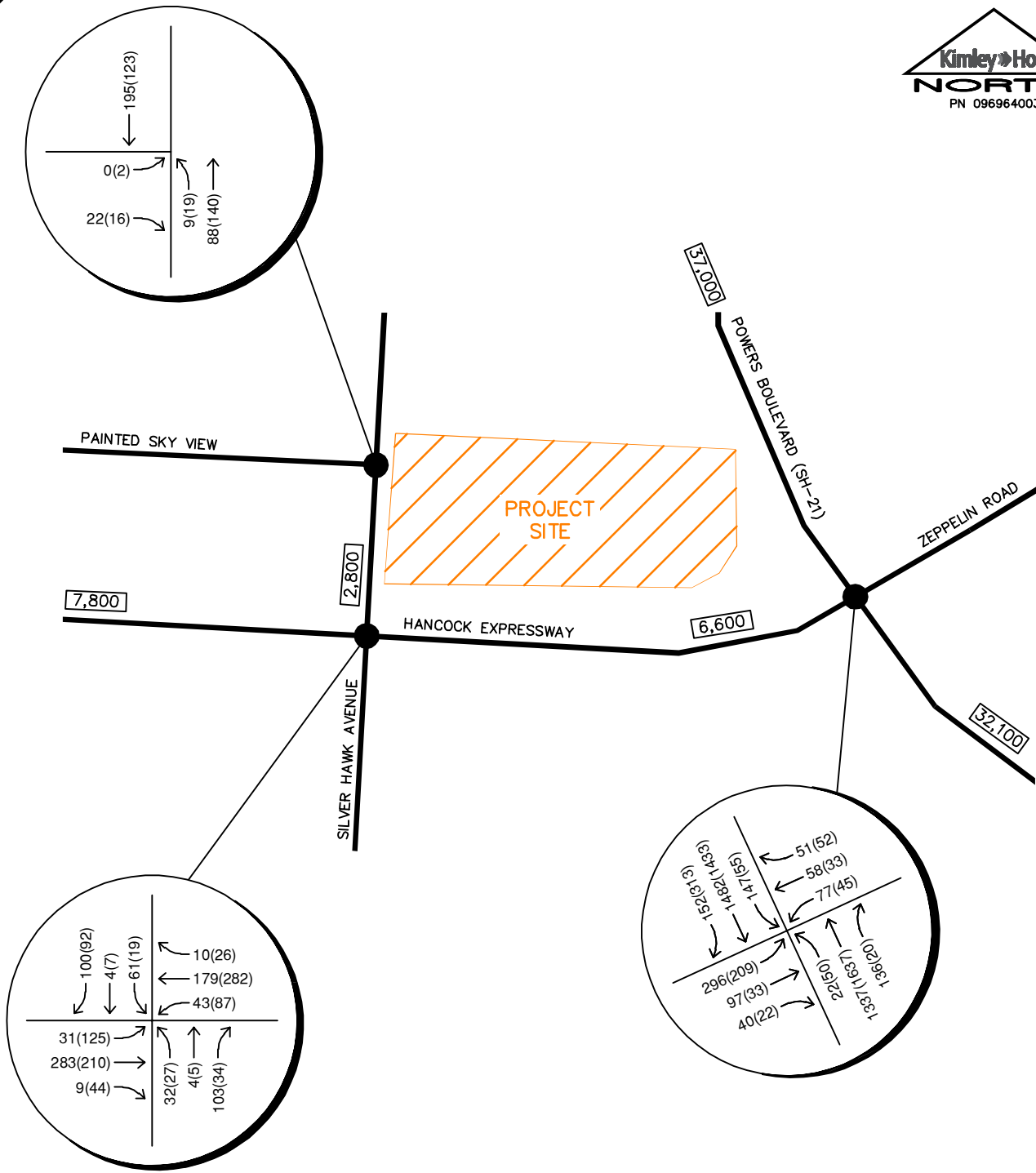
- Study Area Key Intersection
- XXX(XXX) Weekday AM(PM) Peak Hour Traffic Volumes
- XX,X00 Daily Traffic Volume

SKYVIEW VILLAGE
 COLORADO SPRINGS, COLORADO
 2021 ADJUSTED TRAFFIC VOLUMES

FIGURE 5

3.4 Unspecified Development Traffic Growth

Based on information provided on the website for the Colorado Department of Transportation, the 20-year growth factor along SH-21 (Powers Boulevard) adjacent to the study area is 1.15. This value equates to an annual growth rate ranging from approximately 0.70 percent per year. Traffic information from the CDOT Online Transportation Information System (OTIS), is included in **Appendix B**. Based on this as well as experience with City of Colorado Springs a one (1) percent annual growth rate was used to estimate future background traffic volume conditions within the study area. These background traffic volumes at the study area key intersections are shown in **Figure 6** for the buildout 2023 horizon and in **Figure 7** for the twenty-year long-term horizon of 2040.

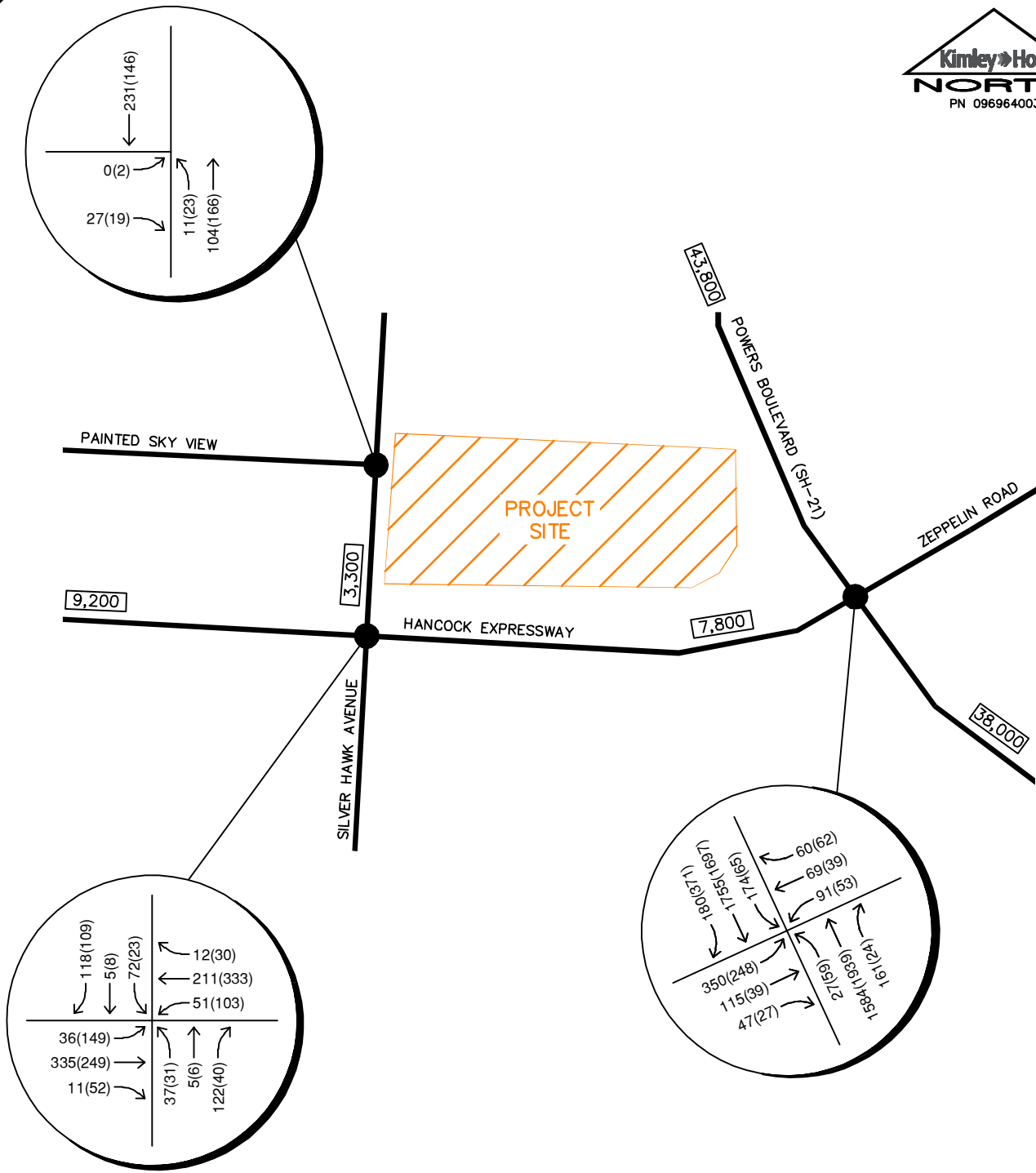


LEGEND

- Study Area Key Intersection
- XXX(XXX) Weekday AM(PM) Peak Hour Traffic Volumes
- XX,X00 Daily Traffic Volume

SKYVIEW VILLAGE
 COLORADO SPRINGS, COLORADO
 2023 BACKGROUND TRAFFIC VOLUMES

FIGURE 6



LEGEND

- Study Area Key Intersection
- XXX(XXX) Weekday AM(PM) Peak Hour Traffic Volumes
- XX,X00 Daily Traffic Volume

SKYVIEW VILLAGE
 COLORADO SPRINGS, COLORADO
 2040 BACKGROUND TRAFFIC VOLUMES

FIGURE 7

4.0 PROJECT TRAFFIC CHARACTERISTICS

4.1 Trip Generation

Site-generated traffic estimates are determined through a process known as trip generation. Rates and equations are applied to the proposed land use to estimate traffic generated by the development during a specific time interval. The acknowledged source for trip generation rates is the *Trip Generation Manual*¹ published by the Institute of Transportation Engineers (ITE). ITE has established trip rates in nationwide studies of similar land uses. For this study, Kimley-Horn used the ITE Trip Generation Report fitted curve equations that apply Single-Family Detached Housing (ITE Code 210) for traffic associated with the development.

Skyview Village with 74 dwelling units is expected to generate approximately 788 weekday daily vehicle trips with 57 of these trips occurring during the morning peak hour and 76 trips occurring during the afternoon peak hour. Calculations were based on the procedure and information provided in the ITE *Trip Generation Handbook, 3rd Edition, 2017*. **Table 1** summarizes the estimated trip generation for the proposed development. The trip generation worksheet is included in **Appendix C**.

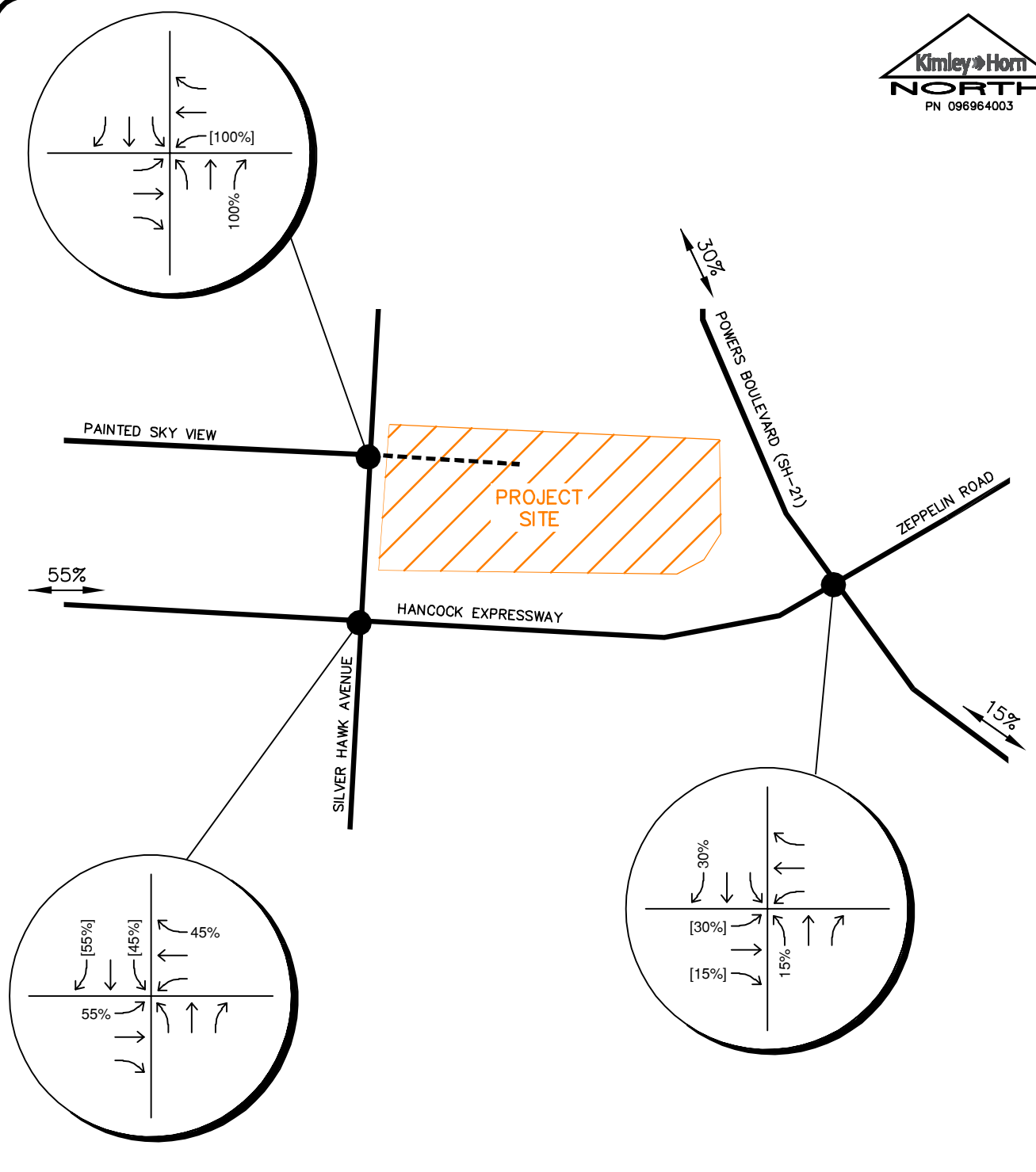
Table 1 – Skyview Village Project Traffic Generation

Land Use and Quantity	Daily	Weekday Vehicle Trips					
		AM Peak Hour			PM Peak Hour		
		In	Out	Total	In	Out	Total
Single-Family Detached Housing (ITE 210) – 74 Dwelling Units	788	14	43	57	48	28	76

4.2 Trip Distribution

Distribution of project traffic on the street system was based on the area street system characteristics, existing traffic patterns, existing and anticipated surrounding development areas, and the proposed access system for the project. The directional distribution of traffic is a means to quantify the percentage of site-generated traffic that approaches the site from a given direction and departs the site back to the original source. The project trip distribution is illustrated in **Figure 8**.

¹ Institute of Transportation Engineers, *ITE Trip Generation Manual*, Tenth Edition, Washington DC, 2017.



SKYVIEW VILLAGE
 COLORADO SPRINGS, COLORADO
 PROJECT TRIP DISTRIBUTION

LEGEND

- Study Area Key Intersection
- XX% External Trip Distribution Percentage
- XX%[XX%] Entering[Exiting] Trip Distribution Percentage

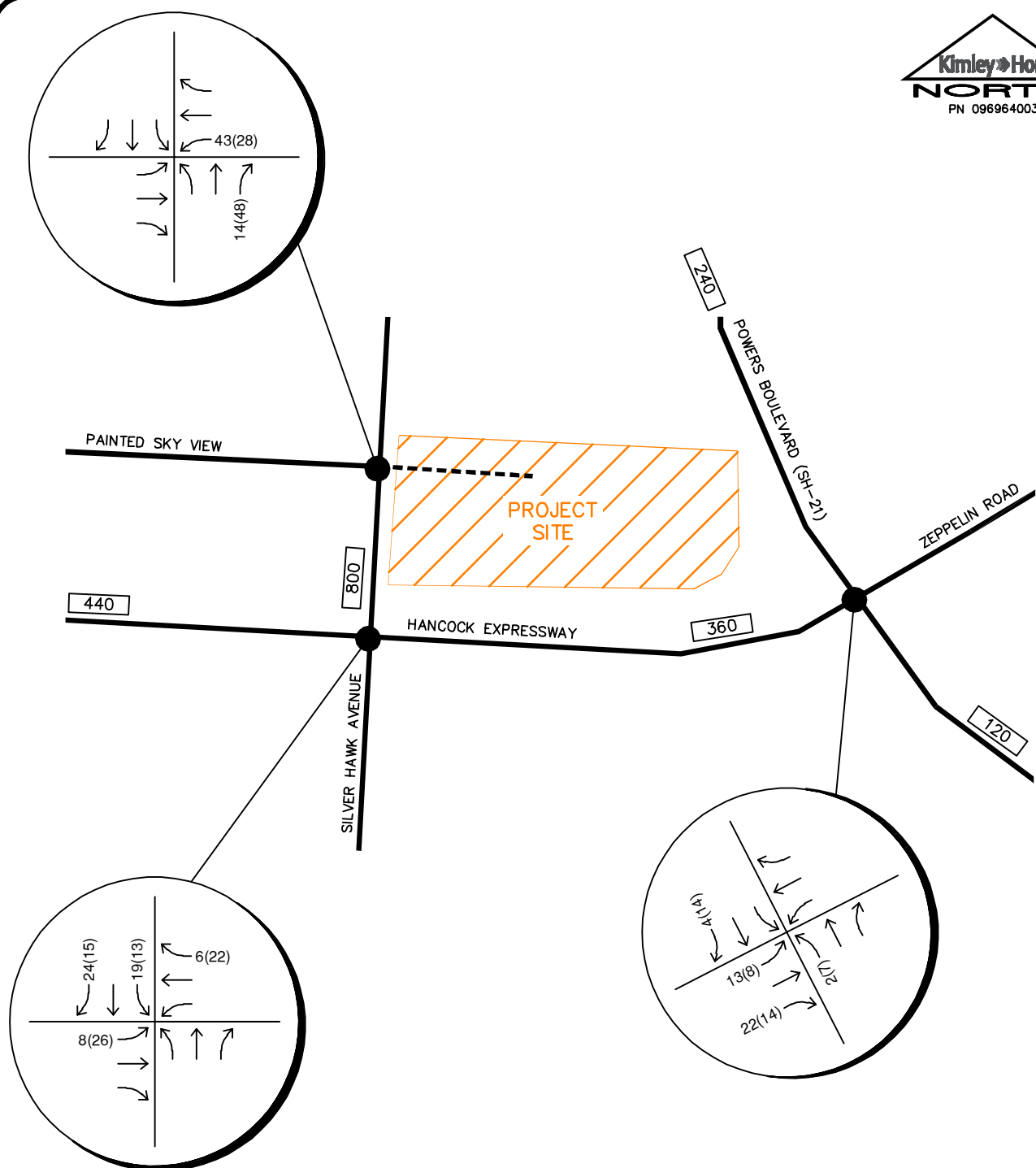
FIGURE 8

4.3 Traffic Assignment

Traffic assignment was obtained by applying the project trip distribution to the estimated traffic generation of the project shown in **Table 1**. Project traffic assignment is shown in **Figure 9**.

4.4 Total (Background Plus Project) Traffic

Project traffic volumes were added to the background volumes to represent estimated traffic conditions for the short term 2023 horizon and long term 2040 horizon. These total traffic volumes for the site are illustrated for the 2023 and 2040 horizon years in **Figures 10** and **11**, respectively.

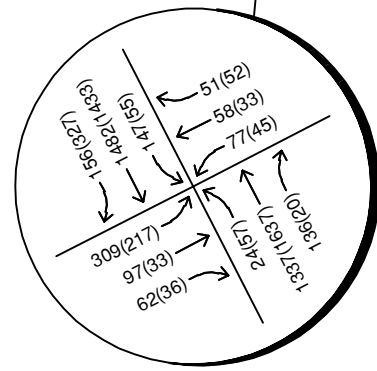
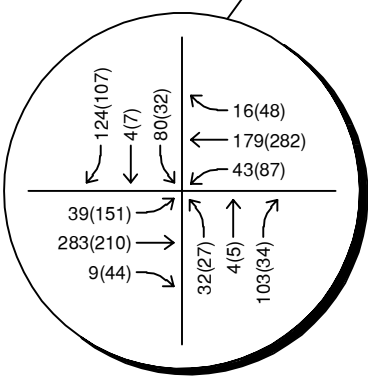
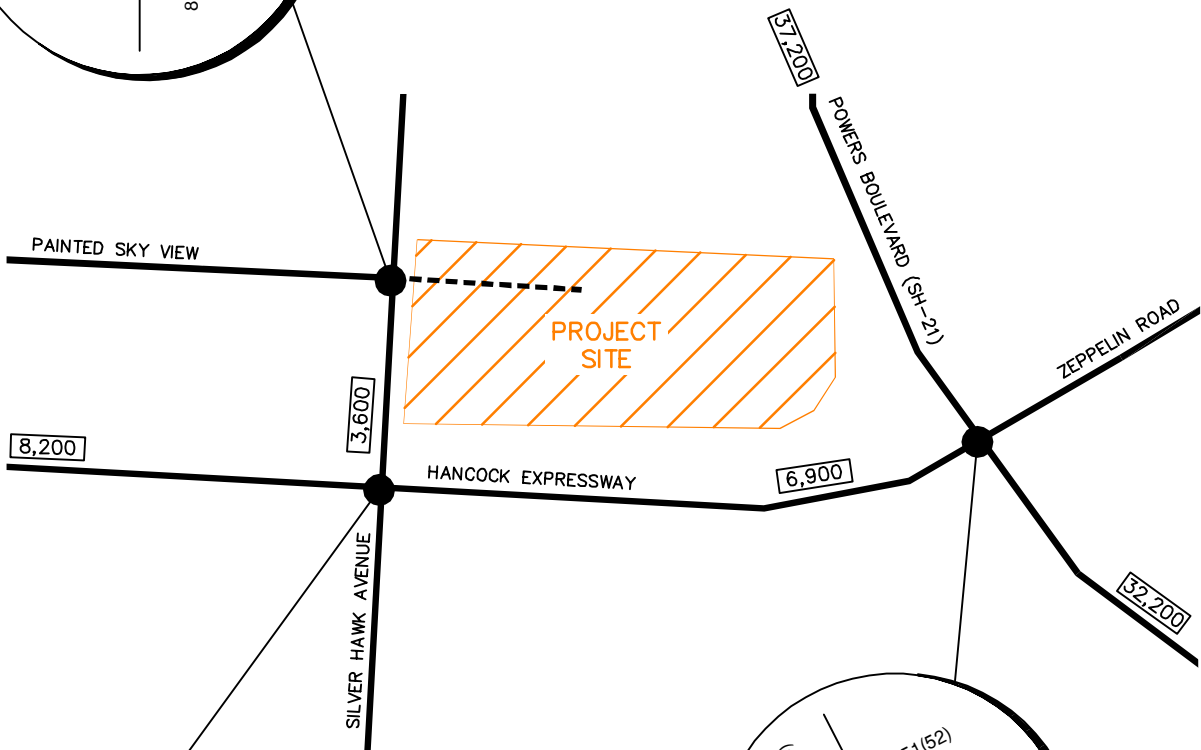
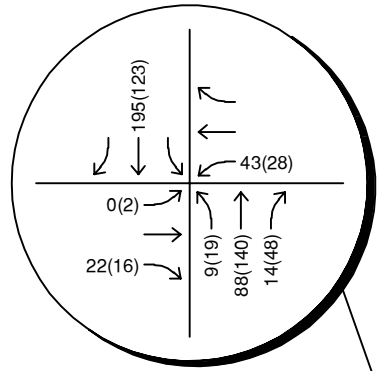


SKYVIEW VILLAGE
 COLORADO SPRINGS, COLORADO
 PROJECT TRAFFIC ASSIGNMENT

LEGEND

- Study Area Key Intersection
- XXX(XXX) Weekday AM(PM) Peak Hour Traffic Volumes
- XX,X00 Daily Traffic Volume

FIGURE 9

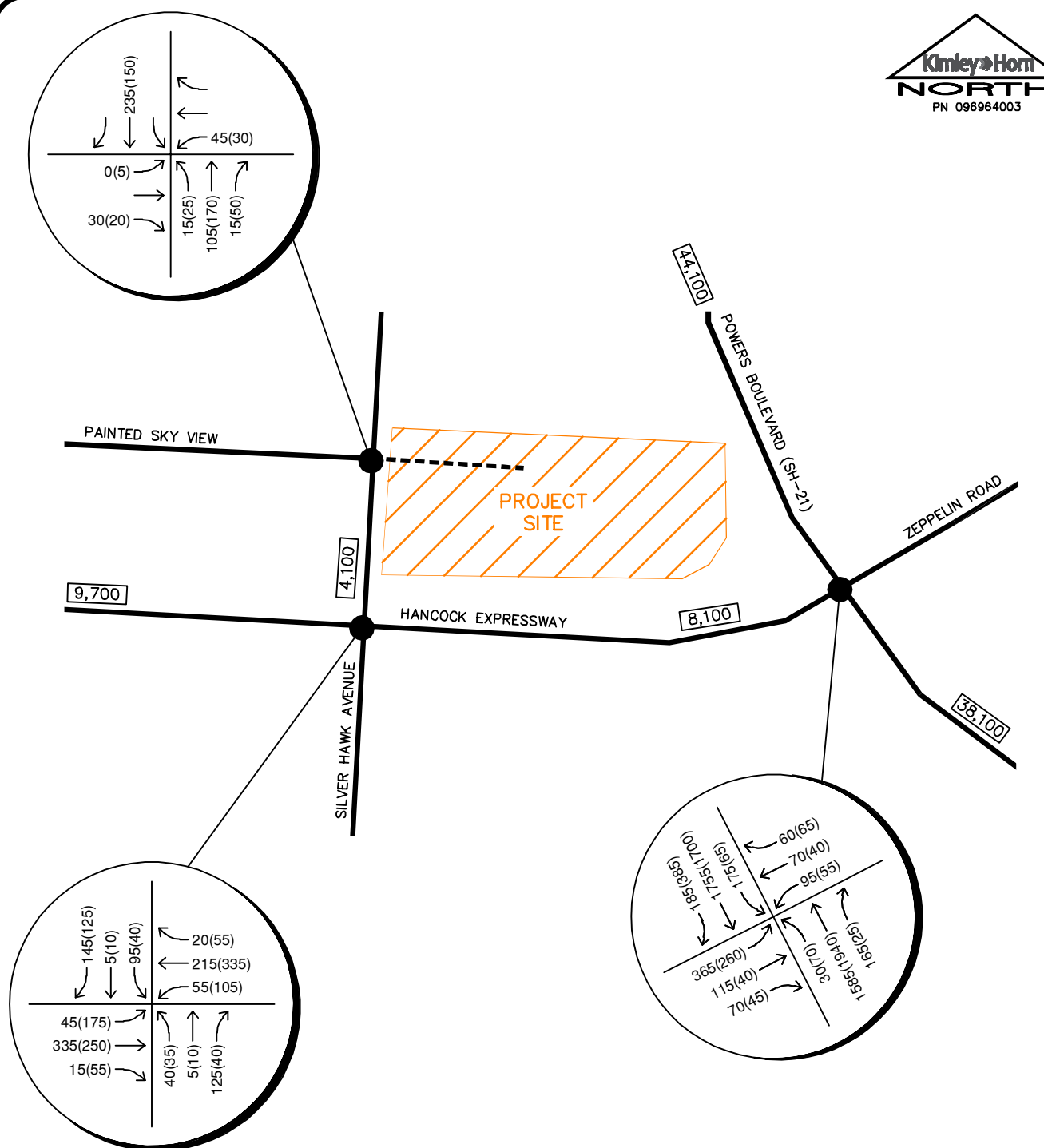


LEGEND

- Study Area Key Intersection
- XXX(XXX) Weekday AM(PM) Peak Hour Traffic Volumes
- XX,X00 Daily Traffic Volume

SKYVIEW VILLAGE
 COLORADO SPRINGS, COLORADO
 2023 BACKGROUND PLUS
 PROJECT TRAFFIC VOLUMES

FIGURE 10



SKYVIEW VILLAGE
 COLORADO SPRINGS, COLORADO
 2040 BACKGROUND PLUS
 PROJECT TRAFFIC VOLUMES

LEGEND

- Study Area Key Intersection
- XXX(XXX) Weekday AM(PM) Peak Hour Traffic Volumes
- [XX,X00] Daily Traffic Volume

FIGURE 11

5.0 TRAFFIC OPERATIONS ANALYSIS

Kimley-Horn’s analysis of traffic operations in the site vicinity was conducted to determine potential capacity deficiencies in the 2023 and 2040 development horizons at the identified key intersections and access driveways. The acknowledged source for determining overall capacity is the current edition of the *Highway Capacity Manual (HCM)*².

5.1 Analysis Methodology

Capacity analysis results are listed in terms of Level of Service (LOS). LOS is a qualitative term describing operating conditions a driver will experience while traveling on a particular street or highway during a specific time interval. It ranges from A (very little delay) to F (long delays and congestion). For intersections and roadways in this study area, typical standard traffic engineering procedure recommends overall intersection LOS D and movement/approach LOS E as the minimum threshold for acceptable operations. **Table 2** shows the definition of level of service for signalized and unsignalized intersections.

Table 2 – Level of Service Definitions

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

Definitions provided from the Highway Capacity Manual, Sixth Edition, Transportation Research Board, 2016.

Study area intersections were analyzed based on average total delay analysis for signalized and unsignalized intersections. Under the unsignalized analysis, the level of service (LOS) for a two-way stop-controlled intersection is determined by the computed or measured control delay and is defined for each minor movement. Level of service for a two-way stop-controlled intersection is not defined for the intersection as a whole. Level of service for a signalized and all-way stop controlled intersection is defined for each approach and for the intersection.

² Transportation Research Board, *Highway Capacity Manual*, Sixth Edition, Washington DC, 2016.

5.2 Key Intersection Operational Analysis

Calculations for the level of service at the key intersections and project access driveways for the study area are provided in **Appendix D**. The existing year analysis is based on the lane geometry and intersection control shown in **Figure 3**. Existing peak hour factors were used for all horizon year scenarios. Existing cycle lengths and timing splits for the key signalized intersections were utilized for all of the study horizons as observed at the time of the counts. Synchro traffic analysis software was used to analyze the study area intersections and access driveways for intersection delay and level of service.

Hancock Expressway and Powers Boulevard (SH-21)

The signalized intersection of Hancock Expressway and Powers Boulevard (SH-12) operates with protected-permissive left turn phasing on the northbound and southbound approaches and permissive-only left turn phasing on the eastbound and westbound approaches. This intersection currently operates acceptably with a LOS D during the morning peak hour and LOS C during the afternoon peak hour. With the addition of project traffic and the existing lane configurations, this intersection is expected to continue to operate acceptably with LOS D during the morning peak hour and LOS C during the afternoon peak hour, throughout the 2040 horizon. **Table 3** provides the results of the level of service analysis for this intersection.

Table 3 – Hancock Expressway & Powers Boulevard LOS Results

Scenario	AM Peak Hour		PM Peak Hour	
	Delay (sec)	LOS	Delay (sec)	LOS
2021 Existing (Adjusted)	38.6	D	22.8	C
2023 Background	39.4	D	23.8	C
2023 Background Plus Project	41.1	D	24.5	C
2040 Background	43.7	D	29.2	C
2040 Background Plus Project	46.5	D	30.1	C

Hancock Expressway and Silver Hawk Avenue

The unsignalized intersection of Hancock Expressway and Silver Hawk Avenue operates with stop control on the northbound and southbound approaches of Silver Hawk Avenue. The movements at this intersection currently operate acceptably with LOS C or better during the morning and afternoon peak hours. With the addition of project traffic and existing lane configurations, the movements at this intersection are expected to continue to operate acceptably with LOS C or better during the peak hours and LOS D or better during the peak hours throughout the 2040 horizon. **Table 4** provides the results of the level of service analysis for this intersection.

Table 4 – Hancock Expressway & Silver Hawk Avenue LOS Results

Scenario	AM Peak Hour		PM Peak Hour	
	Delay (sec)	LOS	Delay (sec)	LOS
2021 Existing (Adjusted)				
Northbound Approach	12.9	B	15.7	C
Eastbound Left	7.9	A	8.3	A
Westbound Left	8.2	A	8.0	A
Southbound Left	16.9	C	18.7	C
Southbound Through/Right	10.0	B	10.9	B
2023 Background				
Northbound Approach	13.1	B	16.2	C
Eastbound Left	7.9	A	8.3	A
Westbound Left	8.2	A	8.1	A
Southbound Left	17.2	C	19.2	C
Southbound Through/Right	10.1	B	11.0	B
2023 Background Plus Project				
Northbound Approach	13.4	B	17.8	C
Eastbound Left	8.0	A	8.5	A
Westbound Left	8.2	A	8.1	A
Southbound Left	18.8	C	22.5	C
Southbound Through/Right	10.2	B	11.3	B
2040 Background				
Northbound Approach	12.8	B	18.5	C
Eastbound Left	7.8	A	8.6	A
Westbound Left	8.2	A	8.2	A
Southbound Left	16.2	C	22.7	C
Southbound Through/Right	9.9	A	11.3	B
2040 Background Plus Project				
Northbound Approach	13.4	B	23.3	C
Eastbound Left	7.9	A	8.8	A
Westbound Left	8.2	A	8.2	A
Southbound Left	18.2	C	28.1	D
Southbound Through/Right	10.1	B	11.9	B

Painted Sky View and Silver Hawk Avenue

The unsignalized T-intersection of Painted Sky View and Silver Hawk Avenue operates with stop control for the eastbound approach. Therefore, with this configuration, all movements at this intersection currently operate acceptably with LOS A or better during the morning and afternoon peak hours. With the addition of project traffic, the east leg will be constructed and operate under stop-control with a R1-1 “STOP” sign installed on the westbound exiting approach from Skyview Village. The movements at this intersection are expected to operate acceptably with LOS B or better during the peak hours throughout the 2040 horizon. **Table 5** provides the results of the level of service analysis for this intersection.

Table 5 – Painted Sky View & Silver Hawk Avenue LOS Results

Scenario	AM Peak Hour		PM Peak Hour	
	Delay (sec)	LOS	Delay (sec)	LOS
2021 Existing (Adjusted)				
Northbound Left	7.7	A	7.6	A
Eastbound Approach	9.6	A	9.5	A
2023 Background				
Northbound Left	7.7	A	7.9	A
Eastbound Approach	9.6	A	9.5	A
2023 Background Plus Project				
Northbound Left	7.7	A	7.6	A
Eastbound Approach	9.6	A	9.6	A
Westbound Approach	12.1	B	12.4	B
2040 Background				
Northbound Left	7.8	A	7.6	A
Eastbound Approach	9.7	A	9.4	A
2040 Background Plus Project				
Northbound Left	7.8	A	7.6	A
Eastbound Approach	9.8	A	9.8	A
Westbound Approach	12.8	B	12.6	B

5.3 Vehicle Queuing Analysis

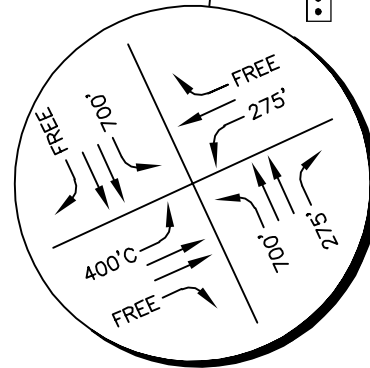
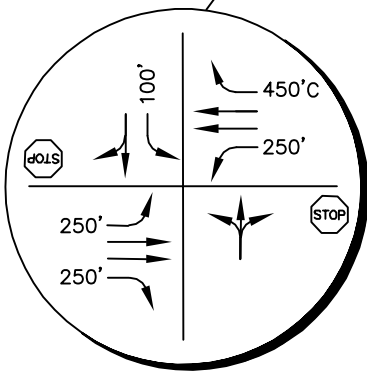
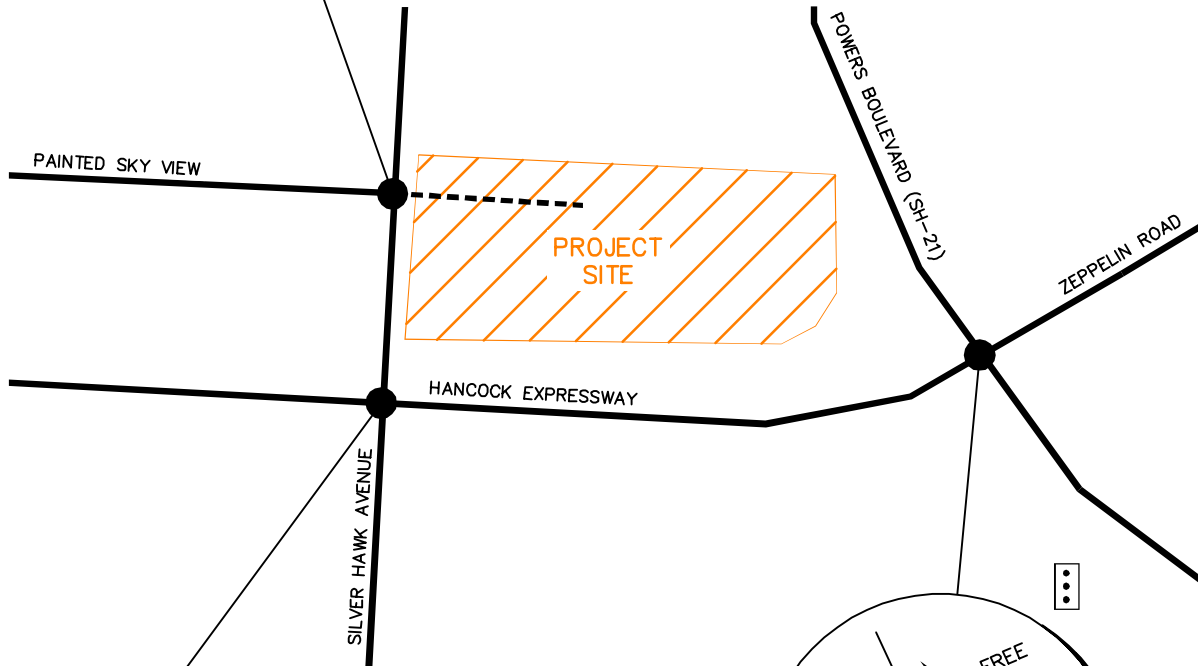
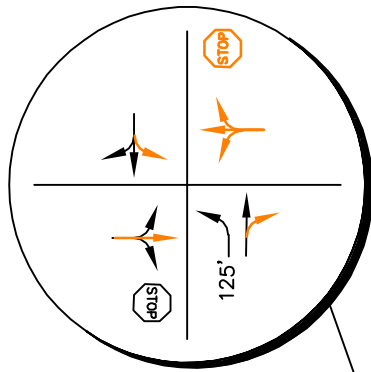
A vehicle queuing analysis was conducted for turn lanes at the study area intersections. The queuing analysis was performed using the Synchro analysis software presenting the results of the 95th percentile queue length. Results of the vehicle queuing analysis are shown in the following **Table 6** with calculations provided in the intersection operational outputs located in **Appendix D** for unsignalized intersections and vehicle queuing analysis worksheets in **Appendix E** for the signalized location.

Table 6 – Queuing Analysis Results and Recommendations

Intersection Turn Lane	Existing Turn Lane Length (feet)	2023 Calculated Queue Length (feet)	2023 Recommended Turn Lane Length (feet)	2040 Calculated Queue Length (feet)	2040 Recommended Turn Lane Length (feet)
Hancock Expy & Powers Blvd					
Eastbound Left	400'/C	477'	400'/C	605'	400'/C
Westbound Left	275'	91'	275'	131'	275'
Northbound Left	700'	34'	700'	62'	700'
Northbound Right	275'	61'	275'	73'	275'
Southbound Left	700'	231'	700'	295'	700'
Hancock Expy & Silver Hawk					
Eastbound Left	250'	25'	250'	25'	250'
Westbound Left	250'	25'	250'	25'	250'
Southbound Left	100'	25'	100'	50'	100'
Painted Sky View & Silver Hawk					
Northbound Left	125'	25'	125'	25'	125'

C = Continuous Lane

As shown in the vehicle queuing table, all vehicle queues are expected to be contained within the existing lane lengths in the short term 2023 horizon and long-term 2040 horizon. Based on the operational level of service and queuing analysis results, the recommended lane configurations and control of the study key intersections are shown in **Figure 12**.



LEGEND

- Study Area Key Intersection
- ⋮ Signalized Intersection
- ⊠ Stop Controlled Approach
- Improvement
- ↪ 100' Turn Lane Length (feet)

SKYVIEW VILLAGE
 COLORADO SPRINGS, COLORADO
 RECOMMENDED LANE CONFIGURATIONS

FIGURE 12

6.0 CONCLUSIONS AND RECOMMENDATIONS

Based on the analysis presented in this report, Kimley-Horn believes the proposed Skyview Village project will be successfully incorporated into the existing and future roadway network. The existing traffic volume analysis, proposed project development, and expected future traffic volumes resulted in the following conclusions and recommendations:

- The threshold for requiring an access permit along CDOT roadways occurs when project traffic is anticipated to increase the existing access traffic volumes by more than 20 percent. Based on traffic projections, the addition of project traffic on the west leg of Hancock Expressway at Powers Boulevard (SH-21) is not anticipated to increase existing access traffic volumes by more than 20 percent, with the expected increase of approximately 1 percent in both peak hours (41/3,936 AM Peak and 43/2,945 PM Peak). Therefore, a CDOT access permit is not anticipated to be required in association with this project.
- With completion of the Skyview Village development, a new east leg of the intersection of Painted Sky View and Silver Hawk Avenue will be constructed. It is recommended that the westbound approach out of Skyview Village operate with stop-control with the installation of a R1-1 "STOP" sign.
- Any on-site and off-site signing and striping improvements should be incorporated into the Civil Drawings and conform to the City of Colorado Springs standards as well as the Manual on Uniform Traffic Control Devices – 2009 Edition (MUTCD).

APPENDICES

APPENDIX A

Intersection Count Sheets

Count Adjustment Calculations

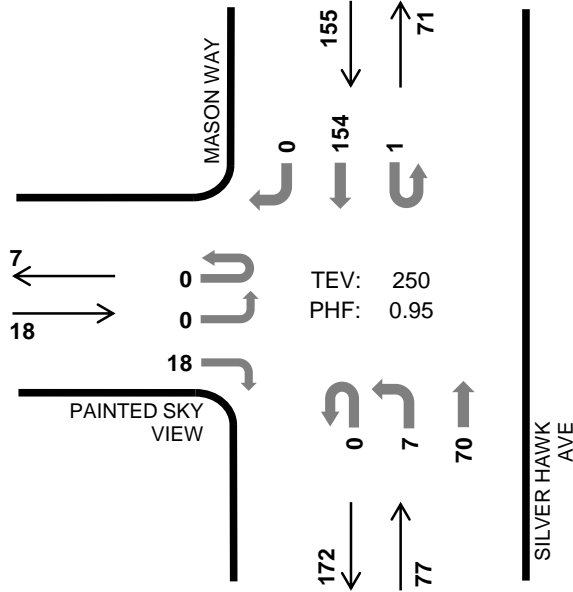
Comparison Traffic Counts

SILVER HAWK AVE PAINTED SKY VIEW

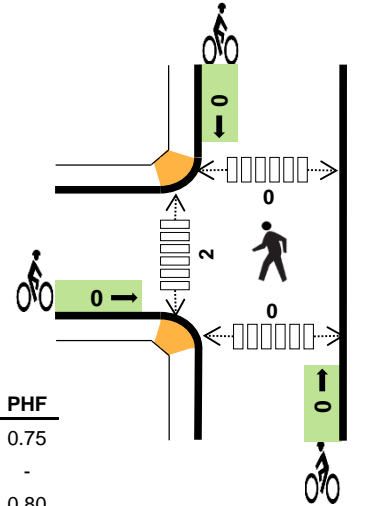


Peak Hour

Date: Tue, Jan 19, 2021
 Count Period: 7:00 AM to 9:00 AM
 Peak Hour: 7:30 AM to 8:30 AM



TEV: 250
 PHF: 0.95



	HV %:	PHF
EB	0.0%	0.75
WB	-	-
NB	3.9%	0.80
SB	1.9%	0.86
TOTAL	2.4%	0.95

Two-Hour Count Summaries

Interval Start	PAINTED SKY VIEW				0				SILVER HAWK AVE				MASON WAY				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	0	3	0	0	0	0	0	1	6	0	0	0	31	0	41	0
7:15 AM	0	0	0	4	0	0	0	0	0	1	4	0	0	0	28	0	37	0
7:30 AM	0	0	0	6	0	0	0	0	0	1	18	0	0	0	41	0	66	0
7:45 AM	0	0	0	5	0	0	0	0	0	1	10	0	1	0	44	0	61	205
8:00 AM	0	0	0	3	0	0	0	0	0	2	22	0	0	0	33	0	60	224
8:15 AM	0	0	0	4	0	0	0	0	0	3	20	0	0	0	36	0	63	250
8:30 AM	0	0	0	0	0	0	0	0	0	0	21	0	0	0	21	0	42	226
8:45 AM	0	0	0	3	0	0	0	0	0	0	7	0	0	0	21	0	31	196
Count Total	0	0	0	28	0	0	0	0	0	9	108	0	1	0	255	0	401	0
Peak Hour	0	0	0	18	0	0	0	0	0	7	70	0	1	0	154	0	250	0

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

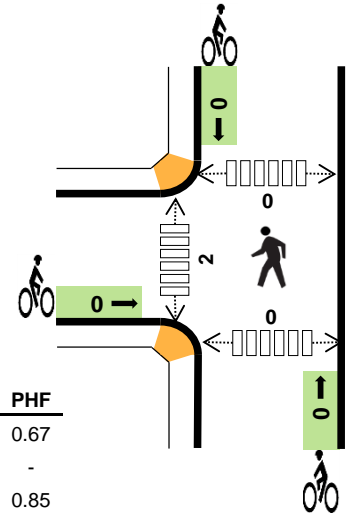
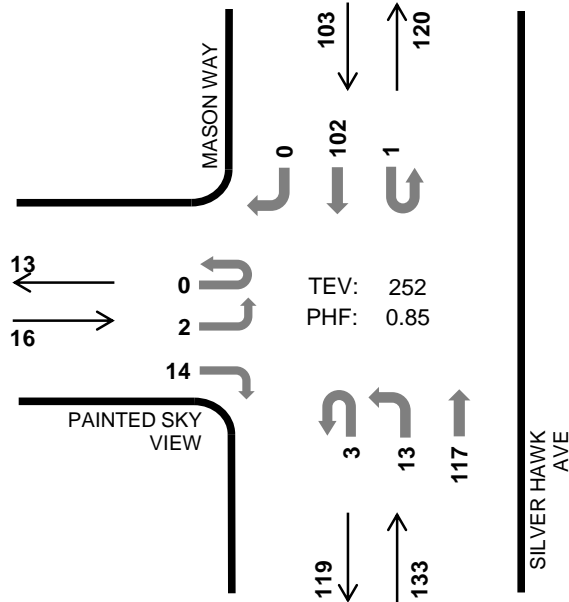
Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
7:00 AM	0	0	0	1	1	0	0	0	0	0	0	6	0	0	6
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2
7:45 AM	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	2	2	4	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	2	0	1	3
Count Total	0	0	3	4	7	0	0	0	0	0	0	10	0	1	11
Peak Hr	0	0	3	3	6	0	0	0	0	0	0	2	0	0	2

SILVER HAWK AVE PAINTED SKY VIEW



Peak Hour

Date: Tue, Jan 19, 2021
 Count Period: 4:00 PM to 6:00 PM
 Peak Hour: 4:15 PM to 5:15 PM



	HV %:	PHF
EB	0.0%	0.67
WB	-	-
NB	0.8%	0.85
SB	1.0%	0.70
TOTAL	0.8%	0.85

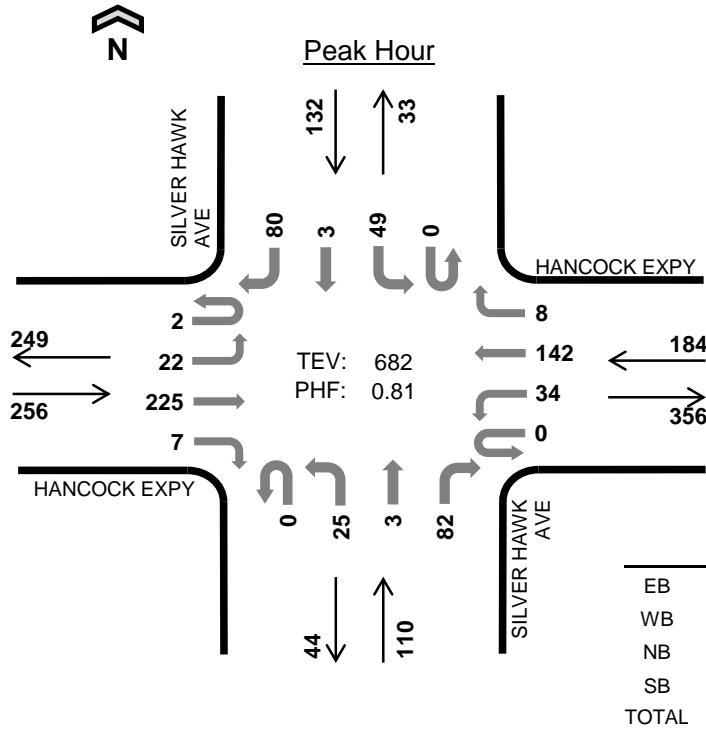
Two-Hour Count Summaries

Interval Start	PAINTED SKY VIEW				0				SILVER HAWK AVE				MASON WAY				15-min Total	Rolling One Hour
	Eastbound		Westbound		Northbound		Southbound		Eastbound		Westbound		Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	0	0	1	0	0	0	0	0	6	37	0	0	0	20	0	64	0
4:15 PM	0	0	0	5	0	0	0	0	0	3	31	0	0	0	23	0	62	0
4:30 PM	0	0	0	2	0	0	0	0	3	3	33	0	0	0	22	0	63	0
4:45 PM	0	2	0	4	0	0	0	0	0	2	24	0	1	0	20	0	53	242
5:00 PM	0	0	0	3	0	0	0	0	0	5	29	0	0	0	37	0	74	252
5:15 PM	0	0	0	2	0	0	0	0	0	7	28	0	0	0	17	0	54	244
5:30 PM	0	1	0	3	0	0	0	0	0	4	27	0	0	0	24	0	59	240
5:45 PM	0	0	0	2	0	0	0	0	0	0	13	0	0	0	19	0	34	221
Count Total	0	3	0	22	0	0	0	0	3	30	222	0	1	0	182	0	463	0
Peak Hour	0	2	0	14	0	0	0	0	3	13	117	0	1	0	102	0	252	0

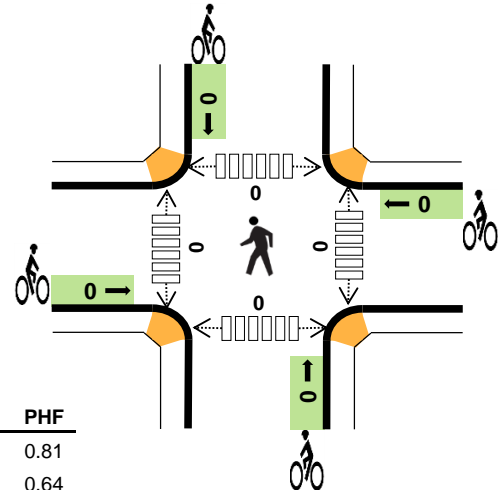
Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:00 PM	0	0	1	1	2	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	1	1	2	0	0	0	0	0	0	1	0	0	1
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	2	2	4	0	0	0	0	0	0	3	0	0	3
Peak Hr	0	0	1	1	2	0	0	0	0	0	0	2	0	0	2

SILVER HAWK AVE HANCOCK EXPY



Date: Wed, Jan 13, 2021
Count Period: 7:00 AM to 9:00 AM
Peak Hour: 7:00 AM to 8:00 AM



	HV %:	PHF
EB	3.1%	0.81
WB	4.9%	0.64
NB	4.5%	0.74
SB	2.3%	0.83
TOTAL	3.7%	0.81

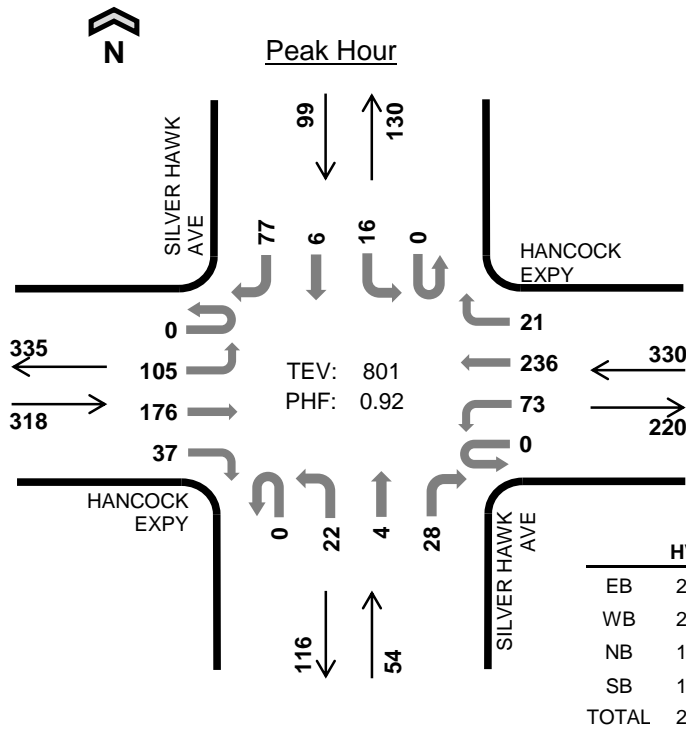
Two-Hour Count Summaries

Interval Start	HANCOCK EXPY Eastbound				HANCOCK EXPY Westbound				SILVER HAWK AVE Northbound				SILVER HAWK AVE Southbound				15-min Total	Rolling One Hour
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	1	3	45	1	0	6	20	1	0	5	1	15	0	13	0	19	130	0
7:15 AM	0	6	71	2	0	2	33	2	0	7	1	26	0	15	2	23	190	0
7:30 AM	0	9	55	1	0	12	58	2	0	5	1	31	0	16	0	20	210	0
7:45 AM	1	4	54	3	0	14	31	3	0	8	0	10	0	5	1	18	152	682
8:00 AM	0	5	32	3	1	8	21	0	0	1	0	10	0	8	0	19	108	660
8:15 AM	0	3	26	1	0	4	15	1	0	1	0	9	0	4	0	17	81	551
8:30 AM	0	9	24	2	2	3	23	0	0	5	0	9	0	4	0	16	97	438
8:45 AM	1	3	23	3	0	3	19	2	0	5	0	8	0	4	0	18	89	375
Count Total	3	42	330	16	3	52	220	11	0	37	3	118	0	69	3	150	1,057	0
Peak Hour	2	22	225	7	0	34	142	8	0	25	3	82	0	49	3	80	682	0

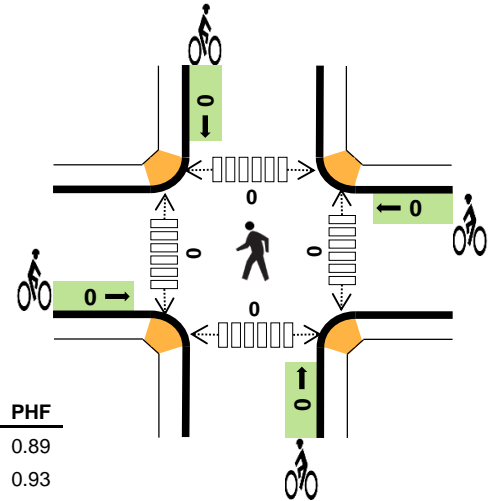
Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
7:00 AM	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0
7:15 AM	2	3	1	2	8	0	0	0	0	0	0	0	0	0	0
7:30 AM	2	6	2	1	11	0	0	0	0	0	0	0	0	0	0
7:45 AM	4	0	1	0	5	0	0	0	0	0	0	0	0	0	0
8:00 AM	5	0	0	0	5	0	0	0	0	0	0	0	0	0	0
8:15 AM	2	1	0	0	3	0	0	0	0	0	0	0	0	0	0
8:30 AM	2	5	0	0	7	0	0	0	0	0	0	0	0	0	0
8:45 AM	1	1	1	1	4	0	0	0	0	0	0	0	0	0	0
Count Total	18	16	6	4	44	0	0	0	0	0	0	0	0	0	0
Peak Hour	8	9	5	3	25	0	0	0	0	0	0	0	0	0	0

SILVER HAWK AVE HANCOCK EXPY



Date: Wed, Jan 13, 2021
 Count Period: 4:00 PM to 6:00 PM
 Peak Hour: 4:00 PM to 5:00 PM



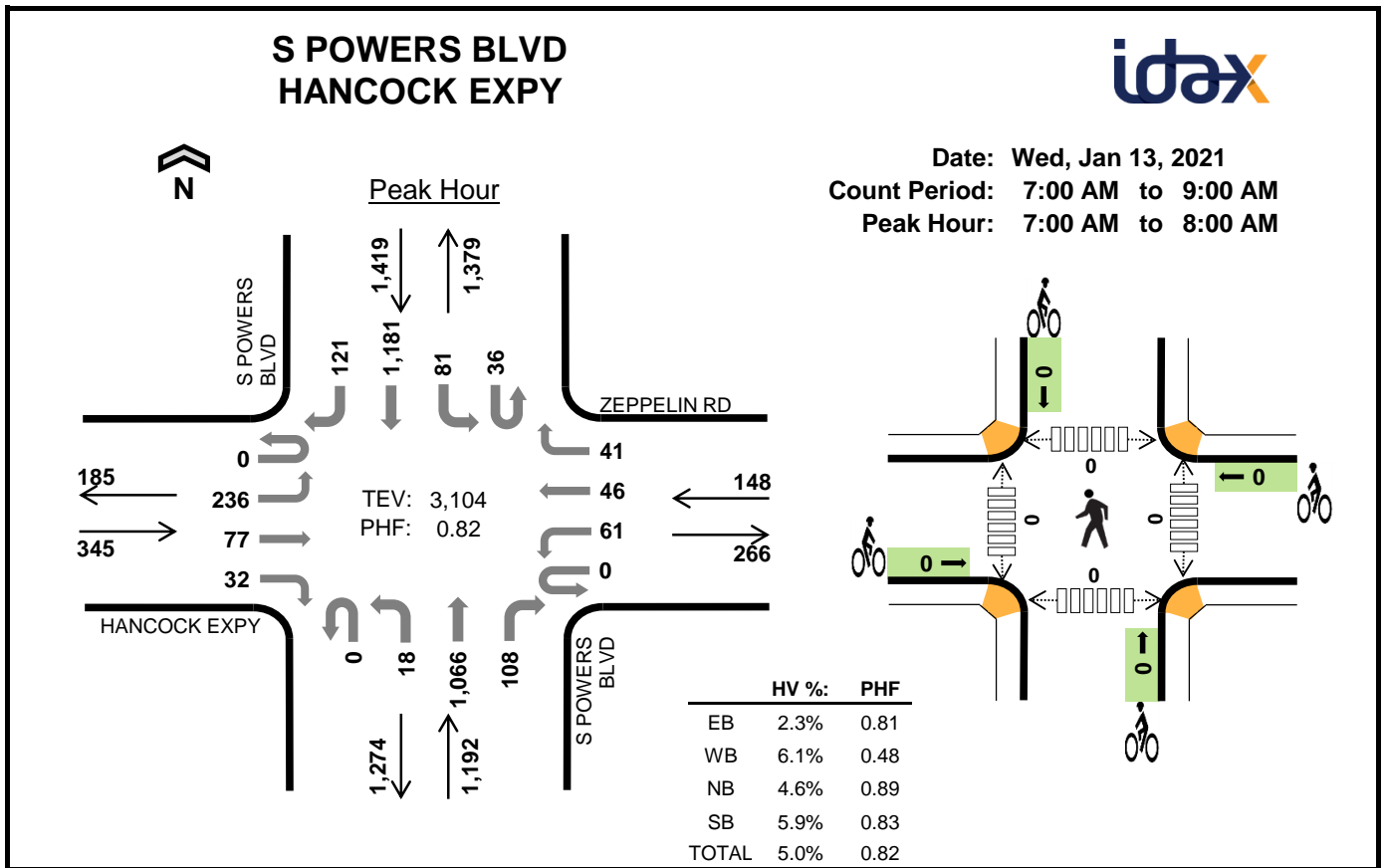
	HV %:	PHF
EB	2.2%	0.89
WB	2.7%	0.93
NB	1.9%	0.75
SB	1.0%	0.65
TOTAL	2.2%	0.92

Two-Hour Count Summaries

Interval Start	HANCOCK EXPY Eastbound				HANCOCK EXPY Westbound				SILVER HAWK AVE Northbound				SILVER HAWK AVE Southbound				15-min Total	Rolling One Hour
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	33	37	6	0	14	70	5	0	5	1	7	0	1	3	11	193	0
4:15 PM	0	22	53	13	0	24	54	6	0	3	0	5	0	7	2	29	218	0
4:30 PM	0	23	34	8	0	17	64	4	0	6	2	7	0	6	0	16	187	0
4:45 PM	0	27	52	10	0	18	48	6	0	8	1	9	0	2	1	21	203	801
5:00 PM	0	28	25	10	0	5	57	6	0	6	1	5	0	3	2	16	164	772
5:15 PM	1	27	36	9	0	9	45	1	0	5	0	7	0	6	1	25	172	726
5:30 PM	2	25	36	3	0	18	44	8	0	9	0	8	0	2	0	12	167	706
5:45 PM	1	25	31	14	0	13	40	2	0	7	3	9	0	6	3	21	175	678
Count Total	4	210	304	73	0	118	422	38	0	49	8	57	0	33	12	151	1,479	0
Peak Hour	0	105	176	37	0	73	236	21	0	22	4	28	0	16	6	77	801	0

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:00 PM	2	6	0	0	8	0	0	0	0	0	0	0	0	0	0
4:15 PM	2	2	0	0	4	0	0	0	0	0	0	0	0	0	0
4:30 PM	1	0	1	0	2	0	0	0	0	0	0	0	0	0	0
4:45 PM	2	1	0	1	4	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0
5:30 PM	2	0	0	0	2	0	0	0	0	0	0	0	0	0	0
5:45 PM	3	2	0	0	5	0	0	1	0	1	0	0	0	0	0
Count Total	13	11	1	1	26	0	0	1	0	1	0	0	0	0	0
Peak Hour	7	9	1	1	18	0	0	0	0	0	0	0	0	0	0

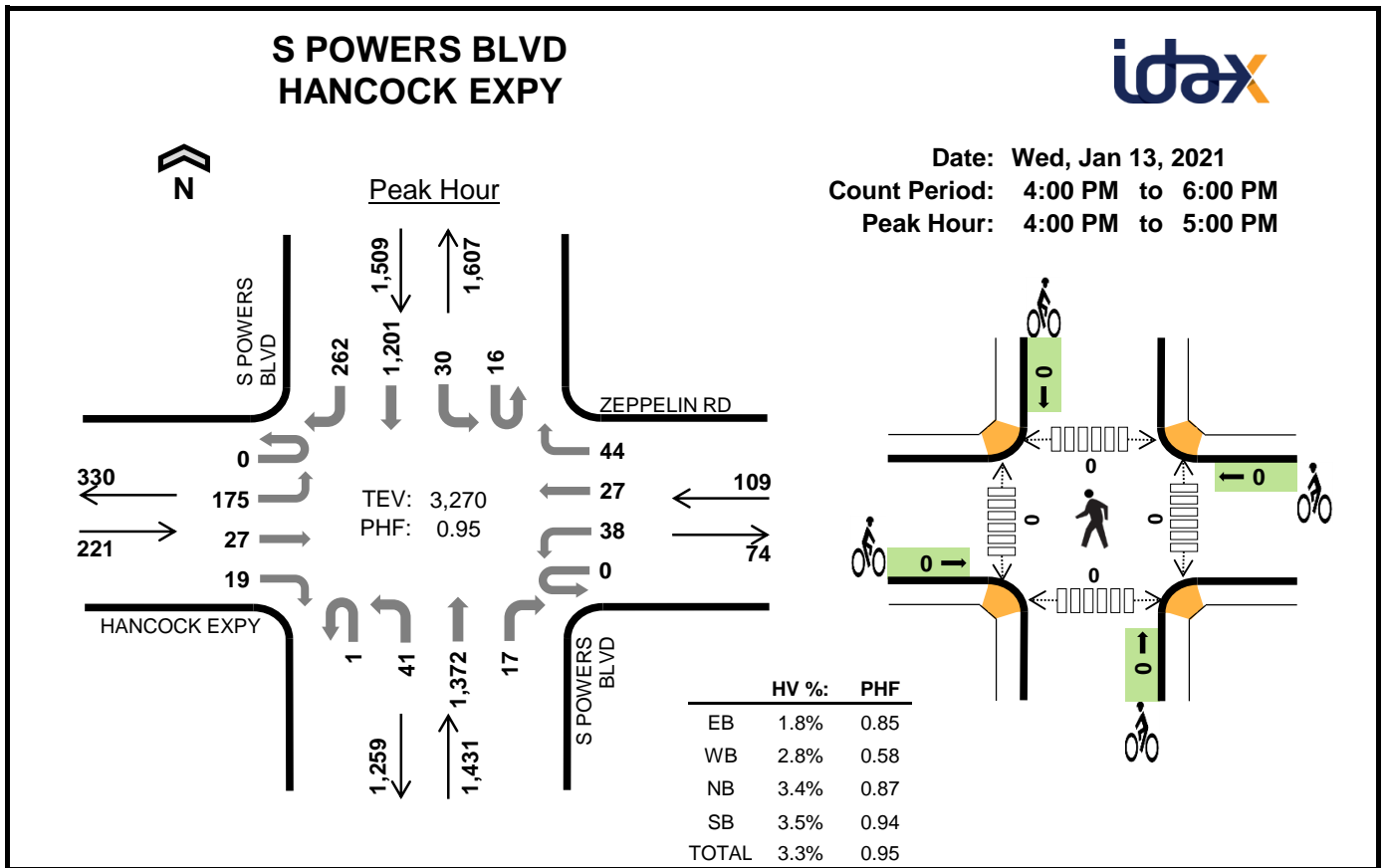


Two-Hour Count Summaries

Interval Start	HANCOCK EXPY				ZEPPELIN RD				S POWERS BLVD				S POWERS BLVD				15-min Total	Rolling One Hour
	Eastbound		Westbound		Westbound		Northbound		Northbound		Southbound		Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	51	8	7	0	6	3	8	0	4	258	16	8	15	247	20	651	0
7:15 AM	0	75	25	5	0	5	6	12	0	7	245	50	13	36	301	24	804	0
7:30 AM	0	62	31	14	0	34	25	18	0	3	306	26	6	21	359	44	949	0
7:45 AM	0	48	13	6	0	16	12	3	0	4	257	16	9	9	274	33	700	3,104
8:00 AM	0	42	7	8	0	7	3	6	0	1	184	13	4	11	260	26	572	3,025
8:15 AM	0	31	4	5	0	4	0	9	0	2	204	5	9	3	289	16	581	2,802
8:30 AM	0	32	2	6	0	3	4	4	0	4	202	5	4	6	276	21	569	2,422
8:45 AM	0	28	6	3	0	5	1	5	0	4	167	3	5	8	270	20	525	2,247
Count Total	0	369	96	54	0	80	54	65	0	29	1,823	134	58	109	2,276	204	5,351	0
Peak Hour	0	236	77	32	0	61	46	41	0	18	1,066	108	36	81	1,181	121	3,104	0

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
7:00 AM	0	3	16	10	29	0	0	0	0	0	0	0	0	0	0
7:15 AM	2	2	9	17	30	0	0	0	0	0	0	0	0	0	0
7:30 AM	4	4	11	32	51	0	0	0	0	0	0	0	0	0	0
7:45 AM	2	0	19	25	46	0	0	0	0	0	0	0	0	0	0
8:00 AM	4	5	14	25	48	0	0	0	0	0	0	0	0	0	0
8:15 AM	2	2	17	21	42	0	0	0	0	0	0	0	0	0	0
8:30 AM	2	5	12	23	42	0	0	0	0	0	0	0	0	0	0
8:45 AM	2	1	10	26	39	0	0	0	0	0	0	0	0	0	0
Count Total	18	22	108	179	327	0	0	0	0	0	0	0	0	0	0
Peak Hour	8	9	55	84	156	0	0	0	0	0	0	0	0	0	0



Two-Hour Count Summaries

Interval Start	HANCOCK EXPY				ZEPPELIN RD				S POWERS BLVD				S POWERS BLVD				15-min Total	Rolling One Hour
	Eastbound		Westbound		Westbound		Northbound		Northbound		Southbound		Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	36	4	6	0	17	10	20	0	7	307	7	4	9	313	72	812	0
4:15 PM	0	49	6	5	0	12	6	8	0	16	328	7	5	7	325	63	837	0
4:30 PM	0	40	7	3	0	4	6	10	0	10	400	0	2	8	301	68	859	0
4:45 PM	0	50	10	5	0	5	5	6	1	8	337	3	5	6	262	59	762	3,270
5:00 PM	0	25	5	3	0	5	16	14	1	6	283	2	5	4	296	49	714	3,172
5:15 PM	0	42	1	8	0	10	5	3	0	4	290	4	3	0	262	48	680	3,015
5:30 PM	0	35	1	6	0	1	4	2	0	10	255	7	8	1	253	51	634	2,790
5:45 PM	0	37	6	4	0	6	3	3	0	6	271	12	2	6	271	46	673	2,701
Count Total	0	314	40	40	0	60	55	66	2	67	2,471	42	34	41	2,283	456	5,971	0
Peak Hour	0	175	27	19	0	38	27	44	1	41	1,372	17	16	30	1,201	262	3,270	0

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:00 PM	1	1	12	17	31	0	0	0	0	0	0	0	0	0	0
4:15 PM	1	1	16	15	33	0	0	0	0	0	0	0	0	0	0
4:30 PM	2	1	11	12	26	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	10	9	19	0	0	0	0	0	0	0	0	0	0
5:00 PM	1	1	8	8	18	0	0	0	0	0	0	0	0	0	0
5:15 PM	1	1	6	4	12	0	0	0	0	0	0	0	0	0	0
5:30 PM	1	0	6	6	13	0	0	0	0	0	0	0	0	0	0
5:45 PM	2	0	5	7	14	0	0	0	0	0	0	0	0	0	0
Count Total	9	5	74	78	166	0	0	0	0	0	0	0	0	0	0
Peak Hour	4	3	49	53	109	0	0	0	0	0	0	0	0	0	0

Skyview Village

Powers Blvd (SH-12) N/S Through Volumes		
Scenario	AM Peak	PM Peak
2019 Existing (Pre-COVID - 2019-11-12)	3,243	3,081
2019 to 2021 Grown Existing	3,308	3,143
2021 Counts (During COVID - 2021-01-113)	2,690	2,690
Percent Change	-18.69%	-14.41%
Growth Adjustment	22.98%	16.84%
Adjustment Factor	1.23	1.17



Ridgeview Data
Collection

Colorado Springs, CO
Peak Innovation Park
AM Peak
Milton E Proby & Powers Blvd (SH-21)

File Name : Milton and Powers AM
Site Code : IPO 467
Start Date : 11/12/2019
Page No : 1

Groups Printed- Automobiles

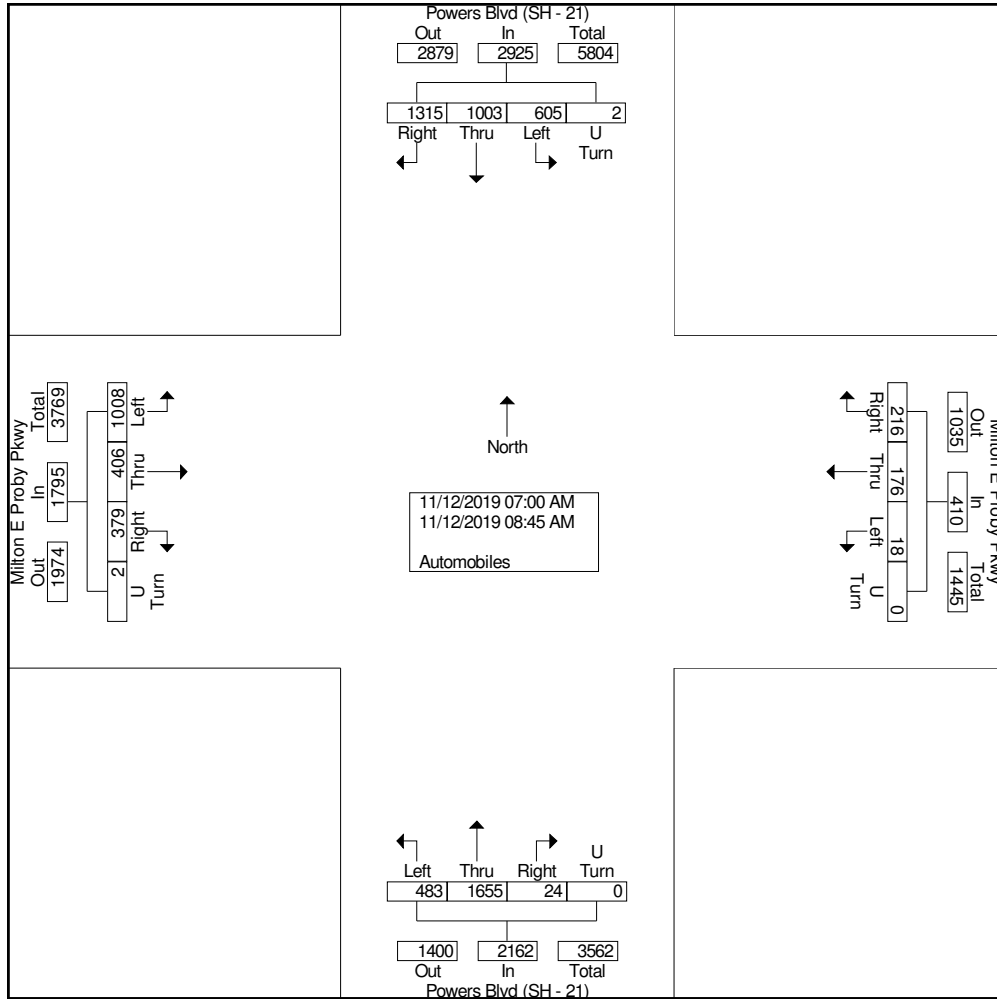
Start Time	Milton E Proby Pkwy Eastbound					Milton E Proby Pkwy Westbound					Powers Blvd (SH - 21) Northbound					Powers Blvd (SH - 21) Southbound					Int. Total
	Left	Thru	Right	U Turn	App. Total	Left	Thru	Right	U Turn	App. Total	Left	Thru	Right	U Turn	App. Total	Left	Thru	Right	U Turn	App. Total	
07:00 AM	129	39	48	0	216	0	10	23	0	33	80	224	3	0	307	61	115	190	0	366	922
07:15 AM	188	49	61	1	299	1	19	22	0	42	93	329	2	0	424	63	134	176	1	374	1139
07:30 AM	168	48	53	0	269	1	26	28	0	55	95	273	6	0	374	73	146	163	0	382	1080
07:45 AM	118	67	56	0	241	2	14	16	0	32	70	202	2	0	274	91	146	164	0	401	948
Total	603	203	218	1	1025	4	69	89	0	162	338	1028	13	0	1379	288	541	693	1	1523	4089
08:00 AM	85	59	45	0	189	2	20	30	0	52	37	186	2	0	225	86	127	148	0	361	827
08:15 AM	91	56	30	1	178	3	20	19	0	42	43	145	5	0	193	83	132	177	0	392	805
08:30 AM	108	42	41	0	191	7	44	42	0	93	39	175	1	0	215	78	101	176	0	355	854
08:45 AM	121	46	45	0	212	2	23	36	0	61	26	121	3	0	150	70	102	121	1	294	717
Total	405	203	161	1	770	14	107	127	0	248	145	627	11	0	783	317	462	622	1	1402	3203
Grand Total	1008	406	379	2	1795	18	176	216	0	410	483	1655	24	0	2162	605	1003	1315	2	2925	7292
Apprch %	56.2	22.6	21.1	0.1		4.4	42.9	52.7	0		22.3	76.5	1.1	0		20.7	34.3	45	0.1		
Total %	13.8	5.6	5.2	0	24.6	0.2	2.4	3	0	5.6	6.6	22.7	0.3	0	29.6	8.3	13.8	18	0	40.1	



Ridgeview Data Collection

Colorado Springs, CO
Peak Innovation Park
AM Peak
Milton E Proby & Powers Blvd (SH-21)

File Name : Milton and Powers AM
Site Code : IPO 467
Start Date : 11/12/2019
Page No : 2



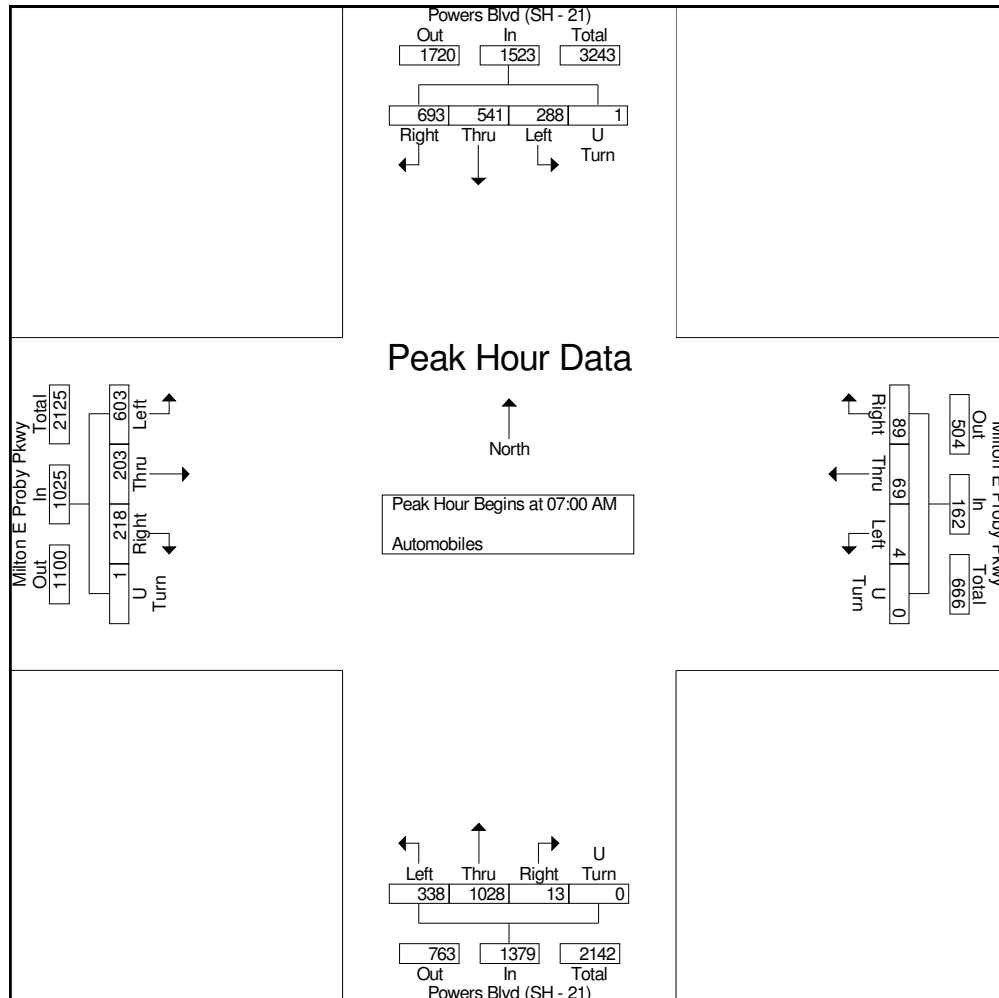


Ridgeview Data
Collection

Colorado Springs, CO
Peak Innovation Park
AM Peak
Milton E Proby & Powers Blvd (SH-21)

File Name : Milton and Powers AM
Site Code : IPO 467
Start Date : 11/12/2019
Page No : 3

Start Time	Milton E Proby Pkwy Eastbound					Milton E Proby Pkwy Westbound					Powers Blvd (SH - 21) Northbound					Powers Blvd (SH - 21) Southbound					Int. Total
	Left	Thru	Right	U Turn	App. Total	Left	Thru	Right	U Turn	App. Total	Left	Thru	Right	U Turn	App. Total	Left	Thru	Right	U Turn	App. Total	
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:00 AM																					
07:00 AM	129	39	48	0	216	0	10	23	0	33	80	224	3	0	307	61	115	190	0	366	922
07:15 AM	188	49	61	1	299	1	19	22	0	42	93	329	2	0	424	63	134	176	1	374	1139
07:30 AM	168	48	53	0	269	1	26	28	0	55	95	273	6	0	374	73	146	163	0	382	1080
07:45 AM	118	67	56	0	241	2	14	16	0	32	70	202	2	0	274	91	146	164	0	401	948
Total Volume	603	203	218	1	1025	4	69	89	0	162	338	1028	13	0	1379	288	541	693	1	1523	4089
% App. Total	58.8	19.8	21.3	0.1		2.5	42.6	54.9	0		24.5	74.5	0.9	0		18.9	35.5	45.5	0.1		
PHF	.802	.757	.893	.250	.857	.500	.663	.795	.000	.736	.889	.781	.542	.000	.813	.791	.926	.912	.250	.950	.897





Ridgeview Data
Collection

Colorado Springs, CO
Peak Innovation Park
PM Peak
Milton E Proby & Powers Blvd (SH-21)

File Name : Milton and Powers PM
Site Code : IPO 467
Start Date : 11/12/2019
Page No : 1

Groups Printed- Automobiles

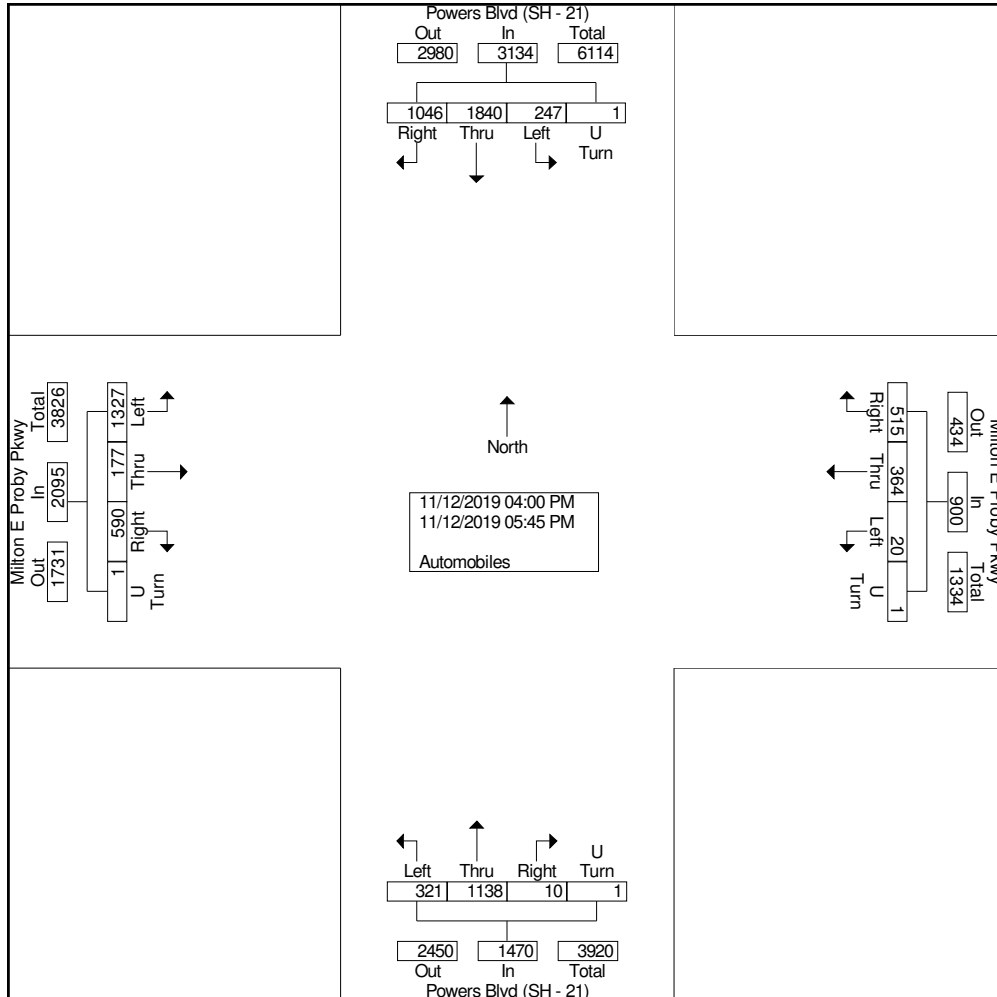
Start Time	Milton E Proby Pkwy Eastbound					Milton E Proby Pkwy Westbound					Powers Blvd (SH - 21) Northbound					Powers Blvd (SH - 21) Southbound					Int. Total
	Left	Thru	Right	U Turn	App. Total	Left	Thru	Right	U Turn	App. Total	Left	Thru	Right	U Turn	App. Total	Left	Thru	Right	U Turn	App. Total	
04:00 PM	180	18	74	0	272	6	75	106	0	187	34	133	1	0	168	33	222	115	0	370	997
04:15 PM	165	26	53	0	244	2	29	51	0	82	50	143	1	0	194	31	242	149	0	422	942
04:30 PM	162	25	68	0	255	2	43	59	0	104	47	130	1	0	178	33	246	133	0	412	949
04:45 PM	150	24	75	0	249	1	58	51	1	111	36	151	1	1	189	26	192	130	0	348	897
Total	657	93	270	0	1020	11	205	267	1	484	167	557	4	1	729	123	902	527	0	1552	3785
05:00 PM	180	21	87	1	289	1	38	65	0	104	50	155	2	0	207	25	237	145	0	407	1007
05:15 PM	184	21	76	0	281	1	19	62	0	82	36	142	3	0	181	37	234	133	0	404	948
05:30 PM	166	29	91	0	286	5	40	64	0	109	31	130	1	0	162	38	207	137	1	383	940
05:45 PM	140	13	66	0	219	2	62	57	0	121	37	154	0	0	191	24	260	104	0	388	919
Total	670	84	320	1	1075	9	159	248	0	416	154	581	6	0	741	124	938	519	1	1582	3814
Grand Total	1327	177	590	1	2095	20	364	515	1	900	321	1138	10	1	1470	247	1840	1046	1	3134	7599
Apprch %	63.3	8.4	28.2	0		2.2	40.4	57.2	0.1		21.8	77.4	0.7	0.1		7.9	58.7	33.4	0		
Total %	17.5	2.3	7.8	0	27.6	0.3	4.8	6.8	0	11.8	4.2	15	0.1	0	19.3	3.3	24.2	13.8	0	41.2	



Ridgeview Data
Collection

Colorado Springs, CO
Peak Innovation Park
PM Peak
Milton E Proby & Powers Blvd (SH-21)

File Name : Milton and Powers PM
Site Code : IPO 467
Start Date : 11/12/2019
Page No : 2



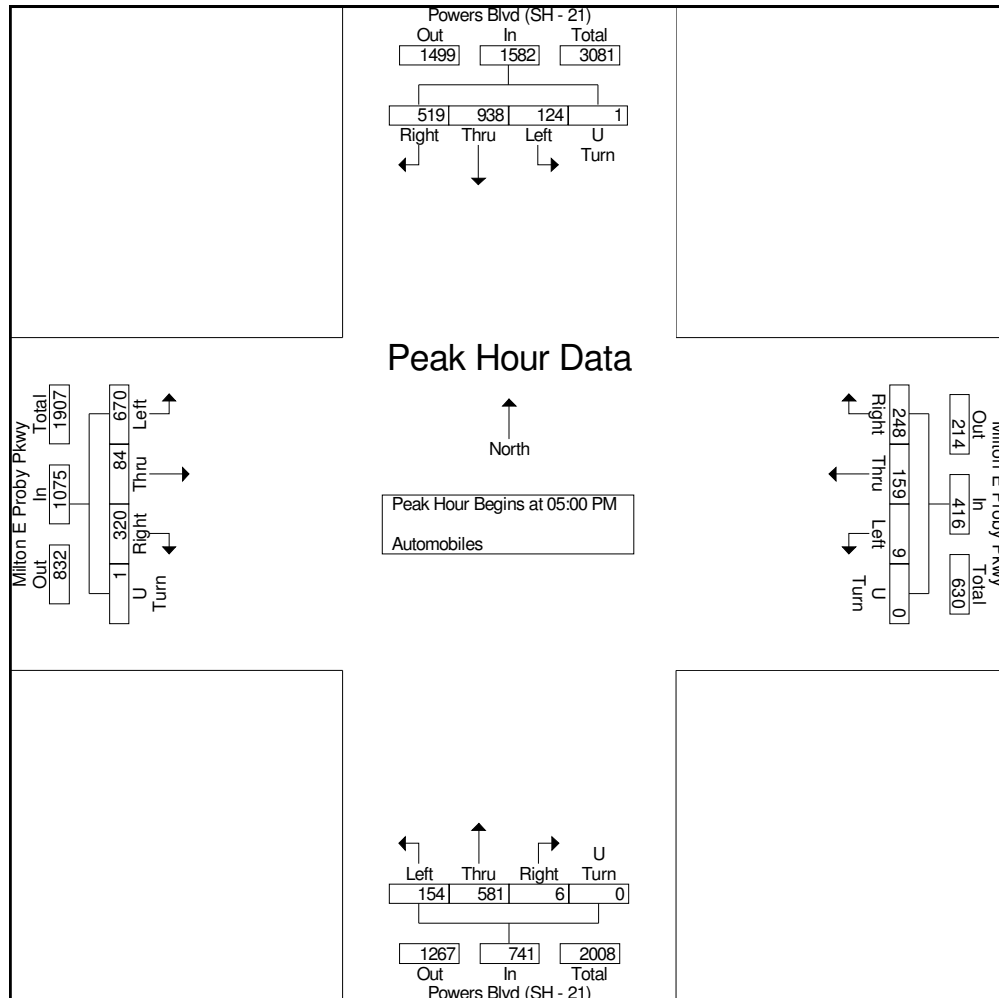


Ridgeview Data
Collection

Colorado Springs, CO
Peak Innovation Park
PM Peak
Milton E Proby & Powers Blvd (SH-21)

File Name : Milton and Powers PM
Site Code : IPO 467
Start Date : 11/12/2019
Page No : 3

Start Time	Milton E Proby Pkwy Eastbound					Milton E Proby Pkwy Westbound					Powers Blvd (SH - 21) Northbound					Powers Blvd (SH - 21) Southbound					Int. Total
	Left	Thru	Right	U Turn	App. Total	Left	Thru	Right	U Turn	App. Total	Left	Thru	Right	U Turn	App. Total	Left	Thru	Right	U Turn	App. Total	
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 05:00 PM																					
05:00 PM	180	21	87	1	289	1	38	65	0	104	50	155	2	0	207	25	237	145	0	407	1007
05:15 PM	184	21	76	0	281	1	19	62	0	82	36	142	3	0	181	37	234	133	0	404	948
05:30 PM	166	29	91	0	286	5	40	64	0	109	31	130	1	0	162	38	207	137	1	383	940
05:45 PM	140	13	66	0	219	2	62	57	0	121	37	154	0	0	191	24	260	104	0	388	919
Total Volume	670	84	320	1	1075	9	159	248	0	416	154	581	6	0	741	124	938	519	1	1582	3814
% App. Total	62.3	7.8	29.8	0.1		2.2	38.2	59.6	0		20.8	78.4	0.8	0		7.8	59.3	32.8	0.1		
PHF	.910	.724	.879	.250	.930	.450	.641	.954	.000	.860	.770	.937	.500	.000	.895	.816	.902	.895	.250	.972	.947



APPENDIX B

CDOT OTIS Traffic Growth Information

ROUTE	UPDATEYR	AA DT	AA DTYR	COUNTYEAR	YR20FACT	DHV	DD	LOCATION
021A	2019	26000	2019	2017	1.15	8	66	ON POWERS BLVD N/O DRENNAN RD COLO SPGS
021A	2019	35000	2019	2017	1.15	9	54	ON POWERS BLVD N/O ZEPPELEN RD COLO SPGS

Growth Rate 0.70%

APPENDIX C

Trip Generation Calculations

Project Skyview Village
 Subject Trip Generation for Single-Family Detached Housing
 Designed by MAG Date February 01, 2021 Job No. 096964003
 Checked by _____ Date _____ Sheet No. _____ of _____

TRIP GENERATION MANUAL TECHNIQUES

ITE Trip Generation Manual 10th Edition, Fitted Curve Equations

Land Use Code - Single-Family Detached Housing (210)

Independent Variable - Dwelling Units (X)

$$X = 74$$

T = Average Vehicle Trip Ends

Peak Hour of Adjacent Street Traffic, One Hour Between 7 and 9 a.m. (200 Series Page 3)

Average Weekday

$$(T) = 0.71 (X) + 4.80$$

$$(T) = 0.71 * (74) + 4.80$$

Directional Distribution: 25% ent. 75% exit.

$$T = 57 \text{ Average Vehicle Trip Ends}$$

$$14 \text{ entering} \quad 43 \text{ exiting}$$

$$14 + 43 = 57$$

Peak Hour of Adjacent Street Traffic, One Hour Between 4 and 6 p.m. (200 Series Page 4)

Average Weekday

$$\ln(T) = 0.96 \ln(X) + 0.20$$

$$\ln(T) = 0.96 * \ln(74) + 0.20$$

Directional Distribution: 63% ent. 37% exit.

$$T = 76 \text{ Average Vehicle Trip Ends}$$

$$48 \text{ entering} \quad 28 \text{ exiting}$$

$$48 + 28 = 76$$

Peak Hour of Generator, Saturday (200 Series Page 8)

Average Saturday

$$(T) = 0.84 (X) + 17.99$$

$$(T) = 0.84 * (74) + 17.99$$

Directional Distribution: 54% ent. 46% exit.

$$T = 80 \text{ Average Vehicle Trip Ends}$$

$$43 \text{ entering} \quad 37 \text{ exiting}$$

$$43 + 37 = 80$$

Weekday (200 Series Page 2)

Average Weekday

$$\ln(T) = 0.92 \ln(X) + 2.71$$

$$\ln(T) = 0.92 * \ln(74) + 2.71$$

Directional Distribution: 50% entering, 50% exiting

$$T = 788 \text{ Average Vehicle Trip Ends}$$

$$394 \text{ entering} \quad 394 \text{ exiting}$$

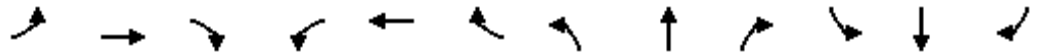
$$394 + 394 = 788$$

APPENDIX D

Intersection Analysis Worksheets

Timings

1: Hancock Expy/Zeppelin Rd & Powers Blvd (SH-21)



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↑↑	↗	↘	↑	↗	↘	↑↑	↗	↘	↑↑	↗
Traffic Volume (vph)	290	95	39	75	57	50	22	1311	133	144	1453	149
Future Volume (vph)	290	95	39	75	57	50	22	1311	133	144	1453	149
Turn Type	Perm	NA	Free	Perm	NA	Free	pm+pt	NA	Perm	pm+pt	NA	Free
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		Free	8		Free	2		2	6		Free
Detector Phase	4	4		8	8		5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	22.5	22.5		22.5	22.5		9.5	22.5	22.5	9.5	22.5	
Total Split (s)	55.0	55.0		55.0	55.0		9.5	76.0	76.0	19.0	85.5	
Total Split (%)	36.7%	36.7%		36.7%	36.7%		6.3%	50.7%	50.7%	12.7%	57.0%	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5	3.5	3.5	3.5	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.5	4.5		4.5	4.5		4.5	4.5	4.5	4.5	4.5	
Lead/Lag							Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	
Recall Mode	None	None		None	None		None	C-Max	C-Max	None	C-Max	
Act Effct Green (s)	47.4	47.4	150.0	47.4	47.4	150.0	81.2	76.0	76.0	93.6	87.9	150.0
Actuated g/C Ratio	0.32	0.32	1.00	0.32	0.32	1.00	0.54	0.51	0.51	0.62	0.59	1.00
v/c Ratio	0.95	0.10	0.03	0.39	0.20	0.07	0.22	0.82	0.17	0.83	0.84	0.11
Control Delay	85.3	35.6	0.0	42.6	37.5	0.1	17.7	37.2	7.7	65.2	31.9	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	85.3	35.6	0.0	42.6	37.5	0.1	17.7	37.2	7.7	65.2	31.9	0.1
LOS	F	D	A	D	D	A	B	D	A	E	C	A
Approach Delay		66.3			29.3			34.3			31.9	
Approach LOS		E			C			C			C	

Intersection Summary

Cycle Length: 150
 Actuated Cycle Length: 150
 Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
 Natural Cycle: 90
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.95
 Intersection Signal Delay: 36.4
 Intersection LOS: D
 Intersection Capacity Utilization 78.3%
 ICU Level of Service D
 Analysis Period (min) 15

Splits and Phases: 1: Hancock Expy/Zeppelin Rd & Powers Blvd (SH-21)



HCM 6th Signalized Intersection Summary
 1: Hancock Expy/Zeppelin Rd & Powers Blvd (SH-21)

2021 Adj Existing AM.syn
 02/02/2021



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↑↑	↗	↘	↑	↗	↘	↑↑	↗	↘	↑↑	↗
Traffic Volume (veh/h)	290	95	39	75	57	50	22	1311	133	144	1453	149
Future Volume (veh/h)	290	95	39	75	57	50	22	1311	133	144	1453	149
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	358	117	0	156	119	0	25	1473	0	173	1751	0
Peak Hour Factor	0.81	0.81	0.81	0.48	0.48	0.48	0.89	0.89	0.89	0.83	0.83	0.83
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	418	1194		448	629		119	1829		215	1963	
Arrive On Green	0.34	0.34	0.00	0.34	0.34	0.00	0.02	0.51	0.00	0.06	0.55	0.00
Sat Flow, veh/h	1273	3554	1585	1275	1870	1585	1781	3554	1585	1781	3554	1585
Grp Volume(v), veh/h	358	117	0	156	119	0	25	1473	0	173	1751	0
Grp Sat Flow(s),veh/h/ln	1273	1777	1585	1275	1870	1585	1781	1777	1585	1781	1777	1585
Q Serve(g_s), s	41.6	3.4	0.0	14.4	6.8	0.0	1.0	51.5	0.0	6.7	65.2	0.0
Cycle Q Clear(g_c), s	48.4	3.4	0.0	17.7	6.8	0.0	1.0	51.5	0.0	6.7	65.2	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	418	1194		448	629		119	1829		215	1963	
V/C Ratio(X)	0.86	0.10		0.35	0.19		0.21	0.81		0.81	0.89	
Avail Cap(c_a), veh/h	419	1196		448	630		140	1829		282	1963	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	52.5	34.2	0.0	40.3	35.3	0.0	29.4	30.2	0.0	30.5	29.6	0.0
Incr Delay (d2), s/veh	15.8	0.0	0.0	0.5	0.1	0.0	0.9	3.9	0.0	12.0	6.7	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	15.1	1.5	0.0	4.6	3.2	0.0	0.4	22.8	0.0	4.0	29.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	68.3	34.2	0.0	40.7	35.4	0.0	30.2	34.1	0.0	42.5	36.3	0.0
LnGrp LOS	E	C		D	D		C	C		D	D	
Approach Vol, veh/h		475	A		275	A		1498	A		1924	A
Approach Delay, s/veh		59.9			38.4			34.0			36.9	
Approach LOS		E			D			C			D	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	13.4	81.7		54.9	7.7	87.3		54.9				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	14.5	71.5		50.5	5.0	81.0		50.5				
Max Q Clear Time (g_c+I1), s	8.7	53.5		50.4	3.0	67.2		19.7				
Green Ext Time (p_c), s	0.2	10.7		0.0	0.0	10.3		1.2				

Intersection Summary

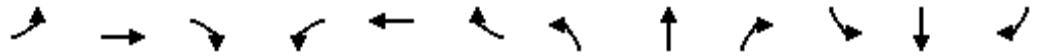
HCM 6th Ctrl Delay	38.6
HCM 6th LOS	D

Notes

Unsignalized Delay for [NBR, EBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Timings

1: Hancock Expy/Zeppelin Rd & Powers Blvd (SH-21)



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗	↘	↖	↗	↘	↖	↗	↘	↖	↗	↘
Traffic Volume (vph)	205	32	22	44	32	51	49	1605	20	54	1405	307
Future Volume (vph)	205	32	22	44	32	51	49	1605	20	54	1405	307
Turn Type	Perm	NA	Free	Perm	NA	Free	pm+pt	NA	Perm	pm+pt	NA	Free
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		Free	8		Free	2		2	6		Free
Detector Phase	4	4		8	8		5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	22.5	22.5		22.5	22.5		9.5	22.5	22.5	9.5	22.5	
Total Split (s)	42.0	42.0		42.0	42.0		10.6	97.0	97.0	11.0	97.4	
Total Split (%)	28.0%	28.0%		28.0%	28.0%		7.1%	64.7%	64.7%	7.3%	64.9%	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5	3.5	3.5	3.5	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.5	4.5		4.5	4.5		4.5	4.5	4.5	4.5	4.5	
Lead/Lag							Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	
Recall Mode	None	None		None	None		None	C-Max	C-Max	None	C-Max	
Act Effect Green (s)	31.1	31.1	150.0	31.1	31.1	150.0	106.1	100.9	100.9	106.5	101.1	150.0
Actuated g/C Ratio	0.21	0.21	1.00	0.21	0.21	1.00	0.71	0.67	0.67	0.71	0.67	1.00
v/c Ratio	0.87	0.05	0.02	0.27	0.14	0.06	0.26	0.78	0.02	0.39	0.63	0.21
Control Delay	85.6	44.9	0.0	50.6	47.2	0.1	9.6	21.6	0.8	15.8	16.7	0.3
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	85.6	44.9	0.0	50.6	47.2	0.1	9.6	21.6	0.8	15.8	16.7	0.3
LOS	F	D	A	D	D	A	A	C	A	B	B	A
Approach Delay		73.2			29.4			21.0				13.8
Approach LOS		E			C			C				B

Intersection Summary

Cycle Length: 150
 Actuated Cycle Length: 150
 Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
 Natural Cycle: 90
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.87
 Intersection Signal Delay: 22.0
 Intersection LOS: C
 Intersection Capacity Utilization 70.4%
 ICU Level of Service C
 Analysis Period (min) 15

Splits and Phases: 1: Hancock Expy/Zeppelin Rd & Powers Blvd (SH-21)



HCM 6th Signalized Intersection Summary
 1: Hancock Expy/Zeppelin Rd & Powers Blvd (SH-21)

2021 Adj Existing PM.syn
 02/02/2021



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↑↑	↗	↘	↑	↗	↘	↑↑	↗	↘	↑↑	↗
Traffic Volume (veh/h)	205	32	22	44	32	51	49	1605	20	54	1405	307
Future Volume (veh/h)	205	32	22	44	32	51	49	1605	20	54	1405	307
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	241	38	0	76	55	0	56	1845	0	57	1495	0
Peak Hour Factor	0.85	0.85	0.85	0.58	0.58	0.58	0.87	0.87	0.87	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	307	767		332	404		249	2359		177	2360	
Arrive On Green	0.22	0.22	0.00	0.22	0.22	0.00	0.03	0.66	0.00	0.03	0.66	0.00
Sat Flow, veh/h	1349	3554	1585	1370	1870	1585	1781	3554	1585	1781	3554	1585
Grp Volume(v), veh/h	241	38	0	76	55	0	56	1845	0	57	1495	0
Grp Sat Flow(s),veh/h/ln	1349	1777	1585	1370	1870	1585	1781	1777	1585	1781	1777	1585
Q Serve(g_s), s	26.4	1.3	0.0	7.0	3.6	0.0	1.5	54.4	0.0	1.5	36.6	0.0
Cycle Q Clear(g_c), s	29.9	1.3	0.0	8.3	3.6	0.0	1.5	54.4	0.0	1.5	36.6	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	307	767		332	404		249	2359		177	2360	
V/C Ratio(X)	0.78	0.05		0.23	0.14		0.22	0.78		0.32	0.63	
Avail Cap(c_a), veh/h	353	888		379	468		268	2359		201	2360	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	59.6	46.6	0.0	49.9	47.5	0.0	12.6	17.6	0.0	20.0	14.6	0.0
Incr Delay (d2), s/veh	9.7	0.0	0.0	0.3	0.2	0.0	0.5	2.7	0.0	1.0	1.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	9.9	0.6	0.0	2.5	1.7	0.0	0.6	22.2	0.0	1.0	14.8	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	69.3	46.6	0.0	50.2	47.7	0.0	13.0	20.3	0.0	21.1	15.9	0.0
LnGrp LOS	E	D		D	D		B	C		C	B	
Approach Vol, veh/h		279	A		131	A		1901	A		1552	A
Approach Delay, s/veh		66.2			49.1			20.1			16.1	
Approach LOS		E			D			C			B	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	9.0	104.1		36.9	9.0	104.1		36.9				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	6.5	92.5		37.5	6.1	92.9		37.5				
Max Q Clear Time (g_c+I1), s	3.5	56.4		31.9	3.5	38.6		10.3				
Green Ext Time (p_c), s	0.0	21.6		0.5	0.0	18.4		0.5				

Intersection Summary

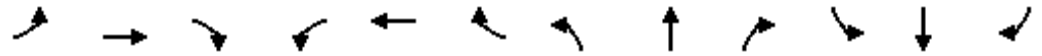
HCM 6th Ctrl Delay	22.8
HCM 6th LOS	C

Notes

Unsignalized Delay for [NBR, EBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Timings

1: Hancock Expy/Zeppelin Rd & Powers Blvd (SH-21)

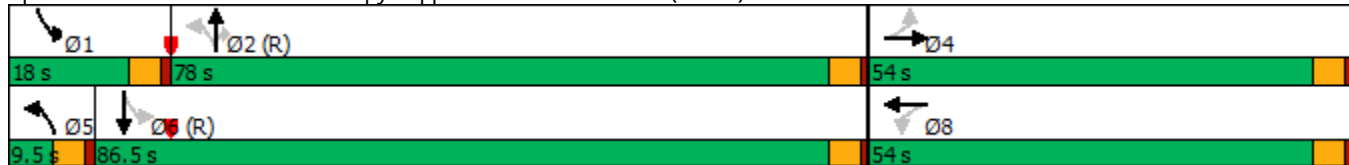


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↗	↘	↘	↗	↘	↘	↗	↘	↘	↗	↘
Traffic Volume (vph)	296	97	40	77	58	51	22	1337	136	147	1482	152
Future Volume (vph)	296	97	40	77	58	51	22	1337	136	147	1482	152
Turn Type	Perm	NA	Free	Perm	NA	Free	pm+pt	NA	Perm	pm+pt	NA	Free
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		Free	8		Free	2		2	6		Free
Detector Phase	4	4		8	8		5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	22.5	22.5		22.5	22.5		9.5	22.5	22.5	9.5	22.5	
Total Split (s)	54.0	54.0		54.0	54.0		9.5	78.0	78.0	18.0	86.5	
Total Split (%)	36.0%	36.0%		36.0%	36.0%		6.3%	52.0%	52.0%	12.0%	57.7%	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5	3.5	3.5	3.5	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.5	4.5		4.5	4.5		4.5	4.5	4.5	4.5	4.5	
Lead/Lag							Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	
Recall Mode	None	None		None	None		None	C-Max	C-Max	None	C-Max	
Act Effct Green (s)	47.9	47.9	150.0	47.9	47.9	150.0	80.9	75.8	75.8	93.1	87.4	150.0
Actuated g/C Ratio	0.32	0.32	1.00	0.32	0.32	1.00	0.54	0.51	0.51	0.62	0.58	1.00
v/c Ratio	0.96	0.11	0.03	0.40	0.20	0.07	0.23	0.84	0.18	0.88	0.87	0.12
Control Delay	87.4	35.7	0.0	42.8	37.7	0.1	17.5	38.0	7.4	76.5	33.2	0.2
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	87.4	35.7	0.0	42.8	37.7	0.1	17.5	38.0	7.4	76.5	33.2	0.2
LOS	F	D	A	D	D	A	B	D	A	E	C	A
Approach Delay		67.8			29.5			34.9			33.9	
Approach LOS		E			C			C			C	

Intersection Summary

Cycle Length: 150
 Actuated Cycle Length: 150
 Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
 Natural Cycle: 100
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.96
 Intersection Signal Delay: 37.7
 Intersection LOS: D
 Intersection Capacity Utilization 79.4%
 ICU Level of Service D
 Analysis Period (min) 15

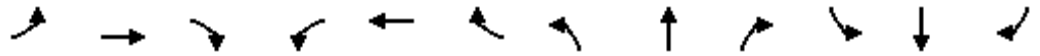
Splits and Phases: 1: Hancock Expy/Zeppelin Rd & Powers Blvd (SH-21)



HCM 6th Signalized Intersection Summary
 1: Hancock Expy/Zeppelin Rd & Powers Blvd (SH-21)

2023 Background AM.syn

02/02/2021



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗	↘	↖	↗	↘	↖	↗	↘	↖	↗	↘
Traffic Volume (veh/h)	296	97	40	77	58	51	22	1337	136	147	1482	152
Future Volume (veh/h)	296	97	40	77	58	51	22	1337	136	147	1482	152
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	365	120	0	160	121	0	25	1502	0	177	1786	0
Peak Hour Factor	0.81	0.81	0.81	0.48	0.48	0.48	0.89	0.89	0.89	0.83	0.83	0.83
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	408	1173		438	617		116	1850		213	1984	
Arrive On Green	0.33	0.33	0.00	0.33	0.33	0.00	0.02	0.52	0.00	0.06	0.56	0.00
Sat Flow, veh/h	1270	3554	1585	1272	1870	1585	1781	3554	1585	1781	3554	1585
Grp Volume(v), veh/h	365	120	0	160	121	0	25	1502	0	177	1786	0
Grp Sat Flow(s),veh/h/ln	1270	1777	1585	1272	1870	1585	1781	1777	1585	1781	1777	1585
Q Serve(g_s), s	42.5	3.5	0.0	15.0	7.0	0.0	1.0	52.6	0.0	6.7	66.9	0.0
Cycle Q Clear(g_c), s	49.5	3.5	0.0	18.5	7.0	0.0	1.0	52.6	0.0	6.7	66.9	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	408	1173		438	617		116	1850		213	1984	
V/C Ratio(X)	0.89	0.10		0.37	0.20		0.22	0.81		0.83	0.90	
Avail Cap(c_a), veh/h	408	1173		438	617		137	1850		268	1984	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	54.0	34.8	0.0	41.3	36.0	0.0	29.7	29.9	0.0	30.9	29.4	0.0
Incr Delay (d2), s/veh	21.4	0.0	0.0	0.5	0.2	0.0	0.9	4.0	0.0	16.1	7.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	16.2	1.6	0.0	4.8	3.3	0.0	0.4	23.3	0.0	4.4	29.8	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	75.4	34.9	0.0	41.8	36.1	0.0	30.7	33.9	0.0	47.0	36.5	0.0
LnGrp LOS	E	C		D	D		C	C		D	D	
Approach Vol, veh/h		485	A		281	A		1527	A		1963	A
Approach Delay, s/veh		65.3			39.3			33.8			37.4	
Approach LOS		E			D			C			D	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	13.4	82.6		54.0	7.7	88.3		54.0				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	13.5	73.5		49.5	5.0	82.0		49.5				
Max Q Clear Time (g_c+I1), s	8.7	54.6		51.5	3.0	68.9		20.5				
Green Ext Time (p_c), s	0.2	11.3		0.0	0.0	10.0		1.2				

Intersection Summary

HCM 6th Ctrl Delay	39.4
HCM 6th LOS	D

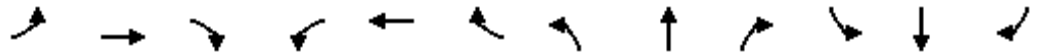
Notes

Unsignalized Delay for [NBR, EBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.

HCM 6th Signalized Intersection Summary
 1: Hancock Expy/Zeppelin Rd & Powers Blvd (SH-21)

2023 Background PM.syn

02/02/2021



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗	↘	↖	↗	↘	↖	↗	↘	↖	↗	↘
Traffic Volume (veh/h)	209	33	22	45	33	52	50	1637	20	55	1433	313
Future Volume (veh/h)	209	33	22	45	33	52	50	1637	20	55	1433	313
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	246	39	0	78	57	0	57	1882	0	59	1524	0
Peak Hour Factor	0.85	0.85	0.85	0.58	0.58	0.58	0.87	0.87	0.87	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	312	783		338	412		240	2342		169	2343	
Arrive On Green	0.22	0.22	0.00	0.22	0.22	0.00	0.03	0.66	0.00	0.03	0.66	0.00
Sat Flow, veh/h	1346	3554	1585	1368	1870	1585	1781	3554	1585	1781	3554	1585
Grp Volume(v), veh/h	246	39	0	78	57	0	57	1882	0	59	1524	0
Grp Sat Flow(s),veh/h/ln	1346	1777	1585	1368	1870	1585	1781	1777	1585	1781	1777	1585
Q Serve(g_s), s	27.0	1.3	0.0	7.1	3.7	0.0	1.5	57.6	0.0	1.6	38.4	0.0
Cycle Q Clear(g_c), s	30.6	1.3	0.0	8.4	3.7	0.0	1.5	57.6	0.0	1.6	38.4	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	312	783		338	412		240	2342		169	2343	
V/C Ratio(X)	0.79	0.05		0.23	0.14		0.24	0.80		0.35	0.65	
Avail Cap(c_a), veh/h	352	888		378	468		258	2342		180	2343	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	59.3	46.1	0.0	49.4	47.0	0.0	13.4	18.5	0.0	22.1	15.2	0.0
Incr Delay (d2), s/veh	10.3	0.0	0.0	0.3	0.2	0.0	0.5	3.0	0.0	1.2	1.4	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	10.1	0.6	0.0	2.5	1.8	0.0	0.6	23.7	0.0	1.1	15.6	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	69.6	46.1	0.0	49.8	47.2	0.0	13.9	21.6	0.0	23.3	16.7	0.0
LnGrp LOS	E	D		D	D		B	C		C	B	
Approach Vol, veh/h		285	A		135	A		1939	A		1583	A
Approach Delay, s/veh		66.4			48.7			21.3			16.9	
Approach LOS		E			D			C			B	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	9.1	103.4		37.6	9.0	103.4		37.6				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	5.5	93.5		37.5	6.1	92.9		37.5				
Max Q Clear Time (g_c+I1), s	3.6	59.6		32.6	3.5	40.4		10.4				
Green Ext Time (p_c), s	0.0	21.4		0.4	0.0	18.9		0.5				

Intersection Summary

HCM 6th Ctrl Delay	23.8
HCM 6th LOS	C

Notes

Unsignalized Delay for [NBR, EBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Timings

2023 Total AM.syn

1: Hancock Expy/Zeppelin Rd & Powers Blvd (SH-21)

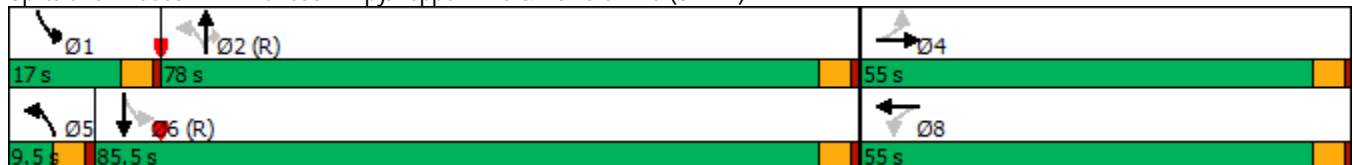
02/02/2021

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	309	97	62	77	58	51	24	1337	136	147	1482	156
Future Volume (vph)	309	97	62	77	58	51	24	1337	136	147	1482	156
Turn Type	Perm	NA	Free	Perm	NA	Free	pm+pt	NA	Perm	pm+pt	NA	Free
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		Free	8		Free	2		2	6		Free
Detector Phase	4	4		8	8		5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	22.5	22.5		22.5	22.5		9.5	22.5	22.5	9.5	22.5	
Total Split (s)	55.0	55.0		55.0	55.0		9.5	78.0	78.0	17.0	85.5	
Total Split (%)	36.7%	36.7%		36.7%	36.7%		6.3%	52.0%	52.0%	11.3%	57.0%	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5	3.5	3.5	3.5	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.5	4.5		4.5	4.5		4.5	4.5	4.5	4.5	4.5	
Lead/Lag							Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	
Recall Mode	None	None		None	None		None	C-Max	C-Max	None	C-Max	
Act Effct Green (s)	49.3	49.3	150.0	49.3	49.3	150.0	80.1	75.0	75.0	91.7	86.0	150.0
Actuated g/C Ratio	0.33	0.33	1.00	0.33	0.33	1.00	0.53	0.50	0.50	0.61	0.57	1.00
v/c Ratio	0.97	0.10	0.05	0.39	0.20	0.07	0.25	0.85	0.18	0.92	0.88	0.12
Control Delay	88.6	34.9	0.1	41.7	36.8	0.1	18.3	38.8	7.4	84.2	34.9	0.2
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	88.6	34.9	0.1	41.7	36.8	0.1	18.3	38.8	7.4	84.2	34.9	0.2
LOS	F	C	A	D	D	A	B	D	A	F	C	A
Approach Delay		65.6			28.8			35.6			35.9	
Approach LOS		E			C			D			D	

Intersection Summary

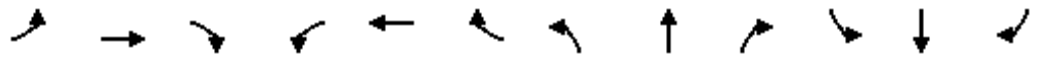
Cycle Length: 150
 Actuated Cycle Length: 150
 Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
 Natural Cycle: 110
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.97
 Intersection Signal Delay: 38.8
 Intersection Capacity Utilization 80.2%
 Analysis Period (min) 15
 Intersection LOS: D
 ICU Level of Service D

Splits and Phases: 1: Hancock Expy/Zeppelin Rd & Powers Blvd (SH-21)



HCM 6th Signalized Intersection Summary
 1: Hancock Expy/Zeppelin Rd & Powers Blvd (SH-21)

2023 Total AM.syn
 02/02/2021



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↑↑	↗	↘	↑	↗	↘	↑↑	↗	↘	↑↑	↗
Traffic Volume (veh/h)	309	97	62	77	58	51	24	1337	136	147	1482	156
Future Volume (veh/h)	309	97	62	77	58	51	24	1337	136	147	1482	156
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	381	120	0	160	121	0	27	1502	0	177	1786	0
Peak Hour Factor	0.81	0.81	0.81	0.48	0.48	0.48	0.89	0.89	0.89	0.83	0.83	0.83
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	417	1196		447	630		114	1824		210	1957	
Arrive On Green	0.34	0.34	0.00	0.34	0.34	0.00	0.02	0.51	0.00	0.06	0.55	0.00
Sat Flow, veh/h	1270	3554	1585	1272	1870	1585	1781	3554	1585	1781	3554	1585
Grp Volume(v), veh/h	381	120	0	160	121	0	27	1502	0	177	1786	0
Grp Sat Flow(s),veh/h/ln	1270	1777	1585	1272	1870	1585	1781	1777	1585	1781	1777	1585
Q Serve(g_s), s	43.6	3.5	0.0	14.8	6.9	0.0	1.1	53.4	0.0	6.8	68.1	0.0
Cycle Q Clear(g_c), s	50.5	3.5	0.0	18.3	6.9	0.0	1.1	53.4	0.0	6.8	68.1	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	417	1196		447	630		114	1824		210	1957	
V/C Ratio(X)	0.91	0.10		0.36	0.19		0.24	0.82		0.84	0.91	
Avail Cap(c_a), veh/h	417	1196		447	630		133	1824		251	1957	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	53.9	34.2	0.0	40.4	35.3	0.0	30.9	30.8	0.0	31.4	30.4	0.0
Incr Delay (d2), s/veh	24.1	0.0	0.0	0.5	0.1	0.0	1.1	4.4	0.0	19.5	8.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	17.3	1.5	0.0	4.8	3.2	0.0	0.5	23.7	0.0	4.5	30.6	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	78.0	34.2	0.0	40.9	35.4	0.0	31.9	35.1	0.0	50.9	38.4	0.0
LnGrp LOS	E	C		D	D		C	D		D	D	
Approach Vol, veh/h		501	A		281	A		1529	A		1963	A
Approach Delay, s/veh		67.5			38.6			35.1			39.5	
Approach LOS		E			D			D			D	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	13.5	81.5		55.0	7.9	87.1		55.0				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	12.5	73.5		50.5	5.0	81.0		50.5				
Max Q Clear Time (g_c+I1), s	8.8	55.4		52.5	3.1	70.1		20.3				
Green Ext Time (p_c), s	0.2	10.9		0.0	0.0	8.6		1.2				

Intersection Summary

HCM 6th Ctrl Delay	41.1
HCM 6th LOS	D

Notes

Unsignalized Delay for [NBR, EBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.

HCM 6th Signalized Intersection Summary
 1: Hancock Expy/Zeppelin Rd & Powers Blvd (SH-21)

2023 Total PM.syn
 02/02/2021



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗	↘	↖	↗	↘	↖	↗	↘	↖	↗	↘
Traffic Volume (veh/h)	217	33	36	45	33	52	57	1637	20	55	1433	327
Future Volume (veh/h)	217	33	36	45	33	52	57	1637	20	55	1433	327
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	255	39	0	78	57	0	66	1882	0	59	1524	0
Peak Hour Factor	0.85	0.85	0.85	0.58	0.58	0.58	0.87	0.87	0.87	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	320	805		346	424		237	2320		166	2318	
Arrive On Green	0.23	0.23	0.00	0.23	0.23	0.00	0.03	0.65	0.00	0.03	0.65	0.00
Sat Flow, veh/h	1346	3554	1585	1368	1870	1585	1781	3554	1585	1781	3554	1585
Grp Volume(v), veh/h	255	39	0	78	57	0	66	1882	0	59	1524	0
Grp Sat Flow(s),veh/h/ln	1346	1777	1585	1368	1870	1585	1781	1777	1585	1781	1777	1585
Q Serve(g_s), s	28.0	1.3	0.0	7.1	3.6	0.0	1.8	58.6	0.0	1.6	39.2	0.0
Cycle Q Clear(g_c), s	31.6	1.3	0.0	8.4	3.6	0.0	1.8	58.6	0.0	1.6	39.2	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	320	805		346	424		237	2320		166	2318	
V/C Ratio(X)	0.80	0.05		0.23	0.13		0.28	0.81		0.36	0.66	
Avail Cap(c_a), veh/h	352	888		378	468		259	2320		177	2318	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	58.9	45.4	0.0	48.6	46.3	0.0	14.1	19.2	0.0	22.9	15.9	0.0
Incr Delay (d2), s/veh	11.1	0.0	0.0	0.3	0.1	0.0	0.6	3.2	0.0	1.3	1.5	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	10.5	0.6	0.0	2.5	1.7	0.0	0.7	24.2	0.0	1.1	15.9	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	70.0	45.4	0.0	49.0	46.4	0.0	14.8	22.4	0.0	24.2	17.4	0.0
LnGrp LOS	E	D		D	D		B	C		C	B	
Approach Vol, veh/h		294	A		135	A		1948	A		1583	A
Approach Delay, s/veh		66.7			47.9			22.2			17.6	
Approach LOS		E			D			C			B	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	9.1	102.4		38.5	9.2	102.3		38.5				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	5.5	93.5		37.5	6.5	92.5		37.5				
Max Q Clear Time (g_c+I1), s	3.6	60.6		33.6	3.8	41.2		10.4				
Green Ext Time (p_c), s	0.0	21.0		0.4	0.0	18.7		0.5				

Intersection Summary

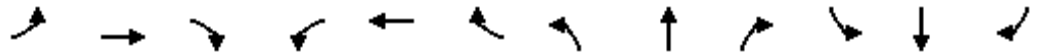
HCM 6th Ctrl Delay	24.5
HCM 6th LOS	C

Notes

Unsignalized Delay for [NBR, EBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Timings

1: Hancock Expy/Zeppelin Rd & Powers Blvd (SH-21)



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗	↘	↖	↗	↘	↖	↗	↘	↖	↗	↘
Traffic Volume (vph)	350	115	47	91	69	60	27	1584	161	174	1755	180
Future Volume (vph)	350	115	47	91	69	60	27	1584	161	174	1755	180
Turn Type	Perm	NA	Free	Perm	NA	Free	pm+pt	NA	Perm	pm+pt	NA	Free
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		Free	8		Free	2		2	6		Free
Detector Phase	4	4		8	8		5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5		22.5	22.5		9.5	22.5	22.5	9.5	22.5	22.5
Total Split (s)	50.0	50.0		50.0	50.0		9.5	82.6	82.6	17.4	90.5	
Total Split (%)	33.3%	33.3%		33.3%	33.3%		6.3%	55.1%	55.1%	11.6%	60.3%	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5		4.5	4.5		4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag							Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None		None	None		None	C-Max	C-Max	None	C-Max	
Act Effect Green (s)	44.6	44.6	150.0	44.6	44.6	150.0	84.0	78.9	78.9	96.4	90.7	150.0
Actuated g/C Ratio	0.30	0.30	1.00	0.30	0.30	1.00	0.56	0.53	0.53	0.64	0.60	1.00
v/c Ratio	0.97	0.12	0.03	0.27	0.14	0.04	0.26	0.92	0.20	0.94	0.89	0.12
Control Delay	90.5	38.5	0.0	42.2	39.0	0.1	17.0	42.6	7.3	88.5	33.0	0.2
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	90.5	38.5	0.0	42.2	39.0	0.1	17.0	42.6	7.3	88.5	33.0	0.2
LOS	F	D	A	D	D	A	B	D	A	F	C	A
Approach Delay		70.5			29.7			39.0			34.8	
Approach LOS		E			C			D			C	

Intersection Summary

Cycle Length: 150
 Actuated Cycle Length: 150
 Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
 Natural Cycle: 110
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.97
 Intersection Signal Delay: 40.1
 Intersection LOS: D
 Intersection Capacity Utilization 90.7%
 ICU Level of Service E
 Analysis Period (min) 15

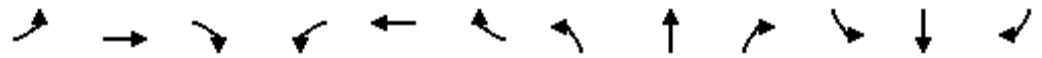
Splits and Phases: 1: Hancock Expy/Zeppelin Rd & Powers Blvd (SH-21)



HCM 6th Signalized Intersection Summary
 1: Hancock Expy/Zeppelin Rd & Powers Blvd (SH-21)

2040 Background AM.syn

02/02/2021



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗	↘	↖	↗	↘	↖	↗	↘	↖	↗	↘
Traffic Volume (veh/h)	350	115	47	91	69	60	27	1584	161	174	1755	180
Future Volume (veh/h)	350	115	47	91	69	60	27	1584	161	174	1755	180
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	380	125	0	99	75	0	29	1722	0	189	1908	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	411	1078		400	567		113	1879		211	2073	
Arrive On Green	0.30	0.30	0.00	0.30	0.30	0.00	0.02	0.53	0.00	0.08	0.58	0.00
Sat Flow, veh/h	1325	3554	1585	1266	1870	1585	1781	3554	1585	1781	3554	1585
Grp Volume(v), veh/h	380	125	0	99	75	0	29	1722	0	189	1908	0
Grp Sat Flow(s),veh/h/ln	1325	1777	1585	1266	1870	1585	1781	1777	1585	1781	1777	1585
Q Serve(g_s), s	41.1	3.8	0.0	9.2	4.4	0.0	1.1	66.4	0.0	9.6	72.5	0.0
Cycle Q Clear(g_c), s	45.5	3.8	0.0	13.0	4.4	0.0	1.1	66.4	0.0	9.6	72.5	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	411	1078		400	567		113	1879		211	2073	
V/C Ratio(X)	0.92	0.12		0.25	0.13		0.26	0.92		0.90	0.92	
Avail Cap(c_a), veh/h	411	1078		400	567		131	1879		225	2073	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	55.3	37.7	0.0	42.4	37.9	0.0	31.0	32.3	0.0	43.8	28.1	0.0
Incr Delay (d2), s/veh	26.4	0.0	0.0	0.3	0.1	0.0	1.2	8.5	0.0	32.5	8.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	17.6	1.7	0.0	3.0	2.1	0.0	0.5	30.2	0.0	9.1	32.2	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	81.8	37.8	0.0	42.7	38.0	0.0	32.2	40.8	0.0	76.2	36.3	0.0
LnGrp LOS	F	D		D	D		C	D		E	D	
Approach Vol, veh/h		505	A		174	A		1751	A		2097	A
Approach Delay, s/veh		70.9			40.7			40.7			39.9	
Approach LOS		E			D			D			D	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	16.2	83.8		50.0	8.0	92.0		50.0				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	12.9	78.1		45.5	5.0	86.0		45.5				
Max Q Clear Time (g_c+l1), s	11.6	68.4		47.5	3.1	74.5		15.0				
Green Ext Time (p_c), s	0.1	7.6		0.0	0.0	9.4		0.7				

Intersection Summary

HCM 6th Ctrl Delay	43.7
HCM 6th LOS	D

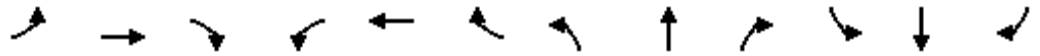
Notes

Unsignalized Delay for [NBR, EBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Timings

1: Hancock Expy/Zeppelin Rd & Powers Blvd (SH-21)

02/02/2021

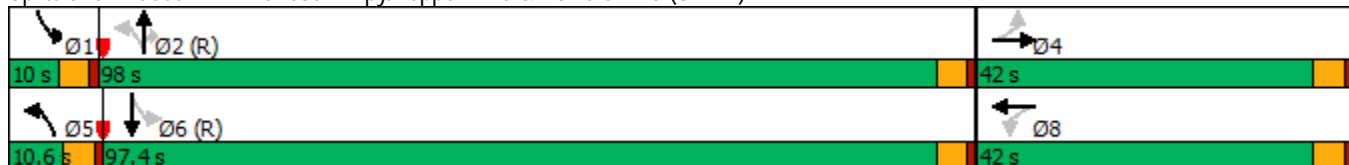


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↗	↘	↘	↗	↘	↘	↗	↘	↘	↗	↘
Traffic Volume (vph)	248	39	27	53	39	62	59	1939	24	65	1697	371
Future Volume (vph)	248	39	27	53	39	62	59	1939	24	65	1697	371
Turn Type	Perm	NA	Free	Perm	NA	Free	pm+pt	NA	Perm	pm+pt	NA	Free
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		Free	8		Free	2		2	6		Free
Detector Phase	4	4		8	8		5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	22.5	22.5		22.5	22.5		9.5	22.5	22.5	9.5	22.5	
Total Split (s)	42.0	42.0		42.0	42.0		10.6	98.0	98.0	10.0	97.4	
Total Split (%)	28.0%	28.0%		28.0%	28.0%		7.1%	65.3%	65.3%	6.7%	64.9%	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5	3.5	3.5	3.5	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.5	4.5		4.5	4.5		4.5	4.5	4.5	4.5	4.5	
Lead/Lag							Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	
Recall Mode	None	None		None	None		None	C-Max	C-Max	None	C-Max	
Act Effct Green (s)	33.3	33.3	150.0	33.3	33.3	150.0	103.3	97.0	97.0	103.9	98.9	150.0
Actuated g/C Ratio	0.22	0.22	1.00	0.22	0.22	1.00	0.69	0.65	0.65	0.69	0.66	1.00
v/c Ratio	0.89	0.05	0.02	0.19	0.10	0.04	0.44	0.92	0.03	0.57	0.77	0.25
Control Delay	86.8	43.9	0.0	47.4	45.0	0.0	19.3	32.0	1.2	37.8	22.2	0.4
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	86.8	43.9	0.0	47.4	45.0	0.0	19.3	32.0	1.2	37.8	22.2	0.4
LOS	F	D	A	D	D	A	B	C	A	D	C	A
Approach Delay		74.1			27.8			31.3				18.9
Approach LOS		E			C			C				B

Intersection Summary

Cycle Length: 150
 Actuated Cycle Length: 150
 Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
 Natural Cycle: 90
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.92
 Intersection Signal Delay: 28.4
 Intersection LOS: C
 Intersection Capacity Utilization 81.9%
 ICU Level of Service D
 Analysis Period (min) 15

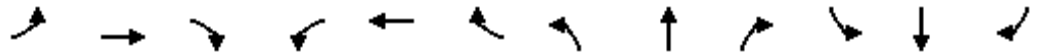
Splits and Phases: 1: Hancock Expy/Zeppelin Rd & Powers Blvd (SH-21)



HCM 6th Signalized Intersection Summary
 1: Hancock Expy/Zeppelin Rd & Powers Blvd (SH-21)

2040 Background PM.syn

02/02/2021



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗	↘	↖	↗	↘	↖	↗	↘	↖	↗	↘
Traffic Volume (veh/h)	248	39	27	53	39	62	59	1939	24	65	1697	371
Future Volume (veh/h)	248	39	27	53	39	62	59	1939	24	65	1697	371
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	270	42	0	58	42	0	64	2108	0	69	1805	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	335	811		347	427		179	2311		131	2312	
Arrive On Green	0.23	0.23	0.00	0.23	0.23	0.00	0.03	0.65	0.00	0.03	0.65	0.00
Sat Flow, veh/h	1365	3554	1585	1365	1870	1585	1781	3554	1585	1781	3554	1585
Grp Volume(v), veh/h	270	42	0	58	42	0	64	2108	0	69	1805	0
Grp Sat Flow(s),veh/h/ln	1365	1777	1585	1365	1870	1585	1781	1777	1585	1781	1777	1585
Q Serve(g_s), s	29.2	1.4	0.0	5.2	2.7	0.0	1.8	76.5	0.0	1.9	54.1	0.0
Cycle Q Clear(g_c), s	31.9	1.4	0.0	6.6	2.7	0.0	1.8	76.5	0.0	1.9	54.1	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	335	811		347	427		179	2311		131	2312	
V/C Ratio(X)	0.81	0.05		0.17	0.10		0.36	0.91		0.53	0.78	
Avail Cap(c_a), veh/h	365	888		377	468		196	2311		140	2312	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	58.3	45.2	0.0	47.8	45.7	0.0	20.8	22.6	0.0	35.5	18.6	0.0
Incr Delay (d2), s/veh	11.6	0.0	0.0	0.2	0.1	0.0	1.2	6.9	0.0	3.2	2.7	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	11.2	0.6	0.0	1.8	1.3	0.0	1.1	32.5	0.0	1.8	22.3	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	69.9	45.2	0.0	48.0	45.8	0.0	22.0	29.4	0.0	38.7	21.3	0.0
LnGrp LOS	E	D		D	D		C	C		D	C	
Approach Vol, veh/h		312	A		100	A		2172	A		1874	A
Approach Delay, s/veh		66.5			47.1			29.2			21.9	
Approach LOS		E			D			C			C	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	9.2	102.0		38.7	9.2	102.1		38.7				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	5.5	93.5		37.5	6.1	92.9		37.5				
Max Q Clear Time (g_c+I1), s	3.9	78.5		33.9	3.8	56.1		8.6				
Green Ext Time (p_c), s	0.0	12.6		0.4	0.0	21.2		0.3				

Intersection Summary

HCM 6th Ctrl Delay	29.2
HCM 6th LOS	C

Notes

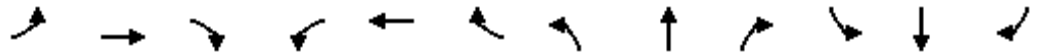
Unsignalized Delay for [NBR, EBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Timings

2040 Total AM.syn

1: Hancock Expy/Zeppelin Rd & Powers Blvd (SH-21)

02/02/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗	↘	↖	↗	↘	↖	↗	↘	↖	↗	↘
Traffic Volume (vph)	365	115	70	95	70	60	30	1585	165	175	1755	185
Future Volume (vph)	365	115	70	95	70	60	30	1585	165	175	1755	185
Turn Type	Perm	NA	Free	Perm	NA	Free	pm+pt	NA	Perm	pm+pt	NA	Free
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		Free	8		Free	2		2	6		Free
Detector Phase	4	4		8	8		5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	22.5	22.5		22.5	22.5		9.5	22.5	22.5	9.5	22.5	
Total Split (s)	51.0	51.0		51.0	51.0		9.5	81.6	81.6	17.4	89.5	
Total Split (%)	34.0%	34.0%		34.0%	34.0%		6.3%	54.4%	54.4%	11.6%	59.7%	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5	3.5	3.5	3.5	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.5	4.5		4.5	4.5		4.5	4.5	4.5	4.5	4.5	
Lead/Lag							Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	
Recall Mode	None	None		None	None		None	C-Max	C-Max	None	C-Max	
Act Effect Green (s)	46.2	46.2	150.0	46.2	46.2	150.0	82.4	77.3	77.3	94.8	87.2	150.0
Actuated g/C Ratio	0.31	0.31	1.00	0.31	0.31	1.00	0.55	0.52	0.52	0.63	0.58	1.00
v/c Ratio	0.98	0.11	0.05	0.27	0.13	0.04	0.30	0.95	0.21	0.94	0.93	0.13
Control Delay	91.2	37.5	0.1	41.3	38.1	0.1	18.8	46.2	7.6	89.3	38.3	0.2
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	91.2	37.5	0.1	41.3	38.1	0.1	18.8	46.2	7.6	89.3	38.3	0.2
LOS	F	D	A	D	D	A	B	D	A	F	D	A
Approach Delay		68.4			29.3			42.1			39.2	
Approach LOS		E			C			D			D	

Intersection Summary

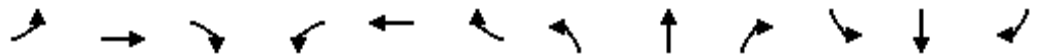
Cycle Length: 150
 Actuated Cycle Length: 150
 Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
 Natural Cycle: 120
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.98
 Intersection Signal Delay: 43.3
 Intersection LOS: D
 Intersection Capacity Utilization 91.6%
 ICU Level of Service F
 Analysis Period (min) 15

Splits and Phases: 1: Hancock Expy/Zeppelin Rd & Powers Blvd (SH-21)



HCM 6th Signalized Intersection Summary
 1: Hancock Expy/Zeppelin Rd & Powers Blvd (SH-21)

2040 Total AM.syn
 02/02/2021



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗	↘	↖	↗	↘	↖	↗	↘	↖	↗	↘
Traffic Volume (veh/h)	365	115	70	95	70	60	30	1585	165	175	1755	185
Future Volume (veh/h)	365	115	70	95	70	60	30	1585	165	175	1755	185
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	397	125	0	103	76	0	33	1723	0	190	1908	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	420	1102		409	580		112	1843		212	2044	
Arrive On Green	0.31	0.31	0.00	0.31	0.31	0.00	0.02	0.52	0.00	0.08	0.58	0.00
Sat Flow, veh/h	1323	3554	1585	1266	1870	1585	1781	3554	1585	1781	3554	1585
Grp Volume(v), veh/h	397	125	0	103	76	0	33	1723	0	190	1908	0
Grp Sat Flow(s),veh/h/ln	1323	1777	1585	1266	1870	1585	1781	1777	1585	1781	1777	1585
Q Serve(g_s), s	42.1	3.8	0.0	9.5	4.4	0.0	1.3	68.0	0.0	10.2	73.9	0.0
Cycle Q Clear(g_c), s	46.5	3.8	0.0	13.3	4.4	0.0	1.3	68.0	0.0	10.2	73.9	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	420	1102		409	580		112	1843		212	2044	
V/C Ratio(X)	0.95	0.11		0.25	0.13		0.30	0.94		0.90	0.93	
Avail Cap(c_a), veh/h	420	1102		409	580		127	1843		220	2044	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	55.3	37.0	0.0	41.8	37.2	0.0	32.5	33.8	0.0	45.4	29.2	0.0
Incr Delay (d2), s/veh	30.5	0.0	0.0	0.3	0.1	0.0	1.5	10.4	0.0	34.0	9.4	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	18.9	1.7	0.0	3.1	2.1	0.0	0.6	31.4	0.0	9.2	33.2	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	85.8	37.1	0.0	42.1	37.3	0.0	34.0	44.1	0.0	79.4	38.7	0.0
LnGrp LOS	F	D		D	D		C	D		E	D	
Approach Vol, veh/h		522	A		179	A		1756	A		2098	A
Approach Delay, s/veh		74.2			40.1			43.9			42.3	
Approach LOS		E			D			D			D	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	16.7	82.3		51.0	8.2	90.8		51.0				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	12.9	77.1		46.5	5.0	85.0		46.5				
Max Q Clear Time (g_c+I1), s	12.2	70.0		48.5	3.3	75.9		15.3				
Green Ext Time (p_c), s	0.0	5.8		0.0	0.0	7.7		0.7				

Intersection Summary

HCM 6th Ctrl Delay	46.5
HCM 6th LOS	D

Notes

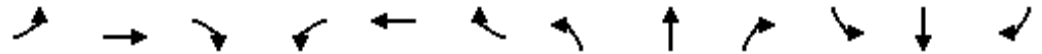
Unsignalized Delay for [NBR, EBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Timings

2040 Total PM.syn

1: Hancock Expy/Zeppelin Rd & Powers Blvd (SH-21)

02/02/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗	↘	↖	↗	↘	↖	↗	↘	↖	↗	↘
Traffic Volume (vph)	260	40	45	55	40	65	70	1940	25	65	1700	385
Future Volume (vph)	260	40	45	55	40	65	70	1940	25	65	1700	385
Turn Type	Perm	NA	Free	Perm	NA	Free	pm+pt	NA	Perm	pm+pt	NA	Free
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		Free	8		Free	2		2	6		Free
Detector Phase	4	4		8	8		5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	22.5	22.5		22.5	22.5		9.5	22.5	22.5	9.5	22.5	
Total Split (s)	39.0	39.0		39.0	39.0		11.0	101.0	101.0	10.0	100.0	
Total Split (%)	26.0%	26.0%		26.0%	26.0%		7.3%	67.3%	67.3%	6.7%	66.7%	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5	3.5	3.5	3.5	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.5	4.5		4.5	4.5		4.5	4.5	4.5	4.5	4.5	
Lead/Lag							Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	
Recall Mode	None	None		None	None		None	C-Max	C-Max	None	C-Max	
Act Effct Green (s)	33.2	33.2	150.0	33.2	33.2	150.0	104.0	97.7	97.7	102.5	96.9	150.0
Actuated g/C Ratio	0.22	0.22	1.00	0.22	0.22	1.00	0.69	0.65	0.65	0.68	0.65	1.00
v/c Ratio	0.94	0.05	0.03	0.20	0.10	0.04	0.54	0.92	0.03	0.60	0.79	0.26
Control Delay	95.7	45.4	0.0	48.9	46.5	0.0	27.2	30.6	1.1	41.2	22.9	0.4
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	95.7	45.4	0.0	48.9	46.5	0.0	27.2	30.6	1.1	41.2	22.9	0.4
LOS	F	D	A	D	D	A	C	C	A	D	C	A
Approach Delay		77.4			28.4			30.1			19.4	
Approach LOS		E			C			C			B	

Intersection Summary

Cycle Length: 150
 Actuated Cycle Length: 150
 Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
 Natural Cycle: 100
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.94
 Intersection Signal Delay: 28.7
 Intersection LOS: C
 Intersection Capacity Utilization 86.7%
 ICU Level of Service E
 Analysis Period (min) 15

Splits and Phases: 1: Hancock Expy/Zeppelin Rd & Powers Blvd (SH-21)



HCM 6th Signalized Intersection Summary
 1: Hancock Expy/Zeppelin Rd & Powers Blvd (SH-21)

2040 Total PM.syn
 02/02/2021



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗	↘	↖	↗	↘	↖	↗	↘	↖	↗	↘
Traffic Volume (veh/h)	260	40	45	55	40	65	70	1940	25	65	1700	385
Future Volume (veh/h)	260	40	45	55	40	65	70	1940	25	65	1700	385
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	283	43	0	60	43	0	76	2109	0	69	1809	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	337	817		349	430		178	2305		130	2303	
Arrive On Green	0.23	0.23	0.00	0.23	0.23	0.00	0.03	0.65	0.00	0.03	0.65	0.00
Sat Flow, veh/h	1364	3554	1585	1364	1870	1585	1781	3554	1585	1781	3554	1585
Grp Volume(v), veh/h	283	43	0	60	43	0	76	2109	0	69	1809	0
Grp Sat Flow(s),veh/h/ln	1364	1777	1585	1364	1870	1585	1781	1777	1585	1781	1777	1585
Q Serve(g_s), s	31.0	1.4	0.0	5.4	2.7	0.0	2.1	77.0	0.0	1.9	54.7	0.0
Cycle Q Clear(g_c), s	33.7	1.4	0.0	6.8	2.7	0.0	2.1	77.0	0.0	1.9	54.7	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	337	817		349	430		178	2305		130	2303	
V/C Ratio(X)	0.84	0.05		0.17	0.10		0.43	0.92		0.53	0.79	
Avail Cap(c_a), veh/h	337	817		349	430		199	2305		140	2303	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	58.8	45.0	0.0	47.7	45.5	0.0	22.1	22.8	0.0	35.7	18.9	0.0
Incr Delay (d2), s/veh	17.0	0.0	0.0	0.2	0.1	0.0	1.6	7.1	0.0	3.3	2.8	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	12.3	0.6	0.0	1.9	1.3	0.0	1.4	32.8	0.0	1.8	22.6	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	75.8	45.0	0.0	47.9	45.6	0.0	23.8	29.9	0.0	39.0	21.7	0.0
LnGrp LOS	E	D		D	D		C	C		D	C	
Approach Vol, veh/h		326	A		103	A		2185	A		1878	A
Approach Delay, s/veh		71.7			46.9			29.7			22.3	
Approach LOS		E			D			C			C	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	9.2	101.8		39.0	9.3	101.7		39.0				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	5.5	96.5		34.5	6.5	95.5		34.5				
Max Q Clear Time (g_c+I1), s	3.9	79.0		35.7	4.1	56.7		8.8				
Green Ext Time (p_c), s	0.0	14.5		0.0	0.0	21.9		0.3				

Intersection Summary

HCM 6th Ctrl Delay	30.1
HCM 6th LOS	C

Notes

Unsignalized Delay for [NBR, EBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Intersection												
Int Delay, s/veh	5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗	↗	↖	↗	↖		↔		↖	↗	
Traffic Vol, veh/h	30	277	9	42	175	10	31	4	101	60	4	98
Future Vol, veh/h	30	277	9	42	175	10	31	4	101	60	4	98
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	250	-	250	250	-	450	-	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	81	81	81	64	64	64	74	74	74	83	83	83
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	37	342	11	66	273	16	42	5	136	72	5	118

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	289	0	0	353	0	0	687	837	171	653	832	137
Stage 1	-	-	-	-	-	-	416	416	-	405	405	-
Stage 2	-	-	-	-	-	-	271	421	-	248	427	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
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	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	1270	-	-	1202	-	-	333	301	843	352	303	886
Stage 1	-	-	-	-	-	-	585	590	-	593	597	-
Stage 2	-	-	-	-	-	-	712	587	-	734	584	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1270	-	-	1202	-	-	268	276	843	274	278	886
Mov Cap-2 Maneuver	-	-	-	-	-	-	375	374	-	375	368	-
Stage 1	-	-	-	-	-	-	568	573	-	576	564	-
Stage 2	-	-	-	-	-	-	578	555	-	592	567	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.8			1.5			12.9			12.6		
HCM LOS							B			B		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	638	1270	-	-	1202	-	-	375	840
HCM Lane V/C Ratio	0.288	0.029	-	-	0.055	-	-	0.193	0.146
HCM Control Delay (s)	12.9	7.9	-	-	8.2	-	-	16.9	10
HCM Lane LOS	B	A	-	-	A	-	-	C	B
HCM 95th %tile Q(veh)	1.2	0.1	-	-	0.2	-	-	0.7	0.5

Intersection												
Int Delay, s/veh	4.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	123	206	43	85	276	25	26	5	33	19	7	90
Future Vol, veh/h	123	206	43	85	276	25	26	5	33	19	7	90
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	250	-	250	250	-	450	-	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	89	89	89	93	93	93	75	75	75	65	65	65
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	138	231	48	91	297	27	35	7	44	29	11	138

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	324	0	0	279	0	0	843	1013	116	874	1034	149
Stage 1	-	-	-	-	-	-	507	507	-	479	479	-
Stage 2	-	-	-	-	-	-	336	506	-	395	555	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
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	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	1233	-	-	1281	-	-	257	237	914	244	231	871
Stage 1	-	-	-	-	-	-	516	538	-	537	553	-
Stage 2	-	-	-	-	-	-	652	538	-	602	511	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1233	-	-	1281	-	-	182	196	914	197	191	871
Mov Cap-2 Maneuver	-	-	-	-	-	-	265	274	-	291	277	-
Stage 1	-	-	-	-	-	-	458	478	-	477	514	-
Stage 2	-	-	-	-	-	-	499	500	-	502	454	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	2.7			1.8			15.7			12.2		
HCM LOS							C			B		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	420	1233	-	-	1281	-	-	291	754
HCM Lane V/C Ratio	0.203	0.112	-	-	0.071	-	-	0.1	0.198
HCM Control Delay (s)	15.7	8.3	-	-	8	-	-	18.7	10.9
HCM Lane LOS	C	A	-	-	A	-	-	C	B
HCM 95th %tile Q(veh)	0.8	0.4	-	-	0.2	-	-	0.3	0.7

Intersection												
Int Delay, s/veh	5.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	31	283	9	43	179	10	32	4	103	61	4	100
Future Vol, veh/h	31	283	9	43	179	10	32	4	103	61	4	100
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	250	-	250	250	-	450	-	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	81	81	81	64	64	64	74	74	74	83	83	83
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	38	349	11	67	280	16	43	5	139	73	5	120

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	296	0	0	360	0	0	702	855	175	667	850	140
Stage 1	-	-	-	-	-	-	425	425	-	414	414	-
Stage 2	-	-	-	-	-	-	277	430	-	253	436	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
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	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	1262	-	-	1195	-	-	325	294	838	344	296	882
Stage 1	-	-	-	-	-	-	578	585	-	586	591	-
Stage 2	-	-	-	-	-	-	706	582	-	729	578	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1262	-	-	1195	-	-	260	269	838	265	271	882
Mov Cap-2 Maneuver	-	-	-	-	-	-	368	367	-	367	362	-
Stage 1	-	-	-	-	-	-	561	567	-	568	558	-
Stage 2	-	-	-	-	-	-	570	549	-	584	561	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.8			1.5			13.1			12.7		
HCM LOS							B			B		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	630	1262	-	-	1195	-	-	367	836
HCM Lane V/C Ratio	0.298	0.03	-	-	0.056	-	-	0.2	0.15
HCM Control Delay (s)	13.1	7.9	-	-	8.2	-	-	17.2	10.1
HCM Lane LOS	B	A	-	-	A	-	-	C	B
HCM 95th %tile Q(veh)	1.2	0.1	-	-	0.2	-	-	0.7	0.5

Intersection												
Int Delay, s/veh	5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	125	210	44	87	282	26	27	5	34	19	7	92
Future Vol, veh/h	125	210	44	87	282	26	27	5	34	19	7	92
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	250	-	250	250	-	450	-	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	89	89	89	93	93	93	75	75	75	65	65	65
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	140	236	49	94	303	28	36	7	45	29	11	142

Major/Minor	Major1		Major2		Minor1		Minor2					
Conflicting Flow All	331	0	0	285	0	0	861	1035	118	893	1056	152
Stage 1	-	-	-	-	-	-	516	516	-	491	491	-
Stage 2	-	-	-	-	-	-	345	519	-	402	565	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
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	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	1225	-	-	1274	-	-	249	230	912	236	224	867
Stage 1	-	-	-	-	-	-	510	533	-	528	546	-
Stage 2	-	-	-	-	-	-	644	531	-	596	506	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1225	-	-	1274	-	-	174	189	912	190	184	867
Mov Cap-2 Maneuver	-	-	-	-	-	-	257	267	-	283	270	-
Stage 1	-	-	-	-	-	-	452	472	-	468	506	-
Stage 2	-	-	-	-	-	-	488	492	-	495	448	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	2.7		1.8		16.2		12.3	
HCM LOS					C		B	

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	410	1225	-	-	1274	-	-	283	750
HCM Lane V/C Ratio	0.215	0.115	-	-	0.073	-	-	0.103	0.203
HCM Control Delay (s)	16.2	8.3	-	-	8.1	-	-	19.2	11
HCM Lane LOS	C	A	-	-	A	-	-	C	B
HCM 95th %tile Q(veh)	0.8	0.4	-	-	0.2	-	-	0.3	0.8

Intersection												
Int Delay, s/veh	5.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗	↘	↖	↗	↘		↕		↖	↗	
Traffic Vol, veh/h	39	283	9	43	179	16	32	4	103	80	4	124
Future Vol, veh/h	39	283	9	43	179	16	32	4	103	80	4	124
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	250	-	250	250	-	450	-	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	81	81	81	64	64	64	74	74	74	83	83	83
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	48	349	11	67	280	25	43	5	139	96	5	149

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	305	0	0	360	0	0	722	884	175	687	870	140
Stage 1	-	-	-	-	-	-	445	445	-	414	414	-
Stage 2	-	-	-	-	-	-	277	439	-	273	456	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
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	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	1253	-	-	1195	-	-	314	283	838	333	288	882
Stage 1	-	-	-	-	-	-	562	573	-	586	591	-
Stage 2	-	-	-	-	-	-	706	576	-	710	567	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1253	-	-	1195	-	-	240	257	838	255	262	882
Mov Cap-2 Maneuver	-	-	-	-	-	-	347	355	-	357	353	-
Stage 1	-	-	-	-	-	-	541	551	-	564	558	-
Stage 2	-	-	-	-	-	-	549	544	-	564	545	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.9			1.5			13.4			13.5		
HCM LOS							B			B		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	614	1253	-	-	1195	-	-	357	843
HCM Lane V/C Ratio	0.306	0.038	-	-	0.056	-	-	0.27	0.183
HCM Control Delay (s)	13.4	8	-	-	8.2	-	-	18.8	10.2
HCM Lane LOS	B	A	-	-	A	-	-	C	B
HCM 95th %tile Q(veh)	1.3	0.1	-	-	0.2	-	-	1.1	0.7

Intersection												
Int Delay, s/veh	5.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	151	210	44	87	282	48	27	5	34	32	7	107
Future Vol, veh/h	151	210	44	87	282	48	27	5	34	32	7	107
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	250	-	250	250	-	450	-	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	89	89	89	93	93	93	75	75	75	65	65	65
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	170	236	49	94	303	52	36	7	45	49	11	165

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	355	0	0	285	0	0	921	1119	118	953	1116	152
Stage 1	-	-	-	-	-	-	576	576	-	491	491	-
Stage 2	-	-	-	-	-	-	345	543	-	462	625	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
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	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	1200	-	-	1274	-	-	225	205	912	214	206	867
Stage 1	-	-	-	-	-	-	470	500	-	528	546	-
Stage 2	-	-	-	-	-	-	644	518	-	549	475	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1200	-	-	1274	-	-	149	163	912	168	164	867
Mov Cap-2 Maneuver	-	-	-	-	-	-	224	235	-	254	245	-
Stage 1	-	-	-	-	-	-	403	429	-	453	506	-
Stage 2	-	-	-	-	-	-	473	480	-	441	408	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	3.2			1.7			17.8			13.8		
HCM LOS							C			B		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	369	1200	-	-	1274	-	-	254	750
HCM Lane V/C Ratio	0.238	0.141	-	-	0.073	-	-	0.194	0.234
HCM Control Delay (s)	17.8	8.5	-	-	8.1	-	-	22.5	11.3
HCM Lane LOS	C	A	-	-	A	-	-	C	B
HCM 95th %tile Q(veh)	0.9	0.5	-	-	0.2	-	-	0.7	0.9

Intersection												
Int Delay, s/veh	5.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗	↗	↖	↗	↖		↔		↖	↗	
Traffic Vol, veh/h	36	335	11	51	211	12	37	5	122	72	5	118
Future Vol, veh/h	36	335	11	51	211	12	37	5	122	72	5	118
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	250	-	250	250	-	450	-	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	1	-	-	1	-
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	39	364	12	55	229	13	40	5	133	78	5	128

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	242	0	0	376	0	0	669	794	182	602	793	115
Stage 1	-	-	-	-	-	-	442	442	-	339	339	-
Stage 2	-	-	-	-	-	-	227	352	-	263	454	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
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	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	1322	-	-	1179	-	-	343	319	829	383	320	916
Stage 1	-	-	-	-	-	-	564	575	-	649	638	-
Stage 2	-	-	-	-	-	-	755	630	-	719	568	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1322	-	-	1179	-	-	275	295	829	300	296	916
Mov Cap-2 Maneuver	-	-	-	-	-	-	381	390	-	396	381	-
Stage 1	-	-	-	-	-	-	547	558	-	630	608	-
Stage 2	-	-	-	-	-	-	613	600	-	580	551	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.7			1.5			12.8			12.3		
HCM LOS							B			B		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	638	1322	-	-	1179	-	-	396	867
HCM Lane V/C Ratio	0.279	0.03	-	-	0.047	-	-	0.198	0.154
HCM Control Delay (s)	12.8	7.8	-	-	8.2	-	-	16.3	9.9
HCM Lane LOS	B	A	-	-	A	-	-	C	A
HCM 95th %tile Q(veh)	1.1	0.1	-	-	0.1	-	-	0.7	0.5

Intersection												
Int Delay, s/veh	4.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↙	↑↑	↗	↙	↑↑	↗		↔		↙	↗	
Traffic Vol, veh/h	149	249	52	103	333	30	31	6	40	23	8	109
Future Vol, veh/h	149	249	52	103	333	30	31	6	40	23	8	109
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	250	-	250	250	-	450	-	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	1	-	-	1	-
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	162	271	57	112	362	33	34	7	43	25	9	118

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	395	0	0	328	0	0	1005	1214	136	1049	1238	181
Stage 1	-	-	-	-	-	-	595	595	-	586	586	-
Stage 2	-	-	-	-	-	-	410	619	-	463	652	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
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	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	1160	-	-	1228	-	-	196	180	888	182	174	831
Stage 1	-	-	-	-	-	-	458	491	-	463	495	-
Stage 2	-	-	-	-	-	-	589	478	-	548	462	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1160	-	-	1228	-	-	136	141	888	141	136	831
Mov Cap-2 Maneuver	-	-	-	-	-	-	211	211	-	228	216	-
Stage 1	-	-	-	-	-	-	394	422	-	398	450	-
Stage 2	-	-	-	-	-	-	450	435	-	441	397	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	2.8			1.8			18.5			13.2		
HCM LOS							C			B		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	349	1160	-	-	1228	-	-	228	696
HCM Lane V/C Ratio	0.24	0.14	-	-	0.091	-	-	0.11	0.183
HCM Control Delay (s)	18.5	8.6	-	-	8.2	-	-	22.7	11.3
HCM Lane LOS	C	A	-	-	A	-	-	C	B
HCM 95th %tile Q(veh)	0.9	0.5	-	-	0.3	-	-	0.4	0.7

Intersection												
Int Delay, s/veh	5.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↙	↑↑	↗	↙	↑↑	↗		↔		↙	↗	
Traffic Vol, veh/h	45	335	15	55	215	20	40	5	125	95	5	145
Future Vol, veh/h	45	335	15	55	215	20	40	5	125	95	5	145
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	250	-	250	250	-	450	-	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	1	-	-	1	-
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	49	364	16	60	234	22	43	5	136	103	5	158

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	256	0	0	380	0	0	702	838	182	637	832	117
Stage 1	-	-	-	-	-	-	462	462	-	354	354	-
Stage 2	-	-	-	-	-	-	240	376	-	283	478	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
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	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	1306	-	-	1175	-	-	325	301	829	362	303	913
Stage 1	-	-	-	-	-	-	549	563	-	636	629	-
Stage 2	-	-	-	-	-	-	742	615	-	700	554	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1306	-	-	1175	-	-	248	275	829	279	277	913
Mov Cap-2 Maneuver	-	-	-	-	-	-	354	371	-	375	364	-
Stage 1	-	-	-	-	-	-	528	542	-	612	597	-
Stage 2	-	-	-	-	-	-	577	584	-	558	533	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.9			1.6			13.4			13.2		
HCM LOS							B			B		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	613	1306	-	-	1175	-	-	375	869
HCM Lane V/C Ratio	0.301	0.037	-	-	0.051	-	-	0.275	0.188
HCM Control Delay (s)	13.4	7.9	-	-	8.2	-	-	18.2	10.1
HCM Lane LOS	B	A	-	-	A	-	-	C	B
HCM 95th %tile Q(veh)	1.3	0.1	-	-	0.2	-	-	1.1	0.7

Intersection												
Int Delay, s/veh	5.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	175	250	55	105	335	55	35	10	40	40	10	125
Future Vol, veh/h	175	250	55	105	335	55	35	10	40	40	10	125
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	250	-	250	250	-	450	-	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	1	-	-	1	-
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	190	272	60	114	364	60	38	11	43	43	11	136

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	424	0	0	332	0	0	1068	1304	136	1114	1304	182
Stage 1	-	-	-	-	-	-	652	652	-	592	592	-
Stage 2	-	-	-	-	-	-	416	652	-	522	712	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
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	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	1132	-	-	1224	-	-	176	159	888	163	159	829
Stage 1	-	-	-	-	-	-	423	462	-	460	492	-
Stage 2	-	-	-	-	-	-	585	462	-	506	434	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1132	-	-	1224	-	-	114	120	888	120	120	829
Mov Cap-2 Maneuver	-	-	-	-	-	-	180	180	-	199	193	-
Stage 1	-	-	-	-	-	-	352	384	-	383	446	-
Stage 2	-	-	-	-	-	-	433	419	-	389	361	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	3.2			1.7			23.3			15.6		
HCM LOS							C			C		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	288	1132	-	-	1224	-	-	199	666
HCM Lane V/C Ratio	0.321	0.168	-	-	0.093	-	-	0.218	0.22
HCM Control Delay (s)	23.3	8.8	-	-	8.2	-	-	28.1	11.9
HCM Lane LOS	C	A	-	-	A	-	-	D	B
HCM 95th %tile Q(veh)	1.3	0.6	-	-	0.3	-	-	0.8	0.8

Intersection						
Int Delay, s/veh	1					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	Y		Y	↑	↑	
Traffic Vol, veh/h	0	22	9	86	191	0
Future Vol, veh/h	0	22	9	86	191	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	125	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	75	75	80	80	86	86
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	29	11	108	222	0

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	352	222	222	0	-	0
Stage 1	222	-	-	-	-	-
Stage 2	130	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	646	818	1347	-	-	-
Stage 1	815	-	-	-	-	-
Stage 2	896	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	641	818	1347	-	-	-
Mov Cap-2 Maneuver	641	-	-	-	-	-
Stage 1	808	-	-	-	-	-
Stage 2	896	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.6	0.7	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1347	-	818	-	-
HCM Lane V/C Ratio	0.008	-	0.036	-	-
HCM Control Delay (s)	7.7	-	9.6	-	-
HCM Lane LOS	A	-	A	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

Intersection						
Int Delay, s/veh	1.1					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	2	16	19	137	121	0
Future Vol, veh/h	2	16	19	137	121	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	125	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	67	67	85	85	70	70
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	3	24	22	161	173	0

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	378	173	173	0	-	0
Stage 1	173	-	-	-	-	-
Stage 2	205	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	624	871	1404	-	-	-
Stage 1	857	-	-	-	-	-
Stage 2	829	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	614	871	1404	-	-	-
Mov Cap-2 Maneuver	614	-	-	-	-	-
Stage 1	843	-	-	-	-	-
Stage 2	829	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.5	0.9	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1404	-	832	-	-
HCM Lane V/C Ratio	0.016	-	0.032	-	-
HCM Control Delay (s)	7.6	-	9.5	-	-
HCM Lane LOS	A	-	A	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

Intersection						
Int Delay, s/veh	1					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	22	9	88	195	0
Future Vol, veh/h	0	22	9	88	195	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	125	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	75	75	80	80	86	86
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	29	11	110	227	0

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	359	227	227	0	-	0
Stage 1	227	-	-	-	-	-
Stage 2	132	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	640	812	1341	-	-	-
Stage 1	811	-	-	-	-	-
Stage 2	894	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	635	812	1341	-	-	-
Mov Cap-2 Maneuver	635	-	-	-	-	-
Stage 1	805	-	-	-	-	-
Stage 2	894	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.6	0.7	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1341	-	812	-	-
HCM Lane V/C Ratio	0.008	-	0.036	-	-
HCM Control Delay (s)	7.7	-	9.6	-	-
HCM Lane LOS	A	-	A	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

Intersection						
Int Delay, s/veh	1.1					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	2	16	19	140	123	0
Future Vol, veh/h	2	16	19	140	123	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	125	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	67	67	85	85	70	70
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	3	24	22	165	176	0

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	385	176	176	0	-	0
Stage 1	176	-	-	-	-	-
Stage 2	209	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	618	867	1400	-	-	-
Stage 1	855	-	-	-	-	-
Stage 2	826	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	608	867	1400	-	-	-
Mov Cap-2 Maneuver	608	-	-	-	-	-
Stage 1	841	-	-	-	-	-
Stage 2	826	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.5	0.9	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1400	-	828	-	-
HCM Lane V/C Ratio	0.016	-	0.032	-	-
HCM Control Delay (s)	7.6	-	9.5	-	-
HCM Lane LOS	A	-	A	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

Intersection												
Int Delay, s/veh	2.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕			↕	
Traffic Vol, veh/h	0	0	22	43	0	0	9	88	14	0	195	0
Future Vol, veh/h	0	0	22	43	0	0	9	88	14	0	195	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	125	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	75	92	75	92	92	92	80	80	92	92	86	86
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	29	47	0	0	11	110	15	0	227	0

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	367	374	227	382	367	118	227	0	0	125	0	0
Stage 1	227	227	-	140	140	-	-	-	-	-	-	-
Stage 2	140	147	-	242	227	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	589	557	812	576	562	934	1341	-	-	1462	-	-
Stage 1	776	716	-	863	781	-	-	-	-	-	-	-
Stage 2	863	775	-	762	716	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	585	553	812	552	558	934	1341	-	-	1462	-	-
Mov Cap-2 Maneuver	585	553	-	552	558	-	-	-	-	-	-	-
Stage 1	770	716	-	856	775	-	-	-	-	-	-	-
Stage 2	856	769	-	734	716	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	9.6		12.1		0.6		0	
HCM LOS	A		B					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1341	-	-	812	552	1462	-
HCM Lane V/C Ratio	0.008	-	-	0.036	0.085	-	-
HCM Control Delay (s)	7.7	-	-	9.6	12.1	0	-
HCM Lane LOS	A	-	-	A	B	A	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.3	0	-

Intersection												
Int Delay, s/veh	1.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕			↕	
Traffic Vol, veh/h	2	0	16	28	0	0	19	140	48	0	123	0
Future Vol, veh/h	2	0	16	28	0	0	19	140	48	0	123	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	125	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	67	92	67	92	92	92	85	85	92	92	70	70
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	3	0	24	30	0	0	22	165	52	0	176	0

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	411	437	176	423	411	191	176	0	0	217	0	0
Stage 1	176	176	-	235	235	-	-	-	-	-	-	-
Stage 2	235	261	-	188	176	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	551	513	867	541	531	851	1400	-	-	1353	-	-
Stage 1	826	753	-	768	710	-	-	-	-	-	-	-
Stage 2	768	692	-	814	753	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	544	505	867	520	523	851	1400	-	-	1353	-	-
Mov Cap-2 Maneuver	544	505	-	520	523	-	-	-	-	-	-	-
Stage 1	813	753	-	756	699	-	-	-	-	-	-	-
Stage 2	756	681	-	792	753	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB			
HCM Control Delay, s	9.6		12.4		0.7		0			
HCM LOS	A		B							

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1400	-	-	813	520	1353	-
HCM Lane V/C Ratio	0.016	-	-	0.033	0.059	-	-
HCM Control Delay (s)	7.6	-	-	9.6	12.4	0	-
HCM Lane LOS	A	-	-	A	B	A	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.2	0	-

Intersection						
Int Delay, s/veh	0.9					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	27	11	104	231	0
Future Vol, veh/h	0	27	11	104	231	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	125	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	29	12	113	251	0

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	388	251	251	0	-	0
Stage 1	251	-	-	-	-	-
Stage 2	137	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	616	788	1314	-	-	-
Stage 1	791	-	-	-	-	-
Stage 2	890	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	610	788	1314	-	-	-
Mov Cap-2 Maneuver	610	-	-	-	-	-
Stage 1	784	-	-	-	-	-
Stage 2	890	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.7	0.7	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1314	-	788	-	-
HCM Lane V/C Ratio	0.009	-	0.037	-	-
HCM Control Delay (s)	7.8	-	9.7	-	-
HCM Lane LOS	A	-	A	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

Intersection						
Int Delay, s/veh	1					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔		↔	↑	↑	
Traffic Vol, veh/h	2	19	23	166	146	0
Future Vol, veh/h	2	19	23	166	146	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	125	-	-	-
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	2	21	25	180	159	0

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	389	159	159	0	-	0
Stage 1	159	-	-	-	-	-
Stage 2	230	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	615	886	1420	-	-	-
Stage 1	870	-	-	-	-	-
Stage 2	808	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	604	886	1420	-	-	-
Mov Cap-2 Maneuver	604	-	-	-	-	-
Stage 1	854	-	-	-	-	-
Stage 2	808	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.4	0.9	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1420	-	848	-	-
HCM Lane V/C Ratio	0.018	-	0.027	-	-
HCM Control Delay (s)	7.6	-	9.4	-	-
HCM Lane LOS	A	-	A	-	-
HCM 95th %tile Q(veh)	0.1	-	0.1	-	-

Intersection												
Int Delay, s/veh	2.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕			↕	
Traffic Vol, veh/h	0	0	30	45	0	0	15	105	15	0	235	0
Future Vol, veh/h	0	0	30	45	0	0	15	105	15	0	235	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	125	-	-	-	-	-
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	0	0	33	49	0	0	16	114	16	0	255	0

Major/Minor	Minor2		Minor1		Major1			Major2				
Conflicting Flow All	409	417	255	426	409	122	255	0	0	130	0	0
Stage 1	255	255	-	154	154	-	-	-	-	-	-	-
Stage 2	154	162	-	272	255	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	553	527	784	539	532	929	1310	-	-	1455	-	-
Stage 1	749	696	-	848	770	-	-	-	-	-	-	-
Stage 2	848	764	-	734	696	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	548	521	784	512	526	929	1310	-	-	1455	-	-
Mov Cap-2 Maneuver	548	521	-	512	526	-	-	-	-	-	-	-
Stage 1	740	696	-	838	761	-	-	-	-	-	-	-
Stage 2	838	755	-	703	696	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.8	12.8	0.9	0
HCM LOS	A	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1310	-	-	784	512	1455	-
HCM Lane V/C Ratio	0.012	-	-	0.042	0.096	-	-
HCM Control Delay (s)	7.8	-	-	9.8	12.8	0	-
HCM Lane LOS	A	-	-	A	B	A	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.3	0	-

Intersection												
Int Delay, s/veh	1.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕			↕	
Traffic Vol, veh/h	5	0	20	30	0	0	25	170	50	0	150	0
Future Vol, veh/h	5	0	20	30	0	0	25	170	50	0	150	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	125	-	-	-	-	-
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	5	0	22	33	0	0	27	185	54	0	163	0

Major/Minor	Minor2		Minor1		Major1			Major2				
Conflicting Flow All	429	456	163	440	429	212	163	0	0	239	0	0
Stage 1	163	163	-	266	266	-	-	-	-	-	-	-
Stage 2	266	293	-	174	163	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	536	501	882	527	518	828	1416	-	-	1328	-	-
Stage 1	839	763	-	739	689	-	-	-	-	-	-	-
Stage 2	739	670	-	828	763	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	528	491	882	506	508	828	1416	-	-	1328	-	-
Mov Cap-2 Maneuver	528	491	-	506	508	-	-	-	-	-	-	-
Stage 1	823	763	-	725	676	-	-	-	-	-	-	-
Stage 2	725	657	-	808	763	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	9.8		12.6		0.8		0	
HCM LOS	A		B					

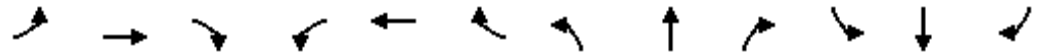
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1416	-	-	778	506	1328	-
HCM Lane V/C Ratio	0.019	-	-	0.035	0.064	-	-
HCM Control Delay (s)	7.6	-	-	9.8	12.6	0	-
HCM Lane LOS	A	-	-	A	B	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.1	0.2	0	-

APPENDIX E

Vehicle Queuing Analysis Worksheets

Queues

1: Hancock Expy/Zeppelin Rd & Powers Blvd (SH-21)



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	381	120	77	160	121	106	27	1502	153	177	1786	188
v/c Ratio	0.97	0.10	0.05	0.39	0.20	0.07	0.25	0.85	0.18	0.92	0.88	0.12
Control Delay	88.6	34.9	0.1	41.7	36.8	0.1	18.3	38.8	7.4	84.2	34.9	0.2
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	88.6	34.9	0.1	41.7	36.8	0.1	18.3	38.8	7.4	84.2	34.9	0.2
Queue Length 50th (ft)	363	42	0	119	84	0	10	672	22	124	830	0
Queue Length 95th (ft)	#477	60	0	91	69	0	24	764	61	#231	811	0
Internal Link Dist (ft)		283			828			361			679	
Turn Bay Length (ft)	400			275			700		275	700		
Base Capacity (vph)	401	1191	1583	423	627	1583	109	1768	845	196	2030	1583
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	0.95	0.10	0.05	0.38	0.19	0.07	0.25	0.85	0.18	0.90	0.88	0.12

Intersection Summary

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

Queues

2023 Total PM.syn

1: Hancock Expy/Zeppelin Rd & Powers Blvd (SH-21)

02/02/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	255	39	42	78	57	90	66	1882	23	59	1524	348
v/c Ratio	0.88	0.05	0.03	0.27	0.14	0.06	0.32	0.80	0.02	0.45	0.65	0.22
Control Delay	85.7	44.2	0.0	49.7	46.4	0.1	11.0	22.7	0.8	23.3	17.9	0.3
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	85.7	44.2	0.0	49.7	46.4	0.1	11.0	22.7	0.8	23.3	17.9	0.3
Queue Length 50th (ft)	240	15	0	63	45	0	18	715	0	16	477	0
Queue Length 95th (ft)	319	30	0	68	52	0	34	795	4	49	585	0
Internal Link Dist (ft)		283			828			361			679	
Turn Bay Length (ft)	400			275			700		275	700		
Base Capacity (vph)	335	884	1583	340	465	1583	207	2361	1071	130	2350	1583
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	0.76	0.04	0.03	0.23	0.12	0.06	0.32	0.80	0.02	0.45	0.65	0.22

Intersection Summary

Queues

2040 Total AM.syn

02/02/2021

1: Hancock Expy/Zeppelin Rd & Powers Blvd (SH-21)



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	397	125	76	103	76	65	33	1723	179	190	1908	201
v/c Ratio	0.98	0.11	0.05	0.27	0.13	0.04	0.30	0.95	0.21	0.94	0.93	0.13
Control Delay	91.2	37.5	0.1	41.3	38.1	0.1	18.8	46.2	7.6	89.3	38.3	0.2
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	91.2	37.5	0.1	41.3	38.1	0.1	18.8	46.2	7.6	89.3	38.3	0.2
Queue Length 50th (ft)	385	46	0	76	54	0	12	821	30	136	893	0
Queue Length 95th (ft)	#605	73	0	131	95	0	26	#1006	73	#295	#1101	0
Internal Link Dist (ft)		283			828			361			679	
Turn Bay Length (ft)	400			275			700		275	700		
Base Capacity (vph)	407	1097	1583	388	577	1583	109	1823	872	202	2056	1583
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	0.98	0.11	0.05	0.27	0.13	0.04	0.30	0.95	0.21	0.94	0.93	0.13

Intersection Summary

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

Queue shown is maximum after two cycles.

Queues

2040 Total PM.syn

1: Hancock Expy/Zeppelin Rd & Powers Blvd (SH-21)

02/02/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	283	43	49	60	43	71	76	2109	27	69	1809	410
v/c Ratio	0.94	0.05	0.03	0.20	0.10	0.04	0.54	0.92	0.03	0.60	0.79	0.26
Control Delay	95.7	45.4	0.0	48.9	46.5	0.0	27.2	30.6	1.1	41.2	22.9	0.4
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	95.7	45.4	0.0	48.9	46.5	0.0	27.2	30.6	1.1	41.2	22.9	0.4
Queue Length 50th (ft)	272	17	0	48	33	0	21	906	0	19	656	0
Queue Length 95th (ft)	#448	35	0	91	69	0	62	1048	6	#82	758	0
Internal Link Dist (ft)		283			828			361			679	
Turn Bay Length (ft)	400			275			700		275	700		
Base Capacity (vph)	312	813	1583	311	428	1583	142	2303	1046	115	2285	1583
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	0.91	0.05	0.03	0.19	0.10	0.04	0.54	0.92	0.03	0.60	0.79	0.26

Intersection Summary

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

APPENDIX F

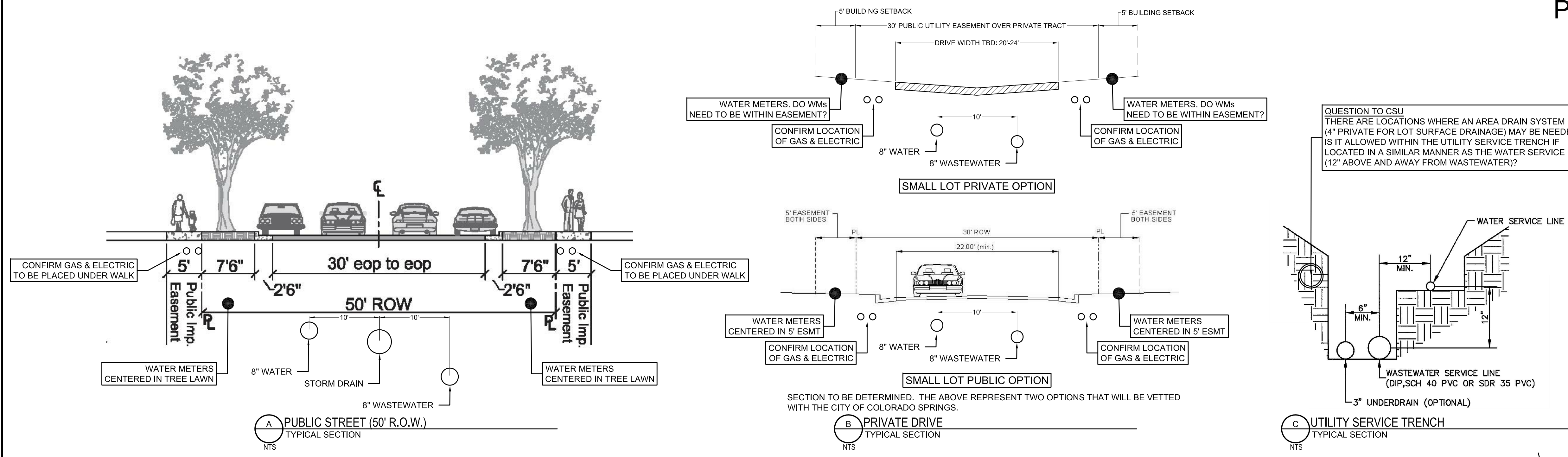
Conceptual Site Plan

CHALLENGER HOMES - SKY VIEW

PRELIMINARY UTILITY LAYOUT EXHIBIT

COLORADO SPRINGS, CO

JANUARY 4, 2021



UTILITY NOTES

1. CONNECT TO EXISTING WATER AND/OR WASTEWATER SYSTEM.
2. CONSIDER DOWNSIZING MAIN FROM 8-INCHES TO 4-INCHES. APPLICANT BELIEVES THAT ONLY A 8-INCH PERIMETER LOOP IS NEEDED FOR FIRE PROTECTION. MAKE SURE TO TAP HYDRANT FROM 8-INCH MAIN IF PORTIONS ARE DOWNSIZED.
3. SPECIAL ATTENTION SHOULD BE PAID TO THESE UTILITY SERVICE TRENCHES. IF NOT ALLOWED BY CSU, MAIN WILL NEED TO BE EXTENDED SOUTH ALONG THE PRIVATE DRIVE TO ENCOMPASS THE LOT FRONTAGE.
4. GENERAL QUESTION. ARE UTILITY SERVICES ALLOWED TO BE PLACED UNDER DRIVEWAY BY CSU? IF SO, WE WANT TO CONFIRM THAT THE METER PIT IS ALSO ALLOWED IN THE DRIVEWAY.
5. MULTI PURPOSE CONNECTION: SECONDARY EMERGENCY ACCESS + MAINTENANCE ACCESS TO CSU. WIDTH TO BE CONFIRMED WITH THE FIRE DISTRICT. MINIMUM 16-FT PER CSU CRITERIA.
6. PROPOSED FIRE HYDRANT LOCATIONS TO BE CONFIRMED WITH THE FIRE DISTRICT. ASSUMED CRITERIA:
 - FIRE FLOW REQUIREMENT = 1,750 OR LESS
 - MIN. NUMBER OF HYDRANTS FOR A RESIDENTIAL UNIT = 1
 - AVERAGE SPACING BETWEEN = 500 FT
 - MAX. DISTANCE FROM STREET FRONTAGE TO HYDRANT = 250 FT
 - HYDRANTS NOT ONLY LOCATED FOR MINIMUM SPACING CRITERIA BUT FOR EASE OF USE BY THE FIRE DISTRICT. APPLICANT GENERALLY TRIED TO LOCATE HYDRANTS AT INTERSECTIONS WHERE POSSIBLE SUCH THAT THE FIRE DISTRICT CAN MORE EASILY LOCATE AND USE THE HYDRANT.

LEGEND

- 8"W PROPOSED WATER SYSTEM
- 8"SS PROPOSED WASTEWATER SYSTEM
- PROPOSED STORM SYSTEM (MAJOR/PUBLIC)
- PROPOSED STORM SYSTEM (MINOR/PRIVATE)
- PROPOSED FIRE HYDRANT



Scale: 1"=40'

