



Traffic Impact Study

Gateway Park – Parcel TIC 2 Aurora, Colorado

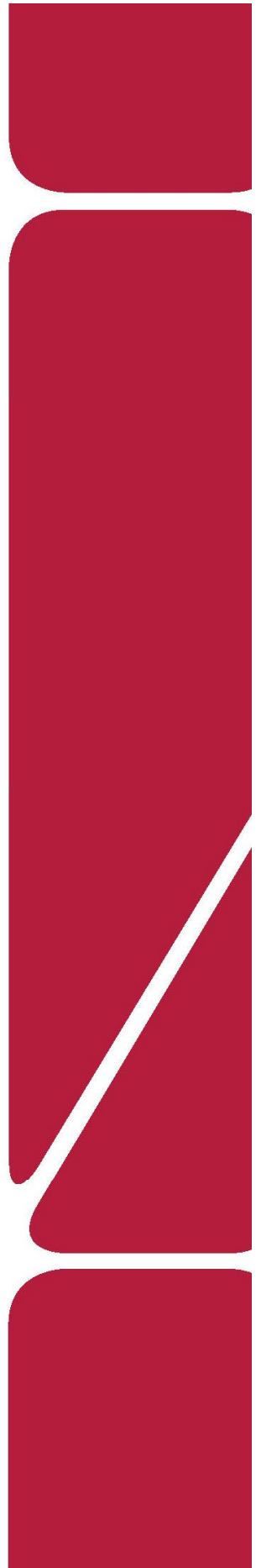
Prepared for:

LIT PAULS GATEWAY LAND HOLDINGS, LLC

AND

SAND CREEK METROPOLITAN DISTRICT

Kimley»Horn



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

Gateway Park – Parcel TIC 2

Aurora, Colorado

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June 2020

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1.0 EXECUTIVE SUMMARY

Gateway Park – Parcel TIC 2 (“Project”) is located along the southwest side of Salida Street, south of the RTD 40th Avenue and Airport Station Park and Ride, and northwest of Telluride Street in Aurora, Colorado. For purposes of this study, the proposed development on TIC 2 is anticipated to include approximately 725,000 square feet of industrial park along the south side of future 37th Avenue and a hotel with 125 rooms and 10,000 square feet of commercial space along the north side of future 37th Avenue. It is expected that the roadway work for this Project will be completed in the next two to three years. Additionally, this project triggers easement dedication and roadway improvements as set forth in the Intergovernmental Agreement between Sand Creek Metropolitan District (“SCMD”) and the City and County of Denver through its Department of Aviation (“DIA”) to support development of the DIA property within the City of Aurora and immediately west of the Project. Development of the DIA property, is programmed to include approximately 500,000 square feet of commercial uses has been included in this study (see **Appendix B** or anticipated development on the DIA property). Therefore, analysis was conducted for the 2022 short term horizon as well as the 2040 long-term horizon.

The purpose of this traffic study is to identify project traffic generation characteristics and potential project traffic related impacts on the local street system, as well as to develop recommended roadway sections for both 35th and 37th Avenues and mitigation measures for identified impacts. The following intersections were incorporated into this traffic study in accordance with City of Aurora standards and requirements:

1. 40th Avenue and Pena Boulevard Southbound Off-Ramp/Airport Boulevard
2. 40th Avenue and Pena Boulevard Northbound On-Ramp/Airport Boulevard
3. 40th Avenue and Salida Street
4. 38th Avenue and Tower Road
5. I-70 Westbound Ramp and Airport Boulevard
6. Salida Street and Telluride Street
7. Salida Street and Walden Street
8. Salida Street and Tower Road
9. 32nd Parkway and Tower Road
10. I-70 Westbound Ramps and Tower Road
11. I-70 Eastbound Ramps and Tower Road

In addition, the future intersection of 37th Avenue and Salida Street, as well as the proposed right-in/right-out access into the Project along Salida Street were included for evaluation.

Regional access to the Project is provided by Interstate 70, E-470, and Interstate 225. Primary access to the Project is provided by E. 40th Avenue, Salida Street and Tower Road. Full movement internal Project access is planned at driveways along Telluride Street, 37th Avenue, and 35th Avenue while one right-in/right-out access is proposed along Salida Street. The future intersection of 37th Avenue and Salida Street will align with an access now under construction for the Salida Flex project on the northeast side of Salida Street.

Based on ITE Trip Generation, the proposed Project is expected to generate approximately 5,370 daily weekday vehicle trips, with 533 trips occurring during the morning peak hour and 476 trips occurring during the afternoon peak hour. For reference, the approximately 40-acre DIA property to the west was evaluated based upon full development of approximately 500,000 square feet of commercial uses and included as a part of background traffic. Based upon this level of development, it is anticipated to generate approximately 5,200 daily weekday vehicles trips, with 620 trips occurring during the morning peak hour and 600 trips occurring during the afternoon peak hour in addition to the Project generated traffic volumes.

Distribution of site traffic on the street system was based on the area street system characteristics, existing traffic patterns, anticipated surrounding development in the area, and the proposed access system for the Project. A second scenario was evaluated in 2040 inclusive of the DIA property development and a future connection of 37th Avenue between Airport Boulevard and Salida Street which developed a second trip distribution for the Project. Assignment of Project traffic was based upon the trip generation described previously and the distributions developed.

Based on the analysis presented in this report, Kimley-Horn believes the proposed Project will be successfully incorporated into the existing and future roadway network. The proposed Project development and expected traffic volumes resulted in the following roadway sections, participation percentages, and recommended mitigation measures at the key intersections impacted by Project traffic:

- Concurrent with the Project, 37th Avenue will be partially constructed through the northern portion of the property and will eventually extend from the west Project property line to Salida Street to serve the DIA property to the west utilizing a potential future connection under the A-line and ultimate connection to Airport Boulevard. It is recommended that 37th Avenue be a three-lane roadway. Proposed 35th Avenue, also recommended to be three lanes, will be partially constructed with the Project through the southern portion of the site, and will ultimately extend from Telluride Street west to the west property line of the Project site and eventually under the A-line to serve the DIA property. It should be noted that extensions of 35th Avenue and 37th Avenue are not needed under the A-line until the DIA property is developed. Further, a connection of 37th Avenue to Airport Boulevard is not needed unless the DIA property is developed.
- At the 37th Avenue and Salida Street intersection, 150-foot left turn lanes along northbound Salida Street and eastbound 37th Avenue approaches are recommended. The eastbound 37th Avenue approach of this intersection should provide stop control with installation of a R1-1 “STOP” sign upon buildout of the Project. A future traffic signal is not needed with development of the Project; however, a traffic signal may be needed at this intersection depending on the development density of the DIA property to the west and should be re-evaluated as a part of and at the time of DIA property development.
- A new Salida Street Access is proposed to be restricted to right-in/right-out movements only. The eastbound exiting access approach to Salida Street should provide stop control with the installation of a R1-1 “STOP” sign. A R3-2 No Left Turn Sign should be installed underneath the “STOP” sign and a R6-1(R) “ONE WAY” sign should be located within the raised median to identify the restriction to right turn exiting movements from the driveway.
- The existing 225-foot westbound left turn lane at the 40th Avenue and Pena Boulevard Southbound Ramp/Airport Boulevard intersection was found to require additional storage length by 2022 with or without the Project. Based on this, it is recommended that dual westbound left turn lanes be constructed with a length of 250 feet for the inside left turn lane and 350 feet for the outside left turn lane. It is believed that sufficient median width is available to accommodate dual left turn lanes. Further, these distances will provide sufficient lengths for back-to-back left turn lanes and to avoid the Pena Boulevard columns. With the

westbound dual left turn lanes, a traffic signal modification will likely be needed to provide two protected only left turn signal heads on the westbound mast arm. A slight modification of the curb return on the southeast corner of the intersection may also be needed to receive the dual left turns on the Airport Boulevard south leg. It should be noted that Project traffic contributes less than fifteen percent of the traffic volume in the westbound left turn.

- It is recommended that the intersection of Salida Street and Walden Street be signalized within a few years of Project completion. The eastbound and westbound left turns are recommended to operate with protected/permitted left turn phasing while the northbound and southbound approaches operate permitted only. With signalization, the existing 175-foot westbound left turn lane is recommended to be extended to 250 feet, which will require a reduction in the existing taper and back-to-back storage length for the eastbound left turn lane at the access intersection to the east. A signal phasing agreement between SCMD and the City of Aurora is already in place for this intersection.
- At the Salida Street and Tower Road intersection, 250-foot eastbound dual left turn lanes are recommended with or without completion of this Project and should be constructed within a year or two of Project completion. To construct these, the two westbound through lanes along Salida Street could be shifted to the north by reconstructing the curb line along the north side of Salida Street which may be constructed within the existing SCMD forty-foot access easement area or within City of Aurora acquired right-of-way (note that the City of Aurora right of way extend only one (1) foot back of the existing Salida Street curb on either side of the roadways). Likewise, the eastbound right turn movement is recommended to operate with protected overlap phasing. If implemented, the eastbound improvements may require a shift of the through lanes on the west side of the intersection which will require COA right-of-way acquisition from the property owner at the northeast corner of the intersection. Project traffic is expected to contribute slightly more than five percent of these eastbound left turn movements and need for these improvements.
- According to the State Highway Access Code, a southbound right turn lane is warranted for the 37th Avenue and Salida Street intersection based on projected background plus Project traffic volumes exceeding the highway code threshold. It is recommended that this

southbound right turn lane have a length of 150 feet to meet City standards and be completed with construction of 37th Avenue.

- A summary of these improvements as discussed are provided within the following table along with an identified project cost participation and planning year needed.

Summary of Improvements

Intersection	Improvements	Project Participation Percentage	Planning Year Needed
40 th Ave & Pena Blvd SB Ramps (#1)	Westbound Dual Left Turns (250-ft & 350-ft)	AM Peak 59 / 480 12.3%	2022
40 th Ave & Pena Blvd NB Ramps (#2)	Eastbound Dual Left Turns (250-ft & 350-ft)	AM Peak 0.0%	2022
38 th Avenue & Tower Road (#4)	Westbound Dual Left Turn Lanes (375-ft)	AM Peak 8 / 583 1.4%	2022
Salida Street & Walden Street (#7) #	Traffic Signal	PM Peak 176 / 1,365 12.9%	2025
Salida Street & Tower Road (#8)	Eastbound Dual Left Turn Lanes (250-ft)	PM Peak 23 / 360 6.4%	2022
37 th Avenue & Salida Street (#12)	Construction of 37 th Avenue West of Salida Street + NB Left Turn Lane + SB Right Turn Lane	100%	With Project

current signal phasing agreement between COA and SCMD

2.0 INTRODUCTION

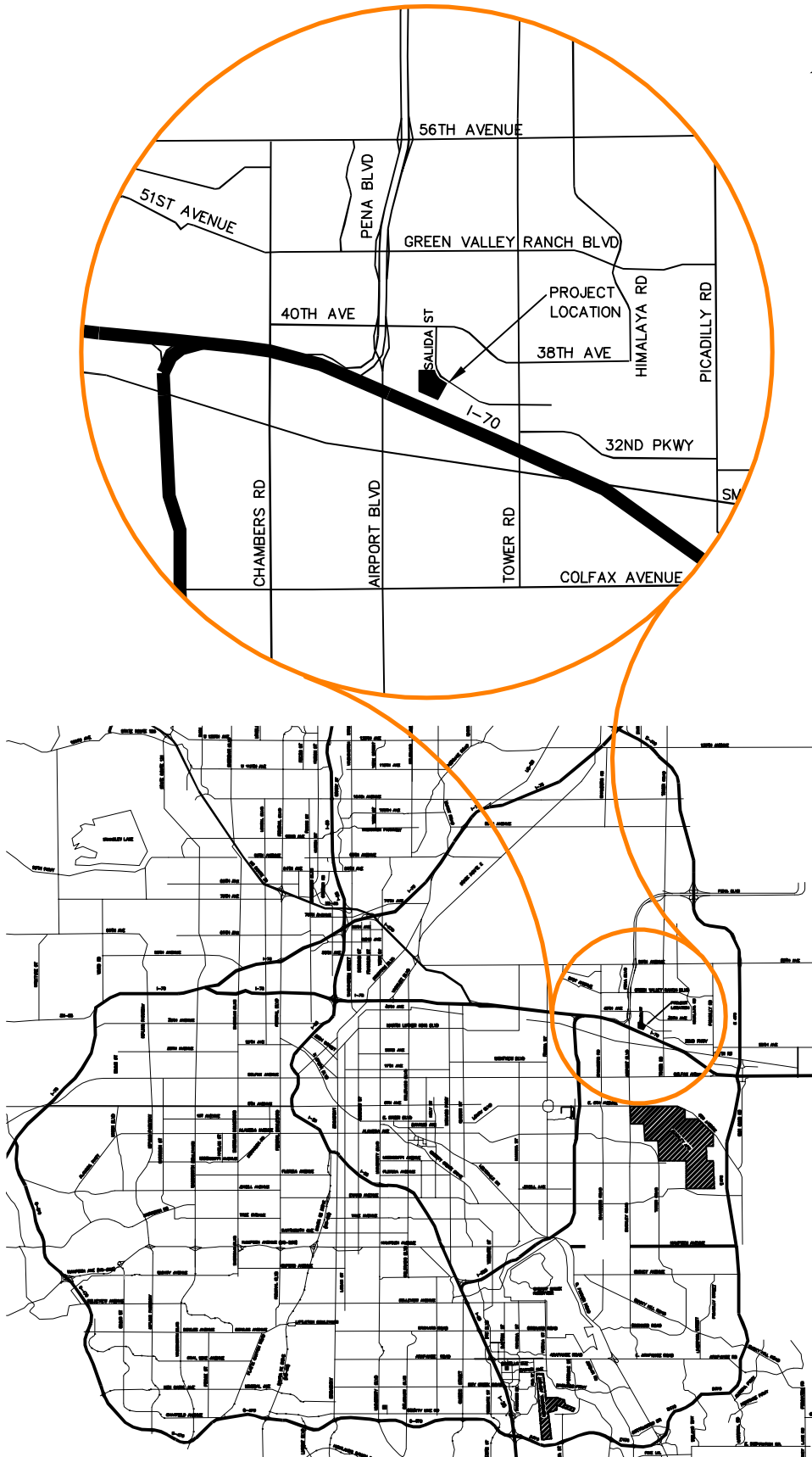
Kimley-Horn has prepared this report to document traffic impact study results of future traffic conditions associated with the proposed Gateway Park TIC 2 Parcel aka Building 28 (“Project”) to be located along the southwest side of Salida Street and northwest of Telluride Street in Aurora, Colorado. A vicinity map is shown in **Figure 1**. For purposes of this study, the proposed development on TIC 2 is anticipated to include approximately 725,000 square feet of industrial park along the south side of future 37th Avenue and a hotel with 125 rooms and 10,000 square feet of commercial space along the north side of future 37th Avenue. It is expected that the project will be completed in the next few years. Additionally, this project triggers roadway improvements and easement dedications as set forth in the Intergovernmental Agreement between Sand Creek Metropolitan District (“SCMD”) and the City and County of Denver through its Department of Aviation (“DIA”). Development of the DIA property in the City of Aurora and immediately west of the proposed Project of up to 500,000 square feet of commercial uses has also been included in this study (see **Appendix B** for anticipated development on the DIA property). Therefore, analysis was conducted for the 2022 short term horizon as well as the 2040 long-term horizon.

The purpose of this traffic study is to identify project traffic generation characteristics, ascertain roadway sections for proposed 35th and 37th Avenues, identify potential project traffic related impacts on the local street system, and recommend mitigation measures for identified impacts. The following intersections were incorporated into this traffic study in accordance with City of Aurora requirements:

1. 40th Avenue and Pena Boulevard Southbound Off-Ramp/Airport Boulevard
2. 40th Avenue and Pena Boulevard Northbound On-Ramp/Airport Boulevard
3. 40th Avenue and Salida Street
4. 38th Avenue and Tower Road
5. I-70 Westbound Ramp and Airport Boulevard
6. Salida Street and Telluride Street
7. Salida Street and Walden Street
8. Salida Street and Tower Road
9. 32nd Parkway and Tower Road
10. I-70 Westbound Ramps and Tower Road

11. I-70 Eastbound Ramps and Tower Road
12. 37th Avenue and Salida Street (Future)
13. Salida Street Right-In/Right-Out Access

Regional access to the Project is provided by Interstate 70, E-470, and Interstate 225. Primary access to the Project is provided by 40th Avenue, Salida Street and Tower Road. Full movement access is planned at driveways along Telluride Street, 37th Avenue, and 35th Avenue while one right-in/right-out access is proposed along Salida Street. The future intersection of 37th Avenue and Salida Street will align with an access now under construction for the Salida Flex project on the northeast side of Salida Street



GATEWAY PARK — PARCEL TIC 2
(SALIDA ST & TELLURIDE ST)
VICINITY MAP

FIGURE 1

3.0 EXISTING AND FUTURE CONDITIONS

3.1 Existing Study Area

The existing site is comprised of vacant land. Directly southeast of the Project site is a shopping center and other commercial buildings. Directly north of the Project site is the RTD 40th Avenue Airport Station Park and Ride. Denver Aviation ("DIA") owns the approximately forty parcel within the City of Aurora and lying immediately west of the Project site. Full development of the DIA property has been included in this study including a potential connection of proposed 37th Avenue to Airport Boulevard via an existing undercrossing beneath the A-line located at the northwest corner of the Project site and a southern connection between the Project and the DIA property adjacent to I-70. The extended area surrounding the Project site is mainly comprised of vacant land, warehouses, and commercial uses. The land uses and roadway network surrounding the site are shown in **Figure 2**.

3.2 Existing and Future Roadway Network

40th Avenue provides two through lanes eastbound and westbound with a 40 mile per hour posted speed limit and a raised median. Salida Street provides two lanes of travel in each direction and extends from 40th Avenue to Tower Road. Salida Street has a 40 mile per hour posted speed limit and a raised median. Tower Road provides three lanes of travel northbound and southbound with a 40 mile per hour posted speed limit and a raised median. Airport Boulevard provides three lanes of travel northbound and southbound with a 40 mile per hour posted speed limit and a raised median. Telluride Street provides one lane of travel northbound and southbound with a solid yellow centerline. Walden Street (a private street) provides one lane of travel northbound and southbound with a 30 mile per hour posted speed limit and a solid yellow centerline. 32nd Parkway provides two lanes of travel eastbound and westbound with a 40 mile per hour posted speed limit and a raised median.

Both future 37th and 35th Avenues are proposed through the Project site as "private SCMD roadways", and both will provide one eastbound and westbound lane and will both have a striped center median. It should be noted that extensions of 35th Avenue and 37th Avenue into the DIA property are included in this study but are NOT needed west of the Project until the DIA property is developed. Further, a connection of 37th Avenue to Airport Boulevard is not needed to service the Project and is only needed if DIA property is developed.



GATEWAY PARK — PARCEL TIC 2
(SALIDA ST & TELLURIDE ST)
SITE AREA

FIGURE 2

40th Avenue and Pena Boulevard Southbound Ramps/Airport Boulevard is a four-leg signalized intersection with the north leg being the exit ramp from Pena Boulevard and the south leg being Airport Boulevard. The eastbound approach consists of an exclusive through lane and a shared through/right turn lane. The westbound approach consists of an exclusive left turn lane that operates under protected/permissive phasing, and two through lanes. The southbound approach has an exclusive left turn lane, a shared left turn/through lane, and a shared through/right turn lane.

40th Avenue and Pena Boulevard Northbound Ramps is a four-leg signalized intersection with the north leg being the entrance ramp onto Pena Boulevard. The eastbound approach consists of an exclusive left turn lane that operates under protected/permissive phasing, and two through lanes. The westbound approach consists of an exclusive through lane and a shared through/right turn lane. The northbound approach has an exclusive left turn lane, a shared left turn/through lane, and a shared through/right turn lane.

40th Avenue and Salida Street is a three-leg signalized intersection with protected/permissive left turns on the westbound approach. The eastbound approach consists of one through lane and a shared through/right turn lane. The westbound approach consists of dual left turn lanes and two through lanes. The northbound approach has dual left turn lanes and an exclusive right turn lane. It is anticipated that this intersection will be converted to a four-leg signal upon development of the property north of the present intersection.

38th Avenue and Tower Road is a four-leg signalized intersection with protected/permissive left turn phasing on all four approaches. The eastbound approach consists of an exclusive left turn lane, a through lane, and one right turn lane. The westbound approach consists of an exclusive left turn lane, two through lanes, and one right turn lane. The northbound approach has dual left turn lanes, a through lane, and one shared through/right turn lane. The southbound approach consists of an exclusive left turn lane, two through lanes, and a shared through/right turn lane.

The intersection of I-70 Westbound Ramp and Airport Boulevard is a three-leg signalized intersection with the west leg being the entrance ramp onto I-70. The northbound approach consists of dual lefts that operate under protected phasing, and three through lanes. The southbound approach consists of three through lanes and an exclusive right turn lane.

Salida Street and Telluride Street is an unsignalized “T”-intersection with stop control along the northbound approach. The eastbound approach consists of one through lane and a shared through/right turn lane. The westbound approach has an exclusive left turn lane and two through lanes. The northbound approach consists of an exclusive left turn lane and an exclusive right turn lane.

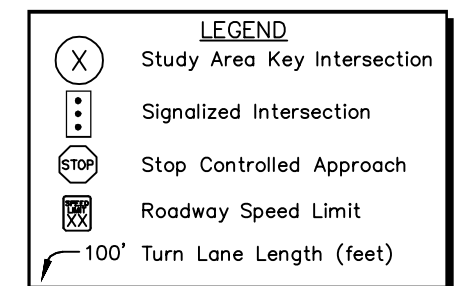
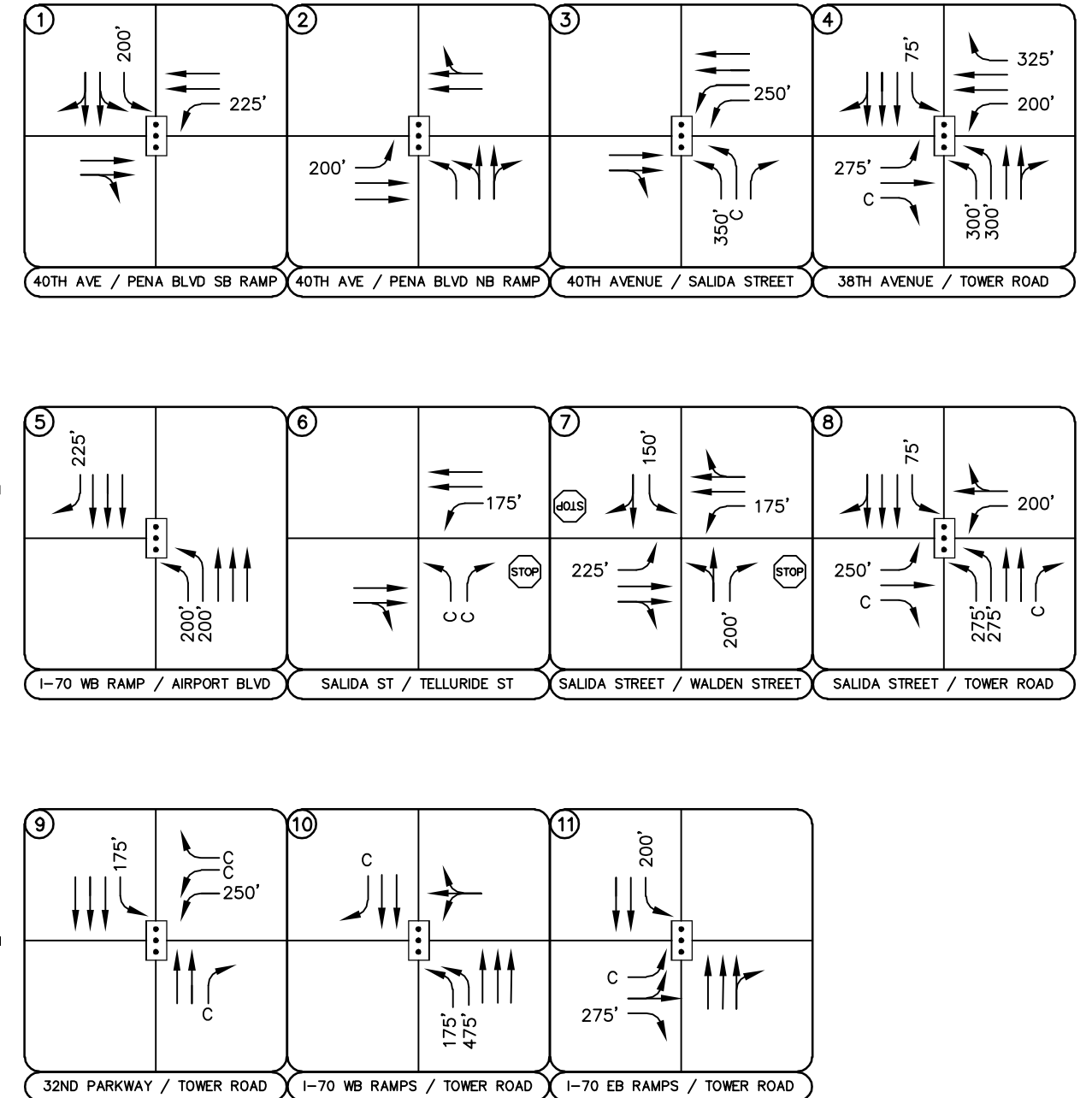
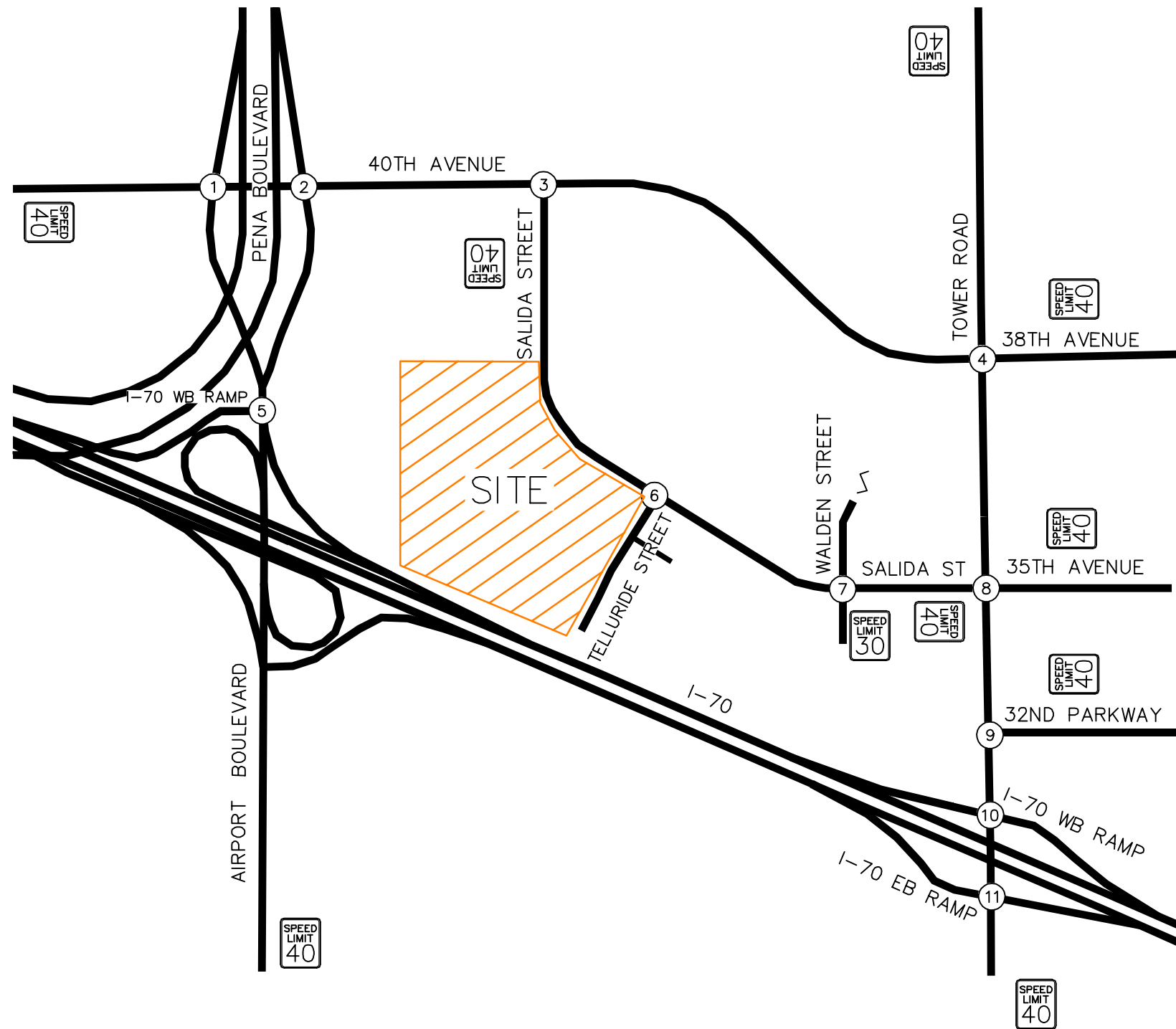
Salida Street and Walden Street is a four-leg unsignalized intersection stop control along the northbound and southbound approaches. The eastbound and westbound approaches consist of an exclusive left turn lane, a through lane, and a shared through/right turn lane. The northbound approach has a shared left/through lane and an exclusive right turn lane. The southbound approach consists of an exclusive left turn lane and a shared through/right turn lane.

The intersection of Salida Street and Tower Road is a four-leg signalized intersection with protected/permissive phasing for the eastbound, westbound, and southbound left turns, the northbound left turn operates with protected phasing. The eastbound approach consists of an exclusive left turn lane, a through lane, and one right turn lane. The westbound approach consists of an exclusive left turn lane and one shared through/right turn lane. The northbound approach has dual left turn lanes, two through lanes, and one right turn lane. The southbound approach consists of an exclusive left turn lane, two through lanes, and a shared through/right turn lane.

32nd Parkway and Tower Road is a three-leg signalized intersection with protected/permissive left turn on the southbound approach. The westbound approach consists of dual left turn lanes and an exclusive right turn lane. The northbound approach consists of two through lanes and an exclusive right turn lane. The southbound approach has an exclusive left turn lane and three through lanes.

I-70 Westbound Ramps and Tower Road is a four-leg signalized intersection with the west leg being the entrance ramp onto I-70. The westbound approach consists of one lane for all movements. The northbound approach consists of dual left turn lanes that operate under protected phasing and three through lanes. The southbound approach has two through lanes and an exclusive right turn lane.

I-70 Eastbound Ramps and Tower Road is a four-leg signalized intersection with the east leg being the entrance ramp onto I-70. The eastbound approach consists of an exclusive left turn lane that operates with permissive phasing, a shared left/through lane, and an exclusive right turn lane. The northbound approach consists of two through lanes and a shared through/right turn lane. The southbound approach has an exclusive left turn lane that operates with protected/permissive phasing and two through lanes. The intersection lane configuration and control for the study area key intersections are shown in **Figure 3**.



GATEWAY PARK — PARCEL TIC 2 — SALIDA STREET & TELLURIDE STREET
EXISTING LANE CONFIGURATIONS AND CONTROL

FIGURE 3

3.3 Existing Traffic Volumes

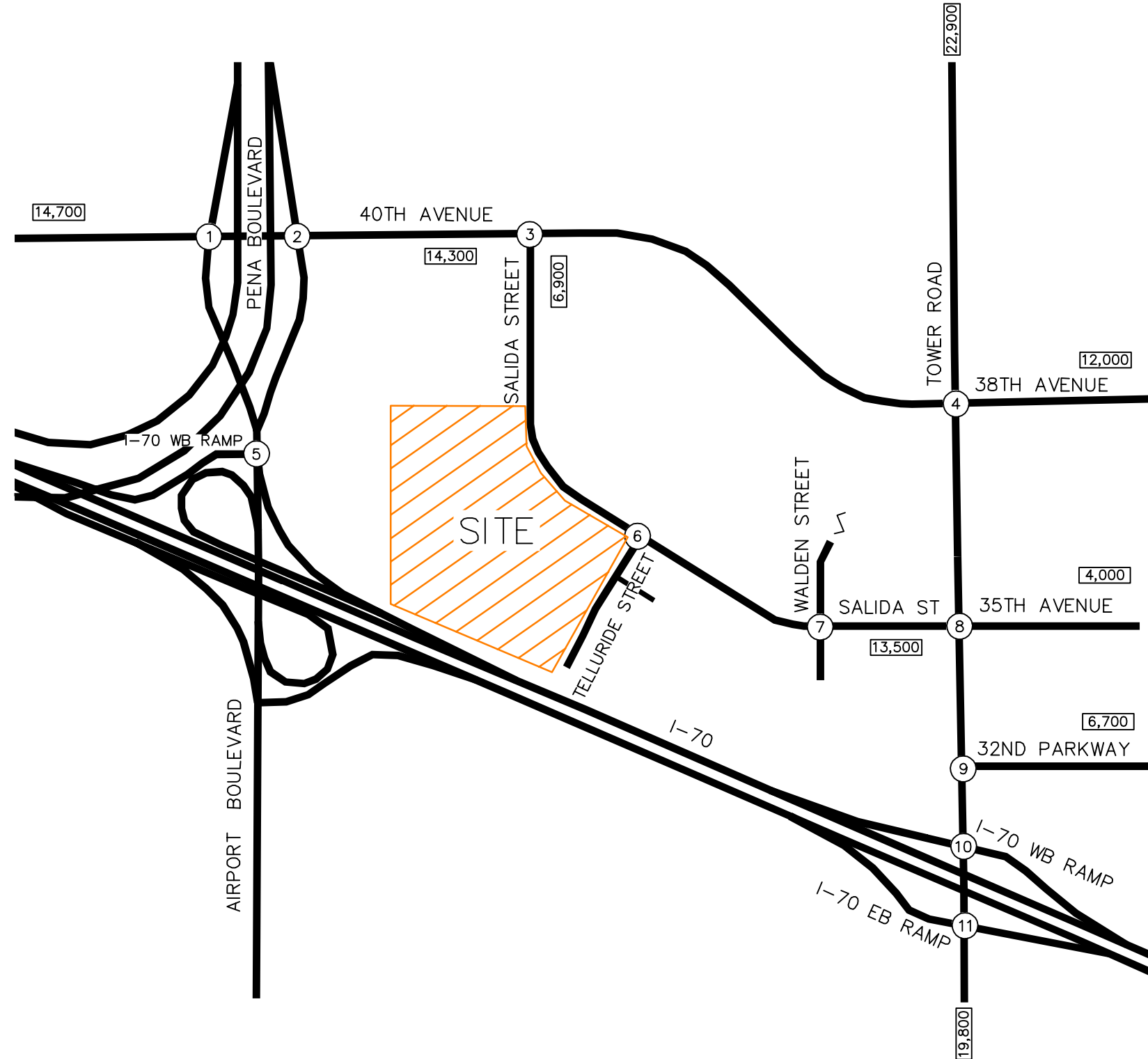
Weekday morning and afternoon peak hour traffic volume counts were obtained from the City of Aurora and from previous traffic studies performed by Kimley-Horn at the identified key intersections. This is due to the COVID-19 pandemic impacting regular traffic volumes and presently not being able to perform meaningful counts.

Peak hour turning movement counts were conducted at all the following key study area intersections on Thursday, April 5, 2018:

- 40th Avenue and Pena Boulevard Southbound Ramp
- 40th Avenue and Pena Boulevard Northbound Ramp
- 40th Avenue and Salida Street
- I-70 Westbound Ramp and Airport Boulevard
- 32nd Parkway and Tower Road

Peak hour turning movements counts were conducted at the I-70 Westbound Ramps/Tower Road and I-70 Eastbound Ramps/Tower Road intersections on Wednesday, April 18, 2018. Peak hour turning movements counts were also collected at the intersections of 38th Avenue/Tower Road, Salida Street/Walden Street, and Salida Street/Tower Road on Wednesday, April 25, 2018. Lastly, peak hour turning movement counts were collected at the intersection of Salida Street and Telluride Street on Thursday, August 9, 2018.

The traffic volume counts provided by the City of Aurora at four count locations were conducted from 6:00 AM to 9:00 AM and 3:00 PM to 6:00 PM. Traffic volume counts at the remaining seven count locations were conducted in 15-minute intervals during the AM and PM peak hours of adjacent street traffic from 7:00 AM to 9:00 AM and 4:00 PM to 6:00 PM. These turning movement counts are shown in **Figure 4** with count sheets provided in **Appendix A**. To be consistent with the City of Aurora Traffic Impact Study Guidelines, a two percent annual growth rate was applied to the 2018 traffic counts to estimate 2020 traffic volumes at the key study area intersections. These 2020 adjusted existing traffic volumes are shown in **Figure 5**.



<p>THURSDAY, APRIL 5, 2018 7:45-8:45AM (3:30-4:30PM)</p> <p>1</p> <p>225(168) 490(525) 92(91)</p> <p>754(502) 369(194)</p> <p>343(568) 147(235)</p> <p>40TH AVE / PENA BLVD SB RAMP</p>	<p>THURSDAY, APRIL 5, 2018 6:45-7:45AM (3:30-4:30PM)</p> <p>2</p> <p>172(235) 360(570)</p> <p>373(190) 933(502)</p> <p>68(90) 623(521) 160(167)</p> <p>40TH AVE / PENA BLVD NB RAMP</p>	<p>THURSDAY, APRIL 5, 2018 7:15-8:15AM (3:30-4:30PM)</p> <p>3</p> <p>911(319) 79(18)</p> <p>360(482) 197(314)</p> <p>200(310) 18(42)</p> <p>40TH AVENUE / SALIDA STREET</p>	<p>WEDNESDAY, APRIL 25, 2018 7:00-8:00AM (4:30-5:30PM)</p> <p>4</p> <p>413(111) 1208(935) 33(13)</p> <p>36(33) 467(178) 515(285)</p> <p>117(322) 147(334) 43(65)</p> <p>38TH AVENUE / TOWER ROAD</p>
<p>THURSDAY, APRIL 5, 2018 6:45-7:45AM (3:30-4:30PM)</p> <p>5</p> <p>246(162) 918(799)</p> <p>523(631) 1502(1353)</p> <p>I-70 WB RAMP / AIRPORT BLVD</p>	<p>THURSDAY, AUGUST 9, 2018 7:30-8:30AM (5:00-6:00PM)</p> <p>6</p> <p>91(207) 1(11)</p> <p>109(301) 6(16)</p> <p>15(60) 1(0)</p> <p>SALIDA ST / TELLURIDE ST</p>	<p>WEDNESDAY, APRIL 25, 2018 8:00-9:00AM (4:45-5:45PM)</p> <p>7</p> <p>3(21) 22(38) 6(15)</p> <p>7(7) 52(128) 105(191)</p> <p>11(34) 62(203) 56(92)</p> <p>28(79) 17(27) 100(202)</p> <p>SALIDA STREET / WALDEN STREET</p>	<p>WEDNESDAY, APRIL 25, 2018 7:00-8:00AM (4:45-5:45PM)</p> <p>8</p> <p>96(185) 1540(1000) 67(64)</p> <p>36(75) 24(39) 88(121)</p> <p>86(304) 16(45) 154(318)</p> <p>240(455) 609(915) 40(69)</p> <p>SALIDA STREET / TOWER ROAD</p>
<p>THURSDAY, APRIL 5, 2018 7:15-8:15AM (4:30-5:30PM)</p> <p>9</p> <p>1555(1427) 79(58)</p> <p>82(101) 197(319)</p> <p>1095(1261) 337(192)</p> <p>32ND PARKWAY / TOWER ROAD</p>	<p>WEDNESDAY, APRIL 18, 2018 7:00-8:00AM (4:30-5:30PM)</p> <p>10</p> <p>996(675) 979(1081)</p> <p>249(209) 64(31)</p> <p>205(204) 889(1275)</p> <p>I-70 WB RAMP / TOWER ROAD</p>	<p>WEDNESDAY, APRIL 18, 2018 7:15-8:15AM (4:45-5:45PM)</p> <p>11</p> <p>869(805) 187(351)</p> <p>412(625) 1(2) 226(237)</p> <p>708(872) 23(66)</p> <p>I-70 EB RAMP / TOWER ROAD</p>	

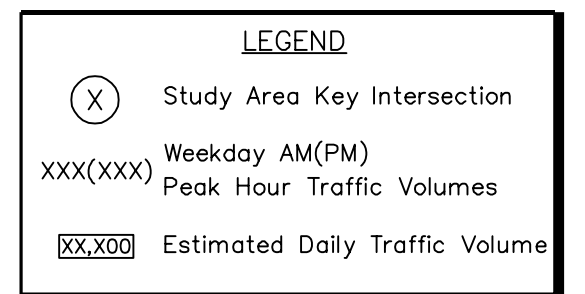
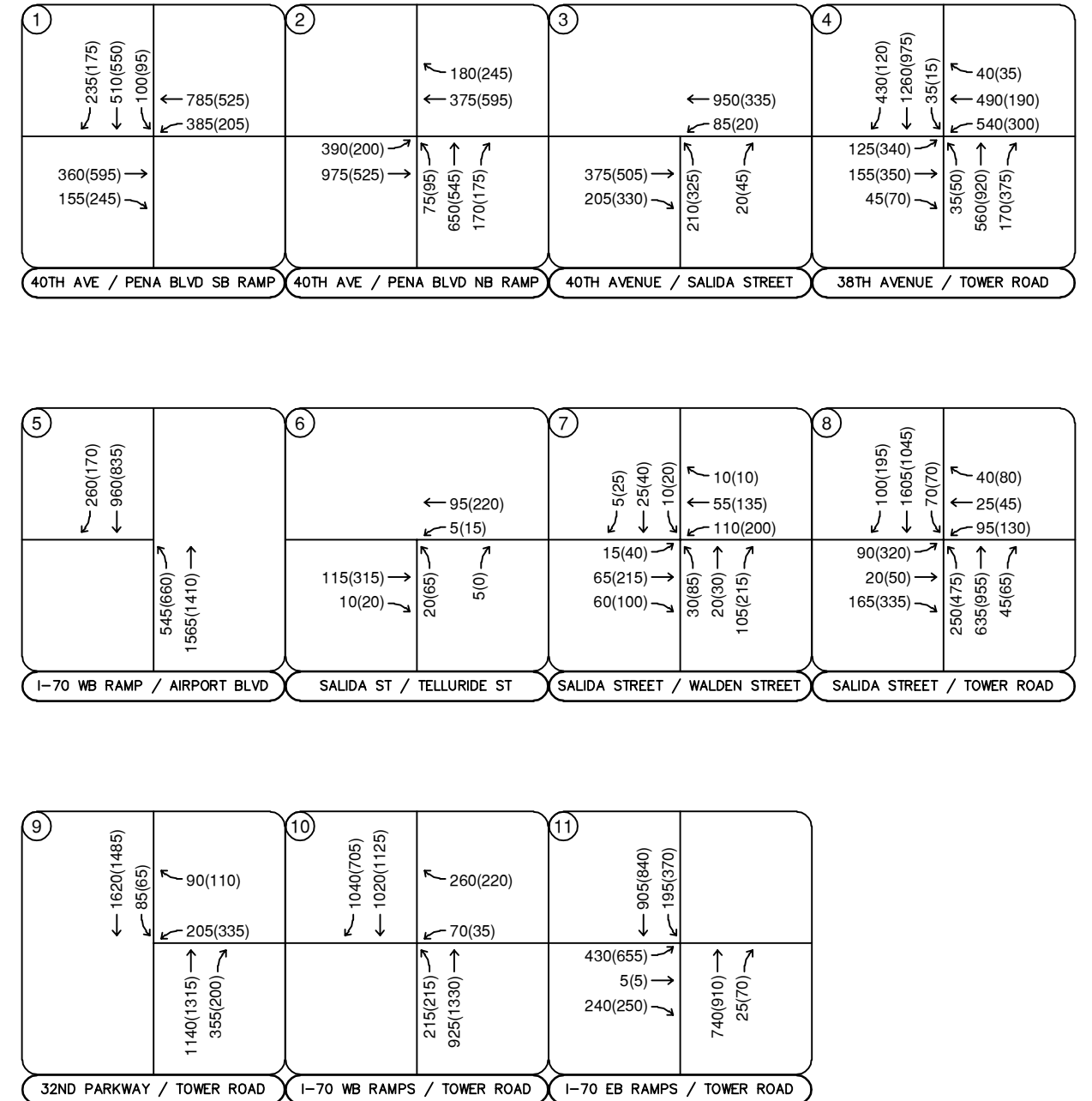
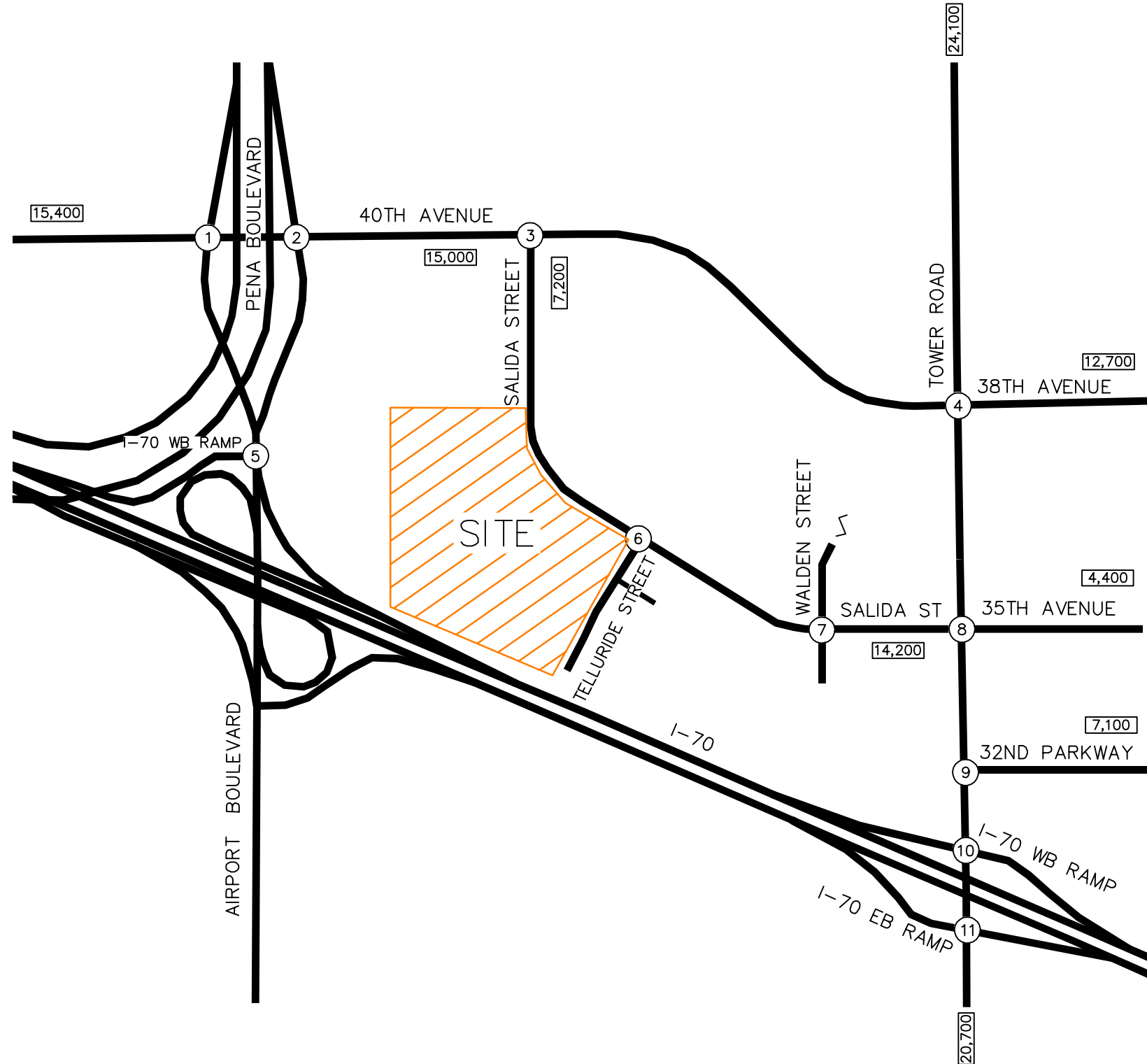
LEGEND

(X) Study Area Key Intersection

XXX(XXX) Weekday AM(PM)
Peak Hour Traffic Volumes

XX,X00 Estimated Daily Traffic Volume

GATEWAY PARK — PARCEL TIC 2 — SALIDA STREET & TELLURIDE STREET
EXISTING TRAFFIC VOLUMES



GATEWAY PARK — PARCEL TIC 2 — SALIDA STREET & TELLURIDE STREET
2020 ADJUSTED EXISTING TRAFFIC VOLUMES

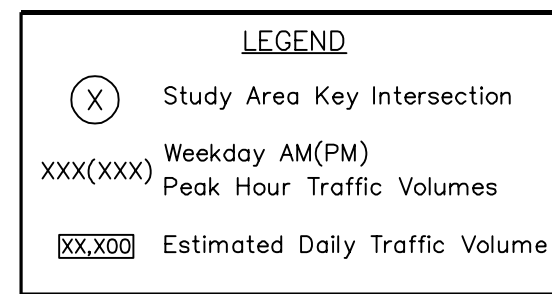
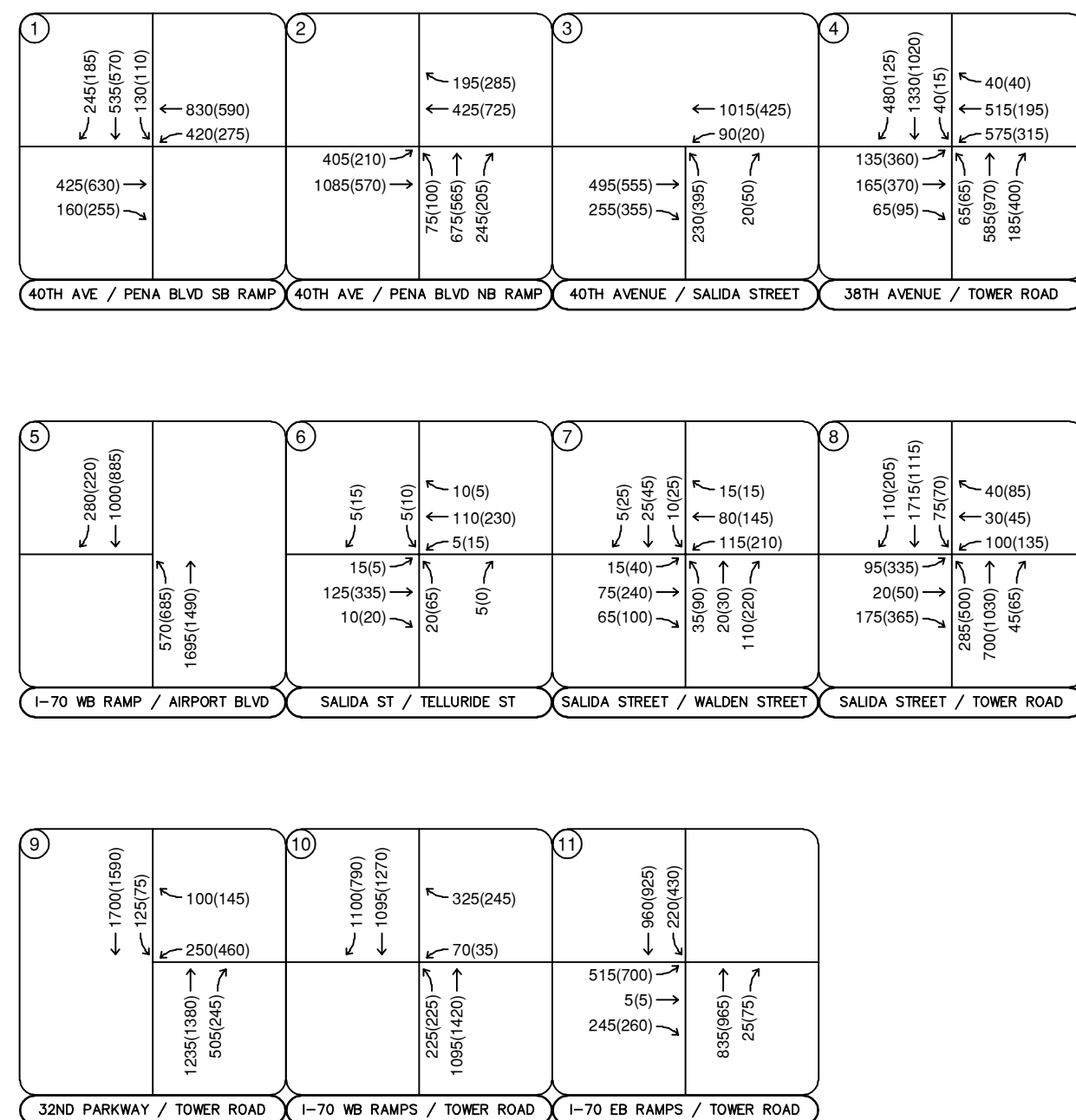
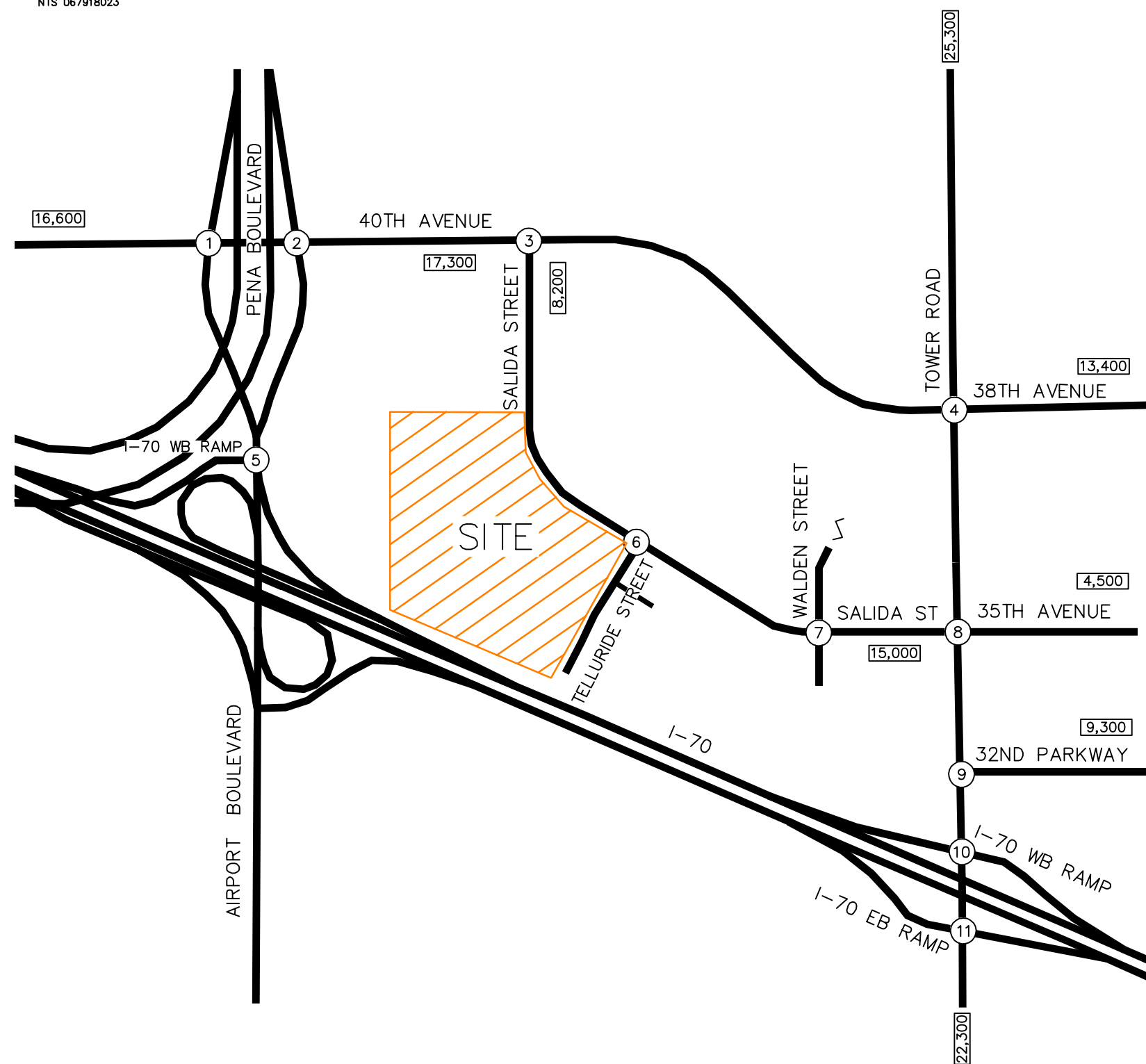
FIGURE 5

3.4 Unspecified Development Traffic Growth

In conformance with the City of Aurora Traffic Impact Study Guidelines, a two percent annual growth rate was used to estimate future traffic volume conditions in 2022 and 2040. Project traffic volume estimates from the Gateway Park Buildings 22/23 (not yet fully leased), Salida Flex Buildings 24 and 25 (now under construction), and Majestic Commercenter Phase 10 projects were directly added to the background traffic volumes in 2022. Along with growing traffic volumes to their respective year, the project traffic volume estimates from the following traffic studies or planned development areas were included as background traffic volumes in 2040:

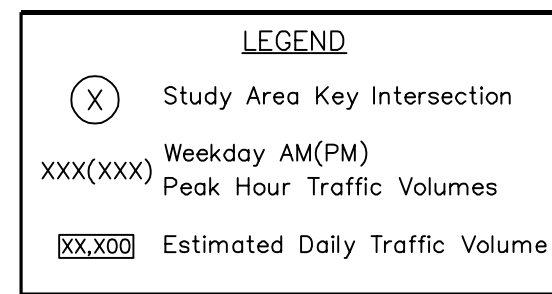
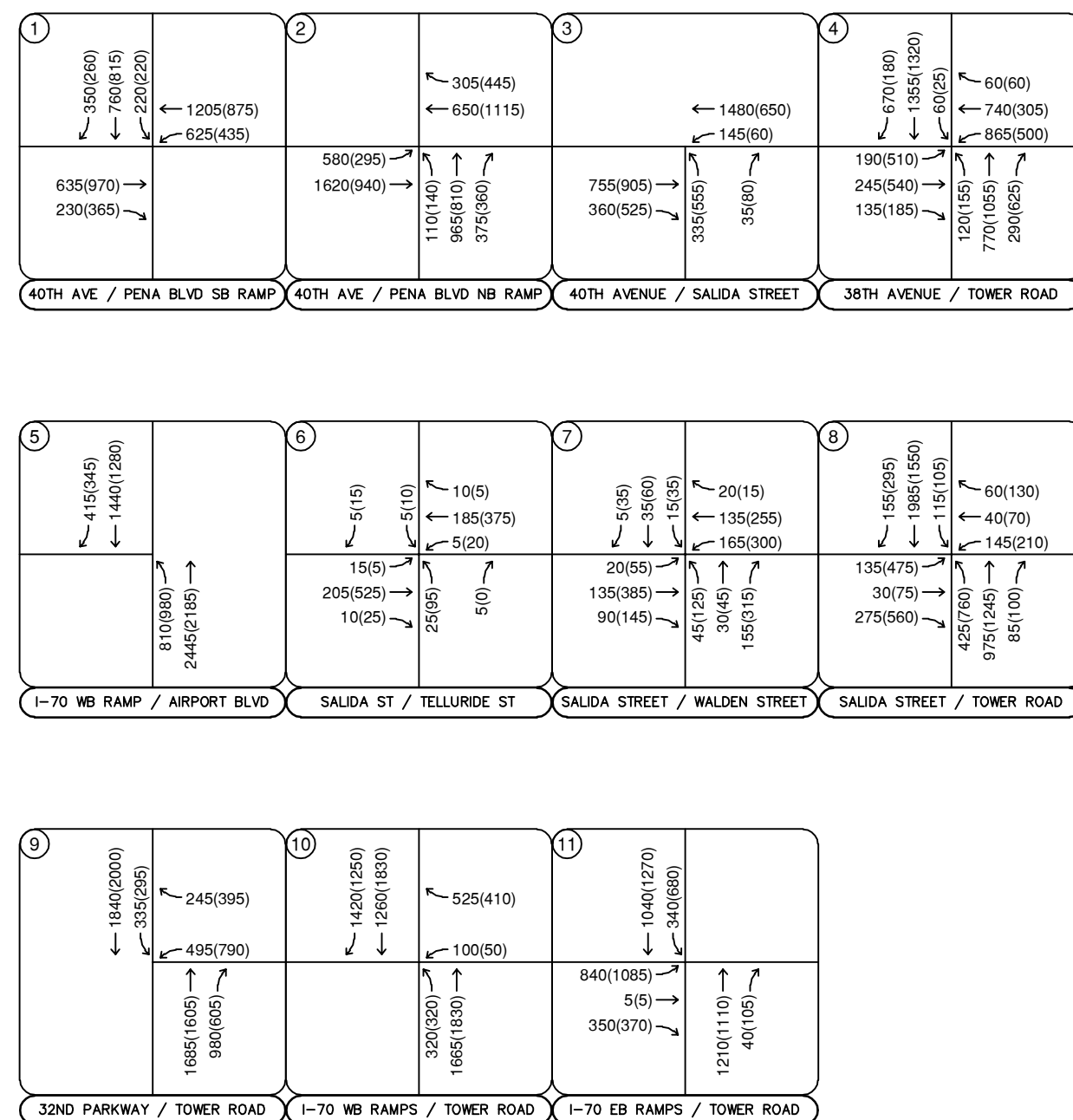
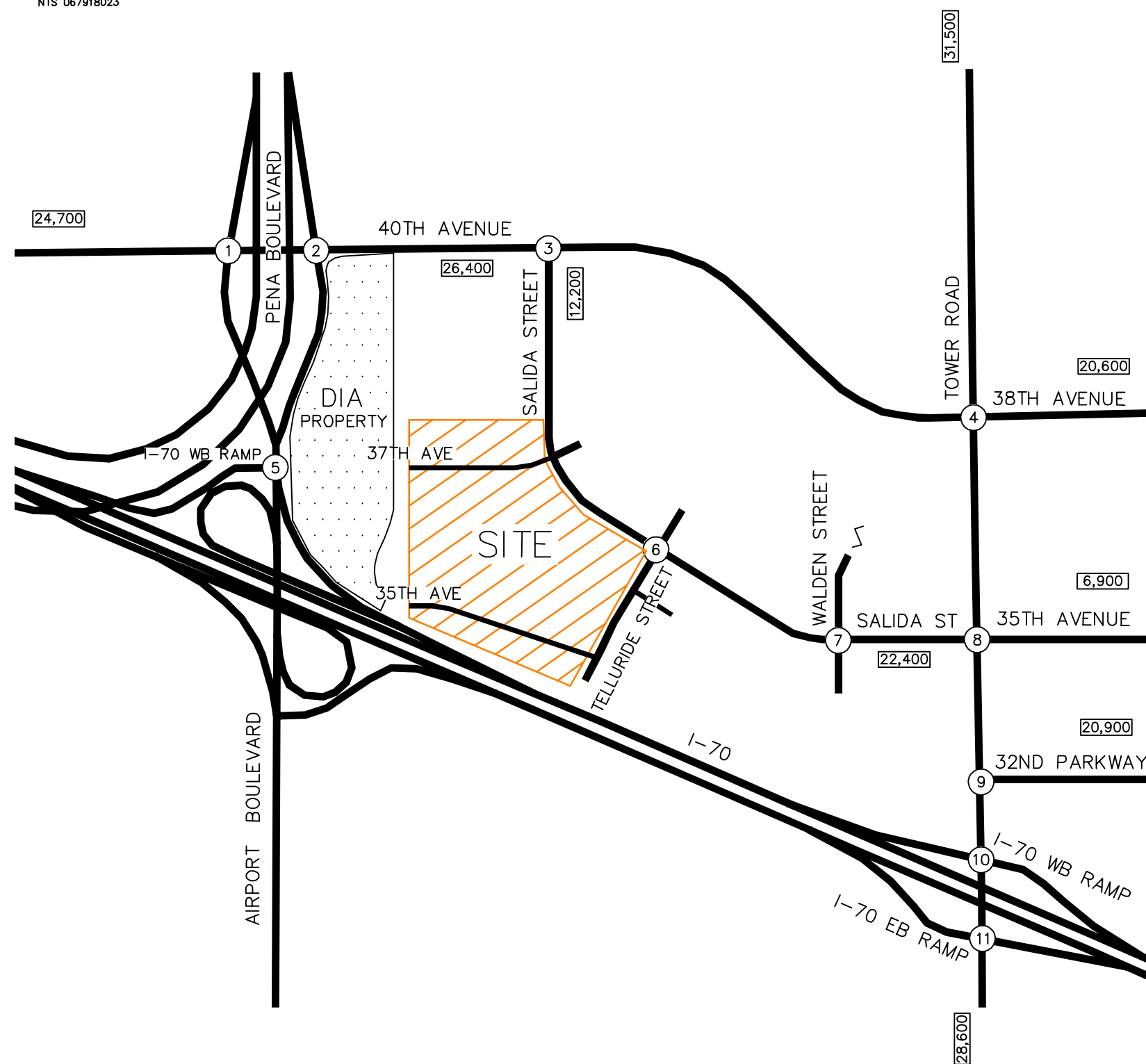
- *Gateway Park Buildings 22/23 Traffic Impact Study* (Kimley-Horn: August 2017)
- *Majestic Commercenter Phase 10 Traffic Impact Study* (Kimley-Horn: May 2017)
- *Salida Flex Buildings 24 & 25 Traffic Impact Study* (Kimley-Horn: January 2019)
- *Buildings 26 & 27 at Gateway Park Traffic Impact Study* (Kimley-Horn: November 2018)
- *Majestic Tower Retail Traffic Impact Study* (Kimley-Horn: July 2018)
- *Majestic Commercenter Phase 11 and Lisbon Street Buildings Traffic Impact Study* (Kimley-Horn: August 2018)
- Development of the Denver property west of the project site (Development information is attached in **Appendix B**)
- Development of the property north of the existing RTD 40th Avenue and Airport Station Park and Ride (Development information is attached in **Appendix B**).

Project traffic volume estimates from adjacent developments that did not include the full scope of intersections as this Project were extended and distributed to all key intersections in this project study area. Of note, including all seven of these adjacent development projects as background traffic in addition to the prescribed annual two percent growth rate provides an ultra-conservative estimate of future traffic volumes in the area. The project traffic assignment volumes from the seven adjacent development traffic studies are included in **Appendix B**. Existing travel patterns along Tower Road were modified in 2040 to account for the future connectivity of 38th Avenue to a future interchange with E-470 as well as the future planned interchange at Picadilly Road and I-70. Background traffic volumes for 2022 and 2040 are shown in **Figure 6** and **Figure 7**, respectively. Even though the Project is immediately adjacent to the Gateway Station, no transit factor for this multi-modal transit station has been applied in this study.



GATEWAY PARK — PARCEL TIC 2 — SALIDA STREET & TELLURIDE STREET
2022 BACKGROUND TRAFFIC VOLUMES

FIGURE 6



GATEWAY PARK — PARCEL TIC 2 — SALIDA STREET & TELLURIDE STREET
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 uses 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 average rates and fitted curve equations that apply to Industrial Park (ITE Code 130), Hotel (ITE 310), Shopping Center (ITE 820), and Coffee Shop (ITE 937) for traffic associated with the development.

The Project is expected to generate approximately 5,370 daily weekday trips, with 533 trips occurring during the morning peak hour and 476 trips occurring during the afternoon peak hour. For reference, development of the DIA property, included as background traffic, was found to generate approximately 5,200 daily weekday vehicles trips, with 620 trips occurring during the morning peak hour and 600 trips occurring during the afternoon peak hour. Calculations were based on the procedure and information provided in the ITE *Trip Generation Manual, 10th Edition – Volume 1: User's Guide and Handbook*, 2017. **Table 1** summarizes the estimated trip generation for the proposed development. The trip generation worksheets are included in **Appendix C**.

Table 1 – Gateway Park Parcel TIC Traffic Generation

Land Use	Weekday Vehicle Trips						
	Daily	AM Peak Hour			PM Peak Hour		
		In	Out	Total	In	Out	Total
Industrial Park (ITE130) – Lot 1 725,000 Square Feet	2,444	235	55	290	61	229	290
Hotel (ITE 310) – Lot 2 125 Rooms	984	34	23	57	35	33	68
Shopping Center (ITE 820) – Lot 2 8,000 Square Feet	302	5	3	8	14	16	30
Coffee Shop w/ DT (ITE 937) – Lot 2 2,000 Square Feet	1,640	91	87	178	44	44	88
Total Site Generated Trips	5,370	365	168	533	154	322	476

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

4.2 Trip Distribution

Distribution of site traffic on the street system was based on the area street system characteristics, existing traffic patterns, existing and anticipated surrounding demographic information, expected roadway improvements including new 35th and 37th Avenues, 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 upon a previous site plan for Lot 1 of the Project, it was assumed that three accesses would be provided along 37th Avenue, three accesses along 35th Avenue, one access along Salida Street, and one access along Telluride Street. The project trip distribution for year 2022 and Scenario 1 which does not include a 37th Avenue connection to Airport Boulevard through the DIA property is illustrated in **Figure 8** for the industrial parcel and **Figure 9** for the commercial parcel. A second scenario was evaluated in 2040 with the possible future connection of 37th Avenue to Airport Boulevard through and with development of the DIA property. The Scenario 2 trip distribution is shown in **Figure 10** for the industrial portion and **Figure 11** for the commercial portion.

4.3 Traffic Assignment

Traffic assignment was obtained by applying the project trip distribution to the estimated traffic generation of the development shown in **Table 1**. Site traffic assignment for the Project is shown in **Figure 12** for 2022 and Scenario 1 of 2040. The 2040 Scenario 2 project traffic assignment volumes are shown in **Figure 13**.

4.4 Total (Background Plus Project) Traffic

Site traffic volumes were added to the background volumes to represent estimated traffic conditions for the short term 2022 horizon and long term 2040 horizon. These total traffic volumes for the site are illustrated for the 2022 and 2040 horizon years in **Figures 14** and **15**, respectively. Existing travel patterns within the study area were modified under the 2040 Scenario 2 total traffic volumes to account for the possible future connection of 37th Avenue from Airport Boulevard to Salida Street. The Scenario 2 total traffic volumes are shown in **Figure 16**.

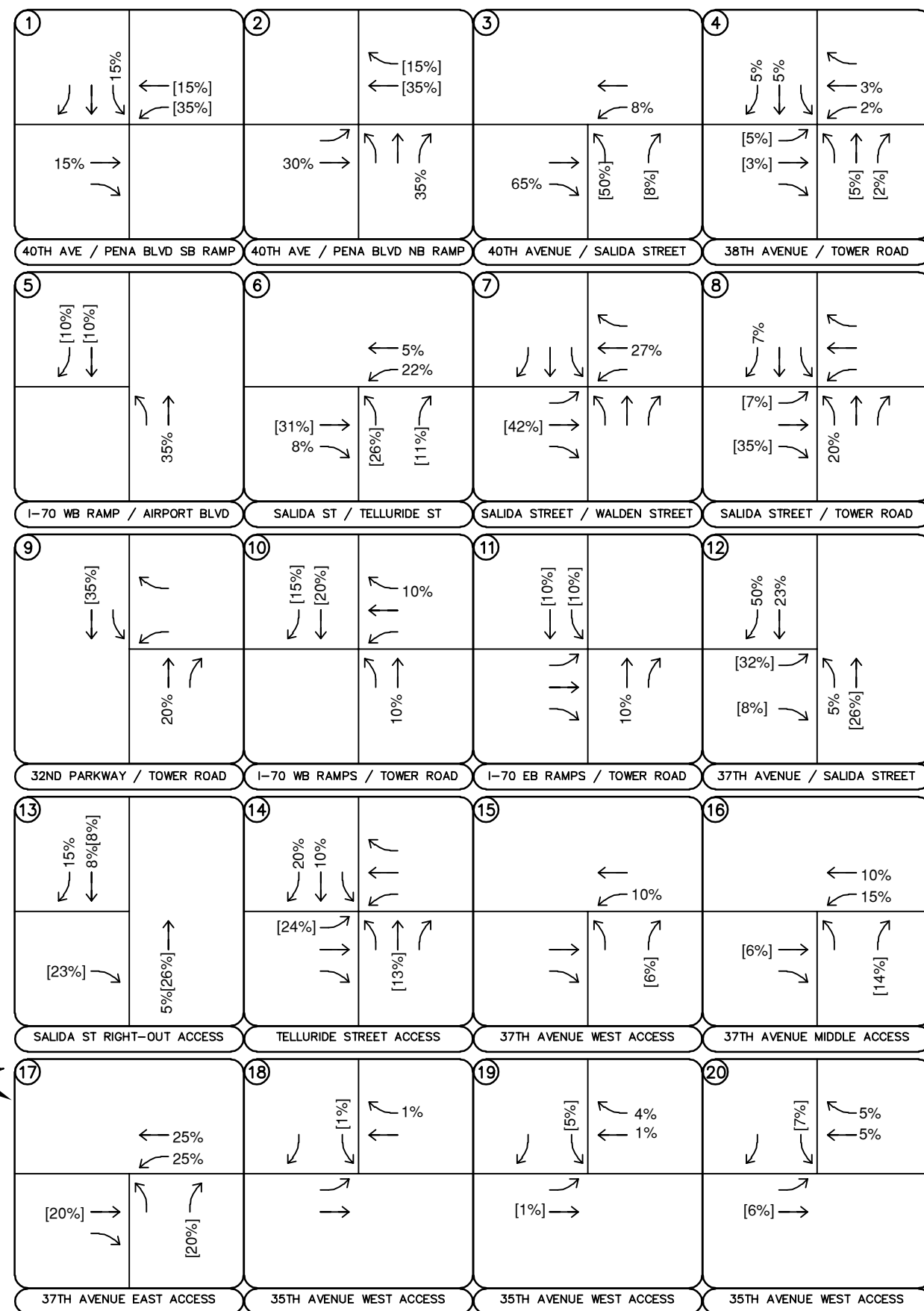
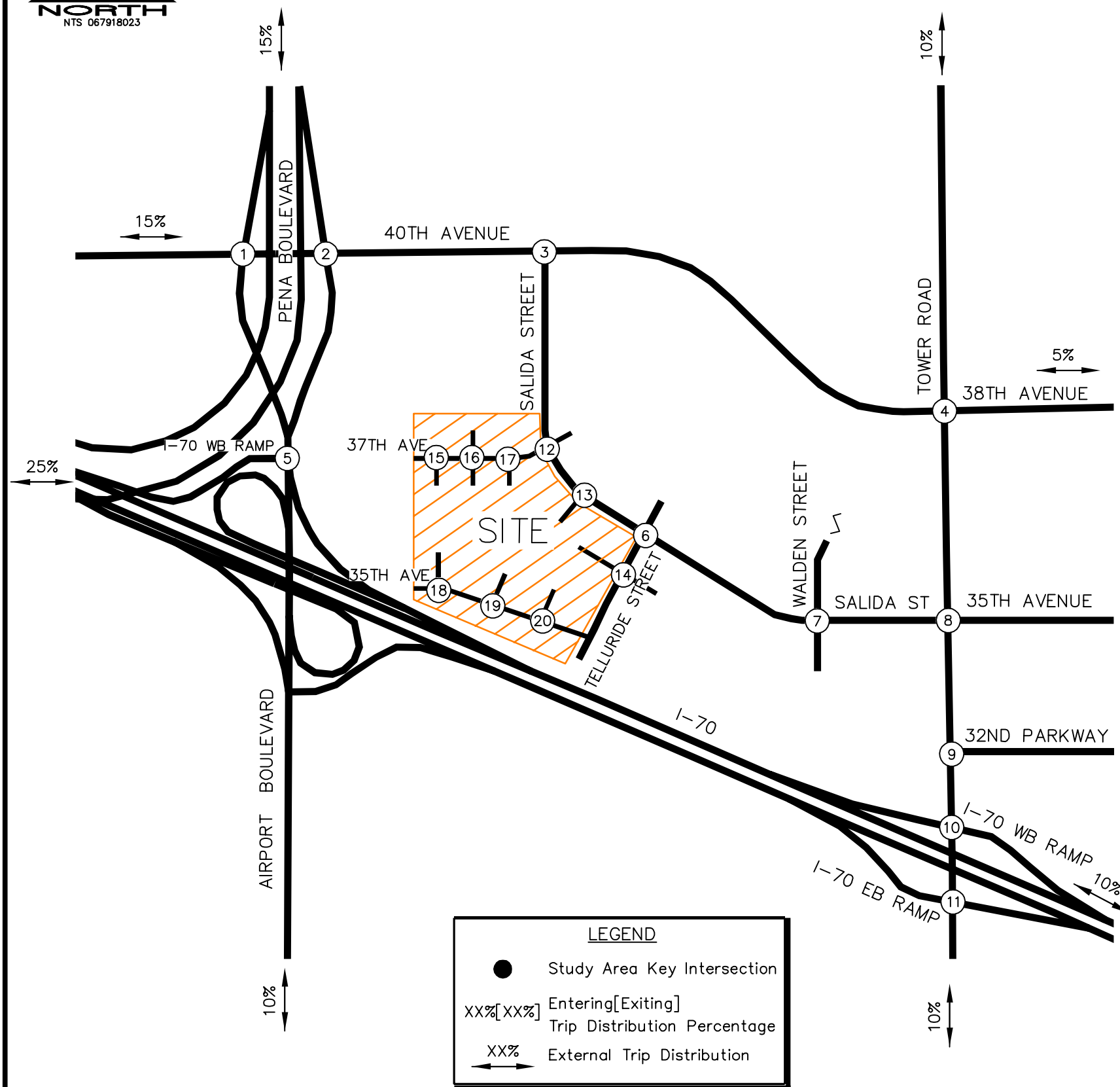


FIGURE 8

GATEWAY PARK — PARCEL TIC 2 — SALIDA STREET & TELLURIDE STREET
2022 & 2040 SCENARIO 1 INDUSTRIAL PROJECT TRIP DISTRIBUTION

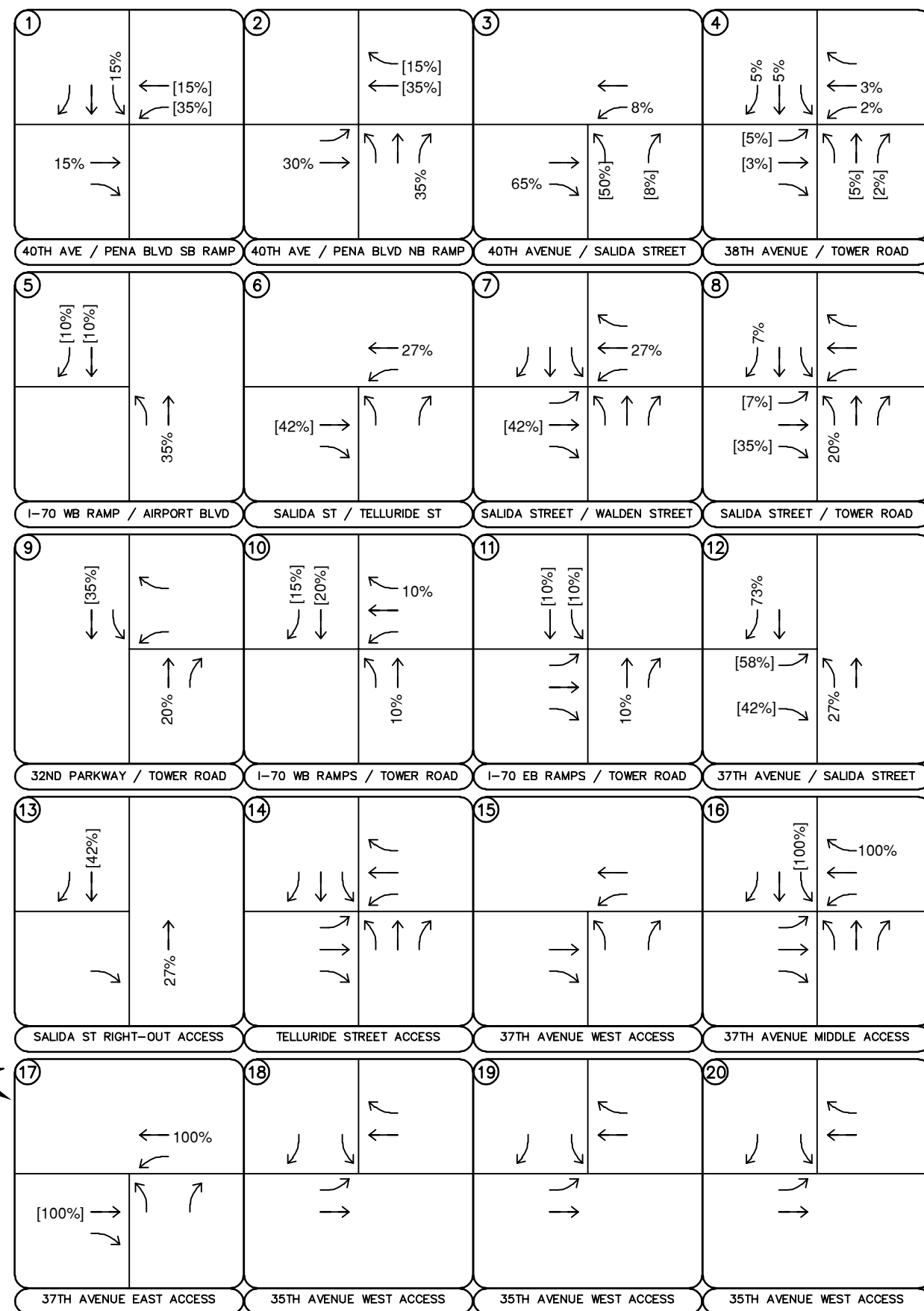
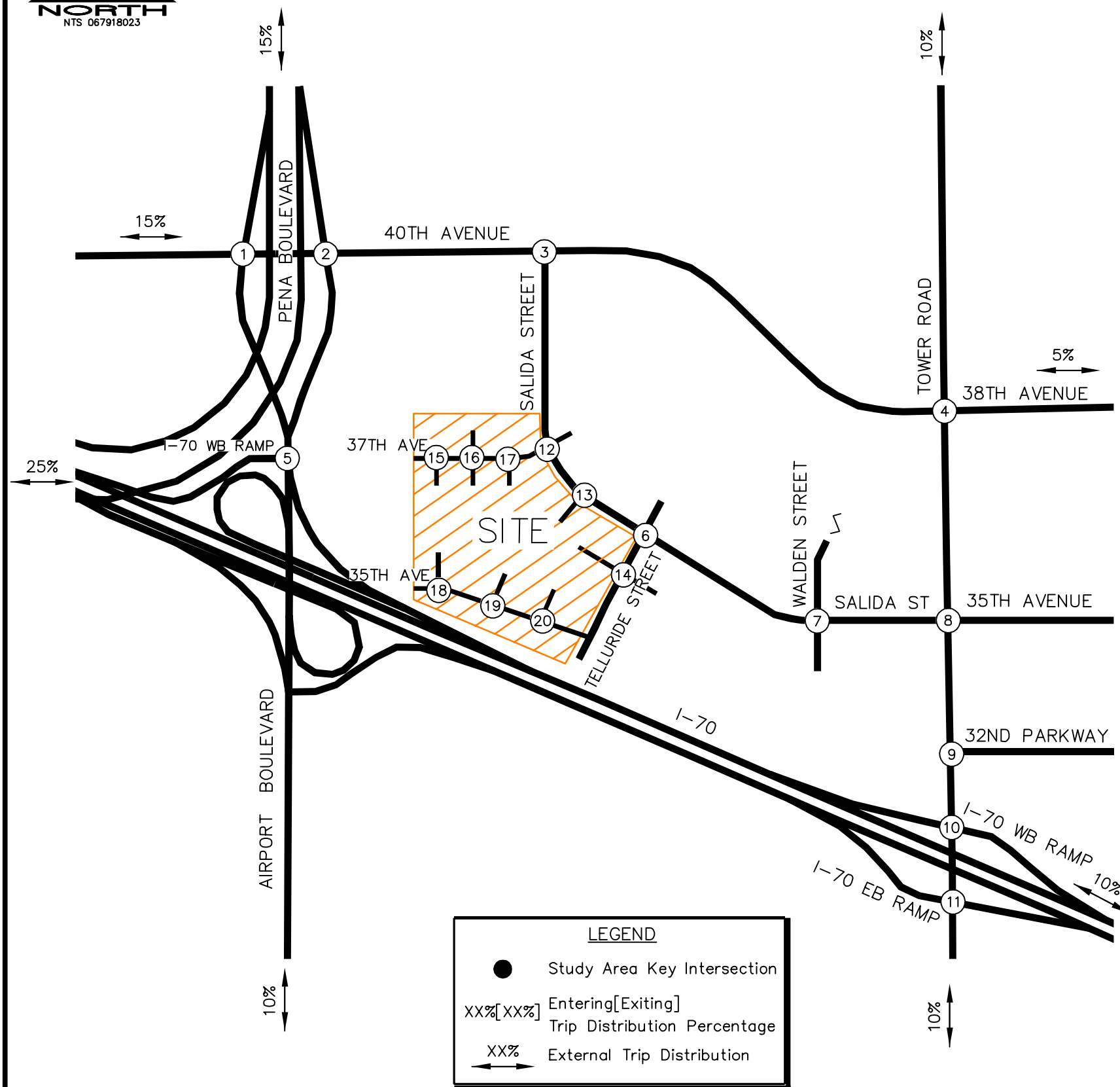


FIGURE 9

GATEWAY PARK — PARCEL TIC 2 — SALIDA STREET & TELLURIDE STREET
2022 & 2040 SCENARIO 1 COMMERCIAL PROJECT TRIP DISTRIBUTION

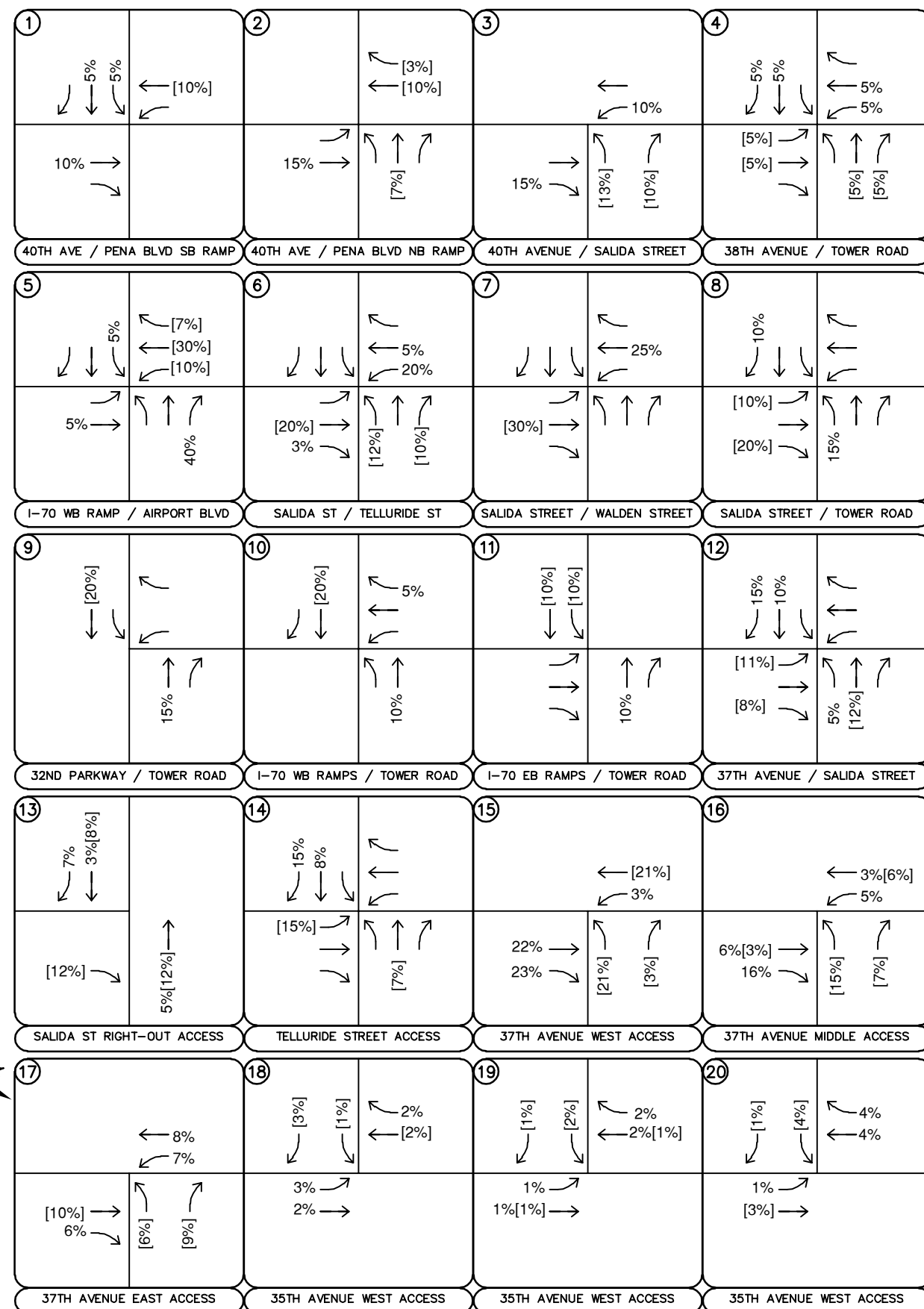
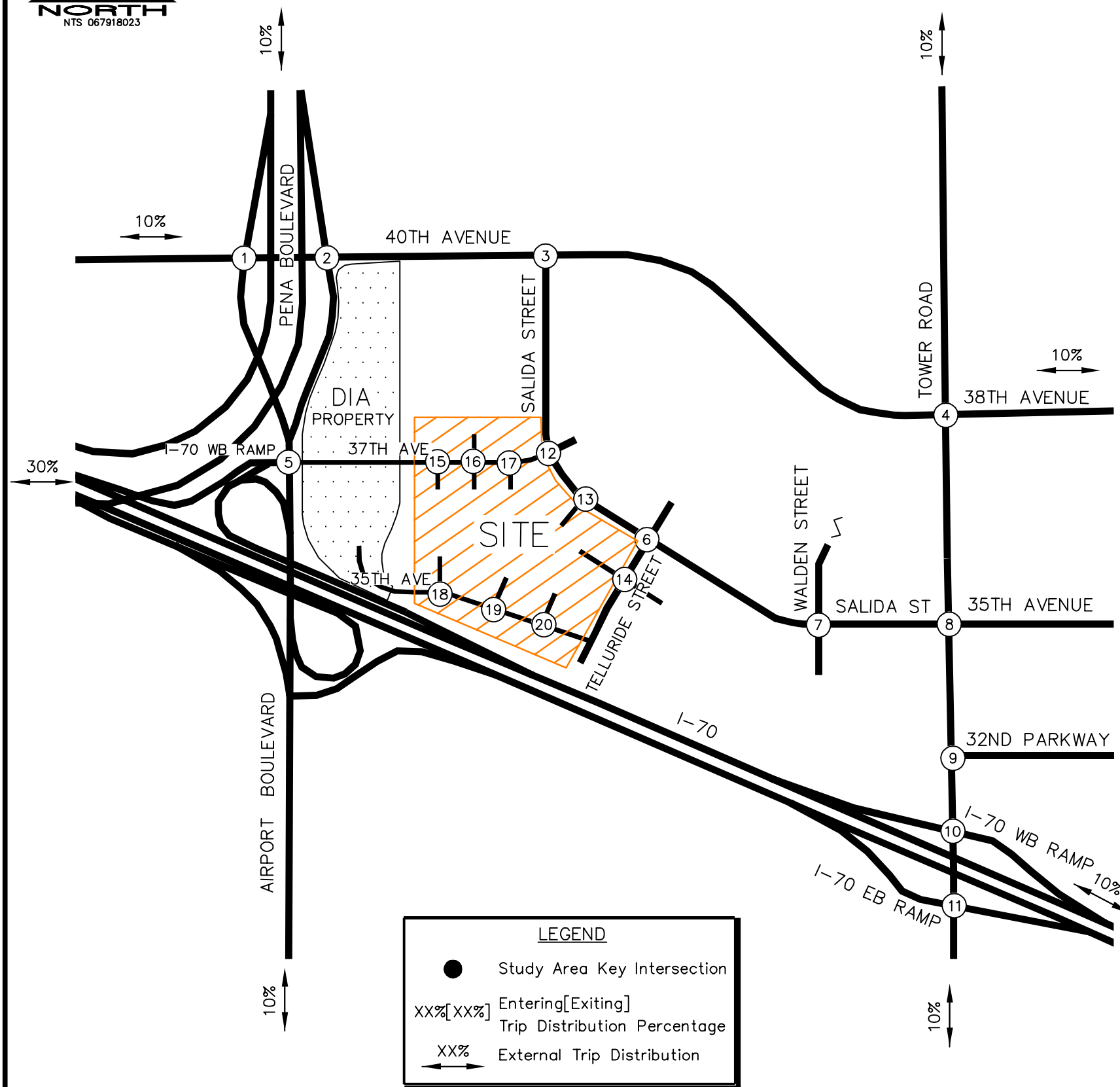
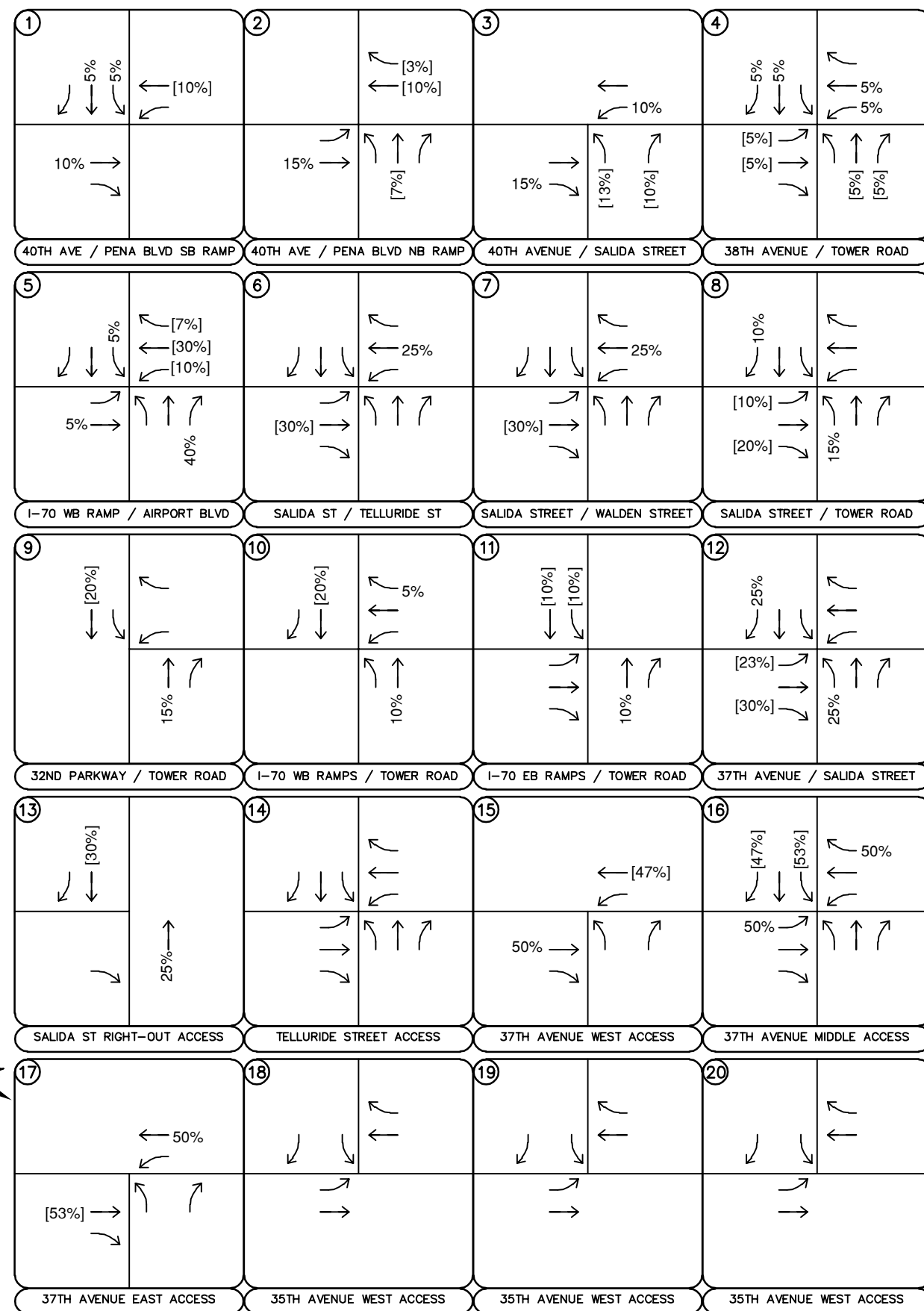
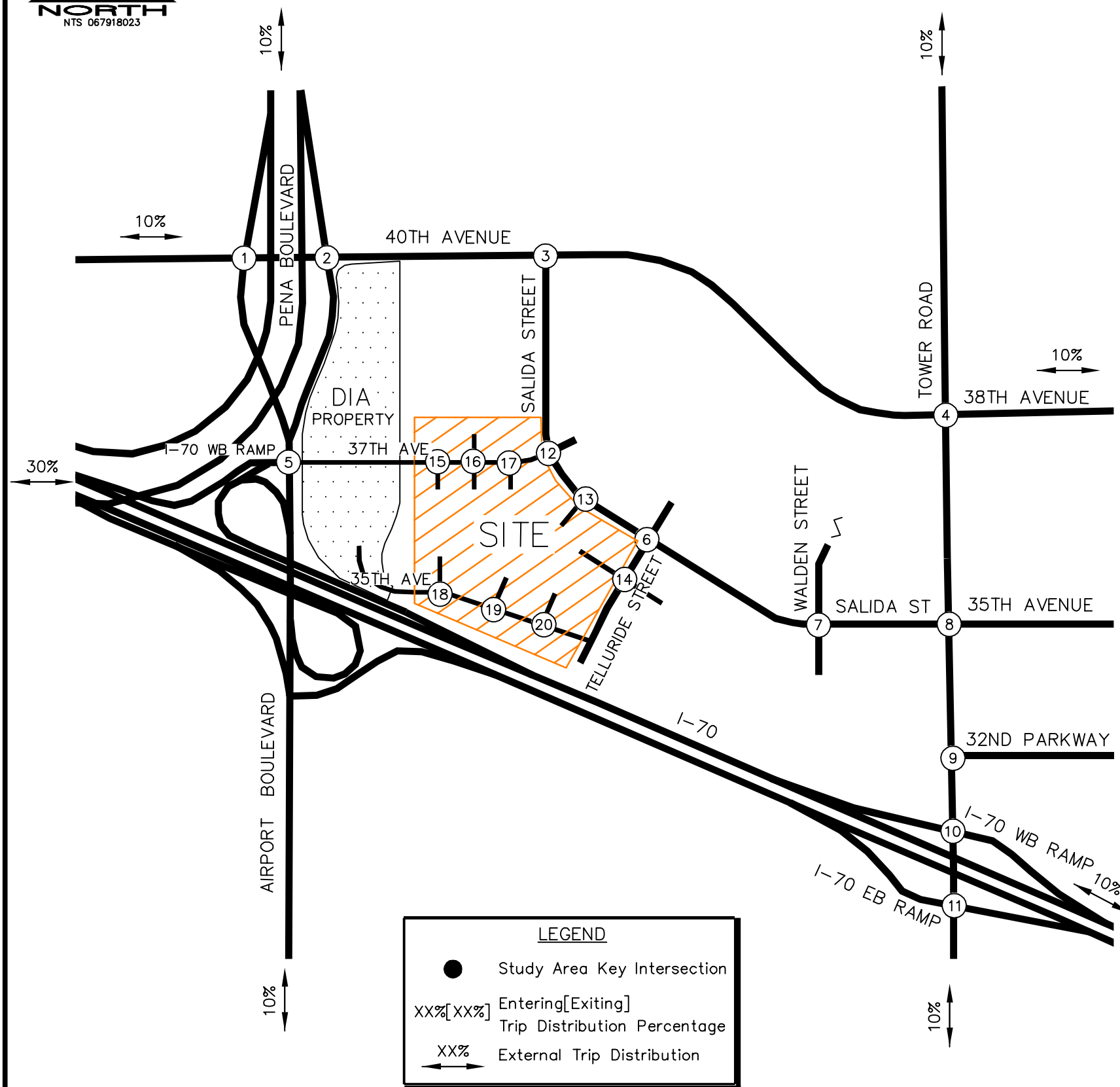


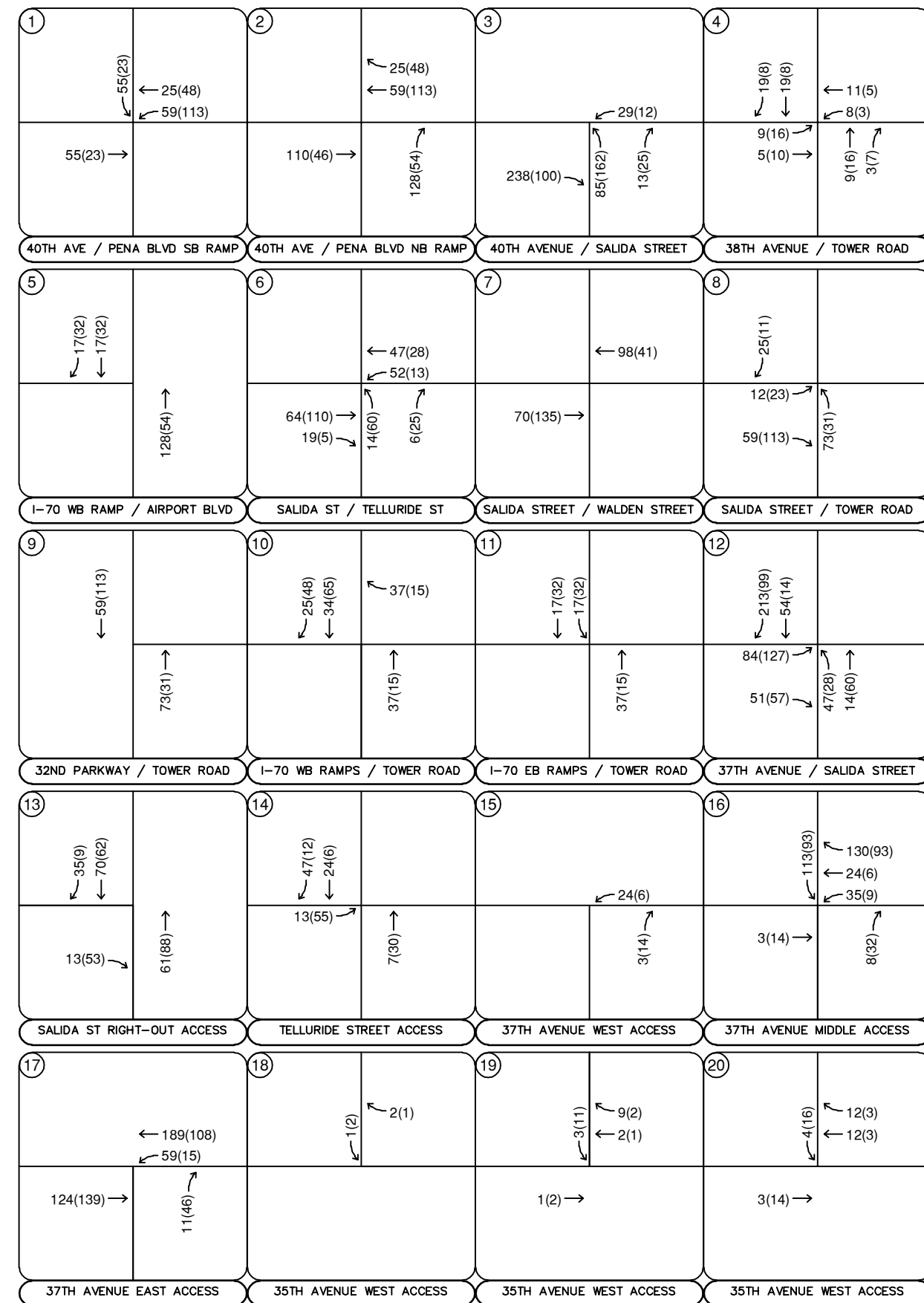
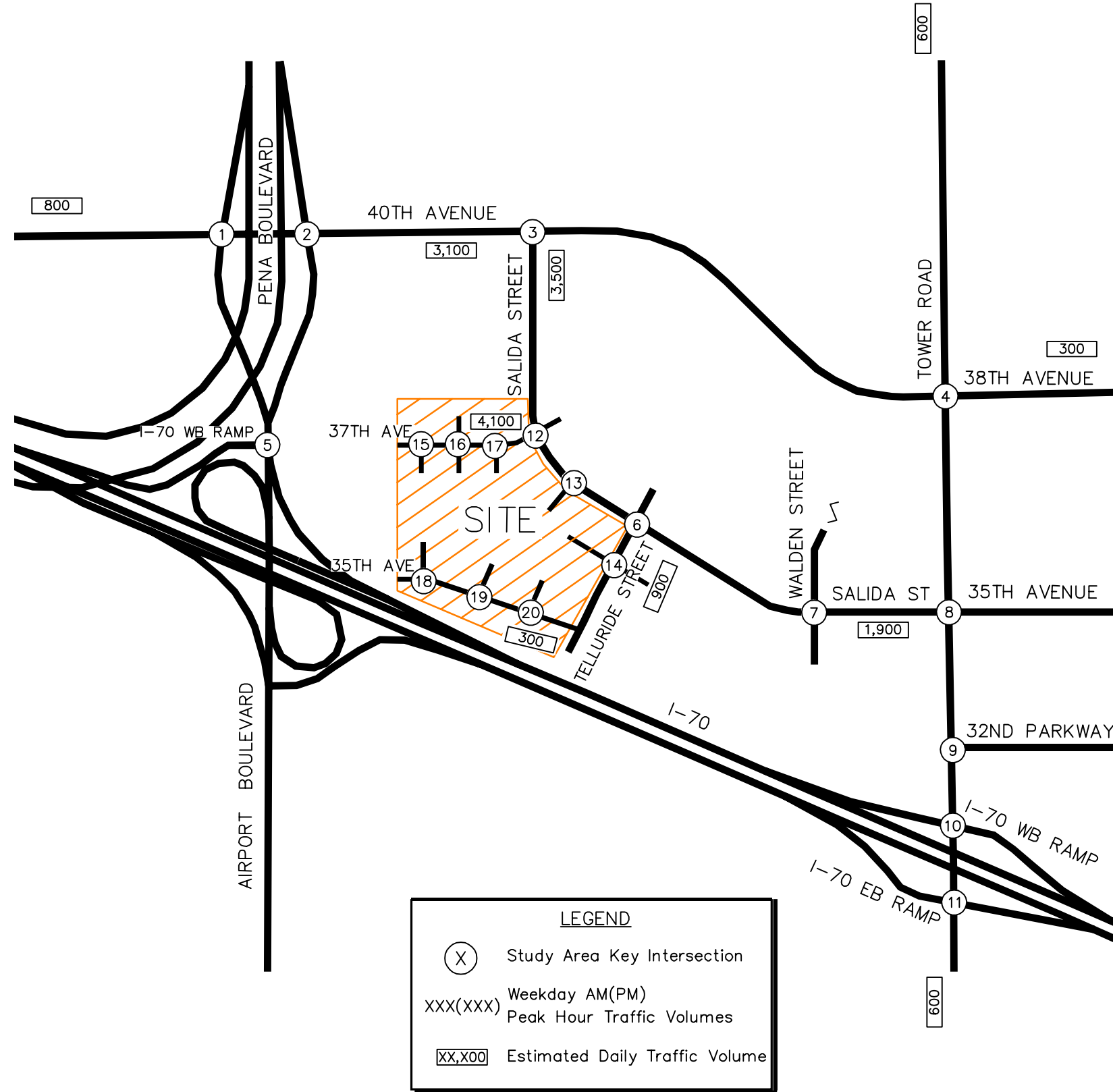
FIGURE 10

GATEWAY PARK — PARCEL TIC 2 — SALIDA STREET & TELLURIDE STREET
2040 SCENARIO 2 INDUSTRIAL PROJECT TRIP DISTRIBUTION



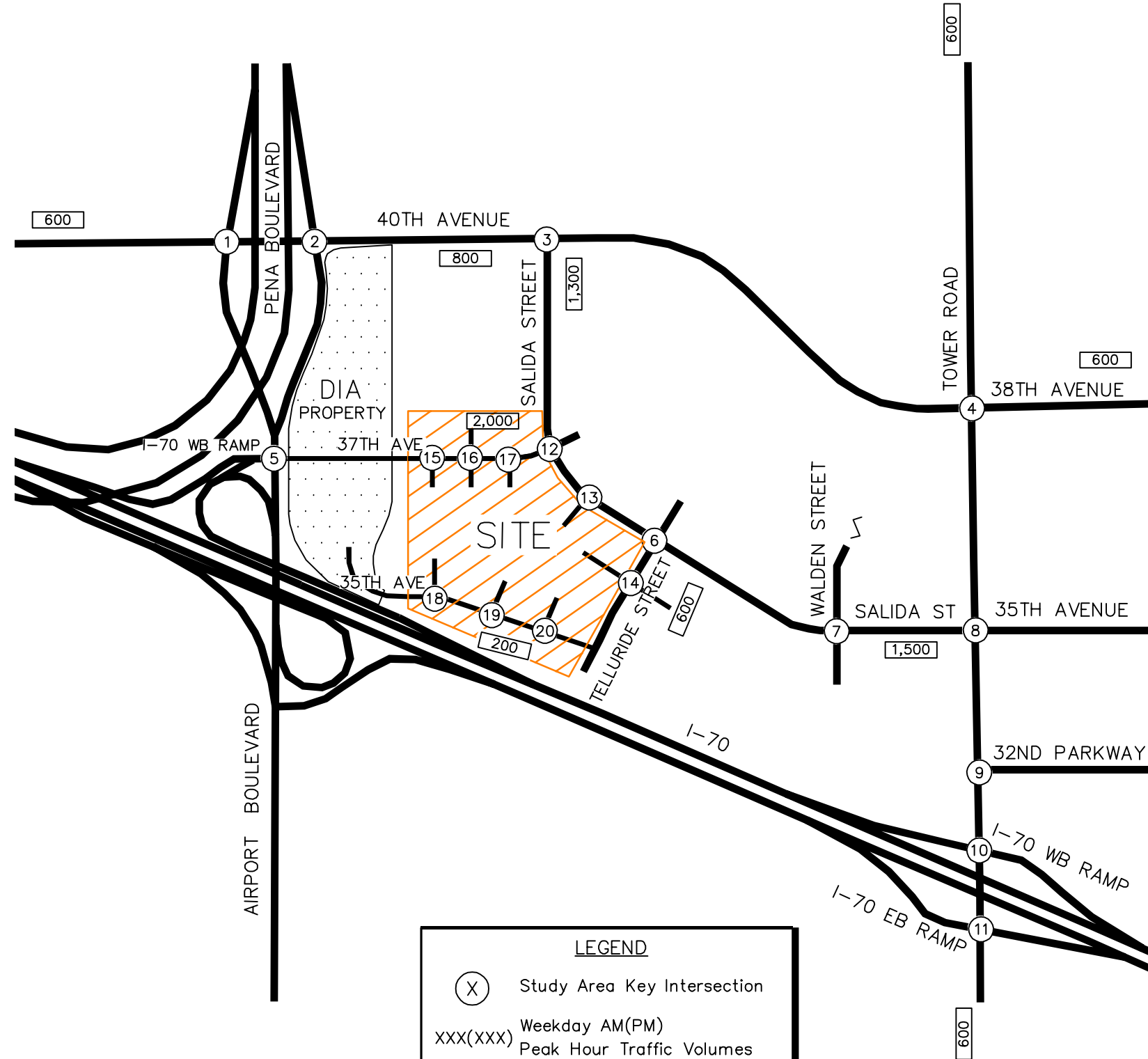
GATEWAY PARK — PARCEL TIC 2 — SALIDA STREET & TELLURIDE STREET
2040 SCENARIO 2 COMMERCIAL PROJECT TRIP DISTRIBUTION

FIGURE 11



GATEWAY PARK — PARCEL TIC 2 — SALIDA STREET & TELLURIDE STREET
2022 & 2040 SCENARIO 1 TRAFFIC ASSIGNMENT VOLUMES

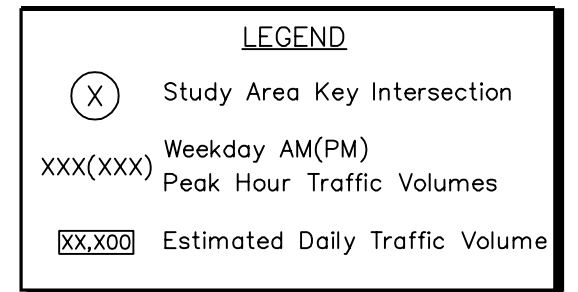
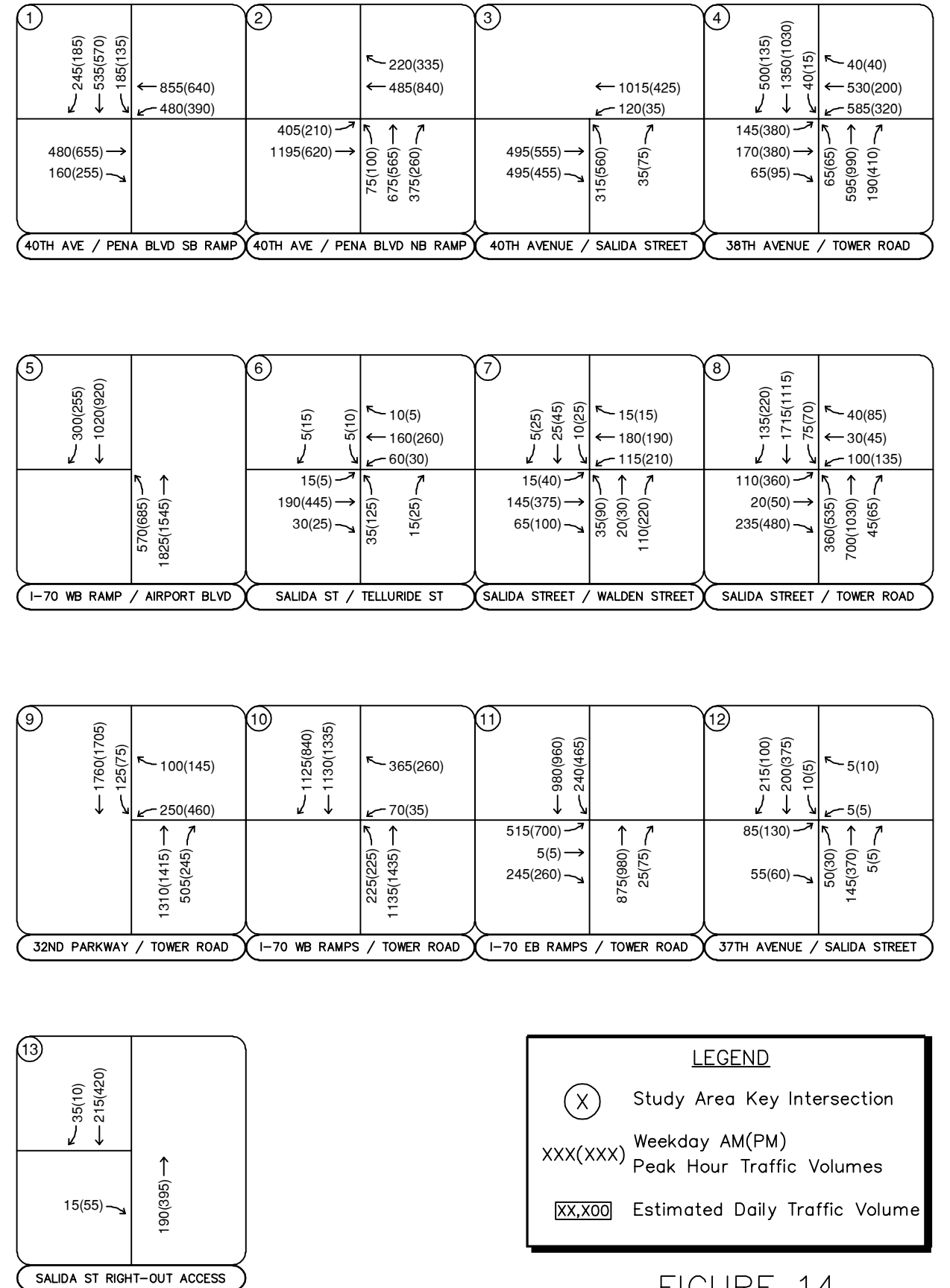
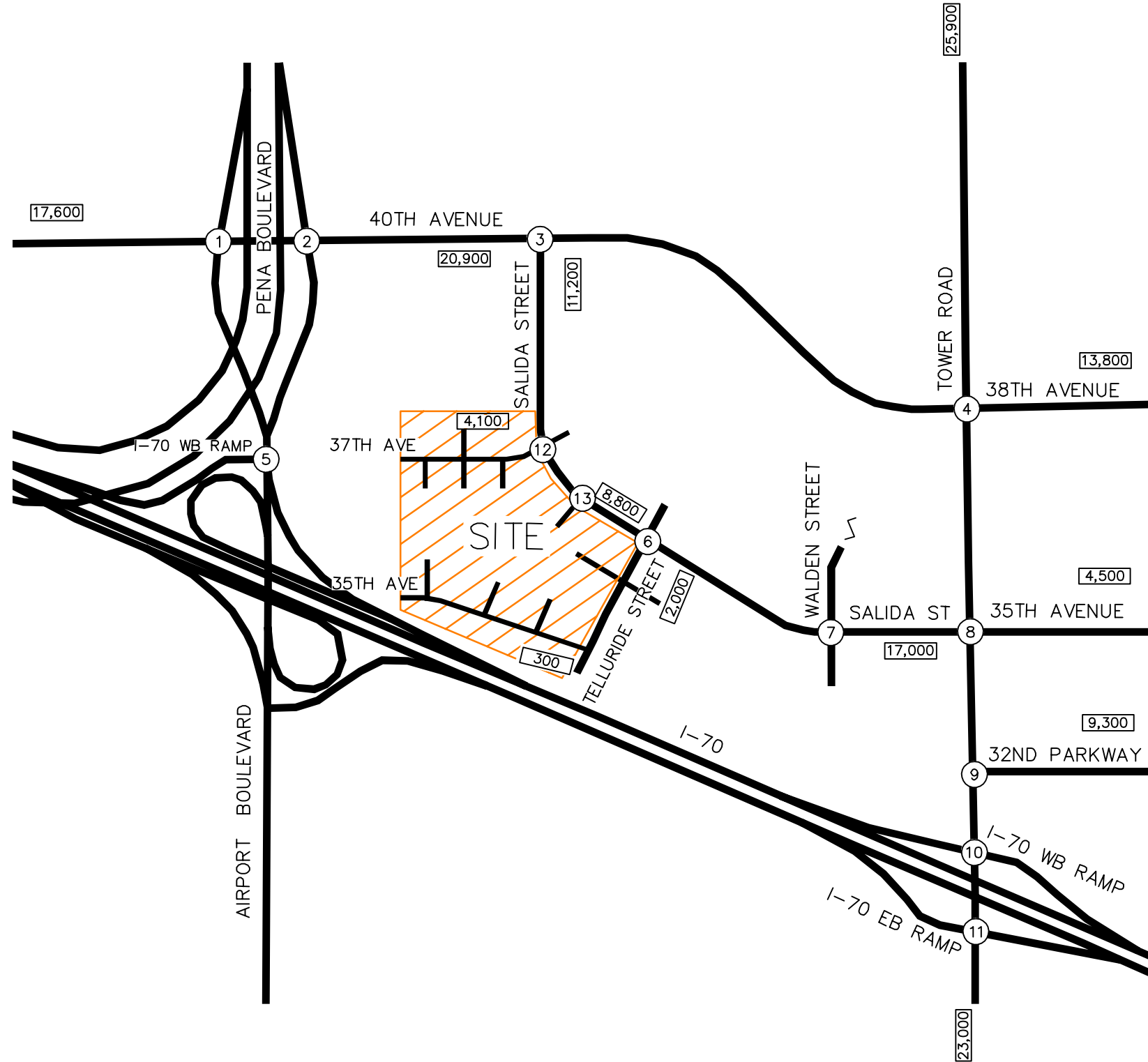
FIGURE 12



1 19(8) 17(32) 37(15)→	2 5(10) 17(32) 55(23)→ 12(23)↑	3 37(15) 55(23) 22(42) 17(32)↑	4 19(8) 19(8) 9(16) 9(16)→ 9(16)↑ 9(16)↑
40TH AVE / PENA BLVD SB RAMP	40TH AVE / PENA BLVD NB RAMP	40TH AVENUE / SALIDA STREET	38TH AVENUE / TOWER ROAD
5 19(8) 12(23) 51(97) 17(32) 19(8)→ 146(61)↑	6 45(26) 47(12) 45(74) 7(2) 7(27) 6(23)↑	7 92(38) 51(97)→	8 37(15) 17(32) 34(65) 55(23)↑
I-70 WB RAMP / AIRPORT BLVD	SALIDA ST / TELLURIDE ST	SALIDA STREET / WALDEN STREET	SALIDA STREET / TOWER ROAD
9 34(65) 55(23)↑	10 34(65) 19(8) 37(15)↑	11 17(32) 17(32) 37(15)↑	12 61(30) 24(6) 32(46) 38(46) 45(26)↑ 7(27)↑
32ND PARKWAY / TOWER ROAD	I-70 WB RAMPS / TOWER ROAD	I-70 EB RAMPS / TOWER ROAD	37TH AVENUE / SALIDA STREET
13 16(4) 45(48) 7(27) 52(53)↑	14 35(9) 19(5) 8(34) 4(16)↑	15 65(92) 7(2) 117(60) 54(14) 12(48) 2(7)↑	16 53(44) 60(49) 65(47) 10(16) 12(3) 65(47) 16(11) 38(10) 8(34) 4(16)↑
SALIDA ST RIGHT-OUT ACCESS	TELLURIDE STREET ACCESS	37TH AVENUE WEST ACCESS	37TH AVENUE MIDDLE ACCESS
17 84(52) 16(4) 66(72) 14(4) 3(14) 5(21)↑	18 2(7) 1(2) 5(1) 1(5) 7(2) 5(1)→	19 1(2) 1(5) 5(1) 6(3) 2(1) 3(3)→	20 1(2) 2(9) 9(2) 9(2) 2(1) 2(7)→
37TH AVENUE EAST ACCESS	35TH AVENUE WEST ACCESS	35TH AVENUE WEST ACCESS	35TH AVENUE WEST ACCESS

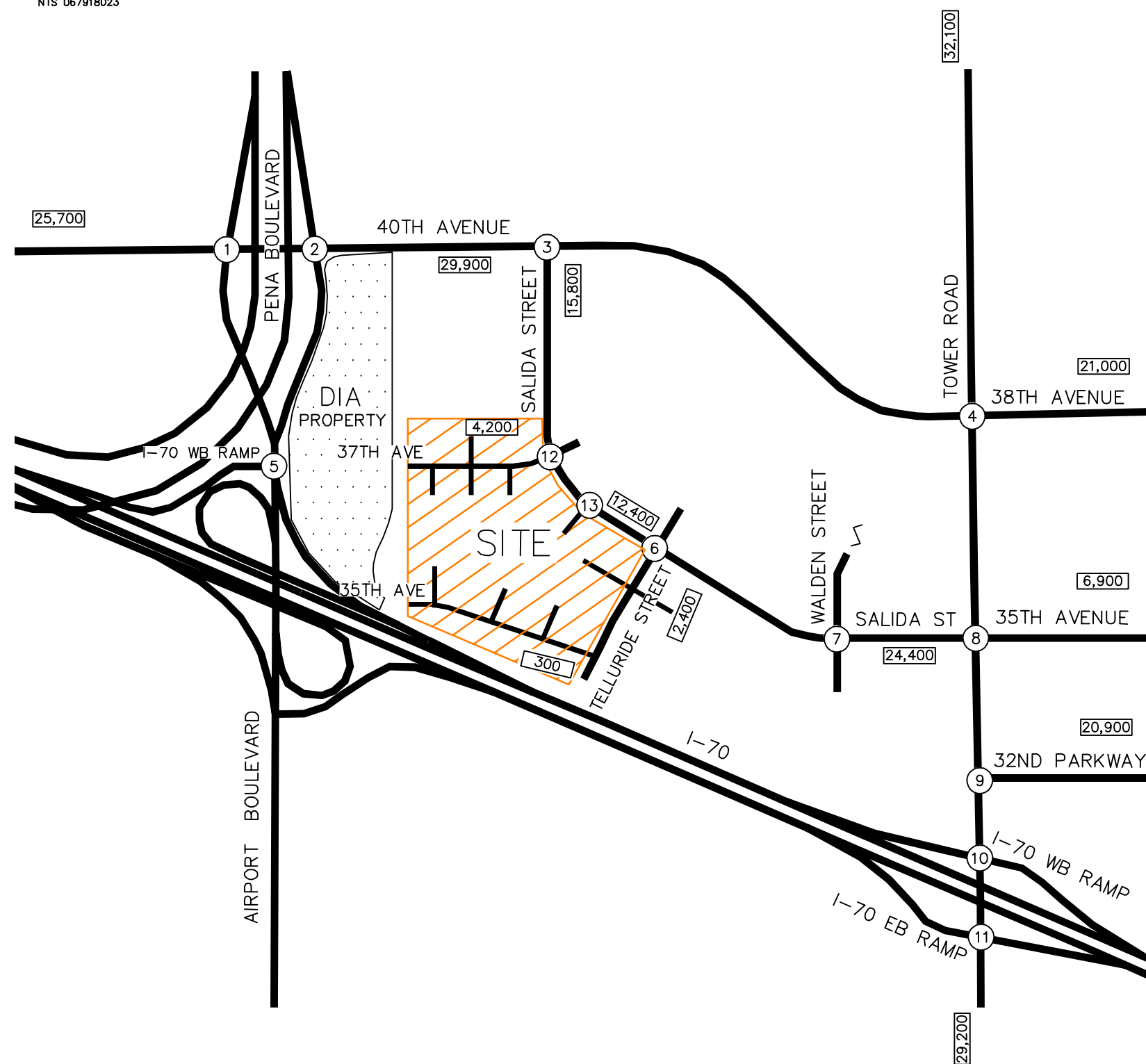
FIGURE 13

GATEWAY PARK — PARCEL TIC 2 — SALIDA STREET & TELLURIDE STREET
2040 SCENARIO 2 TRAFFIC ASSIGNMENT VOLUMES (AIRPORT BLVD CONNECTION)



GATEWAY PARK — PARCEL TIC 2 — SALIDA STREET & TELLURIDE STREET
2022 BACKGROUND PLUS PROJECT TRAFFIC VOLUMES

FIGURE 14



1 350(260) 760(815) 275(245) 1230(925) 685(550) 690(995) 230(365)	2 330(495) 710(1230) 580(295) 1730(990) 110(140) 965(810) 505(415)	3 1480(650) 175(75) 755(905) 600(625) 420(720) 50(105)	4 690(190) 1375(1330) 60(25) 60(60) 755(310) 875(505) 200(530) 250(550) 135(185) 120(155) 780(1075) 295(635)
40TH AVE / PENA BLVD SB RAMP	40TH AVE / PENA BLVD NB RAMP	40TH AVENUE / SALIDA STREET	38TH AVENUE / TOWER ROAD

5 435(380) 1460(1315) 810(980) 2575(2240)	6 5(15) 5(10) 10(5) 235(405) 60(35) 15(5) 270(635) 30(30) 40(155) 15(25)	7 5(35) 35(60) 15(35) 20(15) 235(300) 165(300) 20(55) 205(520) 90(145) 45(125) 30(45) 155(315)	8 180(310) 1985(1550) 115(105) 60(130) 40(70) 145(210) 150(500) 30(75) 335(675) 500(795) 975(1245) 85(100)
I-70 WB RAMP / AIRPORT BLVD	SALIDA ST / TELLURIDE ST	SALIDA STREET / WALDEN STREET	SALIDA STREET / TOWER ROAD

9 1900(2115) 335(295) 245(395) 495(790) 1760(1640) 980(605)	10 1445(1300) 1295(1895) 565(425) 100(50) 320(320) 1705(1845)	11 1060(1305) 360(715) 840(1085) 5(5) 350(370) 1250(1125) 40(105)	12 215(100) 285(570) 10(5) 5(10) 5(5) 85(130) 55(60) 50(30) 225(540) 5(5)
32ND PARKWAY / TOWER ROAD	I-70 WB RAMPS / TOWER ROAD	I-70 EB RAMPS / TOWER ROAD	37TH AVENUE / SALIDA STREET

13 35(10) 300(620) 15(55) 280(575)
SALIDA ST RIGHT-OUT ACCESS

LEGEND

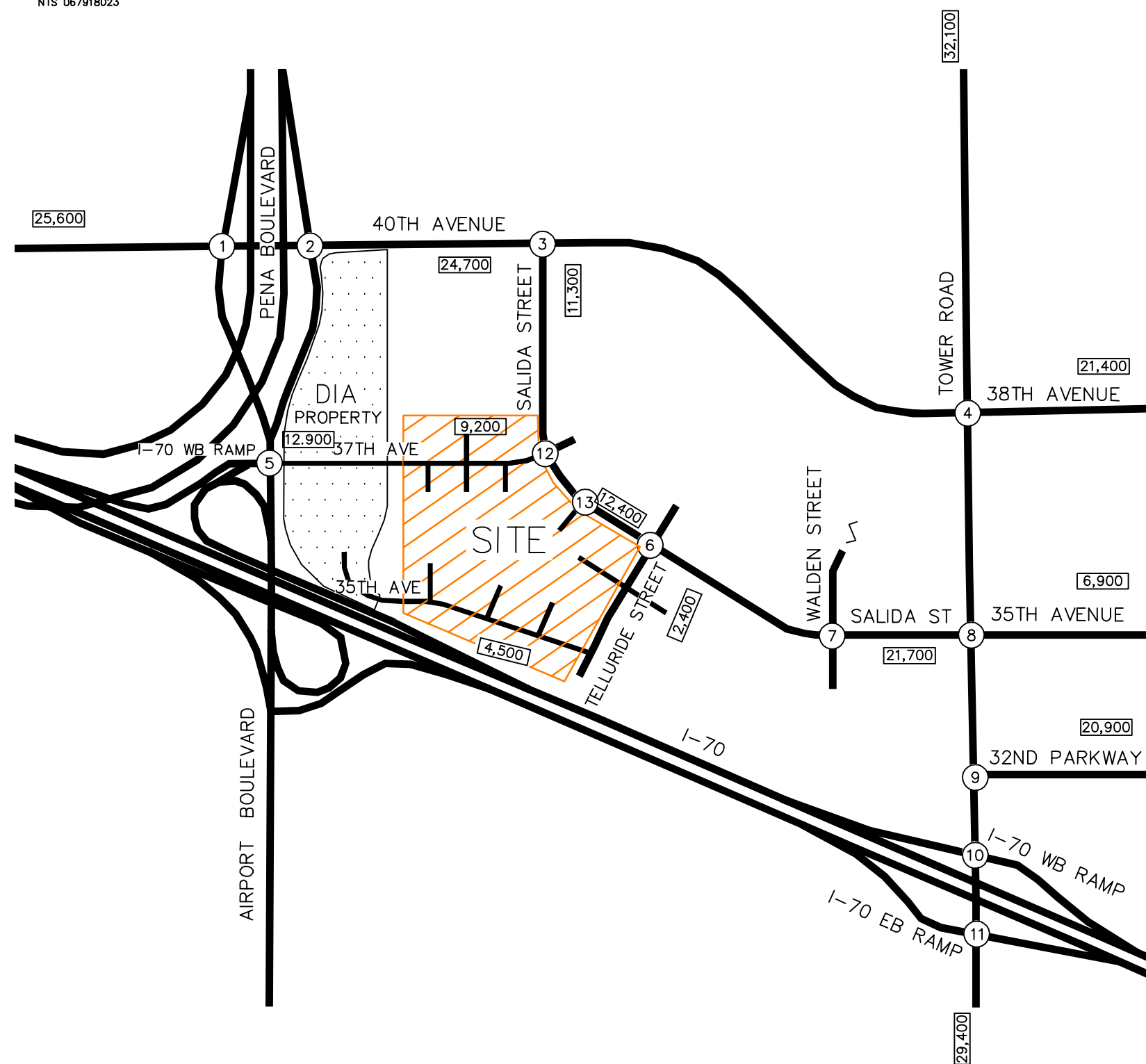
(X) Study Area Key Intersection

XXX(XXX) Weekday AM(PM)

Peak Hour Traffic Volumes

XX,X00 Estimated Daily Traffic Volume

GATEWAY PARK – PARCEL TIC 2 – SALIDA STREET & TELLURIDE STREET
2040 BACKGROUND PLUS PROJECT TRAFFIC VOLUMES (SCENARIO 1 – NO AIRPORT BLVD CONNECTION)



1 350(260) 830(835) 240(230) 1230(920) 540(265) 665(960) 290(400)	2 300(430) 570(950) 580(295) 1665(940) 125(195) 995(885) 270(245)	3 1480(650) 200(80) 760(935) 325(415) 275(460) 65(150)	4 690(190) 1375(1330) 60(25) 60(60) 770(320) 885(510) 200(530) 265(575) 135(185) 120(155) 780(1075) 300(645)
40TH AVE / PENA BLVD SB RAMP	40TH AVE / PENA BLVD NB RAMP	40TH AVENUE / SALIDA STREET	38TH AVENUE / TOWER ROAD

5 420(400) 1440(1320) 100(50) 60(145) 210(505) 90(195) 345(75) 80(55) 810(980) 2210(1990) 510(360)	6 5(15) 5(10) 10(5) 305(420) 75(40) 15(5) 260(650) 20(30) 35(125) 20(50) 35(125)	7 5(35) 35(60) 15(35) 20(15) 325(315) 165(300) 20(55) 205(555) 90(145) 45(125) 30(45) 155(315)	8 270(325) 1985(1550) 115(105) 60(130) 40(70) 145(210) 160(545) 30(75) 255(525) 400(610) 975(1245) 85(100)
I-70 WB RAMP / AIRPORT BLVD	SALIDA ST / TELLURIDE ST	SALIDA STREET / WALDEN STREET	SALIDA STREET / TOWER ROAD

9 1820(1965) 335(295) 245(395) 495(790) 1660(1455) 980(605)	10 1370(1150) 1290(1895) 540(390) 100(50) 320(320) 1710(1845)	11 1060(1315) 355(705) 760(940) 5(5) 350(370) 1255(1130) 40(105)	12 115(105) 255(565) 10(5) 5(10) 5(5) 5(5) 90(165) 5(5) 185(335) 235(250) 220(510) 5(5)
32ND PARKWAY / TOWER ROAD	I-70 WB RAMPS / TOWER ROAD	I-70 EB RAMPS / TOWER ROAD	37TH AVENUE / SALIDA STREET

13 20(5) 285(655) 10(30) 345(555)
SALIDA ST RIGHT-OUT ACCESS

LEGEND

(X) Study Area Key Intersection

XXX(XXX) Weekday AM(PM)

Peak Hour Traffic Volumes

XX,X00 Estimated Daily Traffic Volume

GATEWAY PARK — PARCEL TIC 2 — SALIDA STREET & TELLURIDE STREET
2040 BACKGROUND PLUS PROJECT TRAFFIC VOLUMES (SCENARIO 2 — WITH AIRPORT BLVD CONNECTION)

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 2022 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). Typical standard traffic engineering practice recommends intersection LOS D for signalized intersections and LOS E for movements or approaches of unsignalized intersections 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 LOS for a two-way stop-controlled intersection is determined by the computed or measured control delay and is defined for each minor movement. LOS for a two-way stop-controlled intersection is not defined for the

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

intersection as a whole. LOS for a signalized and all-way stop controlled intersection is defined for each approach and for the overall intersection.

5.2 Key Intersection Operational Analysis

Calculations for the level of service at the key intersections 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**. The City of Aurora previously provided Kimley-Horn with SEPAC signal timings for most of the signalized intersections in the study area. These signal timings were utilized in the existing conditions analysis while optimized splits may have been utilized in the horizon year analyses. It should be noted that several left turn phasing changes have been implemented since the SEPAC signal timings were provided.

Based on national attention given on appropriate yellow and all-red clearance intervals to improve intersection safety, these have been calculated and are applied for the approaches to the signalized intersections that do not have SEPAC timing information or had new left turn phasing operations. The increase in the yellow and all red time sacrifices intersection capacity for improved safety. Existing peak hour factors were used for the existing and 2022 conditions, and the recommended HCM urban area peak hour factor of 0.92 was used for the 2040 analysis. Synchro traffic analysis software was used to analyze the study area intersections and access drives for level of service. The Synchro Highway Capacity Manual (HCM) methodology reports were used to analyze intersection delay and level of service.

For this Project two different alternatives were analyzed. The first alternative, Scenario 1, does not include the DIA property and is comprised of the existing lane configuration and intersection control. The second alternative, Scenario 2, includes the DIA property while evaluating the extension of proposed 37th Avenue from Salida Street to Airport Boulevard creating a four-leg intersection at 37th Avenue/I-70 Westbound Ramps and Airport Boulevard intersection. Also, under Scenario 2, 35th Avenue will be extended west of the proposed development and provide a connection for the DIA property to the west. Scenario 2 was only evaluated for the 2040 condition which includes to the DIA property.

40th Avenue and Pena Boulevard Southbound Ramp/Airport Boulevard

40th Avenue and Pena Boulevard Southbound Ramps is a four-leg signalized intersection which operates with protected/permissive left turn phasing on the westbound approach. This intersection currently operates with LOS C or better during the morning peak hour and the afternoon peak hour under the existing lane configuration and signal control. Prior to the addition of Project traffic, this intersection is anticipated to operate acceptably with LOS C during both the morning and afternoon peak hours throughout the 2040 horizon. Based on queuing issues, dual westbound left turn lanes are recommended at this intersection to operate with protected only left turn phasing. This improvement is recommended within one year of Project completion. With this improvement, the intersection is anticipated to operate at LOS D or better during both the morning and afternoon peak hours throughout the 2040 horizon for either studied street network scenario. **Table 3** provides the results of the level of service at this intersection.

Table 3 – 40th Ave and Pena Blvd SB Ramp/Airport Blvd LOS Results

Scenario	AM Peak Hour		PM Peak Hour	
	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS
2020 Existing	17.1	B	20.1	C
2022 Background	18.1	B	20.1	C
2022 Background Plus Project #	25.4	C	26.0	C
2040 Background #	25.8	C	34.3	C
2040 Background Plus Project – Scenario 1 #	24.9	C	35.5	D
2040 Background Plus Project – Scenario 2 #	25.0	C	26.3	C

Includes Westbound Dual Left Turn Lanes

40th Avenue and Pena Boulevard Northbound Ramps

40th Avenue and Pena Boulevard Northbound Ramps is a four-leg signalized intersection which operates with protected/permissive left turn phasing on the eastbound approach. This intersection currently operates with LOS B during the morning and afternoon peak hours under the existing lane configuration and signal control. Prior to the addition of Project traffic, the intersection is anticipated to operate acceptably with LOS C during both the morning and afternoon peak hours throughout the 2040 horizon. However, eastbound left turn queue issues currently exist at this intersection and it should be noted that this Project does not contribute to this movement. Therefore, eastbound dual left turn lanes operating with protected only phasing are recommended for future consideration. With this improvement, the intersection is expected to operate at LOS C throughout the 2040 horizon. **Table 4** provides the results of the level of service at this intersection.

Table 4 – 40th Avenue and Pena Boulevard Northbound Ramps LOS Results

Scenario	AM Peak Hour		PM Peak Hour	
	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS
2020 Existing	17.5	B	19.9	B
2022 Background	17.4	B	19.7	B
2022 Background Plus Project #	22.2	C	17.6	B
2040 Background #	30.6	C	28.5	C
2040 Background Plus Project – Scenario 1 #	23.7	C	28.4	C
2040 Background Plus Project – Scenario 2 #	23.3	C	27.1	C

Includes Eastbound Dual Left Turn Lanes – not required by this Project

40th Avenue and Salida Street

40th Avenue and Salida Street is a signalized T-intersection which operates with protected/permissive left turn phasing on the westbound approach. This intersection currently operates with LOS B or better during the morning peak hour and the afternoon peak hour under the existing lane configuration and signal control. With or without the completion of the proposed development, the intersection is anticipated to operate acceptably with LOS C or better during both the morning and afternoon peak hours throughout the 2040 horizon. **Table 5** provides the results of the level of service at this intersection. This intersection is anticipated to become a four-legged signal controlled intersection when the currently vacant property to the north is developed.

Table 5 – 40th Avenue and Salida Street LOS Results

Scenario	AM Peak Hour		PM Peak Hour	
	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS
2020 Existing	8.8	A	15.2	B
2022 Background	9.2	A	16.3	B
2022 Background Plus Project	11.5	A	21.3	C
2040 Background	11.5	B	20.3	C
2040 Background Plus Project – Scenario 1	14.7	B	28.2	C
2040 Background Plus Project – Scenario 2	10.1	B	17.6	B

38th Avenue and Tower Road

38th Avenue and Tower Road is a four-leg signalized intersection which operates with protected/permmissive left turn phasing on all approaches. This intersection currently operates with LOS E during the morning peak hour, and LOS D during the afternoon peak hour under the existing lane configuration and signal control. With or without the completion of the Project, the intersection is anticipated to operate with LOS E during both the morning and afternoon peak hours in the 2022 horizon. Dual westbound left turn lanes are currently needed at this intersection, but this improvement is not possible until the property on the southeast corner of the intersection develops. **It should be noted that project traffic does not contribute to the need for these dual left turn lanes.** With the addition of dual westbound left turn lanes, this intersection is anticipated to operate acceptably during the 2022 project buildout with LOS D during the morning and afternoon peak hours. By 2040, the intersection of 38th Avenue and Tower Road is anticipated to operate poorly with LOS F during the morning and afternoon peak hours. To mitigate the long vehicle delays at this intersection in 2040 and independent of this project, constructing dual eastbound left turn lanes, an additional eastbound and northbound through lane, as well as northbound and southbound right turn lanes would all be needed for acceptable operations. Additionally, implementing overlap right turn phasing on the northbound and southbound approaches of this intersection should be considered by 2040. With these improvements, this intersection is expected to operate acceptably with LOS D during the morning and afternoon peak hours for both Scenario 1 and Scenario 2. **Table 6** provides the results of the level of service at this intersection.

Table 6 – 38th Avenue and Tower Road LOS Results

Scenario	AM Peak Hour		PM Peak Hour	
	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS
2020 Existing	60.5	E	53.5	D
2022 Background	72.3	E	60.8	E
2022 Background Plus Project	77.3	E	64.5	E
2022 Background Plus Project #	46.4	D	54.9	D
2040 Background #	85.7	F	115.3	F
2040 Total Traffic – Scenario 1 ##	54.1	D	47.8	D
2040 Total Traffic – Scenario 2 ##	53.5	D	41.8	D

= Dual Westbound Left Turn Lanes

= Dual Eastbound Left Turn Lanes, Change Eastbound Right Turn Lane to Shared Eastbound Through/Right Turn Lane, Northbound Through Lane, Northbound Right Turn Lane, Southbound Right Turn Lane, Permissive/Overlap Phasing on Northbound and Southbound Right Turn Lanes

I-70 Westbound Ramps and Airport Boulevard

I-70 Westbound Ramps and Airport Boulevard is a signalized T-intersection which operates with protected left turn phasing on the northbound approach. This intersection currently operates with LOS B or better during the morning and afternoon peak hours under the existing lane configuration and signal control. For Scenario 1, the intersection is anticipated to operate acceptably with LOS A during both the morning and afternoon peak hours throughout the 2040 horizon. Scenario 2 provides a connection from Salida Street to Airport Boulevard along 37th Avenue. Along with the new 37th Avenue connection on the east leg of this intersection, the I-70 Westbound Off Ramp to northbound Airport Boulevard will be reconstructed to tie in with the I-70 Westbound On-Ramp. It should be noted that the new east leg of this intersection is not needed for this Project and is only needed if the DIA property is developed. If Scenario 2 is implemented, the intersection is anticipated to operate at LOS D during the morning and afternoon peak hour. **Table 7** provides the results of the level of service at this intersection.

Table 7 – I-70 Westbound Ramps and Airport Boulevard LOS Results

Scenario	AM Peak Hour		PM Peak Hour	
	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS
2020 Existing	8.9	A	10.5	B
2022 Background	8.6	A	10.3	B
2022 Background Plus Project	8.2	A	10.1	B
2040 Background	7.9	A	9.3	A
2040 Background Plus Project – Scenario 1	7.7	A	9.1	A
2040 Background Plus Project – Scenario 2 #	41.5	D	31.5	D

= Four Leg Intersection: Dual Eastbound Lefts, Eastbound Through, Westbound Left, Westbound Through, Westbound Right, Northbound Right, and Southbound Left

Salida Street and Telluride Street

Salida Street and Telluride Street is an unsignalized T-intersection which operates with stop control on the northbound approach. The movements at this intersection currently operate with LOS B or better during the morning and afternoon peak hours under the existing lane configuration and control. By 2022, it is anticipated that a southbound approach will be constructed for the access of the Salida Flex development. With or without the completion of the Project, the movements at this intersection are anticipated to operate acceptably with LOS C or better during both the morning and afternoon peak hours throughout the 2022 horizon. With the construction of the southbound approach, all movements at this intersection are anticipated to operate acceptably with all legs other than the northbound left (LOS D) operating at LOS C or better during the peak hours as an unsignalized intersection during the 2040 condition. **Table 8** provides the results of the level of service at this intersection.

Table 8 – Salida Street and Telluride Street LOS Results

Scenario	AM Peak Hour		PM Peak Hour	
	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS
2020 Existing				
Northbound Left	10.0	B	13.1	B
Northbound Right	8.7	A	0.0	A
Westbound Left	7.5	A	8.2	A
2022 Background*				
Northbound Left	10.6	B	14.5	B
Northbound Through/Right	8.8	A	0.0	A
Eastbound Left	7.6	A	7.8	A
Westbound Left	7.5	A	8.2	A
Southbound Left	10.8	B	13.5	B
Southbound Through/Right	8.8	A	9.1	A
2022 Background Plus Project*				
Northbound Left	13.2	B	22.4	C
Northbound Through/Right	9.2	A	10.2	B
Eastbound Left	7.8	A	7.9	A
Westbound Left	7.9	A	8.8	A
Southbound Left	14.1	B	16.7	C
Southbound Through/Right	9.0	A	9.2	A
2040 Background*				
Northbound Left	11.3	B	19.2	C
Northbound Through/Right	9.0	A	0.0	A
Eastbound Left	7.7	A	8.2	A
Westbound Left	7.7	A	8.8	A
Southbound Left	11.5	B	17.8	C
Southbound Through/Right	8.9	A	9.6	A
2040 Background Plus Project – Scenario 1*				
Northbound Left	13.5	B	32.5	D
Northbound Through/Right	9.3	A	10.9	B
Eastbound Left	7.8	A	8.3	A
Westbound Left	8.1	A	9.3	A
Southbound Left	14.6	B	21.8	C
Southbound Through/Right	9.1	A	9.7	A
2040 Background Plus Project – Scenario 2*				
Northbound Left	14.1	B	28.8	D
Northbound Through/Right	9.2	A	11.3	B
Eastbound Left	8.0	A	8.3	A
Westbound Left	8.1	A	9.4	A
Southbound Left	16.7	C	23.9	C
Southbound Through/Right	9.3	A	9.8	A

* = Southbound Approach from proposed Salida Flex access

Salida Street and Walden Street

Salida Street and Walden Street is a four-leg unsignalized intersection which operates with stop control on the northbound and southbound approaches. The movements at this intersection currently operate with LOS E or better during the morning and afternoon peak hours under the existing lane configuration and control. With or without completion of the proposed development, all movements at this intersection are anticipated to operate acceptably with LOS D or better during both the morning and afternoon peak hours with exception of the northbound left turn/through movement that is projected to operate at LOS F during the afternoon peak hour. Therefore, this intersection was evaluated for a traffic signal. Based on projected traffic volumes for the morning and afternoon peak hours without actual counts being able to be performed, it looks like this intersection may not meet signal warrants in 2022. The four-hour signal warrant figure for this intersection is attached in **Appendix E**. Because it is likely that this intersection will meet signal warrants within a few years of Project completion and because a Signal Phasing Agreement exists for this intersection, it was also evaluated with signalized control. With signal control, the intersection is expected to operate acceptably with LOS C or better during the morning and afternoon peak hours with or without the addition of project traffic through 2040. **Table 9** provides the results of the level of service at this intersection.

Table 9 – Salida Street and Walden Street LOS Results

Scenario	AM Peak Hour		PM Peak Hour	
	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS
2020 Existing				
Northbound Left/Through	16.6	C	40.6	E
Northbound Right	9.4	A	11.7	B
Eastbound Left	7.4	A	7.7	A
Westbound Left	7.9	A	9.0	A
Southbound Left	14.0	B	27.2	D
Southbound Through/Right	13.6	B	20.4	C
2022 Background				
Northbound Left/Through	18.4	C	53.2	F
Northbound Right	9.5	A	12.1	B
Eastbound Left	7.5	A	7.7	A
Westbound Left	8.0	A	9.2	A
Southbound Left	14.8	B	32.1	D
Southbound Through/Right	14.3	B	24.0	C
2022 Background Plus Project				
Northbound Left/Through	22.7	C	89.2	F
Northbound Right	9.9	A	13.7	B
Eastbound Left	7.9	A	7.8	A
Westbound Left	8.3	A	10.1	B
Southbound Left	17.4	C	56.3	F
Southbound Through/Right	16.9	C	36.4	D
2022 Background Plus Project #	18.3	B	20.4	C
2040 Background #	29.1	C	23.6	C
2040 Background Plus Project – Scenario 1 #	29.3	C	23.1	C
2040 Background Plus Project – Scenario 2 #	29.8	C	23.1	C

= Signalization

Salida Street and Tower Road

Salida Street and Tower Road is a four-leg signalized intersection which operates with protected/permissive left turn phasing on the eastbound, westbound, and southbound approaches. This intersection currently operates with LOS C during the morning and afternoon peak hours under the existing lane configuration and signal control. With or without the completion of the Project and due to the ULTRA CONSERVATIVE BACKGROUND APPROACH TAKEN FOR THIS STUDY the intersection is anticipated to operate acceptably with LOS D or better during both the morning and afternoon peak hours throughout the 2022 horizon. Due to non-Project driven queuing issues, dual left turn lanes are recommended within one year of the completion of the Project on the eastbound approach to operate with protected only left turn phasing. Likewise, the eastbound right turn is recommended to operate with protected overlap phasing. If these eastbound left improvements are implemented, in 2040, the intersection is anticipated to operate at LOS C during the morning peak hour and LOS D during the afternoon peak hour. **Table 10** provides the results of the level of service at this intersection.

Table 10 – Salida Street and Tower Road LOS Results

Scenario	AM Peak Hour		PM Peak Hour	
	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS
2020 Existing	30.3	C	34.8	C
2022 Background	31.9	C	37.0	D
2022 Background Plus Project #	39.1	D	40.8	D
2040 Background #	29.0	C	45.7	D
2040 Background Plus Project – Scenario 1 #	34.0	C	52.0	D
2040 Background Plus Project – Scenario 2 #	33.3	C	41.1	D

= Dual Eastbound Lefts and EB Right Turn Protected/Overlap Phasing

32nd Parkway and Tower Road

32nd Parkway and Tower Road is a signalized T-intersection which operates with a protected/permissive southbound left turn. This intersection currently operates with LOS A during the morning peak hour and LOS B during the afternoon peak hour. With or without the completion of the proposed development, the intersection is anticipated to operate acceptably with LOS D or better during both the morning and LOS C or better in the afternoon peak hours throughout the 2040 horizon with the existing intersection configuration and control. **Table 11** provides the results of the level of service at this intersection.

Table 11 – 32nd Parkway and Tower Road LOS Results

Scenario	AM Peak Hour		PM Peak Hour	
	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS
2020 Existing	5.6	A	13.9	B
2022 Background	6.1	A	16.7	B
2022 Background Plus Project	5.9	A	16.8	B
2040 Background	45.2	D	32.5	C
2040 Background Plus Project – Scenario 1	45.6	D	32.1	C
2040 Background Plus Project – Scenario 2	52.6	D	20.7	C

I-70 Westbound Ramps and Tower Road

I-70 Westbound Ramps and Tower Road is a four-leg signalized intersection which operates with protected left turn phasing on the northbound approach. This intersection currently operates with LOS B during the morning peak hour and LOS A during the afternoon peak hour. With or without the completion of the proposed development, the intersection is anticipated to operate acceptably with LOS D during both the morning and afternoon peak hours throughout the 2040 horizon under the existing lane configuration and signal control. **Table 12** provides the results of the level of service at this intersection.

Table 12 – I-70 Westbound Ramps and Tower Road LOS Results

Scenario	AM Peak Hour		PM Peak Hour	
	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS
2020 Existing	15.2	B	9.5	A
2022 Background	17.3	B	9.6	A
2022 Background Plus Project	22.1	C	10.1	B
2040 Background	36.5	D	41.8	D
2040 Background Plus Project – Scenario 1	43.7	D	50.1	D
2040 Background Plus Project – Scenario 2	40.7	D	44.8	D

I-70 Eastbound Ramps and Tower Road

The I-70 Eastbound Ramps and Tower Road intersection is signalized which operates with protected/permissive left turn phasing on the southbound approach. This intersection currently operates with LOS B during the morning peak hour and LOS C during the afternoon peak hour. With or without the addition of Project traffic in 2022, this intersection is anticipated to continue to operate acceptably at LOS B during the morning peak hour and LOS C during the afternoon peak hour under the existing lane configuration and signal control. By 2040, the intersection may operate at LOS E with or without the addition of project traffic during the afternoon peak hour. Therefore, southbound dual left turn lanes could be considered in order to provide acceptable operations in 2040 if future traffic volume projections are realized. Likewise, these dual left turn lanes would require two receiving lanes on the eastbound on-ramp to I-70. However, the future interchange at I-70 and Picadilly Road will likely reduce traffic volumes at this intersection and interchange in the future. Therefore, this is recommended for further study in the future after the Picadilly Road interchange is constructed to determine if this improvement need will still exist. With the unadjusted future volumes and southbound dual left turn lanes, the intersection is anticipated to operate acceptably at LOS C during the morning and afternoon peak hours in 2040. **Table 13** provides the results of the level of service at this intersection.

Table 13 – I-70 Eastbound Ramps and Tower Road LOS Results

Scenario	AM Peak Hour		PM Peak Hour	
	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS
2020 Existing	13.5	B	20.2	C
2022 Background	14.9	B	22.1	C
2022 Background Plus Project	15.0	B	22.8	C
2040 Background	23.1	C	58.0	E
2040 Background Plus Project – Scenario 1 #	25.2	C	33.1	C
2040 Background Plus Project – Scenario 2 #	23.9	C	32.2	C

= Dual Southbound Left Turn Lanes

37th Avenue and Salida Street

Traffic volumes from the Project when combined with background and full development of the DIA property indicate that 37th Avenue should be a three-lane collector section. The proposed intersection of 37th Avenue and Salida Street is anticipated to be an unsignalized intersection which will operate with stop control on the eastbound 37th Avenue approach. It is anticipated that a westbound approach will be constructed by 2022 for access of the Salida Flex development. The eastbound 37th Avenue approach is recommended to have a R1-1 “STOP” sign installed. The movements at this intersection are anticipated to operate acceptably with LOS C or better during the morning and afternoon peak hours during the 2022 horizon.

Without development of the DIA property and a connection to Airport Boulevard, all movements at this intersection are still anticipated to operate acceptably with LOS D or better during the morning and afternoon peak hours in 2040 as an unsignalized intersection. However, with development of the DIA property, the eastbound and westbound left turn movements are expected to experience long delays during the afternoon peak hour in 2040. Therefore, a traffic signal may be needed at this intersection based on the level of development of the DIA property. It is recommended that a study update be provided based at the time of actual DIA property development. **Table 14** provides the results of the level of service at this intersection.

Table 14 – 37th Avenue and Salida Street Access LOS Results

Scenario	AM Peak Hour		PM Peak Hour	
	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS
2022 Background				
Westbound Left	10.1	B	12.8	B
Westbound Right	8.7	A	9.3	A
Southbound Left	7.5	A	8.0	A
2022 Background Plus Project				
Northbound Left	8.4	A	8.6	A
Eastbound Left	16.6	C	18.9	C
Eastbound Through/Right	10.0	B	10.3	B
Westbound Left	12.7	B	14.1	B
Westbound Through/Right	8.8	A	9.5	A
Southbound Left	7.6	A	8.2	A
2040 Background				
Westbound Left	11.6	B	19.3	C
Westbound Through/Right	9.0	A	10.0	B
Southbound Left	7.7	A	8.5	A
2040 Background Plus Project – Scenario 1				
Northbound Left	8.7	A	9.3	A
Eastbound Left	16.2	C	28.8	D
Eastbound Through/Right	10.4	B	11.4	B
Westbound Left	12.9	B	17.5	C
Westbound Through/Right	9.0	A	10.2	B
Southbound Left	7.8	A	8.7	A
2040 Background Plus Project – Scenario 2 #				
Northbound Left	9.0	A	11.0	B
Eastbound Left	29.3	D	243.4	F
Eastbound Through/Right	11.5	B	20.0	C
Westbound Left	22.9	C	V>C	F
Westbound Through/Right	15.7	C	21.5	C
Southbound Left	7.8	A	8.6	A

#full development of the DIA property and connection of 37th Avenue to Airport Boulevard

Salida Street Right-In/Right-Out Access

The access along Salida Street is proposed to be restricted to right-in/right-out movements. The exiting eastbound access drive is recommended to have a R1-1 “STOP” sign installed. A R3-2 No Left Turn Sign should be installed underneath the “STOP” sign and a R6-1(R) “ONE WAY” sign should be located within the raised median to identify the restriction to right turn exiting movements from the driveway. The eastbound approach at this intersection operates acceptably at LOS B or better during the morning and afternoon peak hours during all future conditions. **Table 15** provides the results of the level of service at this intersection.

Table 15 – Salida Street Right-In/Right-Out Access LOS Results

Scenario	AM Peak Hour		PM Peak Hour	
	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS
2022 Background Plus Project Eastbound Right	9.1	A	10.1	B
2040 Background Plus Project – Scenario 1 Eastbound Right	9.4	A	11.1	B
2040 Background Plus Project – Scenario 2 Eastbound Right	9.3	A	10.9	B

5.3 Right Turn Lane Requirement Analysis

The City of Aurora has directed Kimley-Horn to use the Colorado Department of Transportation (CDOT) State Highway Access Code (SHAC) guidelines to determine if turn lanes are warranted for access into the project accesses. CDOT classifies their state highways based on roadway types. The Non-Rural Arterial Category NR-C (low to moderate travel speeds and moderate volumes) was assigned to Salida Street based on matching the characteristics of the CDOT roadways.

According to the State Highway Access Code for category NR-C roadways, a right turn lane with storage length plus taper is required for any access with a projected peak hour right ingress turning volume greater than 50 vehicles per hour (vph). If the posted speed limit is greater than 40 miles per hour, a right turn lane deceleration lane and taper is required for any access with a project peak hour right ingress turning volume greater than 25 vehicles per hour.

Salida Street currently has a posted speed limit of 40 miles per hour within the project limits. Based on the current speed limits and 2040 traffic volume projections, right turn lane requirements at the project intersections along Salida Street are as follows:

- A southbound right turn lane **is** warranted along Salida Street for at the 37th Avenue and Salida Street intersection based on projected 2022 background plus project traffic volumes being 215 southbound right turns during the peak hour and the threshold being 50 vph. It is recommended that this 150-foot right turn lane along Salida Street be completed with the 37th Avenue roadway construction.
- A southbound right turn lane **is not** warranted along Salida Street for Scenario 1 or 2 at the Salida Street Right-In/Right-Out access intersection based on projected 2040 background plus project traffic volumes being 35 southbound right turns during the peak hour and the threshold being 50 vph.
- An eastbound right turn lane **is not** warranted along Salida Street for Scenario 1 or 2 at the Salida Street and Telluride Street intersection based on projected 2040 background plus project traffic volumes being 30 eastbound right turns during the peak hour and the threshold being 50 vph.

5.4 Turn Bay 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 16** with calculations provided in the intersection operational outputs located in **Appendix D** for unsignalized intersections and vehicle queuing analysis worksheets in **Appendix F** for signalized locations.

Table 16 – Turn Lane Length Analysis Results

Intersection Turn Lane	Existing Turn Lane Length (feet)	2022 Calculated Queue Length (feet)	2022 Recommended Turn Lane Length (feet)	Scenario 1		Scenario 2	
				2040 Calculated Queue Length (feet)	2040 Recommended Turn Lane Length (feet)	2040 Calculated Queue Length (feet)	2040 Recommended Turn Lane Length (feet)
40th Ave & Pena Blvd SB Ramps							
Westbound Left	225'	265' DL	250'/350' DL	326' DL	250'/350' DL	274' DL	250'/350' DL
Southbound Left	200'	174'	200'	280'	275'	232'	250'
40th Ave & Pena Blvd NB Ramps							
Eastbound Left	200'	238' DL	250'/350' DL	285' DL	250'/350' DL	285' DL	250'/350' DL
40th Ave & Salida St							
Westbound Left	250'	25'	250'	29'	250'	28'	250'
Northbound Left	350'	254'	350'	323'	350'	209'	350'
38th Ave & Tower Rd							
Eastbound Left	275'	318'	275'	257'	275'	267'	275'
Westbound Left	200'	360' DL	375' DL	568' DL	575' DL	541' DL	550' DL
Westbound Right	325'	25'	325'	25'	325'	25'	325'
Northbound Left	300'	40'	300'	79'	300'	77'	300'
Northbound Right	DNE	DNE	DNE	279'	300'	127'	125'
Southbound Left	75'	34'	75'	56'	75'	58'	75'
Southbound Right	DNE	DNE	DNE	458'	475'	493'	500'
I-70 WB Ramps & Airport Blvd							
Eastbound Left	DNE	DNE	DNE	DNE	DNE	211'	225'
Westbound Left	DNE	DNE	DNE	DNE	DNE	272'	275'
Westbound Right	DNE	DNE	DNE	DNE	DNE	88'	150'
Northbound Left	200'	308'	325'	397'	400'	420'	425'
Northbound Right	DNE	DNE	DNE	DNE	DNE	144'	150'
Southbound Left	DNE	DNE	DNE	DNE	DNE	254'	250'
Southbound Right	225'	25'	225'	25'	225'	25'	225'
Telluride St & Salida St							
Eastbound Left	DNE	DNE	DNE	25'	150'	25'	150'
Westbound Left	175'	25'	175'	25'	175'	25'	175'
Northbound Left	250'	55'	250'	85'	250'	75'	250'
Southbound Left	DNE	DNE	DNE	25'	150'	25'	150'
Salida St & Walden St							
Eastbound Left	225'	27'	225'	32'	225'	32'	225'
Westbound Left	175'	232'	250'	231'	250'	173'	250'
Northbound Right	200'	46'	200'	74'	200'	79'	200'
Southbound Left	150'	38'	150'	52'	150'	52'	150'

Intersection Turn Lane	Existing Turn Lane Length (feet)	2022 Calculated Queue Length (feet)	2022 Recommended Turn Lane Length (feet)	Scenario 1		Scenario 2	
				2040 Calculated Queue Length (feet)	2040 Recommended Turn Lane Length (feet)	2040 Calculated Queue Length (feet)	2040 Recommended Turn Lane Length (feet)
Salida St & Tower Rd							
Eastbound Left	250'	212' DL	250' DL	323' DL	250' DL	358' DL	250' DL
Westbound Left	200'	130'	200'	199'	200'	193'	200'
Northbound Left	275'	231'	275'	404'	400'	359'	350'
Southbound Left	75'	85'	100'	86'	100'	37'	100'
32nd Pkwy & Tower Rd							
Westbound Left	250'/C DL	235' DL	250'/C DL	459'	400'/C DL	447'	400'/C DL
Southbound Left	175'	70'	175'	357'	375'	294'	300'
I-70 WB Ramps & Tower Rd							
Northbound Left	325' DL	148' DL	325' DL	251' DL	325' DL	251' DL	325' DL
I-70 EB Ramps & Tower Rd							
Eastbound Right	275'	25'	275'	25'	275'	25'	275'
Southbound Left	200'	489'	200'	255' DL	200' DL	292' DL	200' DL
Salida St & 37th Ave							
Eastbound Left	DNE	50'	150'	75'	150'	285'	300'
Eastbound Right	DNE	25'	C	25'	C	105'	C
Westbound Left	DNE	DNE	DNE	25'	150'	25'	150'
Westbound Right	DNE	DNE	DNE	25'	C	25'	C
Northbound Left	DNE	25'	150'	25'	150'	50'	150'
Southbound Left	DNE	DNE	DNE	25'	150'	25'	150'
Salida St Right Out Access							
Eastbound Right	DNE	25'	50'	25'	50'	25'	50'

DL = Dual Left Turn Lanes; DNE = Does Not Exist; C = Continuous Turn Lane

As shown in the queuing table, there are several vehicle queues that are expected to extend past the existing turn lanes during the peak hour in 2022. The vehicle queue for the westbound left turn lane at the intersection of 40th Avenue and Pena Boulevard Southbound Ramp/Airport Boulevard extends beyond the available storage length. Within a few years of Project completion, it is recommended that dual left turn lanes be constructed at this intersection with a 250-foot inside left turn lane length and 350-foot outside turn lane length. Likewise, the vehicle queue for the eastbound left turn lane 40th Avenue and Pena Boulevard Northbound Ramps extends beyond the available storage. Dual eastbound left turn lanes are recommended here as well with a 250-foot inside left turn lane and 350-foot outside left turn lane. These lengths will allow for acceptable back-to-back storage requirements between the two intersections as well as avoiding the existing columns.

In 2022, the eastbound and westbound left turn queues at the intersection of 38th Avenue and Tower Road extend beyond the available storage length. Although the eastbound left turn

queue is slightly longer than the storage length, this lane cannot be lengthened due to the back to back left turn lane configuration at Walden Street. However, it is recommended that the westbound left turn lane be lengthened from 200 feet to 375 feet in dual left turn lanes to accommodate the 2022 traffic demands. The lengthening need of this left turn lane is **independent of this proposed Project** and would require development of the southeast corner of the intersection in order to be implemented.

During 2022, the queue for the northbound dual left turn lanes at the intersection of I-70 Westbound Ramps and Airport Boulevard extends beyond the available storage length. It is recommended to extend this lane from 200 feet to 325 feet. The lengthening need of these left turn lanes are **independent of this proposed project**.

At the intersection of Salida Street and Walden Street, the queue for the westbound left turn lane extends beyond the available storage length; therefore, it is recommended that this lane be extended from 175 feet to 250 feet by 2022. There is 400 feet along Salida Street between Walden Street and the access to the east. Therefore, to accommodate this westbound left turn lane extension, the taper is recommended to be shortened from 100 feet to 50 feet with a 100-foot eastbound left turn lane provided for the access to the east. The lengthening need of this left turn lane is **independent of this proposed**.

In 2022, the eastbound left turn queue at the intersection of Salida Street and Tower Road extends beyond the available storage length. Although the eastbound left turn queue is longer than the storage length this lane cannot be lengthened due to the back to back left turn lane configuration with the private access to the west. Therefore, it is recommended that 250-foot eastbound dual left turn lanes be constructed by shifting the two westbound through lanes to the north. Likewise, the existing 75-foot southbound left turn lane is recommended to be extended to 100 feet. **The lengthening need of this left turn lane is independent of this proposed project and would require construction of a portion of the improvements in the SCMD access easement or the City's acquisition of additional right of way.**

During 2022, the queue for the southbound left turn lane at the intersection of I-70 Eastbound Ramps and Tower Road extends beyond the available storage length with or without the

addition of Project traffic. Although the queue is longer than the available storage this lane cannot be extended due to the back-to-back left turn lane onto the I-70 Westbound Ramp.

Left turn lanes at the future intersection of 37th Avenue and Salida Street should provide 150 feet of length on all approaches.

Several auxiliary turn lanes may need to be lengthened by the long-term 2040 horizon if future traffic volumes are realized. The City of Aurora should monitor vehicle queues in the future to determine if turn lanes need to be extended by the long-term horizon.

5.5 Improvements Summary

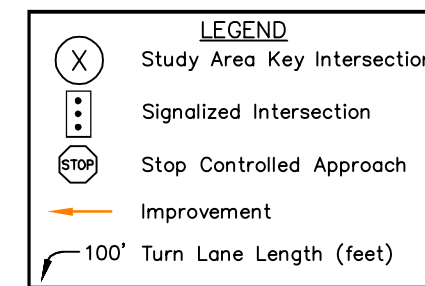
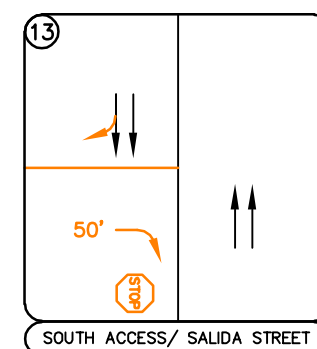
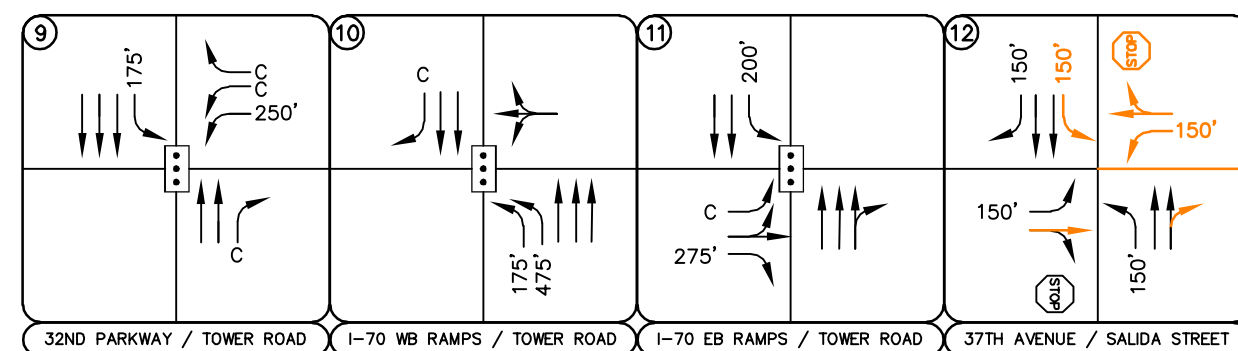
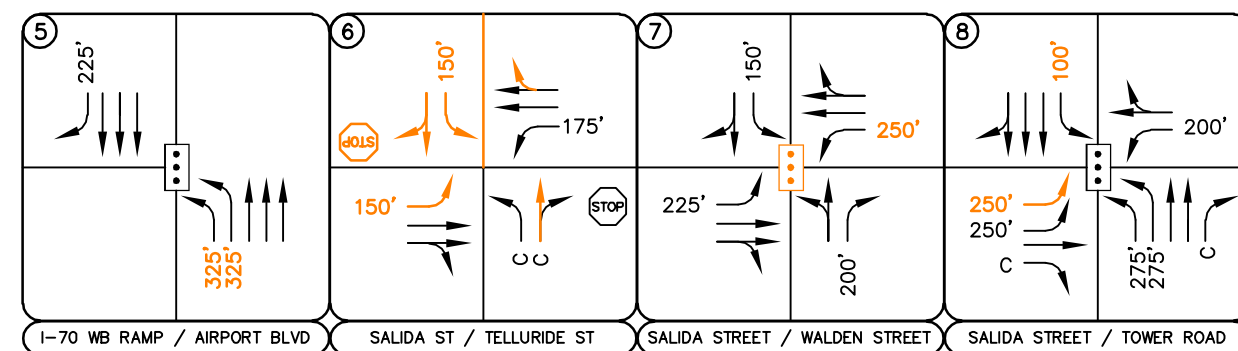
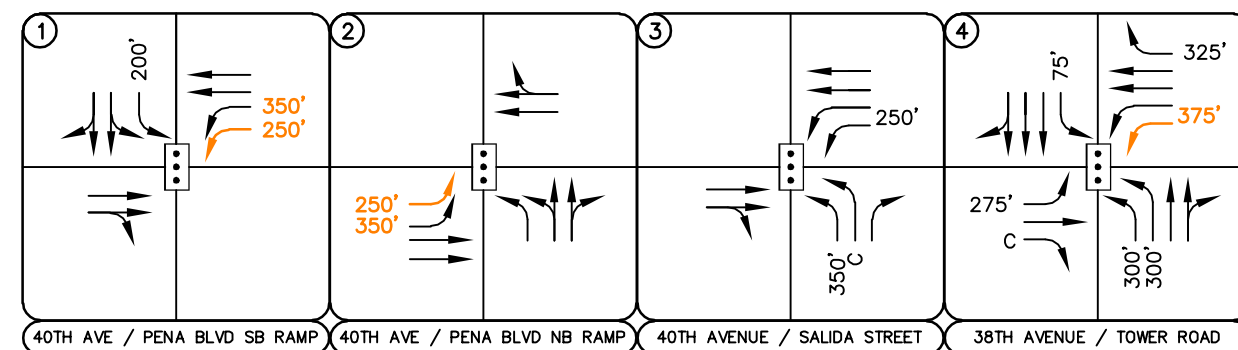
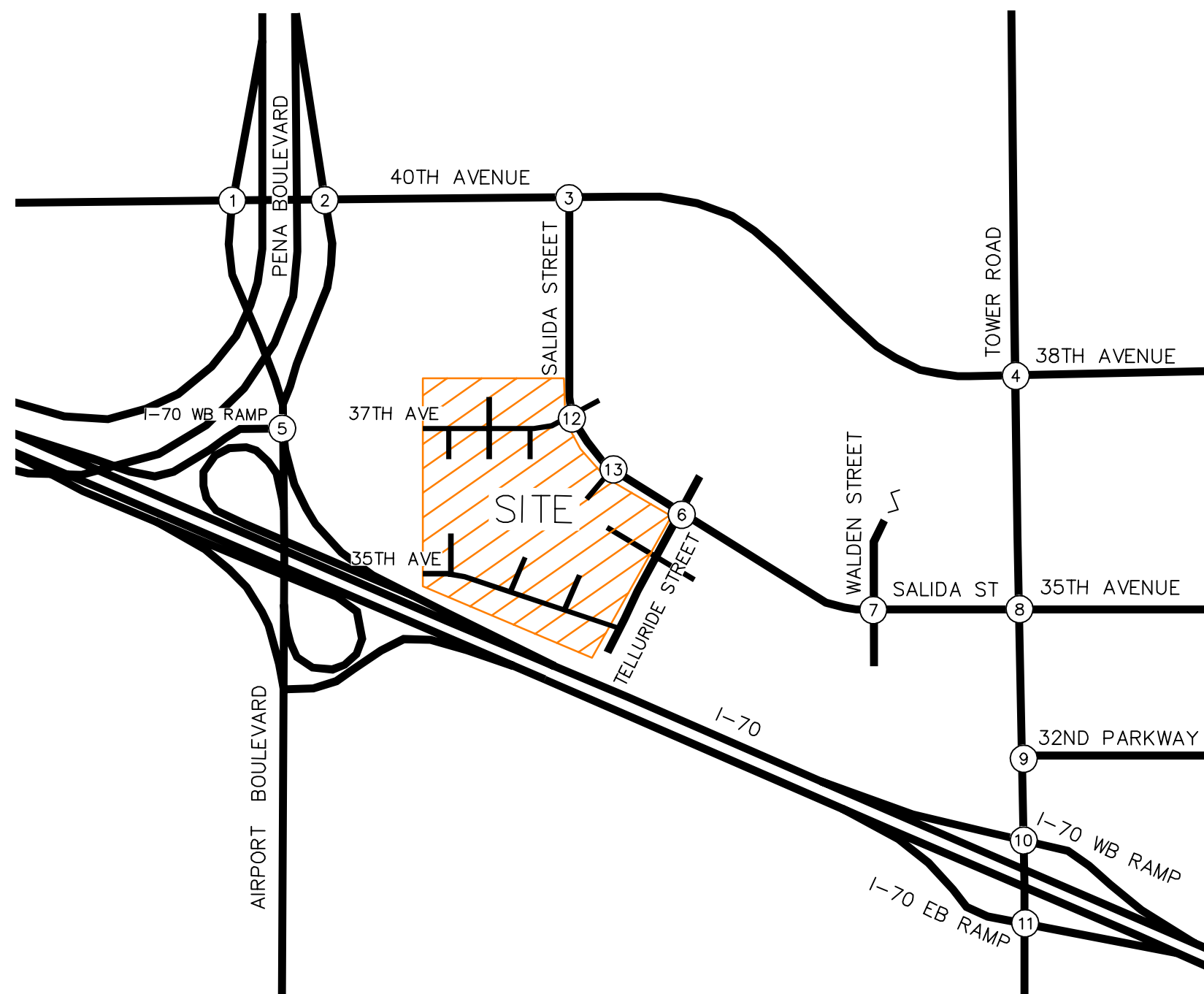
Based on the results of the operational and turn lane analysis, improvements were identified as being needed at the key study intersections in 2022, as well as a traffic signal at the intersection of Salida Street and Walden Street within the next five years. The following **Table 17** summarizes the improvements needed for each intersection along with participation calculations and the recommended implementation timeframe.

Table 17 – Summary of Short-Term and Five-Year Intersection Improvements

Intersection	Improvements	Project Participation Percentage	Planning Year Needed
40 th Ave & Pena Blvd SB Ramps (#1)	Westbound Dual Left Turns (250-ft & 350-ft)	AM Peak 59 / 480 12.3%	2022
40 th Ave & Pena Blvd NB Ramps (#2)	Eastbound Dual Left Turns (250-ft & 350-ft)	AM Peak 0.0%	2022
38 th Avenue & Tower Road (#4)	Westbound Dual Left Turn Lanes (375-ft)	AM Peak 8 / 583 1.4%	2022
Salida Street & Walden Street (#7) #	Traffic Signal	PM Peak 176 / 1,365 12.9%	2025
Salida Street & Tower Road (#8)	Eastbound Dual Left Turn Lanes (250-ft)	PM Peak 23 / 360 6.4%	2022
37 th Avenue & Salida Street (#12)	Construction of 37 th Avenue West of Salida Street + NB Left Turn Lane + SB Right Turn Lane	100%	With Project

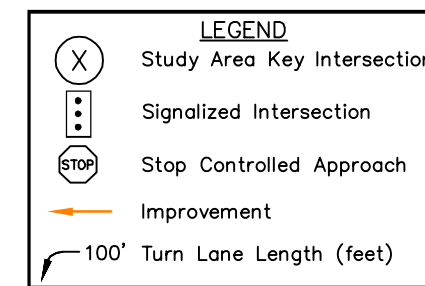
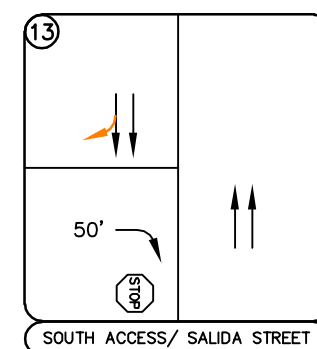
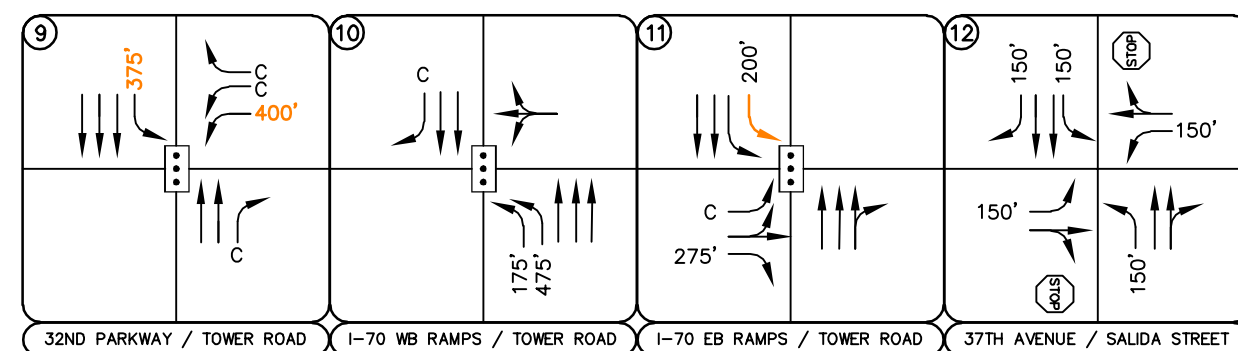
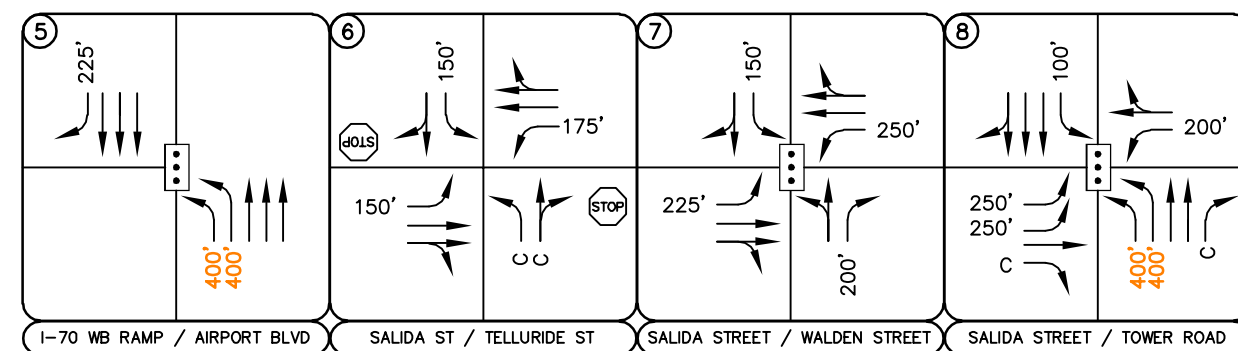
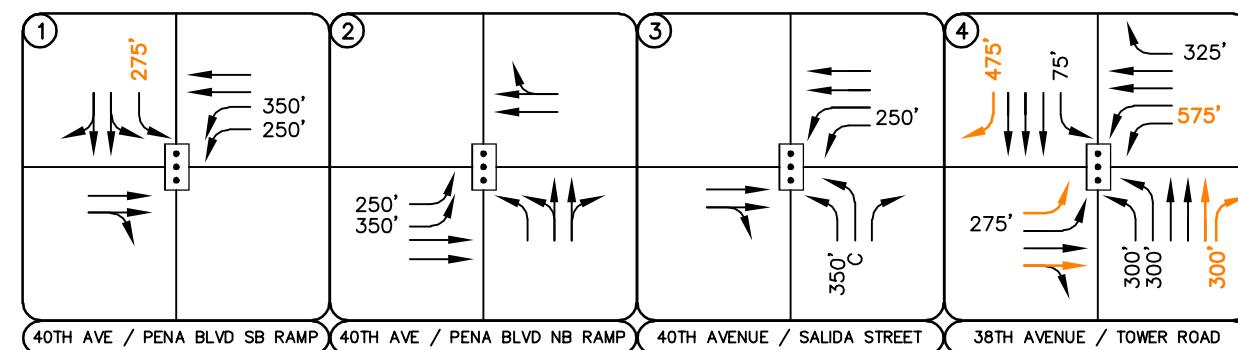
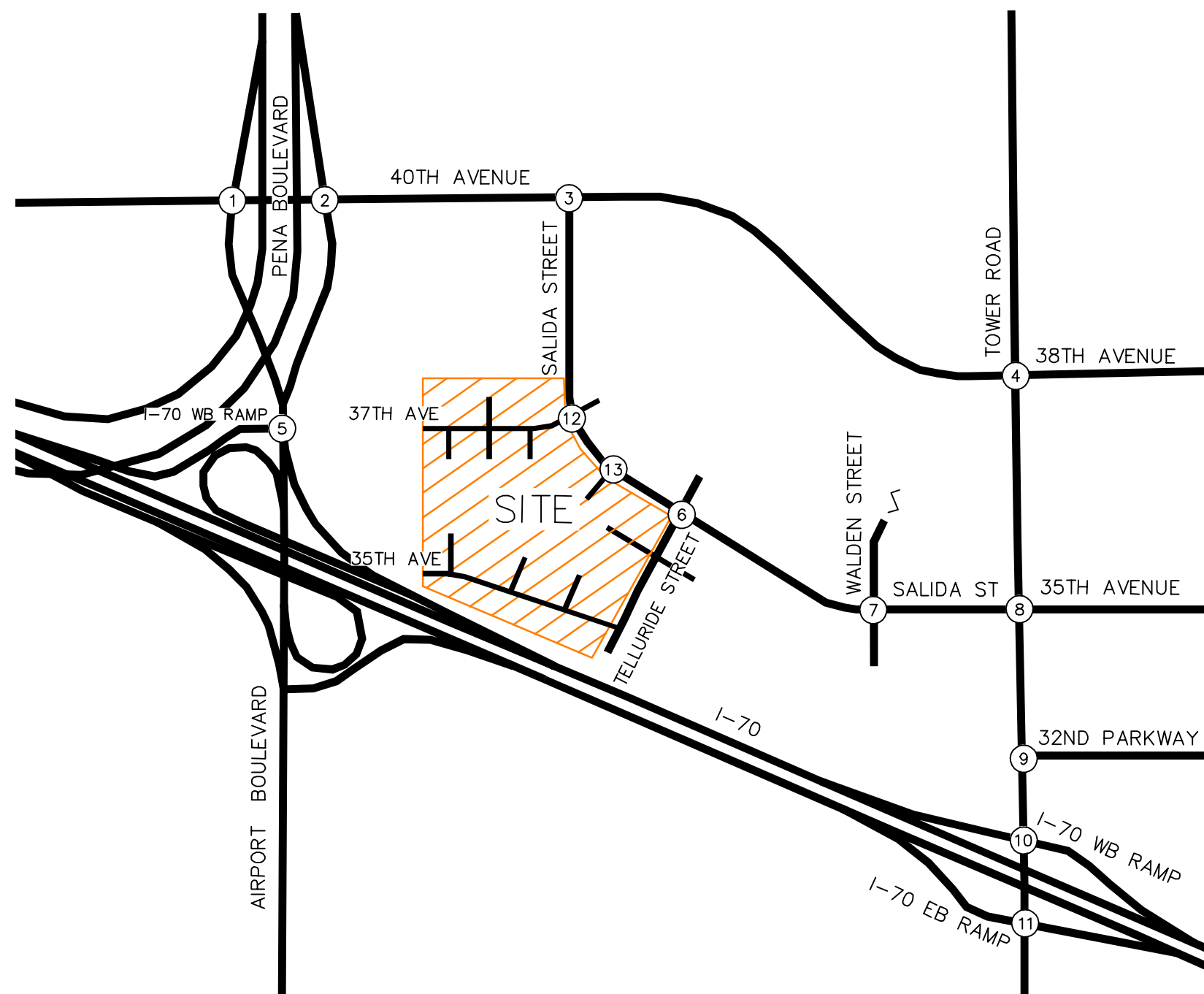
current signal phasing agreement between COA and SCMD

Based on the results of the intersection operational and turn lane analysis, the recommended lane configurations and control of the study key intersections are shown for the 2022 Project planning year in **Figure 17**. The improvements that may be needed in the 2040 long term horizon for Scenario 1 are shown in **Figure 18** and for Scenario 2 in **Figure 19**.



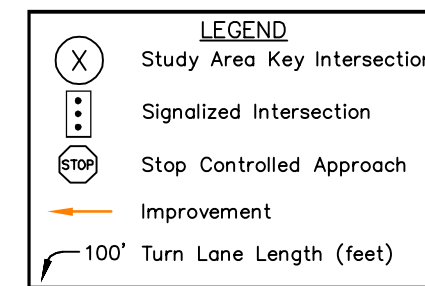
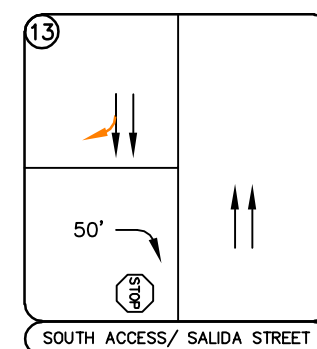
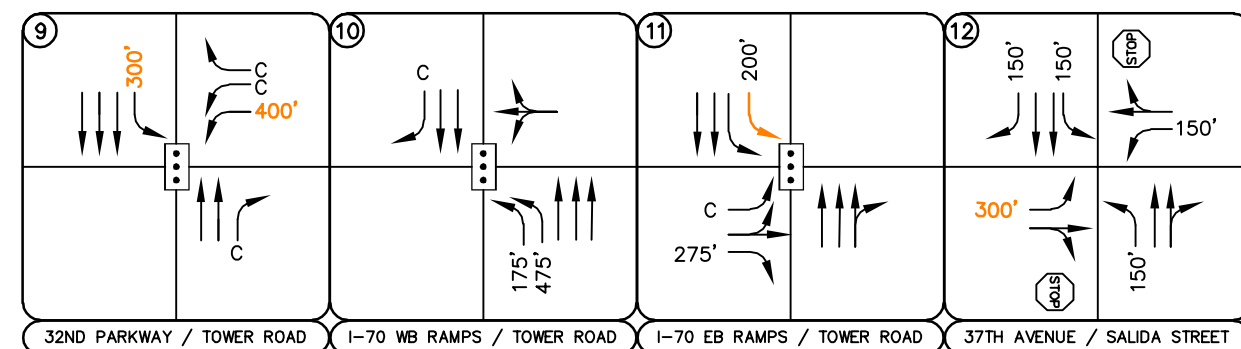
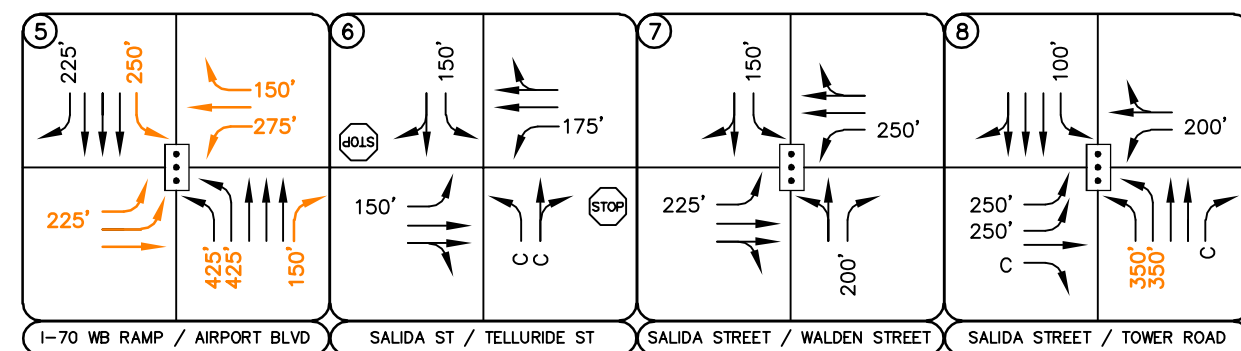
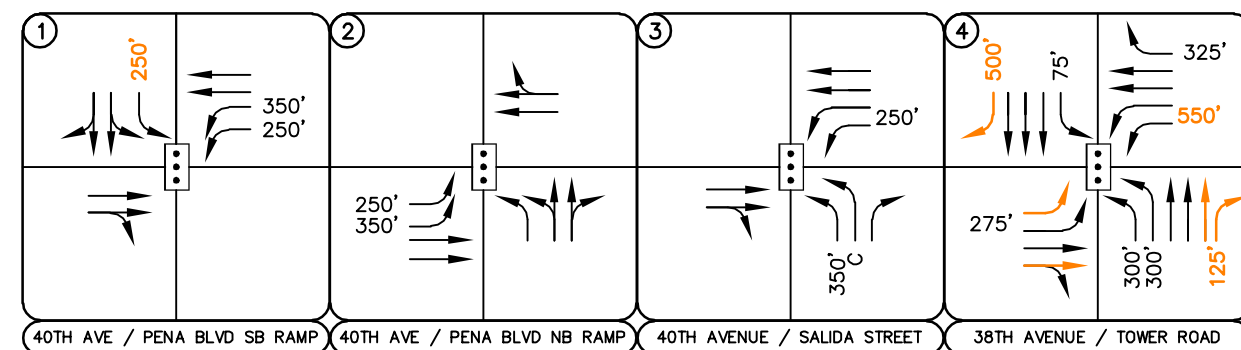
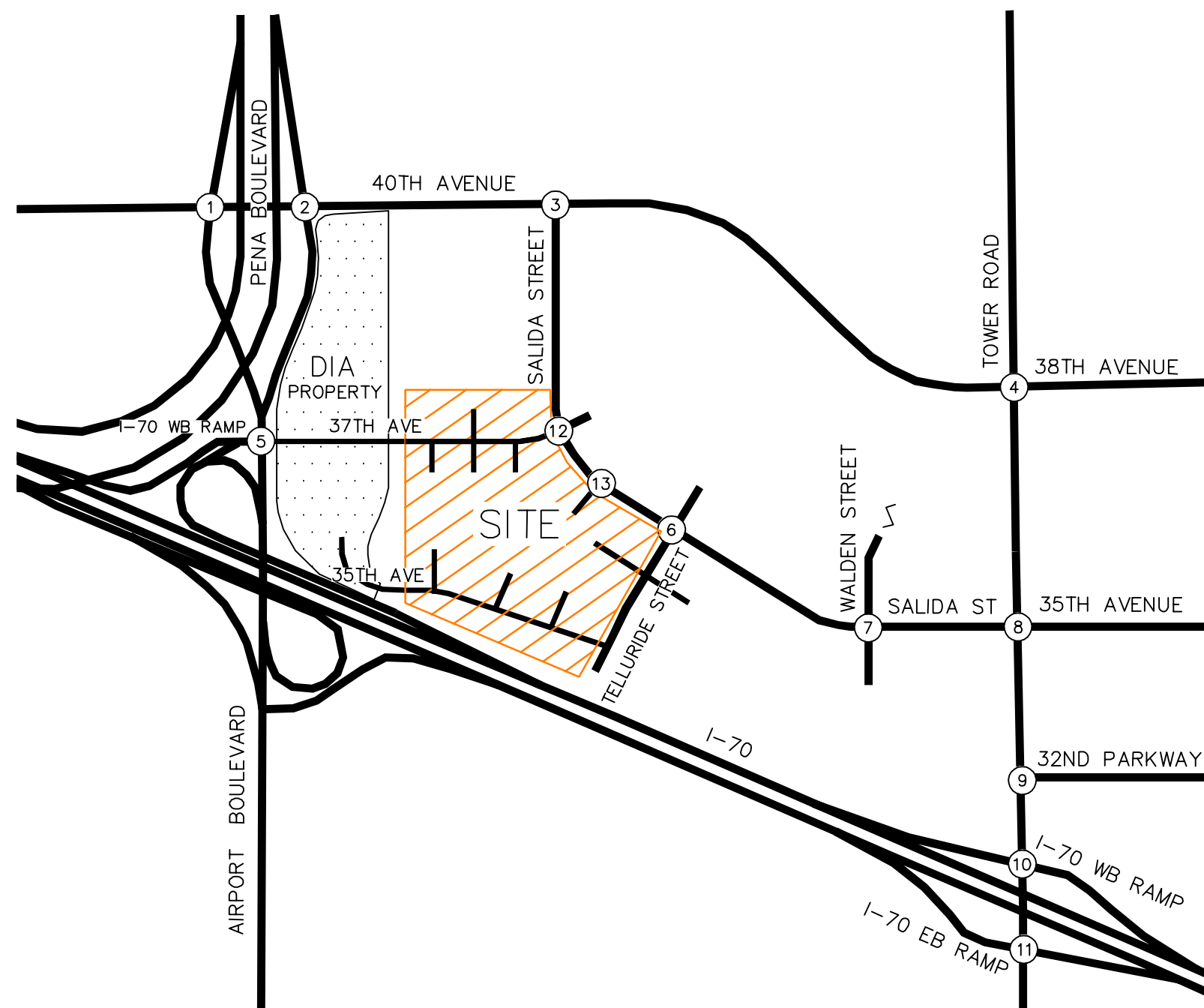
GATEWAY PARK — PARCEL TIC 2 — SALIDA STREET & TELLURIDE STREET
2022 RECOMMENDED LANE CONFIGURATIONS AND CONTROL

FIGURE 17



GATEWAY PARK — PARCEL TIC 2 — SALIDA STREET & TELLURIDE STREET
2040 SCENARIO 1 RECOMMENDED LANE CONFIGURATIONS AND CONTROL

FIGURE 18



GATEWAY PARK — PARCEL TIC 2 — SALIDA STREET & TELLURIDE STREET
2040 SCENARIO 2 RECOMMENDED LANE CONFIGURATIONS AND CONTROL

FIGURE 19

6.0 CONCLUSIONS AND RECOMMENDATIONS

Based on the analysis presented in this report, Kimley-Horn believes the proposed Project will be successfully incorporated into the existing and future roadway network. The proposed Project development and expected traffic volumes resulted in the following recommendations and conclusions at the key intersections impacted by Project traffic:

- Concurrent with the Project, 37th Avenue will be partially constructed through the northern portion of the property and will eventually extend from the west Project property line to Salida Street to serve the DIA property to the west utilizing a potential future connection under the A-line and ultimate connection to Airport Boulevard. It is recommended that 37th Avenue be a three-lane roadway. Proposed 35th Avenue, also recommended to be three lanes, will be partially constructed with the Project through the southern portion of the site, and will ultimately extend from Telluride Street west to the west property line of the Project site and eventually under the A-line to serve the DIA property. It should be noted that extensions of 35th Avenue and 37th Avenue are not needed under the A-line until the DIA property is developed. Further, a connection of 37th Avenue to Airport Boulevard is not needed unless the DIA property is developed.
- At the 37th Avenue and Salida Street intersection, 150-foot left turn lanes along northbound Salida Street and eastbound 37th Avenue approaches are recommended. The eastbound 37th Avenue approach of this intersection should provide stop control with installation of a R1-1 “STOP” sign upon buildout of the Project. A future traffic signal is not needed with development of the Project; however, a traffic signal may be needed at this intersection depending on the development density of the DIA property to the west and should be re-evaluated as a part of and at the time of DIA property development.
- A new Salida Street Access is proposed to be restricted to right-in/right-out movements only. The eastbound exiting access approach to Salida Street should provide stop control with the installation of a R1-1 “STOP” sign. A R3-2 No Left Turn Sign should be installed underneath the “STOP” sign and a R6-1(R) “ONE WAY” sign should be located within the raised median to identify the restriction to right turn exiting movements from the driveway.

- The existing 225-foot westbound left turn lane at the 40th Avenue and Pena Boulevard Southbound Ramp/Airport Boulevard intersection was found to require additional storage length by 2022 with or without the Project. Based on this, it is recommended that dual westbound left turn lanes be constructed with a length of 250 feet for the inside left turn lane and 350 feet for the outside left turn lane. It is believed that sufficient median width is available to accommodate dual left turn lanes. Further, these distances will provide sufficient lengths for back-to-back left turn lanes and to avoid the Pena Boulevard columns. With the westbound dual left turn lanes, a traffic signal modification will likely be needed to provide two protected only left turn signal heads on the westbound mast arm. A slight modification of the curb return on the southeast corner of the intersection may also be needed to receive the dual left turns on the Airport Boulevard south leg. It should be noted that Project traffic contributes less than fifteen percent of the traffic volume in the westbound left turn.
- It is recommended that the intersection of Salida Street and Walden Street be signalized within a few years of Project completion. The eastbound and westbound left turns are recommended to operate with protected/permitted left turn phasing while the northbound and southbound approaches operate permitted only. With signalization, the existing 175-foot westbound left turn lane is recommended to be extended to 250 feet, which will require a reduction in the existing taper and back-to-back storage length for the eastbound left turn lane at the access intersection to the east. A signal phasing agreement between SCMD and the City of Aurora is already in place for this intersection.
- At the Salida Street and Tower Road intersection, 250-foot eastbound dual left turn lanes are recommended with or without completion of this Project and should be constructed within a year or two of Project completion. To construct these, the two westbound through lanes along Salida Street could be shifted to the north by reconstructing the curb line along the north side of Salida Street which may be constructed within the existing SCMD forty-foot access easement area or within City of Aurora acquired right-of-way (note that the City of Aurora right of way extend only one (1) foot back of the existing Salida Street curb on either side of the roadways). Likewise, the eastbound right turn movement is recommended to operate with protected overlap phasing. If implemented, the eastbound improvements may require a shift of the through lanes on the west side of the intersection which will require COA right-of-way acquisition from the property owner at the northeast corner of the

intersection. Project traffic is expected to contribute slightly more than five percent of these eastbound left turn movements and need for these improvements.

- According to the State Highway Access Code, a southbound right turn lane is warranted for the 37th Avenue and Salida Street intersection based on projected background plus Project traffic volumes exceeding the highway code threshold. It is recommended that this southbound right turn lane have a length of 150 feet to meet City standards and be completed with construction of 37th.

APPENDICES

APPENDIX A

Intersection Count Sheets



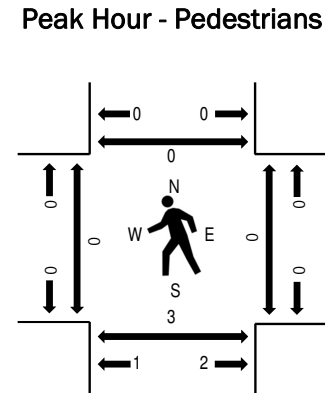
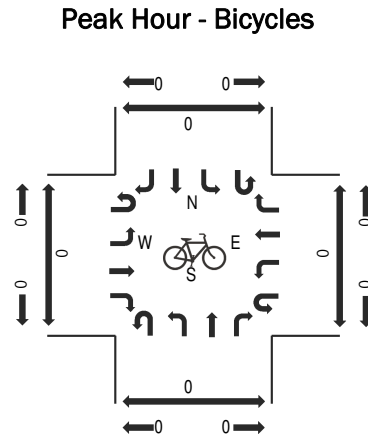
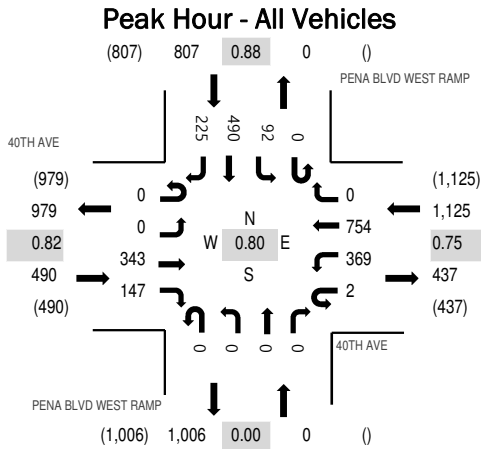
(303) 216-2439
www.alltrafficdata.net

Location: 222 PENA BLVD WEST RAMP & 40TH AVE AM

Date: Thursday, April 5, 2018

Peak Hour: 07:45 AM - 08:45 AM

Peak 15-Minutes: 07:45 AM - 08:00 AM



Note: Total study counts contained in parentheses.

Traffic Counts

Interval Start Time	40TH AVE Eastbound				40TH AVE Westbound				PENA BLVD WEST RAMP Northbound				PENA BLVD WEST RAMP Southbound				Total	Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
7:45 AM	0	0	114	35	1	123	252	0	0	0	0	0	0	25	153	51	754	2,422	0	0	1	0
8:00 AM	0	0	76	54	1	104	234	0	0	0	0	0	0	21	141	67	698		0	0	2	0
8:15 AM	0	0	81	26	0	84	164	0	0	0	0	0	0	29	104	50	538		0	0	0	0
8:30 AM	0	0	72	32	0	58	104	0	0	0	0	0	0	17	92	57	432		0	0	0	0
Count Total	0	0	343	147	2	369	754	0	0	0	0	0	0	92	490	225	2,422		0	0	3	0
Peak Hour	0	0	343	147	2	369	754	0	0	0	0	0	0	92	490	225	2,422		0	0	3	0



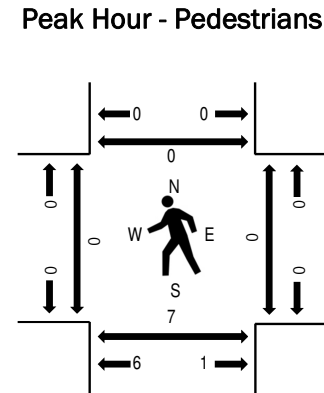
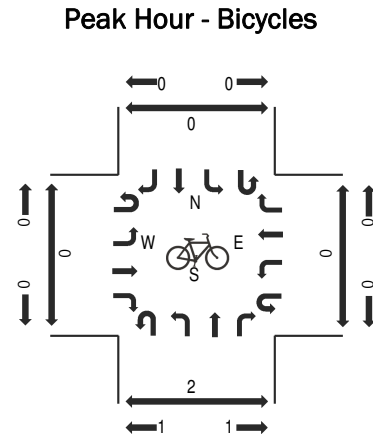
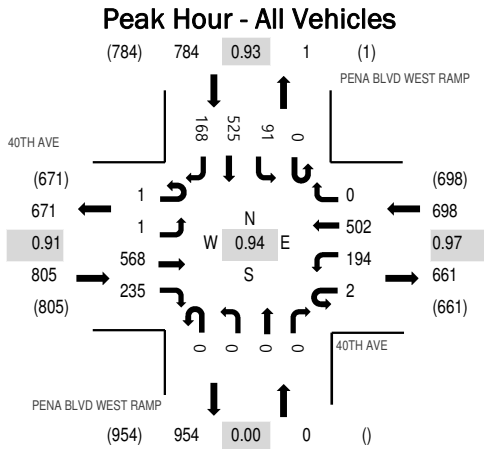
(303) 216-2439
www.alltrafficdata.net

Location: 222 PENA BLVD WEST RAMP & 40TH AVE PM

Date: Thursday, April 5, 2018

Peak Hour: 03:30 PM - 04:30 PM

Peak 15-Minutes: 04:00 PM - 04:15 PM



Note: Total study counts contained in parentheses.

Traffic Counts

Interval Start Time	40TH AVE Eastbound				40TH AVE Westbound				PENA BLVD WEST RAMP Northbound				PENA BLVD WEST RAMP Southbound				Total	Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
3:30 PM	0	0	130	42	1	56	121	0	0	0	0	0	0	23	118	47	538	2,287	0	0	0	0
3:45 PM	0	0	140	65	1	45	117	0	0	0	0	0	0	23	116	47	554		0	0	0	0
4:00 PM	1	1	146	73	0	49	130	0	0	0	0	0	0	23	147	40	610		0	0	0	0
4:15 PM	0	0	152	55	0	44	134	0	0	0	0	0	0	22	144	34	585		0	0	7	0
Count Total	1	1	568	235	2	194	502	0	0	0	0	0	0	91	525	168	2,287		0	0	7	0
Peak Hour	1	1	568	235	2	194	502	0	0	0	0	0	0	91	525	168	2,287		0	0	7	0



(303) 216-2439
www.alltrafficdata.net

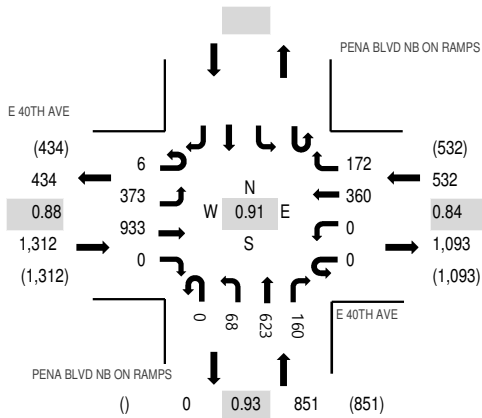
Location: 221 PENA BLVD NB ON RAMP & E 40TH AVE AM

Date: Thursday, April 5, 2018

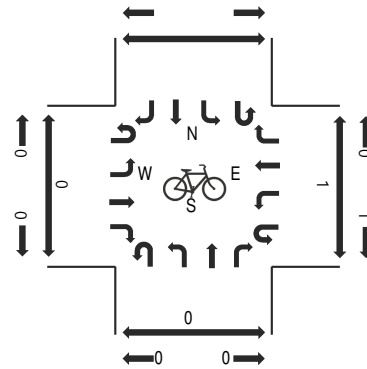
Peak Hour: 06:45 AM - 07:45 AM

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

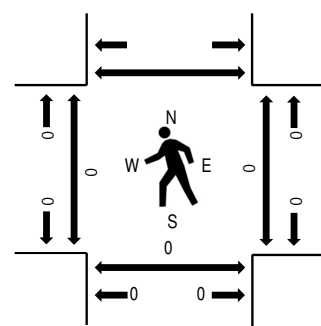
Peak Hour - All Vehicles



Peak Hour - Bicycles



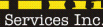
Peak Hour - Pedestrians



Note: Total study counts contained in parentheses.

Traffic Counts

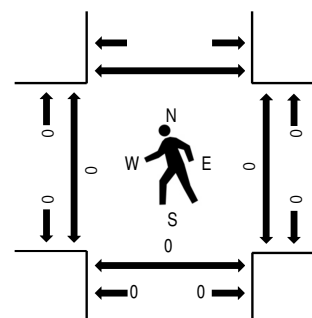
Interval Start Time	E 40TH AVE Eastbound				E 40TH AVE Westbound				PENA BLVD NB ON RAMP Northbound				PENA BLVD NB ON RAMP Southbound				Total	Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
6:45 AM	2	60	203	0	0	0	62	42	0	12	177	41					599	2,695	0	0	0	0
7:00 AM	1	96	223	0	0	0	85	39	0	18	150	40					652		0	0	0	0
7:15 AM	1	119	252	0	0	0	98	47	0	17	131	37					702		0	0	0	0
7:30 AM	2	98	255	0	0	0	115	44	0	21	165	42					742		0	0	0	0
Count Total	6	373	933	0	0	0	360	172	0	68	623	160					2,695		0	0	0	0
Peak Hour	6	373	933	0	0	0	360	172	0	68	623	160					2,695		0	0	0	0



www.alltrafficdata.net

Peak 15-Minutes: 04:00 PM - 04:15 PM

Peak Hour - Pedestrians



Traffic Counts

Interval Start Time	E 40TH AVE Eastbound				E 40TH AVE Westbound				PENA BLVD NB ON RAMP				PENA BLVD NB ON RAMP				Total	Rolling Hour	Pedestrain Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Northbound				Southbound						West	East	South	North
									U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right						
3:30 PM	2	55	123	0	0	0	129	42	0	23	113	48				535	2,278	0	0	0		
3:45 PM	1	43	115	0	0	0	141	65	0	22	116	47				550		0	0	0		
4:00 PM	0	48	128	0	0	0	146	73	0	23	147	40				605		0	0	0		
4:15 PM	0	44	136	0	0	0	154	55	0	22	145	32				588		0	0	0		
Count Total	3	190	502	0	0	0	570	235	0	90	521	167				2,278		0	0	0		
Peak Hour	3	190	502	0	0	0	570	235	0	90	521	167				2,278		0	0	0		



(303) 216-2439
www.alltrafficdata.net

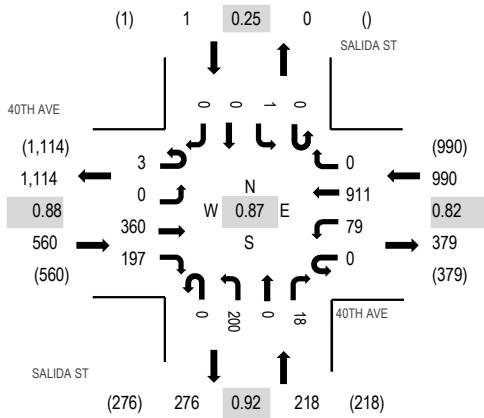
Location: 24 SALIDA ST & 40TH AVE AM

Date: Thursday, April 5, 2018

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

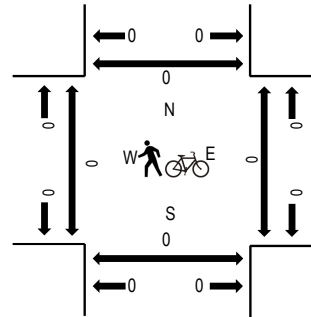
Peak 15-Minutes: 07:30 AM - 07:45 AM

Peak Hour - All Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles on Crosswalk



Traffic Counts

Interval Start Time	40TH AVE Eastbound				40TH AVE Westbound				SALIDA ST Northbound				SALIDA ST Southbound				Total	Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
7:15 AM	1	0	83	47	0	30	213	0	0	45	0	6	0	0	0	0	425	1,769	0	0	0	0
7:30 AM	1	0	108	42	0	22	279	0	0	47	0	7	0	0	0	0	506		0	0	0	0
7:45 AM	0	0	101	58	0	10	226	0	0	54	0	0	0	1	0	0	450		0	0	0	0
8:00 AM	1	0	68	50	0	17	193	0	0	54	0	5	0	0	0	0	388		0	0	0	0
Count Total	3	0	360	197	0	79	911	0	0	200	0	18	0	1	0	0	1,769		0	0	0	0
Peak Hour	3	0	360	197	0	79	911	0	0	200	0	18	0	1	0	0	1,769		0	0	0	0



(303) 216-2439
www.alltrafficdata.net

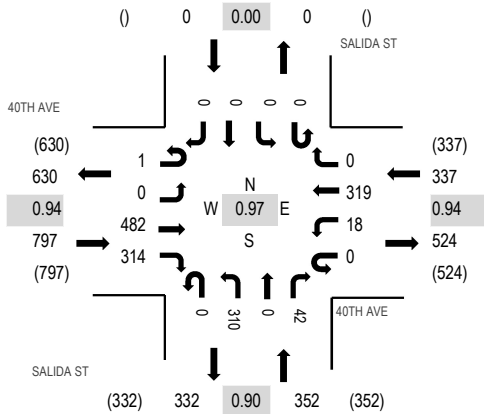
Location: 24 SALIDA ST & 40TH AVE PM

Date: Thursday, April 5, 2018

Peak Hour: 03:30 PM - 04:30 PM

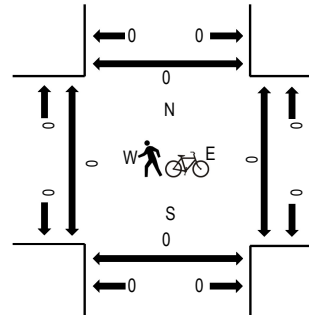
Peak 15-Minutes: 04:00 PM - 04:15 PM

Peak Hour - All Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles on Crosswalk



Traffic Counts

Interval Start Time	40TH AVE Eastbound				40TH AVE Westbound				SALIDA ST Northbound				SALIDA ST Southbound				Total	Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
3:30 PM	0	0	108	80	0	6	84	0	0	80	0	11	0	0	0	0	369	1,486	0	0	0	0
3:45 PM	1	0	117	77	0	7	81	0	0	72	0	6	0	0	0	0	361		0	0	0	0
4:00 PM	0	0	125	78	0	2	80	0	0	85	0	13	0	0	0	0	383		0	0	0	0
4:15 PM	0	0	132	79	0	3	74	0	0	73	0	12	0	0	0	0	373		0	0	0	0
Count Total	1	0	482	314	0	18	319	0	0	310	0	42	0	0	0	0	1,486		0	0	0	0
Peak Hour	1	0	482	314	0	18	319	0	0	310	0	42	0	0	0	0	1,486		0	0	0	0



Morrison, CO 80465

Aurora, CO
 GEI Remainder Tract
 AM Peak
 40th Ave/38th Ave and Tower Rd

File Name : 40th-38th and Tower Rd AM
 Site Code : IPO 339
 Start Date : 4/25/2018
 Page No : 1

Groups Printed- Automobiles

	40th Ave Eastbound					38th Ave Westbound					Tower Rd Northbound					Tower Rd Southbound					
Start Time	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	Int. Total
07:00 AM	20	19	12	0	51	131	83	8	0	222	8	120	42	0	170	4	287	97	0	388	831
07:15 AM	33	31	5	0	69	151	134	6	0	291	5	139	29	0	173	3	307	100	2	412	945
07:30 AM	37	44	13	0	94	122	120	7	0	249	13	146	46	1	206	13	317	112	0	442	991
07:45 AM	27	53	13	0	93	111	130	15	0	256	7	129	46	1	183	13	297	104	0	414	946
Total	117	147	43	0	307	515	467	36	0	1018	33	534	163	2	732	33	1208	413	2	1656	3713
08:00 AM	15	39	6	0	60	95	63	10	0	168	10	121	38	0	169	9	259	68	0	336	733
08:15 AM	28	22	5	0	55	91	52	3	0	146	1	127	37	0	165	4	231	45	0	280	646
08:30 AM	22	17	8	1	48	85	48	3	0	136	7	96	32	0	135	4	201	41	0	246	565
08:45 AM	27	21	9	0	57	71	23	6	0	100	8	86	30	0	124	13	163	25	0	201	482
Total	92	99	28	1	220	342	186	22	0	550	26	430	137	0	593	30	854	179	0	1063	2426
Grand Total	209	246	71	1	527	857	653	58	0	1568	59	964	300	2	1325	63	2062	592	2	2719	6139
Approch %	39.7	46.7	13.5	0.2		54.7	41.6	3.7	0		4.5	72.8	22.6	0.2		2.3	75.8	21.8	0.1		
Total %	3.4	4	1.2	0	8.6	14	10.6	0.9	0	25.5	1	15.7	4.9	0	21.6	1	33.6	9.6	0	44.3	

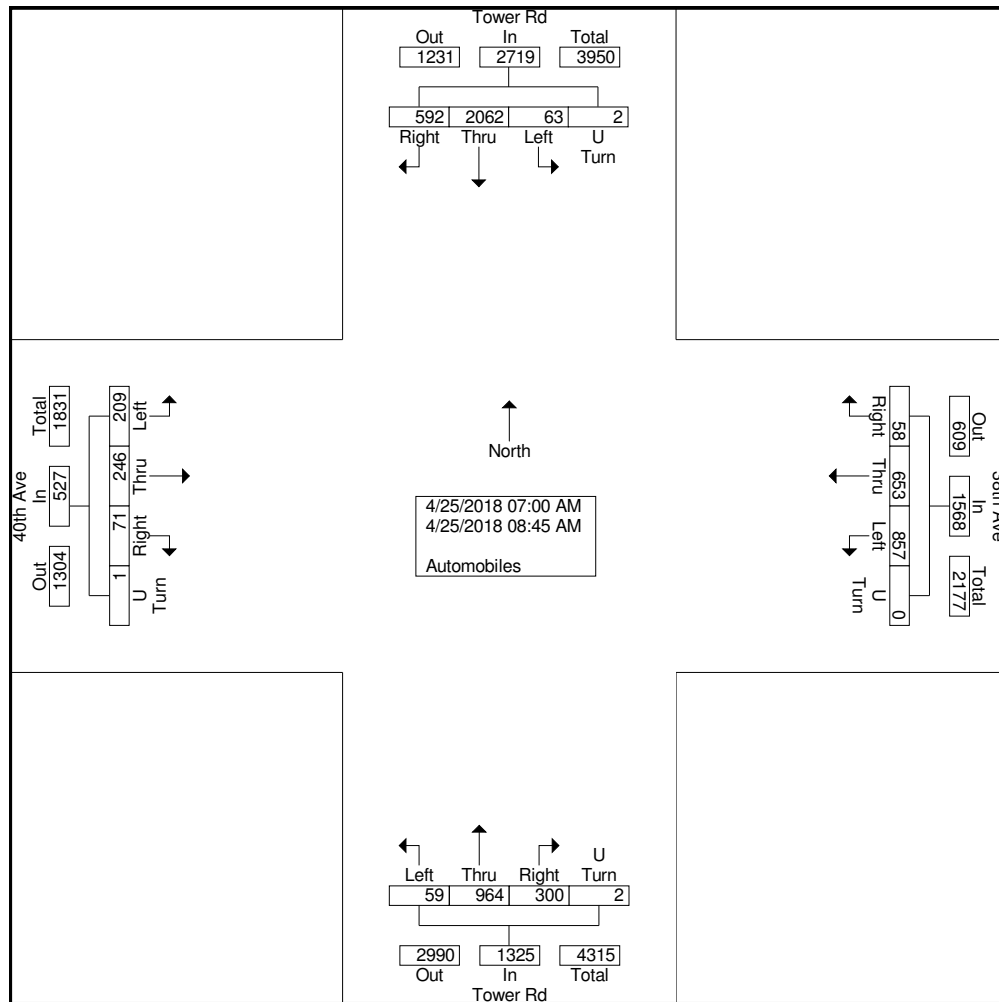


Ridgeview Data
Collection

Morrison, CO 80465

Aurora, CO
GEI Remainder Tract
AM Peak
40th Ave/38th Ave and Tower Rd

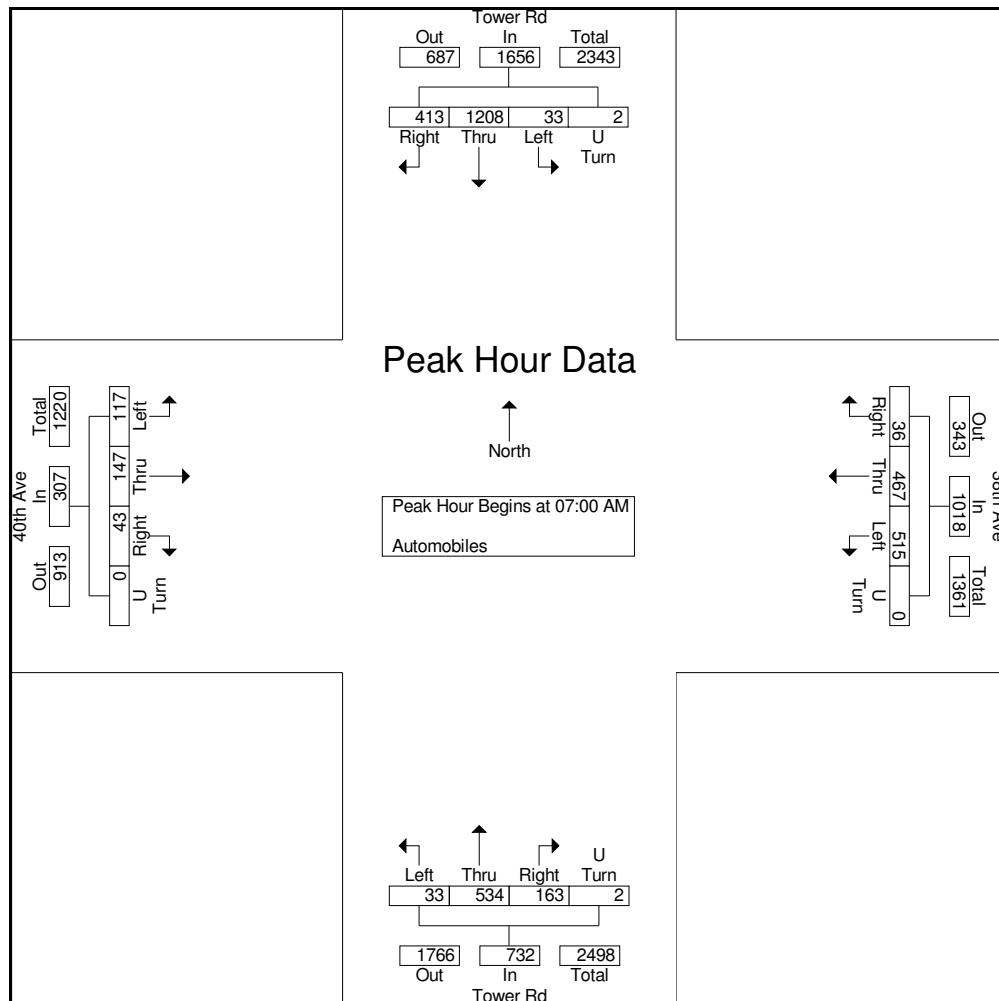
File Name : 40th-38th and Tower Rd AM
Site Code : IPO 339
Start Date : 4/25/2018
Page No : 2



Aurora, CO
GEI Remainder Tract
AM Peak
40th Ave/38th Ave and Tower Rd

File Name : 40th-38th and Tower Rd AM
Site Code : IPO 339
Start Date : 4/25/2018
Page No : 3

	40th Ave Eastbound					38th Ave Westbound					Tower Rd Northbound					Tower Rd Southbound					
Start Time	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	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:00 AM																					
07:00 AM	20	19	12	0	51	131	83	8	0	222	8	120	42	0	170	4	287	97	0	388	831
07:15 AM	33	31	5	0	69	151	134	6	0	291	5	139	29	0	173	3	307	100	2	412	945
07:30 AM	37	44	13	0	94	122	120	7	0	249	13	146	46	1	206	13	317	112	0	442	991
07:45 AM	27	53	13	0	93	111	130	15	0	256	7	129	46	1	183	13	297	104	0	414	946
Total Volume	117	147	43	0	307	515	467	36	0	1018	33	534	163	2	732	33	1208	413	2	1656	3713
% App. Total	38.1	47.9	14	0		50.6	45.9	3.5	0		4.5	73	22.3	0.3		2	72.9	24.9	0.1		
PHF	.791	.693	.827	.000	.816	.853	.871	.600	.000	.875	.635	.914	.886	.500	.888	.635	.953	.922	.250	.937	.937





Morrison, CO 80465

Aurora, CO
 GEI Remainder Tract
 PM Peak
 40th Ave/38th Ave and Tower Rd

File Name : 40th-38th and Tower Rd PM
 Site Code : IPO 339
 Start Date : 4/25/2018
 Page No : 1

Groups Printed- Automobiles

	40th Ave Eastbound					38th Ave Westbound					Tower Rd Northbound					Tower Rd Southbound					
Start Time	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	Int. Total
04:00 PM	91	66	12	0	169	72	31	4	0	107	10	195	73	1	279	5	223	35	0	263	818
04:15 PM	79	69	13	0	161	60	26	7	0	93	5	183	87	1	276	2	249	32	2	285	815
04:30 PM	80	85	20	0	185	78	42	9	0	129	12	210	76	0	298	4	231	24	0	259	871
04:45 PM	80	78	20	0	178	76	44	3	0	123	9	239	92	0	340	0	252	25	1	278	919
Total	330	298	65	0	693	286	143	23	0	452	36	827	328	2	1193	11	955	116	3	1085	3423
05:00 PM	76	87	12	0	175	67	49	7	0	123	17	210	82	0	309	5	235	32	2	274	881
05:15 PM	86	84	13	0	183	64	43	14	0	121	7	221	106	0	334	4	217	30	2	253	891
05:30 PM	86	94	10	0	190	79	36	7	0	122	19	195	91	1	306	4	215	31	1	251	869
05:45 PM	82	83	9	0	174	58	29	4	1	92	12	196	66	0	274	8	248	30	1	287	827
Total	330	348	44	0	722	268	157	32	1	458	55	822	345	1	1223	21	915	123	6	1065	3468
Grand Total	660	646	109	0	1415	554	300	55	1	910	91	1649	673	3	2416	32	1870	239	9	2150	6891
Approch %	46.6	45.7	7.7	0		60.9	33	6	0.1		3.8	68.3	27.9	0.1		1.5	87	11.1	0.4		
Total %	9.6	9.4	1.6	0	20.5	8	4.4	0.8	0	13.2	1.3	23.9	9.8	0	35.1	0.5	27.1	3.5	0.1	31.2	

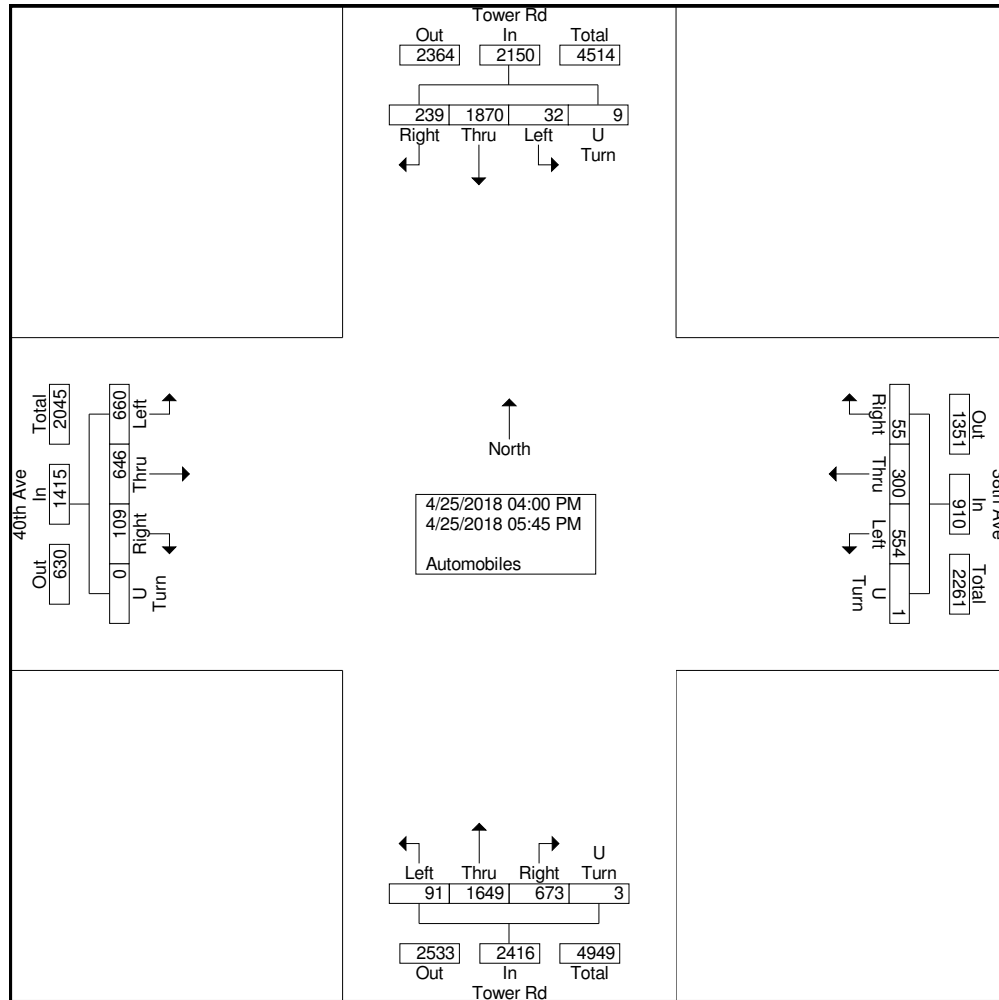


Ridgeview Data
Collection

Morrison, CO 80465

Aurora, CO
GEI Remainder Tract
PM Peak
40th Ave/38th Ave and Tower Rd

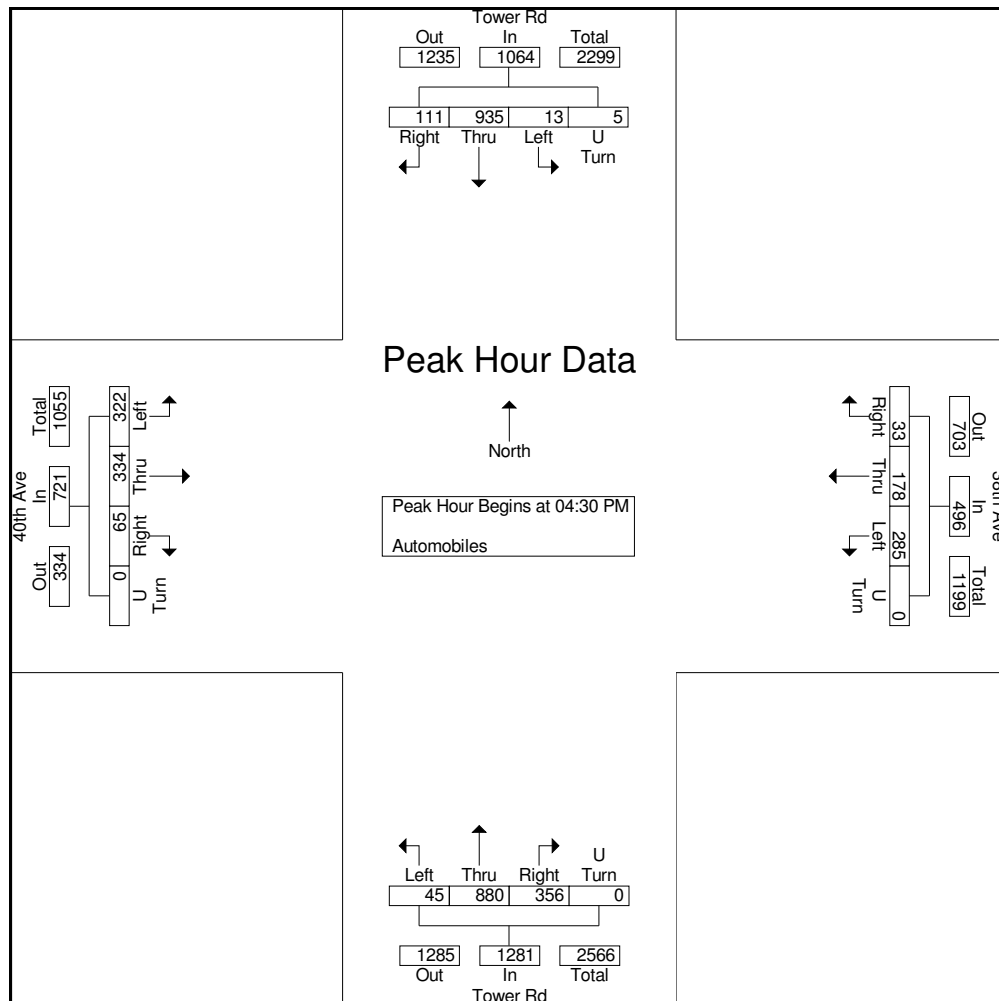
File Name : 40th-38th and Tower Rd PM
Site Code : IPO 339
Start Date : 4/25/2018
Page No : 2

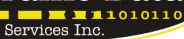


Aurora, CO
GEI Remainder Tract
PM Peak
40th Ave/38th Ave and Tower Rd

File Name : 40th-38th and Tower Rd PM
Site Code : IPO 339
Start Date : 4/25/2018
Page No : 3

	40th Ave Eastbound					38th Ave Westbound					Tower Rd Northbound					Tower Rd Southbound					
Start Time	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	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:30 PM																					
04:30 PM	80	85	20	0	185	78	42	9	0	129	12	210	76	0	298	4	231	24	0	259	871
04:45 PM	80	78	20	0	178	76	44	3	0	123	9	239	92	0	340	0	252	25	1	278	919
05:00 PM	76	87	12	0	175	67	49	7	0	123	17	210	82	0	309	5	235	32	2	274	881
05:15 PM	86	84	13	0	183	64	43	14	0	121	7	221	106	0	334	4	217	30	2	253	891
Total Volume	322	334	65	0	721	285	178	33	0	496	45	880	356	0	1281	13	935	111	5	1064	3562
% App. Total	44.7	46.3	9	0		57.5	35.9	6.7	0		3.5	68.7	27.8	0		1.2	87.9	10.4	0.5		
PHF	.936	.960	.813	.000	.974	.913	.908	.589	.000	.961	.662	.921	.840	.000	.942	.650	.928	.867	.625	.957	.969

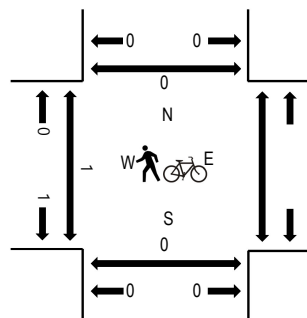




www.alltrafficdata.net

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

Peak Hour - Pedestrians/Bicycles on Crosswalk



Note: Total study counts contained in parentheses.

Interval Start Time	I-70 NORTH RAMP								AIRPORT BLVD				AIRPORT BLVD				Total	Rolling Hour	Pedestrian Crossings			
	Eastbound				Westbound				Northbound				Southbound						West	East	South	North
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right						
6:45 AM	0	0	0	0					1	137	381	0	0	0	256	31	806	3,192	0	0	0	
7:00 AM	0	0	0	0					1	110	401	0	0	0	226	53	791		0	0	0	
7:15 AM	0	0	0	0					0	138	397	0	0	0	225	80	840		0	0	0	
7:30 AM	0	0	0	0					1	138	323	0	0	0	211	82	755		1	0	0	
Count Total	0	0	0	0					3	523	1,502	0	0	0	918	246	3,192		1	0	0	
Peak Hour	0	0	0	0					3	523	1,502	0	0	0	918	246	3,192		1	0	0	



(303) 216-2439
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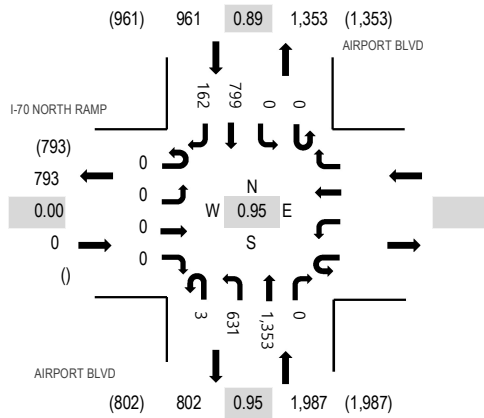
Location: 32 AIRPORT BLVD & I-70 NORTH RAMP PM

Date: Thursday, April 5, 2018

Peak Hour: 03:30 PM - 04:30 PM

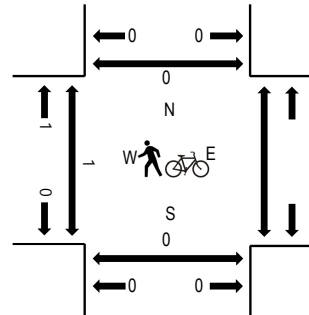
Peak 15-Minutes: 04:00 PM - 04:15 PM

Peak Hour - All Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles on Crosswalk



Traffic Counts

Interval Start Time	I-70 NORTH RAMP Eastbound				Westbound				AIRPORT BLVD Northbound				AIRPORT BLVD Southbound				Total	Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
3:30 PM	0	0	0	0	0	0	0	0	2	151	315	0	0	0	183	36	687	2,948	0	0	0	0
3:45 PM	0	0	0	0	0	0	0	0	0	154	337	0	0	0	183	42	716		0	0	0	0
4:00 PM	0	0	0	0	0	0	0	0	0	172	331	0	0	0	227	43	773		0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	1	154	370	0	0	0	206	41	772		0	0	0	0
Count Total	0	0	0	0	0	0	0	0	3	631	1,353	0	0	0	799	162	2,948		0	0	0	0
Peak Hour	0	0	0	0	0	0	0	0	3	631	1,353	0	0	0	799	162	2,948		0	0	0	0

Aurora, CO
Salida Flex
AM Peak
Salida St and Telluride St

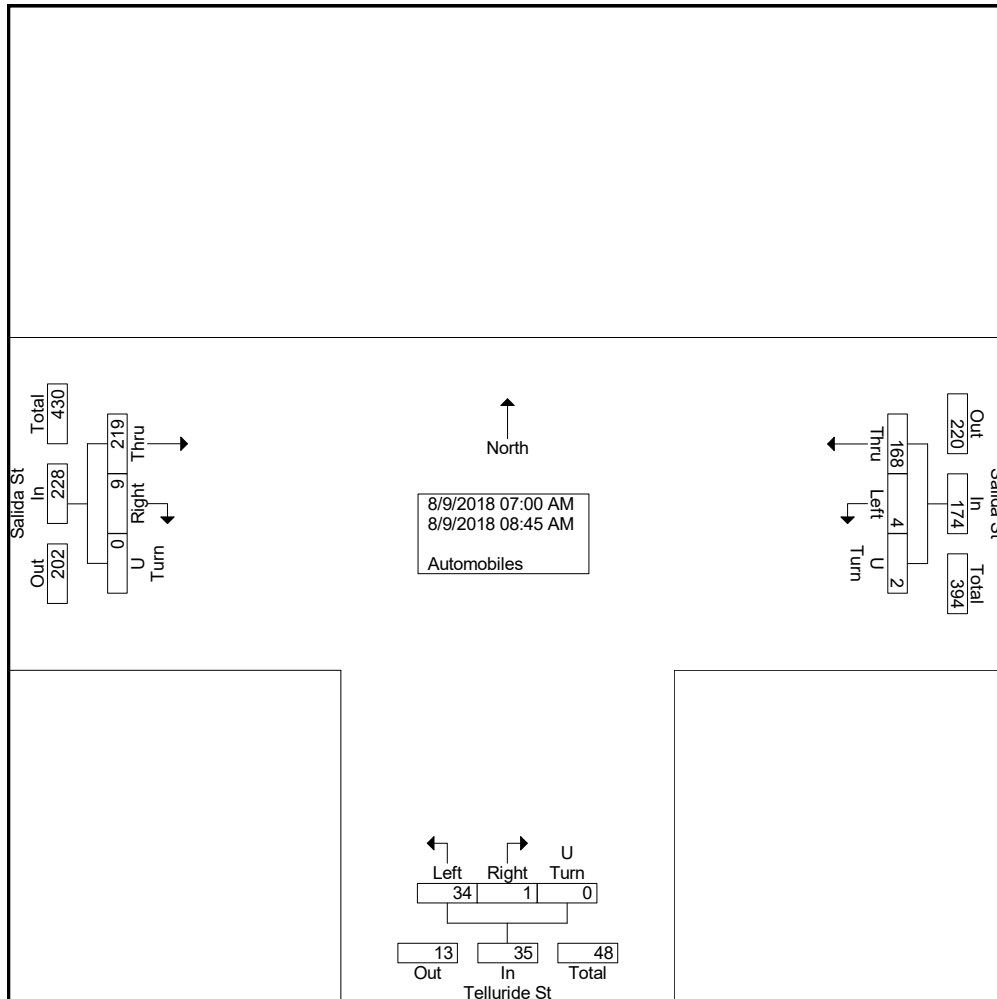
File Name : Telluride and Salida AM
Site Code : IPO 363
Start Date : 8/9/2018
Page No : 1

Groups Printed- Automobiles

Start Time	Salida St Eastbound				Salida St Westbound				Telluride St Northbound				Int. Total
	Thru	Right	U Turn	App. Total	Left	Thru	U Turn	App. Total	Left	Right	U Turn	App. Total	
07:00 AM	22	0	0	22	0	25	0	25	3	0	0	3	50
07:15 AM	26	0	0	26	0	20	0	20	4	0	0	4	50
07:30 AM	26	2	0	28	0	23	0	23	1	0	0	1	52
07:45 AM	26	2	0	28	0	34	1	35	3	0	0	3	66
Total	100	4	0	104	0	102	1	103	11	0	0	11	218
08:00 AM	28	1	0	29	0	14	0	14	3	1	0	4	47
08:15 AM	29	1	0	30	0	20	0	20	8	0	0	8	58
08:30 AM	23	2	0	25	2	15	0	17	5	0	0	5	47
08:45 AM	39	1	0	40	2	17	1	20	7	0	0	7	67
Total	119	5	0	124	4	66	1	71	23	1	0	24	219
Grand Total	219	9	0	228	4	168	2	174	34	1	0	35	437
Apprch %	96.1	3.9	0		2.3	96.6	1.1		97.1	2.9	0		
Total %	50.1	2.1	0	52.2	0.9	38.4	0.5	39.8	7.8	0.2	0	8	

Aurora, CO
Salida Flex
AM Peak
Salida St and Telluride St

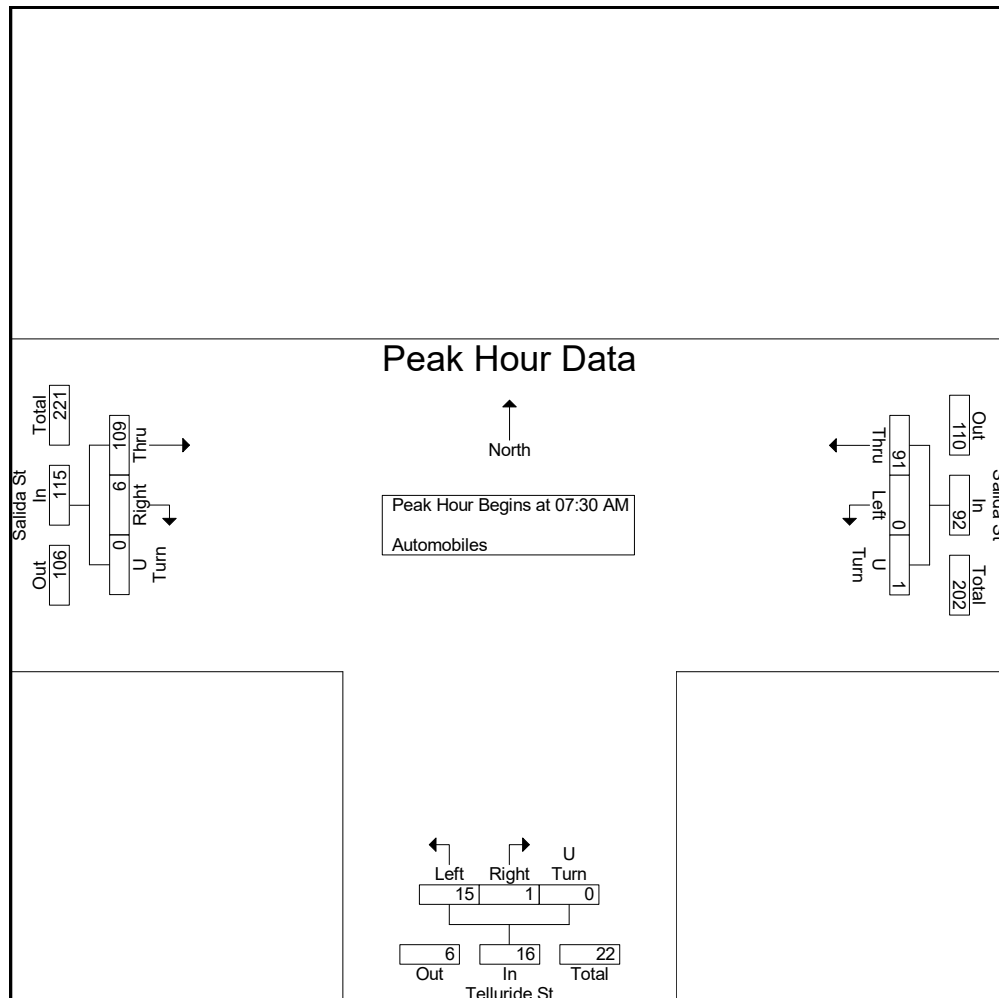
File Name : Telluride and Salida AM
Site Code : IPO 363
Start Date : 8/9/2018
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Aurora, CO
Salida Flex
AM Peak
Salida St and Telluride St

File Name : Telluride and Salida AM
Site Code : IPO 363
Start Date : 8/9/2018
Page No : 3

	Salida St Eastbound				Salida St Westbound				Telluride St Northbound				
Start Time	Thru	Right	U Turn	App. Total	Left	Thru	U Turn	App. Total	Left	Right	U Turn	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 07:30 AM													
07:30 AM	26	2	0	28	0	23	0	23	1	0	0	1	52
07:45 AM	26	2	0	28	0	34	1	35	3	0	0	3	66
08:00 AM	28	1	0	29	0	14	0	14	3	1	0	4	47
08:15 AM	29	1	0	30	0	20	0	20	8	0	0	8	58
Total Volume	109	6	0	115	0	91	1	92	15	1	0	16	223
% App. Total	94.8	5.2	0		0	98.9	1.1		93.8	6.2	0		
PHF	.940	.750	.000	.958	.000	.669	.250	.657	.469	.250	.000	.500	.845



Aurora, CO
Salida Flex
PM Peak
Salida St and Telluride St

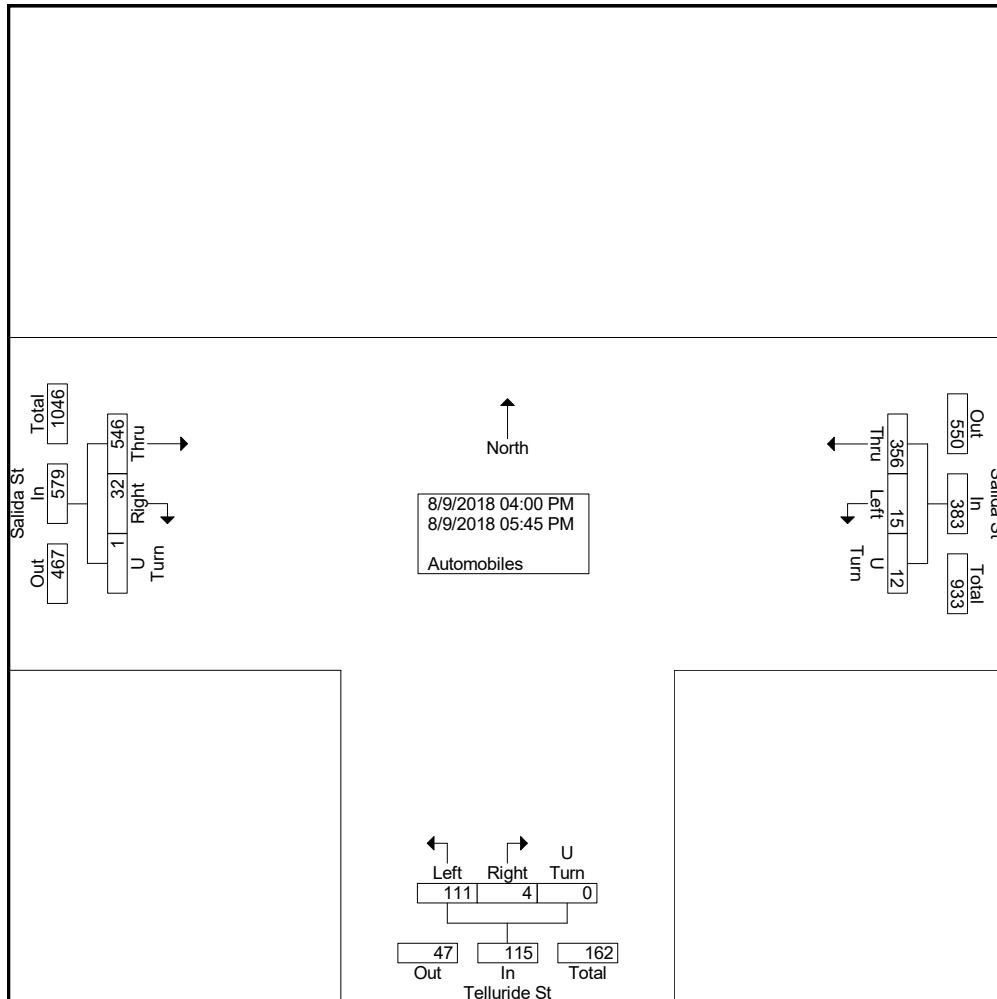
File Name : Telluride and Salida PM
Site Code : IPO 363
Start Date : 8/9/2018
Page No : 1

Groups Printed- Automobiles

Start Time	Salida St Eastbound				Salida St Westbound				Telluride St Northbound				Int. Total
	Thru	Right	U Turn	App. Total	Left	Thru	U Turn	App. Total	Left	Right	U Turn	App. Total	
04:00 PM	54	2	0	56	3	37	0	40	19	0	0	19	115
04:15 PM	67	4	1	72	3	31	0	34	12	1	0	13	119
04:30 PM	59	7	0	66	3	38	4	45	10	0	0	10	121
04:45 PM	65	3	0	68	1	43	2	46	10	3	0	13	127
Total	245	16	1	262	10	149	6	165	51	4	0	55	482
05:00 PM	75	3	0	78	2	59	3	64	20	0	0	20	162
05:15 PM	89	2	0	91	2	48	0	50	17	0	0	17	158
05:30 PM	57	5	0	62	1	52	3	56	13	0	0	13	131
05:45 PM	80	6	0	86	0	48	0	48	10	0	0	10	144
Total	301	16	0	317	5	207	6	218	60	0	0	60	595
Grand Total	546	32	1	579	15	356	12	383	111	4	0	115	1077
Apprch %	94.3	5.5	0.2		3.9	93	3.1		96.5	3.5	0		
Total %	50.7	3	0.1	53.8	1.4	33.1	1.1	35.6	10.3	0.4	0	10.7	

Aurora, CO
Salida Flex
PM Peak
Salida St and Telluride St

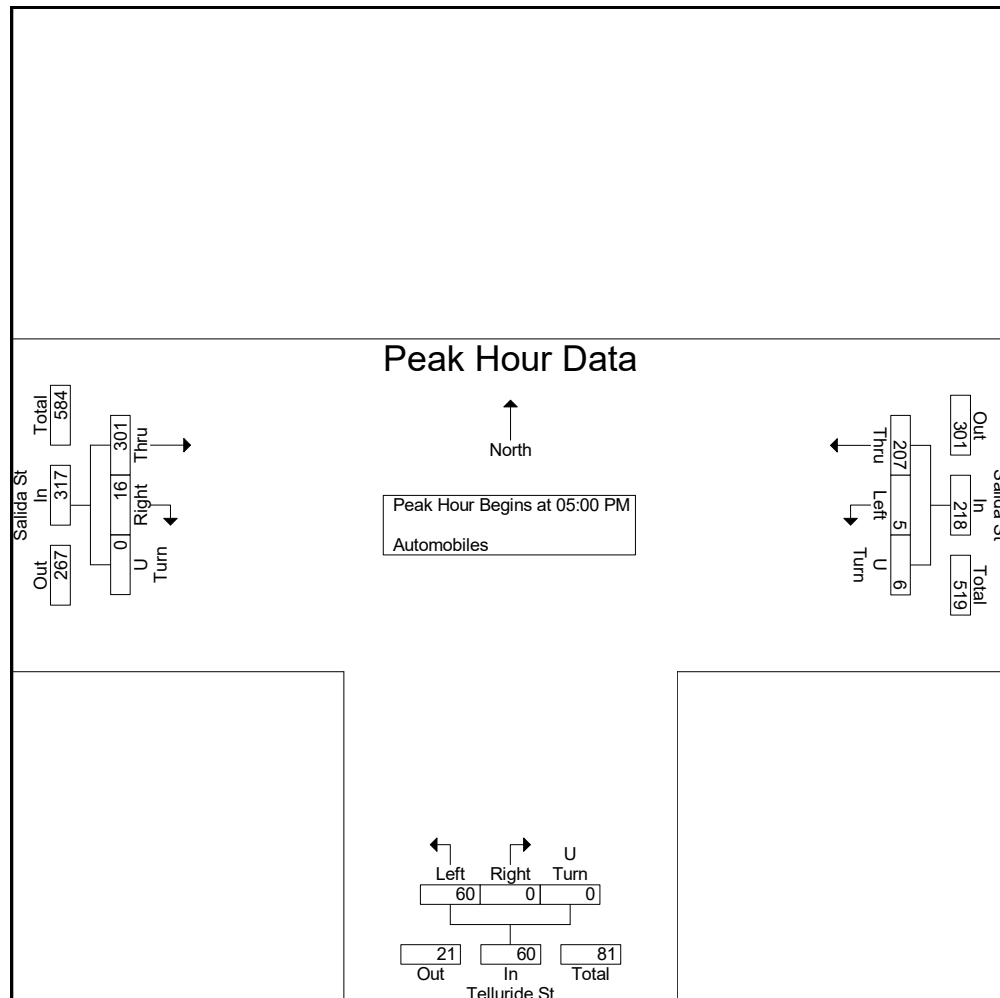
File Name : Telluride and Salida PM
Site Code : IPO 363
Start Date : 8/9/2018
Page No : 2



Aurora, CO
Salida Flex
PM Peak
Salida St and Telluride St

File Name : Telluride and Salida PM
Site Code : IPO 363
Start Date : 8/9/2018
Page No : 3

	Salida St Eastbound				Salida St Westbound				Telluride St Northbound				
Start Time	Thru	Right	U Turn	App. Total	Left	Thru	U Turn	App. Total	Left	Right	U Turn	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 05:00 PM													
05:00 PM	75	3	0	78	2	59	3	64	20	0	0	20	162
05:15 PM	89	2	0	91	2	48	0	50	17	0	0	17	158
05:30 PM	57	5	0	62	1	52	3	56	13	0	0	13	131
05:45 PM	80	6	0	86	0	48	0	48	10	0	0	10	144
Total Volume	301	16	0	317	5	207	6	218	60	0	0	60	595
% App. Total	95	5	0		2.3	95	2.8		100	0	0		
PHF	.846	.667	.000	.871	.625	.877	.500	.852	.750	.000	.000	.750	.918





Morrison, CO 80465

Aurora, CO
Salida Flex
AM Peak
Salida St and Walden St

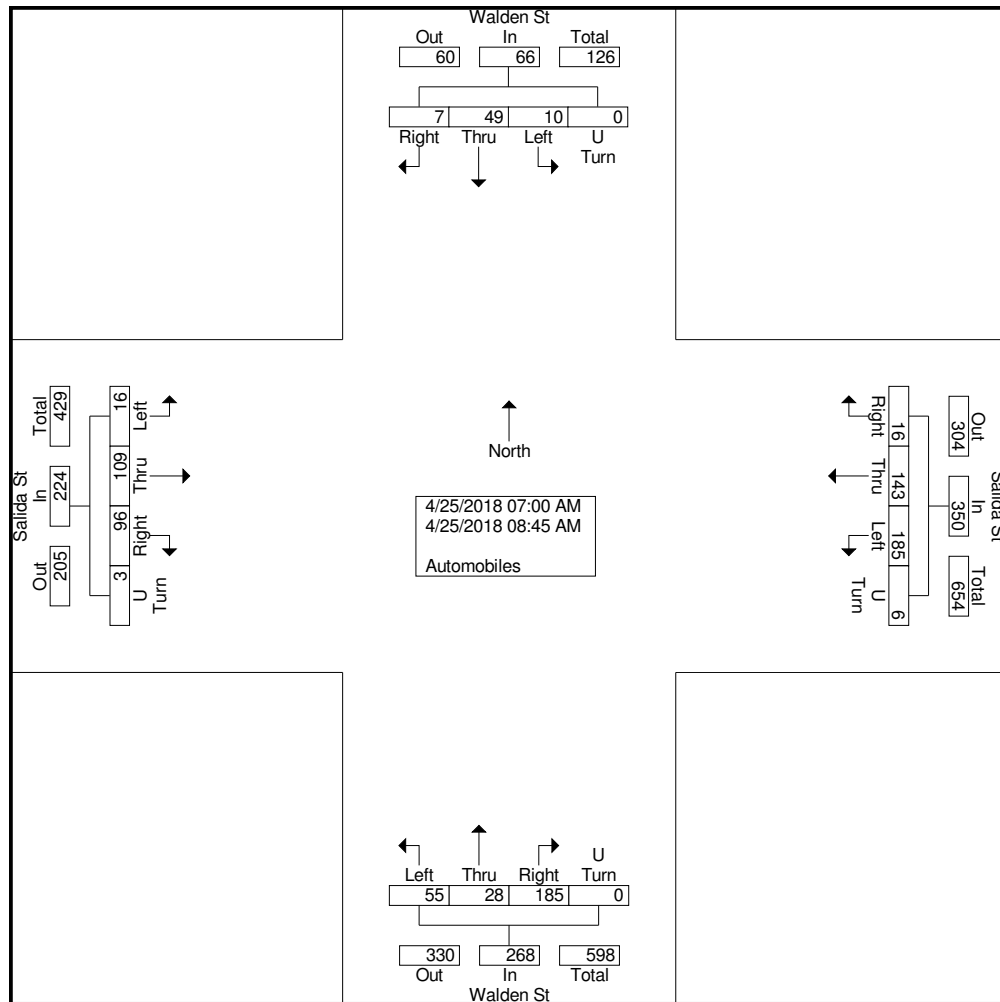
File Name : Salida St and Walden St AM
Site Code : IPO 338
Start Date : 4/25/2018
Page No : 1

Groups Printed- Automobiles

Start Time	Salida St Eastbound					Salida St Westbound					Walden St Northbound					Walden St 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	1	11	14	0	26	13	20	1	0	34	3	1	21	0	25	0	9	1	0	10	95
07:15 AM	1	13	8	1	23	24	23	2	0	49	8	5	16	0	29	1	2	0	0	3	104
07:30 AM	2	12	7	0	21	15	28	1	1	45	8	3	27	0	38	1	9	2	0	12	116
07:45 AM	1	11	11	0	23	28	20	5	1	54	8	2	21	0	31	2	7	1	0	10	118
Total	5	47	40	1	93	80	91	9	2	182	27	11	85	0	123	4	27	4	0	35	433
08:00 AM	1	23	13	0	37	19	18	2	1	40	3	0	21	0	24	3	5	0	0	8	109
08:15 AM	4	12	10	0	26	17	10	1	1	29	5	5	20	0	30	0	10	2	0	12	97
08:30 AM	4	14	19	1	38	33	13	3	2	51	18	7	28	0	53	3	4	1	0	8	150
08:45 AM	2	13	14	1	30	36	11	1	0	48	2	5	31	0	38	0	3	0	0	3	119
Total	11	62	56	2	131	105	52	7	4	168	28	17	100	0	145	6	22	3	0	31	475
Grand Total	16	109	96	3	224	185	143	16	6	350	55	28	185	0	268	10	49	7	0	66	908
Apprch %	7.1	48.7	42.9	1.3		52.9	40.9	4.6	1.7		20.5	10.4	69	0		15.2	74.2	10.6	0		
Total %	1.8	12	10.6	0.3	24.7	20.4	15.7	1.8	0.7	38.5	6.1	3.1	20.4	0	29.5	1.1	5.4	0.8	0	7.3	

Aurora, CO
Salida Flex
AM Peak
Salida St and Walden St

File Name : Salida St and Walden St AM
Site Code : IPO 338
Start Date : 4/25/2018
Page No : 2



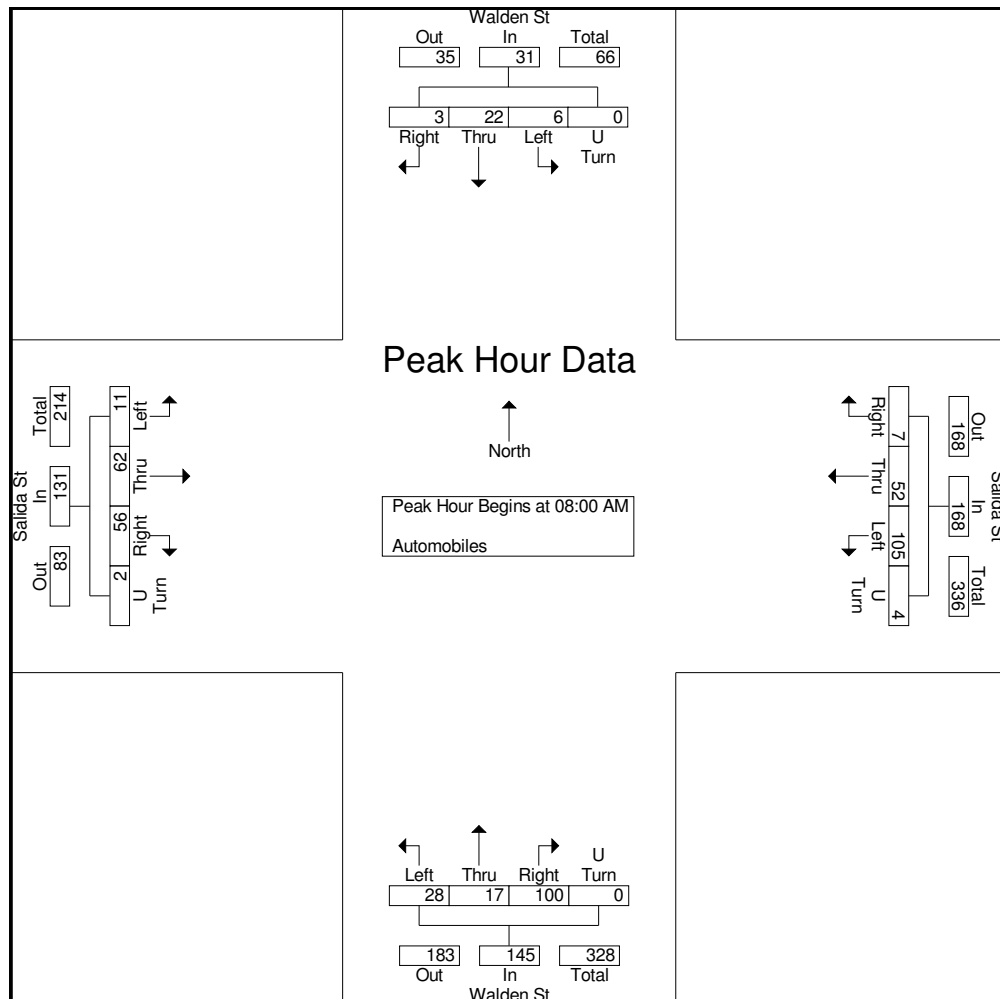


Morrison, CO 80465

Aurora, CO
Salida Flex
AM Peak
Salida St and Walden St

File Name : Salida St and Walden St AM
Site Code : IPO 338
Start Date : 4/25/2018
Page No : 3

	Salida St Eastbound					Salida St Westbound					Walden St Northbound					Walden St Southbound					
Start Time	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	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 08:00 AM																					
08:00 AM	1	23	13	0	37	19	18	2	1	40	3	0	21	0	24	3	5	0	0	8	109
08:15 AM	4	12	10	0	26	17	10	1	1	29	5	5	20	0	30	0	10	2	0	12	97
08:30 AM	4	14	19	1	38	33	13	3	2	51	18	7	28	0	53	3	4	1	0	8	150
08:45 AM	2	13	14	1	30	36	11	1	0	48	2	5	31	0	38	0	3	0	0	3	119
Total Volume	11	62	56	2	131	105	52	7	4	168	28	17	100	0	145	6	22	3	0	31	475
% App. Total	8.4	47.3	42.7	1.5		62.5	31	4.2	2.4		19.3	11.7	69	0		19.4	71	9.7	0		
PHF	.688	.674	.737	.500	.862	.729	.722	.583	.500	.824	.389	.607	.806	.000	.684	.500	.550	.375	.000	.646	.792





Morrison, CO 80465

Aurora, CO
Salida Flex
PM Peak
Salida St and Walden St

File Name : Salida St and Walden St PM
Site Code : IPO 338
Start Date : 4/25/2018
Page No : 1

Groups Printed- Automobiles

Start Time	Salida St Eastbound					Salida St Westbound					Walden St Northbound					Walden St 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	10	35	23	2	70	37	31	7	1	76	17	7	52	0	76	6	7	2	0	15	237
04:15 PM	10	38	31	1	80	47	23	2	1	73	21	11	47	0	79	6	9	3	0	18	250
04:30 PM	8	51	25	1	85	39	22	1	0	62	12	9	53	0	74	2	14	0	0	16	237
04:45 PM	6	38	18	1	63	50	36	1	1	88	18	8	51	0	77	4	9	5	0	18	246
Total	34	162	97	5	298	173	112	11	3	299	68	35	203	0	306	18	39	10	0	67	970
05:00 PM	7	38	32	3	80	40	32	2	2	76	18	4	50	0	72	3	9	3	0	15	243
05:15 PM	8	69	29	2	108	47	34	1	2	84	23	7	60	0	90	4	7	5	0	16	298
05:30 PM	5	58	13	2	78	47	26	3	2	78	20	8	41	0	69	4	13	8	0	25	250
05:45 PM	3	34	33	2	72	48	36	1	0	85	15	6	40	0	61	3	6	5	0	14	232
Total	23	199	107	9	338	182	128	7	6	323	76	25	191	0	292	14	35	21	0	70	1023
Grand Total	57	361	204	14	636	355	240	18	9	622	144	60	394	0	598	32	74	31	0	137	1993
Apprch %	9	56.8	32.1	2.2		57.1	38.6	2.9	1.4		24.1	10	65.9	0		23.4	54	22.6	0		
Total %	2.9	18.1	10.2	0.7	31.9	17.8	12	0.9	0.5	31.2	7.2	3	19.8	0	30	1.6	3.7	1.6	0	6.9	

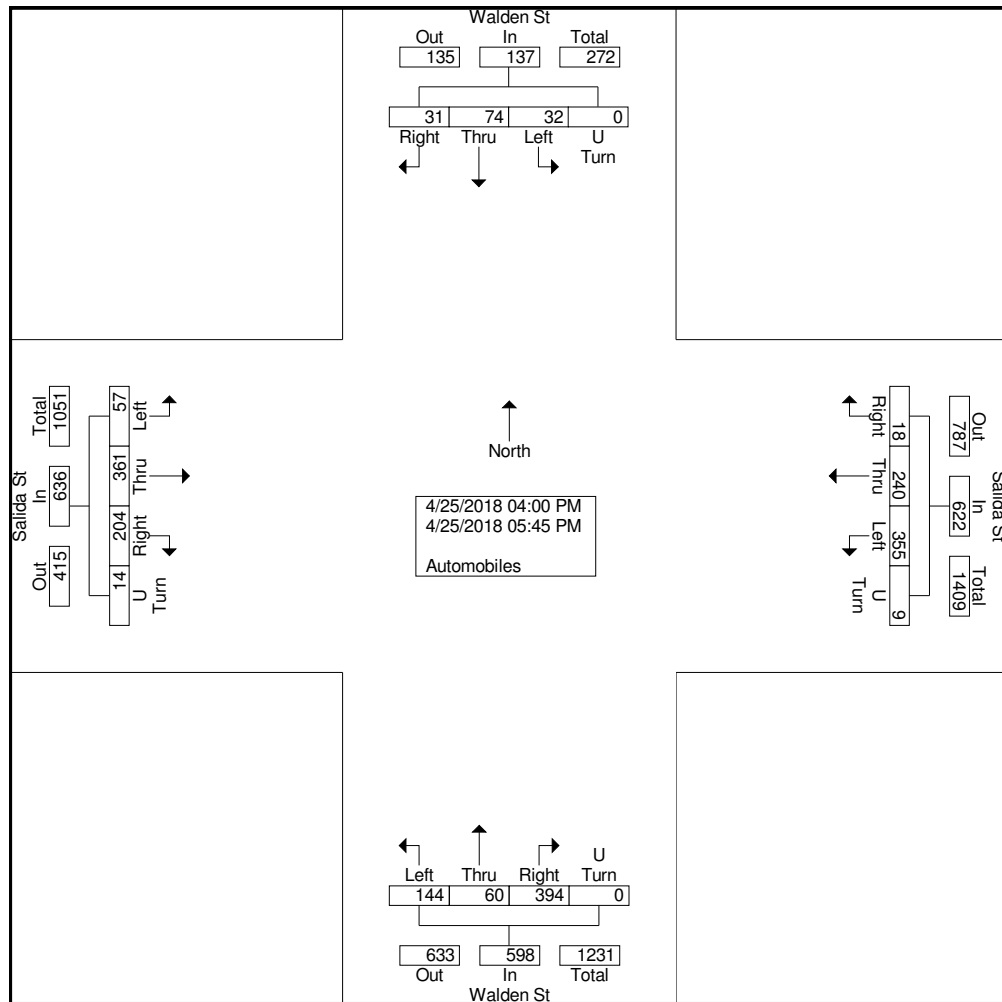


Ridgeview Data
Collection

Morrison, CO 80465

Aurora, CO
Salida Flex
PM Peak
Salida St and Walden St

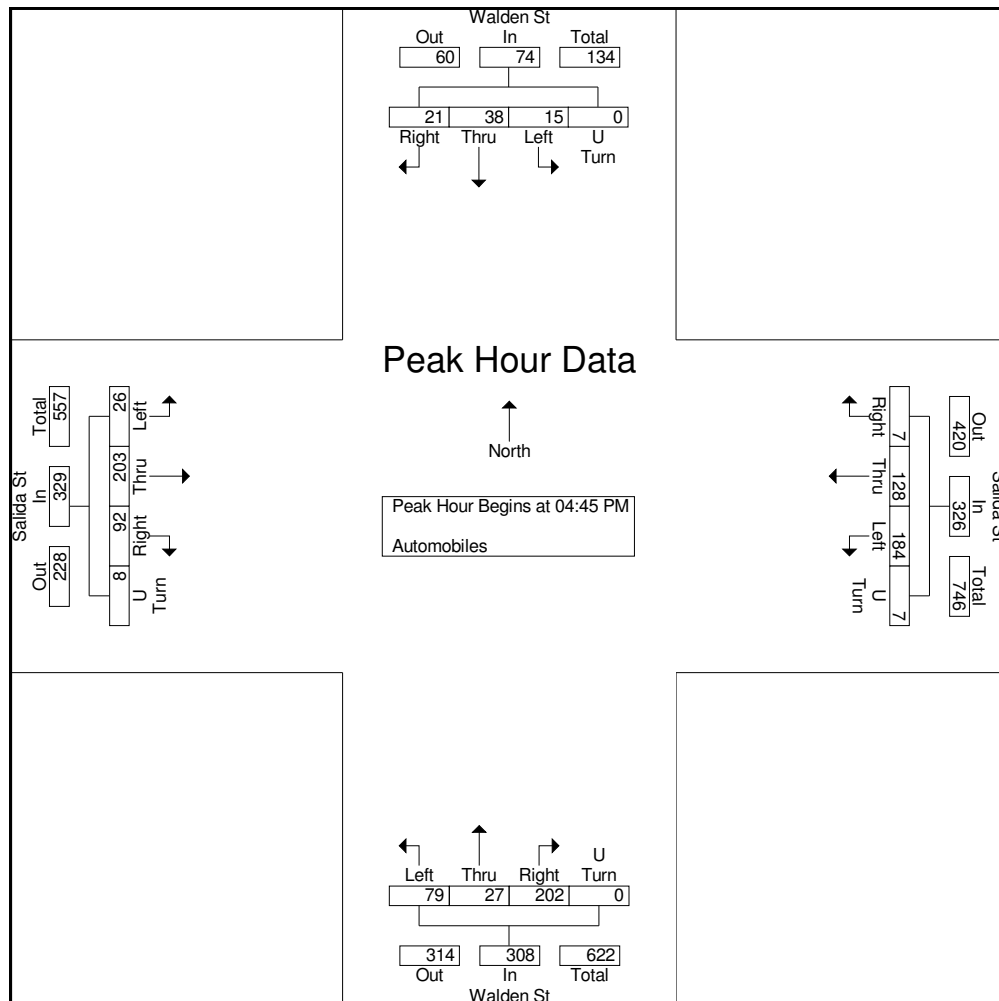
File Name : Salida St and Walden St PM
Site Code : IPO 338
Start Date : 4/25/2018
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Aurora, CO
Salida Flex
PM Peak
Salida St and Walden St

File Name : Salida St and Walden St PM
Site Code : IPO 338
Start Date : 4/25/2018
Page No : 3

	Salida St Eastbound					Salida St Westbound					Walden St Northbound					Walden St Southbound					
Start Time	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	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:45 PM																					
04:45 PM	6	38	18	1	63	50	36	1	1	88	18	8	51	0	77	4	9	5	0	18	246
05:00 PM	7	38	32	3	80	40	32	2	2	76	18	4	50	0	72	3	9	3	0	15	243
05:15 PM	8	69	29	2	108	47	34	1	2	84	23	7	60	0	90	4	7	5	0	16	298
05:30 PM	5	58	13	2	78	47	26	3	2	78	20	8	41	0	69	4	13	8	0	25	250
Total Volume	26	203	92	8	329	184	128	7	7	326	79	27	202	0	308	15	38	21	0	74	1037
% App. Total	7.9	61.7	28	2.4		56.4	39.3	2.1	2.1		25.6	8.8	65.6	0		20.3	51.4	28.4	0		
PHF	.813	.736	.719	.667	.762	.920	.889	.583	.875	.926	.859	.844	.842	.000	.856	.938	.731	.656	.000	.740	.870





Morrison, CO 80465

Aurora, CO
 GEI Remainder Tract
 AM Peak
 Salida St and Tower Rd

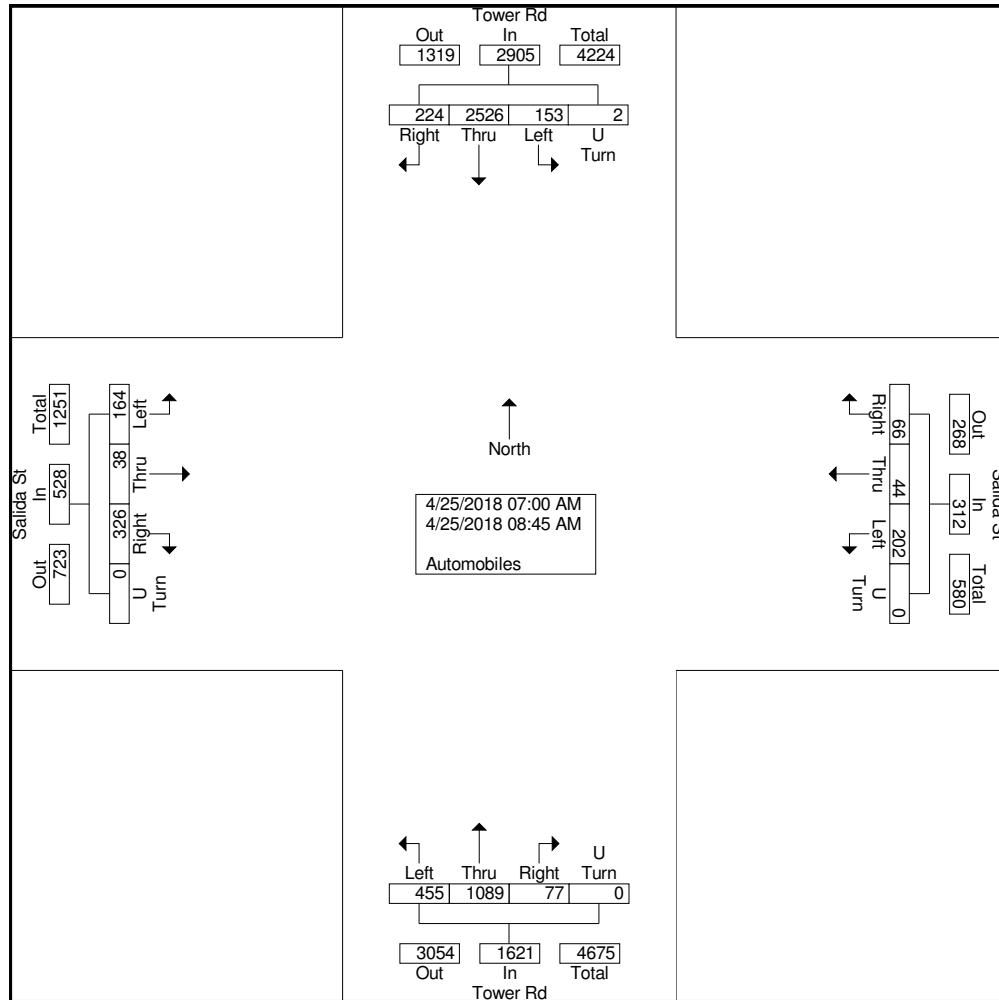
File Name : Salida St and Tower Rd AM
 Site Code : IPO 339
 Start Date : 4/25/2018
 Page No : 1

Groups Printed- Automobiles

Start Time	Salida St Eastbound					Salida St Westbound					Tower Rd Northbound					Tower Rd 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	25	5	38	0	68	21	6	7	0	34	47	133	10	0	190	11	371	17	0	399	691
07:15 AM	11	4	34	0	49	28	5	12	0	45	64	158	8	0	230	13	437	23	0	473	797
07:30 AM	26	5	46	0	77	17	6	6	0	29	68	179	7	0	254	15	375	21	1	412	772
07:45 AM	24	2	36	0	62	22	7	11	0	40	61	139	15	0	215	28	357	35	0	420	737
Total	86	16	154	0	256	88	24	36	0	148	240	609	40	0	889	67	1540	96	1	1704	2997
08:00 AM	23	7	48	0	78	31	6	11	0	48	51	138	10	0	199	11	294	29	1	335	660
08:15 AM	19	7	39	0	65	31	2	3	0	36	42	136	9	0	187	18	275	27	0	320	608
08:30 AM	16	5	46	0	67	29	5	9	0	43	66	112	8	0	186	23	228	37	0	288	584
08:45 AM	20	3	39	0	62	23	7	7	0	37	56	94	10	0	160	34	189	35	0	258	517
Total	78	22	172	0	272	114	20	30	0	164	215	480	37	0	732	86	986	128	1	1201	2369
Grand Total	164	38	326	0	528	202	44	66	0	312	455	1089	77	0	1621	153	2526	224	2	2905	5366
Apprch %	31.1	7.2	61.7	0		64.7	14.1	21.2	0		28.1	67.2	4.8	0		5.3	87	7.7	0.1		
Total %	3.1	0.7	6.1	0	9.8	3.8	0.8	1.2	0	5.8	8.5	20.3	1.4	0	30.2	2.9	47.1	4.2	0	54.1	

Aurora, CO
GEI Remainder Tract
AM Peak
Salida St and Tower Rd

File Name : Salida St and Tower Rd AM
Site Code : IPO 339
Start Date : 4/25/2018
Page No : 2





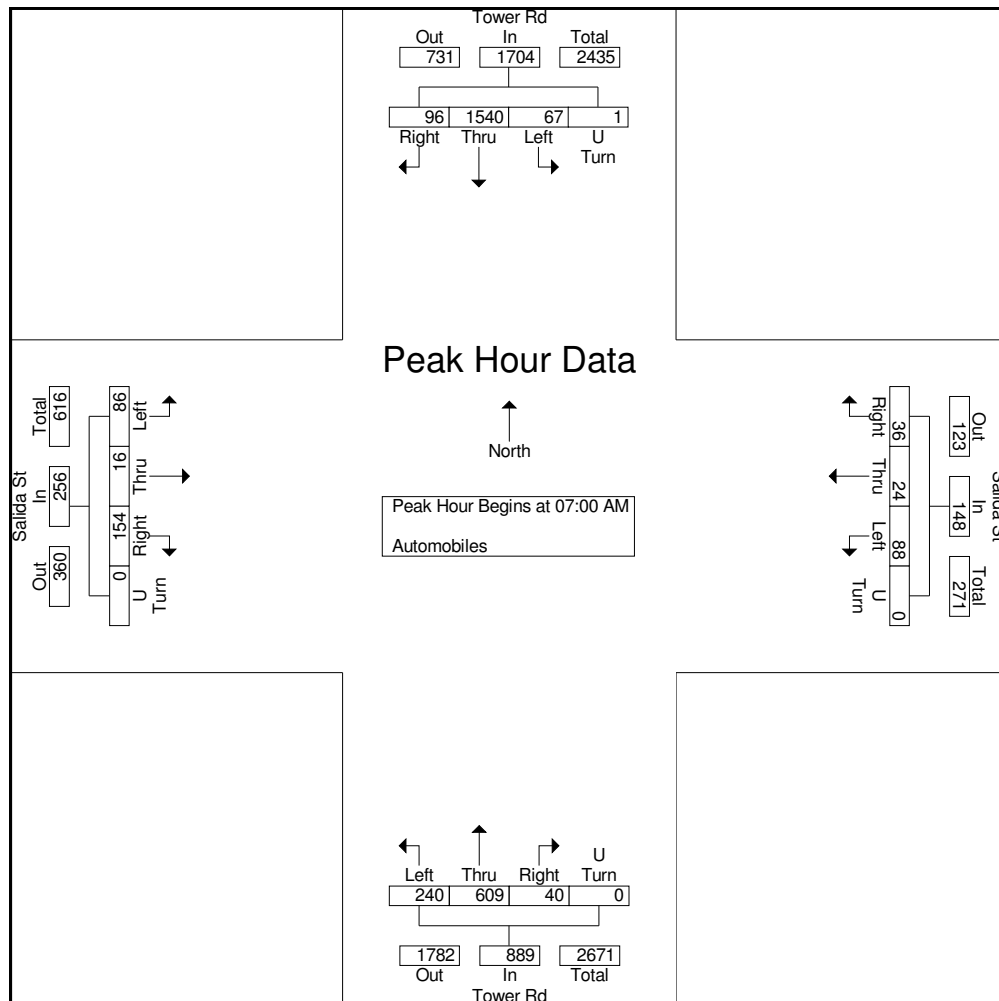
Ridgeview Data
Collection

Morrison, CO 80465

Aurora, CO
GEI Remainder Tract
AM Peak
Salida St and Tower Rd

File Name : Salida St and Tower Rd AM
Site Code : IPO 339
Start Date : 4/25/2018
Page No : 3

	Salida St Eastbound					Salida St Westbound					Tower Rd Northbound					Tower Rd Southbound					
Start Time	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	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:00 AM																					
07:00 AM	25	5	38	0	68	21	6	7	0	34	47	133	10	0	190	11	371	17	0	399	691
07:15 AM	11	4	34	0	49	28	5	12	0	45	64	158	8	0	230	13	437	23	0	473	797
07:30 AM	26	5	46	0	77	17	6	6	0	29	68	179	7	0	254	15	375	21	1	412	772
07:45 AM	24	2	36	0	62	22	7	11	0	40	61	139	15	0	215	28	357	35	0	420	737
Total Volume	86	16	154	0	256	88	24	36	0	148	240	609	40	0	889	67	1540	96	1	1704	2997
% App. Total	33.6	6.2	60.2	0		59.5	16.2	24.3	0		27	68.5	4.5	0		3.9	90.4	5.6	0.1		
PHF	.827	.800	.837	.000	.831	.786	.857	.750	.000	.822	.882	.851	.667	.000	.875	.598	.881	.686	.250	.901	.940





Morrison, CO 80465

Aurora, CO
 GEI Remainder Tract
 PM Peak
 Salida St and Tower Rd

File Name : Salida St and Tower Rd PM
 Site Code : IPO 339
 Start Date : 4/25/2018
 Page No : 1

Groups Printed- Automobiles

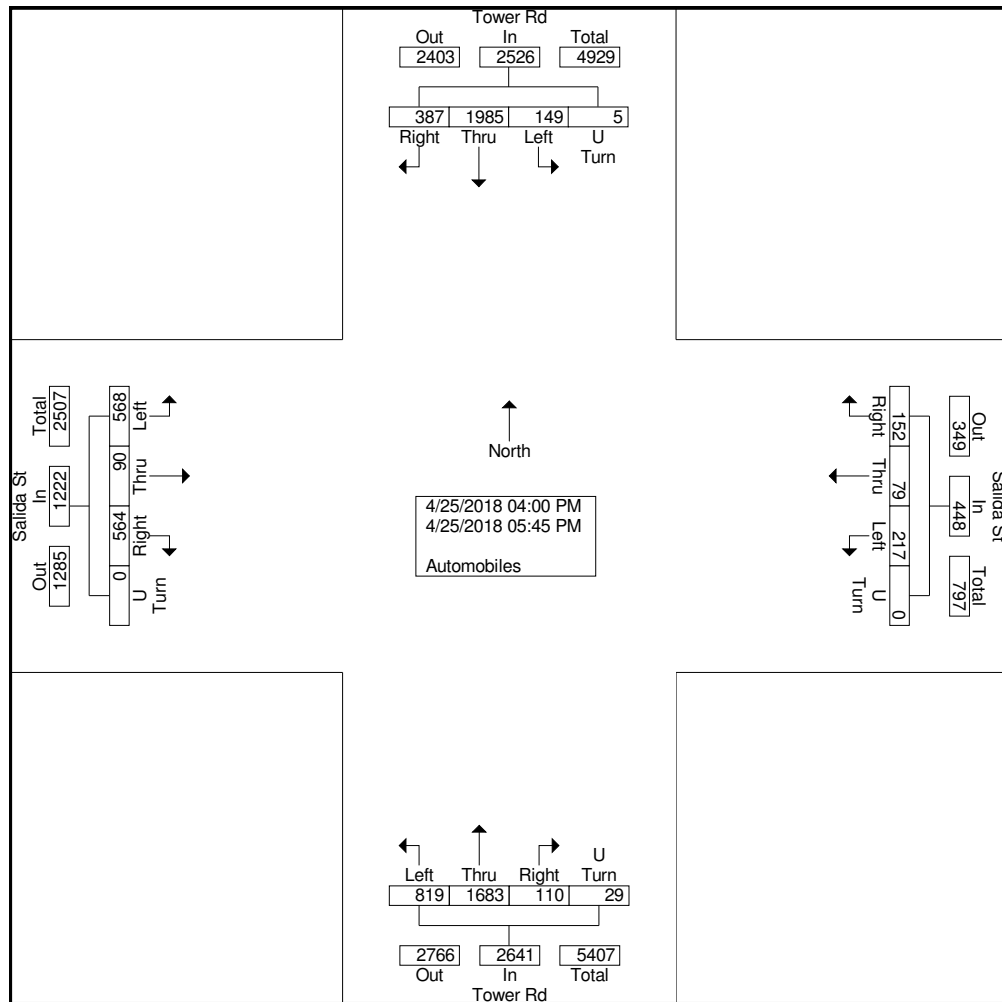
Start Time	Salida St Eastbound					Salida St Westbound					Tower Rd Northbound					Tower Rd Southbound					Int. Total
	Left	Thru	Right	U Turn	App. Total	Left	Thru	Right	U Turn	App. Total	Left	Thru	Right	U Turn	App. Total	Left	Thru	Right	U Turn	App. Total	
04:00 PM	63	13	58	0	134	19	17	19	0	55	101	189	15	1	306	24	244	46	1	315	810
04:15 PM	59	12	64	0	135	40	8	23	0	71	89	192	11	1	293	27	241	58	0	326	825
04:30 PM	79	9	68	0	156	13	3	16	0	32	104	204	14	2	324	15	261	50	0	326	838
04:45 PM	63	11	76	0	150	19	8	21	0	48	97	263	16	7	383	15	278	54	0	347	928
Total	264	45	266	0	575	91	36	79	0	206	391	848	56	11	1306	81	1024	208	1	1314	3401
05:00 PM	87	16	70	0	173	33	7	20	0	60	111	219	13	4	347	15	263	50	1	329	909
05:15 PM	92	11	88	0	191	34	13	18	0	65	112	208	13	9	342	13	227	41	1	282	880
05:30 PM	62	7	84	0	153	35	11	16	0	62	112	225	17	3	357	21	232	40	0	293	865
05:45 PM	63	11	56	0	130	24	12	19	0	55	93	183	11	2	289	19	239	48	2	308	782
Total	304	45	298	0	647	126	43	73	0	242	428	835	54	18	1335	68	961	179	4	1212	3436
Grand Total	568	90	564	0	1222	217	79	152	0	448	819	1683	110	29	2641	149	1985	387	5	2526	6837
Apprch %	46.5	7.4	46.2	0		48.4	17.6	33.9	0		31	63.7	4.2	1.1		5.9	78.6	15.3	0.2		
Total %	8.3	1.3	8.2	0	17.9	3.2	1.2	2.2	0	6.6	12	24.6	1.6	0.4	38.6	2.2	29	5.7	0.1	36.9	



Morrison, CO 80465

Aurora, CO
GEI Remainder Tract
PM Peak
Salida St and Tower Rd

File Name : Salida St and Tower Rd PM
Site Code : IPO 339
Start Date : 4/25/2018
Page No : 2





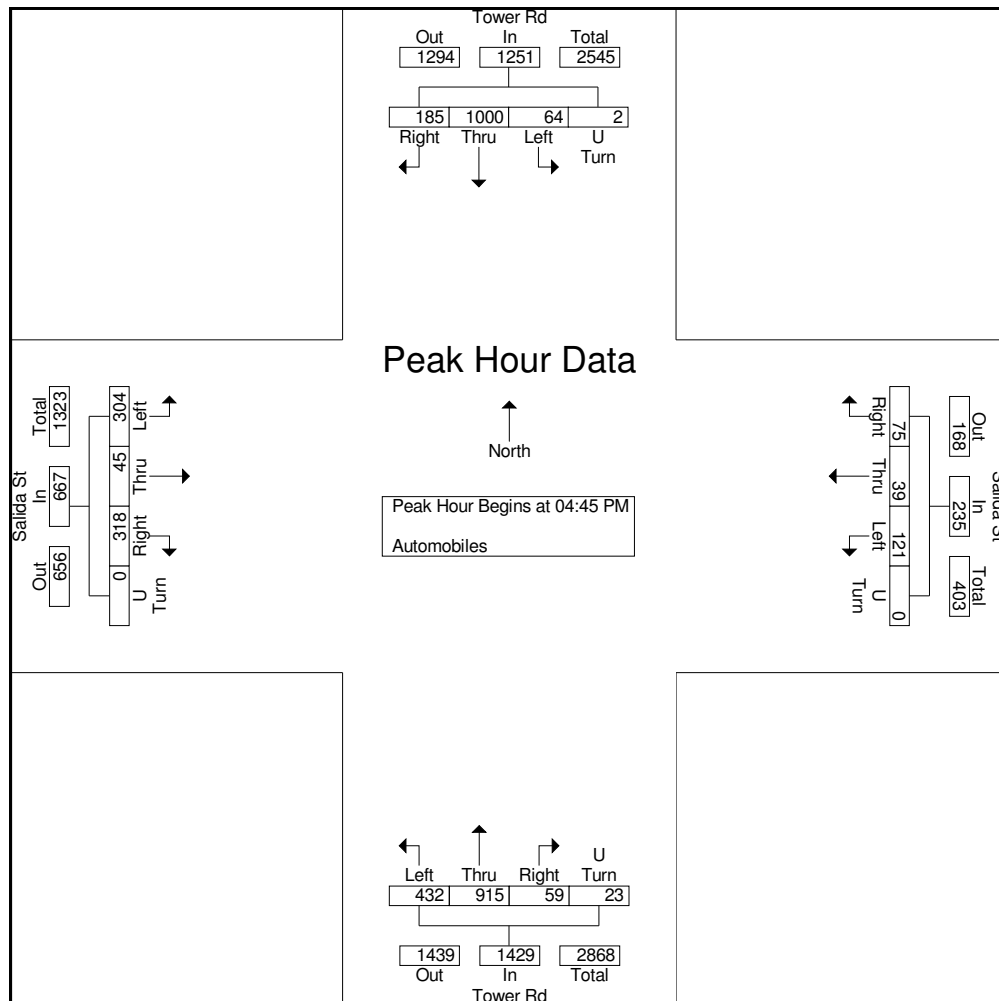
Ridgeview Data
Collection

Morrison, CO 80465

Aurora, CO
GEI Remainder Tract
PM Peak
Salida St and Tower Rd

File Name : Salida St and Tower Rd PM
Site Code : IPO 339
Start Date : 4/25/2018
Page No : 3

	Salida St Eastbound					Salida St Westbound					Tower Rd Northbound					Tower Rd Southbound					
Start Time	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	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:45 PM																					
04:45 PM	63	11	76	0	150	19	8	21	0	48	97	263	16	7	383	15	278	54	0	347	928
05:00 PM	87	16	70	0	173	33	7	20	0	60	111	219	13	4	347	15	263	50	1	329	909
05:15 PM	92	11	88	0	191	34	13	18	0	65	112	208	13	9	342	13	227	41	1	282	880
05:30 PM	62	7	84	0	153	35	11	16	0	62	112	225	17	3	357	21	232	40	0	293	865
Total Volume	304	45	318	0	667	121	39	75	0	235	432	915	59	23	1429	64	1000	185	2	1251	3582
% App. Total	45.6	6.7	47.7	0		51.5	16.6	31.9	0		30.2	64	4.1	1.6		5.1	79.9	14.8	0.2		
PHF	.826	.703	.903	.000	.873	.864	.750	.893	.000	.904	.964	.870	.868	.639	.933	.762	.899	.856	.500	.901	.965





Morrison, CO 80465

Aurora, CO
Majestic Commercenter Phase 11
AM Peak
32nd Parkway and Tower Rd

File Name : 32nd Pkwy and Tower Rd AM
Site Code : IPO 329
Start Date : 4/5/2018
Page No : 1

Groups Printed- Automobiles

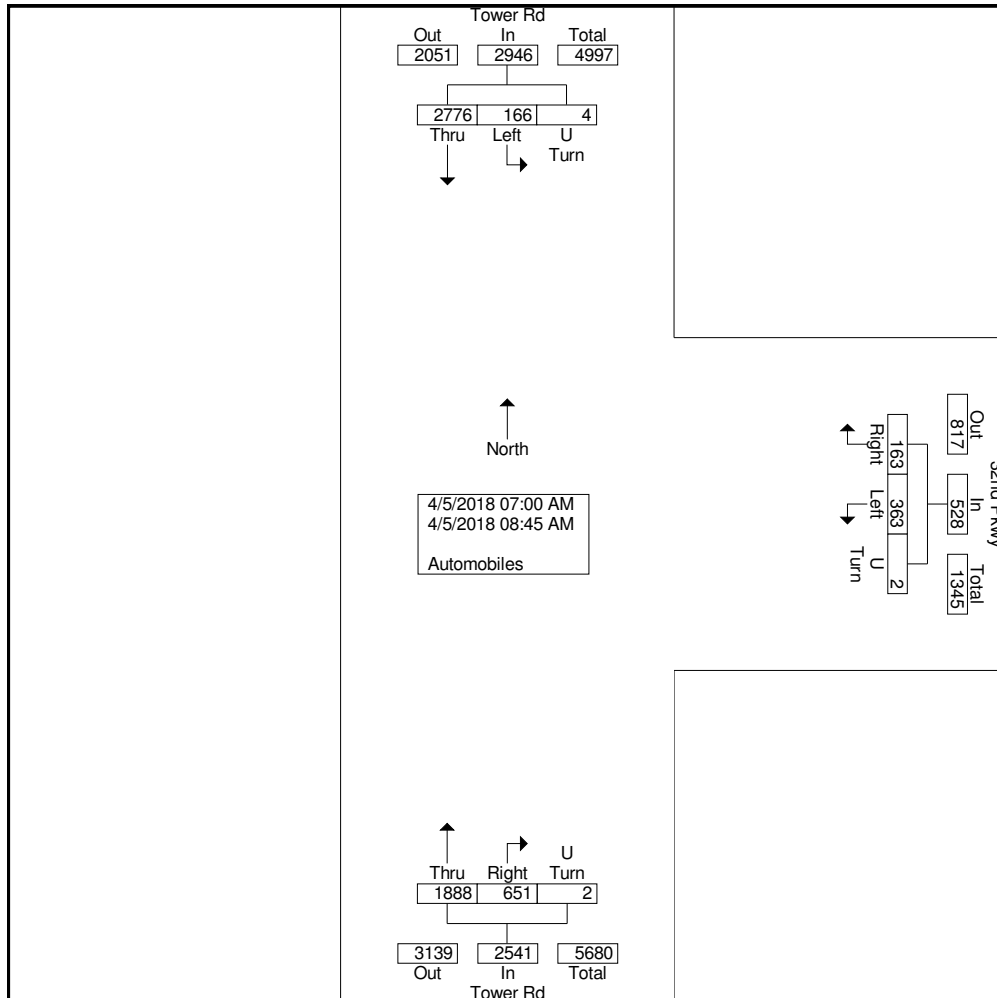
Start Time	32nd Pkwy Westbound				Tower Rd Northbound				Tower Rd Southbound				Int. Total
	Left	Right	U Turn	App. Total	Thru	Right	U Turn	App. Total	Left	Thru	U Turn	App. Total	
07:00 AM	45	20	0	65	215	77	0	292	15	378	1	394	751
07:15 AM	57	21	1	79	248	72	0	320	11	385	0	396	795
07:30 AM	58	24	0	82	304	72	1	377	24	375	0	399	858
07:45 AM	37	25	0	62	307	111	0	418	22	428	0	450	930
Total	197	90	1	288	1074	332	1	1407	72	1566	1	1639	3334
08:00 AM	45	12	0	57	236	82	0	318	22	367	1	390	765
08:15 AM	38	21	0	59	187	91	1	279	18	291	0	309	647
08:30 AM	31	28	0	59	209	75	0	284	23	287	2	312	655
08:45 AM	52	12	1	65	182	71	0	253	31	265	0	296	614
Total	166	73	1	240	814	319	1	1134	94	1210	3	1307	2681
Grand Total	363	163	2	528	1888	651	2	2541	166	2776	4	2946	6015
Apprch %	68.8	30.9	0.4		74.3	25.6	0.1		5.6	94.2	0.1		
Total %	6	2.7	0	8.8	31.4	10.8	0	42.2	2.8	46.2	0.1	49	



Morrison, CO 80465

Aurora, CO
Majestic Commercenter Phase 11
AM Peak
32nd Parkway and Tower Rd

File Name : 32nd Pkwy and Tower Rd AM
Site Code : IPO 329
Start Date : 4/5/2018
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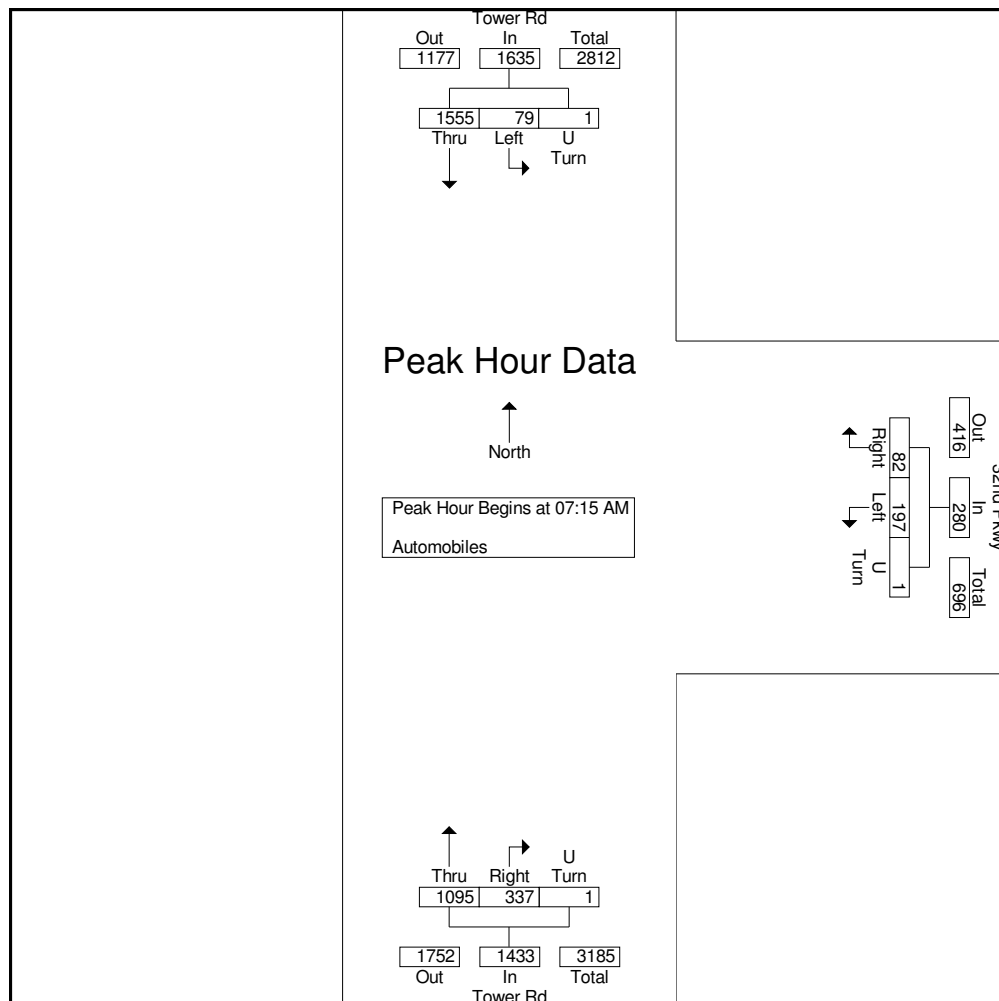


Morrison, CO 80465

Aurora, CO
Majestic Commercenter Phase 11
AM Peak
32nd Parkway and Tower Rd

File Name : 32nd Pkwy and Tower Rd AM
Site Code : IPO 329
Start Date : 4/5/2018
Page No : 3

	32nd Pkwy Westbound				Tower Rd Northbound				Tower Rd Southbound				
Start Time	Left	Right	U Turn	App. Total	Thru	Right	U Turn	App. Total	Left	Thru	U Turn	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 07:15 AM													
07:15 AM	57	21	1	79	248	72	0	320	11	385	0	396	795
07:30 AM	58	24	0	82	304	72	1	377	24	375	0	399	858
07:45 AM	37	25	0	62	307	111	0	418	22	428	0	450	930
08:00 AM	45	12	0	57	236	82	0	318	22	367	1	390	765
Total Volume	197	82	1	280	1095	337	1	1433	79	1555	1	1635	3348
% App. Total	70.4	29.3	0.4		76.4	23.5	0.1		4.8	95.1	0.1		
PHF	.849	.820	.250	.854	.892	.759	.250	.857	.823	.908	.250	.908	.900





Morrison, CO 80465

Aurora, CO
Majestic Commercenter Phase 11
PM Peak
32nd Parkway and Tower Rd

File Name : 32nd Pkwy and Tower Rd PM
Site Code : IPO 329
Start Date : 4/5/2018
Page No : 1

Groups Printed- Automobiles

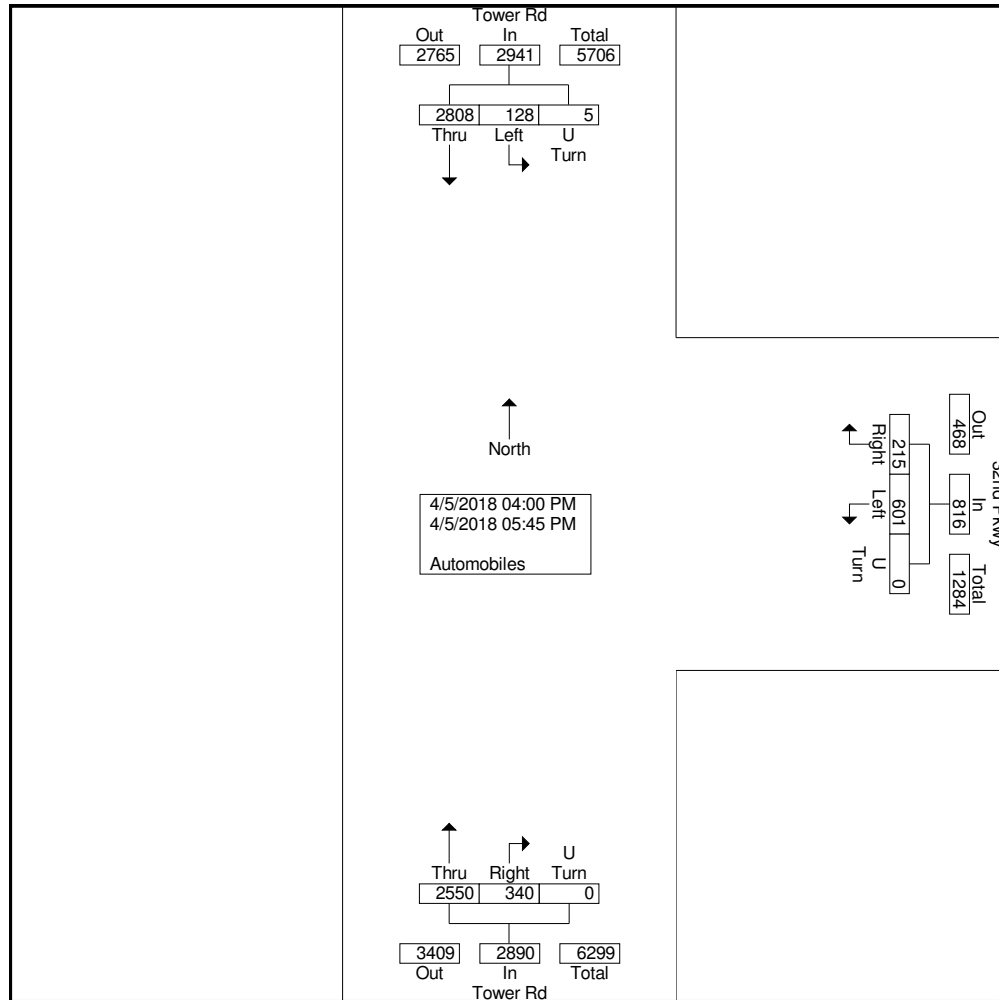
Start Time	32nd Pkwy Westbound				Tower Rd Northbound				Tower Rd Southbound				Int. Total
	Left	Right	U Turn	App. Total	Thru	Right	U Turn	App. Total	Left	Thru	U Turn	App. Total	
04:00 PM	82	26	0	108	308	58	0	366	15	345	0	360	834
04:15 PM	62	16	0	78	329	53	0	382	16	375	0	391	851
04:30 PM	102	28	0	130	294	38	0	332	15	369	0	384	846
04:45 PM	73	31	0	104	330	43	0	373	12	338	1	351	828
Total	319	101	0	420	1261	192	0	1453	58	1427	1	1486	3359
05:00 PM	96	38	0	134	301	35	0	336	18	345	0	363	833
05:15 PM	57	21	0	78	336	39	0	375	14	355	1	370	823
05:30 PM	67	34	0	101	306	47	0	353	21	333	2	356	810
05:45 PM	62	21	0	83	346	27	0	373	17	348	1	366	822
Total	282	114	0	396	1289	148	0	1437	70	1381	4	1455	3288
Grand Total	601	215	0	816	2550	340	0	2890	128	2808	5	2941	6647
Apprch %	73.7	26.3	0		88.2	11.8	0		4.4	95.5	0.2		
Total %	9	3.2	0	12.3	38.4	5.1	0	43.5	1.9	42.2	0.1	44.2	



Morrison, CO 80465

Aurora, CO
Majestic Commercenter Phase 11
PM Peak
32nd Parkway and Tower Rd

File Name : 32nd Pkwy and Tower Rd PM
Site Code : IPO 329
Start Date : 4/5/2018
Page No : 2



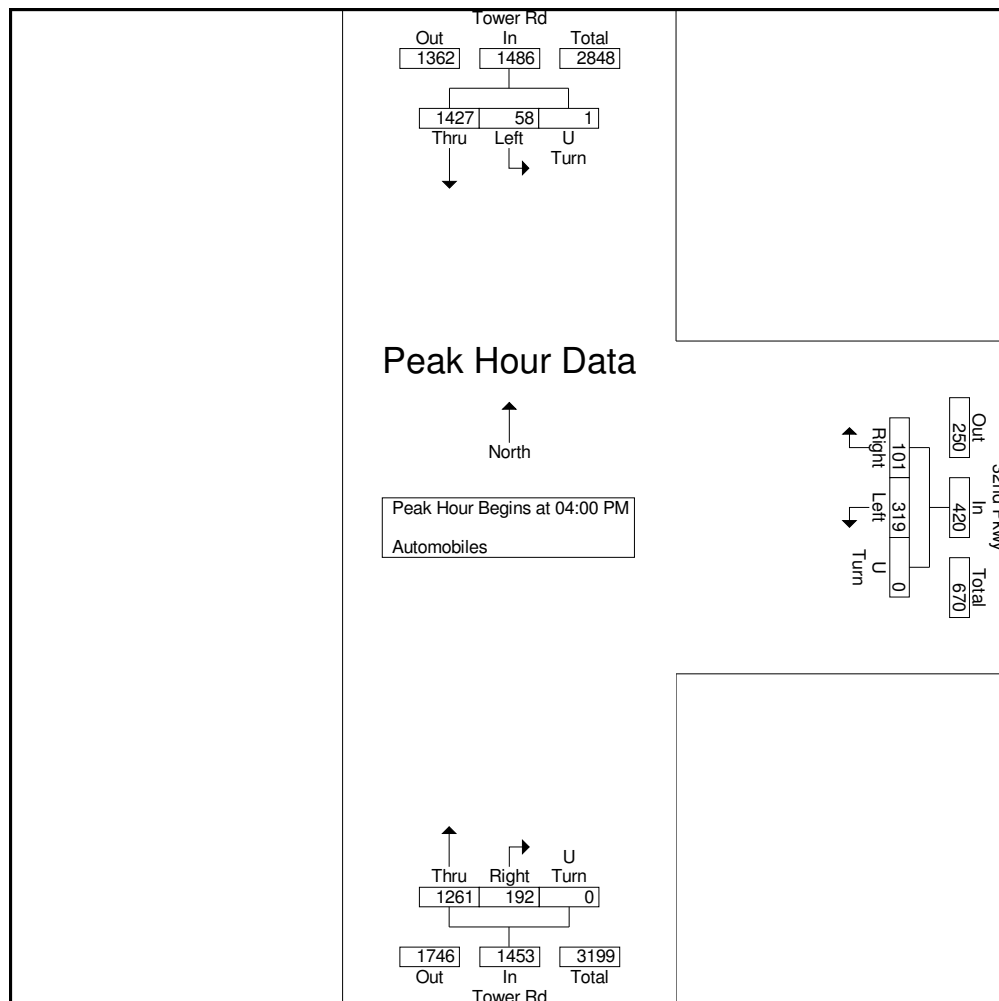


Morrison, CO 80465

Aurora, CO
Majestic Commercenter Phase 11
PM Peak
32nd Parkway and Tower Rd

File Name : 32nd Pkwy and Tower Rd PM
Site Code : IPO 329
Start Date : 4/5/2018
Page No : 3

	32nd Pkwy Westbound				Tower Rd Northbound				Tower Rd Southbound				
Start Time	Left	Right	U Turn	App. Total	Thru	Right	U Turn	App. Total	Left	Thru	U Turn	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 04:00 PM													
04:00 PM	82	26	0	108	308	58	0	366	15	345	0	360	834
04:15 PM	62	16	0	78	329	53	0	382	16	375	0	391	851
04:30 PM	102	28	0	130	294	38	0	332	15	369	0	384	846
04:45 PM	73	31	0	104	330	43	0	373	12	338	1	351	828
Total Volume	319	101	0	420	1261	192	0	1453	58	1427	1	1486	3359
% App. Total	76	24	0		86.8	13.2	0		3.9	96	0.1		
PHF	.782	.815	.000	.808	.955	.828	.000	.951	.906	.951	.250	.950	.987





Morrison, CO 80465

Aurora, CO
Majestic Tower Retail
AM Peak
I-70 Westbound Ramp and Tower Rd

File Name : I-70 WB Ramp & Tower AM
Site Code : IPO 336
Start Date : 4/25/2018
Page No : 1

Groups Printed- Automobiles

Start Time	I-70 Westbound Ramp Eastbound					I-70 Westbound Ramp Westbound					Tower Rd Northbound					Tower Rd 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	0	0	0	0	0	15	0	62	0	77	57	172	0	0	229	0	231	248	0	479	785
07:15 AM	0	0	0	0	0	15	0	71	0	86	63	230	0	0	293	0	233	284	0	517	896
07:30 AM	0	0	0	0	0	25	0	61	0	86	48	226	0	0	274	0	259	266	0	525	885
07:45 AM	0	0	0	0	0	9	0	55	0	64	37	261	0	0	298	0	256	198	0	454	816
Total	0	0	0	0	0	64	0	249	0	313	205	889	0	0	1094	0	979	996	0	1975	3382
08:00 AM	0	0	0	0	0	19	0	53	0	72	37	216	0	0	253	0	223	203	0	426	751
08:15 AM	0	0	0	0	0	17	2	64	0	83	36	199	0	0	235	0	201	185	0	386	704
08:30 AM	0	0	0	0	0	19	0	41	0	60	40	199	0	0	239	0	149	174	0	323	622
08:45 AM	0	0	0	0	0	5	0	47	0	52	23	186	0	0	209	0	149	144	0	293	554
Total	0	0	0	0	0	60	2	205	0	267	136	800	0	0	936	0	722	706	0	1428	2631
Grand Total	0	0	0	0	0	124	2	454	0	580	341	1689	0	0	2030	0	1701	1702	0	3403	6013
Apprch %	0	0	0	0		21.4	0.3	78.3	0		16.8	83.2	0	0		0	50	50	0		
Total %	0	0	0	0	0	2.1	0	7.6	0	9.6	5.7	28.1	0	0	33.8	0	28.3	28.3	0	56.6	

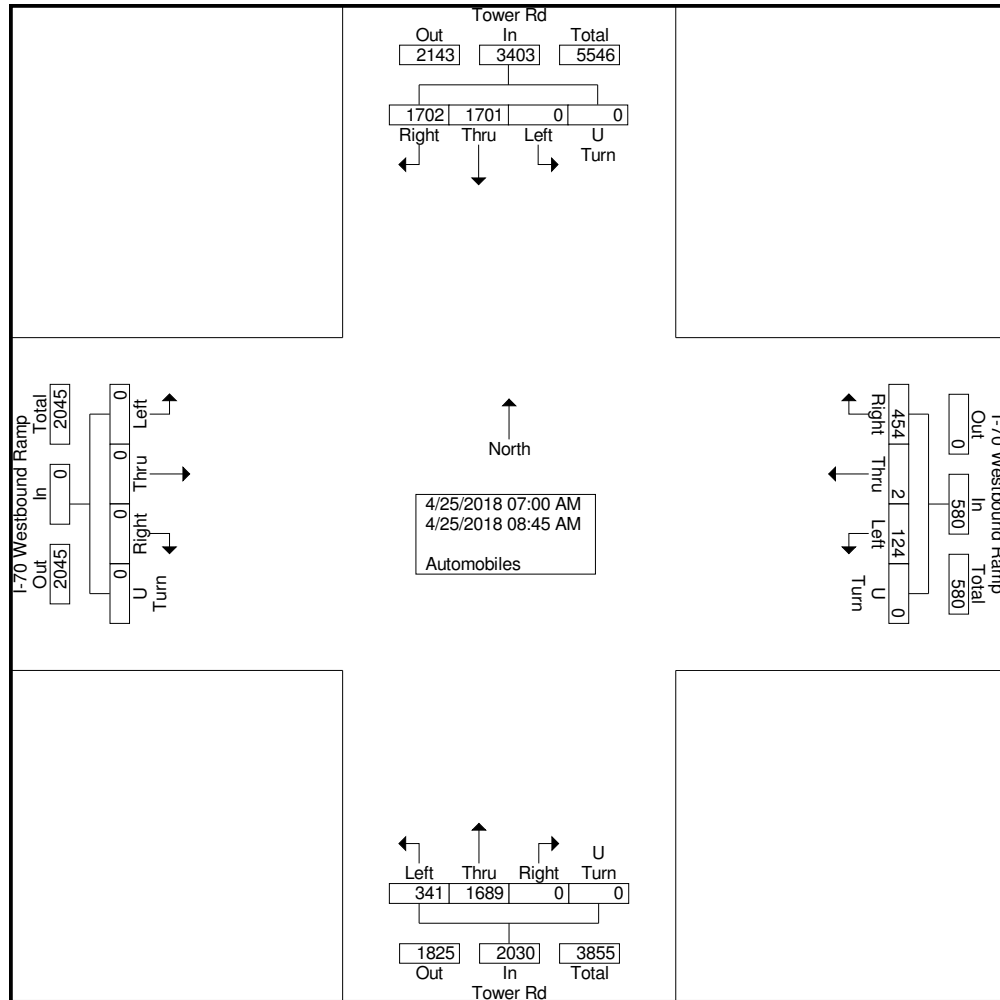


Ridgeview Data
Collection

Morrison, CO 80465

Aurora, CO
Majestic Tower Retail
AM Peak
I-70 Westbound Ramp and Tower Rd

File Name : I-70 WB Ramp & Tower AM
Site Code : IPO 336
Start Date : 4/25/2018
Page No : 2



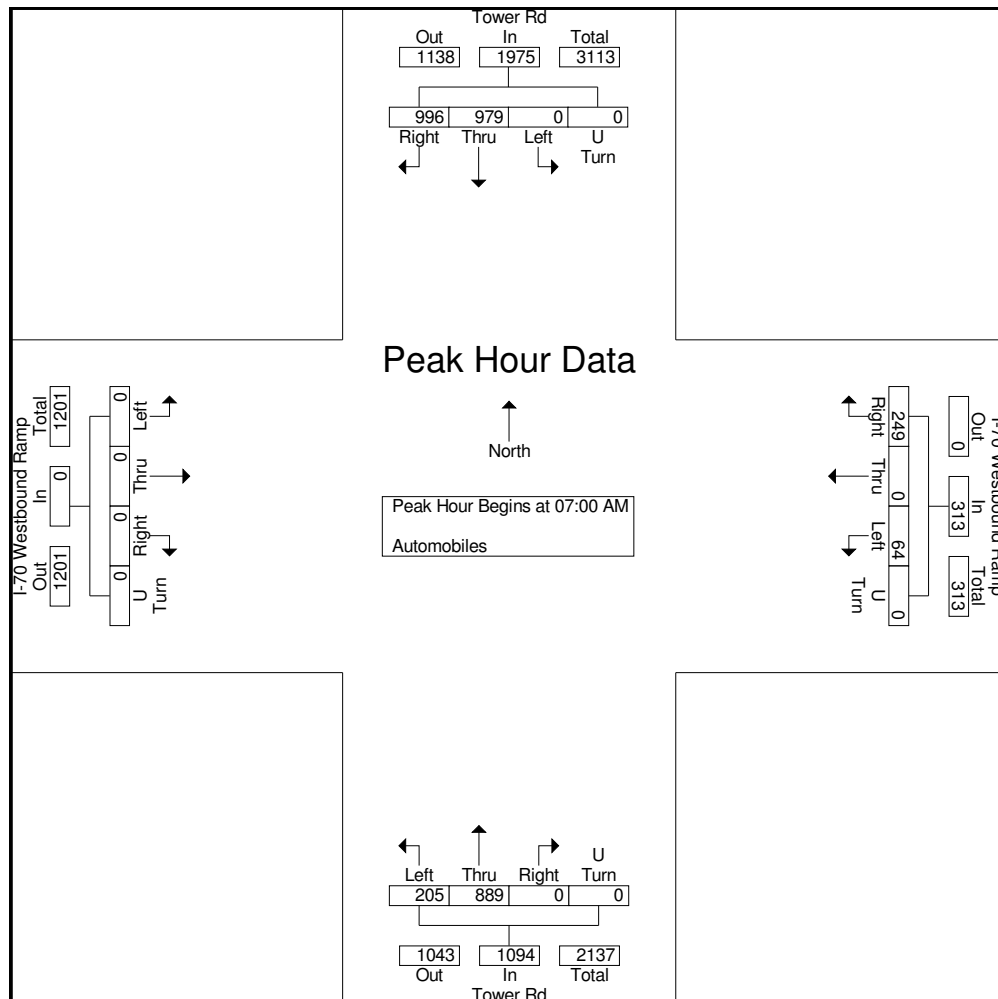


Morrison, CO 80465

Aurora, CO
Majestic Tower Retail
AM Peak
I-70 Westbound Ramp and Tower Rd

File Name : I-70 WB Ramp & Tower AM
Site Code : IPO 336
Start Date : 4/25/2018
Page No : 3

	I-70 Westbound Ramp Eastbound					I-70 Westbound Ramp Westbound					Tower Rd Northbound					Tower Rd Southbound					
Start Time	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	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:00 AM																					
07:00 AM	0	0	0	0	0	15	0	62	0	77	57	172	0	0	229	0	231	248	0	479	785
07:15 AM	0	0	0	0	0	15	0	71	0	86	63	230	0	0	293	0	233	284	0	517	896
07:30 AM	0	0	0	0	0	25	0	61	0	86	48	226	0	0	274	0	259	266	0	525	885
07:45 AM	0	0	0	0	0	9	0	55	0	64	37	261	0	0	298	0	256	198	0	454	816
Total Volume	0	0	0	0	0	64	0	249	0	313	205	889	0	0	1094	0	979	996	0	1975	3382
% App. Total	0	0	0	0	0	20.4	0	79.6	0	0	18.7	81.3	0	0	0	0	49.6	50.4	0	0	0
PHF	.000	.000	.000	.000	.000	.640	.000	.877	.000	.910	.813	.852	.000	.000	.918	.000	.945	.877	.000	.940	.944





Morrison, CO 80465

Aurora, CO
Majestic Tower Retail
PM Peak
I-70 Westbound Ramp and Tower Rd

File Name : I-70 WB Ramp & Tower PM
Site Code : IPO 336
Start Date : 4/25/2018
Page No : 1

Groups Printed- Automobiles

Start Time	I-70 Westbound Ramp Eastbound					I-70 Westbound Ramp Westbound					Tower Rd Northbound					Tower Rd 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	0	0	0	0	0	7	0	34	0	41	35	294	0	0	329	0	265	167	0	432	802
04:15 PM	0	0	0	0	0	6	0	35	0	41	64	274	0	0	338	0	274	142	0	416	795
04:30 PM	0	0	0	0	0	10	0	47	0	57	45	336	0	0	381	0	251	175	0	426	864
04:45 PM	0	0	0	0	0	8	0	48	0	56	51	305	0	0	356	0	273	165	0	438	850
Total	0	0	0	0	0	31	0	164	0	195	195	1209	0	0	1404	0	1063	649	0	1712	3311
05:00 PM	0	0	0	0	0	8	0	50	0	58	50	355	0	0	405	0	309	173	0	482	945
05:15 PM	0	0	0	0	0	5	0	64	0	69	58	279	0	0	337	0	248	162	0	410	816
05:30 PM	0	0	0	0	0	7	0	37	0	44	35	338	0	0	373	0	278	148	0	426	843
05:45 PM	0	0	0	0	0	3	2	58	0	63	44	255	0	0	299	0	254	144	0	398	760
Total	0	0	0	0	0	23	2	209	0	234	187	1227	0	0	1414	0	1089	627	0	1716	3364
Grand Total	0	0	0	0	0	54	2	373	0	429	382	2436	0	0	2818	0	2152	1276	0	3428	6675
Apprch %	0	0	0	0		12.6	0.5	86.9	0		13.6	86.4	0	0		0	62.8	37.2	0		
Total %	0	0	0	0	0	0.8	0	5.6	0	6.4	5.7	36.5	0	0	42.2	0	32.2	19.1	0	51.4	

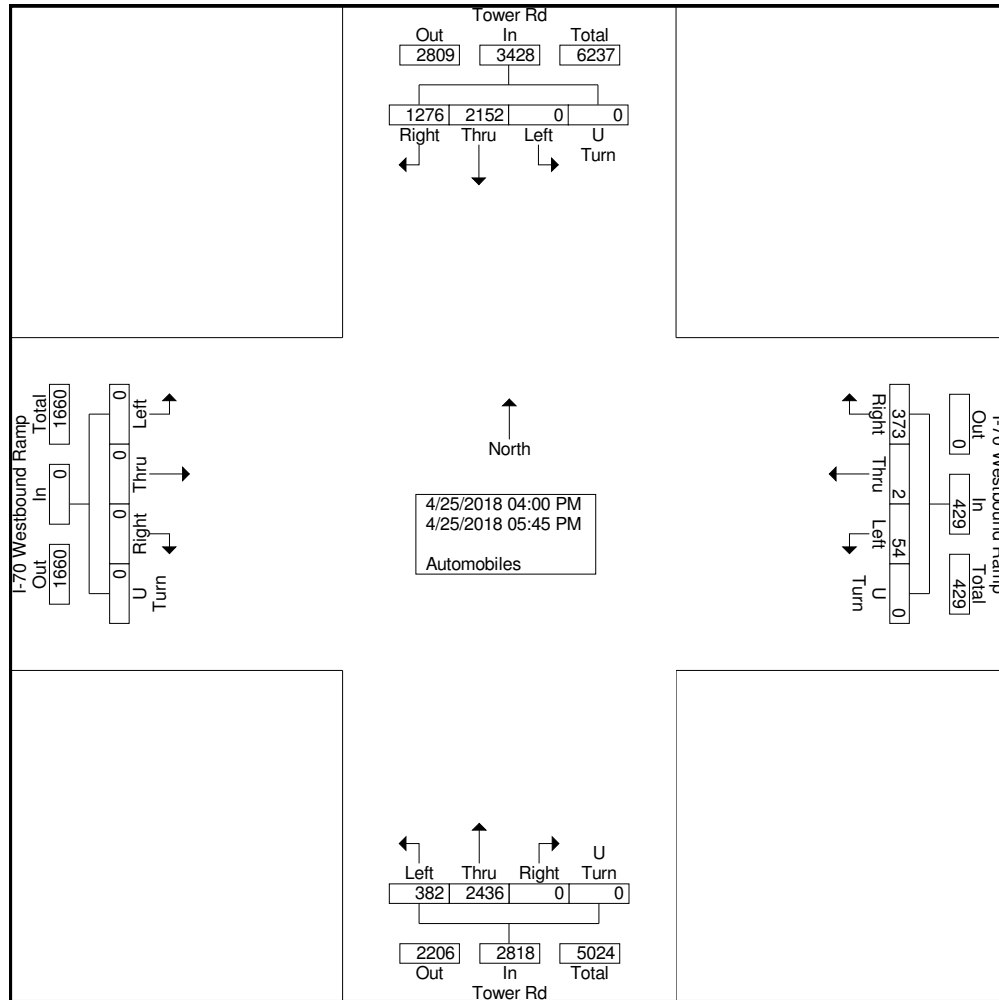


Ridgeview Data
Collection

Morrison, CO 80465

Aurora, CO
Majestic Tower Retail
PM Peak
I-70 Westbound Ramp and Tower Rd

File Name : I-70 WB Ramp & Tower PM
Site Code : IPO 336
Start Date : 4/25/2018
Page No : 2



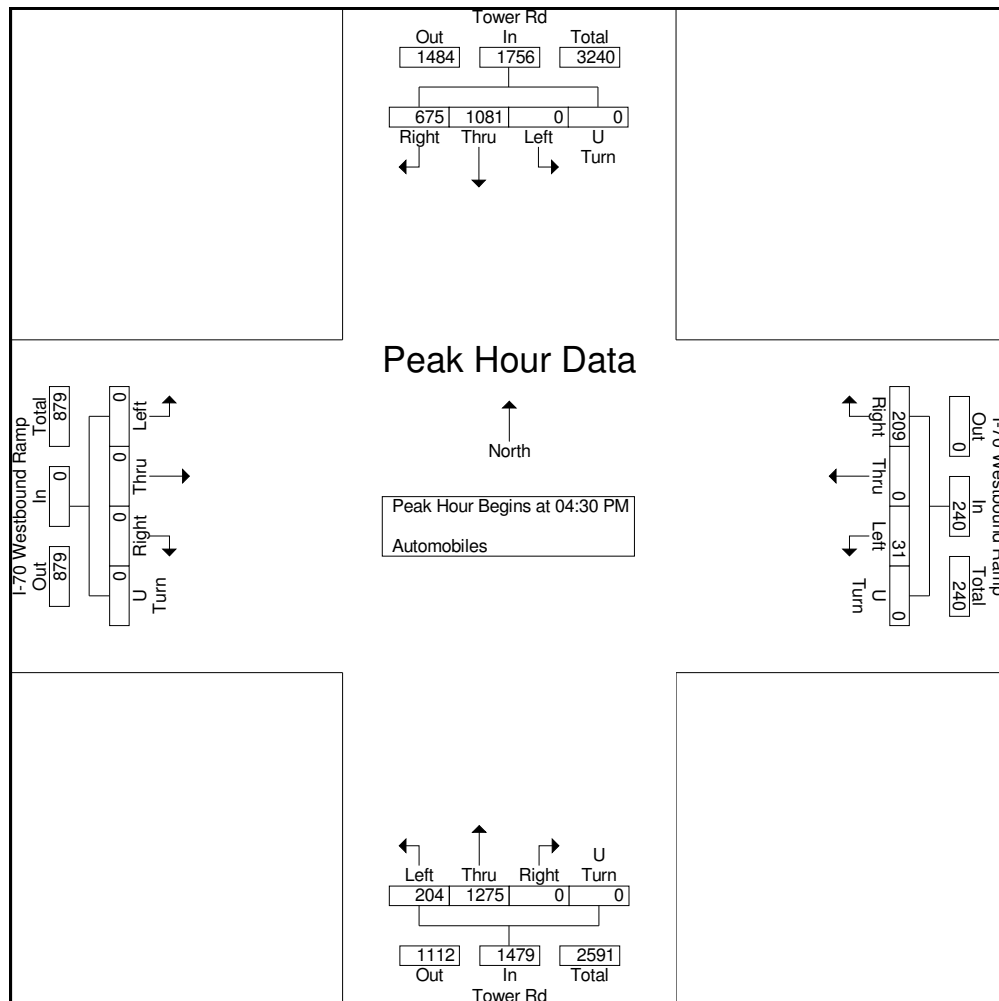


Morrison, CO 80465

Aurora, CO
Majestic Tower Retail
PM Peak
I-70 Westbound Ramp and Tower Rd

File Name : I-70 WB Ramp & Tower PM
Site Code : IPO 336
Start Date : 4/25/2018
Page No : 3

	I-70 Westbound Ramp Eastbound					I-70 Westbound Ramp Westbound					Tower Rd Northbound					Tower Rd Southbound					
Start Time	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	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:30 PM																					
04:30 PM	0	0	0	0	0	10	0	47	0	57	45	336	0	0	381	0	251	175	0	426	864
04:45 PM	0	0	0	0	0	8	0	48	0	56	51	305	0	0	356	0	273	165	0	438	850
05:00 PM	0	0	0	0	0	8	0	50	0	58	50	355	0	0	405	0	309	173	0	482	945
05:15 PM	0	0	0	0	0	5	0	64	0	69	58	279	0	0	337	0	248	162	0	410	816
Total Volume	0	0	0	0	0	31	0	209	0	240	204	1275	0	0	1479	0	1081	675	0	1756	3475
% App. Total	0	0	0	0	0	12.9	0	87.1	0	0	13.8	86.2	0	0	0	0	61.6	38.4	0	0	0
PHF	.000	.000	.000	.000	.000	.775	.000	.816	.000	.870	.879	.898	.000	.000	.913	.000	.875	.964	.000	.911	.919





Morrison, CO 80465

Aurora, CO
Majestic Tower Retail
AM Peak
I-70 Eastbound Ramp and Tower Rd

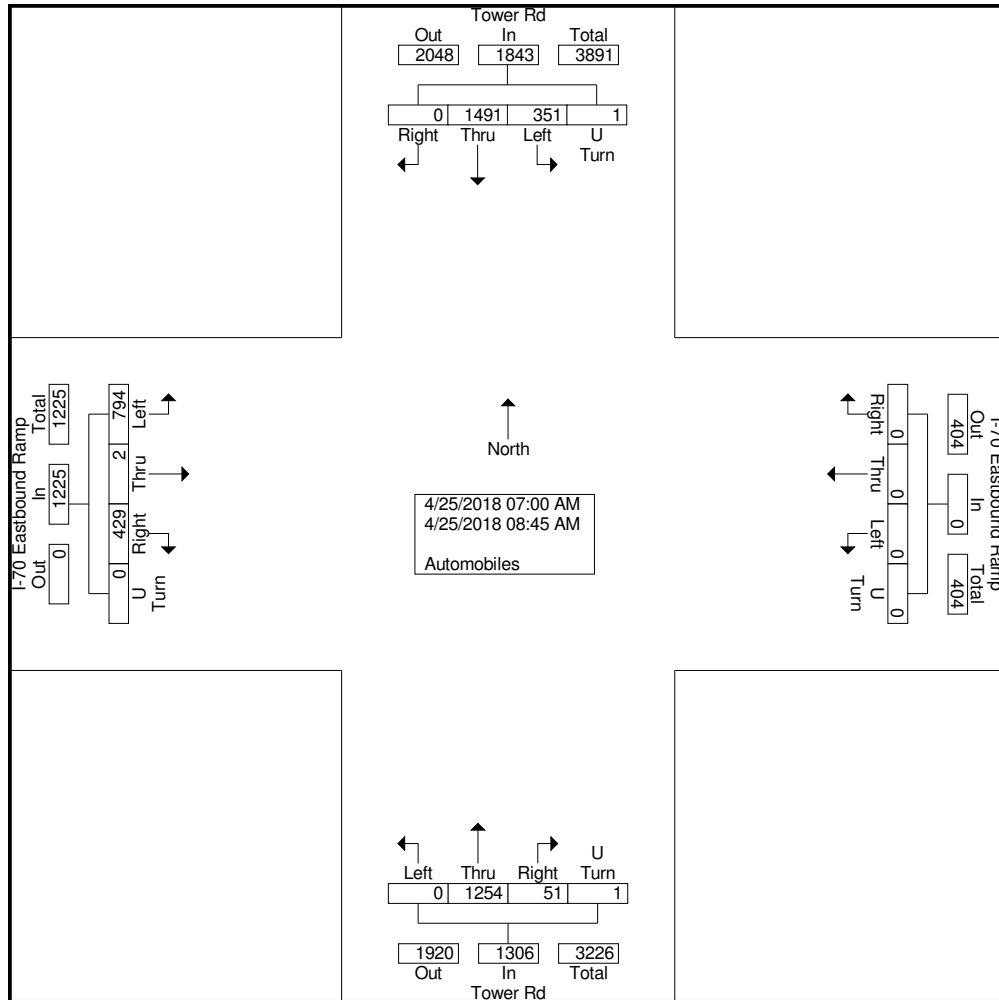
File Name : I-70 EB Ramp & Tower AM
Site Code : IPO 336
Start Date : 4/25/2018
Page No : 1

Groups Printed- Automobiles

Start Time	I-70 Eastbound Ramp Eastbound					I-70 Eastbound Ramp Westbound					Tower Rd Northbound					Tower Rd 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	86	0	56	0	142	0	0	0	0	0	0	149	9	0	158	48	207	0	0	255	555
07:15 AM	110	0	66	0	176	0	0	0	0	0	0	186	6	0	192	40	198	0	0	238	606
07:30 AM	97	1	44	0	142	0	0	0	0	0	0	174	5	0	179	57	247	0	0	304	625
07:45 AM	106	0	56	0	162	0	0	0	0	0	0	196	6	0	202	38	216	0	0	254	618
Total	399	1	222	0	622	0	0	0	0	0	0	705	26	0	731	183	868	0	0	1051	2404
08:00 AM	99	0	60	0	159	0	0	0	0	0	0	152	6	0	158	52	208	0	0	260	577
08:15 AM	97	1	47	0	145	0	0	0	0	0	0	142	7	0	149	43	157	0	1	201	495
08:30 AM	102	0	43	0	145	0	0	0	0	0	0	144	7	0	151	38	137	0	0	175	471
08:45 AM	97	0	57	0	154	0	0	0	0	0	0	111	5	1	117	35	121	0	0	156	427
Total	395	1	207	0	603	0	0	0	0	0	0	549	25	1	575	168	623	0	1	792	1970
Grand Total	794	2	429	0	1225	0	0	0	0	0	0	1254	51	1	1306	351	1491	0	1	1843	4374
Apprch %	64.8	0.2	35	0		0	0	0	0		0	96	3.9	0.1		19	80.9	0	0.1		
Total %	18.2	0	9.8	0	28	0	0	0	0		0	28.7	1.2	0	29.9	8	34.1	0	0	42.1	

Aurora, CO
Majestic Tower Retail
AM Peak
I-70 Eastbound Ramp and Tower Rd

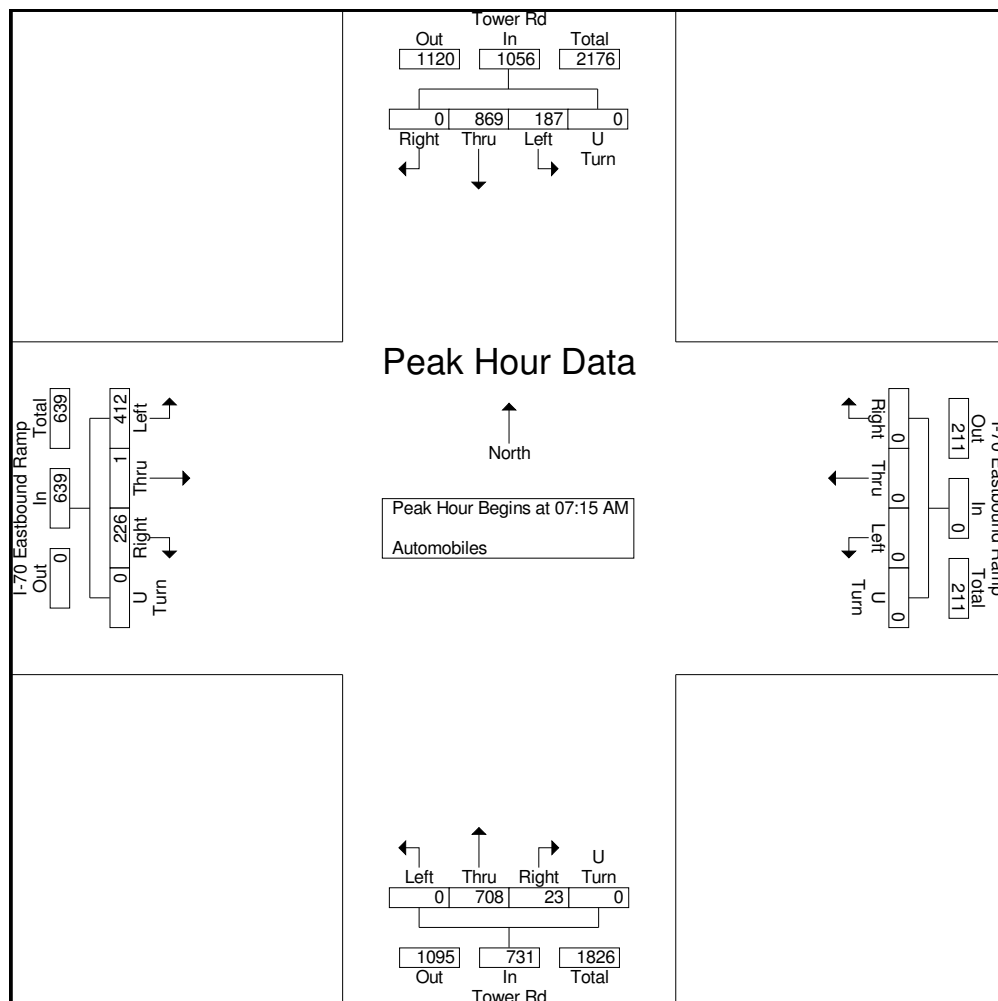
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Site Code : IPO 336
Start Date : 4/25/2018
Page No : 2



Aurora, CO
Majestic Tower Retail
AM Peak
I-70 Eastbound Ramp and Tower Rd

File Name : I-70 EB Ramp & Tower AM
Site Code : IPO 336
Start Date : 4/25/2018
Page No : 3

	I-70 Eastbound Ramp Eastbound					I-70 Eastbound Ramp Westbound					Tower Rd Northbound					Tower Rd Southbound					
Start Time	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	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:15 AM																					
07:15 AM	110	0	66	0	176	0	0	0	0	0	0	186	6	0	192	40	198	0	0	238	606
07:30 AM	97	1	44	0	142	0	0	0	0	0	0	174	5	0	179	57	247	0	0	304	625
07:45 AM	106	0	56	0	162	0	0	0	0	0	0	196	6	0	202	38	216	0	0	254	618
08:00 AM	99	0	60	0	159	0	0	0	0	0	0	152	6	0	158	52	208	0	0	260	577
Total Volume	412	1	226	0	639	0	0	0	0	0	0	708	23	0	731	187	869	0	0	1056	2426
% App. Total	64.5	0.2	35.4	0		0	0	0	0		0	96.9	3.1	0		17.7	82.3	0	0		
PHF	.936	.250	.856	.000	.908	.000	.000	.000	.000	.000	.000	.903	.958	.000	.905	.820	.880	.000	.000	.868	.970





Morrison, CO 80465

Aurora, CO
Majestic Tower Retail
PM Peak
I-70 Eastbound Ramp and Tower Rd

File Name : I-70 EB Ramp & Tower PM
Site Code : IPO 336
Start Date : 4/25/2018
Page No : 1

Groups Printed- Automobiles

Start Time	I-70 Eastbound Ramp Eastbound					I-70 Eastbound Ramp Westbound					Tower Rd Northbound					Tower Rd 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	161	0	50	0	211	0	0	0	0	0	0	188	25	0	213	59	206	0	0	265	689
04:15 PM	127	0	39	0	166	0	0	0	0	0	0	188	11	0	199	83	210	0	0	293	658
04:30 PM	141	1	55	0	197	0	0	0	0	0	0	224	16	0	240	73	169	0	0	242	679
04:45 PM	161	0	59	0	220	0	0	0	0	0	0	213	8	0	221	91	211	0	0	302	743
Total	590	1	203	0	794	0	0	0	0	0	0	813	60	0	873	306	796	0	0	1102	2769
05:00 PM	154	1	65	0	220	0	0	0	0	0	0	250	21	0	271	94	210	0	0	304	795
05:15 PM	141	0	50	0	191	0	0	0	0	0	0	216	21	0	237	85	185	0	0	270	698
05:30 PM	169	1	63	0	233	0	0	0	0	0	0	193	16	0	209	81	199	0	0	280	722
05:45 PM	118	0	42	0	160	0	0	0	0	0	0	181	10	0	191	96	175	0	0	271	622
Total	582	2	220	0	804	0	0	0	0	0	0	840	68	0	908	356	769	0	0	1125	2837
Grand Total	1172	3	423	0	1598	0	0	0	0	0	0	1653	128	0	1781	662	1565	0	0	2227	5606
Apprch %	73.3	0.2	26.5	0		0	0	0	0	0	0	92.8	7.2	0		29.7	70.3	0	0		
Total %	20.9	0.1	7.5	0	28.5	0	0	0	0	0	0	29.5	2.3	0	31.8	11.8	27.9	0	0	39.7	

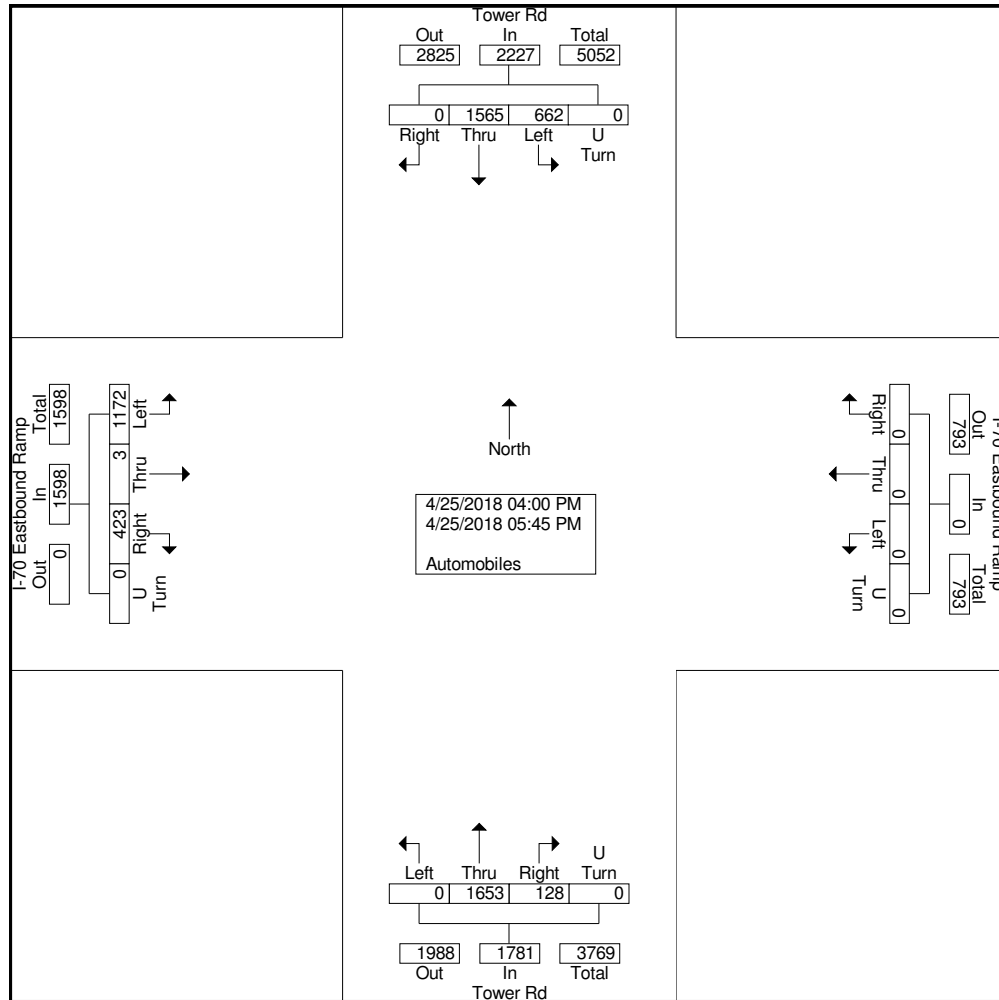


Ridgeview Data
Collection

Morrison, CO 80465

Aurora, CO
Majestic Tower Retail
PM Peak
I-70 Eastbound Ramp and Tower Rd

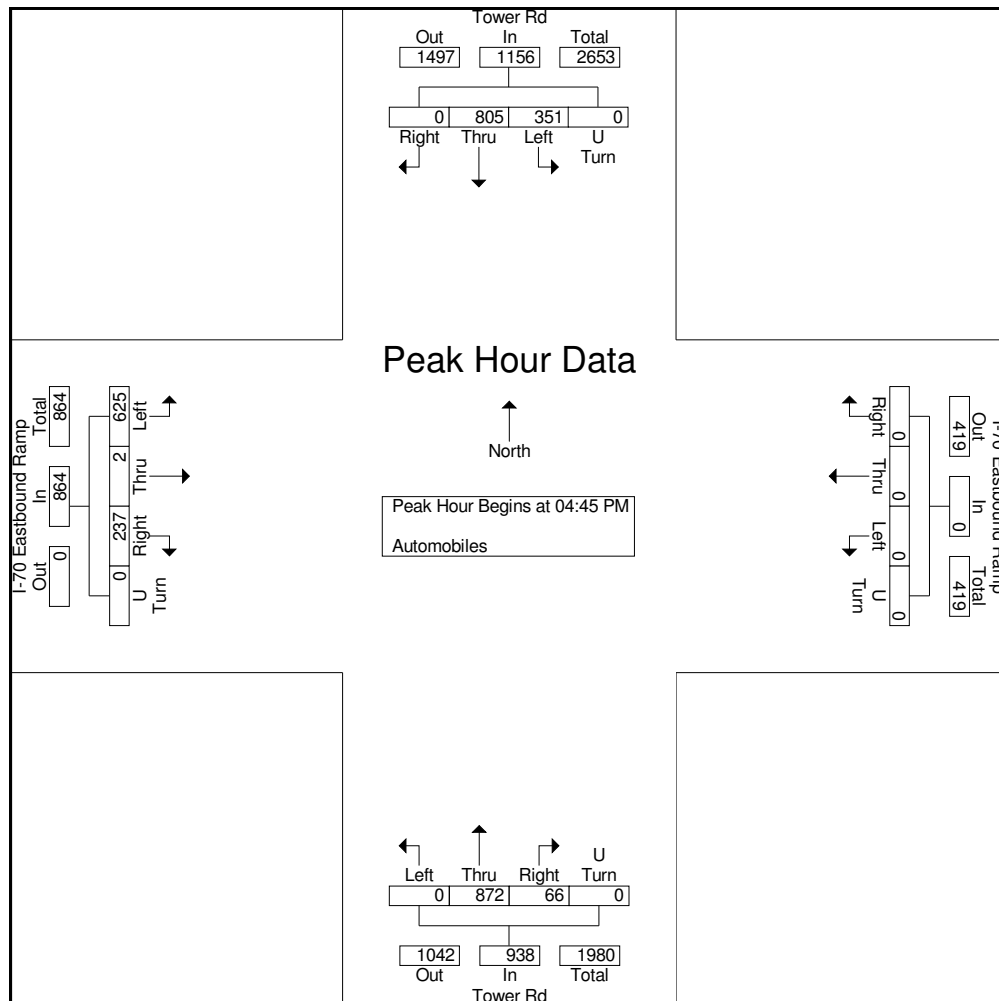
File Name : I-70 EB Ramp & Tower PM
Site Code : IPO 336
Start Date : 4/25/2018
Page No : 2



Aurora, CO
Majestic Tower Retail
PM Peak
I-70 Eastbound Ramp and Tower Rd

File Name : I-70 EB Ramp & Tower PM
Site Code : IPO 336
Start Date : 4/25/2018
Page No : 3

	I-70 Eastbound Ramp Eastbound					I-70 Eastbound Ramp Westbound					Tower Rd Northbound					Tower Rd Southbound					
Start Time	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	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:45 PM																					
04:45 PM	161	0	59	0	220	0	0	0	0	0	0	213	8	0	221	91	211	0	0	302	743
05:00 PM	154	1	65	0	220	0	0	0	0	0	0	250	21	0	271	94	210	0	0	304	795
05:15 PM	141	0	50	0	191	0	0	0	0	0	0	216	21	0	237	85	185	0	0	270	698
05:30 PM	169	1	63	0	233	0	0	0	0	0	0	193	16	0	209	81	199	0	0	280	722
Total Volume	625	2	237	0	864	0	0	0	0	0	0	872	66	0	938	351	805	0	0	1156	2958
% App. Total	72.3	0.2	27.4	0		0	0	0	0	0	0	93	7	0		30.4	69.6	0	0		
PHF	.925	.500	.912	.000	.927	.000	.000	.000	.000	.000	.000	.872	.786	.000	.865	.934	.954	.000	.000	.951	.930



APPENDIX B

Background Volume Information

Salida Flex Buildings 24 & 25

Traffic Impact Study

PREPARED FOR

PaulsCorp, LLC
100 St. Paul Street
Suite 300
Denver, CO 80206

Prepared By:

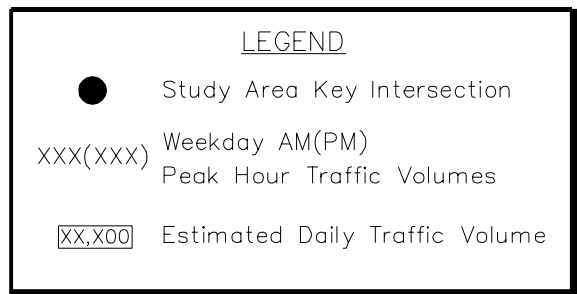
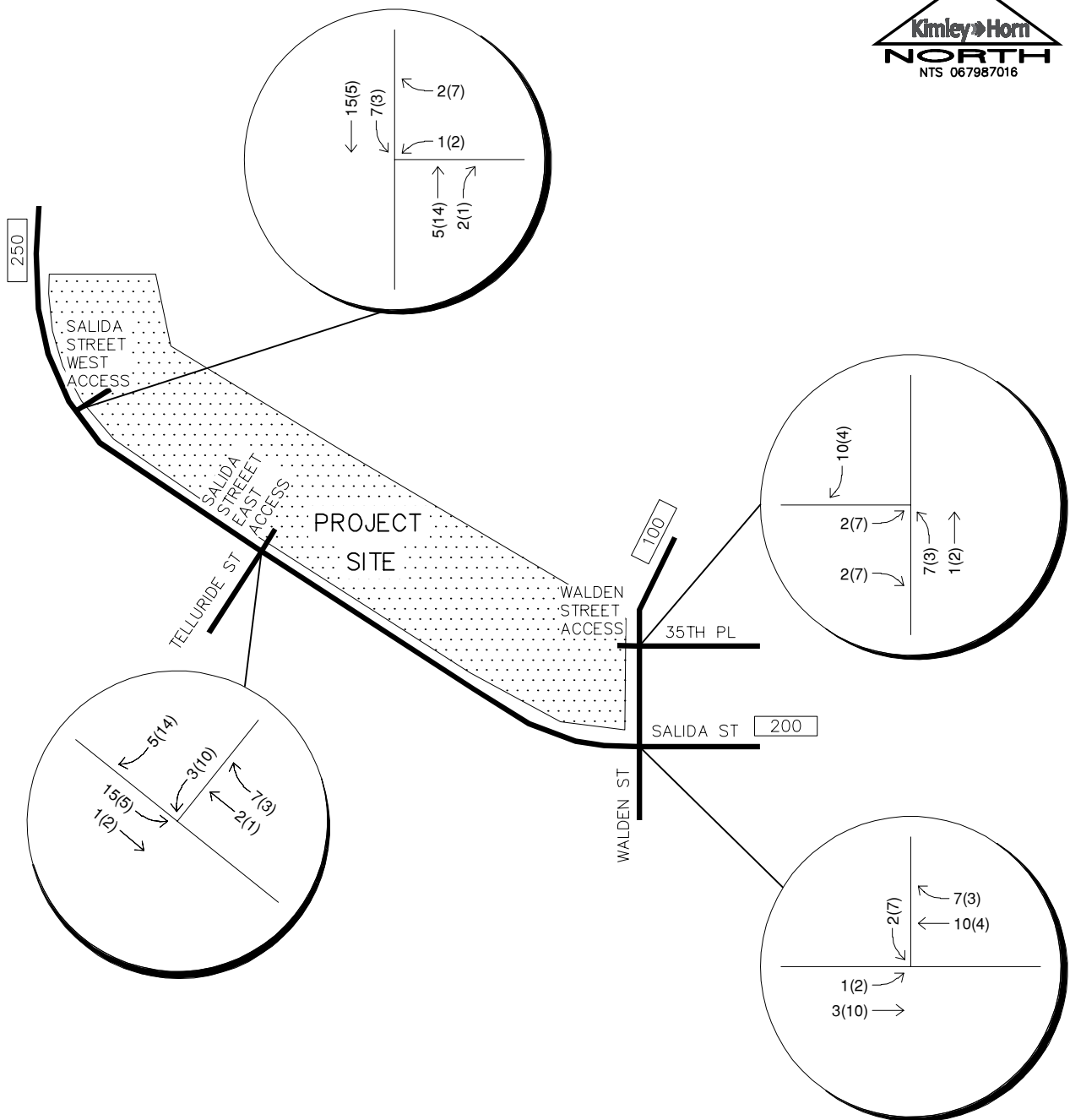
Kimley»Horn

4582 South Ulster Street, Suite 1500
Denver, Colorado 80237
(303) 228-2300

JANUARY 2019



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SALIDA FLEX
SALIDA STREET & WALDEN STREET
PROJECT TRAFFIC ASSIGNMENT

FIGURE 5

Buildings 26 & 27 at Gateway Park V

Traffic Impact Study

PREPARED FOR

PaulsCorp, LLC
100 Saint Paul Street
Suite 300
Denver, CO 80206

Prepared By:

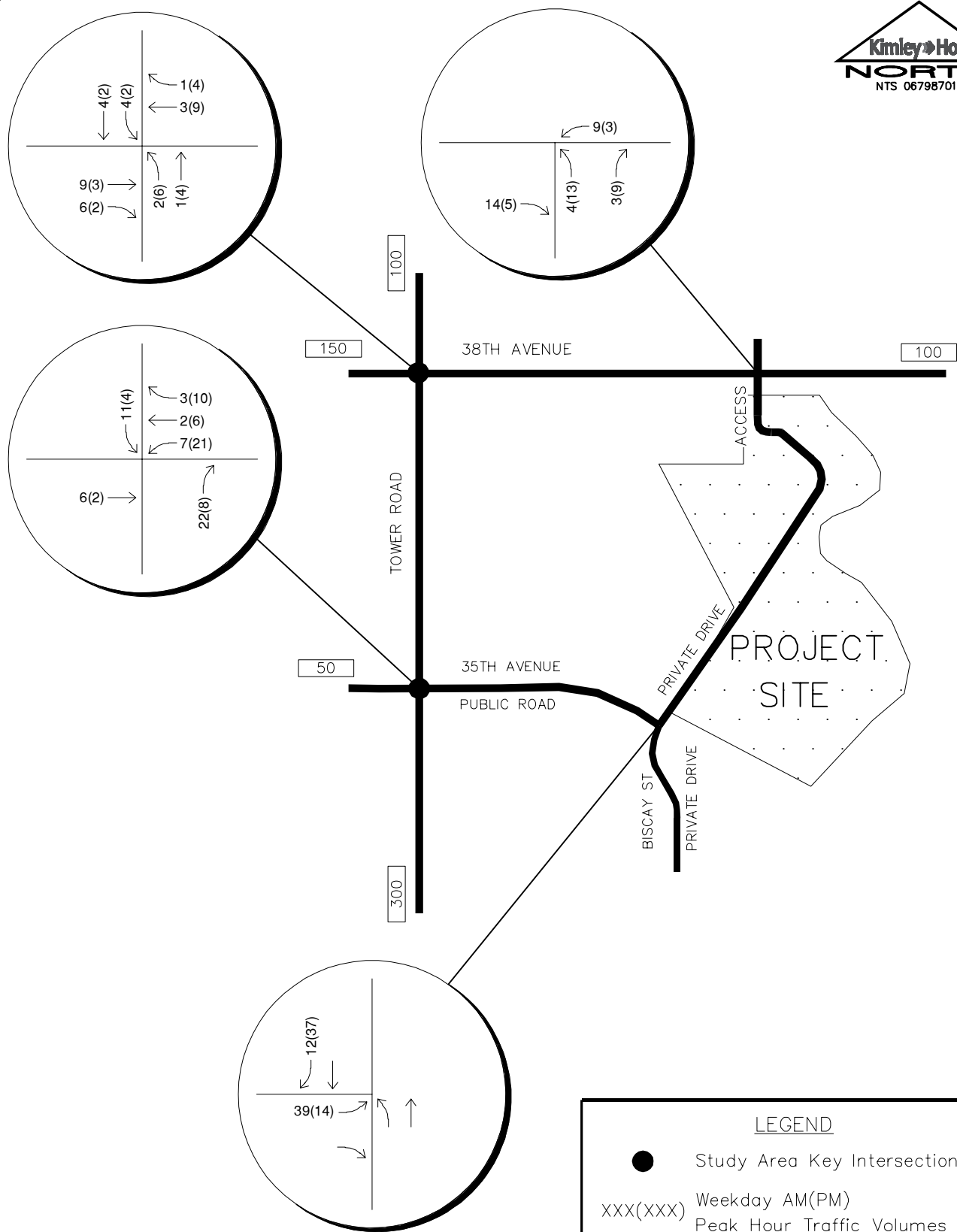
Kimley»Horn

4582 South Ulster Street, Suite 1500
Denver, Colorado 80237
(303) 228-2300



NOVEMBER 2018

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LEGEND

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

BUILDINGS 26 & 27 AT
 GATEWAY PARK V
 2040 PROJECT TRAFFIC ASSIGNMENT

FIGURE 9

Majestic Tower Retail

Traffic Impact Study

PREPARED FOR

Commerce Construction Co., L.P.
20100 East 32nd Parkway
Suite 150
Aurora, CO 80011

Prepared By:

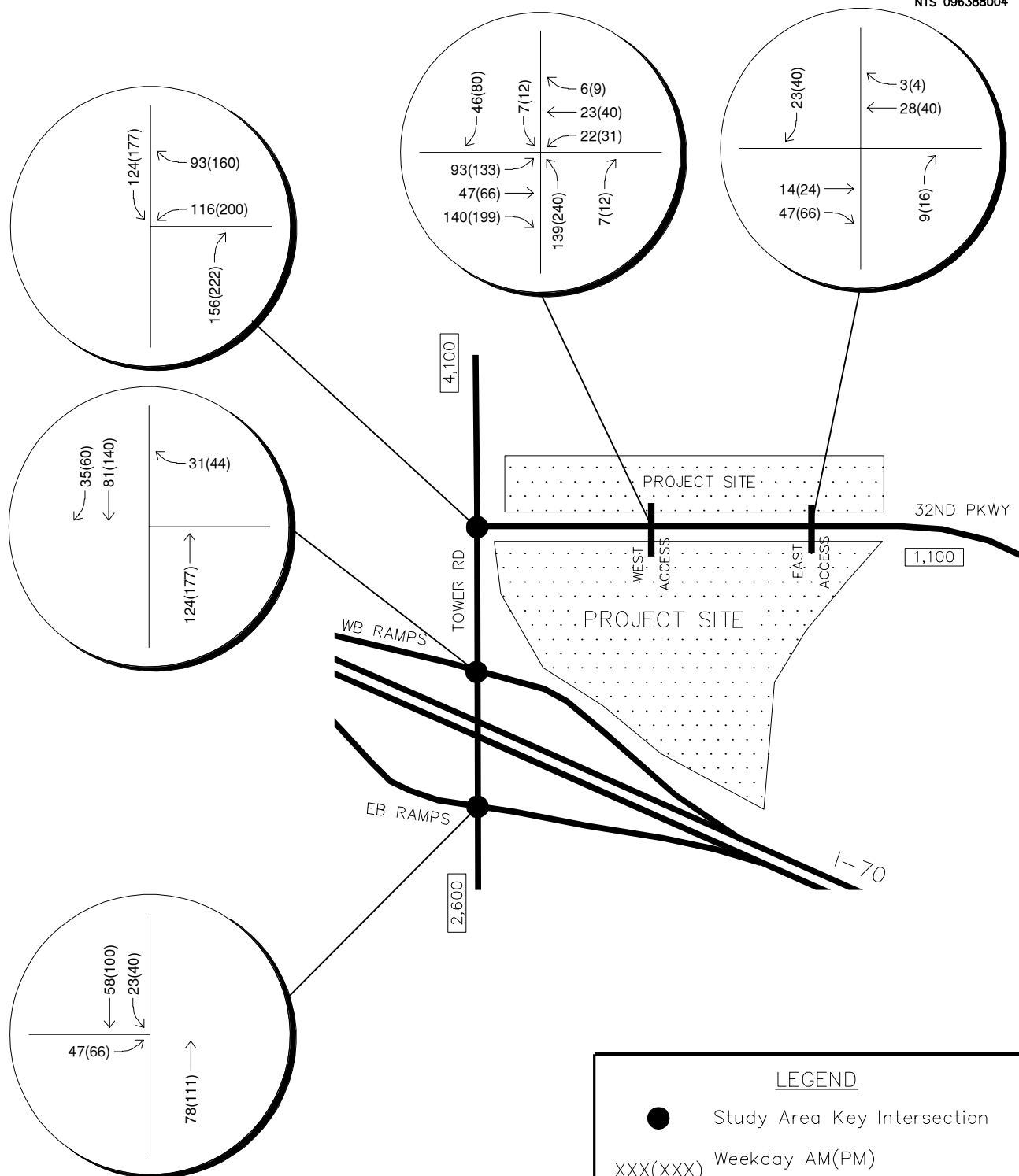
Kimley»Horn

4582 South Ulster Street, Suite 1500
Denver, Colorado 80237
(303) 228-2300

JULY 2018



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MAJESTIC TOWER RETAIL
 32ND PARKWAY & TOWER ROAD
 PROJECT TRAFFIC ASSIGNMENT

FIGURE 7

Gateway Park Buildings 22/23

Traffic Impact Study

PREPARED FOR

Sand Creek Metropolitan District

100 St. Paul Street
Suite 300
Denver, CO 80206

Prepared By:

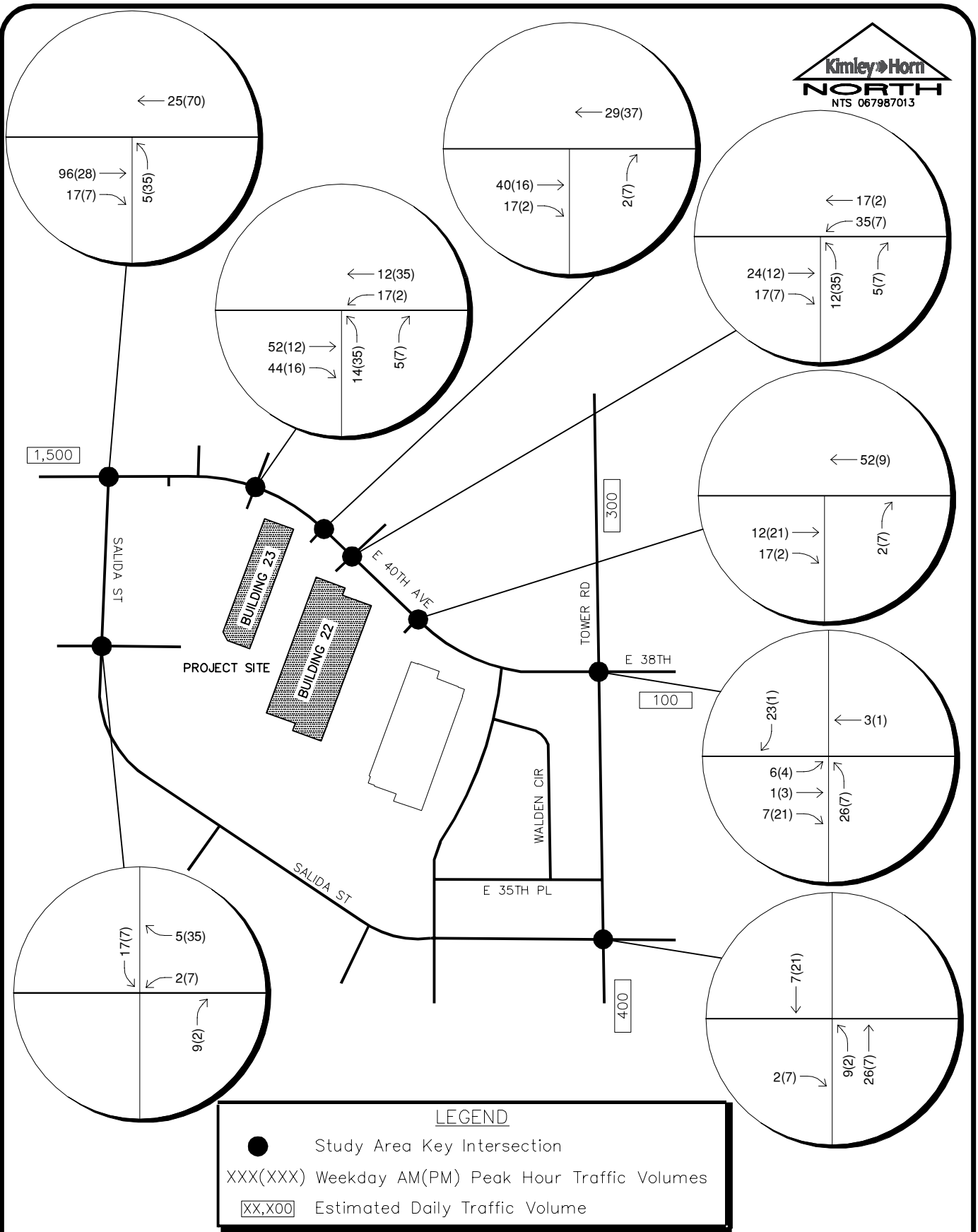
Kimley»Horn

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AUGUST 2017



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GATEWAY PARK BUILDING 22 & 23
E 40TH AVENUE & SALIDA STREET
TRAFFIC ASSIGNMENT

FIGURE 7

EAST 40th AVE

A

B

E

F

H

C

D

G

I

J

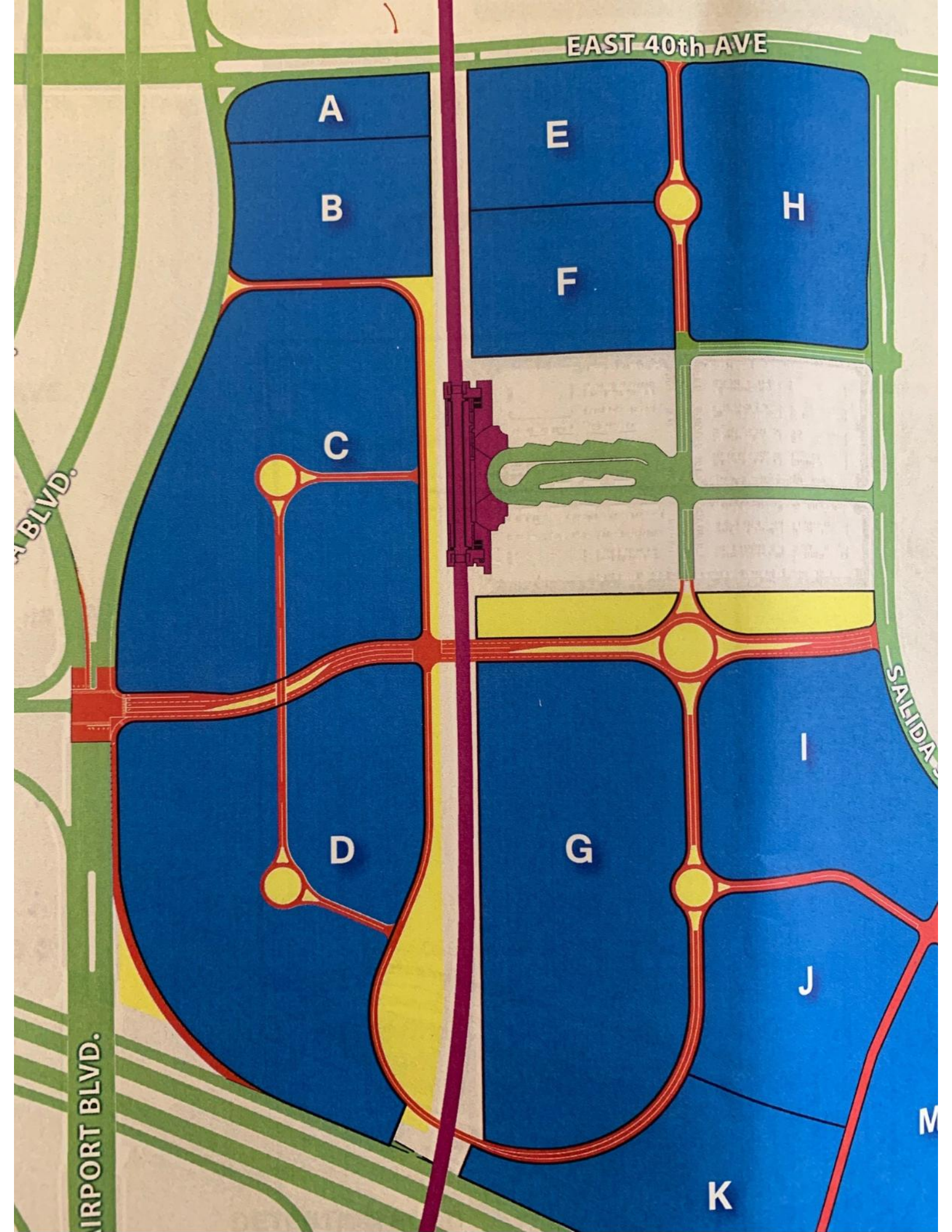
K

M

BLVD.

AIRPORT BLVD.

SALIDA



Block	Square Feet Approximate	Proposed Use(s)
A	83,070 (1.91 acres)	Entry water feature/landscape Open Space Water Detention Water Quality
B	186,000 (4.27 acres)	Mid-Rise Office
C	647,085 (14.85 acres)	Signature High-Rise Office Corporate Campus?
D	669,645 (15.37 acres)	Signature High-Rise Office Corporate Campus?
E	181,700 (4.17 acres)	Open Space Water Detention Water Quality
F	186,105 (4.27 acres)	Hotel
G	584,820 (13.43 acres)	5000 Parking Spaces
H	358,270 (8.22 acres)	Mixed-Use Hotel Restaurant Support Retail
I	400,835 (9.20 acres)	Low-Rise Office
J	307,250 (7.05 acres)	Low-Rise Office
✓ K	308,400 (7.08 acres)	Open Space Water Detention Water Quality
L	153,590 (3.52) acres)	Typical Pad Retail
M	446,880 (10.28) acres)	Typical Big Box Retail <i>Pad</i>
	3,940,480 (90.46 acres)	Developed Area
	573,170 (13.16 acres)	Not Developed Area (Blocks A, E & K)
	4,513,650 (103.62 acres)	TOTAL

Amazon

Majestic Commercenter Phase 10

Building 15

Traffic Impact Study

PREPARED FOR

Commerce Construction Co., L.P.
20100 East 32nd Parkway
Suite 150
Aurora, CO 80011

Prepared By:

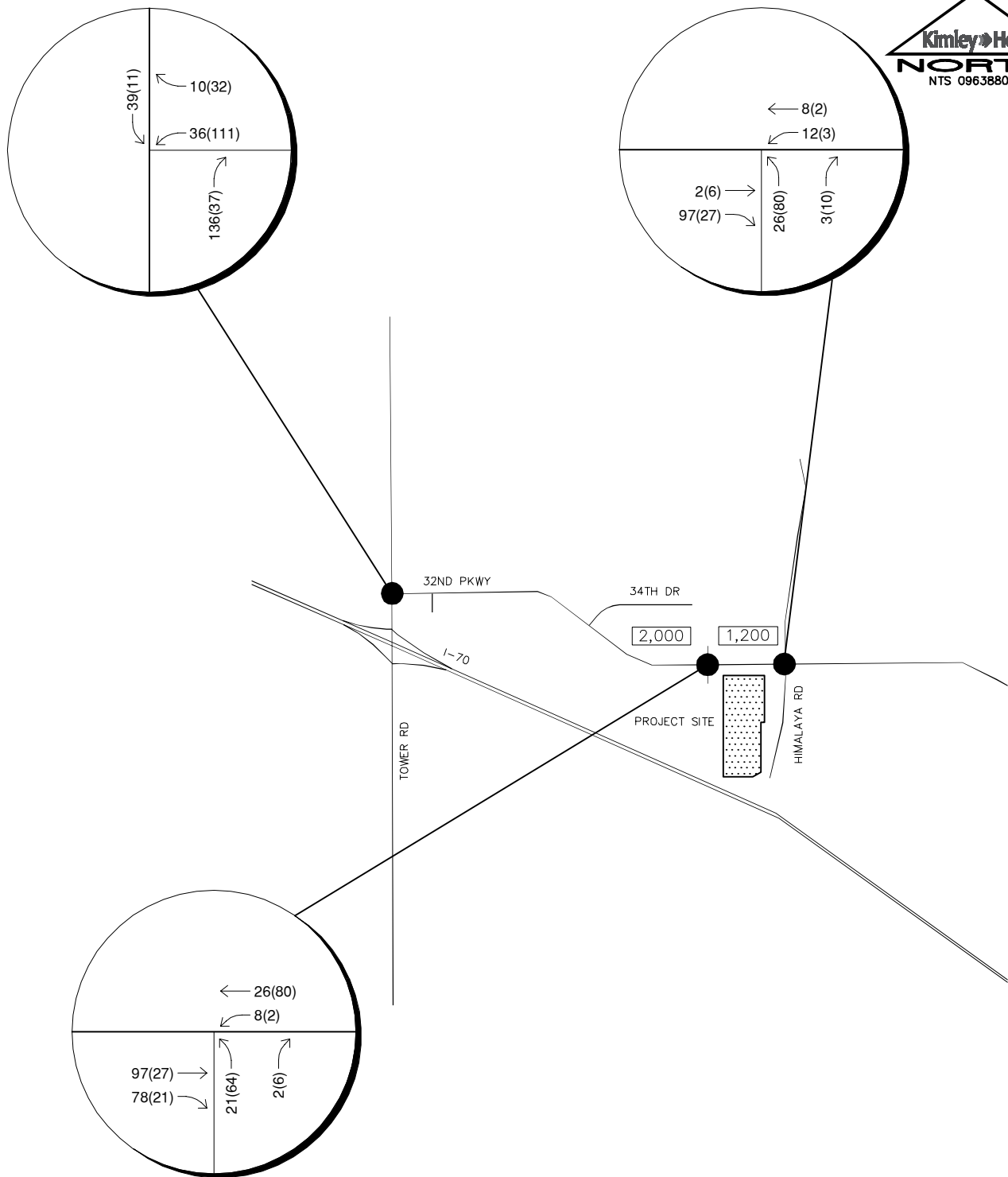
Kimley»Horn

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MAY 2017



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LEGEND

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

MAJESTIC COMMERCE CENTER PHASE 10
 TOWER RD & 32ND PKWY
 TRAFFIC ASSIGNMENT

FIGURE 7

Majestic Commercenter Phase 11 and Lisbon Street Buildings

Traffic Impact Study

PREPARED FOR

Commerce Construction Co., L.P.
20100 East 32nd Parkway
Suite 150
Aurora, CO 80011

Prepared By:

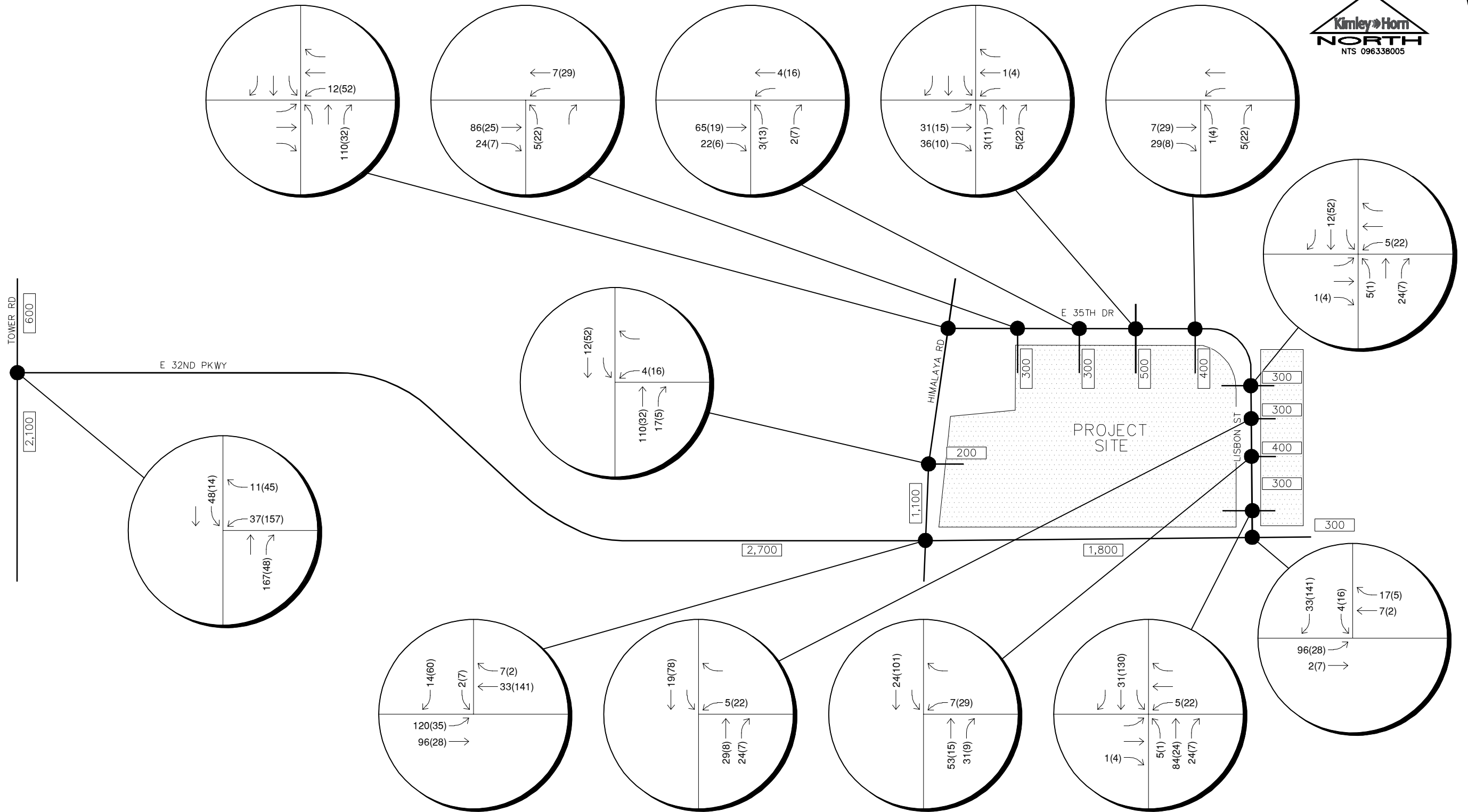
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AUGUST 2018



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LEGEND

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

MAJESTIC COMMERCCENTER PHASE 11
AND LISBON STREET BUILDINGS
AURORA, COLORADO
PROJECT TRAFFIC ASSIGNMENT

FIGURE 7

APPENDIX C

Trip Generation Worksheets

Gateway Park - Parcel TIC 2 Trip Generation Summary

Land Use	Quantity	Units	Vehicle Trips						
			Weekday Daily	Weekday AM Peak Hour			Weekday PM Peak Hour		
				In	Out	Total	In	Out	Total
Industrial Park (ITE 130) - Lot 1	725,000	Square Feet	2,444	235	55	290	61	229	290
Hotel (ITE 310) - Lot 2	125	Rooms	984	34	23	57	35	33	68
Shopping Center (ITE 820) - Lot 2	8,000	Square Feet	302	5	3	8	14	16	30
Coffee Shop w/ DT (ITE 937) - Lot 2	2,000	Square Feet	1,640	91	87	178	44	44	88
Total Site Generated Trips			5,370	365	168	533	154	322	476

Project Gateway Park - Parcel TIC 2 Lot 1

Subject Trip Generation for Industrial Park

Designed by TES

Date June 04, 2020

Job No. 067918023

Checked by

Date

Sheet No. of

TRIP GENERATION MANUAL TECHNIQUES

ITE Trip Generation Manual 10th Edition, Average Rate Equations

Land Use Code - Industrial Park (130)

Independant Variable - 1000 Square Feet Gross Floor Feet (X)

Gross Floor Area = 725,000

X = 725.0

T = Average Vehicle Trip Ends

Peak Hour of Adjacent Street Traffic, One Hour Between 7 and 9 a.m. (100 Series Page 22)

T = 0.40 (X)		Directional Distribution:	81% ent.	19% exit.
T = 0.40 *	725	T =	290	Average Vehicle Trip Ends
		235 entering	55 exiting	
		235 + 55 =	290	

Peak Hour of Adjacent Street Traffic, One Hour Between 4 and 6 p.m. (100 Series Page 23)

T = 0.40 (X)		Directional Distribution:	21% ent.	79% exit.
T = 0.40 *	725	T =	290	Average Vehicle Trip Ends
		61 entering	229 exiting	
		61 + 229 =	290	

Weekday (100 Series Page 21)

T = 3.37 (X)		Directional Distribution:	50% entering, 50% exiting
T = 3.37 *	725	T =	2444
		1222 entering	1222 exiting
		1222 + 1222 =	2444

Project Gateway Park - Parcel TIC 2 Lot 2
 Subject Trip Generation for Hotel
 Designed by JRP Date June 04, 2020 Job No. 067918023
 Checked by _____ Sheet No. 1 of 1

TRIP GENERATION MANUAL TECHNIQUES

ITE Trip Generation Manual 10th Edition, Fitted Curve

Land Use Code -Hotel (310)

Independant Variable - Rooms (X)

$$X = 125$$

T = Average Vehicle Trip Ends

Peak Hour of Adjacent Street Traffic, One Hour Between 7 and 9 a.m. (Series 300 Page 3)

		Directional Distribution:	59% ent.	41% exit.
(T) = 0.50 (X) - 5.34		T = 57	Average Vehicle Trip Ends	
(T) = 0.50 * (125.0) - 5.34		34 entering	23 exiting	
		34 + 23 = 57		

Peak Hour of Adjacent Street Traffic, One Hour Between 4 and 6 p.m. (Series 300 page 4)

		Directional Distribution:	51% ent.	49% exit.
T = 0.75 (X) - 26.02		T = 68	Average Vehicle Trip Ends	
T = 0.75 * 125 - 26.02		35 entering	33 exiting	
		35 + 33 = 68		

Weekday (Series 300 Page 2)

Average Weekday		Directional Distribution:	50% entering, 50% exiting
(T) = 11.29 (X) - 426.97		T = 984	Average Vehicle Trip Ends
(T) = 11.29 * (125.0) - 426.97		492 entering	492 exiting
		492 + 492 = 984	

Project Gateway Park - Parcel TIC 2 Lot 2
 Subject Trip Generation for Shopping Center
 Designed by JRP Date June 04, 2020 Job No. 067918023
 Checked by _____ Date _____ Sheet No. 1 of 1

TRIP GENERATION MANUAL TECHNIQUES

ITE Trip Generation Manual 10th Edition, Average Rate Equations

Land Use Code - Shopping Center (820)

Independant Variable - 1000 Square Feet Gross Leasable Area (X)

Gross Leasable Area = **8,000** Square Feet

X = 8.000

T = Average Vehicle Trip Ends

Peak Hour of Adjacent Street Traffic, One Hour Between 7 and 9 a.m. (800 Series Page 139)

Average Weekday		Directional Distribution:	62% ent.	38% exit.
T = 0.94 * (X)		T =	8	Average Vehicle Trip Ends
T = 0.94 *	8	5	entering	3 exiting
		5	+	3 = 8

Peak Hour of Adjacent Street Traffic, One Hour Between 4 and 6 p.m. (800 Series page 140)

Average Weekday		Directional Distribution:	48% ent.	52% exit.
T = 3.81 * (X)		T =	30	Average Vehicle Trip Ends
T = 3.81 *	8	14	entering	16 exiting
		14	+	16 = 30

Weekday (800 Series page 138)

Average Weekday		Directional Distribution:	50% entering, 50% exiting	
T = 37.75 * (X)		T =	302 Average Vehicle Trip Ends	
T = 37.75 *	8	151	entering 151 exiting	
		151	+	151 = 302

Non Pass-By Trip Volumes (Per ITE Trip Generation Handbook, 3rd Edition September 2017-Page 190)

AM Peak Hour =	66%	Non-Pass By	PM Peak Hour =	66%	Non-Pass By
	IN	Out	Total		
AM Peak	3	2	5		
PM Peak	9	11	20		
Daily	100	100	200	PM Peak Hour Rate Applied to Daily	

Pass-By Trip Volumes (Per ITE Trip Generation Handbook, 3rd Edition September 2017 -Page 190)

AM Peak Hour =	34%	Pass By	PM Peak Hour =	34%	Pass By
	IN	Out	Total		
AM Peak	2	1	3		
PM Peak	5	5	10		
Daily	51	51	102	PM Peak Hour Rate Applied to Daily	

Project Gateway Park - Parcel TIC 2 Lot 2
 Subject Trip Generation for Coffee/Donut Shop with Drive Through
 Designed by JRP Date June 04, 2020 Job No. 067918023
 Checked by _____ Date _____ Sheet No. 1 of 1

TRIP GENERATION MANUAL TECHNIQUES

ITE Trip Generation Manual 10th Edition, Average Rate Equations

Land Use Code - Coffee/Donut Shop with Drive Through (937)

Independant Variable - 1000 Square Feet Gross Floor Feet (X)

Gross Floor Area = **2,000**

X = 2.0

T = Average Vehicle Trip Ends

Peak Hour of Adjacent Street Traffic, One Hour Between 7 and 9 a.m. (Series 900 Page 232)

T = 88.99 (X)		Directional Distribution:	51% ent.	49% exit.
T = 88.99 *	2	T =	178	Average Vehicle Trip Ends
		91	entering	87 exiting

Peak Hour of Adjacent Street Traffic, One Hour Between 4 and 6 p.m. (Series 900 Page 233)

T = 43.38 (X)		Directional Distribution:	50% ent.	50% exit.
T = 43.38 *	2	T =	88	Average Vehicle Trip Ends
		44	entering	44 exiting

Weekday (Series 900 Page 231)

Average Weekday		Directional Distribution:	50% entering, 50% exiting
(T) = 820.38 (X)		T =	1640
(T) = 820.38 *	(2.0)	820	entering
		820	exiting
		820 + 820 =	1640

APPENDIX D

Intersection Analysis Worksheets

Timings

1: Pena Blvd SB Ramp & 40th Ave

2020 Adjusted Existing AM.syn

04/21/2020

	→	↖	←	↗	↓
Lane Group	EBT	WBL	WBT	SBL	SBT
Lane Configurations	↑↑	↑	↑↑	↑	↑↑
Traffic Volume (vph)	360	385	785	100	510
Future Volume (vph)	360	385	785	100	510
Turn Type	NA	pm+pt	NA	Prot	NA
Protected Phases	4	3	8	1	6
Permitted Phases		8			
Detector Phase	4	3	8	1	6
Switch Phase					
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	24.0	11.0	24.0	11.0	23.0
Total Split (s)	33.0	43.0	76.0	44.0	44.0
Total Split (%)	27.5%	35.8%	63.3%	36.7%	36.7%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	5.0	5.0
Lead/Lag	Lag	Lead			
Lead-Lag Optimize?	Yes	Yes			
Recall Mode	C-Max	None	C-Max	None	None
Act Effect Green (s)	32.2	70.0	70.0	39.0	39.0
Actuated g/C Ratio	0.27	0.58	0.58	0.32	0.32
v/c Ratio	0.67	0.87	0.51	0.20	0.79
Control Delay	41.1	47.1	16.6	30.5	40.4
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	41.1	47.1	16.6	30.5	40.4
LOS	D	D	B	C	D
Approach Delay	41.1		26.6		39.3
Approach LOS	D		C		D

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 118.5 (99%), Referenced to phase 4:EBT and 8:WBTL, Start of Yellow

Natural Cycle: 75

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.87

Intersection Signal Delay: 33.4

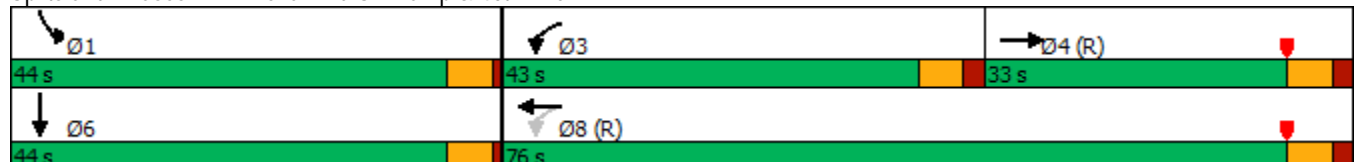
Intersection LOS: C

Intersection Capacity Utilization 66.0%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 1: Pena Blvd SB Ramp & 40th Ave




HCM 6th Signalized Intersection Summary

2020 Adjusted Existing AM.syn

1: Pena Blvd SB Ramp & 40th Ave

04/21/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑		↑	↑↑					↑	↑↑	
Traffic Volume (veh/h)	0	360	155	385	785	0	0	0	0	100	510	235
Future Volume (veh/h)	0	360	155	385	785	0	0	0	0	100	510	235
Initial Q (Qb), veh	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
Parking Bus, Adj	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	
Adj Sat Flow, veh/h/ln	0	1870	1870	1870	1870	0				1870	1870	1870
Adj Flow Rate, veh/h	0	439	0	513	1047	0				114	580	0
Peak Hour Factor	0.82	0.82	0.82	0.75	0.75	0.75				0.88	0.88	0.88
Percent Heavy Veh, %	0	2	2	2	2	0				2	2	2
Cap, veh/h	0	1650		778	2523	0				353	742	
Arrive On Green	0.00	0.46	0.00	0.39	1.00	0.00				0.20	0.20	0.00
Sat Flow, veh/h	0	3741	0	1781	3647	0				1781	3741	0
Grp Volume(v), veh/h	0	439	0	513	1047	0				114	580	0
Grp Sat Flow(s),veh/h/ln	0	1777	0	1781	1777	0				1781	1870	0
Q Serve(g_s), s	0.0	9.1	0.0	19.9	0.0	0.0				6.6	17.7	0.0
Cycle Q Clear(g_c), s	0.0	9.1	0.0	19.9	0.0	0.0				6.6	17.7	0.0
Prop In Lane	0.00		0.00	1.00		0.00				1.00		0.00
Lane Grp Cap(c), veh/h	0	1650		778	2523	0				353	742	
V/C Ratio(X)	0.00	0.27		0.66	0.42	0.00				0.32	0.78	
Avail Cap(c_a), veh/h	0	1650		978	2523	0				579	1216	
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	0.00	0.76	0.76	0.00				1.00	1.00	0.00
Uniform Delay (d), s/veh	0.0	19.7	0.0	7.8	0.0	0.0				41.2	45.6	0.0
Incr Delay (d2), s/veh	0.0	0.4	0.0	0.9	0.4	0.0				0.5	1.8	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
%ile BackOfQ(50%),veh/ln	0.0	3.8	0.0	4.1	0.1	0.0				3.0	8.4	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	20.0	0.0	8.7	0.4	0.0				41.7	47.5	0.0
LnGrp LOS	A	C		A	A	A				D	D	
Approach Vol, veh/h		439	A		1560						694	A
Approach Delay, s/veh		20.0			3.1						46.5	
Approach LOS		C			A						D	
Timer - Assigned Phs			3	4		6		8				
Phs Duration (G+Y+Rc), s			29.5	61.7		28.8		91.2				
Change Period (Y+Rc), s			6.0	6.0		5.0		6.0				
Max Green Setting (Gmax), s			37.0	27.0		39.0		70.0				
Max Q Clear Time (g_c+I1), s			21.9	11.1		19.7		2.0				
Green Ext Time (p_c), s			1.5	2.6		4.2		10.3				
Intersection Summary												
HCM 6th Ctrl Delay			17.1									
HCM 6th LOS			B									
Notes												
User approved volume balancing among the lanes for turning movement.												
Unsignalized Delay for [EBR, SBR] is excluded from calculations of the approach delay and intersection delay.												

Timings
1: Pena Blvd SB Ramp & 40th Ave

2020 Adjusted Existing PM.syn

04/21/2020

	→	↙	←	↘	↓
Lane Group	EBT	WBL	WBT	SBL	SBT
Lane Configurations	↑↑	↑	↑↑	↑	↑↑
Traffic Volume (vph)	595	205	525	95	550
Future Volume (vph)	595	205	525	95	550
Turn Type	NA	pm+pt	NA	Prot	NA
Protected Phases	4	3	8	1	6
Permitted Phases		8			
Detector Phase	4	3	8	1	6
Switch Phase					
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	24.0	11.0	24.0	11.0	23.0
Total Split (s)	48.0	24.0	72.0	48.0	48.0
Total Split (%)	40.0%	20.0%	60.0%	40.0%	40.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	5.0	5.0
Lead/Lag	Lag	Lead			
Lead-Lag Optimize?	Yes	Yes			
Recall Mode	C-Max	None	C-Max	None	None
Act Effect Green (s)	46.8	66.0	66.0	43.0	43.0
Actuated g/C Ratio	0.39	0.55	0.55	0.36	0.36
v/c Ratio	0.69	0.66	0.28	0.16	0.66
Control Delay	32.3	46.9	11.5	27.2	34.0
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	32.3	46.9	11.5	27.2	34.0
LOS	C	D	B	C	C
Approach Delay	32.3		21.5		33.3
Approach LOS	C		C		C

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 118.5 (99%), Referenced to phase 4:EBT and 8:WBT, Start of Yellow
 Natural Cycle: 60
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.69
 Intersection Signal Delay: 29.5
 Intersection Capacity Utilization 65.7%
 Analysis Period (min) 15

Intersection LOS: C

ICU Level of Service C

Splits and Phases: 1: Pena Blvd SB Ramp & 40th Ave

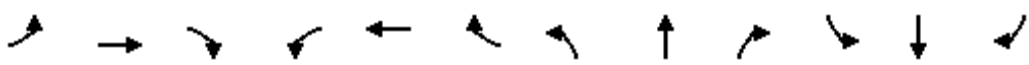
↙ Ø1	↙ Ø3	→ Ø4 (R)
48 s	24 s	48 s
↓ Ø6	↙ Ø8 (R)	
48 s	72 s	

HCM 6th Signalized Intersection Summary

2020 Adjusted Existing PM.syn

1: Pena Blvd SB Ramp & 40th Ave

04/21/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑		↑	↑↑					↑	↑↑	
Traffic Volume (veh/h)	0	595	245	205	525	0	0	0	0	95	550	175
Future Volume (veh/h)	0	595	245	205	525	0	0	0	0	95	550	175
Initial Q (Qb), veh	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
Parking Bus, Adj	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	
Adj Sat Flow, veh/h/ln	0	1870	1870	1870	1870	0				1870	1870	1870
Adj Flow Rate, veh/h	0	654	0	211	541	0				102	591	0
Peak Hour Factor	0.91	0.91	0.91	0.97	0.97	0.97				0.93	0.93	0.93
Percent Heavy Veh, %	0	2	2	2	2	0				2	2	2
Cap, veh/h	0	2089		565	2506	0				362	760	
Arrive On Green	0.00	0.59	0.00	0.13	1.00	0.00				0.20	0.20	0.00
Sat Flow, veh/h	0	3741	0	1781	3647	0				1781	3741	0
Grp Volume(v), veh/h	0	654	0	211	541	0				102	591	0
Grp Sat Flow(s),veh/h/ln	0	1777	0	1781	1777	0				1781	1870	0
Q Serve(g_s), s	0.0	11.2	0.0	5.7	0.0	0.0				5.8	17.9	0.0
Cycle Q Clear(g_c), s	0.0	11.2	0.0	5.7	0.0	0.0				5.8	17.9	0.0
Prop In Lane	0.00		0.00	1.00		0.00				1.00		0.00
Lane Grp Cap(c), veh/h	0	2089		565	2506	0				362	760	
V/C Ratio(X)	0.00	0.31		0.37	0.22	0.00				0.28	0.78	
Avail Cap(c_a), veh/h	0	2089		712	2506	0				638	1340	
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	0.00	0.74	0.74	0.00				1.00	1.00	0.00
Uniform Delay (d), s/veh	0.0	12.5	0.0	7.8	0.0	0.0				40.4	45.2	0.0
Incr Delay (d2), s/veh	0.0	0.4	0.0	0.3	0.1	0.0				0.4	1.8	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
%ile BackOfQ(50%),veh/ln	0.0	4.5	0.0	1.8	0.1	0.0				2.6	8.5	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	12.9	0.0	8.1	0.1	0.0				40.8	47.0	0.0
LnGrp LOS	A	B		A	A	A				D	D	
Approach Vol, veh/h		654	A		752						693	A
Approach Delay, s/veh		12.9			2.4						46.1	
Approach LOS		B			A						D	
Timer - Assigned Phs			3	4		6		8				
Phs Duration (G+Y+Rc), s			14.1	76.5		29.4		90.6				
Change Period (Y+Rc), s			6.0	6.0		5.0		6.0				
Max Green Setting (Gmax), s			18.0	42.0		43.0		66.0				
Max Q Clear Time (g_c+I1), s			7.7	13.2		19.9		2.0				
Green Ext Time (p_c), s			0.4	4.9		4.4		4.2				
Intersection Summary												
HCM 6th Ctrl Delay			20.1									
HCM 6th LOS			C									
Notes												
User approved volume balancing among the lanes for turning movement.												
Unsignalized Delay for [EBR, SBR] is excluded from calculations of the approach delay and intersection delay.												

Timings

2022 Background AM.syn

05/06/2020

1: Pena Blvd SB Ramp & 40th Ave

	→	↖	←	↙	↓
Lane Group	EBT	WBL	WBT	SBL	SBT
Lane Configurations	↑↑	↑	↑↑	↑	↑↑
Traffic Volume (vph)	425	420	830	130	535
Future Volume (vph)	425	420	830	130	535
Turn Type	NA	pm+pt	NA	Prot	NA
Protected Phases	4	3	8	1	6
Permitted Phases		8			
Detector Phase	4	3	8	1	6
Switch Phase					
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	24.0	11.0	24.0	11.0	23.0
Total Split (s)	33.0	42.0	75.0	45.0	45.0
Total Split (%)	27.5%	35.0%	62.5%	37.5%	37.5%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	5.0	5.0
Lead/Lag	Lag	Lead			
Lead-Lag Optimize?	Yes	Yes			
Recall Mode	C-Max	None	C-Max	None	None
Act Effect Green (s)	28.0	69.0	69.0	40.0	40.0
Actuated g/C Ratio	0.23	0.58	0.58	0.33	0.33
v/c Ratio	0.87	0.97	0.54	0.25	0.81
Control Delay	54.5	70.5	18.8	30.6	40.8
Queue Delay	0.0	0.0	0.3	0.0	0.0
Total Delay	54.5	70.5	19.1	30.6	40.8
LOS	D	E	B	C	D
Approach Delay	54.5		36.4		39.5
Approach LOS	D		D		D

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 118.5 (99%), Referenced to phase 4:EBT and 8:WBTL, Start of Yellow

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.97

Intersection Signal Delay: 41.1

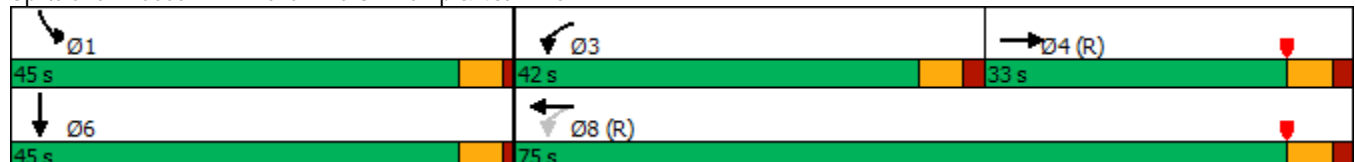
Intersection LOS: D

Intersection Capacity Utilization 69.8%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 1: Pena Blvd SB Ramp & 40th Ave




HCM 6th Signalized Intersection Summary

2022 Background AM.syn

1: Pena Blvd SB Ramp & 40th Ave

05/06/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑		↵	↑↑					↵	↑↑	
Traffic Volume (veh/h)	0	425	160	420	830	0	0	0	0	130	535	245
Future Volume (veh/h)	0	425	160	420	830	0	0	0	0	130	535	245
Initial Q (Qb), veh	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
Parking Bus, Adj	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	
Adj Sat Flow, veh/h/ln	0	1870	1870	1870	1870	0				1870	1870	1870
Adj Flow Rate, veh/h	0	518	0	560	1107	0				148	608	0
Peak Hour Factor	0.82	0.82	0.82	0.75	0.75	0.75				0.88	0.88	0.88
Percent Heavy Veh, %	0	2	2	2	2	0				2	2	2
Cap, veh/h	0	1502		752	2489	0				370	778	
Arrive On Green	0.00	0.42	0.00	0.46	1.00	0.00				0.21	0.21	0.00
Sat Flow, veh/h	0	3741	0	1781	3647	0				1781	3741	0
Grp Volume(v), veh/h	0	518	0	560	1107	0				148	608	0
Grp Sat Flow(s),veh/h/ln	0	1777	0	1781	1777	0				1781	1870	0
Q Serve(g_s), s	0.0	11.8	0.0	23.9	0.0	0.0				8.6	18.4	0.0
Cycle Q Clear(g_c), s	0.0	11.8	0.0	23.9	0.0	0.0				8.6	18.4	0.0
Prop In Lane	0.00		0.00	1.00		0.00				1.00		0.00
Lane Grp Cap(c), veh/h	0	1502		752	2489	0				370	778	
V/C Ratio(X)	0.00	0.34		0.74	0.44	0.00				0.40	0.78	
Avail Cap(c_a), veh/h	0	1502		881	2489	0				594	1247	
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	0.00	0.61	0.61	0.00				1.00	1.00	0.00
Uniform Delay (d), s/veh	0.0	23.4	0.0	8.5	0.0	0.0				41.1	45.0	0.0
Incr Delay (d2), s/veh	0.0	0.6	0.0	1.8	0.4	0.0				0.7	1.8	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
%ile BackOfQ(50%),veh/ln	0.0	5.1	0.0	4.5	0.1	0.0				3.9	8.7	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	24.0	0.0	10.3	0.4	0.0				41.8	46.7	0.0
LnGrp LOS	A	C		B	A	A				D	D	
Approach Vol, veh/h		518	A		1667						756	A
Approach Delay, s/veh		24.0			3.7						45.7	
Approach LOS		C			A						D	
Timer - Assigned Phs			3	4		6		8				
Phs Duration (G+Y+Rc), s			33.3	56.7		29.9		90.1				
Change Period (Y+Rc), s			6.0	6.0		5.0		6.0				
Max Green Setting (Gmax), s			36.0	27.0		40.0		69.0				
Max Q Clear Time (g_c+I1), s			25.9	13.8		20.4		2.0				
Green Ext Time (p_c), s			1.5	2.8		4.5		11.3				
Intersection Summary												
HCM 6th Ctrl Delay			18.1									
HCM 6th LOS			B									
Notes												
User approved volume balancing among the lanes for turning movement.												
Unsignalized Delay for [EBR, SBR] is excluded from calculations of the approach delay and intersection delay.												

Timings
1: Pena Blvd SB Ramp & 40th Ave

2022 Background PM.syn

05/06/2020

	→	↖	←	↙	↓
Lane Group	EBT	WBL	WBT	SBL	SBT
Lane Configurations	↑↑	↑	↑↑	↑	↑↑
Traffic Volume (vph)	630	275	590	110	570
Future Volume (vph)	630	275	590	110	570
Turn Type	NA	pm+pt	NA	Prot	NA
Protected Phases	4	3	8	1	6
Permitted Phases		8			
Detector Phase	4	3	8	1	6
Switch Phase					
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	24.0	11.0	24.0	11.0	23.0
Total Split (s)	49.0	26.0	75.0	45.0	45.0
Total Split (%)	40.8%	21.7%	62.5%	37.5%	37.5%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	5.0	5.0
Lead/Lag	Lag	Lead			
Lead-Lag Optimize?	Yes	Yes			
Recall Mode	C-Max	None	C-Max	None	None
Act Effect Green (s)	46.1	69.0	69.0	40.0	40.0
Actuated g/C Ratio	0.38	0.58	0.58	0.33	0.33
v/c Ratio	0.73	0.80	0.30	0.20	0.74
Control Delay	34.3	59.8	11.8	29.8	38.7
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	34.3	59.8	11.8	29.8	38.7
LOS	C	E	B	C	D
Approach Delay	34.3		27.1		37.7
Approach LOS	C		C		D

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 118.5 (99%), Referenced to phase 4:EBT and 8:WBT, Start of Yellow

Natural Cycle: 65

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.80

Intersection Signal Delay: 33.1

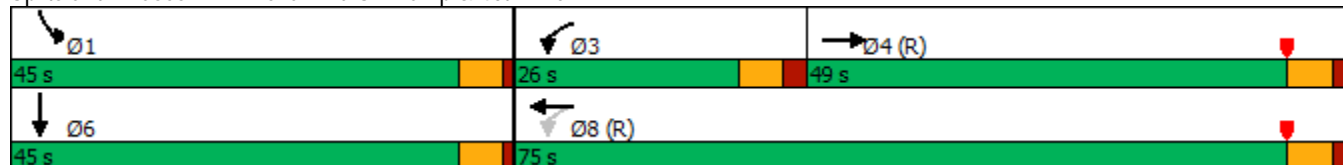
Intersection LOS: C

Intersection Capacity Utilization 71.8%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 1: Pena Blvd SB Ramp & 40th Ave




HCM 6th Signalized Intersection Summary

2022 Background PM.syn

1: Pena Blvd SB Ramp & 40th Ave

05/06/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑		↑	↑↑					↑	↑↑	
Traffic Volume (veh/h)	0	630	255	275	590	0	0	0	0	110	570	185
Future Volume (veh/h)	0	630	255	275	590	0	0	0	0	110	570	185
Initial Q (Qb), veh	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
Parking Bus, Adj	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	
Adj Sat Flow, veh/h/ln	0	1870	1870	1870	1870	0				1870	1870	1870
Adj Flow Rate, veh/h	0	692	0	284	608	0				118	613	0
Peak Hour Factor	0.91	0.91	0.91	0.97	0.97	0.97				0.93	0.93	0.93
Percent Heavy Veh, %	0	2	2	2	2	0				2	2	2
Cap, veh/h	0	1982		562	2486	0				372	781	
Arrive On Green	0.00	0.56	0.00	0.18	1.00	0.00				0.21	0.21	0.00
Sat Flow, veh/h	0	3741	0	1781	3647	0				1781	3741	0
Grp Volume(v), veh/h	0	692	0	284	608	0				118	613	0
Grp Sat Flow(s),veh/h/ln	0	1777	0	1781	1777	0				1781	1870	0
Q Serve(g_s), s	0.0	12.8	0.0	8.4	0.0	0.0				6.7	18.6	0.0
Cycle Q Clear(g_c), s	0.0	12.8	0.0	8.4	0.0	0.0				6.7	18.6	0.0
Prop In Lane	0.00		0.00	1.00		0.00				1.00		0.00
Lane Grp Cap(c), veh/h	0	1982		562	2486	0				372	781	
V/C Ratio(X)	0.00	0.35		0.50	0.24	0.00				0.32	0.79	
Avail Cap(c_a), veh/h	0	1982		696	2486	0				594	1247	
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	0.00	0.61	0.61	0.00				1.00	1.00	0.00
Uniform Delay (d), s/veh	0.0	14.6	0.0	8.5	0.0	0.0				40.2	44.9	0.0
Incr Delay (d2), s/veh	0.0	0.5	0.0	0.4	0.1	0.0				0.5	1.8	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
%ile BackOfQ(50%),veh/ln	0.0	5.2	0.0	2.5	0.0	0.0				3.0	8.8	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	15.1	0.0	8.9	0.1	0.0				40.7	46.7	0.0
LnGrp LOS	A	B		A	A	A				D	D	
Approach Vol, veh/h		692	A		892						731	A
Approach Delay, s/veh		15.1			2.9						45.8	
Approach LOS		B			A						D	
Timer - Assigned Phs			3	4		6		8				
Phs Duration (G+Y+Rc), s			17.0	72.9		30.0		90.0				
Change Period (Y+Rc), s			6.0	6.0		5.0		6.0				
Max Green Setting (Gmax), s			20.0	43.0		40.0		69.0				
Max Q Clear Time (g_c+I1), s			10.4	14.8		20.6		2.0				
Green Ext Time (p_c), s			0.6	5.3		4.4		4.9				
Intersection Summary												
HCM 6th Ctrl Delay			20.1									
HCM 6th LOS			C									
Notes												
User approved volume balancing among the lanes for turning movement.												
Unsignalized Delay for [EBR, SBR] is excluded from calculations of the approach delay and intersection delay.												

Timings
1: Pena Blvd SB Ramp & 40th Ave

2022 Total AM.syn
06/08/2020

	→	↖	←	↙	↓
Lane Group	EBT	WBL	WBT	SBL	SBT
Lane Configurations	↑↑	↑	↑↑	↑	↑↑
Traffic Volume (vph)	480	480	855	185	535
Future Volume (vph)	480	480	855	185	535
Turn Type	NA	pm+pt	NA	Prot	NA
Protected Phases	4	3	8	1	6
Permitted Phases		8			
Detector Phase	4	3	8	1	6
Switch Phase					
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	24.0	11.0	24.0	11.0	23.0
Total Split (s)	33.0	42.0	75.0	45.0	45.0
Total Split (%)	27.5%	35.0%	62.5%	37.5%	37.5%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	5.0	5.0
Lead/Lag	Lag	Lead			
Lead-Lag Optimize?	Yes	Yes			
Recall Mode	C-Max	None	C-Max	None	None
Act Effect Green (s)	27.0	69.0	69.0	40.0	40.0
Actuated g/C Ratio	0.22	0.58	0.58	0.33	0.33
v/c Ratio	0.99	1.08	0.56	0.35	0.81
Control Delay	73.9	100.2	19.8	32.6	41.1
Queue Delay	0.0	0.0	0.3	0.0	0.0
Total Delay	73.9	100.2	20.1	32.6	41.1
LOS	E	F	C	C	D
Approach Delay	73.9		48.9		39.7
Approach LOS	E		D		D

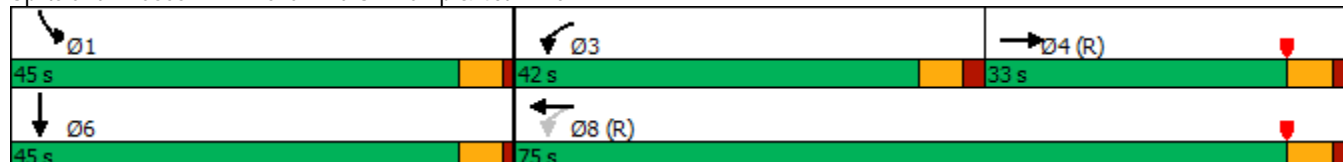
Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 118.5 (99%), Referenced to phase 4:EBT and 8:WBTL, Start of Yellow
 Natural Cycle: 90
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.08
 Intersection Signal Delay: 51.5
 Intersection Capacity Utilization 75.0%
 Analysis Period (min) 15

Intersection LOS: D

ICU Level of Service D

Splits and Phases: 1: Pena Blvd SB Ramp & 40th Ave

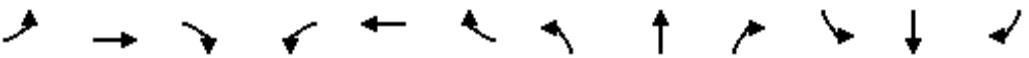


HCM 6th Signalized Intersection Summary

2022 Total AM.syn

06/08/2020

1: Pena Blvd SB Ramp & 40th Ave

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑		↖	↑↑					↖	↑↑	
Traffic Volume (veh/h)	0	480	160	480	855	0	0	0	0	185	535	245
Future Volume (veh/h)	0	480	160	480	855	0	0	0	0	185	535	245
Initial Q (Qb), veh	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
Parking Bus, Adj	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	
Adj Sat Flow, veh/h/ln	0	1870	1870	1870	1870	0				1870	1870	1870
Adj Flow Rate, veh/h	0	585	0	640	1140	0				210	608	0
Peak Hour Factor	0.82	0.82	0.82	0.75	0.75	0.75				0.88	0.88	0.88
Percent Heavy Veh, %	0	2	2	2	2	0				2	2	2
Cap, veh/h	0	1304		764	2484	0				373	783	
Arrive On Green	0.00	0.37	0.00	0.56	1.00	0.00				0.21	0.21	0.00
Sat Flow, veh/h	0	3741	0	1781	3647	0				1781	3741	0
Grp Volume(v), veh/h	0	585	0	640	1140	0				210	608	0
Grp Sat Flow(s),veh/h/ln	0	1777	0	1781	1777	0				1781	1870	0
Q Serve(g_s), s	0.0	15.0	0.0	31.1	0.0	0.0				12.7	18.4	0.0
Cycle Q Clear(g_c), s	0.0	15.0	0.0	31.1	0.0	0.0				12.7	18.4	0.0
Prop In Lane	0.00		0.00	1.00		0.00				1.00		0.00
Lane Grp Cap(c), veh/h	0	1304		764	2484	0				373	783	
V/C Ratio(X)	0.00	0.45		0.84	0.46	0.00				0.56	0.78	
Avail Cap(c_a), veh/h	0	1304		795	2484	0				594	1247	
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	0.00	0.44	0.44	0.00				1.00	1.00	0.00
Uniform Delay (d), s/veh	0.0	28.8	0.0	8.6	0.0	0.0				42.5	44.8	0.0
Incr Delay (d2), s/veh	0.0	1.1	0.0	3.6	0.3	0.0				1.3	1.7	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
%ile BackOfQ(50%),veh/ln	0.0	6.6	0.0	4.8	0.1	0.0				5.7	8.7	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	29.9	0.0	12.2	0.3	0.0				43.9	46.5	0.0
LnGrp LOS	A	C		B	A	A				D	D	
Approach Vol, veh/h		585	A		1780						818	A
Approach Delay, s/veh		29.9			4.5						45.8	
Approach LOS		C			A						D	
Timer - Assigned Phs			3	4		6		8				
Phs Duration (G+Y+Rc), s			39.9	50.0		30.1		89.9				
Change Period (Y+Rc), s			6.0	6.0		5.0		6.0				
Max Green Setting (Gmax), s			36.0	27.0		40.0		69.0				
Max Q Clear Time (g_c+I1), s			33.1	17.0		20.4		2.0				
Green Ext Time (p_c), s			0.8	2.8		4.7		11.8				
Intersection Summary												
HCM 6th Ctrl Delay			19.8									
HCM 6th LOS			B									
Notes												
User approved volume balancing among the lanes for turning movement.												
Unsignalized Delay for [EBR, SBR] is excluded from calculations of the approach delay and intersection delay.												

Timings
1: Pena Blvd SB Ramp & 40th Ave

2022 Total PM.syn
06/08/2020

	→	↖	←	↙	↓
Lane Group	EBT	WBL	WBT	SBL	SBT
Lane Configurations	↑↑	↑	↑↑	↑	↑↑
Traffic Volume (vph)	655	390	640	135	570
Future Volume (vph)	655	390	640	135	570
Turn Type	NA	pm+pt	NA	Prot	NA
Protected Phases	4	3	8	1	6
Permitted Phases		8			
Detector Phase	4	3	8	1	6
Switch Phase					
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	24.0	11.0	24.0	11.0	23.0
Total Split (s)	49.0	26.0	75.0	45.0	45.0
Total Split (%)	40.8%	21.7%	62.5%	37.5%	37.5%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	5.0	5.0
Lead/Lag	Lag	Lead			
Lead-Lag Optimize?	Yes	Yes			
Recall Mode	C-Max	None	C-Max	None	None
Act Effect Green (s)	43.0	69.0	69.0	40.0	40.0
Actuated g/C Ratio	0.36	0.58	0.58	0.33	0.33
v/c Ratio	0.81	1.09	0.32	0.24	0.74
Control Delay	38.9	111.0	13.9	30.6	38.8
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	38.9	111.0	13.9	30.6	38.8
LOS	D	F	B	C	D
Approach Delay	38.9		50.6		37.7
Approach LOS	D		D		D

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 118.5 (99%), Referenced to phase 4:EBT and 8:WBT, Start of Yellow
 Natural Cycle: 80
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.09
 Intersection Signal Delay: 42.6
 Intersection Capacity Utilization 79.3%
 Analysis Period (min) 15

Intersection LOS: D

ICU Level of Service D

Splits and Phases: 1: Pena Blvd SB Ramp & 40th Ave


↖ Ø1	↙ Ø3	→ Ø4 (R)
45 s	26 s	49 s
↓ Ø6	← Ø8 (R)	
45 s	75 s	

HCM 6th Signalized Intersection Summary

2022 Total PM.syn

06/08/2020

1: Pena Blvd SB Ramp & 40th Ave

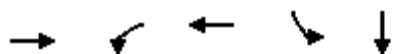
												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑		↖	↑↑					↖	↑↑	
Traffic Volume (veh/h)	0	655	255	390	640	0	0	0	0	135	570	185
Future Volume (veh/h)	0	655	255	390	640	0	0	0	0	135	570	185
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	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	
Adj Sat Flow, veh/h/ln	0	1870	1870	1870	1870	0				1870	1870	1870
Adj Flow Rate, veh/h	0	720	0	402	660	0				145	613	0
Peak Hour Factor	0.91	0.91	0.91	0.97	0.97	0.97				0.93	0.93	0.93
Percent Heavy Veh, %	0	2	2	2	2	0				2	2	2
Cap, veh/h	0	1820		588	2484	0				373	783	
Arrive On Green	0.00	0.51	0.00	0.27	1.00	0.00				0.21	0.21	0.00
Sat Flow, veh/h	0	3741	0	1781	3647	0				1781	3741	0
Grp Volume(v), veh/h	0	720	0	402	660	0				145	613	0
Grp Sat Flow(s),veh/h/ln	0	1777	0	1781	1777	0				1781	1870	0
Q Serve(g_s), s	0.0	14.9	0.0	13.9	0.0	0.0				8.4	18.6	0.0
Cycle Q Clear(g_c), s	0.0	14.9	0.0	13.9	0.0	0.0				8.4	18.6	0.0
Prop In Lane	0.00		0.00	1.00		0.00				1.00		0.00
Lane Grp Cap(c), veh/h	0	1820		588	2484	0				373	783	
V/C Ratio(X)	0.00	0.40		0.68	0.27	0.00				0.39	0.78	
Avail Cap(c_a), veh/h	0	1820		641	2484	0				594	1247	
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	0.00	0.38	0.38	0.00				1.00	1.00	0.00
Uniform Delay (d), s/veh	0.0	17.9	0.0	9.4	0.0	0.0				40.8	44.9	0.0
Incr Delay (d2), s/veh	0.0	0.6	0.0	1.0	0.1	0.0				0.7	1.8	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
%ile BackOfQ(50%),veh/ln	0.0	6.2	0.0	3.6	0.0	0.0				3.8	8.8	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	18.6	0.0	10.5	0.1	0.0				41.5	46.6	0.0
LnGrp LOS	A	B		B	A	A				D	D	
Approach Vol, veh/h		720	A		1062						758	A
Approach Delay, s/veh		18.6			4.0						45.6	
Approach LOS		B			A						D	
Timer - Assigned Phs			3	4		6		8				
Phs Duration (G+Y+Rc), s			22.4	67.5		30.1		89.9				
Change Period (Y+Rc), s			6.0	6.0		5.0		6.0				
Max Green Setting (Gmax), s			20.0	43.0		40.0		69.0				
Max Q Clear Time (g_c+I1), s			15.9	16.9		20.6		2.0				
Green Ext Time (p_c), s			0.5	5.4		4.5		5.4				
Intersection Summary												
HCM 6th Ctrl Delay			20.6									
HCM 6th LOS			C									
Notes												
User approved volume balancing among the lanes for turning movement.												
Unsignalized Delay for [EBR, SBR] is excluded from calculations of the approach delay and intersection delay.												

Timings

2022 Total AM Improved.syn

1: Pena Blvd SB Ramp & 40th Ave

06/08/2020



Lane Group	EBT	WBL	WBT	SBL	SBT
Lane Configurations	↑↑	↑↑	↑↑	↑	↑↑
Traffic Volume (vph)	480	480	855	185	535
Future Volume (vph)	480	480	855	185	535
Turn Type	NA	Prot	NA	Prot	NA
Protected Phases	4	3	8	1	6
Permitted Phases					
Detector Phase	4	3	8	1	6
Switch Phase					
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	24.0	11.0	24.0	11.0	23.0
Total Split (s)	39.0	31.0	70.0	50.0	50.0
Total Split (%)	32.5%	25.8%	58.3%	41.7%	41.7%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	5.0	5.0
Lead/Lag	Lag	Lead			
Lead-Lag Optimize?	Yes	Yes			
Recall Mode	C-Max	None	C-Max	None	None
Act Effect Green (s)	33.5	24.5	64.0	45.0	45.0
Actuated g/C Ratio	0.28	0.20	0.53	0.38	0.38
v/c Ratio	0.80	0.91	0.60	0.31	0.73
Control Delay	45.6	72.1	21.2	28.4	34.0
Queue Delay	0.0	0.0	0.2	0.0	0.0
Total Delay	45.6	72.1	21.4	28.4	34.0
LOS	D	E	C	C	C
Approach Delay	45.6		39.6		33.0
Approach LOS	D		D		C

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 118.5 (99%), Referenced to phase 4:EBT and 8:WBT, Start of Yellow

Natural Cycle: 75

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.91

Intersection Signal Delay: 38.9

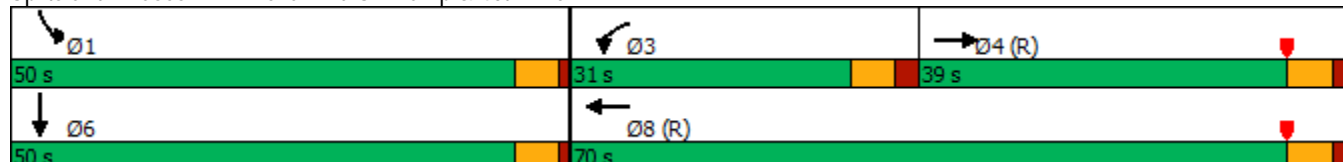
Intersection LOS: D

Intersection Capacity Utilization 68.1%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 1: Pena Blvd SB Ramp & 40th Ave




HCM 6th Signalized Intersection Summary

2022 Total AM Improved.syn

1: Pena Blvd SB Ramp & 40th Ave

06/08/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑		↑↑	↑↑					↑	↑↑	
Traffic Volume (veh/h)	0	480	160	480	855	0	0	0	0	185	535	245
Future Volume (veh/h)	0	480	160	480	855	0	0	0	0	185	535	245
Initial Q (Qb), veh	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
Parking Bus, Adj	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	
Adj Sat Flow, veh/h/ln	0	1870	1870	1870	1870	0				1870	1870	1870
Adj Flow Rate, veh/h	0	585	0	640	1140	0				210	608	0
Peak Hour Factor	0.82	0.82	0.82	0.75	0.75	0.75				0.88	0.88	0.88
Percent Heavy Veh, %	0	2	2	2	2	0				2	2	2
Cap, veh/h	0	1593		685	2476	0				377	792	
Arrive On Green	0.00	0.45	0.00	0.40	1.00	0.00				0.21	0.21	0.00
Sat Flow, veh/h	0	3741	0	3456	3647	0				1781	3741	0
Grp Volume(v), veh/h	0	585	0	640	1140	0				210	608	0
Grp Sat Flow(s),veh/h/ln	0	1777	0	1728	1777	0				1781	1870	0
Q Serve(g_s), s	0.0	13.0	0.0	21.3	0.0	0.0				12.6	18.4	0.0
Cycle Q Clear(g_c), s	0.0	13.0	0.0	21.3	0.0	0.0				12.6	18.4	0.0
Prop In Lane	0.00		0.00	1.00		0.00				1.00		0.00
Lane Grp Cap(c), veh/h	0	1593		685	2476	0				377	792	
V/C Ratio(X)	0.00	0.37		0.93	0.46	0.00				0.56	0.77	
Avail Cap(c_a), veh/h	0	1593		720	2476	0				668	1403	
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	0.00	0.54	0.54	0.00				1.00	1.00	0.00
Uniform Delay (d), s/veh	0.0	21.9	0.0	35.4	0.0	0.0				42.3	44.5	0.0
Incr Delay (d2), s/veh	0.0	0.7	0.0	11.8	0.3	0.0				1.3	1.6	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
%ile BackOfQ(50%),veh/ln	0.0	5.6	0.0	8.4	0.1	0.0				5.7	8.7	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	22.5	0.0	47.3	0.3	0.0				43.6	46.1	0.0
LnGrp LOS	A	C		D	A	A				D	D	
Approach Vol, veh/h		585	A		1780						818	A
Approach Delay, s/veh		22.5			17.2						45.5	
Approach LOS		C			B						D	
Timer - Assigned Phs			3	4		6		8				
Phs Duration (G+Y+Rc), s			29.8	59.8		30.4		89.6				
Change Period (Y+Rc), s			6.0	6.0		5.0		6.0				
Max Green Setting (Gmax), s			25.0	33.0		45.0		64.0				
Max Q Clear Time (g_c+I1), s			23.3	15.0		20.4		2.0				
Green Ext Time (p_c), s			0.5	3.8		5.0		11.7				
Intersection Summary												
HCM 6th Ctrl Delay			25.4									
HCM 6th LOS			C									
Notes												
User approved volume balancing among the lanes for turning movement.												
Unsignalized Delay for [EBR, SBR] is excluded from calculations of the approach delay and intersection delay.												

Timings
1: Pena Blvd SB Ramp & 40th Ave

2022 Total PM Improved.syn
06/08/2020

	→	↙	←	↘	↓
Lane Group	EBT	WBL	WBT	SBL	SBT
Lane Configurations	↑↑	↙↘	↑↑	↘	↑↑
Traffic Volume (vph)	655	390	640	135	570
Future Volume (vph)	655	390	640	135	570
Turn Type	NA	Prot	NA	Prot	NA
Protected Phases	4	3	8	1	6
Permitted Phases					
Detector Phase	4	3	8	1	6
Switch Phase					
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	24.0	11.0	24.0	11.0	23.0
Total Split (s)	49.0	22.0	71.0	49.0	49.0
Total Split (%)	40.8%	18.3%	59.2%	40.8%	40.8%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	5.0	5.0
Lead/Lag	Lag	Lead			
Lead-Lag Optimize?	Yes	Yes			
Recall Mode	C-Max	None	C-Max	None	None
Act Effect Green (s)	43.1	15.9	65.0	44.0	44.0
Actuated g/C Ratio	0.36	0.13	0.54	0.37	0.37
v/c Ratio	0.80	0.89	0.34	0.22	0.68
Control Delay	38.7	52.5	21.9	27.5	33.9
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	38.7	52.5	21.9	27.5	33.9
LOS	D	D	C	C	C
Approach Delay	38.7		33.5		33.0
Approach LOS	D		C		C

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 118.5 (99%), Referenced to phase 4:EBT and 8:WBT, Start of Yellow
 Natural Cycle: 70
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.89
 Intersection Signal Delay: 35.1
 Intersection Capacity Utilization 72.0%
 Analysis Period (min) 15

Intersection LOS: D

ICU Level of Service C

Splits and Phases: 1: Pena Blvd SB Ramp & 40th Ave


↙ Ø1	↘ Ø3	→ Ø4 (R)
49 s	22 s	49 s
↓ Ø6	← Ø8 (R)	
49 s	71 s	

HCM 6th Signalized Intersection Summary

2022 Total PM Improved.syn

1: Pena Blvd SB Ramp & 40th Ave

06/08/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑		↑↑	↑↑					↑	↑↑	
Traffic Volume (veh/h)	0	655	255	390	640	0	0	0	0	135	570	185
Future Volume (veh/h)	0	655	255	390	640	0	0	0	0	135	570	185
Initial Q (Qb), veh	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
Parking Bus, Adj	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	
Adj Sat Flow, veh/h/ln	0	1870	1870	1870	1870	0				1870	1870	1870
Adj Flow Rate, veh/h	0	720	0	402	660	0				145	613	0
Peak Hour Factor	0.91	0.91	0.91	0.97	0.97	0.97				0.93	0.93	0.93
Percent Heavy Veh, %	0	2	2	2	2	0				2	2	2
Cap, veh/h	0	1839		448	2477	0				376	790	
Arrive On Green	0.00	0.52	0.00	0.26	1.00	0.00				0.21	0.21	0.00
Sat Flow, veh/h	0	3741	0	3456	3647	0				1781	3741	0
Grp Volume(v), veh/h	0	720	0	402	660	0				145	613	0
Grp Sat Flow(s),veh/h/ln	0	1777	0	1728	1777	0				1781	1870	0
Q Serve(g_s), s	0.0	14.7	0.0	13.5	0.0	0.0				8.4	18.6	0.0
Cycle Q Clear(g_c), s	0.0	14.7	0.0	13.5	0.0	0.0				8.4	18.6	0.0
Prop In Lane	0.00		0.00	1.00		0.00				1.00		0.00
Lane Grp Cap(c), veh/h	0	1839		448	2477	0				376	790	
V/C Ratio(X)	0.00	0.39		0.90	0.27	0.00				0.39	0.78	
Avail Cap(c_a), veh/h	0	1839		461	2477	0				653	1372	
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	0.00	0.09	0.09	0.00				1.00	1.00	0.00
Uniform Delay (d), s/veh	0.0	17.5	0.0	43.7	0.0	0.0				40.6	44.7	0.0
Incr Delay (d2), s/veh	0.0	0.6	0.0	2.4	0.0	0.0				0.6	1.7	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
%ile BackOfQ(50%),veh/ln	0.0	6.1	0.0	5.1	0.0	0.0				3.8	8.8	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	18.2	0.0	46.0	0.0	0.0				41.3	46.3	0.0
LnGrp LOS	A	B		D	A	A				D	D	
Approach Vol, veh/h		720	A		1062						758	A
Approach Delay, s/veh		18.2			17.4						45.4	
Approach LOS		B			B						D	
Timer - Assigned Phs			3	4		6		8				
Phs Duration (G+Y+Rc), s			21.6	68.1		30.3		89.7				
Change Period (Y+Rc), s			6.0	6.0		5.0		6.0				
Max Green Setting (Gmax), s			16.0	43.0		44.0		65.0				
Max Q Clear Time (g_c+I1), s			15.5	16.7		20.6		2.0				
Green Ext Time (p_c), s			0.1	5.4		4.8		5.4				
Intersection Summary												
HCM 6th Ctrl Delay			26.0									
HCM 6th LOS			C									
Notes												
User approved volume balancing among the lanes for turning movement.												
Unsignalized Delay for [EBR, SBR] is excluded from calculations of the approach delay and intersection delay.												

Timings
1: Pena Blvd SB Ramp & 40th Ave

2040 Background AM.syn

05/06/2020

	→	↖	←	↙	↓
Lane Group	EBT	WBL	WBT	SBL	SBT
Lane Configurations	↑↑	↖↖	↑↑	↖	↑↑
Traffic Volume (vph)	635	625	1205	220	760
Future Volume (vph)	635	625	1205	220	760
Turn Type	NA	Prot	NA	Prot	NA
Protected Phases	4	3	8	1	6
Permitted Phases					
Detector Phase	4	3	8	1	6
Switch Phase					
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	24.0	11.0	24.0	11.0	23.0
Total Split (s)	39.0	30.0	69.0	51.0	51.0
Total Split (%)	32.5%	25.0%	57.5%	42.5%	42.5%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	5.0	5.0
Lead/Lag	Lag	Lead			
Lead-Lag Optimize?	Yes	Yes			
Recall Mode	C-Max	None	C-Max	None	None
Act Effect Green (s)	33.0	24.0	63.0	46.0	46.0
Actuated g/C Ratio	0.28	0.20	0.52	0.38	0.38
v/c Ratio	0.98	0.99	0.71	0.35	0.98
Control Delay	65.9	86.4	25.2	28.4	55.8
Queue Delay	20.3	0.0	0.4	0.0	0.0
Total Delay	86.3	86.4	25.6	28.4	55.8
LOS	F	F	C	C	E
Approach Delay	86.3		46.3		51.7
Approach LOS	F		D		D

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 118.5 (99%), Referenced to phase 4:EBT and 8:WBT, Start of Yellow

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.99

Intersection Signal Delay: 56.7

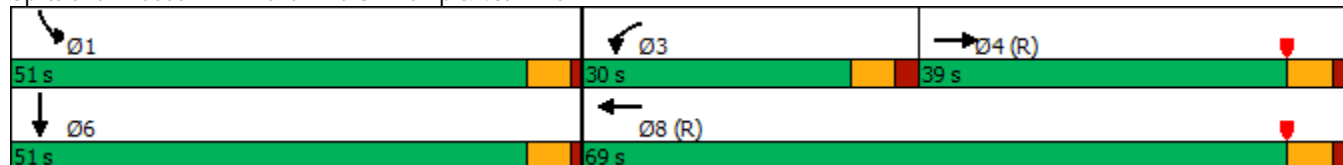
Intersection LOS: E

Intersection Capacity Utilization 86.3%

ICU Level of Service E

Analysis Period (min) 15

Splits and Phases: 1: Pena Blvd SB Ramp & 40th Ave




HCM 6th Signalized Intersection Summary

2040 Background AM.syn

1: Pena Blvd SB Ramp & 40th Ave

05/06/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑		↑↑	↑↑					↑	↑↑	
Traffic Volume (veh/h)	0	635	230	625	1205	0	0	0	0	220	760	350
Future Volume (veh/h)	0	635	230	625	1205	0	0	0	0	220	760	350
Initial Q (Qb), veh	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
Parking Bus, Adj	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	
Adj Sat Flow, veh/h/ln	0	1870	1870	1870	1870	0				1870	1870	1870
Adj Flow Rate, veh/h	0	690	0	679	1310	0				239	826	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92				0.92	0.92	0.92
Percent Heavy Veh, %	0	2	2	2	2	0				2	2	2
Cap, veh/h	0	1358		691	2246	0				492	1033	
Arrive On Green	0.00	0.38	0.00	0.40	1.00	0.00				0.28	0.28	0.00
Sat Flow, veh/h	0	3741	0	3456	3647	0				1781	3741	0
Grp Volume(v), veh/h	0	690	0	679	1310	0				239	826	0
Grp Sat Flow(s),veh/h/ln	0	1777	0	1728	1777	0				1781	1870	0
Q Serve(g_s), s	0.0	17.9	0.0	23.3	0.0	0.0				13.5	24.6	0.0
Cycle Q Clear(g_c), s	0.0	17.9	0.0	23.3	0.0	0.0				13.5	24.6	0.0
Prop In Lane	0.00		0.00	1.00		0.00				1.00		0.00
Lane Grp Cap(c), veh/h	0	1358		691	2246	0				492	1033	
V/C Ratio(X)	0.00	0.51		0.98	0.58	0.00				0.49	0.80	
Avail Cap(c_a), veh/h	0	1358		691	2246	0				683	1434	
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	0.00	0.19	0.19	0.00				1.00	1.00	0.00
Uniform Delay (d), s/veh	0.0	28.4	0.0	35.8	0.0	0.0				36.3	40.3	0.0
Incr Delay (d2), s/veh	0.0	1.4	0.0	11.2	0.2	0.0				0.7	2.3	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
%ile BackOfQ(50%),veh/ln	0.0	7.8	0.0	9.0	0.1	0.0				6.0	11.6	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	29.8	0.0	47.0	0.2	0.0				37.1	42.6	0.0
LnGrp LOS	A	C		D	A	A				D	D	
Approach Vol, veh/h		690	A		1989						1065	A
Approach Delay, s/veh		29.8			16.2						41.4	
Approach LOS		C			B						D	
Timer - Assigned Phs			3	4		6		8				
Phs Duration (G+Y+Rc), s			30.0	51.9		38.1		81.9				
Change Period (Y+Rc), s			6.0	6.0		5.0		6.0				
Max Green Setting (Gmax), s			24.0	33.0		46.0		63.0				
Max Q Clear Time (g_c+I1), s			25.3	19.9		26.6		2.0				
Green Ext Time (p_c), s			0.0	3.9		6.5		14.9				
Intersection Summary												
HCM 6th Ctrl Delay			25.8									
HCM 6th LOS			C									
Notes												
User approved volume balancing among the lanes for turning movement.												
Unsignalized Delay for [EBR, SBR] is excluded from calculations of the approach delay and intersection delay.												

Timings
1: Pena Blvd SB Ramp & 40th Ave

2040 Background PM.syn

05/06/2020

	→	↖	←	↙	↓
Lane Group	EBT	WBL	WBT	SBL	SBT
Lane Configurations	↑↑	↖↖	↑↑	↖	↑↑
Traffic Volume (vph)	970	435	875	220	815
Future Volume (vph)	970	435	875	220	815
Turn Type	NA	Prot	NA	Prot	NA
Protected Phases	4	3	8	1	6
Permitted Phases					
Detector Phase	4	3	8	1	6
Switch Phase					
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	24.0	11.0	24.0	11.0	23.0
Total Split (s)	54.0	20.0	74.0	46.0	46.0
Total Split (%)	45.0%	16.7%	61.7%	38.3%	38.3%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	5.0	5.0
Lead/Lag	Lag	Lead			
Lead-Lag Optimize?	Yes	Yes			
Recall Mode	C-Max	None	C-Max	None	None
Act Effect Green (s)	48.0	14.0	68.0	41.0	41.0
Actuated g/C Ratio	0.40	0.12	0.57	0.34	0.34
v/c Ratio	1.06	1.12	0.45	0.39	1.04
Control Delay	78.0	114.4	15.9	32.6	74.5
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	78.0	114.4	15.9	32.6	74.5
LOS	E	F	B	C	E
Approach Delay	78.0		48.6		68.1
Approach LOS	E		D		E

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 118.5 (99%), Referenced to phase 4:EBT and 8:WBT, Start of Yellow

Natural Cycle: 140

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.12

Intersection Signal Delay: 65.2

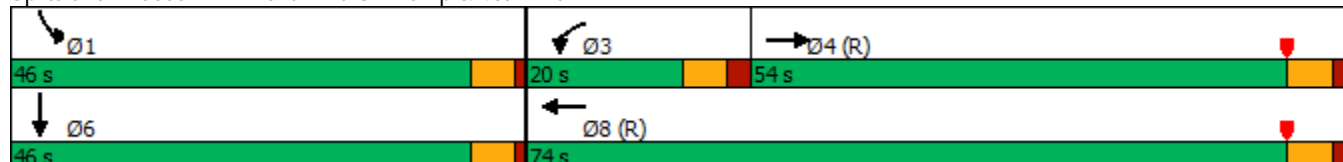
Intersection LOS: E

Intersection Capacity Utilization 92.9%

ICU Level of Service F

Analysis Period (min) 15

Splits and Phases: 1: Pena Blvd SB Ramp & 40th Ave



HCM 6th Signalized Intersection Summary

2040 Background PM.syn

1: Pena Blvd SB Ramp & 40th Ave

05/06/2020



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑		↑↑	↑↑					↑	↑↑	
Traffic Volume (veh/h)	0	970	365	435	875	0	0	0	0	220	815	260
Future Volume (veh/h)	0	970	365	435	875	0	0	0	0	220	815	260
Initial Q (Qb), veh	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
Parking Bus, Adj	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	
Adj Sat Flow, veh/h/ln	0	1870	1870	1870	1870	0				1870	1870	1870
Adj Flow Rate, veh/h	0	1054	0	448	902	0				237	876	0
Peak Hour Factor	0.92	0.92	0.92	0.97	0.97	0.97				0.93	0.93	0.93
Percent Heavy Veh, %	0	2	2	2	2	0				2	2	2
Cap, veh/h	0	1632		403	2224	0				503	1057	
Arrive On Green	0.00	0.46	0.00	0.23	1.00	0.00				0.28	0.28	0.00
Sat Flow, veh/h	0	3741	0	3456	3647	0				1781	3741	0
Grp Volume(v), veh/h	0	1054	0	448	902	0				237	876	0
Grp Sat Flow(s),veh/h/ln	0	1777	0	1728	1777	0				1781	1870	0
Q Serve(g_s), s	0.0	27.4	0.0	14.0	0.0	0.0				13.2	26.3	0.0
Cycle Q Clear(g_c), s	0.0	27.4	0.0	14.0	0.0	0.0				13.2	26.3	0.0
Prop In Lane	0.00		0.00	1.00		0.00				1.00		0.00
Lane Grp Cap(c), veh/h	0	1632		403	2224	0				503	1057	
V/C Ratio(X)	0.00	0.65		1.11	0.41	0.00				0.47	0.83	
Avail Cap(c_a), veh/h	0	1632		403	2224	0				609	1278	
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	0.00	0.09	0.09	0.00				1.00	1.00	0.00
Uniform Delay (d), s/veh	0.0	24.9	0.0	46.0	0.0	0.0				35.6	40.3	0.0
Incr Delay (d2), s/veh	0.0	2.0	0.0	53.8	0.0	0.0				0.7	4.0	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
%ile BackOfQ(50%),veh/ln	0.0	11.8	0.0	8.2	0.0	0.0				5.8	12.6	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	26.9	0.0	99.8	0.0	0.0				36.3	44.3	0.0
LnGrp LOS	A	C		F	A	A				D	D	
Approach Vol, veh/h		1054	A		1350						1113	A
Approach Delay, s/veh		26.9			33.1						42.6	
Approach LOS		C			C						D	
Timer - Assigned Phs			3	4		6		8				
Phs Duration (G+Y+Rc), s			20.0	61.1		38.9		81.1				
Change Period (Y+Rc), s			6.0	6.0		5.0		6.0				
Max Green Setting (Gmax), s			14.0	48.0		41.0		68.0				
Max Q Clear Time (g_c+I1), s			16.0	29.4		28.3		2.0				
Green Ext Time (p_c), s			0.0	7.5		5.6		8.2				
Intersection Summary												
HCM 6th Ctrl Delay			34.3									
HCM 6th LOS			C									
Notes												
User approved volume balancing among the lanes for turning movement.												
Unsignalized Delay for [EBR, SBR] is excluded from calculations of the approach delay and intersection delay.												

Timings
1: Pena Blvd SB Ramp & 40th Ave

2040 Total AM Scenario 1.syn

06/08/2020

	→	↖	←	↘	↓
Lane Group	EBT	WBL	WBT	SBL	SBT
Lane Configurations	↑↑	↖↖	↑↑	↘	↑↑
Traffic Volume (vph)	690	685	1230	275	760
Future Volume (vph)	690	685	1230	275	760
Turn Type	NA	Prot	NA	Prot	NA
Protected Phases	4	3	8	1	6
Permitted Phases					
Detector Phase	4	3	8	1	6
Switch Phase					
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	24.0	11.0	24.0	11.0	23.0
Total Split (s)	36.0	40.0	76.0	44.0	44.0
Total Split (%)	30.0%	33.3%	63.3%	36.7%	36.7%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	5.0	5.0
Lead/Lag	Lag	Lead			
Lead-Lag Optimize?	Yes	Yes			
Recall Mode	C-Max	None	C-Max	None	None
Act Effect Green (s)	33.4	30.6	70.0	39.0	39.0
Actuated g/C Ratio	0.28	0.26	0.58	0.32	0.32
v/c Ratio	1.03	0.85	0.65	0.51	1.14
Control Delay	79.5	60.3	20.4	37.1	111.1
Queue Delay	0.7	0.0	0.4	0.0	0.0
Total Delay	80.3	60.3	20.9	37.1	111.1
LOS	F	E	C	D	F
Approach Delay	80.3		35.0		97.9
Approach LOS	F		D		F

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 118.5 (99%), Referenced to phase 4:EBT and 8:WBT, Start of Yellow

Natural Cycle: 120

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.14

Intersection Signal Delay: 65.5

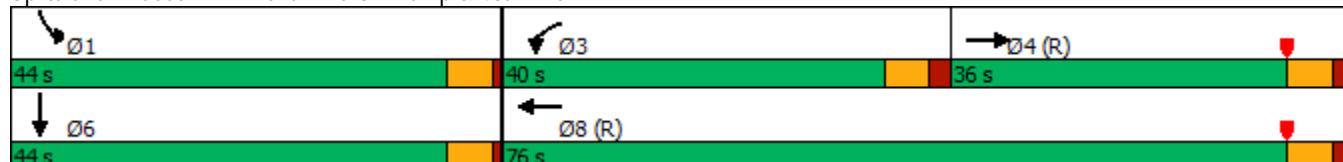
Intersection LOS: E

Intersection Capacity Utilization 91.6%

ICU Level of Service F

Analysis Period (min) 15

Splits and Phases: 1: Pena Blvd SB Ramp & 40th Ave




HCM 6th Signalized Intersection Summary

2040 Total AM Scenario 1.syn

1: Pena Blvd SB Ramp & 40th Ave

06/08/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑		↑↑	↑↑					↑	↑↑	
Traffic Volume (veh/h)	0	690	230	685	1230	0	0	0	0	275	760	350
Future Volume (veh/h)	0	690	230	685	1230	0	0	0	0	275	760	350
Initial Q (Qb), veh	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
Parking Bus, Adj	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	
Adj Sat Flow, veh/h/ln	0	1870	1870	1870	1870	0				1870	1870	1870
Adj Flow Rate, veh/h	0	750	0	745	1337	0				299	826	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92				0.92	0.92	0.92
Percent Heavy Veh, %	0	2	2	2	2	0				2	2	2
Cap, veh/h	0	1265		809	2275	0				478	1003	
Arrive On Green	0.00	0.36	0.00	0.47	1.00	0.00				0.27	0.27	0.00
Sat Flow, veh/h	0	3741	0	3456	3647	0				1781	3741	0
Grp Volume(v), veh/h	0	750	0	745	1337	0				299	826	0
Grp Sat Flow(s),veh/h/ln	0	1777	0	1728	1777	0				1781	1870	0
Q Serve(g_s), s	0.0	20.7	0.0	24.2	0.0	0.0				17.7	24.9	0.0
Cycle Q Clear(g_c), s	0.0	20.7	0.0	24.2	0.0	0.0				17.7	24.9	0.0
Prop In Lane	0.00		0.00	1.00		0.00				1.00		0.00
Lane Grp Cap(c), veh/h	0	1265		809	2275	0				478	1003	
V/C Ratio(X)	0.00	0.59		0.92	0.59	0.00				0.63	0.82	
Avail Cap(c_a), veh/h	0	1265		979	2275	0				579	1216	
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	0.00	0.09	0.09	0.00				1.00	1.00	0.00
Uniform Delay (d), s/veh	0.0	31.6	0.0	30.8	0.0	0.0				38.6	41.2	0.0
Incr Delay (d2), s/veh	0.0	2.1	0.0	1.4	0.1	0.0				1.5	4.0	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
%ile BackOfQ(50%),veh/ln	0.0	9.2	0.0	8.0	0.0	0.0				7.9	12.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	33.6	0.0	32.2	0.1	0.0				40.1	45.2	0.0
LnGrp LOS	A	C		C	A	A				D	D	
Approach Vol, veh/h		750	A		2082						1125	A
Approach Delay, s/veh		33.6			11.6						43.8	
Approach LOS		C			B						D	
Timer - Assigned Phs			3	4		6		8				
Phs Duration (G+Y+Rc), s			34.1	48.7		37.2		82.8				
Change Period (Y+Rc), s			6.0	6.0		5.0		6.0				
Max Green Setting (Gmax), s			34.0	30.0		39.0		70.0				
Max Q Clear Time (g_c+I1), s			26.2	22.7		26.9		2.0				
Green Ext Time (p_c), s			1.9	3.0		5.3		15.6				
Intersection Summary												
HCM 6th Ctrl Delay			24.9									
HCM 6th LOS			C									
Notes												
User approved volume balancing among the lanes for turning movement.												
Unsignalized Delay for [EBR, SBR] is excluded from calculations of the approach delay and intersection delay.												

Timings
1: Pena Blvd SB Ramp & 40th Ave

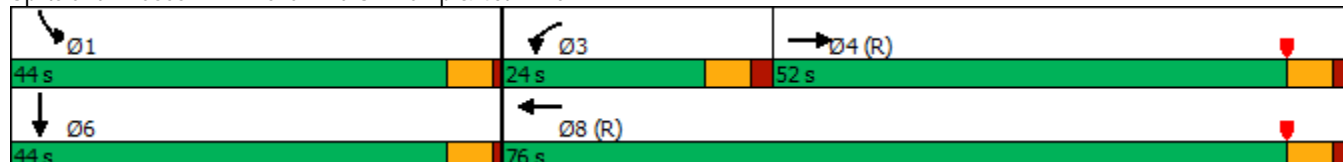
2040 Total PM Scenario 1.syn
06/08/2020

	→	↖	←	↘	↓
Lane Group	EBT	WBL	WBT	SBL	SBT
Lane Configurations	↑↑	↖↖	↑↑	↘	↑↑
Traffic Volume (vph)	995	550	925	245	815
Future Volume (vph)	995	550	925	245	815
Turn Type	NA	Prot	NA	Prot	NA
Protected Phases	4	3	8	1	6
Permitted Phases					
Detector Phase	4	3	8	1	6
Switch Phase					
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	24.0	11.0	24.0	11.0	23.0
Total Split (s)	52.0	24.0	76.0	44.0	44.0
Total Split (%)	43.3%	20.0%	63.3%	36.7%	36.7%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	5.0	5.0
Lead/Lag	Lag	Lead			
Lead-Lag Optimize?	Yes	Yes			
Recall Mode	C-Max	None	C-Max	None	None
Act Effect Green (s)	46.0	18.0	70.0	39.0	39.0
Actuated g/C Ratio	0.38	0.15	0.58	0.32	0.32
v/c Ratio	1.13	1.10	0.46	0.45	1.09
Control Delay	104.3	107.1	15.4	35.5	93.0
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	104.3	107.1	15.4	35.5	93.0
LOS	F	F	B	D	F
Approach Delay	104.3		49.6		83.4
Approach LOS	F		D		F

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 118.5 (99%), Referenced to phase 4:EBT and 8:WBT, Start of Yellow
 Natural Cycle: 140
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.13
 Intersection Signal Delay: 78.8
 Intersection Capacity Utilization 98.9%
 Analysis Period (min) 15
 Intersection LOS: E
 ICU Level of Service F

Splits and Phases: 1: Pena Blvd SB Ramp & 40th Ave




HCM 6th Signalized Intersection Summary

2040 Total PM Scenario 1.syn

1: Pena Blvd SB Ramp & 40th Ave

06/08/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑		↑↑	↑↑					↑	↑↑	
Traffic Volume (veh/h)	0	995	365	550	925	0	0	0	0	245	815	260
Future Volume (veh/h)	0	995	365	550	925	0	0	0	0	245	815	260
Initial Q (Qb), veh	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
Parking Bus, Adj	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	
Adj Sat Flow, veh/h/ln	0	1870	1870	1870	1870	0				1870	1870	1870
Adj Flow Rate, veh/h	0	1082	0	567	954	0				263	876	0
Peak Hour Factor	0.92	0.92	0.92	0.97	0.97	0.97				0.93	0.93	0.93
Percent Heavy Veh, %	0	2	2	2	2	0				2	2	2
Cap, veh/h	0	1526		518	2236	0				497	1044	
Arrive On Green	0.00	0.43	0.00	0.30	1.00	0.00				0.28	0.28	0.00
Sat Flow, veh/h	0	3741	0	3456	3647	0				1781	3741	0
Grp Volume(v), veh/h	0	1082	0	567	954	0				263	876	0
Grp Sat Flow(s),veh/h/ln	0	1777	0	1728	1777	0				1781	1870	0
Q Serve(g_s), s	0.0	30.0	0.0	18.0	0.0	0.0				15.0	26.5	0.0
Cycle Q Clear(g_c), s	0.0	30.0	0.0	18.0	0.0	0.0				15.0	26.5	0.0
Prop In Lane	0.00		0.00	1.00		0.00				1.00		0.00
Lane Grp Cap(c), veh/h	0	1526		518	2236	0				497	1044	
V/C Ratio(X)	0.00	0.71		1.09	0.43	0.00				0.53	0.84	
Avail Cap(c_a), veh/h	0	1526		518	2236	0				579	1216	
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	0.00	0.09	0.09	0.00				1.00	1.00	0.00
Uniform Delay (d), s/veh	0.0	28.1	0.0	42.0	0.0	0.0				36.6	40.7	0.0
Incr Delay (d2), s/veh	0.0	2.8	0.0	45.6	0.1	0.0				0.9	4.7	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
%ile BackOfQ(50%),veh/ln	0.0	13.1	0.0	9.8	0.0	0.0				6.6	12.8	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	30.9	0.0	87.6	0.1	0.0				37.5	45.5	0.0
LnGrp LOS	A	C		F	A	A				D	D	
Approach Vol, veh/h		1082	A		1521						1139	A
Approach Delay, s/veh		30.9			32.7						43.6	
Approach LOS		C			C						D	
Timer - Assigned Phs			3	4		6		8				
Phs Duration (G+Y+Rc), s			24.0	57.5		38.5		81.5				
Change Period (Y+Rc), s			6.0	6.0		5.0		6.0				
Max Green Setting (Gmax), s			18.0	46.0		39.0		70.0				
Max Q Clear Time (g_c+I1), s			20.0	32.0		28.5		2.0				
Green Ext Time (p_c), s			0.0	6.6		5.0		8.9				
Intersection Summary												
HCM 6th Ctrl Delay			35.5									
HCM 6th LOS			D									
Notes												
User approved volume balancing among the lanes for turning movement.												
Unsignalized Delay for [EBR, SBR] is excluded from calculations of the approach delay and intersection delay.												

Timings

1: Pena Blvd SB Ramp & 40th Ave

2040 Total AM Scenario 2.syn

06/08/2020

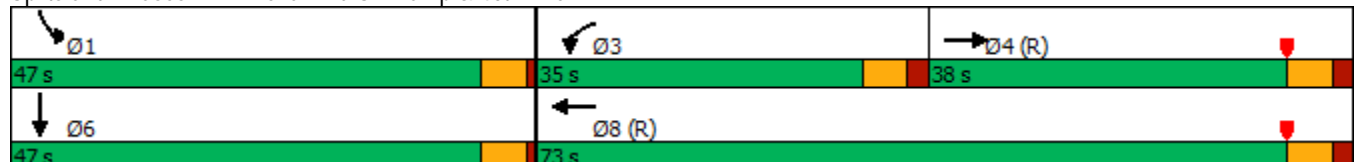
	→	↖	←	↙	↓
Lane Group	EBT	WBL	WBT	SBL	SBT
Lane Configurations	↑↑	↖↖	↑↑	↙	↑↑
Traffic Volume (vph)	665	540	1230	240	830
Future Volume (vph)	665	540	1230	240	830
Turn Type	NA	Prot	NA	Prot	NA
Protected Phases	4	3	8	1	6
Permitted Phases					
Detector Phase	4	3	8	1	6
Switch Phase					
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	24.0	11.0	24.0	11.0	23.0
Total Split (s)	38.0	35.0	73.0	47.0	47.0
Total Split (%)	31.7%	29.2%	60.8%	39.2%	39.2%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	5.0	5.0
Lead/Lag	Lag	Lead			
Lead-Lag Optimize?	Yes	Yes			
Recall Mode	C-Max	None	C-Max	None	None
Act Effect Green (s)	35.9	25.1	67.0	42.0	42.0
Actuated g/C Ratio	0.30	0.21	0.56	0.35	0.35
v/c Ratio	1.01	0.82	0.68	0.42	1.13
Control Delay	70.9	60.6	22.9	32.5	104.0
Queue Delay	0.3	0.0	0.5	0.0	0.0
Total Delay	71.2	60.6	23.4	32.5	104.0
LOS	E	E	C	C	F
Approach Delay	71.2		34.7		93.1
Approach LOS	E		C		F

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 118.5 (99%), Referenced to phase 4:EBT and 8:WBT, Start of Yellow
 Natural Cycle: 110
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.13
 Intersection Signal Delay: 63.1
 Intersection Capacity Utilization 84.7%
 Analysis Period (min) 15

Intersection LOS: E
 ICU Level of Service E

Splits and Phases: 1: Pena Blvd SB Ramp & 40th Ave




HCM 6th Signalized Intersection Summary

2040 Total AM Scenario 2.syn

1: Pena Blvd SB Ramp & 40th Ave

06/08/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑		↑↑	↑↑					↑	↑↑	
Traffic Volume (veh/h)	0	665	290	540	1230	0	0	0	0	240	830	350
Future Volume (veh/h)	0	665	290	540	1230	0	0	0	0	240	830	350
Initial Q (Qb), veh	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
Parking Bus, Adj	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	
Adj Sat Flow, veh/h/ln	0	1870	1870	1870	1870	0				1870	1870	1870
Adj Flow Rate, veh/h	0	723	0	587	1337	0				261	902	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92				0.92	0.92	0.92
Percent Heavy Veh, %	0	2	2	2	2	0				2	2	2
Cap, veh/h	0	1345		653	2194	0				518	1088	
Arrive On Green	0.00	0.38	0.00	0.38	1.00	0.00				0.29	0.29	0.00
Sat Flow, veh/h	0	3741	0	3456	3647	0				1781	3741	0
Grp Volume(v), veh/h	0	723	0	587	1337	0				261	902	0
Grp Sat Flow(s),veh/h/ln	0	1777	0	1728	1777	0				1781	1870	0
Q Serve(g_s), s	0.0	19.0	0.0	19.2	0.0	0.0				14.6	27.0	0.0
Cycle Q Clear(g_c), s	0.0	19.0	0.0	19.2	0.0	0.0				14.6	27.0	0.0
Prop In Lane	0.00		0.00	1.00		0.00				1.00		0.00
Lane Grp Cap(c), veh/h	0	1345		653	2194	0				518	1088	
V/C Ratio(X)	0.00	0.54		0.90	0.61	0.00				0.50	0.83	
Avail Cap(c_a), veh/h	0	1345		835	2194	0				623	1309	
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	0.00	0.33	0.33	0.00				1.00	1.00	0.00
Uniform Delay (d), s/veh	0.0	29.1	0.0	36.3	0.0	0.0				35.4	39.8	0.0
Incr Delay (d2), s/veh	0.0	1.5	0.0	4.0	0.4	0.0				0.8	3.9	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
%ile BackOfQ(50%),veh/ln	0.0	8.4	0.0	7.0	0.1	0.0				6.5	12.9	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	30.6	0.0	40.2	0.4	0.0				36.1	43.7	0.0
LnGrp LOS	A	C		D	A	A				D	D	
Approach Vol, veh/h		723	A		1924						1163	A
Approach Delay, s/veh		30.6			12.6						42.0	
Approach LOS		C			B						D	
Timer - Assigned Phs			3	4		6		8				
Phs Duration (G+Y+Rc), s			28.7	51.4		39.9		80.1				
Change Period (Y+Rc), s			6.0	6.0		5.0		6.0				
Max Green Setting (Gmax), s			29.0	32.0		42.0		67.0				
Max Q Clear Time (g_c+I1), s			21.2	21.0		29.0		2.0				
Green Ext Time (p_c), s			1.5	3.7		5.9		15.5				
Intersection Summary												
HCM 6th Ctrl Delay			25.0									
HCM 6th LOS			C									
Notes												
User approved volume balancing among the lanes for turning movement.												
Unsignalized Delay for [EBR, SBR] is excluded from calculations of the approach delay and intersection delay.												

Timings
1: Pena Blvd SB Ramp & 40th Ave

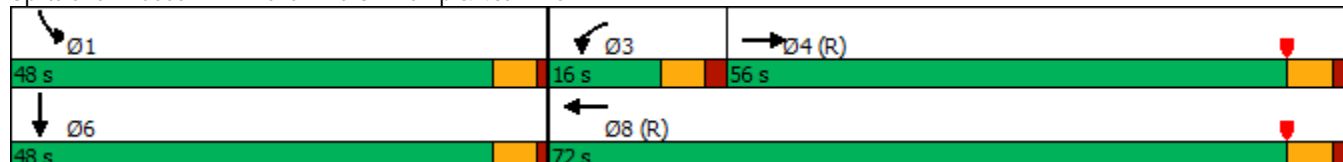
2040 Total PM Scenario 2.syn
06/08/2020

	→	↖	←	↙	↓
Lane Group	EBT	WBL	WBT	SBL	SBT
Lane Configurations	↑↑	↖↖	↑↑	↖	↑↑
Traffic Volume (vph)	960	265	920	230	835
Future Volume (vph)	960	265	920	230	835
Turn Type	NA	Prot	NA	Prot	NA
Protected Phases	4	3	8	1	6
Permitted Phases					
Detector Phase	4	3	8	1	6
Switch Phase					
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	24.0	11.0	24.0	11.0	23.0
Total Split (s)	56.0	16.0	72.0	48.0	48.0
Total Split (%)	46.7%	13.3%	60.0%	40.0%	40.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	5.0	5.0
Lead/Lag	Lag	Lead			
Lead-Lag Optimize?	Yes	Yes			
Recall Mode	C-Max	None	C-Max	None	None
Act Effect Green (s)	50.0	10.0	66.0	43.0	43.0
Actuated g/C Ratio	0.42	0.08	0.55	0.36	0.36
v/c Ratio	1.04	0.95	0.49	0.39	1.01
Control Delay	69.9	82.7	17.4	31.1	65.9
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	69.9	82.7	17.4	31.1	65.9
LOS	E	F	B	C	E
Approach Delay	69.9		32.0		60.4
Approach LOS	E		C		E

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 118.5 (99%), Referenced to phase 4:EBT and 8:WBT, Start of Yellow
 Natural Cycle: 120
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.04
 Intersection Signal Delay: 55.4
 Intersection Capacity Utilization 87.9%
 Analysis Period (min) 15
 Intersection LOS: E
 ICU Level of Service E

Splits and Phases: 1: Pena Blvd SB Ramp & 40th Ave




HCM 6th Signalized Intersection Summary

2040 Total PM Scenario 2.syn

1: Pena Blvd SB Ramp & 40th Ave











06/08/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑		↑↑	↑↑					↑	↑↑	
Traffic Volume (veh/h)	0	960	400	265	920	0	0	0	0	230	835	260
Future Volume (veh/h)	0	960	400	265	920	0	0	0	0	230	835	260
Initial Q (Qb), veh	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
Parking Bus, Adj	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	
Adj Sat Flow, veh/h/ln	0	1870	1870	1870	1870	0				1870	1870	1870
Adj Flow Rate, veh/h	0	1043	0	273	948	0				247	898	0
Peak Hour Factor	0.92	0.92	0.92	0.97	0.97	0.97				0.93	0.93	0.93
Percent Heavy Veh, %	0	2	2	2	2	0				2	2	2
Cap, veh/h	0	1719		288	2193	0				519	1090	
Arrive On Green	0.00	0.48	0.00	0.17	1.00	0.00				0.29	0.29	0.00
Sat Flow, veh/h	0	3741	0	3456	3647	0				1781	3741	0
Grp Volume(v), veh/h	0	1043	0	273	948	0				247	898	0
Grp Sat Flow(s),veh/h/ln	0	1777	0	1728	1777	0				1781	1870	0
Q Serve(g_s), s	0.0	25.7	0.0	9.4	0.0	0.0				13.7	26.9	0.0
Cycle Q Clear(g_c), s	0.0	25.7	0.0	9.4	0.0	0.0				13.7	26.9	0.0
Prop In Lane	0.00		0.00	1.00		0.00				1.00		0.00
Lane Grp Cap(c), veh/h	0	1719		288	2193	0				519	1090	
V/C Ratio(X)	0.00	0.61		0.95	0.43	0.00				0.48	0.82	
Avail Cap(c_a), veh/h	0	1719		288	2193	0				638	1340	
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	0.00	0.15	0.15	0.00				1.00	1.00	0.00
Uniform Delay (d), s/veh	0.0	22.6	0.0	49.7	0.0	0.0				35.0	39.6	0.0
Incr Delay (d2), s/veh	0.0	1.6	0.0	10.8	0.1	0.0				0.7	3.6	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
%ile BackOfQ(50%),veh/ln	0.0	11.0	0.0	4.1	0.0	0.0				6.0	12.8	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	24.2	0.0	60.5	0.1	0.0				35.7	43.2	0.0
LnGrp LOS	A	C		E	A	A				D	D	
Approach Vol, veh/h		1043	A		1221						1145	A
Approach Delay, s/veh		24.2			13.6						41.6	
Approach LOS		C			B						D	
Timer - Assigned Phs			3	4		6		8				
Phs Duration (G+Y+Rc), s			16.0	64.0		40.0		80.0				
Change Period (Y+Rc), s			6.0	6.0		5.0		6.0				
Max Green Setting (Gmax), s			10.0	50.0		43.0		66.0				
Max Q Clear Time (g_c+I1), s			11.4	27.7		28.9		2.0				
Green Ext Time (p_c), s			0.0	8.1		6.1		8.8				
Intersection Summary												
HCM 6th Ctrl Delay			26.3									
HCM 6th LOS			C									
Notes												
User approved volume balancing among the lanes for turning movement.												
Unsignalized Delay for [EBR, SBR] is excluded from calculations of the approach delay and intersection delay.												

Timings
2: Pena Blvd NB Ramp & 40th Ave

2020 Adjusted Existing AM.syn

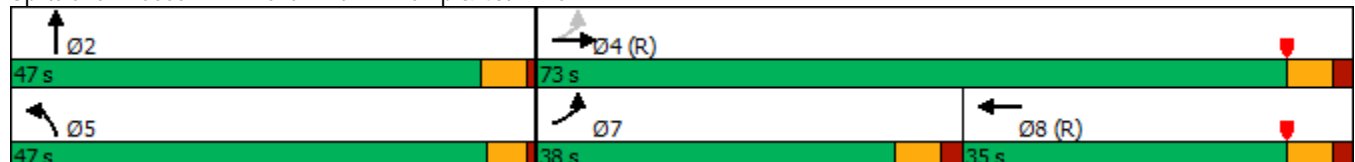
04/24/2020

					
Lane Group	EBL	EBT	WBT	NBL	NBT
Lane Configurations					
Traffic Volume (vph)	390	975	375	75	650
Future Volume (vph)	390	975	375	75	650
Turn Type	pm+pt	NA	NA	Prot	NA
Protected Phases	7	4	8	5	2
Permitted Phases	4				
Detector Phase	7	4	8	5	2
Switch Phase					
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	11.0	24.0	24.0	9.5	23.0
Total Split (s)	38.0	73.0	35.0	47.0	47.0
Total Split (%)	31.7%	60.8%	29.2%	39.2%	39.2%
Yellow Time (s)	4.0	4.0	4.0	3.5	4.0
All-Red Time (s)	2.0	2.0	2.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	4.5	5.0
Lead/Lag	Lead		Lag		
Lead-Lag Optimize?	Yes		Yes		
Recall Mode	None	C-Max	C-Max	None	None
Act Effect Green (s)	67.0	67.0	34.2	35.3	42.0
Actuated g/C Ratio	0.56	0.56	0.28	0.29	0.35
v/c Ratio	0.86	0.56	0.66	0.15	0.85
Control Delay	46.2	20.0	38.7	28.3	44.5
Queue Delay	0.0	0.2	0.0	0.0	0.0
Total Delay	46.2	20.3	38.7	28.3	44.5
LOS	D	C	D	C	D
Approach Delay		27.7	38.7		43.3
Approach LOS		C	D		D

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 118.5 (99%), Referenced to phase 4:EBTL and 8:WBT, Start of Yellow
Natural Cycle: 75
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.86
Intersection Signal Delay: 34.7
Intersection Capacity Utilization 66.0%
Analysis Period (min) 15
Intersection LOS: C
ICU Level of Service C

Splits and Phases: 2: Pena Blvd NB Ramp & 40th Ave




















HCM 6th Signalized Intersection Summary

2: Pena Blvd NB Ramp & 40th Ave

2020 Adjusted Existing AM.syn











04/24/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	390	975	0	0	375	180	75	650	170	0	0	0
Future Volume (veh/h)	390	975	0	0	375	180	75	650	170	0	0	0
Initial Q (Qb), veh	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			
Parking Bus, Adj	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					
Adj Sat Flow, veh/h/ln	1870	1870	0	0	1870	1870	1870	1870	1870			
Adj Flow Rate, veh/h	443	1108	0	0	446	0	81	699	0			
Peak Hour Factor	0.88	0.88	0.88	0.84	0.84	0.84	0.93	0.93	0.93			
Percent Heavy Veh, %	2	2	0	0	2	2	2	2	2			
Cap, veh/h	720	2410	0	0	1639		417	876				
Arrive On Green	0.33	1.00	0.00	0.00	0.46	0.00	0.23	0.23	0.00			
Sat Flow, veh/h	1781	3647	0	0	3741	0	1781	3741	0			
Grp Volume(v), veh/h	443	1108	0	0	446	0	81	699	0			
Grp Sat Flow(s),veh/h/ln	1781	1777	0	0	1777	0	1781	1870	0			
Q Serve(g_s), s	16.8	0.0	0.0	0.0	9.3	0.0	4.4	21.1	0.0			
Cycle Q Clear(g_c), s	16.8	0.0	0.0	0.0	9.3	0.0	4.4	21.1	0.0			
Prop In Lane	1.00		0.00	0.00		0.00	1.00		0.00			
Lane Grp Cap(c), veh/h	720	2410	0	0	1639		417	876				
V/C Ratio(X)	0.62	0.46	0.00	0.00	0.27		0.19	0.80				
Avail Cap(c_a), veh/h	897	2410	0	0	1639		631	1325				
HCM Platoon Ratio	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.77	0.77	0.00	0.00	0.90	0.00	1.00	1.00	0.00			
Uniform Delay (d), s/veh	9.1	0.0	0.0	0.0	19.9	0.0	36.9	43.3	0.0			
Incr Delay (d2), s/veh	0.7	0.5	0.0	0.0	0.4	0.0	0.2	2.1	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			
%ile BackOfQ(50%),veh/ln	4.1	0.2	0.0	0.0	3.9	0.0	1.9	10.0	0.0			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	9.8	0.5	0.0	0.0	20.3	0.0	37.1	45.3	0.0			
LnGrp LOS	A	A	A	A	C		D	D				
Approach Vol, veh/h	1551			446			A			780		
Approach Delay, s/veh	3.1			20.3			44.5			A		
Approach LOS	A			C			D					
Timer - Assigned Phs	2			4			7			8		
Phs Duration (G+Y+Rc), s	32.6			87.4			26.1			61.3		
Change Period (Y+Rc), s	4.5			6.0			6.0			6.0		
Max Green Setting (Gmax), s	42.5			67.0			32.0			29.0		
Max Q Clear Time (g_c+I1), s	23.1			2.0			18.8			11.3		
Green Ext Time (p_c), s	5.0			11.3			1.2			2.7		
Intersection Summary												
HCM 6th Ctrl Delay	17.5											
HCM 6th LOS	B											
Notes												
User approved volume balancing among the lanes for turning movement.												
Unsignalized Delay for [NBR, WBR] is excluded from calculations of the approach delay and intersection delay.												

Timings
2: Pena Blvd NB Ramp & 40th Ave

2020 Adjusted Existing PM.syn

04/27/2020

					
Lane Group	EBL	EBT	WBT	NBL	NBT
Lane Configurations					
Traffic Volume (vph)	200	525	595	95	545
Future Volume (vph)	200	525	595	95	545
Turn Type	pm+pt	NA	NA	Prot	NA
Protected Phases	7	4	8	5	2
Permitted Phases	4				
Detector Phase	7	4	8	5	2
Switch Phase					
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	11.0	24.0	24.0	9.5	23.0
Total Split (s)	24.0	72.0	48.0	48.0	48.0
Total Split (%)	20.0%	60.0%	40.0%	40.0%	40.0%
Yellow Time (s)	4.0	4.0	4.0	3.5	4.0
All-Red Time (s)	2.0	2.0	2.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	4.5	5.0
Lead/Lag	Lead		Lag		
Lead-Lag Optimize?	Yes		Yes		
Recall Mode	None	C-Max	C-Max	None	None
Act Effect Green (s)	66.0	66.0	47.0	43.5	43.0
Actuated g/C Ratio	0.55	0.55	0.39	0.36	0.36
v/c Ratio	0.64	0.28	0.67	0.16	0.66
Control Delay	44.8	11.8	31.7	26.8	33.9
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	44.8	11.8	31.7	26.8	33.9
LOS	D	B	C	C	C
Approach Delay		20.9	31.7		33.2
Approach LOS		C	C		C

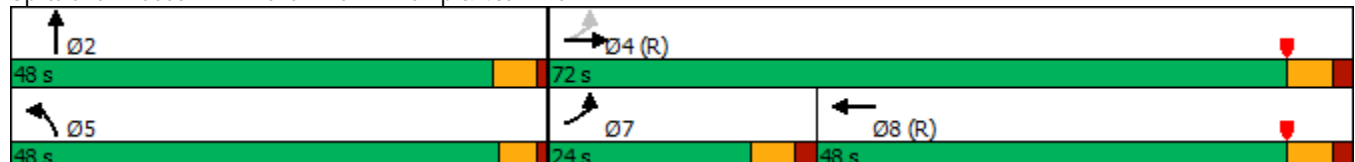
Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 118.5 (99%), Referenced to phase 4:EBTL and 8:WBT, Start of Yellow
 Natural Cycle: 60
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.67
 Intersection Signal Delay: 29.0
 Intersection Capacity Utilization 65.7%
 Analysis Period (min) 15

Intersection LOS: C

ICU Level of Service C

Splits and Phases: 2: Pena Blvd NB Ramp & 40th Ave




















HCM 6th Signalized Intersection Summary

2: Pena Blvd NB Ramp & 40th Ave

2020 Adjusted Existing PM.syn











04/27/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	200	525	0	0	595	245	95	545	175	0	0	0
Future Volume (veh/h)	200	525	0	0	595	245	95	545	175	0	0	0
Initial Q (Qb), veh	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			
Parking Bus, Adj	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					
Adj Sat Flow, veh/h/ln	1870	1870	0	0	1870	1870	1870	1870	1870			
Adj Flow Rate, veh/h	206	541	0	0	647	0	102	586	0			
Peak Hour Factor	0.97	0.97	0.97	0.92	0.92	0.92	0.93	0.93	0.93			
Percent Heavy Veh, %	2	2	0	0	2	2	2	2	2			
Cap, veh/h	572	2525	0	0	2116		360	755				
Arrive On Green	0.13	1.00	0.00	0.00	0.60	0.00	0.20	0.20	0.00			
Sat Flow, veh/h	1781	3647	0	0	3741	0	1781	3741	0			
Grp Volume(v), veh/h	206	541	0	0	647	0	102	586	0			
Grp Sat Flow(s),veh/h/ln	1781	1777	0	0	1777	0	1781	1870	0			
Q Serve(g_s), s	5.4	0.0	0.0	0.0	10.8	0.0	5.8	17.8	0.0			
Cycle Q Clear(g_c), s	5.4	0.0	0.0	0.0	10.8	0.0	5.8	17.8	0.0			
Prop In Lane	1.00		0.00	0.00		0.00	1.00		0.00			
Lane Grp Cap(c), veh/h	572	2525	0	0	2116		360	755				
V/C Ratio(X)	0.36	0.21	0.00	0.00	0.31		0.28	0.78				
Avail Cap(c_a), veh/h	723	2525	0	0	2116		646	1356				
HCM Platoon Ratio	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.73	0.73	0.00	0.00	0.92	0.00	1.00	1.00	0.00			
Uniform Delay (d), s/veh	7.5	0.0	0.0	0.0	12.0	0.0	40.5	45.3	0.0			
Incr Delay (d2), s/veh	0.3	0.1	0.0	0.0	0.3	0.0	0.4	1.8	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			
%ile BackOfQ(50%),veh/ln	1.7	0.0	0.0	0.0	4.3	0.0	2.6	8.4	0.0			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	7.7	0.1	0.0	0.0	12.4	0.0	41.0	47.1	0.0			
LnGrp LOS	A	A	A	A	B		D	D				
Approach Vol, veh/h	747			647			A			688		
Approach Delay, s/veh	2.2			12.4			46.2			A		
Approach LOS	A			B			D					
Timer - Assigned Phs	2			4			7			8		
Phs Duration (G+Y+Rc), s	28.7			91.3			13.8			77.4		
Change Period (Y+Rc), s	4.5			6.0			6.0			6.0		
Max Green Setting (Gmax), s	43.5			66.0			18.0			42.0		
Max Q Clear Time (g_c+I1), s	19.8			2.0			7.4			12.8		
Green Ext Time (p_c), s	4.4			4.2			0.4			4.9		
Intersection Summary												
HCM 6th Ctrl Delay	19.9											
HCM 6th LOS	B											
Notes												
User approved volume balancing among the lanes for turning movement.												
Unsignalized Delay for [NBR, WBR] is excluded from calculations of the approach delay and intersection delay.												

Timings 2: Pena Blvd NB Ramp & 40th Ave

2022 Background AM.syn

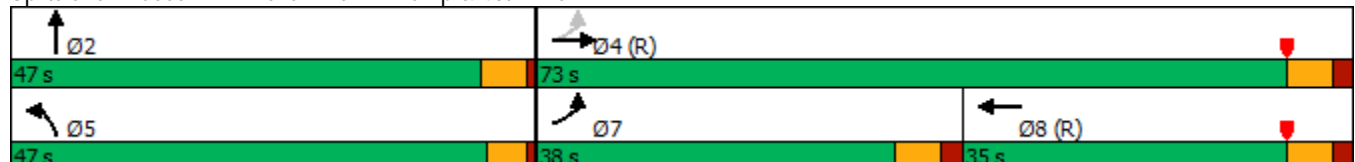
05/06/2020

					
Lane Group	EBL	EBT	WBT	NBL	NBT
Lane Configurations					
Traffic Volume (vph)	405	1085	425	75	675
Future Volume (vph)	405	1085	425	75	675
Turn Type	pm+pt	NA	NA	Prot	NA
Protected Phases	7	4	8	5	2
Permitted Phases	4				
Detector Phase	7	4	8	5	2
Switch Phase					
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	11.0	24.0	24.0	9.5	23.0
Total Split (s)	38.0	73.0	35.0	47.0	47.0
Total Split (%)	31.7%	60.8%	29.2%	39.2%	39.2%
Yellow Time (s)	4.0	4.0	4.0	3.5	4.0
All-Red Time (s)	2.0	2.0	2.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	4.5	5.0
Lead/Lag	Lead		Lag		
Lead-Lag Optimize?	Yes		Yes		
Recall Mode	None	C-Max	C-Max	None	None
Act Effect Green (s)	67.0	67.0	31.8	35.3	42.0
Actuated g/C Ratio	0.56	0.56	0.26	0.29	0.35
v/c Ratio	0.90	0.62	0.79	0.15	0.96
Control Delay	57.6	23.5	45.4	28.3	56.3
Queue Delay	0.0	0.4	0.0	0.0	0.0
Total Delay	57.6	23.9	45.4	28.3	56.3
LOS	E	C	D	C	E
Approach Delay		33.1	45.4		54.4
Approach LOS		C	D		D

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 118.5 (99%), Referenced to phase 4:EBTL and 8:WBT, Start of Yellow
Natural Cycle: 80
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.96
Intersection Signal Delay: 42.2
Intersection LOS: D
Intersection Capacity Utilization 69.8%
ICU Level of Service C
Analysis Period (min) 15

Splits and Phases: 2: Pena Blvd NB Ramp & 40th Ave



HCM 6th Signalized Intersection Summary

2022 Background AM.syn

2: Pena Blvd NB Ramp & 40th Ave

05/06/2020



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	405	1085	0	0	425	195	75	675	245	0	0	0
Future Volume (veh/h)	405	1085	0	0	425	195	75	675	245	0	0	0
Initial Q (Qb), veh	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			
Parking Bus, Adj	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					
Adj Sat Flow, veh/h/ln	1870	1870	0	0	1870	1870	1870	1870	1870			
Adj Flow Rate, veh/h	460	1233	0	0	506	0	81	726	0			
Peak Hour Factor	0.88	0.88	0.88	0.84	0.84	0.84	0.93	0.93	0.93			
Percent Heavy Veh, %	2	2	0	0	2	2	2	2	2			
Cap, veh/h	690	2383	0	0	1571		431	905				
Arrive On Green	0.36	1.00	0.00	0.00	0.44	0.00	0.24	0.24	0.00			
Sat Flow, veh/h	1781	3647	0	0	3741	0	1781	3741	0			
Grp Volume(v), veh/h	460	1233	0	0	506	0	81	726	0			
Grp Sat Flow(s),veh/h/ln	1781	1777	0	0	1777	0	1781	1870	0			
Q Serve(g_s), s	18.2	0.0	0.0	0.0	11.1	0.0	4.3	21.9	0.0			
Cycle Q Clear(g_c), s	18.2	0.0	0.0	0.0	11.1	0.0	4.3	21.9	0.0			
Prop In Lane	1.00		0.00	0.00		0.00	1.00		0.00			
Lane Grp Cap(c), veh/h	690	2383	0	0	1571		431	905				
V/C Ratio(X)	0.67	0.52	0.00	0.00	0.32		0.19	0.80				
Avail Cap(c_a), veh/h	847	2383	0	0	1571		631	1325				
HCM Platoon Ratio	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.54	0.54	0.00	0.00	0.88	0.00	1.00	1.00	0.00			
Uniform Delay (d), s/veh	9.7	0.0	0.0	0.0	21.8	0.0	36.1	42.8	0.0			
Incr Delay (d2), s/veh	0.8	0.4	0.0	0.0	0.5	0.0	0.2	2.3	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			
%ile BackOfQ(50%),veh/ln	4.3	0.1	0.0	0.0	4.7	0.0	1.9	10.4	0.0			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	10.5	0.4	0.0	0.0	22.2	0.0	36.3	45.1	0.0			
LnGrp LOS	B	A	A	A	C		D	D				
Approach Vol, veh/h	1693			506			A			807		
Approach Delay, s/veh	3.2			22.2						44.2		
Approach LOS	A			C						D		
Timer - Assigned Phs	2			4			7			8		
Phs Duration (G+Y+Rc), s	33.5			86.5			27.4			59.1		
Change Period (Y+Rc), s	4.5			6.0			6.0			6.0		
Max Green Setting (Gmax), s	42.5			67.0			32.0			29.0		
Max Q Clear Time (g_c+I1), s	23.9			2.0			20.2			13.1		
Green Ext Time (p_c), s	5.1			13.5			1.2			3.0		

Intersection Summary

HCM 6th Ctrl Delay 17.4

HCM 6th LOS B

Notes

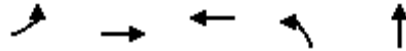
User approved volume balancing among the lanes for turning movement.

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

Timings 2: Pena Blvd NB Ramp & 40th Ave

2022 Background PM.syn

05/06/2020



Lane Group	EBL	EBT	WBT	NBL	NBT
Lane Configurations					
Traffic Volume (vph)	210	570	725	100	565
Future Volume (vph)	210	570	725	100	565
Turn Type	pm+pt	NA	NA	Prot	NA
Protected Phases	7	4	8	5	2
Permitted Phases	4				
Detector Phase	7	4	8	5	2
Switch Phase					
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	11.0	24.0	24.0	9.5	23.0
Total Split (s)	22.0	74.0	52.0	46.0	46.0
Total Split (%)	18.3%	61.7%	43.3%	38.3%	38.3%
Yellow Time (s)	4.0	4.0	4.0	3.5	4.0
All-Red Time (s)	2.0	2.0	2.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	4.5	5.0
Lead/Lag	Lead		Lag		
Lead-Lag Optimize?	Yes		Yes		
Recall Mode	None	C-Max	C-Max	None	None
Act Effect Green (s)	68.0	68.0	48.7	41.5	41.0
Actuated g/C Ratio	0.57	0.57	0.41	0.35	0.34
v/c Ratio	0.77	0.29	0.78	0.17	0.74
Control Delay	60.2	12.5	34.6	28.4	37.5
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	60.2	12.5	34.6	28.4	37.5
LOS	E	B	C	C	D
Approach Delay		25.3	34.6		36.6
Approach LOS		C	C		D

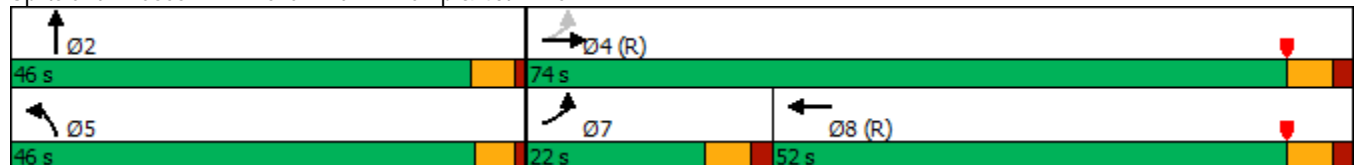
Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 118.5 (99%), Referenced to phase 4:EBTL and 8:WBT, Start of Yellow
 Natural Cycle: 60
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.78
 Intersection Signal Delay: 32.6
 Intersection Capacity Utilization 71.8%
 Analysis Period (min) 15

Intersection LOS: C

ICU Level of Service C

Splits and Phases: 2: Pena Blvd NB Ramp & 40th Ave




















HCM 6th Signalized Intersection Summary

2: Pena Blvd NB Ramp & 40th Ave

2022 Background PM.syn

05/06/2020

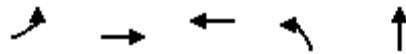
													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (veh/h)	210	570	0	0	725	285	100	565	205	0	0	0	
Future Volume (veh/h)	210	570	0	0	725	285	100	565	205	0	0	0	
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0				
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00				
Parking Bus, Adj	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						
Adj Sat Flow, veh/h/ln	1870	1870	0	0	1870	1870	1870	1870	1870				
Adj Flow Rate, veh/h	216	588	0	0	788	0	108	608	0				
Peak Hour Factor	0.97	0.97	0.97	0.92	0.92	0.92	0.93	0.93	0.93				
Percent Heavy Veh, %	2	2	0	0	2	2	2	2	2				
Cap, veh/h	504	2504	0	0	2083		370	777					
Arrive On Green	0.14	1.00	0.00	0.00	0.59	0.00	0.21	0.21	0.00				
Sat Flow, veh/h	1781	3647	0	0	3741	0	1781	3741	0				
Grp Volume(v), veh/h	216	588	0	0	788	0	108	608	0				
Grp Sat Flow(s),veh/h/ln	1781	1777	0	0	1777	0	1781	1870	0				
Q Serve(g_s), s	5.8	0.0	0.0	0.0	14.1	0.0	6.1	18.5	0.0				
Cycle Q Clear(g_c), s	5.8	0.0	0.0	0.0	14.1	0.0	6.1	18.5	0.0				
Prop In Lane	1.00		0.00	0.00		0.00	1.00		0.00				
Lane Grp Cap(c), veh/h	504	2504	0	0	2083		370	777					
V/C Ratio(X)	0.43	0.23	0.00	0.00	0.38		0.29	0.78					
Avail Cap(c_a), veh/h	619	2504	0	0	2083		616	1294					
HCM Platoon Ratio	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00				
Upstream Filter(I)	0.68	0.68	0.00	0.00	0.90	0.00	1.00	1.00	0.00				
Uniform Delay (d), s/veh	8.3	0.0	0.0	0.0	13.2	0.0	40.1	45.0	0.0				
Incr Delay (d2), s/veh	0.4	0.1	0.0	0.0	0.5	0.0	0.4	1.8	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				
%ile BackOfQ(50%),veh/ln	1.9	0.1	0.0	0.0	5.7	0.0	2.7	8.7	0.0				
Unsig. Movement Delay, s/veh													
LnGrp Delay(d),s/veh	8.7	0.1	0.0	0.0	13.7	0.0	40.5	46.7	0.0				
LnGrp LOS	A	A	A	A	B		D	D					
Approach Vol, veh/h	804			788			A			716			A
Approach Delay, s/veh	2.4			13.7						45.8			
Approach LOS	A			B						D			
Timer - Assigned Phs	2			4			7			8			
Phs Duration (G+Y+Rc), s	29.4			90.6			14.2			76.4			
Change Period (Y+Rc), s	4.5			6.0			6.0			6.0			
Max Green Setting (Gmax), s	41.5			68.0			16.0			46.0			
Max Q Clear Time (g_c+I1), s	20.5			2.0			7.8			16.1			
Green Ext Time (p_c), s	4.5			4.7			0.4			6.3			
Intersection Summary													
HCM 6th Ctrl Delay	19.7												
HCM 6th LOS	B												
Notes													
User approved volume balancing among the lanes for turning movement.													
Unsignalized Delay for [NBR, WBR] is excluded from calculations of the approach delay and intersection delay.													

Timings

2: Pena Blvd NB Ramp & 40th Ave

2022 Total AM.syn

06/08/2020



Lane Group	EBL	EBT	WBT	NBL	NBT
Lane Configurations	↰	↑↑	↑↑	↰	↑↑
Traffic Volume (vph)	405	1195	485	75	675
Future Volume (vph)	405	1195	485	75	675
Turn Type	pm+pt	NA	NA	Prot	NA
Protected Phases	7	4	8	5	2
Permitted Phases	4				
Detector Phase	7	4	8	5	2
Switch Phase					
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	11.0	24.0	24.0	9.5	23.0
Total Split (s)	38.0	73.0	35.0	47.0	47.0
Total Split (%)	31.7%	60.8%	29.2%	39.2%	39.2%
Yellow Time (s)	4.0	4.0	4.0	3.5	4.0
All-Red Time (s)	2.0	2.0	2.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	4.5	5.0
Lead/Lag	Lead		Lag		
Lead-Lag Optimize?	Yes		Yes		
Recall Mode	None	C-Max	C-Max	None	None
Act Effect Green (s)	67.0	67.0	31.8	35.3	42.0
Actuated g/C Ratio	0.56	0.56	0.26	0.29	0.35
v/c Ratio	0.93	0.69	0.90	0.15	1.11
Control Delay	64.7	26.9	53.6	28.3	99.3
Queue Delay	0.0	0.6	0.0	0.0	0.0
Total Delay	64.7	27.5	53.6	28.3	99.3
LOS	E	C	D	C	F
Approach Delay		36.9	53.6		95.0
Approach LOS		D	D		F

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 118.5 (99%), Referenced to phase 4:EBTL and 8:WBT, Start of Yellow

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.11

Intersection Signal Delay: 58.7

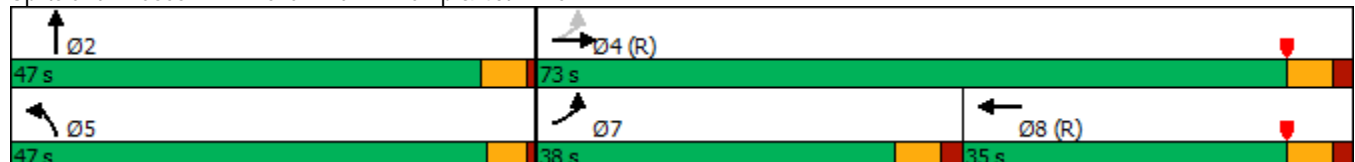
Intersection LOS: E

Intersection Capacity Utilization 75.0%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 2: Pena Blvd NB Ramp & 40th Ave




















HCM 6th Signalized Intersection Summary

2: Pena Blvd NB Ramp & 40th Ave

2022 Total AM.syn

06/08/2020

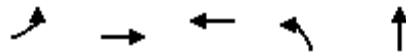
												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	405	1195	0	0	485	220	75	675	375	0	0	0
Future Volume (veh/h)	405	1195	0	0	485	220	75	675	375	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	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					
Adj Sat Flow, veh/h/ln	1870	1870	0	0	1870	1870	1870	1870	1870			
Adj Flow Rate, veh/h	460	1358	0	0	577	0	81	726	0			
Peak Hour Factor	0.88	0.88	0.88	0.84	0.84	0.84	0.93	0.93	0.93			
Percent Heavy Veh, %	2	2	0	0	2	2	2	2	2			
Cap, veh/h	657	2383	0	0	1571		431	905				
Arrive On Green	0.36	1.00	0.00	0.00	0.44	0.00	0.24	0.24	0.00			
Sat Flow, veh/h	1781	3647	0	0	3741	0	1781	3741	0			
Grp Volume(v), veh/h	460	1358	0	0	577	0	81	726	0			
Grp Sat Flow(s),veh/h/ln	1781	1777	0	0	1777	0	1781	1870	0			
Q Serve(g_s), s	18.2	0.0	0.0	0.0	13.0	0.0	4.3	21.9	0.0			
Cycle Q Clear(g_c), s	18.2	0.0	0.0	0.0	13.0	0.0	4.3	21.9	0.0			
Prop In Lane	1.00		0.00	0.00		0.00	1.00		0.00			
Lane Grp Cap(c), veh/h	657	2383	0	0	1571		431	905				
V/C Ratio(X)	0.70	0.57	0.00	0.00	0.37		0.19	0.80				
Avail Cap(c_a), veh/h	814	2383	0	0	1571		631	1325				
HCM Platoon Ratio	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.38	0.38	0.00	0.00	0.85	0.00	1.00	1.00	0.00			
Uniform Delay (d), s/veh	10.0	0.0	0.0	0.0	22.3	0.0	36.1	42.8	0.0			
Incr Delay (d2), s/veh	0.8	0.4	0.0	0.0	0.6	0.0	0.2	2.3	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			
%ile BackOfQ(50%),veh/ln	4.3	0.1	0.0	0.0	5.5	0.0	1.9	10.4	0.0			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	10.8	0.4	0.0	0.0	22.9	0.0	36.3	45.1	0.0			
LnGrp LOS	B	A	A	A	C		D	D				
Approach Vol, veh/h	1818			577			A			807		
Approach Delay, s/veh	3.0			22.9			44.2			A		
Approach LOS	A			C			D					
Timer - Assigned Phs	2			4			7			8		
Phs Duration (G+Y+Rc), s	33.5			86.5			27.4			59.1		
Change Period (Y+Rc), s	4.5			6.0			6.0			6.0		
Max Green Setting (Gmax), s	42.5			67.0			32.0			29.0		
Max Q Clear Time (g_c+I1), s	23.9			2.0			20.2			15.0		
Green Ext Time (p_c), s	5.1			16.0			1.2			3.3		
Intersection Summary												
HCM 6th Ctrl Delay	17.0											
HCM 6th LOS	B											
Notes												
User approved volume balancing among the lanes for turning movement.												
Unsignalized Delay for [NBR, WBR] is excluded from calculations of the approach delay and intersection delay.												

Timings

2: Pena Blvd NB Ramp & 40th Ave

2022 Total PM.syn

06/08/2020



Lane Group	EBL	EBT	WBT	NBL	NBT
Lane Configurations	↰	↗↗	↗↗	↰	↗↗
Traffic Volume (vph)	210	620	840	100	565
Future Volume (vph)	210	620	840	100	565
Turn Type	pm+pt	NA	NA	Prot	NA
Protected Phases	7	4	8	5	2
Permitted Phases	4				
Detector Phase	7	4	8	5	2
Switch Phase					
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	11.0	24.0	24.0	9.5	23.0
Total Split (s)	22.0	74.0	52.0	46.0	46.0
Total Split (%)	18.3%	61.7%	43.3%	38.3%	38.3%
Yellow Time (s)	4.0	4.0	4.0	3.5	4.0
All-Red Time (s)	2.0	2.0	2.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	4.5	5.0
Lead/Lag	Lead		Lag		
Lead-Lag Optimize?	Yes		Yes		
Recall Mode	None	C-Max	C-Max	None	None
Act Effect Green (s)	68.0	68.0	48.0	41.5	41.0
Actuated g/C Ratio	0.57	0.57	0.40	0.35	0.34
v/c Ratio	0.81	0.32	0.92	0.17	0.79
Control Delay	65.7	13.8	44.6	28.4	39.0
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	65.7	13.8	44.6	28.4	39.0
LOS	E	B	D	C	D
Approach Delay		26.9	44.6		38.0
Approach LOS		C	D		D

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 118.5 (99%), Referenced to phase 4:EBTL and 8:WBT, Start of Yellow

Natural Cycle: 75

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.92

Intersection Signal Delay: 37.7

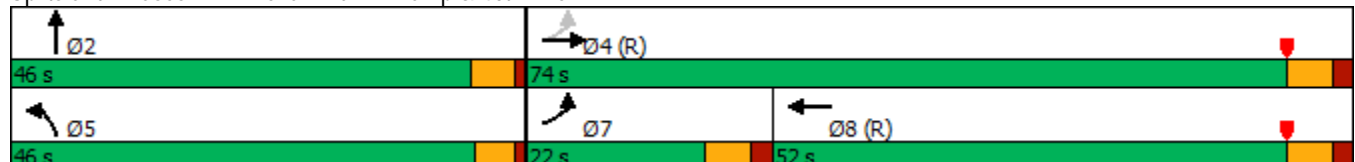
Intersection LOS: D

Intersection Capacity Utilization 79.3%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 2: Pena Blvd NB Ramp & 40th Ave




















HCM 6th Signalized Intersection Summary

2: Pena Blvd NB Ramp & 40th Ave

2022 Total PM.syn

06/08/2020

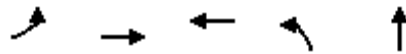
												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	210	620	0	0	840	335	100	565	260	0	0	0
Future Volume (veh/h)	210	620	0	0	840	335	100	565	260	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	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					
Adj Sat Flow, veh/h/ln	1870	1870	0	0	1870	1870	1870	1870	1870			
Adj Flow Rate, veh/h	216	639	0	0	913	0	108	608	0			
Peak Hour Factor	0.97	0.97	0.97	0.92	0.92	0.92	0.93	0.93	0.93			
Percent Heavy Veh, %	2	2	0	0	2	2	2	2	2			
Cap, veh/h	453	2504	0	0	2083		370	777				
Arrive On Green	0.14	1.00	0.00	0.00	0.59	0.00	0.21	0.21	0.00			
Sat Flow, veh/h	1781	3647	0	0	3741	0	1781	3741	0			
Grp Volume(v), veh/h	216	639	0	0	913	0	108	608	0			
Grp Sat Flow(s),veh/h/ln	1781	1777	0	0	1777	0	1781	1870	0			
Q Serve(g_s), s	5.8	0.0	0.0	0.0	17.2	0.0	6.1	18.5	0.0			
Cycle Q Clear(g_c), s	5.8	0.0	0.0	0.0	17.2	0.0	6.1	18.5	0.0			
Prop In Lane	1.00		0.00	0.00		0.00	1.00		0.00			
Lane Grp Cap(c), veh/h	453	2504	0	0	2083		370	777				
V/C Ratio(X)	0.48	0.26	0.00	0.00	0.44		0.29	0.78				
Avail Cap(c_a), veh/h	568	2504	0	0	2083		616	1294				
HCM Platoon Ratio	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.59	0.59	0.00	0.00	0.82	0.00	1.00	1.00	0.00			
Uniform Delay (d), s/veh	9.0	0.0	0.0	0.0	13.8	0.0	40.1	45.0	0.0			
Incr Delay (d2), s/veh	0.5	0.1	0.0	0.0	0.6	0.0	0.4	1.8	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			
%ile BackOfQ(50%),veh/ln	1.9	0.1	0.0	0.0	6.9	0.0	2.7	8.7	0.0			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	9.5	0.1	0.0	0.0	14.4	0.0	40.5	46.7	0.0			
LnGrp LOS	A	A	A	A	B		D	D				
Approach Vol, veh/h	855			913			A	716	A			
Approach Delay, s/veh	2.5			14.4				45.8				
Approach LOS	A			B				D				
Timer - Assigned Phs	2			4			7		8			
Phs Duration (G+Y+Rc), s	29.4			90.6			14.2		76.4			
Change Period (Y+Rc), s	4.5			6.0			6.0		6.0			
Max Green Setting (Gmax), s	41.5			68.0			16.0		46.0			
Max Q Clear Time (g_c+I1), s	20.5			2.0			7.8		19.2			
Green Ext Time (p_c), s	4.5			5.2			0.4		7.3			
Intersection Summary												
HCM 6th Ctrl Delay				19.3								
HCM 6th LOS				B								
Notes												
User approved volume balancing among the lanes for turning movement.												
Unsignalized Delay for [NBR, WBR] is excluded from calculations of the approach delay and intersection delay.												

Timings

2022 Total AM Improved.syn

2: Pena Blvd NB Ramp & 40th Ave

06/08/2020

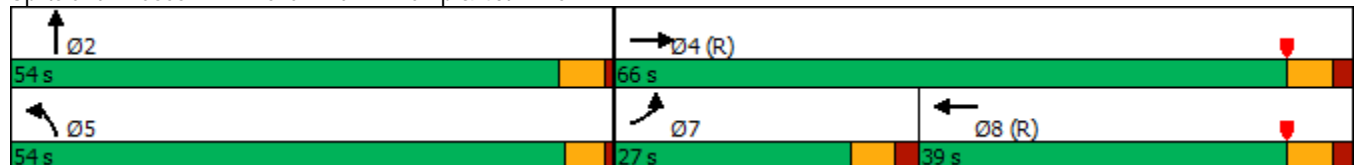


Lane Group	EBL	EBT	WBT	NBL	NBT
Lane Configurations	↰↰	↑↑	↑↑	↰	↰↰
Traffic Volume (vph)	405	1195	485	75	675
Future Volume (vph)	405	1195	485	75	675
Turn Type	Prot	NA	NA	Prot	NA
Protected Phases	7	4	8	5	2
Permitted Phases					
Detector Phase	7	4	8	5	2
Switch Phase					
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	11.0	24.0	24.0	9.5	23.0
Total Split (s)	27.0	66.0	39.0	54.0	54.0
Total Split (%)	22.5%	55.0%	32.5%	45.0%	45.0%
Yellow Time (s)	4.0	4.0	4.0	3.5	4.0
All-Red Time (s)	2.0	2.0	2.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	4.5	5.0
Lead/Lag	Lead		Lag		
Lead-Lag Optimize?	Yes		Yes		
Recall Mode	None	C-Max	C-Max	None	None
Act Effect Green (s)	19.6	60.0	34.4	40.9	49.0
Actuated g/C Ratio	0.16	0.50	0.29	0.34	0.41
v/c Ratio	0.82	0.77	0.83	0.13	0.96
Control Delay	66.7	28.0	45.9	23.7	53.1
Queue Delay	0.0	0.4	0.0	0.0	0.0
Total Delay	66.7	28.4	45.9	23.7	53.1
LOS	E	C	D	C	D
Approach Delay		38.1	45.9		51.3
Approach LOS		D	D		D

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 118.5 (99%), Referenced to phase 4:EBT and 8:WBT, Start of Yellow
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.96
Intersection Signal Delay: 43.9
Intersection Capacity Utilization 68.1%
Analysis Period (min) 15
Intersection LOS: D
ICU Level of Service C

Splits and Phases: 2: Pena Blvd NB Ramp & 40th Ave




















HCM 6th Signalized Intersection Summary

2: Pena Blvd NB Ramp & 40th Ave

2022 Total AM Improved.syn

06/08/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	405	1195	0	0	485	220	75	675	375	0	0	0
Future Volume (veh/h)	405	1195	0	0	485	220	75	675	375	0	0	0
Initial Q (Qb), veh	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			
Parking Bus, Adj	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					
Adj Sat Flow, veh/h/ln	1870	1870	0	0	1870	1870	1870	1870	1870			
Adj Flow Rate, veh/h	460	1358	0	0	577	0	81	726	0			
Peak Hour Factor	0.88	0.88	0.88	0.84	0.84	0.84	0.93	0.93	0.93			
Percent Heavy Veh, %	2	2	0	0	2	2	2	2	2			
Cap, veh/h	516	2369	0	0	1661		438	919				
Arrive On Green	0.30	1.00	0.00	0.00	0.47	0.00	0.25	0.25	0.00			
Sat Flow, veh/h	3456	3647	0	0	3741	0	1781	3741	0			
Grp Volume(v), veh/h	460	1358	0	0	577	0	81	726	0			
Grp Sat Flow(s),veh/h/ln	1728	1777	0	0	1777	0	1781	1870	0			
Q Serve(g_s), s	15.3	0.0	0.0	0.0	12.4	0.0	4.3	21.8	0.0			
Cycle Q Clear(g_c), s	15.3	0.0	0.0	0.0	12.4	0.0	4.3	21.8	0.0			
Prop In Lane	1.00		0.00	0.00		0.00	1.00		0.00			
Lane Grp Cap(c), veh/h	516	2369	0	0	1661		438	919				
V/C Ratio(X)	0.89	0.57	0.00	0.00	0.35		0.19	0.79				
Avail Cap(c_a), veh/h	605	2369	0	0	1661		735	1543				
HCM Platoon Ratio	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.64	0.64	0.00	0.00	0.85	0.00	1.00	1.00	0.00			
Uniform Delay (d), s/veh	41.1	0.0	0.0	0.0	20.3	0.0	35.8	42.3	0.0			
Incr Delay (d2), s/veh	9.6	0.7	0.0	0.0	0.5	0.0	0.2	1.6	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			
%ile BackOfQ(50%),veh/ln	6.2	0.2	0.0	0.0	5.2	0.0	1.9	10.2	0.0			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	50.7	0.7	0.0	0.0	20.8	0.0	36.0	43.9	0.0			
LnGrp LOS	D	A	A	A	C		D	D				
Approach Vol, veh/h	1818			577			A			807		
Approach Delay, s/veh	13.3			20.8			43.1					
Approach LOS	B			C			D					
Timer - Assigned Phs	2			4			7			8		
Phs Duration (G+Y+Rc), s	34.0			86.0			23.9			62.1		
Change Period (Y+Rc), s	4.5			6.0			6.0			6.0		
Max Green Setting (Gmax), s	49.5			60.0			21.0			33.0		
Max Q Clear Time (g_c+I1), s	23.8			2.0			17.3			14.4		
Green Ext Time (p_c), s	5.7			15.7			0.7			3.8		
Intersection Summary												
HCM 6th Ctrl Delay	22.2											
HCM 6th LOS	C											
Notes												
User approved volume balancing among the lanes for turning movement.												
Unsignalized Delay for [NBR, WBR] is excluded from calculations of the approach delay and intersection delay.												

Timings

2: Pena Blvd NB Ramp & 40th Ave

2022 Total PM Improved.syn

06/08/2020



Lane Group	EBL	EBT	WBT	NBL	NBT
Lane Configurations	↖↖	↑↑	↑↑	↖	↕
Traffic Volume (vph)	210	620	840	100	565
Future Volume (vph)	210	620	840	100	565
Turn Type	Prot	NA	NA	Prot	NA
Protected Phases	7	4	8	5	2
Permitted Phases					
Detector Phase	7	4	8	5	2
Switch Phase					
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	11.0	24.0	24.0	9.5	23.0
Total Split (s)	11.0	37.0	26.0	23.0	23.0
Total Split (%)	18.3%	61.7%	43.3%	38.3%	38.3%
Yellow Time (s)	4.0	4.0	4.0	3.5	4.0
All-Red Time (s)	2.0	2.0	2.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	4.5	5.0
Lead/Lag	Lead		Lag		
Lead-Lag Optimize?	Yes		Yes		
Recall Mode	None	C-Max	C-Max	None	None
Act Effect Green (s)	5.0	31.0	20.0	15.9	18.0
Actuated g/C Ratio	0.08	0.52	0.33	0.26	0.30
v/c Ratio	0.76	0.35	1.09	0.23	0.96
Control Delay	58.2	5.8	76.4	17.0	40.8
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	58.2	5.8	76.4	17.0	40.8
LOS	E	A	E	B	D
Approach Delay		19.1	76.4		38.4
Approach LOS		B	E		D

Intersection Summary

Cycle Length: 60

Actuated Cycle Length: 60

Offset: 0 (0%), Referenced to phase 4:EBT and 8:WBT, Start of Yellow

Natural Cycle: 80

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.09

Intersection Signal Delay: 48.6

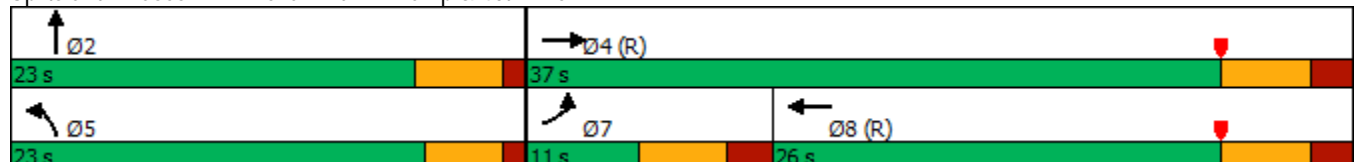
Intersection LOS: D

Intersection Capacity Utilization 72.0%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 2: Pena Blvd NB Ramp & 40th Ave
























HCM 6th Signalized Intersection Summary

2022 Total PM Improved.syn

2: Pena Blvd NB Ramp & 40th Ave















06/08/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 	 			 			 				
Traffic Volume (veh/h)	210	620	0	0	840	335	100	565	260	0	0	0
Future Volume (veh/h)	210	620	0	0	840	335	100	565	260	0	0	0
Initial Q (Qb), veh	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			
Parking Bus, Adj	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					
Adj Sat Flow, veh/h/ln	1870	1870	0	0	1870	1870	1870	1870	1870			
Adj Flow Rate, veh/h	216	639	0	0	913	0	108	608	0			
Peak Hour Factor	0.97	0.97	0.97	0.92	0.92	0.92	0.93	0.93	0.93			
Percent Heavy Veh, %	2	2	0	0	2	2	2	2	2			
Cap, veh/h	288	2125	0	0	1473		405	850				
Arrive On Green	0.06	0.40	0.00	0.00	0.41	0.00	0.23	0.23	0.00			
Sat Flow, veh/h	3456	3647	0	0	3741	0	1781	3741	0			
Grp Volume(v), veh/h	216	639	0	0	913	0	108	608	0			
Grp Sat Flow(s),veh/h/ln	1728	1777	0	0	1777	0	1781	1870	0			
Q Serve(g_s), s	3.7	7.4	0.0	0.0	12.1	0.0	3.0	9.0	0.0			
Cycle Q Clear(g_c), s	3.7	7.4	0.0	0.0	12.1	0.0	3.0	9.0	0.0			
Prop In Lane	1.00		0.00	0.00		0.00	1.00		0.00			
Lane Grp Cap(c), veh/h	288	2125	0	0	1473		405	850				
V/C Ratio(X)	0.75	0.30	0.00	0.00	0.62		0.27	0.72				
Avail Cap(c_a), veh/h	288	2125	0	0	1473		549	1153				
HCM Platoon Ratio	0.67	0.67	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.60	0.60	0.00	0.00	0.82	0.00	1.00	1.00	0.00			
Uniform Delay (d), s/veh	27.7	9.4	0.0	0.0	13.8	0.0	19.1	21.4	0.0			
Incr Delay (d2), s/veh	6.5	0.2	0.0	0.0	1.6	0.0	0.3	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			
%ile BackOfQ(50%),veh/ln	1.7	2.6	0.0	0.0	4.6	0.0	1.2	3.8	0.0			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	34.2	9.7	0.0	0.0	15.5	0.0	19.4	22.8	0.0			
LnGrp LOS	C	A	A	A	B		B	C				
Approach Vol, veh/h	855			913			A	716	A			
Approach Delay, s/veh	15.9			15.5				22.3				
Approach LOS	B			B				C				
Timer - Assigned Phs	2			4			7		8			
Phs Duration (G+Y+Rc), s	18.1			41.9			11.0		30.9			
Change Period (Y+Rc), s	4.5			6.0			6.0		6.0			
Max Green Setting (Gmax), s	18.5			31.0			5.0		20.0			
Max Q Clear Time (g_c+I1), s	11.0			9.4			5.7		14.1			
Green Ext Time (p_c), s	2.6			4.5			0.0		3.0			
Intersection Summary												
HCM 6th Ctrl Delay	17.6											
HCM 6th LOS	B											
Notes												
User approved volume balancing among the lanes for turning movement.												
Unsignalized Delay for [NBR, WBR] is excluded from calculations of the approach delay and intersection delay.												

Timings 2: Pena Blvd NB Ramp & 40th Ave

2040 Background AM.syn

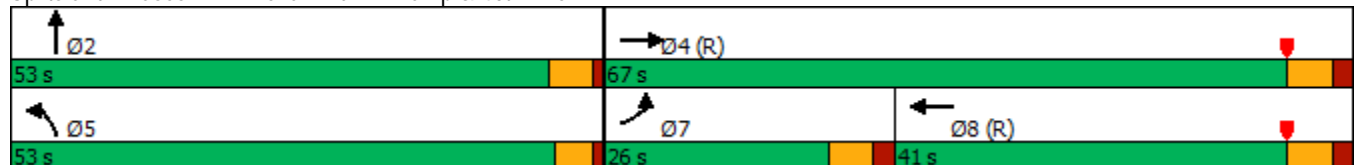
05/06/2020

					
Lane Group	EBL	EBT	WBT	NBL	NBT
Lane Configurations	 	 	 		 
Traffic Volume (vph)	580	1620	650	110	965
Future Volume (vph)	580	1620	650	110	965
Turn Type	Prot	NA	NA	Prot	NA
Protected Phases	7	4	8	5	2
Permitted Phases					
Detector Phase	7	4	8	5	2
Switch Phase					
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	11.0	24.0	24.0	9.5	23.0
Total Split (s)	26.0	67.0	41.0	53.0	53.0
Total Split (%)	21.7%	55.8%	34.2%	44.2%	44.2%
Yellow Time (s)	4.0	4.0	4.0	3.5	4.0
All-Red Time (s)	2.0	2.0	2.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	4.5	5.0
Lead/Lag	Lead		Lag		
Lead-Lag Optimize?	Yes		Yes		
Recall Mode	None	C-Max	C-Max	None	None
Act Effect Green (s)	20.0	61.0	35.0	48.5	48.0
Actuated g/C Ratio	0.17	0.51	0.29	0.40	0.40
v/c Ratio	1.10	0.98	1.04	0.16	1.11
Control Delay	117.9	46.3	79.8	23.7	96.8
Queue Delay	0.0	9.1	0.0	0.0	0.0
Total Delay	117.9	55.3	79.8	23.7	96.8
LOS	F	E	E	C	F
Approach Delay		71.8	79.8		91.9
Approach LOS		E	E		F

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 118.5 (99%), Referenced to phase 4:EBT and 8:WBT, Start of Yellow
 Natural Cycle: 150
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.11
 Intersection Signal Delay: 79.7
 Intersection LOS: E
 Intersection Capacity Utilization 86.3%
 ICU Level of Service E
 Analysis Period (min) 15

Splits and Phases: 2: Pena Blvd NB Ramp & 40th Ave




















HCM 6th Signalized Intersection Summary

2: Pena Blvd NB Ramp & 40th Ave

2040 Background AM.syn

05/06/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	580	1620	0	0	650	305	110	965	375	0	0	0
Future Volume (veh/h)	580	1620	0	0	650	305	110	965	375	0	0	0
Initial Q (Qb), veh	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			
Parking Bus, Adj	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					
Adj Sat Flow, veh/h/ln	1870	1870	0	0	1870	1870	1870	1870	1870			
Adj Flow Rate, veh/h	630	1761	0	0	707	0	118	1038	0			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.93	0.93	0.93			
Percent Heavy Veh, %	2	2	0	0	2	2	2	2	2			
Cap, veh/h	576	2063	0	0	1293		592	1242				
Arrive On Green	0.33	1.00	0.00	0.00	0.36	0.00	0.33	0.33	0.00			
Sat Flow, veh/h	3456	3647	0	0	3741	0	1781	3741	0			
Grp Volume(v), veh/h	630	1761	0	0	707	0	118	1038	0			
Grp Sat Flow(s),veh/h/ln	1728	1777	0	0	1777	0	1781	1870	0			
Q Serve(g_s), s	20.0	0.0	0.0	0.0	19.0	0.0	5.7	30.8	0.0			
Cycle Q Clear(g_c), s	20.0	0.0	0.0	0.0	19.0	0.0	5.7	30.8	0.0			
Prop In Lane	1.00		0.00	0.00		0.00	1.00		0.00			
Lane Grp Cap(c), veh/h	576	2063	0	0	1293		592	1242				
V/C Ratio(X)	1.09	0.85	0.00	0.00	0.55		0.20	0.84				
Avail Cap(c_a), veh/h	576	2063	0	0	1293		720	1512				
HCM Platoon Ratio	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.39	0.39	0.00	0.00	0.74	0.00	1.00	1.00	0.00			
Uniform Delay (d), s/veh	40.0	0.0	0.0	0.0	30.3	0.0	28.7	37.0	0.0			
Incr Delay (d2), s/veh	53.5	1.9	0.0	0.0	1.2	0.0	0.2	3.6	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			
%ile BackOfQ(50%),veh/ln	11.4	0.6	0.0	0.0	8.3	0.0	2.5	14.5	0.0			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	93.5	1.9	0.0	0.0	31.6	0.0	28.8	40.6	0.0			
LnGrp LOS	F	A	A	A	C		C	D				
Approach Vol, veh/h	2391			707			1156			A		
Approach Delay, s/veh	26.0			31.6			39.4					
Approach LOS	C			C			D					
Timer - Assigned Phs	2			4			7			8		
Phs Duration (G+Y+Rc), s	44.3			75.7			26.0			49.7		
Change Period (Y+Rc), s	4.5			6.0			6.0			6.0		
Max Green Setting (Gmax), s	48.5			61.0			20.0			35.0		
Max Q Clear Time (g_c+I1), s	32.8			2.0			22.0			21.0		
Green Ext Time (p_c), s	7.1			25.5			0.0			4.2		
Intersection Summary												
HCM 6th Ctrl Delay	30.6											
HCM 6th LOS	C											
Notes												
User approved volume balancing among the lanes for turning movement.												
Unsignalized Delay for [NBR, WBR] is excluded from calculations of the approach delay and intersection delay.												

Timings 2: Pena Blvd NB Ramp & 40th Ave

2040 Background PM.syn

05/06/2020



Lane Group	EBL	EBT	WBT	NBL	NBT
Lane Configurations	←←	↑↑	↑↑	←	↑↑
Traffic Volume (vph)	295	940	1115	140	810
Future Volume (vph)	295	940	1115	140	810
Turn Type	Prot	NA	NA	Prot	NA
Protected Phases	7	4	8	5	2
Permitted Phases					
Detector Phase	7	4	8	5	2
Switch Phase					
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	11.0	24.0	24.0	9.5	23.0
Total Split (s)	16.0	73.0	57.0	47.0	47.0
Total Split (%)	13.3%	60.8%	47.5%	39.2%	39.2%
Yellow Time (s)	4.0	4.0	4.0	3.5	4.0
All-Red Time (s)	2.0	2.0	2.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	4.5	5.0
Lead/Lag	Lead		Lag		
Lead-Lag Optimize?	Yes		Yes		
Recall Mode	None	C-Max	C-Max	None	None
Act Effect Green (s)	10.0	67.0	51.0	42.5	42.0
Actuated g/C Ratio	0.08	0.56	0.42	0.35	0.35
v/c Ratio	1.06	0.49	1.16	0.24	1.09
Control Delay	104.2	17.9	113.9	28.8	90.5
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	104.2	17.9	113.9	28.8	90.5
LOS	F	B	F	C	F
Approach Delay		38.5	113.9		84.6
Approach LOS		D	F		F

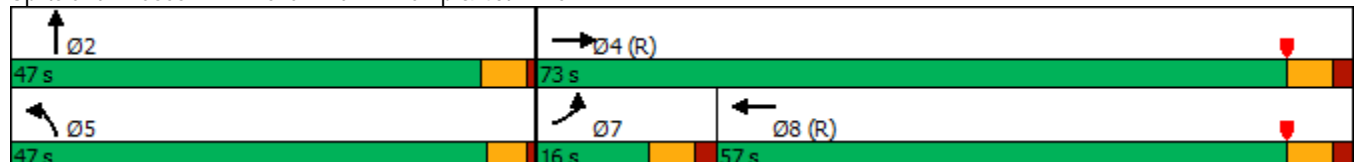
Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 118.5 (99%), Referenced to phase 4:EBT and 8:WBT, Start of Yellow
 Natural Cycle: 150
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.16
 Intersection Signal Delay: 82.5
 Intersection Capacity Utilization 92.9%
 Analysis Period (min) 15

Intersection LOS: F

ICU Level of Service F

Splits and Phases: 2: Pena Blvd NB Ramp & 40th Ave




















HCM 6th Signalized Intersection Summary

2: Pena Blvd NB Ramp & 40th Ave

2040 Background PM.syn











05/06/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	295	940	0	0	1115	445	140	810	360	0	0	0
Future Volume (veh/h)	295	940	0	0	1115	445	140	810	360	0	0	0
Initial Q (Qb), veh	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			
Parking Bus, Adj	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				
Adj Sat Flow, veh/h/ln	1870	1870	0	0	1870	1870	1870	1870	1870			
Adj Flow Rate, veh/h	304	969	0	0	1212	0	151	871	0			
Peak Hour Factor	0.97	0.97	0.97	0.92	0.92	0.92	0.93	0.93	0.93			
Percent Heavy Veh, %	2	2	0	0	2	2	2	2	2			
Cap, veh/h	288	2240	0	0	1767		502	1055				
Arrive On Green	0.17	1.00	0.00	0.00	0.50	0.00	0.28	0.28	0.00			
Sat Flow, veh/h	3456	3647	0	0	3741	0	1781	3741	0			
Grp Volume(v), veh/h	304	969	0	0	1212	0	151	871	0			
Grp Sat Flow(s),veh/h/ln	1728	1777	0	0	1777	0	1781	1870	0			
Q Serve(g_s), s	10.0	0.0	0.0	0.0	31.2	0.0	8.0	26.1	0.0			
Cycle Q Clear(g_c), s	10.0	0.0	0.0	0.0	31.2	0.0	8.0	26.1	0.0			
Prop In Lane	1.00		0.00	0.00		0.00	1.00		0.00			
Lane Grp Cap(c), veh/h	288	2240	0	0	1767		502	1055				
V/C Ratio(X)	1.06	0.43	0.00	0.00	0.69		0.30	0.83				
Avail Cap(c_a), veh/h	288	2240	0	0	1767		631	1325				
HCM Platoon Ratio	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.14	0.14	0.00	0.00	0.85	0.00	1.00	1.00	0.00			
Uniform Delay (d), s/veh	50.0	0.0	0.0	0.0	23.0	0.0	33.8	40.3	0.0			
Incr Delay (d2), s/veh	36.4	0.1	0.0	0.0	1.9	0.0	0.3	3.6	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			
%ile BackOfQ(50%),veh/ln	5.4	0.0	0.0	0.0	13.2	0.0	3.5	12.5	0.0			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	86.4	0.1	0.0	0.0	24.9	0.0	34.1	43.9	0.0			
LnGrp LOS	F	A	A	A	C		C	D				
Approach Vol, veh/h		1273			1212	A		1022	A			
Approach Delay, s/veh		20.7			24.9			42.4				
Approach LOS		C			C			D				
Timer - Assigned Phs		2		4			7	8				
Phs Duration (G+Y+Rc), s		38.3		81.7			16.0	65.7				
Change Period (Y+Rc), s		4.5		6.0			6.0	6.0				
Max Green Setting (Gmax), s		42.5		67.0			10.0	51.0				
Max Q Clear Time (g_c+I1), s		28.1		2.0			12.0	33.2				
Green Ext Time (p_c), s		5.7		9.1			0.0	8.6				
Intersection Summary												
HCM 6th Ctrl Delay				28.5								
HCM 6th LOS				C								
Notes												
User approved volume balancing among the lanes for turning movement.												
Unsignalized Delay for [NBR, WBR] is excluded from calculations of the approach delay and intersection delay.												

Timings
2: Pena Blvd NB Ramp & 40th Ave

2040 Total AM Scenario 1.syn

06/08/2020

					
Lane Group	EBL	EBT	WBT	NBL	NBT
Lane Configurations					
Traffic Volume (vph)	580	1730	710	110	965
Future Volume (vph)	580	1730	710	110	965
Turn Type	Prot	NA	NA	Prot	NA
Protected Phases	7	4	8	5	2
Permitted Phases					
Detector Phase	7	4	8	5	2
Switch Phase					
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	11.0	24.0	24.0	9.5	23.0
Total Split (s)	39.0	75.0	36.0	45.0	45.0
Total Split (%)	32.5%	62.5%	30.0%	37.5%	37.5%
Yellow Time (s)	4.0	4.0	4.0	3.5	4.0
All-Red Time (s)	2.0	2.0	2.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	4.5	5.0
Lead/Lag	Lead		Lag		
Lead-Lag Optimize?	Yes		Yes		
Recall Mode	None	C-Max	C-Max	None	None
Act Effect Green (s)	27.2	69.0	35.8	40.5	40.0
Actuated g/C Ratio	0.23	0.58	0.30	0.34	0.33
v/c Ratio	0.81	0.92	1.10	0.20	1.48
Control Delay	56.5	33.4	98.7	29.4	250.1
Queue Delay	0.0	12.3	0.0	0.0	0.0
Total Delay	56.5	45.7	98.7	29.4	250.1
LOS	E	D	F	C	F
Approach Delay		48.4	98.7		236.3
Approach LOS		D	F		F

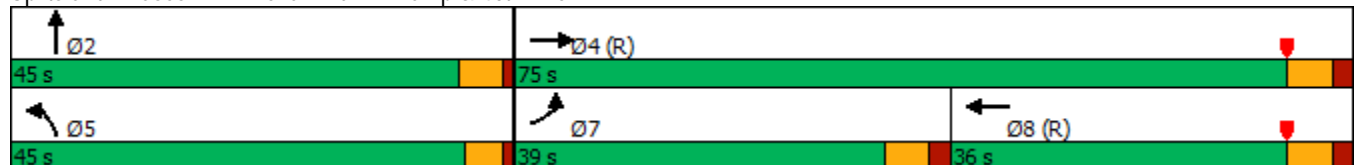
Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 118.5 (99%), Referenced to phase 4:EBT and 8:WBT, Start of Yellow
 Natural Cycle: 140
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.48
 Intersection Signal Delay: 118.9
 Intersection Capacity Utilization 91.6%
 Analysis Period (min) 15

Intersection LOS: F

ICU Level of Service F

Splits and Phases: 2: Pena Blvd NB Ramp & 40th Ave




















HCM 6th Signalized Intersection Summary

2: Pena Blvd NB Ramp & 40th Ave

2040 Total AM Scenario 1.syn

06/08/2020











												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	580	1730	0	0	710	330	110	965	505	0	0	0
Future Volume (veh/h)	580	1730	0	0	710	330	110	965	505	0	0	0
Initial Q (Qb), veh	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			
Parking Bus, Adj	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					
Adj Sat Flow, veh/h/ln	1870	1870	0	0	1870	1870	1870	1870	1870			
Adj Flow Rate, veh/h	630	1880	0	0	772	0	118	1038	0			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.93	0.93	0.93			
Percent Heavy Veh, %	2	2	0	0	2	2	2	2	2			
Cap, veh/h	701	2128	0	0	1230		559	1173				
Arrive On Green	0.41	1.00	0.00	0.00	0.35	0.00	0.31	0.31	0.00			
Sat Flow, veh/h	3456	3647	0	0	3741	0	1781	3741	0			
Grp Volume(v), veh/h	630	1880	0	0	772	0	118	1038	0			
Grp Sat Flow(s),veh/h/ln	1728	1777	0	0	1777	0	1781	1870	0			
Q Serve(g_s), s	20.5	0.0	0.0	0.0	21.8	0.0	5.8	31.6	0.0			
Cycle Q Clear(g_c), s	20.5	0.0	0.0	0.0	21.8	0.0	5.8	31.6	0.0			
Prop In Lane	1.00		0.00	0.00		0.00	1.00		0.00			
Lane Grp Cap(c), veh/h	701	2128	0	0	1230		559	1173				
V/C Ratio(X)	0.90	0.88	0.00	0.00	0.63		0.21	0.88				
Avail Cap(c_a), veh/h	950	2128	0	0	1230		601	1262				
HCM Platoon Ratio	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.26	0.26	0.00	0.00	0.70	0.00	1.00	1.00	0.00			
Uniform Delay (d), s/veh	34.5	0.0	0.0	0.0	32.8	0.0	30.3	39.1	0.0			
Incr Delay (d2), s/veh	2.7	1.6	0.0	0.0	1.7	0.0	0.2	7.4	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			
%ile BackOfQ(50%),veh/ln	7.2	0.5	0.0	0.0	9.6	0.0	2.6	15.6	0.0			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	37.2	1.6	0.0	0.0	34.5	0.0	30.5	46.5	0.0			
LnGrp LOS	D	A	A	A	C		C	D				
Approach Vol, veh/h	2510			772			1156			A		
Approach Delay, s/veh	10.5			34.5			44.9					
Approach LOS	B			C			D					
Timer - Assigned Phs	2			4			7			8		
Phs Duration (G+Y+Rc), s	42.1			77.9			30.3			47.5		
Change Period (Y+Rc), s	4.5			6.0			6.0			6.0		
Max Green Setting (Gmax), s	40.5			69.0			33.0			30.0		
Max Q Clear Time (g_c+I1), s	33.6			2.0			22.5			23.8		
Green Ext Time (p_c), s	4.0			30.4			1.9			2.7		
Intersection Summary												
HCM 6th Ctrl Delay	23.7											
HCM 6th LOS	C											
Notes												
User approved volume balancing among the lanes for turning movement.												
Unsignalized Delay for [NBR, WBR] is excluded from calculations of the approach delay and intersection delay.												

Timings

2: Pena Blvd NB Ramp & 40th Ave

2040 Total PM Scenario 1.syn

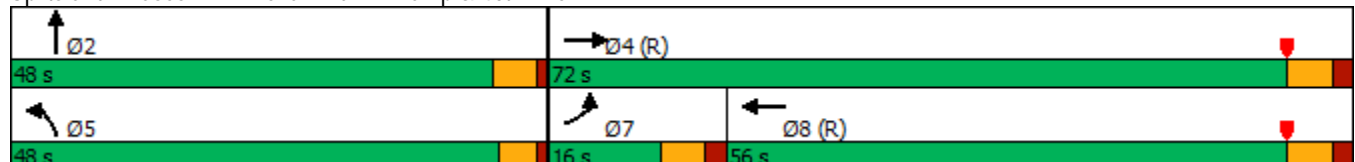
06/08/2020

					
Lane Group	EBL	EBT	WBT	NBL	NBT
Lane Configurations					
Traffic Volume (vph)	295	990	1230	140	810
Future Volume (vph)	295	990	1230	140	810
Turn Type	Prot	NA	NA	Prot	NA
Protected Phases	7	4	8	5	2
Permitted Phases					
Detector Phase	7	4	8	5	2
Switch Phase					
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	11.0	24.0	24.0	9.5	23.0
Total Split (s)	16.0	72.0	56.0	48.0	48.0
Total Split (%)	13.3%	60.0%	46.7%	40.0%	40.0%
Yellow Time (s)	4.0	4.0	4.0	3.5	4.0
All-Red Time (s)	2.0	2.0	2.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	4.5	5.0
Lead/Lag	Lead		Lag		
Lead-Lag Optimize?	Yes		Yes		
Recall Mode	None	C-Max	C-Max	None	None
Act Effect Green (s)	10.0	66.0	50.0	43.5	43.0
Actuated g/C Ratio	0.08	0.55	0.42	0.36	0.36
v/c Ratio	1.06	0.52	1.31	0.23	1.11
Control Delay	103.0	18.8	175.5	28.0	96.7
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	103.0	18.8	175.5	28.0	96.7
LOS	F	B	F	C	F
Approach Delay		38.1	175.5		90.4
Approach LOS		D	F		F

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 118.5 (99%), Referenced to phase 4:EBT and 8:WBT, Start of Yellow
Natural Cycle: 150
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.31
Intersection Signal Delay: 109.7
Intersection Capacity Utilization 98.9%
Analysis Period (min) 15
Intersection LOS: F
ICU Level of Service F

Splits and Phases: 2: Pena Blvd NB Ramp & 40th Ave




















HCM 6th Signalized Intersection Summary

2: Pena Blvd NB Ramp & 40th Ave

2040 Total PM Scenario 1.syn











06/08/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	295	990	0	0	1230	495	140	810	415	0	0	0
Future Volume (veh/h)	295	990	0	0	1230	495	140	810	415	0	0	0
Initial Q (Qb), veh	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			
Parking Bus, Adj	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					
Adj Sat Flow, veh/h/ln	1870	1870	0	0	1870	1870	1870	1870	1870			
Adj Flow Rate, veh/h	304	1021	0	0	1337	0	151	871	0			
Peak Hour Factor	0.97	0.97	0.97	0.92	0.92	0.92	0.93	0.93	0.93			
Percent Heavy Veh, %	2	2	0	0	2	2	2	2	2			
Cap, veh/h	288	2235	0	0	1762		505	1060				
Arrive On Green	0.17	1.00	0.00	0.00	0.50	0.00	0.28	0.28	0.00			
Sat Flow, veh/h	3456	3647	0	0	3741	0	1781	3741	0			
Grp Volume(v), veh/h	304	1021	0	0	1337	0	151	871	0			
Grp Sat Flow(s),veh/h/ln	1728	1777	0	0	1777	0	1781	1870	0			
Q Serve(g_s), s	10.0	0.0	0.0	0.0	36.5	0.0	8.0	26.1	0.0			
Cycle Q Clear(g_c), s	10.0	0.0	0.0	0.0	36.5	0.0	8.0	26.1	0.0			
Prop In Lane	1.00		0.00	0.00		0.00	1.00		0.00			
Lane Grp Cap(c), veh/h	288	2235	0	0	1762		505	1060				
V/C Ratio(X)	1.06	0.46	0.00	0.00	0.76		0.30	0.82				
Avail Cap(c_a), veh/h	288	2235	0	0	1762		646	1356				
HCM Platoon Ratio	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.11	0.11	0.00	0.00	0.74	0.00	1.00	1.00	0.00			
Uniform Delay (d), s/veh	50.0	0.0	0.0	0.0	24.5	0.0	33.7	40.2	0.0			
Incr Delay (d2), s/veh	34.5	0.1	0.0	0.0	2.3	0.0	0.3	3.3	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			
%ile BackOfQ(50%),veh/ln	5.3	0.0	0.0	0.0	15.5	0.0	3.5	12.4	0.0			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	84.5	0.1	0.0	0.0	26.8	0.0	34.0	43.5	0.0			
LnGrp LOS	F	A	A	A	C		C	D				
Approach Vol, veh/h	1325			1337			A			1022		
Approach Delay, s/veh	19.4			26.8			42.1			A		
Approach LOS	B			C			D					
Timer - Assigned Phs	2			4			7			8		
Phs Duration (G+Y+Rc), s	38.5			81.5			16.0			65.5		
Change Period (Y+Rc), s	4.5			6.0			6.0			6.0		
Max Green Setting (Gmax), s	43.5			66.0			10.0			50.0		
Max Q Clear Time (g_c+I1), s	28.1			2.0			12.0			38.5		
Green Ext Time (p_c), s	5.9			9.9			0.0			7.1		
Intersection Summary												
HCM 6th Ctrl Delay	28.4											
HCM 6th LOS	C											
Notes												
User approved volume balancing among the lanes for turning movement.												
Unsignalized Delay for [NBR, WBR] is excluded from calculations of the approach delay and intersection delay.												

Timings
2: Pena Blvd NB Ramp & 40th Ave

2040 Total AM Scenario 2.syn

06/08/2020

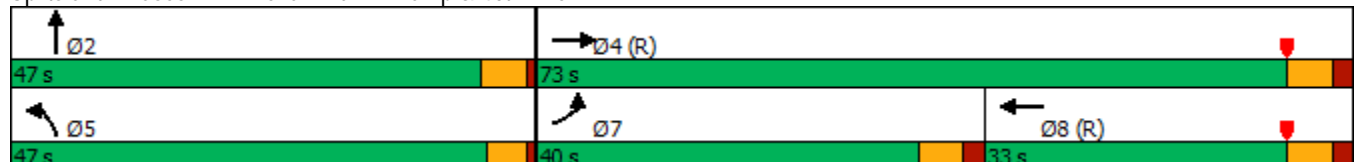
					
Lane Group	EBL	EBT	WBT	NBL	NBT
Lane Configurations					
Traffic Volume (vph)	580	1665	570	125	995
Future Volume (vph)	580	1665	570	125	995
Turn Type	Prot	NA	NA	Prot	NA
Protected Phases	7	4	8	5	2
Permitted Phases					
Detector Phase	7	4	8	5	2
Switch Phase					
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	11.0	24.0	24.0	9.5	23.0
Total Split (s)	40.0	73.0	33.0	47.0	47.0
Total Split (%)	33.3%	60.8%	27.5%	39.2%	39.2%
Yellow Time (s)	4.0	4.0	4.0	3.5	4.0
All-Red Time (s)	2.0	2.0	2.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	4.5	5.0
Lead/Lag	Lead		Lag		
Lead-Lag Optimize?	Yes		Yes		
Recall Mode	None	C-Max	C-Max	None	None
Act Effect Green (s)	27.3	67.0	33.7	42.5	42.0
Actuated g/C Ratio	0.23	0.56	0.28	0.35	0.35
v/c Ratio	0.81	0.92	0.98	0.21	1.19
Control Delay	57.5	32.8	66.5	28.3	128.3
Queue Delay	0.0	5.0	0.0	0.0	0.0
Total Delay	57.5	37.8	66.5	28.3	128.3
LOS	E	D	E	C	F
Approach Delay		42.9	66.5		120.2
Approach LOS		D	E		F

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 118.5 (99%), Referenced to phase 4:EBT and 8:WBT, Start of Yellow
 Natural Cycle: 120
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.19
 Intersection Signal Delay: 71.1
 Intersection Capacity Utilization 84.7%
 Analysis Period (min) 15

Intersection LOS: E
 ICU Level of Service E


















Splits and Phases: 2: Pena Blvd NB Ramp & 40th Ave



HCM 6th Signalized Intersection Summary 2: Pena Blvd NB Ramp & 40th Ave

2040 Total AM Scenario 2.syn















06/08/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	580	1665	0	0	570	300	125	995	270	0	0	0
Future Volume (veh/h)	580	1665	0	0	570	300	125	995	270	0	0	0
Initial Q (Qb), veh	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			
Parking Bus, Adj	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					
Adj Sat Flow, veh/h/ln	1870	1870	0	0	1870	1870	1870	1870	1870			
Adj Flow Rate, veh/h	630	1810	0	0	620	0	134	1070	0			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.93	0.93	0.93			
Percent Heavy Veh, %	2	2	0	0	2	2	2	2	2			
Cap, veh/h	702	2085	0	0	1185		580	1219				
Arrive On Green	0.41	1.00	0.00	0.00	0.33	0.00	0.33	0.33	0.00			
Sat Flow, veh/h	3456	3647	0	0	3741	0	1781	3741	0			
Grp Volume(v), veh/h	630	1810	0	0	620	0	134	1070	0			
Grp Sat Flow(s),veh/h/ln	1728	1777	0	0	1777	0	1781	1870	0			
Q Serve(g_s), s	20.4	0.0	0.0	0.0	16.9	0.0	6.6	32.4	0.0			
Cycle Q Clear(g_c), s	20.4	0.0	0.0	0.0	16.9	0.0	6.6	32.4	0.0			
Prop In Lane	1.00		0.00	0.00		0.00	1.00		0.00			
Lane Grp Cap(c), veh/h	702	2085	0	0	1185		580	1219				
V/C Ratio(X)	0.90	0.87	0.00	0.00	0.52		0.23	0.88				
Avail Cap(c_a), veh/h	979	2085	0	0	1185		631	1325				
HCM Platoon Ratio	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.32	0.32	0.00	0.00	0.76	0.00	1.00	1.00	0.00			
Uniform Delay (d), s/veh	34.4	0.0	0.0	0.0	32.3	0.0	29.5	38.2	0.0			
Incr Delay (d2), s/veh	3.0	1.8	0.0	0.0	1.3	0.0	0.2	6.6	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			
%ile BackOfQ(50%),veh/ln	7.2	0.5	0.0	0.0	7.5	0.0	2.9	15.8	0.0			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	37.4	1.8	0.0	0.0	33.5	0.0	29.7	44.8	0.0			
LnGrp LOS	D	A	A	A	C		C	D				
Approach Vol, veh/h	2440			620			1204			A		
Approach Delay, s/veh	11.0			33.5			43.1					
Approach LOS	B			C			D					
Timer - Assigned Phs	2			4			7			8		
Phs Duration (G+Y+Rc), s	43.6			76.4			30.4			46.0		
Change Period (Y+Rc), s	4.5			6.0			6.0			6.0		
Max Green Setting (Gmax), s	42.5			67.0			34.0			27.0		
Max Q Clear Time (g_c+I1), s	34.4			2.0			22.4			18.9		
Green Ext Time (p_c), s	4.7			27.9			1.9			2.6		
Intersection Summary												
HCM 6th Ctrl Delay	23.3											
HCM 6th LOS	C											
Notes												
User approved volume balancing among the lanes for turning movement.												
Unsignalized Delay for [NBR, WBR] is excluded from calculations of the approach delay and intersection delay.												

Timings
2: Pena Blvd NB Ramp & 40th Ave

2040 Total PM Scenario 2.syn

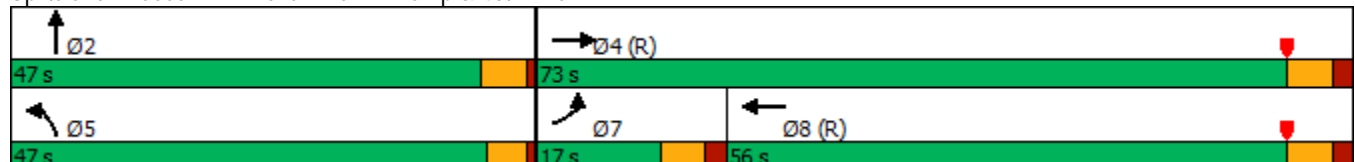
06/08/2020

					
Lane Group	EBL	EBT	WBT	NBL	NBT
Lane Configurations	 	 	 		 
Traffic Volume (vph)	295	940	950	195	885
Future Volume (vph)	295	940	950	195	885
Turn Type	Prot	NA	NA	Prot	NA
Protected Phases	7	4	8	5	2
Permitted Phases					
Detector Phase	7	4	8	5	2
Switch Phase					
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	11.0	24.0	24.0	9.5	23.0
Total Split (s)	17.0	73.0	56.0	47.0	47.0
Total Split (%)	14.2%	60.8%	46.7%	39.2%	39.2%
Yellow Time (s)	4.0	4.0	4.0	3.5	4.0
All-Red Time (s)	2.0	2.0	2.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	4.5	5.0
Lead/Lag	Lead		Lag		
Lead-Lag Optimize?	Yes		Yes		
Recall Mode	None	C-Max	C-Max	None	None
Act Effect Green (s)	11.0	67.0	50.0	42.5	42.0
Actuated g/C Ratio	0.09	0.56	0.42	0.35	0.35
v/c Ratio	0.97	0.49	1.06	0.33	1.06
Control Delay	83.7	17.1	74.5	30.4	81.0
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	83.7	17.1	74.5	30.4	81.0
LOS	F	B	E	C	F
Approach Delay		33.0	74.5		74.3
Approach LOS		C	E		E

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 118.5 (99%), Referenced to phase 4:EBT and 8:WBT, Start of Yellow
 Natural Cycle: 140
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.06
 Intersection Signal Delay: 61.9
 Intersection Capacity Utilization 87.9%
 Analysis Period (min) 15
 Intersection LOS: E
 ICU Level of Service E


















Splits and Phases: 2: Pena Blvd NB Ramp & 40th Ave



HCM 6th Signalized Intersection Summary 2: Pena Blvd NB Ramp & 40th Ave

2040 Total PM Scenario 2.syn

06/08/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	295	940	0	0	950	430	195	885	245	0	0	0
Future Volume (veh/h)	295	940	0	0	950	430	195	885	245	0	0	0
Initial Q (Qb), veh	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			
Parking Bus, Adj	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					
Adj Sat Flow, veh/h/ln	1870	1870	0	0	1870	1870	1870	1870	1870			
Adj Flow Rate, veh/h	304	969	0	0	1033	0	210	952	0			
Peak Hour Factor	0.97	0.97	0.97	0.92	0.92	0.92	0.93	0.93	0.93			
Percent Heavy Veh, %	2	2	0	0	2	2	2	2	2			
Cap, veh/h	317	2168	0	0	1664		539	1131				
Arrive On Green	0.18	1.00	0.00	0.00	0.47	0.00	0.30	0.30	0.00			
Sat Flow, veh/h	3456	3647	0	0	3741	0	1781	3741	0			
Grp Volume(v), veh/h	304	969	0	0	1033	0	210	952	0			
Grp Sat Flow(s),veh/h/ln	1728	1777	0	0	1777	0	1781	1870	0			
Q Serve(g_s), s	10.5	0.0	0.0	0.0	26.1	0.0	11.2	28.6	0.0			
Cycle Q Clear(g_c), s	10.5	0.0	0.0	0.0	26.1	0.0	11.2	28.6	0.0			
Prop In Lane	1.00		0.00	0.00		0.00	1.00		0.00			
Lane Grp Cap(c), veh/h	317	2168	0	0	1664		539	1131				
V/C Ratio(X)	0.96	0.45	0.00	0.00	0.62		0.39	0.84				
Avail Cap(c_a), veh/h	317	2168	0	0	1664		631	1325				
HCM Platoon Ratio	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.19	0.19	0.00	0.00	0.87	0.00	1.00	1.00	0.00			
Uniform Delay (d), s/veh	48.8	0.0	0.0	0.0	23.9	0.0	33.1	39.2	0.0			
Incr Delay (d2), s/veh	13.7	0.1	0.0	0.0	1.5	0.0	0.5	4.4	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			
%ile BackOfQ(50%),veh/ln	4.7	0.0	0.0	0.0	11.1	0.0	4.9	13.7	0.0			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	62.5	0.1	0.0	0.0	25.4	0.0	33.6	43.6	0.0			
LnGrp LOS	E	A	A	A	C		C	D				
Approach Vol, veh/h	1273			1033			1162			A		
Approach Delay, s/veh	15.0			25.4			41.8					
Approach LOS	B			C			D					
Timer - Assigned Phs	2			4			7			8		
Phs Duration (G+Y+Rc), s	40.8			79.2			17.0			62.2		
Change Period (Y+Rc), s	4.5			6.0			6.0			6.0		
Max Green Setting (Gmax), s	42.5			67.0			11.0			50.0		
Max Q Clear Time (g_c+I1), s	30.6			2.0			12.5			28.1		
Green Ext Time (p_c), s	5.7			9.1			0.0			7.9		
Intersection Summary												
HCM 6th Ctrl Delay	27.1											
HCM 6th LOS	C											
Notes												
User approved volume balancing among the lanes for turning movement.												
Unsignalized Delay for [NBR, WBR] is excluded from calculations of the approach delay and intersection delay.												

Timings
3: Salida St & 40th Ave

2020 Adjusted Existing AM.syn

04/21/2020

	→	↖	←	↗	↘
Lane Group	EBT	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↖↗	↑↑	↖↗	↗
Traffic Volume (vph)	375	85	950	210	20
Future Volume (vph)	375	85	950	210	20
Turn Type	NA	pm+pt	NA	Prot	Free
Protected Phases	2	1	6	4	
Permitted Phases		6			Free
Detector Phase	2	1	6	4	
Switch Phase					
Minimum Initial (s)	10.0	3.0	10.0	4.0	
Minimum Split (s)	24.0	9.5	24.0	23.0	
Total Split (s)	50.0	20.0	70.0	35.0	
Total Split (%)	47.6%	19.0%	66.7%	33.3%	
Yellow Time (s)	4.0	3.0	4.0	3.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	
Total Lost Time (s)	6.0	5.0	6.0	5.0	
Lead/Lag	Lag	Lead			
Lead-Lag Optimize?	Yes	Yes			
Recall Mode	C-Max	None	C-Max	None	
Act Effect Green (s)	70.5	82.7	81.7	12.3	105.0
Actuated g/C Ratio	0.67	0.79	0.78	0.12	1.00
v/c Ratio	0.29	0.09	0.42	0.57	0.01
Control Delay	6.2	2.9	4.6	49.1	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	6.2	2.9	4.6	49.1	0.0
LOS	A	A	A	D	A
Approach Delay	6.3		4.5	44.8	
Approach LOS	A		A	D	

Intersection Summary

Cycle Length: 105
 Actuated Cycle Length: 105
 Offset: 86.5 (82%), Referenced to phase 2:EBT and 6:WBTL, Start of Yellow
 Natural Cycle: 60
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.57
 Intersection Signal Delay: 9.6
 Intersection Capacity Utilization 41.4%
 Analysis Period (min) 15

Intersection LOS: A
 ICU Level of Service A

Splits and Phases: 3: Salida St & 40th Ave



HCM 6th Signalized Intersection Summary

3: Salida St & 40th Ave

2020 Adjusted Existing AM.syn

04/21/2020

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↖↗	↑↑	↖↗	↗
Traffic Volume (veh/h)	375	205	85	950	210	20
Future Volume (veh/h)	375	205	85	950	210	20
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	426	233	104	1159	228	0
Peak Hour Factor	0.88	0.88	0.82	0.82	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	1625	880	1232	2861	312	
Arrive On Green	0.73	0.73	0.03	0.81	0.09	0.00
Sat Flow, veh/h	2319	1205	3456	3647	3456	1585
Grp Volume(v), veh/h	339	320	104	1159	228	0
Grp Sat Flow(s),veh/h/ln	1777	1653	1728	1777	1728	1585
Q Serve(g_s), s	6.7	6.8	0.7	9.9	6.7	0.0
Cycle Q Clear(g_c), s	6.7	6.8	0.7	9.9	6.7	0.0
Prop In Lane		0.73	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	1298	1207	1232	2861	312	
V/C Ratio(X)	0.26	0.26	0.08	0.41	0.73	
Avail Cap(c_a), veh/h	1298	1207	1632	2861	987	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.84	0.84	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	4.7	4.7	3.1	3.0	46.5	0.0
Incr Delay (d2), s/veh	0.4	0.5	0.0	0.4	3.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.2	2.1	0.2	2.6	3.0	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	5.1	5.2	3.1	3.4	49.8	0.0
LnGrp LOS	A	A	A	A	D	
Approach Vol, veh/h	659			1263	228	A
Approach Delay, s/veh	5.2			3.4	49.8	
Approach LOS	A			A	D	
Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	7.9	82.7		14.5		90.5
Change Period (Y+Rc), s	5.0	6.0		5.0		6.0
Max Green Setting (Gmax), s	15.0	44.0		30.0		64.0
Max Q Clear Time (g_c+l1), s	2.7	8.8		8.7		11.9
Green Ext Time (p_c), s	0.2	4.8		0.7		11.8
Intersection Summary						
HCM 6th Ctrl Delay			8.8			
HCM 6th LOS			A			

Notes

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

Timings
3: Salida St & 40th Ave

2020 Adjusted Existing PM.syn

04/21/2020

	→	↖	←	↗	↘
Lane Group	EBT	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↖↖	↑↑	↖↖	↗
Traffic Volume (vph)	505	20	335	325	45
Future Volume (vph)	505	20	335	325	45
Turn Type	NA	pm+pt	NA	Prot	Free
Protected Phases	2	1	6	4	
Permitted Phases		6			Free
Detector Phase	2	1	6	4	
Switch Phase					
Minimum Initial (s)	10.0	3.0	10.0	4.0	
Minimum Split (s)	24.0	9.5	24.0	23.0	
Total Split (s)	50.0	20.0	70.0	35.0	
Total Split (%)	47.6%	19.0%	66.7%	33.3%	
Yellow Time (s)	4.0	3.0	4.0	3.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	
Total Lost Time (s)	6.0	5.0	6.0	5.0	
Lead/Lag	Lag	Lead			
Lead-Lag Optimize?	Yes	Yes			
Recall Mode	C-Max	None	C-Max	None	
Act Effect Green (s)	73.3	78.6	77.6	16.4	105.0
Actuated g/C Ratio	0.70	0.75	0.74	0.16	1.00
v/c Ratio	0.37	0.02	0.14	0.68	0.03
Control Delay	6.5	4.0	4.4	48.1	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	6.5	4.0	4.4	48.1	0.0
LOS	A	A	A	D	A
Approach Delay	6.5		4.4	42.3	
Approach LOS	A		A	D	

Intersection Summary

Cycle Length: 105
 Actuated Cycle Length: 105
 Offset: 86.5 (82%), Referenced to phase 2:EBT and 6:WBTL, Start of Yellow
 Natural Cycle: 60
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.68
 Intersection Signal Delay: 14.8
 Intersection Capacity Utilization 43.0%
 Analysis Period (min) 15

Intersection LOS: B
 ICU Level of Service A

Splits and Phases: 3: Salida St & 40th Ave



HCM 6th Signalized Intersection Summary

3: Salida St & 40th Ave

2020 Adjusted Existing PM.syn

04/21/2020

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↖↗	↑↑	↖↗	↗
Traffic Volume (veh/h)	505	330	20	335	325	45
Future Volume (veh/h)	505	330	20	335	325	45
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	537	351	21	356	361	0
Peak Hour Factor	0.94	0.94	0.94	0.94	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	1448	946	909	2714	455	
Arrive On Green	0.70	0.70	0.01	0.76	0.13	0.00
Sat Flow, veh/h	2153	1345	3456	3647	3456	1585
Grp Volume(v), veh/h	463	425	21	356	361	0
Grp Sat Flow(s),veh/h/ln	1777	1628	1728	1777	1728	1585
Q Serve(g_s), s	11.0	11.0	0.2	2.8	10.6	0.0
Cycle Q Clear(g_c), s	11.0	11.0	0.2	2.8	10.6	0.0
Prop In Lane		0.83	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	1249	1145	909	2714	455	
V/C Ratio(X)	0.37	0.37	0.02	0.13	0.79	
Avail Cap(c_a), veh/h	1249	1145	1357	2714	987	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.98	0.98	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	6.3	6.3	4.5	3.3	44.2	0.0
Incr Delay (d2), s/veh	0.8	0.9	0.0	0.1	3.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.9	3.6	0.1	0.8	4.7	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	7.1	7.2	4.5	3.4	47.4	0.0
LnGrp LOS	A	A	A	A	D	
Approach Vol, veh/h	888			377	361	A
Approach Delay, s/veh	7.1			3.4	47.4	
Approach LOS	A			A	D	
Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	6.4	79.8		18.8		86.2
Change Period (Y+Rc), s	5.0	6.0		5.0		6.0
Max Green Setting (Gmax), s	15.0	44.0		30.0		64.0
Max Q Clear Time (g_c+I1), s	2.2	13.0		12.6		4.8
Green Ext Time (p_c), s	0.0	6.9		1.2		2.6
Intersection Summary						
HCM 6th Ctrl Delay			15.2			
HCM 6th LOS			B			
Notes						
Unsignalized Delay for [NBR] is excluded from calculations of the approach delay and intersection delay.						

Timings 3: Salida St & 40th Ave

2022 Background AM.syn

05/06/2020

	→	↖	←	↙	↗
Lane Group	EBT	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↖↖	↑↑	↖↖	↗
Traffic Volume (vph)	495	90	1015	230	20
Future Volume (vph)	495	90	1015	230	20
Turn Type	NA	pm+pt	NA	Prot	Free
Protected Phases	2	1	6	4	
Permitted Phases		6			Free
Detector Phase	2	1	6	4	
Switch Phase					
Minimum Initial (s)	10.0	3.0	10.0	4.0	
Minimum Split (s)	24.0	9.5	24.0	23.0	
Total Split (s)	63.0	13.0	76.0	29.0	
Total Split (%)	60.0%	12.4%	72.4%	27.6%	
Yellow Time (s)	4.0	3.0	4.0	3.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	
Total Lost Time (s)	6.0	5.0	6.0	5.0	
Lead/Lag	Lag	Lead			
Lead-Lag Optimize?	Yes	Yes			
Recall Mode	C-Max	None	C-Max	None	
Act Effect Green (s)	69.8	82.0	81.0	13.0	105.0
Actuated g/C Ratio	0.66	0.78	0.77	0.12	1.00
v/c Ratio	0.37	0.12	0.45	0.59	0.01
Control Delay	7.3	3.2	5.1	49.1	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	7.3	3.2	5.1	49.1	0.0
LOS	A	A	A	D	A
Approach Delay	7.3		4.9	45.1	
Approach LOS	A		A	D	

Intersection Summary

Cycle Length: 105
 Actuated Cycle Length: 105
 Offset: 86.5 (82%), Referenced to phase 2:EBT and 6:WBTL, Start of Yellow
 Natural Cycle: 60
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.59
 Intersection Signal Delay: 10.1
 Intersection Capacity Utilization 45.1%
 Analysis Period (min) 15

Intersection LOS: B
 ICU Level of Service A

Splits and Phases: 3: Salida St & 40th Ave



HCM 6th Signalized Intersection Summary

3: Salida St & 40th Ave

2022 Background AM.syn

05/06/2020

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↖↗	↑↑	↖↗	↗
Traffic Volume (veh/h)	495	255	90	1015	230	20
Future Volume (veh/h)	495	255	90	1015	230	20
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	562	290	110	1238	250	0
Peak Hour Factor	0.88	0.88	0.82	0.82	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	1642	846	1027	2839	333	
Arrive On Green	0.72	0.72	0.03	0.80	0.10	0.00
Sat Flow, veh/h	2362	1169	3456	3647	3456	1585
Grp Volume(v), veh/h	440	412	110	1238	250	0
Grp Sat Flow(s),veh/h/ln	1777	1660	1728	1777	1728	1585
Q Serve(g_s), s	9.5	9.6	0.8	11.3	7.4	0.0
Cycle Q Clear(g_c), s	9.5	9.6	0.8	11.3	7.4	0.0
Prop In Lane		0.70	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	1286	1202	1027	2839	333	
V/C Ratio(X)	0.34	0.34	0.11	0.44	0.75	
Avail Cap(c_a), veh/h	1286	1202	1195	2839	790	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.74	0.74	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	5.3	5.3	3.6	3.3	46.2	0.0
Incr Delay (d2), s/veh	0.5	0.6	0.0	0.5	3.4	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.2	3.0	0.2	3.0	3.3	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	5.9	5.9	3.6	3.7	49.7	0.0
LnGrp LOS	A	A	A	A	D	
Approach Vol, veh/h	852			1348	250	A
Approach Delay, s/veh	5.9			3.7	49.7	
Approach LOS	A			A	D	
Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	7.9	82.0		15.1		89.9
Change Period (Y+Rc), s	5.0	6.0		5.0		6.0
Max Green Setting (Gmax), s	8.0	57.0		24.0		70.0
Max Q Clear Time (g_c+l1), s	2.8	11.6		9.4		13.3
Green Ext Time (p_c), s	0.1	6.8		0.7		13.3
Intersection Summary						
HCM 6th Ctrl Delay			9.2			
HCM 6th LOS			A			

Notes

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

Timings 3: Salida St & 40th Ave

2022 Background PM.syn

05/06/2020

	→	↖	←	↙	↗
Lane Group	EBT	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↖↖	↑↑	↖↖	↗
Traffic Volume (vph)	555	20	425	395	50
Future Volume (vph)	555	20	425	395	50
Turn Type	NA	pm+pt	NA	Prot	Free
Protected Phases	2	1	6	4	
Permitted Phases		6			Free
Detector Phase	2	1	6	4	
Switch Phase					
Minimum Initial (s)	10.0	3.0	10.0	4.0	
Minimum Split (s)	24.0	9.5	24.0	23.0	
Total Split (s)	62.0	11.0	73.0	32.0	
Total Split (%)	59.0%	10.5%	69.5%	30.5%	
Yellow Time (s)	4.0	3.0	4.0	3.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	
Total Lost Time (s)	6.0	5.0	6.0	5.0	
Lead/Lag	Lag	Lead			
Lead-Lag Optimize?	Yes	Yes			
Recall Mode	C-Max	None	C-Max	None	
Act Effect Green (s)	71.0	76.3	75.3	18.7	105.0
Actuated g/C Ratio	0.68	0.73	0.72	0.18	1.00
v/c Ratio	0.42	0.03	0.18	0.72	0.04
Control Delay	7.4	4.8	5.3	47.5	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	7.4	4.8	5.3	47.5	0.0
LOS	A	A	A	D	A
Approach Delay	7.4		5.3	42.1	
Approach LOS	A		A	D	

Intersection Summary

Cycle Length: 105
Actuated Cycle Length: 105
Offset: 86.5 (82%), Referenced to phase 2:EBT and 6:WBTL, Start of Yellow
Natural Cycle: 60
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.72
Intersection Signal Delay: 15.8
Intersection Capacity Utilization 47.2%
Analysis Period (min) 15

Intersection LOS: B
ICU Level of Service A

Splits and Phases: 3: Salida St & 40th Ave




HCM 6th Signalized Intersection Summary

3: Salida St & 40th Ave

2022 Background PM.syn

05/06/2020

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↵↵	↑↑	↵↵	↵
Traffic Volume (veh/h)	555	355	20	425	395	50
Future Volume (veh/h)	555	355	20	425	395	50
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	590	378	21	452	439	0
Peak Hour Factor	0.94	0.94	0.94	0.94	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	1413	905	805	2633	534	
Arrive On Green	0.68	0.68	0.01	0.74	0.15	0.00
Sat Flow, veh/h	2171	1331	3456	3647	3456	1585
Grp Volume(v), veh/h	505	463	21	452	439	0
Grp Sat Flow(s),veh/h/ln	1777	1631	1728	1777	1728	1585
Q Serve(g_s), s	13.3	13.3	0.2	4.0	12.9	0.0
Cycle Q Clear(g_c), s	13.3	13.3	0.2	4.0	12.9	0.0
Prop In Lane		0.82	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	1208	1109	805	2633	534	
V/C Ratio(X)	0.42	0.42	0.03	0.17	0.82	
Avail Cap(c_a), veh/h	1208	1109	958	2633	889	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.97	0.97	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	7.5	7.5	5.5	4.0	43.0	0.0
Incr Delay (d2), s/veh	1.0	1.1	0.0	0.1	3.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.9	4.5	0.1	1.3	5.7	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	8.5	8.6	5.5	4.2	46.2	0.0
LnGrp LOS	A	A	A	A	D	
Approach Vol, veh/h	968			473	439	A
Approach Delay, s/veh	8.6			4.2	46.2	
Approach LOS	A			A	D	
Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	6.4	77.4		21.2		83.8
Change Period (Y+Rc), s	5.0	6.0		5.0		6.0
Max Green Setting (Gmax), s	6.0	56.0		27.0		67.0
Max Q Clear Time (g_c+I1), s	2.2	15.3		14.9		6.0
Green Ext Time (p_c), s	0.0	8.2		1.3		3.4
Intersection Summary						
HCM 6th Ctrl Delay			16.3			
HCM 6th LOS			B			

Notes

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

Timings
3: Salida St & 40th Ave

2022 Total AM.syn

06/08/2020

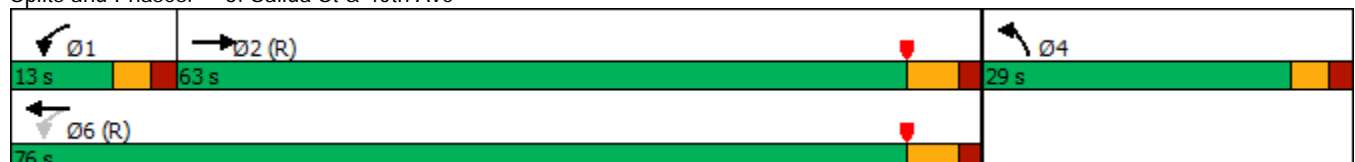
	→	↖	←	↙	↗
Lane Group	EBT	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↖↖	↑↑	↖↖	↗
Traffic Volume (vph)	495	120	1015	315	35
Future Volume (vph)	495	120	1015	315	35
Turn Type	NA	pm+pt	NA	Prot	Free
Protected Phases	2	1	6	4	
Permitted Phases		6			Free
Detector Phase	2	1	6	4	
Switch Phase					
Minimum Initial (s)	10.0	3.0	10.0	4.0	
Minimum Split (s)	24.0	9.5	24.0	23.0	
Total Split (s)	63.0	13.0	76.0	29.0	
Total Split (%)	60.0%	12.4%	72.4%	27.6%	
Yellow Time (s)	4.0	3.0	4.0	3.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	
Total Lost Time (s)	6.0	5.0	6.0	5.0	
Lead/Lag	Lag	Lead			
Lead-Lag Optimize?	Yes	Yes			
Recall Mode	C-Max	None	C-Max	None	
Act Effect Green (s)	66.6	79.3	78.3	15.7	105.0
Actuated g/C Ratio	0.63	0.76	0.75	0.15	1.00
v/c Ratio	0.51	0.21	0.47	0.67	0.02
Control Delay	7.7	4.4	6.2	48.5	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	7.7	4.4	6.2	48.5	0.0
LOS	A	A	A	D	A
Approach Delay	7.7		6.0	43.6	
Approach LOS	A		A	D	

Intersection Summary

Cycle Length: 105
 Actuated Cycle Length: 105
 Offset: 86.5 (82%), Referenced to phase 2:EBT and 6:WBTL, Start of Yellow
 Natural Cycle: 60
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.67
 Intersection Signal Delay: 11.6
 Intersection Capacity Utilization 55.3%
 Analysis Period (min) 15

Intersection LOS: B
 ICU Level of Service B

Splits and Phases: 3: Salida St & 40th Ave














HCM 6th Signalized Intersection Summary

3: Salida St & 40th Ave

2022 Total AM.syn

06/08/2020

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	495	495	120	1015	315	35
Future Volume (veh/h)	495	495	120	1015	315	35
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	562	562	146	1238	342	0
Peak Hour Factor	0.88	0.88	0.82	0.82	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	1229	1096	754	2740	430	
Arrive On Green	0.69	0.69	0.03	0.77	0.12	0.00
Sat Flow, veh/h	1870	1585	3456	3647	3456	1585
Grp Volume(v), veh/h	562	562	146	1238	342	0
Grp Sat Flow(s),veh/h/ln	1777	1585	1728	1777	1728	1585
Q Serve(g_s), s	15.0	17.8	1.2	12.9	10.1	0.0
Cycle Q Clear(g_c), s	15.0	17.8	1.2	12.9	10.1	0.0
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	1229	1096	754	2740	430	
V/C Ratio(X)	0.46	0.51	0.19	0.45	0.80	
Avail Cap(c_a), veh/h	1229	1096	908	2740	790	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.67	0.67	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	7.3	7.7	5.8	4.2	44.7	0.0
Incr Delay (d2), s/veh	0.8	1.2	0.1	0.5	3.4	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.3	5.7	0.4	3.8	4.5	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	8.1	8.9	6.0	4.8	48.1	0.0
LnGrp LOS	A	A	A	A	D	
Approach Vol, veh/h	1124			1384	342	A
Approach Delay, s/veh	8.5			4.9	48.1	
Approach LOS	A			A	D	
Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	8.3	78.6		18.1		86.9
Change Period (Y+Rc), s	5.0	6.0		5.0		6.0
Max Green Setting (Gmax), s	8.0	57.0		24.0		70.0
Max Q Clear Time (g_c+I1), s	3.2	19.8		12.1		14.9
Green Ext Time (p_c), s	0.2	10.2		1.0		13.3
Intersection Summary						
HCM 6th Ctrl Delay			11.5			
HCM 6th LOS			B			

Notes

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

Timings
3: Salida St & 40th Ave

2022 Total PM.syn

06/08/2020

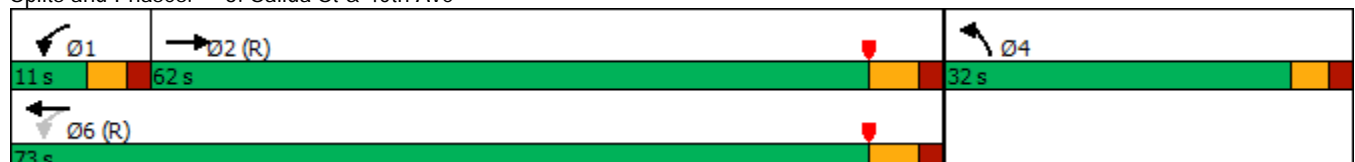
	→	↖	←	↗	↘
Lane Group	EBT	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↖↖	↑↑	↖↖	↘
Traffic Volume (vph)	555	35	425	560	75
Future Volume (vph)	555	35	425	560	75
Turn Type	NA	pm+pt	NA	Prot	Free
Protected Phases	2	1	6	4	
Permitted Phases		6			Free
Detector Phase	2	1	6	4	
Switch Phase					
Minimum Initial (s)	10.0	3.0	10.0	4.0	
Minimum Split (s)	24.0	9.5	24.0	23.0	
Total Split (s)	62.0	11.0	73.0	32.0	
Total Split (%)	59.0%	10.5%	69.5%	30.5%	
Yellow Time (s)	4.0	3.0	4.0	3.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	
Total Lost Time (s)	6.0	5.0	6.0	5.0	
Lead/Lag	Lag	Lead			
Lead-Lag Optimize?	Yes	Yes			
Recall Mode	C-Max	None	C-Max	None	
Act Effect Green (s)	63.9	71.4	70.4	23.6	105.0
Actuated g/C Ratio	0.61	0.68	0.67	0.22	1.00
v/c Ratio	0.51	0.06	0.19	0.81	0.05
Control Delay	10.0	6.4	7.1	47.3	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	10.0	6.4	7.1	47.3	0.1
LOS	A	A	A	D	A
Approach Delay	10.0		7.1	41.7	
Approach LOS	A		A	D	

Intersection Summary

Cycle Length: 105
 Actuated Cycle Length: 105
 Offset: 86.5 (82%), Referenced to phase 2:EBT and 6:WBTL, Start of Yellow
 Natural Cycle: 60
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.81
 Intersection Signal Delay: 19.2
 Intersection Capacity Utilization 55.1%
 Analysis Period (min) 15

Intersection LOS: B
 ICU Level of Service B

Splits and Phases: 3: Salida St & 40th Ave














HCM 6th Signalized Intersection Summary

3: Salida St & 40th Ave

2022 Total PM.syn

06/08/2020

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	555	455	35	425	560	75
Future Volume (veh/h)	555	455	35	425	560	75
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	590	484	37	452	622	0
Peak Hour Factor	0.94	0.94	0.94	0.94	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	1154	945	656	2446	715	
Arrive On Green	0.62	0.62	0.02	0.69	0.21	0.00
Sat Flow, veh/h	1948	1519	3456	3647	3456	1585
Grp Volume(v), veh/h	565	509	37	452	622	0
Grp Sat Flow(s),veh/h/ln	1777	1597	1728	1777	1728	1585
Q Serve(g_s), s	18.5	18.6	0.4	4.8	18.3	0.0
Cycle Q Clear(g_c), s	18.5	18.6	0.4	4.8	18.3	0.0
Prop In Lane		0.95	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	1105	993	656	2446	715	
V/C Ratio(X)	0.51	0.51	0.06	0.18	0.87	
Avail Cap(c_a), veh/h	1105	993	788	2446	889	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.96	0.96	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	11.0	11.0	8.2	5.8	40.3	0.0
Incr Delay (d2), s/veh	1.6	1.8	0.0	0.2	7.9	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.2	6.6	0.1	1.7	8.5	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	12.6	12.8	8.3	6.0	48.2	0.0
LnGrp LOS	B	B	A	A	D	
Approach Vol, veh/h	1074			489	622	A
Approach Delay, s/veh	12.7			6.2	48.2	
Approach LOS	B			A	D	
Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	7.0	71.3		26.7		78.3
Change Period (Y+Rc), s	5.0	6.0		5.0		6.0
Max Green Setting (Gmax), s	6.0	56.0		27.0		67.0
Max Q Clear Time (g_c+I1), s	2.4	20.6		20.3		6.8
Green Ext Time (p_c), s	0.0	9.3		1.4		3.4
Intersection Summary						
HCM 6th Ctrl Delay			21.3			
HCM 6th LOS			C			

Notes

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

Timings 3: Salida St & 40th Ave

2040 Background AM.syn

05/06/2020

	→	↖	←	↙	↗
Lane Group	EBT	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↖↖	↑↑	↖↖	↗
Traffic Volume (vph)	755	145	1480	335	35
Future Volume (vph)	755	145	1480	335	35
Turn Type	NA	pm+pt	NA	Prot	Free
Protected Phases	2	1	6	4	
Permitted Phases		6			Free
Detector Phase	2	1	6	4	
Switch Phase					
Minimum Initial (s)	10.0	3.0	10.0	4.0	
Minimum Split (s)	24.0	9.5	24.0	23.0	
Total Split (s)	67.0	11.0	78.0	27.0	
Total Split (%)	63.8%	10.5%	74.3%	25.7%	
Yellow Time (s)	4.0	3.0	4.0	3.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	
Total Lost Time (s)	6.0	5.0	6.0	5.0	
Lead/Lag	Lag	Lead			
Lead-Lag Optimize?	Yes	Yes			
Recall Mode	C-Max	None	C-Max	None	
Act Effect Green (s)	66.0	78.7	77.7	16.3	105.0
Actuated g/C Ratio	0.63	0.75	0.74	0.16	1.00
v/c Ratio	0.56	0.25	0.61	0.68	0.02
Control Delay	11.5	4.8	8.2	48.4	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	11.5	4.8	8.2	48.4	0.0
LOS	B	A	A	D	A
Approach Delay	11.5		7.9	43.8	
Approach LOS	B		A	D	

Intersection Summary

Cycle Length: 105

Actuated Cycle Length: 105

Offset: 86.5 (82%), Referenced to phase 2:EBT and 6:WBTL, Start of Yellow

Natural Cycle: 60

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.68

Intersection Signal Delay: 13.4

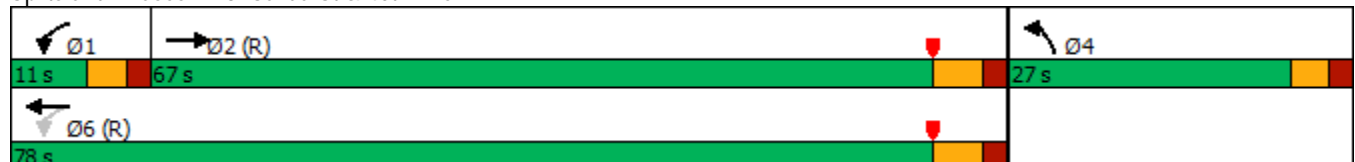
Intersection LOS: B

Intersection Capacity Utilization 59.6%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 3: Salida St & 40th Ave



HCM 6th Signalized Intersection Summary

3: Salida St & 40th Ave

2040 Background AM.syn

05/06/2020

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↖↗	↑↑	↖↗	↗
Traffic Volume (veh/h)	755	360	145	1480	335	35
Future Volume (veh/h)	755	360	145	1480	335	35
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	821	391	158	1609	364	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	1602	759	708	2719	450	
Arrive On Green	0.69	0.69	0.03	0.77	0.13	0.00
Sat Flow, veh/h	2433	1109	3456	3647	3456	1585
Grp Volume(v), veh/h	623	589	158	1609	364	0
Grp Sat Flow(s),veh/h/ln	1777	1671	1728	1777	1728	1585
Q Serve(g_s), s	17.8	18.0	1.3	20.4	10.8	0.0
Cycle Q Clear(g_c), s	17.8	18.0	1.3	20.4	10.8	0.0
Prop In Lane		0.66	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	1217	1145	708	2719	450	
V/C Ratio(X)	0.51	0.51	0.22	0.59	0.81	
Avail Cap(c_a), veh/h	1217	1145	794	2719	724	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.14	0.14	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	8.0	8.0	6.1	5.3	44.4	0.0
Incr Delay (d2), s/veh	0.2	0.2	0.2	1.0	3.6	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.1	5.8	0.4	6.2	4.8	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	8.2	8.3	6.3	6.2	48.0	0.0
LnGrp LOS	A	A	A	A	D	
Approach Vol, veh/h	1212			1767	364	A
Approach Delay, s/veh	8.3			6.3	48.0	
Approach LOS	A			A	D	
Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	8.4	77.9		18.7		86.3
Change Period (Y+Rc), s	5.0	6.0		5.0		6.0
Max Green Setting (Gmax), s	6.0	61.0		22.0		72.0
Max Q Clear Time (g_c+I1), s	3.3	20.0		12.8		22.4
Green Ext Time (p_c), s	0.1	11.4		0.9		20.4

Intersection Summary

HCM 6th Ctrl Delay	11.5
HCM 6th LOS	B

Notes

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

Timings 3: Salida St & 40th Ave

2040 Background PM.syn

05/06/2020

	→	↖	←	↗	↘
Lane Group	EBT	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↖↖	↑↑	↖↖	↘
Traffic Volume (vph)	905	60	650	555	80
Future Volume (vph)	905	60	650	555	80
Turn Type	NA	pm+pt	NA	Prot	Free
Protected Phases	2	1	6	4	
Permitted Phases		6			Free
Detector Phase	2	1	6	4	
Switch Phase					
Minimum Initial (s)	10.0	3.0	10.0	4.0	
Minimum Split (s)	24.0	9.5	24.0	23.0	
Total Split (s)	56.0	9.6	65.6	39.4	
Total Split (%)	53.3%	9.1%	62.5%	37.5%	
Yellow Time (s)	4.0	3.0	4.0	3.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	
Total Lost Time (s)	6.0	5.0	6.0	5.0	
Lead/Lag	Lag	Lead			
Lead-Lag Optimize?	Yes	Yes			
Recall Mode	C-Max	None	C-Max	None	
Act Effect Green (s)	61.0	71.0	70.0	24.0	105.0
Actuated g/C Ratio	0.58	0.68	0.67	0.23	1.00
v/c Ratio	0.76	0.17	0.29	0.77	0.05
Control Delay	19.5	7.5	8.1	44.7	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	19.5	7.5	8.1	44.7	0.1
LOS	B	A	A	D	A
Approach Delay	19.5		8.1	39.1	
Approach LOS	B		A	D	

Intersection Summary

Cycle Length: 105
 Actuated Cycle Length: 105
 Offset: 86.5 (82%), Referenced to phase 2:EBT and 6:WBTL, Start of Yellow
 Natural Cycle: 70
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.77
 Intersection Signal Delay: 21.1
 Intersection Capacity Utilization 66.8%
 Analysis Period (min) 15

Intersection LOS: C
 ICU Level of Service C

Splits and Phases: 3: Salida St & 40th Ave














HCM 6th Signalized Intersection Summary

3: Salida St & 40th Ave

2040 Background PM.syn

05/06/2020

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	905	525	60	650	555	80
Future Volume (veh/h)	905	525	60	650	555	80
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	963	559	64	691	603	0
Peak Hour Factor	0.94	0.94	0.94	0.94	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	1353	761	420	2449	712	
Arrive On Green	0.62	0.62	0.02	0.69	0.21	0.00
Sat Flow, veh/h	2285	1233	3456	3647	3456	1585
Grp Volume(v), veh/h	775	747	64	691	603	0
Grp Sat Flow(s),veh/h/ln	1777	1648	1728	1777	1728	1585
Q Serve(g_s), s	31.1	33.3	0.7	7.9	17.6	0.0
Cycle Q Clear(g_c), s	31.1	33.3	0.7	7.9	17.6	0.0
Prop In Lane		0.75	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	1097	1018	420	2449	712	
V/C Ratio(X)	0.71	0.73	0.15	0.28	0.85	
Avail Cap(c_a), veh/h	1097	1018	488	2449	1132	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	0.87	0.87	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	13.6	14.1	12.7	6.3	40.1	0.0
Incr Delay (d2), s/veh	3.4	4.1	0.2	0.3	3.5	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	12.4	12.5	0.3	2.7	7.8	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	17.0	18.2	12.9	6.6	43.6	0.0
LnGrp LOS	B	B	B	A	D	
Approach Vol, veh/h	1522			755	603	A
Approach Delay, s/veh	17.6			7.1	43.6	
Approach LOS	B			A	D	
Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	7.5	70.8		26.6		78.4
Change Period (Y+Rc), s	5.0	6.0		5.0		6.0
Max Green Setting (Gmax), s	4.6	50.0		34.4		59.6
Max Q Clear Time (g_c+l1), s	2.7	35.3		19.6		9.9
Green Ext Time (p_c), s	0.0	9.4		2.0		5.7
Intersection Summary						
HCM 6th Ctrl Delay			20.3			
HCM 6th LOS			C			

Notes

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

Timings 3: Salida St & 40th Ave

2040 Total AM Scenario 1.syn

06/08/2020

	→	↖	←	↙	↗
Lane Group	EBT	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↖↖	↑↑	↖↖	↗
Traffic Volume (vph)	755	175	1480	420	50
Future Volume (vph)	755	175	1480	420	50
Turn Type	NA	pm+pt	NA	Prot	Free
Protected Phases	2	1	6	4	
Permitted Phases		6			Free
Detector Phase	2	1	6	4	
Switch Phase					
Minimum Initial (s)	10.0	3.0	10.0	4.0	
Minimum Split (s)	24.0	9.5	24.0	23.0	
Total Split (s)	67.0	11.0	78.0	27.0	
Total Split (%)	63.8%	10.5%	74.3%	25.7%	
Yellow Time (s)	4.0	3.0	4.0	3.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	
Total Lost Time (s)	6.0	5.0	6.0	5.0	
Lead/Lag	Lag	Lead			
Lead-Lag Optimize?	Yes	Yes			
Recall Mode	C-Max	None	C-Max	None	
Act Effect Green (s)	63.7	76.3	75.3	18.7	105.0
Actuated g/C Ratio	0.61	0.73	0.72	0.18	1.00
v/c Ratio	0.69	0.42	0.63	0.75	0.03
Control Delay	12.9	7.3	9.5	48.7	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	12.9	7.3	9.5	48.7	0.0
LOS	B	A	A	D	A
Approach Delay	12.9		9.3	43.5	
Approach LOS	B		A	D	

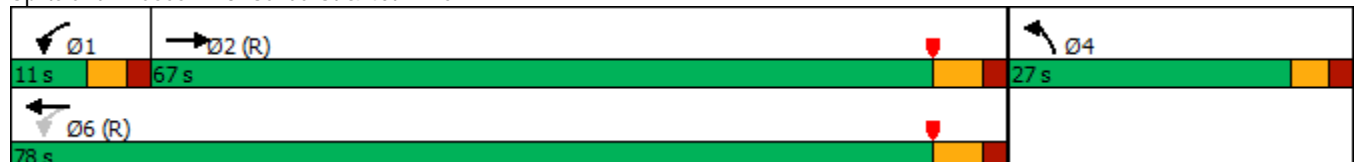
Intersection Summary

Cycle Length: 105
 Actuated Cycle Length: 105
 Offset: 86.5 (82%), Referenced to phase 2:EBT and 6:WBTL, Start of Yellow
 Natural Cycle: 65
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.75
 Intersection Signal Delay: 15.3
 Intersection Capacity Utilization 70.4%
 Analysis Period (min) 15

Intersection LOS: B

ICU Level of Service C

Splits and Phases: 3: Salida St & 40th Ave




HCM 6th Signalized Intersection Summary

3: Salida St & 40th Ave

2040 Total AM Scenario 1.syn

06/08/2020

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↵↵	↑↑	↵↵	↵
Traffic Volume (veh/h)	755	600	175	1480	420	50
Future Volume (veh/h)	755	600	175	1480	420	50
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	821	652	190	1609	457	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	1252	960	528	2624	542	
Arrive On Green	0.65	0.65	0.04	0.74	0.16	0.00
Sat Flow, veh/h	2008	1468	3456	3647	3456	1585
Grp Volume(v), veh/h	760	713	190	1609	457	0
Grp Sat Flow(s),veh/h/ln	1777	1606	1728	1777	1728	1585
Q Serve(g_s), s	27.1	29.0	1.8	22.7	13.5	0.0
Cycle Q Clear(g_c), s	27.1	29.0	1.8	22.7	13.5	0.0
Prop In Lane		0.91	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	1162	1050	528	2624	542	
V/C Ratio(X)	0.65	0.68	0.36	0.61	0.84	
Avail Cap(c_a), veh/h	1162	1050	597	2624	724	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.26	0.26	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	11.0	11.3	11.0	6.6	43.0	0.0
Incr Delay (d2), s/veh	0.8	0.9	0.4	1.1	6.9	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	9.8	9.5	0.8	7.4	6.2	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	11.7	12.3	11.4	7.6	49.9	0.0
LnGrp LOS	B	B	B	A	D	
Approach Vol, veh/h	1473			1799	457	A
Approach Delay, s/veh	12.0			8.0	49.9	
Approach LOS	B			A	D	
Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	8.9	74.7		21.5		83.5
Change Period (Y+Rc), s	5.0	6.0		5.0		6.0
Max Green Setting (Gmax), s	6.0	61.0		22.0		72.0
Max Q Clear Time (g_c+I1), s	3.8	31.0		15.5		24.7
Green Ext Time (p_c), s	0.1	14.1		1.0		20.0
Intersection Summary						
HCM 6th Ctrl Delay			14.7			
HCM 6th LOS			B			

Notes

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

Timings
3: Salida St & 40th Ave

2040 Total PM Scenario 1.syn

06/08/2020

	→	↖	←	↗	↘
Lane Group	EBT	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↖↖	↑↑	↖↖	↗
Traffic Volume (vph)	905	75	650	720	105
Future Volume (vph)	905	75	650	720	105
Turn Type	NA	pm+pt	NA	Prot	Free
Protected Phases	2	1	6	4	
Permitted Phases		6			Free
Detector Phase	2	1	6	4	
Switch Phase					
Minimum Initial (s)	10.0	3.0	10.0	4.0	
Minimum Split (s)	24.0	9.5	24.0	23.0	
Total Split (s)	63.4	9.6	73.0	32.0	
Total Split (%)	60.4%	9.1%	69.5%	30.5%	
Yellow Time (s)	4.0	3.0	4.0	3.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	
Total Lost Time (s)	6.0	5.0	6.0	5.0	
Lead/Lag	Lag	Lead			
Lead-Lag Optimize?	Yes	Yes			
Recall Mode	C-Max	None	C-Max	None	
Act Effect Green (s)	60.0	68.7	67.7	26.3	105.0
Actuated g/C Ratio	0.57	0.65	0.64	0.25	1.00
v/c Ratio	0.81	0.27	0.30	0.91	0.07
Control Delay	19.5	9.0	8.8	54.0	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	19.5	9.0	8.8	54.0	0.1
LOS	B	A	A	D	A
Approach Delay	19.5		8.8	47.2	
Approach LOS	B		A	D	

Intersection Summary

Cycle Length: 105
 Actuated Cycle Length: 105
 Offset: 86.5 (82%), Referenced to phase 2:EBT and 6:WBTL, Start of Yellow
 Natural Cycle: 80
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.91
 Intersection Signal Delay: 24.5
 Intersection Capacity Utilization 74.8%
 Analysis Period (min) 15

Intersection LOS: C
 ICU Level of Service D

Splits and Phases: 3: Salida St & 40th Ave














HCM 6th Signalized Intersection Summary

3: Salida St & 40th Ave

2040 Total PM Scenario 1.syn

06/08/2020

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	905	625	75	650	720	105
Future Volume (veh/h)	905	625	75	650	720	105
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	963	665	80	691	783	0
Peak Hour Factor	0.94	0.94	0.94	0.94	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	1184	776	324	2306	851	
Arrive On Green	0.58	0.58	0.03	0.65	0.25	0.00
Sat Flow, veh/h	2150	1348	3456	3647	3456	1585
Grp Volume(v), veh/h	825	803	80	691	783	0
Grp Sat Flow(s),veh/h/ln	1777	1628	1728	1777	1728	1585
Q Serve(g_s), s	38.6	43.4	0.9	8.9	23.2	0.0
Cycle Q Clear(g_c), s	38.6	43.4	0.9	8.9	23.2	0.0
Prop In Lane		0.83	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	1023	937	324	2306	851	
V/C Ratio(X)	0.81	0.86	0.25	0.30	0.92	
Avail Cap(c_a), veh/h	1023	937	386	2306	889	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.84	0.84	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	17.7	18.7	19.1	8.0	38.6	0.0
Incr Delay (d2), s/veh	5.8	8.5	0.4	0.3	14.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	16.3	17.3	0.5	3.3	11.3	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	23.4	27.2	19.5	8.4	52.8	0.0
LnGrp LOS	C	C	B	A	D	
Approach Vol, veh/h	1628			771	783	A
Approach Delay, s/veh	25.3			9.5	52.8	
Approach LOS	C			A	D	
Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	7.7	66.4		30.9		74.1
Change Period (Y+Rc), s	5.0	6.0		5.0		6.0
Max Green Setting (Gmax), s	4.6	57.4		27.0		67.0
Max Q Clear Time (g_c+I1), s	2.9	45.4		25.2		10.9
Green Ext Time (p_c), s	0.0	8.7		0.7		5.7
Intersection Summary						
HCM 6th Ctrl Delay			28.2			
HCM 6th LOS			C			

Notes

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

Timings
3: Salida St & 40th Ave

2040 Total AM Scenario 2.syn

06/08/2020

	→	↖	←	↙	↗
Lane Group	EBT	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↖↖	↑↑	↖↖	↗
Traffic Volume (vph)	760	200	1480	275	65
Future Volume (vph)	760	200	1480	275	65
Turn Type	NA	pm+pt	NA	Prot	Free
Protected Phases	2	1	6	4	
Permitted Phases		6			Free
Detector Phase	2	1	6	4	
Switch Phase					
Minimum Initial (s)	10.0	3.0	10.0	4.0	
Minimum Split (s)	24.0	9.5	24.0	23.0	
Total Split (s)	69.0	11.0	80.0	25.0	
Total Split (%)	65.7%	10.5%	76.2%	23.8%	
Yellow Time (s)	4.0	3.0	4.0	3.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	
Total Lost Time (s)	6.0	5.0	6.0	5.0	
Lead/Lag	Lag	Lead			
Lead-Lag Optimize?	Yes	Yes			
Recall Mode	C-Max	None	C-Max	None	
Act Effect Green (s)	67.6	80.6	79.6	14.4	105.0
Actuated g/C Ratio	0.64	0.77	0.76	0.14	1.00
v/c Ratio	0.53	0.32	0.60	0.64	0.04
Control Delay	10.5	4.6	7.1	48.9	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	10.5	4.6	7.1	48.9	0.0
LOS	B	A	A	D	A
Approach Delay	10.5		6.8	39.5	
Approach LOS	B		A	D	

Intersection Summary

Cycle Length: 105
 Actuated Cycle Length: 105
 Offset: 86.5 (82%), Referenced to phase 2:EBT and 6:WBTL, Start of Yellow
 Natural Cycle: 60
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.64
 Intersection Signal Delay: 11.7
 Intersection Capacity Utilization 58.3%
 Analysis Period (min) 15

Intersection LOS: B
 ICU Level of Service B

Splits and Phases: 3: Salida St & 40th Ave














HCM 6th Signalized Intersection Summary

3: Salida St & 40th Ave

2040 Total AM Scenario 2.syn

06/08/2020

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	760	325	200	1480	275	65
Future Volume (veh/h)	760	325	200	1480	275	65
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	826	353	217	1609	299	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	1701	725	768	2790	380	
Arrive On Green	0.70	0.70	0.04	0.79	0.11	0.00
Sat Flow, veh/h	2521	1034	3456	3647	3456	1585
Grp Volume(v), veh/h	604	575	217	1609	299	0
Grp Sat Flow(s),veh/h/ln	1777	1684	1728	1777	1728	1585
Q Serve(g_s), s	16.2	16.3	1.7	18.7	8.9	0.0
Cycle Q Clear(g_c), s	16.2	16.3	1.7	18.7	8.9	0.0
Prop In Lane		0.61	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	1245	1180	768	2790	380	
V/C Ratio(X)	0.49	0.49	0.28	0.58	0.79	
Avail Cap(c_a), veh/h	1245	1180	838	2790	658	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.28	0.28	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	7.1	7.1	5.4	4.4	45.5	0.0
Incr Delay (d2), s/veh	0.4	0.4	0.2	0.9	3.6	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.5	5.2	0.5	5.3	4.0	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	7.5	7.5	5.6	5.3	49.1	0.0
LnGrp LOS	A	A	A	A	D	
Approach Vol, veh/h	1179			1826	299	A
Approach Delay, s/veh	7.5			5.3	49.1	
Approach LOS	A			A	D	
Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	8.9	79.6		16.6		88.4
Change Period (Y+Rc), s	5.0	6.0		5.0		6.0
Max Green Setting (Gmax), s	6.0	63.0		20.0		74.0
Max Q Clear Time (g_c+I1), s	3.7	18.3		10.9		20.7
Green Ext Time (p_c), s	0.2	11.0		0.7		20.9
Intersection Summary						
HCM 6th Ctrl Delay			10.1			
HCM 6th LOS			B			

Notes

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

Timings 3: Salida St & 40th Ave

2040 Total PM Scenario 2.syn

06/08/2020

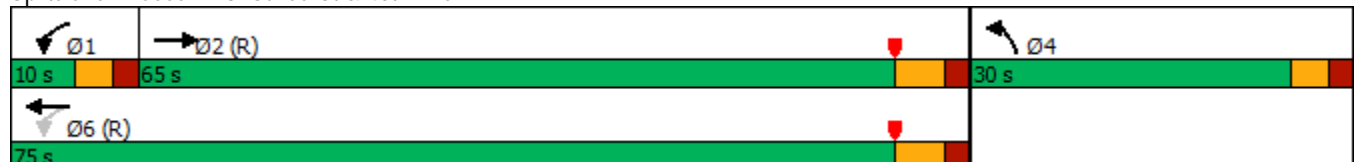
	→	↖	←	↗	↘
Lane Group	EBT	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↖↖	↑↑	↖↖	↘
Traffic Volume (vph)	935	80	650	460	150
Future Volume (vph)	935	80	650	460	150
Turn Type	NA	pm+pt	NA	Prot	Free
Protected Phases	2	1	6	4	
Permitted Phases		6			Free
Detector Phase	2	1	6	4	
Switch Phase					
Minimum Initial (s)	10.0	3.0	10.0	4.0	
Minimum Split (s)	24.0	9.5	24.0	23.0	
Total Split (s)	65.0	10.0	75.0	30.0	
Total Split (%)	61.9%	9.5%	71.4%	28.6%	
Yellow Time (s)	4.0	3.0	4.0	3.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	
Total Lost Time (s)	6.0	5.0	6.0	5.0	
Lead/Lag	Lag	Lead			
Lead-Lag Optimize?	Yes	Yes			
Recall Mode	C-Max	None	C-Max	None	
Act Effect Green (s)	64.9	74.6	73.6	20.4	105.0
Actuated g/C Ratio	0.62	0.71	0.70	0.19	1.00
v/c Ratio	0.67	0.19	0.28	0.75	0.10
Control Delay	15.1	6.1	6.5	47.2	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	15.1	6.1	6.5	47.2	0.1
LOS	B	A	A	D	A
Approach Delay	15.1		6.5	35.6	
Approach LOS	B		A	D	

Intersection Summary

Cycle Length: 105
 Actuated Cycle Length: 105
 Offset: 86.5 (82%), Referenced to phase 2:EBT and 6:WBTL, Start of Yellow
 Natural Cycle: 70
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.75
 Intersection Signal Delay: 17.5
 Intersection Capacity Utilization 61.4%
 Analysis Period (min) 15

Intersection LOS: B
 ICU Level of Service B

Splits and Phases: 3: Salida St & 40th Ave














HCM 6th Signalized Intersection Summary

3: Salida St & 40th Ave

2040 Total PM Scenario 2.syn

06/08/2020





















						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	935	415	80	650	460	150
Future Volume (veh/h)	935	415	80	650	460	150
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	995	441	85	691	500	0
Peak Hour Factor	0.94	0.94	0.94	0.94	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	1566	682	514	2573	592	
Arrive On Green	0.65	0.65	0.03	0.72	0.17	0.00
Sat Flow, veh/h	2502	1050	3456	3647	3456	1585
Grp Volume(v), veh/h	730	706	85	691	500	0
Grp Sat Flow(s),veh/h/ln	1777	1681	1728	1777	1728	1585
Q Serve(g_s), s	25.6	26.6	0.8	7.0	14.7	0.0
Cycle Q Clear(g_c), s	25.6	26.6	0.8	7.0	14.7	0.0
Prop In Lane		0.62	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	1155	1093	514	2573	592	
V/C Ratio(X)	0.63	0.65	0.17	0.27	0.85	
Avail Cap(c_a), veh/h	1155	1093	588	2573	823	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.87	0.87	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	10.9	11.1	9.4	5.0	42.2	0.0
Incr Delay (d2), s/veh	2.3	2.6	0.1	0.3	5.9	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	9.8	9.7	0.3	2.3	6.7	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	13.2	13.6	9.6	5.2	48.1	0.0
LnGrp LOS	B	B	A	A	D	
Approach Vol, veh/h	1436			776	500	A
Approach Delay, s/veh	13.4			5.7	48.1	
Approach LOS	B			A	D	
Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	7.7	74.3		23.0		82.0
Change Period (Y+Rc), s	5.0	6.0		5.0		6.0
Max Green Setting (Gmax), s	5.0	59.0		25.0		69.0
Max Q Clear Time (g_c+I1), s	2.8	28.6		16.7		9.0
Green Ext Time (p_c), s	0.0	13.5		1.3		5.7
Intersection Summary						
HCM 6th Ctrl Delay			17.6			
HCM 6th LOS			B			

Notes

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

Timings 4: Tower Road & 38th Ave

2020 Adjusted Existing AM.syn
04/21/2020

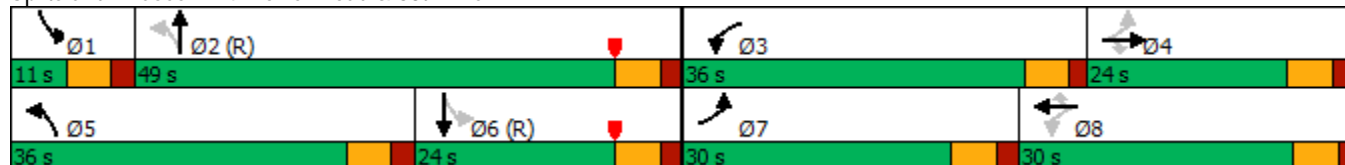
										
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	125	155	45	540	490	40	35	560	35	1260
Future Volume (vph)	125	155	45	540	490	40	35	560	35	1260
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	pm+pt	NA
Protected Phases	7	4		3	8		5	2	1	6
Permitted Phases	4		4	8		8	2		6	
Detector Phase	7	4	4	3	8	8	5	2	1	6
Switch Phase										
Minimum Initial (s)	10.0	5.0	5.0	3.0	5.0	5.0	5.0	10.0	5.0	10.0
Minimum Split (s)	16.0	24.0	24.0	9.5	23.5	23.5	36.0	24.0	11.0	24.0
Total Split (s)	30.0	24.0	24.0	36.0	30.0	30.0	36.0	49.0	11.0	24.0
Total Split (%)	25.0%	20.0%	20.0%	30.0%	25.0%	25.0%	30.0%	40.8%	9.2%	20.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	1.5	1.5	1.5	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	5.5	5.5	5.5	6.0	6.0	6.0	6.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	C-Min	None	C-Min
Act Effect Green (s)	29.6	17.1	17.1	53.6	35.2	35.2	50.6	46.0	49.5	45.5
Actuated g/C Ratio	0.25	0.14	0.14	0.45	0.29	0.29	0.42	0.38	0.41	0.38
v/c Ratio	0.52	0.85	0.12	1.18	0.54	0.11	0.20	0.61	0.25	0.95
Control Delay	29.4	77.6	0.6	130.2	38.3	0.4	15.7	23.1	21.8	47.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	29.4	77.6	0.6	130.2	38.3	0.4	15.7	23.1	21.8	47.7
LOS	C	E	A	F	D	A	B	C	C	D
Approach Delay		50.8			82.4			22.7		46.9
Approach LOS		D			F			C		D

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 50 (42%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow
 Natural Cycle: 150
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.18
 Intersection Signal Delay: 52.7
 Intersection Capacity Utilization 86.6%
 Analysis Period (min) 15

Intersection LOS: D
 ICU Level of Service E

Splits and Phases: 4: Tower Road & 38th Ave



























HCM 6th Signalized Intersection Summary

2020 Adjusted Existing AM.syn

4: Tower Road & 38th Ave

04/21/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	125	155	45	540	490	40	35	560	170	35	1260	430
Future Volume (veh/h)	125	155	45	540	490	40	35	560	170	35	1260	430
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	156	225	54	635	563	67	55	615	191	55	1326	467
Peak Hour Factor	0.80	0.69	0.83	0.85	0.87	0.60	0.64	0.91	0.89	0.64	0.95	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	334	256	217	533	1045	466	275	1010	313	252	1387	485
Arrive On Green	0.09	0.14	0.14	0.25	0.29	0.29	0.04	0.38	0.38	0.04	0.37	0.37
Sat Flow, veh/h	1781	1870	1585	1781	3554	1585	3456	2670	828	1781	3733	1307
Grp Volume(v), veh/h	156	225	54	635	563	67	55	409	397	55	1209	584
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	1777	1585	1728	1777	1721	1781	1702	1635
Q Serve(g_s), s	8.9	14.2	3.7	30.5	15.9	3.7	1.1	22.3	22.4	2.3	41.5	41.9
Cycle Q Clear(g_c), s	8.9	14.2	3.7	30.5	15.9	3.7	1.1	22.3	22.4	2.3	41.5	41.9
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.48	1.00		0.80
Lane Grp Cap(c), veh/h	334	256	217	533	1045	466	275	672	651	252	1265	607
V/C Ratio(X)	0.47	0.88	0.25	1.19	0.54	0.14	0.20	0.61	0.61	0.22	0.96	0.96
Avail Cap(c_a), veh/h	525	281	238	533	1045	466	995	672	651	264	1265	607
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	1.00	1.00	1.00	1.00	0.94	0.94	0.94	1.00	1.00	1.00
Uniform Delay (d), s/veh	39.0	50.8	46.3	31.6	35.5	31.2	29.0	30.1	30.2	23.9	36.7	36.9
Incr Delay (d2), s/veh	1.0	24.4	0.6	103.2	0.3	0.1	0.1	3.8	4.0	0.4	16.7	28.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.0	8.4	1.5	28.2	7.0	1.4	0.5	10.2	9.9	1.0	19.9	21.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	40.0	75.2	46.9	134.8	35.8	31.3	29.1	34.0	34.1	24.4	53.5	65.2
LnGrp LOS	D	E	D	F	D	C	C	C	C	C	D	E
Approach Vol, veh/h	435		1265			861			1848			
Approach Delay, s/veh	59.1		85.3			33.7			56.3			
Approach LOS	E		F			C			E			
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	10.2	51.4	36.0	22.4	11.0	50.6	17.1	41.3				
Change Period (Y+Rc), s	6.0	6.0	5.5	6.0	6.0	6.0	6.0	* 6				
Max Green Setting (Gmax), s	5.0	43.0	30.5	18.0	30.0	18.0	24.0	* 25				
Max Q Clear Time (g_c+I1), s	4.3	24.4	32.5	16.2	3.1	43.9	10.9	17.9				
Green Ext Time (p_c), s	0.0	8.7	0.0	0.3	0.1	0.0	0.3	1.6				
Intersection Summary												
HCM 6th Ctrl Delay	60.5											
HCM 6th LOS	E											
Notes												





















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

Timings

4: Tower Road & 38th Ave

2020 Adjusted Existing PM.syn

04/21/2020

										
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	340	350	70	300	190	35	50	920	15	975
Future Volume (vph)	340	350	70	300	190	35	50	920	15	975
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	pm+pt	NA
Protected Phases	7	4		3	8		5	2	1	6
Permitted Phases	4		4	8		8	2		6	
Detector Phase	7	4	4	3	8	8	5	2	1	6
Switch Phase										
Minimum Initial (s)	10.0	5.0	5.0	3.0	5.0	5.0	5.0	10.0	5.0	10.0
Minimum Split (s)	16.0	24.0	24.0	9.5	23.5	23.5	36.0	24.0	11.0	24.0
Total Split (s)	25.3	32.0	32.0	21.0	27.7	27.7	36.0	56.0	11.0	31.0
Total Split (%)	21.1%	26.7%	26.7%	17.5%	23.1%	23.1%	30.0%	46.7%	9.2%	25.8%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	1.5	1.5	1.5	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	5.5	5.5	5.5	6.0	6.0	6.0	6.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	C-Min	None	C-Min
Act Effect Green (s)	44.1	25.3	25.3	37.5	22.0	22.0	58.9	55.1	56.1	52.1
Actuated g/C Ratio	0.37	0.21	0.21	0.31	0.18	0.18	0.49	0.46	0.47	0.43
v/c Ratio	0.76	0.93	0.18	1.13	0.32	0.13	0.19	0.91	0.17	0.54
Control Delay	40.5	77.8	0.8	122.7	44.1	0.6	24.6	45.5	17.8	26.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	40.5	77.8	0.8	122.7	44.1	0.6	24.6	45.5	17.8	26.7
LOS	D	E	A	F	D	A	C	D	B	C
Approach Delay		53.0			83.2			44.5		26.6
Approach LOS		D			F			D		C

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 34 (28%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow

Natural Cycle: 120

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.13

Intersection Signal Delay: 46.5

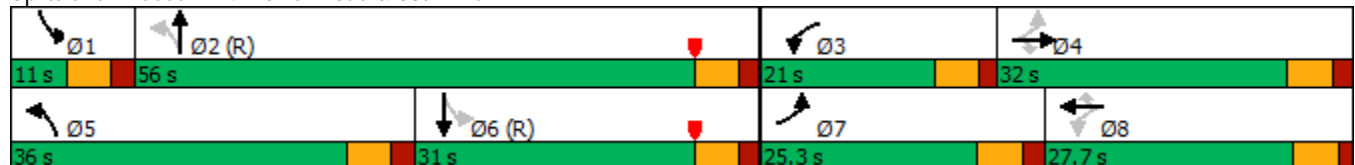
Intersection LOS: D

Intersection Capacity Utilization 87.0%

ICU Level of Service E

Analysis Period (min) 15

Splits and Phases: 4: Tower Road & 38th Ave



























HCM 6th Signalized Intersection Summary

2020 Adjusted Existing PM.syn

4: Tower Road & 38th Ave





















04/21/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	340	350	70	300	190	35	50	920	375	15	975	120
Future Volume (veh/h)	340	350	70	300	190	35	50	920	375	15	975	120
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	362	365	86	330	209	59	76	1000	446	23	1048	138
Peak Hour Factor	0.94	0.96	0.81	0.91	0.91	0.59	0.66	0.92	0.84	0.65	0.93	0.87
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	483	394	334	308	620	277	494	1063	466	108	1931	254
Arrive On Green	0.16	0.21	0.21	0.13	0.17	0.17	0.01	0.15	0.15	0.02	0.42	0.42
Sat Flow, veh/h	1781	1870	1585	1781	3554	1585	3456	2404	1053	1781	4566	600
Grp Volume(v), veh/h	362	365	86	330	209	59	76	734	712	23	781	405
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	1777	1585	1728	1777	1681	1781	1702	1762
Q Serve(g_s), s	19.3	23.0	5.4	15.5	6.2	3.8	1.5	49.0	50.4	0.9	20.6	20.7
Cycle Q Clear(g_c), s	19.3	23.0	5.4	15.5	6.2	3.8	1.5	49.0	50.4	0.9	20.6	20.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.63	1.00		0.34
Lane Grp Cap(c), veh/h	483	394	334	308	620	277	494	786	743	108	1440	745
V/C Ratio(X)	0.75	0.93	0.26	1.07	0.34	0.21	0.15	0.93	0.96	0.21	0.54	0.54
Avail Cap(c_a), veh/h	483	405	343	308	657	293	1214	786	743	142	1440	745
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	0.58	0.58	0.58	1.00	1.00	1.00
Uniform Delay (d), s/veh	33.6	46.5	39.6	38.5	43.4	42.5	20.1	49.5	50.1	29.0	25.9	25.9
Incr Delay (d2), s/veh	6.4	27.0	0.4	71.6	0.1	0.1	0.0	13.1	16.8	1.0	1.5	2.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	9.5	13.6	2.2	13.7	2.7	1.5	0.6	26.3	26.3	0.4	8.6	9.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	40.0	73.5	40.0	110.1	43.5	42.6	20.1	62.6	66.9	30.0	27.4	28.8
LnGrp LOS	D	E	D	F	D	D	C	E	E	C	C	C
Approach Vol, veh/h		813			598			1522			1209	
Approach Delay, s/veh		55.0			80.2			62.5			27.9	
Approach LOS		E			F			E			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	8.7	59.1	21.0	31.3	11.0	56.7	25.3	27.0				
Change Period (Y+Rc), s	6.0	6.0	5.5	6.0	6.0	6.0	6.0	* 6				
Max Green Setting (Gmax), s	5.0	50.0	15.5	26.0	30.0	25.0	19.3	* 22				
Max Q Clear Time (g_c+I1), s	2.9	52.4	17.5	25.0	3.5	22.7	21.3	8.2				
Green Ext Time (p_c), s	0.0	0.0	0.0	0.3	0.1	2.0	0.0	0.8				
Intersection Summary												
HCM 6th Ctrl Delay			53.5									
HCM 6th LOS			D									
Notes												
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.												

Timings 4: Tower Road & 38th Ave

2022 Background AM.syn

05/06/2020

										
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	135	165	65	575	515	40	65	585	40	1330
Future Volume (vph)	135	165	65	575	515	40	65	585	40	1330
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	pm+pt	NA
Protected Phases	7	4		3	8		5	2	1	6
Permitted Phases	4		4	8		8	2		6	
Detector Phase	7	4	4	3	8	8	5	2	1	6
Switch Phase										
Minimum Initial (s)	10.0	5.0	5.0	3.0	5.0	5.0	5.0	10.0	5.0	10.0
Minimum Split (s)	16.0	24.0	24.0	9.5	23.5	23.5	36.0	24.0	11.0	24.0
Total Split (s)	27.0	24.0	24.0	33.0	30.0	30.0	36.0	52.0	11.0	27.0
Total Split (%)	22.5%	20.0%	20.0%	27.5%	25.0%	25.0%	30.0%	43.3%	9.2%	22.5%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	1.5	1.5	1.5	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	5.5	5.5	5.5	6.0	6.0	6.0	6.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	C-Min	None	C-Min
Act Effect Green (s)	30.8	17.4	17.4	50.9	31.6	31.6	54.1	48.8	50.3	45.2
Actuated g/C Ratio	0.26	0.14	0.14	0.42	0.26	0.26	0.45	0.41	0.42	0.38
v/c Ratio	0.54	0.89	0.18	1.40	0.64	0.12	0.34	0.60	0.28	1.02
Control Delay	30.9	82.3	0.9	219.8	43.2	0.5	16.4	23.0	20.7	62.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	30.9	82.3	0.9	219.8	43.2	0.5	16.4	23.0	20.7	62.9
LOS	C	F	A	F	D	A	B	C	C	E
Approach Delay		51.4			130.5			22.3		61.6
Approach LOS		D			F			C		E

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 50 (42%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow

Natural Cycle: 150

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.40

Intersection Signal Delay: 72.0

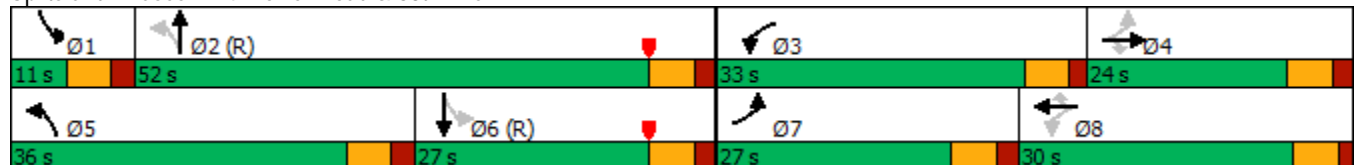
Intersection LOS: E

Intersection Capacity Utilization 91.5%

ICU Level of Service F

Analysis Period (min) 15

Splits and Phases: 4: Tower Road & 38th Ave



























HCM 6th Signalized Intersection Summary

2022 Background AM.syn

4: Tower Road & 38th Ave

05/06/2020





















												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	135	165	65	575	515	40	65	585	185	40	1330	480
Future Volume (veh/h)	135	165	65	575	515	40	65	585	185	40	1330	480
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	169	239	78	676	592	67	102	643	208	62	1400	522
Peak Hour Factor	0.80	0.69	0.83	0.85	0.87	0.60	0.64	0.91	0.89	0.64	0.95	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	331	268	227	487	960	428	267	1043	337	270	1433	528
Arrive On Green	0.10	0.14	0.14	0.23	0.27	0.27	0.06	0.53	0.53	0.04	0.39	0.39
Sat Flow, veh/h	1781	1870	1585	1781	3554	1585	3456	2640	853	1781	3676	1354
Grp Volume(v), veh/h	169	239	78	676	592	67	102	433	418	62	1295	627
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	1777	1585	1728	1777	1717	1781	1702	1627
Q Serve(g_s), s	9.5	15.1	5.3	27.5	17.5	3.9	2.1	20.5	20.5	2.5	45.0	45.9
Cycle Q Clear(g_c), s	9.5	15.1	5.3	27.5	17.5	3.9	2.1	20.5	20.5	2.5	45.0	45.9
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.50	1.00		0.83
Lane Grp Cap(c), veh/h	331	268	227	487	960	428	267	702	678	270	1327	634
V/C Ratio(X)	0.51	0.89	0.34	1.39	0.62	0.16	0.38	0.62	0.62	0.23	0.98	0.99
Avail Cap(c_a), veh/h	468	281	238	487	960	428	987	702	678	279	1327	634
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.33	1.33	1.33	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	0.92	0.92	0.92	1.00	1.00	1.00
Uniform Delay (d), s/veh	38.1	50.5	46.3	32.3	38.3	33.4	28.7	22.1	22.1	22.3	36.1	36.3
Incr Delay (d2), s/veh	1.2	27.1	0.9	186.6	0.9	0.1	0.3	3.7	3.8	0.4	19.6	33.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.3	9.0	2.2	36.9	7.7	1.5	0.8	8.4	8.1	1.1	21.9	23.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	39.4	77.5	47.2	218.9	39.2	33.4	29.0	25.8	25.9	22.7	55.6	69.4
LnGrp LOS	D	E	D	F	D	C	C	C	C	C	E	E
Approach Vol, veh/h		486			1335			953			1984	
Approach Delay, s/veh		59.4			129.9			26.2			59.0	
Approach LOS		E			F			C			E	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	10.4	53.4	33.0	23.2	11.0	52.8	17.8	38.4				
Change Period (Y+Rc), s	6.0	6.0	5.5	6.0	6.0	6.0	6.0	* 6				
Max Green Setting (Gmax), s	5.0	46.0	27.5	18.0	30.0	21.0	21.0	* 25				
Max Q Clear Time (g_c+I1), s	4.5	22.5	29.5	17.1	4.1	47.9	11.5	19.5				
Green Ext Time (p_c), s	0.0	10.6	0.0	0.2	0.2	0.0	0.3	1.4				
Intersection Summary												
HCM 6th Ctrl Delay				72.3								
HCM 6th LOS				E								
Notes												
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.												

Timings

4: Tower Road & 38th Ave

2022 Background PM.syn

05/06/2020

										
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	360	370	95	315	195	40	65	970	15	1020
Future Volume (vph)	360	370	95	315	195	40	65	970	15	1020
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	pm+pt	NA
Protected Phases	7	4		3	8		5	2	1	6
Permitted Phases	4		4	8		8	2		6	
Detector Phase	7	4	4	3	8	8	5	2	1	6
Switch Phase										
Minimum Initial (s)	10.0	5.0	5.0	3.0	5.0	5.0	5.0	10.0	5.0	10.0
Minimum Split (s)	16.0	24.0	24.0	9.5	23.5	23.5	36.0	24.0	11.0	24.0
Total Split (s)	25.0	28.0	28.0	23.0	26.0	26.0	36.0	58.0	11.0	33.0
Total Split (%)	20.8%	23.3%	23.3%	19.2%	21.7%	21.7%	30.0%	48.3%	9.2%	27.5%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	1.5	1.5	1.5	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	5.5	5.5	5.5	6.0	6.0	6.0	6.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	C-Min	None	C-Min
Act Effect Green (s)	40.9	22.0	22.0	38.1	20.6	20.6	60.4	56.4	55.9	50.9
Actuated g/C Ratio	0.34	0.18	0.18	0.32	0.17	0.17	0.50	0.47	0.47	0.42
v/c Ratio	0.83	1.13	0.26	1.08	0.35	0.16	0.25	0.94	0.17	0.58
Control Delay	48.0	133.0	1.9	107.9	45.8	0.8	23.9	48.1	16.9	27.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	48.0	133.0	1.9	107.9	45.8	0.8	23.9	48.1	16.9	27.5
LOS	D	F	A	F	D	A	C	D	B	C
Approach Delay		78.9			75.2			46.6		27.3
Approach LOS		E			E			D		C

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 34 (28%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow

Natural Cycle: 150

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.13

Intersection Signal Delay: 51.6

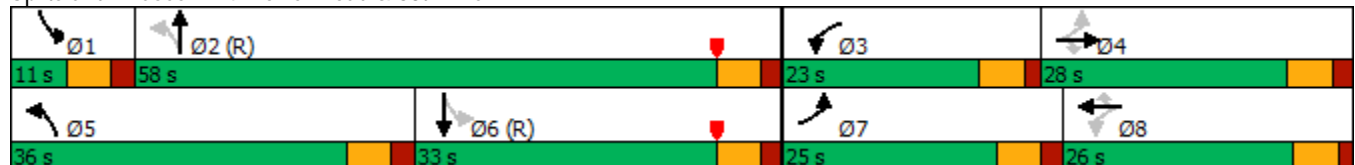
Intersection LOS: D

Intersection Capacity Utilization 91.1%

ICU Level of Service F

Analysis Period (min) 15

Splits and Phases: 4: Tower Road & 38th Ave



HCM 6th Signalized Intersection Summary

2022 Background PM.syn

4: Tower Road & 38th Ave

05/06/2020



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	360	370	95	315	195	40	65	970	400	15	1020	125
Future Volume (veh/h)	360	370	95	315	195	40	65	970	400	15	1020	125
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	383	385	117	346	214	68	98	1054	476	23	1097	144
Peak Hour Factor	0.94	0.96	0.81	0.91	0.91	0.59	0.66	0.92	0.84	0.65	0.93	0.87
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	466	343	291	320	592	264	485	1086	479	101	1979	260
Arrive On Green	0.16	0.18	0.18	0.15	0.17	0.17	0.01	0.15	0.15	0.02	0.43	0.43
Sat Flow, veh/h	1781	1870	1585	1781	3554	1585	3456	2400	1057	1781	4568	599
Grp Volume(v), veh/h	383	385	117	346	214	68	98	773	757	23	817	424
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	1777	1585	1728	1777	1680	1781	1702	1763
Q Serve(g_s), s	19.0	22.0	7.8	17.5	6.4	4.5	1.9	51.9	54.0	0.9	21.5	21.5
Cycle Q Clear(g_c), s	19.0	22.0	7.8	17.5	6.4	4.5	1.9	51.9	54.0	0.9	21.5	21.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.63	1.00		0.34
Lane Grp Cap(c), veh/h	466	343	291	320	592	264	485	804	761	101	1475	764
V/C Ratio(X)	0.82	1.12	0.40	1.08	0.36	0.26	0.20	0.96	0.99	0.23	0.55	0.55
Avail Cap(c_a), veh/h	466	343	291	320	607	271	1205	804	761	135	1475	764
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	0.49	0.49	0.49	1.00	1.00	1.00
Uniform Delay (d), s/veh	36.2	49.0	43.2	36.6	44.3	43.5	19.8	50.0	50.9	29.3	25.4	25.4
Incr Delay (d2), s/veh	11.2	86.1	0.9	74.0	0.1	0.2	0.0	14.8	21.6	1.1	1.5	2.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.7	18.4	3.1	14.4	2.8	1.8	0.8	28.1	28.9	0.4	8.9	9.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	47.4	135.1	44.1	110.6	44.5	43.7	19.8	64.8	72.5	30.4	26.9	28.3
LnGrp LOS	D	F	D	F	D	D	B	E	E	C	C	C
Approach Vol, veh/h		885			628			1628			1264	
Approach Delay, s/veh		85.1			80.8			65.7			27.4	
Approach LOS		F			F			E			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	8.7	60.3	23.0	28.0	11.0	58.0	25.0	26.0				
Change Period (Y+Rc), s	6.0	6.0	5.5	6.0	6.0	6.0	6.0	* 6				
Max Green Setting (Gmax), s	5.0	52.0	17.5	22.0	30.0	27.0	19.0	* 21				
Max Q Clear Time (g_c+I1), s	2.9	56.0	19.5	24.0	3.9	23.5	21.0	8.4				
Green Ext Time (p_c), s	0.0	0.0	0.0	0.0	0.2	2.9	0.0	0.8				

Intersection Summary

HCM 6th Ctrl Delay 60.8

HCM 6th LOS E

Notes





















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

Timings

4: Tower Road & 38th Ave

2022 Total AM.syn

06/08/2020

										
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	145	170	65	585	530	40	65	595	40	1350
Future Volume (vph)	145	170	65	585	530	40	65	595	40	1350
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	pm+pt	NA
Protected Phases	7	4		3	8		5	2	1	6
Permitted Phases	4		4	8		8	2		6	
Detector Phase	7	4	4	3	8	8	5	2	1	6
Switch Phase										
Minimum Initial (s)	10.0	5.0	5.0	3.0	5.0	5.0	5.0	10.0	5.0	10.0
Minimum Split (s)	16.0	24.0	24.0	9.5	23.5	23.5	36.0	24.0	11.0	24.0
Total Split (s)	27.0	24.0	24.0	33.0	30.0	30.0	36.0	52.0	11.0	27.0
Total Split (%)	22.5%	20.0%	20.0%	27.5%	25.0%	25.0%	30.0%	43.3%	9.2%	22.5%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	1.5	1.5	1.5	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	5.5	5.5	5.5	6.0	6.0	6.0	6.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	C-Min	None	C-Min
Act Effect Green (s)	31.6	17.6	17.6	51.1	31.0	31.0	54.0	48.6	50.2	45.0
Actuated g/C Ratio	0.26	0.15	0.15	0.43	0.26	0.26	0.45	0.40	0.42	0.38
v/c Ratio	0.57	0.90	0.18	1.43	0.67	0.12	0.34	0.62	0.29	1.05
Control Delay	31.7	85.2	0.9	235.2	44.6	0.5	16.7	23.7	20.9	70.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	31.7	85.2	0.9	235.2	44.6	0.5	16.7	23.7	20.9	70.4
LOS	C	F	A	F	D	A	B	C	C	E
Approach Delay		53.0			138.6			22.9		68.9
Approach LOS		D			F			C		E

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 50 (42%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow

Natural Cycle: 150

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.43

Intersection Signal Delay: 77.6

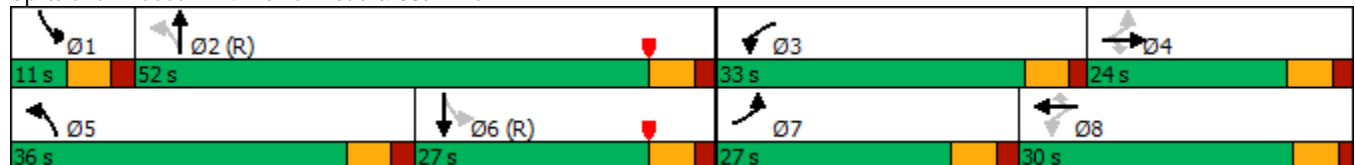
Intersection LOS: E

Intersection Capacity Utilization 93.2%

ICU Level of Service F

Analysis Period (min) 15

Splits and Phases: 4: Tower Road & 38th Ave


























HCM 6th Signalized Intersection Summary

2022 Total AM.syn

4: Tower Road & 38th Ave

06/08/2020





















												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	145	170	65	585	530	40	65	595	190	40	1350	500
Future Volume (veh/h)	145	170	65	585	530	40	65	595	190	40	1350	500
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	181	246	78	688	609	67	102	654	213	62	1421	543
Peak Hour Factor	0.80	0.69	0.83	0.85	0.87	0.60	0.64	0.91	0.89	0.64	0.95	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	334	274	232	487	952	425	264	1033	336	262	1412	532
Arrive On Green	0.10	0.15	0.15	0.23	0.27	0.27	0.06	0.52	0.52	0.04	0.39	0.39
Sat Flow, veh/h	1781	1870	1585	1781	3554	1585	3456	2635	858	1781	3652	1375
Grp Volume(v), veh/h	181	246	78	688	609	67	102	441	426	62	1323	641
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	1777	1585	1728	1777	1716	1781	1702	1623
Q Serve(g_s), s	10.2	15.5	5.3	27.5	18.2	3.9	2.1	21.3	21.3	2.5	46.4	46.4
Cycle Q Clear(g_c), s	10.2	15.5	5.3	27.5	18.2	3.9	2.1	21.3	21.3	2.5	46.4	46.4
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.50	1.00		0.85
Lane Grp Cap(c), veh/h	334	274	232	487	952	425	264	696	673	262	1316	628
V/C Ratio(X)	0.54	0.90	0.34	1.41	0.64	0.16	0.39	0.63	0.63	0.24	1.01	1.02
Avail Cap(c_a), veh/h	461	281	238	487	952	425	984	696	673	271	1316	628
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.33	1.33	1.33	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	0.91	0.91	0.91	1.00	1.00	1.00
Uniform Delay (d), s/veh	37.6	50.3	46.0	32.3	38.8	33.6	28.8	22.6	22.6	22.7	36.8	36.8
Incr Delay (d2), s/veh	1.4	28.5	0.8	198.2	1.1	0.1	0.3	4.0	4.1	0.5	26.0	41.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.6	9.4	2.1	38.5	8.1	1.5	0.8	8.7	8.5	1.1	23.6	25.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	39.0	78.8	46.8	230.4	39.9	33.6	29.1	26.5	26.7	23.1	62.8	78.2
LnGrp LOS	D	E	D	F	D	C	C	C	C	C	F	F
Approach Vol, veh/h		505			1364			969			2026	
Approach Delay, s/veh		59.6			135.7			26.9			66.5	
Approach LOS		E			F			C			E	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	10.4	53.0	33.0	23.6	11.0	52.4	18.5	38.1				
Change Period (Y+Rc), s	6.0	6.0	5.5	6.0	6.0	6.0	6.0	* 6				
Max Green Setting (Gmax), s	5.0	46.0	27.5	18.0	30.0	21.0	21.0	* 25				
Max Q Clear Time (g_c+I1), s	4.5	23.3	29.5	17.5	4.1	48.4	12.2	20.2				
Green Ext Time (p_c), s	0.0	10.6	0.0	0.1	0.2	0.0	0.3	1.3				
Intersection Summary												
HCM 6th Ctrl Delay				77.3								
HCM 6th LOS				E								
Notes												
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.												

Timings

4: Tower Road & 38th Ave

2022 Total PM.syn

06/08/2020

										
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	380	380	95	320	200	40	65	990	15	1030
Future Volume (vph)	380	380	95	320	200	40	65	990	15	1030
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	pm+pt	NA
Protected Phases	7	4		3	8		5	2	1	6
Permitted Phases	4		4	8		8	2		6	
Detector Phase	7	4	4	3	8	8	5	2	1	6
Switch Phase										
Minimum Initial (s)	10.0	5.0	5.0	3.0	5.0	5.0	5.0	10.0	5.0	10.0
Minimum Split (s)	16.0	24.0	24.0	9.5	23.5	23.5	36.0	24.0	11.0	24.0
Total Split (s)	25.0	28.0	28.0	23.0	26.0	26.0	36.0	58.0	11.0	33.0
Total Split (%)	20.8%	23.3%	23.3%	19.2%	21.7%	21.7%	30.0%	48.3%	9.2%	27.5%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	1.5	1.5	1.5	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	5.5	5.5	5.5	6.0	6.0	6.0	6.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	C-Min	None	C-Min
Act Effect Green (s)	41.0	22.0	22.0	38.0	20.5	20.5	60.4	56.4	55.9	50.9
Actuated g/C Ratio	0.34	0.18	0.18	0.32	0.17	0.17	0.50	0.47	0.47	0.42
v/c Ratio	0.88	1.16	0.26	1.10	0.36	0.16	0.26	0.96	0.17	0.59
Control Delay	54.0	143.7	1.9	112.9	46.0	0.8	23.9	50.7	16.9	27.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	54.0	143.7	1.9	112.9	46.0	0.8	23.9	50.7	16.9	27.7
LOS	D	F	A	F	D	A	C	D	B	C
Approach Delay		86.1			78.0			49.1		27.5
Approach LOS		F			E			D		C

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 34 (28%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow

Natural Cycle: 140

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.16

Intersection Signal Delay: 54.6

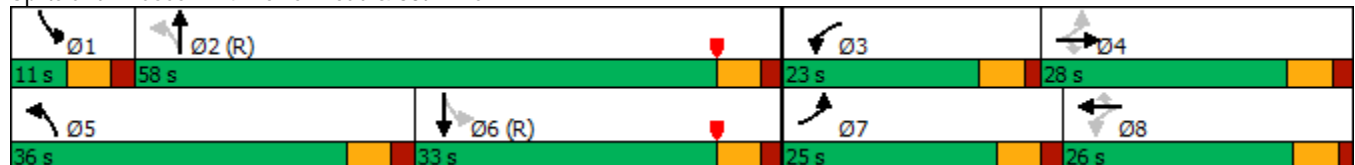
Intersection LOS: D

Intersection Capacity Utilization 92.8%

ICU Level of Service F

Analysis Period (min) 15

Splits and Phases: 4: Tower Road & 38th Ave



























HCM 6th Signalized Intersection Summary

2022 Total PM.syn

06/08/2020

4: Tower Road & 38th Ave





















												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	380	380	95	320	200	40	65	990	410	15	1030	135
Future Volume (veh/h)	380	380	95	320	200	40	65	990	410	15	1030	135
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	404	396	117	352	220	68	98	1076	488	23	1108	155
Peak Hour Factor	0.94	0.96	0.81	0.91	0.91	0.59	0.66	0.92	0.84	0.65	0.93	0.87
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	464	343	291	320	592	264	477	1086	479	100	1962	274
Arrive On Green	0.16	0.18	0.18	0.15	0.17	0.17	0.01	0.15	0.15	0.02	0.43	0.43
Sat Flow, veh/h	1781	1870	1585	1781	3554	1585	3456	2399	1058	1781	4528	633
Grp Volume(v), veh/h	404	396	117	352	220	68	98	789	775	23	833	430
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	1777	1585	1728	1777	1680	1781	1702	1756
Q Serve(g_s), s	19.0	22.0	7.8	17.5	6.6	4.5	1.9	53.1	54.3	0.9	22.0	22.1
Cycle Q Clear(g_c), s	19.0	22.0	7.8	17.5	6.6	4.5	1.9	53.1	54.3	0.9	22.0	22.1
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.63	1.00		0.36
Lane Grp Cap(c), veh/h	464	343	291	320	592	264	477	804	761	100	1475	761
V/C Ratio(X)	0.87	1.15	0.40	1.10	0.37	0.26	0.21	0.98	1.02	0.23	0.56	0.57
Avail Cap(c_a), veh/h	464	343	291	320	607	271	1196	804	761	134	1475	761
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	0.46	0.46	0.46	1.00	1.00	1.00
Uniform Delay (d), s/veh	37.4	49.0	43.2	36.6	44.4	43.5	19.9	50.5	51.0	29.3	25.5	25.5
Incr Delay (d2), s/veh	16.3	97.6	0.9	80.1	0.1	0.2	0.0	17.4	27.1	1.2	1.6	3.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.3	19.5	3.1	14.9	2.9	1.8	0.8	29.2	30.2	0.4	9.1	9.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	53.7	146.6	44.1	116.8	44.6	43.7	19.9	68.0	78.1	30.4	27.1	28.5
LnGrp LOS	D	F	D	F	D	D	B	E	F	C	C	C
Approach Vol, veh/h		917			640			1662			1286	
Approach Delay, s/veh		92.6			84.2			69.9			27.6	
Approach LOS		F			F			E			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	8.7	60.3	23.0	28.0	11.0	58.0	25.0	26.0				
Change Period (Y+Rc), s	6.0	6.0	5.5	6.0	6.0	6.0	6.0	* 6				
Max Green Setting (Gmax), s	5.0	52.0	17.5	22.0	30.0	27.0	19.0	* 21				
Max Q Clear Time (g_c+I1), s	2.9	56.3	19.5	24.0	3.9	24.1	21.0	8.6				
Green Ext Time (p_c), s	0.0	0.0	0.0	0.0	0.2	2.5	0.0	0.8				
Intersection Summary												
HCM 6th Ctrl Delay			64.5									
HCM 6th LOS			E									
Notes												
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.												

Timings

4: Tower Road & 38th Ave

2022 Total AM Improved.syn

06/08/2020

										
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	145	170	65	585	530	40	65	595	40	1350
Future Volume (vph)	145	170	65	585	530	40	65	595	40	1350
Turn Type	pm+pt	NA	Perm	Prot	NA	Perm	pm+pt	NA	pm+pt	NA
Protected Phases	7	4		3	8		5	2	1	6
Permitted Phases	4		4			8	2		6	
Detector Phase	7	4	4	3	8	8	5	2	1	6
Switch Phase										
Minimum Initial (s)	10.0	5.0	5.0	3.0	5.0	5.0	5.0	10.0	5.0	10.0
Minimum Split (s)	16.0	24.0	24.0	9.5	23.5	23.5	36.0	24.0	11.0	24.0
Total Split (s)	25.0	24.0	24.0	30.0	29.0	29.0	36.0	55.0	11.0	30.0
Total Split (%)	20.8%	20.0%	20.0%	25.0%	24.2%	24.2%	30.0%	45.8%	9.2%	25.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	1.5	1.5	1.5	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	5.5	5.5	5.5	6.0	6.0	6.0	6.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	C-Min	None	C-Min
Act Effct Green (s)	31.6	17.6	17.6	24.5	28.0	28.0	56.9	51.6	53.3	48.1
Actuated g/C Ratio	0.26	0.15	0.15	0.20	0.23	0.23	0.47	0.43	0.44	0.40
v/c Ratio	0.62	0.90	0.20	0.98	0.74	0.13	0.34	0.58	0.26	0.98
Control Delay	35.4	85.2	1.1	77.9	49.3	0.5	17.2	21.2	18.7	51.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	35.4	85.2	1.1	77.9	49.3	0.5	17.2	21.2	18.7	51.1
LOS	D	F	A	E	D	A	B	C	B	D
Approach Delay		54.4			61.3			20.7		50.1
Approach LOS		D			E			C		D

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 50 (42%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow

Natural Cycle: 150

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.98

Intersection Signal Delay: 47.8

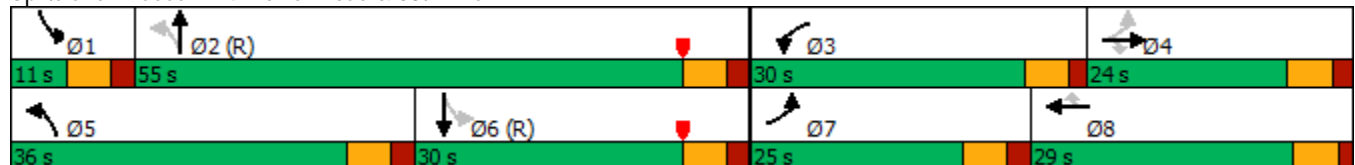
Intersection LOS: D

Intersection Capacity Utilization 77.5%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 4: Tower Road & 38th Ave



























HCM 6th Signalized Intersection Summary

2022 Total AM Improved.syn

4: Tower Road & 38th Ave

06/08/2020





















												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	145	170	65	585	530	40	65	595	190	40	1350	500
Future Volume (veh/h)	145	170	65	585	530	40	65	595	190	40	1350	500
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	181	246	78	688	609	67	102	654	213	62	1421	543
Peak Hour Factor	0.80	0.69	0.83	0.85	0.87	0.60	0.64	0.91	0.89	0.64	0.95	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	310	274	232	706	864	386	276	1099	358	339	1504	566
Arrive On Green	0.10	0.15	0.15	0.20	0.24	0.24	0.08	0.83	0.83	0.04	0.41	0.41
Sat Flow, veh/h	1781	1870	1585	3456	3554	1585	3456	2635	858	1781	3652	1375
Grp Volume(v), veh/h	181	246	78	688	609	67	102	441	426	62	1323	641
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1728	1777	1585	1728	1777	1716	1781	1702	1623
Q Serve(g_s), s	10.2	15.5	5.3	23.7	18.8	4.0	2.0	9.8	9.8	2.4	44.9	46.1
Cycle Q Clear(g_c), s	10.2	15.5	5.3	23.7	18.8	4.0	2.0	9.8	9.8	2.4	44.9	46.1
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.50	1.00		0.85
Lane Grp Cap(c), veh/h	310	274	232	706	864	386	276	741	716	339	1401	668
V/C Ratio(X)	0.58	0.90	0.34	0.98	0.70	0.17	0.37	0.60	0.60	0.18	0.94	0.96
Avail Cap(c_a), veh/h	408	281	238	706	864	386	996	741	716	348	1401	668
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	0.89	0.89	0.89	1.00	1.00	1.00
Uniform Delay (d), s/veh	37.8	50.3	46.0	47.4	41.5	35.9	27.2	6.6	6.6	19.3	34.0	34.3
Incr Delay (d2), s/veh	1.7	28.5	0.8	27.6	2.2	0.1	0.3	3.1	3.2	0.3	14.0	26.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.6	9.4	2.1	12.8	8.5	1.6	0.8	2.9	2.8	1.0	20.8	22.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	39.6	78.8	46.8	75.0	43.7	36.0	27.5	9.7	9.9	19.6	47.9	60.5
LnGrp LOS	D	E	D	E	D	D	C	A	A	B	D	E
Approach Vol, veh/h		505			1364			969			2026	
Approach Delay, s/veh		59.8			59.1			11.7			51.0	
Approach LOS		E			E			B			D	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	10.4	56.0	30.0	23.6	11.0	55.4	18.4	35.2				
Change Period (Y+Rc), s	6.0	6.0	5.5	6.0	6.0	6.0	6.0	* 6				
Max Green Setting (Gmax), s	5.0	49.0	24.5	18.0	30.0	24.0	19.0	* 24				
Max Q Clear Time (g_c+I1), s	4.4	11.8	25.7	17.5	4.0	48.1	12.2	20.8				
Green Ext Time (p_c), s	0.0	13.4	0.0	0.1	0.2	0.0	0.3	0.9				
Intersection Summary												
HCM 6th Ctrl Delay			46.4									
HCM 6th LOS			D									
Notes												
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.												

Timings

2022 Total PM Improved.syn

4: Tower Road & 38th Ave

06/08/2020

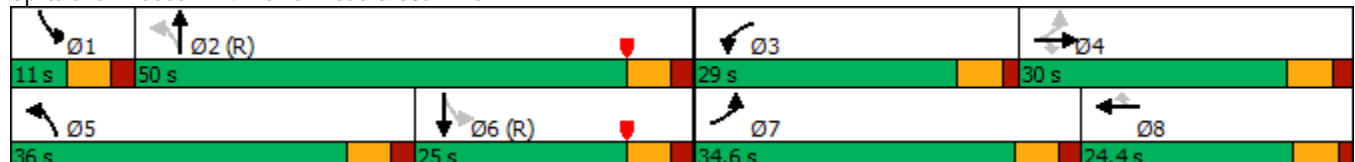
										
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	380	380	95	320	200	40	65	990	15	1030
Future Volume (vph)	380	380	95	320	200	40	65	990	15	1030
Turn Type	pm+pt	NA	Perm	Prot	NA	Perm	pm+pt	NA	pm+pt	NA
Protected Phases	7	4		3	8		5	2	1	6
Permitted Phases	4		4			8	2		6	
Detector Phase	7	4	4	3	8	8	5	2	1	6
Switch Phase										
Minimum Initial (s)	10.0	5.0	5.0	3.0	5.0	5.0	5.0	10.0	5.0	10.0
Minimum Split (s)	16.0	24.0	24.0	9.5	23.5	23.5	36.0	24.0	11.0	24.0
Total Split (s)	34.6	30.0	30.0	29.0	24.4	24.4	36.0	50.0	11.0	25.0
Total Split (%)	28.8%	25.0%	25.0%	24.2%	20.3%	20.3%	30.0%	41.7%	9.2%	20.8%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	1.5	1.5	1.5	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	5.5	5.5	5.5	6.0	6.0	6.0	6.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	C-Min	None	C-Min
Act Effect Green (s)	53.0	31.3	31.3	16.2	23.2	23.2	52.6	48.4	47.6	42.6
Actuated g/C Ratio	0.44	0.26	0.26	0.14	0.19	0.19	0.44	0.40	0.40	0.36
v/c Ratio	0.72	0.81	0.21	0.76	0.32	0.15	0.31	1.12	0.17	0.71
Control Delay	32.4	57.0	1.3	60.9	44.4	0.7	31.3	102.1	21.1	35.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	32.4	57.0	1.3	60.9	44.4	0.7	31.3	102.1	21.1	35.6
LOS	C	E	A	E	D	A	C	F	C	D
Approach Delay		39.1			48.8			97.9		35.4
Approach LOS		D			D			F		D

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 34 (28%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow
 Natural Cycle: 120
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.12
 Intersection Signal Delay: 61.1
 Intersection Capacity Utilization 84.2%
 Analysis Period (min) 15

Intersection LOS: E
 ICU Level of Service E

Splits and Phases: 4: Tower Road & 38th Ave



HCM 6th Signalized Intersection Summary

2022 Total PM Improved.syn

4: Tower Road & 38th Ave

06/08/2020



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	380	380	95	320	200	40	65	990	410	15	1030	135
Future Volume (veh/h)	380	380	95	320	200	40	65	990	410	15	1030	135
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	404	396	117	352	220	68	98	1076	488	23	1108	155
Peak Hour Factor	0.94	0.96	0.81	0.91	0.91	0.59	0.66	0.92	0.84	0.65	0.93	0.87
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	488	374	317	413	352	157	488	1109	489	100	2006	280
Arrive On Green	0.22	0.20	0.20	0.12	0.10	0.10	0.01	0.15	0.15	0.02	0.44	0.44
Sat Flow, veh/h	1781	1870	1585	3456	3554	1585	3456	2399	1058	1781	4528	633
Grp Volume(v), veh/h	404	396	117	352	220	68	98	789	775	23	833	430
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1728	1777	1585	1728	1777	1680	1781	1702	1756
Q Serve(g_s), s	23.5	24.0	7.7	12.0	7.1	4.8	1.8	52.9	55.3	0.8	21.6	21.7
Cycle Q Clear(g_c), s	23.5	24.0	7.7	12.0	7.1	4.8	1.8	52.9	55.3	0.8	21.6	21.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.63	1.00		0.36
Lane Grp Cap(c), veh/h	488	374	317	413	352	157	488	822	777	100	1508	778
V/C Ratio(X)	0.83	1.06	0.37	0.85	0.63	0.43	0.20	0.96	1.00	0.23	0.55	0.55
Avail Cap(c_a), veh/h	528	374	317	677	560	250	1207	822	777	135	1508	778
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	0.57	0.57	0.57	1.00	1.00	1.00
Uniform Delay (d), s/veh	35.2	48.0	41.5	51.8	51.9	50.9	19.2	49.7	50.8	29.2	24.6	24.6
Incr Delay (d2), s/veh	9.9	62.9	0.7	2.8	0.7	0.7	0.0	15.9	23.8	1.2	1.5	2.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	11.5	17.6	3.1	5.4	3.2	2.0	0.7	28.9	30.1	0.4	9.0	9.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	45.1	110.9	42.2	54.6	52.6	51.6	19.2	65.7	74.6	30.3	26.1	27.5
LnGrp LOS	D	F	D	D	D	D	B	E	E	C	C	C
Approach Vol, veh/h		917			640			1662			1286	
Approach Delay, s/veh		73.1			53.6			67.1			26.6	
Approach LOS		E			D			E			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	8.7	61.5	19.8	30.0	11.0	59.2	31.9	17.9				
Change Period (Y+Rc), s	6.0	6.0	5.5	6.0	6.0	6.0	6.0	* 6				
Max Green Setting (Gmax), s	5.0	44.0	23.5	24.0	30.0	19.0	28.6	* 19				
Max Q Clear Time (g_c+I1), s	2.8	57.3	14.0	26.0	3.8	23.7	25.5	9.1				
Green Ext Time (p_c), s	0.0	0.0	0.3	0.0	0.2	0.0	0.4	0.7				

Intersection Summary

HCM 6th Ctrl Delay 54.9

HCM 6th LOS D

Notes





















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

Timings

4: Tower Road & 38th Ave

2040 Background AM.syn

05/06/2020

										
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	190	245	135	865	740	60	120	770	60	1355
Future Volume (vph)	190	245	135	865	740	60	120	770	60	1355
Turn Type	pm+pt	NA	Perm	Prot	NA	Perm	pm+pt	NA	pm+pt	NA
Protected Phases	7	4		3	8		5	2	1	6
Permitted Phases	4		4			8	2		6	
Detector Phase	7	4	4	3	8	8	5	2	1	6
Switch Phase										
Minimum Initial (s)	10.0	5.0	5.0	3.0	5.0	5.0	5.0	10.0	5.0	10.0
Minimum Split (s)	16.0	24.0	24.0	9.5	23.5	23.5	36.0	24.0	11.0	24.0
Total Split (s)	25.0	24.0	24.0	30.0	29.0	29.0	36.0	54.0	12.0	30.0
Total Split (%)	20.8%	20.0%	20.0%	25.0%	24.2%	24.2%	30.0%	45.0%	10.0%	25.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	1.5	1.5	1.5	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	5.5	5.5	5.5	6.0	6.0	6.0	6.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	C-Min	None	C-Min
Act Effect Green (s)	32.9	18.0	18.0	24.5	27.6	27.6	56.2	50.4	53.1	47.2
Actuated g/C Ratio	0.27	0.15	0.15	0.20	0.23	0.23	0.47	0.42	0.44	0.39
v/c Ratio	0.73	0.95	0.37	1.34	0.99	0.13	0.41	0.79	0.41	1.10
Control Delay	43.4	94.2	5.1	201.6	75.6	0.5	21.5	25.2	23.8	87.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	43.4	94.2	5.1	201.6	75.6	0.5	21.5	25.2	23.8	87.8
LOS	D	F	A	F	E	A	C	C	C	F
Approach Delay		56.1			138.4			24.8		85.9
Approach LOS		E			F			C		F

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 50 (42%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow

Natural Cycle: 150

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.34

Intersection Signal Delay: 85.6

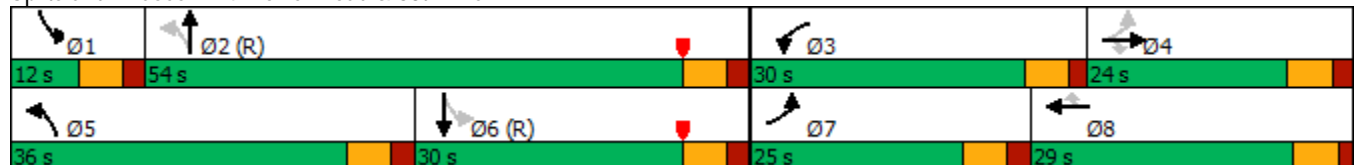
Intersection LOS: F

Intersection Capacity Utilization 102.5%

ICU Level of Service G

Analysis Period (min) 15

Splits and Phases: 4: Tower Road & 38th Ave



























HCM 6th Signalized Intersection Summary

2040 Background AM.syn

05/06/2020





















4: Tower Road & 38th Ave

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	190	245	135	865	740	60	120	770	290	60	1355	670
Future Volume (veh/h)	190	245	135	865	740	60	120	770	290	60	1355	670
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	207	266	147	940	804	65	130	837	315	65	1426	728
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.95	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	272	281	238	706	834	372	264	1044	392	197	1390	647
Arrive On Green	0.12	0.15	0.15	0.20	0.23	0.23	0.06	0.55	0.55	0.04	0.41	0.41
Sat Flow, veh/h	1781	1870	1585	3456	3554	1585	3456	2527	949	1781	3404	1585
Grp Volume(v), veh/h	207	266	147	940	804	65	130	588	564	65	1426	728
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1728	1777	1585	1728	1777	1700	1781	1702	1585
Q Serve(g_s), s	11.6	16.9	10.4	24.5	26.9	3.9	2.6	32.0	32.1	2.5	49.0	49.0
Cycle Q Clear(g_c), s	11.6	16.9	10.4	24.5	26.9	3.9	2.6	32.0	32.1	2.5	49.0	49.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.56	1.00		1.00
Lane Grp Cap(c), veh/h	272	281	238	706	834	372	264	734	702	197	1390	647
V/C Ratio(X)	0.76	0.95	0.62	1.33	0.96	0.17	0.49	0.80	0.80	0.33	1.03	1.12
Avail Cap(c_a), veh/h	349	281	238	706	834	372	984	734	702	220	1390	647
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.33	1.33	1.33	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	0.80	0.80	0.80	1.00	1.00	1.00
Uniform Delay (d), s/veh	38.0	50.5	47.8	47.8	45.4	36.6	28.4	23.1	23.1	24.0	35.5	35.5
Incr Delay (d2), s/veh	7.1	39.8	4.8	159.2	22.6	0.1	0.4	7.3	7.7	1.0	31.0	74.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.6	11.0	4.4	26.1	14.4	1.5	1.0	13.2	12.8	1.1	25.7	31.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	45.1	90.4	52.6	206.9	68.0	36.7	28.9	30.4	30.8	24.9	66.5	110.4
LnGrp LOS	D	F	D	F	E	D	C	C	C	C	F	F
Approach Vol, veh/h		620			1809			1282			2219	
Approach Delay, s/veh		66.3			139.1			30.4			79.7	
Approach LOS		E			F			C			E	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	10.4	55.6	30.0	24.0	11.0	55.0	19.8	34.2				
Change Period (Y+Rc), s	6.0	6.0	5.5	6.0	6.0	6.0	6.0	* 6				
Max Green Setting (Gmax), s	6.0	48.0	24.5	18.0	30.0	24.0	19.0	* 24				
Max Q Clear Time (g_c+I1), s	4.5	34.1	26.5	18.9	4.6	51.0	13.6	28.9				
Green Ext Time (p_c), s	0.0	9.9	0.0	0.0	0.2	0.0	0.3	0.0				
Intersection Summary												
HCM 6th Ctrl Delay				85.7								
HCM 6th LOS				F								
Notes												
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.												

Timings 4: Tower Road & 38th Ave

2040 Background PM.syn

05/06/2020

										
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	510	540	185	500	305	60	155	1055	25	1320
Future Volume (vph)	510	540	185	500	305	60	155	1055	25	1320
Turn Type	pm+pt	NA	Perm	Prot	NA	Perm	pm+pt	NA	pm+pt	NA
Protected Phases	7	4		3	8		5	2	1	6
Permitted Phases	4		4			8	2		6	
Detector Phase	7	4	4	3	8	8	5	2	1	6
Switch Phase										
Minimum Initial (s)	10.0	5.0	5.0	3.0	5.0	5.0	5.0	10.0	5.0	10.0
Minimum Split (s)	16.0	24.0	24.0	9.5	23.5	23.5	36.0	24.0	11.0	24.0
Total Split (s)	29.0	31.0	31.0	22.0	24.0	24.0	36.0	56.0	11.0	31.0
Total Split (%)	24.2%	25.8%	25.8%	18.3%	20.0%	20.0%	30.0%	46.7%	9.2%	25.8%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	1.5	1.5	1.5	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	5.5	5.5	5.5	6.0	6.0	6.0	6.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	C-Min	None	C-Min
Act Effect Green (s)	47.0	25.0	25.0	16.5	18.5	18.5	59.4	54.4	52.5	47.5
Actuated g/C Ratio	0.39	0.21	0.21	0.14	0.15	0.15	0.50	0.45	0.44	0.40
v/c Ratio	1.22	1.45	0.42	1.15	0.61	0.15	0.50	1.15	0.20	0.81
Control Delay	146.3	252.3	10.2	135.6	52.7	0.7	27.6	112.5	18.8	36.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	146.3	252.3	10.2	135.6	52.7	0.7	27.6	112.5	18.8	36.2
LOS	F	F	B	F	D	A	C	F	B	D
Approach Delay		171.0			97.0			105.4		35.9
Approach LOS		F			F			F		D

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 34 (28%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow

Natural Cycle: 150

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.45

Intersection Signal Delay: 99.2

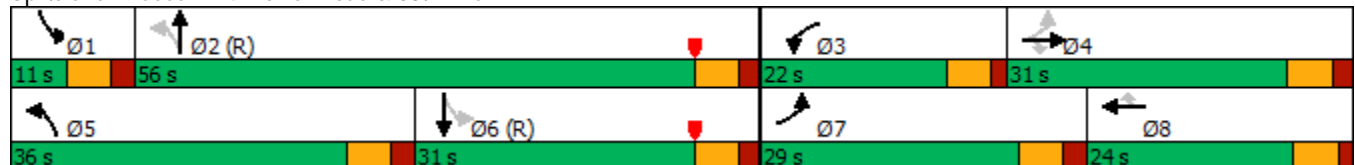
Intersection LOS: F

Intersection Capacity Utilization 115.6%

ICU Level of Service H

Analysis Period (min) 15

Splits and Phases: 4: Tower Road & 38th Ave


























HCM 6th Signalized Intersection Summary

2040 Background PM.syn

4: Tower Road & 38th Ave

05/06/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	510	540	185	500	305	60	155	1055	625	25	1320	180
Future Volume (veh/h)	510	540	185	500	305	60	155	1055	625	25	1320	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	543	562	201	543	332	65	168	1147	679	27	1419	196
Peak Hour Factor	0.94	0.96	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.93	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	463	390	330	475	533	238	369	960	527	104	1867	258
Arrive On Green	0.19	0.21	0.21	0.14	0.15	0.15	0.02	0.14	0.14	0.02	0.41	0.41
Sat Flow, veh/h	1781	1870	1585	3456	3554	1585	3456	2213	1215	1781	4536	626
Grp Volume(v), veh/h	543	562	201	543	332	65	168	903	923	27	1065	550
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1728	1777	1585	1728	1777	1652	1781	1702	1758
Q Serve(g_s), s	23.0	25.0	13.8	16.5	10.5	4.4	3.3	52.0	52.0	1.0	32.1	32.2
Cycle Q Clear(g_c), s	23.0	25.0	13.8	16.5	10.5	4.4	3.3	52.0	52.0	1.0	32.1	32.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.74	1.00		0.36
Lane Grp Cap(c), veh/h	463	390	330	475	533	238	369	770	716	104	1401	724
V/C Ratio(X)	1.17	1.44	0.61	1.14	0.62	0.27	0.46	1.17	1.29	0.26	0.76	0.76
Avail Cap(c_a), veh/h	463	390	330	475	548	244	1071	770	716	134	1401	724
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	0.38	0.38	0.38	1.00	1.00	1.00
Uniform Delay (d), s/veh	36.3	47.5	43.1	51.8	47.8	45.2	25.3	51.4	51.4	29.5	30.2	30.2
Incr Delay (d2), s/veh	98.5	213.1	3.2	86.7	1.5	0.2	0.1	83.3	133.9	1.3	3.9	7.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	15.4	34.6	5.7	12.8	4.8	1.7	1.4	42.7	49.7	0.5	13.7	14.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	134.8	260.6	46.3	138.5	49.3	45.4	25.5	134.7	185.3	30.8	34.1	37.6
LnGrp LOS	F	F	D	F	D	D	C	F	F	C	C	D
Approach Vol, veh/h	1306			940			1994			1642		
Approach Delay, s/veh	175.3			100.6			148.9			35.3		
Approach LOS	F			F			F			D		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	9.0	58.0	22.0	31.0	11.6	55.4	29.0	24.0				
Change Period (Y+Rc), s	6.0	6.0	5.5	6.0	6.0	6.0	6.0	* 6				
Max Green Setting (Gmax), s	5.0	50.0	16.5	25.0	30.0	25.0	23.0	* 19				
Max Q Clear Time (g_c+I1), s	3.0	54.0	18.5	27.0	5.3	34.2	25.0	12.5				
Green Ext Time (p_c), s	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.8				
Intersection Summary												
HCM 6th Ctrl Delay	115.3											
HCM 6th LOS	F											
Notes												
































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

Timings

2040 Total AM Scenario 1.syn

4: Tower Road & 38th Ave

06/08/2020

											
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 	 	 	 		 	  			  	
Traffic Volume (vph)	200	250	875	755	60	120	780	295	60	1375	690
Future Volume (vph)	200	250	875	755	60	120	780	295	60	1375	690
Turn Type	Prot	NA	Prot	NA	Perm	Prot	NA	pm+ov	pm+pt	NA	pm+ov
Protected Phases	7	4	3	8		5	2	3	1	6	7
Permitted Phases					8			2	6		6
Detector Phase	7	4	3	8	8	5	2	3	1	6	7
Switch Phase											
Minimum Initial (s)	10.0	5.0	3.0	5.0	5.0	5.0	10.0	3.0	5.0	10.0	10.0
Minimum Split (s)	16.0	24.0	9.5	23.5	23.5	36.0	24.0	9.5	11.0	24.0	16.0
Total Split (s)	27.0	25.0	35.0	33.0	33.0	36.0	48.0	35.0	12.0	24.0	27.0
Total Split (%)	22.5%	20.8%	29.2%	27.5%	27.5%	30.0%	40.0%	29.2%	10.0%	20.0%	22.5%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	1.5	1.5	1.5	2.0	2.0	1.5	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	5.5	5.5	5.5	6.0	6.0	5.5	6.0	6.0	6.0
Lead/Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lead	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	C-Min	None	None	C-Min	None
Act Effect Green (s)	20.7	19.0	29.5	27.8	27.8	9.0	44.4	79.9	45.0	39.0	65.8
Actuated g/C Ratio	0.17	0.16	0.25	0.23	0.23	0.08	0.37	0.67	0.38	0.32	0.55
v/c Ratio	0.37	0.71	1.13	1.00	0.13	0.51	0.45	0.29	0.26	0.87	0.75
Control Delay	45.8	47.0	114.2	78.3	0.5	65.3	22.0	3.4	22.1	45.5	17.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	45.8	47.0	114.2	78.3	0.5	65.3	22.0	3.4	22.1	45.5	17.6
LOS	D	D	F	E	A	E	C	A	C	D	B
Approach Delay		46.6		94.1			21.7			35.6	
Approach LOS		D		F			C			D	

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 50 (42%), Referenced to phase 2:NBT and 6:SBTL, Start of Yellow

Natural Cycle: 150

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.13

Intersection Signal Delay: 51.6

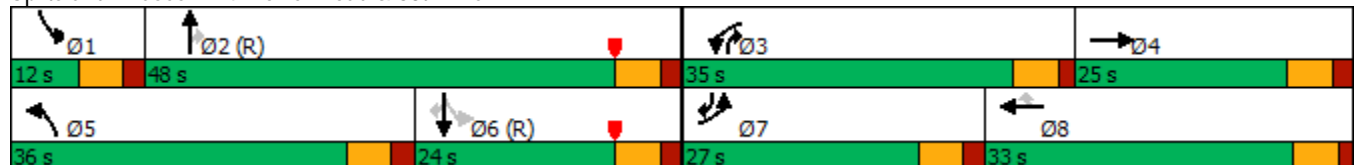
Intersection LOS: D

Intersection Capacity Utilization 86.5%

ICU Level of Service E

Analysis Period (min) 15

Splits and Phases: 4: Tower Road & 38th Ave



































HCM 6th Signalized Intersection Summary

2040 Total AM Scenario 1.syn

4: Tower Road & 38th Ave

06/08/2020























												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 	 		 	 		 	  			  	
Traffic Volume (veh/h)	200	250	135	875	755	60	120	780	295	60	1375	690
Future Volume (veh/h)	200	250	135	875	755	60	120	780	295	60	1375	690
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	217	272	147	951	821	65	130	848	321	65	1447	696
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.95	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	288	323	169	850	1072	478	191	1931	989	248	1836	702
Arrive On Green	0.08	0.14	0.14	0.25	0.30	0.30	0.06	0.38	0.38	0.04	0.36	0.36
Sat Flow, veh/h	3456	2253	1182	3456	3554	1585	3456	5106	1585	1781	5106	1585
Grp Volume(v), veh/h	217	213	206	951	821	65	130	848	321	65	1447	696
Grp Sat Flow(s),veh/h/ln	1728	1777	1658	1728	1777	1585	1728	1702	1585	1781	1702	1585
Q Serve(g_s), s	7.4	14.0	14.6	29.5	25.2	3.6	4.4	14.9	11.5	2.7	30.4	43.2
Cycle Q Clear(g_c), s	7.4	14.0	14.6	29.5	25.2	3.6	4.4	14.9	11.5	2.7	30.4	43.2
Prop In Lane	1.00		0.71	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	288	255	238	850	1072	478	191	1931	989	248	1836	702
V/C Ratio(X)	0.75	0.84	0.87	1.12	0.77	0.14	0.68	0.44	0.32	0.26	0.79	0.99
Avail Cap(c_a), veh/h	605	281	262	850	1072	478	864	1931	989	271	1836	702
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	1.00	1.00	1.00	1.00	0.78	0.78	0.78	1.00	1.00	1.00
Uniform Delay (d), s/veh	53.8	50.0	50.3	45.2	38.0	30.5	55.6	27.8	10.6	23.4	34.3	33.2
Incr Delay (d2), s/veh	4.0	17.9	23.6	69.2	3.0	0.0	1.2	0.6	0.7	0.6	3.5	31.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.4	7.5	7.6	20.7	11.3	1.4	2.0	6.2	4.1	1.2	13.0	25.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	57.8	67.9	73.9	114.4	41.1	30.6	56.9	28.4	11.3	24.0	37.8	65.1
LnGrp LOS	E	E	E	F	D	C	E	C	B	C	D	E
Approach Vol, veh/h	636		1837			1299			2208			
Approach Delay, s/veh	66.4		78.7			27.0			46.0			
Approach LOS	E		E			C			D			
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	10.4	51.4	35.0	23.2	12.6	49.2	16.0	42.2				
Change Period (Y+Rc), s	6.0	6.0	5.5	6.0	6.0	6.0	6.0	* 6				
Max Green Setting (Gmax), s	6.0	42.0	29.5	19.0	30.0	18.0	21.0	* 28				
Max Q Clear Time (g_c+I1), s	4.7	16.9	31.5	16.6	6.4	45.2	9.4	27.2				
Green Ext Time (p_c), s	0.0	13.9	0.0	0.6	0.2	0.0	0.5	0.2				
Intersection Summary												
HCM 6th Ctrl Delay			54.1									
HCM 6th LOS			D									
Notes												

Timings

2040 Total PM Scenario 1.syn

4: Tower Road & 38th Ave

06/08/2020

											
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	530	550	505	310	60	155	1075	635	25	1330	190
Future Volume (vph)	530	550	505	310	60	155	1075	635	25	1330	190
Turn Type	Prot	NA	Prot	NA	Perm	Prot	NA	pm+ov	pm+pt	NA	pm+ov
Protected Phases	7	4	3	8		5	2	3	1	6	7
Permitted Phases					8			2	6		6
Detector Phase	7	4	3	8	8	5	2	3	1	6	7
Switch Phase											
Minimum Initial (s)	10.0	5.0	3.0	5.0	5.0	5.0	10.0	3.0	5.0	10.0	10.0
Minimum Split (s)	16.0	24.0	9.5	23.5	23.5	36.0	24.0	9.5	11.0	24.0	16.0
Total Split (s)	43.0	37.0	30.0	24.0	24.0	29.0	42.0	30.0	11.0	24.0	43.0
Total Split (%)	35.8%	30.8%	25.0%	20.0%	20.0%	24.2%	35.0%	25.0%	9.2%	20.0%	35.8%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	1.5	1.5	1.5	2.0	2.0	1.5	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	5.5	5.5	5.5	6.0	6.0	5.5	6.0	6.0	6.0
Lead/Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lead	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	C-Min	None	None	C-Min	None
Act Effect Green (s)	25.7	30.1	22.1	26.5	26.5	10.3	43.7	71.8	39.3	34.0	65.8
Actuated g/C Ratio	0.21	0.25	0.18	0.22	0.22	0.09	0.36	0.60	0.33	0.28	0.55
v/c Ratio	0.77	0.88	0.87	0.43	0.12	0.57	0.63	0.68	0.17	0.99	0.22
Control Delay	51.3	53.0	62.6	42.5	0.5	50.3	49.6	15.1	25.7	65.4	3.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	51.3	53.0	62.6	42.5	0.5	50.3	49.6	15.1	25.7	65.4	3.9
LOS	D	D	E	D	A	D	D	B	C	E	A
Approach Delay		52.3		51.2			37.9			57.1	
Approach LOS		D		D			D			E	

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 34 (28%), Referenced to phase 2:NBT and 6:SBTL, Start of Yellow

Natural Cycle: 150

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.99

Intersection Signal Delay: 48.6

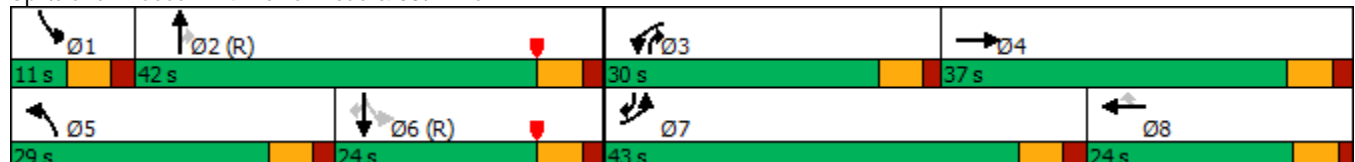
Intersection LOS: D

Intersection Capacity Utilization 85.2%

ICU Level of Service E

Analysis Period (min) 15

Splits and Phases: 4: Tower Road & 38th Ave


























HCM 6th Signalized Intersection Summary

2040 Total PM Scenario 1.syn

4: Tower Road & 38th Ave

06/08/2020
































												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	530	550	185	505	310	60	155	1075	635	25	1330	190
Future Volume (veh/h)	530	550	185	505	310	60	155	1075	635	25	1330	190
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	564	573	201	549	337	65	168	1168	690	27	1430	207
Peak Hour Factor	0.94	0.96	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.93	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	659	632	221	606	801	357	232	1834	847	139	1618	804
Arrive On Green	0.19	0.24	0.24	0.18	0.23	0.23	0.02	0.12	0.12	0.02	0.32	0.32
Sat Flow, veh/h	3456	2581	903	3456	3554	1585	3456	5106	1585	1781	5106	1585
Grp Volume(v), veh/h	564	394	380	549	337	65	168	1168	690	27	1430	207
Grp Sat Flow(s),veh/h/ln	1728	1777	1708	1728	1777	1585	1728	1702	1585	1781	1702	1585
Q Serve(g_s), s	18.9	25.8	25.9	18.7	9.7	4.0	5.8	26.2	39.0	1.2	31.9	8.9
Cycle Q Clear(g_c), s	18.9	25.8	25.9	18.7	9.7	4.0	5.8	26.2	39.0	1.2	31.9	8.9
Prop In Lane	1.00		0.53	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	659	435	418	606	801	357	232	1834	847	139	1618	804
V/C Ratio(X)	0.86	0.91	0.91	0.91	0.42	0.18	0.73	0.64	0.81	0.19	0.88	0.26
Avail Cap(c_a), veh/h	1066	459	441	706	801	357	662	1834	847	169	1618	804
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00
Uniform Delay (d), s/veh	47.0	44.0	44.0	48.5	39.8	37.5	57.6	45.4	30.4	28.5	38.9	16.7
Incr Delay (d2), s/veh	4.0	20.8	21.9	12.9	0.1	0.1	0.5	0.6	3.0	0.7	7.4	0.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.5	13.8	13.4	9.1	4.3	1.6	2.6	12.1	17.1	0.5	14.3	3.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	51.0	64.7	66.0	61.4	39.9	37.6	58.1	46.0	33.3	29.2	46.3	17.5
LnGrp LOS	D	E	E	E	D	D	E	D	C	C	D	B
Approach Vol, veh/h		1338			951			2026			1664	
Approach Delay, s/veh		59.3			52.2			42.7			42.4	
Approach LOS		E			D			D			D	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	9.0	49.1	26.6	35.4	14.0	44.0	28.9	33.1				
Change Period (Y+Rc), s	6.0	6.0	5.5	6.0	6.0	6.0	6.0	* 6				
Max Green Setting (Gmax), s	5.0	36.0	24.5	31.0	23.0	18.0	37.0	* 19				
Max Q Clear Time (g_c+I1), s	3.2	41.0	20.7	27.9	7.8	33.9	20.9	11.7				
Green Ext Time (p_c), s	0.0	0.0	0.4	1.4	0.2	0.0	1.9	0.9				
Intersection Summary												
HCM 6th Ctrl Delay			47.8									
HCM 6th LOS			D									
Notes												
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.												

Timings

2040 Total AM Scenario 2.syn

4: Tower Road & 38th Ave

06/08/2020

											
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 	 	 	 		 	  			  	
Traffic Volume (vph)	200	265	885	770	60	120	780	300	60	1375	690
Future Volume (vph)	200	265	885	770	60	120	780	300	60	1375	690
Turn Type	Prot	NA	Prot	NA	Perm	Prot	NA	pm+ov	pm+pt	NA	pm+ov
Protected Phases	7	4	3	8		5	2	3	1	6	7
Permitted Phases					8			2	6		6
Detector Phase	7	4	3	8	8	5	2	3	1	6	7
Switch Phase											
Minimum Initial (s)	10.0	5.0	3.0	5.0	5.0	5.0	10.0	3.0	5.0	10.0	10.0
Minimum Split (s)	16.0	24.0	9.5	23.5	23.5	36.0	24.0	9.5	11.0	24.0	16.0
Total Split (s)	29.0	24.0	38.0	33.0	33.0	33.0	46.0	38.0	12.0	25.0	29.0
Total Split (%)	24.2%	20.0%	31.7%	27.5%	27.5%	27.5%	38.3%	31.7%	10.0%	20.8%	24.2%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	1.5	1.5	1.5	2.0	2.0	1.5	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	5.5	5.5	5.5	6.0	6.0	5.5	6.0	6.0	6.0
Lead/Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lead	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	C-Min	None	None	C-Min	None
Act Effect Green (s)	22.4	18.0	32.5	28.1	28.1	8.9	42.4	80.9	43.0	37.1	65.5
Actuated g/C Ratio	0.19	0.15	0.27	0.23	0.23	0.07	0.35	0.67	0.36	0.31	0.55
v/c Ratio	0.34	0.78	1.04	1.01	0.13	0.51	0.47	0.29	0.27	0.92	0.76
Control Delay	43.8	52.6	82.0	79.9	0.5	67.2	28.1	2.9	23.6	51.0	19.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	43.8	52.6	82.0	79.9	0.5	67.2	28.1	2.9	23.6	51.0	19.6
LOS	D	D	F	E	A	E	C	A	C	D	B
Approach Delay		49.7		78.2			25.7			39.8	
Approach LOS		D		E			C			D	

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 45 (38%), Referenced to phase 2:NBT and 6:SBTL, Start of Yellow

Natural Cycle: 150

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.04

Intersection Signal Delay: 49.6

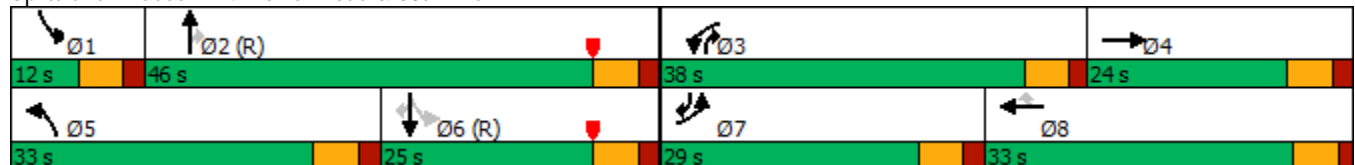
Intersection LOS: D

Intersection Capacity Utilization 87.2%

ICU Level of Service E

Analysis Period (min) 15

Splits and Phases: 4: Tower Road & 38th Ave


























HCM 6th Signalized Intersection Summary

2040 Total AM Scenario 2.syn

4: Tower Road & 38th Ave

06/08/2020
































												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	200	265	135	885	770	60	120	780	300	60	1375	690
Future Volume (veh/h)	200	265	135	885	770	60	120	780	300	60	1375	690
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	217	288	147	962	837	65	130	848	326	65	1447	696
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.95	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	288	333	166	936	1167	520	192	1795	987	225	1700	660
Arrive On Green	0.08	0.14	0.14	0.27	0.33	0.33	0.04	0.24	0.24	0.04	0.33	0.33
Sat Flow, veh/h	3456	2299	1143	3456	3554	1585	3456	5106	1585	1781	5106	1585
Grp Volume(v), veh/h	217	221	214	962	837	65	130	848	326	65	1447	696
Grp Sat Flow(s),veh/h/ln	1728	1777	1665	1728	1777	1585	1728	1702	1585	1781	1702	1585
Q Serve(g_s), s	7.4	14.6	15.1	32.5	24.8	3.4	4.5	17.1	12.7	2.9	31.7	40.0
Cycle Q Clear(g_c), s	7.4	14.6	15.1	32.5	24.8	3.4	4.5	17.1	12.7	2.9	31.7	40.0
Prop In Lane	1.00		0.69	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	288	257	241	936	1167	520	192	1795	987	225	1700	660
V/C Ratio(X)	0.75	0.86	0.89	1.03	0.72	0.12	0.68	0.47	0.33	0.29	0.85	1.05
Avail Cap(c_a), veh/h	662	267	250	936	1167	520	778	1795	987	249	1700	660
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	0.67	0.67	0.67	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	0.78	0.78	0.78	1.00	1.00	1.00
Uniform Delay (d), s/veh	53.8	50.1	50.3	43.8	35.4	28.2	56.7	36.3	12.9	25.8	37.3	35.0
Incr Delay (d2), s/veh	4.0	22.8	29.1	36.7	1.9	0.0	1.2	0.7	0.7	0.7	5.6	50.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.4	8.1	8.2	18.5	11.0	1.3	2.0	7.6	5.1	1.3	13.9	28.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	57.8	72.9	79.4	80.5	37.3	28.3	57.9	37.0	13.6	26.5	42.8	85.4
LnGrp LOS	E	E	E	F	D	C	E	D	B	C	D	F
Approach Vol, veh/h		652			1864			1304			2208	
Approach Delay, s/veh		70.0			59.3			33.2			55.8	
Approach LOS		E			E			C			E	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	10.4	48.2	38.0	23.4	12.7	46.0	16.0	45.4				
Change Period (Y+Rc), s	6.0	6.0	5.5	6.0	6.0	6.0	6.0	* 6				
Max Green Setting (Gmax), s	6.0	40.0	32.5	18.0	27.0	19.0	23.0	* 28				
Max Q Clear Time (g_c+I1), s	4.9	19.1	34.5	17.1	6.5	42.0	9.4	26.8				
Green Ext Time (p_c), s	0.0	12.4	0.0	0.2	0.2	0.0	0.6	0.3				
Intersection Summary												
HCM 6th Ctrl Delay			53.5									
HCM 6th LOS			D									
Notes												
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.												

Timings

2040 Total PM Scenario 2.syn

4: Tower Road & 38th Ave

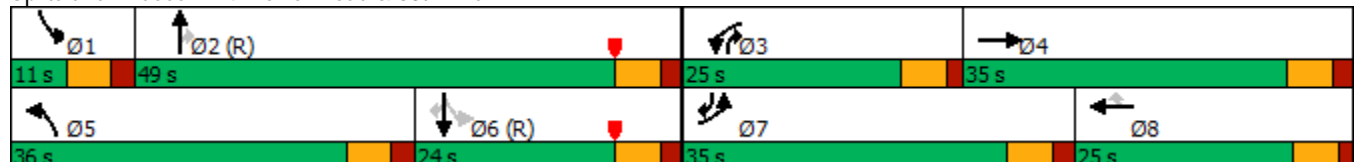
06/08/2020

											
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 	 	 	 		 	  			  	
Traffic Volume (vph)	530	575	510	320	60	155	1075	645	25	1330	190
Future Volume (vph)	530	575	510	320	60	155	1075	645	25	1330	190
Turn Type	Prot	NA	Prot	NA	Perm	Prot	NA	pm+ov	pm+pt	NA	pm+ov
Protected Phases	7	4	3	8		5	2	3	1	6	7
Permitted Phases					8			2	6		6
Detector Phase	7	4	3	8	8	5	2	3	1	6	7
Switch Phase											
Minimum Initial (s)	10.0	5.0	3.0	5.0	5.0	5.0	10.0	3.0	5.0	10.0	10.0
Minimum Split (s)	16.0	24.0	9.5	23.5	23.5	36.0	24.0	9.5	11.0	24.0	16.0
Total Split (s)	35.0	35.0	25.0	25.0	25.0	36.0	49.0	25.0	11.0	24.0	35.0
Total Split (%)	29.2%	29.2%	20.8%	20.8%	20.8%	30.0%	40.8%	20.8%	9.2%	20.0%	29.2%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	1.5	1.5	1.5	2.0	2.0	1.5	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	5.5	5.5	5.5	6.0	6.0	5.5	6.0	6.0	6.0
Lead/Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lead	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	C-Min	None	None	C-Min	None
Act Effect Green (s)	24.9	28.9	19.5	23.5	23.5	10.3	47.5	73.0	42.9	37.8	68.7
Actuated g/C Ratio	0.21	0.24	0.16	0.20	0.20	0.09	0.40	0.61	0.36	0.32	0.57
v/c Ratio	0.79	0.95	0.99	0.50	0.13	0.57	0.58	0.69	0.16	0.89	0.21
Control Delay	53.6	63.3	87.2	46.9	0.5	73.6	25.7	7.6	21.4	47.7	4.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	53.6	63.3	87.2	46.9	0.5	73.6	25.7	7.6	21.4	47.7	4.2
LOS	D	E	F	D	A	E	C	A	C	D	A
Approach Delay		59.3		66.9			23.4			41.9	
Approach LOS		E		E			C			D	

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 50 (42%), Referenced to phase 2:NBT and 6:SBTL, Start of Yellow
Natural Cycle: 150
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.99
Intersection Signal Delay: 43.6
Intersection Capacity Utilization 86.1%
Analysis Period (min) 15
Intersection LOS: D
ICU Level of Service E

Splits and Phases: 4: Tower Road & 38th Ave


























HCM 6th Signalized Intersection Summary

2040 Total PM Scenario 2.syn

4: Tower Road & 38th Ave









06/08/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	530	575	185	510	320	60	155	1075	645	25	1330	190
Future Volume (veh/h)	530	575	185	510	320	60	155	1075	645	25	1330	190
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	564	599	201	554	348	65	168	1168	701	27	1430	207
Peak Hour Factor	0.94	0.96	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.93	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	646	632	212	562	757	338	227	1916	852	170	1707	826
Arrive On Green	0.19	0.24	0.24	0.16	0.21	0.21	0.13	0.75	0.75	0.02	0.33	0.33
Sat Flow, veh/h	3456	2614	876	3456	3554	1585	3456	5106	1585	1781	5106	1585
Grp Volume(v), veh/h	564	407	393	554	348	65	168	1168	701	27	1430	207
Grp Sat Flow(s),veh/h/ln	1728	1777	1713	1728	1777	1585	1728	1702	1585	1781	1702	1585
Q Serve(g_s), s	19.0	27.0	27.1	19.2	10.3	4.0	5.6	12.6	45.0	1.2	31.1	8.6
Cycle Q Clear(g_c), s	19.0	27.0	27.1	19.2	10.3	4.0	5.6	12.6	45.0	1.2	31.1	8.6
Prop In Lane	1.00		0.51	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	646	429	414	562	757	338	227	1916	852	170	1707	826
V/C Ratio(X)	0.87	0.95	0.95	0.99	0.46	0.19	0.74	0.61	0.82	0.16	0.84	0.25
Avail Cap(c_a), veh/h	835	429	414	562	757	338	864	1916	852	200	1707	826
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	0.31	0.31	0.31	1.00	1.00	1.00
Uniform Delay (d), s/veh	47.4	44.7	44.8	50.1	41.2	38.8	51.1	10.9	11.5	25.3	36.9	15.8
Incr Delay (d2), s/veh	8.2	30.4	31.6	34.3	0.2	0.1	0.6	0.5	2.9	0.4	5.1	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.9	15.4	15.1	10.9	4.5	1.6	2.3	3.1	5.0	0.5	13.6	3.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	55.6	75.1	76.4	84.5	41.4	38.9	51.7	11.4	14.4	25.7	42.0	16.5
LnGrp LOS	E	E	E	F	D	D	D	B	B	C	D	B
Approach Vol, veh/h		1364			967			2037			1664	
Approach Delay, s/veh		67.4			65.9			15.7			38.6	
Approach LOS		E			E			B			D	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	9.0	51.0	25.0	35.0	13.9	46.1	28.4	31.6				
Change Period (Y+Rc), s	6.0	6.0	5.5	6.0	6.0	6.0	6.0	* 6				
Max Green Setting (Gmax), s	5.0	43.0	19.5	29.0	30.0	18.0	29.0	* 20				
Max Q Clear Time (g_c+I1), s	3.2	47.0	21.2	29.1	7.6	33.1	21.0	12.3				
Green Ext Time (p_c), s	0.0	0.0	0.0	0.0	0.3	0.0	1.4	1.0				
Intersection Summary												
HCM 6th Ctrl Delay			41.8									
HCM 6th LOS			D									
Notes												
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.												

Timings
5: Airport Blvd & I-70 WB Ramp

2020 Adjusted Existing AM.syn

04/21/2020

				
Lane Group	NBL	NBT	SBT	SBR
Lane Configurations				
Traffic Volume (vph)	545	1565	960	260
Future Volume (vph)	545	1565	960	260
Turn Type	Prot	NA	NA	Free
Protected Phases	5	2	6	
Permitted Phases				Free
Detector Phase	5	2	6	
Switch Phase				
Minimum Initial (s)	5.0	5.0	5.0	
Minimum Split (s)	9.5	24.0	24.0	
Total Split (s)	56.0	120.0	64.0	
Total Split (%)	46.7%	100.0%	53.3%	
Yellow Time (s)	3.5	3.0	4.0	
All-Red Time (s)	1.0	0.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	
Total Lost Time (s)	4.5	3.0	6.0	
Lead/Lag	Lead		Lag	
Lead-Lag Optimize?	Yes		Yes	
Recall Mode	None	C-Max	C-Max	
Act Effect Green (s)	26.3	120.0	83.2	120.0
Actuated g/C Ratio	0.22	1.00	0.69	1.00
v/c Ratio	0.76	0.32	0.29	0.18
Control Delay	50.7	0.2	7.7	0.2
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	50.7	0.2	7.7	0.2
LOS	D	A	A	A
Approach Delay		13.2	6.1	
Approach LOS		B	A	

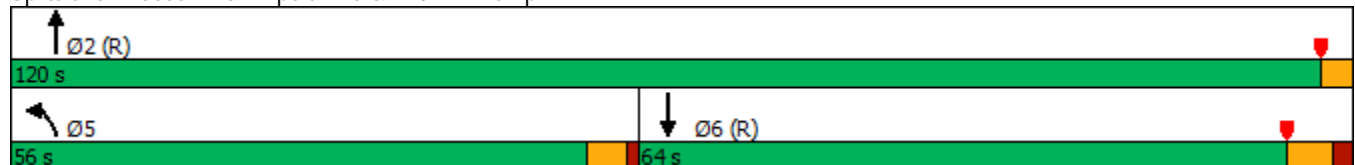
Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Yellow
 Natural Cycle: 40
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.76
 Intersection Signal Delay: 10.6
 Intersection Capacity Utilization 42.8%
 Analysis Period (min) 15

Intersection LOS: B

ICU Level of Service A

Splits and Phases: 5: Airport Blvd & I-70 WB Ramp


















HCM 6th Signalized Intersection Summary

5: Airport Blvd & I-70 WB Ramp

2020 Adjusted Existing AM.syn









04/21/2020

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations			 	  	  	
Traffic Volume (veh/h)	0	0	545	1565	960	260
Future Volume (veh/h)	0	0	545	1565	960	260
Initial Q (Qb), veh			0	0	0	0
Ped-Bike Adj(A_pbT)			1.00			1.00
Parking Bus, Adj			1.00	1.00	1.00	1.00
Work Zone On Approach			No	No		
Adj Sat Flow, veh/h/ln			1870	1870	1870	1870
Adj Flow Rate, veh/h			574	1647	1011	0
Peak Hour Factor			0.95	0.95	0.95	0.95
Percent Heavy Veh, %			2	2	2	2
Cap, veh/h			675	9191	8002	
Arrive On Green			0.20	1.00	1.00	0.00
Sat Flow, veh/h			3456	5274	5274	1585
Grp Volume(v), veh/h			574	1647	1011	0
Grp Sat Flow(s),veh/h/ln			1728	1702	1702	1585
Q Serve(g_s), s			19.2	0.0	0.0	0.0
Cycle Q Clear(g_c), s			19.2	0.0	0.0	0.0
Prop In Lane			1.00			1.00
Lane Grp Cap(c), veh/h			675	9191	8002	
V/C Ratio(X)			0.85	0.18	0.13	
Avail Cap(c_a), veh/h			1483	9191	8002	
HCM Platoon Ratio			1.00	1.00	1.00	1.00
Upstream Filter(I)			1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh			46.6	0.0	0.0	0.0
Incr Delay (d2), s/veh			3.1	0.0	0.0	0.0
Initial Q Delay(d3),s/veh			0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln			8.5	0.0	0.0	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh			49.7	0.0	0.0	0.0
LnGrp LOS			D	A	A	
Approach Vol, veh/h				2221	1011	A
Approach Delay, s/veh				12.9	0.0	
Approach LOS				B	A	
Timer - Assigned Phs		2			5	6
Phs Duration (G+Y+Rc), s		225.0			27.9	197.1
Change Period (Y+Rc), s		* 6			4.5	6.0
Max Green Setting (Gmax), s		* 1.2E2			51.5	58.0
Max Q Clear Time (g_c+I1), s		2.0			21.2	2.0
Green Ext Time (p_c), s		22.8			2.2	9.4
Intersection Summary						
HCM 6th Ctrl Delay			8.9			
HCM 6th LOS			A			
Notes						
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.						
Unsignalized Delay for [SBR] is excluded from calculations of the approach delay and intersection delay.						

Timings
5: Airport Blvd & I-70 WB Ramp

2020 Adjusted Existing PM.syn

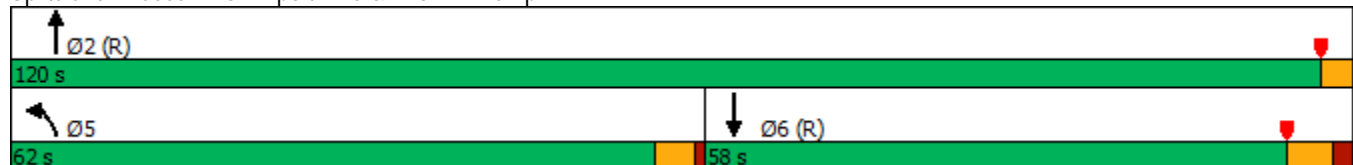
04/21/2020

				
Lane Group	NBL	NBT	SBT	SBR
Lane Configurations				
Traffic Volume (vph)	660	1410	835	170
Future Volume (vph)	660	1410	835	170
Turn Type	Prot	NA	NA	Free
Protected Phases	5	2	6	
Permitted Phases				Free
Detector Phase	5	2	6	
Switch Phase				
Minimum Initial (s)	5.0	5.0	5.0	
Minimum Split (s)	9.5	24.0	24.0	
Total Split (s)	62.0	120.0	58.0	
Total Split (%)	51.7%	100.0%	48.3%	
Yellow Time (s)	3.5	3.0	4.0	
All-Red Time (s)	1.0	0.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	
Total Lost Time (s)	4.5	3.0	6.0	
Lead/Lag	Lead		Lag	
Lead-Lag Optimize?	Yes		Yes	
Recall Mode	None	C-Max	C-Max	
Act Effect Green (s)	31.3	120.0	78.2	120.0
Actuated g/C Ratio	0.26	1.00	0.65	1.00
v/c Ratio	0.78	0.29	0.28	0.12
Control Delay	47.2	0.1	9.7	0.2
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	47.2	0.1	9.7	0.2
LOS	D	A	A	A
Approach Delay		15.2	8.1	
Approach LOS		B	A	

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Yellow
Natural Cycle: 40
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.78
Intersection Signal Delay: 12.8
Intersection Capacity Utilization 43.7%
Analysis Period (min) 15
Intersection LOS: B
ICU Level of Service A

Splits and Phases: 5: Airport Blvd & I-70 WB Ramp




HCM 6th Signalized Intersection Summary

5: Airport Blvd & I-70 WB Ramp

2020 Adjusted Existing PM.syn














04/21/2020

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations			↰↰	↑↑↑	↑↑↑	↰
Traffic Volume (veh/h)	0	0	660	1410	835	170
Future Volume (veh/h)	0	0	660	1410	835	170
Initial Q (Qb), veh			0	0	0	0
Ped-Bike Adj(A_pbT)			1.00			1.00
Parking Bus, Adj			1.00	1.00	1.00	1.00
Work Zone On Approach			No	No		
Adj Sat Flow, veh/h/ln			1870	1870	1870	1870
Adj Flow Rate, veh/h			695	1484	938	0
Peak Hour Factor			0.95	0.95	0.89	0.89
Percent Heavy Veh, %			2	2	2	2
Cap, veh/h			805	9191	7810	
Arrive On Green			0.23	1.00	1.00	0.00
Sat Flow, veh/h			3456	5274	5274	1585
Grp Volume(v), veh/h			695	1484	938	0
Grp Sat Flow(s),veh/h/ln			1728	1702	1702	1585
Q Serve(g_s), s			23.2	0.0	0.0	0.0
Cycle Q Clear(g_c), s			23.2	0.0	0.0	0.0
Prop In Lane			1.00			1.00
Lane Grp Cap(c), veh/h			805	9191	7810	
V/C Ratio(X)			0.86	0.16	0.12	
Avail Cap(c_a), veh/h			1656	9191	7810	
HCM Platoon Ratio			1.00	1.00	1.00	1.00
Upstream Filter(I)			1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh			44.2	0.0	0.0	0.0
Incr Delay (d2), s/veh			2.9	0.0	0.0	0.0
Initial Q Delay(d3),s/veh			0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln			10.2	0.0	0.0	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh			47.1	0.0	0.0	0.0
LnGrp LOS			D	A	A	
Approach Vol, veh/h				2179	938	A
Approach Delay, s/veh				15.1	0.0	
Approach LOS				B	A	
Timer - Assigned Phs		2			5	6
Phs Duration (G+Y+Rc), s		225.0			32.4	192.6
Change Period (Y+Rc), s		* 6			4.5	6.0
Max Green Setting (Gmax), s		* 1.2E2			57.5	52.0
Max Q Clear Time (g_c+I1), s		2.0			25.2	2.0
Green Ext Time (p_c), s		18.4			2.8	8.4
Intersection Summary						
HCM 6th Ctrl Delay			10.5			
HCM 6th LOS			B			
Notes						
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.						
Unsignalized Delay for [SBR] is excluded from calculations of the approach delay and intersection delay.						

Timings 5: Airport Blvd & I-70 WB Ramp

2022 Background AM.syn

05/06/2020

				
Lane Group	NBL	NBT	SBT	SBR
Lane Configurations	 	  	  	
Traffic Volume (vph)	570	1695	1000	280
Future Volume (vph)	570	1695	1000	280
Turn Type	Prot	NA	NA	Free
Protected Phases	5	2	6	
Permitted Phases				Free
Detector Phase	5	2	6	
Switch Phase				
Minimum Initial (s)	5.0	5.0	5.0	
Minimum Split (s)	9.5	24.0	24.0	
Total Split (s)	56.0	120.0	64.0	
Total Split (%)	46.7%	100.0%	53.3%	
Yellow Time (s)	3.5	3.0	4.0	
All-Red Time (s)	1.0	0.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	
Total Lost Time (s)	4.5	3.0	6.0	
Lead/Lag	Lead		Lag	
Lead-Lag Optimize?	Yes		Yes	
Recall Mode	None	C-Max	C-Max	
Act Effect Green (s)	27.2	120.0	82.3	120.0
Actuated g/C Ratio	0.23	1.00	0.69	1.00
v/c Ratio	0.77	0.35	0.30	0.19
Control Delay	50.2	0.2	8.2	0.3
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	50.2	0.2	8.2	0.3
LOS	D	A	A	A
Approach Delay		12.8	6.5	
Approach LOS		B	A	

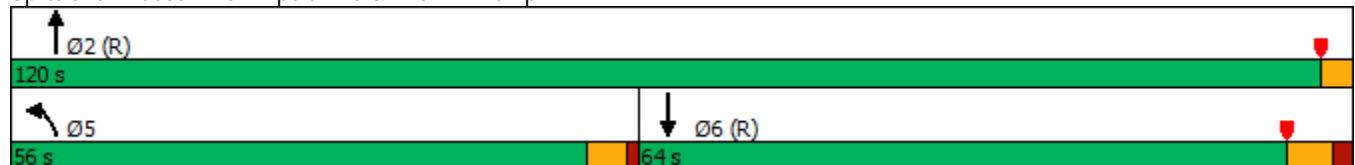
Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Yellow
Natural Cycle: 40
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.77
Intersection Signal Delay: 10.5
Intersection Capacity Utilization 44.3%
Analysis Period (min) 15

Intersection LOS: B

ICU Level of Service A

Splits and Phases: 5: Airport Blvd & I-70 WB Ramp




HCM 6th Signalized Intersection Summary

5: Airport Blvd & I-70 WB Ramp

2022 Background AM.syn














05/06/2020

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations			↰↰	↑↑↑	↑↑↑	↰
Traffic Volume (veh/h)	0	0	570	1695	1000	280
Future Volume (veh/h)	0	0	570	1695	1000	280
Initial Q (Qb), veh			0	0	0	0
Ped-Bike Adj(A_pbT)			1.00			1.00
Parking Bus, Adj			1.00	1.00	1.00	1.00
Work Zone On Approach			No	No		
Adj Sat Flow, veh/h/ln			1870	1870	1870	1870
Adj Flow Rate, veh/h			600	1784	1053	0
Peak Hour Factor			0.95	0.95	0.95	0.95
Percent Heavy Veh, %			2	2	2	2
Cap, veh/h			703	9191	7961	
Arrive On Green			0.20	1.00	1.00	0.00
Sat Flow, veh/h			3456	5274	5274	1585
Grp Volume(v), veh/h			600	1784	1053	0
Grp Sat Flow(s),veh/h/ln			1728	1702	1702	1585
Q Serve(g_s), s			20.1	0.0	0.0	0.0
Cycle Q Clear(g_c), s			20.1	0.0	0.0	0.0
Prop In Lane			1.00			1.00
Lane Grp Cap(c), veh/h			703	9191	7961	
V/C Ratio(X)			0.85	0.19	0.13	
Avail Cap(c_a), veh/h			1483	9191	7961	
HCM Platoon Ratio			1.00	1.00	1.00	1.00
Upstream Filter(I)			1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh			46.1	0.0	0.0	0.0
Incr Delay (d2), s/veh			3.1	0.0	0.0	0.0
Initial Q Delay(d3),s/veh			0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln			8.9	0.0	0.0	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh			49.2	0.0	0.0	0.0
LnGrp LOS			D	A	A	
Approach Vol, veh/h				2384	1053	A
Approach Delay, s/veh				12.4	0.0	
Approach LOS				B	A	
Timer - Assigned Phs		2			5	6
Phs Duration (G+Y+Rc), s		225.0			28.9	196.1
Change Period (Y+Rc), s		* 6			4.5	6.0
Max Green Setting (Gmax), s		* 1.2E2			51.5	58.0
Max Q Clear Time (g_c+I1), s		2.0			22.1	2.0
Green Ext Time (p_c), s		27.3			2.3	10.0
Intersection Summary						
HCM 6th Ctrl Delay			8.6			
HCM 6th LOS			A			
Notes						
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.						
Unsignalized Delay for [SBR] is excluded from calculations of the approach delay and intersection delay.						

Timings 5: Airport Blvd & I-70 WB Ramp

2022 Background PM.syn

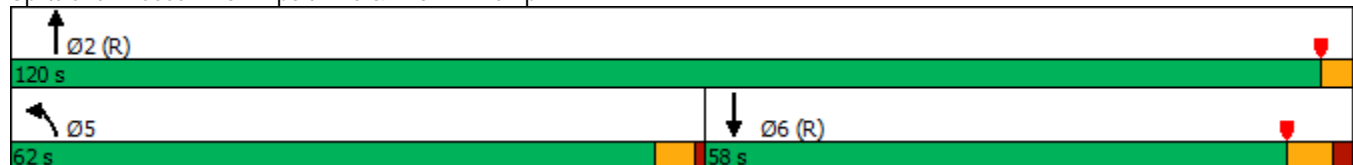
05/06/2020

				
Lane Group	NBL	NBT	SBT	SBR
Lane Configurations	 	  	  	
Traffic Volume (vph)	685	1490	885	220
Future Volume (vph)	685	1490	885	220
Turn Type	Prot	NA	NA	Free
Protected Phases	5	2	6	
Permitted Phases				Free
Detector Phase	5	2	6	
Switch Phase				
Minimum Initial (s)	5.0	5.0	5.0	
Minimum Split (s)	9.5	24.0	24.0	
Total Split (s)	62.0	120.0	58.0	
Total Split (%)	51.7%	100.0%	48.3%	
Yellow Time (s)	3.5	3.0	4.0	
All-Red Time (s)	1.0	0.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	
Total Lost Time (s)	4.5	3.0	6.0	
Lead/Lag	Lead		Lag	
Lead-Lag Optimize?	Yes		Yes	
Recall Mode	None	C-Max	C-Max	
Act Effect Green (s)	32.4	120.0	77.1	120.0
Actuated g/C Ratio	0.27	1.00	0.64	1.00
v/c Ratio	0.78	0.31	0.30	0.16
Control Delay	46.4	0.2	10.4	0.2
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	46.4	0.2	10.4	0.2
LOS	D	A	B	A
Approach Delay		14.7	8.4	
Approach LOS		B	A	

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Yellow
Natural Cycle: 40
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.78
Intersection Signal Delay: 12.5
Intersection Capacity Utilization 45.4%
Analysis Period (min) 15
Intersection LOS: B
ICU Level of Service A

Splits and Phases: 5: Airport Blvd & I-70 WB Ramp



HCM 6th Signalized Intersection Summary

5: Airport Blvd & I-70 WB Ramp

2022 Background PM.syn

05/06/2020



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations			↰↰	↑↑↑	↑↑↑	↰
Traffic Volume (veh/h)	0	0	685	1490	885	220
Future Volume (veh/h)	0	0	685	1490	885	220
Initial Q (Qb), veh			0	0	0	0
Ped-Bike Adj(A_pbT)			1.00			1.00
Parking Bus, Adj			1.00	1.00	1.00	1.00
Work Zone On Approach			No	No		
Adj Sat Flow, veh/h/ln			1870	1870	1870	1870
Adj Flow Rate, veh/h			721	1568	994	0
Peak Hour Factor			0.95	0.95	0.89	0.89
Percent Heavy Veh, %			2	2	2	2
Cap, veh/h			833	9191	7769	
Arrive On Green			0.24	1.00	1.00	0.00
Sat Flow, veh/h			3456	5274	5274	1585
Grp Volume(v), veh/h			721	1568	994	0
Grp Sat Flow(s),veh/h/ln			1728	1702	1702	1585
Q Serve(g_s), s			24.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s			24.0	0.0	0.0	0.0
Prop In Lane			1.00			1.00
Lane Grp Cap(c), veh/h			833	9191	7769	
V/C Ratio(X)			0.87	0.17	0.13	
Avail Cap(c_a), veh/h			1656	9191	7769	
HCM Platoon Ratio			1.00	1.00	1.00	1.00
Upstream Filter(I)			1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh			43.7	0.0	0.0	0.0
Incr Delay (d2), s/veh			2.9	0.0	0.0	0.0
Initial Q Delay(d3),s/veh			0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln			10.5	0.0	0.0	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh			46.6	0.0	0.0	0.0
LnGrp LOS			D	A	A	
Approach Vol, veh/h				2289	994	A
Approach Delay, s/veh				14.7	0.0	
Approach LOS				B	A	
Timer - Assigned Phs		2			5	6
Phs Duration (G+Y+Rc), s		225.0			33.4	191.6
Change Period (Y+Rc), s		* 6			4.5	6.0
Max Green Setting (Gmax), s		* 1.2E2			57.5	52.0
Max Q Clear Time (g_c+I1), s		2.0			26.0	2.0
Green Ext Time (p_c), s		20.5			2.9	9.1
Intersection Summary						
HCM 6th Ctrl Delay			10.3			
HCM 6th LOS			B			

Notes














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

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

Timings
5: Airport Blvd & I-70 WB Ramp

2022 Total AM.syn

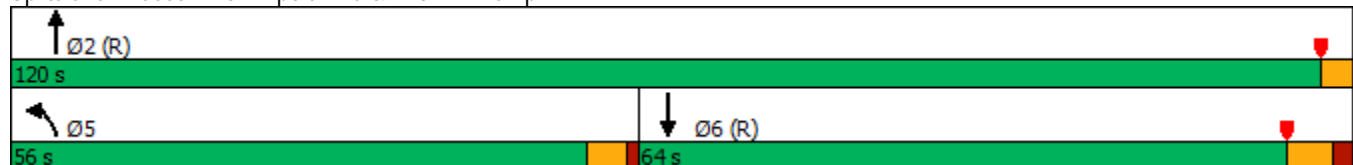
06/08/2020

				
Lane Group	NBL	NBT	SBT	SBR
Lane Configurations	 	  	  	
Traffic Volume (vph)	570	1825	1020	300
Future Volume (vph)	570	1825	1020	300
Turn Type	Prot	NA	NA	Free
Protected Phases	5	2	6	
Permitted Phases				Free
Detector Phase	5	2	6	
Switch Phase				
Minimum Initial (s)	5.0	5.0	5.0	
Minimum Split (s)	9.5	24.0	24.0	
Total Split (s)	56.0	120.0	64.0	
Total Split (%)	46.7%	100.0%	53.3%	
Yellow Time (s)	3.5	3.0	4.0	
All-Red Time (s)	1.0	0.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	
Total Lost Time (s)	4.5	3.0	6.0	
Lead/Lag	Lead		Lag	
Lead-Lag Optimize?	Yes		Yes	
Recall Mode	None	C-Max	C-Max	
Act Effect Green (s)	27.2	120.0	82.3	120.0
Actuated g/C Ratio	0.23	1.00	0.69	1.00
v/c Ratio	0.77	0.38	0.31	0.20
Control Delay	50.2	0.2	8.3	0.3
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	50.2	0.2	8.3	0.3
LOS	D	A	A	A
Approach Delay		12.1	6.4	
Approach LOS		B	A	

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Yellow
Natural Cycle: 40
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.77
Intersection Signal Delay: 10.1
Intersection Capacity Utilization 44.7%
Analysis Period (min) 15
Intersection LOS: B
ICU Level of Service A

Splits and Phases: 5: Airport Blvd & I-70 WB Ramp




HCM 6th Signalized Intersection Summary

5: Airport Blvd & I-70 WB Ramp

2022 Total AM.syn









06/08/2020

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations			↰↰	↑↑↑	↑↑↑	↰
Traffic Volume (veh/h)	0	0	570	1825	1020	300
Future Volume (veh/h)	0	0	570	1825	1020	300
Initial Q (Qb), veh			0	0	0	0
Ped-Bike Adj(A_pbT)			1.00			1.00
Parking Bus, Adj			1.00	1.00	1.00	1.00
Work Zone On Approach			No	No		
Adj Sat Flow, veh/h/ln			1870	1870	1870	1870
Adj Flow Rate, veh/h			600	1921	1074	0
Peak Hour Factor			0.95	0.95	0.95	0.95
Percent Heavy Veh, %			2	2	2	2
Cap, veh/h			703	9191	7961	
Arrive On Green			0.20	1.00	1.00	0.00
Sat Flow, veh/h			3456	5274	5274	1585
Grp Volume(v), veh/h			600	1921	1074	0
Grp Sat Flow(s),veh/h/ln			1728	1702	1702	1585
Q Serve(g_s), s			20.1	0.0	0.0	0.0
Cycle Q Clear(g_c), s			20.1	0.0	0.0	0.0
Prop In Lane			1.00			1.00
Lane Grp Cap(c), veh/h			703	9191	7961	
V/C Ratio(X)			0.85	0.21	0.13	
Avail Cap(c_a), veh/h			1483	9191	7961	
HCM Platoon Ratio			1.00	1.00	1.00	1.00
Upstream Filter(I)			1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh			46.1	0.0	0.0	0.0
Incr Delay (d2), s/veh			3.1	0.1	0.0	0.0
Initial Q Delay(d3),s/veh			0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln			8.9	0.0	0.0	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh			49.2	0.1	0.0	0.0
LnGrp LOS			D	A	A	
Approach Vol, veh/h				2521	1074	A
Approach Delay, s/veh				11.7	0.0	
Approach LOS				B	A	
Timer - Assigned Phs		2			5	6
Phs Duration (G+Y+Rc), s		225.0			28.9	196.1
Change Period (Y+Rc), s		* 6			4.5	6.0
Max Green Setting (Gmax), s		* 1.2E2			51.5	58.0
Max Q Clear Time (g_c+I1), s		2.0			22.1	2.0
Green Ext Time (p_c), s		32.5			2.3	10.3
Intersection Summary						
HCM 6th Ctrl Delay			8.2			
HCM 6th LOS			A			
Notes						
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.						
Unsignalized Delay for [SBR] is excluded from calculations of the approach delay and intersection delay.						

Timings 5: Airport Blvd & I-70 WB Ramp

2022 Total PM.syn

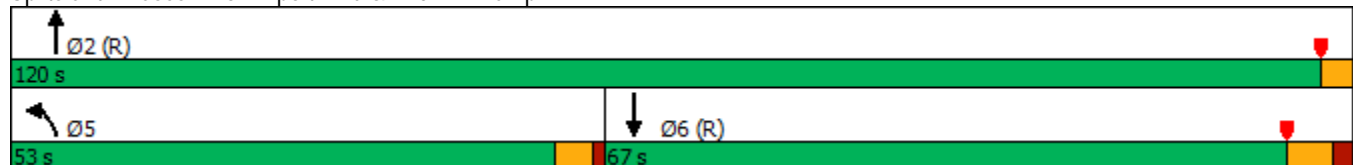
06/08/2020

				
Lane Group	NBL	NBT	SBT	SBR
Lane Configurations				
Traffic Volume (vph)	685	1545	920	255
Future Volume (vph)	685	1545	920	255
Turn Type	Prot	NA	NA	Free
Protected Phases	5	2	6	
Permitted Phases				Free
Detector Phase	5	2	6	
Switch Phase				
Minimum Initial (s)	5.0	5.0	5.0	
Minimum Split (s)	9.5	24.0	24.0	
Total Split (s)	53.0	120.0	67.0	
Total Split (%)	44.2%	100.0%	55.8%	
Yellow Time (s)	3.5	3.0	4.0	
All-Red Time (s)	1.0	0.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	
Total Lost Time (s)	4.5	3.0	6.0	
Lead/Lag	Lead		Lag	
Lead-Lag Optimize?	Yes		Yes	
Recall Mode	None	C-Max	C-Max	
Act Effect Green (s)	31.7	120.0	77.8	120.0
Actuated g/C Ratio	0.26	1.00	0.65	1.00
v/c Ratio	0.79	0.32	0.31	0.18
Control Delay	47.8	0.2	10.2	0.3
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	47.8	0.2	10.2	0.3
LOS	D	A	B	A
Approach Delay		14.8	8.0	
Approach LOS		B	A	

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Yellow
Natural Cycle: 40
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.79
Intersection Signal Delay: 12.4
Intersection Capacity Utilization 46.1%
Analysis Period (min) 15
Intersection LOS: B
ICU Level of Service A

Splits and Phases: 5: Airport Blvd & I-70 WB Ramp








HCM 6th Signalized Intersection Summary

5: Airport Blvd & I-70 WB Ramp

2022 Total PM.syn














06/08/2020

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	0	685	1545	920	255
Future Volume (veh/h)	0	0	685	1545	920	255
Initial Q (Qb), veh			0	0	0	0
Ped-Bike Adj(A_pbT)			1.00			1.00
Parking Bus, Adj			1.00	1.00	1.00	1.00
Work Zone On Approach			No	No		
Adj Sat Flow, veh/h/ln			1870	1870	1870	1870
Adj Flow Rate, veh/h			721	1626	1034	0
Peak Hour Factor			0.95	0.95	0.89	0.89
Percent Heavy Veh, %			2	2	2	2
Cap, veh/h			830	9191	7773	
Arrive On Green			0.24	1.00	1.00	0.00
Sat Flow, veh/h			3456	5274	5274	1585
Grp Volume(v), veh/h			721	1626	1034	0
Grp Sat Flow(s),veh/h/ln			1728	1702	1702	1585
Q Serve(g_s), s			24.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s			24.0	0.0	0.0	0.0
Prop In Lane			1.00			1.00
Lane Grp Cap(c), veh/h			830	9191	7773	
V/C Ratio(X)			0.87	0.18	0.13	
Avail Cap(c_a), veh/h			1397	9191	7773	
HCM Platoon Ratio			1.00	1.00	1.00	1.00
Upstream Filter(I)			1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh			43.8	0.0	0.0	0.0
Incr Delay (d2), s/veh			3.3	0.0	0.0	0.0
Initial Q Delay(d3),s/veh			0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln			10.6	0.0	0.0	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh			47.1	0.0	0.0	0.0
LnGrp LOS			D	A	A	
Approach Vol, veh/h				2347	1034	A
Approach Delay, s/veh				14.5	0.0	
Approach LOS				B	A	
Timer - Assigned Phs		2			5	6
Phs Duration (G+Y+Rc), s		225.0			33.3	191.7
Change Period (Y+Rc), s		* 6			4.5	6.0
Max Green Setting (Gmax), s		* 1.2E2			48.5	61.0
Max Q Clear Time (g_c+I1), s		2.0			26.0	2.0
Green Ext Time (p_c), s		22.2			2.8	9.7
Intersection Summary						
HCM 6th Ctrl Delay			10.1			
HCM 6th LOS			B			
Notes						
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.						
Unsignalized Delay for [SBR] is excluded from calculations of the approach delay and intersection delay.						

Timings 5: Airport Blvd & I-70 WB Ramp

2040 Background AM.syn

05/06/2020

				
Lane Group	NBL	NBT	SBT	SBR
Lane Configurations	 	  	  	
Traffic Volume (vph)	810	2445	1440	415
Future Volume (vph)	810	2445	1440	415
Turn Type	Prot	NA	NA	Free
Protected Phases	5	2	6	
Permitted Phases				Free
Detector Phase	5	2	6	
Switch Phase				
Minimum Initial (s)	5.0	5.0	5.0	
Minimum Split (s)	9.5	24.0	24.0	
Total Split (s)	56.0	120.0	64.0	
Total Split (%)	46.7%	100.0%	53.3%	
Yellow Time (s)	3.5	3.0	4.0	
All-Red Time (s)	1.0	0.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	
Total Lost Time (s)	4.5	3.0	6.0	
Lead/Lag	Lead		Lag	
Lead-Lag Optimize?	Yes		Yes	
Recall Mode	None	C-Max	C-Max	
Act Effect Green (s)	36.9	120.0	72.6	120.0
Actuated g/C Ratio	0.31	1.00	0.60	1.00
v/c Ratio	0.81	0.51	0.49	0.28
Control Delay	44.5	0.4	14.7	0.4
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	44.5	0.4	14.7	0.4
LOS	D	A	B	A
Approach Delay		11.3	11.5	
Approach LOS		B	B	

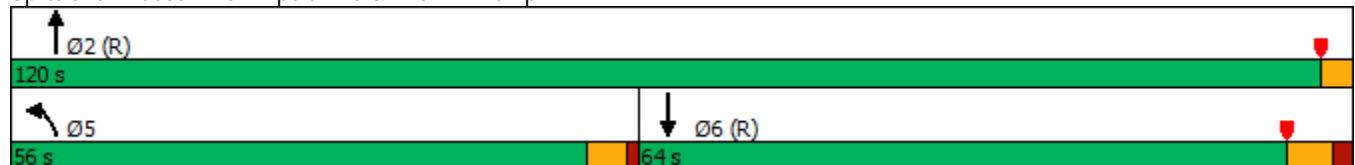
Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Yellow
 Natural Cycle: 45
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.81
 Intersection Signal Delay: 11.4
 Intersection Capacity Utilization 59.7%
 Analysis Period (min) 15

Intersection LOS: B

ICU Level of Service B






Splits and Phases: 5: Airport Blvd & I-70 WB Ramp



HCM 6th Signalized Intersection Summary 5: Airport Blvd & I-70 WB Ramp

2040 Background AM.syn









05/06/2020

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	0	810	2445	1440	415
Future Volume (veh/h)	0	0	810	2445	1440	415
Initial Q (Qb), veh			0	0	0	0
Ped-Bike Adj(A_pbT)			1.00			1.00
Parking Bus, Adj			1.00	1.00	1.00	1.00
Work Zone On Approach			No	No		
Adj Sat Flow, veh/h/ln			1870	1870	1870	1870
Adj Flow Rate, veh/h			853	2574	1516	0
Peak Hour Factor			0.95	0.95	0.95	0.95
Percent Heavy Veh, %			2	2	2	2
Cap, veh/h			969	9191	7567	
Arrive On Green			0.28	1.00	1.00	0.00
Sat Flow, veh/h			3456	5274	5274	1585
Grp Volume(v), veh/h			853	2574	1516	0
Grp Sat Flow(s),veh/h/ln			1728	1702	1702	1585
Q Serve(g_s), s			28.3	0.0	0.0	0.0
Cycle Q Clear(g_c), s			28.3	0.0	0.0	0.0
Prop In Lane			1.00			1.00
Lane Grp Cap(c), veh/h			969	9191	7567	
V/C Ratio(X)			0.88	0.28	0.20	
Avail Cap(c_a), veh/h			1483	9191	7567	
HCM Platoon Ratio			1.00	1.00	1.00	1.00
Upstream Filter(I)			1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh			41.2	0.0	0.0	0.0
Incr Delay (d2), s/veh			4.2	0.1	0.1	0.0
Initial Q Delay(d3),s/veh			0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln			12.5	0.1	0.0	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh			45.4	0.1	0.1	0.0
LnGrp LOS			D	A	A	
Approach Vol, veh/h				3427	1516	A
Approach Delay, s/veh				11.4	0.1	
Approach LOS				B	A	
Timer - Assigned Phs		2			5	6
Phs Duration (G+Y+Rc), s		225.0			38.2	186.8
Change Period (Y+Rc), s		* 6			4.5	6.0
Max Green Setting (Gmax), s		* 1.2E2			51.5	58.0
Max Q Clear Time (g_c+I1), s		2.0			30.3	2.0
Green Ext Time (p_c), s		66.0			3.4	17.7
Intersection Summary						
HCM 6th Ctrl Delay			7.9			
HCM 6th LOS			A			
Notes						
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.						
Unsignalized Delay for [SBR] is excluded from calculations of the approach delay and intersection delay.						

Timings
5: Airport Blvd & I-70 WB Ramp

2040 Background PM.syn

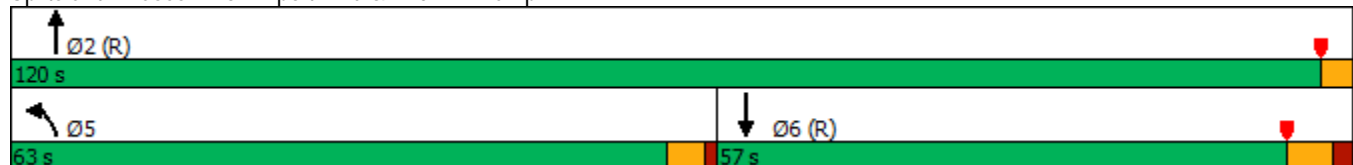
05/06/2020

				
Lane Group	NBL	NBT	SBT	SBR
Lane Configurations				
Traffic Volume (vph)	980	2185	1280	345
Future Volume (vph)	980	2185	1280	345
Turn Type	Prot	NA	NA	Free
Protected Phases	5	2	6	
Permitted Phases				Free
Detector Phase	5	2	6	
Switch Phase				
Minimum Initial (s)	5.0	5.0	5.0	
Minimum Split (s)	9.5	24.0	24.0	
Total Split (s)	63.0	120.0	57.0	
Total Split (%)	52.5%	100.0%	47.5%	
Yellow Time (s)	3.5	3.0	4.0	
All-Red Time (s)	1.0	0.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	
Total Lost Time (s)	4.5	3.0	6.0	
Lead/Lag	Lead		Lag	
Lead-Lag Optimize?	Yes		Yes	
Recall Mode	None	C-Max	C-Max	
Act Effect Green (s)	44.7	120.0	64.8	120.0
Actuated g/C Ratio	0.37	1.00	0.54	1.00
v/c Ratio	0.81	0.45	0.51	0.24
Control Delay	38.9	0.3	19.1	0.4
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	38.9	0.3	19.1	0.4
LOS	D	A	B	A
Approach Delay		12.2	15.2	
Approach LOS		B	B	

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Yellow
 Natural Cycle: 50
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.81
 Intersection Signal Delay: 13.2
 Intersection LOS: B
 Intersection Capacity Utilization 61.4%
 ICU Level of Service B
 Analysis Period (min) 15

Splits and Phases: 5: Airport Blvd & I-70 WB Ramp




HCM 6th Signalized Intersection Summary

5: Airport Blvd & I-70 WB Ramp

2040 Background PM.syn









05/06/2020

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations			↰↰	↑↑↑	↑↑↑	↰
Traffic Volume (veh/h)	0	0	980	2185	1280	345
Future Volume (veh/h)	0	0	980	2185	1280	345
Initial Q (Qb), veh			0	0	0	0
Ped-Bike Adj(A_pbT)			1.00			1.00
Parking Bus, Adj			1.00	1.00	1.00	1.00
Work Zone On Approach			No	No		
Adj Sat Flow, veh/h/ln			1870	1870	1870	1870
Adj Flow Rate, veh/h			1032	2300	1391	0
Peak Hour Factor			0.95	0.95	0.92	0.92
Percent Heavy Veh, %			2	2	2	2
Cap, veh/h			1160	9191	7285	
Arrive On Green			0.34	1.00	1.00	0.00
Sat Flow, veh/h			3456	5274	5274	1585
Grp Volume(v), veh/h			1032	2300	1391	0
Grp Sat Flow(s),veh/h/ln			1728	1702	1702	1585
Q Serve(g_s), s			33.9	0.0	0.0	0.0
Cycle Q Clear(g_c), s			33.9	0.0	0.0	0.0
Prop In Lane			1.00			1.00
Lane Grp Cap(c), veh/h			1160	9191	7285	
V/C Ratio(X)			0.89	0.25	0.19	
Avail Cap(c_a), veh/h			1685	9191	7285	
HCM Platoon Ratio			1.00	1.00	1.00	1.00
Upstream Filter(I)			1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh			37.8	0.0	0.0	0.0
Incr Delay (d2), s/veh			4.5	0.1	0.1	0.0
Initial Q Delay(d3),s/veh			0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln			14.9	0.1	0.0	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh			42.3	0.1	0.1	0.0
LnGrp LOS			D	A	A	
Approach Vol, veh/h				3332	1391	A
Approach Delay, s/veh				13.1	0.1	
Approach LOS				B	A	
Timer - Assigned Phs		2			5	6
Phs Duration (G+Y+Rc), s		225.0			44.8	180.2
Change Period (Y+Rc), s		* 6			4.5	6.0
Max Green Setting (Gmax), s		* 1.2E2			58.5	51.0
Max Q Clear Time (g_c+I1), s		2.0			35.9	2.0
Green Ext Time (p_c), s		50.7			4.3	14.9
Intersection Summary						
HCM 6th Ctrl Delay			9.3			
HCM 6th LOS			A			
Notes						
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.						
Unsignalized Delay for [SBR] is excluded from calculations of the approach delay and intersection delay.						

Timings
5: Airport Blvd & I-70 WB Ramp

2040 Total AM Scenario 1.syn

06/08/2020

				
Lane Group	NBL	NBT	SBT	SBR
Lane Configurations				
Traffic Volume (vph)	810	2575	1460	435
Future Volume (vph)	810	2575	1460	435
Turn Type	Prot	NA	NA	Free
Protected Phases	5	2	6	
Permitted Phases				Free
Detector Phase	5	2	6	
Switch Phase				
Minimum Initial (s)	5.0	5.0	5.0	
Minimum Split (s)	9.5	24.0	24.0	
Total Split (s)	56.0	120.0	64.0	
Total Split (%)	46.7%	100.0%	53.3%	
Yellow Time (s)	3.5	3.0	4.0	
All-Red Time (s)	1.0	0.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	
Total Lost Time (s)	4.5	3.0	6.0	
Lead/Lag	Lead		Lag	
Lead-Lag Optimize?	Yes		Yes	
Recall Mode	None	C-Max	C-Max	
Act Effect Green (s)	36.9	120.0	72.6	120.0
Actuated g/C Ratio	0.31	1.00	0.60	1.00
v/c Ratio	0.81	0.53	0.50	0.29
Control Delay	44.5	0.4	14.8	0.5
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	44.5	0.4	14.8	0.5
LOS	D	A	B	A
Approach Delay		11.0	11.5	
Approach LOS		B	B	

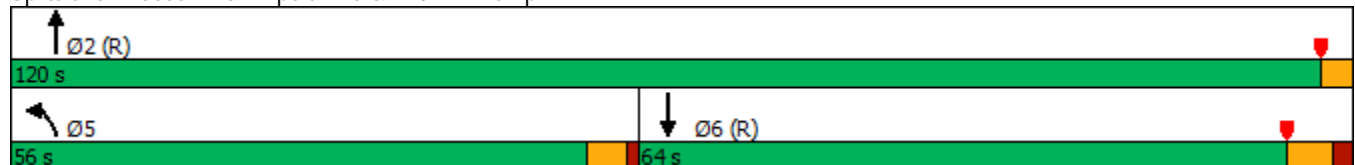
Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Yellow
 Natural Cycle: 45
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.81
 Intersection Signal Delay: 11.2
 Intersection Capacity Utilization 60.1%
 Analysis Period (min) 15

Intersection LOS: B

ICU Level of Service B
















Splits and Phases: 5: Airport Blvd & I-70 WB Ramp



HCM 6th Signalized Intersection Summary 5: Airport Blvd & I-70 WB Ramp

2040 Total AM Scenario 1.syn









06/08/2020

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations			 	  	  	
Traffic Volume (veh/h)	0	0	810	2575	1460	435
Future Volume (veh/h)	0	0	810	2575	1460	435
Initial Q (Qb), veh			0	0	0	0
Ped-Bike Adj(A_pbT)			1.00			1.00
Parking Bus, Adj			1.00	1.00	1.00	1.00
Work Zone On Approach				No	No	
Adj Sat Flow, veh/h/ln			1870	1870	1870	1870
Adj Flow Rate, veh/h			853	2711	1537	0
Peak Hour Factor			0.95	0.95	0.95	0.95
Percent Heavy Veh, %			2	2	2	2
Cap, veh/h			969	9191	7567	
Arrive On Green			0.28	1.00	1.00	0.00
Sat Flow, veh/h			3456	5274	5274	1585
Grp Volume(v), veh/h			853	2711	1537	0
Grp Sat Flow(s),veh/h/ln			1728	1702	1702	1585
Q Serve(g_s), s			28.3	0.0	0.0	0.0
Cycle Q Clear(g_c), s			28.3	0.0	0.0	0.0
Prop In Lane			1.00			1.00
Lane Grp Cap(c), veh/h			969	9191	7567	
V/C Ratio(X)			0.88	0.29	0.20	
Avail Cap(c_a), veh/h			1483	9191	7567	
HCM Platoon Ratio			1.00	1.00	1.00	1.00
Upstream Filter(I)			1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh			41.2	0.0	0.0	0.0
Incr Delay (d2), s/veh			4.2	0.1	0.1	0.0
Initial Q Delay(d3),s/veh			0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln			12.5	0.1	0.0	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh			45.4	0.1	0.1	0.0
LnGrp LOS			D	A	A	
Approach Vol, veh/h				3564	1537	A
Approach Delay, s/veh				10.9	0.1	
Approach LOS				B	A	
Timer - Assigned Phs	2				5	6
Phs Duration (G+Y+Rc), s	225.0				38.2	186.8
Change Period (Y+Rc), s	* 6				4.5	6.0
Max Green Setting (Gmax), s	* 1.2E2				51.5	58.0
Max Q Clear Time (g_c+I1), s	2.0				30.3	2.0
Green Ext Time (p_c), s	73.6				3.4	18.1
Intersection Summary						
HCM 6th Ctrl Delay			7.7			
HCM 6th LOS			A			
Notes						
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.						
Unsignalized Delay for [SBR] is excluded from calculations of the approach delay and intersection delay.						

Timings
5: Airport Blvd & I-70 WB Ramp

2040 Total PM Scenario 1.syn

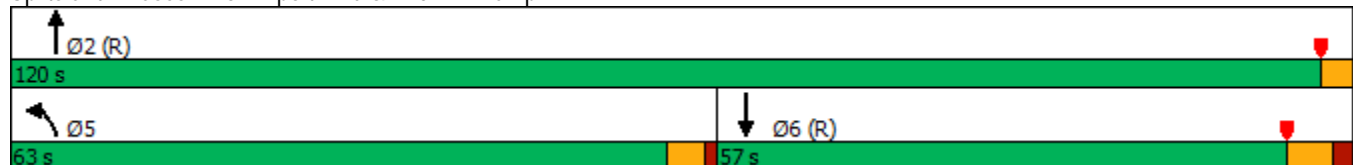
06/08/2020

				
Lane Group	NBL	NBT	SBT	SBR
Lane Configurations				
Traffic Volume (vph)	980	2240	1315	380
Future Volume (vph)	980	2240	1315	380
Turn Type	Prot	NA	NA	Free
Protected Phases	5	2	6	
Permitted Phases				Free
Detector Phase	5	2	6	
Switch Phase				
Minimum Initial (s)	5.0	5.0	5.0	
Minimum Split (s)	9.5	24.0	24.0	
Total Split (s)	63.0	120.0	57.0	
Total Split (%)	52.5%	100.0%	47.5%	
Yellow Time (s)	3.5	3.0	4.0	
All-Red Time (s)	1.0	0.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	
Total Lost Time (s)	4.5	3.0	6.0	
Lead/Lag	Lead		Lag	
Lead-Lag Optimize?	Yes		Yes	
Recall Mode	None	C-Max	C-Max	
Act Effect Green (s)	44.7	120.0	64.8	120.0
Actuated g/C Ratio	0.37	1.00	0.54	1.00
v/c Ratio	0.81	0.46	0.52	0.26
Control Delay	38.9	0.3	19.4	0.4
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	38.9	0.3	19.4	0.4
LOS	D	A	B	A
Approach Delay		12.0	15.1	
Approach LOS		B	B	

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Yellow
 Natural Cycle: 50
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.81
 Intersection Signal Delay: 13.1
 Intersection Capacity Utilization 62.1%
 Analysis Period (min) 15
 Intersection LOS: B
 ICU Level of Service B


Splits and Phases: 5: Airport Blvd & I-70 WB Ramp



HCM 6th Signalized Intersection Summary 5: Airport Blvd & I-70 WB Ramp

2040 Total PM Scenario 1.syn





























06/08/2020

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations			↗↘	↑↑↑	↑↑↑	↗
Traffic Volume (veh/h)	0	0	980	2240	1315	380
Future Volume (veh/h)	0	0	980	2240	1315	380
Initial Q (Qb), veh			0	0	0	0
Ped-Bike Adj(A_pbT)			1.00			1.00
Parking Bus, Adj			1.00	1.00	1.00	1.00
Work Zone On Approach				No	No	
Adj Sat Flow, veh/h/ln			1870	1870	1870	1870
Adj Flow Rate, veh/h			1032	2358	1429	0
Peak Hour Factor			0.95	0.95	0.92	0.92
Percent Heavy Veh, %			2	2	2	2
Cap, veh/h			1160	9191	7285	
Arrive On Green			0.34	1.00	1.00	0.00
Sat Flow, veh/h			3456	5274	5274	1585
Grp Volume(v), veh/h			1032	2358	1429	0
Grp Sat Flow(s),veh/h/ln			1728	1702	1702	1585
Q Serve(g_s), s			33.9	0.0	0.0	0.0
Cycle Q Clear(g_c), s			33.9	0.0	0.0	0.0
Prop In Lane			1.00			1.00
Lane Grp Cap(c), veh/h			1160	9191	7285	
V/C Ratio(X)			0.89	0.26	0.20	
Avail Cap(c_a), veh/h			1685	9191	7285	
HCM Platoon Ratio			1.00	1.00	1.00	1.00
Upstream Filter(I)			1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh			37.8	0.0	0.0	0.0
Incr Delay (d2), s/veh			4.5	0.1	0.1	0.0
Initial Q Delay(d3),s/veh			0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln			14.9	0.1	0.0	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh			42.3	0.1	0.1	0.0
LnGrp LOS			D	A	A	
Approach Vol, veh/h				3390	1429	A
Approach Delay, s/veh				12.9	0.1	
Approach LOS				B	A	
Timer - Assigned Phs	2				5	6
Phs Duration (G+Y+Rc), s	225.0				44.8	180.2
Change Period (Y+Rc), s	* 6				4.5	6.0
Max Green Setting (Gmax), s	* 1.2E2				58.5	51.0
Max Q Clear Time (g_c+I1), s	2.0				35.9	2.0
Green Ext Time (p_c), s	53.9				4.3	15.5
Intersection Summary						
HCM 6th Ctrl Delay			9.1			
HCM 6th LOS			A			
Notes						

Timings
5: Airport Blvd & I-70 WB Ramp/37th Avenue

2040 Total AM Scenario 2.syn

06/08/2020

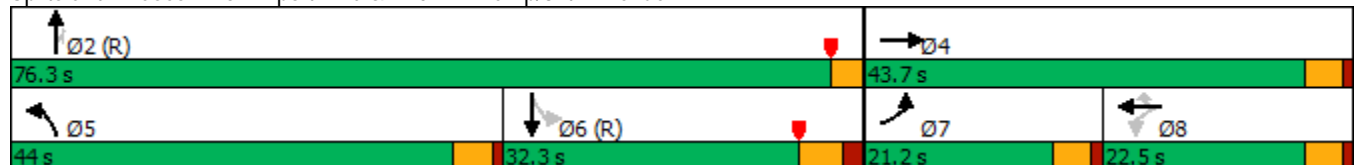
											
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 					 	  			  	
Traffic Volume (vph)	345	80	90	210	60	810	2210	510	100	1440	420
Future Volume (vph)	345	80	90	210	60	810	2210	510	100	1440	420
Turn Type	Prot	NA	Perm	NA	Perm	Prot	NA	Perm	Perm	NA	Free
Protected Phases	7	4		8		5	2			6	
Permitted Phases			8		8			2	6		Free
Detector Phase	7	4	8	8	8	5	2	2	6	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)	9.5	22.5	22.5	22.5	22.5	9.5	24.0	24.0	24.0	24.0	
Total Split (s)	21.2	43.7	22.5	22.5	22.5	44.0	76.3	76.3	32.3	32.3	
Total Split (%)	17.7%	36.4%	18.8%	18.8%	18.8%	36.7%	63.6%	63.6%	26.9%	26.9%	
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.0	3.0	4.0	4.0	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	0.0	0.0	2.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	3.0	3.0	6.0	6.0	
Lead/Lag	Lead		Lag	Lag	Lag	Lead			Lag	Lag	
Lead-Lag Optimize?	Yes		Yes	Yes	Yes	Yes			Yes	Yes	
Recall Mode	None	None	None	None	None	None	C-Max	C-Max	C-Max	C-Max	
Act Effect Green (s)	16.1	37.9	17.2	17.2	17.2	34.9	74.6	74.6	32.2	32.2	120.0
Actuated g/C Ratio	0.13	0.32	0.14	0.14	0.14	0.29	0.62	0.62	0.27	0.27	1.00
v/c Ratio	0.82	0.15	0.52	0.85	0.20	0.85	0.74	0.50	1.79	1.11	0.28
Control Delay	65.3	29.7	61.3	81.3	5.7	49.1	17.9	5.8	435.7	102.1	0.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	65.3	29.7	61.3	81.3	5.7	49.1	17.9	5.8	435.7	102.1	0.5
LOS	E	C	E	F	A	D	B	A	F	F	A
Approach Delay		58.6		63.7			23.2			98.0	
Approach LOS		E		E			C			F	

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBTL, Start of Yellow
 Natural Cycle: 90
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.79
 Intersection Signal Delay: 51.3
 Intersection Capacity Utilization 88.1%
 Analysis Period (min) 15

Intersection LOS: D
 ICU Level of Service E

Splits and Phases: 5: Airport Blvd & I-70 WB Ramp/37th Avenue

































HCM 6th Signalized Intersection Summary

5: Airport Blvd & I-70 WB Ramp/37th Avenue

2040 Total AM Scenario 2.syn

06/08/2020





























												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 			 			 	  			  	
Traffic Volume (veh/h)	345	80	0	90	210	60	810	2210	510	100	1440	420
Future Volume (veh/h)	345	80	0	90	210	60	810	2210	510	100	1440	420
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	0	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	375	87	0	98	228	65	853	2326	554	109	1516	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.95	0.95	0.92	0.92	0.95	0.95
Percent Heavy Veh, %	2	2	0	2	2	2	2	2	2	2	2	2
Cap, veh/h	434	565	0	242	260	220	949	3159	980	87	1565	
Arrive On Green	0.13	0.30	0.00	0.14	0.14	0.14	0.27	0.62	0.62	0.31	0.31	0.00
Sat Flow, veh/h	3456	1870	0	1310	1870	1585	3456	5106	1584	90	5106	1585
Grp Volume(v), veh/h	375	87	0	98	228	65	853	2326	554	109	1516	0
Grp Sat Flow(s),veh/h/ln	1728	1870	0	1310	1870	1585	1728	1702	1584	90	1702	1585
Q Serve(g_s), s	12.8	4.1	0.0	8.4	14.3	4.4	28.5	38.3	24.6	35.9	35.1	0.0
Cycle Q Clear(g_c), s	12.8	4.1	0.0	8.4	14.3	4.4	28.5	38.3	24.6	36.8	35.1	0.0
Prop In Lane	1.00		0.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	434	565	0	242	260	220	949	3159	980	87	1565	
V/C Ratio(X)	0.86	0.15	0.00	0.40	0.88	0.30	0.90	0.74	0.57	1.26	0.97	
Avail Cap(c_a), veh/h	481	611	0	257	281	238	1138	3159	980	87	1565	
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	1.00	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	51.5	30.7	0.0	48.1	50.7	46.4	41.9	16.0	13.4	54.5	41.0	0.0
Incr Delay (d2), s/veh	14.1	0.1	0.0	1.1	24.3	0.7	8.6	1.6	2.4	180.2	16.4	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	6.4	1.9	0.0	2.8	8.5	1.8	13.2	14.5	9.0	7.0	16.9	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	65.5	30.8	0.0	49.2	75.0	47.1	50.5	17.6	15.8	234.7	57.5	0.0
LnGrp LOS	E	C	A	D	E	D	D	B	B	F	E	
Approach Vol, veh/h		462			391			3733			1625	A
Approach Delay, s/veh		59.0			63.9			24.8			69.3	
Approach LOS		E			E			C			E	
Timer - Assigned Phs		2		4	5	6	7	8				
Phs Duration (G+Y+Rc), s		80.3		40.7	37.5	42.8	19.6	21.2				
Change Period (Y+Rc), s		* 6		4.5	4.5	6.0	4.5	4.5				
Max Green Setting (Gmax), s		* 73		39.2	39.5	26.3	16.7	18.0				
Max Q Clear Time (g_c+I1), s		40.3		6.1	30.5	38.8	14.8	16.3				
Green Ext Time (p_c), s		27.3		0.4	2.4	0.0	0.3	0.3				
Intersection Summary												
HCM 6th Ctrl Delay				41.5								
HCM 6th LOS				D								
Notes												
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.												
Unsignalized Delay for [SBR] is excluded from calculations of the approach delay and intersection delay.												

Timings

2040 Total PM Scenario 2.syn

5: Airport Blvd & I-70 WB Ramp/37th Avenue

06/08/2020

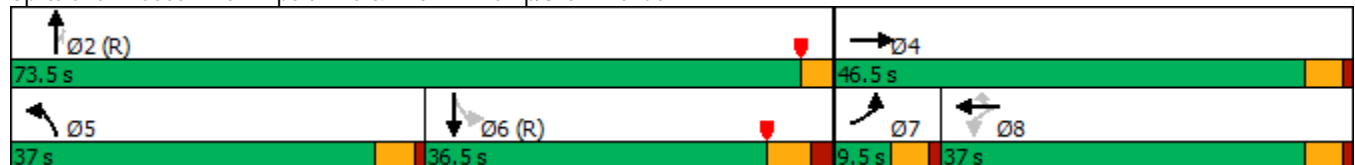
											
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 					 	  			  	
Traffic Volume (vph)	75	55	195	505	145	980	1990	360	50	1320	400
Future Volume (vph)	75	55	195	505	145	980	1990	360	50	1320	400
Turn Type	Prot	NA	Perm	NA	Perm	Prot	NA	Perm	Perm	NA	Free
Protected Phases	7	4		8		5	2			6	
Permitted Phases			8		8			2	6		Free
Detector Phase	7	4	8	8	8	5	2	2	6	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)	9.5	22.5	22.5	22.5	22.5	9.5	24.0	24.0	24.0	24.0	
Total Split (s)	9.5	46.5	37.0	37.0	37.0	37.0	73.5	73.5	36.5	36.5	
Total Split (%)	7.9%	38.8%	30.8%	30.8%	30.8%	30.8%	61.3%	61.3%	30.4%	30.4%	
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.0	3.0	4.0	4.0	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	0.0	0.0	2.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	3.0	3.0	6.0	6.0	
Lead/Lag	Lead		Lag	Lag	Lag	Lead			Lag	Lag	
Lead-Lag Optimize?	Yes		Yes	Yes	Yes	Yes			Yes	Yes	
Recall Mode	None	None	None	None	None	None	C-Max	C-Max	C-Max	C-Max	
Act Effect Green (s)	5.0	42.0	34.4	34.4	34.4	32.5	70.5	70.5	30.5	30.5	120.0
Actuated g/C Ratio	0.04	0.35	0.29	0.29	0.29	0.27	0.59	0.59	0.25	0.25	1.00
v/c Ratio	0.57	0.09	0.55	1.03	0.30	1.11	0.70	0.38	0.86	1.08	0.27
Control Delay	72.5	26.8	41.7	87.5	12.0	105.7	19.0	5.1	124.1	90.5	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
Total Delay	72.5	26.8	41.7	87.5	12.0	105.7	19.0	5.1	124.1	90.5	0.4
LOS	E	C	D	F	B	F	B	A	F	F	A
Approach Delay		53.2		64.0			42.9			71.1	
Approach LOS		D		E			D			E	

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBTL, Start of Yellow
 Natural Cycle: 140
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.11
 Intersection Signal Delay: 54.3
 Intersection Capacity Utilization 98.1%
 Analysis Period (min) 15

Intersection LOS: D
 ICU Level of Service F































Splits and Phases: 5: Airport Blvd & I-70 WB Ramp/37th Avenue



HCM 6th Signalized Intersection Summary 5: Airport Blvd & I-70 WB Ramp/37th Avenue

2040 Total PM Scenario 2.syn

06/08/2020

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations	 			 			 	  			  		
Traffic Volume (veh/h)	75	55	0	195	505	145	980	1990	360	50	1320	400	
Future Volume (veh/h)	75	55	0	195	505	145	980	1990	360	50	1320	400	
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	0	1870	1870	1870	1870	1870	1870	1870	1870	1870	
Adj Flow Rate, veh/h	82	60	0	212	549	158	1032	2095	391	54	1389	0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.95	0.95	0.92	0.92	0.95	0.95	
Percent Heavy Veh, %	2	2	0	2	2	2	2	2	2	2	2	2	
Cap, veh/h	135	650	0	424	507	429	936	6756	2097	192	5182		
Arrive On Green	0.04	0.35	0.00	0.27	0.27	0.27	0.27	1.00	1.00	1.00	1.00	0.00	
Sat Flow, veh/h	3456	1870	0	1343	1870	1585	3456	5106	1585	133	5106	1585	
Grp Volume(v), veh/h	82	60	0	212	549	158	1032	2095	391	54	1389	0	
Grp Sat Flow(s),veh/h/ln	1728	1870	0	1343	1870	1585	1728	1702	1585	133	1702	1585	
Q Serve(g_s), s	2.8	2.6	0.0	16.4	32.5	9.7	32.5	0.0	0.0	1.8	0.0	0.0	
Cycle Q Clear(g_c), s	2.8	2.6	0.0	16.4	32.5	9.7	32.5	0.0	0.0	4.5	0.0	0.0	
Prop In Lane	1.00		0.00	1.00		1.00	1.00		1.00	1.00		1.00	
Lane Grp Cap(c), veh/h	135	650	0	424	507	429	936	6756	2097	192	5182		
V/C Ratio(X)	0.61	0.09	0.00	0.50	1.08	0.37	1.10	0.31	0.19	0.28	0.27		
Avail Cap(c_a), veh/h	144	655	0	424	507	429	936	6756	2097	192	5182		
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	1.00	1.00	1.00	1.00	1.00	1.00	0.00	
Uniform Delay (d), s/veh	56.8	26.4	0.0	37.9	43.7	35.4	43.8	0.0	0.0	0.0	0.0	0.0	
Incr Delay (d2), s/veh	6.5	0.1	0.0	0.9	64.6	0.5	61.7	0.1	0.2	3.6	0.1	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	1.3	1.2	0.0	5.5	24.0	3.8	21.8	0.1	0.1	0.2	0.1	0.0	
Unsig. Movement Delay, s/veh													
LnGrp Delay(d),s/veh	63.3	26.5	0.0	38.8	108.3	36.0	105.4	0.1	0.2	3.7	0.1	0.0	
LnGrp LOS	E	C	A	D	F	D	F	A	A	A	A		
Approach Vol, veh/h	142				919		3518				1443		A
Approach Delay, s/veh	47.7				79.8		31.0				0.3		
Approach LOS	D				E		C				A		
Timer - Assigned Phs	2		4		5	6	7	8					
Phs Duration (G+Y+Rc), s	167.4		46.2		37.0	130.4	9.2	37.0					
Change Period (Y+Rc), s	* 6		4.5		4.5	6.0	4.5	4.5					
Max Green Setting (Gmax), s	* 71		42.0		32.5	30.5	5.0	32.5					
Max Q Clear Time (g_c+I1), s	2.0		4.6		34.5	6.5	4.8	34.5					
Green Ext Time (p_c), s	38.9		0.3		0.0	14.5	0.0	0.0					
Intersection Summary													
HCM 6th Ctrl Delay			31.5										
HCM 6th LOS			C										
Notes													

Intersection

Int Delay, s/veh 1.9

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↑	↑↑	↑	↑
Traffic Vol, veh/h	115	10	5	95	20	5
Future Vol, veh/h	115	10	5	95	20	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	175	-	0	0
Veh in Median Storage, #	0	-	-	0	1	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	94	75	92	67	47	25
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	122	13	5	142	43	20

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	135
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	-	4.14
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	-	2.22
Pot Cap-1 Maneuver	-	-	1447
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	1447
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.3	9.6
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	758	981	-	-	1447	-
HCM Lane V/C Ratio	0.056	0.02	-	-	0.004	-
HCM Control Delay (s)	10	8.7	-	-	7.5	-
HCM Lane LOS	B	A	-	-	A	-
HCM 95th %tile Q(veh)	0.2	0.1	-	-	0	-

Intersection









Int Delay, s/veh 1.7









Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↑	↑↑	↑	↑
Traffic Vol, veh/h	315	20	15	220	65	0
Future Vol, veh/h	315	20	15	220	65	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	175	-	0	0
Veh in Median Storage, #	0	-	-	0	1	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	85	67	63	88	75	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	371	30	24	250	87	0

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	401
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	-	4.14
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	-	2.22
Pot Cap-1 Maneuver	-	-	1154
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	1154
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.7	13.1
HCM LOS			B









Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	531	-	-	-	1154	-
HCM Lane V/C Ratio	0.163	-	-	-	0.021	-
HCM Control Delay (s)	13.1	0	-	-	8.2	-
HCM Lane LOS	B	A	-	-	A	-
HCM 95th %tile Q(veh)	0.6	-	-	-	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	15	125	10	5	110	10	20	0	5	5	0	5
Future Vol, veh/h	15	125	10	5	110	10	20	0	5	5	0	5
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	175	-	-	175	-	-	0	-	-	50	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	1	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	94	75	92	67	92	47	92	25	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	16	133	13	5	164	11	43	0	20	5	0	5
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	175	0	0	146	0	0	264	357	73	279	358	88
Stage 1	-	-	-	-	-	-	172	172	-	180	180	-
Stage 2	-	-	-	-	-	-	92	185	-	99	178	-
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	1399	-	-	1434	-	-	668	568	974	651	567	953
Stage 1	-	-	-	-	-	-	813	755	-	804	749	-
Stage 2	-	-	-	-	-	-	905	746	-	896	751	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1399	-	-	1434	-	-	657	560	974	630	559	953
Mov Cap-2 Maneuver	-	-	-	-	-	-	681	592	-	630	559	-
Stage 1	-	-	-	-	-	-	804	747	-	795	747	-
Stage 2	-	-	-	-	-	-	897	744	-	868	743	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.8			0.2			10			9.8		
HCM LOS							B			A		
Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2		
Capacity (veh/h)	681	974	1399	-	-	1434	-	-	630	953		
HCM Lane V/C Ratio	0.062	0.021	0.012	-	-	0.004	-	-	0.009	0.006		
HCM Control Delay (s)	10.6	8.8	7.6	-	-	7.5	-	-	10.8	8.8		
HCM Lane LOS	B	A	A	-	-	A	-	-	B	A		
HCM 95th %tile Q(veh)	0.2	0.1	0	-	-	0	-	-	0	0		

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	5	335	20	15	230	5	65	0	0	10	0	15
Future Vol, veh/h	5	335	20	15	230	5	65	0	0	10	0	15
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	175	-	-	175	-	-	0	-	-	50	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	1	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	85	67	63	88	92	75	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	5	394	30	24	261	5	87	0	0	11	0	16
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	266	0	0	424	0	0	598	733	212	519	746	133
Stage 1	-	-	-	-	-	-	419	419	-	312	312	-
Stage 2	-	-	-	-	-	-	179	314	-	207	434	-
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	1295	-	-	1132	-	-	386	346	793	440	340	892
Stage 1	-	-	-	-	-	-	582	588	-	673	656	-
Stage 2	-	-	-	-	-	-	805	655	-	776	579	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1295	-	-	1132	-	-	372	337	793	432	332	892
Mov Cap-2 Maneuver	-	-	-	-	-	-	464	432	-	432	332	-
Stage 1	-	-	-	-	-	-	580	586	-	670	642	-
Stage 2	-	-	-	-	-	-	774	641	-	773	577	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.1			0.7			14.5			10.9		
HCM LOS							B			B		
Minor Lane/Major Mvmt	NBLn1 NBLn2		EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2		
Capacity (veh/h)	464		-	1295	-	-	1132	-	-	432	892	
HCM Lane V/C Ratio	0.187		-	0.004	-	-	0.021	-	-	0.025	0.018	
HCM Control Delay (s)	14.5		0	7.8	-	-	8.2	-	-	13.5	9.1	
HCM Lane LOS	B		A	A	-	-	A	-	-	B	A	
HCM 95th %tile Q(veh)	0.7		-	0	-	-	0.1	-	-	0.1	0.1	









Intersection												
Int Delay, s/veh	3.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↰↱		↰	↰↱		↰	↱		↰	↱	
Traffic Vol, veh/h	15	190	30	60	160	10	35	0	15	5	0	5
Future Vol, veh/h	15	190	30	60	160	10	35	0	15	5	0	5
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	175	-	-	175	-	-	0	-	-	50	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	1	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	94	75	92	67	92	47	92	25	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	16	202	40	65	239	11	74	0	60	5	0	5
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	250	0	0	242	0	0	504	634	121	508	649	125
Stage 1	-	-	-	-	-	-	254	254	-	375	375	-
Stage 2	-	-	-	-	-	-	250	380	-	133	274	-
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	1313	-	-	1322	-	-	451	395	908	448	387	902
Stage 1	-	-	-	-	-	-	728	696	-	618	615	-
Stage 2	-	-	-	-	-	-	732	612	-	857	682	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1313	-	-	1322	-	-	428	371	908	399	364	902
Mov Cap-2 Maneuver	-	-	-	-	-	-	513	449	-	399	364	-
Stage 1	-	-	-	-	-	-	719	688	-	611	585	-
Stage 2	-	-	-	-	-	-	692	582	-	791	674	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.5			1.6			11.4			11.6		
HCM LOS							B			B		
Minor Lane/Major Mvmt	NBLn1NBLn2		EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2		
Capacity (veh/h)	513	908	1313	-	-	1322	-	-	399	902		
HCM Lane V/C Ratio	0.145	0.066	0.012	-	-	0.049	-	-	0.014	0.006		
HCM Control Delay (s)	13.2	9.2	7.8	-	-	7.9	-	-	14.1	9		
HCM Lane LOS	B	A	A	-	-	A	-	-	B	A		
HCM 95th %tile Q(veh)	0.5	0.2	0	-	-	0.2	-	-	0	0		

Intersection												
Int Delay, s/veh	4.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↰↱		↰	↰↱		↰	↱		↰	↱	
Traffic Vol, veh/h	5	445	25	30	260	5	125	0	25	10	0	15
Future Vol, veh/h	5	445	25	30	260	5	125	0	25	10	0	15
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	175	-	-	175	-	-	0	-	-	50	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	1	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	85	67	63	88	92	75	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	5	524	37	48	295	5	167	0	27	11	0	16
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	300	0	0	561	0	0	797	949	281	666	965	150
Stage 1	-	-	-	-	-	-	553	553	-	394	394	-
Stage 2	-	-	-	-	-	-	244	396	-	272	571	-
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	1258	-	-	1006	-	-	277	259	716	345	253	870
Stage 1	-	-	-	-	-	-	485	513	-	602	604	-
Stage 2	-	-	-	-	-	-	738	602	-	711	503	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1258	-	-	1006	-	-	261	246	716	319	240	870
Mov Cap-2 Maneuver	-	-	-	-	-	-	371	357	-	319	240	-
Stage 1	-	-	-	-	-	-	483	511	-	600	575	-
Stage 2	-	-	-	-	-	-	690	573	-	681	501	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.1			1.2			20.7			12.2		
HCM LOS							C			B		
Minor Lane/Major Mvmt	NBLn1 NBLn2		EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2		
Capacity (veh/h)	371	716	1258	-	-	1006	-	-	319	870		
HCM Lane V/C Ratio	0.449	0.038	0.004	-	-	0.047	-	-	0.034	0.019		
HCM Control Delay (s)	22.4	10.2	7.9	-	-	8.8	-	-	16.7	9.2		
HCM Lane LOS	C	B	A	-	-	A	-	-	C	A		
HCM 95th %tile Q(veh)	2.2	0.1	0	-	-	0.1	-	-	0.1	0.1		

Intersection												
Int Delay, s/veh	1.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	15	205	10	5	185	10	25	0	5	5	0	5
Future Vol, veh/h	15	205	10	5	185	10	25	0	5	5	0	5
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	175	-	-	175	-	-	0	-	-	50	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	1	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	94	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	16	218	11	5	201	11	27	0	5	5	0	5
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	212	0	0	229	0	0	367	478	115	358	478	106
Stage 1	-	-	-	-	-	-	256	256	-	217	217	-
Stage 2	-	-	-	-	-	-	111	222	-	141	261	-
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	1356	-	-	1336	-	-	564	485	916	573	485	928
Stage 1	-	-	-	-	-	-	726	694	-	765	722	-
Stage 2	-	-	-	-	-	-	882	718	-	847	691	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1356	-	-	1336	-	-	554	477	916	563	477	928
Mov Cap-2 Maneuver	-	-	-	-	-	-	603	534	-	563	477	-
Stage 1	-	-	-	-	-	-	717	686	-	756	719	-
Stage 2	-	-	-	-	-	-	874	715	-	832	683	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.5			0.2			10.9			10.2		
HCM LOS							B			B		
Minor Lane/Major Mvmt	NBLn1 NBLn2		EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2		
Capacity (veh/h)	603	916	1356	-	-	1336	-	-	563	928		
HCM Lane V/C Ratio	0.045	0.006	0.012	-	-	0.004	-	-	0.01	0.006		
HCM Control Delay (s)	11.3	9	7.7	-	-	7.7	-	-	11.5	8.9		
HCM Lane LOS	B	A	A	-	-	A	-	-	B	A		
HCM 95th %tile Q(veh)	0.1	0	0	-	-	0	-	-	0	0		

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	5	525	25	20	375	5	95	0	0	10	0	15
Future Vol, veh/h	5	525	25	20	375	5	95	0	0	10	0	15
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	175	-	-	175	-	-	0	-	-	50	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	1	-	-	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	571	27	22	408	5	103	0	0	11	0	16

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	413	0	0	598	0	0	843	1052	299	751	1063	207
Stage 1	-	-	-	-	-	-	595	595	-	455	455	-
Stage 2	-	-	-	-	-	-	248	457	-	296	608	-
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	1142	-	-	975	-	-	257	225	697	299	222	799
Stage 1	-	-	-	-	-	-	458	491	-	554	567	-
Stage 2	-	-	-	-	-	-	734	566	-	688	484	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1142	-	-	975	-	-	247	219	697	293	216	799
Mov Cap-2 Maneuver	-	-	-	-	-	-	356	335	-	293	216	-
Stage 1	-	-	-	-	-	-	456	489	-	552	554	-
Stage 2	-	-	-	-	-	-	703	553	-	685	482	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.1			0.4			19.2			12.9		
HCM LOS							C			B		

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	356	-	1142	-	-	975	-	-	293	799
HCM Lane V/C Ratio	0.29	-	0.005	-	-	0.022	-	-	0.037	0.02
HCM Control Delay (s)	19.2	0	8.2	-	-	8.8	-	-	17.8	9.6
HCM Lane LOS	C	A	A	-	-	A	-	-	C	A
HCM 95th %tile Q(veh)	1.2	-	0	-	-	0.1	-	-	0.1	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	15	270	30	60	235	10	40	0	15	5	0	5
Future Vol, veh/h	15	270	30	60	235	10	40	0	15	5	0	5
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	175	-	-	175	-	-	0	-	-	50	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	1	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	94	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	16	287	33	65	255	11	43	0	16	5	0	5
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	266	0	0	320	0	0	594	732	160	567	743	133
Stage 1	-	-	-	-	-	-	336	336	-	391	391	-
Stage 2	-	-	-	-	-	-	258	396	-	176	352	-
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	1295	-	-	1237	-	-	389	347	857	406	342	892
Stage 1	-	-	-	-	-	-	652	640	-	605	606	-
Stage 2	-	-	-	-	-	-	724	602	-	809	630	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1295	-	-	1237	-	-	368	325	857	379	320	892
Mov Cap-2 Maneuver	-	-	-	-	-	-	467	416	-	379	320	-
Stage 1	-	-	-	-	-	-	644	632	-	598	574	-
Stage 2	-	-	-	-	-	-	682	570	-	784	622	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.4			1.6			12.4			11.8		
HCM LOS							B			B		
Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2		
Capacity (veh/h)	467	857	1295	-	-	1237	-	-	379	892		
HCM Lane V/C Ratio	0.093	0.019	0.013	-	-	0.053	-	-	0.014	0.006		
HCM Control Delay (s)	13.5	9.3	7.8	-	-	8.1	-	-	14.6	9.1		
HCM Lane LOS	B	A	A	-	-	A	-	-	B	A		
HCM 95th %tile Q(veh)	0.3	0.1	0	-	-	0.2	-	-	0	0		

Intersection												
Int Delay, s/veh	4.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	635	30	35	405	5	155	0	25	10	0	15
Future Vol, veh/h	5	635	30	35	405	5	155	0	25	10	0	15
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	175	-	-	175	-	-	0	-	-	50	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	1	-	-	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	690	33	38	440	5	168	0	27	11	0	16

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	445	0	0	723	0	0	1013	1238	362	874	1252	223
Stage 1	-	-	-	-	-	-	717	717	-	519	519	-
Stage 2	-	-	-	-	-	-	296	521	-	355	733	-
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	1112	-	-	875	-	-	193	174	635	244	171	780
Stage 1	-	-	-	-	-	-	387	432	-	508	531	-
Stage 2	-	-	-	-	-	-	688	530	-	635	424	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1112	-	-	875	-	-	182	166	635	225	163	780
Mov Cap-2 Maneuver	-	-	-	-	-	-	294	286	-	225	163	-
Stage 1	-	-	-	-	-	-	385	430	-	506	508	-
Stage 2	-	-	-	-	-	-	644	507	-	605	422	-









Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.1			0.7			29.5			14.5		
HCM LOS							D			B		

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	294	635	1112	-	-	875	-	-	225	780
HCM Lane V/C Ratio	0.573	0.043	0.005	-	-	0.043	-	-	0.048	0.021
HCM Control Delay (s)	32.5	10.9	8.3	-	-	9.3	-	-	21.8	9.7
HCM Lane LOS	D	B	A	-	-	A	-	-	C	A
HCM 95th %tile Q(veh)	3.3	0.1	0	-	-	0.1	-	-	0.2	0.1

Intersection												
Int Delay, s/veh	2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	15	260	20	75	305	10	35	0	20	5	0	5
Future Vol, veh/h	15	260	20	75	305	10	35	0	20	5	0	5
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	175	-	-	175	-	-	0	-	-	50	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	1	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	94	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	16	277	22	82	332	11	38	0	22	5	0	5
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	343	0	0	299	0	0	650	827	150	673	833	172
Stage 1	-	-	-	-	-	-	320	320	-	502	502	-
Stage 2	-	-	-	-	-	-	330	507	-	171	331	-
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	1213	-	-	1259	-	-	354	305	870	341	303	842
Stage 1	-	-	-	-	-	-	666	651	-	520	540	-
Stage 2	-	-	-	-	-	-	657	538	-	814	644	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1213	-	-	1259	-	-	331	282	870	313	280	842
Mov Cap-2 Maneuver	-	-	-	-	-	-	435	377	-	313	280	-
Stage 1	-	-	-	-	-	-	657	643	-	513	505	-
Stage 2	-	-	-	-	-	-	610	503	-	783	636	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.4			1.5			12.3			13		
HCM LOS							B			B		
Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2		
Capacity (veh/h)	435	870	1213	-	-	1259	-	-	313	842		
HCM Lane V/C Ratio	0.087	0.025	0.013	-	-	0.065	-	-	0.017	0.006		
HCM Control Delay (s)	14.1	9.2	8	-	-	8.1	-	-	16.7	9.3		
HCM Lane LOS	B	A	A	-	-	A	-	-	C	A		
HCM 95th %tile Q(veh)	0.3	0.1	0	-	-	0.2	-	-	0.1	0		

Intersection

Int Delay, s/veh 3.7









Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	650	30	40	420	5	125	0	50	10	0	15
Future Vol, veh/h	5	650	30	40	420	5	125	0	50	10	0	15
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	175	-	-	175	-	-	0	-	-	50	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	1	-	-	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	707	33	43	457	5	136	0	54	11	0	16









Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	462	0	0	740	0	0	1049	1282	370	910	1296	231
Stage 1	-	-	-	-	-	-	734	734	-	546	546	-
Stage 2	-	-	-	-	-	-	315	548	-	364	750	-
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	1095	-	-	862	-	-	182	164	627	230	161	771
Stage 1	-	-	-	-	-	-	378	424	-	490	516	-
Stage 2	-	-	-	-	-	-	671	515	-	627	417	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1095	-	-	862	-	-	171	155	627	201	152	771
Mov Cap-2 Maneuver	-	-	-	-	-	-	284	276	-	201	152	-
Stage 1	-	-	-	-	-	-	376	422	-	488	490	-
Stage 2	-	-	-	-	-	-	624	489	-	570	415	-









Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0.8	23.8	15.4
HCM LOS			C	C









Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	284	627	1095	-	-	862	-	-	201	771
HCM Lane V/C Ratio	0.478	0.087	0.005	-	-	0.05	-	-	0.054	0.021
HCM Control Delay (s)	28.8	11.3	8.3	-	-	9.4	-	-	23.9	9.8
HCM Lane LOS	D	B	A	-	-	A	-	-	C	A
HCM 95th %tile Q(veh)	2.4	0.3	0	-	-	0.2	-	-	0.2	0.1









Intersection												
Int Delay, s/veh	7.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱		↰	↱			↱	↰	↰	↱	
Traffic Vol, veh/h	15	65	60	110	55	10	30	20	105	10	25	5
Future Vol, veh/h	15	65	60	110	55	10	30	20	105	10	25	5
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	225	-	-	175	-	-	-	-	200	150	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	69	67	74	73	72	58	39	61	81	50	55	38
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	22	97	81	151	76	17	77	33	130	20	45	13
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	93	0	0	178	0	0	545	577	89	496	609	47
Stage 1	-	-	-	-	-	-	182	182	-	387	387	-
Stage 2	-	-	-	-	-	-	363	395	-	109	222	-
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	1499	-	-	1395	-	-	421	426	951	457	408	1012
Stage 1	-	-	-	-	-	-	802	748	-	608	608	-
Stage 2	-	-	-	-	-	-	628	603	-	885	718	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1499	-	-	1395	-	-	346	374	951	338	359	1012
Mov Cap-2 Maneuver	-	-	-	-	-	-	412	435	-	420	414	-
Stage 1	-	-	-	-	-	-	790	737	-	599	542	-
Stage 2	-	-	-	-	-	-	506	538	-	720	707	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.8			4.9			12.7			13.7		
HCM LOS							B			B		
Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2		
Capacity (veh/h)	419	951	1499	-	-	1395	-	-	420	477		
HCM Lane V/C Ratio	0.262	0.136	0.015	-	-	0.108	-	-	0.048	0.123		
HCM Control Delay (s)	16.6	9.4	7.4	-	-	7.9	-	-	14	13.6		
HCM Lane LOS	C	A	A	-	-	A	-	-	B	B		
HCM 95th %tile Q(veh)	1	0.5	0	-	-	0.4	-	-	0.1	0.4		

Intersection												
Int Delay, s/veh	9.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	40	215	100	200	135	10	85	30	215	20	40	25
Future Vol, veh/h	40	215	100	200	135	10	85	30	215	20	40	25
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	225	-	-	175	-	-	-	-	200	150	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	81	74	72	92	89	58	86	84	84	94	73	66
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	49	291	139	217	152	17	99	36	256	21	55	38
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	169	0	0	430	0	0	997	1062	215	857	1123	85
Stage 1	-	-	-	-	-	-	459	459	-	595	595	-
Stage 2	-	-	-	-	-	-	538	603	-	262	528	-
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	1406	-	-	1126	-	-	198	222	790	251	204	957
Stage 1	-	-	-	-	-	-	551	565	-	458	491	-
Stage 2	-	-	-	-	-	-	495	487	-	720	526	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1406	-	-	1126	-	-	129	173	790	127	159	957
Mov Cap-2 Maneuver	-	-	-	-	-	-	219	265	-	183	223	-
Stage 1	-	-	-	-	-	-	532	545	-	442	396	-
Stage 2	-	-	-	-	-	-	331	393	-	439	508	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.8			5			21.7			21.7		
HCM LOS							C			C		
Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2		
Capacity (veh/h)	230	790	1406	-	-	1126	-	-	183	325		
HCM Lane V/C Ratio	0.585	0.324	0.035	-	-	0.193	-	-	0.116	0.285		
HCM Control Delay (s)	40.6	11.7	7.7	-	-	9	-	-	27.2	20.4		
HCM Lane LOS	E	B	A	-	-	A	-	-	D	C		
HCM 95th %tile Q(veh)	3.3	1.4	0.1	-	-	0.7	-	-	0.4	1.2		

Intersection												
Int Delay, s/veh	7.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	15	75	65	115	80	15	35	20	110	10	25	5
Future Vol, veh/h	15	75	65	115	80	15	35	20	110	10	25	5
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	225	-	-	175	-	-	-	-	200	150	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	69	67	74	73	72	58	39	61	81	50	55	38
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	22	112	88	158	111	26	90	33	136	20	45	13
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	137	0	0	200	0	0	594	653	100	557	684	69
Stage 1	-	-	-	-	-	-	200	200	-	440	440	-
Stage 2	-	-	-	-	-	-	394	453	-	117	244	-
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	1445	-	-	1370	-	-	389	385	936	413	370	980
Stage 1	-	-	-	-	-	-	783	735	-	566	576	-
Stage 2	-	-	-	-	-	-	602	568	-	875	703	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1445	-	-	1370	-	-	315	336	936	299	323	980
Mov Cap-2 Maneuver	-	-	-	-	-	-	386	403	-	388	385	-
Stage 1	-	-	-	-	-	-	771	724	-	558	510	-
Stage 2	-	-	-	-	-	-	479	503	-	703	692	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.7			4.3			13.7			14.4		
HCM LOS							B			B		
Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2		
Capacity (veh/h)	390	936	1445	-	-	1370	-	-	388	446		
HCM Lane V/C Ratio	0.314	0.145	0.015	-	-	0.115	-	-	0.052	0.131		
HCM Control Delay (s)	18.4	9.5	7.5	-	-	8	-	-	14.8	14.3		
HCM Lane LOS	C	A	A	-	-	A	-	-	B	B		
HCM 95th %tile Q(veh)	1.3	0.5	0	-	-	0.4	-	-	0.2	0.5		

Intersection												
Int Delay, s/veh	11.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	40	240	100	210	145	15	90	30	220	25	45	25
Future Vol, veh/h	40	240	100	210	145	15	90	30	220	25	45	25
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	225	-	-	175	-	-	-	-	200	150	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	81	74	72	92	89	58	86	84	84	94	73	66
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	49	324	139	228	163	26	105	36	262	27	62	38
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	189	0	0	463	0	0	1061	1137	232	910	1193	95
Stage 1	-	-	-	-	-	-	492	492	-	632	632	-
Stage 2	-	-	-	-	-	-	569	645	-	278	561	-
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	1382	-	-	1095	-	-	178	200	770	230	186	943
Stage 1	-	-	-	-	-	-	527	546	-	435	472	-
Stage 2	-	-	-	-	-	-	474	466	-	705	508	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1382	-	-	1095	-	-	108	153	770	111	142	943
Mov Cap-2 Maneuver	-	-	-	-	-	-	195	245	-	159	202	-
Stage 1	-	-	-	-	-	-	509	527	-	420	374	-
Stage 2	-	-	-	-	-	-	301	369	-	418	490	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.7			5			26.4			25.7		
HCM LOS							D			D		
Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2		
Capacity (veh/h)	206	770	1382	-	-	1095	-	-	159	288		
HCM Lane V/C Ratio	0.681	0.34	0.036	-	-	0.208	-	-	0.167	0.346		
HCM Control Delay (s)	53.2	12.1	7.7	-	-	9.2	-	-	32.1	24		
HCM Lane LOS	F	B	A	-	-	A	-	-	D	C		
HCM 95th %tile Q(veh)	4.2	1.5	0.1	-	-	0.8	-	-	0.6	1.5		


















Intersection												
Int Delay, s/veh	6.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	15	145	65	115	180	15	35	20	110	10	25	5
Future Vol, veh/h	15	145	65	115	180	15	35	20	110	10	25	5
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	225	-	-	175	-	-	-	-	200	150	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	69	67	74	73	72	58	39	61	81	50	55	38
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	22	216	88	158	250	26	90	33	136	20	45	13
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	276	0	0	304	0	0	768	896	152	748	927	138
Stage 1	-	-	-	-	-	-	304	304	-	579	579	-
Stage 2	-	-	-	-	-	-	464	592	-	169	348	-
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	1284	-	-	1254	-	-	291	278	867	301	267	885
Stage 1	-	-	-	-	-	-	681	662	-	468	499	-
Stage 2	-	-	-	-	-	-	548	492	-	816	633	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1284	-	-	1254	-	-	228	239	867	209	229	885
Mov Cap-2 Maneuver	-	-	-	-	-	-	322	328	-	311	309	-
Stage 1	-	-	-	-	-	-	669	651	-	460	436	-
Stage 2	-	-	-	-	-	-	423	430	-	642	622	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.5			3			16			17		
HCM LOS							C			C		
Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2		
Capacity (veh/h)	324	867	1284	-	-	1254	-	-	311	362		
HCM Lane V/C Ratio	0.378	0.157	0.017	-	-	0.126	-	-	0.064	0.162		
HCM Control Delay (s)	22.7	9.9	7.9	-	-	8.3	-	-	17.4	16.9		
HCM Lane LOS	C	A	A	-	-	A	-	-	C	C		
HCM 95th %tile Q(veh)	1.7	0.6	0.1	-	-	0.4	-	-	0.2	0.6		

Intersection												
Int Delay, s/veh	14.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	40	375	100	210	190	15	90	30	220	25	45	25
Future Vol, veh/h	40	375	100	210	190	15	90	30	220	25	45	25
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	225	-	-	175	-	-	-	-	200	150	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	81	74	72	92	89	58	86	84	84	94	73	66
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	49	507	139	228	213	26	105	36	262	27	62	38
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	239	0	0	646	0	0	1269	1370	323	1052	1426	120
Stage 1	-	-	-	-	-	-	675	675	-	682	682	-
Stage 2	-	-	-	-	-	-	594	695	-	370	744	-
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	1325	-	-	935	-	-	125	145	673	181	134	909
Stage 1	-	-	-	-	-	-	410	451	-	406	448	-
Stage 2	-	-	-	-	-	-	458	442	-	622	420	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1325	-	-	935	-	-	~ 64	106	673	76	98	909
Mov Cap-2 Maneuver	-	-	-	-	-	-	156	202	-	96	143	-
Stage 1	-	-	-	-	-	-	395	434	-	391	339	-
Stage 2	-	-	-	-	-	-	272	334	-	336	404	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.6			4.9			40			40.6		
HCM LOS							E			E		
Minor Lane/Major Mvmt	NBLn1 NBLn2		EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2		
Capacity (veh/h)	166	673	1325	-	-	935	-	-	96	211		
HCM Lane V/C Ratio	0.846	0.389	0.037	-	-	0.244	-	-	0.277	0.472		
HCM Control Delay (s)	89.2	13.7	7.8	-	-	10.1	-	-	56.3	36.4		
HCM Lane LOS	F	B	A	-	-	B	-	-	F	E		
HCM 95th %tile Q(veh)	5.8	1.8	0.1	-	-	1	-	-	1	2.3		
Notes												
~: Volume exceeds capacity		\$: Delay exceeds 300s			+: Computation Not Defined					*: All major volume in platoon		





Timings
7: Walden St & Salida St

2022 Total AM Improved.syn

06/08/2020

									
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	15	145	115	180	35	20	110	10	25
Future Volume (vph)	15	145	115	180	35	20	110	10	25
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	Perm	NA
Protected Phases		4		8		2			6
Permitted Phases	4		8		2		2	6	
Detector Phase	4	4	8	8	2	2	2	6	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	22.5	22.5	22.5	22.5	22.5
Total Split (s)	70.0	70.0	70.0	70.0	50.0	50.0	50.0	50.0	50.0
Total Split (%)	58.3%	58.3%	58.3%	58.3%	41.7%	41.7%	41.7%	41.7%	41.7%
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
Total Lost Time (s)	4.5	4.5	4.5	4.5		4.5	4.5	4.5	4.5
Lead/Lag									
Lead-Lag Optimize?									
Recall Mode	C-Max	C-Max	C-Max	C-Max	Max	Max	Max	Max	Max
Act Effct Green (s)	65.5	65.5	65.5	65.5		45.5	45.5	45.5	45.5
Actuated g/C Ratio	0.55	0.55	0.55	0.55		0.38	0.38	0.38	0.38
v/c Ratio	0.04	0.16	0.28	0.14		0.23	0.20	0.04	0.08
Control Delay	12.9	10.0	10.5	8.7		26.7	4.8	24.0	19.6
Queue Delay	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0
Total Delay	12.9	10.0	10.5	8.7		26.7	4.8	24.0	19.6
LOS	B	B	B	A		C	A	C	B
Approach Delay		10.2		9.4		15.2			20.7
Approach LOS		B		A		B			C
Intersection Summary									
Cycle Length: 120									
Actuated Cycle Length: 120									
Offset: 115.5 (96%), Referenced to phase 4:EBTL and 8:WBTL, Start of Yellow									
Natural Cycle: 45									
Control Type: Actuated-Coordinated									
Maximum v/c Ratio: 0.28									
Intersection Signal Delay: 11.8					Intersection LOS: B				
Intersection Capacity Utilization 33.4%					ICU Level of Service A				
Analysis Period (min) 15									

Splits and Phases: 7: Walden St & Salida St






















	
Ø2	Ø4 (R)
50 s	70 s
	
Ø6	Ø8 (R)
50 s	70 s

HCM 6th Signalized Intersection Summary

2022 Total AM Improved.syn

7: Walden St & Salida St


















06/08/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	15	145	65	115	180	15	35	20	110	10	25	5
Future Volume (veh/h)	15	145	65	115	180	15	35	20	110	10	25	5
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	22	216	88	158	250	26	90	33	136	20	45	13
Peak Hour Factor	0.69	0.67	0.74	0.73	0.72	0.58	0.39	0.61	0.81	0.50	0.55	0.38
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	620	1358	536	599	1775	183	434	151	601	434	529	153
Arrive On Green	0.55	0.55	0.55	0.55	0.55	0.55	0.38	0.38	0.38	0.38	0.38	0.38
Sat Flow, veh/h	1103	2489	982	1075	3252	335	1006	399	1585	1216	1395	403
Grp Volume(v), veh/h	22	152	152	158	136	140	123	0	136	20	0	58
Grp Sat Flow(s),veh/h/ln	1103	1777	1694	1075	1777	1810	1405	0	1585	1216	0	1798
Q Serve(g_s), s	1.2	5.1	5.4	10.3	4.5	4.6	6.1	0.0	7.0	1.4	0.0	2.5
Cycle Q Clear(g_c), s	5.8	5.1	5.4	15.7	4.5	4.6	8.6	0.0	7.0	10.0	0.0	2.5
Prop In Lane	1.00		0.58	1.00		0.19	0.73		1.00	1.00		0.22
Lane Grp Cap(c), veh/h	620	970	924	599	970	988	585	0	601	434	0	682
V/C Ratio(X)	0.04	0.16	0.16	0.26	0.14	0.14	0.21	0.00	0.23	0.05	0.00	0.09
Avail Cap(c_a), veh/h	620	970	924	599	970	988	585	0	601	434	0	682
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	1.00	0.62	0.62	0.62	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	14.8	13.5	13.6	17.5	13.4	13.4	26.2	0.0	25.3	29.2	0.0	23.9
Incr Delay (d2), s/veh	0.1	0.3	0.4	0.7	0.2	0.2	0.8	0.0	0.9	0.2	0.0	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	2.1	2.1	2.7	1.8	1.9	2.6	0.0	2.8	0.4	0.0	1.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	14.9	13.9	14.0	18.2	13.6	13.6	27.0	0.0	26.2	29.4	0.0	24.1
LnGrp LOS	B	B	B	B	B	B	C	A	C	C	A	C
Approach Vol, veh/h	326			434			259			78		
Approach Delay, s/veh	14.0			15.3			26.6			25.5		
Approach LOS	B			B			C			C		
Timer - Assigned Phs	2			4			6			8		
Phs Duration (G+Y+Rc), s	50.0			70.0			50.0			70.0		
Change Period (Y+Rc), s	4.5			4.5			4.5			4.5		
Max Green Setting (Gmax), s	45.5			65.5			45.5			65.5		
Max Q Clear Time (g_c+I1), s	10.6			7.8			12.0			17.7		
Green Ext Time (p_c), s	1.2			2.1			0.4			2.5		
Intersection Summary												
HCM 6th Ctrl Delay	18.3											
HCM 6th LOS	B											

Timings
7: Walden St & Salida St

2022 Total PM Improved.syn

06/08/2020

									
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	40	375	210	190	90	30	220	25	45
Future Volume (vph)	40	375	210	190	90	30	220	25	45
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	Perm	NA
Protected Phases		4		8		2			6
Permitted Phases	4		8		2		2	6	
Detector Phase	4	4	8	8	2	2	2	6	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	22.5	22.5	22.5	22.5	22.5
Total Split (s)	79.0	79.0	79.0	79.0	41.0	41.0	41.0	41.0	41.0
Total Split (%)	65.8%	65.8%	65.8%	65.8%	34.2%	34.2%	34.2%	34.2%	34.2%
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
Total Lost Time (s)	4.5	4.5	4.5	4.5		4.5	4.5	4.5	4.5
Lead/Lag									
Lead-Lag Optimize?									
Recall Mode	C-Max	C-Max	C-Max	C-Max	Max	Max	Max	Max	Max
Act Effct Green (s)	74.5	74.5	74.5	74.5		36.5	36.5	36.5	36.5
Actuated g/C Ratio	0.62	0.62	0.62	0.62		0.30	0.30	0.30	0.30
v/c Ratio	0.07	0.30	0.53	0.11		0.34	0.40	0.08	0.18
Control Delay	9.4	10.0	39.3	21.8		35.4	5.6	30.7	23.6
Queue Delay	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0
Total Delay	9.4	10.0	39.3	21.8		35.4	5.6	30.7	23.6
LOS	A	B	D	C		D	A	C	C
Approach Delay		10.0		30.3		16.0			25.1
Approach LOS		A		C		B			C
Intersection Summary									
Cycle Length: 120									
Actuated Cycle Length: 120									
Offset: 0 (0%), Referenced to phase 4:EBTL and 8:WBTL, Start of Yellow									
Natural Cycle: 60									
Control Type: Actuated-Coordinated									
Maximum v/c Ratio: 0.53									
Intersection Signal Delay: 18.2					Intersection LOS: B				
Intersection Capacity Utilization 49.7%					ICU Level of Service A				
Analysis Period (min) 15									

Splits and Phases: 7: Walden St & Salida St
























HCM 6th Signalized Intersection Summary

2022 Total PM Improved.syn

7: Walden St & Salida St


















06/08/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	40	375	100	210	190	15	90	30	220	25	45	25
Future Volume (veh/h)	40	375	100	210	190	15	90	30	220	25	45	25
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	49	507	139	228	213	26	105	36	262	27	62	38
Peak Hour Factor	0.81	0.74	0.72	0.92	0.89	0.58	0.86	0.84	0.84	0.94	0.73	0.66
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	737	1713	467	480	1982	239	327	105	482	263	330	202
Arrive On Green	0.62	0.62	0.62	0.62	0.62	0.62	0.30	0.30	0.30	0.30	0.30	0.30
Sat Flow, veh/h	1141	2759	752	785	3193	385	901	344	1585	1081	1085	665
Grp Volume(v), veh/h	49	326	320	228	117	122	141	0	262	27	0	100
Grp Sat Flow(s),veh/h/ln	1141	1777	1735	785	1777	1801	1246	0	1585	1081	0	1751
Q Serve(g_s), s	2.2	10.2	10.3	22.9	3.2	3.3	8.9	0.0	16.5	2.5	0.0	5.1
Cycle Q Clear(g_c), s	5.5	10.2	10.3	33.2	3.2	3.3	13.9	0.0	16.5	16.4	0.0	5.1
Prop In Lane	1.00		0.43	1.00		0.21	0.74		1.00	1.00		0.38
Lane Grp Cap(c), veh/h	737	1103	1077	480	1103	1118	431	0	482	263	0	532
V/C Ratio(X)	0.07	0.30	0.30	0.48	0.11	0.11	0.33	0.00	0.54	0.10	0.00	0.19
Avail Cap(c_a), veh/h	737	1103	1077	480	1103	1118	431	0	482	263	0	532
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	1.00	0.62	0.62	0.62	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	10.4	10.6	10.6	18.3	9.2	9.3	35.3	0.0	34.8	40.6	0.0	30.8
Incr Delay (d2), s/veh	0.2	0.7	0.7	2.1	0.1	0.1	2.0	0.0	4.4	0.8	0.0	0.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	4.1	4.0	4.3	1.3	1.3	3.6	0.0	7.0	0.7	0.0	2.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	10.5	11.2	11.3	20.4	9.4	9.4	37.3	0.0	39.2	41.3	0.0	31.6
LnGrp LOS	B	B	B	C	A	A	D	A	D	D	A	C
Approach Vol, veh/h		695			467			403			127	
Approach Delay, s/veh		11.2			14.7			38.5			33.7	
Approach LOS		B			B			D			C	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		41.0		79.0		41.0		79.0				
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5				
Max Green Setting (Gmax), s		36.5		74.5		36.5		74.5				
Max Q Clear Time (g_c+I1), s		18.5		12.3		18.4		35.2				
Green Ext Time (p_c), s		1.6		4.9		0.5		3.4				
Intersection Summary												
HCM 6th Ctrl Delay				20.4								
HCM 6th LOS				C								

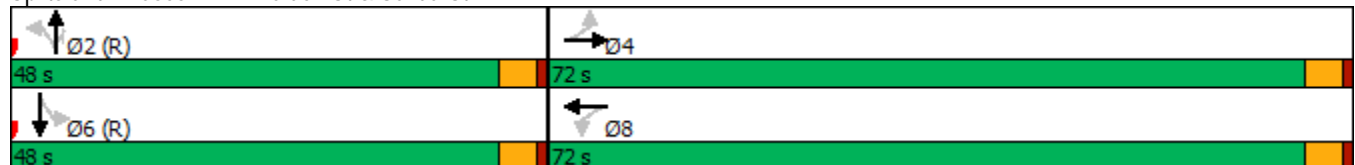
Timings
7: Walden St & Salida St

2040 Background AM.syn

05/06/2020

									
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	20	135	165	135	45	30	155	15	35
Future Volume (vph)	20	135	165	135	45	30	155	15	35
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	Perm	NA
Protected Phases		4		8		2			6
Permitted Phases	4		8		2		2	6	
Detector Phase	4	4	8	8	2	2	2	6	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	22.5	22.5	22.5	22.5	22.5
Total Split (s)	72.0	72.0	72.0	72.0	48.0	48.0	48.0	48.0	48.0
Total Split (%)	60.0%	60.0%	60.0%	60.0%	40.0%	40.0%	40.0%	40.0%	40.0%
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
Total Lost Time (s)	4.5	4.5	4.5	4.5		4.5	4.5	4.5	4.5
Lead/Lag									
Lead-Lag Optimize?									
Recall Mode	None	None	None	None	C-Max	C-Max	C-Max	C-Max	C-Max
Act Effct Green (s)	26.1	26.1	26.1	26.1		84.9	84.9	84.9	84.9
Actuated g/C Ratio	0.22	0.22	0.22	0.22		0.71	0.71	0.71	0.71
v/c Ratio	0.09	0.31	0.82	0.22		0.07	0.14	0.02	0.03
Control Delay	33.8	22.5	87.1	59.7		7.3	1.6	7.7	6.8
Queue Delay	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0
Total Delay	33.8	22.5	87.1	59.7		7.3	1.6	7.7	6.8
LOS	C	C	F	E		A	A	A	A
Approach Delay		23.4		73.8		3.5			7.0
Approach LOS		C		E		A			A
Intersection Summary									
Cycle Length: 120									
Actuated Cycle Length: 120									
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green									
Natural Cycle: 45									
Control Type: Actuated-Coordinated									
Maximum v/c Ratio: 0.82									
Intersection Signal Delay: 36.0					Intersection LOS: D				
Intersection Capacity Utilization 37.7%					ICU Level of Service A				
Analysis Period (min) 15									

Splits and Phases: 7: Walden St & Salida St
























HCM 6th Signalized Intersection Summary

2040 Background AM.syn

7: Walden St & Salida St


















05/06/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	20	135	90	165	135	20	45	30	155	15	35	5
Future Volume (veh/h)	20	135	90	165	135	20	45	30	155	15	35	5
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	22	147	98	179	147	22	49	33	168	16	38	5
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	312	514	322	269	762	112	659	433	1078	845	1101	145
Arrive On Green	0.25	0.25	0.25	0.25	0.25	0.25	0.68	0.68	0.68	0.68	0.68	0.68
Sat Flow, veh/h	1216	2097	1314	1135	3108	457	899	637	1585	1181	1619	213
Grp Volume(v), veh/h	22	123	122	179	83	86	82	0	168	16	0	43
Grp Sat Flow(s),veh/h/ln	1216	1777	1634	1135	1777	1788	1536	0	1585	1181	0	1832
Q Serve(g_s), s	1.8	6.7	7.3	18.3	4.4	4.6	0.5	0.0	4.6	0.6	0.0	0.9
Cycle Q Clear(g_c), s	6.3	6.7	7.3	25.6	4.4	4.6	1.9	0.0	4.6	2.4	0.0	0.9
Prop In Lane	1.00		0.80	1.00		0.26	0.60		1.00	1.00		0.12
Lane Grp Cap(c), veh/h	312	436	400	269	436	438	1092	0	1078	845	0	1246
V/C Ratio(X)	0.07	0.28	0.30	0.67	0.19	0.20	0.08	0.00	0.16	0.02	0.00	0.03
Avail Cap(c_a), veh/h	698	999	919	629	999	1006	1092	0	1078	845	0	1246
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	1.00	0.48	0.48	0.48	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	38.4	36.7	36.9	47.4	35.9	35.9	6.4	0.0	6.9	6.9	0.0	6.3
Incr Delay (d2), s/veh	0.1	0.4	0.4	1.4	0.1	0.1	0.1	0.0	0.3	0.0	0.0	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	3.0	3.0	5.3	1.9	2.0	0.7	0.0	1.6	0.1	0.0	0.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	38.5	37.1	37.4	48.8	36.0	36.0	6.6	0.0	7.2	6.9	0.0	6.3
LnGrp LOS	D	D	D	D	D	D	A	A	A	A	A	A
Approach Vol, veh/h		267			348			250			59	
Approach Delay, s/veh		37.3			42.6			7.0			6.5	
Approach LOS		D			D			A			A	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		86.1		33.9		86.1		33.9				
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5				
Max Green Setting (Gmax), s		43.5		67.5		43.5		67.5				
Max Q Clear Time (g_c+I1), s		6.6		9.3		4.4		27.6				
Green Ext Time (p_c), s		1.1		1.7		0.3		1.8				
Intersection Summary												
HCM 6th Ctrl Delay				29.1								
HCM 6th LOS				C								

Timings
7: Walden St & Salida St

2040 Background PM.syn

05/06/2020

									
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	55	385	300	255	125	45	315	35	60
Future Volume (vph)	55	385	300	255	125	45	315	35	60
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	Perm	NA
Protected Phases		4		8		2			6
Permitted Phases	4		8		2		2	6	
Detector Phase	4	4	8	8	2	2	2	6	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	22.5	22.5	22.5	22.5	22.5
Total Split (s)	83.0	83.0	83.0	83.0	37.0	37.0	37.0	37.0	37.0
Total Split (%)	69.2%	69.2%	69.2%	69.2%	30.8%	30.8%	30.8%	30.8%	30.8%
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
Total Lost Time (s)	4.5	4.5	4.5	4.5		4.5	4.5	4.5	4.5
Lead/Lag									
Lead-Lag Optimize?									
Recall Mode	None	None	None	None	C-Max	C-Max	C-Max	C-Max	C-Max
Act Effct Green (s)	64.3	64.3	64.3	64.3		46.7	46.7	46.7	46.7
Actuated g/C Ratio	0.54	0.54	0.54	0.54		0.39	0.39	0.39	0.39
v/c Ratio	0.11	0.31	0.84	0.16		0.35	0.42	0.09	0.15
Control Delay	10.8	12.2	44.4	21.4		33.1	5.3	30.9	23.5
Queue Delay	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0
Total Delay	10.8	12.2	44.4	21.4		33.1	5.3	30.9	23.5
LOS	B	B	D	C		C	A	C	C
Approach Delay		12.1		33.5		15.0			25.4
Approach LOS		B		C		B			C
Intersection Summary									
Cycle Length: 120									
Actuated Cycle Length: 120									
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green									
Natural Cycle: 60									
Control Type: Actuated-Coordinated									
Maximum v/c Ratio: 0.84									
Intersection Signal Delay: 20.8					Intersection LOS: C				
Intersection Capacity Utilization 59.1%					ICU Level of Service B				
Analysis Period (min) 15									

Splits and Phases: 7: Walden St & Salida St





















	
Ø2 (R)	Ø4
37 s	83 s
	
Ø6 (R)	Ø8
37 s	83 s

HCM 6th Signalized Intersection Summary

2040 Background PM.syn

7: Walden St & Salida St


















05/06/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	55	385	145	300	255	15	125	45	315	35	60	35
Future Volume (veh/h)	55	385	145	300	255	15	125	45	315	35	60	35
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	60	418	158	326	277	16	136	49	342	37	65	38
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.94	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	574	1307	489	411	1763	101	437	150	648	344	452	264
Arrive On Green	0.52	0.52	0.52	0.52	0.52	0.52	0.41	0.41	0.41	0.41	0.41	0.41
Sat Flow, veh/h	1086	2531	946	837	3416	196	941	366	1585	993	1107	647
Grp Volume(v), veh/h	60	292	284	326	143	150	185	0	342	37	0	103
Grp Sat Flow(s),veh/h/ln	1086	1777	1700	837	1777	1835	1307	0	1585	993	0	1754
Q Serve(g_s), s	3.7	11.4	11.6	44.4	5.1	5.1	10.3	0.0	19.5	3.3	0.0	4.4
Cycle Q Clear(g_c), s	8.8	11.4	11.6	56.1	5.1	5.1	14.7	0.0	19.5	18.1	0.0	4.4
Prop In Lane	1.00		0.56	1.00		0.11	0.74		1.00	1.00		0.37
Lane Grp Cap(c), veh/h	574	917	878	411	917	947	586	0	648	344	0	717
V/C Ratio(X)	0.10	0.32	0.32	0.79	0.16	0.16	0.32	0.00	0.53	0.11	0.00	0.14
Avail Cap(c_a), veh/h	724	1162	1112	526	1162	1200	586	0	648	344	0	717
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	1.00	0.19	0.19	0.19	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	17.6	16.8	16.9	33.1	15.3	15.3	26.4	0.0	26.8	31.8	0.0	22.3
Incr Delay (d2), s/veh	0.1	0.2	0.2	1.3	0.0	0.0	1.4	0.0	3.1	0.6	0.0	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	4.7	4.6	8.9	2.1	2.2	4.0	0.0	7.9	0.9	0.0	1.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	17.7	17.0	17.1	34.4	15.3	15.3	27.8	0.0	29.8	32.4	0.0	22.7
LnGrp LOS	B	B	B	C	B	B	C	A	C	C	A	C
Approach Vol, veh/h		636			619			527			140	
Approach Delay, s/veh		17.1			25.4			29.1			25.3	
Approach LOS		B			C			C			C	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		53.5		66.5		53.5		66.5				
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5				
Max Green Setting (Gmax), s		32.5		78.5		32.5		78.5				
Max Q Clear Time (g_c+I1), s		21.5		13.6		20.1		58.1				
Green Ext Time (p_c), s		1.8		4.4		0.5		3.9				
Intersection Summary												
HCM 6th Ctrl Delay				23.6								
HCM 6th LOS				C								

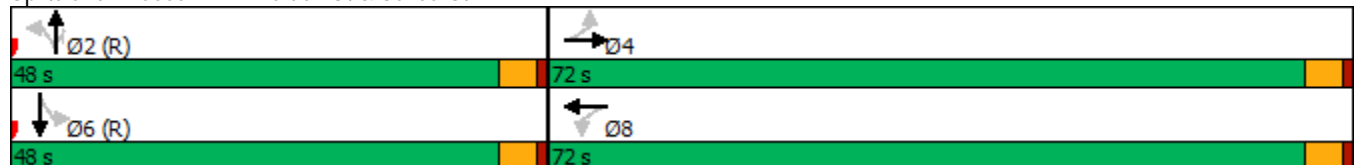
Timings
7: Walden St & Salida St

2040 Total AM Scenario 1.syn

06/08/2020

									
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	20	205	165	235	45	30	155	15	35
Future Volume (vph)	20	205	165	235	45	30	155	15	35
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	Perm	NA
Protected Phases		4		8		2			6
Permitted Phases	4		8		2		2	6	
Detector Phase	4	4	8	8	2	2	2	6	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	22.5	22.5	22.5	22.5	22.5
Total Split (s)	72.0	72.0	72.0	72.0	48.0	48.0	48.0	48.0	48.0
Total Split (%)	60.0%	60.0%	60.0%	60.0%	40.0%	40.0%	40.0%	40.0%	40.0%
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
Total Lost Time (s)	4.5	4.5	4.5	4.5		4.5	4.5	4.5	4.5
Lead/Lag									
Lead-Lag Optimize?									
Recall Mode	None	None	None	None	C-Max	C-Max	C-Max	C-Max	C-Max
Act Effct Green (s)	28.4	28.4	28.4	28.4		82.6	82.6	82.6	82.6
Actuated g/C Ratio	0.24	0.24	0.24	0.24		0.69	0.69	0.69	0.69
v/c Ratio	0.10	0.37	0.89	0.33		0.08	0.15	0.02	0.03
Control Delay	32.0	26.1	76.3	59.4		8.4	1.9	8.9	7.8
Queue Delay	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0
Total Delay	32.0	26.1	76.3	59.4		8.4	1.9	8.9	7.8
LOS	C	C	E	E		A	A	A	A
Approach Delay		26.5		66.1		4.0			8.1
Approach LOS		C		E		A			A
Intersection Summary									
Cycle Length: 120									
Actuated Cycle Length: 120									
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green									
Natural Cycle: 45									
Control Type: Actuated-Coordinated									
Maximum v/c Ratio: 0.89									
Intersection Signal Delay: 36.7					Intersection LOS: D				
Intersection Capacity Utilization 39.7%					ICU Level of Service A				
Analysis Period (min) 15									

Splits and Phases: 7: Walden St & Salida St























HCM 6th Signalized Intersection Summary

2040 Total AM Scenario 1.syn

7: Walden St & Salida St


















06/08/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	20	205	90	165	235	20	45	30	155	15	35	5
Future Volume (veh/h)	20	205	90	165	235	20	45	30	155	15	35	5
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	22	223	98	179	255	22	49	33	168	16	38	5
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	298	672	286	273	917	78	631	413	1028	805	1050	138
Arrive On Green	0.28	0.28	0.28	0.28	0.28	0.28	0.65	0.65	0.65	0.65	0.65	0.65
Sat Flow, veh/h	1102	2429	1033	1059	3313	284	899	638	1585	1181	1619	213
Grp Volume(v), veh/h	22	161	160	179	136	141	82	0	168	16	0	43
Grp Sat Flow(s),veh/h/ln	1102	1777	1685	1059	1777	1819	1536	0	1585	1181	0	1832
Q Serve(g_s), s	1.9	8.7	9.1	19.5	7.2	7.3	0.7	0.0	5.0	0.6	0.0	1.0
Cycle Q Clear(g_c), s	9.2	8.7	9.1	28.6	7.2	7.3	2.1	0.0	5.0	2.7	0.0	1.0
Prop In Lane	1.00		0.61	1.00		0.16	0.60		1.00	1.00		0.12
Lane Grp Cap(c), veh/h	298	492	466	273	492	503	1044	0	1028	805	0	1188
V/C Ratio(X)	0.07	0.33	0.34	0.66	0.28	0.28	0.08	0.00	0.16	0.02	0.00	0.04
Avail Cap(c_a), veh/h	613	999	948	575	999	1023	1044	0	1028	805	0	1188
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	1.00	0.21	0.21	0.21	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	37.6	34.5	34.7	46.1	34.0	34.0	7.8	0.0	8.3	8.3	0.0	7.6
Incr Delay (d2), s/veh	0.1	0.4	0.4	0.6	0.1	0.1	0.1	0.0	0.3	0.0	0.0	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	3.8	3.8	5.2	3.1	3.3	0.8	0.0	1.8	0.2	0.0	0.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	37.7	34.9	35.1	46.7	34.1	34.1	7.9	0.0	8.6	8.3	0.0	7.7
LnGrp LOS	D	C	D	D	C	C	A	A	A	A	A	A
Approach Vol, veh/h	343			456			250			59		
Approach Delay, s/veh	35.2			39.0			8.4			7.8		
Approach LOS	D			D			A			A		
Timer - Assigned Phs	2			4			6			8		
Phs Duration (G+Y+Rc), s	82.3			37.7			82.3			37.7		
Change Period (Y+Rc), s	4.5			4.5			4.5			4.5		
Max Green Setting (Gmax), s	43.5			67.5			43.5			67.5		
Max Q Clear Time (g_c+I1), s	7.0			11.2			4.7			30.6		
Green Ext Time (p_c), s	1.1			2.2			0.3			2.6		
Intersection Summary												
HCM 6th Ctrl Delay	29.3											
HCM 6th LOS	C											


Timings
7: Walden St & Salida St

2040 Total PM Scenario 1.syn

06/08/2020

									
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	55	520	300	300	125	45	315	35	60
Future Volume (vph)	55	520	300	300	125	45	315	35	60
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	Perm	NA
Protected Phases		4		8		2			6
Permitted Phases	4		8		2		2	6	
Detector Phase	4	4	8	8	2	2	2	6	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	22.5	22.5	22.5	22.5	22.5
Total Split (s)	84.0	84.0	84.0	84.0	36.0	36.0	36.0	36.0	36.0
Total Split (%)	70.0%	70.0%	70.0%	70.0%	30.0%	30.0%	30.0%	30.0%	30.0%
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
Total Lost Time (s)	4.5	4.5	4.5	4.5		4.5	4.5	4.5	4.5
Lead/Lag									
Lead-Lag Optimize?									
Recall Mode	None	None	None	None	C-Max	C-Max	C-Max	C-Max	C-Max
Act Efect Green (s)	71.5	71.5	71.5	71.5		39.5	39.5	39.5	39.5
Actuated g/C Ratio	0.60	0.60	0.60	0.60		0.33	0.33	0.33	0.33
v/c Ratio	0.10	0.35	0.89	0.16		0.43	0.46	0.11	0.17
Control Delay	8.6	11.1	44.9	18.3		38.7	5.8	34.4	26.3
Queue Delay	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0
Total Delay	8.6	11.1	44.9	18.3		38.7	5.8	34.4	26.3
LOS	A	B	D	B		D	A	C	C
Approach Delay		10.9		31.3		17.4			28.5
Approach LOS		B		C		B			C
Intersection Summary									
Cycle Length: 120									
Actuated Cycle Length: 120									
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green									
Natural Cycle: 70									
Control Type: Actuated-Coordinated									
Maximum v/c Ratio: 0.89									
Intersection Signal Delay: 20.1					Intersection LOS: C				
Intersection Capacity Utilization 62.8%					ICU Level of Service B				
Analysis Period (min) 15									

Splits and Phases: 7: Walden St & Salida St






















 Ø2 (R)	 Ø4
36 s	84 s
 Ø6 (R)	 Ø8
36 s	84 s

HCM 6th Signalized Intersection Summary

2040 Total PM Scenario 1.syn

7: Walden St & Salida St


















06/08/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	55	520	145	300	300	15	125	45	315	35	60	35
Future Volume (veh/h)	55	520	145	300	300	15	125	45	315	35	60	35
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	60	565	158	326	326	16	136	49	342	37	65	38
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.94	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	619	1598	446	406	2008	98	364	124	543	264	379	222
Arrive On Green	0.58	0.58	0.58	0.58	0.58	0.58	0.34	0.34	0.34	0.34	0.34	0.34
Sat Flow, veh/h	1039	2744	765	730	3448	169	910	361	1585	993	1107	647
Grp Volume(v), veh/h	60	365	358	326	167	175	185	0	342	37	0	103
Grp Sat Flow(s),veh/h/ln	1039	1777	1733	730	1777	1840	1271	0	1585	993	0	1754
Q Serve(g_s), s	3.4	13.0	13.0	50.9	5.2	5.3	11.6	0.0	21.7	3.7	0.0	4.9
Cycle Q Clear(g_c), s	8.6	13.0	13.0	64.0	5.2	5.3	16.5	0.0	21.7	20.2	0.0	4.9
Prop In Lane	1.00		0.44	1.00		0.09	0.74		1.00	1.00		0.37
Lane Grp Cap(c), veh/h	619	1035	1009	406	1035	1071	488	0	543	264	0	601
V/C Ratio(X)	0.10	0.35	0.35	0.80	0.16	0.16	0.38	0.00	0.63	0.14	0.00	0.17
Avail Cap(c_a), veh/h	703	1177	1148	464	1177	1219	488	0	543	264	0	601
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	1.00	0.21	0.21	0.21	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	13.6	13.2	13.2	30.0	11.6	11.6	32.7	0.0	33.1	39.4	0.0	27.5
Incr Delay (d2), s/veh	0.1	0.2	0.2	2.0	0.0	0.0	2.2	0.0	5.5	1.1	0.0	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	5.1	5.0	8.9	2.0	2.1	4.6	0.0	9.1	1.0	0.0	2.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	13.6	13.4	13.4	32.0	11.6	11.6	34.9	0.0	38.5	40.5	0.0	28.2
LnGrp LOS	B	B	B	C	B	B	C	A	D	D	A	C
Approach Vol, veh/h	783			668			527			140		
Approach Delay, s/veh	13.4			21.5			37.2			31.4		
Approach LOS	B			C			D			C		
Timer - Assigned Phs	2			4			6			8		
Phs Duration (G+Y+Rc), s	45.6			74.4			45.6			74.4		
Change Period (Y+Rc), s	4.5			4.5			4.5			4.5		
Max Green Setting (Gmax), s	31.5			79.5			31.5			79.5		
Max Q Clear Time (g_c+I1), s	23.7			15.0			22.2			66.0		
Green Ext Time (p_c), s	1.5			5.8			0.4			3.9		
Intersection Summary												
HCM 6th Ctrl Delay	23.1											
HCM 6th LOS	C											

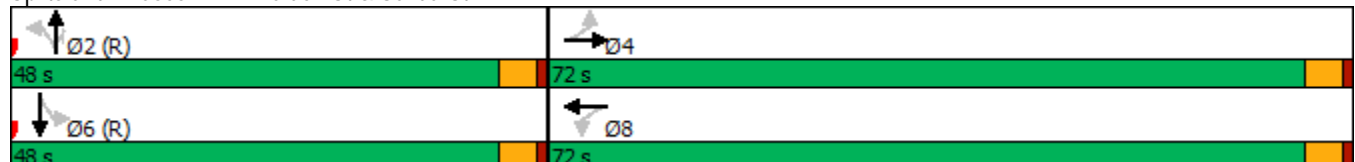
Timings
7: Walden St & Salida St

2040 Total AM Scenario 2.syn

06/08/2020

									
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	20	205	165	325	45	30	155	15	35
Future Volume (vph)	20	205	165	325	45	30	155	15	35
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	Perm	NA
Protected Phases		4		8		2			6
Permitted Phases	4		8		2		2	6	
Detector Phase	4	4	8	8	2	2	2	6	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	22.5	22.5	22.5	22.5	22.5
Total Split (s)	72.0	72.0	72.0	72.0	48.0	48.0	48.0	48.0	48.0
Total Split (%)	60.0%	60.0%	60.0%	60.0%	40.0%	40.0%	40.0%	40.0%	40.0%
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
Total Lost Time (s)	4.5	4.5	4.5	4.5		4.5	4.5	4.5	4.5
Lead/Lag									
Lead-Lag Optimize?									
Recall Mode	None	None	None	None	C-Max	C-Max	C-Max	C-Max	C-Max
Act Effct Green (s)	28.8	28.8	28.8	28.8		82.2	82.2	82.2	82.2
Actuated g/C Ratio	0.24	0.24	0.24	0.24		0.68	0.68	0.68	0.68
v/c Ratio	0.12	0.36	0.87	0.44		0.08	0.15	0.02	0.03
Control Delay	32.4	25.8	79.4	58.2		8.6	1.9	9.2	8.1
Queue Delay	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0
Total Delay	32.4	25.8	79.4	58.2		8.6	1.9	9.2	8.1
LOS	C	C	E	E		A	A	A	A
Approach Delay		26.2		65.0		4.1			8.4
Approach LOS		C		E		A			A
Intersection Summary									
Cycle Length: 120									
Actuated Cycle Length: 120									
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green									
Natural Cycle: 45									
Control Type: Actuated-Coordinated									
Maximum v/c Ratio: 0.87									
Intersection Signal Delay: 38.6					Intersection LOS: D				
Intersection Capacity Utilization 39.7%					ICU Level of Service A				
Analysis Period (min) 15									

Splits and Phases: 7: Walden St & Salida St
























HCM 6th Signalized Intersection Summary

2040 Total AM Scenario 2.syn

7: Walden St & Salida St


















06/08/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	20	205	90	165	325	20	45	30	155	15	35	5
Future Volume (veh/h)	20	205	90	165	325	20	45	30	155	15	35	5
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	22	223	98	179	353	22	49	33	168	16	38	5
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	259	683	290	278	955	59	627	411	1021	800	1043	137
Arrive On Green	0.28	0.28	0.28	0.28	0.28	0.28	0.64	0.64	0.64	0.64	0.64	0.64
Sat Flow, veh/h	1008	2429	1033	1059	3398	211	899	638	1585	1181	1619	213
Grp Volume(v), veh/h	22	161	160	179	184	191	82	0	168	16	0	43
Grp Sat Flow(s),veh/h/ln	1008	1777	1685	1059	1777	1832	1536	0	1585	1181	0	1832
Q Serve(g_s), s	2.1	8.6	9.0	19.4	10.0	10.0	0.8	0.0	5.1	0.6	0.0	1.0
Cycle Q Clear(g_c), s	12.2	8.6	9.0	28.4	10.0	10.0	2.1	0.0	5.1	2.7	0.0	1.0
Prop In Lane	1.00		0.61	1.00		0.12	0.60		1.00	1.00		0.12
Lane Grp Cap(c), veh/h	259	499	473	278	499	515	1037	0	1021	800	0	1180
V/C Ratio(X)	0.08	0.32	0.34	0.64	0.37	0.37	0.08	0.00	0.16	0.02	0.00	0.04
Avail Cap(c_a), veh/h	542	999	948	576	999	1031	1037	0	1021	800	0	1180
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	1.00	0.25	0.25	0.25	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	39.5	34.1	34.3	45.6	34.6	34.6	8.0	0.0	8.5	8.5	0.0	7.8
Incr Delay (d2), s/veh	0.1	0.4	0.4	0.6	0.1	0.1	0.1	0.0	0.3	0.0	0.0	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	3.8	3.8	5.1	4.3	4.5	0.8	0.0	1.8	0.2	0.0	0.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	39.7	34.5	34.7	46.2	34.7	34.7	8.1	0.0	8.9	8.5	0.0	7.8
LnGrp LOS	D	C	C	D	C	C	A	A	A	A	A	A
Approach Vol, veh/h		343			554			250			59	
Approach Delay, s/veh		34.9			38.4			8.6			8.0	
Approach LOS		C			D			A			A	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		81.8		38.2		81.8		38.2				
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5				
Max Green Setting (Gmax), s		43.5		67.5		43.5		67.5				
Max Q Clear Time (g_c+I1), s		7.1		14.2		4.7		30.4				
Green Ext Time (p_c), s		1.1		2.2		0.3		3.3				
Intersection Summary												
HCM 6th Ctrl Delay				29.8								
HCM 6th LOS				C								

Timings
7: Walden St & Salida St

2040 Total PM Scenario 2.syn

06/08/2020

									
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	55	555	300	315	125	45	315	35	60
Future Volume (vph)	55	555	300	315	125	45	315	35	60
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	Perm	NA
Protected Phases		4		8		2			6
Permitted Phases	4		8		2		2	6	
Detector Phase	4	4	8	8	2	2	2	6	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	22.5	22.5	22.5	22.5	22.5
Total Split (s)	84.0	84.0	84.0	84.0	36.0	36.0	36.0	36.0	36.0
Total Split (%)	70.0%	70.0%	70.0%	70.0%	30.0%	30.0%	30.0%	30.0%	30.0%
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
Total Lost Time (s)	4.5	4.5	4.5	4.5		4.5	4.5	4.5	4.5
Lead/Lag									
Lead-Lag Optimize?									
Recall Mode	None	None	None	None	C-Max	C-Max	C-Max	C-Max	C-Max
Act Effct Green (s)	72.8	72.8	72.8	72.8		38.2	38.2	38.2	38.2
Actuated g/C Ratio	0.61	0.61	0.61	0.61		0.32	0.32	0.32	0.32
v/c Ratio	0.10	0.36	0.91	0.17		0.44	0.47	0.11	0.18
Control Delay	8.4	10.9	46.7	15.1		39.6	6.3	34.7	26.6
Queue Delay	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0
Total Delay	8.4	10.9	46.7	15.1		39.6	6.3	34.7	26.6
LOS	A	B	D	B		D	A	C	C
Approach Delay		10.7		30.2		18.0			28.8
Approach LOS		B		C		B			C
Intersection Summary									
Cycle Length: 120									
Actuated Cycle Length: 120									
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green									
Natural Cycle: 75									
Control Type: Actuated-Coordinated									
Maximum v/c Ratio: 0.91									
Intersection Signal Delay: 19.8					Intersection LOS: B				
Intersection Capacity Utilization 63.8%					ICU Level of Service B				
Analysis Period (min) 15									

Splits and Phases: 7: Walden St & Salida St






















 Ø2 (R)	 Ø4
36 s	84 s
 Ø6 (R)	 Ø8
36 s	84 s

HCM 6th Signalized Intersection Summary

2040 Total PM Scenario 2.syn

7: Walden St & Salida St

06/08/2020





















												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	55	555	145	300	315	15	125	45	315	35	60	35
Future Volume (veh/h)	55	555	145	300	315	15	125	45	315	35	60	35
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	60	603	158	326	342	16	136	49	342	37	65	38
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.94	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	628	1670	437	404	2071	97	346	117	517	243	361	211
Arrive On Green	0.60	0.60	0.60	0.60	0.60	0.60	0.33	0.33	0.33	0.33	0.33	0.33
Sat Flow, veh/h	1023	2787	729	705	3457	161	901	359	1585	993	1107	647
Grp Volume(v), veh/h	60	384	377	326	175	183	185	0	342	37	0	103
Grp Sat Flow(s),veh/h/ln	1023	1777	1739	705	1777	1841	1260	0	1585	993	0	1754
Q Serve(g_s), s	3.3	13.3	13.3	52.9	5.3	5.3	11.9	0.0	22.3	3.8	0.0	5.0
Cycle Q Clear(g_c), s	8.6	13.3	13.3	66.2	5.3	5.3	17.0	0.0	22.3	20.7	0.0	5.0
Prop In Lane	1.00		0.42	1.00		0.09	0.74		1.00	1.00		0.37
Lane Grp Cap(c), veh/h	628	1064	1042	404	1064	1103	463	0	517	243	0	572
V/C Ratio(X)	0.10	0.36	0.36	0.81	0.16	0.17	0.40	0.00	0.66	0.15	0.00	0.18
Avail Cap(c_a), veh/h	693	1177	1152	449	1177	1220	463	0	517	243	0	572
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	1.00	0.28	0.28	0.28	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	12.6	12.3	12.3	29.3	10.7	10.7	34.4	0.0	34.8	41.4	0.0	29.0
Incr Delay (d2), s/veh	0.1	0.2	0.2	2.9	0.0	0.0	2.6	0.0	6.5	1.3	0.0	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	5.2	5.1	8.9	2.0	2.1	4.7	0.0	9.5	1.0	0.0	2.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	12.7	12.5	12.5	32.1	10.7	10.7	36.9	0.0	41.3	42.7	0.0	29.6
LnGrp LOS	B	B	B	C	B	B	D	A	D	D	A	C
Approach Vol, veh/h	821			684			527			140		
Approach Delay, s/veh	12.5			20.9			39.8			33.1		
Approach LOS	B			C			D			C		
Timer - Assigned Phs	2			4			6			8		
Phs Duration (G+Y+Rc), s	43.6			76.4			43.6			76.4		
Change Period (Y+Rc), s	4.5			4.5			4.5			4.5		
Max Green Setting (Gmax), s	31.5			79.5			31.5			79.5		
Max Q Clear Time (g_c+I1), s	24.3			15.3			22.7			68.2		
Green Ext Time (p_c), s	1.4			6.2			0.4			3.7		
Intersection Summary												
HCM 6th Ctrl Delay	23.1											
HCM 6th LOS	C											

Timings

8: Tower Road & Salida St

2020 Adjusted Existing AM.syn

04/21/2020

										
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	90	20	165	95	25	250	635	45	70	1605
Future Volume (vph)	90	20	165	95	25	250	635	45	70	1605
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Prot	NA	Perm	pm+pt	NA
Protected Phases	7	4		3	8	5	2		1	6
Permitted Phases	4		4	8				2	6	
Detector Phase	7	4	4	3	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)	10.5	24.5	24.5	11.5	23.0	11.5	24.5	24.5	11.0	24.0
Total Split (s)	12.8	24.8	24.8	12.0	24.0	24.0	71.2	71.2	12.0	59.2
Total Split (%)	10.7%	20.7%	20.7%	10.0%	20.0%	20.0%	59.3%	59.3%	10.0%	49.3%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.5	1.5	1.5	1.0	1.0	2.5	2.5	2.5	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	5.5	5.5	5.0	5.0	6.5	6.5	6.5	6.0	6.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	C-Max	C-Max	None	C-Max
Act Effect Green (s)	16.8	8.6	8.6	14.2	8.3	15.1	73.6	73.6	74.1	66.3
Actuated g/C Ratio	0.14	0.07	0.07	0.12	0.07	0.13	0.61	0.61	0.62	0.55
v/c Ratio	0.56	0.19	0.66	0.65	0.49	0.66	0.34	0.07	0.24	0.71
Control Delay	55.7	53.9	18.5	61.2	32.8	55.2	11.3	1.7	4.5	20.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	55.7	53.9	18.5	61.2	32.8	55.2	11.3	1.7	4.5	20.0
LOS	E	D	B	E	C	E	B	A	A	C
Approach Delay		33.4			49.7		22.0			19.1
Approach LOS		C			D		C			B

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 18 (15%), Referenced to phase 2:NBT and 6:SBTL, Start of Yellow

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.71

Intersection Signal Delay: 22.9




Intersection LOS: C

Intersection Capacity Utilization 67.0%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 8: Tower Road & Salida St
























			
Ø1	Ø2 (R)	Ø3	Ø4
12 s	71.2 s	12 s	24.8 s
			
Ø5	Ø6 (R)	Ø7	Ø8
24 s	59.2 s	12.8 s	24 s

HCM 6th Signalized Intersection Summary

2020 Adjusted Existing AM.syn

8: Tower Road & Salida St

04/21/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	90	20	165	95	25	40	250	635	45	70	1605	100
Future Volume (veh/h)	90	20	165	95	25	40	250	635	45	70	1605	100
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	108	25	196	120	29	53	284	747	67	117	1824	149
Peak Hour Factor	0.83	0.80	0.84	0.79	0.86	0.75	0.88	0.85	0.67	0.60	0.88	0.67
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	285	261	221	312	79	144	344	2002	893	483	2437	198
Arrive On Green	0.06	0.14	0.14	0.06	0.13	0.13	0.20	1.00	1.00	0.03	0.34	0.34
Sat Flow, veh/h	1781	1870	1585	1781	593	1083	3456	3554	1585	1781	4812	392
Grp Volume(v), veh/h	108	25	196	120	0	82	284	747	67	117	1289	684
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	0	1675	1728	1777	1585	1781	1702	1800
Q Serve(g_s), s	6.2	1.4	14.6	7.0	0.0	5.4	9.5	0.0	0.0	3.7	40.2	40.5
Cycle Q Clear(g_c), s	6.2	1.4	14.6	7.0	0.0	5.4	9.5	0.0	0.0	3.7	40.2	40.5
Prop In Lane	1.00		1.00	1.00		0.65	1.00		1.00	1.00		0.22
Lane Grp Cap(c), veh/h	285	261	221	312	0	223	344	2002	893	483	1724	912
V/C Ratio(X)	0.38	0.10	0.89	0.38	0.00	0.37	0.82	0.37	0.08	0.24	0.75	0.75
Avail Cap(c_a), veh/h	285	301	255	312	0	265	504	2002	893	489	1724	912
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	0.67	0.67	0.67
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	0.84	0.84	0.84	0.11	0.11	0.11
Uniform Delay (d), s/veh	41.6	45.0	50.7	42.1	0.0	47.4	47.0	0.0	0.0	13.0	32.8	32.9
Incr Delay (d2), s/veh	0.8	0.2	26.4	0.8	0.0	1.0	6.1	0.4	0.1	0.0	0.3	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.8	0.7	7.4	3.2	0.0	2.3	4.0	0.1	0.0	1.5	17.4	18.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	42.5	45.2	77.1	42.8	0.0	48.4	53.1	0.4	0.1	13.0	33.2	33.6
LnGrp LOS	D	D	E	D	A	D	D	A	A	B	C	C
Approach Vol, veh/h	329			202			1098			2090		
Approach Delay, s/veh	63.3			45.1			14.0			32.2		
Approach LOS	E			D			B			C		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	11.6	74.1	12.0	22.3	18.5	67.3	12.8	21.5				
Change Period (Y+Rc), s	6.0	6.5	5.0	5.5	6.5	* 6.5	5.5	* 5.5				
Max Green Setting (Gmax), s	6.0	64.7	7.0	19.3	17.5	* 53	7.3	* 19				
Max Q Clear Time (g_c+I1), s	5.7	2.0	9.0	16.6	11.5	42.5	8.2	7.4				
Green Ext Time (p_c), s	0.0	6.6	0.0	0.2	0.5	8.6	0.0	0.2				
Intersection Summary												
HCM 6th Ctrl Delay	30.3											
HCM 6th LOS	C											
Notes												





















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

Timings

8: Tower Road & Salida St

2020 Adjusted Existing PM.syn

04/21/2020

										
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	320	50	335	130	45	475	955	65	70	1045
Future Volume (vph)	320	50	335	130	45	475	955	65	70	1045
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Prot	NA	Perm	pm+pt	NA
Protected Phases	7	4		3	8	5	2		1	6
Permitted Phases	4		4	8				2	6	
Detector Phase	7	4	4	3	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)	10.5	24.5	24.5	11.5	23.0	11.5	24.5	24.5	11.0	24.0
Total Split (s)	27.0	35.0	35.0	15.0	23.0	25.0	59.0	59.0	11.0	45.0
Total Split (%)	22.5%	29.2%	29.2%	12.5%	19.2%	20.8%	49.2%	49.2%	9.2%	37.5%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.5	1.5	1.5	1.0	1.0	2.5	2.5	2.5	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	5.5	5.5	5.0	5.0	6.5	6.5	6.5	6.0	6.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	C-Max	C-Max	None	C-Max
Act Effect Green (s)	38.8	24.0	24.0	22.0	12.3	21.1	56.3	56.3	49.1	42.2
Actuated g/C Ratio	0.32	0.20	0.20	0.18	0.10	0.18	0.47	0.47	0.41	0.35
v/c Ratio	0.99	0.19	0.67	0.54	0.68	0.82	0.66	0.09	0.39	0.79
Control Delay	80.5	39.8	16.2	38.3	48.1	49.8	35.2	3.0	22.0	34.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	80.5	39.8	16.2	38.3	48.1	49.8	35.2	3.0	22.0	34.7
LOS	F	D	B	D	D	D	D	A	C	C
Approach Delay		48.2			43.2		38.1			33.9
Approach LOS		D			D		D			C

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 40 (33%), Referenced to phase 2:NBT and 6:SBTL, Start of Yellow

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.99

Intersection Signal Delay: 38.9

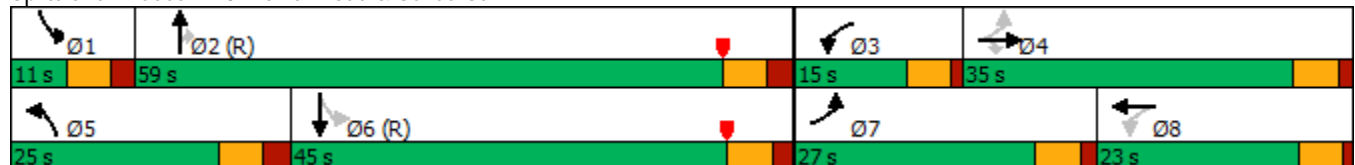
Intersection LOS: D

Intersection Capacity Utilization 82.3%

ICU Level of Service E
























Analysis Period (min) 15

Splits and Phases: 8: Tower Road & Salida St



HCM 6th Signalized Intersection Summary 8: Tower Road & Salida St

2020 Adjusted Existing PM.syn
04/21/2020





















												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	320	50	335	130	45	80	475	955	65	70	1045	195
Future Volume (veh/h)	320	50	335	130	45	80	475	955	65	70	1045	195
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	386	71	372	151	60	90	495	1098	75	92	1161	227
Peak Hour Factor	0.83	0.70	0.90	0.86	0.75	0.89	0.96	0.87	0.87	0.76	0.90	0.86
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	457	460	390	346	98	148	533	2058	918	276	1982	387
Arrive On Green	0.18	0.25	0.25	0.08	0.15	0.15	0.05	0.19	0.19	0.08	0.93	0.93
Sat Flow, veh/h	1781	1870	1585	1781	675	1013	3456	3554	1585	1781	4286	838
Grp Volume(v), veh/h	386	71	372	151	0	150	495	1098	75	92	922	466
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	0	1688	1728	1777	1585	1781	1702	1720
Q Serve(g_s), s	21.5	3.6	27.8	8.6	0.0	10.0	17.1	33.4	4.7	3.3	5.3	5.3
Cycle Q Clear(g_c), s	21.5	3.6	27.8	8.6	0.0	10.0	17.1	33.4	4.7	3.3	5.3	5.3
Prop In Lane	1.00		1.00	1.00		0.60	1.00		1.00	1.00		0.49
Lane Grp Cap(c), veh/h	457	460	390	346	0	246	533	2058	918	276	1574	795
V/C Ratio(X)	0.85	0.15	0.95	0.44	0.00	0.61	0.93	0.53	0.08	0.33	0.59	0.59
Avail Cap(c_a), veh/h	457	460	390	346	0	253	533	2058	918	276	1574	795
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33	2.00	2.00	2.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	0.79	0.79	0.79	0.72	0.72	0.72
Uniform Delay (d), s/veh	34.3	35.5	44.6	39.0	0.0	48.0	56.3	33.9	22.3	16.8	2.6	2.6
Incr Delay (d2), s/veh	13.7	0.2	33.9	0.9	0.0	4.0	19.4	0.8	0.1	0.5	1.2	2.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	11.1	1.7	14.5	3.8	0.0	4.5	9.4	16.1	1.8	1.3	1.3	1.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	47.9	35.6	78.5	39.8	0.0	52.1	75.7	34.7	22.4	17.4	3.8	4.9
LnGrp LOS	D	D	E	D	A	D	E	C	C	B	A	A
Approach Vol, veh/h		829			301			1668			1480	
Approach Delay, s/veh		60.6			45.9			46.3			5.0	
Approach LOS		E			D			D			A	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	11.0	76.5	15.0	35.0	25.0	62.5	27.0	23.0				
Change Period (Y+Rc), s	6.0	6.5	5.0	5.5	6.5	* 6.5	5.5	* 5.5				
Max Green Setting (Gmax), s	5.0	52.5	10.0	29.5	18.5	* 39	21.5	* 18				
Max Q Clear Time (g_c+I1), s	5.3	35.4	10.6	29.8	19.1	7.3	23.5	12.0				
Green Ext Time (p_c), s	0.0	7.8	0.0	0.0	0.0	12.4	0.0	0.4				
Intersection Summary												
HCM 6th Ctrl Delay			34.8									
HCM 6th LOS			C									
Notes												
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.												

Timings

2022 Background AM.syn

8: Tower Road & Salida St

05/06/2020

										
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	95	20	175	100	30	285	700	45	75	1715
Future Volume (vph)	95	20	175	100	30	285	700	45	75	1715
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Prot	NA	Perm	pm+pt	NA
Protected Phases	7	4		3	8	5	2		1	6
Permitted Phases	4		4	8				2	6	
Detector Phase	7	4	4	3	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)	10.5	24.5	24.5	11.5	23.0	11.5	24.5	24.5	11.0	24.0
Total Split (s)	12.8	24.8	24.8	11.8	23.8	24.0	70.4	70.4	13.0	59.4
Total Split (%)	10.7%	20.7%	20.7%	9.8%	19.8%	20.0%	58.7%	58.7%	10.8%	49.5%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.5	1.5	1.5	1.0	1.0	2.5	2.5	2.5	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	5.5	5.5	5.0	5.0	6.5	6.5	6.5	6.0	6.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	C-Max	C-Max	None	C-Max
Act Effect Green (s)	16.4	9.1	9.1	15.4	8.6	16.5	73.1	73.1	72.7	64.6
Actuated g/C Ratio	0.14	0.08	0.08	0.13	0.07	0.14	0.61	0.61	0.61	0.54
v/c Ratio	0.61	0.18	0.67	0.64	0.52	0.69	0.38	0.07	0.27	0.78
Control Delay	58.0	53.1	17.7	59.5	34.9	51.9	14.3	2.6	4.7	21.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	58.0	53.1	17.7	59.5	34.9	51.9	14.3	2.6	4.7	21.8
LOS	E	D	B	E	C	D	B	A	A	C
Approach Delay		33.5			49.4		23.7			20.8
Approach LOS		C			D		C			C

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 18 (15%), Referenced to phase 2:NBT and 6:SBTL, Start of Yellow

Natural Cycle: 100

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.78

Intersection Signal Delay: 24.3

Intersection LOS: C

Intersection Capacity Utilization 70.6%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 8: Tower Road & Salida St


























HCM 6th Signalized Intersection Summary

2022 Background AM.syn

8: Tower Road & Salida St

05/06/2020





















												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	95	20	175	100	30	40	285	700	45	75	1715	110
Future Volume (veh/h)	95	20	175	100	30	40	285	700	45	75	1715	110
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	114	25	208	127	35	53	324	824	67	125	1949	164
Peak Hour Factor	0.83	0.80	0.84	0.79	0.86	0.75	0.88	0.85	0.67	0.60	0.88	0.67
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	288	275	233	316	93	141	383	1970	879	456	2352	197
Arrive On Green	0.06	0.15	0.15	0.06	0.14	0.14	0.22	1.00	1.00	0.03	0.33	0.33
Sat Flow, veh/h	1781	1870	1585	1781	671	1016	3456	3554	1585	1781	4800	402
Grp Volume(v), veh/h	114	25	208	127	0	88	324	824	67	125	1379	734
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	0	1687	1728	1777	1585	1781	1702	1798
Q Serve(g_s), s	6.6	1.4	15.5	6.8	0.0	5.7	10.8	0.0	0.0	4.1	44.8	45.3
Cycle Q Clear(g_c), s	6.6	1.4	15.5	6.8	0.0	5.7	10.8	0.0	0.0	4.1	44.8	45.3
Prop In Lane	1.00		1.00	1.00		0.60	1.00		1.00	1.00		0.22
Lane Grp Cap(c), veh/h	288	275	233	316	0	234	383	1970	879	456	1668	881
V/C Ratio(X)	0.40	0.09	0.89	0.40	0.00	0.38	0.85	0.42	0.08	0.27	0.83	0.83
Avail Cap(c_a), veh/h	288	301	255	316	0	264	504	1970	879	470	1668	881
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	0.67	0.67	0.67
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	0.78	0.78	0.78	0.09	0.09	0.09
Uniform Delay (d), s/veh	41.2	44.3	50.3	41.9	0.0	47.0	45.7	0.0	0.0	13.9	35.6	35.8
Incr Delay (d2), s/veh	0.9	0.1	28.9	0.8	0.0	1.0	8.0	0.5	0.1	0.0	0.5	0.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.0	0.7	8.0	3.3	0.0	2.5	4.6	0.1	0.0	1.7	19.5	20.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	42.1	44.4	79.2	42.7	0.0	48.0	53.7	0.5	0.1	13.9	36.1	36.7
LnGrp LOS	D	D	E	D	A	D	D	A	A	B	D	D
Approach Vol, veh/h	347					215		1215		2238		
Approach Delay, s/veh	64.5					44.9		14.7		35.0		
Approach LOS	E					D		B		D		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	12.1	73.0	11.8	23.1	19.8	65.3	12.8	22.1				
Change Period (Y+Rc), s	6.0	6.5	5.0	5.5	6.5	* 6.5	5.5	* 5.5				
Max Green Setting (Gmax), s	7.0	63.9	6.8	19.3	17.5	* 53	7.3	* 19				
Max Q Clear Time (g_c+I1), s	6.1	2.0	8.8	17.5	12.8	47.3	8.6	7.7				
Green Ext Time (p_c), s	0.0	7.5	0.0	0.1	0.5	5.4	0.0	0.3				
Intersection Summary												
HCM 6th Ctrl Delay			31.9									
HCM 6th LOS			C									
Notes												

Timings

2022 Background PM.syn

8: Tower Road & Salida St

05/06/2020

										
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	335	50	365	135	45	500	1030	65	70	1115
Future Volume (vph)	335	50	365	135	45	500	1030	65	70	1115
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Prot	NA	Perm	pm+pt	NA
Protected Phases	7	4		3	8	5	2		1	6
Permitted Phases	4		4	8				2	6	
Detector Phase	7	4	4	3	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)	10.5	24.5	24.5	11.5	23.0	11.5	24.5	24.5	11.0	24.0
Total Split (s)	27.0	36.1	36.1	13.9	23.0	26.0	58.0	58.0	12.0	44.0
Total Split (%)	22.5%	30.1%	30.1%	11.6%	19.2%	21.7%	48.3%	48.3%	10.0%	36.7%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.5	1.5	1.5	1.0	1.0	2.5	2.5	2.5	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	5.5	5.5	5.0	5.0	6.5	6.5	6.5	6.0	6.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	C-Max	C-Max	None	C-Max
Act Effect Green (s)	38.9	25.0	25.0	21.3	12.4	21.9	55.8	55.8	48.5	41.2
Actuated g/C Ratio	0.32	0.21	0.21	0.18	0.10	0.18	0.46	0.46	0.40	0.34
v/c Ratio	1.05	0.18	0.71	0.59	0.69	0.83	0.72	0.09	0.43	0.86
Control Delay	94.6	38.7	18.6	41.0	48.4	46.9	33.0	2.3	23.0	36.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	94.6	38.7	18.6	41.0	48.4	46.9	33.0	2.3	23.0	36.0
LOS	F	D	B	D	D	D	C	A	C	D
Approach Delay		55.0			44.7		35.8			35.2
Approach LOS		E			D		D			D

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 40 (33%), Referenced to phase 2:NBT and 6:SBTL, Start of Yellow

Natural Cycle: 100

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.05

Intersection Signal Delay: 39.9

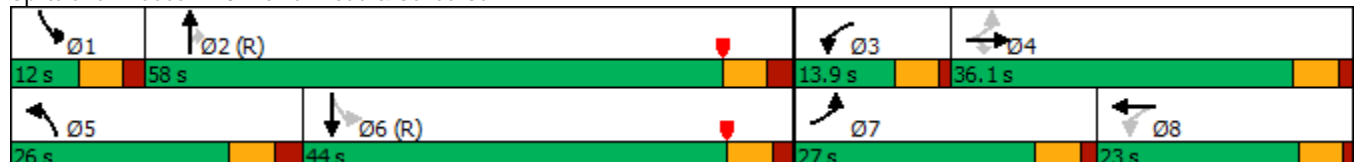
Intersection LOS: D

Intersection Capacity Utilization 85.7%

ICU Level of Service E

Analysis Period (min) 15

Splits and Phases: 8: Tower Road & Salida St


























HCM 6th Signalized Intersection Summary

2022 Background PM.syn

8: Tower Road & Salida St

05/06/2020





















												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	335	50	365	135	45	85	500	1030	65	70	1115	205
Future Volume (veh/h)	335	50	365	135	45	85	500	1030	65	70	1115	205
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	404	71	406	157	60	96	521	1184	75	92	1239	238
Peak Hour Factor	0.83	0.70	0.90	0.86	0.75	0.89	0.96	0.87	0.87	0.76	0.90	0.86
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	451	477	404	326	94	151	562	2054	916	255	1953	375
Arrive On Green	0.18	0.25	0.25	0.07	0.15	0.15	0.05	0.19	0.19	0.09	0.91	0.91
Sat Flow, veh/h	1781	1870	1585	1781	648	1036	3456	3554	1585	1781	4300	826
Grp Volume(v), veh/h	404	71	406	157	0	156	521	1184	75	92	981	496
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	0	1684	1728	1777	1585	1781	1702	1722
Q Serve(g_s), s	21.5	3.5	30.6	8.9	0.0	10.5	18.0	36.4	4.7	3.3	7.5	7.5
Cycle Q Clear(g_c), s	21.5	3.5	30.6	8.9	0.0	10.5	18.0	36.4	4.7	3.3	7.5	7.5
Prop In Lane	1.00		1.00	1.00		0.62	1.00		1.00	1.00		0.48
Lane Grp Cap(c), veh/h	451	477	404	326	0	246	562	2054	916	255	1546	782
V/C Ratio(X)	0.90	0.15	1.00	0.48	0.00	0.64	0.93	0.58	0.08	0.36	0.63	0.63
Avail Cap(c_a), veh/h	451	477	404	326	0	253	562	2054	916	268	1546	782
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33	2.00	2.00	2.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	0.69	0.69	0.69	0.70	0.70	0.70
Uniform Delay (d), s/veh	35.5	34.6	44.7	40.0	0.0	48.2	56.1	35.2	22.4	17.7	3.3	3.3
Incr Delay (d2), s/veh	20.0	0.1	45.9	1.1	0.0	5.0	16.7	0.8	0.1	0.6	1.4	2.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	12.4	1.6	17.1	4.1	0.0	4.7	9.7	17.6	1.8	1.3	1.6	1.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	55.5	34.8	90.6	41.1	0.0	53.2	72.7	36.0	22.5	18.3	4.7	6.1
LnGrp LOS	E	C	F	D	A	D	E	D	C	B	A	A
Approach Vol, veh/h	881					313		1780		1569		
Approach Delay, s/veh	70.0					47.2		46.2		6.0		
Approach LOS	E					D		D		A		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	11.1	76.4	13.9	36.1	26.0	61.5	27.0	23.0				
Change Period (Y+Rc), s	6.0	6.5	5.0	5.5	6.5	* 6.5	5.5	* 5.5				
Max Green Setting (Gmax), s	6.0	51.5	8.9	30.6	19.5	* 38	21.5	* 18				
Max Q Clear Time (g_c+I1), s	5.3	38.4	10.9	32.6	20.0	9.5	23.5	12.5				
Green Ext Time (p_c), s	0.0	7.1	0.0	0.0	0.0	12.9	0.0	0.3				
Intersection Summary												
HCM 6th Ctrl Delay	37.0											
HCM 6th LOS	D											
Notes												

Timings

8: Tower Road & Salida St

2022 Total AM.syn

06/08/2020

										
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	110	20	235	100	30	360	700	45	75	1715
Future Volume (vph)	110	20	235	100	30	360	700	45	75	1715
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Prot	NA	Perm	pm+pt	NA
Protected Phases	7	4		3	8	5	2		1	6
Permitted Phases	4		4	8				2	6	
Detector Phase	7	4	4	3	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)	10.5	24.5	24.5	11.5	23.0	11.5	24.5	24.5	11.0	24.0
Total Split (s)	12.8	24.8	24.8	11.8	23.8	24.0	70.4	70.4	13.0	59.4
Total Split (%)	10.7%	20.7%	20.7%	9.8%	19.8%	20.0%	58.7%	58.7%	10.8%	49.5%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.5	1.5	1.5	1.0	1.0	2.5	2.5	2.5	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	5.5	5.5	5.0	5.0	6.5	6.5	6.5	6.0	6.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	C-Max	C-Max	None	C-Max
Act Effect Green (s)	18.7	11.4	11.4	17.7	10.9	18.4	71.3	71.3	67.9	60.4
Actuated g/C Ratio	0.16	0.10	0.10	0.15	0.09	0.15	0.59	0.59	0.57	0.50
v/c Ratio	0.62	0.14	0.80	0.56	0.44	0.78	0.39	0.07	0.29	0.85
Control Delay	55.1	48.4	30.1	51.6	29.0	56.9	16.8	3.1	6.1	26.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	55.1	48.4	30.1	51.6	29.0	56.9	16.8	3.1	6.1	26.0
LOS	E	D	C	D	C	E	B	A	A	C
Approach Delay		38.7			42.3		28.7			24.9
Approach LOS		D			D		C			C

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 18 (15%), Referenced to phase 2:NBT and 6:SBTL, Start of Yellow

Natural Cycle: 110

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.85

Intersection Signal Delay: 28.4




Intersection LOS: C

Intersection Capacity Utilization 74.2%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 8: Tower Road & Salida St
























							
13 s	70.4 s				11.8 s	24.8 s	
							
24 s	59.4 s				12.8 s	23.8 s	

HCM 6th Signalized Intersection Summary

8: Tower Road & Salida St

2022 Total AM.syn

06/08/2020





















												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	110	20	235	100	30	40	360	700	45	75	1715	135
Future Volume (veh/h)	110	20	235	100	30	40	360	700	45	75	1715	135
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	133	25	280	127	35	53	409	824	67	125	1949	201
Peak Hour Factor	0.83	0.80	0.84	0.79	0.86	0.75	0.88	0.85	0.67	0.60	0.88	0.67
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	307	301	255	322	102	155	460	1912	853	437	2135	218
Arrive On Green	0.06	0.16	0.16	0.06	0.15	0.15	0.27	1.00	1.00	0.02	0.15	0.15
Sat Flow, veh/h	1781	1870	1585	1781	671	1016	3456	3554	1585	1781	4706	482
Grp Volume(v), veh/h	133	25	280	127	0	88	409	824	67	125	1406	744
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	0	1687	1728	1777	1585	1781	1702	1784
Q Serve(g_s), s	7.3	1.4	19.3	6.8	0.0	5.6	13.7	0.0	0.0	4.4	48.8	49.4
Cycle Q Clear(g_c), s	7.3	1.4	19.3	6.8	0.0	5.6	13.7	0.0	0.0	4.4	48.8	49.4
Prop In Lane	1.00		1.00	1.00		0.60	1.00		1.00	1.00		0.27
Lane Grp Cap(c), veh/h	307	301	255	322	0	257	460	1912	853	437	1544	809
V/C Ratio(X)	0.43	0.08	1.10	0.40	0.00	0.34	0.89	0.43	0.08	0.29	0.91	0.92
Avail Cap(c_a), veh/h	307	301	255	322	0	264	504	1912	853	447	1544	809
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	0.33	0.33	0.33
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	0.74	0.74	0.74	0.09	0.09	0.09
Uniform Delay (d), s/veh	40.5	42.8	50.3	40.4	0.0	45.5	43.2	0.0	0.0	16.3	48.6	48.9
Incr Delay (d2), s/veh	1.0	0.1	85.2	0.8	0.0	0.8	13.0	0.5	0.1	0.0	1.0	2.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.4	0.6	13.7	3.3	0.0	2.4	5.8	0.1	0.0	1.9	22.5	24.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	41.4	42.9	135.6	41.2	0.0	46.2	56.2	0.5	0.1	16.3	49.7	51.0
LnGrp LOS	D	D	F	D	A	D	E	A	A	B	D	D
Approach Vol, veh/h	438			215			1300			2275		
Approach Delay, s/veh	101.7			43.3			18.0			48.3		
Approach LOS	F			D			B			D		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	12.3	71.1	11.8	24.8	22.5	60.9	12.8	23.8				
Change Period (Y+Rc), s	6.0	6.5	5.0	5.5	6.5	* 6.5	5.5	* 5.5				
Max Green Setting (Gmax), s	7.0	63.9	6.8	19.3	17.5	* 53	7.3	* 19				
Max Q Clear Time (g_c+I1), s	6.4	2.0	8.8	21.3	15.7	51.4	9.3	7.6				
Green Ext Time (p_c), s	0.0	7.5	0.0	0.0	0.3	1.9	0.0	0.3				
Intersection Summary												
HCM 6th Ctrl Delay			44.3									
HCM 6th LOS			D									
Notes												

Timings

8: Tower Road & Salida St

2022 Total PM.syn

06/08/2020

										
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	360	50	480	135	45	535	1030	65	70	1115
Future Volume (vph)	360	50	480	135	45	535	1030	65	70	1115
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Prot	NA	Perm	pm+pt	NA
Protected Phases	7	4		3	8	5	2		1	6
Permitted Phases	4		4	8				2	6	
Detector Phase	7	4	4	3	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)	10.5	24.5	24.5	11.5	23.0	11.5	24.5	24.5	11.0	24.0
Total Split (s)	27.0	36.1	36.1	13.9	23.0	26.0	58.0	58.0	12.0	44.0
Total Split (%)	22.5%	30.1%	30.1%	11.6%	19.2%	21.7%	48.3%	48.3%	10.0%	36.7%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.5	1.5	1.5	1.0	1.0	2.5	2.5	2.5	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	5.5	5.5	5.0	5.0	6.5	6.5	6.5	6.0	6.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	C-Max	C-Max	None	C-Max
Act Effect Green (s)	40.3	26.4	26.4	22.7	13.8	22.1	55.1	55.1	46.2	39.6
Actuated g/C Ratio	0.34	0.22	0.22	0.19	0.12	0.18	0.46	0.46	0.38	0.33
v/c Ratio	1.08	0.17	0.91	0.55	0.64	0.88	0.73	0.09	0.46	0.90
Control Delay	103.4	37.4	40.3	38.4	43.5	50.8	33.5	2.1	24.7	39.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	103.4	37.4	40.3	38.4	43.5	50.8	33.5	2.1	24.7	39.3
LOS	F	D	D	D	D	D	C	A	C	D
Approach Delay		66.5			41.0		37.5			38.4
Approach LOS		E			D		D			D

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 40 (33%), Referenced to phase 2:NBT and 6:SBTL, Start of Yellow

Natural Cycle: 110

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.08

Intersection Signal Delay: 44.4

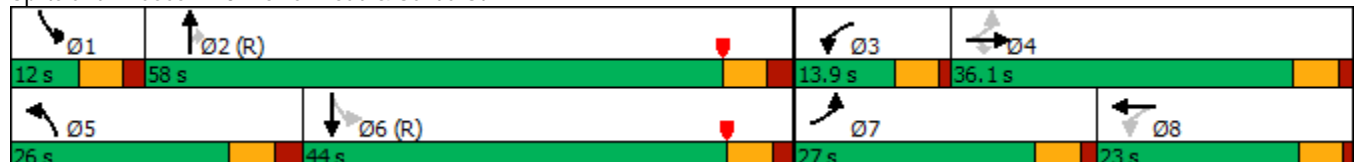
Intersection LOS: D

Intersection Capacity Utilization 88.4%

ICU Level of Service E

Analysis Period (min) 15

Splits and Phases: 8: Tower Road & Salida St


























HCM 6th Signalized Intersection Summary

8: Tower Road & Salida St

2022 Total PM.syn

06/08/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	360	50	480	135	45	85	535	1030	65	70	1115	220
Future Volume (veh/h)	360	50	480	135	45	85	535	1030	65	70	1115	220
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	434	71	533	157	60	96	557	1184	75	92	1239	256
Peak Hour Factor	0.83	0.70	0.90	0.86	0.75	0.89	0.96	0.87	0.87	0.76	0.90	0.86
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	451	477	404	311	94	151	562	2054	916	255	1926	398
Arrive On Green	0.18	0.25	0.25	0.07	0.15	0.15	0.05	0.19	0.19	0.09	0.91	0.91
Sat Flow, veh/h	1781	1870	1585	1781	648	1036	3456	3554	1585	1781	4241	876
Grp Volume(v), veh/h	434	71	533	157	0	156	557	1184	75	92	995	500
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	0	1684	1728	1777	1585	1781	1702	1713
Q Serve(g_s), s	21.5	3.5	30.6	8.9	0.0	10.5	19.3	36.4	4.7	3.3	7.7	7.7
Cycle Q Clear(g_c), s	21.5	3.5	30.6	8.9	0.0	10.5	19.3	36.4	4.7	3.3	7.7	7.7
Prop In Lane	1.00		1.00	1.00		0.62	1.00		1.00	1.00		0.51
Lane Grp Cap(c), veh/h	451	477	404	311	0	246	562	2054	916	255	1546	778
V/C Ratio(X)	0.96	0.15	1.32	0.50	0.00	0.64	0.99	0.58	0.08	0.36	0.64	0.64
Avail Cap(c_a), veh/h	451	477	404	311	0	253	562	2054	916	268	1546	778
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33	2.00	2.00	2.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	0.67	0.67	0.67	0.68	0.68	0.68
Uniform Delay (d), s/veh	37.2	34.6	44.7	40.0	0.0	48.2	56.7	35.2	22.4	17.7	3.4	3.4
Incr Delay (d2), s/veh	32.6	0.1	159.9	1.3	0.0	5.0	29.0	0.8	0.1	0.6	1.4	2.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.7	1.6	29.9	4.1	0.0	4.7	11.3	17.6	1.8	1.3	1.6	2.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	69.7	34.8	204.6	41.3	0.0	53.2	85.7	36.0	22.5	18.3	4.8	6.1
LnGrp LOS	E	C	F	D	A	D	F	D	C	B	A	A
Approach Vol, veh/h	1038				313				1816			
Approach Delay, s/veh	136.6				47.3				50.7			
Approach LOS	F				D				D			
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	11.1	76.4	13.9	36.1	26.0	61.5	27.0	23.0				
Change Period (Y+Rc), s	6.0	6.5	5.0	5.5	6.5	* 6.5	5.5	* 5.5				
Max Green Setting (Gmax), s	6.0	51.5	8.9	30.6	19.5	* 38	21.5	* 18				
Max Q Clear Time (g_c+I1), s	5.3	38.4	10.9	32.6	21.3	9.7	23.5	12.5				
Green Ext Time (p_c), s	0.0	7.1	0.0	0.0	0.0	13.0	0.0	0.3				
Intersection Summary												
HCM 6th Ctrl Delay	54.3											
HCM 6th LOS	D											
Notes												



























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

Timings

2022 Total AM Improved.syn

8: Tower Road & Salida St

06/08/2020

										
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations	 				 	 	 			  
Traffic Volume (vph)	110	20	235	100	30	360	700	45	75	1715
Future Volume (vph)	110	20	235	100	30	360	700	45	75	1715
Turn Type	Prot	NA	pt+ov	pm+pt	NA	Prot	NA	Perm	pm+pt	NA
Protected Phases	7	4	4 5	3	8	5	2		1	6
Permitted Phases				8				2	6	
Detector Phase	7	4	4 5	3	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)	10.5	24.5		11.5	23.0	11.5	24.5	24.5	11.0	24.0
Total Split (s)	13.0	24.8		11.8	23.6	25.0	70.4	70.4	13.0	58.4
Total Split (%)	10.8%	20.7%		9.8%	19.7%	20.8%	58.7%	58.7%	10.8%	48.7%
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.5	1.5		1.0	1.0	2.5	2.5	2.5	2.0	2.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	5.5		5.0	5.0	6.5	6.5	6.5	6.0	6.0
Lead/Lag	Lead	Lag		Lead	Lag	Lead	Lag	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None		None	None	None	C-Max	C-Max	None	C-Max
Act Effect Green (s)	7.4	16.3	40.6	22.5	15.7	17.8	66.6	66.6	63.4	56.1
Actuated g/C Ratio	0.06	0.14	0.34	0.19	0.13	0.15	0.56	0.56	0.53	0.47
v/c Ratio	0.63	0.10	0.48	0.45	0.33	0.80	0.42	0.07	0.31	0.91
Control Delay	66.3	50.2	24.1	43.4	24.5	62.7	17.8	2.7	7.3	33.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	66.3	50.2	24.1	43.4	24.5	62.7	17.8	2.7	7.3	33.5
LOS	E	D	C	D	C	E	B	A	A	C
Approach Delay		38.4			35.7		31.1			32.0
Approach LOS		D			D		C			C

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 18 (15%), Referenced to phase 2:NBT and 6:SBTL, Start of Yellow

Natural Cycle: 110

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.91

Intersection Signal Delay: 32.6

Intersection LOS: C

Intersection Capacity Utilization 73.2%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 8: Tower Road & Salida St



























HCM 6th Signalized Intersection Summary

2022 Total AM Improved.syn

8: Tower Road & Salida St

06/08/2020

























												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	110	20	235	100	30	40	360	700	45	75	1715	135
Future Volume (veh/h)	110	20	235	100	30	40	360	700	45	75	1715	135
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	133	25	280	127	35	53	409	824	67	125	1949	201
Peak Hour Factor	0.83	0.80	0.84	0.79	0.86	0.75	0.88	0.85	0.67	0.60	0.88	0.67
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	187	301	467	322	107	162	463	1912	853	437	2130	218
Arrive On Green	0.05	0.16	0.16	0.06	0.16	0.16	0.27	1.00	1.00	0.02	0.15	0.15
Sat Flow, veh/h	3456	1870	1585	1781	671	1016	3456	3554	1585	1781	4706	482
Grp Volume(v), veh/h	133	25	280	127	0	88	409	824	67	125	1406	744
Grp Sat Flow(s),veh/h/ln	1728	1870	1585	1781	0	1687	1728	1777	1585	1781	1702	1784
Q Serve(g_s), s	4.5	1.4	18.2	6.8	0.0	5.6	13.6	0.0	0.0	4.4	48.8	49.4
Cycle Q Clear(g_c), s	4.5	1.4	18.2	6.8	0.0	5.6	13.6	0.0	0.0	4.4	48.8	49.4
Prop In Lane	1.00		1.00	1.00		0.60	1.00		1.00	1.00		0.27
Lane Grp Cap(c), veh/h	187	301	467	322	0	269	463	1912	853	437	1541	807
V/C Ratio(X)	0.71	0.08	0.60	0.40	0.00	0.33	0.88	0.43	0.08	0.29	0.91	0.92
Avail Cap(c_a), veh/h	216	301	467	322	0	269	533	1912	853	446	1541	807
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	0.33	0.33	0.33
Upstream Filter(I)	0.99	0.99	0.99	1.00	0.00	1.00	0.74	0.74	0.74	0.18	0.18	0.18
Uniform Delay (d), s/veh	55.8	42.8	36.2	39.8	0.0	44.8	43.0	0.0	0.0	16.4	48.7	48.9
Incr Delay (d2), s/veh	8.7	0.1	2.1	0.8	0.0	0.7	11.4	0.5	0.1	0.1	2.1	4.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.2	0.6	7.3	3.2	0.0	2.4	5.7	0.1	0.0	1.9	22.7	24.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	64.5	42.9	38.3	40.6	0.0	45.5	54.4	0.5	0.1	16.4	50.8	53.2
LnGrp LOS	E	D	D	D	A	D	D	A	A	B	D	D
Approach Vol, veh/h	438			215			1300			2275		
Approach Delay, s/veh	46.6			42.6			17.5			49.7		
Approach LOS	D			D			B			D		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	12.3	71.1	11.8	24.8	22.6	60.8	12.0	24.6				
Change Period (Y+Rc), s	6.0	6.5	5.0	5.5	6.5	* 6.5	5.5	* 5.5				
Max Green Setting (Gmax), s	7.0	63.9	6.8	19.3	18.5	* 52	7.5	* 19				
Max Q Clear Time (g_c+I1), s	6.4	2.0	8.8	20.2	15.6	51.4	6.5	7.6				
Green Ext Time (p_c), s	0.0	7.5	0.0	0.0	0.5	0.9	0.0	0.3				
Intersection Summary												
HCM 6th Ctrl Delay	39.1											
HCM 6th LOS	D											
Notes												

Timings

2022 Total PM Improved.syn

8: Tower Road & Salida St

06/08/2020

										
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations	 					 	 			 
Traffic Volume (vph)	360	50	480	135	45	535	1030	65	70	1115
Future Volume (vph)	360	50	480	135	45	535	1030	65	70	1115
Turn Type	Prot	NA	pt+ov	pm+pt	NA	Prot	NA	Perm	pm+pt	NA
Protected Phases	7	4	4 5	3	8	5	2		1	6
Permitted Phases				8				2	6	
Detector Phase	7	4	4 5	3	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)	10.5	24.5		11.5	23.0	11.5	24.5	24.5	11.0	24.0
Total Split (s)	26.0	24.0		25.0	23.0	36.0	57.0	57.0	14.0	35.0
Total Split (%)	21.7%	20.0%		20.8%	19.2%	30.0%	47.5%	47.5%	11.7%	29.2%
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.5	1.5		1.0	1.0	2.5	2.5	2.5	2.0	2.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	5.5		5.0	5.0	6.5	6.5	6.5	6.0	6.0
Lead/Lag	Lead	Lag		Lead	Lag	Lead	Lag	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None		None	None	None	C-Max	C-Max	None	C-Max
Act Effect Green (s)	19.0	21.7	53.8	29.3	16.0	25.6	54.5	54.5	43.9	36.4
Actuated g/C Ratio	0.16	0.18	0.45	0.24	0.13	0.21	0.45	0.45	0.37	0.30
v/c Ratio	0.80	0.21	0.64	0.42	0.57	0.76	0.74	0.10	0.44	0.98
Control Delay	73.0	38.7	14.3	32.1	38.9	38.5	34.2	5.1	31.7	68.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	73.0	38.7	14.3	32.1	38.9	38.5	34.2	5.1	31.7	68.3
LOS	E	D	B	C	D	D	C	A	C	E
Approach Delay		40.5			35.5		34.3			66.2
Approach LOS		D			D		C			E

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 40 (33%), Referenced to phase 2:NBT and 6:SBTL, Start of Yellow

Natural Cycle: 100

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.98

Intersection Signal Delay: 46.4

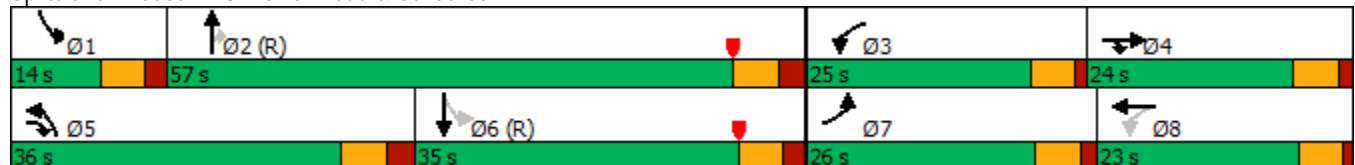
Intersection LOS: D

Intersection Capacity Utilization 78.7%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 8: Tower Road & Salida St


























HCM 6th Signalized Intersection Summary

2022 Total PM Improved.syn

8: Tower Road & Salida St

06/08/2020



























												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	360	50	480	135	45	85	535	1030	65	70	1115	220
Future Volume (veh/h)	360	50	480	135	45	85	535	1030	65	70	1115	220
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	434	71	533	157	60	96	557	1184	75	92	1239	256
Peak Hour Factor	0.83	0.70	0.90	0.86	0.75	0.89	0.96	0.87	0.87	0.76	0.90	0.86
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	494	304	556	319	71	114	651	1790	798	229	1520	314
Arrive On Green	0.24	0.27	0.27	0.10	0.11	0.11	0.06	0.17	0.17	0.09	0.72	0.72
Sat Flow, veh/h	3456	1870	1585	1781	648	1036	3456	3554	1585	1781	4241	876
Grp Volume(v), veh/h	434	71	533	157	0	156	557	1184	75	92	995	500
Grp Sat Flow(s),veh/h/ln	1728	1870	1585	1781	0	1684	1728	1777	1585	1781	1702	1713
Q Serve(g_s), s	14.5	3.5	19.5	9.2	0.0	10.9	19.2	37.5	4.8	3.9	23.9	23.9
Cycle Q Clear(g_c), s	14.5	3.5	19.5	9.2	0.0	10.9	19.2	37.5	4.8	3.9	23.9	23.9
Prop In Lane	1.00		1.00	1.00		0.62	1.00		1.00	1.00		0.51
Lane Grp Cap(c), veh/h	494	304	556	319	0	186	651	1790	798	229	1220	614
V/C Ratio(X)	0.88	0.23	0.96	0.49	0.00	0.84	0.86	0.66	0.09	0.40	0.81	0.81
Avail Cap(c_a), veh/h	590	304	556	447	0	253	850	1790	798	263	1220	614
HCM Platoon Ratio	1.67	1.67	1.67	1.00	1.00	1.00	0.33	0.33	0.33	2.00	2.00	2.00
Upstream Filter(I)	0.96	0.96	0.96	1.00	0.00	1.00	0.67	0.67	0.67	0.67	0.67	0.67
Uniform Delay (d), s/veh	44.7	37.9	34.5	41.6	0.0	52.4	54.7	40.4	26.8	23.2	14.3	14.3
Incr Delay (d2), s/veh	12.1	0.4	27.4	1.2	0.0	16.6	4.7	1.3	0.2	0.8	4.1	7.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.5	1.6	19.8	4.2	0.0	5.5	9.3	18.2	1.9	1.6	5.4	6.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	56.8	38.3	62.0	42.7	0.0	69.0	59.4	41.7	27.0	24.0	18.4	22.2
LnGrp LOS	E	D	E	D	A	E	E	D	C	C	B	C
Approach Vol, veh/h	1038			313			1816			1587		
Approach Delay, s/veh	58.2			55.8			46.5			19.9		
Approach LOS	E			E			D			B		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	11.7	67.0	16.4	25.0	29.1	49.5	22.7	18.7				
Change Period (Y+Rc), s	6.0	6.5	5.0	5.5	6.5	* 6.5	5.5	* 5.5				
Max Green Setting (Gmax), s	8.0	50.5	20.0	18.5	29.5	* 29	20.5	* 18				
Max Q Clear Time (g_c+I1), s	5.9	39.5	11.2	21.5	21.2	25.9	16.5	12.9				
Green Ext Time (p_c), s	0.0	6.3	0.3	0.0	1.4	2.4	0.6	0.3				
Intersection Summary												
HCM 6th Ctrl Delay	40.8											
HCM 6th LOS	D											
Notes												

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

Timings
8: Tower Road & Salida St

2040 Background AM.syn

05/06/2020

											
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	
Lane Configurations	 					 	 			  	
Traffic Volume (vph)	135	30	275	145	40	425	975	85	115	1985	
Future Volume (vph)	135	30	275	145	40	425	975	85	115	1985	
Turn Type	Prot	NA	pt+ov	pm+pt	NA	Prot	NA	Perm	pm+pt	NA	
Protected Phases	7	4	4 5	3	8	5	2		1	6	
Permitted Phases				8				2	6		
Detector Phase	7	4	4 5	3	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)	10.5	24.5		11.5	23.0	11.5	24.5	24.5	11.0	24.0	
Total Split (s)	13.2	24.6		12.0	23.4	22.0	68.4	68.4	15.0	61.4	
Total Split (%)	11.0%	20.5%		10.0%	19.5%	18.3%	57.0%	57.0%	12.5%	51.2%	
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	1.5	1.5		1.0	1.0	2.5	2.5	2.5	2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.5	5.5		5.0	5.0	6.5	6.5	6.5	6.0	6.0	
Lead/Lag	Lead	Lag		Lead	Lag	Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Recall Mode	None	None		None	None	None	C-Max	C-Max	None	C-Max	
Act Effct Green (s)	7.7	16.8	41.1	23.1	16.1	17.8	65.1	65.1	63.5	55.4	
Actuated g/C Ratio	0.06	0.14	0.34	0.19	0.13	0.15	0.54	0.54	0.53	0.46	
v/c Ratio	0.67	0.13	0.51	0.55	0.39	0.91	0.55	0.10	0.39	1.00	
Control Delay	72.4	51.7	23.3	46.7	28.7	59.0	25.5	5.4	5.6	34.3	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	72.4	51.7	23.3	46.7	28.7	59.0	25.5	5.4	5.6	34.3	
LOS	E	D	C	D	C	E	C	A	A	C	
Approach Delay		40.3			39.4		33.9			32.8	
Approach LOS		D			D		C			C	

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 18 (15%), Referenced to phase 2:NBT and 6:SBTL, Start of Yellow

Natural Cycle: 120

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.00

Intersection Signal Delay: 34.3












Intersection LOS: C

Intersection Capacity Utilization 83.2%

ICU Level of Service E

Analysis Period (min) 15

Splits and Phases: 8: Tower Road & Salida St
























							
Ø1	Ø2 (R)				Ø3	Ø4	
15 s	68.4 s				12 s	24.6 s	
							
Ø5	Ø6 (R)				Ø7	Ø8	
22 s	61.4 s				13.2 s	23.4 s	

HCM 6th Signalized Intersection Summary

8: Tower Road & Salida St

2040 Background AM.syn


























05/06/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	135	30	275	145	40	60	425	975	85	115	1985	155
Future Volume (veh/h)	135	30	275	145	40	60	425	975	85	115	1985	155
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	147	33	299	158	43	65	462	1060	92	125	2158	168
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	201	298	457	315	104	157	446	2447	1091	429	2897	223
Arrive On Green	0.06	0.16	0.16	0.06	0.16	0.16	0.26	1.00	1.00	0.03	0.40	0.40
Sat Flow, veh/h	3456	1870	1585	1781	672	1016	3456	3554	1585	1781	4834	373
Grp Volume(v), veh/h	147	33	299	158	0	108	462	1060	92	125	1514	812
Grp Sat Flow(s),veh/h/ln	1728	1870	1585	1781	0	1688	1728	1777	1585	1781	1702	1803
Q Serve(g_s), s	5.0	1.8	19.1	7.0	0.0	6.9	15.5	0.0	0.0	3.2	45.5	46.3
Cycle Q Clear(g_c), s	5.0	1.8	19.1	7.0	0.0	6.9	15.5	0.0	0.0	3.2	45.5	46.3
Prop In Lane	1.00		1.00	1.00		0.60	1.00		1.00	1.00		0.21
Lane Grp Cap(c), veh/h	201	298	457	315	0	262	446	2447	1091	429	2040	1080
V/C Ratio(X)	0.73	0.11	0.65	0.50	0.00	0.41	1.04	0.43	0.08	0.29	0.74	0.75
Avail Cap(c_a), veh/h	222	298	457	315	0	262	446	2447	1091	484	2040	1080
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	0.67	0.67	0.67
Upstream Filter(I)	0.98	0.98	0.98	1.00	0.00	1.00	0.38	0.38	0.38	0.09	0.09	0.09
Uniform Delay (d), s/veh	55.6	43.2	37.5	41.2	0.0	45.8	44.5	0.0	0.0	8.3	28.0	28.3
Incr Delay (d2), s/veh	10.3	0.2	3.3	1.3	0.0	1.0	35.7	0.2	0.1	0.0	0.2	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.5	0.9	8.1	4.3	0.0	3.0	7.9	0.1	0.0	1.2	19.5	21.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	65.8	43.3	40.7	42.5	0.0	46.8	80.2	0.2	0.1	8.4	28.2	28.7
LnGrp LOS	E	D	D	D	A	D	F	A	A	A	C	C
Approach Vol, veh/h		479			266			1614			2451	
Approach Delay, s/veh		48.6			44.2			23.1			27.4	
Approach LOS		D			D			C			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	11.2	89.7	12.0	24.6	22.0	78.9	12.5	24.1				
Change Period (Y+Rc), s	6.0	6.5	5.0	5.5	6.5	* 6.5	5.5	* 5.5				
Max Green Setting (Gmax), s	9.0	61.9	7.0	19.1	15.5	* 55	7.7	* 18				
Max Q Clear Time (g_c+I1), s	5.2	2.0	9.0	21.1	17.5	48.3	7.0	8.9				
Green Ext Time (p_c), s	0.1	10.9	0.0	0.0	0.0	6.4	0.0	0.3				
Intersection Summary												
HCM 6th Ctrl Delay			29.0									
HCM 6th LOS			C									
Notes												
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.												

Timings 8: Tower Road & Salida St

2040 Background PM.syn

05/06/2020

										
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations	 					 	 			  
Traffic Volume (vph)	475	75	560	210	70	760	1245	100	105	1550
Future Volume (vph)	475	75	560	210	70	760	1245	100	105	1550
Turn Type	Prot	NA	pt+ov	pm+pt	NA	Prot	NA	Perm	pm+pt	NA
Protected Phases	7	4	4 5	3	8	5	2		1	6
Permitted Phases				8				2	6	
Detector Phase	7	4	4 5	3	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)	10.5	24.5		11.5	23.0	11.5	24.5	24.5	11.0	24.0
Total Split (s)	25.0	33.0		15.0	23.0	33.0	61.0	61.0	11.0	39.0
Total Split (%)	20.8%	27.5%		12.5%	19.2%	27.5%	50.8%	50.8%	9.2%	32.5%
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.5	1.5		1.0	1.0	2.5	2.5	2.5	2.0	2.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	5.5		5.0	5.0	6.5	6.5	6.5	6.0	6.0
Lead/Lag	Lead	Lag		Lead	Lag	Lead	Lag	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None		None	None	None	C-Max	C-Max	None	C-Max
Act Effect Green (s)	19.5	26.8	60.5	27.3	17.3	27.2	54.6	54.6	38.6	33.0
Actuated g/C Ratio	0.16	0.22	0.50	0.23	0.14	0.23	0.46	0.46	0.32	0.28
v/c Ratio	0.93	0.20	0.73	0.68	0.73	1.02	0.84	0.13	0.79	1.45
Control Delay	74.6	35.6	24.7	43.7	48.9	64.1	28.1	1.9	50.1	239.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	74.6	35.6	24.7	43.7	48.9	64.1	28.1	1.9	50.1	239.2
LOS	E	D	C	D	D	E	C	A	D	F
Approach Delay		46.8			46.2		39.5			229.1
Approach LOS		D			D		D			F

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 40 (33%), Referenced to phase 2:NBT and 6:SBTL, Start of Yellow

Natural Cycle: 150

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.45

Intersection Signal Delay: 108.1

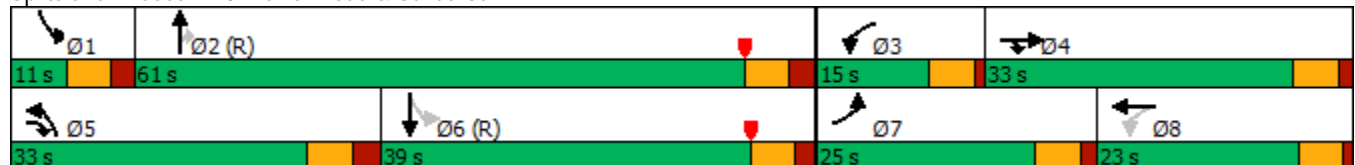
Intersection LOS: F

Intersection Capacity Utilization 102.6%

ICU Level of Service G

Analysis Period (min) 15

Splits and Phases: 8: Tower Road & Salida St



























HCM 6th Signalized Intersection Summary

8: Tower Road & Salida St

2040 Background PM.syn

05/06/2020


























												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	475	75	560	210	70	130	760	1245	100	105	1550	295
Future Volume (veh/h)	475	75	560	210	70	130	760	1245	100	105	1550	295
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	516	82	609	228	76	141	792	1353	109	114	1685	321
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.96	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	560	429	713	319	86	159	763	2117	944	222	1779	336
Arrive On Green	0.27	0.38	0.38	0.08	0.15	0.15	0.07	0.20	0.20	0.06	0.55	0.55
Sat Flow, veh/h	3456	1870	1585	1781	586	1088	3456	3554	1585	1781	4313	815
Grp Volume(v), veh/h	516	82	609	228	0	217	792	1353	109	114	1327	679
Grp Sat Flow(s),veh/h/ln	1728	1870	1585	1781	0	1675	1728	1777	1585	1781	1702	1724
Q Serve(g_s), s	17.4	3.5	27.5	10.0	0.0	15.3	26.5	42.0	6.8	4.5	43.8	44.9
Cycle Q Clear(g_c), s	17.4	3.5	27.5	10.0	0.0	15.3	26.5	42.0	6.8	4.5	43.8	44.9
Prop In Lane	1.00		1.00	1.00		0.65	1.00		1.00	1.00		0.47
Lane Grp Cap(c), veh/h	560	429	713	319	0	245	763	2117	944	222	1404	711
V/C Ratio(X)	0.92	0.19	0.85	0.72	0.00	0.89	1.04	0.64	0.12	0.51	0.94	0.96
Avail Cap(c_a), veh/h	562	429	713	319	0	251	763	2117	944	222	1404	711
HCM Platoon Ratio	1.67	1.67	1.67	1.00	1.00	1.00	0.33	0.33	0.33	1.33	1.33	1.33
Upstream Filter(I)	0.95	0.95	0.95	1.00	0.00	1.00	0.28	0.28	0.28	0.40	0.40	0.40
Uniform Delay (d), s/veh	43.0	29.6	25.4	41.5	0.0	50.2	55.6	36.3	22.2	21.4	25.8	26.0
Incr Delay (d2), s/veh	20.0	0.2	9.4	7.4	0.0	28.7	28.0	0.4	0.1	0.8	6.9	13.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.3	1.6	18.6	1.9	0.0	8.3	15.3	20.1	2.7	1.9	16.8	18.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	63.1	29.8	34.9	49.0	0.0	78.9	83.7	36.8	22.3	22.2	32.7	39.1
LnGrp LOS	E	C	C	D	A	E	F	D	C	C	C	D
Approach Vol, veh/h		1207			445			2254			2120	
Approach Delay, s/veh		46.6			63.6			52.5			34.2	
Approach LOS		D			E			D			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	11.0	78.5	15.0	33.0	33.0	56.5	24.9	23.1				
Change Period (Y+Rc), s	6.0	6.5	5.0	5.5	6.5	* 6.5	5.5	* 5.5				
Max Green Setting (Gmax), s	5.0	54.5	10.0	27.5	26.5	* 33	19.5	* 18				
Max Q Clear Time (g_c+I1), s	6.5	44.0	12.0	29.5	28.5	46.9	19.4	17.3				
Green Ext Time (p_c), s	0.0	6.9	0.0	0.0	0.0	0.0	0.0	0.1				
Intersection Summary												
HCM 6th Ctrl Delay			45.7									
HCM 6th LOS			D									
Notes												
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.												

Timings

2040 Total AM Scenario 1.syn

8: Tower Road & Salida St




06/08/2020

										
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations	 					 	 			  
Traffic Volume (vph)	150	30	335	145	40	500	975	85	115	1985
Future Volume (vph)	150	30	335	145	40	500	975	85	115	1985
Turn Type	Prot	NA	pt+ov	pm+pt	NA	Prot	NA	Perm	pm+pt	NA
Protected Phases	7	4	4 5	3	8	5	2		1	6
Permitted Phases				8				2	6	
Detector Phase	7	4	4 5	3	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)	10.5	24.5		11.5	23.0	11.5	24.5	24.5	11.0	24.0
Total Split (s)	13.2	24.6		12.0	23.4	23.4	68.4	68.4	15.0	60.0
Total Split (%)	11.0%	20.5%		10.0%	19.5%	19.5%	57.0%	57.0%	12.5%	50.0%
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.5	1.5		1.0	1.0	2.5	2.5	2.5	2.0	2.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	5.5		5.0	5.0	6.5	6.5	6.5	6.0	6.0
Lead/Lag	Lead	Lag		Lead	Lag	Lead	Lag	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None		None	None	None	C-Max	C-Max	None	C-Max
Act Effect Green (s)	7.7	18.1	42.5	24.4	17.4	17.9	63.7	63.7	62.2	54.0
Actuated g/C Ratio	0.06	0.15	0.35	0.20	0.14	0.15	0.53	0.53	0.52	0.45
v/c Ratio	0.74	0.12	0.60	0.52	0.37	1.06	0.56	0.10	0.40	1.04
Control Delay	78.7	54.7	26.3	44.9	28.0	89.9	26.2	5.2	6.7	49.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	78.7	54.7	26.3	44.9	28.0	89.9	26.2	5.2	6.7	49.4
LOS	E	D	C	D	C	F	C	A	A	D
Approach Delay		43.2			38.1		45.5			47.2
Approach LOS		D			D		D			D

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 18 (15%), Referenced to phase 2:NBT and 6:SBTL, Start of Yellow
Natural Cycle: 130
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.06
Intersection Signal Delay: 45.7
Intersection Capacity Utilization 85.9%
Analysis Period (min) 15
Intersection LOS: D
ICU Level of Service E

Splits and Phases: 8: Tower Road & Salida St
























 Ø1	 Ø2 (R)	 Ø3	 Ø4
15 s	68.4 s	12 s	24.6 s
 Ø5	 Ø6 (R)	 Ø7	 Ø8
23.4 s	60 s	13.2 s	23.4 s

HCM 6th Signalized Intersection Summary

2040 Total AM Scenario 1.syn

8: Tower Road & Salida St

06/08/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	150	30	335	145	40	60	500	975	85	115	1985	180
Future Volume (veh/h)	150	30	335	145	40	60	500	975	85	115	1985	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	163	33	364	158	43	65	543	1060	92	125	2158	196
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	217	298	476	306	101	153	487	2444	1090	424	2802	252
Arrive On Green	0.06	0.16	0.16	0.06	0.15	0.15	0.28	1.00	1.00	0.03	0.39	0.39
Sat Flow, veh/h	3456	1870	1585	1781	672	1016	3456	3554	1585	1781	4769	428
Grp Volume(v), veh/h	163	33	364	158	0	108	543	1060	92	125	1533	821
Grp Sat Flow(s),veh/h/ln	1728	1870	1585	1781	0	1688	1728	1777	1585	1781	1702	1793
Q Serve(g_s), s	5.6	1.8	19.1	7.0	0.0	7.0	16.9	0.0	0.0	3.3	46.9	48.0
Cycle Q Clear(g_c), s	5.6	1.8	19.1	7.0	0.0	7.0	16.9	0.0	0.0	3.3	46.9	48.0
Prop In Lane	1.00		1.00	1.00		0.60	1.00		1.00	1.00		0.24
Lane Grp Cap(c), veh/h	217	298	476	306	0	254	487	2444	1090	424	2000	1054
V/C Ratio(X)	0.75	0.11	0.77	0.52	0.00	0.43	1.12	0.43	0.08	0.29	0.77	0.78
Avail Cap(c_a), veh/h	222	298	476	306	0	259	487	2444	1090	478	2000	1054
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	0.67	0.67	0.67
Upstream Filter(I)	0.97	0.97	0.97	1.00	0.00	1.00	0.33	0.33	0.33	0.15	0.15	0.15
Uniform Delay (d), s/veh	55.3	43.2	38.2	41.6	0.0	46.3	43.1	0.0	0.0	8.9	29.2	29.6
Incr Delay (d2), s/veh	12.7	0.2	7.1	1.5	0.0	1.1	62.0	0.2	0.1	0.1	0.4	0.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.8	0.9	10.6	4.3	0.0	3.0	10.3	0.1	0.0	1.3	20.2	21.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	68.0	43.3	45.3	43.1	0.0	47.4	105.1	0.2	0.1	8.9	29.7	30.5
LnGrp LOS	E	D	D	D	A	D	F	A	A	A	C	C
Approach Vol, veh/h	560		266			1695			2479			
Approach Delay, s/veh	51.8		44.8			33.8			28.9			
Approach LOS	D		D			C			C			
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	11.3	89.6	12.0	24.6	23.4	77.5	13.0	23.6				
Change Period (Y+Rc), s	6.0	6.5	5.0	5.5	6.5	* 6.5	5.5	* 5.5				
Max Green Setting (Gmax), s	9.0	61.9	7.0	19.1	16.9	* 54	7.7	* 18				
Max Q Clear Time (g_c+I1), s	5.3	2.0	9.0	21.1	18.9	50.0	7.6	9.0				
Green Ext Time (p_c), s	0.1	10.9	0.0	0.0	0.0	3.7	0.0	0.3				
Intersection Summary												
HCM 6th Ctrl Delay			34.0									
HCM 6th LOS			C									
Notes												





















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

Timings

2040 Total PM Scenario 1.syn

8: Tower Road & Salida St

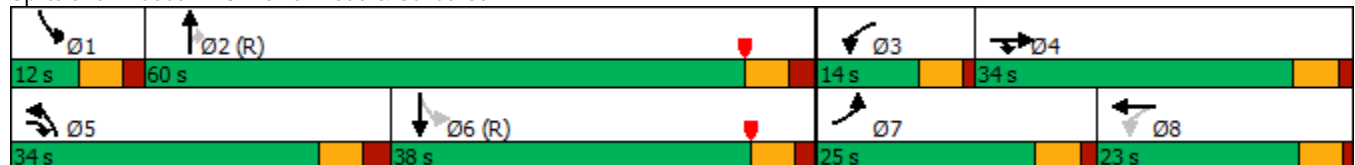
06/08/2020

										
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	500	75	675	210	70	795	1245	100	105	1550
Future Volume (vph)	500	75	675	210	70	795	1245	100	105	1550
Turn Type	Prot	NA	pt+ov	pm+pt	NA	Prot	NA	Perm	pm+pt	NA
Protected Phases	7	4	4 5	3	8	5	2		1	6
Permitted Phases				8				2	6	
Detector Phase	7	4	4 5	3	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)	10.5	24.5		11.5	23.0	11.5	24.5	24.5	11.0	24.0
Total Split (s)	25.0	34.0		14.0	23.0	34.0	60.0	60.0	12.0	38.0
Total Split (%)	20.8%	28.3%		11.7%	19.2%	28.3%	50.0%	50.0%	10.0%	31.7%
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.5	1.5		1.0	1.0	2.5	2.5	2.5	2.0	2.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	5.5		5.0	5.0	6.5	6.5	6.5	6.0	6.0
Lead/Lag	Lead	Lag		Lead	Lag	Lead	Lag	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None		None	None	None	C-Max	C-Max	None	C-Max
Act Effect Green (s)	19.5	28.5	62.5	27.0	18.0	27.5	53.5	53.5	38.0	32.0
Actuated g/C Ratio	0.16	0.24	0.52	0.22	0.15	0.23	0.45	0.45	0.32	0.27
v/c Ratio	0.97	0.19	0.85	0.69	0.71	1.05	0.86	0.14	0.76	1.50
Control Delay	84.5	34.3	31.0	45.4	47.2	72.5	29.2	2.0	51.8	269.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	84.5	34.3	31.0	45.4	47.2	72.5	29.2	2.0	51.8	269.2
LOS	F	C	C	D	D	E	C	A	D	F
Approach Delay		52.6			46.3		43.6			257.6
Approach LOS		D			D		D			F

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 40 (33%), Referenced to phase 2:NBT and 6:SBTL, Start of Yellow
Natural Cycle: 150
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.50
Intersection Signal Delay: 119.1
Intersection Capacity Utilization 104.6%
Analysis Period (min) 15
Intersection LOS: F
ICU Level of Service G

Splits and Phases: 8: Tower Road & Salida St



HCM 6th Signalized Intersection Summary

2040 Total PM Scenario 1.syn

8: Tower Road & Salida St

06/08/2020



























Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰↱	↑	↰	↰	↱		↰↱	↑↑	↰	↰	↑↑↑	
Traffic Volume (veh/h)	500	75	675	210	70	130	795	1245	100	105	1550	310
Future Volume (veh/h)	500	75	675	210	70	130	795	1245	100	105	1550	310
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	543	82	571	228	76	141	828	1353	109	114	1685	337
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.96	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	562	444	740	307	86	159	792	2088	931	233	1728	342
Arrive On Green	0.27	0.40	0.40	0.08	0.15	0.15	0.08	0.19	0.19	0.03	0.27	0.27
Sat Flow, veh/h	3456	1870	1585	1781	586	1088	3456	3554	1585	1781	4275	847
Grp Volume(v), veh/h	543	82	571	228	0	217	828	1353	109	114	1338	684
Grp Sat Flow(s),veh/h/ln	1728	1870	1585	1781	0	1675	1728	1777	1585	1781	1702	1718
Q Serve(g_s), s	18.6	3.4	28.5	9.0	0.0	15.3	27.5	42.1	6.8	4.5	46.7	47.5
Cycle Q Clear(g_c), s	18.6	3.4	28.5	9.0	0.0	15.3	27.5	42.1	6.8	4.5	46.7	47.5
Prop In Lane	1.00		1.00	1.00		0.65	1.00		1.00	1.00		0.49
Lane Grp Cap(c), veh/h	562	444	740	307	0	244	792	2088	931	233	1376	694
V/C Ratio(X)	0.97	0.18	0.77	0.74	0.00	0.89	1.05	0.65	0.12	0.49	0.97	0.98
Avail Cap(c_a), veh/h	562	444	740	307	0	251	792	2088	931	233	1376	694
HCM Platoon Ratio	1.67	1.67	1.67	1.00	1.00	1.00	0.33	0.33	0.33	0.67	0.67	0.67
Upstream Filter(I)	0.93	0.93	0.93	1.00	0.00	1.00	0.25	0.25	0.25	0.19	0.19	0.19
Uniform Delay (d), s/veh	43.4	28.6	22.6	42.9	0.0	50.3	55.5	36.9	22.7	22.1	43.1	43.4
Incr Delay (d2), s/veh	28.4	0.2	4.7	9.3	0.0	29.2	29.5	0.4	0.1	0.3	6.0	11.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	9.4	1.5	14.2	2.7	0.0	8.4	16.0	20.2	2.7	1.9	21.5	23.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	71.8	28.8	27.3	52.2	0.0	79.5	85.0	37.3	22.8	22.4	49.1	55.1
LnGrp LOS	E	C	C	D	A	E	F	D	C	C	D	E
Approach Vol, veh/h		1196			445			2290			2136	
Approach Delay, s/veh		47.6			65.5			53.9			49.6	
Approach LOS		D			E			D			D	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	12.0	77.5	14.0	34.0	34.0	55.5	25.0	23.0				
Change Period (Y+Rc), s	6.0	6.5	5.0	5.5	6.5	* 6.5	5.5	* 5.5				
Max Green Setting (Gmax), s	6.0	53.5	9.0	28.5	27.5	* 32	19.5	* 18				
Max Q Clear Time (g_c+I1), s	6.5	44.1	11.0	30.5	29.5	49.5	20.6	17.3				
Green Ext Time (p_c), s	0.0	6.3	0.0	0.0	0.0	0.0	0.0	0.1				
Intersection Summary												
HCM 6th Ctrl Delay			52.0									
HCM 6th LOS			D									
Notes												
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.												

Timings

2040 Total AM Scenario 2.syn

8: Tower Road & Salida St






06/08/2020

										
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations	 				 	 	 			  
Traffic Volume (vph)	160	30	255	145	40	400	975	85	115	1985
Future Volume (vph)	160	30	255	145	40	400	975	85	115	1985
Turn Type	Prot	NA	pt+ov	pm+pt	NA	Prot	NA	Perm	pm+pt	NA
Protected Phases	7	4	4 5	3	8	5	2		1	6
Permitted Phases				8				2	6	
Detector Phase	7	4	4 5	3	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)	10.5	24.5		11.5	23.0	11.5	24.5	24.5	11.0	24.0
Total Split (s)	13.0	24.6		12.0	23.6	18.0	68.4	68.4	15.0	65.4
Total Split (%)	10.8%	20.5%		10.0%	19.7%	15.0%	57.0%	57.0%	12.5%	54.5%
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.5	1.5		1.0	1.0	2.5	2.5	2.5	2.0	2.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	5.5		5.0	5.0	6.5	6.5	6.5	6.0	6.0
Lead/Lag	Lead	Lag		Lead	Lag	Lead	Lag	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None		None	None	None	C-Max	C-Max	None	C-Max
Act Effect Green (s)	7.5	16.3	37.1	22.8	15.8	14.3	65.6	65.6	67.5	59.4
Actuated g/C Ratio	0.06	0.14	0.31	0.19	0.13	0.12	0.55	0.55	0.56	0.50
v/c Ratio	0.81	0.13	0.51	0.56	0.40	1.06	0.55	0.10	0.39	0.99
Control Delay	86.8	56.7	37.4	47.2	28.9	87.6	28.7	7.5	5.4	34.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	86.8	56.7	37.4	47.2	28.9	87.6	28.7	7.5	5.4	34.4
LOS	F	E	D	D	C	F	C	A	A	C
Approach Delay		56.5			39.8		43.6			33.0
Approach LOS		E			D		D			C

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 18 (15%), Referenced to phase 2:NBT and 6:SBTL, Start of Yellow
Natural Cycle: 120
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.06
Intersection Signal Delay: 39.1
Intersection Capacity Utilization 85.1%
Analysis Period (min) 15
Intersection LOS: D
ICU Level of Service E

Splits and Phases: 8: Tower Road & Salida St




























 Ø1	 Ø2 (R)	 Ø3	 Ø4
15 s	68.4 s	12 s	24.6 s
 Ø5	 Ø6 (R)	 Ø7	 Ø8
18 s	65.4 s	13 s	23.6 s

HCM 6th Signalized Intersection Summary

2040 Total AM Scenario 2.syn

8: Tower Road & Salida St

06/08/2020


























												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 						 	 			  	
Traffic Volume (veh/h)	160	30	255	145	40	60	400	975	85	115	1985	270
Future Volume (veh/h)	160	30	255	145	40	60	400	975	85	115	1985	270
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	174	33	277	158	43	65	435	1060	92	125	2158	293
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	216	298	404	318	101	153	331	2454	1095	441	2883	384
Arrive On Green	0.06	0.16	0.16	0.06	0.15	0.15	0.19	1.00	1.00	0.04	0.63	0.63
Sat Flow, veh/h	3456	1870	1585	1781	672	1016	3456	3554	1585	1781	4559	607
Grp Volume(v), veh/h	174	33	277	158	0	108	435	1060	92	125	1600	851
Grp Sat Flow(s),veh/h/ln	1728	1870	1585	1781	0	1688	1728	1777	1585	1781	1702	1761
Q Serve(g_s), s	6.0	1.8	18.9	7.0	0.0	7.0	11.5	0.0	0.0	2.9	39.1	41.2
Cycle Q Clear(g_c), s	6.0	1.8	18.9	7.0	0.0	7.0	11.5	0.0	0.0	2.9	39.1	41.2
Prop In Lane	1.00		1.00	1.00		0.60	1.00		1.00	1.00		0.34
Lane Grp Cap(c), veh/h	216	298	404	318	0	255	331	2454	1095	441	2153	1114
V/C Ratio(X)	0.81	0.11	0.69	0.50	0.00	0.42	1.31	0.43	0.08	0.28	0.74	0.76
Avail Cap(c_a), veh/h	216	298	404	318	0	262	331	2454	1095	500	2153	1114
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	0.97	0.97	0.97	1.00	0.00	1.00	0.25	0.25	0.25	0.17	0.17	0.17
Uniform Delay (d), s/veh	55.5	43.2	40.4	41.5	0.0	46.2	48.5	0.0	0.0	6.8	15.3	15.7
Incr Delay (d2), s/veh	19.1	0.2	4.6	1.2	0.0	1.1	146.6	0.1	0.0	0.1	0.4	0.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.2	0.9	7.9	4.3	0.0	3.0	11.1	0.0	0.0	1.1	14.2	15.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	74.6	43.3	45.0	42.7	0.0	47.3	195.1	0.1	0.0	6.9	15.7	16.6
LnGrp LOS	E	D	D	D	A	D	F	A	A	A	B	B
Approach Vol, veh/h	484				266				1587			
Approach Delay, s/veh	55.5				44.6				53.6			
Approach LOS	E				D				D			
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	11.0	89.9	12.0	24.6	18.0	82.9	13.0	23.6				
Change Period (Y+Rc), s	6.0	6.5	5.0	5.5	6.5	* 6.5	5.5	* 5.5				
Max Green Setting (Gmax), s	9.0	61.9	7.0	19.1	11.5	* 59	7.5	* 19				
Max Q Clear Time (g_c+I1), s	4.9	2.0	9.0	20.9	13.5	43.2	8.0	9.0				
Green Ext Time (p_c), s	0.1	10.9	0.0	0.0	0.0	14.0	0.0	0.3				
Intersection Summary												
HCM 6th Ctrl Delay	33.3											
HCM 6th LOS	C											
Notes												

Timings

2040 Total PM Scenario 2.syn

8: Tower Road & Salida St

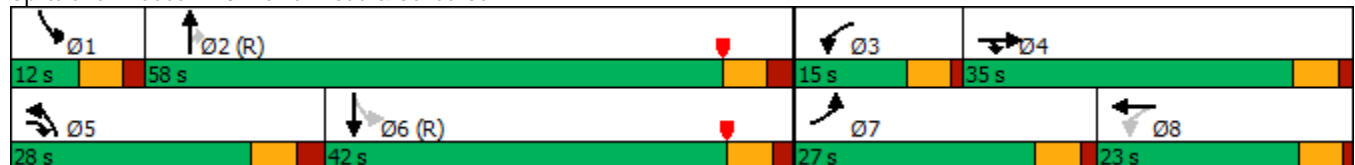
06/08/2020

										
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations	 					 	 			  
Traffic Volume (vph)	545	75	525	210	70	610	1245	100	105	1550
Future Volume (vph)	545	75	525	210	70	610	1245	100	105	1550
Turn Type	Prot	NA	pt+ov	pm+pt	NA	Prot	NA	Perm	pm+pt	NA
Protected Phases	7	4	4 5	3	8	5	2		1	6
Permitted Phases				8				2	6	
Detector Phase	7	4	4 5	3	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)	10.5	24.5		11.5	23.0	11.5	24.5	24.5	11.0	24.0
Total Split (s)	27.0	35.0		15.0	23.0	28.0	58.0	58.0	12.0	42.0
Total Split (%)	22.5%	29.2%		12.5%	19.2%	23.3%	48.3%	48.3%	10.0%	35.0%
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.5	1.5		1.0	1.0	2.5	2.5	2.5	2.0	2.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	5.5		5.0	5.0	6.5	6.5	6.5	6.0	6.0
Lead/Lag	Lead	Lag		Lead	Lag	Lead	Lag	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None		None	None	None	C-Max	C-Max	None	C-Max
Act Effect Green (s)	21.5	28.1	57.5	26.6	16.6	22.9	52.6	52.6	42.3	36.0
Actuated g/C Ratio	0.18	0.23	0.48	0.22	0.14	0.19	0.44	0.44	0.35	0.30
v/c Ratio	0.96	0.19	0.72	0.69	0.75	0.97	0.87	0.14	0.74	1.35
Control Delay	83.8	38.8	23.0	43.8	51.1	72.1	42.7	4.5	30.6	191.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	83.8	38.8	23.0	43.8	51.1	72.1	42.7	4.5	30.6	191.6
LOS	F	D	C	D	D	E	D	A	C	F
Approach Delay		53.0			47.4		49.6			183.1
Approach LOS		D			D		D			F

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 18 (15%), Referenced to phase 2:NBT and 6:SBTL, Start of Yellow
Natural Cycle: 150
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.35
Intersection Signal Delay: 98.5
Intersection Capacity Utilization 101.0%
Analysis Period (min) 15
Intersection LOS: F
ICU Level of Service G

Splits and Phases: 8: Tower Road & Salida St


























HCM 6th Signalized Intersection Summary

2040 Total PM Scenario 2.syn

8: Tower Road & Salida St

















06/08/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	545	75	525	210	70	130	610	1245	100	105	1550	325
Future Volume (veh/h)	545	75	525	210	70	130	610	1245	100	105	1550	325
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	592	82	571	228	76	141	635	1353	109	114	1685	353
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.96	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	619	460	674	322	86	159	619	2029	905	306	1854	384
Arrive On Green	0.30	0.41	0.41	0.08	0.15	0.15	0.36	1.00	1.00	0.02	0.14	0.14
Sat Flow, veh/h	3456	1870	1585	1781	586	1088	3456	3554	1585	1781	4238	878
Grp Volume(v), veh/h	592	82	571	228	0	217	635	1353	109	114	1350	688
Grp Sat Flow(s),veh/h/ln	1728	1870	1585	1781	0	1675	1728	1777	1585	1781	1702	1712
Q Serve(g_s), s	20.2	3.3	29.5	10.0	0.0	15.3	21.5	0.0	0.0	4.2	46.8	47.6
Cycle Q Clear(g_c), s	20.2	3.3	29.5	10.0	0.0	15.3	21.5	0.0	0.0	4.2	46.8	47.6
Prop In Lane	1.00		1.00	1.00		0.65	1.00		1.00	1.00		0.51
Lane Grp Cap(c), veh/h	619	460	674	322	0	244	619	2029	905	306	1489	749
V/C Ratio(X)	0.96	0.18	0.85	0.71	0.00	0.89	1.03	0.67	0.12	0.37	0.91	0.92
Avail Cap(c_a), veh/h	619	460	674	322	0	251	619	2029	905	306	1489	749
HCM Platoon Ratio	1.67	1.67	1.67	1.00	1.00	1.00	2.00	2.00	2.00	0.33	0.33	0.33
Upstream Filter(I)	0.93	0.93	0.93	1.00	0.00	1.00	0.39	0.39	0.39	0.27	0.27	0.27
Uniform Delay (d), s/veh	41.6	27.7	25.7	41.5	0.0	50.3	38.5	0.0	0.0	17.4	48.9	49.2
Incr Delay (d2), s/veh	24.5	0.2	9.3	7.0	0.0	29.2	29.3	0.7	0.1	0.2	3.0	6.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	9.8	1.5	16.3	1.9	0.0	8.4	10.0	0.2	0.0	1.8	22.0	23.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	66.1	27.8	35.0	48.5	0.0	79.5	67.8	0.7	0.1	17.6	51.9	55.5
LnGrp LOS	E	C	C	D	A	E	F	A	A	B	D	E
Approach Vol, veh/h		1245			445			2097			2152	
Approach Delay, s/veh		49.3			63.6			21.0			51.2	
Approach LOS		D			E			C			D	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	12.0	75.5	15.0	35.0	28.0	59.5	27.0	23.0				
Change Period (Y+Rc), s	6.0	6.5	5.0	5.5	6.5	* 6.5	5.5	* 5.5				
Max Green Setting (Gmax), s	6.0	51.5	10.0	29.5	21.5	* 36	21.5	* 18				
Max Q Clear Time (g_c+I1), s	6.2	2.0	12.0	31.5	23.5	49.6	22.2	17.3				
Green Ext Time (p_c), s	0.0	15.9	0.0	0.0	0.0	0.0	0.0	0.1				
Intersection Summary												
HCM 6th Ctrl Delay			41.1									
HCM 6th LOS			D									
Notes												
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.												

Timings
9: Tower Road & 32nd Pkwy

2020 Adjusted Existing AM.syn

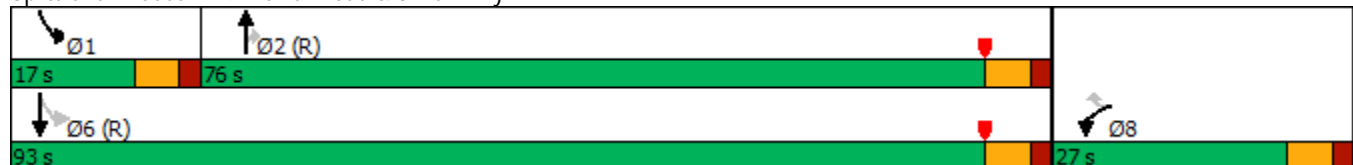
04/21/2020

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	 		 			  
Traffic Volume (vph)	205	90	1140	355	85	1620
Future Volume (vph)	205	90	1140	355	85	1620
Turn Type	Prot	Perm	NA	Perm	pm+pt	NA
Protected Phases	8		2		1	6
Permitted Phases		8		2	6	
Detector Phase	8	8	2	2	1	6
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	24.0	24.0	24.0	24.0	11.0	24.0
Total Split (s)	27.0	27.0	76.0	76.0	17.0	93.0
Total Split (%)	22.5%	22.5%	63.3%	63.3%	14.2%	77.5%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag			Lag	Lag	Lead	
Lead-Lag Optimize?			Yes	Yes	Yes	
Recall Mode	None	None	C-Max	C-Max	None	C-Max
Act Effect Green (s)	13.7	13.7	81.1	81.1	94.3	94.3
Actuated g/C Ratio	0.11	0.11	0.68	0.68	0.79	0.79
v/c Ratio	0.62	0.40	0.54	0.38	0.33	0.45
Control Delay	57.3	12.9	6.8	0.9	5.8	2.1
Queue Delay	0.0	0.0	0.1	0.1	0.0	0.0
Total Delay	57.3	12.9	7.0	1.0	5.8	2.1
LOS	E	B	A	A	A	A
Approach Delay	43.4		5.4			2.3
Approach LOS	D		A			A

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 33.5 (28%), Referenced to phase 2:NBT and 6:SBTL, Start of Yellow
 Natural Cycle: 65
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.62
 Intersection Signal Delay: 7.3
 Intersection Capacity Utilization 57.1%
 Analysis Period (min) 15
 Intersection LOS: A
 ICU Level of Service B

Splits and Phases: 9: Tower Road & 32nd Pkwy



















HCM 6th Signalized Intersection Summary

2020 Adjusted Existing AM.syn

9: Tower Road & 32nd Pkwy
















04/21/2020

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	 		 			  
Traffic Volume (veh/h)	205	90	1140	355	85	1620
Future Volume (veh/h)	205	90	1140	355	85	1620
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	241	110	1281	467	104	1780
Peak Hour Factor	0.85	0.82	0.89	0.76	0.82	0.91
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	319	146	2549	1137	329	4124
Arrive On Green	0.09	0.09	1.00	1.00	0.08	1.00
Sat Flow, veh/h	3456	1585	3647	1585	1781	5274
Grp Volume(v), veh/h	241	110	1281	467	104	1780
Grp Sat Flow(s),veh/h/ln	1728	1585	1777	1585	1781	1702
Q Serve(g_s), s	8.2	8.1	0.0	0.0	1.7	0.0
Cycle Q Clear(g_c), s	8.2	8.1	0.0	0.0	1.7	0.0
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	319	146	2549	1137	329	4124
V/C Ratio(X)	0.76	0.75	0.50	0.41	0.32	0.43
Avail Cap(c_a), veh/h	605	277	2549	1137	421	4124
HCM Platoon Ratio	1.00	1.00	2.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	1.00	0.96	0.96	0.65	0.65
Uniform Delay (d), s/veh	53.1	53.1	0.0	0.0	3.1	0.0
Incr Delay (d2), s/veh	3.6	7.5	0.7	1.1	0.4	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.7	3.5	0.2	0.3	0.5	0.1
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	56.8	60.6	0.7	1.1	3.5	0.2
LnGrp LOS	E	E	A	A	A	A
Approach Vol, veh/h	351		1748			1884
Approach Delay, s/veh	58.0		0.8			0.4
Approach LOS	E		A			A
Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	10.8	92.1			102.9	17.1
Change Period (Y+Rc), s	6.0	6.0			6.0	6.0
Max Green Setting (Gmax), s	11.0	70.0			87.0	21.0
Max Q Clear Time (g_c+I1), s	3.7	2.0			2.0	10.2
Green Ext Time (p_c), s	0.1	18.9			26.1	0.9
Intersection Summary						
HCM 6th Ctrl Delay			5.6			
HCM 6th LOS			A			

Timings
9: Tower Road & 32nd Pkwy

2020 Adjusted Existing PM.syn

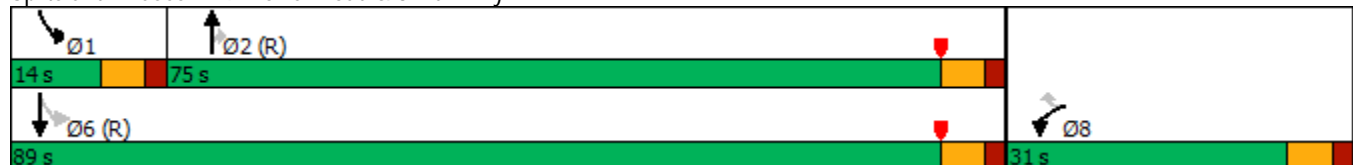
04/21/2020

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	 		 			  
Traffic Volume (vph)	335	110	1315	200	65	1485
Future Volume (vph)	335	110	1315	200	65	1485
Turn Type	Prot	Perm	NA	Perm	pm+pt	NA
Protected Phases	8		2		1	6
Permitted Phases		8		2	6	
Detector Phase	8	8	2	2	1	6
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	24.0	24.0	24.0	24.0	11.0	24.0
Total Split (s)	31.0	31.0	75.0	75.0	14.0	89.0
Total Split (%)	25.8%	25.8%	62.5%	62.5%	11.7%	74.2%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag			Lag	Lag	Lead	
Lead-Lag Optimize?			Yes	Yes	Yes	
Recall Mode	None	None	C-Max	C-Max	None	C-Max
Act Effect Green (s)	20.1	20.1	77.3	77.3	87.9	87.9
Actuated g/C Ratio	0.17	0.17	0.64	0.64	0.73	0.73
v/c Ratio	0.74	0.36	0.60	0.22	0.31	0.42
Control Delay	55.6	9.4	14.8	2.6	4.3	1.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	55.6	9.4	14.8	2.6	4.3	1.4
LOS	E	A	B	A	A	A
Approach Delay	44.6		13.0			1.5
Approach LOS	D		B			A

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 108 (90%), Referenced to phase 2:NBT and 6:SBTL, Start of Yellow
 Natural Cycle: 70
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.74
 Intersection Signal Delay: 12.7
 Intersection LOS: B
 Intersection Capacity Utilization 65.1%
 ICU Level of Service C
 Analysis Period (min) 15

Splits and Phases: 9: Tower Road & 32nd Pkwy




HCM 6th Signalized Intersection Summary

9: Tower Road & 32nd Pkwy

2020 Adjusted Existing PM.syn

04/21/2020

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↰↱	↰	↰↱	↰	↰	↰↱↱↱
Traffic Volume (veh/h)	335	110	1315	200	65	1485
Future Volume (veh/h)	335	110	1315	200	65	1485
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	429	134	1370	241	80	1563
Peak Hour Factor	0.78	0.82	0.96	0.83	0.81	0.95
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	515	236	2353	1049	337	3834
Arrive On Green	0.15	0.15	1.00	1.00	0.03	0.50
Sat Flow, veh/h	3456	1585	3647	1585	1781	5274
Grp Volume(v), veh/h	429	134	1370	241	80	1563
Grp Sat Flow(s),veh/h/ln	1728	1585	1777	1585	1781	1702
Q Serve(g_s), s	14.5	9.4	0.0	0.0	1.6	23.0
Cycle Q Clear(g_c), s	14.5	9.4	0.0	0.0	1.6	23.0
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	515	236	2353	1049	337	3834
V/C Ratio(X)	0.83	0.57	0.58	0.23	0.24	0.41
Avail Cap(c_a), veh/h	720	330	2353	1049	387	3834
HCM Platoon Ratio	1.00	1.00	2.00	2.00	0.67	0.67
Upstream Filter(I)	1.00	1.00	0.92	0.92	0.59	0.59
Uniform Delay (d), s/veh	49.6	47.5	0.0	0.0	5.1	13.1
Incr Delay (d2), s/veh	5.9	2.1	1.0	0.5	0.2	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.7	3.9	0.3	0.1	0.6	9.6
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	55.5	49.6	1.0	0.5	5.3	13.3
LnGrp LOS	E	D	A	A	A	B
Approach Vol, veh/h	563		1611			1643
Approach Delay, s/veh	54.1		0.9			12.9
Approach LOS	D		A			B
Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	10.7	85.5			96.1	23.9
Change Period (Y+Rc), s	6.0	6.0			6.0	6.0
Max Green Setting (Gmax), s	8.0	69.0			83.0	25.0
Max Q Clear Time (g_c+I1), s	3.6	2.0			25.0	16.5
Green Ext Time (p_c), s	0.1	18.4			18.8	1.4
Intersection Summary						
HCM 6th Ctrl Delay			13.9			
HCM 6th LOS			B			

Timings 9: Tower Road & 32nd Pkwy

2022 Background AM.syn

05/06/2020

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	250	100	1235	505	125	1700
Future Volume (vph)	250	100	1235	505	125	1700
Turn Type	Prot	Perm	NA	Perm	pm+pt	NA
Protected Phases	8		2		1	6
Permitted Phases		8		2	6	
Detector Phase	8	8	2	2	1	6
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	24.0	24.0	24.0	24.0	11.0	24.0
Total Split (s)	26.0	26.0	74.0	74.0	20.0	94.0
Total Split (%)	21.7%	21.7%	61.7%	61.7%	16.7%	78.3%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag			Lag	Lag	Lead	
Lead-Lag Optimize?			Yes	Yes	Yes	
Recall Mode	None	None	C-Max	C-Max	None	C-Max
Act Effect Green (s)	15.5	15.5	77.8	77.8	92.5	92.5
Actuated g/C Ratio	0.13	0.13	0.65	0.65	0.77	0.77
v/c Ratio	0.66	0.39	0.61	0.53	0.52	0.48
Control Delay	57.0	11.7	7.9	1.8	20.4	2.7
Queue Delay	0.0	0.0	0.1	0.1	0.0	0.0
Total Delay	57.0	11.7	8.0	1.8	20.4	2.7
LOS	E	B	A	A	C	A
Approach Delay	43.7		6.0			4.0
Approach LOS	D		A			A

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 33.5 (28%), Referenced to phase 2:NBT and 6:SBTL, Start of Yellow

Natural Cycle: 70

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.66

Intersection Signal Delay: 8.6

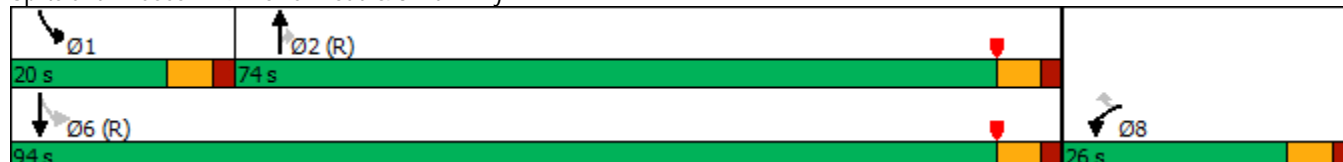
Intersection LOS: A

Intersection Capacity Utilization 63.2%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 9: Tower Road & 32nd Pkwy




HCM 6th Signalized Intersection Summary

9: Tower Road & 32nd Pkwy

2022 Background AM.syn

05/06/2020

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔↔	↔	↕↕	↔	↔	↕↕↕
Traffic Volume (veh/h)	250	100	1235	505	125	1700
Future Volume (veh/h)	250	100	1235	505	125	1700
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	294	122	1388	664	152	1868
Peak Hour Factor	0.85	0.82	0.89	0.76	0.82	0.91
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	372	171	2488	1110	278	4046
Arrive On Green	0.11	0.11	1.00	1.00	0.08	1.00
Sat Flow, veh/h	3456	1585	3647	1585	1781	5274
Grp Volume(v), veh/h	294	122	1388	664	152	1868
Grp Sat Flow(s),veh/h/ln	1728	1585	1777	1585	1781	1702
Q Serve(g_s), s	10.0	8.9	0.0	0.0	2.8	0.0
Cycle Q Clear(g_c), s	10.0	8.9	0.0	0.0	2.8	0.0
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	372	171	2488	1110	278	4046
V/C Ratio(X)	0.79	0.72	0.56	0.60	0.55	0.46
Avail Cap(c_a), veh/h	576	264	2488	1110	411	4046
HCM Platoon Ratio	1.00	1.00	2.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	1.00	0.92	0.92	0.56	0.56
Uniform Delay (d), s/veh	52.2	51.8	0.0	0.0	3.7	0.0
Incr Delay (d2), s/veh	4.1	5.5	0.8	2.2	0.9	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.5	3.8	0.3	0.7	0.9	0.1
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	56.3	57.2	0.8	2.2	4.7	0.2
LnGrp LOS	E	E	A	A	A	A
Approach Vol, veh/h	416		2052			2020
Approach Delay, s/veh	56.6		1.3			0.5
Approach LOS	E		A			A
Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	11.1	90.0			101.1	18.9
Change Period (Y+Rc), s	6.0	6.0			6.0	6.0
Max Green Setting (Gmax), s	14.0	68.0			88.0	20.0
Max Q Clear Time (g_c+l1), s	4.8	2.0			2.0	12.0
Green Ext Time (p_c), s	0.2	24.5			28.9	1.0
Intersection Summary						
HCM 6th Ctrl Delay			6.1			
HCM 6th LOS			A			

Timings 9: Tower Road & 32nd Pkwy

2022 Background PM.syn

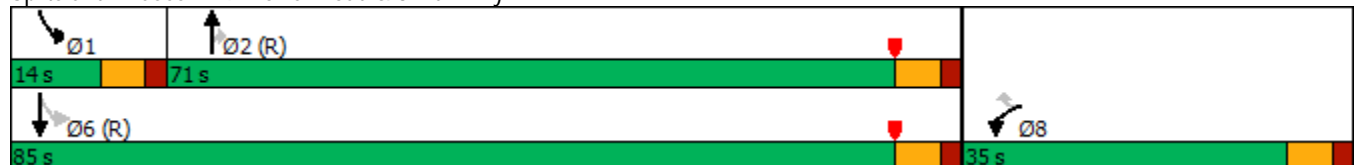
05/06/2020

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↰↰	↰	↰↰	↰	↰	↰↰↰
Traffic Volume (vph)	460	145	1380	245	75	1590
Future Volume (vph)	460	145	1380	245	75	1590
Turn Type	Prot	Perm	NA	Perm	pm+pt	NA
Protected Phases	8		2		1	6
Permitted Phases		8		2	6	
Detector Phase	8	8	2	2	1	6
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	24.0	24.0	24.0	24.0	11.0	24.0
Total Split (s)	35.0	35.0	71.0	71.0	14.0	85.0
Total Split (%)	29.2%	29.2%	59.2%	59.2%	11.7%	70.8%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag			Lag	Lag	Lead	
Lead-Lag Optimize?			Yes	Yes	Yes	
Recall Mode	None	None	C-Max	C-Max	None	C-Max
Act Effect Green (s)	25.5	25.5	69.2	69.2	82.5	82.5
Actuated g/C Ratio	0.21	0.21	0.58	0.58	0.69	0.69
v/c Ratio	0.81	0.39	0.70	0.29	0.43	0.48
Control Delay	54.1	12.0	21.6	3.3	12.1	2.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	54.1	12.0	21.6	3.3	12.1	2.9
LOS	D	B	C	A	B	A
Approach Delay	44.3		18.5			3.3
Approach LOS	D		B			A

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 108 (90%), Referenced to phase 2:NBT and 6:SBTL, Start of Yellow
Natural Cycle: 70
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.81
Intersection Signal Delay: 16.9
Intersection Capacity Utilization 70.4%
Analysis Period (min) 15

Splits and Phases: 9: Tower Road & 32nd Pkwy




HCM 6th Signalized Intersection Summary

9: Tower Road & 32nd Pkwy

2022 Background PM.syn

05/06/2020













						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔↔	↔	↕↕	↔	↔	↕↕↕
Traffic Volume (veh/h)	460	145	1380	245	75	1590
Future Volume (veh/h)	460	145	1380	245	75	1590
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	590	177	1438	295	93	1674
Peak Hour Factor	0.78	0.82	0.96	0.83	0.81	0.95
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	682	313	2178	972	302	3588
Arrive On Green	0.20	0.20	1.00	1.00	0.03	0.47
Sat Flow, veh/h	3456	1585	3647	1585	1781	5274
Grp Volume(v), veh/h	590	177	1438	295	93	1674
Grp Sat Flow(s),veh/h/ln	1728	1585	1777	1585	1781	1702
Q Serve(g_s), s	19.8	12.1	0.0	0.0	2.2	26.7
Cycle Q Clear(g_c), s	19.8	12.1	0.0	0.0	2.2	26.7
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	682	313	2178	972	302	3588
V/C Ratio(X)	0.87	0.57	0.66	0.30	0.31	0.47
Avail Cap(c_a), veh/h	835	383	2178	972	350	3588
HCM Platoon Ratio	1.00	1.00	2.00	2.00	0.67	0.67
Upstream Filter(I)	1.00	1.00	0.89	0.89	0.49	0.49
Uniform Delay (d), s/veh	46.6	43.5	0.0	0.0	7.0	16.5
Incr Delay (d2), s/veh	8.1	1.6	1.4	0.7	0.3	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	9.3	4.9	0.4	0.2	0.8	11.3
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	54.7	45.1	1.4	0.7	7.3	16.7
LnGrp LOS	D	D	A	A	A	B
Approach Vol, veh/h	767		1733			1767
Approach Delay, s/veh	52.5		1.3			16.2
Approach LOS	D		A			B
Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	10.8	79.6			90.3	29.7
Change Period (Y+Rc), s	6.0	6.0			6.0	6.0
Max Green Setting (Gmax), s	8.0	65.0			79.0	29.0
Max Q Clear Time (g_c+I1), s	4.2	2.0			28.7	21.8
Green Ext Time (p_c), s	0.1	20.4			20.3	1.8
Intersection Summary						
HCM 6th Ctrl Delay			16.7			
HCM 6th LOS			B			

Timings

9: Tower Road & 32nd Pkwy

2022 Total AM.syn

06/08/2020

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	250	100	1310	505	125	1760
Future Volume (vph)	250	100	1310	505	125	1760
Turn Type	Prot	Perm	NA	Perm	pm+pt	NA
Protected Phases	8		2		1	6
Permitted Phases		8		2	6	
Detector Phase	8	8	2	2	1	6
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	24.0	24.0	24.0	24.0	11.0	24.0
Total Split (s)	26.0	26.0	74.0	74.0	20.0	94.0
Total Split (%)	21.7%	21.7%	61.7%	61.7%	16.7%	78.3%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag			Lag	Lag	Lead	
Lead-Lag Optimize?			Yes	Yes	Yes	
Recall Mode	None	None	C-Max	C-Max	None	C-Max
Act Effect Green (s)	15.5	15.5	77.2	77.2	92.5	92.5
Actuated g/C Ratio	0.13	0.13	0.64	0.64	0.77	0.77
v/c Ratio	0.66	0.39	0.65	0.53	0.55	0.49
Control Delay	57.0	11.7	9.2	1.9	23.5	3.6
Queue Delay	0.0	0.0	0.0	0.1	0.0	0.0
Total Delay	57.0	11.7	9.2	1.9	23.5	3.6
LOS	E	B	A	A	C	A
Approach Delay	43.7		7.0			5.0
Approach LOS	D		A			A

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 33.5 (28%), Referenced to phase 2:NBT and 6:SBTL, Start of Yellow

Natural Cycle: 70

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.66

Intersection Signal Delay: 9.4

Intersection LOS: A

Intersection Capacity Utilization 65.3%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 9: Tower Road & 32nd Pkwy




HCM 6th Signalized Intersection Summary

2022 Total AM.syn
















06/08/2020

9: Tower Road & 32nd Pkwy

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↖↗	↖	↕↕	↖	↗	↕↕↕
Traffic Volume (veh/h)	250	100	1310	505	125	1760
Future Volume (veh/h)	250	100	1310	505	125	1760
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	294	122	1472	664	152	1934
Peak Hour Factor	0.85	0.82	0.89	0.76	0.82	0.91
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	372	171	2488	1110	267	4046
Arrive On Green	0.11	0.11	1.00	1.00	0.08	1.00
Sat Flow, veh/h	3456	1585	3647	1585	1781	5274
Grp Volume(v), veh/h	294	122	1472	664	152	1934
Grp Sat Flow(s),veh/h/ln	1728	1585	1777	1585	1781	1702
Q Serve(g_s), s	10.0	8.9	0.0	0.0	2.8	0.0
Cycle Q Clear(g_c), s	10.0	8.9	0.0	0.0	2.8	0.0
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	372	171	2488	1110	267	4046
V/C Ratio(X)	0.79	0.72	0.59	0.60	0.57	0.48
Avail Cap(c_a), veh/h	576	264	2488	1110	400	4046
HCM Platoon Ratio	1.00	1.00	2.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	1.00	0.90	0.90	0.45	0.45
Uniform Delay (d), s/veh	52.2	51.8	0.0	0.0	3.7	0.0
Incr Delay (d2), s/veh	4.1	5.5	0.9	2.1	0.9	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.5	3.8	0.3	0.7	0.9	0.1
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	56.3	57.2	0.9	2.1	4.6	0.2
LnGrp LOS	E	E	A	A	A	A
Approach Vol, veh/h	416		2136			2086
Approach Delay, s/veh	56.6		1.3			0.5
Approach LOS	E		A			A
Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	11.1	90.0			101.1	18.9
Change Period (Y+Rc), s	6.0	6.0			6.0	6.0
Max Green Setting (Gmax), s	14.0	68.0			88.0	20.0
Max Q Clear Time (g_c+I1), s	4.8	2.0			2.0	12.0
Green Ext Time (p_c), s	0.2	26.8			31.2	1.0
Intersection Summary						
HCM 6th Ctrl Delay			5.9			
HCM 6th LOS			A			

Timings 9: Tower Road & 32nd Pkwy

2022 Total PM.syn
06/08/2020

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	 		 			  
Traffic Volume (vph)	460	145	1415	245	75	1705
Future Volume (vph)	460	145	1415	245	75	1705
Turn Type	Prot	Perm	NA	Perm	pm+pt	NA
Protected Phases	8		2		1	6
Permitted Phases		8		2	6	
Detector Phase	8	8	2	2	1	6
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	24.0	24.0	24.0	24.0	11.0	24.0
Total Split (s)	35.0	35.0	71.0	71.0	14.0	85.0
Total Split (%)	29.2%	29.2%	59.2%	59.2%	11.7%	70.8%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag			Lag	Lag	Lead	
Lead-Lag Optimize?			Yes	Yes	Yes	
Recall Mode	None	None	C-Max	C-Max	None	C-Max
Act Effect Green (s)	25.5	25.5	69.2	69.2	82.5	82.5
Actuated g/C Ratio	0.21	0.21	0.58	0.58	0.69	0.69
v/c Ratio	0.81	0.39	0.72	0.29	0.45	0.51
Control Delay	54.1	12.3	23.9	4.1	12.7	3.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	54.1	12.3	23.9	4.1	12.7	3.2
LOS	D	B	C	A	B	A
Approach Delay	44.4		20.6			3.7
Approach LOS	D		C			A

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 108 (90%), Referenced to phase 2:NBT and 6:SBTL, Start of Yellow
Natural Cycle: 70
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.81
Intersection Signal Delay: 17.5
Intersection Capacity Utilization 71.4%
Analysis Period (min) 15
Intersection LOS: B
ICU Level of Service C

Splits and Phases: 9: Tower Road & 32nd Pkwy



















HCM 6th Signalized Intersection Summary

2022 Total PM.syn

06/08/2020

9: Tower Road & 32nd Pkwy

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	 		 			  
Traffic Volume (veh/h)	460	145	1415	245	75	1705
Future Volume (veh/h)	460	145	1415	245	75	1705
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	590	177	1474	295	93	1795
Peak Hour Factor	0.78	0.82	0.96	0.83	0.81	0.95
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	682	313	2178	972	296	3588
Arrive On Green	0.20	0.20	1.00	1.00	0.03	0.47
Sat Flow, veh/h	3456	1585	3647	1585	1781	5274
Grp Volume(v), veh/h	590	177	1474	295	93	1795
Grp Sat Flow(s),veh/h/ln	1728	1585	1777	1585	1781	1702
Q Serve(g_s), s	19.8	12.1	0.0	0.0	2.2	29.2
Cycle Q Clear(g_c), s	19.8	12.1	0.0	0.0	2.2	29.2
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	682	313	2178	972	296	3588
V/C Ratio(X)	0.87	0.57	0.68	0.30	0.31	0.50
Avail Cap(c_a), veh/h	835	383	2178	972	344	3588
HCM Platoon Ratio	1.00	1.00	2.00	2.00	0.67	0.67
Upstream Filter(I)	1.00	1.00	0.88	0.88	0.36	0.36
Uniform Delay (d), s/veh	46.6	43.5	0.0	0.0	7.0	17.2
Incr Delay (d2), s/veh	8.1	1.6	1.5	0.7	0.2	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	9.3	4.9	0.5	0.2	0.8	12.4
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	54.7	45.1	1.5	0.7	7.3	17.3
LnGrp LOS	D	D	A	A	A	B
Approach Vol, veh/h	767		1769			1888
Approach Delay, s/veh	52.5		1.4			16.8
Approach LOS	D		A			B
Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	10.8	79.6			90.3	29.7
Change Period (Y+Rc), s	6.0	6.0			6.0	6.0
Max Green Setting (Gmax), s	8.0	65.0			79.0	29.0
Max Q Clear Time (g_c+l1), s	4.2	2.0			31.2	21.8
Green Ext Time (p_c), s	0.1	21.3			22.2	1.8
Intersection Summary						
HCM 6th Ctrl Delay			16.8			
HCM 6th LOS			B			

Timings
9: Tower Road & 32nd Pkwy

2040 Background AM.syn

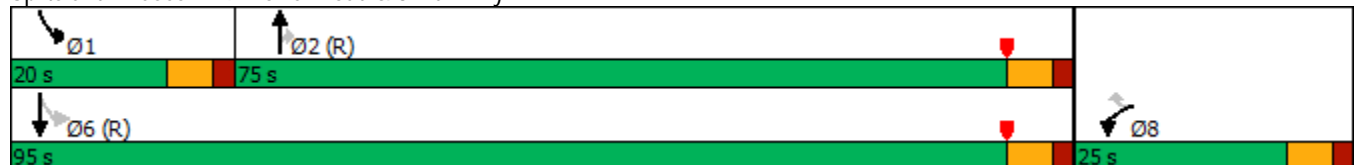
05/06/2020

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	495	245	1685	980	335	1840
Future Volume (vph)	495	245	1685	980	335	1840
Turn Type	Prot	Perm	NA	Perm	pm+pt	NA
Protected Phases	8		2		1	6
Permitted Phases		8		2	6	
Detector Phase	8	8	2	2	1	6
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	24.0	24.0	24.0	24.0	11.0	24.0
Total Split (s)	25.0	25.0	75.0	75.0	20.0	95.0
Total Split (%)	20.8%	20.8%	62.5%	62.5%	16.7%	79.2%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag			Lag	Lag	Lead	
Lead-Lag Optimize?			Yes	Yes	Yes	
Recall Mode	None	None	C-Max	C-Max	None	C-Max
Act Effect Green (s)	19.0	19.0	69.0	69.0	89.0	89.0
Actuated g/C Ratio	0.16	0.16	0.58	0.58	0.74	0.74
v/c Ratio	0.99	0.64	0.90	0.90	1.36	0.53
Control Delay	87.0	21.4	23.9	18.2	204.9	4.8
Queue Delay	0.0	0.0	0.0	0.7	0.0	0.0
Total Delay	87.0	21.4	23.9	18.9	204.9	4.8
LOS	F	C	C	B	F	A
Approach Delay	65.3		22.1			35.6
Approach LOS	E		C			D

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 33.5 (28%), Referenced to phase 2:NBT and 6:SBTL, Start of Yellow
Natural Cycle: 110
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.36
Intersection Signal Delay: 33.1
Intersection Capacity Utilization 94.3%
Analysis Period (min) 15
Intersection LOS: C
ICU Level of Service F

Splits and Phases: 9: Tower Road & 32nd Pkwy




HCM 6th Signalized Intersection Summary

9: Tower Road & 32nd Pkwy

2040 Background AM.syn













05/06/2020

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔↔	↔	↕↕	↔	↔	↕↕↕
Traffic Volume (veh/h)	495	245	1685	980	335	1840
Future Volume (veh/h)	495	245	1685	980	335	1840
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	538	266	1832	1065	364	2000
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	547	251	2043	911	284	3787
Arrive On Green	0.16	0.16	0.76	0.76	0.23	1.00
Sat Flow, veh/h	3456	1585	3647	1585	1781	5274
Grp Volume(v), veh/h	538	266	1832	1065	364	2000
Grp Sat Flow(s),veh/h/ln	1728	1585	1777	1585	1781	1702
Q Serve(g_s), s	18.6	19.0	46.3	69.0	14.0	0.0
Cycle Q Clear(g_c), s	18.6	19.0	46.3	69.0	14.0	0.0
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	547	251	2043	911	284	3787
V/C Ratio(X)	0.98	1.06	0.90	1.17	1.28	0.53
Avail Cap(c_a), veh/h	547	251	2043	911	284	3787
HCM Platoon Ratio	1.00	1.00	1.33	1.33	2.00	2.00
Upstream Filter(l)	1.00	1.00	0.69	0.69	0.27	0.27
Uniform Delay (d), s/veh	50.3	50.5	11.4	14.1	34.0	0.0
Incr Delay (d2), s/veh	34.1	73.5	4.8	84.3	133.2	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	10.6	12.6	13.0	36.8	14.7	0.1
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	84.4	124.0	16.2	98.4	167.2	0.1
LnGrp LOS	F	F	B	F	F	A
Approach Vol, veh/h	804		2897			2364
Approach Delay, s/veh	97.5		46.5			25.9
Approach LOS	F		D			C
Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	20.0	75.0			95.0	25.0
Change Period (Y+Rc), s	6.0	6.0			6.0	6.0
Max Green Setting (Gmax), s	14.0	69.0			89.0	19.0
Max Q Clear Time (g_c+l1), s	16.0	71.0			2.0	21.0
Green Ext Time (p_c), s	0.0	0.0			33.6	0.0
Intersection Summary						
HCM 6th Ctrl Delay			45.2			
HCM 6th LOS			D			

Timings
9: Tower Road & 32nd Pkwy

2040 Background PM.syn

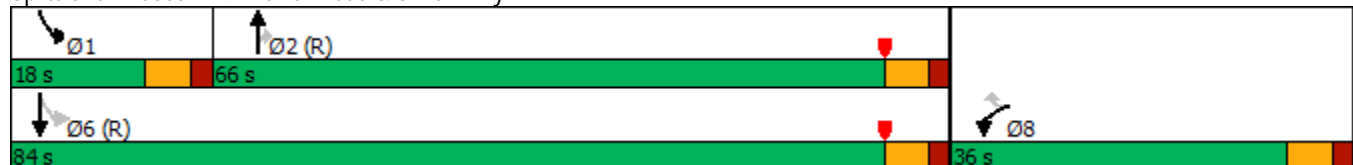
05/06/2020

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	790	395	1605	605	295	2000
Future Volume (vph)	790	395	1605	605	295	2000
Turn Type	Prot	Perm	NA	Perm	pm+pt	NA
Protected Phases	8		2		1	6
Permitted Phases		8		2	6	
Detector Phase	8	8	2	2	1	6
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	24.0	24.0	24.0	24.0	11.0	24.0
Total Split (s)	36.0	36.0	66.0	66.0	18.0	84.0
Total Split (%)	30.0%	30.0%	55.0%	55.0%	15.0%	70.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag			Lag	Lag	Lead	
Lead-Lag Optimize?			Yes	Yes	Yes	
Recall Mode	None	None	C-Max	C-Max	None	C-Max
Act Effect Green (s)	30.0	30.0	60.0	60.0	78.0	78.0
Actuated g/C Ratio	0.25	0.25	0.50	0.50	0.65	0.65
v/c Ratio	1.00	0.80	0.95	0.63	1.34	0.64
Control Delay	76.2	35.1	40.9	8.8	192.1	7.1
Queue Delay	0.0	0.0	0.0	0.4	0.0	0.5
Total Delay	76.2	35.1	40.9	9.1	192.1	7.7
LOS	E	D	D	A	F	A
Approach Delay	62.5		31.9			32.1
Approach LOS	E		C			C

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 108 (90%), Referenced to phase 2:NBT and 6:SBTL, Start of Yellow
 Natural Cycle: 120
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.34
 Intersection Signal Delay: 38.5
 Intersection Capacity Utilization 98.2%
 Analysis Period (min) 15
 Intersection LOS: D
 ICU Level of Service F

Splits and Phases: 9: Tower Road & 32nd Pkwy




HCM 6th Signalized Intersection Summary

9: Tower Road & 32nd Pkwy

2040 Background PM.syn

05/06/2020













						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔↔	↔	↕↕	↔	↔	↕↕↕
Traffic Volume (veh/h)	790	395	1605	605	295	2000
Future Volume (veh/h)	790	395	1605	605	295	2000
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	859	429	1672	658	321	2105
Peak Hour Factor	0.92	0.92	0.96	0.92	0.92	0.95
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	864	396	1777	793	316	3319
Arrive On Green	0.25	0.25	1.00	1.00	0.07	0.44
Sat Flow, veh/h	3456	1585	3647	1585	1781	5274
Grp Volume(v), veh/h	859	429	1672	658	321	2105
Grp Sat Flow(s),veh/h/ln	1728	1585	1777	1585	1781	1702
Q Serve(g_s), s	29.8	30.0	0.0	0.0	12.0	38.6
Cycle Q Clear(g_c), s	29.8	30.0	0.0	0.0	12.0	38.6
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	864	396	1777	793	316	3319
V/C Ratio(X)	0.99	1.08	0.94	0.83	1.02	0.63
Avail Cap(c_a), veh/h	864	396	1777	793	316	3319
HCM Platoon Ratio	1.00	1.00	2.00	2.00	0.67	0.67
Upstream Filter(I)	1.00	1.00	0.80	0.80	0.09	0.09
Uniform Delay (d), s/veh	44.9	45.0	0.0	0.0	25.9	22.7
Incr Delay (d2), s/veh	29.1	69.2	9.5	8.0	19.4	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	16.1	19.3	2.3	1.8	5.7	16.4
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	74.1	114.2	9.5	8.0	45.3	22.8
LnGrp LOS	E	F	A	A	F	C
Approach Vol, veh/h	1288		2330			2426
Approach Delay, s/veh	87.4		9.1			25.8
Approach LOS	F		A			C
Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	18.0	66.0			84.0	36.0
Change Period (Y+Rc), s	6.0	6.0			6.0	6.0
Max Green Setting (Gmax), s	12.0	60.0			78.0	30.0
Max Q Clear Time (g_c+l1), s	14.0	2.0			40.6	32.0
Green Ext Time (p_c), s	0.0	30.8			24.4	0.0
Intersection Summary						
HCM 6th Ctrl Delay			32.5			
HCM 6th LOS			C			

Timings

2040 Total AM Scenario 1.syn

9: Tower Road & 32nd Pkwy

06/08/2020

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	495	245	1760	980	335	1900
Future Volume (vph)	495	245	1760	980	335	1900
Turn Type	Prot	Perm	NA	Perm	pm+pt	NA
Protected Phases	8		2		1	6
Permitted Phases		8		2	6	
Detector Phase	8	8	2	2	1	6
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	24.0	24.0	24.0	24.0	11.0	24.0
Total Split (s)	25.0	25.0	76.0	76.0	19.0	95.0
Total Split (%)	20.8%	20.8%	63.3%	63.3%	15.8%	79.2%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag			Lag	Lag	Lead	
Lead-Lag Optimize?			Yes	Yes	Yes	
Recall Mode	None	None	C-Max	C-Max	None	C-Max
Act Effect Green (s)	19.0	19.0	70.0	70.0	89.0	89.0
Actuated g/C Ratio	0.16	0.16	0.58	0.58	0.74	0.74
v/c Ratio	0.99	0.66	0.93	0.89	1.43	0.55
Control Delay	87.0	24.6	22.3	14.2	234.1	5.2
Queue Delay	0.0	0.0	0.0	0.6	0.0	0.0
Total Delay	87.0	24.6	22.3	14.9	234.1	5.2
LOS	F	C	C	B	F	A
Approach Delay	66.4		19.7			39.5
Approach LOS	E		B			D

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 33.5 (28%), Referenced to phase 2:NBT and 6:SBTL, Start of Yellow
Natural Cycle: 120
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.43
Intersection Signal Delay: 33.5
Intersection Capacity Utilization 96.3%
Analysis Period (min) 15
Intersection LOS: C
ICU Level of Service F

Splits and Phases: 9: Tower Road & 32nd Pkwy




HCM 6th Signalized Intersection Summary

2040 Total AM Scenario 1.syn


9: Tower Road & 32nd Pkwy

06/08/2020

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔↔	↔	↕↕	↔	↔	↕↕↕
Traffic Volume (veh/h)	495	245	1760	980	335	1900
Future Volume (veh/h)	495	245	1760	980	335	1900
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	538	266	1913	1065	364	2065
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	547	251	2073	925	266	3787
Arrive On Green	0.16	0.16	0.78	0.78	0.22	1.00
Sat Flow, veh/h	3456	1585	3647	1585	1781	5274
Grp Volume(v), veh/h	538	266	1913	1065	364	2065
Grp Sat Flow(s),veh/h/ln	1728	1585	1777	1585	1781	1702
Q Serve(g_s), s	18.6	19.0	51.0	70.0	13.0	0.0
Cycle Q Clear(g_c), s	18.6	19.0	51.0	70.0	13.0	0.0
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	547	251	2073	925	266	3787
V/C Ratio(X)	0.98	1.06	0.92	1.15	1.37	0.55
Avail Cap(c_a), veh/h	547	251	2073	925	266	3787
HCM Platoon Ratio	1.00	1.00	1.33	1.33	2.00	2.00
Upstream Filter(I)	1.00	1.00	0.67	0.67	0.20	0.20
Uniform Delay (d), s/veh	50.3	50.5	11.3	13.4	35.2	0.0
Incr Delay (d2), s/veh	34.1	73.5	5.9	77.1	171.1	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	10.6	12.6	13.9	34.8	16.6	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	84.4	124.0	17.3	90.5	206.2	0.1
LnGrp LOS	F	F	B	F	F	A
Approach Vol, veh/h	804		2978			2429
Approach Delay, s/veh	97.5		43.5			31.0
Approach LOS	F		D			C
Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	19.0	76.0			95.0	25.0
Change Period (Y+Rc), s	6.0	6.0			6.0	6.0
Max Green Setting (Gmax), s	13.0	70.0			89.0	19.0
Max Q Clear Time (g_c+l1), s	15.0	72.0			2.0	21.0
Green Ext Time (p_c), s	0.0	0.0			36.0	0.0
Intersection Summary						
HCM 6th Ctrl Delay			45.6			
HCM 6th LOS			D			

Timings 9: Tower Road & 32nd Pkwy

2040 Total PM Scenario 1.syn
06/08/2020

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↰↰	↱	↕↕	↱	↰	↕↕↕
Traffic Volume (vph)	790	395	1640	605	295	2115
Future Volume (vph)	790	395	1640	605	295	2115
Turn Type	Prot	Perm	NA	Perm	pm+pt	NA
Protected Phases	8		2		1	6
Permitted Phases		8		2	6	
Detector Phase	8	8	2	2	1	6
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	24.0	24.0	24.0	24.0	11.0	24.0
Total Split (s)	38.0	38.0	66.0	66.0	16.0	82.0
Total Split (%)	31.7%	31.7%	55.0%	55.0%	13.3%	68.3%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag			Lag	Lag	Lead	
Lead-Lag Optimize?			Yes	Yes	Yes	
Recall Mode	None	None	C-Max	C-Max	None	C-Max
Act Effect Green (s)	31.7	31.7	60.0	60.0	76.3	76.3
Actuated g/C Ratio	0.26	0.26	0.50	0.50	0.64	0.64
v/c Ratio	0.95	0.80	0.97	0.64	1.50	0.69
Control Delay	63.0	37.1	44.9	9.8	261.1	9.8
Queue Delay	0.0	0.0	0.0	0.4	0.0	0.8
Total Delay	63.0	37.1	44.9	10.1	261.1	10.7
LOS	E	D	D	B	F	B
Approach Delay	54.4		35.2			42.2
Approach LOS	D		D			D

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 108 (90%), Referenced to phase 2:NBT and 6:SBTL, Start of Yellow
 Natural Cycle: 120
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.50
 Intersection Signal Delay: 42.1
 Intersection Capacity Utilization 99.2%
 Analysis Period (min) 15

Intersection LOS: D

ICU Level of Service F

Splits and Phases: 9: Tower Road & 32nd Pkwy




HCM 6th Signalized Intersection Summary

2040 Total PM Scenario 1.syn








9: Tower Road & 32nd Pkwy

06/08/2020

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↖↗	↖	↕↕	↖	↗	↕↕↕
Traffic Volume (veh/h)	790	395	1640	605	295	2115
Future Volume (veh/h)	790	395	1640	605	295	2115
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	859	429	1708	658	321	2226
Peak Hour Factor	0.92	0.92	0.96	0.92	0.92	0.95
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	922	423	1777	793	283	3234
Arrive On Green	0.27	0.27	1.00	1.00	0.06	0.42
Sat Flow, veh/h	3456	1585	3647	1585	1781	5274
Grp Volume(v), veh/h	859	429	1708	658	321	2226
Grp Sat Flow(s),veh/h/ln	1728	1585	1777	1585	1781	1702
Q Serve(g_s), s	29.1	32.0	0.0	0.0	10.0	42.5
Cycle Q Clear(g_c), s	29.1	32.0	0.0	0.0	10.0	42.5
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	922	423	1777	793	283	3234
V/C Ratio(X)	0.93	1.01	0.96	0.83	1.13	0.69
Avail Cap(c_a), veh/h	922	423	1777	793	283	3234
HCM Platoon Ratio	1.00	1.00	2.00	2.00	0.67	0.67
Upstream Filter(I)	1.00	1.00	0.78	0.78	0.09	0.09
Uniform Delay (d), s/veh	42.9	44.0	0.0	0.0	23.5	24.9
Incr Delay (d2), s/veh	15.8	47.6	11.7	7.9	64.2	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	14.3	18.0	2.9	1.7	8.7	18.1
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	58.7	91.6	11.7	7.9	87.6	25.0
LnGrp LOS	E	F	B	A	F	C
Approach Vol, veh/h	1288		2366			2547
Approach Delay, s/veh	69.7		10.6			32.9
Approach LOS	E		B			C
Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	16.0	66.0			82.0	38.0
Change Period (Y+Rc), s	6.0	6.0			6.0	6.0
Max Green Setting (Gmax), s	10.0	60.0			76.0	32.0
Max Q Clear Time (g_c+l1), s	12.0	2.0			44.5	34.0
Green Ext Time (p_c), s	0.0	31.8			23.1	0.0
Intersection Summary						
HCM 6th Ctrl Delay			32.1			
HCM 6th LOS			C			

Timings 9: Tower Road & 32nd Pkwy

2040 Total AM Scenario 2.syn
06/08/2020

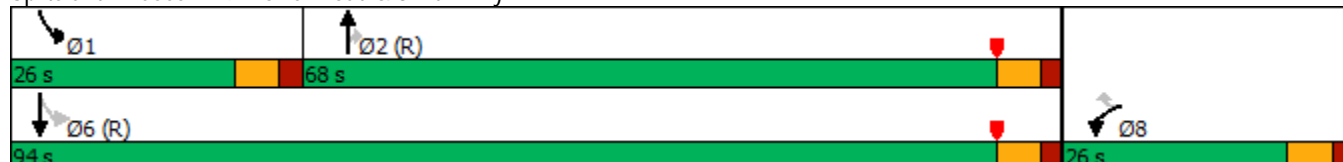
						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	495	245	1660	980	335	1820
Future Volume (vph)	495	245	1660	980	335	1820
Turn Type	Prot	Perm	NA	Perm	pm+pt	NA
Protected Phases	8		2		1	6
Permitted Phases		8		2	6	
Detector Phase	8	8	2	2	1	6
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	24.0	24.0	24.0	24.0	11.0	24.0
Total Split (s)	26.0	26.0	68.0	68.0	26.0	94.0
Total Split (%)	21.7%	21.7%	56.7%	56.7%	21.7%	78.3%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag			Lag	Lag	Lead	
Lead-Lag Optimize?			Yes	Yes	Yes	
Recall Mode	None	None	C-Max	C-Max	None	C-Max
Act Effect Green (s)	20.0	20.0	62.0	62.0	88.0	88.0
Actuated g/C Ratio	0.17	0.17	0.52	0.52	0.73	0.73
v/c Ratio	0.94	0.55	0.99	0.96	1.02	0.53
Control Delay	75.2	9.9	34.7	26.4	81.4	4.7
Queue Delay	0.0	0.0	0.4	2.7	0.0	0.1
Total Delay	75.2	9.9	35.1	29.1	81.4	4.8
LOS	E	A	D	C	F	A
Approach Delay	53.6		32.9			16.7
Approach LOS	D		C			B

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 33.5 (28%), Referenced to phase 2:NBT and 6:SBTL, Start of Yellow
 Natural Cycle: 110
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.02
 Intersection Signal Delay: 29.4
 Intersection Capacity Utilization 93.6%
 Analysis Period (min) 15

Intersection LOS: C
 ICU Level of Service F

Splits and Phases: 9: Tower Road & 32nd Pkwy



HCM 6th Signalized Intersection Summary

2040 Total AM Scenario 2.syn

9: Tower Road & 32nd Pkwy

06/08/2020

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↰↰	↱	↕↕	↱	↰	↕↕↕
Traffic Volume (veh/h)	495	245	1660	980	335	1820
Future Volume (veh/h)	495	245	1660	980	335	1820
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	538	266	1804	1065	364	1978
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	576	264	1836	819	359	3744
Arrive On Green	0.17	0.17	0.69	0.69	0.33	1.00
Sat Flow, veh/h	3456	1585	3647	1585	1781	5274
Grp Volume(v), veh/h	538	266	1804	1065	364	1978
Grp Sat Flow(s),veh/h/ln	1728	1585	1777	1585	1781	1702
Q Serve(g_s), s	18.4	20.0	58.7	62.0	20.0	0.0
Cycle Q Clear(g_c), s	18.4	20.0	58.7	62.0	20.0	0.0
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	576	264	1836	819	359	3744
V/C Ratio(X)	0.93	1.01	0.98	1.30	1.01	0.53
Avail Cap(c_a), veh/h	576	264	1836	819	359	3744
HCM Platoon Ratio	1.00	1.00	1.33	1.33	2.00	2.00
Upstream Filter(I)	1.00	1.00	0.65	0.65	0.28	0.28
Uniform Delay (d), s/veh	49.3	50.0	18.2	18.8	32.0	0.0
Incr Delay (d2), s/veh	22.6	57.1	13.3	141.1	28.3	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	9.7	12.1	21.7	49.3	10.6	0.1
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	71.9	107.1	31.6	159.9	60.3	0.2
LnGrp LOS	E	F	C	F	F	A
Approach Vol, veh/h	804		2869			2342
Approach Delay, s/veh	83.6		79.2			9.5
Approach LOS	F		E			A
Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	26.0	68.0			94.0	26.0
Change Period (Y+Rc), s	6.0	6.0			6.0	6.0
Max Green Setting (Gmax), s	20.0	62.0			88.0	20.0
Max Q Clear Time (g_c+l1), s	22.0	64.0			2.0	22.0
Green Ext Time (p_c), s	0.0	0.0			32.7	0.0
Intersection Summary						
HCM 6th Ctrl Delay			52.6			
HCM 6th LOS			D			

Timings 9: Tower Road & 32nd Pkwy

2040 Total PM Scenario 2.syn
06/08/2020

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	790	395	1455	605	295	1965
Future Volume (vph)	790	395	1455	605	295	1965
Turn Type	Prot	Perm	NA	Perm	pm+pt	NA
Protected Phases	8		2		1	6
Permitted Phases		8		2	6	
Detector Phase	8	8	2	2	1	6
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	24.0	24.0	24.0	24.0	11.0	24.0
Total Split (s)	39.0	39.0	64.0	64.0	17.0	81.0
Total Split (%)	32.5%	32.5%	53.3%	53.3%	14.2%	67.5%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag			Lag	Lag	Lead	
Lead-Lag Optimize?			Yes	Yes	Yes	
Recall Mode	None	None	C-Max	C-Max	None	C-Max
Act Effect Green (s)	32.4	32.4	58.0	58.0	75.6	75.6
Actuated g/C Ratio	0.27	0.27	0.48	0.48	0.63	0.63
v/c Ratio	0.93	0.76	0.89	0.63	1.38	0.65
Control Delay	59.2	31.9	38.2	9.5	208.3	13.1
Queue Delay	0.0	0.0	0.7	0.4	0.0	1.8
Total Delay	59.2	31.9	38.8	9.9	208.3	14.8
LOS	E	C	D	A	F	B
Approach Delay	50.1		30.1			40.8
Approach LOS	D		C			D

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 33.5 (28%), Referenced to phase 2:NBT and 6:SBTL, Start of Yellow
 Natural Cycle: 90
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.38
 Intersection Signal Delay: 38.9
 Intersection Capacity Utilization 94.1%
 Analysis Period (min) 15

Intersection LOS: D
 ICU Level of Service F

Splits and Phases: 9: Tower Road & 32nd Pkwy



HCM 6th Signalized Intersection Summary

2040 Total PM Scenario 2.syn

9: Tower Road & 32nd Pkwy

06/08/2020

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↰↰	↱	↕↕	↱	↰	↕↕↕
Traffic Volume (veh/h)	790	395	1455	605	295	1965
Future Volume (veh/h)	790	395	1455	605	295	1965
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	859	429	1516	658	321	2068
Peak Hour Factor	0.92	0.92	0.96	0.92	0.92	0.95
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	950	436	1718	766	293	3191
Arrive On Green	0.28	0.28	0.97	0.97	0.18	1.00
Sat Flow, veh/h	3456	1585	3647	1585	1781	5274
Grp Volume(v), veh/h	859	429	1516	658	321	2068
Grp Sat Flow(s),veh/h/ln	1728	1585	1777	1585	1781	1702
Q Serve(g_s), s	28.8	32.3	11.6	9.8	11.0	0.0
Cycle Q Clear(g_c), s	28.8	32.3	11.6	9.8	11.0	0.0
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	950	436	1718	766	293	3191
V/C Ratio(X)	0.90	0.98	0.88	0.86	1.09	0.65
Avail Cap(c_a), veh/h	950	436	1718	766	293	3191
HCM Platoon Ratio	1.00	1.00	2.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	1.00	0.79	0.79	0.09	0.09
Uniform Delay (d), s/veh	42.0	43.2	1.2	1.2	19.3	0.0
Incr Delay (d2), s/veh	11.9	38.8	5.6	9.8	48.0	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	13.7	17.2	2.1	2.7	7.5	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	53.8	82.1	6.9	11.0	67.3	0.1
LnGrp LOS	D	F	A	B	F	A
Approach Vol, veh/h	1288		2174			2389
Approach Delay, s/veh	63.2		8.1			9.1
Approach LOS	E		A			A
Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	17.0	64.0			81.0	39.0
Change Period (Y+Rc), s	6.0	6.0			6.0	6.0
Max Green Setting (Gmax), s	11.0	58.0			75.0	33.0
Max Q Clear Time (g_c+l1), s	13.0	13.6			2.0	34.3
Green Ext Time (p_c), s	0.0	23.7			33.9	0.0
Intersection Summary						
HCM 6th Ctrl Delay			20.7			
HCM 6th LOS			C			

Timings 10: Tower Road & I-70 WB Ramps

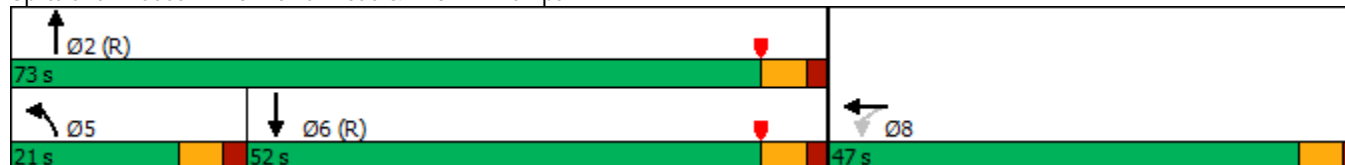
2020 Adjusted Existing AM.syn
04/21/2020

	←	↖	↑	↓	↗
Lane Group	WBT	NBL	NBT	SBT	SBR
Lane Configurations	↕	↖↗	↑↑↑	↑↑	↗
Traffic Volume (vph)	0	215	925	1020	1040
Future Volume (vph)	0	215	925	1020	1040
Turn Type	NA	Prot	NA	NA	Free
Protected Phases	8	5	2	6	
Permitted Phases					Free
Detector Phase	8	5	2	6	
Switch Phase					
Minimum Initial (s)	5.0	5.0	5.0	5.0	
Minimum Split (s)	23.5	11.0	24.0	24.0	
Total Split (s)	47.0	21.0	73.0	52.0	
Total Split (%)	39.2%	17.5%	60.8%	43.3%	
Yellow Time (s)	4.0	4.0	4.0	4.0	
All-Red Time (s)	1.0	2.0	2.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.0	6.0	6.0	6.0	
Lead/Lag		Lead		Lag	
Lead-Lag Optimize?		Yes		Yes	
Recall Mode	None	None	C-Max	C-Max	
Act Effect Green (s)	27.4	14.5	81.6	61.1	120.0
Actuated g/C Ratio	0.23	0.12	0.68	0.51	1.00
v/c Ratio	0.83	0.64	0.31	0.60	0.75
Control Delay	49.6	71.9	10.3	16.4	10.8
Queue Delay	0.0	0.0	0.0	0.2	0.0
Total Delay	49.6	71.9	10.3	16.6	10.8
LOS	D	E	B	B	B
Approach Delay	49.6		22.4	13.5	
Approach LOS	D		C	B	

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 38.5 (32%), Referenced to phase 2:NBT and 6:SBT, Start of Yellow
 Natural Cycle: 60
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.83
 Intersection Signal Delay: 19.9
 Intersection LOS: B
 Intersection Capacity Utilization 68.4%
 ICU Level of Service C
 Analysis Period (min) 15

Splits and Phases: 10: Tower Road & I-70 WB Ramps

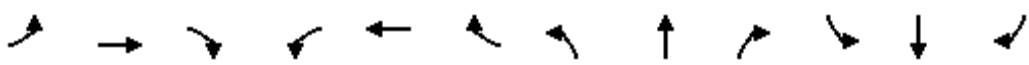


HCM 6th Signalized Intersection Summary

10: Tower Road & I-70 WB Ramps

2020 Adjusted Existing AM.syn

04/21/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↔		↔	↑↑↑			↑↑	↗
Traffic Volume (veh/h)	0	0	0	70	0	260	215	925	0	0	1020	1040
Future Volume (veh/h)	0	0	0	70	0	260	215	925	0	0	1020	1040
Initial Q (Qb), veh				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
Parking Bus, Adj				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	
Adj Sat Flow, veh/h/ln				1900	1870	1900	1870	1870	0	0	1870	1870
Adj Flow Rate, veh/h				70	0	295	265	1088	0	0	1074	0
Peak Hour Factor				1.00	0.92	0.88	0.81	0.85	0.92	0.92	0.95	0.88
Percent Heavy Veh, %				0	2	0	2	2	0	0	2	2
Cap, veh/h				78	0	329	322	3354	0	0	1825	
Arrive On Green				0.25	0.00	0.25	0.19	1.00	0.00	0.00	0.86	0.00
Sat Flow, veh/h				311	0	1309	3456	5274	0	0	3647	1585
Grp Volume(v), veh/h				365	0	0	265	1088	0	0	1074	0
Grp Sat Flow(s),veh/h/ln				1619	0	0	1728	1702	0	0	1777	1585
Q Serve(g_s), s				26.1	0.0	0.0	8.8	0.0	0.0	0.0	10.4	0.0
Cycle Q Clear(g_c), s				26.1	0.0	0.0	8.8	0.0	0.0	0.0	10.4	0.0
Prop In Lane				0.19		0.81	1.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h				407	0	0	322	3354	0	0	1825	
V/C Ratio(X)				0.90	0.00	0.00	0.82	0.32	0.00	0.00	0.59	
Avail Cap(c_a), veh/h				567	0	0	432	3354	0	0	1825	
HCM Platoon Ratio				1.00	1.00	1.00	2.00	2.00	1.00	1.00	1.67	1.67
Upstream Filter(l)				1.00	0.00	0.00	0.93	0.93	0.00	0.00	0.88	0.00
Uniform Delay (d), s/veh				43.4	0.0	0.0	47.9	0.0	0.0	0.0	4.9	0.0
Incr Delay (d2), s/veh				13.2	0.0	0.0	8.6	0.2	0.0	0.0	1.2	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
%ile BackOfQ(50%),veh/ln				11.9	0.0	0.0	3.9	0.1	0.0	0.0	2.6	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				56.6	0.0	0.0	56.4	0.2	0.0	0.0	6.1	0.0
LnGrp LOS				E	A	A	E	A	A	A	A	
Approach Vol, veh/h					365			1353			1074	A
Approach Delay, s/veh					56.6			11.2			6.1	
Approach LOS					E			B			A	
Timer - Assigned Phs		2			5	6		8				
Phs Duration (G+Y+Rc), s		84.8			17.2	67.6		35.2				
Change Period (Y+Rc), s		6.0			6.0	6.0		5.0				
Max Green Setting (Gmax), s		67.0			15.0	46.0		42.0				
Max Q Clear Time (g_c+l1), s		2.0			10.8	12.4		28.1				
Green Ext Time (p_c), s		10.6			0.3	9.7		2.0				
Intersection Summary												
HCM 6th Ctrl Delay				15.2								
HCM 6th LOS				B								

Notes

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

Timings
10: Tower Road & I-70 WB Ramps

2020 Adjusted Existing PM.syn

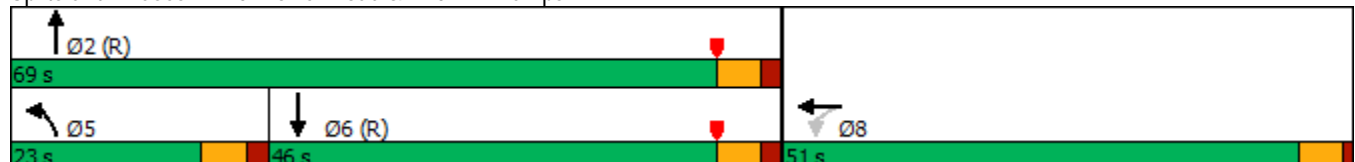
04/21/2020

	←	↖	↑	↓	↘
Lane Group	WBT	NBL	NBT	SBT	SBR
Lane Configurations	↕	↖↖	↑↑↑	↑↑	↘
Traffic Volume (vph)	0	215	1330	1125	705
Future Volume (vph)	0	215	1330	1125	705
Turn Type	NA	Prot	NA	NA	Free
Protected Phases	8	5	2	6	
Permitted Phases					Free
Detector Phase	8	5	2	6	
Switch Phase					
Minimum Initial (s)	5.0	5.0	5.0	5.0	
Minimum Split (s)	23.5	11.0	24.0	24.0	
Total Split (s)	51.0	23.0	69.0	46.0	
Total Split (%)	42.5%	19.2%	57.5%	38.3%	
Yellow Time (s)	4.0	4.0	4.0	4.0	
All-Red Time (s)	1.0	2.0	2.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.0	6.0	6.0	6.0	
Lead/Lag		Lead		Lag	
Lead-Lag Optimize?		Yes		Yes	
Recall Mode	None	None	C-Max	C-Max	
Act Effect Green (s)	23.6	13.8	85.4	65.6	120.0
Actuated g/C Ratio	0.20	0.12	0.71	0.55	1.00
v/c Ratio	0.81	0.62	0.41	0.66	0.46
Control Delay	49.2	48.1	10.3	20.2	1.3
Queue Delay	0.0	0.0	0.1	0.2	0.0
Total Delay	49.2	48.1	10.4	20.4	1.3
LOS	D	D	B	C	A
Approach Delay	49.2		15.8	13.4	
Approach LOS	D		B	B	

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 106 (88%), Referenced to phase 2:NBT and 6:SBT, Start of Yellow
 Natural Cycle: 65
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.81
 Intersection Signal Delay: 17.2
 Intersection LOS: B
 Intersection Capacity Utilization 72.1%
 ICU Level of Service C
 Analysis Period (min) 15

Splits and Phases: 10: Tower Road & I-70 WB Ramps

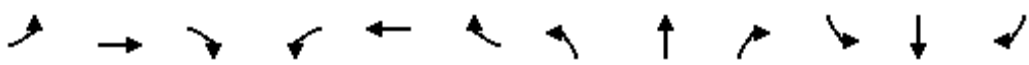


HCM 6th Signalized Intersection Summary

10: Tower Road & I-70 WB Ramps

2020 Adjusted Existing PM.syn

04/21/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↔		↔	↑↑↑			↑↑	↗
Traffic Volume (veh/h)	0	0	0	35	0	220	215	1330	0	0	1125	705
Future Volume (veh/h)	0	0	0	35	0	220	215	1330	0	0	1125	705
Initial Q (Qb), veh				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
Parking Bus, Adj				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	
Adj Sat Flow, veh/h/ln				1900	1870	1900	1870	1870	0	0	1870	1870
Adj Flow Rate, veh/h				45	0	268	244	1478	0	0	1278	0
Peak Hour Factor				0.78	0.92	0.82	0.88	0.90	0.92	0.92	0.88	0.96
Percent Heavy Veh, %				0	2	0	2	2	0	0	2	2
Cap, veh/h				51	0	305	305	3508	0	0	1950	
Arrive On Green				0.22	0.00	0.22	0.18	1.00	0.00	0.00	1.00	0.00
Sat Flow, veh/h				232	0	1379	3456	5274	0	0	3647	1585
Grp Volume(v), veh/h				313	0	0	244	1478	0	0	1278	0
Grp Sat Flow(s),veh/h/ln				1611	0	0	1728	1702	0	0	1777	1585
Q Serve(g_s), s				22.5	0.0	0.0	8.1	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s				22.5	0.0	0.0	8.1	0.0	0.0	0.0	0.0	0.0
Prop In Lane				0.14		0.86	1.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h				357	0	0	305	3508	0	0	1950	
V/C Ratio(X)				0.88	0.00	0.00	0.80	0.42	0.00	0.00	0.66	
Avail Cap(c_a), veh/h				617	0	0	490	3508	0	0	1950	
HCM Platoon Ratio				1.00	1.00	1.00	2.00	2.00	1.00	1.00	2.00	2.00
Upstream Filter(I)				1.00	0.00	0.00	0.73	0.73	0.00	0.00	0.87	0.00
Uniform Delay (d), s/veh				45.1	0.0	0.0	48.4	0.0	0.0	0.0	0.0	0.0
Incr Delay (d2), s/veh				7.3	0.0	0.0	3.6	0.3	0.0	0.0	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
%ile BackOfQ(50%),veh/ln				9.7	0.0	0.0	3.4	0.1	0.0	0.0	0.4	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				52.4	0.0	0.0	52.0	0.3	0.0	0.0	1.5	0.0
LnGrp LOS				D	A	A	D	A	A	A	A	
Approach Vol, veh/h					313			1722			1278	A
Approach Delay, s/veh					52.4			7.6			1.5	
Approach LOS					D			A			A	
Timer - Assigned Phs		2			5	6		8				
Phs Duration (G+Y+Rc), s		88.4			16.6	71.9		31.6				
Change Period (Y+Rc), s		6.0			6.0	6.0		5.0				
Max Green Setting (Gmax), s		63.0			17.0	40.0		46.0				
Max Q Clear Time (g_c+I1), s		2.0			10.1	2.0		24.5				
Green Ext Time (p_c), s		17.2			0.5	12.9		2.0				
Intersection Summary												
HCM 6th Ctrl Delay				9.5								
HCM 6th LOS				A								
Notes												
Unsignalized Delay for [SBR] is excluded from calculations of the approach delay and intersection delay.												

Timings 10: Tower Road & I-70 WB Ramps

2022 Background AM.syn

05/06/2020

	←	↖	↑	↓	↗
Lane Group	WBT	NBL	NBT	SBT	SBR
Lane Configurations	↕	↖↖	↑↑↑	↑↑	↗
Traffic Volume (vph)	0	225	1095	1095	1100
Future Volume (vph)	0	225	1095	1095	1100
Turn Type	NA	Prot	NA	NA	Free
Protected Phases	8	5	2	6	
Permitted Phases					Free
Detector Phase	8	5	2	6	
Switch Phase					
Minimum Initial (s)	5.0	5.0	5.0	5.0	
Minimum Split (s)	23.5	11.0	24.0	24.0	
Total Split (s)	53.0	19.0	67.0	48.0	
Total Split (%)	44.2%	15.8%	55.8%	40.0%	
Yellow Time (s)	4.0	4.0	4.0	4.0	
All-Red Time (s)	1.0	2.0	2.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.0	6.0	6.0	6.0	
Lead/Lag		Lead		Lag	
Lead-Lag Optimize?		Yes		Yes	
Recall Mode	None	None	C-Max	C-Max	
Act Effect Green (s)	33.7	14.5	75.3	54.8	120.0
Actuated g/C Ratio	0.28	0.12	0.63	0.46	1.00
v/c Ratio	0.85	0.67	0.40	0.71	0.79
Control Delay	47.5	73.5	13.1	22.9	12.3
Queue Delay	0.0	0.0	0.0	0.2	0.0
Total Delay	47.5	73.5	13.1	23.2	12.3
LOS	D	E	B	C	B
Approach Delay	47.5		23.8	17.5	
Approach LOS	D		C	B	

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 38.5 (32%), Referenced to phase 2:NBT and 6:SBT, Start of Yellow

Natural Cycle: 65

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.85

Intersection Signal Delay: 22.7

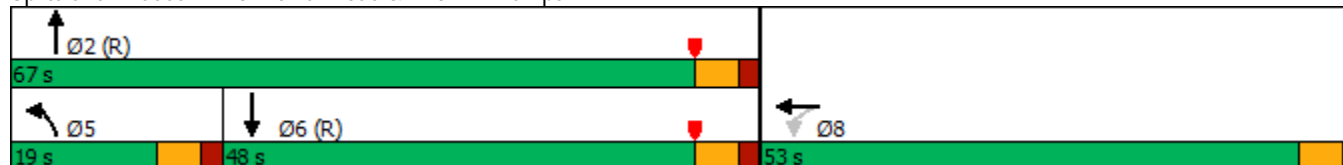
Intersection LOS: C

Intersection Capacity Utilization 74.8%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 10: Tower Road & I-70 WB Ramps




















HCM 6th Signalized Intersection Summary

10: Tower Road & I-70 WB Ramps

2022 Background AM.syn

05/06/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	70	0	325	225	1095	0	0	1095	1100
Future Volume (veh/h)	0	0	0	70	0	325	225	1095	0	0	1095	1100
Initial Q (Qb), veh				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
Parking Bus, Adj				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	
Adj Sat Flow, veh/h/ln				1900	1870	1900	1870	1870	0	0	1870	1870
Adj Flow Rate, veh/h				70	0	369	278	1288	0	0	1153	0
Peak Hour Factor				1.00	0.92	0.88	0.81	0.85	0.92	0.92	0.95	0.88
Percent Heavy Veh, %				0	2	0	2	2	0	0	2	2
Cap, veh/h				77	0	407	330	3105	0	0	1644	
Arrive On Green				0.30	0.00	0.30	0.19	1.00	0.00	0.00	0.77	0.00
Sat Flow, veh/h				257	0	1356	3456	5274	0	0	3647	1585
Grp Volume(v), veh/h				439	0	0	278	1288	0	0	1153	0
Grp Sat Flow(s),veh/h/ln				1613	0	0	1728	1702	0	0	1777	1585
Q Serve(g_s), s				31.4	0.0	0.0	9.3	0.0	0.0	0.0	19.3	0.0
Cycle Q Clear(g_c), s				31.4	0.0	0.0	9.3	0.0	0.0	0.0	19.3	0.0
Prop In Lane				0.16		0.84	1.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h				484	0	0	330	3105	0	0	1644	
V/C Ratio(X)				0.91	0.00	0.00	0.84	0.41	0.00	0.00	0.70	
Avail Cap(c_a), veh/h				645	0	0	374	3105	0	0	1644	
HCM Platoon Ratio				1.00	1.00	1.00	2.00	2.00	1.00	1.00	1.67	1.67
Upstream Filter(I)				1.00	0.00	0.00	0.89	0.89	0.00	0.00	0.86	0.00
Uniform Delay (d), s/veh				40.4	0.0	0.0	47.6	0.0	0.0	0.0	9.5	0.0
Incr Delay (d2), s/veh				13.6	0.0	0.0	13.0	0.4	0.0	0.0	2.2	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
%ile BackOfQ(50%),veh/ln				14.2	0.0	0.0	4.2	0.1	0.0	0.0	4.7	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				54.0	0.0	0.0	60.6	0.4	0.0	0.0	11.7	0.0
LnGrp LOS				D	A	A	E	A	A	A	B	
Approach Vol, veh/h					439			1566			1153	A
Approach Delay, s/veh					54.0			11.1			11.7	
Approach LOS					D			B			B	
Timer - Assigned Phs	2			5			6			8		
Phs Duration (G+Y+Rc), s	79.0			17.5			61.5			41.0		
Change Period (Y+Rc), s	6.0			6.0			6.0			5.0		
Max Green Setting (Gmax), s	61.0			13.0			42.0			48.0		
Max Q Clear Time (g_c+I1), s	2.0			11.3			21.3			33.4		
Green Ext Time (p_c), s	13.6			0.2			8.8			2.6		
Intersection Summary												
HCM 6th Ctrl Delay	17.3											
HCM 6th LOS	B											

Timings 10: Tower Road & I-70 WB Ramps

2022 Background PM.syn

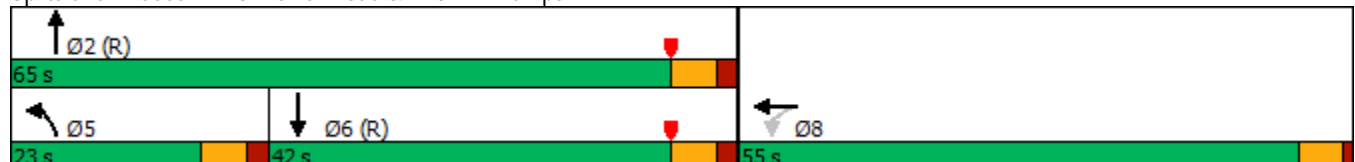
05/06/2020

	←	↖	↑	↓	↗
Lane Group	WBT	NBL	NBT	SBT	SBR
Lane Configurations	↕	↖↗	↑↑↑	↑↑	↗
Traffic Volume (vph)	0	225	1420	1270	790
Future Volume (vph)	0	225	1420	1270	790
Turn Type	NA	Prot	NA	NA	Free
Protected Phases	8	5	2	6	
Permitted Phases					Free
Detector Phase	8	5	2	6	
Switch Phase					
Minimum Initial (s)	5.0	5.0	5.0	5.0	
Minimum Split (s)	23.5	11.0	24.0	24.0	
Total Split (s)	55.0	23.0	65.0	42.0	
Total Split (%)	45.8%	19.2%	54.2%	35.0%	
Yellow Time (s)	4.0	4.0	4.0	4.0	
All-Red Time (s)	1.0	2.0	2.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.0	6.0	6.0	6.0	
Lead/Lag		Lead		Lag	
Lead-Lag Optimize?		Yes		Yes	
Recall Mode	None	None	C-Max	C-Max	
Act Effect Green (s)	26.3	14.2	82.7	62.5	120.0
Actuated g/C Ratio	0.22	0.12	0.69	0.52	1.00
v/c Ratio	0.81	0.63	0.45	0.78	0.52
Control Delay	48.2	47.3	15.8	26.0	2.2
Queue Delay	0.0	0.0	0.1	0.0	0.0
Total Delay	48.2	47.3	15.9	26.0	2.2
LOS	D	D	B	C	A
Approach Delay	48.2		20.3	17.4	
Approach LOS	D		C	B	

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 106 (88%), Referenced to phase 2:NBT and 6:SBT, Start of Yellow
Natural Cycle: 75
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.81
Intersection Signal Delay: 21.0
Intersection LOS: C
Intersection Capacity Utilization 77.8%
ICU Level of Service D
Analysis Period (min) 15

Splits and Phases: 10: Tower Road & I-70 WB Ramps




HCM 6th Signalized Intersection Summary

10: Tower Road & I-70 WB Ramps

2022 Background PM.syn

05/06/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↔		↔	↑↑↑			↑↑	↔
Traffic Volume (veh/h)	0	0	0	35	0	245	225	1420	0	0	1270	790
Future Volume (veh/h)	0	0	0	35	0	245	225	1420	0	0	1270	790
Initial Q (Qb), veh				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
Parking Bus, Adj				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	
Adj Sat Flow, veh/h/ln				1900	1870	1900	1870	1870	0	0	1870	1870
Adj Flow Rate, veh/h				45	0	299	256	1578	0	0	1443	0
Peak Hour Factor				0.78	0.92	0.82	0.88	0.90	0.92	0.92	0.88	0.96
Percent Heavy Veh, %				0	2	0	2	2	0	0	2	2
Cap, veh/h				51	0	339	316	3401	0	0	1864	
Arrive On Green				0.24	0.00	0.24	0.18	1.00	0.00	0.00	1.00	0.00
Sat Flow, veh/h				210	0	1398	3456	5274	0	0	3647	1585
Grp Volume(v), veh/h				344	0	0	256	1578	0	0	1443	0
Grp Sat Flow(s),veh/h/ln				1608	0	0	1728	1702	0	0	1777	1585
Q Serve(g_s), s				24.7	0.0	0.0	8.5	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s				24.7	0.0	0.0	8.5	0.0	0.0	0.0	0.0	0.0
Prop In Lane				0.13		0.87	1.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h				390	0	0	316	3401	0	0	1864	
V/C Ratio(X)				0.88	0.00	0.00	0.81	0.46	0.00	0.00	0.77	
Avail Cap(c_a), veh/h				670	0	0	490	3401	0	0	1864	
HCM Platoon Ratio				1.00	1.00	1.00	2.00	2.00	1.00	1.00	2.00	2.00
Upstream Filter(I)				1.00	0.00	0.00	0.58	0.58	0.00	0.00	0.80	0.00
Uniform Delay (d), s/veh				43.8	0.0	0.0	48.0	0.0	0.0	0.0	0.0	0.0
Incr Delay (d2), s/veh				7.2	0.0	0.0	3.4	0.3	0.0	0.0	2.6	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
%ile BackOfQ(50%),veh/ln				10.6	0.0	0.0	3.5	0.1	0.0	0.0	0.7	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				51.1	0.0	0.0	51.4	0.3	0.0	0.0	2.6	0.0
LnGrp LOS				D	A	A	D	A	A	A	A	
Approach Vol, veh/h					344			1834			1443	A
Approach Delay, s/veh					51.1			7.4			2.6	
Approach LOS					D			A			A	
Timer - Assigned Phs		2			5	6		8				
Phs Duration (G+Y+Rc), s		85.9			17.0	68.9		34.1				
Change Period (Y+Rc), s		6.0			6.0	6.0		5.0				
Max Green Setting (Gmax), s		59.0			17.0	36.0		50.0				
Max Q Clear Time (g_c+I1), s		2.0			10.5	2.0		26.7				
Green Ext Time (p_c), s		19.0			0.5	14.8		2.3				
Intersection Summary												
HCM 6th Ctrl Delay				9.6								
HCM 6th LOS				A								
Notes												
Unsignalized Delay for [SBR] is excluded from calculations of the approach delay and intersection delay.												

Timings 10: Tower Road & I-70 WB Ramps

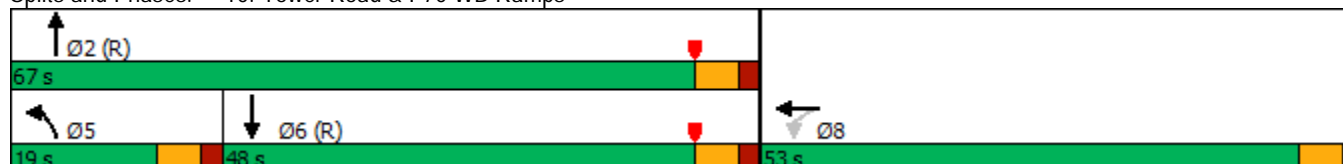
2022 Total AM.syn
06/08/2020

	←	↖	↑	↓	↗
Lane Group	WBT	NBL	NBT	SBT	SBR
Lane Configurations	↕	↖↖	↗↗↗	↗↗	↗
Traffic Volume (vph)	0	225	1135	1130	1125
Future Volume (vph)	0	225	1135	1130	1125
Turn Type	NA	Prot	NA	NA	Free
Protected Phases	8	5	2	6	
Permitted Phases					Free
Detector Phase	8	5	2	6	
Switch Phase					
Minimum Initial (s)	5.0	5.0	5.0	5.0	
Minimum Split (s)	23.5	11.0	24.0	24.0	
Total Split (s)	53.0	19.0	67.0	48.0	
Total Split (%)	44.2%	15.8%	55.8%	40.0%	
Yellow Time (s)	4.0	4.0	4.0	4.0	
All-Red Time (s)	1.0	2.0	2.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.0	6.0	6.0	6.0	
Lead/Lag		Lead		Lag	
Lead-Lag Optimize?		Yes		Yes	
Recall Mode	None	None	C-Max	C-Max	
Act Effect Green (s)	37.2	13.9	71.8	51.9	120.0
Actuated g/C Ratio	0.31	0.12	0.60	0.43	1.00
v/c Ratio	0.86	0.70	0.44	0.78	0.81
Control Delay	47.1	73.6	14.2	28.1	12.8
Queue Delay	0.0	0.0	0.0	0.3	0.0
Total Delay	47.1	73.6	14.2	28.3	12.8
LOS	D	E	B	C	B
Approach Delay	47.1		24.4	20.3	
Approach LOS	D		C	C	

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 38.5 (32%), Referenced to phase 2:NBT and 6:SBT, Start of Yellow
Natural Cycle: 70
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.86
Intersection Signal Delay: 24.6
Intersection LOS: C
Intersection Capacity Utilization 78.2%
ICU Level of Service D
Analysis Period (min) 15

Splits and Phases: 10: Tower Road & I-70 WB Ramps



HCM 6th Signalized Intersection Summary

2022 Total AM.syn

10: Tower Road & I-70 WB Ramps

06/08/2020

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↔		↔	↑↑↑			↑↑	↗
Traffic Volume (veh/h)	0	0	0	70	0	365	225	1135	0	0	1130	1125
Future Volume (veh/h)	0	0	0	70	0	365	225	1135	0	0	1130	1125
Initial Q (Qb), veh				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
Parking Bus, Adj				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	
Adj Sat Flow, veh/h/ln				1900	1870	1900	1870	1870	0	0	1870	1870
Adj Flow Rate, veh/h				70	0	415	278	1335	0	0	1189	0
Peak Hour Factor				1.00	0.92	0.88	0.81	0.85	0.92	0.92	0.95	0.88
Percent Heavy Veh, %				0	2	0	2	2	0	0	2	2
Cap, veh/h				76	0	452	330	2964	0	0	1545	
Arrive On Green				0.33	0.00	0.33	0.19	1.00	0.00	0.00	0.58	0.00
Sat Flow, veh/h				232	0	1378	3456	5274	0	0	3647	1585
Grp Volume(v), veh/h				485	0	0	278	1335	0	0	1189	0
Grp Sat Flow(s),veh/h/ln				1611	0	0	1728	1702	0	0	1777	1585
Q Serve(g_s), s				34.8	0.0	0.0	9.3	0.0	0.0	0.0	30.5	0.0
Cycle Q Clear(g_c), s				34.8	0.0	0.0	9.3	0.0	0.0	0.0	30.5	0.0
Prop In Lane				0.14		0.86	1.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h				528	0	0	330	2964	0	0	1545	
V/C Ratio(X)				0.92	0.00	0.00	0.84	0.45	0.00	0.00	0.77	
Avail Cap(c_a), veh/h				644	0	0	374	2964	0	0	1545	
HCM Platoon Ratio				1.00	1.00	1.00	2.00	2.00	1.00	1.00	1.33	1.33
Upstream Filter(I)				1.00	0.00	0.00	0.88	0.88	0.00	0.00	0.85	0.00
Uniform Delay (d), s/veh				38.8	0.0	0.0	47.6	0.0	0.0	0.0	20.7	0.0
Incr Delay (d2), s/veh				16.3	0.0	0.0	12.8	0.4	0.0	0.0	3.2	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
%ile BackOfQ(50%),veh/ln				15.9	0.0	0.0	4.2	0.1	0.0	0.0	11.6	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				55.1	0.0	0.0	60.5	0.4	0.0	0.0	23.9	0.0
LnGrp LOS				E	A	A	E	A	A	A	C	
Approach Vol, veh/h					485			1613			1189	A
Approach Delay, s/veh					55.1			10.8			23.9	
Approach LOS					E			B			C	
Timer - Assigned Phs		2			5	6		8				
Phs Duration (G+Y+Rc), s		75.7			17.5	58.2		44.3				
Change Period (Y+Rc), s		6.0			6.0	6.0		5.0				
Max Green Setting (Gmax), s		61.0			13.0	42.0		48.0				
Max Q Clear Time (g_c+I1), s		2.0			11.3	32.5		36.8				
Green Ext Time (p_c), s		14.4			0.2	5.6		2.6				
Intersection Summary												
HCM 6th Ctrl Delay				22.1								
HCM 6th LOS				C								
Notes												
Unsignalized Delay for [SBR] is excluded from calculations of the approach delay and intersection delay.												

Timings 10: Tower Road & I-70 WB Ramps

2022 Total PM.syn

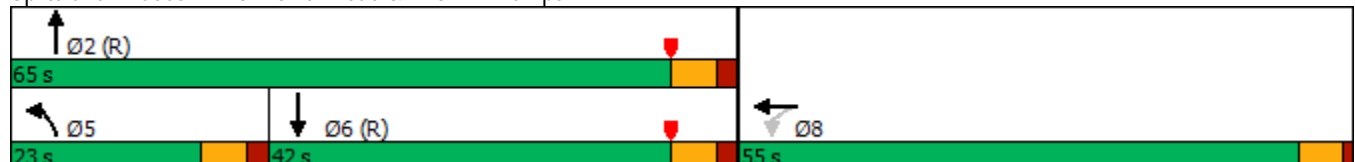
06/08/2020

	←	↖	↑	↓	↗
Lane Group	WBT	NBL	NBT	SBT	SBR
Lane Configurations	↕	↖↖	↑↑↑	↑↑	↗
Traffic Volume (vph)	0	225	1435	1335	840
Future Volume (vph)	0	225	1435	1335	840
Turn Type	NA	Prot	NA	NA	Free
Protected Phases	8	5	2	6	
Permitted Phases					Free
Detector Phase	8	5	2	6	
Switch Phase					
Minimum Initial (s)	5.0	5.0	5.0	5.0	
Minimum Split (s)	23.5	11.0	24.0	24.0	
Total Split (s)	55.0	23.0	65.0	42.0	
Total Split (%)	45.8%	19.2%	54.2%	35.0%	
Yellow Time (s)	4.0	4.0	4.0	4.0	
All-Red Time (s)	1.0	2.0	2.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.0	6.0	6.0	6.0	
Lead/Lag		Lead		Lag	
Lead-Lag Optimize?		Yes		Yes	
Recall Mode	None	None	C-Max	C-Max	
Act Effect Green (s)	27.8	14.2	81.2	61.0	120.0
Actuated g/C Ratio	0.23	0.12	0.68	0.51	1.00
v/c Ratio	0.82	0.63	0.46	0.84	0.55
Control Delay	48.1	47.2	17.1	30.4	2.5
Queue Delay	0.0	0.0	0.2	0.0	0.0
Total Delay	48.1	47.2	17.3	30.4	2.5
LOS	D	D	B	C	A
Approach Delay	48.1		21.4	20.2	
Approach LOS	D		C	C	

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 106 (88%), Referenced to phase 2:NBT and 6:SBT, Start of Yellow
Natural Cycle: 80
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.84
Intersection Signal Delay: 22.9
Intersection LOS: C
Intersection Capacity Utilization 80.1%
ICU Level of Service D
Analysis Period (min) 15

Splits and Phases: 10: Tower Road & I-70 WB Ramps

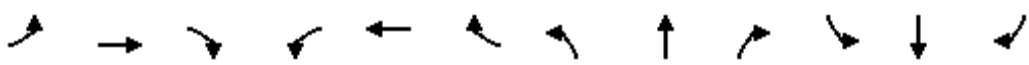


HCM 6th Signalized Intersection Summary

10: Tower Road & I-70 WB Ramps

2022 Total PM.syn

06/08/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↔		↔	↑↑↑			↑↑	↗
Traffic Volume (veh/h)	0	0	0	35	0	260	225	1435	0	0	1335	840
Future Volume (veh/h)	0	0	0	35	0	260	225	1435	0	0	1335	840
Initial Q (Qb), veh				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
Parking Bus, Adj				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	
Adj Sat Flow, veh/h/ln				1900	1870	1900	1870	1870	0	0	1870	1870
Adj Flow Rate, veh/h				45	0	317	256	1594	0	0	1517	0
Peak Hour Factor				0.78	0.92	0.82	0.88	0.90	0.92	0.92	0.88	0.96
Percent Heavy Veh, %				0	2	0	2	2	0	0	2	2
Cap, veh/h				51	0	357	316	3341	0	0	1822	
Arrive On Green				0.25	0.00	0.25	0.18	1.00	0.00	0.00	1.00	0.00
Sat Flow, veh/h				200	0	1407	3456	5274	0	0	3647	1585
Grp Volume(v), veh/h				362	0	0	256	1594	0	0	1517	0
Grp Sat Flow(s),veh/h/ln				1607	0	0	1728	1702	0	0	1777	1585
Q Serve(g_s), s				26.0	0.0	0.0	8.5	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s				26.0	0.0	0.0	8.5	0.0	0.0	0.0	0.0	0.0
Prop In Lane				0.12		0.88	1.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h				408	0	0	316	3341	0	0	1822	
V/C Ratio(X)				0.89	0.00	0.00	0.81	0.48	0.00	0.00	0.83	
Avail Cap(c_a), veh/h				670	0	0	490	3341	0	0	1822	
HCM Platoon Ratio				1.00	1.00	1.00	2.00	2.00	1.00	1.00	2.00	2.00
Upstream Filter(l)				1.00	0.00	0.00	0.48	0.48	0.00	0.00	0.78	0.00
Uniform Delay (d), s/veh				43.1	0.0	0.0	48.0	0.0	0.0	0.0	0.0	0.0
Incr Delay (d2), s/veh				8.3	0.0	0.0	2.8	0.2	0.0	0.0	3.7	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
%ile BackOfQ(50%),veh/ln				11.2	0.0	0.0	3.5	0.1	0.0	0.0	0.9	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				51.4	0.0	0.0	50.8	0.2	0.0	0.0	3.7	0.0
LnGrp LOS				D	A	A	D	A	A	A	A	
Approach Vol, veh/h					362			1850			1517	A
Approach Delay, s/veh					51.4			7.2			3.7	
Approach LOS					D			A			A	
Timer - Assigned Phs		2			5	6		8				
Phs Duration (G+Y+Rc), s		84.5			17.0	67.5		35.5				
Change Period (Y+Rc), s		6.0			6.0	6.0		5.0				
Max Green Setting (Gmax), s		59.0			17.0	36.0		50.0				
Max Q Clear Time (g_c+l1), s		2.0			10.5	2.0		28.0				
Green Ext Time (p_c), s		19.3			0.5	15.9		2.4				
Intersection Summary												
HCM 6th Ctrl Delay				10.1								
HCM 6th LOS				B								
Notes												
Unsignalized Delay for [SBR] is excluded from calculations of the approach delay and intersection delay.												

Timings 10: Tower Road & I-70 WB Ramps

2040 Background AM.syn

05/06/2020

	←	↖	↑	↓	↗
Lane Group	WBT	NBL	NBT	SBT	SBR
Lane Configurations	↕	↖↗	↑↑↑	↑↑	↗
Traffic Volume (vph)	0	320	1665	1260	1420
Future Volume (vph)	0	320	1665	1260	1420
Turn Type	NA	Prot	NA	NA	Free
Protected Phases	8	5	2	6	
Permitted Phases					Free
Detector Phase	8	5	2	6	
Switch Phase					
Minimum Initial (s)	5.0	5.0	5.0	5.0	
Minimum Split (s)	23.5	11.0	24.0	24.0	
Total Split (s)	50.0	18.0	70.0	52.0	
Total Split (%)	41.7%	15.0%	58.3%	43.3%	
Yellow Time (s)	4.0	4.0	4.0	4.0	
All-Red Time (s)	1.0	2.0	2.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.0	6.0	6.0	6.0	
Lead/Lag		Lead		Lag	
Lead-Lag Optimize?		Yes		Yes	
Recall Mode	None	None	C-Max	C-Max	
Act Effect Green (s)	45.0	12.0	64.0	46.0	120.0
Actuated g/C Ratio	0.38	0.10	0.53	0.38	1.00
v/c Ratio	1.01	1.01	0.67	0.98	0.97
Control Delay	70.5	103.0	19.3	52.1	27.8
Queue Delay	1.7	0.0	0.2	7.1	0.0
Total Delay	72.2	103.0	19.6	59.2	27.8
LOS	E	F	B	E	C
Approach Delay	72.2		33.0	42.3	
Approach LOS	E		C	D	

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 38.5 (32%), Referenced to phase 2:NBT and 6:SBT, Start of Yellow

Natural Cycle: 100

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.01

Intersection Signal Delay: 42.3

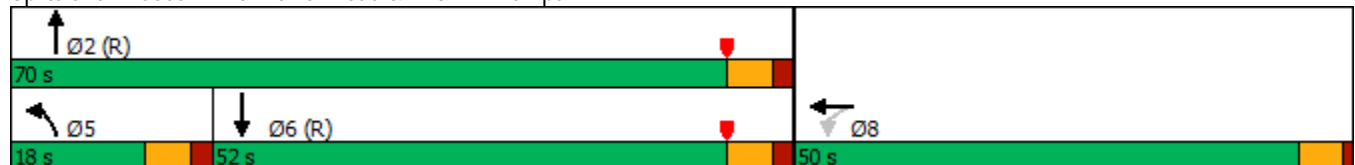
Intersection LOS: D

Intersection Capacity Utilization 96.1%

ICU Level of Service F

Analysis Period (min) 15

Splits and Phases: 10: Tower Road & I-70 WB Ramps




















HCM 6th Signalized Intersection Summary

10: Tower Road & I-70 WB Ramps

2040 Background AM.syn

05/06/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	100	0	525	320	1665	0	0	1260	1420
Future Volume (veh/h)	0	0	0	100	0	525	320	1665	0	0	1260	1420
Initial Q (Qb), veh				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
Parking Bus, Adj				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	
Adj Sat Flow, veh/h/ln				1900	1870	1900	1870	1870	0	0	1870	1870
Adj Flow Rate, veh/h				100	0	571	348	1810	0	0	1326	0
Peak Hour Factor				1.00	0.92	0.92	0.92	0.92	0.92	0.92	0.95	0.92
Percent Heavy Veh, %				0	2	0	2	2	0	0	2	2
Cap, veh/h				90	0	514	346	2723	0	0	1362	
Arrive On Green				0.38	0.00	0.38	0.20	1.00	0.00	0.00	0.64	0.00
Sat Flow, veh/h				240	0	1371	3456	5274	0	0	3647	1585
Grp Volume(v), veh/h				671	0	0	348	1810	0	0	1326	0
Grp Sat Flow(s),veh/h/ln				1612	0	0	1728	1702	0	0	1777	1585
Q Serve(g_s), s				45.0	0.0	0.0	12.0	0.0	0.0	0.0	42.8	0.0
Cycle Q Clear(g_c), s				45.0	0.0	0.0	12.0	0.0	0.0	0.0	42.8	0.0
Prop In Lane				0.15		0.85	1.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h				604	0	0	346	2723	0	0	1362	
V/C Ratio(X)				1.11	0.00	0.00	1.01	0.66	0.00	0.00	0.97	
Avail Cap(c_a), veh/h				604	0	0	346	2723	0	0	1362	
HCM Platoon Ratio				1.00	1.00	1.00	2.00	2.00	1.00	1.00	1.67	1.67
Upstream Filter(I)				1.00	0.00	0.00	0.52	0.52	0.00	0.00	0.74	0.00
Uniform Delay (d), s/veh				37.5	0.0	0.0	48.0	0.0	0.0	0.0	21.0	0.0
Incr Delay (d2), s/veh				70.7	0.0	0.0	36.7	0.7	0.0	0.0	15.6	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
%ile BackOfQ(50%),veh/ln				29.2	0.0	0.0	6.3	0.2	0.0	0.0	15.5	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				108.2	0.0	0.0	84.7	0.7	0.0	0.0	36.6	0.0
LnGrp LOS				F	A	A	F	A	A	A	D	
Approach Vol, veh/h					671			2158			1326	A
Approach Delay, s/veh					108.2			14.2			36.6	
Approach LOS					F			B			D	
Timer - Assigned Phs	2			5		6	8					
Phs Duration (G+Y+Rc), s	70.0			18.0		52.0	50.0					
Change Period (Y+Rc), s	6.0			6.0		6.0	5.0					
Max Green Setting (Gmax), s	64.0			12.0		46.0	45.0					
Max Q Clear Time (g_c+I1), s	2.0			14.0		44.8	47.0					
Green Ext Time (p_c), s	24.9			0.0		1.0	0.0					
Intersection Summary												
HCM 6th Ctrl Delay			36.5									
HCM 6th LOS			D									
Notes												

Timings 10: Tower Road & I-70 WB Ramps

2040 Background PM.syn

05/06/2020

	←	↖	↑	↓	↘
Lane Group	WBT	NBL	NBT	SBT	SBR
Lane Configurations	↕	↖↖	↑↑↑	↑↑	↘
Traffic Volume (vph)	0	320	1830	1830	1250
Future Volume (vph)	0	320	1830	1830	1250
Turn Type	NA	Prot	NA	NA	Free
Protected Phases	8	5	2	6	
Permitted Phases					Free
Detector Phase	8	5	2	6	
Switch Phase					
Minimum Initial (s)	5.0	5.0	5.0	5.0	
Minimum Split (s)	23.5	11.0	24.0	24.0	
Total Split (s)	32.0	18.0	88.0	70.0	
Total Split (%)	26.7%	15.0%	73.3%	58.3%	
Yellow Time (s)	4.0	4.0	4.0	4.0	
All-Red Time (s)	1.0	2.0	2.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.0	6.0	6.0	6.0	
Lead/Lag		Lead		Lag	
Lead-Lag Optimize?		Yes		Yes	
Recall Mode	None	None	C-Max	C-Max	
Act Effect Green (s)	27.0	12.0	82.0	64.0	120.0
Actuated g/C Ratio	0.22	0.10	0.68	0.53	1.00
v/c Ratio	1.16	1.01	0.57	1.05	0.82
Control Delay	131.2	54.0	15.4	60.7	8.5
Queue Delay	1.7	0.0	0.5	19.2	0.0
Total Delay	132.9	54.0	15.9	80.0	8.5
LOS	F	D	B	E	A
Approach Delay	132.9		21.6	51.7	
Approach LOS	F		C	D	

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 106 (88%), Referenced to phase 2:NBT and 6:SBT, Start of Yellow

Natural Cycle: 130

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.16

Intersection Signal Delay: 46.8

Intersection LOS: D

Intersection Capacity Utilization 105.8%

ICU Level of Service G

Analysis Period (min) 15

Splits and Phases: 10: Tower Road & I-70 WB Ramps




















HCM 6th Signalized Intersection Summary

10: Tower Road & I-70 WB Ramps

2040 Background PM.syn

05/06/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	50	0	410	320	1830	0	0	1830	1250
Future Volume (veh/h)	0	0	0	50	0	410	320	1830	0	0	1830	1250
Initial Q (Qb), veh				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
Parking Bus, Adj				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	
Adj Sat Flow, veh/h/ln				1900	1870	1900	1870	1870	0	0	1870	1870
Adj Flow Rate, veh/h				54	0	446	348	1989	0	0	1989	0
Peak Hour Factor				0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.96
Percent Heavy Veh, %				0	2	0	2	2	0	0	2	2
Cap, veh/h				39	0	322	346	3489	0	0	1895	
Arrive On Green				0.22	0.00	0.22	0.20	1.00	0.00	0.00	1.00	0.00
Sat Flow, veh/h				173	0	1431	3456	5274	0	0	3647	1585
Grp Volume(v), veh/h				500	0	0	348	1989	0	0	1989	0
Grp Sat Flow(s),veh/h/ln				1604	0	0	1728	1702	0	0	1777	1585
Q Serve(g_s), s				27.0	0.0	0.0	12.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s				27.0	0.0	0.0	12.0	0.0	0.0	0.0	0.0	0.0
Prop In Lane				0.11		0.89	1.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h				361	0	0	346	3489	0	0	1895	
V/C Ratio(X)				1.39	0.00	0.00	1.01	0.57	0.00	0.00	1.05	
Avail Cap(c_a), veh/h				361	0	0	346	3489	0	0	1895	
HCM Platoon Ratio				1.00	1.00	1.00	2.00	2.00	1.00	1.00	2.00	2.00
Upstream Filter(I)				1.00	0.00	0.00	0.09	0.09	0.00	0.00	0.59	0.00
Uniform Delay (d), s/veh				46.5	0.0	0.0	48.0	0.0	0.0	0.0	0.0	0.0
Incr Delay (d2), s/veh				189.8	0.0	0.0	16.2	0.1	0.0	0.0	30.8	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
%ile BackOfQ(50%),veh/ln				29.7	0.0	0.0	5.3	0.0	0.0	0.0	8.1	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				236.3	0.0	0.0	64.2	0.1	0.0	0.0	30.8	0.0
LnGrp LOS				F	A	A	F	A	A	A	F	
Approach Vol, veh/h				500			2337				1989	A
Approach Delay, s/veh				236.3			9.6				30.8	
Approach LOS				F			A				C	
Timer - Assigned Phs	2			5		6	8					
Phs Duration (G+Y+Rc), s	88.0			18.0		70.0	32.0					
Change Period (Y+Rc), s	6.0			6.0		6.0	5.0					
Max Green Setting (Gmax), s	82.0			12.0		64.0	27.0					
Max Q Clear Time (g_c+I1), s	2.0			14.0		2.0	29.0					
Green Ext Time (p_c), s	32.4			0.0		32.8	0.0					
Intersection Summary												
HCM 6th Ctrl Delay	41.8											
HCM 6th LOS	D											

Timings

2040 Total AM Scenario 1.syn

10: Tower Road & I-70 WB Ramps

06/08/2020



Lane Group	WBT	NBL	NBT	SBT	SBR
Lane Configurations	↕	↕↕	↕↕↕	↕↕	↕
Traffic Volume (vph)	0	320	1705	1295	1445
Future Volume (vph)	0	320	1705	1295	1445
Turn Type	NA	Prot	NA	NA	Free
Protected Phases	8	5	2	6	
Permitted Phases					Free
Detector Phase	8	5	2	6	
Switch Phase					
Minimum Initial (s)	5.0	5.0	5.0	5.0	
Minimum Split (s)	23.5	11.0	24.0	24.0	
Total Split (s)	50.0	18.0	70.0	52.0	
Total Split (%)	41.7%	15.0%	58.3%	43.3%	
Yellow Time (s)	4.0	4.0	4.0	4.0	
All-Red Time (s)	1.0	2.0	2.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.0	6.0	6.0	6.0	
Lead/Lag		Lead		Lag	
Lead-Lag Optimize?		Yes		Yes	
Recall Mode	None	None	C-Max	C-Max	
Act Effect Green (s)	45.0	12.0	64.0	46.0	120.0
Actuated g/C Ratio	0.38	0.10	0.53	0.38	1.00
v/c Ratio	1.08	1.01	0.68	1.01	0.99
Control Delay	89.5	106.9	18.4	58.4	31.4
Queue Delay	1.3	0.0	0.2	10.2	0.0
Total Delay	90.8	106.9	18.6	68.6	31.4
LOS	F	F	B	E	C
Approach Delay	90.8		32.6	48.7	
Approach LOS	F		C	D	

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 38.5 (32%), Referenced to phase 2:NBT and 6:SBT, Start of Yellow

Natural Cycle: 110

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.08

Intersection Signal Delay: 47.8

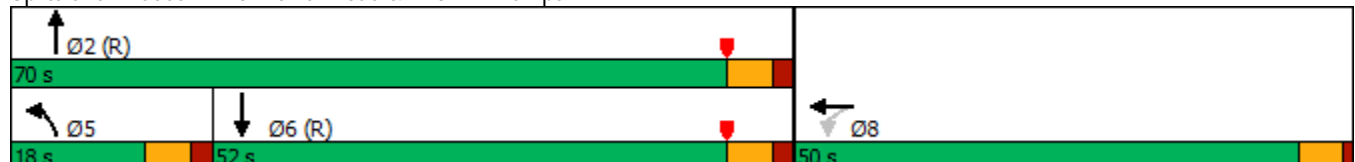
Intersection LOS: D

Intersection Capacity Utilization 99.5%

ICU Level of Service F

Analysis Period (min) 15


Splits and Phases: 10: Tower Road & I-70 WB Ramps



HCM 6th Signalized Intersection Summary 10: Tower Road & I-70 WB Ramps

2040 Total AM Scenario 1.syn

06/08/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↔		↔	↑↑↑			↑↑	↗
Traffic Volume (veh/h)	0	0	0	100	0	565	320	1705	0	0	1295	1445
Future Volume (veh/h)	0	0	0	100	0	565	320	1705	0	0	1295	1445
Initial Q (Qb), veh				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
Parking Bus, Adj				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	
Adj Sat Flow, veh/h/ln				1900	1870	1900	1870	1870	0	0	1870	1870
Adj Flow Rate, veh/h				100	0	614	348	1853	0	0	1363	0
Peak Hour Factor				1.00	0.92	0.92	0.92	0.92	0.92	0.92	0.95	0.92
Percent Heavy Veh, %				0	2	0	2	2	0	0	2	2
Cap, veh/h				85	0	519	346	2723	0	0	1362	
Arrive On Green				0.38	0.00	0.38	0.20	1.00	0.00	0.00	0.64	0.00
Sat Flow, veh/h				225	0	1384	3456	5274	0	0	3647	1585
Grp Volume(v), veh/h				714	0	0	348	1853	0	0	1363	0
Grp Sat Flow(s),veh/h/ln				1610	0	0	1728	1702	0	0	1777	1585
Q Serve(g_s), s				45.0	0.0	0.0	12.0	0.0	0.0	0.0	46.0	0.0
Cycle Q Clear(g_c), s				45.0	0.0	0.0	12.0	0.0	0.0	0.0	46.0	0.0
Prop In Lane				0.14		0.86	1.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h				604	0	0	346	2723	0	0	1362	
V/C Ratio(X)				1.18	0.00	0.00	1.01	0.68	0.00	0.00	1.00	
Avail Cap(c_a), veh/h				604	0	0	346	2723	0	0	1362	
HCM Platoon Ratio				1.00	1.00	1.00	2.00	2.00	1.00	1.00	1.67	1.67
Upstream Filter(I)				1.00	0.00	0.00	0.60	0.60	0.00	0.00	0.73	0.00
Uniform Delay (d), s/veh				37.5	0.0	0.0	48.0	0.0	0.0	0.0	21.6	0.0
Incr Delay (d2), s/veh				98.3	0.0	0.0	39.2	0.8	0.0	0.0	21.0	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
%ile BackOfQ(50%),veh/ln				33.8	0.0	0.0	6.5	0.2	0.0	0.0	17.5	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				135.8	0.0	0.0	87.2	0.8	0.0	0.0	42.6	0.0
LnGrp LOS				F	A	A	F	A	A	A	F	
Approach Vol, veh/h					714			2201			1363	A
Approach Delay, s/veh					135.8			14.5			42.6	
Approach LOS					F			B			D	
Timer - Assigned Phs		2			5	6		8				
Phs Duration (G+Y+Rc), s		70.0			18.0	52.0		50.0				
Change Period (Y+Rc), s		6.0			6.0	6.0		5.0				
Max Green Setting (Gmax), s		64.0			12.0	46.0		45.0				
Max Q Clear Time (g_c+I1), s		2.0			14.0	48.0		47.0				
Green Ext Time (p_c), s		26.0			0.0	0.0		0.0				
Intersection Summary												
HCM 6th Ctrl Delay				43.7								
HCM 6th LOS				D								
Notes												
Unsignalized Delay for [SBR] is excluded from calculations of the approach delay and intersection delay.												

Timings

2040 Total PM Scenario 1.syn

10: Tower Road & I-70 WB Ramps

06/08/2020



Lane Group	WBT	NBL	NBT	SBT	SBR
Lane Configurations	↔	↔↔	↔↔↔	↔↔	↔
Traffic Volume (vph)	0	320	1845	1895	1300
Future Volume (vph)	0	320	1845	1895	1300
Turn Type	NA	Prot	NA	NA	Free
Protected Phases	8	5	2	6	
Permitted Phases					Free
Detector Phase	8	5	2	6	
Switch Phase					
Minimum Initial (s)	5.0	5.0	5.0	5.0	
Minimum Split (s)	23.5	11.0	24.0	24.0	
Total Split (s)	33.0	17.0	87.0	70.0	
Total Split (%)	27.5%	14.2%	72.5%	58.3%	
Yellow Time (s)	4.0	4.0	4.0	4.0	
All-Red Time (s)	1.0	2.0	2.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.0	6.0	6.0	6.0	
Lead/Lag		Lead		Lag	
Lead-Lag Optimize?		Yes		Yes	
Recall Mode	None	None	C-Max	C-Max	
Act Effect Green (s)	28.0	11.0	81.0	64.0	120.0
Actuated g/C Ratio	0.23	0.09	0.68	0.53	1.00
v/c Ratio	1.17	1.11	0.58	1.09	0.86
Control Delay	132.3	92.2	15.7	73.1	10.4
Queue Delay	0.3	0.0	0.8	3.6	0.0
Total Delay	132.6	92.2	16.5	76.7	10.4
LOS	F	F	B	E	B
Approach Delay	132.6		27.7	50.4	
Approach LOS	F		C	D	

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 106 (88%), Referenced to phase 2:NBT and 6:SBT, Start of Yellow

Natural Cycle: 120

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.17

Intersection Signal Delay: 48.6

Intersection LOS: D

Intersection Capacity Utilization 104.7%

ICU Level of Service G

Analysis Period (min) 15

Splits and Phases: 10: Tower Road & I-70 WB Ramps




















HCM 6th Signalized Intersection Summary

2040 Total PM Scenario 1.syn

10: Tower Road & I-70 WB Ramps

06/08/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	50	0	425	320	1845	0	0	1895	1300
Future Volume (veh/h)	0	0	0	50	0	425	320	1845	0	0	1895	1300
Initial Q (Qb), veh				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
Parking Bus, Adj				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	
Adj Sat Flow, veh/h/ln				1900	1870	1900	1870	1870	0	0	1870	1870
Adj Flow Rate, veh/h				54	0	462	348	2005	0	0	2060	0
Peak Hour Factor				0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.96
Percent Heavy Veh, %				0	2	0	2	2	0	0	2	2
Cap, veh/h				39	0	335	317	3447	0	0	1895	
Arrive On Green				0.23	0.00	0.23	0.18	1.00	0.00	0.00	1.00	0.00
Sat Flow, veh/h				168	0	1436	3456	5274	0	0	3647	1585
Grp Volume(v), veh/h				516	0	0	348	2005	0	0	2060	0
Grp Sat Flow(s),veh/h/ln				1604	0	0	1728	1702	0	0	1777	1585
Q Serve(g_s), s				28.0	0.0	0.0	11.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s				28.0	0.0	0.0	11.0	0.0	0.0	0.0	0.0	0.0
Prop In Lane				0.10		0.90	1.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h				374	0	0	317	3447	0	0	1895	
V/C Ratio(X)				1.38	0.00	0.00	1.10	0.58	0.00	0.00	1.09	
Avail Cap(c_a), veh/h				374	0	0	317	3447	0	0	1895	
HCM Platoon Ratio				1.00	1.00	1.00	2.00	2.00	1.00	1.00	2.00	2.00
Upstream Filter(I)				1.00	0.00	0.00	0.09	0.09	0.00	0.00	0.56	0.00
Uniform Delay (d), s/veh				46.0	0.0	0.0	49.0	0.0	0.0	0.0	0.0	0.0
Incr Delay (d2), s/veh				186.6	0.0	0.0	49.5	0.1	0.0	0.0	44.9	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
%ile BackOfQ(50%),veh/ln				30.5	0.0	0.0	6.4	0.0	0.0	0.0	11.8	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				232.6	0.0	0.0	98.5	0.1	0.0	0.0	44.9	0.0
LnGrp LOS				F	A	A	F	A	A	A	F	
Approach Vol, veh/h				516			2353				2060	A
Approach Delay, s/veh				232.6			14.6				44.9	
Approach LOS				F			B				D	
Timer - Assigned Phs	2			5			6			8		
Phs Duration (G+Y+Rc), s	87.0			17.0			70.0			33.0		
Change Period (Y+Rc), s	6.0			6.0			6.0			5.0		
Max Green Setting (Gmax), s	81.0			11.0			64.0			28.0		
Max Q Clear Time (g_c+I1), s	2.0			13.0			2.0			30.0		
Green Ext Time (p_c), s	32.8			0.0			34.9			0.0		
Intersection Summary												
HCM 6th Ctrl Delay			50.1									
HCM 6th LOS			D									
Notes												

Timings 10: Tower Road & I-70 WB Ramps

2040 Total AM Scenario 2.syn
06/08/2020

	←	↖	↑	↓	↘
Lane Group	WBT	NBL	NBT	SBT	SBR
Lane Configurations	↕	↖↖	↑↑↑	↑↑	↘
Traffic Volume (vph)	0	320	1710	1290	1370
Future Volume (vph)	0	320	1710	1290	1370
Turn Type	NA	Prot	NA	NA	Free
Protected Phases	8	5	2	6	
Permitted Phases					Free
Detector Phase	8	5	2	6	
Switch Phase					
Minimum Initial (s)	5.0	5.0	5.0	5.0	
Minimum Split (s)	23.5	11.0	24.0	24.0	
Total Split (s)	51.0	18.0	69.0	51.0	
Total Split (%)	42.5%	15.0%	57.5%	42.5%	
Yellow Time (s)	4.0	4.0	4.0	4.0	
All-Red Time (s)	1.0	2.0	2.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.0	6.0	6.0	6.0	
Lead/Lag		Lead		Lag	
Lead-Lag Optimize?		Yes		Yes	
Recall Mode	None	None	C-Max	C-Max	
Act Effect Green (s)	46.0	12.0	63.0	45.0	120.0
Actuated g/C Ratio	0.38	0.10	0.52	0.38	1.00
v/c Ratio	1.01	1.01	0.70	1.02	0.94
Control Delay	70.9	109.6	19.1	63.4	19.7
Queue Delay	1.3	0.0	0.2	8.8	0.0
Total Delay	72.2	109.6	19.4	72.2	19.7
LOS	E	F	B	E	B
Approach Delay	72.2		33.6	44.8	
Approach LOS	E		C	D	

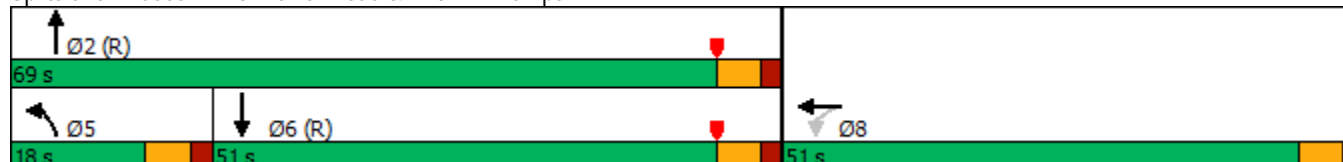
Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 38.5 (32%), Referenced to phase 2:NBT and 6:SBT, Start of Yellow
 Natural Cycle: 110
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.02
 Intersection Signal Delay: 43.8
 Intersection Capacity Utilization 97.8%
 Analysis Period (min) 15

Intersection LOS: D

ICU Level of Service F

Splits and Phases: 10: Tower Road & I-70 WB Ramps




HCM 6th Signalized Intersection Summary

2040 Total AM Scenario 2.syn

10: Tower Road & I-70 WB Ramps

06/08/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↔		↔	↑↑↑			↑↑	↗
Traffic Volume (veh/h)	0	0	0	100	0	540	320	1710	0	0	1290	1370
Future Volume (veh/h)	0	0	0	100	0	540	320	1710	0	0	1290	1370
Initial Q (Qb), veh				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
Parking Bus, Adj				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	
Adj Sat Flow, veh/h/ln				1900	1870	1900	1870	1870	0	0	1870	1870
Adj Flow Rate, veh/h				100	0	587	348	1859	0	0	1358	0
Peak Hour Factor				1.00	0.92	0.92	0.92	0.92	0.92	0.92	0.95	0.92
Percent Heavy Veh, %				0	2	0	2	2	0	0	2	2
Cap, veh/h				90	0	528	346	2681	0	0	1333	
Arrive On Green				0.38	0.00	0.38	0.20	1.00	0.00	0.00	0.63	0.00
Sat Flow, veh/h				234	0	1376	3456	5274	0	0	3647	1585
Grp Volume(v), veh/h				687	0	0	348	1859	0	0	1358	0
Grp Sat Flow(s),veh/h/ln				1611	0	0	1728	1702	0	0	1777	1585
Q Serve(g_s), s				46.0	0.0	0.0	12.0	0.0	0.0	0.0	45.0	0.0
Cycle Q Clear(g_c), s				46.0	0.0	0.0	12.0	0.0	0.0	0.0	45.0	0.0
Prop In Lane				0.15		0.85	1.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h				618	0	0	346	2681	0	0	1333	
V/C Ratio(X)				1.11	0.00	0.00	1.01	0.69	0.00	0.00	1.02	
Avail Cap(c_a), veh/h				618	0	0	346	2681	0	0	1333	
HCM Platoon Ratio				1.00	1.00	1.00	2.00	2.00	1.00	1.00	1.67	1.67
Upstream Filter(I)				1.00	0.00	0.00	0.63	0.63	0.00	0.00	0.75	0.00
Uniform Delay (d), s/veh				37.0	0.0	0.0	48.0	0.0	0.0	0.0	22.4	0.0
Incr Delay (d2), s/veh				71.2	0.0	0.0	40.2	1.0	0.0	0.0	26.3	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
%ile BackOfQ(50%),veh/ln				29.9	0.0	0.0	6.5	0.2	0.0	0.0	18.4	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				108.2	0.0	0.0	88.2	1.0	0.0	0.0	48.7	0.0
LnGrp LOS				F	A	A	F	A	A	A	F	
Approach Vol, veh/h					687			2207			1358	A
Approach Delay, s/veh					108.2			14.7			48.7	
Approach LOS					F			B			D	
Timer - Assigned Phs		2			5	6		8				
Phs Duration (G+Y+Rc), s		69.0			18.0	51.0		51.0				
Change Period (Y+Rc), s		6.0			6.0	6.0		5.0				
Max Green Setting (Gmax), s		63.0			12.0	45.0		46.0				
Max Q Clear Time (g_c+I1), s		2.0			14.0	47.0		48.0				
Green Ext Time (p_c), s		26.0			0.0	0.0		0.0				
Intersection Summary												
HCM 6th Ctrl Delay				40.7								
HCM 6th LOS				D								
Notes												
Unsignalized Delay for [SBR] is excluded from calculations of the approach delay and intersection delay.												

Timings

2040 Total PM Scenario 2.syn

10: Tower Road & I-70 WB Ramps

06/08/2020



Lane Group	WBT	NBL	NBT	SBT	SBR
Lane Configurations	↕	↕↕	↕↕↕	↕↕	↕
Traffic Volume (vph)	0	320	1845	1895	1150
Future Volume (vph)	0	320	1845	1895	1150
Turn Type	NA	Prot	NA	NA	Free
Protected Phases	8	5	2	6	
Permitted Phases					Free
Detector Phase	8	5	2	6	
Switch Phase					
Minimum Initial (s)	5.0	5.0	5.0	5.0	
Minimum Split (s)	23.5	11.0	24.0	24.0	
Total Split (s)	32.0	18.0	88.0	70.0	
Total Split (%)	26.7%	15.0%	73.3%	58.3%	
Yellow Time (s)	4.0	4.0	4.0	4.0	
All-Red Time (s)	1.0	2.0	2.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.0	6.0	6.0	6.0	
Lead/Lag		Lead		Lag	
Lead-Lag Optimize?		Yes		Yes	
Recall Mode	None	None	C-Max	C-Max	
Act Effect Green (s)	27.0	12.0	82.0	64.0	120.0
Actuated g/C Ratio	0.22	0.10	0.68	0.53	1.00
v/c Ratio	1.11	1.01	0.58	1.09	0.76
Control Delay	113.4	80.9	12.0	77.4	4.6
Queue Delay	0.2	0.0	0.3	3.6	0.0
Total Delay	113.6	80.9	12.3	81.0	4.6
LOS	F	F	B	F	A
Approach Delay	113.6		22.5	52.9	
Approach LOS	F		C	D	

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 38.5 (32%), Referenced to phase 2:NBT and 6:SBT, Start of Yellow

Natural Cycle: 140

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.11

Intersection Signal Delay: 45.9

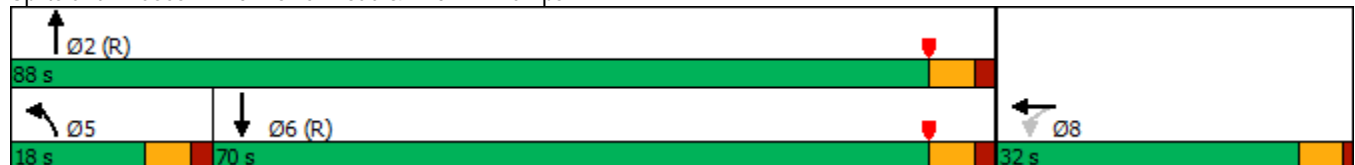
Intersection LOS: D

Intersection Capacity Utilization 102.5%

ICU Level of Service G

Analysis Period (min) 15

Splits and Phases: 10: Tower Road & I-70 WB Ramps




















HCM 6th Signalized Intersection Summary

2040 Total PM Scenario 2.syn

10: Tower Road & I-70 WB Ramps

06/08/2020
















												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	50	0	390	320	1845	0	0	1895	1150
Future Volume (veh/h)	0	0	0	50	0	390	320	1845	0	0	1895	1150
Initial Q (Qb), veh				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
Parking Bus, Adj				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	
Adj Sat Flow, veh/h/ln				1900	1870	1900	1870	1870	0	0	1870	1870
Adj Flow Rate, veh/h				54	0	424	348	2005	0	0	2060	0
Peak Hour Factor				0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.96
Percent Heavy Veh, %				0	2	0	2	2	0	0	2	2
Cap, veh/h				41	0	320	346	3489	0	0	1895	
Arrive On Green				0.22	0.00	0.22	0.20	1.00	0.00	0.00	1.00	0.00
Sat Flow, veh/h				181	0	1424	3456	5274	0	0	3647	1585
Grp Volume(v), veh/h				478	0	0	348	2005	0	0	2060	0
Grp Sat Flow(s),veh/h/ln				1605	0	0	1728	1702	0	0	1777	1585
Q Serve(g_s), s				27.0	0.0	0.0	12.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s				27.0	0.0	0.0	12.0	0.0	0.0	0.0	0.0	0.0
Prop In Lane				0.11		0.89	1.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h				361	0	0	346	3489	0	0	1895	
V/C Ratio(X)				1.32	0.00	0.00	1.01	0.57	0.00	0.00	1.09	
Avail Cap(c_a), veh/h				361	0	0	346	3489	0	0	1895	
HCM Platoon Ratio				1.00	1.00	1.00	2.00	2.00	1.00	1.00	2.00	2.00
Upstream Filter(I)				1.00	0.00	0.00	0.20	0.20	0.00	0.00	0.61	0.00
Uniform Delay (d), s/veh				46.5	0.0	0.0	48.0	0.0	0.0	0.0	0.0	0.0
Incr Delay (d2), s/veh				163.8	0.0	0.0	23.4	0.1	0.0	0.0	45.4	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
%ile BackOfQ(50%),veh/ln				27.1	0.0	0.0	5.7	0.0	0.0	0.0	11.9	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				210.3	0.0	0.0	71.4	0.1	0.0	0.0	45.4	0.0
LnGrp LOS				F	A	A	F	A	A	A	F	
Approach Vol, veh/h				478			2353				2060	A
Approach Delay, s/veh				210.3			10.7				45.4	
Approach LOS				F			B				D	
Timer - Assigned Phs	2			5			6			8		
Phs Duration (G+Y+Rc), s	88.0			18.0			70.0			32.0		
Change Period (Y+Rc), s	6.0			6.0			6.0			5.0		
Max Green Setting (Gmax), s	82.0			12.0			64.0			27.0		
Max Q Clear Time (g_c+I1), s	2.0			14.0			2.0			29.0		
Green Ext Time (p_c), s	33.0			0.0			34.9			0.0		
Intersection Summary												
HCM 6th Ctrl Delay			44.8									
HCM 6th LOS			D									
Notes												

Timings

11: Tower Road & I-70 EB Ramps

2020 Adjusted Existing AM.syn

04/21/2020

						
Lane Group	EBL	EBT	EBR	NBT	SBL	SBT
Lane Configurations				  		 
Traffic Volume (vph)	430	5	240	740	195	905
Future Volume (vph)	430	5	240	740	195	905
Turn Type	Perm	NA	Free	NA	pm+pt	NA
Protected Phases		4		2	1	6
Permitted Phases	4		Free		6	
Detector Phase	4	4		2	1	6
Switch Phase						
Minimum Initial (s)	5.0	5.0		5.0	5.0	5.0
Minimum Split (s)	23.0	23.0		24.0	11.0	24.0
Total Split (s)	42.0	42.0		44.0	34.0	78.0
Total Split (%)	35.0%	35.0%		36.7%	28.3%	65.0%
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	1.0	1.0		2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0		6.0	6.0	6.0
Lead/Lag				Lag	Lead	
Lead-Lag Optimize?				Yes	Yes	
Recall Mode	None	None		C-Max	None	C-Max
Act Effect Green (s)	23.0	23.0	120.0	68.8	86.0	86.0
Actuated g/C Ratio	0.19	0.19	1.00	0.57	0.72	0.72
v/c Ratio	0.74	0.74	0.18	0.29	0.49	0.41
Control Delay	58.8	58.5	0.2	14.6	18.1	10.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.1
Total Delay	58.8	58.5	0.2	14.6	18.1	10.7
LOS	E	E	A	B	B	B
Approach Delay		37.1		14.6		12.1
Approach LOS		D		B		B

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 27.5 (23%), Referenced to phase 2:NBT and 6:SBTL, Start of Yellow

Natural Cycle: 60

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.74

Intersection Signal Delay: 19.4

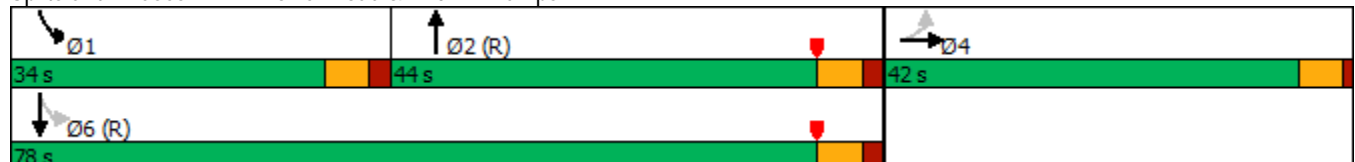
Intersection LOS: B

Intersection Capacity Utilization 68.4%

ICU Level of Service C





















Analysis Period (min) 15

Splits and Phases: 11: Tower Road & I-70 EB Ramps



HCM 6th Signalized Intersection Summary 11: Tower Road & I-70 EB Ramps

2020 Adjusted Existing AM.syn
04/21/2020
















												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	430	5	240	0	0	0	0	740	25	195	905	0
Future Volume (veh/h)	430	5	240	0	0	0	0	740	25	195	905	0
Initial Q (Qb), veh	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
Parking Bus, Adj	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		
Adj Sat Flow, veh/h/ln	1870	1870	1870				0	1870	1870	1870	1870	0
Adj Flow Rate, veh/h	471	0	0				0	822	0	238	1028	0
Peak Hour Factor	0.94	0.25	0.86				0.92	0.90	0.96	0.82	0.88	0.92
Percent Heavy Veh, %	2	2	2				0	2	2	2	2	0
Cap, veh/h	565	0					0	3216		557	2664	0
Arrive On Green	0.16	0.00	0.00				0.00	0.63	0.00	0.14	1.00	0.00
Sat Flow, veh/h	3563	0	1585				0	5443	0	1781	3647	0
Grp Volume(v), veh/h	471	0	0				0	822	0	238	1028	0
Grp Sat Flow(s),veh/h/ln	1781	0	1585				0	1702	0	1781	1777	0
Q Serve(g_s), s	15.4	0.0	0.0				0.0	8.5	0.0	5.7	0.0	0.0
Cycle Q Clear(g_c), s	15.4	0.0	0.0				0.0	8.5	0.0	5.7	0.0	0.0
Prop In Lane	1.00		1.00				0.00		0.00	1.00		0.00
Lane Grp Cap(c), veh/h	565	0					0	3216		557	2664	0
V/C Ratio(X)	0.83	0.00					0.00	0.26		0.43	0.39	0.00
Avail Cap(c_a), veh/h	1098	0					0	3216		848	2664	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	2.00	2.00	1.00
Upstream Filter(I)	1.00	0.00	0.00				0.00	1.00	0.00	0.77	0.77	0.00
Uniform Delay (d), s/veh	48.9	0.0	0.0				0.0	9.8	0.0	5.9	0.0	0.0
Incr Delay (d2), s/veh	3.3	0.0	0.0				0.0	0.2	0.0	0.4	0.3	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
%ile BackOfQ(50%),veh/ln	7.1	0.0	0.0				0.0	3.1	0.0	1.7	0.1	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	52.2	0.0	0.0				0.0	10.0	0.0	6.3	0.3	0.0
LnGrp LOS	D	A					A	A		A	A	A
Approach Vol, veh/h		471	A					822	A		1266	
Approach Delay, s/veh		52.2						10.0			1.4	
Approach LOS		D						A			A	
Timer - Assigned Phs	1	2		4		6						
Phs Duration (G+Y+Rc), s	14.4	81.6		24.0		96.0						
Change Period (Y+Rc), s	6.0	6.0		5.0		6.0						
Max Green Setting (Gmax), s	28.0	38.0		37.0		72.0						
Max Q Clear Time (g_c+l1), s	7.7	10.5		17.4		2.0						
Green Ext Time (p_c), s	0.6	6.4		1.7		10.0						
Intersection Summary												
HCM 6th Ctrl Delay			13.5									
HCM 6th LOS			B									
Notes												
User approved volume balancing among the lanes for turning movement.												
Unsignalized Delay for [NBR, EBR] is excluded from calculations of the approach delay and intersection delay.												

Timings

11: Tower Road & I-70 EB Ramps

2020 Adjusted Existing PM.syn

04/21/2020

						
Lane Group	EBL	EBT	EBR	NBT	SBL	SBT
Lane Configurations				  		 
Traffic Volume (vph)	655	5	250	910	370	840
Future Volume (vph)	655	5	250	910	370	840
Turn Type	Perm	NA	Free	NA	pm+pt	NA
Protected Phases		4		2	1	6
Permitted Phases	4		Free		6	
Detector Phase	4	4		2	1	6
Switch Phase						
Minimum Initial (s)	5.0	5.0		5.0	5.0	5.0
Minimum Split (s)	23.0	23.0		24.0	11.0	24.0
Total Split (s)	50.0	50.0		31.0	39.0	70.0
Total Split (%)	41.7%	41.7%		25.8%	32.5%	58.3%
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	1.0	1.0		2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0		6.0	6.0	6.0
Lead/Lag				Lag	Lead	
Lead-Lag Optimize?				Yes	Yes	
Recall Mode	None	None		C-Max	None	C-Max
Act Effect Green (s)	32.7	32.7	120.0	45.6	76.3	76.3
Actuated g/C Ratio	0.27	0.27	1.00	0.38	0.64	0.64
v/c Ratio	0.78	0.77	0.17	0.59	0.85	0.39
Control Delay	52.0	51.1	0.2	34.0	69.1	8.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	52.0	51.1	0.2	34.0	69.1	8.6
LOS	D	D	A	C	E	A
Approach Delay		37.3		34.0		27.4
Approach LOS		D		C		C

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 99 (83%), Referenced to phase 2:NBT and 6:SBTL, Start of Yellow

Natural Cycle: 65

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.85

Intersection Signal Delay: 32.5

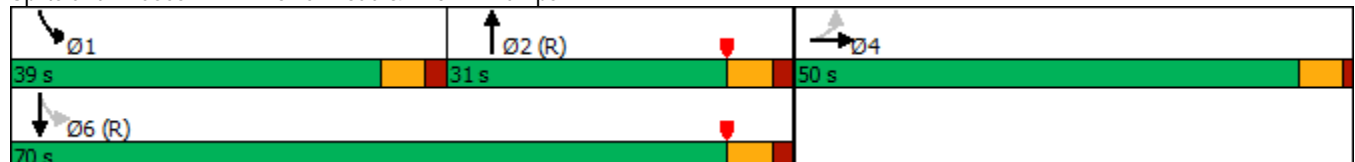
Intersection LOS: C

Intersection Capacity Utilization 72.1%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 11: Tower Road & I-70 EB Ramps























HCM 6th Signalized Intersection Summary

2020 Adjusted Existing PM.syn

11: Tower Road & I-70 EB Ramps

04/21/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	655	5	250	0	0	0	0	910	70	370	840	0
Future Volume (veh/h)	655	5	250	0	0	0	0	910	70	370	840	0
Initial Q (Qb), veh	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
Parking Bus, Adj	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		
Adj Sat Flow, veh/h/ln	1870	1870	1870				0	1870	1870	1870	1870	0
Adj Flow Rate, veh/h	711	0	0				0	1046	0	398	884	0
Peak Hour Factor	0.93	0.50	0.91				0.92	0.87	0.79	0.93	0.95	0.92
Percent Heavy Veh, %	2	2	2				0	2	2	2	2	0
Cap, veh/h	822	0					0	2462		507	2408	0
Arrive On Green	0.23	0.00	0.00				0.00	0.48	0.00	0.29	1.00	0.00
Sat Flow, veh/h	3563	0	1585				0	5443	0	1781	3647	0
Grp Volume(v), veh/h	711	0	0				0	1046	0	398	884	0
Grp Sat Flow(s),veh/h/ln	1781	0	1585				0	1702	0	1781	1777	0
Q Serve(g_s), s	23.0	0.0	0.0				0.0	16.0	0.0	14.3	0.0	0.0
Cycle Q Clear(g_c), s	23.0	0.0	0.0				0.0	16.0	0.0	14.3	0.0	0.0
Prop In Lane	1.00		1.00				0.00		0.00	1.00		0.00
Lane Grp Cap(c), veh/h	822	0					0	2462		507	2408	0
V/C Ratio(X)	0.86	0.00					0.00	0.42		0.78	0.37	0.00
Avail Cap(c_a), veh/h	1336	0					0	2462		738	2408	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	2.00	2.00	1.00
Upstream Filter(I)	1.00	0.00	0.00				0.00	1.00	0.00	0.70	0.70	0.00
Uniform Delay (d), s/veh	44.4	0.0	0.0				0.0	20.2	0.0	11.3	0.0	0.0
Incr Delay (d2), s/veh	3.5	0.0	0.0				0.0	0.5	0.0	2.5	0.3	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
%ile BackOfQ(50%),veh/ln	10.5	0.0	0.0				0.0	6.4	0.0	4.0	0.1	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	47.9	0.0	0.0				0.0	20.8	0.0	13.8	0.3	0.0
LnGrp LOS	D	A					A	C		B	A	A
Approach Vol, veh/h	711			A			1046			A		
Approach Delay, s/veh	47.9						20.8			4.5		
Approach LOS	D						C			A		
Timer - Assigned Phs	1	2		4			6					
Phs Duration (G+Y+Rc), s	23.5	63.9		32.7			87.3					
Change Period (Y+Rc), s	6.0	6.0		5.0			6.0					
Max Green Setting (Gmax), s	33.0	25.0		45.0			64.0					
Max Q Clear Time (g_c+l1), s	16.3	18.0		25.0			2.0					
Green Ext Time (p_c), s	1.1	3.9		2.7			8.0					

Intersection Summary

HCM 6th Ctrl Delay 20.2

HCM 6th LOS C

Notes
















User approved volume balancing among the lanes for turning movement.

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

Timings 11: Tower Road & I-70 EB Ramps

2022 Background AM.syn

05/06/2020

						
Lane Group	EBL	EBT	EBR	NBT	SBL	SBT
Lane Configurations				  		 
Traffic Volume (vph)	515	5	245	835	220	960
Future Volume (vph)	515	5	245	835	220	960
Turn Type	Perm	NA	Free	NA	pm+pt	NA
Protected Phases		4		2	1	6
Permitted Phases	4		Free		6	
Detector Phase	4	4		2	1	6
Switch Phase						
Minimum Initial (s)	5.0	5.0		5.0	5.0	5.0
Minimum Split (s)	23.0	23.0		24.0	11.0	24.0
Total Split (s)	43.0	43.0		44.0	33.0	77.0
Total Split (%)	35.8%	35.8%		36.7%	27.5%	64.2%
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	1.0	1.0		2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0		6.0	6.0	6.0
Lead/Lag				Lag	Lead	
Lead-Lag Optimize?				Yes	Yes	
Recall Mode	None	None		C-Max	None	C-Max
Act Effect Green (s)	26.8	26.8	120.0	62.7	82.2	82.2
Actuated g/C Ratio	0.22	0.22	1.00	0.52	0.68	0.68
v/c Ratio	0.76	0.75	0.18	0.36	0.60	0.45
Control Delay	56.2	55.3	0.2	19.2	29.1	14.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.2
Total Delay	56.2	55.3	0.2	19.2	29.1	14.9
LOS	E	E	A	B	C	B
Approach Delay		37.2		19.2		17.7
Approach LOS		D		B		B

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 27.5 (23%), Referenced to phase 2:NBT and 6:SBTL, Start of Yellow

Natural Cycle: 60

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.76

Intersection Signal Delay: 23.4

Intersection LOS: C

Intersection Capacity Utilization 74.8%

ICU Level of Service D

Analysis Period (min) 15






















Splits and Phases: 11: Tower Road & I-70 EB Ramps



HCM 6th Signalized Intersection Summary 11: Tower Road & I-70 EB Ramps

2022 Background AM.syn

05/06/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations								  			 	
Traffic Volume (veh/h)	515	5	245	0	0	0	0	835	25	220	960	0
Future Volume (veh/h)	515	5	245	0	0	0	0	835	25	220	960	0
Initial Q (Qb), veh	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
Parking Bus, Adj	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		
Adj Sat Flow, veh/h/ln	1870	1870	1870				0	1870	1870	1870	1870	0
Adj Flow Rate, veh/h	562	0	0				0	928	0	268	1091	0
Peak Hour Factor	0.94	0.25	0.86				0.92	0.90	0.96	0.82	0.88	0.92
Percent Heavy Veh, %	2	2	2				0	2	2	2	2	0
Cap, veh/h	661	0					0	3009		509	2568	0
Arrive On Green	0.19	0.00	0.00				0.00	0.59	0.00	0.17	1.00	0.00
Sat Flow, veh/h	3563	0	1585				0	5443	0	1781	3647	0
Grp Volume(v), veh/h	562	0	0				0	928	0	268	1091	0
Grp Sat Flow(s),veh/h/ln	1781	0	1585				0	1702	0	1781	1777	0
Q Serve(g_s), s	18.3	0.0	0.0				0.0	10.9	0.0	7.3	0.0	0.0
Cycle Q Clear(g_c), s	18.3	0.0	0.0				0.0	10.9	0.0	7.3	0.0	0.0
Prop In Lane	1.00		1.00				0.00		0.00	1.00		0.00
Lane Grp Cap(c), veh/h	661	0					0	3009		509	2568	0
V/C Ratio(X)	0.85	0.00					0.00	0.31		0.53	0.42	0.00
Avail Cap(c_a), veh/h	1128	0					0	3009		761	2568	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	2.00	2.00	1.00
Upstream Filter(I)	1.00	0.00	0.00				0.00	1.00	0.00	0.63	0.63	0.00
Uniform Delay (d), s/veh	47.2	0.0	0.0				0.0	12.4	0.0	7.4	0.0	0.0
Incr Delay (d2), s/veh	3.2	0.0	0.0				0.0	0.3	0.0	0.5	0.3	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
%ile BackOfQ(50%),veh/ln	8.4	0.0	0.0				0.0	4.2	0.0	2.2	0.1	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	50.4	0.0	0.0				0.0	12.6	0.0	7.9	0.3	0.0
LnGrp LOS	D	A					A	B		A	A	A
Approach Vol, veh/h	562		A				928		A	1359		
Approach Delay, s/veh	50.4						12.6			1.8		
Approach LOS	D						B			A		
Timer - Assigned Phs	1	2	4		6							
Phs Duration (G+Y+Rc), s	16.0	76.7	27.3		92.7							
Change Period (Y+Rc), s	6.0	6.0	5.0		6.0							
Max Green Setting (Gmax), s	27.0	38.0	38.0		71.0							
Max Q Clear Time (g_c+l1), s	9.3	12.9	20.3		2.0							
Green Ext Time (p_c), s	0.7	7.2	2.0		11.0							

Intersection Summary

HCM 6th Ctrl Delay 14.9

HCM 6th LOS B

Notes

















User approved volume balancing among the lanes for turning movement.

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

Timings 11: Tower Road & I-70 EB Ramps

2022 Background PM.syn

05/06/2020

						
Lane Group	EBL	EBT	EBR	NBT	SBL	SBT
Lane Configurations				  		  
Traffic Volume (vph)	700	5	260	965	430	925
Future Volume (vph)	700	5	260	965	430	925
Turn Type	Perm	NA	Free	NA	pm+pt	NA
Protected Phases		4		2	1	6
Permitted Phases	4		Free		6	
Detector Phase	4	4		2	1	6
Switch Phase						
Minimum Initial (s)	5.0	5.0		5.0	5.0	5.0
Minimum Split (s)	23.0	23.0		24.0	11.0	24.0
Total Split (s)	56.0	56.0		25.0	39.0	64.0
Total Split (%)	46.7%	46.7%		20.8%	32.5%	53.3%
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	1.0	1.0		2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0		6.0	6.0	6.0
Lead/Lag				Lag	Lead	
Lead-Lag Optimize?				Yes	Yes	
Recall Mode	None	None		C-Max	None	C-Max
Act Effect Green (s)	35.4	35.4	120.0	38.8	73.6	73.6
Actuated g/C Ratio	0.30	0.30	1.00	0.32	0.61	0.61
v/c Ratio	0.78	0.76	0.18	0.74	0.95	0.45
Control Delay	49.0	48.0	0.2	41.4	84.7	11.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.1
Total Delay	49.0	48.0	0.2	41.4	84.7	11.8
LOS	D	D	A	D	F	B
Approach Delay		35.3		41.4		35.3
Approach LOS		D		D		D

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 99 (83%), Referenced to phase 2:NBT and 6:SBTL, Start of Yellow

Natural Cycle: 70

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.95

Intersection Signal Delay: 37.3

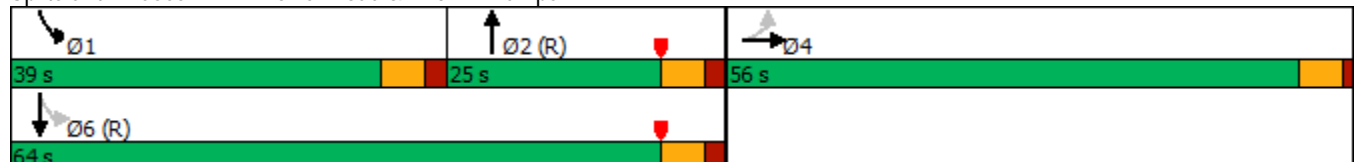
Intersection LOS: D

Intersection Capacity Utilization 77.8%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 11: Tower Road & I-70 EB Ramps





















HCM 6th Signalized Intersection Summary

2022 Background PM.syn
















05/06/2020

11: Tower Road & I-70 EB Ramps

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	700	5	260	0	0	0	0	965	75	430	925	0
Future Volume (veh/h)	700	5	260	0	0	0	0	965	75	430	925	0
Initial Q (Qb), veh	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
Parking Bus, Adj	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	
Adj Sat Flow, veh/h/ln	1870	1870	1870				0	1870	1870	1870	1870	0
Adj Flow Rate, veh/h	760	0	0				0	1109	0	462	974	0
Peak Hour Factor	0.93	0.50	0.91				0.92	0.87	0.79	0.93	0.95	0.92
Percent Heavy Veh, %	2	2	2				0	2	2	2	2	0
Cap, veh/h	877	0					0	2195		523	2353	0
Arrive On Green	0.25	0.00	0.00				0.00	0.43	0.00	0.36	1.00	0.00
Sat Flow, veh/h	3563	0	1585				0	5443	0	1781	3647	0
Grp Volume(v), veh/h	760	0	0				0	1109	0	462	974	0
Grp Sat Flow(s),veh/h/ln	1781	0	1585				0	1702	0	1781	1777	0
Q Serve(g_s), s	24.5	0.0	0.0				0.0	19.0	0.0	18.6	0.0	0.0
Cycle Q Clear(g_c), s	24.5	0.0	0.0				0.0	19.0	0.0	18.6	0.0	0.0
Prop In Lane	1.00		1.00				0.00		0.00	1.00		0.00
Lane Grp Cap(c), veh/h	877	0					0	2195		523	2353	0
V/C Ratio(X)	0.87	0.00					0.00	0.51		0.88	0.41	0.00
Avail Cap(c_a), veh/h	1514	0					0	2195		688	2353	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	2.00	2.00	1.00
Upstream Filter(I)	1.00	0.00	0.00				0.00	1.00	0.00	0.53	0.53	0.00
Uniform Delay (d), s/veh	43.3	0.0	0.0				0.0	24.9	0.0	13.5	0.0	0.0
Incr Delay (d2), s/veh	2.8	0.0	0.0				0.0	0.8	0.0	6.0	0.3	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
%ile BackOfQ(50%),veh/ln	11.1	0.0	0.0				0.0	7.8	0.0	5.1	0.1	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	46.1	0.0	0.0				0.0	25.8	0.0	19.5	0.3	0.0
LnGrp LOS	D	A					A	C		B	A	A
Approach Vol, veh/h	760		A				1109		A		1436	
Approach Delay, s/veh	46.1						25.8				6.5	
Approach LOS	D						C				A	
Timer - Assigned Phs	1	2	4		6							
Phs Duration (G+Y+Rc), s	27.9	57.6	34.5		85.5							
Change Period (Y+Rc), s	6.0	6.0	5.0		6.0							
Max Green Setting (Gmax), s	33.0	19.0	51.0		58.0							
Max Q Clear Time (g_c+l1), s	20.6	21.0	26.5		2.0							
Green Ext Time (p_c), s	1.2	0.0	3.0		9.1							
Intersection Summary												
HCM 6th Ctrl Delay			22.1									
HCM 6th LOS			C									
Notes												
User approved volume balancing among the lanes for turning movement.												
Unsignalized Delay for [NBR, EBR] is excluded from calculations of the approach delay and intersection delay.												

Timings 11: Tower Road & I-70 EB Ramps

2022 Total AM.syn
06/08/2020

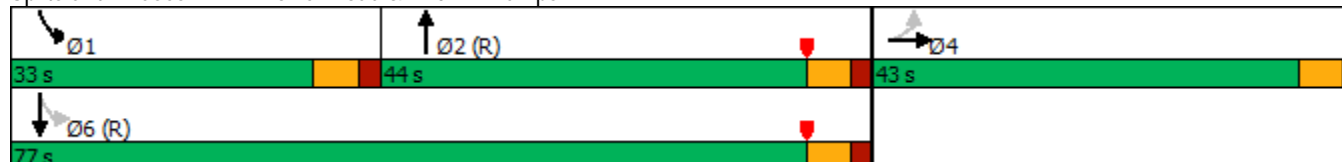
						
Lane Group	EBL	EBT	EBR	NBT	SBL	SBT
Lane Configurations				  		 
Traffic Volume (vph)	515	5	245	875	240	980
Future Volume (vph)	515	5	245	875	240	980
Turn Type	Perm	NA	Free	NA	pm+pt	NA
Protected Phases		4		2	1	6
Permitted Phases	4		Free		6	
Detector Phase	4	4		2	1	6
Switch Phase						
Minimum Initial (s)	5.0	5.0		5.0	5.0	5.0
Minimum Split (s)	23.0	23.0		24.0	11.0	24.0
Total Split (s)	43.0	43.0		44.0	33.0	77.0
Total Split (%)	35.8%	35.8%		36.7%	27.5%	64.2%
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	1.0	1.0		2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0		6.0	6.0	6.0
Lead/Lag				Lag	Lead	
Lead-Lag Optimize?				Yes	Yes	
Recall Mode	None	None		C-Max	None	C-Max
Act Effect Green (s)	26.8	26.8	120.0	60.7	82.2	82.2
Actuated g/C Ratio	0.22	0.22	1.00	0.51	0.68	0.68
v/c Ratio	0.76	0.75	0.18	0.39	0.65	0.46
Control Delay	56.2	55.3	0.2	21.0	32.9	16.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.2
Total Delay	56.2	55.3	0.2	21.0	32.9	16.2
LOS	E	E	A	C	C	B
Approach Delay		37.2		21.0		19.7
Approach LOS		D		C		B

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 27.5 (23%), Referenced to phase 2:NBT and 6:SBTL, Start of Yellow
Natural Cycle: 60
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.76
Intersection Signal Delay: 24.7
Intersection Capacity Utilization 78.2%
Analysis Period (min) 15

Intersection LOS: C
ICU Level of Service D

Splits and Phases: 11: Tower Road & I-70 EB Ramps

























HCM 6th Signalized Intersection Summary

2022 Total AM.syn













11: Tower Road & I-70 EB Ramps

06/08/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations								  			  	
Traffic Volume (veh/h)	515	5	245	0	0	0	0	875	25	240	980	0
Future Volume (veh/h)	515	5	245	0	0	0	0	875	25	240	980	0
Initial Q (Qb), veh	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
Parking Bus, Adj	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		
Adj Sat Flow, veh/h/ln	1870	1870	1870				0	1870	1870	1870	1870	0
Adj Flow Rate, veh/h	562	0	0				0	972	0	293	1114	0
Peak Hour Factor	0.94	0.25	0.86				0.92	0.90	0.96	0.82	0.88	0.92
Percent Heavy Veh, %	2	2	2				0	2	2	2	2	0
Cap, veh/h	661	0					0	2967		502	2568	0
Arrive On Green	0.19	0.00	0.00				0.00	0.58	0.00	0.18	1.00	0.00
Sat Flow, veh/h	3563	0	1585				0	5443	0	1781	3647	0
Grp Volume(v), veh/h	562	0	0				0	972	0	293	1114	0
Grp Sat Flow(s),veh/h/ln	1781	0	1585				0	1702	0	1781	1777	0
Q Serve(g_s), s	18.3	0.0	0.0				0.0	11.8	0.0	8.2	0.0	0.0
Cycle Q Clear(g_c), s	18.3	0.0	0.0				0.0	11.8	0.0	8.2	0.0	0.0
Prop In Lane	1.00		1.00				0.00		0.00	1.00		0.00
Lane Grp Cap(c), veh/h	661	0					0	2967		502	2568	0
V/C Ratio(X)	0.85	0.00					0.00	0.33		0.58	0.43	0.00
Avail Cap(c_a), veh/h	1128	0					0	2967		740	2568	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	2.00	2.00	1.00
Upstream Filter(I)	1.00	0.00	0.00				0.00	1.00	0.00	0.54	0.54	0.00
Uniform Delay (d), s/veh	47.2	0.0	0.0				0.0	13.0	0.0	7.7	0.0	0.0
Incr Delay (d2), s/veh	3.2	0.0	0.0				0.0	0.3	0.0	0.6	0.3	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
%ile BackOfQ(50%),veh/ln	8.4	0.0	0.0				0.0	4.5	0.0	2.4	0.1	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	50.4	0.0	0.0				0.0	13.3	0.0	8.2	0.3	0.0
LnGrp LOS	D	A					A	B		A	A	A
Approach Vol, veh/h	562		A				972		A	1407		
Approach Delay, s/veh	50.4						13.3			1.9		
Approach LOS	D						B			A		
Timer - Assigned Phs	1	2		4		6						
Phs Duration (G+Y+Rc), s	17.0	75.7		27.3		92.7						
Change Period (Y+Rc), s	6.0	6.0		5.0		6.0						
Max Green Setting (Gmax), s	27.0	38.0		38.0		71.0						
Max Q Clear Time (g_c+l1), s	10.2	13.8		20.3		2.0						
Green Ext Time (p_c), s	0.8	7.5		2.0		11.4						
Intersection Summary												
HCM 6th Ctrl Delay	15.0											
HCM 6th LOS	B											
Notes												
User approved volume balancing among the lanes for turning movement.												
Unsignalized Delay for [NBR, EBR] is excluded from calculations of the approach delay and intersection delay.												

Timings 11: Tower Road & I-70 EB Ramps

2022 Total PM.syn
06/08/2020

						
Lane Group	EBL	EBT	EBR	NBT	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	700	5	260	980	465	960
Future Volume (vph)	700	5	260	980	465	960
Turn Type	Perm	NA	Free	NA	pm+pt	NA
Protected Phases		4		2	1	6
Permitted Phases	4		Free		6	
Detector Phase	4	4		2	1	6
Switch Phase						
Minimum Initial (s)	5.0	5.0		5.0	5.0	5.0
Minimum Split (s)	23.0	23.0		24.0	11.0	24.0
Total Split (s)	56.0	56.0		25.0	39.0	64.0
Total Split (%)	46.7%	46.7%		20.8%	32.5%	53.3%
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	1.0	1.0		2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0		6.0	6.0	6.0
Lead/Lag				Lag	Lead	
Lead-Lag Optimize?				Yes	Yes	
Recall Mode	None	None		C-Max	None	C-Max
Act Effect Green (s)	35.4	35.4	120.0	35.3	73.6	73.6
Actuated g/C Ratio	0.30	0.30	1.00	0.29	0.61	0.61
v/c Ratio	0.78	0.76	0.18	0.82	0.93	0.47
Control Delay	49.0	48.0	0.2	46.5	77.5	13.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.1
Total Delay	49.0	48.0	0.2	46.5	77.5	13.5
LOS	D	D	A	D	E	B
Approach Delay		35.3		46.5		34.7
Approach LOS		D		D		C

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 99 (83%), Referenced to phase 2:NBT and 6:SBTL, Start of Yellow

Natural Cycle: 70

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.93

Intersection Signal Delay: 38.7

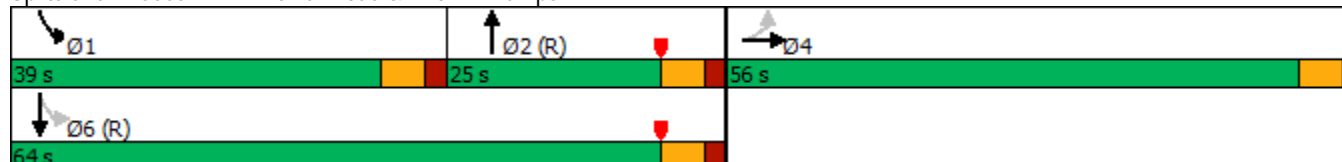
Intersection LOS: D

Intersection Capacity Utilization 80.1%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 11: Tower Road & I-70 EB Ramps
























HCM 6th Signalized Intersection Summary

2022 Total PM.syn

06/08/2020
















11: Tower Road & I-70 EB Ramps

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations								  			 	
Traffic Volume (veh/h)	700	5	260	0	0	0	0	980	75	465	960	0
Future Volume (veh/h)	700	5	260	0	0	0	0	980	75	465	960	0
Initial Q (Qb), veh	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
Parking Bus, Adj	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		
Adj Sat Flow, veh/h/ln	1870	1870	1870				0	1870	1870	1870	1870	0
Adj Flow Rate, veh/h	760	0	0				0	1126	0	500	1011	0
Peak Hour Factor	0.93	0.50	0.91				0.92	0.87	0.79	0.93	0.95	0.92
Percent Heavy Veh, %	2	2	2				0	2	2	2	2	0
Cap, veh/h	877	0					0	2086		544	2353	0
Arrive On Green	0.25	0.00	0.00				0.00	0.41	0.00	0.41	1.00	0.00
Sat Flow, veh/h	3563	0	1585				0	5443	0	1781	3647	0
Grp Volume(v), veh/h	760	0	0				0	1126	0	500	1011	0
Grp Sat Flow(s),veh/h/ln	1781	0	1585				0	1702	0	1781	1777	0
Q Serve(g_s), s	24.5	0.0	0.0				0.0	20.1	0.0	21.2	0.0	0.0
Cycle Q Clear(g_c), s	24.5	0.0	0.0				0.0	20.1	0.0	21.2	0.0	0.0
Prop In Lane	1.00		1.00				0.00		0.00	1.00		0.00
Lane Grp Cap(c), veh/h	877	0					0	2086		544	2353	0
V/C Ratio(X)	0.87	0.00					0.00	0.54		0.92	0.43	0.00
Avail Cap(c_a), veh/h	1514	0					0	2086		670	2353	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	2.00	2.00	1.00
Upstream Filter(I)	1.00	0.00	0.00				0.00	1.00	0.00	0.42	0.42	0.00
Uniform Delay (d), s/veh	43.3	0.0	0.0				0.0	26.9	0.0	13.7	0.0	0.0
Incr Delay (d2), s/veh	2.8	0.0	0.0				0.0	1.0	0.0	7.9	0.2	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
%ile BackOfQ(50%),veh/ln	11.1	0.0	0.0				0.0	8.3	0.0	5.6	0.1	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	46.1	0.0	0.0				0.0	27.9	0.0	21.5	0.2	0.0
LnGrp LOS	D	A					A	C		C	A	A
Approach Vol, veh/h	760			A			1126			A		
Approach Delay, s/veh	46.1						27.9			7.3		
Approach LOS	D						C			A		
Timer - Assigned Phs	1	2		4		6						
Phs Duration (G+Y+Rc), s	30.5	55.0		34.5		85.5						
Change Period (Y+Rc), s	6.0	6.0		5.0		6.0						
Max Green Setting (Gmax), s	33.0	19.0		51.0		58.0						
Max Q Clear Time (g_c+I1), s	23.2	22.1		26.5		2.0						
Green Ext Time (p_c), s	1.2	0.0		3.0		9.6						
Intersection Summary												
HCM 6th Ctrl Delay				22.8								
HCM 6th LOS				C								
Notes												
User approved volume balancing among the lanes for turning movement.												
Unsignalized Delay for [NBR, EBR] is excluded from calculations of the approach delay and intersection delay.												

Timings 11: Tower Road & I-70 EB Ramps

2040 Background AM.syn

05/06/2020

						
Lane Group	EBL	EBT	EBR	NBT	SBL	SBT
Lane Configurations				  		 
Traffic Volume (vph)	840	5	350	1210	340	1040
Future Volume (vph)	840	5	350	1210	340	1040
Turn Type	Perm	NA	Free	NA	pm+pt	NA
Protected Phases		4		2	1	6
Permitted Phases	4		Free		6	
Detector Phase	4	4		2	1	6
Switch Phase						
Minimum Initial (s)	5.0	5.0		5.0	5.0	5.0
Minimum Split (s)	23.0	23.0		24.0	11.0	24.0
Total Split (s)	50.0	50.0		38.0	32.0	70.0
Total Split (%)	41.7%	41.7%		31.7%	26.7%	58.3%
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	1.0	1.0		2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0		6.0	6.0	6.0
Lead/Lag				Lag	Lead	
Lead-Lag Optimize?				Yes	Yes	
Recall Mode	None	None		C-Max	None	C-Max
Act Effect Green (s)	38.8	38.8	120.0	41.2	70.2	70.2
Actuated g/C Ratio	0.32	0.32	1.00	0.34	0.58	0.58
v/c Ratio	0.82	0.83	0.24	0.78	0.93	0.55
Control Delay	50.0	50.6	0.4	40.9	66.0	24.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.2
Total Delay	50.0	50.6	0.4	40.9	66.0	24.4
LOS	D	D	A	D	E	C
Approach Delay		35.4		40.9		34.6
Approach LOS		D		D		C

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 27.5 (23%), Referenced to phase 2:NBT and 6:SBTL, Start of Yellow

Natural Cycle: 70

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.93

Intersection Signal Delay: 37.0

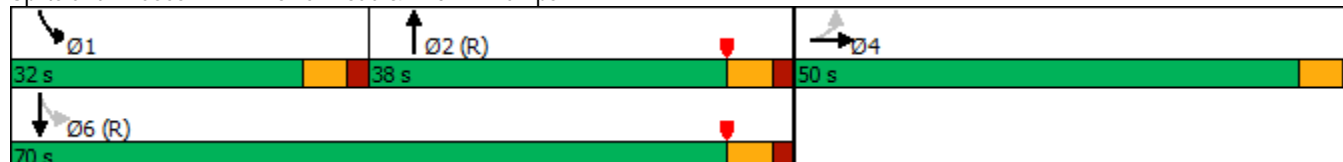
Intersection LOS: D

Intersection Capacity Utilization 96.1%

ICU Level of Service F

Analysis Period (min) 15

Splits and Phases: 11: Tower Road & I-70 EB Ramps
























HCM 6th Signalized Intersection Summary

11: Tower Road & I-70 EB Ramps

2040 Background AM.syn
















05/06/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations								  			 	
Traffic Volume (veh/h)	840	5	350	0	0	0	0	1210	40	340	1040	0
Future Volume (veh/h)	840	5	350	0	0	0	0	1210	40	340	1040	0
Initial Q (Qb), veh	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
Parking Bus, Adj	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		
Adj Sat Flow, veh/h/ln	1870	1870	1870				0	1870	1870	1870	1870	0
Adj Flow Rate, veh/h	898	0	0				0	1315	0	370	1130	0
Peak Hour Factor	0.94	0.92	0.92				0.92	0.92	0.96	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2				0	2	2	2	2	0
Cap, veh/h	1013	0					0	2193		414	2217	0
Arrive On Green	0.28	0.00	0.00				0.00	0.43	0.00	0.29	1.00	0.00
Sat Flow, veh/h	3563	0	1585				0	5443	0	1781	3647	0
Grp Volume(v), veh/h	898	0	0				0	1315	0	370	1130	0
Grp Sat Flow(s),veh/h/ln	1781	0	1585				0	1702	0	1781	1777	0
Q Serve(g_s), s	28.9	0.0	0.0				0.0	23.7	0.0	14.5	0.0	0.0
Cycle Q Clear(g_c), s	28.9	0.0	0.0				0.0	23.7	0.0	14.5	0.0	0.0
Prop In Lane	1.00		1.00				0.00		0.00	1.00		0.00
Lane Grp Cap(c), veh/h	1013	0					0	2193		414	2217	0
V/C Ratio(X)	0.89	0.00					0.00	0.60		0.89	0.51	0.00
Avail Cap(c_a), veh/h	1336	0					0	2193		543	2217	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	2.00	2.00	1.00
Upstream Filter(I)	1.00	0.00	0.00				0.00	1.00	0.00	0.14	0.14	0.00
Uniform Delay (d), s/veh	41.1	0.0	0.0				0.0	26.3	0.0	17.1	0.0	0.0
Incr Delay (d2), s/veh	6.0	0.0	0.0				0.0	1.2	0.0	2.4	0.1	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
%ile BackOfQ(50%),veh/ln	13.4	0.0	0.0				0.0	9.8	0.0	4.3	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	47.1	0.0	0.0				0.0	27.5	0.0	19.6	0.1	0.0
LnGrp LOS	D	A					A	C		B	A	A
Approach Vol, veh/h	898		A					1315	A	1500		
Approach Delay, s/veh	47.1							27.5		4.9		
Approach LOS	D							C		A		
Timer - Assigned Phs	1	2		4		6						
Phs Duration (G+Y+Rc), s	23.3	57.5		39.1		80.9						
Change Period (Y+Rc), s	6.0	6.0		5.0		6.0						
Max Green Setting (Gmax), s	26.0	32.0		45.0		64.0						
Max Q Clear Time (g_c+l1), s	16.5	25.7		30.9		2.0						
Green Ext Time (p_c), s	0.8	4.2		3.2		11.6						
Intersection Summary												
HCM 6th Ctrl Delay				23.1								
HCM 6th LOS				C								
Notes												
User approved volume balancing among the lanes for turning movement.												
Unsignalized Delay for [NBR, EBR] is excluded from calculations of the approach delay and intersection delay.												

Timings 11: Tower Road & I-70 EB Ramps

2040 Background PM.syn

05/06/2020

						
Lane Group	EBL	EBT	EBR	NBT	SBL	SBT
Lane Configurations				  		 
Traffic Volume (vph)	1085	5	370	1110	680	1270
Future Volume (vph)	1085	5	370	1110	680	1270
Turn Type	Perm	NA	Free	NA	pm+pt	NA
Protected Phases		4		2	1	6
Permitted Phases	4		Free		6	
Detector Phase	4	4		2	1	6
Switch Phase						
Minimum Initial (s)	5.0	5.0		5.0	5.0	5.0
Minimum Split (s)	23.0	23.0		24.0	11.0	24.0
Total Split (s)	42.0	42.0		36.0	42.0	78.0
Total Split (%)	35.0%	35.0%		30.0%	35.0%	65.0%
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	1.0	1.0		2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0		6.0	6.0	6.0
Lead/Lag				Lag	Lead	
Lead-Lag Optimize?				Yes	Yes	
Recall Mode	None	None		C-Max	None	C-Max
Act Effect Green (s)	37.0	37.0	120.0	30.0	72.0	72.0
Actuated g/C Ratio	0.31	0.31	1.00	0.25	0.60	0.60
v/c Ratio	1.13	1.13	0.25	1.05	1.23	0.63
Control Delay	117.6	120.9	0.4	81.5	150.6	14.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.4
Total Delay	117.6	120.9	0.4	81.5	150.6	14.5
LOS	F	F	A	F	F	B
Approach Delay		88.9		81.5		62.6
Approach LOS		F		F		E

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 99 (83%), Referenced to phase 2:NBT and 6:SBTL, Start of Yellow

Natural Cycle: 120

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.23

Intersection Signal Delay: 76.0

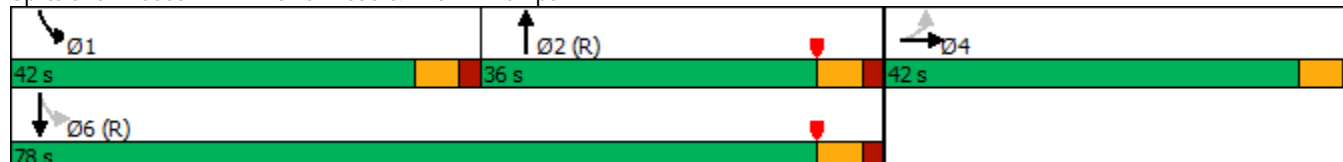
Intersection LOS: E

Intersection Capacity Utilization 105.8%

ICU Level of Service G

Analysis Period (min) 15

Splits and Phases: 11: Tower Road & I-70 EB Ramps























HCM 6th Signalized Intersection Summary

11: Tower Road & I-70 EB Ramps

2040 Background PM.syn

















05/06/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1085	5	370	0	0	0	0	1110	105	680	1270	0
Future Volume (veh/h)	1085	5	370	0	0	0	0	1110	105	680	1270	0
Initial Q (Qb), veh	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
Parking Bus, Adj	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		
Adj Sat Flow, veh/h/ln	1870	1870	1870				0	1870	1870	1870	1870	0
Adj Flow Rate, veh/h	1171	0	0				0	1207	0	731	1337	0
Peak Hour Factor	0.93	0.92	0.92				0.92	0.92	0.92	0.93	0.95	0.92
Percent Heavy Veh, %	2	2	2				0	2	2	2	2	0
Cap, veh/h	1098	0					0	1277		603	2132	0
Arrive On Green	0.31	0.00	0.00				0.00	0.25	0.00	0.60	1.00	0.00
Sat Flow, veh/h	3563	0	1585				0	5443	0	1781	3647	0
Grp Volume(v), veh/h	1171	0	0				0	1207	0	731	1337	0
Grp Sat Flow(s),veh/h/ln	1781	0	1585				0	1702	0	1781	1777	0
Q Serve(g_s), s	37.0	0.0	0.0				0.0	27.9	0.0	36.0	0.0	0.0
Cycle Q Clear(g_c), s	37.0	0.0	0.0				0.0	27.9	0.0	36.0	0.0	0.0
Prop In Lane	1.00		1.00				0.00		0.00	1.00		0.00
Lane Grp Cap(c), veh/h	1098	0					0	1277		603	2132	0
V/C Ratio(X)	1.07	0.00					0.00	0.95		1.21	0.63	0.00
Avail Cap(c_a), veh/h	1098	0					0	1277		603	2132	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	2.00	2.00	1.00
Upstream Filter(I)	1.00	0.00	0.00				0.00	1.00	0.00	0.09	0.09	0.00
Uniform Delay (d), s/veh	41.5	0.0	0.0				0.0	44.2	0.0	16.1	0.0	0.0
Incr Delay (d2), s/veh	46.6	0.0	0.0				0.0	15.1	0.0	97.4	0.1	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
%ile BackOfQ(50%),veh/ln	23.1	0.0	0.0				0.0	13.4	0.0	21.2	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	88.1	0.0	0.0				0.0	59.3	0.0	113.4	0.1	0.0
LnGrp LOS	F	A					A	E		F	A	A
Approach Vol, veh/h	1171		A					1207	A	2068		
Approach Delay, s/veh	88.1							59.3		40.2		
Approach LOS	F							E		D		
Timer - Assigned Phs	1	2		4		6						
Phs Duration (G+Y+Rc), s	42.0	36.0		42.0		78.0						
Change Period (Y+Rc), s	6.0	6.0		5.0		6.0						
Max Green Setting (Gmax), s	36.0	30.0		37.0		72.0						
Max Q Clear Time (g_c+I1), s	38.0	29.9		39.0		2.0						
Green Ext Time (p_c), s	0.0	0.1		0.0		15.7						
Intersection Summary												
HCM 6th Ctrl Delay	58.0											
HCM 6th LOS	E											
Notes												
User approved volume balancing among the lanes for turning movement.												
Unsignalized Delay for [NBR, EBR] is excluded from calculations of the approach delay and intersection delay.												

Timings 11: Tower Road & I-70 EB Ramps

2040 Total AM Scenario 1.syn

06/08/2020

						
Lane Group	EBL	EBT	EBR	NBT	SBL	SBT
Lane Configurations				  	 	 
Traffic Volume (vph)	840	5	350	1250	360	1060
Future Volume (vph)	840	5	350	1250	360	1060
Turn Type	Perm	NA	Free	NA	Prot	NA
Protected Phases		4		2	1	6
Permitted Phases	4		Free			
Detector Phase	4	4		2	1	6
Switch Phase						
Minimum Initial (s)	5.0	5.0		5.0	5.0	5.0
Minimum Split (s)	23.0	23.0		24.0	11.0	24.0
Total Split (s)	50.0	50.0		46.0	24.0	70.0
Total Split (%)	41.7%	41.7%		38.3%	20.0%	58.3%
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	1.0	1.0		2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0		6.0	6.0	6.0
Lead/Lag				Lag	Lead	
Lead-Lag Optimize?				Yes	Yes	
Recall Mode	None	None		C-Max	None	C-Max
Act Effect Green (s)	38.8	38.8	120.0	46.9	17.3	70.2
Actuated g/C Ratio	0.32	0.32	1.00	0.39	0.14	0.58
v/c Ratio	0.82	0.83	0.24	0.71	0.79	0.56
Control Delay	50.0	50.6	0.4	34.5	59.3	24.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.2
Total Delay	50.0	50.6	0.4	34.5	59.3	24.7
LOS	D	D	A	C	E	C
Approach Delay		35.4		34.5		33.5
Approach LOS		D		C		C

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 27.5 (23%), Referenced to phase 2:NBT and 6:SBT, Start of Yellow

Natural Cycle: 65

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.83

Intersection Signal Delay: 34.4

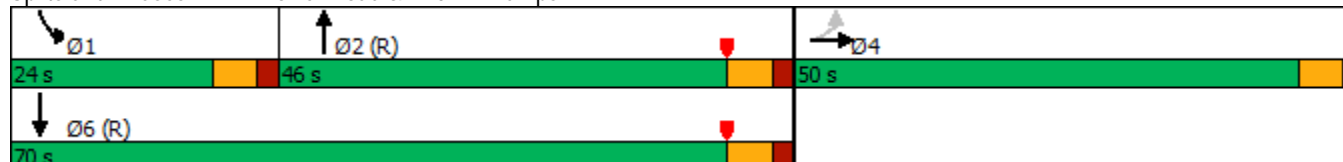
Intersection LOS: C

Intersection Capacity Utilization 99.5%

ICU Level of Service F

Analysis Period (min) 15

Splits and Phases: 11: Tower Road & I-70 EB Ramps



























HCM 6th Signalized Intersection Summary

2040 Total AM Scenario 1.syn

11: Tower Road & I-70 EB Ramps

06/08/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations								  		  	 	
Traffic Volume (veh/h)	840	5	350	0	0	0	0	1250	40	360	1060	0
Future Volume (veh/h)	840	5	350	0	0	0	0	1250	40	360	1060	0
Initial Q (Qb), veh	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
Parking Bus, Adj	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	
Adj Sat Flow, veh/h/ln	1870	1870	1870				0	1870	1870	1870	1870	0
Adj Flow Rate, veh/h	898	0	0				0	1359	0	391	1152	0
Peak Hour Factor	0.94	0.92	0.92				0.92	0.92	0.96	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2				0	2	2	2	2	0
Cap, veh/h	1013	0					0	2272		445	2217	0
Arrive On Green	0.28	0.00	0.00				0.00	0.45	0.00	0.26	1.00	0.00
Sat Flow, veh/h	3563	0	1585				0	5443	0	3456	3647	0
Grp Volume(v), veh/h	898	0	0				0	1359	0	391	1152	0
Grp Sat Flow(s),veh/h/ln	1781	0	1585				0	1702	0	1728	1777	0
Q Serve(g_s), s	28.9	0.0	0.0				0.0	24.2	0.0	13.0	0.0	0.0
Cycle Q Clear(g_c), s	28.9	0.0	0.0				0.0	24.2	0.0	13.0	0.0	0.0
Prop In Lane	1.00		1.00				0.00		0.00	1.00		0.00
Lane Grp Cap(c), veh/h	1013	0					0	2272		445	2217	0
V/C Ratio(X)	0.89	0.00					0.00	0.60		0.88	0.52	0.00
Avail Cap(c_a), veh/h	1336	0					0	2272		518	2217	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	2.00	2.00	1.00
Upstream Filter(I)	1.00	0.00	0.00				0.00	1.00	0.00	0.09	0.09	0.00
Uniform Delay (d), s/veh	41.1	0.0	0.0				0.0	25.2	0.0	43.6	0.0	0.0
Incr Delay (d2), s/veh	6.0	0.0	0.0				0.0	1.2	0.0	1.6	0.1	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
%ile BackOfQ(50%),veh/ln	13.4	0.0	0.0				0.0	9.9	0.0	4.9	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	47.1	0.0	0.0				0.0	26.4	0.0	45.2	0.1	0.0
LnGrp LOS	D	A					A	C		D	A	A
Approach Vol, veh/h		898	A					1359	A		1543	
Approach Delay, s/veh		47.1						26.4			11.5	
Approach LOS		D						C			B	
Timer - Assigned Phs	1	2		4		6						
Phs Duration (G+Y+Rc), s	21.5	59.4		39.1		80.9						
Change Period (Y+Rc), s	6.0	6.0		5.0		6.0						
Max Green Setting (Gmax), s	18.0	40.0		45.0		64.0						
Max Q Clear Time (g_c+l1), s	15.0	26.2		30.9		2.0						
Green Ext Time (p_c), s	0.4	8.0		3.2		12.0						

Intersection Summary

HCM 6th Ctrl Delay	25.2
HCM 6th LOS	C

Notes

















User approved volume balancing among the lanes for turning movement.

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

Timings 11: Tower Road & I-70 EB Ramps

2040 Total PM Scenario 1.syn

06/08/2020

						
Lane Group	EBL	EBT	EBR	NBT	SBL	SBT
Lane Configurations				  	 	 
Traffic Volume (vph)	1085	5	370	1125	715	1305
Future Volume (vph)	1085	5	370	1125	715	1305
Turn Type	Perm	NA	Free	NA	Prot	NA
Protected Phases		4		2	1	6
Permitted Phases	4		Free			
Detector Phase	4	4		2	1	6
Switch Phase						
Minimum Initial (s)	5.0	5.0		5.0	5.0	5.0
Minimum Split (s)	23.0	23.0		24.0	11.0	24.0
Total Split (s)	55.0	55.0		33.0	32.0	65.0
Total Split (%)	45.8%	45.8%		27.5%	26.7%	54.2%
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	1.0	1.0		2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0		6.0	6.0	6.0
Lead/Lag				Lag	Lead	
Lead-Lag Optimize?				Yes	Yes	
Recall Mode	None	None		C-Max	None	C-Max
Act Effect Green (s)	47.2	47.2	120.0	27.4	28.5	61.8
Actuated g/C Ratio	0.39	0.39	1.00	0.23	0.24	0.52
v/c Ratio	0.88	0.89	0.25	1.16	0.94	0.75
Control Delay	49.8	50.6	0.4	123.0	65.6	18.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.8
Total Delay	49.8	50.6	0.4	123.0	65.6	19.0
LOS	D	D	A	F	E	B
Approach Delay		37.5		123.0		35.7
Approach LOS		D		F		D

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 99 (83%), Referenced to phase 2:NBT and 6:SBT, Start of Yellow

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.16

Intersection Signal Delay: 59.4

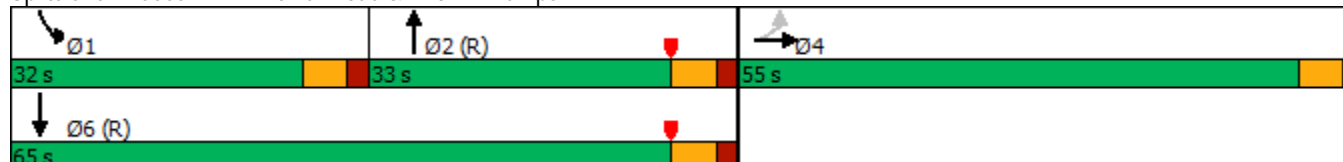
Intersection LOS: E

Intersection Capacity Utilization 104.7%

ICU Level of Service G

Analysis Period (min) 15

Splits and Phases: 11: Tower Road & I-70 EB Ramps

























HCM 6th Signalized Intersection Summary

2040 Total PM Scenario 1.syn

11: Tower Road & I-70 EB Ramps

















06/08/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations								  		 		
Traffic Volume (veh/h)	1085	5	370	0	0	0	0	1125	105	715	1305	0
Future Volume (veh/h)	1085	5	370	0	0	0	0	1125	105	715	1305	0
Initial Q (Qb), veh	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
Parking Bus, Adj	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	
Adj Sat Flow, veh/h/ln	1870	1870	1870				0	1870	1870	1870	1870	0
Adj Flow Rate, veh/h	1171	0	0				0	1223	0	769	1374	0
Peak Hour Factor	0.93	0.92	0.92				0.92	0.92	0.92	0.93	0.95	0.92
Percent Heavy Veh, %	2	2	2				0	2	2	2	2	0
Cap, veh/h	1287	0					0	1432		749	1945	0
Arrive On Green	0.36	0.00	0.00				0.00	0.28	0.00	0.43	1.00	0.00
Sat Flow, veh/h	3563	0	1585				0	5443	0	3456	3647	0
Grp Volume(v), veh/h	1171	0	0				0	1223	0	769	1374	0
Grp Sat Flow(s),veh/h/ln	1781	0	1585				0	1702	0	1728	1777	0
Q Serve(g_s), s	37.5	0.0	0.0				0.0	27.2	0.0	26.0	0.0	0.0
Cycle Q Clear(g_c), s	37.5	0.0	0.0				0.0	27.2	0.0	26.0	0.0	0.0
Prop In Lane	1.00		1.00				0.00		0.00	1.00		0.00
Lane Grp Cap(c), veh/h	1287	0					0	1432		749	1945	0
V/C Ratio(X)	0.91	0.00					0.00	0.85		1.03	0.71	0.00
Avail Cap(c_a), veh/h	1484	0					0	1432		749	1945	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	2.00	2.00	1.00
Upstream Filter(I)	1.00	0.00	0.00				0.00	1.00	0.00	0.09	0.09	0.00
Uniform Delay (d), s/veh	36.5	0.0	0.0				0.0	40.8	0.0	34.0	0.0	0.0
Incr Delay (d2), s/veh	7.9	0.0	0.0				0.0	6.7	0.0	17.8	0.2	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
%ile BackOfQ(50%),veh/ln	17.5	0.0	0.0				0.0	12.2	0.0	10.5	0.1	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	44.4	0.0	0.0				0.0	47.5	0.0	51.8	0.2	0.0
LnGrp LOS	D	A					A	D		F	A	A
Approach Vol, veh/h		1171	A					1223	A		2143	
Approach Delay, s/veh		44.4						47.5			18.7	
Approach LOS		D						D			B	
Timer - Assigned Phs	1	2		4		6						
Phs Duration (G+Y+Rc), s	32.0	39.7		48.3		71.7						
Change Period (Y+Rc), s	6.0	6.0		5.0		6.0						
Max Green Setting (Gmax), s	26.0	27.0		50.0		59.0						
Max Q Clear Time (g_c+l1), s	28.0	29.2		39.5		2.0						
Green Ext Time (p_c), s	0.0	0.0		3.8		16.0						
Intersection Summary												
HCM 6th Ctrl Delay			33.1									
HCM 6th LOS			C									
Notes												
User approved volume balancing among the lanes for turning movement.												
Unsignalized Delay for [NBR, EBR] is excluded from calculations of the approach delay and intersection delay.												

Timings 11: Tower Road & I-70 EB Ramps

2040 Total AM Scenario 2.syn

06/08/2020

						
Lane Group	EBL	EBT	EBR	NBT	SBL	SBT
Lane Configurations				  	 	 
Traffic Volume (vph)	760	5	350	1255	355	1060
Future Volume (vph)	760	5	350	1255	355	1060
Turn Type	Perm	NA	Free	NA	Prot	NA
Protected Phases		4		2	1	6
Permitted Phases	4		Free			
Detector Phase	4	4		2	1	6
Switch Phase						
Minimum Initial (s)	5.0	5.0		5.0	5.0	5.0
Minimum Split (s)	23.0	23.0		24.0	11.0	24.0
Total Split (s)	49.0	49.0		39.0	32.0	71.0
Total Split (%)	40.8%	40.8%		32.5%	26.7%	59.2%
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	1.0	1.0		2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0		6.0	6.0	6.0
Lead/Lag				Lag	Lead	
Lead-Lag Optimize?				Yes	Yes	
Recall Mode	None	None		C-Max	None	C-Max
Act Effect Green (s)	36.0	36.0	120.0	48.3	18.7	73.0
Actuated g/C Ratio	0.30	0.30	1.00	0.40	0.16	0.61
v/c Ratio	0.80	0.81	0.24	0.69	0.72	0.54
Control Delay	50.5	51.3	0.4	33.6	54.6	23.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.3
Total Delay	50.5	51.3	0.4	33.6	54.6	24.0
LOS	D	D	A	C	D	C
Approach Delay		34.8		33.6		31.7
Approach LOS		C		C		C

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 27.5 (23%), Referenced to phase 2:NBT and 6:SBT, Start of Yellow

Natural Cycle: 65

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.81

Intersection Signal Delay: 33.3

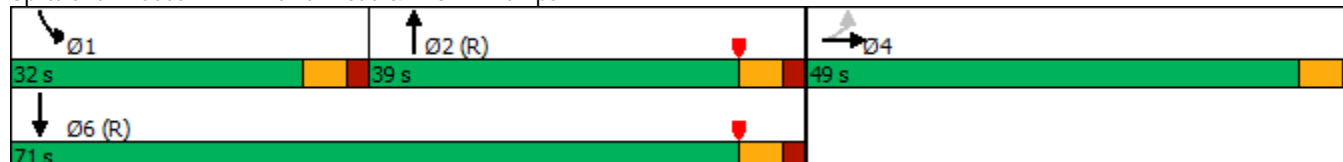
Intersection LOS: C

Intersection Capacity Utilization 97.8%

ICU Level of Service F

Analysis Period (min) 15

Splits and Phases: 11: Tower Road & I-70 EB Ramps

























HCM 6th Signalized Intersection Summary

2040 Total AM Scenario 2.syn

11: Tower Road & I-70 EB Ramps

06/08/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations								  		 		
Traffic Volume (veh/h)	760	5	350	0	0	0	0	1255	40	355	1060	0
Future Volume (veh/h)	760	5	350	0	0	0	0	1255	40	355	1060	0
Initial Q (Qb), veh	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
Parking Bus, Adj	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		
Adj Sat Flow, veh/h/ln	1870	1870	1870				0	1870	1870	1870	1870	0
Adj Flow Rate, veh/h	813	0	0				0	1364	0	386	1152	0
Peak Hour Factor	0.94	0.92	0.92				0.92	0.92	0.96	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2				0	2	2	2	2	0
Cap, veh/h	926	0					0	2383		455	2304	0
Arrive On Green	0.26	0.00	0.00				0.00	0.47	0.00	0.26	1.00	0.00
Sat Flow, veh/h	3563	0	1585				0	5443	0	3456	3647	0
Grp Volume(v), veh/h	813	0	0				0	1364	0	386	1152	0
Grp Sat Flow(s),veh/h/ln	1781	0	1585				0	1702	0	1728	1777	0
Q Serve(g_s), s	26.3	0.0	0.0				0.0	23.3	0.0	12.7	0.0	0.0
Cycle Q Clear(g_c), s	26.3	0.0	0.0				0.0	23.3	0.0	12.7	0.0	0.0
Prop In Lane	1.00		1.00				0.00		0.00	1.00		0.00
Lane Grp Cap(c), veh/h	926	0					0	2383		455	2304	0
V/C Ratio(X)	0.88	0.00					0.00	0.57		0.85	0.50	0.00
Avail Cap(c_a), veh/h	1306	0					0	2383		749	2304	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	2.00	2.00	1.00
Upstream Filter(I)	1.00	0.00	0.00				0.00	1.00	0.00	0.09	0.09	0.00
Uniform Delay (d), s/veh	42.6	0.0	0.0				0.0	23.3	0.0	43.1	0.0	0.0
Incr Delay (d2), s/veh	5.2	0.0	0.0				0.0	1.0	0.0	0.5	0.1	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
%ile BackOfQ(50%),veh/ln	12.1	0.0	0.0				0.0	9.5	0.0	4.7	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	47.8	0.0	0.0				0.0	24.3	0.0	43.5	0.1	0.0
LnGrp LOS	D	A					A	C		D	A	A
Approach Vol, veh/h	813			A			1364			A		
Approach Delay, s/veh	47.8						24.3			11.0		
Approach LOS	D						C			B		
Timer - Assigned Phs	1	2		4			6					
Phs Duration (G+Y+Rc), s	21.8	62.0		36.2			83.8					
Change Period (Y+Rc), s	6.0	6.0		5.0			6.0					
Max Green Setting (Gmax), s	26.0	33.0		44.0			65.0					
Max Q Clear Time (g_c+l1), s	14.7	25.3		28.3			2.0					
Green Ext Time (p_c), s	1.1	5.2		2.9			12.0					

Intersection Summary

HCM 6th Ctrl Delay 23.9

HCM 6th LOS C

Notes

















User approved volume balancing among the lanes for turning movement.

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

Timings 11: Tower Road & I-70 EB Ramps

2040 Total PM Scenario 2.syn

06/08/2020

						
Lane Group	EBL	EBT	EBR	NBT	SBL	SBT
Lane Configurations				  	 	 
Traffic Volume (vph)	940	5	370	1130	705	1315
Future Volume (vph)	940	5	370	1130	705	1315
Turn Type	Perm	NA	Free	NA	Prot	NA
Protected Phases		4		2	1	6
Permitted Phases	4		Free			
Detector Phase	4	4		2	1	6
Switch Phase						
Minimum Initial (s)	5.0	5.0		5.0	5.0	5.0
Minimum Split (s)	23.0	23.0		24.0	11.0	24.0
Total Split (s)	51.0	51.0		38.0	31.0	69.0
Total Split (%)	42.5%	42.5%		31.7%	25.8%	57.5%
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	1.0	1.0		2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0		6.0	6.0	6.0
Lead/Lag				Lag	Lead	
Lead-Lag Optimize?				Yes	Yes	
Recall Mode	None	None		C-Max	None	C-Max
Act Effect Green (s)	42.0	42.0	120.0	32.2	28.8	67.0
Actuated g/C Ratio	0.35	0.35	1.00	0.27	0.24	0.56
v/c Ratio	0.86	0.87	0.25	0.99	0.92	0.70
Control Delay	51.2	51.9	0.4	65.6	70.7	19.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.5
Total Delay	51.2	51.9	0.4	65.6	70.7	19.8
LOS	D	D	A	E	E	B
Approach Delay		37.1		65.6		37.8
Approach LOS		D		E		D

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 27.5 (23%), Referenced to phase 2:NBT and 6:SBT, Start of Yellow

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.99

Intersection Signal Delay: 45.2

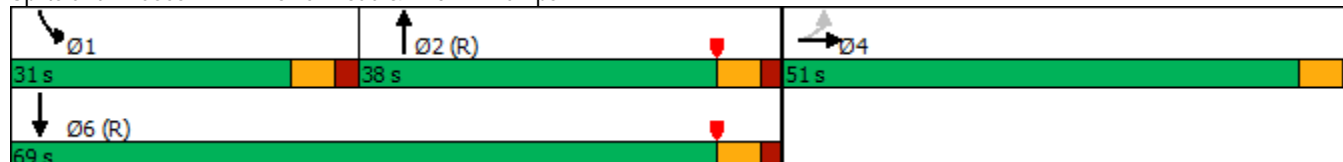
Intersection LOS: D

Intersection Capacity Utilization 102.5%

ICU Level of Service G

Analysis Period (min) 15

Splits and Phases: 11: Tower Road & I-70 EB Ramps






















HCM 6th Signalized Intersection Summary

2040 Total PM Scenario 2.syn






11: Tower Road & I-70 EB Ramps

06/08/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	940	5	370	0	0	0	0	1130	105	705	1315	0
Future Volume (veh/h)	940	5	370	0	0	0	0	1130	105	705	1315	0
Initial Q (Qb), veh	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
Parking Bus, Adj	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		
Adj Sat Flow, veh/h/ln	1870	1870	1870				0	1870	1870	1870	1870	0
Adj Flow Rate, veh/h	1015	0	0				0	1228	0	758	1384	0
Peak Hour Factor	0.93	0.92	0.92				0.92	0.92	0.92	0.93	0.95	0.92
Percent Heavy Veh, %	2	2	2				0	2	2	2	2	0
Cap, veh/h	1129	0					0	1701		720	2102	0
Arrive On Green	0.32	0.00	0.00				0.00	0.33	0.00	0.42	1.00	0.00
Sat Flow, veh/h	3563	0	1585				0	5443	0	3456	3647	0
Grp Volume(v), veh/h	1015	0	0				0	1228	0	758	1384	0
Grp Sat Flow(s),veh/h/ln	1781	0	1585				0	1702	0	1728	1777	0
Q Serve(g_s), s	32.7	0.0	0.0				0.0	25.3	0.0	25.0	0.0	0.0
Cycle Q Clear(g_c), s	32.7	0.0	0.0				0.0	25.3	0.0	25.0	0.0	0.0
Prop In Lane	1.00		1.00				0.00		0.00	1.00		0.00
Lane Grp Cap(c), veh/h	1129	0					0	1701		720	2102	0
V/C Ratio(X)	0.90	0.00					0.00	0.72		1.05	0.66	0.00
Avail Cap(c_a), veh/h	1366	0					0	1701		720	2102	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	2.00	2.00	1.00
Upstream Filter(I)	1.00	0.00	0.00				0.00	1.00	0.00	0.09	0.09	0.00
Uniform Delay (d), s/veh	39.2	0.0	0.0				0.0	35.1	0.0	35.0	0.0	0.0
Incr Delay (d2), s/veh	7.3	0.0	0.0				0.0	2.7	0.0	27.6	0.1	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
%ile BackOfQ(50%),veh/ln	15.3	0.0	0.0				0.0	10.9	0.0	11.2	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	46.5	0.0	0.0				0.0	37.8	0.0	62.6	0.1	0.0
LnGrp LOS	D	A					A	D		F	A	A
Approach Vol, veh/h	1015		A				1228		A	2142		
Approach Delay, s/veh	46.5						37.8			22.3		
Approach LOS	D						D			C		
Timer - Assigned Phs	1	2		4		6						
Phs Duration (G+Y+Rc), s	31.0	46.0		43.0		77.0						
Change Period (Y+Rc), s	6.0	6.0		5.0		6.0						
Max Green Setting (Gmax), s	25.0	32.0		46.0		63.0						
Max Q Clear Time (g_c+l1), s	27.0	27.3		34.7		2.0						
Green Ext Time (p_c), s	0.0	3.1		3.4		16.4						
Intersection Summary												
HCM 6th Ctrl Delay			32.2									
HCM 6th LOS			C									
Notes												
User approved volume balancing among the lanes for turning movement.												
Unsignalized Delay for [NBR, EBR] is excluded from calculations of the approach delay and intersection delay.												

Intersection

Int Delay, s/veh 0.6

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	5	5	130	5	10	145
Future Vol, veh/h	5	5	130	5	10	145
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	50	0	-	-	175	-
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	5	5	141	5	11	158






Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	245	73	0
Stage 1	144	-	-
Stage 2	101	-	-
Critical Hdwy	6.84	6.94	-
Critical Hdwy Stg 1	5.84	-	-
Critical Hdwy Stg 2	5.84	-	-
Follow-up Hdwy	3.52	3.32	-
Pot Cap-1 Maneuver	722	974	-
Stage 1	868	-	-
Stage 2	912	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	716	974	-
Mov Cap-2 Maneuver	716	-	-
Stage 1	868	-	-
Stage 2	905	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.4	0	0.5
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBRWBLn1WBLn2	SBL	SBT
Capacity (veh/h)	-	-	716	974
HCM Lane V/C Ratio	-	-	0.008	0.006
HCM Control Delay (s)	-	-	10.1	8.7
HCM Lane LOS	-	-	B	A
HCM 95th %tile Q(veh)	-	-	0	0

Intersection









Int Delay, s/veh 0.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	5	10	310	5	5	360
Future Vol, veh/h	5	10	310	5	5	360
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	50	0	-	-	175	-
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	5	11	337	5	5	391

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	546	171	0
Stage 1	340	-	-
Stage 2	206	-	-
Critical Hdwy	6.84	6.94	-
Critical Hdwy Stg 1	5.84	-	-
Critical Hdwy Stg 2	5.84	-	-
Follow-up Hdwy	3.52	3.32	-
Pot Cap-1 Maneuver	468	843	-
Stage 1	692	-	-
Stage 2	808	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	466	843	-
Mov Cap-2 Maneuver	466	-	-
Stage 1	692	-	-
Stage 2	805	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10.5	0	0.1
HCM LOS	B		









Minor Lane/Major Mvmt	NBT	NBRWBLn1WBLn2	SBL	SBT
Capacity (veh/h)	-	-	466	843
HCM Lane V/C Ratio	-	-	0.012	0.013
HCM Control Delay (s)	-	-	12.8	9.3
HCM Lane LOS	-	-	B	A
HCM 95th %tile Q(veh)	-	-	0	0

Intersection												
Int Delay, s/veh	3.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	85	0	55	5	0	5	50	145	5	10	200	215
Future Vol, veh/h	85	0	55	5	0	5	50	145	5	10	200	215
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	0	-	-	50	-	-	150	-	-	175	-	-
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	92	0	60	5	0	5	54	158	5	11	217	234

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	543	627	226	400	742	82	451	0	0	163	0	0
Stage 1	356	356	-	269	269	-	-	-	-	-	-	-
Stage 2	187	271	-	131	473	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	423	399	777	535	342	961	1106	-	-	1413	-	-
Stage 1	634	628	-	713	685	-	-	-	-	-	-	-
Stage 2	797	684	-	859	557	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	403	376	777	472	323	961	1106	-	-	1413	-	-
Mov Cap-2 Maneuver	403	376	-	472	323	-	-	-	-	-	-	-
Stage 1	603	623	-	678	651	-	-	-	-	-	-	-
Stage 2	754	650	-	787	553	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	14		10.8		2.1		0.2	
HCM LOS	B		B					









Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1106	-	-	403	777	472	961	1413	-	-
HCM Lane V/C Ratio	0.049	-	-	0.229	0.077	0.012	0.006	0.008	-	-
HCM Control Delay (s)	8.4	-	-	16.6	10	12.7	8.8	7.6	-	-
HCM Lane LOS	A	-	-	C	B	B	A	A	-	-
HCM 95th %tile Q(veh)	0.2	-	-	0.9	0.2	0	0	0	-	-

Intersection												
Int Delay, s/veh	3.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	130	0	60	5	0	10	30	370	5	5	375	100
Future Vol, veh/h	130	0	60	5	0	10	30	370	5	5	375	100
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	0	-	-	50	-	-	150	-	-	175	-	-
Veh in Median Storage, #	-	1	-	-	1	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	141	0	65	5	0	11	33	402	5	5	408	109

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	740	946	259	685	998	204	517	0	0	407	0	0
Stage 1	473	473	-	471	471	-	-	-	-	-	-	-
Stage 2	267	473	-	214	527	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	305	260	740	334	242	803	1045	-	-	1148	-	-
Stage 1	541	557	-	542	558	-	-	-	-	-	-	-
Stage 2	715	557	-	768	527	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	293	251	740	296	233	803	1045	-	-	1148	-	-
Mov Cap-2 Maneuver	399	363	-	399	341	-	-	-	-	-	-	-
Stage 1	524	555	-	525	540	-	-	-	-	-	-	-
Stage 2	683	539	-	697	525	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	16.2		11		0.6		0.1	
HCM LOS	C		B					









Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1045	-	-	399	740	399	803	1148	-	-
HCM Lane V/C Ratio	0.031	-	-	0.354	0.088	0.014	0.014	0.005	-	-
HCM Control Delay (s)	8.6	-	-	18.9	10.3	14.1	9.5	8.2	-	-
HCM Lane LOS	A	-	-	C	B	B	A	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	1.6	0.3	0	0	0	-	-









Intersection												
Int Delay, s/veh	0.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	5	0	5	0	210	5	10	230	0
Future Vol, veh/h	0	0	0	5	0	5	0	210	5	10	230	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	0	-	-	50	-	-	150	-	-	175	-	-
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	0	5	0	5	0	228	5	11	250	0

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	386	505	125	378	503	117	250	0	0	233	0	0
Stage 1	272	272	-	231	231	-	-	-	-	-	-	-
Stage 2	114	233	-	147	272	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	547	468	902	554	469	913	1313	-	-	1332	-	-
Stage 1	711	683	-	751	712	-	-	-	-	-	-	-
Stage 2	879	711	-	841	683	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	540	464	902	551	465	913	1313	-	-	1332	-	-
Mov Cap-2 Maneuver	540	464	-	551	465	-	-	-	-	-	-	-
Stage 1	711	678	-	751	712	-	-	-	-	-	-	-
Stage 2	874	711	-	834	678	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	10.3	0	0.3
HCM LOS	A	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1313	-	-	-	-	551	913	1332	-	-
HCM Lane V/C Ratio	-	-	-	-	-	0.01	0.006	0.008	-	-
HCM Control Delay (s)	0	-	-	0	0	11.6	9	7.7	-	-
HCM Lane LOS	A	-	-	A	A	B	A	A	-	-
HCM 95th %tile Q(veh)	0	-	-	-	-	0	0	0	-	-









Intersection												
Int Delay, s/veh	0.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	5	0	10	0	480	5	5	555	0
Future Vol, veh/h	0	0	0	5	0	10	0	480	5	5	555	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	0	-	-	50	-	-	150	-	-	175	-	-
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	0	5	0	11	0	522	5	5	603	0
Major/Minor	Minor2		Minor1		Major1		Major2		Major2		Major2	
Conflicting Flow All	874	1140	302	837	1138	264	603	0	0	527	0	0
Stage 1	613	613	-	525	525	-	-	-	-	-	-	-
Stage 2	261	527	-	312	613	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	244	200	694	259	200	734	971	-	-	1036	-	-
Stage 1	446	481	-	504	528	-	-	-	-	-	-	-
Stage 2	721	527	-	673	481	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	240	199	694	258	199	734	971	-	-	1036	-	-
Mov Cap-2 Maneuver	240	199	-	258	199	-	-	-	-	-	-	-
Stage 1	446	479	-	504	528	-	-	-	-	-	-	-
Stage 2	710	527	-	670	479	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB		SB		SB	
HCM Control Delay, s	0		13.1		0		0.1		0.1		0.1	
HCM LOS	A		B									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR		
Capacity (veh/h)	971	-	-	-	-	258	734	1036	-	-		
HCM Lane V/C Ratio	-	-	-	-	-	0.021	0.015	0.005	-	-		
HCM Control Delay (s)	0	-	-	0	0	19.3	10	8.5	-	-		
HCM Lane LOS	A	-	-	A	A	C	B	A	-	-		
HCM 95th %tile Q(veh)	0	-	-	-	-	0.1	0	0	-	-		









Intersection												
Int Delay, s/veh	2.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	85	0	55	5	0	5	50	225	5	10	285	215
Future Vol, veh/h	85	0	55	5	0	5	50	225	5	10	285	215
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	0	-	-	50	-	-	150	-	-	175	-	-
Veh in Median Storage, #	-	1	-	-	1	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	92	0	60	5	0	5	54	245	5	11	310	234

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	680	807	272	533	922	125	544	0	0	250	0	0
Stage 1	449	449	-	356	356	-	-	-	-	-	-	-
Stage 2	231	358	-	177	566	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	337	314	726	430	269	902	1021	-	-	1313	-	-
Stage 1	559	571	-	634	628	-	-	-	-	-	-	-
Stage 2	751	626	-	808	506	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	319	295	726	376	253	902	1021	-	-	1313	-	-
Mov Cap-2 Maneuver	414	397	-	461	344	-	-	-	-	-	-	-
Stage 1	529	566	-	600	595	-	-	-	-	-	-	-
Stage 2	707	593	-	735	502	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	13.9		11		1.6		0.2	
HCM LOS	B		B					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1021	-	-	414	726	461	902	1313	-	-
HCM Lane V/C Ratio	0.053	-	-	0.223	0.082	0.012	0.006	0.008	-	-
HCM Control Delay (s)	8.7	-	-	16.2	10.4	12.9	9	7.8	-	-
HCM Lane LOS	A	-	-	C	B	B	A	A	-	-
HCM 95th %tile Q(veh)	0.2	-	-	0.8	0.3	0	0	0	-	-









Intersection												
Int Delay, s/veh	3.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	130	0	60	5	0	10	30	540	5	5	570	100
Future Vol, veh/h	130	0	60	5	0	10	30	540	5	5	570	100
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	0	-	-	50	-	-	150	-	-	175	-	-
Veh in Median Storage, #	-	1	-	-	1	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	141	0	65	5	0	11	33	587	5	5	620	109
Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1045	1343	365	976	1395	296	729	0	0	592	0	0
Stage 1	685	685	-	656	656	-	-	-	-	-	-	-
Stage 2	360	658	-	320	739	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	183	151	632	206	140	700	871	-	-	980	-	-
Stage 1	404	447	-	421	460	-	-	-	-	-	-	-
Stage 2	631	459	-	666	422	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	174	145	632	179	134	700	871	-	-	980	-	-
Mov Cap-2 Maneuver	289	267	-	293	249	-	-	-	-	-	-	-
Stage 1	389	445	-	405	443	-	-	-	-	-	-	-
Stage 2	598	442	-	594	420	-	-	-	-	-	-	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	23.3			12.6			0.5			0.1		
HCM LOS	C			B								
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR		
Capacity (veh/h)	871	-	-	289	632	293	700	980	-	-		
HCM Lane V/C Ratio	0.037	-	-	0.489	0.103	0.019	0.016	0.006	-	-		
HCM Control Delay (s)	9.3	-	-	28.8	11.4	17.5	10.2	8.7	-	-		
HCM Lane LOS	A	-	-	D	B	C	B	A	-	-		
HCM 95th %tile Q(veh)	0.1	-	-	2.5	0.3	0.1	0	0	-	-		

Intersection												
Int Delay, s/veh	6.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	90	5	185	5	5	5	235	220	5	10	255	115
Future Vol, veh/h	90	5	185	5	5	5	235	220	5	10	255	115
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	0	-	-	50	-	-	150	-	-	175	-	-
Veh in Median Storage, #	-	1	-	-	1	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	98	5	201	5	5	5	255	239	5	11	277	125

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	994	1116	201	915	1176	122	402	0	0	244	0	0
Stage 1	362	362	-	752	752	-	-	-	-	-	-	-
Stage 2	632	754	-	163	424	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	199	206	806	228	190	906	1153	-	-	1319	-	-
Stage 1	629	624	-	368	416	-	-	-	-	-	-	-
Stage 2	435	415	-	823	585	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	160	159	806	139	147	906	1153	-	-	1319	-	-
Mov Cap-2 Maneuver	244	250	-	207	215	-	-	-	-	-	-	-
Stage 1	490	619	-	287	324	-	-	-	-	-	-	-
Stage 2	331	323	-	607	580	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	17.2		18.1		4.6		0.2	
HCM LOS	C		C					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1153	-	-	244	761	207	348	1319	-	-
HCM Lane V/C Ratio	0.222	-	-	0.401	0.271	0.026	0.031	0.008	-	-
HCM Control Delay (s)	9	-	-	29.3	11.5	22.9	15.7	7.8	-	-
HCM Lane LOS	A	-	-	D	B	C	C	A	-	-
HCM 95th %tile Q(veh)	0.8	-	-	1.8	1.1	0.1	0.1	0	-	-

Intersection												
Int Delay, s/veh	25.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	165	5	335	5	5	10	250	510	5	5	565	105
Future Vol, veh/h	165	5	335	5	5	10	250	510	5	5	565	105
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	0	-	-	50	-	-	150	-	-	175	-	-
Veh in Median Storage, #	-	1	-	-	1	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	179	5	364	5	5	11	272	554	5	5	614	114

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1505	1784	364	1421	1839	280	728	0	0	559	0	0
Stage 1	681	681	-	1101	1101	-	-	-	-	-	-	-
Stage 2	824	1103	-	320	738	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	~ 84	81	633	97	75	717	871	-	-	1008	-	-
Stage 1	407	448	-	226	286	-	-	-	-	-	-	-
Stage 2	333	285	-	666	422	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	~ 60	55	633	30	51	717	871	-	-	1008	-	-
Mov Cap-2 Maneuver	~ 137	142	-	0	100	-	-	-	-	-	-	-
Stage 1	280	446	-	155	197	-	-	-	-	-	-	-
Stage 2	219	196	-	278	420	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	93		3.6	0.1
HCM LOS	F	-		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	871	-	-	137	602	-	235	1008	-	-
HCM Lane V/C Ratio	0.312	-	-	1.309	0.614	-	0.069	0.005	-	-
HCM Control Delay (s)	11	-	-	243.4	20	-	21.5	8.6	-	-
HCM Lane LOS	B	-	-	F	C	-	C	A	-	-
HCM 95th %tile Q(veh)	1.3	-	-	11.3	4.2	-	0.2	0	-	-

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

Intersection

Int Delay, s/veh 0.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗		↑↑	↑↑	
Traffic Vol, veh/h	0	15	0	190	215	35
Future Vol, veh/h	0	15	0	190	215	35
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	-	-	-	-
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	16	0	207	234	38

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	- 136	- 0	- 0
Stage 1	- -	- -	- -
Stage 2	- -	- -	- -
Critical Hdwy	- 6.94	- -	- -
Critical Hdwy Stg 1	- -	- -	- -
Critical Hdwy Stg 2	- -	- -	- -
Follow-up Hdwy	- 3.32	- -	- -
Pot Cap-1 Maneuver	0 888	0 -	- -
Stage 1	0 -	0 -	- -
Stage 2	0 -	0 -	- -
Platoon blocked, %		- -	- -
Mov Cap-1 Maneuver	- 888	- -	- -
Mov Cap-2 Maneuver	- -	- -	- -
Stage 1	- -	- -	- -
Stage 2	- -	- -	- -

Approach	EB	NB	SB
HCM Control Delay, s	9.1	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT EBLn1	SBT	SBR
Capacity (veh/h)	- 888	- -	- -
HCM Lane V/C Ratio	- 0.018	- -	- -
HCM Control Delay (s)	- 9.1	- -	- -
HCM Lane LOS	- A	- -	- -
HCM 95th %tile Q(veh)	- 0.1	- -	- -

Intersection						
Int Delay, s/veh	0.6					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗		↑↑	↑↑	
Traffic Vol, veh/h	0	55	0	395	420	10
Future Vol, veh/h	0	55	0	395	420	10
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	-	-	-	-
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	60	0	429	457	11
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	-	234	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.94	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.32	-	-	-	-
Pot Cap-1 Maneuver	0	768	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	768	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	10.1	0		0		
HCM LOS	B					
Minor Lane/Major Mvmt	NBT EBLn1		SBT	SBR		
Capacity (veh/h)	- 768		-	-		
HCM Lane V/C Ratio	- 0.078		-	-		
HCM Control Delay (s)	- 10.1		-	-		
HCM Lane LOS	- B		-	-		
HCM 95th %tile Q(veh)	- 0.3		-	-		

Intersection						
Int Delay, s/veh	0.2					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗		↑↑	↑↑	
Traffic Vol, veh/h	0	15	0	280	300	35
Future Vol, veh/h	0	15	0	280	300	35
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	-	-	-	-
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	16	0	304	326	38
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	-	182	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.94	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.32	-	-	-	-
Pot Cap-1 Maneuver	0	829	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	829	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	9.4	0		0		
HCM LOS	A					
Minor Lane/Major Mvmt	NBT EBLn1		SBT	SBR		
Capacity (veh/h)	- 829		-	-		
HCM Lane V/C Ratio	- 0.02		-	-		
HCM Control Delay (s)	- 9.4		-	-		
HCM Lane LOS	- A		-	-		
HCM 95th %tile Q(veh)	- 0.1		-	-		

Intersection						
Int Delay, s/veh	0.5					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗		↑↑	↑↑	
Traffic Vol, veh/h	0	55	0	575	620	10
Future Vol, veh/h	0	55	0	575	620	10
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	-	-	-	-
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	60	0	625	674	11
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	-	343	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.94	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.32	-	-	-	-
Pot Cap-1 Maneuver	0	653	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	653	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	11.1	0		0		
HCM LOS	B					
Minor Lane/Major Mvmt	NBT EBLn1		SBT	SBR		
Capacity (veh/h)	- 653		-	-		
HCM Lane V/C Ratio	- 0.092		-	-		
HCM Control Delay (s)	- 11.1		-	-		
HCM Lane LOS	- B		-	-		
HCM 95th %tile Q(veh)	- 0.3		-	-		

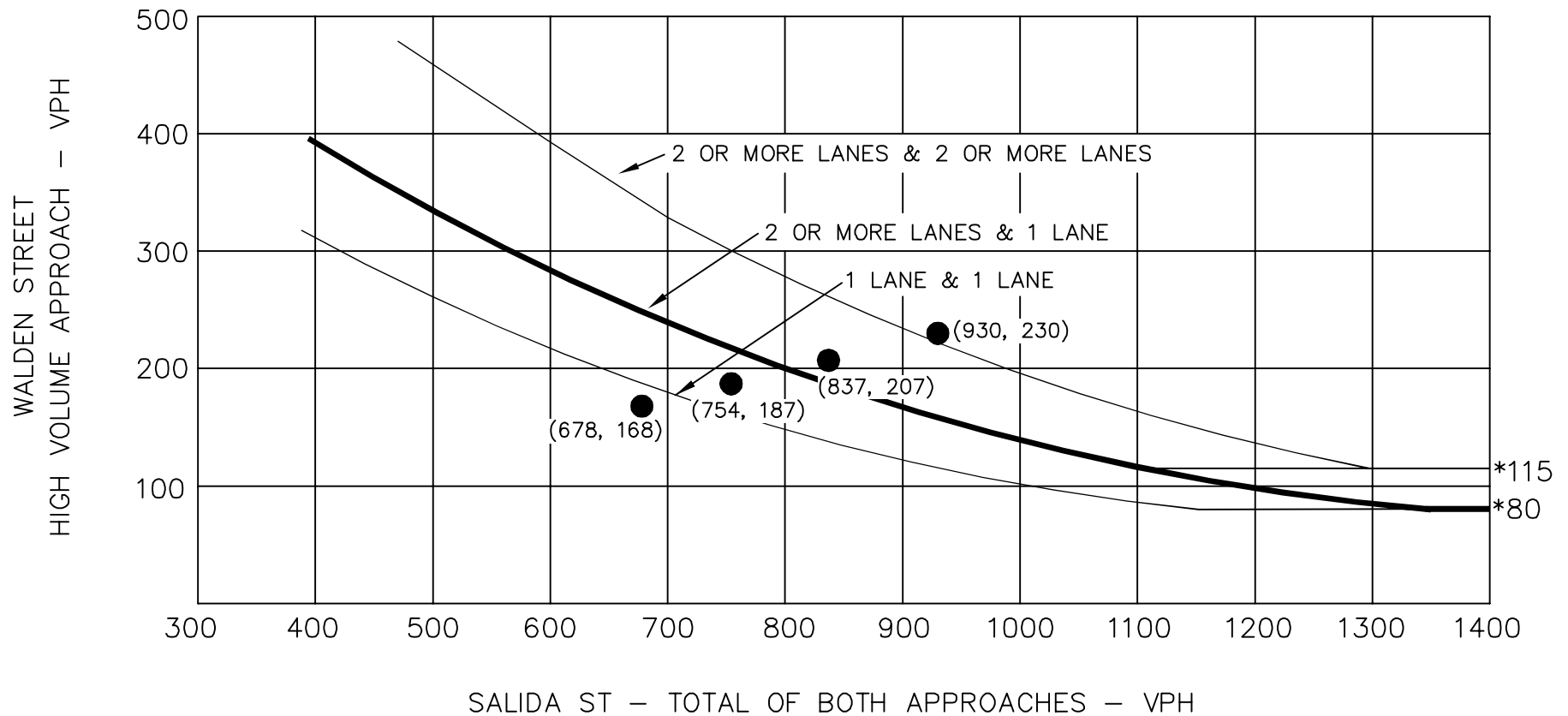
Intersection						
Int Delay, s/veh	0.1					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗		↗↗	↗↗	
Traffic Vol, veh/h	0	10	0	345	285	20
Future Vol, veh/h	0	10	0	345	285	20
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
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	11	0	375	310	22
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	-	166	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.94	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.32	-	-	-	-
Pot Cap-1 Maneuver	0	849	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	849	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	9.3	0		0		
HCM LOS	A					
Minor Lane/Major Mvmt	NBT EBLn1		SBT	SBR		
Capacity (veh/h)	- 849		-	-		
HCM Lane V/C Ratio	- 0.013		-	-		
HCM Control Delay (s)	- 9.3		-	-		
HCM Lane LOS	- A		-	-		
HCM 95th %tile Q(veh)	- 0		-	-		

Intersection						
Int Delay, s/veh	0.3					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗		↑↑	↑↑	
Traffic Vol, veh/h	0	30	0	555	655	5
Future Vol, veh/h	0	30	0	555	655	5
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	-	-	-	-
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	33	0	603	712	5
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	-	359	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.94	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.32	-	-	-	-
Pot Cap-1 Maneuver	0	638	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	638	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	10.9	0		0		
HCM LOS	B					
Minor Lane/Major Mvmt	NBT EBLn1		SBT	SBR		
Capacity (veh/h)	- 638		-	-		
HCM Lane V/C Ratio	- 0.051		-	-		
HCM Control Delay (s)	- 10.9		-	-		
HCM Lane LOS	- B		-	-		
HCM 95th %tile Q(veh)	- 0.2		-	-		

APPENDIX E

Signal Warrant Analysis Figure

WARRANT 2 - FOUR HOUR VEHICULAR VOLUME



GATEWAY PARK – PARCEL TIC 2
SALIDA ST AT WALDEN ST
FOUR HOUR VOLUME WARRANT

* NOTE: 115 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET
APPROACH WITH TWO OR MORE LANES AND 80 VPH APPLIES AS THE LOWER
THRESHOLD VOLUME FOR A MINOR STREET APPROACHING WITH ONE LANE.

● 2022 Traffic Volume Projections
Source: Manual of Uniform Traffic Control Devices 2009

APPENDIX FIGURE E1

APPENDIX F

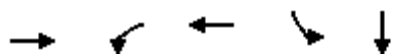
Queuing Analysis Worksheets

Queues

2022 Total AM Improved.syn

1: Pena Blvd SB Ramp & 40th Ave

06/08/2020



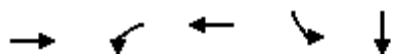
Lane Group	EBT	WBL	WBT	SBL	SBT
Lane Group Flow (vph)	780	640	1140	189	907
v/c Ratio	0.80	0.91	0.60	0.31	0.73
Control Delay	45.6	72.1	21.2	28.4	34.0
Queue Delay	0.0	0.0	0.2	0.0	0.0
Total Delay	45.6	72.1	21.4	28.4	34.0
Queue Length 50th (ft)	284	260	268	113	308
Queue Length 95th (ft)	317	265	267	174	376
Internal Link Dist (ft)	1199		576		344
Turn Bay Length (ft)		250		200	
Base Capacity (vph)	973	715	1887	603	1249
Starvation Cap Reductn	0	0	185	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.80	0.90	0.67	0.31	0.73
Intersection Summary					

Queues

2022 Total PM Improved.syn

1: Pena Blvd SB Ramp & 40th Ave

06/08/2020



Lane Group	EBT	WBL	WBT	SBL	SBT
Lane Group Flow (vph)	1000	402	660	130	827
v/c Ratio	0.80	0.89	0.34	0.22	0.68
Control Delay	38.7	52.5	21.9	27.5	33.9
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	38.7	52.5	21.9	27.5	33.9
Queue Length 50th (ft)	348	132	147	75	281
Queue Length 95th (ft)	434	m125	m136	129	357
Internal Link Dist (ft)	1199		576		344
Turn Bay Length (ft)		250		200	
Base Capacity (vph)	1243	457	1916	590	1220
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.80	0.88	0.34	0.22	0.68

Intersection Summary

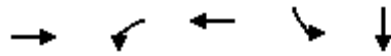
m Volume for 95th percentile queue is metered by upstream signal.

Queues

2040 Total AM Scenario 1.syn

1: Pena Blvd SB Ramp & 40th Ave

06/08/2020



Lane Group	EBT	WBL	WBT	SBL	SBT
Lane Group Flow (vph)	1000	745	1337	269	1236
v/c Ratio	1.03	0.85	0.65	0.51	1.14
Control Delay	79.5	60.3	20.4	37.1	111.1
Queue Delay	0.7	0.0	0.4	0.0	0.0
Total Delay	80.3	60.3	20.9	37.1	111.1
Queue Length 50th (ft)	~442	298	314	184	~601
Queue Length 95th (ft)	#604	m326	m355	280	#747
Internal Link Dist (ft)	1199		576		344
Turn Bay Length (ft)		250		200	
Base Capacity (vph)	967	972	2064	523	1083
Starvation Cap Reductn	0	0	292	0	0
Spillback Cap Reductn	2	0	0	0	1
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	1.04	0.77	0.75	0.51	1.14

Intersection Summary

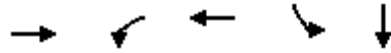
- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

Queues

2040 Total PM Scenario 1.syn

1: Pena Blvd SB Ramp & 40th Ave

06/08/2020



Lane Group	EBT	WBL	WBT	SBL	SBT
Lane Group Flow (vph)	1479	567	954	237	1182
v/c Ratio	1.13	1.10	0.46	0.45	1.09
Control Delay	104.3	107.1	15.4	35.5	93.0
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	104.3	107.1	15.4	35.5	93.0
Queue Length 50th (ft)	~697	~265	152	159	~557
Queue Length 95th (ft)	#838	m198	m122	245	#702
Internal Link Dist (ft)	1199		576		344
Turn Bay Length (ft)		250		200	
Base Capacity (vph)	1306	514	2064	523	1084
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	1.13	1.10	0.46	0.45	1.09

Intersection Summary

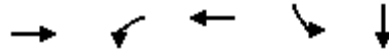
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- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

Queues

2040 Total AM Scenario 2.syn

1: Pena Blvd SB Ramp & 40th Ave

06/08/2020



Lane Group	EBT	WBL	WBT	SBL	SBT
Lane Group Flow (vph)	1038	587	1337	235	1308
v/c Ratio	1.01	0.82	0.68	0.42	1.13
Control Delay	70.9	60.6	22.9	32.5	104.0
Queue Delay	0.3	0.0	0.5	0.0	0.0
Total Delay	71.2	60.6	23.4	32.5	104.0
Queue Length 50th (ft)	~438	236	340	151	~632
Queue Length 95th (ft)	#614	m274	m411	232	#779
Internal Link Dist (ft)	1199		576		344
Turn Bay Length (ft)		250		200	
Base Capacity (vph)	1030	829	1975	563	1161
Starvation Cap Reductn	0	0	237	0	0
Spillback Cap Reductn	1	0	0	0	1
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	1.01	0.71	0.77	0.42	1.13

Intersection Summary

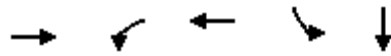
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- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

Queues

2040 Total PM Scenario 2.syn

1: Pena Blvd SB Ramp & 40th Ave

06/08/2020



Lane Group	EBT	WBL	WBT	SBL	SBT
Lane Group Flow (vph)	1478	273	948	222	1203
v/c Ratio	1.04	0.95	0.49	0.39	1.01
Control Delay	69.9	82.7	17.4	31.1	65.9
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	69.9	82.7	17.4	31.1	65.9
Queue Length 50th (ft)	~645	115	173	139	~507
Queue Length 95th (ft)	#786	m118	m168	216	#672
Internal Link Dist (ft)	1199		576		344
Turn Bay Length (ft)		250		200	
Base Capacity (vph)	1417	286	1946	576	1192
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	1.04	0.95	0.49	0.39	1.01

Intersection Summary

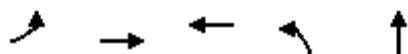
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Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

Queues

2022 Total AM Improved.syn

2: Pena Blvd NB Ramp & 40th Ave

06/08/2020



Lane Group	EBL	EBT	WBT	NBL	NBT
Lane Group Flow (vph)	460	1358	839	73	1137
v/c Ratio	0.82	0.77	0.83	0.13	0.96
Control Delay	66.7	28.0	45.9	23.7	53.1
Queue Delay	0.0	0.4	0.0	0.0	0.0
Total Delay	66.7	28.4	45.9	23.7	53.1
Queue Length 50th (ft)	186	362	305	37	424
Queue Length 95th (ft)	m238	442	350	72	526
Internal Link Dist (ft)		576	1680		365
Turn Bay Length (ft)	200				
Base Capacity (vph)	600	1769	1008	664	1180
Starvation Cap Reductn	0	94	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.77	0.81	0.83	0.11	0.96

Intersection Summary

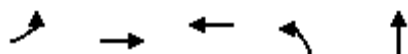
m Volume for 95th percentile queue is metered by upstream signal.

Queues

2022 Total PM Improved.syn

2: Pena Blvd NB Ramp & 40th Ave

06/08/2020



Lane Group	EBL	EBT	WBT	NBL	NBT
Lane Group Flow (vph)	216	639	1277	97	899
v/c Ratio	0.76	0.35	1.09	0.23	0.96
Control Delay	58.2	5.8	76.4	17.0	40.8
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	58.2	5.8	76.4	17.0	40.8
Queue Length 50th (ft)	77	64	~275	27	146
Queue Length 95th (ft)	m102	125	#394	61	#252
Internal Link Dist (ft)		576	1680		365
Turn Bay Length (ft)	200				
Base Capacity (vph)	286	1828	1171	496	938
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.76	0.35	1.09	0.20	0.96

Intersection Summary

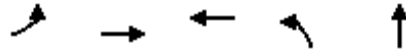
- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

Queues

2040 Total AM Scenario 1.syn

2: Pena Blvd NB Ramp & 40th Ave

06/08/2020



Lane Group	EBL	EBT	WBT	NBL	NBT
Lane Group Flow (vph)	630	1880	1131	106	1593
v/c Ratio	0.81	0.92	1.10	0.20	1.48
Control Delay	56.5	33.4	98.7	29.4	250.1
Queue Delay	0.0	12.3	0.0	0.0	0.0
Total Delay	56.5	45.7	98.7	29.4	250.1
Queue Length 50th (ft)	254	571	~515	63	~936
Queue Length 95th (ft)	m285	m625	#724	113	#1085
Internal Link Dist (ft)		576	1680		365
Turn Bay Length (ft)	250				
Base Capacity (vph)	944	2034	1027	543	1080
Starvation Cap Reductn	0	181	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.67	1.01	1.10	0.20	1.48

Intersection Summary

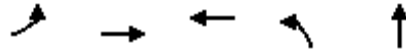
- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

Queues

2040 Total PM Scenario 1.syn

2: Pena Blvd NB Ramp & 40th Ave

06/08/2020



Lane Group	EBL	EBT	WBT	NBL	NBT
Lane Group Flow (vph)	304	1021	1875	136	1332
v/c Ratio	1.06	0.52	1.31	0.23	1.11
Control Delay	91.4	19.6	175.5	28.0	96.7
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	91.4	19.6	175.5	28.0	96.7
Queue Length 50th (ft)	~138	205	~981	80	~629
Queue Length 95th (ft)	m#129	m191	#1122	135	#775
Internal Link Dist (ft)		576	1680		365
Turn Bay Length (ft)	250				
Base Capacity (vph)	286	1946	1431	583	1199
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	1.06	0.52	1.31	0.23	1.11

Intersection Summary

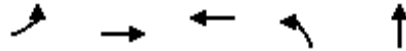
- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

Queues

2040 Total AM Scenario 2.syn

2: Pena Blvd NB Ramp & 40th Ave

06/08/2020



Lane Group	EBL	EBT	WBT	NBL	NBT
Lane Group Flow (vph)	630	1810	946	121	1373
v/c Ratio	0.81	0.92	0.98	0.21	1.19
Control Delay	57.5	32.8	66.5	28.3	128.3
Queue Delay	0.0	5.0	0.0	0.0	0.0
Total Delay	57.5	37.8	66.5	28.3	128.3
Queue Length 50th (ft)	253	536	372	71	~702
Queue Length 95th (ft)	m285	m600	#592	123	#850
Internal Link Dist (ft)		576	1680		365
Turn Bay Length (ft)	250				
Base Capacity (vph)	972	1975	965	570	1157
Starvation Cap Reductn	0	129	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.65	0.98	0.98	0.21	1.19

Intersection Summary

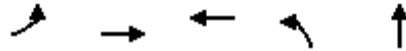
- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

Queues

2040 Total PM Scenario 2.syn

2: Pena Blvd NB Ramp & 40th Ave

06/08/2020








Lane Group	EBL	EBT	WBT	NBL	NBT
Lane Group Flow (vph)	304	969	1500	189	1236
v/c Ratio	0.97	0.49	1.06	0.33	1.06
Control Delay	83.7	17.1	74.5	30.4	81.0
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	83.7	17.1	74.5	30.4	81.0
Queue Length 50th (ft)	128	183	~665	116	~570
Queue Length 95th (ft)	m132	m182	#806	186	#716
Internal Link Dist (ft)		576	1680		365
Turn Bay Length (ft)	250				
Base Capacity (vph)	314	1975	1419	570	1166
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.97	0.49	1.06	0.33	1.06

Intersection Summary

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






Queues
3: Salida St & 40th Ave

2022 Total AM Improved.syn
06/08/2020

					
Lane Group	EBT	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	1126	146	1238	342	38
v/c Ratio	0.51	0.21	0.47	0.67	0.02
Control Delay	7.7	4.4	6.2	48.5	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	7.7	4.4	6.2	48.5	0.0
Queue Length 50th (ft)	122	10	144	113	0
Queue Length 95th (ft)	188	19	185	153	0
Internal Link Dist (ft)	1680		738	1378	
Turn Bay Length (ft)		250		350	
Base Capacity (vph)	2215	728	2639	784	1583
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.51	0.20	0.47	0.44	0.02
Intersection Summary					






Queues
3: Salida St & 40th Ave

2022 Total PM Improved.syn
06/08/2020

					
Lane Group	EBT	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	1074	37	452	622	83
v/c Ratio	0.51	0.06	0.19	0.80	0.05
Control Delay	10.2	6.5	7.2	46.6	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	10.2	6.5	7.2	46.6	0.1
Queue Length 50th (ft)	158	3	55	204	0
Queue Length 95th (ft)	237	10	85	254	0
Internal Link Dist (ft)	1680		738	1378	
Turn Bay Length (ft)		250		350	
Base Capacity (vph)	2115	625	2366	915	1583
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.51	0.06	0.19	0.68	0.05
Intersection Summary					






Queues
3: Salida St & 40th Ave

2040 Total AM Scenario 1.syn
06/08/2020

					
Lane Group	EBT	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	1473	190	1609	457	54
v/c Ratio	0.69	0.42	0.63	0.75	0.03
Control Delay	12.9	7.3	9.5	48.7	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	12.9	7.3	9.5	48.7	0.0
Queue Length 50th (ft)	261	16	259	150	0
Queue Length 95th (ft)	357	29	360	199	0
Internal Link Dist (ft)	1680		738	1378	
Turn Bay Length (ft)		250		350	
Base Capacity (vph)	2132	455	2536	719	1583
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.69	0.42	0.63	0.64	0.03
Intersection Summary					

Queues
3: Salida St & 40th Ave

2040 Total PM Scenario 1.syn
06/08/2020

					
Lane Group	EBT	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	1628	80	691	783	114
v/c Ratio	0.84	0.25	0.31	0.86	0.07
Control Delay	22.6	9.5	9.7	47.3	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	22.6	9.5	9.7	47.3	0.1
Queue Length 50th (ft)	436	9	108	252	0
Queue Length 95th (ft)	557	19	143	323	0
Internal Link Dist (ft)	1680		738	1378	
Turn Bay Length (ft)		250		350	
Base Capacity (vph)	1942	314	2231	980	1583
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.84	0.25	0.31	0.80	0.07
Intersection Summary					






Queues
3: Salida St & 40th Ave

2040 Total AM Scenario 2.syn
06/08/2020

	→	↙	←	↘	↗
Lane Group	EBT	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	1179	217	1609	299	71
v/c Ratio	0.53	0.32	0.60	0.64	0.04
Control Delay	10.5	4.6	7.1	48.9	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	10.5	4.6	7.1	48.9	0.0
Queue Length 50th (ft)	184	15	208	98	0
Queue Length 95th (ft)	270	28	308	138	0
Internal Link Dist (ft)	1680		738	1378	
Turn Bay Length (ft)		250		350	
Base Capacity (vph)	2215	681	2683	653	1583
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.53	0.32	0.60	0.46	0.04
Intersection Summary					

Queues
3: Salida St & 40th Ave

2040 Total PM Scenario 2.syn
06/08/2020

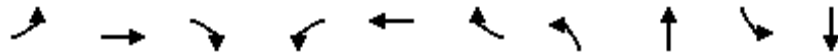
					
Lane Group	EBT	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	1436	85	691	500	163
v/c Ratio	0.67	0.19	0.28	0.75	0.10
Control Delay	15.1	6.1	6.5	47.2	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	15.1	6.1	6.5	47.2	0.1
Queue Length 50th (ft)	305	7	80	164	0
Queue Length 95th (ft)	421	17	122	209	0
Internal Link Dist (ft)	1680		738	1378	
Turn Bay Length (ft)		250		350	
Base Capacity (vph)	2128	446	2482	817	1583
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.67	0.19	0.28	0.61	0.10
Intersection Summary					

Queues

2022 Total AM Improved.syn

4: Tower Road & 38th Ave

06/08/2020



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	181	246	78	688	609	67	102	867	63	1964
v/c Ratio	0.62	0.90	0.20	0.98	0.74	0.13	0.34	0.58	0.26	0.98
Control Delay	35.4	85.2	1.1	77.9	49.3	0.5	17.2	21.2	18.7	51.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	35.4	85.2	1.1	77.9	49.3	0.5	17.2	21.2	18.7	51.1
Queue Length 50th (ft)	92	189	0	275	228	0	11	222	25	532
Queue Length 95th (ft)	129	208	0	#360	#319	0	13	304	34	#674
Internal Link Dist (ft)		561			1128			1626		942
Turn Bay Length (ft)	275			200		325	300		75	
Base Capacity (vph)	366	279	399	700	827	516	930	1490	242	1998
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.49	0.88	0.20	0.98	0.74	0.13	0.11	0.58	0.26	0.98

Intersection Summary

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

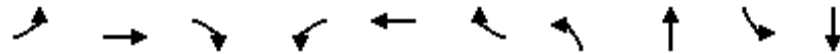
Queue shown is maximum after two cycles.

Queues

2022 Total PM Improved.syn

4: Tower Road & 38th Ave

06/08/2020



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	404	396	117	352	220	68	98	1564	23	1263
v/c Ratio	0.72	0.81	0.21	0.76	0.32	0.15	0.31	1.12	0.17	0.71
Control Delay	32.4	57.0	1.3	60.9	44.4	0.7	31.3	102.1	21.1	35.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	32.4	57.0	1.3	60.9	44.4	0.7	31.3	102.1	21.1	35.6
Queue Length 50th (ft)	222	289	0	137	78	0	32	~730	10	302
Queue Length 95th (ft)	318	#500	0	181	122	0	40	#882	18	364
Internal Link Dist (ft)		561			1128			1626		942
Turn Bay Length (ft)	275			200		325	300		75	
Base Capacity (vph)	596	486	550	672	685	456	932	1401	135	1785
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.68	0.81	0.21	0.52	0.32	0.15	0.11	1.12	0.17	0.71

Intersection Summary

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

Queues

2040 Total AM Scenario 1.syn

4: Tower Road & 38th Ave

06/08/2020



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	217	419	951	821	65	130	848	321	65	1447	750
v/c Ratio	0.37	0.71	1.13	1.00	0.13	0.51	0.45	0.29	0.26	0.87	0.75
Control Delay	45.8	47.0	114.2	78.3	0.5	65.3	22.0	3.4	22.1	45.5	17.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	45.8	47.0	114.2	78.3	0.5	65.3	22.0	3.4	22.1	45.5	17.6
Queue Length 50th (ft)	77	136	~439	~343	0	42	183	64	28	386	263
Queue Length 95th (ft)	115	193	#568	#480	0	m68	208	84	56	#497	458
Internal Link Dist (ft)		561		1128			1626			942	
Turn Bay Length (ft)	275		200		325	300		150	75		150
Base Capacity (vph)	600	590	843	819	513	858	1881	1118	254	1654	1005
Starvation Cap Reductn	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
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.36	0.71	1.13	1.00	0.13	0.15	0.45	0.29	0.26	0.87	0.75

Intersection Summary

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

Queues

2040 Total PM Scenario 1.syn

4: Tower Road & 38th Ave

06/08/2020



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	564	774	549	337	65	168	1168	690	27	1430	207
v/c Ratio	0.77	0.88	0.87	0.43	0.12	0.57	0.63	0.68	0.17	0.99	0.22
Control Delay	51.3	53.0	62.6	42.5	0.5	50.8	47.9	13.9	25.7	65.4	3.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	51.3	53.0	62.6	42.5	0.5	50.8	47.9	13.9	25.7	65.4	3.9
Queue Length 50th (ft)	212	283	212	115	0	70	310	198	13	-460	14
Queue Length 95th (ft)	257	#376	273	172	0	m79	m352	m279	32	#595	49
Internal Link Dist (ft)		561		1128			1626			942	
Turn Bay Length (ft)	275		200		325	300		150	75		150
Base Capacity (vph)	1058	915	700	780	536	657	1851	1037	159	1442	1076
Starvation Cap Reductn	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
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.53	0.85	0.78	0.43	0.12	0.26	0.63	0.67	0.17	0.99	0.19

Intersection Summary

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

Queues

2040 Total AM Scenario 2.syn

4: Tower Road & 38th Ave

06/08/2020



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	217	435	962	837	65	130	848	326	65	1447	750
v/c Ratio	0.34	0.78	1.04	1.01	0.13	0.51	0.47	0.29	0.27	0.92	0.76
Control Delay	43.8	52.6	82.0	79.9	0.5	67.2	28.1	2.9	23.6	51.0	19.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	43.8	52.6	82.0	79.9	0.5	67.2	28.1	2.9	23.6	51.0	19.6
Queue Length 50th (ft)	75	148	~412	~366	0	44	214	51	29	395	290
Queue Length 95th (ft)	112	#210	#541	#494	0	m71	218	m47	58	#521	493
Internal Link Dist (ft)		561		1128			1626			942	
Turn Bay Length (ft)	275		200		325	300		150	75		150
Base Capacity (vph)	657	557	929	828	517	772	1797	1124	241	1570	988
Starvation Cap Reductn	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
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.33	0.78	1.04	1.01	0.13	0.17	0.47	0.29	0.27	0.92	0.76

Intersection Summary

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

Queues

2040 Total PM Scenario 2.syn

4: Tower Road & 38th Ave

06/08/2020



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	564	800	554	348	65	168	1168	701	27	1430	207
v/c Ratio	0.79	0.95	0.99	0.50	0.13	0.57	0.58	0.69	0.16	0.89	0.21
Control Delay	53.6	63.3	87.2	46.9	0.5	73.6	25.7	7.6	21.4	47.7	4.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	53.6	63.3	87.2	46.9	0.5	73.6	25.7	7.6	21.4	47.7	4.2
Queue Length 50th (ft)	213	309	223	128	0	71	206	71	11	386	19
Queue Length 95th (ft)	267	#434	#340	184	0	m77	m243	m127	29	#509	53
Internal Link Dist (ft)		561		1128			1626			942	
Turn Bay Length (ft)	275		200		325	300		150	75		150
Base Capacity (vph)	829	850	557	692	503	858	2014	1021	174	1603	1019
Starvation Cap Reductn	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
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.68	0.94	0.99	0.50	0.13	0.20	0.58	0.69	0.16	0.89	0.20

Intersection Summary

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

Queue shown is maximum after two cycles.

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

Queues

2022 Total AM Improved.syn

5: Airport Blvd & I-70 WB Ramp

06/08/2020



Lane Group	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	600	1921	1074	316
v/c Ratio	0.77	0.38	0.31	0.20
Control Delay	50.2	0.2	8.3	0.3
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	50.2	0.2	8.3	0.3
Queue Length 50th (ft)	226	0	109	0
Queue Length 95th (ft)	269	0	160	0
Internal Link Dist (ft)		754	222	
Turn Bay Length (ft)	200			225
Base Capacity (vph)	1473	5085	3485	1564
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.41	0.38	0.31	0.20
Intersection Summary				

Queues

2022 Total PM Improved.syn

5: Airport Blvd & I-70 WB Ramp

06/08/2020



Lane Group	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	721	1626	1034	287
v/c Ratio	0.78	0.32	0.32	0.18
Control Delay	46.4	0.2	10.5	0.3
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	46.4	0.2	10.5	0.3
Queue Length 50th (ft)	265	0	123	0
Queue Length 95th (ft)	308	0	172	0
Internal Link Dist (ft)		754	222	
Turn Bay Length (ft)	200			225
Base Capacity (vph)	1644	5085	3268	1564
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.44	0.32	0.32	0.18
Intersection Summary				

Queues

2040 Total AM Scenario 1.syn

5: Airport Blvd & I-70 WB Ramp

06/08/2020



Lane Group	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	853	2711	1537	458
v/c Ratio	0.81	0.53	0.50	0.29
Control Delay	44.5	0.4	14.8	0.5
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	44.5	0.4	14.8	0.5
Queue Length 50th (ft)	312	0	233	0
Queue Length 95th (ft)	352	0	319	0
Internal Link Dist (ft)		754	222	
Turn Bay Length (ft)	200			225
Base Capacity (vph)	1473	5085	3076	1564
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.58	0.53	0.50	0.29
Intersection Summary				

Queues

2040 Total PM Scenario 1.syn

5: Airport Blvd & I-70 WB Ramp

06/08/2020



Lane Group	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	1032	2358	1429	413
v/c Ratio	0.81	0.46	0.52	0.26
Control Delay	38.9	0.3	19.4	0.4
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	38.9	0.3	19.4	0.4
Queue Length 50th (ft)	363	0	250	0
Queue Length 95th (ft)	397	0	339	0
Internal Link Dist (ft)		754	222	
Turn Bay Length (ft)	200			225
Base Capacity (vph)	1673	5085	2745	1564
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.62	0.46	0.52	0.26
Intersection Summary				

Queues

2040 Total AM Scenario 2.syn

5: Airport Blvd & I-70 WB Ramp/37th Avenue

06/08/2020



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	375	87	98	228	65	853	2326	554	109	1516	442
v/c Ratio	0.82	0.15	0.52	0.85	0.20	0.85	0.74	0.50	1.79	1.11	0.28
Control Delay	65.3	29.7	61.3	81.3	5.7	49.1	17.9	5.8	435.7	102.1	0.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	65.3	29.7	61.3	81.3	5.7	49.1	17.9	5.8	435.7	102.1	0.5
Queue Length 50th (ft)	146	47	61	145	0	318	443	66	~129	~518	0
Queue Length 95th (ft)	#211	87	114	#285	0	378	503	144	#254	#663	0
Internal Link Dist (ft)		210		2018			754			933	
Turn Bay Length (ft)	150		150		150	200		150	150		225
Base Capacity (vph)	477	608	195	279	330	1130	3163	1117	61	1364	1564
Starvation Cap Reductn	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
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.79	0.14	0.50	0.82	0.20	0.75	0.74	0.50	1.79	1.11	0.28

Intersection Summary

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

Queues

2040 Total PM Scenario 2.syn

5: Airport Blvd & I-70 WB Ramp/37th Avenue

06/08/2020



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	82	60	212	549	158	1032	2095	391	54	1389	421
v/c Ratio	0.52	0.11	0.69	1.29	0.35	0.84	0.64	0.35	0.84	1.23	0.27
Control Delay	68.2	31.5	53.7	183.0	14.1	42.3	14.3	3.2	124.6	150.6	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
Total Delay	68.2	31.5	53.7	183.0	14.1	42.3	14.3	3.2	124.6	150.6	0.4
Queue Length 50th (ft)	32	34	150	~574	29	372	335	25	41	~493	0
Queue Length 95th (ft)	60	68	#272	#795	88	420	381	63	#135	#666	0
Internal Link Dist (ft)		210		2018			754			750	
Turn Bay Length (ft)	150		150		150	200		150	150		225
Base Capacity (vph)	157	551	306	426	447	1416	3262	1122	64	1131	1564
Starvation Cap Reductn	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
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.52	0.11	0.69	1.29	0.35	0.73	0.64	0.35	0.84	1.23	0.27

Intersection Summary

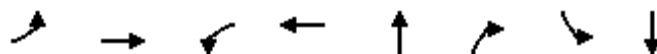
- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
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Queues

2022 Total AM Improved.syn

7: Walden St & Salida St

06/08/2020



Lane Group	EBL	EBT	WBL	WBT	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	22	304	158	276	123	136	20	58
v/c Ratio	0.04	0.16	0.28	0.14	0.23	0.20	0.04	0.08
Control Delay	12.9	10.0	10.5	8.7	26.7	4.8	24.0	19.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	12.9	10.0	10.5	8.7	26.7	4.8	24.0	19.6
Queue Length 50th (ft)	8	42	38	31	64	0	10	22
Queue Length 95th (ft)	15	43	m46	m33	72	29	15	28
Internal Link Dist (ft)		221		962	321			251
Turn Bay Length (ft)	225		175			200	150	
Base Capacity (vph)	589	1885	569	1911	541	684	469	690
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.04	0.16	0.28	0.14	0.23	0.20	0.04	0.08

Intersection Summary

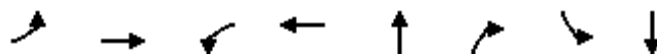
m Volume for 95th percentile queue is metered by upstream signal.

Queues

2022 Total PM Improved.syn

7: Walden St & Salida St

06/08/2020



Lane Group	EBL	EBT	WBL	WBT	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	49	646	228	239	141	262	27	100
v/c Ratio	0.07	0.30	0.53	0.11	0.34	0.40	0.08	0.18
Control Delay	9.4	10.0	39.3	21.8	35.4	5.6	30.7	23.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	9.4	10.0	39.3	21.8	35.4	5.6	30.7	23.6
Queue Length 50th (ft)	14	103	176	73	85	0	15	42
Queue Length 95th (ft)	27	104	m232	m97	132	46	38	65
Internal Link Dist (ft)		221		962	321			251
Turn Bay Length (ft)	225		175			200	150	
Base Capacity (vph)	697	2147	431	2170	410	663	351	552
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.07	0.30	0.53	0.11	0.34	0.40	0.08	0.18

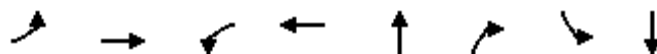
Intersection Summary

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

Queues
7: Walden St & Salida St

2040 Total AM Scenario 1.syn

06/08/2020



Lane Group	EBL	EBT	WBL	WBT	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	22	321	179	277	82	168	16	43
v/c Ratio	0.10	0.37	0.89	0.33	0.08	0.15	0.02	0.03
Control Delay	32.0	26.1	76.3	59.4	8.4	1.9	8.9	7.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	32.0	26.1	76.3	59.4	8.4	1.9	8.9	7.8
Queue Length 50th (ft)	14	76	148	113	19	0	4	8
Queue Length 95th (ft)	31	100	m109	m84	51	30	15	29
Internal Link Dist (ft)		221		962	321			251
Turn Bay Length (ft)	225		175			200	150	
Base Capacity (vph)	532	1940	480	1972	1084	1142	902	1262
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.04	0.17	0.37	0.14	0.08	0.15	0.02	0.03

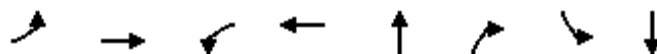
Intersection Summary

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

Queues
7: Walden St & Salida St

2040 Total PM Scenario 1.syn

06/08/2020



Lane Group	EBL	EBT	WBL	WBT	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	60	723	326	342	185	342	37	103
v/c Ratio	0.10	0.35	0.89	0.16	0.43	0.46	0.11	0.17
Control Delay	8.6	11.1	46.9	20.1	38.7	5.8	34.4	26.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	8.6	11.1	46.9	20.1	38.7	5.8	34.4	26.3
Queue Length 50th (ft)	15	103	259	107	123	0	22	47
Queue Length 95th (ft)	32	134	m231	m95	201	74	52	95
Internal Link Dist (ft)		221		962	321			251
Turn Bay Length (ft)	225		175			200	150	
Base Capacity (vph)	665	2288	409	2331	435	749	345	594
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.09	0.32	0.80	0.15	0.43	0.46	0.11	0.17

Intersection Summary

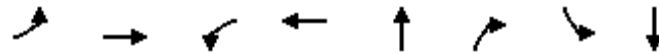
m Volume for 95th percentile queue is metered by upstream signal.

Queues

2040 Total AM Scenario 2.syn

7: Walden St & Salida St

06/08/2020



Lane Group	EBL	EBT	WBL	WBT	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	22	321	179	375	82	168	16	43
v/c Ratio	0.12	0.36	0.87	0.44	0.08	0.15	0.02	0.03
Control Delay	32.4	25.8	79.4	58.2	8.6	1.9	9.2	8.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	32.4	25.8	79.4	58.2	8.6	1.9	9.2	8.1
Queue Length 50th (ft)	13	75	149	156	19	0	4	9
Queue Length 95th (ft)	31	98	m109	m106	52	30	16	29
Internal Link Dist (ft)		221		962	321			251
Turn Bay Length (ft)	225		175			200	150	
Base Capacity (vph)	424	1940	484	1976	1078	1137	898	1256
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.05	0.17	0.37	0.19	0.08	0.15	0.02	0.03

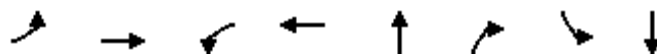
Intersection Summary

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

Queues
7: Walden St & Salida St

2040 Total PM Scenario 2.syn

06/08/2020



Lane Group	EBL	EBT	WBL	WBT	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	60	761	326	358	185	342	37	103
v/c Ratio	0.10	0.36	0.91	0.17	0.44	0.47	0.11	0.18
Control Delay	8.4	10.9	46.7	15.1	39.6	6.3	34.7	26.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	8.4	10.9	46.7	15.1	39.6	6.3	34.7	26.6
Queue Length 50th (ft)	15	112	186	58	123	4	22	47
Queue Length 95th (ft)	32	144	m173	m55	201	79	52	95
Internal Link Dist (ft)		221		962	321			251
Turn Bay Length (ft)	225		175			200	150	
Base Capacity (vph)	653	2291	392	2330	420	732	331	576
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.09	0.33	0.83	0.15	0.44	0.47	0.11	0.18

Intersection Summary

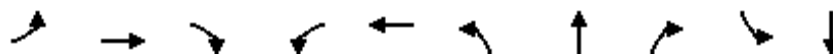
m Volume for 95th percentile queue is metered by upstream signal.

Queues

2022 Total AM Improved.syn

8: Tower Road & Salida St

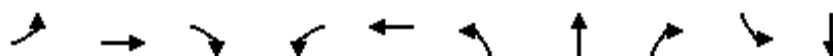
06/08/2020



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	133	25	280	127	88	409	824	67	125	2150
v/c Ratio	0.63	0.10	0.48	0.45	0.33	0.80	0.42	0.07	0.31	0.91
Control Delay	66.3	50.2	24.1	43.4	24.5	62.7	17.8	2.7	7.3	33.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	66.3	50.2	24.1	43.4	24.5	62.7	17.8	2.7	7.3	33.5
Queue Length 50th (ft)	52	19	101	80	24	174	144	1	21	649
Queue Length 95th (ft)	75	41	150	115	67	222	214	4	m23	m663
Internal Link Dist (ft)		962			568		971			1626
Turn Bay Length (ft)	250			200		275			75	
Base Capacity (vph)	214	299	586	281	307	535	1963	933	406	2352
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.62	0.08	0.48	0.45	0.29	0.76	0.42	0.07	0.31	0.91

Intersection Summary

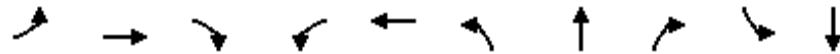
m Volume for 95th percentile queue is metered by upstream signal.



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	434	71	533	157	156	557	1184	75	92	1495
v/c Ratio	0.80	0.21	0.64	0.42	0.57	0.76	0.74	0.10	0.44	0.98
Control Delay	73.0	38.7	14.3	32.1	38.9	38.5	34.2	5.1	31.7	68.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	73.0	38.7	14.3	32.1	38.9	38.5	34.2	5.1	31.7	68.3
Queue Length 50th (ft)	176	38	75	84	71	215	505	8	55	~447
Queue Length 95th (ft)	212	57	319	130	108	231	558	m19	m85	#591
Internal Link Dist (ft)		962			568		971			1626
Turn Bay Length (ft)	250			200		275			75	
Base Capacity (vph)	586	345	868	471	301	843	1607	786	217	1527
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.74	0.21	0.61	0.33	0.52	0.66	0.74	0.10	0.42	0.98

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
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Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	163	33	364	158	108	543	1060	92	125	2354
v/c Ratio	0.74	0.12	0.60	0.52	0.37	1.06	0.56	0.10	0.40	1.04
Control Delay	78.7	54.7	26.3	44.9	28.0	89.9	26.2	5.2	6.7	49.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	78.7	54.7	26.3	44.9	28.0	89.9	26.2	5.2	6.7	49.4
Queue Length 50th (ft)	67	24	128	99	37	~257	256	3	18	~731
Queue Length 95th (ft)	#117	57	238	162	93	m#301	m301	m10	m17	m#734
Internal Link Dist (ft)		962			568		971			1626
Turn Bay Length (ft)	250			200		275			75	
Base Capacity (vph)	220	296	608	302	305	511	1877	897	323	2269
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.74	0.11	0.60	0.52	0.35	1.06	0.56	0.10	0.39	1.04

Intersection Summary

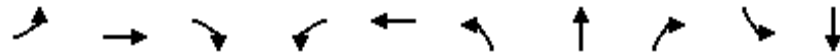
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Queues

2040 Total PM Scenario 1.syn

8: Tower Road & Salida St

06/08/2020



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	543	82	734	228	217	828	1353	109	114	2022
v/c Ratio	0.97	0.19	0.85	0.69	0.71	1.05	0.86	0.14	0.76	1.50
Control Delay	84.5	34.3	31.0	45.4	47.2	72.5	29.2	2.0	51.8	269.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	84.5	34.3	31.0	45.4	47.2	72.5	29.2	2.0	51.8	269.2
Queue Length 50th (ft)	199	43	441	129	113	~354	528	2	83	~816
Queue Length 95th (ft)	#323	83	#698	199	#214	m#404	m580	m5	m86	m#850
Internal Link Dist (ft)		962			568		971			1626
Turn Bay Length (ft)	250			200		275			75	
Base Capacity (vph)	557	442	861	329	307	786	1577	801	150	1347
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.97	0.19	0.85	0.69	0.71	1.05	0.86	0.14	0.76	1.50

Intersection Summary

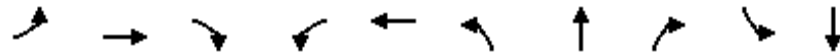
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Queues

2040 Total AM Scenario 2.syn

8: Tower Road & Salida St

06/08/2020



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	174	33	277	158	108	435	1060	92	125	2451
v/c Ratio	0.81	0.13	0.51	0.56	0.40	1.06	0.55	0.10	0.39	0.99
Control Delay	86.8	56.7	37.4	47.2	28.9	87.6	28.7	7.5	5.4	34.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	86.8	56.7	37.4	47.2	28.9	87.6	28.7	7.5	5.4	34.4
Queue Length 50th (ft)	71	24	129	100	37	~219	292	11	17	719
Queue Length 95th (ft)	#132	57	223	162	92	m#246	m311	m14	m15	m#765
Internal Link Dist (ft)		962			568		971			1626
Turn Bay Length (ft)	250			200		275			75	
Base Capacity (vph)	214	296	528	283	308	409	1934	921	334	2486
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.81	0.11	0.52	0.56	0.35	1.06	0.55	0.10	0.37	0.99

Intersection Summary

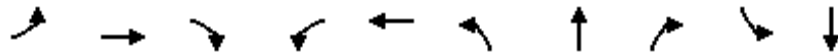
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Queues

2040 Total PM Scenario 2.syn

8: Tower Road & Salida St

06/08/2020



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	592	82	571	228	217	635	1353	109	114	2038
v/c Ratio	0.96	0.19	0.72	0.69	0.75	0.97	0.87	0.14	0.74	1.35
Control Delay	83.8	38.8	23.0	43.8	51.1	72.1	42.7	4.5	30.6	191.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	83.8	38.8	23.0	43.8	51.1	72.1	42.7	4.5	30.6	191.6
Queue Length 50th (ft)	245	47	214	126	113	~279	418	4	41	~768
Queue Length 95th (ft)	#358	93	461	193	#214	m#359	496	m11	m37	m#843
Internal Link Dist (ft)		962			568		971			1626
Turn Bay Length (ft)	250			200		275			75	
Base Capacity (vph)	615	457	798	329	307	654	1551	791	154	1512
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.96	0.18	0.72	0.69	0.71	0.97	0.87	0.14	0.74	1.35

Intersection Summary

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

Queues

2022 Total AM Improved.syn

9: Tower Road & 32nd Pkwy

06/08/2020



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	294	122	1472	664	152	1934
v/c Ratio	0.66	0.39	0.65	0.53	0.55	0.49
Control Delay	57.0	11.7	9.2	1.9	22.4	3.8
Queue Delay	0.0	0.0	0.0	0.1	0.0	0.0
Total Delay	57.0	11.7	9.2	1.9	22.4	3.8
Queue Length 50th (ft)	113	0	182	9	50	109
Queue Length 95th (ft)	144	41	273	0	m70	152
Internal Link Dist (ft)	1106		521			971
Turn Bay Length (ft)	250				175	
Base Capacity (vph)	572	365	2276	1251	340	3919
Starvation Cap Reductn	0	0	26	48	0	0
Spillback Cap Reductn	0	0	0	0	0	102
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.51	0.33	0.65	0.55	0.45	0.51

Intersection Summary

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



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	590	177	1474	295	93	1795
v/c Ratio	0.81	0.39	0.72	0.29	0.45	0.51
Control Delay	54.1	12.3	24.0	4.1	19.9	4.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.1
Total Delay	54.1	12.3	24.0	4.1	19.9	4.3
Queue Length 50th (ft)	223	21	465	17	12	50
Queue Length 95th (ft)	235	63	679	37	m23	m93
Internal Link Dist (ft)	1106		521			971
Turn Bay Length (ft)	250				175	
Base Capacity (vph)	829	491	2040	1028	219	3495
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	602
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.71	0.36	0.72	0.29	0.42	0.62

Intersection Summary

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



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	538	266	1913	1065	364	2065
v/c Ratio	0.99	0.66	0.93	0.89	1.43	0.55
Control Delay	87.0	24.6	22.3	14.2	234.1	5.2
Queue Delay	0.0	0.0	0.0	0.6	0.0	0.0
Total Delay	87.0	24.6	22.3	14.9	234.1	5.2
Queue Length 50th (ft)	217	59	344	52	~341	153
Queue Length 95th (ft)	#332	155	m693	m205	m#357	m132
Internal Link Dist (ft)	1106		521			971
Turn Bay Length (ft)	250				175	
Base Capacity (vph)	543	402	2064	1199	254	3771
Starvation Cap Reductn	0	0	0	22	0	0
Spillback Cap Reductn	0	0	0	0	0	256
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.99	0.66	0.93	0.90	1.43	0.59

Intersection Summary

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

Queues

2040 Total PM Scenario 1.syn

9: Tower Road & 32nd Pkwy

06/08/2020



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	859	429	1708	658	321	2226
v/c Ratio	0.95	0.80	0.97	0.64	1.50	0.69
Control Delay	63.0	37.1	44.9	9.8	259.3	10.6
Queue Delay	0.0	0.0	0.0	0.4	0.0	0.9
Total Delay	63.0	37.1	44.9	10.1	259.3	11.4
Queue Length 50th (ft)	336	198	645	162	-287	537
Queue Length 95th (ft)	#459	#356	m#693	m340	m#216	m219
Internal Link Dist (ft)	1106		521			971
Turn Bay Length (ft)	250				175	
Base Capacity (vph)	915	542	1769	1033	214	3231
Starvation Cap Reductn	0	0	0	84	0	0
Spillback Cap Reductn	0	0	0	0	0	636
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.94	0.79	0.97	0.69	1.50	0.86

Intersection Summary

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



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	538	266	1804	1065	364	1978
v/c Ratio	0.94	0.55	0.99	0.96	1.02	0.53
Control Delay	75.2	9.9	34.7	26.4	81.4	4.7
Queue Delay	0.0	0.0	0.4	2.7	0.0	0.1
Total Delay	75.2	9.9	35.1	29.1	81.4	4.8
Queue Length 50th (ft)	214	0	289	401	~262	138
Queue Length 95th (ft)	#320	76	m#847	m#769	m#294	m132
Internal Link Dist (ft)	1106		521			971
Turn Bay Length (ft)	250				175	
Base Capacity (vph)	572	485	1828	1105	357	3729
Starvation Cap Reductn	0	0	4	20	0	0
Spillback Cap Reductn	0	0	0	0	0	305
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.94	0.55	0.99	0.98	1.02	0.58

Intersection Summary

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



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	859	429	1516	658	321	2068
v/c Ratio	0.93	0.76	0.89	0.63	1.38	0.65
Control Delay	59.2	31.9	38.2	9.5	208.3	13.1
Queue Delay	0.0	0.0	0.7	0.4	0.0	1.8
Total Delay	59.2	31.9	38.8	9.9	208.3	14.8
Queue Length 50th (ft)	332	176	560	76	-291	272
Queue Length 95th (ft)	#447	306	m601	m263	m#259	m187
Internal Link Dist (ft)	1106		521			971
Turn Bay Length (ft)	250				175	
Base Capacity (vph)	944	570	1710	1037	232	3203
Starvation Cap Reductn	0	0	43	93	0	0
Spillback Cap Reductn	0	0	0	0	0	909
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.91	0.75	0.91	0.70	1.38	0.90

Intersection Summary

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

10: Tower Road & I-70 WB Ramps



Lane Group	WBT	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	485	278	1335	1189	1278
v/c Ratio	0.87	0.69	0.44	0.77	0.81
Control Delay	49.0	73.4	13.9	29.4	12.2
Queue Delay	0.0	0.0	0.0	0.3	0.0
Total Delay	49.0	73.4	13.9	29.7	12.2
Queue Length 50th (ft)	299	108	154	268	511
Queue Length 95th (ft)	398	148	165	#610	639
Internal Link Dist (ft)	388		516	521	
Turn Bay Length (ft)		325			
Base Capacity (vph)	677	438	3067	1540	1583
Starvation Cap Reductn	0	0	0	57	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.72	0.63	0.44	0.80	0.81

Intersection Summary

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

10: Tower Road & I-70 WB Ramps



Lane Group	WBT	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	362	256	1594	1517	875
v/c Ratio	0.84	0.63	0.46	0.84	0.55
Control Delay	50.2	46.7	15.7	30.1	2.6
Queue Delay	0.0	0.0	0.2	0.3	0.0
Total Delay	50.2	46.7	15.8	30.4	2.6
Queue Length 50th (ft)	213	107	212	622	7
Queue Length 95th (ft)	293	m140	348	#831	89
Internal Link Dist (ft)	388		516	521	
Turn Bay Length (ft)		325			
Base Capacity (vph)	599	492	3466	1816	1583
Starvation Cap Reductn	0	0	763	40	0
Spillback Cap Reductn	2	0	178	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.61	0.52	0.59	0.85	0.55

Intersection Summary

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

Queue shown is maximum after two cycles.

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

Queues

2040 Total AM Scenario 1.syn

06/08/2020

10: Tower Road & I-70 WB Ramps



Lane Group	WBT	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	714	348	1853	1363	1571
v/c Ratio	1.08	1.01	0.68	1.01	0.99
Control Delay	89.5	106.9	18.4	58.4	31.4
Queue Delay	1.3	0.0	0.2	10.2	0.0
Total Delay	90.8	106.9	18.6	68.6	31.4
Queue Length 50th (ft)	~574	~152	232	~518	779
Queue Length 95th (ft)	#813	#251	262	m#690	m#966
Internal Link Dist (ft)	388		516	521	
Turn Bay Length (ft)		325			
Base Capacity (vph)	664	343	2712	1356	1583
Starvation Cap Reductn	0	0	192	43	0
Spillback Cap Reductn	2	0	163	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	1.08	1.01	0.74	1.04	0.99

Intersection Summary

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

Queues

2040 Total PM Scenario 1.syn

06/08/2020

10: Tower Road & I-70 WB Ramps



Lane Group	WBT	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	516	348	2005	2060	1354
v/c Ratio	1.17	1.11	0.58	1.09	0.86
Control Delay	132.3	92.2	15.7	73.3	10.4
Queue Delay	0.3	0.0	0.8	3.6	0.0
Total Delay	132.6	92.2	16.5	76.9	10.4
Queue Length 50th (ft)	~424	~157	373	~965	220
Queue Length 95th (ft)	#642	m#165	m350	m#1102	m300
Internal Link Dist (ft)	388		516	521	
Turn Bay Length (ft)		325			
Base Capacity (vph)	442	314	3432	1887	1583
Starvation Cap Reductn	0	0	978	50	0
Spillback Cap Reductn	13	0	865	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	1.20	1.11	0.82	1.12	0.86

Intersection Summary

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

Queues

2040 Total AM Scenario 2.syn

06/08/2020

10: Tower Road & I-70 WB Ramps



Lane Group	WBT	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	687	348	1859	1358	1489
v/c Ratio	1.01	1.01	0.70	1.02	0.94
Control Delay	70.9	109.6	19.1	63.4	19.7
Queue Delay	1.3	0.0	0.2	8.8	0.0
Total Delay	72.2	109.6	19.4	72.2	19.7
Queue Length 50th (ft)	~499	~151	220	~584	1199
Queue Length 95th (ft)	#755	#251	258	m#712	m#852
Internal Link Dist (ft)	388		516	521	
Turn Bay Length (ft)		325			
Base Capacity (vph)	678	343	2669	1327	1583
Starvation Cap Reductn	0	0	160	32	0
Spillback Cap Reductn	3	0	233	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	1.02	1.01	0.76	1.05	0.94

Intersection Summary

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

Queues

2040 Total PM Scenario 2.syn

06/08/2020

10: Tower Road & I-70 WB Ramps



Lane Group	WBT	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	478	348	2005	2060	1198
v/c Ratio	1.11	1.01	0.58	1.09	0.76
Control Delay	113.4	80.9	12.0	77.4	4.6
Queue Delay	0.2	0.0	0.3	3.6	0.0
Total Delay	113.6	80.9	12.3	81.0	4.6
Queue Length 50th (ft)	~372	~149	301	~933	61
Queue Length 95th (ft)	#585	m#186	m315	#1075	m82
Internal Link Dist (ft)	388		516	521	
Turn Bay Length (ft)		325			
Base Capacity (vph)	430	343	3474	1887	1583
Starvation Cap Reductn	0	0	686	20	0
Spillback Cap Reductn	11	0	742	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	1.14	1.01	0.73	1.10	0.76

Intersection Summary

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

Queues

2022 Total AM Improved.syn

06/08/2020

11: Tower Road & I-70 EB Ramps



Lane Group	EBL	EBT	EBR	NBT	SBL	SBT
Lane Group Flow (vph)	285	283	285	998	293	1114
v/c Ratio	0.76	0.75	0.18	0.39	0.65	0.46
Control Delay	56.2	55.3	0.2	21.0	32.9	16.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.2
Total Delay	56.2	55.3	0.2	21.0	32.9	16.5
Queue Length 50th (ft)	218	216	0	163	156	177
Queue Length 95th (ft)	291	66	0	274	242	322
Internal Link Dist (ft)		298		1049		516
Turn Bay Length (ft)			275		200	
Base Capacity (vph)	532	535	1583	2564	581	2424
Starvation Cap Reductn	0	0	0	0	0	553
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.54	0.53	0.18	0.39	0.50	0.60
Intersection Summary						

Queues

2022 Total PM Improved.syn

06/08/2020

11: Tower Road & I-70 EB Ramps



Lane Group	EBL	EBT	EBR	NBT	SBL	SBT
Lane Group Flow (vph)	384	379	286	1221	500	1011
v/c Ratio	0.78	0.77	0.18	0.81	0.94	0.46
Control Delay	49.7	48.7	0.2	45.3	79.5	12.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.1
Total Delay	49.7	48.7	0.2	45.3	79.5	12.8
Queue Length 50th (ft)	287	282	0	326	357	96
Queue Length 95th (ft)	360	165	0	#528	m#489	228
Internal Link Dist (ft)		298		1049		516
Turn Bay Length (ft)			275		200	
Base Capacity (vph)	672	675	1583	1514	580	2179
Starvation Cap Reductn	0	0	0	0	0	302
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.57	0.56	0.18	0.81	0.86	0.54

Intersection Summary

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

Queue shown is maximum after two cycles.

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

Queues

2040 Total AM Scenario 1.syn

11: Tower Road & I-70 EB Ramps

06/08/2020



Lane Group	EBL	EBT	EBR	NBT	SBL	SBT
Lane Group Flow (vph)	447	452	380	1401	391	1152
v/c Ratio	0.82	0.83	0.24	0.71	0.79	0.56
Control Delay	50.0	50.6	0.4	34.5	59.3	24.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.2
Total Delay	50.0	50.6	0.4	34.5	59.3	24.7
Queue Length 50th (ft)	327	331	0	345	164	277
Queue Length 95th (ft)	437	446	0	424	m166	m281
Internal Link Dist (ft)		298		1049		516
Turn Bay Length (ft)			275		200	
Base Capacity (vph)	630	632	1583	1981	521	2069
Starvation Cap Reductn	0	0	0	0	0	284
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.71	0.72	0.24	0.71	0.75	0.65

Intersection Summary

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

Queues

2040 Total PM Scenario 1.syn

06/08/2020

11: Tower Road & I-70 EB Ramps



Lane Group	EBL	EBT	EBR	NBT	SBL	SBT
Lane Group Flow (vph)	583	589	402	1337	769	1374
v/c Ratio	0.88	0.89	0.25	1.16	0.94	0.75
Control Delay	49.8	50.6	0.4	123.0	65.5	18.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.8
Total Delay	49.8	50.6	0.4	123.0	65.5	19.1
Queue Length 50th (ft)	417	423	0	~452	~321	204
Queue Length 95th (ft)	#629	#637	0	#549	m255	m187
Internal Link Dist (ft)		298		1049		516
Turn Bay Length (ft)			275		200	
Base Capacity (vph)	700	702	1583	1153	814	1824
Starvation Cap Reductn	0	0	0	0	0	186
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.83	0.84	0.25	1.16	0.94	0.84

Intersection Summary

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

Queues

2040 Total AM Scenario 2.syn

06/08/2020

11: Tower Road & I-70 EB Ramps



Lane Group	EBL	EBT	EBR	NBT	SBL	SBT
Lane Group Flow (vph)	404	410	380	1406	386	1152
v/c Ratio	0.80	0.81	0.24	0.69	0.72	0.54
Control Delay	50.5	51.3	0.4	33.6	54.6	23.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.3
Total Delay	50.5	51.3	0.4	33.6	54.6	24.0
Queue Length 50th (ft)	298	305	0	329	162	280
Queue Length 95th (ft)	393	398	0	#482	m160	m282
Internal Link Dist (ft)		298		1049		516
Turn Bay Length (ft)			275		200	
Base Capacity (vph)	616	618	1583	2039	743	2151
Starvation Cap Reductn	0	0	0	0	0	382
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.66	0.66	0.24	0.69	0.52	0.65

Intersection Summary

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

Queue shown is maximum after two cycles.

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

Queues

2040 Total PM Scenario 2.syn

06/08/2020

11: Tower Road & I-70 EB Ramps



Lane Group	EBL	EBT	EBR	NBT	SBL	SBT
Lane Group Flow (vph)	505	511	402	1342	758	1384
v/c Ratio	0.86	0.87	0.25	0.99	0.92	0.70
Control Delay	51.2	51.9	0.4	65.6	70.7	19.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.5
Total Delay	51.2	51.9	0.4	65.6	70.7	19.8
Queue Length 50th (ft)	363	369	0	378	~326	242
Queue Length 95th (ft)	508	517	0	#489	m292	m222
Internal Link Dist (ft)		298		1049		516
Turn Bay Length (ft)			275		200	
Base Capacity (vph)	644	646	1583	1356	823	1975
Starvation Cap Reductn	0	0	0	0	0	230
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.78	0.79	0.25	0.99	0.92	0.79

Intersection Summary

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