

# TRANSPORTATION IMPACT STUDY

High Point PA 5 in Aurora

Prepared for:

Richmond American Homes of Colorado  
4350 South Monaco Street, Suite 500  
Denver, CO 80237

Prepared by:

Felsburg Holt & Ullevig  
6400 S Fiddlers Green Circle, Suite 1500  
Greenwood Village, CO 80111  
303.721.1440

Project Manager: Chris Fasching, PE, PTOE  
Project Engineer: Faith Kelley, EI



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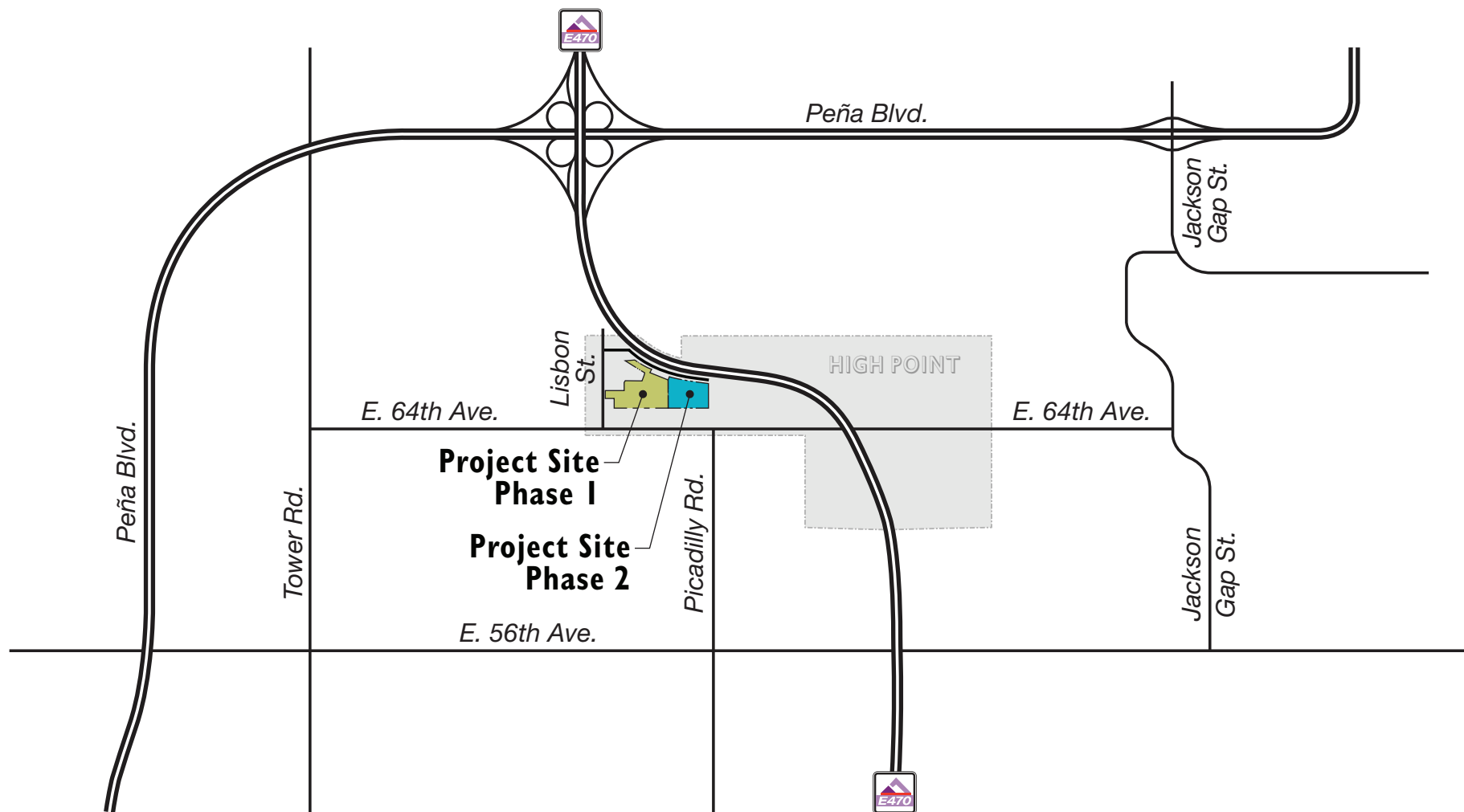
## I. INTRODUCTION

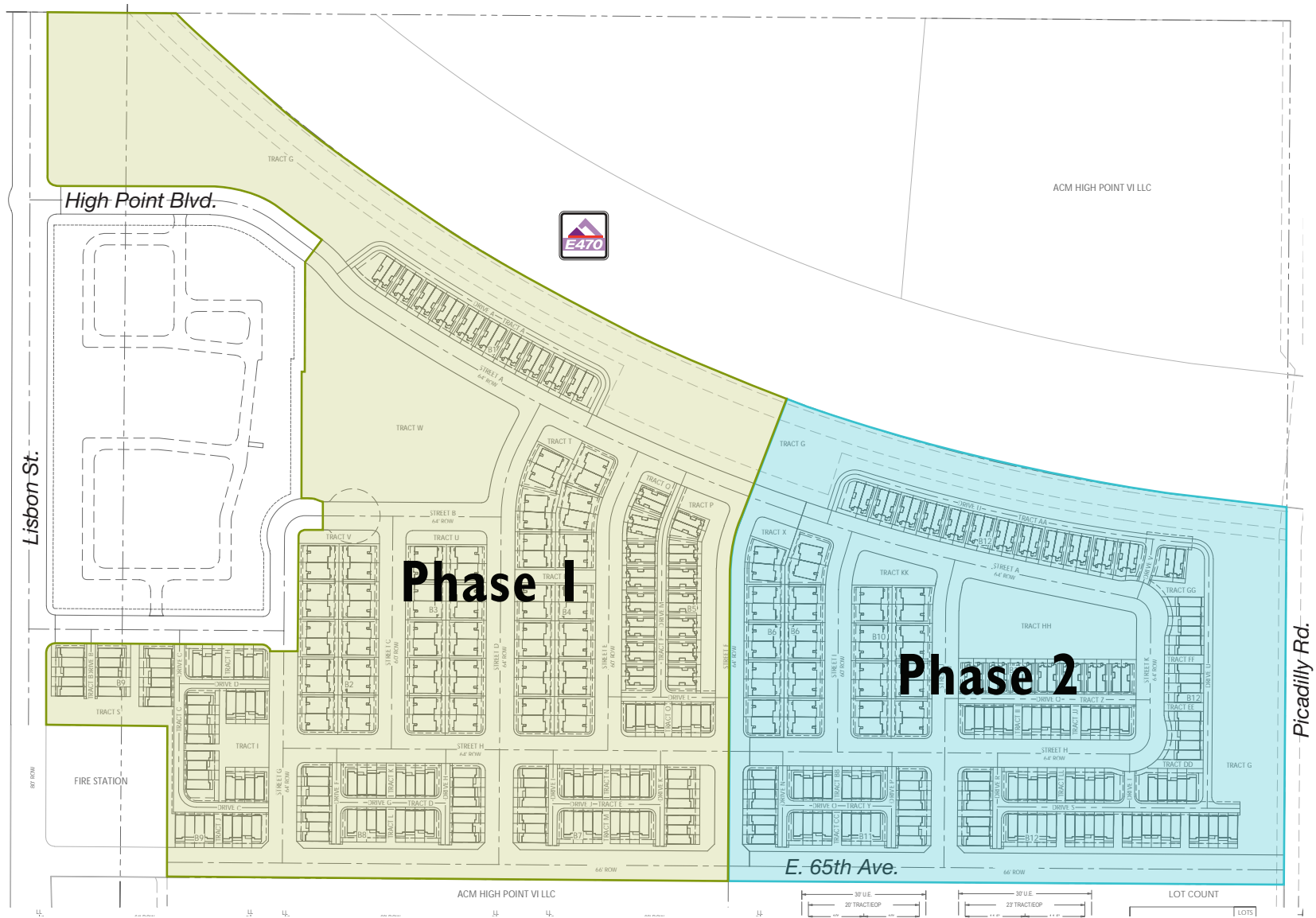
Richmond American Homes of Colorado is proposing to develop an approximate 45-acre site within the 1,180-acre High Point Master Plan. The PA 5 site is located between Lisbon Street and Picadilly Street immediately north of 65<sup>th</sup> Avenue. **Figure 1** illustrates the location of the site and the adjacent primary roadway network (existing and future planned roadways).

The proposed residential development would consist of approximately 412 multi-family units. Primary access to the site will be provided onto 65<sup>th</sup> Avenue along the south side of the site and Lisbon Street west of the site. **Figure 2** depicts the current site plan concept which shows the lots as well as depicting access roads. A total of four access roads are planned onto 65<sup>th</sup> Avenue, spaced approximately 450 feet apart.

The purpose of this Transportation Impact Study (TIS) is to estimate the potential impacts specific to the proposed development and to identify any resultant required roadway and/or intersection improvements and traffic control needs. A short-term scenario representing completion of the site in year 2027 and a long-term future scenario were explored to examine the traffic impacts within the context of the year 2040 horizon. An existing conditions analysis and short-term background analysis have been omitted since PA 5 is one of the first sites within High Point, and the only study area intersections that exist are 64<sup>th</sup> Avenue/Lisbon Street and 64<sup>th</sup> Avenue/Picadilly Street (which serve a fire station and the first phase of Painted Prairie, which remains under construction). Existing volumes provide little benefit given the lack of existing development as compared to planned development in the area through the course of this study's planning horizon, but existing traffic from other studies nearby was extracted for use in developing short-term total traffic projections.

This study builds on the *High Point Master Plan Traffic Impact Study Analysis*, January 2020, prepared by Felsburg Holt & Ullevig, that addresses transportation needs of the 1,180-acre High Point Framework Development Plan (FDP).





## II. EXISTING CONDITIONS

### ***II.A. Surrounding Land Use***

The area around the High Point FDP is mostly vacant. The Gaylord Rockies Resort is located to the west of the site. The Green Valley Ranch residential development also exists about 1 mile south in Denver. Initial phases of Painted Prairie are under construction approximately one-half mile south in Aurora. Denver International Airport (DEN) is located north of the FDP.

A multi-family complex with 365 units is planned immediately west of the High Point PA 5 acreage, along the east side of Lisbon Street, the impacts of which are captured in the traffic forecasts presented later in this report.

### ***II.B. Roadway System***

Very few roadways exist in proximity to the site. One notable roadway, 64<sup>th</sup> Avenue, runs east-west and defines part of the overall FDP's southern boundary. The roadway was recently improved in association with the Gaylord Rockies Resort, and it provides two lanes of through traffic. The roadway extends west to Tower Road and east to, and interchanging with, E-470. 64<sup>th</sup> Avenue has a posted speed of 40 miles per hour (mph) in the adjacent to the site. Additional widening is planned to establish a four-lane roadway, and its extension east to Jackson Gap Street is also planned to be constructed soon. A detached walk has been provided along the northern side of the currently completed section of 64<sup>th</sup> Avenue.

E-470 exists north of the site, but site access to E-470 is a mile away to the east at the 64<sup>th</sup> Avenue interchange. E-470 has a posted speed of 75 mph within the study area.

Picadilly Road has been built as a three-lane cross-section south of 64<sup>th</sup> Avenue. This roadway does not yet exist north of 64<sup>th</sup> Avenue. Picadilly Road has a posted speed of 35 mph.

Lisbon Street extends north of 64<sup>th</sup> Avenue for approximately 1,000 feet as a two-lane roadway terminating at the Aurora Fire Station #16. Lisbon Street has a posted speed of 35 mph. A detached walk has been provided along the eastern side of the completed portions of Lisbon Street.

### ***II.C. Traffic Volumes***

Past data collected along 64<sup>th</sup> Avenue in February 2019 indicate that approximately 2,850 vehicles per day (VPD) travel 64<sup>th</sup> Avenue near the site today. Due to the ongoing COVID-19 pandemic, new data was not collected as it was believed that traffic in the vicinity of the site would be heavily influenced by the Gaylord Rockies Resort and the hospitality industry has been one of the most affected by the pandemic. This volume is well below the capacity threshold of a two-lane roadway, so operationally 64<sup>th</sup> Avenue is not experiencing any functional challenges today in proximity to the PA 5 site.

### III. PROPOSED CONDITIONS

#### III.A. Future Road Network

In 2018, the City of Aurora completed the NEATS Refresh study, which provides Year 2040 and regional buildout transportation recommendations for the roadways and a multimodal transportation system. The NEATS Refresh study area encompassed a regional area extending from approximately between Tower Road east to Schumaker Road, and from Jewell Avenue on the south to 72<sup>nd</sup> Avenue on the north. Recommendations with respect to High Point included:

- Constructing 64<sup>th</sup> Avenue to major arterial standards, including six-through lanes plus turn lanes (sections of which have subsequently been approved to be four-lanes subject to right-of-way [ROW] preservation for six lanes in the future is needed). Construction of the southern half of 64<sup>th</sup> Avenue in the vicinity of PA 5 will be the responsibility of Painted Prairie, which is actively developing. Current development plans indicate this construction will occur in 2022.
- Constructing Picadilly Road as a six-lane arterial road through the FDP as far south as I-70 and to the north. Picadilly is currently planned to cross over E-470, pass through DEN, and serve areas in Commerce City per the City's NEATS Refresh. This study includes this roadway to be in-place to be consistent with NEATS. A full buildout timeline for Picadilly is unknown but sections in the immediate vicinity of PA 5 will be the responsibility of High Point, and portions will be constructed in conjunction with the development of PA 5.

Lisbon Street will provide one of the main accesses for the site and will ultimately continue as a three-lane collector to the north before bending to the west, north of the Gaylord Rockies Resort, likely tying into High Point Boulevard at Dunkirk Street. Lisbon is currently constructed north of 64<sup>th</sup> Avenue to 66<sup>th</sup> Avenue to service the existing fire station and is currently under construction north to High Point Boulevard in support of development in PA 64. The residential development will be provided two means of access to Lisbon Street via 66<sup>th</sup> Avenue and High Point Boulevard. High Point Boulevard and 66<sup>th</sup> Avenue to the east of Lisbon Street up to the PA 5 boundary are also under construction in support of current construction in PA 64. Picadilly Road will be another means of access for the PA 5 development via 65<sup>th</sup> Avenue. When completed, Picadilly Road will provide significant north-south continuity through the region.

#### III.B. Site Trip Generation

The current proposed residential development will consist of 412 multi-family units (the FDP master plan traffic study had incorporated 419 units; the proposed PA 5 plan reflects a slight reduction). Trip generation estimates were developed using weekday data contained in *Trip Generation*, 10<sup>th</sup> Edition, Institute of Transportation Engineers (ITE), 2017. **Table I** shows the trip generation for the proposed development, which is estimated to generate 3,074 trips per day when built out.

**Table I. Trip Generation Summary**

Land Use	Intensity	ITE Code	Daily Trips	AM Peak Hour			PM Peak Hour		
				In	Out	Total	In	Out	Total
Multifamily Housing (Low-Rise)	412 DUs	220	3,074	42	141	183	131	77	208

The High Point Master Plan Traffic Impact Study has estimated a generation of approximately 3,500 trips per day, so the current proposal represents roughly 12 percent less trip generation.



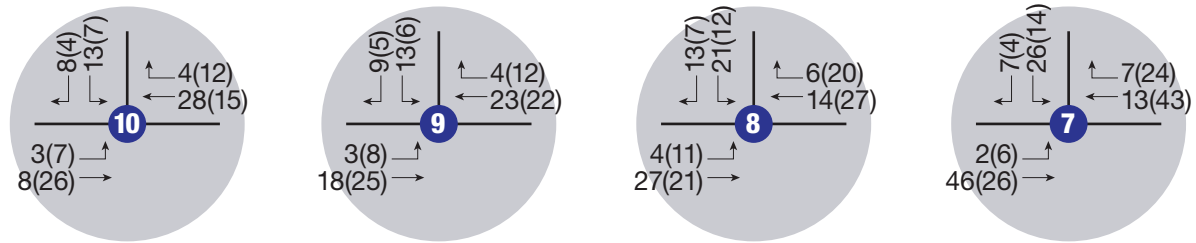
### ***III.C. Trip Distribution and Traffic Assignment***

Trip distribution estimates for this site were based on those used in the FDP master plan traffic study. The greatest component of site traffic will be toward 64<sup>th</sup> Avenue and Picadilly Road, which will afford regional connectivity as the area's roadway network builds out.

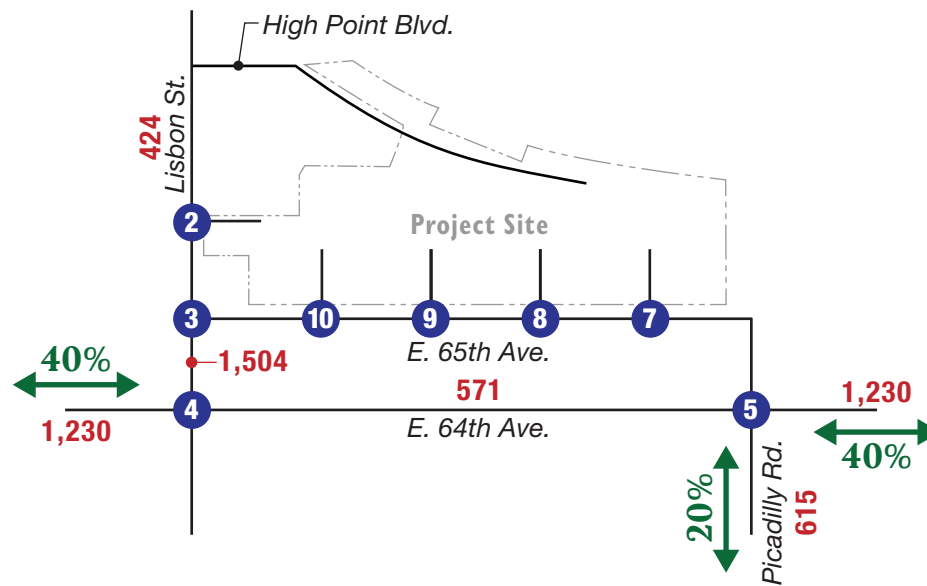
**Figure 3** shows the site-trip distribution percentages and the trip assignment for the short-term scenario in which all traffic will access the site via Picadilly Road and Lisbon Street from 64<sup>th</sup> Avenue to the south. For purposes of this study, it is assumed that Picadilly Road would extend north to 65<sup>th</sup> Avenue for the short-term planning horizon. From the traffic assignment shown on **Figure 3**, 64<sup>th</sup> Avenue would be impacted the greatest; PA 5's buildout would add 1,230 VPD onto 64<sup>th</sup> Avenue in the short-term planning horizon.

**Figure 4** shows the site-trip distribution percentages and the trip assignment resulting from applying the percentages for site traffic in the long-term scenario. This scenario includes the continuation of Lisbon Street and Picadilly Road to the north, including a Picadilly Road overpass of E-470. 64<sup>th</sup> Avenue will continue to be impacted the most by the development, which is projected to add up to 1,076 VPD east of Picadilly Street.

Relatively minor traffic amounts will be oriented to the north reflecting completion of the area's roadway system by 2040. Similar to the short-term planning horizon, 64<sup>th</sup> Avenue would be most impacted by PA 5 trips. However, the impact is reduced compared to the short-term since additional options will be available to serve site traffic, namely Picadilly Road to the north and Lisbon Street to the north.

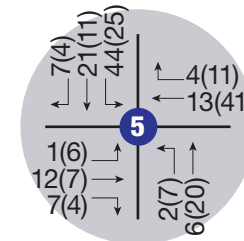
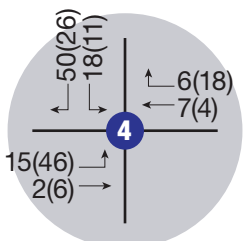
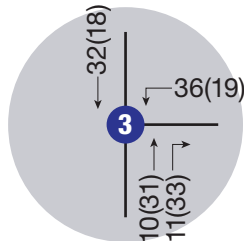
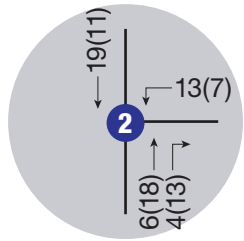


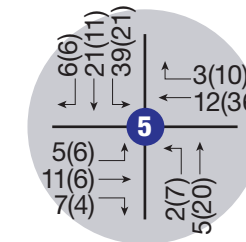
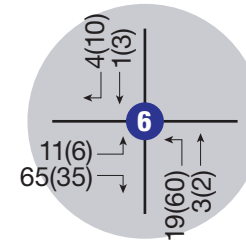
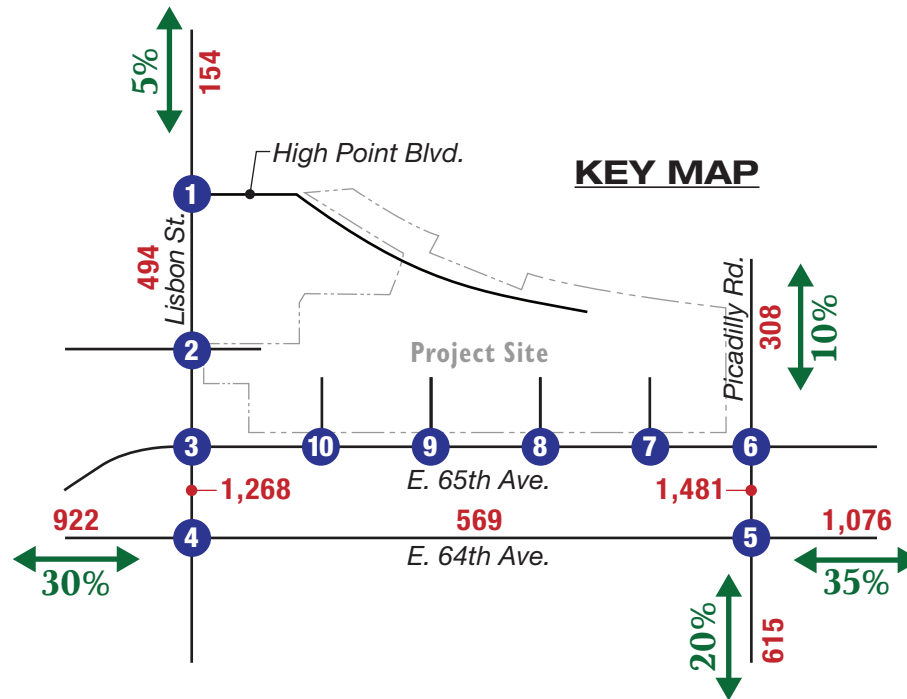
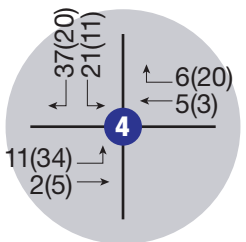
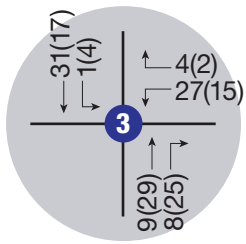
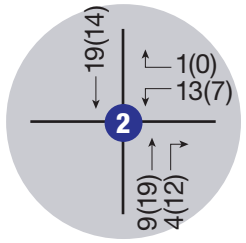
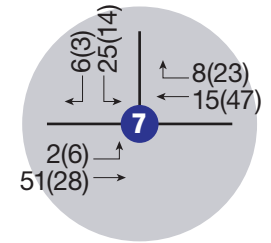
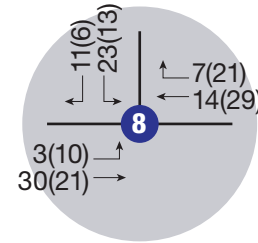
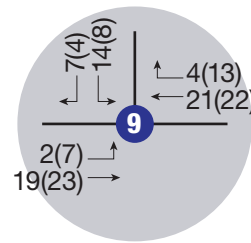
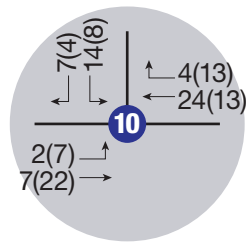
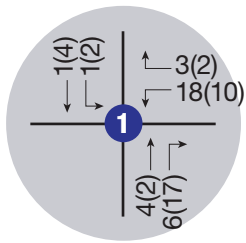
### KEY MAP



### LEGEND

- XXX(XXX) = AM(PM) Peak Hour Traffic Volumes
- XXXX = Daily Traffic Volumes
- XX% = Site Trip Distribution





#### LEGEND

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

XXXX = Daily Traffic Volumes

XX% = Site Trip Distribution

## IV. FUTURE CONDITIONS

### IV.A. Short-Term Future Background

#### Roadway System

There will be relatively little other development in the area, so the roadway network will be limited. The expected roadways will include 64<sup>th</sup> Avenue, Lisbon Street, and Picadilly Road south of 64<sup>th</sup> Avenue.

#### Traffic Volumes

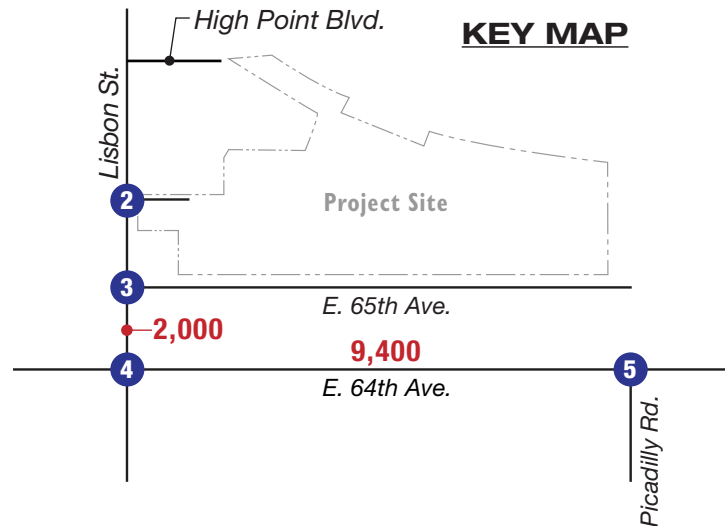
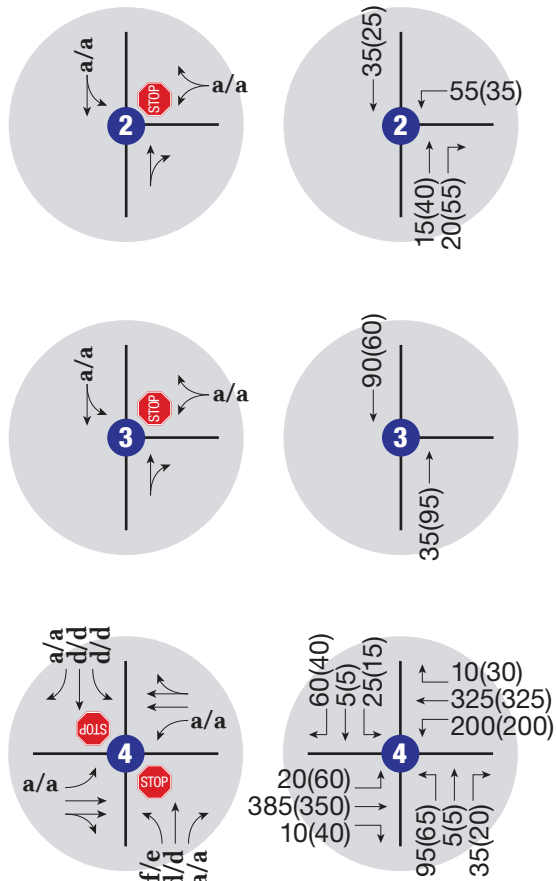
Background traffic is the component of roadway volumes that would use the adjacent roadway system regardless of site development. Components of the short-term background traffic include the development of High Point PA 64, Painted Prairied Town Center, and Painted Prairie Filings 1 and 2 in addition to a 5 percent growth rate along 64<sup>th</sup> Avenue to represent additional regional growth in the vicinity of the site. **Figure 5** shows the projected short-term background traffic demands.

#### Traffic Control and Operations

**Figure 5** also shows the Level of Service (LOS, which is better defined in a subsequent section) results of the short-term background traffic. Four intersections have been assessed including two along Lisbon Street north of 64<sup>th</sup> Avenue and the two intersections planned along 64<sup>th</sup> Avenue (Lisbon Street and Picadilly Road). The only intersection that would likely be signalized is 64<sup>th</sup> Avenue and Picadilly Road; 64<sup>th</sup> Avenue and Lisbon Street appears to fall short from satisfying MUTCD Warrant 3 – Peak Hour Volume based on cursory-level review of the peak hour traffic. **Appendix B** contains the LOS Worksheets.

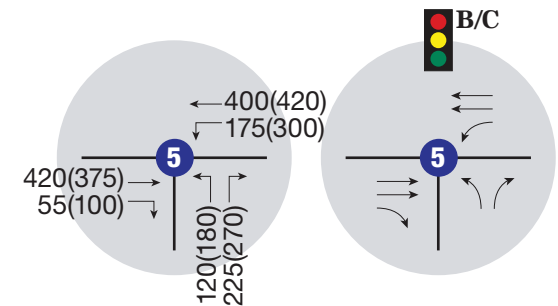
Results show that most intersections would function at a LOS B or better. The exception is the northbound minor left turn movement at 64<sup>th</sup> Avenue and Lisbon Street which is anticipated to operate at a LOS F during the AM peak hour. This movement will not operate beyond its capacity (v/c ratio is projected to be 0.6 during the peak hour), and signalization will eventually be implemented at this intersection once warrants are satisfied, thereby alleviating

NOTE: Drawing Not to Scale



#### LEGEND

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



**FIGURE 5**  
Short Term Background  
Traffic Conditions

## ***IV.B. Long-Term Future Background***

### **Roadway System**

By the year 2040, High Point is assumed to be built out for the purposes of this analysis. This includes the full roadway network surrounding the site, including connectivity into Rockies Village to the west, Lisbon Street to the north providing additional connectivity to other High Point development north of the Gaylord Rockies Resort and Convention Center, High Point Boulevard and 65<sup>th</sup> Avenue along the site's south side crossing Picadilly Road to the east. Regionally, Picadilly Road is assumed to extend north across E-470 (without an interchange), spanning Peña Boulevard and connecting to Commerce City.

### **Traffic Volumes**

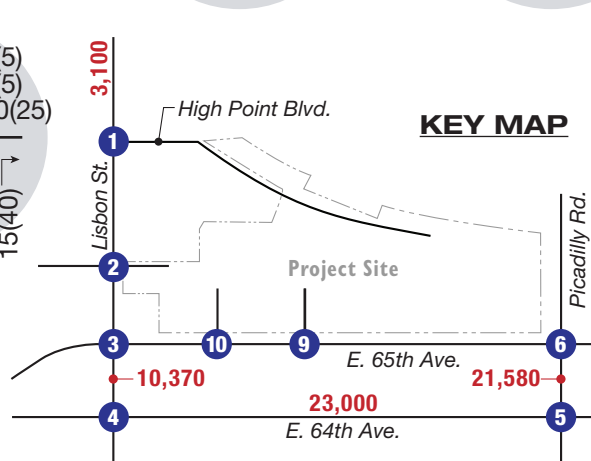
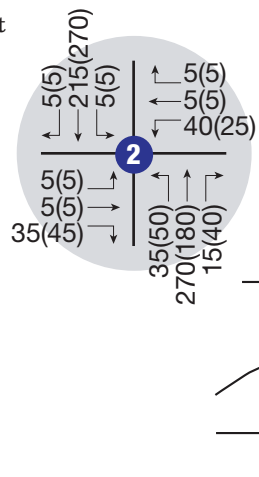
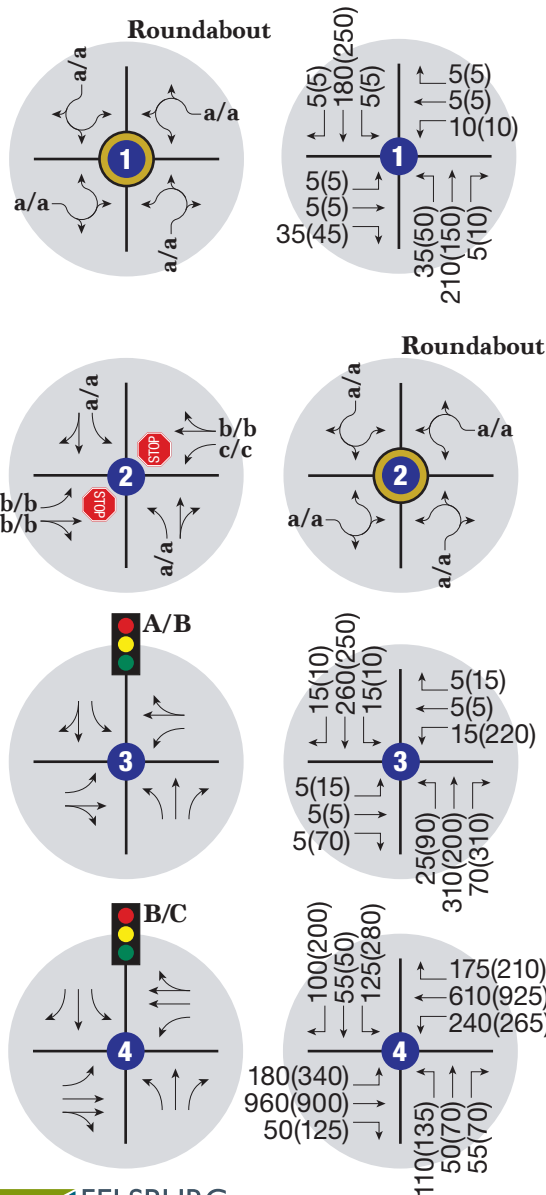
The long-term background traffic has been estimated using traffic volume projections from the High Point Master Plan Traffic Study (assuming High Point is built out) and the Gaylord Rockies Phase 2 Traffic Study. Volumes from the two studies were combined and then trips associated with the PA 5 area, as represented in the Master Plan Traffic Study, were removed.

**Figure 6** shows the projected long-term background traffic demands along the study area roadways and intersections. 64<sup>th</sup> Avenue and Picadilly Street will serve the greatest amount of long-term traffic at 23,000 and 21,580 VPD, respectively. These are slightly higher than that shown in NEATS shows. Traffic loadings along Lisbon Street will be less (since this will not be an arterial roadway) projected to reach 3,100 VPD north of High Point Boulevard.

### **Traffic Control and Operations**

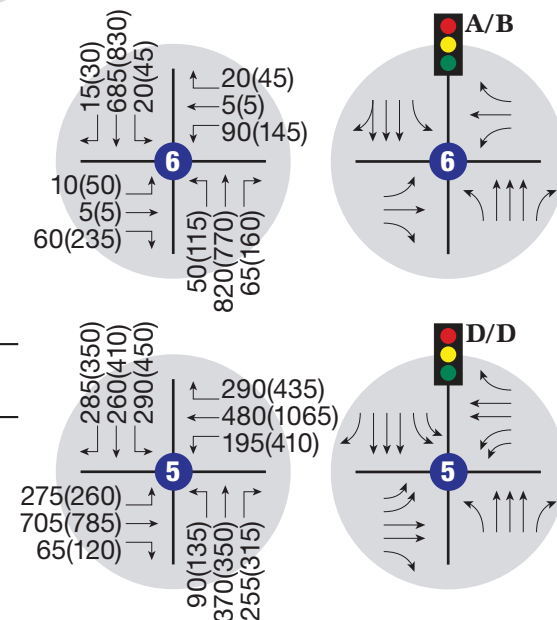
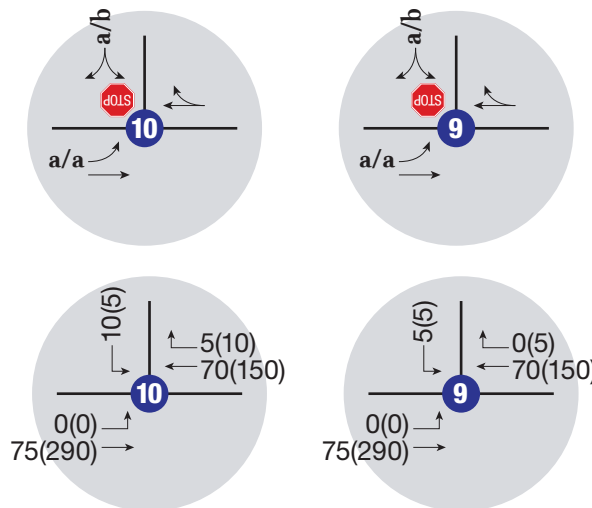
An analysis of long-term traffic conditions is fully assessed as part of **Section IV.D** of this report. The long-term background traffic is presented on **Figure 6**. Given the lane geometry and traffic control depicted on **Figure 6** (which has been informed by other area studies), operations of all study area roadways are anticipated to be acceptable, being at LOS D or better. Worksheets are shown in **Appendix B**.

NOTE: Drawing Not to Scale



**LEGEND**

- xxx(xxx) = AM(PM) Peak Hour Traffic Volumes
- XXXX = Daily Traffic Volumes
- X/X = AM/PM Peak Hour Signalized Intersection Level of Service
- x/x = AM/PM Peak Hour Unsignalized Intersection Level of Service
- STOP = Stop Sign
- Traffic Signal = Traffic Signal
- Roundabout = Roundabout



#### **IV.C. Short-Term Future Total Traffic Conditions**

##### **Roadway System**

Very few roadways exist within High Point at this time and that will remain true for a short-term planning horizon. Additional roadways are planned in the short term aimed at providing access to the site:

- The construction of Lisbon Street north to the site's northern access road (High Point Boulevard).
- The construction of a portion of Picadilly Road north of 64<sup>th</sup> Avenue to 65<sup>th</sup> Avenue. Coordination with the District will be necessary to better define this.
- The complete construction of 65<sup>th</sup> Avenue from Lisbon Street to Picadilly Road as a two-lane roadway.

##### **Traffic Volumes**

The short-term total traffic has been estimated using the site generated traffic in combination with existing traffic extracted from other nearby traffic impact studies, and incorporating other near-term growth expected in the area, including that associated with Painted Prairie. **Figure 7** shows the results of the projected short-term total traffic demands along the study area roadways and intersections. By 2027, 64<sup>th</sup> Avenue is projected to serve a total of 10,000 VPD, by far the busiest roadway in the study area. Lisbon Street and Picadilly Street are projected to serve much less traffic than 64<sup>th</sup> Avenue by 2027, mostly due to the notion that both roads will be extended only so far north.

##### **Traffic Control and Operations**

Many of the study area intersections have been assumed to function under side-street stop-control in the short term. The 64<sup>th</sup> Avenue/Picadilly Road intersection will warrant signalization by 2027 (worksheets shown in **Appendix A**) based on the projected northbound demands, but the 64<sup>th</sup> Avenue/ Lisbon Street intersection will not quite satisfy signalization warrants yet in 2027 based on a brief assessment using the MUTCD Warrant 3 – Peak Hour Volume. Picadilly Road will extend only as far north as 65<sup>th</sup> Avenue in the short term. Lisbon Street will extend as far north as High Point Boulevard (which aligns approximately with a 68<sup>th</sup> Avenue land line).

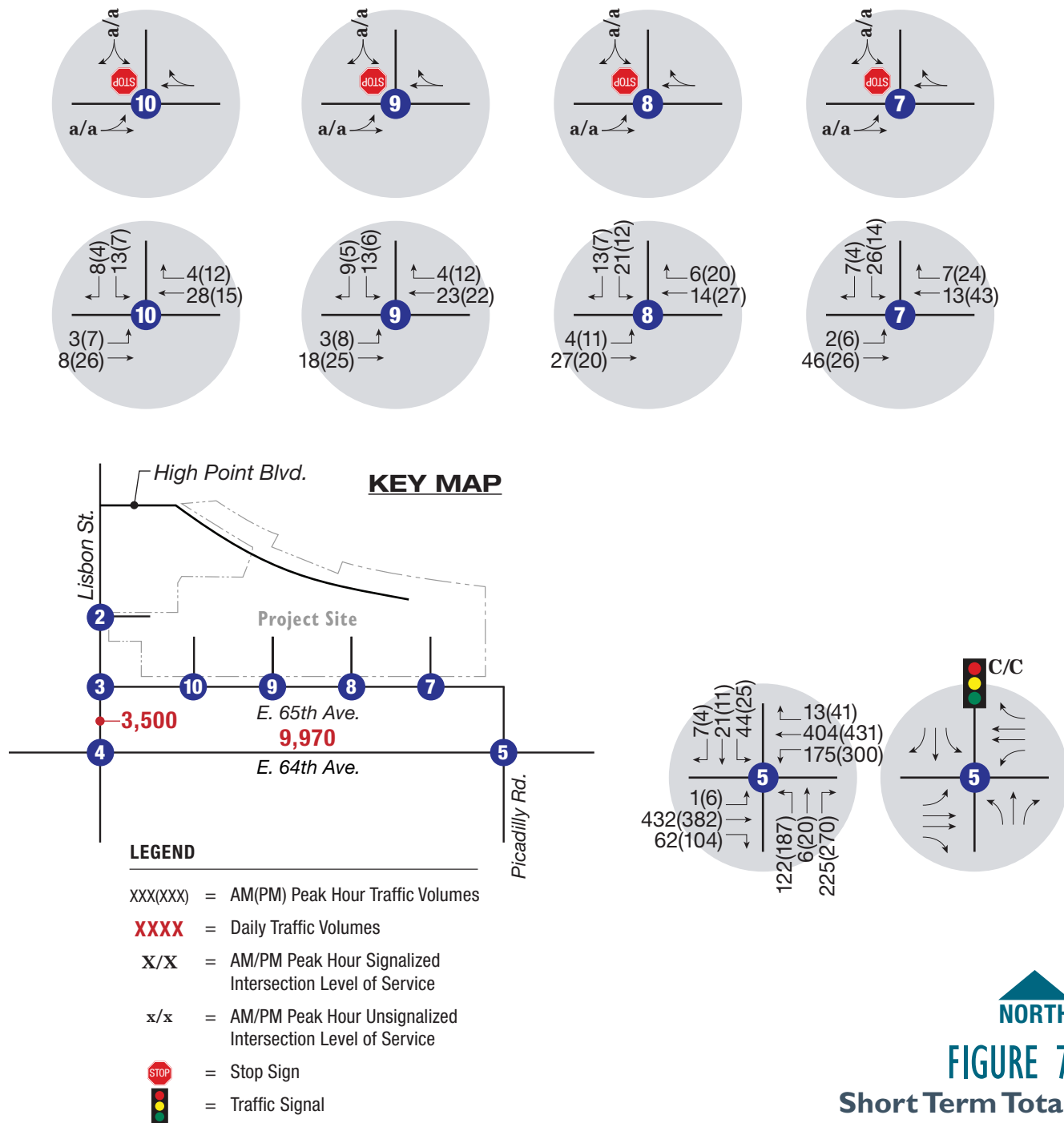
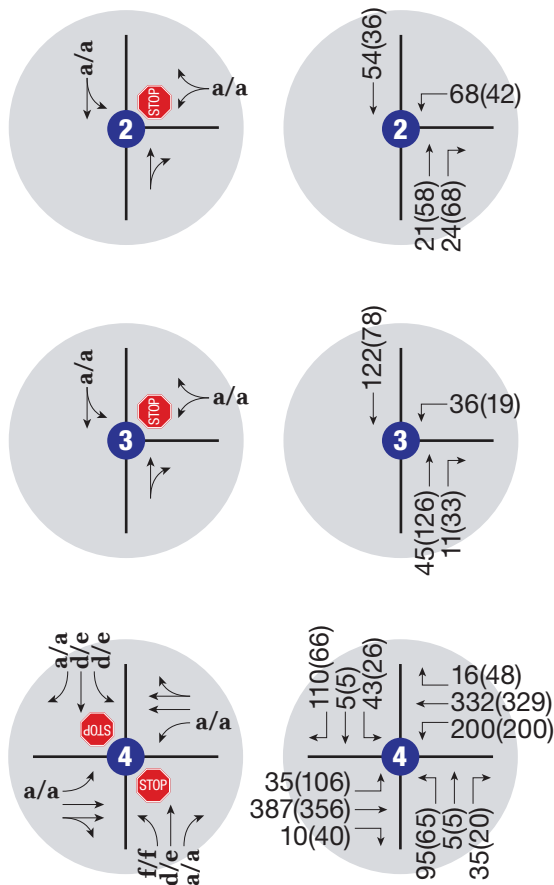
The level of service (LOS) results and intersection laneage are included on **Figure 7**. Calculations were carried out to assess long-term background traffic conditions. Calculations used techniques documented in the *Highway Capacity Manual* (Transportation Research Board, 2016) using the existing traffic volumes and intersection geometry. LOS is a qualitative measure of traffic operational conditions, based on roadway capacity and vehicle delay. Levels of service are described by a letter designation ranging from A to F, with LOS A representing almost free-flow travel, while LOS F represents congested conditions. For signalized intersections, LOS is calculated for the entire intersection while LOS for unsignalized intersections is calculated for movements that must yield ROW to other traffic movements.

As **Figure 7** shows, all but one of the intersections is anticipated to experience excellent operations at LOS A or LOS B. The 64<sup>th</sup> Avenue/Lisbon Street intersection is the one intersection that could experience movements with poor LOS, namely the northbound and southbound left turn movements. As mentioned, this intersection will not quite meet signalization warrants by 2027, but signalization is eminent as the area continues to grow. The northbound left turn 95<sup>th</sup> percentile queue is estimated to be 4 to 6 vehicles during the peak hours prior to signalization. **Appendix C** includes the LOS analysis worksheets.

65<sup>th</sup> Avenue should ultimately be constructed to include two through lanes (one each way) in the short-term timeframe. Ultimately, a center turn lane should be provided in conjunction with developing the mixed-use commercial development along the south side of 65<sup>th</sup> Avenue, meeting the three-lane collector standard.



NOTE: Drawing Not to Scale



#### ***IV.D. Long-Term Future Total Traffic Conditions***

##### **Roadway System**

The roadway network for the High Point development is assumed to be built out by the year 2040 long-term future scenario. No additional roadways are needed beyond those listed in the long-term background scenario, other than local roadways within the PA 5 development.

##### **Traffic Volumes**

The long-term site generated traffic volumes illustrated on **Figure 4** were added to the long-term future background traffic volumes found on **Figure 6** to produce the year 2040 total traffic volumes shown on **Figure 8**. 64<sup>th</sup> Avenue and Picadilly Road are anticipated to carry the greatest amount of total traffic estimated to be 23,000 to 25,000 VPD for each. These projections are within 5 percent of NEATS traffic projections.

##### **Traffic Control and Operations**

Intersection capacity analyses were conducted using the long-term total peak hour volumes and intersection geometrics as illustrated on **Figure 8**. Signalization will be warranted at 64<sup>th</sup> Avenue and Lisbon Street by 2040 (likely well before). 64<sup>th</sup> Avenue and Picadilly Road will be signalized (as analyzed in the short-term planning horizon), and an additional intersection that is anticipated to be signalized is Picadilly Road/65<sup>th</sup> Avenue given that Picadilly Road will extend north to Commerce City and that 65<sup>th</sup> Avenue will serve commercial development on the east side of Picadilly Street. This intersection was shown to be signalized in the High Point Master Plan Traffic study, so the Warrant Analysis (shown in **Appendix A**) conducted in support of PA 5 entailed a conformance.

**Figure 8** shows that the three signalized intersections will all operate at LOS D or better. The 64<sup>th</sup> Avenue/Picadilly Road intersection will require dual left turn lanes and a separate right turn lane along each approach as was identified in the High Point master traffic impact study. The intersection of Lisbon Street and 65<sup>th</sup> Avenue will warrant signalization by 2040 due primarily to the planned mixed-use/commercial development on the south side of 65<sup>th</sup> Avenue. The stop-sign controlled intersections are all anticipated to operate acceptably at LOS D or better. Worksheets are presented in **Appendix C**.

The intersections along Lisbon Street have been analyzed under side-street stop control, but the northernmost intersection with High Point Boulevard has been analyzed as a roundabout intersection as well. The analyses show that this intersection would not have any operational issues if constructed as a roundabout. The Lisbon Street/66<sup>th</sup> Avenue intersection has also been assessed as a roundabout, and preliminary assessment (high-level review) suggests that this intersection could also function well as a roundabout.

Primary recommendations for the long-term time frame include:

- Installing traffic signals, once warranted, at 64<sup>th</sup> Avenue/Picadilly Road, 64<sup>th</sup> Avenue/Lisbon Street, Picadilly Road/65<sup>th</sup> Avenue, and Lisbon Street/65<sup>th</sup> Avenue
- Constructing a major intersection at 64<sup>th</sup> Avenue and Picadilly Road that incorporates dual left turn lanes and a right turn lane along every approach as depicted in **Figure 8**.
- Adding left turn lanes at nearly all intersections, and adding right-turn lanes at select intersections, where they are needed. Specifics are in **Figure 8**.
- Constructing 65<sup>th</sup> Avenue as a three-lane roadway to support the potentially more intense mixed-use/commercial development that could occur along the south side of 65<sup>th</sup> Avenue. The entire roadway width of 65<sup>th</sup> Avenue is planned to be constructed in conjunction with PA 5.

- Providing a roundabout at Lisbon Street/66<sup>th</sup> Avenue as an option and would function well given long-term total traffic.

City of Aurora *Traffic Impact Study Guidelines* indicate that the *CDOT State Highway Access Code (SHAC)* be used to determine storage and taper lengths of auxiliary lanes. These values sometimes yield conservative results and provide storage well in excess of 95<sup>th</sup> percentile queues (which already incorporate a heavy vehicle percentage). Rather, the recommendation is that the values in **Table 2** corresponding to the 95<sup>th</sup> percentile lengths be used for storage lengths, plus a lead-in taper. A full level of service comparison table is included in **Appendix E**.

### **Internal Intersection Traffic Control**

Most of the internal intersections are in a tee-configuration, and the recommended orientation for all of these entails placing a stop sign along the “stem” of the tee. There are three intersections along the south side of the development that are four legged. The recommendation for each one is to provide free-flow to the north-south approaches and place stop signs at the east-west approaches.

ILC Consultants has prepared a map capturing this recommended orientation of stop-signs. Their display is presented in **Appendix D**.

### **Bicycle and Pedestrian Amenities**

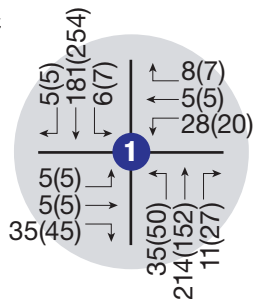
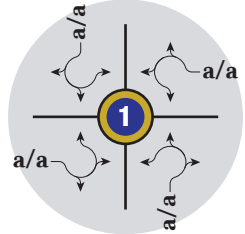
The PA 5 development is planned to include bicycle and pedestrian amenities as it develops. The Phase I site plan shows detached sidewalks along the public streets per city standard. A park and open space area are planned to include pedestrian accommodation as well, some of which will be via open tract pedestrian connections. Phase 2 will include a larger park with a trail loop and a trailhead including a connection to the regional trail.

### **Traffic Calming**

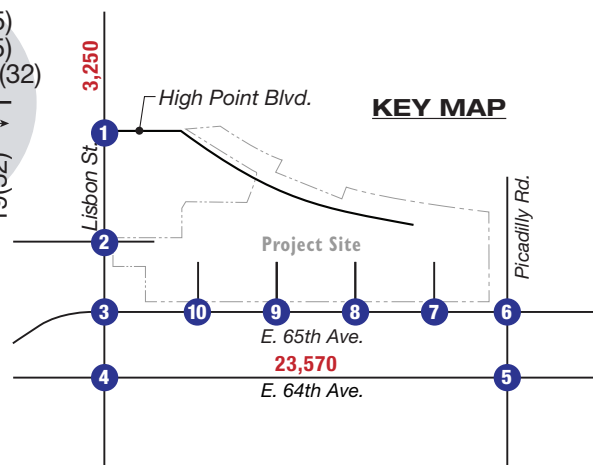
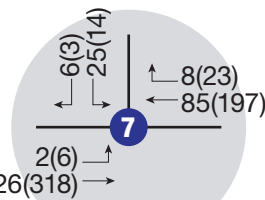
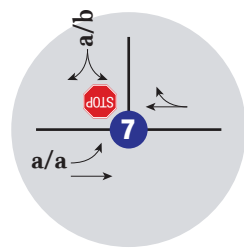
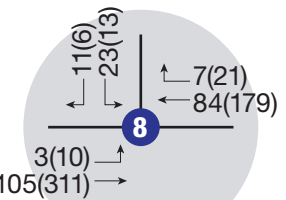
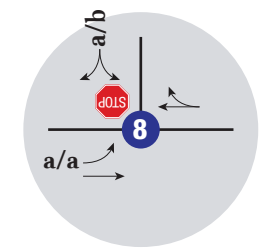
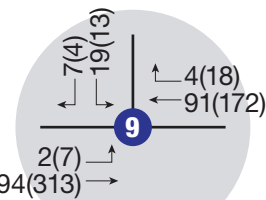
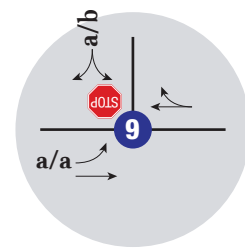
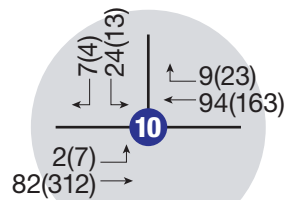
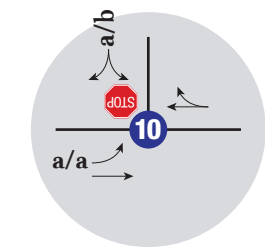
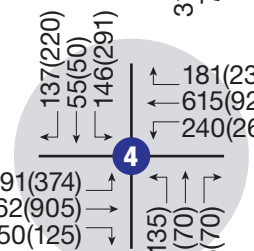
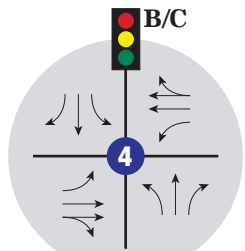
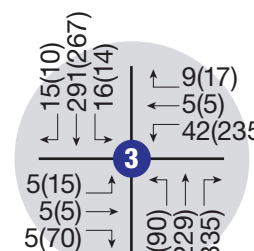
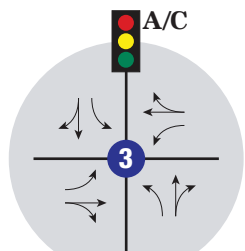
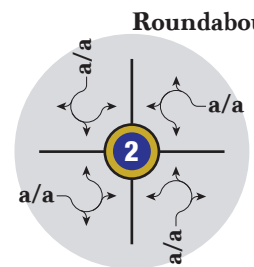
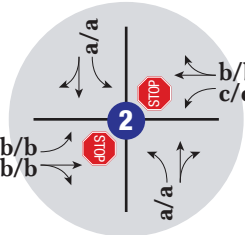
65<sup>th</sup> Avenue is the best candidate for possible traffic calming measures as it could serve as a “cut-through” from Lisbon Street to Picadilly Road. 65<sup>th</sup> Avenue will be designed such that it will narrow slightly adjacent to Phase I, and parallel parking will be allowed along this roadway where a center left turn lane will not be provided. Other measures such as bulb-outs could be explored, however locations of access points on the south side of 65<sup>th</sup> Avenue have not yet been identified. A full analysis of appropriate measures should be conducted at a time when more is known about the south-side development.

NOTE: Drawing Not to Scale

### Roundabout

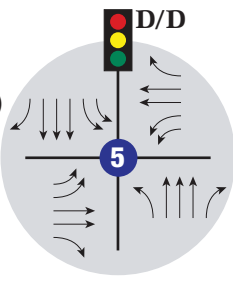
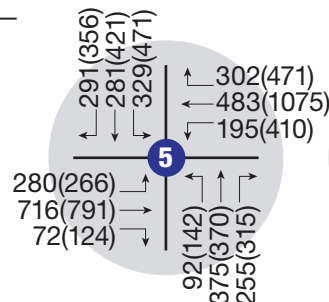
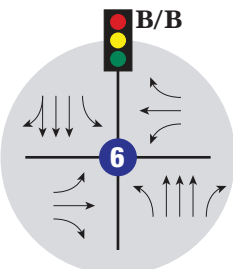
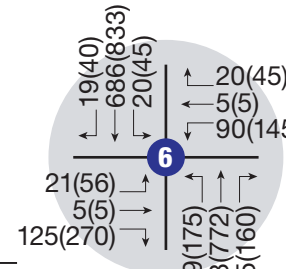


### Roundabout



### LEGEND

- xxx(xxx) = AM(PM) Peak Hour Traffic Volumes
- XXXX = Daily Traffic Volumes
- X/X = AM/PM Peak Hour Signalized Intersection Level of Service
- x/x = AM/PM Peak Hour Unsignalized Intersection Level of Service
- STOP = Stop Sign
- Traffic Signal = Traffic Signal
- Roundabout = Roundabout



NORTH

FIGURE 8  
Long Term Total  
Traffic Conditions

**Table 2. Long-Term Future High Point PA 5 Queueing**

Intersection	Approach	Movement	2040 95th Percentile Queue Length (ft) <sup>1</sup>		2040 SHAC Recommended Storage Length <sup>2</sup>	Recommended Storage Length
			AM	PM		
1. Lisbon Street/High Point Boulevard (Roundabout)	Eastbound	Left-Turn/Through/Right-Turn	25	25	Continuous	Continuous
	Westbound	Left-Turn/Through/Right-Turn	25	25	Continuous	Continuous
	Northbound	Left-Turn/Through/Right-Turn	25	50	Continuous	Continuous
	Southbound	Left-Turn/Through/Right-Turn	50	25	Continuous	Continuous
2. Lisbon Street/66 <sup>th</sup> Avenue (Stop-Controlled)	Eastbound	Left-Turn	0	0	25	50
		Through/Right-Turn	25	25	Continuous	Continuous
	Westbound	Left-Turn	25	25	50	50
		Through/Right-Turn	25	25	Continuous	Continuous
	Northbound	Left-Turn	25	25	50	50
		Through/Right-Turn	0	0	Continuous	Continuous
	Southbound	Left-Turn	0	0	25	50
		Through/Right-Turn	0	0	Continuous	Continuous
2. Lisbon Street/66 <sup>th</sup> Avenue (Roundabout)	Eastbound	Left-Turn/Through/Right-Turn	25	25	Continuous	Continuous
	Westbound	Left-Turn/Through/Right-Turn	25	25	Continuous	Continuous
	Northbound	Left-Turn/Through/Right-Turn	50	50	Continuous	Continuous
	Southbound	Left-Turn/Through/Right-Turn	50	50	Continuous	Continuous

Intersection	Approach	Movement	2040 95th Percentile Queue Length (ft) <sup>1</sup>		2040 SHAC Recommended Storage Length <sup>2</sup>	Recommended Storage Length
			AM	PM		
3. 65 <sup>th</sup> Avenue/ Lisbon Street	Eastbound	Left	25	25	25	50
		Through/Right	25	125	Continuous	Continuous
	Westbound	Left	75	300	250	300
		Through/Right	25	25	Continuous	Continuous
	Northbound	Left	25	50	100	50
		Through	25	275	Continuous	Continuous
		Right	25	375	350	375
	Southbound	Left	25	25	30	50
		Through/Right	100	200	Continuous	Continuous
4. 64 <sup>th</sup> Avenue/ Lisbon Street	Eastbound	Left	100	275	400	275
		Through/Right	350	450	Continuous	Continuous
	Westbound	Left	125	175	275	175
		Through/Right	25	75	Continuous	Continuous
	Northbound	Left	175	175	150	175
		Through	75	100	Continuous	Continuous
		Right	75	100	75	100
	Southbound	Left	200	200	300	200
		Through	75	75	Continuous	Continuous
		Right	175	275	225	275
5. 64 <sup>th</sup> Avenue/ Picadilly Road	Eastbound	Left *	225	175	150	225
		Through	425	225	Continuous	Continuous
		Right	100	75	125	100
	Westbound	Left*	175	300	225	300
		Through	125	600	Continuous	Continuous
		Right	250	400	500	400
	Northbound	Left	175	250	150	250
		Through	175	175	Continuous	Continuous
		Right	300	350	325	350
	Southbound	Left*	250	375	250	375
		Through	100	200	Continuous	Continuous
		Right	250	425	375	425

Intersection	Approach	Movement	2040 95th Percentile Queue Length (ft) <sup>1</sup>		2040 SHAC Recommended Storage Length <sup>2</sup>	Recommended Storage Length
			AM	PM		
6. 65 <sup>th</sup> Avenue/ Picadilly Road	Eastbound	Left	50	75	50	75
		Through	25	25	Continuous	Continuous
		Right	200	350	275	350
	Westbound	Left	125	175	150	175
		Through	25	25	Continuous	Continuous
		Right	50	75	50	75
	Northbound	Left	25	100	200	100
		Through	25	25	Continuous	Continuous
		Right	25	25	175	50
	Southbound	Left	25	50	50	50
		Through/Right	225	250	Continuous	Continuous
65 <sup>th</sup> Avenue/ Access #7	Eastbound	Left	0	0	25	50
	Southbound	Left/Right	25	25	Continuous	Continuous
65 <sup>th</sup> Avenue/ Access #8	Eastbound	Left	0	0	25	50
	Southbound	Left/Right	25	25	Continuous	Continuous
65 <sup>th</sup> Avenue/ Access #9	Eastbound	Left	0	0	25	50
	Southbound	Left/Right	25	25	Continuous	Continuous
65 <sup>th</sup> Avenue/ Access #10	Eastbound	Left	0	0	25	50
	Southbound	Left/Right	25	25	Continuous	Continuous

\*Dual Left-Turn queues and storage are per lane.

<sup>1</sup> Calculations based on HCM methodology using a heavy vehicle percentage of 2 percent network wide.

<sup>2</sup> Number shown is based on volume adjustments of 3 PCE per heavy vehicle.

## V. SUMMARY AND RECOMMENDATIONS

Richmond American Homes is proposing to develop an approximate 45-acre site within the High Point Master Plan. The PA 5 site is located along the north side of the future 65<sup>th</sup> Avenue between Lisbon Street and Picadilly Road. The proposed residential development would consist of approximately 412 residential units. The site represents approximately 4 percent of the High Point Master development by land area.

The proposed development is estimated to generate approximately 3,074 trips per day, with an estimated 183 occurring during the AM peak hour and 208 occurring during the PM peak hour. By comparison to the High Point Master Plan Traffic Impact Study, PA 5 was assumed to generate 3,510 trips per day. The current development proposal represents a 12 percent decrease in daily traffic generation as compared to that analyzed in the 2020 Master Plan Study.

The potential traffic impacts of the development were evaluated under short-term (2027) and long-term future (2040) conditions. Given short-term conditions, most of the study area intersections are anticipated to function well. The one exception includes the intersection of 64<sup>th</sup> Avenue and Lisbon Street, which will experience poor operations for the southbound and northbound left turn movements under side-street stop control. However, this intersection will be close to satisfying signalization warrants, and once signalized, this intersection will function well, thereby alleviating the left turn delay issue. Other key improvements for the 2027 timeframe entail:

- Signalizing the 64<sup>th</sup> Avenue/Picadilly Road intersection.
- Extending Picadilly Road north to 65<sup>th</sup> Avenue at least as a 2-lane cross section. Coordination with the District is needed to define this specifically.
- Extending Lisbon Street north to connect to High Point Boulevard.
- Constructing at least two-lanes of 65<sup>th</sup> Avenue from Lisbon Street to Picadilly Road, allowing the roadway to ultimately be completed as a three-lane road in support of future development along its south side of 65<sup>th</sup> Avenue.

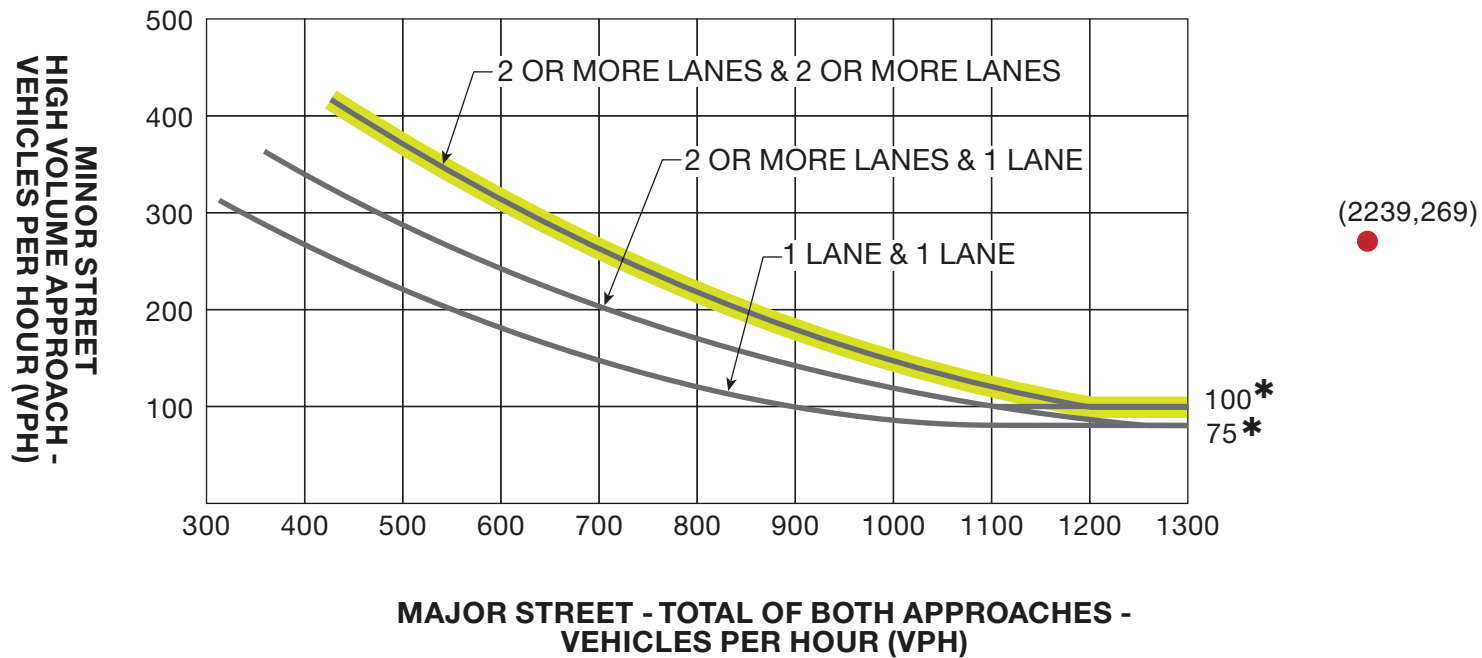
For the long-term timeframe, acceptable operations are anticipated given the following enhancements (in addition to the short-term planning horizon):

- Installing a traffic signal at 64<sup>th</sup> Avenue/Lisbon Street, 65<sup>th</sup> Avenue/Picadilly, and 65<sup>th</sup> Avenue/Lisbon Street
- Widening Picadilly Road to six lanes and extending this roadway north to Commerce City
- Completing 65<sup>th</sup> Avenue to a full three-lane collector standard in conjunction with the future mixed use/commercial development planned for the south side of 65<sup>th</sup> Avenue
- Expanding the 64<sup>th</sup> Avenue/Picadilly Road intersection to include dual left turn lanes and a single right turn lane along each of the four approaches

The PA 5 development is planned to include bicycle and pedestrian amenities as it develops. The Phase I site plan shows detached sidewalks along the public streets per city standard. A park and an open space area are planned to include pedestrian accommodation as well, some of which will be via open tract pedestrian connections. Phase 2 will include a larger park with a trail loop and a trailhead including a connection to the regional trail.



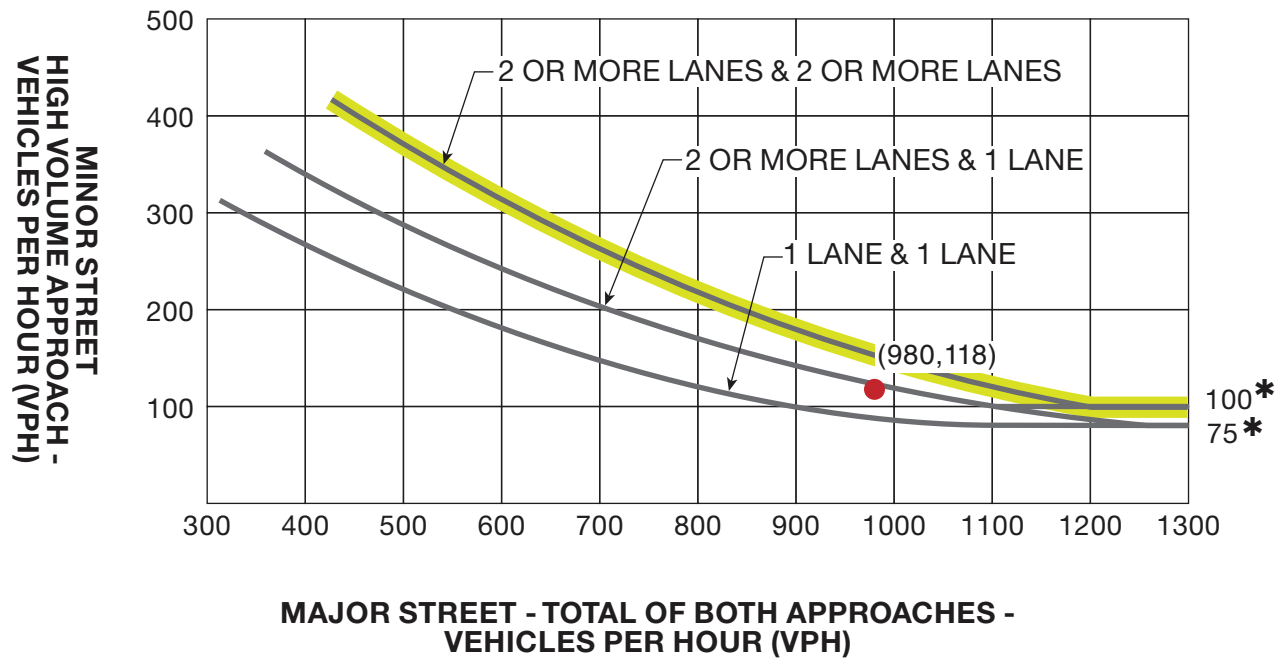
## APPENDIX A. SIGNAL WARRANT ANALYSES



\* Note: 100 vph applies as the lower threshold volume for a minor street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor street approach with one lane.

#### LEGEND

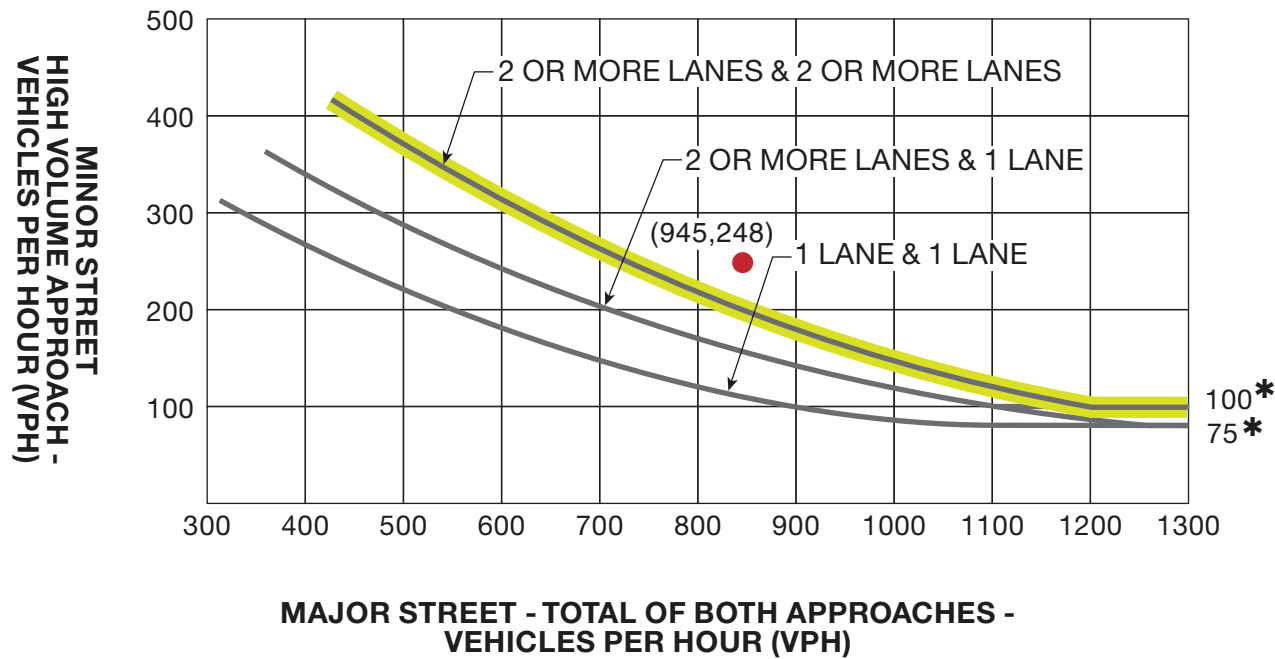
● = 7:00am-8:00am



\* Note: 100 vph applies as the lower threshold volume for a minor street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor street approach with one lane.

#### LEGEND

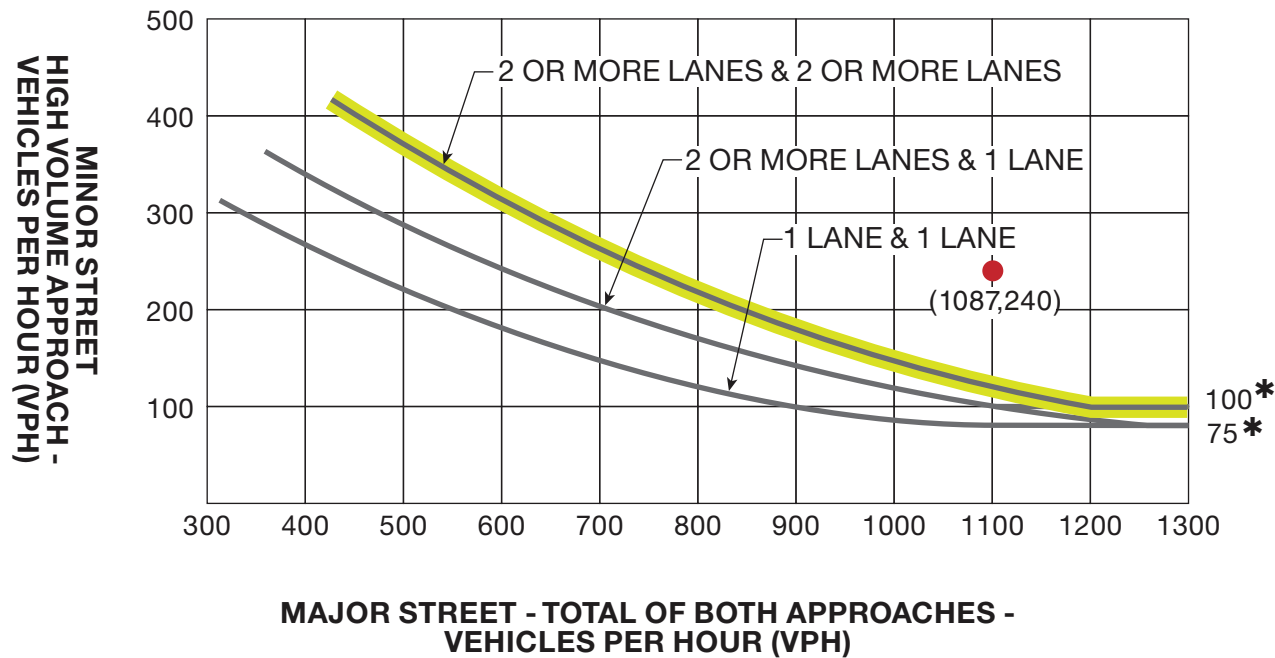
● = 7:00am-8:00am



\* Note: 100 vph applies as the lower threshold volume for a minor street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor street approach with one lane.

#### LEGEND

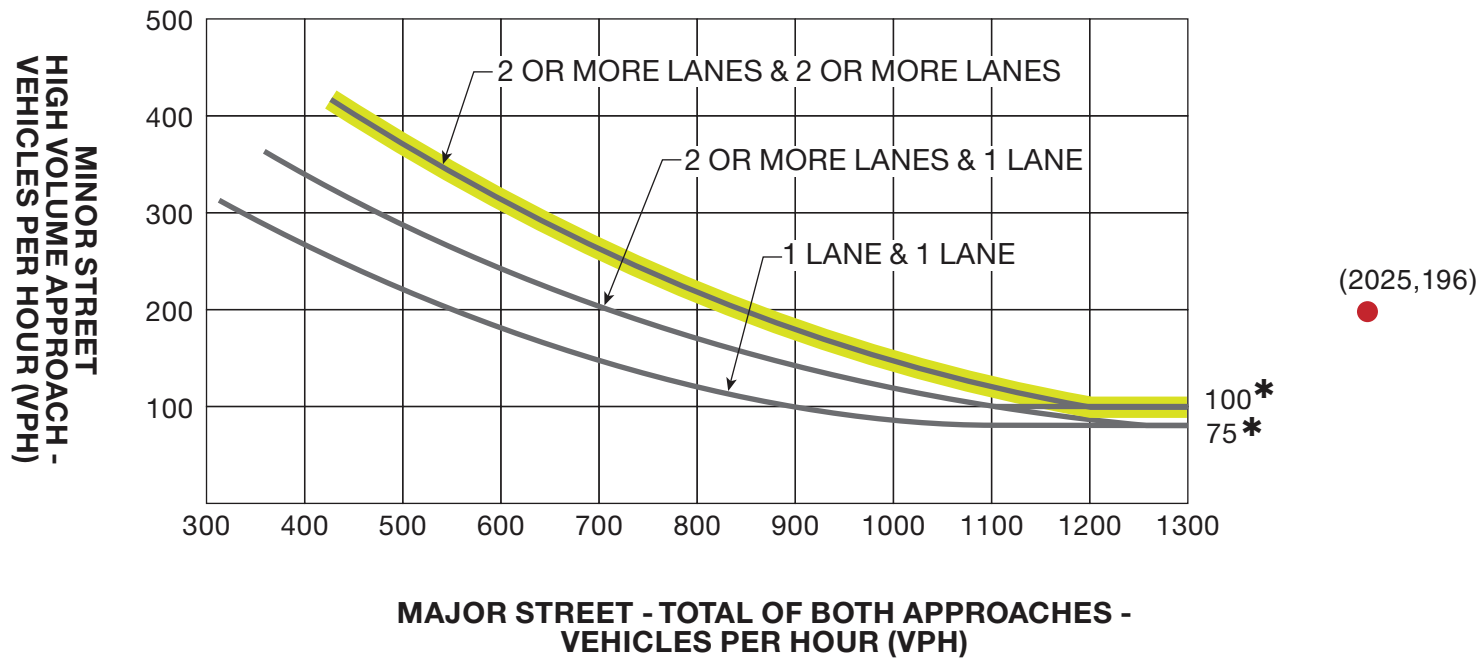
● = PM Peak Hour



\* Note: 100 vph applies as the lower threshold volume for a minor street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor street approach with one lane.

#### LEGEND

● = 7:00am-8:00am






\* Note: 100 vph applies as the lower threshold volume for a minor street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor street approach with one lane.




#### LEGEND

● = PM Peak Hour

## APPENDIX B. BACKGROUND TRAFFIC LOS WORKSHEETS

Intersection						
Int Delay, s/veh	4					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	55	0	15	20	0	35
Future Vol, veh/h	55	0	15	20	0	35
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	60	0	16	22	0	38
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	65	27	0	0	38	0
Stage 1	27	-	-	-	-	-
Stage 2	38	-	-	-	-	-
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	941	1048	-	-	1572	-
Stage 1	996	-	-	-	-	-
Stage 2	984	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	941	1048	-	-	1572	-
Mov Cap-2 Maneuver	941	-	-	-	-	-
Stage 1	996	-	-	-	-	-
Stage 2	984	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s	9.1	0		0		
HCM LOS	A					
Minor Lane/Major Mvmt	NBT	NBRWBLn1		SBL	SBT	
Capacity (veh/h)	-	- 941		1572	-	
HCM Lane V/C Ratio	-	- 0.064		-	-	
HCM Control Delay (s)	-	- 9.1		0	-	
HCM Lane LOS	-	- A		A	-	
HCM 95th %tile Q(veh)	-	- 0.2		0	-	



Intersection						
Int Delay, s/veh	0					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	0	35	0	0	90
Future Vol, veh/h	0	0	35	0	0	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	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	38	0	0	98

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	136	38	0
Stage 1	38	-	-
Stage 2	98	-	-
Critical Hdwy	6.42	6.22	-
Critical Hdwy Stg 1	5.42	-	-
Critical Hdwy Stg 2	5.42	-	-
Follow-up Hdwy	3.518	3.318	-
Pot Cap-1 Maneuver	857	1034	-
Stage 1	984	-	-
Stage 2	926	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	857	1034	-
Mov Cap-2 Maneuver	857	-	-
Stage 1	984	-	-
Stage 2	926	-	-

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

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	-	1572
HCM Lane V/C Ratio	-	-	-	-
HCM Control Delay (s)	-	-	0	0
HCM Lane LOS	-	-	A	A
HCM 95th %tile Q(veh)	-	-	-	0

Intersection												
Int Delay, s/veh	7.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↰↱		↰	↰↱		↰	↱	↰↱	↰	↱	↰
Traffic Vol, veh/h	20	385	10	200	325	10	95	5	35	25	5	60
Future Vol, veh/h	20	385	10	200	325	10	95	5	35	25	5	60
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	250	-	-	250	-	-	250	-	250	250	-	250
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	22	418	11	217	353	11	103	5	38	27	5	65
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	364	0	0	429	0	0	1081	1266	215	1049	1266	182
Stage 1	-	-	-	-	-	-	468	468	-	793	793	-
Stage 2	-	-	-	-	-	-	613	798	-	256	473	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	1382	-	-	1127	-	-	224	198	790	238	198	*971
Stage 1	-	-	-	-	-	-	545	560	-	443	466	-
Stage 2	-	-	-	-	-	-	583	464	-	726	557	-
Platoon blocked, %	1	-	-	-	-	-	1	1	-	1	1	1
Mov Cap-1 Maneuver	1382	-	-	1127	-	-	172	157	790	186	157	*971
Mov Cap-2 Maneuver	-	-	-	-	-	-	172	157	-	186	157	-
Stage 1	-	-	-	-	-	-	536	551	-	436	376	-
Stage 2	-	-	-	-	-	-	433	374	-	673	548	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.4			3.3			41			15.3		
HCM LOS							E			C		
Minor Lane/Major Mvmt	NBLn1	NBLn2	NBLn3	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2	SBLn3
Capacity (veh/h)	172	157	790	1382	-	-	1127	-	-	186	157	971
HCM Lane V/C Ratio	0.6	0.035	0.048	0.016	-	-	0.193	-	-	0.146	0.035	0.067
HCM Control Delay (s)	53.2	28.8	9.8	7.6	-	-	9	-	-	27.6	28.8	9
HCM Lane LOS	F	D	A	A	-	-	A	-	-	D	D	A
HCM 95th %tile Q(veh)	3.3	0.1	0.2	0	-	-	0.7	-	-	0.5	0.1	0.2
Notes												
~: Volume exceeds capacity	\$: Delay exceeds 300s			+: Computation Not Defined			*: All major volume in platoon					

# Timings 5: Picadilly Rd & 64th Ave

Short Term Background  
AM Peak

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑	↘	↑↑	↘	↗
Traffic Volume (vph)	420	55	175	400	120	225
Future Volume (vph)	420	55	175	400	120	225
Turn Type	NA	Perm	pm+pt	NA	Prot	Prot
Protected Phases	4		3	8	1	1
Permitted Phases		4	8			
Detector Phase	4	4	3	8	1	1
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	9.5	22.5	9.5	9.5
Total Split (s)	45.0	45.0	31.0	76.0	44.0	44.0
Total Split (%)	37.5%	37.5%	25.8%	63.3%	36.7%	36.7%
Yellow Time (s)	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
Lost Time Adjust (s)	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
Lead/Lag	Lag	Lag	Lead			
Lead-Lag Optimize?	Yes	Yes	Yes			
Recall Mode	C-Max	C-Max	None	C-Max	None	None
Act Effect Green (s)	83.8	83.8	96.8	96.8	14.2	14.2
Actuated g/C Ratio	0.70	0.70	0.81	0.81	0.12	0.12
v/c Ratio	0.18	0.05	0.25	0.15	0.62	0.61
Control Delay	7.1	2.4	3.7	3.0	62.5	12.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	7.1	2.4	3.7	3.0	62.5	12.5
LOS	A	A	A	A	E	B
Approach Delay	6.5			3.2	29.8	
Approach LOS	A			A	C	

## Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

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

Natural Cycle: 45

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.62

Intersection Signal Delay: 10.9

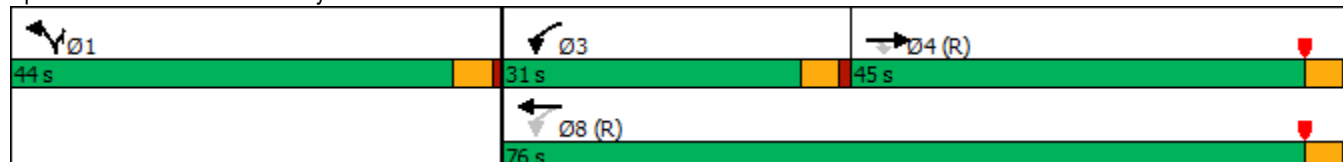
Intersection LOS: B

Intersection Capacity Utilization 39.2%

ICU Level of Service A

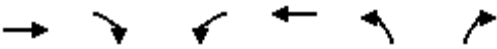
Analysis Period (min) 15




Splits and Phases: 5: Picadilly Rd & 64th Ave






# HCM 6th Signalized Intersection Summary 5: Picadilly Rd & 64th Ave

Short Term Background  
AM Peak

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑	↓	↑↑	↓	↑
Traffic Volume (veh/h)	420	55	175	400	120	225
Future Volume (veh/h)	420	55	175	400	120	225
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	457	60	190	435	130	245
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	2336	1042	691	2659	315	280
Arrive On Green	0.66	0.66	0.05	0.75	0.18	0.18
Sat Flow, veh/h	3647	1585	1781	3647	1781	1585
Grp Volume(v), veh/h	457	60	190	435	130	245
Grp Sat Flow(s),veh/h/ln	1777	1585	1781	1777	1781	1585
Q Serve(g_s), s	6.1	1.6	3.9	4.2	7.8	18.1
Cycle Q Clear(g_c), s	6.1	1.6	3.9	4.2	7.8	18.1
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	2336	1042	691	2659	315	280
V/C Ratio(X)	0.20	0.06	0.27	0.16	0.41	0.87
Avail Cap(c_a), veh/h	2336	1042	990	2659	586	522
HCM Platoon Ratio	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
Uniform Delay (d), s/veh	8.1	7.3	5.3	4.3	43.9	48.1
Incr Delay (d2), s/veh	0.2	0.1	0.2	0.1	0.9	8.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	4.1	1.0	2.4	2.5	6.3	12.3
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	8.3	7.4	5.5	4.5	44.7	56.5
LnGrp LOS	A	A	A	A	D	E
Approach Vol, veh/h	517			625	375	
Approach Delay, s/veh	8.2			4.8	52.4	
Approach LOS	A			A	D	
Timer - Assigned Phs			3	4	6	8
Phs Duration (G+Y+Rc), s			10.9	83.4	25.7	94.3
Change Period (Y+Rc), s			4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s			26.5	40.5	39.5	71.5
Max Q Clear Time (g_c+l1), s			5.9	8.1	20.1	6.2
Green Ext Time (p_c), s			0.5	3.5	1.2	3.3
<b>Intersection Summary</b>						
HCM 6th Ctrl Delay			17.7			
HCM 6th LOS			B			

Intersection						
Int Delay, s/veh	2.1					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	35	0	40	55	0	25
Future Vol, veh/h	35	0	40	55	0	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	-	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	38	0	43	60	0	27
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	100	73	0	0	103	0
Stage 1	73	-	-	-	-	-
Stage 2	27	-	-	-	-	-
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	899	989	-	-	1489	-
Stage 1	950	-	-	-	-	-
Stage 2	996	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	899	989	-	-	1489	-
Mov Cap-2 Maneuver	899	-	-	-	-	-
Stage 1	950	-	-	-	-	-
Stage 2	996	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s	9.2	0		0		
HCM LOS	A					
Minor Lane/Major Mvmt	NBT	NBRWBLn1		SBL	SBT	
Capacity (veh/h)	-	899		1489	-	
HCM Lane V/C Ratio	-	0.042		-	-	
HCM Control Delay (s)	-	9.2		0	-	
HCM Lane LOS	-	A		A	-	
HCM 95th %tile Q(veh)	-	0.1		0	-	

Intersection						
Int Delay, s/veh	0					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	0	95	0	0	60
Future Vol, veh/h	0	0	95	0	0	60
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	103	0	0	65

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	168	103	0
Stage 1	103	-	-
Stage 2	65	-	-
Critical Hdwy	6.42	6.22	-
Critical Hdwy Stg 1	5.42	-	-
Critical Hdwy Stg 2	5.42	-	-
Follow-up Hdwy	3.518	3.318	-
Pot Cap-1 Maneuver	822	952	-
Stage 1	921	-	-
Stage 2	958	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	822	952	-
Mov Cap-2 Maneuver	822	-	-
Stage 1	921	-	-
Stage 2	958	-	-

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

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	-	1489
HCM Lane V/C Ratio	-	-	-	-
HCM Control Delay (s)	-	-	0	0
HCM Lane LOS	-	-	A	A
HCM 95th %tile Q(veh)	-	-	-	0

Intersection												
Int Delay, s/veh	5.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↰↱		↰	↰↱		↰	↱	↰↱	↰	↱	↰↱
Traffic Vol, veh/h	60	350	40	200	325	30	65	5	20	15	5	40
Future Vol, veh/h	60	350	40	200	325	30	65	5	20	15	5	40
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	250	-	-	250	-	-	250	-	250	250	-	250
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	65	380	43	217	353	33	71	5	22	16	5	43
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	386	0	0	423	0	0	1145	1352	212	1127	1357	193
Stage 1	-	-	-	-	-	-	532	532	-	804	804	-
Stage 2	-	-	-	-	-	-	613	820	-	323	553	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	1353	-	-	1133	-	-	198	174	793	205	172	*971
Stage 1	-	-	-	-	-	-	499	524	-	436	460	-
Stage 2	-	-	-	-	-	-	583	452	-	663	513	-
Platoon blocked, %	1	-	-	-	-	-	1	1	-	1	1	1
Mov Cap-1 Maneuver	1353	-	-	1133	-	-	151	134	793	159	132	*971
Mov Cap-2 Maneuver	-	-	-	-	-	-	151	134	-	159	132	-
Stage 1	-	-	-	-	-	-	475	499	-	415	372	-
Stage 2	-	-	-	-	-	-	444	365	-	607	488	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	1			3.2			38.8			16.3		
HCM LOS							E			C		
Minor Lane/Major Mvmt	NBLn1	NBLn2	NBLn3	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2	SBLn3
Capacity (veh/h)	151	134	793	1353	-	-	1133	-	-	159	132	971
HCM Lane V/C Ratio	0.468	0.041	0.027	0.048	-	-	0.192	-	-	0.103	0.041	0.045
HCM Control Delay (s)	48.2	33	9.7	7.8	-	-	8.9	-	-	30.2	33.4	8.9
HCM Lane LOS	E	D	A	A	-	-	A	-	-	D	D	A
HCM 95th %tile Q(veh)	2.2	0.1	0.1	0.2	-	-	0.7	-	-	0.3	0.1	0.1
Notes												
~: Volume exceeds capacity    \$: Delay exceeds 300s    +: Computation Not Defined    *: All major volume in platoon												

# Timings 5: Picadilly Rd & 64th Ave

Short Term Background  
PM Peak

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑	↘	↑↑	↘	↗
Traffic Volume (vph)	375	100	300	420	180	270
Future Volume (vph)	375	100	300	420	180	270
Turn Type	NA	Perm	pm+pt	NA	Prot	Prot
Protected Phases	4		3	8	1	1
Permitted Phases		4	8			
Detector Phase	4	4	3	8	1	1
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	9.5	22.5	9.5	9.5
Total Split (s)	37.0	37.0	41.0	78.0	42.0	42.0
Total Split (%)	30.8%	30.8%	34.2%	65.0%	35.0%	35.0%
Yellow Time (s)	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
Lost Time Adjust (s)	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
Lead/Lag	Lag	Lag	Lead			
Lead-Lag Optimize?	Yes	Yes	Yes			
Recall Mode	C-Max	C-Max	None	C-Max	None	None
Act Effect Green (s)	75.6	75.6	92.3	92.3	18.7	18.7
Actuated g/C Ratio	0.63	0.63	0.77	0.77	0.16	0.16
v/c Ratio	0.18	0.11	0.42	0.17	0.71	0.59
Control Delay	10.7	2.9	6.2	4.3	61.7	9.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	10.7	2.9	6.2	4.3	61.7	9.9
LOS	B	A	A	A	E	A
Approach Delay	9.0			5.1	30.7	
Approach LOS	A			A	C	

## Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

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

Natural Cycle: 45

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.71

Intersection Signal Delay: 13.2

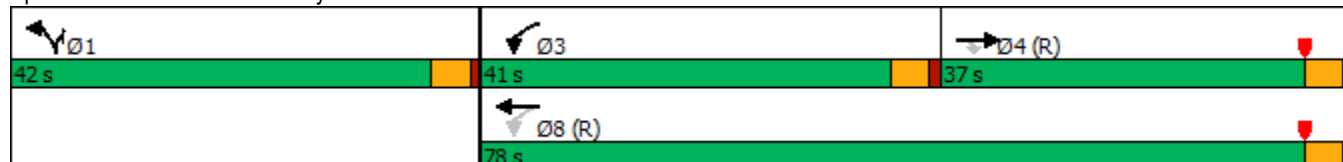
Intersection LOS: B

Intersection Capacity Utilization 48.2%

ICU Level of Service A

Analysis Period (min) 15


Splits and Phases: 5: Picadilly Rd & 64th Ave













# HCM 6th Signalized Intersection Summary 5: Picadilly Rd & 64th Ave

Short Term Background  
PM Peak










						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑	↵	↑↑	↵	↑
Traffic Volume (veh/h)	375	100	300	420	180	270
Future Volume (veh/h)	375	100	300	420	180	270
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	408	109	326	457	196	293
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	2084	930	697	2548	371	330
Arrive On Green	0.59	0.59	0.09	0.72	0.21	0.21
Sat Flow, veh/h	3647	1585	1781	3647	1781	1585
Grp Volume(v), veh/h	408	109	326	457	196	293
Grp Sat Flow(s),veh/h/ln	1777	1585	1781	1777	1781	1585
Q Serve(g_s), s	6.4	3.7	8.2	5.0	11.7	21.6
Cycle Q Clear(g_c), s	6.4	3.7	8.2	5.0	11.7	21.6
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	2084	930	697	2548	371	330
V/C Ratio(X)	0.20	0.12	0.47	0.18	0.53	0.89
Avail Cap(c_a), veh/h	2084	930	1073	2548	557	495
HCM Platoon Ratio	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
Uniform Delay (d), s/veh	11.6	11.0	7.3	5.5	42.3	46.2
Incr Delay (d2), s/veh	0.2	0.3	0.5	0.2	1.2	12.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	4.6	2.4	5.4	3.2	9.1	14.7
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	11.8	11.3	7.7	5.7	43.5	58.7
LnGrp LOS	B	B	A	A	D	E
Approach Vol, veh/h	517			783	489	
Approach Delay, s/veh	11.7			6.5	52.6	
Approach LOS	B			A	D	
Timer - Assigned Phs			3	4	6	8
Phs Duration (G+Y+Rc), s			15.7	74.9	29.5	90.5
Change Period (Y+Rc), s			4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s			36.5	32.5	37.5	73.5
Max Q Clear Time (g_c+I1), s			10.2	8.4	23.6	7.0
Green Ext Time (p_c), s			1.0	3.1	1.4	3.5
<b>Intersection Summary</b>						
HCM 6th Ctrl Delay			20.6			
HCM 6th LOS			C			

Intersection												
Int Delay, s/veh	2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	5	35	10	5	5	35	210	5	5	180	5
Future Vol, veh/h	5	5	35	10	5	5	35	210	5	5	180	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	50	-	-	50	-	-	50	-	-	50	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	5	5	38	11	5	5	38	228	5	5	196	5

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	521	518	199	537	518	231	201	0	0	233	0	0
Stage 1	209	209	-	307	307	-	-	-	-	-	-	-
Stage 2	312	309	-	230	211	-	-	-	-	-	-	-
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	516	491	842	502	491	915	1371	-	-	1369	-	-
Stage 1	793	729	-	774	693	-	-	-	-	-	-	-
Stage 2	769	692	-	773	728	-	-	-	-	-	-	-
Platoon blocked, %	1	1		1	1	1		-	-	1	-	-
Mov Cap-1 Maneuver	496	476	842	463	476	915	1371	-	-	1369	-	-
Mov Cap-2 Maneuver	496	476	-	463	476	-	-	-	-	-	-	-
Stage 1	771	726	-	752	674	-	-	-	-	-	-	-
Stage 2	737	672	-	730	725	-	-	-	-	-	-	-



















Approach	EB		WB		NB		SB	
HCM Control Delay, s	10.3		12		1.1		0.2	
HCM LOS	B		B					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1371	-	-	496	768	463	626	1369	-	-
HCM Lane V/C Ratio	0.028	-	-	0.011	0.057	0.023	0.017	0.004	-	-
HCM Control Delay (s)	7.7	-	-	12.3	10	13	10.9	7.6	-	-
HCM Lane LOS	A	-	-	B	B	B	B	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0	0.2	0.1	0.1	0	-	-

Intersection												
Int Delay, s/veh	2.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	5	35	40	5	5	35	270	15	5	215	5
Future Vol, veh/h	5	5	35	40	5	5	35	270	15	5	215	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	50	-	-	50	-	-	50	-	-	50	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	5	5	38	43	5	5	38	293	16	5	234	5
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	629	632	237	637	618	293	239	0	0	309	0	0
Stage 1	247	247	-	369	369	-	-	-	-	-	-	-
Stage 2	382	385	-	268	249	-	-	-	-	-	-	-
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	440	422	802	434	432	*868	1328	-	-	1286	-	-
Stage 1	757	702	-	737	658	-	-	-	-	-	-	-
Stage 2	722	645	-	738	701	-	-	-	-	-	-	-
Platoon blocked, %	1	1		1	1	1		-	-	1	-	-
Mov Cap-1 Maneuver	423	408	802	399	417	*868	1328	-	-	1286	-	-
Mov Cap-2 Maneuver	423	408	-	399	417	-	-	-	-	-	-	-
Stage 1	735	699	-	715	639	-	-	-	-	-	-	-
Stage 2	691	627	-	695	698	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s	10.8		14.4		0.9		0.2					
HCM LOS	B		B									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR		
Capacity (veh/h)	1328	-	-	423	716	399	563	1286	-	-		
HCM Lane V/C Ratio	0.029	-	-	0.013	0.061	0.109	0.019	0.004	-	-		
HCM Control Delay (s)	7.8	-	-	13.6	10.4	15.1	11.5	7.8	-	-		
HCM Lane LOS	A	-	-	B	B	C	B	A	-	-		
HCM 95th %tile Q(veh)	0.1	-	-	0	0.2	0.4	0.1	0	-	-		
Notes												
~: Volume exceeds capacity		\$: Delay exceeds 300s			+: Computation Not Defined				*: All major volume in platoon			

Timings  
3: Lisbon St & 65th Ave

2040 Background  
AM Peak



									
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	5	5	15	5	25	310	70	15	260
Future Volume (vph)	5	5	15	5	25	310	70	15	260
Turn Type	pm+pt	NA	pm+pt	NA	pm+pt	NA	Perm	pm+pt	NA
Protected Phases	7	4	3	8	5	2		1	6
Permitted Phases	4		8		2		2	6	
Detector Phase	7	4	3	8	5	2	2	1	6
Switch Phase									
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.5	22.5	9.5	22.5	9.5	22.5	22.5	9.5	22.5
Total Split (s)	14.0	24.0	14.0	24.0	14.0	68.0	68.0	14.0	68.0
Total Split (%)	11.7%	20.0%	11.7%	20.0%	11.7%	56.7%	56.7%	11.7%	56.7%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	C-Max	C-Max	None	C-Max
Act Effect Green (s)	7.4	6.1	8.3	6.5	106.6	106.8	106.8	105.5	103.8
Actuated g/C Ratio	0.06	0.05	0.07	0.05	0.89	0.89	0.89	0.88	0.86
v/c Ratio	0.05	0.11	0.13	0.10	0.03	0.20	0.05	0.02	0.19
Control Delay	48.4	42.4	47.7	40.2	2.0	3.2	0.7	2.2	3.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	48.4	42.4	47.7	40.2	2.0	3.2	0.7	2.2	3.7
LOS	D	D	D	D	A	A	A	A	A
Approach Delay		44.4		44.8		2.7			3.6
Approach LOS		D		D		A			A

Intersection Summary

Cycle Length: 120  
 Actuated Cycle Length: 120  
 Offset: 103 (86%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow  
 Natural Cycle: 65  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.20  
 Intersection Signal Delay: 5.2  
 Intersection Capacity Utilization 35.8%  
 Analysis Period (min) 15

Intersection LOS: A  
 ICU Level of Service A






















Splits and Phases: 3: Lisbon St & 65th Ave

			
Ø1	Ø2 (R)	Ø3	Ø4
14 s	68 s	14 s	24 s
			
Ø5	Ø6 (R)	Ø7	Ø8
14 s	68 s	14 s	24 s

# HCM 6th Signalized Intersection Summary





















## 3: Lisbon St & 65th Ave

2040 Background  
AM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	5	5	5	15	5	5	25	310	70	15	260	15
Future Volume (veh/h)	5	5	5	15	5	5	25	310	70	15	260	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	5	5	5	16	5	5	27	337	76	16	283	16
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	104	20	20	116	30	30	907	1481	1255	854	1376	78
Arrive On Green	0.01	0.02	0.02	0.02	0.03	0.03	0.05	1.00	1.00	0.02	0.78	0.78
Sat Flow, veh/h	1781	858	858	1781	858	858	1781	1870	1585	1781	1753	99
Grp Volume(v), veh/h	5	0	10	16	0	10	27	337	76	16	0	299
Grp Sat Flow(s),veh/h/ln	1781	0	1716	1781	0	1716	1781	1870	1585	1781	0	1853
Q Serve(g_s), s	0.3	0.0	0.7	1.0	0.0	0.7	0.3	0.0	0.0	0.2	0.0	5.0
Cycle Q Clear(g_c), s	0.3	0.0	0.7	1.0	0.0	0.7	0.3	0.0	0.0	0.2	0.0	5.0
Prop In Lane	1.00		0.50	1.00		0.50	1.00		1.00	1.00		0.05
Lane Grp Cap(c), veh/h	104	0	40	116	0	59	907	1481	1255	854	0	1453
V/C Ratio(X)	0.05	0.00	0.25	0.14	0.00	0.17	0.03	0.23	0.06	0.02	0.00	0.21
Avail Cap(c_a), veh/h	234	0	279	226	0	279	1004	1481	1255	964	0	1453
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	0.92	0.92	0.92	1.00	0.00	1.00
Uniform Delay (d), s/veh	56.6	0.0	57.5	55.7	0.0	56.3	2.3	0.0	0.0	2.4	0.0	3.3
Incr Delay (d2), s/veh	0.2	0.0	3.1	0.5	0.0	1.3	0.0	0.3	0.1	0.0	0.0	0.3
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	0.3	0.0	0.6	0.9	0.0	0.6	0.2	0.2	0.1	0.1	0.0	3.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	56.8	0.0	60.7	56.2	0.0	57.6	2.3	0.3	0.1	2.4	0.0	3.6
LnGrp LOS	E	A	E	E	A	E	A	A	A	A	A	A
Approach Vol, veh/h	15				26		440				315	
Approach Delay, s/veh	59.4				56.8		0.4				3.6	
Approach LOS	E				E		A				A	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	6.6	99.5	6.6	7.3	7.5	98.6	5.3	8.6				
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	9.5	63.5	9.5	19.5	9.5	63.5	9.5	19.5				
Max Q Clear Time (g_c+I1), s	2.2	2.0	3.0	2.7	2.3	7.0	2.3	2.7				
Green Ext Time (p_c), s	0.0	2.5	0.0	0.0	0.0	2.0	0.0	0.0				
Intersection Summary												
HCM 6th Ctrl Delay			4.6									
HCM 6th LOS			A									

Timings  
4: 64th Ave & Lisbon St

2040 Background  
AM Peak

										
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	180	960	240	610	110	50	55	125	55	100
Future Volume (vph)	180	960	240	610	110	50	55	125	55	100
Turn Type	pm+pt	NA	pm+pt	NA	pm+pt	NA	pm+ov	pm+pt	NA	pm+ov
Protected Phases	7	4	3	8	5	2	3	1	6	7
Permitted Phases	4		8		2		2	6		6
Detector Phase	7	4	3	8	5	2	3	1	6	7
Switch Phase										
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.5	22.5	9.5	22.5	9.5	22.5	9.5	9.5	22.5	9.5
Total Split (s)	20.0	55.0	29.0	64.0	13.0	23.0	29.0	13.0	23.0	20.0
Total Split (%)	16.7%	45.8%	24.2%	53.3%	10.8%	19.2%	24.2%	10.8%	19.2%	16.7%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lead	Lead	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	C-Max	None	C-Max	None	None	None	None	None	None
Act Effect Green (s)	79.4	70.1	90.4	77.0	16.5	9.2	27.9	16.5	9.2	21.0
Actuated g/C Ratio	0.66	0.58	0.75	0.64	0.14	0.08	0.23	0.14	0.08	0.18
v/c Ratio	0.41	0.53	0.59	0.39	0.56	0.38	0.14	0.63	0.42	0.30
Control Delay	8.4	18.2	20.2	9.1	53.8	59.5	7.9	53.6	56.2	6.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	8.4	18.2	20.2	9.1	53.8	59.5	7.9	53.6	56.2	6.5
LOS	A	B	C	A	D	E	A	D	E	A
Approach Delay		16.7		11.7		43.4			37.3	
Approach LOS		B		B		D			D	

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 21 (18%), Referenced to phase 4:EBTL and 8:WBTL, Start of Yellow

Natural Cycle: 80

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.63

Intersection Signal Delay: 19.1

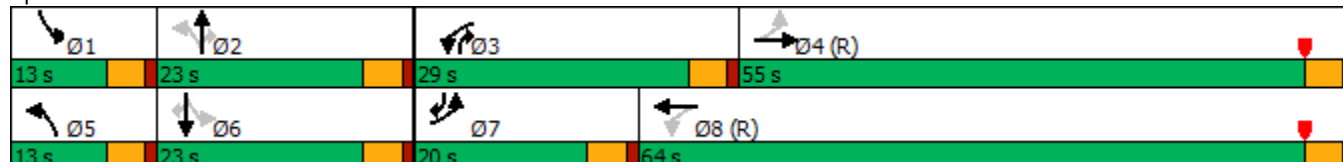
Intersection LOS: B

Intersection Capacity Utilization 66.3%

ICU Level of Service C

Analysis Period (min) 15























Splits and Phases: 4: 64th Ave & Lisbon St



# HCM 6th Signalized Intersection Summary

























## 4: 64th Ave & Lisbon St

2040 Background  
AM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	180	960	50	240	610	175	110	50	55	125	55	100
Future Volume (veh/h)	180	960	50	240	610	175	110	50	55	125	55	100
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	196	1043	54	261	663	190	120	54	60	136	60	109
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	564	2116	110	433	1733	496	250	157	259	258	157	227
Arrive On Green	0.06	0.62	0.62	0.16	1.00	1.00	0.07	0.08	0.08	0.02	0.03	0.03
Sat Flow, veh/h	1781	3437	178	1781	2726	781	1781	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	196	539	558	261	432	421	120	54	60	136	60	109
Grp Sat Flow(s),veh/h/ln	1781	1777	1838	1781	1777	1730	1781	1870	1585	1781	1870	1585
Q Serve(g_s), s	4.8	20.1	20.1	6.9	0.0	0.0	7.3	3.3	3.9	8.4	3.8	7.7
Cycle Q Clear(g_c), s	4.8	20.1	20.1	6.9	0.0	0.0	7.3	3.3	3.9	8.4	3.8	7.7
Prop In Lane	1.00		0.10	1.00		0.45	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	564	1094	1132	433	1130	1100	250	157	259	258	157	227
V/C Ratio(X)	0.35	0.49	0.49	0.60	0.38	0.38	0.48	0.34	0.23	0.53	0.38	0.48
Avail Cap(c_a), veh/h	688	1094	1132	654	1130	1100	250	288	371	258	288	339
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	0.33	0.33	0.33
Upstream Filter(l)	1.00	1.00	1.00	0.92	0.92	0.92	1.00	1.00	1.00	0.99	0.99	0.99
Uniform Delay (d), s/veh	7.1	12.7	12.7	8.9	0.0	0.0	46.0	51.9	43.6	48.8	55.3	50.2
Incr Delay (d2), s/veh	0.4	1.6	1.5	1.3	0.9	0.9	1.4	1.3	0.5	2.0	1.5	1.6
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	3.2	12.9	13.2	3.9	0.5	0.5	6.0	2.9	2.9	7.3	3.4	5.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	7.5	14.3	14.3	10.2	0.9	0.9	47.5	53.2	44.1	50.8	56.8	51.8
LnGrp LOS	A	B	B	B	A	A	D	D	D	D	E	D
Approach Vol, veh/h	1293		1114				234		305			
Approach Delay, s/veh	13.3		3.1				47.9		52.3			
Approach LOS	B		A				D		D			
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	13.0	14.6	14.1	78.4	13.0	14.6	11.6	80.8				
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	8.5	18.5	24.5	50.5	8.5	18.5	15.5	59.5				
Max Q Clear Time (g_c+I1), s	10.4	5.9	8.9	22.1	9.3	9.7	6.8	2.0				
Green Ext Time (p_c), s	0.0	0.3	0.7	8.6	0.0	0.4	0.3	6.8				
Intersection Summary												
HCM 6th Ctrl Delay			16.2									
HCM 6th LOS			B									
Notes												

Timings  
5: Picadilly Rd & 64th Ave

2040 Background  
AM Peak

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	275	705	65	195	480	290	90	370	255	290	260	285
Future Volume (vph)	275	705	65	195	480	290	90	370	255	290	260	285
Turn Type	Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	pm+ov
Protected Phases	7	4	5	3	8	1	5	2	3	1	6	7
Permitted Phases			4			8			2			6
Detector Phase	7	4	5	3	8	1	5	2	3	1	6	7
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	9.5	9.5	22.5	9.5	9.5	22.5	9.5	9.5	22.5	9.5
Total Split (s)	24.0	47.0	19.0	24.0	47.0	25.0	19.0	24.0	24.0	25.0	30.0	24.0
Total Split (%)	20.0%	39.2%	15.8%	20.0%	39.2%	20.8%	15.8%	20.0%	20.0%	20.8%	25.0%	20.0%
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	Lead	Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	C-Max	None	None	C-Max	None	None	None	None	None	None	None
Act Effect Green (s)	15.9	58.0	74.0	12.7	54.8	75.7	11.5	14.9	32.1	16.4	19.8	40.2
Actuated g/C Ratio	0.13	0.48	0.62	0.11	0.46	0.63	0.10	0.12	0.27	0.14	0.16	0.34
v/c Ratio	0.66	0.45	0.07	0.58	0.32	0.31	0.58	0.64	0.56	0.67	0.34	0.46
Control Delay	47.6	16.8	4.2	57.4	23.2	9.6	65.1	54.5	28.2	50.3	40.6	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	47.6	16.8	4.2	57.4	23.2	9.6	65.1	54.5	28.2	50.3	40.6	9.1
LOS	D	B	A	E	C	A	E	D	C	D	D	A
Approach Delay		24.1			26.1			46.4			33.2	
Approach LOS		C			C			D			C	

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 100 (83%), Referenced to phase 4:EBT and 8:WBT, Start of Yellow

Natural Cycle: 70

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.67

Intersection Signal Delay: 31.3









Intersection LOS: C

Intersection Capacity Utilization 55.5%

ICU Level of Service B

Analysis Period (min) 15

























Splits and Phases: 5: Picadilly Rd & 64th Ave

			
Ø1	Ø2	Ø3	Ø4 (R)
25 s	24 s	24 s	47 s
			
Ø5	Ø6	Ø7	Ø8 (R)
19 s	30 s	24 s	47 s



# HCM 6th Signalized Intersection Summary 5: Picadilly Rd & 64th Ave

2040 Background  
AM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	275	705	65	195	480	290	90	370	255	290	260	285
Future Volume (veh/h)	275	705	65	195	480	290	90	370	255	290	260	285
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	299	766	71	212	522	315	98	402	277	315	283	310
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	372	1765	896	279	1669	919	123	830	386	381	1040	494
Arrive On Green	0.04	0.16	0.16	0.08	0.47	0.47	0.07	0.16	0.16	0.18	0.34	0.34
Sat Flow, veh/h	3456	3554	1585	3456	3554	1585	1781	5106	1585	3456	5106	1585
Grp Volume(v), veh/h	299	766	71	212	522	315	98	402	277	315	283	310
Grp Sat Flow(s),veh/h/ln	1728	1777	1585	1728	1777	1585	1781	1702	1585	1728	1702	1585
Q Serve(g_s), s	10.3	23.3	3.9	7.2	11.0	12.5	6.5	8.6	19.2	10.5	4.8	19.9
Cycle Q Clear(g_c), s	10.3	23.3	3.9	7.2	11.0	12.5	6.5	8.6	19.2	10.5	4.8	19.9
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	372	1765	896	279	1669	919	123	830	386	381	1040	494
V/C Ratio(X)	0.80	0.43	0.08	0.76	0.31	0.34	0.80	0.48	0.72	0.83	0.27	0.63
Avail Cap(c_a), veh/h	562	1765	896	562	1669	919	215	830	386	590	1085	507
HCM Platoon Ratio	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00	1.67	1.67	1.67
Upstream Filter(I)	0.84	0.84	0.84	1.00	1.00	1.00	1.00	1.00	1.00	0.98	0.98	0.98
Uniform Delay (d), s/veh	56.6	35.0	20.2	54.0	19.8	13.2	55.0	45.7	41.6	47.9	33.1	29.2
Incr Delay (d2), s/veh	4.2	0.7	0.1	4.2	0.5	1.0	11.2	0.4	6.3	5.6	0.1	2.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	8.4	16.3	2.7	5.9	8.2	8.2	5.9	6.6	12.9	8.0	3.5	11.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	60.9	35.6	20.4	58.3	20.3	14.2	66.2	46.1	48.0	53.4	33.2	31.6
LnGrp LOS	E	D	C	E	C	B	E	D	D	D	C	C
Approach Vol, veh/h	1136			1049			777			908		
Approach Delay, s/veh	41.3			26.1			49.3			39.7		
Approach LOS	D			C			D			D		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	17.7	24.0	14.2	64.1	12.8	29.0	17.4	60.9				
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	20.5	19.5	19.5	42.5	14.5	25.5	19.5	42.5				
Max Q Clear Time (g_c+I1), s	12.5	21.2	9.2	25.3	8.5	21.9	12.3	14.5				
Green Ext Time (p_c), s	0.7	0.0	0.5	5.3	0.1	1.1	0.6	5.0				

## Intersection Summary























HCM 6th Ctrl Delay	38.4
HCM 6th LOS	D

## Notes

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

# Timings 6: Picadilly Rd & 65th Ave

2040 Background  
AM Peak

											
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations											
Traffic Volume (vph)	10	5	60	90	5	20	50	820	65	20	685
Future Volume (vph)	10	5	60	90	5	20	50	820	65	20	685
Turn Type	pm+pt	NA	pm+ov	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA
Protected Phases	7	4	5	3	8		5	2		1	6
Permitted Phases	4		4	8		8	2		2	6	
Detector Phase	7	4	5	3	8	8	5	2	2	1	6
Switch Phase											
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.5	22.5	22.5	9.5	22.5	22.5	22.5	22.5	22.5	9.5	22.5
Total Split (s)	12.0	23.0	25.0	17.0	28.0	28.0	25.0	68.0	68.0	12.0	55.0
Total Split (%)	10.0%	19.2%	20.8%	14.2%	23.3%	23.3%	20.8%	56.7%	56.7%	10.0%	45.8%
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
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
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	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	Lead	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag
Lead-Lag Optimize?	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
Act Effect Green (s)	7.6	5.9	8.5	13.1	10.7	10.7	95.6	91.6	91.6	93.9	89.1
Actuated g/C Ratio	0.06	0.05	0.07	0.11	0.09	0.09	0.80	0.76	0.76	0.78	0.74
v/c Ratio	0.10	0.05	0.33	0.54	0.03	0.08	0.10	0.23	0.06	0.04	0.20
Control Delay	49.7	57.4	8.1	59.5	49.2	0.6	4.0	5.2	0.8	3.4	5.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	49.7	57.4	8.1	59.5	49.2	0.6	4.0	5.2	0.8	3.4	5.7
LOS	D	E	A	E	D	A	A	A	A	A	A
Approach Delay		16.8			48.8			4.8			5.7
Approach LOS		B			D			A			A

## Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 54 (45%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow

Natural Cycle: 80

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.54

Intersection Signal Delay: 8.4

Intersection LOS: A

Intersection Capacity Utilization 42.9%

ICU Level of Service A

























Analysis Period (min) 15





Splits and Phases: 6: Picadilly Rd & 65th Ave



# HCM 6th Signalized Intersection Summary 6: Picadilly Rd & 65th Ave

2040 Background  
AM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	10	5	60	90	5	20	50	820	65	20	685	15
Future Volume (veh/h)	10	5	60	90	5	20	50	820	65	20	685	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	11	5	65	98	5	22	54	891	71	22	745	16
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	158	102	153	245	200	169	582	3618	1123	501	3542	76
Arrive On Green	0.01	0.05	0.05	0.06	0.11	0.11	0.08	1.00	1.00	0.02	0.69	0.69
Sat Flow, veh/h	1781	1870	1585	1781	1870	1585	1781	5106	1585	1781	5144	110
Grp Volume(v), veh/h	11	5	65	98	5	22	54	891	71	22	493	268
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	1870	1585	1781	1702	1585	1781	1702	1851
Q Serve(g_s), s	0.7	0.3	4.6	6.0	0.3	1.5	1.0	0.0	0.0	0.4	6.3	6.3
Cycle Q Clear(g_c), s	0.7	0.3	4.6	6.0	0.3	1.5	1.0	0.0	0.0	0.4	6.3	6.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.06
Lane Grp Cap(c), veh/h	158	102	153	245	200	169	582	3618	1123	501	2344	1274
V/C Ratio(X)	0.07	0.05	0.43	0.40	0.03	0.13	0.09	0.25	0.06	0.04	0.21	0.21
Avail Cap(c_a), veh/h	247	288	310	315	366	310	812	3618	1123	573	2344	1274
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	1.00	1.00	1.00	1.00	1.00	0.82	0.82	0.82	1.00	1.00	1.00
Uniform Delay (d), s/veh	52.5	53.8	51.1	47.4	48.0	48.5	4.5	0.0	0.0	5.1	6.8	6.8
Incr Delay (d2), s/veh	0.2	0.2	1.9	1.1	0.0	0.3	0.1	0.1	0.1	0.0	0.2	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.6	0.3	3.5	5.0	0.2	1.1	0.6	0.1	0.0	0.3	4.0	4.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	52.7	54.0	53.0	48.4	48.0	48.9	4.5	0.1	0.1	5.1	7.0	7.2
LnGrp LOS	D	D	D	D	D	D	A	A	A	A	A	A
Approach Vol, veh/h	81			125			1016			783		
Approach Delay, s/veh	53.0			48.5			0.4			7.0		
Approach LOS	D			D			A			A		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	7.1	89.5	12.3	11.1	9.5	87.1	6.0	17.3				
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	63.5	12.5	18.5	20.5	50.5	7.5	23.5				
Max Q Clear Time (g_c+I1), s	2.4	2.0	8.0	6.6	3.0	8.3	2.7	3.5				
Green Ext Time (p_c), s	0.0	8.3	0.1	0.1	0.1	5.8	0.0	0.0				
Intersection Summary												
HCM 6th Ctrl Delay	8.1											
HCM 6th LOS	A											
Notes												





Intersection						
Int Delay, s/veh	0.3					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	75	70	0	5	0
Future Vol, veh/h	0	75	70	0	5	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	82	76	0	5	0









Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	76	0	0 158 76
Stage 1	-	-	- 76 -
Stage 2	-	-	- 82 -
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	1533	-	- *897 1012
Stage 1	-	-	- *961 -
Stage 2	-	-	- *966 -
Platoon blocked, %	1	-	- 1 1
Mov Cap-1 Maneuver	1533	-	- *897 1012
Mov Cap-2 Maneuver	-	-	- *897 -
Stage 1	-	-	- *961 -
Stage 2	-	-	- *966 -

Approach	EB	WB	SB
HCM Control Delay, s	0	0	9
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1533	-	-	-	897
HCM Lane V/C Ratio	-	-	-	-	0.006
HCM Control Delay (s)	0	-	-	-	9
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0

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










Intersection						
Int Delay, s/veh	0.6					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	75	70	5	10	0
Future Vol, veh/h	0	75	70	5	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	0	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	82	76	5	11	0
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	81	0	-	0	161	79
Stage 1	-	-	-	-	79	-
Stage 2	-	-	-	-	82	-
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	1526	-	-	-	*875	1008
Stage 1	-	-	-	-	*958	-
Stage 2	-	-	-	-	*966	-
Platoon blocked, %	1	-	-	-	1	1
Mov Cap-1 Maneuver	1526	-	-	-	*875	1008
Mov Cap-2 Maneuver	-	-	-	-	*875	-
Stage 1	-	-	-	-	*958	-
Stage 2	-	-	-	-	*966	-
Approach	EB	WB		SB		
HCM Control Delay, s	0	0		9.2		
HCM LOS	A					
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1526	-	-	-	875	
HCM Lane V/C Ratio	-	-	-	-	0.012	
HCM Control Delay (s)	0	-	-	-	9.2	
HCM Lane LOS	A	-	-	-	A	
HCM 95th %tile Q(veh)	0	-	-	-	0	
Notes						
~: Volume exceeds capacity		\$: Delay exceeds 300s		+: Computation Not Defined		*: All major volume in platoon

Intersection												
Int Delay, s/veh	2.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	5	45	10	5	5	50	150	10	5	250	5
Future Vol, veh/h	5	5	45	10	5	5	50	150	10	5	250	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	50	-	-	50	-	-	50	-	-	50	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	5	5	49	11	5	5	54	163	11	5	272	5

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	567	567	275	589	564	169	277	0	0	174	0	0
Stage 1	285	285	-	277	277	-	-	-	-	-	-	-
Stage 2	282	282	-	312	287	-	-	-	-	-	-	-
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	459	447	764	442	448	953	1286	-	-	1430	-	-
Stage 1	722	676	-	778	703	-	-	-	-	-	-	-
Stage 2	772	699	-	699	674	-	-	-	-	-	-	-
Platoon blocked, %	1	1		1	1	1		-	-	1	-	-
Mov Cap-1 Maneuver	437	427	764	396	428	953	1286	-	-	1430	-	-
Mov Cap-2 Maneuver	437	427	-	396	428	-	-	-	-	-	-	-
Stage 1	692	674	-	745	674	-	-	-	-	-	-	-
Stage 2	730	669	-	647	672	-	-	-	-	-	-	-



















Approach	EB		WB		NB		SB	
HCM Control Delay, s	10.8		12.8		1.9		0.1	
HCM LOS	B		B					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1286	-	-	437	708	396	591	1430	-	-
HCM Lane V/C Ratio	0.042	-	-	0.012	0.077	0.027	0.018	0.004	-	-
HCM Control Delay (s)	7.9	-	-	13.3	10.5	14.3	11.2	7.5	-	-
HCM Lane LOS	A	-	-	B	B	B	B	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0	0.2	0.1	0.1	0	-	-

Intersection												
Int Delay, s/veh	2.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	5	45	25	5	5	50	180	40	5	270	5
Future Vol, veh/h	5	5	45	25	5	5	50	180	40	5	270	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	50	-	-	50	-	-	50	-	-	50	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	5	5	49	27	5	5	54	196	43	5	293	5
Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	637	653	296	637	612	196	298	0	0	239	0	0
Stage 1	306	306	-	304	304	-	-	-	-	-	-	-
Stage 2	331	347	-	333	308	-	-	-	-	-	-	-
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	413	397	743	413	422	940	1263	-	-	1353	-	-
Stage 1	704	662	-	763	689	-	-	-	-	-	-	-
Stage 2	735	655	-	681	660	-	-	-	-	-	-	-
Platoon blocked, %	1	1		1	1	1		-	-	1	-	-
Mov Cap-1 Maneuver	392	378	743	368	403	940	1263	-	-	1353	-	-
Mov Cap-2 Maneuver	392	378	-	368	403	-	-	-	-	-	-	-
Stage 1	674	659	-	730	659	-	-	-	-	-	-	-
Stage 2	694	627	-	629	657	-	-	-	-	-	-	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	11.1			14.4			1.5			0.1		
HCM LOS	B			B								
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR		
Capacity (veh/h)	1263	-	-	392	678	368	564	1353	-	-		
HCM Lane V/C Ratio	0.043	-	-	0.014	0.08	0.074	0.019	0.004	-	-		
HCM Control Delay (s)	8	-	-	14.3	10.8	15.6	11.5	7.7	-	-		
HCM Lane LOS	A	-	-	B	B	C	B	A	-	-		
HCM 95th %tile Q(veh)	0.1	-	-	0	0.3	0.2	0.1	0	-	-		

Timings  
3: Lisbon St & 65th Ave

2040 Background  
PM Peak

									
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	15	5	220	5	90	200	310	10	250
Future Volume (vph)	15	5	220	5	90	200	310	10	250
Turn Type	pm+pt	NA	pm+pt	NA	pm+pt	NA	Perm	pm+pt	NA
Protected Phases	7	4	3	8	5	2		1	6
Permitted Phases	4		8		2		2	6	
Detector Phase	7	4	3	8	5	2	2	1	6
Switch Phase									
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.5	22.5	9.5	22.5	9.5	22.5	22.5	9.5	22.5
Total Split (s)	12.0	28.0	30.0	46.0	15.0	50.0	50.0	12.0	47.0
Total Split (%)	10.0%	23.3%	25.0%	38.3%	12.5%	41.7%	41.7%	10.0%	39.2%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	C-Min	C-Min	None	C-Min
Act Effect Green (s)	12.3	7.1	29.2	24.5	81.8	79.7	79.7	75.2	69.4
Actuated g/C Ratio	0.10	0.06	0.24	0.20	0.68	0.66	0.66	0.63	0.58
v/c Ratio	0.10	0.49	0.69	0.06	0.14	0.18	0.29	0.01	0.26
Control Delay	32.9	23.6	48.8	20.2	6.2	6.9	0.9	9.2	15.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	32.9	23.6	48.8	20.2	6.2	6.9	0.9	9.2	15.5
LOS	C	C	D	C	A	A	A	A	B
Approach Delay		25.1		46.5		3.7			15.3
Approach LOS		C		D		A			B

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 60 (50%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow

Natural Cycle: 65

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.69

Intersection Signal Delay: 16.4

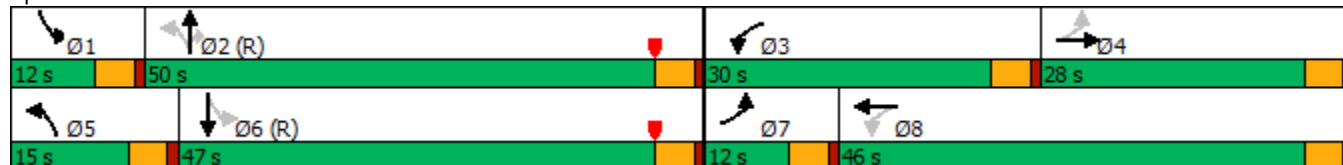
Intersection LOS: B

Intersection Capacity Utilization 48.9%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 3: Lisbon St & 65th Ave



























# HCM 6th Signalized Intersection Summary





















## 3: Lisbon St & 65th Ave

2040 Background  
PM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	15	5	70	220	5	15	90	200	310	10	250	10
Future Volume (veh/h)	15	5	70	220	5	15	90	200	310	10	250	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	16	5	76	239	5	16	98	217	337	11	272	11
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	185	7	101	334	75	239	713	1177	997	597	1074	43
Arrive On Green	0.02	0.07	0.07	0.14	0.19	0.19	0.07	1.00	1.00	0.01	0.60	0.60
Sat Flow, veh/h	1781	99	1501	1781	392	1253	1781	1870	1585	1781	1785	72
Grp Volume(v), veh/h	16	0	81	239	0	21	98	217	337	11	0	283
Grp Sat Flow(s),veh/h/ln	1781	0	1600	1781	0	1645	1781	1870	1585	1781	0	1857
Q Serve(g_s), s	1.0	0.0	6.0	14.4	0.0	1.3	2.5	0.0	0.0	0.3	0.0	8.6
Cycle Q Clear(g_c), s	1.0	0.0	6.0	14.4	0.0	1.3	2.5	0.0	0.0	0.3	0.0	8.6
Prop In Lane	1.00		0.94	1.00		0.76	1.00		1.00	1.00		0.04
Lane Grp Cap(c), veh/h	185	0	108	334	0	314	713	1177	997	597	0	1118
V/C Ratio(X)	0.09	0.00	0.75	0.72	0.00	0.07	0.14	0.18	0.34	0.02	0.00	0.25
Avail Cap(c_a), veh/h	265	0	313	462	0	569	797	1177	997	685	0	1118
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.67	1.67	1.67	1.00	1.00	1.00
Upstream Filter(l)	1.00	0.00	1.00	1.00	0.00	1.00	0.49	0.49	0.49	1.00	0.00	1.00
Uniform Delay (d), s/veh	50.7	0.0	54.9	42.0	0.0	39.8	8.0	0.0	0.0	9.0	0.0	11.2
Incr Delay (d2), s/veh	0.2	0.0	9.9	3.2	0.0	0.1	0.0	0.2	0.5	0.0	0.0	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.8	0.0	4.9	10.8	0.0	0.9	1.6	0.1	0.2	0.2	0.0	6.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	50.9	0.0	64.8	45.2	0.0	39.9	8.1	0.2	0.5	9.0	0.0	11.8
LnGrp LOS	D	A	E	D	A	D	A	A	A	A	A	B
Approach Vol, veh/h	97				260				652			
Approach Delay, s/veh	62.5				44.8				1.5			
Approach LOS	E				D				A			
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	6.0	80.0	21.4	12.6	9.3	76.7	6.6	27.4				
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	7.5	45.5	25.5	23.5	10.5	42.5	7.5	41.5				
Max Q Clear Time (g_c+l1), s	2.3	2.0	16.4	8.0	4.5	10.6	3.0	3.3				
Green Ext Time (p_c), s	0.0	2.6	0.5	0.3	0.1	1.8	0.0	0.1				
Intersection Summary												
HCM 6th Ctrl Delay	17.0											
HCM 6th LOS	B											

Timings  
4: 64th Ave & Lisbon St

2040 Background  
PM Peak

										
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	340	900	265	925	135	70	70	280	50	200
Future Volume (vph)	340	900	265	925	135	70	70	280	50	200
Turn Type	pm+pt	NA	pm+pt	NA	pm+pt	NA	pm+ov	pm+pt	NA	pm+ov
Protected Phases	7	4	3	8	5	2	3	1	6	7
Permitted Phases	4		8		2		2	6		6
Detector Phase	7	4	3	8	5	2	3	1	6	7
Switch Phase										
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.5	22.5	9.5	22.5	9.5	22.5	9.5	9.5	22.5	9.5
Total Split (s)	28.0	56.0	25.0	53.0	14.0	19.0	25.0	20.0	25.0	28.0
Total Split (%)	23.3%	46.7%	20.8%	44.2%	11.7%	15.8%	20.8%	16.7%	20.8%	23.3%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lead	Lead	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	C-Max	None	C-Max	None	None	None	None	None	None
Act Effect Green (s)	82.6	60.9	72.3	54.8	19.7	10.2	30.1	28.1	14.9	41.0
Actuated g/C Ratio	0.69	0.51	0.60	0.46	0.16	0.08	0.25	0.23	0.12	0.34
v/c Ratio	0.87	0.63	0.72	0.78	0.57	0.48	0.16	0.96	0.23	0.36
Control Delay	52.4	25.0	33.9	19.7	47.3	61.6	4.3	74.0	38.8	14.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	52.4	25.0	33.9	19.7	47.3	61.6	4.3	74.0	38.8	14.1
LOS	D	C	C	B	D	E	A	E	D	B
Approach Delay		31.8		22.4		40.0			48.1	
Approach LOS		C		C		D			D	

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 41 (34%), Referenced to phase 4:EBTL and 8:WBTL, Start of Yellow

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.96

Intersection Signal Delay: 31.1

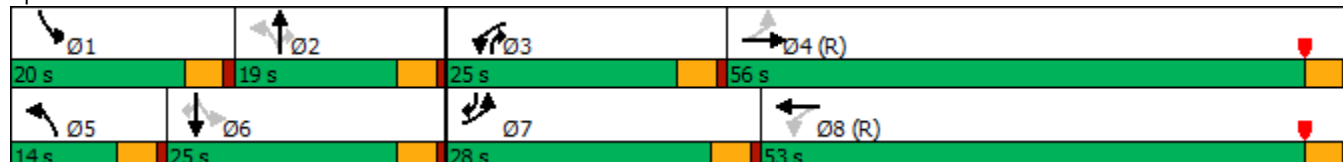
Intersection LOS: C

Intersection Capacity Utilization 84.5%

ICU Level of Service E

Analysis Period (min) 15























Splits and Phases: 4: 64th Ave & Lisbon St



# HCM 6th Signalized Intersection Summary

























## 4: 64th Ave & Lisbon St

2040 Background  
PM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	340	900	125	265	925	210	135	70	70	280	50	200
Future Volume (veh/h)	340	900	125	265	925	210	135	70	70	280	50	200
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	370	978	136	288	1005	228	147	76	76	304	54	217
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	505	1662	231	403	1477	334	298	164	302	351	258	409
Arrive On Green	0.12	0.53	0.53	0.21	1.00	1.00	0.08	0.09	0.09	0.04	0.05	0.05
Sat Flow, veh/h	1781	3133	435	1781	2879	651	1781	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	370	554	560	288	619	614	147	76	76	304	54	217
Grp Sat Flow(s),veh/h/ln	1781	1777	1792	1781	1777	1753	1781	1870	1585	1781	1870	1585
Q Serve(g_s), s	11.5	25.6	25.6	9.8	0.0	0.0	9.0	4.6	4.9	15.5	3.3	14.1
Cycle Q Clear(g_c), s	11.5	25.6	25.6	9.8	0.0	0.0	9.0	4.6	4.9	15.5	3.3	14.1
Prop In Lane	1.00		0.24	1.00		0.37	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	505	942	950	403	912	899	298	164	302	351	258	409
V/C Ratio(X)	0.73	0.59	0.59	0.71	0.68	0.68	0.49	0.46	0.25	0.87	0.21	0.53
Avail Cap(c_a), veh/h	641	942	950	525	912	899	298	226	354	351	320	461
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	0.33	0.33	0.33
Upstream Filter(I)	1.00	1.00	1.00	0.63	0.63	0.63	1.00	1.00	1.00	0.89	0.89	0.89
Uniform Delay (d), s/veh	10.2	19.2	19.2	13.6	0.0	0.0	45.4	52.0	41.3	48.0	51.0	42.4
Incr Delay (d2), s/veh	3.2	2.7	2.7	2.0	2.6	2.7	1.3	2.0	0.4	18.0	0.4	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	8.4	16.4	16.6	5.5	1.2	1.2	7.3	4.1	3.5	5.5	2.9	9.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	13.4	21.9	21.9	15.6	2.6	2.7	46.6	54.1	41.7	66.0	51.3	43.4
LnGrp LOS	B	C	C	B	A	A	D	D	D	E	D	D
Approach Vol, veh/h		1484			1521			299			575	
Approach Delay, s/veh		19.8			5.1			47.3			56.1	
Approach LOS		B			A			D			E	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	20.0	15.0	16.8	68.1	14.0	21.0	18.9	66.1				
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	15.5	14.5	20.5	51.5	9.5	20.5	23.5	48.5				
Max Q Clear Time (g_c+I1), s	17.5	6.9	11.8	27.6	11.0	16.1	13.5	2.0				
Green Ext Time (p_c), s	0.0	0.3	0.6	8.3	0.0	0.4	0.9	11.8				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay			21.5									
HCM 6th LOS			C									
<b>Notes</b>												
User approved pedestrian interval to be less than phase max green.												

Timings  
5: Picadilly Rd & 64th Ave









2040 Background  
PM Peak

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	260	785	120	410	1065	435	135	350	315	450	410	350
Future Volume (vph)	260	785	120	410	1065	435	135	350	315	450	410	350
Turn Type	Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	pm+ov
Protected Phases	7	4	5	3	8	1	5	2	3	1	6	7
Permitted Phases			4			8			2			6
Detector Phase	7	4	5	3	8	1	5	2	3	1	6	7
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	9.5	9.5	22.5	9.5	9.5	22.5	9.5	9.5	22.5	9.5
Total Split (s)	19.0	48.0	22.0	24.0	53.0	26.0	22.0	22.0	24.0	26.0	26.0	19.0
Total Split (%)	15.8%	40.0%	18.3%	20.0%	44.2%	21.7%	18.3%	18.3%	20.0%	21.7%	21.7%	15.8%
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	Lead	Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	C-Max	None	None	C-Max	None	None	None	None	None	None	None
Act Effect Green (s)	14.1	47.7	66.7	19.5	53.1	78.1	14.5	14.2	38.3	20.5	20.2	38.9
Actuated g/C Ratio	0.12	0.40	0.56	0.16	0.44	0.65	0.12	0.12	0.32	0.17	0.17	0.32
v/c Ratio	0.70	0.61	0.14	0.80	0.74	0.45	0.69	0.63	0.63	0.83	0.52	0.66
Control Delay	75.2	22.9	1.2	59.8	32.3	11.2	66.6	55.0	34.1	54.5	39.6	26.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	75.2	22.9	1.2	59.8	32.3	11.2	66.6	55.0	34.1	54.5	39.6	26.5
LOS	E	C	A	E	C	B	E	E	C	D	D	C
Approach Delay		32.3			33.4			48.8			41.4	
Approach LOS		C			C			D			D	

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 99 (83%), Referenced to phase 4:EBT and 8:WBT, Start of Yellow
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.83
Intersection Signal Delay: 37.5
Intersection Capacity Utilization 71.5%
Analysis Period (min) 15
Intersection LOS: D
ICU Level of Service C

























Splits and Phases: 5: Picadilly Rd & 64th Ave

 Ø1	 Ø2	 Ø3	 Ø4 (R)
26 s	22 s	24 s	48 s
 Ø5	 Ø6	 Ø7	 Ø8 (R)
22 s	26 s	19 s	53 s

# HCM 6th Signalized Intersection Summary

## 5: Picadilly Rd & 64th Ave

2040 Background  
PM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	260	785	120	410	1065	435	135	350	315	450	410	350
Future Volume (veh/h)	260	785	120	410	1065	435	135	350	315	450	410	350
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	283	853	130	446	1158	473	147	380	342	489	446	380
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	342	1407	783	507	1577	959	175	745	464	559	1067	488
Arrive On Green	0.13	0.53	0.53	0.15	0.44	0.44	0.10	0.15	0.15	0.05	0.07	0.07
Sat Flow, veh/h	3456	3554	1585	3456	3554	1585	1781	5106	1585	3456	5106	1585
Grp Volume(v), veh/h	283	853	130	446	1158	473	147	380	342	489	446	380
Grp Sat Flow(s),veh/h/ln	1728	1777	1585	1728	1777	1585	1781	1702	1585	1728	1702	1585
Q Serve(g_s), s	9.6	20.0	4.4	15.2	32.3	20.1	9.7	8.2	17.5	16.9	10.0	25.1
Cycle Q Clear(g_c), s	9.6	20.0	4.4	15.2	32.3	20.1	9.7	8.2	17.5	16.9	10.0	25.1
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	342	1407	783	507	1577	959	175	745	464	559	1067	488
V/C Ratio(X)	0.83	0.61	0.17	0.88	0.73	0.49	0.84	0.51	0.74	0.88	0.42	0.78
Avail Cap(c_a), veh/h	418	1407	783	562	1577	959	260	745	464	619	1067	488
HCM Platoon Ratio	1.33	1.33	1.33	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33
Upstream Filter(I)	0.69	0.69	0.69	1.00	1.00	1.00	1.00	1.00	1.00	0.84	0.84	0.84
Uniform Delay (d), s/veh	51.1	21.9	12.9	50.2	27.5	13.3	53.2	47.3	38.3	55.6	48.9	44.2
Incr Delay (d2), s/veh	7.9	1.3	0.3	14.0	3.1	1.8	14.2	0.6	6.1	10.7	0.2	6.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	7.2	11.5	2.9	12.0	20.3	11.9	8.7	6.4	14.9	13.1	7.8	16.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	59.0	23.3	13.2	64.2	30.6	15.1	67.4	47.9	44.4	66.3	49.1	50.9
LnGrp LOS	E	C	B	E	C	B	E	D	D	E	D	D
Approach Vol, veh/h	1266			2077			869			1315		
Approach Delay, s/veh	30.2			34.3			49.8			56.0		
Approach LOS	C			C			D			E		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	23.9	22.0	22.1	52.0	16.3	29.6	16.4	57.7				
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	21.5	17.5	19.5	43.5	17.5	21.5	14.5	48.5				
Max Q Clear Time (g_c+I1), s	18.9	19.5	17.2	22.0	11.7	27.1	11.6	34.3				
Green Ext Time (p_c), s	0.5	0.0	0.4	6.7	0.2	0.0	0.3	8.6				

### Intersection Summary























HCM 6th Ctrl Delay	41.0
HCM 6th LOS	D

### Notes

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

# Timings 6: Picadilly Rd & 65th Ave

2040 Background  
PM Peak

											
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations											
Traffic Volume (vph)	50	5	235	145	5	45	115	770	160	45	830
Future Volume (vph)	50	5	235	145	5	45	115	770	160	45	830
Turn Type	pm+pt	NA	pm+ov	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA
Protected Phases	7	4	5	3	8		5	2		1	6
Permitted Phases	4		4	8		8	2		2	6	
Detector Phase	7	4	5	3	8	8	5	2	2	1	6
Switch Phase											
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.5	22.5	22.5	9.5	22.5	22.5	22.5	22.5	22.5	9.5	22.5
Total Split (s)	12.0	23.0	25.0	18.0	29.0	29.0	25.0	67.0	67.0	12.0	54.0
Total Split (%)	10.0%	19.2%	20.8%	15.0%	24.2%	24.2%	20.8%	55.8%	55.8%	10.0%	45.0%
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
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
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	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	Lead	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag
Lead-Lag Optimize?	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
Act Effect Green (s)	8.5	5.9	17.7	17.6	8.0	8.0	93.4	84.6	84.6	79.7	73.4
Actuated g/C Ratio	0.07	0.05	0.15	0.15	0.07	0.07	0.78	0.70	0.70	0.66	0.61
v/c Ratio	0.43	0.05	0.75	0.63	0.04	0.21	0.25	0.34	0.15	0.10	0.43
Control Delay	58.0	46.0	31.5	58.6	51.6	2.1	8.3	10.9	5.1	5.6	14.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	58.0	46.0	31.5	58.6	51.6	2.1	8.3	10.9	5.1	5.6	14.5
LOS	E	D	C	E	D	A	A	B	A	A	B
Approach Delay		36.3			45.4			9.7			14.0
Approach LOS		D			D			A			B

## Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 38 (32%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow

Natural Cycle: 80

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.75

Intersection Signal Delay: 17.3

Intersection LOS: B

Intersection Capacity Utilization 57.7%

ICU Level of Service B

























Analysis Period (min) 15




Splits and Phases: 6: Picadilly Rd & 65th Ave






# HCM 6th Signalized Intersection Summary 6: Picadilly Rd & 65th Ave

2040 Background  
PM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	50	5	235	145	5	45	115	770	160	45	830	30
Future Volume (veh/h)	50	5	235	145	5	45	115	770	160	45	830	30
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	54	5	255	158	5	49	125	837	174	49	902	33
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	331	288	322	389	389	330	389	2037	909	431	1949	71
Arrive On Green	0.04	0.15	0.15	0.09	0.21	0.21	0.10	1.00	1.00	0.03	0.56	0.56
Sat Flow, veh/h	1781	1870	1585	1781	1870	1585	1781	3554	1585	1781	3496	128
Grp Volume(v), veh/h	54	5	255	158	5	49	125	837	174	49	458	477
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	1870	1585	1781	1777	1585	1781	1777	1847
Q Serve(g_s), s	3.0	0.3	18.3	8.6	0.3	3.0	3.7	0.0	0.0	1.4	18.5	18.5
Cycle Q Clear(g_c), s	3.0	0.3	18.3	8.6	0.3	3.0	3.7	0.0	0.0	1.4	18.5	18.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.07
Lane Grp Cap(c), veh/h	331	288	322	389	389	330	389	2037	909	431	991	1030
V/C Ratio(X)	0.16	0.02	0.79	0.41	0.01	0.15	0.32	0.41	0.19	0.11	0.46	0.46
Avail Cap(c_a), veh/h	379	288	322	430	389	330	606	2037	909	482	991	1030
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	1.00	1.00	1.00	1.00	1.00	0.80	0.80	0.80	1.00	1.00	1.00
Uniform Delay (d), s/veh	40.7	43.0	45.4	36.1	37.7	38.8	11.2	0.0	0.0	10.3	15.8	15.8
Incr Delay (d2), s/veh	0.2	0.0	12.5	0.7	0.0	0.2	0.4	0.5	0.4	0.1	1.6	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	2.5	0.2	13.0	6.9	0.2	2.2	2.4	0.3	0.2	1.0	12.3	12.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	40.9	43.1	57.9	36.8	37.7	39.0	11.5	0.5	0.4	10.4	17.4	17.3
LnGrp LOS	D	D	E	D	D	D	B	A	A	B	B	B
Approach Vol, veh/h		314			212			1136			984	
Approach Delay, s/veh		54.8			37.3			1.7			17.0	
Approach LOS		D			D			A			B	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	8.5	73.3	15.2	23.0	10.4	71.4	8.7	29.5				
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	62.5	13.5	18.5	20.5	49.5	7.5	24.5				
Max Q Clear Time (g_c+I1), s	3.4	2.0	10.6	20.3	5.7	20.5	5.0	5.0				
Green Ext Time (p_c), s	0.0	8.2	0.1	0.0	0.3	6.9	0.0	0.1				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay			16.5									
HCM 6th LOS			B									
<b>Notes</b>												
User approved pedestrian interval to be less than phase max green.												

Intersection						
Int Delay, s/veh	0.1					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	290	150	5	5	0
Future Vol, veh/h	0	290	150	5	5	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	315	163	5	5	0
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	168	0	-	0	481	166
Stage 1	-	-	-	-	166	-
Stage 2	-	-	-	-	315	-
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	1438	-	-	-	*678	958
Stage 1	-	-	-	-	*906	-
Stage 2	-	-	-	-	*794	-
Platoon blocked, %	1	-	-	-	1	1
Mov Cap-1 Maneuver	1438	-	-	-	*678	958
Mov Cap-2 Maneuver	-	-	-	-	*678	-
Stage 1	-	-	-	-	*906	-
Stage 2	-	-	-	-	*794	-
Approach	EB	WB		SB		
HCM Control Delay, s	0	0		10.4		
HCM LOS	B					
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1438	-	-	-	678	
HCM Lane V/C Ratio	-	-	-	-	0.008	
HCM Control Delay (s)	0	-	-	-	10.4	
HCM Lane LOS	A	-	-	-	B	
HCM 95th %tile Q(veh)	0	-	-	-	0	
Notes						
~: Volume exceeds capacity		\$: Delay exceeds 300s		+: Computation Not Defined		*: All major volume in platoon








Intersection						
Int Delay, s/veh	0.1					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	290	150	10	5	0
Future Vol, veh/h	0	290	150	10	5	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	315	163	11	5	0
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	174	0	-	0	484	169
Stage 1	-	-	-	-	169	-
Stage 2	-	-	-	-	315	-
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	1430	-	-	-	*688	953
Stage 1	-	-	-	-	*903	-
Stage 2	-	-	-	-	*794	-
Platoon blocked, %	1	-	-	-	1	1
Mov Cap-1 Maneuver	1430	-	-	-	*688	953
Mov Cap-2 Maneuver	-	-	-	-	*688	-
Stage 1	-	-	-	-	*903	-
Stage 2	-	-	-	-	*794	-
Approach	EB	WB		SB		
HCM Control Delay, s	0	0		10.3		
HCM LOS	B					
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1430	-	-	-	688	
HCM Lane V/C Ratio	-	-	-	-	0.008	
HCM Control Delay (s)	0	-	-	-	10.3	
HCM Lane LOS	A	-	-	-	B	
HCM 95th %tile Q(veh)	0	-	-	-	0	
Notes						
~: Volume exceeds capacity		\$: Delay exceeds 300s		+: Computation Not Defined		*: All major volume in platoon

## APPENDIX C. TOTAL TRAFFIC LOS WORKSHEETS

HCM 6th TWSC  
2: Lisbon St & 66th Ave

Short Term Total  
AM Peak

Intersection						
Int Delay, s/veh	3.8					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	68	0	21	24	0	54
Future Vol, veh/h	68	0	21	24	0	54
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	50	50	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	74	0	23	26	0	59




Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	82	23	0	0	49
Stage 1	23	-	-	-	-
Stage 2	59	-	-	-	-
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	920	1054	-	-	1558
Stage 1	1000	-	-	-	-
Stage 2	964	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	920	1054	-	-	1558
Mov Cap-2 Maneuver	920	-	-	-	-
Stage 1	1000	-	-	-	-
Stage 2	964	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.3	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	920	1558
HCM Lane V/C Ratio	-	-	0.08	-
HCM Control Delay (s)	-	-	9.3	0
HCM Lane LOS	-	-	A	A
HCM 95th %tile Q(veh)	-	-	0.3	0

Intersection




Int Delay, s/veh 3.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	3	8	28	4	13	8
Future Vol, veh/h	3	8	28	4	13	8
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	3	9	30	4	14	9

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	34	0	0 47 32
Stage 1	-	-	- 32 -
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	1578	-	- 963 1042
Stage 1	-	-	- 991 -
Stage 2	-	-	- 1008 -
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	1578	-	- 961 1042
Mov Cap-2 Maneuver	-	-	- 961 -
Stage 1	-	-	- 989 -
Stage 2	-	-	- 1008 -

Approach	EB	WB	SB
HCM Control Delay, s	2	0	8.7
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1578	-	-	-	990
HCM Lane V/C Ratio	0.002	-	-	-	0.023
HCM Control Delay (s)	7.3	0	-	-	8.7
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Intersection						
Int Delay, s/veh	3					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	3	18	23	4	13	9
Future Vol, veh/h	3	18	23	4	13	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	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	3	20	25	4	14	10

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	29	0	53
Stage 1	-	-	27
Stage 2	-	-	26
Critical Hdwy	4.12	-	6.42
Critical Hdwy Stg 1	-	-	5.42
Critical Hdwy Stg 2	-	-	5.42
Follow-up Hdwy	2.218	-	3.518
Pot Cap-1 Maneuver	1584	-	955
Stage 1	-	-	996
Stage 2	-	-	997
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	1584	-	953
Mov Cap-2 Maneuver	-	-	953
Stage 1	-	-	994
Stage 2	-	-	997

Approach	EB	WB	SB
HCM Control Delay, s	1	0	8.7
HCM LOS	A		

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1584	-	-	-	990
HCM Lane V/C Ratio	0.002	-	-	-	0.024
HCM Control Delay (s)	7.3	0	-	-	8.7
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Intersection												
Int Delay, s/veh	15.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱		↰	↱		↰	↱	↱	↰	↱	↱
Traffic Vol, veh/h	35	387	10	200	332	16	95	5	35	43	5	110
Future Vol, veh/h	35	387	10	200	332	16	95	5	35	43	5	110
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	250	-	-	250	-	-	250	-	250	250	-	250
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	38	421	11	217	361	17	103	5	38	47	5	120

























Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	378	0	0	432	0	0	1120	1315	216	1093	1312	189
Stage 1	-	-	-	-	-	-	503	503	-	804	804	-
Stage 2	-	-	-	-	-	-	617	812	-	289	508	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	1177	-	-	1124	-	-	161	157	789	169	157	821
Stage 1	-	-	-	-	-	-	519	540	-	343	394	-
Stage 2	-	-	-	-	-	-	444	390	-	694	537	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1177	-	-	1124	-	-	111	123	789	129	123	821
Mov Cap-2 Maneuver	-	-	-	-	-	-	111	123	-	129	123	-
Stage 1	-	-	-	-	-	-	502	523	-	332	318	-
Stage 2	-	-	-	-	-	-	301	315	-	633	520	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.7			3.3			101.9			21.2		
HCM LOS							F			C		

Minor Lane/Major Mvmt	NBLn1	NBLn2	NBLn3	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2	SBLn3
Capacity (veh/h)	111	123	789	1177	-	-	1124	-	-	129	123	821
HCM Lane V/C Ratio	0.93	0.044	0.048	0.032	-	-	0.193	-	-	0.362	0.044	0.146
HCM Control Delay (s)	139.3	35.6	9.8	8.2	-	-	9	-	-	48	35.6	10.1
HCM Lane LOS	F	E	A	A	-	-	A	-	-	E	E	B
HCM 95th %tile Q(veh)	5.8	0.1	0.2	0.1	-	-	0.7	-	-	1.5	0.1	0.5

Timings  
17: Picadilly Rd & 64th Ave

Short Term Total  
AM Peak

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1	432	62	175	404	13	122	6	225	44	21	7
Future Volume (vph)	1	432	62	175	404	13	122	6	225	44	21	7
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	43.0	43.0	27.0	58.0	58.0	20.0	38.0	38.0	12.0	30.0	30.0
Total Split (%)	10.0%	35.8%	35.8%	22.5%	48.3%	48.3%	16.7%	31.7%	31.7%	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	C-Max	C-Max	None	C-Max	C-Max	None	None	None	None	None	None
Act Effect Green (s)	80.9	75.4	75.4	89.4	87.4	87.4	21.6	12.1	12.1	11.8	7.0	7.0
Actuated g/C Ratio	0.67	0.63	0.63	0.74	0.73	0.73	0.18	0.10	0.10	0.10	0.06	0.06
v/c Ratio	0.00	0.21	0.06	0.28	0.17	0.01	0.51	0.04	0.65	0.29	0.21	0.03
Control Delay	6.0	11.3	0.1	6.5	6.6	0.0	48.7	45.8	14.3	43.9	57.8	0.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	6.0	11.3	0.1	6.5	6.6	0.0	48.7	45.8	14.3	43.9	57.8	0.3
LOS	A	B	A	A	A	A	D	D	B	D	E	A
Approach Delay		9.9			6.4			26.8			43.5	
Approach LOS		A			A			C			D	

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

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

Natural Cycle: 65

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.65

Intersection Signal Delay: 14.1

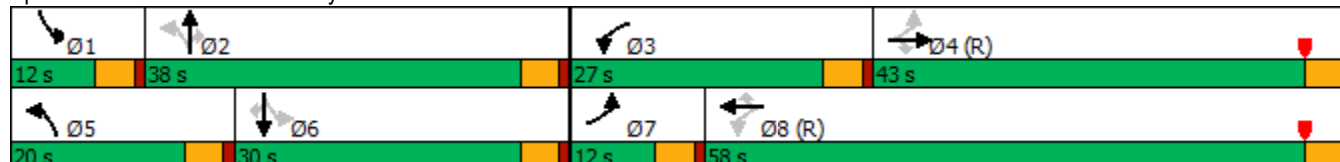
Intersection LOS: B

Intersection Capacity Utilization 46.3%

ICU Level of Service A

























Analysis Period (min) 15

Splits and Phases: 17: Picadilly Rd & 64th Ave



# HCM 6th Signalized Intersection Summary 17: Picadilly Rd & 64th Ave

Short Term Total  
AM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1	432	62	175	404	13	122	6	225	44	21	7
Future Volume (veh/h)	1	432	62	175	404	13	122	6	225	44	21	7
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	1	470	67	190	439	14	133	7	245	48	23	8
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	609	2069	923	619	2281	1017	362	325	275	263	238	202
Arrive On Green	0.00	0.58	0.58	0.06	0.64	0.64	0.08	0.17	0.17	0.03	0.13	0.13
Sat Flow, veh/h	1781	3554	1585	1781	3554	1585	1781	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	1	470	67	190	439	14	133	7	245	48	23	8
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1781	1777	1585	1781	1870	1585	1781	1870	1585
Q Serve(g_s), s	0.0	7.6	2.2	4.9	6.1	0.4	7.5	0.4	18.1	2.8	1.3	0.5
Cycle Q Clear(g_c), s	0.0	7.6	2.2	4.9	6.1	0.4	7.5	0.4	18.1	2.8	1.3	0.5
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	609	2069	923	619	2281	1017	362	325	275	263	238	202
V/C Ratio(X)	0.00	0.23	0.07	0.31	0.19	0.01	0.37	0.02	0.89	0.18	0.10	0.04
Avail Cap(c_a), veh/h	717	2069	923	844	2281	1017	450	522	442	315	397	337
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	1.00	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	10.4	12.1	10.9	8.3	8.8	7.8	39.2	41.1	48.5	43.5	46.3	45.9
Incr Delay (d2), s/veh	0.0	0.3	0.2	0.3	0.2	0.0	0.6	0.0	12.7	0.3	0.2	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	5.5	1.5	3.3	4.2	0.2	6.1	0.3	12.8	2.3	1.1	0.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	10.4	12.3	11.1	8.5	9.0	7.8	39.8	41.2	61.2	43.8	46.5	46.0
LnGrp LOS	B	B	B	A	A	A	D	D	E	D	D	D
Approach Vol, veh/h		538			643			385			79	
Approach Delay, s/veh		12.2			8.8			53.4			44.8	
Approach LOS		B			A			D			D	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	8.5	25.3	11.8	74.4	14.1	19.8	4.7	81.5				
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	33.5	22.5	38.5	15.5	25.5	7.5	53.5				
Max Q Clear Time (g_c+I1), s	4.8	20.1	6.9	9.6	9.5	3.3	2.0	8.1				
Green Ext Time (p_c), s	0.0	0.7	0.4	3.6	0.2	0.1	0.0	3.3				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay			22.1									
HCM 6th LOS			C									



Intersection

Int Delay, s/veh 3.8

Movement EBL EBT WBT WBR SBL SBR

Lane Configurations 

Traffic Vol, veh/h 4 27 14 6 21 13

Future Vol, veh/h 4 27 14 6 21 13

Conflicting Peds, #/hr 0 0 0 0 0 0

Sign Control Free Free Free Free Stop Stop

RT Channelized - None - None - None

Storage Length - - - - 0 -

Veh in Median Storage, # - 0 0 - 0 -

Grade, % - 0 0 - 0 -

Peak Hour Factor 92 92 92 92 92 92

Heavy Vehicles, % 2 2 2 2 2 2

Mvmt Flow 4 29 15 7 23 14

Major/Minor Major1 Major2 Minor2

Conflicting Flow All 22 0 - 0 56 19

Stage 1 - - - - 19 -

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 1593 - - - 952 1059

Stage 1 - - - - 1004 -

Stage 2 - - - - 985 -

Platoon blocked, % - - - -

Mov Cap-1 Maneuver 1593 - - - 949 1059

Mov Cap-2 Maneuver - - - - 949 -

Stage 1 - - - - 1001 -

Stage 2 - - - - 985 -

Approach EB WB SB

HCM Control Delay, s 0.9 0 8.8

HCM LOS A

Minor Lane/Major Mvmt EBL EBT WBT WBR SBLn1




Capacity (veh/h) 1593 - - - 988

HCM Lane V/C Ratio 0.003 - - - 0.037

HCM Control Delay (s) 7.3 0 - - 8.8

HCM Lane LOS A A - - A




HCM 95th %tile Q(veh) 0 - - - 0.1

Intersection						
Int Delay, s/veh	1.6					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	36	0	45	11	0	122
Future Vol, veh/h	36	0	45	11	0	122
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	39	0	49	12	0	133

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	188	31	0
Stage 1	55	-	-
Stage 2	133	-	-
Critical Hdwy	6.63	6.93	-
Critical Hdwy Stg 1	5.83	-	-
Critical Hdwy Stg 2	5.43	-	-
Follow-up Hdwy	3.519	3.319	-
Pot Cap-1 Maneuver	792	1037	-
Stage 1	961	-	-
Stage 2	893	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	792	1037	-
Mov Cap-2 Maneuver	792	-	-
Stage 1	961	-	-
Stage 2	893	-	-






Approach	WB	NB	SB
HCM Control Delay, s	9.8	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	792	1541
HCM Lane V/C Ratio	-	-	0.049	-
HCM Control Delay (s)	-	-	9.8	0
HCM Lane LOS	-	-	A	A
HCM 95th %tile Q(veh)	-	-	0.2	0

Intersection						
Int Delay, s/veh	3.1					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	2	46	13	7	26	7
Future Vol, veh/h	2	46	13	7	26	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	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	2	50	14	8	28	8
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	22	0	-	0	72	18
Stage 1	-	-	-	-	18	-
Stage 2	-	-	-	-	54	-
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	1593	-	-	-	932	1061
Stage 1	-	-	-	-	1005	-
Stage 2	-	-	-	-	969	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1593	-	-	-	931	1061
Mov Cap-2 Maneuver	-	-	-	-	931	-
Stage 1	-	-	-	-	1004	-
Stage 2	-	-	-	-	969	-
Approach	EB	WB		SB		
HCM Control Delay, s	0.3	0		8.9		
HCM LOS				A		
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1593	-	-	-	956	
HCM Lane V/C Ratio	0.001	-	-	-	0.038	
HCM Control Delay (s)	7.3	0	-	-	8.9	
HCM Lane LOS	A	A	-	-	A	
HCM 95th %tile Q(veh)	0	-	-	-	0.1	

HCM 6th TWSC  
2: Lisbon St & 66th Ave




Short Term Total  
PM Peak

Intersection						
Int Delay, s/veh	1.9					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	42	0	58	68	0	36
Future Vol, veh/h	42	0	58	68	0	36
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	50	50	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	46	0	63	74	0	39

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	102	63	0	0	137
Stage 1	63	-	-	-	-
Stage 2	39	-	-	-	-
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	896	1002	-	-	1447
Stage 1	960	-	-	-	-
Stage 2	983	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	896	1002	-	-	1447
Mov Cap-2 Maneuver	896	-	-	-	-
Stage 1	960	-	-	-	-
Stage 2	983	-	-	-	-




Approach	WB	NB	SB
HCM Control Delay, s	9.2	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	896	1447
HCM Lane V/C Ratio	-	-	0.051	-
HCM Control Delay (s)	-	-	9.2	0
HCM Lane LOS	-	-	A	A
HCM 95th %tile Q(veh)	-	-	0.2	0

Intersection						
Int Delay, s/veh	2					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	7	26	15	12	7	4
Future Vol, veh/h	7	26	15	12	7	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	8	28	16	13	8	4
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	29	0	-	0	67	23
Stage 1	-	-	-	-	23	-
Stage 2	-	-	-	-	44	-
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	1584	-	-	-	938	1054
Stage 1	-	-	-	-	1000	-
Stage 2	-	-	-	-	978	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1584	-	-	-	933	1054
Mov Cap-2 Maneuver	-	-	-	-	933	-
Stage 1	-	-	-	-	995	-
Stage 2	-	-	-	-	978	-
Approach	EB	WB		SB		
HCM Control Delay, s	1.5	0		8.7		
HCM LOS				A		
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1584	-	-	-	974	
HCM Lane V/C Ratio	0.005	-	-	-	0.012	
HCM Control Delay (s)	7.3	0	-	-	8.7	
HCM Lane LOS	A	A	-	-	A	
HCM 95th %tile Q(veh)	0	-	-	-	0	

Intersection

Int Delay, s/veh 2.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	8	25	22	12	7	5
Future Vol, veh/h	8	25	22	12	7	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	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	9	27	24	13	8	5

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	37	0	0 76 31
Stage 1	-	-	- 31 -
Stage 2	-	-	- 45 -
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	1574	-	- 927 1043
Stage 1	-	-	- 992 -
Stage 2	-	-	- 977 -
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	1574	-	- 921 1043
Mov Cap-2 Maneuver	-	-	- 921 -
Stage 1	-	-	- 986 -
Stage 2	-	-	- 977 -

























Approach	EB	WB	SB
HCM Control Delay, s	1.8	0	8.8
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1574	-	-	-	968
HCM Lane V/C Ratio	0.006	-	-	-	0.013
HCM Control Delay (s)	7.3	0	-	-	8.8
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0

Intersection												
Int Delay, s/veh	11.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱		↰	↱		↰	↱	↱	↰	↱	↱
Traffic Vol, veh/h	106	356	40	200	329	48	65	5	20	26	5	66
Future Vol, veh/h	106	356	40	200	329	48	65	5	20	26	5	66
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	250	-	-	250	-	-	250	-	250	250	-	250
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	115	387	43	217	358	52	71	5	22	28	5	72
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	410	0	0	430	0	0	1255	1483	215	1244	1478	205
Stage 1	-	-	-	-	-	-	639	639	-	818	818	-
Stage 2	-	-	-	-	-	-	616	844	-	426	660	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	1145	-	-	1126	-	-	128	124	790	131	125	802
Stage 1	-	-	-	-	-	-	431	469	-	336	388	-
Stage 2	-	-	-	-	-	-	445	377	-	577	458	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1145	-	-	1126	-	-	88	90	790	96	91	802
Mov Cap-2 Maneuver	-	-	-	-	-	-	88	90	-	96	91	-
Stage 1	-	-	-	-	-	-	388	422	-	302	313	-
Stage 2	-	-	-	-	-	-	321	304	-	498	412	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	1.8			3.1			99.4			24.5		
HCM LOS							F			C		
Minor Lane/Major Mvmt	NBLn1	NBLn2	NBLn3	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2	SBLn3
Capacity (veh/h)	88	90	790	1145	-	-	1126	-	-	96	91	802
HCM Lane V/C Ratio	0.803	0.06	0.028	0.101	-	-	0.193	-	-	0.294	0.06	0.089
HCM Control Delay (s)	131	47.6	9.7	8.5	-	-	9	-	-	57.4	47.1	9.9
HCM Lane LOS	F	E	A	A	-	-	A	-	-	F	E	A
HCM 95th %tile Q(veh)	4.2	0.2	0.1	0.3	-	-	0.7	-	-	1.1	0.2	0.3

Timings  
17: Picadilly Rd & 64th Ave

Short Term Total  
PM Peak

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	6	382	104	300	431	41	187	20	270	25	11	4
Future Volume (vph)	6	382	104	300	431	41	187	20	270	25	11	4
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	48.5	48.5	12.0	48.5	48.5	12.0	47.5	47.5	12.0	47.5	47.5
Total Split (%)	10.0%	40.4%	40.4%	10.0%	40.4%	40.4%	10.0%	39.6%	39.6%	10.0%	39.6%	39.6%
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	C-Max	C-Max	None	C-Max	C-Max	None	None	None	None	None	None
Act Effect Green (s)	82.7	77.1	77.1	94.2	92.1	92.1	15.0	9.7	9.7	12.1	8.8	8.8
Actuated g/C Ratio	0.69	0.64	0.64	0.78	0.77	0.77	0.12	0.08	0.08	0.10	0.07	0.07
v/c Ratio	0.01	0.18	0.11	0.42	0.17	0.04	1.15	0.15	0.74	0.17	0.09	0.02
Control Delay	6.0	10.9	2.9	6.2	5.4	0.0	159.4	51.6	17.5	44.6	50.2	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	6.0	10.9	2.9	6.2	5.4	0.0	159.4	51.6	17.5	44.6	50.2	0.2
LOS	A	B	A	A	A	A	F	D	B	D	D	A
Approach Delay		9.2			5.4			74.5			42.1	
Approach LOS		A			A			E			D	

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 106 (88%), Referenced to phase 4:EBTL and 8:WBTL, Start of Yellow

Natural Cycle: 65

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.15

Intersection Signal Delay: 25.8









Intersection LOS: C

Intersection Capacity Utilization 55.5%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 17: Picadilly Rd & 64th Ave

























			
Ø1	Ø2	Ø3	Ø4 (R)
12 s	47.5 s	12 s	48.5 s
			
Ø5	Ø6	Ø7	Ø8 (R)
12 s	47.5 s	12 s	48.5 s



# HCM 6th Signalized Intersection Summary

## 17: Picadilly Rd & 64th Ave

Short Term Total  
PM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	6	382	104	300	431	41	187	20	270	25	11	4
Future Volume (veh/h)	6	382	104	300	431	41	187	20	270	25	11	4
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	7	415	113	326	468	45	203	22	293	27	12	4
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	565	1980	883	608	2171	968	398	385	326	283	314	266
Arrive On Green	0.01	0.56	0.56	0.06	0.61	0.61	0.06	0.21	0.21	0.02	0.17	0.17
Sat Flow, veh/h	1781	3554	1585	1781	3554	1585	1781	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	7	415	113	326	468	45	203	22	293	27	12	4
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1781	1777	1585	1781	1870	1585	1781	1870	1585
Q Serve(g_s), s	0.2	7.0	4.1	7.5	7.1	1.4	7.5	1.1	21.6	1.5	0.6	0.3
Cycle Q Clear(g_c), s	0.2	7.0	4.1	7.5	7.1	1.4	7.5	1.1	21.6	1.5	0.6	0.3
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	565	1980	883	608	2171	968	398	385	326	283	314	266
V/C Ratio(X)	0.01	0.21	0.13	0.54	0.22	0.05	0.51	0.06	0.90	0.10	0.04	0.02
Avail Cap(c_a), veh/h	661	1980	883	608	2171	968	398	670	568	350	670	568
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	11.4	13.3	12.7	11.6	10.5	9.3	39.4	38.3	46.4	39.7	41.8	41.7
Incr Delay (d2), s/veh	0.0	0.2	0.3	0.9	0.2	0.1	1.1	0.1	9.7	0.1	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.1	5.1	2.7	6.9	5.0	0.9	3.1	1.0	14.4	1.2	0.5	0.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	11.4	13.6	13.0	12.6	10.7	9.4	40.5	38.4	56.2	39.9	41.9	41.7
LnGrp LOS	B	B	B	B	B	A	D	D	E	D	D	D
Approach Vol, veh/h	535			839			518			43		
Approach Delay, s/veh	13.4			11.3			49.3			40.6		
Approach LOS	B			B			D			D		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	7.5	29.2	12.0	71.4	12.0	24.6	5.5	77.8				
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	7.5	43.0	7.5	44.0	7.5	43.0	7.5	44.0				
Max Q Clear Time (g_c+I1), s	3.5	23.6	9.5	9.0	9.5	2.6	2.2	9.1				
Green Ext Time (p_c), s	0.0	1.1	0.0	3.4	0.0	0.0	0.0	3.6				

### Intersection Summary




HCM 6th Ctrl Delay 22.7  
HCM 6th LOS C

### Notes

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

Intersection




Int Delay, s/veh 2.6

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	11	20	27	20	12	7
Future Vol, veh/h	11	20	27	20	12	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	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	12	22	29	22	13	8

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	51	0	0 86 40
Stage 1	-	-	- 40 -
Stage 2	-	-	- 46 -
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	1555	-	- 915 1031
Stage 1	-	-	- 982 -
Stage 2	-	-	- 976 -
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	1555	-	- 908 1031
Mov Cap-2 Maneuver	-	-	- 908 -
Stage 1	-	-	- 974 -
Stage 2	-	-	- 976 -

Approach	EB	WB	SB
HCM Control Delay, s	2.6	0	8.9
HCM LOS			A




Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1555	-	-	-	950
HCM Lane V/C Ratio	0.008	-	-	-	0.022
HCM Control Delay (s)	7.3	0	-	-	8.9
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.1









Intersection						
Int Delay, s/veh	0.7					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	19	0	126	33	0	78
Future Vol, veh/h	19	0	126	33	0	78
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	21	0	137	36	0	85

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	240	87	0
Stage 1	155	-	-
Stage 2	85	-	-
Critical Hdwy	6.63	6.93	-
Critical Hdwy Stg 1	5.83	-	-
Critical Hdwy Stg 2	5.43	-	-
Follow-up Hdwy	3.519	3.319	-
Pot Cap-1 Maneuver	738	955	-
Stage 1	858	-	-
Stage 2	938	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	738	955	-
Mov Cap-2 Maneuver	738	-	-
Stage 1	858	-	-
Stage 2	938	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	738	1402
HCM Lane V/C Ratio	-	-	0.028	-
HCM Control Delay (s)	-	-	10	0
HCM Lane LOS	-	-	B	A
HCM 95th %tile Q(veh)	-	-	0.1	0










Intersection						
Int Delay, s/veh	1.8					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	6	26	43	24	14	4
Future Vol, veh/h	6	26	43	24	14	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	7	28	47	26	15	4
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	73	0	-	0	102	60
Stage 1	-	-	-	-	60	-
Stage 2	-	-	-	-	42	-
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	1527	-	-	-	896	1005
Stage 1	-	-	-	-	963	-
Stage 2	-	-	-	-	980	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1527	-	-	-	892	1005
Mov Cap-2 Maneuver	-	-	-	-	892	-
Stage 1	-	-	-	-	958	-
Stage 2	-	-	-	-	980	-
Approach	EB	WB		SB		
HCM Control Delay, s	1.4	0		9		
HCM LOS				A		
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1527	-	-	-	915	
HCM Lane V/C Ratio	0.004	-	-	-	0.021	
HCM Control Delay (s)	7.4	0	-	-	9	
HCM Lane LOS	A	A	-	-	A	
HCM 95th %tile Q(veh)	0	-	-	-	0.1	

Intersection												
Int Delay, s/veh	2.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	5	35	28	5	8	35	214	11	6	181	5
Future Vol, veh/h	5	5	35	28	5	8	35	214	11	6	181	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	50	-	-	50	-	-	50	-	-	50	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	5	5	38	30	5	9	38	233	12	7	197	5

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	536	535	200	550	531	239	202	0	0	245	0	0
Stage 1	214	214	-	315	315	-	-	-	-	-	-	-
Stage 2	322	321	-	235	216	-	-	-	-	-	-	-
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	502	480	841	490	482	905	1370	-	-	1353	-	-
Stage 1	788	725	-	766	687	-	-	-	-	-	-	-
Stage 2	758	682	-	768	724	-	-	-	-	-	-	-
Platoon blocked, %	1	1		1	1	1		-	-	1	-	-
Mov Cap-1 Maneuver	481	464	841	452	466	905	1370	-	-	1353	-	-
Mov Cap-2 Maneuver	481	464	-	452	466	-	-	-	-	-	-	-
Stage 1	766	721	-	744	667	-	-	-	-	-	-	-
Stage 2	724	663	-	724	720	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	10.3		12.5		1		0.2	
HCM LOS	B		B					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1370	-	-	481	763	452	664	1353	-	-
HCM Lane V/C Ratio	0.028	-	-	0.011	0.057	0.067	0.021	0.005	-	-
HCM Control Delay (s)	7.7	-	-	12.6	10	13.5	10.5	7.7	-	-
HCM Lane LOS	A	-	-	B	B	B	B	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0	0.2	0.2	0.1	0	-	-

Intersection												
Int Delay, s/veh	2.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	5	35	53	5	6	35	279	19	5	234	5
Future Vol, veh/h	5	5	35	53	5	6	35	279	19	5	234	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	50	-	-	50	-	-	50	-	-	50	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	5	5	38	58	5	7	38	303	21	5	254	5



















Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	663	667	257	667	648	303	259	0	0	324	0	0
Stage 1	267	267	-	379	379	-	-	-	-	-	-	-
Stage 2	396	400	-	288	269	-	-	-	-	-	-	-
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	413	399	782	410	412	863	1306	-	-	1266	-	-
Stage 1	738	688	-	725	650	-	-	-	-	-	-	-
Stage 2	707	634	-	720	687	-	-	-	-	-	-	-
Platoon blocked, %	1	1		1	1	1		-	-	1	-	-
Mov Cap-1 Maneuver	395	386	782	376	398	863	1306	-	-	1266	-	-
Mov Cap-2 Maneuver	395	386	-	376	398	-	-	-	-	-	-	-
Stage 1	717	685	-	704	631	-	-	-	-	-	-	-
Stage 2	675	616	-	677	684	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	10.9		15.5		0.8		0.2	
HCM LOS	B		C					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1306	-	-	395	693	376	564	1266	-	-
HCM Lane V/C Ratio	0.029	-	-	0.014	0.063	0.153	0.021	0.004	-	-
HCM Control Delay (s)	7.8	-	-	14.2	10.5	16.3	11.5	7.9	-	-
HCM Lane LOS	A	-	-	B	B	C	B	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0	0.2	0.5	0.1	0	-	-

Timings  
3: Lisbon St & 65th Ave

AM 2040 Total  
Default

									
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	5	5	42	5	25	319	78	16	291
Future Volume (vph)	5	5	42	5	25	319	78	16	291
Turn Type	pm+pt	NA	pm+pt	NA	pm+pt	NA	Perm	pm+pt	NA
Protected Phases	7	4	3	8	5	2		1	6
Permitted Phases	4		8		2		2	6	
Detector Phase	7	4	3	8	5	2	2	1	6
Switch Phase									
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.5	22.5	9.5	22.5	9.5	22.5	22.5	9.5	22.5
Total Split (s)	13.0	24.0	16.0	27.0	14.0	66.0	66.0	14.0	66.0
Total Split (%)	10.8%	20.0%	13.3%	22.5%	11.7%	55.0%	55.0%	11.7%	55.0%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	C-Max	C-Max	None	C-Max
Act Effect Green (s)	7.4	6.1	10.7	8.5	100.6	99.0	99.0	99.5	96.8
Actuated g/C Ratio	0.06	0.05	0.09	0.07	0.84	0.82	0.82	0.83	0.81
v/c Ratio	0.05	0.11	0.31	0.12	0.03	0.23	0.06	0.02	0.22
Control Delay	47.0	42.4	50.5	29.7	2.7	5.7	2.3	2.9	5.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	47.0	42.4	50.5	29.7	2.7	5.7	2.3	2.9	5.1
LOS	D	D	D	C	A	A	A	A	A
Approach Delay		44.0		45.4		4.9			5.0
Approach LOS		D		D		A			A

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 85 (71%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow

Natural Cycle: 65

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.31

Intersection Signal Delay: 8.4





Intersection LOS: A

Intersection Capacity Utilization 37.3%

ICU Level of Service A

Analysis Period (min) 15






















Splits and Phases: 3: Lisbon St & 65th Ave

 Ø1	 Ø2 (R)	 Ø3	 Ø4
14 s	66 s	16 s	24 s
 Ø5	 Ø6 (R)	 Ø7	 Ø8
14 s	66 s	13 s	27 s

# HCM 6th Signalized Intersection Summary

## 3: Lisbon St & 65th Ave





















AM 2040 Total  
Default

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	5	5	5	42	5	9	25	319	78	16	291	15
Future Volume (veh/h)	5	5	5	42	5	9	25	319	78	16	291	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	5	5	5	46	5	10	27	347	85	17	316	16
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	108	23	23	147	29	59	854	1446	1225	825	1352	68
Arrive On Green	0.01	0.03	0.03	0.03	0.05	0.05	0.05	1.00	1.00	0.02	0.77	0.77
Sat Flow, veh/h	1781	858	858	1781	557	1113	1781	1870	1585	1781	1765	89
Grp Volume(v), veh/h	5	0	10	46	0	15	27	347	85	17	0	332
Grp Sat Flow(s),veh/h/ln	1781	0	1716	1781	0	1670	1781	1870	1585	1781	0	1854
Q Serve(g_s), s	0.3	0.0	0.7	3.0	0.0	1.0	0.4	0.0	0.0	0.2	0.0	6.1
Cycle Q Clear(g_c), s	0.3	0.0	0.7	3.0	0.0	1.0	0.4	0.0	0.0	0.2	0.0	6.1
Prop In Lane	1.00		0.50	1.00		0.67	1.00		1.00	1.00		0.05
Lane Grp Cap(c), veh/h	108	0	45	147	0	88	854	1446	1225	825	0	1421
V/C Ratio(X)	0.05	0.00	0.22	0.31	0.00	0.17	0.03	0.24	0.07	0.02	0.00	0.23
Avail Cap(c_a), veh/h	223	0	279	260	0	313	951	1446	1225	934	0	1421
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	0.90	0.90	0.90	1.00	0.00	1.00
Uniform Delay (d), s/veh	56.3	0.0	57.2	53.9	0.0	54.3	2.8	0.0	0.0	2.8	0.0	4.0
Incr Delay (d2), s/veh	0.2	0.0	2.4	1.2	0.0	0.9	0.0	0.4	0.1	0.0	0.0	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.3	0.0	0.6	2.5	0.0	0.8	0.2	0.3	0.1	0.1	0.0	3.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	56.5	0.0	59.6	55.1	0.0	55.2	2.8	0.4	0.1	2.8	0.0	4.4
LnGrp LOS	E	A	E	E	A	E	A	A	A	A	A	A
Approach Vol, veh/h	15			61			459			349		
Approach Delay, s/veh	58.6			55.1			0.4			4.3		
Approach LOS	E			E			A			A		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	6.7	97.3	8.4	7.7	7.5	96.4	5.3	10.8				
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	9.5	61.5	11.5	19.5	9.5	61.5	8.5	22.5				
Max Q Clear Time (g_c+I1), s	2.2	2.0	5.0	2.7	2.4	8.1	2.3	3.0				
Green Ext Time (p_c), s	0.0	2.6	0.0	0.0	0.0	2.2	0.0	0.0				
Intersection Summary												
HCM 6th Ctrl Delay				6.7								
HCM 6th LOS				A								



Timings  
4: 64th Ave & Lisbon St

AM 2040 Total  
Default

										
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	191	962	240	615	110	50	55	146	55	137
Future Volume (vph)	191	962	240	615	110	50	55	146	55	137
Turn Type	pm+pt	NA	pm+pt	NA	pm+pt	NA	pm+ov	pm+pt	NA	pm+ov
Protected Phases	7	4	3	8	5	2	3	1	6	7
Permitted Phases	4		8		2		2	6		6
Detector Phase	7	4	3	8	5	2	3	1	6	7
Switch Phase										
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.5	22.5	9.5	22.5	9.5	22.5	9.5	9.5	22.5	9.5
Total Split (s)	27.0	48.0	24.0	45.0	12.0	26.0	24.0	22.0	36.0	27.0
Total Split (%)	22.5%	40.0%	20.0%	37.5%	10.0%	21.7%	20.0%	18.3%	30.0%	22.5%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lead	Lead	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	C-Max	None	C-Max	None	None	None	None	None	None
Act Effect Green (s)	74.0	62.1	85.3	68.9	15.8	8.9	30.1	25.7	15.2	29.6
Actuated g/C Ratio	0.62	0.52	0.71	0.57	0.13	0.07	0.25	0.21	0.13	0.25
v/c Ratio	0.45	0.60	0.61	0.44	0.59	0.39	0.13	0.54	0.25	0.30
Control Delay	11.2	24.8	25.1	13.1	51.6	60.6	2.2	41.8	43.0	5.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	11.2	24.8	25.1	13.1	51.6	60.6	2.2	41.8	43.0	5.9
LOS	B	C	C	B	D	E	A	D	D	A
Approach Delay		22.6		15.9		41.0			27.4	
Approach LOS		C		B		D			C	

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 17 (14%), Referenced to phase 4:EBTL and 8:WBTL, Start of Yellow

Natural Cycle: 80

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.61

Intersection Signal Delay: 22.1

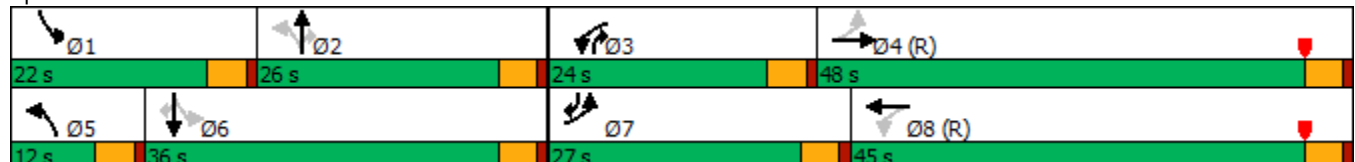
Intersection LOS: C

Intersection Capacity Utilization 67.5%

ICU Level of Service C

Analysis Period (min) 15























Splits and Phases: 4: 64th Ave & Lisbon St



# HCM 6th Signalized Intersection Summary

























## 4: 64th Ave & Lisbon St

AM 2040 Total  
Default

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	191	962	50	240	615	181	110	50	55	146	55	137
Future Volume (veh/h)	191	962	50	240	615	181	110	50	55	146	55	137
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	208	1046	54	261	668	197	120	54	60	159	60	149
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	559	2057	106	422	1664	490	257	136	245	291	201	274
Arrive On Green	0.07	0.60	0.60	0.16	1.00	1.00	0.06	0.07	0.07	0.16	0.18	0.18
Sat Flow, veh/h	1781	3438	177	1781	2706	798	1781	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	208	541	559	261	438	427	120	54	60	159	60	149
Grp Sat Flow(s),veh/h/ln	1781	1777	1838	1781	1777	1727	1781	1870	1585	1781	1870	1585
Q Serve(g_s), s	5.3	21.1	21.1	7.3	0.0	0.0	7.5	3.3	4.0	9.5	3.3	10.2
Cycle Q Clear(g_c), s	5.3	21.1	21.1	7.3	0.0	0.0	7.5	3.3	4.0	9.5	3.3	10.2
Prop In Lane	1.00		0.10	1.00		0.46	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	559	1063	1100	422	1092	1062	257	136	245	291	201	274
V/C Ratio(X)	0.37	0.51	0.51	0.62	0.40	0.40	0.47	0.40	0.25	0.55	0.30	0.54
Avail Cap(c_a), veh/h	777	1063	1100	566	1092	1062	257	335	413	378	491	519
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.67	1.67	1.67
Upstream Filter(I)	1.00	1.00	1.00	0.92	0.92	0.92	1.00	1.00	1.00	0.98	0.98	0.98
Uniform Delay (d), s/veh	7.7	13.9	13.9	9.8	0.0	0.0	48.1	53.1	44.6	40.8	45.3	41.6
Incr Delay (d2), s/veh	0.4	1.7	1.7	1.4	1.0	1.0	1.3	1.9	0.5	1.6	0.8	1.6
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	3.6	13.5	13.9	4.1	0.6	0.6	6.2	2.9	2.9	7.3	2.8	6.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	8.1	15.6	15.6	11.2	1.0	1.0	49.4	55.0	45.1	42.4	46.1	43.3
LnGrp LOS	A	B	B	B	A	A	D	D	D	D	D	D
Approach Vol, veh/h	1308			1126			234			368		
Approach Delay, s/veh	14.4			3.4			49.6			43.3		
Approach LOS	B			A			D			D		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	16.2	13.2	14.3	76.3	12.0	17.4	12.3	78.3				
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	17.5	21.5	19.5	43.5	7.5	31.5	22.5	40.5				
Max Q Clear Time (g_c+I1), s	11.5	6.0	9.3	23.1	9.5	12.2	7.3	2.0				
Green Ext Time (p_c), s	0.2	0.3	0.5	7.6	0.0	0.7	0.5	6.7				
Intersection Summary												
HCM 6th Ctrl Delay	16.5											
HCM 6th LOS	B											

Timings  
5: Picadilly Rd & 64th Ave

AM 2040 Total  
Default

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	280	716	72	195	483	302	92	375	255	329	281	291
Future Volume (vph)	280	716	72	195	483	302	92	375	255	329	281	291
Turn Type	Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	pm+ov
Protected Phases	7	4	5	3	8	1	5	2	3	1	6	7
Permitted Phases			4			8			2			6
Detector Phase	7	4	5	3	8	1	5	2	3	1	6	7
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	9.5	9.5	22.5	9.5	9.5	22.5	9.5	9.5	22.5	9.5
Total Split (s)	18.0	42.0	18.0	15.0	39.0	21.0	18.0	42.0	15.0	21.0	45.0	18.0
Total Split (%)	15.0%	35.0%	15.0%	12.5%	32.5%	17.5%	15.0%	35.0%	12.5%	17.5%	37.5%	15.0%
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	Lead	Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	C-Max	None	None	C-Max	None	None	None	None	None	None	None
Act Effect Green (s)	16.4	58.3	74.1	12.8	54.6	74.9	11.3	15.2	32.5	15.8	19.6	40.5
Actuated g/C Ratio	0.14	0.49	0.62	0.11	0.46	0.62	0.09	0.13	0.27	0.13	0.16	0.34
v/c Ratio	0.65	0.45	0.08	0.58	0.33	0.31	0.60	0.63	0.59	0.79	0.37	0.49
Control Delay	56.6	11.8	2.4	57.3	22.9	6.7	66.7	54.1	34.8	65.8	39.4	12.1
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	56.6	11.8	2.4	57.3	22.9	6.7	66.7	54.1	34.8	65.8	39.4	12.1
LOS	E	B	A	E	C	A	E	D	C	E	D	B
Approach Delay		22.9			24.7			48.9			40.2	
Approach LOS		C			C			D			D	

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 99 (83%), Referenced to phase 4:EBT and 8:WBT, Start of Yellow

Natural Cycle: 70

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.79

Intersection Signal Delay: 32.8

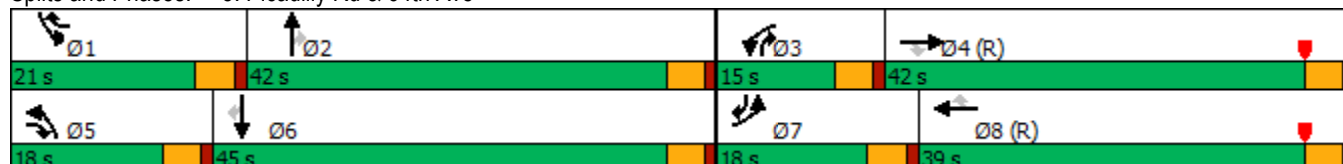
Intersection LOS: C

Intersection Capacity Utilization 57.0%

ICU Level of Service B

























Analysis Period (min) 15

Splits and Phases: 5: Picadilly Rd & 64th Ave

























# HCM 6th Signalized Intersection Summary 5: Picadilly Rd & 64th Ave

AM 2040 Total  
Default

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	280	716	72	195	483	302	92	375	255	329	281	291
Future Volume (veh/h)	280	716	72	195	483	302	92	375	255	329	281	291
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	304	778	78	212	525	328	100	408	277	358	305	316
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	363	1612	830	268	1515	865	125	1016	438	414	1269	561
Arrive On Green	0.03	0.15	0.15	0.08	0.43	0.43	0.07	0.20	0.20	0.20	0.42	0.42
Sat Flow, veh/h	3456	3554	1585	3456	3554	1585	1781	5106	1585	3456	5106	1585
Grp Volume(v), veh/h	304	778	78	212	525	328	100	408	277	358	305	316
Grp Sat Flow(s),veh/h/ln	1728	1777	1585	1728	1777	1585	1781	1702	1585	1728	1702	1585
Q Serve(g_s), s	10.5	24.1	4.4	7.2	11.9	14.2	6.6	8.3	18.4	12.0	4.7	18.0
Cycle Q Clear(g_c), s	10.5	24.1	4.4	7.2	11.9	14.2	6.6	8.3	18.4	12.0	4.7	18.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	363	1612	830	268	1515	865	125	1016	438	414	1269	561
V/C Ratio(X)	0.84	0.48	0.09	0.79	0.35	0.38	0.80	0.40	0.63	0.87	0.24	0.56
Avail Cap(c_a), veh/h	389	1612	830	302	1515	865	200	1596	618	475	1723	702
HCM Platoon Ratio	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00	1.67	1.67	1.67
Upstream Filter(I)	0.79	0.79	0.79	1.00	1.00	1.00	1.00	1.00	1.00	0.94	0.94	0.94
Uniform Delay (d), s/veh	56.9	38.1	22.8	54.4	23.2	15.6	55.0	41.8	38.1	47.1	27.7	24.0
Incr Delay (d2), s/veh	11.4	0.8	0.2	11.9	0.6	1.3	11.2	0.3	1.5	13.2	0.1	0.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	8.9	16.7	3.1	6.5	8.9	9.2	6.1	6.4	11.7	9.2	3.3	9.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	68.3	38.9	23.0	66.3	23.8	16.9	66.1	42.1	39.6	60.3	27.8	24.9
LnGrp LOS	E	D	C	E	C	B	E	D	D	E	C	C
Approach Vol, veh/h	1160			1065			785			979		
Approach Delay, s/veh	45.6			30.1			44.3			38.8		
Approach LOS	D			C			D			D		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	18.9	28.4	13.8	58.9	12.9	34.3	17.1	55.6				
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	37.5	10.5	37.5	13.5	40.5	13.5	34.5				
Max Q Clear Time (g_c+I1), s	14.0	20.4	9.2	26.1	8.6	20.0	12.5	16.2				
Green Ext Time (p_c), s	0.3	3.5	0.1	4.3	0.1	3.1	0.1	4.6				
Intersection Summary												
HCM 6th Ctrl Delay	39.5											
HCM 6th LOS	D											

# Timings 6: Picadilly Rd & 65th Ave

AM 2040 Total  
Default

											
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations											
Traffic Volume (vph)	21	5	125	90	5	20	69	823	65	20	686
Future Volume (vph)	21	5	125	90	5	20	69	823	65	20	686
Turn Type	pm+pt	NA	pm+ov	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA
Protected Phases	7	4	5	3	8		5	2		1	6
Permitted Phases	4		4	8		8	2		2	6	
Detector Phase	7	4	5	3	8	8	5	2	2	1	6
Switch Phase											
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.5	22.5	22.5	9.5	22.5	22.5	22.5	22.5	22.5	9.5	22.5
Total Split (s)	12.0	23.0	26.0	17.0	28.0	28.0	26.0	68.0	68.0	12.0	54.0
Total Split (%)	10.0%	19.2%	21.7%	14.2%	23.3%	23.3%	21.7%	56.7%	56.7%	10.0%	45.0%
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
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
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	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	Lead	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag
Lead-Lag Optimize?	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
Act Effect Green (s)	8.1	5.9	9.2	15.3	8.2	8.2	93.9	89.3	89.3	90.1	84.3
Actuated g/C Ratio	0.07	0.05	0.08	0.13	0.07	0.07	0.78	0.74	0.74	0.75	0.70
v/c Ratio	0.19	0.05	0.55	0.45	0.04	0.09	0.14	0.34	0.06	0.05	0.31
Control Delay	48.9	54.0	14.8	53.2	52.0	0.8	3.3	4.9	0.1	4.0	8.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	48.9	54.0	14.8	53.2	52.0	0.8	3.3	4.9	0.1	4.0	8.0
LOS	D	D	B	D	D	A	A	A	A	A	A
Approach Delay		20.8			43.9			4.4			7.9
Approach LOS		C			D			A			A

## Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 56 (47%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow

Natural Cycle: 80

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.55

Intersection Signal Delay: 9.3

Intersection LOS: A

Intersection Capacity Utilization 49.8%

ICU Level of Service A

Analysis Period (min) 15

























Splits and Phases: 6: Picadilly Rd & 65th Ave



# HCM 6th Signalized Intersection Summary

## 6: Picadilly Rd & 65th Ave

AM 2040 Total  
Default

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	21	5	125	90	5	20	69	823	65	20	686	19
Future Volume (veh/h)	21	5	125	90	5	20	69	823	65	20	686	19
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	23	5	136	98	5	22	75	895	71	22	746	21
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	237	185	223	292	260	221	521	2369	1057	475	2283	64
Arrive On Green	0.02	0.10	0.10	0.06	0.14	0.14	0.08	1.00	1.00	0.02	0.65	0.65
Sat Flow, veh/h	1781	1870	1585	1781	1870	1585	1781	3554	1585	1781	3530	99
Grp Volume(v), veh/h	23	5	136	98	5	22	75	895	71	22	375	392
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	1870	1585	1781	1777	1585	1781	1777	1852
Q Serve(g_s), s	1.4	0.3	9.7	5.7	0.3	1.5	1.6	0.0	0.0	0.5	11.4	11.4
Cycle Q Clear(g_c), s	1.4	0.3	9.7	5.7	0.3	1.5	1.6	0.0	0.0	0.5	11.4	11.4
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.05
Lane Grp Cap(c), veh/h	237	185	223	292	260	221	521	2369	1057	475	1149	1198
V/C Ratio(X)	0.10	0.03	0.61	0.34	0.02	0.10	0.14	0.38	0.07	0.05	0.33	0.33
Avail Cap(c_a), veh/h	308	288	310	366	366	310	766	2369	1057	548	1149	1198
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	0.83	0.83	0.83	1.00	1.00	1.00
Uniform Delay (d), s/veh	46.9	48.8	48.5	42.9	44.6	45.1	6.4	0.0	0.0	6.7	9.5	9.5
Incr Delay (d2), s/veh	0.2	0.1	2.7	0.7	0.0	0.2	0.1	0.4	0.1	0.0	0.8	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	1.1	0.3	7.2	4.7	0.2	1.1	1.0	0.2	0.1	0.3	7.9	8.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	47.1	48.9	51.2	43.6	44.6	45.3	6.5	0.4	0.1	6.7	10.3	10.2
LnGrp LOS	D	D	D	D	D	D	A	A	A	A	B	B
Approach Vol, veh/h	164			125			1041			789		
Approach Delay, s/veh	50.5			43.9			0.8			10.1		
Approach LOS	D			D			A			B		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	7.1	84.5	12.0	16.4	9.5	82.1	7.2	21.2				
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	63.5	12.5	18.5	21.5	49.5	7.5	23.5				
Max Q Clear Time (g_c+I1), s	2.5	2.0	7.7	11.7	3.6	13.4	3.4	3.5				
Green Ext Time (p_c), s	0.0	8.4	0.1	0.2	0.1	5.5	0.0	0.0				
Intersection Summary												
HCM 6th Ctrl Delay	10.7											
HCM 6th LOS	B											

Intersection						
Int Delay, s/veh	1.2					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑		↑	↑
Traffic Vol, veh/h	2	126	85	8	25	6
Future Vol, veh/h	2	126	85	8	25	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	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	2	137	92	9	27	7
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	101	0	-	0	238	97
Stage 1	-	-	-	-	97	-
Stage 2	-	-	-	-	141	-
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	1509	-	-	-	839	1005
Stage 1	-	-	-	-	953	-
Stage 2	-	-	-	-	919	-
Platoon blocked, %	1	-	-	-	1	1
Mov Cap-1 Maneuver	1509	-	-	-	838	1005
Mov Cap-2 Maneuver	-	-	-	-	808	-
Stage 1	-	-	-	-	952	-
Stage 2	-	-	-	-	919	-
Approach	EB	WB		SB		
HCM Control Delay, s	0.1	0		9.5		
HCM LOS	A					
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1509	-	-	-	840	
HCM Lane V/C Ratio	0.001	-	-	-	0.04	
HCM Control Delay (s)	7.4	-	-	-	9.5	
HCM Lane LOS	A	-	-	-	A	
HCM 95th %tile Q(veh)	0	-	-	-	0.1	

Intersection

Int Delay, s/veh 1.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑		↑	↑
Traffic Vol, veh/h	3	105	84	7	23	11
Future Vol, veh/h	3	105	84	7	23	11
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	3	114	91	8	25	12

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	99	0	0 215 95
Stage 1	-	-	- 95 -
Stage 2	-	-	- 120 -
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	1512	-	- 868 1008
Stage 1	-	-	- 954 -
Stage 2	-	-	- 941 -
Platoon blocked, %	1	-	- 1 1
Mov Cap-1 Maneuver	1512	-	- 866 1008
Mov Cap-2 Maneuver	-	-	- 827 -
Stage 1	-	-	- 952 -
Stage 2	-	-	- 941 -

Approach	EB	WB	SB
HCM Control Delay, s	0.2	0	9.3
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1512	-	-	-	878
HCM Lane V/C Ratio	0.002	-	-	-	0.042
HCM Control Delay (s)	7.4	-	-	-	9.3
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.1



Intersection

Int Delay, s/veh 1.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑		↑	↑
Traffic Vol, veh/h	2	94	91	4	19	7
Future Vol, veh/h	2	94	91	4	19	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	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	2	102	99	4	21	8

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	103	0	0 207 101
Stage 1	-	-	- 101 -
Stage 2	-	-	- 106 -
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	1506	-	- 857 1001
Stage 1	-	-	- 948 -
Stage 2	-	-	- 943 -
Platoon blocked, %	1	-	- 1 1
Mov Cap-1 Maneuver	1506	-	- 856 1001
Mov Cap-2 Maneuver	-	-	- 822 -
Stage 1	-	-	- 947 -
Stage 2	-	-	- 943 -

Approach	EB	WB	SB
HCM Control Delay, s	0.2	0	9.3
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1506	-	-	-	864
HCM Lane V/C Ratio	0.001	-	-	-	0.033
HCM Control Delay (s)	7.4	-	-	-	9.3
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Intersection









Int Delay, s/veh 1.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑		↓	↓
Traffic Vol, veh/h	2	82	94	9	24	7
Future Vol, veh/h	2	82	94	9	24	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	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	2	89	102	10	26	8

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	112	0	0 200 107
Stage 1	-	-	- 107 -
Stage 2	-	-	- 93 -
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	1494	-	- 866 992
Stage 1	-	-	- 942 -
Stage 2	-	-	- 956 -
Platoon blocked, %	1	-	- 1 1
Mov Cap-1 Maneuver	1494	-	- 865 992
Mov Cap-2 Maneuver	-	-	- 827 -
Stage 1	-	-	- 941 -
Stage 2	-	-	- 956 -

Approach	EB	WB	SB
HCM Control Delay, s	0.2	0	9.4
HCM LOS			A










Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1494	-	-	-	859
HCM Lane V/C Ratio	0.001	-	-	-	0.039
HCM Control Delay (s)	7.4	-	-	-	9.4
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Intersection												
Int Delay, s/veh	2.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	5	45	20	5	7	50	152	27	7	254	5
Future Vol, veh/h	5	5	45	20	5	7	50	152	27	7	254	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	50	-	-	50	-	-	50	-	-	50	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	5	5	49	22	5	8	54	165	29	8	276	5

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	589	597	279	610	585	180	281	0	0	194	0	0
Stage 1	295	295	-	288	288	-	-	-	-	-	-	-
Stage 2	294	302	-	322	297	-	-	-	-	-	-	-
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	442	428	760	427	435	939	1282	-	-	1404	-	-
Stage 1	713	669	-	766	694	-	-	-	-	-	-	-
Stage 2	760	683	-	690	668	-	-	-	-	-	-	-
Platoon blocked, %	1	1		1	1	1		-	-	1	-	-
Mov Cap-1 Maneuver	418	407	760	381	414	939	1282	-	-	1404	-	-
Mov Cap-2 Maneuver	418	407	-	381	414	-	-	-	-	-	-	-
Stage 1	683	665	-	734	665	-	-	-	-	-	-	-
Stage 2	716	655	-	637	664	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	10.9		13.5		1.7		0.2	
HCM LOS	B		B					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1282	-	-	418	699	381	614	1404	-	-
HCM Lane V/C Ratio	0.042	-	-	0.013	0.078	0.057	0.021	0.005	-	-
HCM Control Delay (s)	7.9	-	-	13.7	10.6	15	11	7.6	-	-
HCM Lane LOS	A	-	-	B	B	C	B	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0	0.3	0.2	0.1	0	-	-

Intersection												
Int Delay, s/veh	2.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	5	45	32	5	5	50	199	52	5	284	5
Future Vol, veh/h	5	5	45	32	5	5	50	199	52	5	284	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	50	-	-	50	-	-	50	-	-	50	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	5	5	49	35	5	5	54	216	57	5	309	5

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	680	703	312	673	648	216	314	0	0	273	0	0
Stage 1	322	322	-	324	324	-	-	-	-	-	-	-
Stage 2	358	381	-	349	324	-	-	-	-	-	-	-
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	388	370	728	393	403	*920	1246	-	-	1316	-	-
Stage 1	690	651	-	755	680	-	-	-	-	-	-	-
Stage 2	720	636	-	667	650	-	-	-	-	-	-	-
Platoon blocked, %	1	1		1	1	1		-	-	1	-	-
Mov Cap-1 Maneuver	368	353	728	349	384	*920	1246	-	-	1316	-	-
Mov Cap-2 Maneuver	368	353	-	349	384	-	-	-	-	-	-	-
Stage 1	660	648	-	723	651	-	-	-	-	-	-	-
Stage 2	679	608	-	615	647	-	-	-	-	-	-	-



















Approach	EB		WB		NB		SB	
HCM Control Delay, s	11.4		15.4		1.3		0.1	
HCM LOS	B		C					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1246	-	-	368	658	349	542	1316	-	-
HCM Lane V/C Ratio	0.044	-	-	0.015	0.083	0.1	0.02	0.004	-	-
HCM Control Delay (s)	8	-	-	14.9	11	16.5	11.8	7.7	-	-
HCM Lane LOS	A	-	-	B	B	C	B	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0	0.3	0.3	0.1	0	-	-

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

Timings  
3: Lisbon St & 65th Ave

AM 2040 Total  
Default

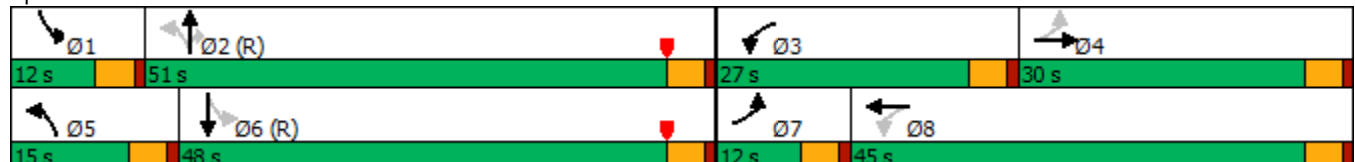
									
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	15	5	235	5	90	229	335	14	267
Future Volume (vph)	15	5	235	5	90	229	335	14	267
Turn Type	pm+pt	NA	pm+pt	NA	pm+pt	NA	Perm	pm+pt	NA
Protected Phases	7	4	3	8	5	2		1	6
Permitted Phases	4		8		2		2	6	
Detector Phase	7	4	3	8	5	2	2	1	6
Switch Phase									
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.5	22.5	9.5	22.5	9.5	22.5	22.5	9.5	22.5
Total Split (s)	12.0	30.0	27.0	45.0	15.0	51.0	51.0	12.0	48.0
Total Split (%)	10.0%	25.0%	22.5%	37.5%	12.5%	42.5%	42.5%	10.0%	40.0%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	C-Max	C-Max	None	C-Max
Act Effect Green (s)	12.3	7.1	29.4	24.8	81.1	77.2	77.2	75.0	69.1
Actuated g/C Ratio	0.10	0.06	0.24	0.21	0.68	0.64	0.64	0.62	0.58
v/c Ratio	0.10	0.49	0.72	0.07	0.15	0.21	0.32	0.02	0.28
Control Delay	33.3	23.6	51.1	19.0	6.2	7.8	1.1	8.6	15.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	33.3	23.6	51.1	19.0	6.2	7.8	1.1	8.6	15.5
LOS	C	C	D	B	A	A	A	A	B
Approach Delay		25.2		48.4		4.1			15.2
Approach LOS		C		D		A			B

Intersection Summary

Cycle Length: 120  
 Actuated Cycle Length: 120  
 Offset: 42 (35%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow  
 Natural Cycle: 65  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.72  
 Intersection Signal Delay: 16.9  
 Intersection Capacity Utilization 50.6%  
 Analysis Period (min) 15

Intersection LOS: B  
 ICU Level of Service A























Splits and Phases: 3: Lisbon St & 65th Ave



# HCM 6th Signalized Intersection Summary





















## 3: Lisbon St & 65th Ave

AM 2040 Total  
Default

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	15	5	70	235	5	17	90	229	335	14	267	10
Future Volume (veh/h)	15	5	70	235	5	17	90	229	335	14	267	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	16	5	76	255	5	18	98	249	364	15	290	11
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	185	7	102	347	71	255	688	1156	980	499	1064	40
Arrive On Green	0.02	0.07	0.07	0.15	0.20	0.20	0.01	0.20	0.20	0.02	0.59	0.59
Sat Flow, veh/h	1781	99	1501	1781	356	1283	1781	1870	1585	1781	1790	68
Grp Volume(v), veh/h	16	0	81	255	0	23	98	249	364	15	0	301
Grp Sat Flow(s),veh/h/ln	1781	0	1600	1781	0	1639	1781	1870	1585	1781	0	1858
Q Serve(g_s), s	1.0	0.0	6.0	15.4	0.0	1.4	2.5	13.3	23.7	0.4	0.0	9.4
Cycle Q Clear(g_c), s	1.0	0.0	6.0	15.4	0.0	1.4	2.5	13.3	23.7	0.4	0.0	9.4
Prop In Lane	1.00		0.94	1.00		0.78	1.00		1.00	1.00		0.04
Lane Grp Cap(c), veh/h	185	0	109	347	0	325	688	1156	980	499	0	1104
V/C Ratio(X)	0.09	0.00	0.75	0.73	0.00	0.07	0.14	0.22	0.37	0.03	0.00	0.27
Avail Cap(c_a), veh/h	266	0	340	418	0	553	772	1156	980	582	0	1104
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	0.64	0.64	0.64	1.00	0.00	1.00
Uniform Delay (d), s/veh	50.7	0.0	54.9	41.6	0.0	39.1	9.0	23.5	27.7	9.6	0.0	11.8
Incr Delay (d2), s/veh	0.2	0.0	9.7	5.3	0.0	0.1	0.1	0.3	0.7	0.0	0.0	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.8	0.0	4.9	11.7	0.0	1.0	1.8	10.2	14.5	0.3	0.0	7.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	50.9	0.0	64.6	46.9	0.0	39.2	9.1	23.8	28.4	9.7	0.0	12.4
LnGrp LOS	D	A	E	D	A	D	A	C	C	A	A	B
Approach Vol, veh/h	97			278			711			316		
Approach Delay, s/veh	62.3			46.3			24.1			12.3		
Approach LOS	E			D			C			B		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	6.5	78.7	22.2	12.6	9.3	75.8	6.6	28.3				
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	46.5	22.5	25.5	10.5	43.5	7.5	40.5				
Max Q Clear Time (g_c+I1), s	2.4	25.7	17.4	8.0	4.5	11.4	3.0	3.4				
Green Ext Time (p_c), s	0.0	2.8	0.3	0.3	0.1	1.9	0.0	0.1				
Intersection Summary												
HCM 6th Ctrl Delay	28.5											
HCM 6th LOS	C											

Timings  
4: 64th Ave & Lisbon St

AM 2040 Total  
Default

										
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	374	905	265	928	135	70	70	291	50	220
Future Volume (vph)	374	905	265	928	135	70	70	291	50	220
Turn Type	pm+pt	NA	pm+pt	NA	pm+pt	NA	pm+ov	pm+pt	NA	pm+ov
Protected Phases	7	4	3	8	5	2	3	1	6	7
Permitted Phases	4		8		2		2	6		6
Detector Phase	7	4	3	8	5	2	3	1	6	7
Switch Phase										
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.5	22.5	9.5	22.5	9.5	22.5	9.5	9.5	22.5	9.5
Total Split (s)	25.0	58.0	18.0	51.0	15.0	26.0	18.0	18.0	29.0	25.0
Total Split (%)	20.8%	48.3%	15.0%	42.5%	12.5%	21.7%	15.0%	15.0%	24.2%	20.8%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lead	Lead	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	C-Max	None	C-Max	None	None	None	None	None	None
Act Effect Green (s)	84.9	61.0	67.4	48.0	20.1	10.2	32.0	24.9	12.5	47.4
Actuated g/C Ratio	0.71	0.51	0.56	0.40	0.17	0.08	0.27	0.21	0.10	0.40
v/c Ratio	0.75	0.63	0.67	0.91	0.56	0.48	0.15	1.08	0.28	0.35
Control Delay	39.4	24.6	31.3	29.0	47.7	61.6	4.2	108.1	40.9	13.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	39.4	24.6	31.3	29.0	47.7	61.6	4.2	108.1	40.9	13.9
LOS	D	C	C	C	D	E	A	F	D	B
Approach Delay		28.6		29.4		40.2			65.2	
Approach LOS		C		C		D			E	

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 48 (40%), Referenced to phase 4:EBTL and 8:WBTL, Start of Yellow

Natural Cycle: 100

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.08

Intersection Signal Delay: 35.4

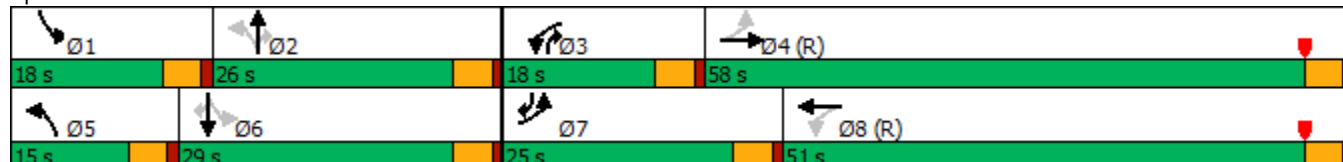
Intersection LOS: D

Intersection Capacity Utilization 87.8%

ICU Level of Service E

Analysis Period (min) 15























Splits and Phases: 4: 64th Ave & Lisbon St



# HCM 6th Signalized Intersection Summary

## 4: 64th Ave & Lisbon St

























AM 2040 Total  
Default

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	374	905	125	265	928	230	135	70	70	291	50	220
Future Volume (veh/h)	374	905	125	265	928	230	135	70	70	291	50	220
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	407	984	136	288	1009	250	147	76	76	316	54	239
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	488	1596	220	390	1356	335	347	231	362	367	279	449
Arrive On Green	0.13	0.51	0.51	0.21	0.96	0.96	0.09	0.12	0.12	0.04	0.05	0.05
Sat Flow, veh/h	1781	3136	433	1781	2824	697	1781	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	407	557	563	288	633	626	147	76	76	316	54	239
Grp Sat Flow(s),veh/h/ln	1781	1777	1792	1781	1777	1745	1781	1870	1585	1781	1870	1585
Q Serve(g_s), s	13.4	26.9	27.0	10.5	6.0	6.1	8.5	4.5	4.7	13.5	3.3	15.3
Cycle Q Clear(g_c), s	13.4	26.9	27.0	10.5	6.0	6.1	8.5	4.5	4.7	13.5	3.3	15.3
Prop In Lane	1.00		0.24	1.00		0.40	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	488	904	912	390	853	837	347	231	362	367	279	449
V/C Ratio(X)	0.83	0.62	0.62	0.74	0.74	0.75	0.42	0.33	0.21	0.86	0.19	0.53
Avail Cap(c_a), veh/h	553	904	912	403	853	837	348	335	450	367	382	536
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	0.33	0.33	0.33
Upstream Filter(l)	1.00	1.00	1.00	0.60	0.60	0.60	1.00	1.00	1.00	0.87	0.87	0.87
Uniform Delay (d), s/veh	13.4	21.1	21.1	15.2	1.4	1.4	40.8	48.0	37.5	47.4	50.1	40.6
Incr Delay (d2), s/veh	9.6	3.1	3.1	4.2	3.5	3.7	0.8	0.8	0.3	16.3	0.3	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	10.6	17.4	17.5	6.1	2.8	2.8	6.9	3.8	3.3	7.4	2.9	10.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	23.1	24.2	24.2	19.3	4.9	5.1	41.6	48.9	37.8	63.7	50.4	41.4
LnGrp LOS	C	C	C	B	A	A	D	D	D	E	D	D
Approach Vol, veh/h	1527			1547			299			609		
Approach Delay, s/veh	23.9			7.7			42.5			53.8		
Approach LOS	C			A			D			D		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	18.0	19.3	17.1	65.6	14.9	22.4	20.6	62.1				
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	13.5	21.5	13.5	53.5	10.5	24.5	20.5	46.5				
Max Q Clear Time (g_c+l1), s	15.5	6.7	12.5	29.0	10.5	17.3	15.4	8.1				
Green Ext Time (p_c), s	0.0	0.5	0.1	8.5	0.0	0.6	0.6	11.7				
Intersection Summary												
HCM 6th Ctrl Delay				23.6								
HCM 6th LOS				C								
Notes												



Timings  
5: Picadilly Rd & 64th Ave

AM 2040 Total  
Default

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	266	791	124	410	1075	471	142	370	315	471	421	356
Future Volume (vph)	266	791	124	410	1075	471	142	370	315	471	421	356
Turn Type	Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	pm+ov
Protected Phases	7	4	5	3	8	1	5	2	3	1	6	7
Permitted Phases			4			8			2			6
Detector Phase	7	4	5	3	8	1	5	2	3	1	6	7
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	9.5	9.5	22.5	9.5	9.5	22.5	9.5	9.5	22.5	9.5
Total Split (s)	19.0	41.0	21.0	24.0	46.0	25.0	21.0	30.0	24.0	25.0	34.0	19.0
Total Split (%)	15.8%	34.2%	17.5%	20.0%	38.3%	20.8%	17.5%	25.0%	20.0%	20.8%	28.3%	15.8%
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	Lead	Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	C-Max	None	None	C-Max	None	None	None	None	None	None	None
Act Effect Green (s)	15.6	45.7	64.5	21.3	51.4	75.9	14.4	14.9	40.8	20.1	20.7	40.8
Actuated g/C Ratio	0.13	0.38	0.54	0.18	0.43	0.63	0.12	0.12	0.34	0.17	0.17	0.34
v/c Ratio	0.65	0.64	0.15	0.73	0.77	0.50	0.73	0.64	0.60	0.89	0.52	0.65
Control Delay	71.8	25.3	1.8	53.8	34.8	12.9	70.4	54.4	30.9	57.7	40.0	26.7
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	71.8	25.3	1.8	53.8	34.8	12.9	70.4	54.4	30.9	57.7	40.0	26.7
LOS	E	C	A	D	C	B	E	D	C	E	D	C
Approach Delay		33.3			33.5			48.2			42.9	
Approach LOS		C			C			D			D	

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 104 (87%), Referenced to phase 4:EBT and 8:WBT, Start of Yellow

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.89

Intersection Signal Delay: 38.0

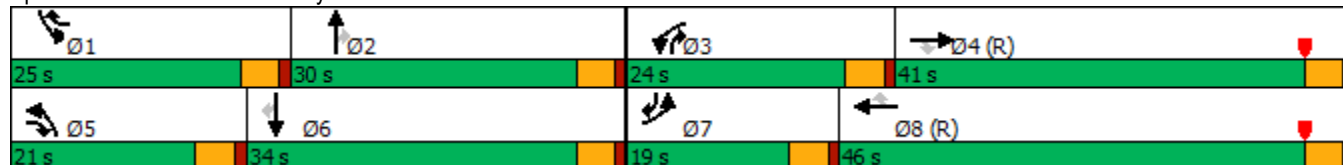
Intersection LOS: D

Intersection Capacity Utilization 72.9%

ICU Level of Service C

Analysis Period (min) 15

























Splits and Phases: 5: Picadilly Rd & 64th Ave



# HCM 6th Signalized Intersection Summary























## 5: Picadilly Rd & 64th Ave

AM 2040 Total  
Default

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	266	791	124	410	1075	471	142	370	315	471	421	356
Future Volume (veh/h)	266	791	124	410	1075	471	142	370	315	471	421	356
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	289	860	135	446	1168	512	154	402	342	512	458	387
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	344	1191	693	507	1358	868	182	1035	554	572	1359	579
Arrive On Green	0.20	0.67	0.67	0.15	0.38	0.38	0.10	0.20	0.20	0.05	0.09	0.09
Sat Flow, veh/h	3456	3554	1585	3456	3554	1585	1781	5106	1585	3456	5106	1585
Grp Volume(v), veh/h	289	860	135	446	1168	512	154	402	342	512	458	387
Grp Sat Flow(s),veh/h/ln	1728	1777	1585	1728	1777	1585	1781	1702	1585	1728	1702	1585
Q Serve(g_s), s	9.7	18.6	3.4	15.2	36.3	25.9	10.2	8.2	21.5	17.7	10.1	25.1
Cycle Q Clear(g_c), s	9.7	18.6	3.4	15.2	36.3	25.9	10.2	8.2	21.5	17.7	10.1	25.1
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	344	1191	693	507	1358	868	182	1035	554	572	1359	579
V/C Ratio(X)	0.84	0.72	0.19	0.88	0.86	0.59	0.85	0.39	0.62	0.89	0.34	0.67
Avail Cap(c_a), veh/h	418	1191	693	562	1358	868	245	1085	569	590	1359	579
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33
Upstream Filter(I)	0.65	0.65	0.65	1.00	1.00	1.00	1.00	1.00	1.00	0.89	0.89	0.89
Uniform Delay (d), s/veh	47.1	16.2	9.9	50.2	34.1	18.1	52.9	41.4	32.4	55.7	44.8	39.9
Incr Delay (d2), s/veh	8.3	2.5	0.4	14.0	7.3	2.9	18.0	0.2	1.9	14.4	0.1	2.6
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	6.9	8.1	2.1	12.0	23.5	15.1	9.3	6.2	13.3	14.1	7.9	16.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	55.5	18.7	10.3	64.2	41.4	21.1	70.9	41.6	34.3	70.1	44.9	42.5
LnGrp LOS	E	B	B	E	D	C	E	D	C	E	D	D
Approach Vol, veh/h	1284			2126			898			1357		
Approach Delay, s/veh	26.1			41.3			43.9			53.8		
Approach LOS	C			D			D			D		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	24.4	28.8	22.1	44.7	16.8	36.4	16.4	50.4				
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	20.5	25.5	19.5	36.5	16.5	29.5	14.5	41.5				
Max Q Clear Time (g_c+I1), s	19.7	23.5	17.2	20.6	12.2	27.1	11.7	38.3				
Green Ext Time (p_c), s	0.2	0.8	0.4	6.0	0.1	1.1	0.3	2.5				
Intersection Summary												
HCM 6th Ctrl Delay	41.2											
HCM 6th LOS	D											

Timings  
6: Picadilly Rd & 65th Ave

AM 2040 Total  
Default

											
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations											
Traffic Volume (vph)	56	5	270	145	5	45	175	772	160	45	833
Future Volume (vph)	56	5	270	145	5	45	175	772	160	45	833
Turn Type	pm+pt	NA	pm+ov	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA
Protected Phases	7	4	5	3	8		5	2		1	6
Permitted Phases	4		4	8		8	2		2	6	
Detector Phase	7	4	5	3	8	8	5	2	2	1	6
Switch Phase											
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.5	22.5	22.5	9.5	22.5	22.5	22.5	22.5	22.5	9.5	22.5
Total Split (s)	12.0	32.0	18.0	15.0	35.0	35.0	18.0	61.0	61.0	12.0	55.0
Total Split (%)	10.0%	26.7%	15.0%	12.5%	29.2%	29.2%	15.0%	50.8%	50.8%	10.0%	45.8%
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
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
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	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	Lead	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag
Lead-Lag Optimize?	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
Act Effect Green (s)	8.5	5.9	21.1	16.7	7.4	7.4	94.0	85.2	85.2	76.9	70.6
Actuated g/C Ratio	0.07	0.05	0.18	0.14	0.06	0.06	0.78	0.71	0.71	0.64	0.59
v/c Ratio	0.48	0.05	0.78	0.66	0.04	0.22	0.34	0.23	0.15	0.11	0.32
Control Delay	65.1	52.4	36.3	61.8	53.2	2.2	10.5	8.3	3.6	6.0	13.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	65.1	52.4	36.3	61.8	53.2	2.2	10.5	8.3	3.6	6.0	13.9
LOS	E	D	D	E	D	A	B	A	A	A	B
Approach Delay		41.4			47.9			8.0			13.6
Approach LOS		D			D			A			B

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 42 (35%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow

Natural Cycle: 80

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.78

Intersection Signal Delay: 17.4

Intersection LOS: B

Intersection Capacity Utilization 53.0%

ICU Level of Service A

Analysis Period (min) 15

























Splits and Phases: 6: Picadilly Rd & 65th Ave



# HCM 6th Signalized Intersection Summary

## 6: Picadilly Rd & 65th Ave

AM 2040 Total  
Default

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	56	5	270	145	5	45	175	772	160	45	833	40
Future Volume (veh/h)	56	5	270	145	5	45	175	772	160	45	833	40
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	61	5	293	158	5	49	190	839	174	49	905	43
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	383	353	410	414	441	374	419	2769	860	401	2527	120
Arrive On Green	0.04	0.19	0.19	0.09	0.24	0.24	0.14	1.00	1.00	0.03	0.51	0.51
Sat Flow, veh/h	1781	1870	1585	1781	1870	1585	1781	5106	1585	1781	4995	237
Grp Volume(v), veh/h	61	5	293	158	5	49	190	839	174	49	616	332
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	1870	1585	1781	1702	1585	1781	1702	1828
Q Serve(g_s), s	3.3	0.3	20.2	8.3	0.2	2.9	6.2	0.0	0.0	1.6	13.1	13.1
Cycle Q Clear(g_c), s	3.3	0.3	20.2	8.3	0.2	2.9	6.2	0.0	0.0	1.6	13.1	13.1
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.13
Lane Grp Cap(c), veh/h	383	353	410	414	441	374	419	2769	860	401	1722	925
V/C Ratio(X)	0.16	0.01	0.71	0.38	0.01	0.13	0.45	0.30	0.20	0.12	0.36	0.36
Avail Cap(c_a), veh/h	426	429	474	418	475	403	495	2769	860	453	1722	925
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	1.00	1.00	1.00	1.00	1.00	0.79	0.79	0.79	1.00	1.00	1.00
Uniform Delay (d), s/veh	37.1	39.6	40.4	33.1	35.1	36.2	11.7	0.0	0.0	13.1	17.9	17.9
Incr Delay (d2), s/veh	0.2	0.0	4.3	0.6	0.0	0.2	0.6	0.2	0.4	0.1	0.6	1.1
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	2.6	0.2	13.1	6.6	0.2	2.1	3.9	0.1	0.2	1.2	9.0	9.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	37.3	39.6	44.7	33.7	35.1	36.3	12.3	0.2	0.4	13.2	18.5	19.0
LnGrp LOS	D	D	D	C	D	D	B	A	A	B	B	B
Approach Vol, veh/h	359			212			1203			997		
Approach Delay, s/veh	43.4			34.4			2.2			18.4		
Approach LOS	D			C			A			B		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	8.5	69.6	14.7	27.2	12.9	65.2	9.1	32.8				
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	7.5	56.5	10.5	27.5	13.5	50.5	7.5	30.5				
Max Q Clear Time (g_c+l1), s	3.6	2.0	10.3	22.2	8.2	15.1	5.3	4.9				
Green Ext Time (p_c), s	0.0	8.1	0.0	0.5	0.2	7.5	0.0	0.1				
Intersection Summary												
HCM 6th Ctrl Delay	15.8											
HCM 6th LOS	B											

Intersection						
Int Delay, s/veh	0.4					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑		↑	↑
Traffic Vol, veh/h	6	318	197	23	14	3
Future Vol, veh/h	6	318	197	23	14	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	7	346	214	25	15	3
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	239	0	-	0	587	227
Stage 1	-	-	-	-	227	-
Stage 2	-	-	-	-	360	-
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	1361	-	-	-	*614	921
Stage 1	-	-	-	-	*868	-
Stage 2	-	-	-	-	*769	-
Platoon blocked, %	1	-	-	-	1	1
Mov Cap-1 Maneuver	1361	-	-	-	*611	921
Mov Cap-2 Maneuver	-	-	-	-	*646	-
Stage 1	-	-	-	-	*863	-
Stage 2	-	-	-	-	*769	-
Approach	EB	WB		SB		
HCM Control Delay, s	0.1	0		10.4		
HCM LOS	B					
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1361	-	-	-	-	682
HCM Lane V/C Ratio	0.005	-	-	-	-	0.027
HCM Control Delay (s)	7.7	-	-	-	-	10.4
HCM Lane LOS	A	-	-	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	-	0.1
Notes						
~: Volume exceeds capacity		\$: Delay exceeds 300s		+: Computation Not Defined		*: All major volume in platoon

Intersection

Int Delay, s/veh 0.5

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑		↑	↑
Traffic Vol, veh/h	10	311	179	21	13	6
Future Vol, veh/h	10	311	179	21	13	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	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	11	338	195	23	14	7

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	218	0	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	4.12	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	2.218	-	-
Pot Cap-1 Maneuver	1380	-	-
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	1	-	-
Mov Cap-1 Maneuver	1380	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	0.2	0	10.2
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1380	-	-	-	713
HCM Lane V/C Ratio	0.008	-	-	-	0.029
HCM Control Delay (s)	7.6	-	-	-	10.2
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.1

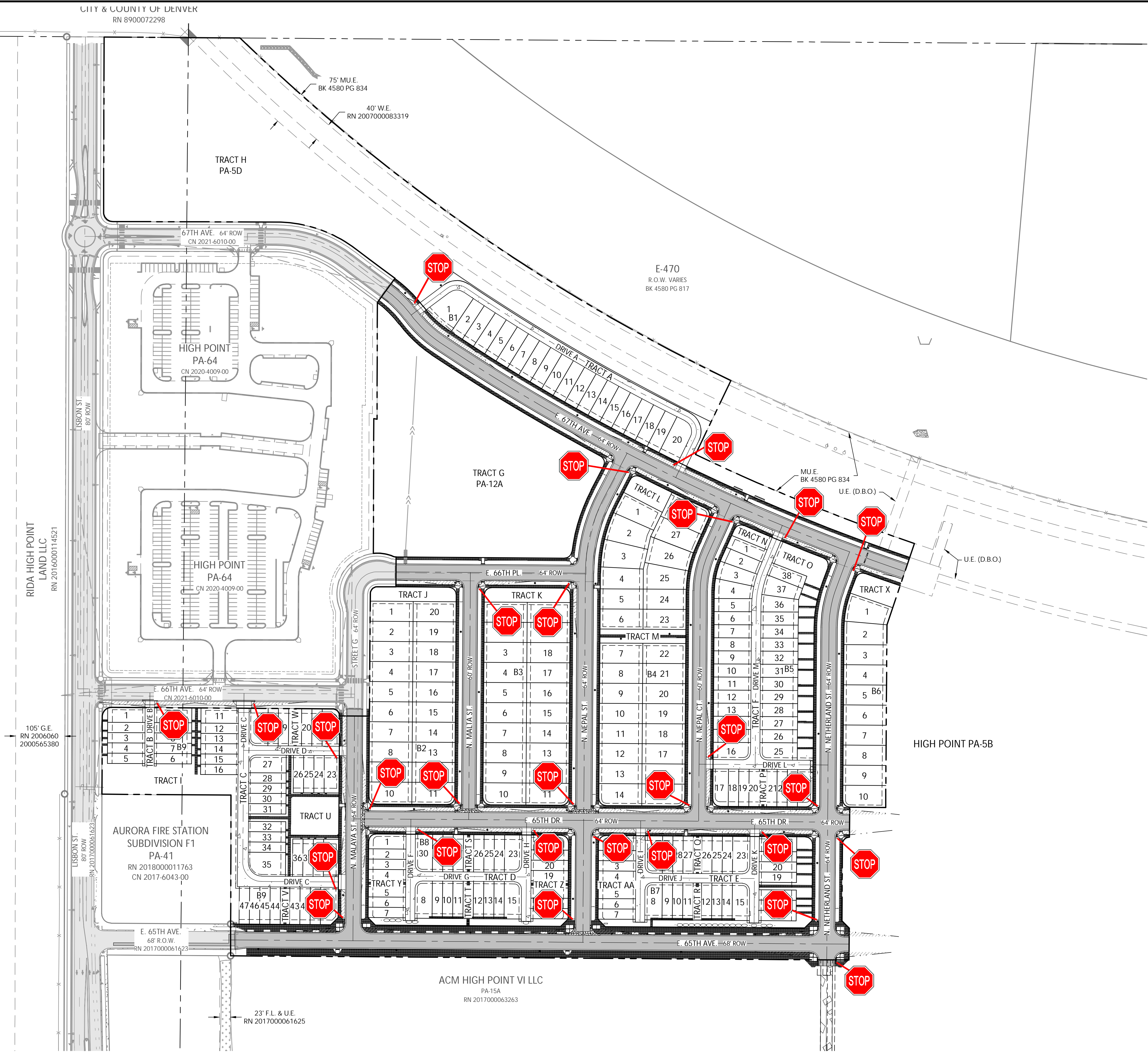
Intersection						
Int Delay, s/veh	0.5					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑		↑	
Traffic Vol, veh/h	7	313	172	18	13	4
Future Vol, veh/h	7	313	172	18	13	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	8	340	187	20	14	4
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	207	0	-	0	553	197
Stage 1	-	-	-	-	197	-
Stage 2	-	-	-	-	356	-
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	1395	-	-	-	577	938
Stage 1	-	-	-	-	887	-
Stage 2	-	-	-	-	773	-
Platoon blocked, %	1	-	-	-	1	1
Mov Cap-1 Maneuver	1395	-	-	-	573	938
Mov Cap-2 Maneuver	-	-	-	-	634	-
Stage 1	-	-	-	-	881	-
Stage 2	-	-	-	-	773	-
Approach	EB	WB		SB		
HCM Control Delay, s	0.2	0		10.4		
HCM LOS	B					
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1395	-	-	-	-	686
HCM Lane V/C Ratio	0.005	-	-	-	-	0.027
HCM Control Delay (s)	7.6	-	-	-	-	10.4
HCM Lane LOS	A	-	-	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	-	0.1

Intersection						
Int Delay, s/veh	0.5					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑		↑	
Traffic Vol, veh/h	7	312	163	23	13	4
Future Vol, veh/h	7	312	163	23	13	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	8	339	177	25	14	4
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	202	0	-	0	545	190
Stage 1	-	-	-	-	190	-
Stage 2	-	-	-	-	355	-
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	1393	-	-	-	620	926
Stage 1	-	-	-	-	882	-
Stage 2	-	-	-	-	774	-
Platoon blocked, %	1	-	-	-	1	1
Mov Cap-1 Maneuver	1393	-	-	-	615	926
Mov Cap-2 Maneuver	-	-	-	-	651	-
Stage 1	-	-	-	-	875	-
Stage 2	-	-	-	-	774	-
Approach	EB	WB		SB		
HCM Control Delay, s	0.2	0		10.3		
HCM LOS	B					
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1393	-	-	-	700	
HCM Lane V/C Ratio	0.005	-	-	-	0.026	
HCM Control Delay (s)	7.6	-	-	-	10.3	
HCM Lane LOS	A	-	-	-	B	
HCM 95th %tile Q(veh)	0	-	-	-	0.1	



## APPENDIX D. STOP SIGN LOCATION EXHIBIT MAP

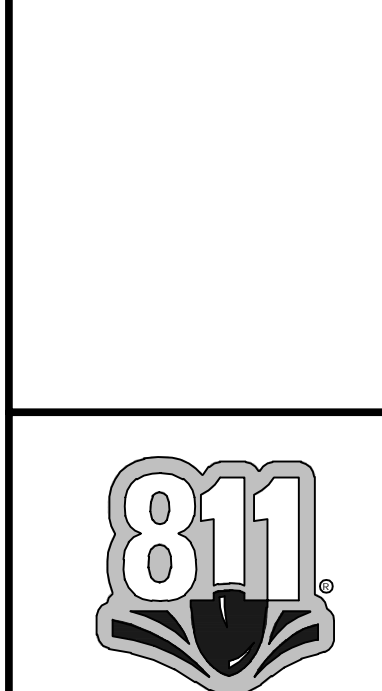
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303.421.4224  
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Revision Type:		Revision No.:	
No.	Rev. Date:	1	2
1		2	3
2		3	4
3		4	5
4		5	6
5		6	
6			

Proj. Name:		High Point PA-5A	
Location:		Aurora, Colorado	
Plan Set:		Stop Sign Location Exhibit	
Sheet Name:			



Sheet:	1
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## APPENDIX E. FULL LEVEL OF SERVICE COMPARISON TABLE



Intersection	Movement	LOS							
		Short Term Background		Short Term Total		Long Term Background		Long Term Total	
		AM	PM	AM	PM	AM	PM	AM	PM
1. Lisbon Street/High Point Boulevard (Roundabout)	EBLTR					a (3.7)	a (4.1)	a (3.8)	a (4.2)
	WBLTR					a (3.7)	a (3.5)	a (3.9)	a (3.6)
	NBLTR					a (4.2)	a (4.1)	a (4.5)	a (4.3)
	SBLTR					a (4.2)	a (4.8)	a (4.3)	a (4.9)
	<b>Overall</b>					<b>A (4.2)</b>	<b>A (4.4)</b>	<b>A (4.3)</b>	<b>A (4.5)</b>
2. Lisbon Street/66th Avenue (Stop-Controlled)	EBL	a (9.1)	a (9.2)	a (9.3)	a (9.5)	b (13.6)	b (14.3)	b (14.2)	b (14.9)
	EBTR					b (10.4)	b (10.8)	b (10.5)	b (11.0)
	WBL					c (15.1)	c (15.6)	c (16.3)	c (16.5)
	WBTR					b (11.5)	b (11.5)	b (11.5)	b (11.8)
	NBL					a (7.8)	a (8.0)	a (7.8)	a (8.0)
	SBL	a (0.0)	a (0.0)	a (0.0)	a (0.0)	a (7.8)	a (7.7)	a (7.9)	a (7.7)
2. Lisbon Street/66th Avenue (Roundabout)	EBLTR					a (4.0)	a (4.3)	a (4.1)	a (4.4)
	WBLTR					a (4.3)	a (3.8)	a (4.5)	a (3.9)
	NBLTR					a (5.0)	a (5.1)	a (5.1)	a (4.8)
	SBLTR					a (4.6)	a (4.6)	a (4.9)	a (5.3)
	<b>Overall</b>					<b>A (4.7)</b>	<b>A (4.7)</b>	<b>A (4.9)</b>	<b>A (4.9)</b>
3. 65th Avenue/Lisbon Street	EBL	a (0.0)	a (0.0)	a (9.7)	a (9.9)	e (56.8)	d (50.9)	e (56.5)	d (50.9)
	EBTR					e (60.7)	e (64.8)	e (59.6)	e (64.6)
	WBL					e (56.2)	d (45.2)	e (55.1)	d (46.9)
	WBTR					e (57.6)	d (39.9)	e (55.2)	d (39.2)
	NBL					a (2.3)	a (8.1)	a (2.8)	a (9.1)
	NBT					a (0.3)	a (0.2)	a (0.4)	c (23.8)
	NBR					a (0.1)	a (0.5)	a (0.1)	c (28.4)
	SBL	a (0.0)	a (0.0)	a (0.0)	a (0.0)	a (2.4)	a (9.0)	a (2.8)	a (9.7)
	SBTR					a (3.6)	b (11.8)	a (4.4)	b (12.4)
	<b>Overall</b>					<b>A (4.6)</b>	<b>B (17.0)</b>	<b>A (6.7)</b>	<b>C (28.5)</b>
4. 64th Avenue/Lisbon Street	EBL	a (7.6)	a (7.8)	a (7.6)	a (7.9)	a (7.5)	b (13.4)	a (8.1)	c (23.1)
	EBTR					b (14.3)	c (21.9)	b (15.6)	c (24.2)
	WBL	a (9.0)	a (8.9)	a (9.0)	a (9.0)	b (10.2)	b (15.6)	b (11.2)	b (19.3)
	WBTR					a (0.9)	a (2.7)	a (1.0)	a (5.1)
	NBL	f (53.2)	e (48.2)	f (62.1)	f (68.9)	d (47.5)	d (46.6)	d (49.4)	d (41.6)
	NBT	d (28.8)	d (33.0)	d (29.7)	e (39.8)	d (53.2)	d (54.1)	d (55.0)	d (48.9)
	NBR	a (9.8)	a (9.7)	a (9.8)	a (9.7)	d (44.1)	d (41.7)	d (45.1)	d (37.8)
	SBL	d (27.6)	d (30.2)	d (31.7)	e (39.9)	d (50.8)	e (66.0)	d (42.4)	e (63.7)
	SBT	d (28.8)	d (33.4)	d (29.7)	e (39.4)	e (56.8)	d (51.3)	d (46.1)	d (50.4)
	SBR	a (9.0)	a (8.9)	a (9.4)	a (9.1)	d (51.8)	d (43.4)	d (43.3)	d (41.4)
	<b>Overall</b>					<b>B (16.2)</b>	<b>C (21.5)</b>	<b>B (16.5)</b>	<b>C (23.6)</b>

Intersection	Movement	LOS							
		Short Term		Short Term		Long Term		Long Term Total	
		AM	PM	AM	PM	AM	PM	AM	PM
5. 64th Avenue/Picadilly Road	EBL			b (10.4)	b (11.4)	e (60.9)	e (59.0)	e (68.3)	e (55.5)
	EBT	a (8.3)	b (11.8)	b (12.3)	b (13.6)	d (35.6)	c (23.3)	d (38.9)	b (18.7)
	EBR	a (7.4)	b (11.3)	b (11.1)	b (13.0)	c (20.4)	b (13.2)	c (23.0)	b (10.3)
	WBL	a (5.5)	a (7.7)	a (8.5)	b (12.6)	e (58.3)	e (64.2)	e (66.3)	e (64.2)
	WBT	a (4.5)	a (5.7)	a (9.0)	b (10.7)	c (20.3)	c (30.6)	c (23.8)	d (41.4)
	WBR			a (7.8)	a (9.4)	b (14.2)	b (15.1)	b (16.9)	c (21.1)
	NBL	d (44.7)	d (43.5)	d (39.8)	d (40.5)	e (66.2)	e (67.4)	e (66.1)	e (70.9)
	NBT			d (41.2)	d (38.4)	d (46.1)	d (47.9)	d (42.1)	d (41.6)
	NBR	e (56.5)	e (58.7)	e (61.2)	e (56.2)	d (48.0)	d (44.4)	d (39.6)	c (34.3)
	SBL			d (43.8)	d (39.9)	d (53.4)	e (66.3)	e (60.3)	e (70.1)
	SBT			d (46.5)	d (41.9)	c (33.2)	d (49.1)	c (27.8)	d (44.9)
	SBR			d (46.0)	d (41.7)	c (31.6)	d (50.9)	c (24.9)	d (42.5)
	<b>Overall</b>	<b>B (17.7)</b>	<b>C (20.6)</b>	<b>C (22.1)</b>	<b>C (22.7)</b>	<b>D (38.4)</b>	<b>D (41.0)</b>	<b>D (39.5)</b>	<b>D (41.2)</b>
6. 65th Avenue/Picadilly Road	EBL					d (52.7)	d (40.9)	d (47.1)	d (37.3)
	EBT					d (54.0)	d (43.1)	d (48.9)	d (39.6)
	EBR					d (53.0)	e (57.9)	d (51.2)	d (44.7)
	WBL					d (48.4)	d (36.8)	d (43.6)	c (33.7)
	WBT					d (48.0)	d (37.7)	d (44.6)	d (35.1)
	WBR					d (48.9)	d (39.0)	d (45.3)	d (36.3)
	NBL					a (4.5)	b (11.5)	a (6.5)	b (12.3)
	NBT					a (0.1)	a (0.5)	a (0.4)	a (0.2)
	NBR					a (0.1)	a (0.4)	a (0.1)	a (0.4)
	SBL					a (5.1)	b (10.4)	a (6.7)	b (13.2)
	SBTR					a (7.2)	b (17.4)	b (10.3)	b (19.0)
	<b>Overall</b>					<b>A (8.1)</b>	<b>B (16.5)</b>	<b>B (10.7)</b>	<b>B (15.8)</b>
65th Avenue/ Access #7	EBL			a (7.3)	a (7.4)			a (7.4)	a (7.7)
	SBLR			a (8.9)	a (9.0)			a (9.5)	b (10.4)
65th Avenue/ Access #8	EBL			a (7.3)	a (7.3)			a (7.4)	a (7.6)
	SBLR			a (8.8)	a (8.9)			a (9.3)	b (10.2)
65th Avenue/ Access #9	EBL			a (7.3)	a (7.3)			a (7.4)	a (7.6)
	SBLR			a (8.7)	a (8.7)			a (9.3)	b (10.4)
65th Avenue/ Access #10	EBL			a (7.3)	a (7.3)			a (7.4)	a (7.6)
	SBLR			a (8.7)	a (8.7)			a (9.4)	b (10.3)