

**GREEN VALLEY RANCH EAST  
FILING 5  
ACTIVE ADULT RESIDENTIAL**

**TRAFFIC IMPACT STUDY**

(Revised May 14, 2020)

Prepared for:

Oakwood Homes  
4908 Tower Rd.  
Denver, CO 80249



Prepared by:

Felsburg Holt & Ullevig  
6300 South Syracuse Way, Suite 600  
Centennial, CO 80111  
303.721.1440

Project Manager: Charles M. Buck, PE, PTOE  
Project Engineer: Faith Kelley



FHU Reference No. 120080-01

Original Report: April 7, 2020  
2<sup>nd</sup> Edition: April 29, 2020  
3<sup>rd</sup> Edition: May 14, 2020

## TABLE OF CONTENTS

	<u>Page</u>
<b>I. INTRODUCTION.....</b>	<b>1</b>
<b>II. EXISTING CONDITIONS.....</b>	<b>4</b>
II.A. Roadways .....	4
II.B. Traffic Volumes and Operations.....	5
<b>III. PROPOSED CONDITIONS .....</b>	<b>7</b>
III.A. Trip Generation.....	7
III.B. Site Trip Distribution and Site-generated Traffic Assignment.....	7
III.C. Existing Plus Site-generated Traffic.....	10
<b>IV. FUTURE CONDITIONS.....</b>	<b>12</b>
IV.A. Background Traffic Conditions .....	12
IV.B. Total Future Traffic.....	12
<b>V. EVALUATION .....</b>	<b>15</b>
V.A. Level of Service.....	15
V.B. Traffic Control Devices.....	16
V.C. Queuing.....	18
V.D. Safety .....	19
<b>VI. CONCLUSIONS AND RECOMMENDATIONS .....</b>	<b>20</b>
VI.A. Short Range Future.....	20
VI.B. Long Range Future .....	20

## Appendices

- Appendix A. Traffic Counts
- Appendix B. Existing Conditions LOS
- Appendix C. Long Range Future Background Traffic LOS
- Appendix D. Short Range Future Total Traffic LOS
- Appendix E. Long Range Future Total Traffic LOS
- Appendix F. Signal Warrant Graphs

## List of Figures

	<u>Page</u>
Figure 1. Vicinity Map.....	2
Figure 2. Site Plan Concept .....	3
Figure 3. Existing Traffic Conditions .....	6
Figure 4. Short Range Future Site Trip Distribution and Traffic Assignment.....	8
Figure 5. Long Range Future Site Trip Distribution and Traffic Assignment.....	9
Figure 6. Short Range Future Total Traffic Conditions .....	11
Figure 7. Long Range Future Background Traffic Conditions .....	13
Figure 8. Long Range Future Total Traffic Conditions.....	14
Figure 9. Internal Traffic Control.....	17

## List of Tables

	<u>Page</u>
Table 1. Trip Generation Analysis.....	7
Table 2. Queue Results at Future Signalized Intersections.....	18

## I. INTRODUCTION

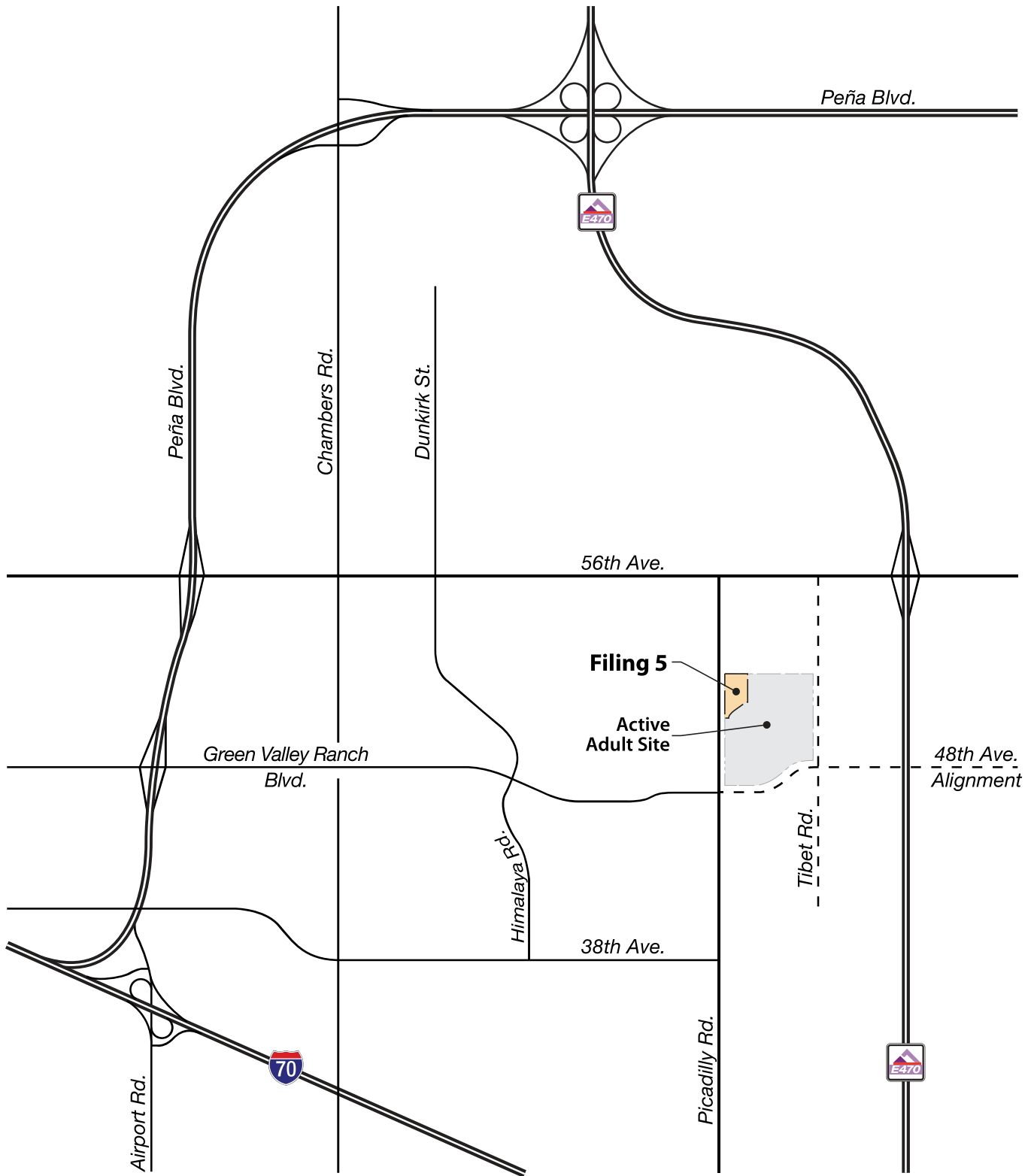
An Active Adult residential development is proposed at Green Valley Ranch East. The approximate 137-acre site, currently vacant, is located on the east side of Picadilly Road, north of the future 48<sup>th</sup> Avenue, west of the future Tibet Street, and south of the future 52<sup>nd</sup> Avenue. At build-out, the proposed development would consist of approximately 662 senior housing units. The traffic impacts of this development were addressed in the report entitled *Green Valley Ranch East CSP I Active Adult Residential Traffic Impact Study*, Felsburg Holt & Ullevig, August 2018.

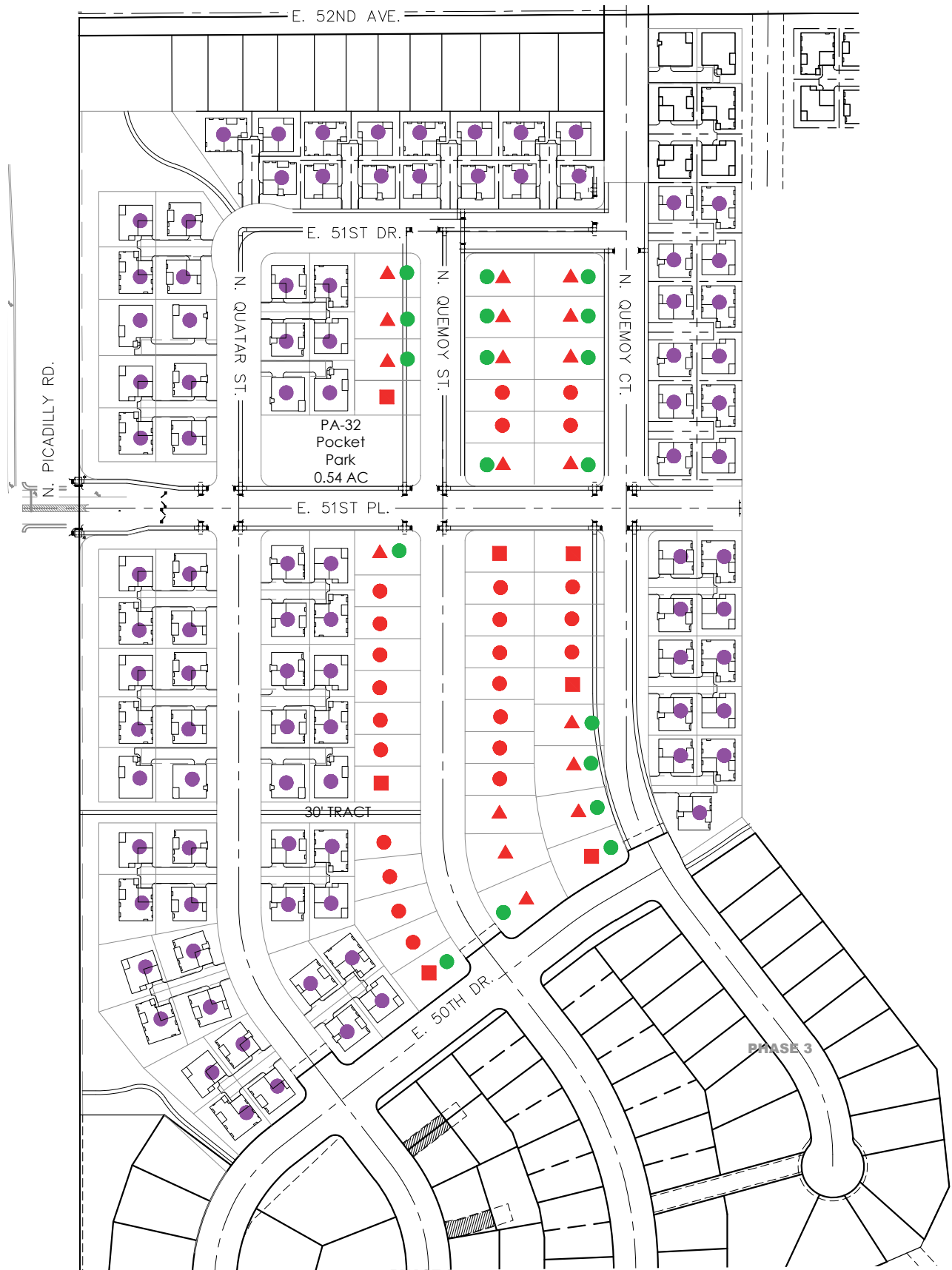
Currently, planning for the first phase of development, Filing 5, is underway. Filing 5 would consist of 143 Active Adult homes to be located in the southeast corner of the 52<sup>nd</sup> Picadilly Road/52<sup>nd</sup> Avenue intersection. **Figure 1** illustrates the location of the site and the adjacent roadway network. **Figure 2** depicts the current site plan concept for Filing 5.

The overall Active Adult site would have vehicular access via seven roadway connections: two  $\frac{3}{4}$ -movement accesses on Picadilly Road (at 50<sup>th</sup> Avenue and 51<sup>st</sup> Place), one full-movement access on Tibet Street, one full-movement access on 48<sup>th</sup> Avenue (Rome Street), and three full-movement accesses along 52<sup>nd</sup> Avenue. Filing 5 would be a private, gated community, with gates at all proposed site accesses along the public roadway system.

The purpose of this traffic study is to update the potential impacts specific to the Active Adult development at Green Valley Ranch East and to identify any resultant required roadway or traffic control improvements. Two future planning horizons were evaluated:

- **Short Range Future.** The projected traffic volumes of the overall active adult site are added to the existing traffic to project the potential impacts of an “opening day” scenario.
- **Long Range Future.** A long range (year 2040) planning horizon was evaluated for the site. This planning horizon is based on the City of Aurora’s 2018 Northeast Area Transportation Study (NEATS) and is consistent with the July 2018 Green Valley Ranch East FDP report. Future conditions include E-470 interchanges at both 38<sup>th</sup> Avenue and 48<sup>th</sup> Avenue.





## II. EXISTING CONDITIONS

### II.A. Roadways

The primary roadways in the vicinity of the site include:

- **Picadilly Road.** This north-south roadway extends along the west side of the Active Adult site. The roadway consists of a basic two-lane cross section with a striped center median area to provide left-turn lanes at intersections. The posted speed limit is 40 miles per hour (MPH). NEATS identifies Picadilly Road as a future six-lane arterial.
- **Green Valley Ranch Boulevard.** This east-west arterial roadway extends west from Picadilly Road into the City and County of Denver. East of Picadilly Road, the roadway is planned to be extended as 48<sup>th</sup> Avenue. NEATS shows 48<sup>th</sup> Avenue as a six-lane arterial with an interchange at E-470. The posted speed limit is 35 MPH. The intersection of Green Valley Ranch Boulevard and Picadilly Road is currently unsignalized, with STOP sign control on the eastbound approach.
- **50<sup>th</sup> Avenue.** This two-lane local street extends west from Picadilly Road, serving existing residential uses. The intersection at Picadilly Road is currently unsignalized, with STOP sign control on the eastbound approach. There is no posted speed limit at 50<sup>th</sup> Avenue. The Active Adult site plan concept shows a site access aligning opposite 50<sup>th</sup> Avenue. This intersection would be converted to  $\frac{3}{4}$ -movement with this development.
- **51<sup>st</sup> Place.** This two-lane local street extends west from Picadilly Road, serving existing residential uses and a Denver Public School (Florida Pitt Waller PreK-8). The intersection at Picadilly Road is currently unsignalized, with STOP sign control on the eastbound approach. School zone signing and school speed limit signs are posted. The site plan concept shows a site access aligning opposite 51<sup>st</sup> Place. This intersection would be converted to  $\frac{3}{4}$ -movement with this development.
- **52<sup>nd</sup> Avenue.** This existing two-lane local street extends west from Picadilly Road, serving existing residential uses and the above-mentioned school site. The intersection at Picadilly Road is currently unsignalized, with STOP sign control on the eastbound approach. School zone signing and school speed limit signs are posted. A proposed extension of 52<sup>nd</sup> Avenue east from Picadilly Road will form the north boundary of the Active Adult site.
- **Tibet Street.** This future roadway is planned to be constructed as a part of Green Valley Ranch East. Tibet Street will extend along the eastern side of the Active Adult site. NEATS identifies Tibet Street as a four-lane minor arterial.

## II.B. Traffic Volumes and Operations

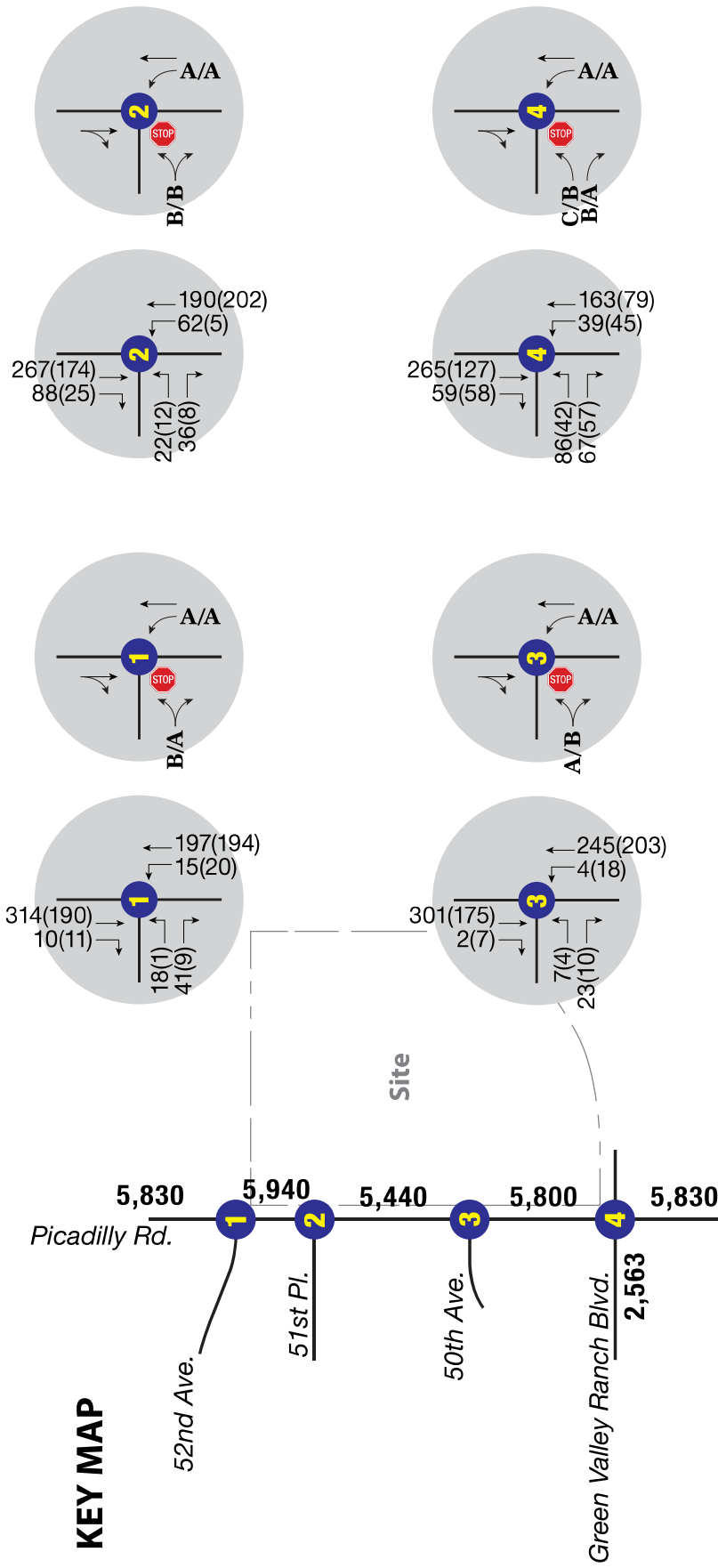
A 72-hour automated traffic count was recently conducted on Picadilly Road adjacent to the Active Adult site. Previous weekday AM and PM peak hour turning movements at the Picadilly Road intersections with Green Valley Ranch Boulevard, 50<sup>th</sup> Avenue, 51<sup>st</sup> Place, and 52<sup>nd</sup> Avenue were extracted from the 2018 report, including 24-hour automated roadway counts on Green Valley Ranch Boulevard west of Picadilly Road and on Picadilly Road adjacent to the site. Current year volumes were estimated using these data. **Appendix A** contains the traffic count data.

**Figure 3** depicts the existing traffic volumes. As shown, Picadilly Road currently serves approximately 5,440 to 5,940 vehicles per day (VPD) adjacent to the site. These current volumes are well below the Level of Service (LOS) C daily threshold established in the 2018 NEATS study for two-lane roadways.

Daily traffic volumes along Green Valley Ranch Boulevard are estimated to be about 2,560 VPD. This volume is well below the NEATS LOS C threshold for four-lane arterials.

LOS is a qualitative measure of traffic operational conditions, based on roadway capacity and motorist delay. The 2010 *Highway Capacity Manual* defines six levels of service, ranging from A to F, with LOS A representing the best possible operating conditions and LOS F representing over-capacity, or congested conditions. In developed areas, LOS D is typically considered to be acceptable for peak hour traffic operations. **Figure 3** depicts the existing intersection geometrics, traffic control, and intersection LOS results; and **Appendix B** contains SYNCHRO LOS worksheets. As indicated, existing traffic operations at the study area intersections are acceptable, at LOS C or better, during the peak times analyzed.





#### LEGEND

- XXX(XXX) = AM(PM) Peak Hour Traffic Volumes
- XXXX = Daily Traffic Volumes
- X/X = AM/PM Peak Hour Signalized Intersection Level of Service
- = Stop Sign
- = Traffic Signal



**FIGURE 3**  
Existing  
Traffic Conditions

GV/R East Filing 5 20-080-01 4/7/20

### III. PROPOSED CONDITIONS

#### III.A. Trip Generation

The standard resource for estimating travel demand is *Trip Generation, 10<sup>th</sup> Edition*, Institute of Transportation Engineers (ITE), 2017. The Active Adult development would consist of about 662 homes, of which 143 homes would be in Filing 5. This analysis used the average rates per dwelling unit for ITE land use code 251, Senior Adult Housing – Detached. As **Table I** indicates, the proposed development is expected to generate approximately 2,970 vehicle trips per day and about 170 to 210 trips during the AM and PM peak hours, respectively. Filing 5 would generate about 770 trips per day, with 55 to 65 trips during the peak hours.

**Table I. Trip Generation Analysis**

Site	Quantity (Dwelling Units)	Daily Trips	AM Peak Hour Trips			PM Peak Hour Trips		
			In	Out	Total	In	Out	Total
Filing 5	143	770	20	35	55	40	25	65
Remainder of AA Site	519	2200	35	80	115	90	55	145
<b>Total</b>	<b>662</b>	<b>2970</b>	<b>55</b>	<b>115</b>	<b>170</b>	<b>130</b>	<b>80</b>	<b>210</b>

#### III.B. Site Trip Distribution and Site-generated Traffic Assignment

##### *Short Range Future*

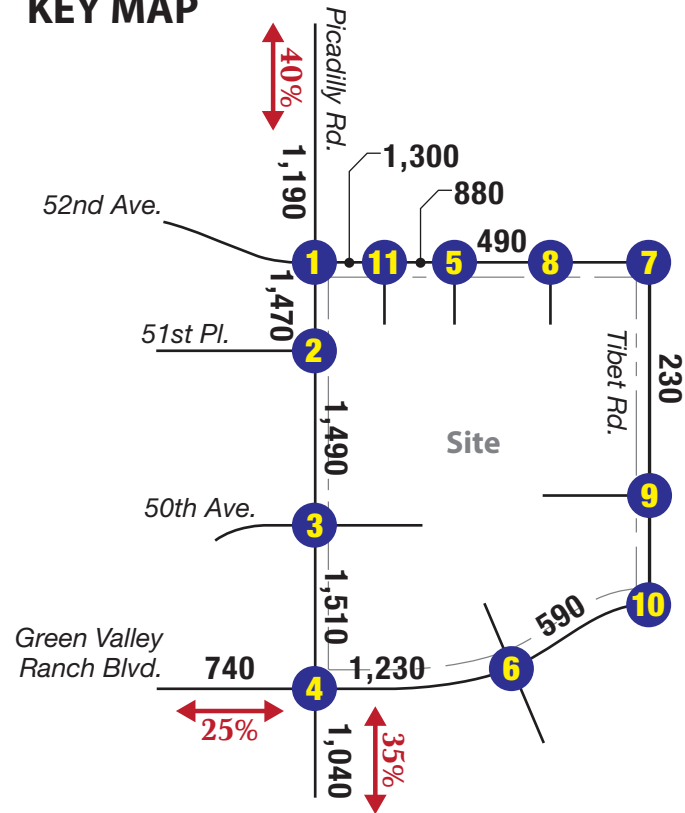
For the Short Range Future scenario, it is expected that the Active Adult development will include construction (partial cross-sections) of the roadways immediately adjacent to the site, including 48<sup>th</sup> Avenue, Tibet Street, and 52<sup>nd</sup> Avenue. It is estimated that the existing two-lane cross-section on Picadilly Road would remain sufficient in the near term for purposes of this study.

The trip generation estimates from **Table I** were assigned to the adjacent roadway system based on existing travel patterns extracted from the count data. It is projected that approximately 40 percent of site trips would be oriented to/from areas north of the site, with 35 percent south and 25 percent west. **Figure 4** shows the site trip distribution and resultant traffic assignment for the Short Range Future. As indicated, Picadilly Road would carry between 1,040 and 1,510 VPD of site traffic, Green Valley Ranch Boulevard would carry about 740 VPD, and 48<sup>th</sup> Avenue would carry up to about 1,230 VPD in site-generated traffic.

##### *Long Range Future*

By 2040, it is projected that the study area roadway system would be fully built, including the planned 38<sup>th</sup> and 48<sup>th</sup> Avenue interchanges at E-470. The trip distribution for this scenario is based on the location of the site relative to regional connections. **Figure 5** depicts the Long Range Future trip distribution and resultant site-generated traffic assignment. As indicated, the proposed development would contribute between 270 and 950 VPD to Picadilly Road. Site-generated volumes along Tibet Street would range between about 180 and 1,150 VPD, and 48<sup>th</sup> Avenue would carry up to about 920 VPD east of the site and about 500 VPD west of the site.

## KEY MAP

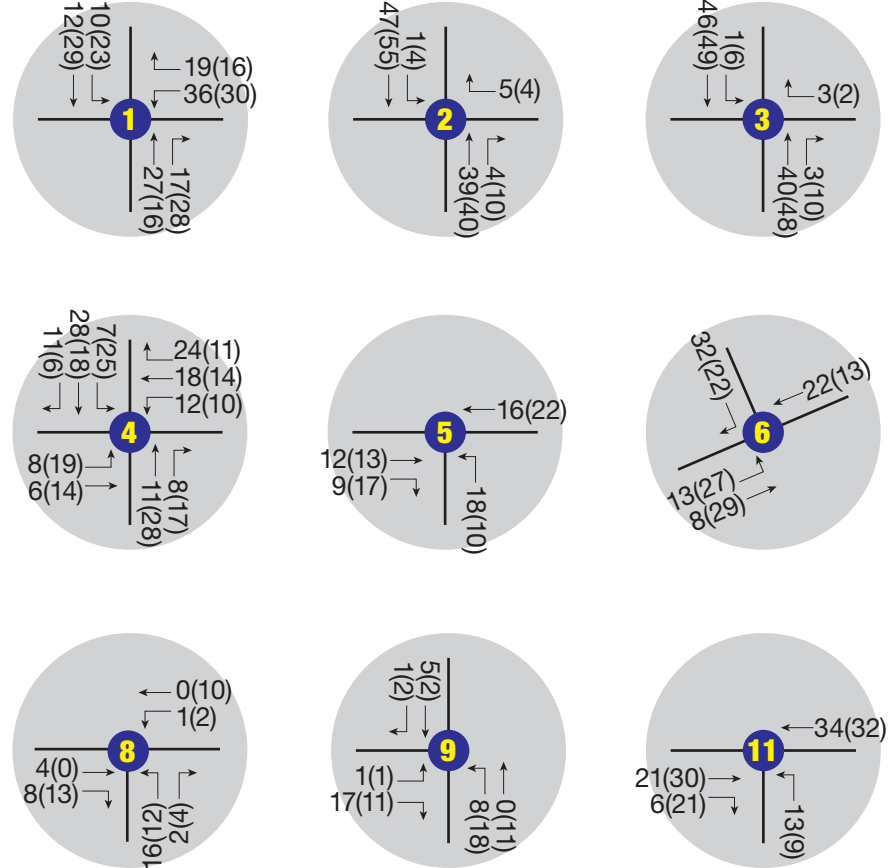


## LEGEND

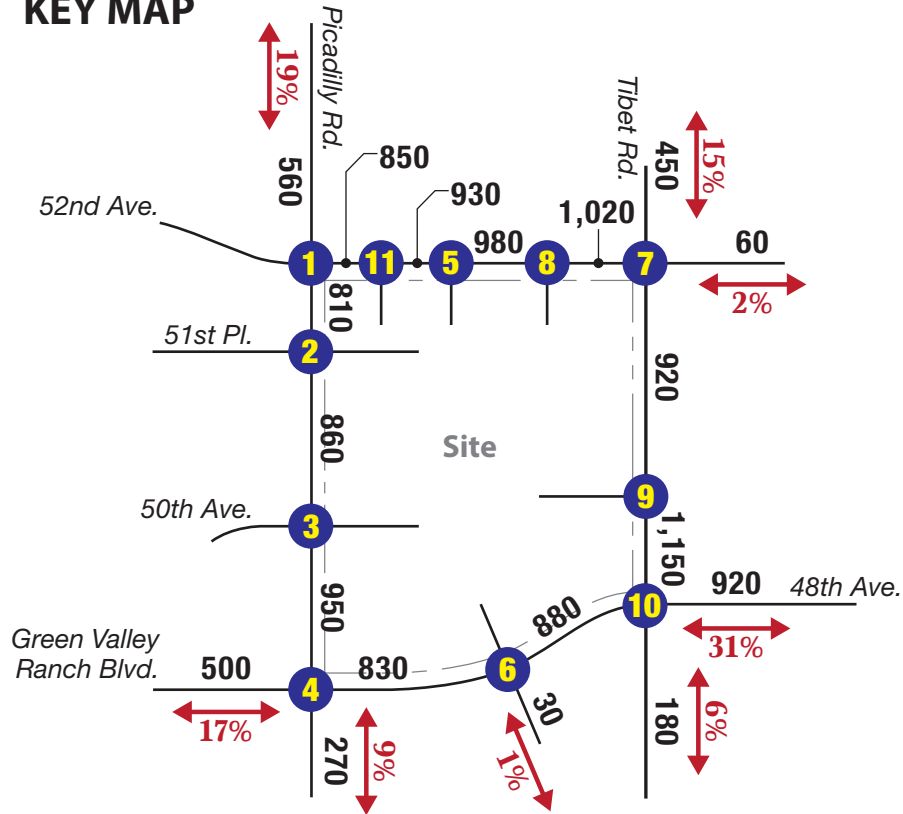
XXX(XXX) = AM(PM) Peak Hour Traffic Volumes

XXXX = Daily Traffic Volumes

XX% = Site Trip Distribution



## KEY MAP

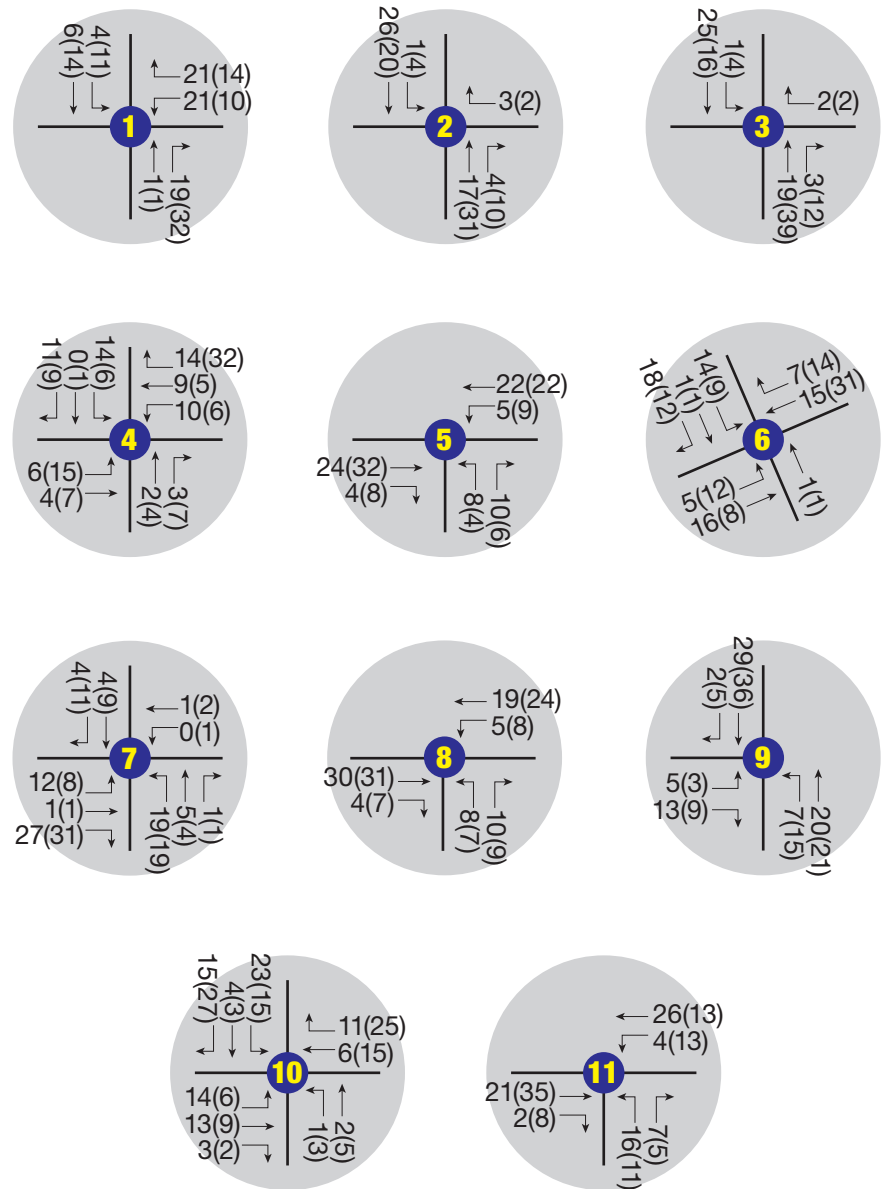


### LEGEND

xxx(xxx) = AM(PM) Peak Hour Traffic Volumes

xxxx = Daily Traffic Volumes

xx% = Site Trip Distribution

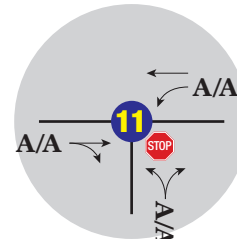
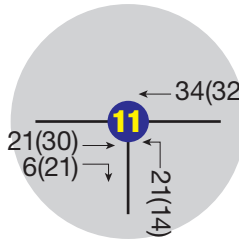
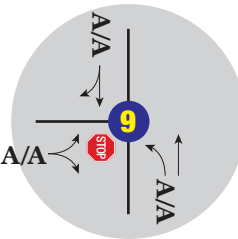
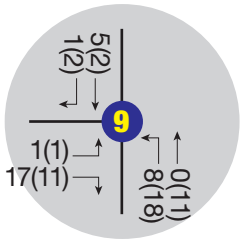
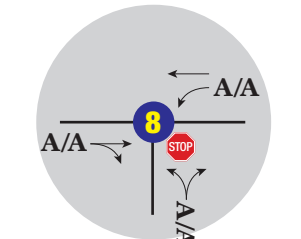
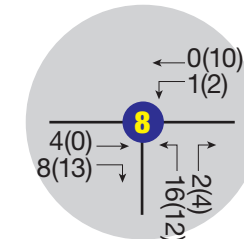
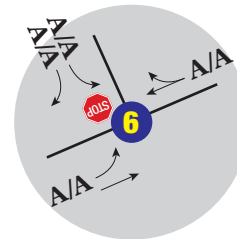
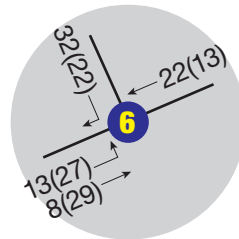
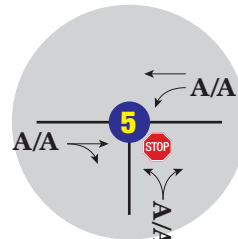
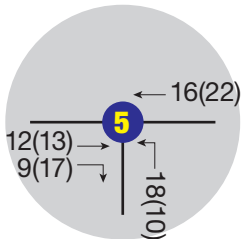
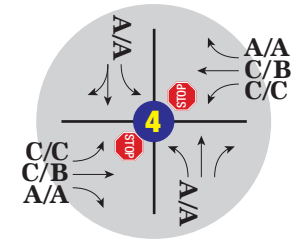
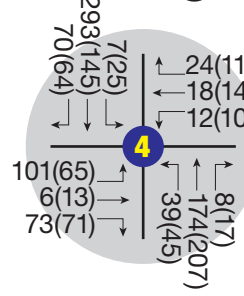
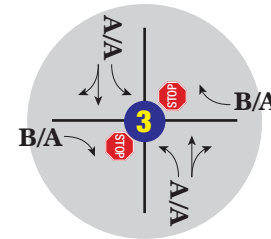
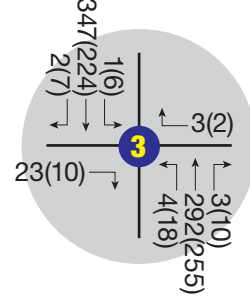
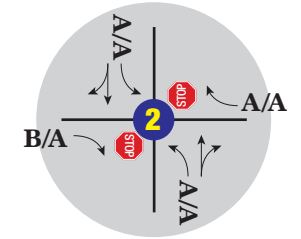
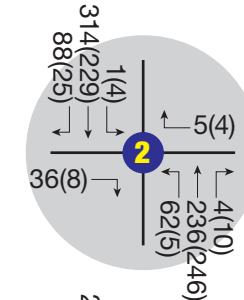
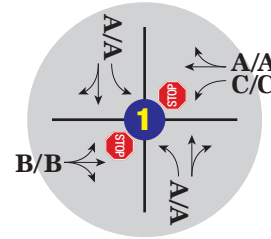
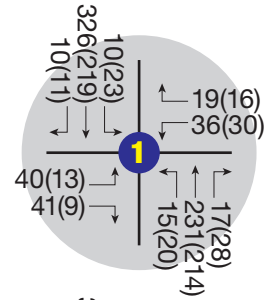
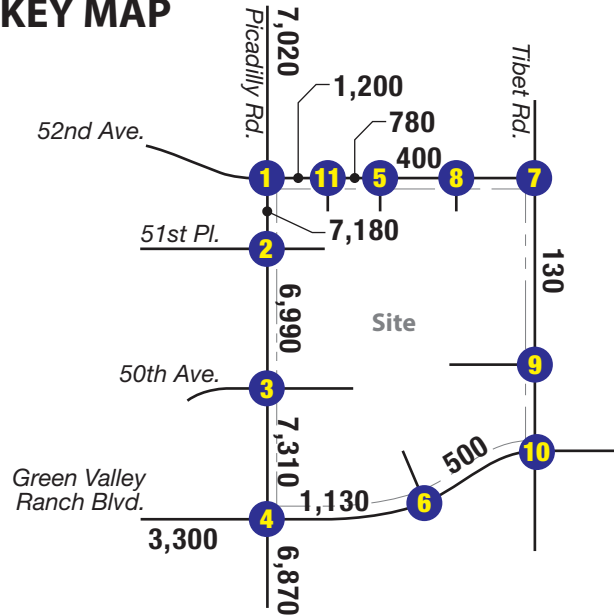


### **III.C. Existing Plus Site-generated Traffic**

The Short Range Future site-generated traffic volumes (**Figure 4**) were added to the existing traffic volumes (**Figure 3**) to produce the Short Range Future total traffic volumes illustrated on **Figure 6**. These volumes also include projected traffic generated by Green Valley Ranch CSP 2, which is planned to consist of 245 single family residences.

The Short Range Future total traffic volumes were used to estimate the lane geometry and traffic control required. Note that the approaches to Picadilly Road at 50<sup>th</sup> Avenue and 51<sup>st</sup> Place are shown as  $\frac{3}{4}$ -movement, as is currently proposed.

## KEY MAP



### LEGEND

xxx(xxx) = AM(PM) Peak Hour Traffic Volumes  
 XXXX = Daily Traffic Volumes  
 X/X = AM/PM Peak Hour Intersection Level of Service

STOP = Stop Sign  
 Traffic Signal

## IV. FUTURE CONDITIONS

### IV.A. Background Traffic Conditions

For the Long Range Future scenario (year 2040), traffic volume projections were developed from the 2018 NEATS model to produce the Long Range Future background projections shown on **Figure 7**. The peak hour volumes were used as the basis for intersection LOS analyses, the results of which are also summarized on **Figure 7**. **Appendix C** contains the LOS worksheets. The analyses assume the following improvements:

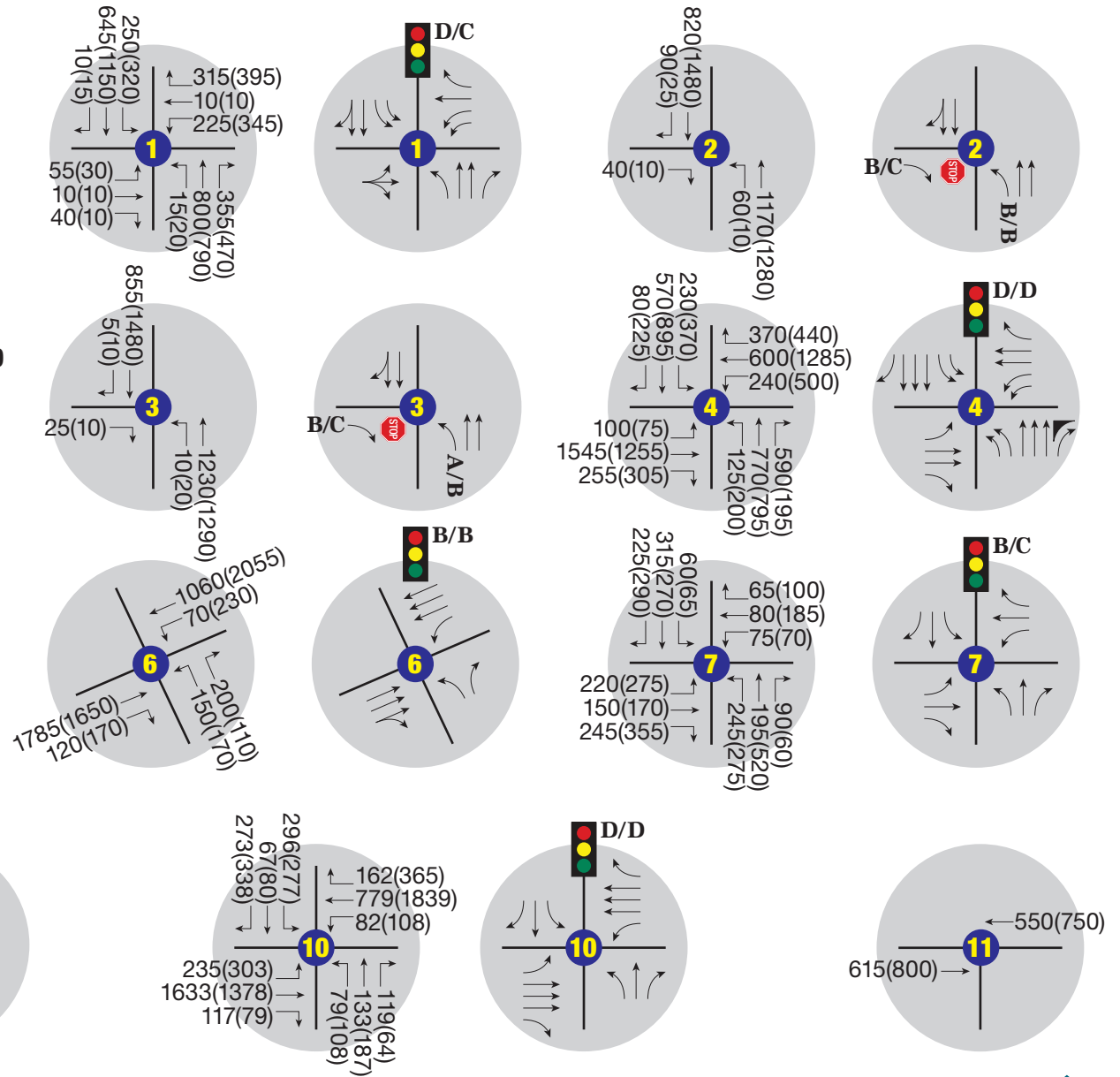
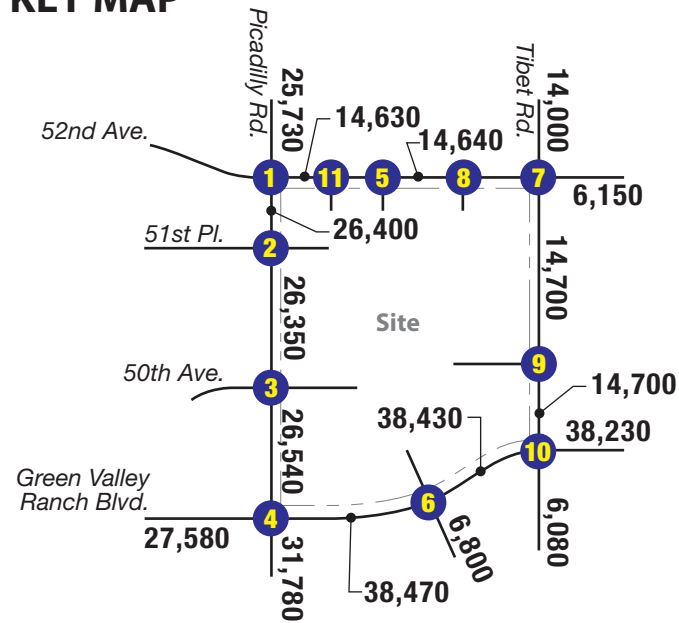
- Traffic projections along 48<sup>th</sup> Avenue are below the NEATS threshold for LOS C for six-lane major arterials.
- Dual left-turn lanes are required at 48<sup>th</sup> Avenue/Picadilly Road on the northbound, southbound, and westbound approaches.
- Green Valley Ranch Boulevard west of Picadilly Road would be restriped to a basic four-lane arterial cross section. In addition, a right-turn lane is needed on the eastbound approach at Picadilly Road. These improvements can be accomplished with pavement marking modifications (similar to improvements in place at the Argonne Street intersection about 1.6 miles to the west).
- The intersections at Green Valley Ranch Boulevard/Picadilly Road, 52<sup>nd</sup> Avenue/Picadilly Road, 48<sup>th</sup> Avenue/site access, and 48<sup>th</sup> Avenue/Tibet Street would all require signalization by 2040. Traffic conditions should be periodically monitored to determine the timing of traffic control improvements.
- The projected volumes on Picadilly Road adjacent to the site are consistent with a four-lane arterial cross-section, at LOS C per the NEATS threshold. However, because NEATS identifies Picadilly Road as a six-lane arterial, sufficient right-of-way should be preserved to implement the ultimate configuration in the future.
- The projected volumes on Tibet Street would exceed NEATS criteria for a collector roadway. This roadway is identified as a four-lane minor arterial in NEATS; therefore, sufficient right-of-way should be preserved to implement this ultimate configuration as well.

It can be seen that year 2040 background traffic operations are projected to remain within the acceptable range at all study area intersections. The unsignalized intersections along Picadilly Road are projected to be well below signal warrant thresholds; restriction to  $\frac{3}{4}$ -movement would maintain acceptable traffic operations at these intersections; inbound left-turns from Picadilly Road would be at LOS A or B during peak times.

### IV.B. Total Future Traffic

The site-generated traffic volumes (**Figure 5**) were added to the year 2040 background traffic volumes (**Figure 6**) to produce the Long Range Future total traffic volumes illustrated on **Figure 8**. By 2040, Picadilly Road would experience total volumes ranging between 26,290 and 32,050 VPD. Total daily traffic volumes along Green Valley Ranch Boulevard west of Picadilly Road are projected to be about 28,080 VPD. To the east, traffic volumes on 48<sup>th</sup> Avenue would increase to about 39,310 VPD. Tibet Street would carry up to 15,560 VPD in total traffic volumes.

## KEY MAP



### LEGEND

xxx(xxx) = AM(PM) Peak Hour Traffic Volumes

XXXX = Daily Traffic Volumes

X/X = AM/PM Peak Hour Intersection  
Level of Service

= Stop Sign

= Traffic Signal

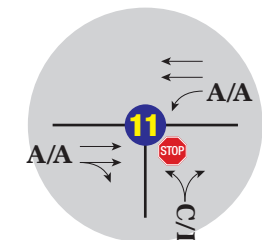
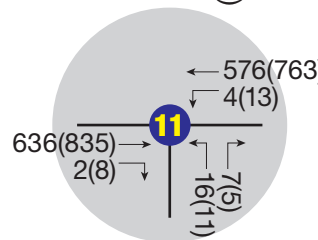
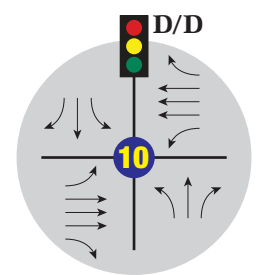
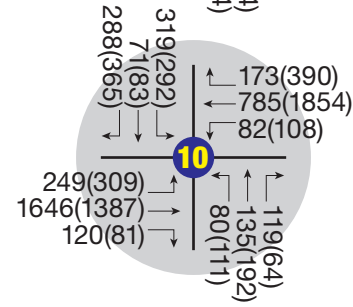
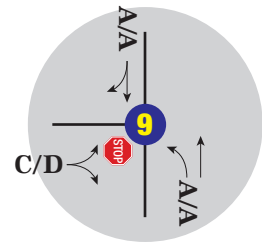
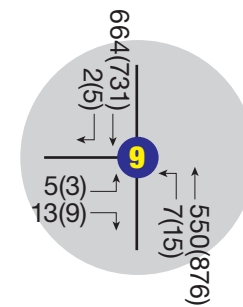
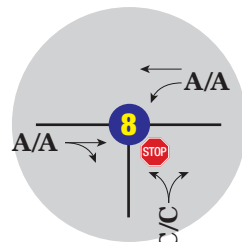
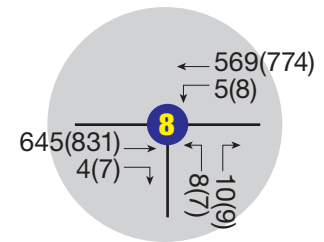
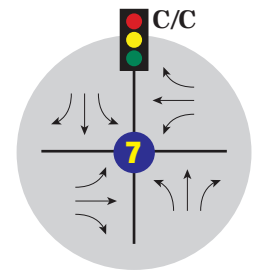
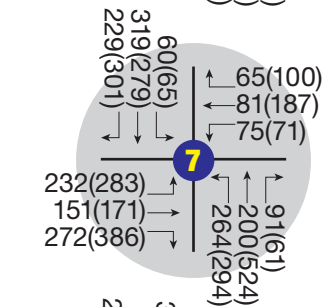
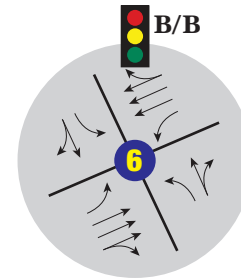
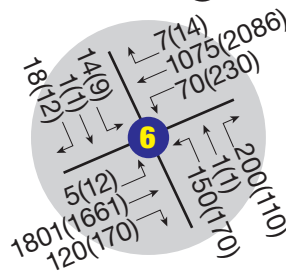
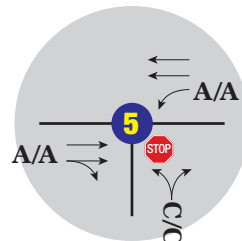
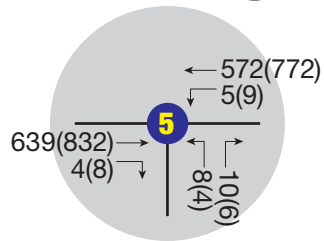
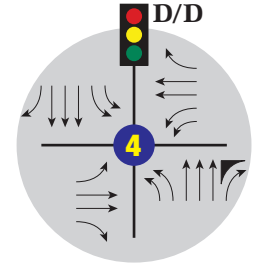
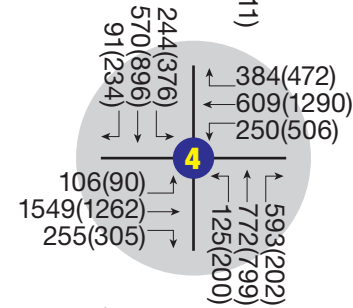
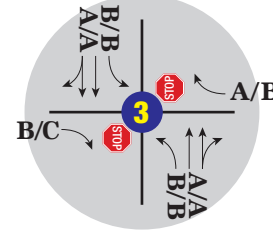
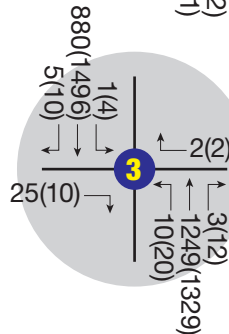
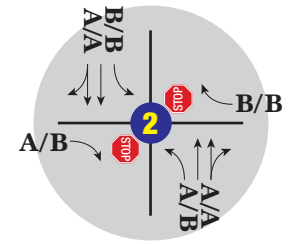
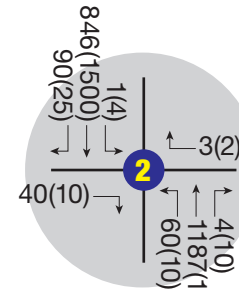
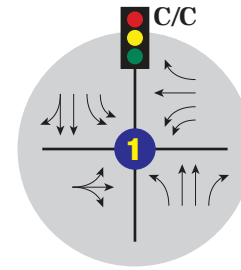
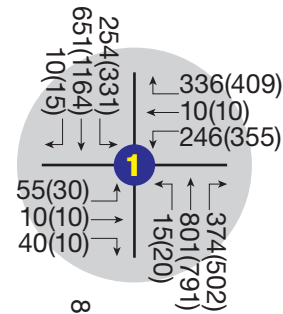
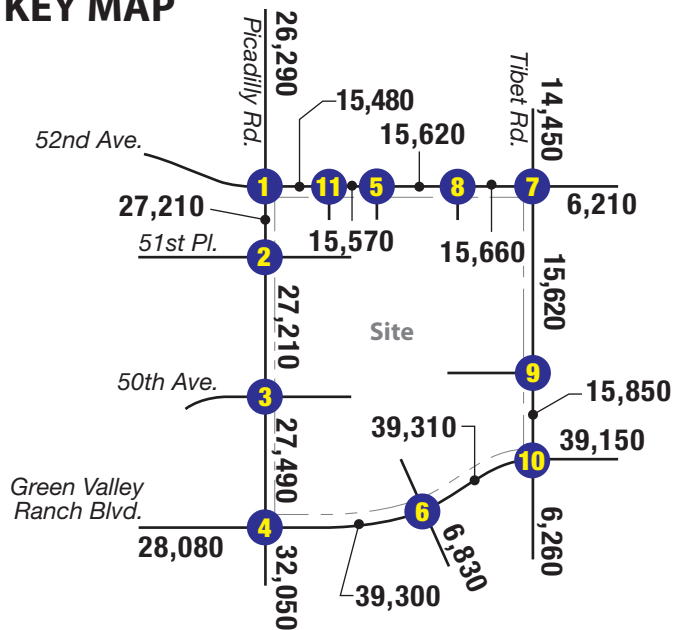
= Yield Control Right-Turn

## FIGURE 7

### Long Range Future Background Traffic Conditions



# KEY MAP



**LEGEND**

xxx(xxx) = AM(PM) Peak Hour Traffic Volumes  
 XXXX = Daily Traffic Volumes  
 X/X = AM/PM Peak Hour Intersection Level of Service

STOP = Stop Sign  
 Traffic Signal = Traffic Signal  
 Yield Control Right-Turn = Yield Control Right-Turn

## V. EVALUATION

### V.A. Level of Service

#### *Short Range Future*

The peak hour traffic volumes, intersection geometrics, and traffic control shown on **Figure 6** were used as the basis for LOS analyses. **Appendix D** contains LOS worksheets. As indicated, traffic operations within the study area would remain acceptable, at LOS A or B, during peak times with unsignalized traffic control. The analyses assume the following improvements:

- Each site access would need a STOP sign exiting the site.
- 50<sup>th</sup> Avenue and 51<sup>st</sup> Place would be restricted to  $\frac{3}{4}$ -movement on both Denver and Aurora sides at Picadilly Road.
- 52<sup>nd</sup> Avenue and Tibet Street would be constructed as three-lane collectors with left-turn lanes at the site accesses to accommodate near-term traffic volume projections. Right-turn lanes are not anticipated.
- The development should preserve sufficient right-of-way on both 52<sup>nd</sup> Avenue and Tibet Street to allow for the ultimate cross-sections to be constructed in the future.
- Both Picadilly Road and 48<sup>th</sup> Avenue would ultimately be six-lane arterials; sufficient right-of-way should be preserved to accommodate the future widening of these roads.

#### *Long Range Future*

The peak hour traffic volumes, intersection geometrics, and traffic control shown on **Figure 8** were used as the basis for LOS analyses. **Appendix E** contains LOS worksheets. As shown, traffic operations are projected to remain acceptable, at LOS D or better, at the signalized intersections.

The unsignalized  $\frac{3}{4}$ -movement intersections along Picadilly Road would continue to operate at LOS A or B during peak times. The proposed site accesses on 52<sup>nd</sup> Avenue and Tibet Street would all operate at acceptable levels (LOS D or better) under STOP sign control for outbound movements. Note that these site accesses would all be gated-entry; minimal traffic volumes (less than 25 vehicles per hour) would equate to no more than one or two vehicles queueing at the gates.

The analyses assume the following improvements:

- 48<sup>th</sup> Avenue would be completed as a six-lane arterial.
- Picadilly Road would be completed as a four-lane arterial adjacent to the Filing 5 site, with right-of-way preservation to ultimately build six lanes.
- 52<sup>nd</sup> Avenue would ultimately be improved to a four-lane (plus center turn lane) roadway between Picadilly Road and Tibet Street. It is anticipated that the classification of 52<sup>nd</sup> Avenue would remain collector, allowing for residential driveway connections.
- Tibet Street is proposed to remain a three-lane collector with separate left- and right-turn lanes at the intersections with 48<sup>th</sup> Avenue and 52<sup>nd</sup> Avenue.
- All internal site roadways would be constructed as two-lane, local streets.

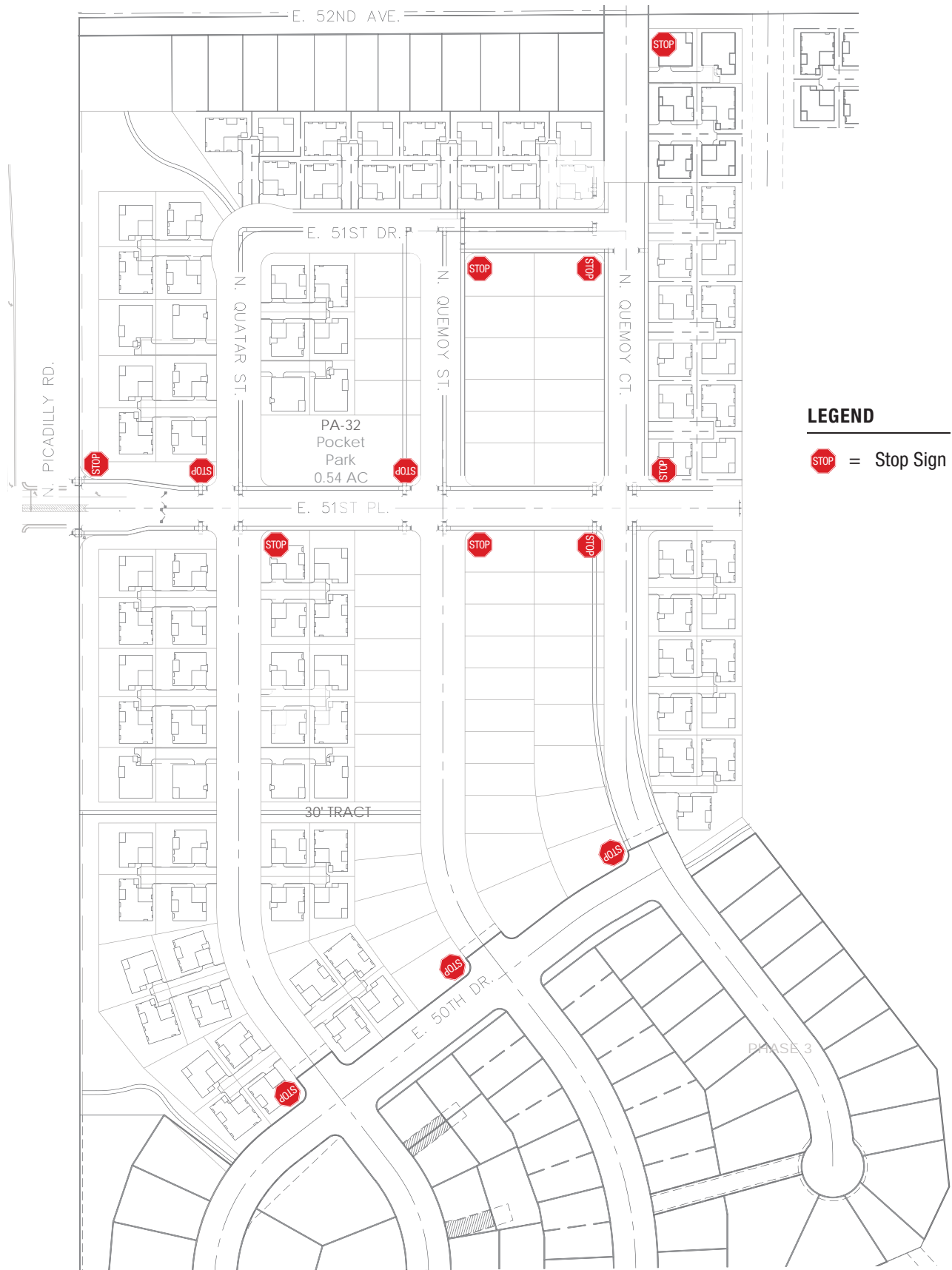
## **V.B. Traffic Control Devices**

As previously identified, all site accesses are projected to function at acceptable levels with unsignalized traffic control in the Short Range Future. Each site access would need a STOP sign exiting the site. Traffic control within the Filing 5 site would be unsignalized. **Figure 9** depicts STOP sign locations on site internal streets.

By 2040, the intersections at Green Valley Ranch Boulevard/48<sup>th</sup> Avenue/Picadilly Road, 48<sup>th</sup> Avenue/site access, 52<sup>nd</sup> Avenue/Tibet Street, and 48<sup>th</sup> Avenue/Tibet Street would all require signalization. Traffic conditions should be periodically monitored to determine the timing of traffic control improvements.

**Appendix F** includes a signal warrant evaluation based on peak hour criteria contained in *Manual on Uniform Traffic Control Devices (MUTCD)* (FHWA, 2009).

The intersections at 50<sup>th</sup> Avenue/Picadilly Road and 51<sup>st</sup> Place/Picadilly Road would remain unsignalized and would be restricted to  $\frac{3}{4}$ -movement for the side-street approaches. Traffic operations at these intersections would be acceptable through the Long Range Future, with all movements at LOS B or better.



**LEGEND**

 = Stop Sign

## V.C. Queuing

The Long Range Future LOS analyses include the 95<sup>th</sup> percentile maximum probable queue lengths for turning movements at the signalized intersections impacted by this site, as summarized in **Table 2**. As indicated, the storage lengths required by the Colorado Department of Transportation (CDOT) criteria would generally be adequate to accommodate the projected queues. Those movements where the projected queues would exceed the CDOT storage are indicated in bold, and future improvements should account for these potential queue lengths.

**Table 2. Queue Results at Future Signalized Intersections**

Intersection	Movement	Per Lane Queue Length (ft) AM (PM)	CDOT Storage Requirement Per Lane (ft)	Recommended Storage Length (ft)
Picadilly Road/ Green Valley Ranch Boulevard/ 48 <sup>th</sup> Avenue	EB Left	<b>200(150)</b>	105	200
	EB Right	<b>275(350)</b>	305	350
	WB Left	<b>200(350)</b>	253	350
	WB Right	400(500)	Continuous Lane	N/A
	NB Left	<b>100(175)</b>	100	175
	NB Right	0(0)	590	Free Right
	SB Left	<b>200(275)</b>	185	275
	SB Right	<b>100(275)</b>	230	275
48 <sup>th</sup> Avenue/ Site Access/ Local Access	EB Left	25(25)	40	50
	WB Left	50(193)	230	230
	NB Left	<b>150(200)</b>	170	200
	NB Through-Right	200(125)	200	200
	SB Left-Through	25(25)	40	50
	SB Right	25(25)	40	50
48 <sup>th</sup> Avenue/ Tibet Street	EB Left	<b>350(400)</b>	255	400
	EB Right	175(200)	191	200
	WB Left	225(250)	255	275
	WB Right	175( <b>375</b> )	360	375
	NB Left	125(75)	158	175
	NB Right	<b>200(25)</b>	165	200
	SB Left	250(100)	293	300
	SB Right	<b>325(500)</b>	314	500
52 <sup>nd</sup> Avenue/ Picadilly Road	EB Left-Through-Right	<b>125(75)</b>	40	125
	WB Left	<b>150(225)</b>	172	225
	NB Left	25(25)	40	50
	NB Right	300(475)	479	500
	SB Left	<b>190(250)</b>	166	250

Intersection	Movement	Per Lane Queue Length (ft) AM (PM)	CDOT Storage Requirement Per Lane (ft)	Recommended Storage Length (ft)
52 <sup>nd</sup> Avenue/ Tibet Street	EB Left	125(100)	280	300
	EB Right	175( <b>575</b> )	366	375
	WB Left	50( <b>100</b> )	76	100
	WB Right	50(125)	300	300
	NB Left	125(225)	275	275
	NB Right	50(73)	90	100
	SB Left	50( <b>75</b> )	65	75
	SB Right	150(300)	300	300

As previously mentioned, queueing at the site access entry gates is expensed to be negligible, due to the minimal projected entering volumes; queues of only one or two vehicles would be expected.

Internal queueing of vehicles is not anticipated to affect traffic operations. The City has expressed concern regarding the proximity of Quatar Street to Picadilly Road at the 51<sup>st</sup> Avenue intersection. To address this concern, the site plan has been modified to better meet the criteria contained in Aurora's Standards and Specifications. Per the LOS analyses, the westbound queue at 51<sup>st</sup> Street and Picadilly Road is minimal, at 25 feet or less, during peak times. Thus, internal queues would not block the intersection at 51<sup>st</sup> Avenue and Quatar Street.

## **V.D. Safety**

### ***Sight Distance***

To enable motorists to make safe decisions, appropriate sight distance should be provided at the proposed site accesses to City of Aurora Standards (see Standard Details TE 13.1 and TE 13.2). Trees or other plantings within adjacent tree-lawns could impact sight distance; therefore, placement of landscaping or plantings should remain outside the appropriate sight distance for outbound motorists. For the 50 MPH arterial design speed on Picadilly Road and 48<sup>th</sup> Avenue, 515 feet (looking left) and 625 feet (looking right) are required, per City of Aurora criteria.

### ***Florida Pitt Waller School***

Due to the proximity of the existing school at Picadilly Road/51<sup>st</sup> Place, school zone signing may be required to alert motorists of the potential for school children. As this is an Active Adult development located in a different school district, school-aged children are not anticipated to cross Picadilly Road between the site and the school. It is generally atypical for school districts to designate walk routes across major arterials, but the signal at 52<sup>nd</sup> Avenue could provide a suitable pedestrian crossing if students do need to walk from this development. Therefore, coordination with Denver Public Schools on potential safety improvements is suggested.

## VI. CONCLUSIONS AND RECOMMENDATIONS

Filing 5 is an Active Adult residential development proposed at Green Valley Ranch East. The site is part of a larger planned Active Adult Community of approximate 140 acres located on the east side of Picadilly Road, north of the future 48<sup>th</sup> Avenue, west of the future Tibet Street, and south of the future 52<sup>nd</sup> Avenue. At build-out, the proposed development would consist of approximately 662 senior housing units, 143 units of which comprise Filing 5. Site vehicular access would be via seven accesses: two on Picadilly Road (at 50<sup>th</sup> Avenue and 51<sup>st</sup> Place), one on Tibet Street, three on 52<sup>nd</sup> Avenue, and one on 48<sup>th</sup> Avenue.

The proposed development would generate approximately 2,970 vehicle trips on a daily basis, with 170 trips during the AM peak hour and about 210 trips during the PM peak hour. The potential impacts of the site-generated traffic were evaluated under both Short Range Future and Long Range Future scenarios. In general, the existing and planned roadway system would have sufficient reserve capacity to accommodate the projected increases. Relative to this, the following summarizes the findings and recommendations of this analysis.

### VI.A. Short Range Future

The following initial improvements are a requirement of the Active Adult development:

- Construct 48<sup>th</sup> Avenue to major arterial standards adjacent to the site.
- Construct all internal site roadways as two-lane, local streets.
- Install a STOP sign at each site access exiting the site.
- Restrict 50<sup>th</sup> Avenue and 51<sup>st</sup> Place to  $\frac{3}{4}$ -movement. Coordination with Denver will be needed.
- Construct 52<sup>nd</sup> Avenue to collector standards with left-turn lanes at the site accesses (right-turn lanes are not anticipated). A westbound right-turn lane/lane drop at Picadilly would provide the transition to the existing cross section on the Denver side.
- Construct Tibet Street as a three-lane collector with left-turn lanes at the site accesses. Right-turn lanes are not anticipated. Preserve sufficient right-of-way for the ultimate minor arterial cross section.
- Preserve sufficient right-of-way to allow for the ultimate six-lane cross section on Picadilly Road to be constructed in the future.

### VI.B. Long Range Future

The following improvements would be required for the 2040 background conditions, regardless of the Active Adult development:

- Construct dual left-turn lanes at 48<sup>th</sup> Avenue/Picadilly Road on the northbound, southbound, and eastbound approaches. Exclusive right-turn lanes would be needed on all approaches. The westbound approach right-turn would be a lane drop at Picadilly Road to reduce laneage to two-throughs on the west side of the intersection.
- Signalize the intersections at 48<sup>th</sup> Avenue/Picadilly Road, 48<sup>th</sup> Avenue/site access, and 48<sup>th</sup> Avenue/Tibet Street, when warranted.
- Signalize the intersections at 52<sup>nd</sup> Avenue/Picadilly Road and 52<sup>nd</sup> Avenue/Tibet Street, when warranted.
- Construct Picadilly Road as a four-lane arterial adjacent to the site. However, because NEATS identifies Picadilly Road as a six-lane arterial, sufficient right-of-way should be preserved to implement the ultimate configuration in the future.

- Tibet Street would remain a three-lane collector. Because this roadway is identified as a four-lane arterial in NEATS, sufficient right-of-way should be preserved to implement this ultimate configuration.
- 52<sup>nd</sup> Avenue would ultimately be improved to a five-lane roadway between Picadilly Road and Tibet Street. The classification of 52<sup>nd</sup> Avenue would remain collector, allowing for residential driveway connections.
- Roadside trees or other plantings that could impact sight distance are recommended to remain outside the 515 to 625 feet of sight distance required for outbound motorists at each of the proposed site accesses.
- Coordinate with Denver Public Schools to ensure appropriate school zone signing adjacent to the site.



## APPENDIX A. TRAFFIC COUNTS

Site Code: 1  
Station ID: 1  
PICADILLY RD S.O. 51ST AVE

Start Time	25-Feb-20 Tue	NB	SB							Total
12:00 AM		17	26							43
01:00		10	14							24
02:00		16	7							23
03:00		32	24							56
04:00		56	30							86
05:00		101	77							178
06:00		128	224							352
07:00		241	331							572
08:00		183	208							391
09:00		111	97							208
10:00		116	113							229
11:00		125	130							255
12:00 PM		159	106							265
01:00		175	143							318
02:00		177	185							362
03:00		295	256							551
04:00		231	210							441
05:00		224	197							421
06:00		156	134							290
07:00		69	72							141
08:00		74	64							138
09:00		56	80							136
10:00		46	61							107
11:00		35	40							75
Total		2833	2829							5662
Percent		50.0%	50.0%							
AM Peak	-	07:00	07:00	-	-	-	-	-	-	07:00
Vol.	-	241	331	-	-	-	-	-	-	572
PM Peak	-	15:00	15:00	-	-	-	-	-	-	15:00
Vol.	-	295	256	-	-	-	-	-	-	551

Site Code: 1  
Station ID: 1  
PICADILLY RD S.O. 51ST AVE

Start Time	26-Feb-20 Wed	NB	SB								Total
12:00 AM		10	19								29
01:00		7	16								23
02:00		16	11								27
03:00		40	14								54
04:00		38	40								78
05:00		107	100								207
06:00		151	226								377
07:00		219	302								521
08:00		182	179								361
09:00		91	99								190
10:00		96	116								212
11:00		140	103								243
12:00 PM		143	142								285
01:00		154	146								300
02:00		205	146								351
03:00		264	257								521
04:00		255	193								448
05:00		202	177								379
06:00		150	126								276
07:00		105	77								182
08:00		79	74								153
09:00		60	63								123
10:00		33	66								99
11:00		28	53								81
Total		2775	2745								5520
Percent		50.3%	49.7%								
AM Peak	-	07:00	07:00	-	-	-	-	-	-	-	07:00
Vol.	-	219	302	-	-	-	-	-	-	-	521
PM Peak	-	15:00	15:00	-	-	-	-	-	-	-	15:00
Vol.	-	264	257	-	-	-	-	-	-	-	521

Site Code: 1  
Station ID: 1  
PICADILLY RD S.O. 51ST AVE

Start Time	27-Feb-20 Thu	NB	SB							Total
12:00 AM		26	26							52
01:00		13	11							24
02:00		25	6							31
03:00		33	14							47
04:00		47	35							82
05:00		98	84							182
06:00		138	213							351
07:00		236	256							492
08:00		166	190							356
09:00		99	113							212
10:00		114	112							226
11:00		151	144							295
12:00 PM		149	140							289
01:00		157	116							273
02:00		166	138							304
03:00		208	212							420
04:00		247	154							401
05:00		194	172							366
06:00		114	111							225
07:00		75	67							142
08:00		55	53							108
09:00		50	64							114
10:00		32	61							93
11:00		18	35							53
Total		2611	2527							5138
Percent		50.8%	49.2%							
AM Peak	-	07:00	07:00	-	-	-	-	-	-	07:00
Vol.	-	236	256	-	-	-	-	-	-	492
PM Peak	-	16:00	15:00	-	-	-	-	-	-	15:00
Vol.	-	247	212	-	-	-	-	-	-	420
Grand Total		8219	8101							16320
Percent		50.4%	49.6%							
ADT		ADT 5,440	AADT 5,440							



(303) 216-2439  
www.alltrafficdata.net

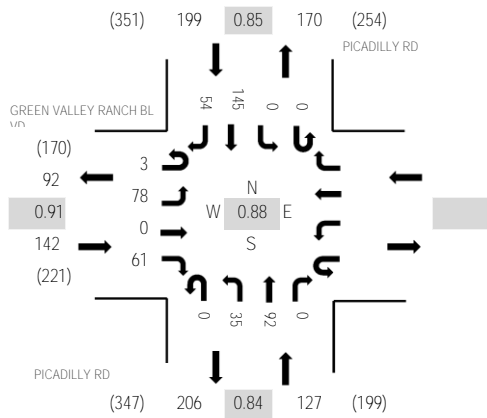
**Location:** 1 PICADILLY RD & GREEN VALLEY RANCH BLVD AM

**Date and Start Time:** Tuesday, February 21, 2017

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

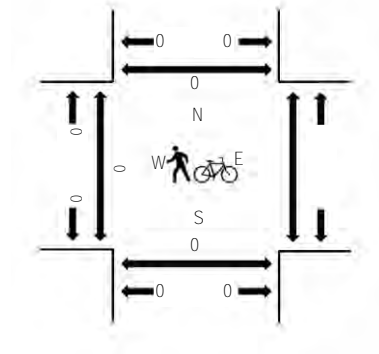
**Peak 15-Minutes:** 07:15 AM - 07:30 AM

### Peak Hour - All Vehicles



Note: Total study counts contained in parentheses.

### Peak Hour - Pedestrians/Bicycles on Crosswalk



### Traffic Counts

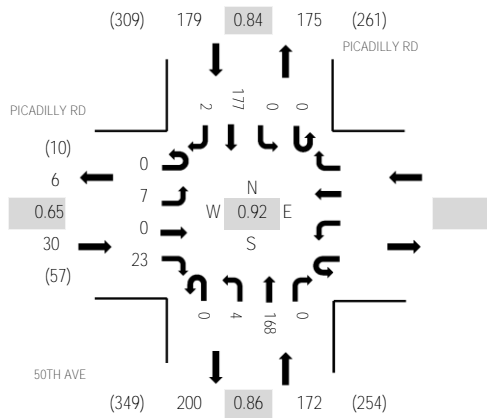
Interval Start Time	GREEN VALLEY RANCH Eastbound				Westbound				PICADILLY RD Northbound				PICADILLY RD Southbound				Total	Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
7:00 AM	0	11	0	21					0	6	15	0	0	0	37	16	106	462	0	0	0	0
7:15 AM	2	16	0	18					0	12	26	0	0	0	45	14	133	468	0	0	0	0
7:30 AM	1	16	0	15					0	8	22	0	0	0	40	15	117	423	0	0	0	0
7:45 AM	0	21	0	18					0	10	23	0	0	0	26	8	106	365	0	0	0	0
8:00 AM	0	25	0	10					0	5	21	0	0	0	34	17	112	309	0	0	0	0
8:15 AM	0	13	0	10					0	6	12	0	0	0	23	24	88		0	0	0	0
8:30 AM	0	2	0	10					0	6	15	0	0	0	17	9	59		0	0	0	0
8:45 AM	1	7	0	4					0	3	9	0	0	0	19	7	50		0	0	0	0
Count Total	4	111	0	106					0	56	143	0	0	0	241	110	771		0	0	0	0
Peak Hour	3	78	0	61					0	35	92	0	0	0	145	54	468		0	0	0	0



(303) 216-2439  
www.alltrafficdata.net

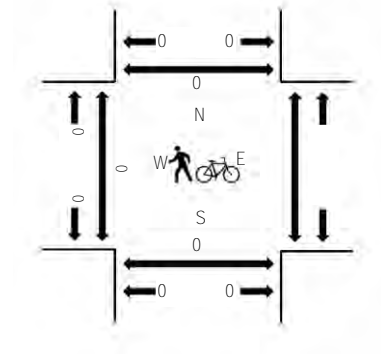
**Location:** 2 50TH AVE & PICADILLY RD AM  
**Date and Start Time:** Tuesday, February 21, 2017  
**Peak Hour:** 07:15 AM - 08:15 AM  
**Peak 15-Minutes:** 07:15 AM - 07:30 AM

### Peak Hour - All Vehicles



Note: Total study counts contained in parentheses.

### Peak Hour - Pedestrians/Bicycles on Crosswalk



### Traffic Counts

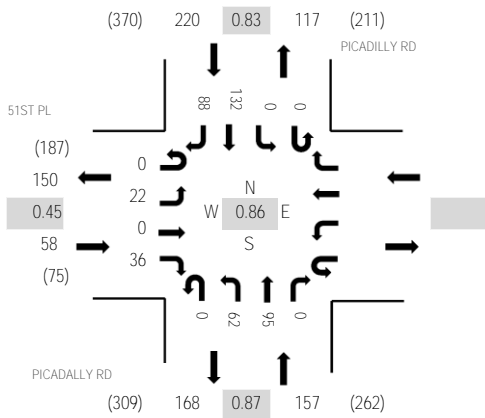
Interval Start Time	PICADILLY RD Eastbound				Westbound				50TH AVE Northbound				PICADILLY RD Southbound				Total	Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
7:00 AM	0	2	0	11					0	0	25	0	0	0	40	0	78	357	0		0	0
7:15 AM	0	4	0	5					0	1	42	0	0	0	51	0	103	381	0		0	0
7:30 AM	0	2	0	5					0	2	37	0	0	0	53	0	99	350	0		0	0
7:45 AM	0	1	0	4					0	1	39	0	0	0	31	1	77	295	0		0	0
8:00 AM	0	0	0	9					0	0	50	0	0	0	42	1	102	263	0		0	0
8:15 AM	0	1	0	8					0	0	25	0	0	0	38	0	72		1		0	0
8:30 AM	0	0	0	2					0	0	18	0	0	0	22	2	44		0		0	0
8:45 AM	0	2	0	1					0	1	13	0	0	0	27	1	45		1		0	0
Count Total	0	12	0	45					0	5	249	0	0	0	304	5	620		2		0	0
Peak Hour	0	7	0	23					0	4	168	0	0	0	177	2	381		0		0	0



(303) 216-2439  
www.alltrafficdata.net

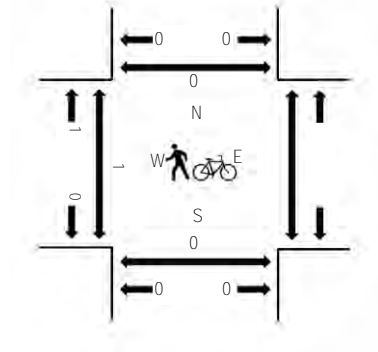
**Location:** 3 PICADALLY RD & 51ST PL AM  
**Date and Start Time:** Tuesday, February 21, 2017  
**Peak Hour:** 07:30 AM - 08:30 AM  
**Peak 15-Minutes:** 08:00 AM - 08:15 AM

### Peak Hour - All Vehicles



Note: Total study counts contained in parentheses.

### Peak Hour - Pedestrians/Bicycles on Crosswalk



### Traffic Counts

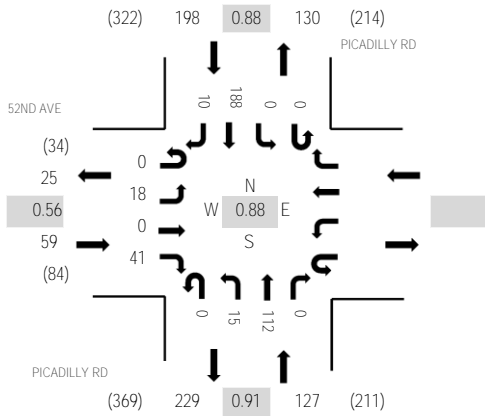
Interval Start Time	51ST PL Eastbound				Westbound				PICADALLY RD Northbound				PICADALLY RD Southbound				Total	Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
7:00 AM	0	2	0	3					0	3	26	0	0	0	39	6	79	383	0		0	0
7:15 AM	0	2	0	7					0	12	31	0	0	0	40	11	103	430	0		0	0
7:30 AM	0	1	0	6					0	11	29	0	0	0	50	19	116	435	0		0	0
7:45 AM	0	3	0	4					0	8	28	0	0	0	27	15	85	365	0		0	0
8:00 AM	0	6	0	6					0	24	24	0	0	0	33	33	126	324	0		0	0
8:15 AM	0	12	0	20					0	19	14	0	0	0	22	21	108		1		0	0
8:30 AM	0	2	0	0					0	2	16	0	0	0	26	0	46		1		0	0
8:45 AM	0	1	0	0					0	1	14	0	0	0	26	2	44		1		0	0
Count Total	0	29	0	46					0	80	182	0	0	0	263	107	707		3		0	0
Peak Hour	0	22	0	36					0	62	95	0	0	0	132	88	435		1		0	0



(303) 216-2439  
www.alltrafficdata.net

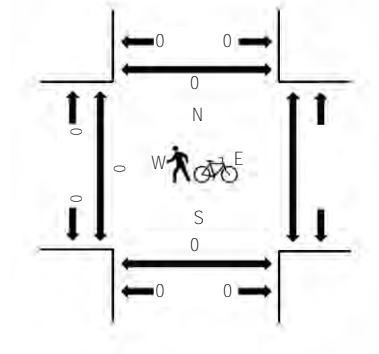
**Location:** 4 PICADILLY RD & 52ND AVE AM  
**Date and Start Time:** Tuesday, February 21, 2017  
**Peak Hour:** 07:15 AM - 08:15 AM  
**Peak 15-Minutes:** 08:00 AM - 08:15 AM

### Peak Hour - All Vehicles



Note: Total study counts contained in parentheses.

### Peak Hour - Pedestrians/Bicycles on Crosswalk



### Traffic Counts

Interval Start Time	52ND AVE								PICADILLY RD				PICADILLY RD				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						
7:00 AM	0	0	0	5					0	0	26	0	0	0	39	3	73	348	0		0	0
7:15 AM	0	2	0	9					0	1	34	0	0	0	47	0	93	384	0		0	0
7:30 AM	0	5	0	8					0	3	27	0	0	0	55	1	99	359	0		0	0
7:45 AM	0	2	0	6					0	6	28	0	0	0	37	4	83	308	0		0	0
8:00 AM	0	9	0	18					0	5	23	0	0	0	49	5	109	269	0		0	0
8:15 AM	0	3	0	9					0	3	22	0	0	0	30	1	68		1		0	0
8:30 AM	0	2	0	4					0	1	16	0	0	0	25	0	48		0		0	0
8:45 AM	0	0	0	2					0	1	15	0	0	0	26	0	44		1		0	0
Count Total	0	23	0	61					0	20	191	0	0	0	308	14	617		2		0	0
Peak Hour	0	18	0	41					0	15	112	0	0	0	188	10	384		0		0	0





(303) 216-2439  
www.alltrafficdata.net

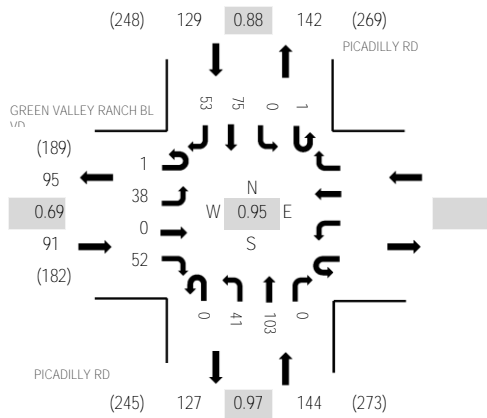
**Location:** 1 PICADILLY RD & GREEN VALLEY RANCH BLVD PM

**Date and Start Time:** Tuesday, February 21, 2017

**Peak Hour:** 05:00 PM - 06:00 PM

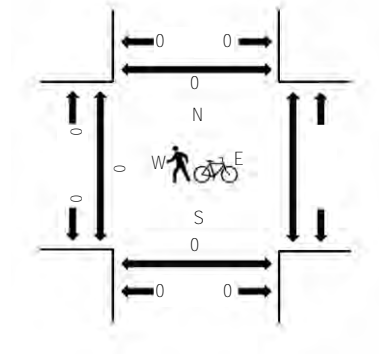
**Peak 15-Minutes:** 05:00 PM - 05:15 PM

### Peak Hour - All Vehicles



Note: Total study counts contained in parentheses.

### Peak Hour - Pedestrians/Bicycles on Crosswalk



### Traffic Counts

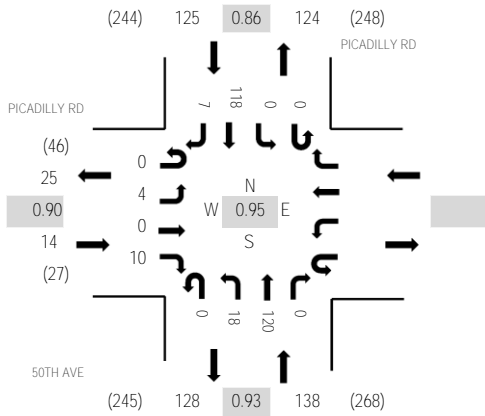
Interval Start Time	GREEN VALLEY RANCH								PICADILLY RD				PICADILLY RD				Total	Rolling Hour	Pedestrian Crossings			
	Eastbound				Westbound				Northbound				Southbound						West	East	South	North
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right						
4:00 PM	0	8	0	7					0	10	26	0	0	0	19	8	78	339	0		0	0
4:15 PM	0	19	0	17					0	11	18	0	0	0	17	15	97	357	0		0	0
4:30 PM	0	9	0	15					0	14	24	0	0	0	24	13	99	353	0		0	0
4:45 PM	0	10	0	6					0	13	13	0	0	0	13	10	65	346	0		0	0
5:00 PM	1	10	0	13					0	12	25	0	1	0	21	13	96	364	0		0	0
5:15 PM	0	14	0	10					0	10	24	0	0	0	20	15	93		0		0	0
5:30 PM	0	6	0	17					0	7	29	0	0	0	20	13	92		0		0	0
5:45 PM	0	8	0	12					0	12	25	0	0	0	14	12	83		0		0	0
Count Total	1	84	0	97					0	89	184	0	1	0	148	99	703		0		0	0
Peak Hour	1	38	0	52					0	41	103	0	1	0	75	53	364		0		0	0



(303) 216-2439  
www.alltrafficdata.net

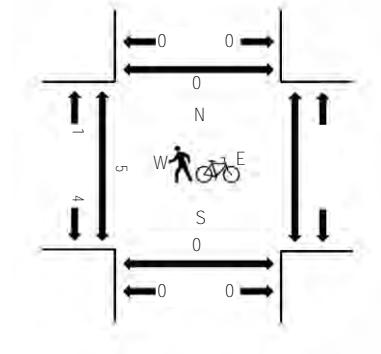
**Location:** 2 50TH AVE & PICADILLY RD PM  
**Date and Start Time:** Tuesday, February 21, 2017  
**Peak Hour:** 05:00 PM - 06:00 PM  
**Peak 15-Minutes:** 05:00 PM - 05:15 PM

### Peak Hour - All Vehicles



Note: Total study counts contained in parentheses.

### Peak Hour - Pedestrians/Bicycles on Crosswalk



### Traffic Counts

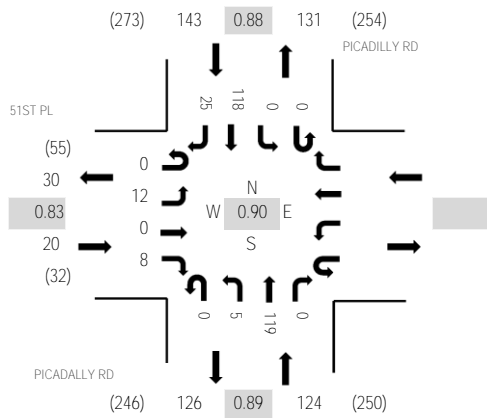
Interval Start Time	PICADILLY RD Eastbound				Westbound				50TH AVE Northbound				PICADILLY RD Southbound				Total	Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
4:00 PM	0	0	0	0					0	4	34	0	0	0	25	2	65	262	0		0	0
4:15 PM	0	3	0	1					0	3	32	0	0	0	31	1	71	270	0		0	0
4:30 PM	0	3	0	2					0	1	33	0	0	0	34	3	76	271	0		0	0
4:45 PM	0	1	0	3					0	5	18	0	0	0	21	2	50	267	4		0	0
5:00 PM	0	2	0	3					0	5	29	0	0	0	31	3	73	277	1		0	0
5:15 PM	0	0	0	2					0	3	33	0	0	0	33	1	72		1		0	0
5:30 PM	0	0	0	1					0	9	28	0	0	0	33	1	72		0		0	0
5:45 PM	0	2	0	4					0	1	30	0	0	0	21	2	60		3		0	0
Count Total	0	11	0	16					0	31	237	0	0	0	229	15	539		9		0	0
Peak Hour	0	4	0	10					0	18	120	0	0	0	118	7	277		5		0	0



(303) 216-2439  
www.alltrafficdata.net

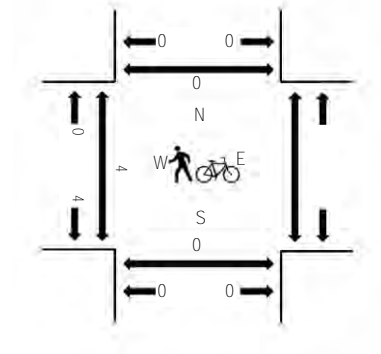
**Location:** 3 PICADALLY RD & 51ST PL PM  
**Date and Start Time:** Tuesday, February 21, 2017  
**Peak Hour:** 04:15 PM - 05:15 PM  
**Peak 15-Minutes:** 04:30 PM - 04:45 PM

### Peak Hour - All Vehicles



Note: Total study counts contained in parentheses.

### Peak Hour - Pedestrians/Bicycles on Crosswalk



### Traffic Counts

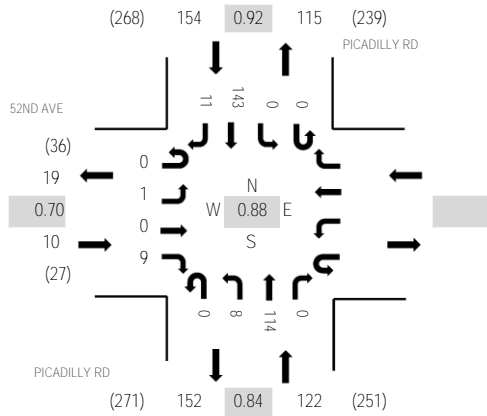
Interval Start Time	51ST PL Eastbound				Westbound				PICADALLY RD Northbound				PICADILLY RD Southbound				Total	Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
4:00 PM	0	1	0	2					0	0	30	0	0	0	27	5	65	278	0		0	0
4:15 PM	0	2	0	3					0	1	40	0	0	0	28	5	79	287	0		0	0
4:30 PM	0	3	0	3					0	1	32	0	0	0	35	6	80	283	0		0	0
4:45 PM	0	5	0	0					0	1	17	0	0	0	21	10	54	270	1		0	0
5:00 PM	0	2	0	2					0	2	30	0	0	0	34	4	74	277	3		0	0
5:15 PM	0	0	0	5					0	3	33	0	0	0	27	7	75		1		0	0
5:30 PM	0	1	0	1					0	1	28	0	0	0	32	4	67		0		0	0
5:45 PM	0	0	0	2					0	1	30	0	0	0	24	4	61		2		0	0
Count Total	0	14	0	18					0	10	240	0	0	0	228	45	555		7		0	0
Peak Hour	0	12	0	8					0	5	119	0	0	0	118	25	287		4		0	0



(303) 216-2439  
www.alltrafficdata.net

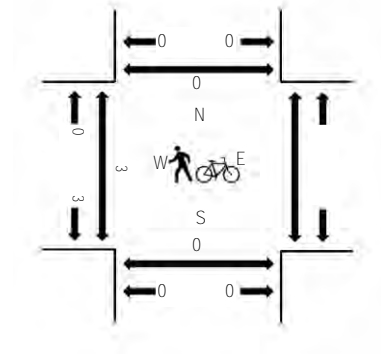
**Location:** 4 PICADILLY RD & 52ND AVE PM  
**Date and Start Time:** Tuesday, February 21, 2017  
**Peak Hour:** 04:30 PM - 05:30 PM  
**Peak 15-Minutes:** 04:30 PM - 04:45 PM

### Peak Hour - All Vehicles



Note: Total study counts contained in parentheses.






### Peak Hour - Pedestrians/Bicycles on Crosswalk













### Traffic Counts

Interval Start Time	52ND AVE				Westbound				PICADILLY RD				PICADILLY RD				Total	Rolling Hour	Pedestrian Crossings			
	Eastbound								Northbound				Southbound						Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
4:00 PM	0	3	0	2					0	2	30	0	0	0	30	1	68	277	0		0	0
4:15 PM	0	4	0	0					0	5	31	0	0	0	30	2	72	282	0		0	0
4:30 PM	0	0	0	3					0	3	35	0	0	0	38	2	81	286	0		0	0
4:45 PM	0	0	0	2					0	1	21	0	0	0	31	1	56	264	2		0	0
5:00 PM	0	1	0	1					0	1	30	0	0	0	35	5	73	269	0		0	0
5:15 PM	0	0	0	3					0	3	28	0	0	0	39	3	76		1		0	0
5:30 PM	0	1	0	4					0	4	26	0	0	0	24	0	59		0		0	0
5:45 PM	0	1	0	2					0	3	28	0	0	0	27	0	61		1		0	0
Count Total	0	10	0	17					0	22	229	0	0	0	254	14	546		4		0	0
Peak Hour	0	1	0	9					0	8	114	0	0	0	143	11	286		3		0	0

## APPENDIX B. EXISTING CONDITIONS LOS

Intersection						
Int Delay, s/veh	1.4					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	18	41	15	197	314	10
Future Vol, veh/h	18	41	15	197	314	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	-	0	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	20	46	17	219	349	11
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	608	355	360	0	-	0
Stage 1	355	-	-	-	-	-
Stage 2	253	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	459	689	1199	-	-	-
Stage 1	710	-	-	-	-	-
Stage 2	789	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	453	689	1199	-	-	-
Mov Cap-2 Maneuver	453	-	-	-	-	-
Stage 1	700	-	-	-	-	-
Stage 2	789	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	11.8	0.6		0		
HCM LOS	B					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	1199	-	595	-	-	
HCM Lane V/C Ratio	0.014	-	0.11	-	-	
HCM Control Delay (s)	8	-	11.8	-	-	
HCM Lane LOS	A	-	B	-	-	
HCM 95th %tile Q(veh)	0	-	0.4	-	-	

Intersection						
Int Delay, s/veh	1.9					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	22	36	62	190	267	88
Future Vol, veh/h	22	36	62	190	267	88
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	-	0	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	24	40	69	211	297	98
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	695	346	395	0	-	0
Stage 1	346	-	-	-	-	-
Stage 2	349	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	408	697	1164	-	-	-
Stage 1	716	-	-	-	-	-
Stage 2	714	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	384	697	1164	-	-	-
Mov Cap-2 Maneuver	384	-	-	-	-	-
Stage 1	674	-	-	-	-	-
Stage 2	714	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	12.7	2		0		
HCM LOS	B					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	1164	-	532	-	-	
HCM Lane V/C Ratio	0.059	-	0.121	-	-	
HCM Control Delay (s)	8.3	-	12.7	-	-	
HCM Lane LOS	A	-	B	-	-	
HCM 95th %tile Q(veh)	0.2	-	0.4	-	-	







Intersection						
Int Delay, s/veh	0.6					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	7	23	4	245	301	2
Future Vol, veh/h	7	23	4	245	301	2
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	-	0	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	8	26	4	272	334	2






Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	615	335	336	0	-	0
Stage 1	335	-	-	-	-	-
Stage 2	280	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	455	707	1223	-	-	-
Stage 1	725	-	-	-	-	-
Stage 2	767	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	454	707	1223	-	-	-
Mov Cap-2 Maneuver	454	-	-	-	-	-
Stage 1	723	-	-	-	-	-
Stage 2	767	-	-	-	-	-






Approach	EB	NB	SB
HCM Control Delay, s	11.1	0.1	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1223	-	626	-	-
HCM Lane V/C Ratio	0.004	-	0.053	-	-
HCM Control Delay (s)	8	-	11.1	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0	-	0.2	-	-



Intersection						
Int Delay, s/veh	3.4					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	86	67	39	163	265	59
Future Vol, veh/h	86	67	39	163	265	59
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	0	0	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	96	74	43	181	294	66
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	594	327	360	0	-	0
Stage 1	327	-	-	-	-	-
Stage 2	267	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	468	714	1199	-	-	-
Stage 1	731	-	-	-	-	-
Stage 2	778	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	451	714	1199	-	-	-
Mov Cap-2 Maneuver	451	-	-	-	-	-
Stage 1	705	-	-	-	-	-
Stage 2	778	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	13.1	1.6		0		
HCM LOS	B					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1199	-	451	714	-	-
HCM Lane V/C Ratio	0.036	-	0.212	0.104	-	-
HCM Control Delay (s)	8.1	-	15.1	10.6	-	-
HCM Lane LOS	A	-	C	B	-	-
HCM 95th %tile Q(veh)	0.1	-	0.8	0.3	-	-





Intersection						
Int Delay, s/veh	0.4					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	1	9	8	194	190	11
Future Vol, veh/h	1	9	8	194	190	11
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	-	0	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1	10	9	216	211	12
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	451	217	223	0	-	0
Stage 1	217	-	-	-	-	-
Stage 2	234	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	566	823	1346	-	-	-
Stage 1	819	-	-	-	-	-
Stage 2	805	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	562	823	1346	-	-	-
Mov Cap-2 Maneuver	562	-	-	-	-	-
Stage 1	813	-	-	-	-	-
Stage 2	805	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	9.6	0.3		0		
HCM LOS	A					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	1346	-	786	-	-	
HCM Lane V/C Ratio	0.007	-	0.014	-	-	
HCM Control Delay (s)	7.7	-	9.6	-	-	
HCM Lane LOS	A	-	A	-	-	
HCM 95th %tile Q(veh)	0	-	0	-	-	







Intersection						
Int Delay, s/veh	0.6					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	12	8	5	202	174	25
Future Vol, veh/h	12	8	5	202	174	25
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	-	0	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	13	9	6	224	193	28

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	443	207	221
Stage 1	207	-	-
Stage 2	236	-	-
Critical Hdwy	6.42	6.22	4.12
Critical Hdwy Stg 1	5.42	-	-
Critical Hdwy Stg 2	5.42	-	-
Follow-up Hdwy	3.518	3.318	2.218
Pot Cap-1 Maneuver	572	833	1348
Stage 1	828	-	-
Stage 2	803	-	-
Platoon blocked, %			
Mov Cap-1 Maneuver	570	833	1348
Mov Cap-2 Maneuver	570	-	-
Stage 1	825	-	-
Stage 2	803	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.7	0.2	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1348	-	652	-	-
HCM Lane V/C Ratio	0.004	-	0.034	-	-
HCM Control Delay (s)	7.7	-	10.7	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

Intersection						
Int Delay, s/veh	0.7					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	4	10	18	203	175	7
Future Vol, veh/h	4	10	18	203	175	7
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	-	0	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	4	11	20	226	194	8
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	464	198	202	0	-	0
Stage 1	198	-	-	-	-	-
Stage 2	266	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	556	843	1370	-	-	-
Stage 1	835	-	-	-	-	-
Stage 2	779	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	548	843	1370	-	-	-
Mov Cap-2 Maneuver	548	-	-	-	-	-
Stage 1	822	-	-	-	-	-
Stage 2	779	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	10	0.6		0		
HCM LOS	B					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	1370	-	731	-	-	
HCM Lane V/C Ratio	0.015	-	0.021	-	-	
HCM Control Delay (s)	7.7	-	10	-	-	
HCM Lane LOS	A	-	B	-	-	
HCM 95th %tile Q(veh)	0	-	0.1	-	-	

Intersection						
Int Delay, s/veh	2.8					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	42	57	45	179	127	58
Future Vol, veh/h	42	57	45	179	127	58
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	0	0	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	47	63	50	199	141	64
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	472	173	205	0	-	0
Stage 1	173	-	-	-	-	-
Stage 2	299	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	551	871	1366	-	-	-
Stage 1	857	-	-	-	-	-
Stage 2	752	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	531	871	1366	-	-	-
Mov Cap-2 Maneuver	531	-	-	-	-	-
Stage 1	825	-	-	-	-	-
Stage 2	752	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	10.7	1.6		0		
HCM LOS	B					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1366	-	531	871	-	-
HCM Lane V/C Ratio	0.037	-	0.088	0.073	-	-
HCM Control Delay (s)	7.7	-	12.4	9.5	-	-
HCM Lane LOS	A	-	B	A	-	-
HCM 95th %tile Q(veh)	0.1	-	0.3	0.2	-	-

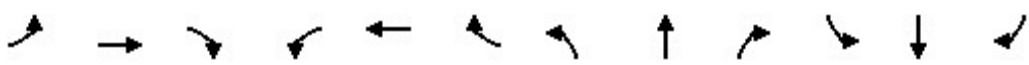
## APPENDIX C. LONG RANGE FUTURE BACKGROUND TRAFFIC LOS

# HCM 6th Signalized Intersection Summary

## 1: Picadilly Rd & 52nd Ave

Long Range Background AM Peak Hour

























04/22/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔		↔	↑	↔	↔	↑↑	↔	↔	↑↑	
Traffic Volume (veh/h)	55	10	40	225	10	315	15	800	355	250	645	10
Future Volume (veh/h)	55	10	40	225	10	315	15	800	355	250	645	10
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	59	11	43	239	11	335	16	851	378	266	686	11
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	73	14	54	648	351	297	31	1720	1065	332	2015	32
Arrive On Green	0.08	0.08	0.08	0.19	0.19	0.19	0.02	0.48	0.48	0.10	0.56	0.56
Sat Flow, veh/h	892	166	650	3456	1870	1585	1781	3554	1585	3456	3579	57
Grp Volume(v), veh/h	113	0	0	239	11	335	16	851	378	266	340	357
Grp Sat Flow(s),veh/h/ln	1709	0	0	1728	1870	1585	1781	1777	1585	1728	1777	1860
Q Serve(g_s), s	7.8	0.0	0.0	7.2	0.6	22.5	1.1	19.5	12.3	9.0	12.4	12.4
Cycle Q Clear(g_c), s	7.8	0.0	0.0	7.2	0.6	22.5	1.1	19.5	12.3	9.0	12.4	12.4
Prop In Lane	0.52		0.38	1.00		1.00	1.00		1.00	1.00		0.03
Lane Grp Cap(c), veh/h	141	0	0	648	351	297	31	1720	1065	332	1000	1047
V/C Ratio(X)	0.80	0.00	0.00	0.37	0.03	1.13	0.52	0.49	0.36	0.80	0.34	0.34
Avail Cap(c_a), veh/h	263	0	0	648	351	297	111	1720	1065	504	1000	1047
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	54.1	0.0	0.0	42.6	39.8	48.7	58.5	21.0	8.5	53.1	14.2	14.2
Incr Delay (d2), s/veh	10.1	0.0	0.0	0.4	0.0	91.0	13.0	1.0	0.9	5.3	0.9	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(95%),veh/ln	6.7	0.0	0.0	5.6	0.5	24.4	1.1	13.0	11.8	7.5	8.9	9.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	64.3	0.0	0.0	42.9	39.9	139.7	71.5	22.0	9.4	58.5	15.1	15.1
LnGrp LOS	E	A	A	D	D	F	E	C	A	E	B	B
Approach Vol, veh/h		113			585			1245			963	
Approach Delay, s/veh		64.3			98.3			18.8			27.1	
Approach LOS		E			F			B			C	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	16.0	62.6		14.4	6.6	72.1		27.0				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	17.5	43.5		18.5	7.5	53.5		22.5				
Max Q Clear Time (g_c+I1), s	11.0	21.5		9.8	3.1	14.4		24.5				
Green Ext Time (p_c), s	0.5	7.9		0.3	0.0	4.9		0.0				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay				39.3								
HCM 6th LOS				D								

# HCM 6th Signalized Intersection Summary 8: Picadilly Rd & Green Valley Ranch Blvd

Long Range Background AM Peak Hour

04/22/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	100	1545	255	240	600	370	125	770	590	230	570	80
Future Volume (veh/h)	100	1545	255	240	600	370	125	770	590	230	570	80
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	106	1644	271	255	638	394	133	819	0	245	606	85
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	132	1496	667	302	1543	688	190	1289		308	1464	455
Arrive On Green	0.07	0.42	0.42	0.15	0.73	0.73	0.05	0.25	0.00	0.09	0.29	0.29
Sat Flow, veh/h	1781	3554	1585	3456	3554	1585	3456	5106	1585	3456	5106	1585
Grp Volume(v), veh/h	106	1644	271	255	638	394	133	819	0	245	606	85
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1728	1777	1585	1728	1702	1585	1728	1702	1585
Q Serve(g_s), s	7.0	50.5	14.3	8.6	8.5	14.0	4.5	17.1	0.0	8.3	11.5	4.8
Cycle Q Clear(g_c), s	7.0	50.5	14.3	8.6	8.5	14.0	4.5	17.1	0.0	8.3	11.5	4.8
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	132	1496	667	302	1543	688	190	1289		308	1464	455
V/C Ratio(X)	0.80	1.10	0.41	0.84	0.41	0.57	0.70	0.64		0.79	0.41	0.19
Avail Cap(c_a), veh/h	245	1496	667	302	1543	688	302	1289		446	1464	455
HCM Platoon Ratio	1.00	1.00	1.00	1.67	1.67	1.67	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.95	0.95	0.95	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	54.7	34.8	24.3	50.4	10.5	11.3	55.7	39.9	0.0	53.6	34.6	32.3
Incr Delay (d2), s/veh	10.7	55.4	0.4	18.2	0.2	1.1	4.7	2.4	0.0	6.2	0.9	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(95%),veh/ln	6.4	45.1	9.3	7.6	4.9	6.7	3.8	11.9	0.0	7.0	8.5	3.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	65.4	90.2	24.7	68.7	10.7	12.3	60.4	42.3	0.0	59.8	35.5	33.2
LnGrp LOS	E	F	C	E	B	B	E	D		E	D	C
Approach Vol, veh/h	2021				1287				952			
Approach Delay, s/veh	80.1				22.7				44.9			
Approach LOS	F				C				D			
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	15.2	34.8	15.0	55.0	11.1	38.9	13.4	56.6				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	15.5	25.5	10.5	50.5	10.5	30.5	16.5	44.5				
Max Q Clear Time (g_c+I1), s	10.3	19.1	10.6	52.5	6.5	13.5	9.0	16.0				
Green Ext Time (p_c), s	0.4	2.9	0.0	0.0	0.1	4.1	0.1	6.5				

## Intersection Summary

HCM 6th Ctrl Delay 52.5

HCM 6th LOS D

## Notes

























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



# HCM 6th Signalized Intersection Summary 13: Tibet St & 52nd Ave

Long Range Background AM Peak Hour












04/22/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	220	150	245	75	80	65	245	195	90	60	315	225
Future Volume (veh/h)	220	150	245	75	80	65	245	195	90	60	315	225
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	234	160	261	80	85	69	261	207	96	64	335	239
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	509	416	352	380	267	226	455	630	534	499	469	398
Arrive On Green	0.14	0.22	0.22	0.06	0.14	0.14	0.14	0.34	0.34	0.06	0.25	0.25
Sat Flow, veh/h	1781	1870	1585	1781	1870	1585	1781	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	234	160	261	80	85	69	261	207	96	64	335	239
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	1870	1585	1781	1870	1585	1781	1870	1585
Q Serve(g_s), s	5.8	4.1	8.6	2.1	2.3	2.2	5.5	4.6	2.4	1.4	9.2	7.5
Cycle Q Clear(g_c), s	5.8	4.1	8.6	2.1	2.3	2.2	5.5	4.6	2.4	1.4	9.2	7.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	509	416	352	380	267	226	455	630	534	499	469	398
V/C Ratio(X)	0.46	0.38	0.74	0.21	0.32	0.30	0.57	0.33	0.18	0.13	0.71	0.60
Avail Cap(c_a), veh/h	810	1318	1117	505	984	834	853	1585	1343	637	1151	976
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	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	15.1	18.5	20.3	18.5	21.6	21.5	12.3	13.9	13.1	14.0	19.2	18.5
Incr Delay (d2), s/veh	0.6	0.6	3.1	0.3	0.7	0.8	1.1	0.3	0.2	0.1	2.0	1.5
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(95%),veh/ln	3.9	3.0	5.7	1.5	1.8	1.4	3.5	3.2	1.4	1.0	6.9	4.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	15.7	19.1	23.4	18.8	22.2	22.3	13.5	14.2	13.3	14.1	21.2	20.0
LnGrp LOS	B	B	C	B	C	C	B	B	B	B	C	B
Approach Vol, veh/h		655			234			564			638	
Approach Delay, s/veh		19.6			21.1			13.7			20.0	
Approach LOS		B			C			B			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	7.7	23.4	8.1	17.0	12.5	18.6	12.5	12.5				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	7.5	47.5	7.5	39.5	20.5	34.5	17.5	29.5				
Max Q Clear Time (g_c+l1), s	3.4	6.6	4.1	10.6	7.5	11.2	7.8	4.3				
Green Ext Time (p_c), s	0.0	1.6	0.0	1.9	0.6	2.9	0.5	0.6				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay			18.3									
HCM 6th LOS			B									

# HCM 6th Signalized Intersection Summary 15: Local Access & Green Valley Ranch Blvd

Long Range Background AM Peak Hour





























04/22/2020

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	1785	120	70	1060	150	200
Future Volume (veh/h)	1785	120	70	1060	150	200
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	1899	128	74	1128	160	213
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	2140	144	174	2622	733	652
Arrive On Green	0.88	0.88	0.04	0.51	0.41	0.41
Sat Flow, veh/h	5055	328	1781	5274	1781	1585
Grp Volume(v), veh/h	1321	706	74	1128	160	213
Grp Sat Flow(s),veh/h/ln	1702	1811	1781	1702	1781	1585
Q Serve(g_s), s	25.8	26.4	2.6	16.6	7.0	11.0
Cycle Q Clear(g_c), s	25.8	26.4	2.6	16.6	7.0	11.0
Prop In Lane		0.18	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	1491	793	174	2622	733	652
V/C Ratio(X)	0.89	0.89	0.43	0.43	0.22	0.33
Avail Cap(c_a), veh/h	2028	1079	217	3553	733	652
HCM Platoon Ratio	2.00	2.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.09	0.09	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	5.8	5.8	21.3	18.2	22.8	24.0
Incr Delay (d2), s/veh	0.4	0.7	1.7	0.1	0.7	1.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	3.4	3.7	2.1	10.6	5.5	7.8
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	6.2	6.6	22.9	18.3	23.5	25.3
LnGrp LOS	A	A	C	B	C	C
Approach Vol, veh/h	2027			1202	373	
Approach Delay, s/veh	6.3			18.6	24.6	
Approach LOS	A			B	C	
Timer - Assigned Phs	2		3	4	8	
Phs Duration (G+Y+Rc), s	53.9		9.1	57.1	66.1	
Change Period (Y+Rc), s	4.5		4.5	4.5	4.5	
Max Green Setting (Gmax), s	27.5		7.5	71.5	83.5	
Max Q Clear Time (g_c+l1), s	13.0		4.6	28.4	18.6	
Green Ext Time (p_c), s	1.0		0.0	24.2	11.2	
Intersection Summary						
HCM 6th Ctrl Delay			12.3			
HCM 6th LOS			B			

# HCM 6th Signalized Intersection Summary 18: Tibet St & 48th Ave

Long Range Background AM Peak Hour

05/14/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  			  							
Traffic Volume (veh/h)	235	1633	117	82	779	162	79	133	119	296	67	273
Future Volume (veh/h)	235	1633	117	82	779	162	79	133	119	296	67	273
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	250	1737	124	87	829	172	84	141	127	315	71	290
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	278	2116	657	110	1635	508	443	551	467	464	612	519
Arrive On Green	0.16	0.41	0.41	0.06	0.32	0.32	0.05	0.29	0.29	0.08	0.33	0.33
Sat Flow, veh/h	1781	5106	1585	1781	5106	1585	1781	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	250	1737	124	87	829	172	84	141	127	315	71	290
Grp Sat Flow(s),veh/h/ln	1781	1702	1585	1781	1702	1585	1781	1870	1585	1781	1870	1585
Q Serve(g_s), s	16.5	36.2	6.0	5.8	15.8	9.9	3.9	6.9	7.4	9.5	3.2	18.1
Cycle Q Clear(g_c), s	16.5	36.2	6.0	5.8	15.8	9.9	3.9	6.9	7.4	9.5	3.2	18.1
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	278	2116	657	110	1635	508	443	551	467	464	612	519
V/C Ratio(X)	0.90	0.82	0.19	0.79	0.51	0.34	0.19	0.26	0.27	0.68	0.12	0.56
Avail Cap(c_a), veh/h	319	2319	720	215	2021	627	472	551	467	464	612	519
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	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	49.7	31.2	22.3	55.5	33.1	31.1	27.4	32.3	32.5	31.4	28.2	33.2
Incr Delay (d2), s/veh	24.6	2.3	0.1	11.7	0.2	0.4	0.2	1.1	1.4	3.9	0.4	4.3
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(95%),veh/ln	14.2	21.4	4.1	5.3	10.8	7.0	3.1	6.0	5.5	7.0	2.7	12.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	74.3	33.5	22.5	67.2	33.3	31.5	27.6	33.4	33.9	35.4	28.6	37.6
LnGrp LOS	E	C	C	E	C	C	C	C	C	D	C	D
Approach Vol, veh/h	2111		1088				352			676		
Approach Delay, s/veh	37.7		35.8				32.2			35.6		
Approach LOS	D		D				C			D		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	14.0	39.8	11.9	54.2	10.1	43.8	23.2	42.9				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	9.5	23.5	14.5	54.5	7.5	25.5	21.5	47.5				
Max Q Clear Time (g_c+I1), s	11.5	9.4	7.8	38.2	5.9	20.1	18.5	17.8				
Green Ext Time (p_c), s	0.0	1.0	0.1	11.5	0.0	0.7	0.2	7.3				
Intersection Summary												
HCM 6th Ctrl Delay			36.4									
HCM 6th LOS			D									

Timings  
1: Picadilly Rd & 52nd Ave

Long Range Background AM Peak Hour

04/22/2020

	→	↖	←	↗	↖	↑	↗	↘	↓
Lane Group	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations	↕	↖↗	↑	↗	↖	↕	↖	↖↗	↕
Traffic Volume (vph)	10	225	10	315	15	800	355	250	645
Future Volume (vph)	10	225	10	315	15	800	355	250	645
Turn Type	NA	Split	NA	Perm	Prot	NA	pm+ov	Prot	NA
Protected Phases	4	8	8		5	2	8	1	6
Permitted Phases				8			2		
Detector Phase	4	8	8	8	5	2	8	1	6
Switch Phase									
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	22.5	22.5	9.5	22.5	22.5	9.5	22.5
Total Split (s)	23.0	27.0	27.0	27.0	12.0	48.0	27.0	22.0	58.0
Total Split (%)	19.2%	22.5%	22.5%	22.5%	10.0%	40.0%	22.5%	18.3%	48.3%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag					Lead	Lag		Lead	Lag
Lead-Lag Optimize?					Yes	Yes		Yes	Yes
Recall Mode	None	None	None	None	None	C-Max	None	None	C-Max
Act Effect Green (s)	11.7	17.6	17.6	17.6	6.5	58.3	75.9	14.3	72.4
Actuated g/C Ratio	0.10	0.15	0.15	0.15	0.05	0.49	0.63	0.12	0.60
v/c Ratio	0.60	0.48	0.04	0.65	0.17	0.49	0.33	0.65	0.33
Control Delay	54.2	49.2	41.0	10.8	40.1	26.3	5.9	57.9	14.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	54.2	49.2	41.0	10.8	40.1	26.3	5.9	57.9	14.7
LOS	D	D	D	B	D	C	A	E	B
Approach Delay	54.2		27.1			20.3			26.6
Approach LOS	D		C			C			C

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

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

Natural Cycle: 80

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.65

Intersection Signal Delay: 25.1

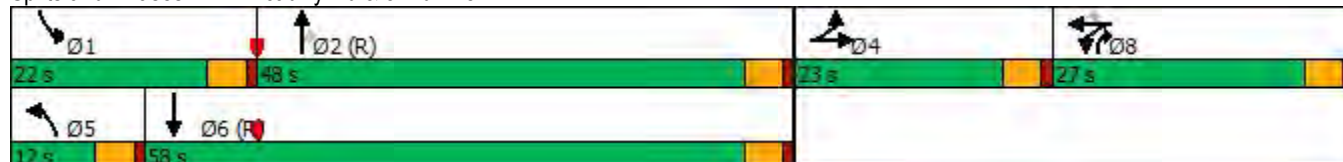
Intersection LOS: C

Intersection Capacity Utilization 58.9%

ICU Level of Service B

Analysis Period (min) 15


































Splits and Phases: 1: Picadilly Rd & 52nd Ave



Timings  
8: Picadilly Rd & Green Valley Ranch Blvd

Long Range Background AM Peak Hour

04/22/2020

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 		 	 		 	  		 	  	
Traffic Volume (vph)	100	1545	255	240	600	370	125	770	590	230	570	80
Future Volume (vph)	100	1545	255	240	600	370	125	770	590	230	570	80
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	pm+ov	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2	3	1	6	
Permitted Phases			4			8			2			6
Detector Phase	7	4	4	3	8	8	5	2	3	1	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	5.0	5.0
Minimum Split (s)	9.5	22.5	22.5	9.5	22.5	22.5	9.5	22.5	9.5	9.5	22.5	22.5
Total Split (s)	21.0	55.0	55.0	15.0	49.0	49.0	15.0	30.0	15.0	20.0	35.0	35.0
Total Split (%)	17.5%	45.8%	45.8%	12.5%	40.8%	40.8%	12.5%	25.0%	12.5%	16.7%	29.2%	29.2%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	C-Max	None	None	C-Max	C-Max
Act Effect Green (s)	12.3	50.5	50.5	10.5	48.7	48.7	9.4	27.6	42.6	13.4	31.6	31.6
Actuated g/C Ratio	0.10	0.42	0.42	0.09	0.41	0.41	0.08	0.23	0.36	0.11	0.26	0.26
v/c Ratio	0.59	1.10	0.35	0.85	0.44	0.46	0.49	0.70	0.97	0.64	0.45	0.16
Control Delay	63.7	91.0	8.0	88.5	17.9	7.9	59.3	46.5	58.9	56.5	44.8	9.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	63.7	91.0	8.0	88.5	17.9	7.9	59.3	46.5	58.9	56.5	44.8	9.1
LOS	E	F	A	F	B	A	E	D	E	E	D	A
Approach Delay		78.4			28.8			52.5			44.6	
Approach LOS		E			C			D			D	

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

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

Natural Cycle: 100

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.10

Intersection Signal Delay: 55.0

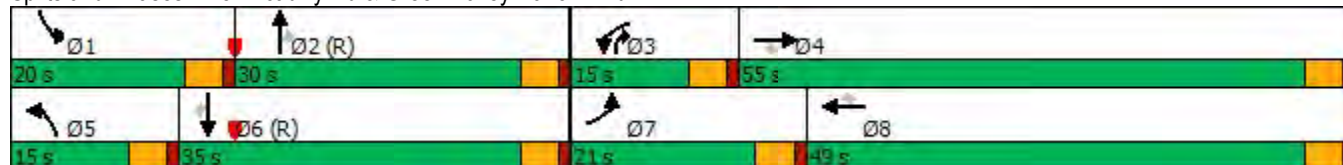
Intersection LOS: E

Intersection Capacity Utilization 97.1%

ICU Level of Service F

Analysis Period (min) 15

























Splits and Phases: 8: Picadilly Rd & Green Valley Ranch Blvd



Timings  
13: Tibet St & 52nd Ave

Long Range Background AM Peak Hour

04/22/2020

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	220	150	245	75	80	65	245	195	90	60	315	225
Future Volume (vph)	220	150	245	75	80	65	245	195	90	60	315	225
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0	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	9.5	22.5	22.5	9.5	22.5	22.5	9.5	22.5	22.5
Total Split (s)	22.0	44.0	44.0	12.0	34.0	34.0	25.0	52.0	52.0	12.0	39.0	39.0
Total Split (%)	18.3%	36.7%	36.7%	10.0%	28.3%	28.3%	20.8%	43.3%	43.3%	10.0%	32.5%	32.5%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	Min	Min	None	Min	Min
Act Effect Green (s)	25.2	16.4	16.4	14.8	9.5	9.5	41.3	32.8	32.8	27.5	20.5	20.5
Actuated g/C Ratio	0.33	0.21	0.21	0.19	0.12	0.12	0.54	0.43	0.43	0.36	0.27	0.27
v/c Ratio	0.52	0.40	0.48	0.28	0.37	0.20	0.48	0.26	0.13	0.13	0.67	0.40
Control Delay	25.5	32.6	7.5	23.3	41.0	1.2	13.7	18.0	1.6	12.0	34.3	5.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	25.5	32.6	7.5	23.3	41.0	1.2	13.7	18.0	1.6	12.0	34.3	5.8
LOS	C	C	A	C	D	A	B	B	A	B	C	A
Approach Delay		20.1			23.2			13.3			21.4	
Approach LOS		C			C			B			C	

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 76.3

Natural Cycle: 65

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.67

Intersection Signal Delay: 19.0

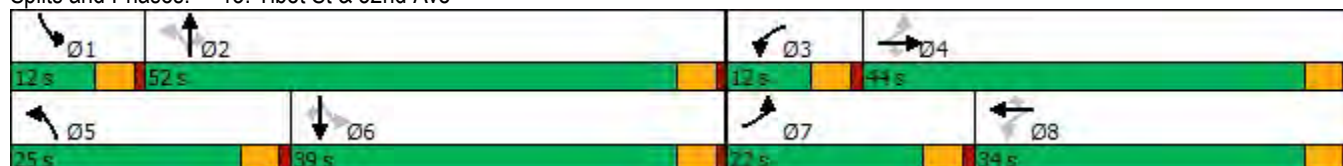
Intersection LOS: B

Intersection Capacity Utilization 61.6%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 13: Tibet St & 52nd Ave



Timings  
15: Local Access & Green Valley Ranch Blvd

Long Range Background AM Peak Hour

04/22/2020

	→	↖	←	↗	↘
Lane Group	EBT	WBL	WBT	NBL	NBR
Lane Configurations	↑↑↑	↑	↑↑↑	↑	↑
Traffic Volume (vph)	1785	70	1060	150	200
Future Volume (vph)	1785	70	1060	150	200
Turn Type	NA	pm+pt	NA	Prot	Perm
Protected Phases	4	3	8	2	
Permitted Phases		8			2
Detector Phase	4	3	8	2	2
Switch Phase					
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	9.5	22.5	22.5	22.5
Total Split (s)	76.0	12.0	88.0	32.0	32.0
Total Split (%)	63.3%	10.0%	73.3%	26.7%	26.7%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5
Lead/Lag	Lag	Lead			
Lead-Lag Optimize?	Yes	Yes			
Recall Mode	None	None	None	C-Max	C-Max
Act Effect Green (s)	68.0	77.5	77.5	33.5	33.5
Actuated g/C Ratio	0.57	0.65	0.65	0.28	0.28
v/c Ratio	0.71	0.45	0.34	0.32	0.40
Control Delay	12.3	30.5	19.1	39.2	20.2
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	12.3	30.5	19.1	39.2	20.2
LOS	B	C	B	D	C
Approach Delay	12.3		19.8	28.3	
Approach LOS	B		B	C	

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

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

Natural Cycle: 65

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.71

Intersection Signal Delay: 16.5

Intersection LOS: B

Intersection Capacity Utilization 60.9%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 15: Local Access & Green Valley Ranch Blvd


































Timings  
18: Tibet St & 48th Ave

Long Range Background AM Peak Hour

05/14/2020

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  			  						 	
Traffic Volume (vph)	235	1633	117	82	779	162	79	133	119	296	67	273
Future Volume (vph)	235	1633	117	82	779	162	79	133	119	296	67	273
Turn Type	Prot	NA	Perm	Prot	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8	2		2	6		6
Detector Phase	7	4	4	3	8	8	5	2	2	1	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	5.0	5.0
Minimum Split (s)	9.5	22.5	22.5	9.5	22.5	22.5	9.5	22.5	22.5	9.5	22.5	22.5
Total Split (s)	26.0	59.0	59.0	19.0	52.0	52.0	12.0	28.0	28.0	14.0	30.0	30.0
Total Split (%)	21.7%	49.2%	49.2%	15.8%	43.3%	43.3%	10.0%	23.3%	23.3%	11.7%	25.0%	25.0%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max
Act Effect Green (s)	19.9	54.2	54.2	11.0	45.3	45.3	32.1	24.7	24.7	39.8	31.6	31.6
Actuated g/C Ratio	0.17	0.45	0.45	0.09	0.38	0.38	0.27	0.21	0.21	0.33	0.26	0.26
v/c Ratio	0.85	0.76	0.16	0.54	0.43	0.24	0.22	0.37	0.29	0.82	0.15	0.46
Control Delay	54.6	48.9	17.0	63.7	28.3	4.3	30.9	44.9	7.6	54.3	38.7	7.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	54.6	48.9	17.0	63.7	28.3	4.3	30.9	44.9	7.6	54.3	38.7	7.1
LOS	D	D	B	E	C	A	C	D	A	D	D	A
Approach Delay		47.7			27.4			28.1			32.4	
Approach LOS		D			C			C			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: 80

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.85

Intersection Signal Delay: 38.4

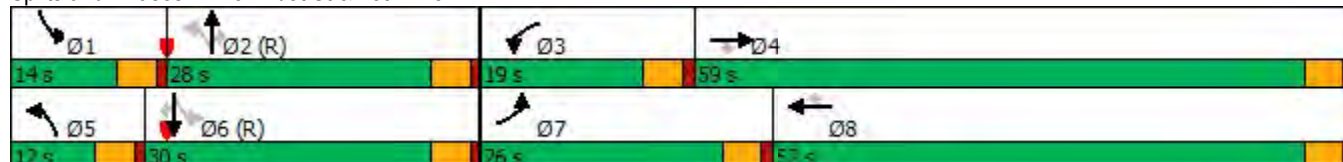
Intersection LOS: D

Intersection Capacity Utilization 74.5%





ICU Level of Service D






Analysis Period (min) 15

Splits and Phases: 18: Tibet St & 48th Ave





Intersection						
Int Delay, s/veh	0.5					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	40	60	1170	820	90
Future Vol, veh/h	0	40	60	1170	820	90
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	200	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	43	64	1245	872	96
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	-	484	968	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.94	4.14	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.32	2.22	-	-	-
Pot Cap-1 Maneuver	0	529	707	-	-	-
Stage 1	0	-	-	-	-	-
Stage 2	0	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	529	707	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	12.4	0.5		0		
HCM LOS	B					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	707	-	529	-	-	
HCM Lane V/C Ratio	0.09	-	0.08	-	-	
HCM Control Delay (s)	10.6	-	12.4	-	-	
HCM Lane LOS	B	-	B	-	-	
HCM 95th %tile Q(veh)	0.3	-	0.3	-	-	























Intersection						
Int Delay, s/veh	0.2					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	25	10	1230	855	10
Future Vol, veh/h	0	25	10	1230	855	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	200	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	27	11	1309	910	11
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	-	461	921	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.94	4.14	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.32	2.22	-	-	-
Pot Cap-1 Maneuver	0	547	737	-	-	-
Stage 1	0	-	-	-	-	-
Stage 2	0	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	547	737	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	11.9	0.1		0		
HCM LOS	B					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	737	-	547	-	-	
HCM Lane V/C Ratio	0.014	-	0.049	-	-	
HCM Control Delay (s)	10	-	11.9	-	-	
HCM Lane LOS	A	-	B	-	-	
HCM 95th %tile Q(veh)	0	-	0.2	-	-	

# HCM 6th Signalized Intersection Summary

## 1: Picadilly Rd & 52nd Ave

Long Range Background PM Peak Hour

























04/22/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	30	10	10	345	10	395	20	790	470	320	1150	15
Future Volume (veh/h)	30	10	10	345	10	395	20	790	470	320	1150	15
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	32	11	11	367	11	420	21	840	500	340	1223	16
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	42	14	14	734	397	522	37	1707	761	404	2070	27
Arrive On Green	0.04	0.04	0.04	0.21	0.21	0.21	0.02	0.48	0.48	0.12	0.58	0.58
Sat Flow, veh/h	1039	357	357	3456	1870	1585	1781	3554	1585	3456	3592	47
Grp Volume(v), veh/h	54	0	0	367	11	420	21	840	500	340	605	634
Grp Sat Flow(s),veh/h/ln	1754	0	0	1728	1870	1585	1781	1777	1585	1728	1777	1862
Q Serve(g_s), s	3.7	0.0	0.0	11.2	0.6	25.5	1.4	19.3	28.7	11.6	26.3	26.3
Cycle Q Clear(g_c), s	3.7	0.0	0.0	11.2	0.6	25.5	1.4	19.3	28.7	11.6	26.3	26.3
Prop In Lane	0.59		0.20	1.00		1.00	1.00		1.00	1.00		0.03
Lane Grp Cap(c), veh/h	71	0	0	734	397	522	37	1707	761	404	1024	1073
V/C Ratio(X)	0.76	0.00	0.00	0.50	0.03	0.80	0.56	0.49	0.66	0.84	0.59	0.59
Avail Cap(c_a), veh/h	270	0	0	734	397	522	111	1707	761	504	1024	1073
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	57.0	0.0	0.0	41.6	37.4	36.7	58.2	21.2	23.7	51.9	16.3	16.3
Incr Delay (d2), s/veh	15.5	0.0	0.0	0.5	0.0	8.9	12.6	1.0	4.4	10.1	2.5	2.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	3.5	0.0	0.0	8.5	0.5	18.2	1.4	12.9	17.0	9.4	16.5	17.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	72.5	0.0	0.0	42.2	37.5	45.6	70.8	22.2	28.1	62.0	18.8	18.7
LnGrp LOS	E	A	A	D	D	D	E	C	C	E	B	B
Approach Vol, veh/h		54			798			1361			1579	
Approach Delay, s/veh		72.5			43.9			25.1			28.1	
Approach LOS		E			D			C			C	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	18.5	62.1		9.3	7.0	73.6		30.0				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	17.5	40.5		18.5	7.5	50.5		25.5				
Max Q Clear Time (g_c+I1), s	13.6	30.7		5.7	3.4	28.3		27.5				
Green Ext Time (p_c), s	0.5	5.3		0.1	0.0	9.2		0.0				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay				31.0								
HCM 6th LOS				C								
<b>Notes</b>												
User approved pedestrian interval to be less than phase max green.												

# HCM 6th Signalized Intersection Summary 8: Picadilly Rd & Green Valley Ranch Blvd

Long Range Background PM Peak Hour

04/22/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	75	1255	305	500	1285	440	200	795	195	370	895	225
Future Volume (veh/h)	75	1255	305	500	1285	440	200	795	195	370	895	225
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	80	1335	324	532	1367	468	213	846	0	394	952	239
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	102	1259	561	533	1602	715	272	1080		450	1342	417
Arrive On Green	0.06	0.35	0.35	0.21	0.60	0.60	0.08	0.21	0.00	0.13	0.26	0.26
Sat Flow, veh/h	1781	3554	1585	3456	3554	1585	3456	5106	1585	3456	5106	1585
Grp Volume(v), veh/h	80	1335	324	532	1367	468	213	846	0	394	952	239
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1728	1777	1585	1728	1702	1585	1728	1702	1585
Q Serve(g_s), s	5.3	42.5	19.9	18.5	37.8	23.4	7.3	18.8	0.0	13.4	20.3	15.7
Cycle Q Clear(g_c), s	5.3	42.5	19.9	18.5	37.8	23.4	7.3	18.8	0.0	13.4	20.3	15.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	102	1259	561	533	1602	715	272	1080		450	1342	417
V/C Ratio(X)	0.78	1.06	0.58	1.00	0.85	0.65	0.78	0.78		0.88	0.71	0.57
Avail Cap(c_a), veh/h	230	1259	561	533	1602	715	360	1080		475	1342	417
HCM Platoon Ratio	1.00	1.00	1.00	1.33	1.33	1.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.75	0.75	0.75	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	55.8	38.8	31.5	47.7	20.8	17.9	54.3	44.7	0.0	51.2	40.1	38.4
Incr Delay (d2), s/veh	12.1	43.1	1.5	33.4	3.6	1.6	7.9	5.7	0.0	16.1	3.2	5.6
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(95%),veh/ln	4.9	35.4	12.4	14.5	19.4	11.6	6.2	13.3	0.0	11.1	13.7	11.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	67.9	81.9	32.9	81.1	24.3	19.5	62.1	50.4	0.0	67.3	43.3	44.0
LnGrp LOS	E	F	C	F	C	B	E	D		E	D	D
Approach Vol, veh/h	1739			2367			1059			1585		
Approach Delay, s/veh	72.1			36.1			52.8			49.4		
Approach LOS	E			D			D			D		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	20.1	29.9	23.0	47.0	14.0	36.0	11.4	58.6				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	16.5	24.5	18.5	42.5	12.5	28.5	15.5	45.5				
Max Q Clear Time (g_c+I1), s	15.4	20.8	20.5	44.5	9.3	22.3	7.3	39.8				
Green Ext Time (p_c), s	0.2	1.9	0.0	0.0	0.2	3.6	0.1	4.5				

## Intersection Summary

HCM 6th Ctrl Delay	51.1
HCM 6th LOS	D

























## Notes

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

# HCM 6th Signalized Intersection Summary 13: Tibet St & 52nd Ave

Long Range Background PM Peak Hour






























04/22/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	275	170	355	70	185	100	275	520	60	65	270	290
Future Volume (veh/h)	275	170	355	70	185	100	275	520	60	65	270	290
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	293	181	378	74	197	106	293	553	64	69	287	309
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	373	490	415	297	349	296	524	944	800	366	815	690
Arrive On Green	0.12	0.26	0.26	0.05	0.19	0.19	0.11	0.50	0.50	0.04	0.44	0.44
Sat Flow, veh/h	1781	1870	1585	1781	1870	1585	1781	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	293	181	378	74	197	106	293	553	64	69	287	309
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	1870	1585	1781	1870	1585	1781	1870	1585
Q Serve(g_s), s	14.5	9.5	27.7	4.0	11.5	7.0	10.4	24.9	2.5	2.5	12.3	16.4
Cycle Q Clear(g_c), s	14.5	9.5	27.7	4.0	11.5	7.0	10.4	24.9	2.5	2.5	12.3	16.4
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	373	490	415	297	349	296	524	944	800	366	815	690
V/C Ratio(X)	0.79	0.37	0.91	0.25	0.56	0.36	0.56	0.59	0.08	0.19	0.35	0.45
Avail Cap(c_a), veh/h	373	600	509	312	475	403	594	944	800	411	815	690
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	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	35.0	36.2	42.9	36.9	44.4	42.5	15.3	20.9	15.3	18.6	22.6	23.7
Incr Delay (d2), s/veh	10.5	0.5	18.2	0.4	1.4	0.7	0.9	2.7	0.2	0.2	1.2	2.1
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(95%),veh/ln	12.6	7.9	18.8	3.2	9.3	5.1	7.6	16.9	1.7	1.9	9.6	10.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	45.6	36.7	61.1	37.3	45.8	43.3	16.2	23.5	15.5	18.8	23.8	25.8
LnGrp LOS	D	D	E	D	D	D	B	C	B	B	C	C
Approach Vol, veh/h	852			377			910			665		
Approach Delay, s/veh	50.6			43.4			20.6			24.2		
Approach LOS	D			D			C			C		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	9.0	65.1	10.0	35.9	17.3	56.8	19.0	26.9				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	7.5	49.5	6.5	38.5	17.5	39.5	14.5	30.5				
Max Q Clear Time (g_c+I1), s	4.5	26.9	6.0	29.7	12.4	18.4	16.5	13.5				
Green Ext Time (p_c), s	0.0	4.0	0.0	1.7	0.4	2.8	0.0	1.3				
Intersection Summary												
HCM 6th Ctrl Delay	33.6											
HCM 6th LOS	C											

# HCM 6th Signalized Intersection Summary 18: Tibet St & 48th Ave

Long Range Background PM Peak Hour












05/14/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  			  						 	
Traffic Volume (veh/h)	303	1378	79	108	1839	365	108	187	64	277	80	338
Future Volume (veh/h)	303	1378	79	108	1839	365	108	187	64	277	80	338
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	322	1466	84	115	1956	388	115	199	68	295	85	360
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	347	2513	780	255	1979	614	357	401	340	351	464	393
Arrive On Green	0.16	0.49	0.49	0.06	0.39	0.39	0.05	0.21	0.21	0.09	0.25	0.25
Sat Flow, veh/h	1781	5106	1585	1781	5106	1585	1781	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	322	1466	84	115	1956	388	115	199	68	295	85	360
Grp Sat Flow(s),veh/h/ln	1781	1702	1585	1781	1702	1585	1781	1870	1585	1781	1870	1585
Q Serve(g_s), s	17.2	24.5	3.4	4.6	45.6	23.8	6.1	11.2	4.2	10.5	4.3	26.5
Cycle Q Clear(g_c), s	17.2	24.5	3.4	4.6	45.6	23.8	6.1	11.2	4.2	10.5	4.3	26.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	347	2513	780	255	1979	614	357	401	340	351	464	393
V/C Ratio(X)	0.93	0.58	0.11	0.45	0.99	0.63	0.32	0.50	0.20	0.84	0.18	0.92
Avail Cap(c_a), veh/h	351	2513	780	445	1979	614	357	401	340	351	464	393
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	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	38.0	21.7	16.3	20.8	36.5	29.8	34.3	41.4	38.7	39.5	35.5	43.9
Incr Delay (d2), s/veh	30.3	0.3	0.1	1.2	17.5	2.1	0.5	4.3	1.3	16.6	0.9	28.5
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(95%),veh/ln	12.4	14.8	2.3	3.6	29.4	14.4	4.8	9.6	3.2	8.9	3.8	19.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	68.3	22.0	16.4	22.0	54.0	31.9	34.8	45.7	40.0	56.1	36.4	72.4
LnGrp LOS	E	C	B	C	D	C	C	D	D	E	D	E
Approach Vol, veh/h		1872			2459			382			740	
Approach Delay, s/veh		29.7			49.0			41.4			61.8	
Approach LOS		C			D			D			E	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	15.0	30.3	11.2	63.6	11.0	34.3	23.7	51.0				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	10.5	25.5	19.5	46.5	6.5	29.5	19.5	46.5				
Max Q Clear Time (g_c+I1), s	12.5	13.2	6.6	26.5	8.1	28.5	19.2	47.6				
Green Ext Time (p_c), s	0.0	1.0	0.2	11.2	0.0	0.2	0.0	0.0				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay			43.6									
HCM 6th LOS			D									

HCM 6th Signalized Intersection Summary  
22: Local Access & Green Valley Ranch Blvd

Long Range Background PM Peak Hour

04/22/2020

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	1653	170	230	2059	170	110
Future Volume (veh/h)	1653	170	230	2059	170	110
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	1759	181	245	2190	181	117
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	2112	217	289	2947	620	551
Arrive On Green	0.90	0.90	0.09	0.58	0.35	0.35
Sat Flow, veh/h	4874	482	1781	5274	1781	1585
Grp Volume(v), veh/h	1271	669	245	2190	181	117
Grp Sat Flow(s),veh/h/ln	1702	1784	1781	1702	1781	1585
Q Serve(g_s), s	18.1	18.4	8.5	38.1	8.9	6.2
Cycle Q Clear(g_c), s	18.1	18.4	8.5	38.1	8.9	6.2
Prop In Lane		0.27	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	1528	801	289	2947	620	551
V/C Ratio(X)	0.83	0.84	0.85	0.74	0.29	0.21
Avail Cap(c_a), veh/h	1801	944	387	3638	620	551
HCM Platoon Ratio	2.00	2.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.23	0.23	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	4.3	4.3	21.8	18.8	28.4	27.6
Incr Delay (d2), s/veh	0.7	1.4	12.4	0.7	1.2	0.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	3.3	3.6	7.8	20.8	7.2	4.5
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	5.0	5.7	34.3	19.4	29.6	28.4
LnGrp LOS	A	A	C	B	C	C
Approach Vol, veh/h	1940			2435	298	
Approach Delay, s/veh	5.3			20.9	29.1	
Approach LOS	A			C	C	
Timer - Assigned Phs	2		3	4	8	
Phs Duration (G+Y+Rc), s	46.2		15.4	58.4	73.8	
Change Period (Y+Rc), s	4.5		4.5	4.5	4.5	
Max Green Setting (Gmax), s	25.5		17.5	63.5	85.5	
Max Q Clear Time (g_c+l1), s	10.9		10.5	20.4	40.1	
Green Ext Time (p_c), s	0.8		0.4	22.7	29.2	
Intersection Summary						
HCM 6th Ctrl Delay			15.0			
HCM 6th LOS			B			

Timings  
1: Picadilly Rd & 52nd Ave

Long Range Background PM Peak Hour

04/22/2020

	→	↖	←	↗	↖	↑	↗	↖	↓
Lane Group	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations	↕	↖↗	↑	↗	↖	↕	↗	↖↗	↕
Traffic Volume (vph)	10	345	10	395	20	790	470	320	1150
Future Volume (vph)	10	345	10	395	20	790	470	320	1150
Turn Type	NA	Perm	NA	pm+ov	Prot	NA	Perm	Prot	NA
Protected Phases	4		8	1	5	2		1	6
Permitted Phases		8		8			2		
Detector Phase	4	8	8	1	5	2	2	1	6
Switch Phase									
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	22.5	9.5	9.5	22.5	22.5	9.5	22.5
Total Split (s)	23.0	30.0	30.0	22.0	12.0	45.0	45.0	22.0	55.0
Total Split (%)	19.2%	25.0%	25.0%	18.3%	10.0%	37.5%	37.5%	18.3%	45.8%
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	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag				Lead	Lead	Lag	Lag	Lead	Lag
Lead-Lag Optimize?				Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	C-Max	C-Max	None	C-Max
Act Effect Green (s)	8.6	22.1	22.1	43.9	7.0	56.0	56.0	17.3	72.6
Actuated g/C Ratio	0.07	0.18	0.18	0.37	0.06	0.47	0.47	0.14	0.60
v/c Ratio	0.40	0.76	0.03	0.55	0.20	0.51	0.50	0.69	0.58
Control Delay	53.8	53.6	35.2	22.0	40.1	28.1	15.7	56.0	19.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	53.8	53.6	35.2	22.0	40.1	28.1	15.7	56.0	19.1
LOS	D	D	D	C	D	C	B	E	B
Approach Delay	53.8		36.8			23.7			27.1
Approach LOS	D		D			C			C

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

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

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.76

Intersection Signal Delay: 28.3

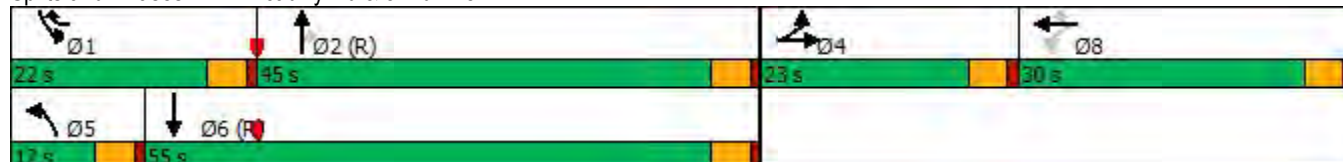
Intersection LOS: C

Intersection Capacity Utilization 62.4%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 1: Picadilly Rd & 52nd Ave





























Timings  
8: Picadilly Rd & Green Valley Ranch Blvd

Long Range Background PM Peak Hour

04/22/2020

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	75	1255	305	500	1285	440	200	795	195	370	895	225
Future Volume (vph)	75	1255	305	500	1285	440	200	795	195	370	895	225
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	pm+ov	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2	3	1	6	
Permitted Phases			4			8			2			6
Detector Phase	7	4	4	3	8	8	5	2	3	1	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	5.0	5.0
Minimum Split (s)	9.5	22.5	22.5	9.5	22.5	22.5	9.5	22.5	9.5	9.5	22.5	22.5
Total Split (s)	20.0	47.0	47.0	23.0	50.0	50.0	17.0	29.0	23.0	21.0	33.0	33.0
Total Split (%)	16.7%	39.2%	39.2%	19.2%	41.7%	41.7%	14.2%	24.2%	19.2%	17.5%	27.5%	27.5%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	C-Max	None	None	C-Max	C-Max
Act Effect Green (s)	10.8	42.5	42.5	18.5	52.5	52.5	11.6	24.9	47.9	16.1	29.4	29.4
Actuated g/C Ratio	0.09	0.35	0.35	0.15	0.44	0.44	0.10	0.21	0.40	0.13	0.24	0.24
v/c Ratio	0.51	1.07	0.44	1.01	0.88	0.53	0.64	0.80	0.31	0.85	0.76	0.42
Control Delay	62.4	82.5	8.5	97.4	23.6	6.4	61.5	52.1	19.5	59.9	50.1	14.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	62.4	82.5	8.5	97.4	23.6	6.4	61.5	52.1	19.5	59.9	50.1	14.0
LOS	E	F	A	F	C	A	E	D	B	E	D	B
Approach Delay		67.8			36.8			48.3			47.1	
Approach LOS		E			D			D			D	

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

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

Natural Cycle: 110

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.07

Intersection Signal Delay: 49.0

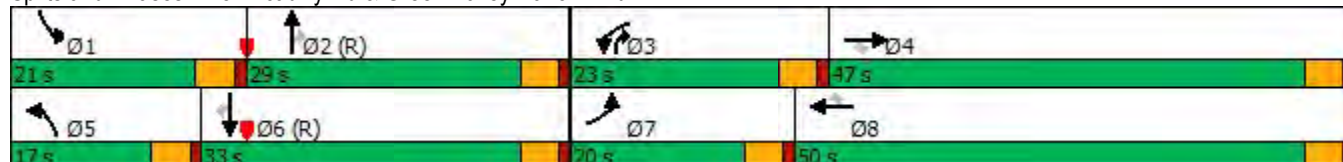
Intersection LOS: D

Intersection Capacity Utilization 89.9%

ICU Level of Service E

Analysis Period (min) 15

























Splits and Phases: 8: Picadilly Rd & Green Valley Ranch Blvd



Timings  
13: Tibet St & 52nd Ave

Long Range Background PM Peak Hour

04/22/2020

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	275	170	355	70	185	100	275	520	60	65	270	290
Future Volume (vph)	275	170	355	70	185	100	275	520	60	65	270	290
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0	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	9.5	22.5	22.5	9.5	22.5	22.5	9.5	22.5	22.5
Total Split (s)	19.0	43.0	43.0	11.0	35.0	35.0	22.0	54.0	54.0	12.0	44.0	44.0
Total Split (%)	15.8%	35.8%	35.8%	9.2%	29.2%	29.2%	18.3%	45.0%	45.0%	10.0%	36.7%	36.7%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max
Act Effect Green (s)	37.2	28.4	28.4	24.6	18.2	18.2	73.8	63.9	63.9	61.7	54.2	54.2
Actuated g/C Ratio	0.31	0.24	0.24	0.20	0.15	0.15	0.62	0.53	0.53	0.51	0.45	0.45
v/c Ratio	0.92	0.41	0.57	0.27	0.70	0.27	0.46	0.56	0.07	0.17	0.34	0.35
Control Delay	54.7	29.5	15.1	31.5	61.1	1.8	12.5	25.7	2.0	12.4	25.0	4.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	54.7	29.5	15.1	31.5	61.1	1.8	12.5	25.7	2.0	12.4	25.0	4.1
LOS	D	C	B	C	E	A	B	C	A	B	C	A
Approach Delay		31.8			38.6			19.8			14.0	
Approach LOS		C			D			B			B	

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: 0.92

Intersection Signal Delay: 24.6

Intersection LOS: C

Intersection Capacity Utilization 71.5%

ICU Level of Service C

Analysis Period (min) 15

























Splits and Phases: 13: Tibet St & 52nd Ave



Timings  
18: Tibet St & 48th Ave

Long Range Background PM Peak Hour

05/14/2020

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	303	1378	79	108	1839	365	108	187	64	277	80	338
Future Volume (vph)	303	1378	79	108	1839	365	108	187	64	277	80	338
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0	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	9.5	22.5	22.5	9.5	22.5	22.5	9.5	22.5	22.5
Total Split (s)	24.0	51.0	51.0	24.0	51.0	51.0	11.0	30.0	30.0	15.0	34.0	34.0
Total Split (%)	20.0%	42.5%	42.5%	20.0%	42.5%	42.5%	9.2%	25.0%	25.0%	12.5%	28.3%	28.3%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max
Act Effect Green (s)	70.5	56.3	56.3	56.2	46.5	46.5	32.0	25.5	25.5	40.0	29.5	29.5
Actuated g/C Ratio	0.59	0.47	0.47	0.47	0.39	0.39	0.27	0.21	0.21	0.33	0.25	0.25
v/c Ratio	0.92	0.61	0.11	0.50	0.99	0.51	0.31	0.50	0.17	0.88	0.19	0.56
Control Delay	59.9	46.2	16.0	20.9	55.3	12.7	31.9	46.8	4.3	57.3	31.2	12.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	59.9	46.2	16.0	20.9	55.3	12.7	31.9	46.8	4.3	57.3	31.2	12.0
LOS	E	D	B	C	E	B	C	D	A	E	C	B
Approach Delay		47.2			47.0			34.8			32.3	
Approach LOS		D			D			C			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: 100

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.99

Intersection Signal Delay: 44.2

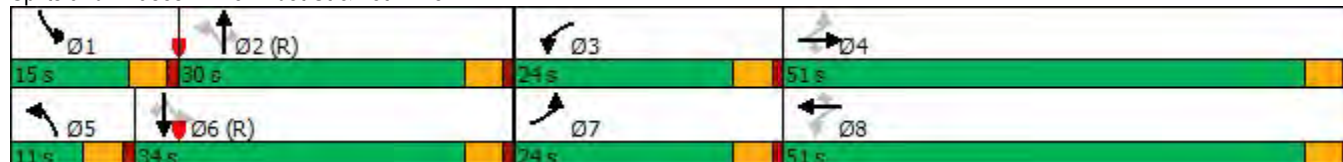
Intersection LOS: D

Intersection Capacity Utilization 92.5%

ICU Level of Service F

Analysis Period (min) 15

Splits and Phases: 18: Tibet St & 48th Ave



Timings  
22: Local Access & Green Valley Ranch Blvd

Long Range Background PM Peak Hour

04/22/2020

	→	↖	←	↗	↘
Lane Group	EBT	WBL	WBT	NBL	NBR
Lane Configurations	↑↑↑	↑	↑↑↑	↑	↑
Traffic Volume (vph)	1653	230	2059	170	110
Future Volume (vph)	1653	230	2059	170	110
Turn Type	NA	pm+pt	NA	Prot	Perm
Protected Phases	4	3	8	2	
Permitted Phases		8			2
Detector Phase	4	3	8	2	2
Switch Phase					
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	9.5	22.5	22.5	22.5
Total Split (s)	68.0	22.0	90.0	30.0	30.0
Total Split (%)	56.7%	18.3%	75.0%	25.0%	25.0%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5
Lead/Lag	Lag	Lead			
Lead-Lag Optimize?	Yes	Yes			
Recall Mode	None	None	None	C-Max	C-Max
Act Effect Green (s)	61.5	81.9	81.9	29.1	29.1
Actuated g/C Ratio	0.51	0.68	0.68	0.24	0.24
v/c Ratio	0.75	0.83	0.63	0.42	0.25
Control Delay	22.0	41.6	25.4	43.5	8.4
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	22.0	41.6	25.4	43.5	8.4
LOS	C	D	C	D	A
Approach Delay	22.0		27.0	29.7	
Approach LOS	C		C	C	

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

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

Natural Cycle: 70

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.83

Intersection Signal Delay: 25.1

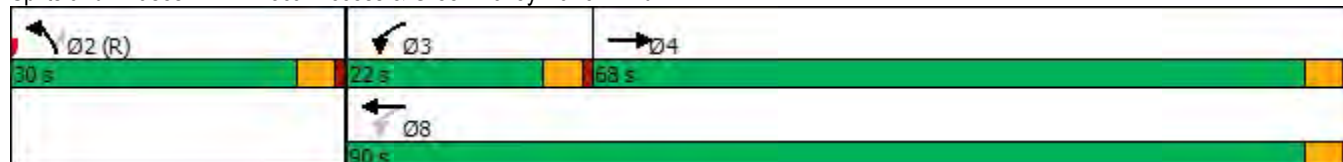
Intersection LOS: C






Intersection Capacity Utilization 69.1%





ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 22: Local Access & Green Valley Ranch Blvd



Intersection						
Int Delay, s/veh	0.1					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	10	10	1280	1480	25
Future Vol, veh/h	0	10	10	1280	1480	25
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	200	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	11	11	1362	1574	27
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	-	801	1601	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.94	4.14	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.32	2.22	-	-	-
Pot Cap-1 Maneuver	0	327	405	-	-	-
Stage 1	0	-	-	-	-	-
Stage 2	0	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	327	405	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	16.4	0.1		0		
HCM LOS	C					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	405	-	327	-	-	
HCM Lane V/C Ratio	0.026	-	0.033	-	-	
HCM Control Delay (s)	14.1	-	16.4	-	-	
HCM Lane LOS	B	-	C	-	-	
HCM 95th %tile Q(veh)	0.1	-	0.1	-	-	

Intersection						
Int Delay, s/veh	0.2					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	10	20	1290	1480	10
Future Vol, veh/h	0	10	20	1290	1480	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	200	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	11	21	1372	1574	11
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	-	793	1585	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.94	4.14	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.32	2.22	-	-	-
Pot Cap-1 Maneuver	0	331	411	-	-	-
Stage 1	0	-	-	-	-	-
Stage 2	0	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	331	411	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	16.2	0.2		0		
HCM LOS	C					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	411	-	331	-	-	
HCM Lane V/C Ratio	0.052	-	0.032	-	-	
HCM Control Delay (s)	14.2	-	16.2	-	-	
HCM Lane LOS	B	-	C	-	-	
HCM 95th %tile Q(veh)	0.2	-	0.1	-	-	

## APPENDIX D.      SHORT RANGE FUTURE TOTAL TRAFFIC LOS

HCM 6th TWSC  
1: Picadilly Rd & 52nd Ave

Short Range Total AM Peak Hour

04/24/2020

Intersection												
Int Delay, s/veh	3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔		↔	↔		↔	↔		↔	↔	
Traffic Vol, veh/h	40	0	41	36	0	19	15	231	17	10	326	10
Future Vol, veh/h	40	0	41	36	0	19	15	231	17	10	326	10
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	-	-	-	200	-	-	200	-	-	200	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	44	0	46	40	0	21	17	257	19	11	362	11

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	701	700	368	714	696	267	373	0	0	276	0	0
Stage 1	390	390	-	301	301	-	-	-	-	-	-	-
Stage 2	311	310	-	413	395	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	353	363	677	346	365	772	1185	-	-	1287	-	-
Stage 1	634	608	-	708	665	-	-	-	-	-	-	-
Stage 2	699	659	-	616	605	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	337	355	677	317	357	772	1185	-	-	1287	-	-
Mov Cap-2 Maneuver	337	355	-	317	357	-	-	-	-	-	-	-
Stage 1	625	603	-	698	656	-	-	-	-	-	-	-
Stage 2	670	650	-	570	600	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	14.9		15.2		0.5		0.2	
HCM LOS	B		C					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1185	-	-	452 317 772 1287	-	-	-
HCM Lane V/C Ratio	0.014	-	-	0.199 0.126 0.027 0.009	-	-	-
HCM Control Delay (s)	8.1	-	-	14.9 18 9.8 7.8	-	-	-
HCM Lane LOS	A	-	-	B C A A	-	-	-
HCM 95th %tile Q(veh)	0	-	-	0.7 0.4 0.1 0	-	-	-



HCM 6th TWSC  
2: Picadilly Rd & 51st Pl/North Site Access

Short Range Total AM Peak Hour













04/24/2020

Intersection												
Int Delay, s/veh	1.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations			↗			↗	↗	↗		↗	↗	
Traffic Vol, veh/h	0	0	36	0	0	5	62	236	4	1	314	88
Future Vol, veh/h	0	0	36	0	0	5	62	236	4	1	314	88
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	-	-	0	200	-	-	200	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	40	0	0	6	69	262	4	1	349	98
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	-	-	398	-	-	264	447	0	0	266	0	0
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	6.22	-	-	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.318	-	-	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	0	0	652	0	0	775	1113	-	-	1298	-	-
Stage 1	0	0	-	0	0	-	-	-	-	-	-	-
Stage 2	0	0	-	0	0	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	-	-	652	-	-	775	1113	-	-	1298	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s	10.9		9.7		1.7		0					
HCM LOS	B		A									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR					
Capacity (veh/h)	1113	-	-	652	775	1298	-	-				
HCM Lane V/C Ratio	0.062	-	-	0.061	0.007	0.001	-	-				
HCM Control Delay (s)	8.4	-	-	10.9	9.7	7.8	-	-				
HCM Lane LOS	A	-	-	B	A	A	-	-				
HCM 95th %tile Q(veh)	0.2	-	-	0.2	0	0	-	-				

HCM 6th TWSC  
6: Picadilly Rd & 50th Ave/South Site Access

Short Range Total AM Peak Hour  
04/24/2020






Intersection												
Int Delay, s/veh	0.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations			↰			↰	↰	↰		↰	↰	
Traffic Vol, veh/h	0	0	23	0	0	3	4	292	3	1	347	2
Future Vol, veh/h	0	0	23	0	0	3	4	292	3	1	347	2
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	-	-	0	200	-	-	200	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	26	0	0	3	4	324	3	1	386	2
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	-	-	387	-	-	326	388	0	0	327	0	0
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	6.22	-	-	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.318	-	-	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	0	0	661	0	0	715	1170	-	-	1233	-	-
Stage 1	0	0	-	0	0	-	-	-	-	-	-	-
Stage 2	0	0	-	0	0	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	-	-	661	-	-	715	1170	-	-	1233	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s	10.7		10.1		0.1		0					
HCM LOS	B		B									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR					
Capacity (veh/h)	1170	-	-	661	715	1233	-	-				
HCM Lane V/C Ratio	0.004	-	-	0.039	0.005	0.001	-	-				
HCM Control Delay (s)	8.1	-	-	10.7	10.1	7.9	-	-				
HCM Lane LOS	A	-	-	B	B	A	-	-				
HCM 95th %tile Q(veh)	0	-	-	0.1	0	0	-	-				





Intersection												
Int Delay, s/veh	5.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	101	6	73	12	18	24	39	174	8	7	293	70
Future Vol, veh/h	101	6	73	12	18	24	39	174	8	7	293	70
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	100	-	100	200	-	200	200	-	200	200	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	112	7	81	13	20	27	43	193	9	8	326	78

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	688	669	365	704	699	193	404	0	0	202	0	0
Stage 1	381	381	-	279	279	-	-	-	-	-	-	-
Stage 2	307	288	-	425	420	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	360	379	680	352	364	849	1155	-	-	1370	-	-
Stage 1	641	613	-	728	680	-	-	-	-	-	-	-
Stage 2	703	674	-	607	589	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	323	363	680	296	348	849	1155	-	-	1370	-	-
Mov Cap-2 Maneuver	323	363	-	296	348	-	-	-	-	-	-	-
Stage 1	617	609	-	701	655	-	-	-	-	-	-	-
Stage 2	636	649	-	526	585	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	17.3		13.4		1.5		0.1	
HCM LOS	C		B					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	EBLn3	WBLn1	WBLn2	WBLn3	SBL	SBT	SBR
Capacity (veh/h)	1155	-	-	323	363	680	296	348	849	1370	-	-
HCM Lane V/C Ratio	0.038	-	-	0.347	0.018	0.119	0.045	0.057	0.031	0.006	-	-
HCM Control Delay (s)	8.2	-	-	22	15.1	11	17.7	16	9.4	7.6	-	-
HCM Lane LOS	A	-	-	C	C	B	C	C	A	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	1.5	0.1	0.4	0.1	0.2	0.1	0	-	-






Intersection						
Int Delay, s/veh	2.9					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	12	9	0	16	18	0
Future Vol, veh/h	12	9	0	16	18	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	-	-	100	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	13	10	0	18	20	0
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	23	0	36	18
Stage 1	-	-	-	-	18	-
Stage 2	-	-	-	-	18	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1592	-	977	1061
Stage 1	-	-	-	-	1005	-
Stage 2	-	-	-	-	1005	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1592	-	977	1061
Mov Cap-2 Maneuver	-	-	-	-	977	-
Stage 1	-	-	-	-	1005	-
Stage 2	-	-	-	-	1005	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		0		8.8	
HCM LOS	A					
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	977	-	-	1592	-	
HCM Lane V/C Ratio	0.02	-	-	-	-	
HCM Control Delay (s)	8.8	-	-	0	-	
HCM Lane LOS	A	-	-	A	-	
HCM 95th %tile Q(veh)	0.1	-	-	0	-	





Intersection						
Int Delay, s/veh	6.5					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	1	17	8	0	5	1
Future Vol, veh/h	1	17	8	0	5	1
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	-	100	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1	19	9	0	6	1






Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	25	7	7	0	0
Stage 1	7	-	-	-	-
Stage 2	18	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-
Pot Cap-1 Maneuver	991	1075	1614	-	-
Stage 1	1016	-	-	-	-
Stage 2	1005	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	985	1075	1614	-	-
Mov Cap-2 Maneuver	985	-	-	-	-
Stage 1	1010	-	-	-	-
Stage 2	1005	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	8.4	7.2	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1614	-	1070	-	-
HCM Lane V/C Ratio	0.006	-	0.019	-	-
HCM Control Delay (s)	7.2	-	8.4	-	-
HCM Lane LOS	A	-	A	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

Intersection						
Int Delay, s/veh	2.3					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	21	6	0	34	21	0
Future Vol, veh/h	21	6	0	34	21	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	-	-	100	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	23	7	0	38	23	0
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	30	0	65	27
Stage 1	-	-	-	-	27	-
Stage 2	-	-	-	-	38	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1583	-	941	1048
Stage 1	-	-	-	-	996	-
Stage 2	-	-	-	-	984	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1583	-	941	1048
Mov Cap-2 Maneuver	-	-	-	-	941	-
Stage 1	-	-	-	-	996	-
Stage 2	-	-	-	-	984	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		0		8.9	
HCM LOS	A					
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	941	-	-	1583	-	
HCM Lane V/C Ratio	0.025	-	-	-	-	
HCM Control Delay (s)	8.9	-	-	0	-	
HCM Lane LOS	A	-	-	A	-	
HCM 95th %tile Q(veh)	0.1	-	-	0	-	

Intersection						
Int Delay, s/veh	5.2					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	4	8	1	0	16	2
Future Vol, veh/h	4	8	1	0	16	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	100	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	4	9	1	0	18	2
Major/Minor	Major1	Major2		Minor1		
Conflicting Flow All	0	0	13	0	11	9
Stage 1	-	-	-	-	9	-
Stage 2	-	-	-	-	2	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1606	-	1009	1073
Stage 1	-	-	-	-	1014	-
Stage 2	-	-	-	-	1021	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1606	-	1008	1073
Mov Cap-2 Maneuver	-	-	-	-	1008	-
Stage 1	-	-	-	-	1014	-
Stage 2	-	-	-	-	1020	-
Approach	EB	WB		NB		
HCM Control Delay, s	0	7.2		8.6		
HCM LOS	A					
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	1015	-	-	1606	-	
HCM Lane V/C Ratio	0.02	-	-	0.001	-	
HCM Control Delay (s)	8.6	-	-	7.2	-	
HCM Lane LOS	A	-	-	A	-	
HCM 95th %tile Q(veh)	0.1	-	-	0	-	

Intersection						
Int Delay, s/veh	4.9					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	13	8	22	0	0	32
Future Vol, veh/h	13	8	22	0	0	32
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	-	0	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	14	9	24	0	0	36
Major/Minor	Major1	Major2	Minor2			
Conflicting Flow All	24	0	-	0	61	24
Stage 1	-	-	-	-	24	-
Stage 2	-	-	-	-	37	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1591	-	-	-	945	1052
Stage 1	-	-	-	-	999	-
Stage 2	-	-	-	-	985	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1591	-	-	-	936	1052
Mov Cap-2 Maneuver	-	-	-	-	936	-
Stage 1	-	-	-	-	990	-
Stage 2	-	-	-	-	985	-
Approach	EB	WB		SB		
HCM Control Delay, s	4.5	0		8.5		
HCM LOS	A					
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1591	-	-	-	-	1052
HCM Lane V/C Ratio	0.009	-	-	-	-	0.034
HCM Control Delay (s)	7.3	-	-	-	0	8.5
HCM Lane LOS	A	-	-	-	A	A
HCM 95th %tile Q(veh)	0	-	-	-	-	0.1



Intersection												
Int Delay, s/veh	2.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔		↔	↔		↔	↔		↔	↔	
Traffic Vol, veh/h	13	0	9	30	0	16	20	214	28	23	219	11
Future Vol, veh/h	13	0	9	30	0	16	20	214	28	23	219	11
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	-	-	-	200	-	-	200	-	-	200	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	14	0	10	33	0	18	22	238	31	26	243	12

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	608	614	249	604	605	254	255	0	0	269	0	0
Stage 1	301	301	-	298	298	-	-	-	-	-	-	-
Stage 2	307	313	-	306	307	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	408	407	790	410	412	785	1310	-	-	1295	-	-
Stage 1	708	665	-	711	667	-	-	-	-	-	-	-
Stage 2	703	657	-	704	661	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	388	392	790	394	397	785	1310	-	-	1295	-	-
Mov Cap-2 Maneuver	388	392	-	394	397	-	-	-	-	-	-	-
Stage 1	696	652	-	699	656	-	-	-	-	-	-	-
Stage 2	676	646	-	681	648	-	-	-	-	-	-	-







Approach	EB		WB		NB		SB	
HCM Control Delay, s	12.7		13.2		0.6		0.7	
HCM LOS	B		B					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1310	-	-	490 394 785	1295	-	-
HCM Lane V/C Ratio	0.017	-	-	0.05 0.085 0.023	0.02	-	-
HCM Control Delay (s)	7.8	-	-	12.7 15 9.7	7.8	-	-
HCM Lane LOS	A	-	-	B C A	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.2 0.3 0.1	0.1	-	-

HCM 6th TWSC  
2: Picadilly Rd & 51st Pl/North Site Access

Short Range Total PM Peak Hour

04/24/2020

Intersection												
Int Delay, s/veh	0.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	8	0	0	4	5	246	10	4	229	25
Future Vol, veh/h	0	0	8	0	0	4	5	246	10	4	229	25
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	-	-	0	100	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	9	0	0	4	6	273	11	4	254	28







Major/Minor	Minor2		Minor1		Major1		Major2	
Conflicting Flow All	-	-	268	-	-	279	282	0
Stage 1	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	6.22	-	-	6.22	4.12	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.318	-	-	3.318	2.218	-
Pot Cap-1 Maneuver	0	0	771	0	0	760	1280	-
Stage 1	0	0	-	0	0	-	-	-
Stage 2	0	0	-	0	0	-	-	-
Platoon blocked, %	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	771	-	-	760	1280	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.7	9.8	0.1	0.1
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1280	-	-	771	760	1278	-
HCM Lane V/C Ratio	0.004	-	-	0.012	0.006	0.003	-
HCM Control Delay (s)	7.8	-	-	9.7	9.8	7.8	-
HCM Lane LOS	A	-	-	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0	0	0	-

HCM 6th TWSC  
6: Picadilly Rd & 50th Ave/South Site Access

Short Range Total PM Peak Hour  
04/24/2020

Intersection												
Int Delay, s/veh	0.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	10	0	0	2	18	255	10	6	224	7
Future Vol, veh/h	0	0	10	0	0	2	18	255	10	6	224	7
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	-	-	0	100	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	11	0	0	2	20	283	11	7	249	8

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	-	-	253	-	-	289	257	0	0	294	0	0
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	6.22	-	-	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.318	-	-	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	0	0	786	0	0	750	1308	-	-	1268	-	-
Stage 1	0	0	-	0	0	-	-	-	-	-	-	-
Stage 2	0	0	-	0	0	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	-	-	786	-	-	750	1308	-	-	1268	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-













Approach	EB	WB	NB	SB
HCM Control Delay, s	9.6	9.8	0.5	0.2
HCM LOS	A	A		





Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1308	-	-	786	750	1268	-	-
HCM Lane V/C Ratio	0.015	-	-	0.014	0.003	0.005	-	-
HCM Control Delay (s)	7.8	-	-	9.6	9.8	7.9	-	-
HCM Lane LOS	A	-	-	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0	0	0	-	-





HCM 6th TWSC  
8: Picadilly Rd & Green Valley Ranch Blvd/48th Ave






Short Range Total PM Peak Hour

04/24/2020

Intersection												
Int Delay, s/veh	4.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	65	13	71	10	14	11	45	207	17	25	145	64
Future Vol, veh/h	65	13	71	10	14	11	45	207	17	25	145	64
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	200	-	200	200	-	200	200	-	200	200	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	72	14	79	11	16	12	50	230	19	28	161	71
Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	607	602	197	629	618	230	232	0	0	249	0	0
Stage 1	253	253	-	330	330	-	-	-	-	-	-	-
Stage 2	354	349	-	299	288	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	408	414	844	395	405	809	1336	-	-	1317	-	-
Stage 1	751	698	-	683	646	-	-	-	-	-	-	-
Stage 2	663	633	-	710	674	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	372	390	844	333	382	809	1336	-	-	1317	-	-
Mov Cap-2 Maneuver	372	390	-	333	382	-	-	-	-	-	-	-
Stage 1	723	683	-	658	622	-	-	-	-	-	-	-
Stage 2	613	610	-	617	660	-	-	-	-	-	-	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	13.3			13.5			1.3			0.8		
HCM LOS	B			B								
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	EBLn3	WBLn1	WBLn2	WBLn3	SBL	SBT	SBR
Capacity (veh/h)	1336	-	-	372	390	844	333	382	809	1317	-	-
HCM Lane V/C Ratio	0.037	-	-	0.194	0.037	0.093	0.033	0.041	0.015	0.021	-	-
HCM Control Delay (s)	7.8	-	-	17	14.6	9.7	16.2	14.8	9.5	7.8	-	-
HCM Lane LOS	A	-	-	C	B	A	C	B	A	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.7	0.1	0.3	0.1	0.1	0	0.1	-	-

Intersection						
Int Delay, s/veh	1.4					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	13	17	0	22	10	0
Future Vol, veh/h	13	17	0	22	10	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	-	-	100	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	14	19	0	24	11	0
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	33	0	48	24
Stage 1	-	-	-	-	24	-
Stage 2	-	-	-	-	24	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1579	-	962	1052
Stage 1	-	-	-	-	999	-
Stage 2	-	-	-	-	999	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1579	-	962	1052
Mov Cap-2 Maneuver	-	-	-	-	962	-
Stage 1	-	-	-	-	999	-
Stage 2	-	-	-	-	999	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		0		8.8	
HCM LOS	A					
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	962	-	-	1579	-	
HCM Lane V/C Ratio	0.012	-	-	-	-	
HCM Control Delay (s)	8.8	-	-	0	-	
HCM Lane LOS	A	-	-	A	-	
HCM 95th %tile Q(veh)	0	-	-	0	-	





Intersection						
Int Delay, s/veh	1.3					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	30	21	0	32	14	0
Future Vol, veh/h	30	21	0	32	14	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	-	-	100	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	33	23	0	36	16	0
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	56	0	81	45
Stage 1	-	-	-	-	45	-
Stage 2	-	-	-	-	36	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1549	-	921	1025
Stage 1	-	-	-	-	977	-
Stage 2	-	-	-	-	986	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1549	-	921	1025
Mov Cap-2 Maneuver	-	-	-	-	921	-
Stage 1	-	-	-	-	977	-
Stage 2	-	-	-	-	986	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		0		9	
HCM LOS					A	
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	921	-	-	1549	-	
HCM Lane V/C Ratio	0.017	-	-	-	-	
HCM Control Delay (s)	9	-	-	0	-	
HCM Lane LOS	A	-	-	A	-	
HCM 95th %tile Q(veh)	0.1	-	-	0	-	

Intersection						
Int Delay, s/veh	5.1					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	1	11	18	11	2	2
Future Vol, veh/h	1	11	18	11	2	2
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	-	100	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1	12	20	12	2	2






Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	55	3	4	0	-	0
Stage 1	3	-	-	-	-	-
Stage 2	52	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	953	1081	1618	-	-	-
Stage 1	1020	-	-	-	-	-
Stage 2	970	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	942	1081	1618	-	-	-
Mov Cap-2 Maneuver	942	-	-	-	-	-
Stage 1	1008	-	-	-	-	-
Stage 2	970	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	8.4	4.5	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1618	-	1068	-	-
HCM Lane V/C Ratio	0.012	-	0.012	-	-
HCM Control Delay (s)	7.3	-	8.4	-	-
HCM Lane LOS	A	-	A	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Intersection						
Int Delay, s/veh	3.7					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	0	13	2	10	12	4
Future Vol, veh/h	0	13	2	10	12	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	100	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	14	2	11	13	4
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	14	0	22	7
Stage 1	-	-	-	-	7	-
Stage 2	-	-	-	-	15	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1604	-	995	1075
Stage 1	-	-	-	-	1016	-
Stage 2	-	-	-	-	1008	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1604	-	994	1075
Mov Cap-2 Maneuver	-	-	-	-	994	-
Stage 1	-	-	-	-	1016	-
Stage 2	-	-	-	-	1007	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		1.2		8.6	
HCM LOS	A					
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	1013	-	-	1604	-	
HCM Lane V/C Ratio	0.018	-	-	0.001	-	
HCM Control Delay (s)	8.6	-	-	7.2	-	
HCM Lane LOS	A	-	-	A	-	
HCM 95th %tile Q(veh)	0.1	-	-	0	-	



Intersection						
Int Delay, s/veh	4.2					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	27	29	13	0	0	22
Future Vol, veh/h	27	29	13	0	0	22
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	-	0	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	30	32	14	0	0	24
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	14	0	-	0	106	14
Stage 1	-	-	-	-	14	-
Stage 2	-	-	-	-	92	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1604	-	-	-	892	1066
Stage 1	-	-	-	-	1009	-
Stage 2	-	-	-	-	932	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1604	-	-	-	875	1066
Mov Cap-2 Maneuver	-	-	-	-	875	-
Stage 1	-	-	-	-	990	-
Stage 2	-	-	-	-	932	-
Approach	EB	WB		SB		
HCM Control Delay, s	3.5	0		8.5		
HCM LOS	A					
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1604	-	-	-	-	1066
HCM Lane V/C Ratio	0.019	-	-	-	-	0.023
HCM Control Delay (s)	7.3	-	-	-	0	8.5
HCM Lane LOS	A	-	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	-	-	0.1

## APPENDIX E. LONG RANGE FUTURE TOTAL TRAFFIC LOS

# HCM 6th Signalized Intersection Summary

## 1: Picadilly Rd & 52nd Ave

Long Range Total AM Peak Hour

04/24/2020

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔		↔	↑	↗	↗	↑↑	↗	↗	↑↑	
Traffic Volume (veh/h)	55	10	40	246	10	336	15	801	374	254	651	10
Future Volume (veh/h)	55	10	40	246	10	336	15	801	374	254	651	10
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	59	11	43	262	11	357	16	852	398	270	693	11
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	73	14	54	734	397	491	31	1627	726	336	1926	31
Arrive On Green	0.08	0.08	0.08	0.21	0.21	0.21	0.02	0.46	0.46	0.10	0.54	0.54
Sat Flow, veh/h	892	166	650	3456	1870	1585	1781	3554	1585	3456	3580	57
Grp Volume(v), veh/h	113	0	0	262	11	357	16	852	398	270	344	360
Grp Sat Flow(s),veh/h/ln	1709	0	0	1728	1870	1585	1781	1777	1585	1728	1777	1860
Q Serve(g_s), s	7.8	0.0	0.0	7.8	0.6	24.1	1.1	20.5	21.8	9.2	13.3	13.3
Cycle Q Clear(g_c), s	7.8	0.0	0.0	7.8	0.6	24.1	1.1	20.5	21.8	9.2	13.3	13.3
Prop In Lane	0.52		0.38	1.00		1.00	1.00		1.00	1.00		0.03
Lane Grp Cap(c), veh/h	141	0	0	734	397	491	31	1627	726	336	956	1001
V/C Ratio(X)	0.80	0.00	0.00	0.36	0.03	0.73	0.52	0.52	0.55	0.80	0.36	0.36
Avail Cap(c_a), veh/h	263	0	0	734	397	491	111	1627	726	504	956	1001
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	54.1	0.0	0.0	40.3	37.4	36.9	58.5	23.2	23.5	53.0	15.9	15.9
Incr Delay (d2), s/veh	10.1	0.0	0.0	0.3	0.0	5.4	13.0	1.2	3.0	5.6	1.1	1.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	6.7	0.0	0.0	6.0	0.5	15.2	1.1	13.6	13.5	7.6	9.5	9.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	64.3	0.0	0.0	40.6	37.5	42.3	71.5	24.4	26.5	58.6	16.9	16.9
LnGrp LOS	E	A	A	D	D	D	E	C	C	E	B	B
Approach Vol, veh/h		113			630			1266			974	
Approach Delay, s/veh		64.3			41.5			25.7			28.5	
Approach LOS		E			D			C			C	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	16.2	59.5		14.4	6.6	69.1		30.0				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	17.5	40.5		18.5	7.5	50.5		25.5				
Max Q Clear Time (g_c+I1), s	11.2	23.8		9.8	3.1	15.3		26.1				
Green Ext Time (p_c), s	0.5	7.0		0.3	0.0	4.9		0.0				

### Intersection Summary

HCM 6th Ctrl Delay 31.4

HCM 6th LOS C

### Notes

























User approved pedestrian interval to be less than phase max green.

# HCM 6th Signalized Intersection Summary

## 8: Picadilly Rd & Green Valley Ranch Blvd

Long Range Total AM Peak Hour

04/24/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	106	1549	255	250	609	384	125	772	593	244	570	91
Future Volume (veh/h)	106	1549	255	250	609	384	125	772	593	244	570	91
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	113	1648	271	266	648	409	133	821	0	260	606	97
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	139	1525	680	330	1586	708	187	1300		245	1385	430
Arrive On Green	0.08	0.43	0.43	0.16	0.75	0.75	0.05	0.25	0.00	0.07	0.27	0.27
Sat Flow, veh/h	1781	3554	1585	3456	3554	1585	3456	5106	1585	3456	5106	1585
Grp Volume(v), veh/h	113	1648	271	266	648	409	133	821	0	260	606	97
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1728	1777	1585	1728	1702	1585	1728	1702	1585
Q Serve(g_s), s	7.5	51.5	14.1	8.9	8.0	13.8	4.5	17.1	0.0	8.5	11.8	5.7
Cycle Q Clear(g_c), s	7.5	51.5	14.1	8.9	8.0	13.8	4.5	17.1	0.0	8.5	11.8	5.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	139	1525	680	330	1586	708	187	1300		245	1385	430
V/C Ratio(X)	0.81	1.08	0.40	0.81	0.41	0.58	0.71	0.63		1.06	0.44	0.23
Avail Cap(c_a), veh/h	221	1525	680	533	1632	728	216	1300		245	1385	430
HCM Platoon Ratio	1.00	1.00	1.00	1.67	1.67	1.67	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.94	0.94	0.94	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	54.4	34.3	23.6	49.4	9.5	10.2	55.8	39.7	0.0	55.8	36.2	33.9
Incr Delay (d2), s/veh	11.4	48.2	0.4	4.4	0.2	1.0	8.8	2.3	0.0	74.9	1.0	1.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	6.8	43.4	9.1	6.9	4.6	6.3	4.0	11.9	0.0	10.5	8.7	4.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	65.9	82.4	24.0	53.8	9.6	11.2	64.6	42.1	0.0	130.7	37.2	35.2
LnGrp LOS	E	F	C	D	A	B	E	D		F	D	D
Approach Vol, veh/h	2032			1323			954			A963		
Approach Delay, s/veh	73.7			19.0			45.2			62.2		
Approach LOS	E			B			D			E		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	13.0	35.0	16.0	56.0	11.0	37.0	13.9	58.1				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	8.5	23.5	18.5	51.5	7.5	24.5	14.9	55.1				
Max Q Clear Time (g_c+I1), s	10.5	19.1	10.9	53.5	6.5	13.8	9.5	15.8				
Green Ext Time (p_c), s	0.0	2.1	0.5	0.0	0.0	3.3	0.1	7.1				

### Intersection Summary

HCM 6th Ctrl Delay 52.7

























HCM 6th LOS D

### Notes

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

# HCM 6th Signalized Intersection Summary 13: Tibet St & 52nd Ave






























Long Range Total AM Peak Hour  
04/24/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	232	151	272	75	81	65	264	200	91	60	319	229
Future Volume (veh/h)	232	151	272	75	81	65	264	200	91	60	319	229
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	247	161	289	80	86	69	281	213	97	64	339	244
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	370	400	339	270	374	317	521	1030	873	687	982	832
Arrive On Green	0.02	0.07	0.07	0.05	0.20	0.20	0.10	0.92	0.92	0.04	0.53	0.53
Sat Flow, veh/h	1781	1870	1585	1781	1870	1585	1781	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	247	161	289	80	86	69	281	213	97	64	339	244
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	1870	1585	1781	1870	1585	1781	1870	1585
Q Serve(g_s), s	7.5	9.9	21.6	4.2	4.6	4.4	7.5	1.4	0.7	2.0	12.6	10.4
Cycle Q Clear(g_c), s	7.5	9.9	21.6	4.2	4.6	4.4	7.5	1.4	0.7	2.0	12.6	10.4
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	370	400	339	270	374	317	521	1030	873	687	982	832
V/C Ratio(X)	0.67	0.40	0.85	0.30	0.23	0.22	0.54	0.21	0.11	0.09	0.35	0.29
Avail Cap(c_a), veh/h	370	959	812	295	959	812	521	1030	873	733	982	832
HCM Platoon Ratio	0.33	0.33	0.33	1.00	1.00	1.00	1.67	1.67	1.67	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	42.1	48.4	53.9	35.8	40.3	40.2	14.6	2.2	2.2	11.9	16.5	16.0
Incr Delay (d2), s/veh	4.5	0.7	6.1	0.6	0.3	0.3	1.1	0.5	0.3	0.1	1.0	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(95%),veh/ln	6.3	8.7	14.9	3.4	3.9	3.1	6.3	1.1	0.5	1.4	9.5	7.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	46.7	49.1	60.0	36.4	40.6	40.5	15.7	2.7	2.4	12.0	17.5	16.9
LnGrp LOS	D	D	E	D	D	D	B	A	A	B	B	B
Approach Vol, veh/h		697			235			591			647	
Approach Delay, s/veh		52.7			39.1			8.8			16.7	
Approach LOS		D			D			A			B	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	8.9	70.6	10.3	30.2	12.0	67.5	12.0	28.5				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	7.5	25.5	7.5	61.5	7.5	25.5	7.5	61.5				
Max Q Clear Time (g_c+l1), s	4.0	3.4	6.2	23.6	9.5	14.6	9.5	6.6				
Green Ext Time (p_c), s	0.0	1.5	0.0	2.0	0.0	2.2	0.0	0.7				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay			28.6									
HCM 6th LOS			C									

# HCM 6th Signalized Intersection Summary 18: Tibet St & 48th Ave

Long Range Total AM Peak Hour



























05/14/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  			  						 	
Traffic Volume (veh/h)	249	1646	120	82	785	173	80	135	119	319	71	288
Future Volume (veh/h)	249	1646	120	82	785	173	80	135	119	319	71	288
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	265	1751	128	87	835	184	85	144	127	339	76	306
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	366	1939	602	159	1586	492	475	626	531	525	706	598
Arrive On Green	0.12	0.38	0.38	0.05	0.31	0.31	0.05	0.33	0.33	0.03	0.12	0.12
Sat Flow, veh/h	1781	5106	1585	1781	5106	1585	1781	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	265	1751	128	87	835	184	85	144	127	339	76	306
Grp Sat Flow(s),veh/h/ln	1781	1702	1585	1781	1702	1585	1781	1870	1585	1781	1870	1585
Q Serve(g_s), s	11.7	38.8	6.5	4.0	16.2	10.9	3.7	6.7	7.0	10.5	4.3	21.7
Cycle Q Clear(g_c), s	11.7	38.8	6.5	4.0	16.2	10.9	3.7	6.7	7.0	10.5	4.3	21.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	366	1939	602	159	1586	492	475	626	531	525	706	598
V/C Ratio(X)	0.72	0.90	0.21	0.55	0.53	0.37	0.18	0.23	0.24	0.65	0.11	0.51
Avail Cap(c_a), veh/h	447	1979	614	363	1979	614	492	626	531	525	706	598
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	24.4	35.1	25.1	31.2	34.1	32.3	24.2	28.8	28.9	27.5	34.6	42.2
Incr Delay (d2), s/veh	4.5	6.2	0.2	2.9	0.3	0.5	0.2	0.9	1.1	2.7	0.3	3.1
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(95%),veh/ln	9.1	23.7	4.5	3.3	11.0	7.6	2.9	5.7	5.1	5.3	3.8	14.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	28.9	41.3	25.3	34.1	34.4	32.7	24.4	29.6	29.9	30.2	34.9	45.3
LnGrp LOS	C	D	C	C	C	C	C	C	C	C	C	D
Approach Vol, veh/h		2144			1106			356			721	
Approach Delay, s/veh		38.8			34.1			28.5			37.1	
Approach LOS		D			C			C			D	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	15.0	44.7	10.3	50.1	9.9	49.8	18.5	41.8				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	10.5	25.5	19.5	46.5	6.5	29.5	19.5	46.5				
Max Q Clear Time (g_c+I1), s	12.5	9.0	6.0	40.8	5.7	23.7	13.7	18.2				
Green Ext Time (p_c), s	0.0	1.1	0.1	4.7	0.0	0.8	0.4	7.4				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay			36.5									
HCM 6th LOS			D									

HCM 6th Signalized Intersection Summary  
22: Local Access/Site Access & Green Valley Ranch Blvd

Long Range Total AM Peak Hour

04/24/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  			  						 	
Traffic Volume (veh/h)	5	1801	120	70	1075	7	150	1	200	14	1	18
Future Volume (veh/h)	5	1801	120	70	1075	7	150	1	200	14	1	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	5	1916	128	74	1144	7	160	1	213	15	1	19
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	234	2063	137	156	2605	16	645	3	675	455	34	649
Arrive On Green	0.84	0.84	0.84	0.04	0.50	0.50	0.43	0.43	0.43	0.43	0.43	0.43
Sat Flow, veh/h	488	4890	326	1781	5237	32	1392	7	1579	1167	80	1517
Grp Volume(v), veh/h	5	1332	712	74	744	407	160	0	214	15	0	20
Grp Sat Flow(s),veh/h/ln	488	1702	1812	1781	1702	1865	1392	0	1586	1167	0	1597
Q Serve(g_s), s	0.4	33.7	34.5	2.7	16.9	16.9	9.0	0.0	10.7	1.0	0.0	0.9
Cycle Q Clear(g_c), s	8.1	33.7	34.5	2.7	16.9	16.9	9.9	0.0	10.7	11.7	0.0	0.9
Prop In Lane	1.00		0.18	1.00		0.02	1.00		1.00	1.00		0.95
Lane Grp Cap(c), veh/h	234	1436	764	156	1694	928	645	0	678	455	0	683
V/C Ratio(X)	0.02	0.93	0.93	0.48	0.44	0.44	0.25	0.00	0.32	0.03	0.00	0.03
Avail Cap(c_a), veh/h	254	1574	838	437	2369	1297	645	0	678	455	0	683
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.09	0.09	0.09	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	7.2	8.1	8.1	25.7	19.4	19.4	22.8	0.0	22.7	26.6	0.0	19.9
Incr Delay (d2), s/veh	0.0	1.1	2.1	2.2	0.2	0.3	0.9	0.0	1.2	0.1	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(95%),veh/ln	0.0	4.4	5.0	2.2	10.9	11.7	5.6	0.0	7.6	0.6	0.0	0.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	7.2	9.1	10.2	27.9	19.6	19.7	23.7	0.0	24.0	26.8	0.0	20.0
LnGrp LOS	A	A	B	C	B	B	C	A	C	C	A	B
Approach Vol, veh/h		2049			1225			374			35	
Approach Delay, s/veh		9.5			20.1			23.8			22.9	
Approach LOS		A			C			C			C	
Timer - Assigned Phs		2	3	4		6		8				
Phs Duration (G+Y+Rc), s		55.8	9.1	55.1		55.8		64.2				
Change Period (Y+Rc), s		4.5	4.5	4.5		4.5		4.5				
Max Green Setting (Gmax), s		27.5	23.5	55.5		27.5		83.5				
Max Q Clear Time (g_c+I1), s		12.7	4.7	36.5		13.7		18.9				
Green Ext Time (p_c), s		1.6	0.1	14.1		0.1		10.5				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay			14.6									
HCM 6th LOS			B									

Timings  
1: Picadilly Rd & 52nd Ave

Long Range Total AM Peak Hour

04/24/2020

	→	↖	←	↗	↖	↑	↗	↖	↓
Lane Group	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations	↕	↖↗	↑	↗	↖	↕	↗	↖↗	↕
Traffic Volume (vph)	10	246	10	336	15	801	374	254	651
Future Volume (vph)	10	246	10	336	15	801	374	254	651
Turn Type	NA	Perm	NA	pm+ov	Prot	NA	Perm	Prot	NA
Protected Phases	4		8	1	5	2		1	6
Permitted Phases		8		8			2		
Detector Phase	4	8	8	1	5	2	2	1	6
Switch Phase									
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	22.5	9.5	9.5	22.5	22.5	9.5	22.5
Total Split (s)	23.0	30.0	30.0	22.0	12.0	45.0	45.0	22.0	55.0
Total Split (%)	19.2%	25.0%	25.0%	18.3%	10.0%	37.5%	37.5%	18.3%	45.8%
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	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag				Lead	Lead	Lag	Lag	Lead	Lag
Lead-Lag Optimize?				Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	C-Max	C-Max	None	C-Max
Act Effect Green (s)	11.7	17.9	17.9	37.5	6.7	57.3	57.3	15.0	71.9
Actuated g/C Ratio	0.10	0.15	0.15	0.31	0.06	0.48	0.48	0.12	0.60
v/c Ratio	0.60	0.71	0.04	0.55	0.16	0.50	0.41	0.63	0.33
Control Delay	54.2	63.2	45.8	22.9	42.7	23.2	14.6	56.1	14.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	54.2	63.2	45.8	22.9	42.7	23.2	14.6	56.1	14.9
LOS	D	E	D	C	D	C	B	E	B
Approach Delay	54.2		40.1			20.8			26.3
Approach LOS	D		D			C			C

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

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

Natural Cycle: 80

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.71

Intersection Signal Delay: 27.9

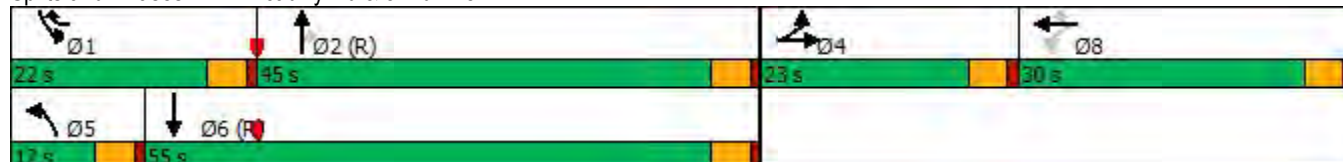
Intersection LOS: C

Intersection Capacity Utilization 60.2%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 1: Picadilly Rd & 52nd Ave





























Timings  
8: Picadilly Rd & Green Valley Ranch Blvd

Long Range Total AM Peak Hour

04/24/2020

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	106	1549	255	250	609	384	125	772	593	244	570	91
Future Volume (vph)	106	1549	255	250	609	384	125	772	593	244	570	91
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	pm+ov	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2	3	1	6	
Permitted Phases			4			8			2			6
Detector Phase	7	4	4	3	8	8	5	2	3	1	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	5.0	5.0
Minimum Split (s)	9.5	22.5	22.5	9.5	22.5	22.5	9.5	22.5	9.5	9.5	22.5	22.5
Total Split (s)	19.4	56.0	56.0	23.0	59.6	59.6	12.0	28.0	23.0	13.0	29.0	29.0
Total Split (%)	16.2%	46.7%	46.7%	19.2%	49.7%	49.7%	10.0%	23.3%	19.2%	10.8%	24.2%	24.2%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	C-Max	None	None	C-Max	C-Max
Act Effect Green (s)	12.3	51.5	51.5	18.5	57.7	57.7	7.4	23.5	46.5	8.5	24.6	24.6
Actuated g/C Ratio	0.10	0.43	0.43	0.15	0.48	0.48	0.06	0.20	0.39	0.07	0.20	0.20
v/c Ratio	0.62	1.09	0.34	0.50	0.38	0.45	0.63	0.83	0.98	1.07	0.58	0.24
Control Delay	66.3	83.6	7.6	52.4	21.6	14.6	68.5	54.3	63.5	128.8	53.4	17.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	66.3	83.6	7.6	52.4	21.6	14.6	68.5	54.3	63.5	128.8	53.4	17.7
LOS	E	F	A	D	C	B	E	D	E	F	D	B
Approach Delay		72.5			25.6			59.2			70.2	
Approach LOS		E			C			E			E	

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

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

Natural Cycle: 100

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.09

Intersection Signal Delay: 58.0

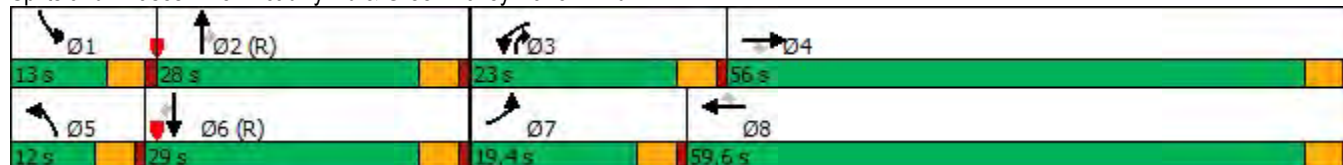
Intersection LOS: E

Intersection Capacity Utilization 97.7%

ICU Level of Service F

























Analysis Period (min) 15

Splits and Phases: 8: Picadilly Rd & Green Valley Ranch Blvd



Timings  
13: Tibet St & 52nd Ave

Long Range Total AM Peak Hour  
04/24/2020

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	232	151	272	75	81	65	264	200	91	60	319	229
Future Volume (vph)	232	151	272	75	81	65	264	200	91	60	319	229
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0	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	9.5	22.5	22.5	9.5	22.5	22.5	9.5	22.5	22.5
Total Split (s)	12.0	66.0	66.0	12.0	66.0	66.0	12.0	30.0	30.0	12.0	30.0	30.0
Total Split (%)	10.0%	55.0%	55.0%	10.0%	55.0%	55.0%	10.0%	25.0%	25.0%	10.0%	25.0%	25.0%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max
Act Effect Green (s)	24.3	18.3	18.3	23.2	15.9	15.9	83.1	73.6	73.6	57.9	50.9	50.9
Actuated g/C Ratio	0.20	0.15	0.15	0.19	0.13	0.13	0.69	0.61	0.61	0.48	0.42	0.42
v/c Ratio	0.91	0.57	0.59	0.35	0.35	0.24	0.38	0.19	0.10	0.11	0.43	0.30
Control Delay	59.0	36.2	12.4	39.3	49.2	5.6	7.1	10.4	3.3	9.3	25.9	3.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	59.0	36.2	12.4	39.3	49.2	5.6	7.1	10.4	3.3	9.3	25.9	3.6
LOS	E	D	B	D	D	A	A	B	A	A	C	A
Approach Delay		34.4			33.0			7.6			15.9	
Approach LOS		C			C			A			B	

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: 65

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.91

Intersection Signal Delay: 21.4

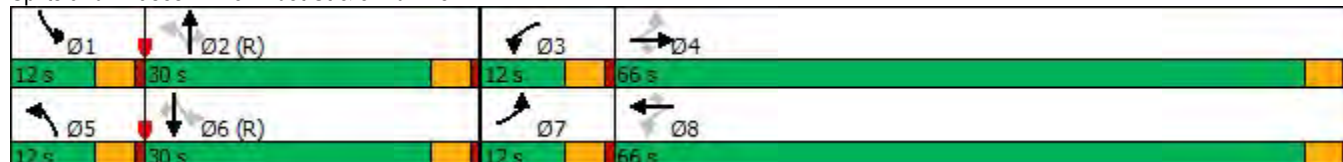
Intersection LOS: C

Intersection Capacity Utilization 63.5%

ICU Level of Service B

Analysis Period (min) 15

























Splits and Phases: 13: Tibet St & 52nd Ave



Timings  
18: Tibet St & 48th Ave

Long Range Total AM Peak Hour

05/14/2020

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	249	1646	120	82	785	173	80	135	119	319	71	288
Future Volume (vph)	249	1646	120	82	785	173	80	135	119	319	71	288
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0	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	9.5	22.5	22.5	9.5	22.5	22.5	9.5	22.5	22.5
Total Split (s)	24.0	51.0	51.0	24.0	51.0	51.0	11.0	30.0	30.0	15.0	34.0	34.0
Total Split (%)	20.0%	42.5%	42.5%	20.0%	42.5%	42.5%	9.2%	25.0%	25.0%	12.5%	28.3%	28.3%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max
Act Effect Green (s)	67.2	54.3	54.3	56.4	48.0	48.0	33.3	26.6	26.6	43.5	34.7	34.7
Actuated g/C Ratio	0.56	0.45	0.45	0.47	0.40	0.40	0.28	0.22	0.22	0.36	0.29	0.29
v/c Ratio	0.65	0.76	0.17	0.47	0.41	0.25	0.22	0.35	0.28	0.80	0.14	0.45
Control Delay	34.6	45.0	17.8	24.3	26.4	4.1	29.2	42.9	8.4	58.3	44.7	16.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	34.6	45.0	17.8	24.3	26.4	4.1	29.2	42.9	8.4	58.3	44.7	16.3
LOS	C	D	B	C	C	A	C	D	A	E	D	B
Approach Delay		42.1			22.6			27.3			39.1	
Approach LOS		D			C			C			D	

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: 80

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.80

Intersection Signal Delay: 35.4

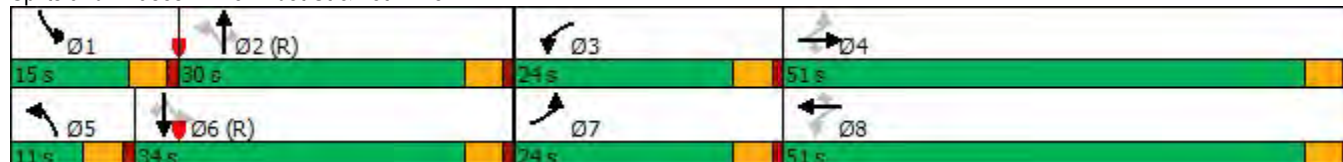
Intersection LOS: D

Intersection Capacity Utilization 76.1%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 18: Tibet St & 48th Ave

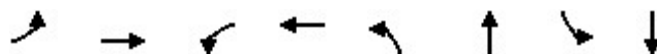


# Timings

## 22: Local Access/Site Access & Green Valley Ranch Blvd

Long Range Total AM Peak Hour

04/24/2020



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations	←	↑↑↑	←	↑↑↑	←	↑	←	↑
Traffic Volume (vph)	5	1801	70	1075	150	1	14	1
Future Volume (vph)	5	1801	70	1075	150	1	14	1
Turn Type	Perm	NA	pm+pt	NA	Perm	NA	Perm	NA
Protected Phases		4	3	8		2		6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	3	8	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
Minimum Split (s)	22.5	22.5	9.5	22.5	22.5	22.5	22.5	22.5
Total Split (s)	60.0	60.0	28.0	88.0	32.0	32.0	32.0	32.0
Total Split (%)	50.0%	50.0%	23.3%	73.3%	26.7%	26.7%	26.7%	26.7%
Yellow Time (s)	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
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	Lag	Lag	Lead					
Lead-Lag Optimize?	Yes	Yes	Yes					
Recall Mode	None	None	None	None	C-Max	C-Max	Max	Max
Act Effect Green (s)	65.9	65.9	75.5	75.5	35.5	35.5	35.5	35.5
Actuated g/C Ratio	0.55	0.55	0.63	0.63	0.30	0.30	0.30	0.30
v/c Ratio	0.02	0.74	0.45	0.36	0.39	0.35	0.05	0.04
Control Delay	12.2	22.2	32.7	14.4	40.6	6.8	36.6	15.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	12.2	22.2	32.7	14.4	40.6	6.8	36.6	15.5
LOS	B	C	C	B	D	A	D	B
Approach Delay		22.2		15.5		21.2		24.5
Approach LOS		C		B		C		C

### Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 0 (0%), Referenced to phase 2:NBT, Start of Green

Natural Cycle: 65

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.74

Intersection Signal Delay: 19.9

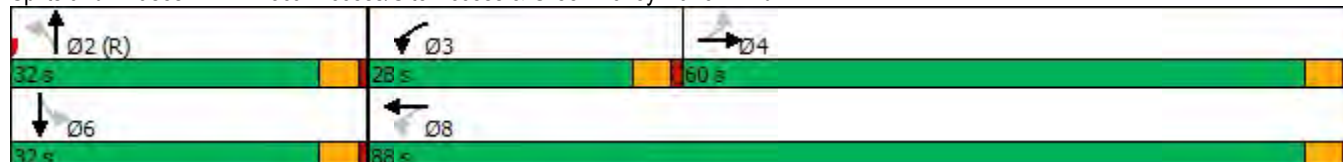
Intersection LOS: B

Intersection Capacity Utilization 67.9%

ICU Level of Service C

Analysis Period (min) 15

### Splits and Phases: 22: Local Access/Site Access & Green Valley Ranch Blvd



HCM 6th TWSC  
2: Picadilly Rd & 51st Pl/North Site Access

Long Range Total AM Peak Hour  
04/24/2020

Intersection												
Int Delay, s/veh	0.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations			↗			↗	↗	↗↘		↗	↗↘	
Traffic Vol, veh/h	0	0	40	0	0	3	60	1187	4	1	846	90
Future Vol, veh/h	0	0	40	0	0	3	60	1187	4	1	846	90
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	-	-	0	200	-	-	0	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	43	0	0	3	64	1263	4	1	900	96

Major/Minor	Minor2		Minor1		Major1		Major2	
Conflicting Flow All	-	-	498	-	-	634	996	0
Stage 1	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	6.94	-	-	6.94	4.14	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.32	-	-	3.32	2.22	-
Pot Cap-1 Maneuver	0	0	518	0	0	422	690	-
Stage 1	0	0	-	0	0	-	-	-
Stage 2	0	0	-	0	0	-	-	-
Platoon blocked, %	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	518	-	-	422	690	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	12.6	13.6	0.5	0
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	690	-	-	518	422	544	-
HCM Lane V/C Ratio	0.093	-	-	0.082	0.008	0.002	-
HCM Control Delay (s)	10.7	-	-	12.6	13.6	11.6	-
HCM Lane LOS	B	-	-	B	B	B	-
HCM 95th %tile Q(veh)	0.3	-	-	0.3	0	0	-

HCM 6th TWSC  
6: Picadilly Rd & 50th Ave/South Site Access

Long Range Total AM Peak Hour  
04/24/2020

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	25	0	0	2	10	1249	3	1	880	5
Future Vol, veh/h	0	0	25	0	0	2	10	1249	3	1	880	5
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	-	-	0	200	-	-	0	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	27	0	0	2	11	1329	3	1	936	5

Major/Minor	Minor2		Minor1		Major1		Major2	
Conflicting Flow All	-	-	471	-	-	666	941	0
Stage 1	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	6.94	-	-	6.94	4.14	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.32	-	-	3.32	2.22	-
Pot Cap-1 Maneuver	0	0	539	0	0	402	724	-
Stage 1	0	0	-	0	0	-	-	-
Stage 2	0	0	-	0	0	-	-	-
Platoon blocked, %	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	539	-	-	402	724	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	12	14	0.1	0
HCM LOS	B	B		






Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	724	-	-	539	402	514	-
HCM Lane V/C Ratio	0.015	-	-	0.049	0.005	0.002	-
HCM Control Delay (s)	10	-	-	12	14	12	-
HCM Lane LOS	B	-	-	B	B	B	-
HCM 95th %tile Q(veh)	0	-	-	0.2	0	0	-

Intersection						
Int Delay, s/veh	0.3					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↑	↑↑	↑	
Traffic Vol, veh/h	639	4	5	572	8	10
Future Vol, veh/h	639	4	5	572	8	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	100	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	680	4	5	609	9	11

Major/Minor	Major1	Major2	Minor1			
Conflicting Flow All	0	0	684	0	997	342
Stage 1	-	-	-	-	682	-
Stage 2	-	-	-	-	315	-
Critical Hdwy	-	-	4.14	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	2.22	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	905	-	241	654
Stage 1	-	-	-	-	464	-
Stage 2	-	-	-	-	713	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	905	-	240	654
Mov Cap-2 Maneuver	-	-	-	-	240	-
Stage 1	-	-	-	-	464	-
Stage 2	-	-	-	-	709	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	15.3
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	370	-	-	905	-
HCM Lane V/C Ratio	0.052	-	-	0.006	-
HCM Control Delay (s)	15.3	-	-	9	-
HCM Lane LOS	C	-	-	A	-
HCM 95th %tile Q(veh)	0.2	-	-	0	-





Intersection						
Int Delay, s/veh	0.3					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	5	13	7	550	664	2
Future Vol, veh/h	5	13	7	550	664	2
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	-	100	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	5	14	7	585	706	2

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	1306	707	708	0	-	0
Stage 1	707	-	-	-	-	-
Stage 2	599	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	176	435	891	-	-	-
Stage 1	489	-	-	-	-	-
Stage 2	549	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	175	435	891	-	-	-
Mov Cap-2 Maneuver	175	-	-	-	-	-
Stage 1	485	-	-	-	-	-
Stage 2	549	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	17.5	0.1	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	891	-	308	-	-
HCM Lane V/C Ratio	0.008	-	0.062	-	-
HCM Control Delay (s)	9.1	-	17.5	-	-
HCM Lane LOS	A	-	C	-	-
HCM 95th %tile Q(veh)	0	-	0.2	-	-



Intersection						
Int Delay, s/veh	0.4					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	636	2	4	576	16	7
Future Vol, veh/h	636	2	4	576	16	7
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	100	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	677	2	4	613	17	7
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	679	0	993	340
Stage 1	-	-	-	-	678	-
Stage 2	-	-	-	-	315	-
Critical Hdwy	-	-	4.14	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	2.22	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	909	-	242	656
Stage 1	-	-	-	-	466	-
Stage 2	-	-	-	-	713	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	909	-	241	656
Mov Cap-2 Maneuver	-	-	-	-	241	-
Stage 1	-	-	-	-	466	-
Stage 2	-	-	-	-	710	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		0.1		18.2	
HCM LOS					C	
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	298	-	-	909	-	
HCM Lane V/C Ratio	0.082	-	-	0.005	-	
HCM Control Delay (s)	18.2	-	-	9	-	
HCM Lane LOS	C	-	-	A	-	
HCM 95th %tile Q(veh)	0.3	-	-	0	-	

Intersection						
Int Delay, s/veh	0.3					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↑	↑↑	↑	
Traffic Vol, veh/h	645	4	5	569	8	10
Future Vol, veh/h	645	4	5	569	8	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	100	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	686	4	5	605	9	11

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	690	0	1001
Stage 1	-	-	-	-	688
Stage 2	-	-	-	-	313
Critical Hdwy	-	-	4.14	-	6.84
Critical Hdwy Stg 1	-	-	-	-	5.84
Critical Hdwy Stg 2	-	-	-	-	5.84
Follow-up Hdwy	-	-	2.22	-	3.52
Pot Cap-1 Maneuver	-	-	900	-	239
Stage 1	-	-	-	-	460
Stage 2	-	-	-	-	715
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	900	-	238
Mov Cap-2 Maneuver	-	-	-	-	238
Stage 1	-	-	-	-	460
Stage 2	-	-	-	-	711

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	15.3
HCM LOS			C























Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	368	-	-	900	-
HCM Lane V/C Ratio	0.052	-	-	0.006	-
HCM Control Delay (s)	15.3	-	-	9	-
HCM Lane LOS	C	-	-	A	-
HCM 95th %tile Q(veh)	0.2	-	-	0	-

# HCM 6th Signalized Intersection Summary

## 1: Picadilly Rd & 52nd Ave

Long Range Total PM Peak Hour

























04/29/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	30	10	10	355	10	409	20	791	502	331	1164	15
Future Volume (veh/h)	30	10	10	355	10	409	20	791	502	331	1164	15
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	32	11	11	378	11	435	21	841	534	352	1238	16
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	42	14	14	734	397	527	37	1695	756	415	2070	27
Arrive On Green	0.04	0.04	0.04	0.21	0.21	0.21	0.02	0.48	0.48	0.12	0.58	0.58
Sat Flow, veh/h	1039	357	357	3456	1870	1585	1781	3554	1585	3456	3592	46
Grp Volume(v), veh/h	54	0	0	378	11	435	21	841	534	352	612	642
Grp Sat Flow(s),veh/h/ln	1754	0	0	1728	1870	1585	1781	1777	1585	1728	1777	1862
Q Serve(g_s), s	3.7	0.0	0.0	11.6	0.6	25.5	1.4	19.5	31.9	12.0	26.7	26.7
Cycle Q Clear(g_c), s	3.7	0.0	0.0	11.6	0.6	25.5	1.4	19.5	31.9	12.0	26.7	26.7
Prop In Lane	0.59		0.20	1.00		1.00	1.00		1.00	1.00		0.02
Lane Grp Cap(c), veh/h	71	0	0	734	397	527	37	1695	756	415	1024	1073
V/C Ratio(X)	0.76	0.00	0.00	0.51	0.03	0.82	0.56	0.50	0.71	0.85	0.60	0.60
Avail Cap(c_a), veh/h	270	0	0	734	397	527	111	1695	756	504	1024	1073
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	57.0	0.0	0.0	41.8	37.4	36.8	58.2	21.5	24.7	51.7	16.4	16.4
Incr Delay (d2), s/veh	15.5	0.0	0.0	0.6	0.0	10.3	12.6	1.0	5.5	11.0	2.6	2.5
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(95%),veh/ln	3.5	0.0	0.0	8.7	0.5	19.0	1.4	13.0	18.8	9.8	16.7	17.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	72.5	0.0	0.0	42.4	37.5	47.1	70.8	22.5	30.2	62.7	19.0	18.9
LnGrp LOS	E	A	A	D	D	D	E	C	C	E	B	B
Approach Vol, veh/h	54			824			1396			1606		
Approach Delay, s/veh	72.5			44.8			26.2			28.5		
Approach LOS	E			D			C			C		
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	18.9	61.7		9.3	7.0	73.6		30.0				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	17.5	40.5		18.5	7.5	50.5		25.5				
Max Q Clear Time (g_c+I1), s	14.0	33.9		5.7	3.4	28.7		27.5				
Green Ext Time (p_c), s	0.4	4.0		0.1	0.0	9.2		0.0				
Intersection Summary												
HCM 6th Ctrl Delay	31.8											
HCM 6th LOS	C											

# HCM 6th Signalized Intersection Summary 8: Picadilly Rd & Green Valley Ranch Blvd

Long Range Total PM Peak Hour

04/29/2020

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (veh/h)	90	1262	305	506	1290	472	200	799	202	376	896	234	
Future Volume (veh/h)	90	1262	305	506	1290	472	200	799	202	376	896	234	
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	96	1343	324	538	1372	502	213	850	0	400	953	249	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2	
Cap, veh/h	120	1347	601	562	1686	752	245	957		418	1213	376	
Arrive On Green	0.07	0.38	0.38	0.16	0.47	0.47	0.07	0.19	0.00	0.12	0.24	0.24	
Sat Flow, veh/h	1781	3554	1585	3456	3554	1585	3456	5106	1585	3456	5106	1585	
Grp Volume(v), veh/h	96	1343	324	538	1372	502	213	850	0	400	953	249	
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1728	1777	1585	1728	1702	1585	1728	1702	1585	
Q Serve(g_s), s	6.4	45.3	19.1	18.5	39.7	29.2	7.3	19.5	0.0	13.8	21.0	17.1	
Cycle Q Clear(g_c), s	6.4	45.3	19.1	18.5	39.7	29.2	7.3	19.5	0.0	13.8	21.0	17.1	
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00	
Lane Grp Cap(c), veh/h	120	1347	601	562	1686	752	245	957		418	1213	376	
V/C Ratio(X)	0.80	1.00	0.54	0.96	0.81	0.67	0.87	0.89		0.96	0.79	0.66	
Avail Cap(c_a), veh/h	141	1347	601	562	1686	752	245	957		418	1213	376	
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	0.71	0.71	0.71	1.00	1.00	0.00	1.00	1.00	1.00	
Uniform Delay (d), s/veh	55.2	37.2	29.1	49.8	27.0	24.2	55.2	47.5	0.0	52.4	42.9	41.4	
Incr Delay (d2), s/veh	24.1	23.7	1.0	22.3	2.3	1.6	26.9	12.0	0.0	33.3	5.2	8.8	
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
%ile BackOfQ(95%),veh/ln	6.6	31.6	11.9	14.0	22.6	15.7	7.4	14.3	0.0	12.5	14.4	12.1	
Unsig. Movement Delay, s/veh													
LnGrp Delay(d),s/veh	79.3	60.9	30.0	72.1	29.3	25.9	82.1	59.5	0.0	85.7	48.1	50.2	
LnGrp LOS	E	E	C	E	C	C	F	E		F	D	D	
Approach Vol, veh/h	1763			2412			1063			A			1602
Approach Delay, s/veh	56.2			38.1			64.1			57.8			
Approach LOS	E			D			E			E			
Timer - Assigned Phs	1	2	3	4	5	6	7	8					
Phs Duration (G+Y+Rc), s	19.0	27.0	24.0	50.0	13.0	33.0	12.6	61.4					
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5					
Max Green Setting (Gmax), s	14.5	22.5	19.5	45.5	8.5	28.5	9.5	55.5					
Max Q Clear Time (g_c+I1), s	15.8	21.5	20.5	47.3	9.3	23.0	8.4	41.7					
Green Ext Time (p_c), s	0.0	0.6	0.0	0.0	0.0	3.3	0.0	9.6					

## Intersection Summary

HCM 6th Ctrl Delay 51.4

























HCM 6th LOS D

## Notes

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

# HCM 6th Signalized Intersection Summary 13: Tibet St & 52nd Ave






























Long Range Total PM Peak Hour  
04/29/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	283	171	386	71	187	100	294	524	61	65	279	301
Future Volume (veh/h)	283	171	386	71	187	100	294	524	61	65	279	301
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	301	182	411	76	199	106	313	557	65	69	297	320
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	417	551	467	310	396	335	447	882	748	301	835	708
Arrive On Green	0.04	0.10	0.10	0.05	0.21	0.21	0.04	0.32	0.32	0.04	0.45	0.45
Sat Flow, veh/h	1781	1870	1585	1781	1870	1585	1781	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	301	182	411	76	199	106	313	557	65	69	297	320
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	1870	1585	1781	1870	1585	1781	1870	1585
Q Serve(g_s), s	15.2	10.9	30.7	4.0	11.3	6.8	7.5	30.5	3.5	2.5	12.5	16.8
Cycle Q Clear(g_c), s	15.2	10.9	30.7	4.0	11.3	6.8	7.5	30.5	3.5	2.5	12.5	16.8
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	417	551	467	310	396	335	447	882	748	301	835	708
V/C Ratio(X)	0.72	0.33	0.88	0.25	0.50	0.32	0.70	0.63	0.09	0.23	0.36	0.45
Avail Cap(c_a), veh/h	417	959	812	340	834	707	447	882	748	346	835	708
HCM Platoon Ratio	0.33	0.33	0.33	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	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	33.8	43.1	52.1	34.5	41.7	40.0	23.5	32.1	22.9	20.1	21.8	23.0
Incr Delay (d2), s/veh	6.1	0.3	5.7	0.4	1.0	0.5	4.8	3.4	0.2	0.4	1.2	2.1
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(95%),veh/ln	12.5	9.4	19.9	3.2	9.1	4.9	7.5	21.8	2.4	1.9	9.7	10.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	39.8	43.5	57.8	35.0	42.7	40.5	28.3	35.5	23.1	20.4	23.0	25.1
LnGrp LOS	D	D	E	C	D	D	C	D	C	C	C	C
Approach Vol, veh/h	894			381			935			686		
Approach Delay, s/veh	48.8			40.6			32.3			23.7		
Approach LOS	D			D			C			C		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	9.0	61.1	10.0	39.9	12.0	58.1	20.0	29.9				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	7.5	25.5	7.5	61.5	7.5	25.5	15.5	53.5				
Max Q Clear Time (g_c+I1), s	4.5	32.5	6.0	32.7	9.5	18.8	17.2	13.3				
Green Ext Time (p_c), s	0.0	0.0	0.0	2.7	0.0	1.7	0.0	1.6				
Intersection Summary												
HCM 6th Ctrl Delay	36.4											
HCM 6th LOS	D											

# HCM 6th Signalized Intersection Summary 18: Tibet St & 48th Ave

Long Range Total PM Peak Hour

























05/14/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  			  						 	
Traffic Volume (veh/h)	309	1387	81	108	1854	390	111	192	64	292	83	365
Future Volume (veh/h)	309	1387	81	108	1854	390	111	192	64	292	83	365
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	329	1476	86	115	1972	415	118	204	68	311	88	388
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	350	2524	784	254	1979	614	342	397	337	344	460	390
Arrive On Green	0.16	0.49	0.49	0.06	0.39	0.39	0.05	0.21	0.21	0.03	0.08	0.08
Sat Flow, veh/h	1781	5106	1585	1781	5106	1585	1781	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	329	1476	86	115	1972	415	118	204	68	311	88	388
Grp Sat Flow(s),veh/h/ln	1781	1702	1585	1781	1702	1585	1781	1870	1585	1781	1870	1585
Q Serve(g_s), s	17.8	24.7	3.5	4.6	46.2	26.1	6.2	11.6	4.2	10.5	5.3	29.4
Cycle Q Clear(g_c), s	17.8	24.7	3.5	4.6	46.2	26.1	6.2	11.6	4.2	10.5	5.3	29.4
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	350	2524	784	254	1979	614	342	397	337	344	460	390
V/C Ratio(X)	0.94	0.58	0.11	0.45	1.00	0.68	0.35	0.51	0.20	0.90	0.19	1.00
Avail Cap(c_a), veh/h	350	2524	784	445	1979	614	342	397	337	344	460	390
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	38.4	21.6	16.2	20.8	36.7	30.5	34.6	41.8	38.9	42.7	44.0	55.1
Incr Delay (d2), s/veh	33.1	0.3	0.1	1.3	19.4	2.9	0.6	4.7	1.3	25.9	0.9	44.5
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(95%),veh/ln	13.1	14.9	2.3	3.6	30.1	15.6	5.0	9.8	3.2	10.9	4.8	24.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	71.4	21.9	16.3	22.0	56.1	33.4	35.2	46.4	40.2	68.6	44.9	99.6
LnGrp LOS	E	C	B	C	E	C	D	D	D	E	D	F
Approach Vol, veh/h	1891					2502		390		787		
Approach Delay, s/veh	30.3					50.8		41.9		81.3		
Approach LOS	C					D		D		F		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	15.0	30.0	11.2	63.8	11.0	34.0	24.0	51.0				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	10.5	25.5	19.5	46.5	6.5	29.5	19.5	46.5				
Max Q Clear Time (g_c+I1), s	12.5	13.6	6.6	26.7	8.2	31.4	19.8	48.2				
Green Ext Time (p_c), s	0.0	1.0	0.2	11.3	0.0	0.0	0.0	0.0				
Intersection Summary												
HCM 6th Ctrl Delay	47.5											
HCM 6th LOS	D											

HCM 6th Signalized Intersection Summary  
22: Local Access/Site Access & Green Valley Ranch Blvd

Long Range Total PM Peak Hour

04/29/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  			  							
Traffic Volume (veh/h)	12	1661	170	230	2086	14	170	1	110	9	1	12
Future Volume (veh/h)	12	1661	170	230	2086	14	170	1	110	9	1	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	13	1767	181	245	2219	15	181	1	117	10	1	13
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	102	2047	209	281	2963	20	554	5	565	451	41	534
Arrive On Green	0.87	0.87	0.87	0.09	0.57	0.57	0.36	0.36	0.36	0.36	0.36	0.36
Sat Flow, veh/h	171	4708	480	1781	5233	35	1400	13	1574	1274	114	1488
Grp Volume(v), veh/h	13	1276	672	245	1443	791	181	0	118	10	0	14
Grp Sat Flow(s),veh/h/ln	171	1702	1784	1781	1702	1864	1400	0	1587	1274	0	1603
Q Serve(g_s), s	5.5	23.4	23.9	8.7	38.3	38.4	11.5	0.0	6.2	0.7	0.0	0.7
Cycle Q Clear(g_c), s	28.1	23.4	23.9	8.7	38.3	38.4	12.2	0.0	6.2	6.8	0.0	0.7
Prop In Lane	1.00		0.27	1.00		0.02	1.00		0.99	1.00		0.93
Lane Grp Cap(c), veh/h	102	1480	776	281	1928	1055	554	0	569	451	0	575
V/C Ratio(X)	0.13	0.86	0.87	0.87	0.75	0.75	0.33	0.00	0.21	0.02	0.00	0.02
Avail Cap(c_a), veh/h	107	1574	825	462	2369	1297	554	0	569	451	0	575
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.27	0.27	0.27	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	13.0	5.9	6.0	23.5	19.6	19.6	28.8	0.0	26.7	29.0	0.0	24.9
Incr Delay (d2), s/veh	0.1	1.4	2.8	9.9	1.1	1.9	1.6	0.0	0.8	0.1	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(95%),veh/ln	0.3	4.3	4.8	7.6	21.1	23.1	7.4	0.0	4.5	0.4	0.0	0.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	13.1	7.3	8.7	33.4	20.7	21.6	30.4	0.0	27.5	29.1	0.0	25.0
LnGrp LOS	B	A	A	C	C	C	C	A	C	C	A	C
Approach Vol, veh/h	1961		2479				299		24			
Approach Delay, s/veh	7.9		22.2				29.3		26.7			
Approach LOS	A		C				C		C			
Timer - Assigned Phs	2		3		4		6		8			
Phs Duration (G+Y+Rc), s	47.5		15.8		56.7		47.5		72.5			
Change Period (Y+Rc), s	4.5		4.5		4.5		4.5		4.5			
Max Green Setting (Gmax), s	27.5		23.5		55.5		27.5		83.5			
Max Q Clear Time (g_c+I1), s	14.2		10.7		30.1		8.8		40.4			
Green Ext Time (p_c), s	1.0		0.6		17.2		0.0		27.6			
Intersection Summary												
HCM 6th Ctrl Delay			16.8									
HCM 6th LOS			B									



Timings  
1: Picadilly Rd & 52nd Ave

Long Range Total PM Peak Hour  
04/29/2020

	→	↖	←	↗	↖	↑	↗	↖	↓
Lane Group	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations	↕	↖↗	↑	↗	↖	↕	↗	↖↗	↕
Traffic Volume (vph)	10	355	10	409	20	791	502	331	1164
Future Volume (vph)	10	355	10	409	20	791	502	331	1164
Turn Type	NA	Perm	NA	pm+ov	Prot	NA	Perm	Prot	NA
Protected Phases	4		8	1	5	2		1	6
Permitted Phases		8		8			2		
Detector Phase	4	8	8	1	5	2	2	1	6
Switch Phase									
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	22.5	9.5	9.5	22.5	22.5	9.5	22.5
Total Split (s)	23.0	30.0	30.0	22.0	12.0	45.0	45.0	22.0	55.0
Total Split (%)	19.2%	25.0%	25.0%	18.3%	10.0%	37.5%	37.5%	18.3%	45.8%
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	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag				Lead	Lead	Lag	Lag	Lead	Lag
Lead-Lag Optimize?				Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	C-Max	C-Max	None	C-Max
Act Effect Green (s)	8.6	22.6	22.6	44.6	7.0	55.3	55.3	17.5	72.2
Actuated g/C Ratio	0.07	0.19	0.19	0.37	0.06	0.46	0.46	0.15	0.60
v/c Ratio	0.40	0.77	0.03	0.57	0.20	0.52	0.53	0.70	0.59
Control Delay	53.8	58.2	39.3	23.0	40.0	29.5	15.8	56.6	19.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	53.8	58.2	39.3	23.0	40.0	29.5	15.8	56.6	19.6
LOS	D	E	D	C	D	C	B	E	B
Approach Delay	53.8		39.4			24.4			27.7
Approach LOS	D		D			C			C

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

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

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.77

Intersection Signal Delay: 29.4

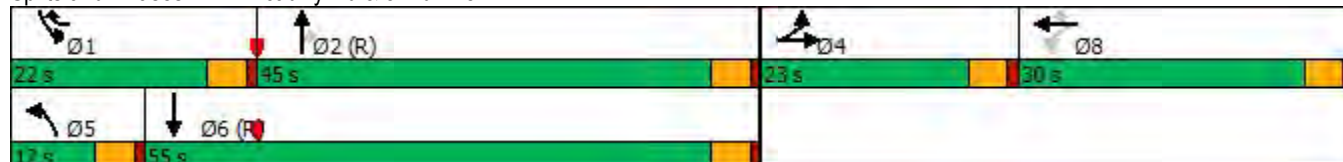
Intersection LOS: C

Intersection Capacity Utilization 63.3%

ICU Level of Service B

Analysis Period (min) 15

























Splits and Phases: 1: Picadilly Rd & 52nd Ave





# Timings 8: Picadilly Rd & Green Valley Ranch Blvd

Long Range Total PM Peak Hour  
04/29/2020

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	90	1262	305	506	1290	472	200	799	202	376	896	234
Future Volume (vph)	90	1262	305	506	1290	472	200	799	202	376	896	234
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	pm+ov	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2	3	1	6	
Permitted Phases			4			8			2			6
Detector Phase	7	4	4	3	8	8	5	2	3	1	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	5.0	5.0
Minimum Split (s)	9.5	22.5	22.5	9.5	22.5	22.5	9.5	22.5	9.5	9.5	22.5	22.5
Total Split (s)	14.0	50.0	50.0	24.0	60.0	60.0	13.0	27.0	24.0	19.0	33.0	33.0
Total Split (%)	11.7%	41.7%	41.7%	20.0%	50.0%	50.0%	10.8%	22.5%	20.0%	15.8%	27.5%	27.5%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	C-Max	None	None	C-Max	C-Max
Act Effect Green (s)	9.1	45.5	45.5	19.5	55.9	55.9	8.5	22.5	46.5	14.5	28.5	28.5
Actuated g/C Ratio	0.08	0.38	0.38	0.16	0.47	0.47	0.07	0.19	0.39	0.12	0.24	0.24
v/c Ratio	0.71	1.00	0.45	0.97	0.83	0.56	0.88	0.89	0.32	0.97	0.79	0.50
Control Delay	82.0	62.4	12.2	85.4	17.8	6.5	88.5	60.2	15.4	79.4	52.7	21.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	82.0	62.4	12.2	85.4	17.8	6.5	88.5	60.2	15.4	79.4	52.7	21.6
LOS	F	E	B	F	B	A	F	E	B	E	D	C
Approach Delay		54.2			30.5			57.4			54.5	
Approach LOS		D			C			E			D	

## Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

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

Natural Cycle: 110

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.00

Intersection Signal Delay: 46.8

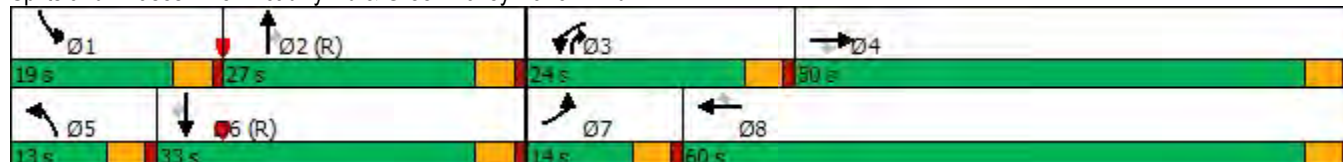
Intersection LOS: D

Intersection Capacity Utilization 90.5%

ICU Level of Service E

























Analysis Period (min) 15

Splits and Phases: 8: Picadilly Rd & Green Valley Ranch Blvd



Timings  
13: Tibet St & 52nd Ave

Long Range Total PM Peak Hour  
04/29/2020

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	283	171	386	71	187	100	294	524	61	65	279	301
Future Volume (vph)	283	171	386	71	187	100	294	524	61	65	279	301
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0	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	9.5	22.5	22.5	9.5	22.5	22.5	9.5	22.5	22.5
Total Split (s)	20.0	66.0	66.0	12.0	58.0	58.0	12.0	30.0	30.0	12.0	30.0	30.0
Total Split (%)	16.7%	55.0%	55.0%	10.0%	48.3%	48.3%	10.0%	25.0%	25.0%	10.0%	25.0%	25.0%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max
Act Effect Green (s)	38.7	29.1	29.1	25.9	18.7	18.7	72.3	62.4	62.4	44.6	37.0	37.0
Actuated g/C Ratio	0.32	0.24	0.24	0.22	0.16	0.16	0.60	0.52	0.52	0.37	0.31	0.31
v/c Ratio	0.89	0.40	0.59	0.26	0.69	0.29	0.46	0.58	0.07	0.19	0.52	0.45
Control Delay	43.3	25.0	9.7	30.2	59.6	5.1	9.4	20.1	1.3	14.8	37.2	5.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	43.3	25.0	9.7	30.2	59.6	5.1	9.4	20.1	1.3	14.8	37.2	5.4
LOS	D	C	A	C	E	A	A	C	A	B	D	A
Approach Delay		24.1			38.6			15.2			20.1	
Approach LOS		C			D			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: 0.89

Intersection Signal Delay: 22.2

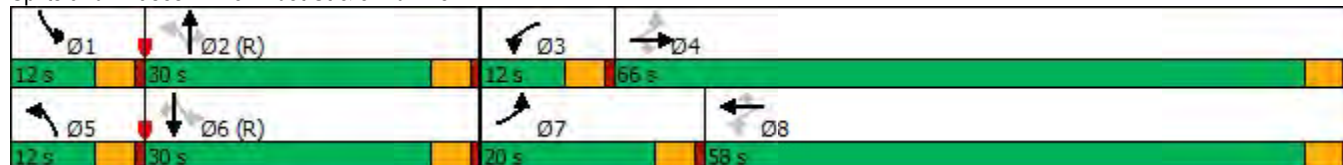
Intersection LOS: C

Intersection Capacity Utilization 72.3%

ICU Level of Service C

Analysis Period (min) 15





























Splits and Phases: 13: Tibet St & 52nd Ave



Timings  
18: Tibet St & 48th Ave

Long Range Total PM Peak Hour

05/14/2020

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  			  							
Traffic Volume (vph)	309	1387	81	108	1854	390	111	192	64	292	83	365
Future Volume (vph)	309	1387	81	108	1854	390	111	192	64	292	83	365
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0	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	9.5	22.5	22.5	9.5	22.5	22.5	9.5	22.5	22.5
Total Split (s)	24.0	51.0	51.0	24.0	51.0	51.0	11.0	30.0	30.0	15.0	34.0	34.0
Total Split (%)	20.0%	42.5%	42.5%	20.0%	42.5%	42.5%	9.2%	25.0%	25.0%	12.5%	28.3%	28.3%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max
Act Effect Green (s)	70.5	56.3	56.3	56.2	46.5	46.5	32.0	25.5	25.5	40.0	29.5	29.5
Actuated g/C Ratio	0.59	0.47	0.47	0.47	0.39	0.39	0.27	0.21	0.21	0.33	0.25	0.25
v/c Ratio	0.94	0.62	0.11	0.50	1.00	0.54	0.32	0.52	0.17	0.94	0.19	0.60
Control Delay	61.1	48.4	18.3	21.2	57.4	13.3	32.2	47.2	4.3	73.3	37.8	19.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	61.1	48.4	18.3	21.2	57.4	13.3	32.2	47.2	4.3	73.3	37.8	19.4
LOS	E	D	B	C	E	B	C	D	A	E	D	B
Approach Delay		49.2			48.4			35.2			42.8	
Approach LOS		D			D			D			D	

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: 100

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.00

Intersection Signal Delay: 47.0

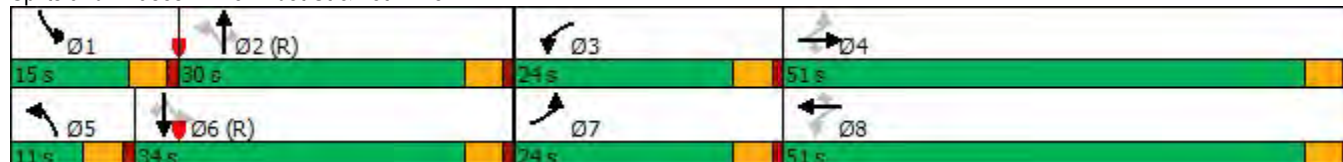
Intersection LOS: D

Intersection Capacity Utilization 94.2%

ICU Level of Service F

Analysis Period (min) 15

Splits and Phases: 18: Tibet St & 48th Ave

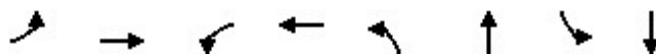


# Timings

## 22: Local Access/Site Access & Green Valley Ranch Blvd

Long Range Total PM Peak Hour

04/29/2020



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations	←	↑↑↑	←	↑↑↑	←	↑	←	↑
Traffic Volume (vph)	12	1661	230	2086	170	1	9	1
Future Volume (vph)	12	1661	230	2086	170	1	9	1
Turn Type	Perm	NA	pm+pt	NA	Perm	NA	Perm	NA
Protected Phases		4	3	8		2		6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	3	8	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
Minimum Split (s)	22.5	22.5	9.5	22.5	22.5	22.5	22.5	22.5
Total Split (s)	60.0	60.0	28.0	88.0	32.0	32.0	32.0	32.0
Total Split (%)	50.0%	50.0%	23.3%	73.3%	26.7%	26.7%	26.7%	26.7%
Yellow Time (s)	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
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	Lag	Lag	Lead					
Lead-Lag Optimize?	Yes	Yes	Yes					
Recall Mode	None	None	None	None	C-Max	C-Max	Max	Max
Act Effect Green (s)	58.0	58.0	79.4	79.4	31.6	31.6	31.6	31.6
Actuated g/C Ratio	0.48	0.48	0.66	0.66	0.26	0.26	0.26	0.26
v/c Ratio	0.21	0.80	0.79	0.66	0.49	0.23	0.03	0.03
Control Delay	24.4	25.1	38.5	28.3	44.7	8.0	36.4	17.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	24.4	25.1	38.5	28.3	44.7	8.0	36.4	17.8
LOS	C	C	D	C	D	A	D	B
Approach Delay		25.1		29.3		30.2		25.6
Approach LOS		C		C		C		C

### Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 0 (0%), Referenced to phase 2:NBT, Start of Green

Natural Cycle: 70

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.80

Intersection Signal Delay: 27.6

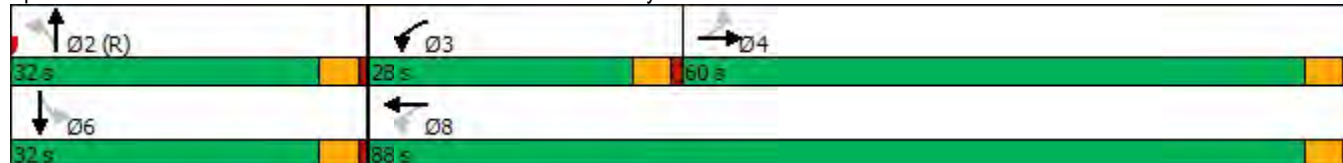
Intersection LOS: C

Intersection Capacity Utilization 76.0%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 22: Local Access/Site Access & Green Valley Ranch Blvd



HCM 6th TWSC  
2: Picadilly Rd & 51st Pl/North Site Access

Long Range Total PM Peak Hour  
04/29/2020

Intersection												
Int Delay, s/veh	0.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations			↗			↗	↗	↗		↗	↗	
Traffic Vol, veh/h	0	0	10	0	0	2	10	1311	10	4	1500	25
Future Vol, veh/h	0	0	10	0	0	2	10	1311	10	4	1500	25
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	-	-	0	200	-	-	0	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	11	0	0	2	11	1395	11	4	1596	27

Major/Minor	Minor2		Minor1		Major1		Major2	
Conflicting Flow All	-	-	812	-	-	703	1623	0
Stage 1	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	6.94	-	-	6.94	4.14	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.32	-	-	3.32	2.22	-
Pot Cap-1 Maneuver	0	0	322	0	0	380	397	-
Stage 1	0	0	-	0	0	-	-	-
Stage 2	0	0	-	0	0	-	-	-
Platoon blocked, %	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	322	-	-	380	397	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	16.6	14.5	0.1	0
HCM LOS	C	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	397	-	-	322	380	481	-
HCM Lane V/C Ratio	0.027	-	-	0.033	0.006	0.009	-
HCM Control Delay (s)	14.3	-	-	16.6	14.5	12.6	-
HCM Lane LOS	B	-	-	C	B	B	-
HCM 95th %tile Q(veh)	0.1	-	-	0.1	0	0	-

HCM 6th TWSC  
6: Picadilly Rd & 50th Ave/South Site Access

Long Range Total PM Peak Hour  
04/29/2020

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	10	0	0	2	20	1329	12	4	1496	10
Future Vol, veh/h	0	0	10	0	0	2	20	1329	12	4	1496	10
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	-	-	0	200	-	-	0	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	11	0	0	2	21	1414	13	4	1591	11

Major/Minor	Minor2		Minor1		Major1		Major2	
Conflicting Flow All	-	-	801	-	-	714	1602	0
Stage 1	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	6.94	-	-	6.94	4.14	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.32	-	-	3.32	2.22	-
Pot Cap-1 Maneuver	0	0	327	0	0	374	404	-
Stage 1	0	0	-	0	0	-	-	-
Stage 2	0	0	-	0	0	-	-	-
Platoon blocked, %	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	327	-	-	374	404	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	16.4	14.7	0.2	0
HCM LOS	C	B		






Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	404	-	-	327	374	473	-
HCM Lane V/C Ratio	0.053	-	-	0.033	0.006	0.009	-
HCM Control Delay (s)	14.4	-	-	16.4	14.7	12.7	-
HCM Lane LOS	B	-	-	C	B	B	-
HCM 95th %tile Q(veh)	0.2	-	-	0.1	0	0	-

Intersection						
Int Delay, s/veh	0.2					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↑	↑↑	↑	
Traffic Vol, veh/h	832	8	9	772	4	6
Future Vol, veh/h	832	8	9	772	4	6
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	100	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	885	9	10	821	4	6

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	894	0	1321
Stage 1	-	-	-	-	890
Stage 2	-	-	-	-	431
Critical Hdwy	-	-	4.14	-	6.84
Critical Hdwy Stg 1	-	-	-	-	5.84
Critical Hdwy Stg 2	-	-	-	-	5.84
Follow-up Hdwy	-	-	2.22	-	3.52
Pot Cap-1 Maneuver	-	-	755	-	148
Stage 1	-	-	-	-	361
Stage 2	-	-	-	-	623
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	755	-	146
Mov Cap-2 Maneuver	-	-	-	-	146
Stage 1	-	-	-	-	361
Stage 2	-	-	-	-	615

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	19.3
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	262	-	-	755	-
HCM Lane V/C Ratio	0.041	-	-	0.013	-
HCM Control Delay (s)	19.3	-	-	9.8	-
HCM Lane LOS	C	-	-	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0	-





Intersection						
Int Delay, s/veh	0.3					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	3	9	15	876	731	5
Future Vol, veh/h	3	9	15	876	731	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	-	100	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	3	10	16	932	778	5

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	1745	781	783	0	-	0
Stage 1	781	-	-	-	-	-
Stage 2	964	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	95	395	835	-	-	-
Stage 1	451	-	-	-	-	-
Stage 2	370	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	93	395	835	-	-	-
Mov Cap-2 Maneuver	93	-	-	-	-	-
Stage 1	442	-	-	-	-	-
Stage 2	370	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	22.5	0.2	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	835	-	218	-	-
HCM Lane V/C Ratio	0.019	-	0.059	-	-
HCM Control Delay (s)	9.4	-	22.5	-	-
HCM Lane LOS	A	-	C	-	-
HCM 95th %tile Q(veh)	0.1	-	0.2	-	-



Intersection						
Int Delay, s/veh	0.4					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	835	8	13	763	11	5
Future Vol, veh/h	835	8	13	763	11	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	-	-	100	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	888	9	14	812	12	5
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	897	0	1327	449
Stage 1	-	-	-	-	893	-
Stage 2	-	-	-	-	434	-
Critical Hdwy	-	-	4.14	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	2.22	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	753	-	147	557
Stage 1	-	-	-	-	360	-
Stage 2	-	-	-	-	621	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	753	-	144	557
Mov Cap-2 Maneuver	-	-	-	-	144	-
Stage 1	-	-	-	-	360	-
Stage 2	-	-	-	-	609	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		0.2		26.2	
HCM LOS					D	
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	187	-	-	753	-	
HCM Lane V/C Ratio	0.091	-	-	0.018	-	
HCM Control Delay (s)	26.2	-	-	9.9	-	
HCM Lane LOS	D	-	-	A	-	
HCM 95th %tile Q(veh)	0.3	-	-	0.1	-	

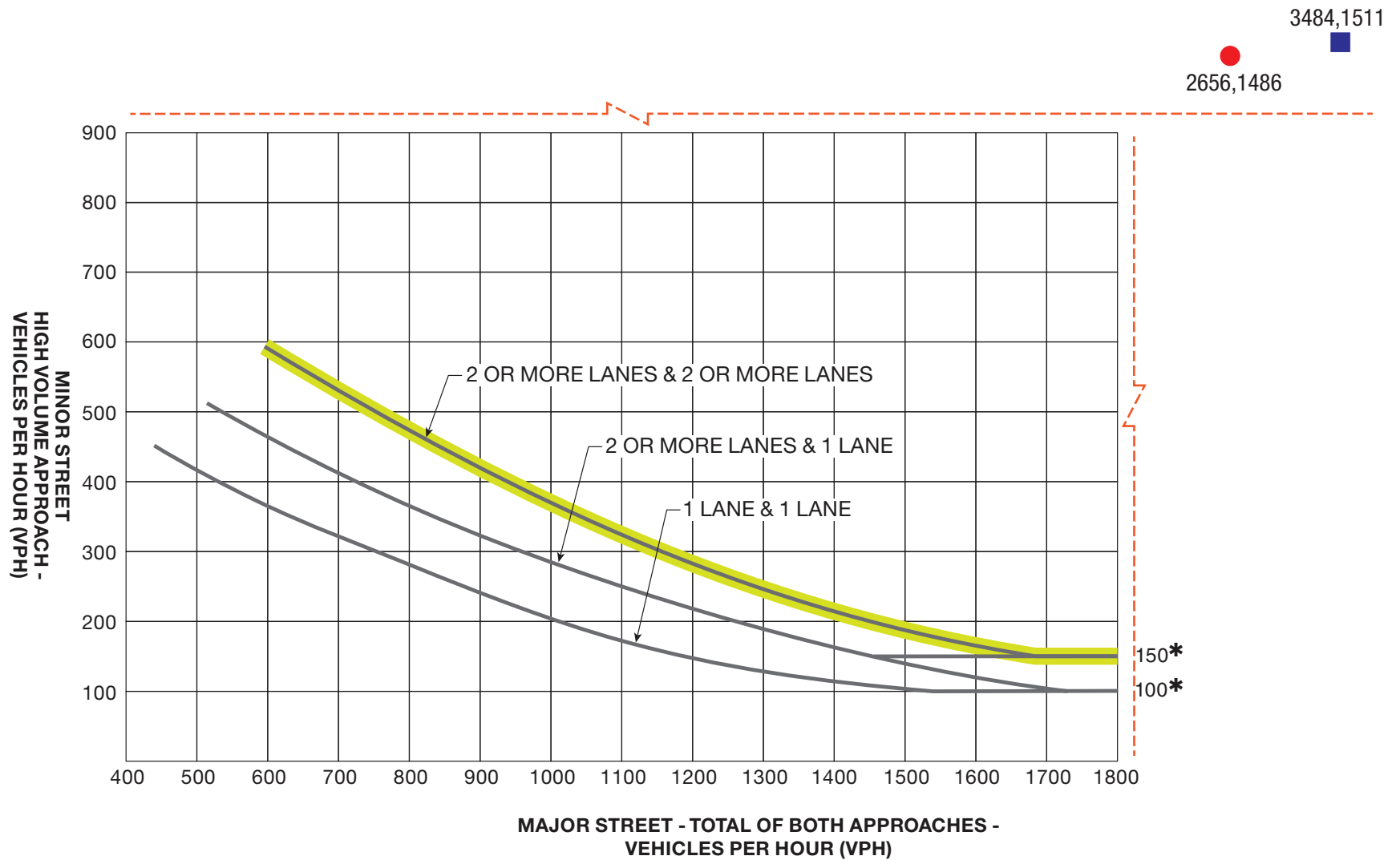
Intersection						
Int Delay, s/veh	0.2					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↑	↑↑	↑	
Traffic Vol, veh/h	831	7	8	774	7	9
Future Vol, veh/h	831	7	8	774	7	9
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	100	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	884	7	9	823	7	10

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	891
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	-	-	757
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	757
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	20.4
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	251	-	-	757	-
HCM Lane V/C Ratio	0.068	-	-	0.011	-
HCM Control Delay (s)	20.4	-	-	9.8	-
HCM Lane LOS	C	-	-	A	-
HCM 95th %tile Q(veh)	0.2	-	-	0	-

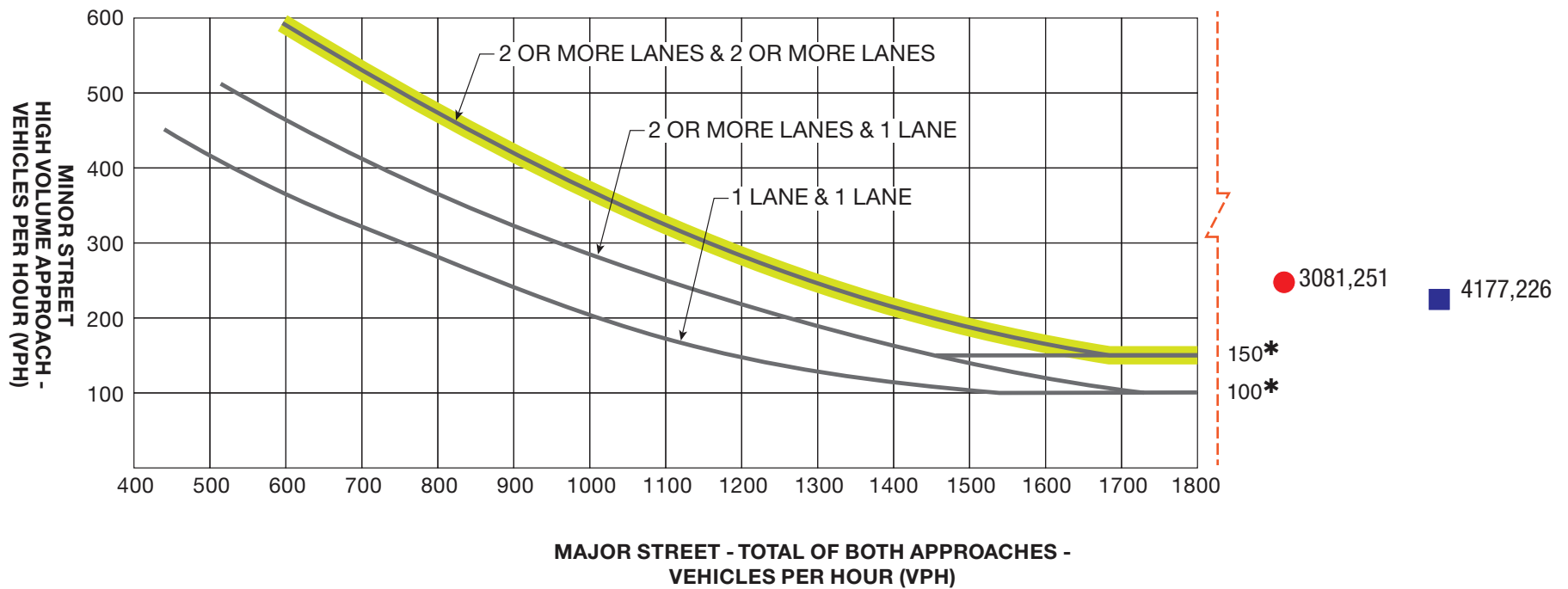
## APPENDIX F. SIGNAL WARRANT GRAPHS



#### LEGEND

- = AM Peak Hour  
(Major Street, Minor Approach)
- = PM Peak Hour  
(Major Street, Minor Approach)

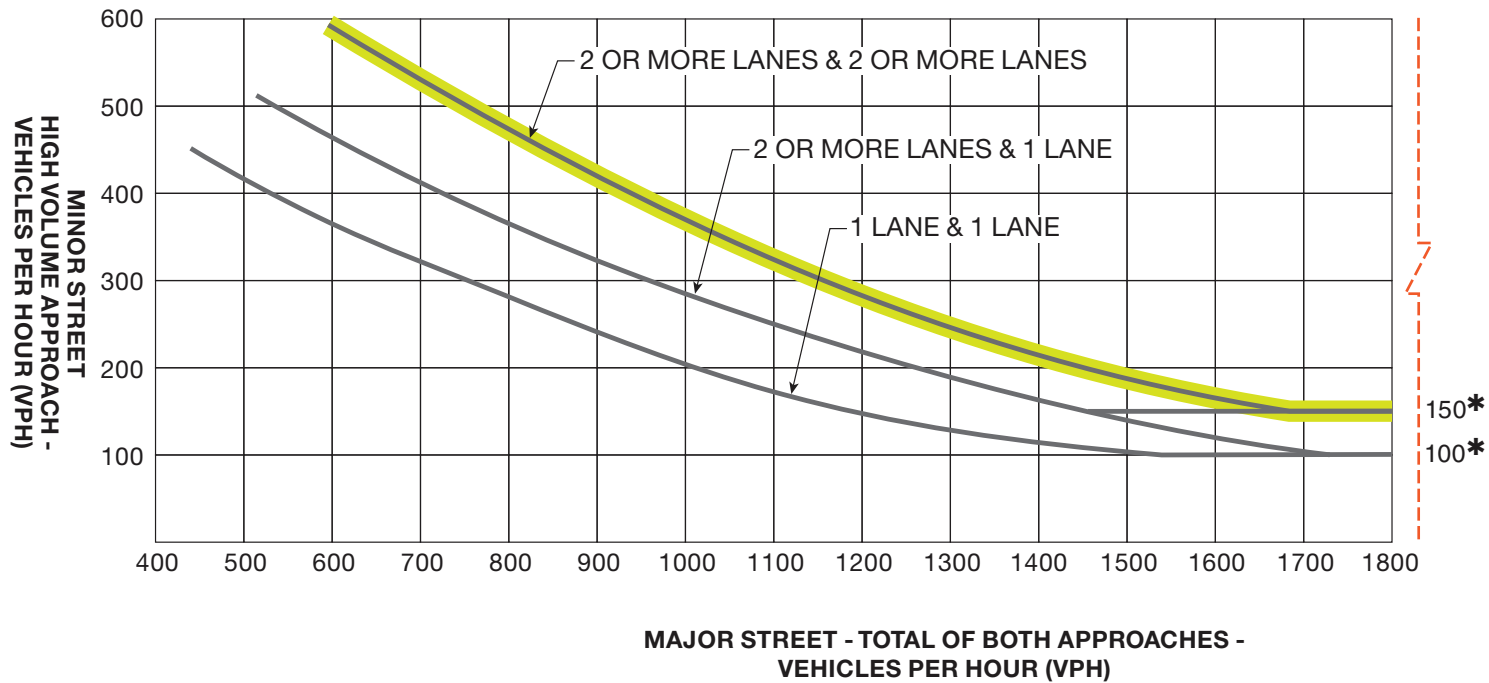
\* Note: 150 vph applies as the lower threshold volume for a minor street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor street approach with one lane.



\* Note: 150 vph applies as the lower threshold volume for a minor street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor street approach with one lane.

#### LEGEND

- = AM Peak Hour (Major Street, Minor Approach)
- = PM Peak Hour (Major Street, Minor Approach)



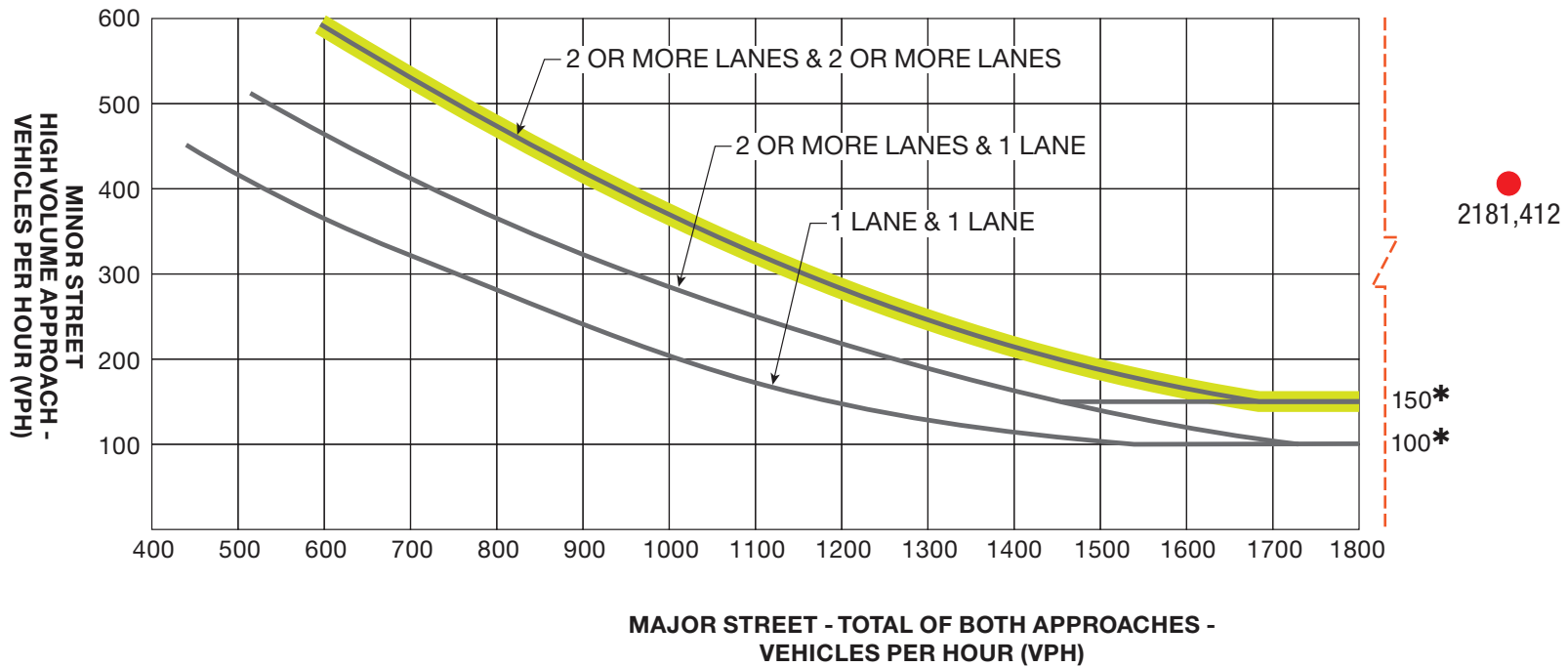
3067,681

4244,737

\* Note: 150 vph applies as the lower threshold volume for a minor street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor street approach with one lane.

#### LEGEND

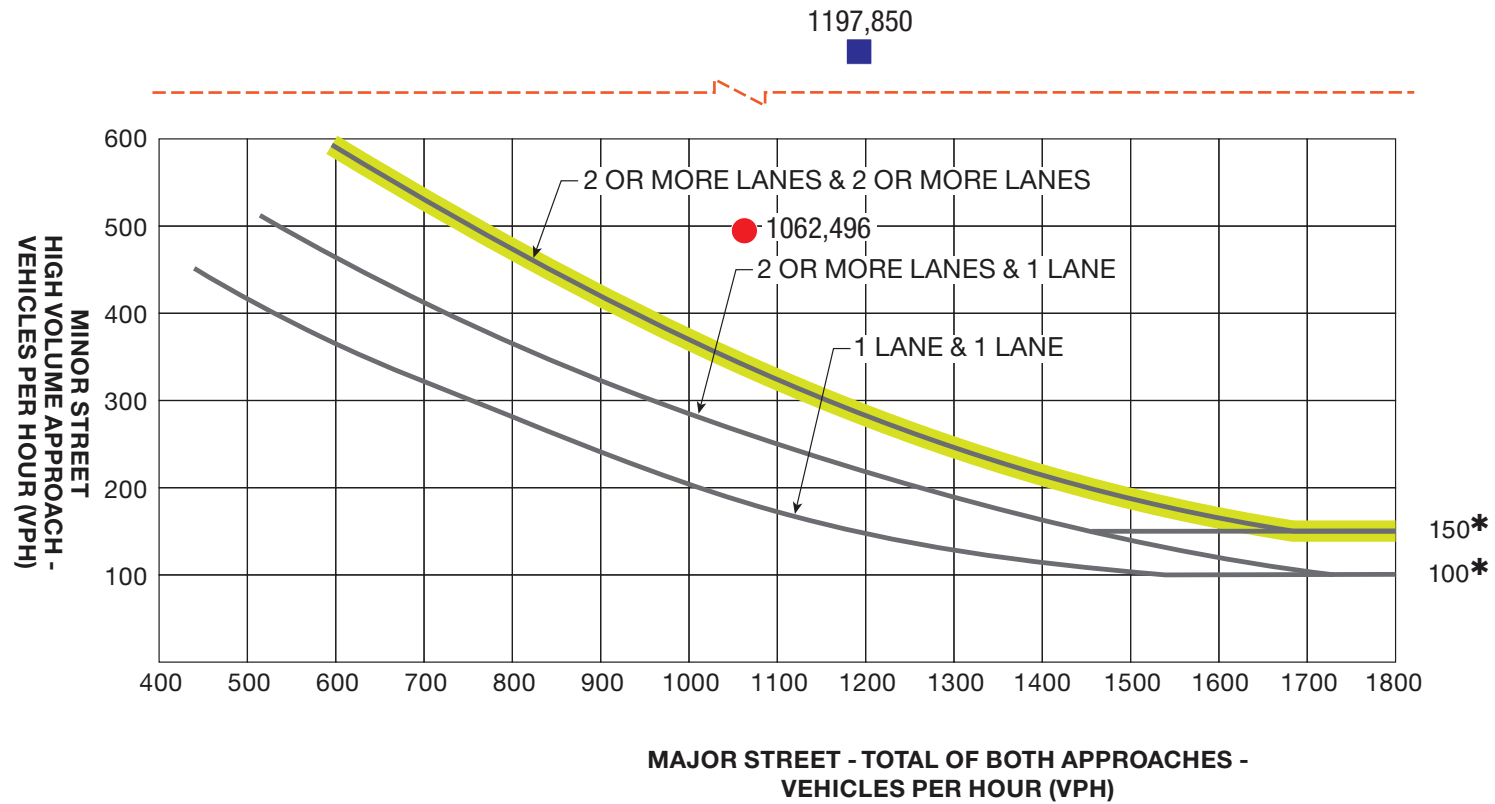
- = AM Peak Hour (Major Street, Minor Approach)
- = PM Peak Hour (Major Street, Minor Approach)



\* Note: 150 vph applies as the lower threshold volume for a minor street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor street approach with one lane.

#### LEGEND

- = AM Peak Hour (Major Street, Minor Approach)
- = PM Peak Hour (Major Street, Minor Approach)



\* Note: 150 vph applies as the lower threshold volume for a minor street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor street approach with one lane.

#### LEGEND

- = AM Peak Hour (Major Street, Minor Approach)
- = PM Peak Hour (Major Street, Minor Approach)