

TRANSPORTATION IMPACT STUDY
Stafford Logistics Center – Commercial
Aurora, Colorado

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I. INTRODUCTION

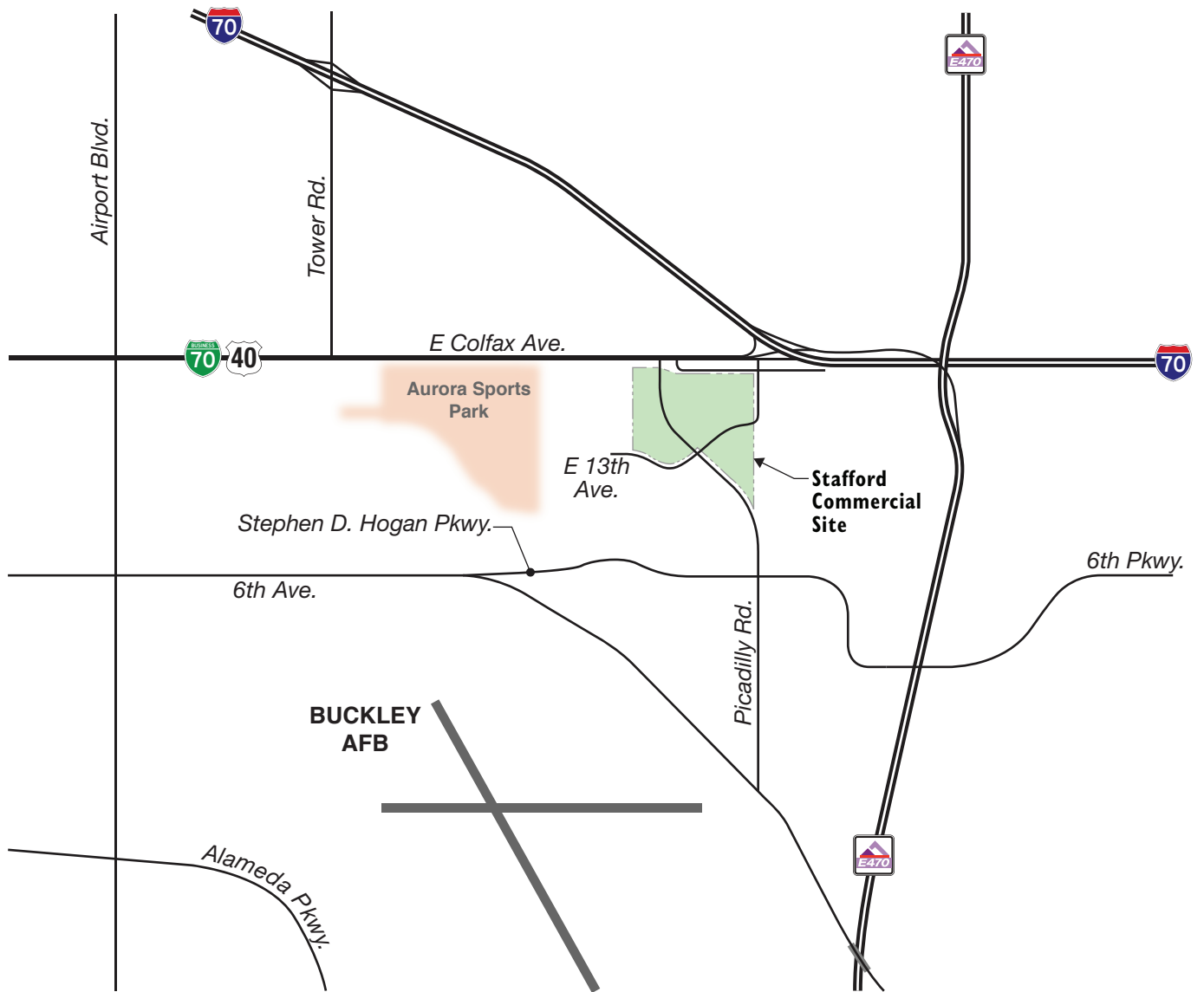
NorthPoint Development is proposing to develop approximately 350 acres primarily in the southwest quadrant of the Picadilly Road and Colfax Avenue intersection in Aurora, Colorado.

The proposed industrial development will consist of approximately 4.2 million square feet of industrial park, which is well underway with four of six proposed buildings already completed. The development will also include mixed retail and multifamily housing. The commercial portion will be located in the northeast corner of the overall site and will have a gas station, a shopping center, several fast-food restaurants, a car wash, multifamily housing, and other commercial land uses. This Transportation Impact Study (TIS) addresses the commercial and residential component of the site, which comprises the northeastern-most 50 acres focused around the intersection of Picadilly Road and 13th Avenue.

Figure 1 illustrates the location of the commercial site and the adjacent primary roadway network (existing and future planned roadways). **Figure 2** depicts the current site plan concept.

The purpose of this 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. This study examines the traffic impacts within the context of the year 2040 horizon.

This TIS provides operational information, including intersection level of service (LOS) and peak hour queue lengths, both of which inform recommendations in achieving long-term functionality. This TIS serves as an update to the Stafford Logistics Center Traffic Study completed in March 2021 specific to the commercial and residential parcels.





FELSBURG
HOLT &
ULLEVIG

Stafford Commercial 123785-01 6/28/24

II. EXISTING CONDITIONS

II.A. Land Use

The proposed commercial site is currently undeveloped. The industrial component of the site has mostly begun to build out over the last few years. Limited development around the site exists, including the Aurora Sports Park and M & M Auto to its west, single-family housing to its north (which is set back from Colfax), and large-lot residential development southeast of the site. An approved mixed-use development, Horizon Uptown, is planned east of the site across Picadilly Road and has begun residential development approximately one-half-mile south along the east side of Picadilly Road near Stephen D. Hogan Parkway.

II.B. Roadway System

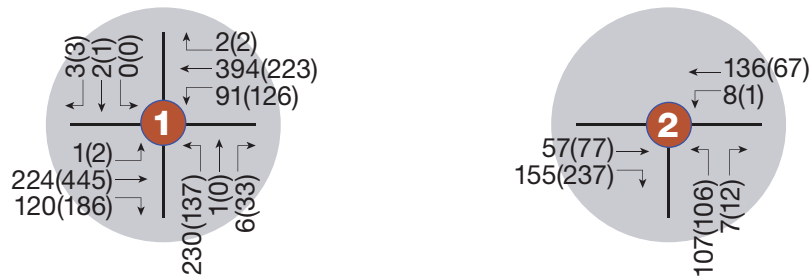
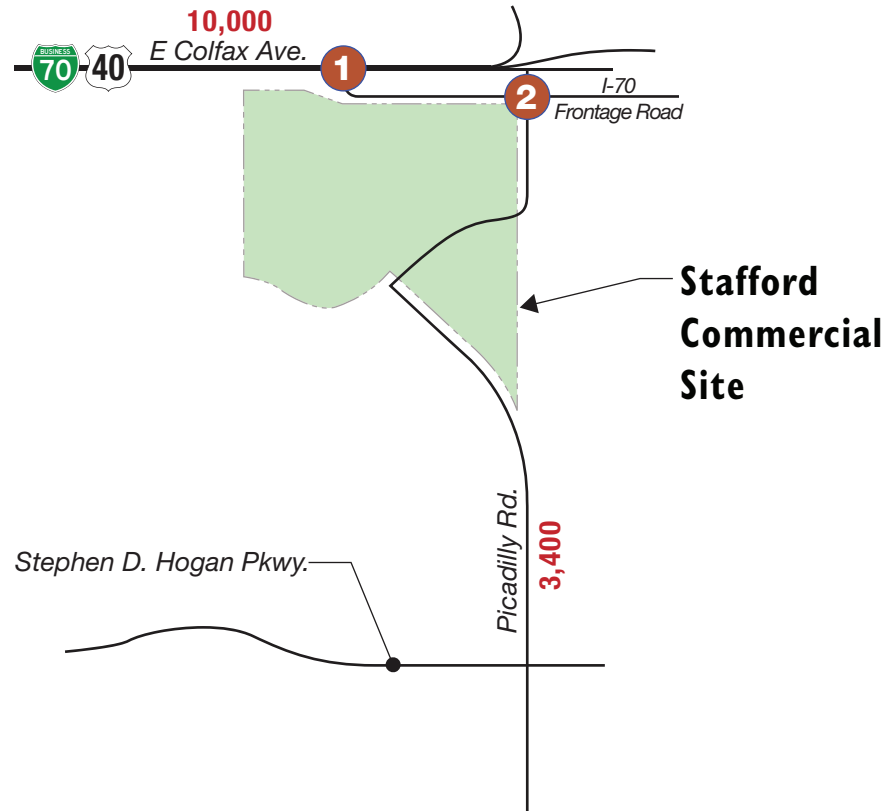
Roadways near the site are further described as follows:

- **Colfax Avenue** is a four-lane divided east-west state highway (US 40 and Business I-70) along the site's northern boundary. Currently a four-lane median-separated highway adjacent to the site, this roadway extends west through Aurora to downtown Denver and further to Golden. To the east, Colfax Avenue directly merges with I-70. Drivers also have the option of using the I-70 Frontage Road along the south side of Colfax Avenue, which connects to Gun Club Road through the I-70/E-470 interchange and parallels I-70 along its south side to the east. The posted speed limit adjacent to the site is 55 miles per hour (MPH).
- **Picadilly Road** is a two-lane north-south road that currently extends along the site's east side. Picadilly Road extends approximately 2 miles south from the I-70 Frontage Road to State Highway 30 (SH 30). Longer term, this roadway's alignment is planned to shift west near Colfax Avenue, extend north to a new interchange with I-70, and connect with the existing Picadilly Road north of Smith Road. Its ultimate cross-section is planned to be a six-lane major arterial facility. Adjacent to the site, the existing posted speed limit is 45 MPH. Initial phases of this realignment have occurred from the southern edge of the Stafford Commercial site up to 13th Avenue. While also completed, the segment between 13th Avenue and Colfax Avenue remains closed until phasing with the proposed interchange is completed.
- **13th Avenue** is a three-lane local roadway constructed west of realigned Picadilly Road through the already completed industrial portions of the Stafford Logistics Center with a posted speed of 35 MPH. A half section of the ultimate four-lane arterial segment of 13th Avenue has also been completed to the east of realigned Picadilly Road to the existing Picadilly Road alignment to maintain connectivity with Colfax Avenue via the I-70 Frontage Road prior to opening the northern section of realigned Picadilly Road as part of the phasing of the I-70/Picadilly Road interchange anticipated to be completed in 2025.

II.C. Traffic Volumes and Operations

Weekday AM and PM peak hour turning movement counts were collected along Colfax Avenue as part of the last TIS for this site. Traffic counts data along Picadilly Road were obtained from the 6th Avenue Extension study in support of the Stephen D. Hogan Parkway. **Figure 3** shows the data. These improvements have been developed based on the current understanding of the I-70/Picadilly Road interchange project and the findings of the 2020 I-70/Picadilly Road System Level Study (SLS). It is acknowledged that results of the interchange project study may provide additional recommendations at arterial intersections in the study area. **Appendix A** contains count data sheets.

KEY MAP



LEGEND

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

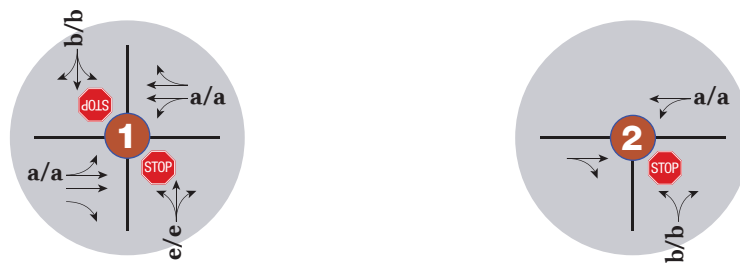
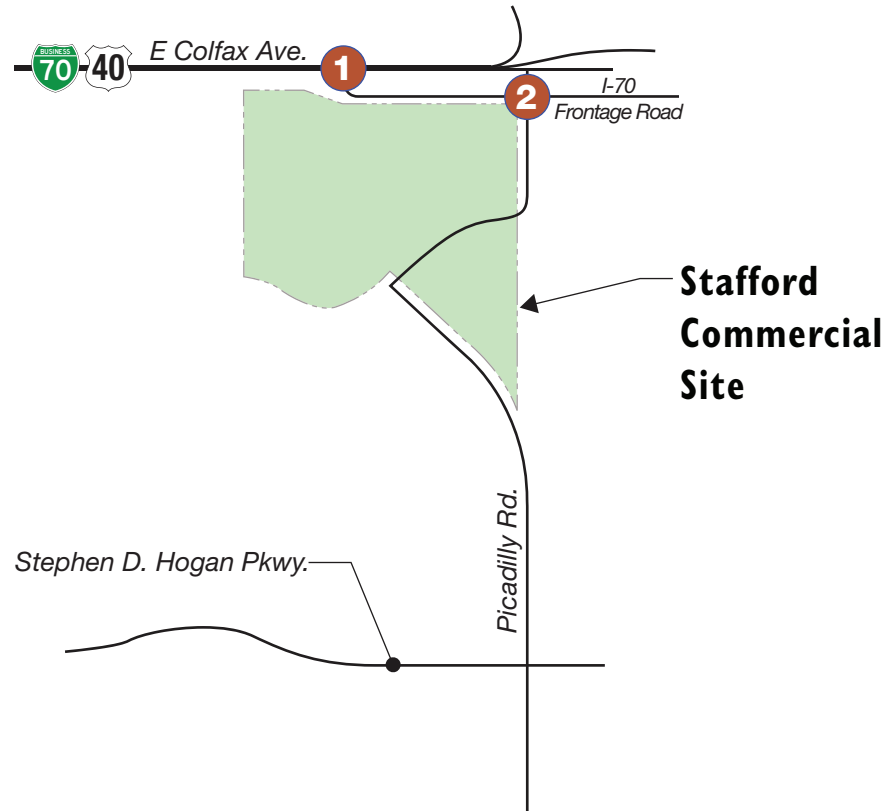
XXXX = Daily Traffic Volumes

As shown, Colfax Avenue serves 10,000 vehicles per day (VPD). Picadilly Road serves a fraction of the traffic that Colfax Avenue serves at 3,400 VPD and approximately 300 vehicles per hour during peak hours. Turning movements at the Picadilly Road/I-70 Frontage Road and the Colfax Avenue/I-70 Frontage Road intersections indicate a strong pattern between Colfax Avenue to the west and Picadilly Road to the south. While it is acknowledged that the exiting counts have aged beyond what is typically accepted, City staff has agreed that new counts would provide little value given the temporary nature of current roadway alignments that will change again over the course of the next two years with the I-70/Picadilly Road interchange project.

Traffic operations within the study area were evaluated according to techniques documented in the Highway Capacity Manual, 6th Edition (Transportation Research Board, 2016) using the existing traffic volumes, intersection geometry, and traffic control. Trafficware's Synchro traffic analysis software (Version 10.3) was used to perform the LOS calculations. LOS is a qualitative measure of traffic operational conditions based on roadway capacity and vehicle delay. LOS is 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 STOP controlled intersections, LOS is calculated for each movement that must yield the right-of-way. In urbanized areas, LOS D is typically considered to be acceptable for peak hour traffic operations and is the standard set in the City of Aurora TIS Guidelines.

Figure 4 shows the existing traffic control, intersection geometry and the results of the LOS analyses (Existing LOS worksheets are included in **Appendix B**). As indicated, all intersections currently operate within acceptable parameters, at LOS B or better, during peak times with the exception of the northbound approach at the Colfax Avenue/I-70 Frontage Road intersection, which operates at LOS E during both the AM and PM peak hours due to heavy northbound left turns. Previous analysis provided in the 2021 Stafford Logistics Center TIS indicated that signalization at the intersection of Colfax Avenue/I-70 Frontage Road is warranted under current conditions. However, Colorado Department of Transportation (CDOT) does not support signalization of this location as this intersection will be eliminated upon realignment of Picadilly Road, and the new intersection of Picadilly Road/Colfax Avenue should be signalized upon construction of the realignment as a part of the I-70/Picadilly Road interchange project.

KEY MAP



LEGEND

x/x = AM/PM Peak Hour Unsignalized
Intersection Level of Service

 = Stop Sign

III. PROPOSED CONDITIONS

III.A. Site Trip Generation

A trip generation analysis for the proposed site plan was conducted using average weekday data contained in Trip Generation, 11th Edition, Institute of Transportation Engineers (ITE), 2020. **Table I** shows the trip generation estimates.

Table I. Stafford Commercial Trip Generation Estimates

Land Use (Trip Generation Category)	Quantity	Daily Vehicle Trips	AM Peak Hour Trips			PM Peak Hour Trips		
			In	Out	Total	In	Out	Total
Shopping Center w/ no Grocery (#821)	52.5 KSF	3,545	56	35	91	134	138	272
Coffee/Donut Shop w/ Drive-Through (#937)	2.3 KSF	1,227	101	97	198	45	45	90
Multifamily Housing (Mid-Rise) (#221)	280 DUs	1,289	26	86	112	67	43	110
Mini-Warehouse (#151)	231.7 KSF	336	12	9	21	16	19	35
Automated Car Wash (#948)	1 Tunnel	780	10	10	20	39	39	78
Fast Food Restaurant w/ Drive-Through (#934)	3 KSF (3x) and 5.1 KSF	6,590	320	310	630	244	221	465
Gas/Service Station (#944)	24 pumps	4,128	123	124	247	167	167	334
Subtotal		17,895	648	671	1,319	712	672	1,384
Pass by Reduction²		4,692	254	254	508	277	277	554
Internal Capture Reduction¹		2,280	25	25	50	114	114	228
Net New Trips		10,923	369	392	761	321	281	602

1. Daily internal capture is assumed to be 10 times the PM value as calculated using ITE methodology. See attached NCHRP 684 Worksheets for peak hours.
2. Pass by reduction applied using current ITE rates for Gas/Service Station (63% AM, 57% PM), Shopping Center (40% AM, 40% PM, 29% Daily), Fast Food Restaurant (50% AM, 55% PM), and Coffee/Doughnut Shop for current site plan.

National Cooperative Highway Research Program (NCHRP) 684 provides the methodology for internal capture reductions based on the interactions of different land uses within mixed-use developments, including office, retail, restaurant, residential, cinema, and hotel. The methodology considers that mixed-use developments will keep a portion of the trips generated internal to the site, thereby reducing impacts to the adjacent roadway network. This methodology was applied to the site based on the specific land use mix presented in **Table I**.

Pass-by reductions are also taken for uses where vehicles traveling on a roadway adjacent to the site may stop to use certain services along the route of an existing trip. Pass-by reductions were taken for the Shopping Center, Coffee/Donut Shop, Fast Food Restaurant, and Gas/Service station based on percentages for these uses found in the ITE Trip Generation Manual.

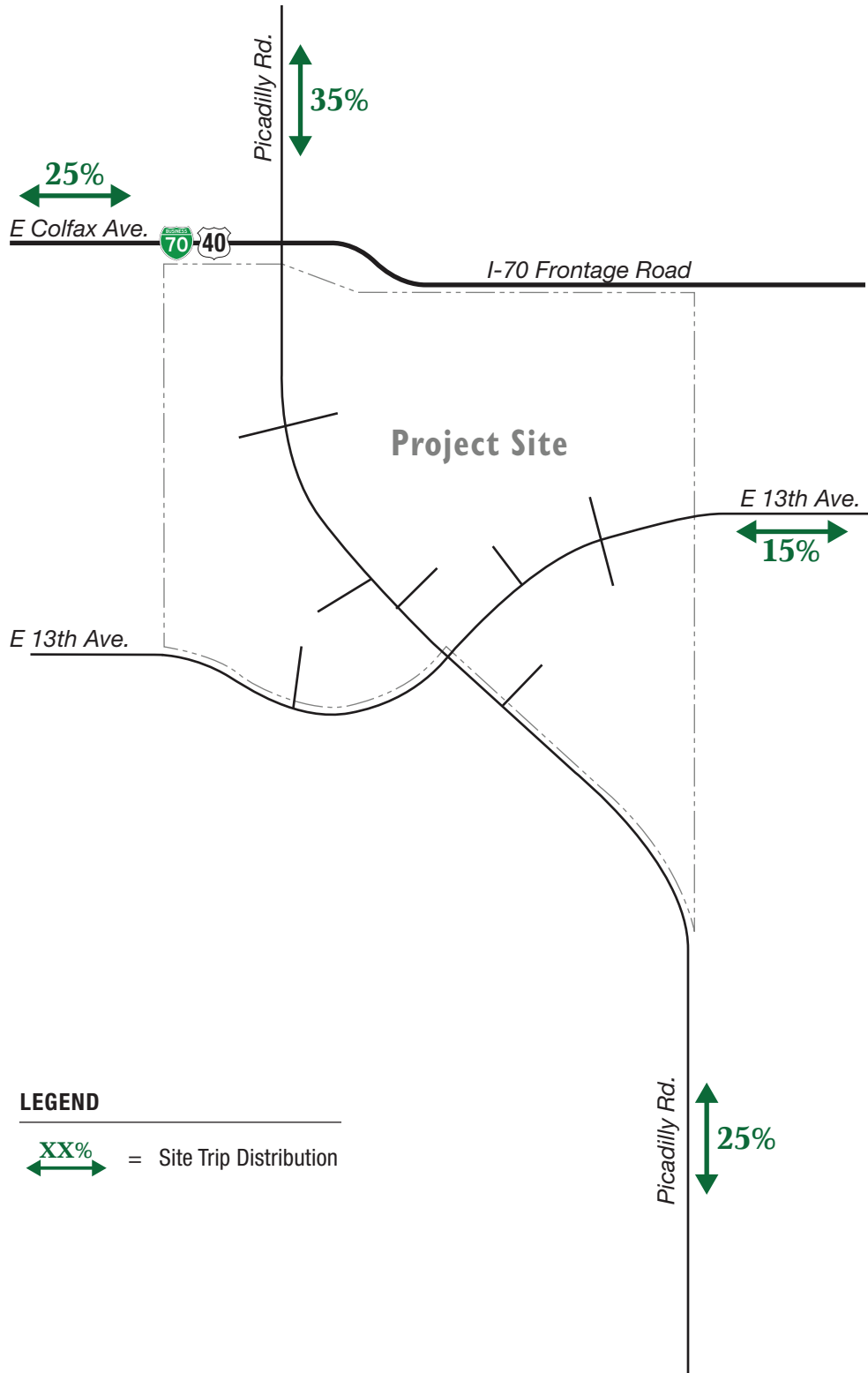
A comparative analysis of trip generation between the current site plan and the 2021 Stafford Logistics Center TIS for the commercial parcels was prepared to help guide the site plan development. That analysis in **Appendix C** includes ITE trip generation rates, pass-by percentages, and NCHRP 684 internal capture worksheets.

As shown in **Table I**, the proposed development would generate approximately 10,923 new external trips per day, with approximately 761 AM peak hour trips and approximately 602 PM peak hour trips.

III.B. Trip Distribution and Traffic Assignment

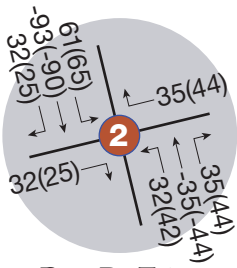
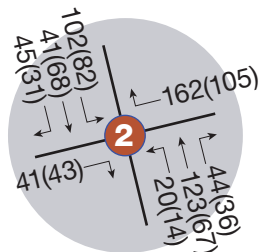
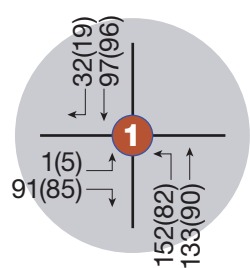
Trip distribution percentages for this site were based, in part, on the turning movement counts and on the Northeast Aurora Transportation Study (NEATS) travel demand model. While not fully in the NEATS study area, the site is immediately adjacent to the NEATS study area, and the City of Aurora requested that travel demand model be used for this project.

Figure 5 shows the long-term site-trip distribution percentages for the retail portions of the site. Twenty-five percent of trips come into and out of the site from the west using Colfax Avenue or streets accessed via Colfax. A further 25 percent come from the south using Picadilly Road to access Stephen D. Hogan Parkway. Thirty-five percent use Picadilly Road to the north to access the I-70 interchange. A final 15 percent will use 13th Avenue to the east. **Figure 6** shows the long-term trip assignments resulting from applying the percentages for the commercial and residential portions of the site. At intersections where pass-by trips apply, these trips are shown separately. Picadilly Road is projected to serve approximately 6,500 VPD south of Colfax Avenue and 1,400 VPD south of 13th Avenue. 13th Avenue is projected to serve approximately 2,500 VPD east of Picadilly Road and 2,800 VPD west of Picadilly Road.

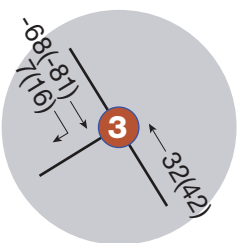
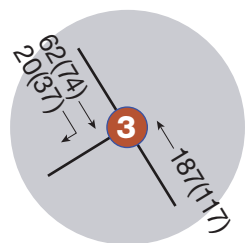


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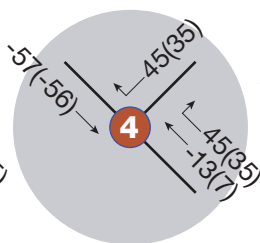
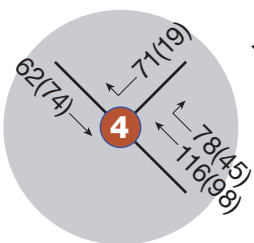
XX% = Site Trip Distribution



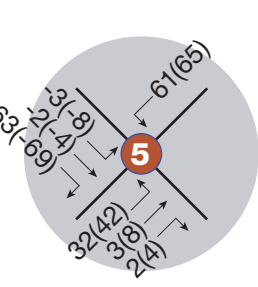
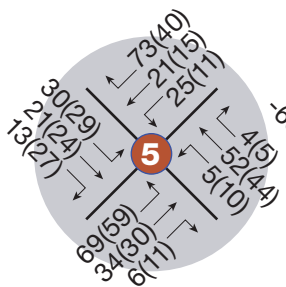
Pass-By Trips



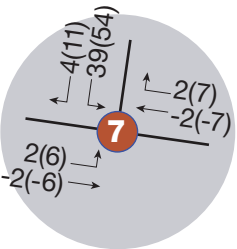
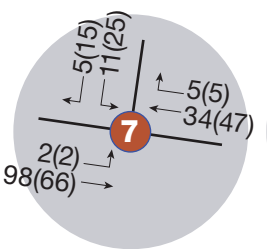
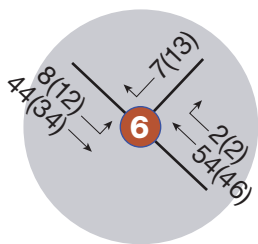
Pass-By Trips



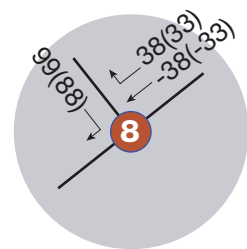
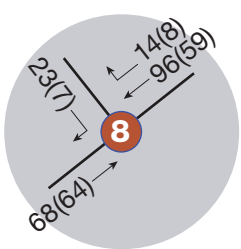
Pass-By Trips



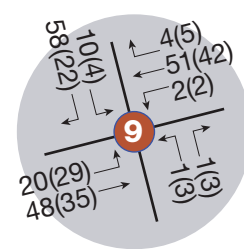
Pass-By Trips



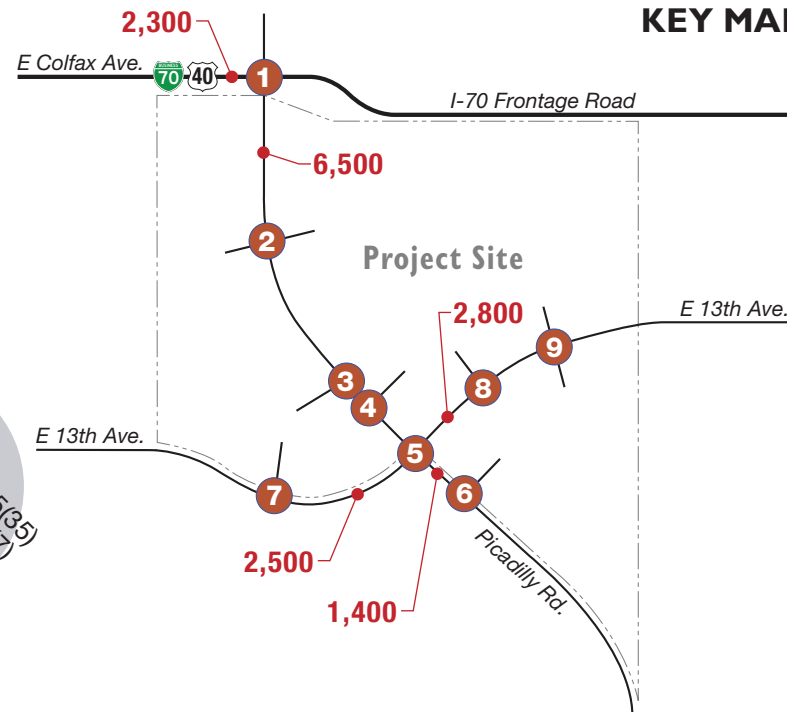
Pass-By Trips



Pass-By Trips



KEY MAP



LEGEND

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

XXXX = Daily Traffic Volumes

IV. FUTURE CONDITIONS

IV.A. Long-term Future Background

Roadway System

By Year 2040, Stafford is assumed to be built out. This includes the existing roadways, as well as:

- Full realignment of Picadilly Road to the west at Colfax Avenue and buildout to a six-lane arterial cross-section.
- Extension of Picadilly Road north of Colfax Avenue crossing over I-70 and connecting with Picadilly Road at Smith Road.
- A reconfigured interchange between I-70 and Picadilly Road providing all movements to/from I-70 (not all are provided today), and the narrowing of the east leg of the Colfax Avenue/Picadilly Road intersection to a two-lane cross-section for the purposes of providing access to the property located in the northeast quadrant of the intersection.
- Completion of I-70 Avenue to the east of realigned Picadilly Road across the Horizon Uptown Development to the I-70/E-470 interchange complex as a four-lane arterial.

Traffic Volumes

Long-term background traffic has been estimated from traffic projections made in the 2021 FHU TIS of this development. The commercial site generated traffic volumes were subtracted from the 2040 total traffic volumes to find 2040 background traffic volumes. The 2021 projections were based on the current Denver Regional Council of Governments (DRCOG) travel demand model and projections made in the I-70/Picadilly Road Interchange SLS. In developing background traffic for the Stafford TIS, adjustments were made to the interchange projections to remove trips associated with the 350 acres associated with the Stafford development. Volumes were also added for entering and exiting the southbound legs of intersections along Colfax Avenue to account for the undeveloped strip of land between Colfax Avenue and the residential development to the north and the 65-acre parcel between Lisbon Street and Picadilly Road, which are all zoned for commercial use. ITE land use 820 (Shopping Center) with an FAR of 0.2 was assumed for these properties. Results of the above background traffic forecasts are illustrated on **Figure 7**. Picadilly Road is projected to serve approximately 25,000 VPD south of Colfax Avenue and 22,300 VPD south of I-70 Avenue. I-70 Avenue is projected to serve approximately 5,700 VPD east of Picadilly Road and 23,500 VPD west of Picadilly Road.

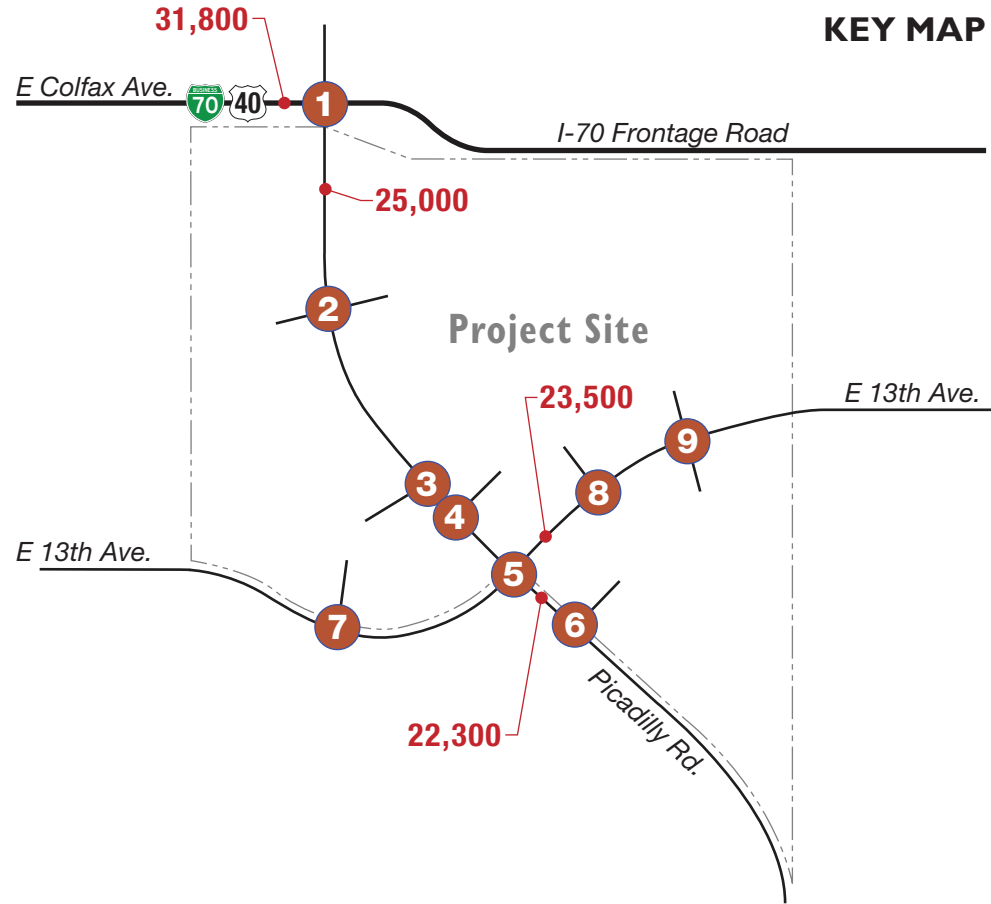
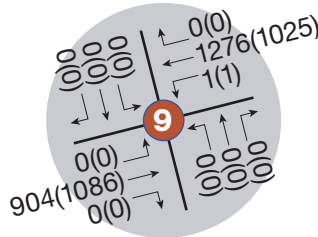
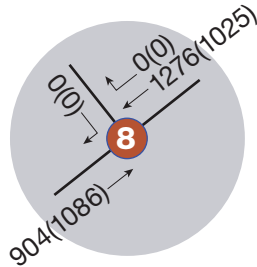
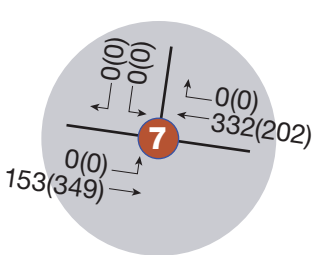
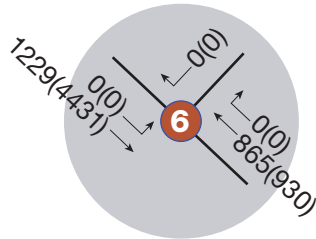
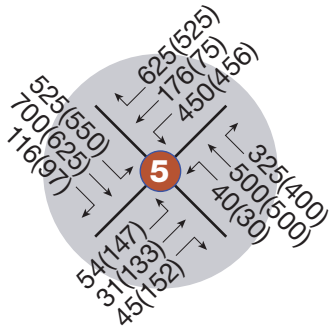
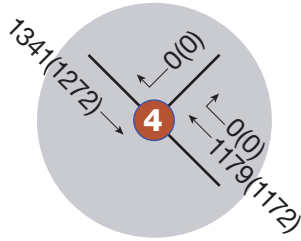
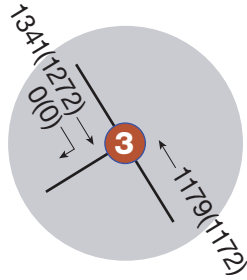
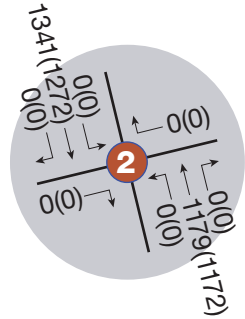
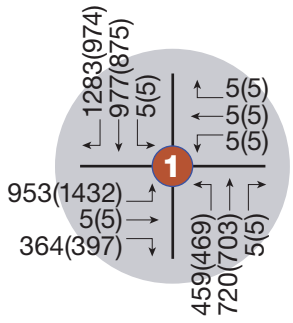
Traffic Control

Signalization of the Colfax Avenue/Picadilly Road and Picadilly Road/I-70 Avenue intersections is assumed in the long-term background traffic conditions. Signalization of both intersections was identified in the 2020 I-70/Picadilly Road SLS and further vetted in the 2021 Stafford Logistics Center TIS.

Traffic Operations

Long-term future background traffic volumes were used as the basis for intersection capacity analyses, the results of which are shown on **Figure 8** (**Appendix D** includes long term background LOS worksheets).

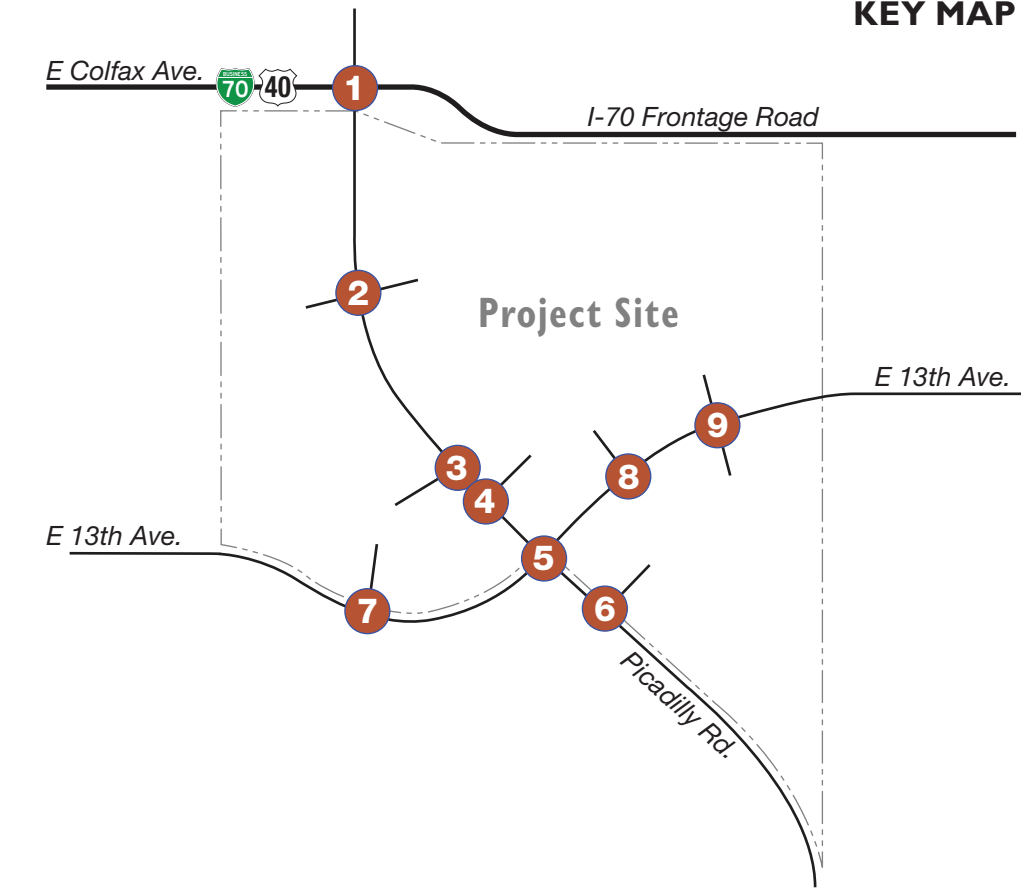
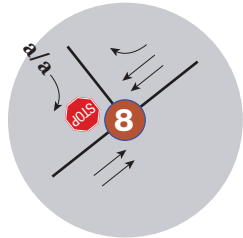
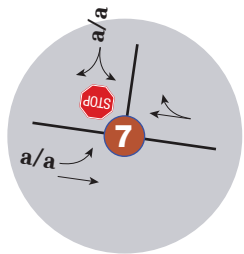
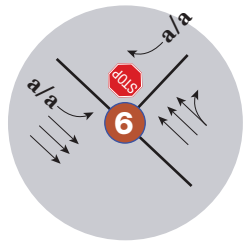
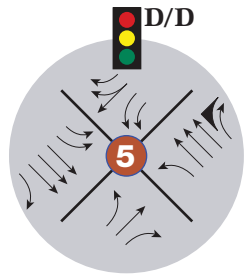
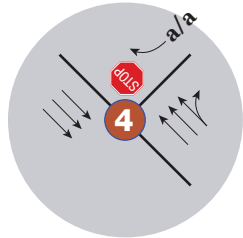
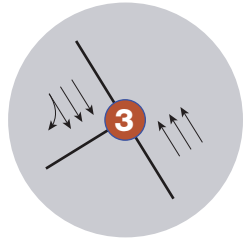
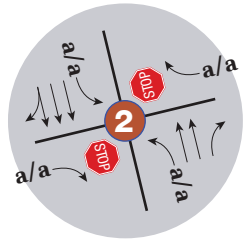
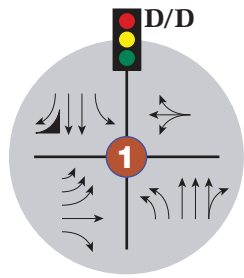
As indicated, all intersections are projected to operate within acceptable parameters, at LOS D or better during peak hours. Key laneage needs include a six-lane cross-section of Picadilly Road and a four-lane cross-section of I-70 Avenue east of Picadilly Road. The major intersections, such as Colfax Avenue/Picadilly Road and Picadilly Road/I-70 Avenue, will also need dual left-turn lanes and separate right-turn lanes along select approaches due to background traffic demands alone.



LEGEND

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

XXXX = Daily Traffic Volumes



LEGEND

- 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 Icon = Traffic Signal

IV.B. Total Traffic Conditions

Long-Term Future

The 2040 site generated traffic volumes (**Figure 6**) were added to the long-term future background traffic volumes (**Figure 7**) to produce the year 2040 total traffic volumes illustrated on **Figure 9**.

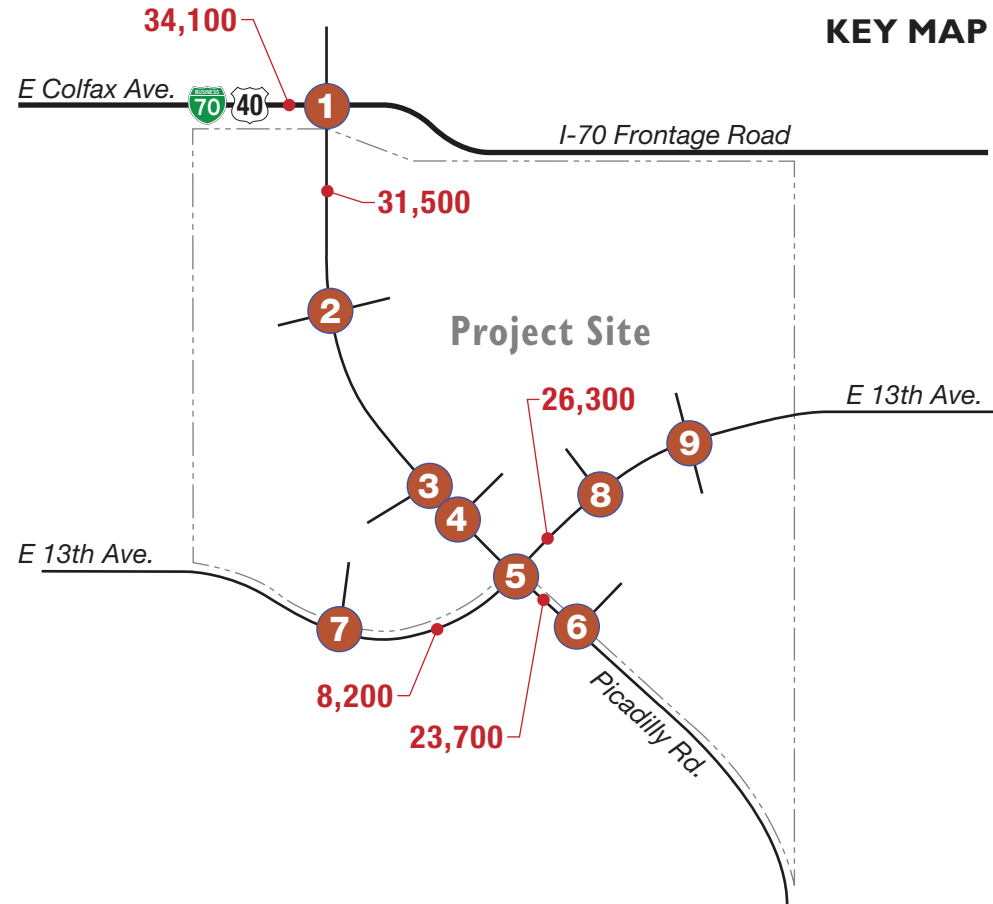
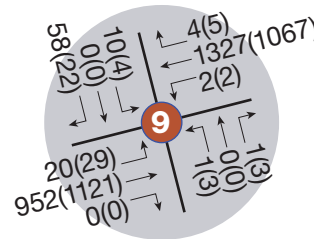
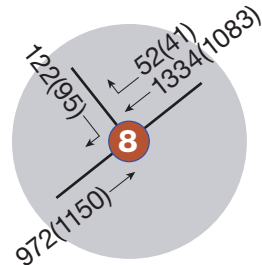
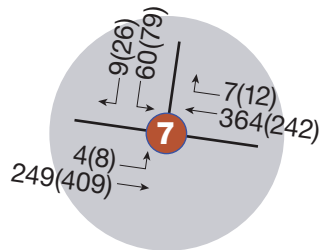
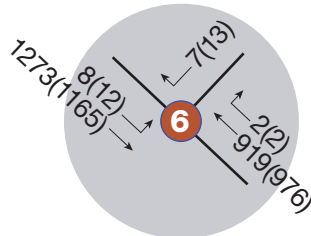
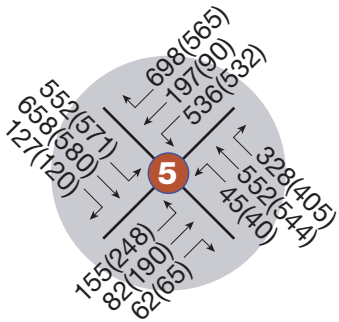
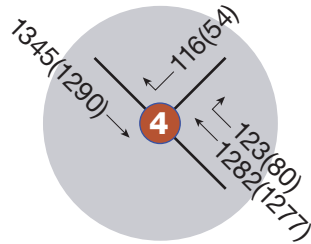
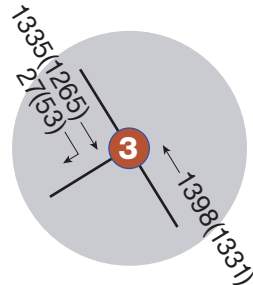
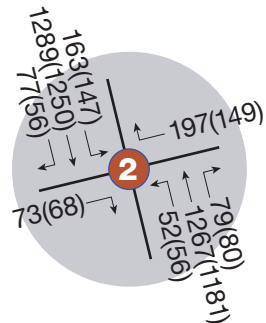
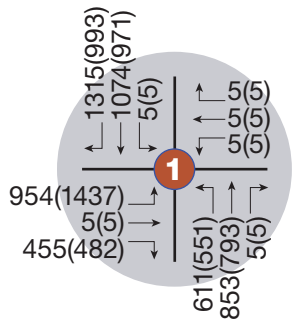
Picadilly Road is projected to serve approximately 31,500 VPD south of Colfax Avenue and 23,700 VPD south of 13th Avenue. 13th Avenue is projected to serve approximately 8,200 VPD east of Picadilly Road and 26,300 VPD west of Picadilly Road.

Intersection capacity analyses were conducted using the long-term total peak hour volumes and intersection geometries. LOS results are shown on **Figure 10** (**Appendix E** includes long-term total LOS worksheets).

These improvements have been developed based on the current understanding of the I-70/Picadilly Road interchange project. It is acknowledged that the interchange project may provide additional recommendations at arterial intersections in the study area. Note that site driveways have been labeled based on the corresponding intersection number. Results for each intersection are summarized below:

- **Colfax Avenue/Picadilly Road (Intersection #1)** – Signal. Colfax Avenue is a major arterial, and Picadilly Road is planned to be a major arterial that will have a new interchange with I-70. This intersection will remain a four-leg intersection, with the eastern leg reduced to a two-lane cross-section for the purpose of providing access to the parcel in the northeast quadrant. The intersection should include two exclusive through-lanes north-south, northbound dual left-turn lanes and a shared through/right-turn lane, triple left-turn lanes along the eastbound approach and a shared through/right-turn lane, a left-turn lane, a separate right-turn lane with overlap signal phasing along the southbound approach, and a channelized eastbound right-turn lane. This geometry is consistent with the recently published Picadilly/I-70 SLS report apart from the channelized eastbound right-turn lane. Despite a heavy eastbound right-turn volume, a separate right-turn lane is not required since the eastbound through traffic (per the SHAC) is not met. However, due to high demand and unknown development in the northeast quadrant of the intersection, the City of Aurora has requested this additional lane. This intersection is projected to operate at LOS D during both the AM and PM peak hours. This is the same as the LOS expected for the background condition, which indicates that site generated traffic will not have a significant impact on operations at this signal and remains consistent with the findings of the 2021 Stafford Logistics Center TIS.
- **Picadilly Road/Stafford Access Drive #2 (Intersection #2)** – Intersection #2 will be a $\frac{3}{4}$ movement side-street stop-controlled access serving development on both the east and west sides of realigned Picadilly Road. The intersection will have northbound and southbound exclusive left turn lanes and shared through/right lanes along Picadilly Road. Stop-controlled and yielding movements are projected to operate at LOS B during both the AM and PM peak hours.
- **Picadilly Road/Stafford Access Drive #3 (Intersection #3)** – Intersection #3 will be side-street stop-controlled right-in only tee intersection. This intersection provides access to businesses on the west side of Picadilly Road. The intersection will have a southbound shared through/right lane along Picadilly Road.
- **Picadilly Road/ Stafford Access Drive #4 (Intersection #4)** – Intersection #4 will be side-street stop-controlled right-in/right-out tee intersection. This intersection provides access to businesses on the east side of Picadilly Road. The intersection will have a northbound shared through/right lane along Picadilly Road. It is close to Intersection #3 but they are offset from each other. Stop-controlled movements are projected to operate at LOS B during both the AM and PM peak hours.

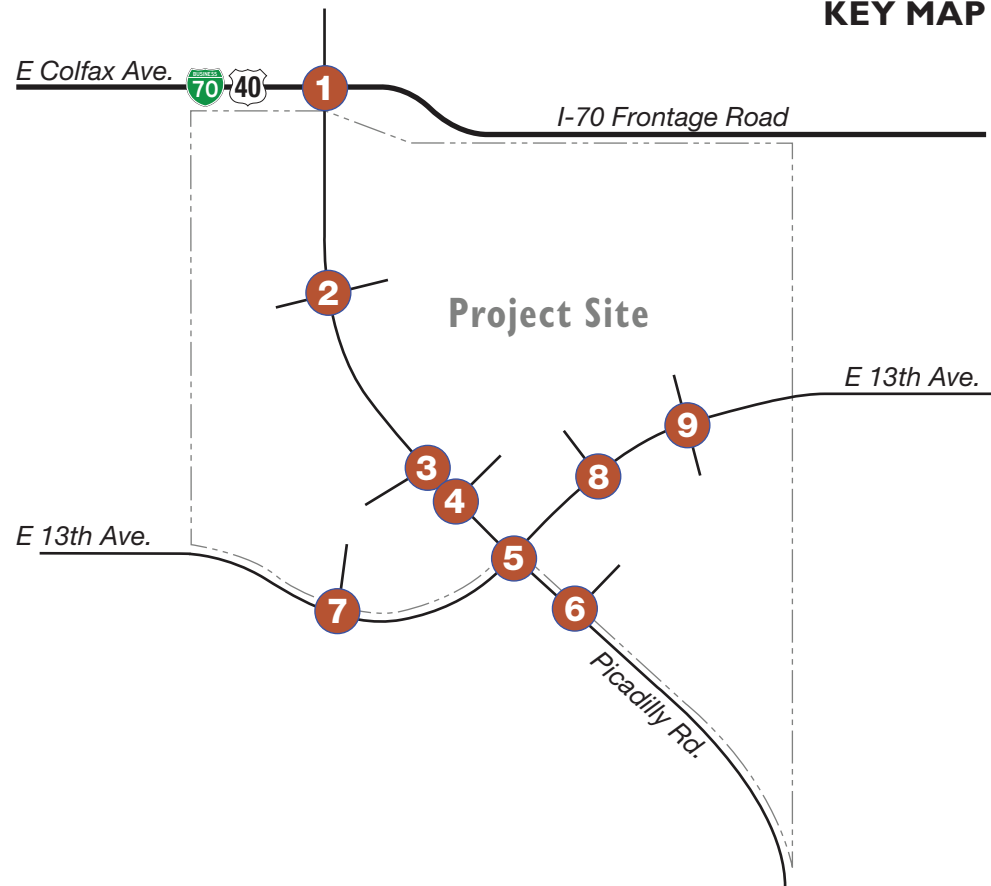
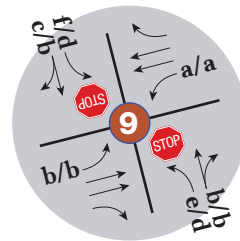
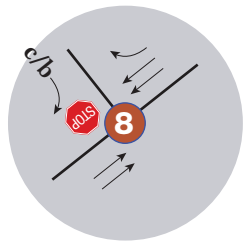
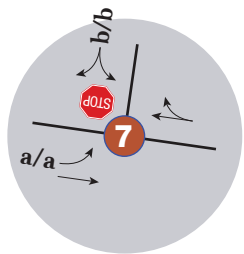
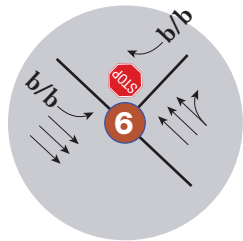
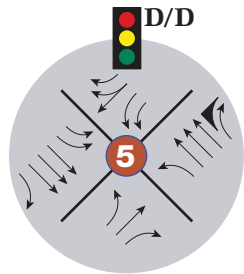
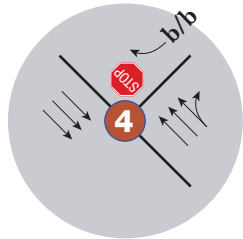
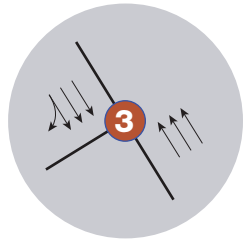
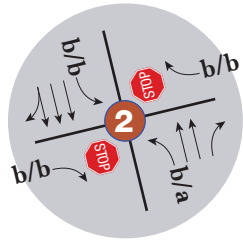
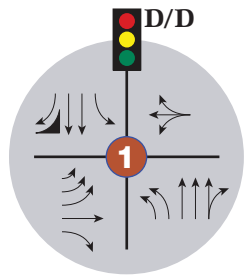
- **Picadilly Road/13th Avenue (Intersection #5)** – Signal. Picadilly Road is a planned six-lane major arterial. The west leg of the intersection will serve as a site access roadway into the industrial portions of the Stafford Logistics Center and has been constructed as a 3-lane local roadway. The east leg serves as the planned four-lane minor arterial, 13th Avenue through the planned Horizon Uptown development. Separate right-turn lanes should be included at all approaches with signal phasing overlaps included on the northbound approaches, channelization of the westbound approach right turn, and left-turn lanes at all approaches with dual left for the southbound and westbound approaches. The signal is expected to operate with LOS D during both AM and PM peak hours and remains consistent with the findings of the 2021 Stafford Logistics Center TIS.
- **Picadilly Road/ Stafford Access Drive #6 (Intersection #6)** – Intersection #6 will be a side-street stop-controlled $\frac{3}{4}$ movement tee intersection. The intersection will have a northbound shared through/right lane and an exclusive southbound left turn lane along Picadilly Road. Stop controlled movements are projected to operate with LOS B during both the AM and PM peak hours.
- **13th Avenue/ Stafford Access Drive #7 (Intersection #7)** – Intersection #7 will be a side-street stop-controlled full access tee intersection. The 13th Avenue alignment has been constructed as a three-lane local roadway through the industrial portions of Stafford Logistics Center west of realigned Picadilly Road. The intersection will have an exclusive eastbound left turn lane striped from the existing three-lane cross-section and a shared westbound through/right lane along 13th Avenue. The southbound shared left/right turn is projected to operate with LOS B during the AM peak hour and LOS C during the PM peak hour. The eastbound and southbound lefts are projected to operate at LOS A during both the AM and PM peak hours.
- **13th Avenue /Stafford Access Drive #8 (Intersection #8)** – Intersection #8 will be a side-street stop-controlled right-in/right-out tee intersection. The intersection will have an exclusive westbound right turn lane along 13th Avenue. The southbound right is projected to operate at LOS C during both the AM and PM peak hours.
- **13th Avenue/Stafford Access Drive #9 (Intersection #9)** – Intersection #9 will be a side-street stop-controlled full movement access. Peak hour and 4-hour signal warrants were analyzed for the intersection in the 2021 Stafford Logistics Center TIS, but due to changes in land use and placement of additional access points, it is no longer anticipated to meet signalization warrants. The intersection will have eastbound and westbound exclusive left turn lanes and shared through/right lanes along 13th Avenue, as well as exclusive left turn and shared through/right turn lanes along the northbound and southbound site access driveways. The southbound left is projected to operate with LOS F during both the AM and PM peak hours. The southbound through/right will operate with LOS C during both the AM and PM peak hours. The northbound left is projected to operate with LOS E during the AM peak hour and F during the PM peak hour. The northbound through/right is projected to operate with LOS B during both the AM and PM peak hours. The eastbound left is projected to operate at LOS B during both the AM and PM peak hours. The westbound left is projected to operate at LOS A during both the AM and PM peak hours. While the side-street stop-controlled left turns along both the northbound and southbound approaches are projected to operate below the typical standard of LOS D, it is common for unsignalized access points along arterial roadways. The volumes for these movements are low and queuing would remain limited. Separating these movements into exclusive left turn lanes as recommended limits their impact on other movements and is all that is recommended for mitigation purposes.



LEGEND

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

XXXX = Daily Traffic Volumes



LEGEND

- 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 10
Long Term Total
Lane Geometry and Level of Service

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 95th percentile queues (which already incorporate a heavy vehicle percentage). Rather, the recommendation is that the values in **Table 2** corresponding to the 95th percentile lengths be used for storage lengths, plus a lead-in taper. It was assumed that Picadilly Road and Colfax Avenue are classified as NR-A Non-Rural Arterials. Table 4-8 in the *SHAC* was used to determine the recommended storage lengths.

Output from the traffic analysis effort was used to recommend these storage lengths, using the following methodology:

- **Left turn lane storage lengths** – At signalized intersections, the greater of the HCM 6th Edition or Synchro methodology queue calculations were reported. For unsignalized intersections, the HCM 6th Edition calculation was reported.
- **Through movements** – For signalized intersections, the greater of the HCM 6th Edition or Synchro methodology queue calculations were reported. No through movement queues are reported for unsignalized intersections as the through movements are free.
- **Right turn movements** – The Synchro queue length was used for signalized intersections. HCM 6th Edition information was not used because HCM's signalized intersection methodology does not account for right turns on red and assumes channelized rights to be removed from the intersection resulting in a reported value of zero. For unsignalized intersections, HCM 6th Edition calculation was reported.

Table 2. Long-term Future 95th Percentile Queueing – Stafford

Intersection	Approach	Movement	2040 95 th Percentile Queue Length (ft) ¹		Recommended Storage Length	2040 SHAC Recommended Storage Length ²
			AM	PM		
Colfax Avenue/ Picadilly Road (Intersection #1)	Eastbound	Left*	375	550	575	575
		Through	25	25	Continuous	Continuous
		Right	150	275	600	600
	Westbound	Left/Through/ Right	50	50	Continuous	Continuous
	Northbound	Left*	325	350	350	400
		Through	175	125	Continuous	Continuous
		Through/Right	175	125	Continuous	Continuous
	Southbound	Left	25	25	50	25
		Through	725	675	Continuous	Continuous
		Right	150	25	150	1600
Picadilly Road/ Site Driveway (Intersection #2)	Eastbound	Right	25	25	Continuous	Continuous
	Westbound	Right	50	25	Continuous	Continuous
	Northbound	Left	25	25	50	75
	Southbound	Left	25	25	50	175
Picadilly Road/ Site Driveway (Intersection #4)	Westbound	Right	25	25	Continuous	Continuous
Picadilly Road/ E 13 th Avenue (Intersection #5)	Eastbound	Left	275	275	275	300
		Through	125	225	Continuous	Continuous
		Right	25	25	50	75
	Westbound	Left*	250	275	275	325
		Through	550	325	Continuous	Continuous
		Right	100	100	100	425
	Northbound	Left	50	75	75	75
		Through	225	200	Continuous	Continuous
		Right	50	275	275	500
	Southbound	Left*	200	275	275	375
		Through	125	100	Continuous	Continuous
		Right	25	25	50	175
Picadilly Road/ Site Driveway (Intersection #6)	Westbound	Right	25	25	50	25
	Southbound	Left	25	25	50	25

Intersection	Approach	Movement	2040 95 th Percentile Queue Length (ft) ¹		Recommended Storage Length	2040 SHAC Recommended Storage Length ²
			AM	PM		
E 13 th Avenue/ Site Driveway (Intersection #7)	Eastbound	Left	25	25	50	25
	Southbound	Left/Right	25	25	Continuous	Continuous
E 13 th Avenue/ Site Driveway (Intersection #8)	Southbound	Right	50	50	Continuous	Continuous
13 th Avenue/ Site Driveway (Intersection #9)	Eastbound	Left	25	25	50	50
	Westbound	Left	25	25	50	25
	Northbound	Left	25	25	50	25
		Through/Right	25	25	Continuous	Continuous
	Southbound	Left	25	25	50	25
		Through/Right	25	25	Continuous	Continuous

*Dual/triple left-turn queues and storage are per lane.

¹Calculations based on HCM methodology using a heavy vehicle percentage of 10 percent network wide with adjustments at driveway locations based on site layout.

²Number shown is based on volume adjustments of 3 PCE per heavy vehicle.

V. SUMMARY AND RECOMMENDATIONS

NorthPoint Development is proposing a 350-acre industrial park in the northeastern-most 50 acres focused around the intersection of Picadilly Road and 13th Avenue to provide commercial and multifamily residential, which is the subject of the TIS. The commercial portion will have a gas station, a shopping center, several fast-food restaurants, a car wash, multifamily housing, and other commercial land uses. Primary access to the commercial parcels will be via Picadilly Road and 13th Avenue. To date four of the six industrial buildings are completed, along with the majority of the internal site roadway network and initial realignment of Picadilly Road anticipated to become fully operational with the anticipated 2025 completion date of the new I-70/Picadilly Road interchange.

The proposed Stafford Commercial development is estimated to generate approximately 10,923 new external trips per day, with about 761 AM peak hour trips and about 602 PM peak hour trips. The potential traffic impacts of the development were evaluated under long-term future (2040) conditions. The long-term analysis reflects buildout of Stafford and the surrounding area per travel demand modeling represented in the I-70/Picadilly Road interchange study, which accounts for a full interchange at I-70/Picadilly Road and the continuity of Picadilly Road north of Colfax Avenue, across I-70, and connecting with Picadilly Road at Smith Road.

Long-term future (2040) traffic reflects buildout of the area. The following roadway sections are needed to accommodate future traffic.

- Picadilly Road will be continued to the north providing an interchange with I-70 and is projected to be constructed as a six-lane major-arterial cross-section.
- The intersections of Colfax Avenue/Picadilly Road and Picadilly Road/13th Avenue are projected to be signalized.
- 13th Avenue will be constructed east of Picadilly Road as a three four-lane minor arterial cross-section extending through the Horizon Uptown development to the I-70/E-470 interchange complex.

These improvements have been developed based on the current I-70/Picadilly Road interchange SLS.

The City of Aurora bases the need for auxiliary turn lanes on the CDOT SHAC (and Colfax Avenue being a state highway already requires the SHAC's application). Ultimate turn lane storage lengths are shown in **Table 2** for auxiliary lanes at study area intersections.

All operations are projected at LOS D or better during the AM and PM peak hours with the following exceptions:

- The stop-controlled northbound left turns at 13th Avenue/Site Driveway #9 are projected at LOS E during the AM peak hour and LOS F during the PM peak hour. This intersection was previously assumed to be signalized in the 2021 Stafford Logistics Center TIS but no longer meets warrants. The volume for this left turn is low and excessive queuing is not anticipated. To mitigate the impact of this below standard LOS, it is recommended that an exclusive left turn and a shared through/right turn lane be provided for the northbound approach to limit how this movement affects other movements on the approach.
- The stop-controlled southbound left turns at 13th Avenue/Site Driveway #9 are projected at LOS F during both the AM and PM peak hours. This intersection was previously assumed to be signalized in the 2021 Stafford Logistics Center TIS but no longer meets warrants. The volume for this left turn is low and excessive queuing is not anticipated. To mitigate the impact of this below standard LOS, it is recommended that an exclusive left turn and a shared through/right turn lane be provided for the southbound approach to limit how this movement affects other movements on the approach.

APPENDIX A. TRAFFIC COUNTS

All Traffic Data Services
Wheat Ridge, CO 80033

Site Code: 6
Station ID: 6
COLFAX AVE W.O. I70 FRONTAGE RD

Start Time	11-Dec-18 Tue	EB	WB							Total
12:00 AM		38	22							60
01:00		19	46							65
02:00		9	18							27
03:00		11	23							34
04:00		59	62							121
05:00		108	180							288
06:00		268	398							666
07:00		357	573							930
08:00		250	391							641
09:00		190	262							452
10:00		187	260							447
11:00		182	267							449
12:00 PM		247	242							489
01:00		191	217							408
02:00		323	269							592
03:00		454	382							836
04:00		536	322							858
05:00		608	343							951
06:00		330	241							571
07:00		176	112							288
08:00		127	91							218
09:00		75	70							145
10:00		58	53							111
11:00		37	43							80
Total		4840	4887							9727
Percent		49.8%	50.2%							
AM Peak	-	07:00	07:00	-	-	-	-	-	-	07:00
Vol.	-	357	573	-	-	-	-	-	-	930
PM Peak	-	17:00	15:00	-	-	-	-	-	-	17:00
Vol.	-	608	382	-	-	-	-	-	-	951

All Traffic Data Services
Wheat Ridge, CO 80033

Site Code: 6
Station ID: 6
COLFAX AVE W.O. I70 FRONTAGE RD

Start Time	12-Dec-18 Wed	EB	WB							Total
12:00 AM		37	40							77
01:00		12	54							66
02:00		12	24							36
03:00		14	30							44
04:00		42	57							99
05:00		114	200							314
06:00		282	443							725
07:00		369	658							1027
08:00		221	415							636
09:00		194	309							503
10:00		180	247							427
11:00		195	228							423
12:00 PM		235	231							466
01:00		240	247							487
02:00		354	279							633
03:00		489	389							878
04:00		581	326							907
05:00		612	376							988
06:00		295	217							512
07:00		174	119							293
08:00		168	92							260
09:00		90	80							170
10:00		55	34							89
11:00		40	34							74
Total		5005	5129							10134
Percent		49.4%	50.6%							
AM Peak	-	07:00	07:00	-	-	-	-	-	-	07:00
Vol.	-	369	658	-	-	-	-	-	-	1027
PM Peak	-	17:00	15:00	-	-	-	-	-	-	17:00
Vol.	-	612	389	-	-	-	-	-	-	988

All Traffic Data Services
Wheat Ridge, CO 80033

Site Code: 6
Station ID: 6
COLFAX AVE W.O. I70 FRONTAGE RD

Start Time	13-Dec-18 Thu	EB	WB							Total
12:00 AM		36	41							77
01:00		15	36							51
02:00		15	28							43
03:00		13	22							35
04:00		55	65							120
05:00		112	186							298
06:00		246	407							653
07:00		397	644							1041
08:00		223	422							645
09:00		147	261							408
10:00		166	217							383
11:00		178	228							406
12:00 PM		212	227							439
01:00		226	230							456
02:00		367	257							624
03:00		504	341							845
04:00		602	383							985
05:00		646	374							1020
06:00		354	243							597
07:00		187	132							319
08:00		134	106							240
09:00		124	70							194
10:00		71	46							117
11:00		47	49							96
Total		5077	5015							10092
Percent		50.3%	49.7%							
AM Peak	-	07:00	07:00	-	-	-	-	-	-	07:00
Vol.	-	397	644	-	-	-	-	-	-	1041
PM Peak	-	17:00	16:00	-	-	-	-	-	-	17:00
Vol.	-	646	383	-	-	-	-	-	-	1020
Grand Total		14922	15031							29953
Percent		49.8%	50.2%							
ADT		ADT 9,984	AADT 9,984							

All Traffic Data Services
Wheat Ridge, CO 80033

Page 1

Site Code: 7
Station ID: 7
PICADILLY RD S.O. I70 FRONTAGE RD

Start Time	11-Dec-18 Tue	NB	SB							Total
12:00 AM		4	14							18
01:00		6	8							14
02:00		10	4							14
03:00		5	7							12
04:00		21	20							41
05:00		50	43							93
06:00		88	149							237
07:00		102	166							268
08:00		94	111							205
09:00		66	78							144
10:00		53	75							128
11:00		69	95							164
12:00 PM		55	88							143
01:00		63	101							164
02:00		84	136							220
03:00		110	207							317
04:00		113	243							356
05:00		115	228							343
06:00		49	155							204
07:00		31	86							117
08:00		22	66							88
09:00		23	37							60
10:00		10	45							55
11:00		10	29							39
Total		1253	2191							3444
Percent		36.4%	63.6%							
AM Peak	-	07:00	07:00	-	-	-	-	-	-	07:00
Vol.	-	102	166	-	-	-	-	-	-	268
PM Peak	-	17:00	16:00	-	-	-	-	-	-	16:00
Vol.	-	115	243	-	-	-	-	-	-	356

All Traffic Data Services
Wheat Ridge, CO 80033

Site Code: 7
Station ID: 7
PICADILLY RD S.O. I70 FRONTAGE RD

Start Time	12-Dec-18 Wed	NB	SB							Total
12:00 AM		3	14							17
01:00		4	9							13
02:00		8	7							15
03:00		11	5							16
04:00		19	17							36
05:00		61	50							111
06:00		92	145							237
07:00		112	166							278
08:00		75	107							182
09:00		59	78							137
10:00		47	88							135
11:00		52	74							126
12:00 PM		49	90							139
01:00		72	100							172
02:00		86	167							253
03:00		99	194							293
04:00		118	242							360
05:00		100	231							331
06:00		47	133							180
07:00		41	83							124
08:00		30	85							115
09:00		17	45							62
10:00		14	33							47
11:00		12	34							46
Total		1228	2197							3425
Percent		35.9%	64.1%							
AM Peak	-	07:00	07:00	-	-	-	-	-	-	07:00
Vol.	-	112	166	-	-	-	-	-	-	278
PM Peak	-	16:00	16:00	-	-	-	-	-	-	16:00
Vol.	-	118	242	-	-	-	-	-	-	360

All Traffic Data Services
Wheat Ridge, CO 80033

Site Code: 7
Station ID: 7
PICADILLY RD S.O. I70 FRONTAGE RD

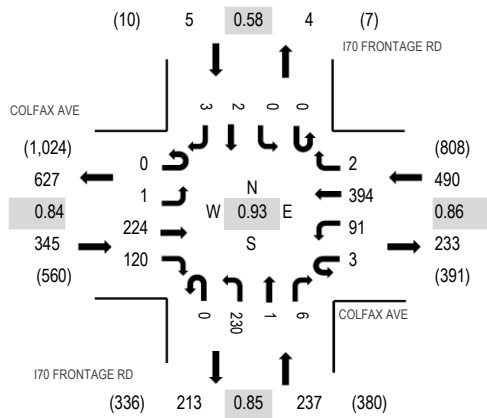
Start Time	13-Dec-18 Thu	NB	SB							Total
12:00 AM		6	13							19
01:00		4	10							14
02:00		11	4							15
03:00		6	5							11
04:00		18	20							38
05:00		59	51							110
06:00		82	136							218
07:00		109	167							276
08:00		86	114							200
09:00		57	83							140
10:00		56	73							129
11:00		49	76							125
12:00 PM		47	103							150
01:00		57	100							157
02:00		65	120							185
03:00		118	221							339
04:00		114	244							358
05:00		105	242							347
06:00		57	155							212
07:00		31	74							105
08:00		23	65							88
09:00		15	50							65
10:00		8	43							51
11:00		15	28							43
Total		1198	2197							3395
Percent		35.3%	64.7%							
AM Peak	-	07:00	07:00	-	-	-	-	-	-	07:00
Vol.	-	109	167	-	-	-	-	-	-	276
PM Peak	-	15:00	16:00	-	-	-	-	-	-	16:00
Vol.	-	118	244	-	-	-	-	-	-	358



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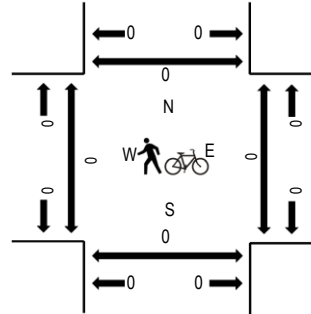
Location: 4 I70 FRONTAGE RD & COLFAX AVE AM
Date and Start Time: Wednesday, December 12, 2018
Peak Hour: 07:00 AM - 08:00 AM
Peak 15-Minutes: 07:15 AM - 07:30 AM

Peak Hour - All Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles on Crosswalk



Traffic Counts

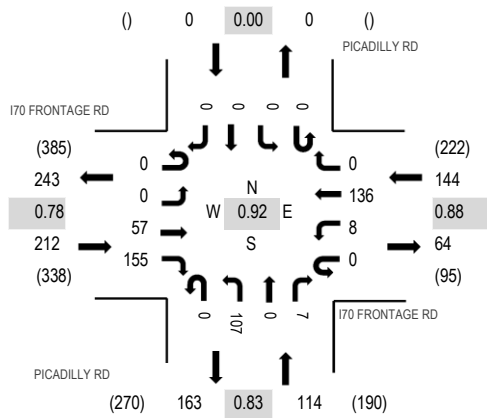
Interval Start Time	COLFAX AVE Eastbound				COLFAX AVE Westbound				I70 FRONTAGE RD Northbound				I70 FRONTAGE RD Southbound				Total	Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
7:00 AM	0	1	71	31	1	25	99	0	0	46	0	3	0	0	0	1	278	1,077	0	0	0	0
7:15 AM	0	0	60	32	1	33	107	1	0	53	1	0	0	0	0	1	289	1,017	0	0	0	0
7:30 AM	0	0	47	30	1	17	104	0	0	67	0	3	0	0	2	0	271	914	0	0	0	0
7:45 AM	0	0	46	27	0	16	84	1	0	64	0	0	0	0	0	1	239	790	0	0	0	0
8:00 AM	0	1	47	24	1	12	82	2	0	46	0	2	0	0	0	1	218	681	0	0	0	0
8:15 AM	0	0	32	16	3	15	72	0	0	43	0	2	0	1	0	2	186		0	0	0	0
8:30 AM	0	0	28	16	0	14	58	0	0	30	0	1	0	0	0	0	147		0	0	0	0
8:45 AM	0	0	36	15	5	11	43	0	0	19	0	0	0	0	0	1	130		0	0	0	0
Count Total	0	2	367	191	12	143	649	4	0	368	1	11	0	1	2	7	1,758		0	0	0	0
Peak Hour	0	1	224	120	3	91	394	2	0	230	1	6	0	0	2	3	1,077		0	0	0	0



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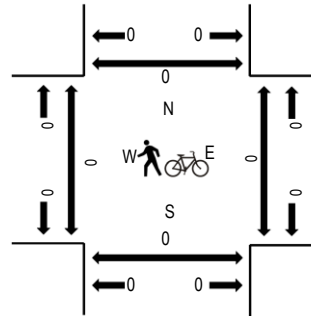
Location: 5 PICADILLY RD & I70 FRONTAGE RD AM
Date and Start Time: Wednesday, December 12, 2018
Peak Hour: 07:00 AM - 08:00 AM
Peak 15-Minutes: 07:15 AM - 07:30 AM

Peak Hour - All Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles on Crosswalk



Traffic Counts

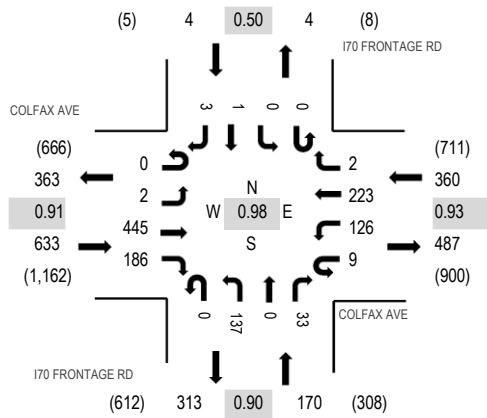
Interval Start Time	I70 FRONTAGE RD Eastbound				I70 FRONTAGE RD Westbound				PICADILLY RD Northbound				PICADILLY RD Southbound				Total	Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
7:00 AM	0	0	16	38	0	1	31	0	0	22	0	1	0	0	0	0	109	470	0	0	0	0
7:15 AM	0	0	17	51	0	4	35	0	0	19	0	2	0	0	0	0	128	448	0	0	0	0
7:30 AM	0	0	13	35	0	1	40	0	0	30	0	4	0	0	0	0	123	400	0	0	0	0
7:45 AM	0	0	11	31	0	2	30	0	0	36	0	0	0	0	0	0	110	338	0	0	0	0
8:00 AM	0	0	12	26	0	3	22	0	0	23	0	1	0	0	0	0	87	280	0	0	0	0
8:15 AM	0	0	5	26	0	2	21	0	0	25	0	1	0	0	0	0	80		0	0	0	0
8:30 AM	0	0	3	27	0	1	15	0	0	14	0	1	0	0	0	0	61		0	0	0	0
8:45 AM	0	0	7	20	0	2	12	0	0	10	0	1	0	0	0	0	52		0	0	0	0
Count Total	0	0	84	254	0	16	206	0	0	179	0	11	0	0	0	0	750		0	0	0	0
Peak Hour	0	0	57	155	0	8	136	0	0	107	0	7	0	0	0	0	470		0	0	0	0



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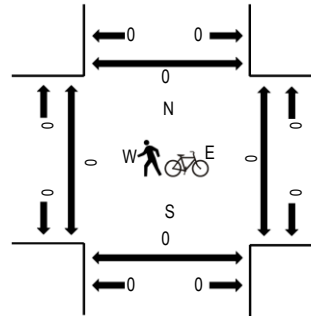
Location: 4 I70 FRONTAGE RD & COLFAX AVE PM
Date and Start Time: Wednesday, December 12, 2018
Peak Hour: 04:30 PM - 05:30 PM
Peak 15-Minutes: 05:00 PM - 05:15 PM

Peak Hour - All Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles on Crosswalk



Traffic Counts

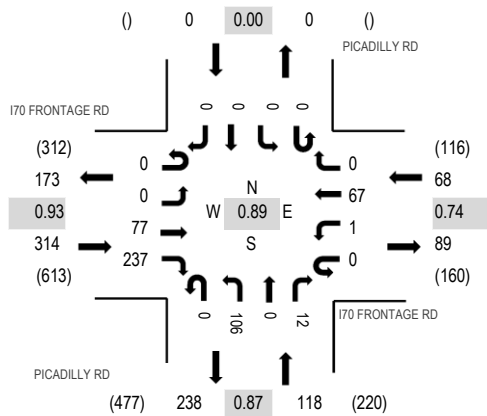
Interval Start Time	COLFAX AVE Eastbound				COLFAX AVE Westbound				I70 FRONTAGE RD Northbound				I70 FRONTAGE RD Southbound				Total	Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
4:00 PM	0	0	93	35	2	36	45	0	0	30	0	6	0	1	0	0	248	1,088	0	0	0	0
4:15 PM	0	1	106	38	1	41	39	1	0	27	0	13	0	0	0	0	267	1,137	0	0	0	0
4:30 PM	0	1	112	43	1	39	55	1	0	31	0	9	0	0	0	1	293	1,167	0	0	0	0
4:45 PM	0	0	100	46	2	32	61	0	0	31	0	8	0	0	0	0	280	1,156	0	0	0	0
5:00 PM	0	1	126	47	2	22	52	1	0	37	0	7	0	0	0	2	297	1,098	0	0	0	0
5:15 PM	0	0	107	50	4	33	55	0	0	38	0	9	0	0	1	0	297		0	0	0	0
5:30 PM	0	0	107	40	1	40	54	2	0	33	0	5	0	0	0	0	282		0	0	0	0
5:45 PM	0	0	71	38	2	31	56	0	0	19	0	5	0	0	0	0	222		0	0	0	0
Count Total	0	3	822	337	15	274	417	5	0	246	0	62	0	1	1	3	2,186		0	0	0	0
Peak Hour	0	2	445	186	9	126	223	2	0	137	0	33	0	0	1	3	1,167		0	0	0	0



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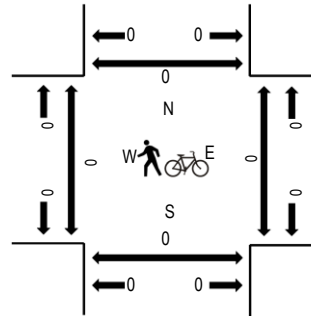
Location: 5 PICADILLY RD & I70 FRONTAGE RD PM
Date and Start Time: Wednesday, December 12, 2018
Peak Hour: 04:30 PM - 05:30 PM
Peak 15-Minutes: 05:15 PM - 05:30 PM

Peak Hour - All Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles on Crosswalk



Traffic Counts




Interval Start Time	I70 FRONTAGE RD Eastbound				I70 FRONTAGE RD Westbound				PICADILLY RD Northbound				PICADILLY RD Southbound				Total	Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
4:00 PM	0	0	10	60	0	0	10	0	0	24	0	3	0	0	0	0	107	474	0	0	0	0
4:15 PM	0	0	17	62	0	0	10	0	0	32	0	2	0	0	0	0	123	482	0	0	0	0
4:30 PM	0	0	22	57	0	0	16	0	0	24	0	1	0	0	0	0	120	500	0	0	0	0
4:45 PM	0	0	16	64	0	1	13	0	0	26	0	4	0	0	0	0	124	497	0	0	0	0
5:00 PM	0	0	15	56	0	0	15	0	0	27	0	2	0	0	0	0	115	475	0	0	0	0
5:15 PM	0	0	24	60	0	0	23	0	0	29	0	5	0	0	0	0	141		0	0	0	0
5:30 PM	0	0	20	58	0	2	12	0	0	24	0	1	0	0	0	0	117		0	0	0	0
5:45 PM	0	0	17	55	0	2	12	0	0	15	0	1	0	0	0	0	102		0	0	0	0
Count Total	0	0	141	472	0	5	111	0	0	201	0	19	0	0	0	0	949		0	0	0	0
Peak Hour	0	0	77	237	0	1	67	0	0	106	0	12	0	0	0	0	500		0	0	0	0

APPENDIX B. EXISTING CONDITIONS LEVEL OF SERVICE

Intersection												
Int Delay, s/veh	11.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕↕	↗		↕↕			↕↕			↕↕	
Traffic Vol, veh/h	1	224	120	91	394	2	230	1	6	0	2	3
Future Vol, veh/h	1	224	120	91	394	2	230	1	6	0	2	3
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	-	-	325	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	1	241	129	98	424	2	247	1	6	0	2	3
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	426	0	0	370	0	0	652	865	121	744	993	213
Stage 1	-	-	-	-	-	-	243	243	-	621	621	-
Stage 2	-	-	-	-	-	-	409	622	-	123	372	-
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	1130	-	-	1185	-	-	353	290	908	303	244	792
Stage 1	-	-	-	-	-	-	739	703	-	442	477	-
Stage 2	-	-	-	-	-	-	590	477	-	868	617	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1130	-	-	1185	-	-	320	258	908	275	217	792
Mov Cap-2 Maneuver	-	-	-	-	-	-	320	258	-	275	217	-
Stage 1	-	-	-	-	-	-	738	702	-	442	425	-
Stage 2	-	-	-	-	-	-	521	425	-	860	616	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0			1.8			46.7			14.5		
HCM LOS							E			B		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	325	1130	-	-	1185	-	-	384				
HCM Lane V/C Ratio	0.784	0.001	-	-	0.083	-	-	0.014				
HCM Control Delay (s)	46.7	8.2	0	-	8.3	0.3	-	14.5				
HCM Lane LOS	E	A	A	-	A	A	-	B				
HCM 95th %tile Q(veh)	6.3	0	-	-	0.3	-	-	0				

Intersection

Int Delay, s/veh 2.9




Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	57	155	8	136	107	7
Future Vol, veh/h	57	155	8	136	107	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	62	168	9	148	116	8

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	230
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	-	-	1338
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	1338
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.4	11.4
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	687	-	-	1338	-
HCM Lane V/C Ratio	0.18	-	-	0.006	-
HCM Control Delay (s)	11.4	-	-	7.7	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.7	-	-	0	-

Intersection												
Int Delay, s/veh	7.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕↕	↗		↕↕			↕			↕	
Traffic Vol, veh/h	2	445	186	126	223	2	137	0	33	0	1	3
Future Vol, veh/h	2	445	186	126	223	2	137	0	33	0	1	3
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	-	-	325	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	98	98	98	98	98	98	98	98	98	98	98	98
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	2	454	190	129	228	2	140	0	34	0	1	3
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	230	0	0	644	0	0	831	946	227	718	1135	115
Stage 1	-	-	-	-	-	-	458	458	-	487	487	-
Stage 2	-	-	-	-	-	-	373	488	-	231	648	-
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	1335	-	-	937	-	-	262	260	776	316	201	916
Stage 1	-	-	-	-	-	-	552	565	-	531	549	-
Stage 2	-	-	-	-	-	-	620	548	-	751	464	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1335	-	-	937	-	-	228	218	776	265	169	916
Mov Cap-2 Maneuver	-	-	-	-	-	-	228	218	-	265	169	-
Stage 1	-	-	-	-	-	-	551	564	-	530	462	-
Stage 2	-	-	-	-	-	-	519	461	-	717	463	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0			3.6			41.4			13.4		
HCM LOS							E			B		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	264	1335	-	-	937	-	-	435				
HCM Lane V/C Ratio	0.657	0.002	-	-	0.137	-	-	0.009				
HCM Control Delay (s)	41.4	7.7	0	-	9.5	0.4	-	13.4				
HCM Lane LOS	E	A	A	-	A	A	-	B				
HCM 95th %tile Q(veh)	4.2	0	-	-	0.5	-	-	0				

Intersection						
Int Delay, s/veh	2.7					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	77	237	1	67	106	12
Future Vol, veh/h	77	237	1	67	106	12
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	89	89	89	89	89	89
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	87	266	1	75	119	13
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	353	0	297	220
Stage 1	-	-	-	-	220	-
Stage 2	-	-	-	-	77	-
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	-	-	1206	-	694	820
Stage 1	-	-	-	-	817	-
Stage 2	-	-	-	-	946	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1206	-	693	820
Mov Cap-2 Maneuver	-	-	-	-	693	-
Stage 1	-	-	-	-	817	-
Stage 2	-	-	-	-	945	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		0.1		11.3	
HCM LOS					B	
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	704	-	-	1206	-	
HCM Lane V/C Ratio	0.188	-	-	0.001	-	
HCM Control Delay (s)	11.3	-	-	8	0	
HCM Lane LOS	B	-	-	A	A	
HCM 95th %tile Q(veh)	0.7	-	-	0	-	

APPENDIX C. TRIP GENERATION COMPARISON LETTER



November 29, 2023

Mr. Grant Polley
Development Manager
NorthPoint Development
3315 N. Oak Trafficway
Kansas City, MO 64116

**RE: Stafford Commercial Traffic Conformance
FHU Project No. 123785-01**

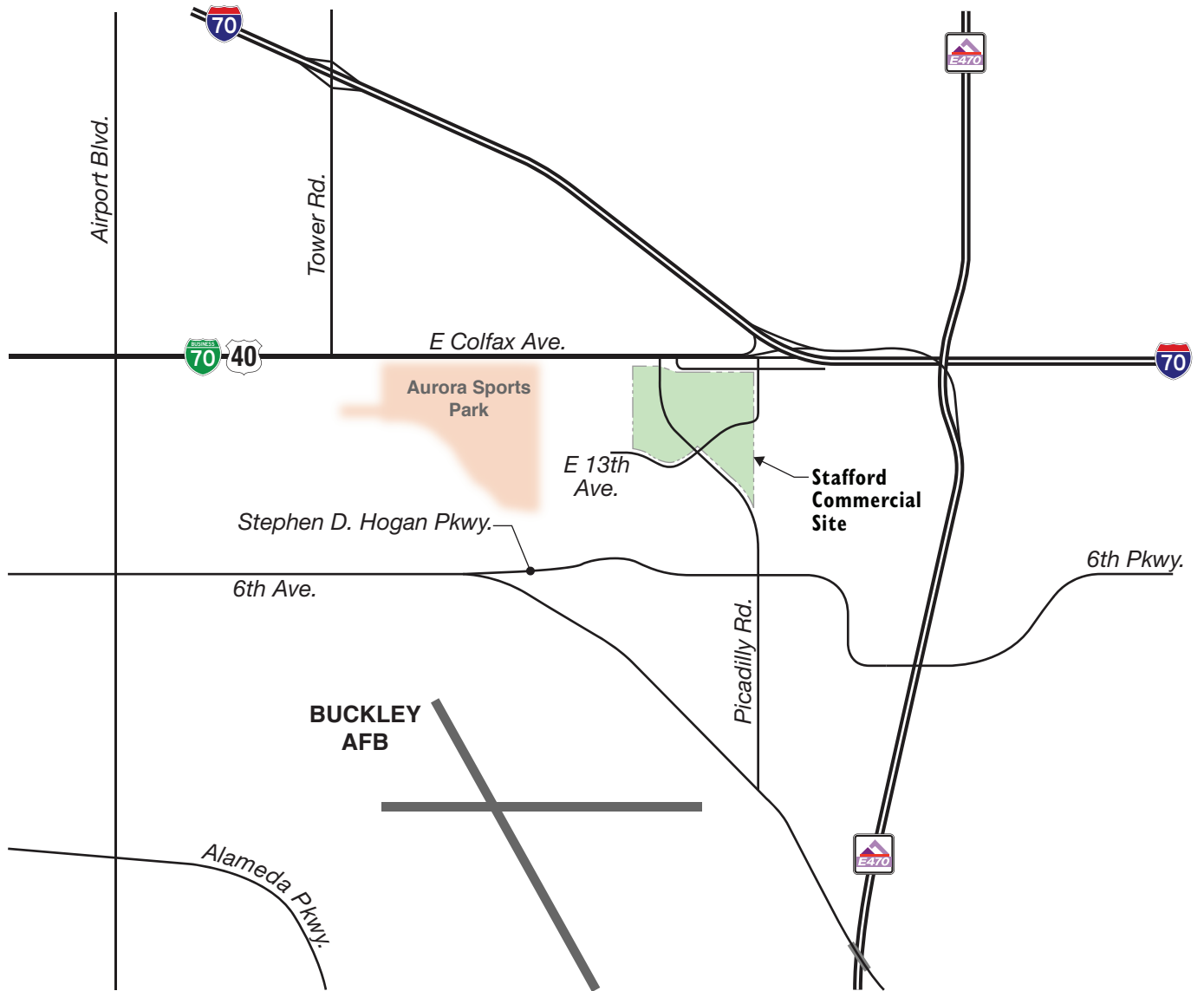
Dear Mr. Polley:

Felsburg Holt & Ullevig (FHU) prepared a traffic impact study for the Stafford Logistics Center in August 2021. That report used the Institute of Transportation Engineers' (ITE) publication *Trip Generation Manual, 10th Edition* (2017) to forecast vehicle-trips based on the land use types and sizes. Within that report, a portion of the property near the intersection of Picadilly Road and 13th Avenue was slated for commercial development, the location of the site is illustrated in the attached **Figure 1**. The current proposal for these parcels is to continue to provide commercial, albeit with an updated mix of uses, and multifamily housing. The current site plan contemplates 14 acres of multifamily at a density of 20 units per acre for a total of 280 units, an automated car wash, a 231,700 square foot self-storage facility, a 2,300 square foot coffee shop, four fast-food restaurant pads totaling 14,100 square feet, five general commercial pads totaling 52,500 square feet of general commercial space, and a 24 pump gas station. The site plan is detailed on the attached **Figure 2**. The TIS for Stafford Logistics Center assumed 75 KSF of retail, a 34 KSF supermarket, a 200-room hotel, a bank, and a gas station.

Trip Generation

The currently proposed site uses *Trip Generation Manual, 11th Edition* (2020) to forecast vehicle-trips, an update on the version utilized for the master TIS for the development. **Table 1** shows the trip generation rates and equations for each land use code for the current site plan.

Table 2 shows the estimated trip generation for the current proposed site and a comparison to what was projected in the Stafford Logistics Center TIS.



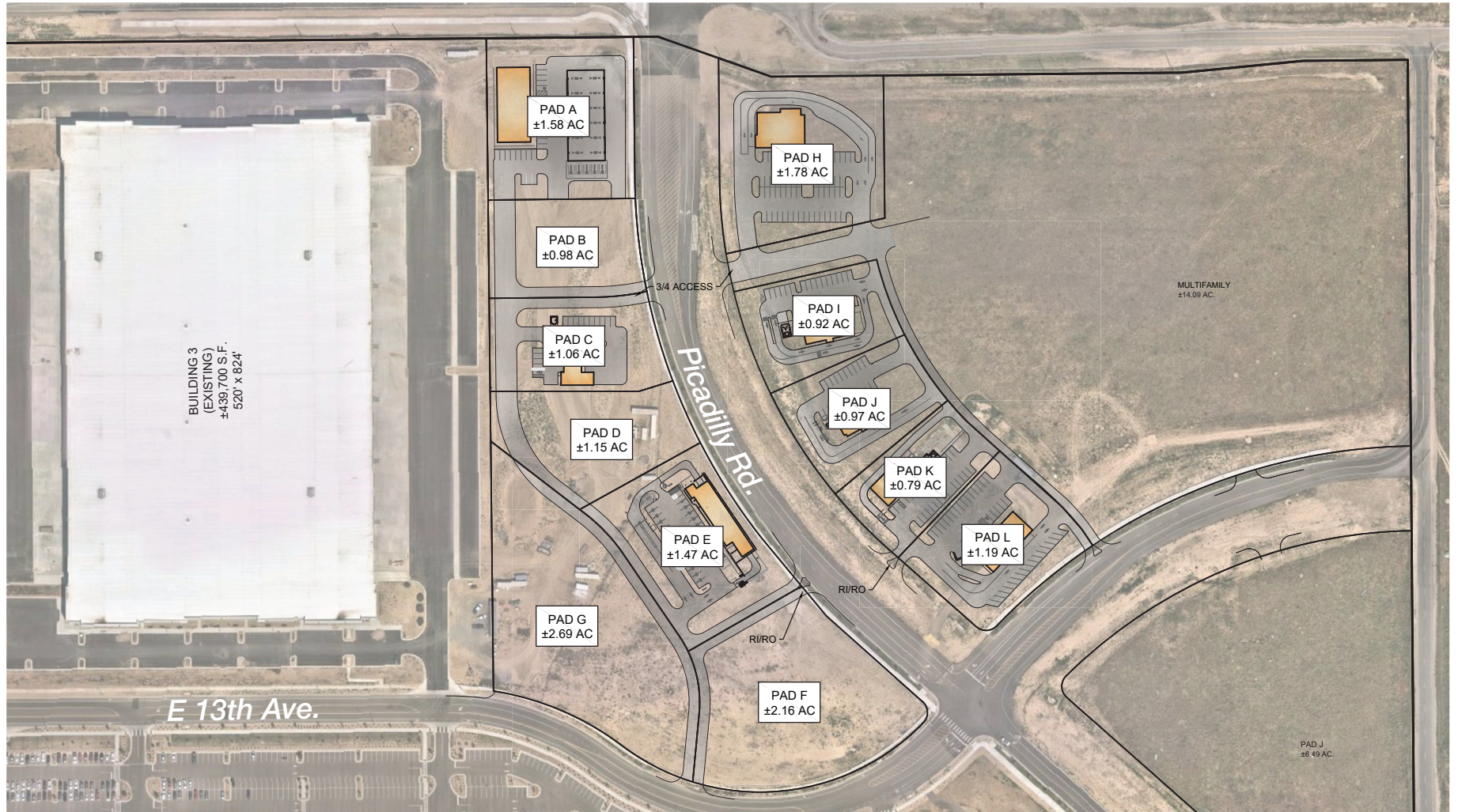


Table 1. ITE Trip Generation Rates and Equations (11th Edition)

Land Use	ITE Code	Unit	Daily	Peak	Equations & Rates	Pass-by	Distributions	
							In	Out
Mini-Warehouse	130	KSF	$T=1.45*X$	AM	$T=0.09*X$	n/a	59%	41%
				PM	$T=0.15*X$	n/a	47%	53%
Multifamily Housing (Mid-Rise)	220	DUs	$T=4.77*X-46.46$	AM	$T=0.44*X-11.61$	n/a	23%	77%
				PM	$T=0.39*X+0.34$	n/a	61%	39%
Strip Retail Plaza (40-150 KSF w/o Supermarket)	821	KSF	$T=76.96*X+1412.79$	AM	$T=1.73*X$	40% ²	62%	38%
				PM	$T=5.19*X$	40%	49%	51%
Fast Food Restaurant w/ Drive-Through	934	KSF	$T=467.48*X$	AM	$T=44.61*X$	50%	51%	49%
				PM	$T=33.03*X$	55%	52%	48%
Coffee/Donut Shop w/ Drive-Through	937	KSF	$T=533.57*X$	AM	$T=85.88*X$	90% ³	51%	49%
				PM	$T=38.99*X$	84% ³	50%	50%
Gas/Service Station	944	Vehicle Fueling Positions/Pumps	$T=172.01*X$	AM	$T=10.28*X$	63%	50%	50%
				PM	$T=13.91*X$	57%	50%	50%
Automated Car Wash	948	Tunnels	N/A ¹	AM	N/A ¹	n/a	N/A	N/A
				PM	$T=77.50*X$	n/a	50%	50%

¹Data not available, assumed AM to be 50% of PM and Daily to be 10x PM

²Data not available, assumed AM to be 40% to match PM value

³Data not available, assumed to be similar to land use #938 Coffee/Donut Show w/ Drive-Through only

Table 2. Stafford Commercial Trip Generation Comparison

Land Use (Trip Generation Category)	Quantity	Daily Vehicle Trips	AM Peak Hour Trips			PM Peak Hour Trips		
			In	Out	Total	In	Out	Total
Current Stafford Commercial Plan								
Shopping Center w/ no Grocery (#821)	52.5 KSF	3,545	56	35	91	134	138	272
Coffee/Donut Show w/ Drive-Through (#937)	2.3 KSF	1,227	101	97	198	45	45	90
Multifamily Housing (Mid-Rise) (#221)	280 DUs	1,289	26	86	112	67	43	110
Mini-Warehouse (#151)	231.7 KSF	336	12	9	21	16	19	35
Automated Car Wash (#948)	1 Tunnel	780	10	10	20	39	39	78
Fast Food Restaurant w/ Drive-Through (#934)	3 KSF (3x) and 5.1 KSF	6,590	320	310	630	244	221	465
Gas/Service Station (#944)	24 pumps	4,128	123	124	247	167	167	334
Subtotal		17,895	648	671	1,319	712	672	1,384
Internal Capture Reduction¹		2,280	25	25	50	114	114	228
Pass by Reduction²		4,692	254	254	508	277	277	554
Net New Trips		10,923	369	392	761	321	281	602
2021 Stafford MTIS (Commercial Parcels only)								
Shopping Center (#820)	120 KSF	4,971	118	72	190	212	230	442
Supermarket (#850)	34 KSF	3,623	78	52	130	178	171	349
Drive-in Bank (#912)	6 KSF	614	33	24	57	61	62	123
Hotel (#310)	200 Rooms	1,672	56	39	95	63	61	124
Gas/Service Station (#944)	16 pumps	2,752	82	82	164	112	112	224
Subtotal		13,632	367	269	636	626	636	1,262
Internal Capture Reduction¹		380	5	5	10	19	19	38
Pass by Reduction²		1,376	41	41	82	56	56	112
Net New Trips		11,876	321	223	544	551	561	1,112
Change from Previous Plan		-953	48	169	217	-230	-280	-510
Percent Change		-8.0 %	--	--	+39.9%	--	--	-45.9%

1. Daily internal capture is assumed to be 10 times the PM value as calculated using ITE methodology. See attached NCHRP 684 Worksheets for peak hours.

2. Pass by reduction of 50% for Gas/Service Station from MTIS and according to current ITE rates for Gas/Service Station, Shopping Center and Fast Food Restaurant for current site plan.

November 29, 2023

Mr. Grant Polley

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The comparison of trip generation indicates an increase of 217 trips in the AM peak hour and a decrease of 510 trips in the PM peak hour. These correspond to a percentage increase of 39.9 in the AM peak hour and a decrease of 45.9 in the PM peak hour.

Conclusions

The study resulted in the following conclusions:

- The newly proposed mix of commercial uses is generally in conformance with the previous analysis contained in the 2021 Stafford Logistics Center TIS. PM peak hour trips from the master TIS were approximately 800 trips higher than in the AM so despite the more balanced peaks with the current plan, PM is likely to still be the worst case for traffic operations. Therefore, it is anticipated that previous analysis and proposed intersection layouts will remain valid.
- The current site plan assumes additional access locations along Picadilly Road, two right-in/right-out north of the intersection of Picadilly Road/13th Avenue on both the east and west side. Also, along 13th Avenue, one full movement west of the intersection of Picadilly Road/13th Avenue on the north side of the roadway and one right-in/right-out east of the intersection of Picadilly Road/13th Avenue on the north side of the roadway.
- A full TIS is being prepared for submittal to City of Aurora to fully analyze all the driveway connections as well as confirm prior analysis for the intersections of Picadilly Road/Colfax Avenue and Picadilly Road/13th Avenue.

Please let me know if you have any questions about this letter or need any additional information.



Philip Dunham, PE, PTOE
Transportation Engineer

Attachment

NCHRP 684 Internal Trip Capture Estimation Tool					
Project Name:	Stafford Commercial			Organization:	Felsburg Holt & Ullevig
Project Location:	Aurora, CO			Performed By:	PJD
Scenario Description:	Buildout			Date:	11/22/2023
Analysis Year:	2040			Checked By:	
Analysis Period:	AM Street Peak Hour			Date:	

Table 1-A: Base Vehicle-Trip Generation Estimates (Single-Use Site Estimate)						
Land Use	Development Data (For Information Only)			Estimated Vehicle-Trips ³		
	ITE LUCs ¹	Quantity	Units	Total	Entering	Exiting
Office				0	0	0
Retail	821	52,500	SF	55	38	17
Restaurant	934, 937	14,100 & 2,300	SF	512	263	249
Cinema/Entertainment				0	0	0
Residential	221	280	DUs	112	26	86
Hotel				0	0	0
All Other Land Uses ²	151, 944	231.7 & 24	KSF and pumps	132	67	65
				811	394	417

Table 2-A: Mode Split and Vehicle Occupancy Estimates						
Land Use	Entering Trips			Exiting Trips		
	Veh. Occ. ⁴	% Transit	% Non-Motorized	Veh. Occ. ⁴	% Transit	% Non-Motorized
Office	1.00			1.00		
Retail	1.00			1.00		
Restaurant	1.00			1.00		
Cinema/Entertainment	1.00			1.00		
Residential	1.00			1.00		
Hotel	1.00			1.00		
All Other Land Uses ²	1.00			1.00		

Table 3-A: Average Land Use Interchange Distances (Feet Walking Distance)						
Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						

Table 4-A: Internal Person-Trip Origin-Destination Matrix*						
Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	0		2	0	1	0
Restaurant	0	3		0	1	0
Cinema/Entertainment	0	0	0		0	0
Residential	0	1	17	0		0
Hotel	0	0	0	0	0	

Table 5-A: Computations Summary			
	Total	Entering	Exiting
All Person-Trips	811	394	417
Internal Capture Percentage	6%	6%	6%
External Vehicle-Trips ⁵	761	369	392
External Transit-Trips ⁶	0	0	0
External Non-Motorized Trips ⁶	0	0	0

Table 6-A: Internal Trip Capture Percentages by Land Use		
Land Use	Entering Trips	Exiting Trips
Office	N/A	N/A
Retail	11%	18%
Restaurant	7%	2%
Cinema/Entertainment	N/A	N/A
Residential	8%	21%
Hotel	N/A	N/A

¹ Land Use Codes (LUCs) from <i>Trip Generation Manual</i> , published by the Institute of Transportation Engineers.
² Total estimate for all other land uses at mixed-use development site is not subject to internal trip capture computations in this estimator.
³ Enter trips assuming no transit or non-motorized trips (as assumed in ITE <i>Trip Generation Manual</i>).
⁴ Enter vehicle occupancy assumed in Table 1-A vehicle trips. If vehicle occupancy changes for proposed mixed-use project, manual adjustments must be made to Tables 5-A, 9-A (O and D). Enter transit, non-motorized percentages that will result with proposed mixed-use project complete.
⁵ Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-A.
⁶ Person-Trips
*Indicates computation that has been rounded to the nearest whole number.
Estimation Tool Developed by the Texas A&M Transportation Institute - Version 2013.1

Project Name:	Stafford Commercial
Analysis Period:	AM Street Peak Hour

Table 7-A: Conversion of Vehicle-Trip Ends to Person-Trip Ends						
Land Use	Table 7-A (D): Entering Trips			Table 7-A (O): Exiting Trips		
	Veh. Occ.	Vehicle-Trips	Person-Trips*	Veh. Occ.	Vehicle-Trips	Person-Trips*
Office	1.00	0	0	1.00	0	0
Retail	1.00	38	38	1.00	17	17
Restaurant	1.00	263	263	1.00	249	249
Cinema/Entertainment	1.00	0	0	1.00	0	0
Residential	1.00	26	26	1.00	86	86
Hotel	1.00	0	0	1.00	0	0

Table 8-A (O): Internal Person-Trip Origin-Destination Matrix (Computed at Origin)						
Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	5		2	0	2	0
Restaurant	77	35		0	10	7
Cinema/Entertainment	0	0	0		0	0
Residential	2	1	17	0		0
Hotel	0	0	0	0	0	

Table 8-A (D): Internal Person-Trip Origin-Destination Matrix (Computed at Destination)						
Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		12	60	0	0	0
Retail	0		132	0	1	0
Restaurant	0	3		0	1	0
Cinema/Entertainment	0	0	0		0	0
Residential	0	6	53	0		0
Hotel	0	2	16	0	0	

Table 9-A (D): Internal and External Trips Summary (Entering Trips)						
Destination Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles ¹	Transit ²	Non-Motorized ²
Office	0	0	0	0	0	0
Retail	4	34	38	34	0	0
Restaurant	19	244	263	244	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	2	24	26	24	0	0
Hotel	0	0	0	0	0	0
All Other Land Uses ³	0	67	67	67	0	0

Table 9-A (O): Internal and External Trips Summary (Exiting Trips)						
Origin Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles ¹	Transit ²	Non-Motorized ²
Office	0	0	0	0	0	0
Retail	3	14	17	14	0	0
Restaurant	4	245	249	245	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	18	68	86	68	0	0
Hotel	0	0	0	0	0	0
All Other Land Uses ³	0	65	65	65	0	0

¹Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-A

²Person-Trips

³Total estimate for all other land uses at mixed-use development site is not subject to internal trip capture computations in this estimator

*Indicates computation that has been rounded to the nearest whole number.

NCHRP 684 Internal Trip Capture Estimation Tool					
Project Name:	Stafford Commercial			Organization:	Felsburg Holt & Ullevig
Project Location:	Aurora, CO			Performed By:	PJD
Scenario Description:	Buildout			Date:	11/22/2023
Analysis Year:	2040			Checked By:	
Analysis Period:	PM Street Peak Hour			Date:	

Table 1-P: Base Vehicle-Trip Generation Estimates (Single-Use Site Estimate)						
Land Use	Development Data (For Information Only)			Estimated Vehicle-Trips ³		
	ITE LUCs ¹	Quantity	Units	Total	Entering	Exiting
Office				0	0	0
Retail	821	52,500	SF	164	80	84
Restaurant	934, 937	14,100 & 2,300	SF	299	161	138
Cinema/Entertainment				0	0	0
Residential	221	280	DUs	110	67	43
Hotel				0	0	0
All Other Land Uses ²	151, 944	231.7 & 24	KSF and pumps	257	127	130
				830	435	395

Table 2-P: Mode Split and Vehicle Occupancy Estimates						
Land Use	Entering Trips			Exiting Trips		
	Veh. Occ. ⁴	% Transit	% Non-Motorized	Veh. Occ. ⁴	% Transit	% Non-Motorized
Office	1.00			1.00		
Retail	1.00			1.00		
Restaurant	1.00			1.00		
Cinema/Entertainment	1.00			1.00		
Residential	1.00			1.00		
Hotel	1.00			1.00		
All Other Land Uses ²	1.00			1.00		

Table 3-P: Average Land Use Interchange Distances (Feet Walking Distance)						
Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						

Table 4-P: Internal Person-Trip Origin-Destination Matrix*						
Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	0		24	0	22	0
Restaurant	0	40		0	11	0
Cinema/Entertainment	0	0	0		0	0
Residential	0	8	9	0		0
Hotel	0	0	0	0	0	

Table 5-P: Computations Summary			
	Total	Entering	Exiting
All Person-Trips	830	435	395
Internal Capture Percentage	27%	26%	29%
External Vehicle-Trips ⁵	602	321	281
External Transit-Trips ⁶	0	0	0
External Non-Motorized Trips ⁶	0	0	0

Table 6-P: Internal Trip Capture Percentages by Land Use		
Land Use	Entering Trips	Exiting Trips
Office	N/A	N/A
Retail	60%	55%
Restaurant	20%	37%
Cinema/Entertainment	N/A	N/A
Residential	49%	40%
Hotel	N/A	N/A

¹ Land Use Codes (LUCs) from <i>Trip Generation Manual</i> , published by the Institute of Transportation Engineers.
² Total estimate for all other land uses at mixed-use development site is not subject to internal trip capture computations in this estimator.
³ Enter trips assuming no transit or non-motorized trips (as assumed in ITE <i>Trip Generation Manual</i>).
⁴ Enter vehicle occupancy assumed in Table 1-P vehicle trips. If vehicle occupancy changes for proposed mixed-use project, manual adjustments must be made.
⁵ Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-P.
⁶ Person-Trips
*Indicates computation that has been rounded to the nearest whole number.
Estimation Tool Developed by the Texas A&M Transportation Institute - Version 2013.1

Project Name:	Stafford Commercial
Analysis Period:	PM Street Peak Hour

Table 7-P: Conversion of Vehicle-Trip Ends to Person-Trip Ends						
Land Use	Table 7-P (D): Entering Trips			Table 7-P (O): Exiting Trips		
	Veh. Occ.	Vehicle-Trips	Person-Trips*	Veh. Occ.	Vehicle-Trips	Person-Trips*
Office	1.00	0	0	1.00	0	0
Retail	1.00	80	80	1.00	84	84
Restaurant	1.00	161	161	1.00	138	138
Cinema/Entertainment	1.00	0	0	1.00	0	0
Residential	1.00	67	67	1.00	43	43
Hotel	1.00	0	0	1.00	0	0

Table 8-P (O): Internal Person-Trip Origin-Destination Matrix (Computed at Origin)						
Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	2		24	3	22	4
Restaurant	4	57		11	25	10
Cinema/Entertainment	0	0	0		0	0
Residential	2	18	9	0		1
Hotel	0	0	0	0	0	

Table 8-P (D): Internal Person-Trip Origin-Destination Matrix (Computed at Destination)						
Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		6	3	0	3	0
Retail	0		47	0	31	0
Restaurant	0	40		0	11	0
Cinema/Entertainment	0	3	5		3	0
Residential	0	8	23	0		0
Hotel	0	2	8	0	0	

Table 9-P (D): Internal and External Trips Summary (Entering Trips)						
Destination Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles ¹	Transit ²	Non-Motorized ²
Office	0	0	0	0	0	0
Retail	48	32	80	32	0	0
Restaurant	33	128	161	128	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	33	34	67	34	0	0
Hotel	0	0	0	0	0	0
All Other Land Uses ³	0	127	127	127	0	0

Table 9-P (O): Internal and External Trips Summary (Exiting Trips)						
Origin Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles ¹	Transit ²	Non-Motorized ²
Office	0	0	0	0	0	0
Retail	46	38	84	38	0	0
Restaurant	51	87	138	87	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	17	26	43	26	0	0
Hotel	0	0	0	0	0	0
All Other Land Uses ³	0	130	130	130	0	0

¹Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-P

²Person-Trips




















³Total estimate for all other land uses at mixed-use development site is not subject to internal trip capture computations in this estimator

*Indicates computation that has been rounded to the nearest whole number.

APPENDIX D. LONG-TERM BACKGROUND LEVEL OF SERVICE

Timings
1: Picadilly Rd & Colfax Ave

2040 Background Conditions
AM Peak Hour

										
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	953	5	364	5	5	459	720	5	977	1283
Future Volume (vph)	953	5	364	5	5	459	720	5	977	1283
Turn Type	Split	NA	pm+ov	Perm	NA	Prot	NA	Perm	NA	pm+ov
Protected Phases	4	4	5		8	5	2		6	4
Permitted Phases			4	8				6		6
Detector Phase	4	4	5	8	8	5	2	6	6	4
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)	24.0	24.0	10.0	10.0	10.0	10.0	24.0	24.0	24.0	24.0
Total Split (s)	47.5	47.5	21.0	10.5	10.5	21.0	62.0	41.0	41.0	47.5
Total Split (%)	39.6%	39.6%	17.5%	8.8%	8.8%	17.5%	51.7%	34.2%	34.2%	39.6%
Yellow Time (s)	4.0	4.0	3.0	3.5	3.5	3.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	1.0	1.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	5.0		4.5	5.0	6.0	6.0	6.0	6.0
Lead/Lag			Lead			Lead		Lag	Lag	
Lead-Lag Optimize?			Yes			Yes		Yes	Yes	
Recall Mode	None	None	None	None	None	None	C-Min	C-Min	C-Min	None
Act Effect Green (s)	41.5	41.5	61.5		5.8	16.0	62.3	41.3	41.3	88.8
Actuated g/C Ratio	0.35	0.35	0.51		0.05	0.13	0.52	0.34	0.34	0.74
v/c Ratio	0.63	0.01	0.46		0.18	1.14	0.31	0.02	0.91	1.17
Control Delay	34.9	26.0	10.6		47.6	129.2	19.4	30.2	51.0	102.2
Queue Delay	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	34.9	26.0	10.6		47.6	129.2	19.4	30.2	51.0	102.2
LOS	C	C	B		D	F	B	C	D	F
Approach Delay		28.2			47.6		62.0		80.0	
Approach LOS		C			D		E		E	

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 92 (77%), Referenced to phase 2:NBT and 6:SBTL, Start of Yellow

Natural Cycle: 150

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.17

Intersection Signal Delay: 61.1

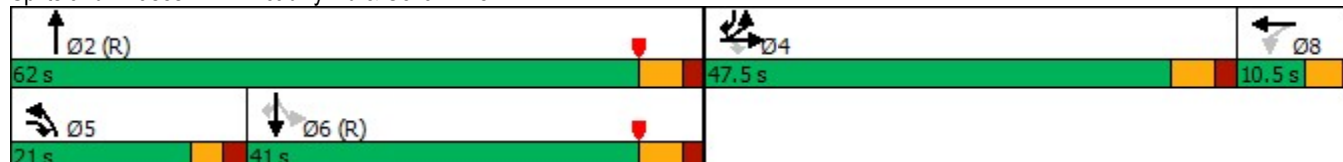
Intersection LOS: E

Intersection Capacity Utilization 109.6%

ICU Level of Service H

Analysis Period (min) 15

Splits and Phases: 1: Picadilly Rd & Colfax Ave



Queues
1: Picadilly Rd & Colfax Ave

2040 Background Conditions

AM Peak Hour



Lane Group	EBL	EBT	EBR	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	1003	5	383	15	483	763	5	1028	1351
v/c Ratio	0.63	0.01	0.46	0.18	1.14	0.31	0.02	0.91	1.17
Control Delay	34.9	26.0	10.6	47.6	129.2	19.4	30.2	51.0	102.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	34.9	26.0	10.6	47.6	129.2	19.4	30.2	51.0	102.2
Queue Length 50th (ft)	228	3	103	8	~227	139	2	374	~1166
Queue Length 95th (ft)	276	12	141	31	m#298	m153	13	#599	#1502
Internal Link Dist (ft)		479		447		398		388	
Turn Bay Length (ft)	325		325		300		150		150
Base Capacity (vph)	1600	597	824	87	424	2446	208	1129	1155
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.63	0.01	0.46	0.17	1.14	0.31	0.02	0.91	1.17

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.






















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

HCM 6th Signalized Intersection Summary

1: Picadilly Rd & Colfax Ave

2040 Background Conditions

AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	953	5	364	5	5	5	459	720	5	5	977	1283
Future Volume (veh/h)	953	5	364	5	5	5	459	720	5	5	977	1283
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	1752	1752	1752	1752	1752	1752	1752	1752	1752	1752	1752	1752
Adj Flow Rate, veh/h	1003	5	383	5	5	5	483	758	5	5	1028	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	10	10	10	10	10	10	10	10	10	10	10	10
Cap, veh/h	1253	467	593	9	9	9	432	2842	19	327	1347	
Arrive On Green	0.27	0.27	0.27	0.02	0.02	0.02	0.04	0.19	0.19	0.40	0.40	0.00
Sat Flow, veh/h	4705	1752	1485	542	542	542	3237	4902	32	659	3328	1485
Grp Volume(v), veh/h	1003	5	383	15	0	0	483	493	270	5	1028	0
Grp Sat Flow(s),veh/h/ln	1568	1752	1485	1627	0	0	1618	1594	1746	659	1664	1485
Q Serve(g_s), s	23.9	0.3	25.0	1.1	0.0	0.0	16.0	15.8	15.8	0.5	31.9	0.0
Cycle Q Clear(g_c), s	23.9	0.3	25.0	1.1	0.0	0.0	16.0	15.8	15.8	0.5	31.9	0.0
Prop In Lane	1.00		1.00	0.33		0.33	1.00		0.02	1.00		1.00
Lane Grp Cap(c), veh/h	1253	467	593	27	0	0	432	1849	1012	327	1347	
V/C Ratio(X)	0.80	0.01	0.65	0.56	0.00	0.00	1.12	0.27	0.27	0.02	0.76	
Avail Cap(c_a), veh/h	1627	606	711	81	0	0	432	1849	1012	327	1347	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	41.0	32.4	29.1	58.6	0.0	0.0	57.4	26.8	26.8	21.4	30.8	0.0
Incr Delay (d2), s/veh	2.2	0.0	1.5	17.2	0.0	0.0	79.9	0.4	0.6	0.1	4.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	14.1	0.2	13.6	1.0	0.0	0.0	18.2	11.1	12.0	0.2	19.4	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	43.3	32.4	30.7	75.8	0.0	0.0	137.3	27.1	27.4	21.5	34.9	0.0
LnGrp LOS	D	C	C	E	A	A	F	C	C	C	C	
Approach Vol, veh/h	1391			15			1246			1033		
Approach Delay, s/veh	39.8			75.8			69.9			34.8		
Approach LOS	D			E			E			C		
Timer - Assigned Phs	2			4			6			8		
Phs Duration (G+Y+Rc), s	75.6			38.0			54.6			6.5		
Change Period (Y+Rc), s	6.0			6.0			6.0			4.5		
Max Green Setting (Gmax), s	56.0			41.5			35.0			6.0		
Max Q Clear Time (g_c+I1), s	17.8			27.0			33.9			3.1		
Green Ext Time (p_c), s	5.0			4.9			0.7			0.0		

Intersection Summary

HCM 6th Ctrl Delay 48.7

HCM 6th LOS D

Notes

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

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

HCM 6th TWSC
2: Picadilly Rd & Site Driveway #2

2040 Background Conditions
AM Peak Hour

Intersection												
Int Delay, s/veh	0											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations			↗			↗	↘ ↑↑↑			↘ ↑↑↑		
Traffic Vol, veh/h	0	0	0	0	0	0	0	1179	0	0	1341	0
Future Vol, veh/h	0	0	0	0	0	0	0	1179	0	0	1341	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	0	150	-	-	150	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	2	10	2	2	10	2
Mvmt Flow	0	0	0	0	0	0	0	1241	0	0	1412	0
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	-	-	706	-	-	621	1412	0	0	1241	0	0
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	7.14	-	-	7.14	5.34	-	-	5.34	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.92	-	-	3.92	3.12	-	-	3.12	-	-
Pot Cap-1 Maneuver	0	0	*610	0	0	*653	*767	-	-	*821	-	-
Stage 1	0	0	-	0	0	-	-	-	-	-	-	-
Stage 2	0	0	-	0	0	-	-	-	-	-	-	-
Platoon blocked, %			1			1	1	-	-	1	-	-
Mov Cap-1 Maneuver	-	-	*610	-	-	*653	*767	-	-	*821	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s	0		0		0		0		0			
HCM LOS	A		A									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	* 767	-	-	-	-	* 821	-	-				
HCM Lane V/C Ratio	-	-	-	-	-	-	-	-				
HCM Control Delay (s)	0	-	-	0	0	0	-	-				
HCM Lane LOS	A	-	-	A	A	A	-	-				
HCM 95th %tile Q(veh)	0	-	-	-	-	0	-	-				
Notes												
~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon												

HCM 6th TWSC
4: Picadilly Rd & Site Driveway #4

2040 Background Conditions
AM Peak Hour

Intersection						
Int Delay, s/veh	0					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↑↑	↑↑↑			↑↑↑
Traffic Vol, veh/h	0	0	1179	0	0	1341
Future Vol, veh/h	0	0	1179	0	0	1341
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	95	95	95	95	95	95
Heavy Vehicles, %	2	2	10	2	2	10
Mvmt Flow	0	0	1241	0	0	1412

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	-	621	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	7.14	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	3.92	-
Pot Cap-1 Maneuver	0	*663	-
Stage 1	0	-	-
Stage 2	0	-	-
Platoon blocked, %	-	1	-
Mov Cap-1 Maneuver	-	*663	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

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

























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

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

Timings 5: Picadilly Rd & 13th Ave/Realigned Colfax Ave

2040 Background Conditions

AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	54	45	54	450	176	625	40	500	325	525	700	116
Future Volume (vph)	54	45	54	450	176	625	40	500	325	525	700	116
Turn Type	pm+pt	NA	Perm	Prot	NA	Perm	pm+pt	NA	pm+ov	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2	3	1	6	
Permitted Phases	4		4			8	2		2			6
Detector Phase	7	4	4	3	8	8	5	2	3	1	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	11.0	23.0	23.0	24.0	24.0	24.0	10.0	24.0	24.0	24.0	24.0	24.0
Total Split (s)	41.0	27.0	27.0	35.0	21.0	21.0	11.0	27.0	35.0	31.0	47.0	47.0
Total Split (%)	34.2%	22.5%	22.5%	29.2%	17.5%	17.5%	9.2%	22.5%	29.2%	25.8%	39.2%	39.2%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	4.0	3.0	3.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	6.0	5.0	5.0	6.0	6.0
Lead/Lag	Lead	Lead	Lead	Lag	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	C-Min	None	None	C-Min	C-Min
Act Effect Green (s)	9.5	8.7	8.7	23.7	22.8	22.8	51.3	44.4	70.1	24.3	65.0	65.0
Actuated g/C Ratio	0.08	0.07	0.07	0.20	0.19	0.19	0.43	0.37	0.58	0.20	0.54	0.54
v/c Ratio	0.44	0.38	0.19	0.76	1.35	0.69	0.13	0.30	0.34	0.86	0.29	0.14
Control Delay	62.3	60.9	1.4	53.2	209.8	10.3	15.6	29.9	1.8	63.1	5.0	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	62.3	60.9	1.4	53.2	209.8	10.3	15.6	29.9	1.8	63.1	5.0	0.3
LOS	E	E	A	D	F	B	B	C	A	E	A	A
Approach Delay		40.3			91.6			18.7			27.4	
Approach LOS		D			F			B			C	

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 14 (12%), Referenced to phase 2:NBTL and 6:SBT, Start of Yellow

Natural Cycle: 95

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.35

Intersection Signal Delay: 48.1

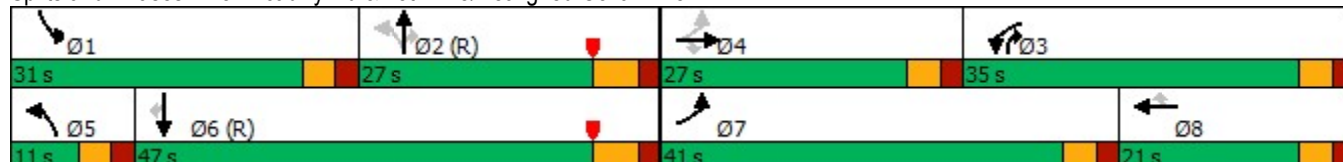
Intersection LOS: D

Intersection Capacity Utilization 68.3%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 5: Picadilly Rd & 13th Ave/Realigned Colfax Ave















Queues

2040 Background Conditions

5: Picadilly Rd & 13th Ave/Realigned Colfax Ave

AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	57	47	57	474	435	408	42	526	342	553	737	122
v/c Ratio	0.44	0.38	0.19	0.76	1.35	0.69	0.13	0.30	0.34	0.86	0.29	0.14
Control Delay	62.3	60.9	1.4	53.2	209.8	10.3	15.6	29.9	1.8	63.1	5.0	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	62.3	60.9	1.4	53.2	209.8	10.3	15.6	29.9	1.8	63.1	5.0	0.3
Queue Length 50th (ft)	43	35	0	179	~431	0	12	110	0	159	31	0
Queue Length 95th (ft)	85	74	0	223	#592	95	34	161	26	m173	m64	m0
Internal Link Dist (ft)		372			156			282			189	
Turn Bay Length (ft)	150		150	200			150		150	150		150
Base Capacity (vph)	492	316	439	795	323	595	317	1745	1059	689	2553	866
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.12	0.15	0.13	0.60	1.35	0.69	0.13	0.30	0.32	0.80	0.29	0.14

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

























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

HCM 6th Signalized Intersection Summary

5: Picadilly Rd & 13th Ave/Realigned Colfax Ave

2040 Background Conditions

AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	54	45	54	450	176	625	40	500	325	525	700	116
Future Volume (veh/h)	54	45	54	450	176	625	40	500	325	525	700	116
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	1752	1752	1752	1752	1752	1752	1752	1752	1752	1752	1752	1752
Adj Flow Rate, veh/h	57	47	57	474	540	422	42	526	342	553	737	122
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	10	10	10	10	10	10	10	10	10	10	10	10
Cap, veh/h	133	92	78	555	307	260	361	1977	861	624	2749	853
Arrive On Green	0.04	0.05	0.05	0.17	0.18	0.18	0.03	0.41	0.41	0.06	0.19	0.19
Sat Flow, veh/h	1668	1752	1485	3337	1752	1485	1668	4782	1485	3237	4782	1485
Grp Volume(v), veh/h	57	47	57	474	540	422	42	526	342	553	737	122
Grp Sat Flow(s),veh/h/ln	1668	1752	1485	1668	1752	1485	1668	1594	1485	1618	1594	1485
Q Serve(g_s), s	4.1	3.1	4.0	16.6	21.0	21.0	1.7	8.7	8.4	20.3	15.8	8.2
Cycle Q Clear(g_c), s	4.1	3.1	4.0	16.6	21.0	21.0	1.7	8.7	8.4	20.3	15.8	8.2
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	133	92	78	555	307	260	361	1977	861	624	2749	853
V/C Ratio(X)	0.43	0.51	0.73	0.85	1.76	1.62	0.12	0.27	0.40	0.89	0.27	0.14
Avail Cap(c_a), veh/h	561	321	272	834	307	260	392	1977	861	701	2749	853
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	56.7	55.4	43.3	48.6	49.5	49.5	19.0	23.2	5.0	54.9	27.1	24.0
Incr Delay (d2), s/veh	2.2	4.3	12.4	5.6	355.6	297.8	0.1	0.3	1.4	12.2	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	3.2	2.7	3.5	11.7	61.4	46.0	1.2	5.8	4.5	15.0	11.0	5.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	58.9	59.7	55.7	54.2	405.1	347.3	19.1	23.5	6.3	67.0	27.3	24.4
LnGrp LOS	E	E	E	D	F	F	B	C	A	E	C	C
Approach Vol, veh/h	161			1436			910			1412		
Approach Delay, s/veh	58.0			272.3			16.9			42.6		
Approach LOS	E			F			B			D		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	28.1	55.6	25.0	11.3	8.8	75.0	10.3	26.0				
Change Period (Y+Rc), s	5.0	6.0	5.0	5.0	5.0	6.0	5.0	5.0				
Max Green Setting (Gmax), s	26.0	21.0	30.0	22.0	6.0	41.0	36.0	16.0				
Max Q Clear Time (g_c+I1), s	22.3	10.7	18.6	6.0	3.7	17.8	6.1	23.0				
Green Ext Time (p_c), s	0.8	3.3	1.4	0.3	0.0	5.2	0.1	0.0				

Intersection Summary

HCM 6th Ctrl Delay 121.4

HCM 6th LOS F

Notes

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

User approved volume balancing among the lanes for turning movement.





HCM 6th TWSC
6: Picadilly Rd & Site Driveway #6

2040 Background Conditions
AM Peak Hour

Intersection						
Int Delay, s/veh	0					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↗ ↑↑↑			↘ ↑↑↑	
Traffic Vol, veh/h	0	0	865	0	0	1229
Future Vol, veh/h	0	0	865	0	0	1229
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	-	-	150	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	10	2	2	10
Mvmt Flow	0	0	911	0	0	1294
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	-	456	0	0	911	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	7.14	-	-	5.34	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.92	-	-	3.12	-
Pot Cap-1 Maneuver	0	472	-	-	432	-
Stage 1	0	-	-	-	-	-
Stage 2	0	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	472	-	-	432	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
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)	-	-	-	432	-	
HCM Lane V/C Ratio	-	-	-	-	-	
HCM Control Delay (s)	-	-	0	0	-	
HCM Lane LOS	-	-	A	A	-	
HCM 95th %tile Q(veh)	-	-	-	0	-	

HCM 6th TWSC
7: 13th Ave & Site Driveway #7

2040 Background Conditions
AM Peak Hour

Intersection						
Int Delay, s/veh	0					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	153	332	0	0	0
Future Vol, veh/h	0	153	332	0	0	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	95	95	95	95	95	95
Heavy Vehicles, %	2	10	10	2	2	2
Mvmt Flow	0	161	349	0	0	0
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	349	0	-	0	510	349
Stage 1	-	-	-	-	349	-
Stage 2	-	-	-	-	161	-
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	*1221	-	-	-	*606	*816
Stage 1	-	-	-	-	*769	-
Stage 2	-	-	-	-	*868	-
Platoon blocked, %	1	-	-	-	1	1
Mov Cap-1 Maneuver	*1221	-	-	-	*606	*816
Mov Cap-2 Maneuver	-	-	-	-	*606	-
Stage 1	-	-	-	-	*769	-
Stage 2	-	-	-	-	*868	-
Approach	EB	WB		SB		
HCM Control Delay, s	0	0		0		
HCM LOS	A					
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	* 1221	-	-	-	-	
HCM Lane V/C Ratio	-	-	-	-	-	
HCM Control Delay (s)	0	-	-	-	0	
HCM Lane LOS	A	-	-	-	A	
HCM 95th %tile Q(veh)	0	-	-	-	-	
Notes						
~: Volume exceeds capacity		\$: Delay exceeds 300s		+: Computation Not Defined		*: All major volume in platoon









HCM 6th TWSC
8: Realigned Colfax Ave & Site Driveway #8

2040 Background Conditions
AM Peak Hour

Intersection						
Int Delay, s/veh	0					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑	↗		↗
Traffic Vol, veh/h	0	904	1276	0	0	0
Future Vol, veh/h	0	904	1276	0	0	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	-	-	-	150	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	10	10	2	2	2
Mvmt Flow	0	952	1343	0	0	0
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	-	0	-	0	-	672
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.32
Pot Cap-1 Maneuver	0	-	-	-	0	398
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	-	-	-	-	-	398
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	EB	WB		SB		
HCM Control Delay, s	0	0		0		
HCM LOS				A		
Minor Lane/Major Mvmt	EBT	WBT	WBR	SBLn1		
Capacity (veh/h)	-	-	-	-		
HCM Lane V/C Ratio	-	-	-	-		
HCM Control Delay (s)	-	-	-	0		
HCM Lane LOS	-	-	-	A		
HCM 95th %tile Q(veh)	-	-	-	-		

HCM 6th TWSC
9: Realigned Colfax Ave & Site Driveway #3

2040 Background Conditions
AM Peak Hour

Intersection												
Int Delay, s/veh	0											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	904	0	0	1276	0	0	0	0	0	0	0
Future Vol, veh/h	0	904	0	0	1276	0	0	0	0	0	0	0
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	150	-	-	150	-	-	0	-	-	0	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	10	2	2	10	2	2	2	2	2	2	2
Mvmt Flow	0	952	0	0	1343	0	0	0	0	0	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1343	0	0	952	0	0	1624	2295	476	1819	2295	672
Stage 1	-	-	-	-	-	-	952	952	-	1343	1343	-
Stage 2	-	-	-	-	-	-	672	1343	-	476	952	-
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	509	-	-	*1063	-	-	*152	*43	*711	*93	*43	398
Stage 1	-	-	-	-	-	-	*670	*587	-	*160	*219	-
Stage 2	-	-	-	-	-	-	*412	*219	-	*670	*587	-
Platoon blocked, %		-	-	1	-	-	1	1	1	1	1	
Mov Cap-1 Maneuver	509	-	-	*1063	-	-	*152	*43	*711	*93	*43	398
Mov Cap-2 Maneuver	-	-	-	-	-	-	*152	*43	-	*93	*43	-
Stage 1	-	-	-	-	-	-	*670	*587	-	*160	*219	-
Stage 2	-	-	-	-	-	-	*412	*219	-	*670	*587	-




















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

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	-	-	509	-	-	* 1063	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-	-	-	-	-	-	-
HCM Control Delay (s)	0	0	0	-	-	0	-	-	0	0
HCM Lane LOS	A	A	A	-	-	A	-	-	A	A
HCM 95th %tile Q(veh)	-	-	0	-	-	0	-	-	-	-

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

Timings
1: Picadilly Rd & Colfax Ave

2040 Background Conditions
PM Peak Hour

										
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	1432	5	397	5	5	469	703	5	875	974
Future Volume (vph)	1432	5	397	5	5	469	703	5	875	974
Turn Type	Split	NA	pm+ov	Perm	NA	Prot	NA	Perm	NA	pm+ov
Protected Phases	4	4	5		8	5	2		6	4
Permitted Phases			4	8				6		6
Detector Phase	4	4	5	8	8	5	2	6	6	4
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)	24.0	24.0	10.0	10.0	10.0	10.0	24.0	24.0	24.0	24.0
Total Split (s)	47.5	47.5	20.0	11.5	11.5	20.0	61.0	41.0	41.0	47.5
Total Split (%)	39.6%	39.6%	16.7%	9.6%	9.6%	16.7%	50.8%	34.2%	34.2%	39.6%
Yellow Time (s)	4.0	4.0	3.0	3.5	3.5	3.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	1.0	1.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	5.0		4.5	5.0	6.0	6.0	6.0	6.0
Lead/Lag			Lead			Lead		Lag	Lag	
Lead-Lag Optimize?			Yes			Yes		Yes	Yes	
Recall Mode	None	None	None	None	None	None	C-Min	C-Min	C-Min	None
Act Effect Green (s)	41.5	41.5	60.5		6.2	15.0	61.9	41.9	41.9	89.4
Actuated g/C Ratio	0.35	0.35	0.50		0.05	0.12	0.52	0.35	0.35	0.74
v/c Ratio	0.94	0.01	0.51		0.17	1.24	0.31	0.02	0.80	0.87
Control Delay	50.8	26.0	10.8		46.8	176.8	9.5	30.0	42.8	18.9
Queue Delay	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	50.8	26.0	10.8		46.8	176.8	9.5	30.0	42.8	18.9
LOS	D	C	B		D	F	A	C	D	B
Approach Delay		42.0			46.8		76.2		30.2	
Approach LOS		D			D		E		C	

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 94 (78%), Referenced to phase 2:NBT and 6:SBTL, Start of Yellow

Natural Cycle: 110

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.24

Intersection Signal Delay: 45.8

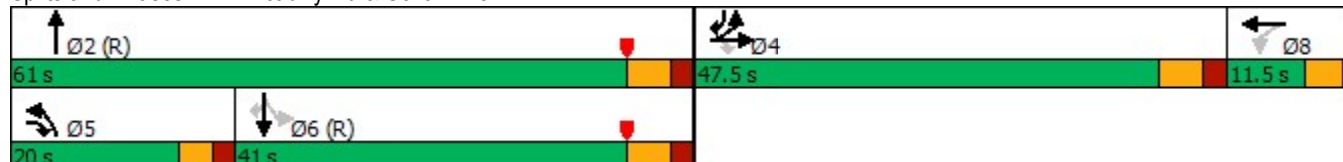
Intersection LOS: D

Intersection Capacity Utilization 90.8%

ICU Level of Service E

Analysis Period (min) 15

Splits and Phases: 1: Picadilly Rd & Colfax Ave



Queues

2040 Background Conditions

1: Picadilly Rd & Colfax Ave

PM Peak Hour



Lane Group	EBL	EBT	EBR	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	1507	5	418	15	494	745	5	921	1025
v/c Ratio	0.94	0.01	0.51	0.17	1.24	0.31	0.02	0.80	0.87
Control Delay	50.8	26.0	10.8	46.8	176.8	9.5	30.0	42.8	18.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	50.8	26.0	10.8	46.8	176.8	9.5	30.0	42.8	18.9
Queue Length 50th (ft)	399	3	112	8	~252	62	2	315	285
Queue Length 95th (ft)	#497	12	150	30	#364	116	13	#505	#933
Internal Link Dist (ft)		479		447		398		388	
Turn Bay Length (ft)	325		325		300		150		150
Base Capacity (vph)	1600	597	826	96	397	2430	215	1145	1173
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.94	0.01	0.51	0.16	1.24	0.31	0.02	0.80	0.87

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

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






















Queue shown is maximum after two cycles.

HCM 6th Signalized Intersection Summary

1: Picadilly Rd & Colfax Ave

2040 Background Conditions

PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1432	5	397	5	5	5	469	703	5	5	875	974
Future Volume (veh/h)	1432	5	397	5	5	5	469	703	5	5	875	974
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	1752	1752	1752	1752	1752	1752	1752	1752	1752	1752	1752	1752
Adj Flow Rate, veh/h	1507	5	418	5	5	5	494	740	5	5	921	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	10	10	10	10	10	10	10	10	10	10	10	10
Cap, veh/h	1605	598	692	9	9	9	405	2475	17	287	1126	
Arrive On Green	0.34	0.34	0.34	0.02	0.02	0.02	0.25	1.00	1.00	0.34	0.34	0.00
Sat Flow, veh/h	4705	1752	1485	542	542	542	3237	4901	33	670	3328	1485
Grp Volume(v), veh/h	1507	5	418	15	0	0	494	481	264	5	921	0
Grp Sat Flow(s),veh/h/ln	1568	1752	1485	1627	0	0	1618	1594	1746	670	1664	1485
Q Serve(g_s), s	37.3	0.2	25.1	1.1	0.0	0.0	15.0	0.0	0.0	0.6	30.4	0.0
Cycle Q Clear(g_c), s	37.3	0.2	25.1	1.1	0.0	0.0	15.0	0.0	0.0	0.6	30.4	0.0
Prop In Lane	1.00		1.00	0.33		0.33	1.00		0.02	1.00		1.00
Lane Grp Cap(c), veh/h	1605	598	692	27	0	0	405	1610	882	287	1126	
V/C Ratio(X)	0.94	0.01	0.60	0.56	0.00	0.00	1.22	0.30	0.30	0.02	0.82	
Avail Cap(c_a), veh/h	1627	606	699	95	0	0	405	1610	882	287	1126	
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	0.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	38.3	26.1	23.8	58.6	0.0	0.0	45.0	0.0	0.0	26.5	36.3	0.0
Incr Delay (d2), s/veh	10.9	0.0	1.5	17.2	0.0	0.0	119.9	0.5	0.9	0.1	6.6	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	21.6	0.2	13.4	1.0	0.0	0.0	18.7	0.2	0.4	0.2	19.2	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	49.3	26.1	25.3	75.8	0.0	0.0	164.9	0.5	0.9	26.6	43.0	0.0
LnGrp LOS	D	C	C	E	A	A	F	A	A	C	D	
Approach Vol, veh/h	1930			15			1239			926		
Approach Delay, s/veh	44.0			75.8			66.1			42.9		
Approach LOS	D			E			E			D		
Timer - Assigned Phs	2			4		5	6	8				
Phs Duration (G+Y+Rc), s	66.6			46.9		20.0	46.6	6.5				
Change Period (Y+Rc), s	6.0			6.0		5.0	6.0	4.5				
Max Green Setting (Gmax), s	55.0			41.5		15.0	35.0	7.0				
Max Q Clear Time (g_c+l1), s	2.0			39.3		17.0	32.4	3.1				
Green Ext Time (p_c), s	5.0			1.7		0.0	1.5	0.0				
Intersection Summary												
HCM 6th Ctrl Delay	50.5											
HCM 6th LOS	D											
Notes												
User approved pedestrian interval to be less than phase max green.												
Unsignalized Delay for [SBR] is excluded from calculations of the approach delay and intersection delay.												

HCM 6th TWSC
2: Picadilly Rd & Site Driveway #2

2040 Background Conditions
PM Peak Hour

Intersection												
Int Delay, s/veh	0											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations			↗			↗	↗ ↑↑↑			↗ ↑↑↑		
Traffic Vol, veh/h	0	0	0	0	0	0	0	1177	0	0	1272	0
Future Vol, veh/h	0	0	0	0	0	0	0	1177	0	0	1272	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	0	150	-	-	150	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	2	10	2	2	10	10
Mvmt Flow	0	0	0	0	0	0	0	1239	0	0	1339	0

Major/Minor	Minor2		Minor1		Major1		Major2	
Conflicting Flow All	-	-	670	-	-	620	1339	0
Stage 1	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	7.14	-	-	7.14	5.34	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.92	-	-	3.92	3.12	-
Pot Cap-1 Maneuver	0	0	*632	0	0	*653	*794	-
Stage 1	0	0	-	0	0	-	-	-
Stage 2	0	0	-	0	0	-	-	-
Platoon blocked, %			1			1	1	-
Mov Cap-1 Maneuver	-	-	*632	-	-	*653	*794	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-

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

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	* 794	-	-	-	* 821	-	-
HCM Lane V/C Ratio	-	-	-	-	-	-	-
HCM Control Delay (s)	0	-	-	0	0	-	-
HCM Lane LOS	A	-	-	A	A	-	-
HCM 95th %tile Q(veh)	0	-	-	-	0	-	-

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

HCM 6th TWSC
4: Picadilly Rd & Site Driveway #4

























2040 Background Conditions
PM Peak Hour

Intersection						
Int Delay, s/veh	0					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↗ ↘ ↘ ↘	↗ ↘ ↘ ↘			↗ ↘ ↘ ↘
Traffic Vol, veh/h	0	0	1172	0	0	1272
Future Vol, veh/h	0	0	1172	0	0	1272
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	95	95	95	95	95	95
Heavy Vehicles, %	2	2	10	2	2	10
Mvmt Flow	0	0	1234	0	0	1339
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	-	617	0	0	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	7.14	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.92	-	-	-	-
Pot Cap-1 Maneuver	0	*663	-	-	0	-
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %		1	-	-	-	-
Mov Cap-1 Maneuver	-	*663	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s	0	0		0		
HCM LOS	A					
Minor Lane/Major Mvmt	NBT	NBRWBLn1		SBT		
Capacity (veh/h)	-	-		-		
HCM Lane V/C Ratio	-	-		-		
HCM Control Delay (s)	-	0		-		
HCM Lane LOS	-	A		-		
HCM 95th %tile Q(veh)	-	-		-		
Notes						
~: Volume exceeds capacity		\$: Delay exceeds 300s		+: Computation Not Defined		*: All major volume in platoon

Timings
5: Picadilly Rd & 13th Ave/Realigned Colfax Ave

2040 Background Conditions

PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	147	152	50	456	75	525	30	500	400	550	625	97
Future Volume (vph)	147	152	50	456	75	525	30	500	400	550	625	97
Turn Type	pm+pt	NA	Perm	Prot	NA	Perm	pm+pt	NA	pm+ov	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2	3	1	6	
Permitted Phases	4		4			8	2		2			6
Detector Phase	7	4	4	3	8	8	5	2	3	1	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	11.0	23.0	23.0	24.0	24.0	24.0	10.0	24.0	24.0	24.0	24.0	24.0
Total Split (s)	25.0	26.0	26.0	35.0	36.0	36.0	12.0	27.0	35.0	32.0	47.0	47.0
Total Split (%)	20.8%	21.7%	21.7%	29.2%	30.0%	30.0%	10.0%	22.5%	29.2%	26.7%	39.2%	39.2%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	4.0	3.0	3.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	6.0	5.0	5.0	6.0	6.0
Lead/Lag	Lag	Lead	Lead	Lag	Lead	Lead	Lead	Lead	Lag	Lag	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	C-Min	None	None	C-Min	C-Min
Act Effect Green (s)	33.2	16.1	16.1	24.1	23.1	23.1	34.5	33.5	63.6	25.3	56.6	56.6
Actuated g/C Ratio	0.28	0.13	0.13	0.20	0.19	0.19	0.29	0.28	0.53	0.21	0.47	0.47
v/c Ratio	0.53	0.69	0.14	0.75	0.85	0.60	0.17	0.40	0.49	0.86	0.30	0.13
Control Delay	44.5	64.8	0.7	52.5	48.0	9.2	39.1	38.6	13.4	37.1	12.7	0.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	44.5	64.8	0.7	52.5	48.0	9.2	39.1	38.6	13.4	37.1	12.7	0.3
LOS	D	E	A	D	D	A	D	D	B	D	B	A
Approach Delay		47.0			39.1			27.8			22.3	
Approach LOS		D			D			C			C	

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 80 (67%), Referenced to phase 2:NBTL and 6:SBT, Start of Yellow

Natural Cycle: 95

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.86

Intersection Signal Delay: 31.0

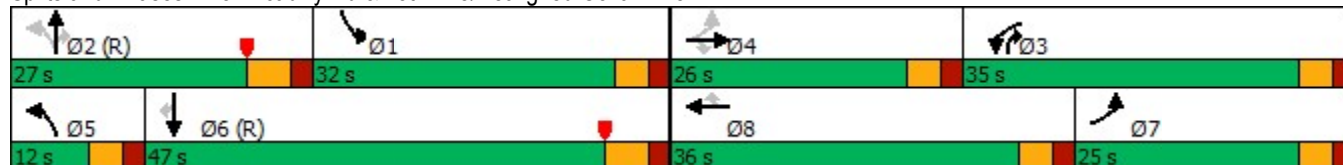
Intersection LOS: C

Intersection Capacity Utilization 65.7%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 5: Picadilly Rd & 13th Ave/Realigned Colfax Ave















Queues

2040 Background Conditions

5: Picadilly Rd & 13th Ave/Realigned Colfax Ave

PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	155	160	53	480	322	310	32	526	421	579	658	102
v/c Ratio	0.53	0.69	0.14	0.75	0.85	0.60	0.17	0.40	0.49	0.86	0.30	0.13
Control Delay	44.5	64.8	0.7	52.5	48.0	9.2	39.1	38.6	13.4	37.1	12.7	0.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	44.5	64.8	0.7	52.5	48.0	9.2	39.1	38.6	13.4	37.1	12.7	0.3
Queue Length 50th (ft)	82	120	0	181	160	0	18	124	119	221	56	0
Queue Length 95th (ft)	113	186	0	226	263	77	50	181	226	#227	78	m0
Internal Link Dist (ft)		372			156			282			189	
Turn Bay Length (ft)	150		150	200			150		150	150		150
Base Capacity (vph)	330	302	436	795	467	590	198	1315	852	716	2223	774
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.47	0.53	0.12	0.60	0.69	0.53	0.16	0.40	0.49	0.81	0.30	0.13

Intersection Summary

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

Queue shown is maximum after two cycles.

























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

HCM 6th Signalized Intersection Summary

5: Picadilly Rd & 13th Ave/Realigned Colfax Ave

2040 Background Conditions

PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	147	152	50	456	75	525	30	500	400	550	625	97
Future Volume (veh/h)	147	152	50	456	75	525	30	500	400	550	625	97
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	1752	1752	1752	1752	1752	1752	1752	1752	1752	1752	1752	1752
Adj Flow Rate, veh/h	155	160	53	480	0	606	32	526	421	579	658	102
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	10	10	10	10	10	10	10	10	10	10	10	10
Cap, veh/h	234	195	165	561	0	671	139	689	464	1273	2479	770
Arrive On Green	0.05	0.11	0.11	0.17	0.00	0.23	0.03	0.14	0.14	0.66	0.87	0.87
Sat Flow, veh/h	1668	1752	1485	3337	0	2969	1668	4782	1485	3237	4782	1485
Grp Volume(v), veh/h	155	160	53	480	0	606	32	526	421	579	658	102
Grp Sat Flow(s),veh/h/ln	1668	1752	1485	1668	0	1485	1668	1594	1485	1618	1594	1485
Q Serve(g_s), s	0.2	10.7	3.5	16.8	0.0	23.8	2.1	12.7	12.5	10.5	2.9	0.9
Cycle Q Clear(g_c), s	0.2	10.7	3.5	16.8	0.0	23.8	2.1	12.7	12.5	10.5	2.9	0.9
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	234	195	165	561	0	671	139	689	464	1273	2479	770
V/C Ratio(X)	0.66	0.82	0.32	0.86	0.00	0.90	0.23	0.76	0.91	0.45	0.27	0.13
Avail Cap(c_a), veh/h	423	307	260	834	0	767	191	837	510	1273	2479	770
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.67	1.67	1.67
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	50.1	52.2	37.7	48.5	0.0	45.2	47.6	49.4	39.6	14.3	4.1	1.9
Incr Delay (d2), s/veh	3.2	9.6	1.1	5.8	0.0	12.9	0.8	7.9	24.2	0.3	0.3	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	8.2	9.0	2.7	11.9	0.0	15.1	1.6	9.2	10.8	5.5	1.5	0.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	53.3	61.8	38.8	54.3	0.0	58.1	48.4	57.3	63.8	14.5	4.3	2.3
LnGrp LOS	D	E	D	D	A	E	D	E	E	B	A	A
Approach Vol, veh/h	368			1086			979			1339		
Approach Delay, s/veh	54.9			56.4			59.8			8.6		
Approach LOS	D			E			E			A		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	53.2	23.3	25.2	18.3	8.3	68.2	11.4	32.1				
Change Period (Y+Rc), s	6.0	* 6	5.0	5.0	5.0	6.0	5.0	5.0				
Max Green Setting (Gmax), s	27.0	* 21	30.0	21.0	7.0	41.0	20.0	31.0				
Max Q Clear Time (g_c+I1), s	12.5	14.7	18.8	12.7	4.1	4.9	2.2	25.8				
Green Ext Time (p_c), s	1.8	2.6	1.4	0.6	0.0	5.0	0.4	1.3				

Intersection Summary

HCM 6th Ctrl Delay 40.2

HCM 6th LOS D

Notes

User approved volume balancing among the lanes for turning movement.

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





HCM 6th TWSC
6: Picadilly Rd & Site Driveway #6

2040 Background Conditions
PM Peak Hour

Intersection						
Int Delay, s/veh	0					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↗ ↑↑↑			↘ ↑↑↑	
Traffic Vol, veh/h	0	0	930	0	0	1131
Future Vol, veh/h	0	0	930	0	0	1131
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	-	-	150	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	10	2	2	10
Mvmt Flow	0	0	979	0	0	1191
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	-	490	0	0	979	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	7.14	-	-	5.34	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.92	-	-	3.12	-
Pot Cap-1 Maneuver	0	448	-	-	401	-
Stage 1	0	-	-	-	-	-
Stage 2	0	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	448	-	-	401	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
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)	-	-	-	401	-	
HCM Lane V/C Ratio	-	-	-	-	-	
HCM Control Delay (s)	-	-	0	0	-	
HCM Lane LOS	-	-	A	A	-	
HCM 95th %tile Q(veh)	-	-	-	0	-	

HCM 6th TWSC
7: 13th Ave & Site Driveway #7

2040 Background Conditions
PM Peak Hour

Intersection						
Int Delay, s/veh	0					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	349	202	0	0	0
Future Vol, veh/h	0	349	202	0	0	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	95	95	95	95	95	95
Heavy Vehicles, %	2	10	10	2	2	2
Mvmt Flow	0	367	213	0	0	0
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	213	0	-	0	580	213
Stage 1	-	-	-	-	213	-
Stage 2	-	-	-	-	367	-
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	*1377	-	-	-	*503	*920
Stage 1	-	-	-	-	*867	-
Stage 2	-	-	-	-	*701	-
Platoon blocked, %	1	-	-	-	1	1
Mov Cap-1 Maneuver	*1377	-	-	-	*503	*920
Mov Cap-2 Maneuver	-	-	-	-	*503	-
Stage 1	-	-	-	-	*867	-
Stage 2	-	-	-	-	*701	-
Approach	EB	WB		SB		
HCM Control Delay, s	0	0		0		
HCM LOS	A					
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	* 1377	-	-	-	-	
HCM Lane V/C Ratio	-	-	-	-	-	
HCM Control Delay (s)	0	-	-	-	0	
HCM Lane LOS	A	-	-	-	A	
HCM 95th %tile Q(veh)	0	-	-	-	-	
Notes						
~: Volume exceeds capacity		\$: Delay exceeds 300s		+: Computation Not Defined		*: All major volume in platoon









HCM 6th TWSC
8: Realigned Colfax Ave & Site Driveway #8

2040 Background Conditions
PM Peak Hour

Intersection						
Int Delay, s/veh	0					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑	↗		↗
Traffic Vol, veh/h	0	1086	1025	0	0	0
Future Vol, veh/h	0	1086	1025	0	0	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	-	-	-	150	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	10	10	2	2	2
Mvmt Flow	0	1143	1079	0	0	0
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	-	0	-	0	-	540
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.32
Pot Cap-1 Maneuver	0	-	-	-	0	486
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	-	-	-	-	-	486
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	EB	WB		SB		
HCM Control Delay, s	0	0		0		
HCM LOS	A					
Minor Lane/Major Mvmt	EBT	WBT	WBR	SBLn1		
Capacity (veh/h)	-	-	-	-		
HCM Lane V/C Ratio	-	-	-	-		
HCM Control Delay (s)	-	-	-	0		
HCM Lane LOS	-	-	-	A		
HCM 95th %tile Q(veh)	-	-	-	-		

HCM 6th TWSC
9: Realigned Colfax Ave & Site Driveway #3





























2040 Background Conditions
PM Peak Hour

Intersection												
Int Delay, s/veh	0											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	1086	0	0	1025	0	0	0	0	0	0	0
Future Vol, veh/h	0	1086	0	0	1025	0	0	0	0	0	0	0
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	150	-	-	150	-	-	0	-	-	0	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	10	2	2	10	2	2	2	2	2	2	2
Mvmt Flow	0	1143	0	0	1079	0	0	0	0	0	0	0
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1079	0	0	1143	0	0	1683	2222	572	1651	2222	540
Stage 1	-	-	-	-	-	-	1143	1143	-	1079	1079	-
Stage 2	-	-	-	-	-	-	540	1079	-	572	1143	-
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	642	-	-	607	-	-	61	43	463	65	43	486
Stage 1	-	-	-	-	-	-	213	273	-	233	293	-
Stage 2	-	-	-	-	-	-	494	293	-	472	273	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	642	-	-	607	-	-	61	43	463	65	43	486
Mov Cap-2 Maneuver	-	-	-	-	-	-	61	43	-	65	43	-
Stage 1	-	-	-	-	-	-	213	273	-	233	293	-
Stage 2	-	-	-	-	-	-	494	293	-	472	273	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0			0			0			0		
HCM LOS							A			A		
Minor Lane/Major Mvmt	NBLn1 NBLn2		EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2		
Capacity (veh/h)	-	-	642	-	-	607	-	-	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-	-	-	-	-	-	-	-	-
HCM Control Delay (s)	0	0	0	-	-	0	-	-	0	0	-	-
HCM Lane LOS	A	A	A	-	-	A	-	-	A	A	-	-
HCM 95th %tile Q(veh)	-	-	0	-	-	0	-	-	-	-	-	-

APPENDIX E. LONG-TERM TOTAL LEVEL OF SERVICE

Timings
1: Picadilly Rd & Colfax Ave

2040 Total Conditions
AM Peak Hour

										
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations	  				 	  	  		  	
Traffic Volume (vph)	954	5	455	5	5	611	853	5	1074	1315
Future Volume (vph)	954	5	455	5	5	611	853	5	1074	1315
Turn Type	Split	NA	pm+ov	Perm	NA	Prot	NA	Perm	NA	Free
Protected Phases	4	4	5		8	5	2		6	
Permitted Phases			4	8				6		Free
Detector Phase	4	4	5	8	8	5	2	6	6	
Switch Phase										
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	24.0	24.0	10.0	22.5	22.5	10.0	24.0	24.0	24.0	
Total Split (s)	34.0	34.0	34.0	15.0	15.0	34.0	71.0	37.0	37.0	
Total Split (%)	28.3%	28.3%	28.3%	12.5%	12.5%	28.3%	59.2%	30.8%	30.8%	
Yellow Time (s)	4.0	4.0	3.0	3.5	3.5	3.0	4.0	4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	1.0	1.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	6.0	6.0	5.0		4.5	5.0	6.0	6.0	6.0	
Lead/Lag			Lead			Lead		Lag	Lag	
Lead-Lag Optimize?			Yes			Yes		Yes	Yes	
Recall Mode	None	None	None	None	None	None	C-Min	C-Min	C-Min	
Act Effect Green (s)	28.0	28.0	59.8		6.5	27.8	75.1	42.4	42.4	120.0
Actuated g/C Ratio	0.23	0.23	0.50		0.05	0.23	0.63	0.35	0.35	1.00
v/c Ratio	0.93	0.01	0.56		0.18	0.87	0.31	0.03	0.98	0.94
Control Delay	60.4	35.6	9.3		46.6	50.4	8.7	31.2	60.6	15.1
Queue Delay	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	60.4	35.6	9.3		46.6	50.4	8.7	31.2	60.6	15.1
LOS	E	D	A		D	D	A	C	E	B
Approach Delay		43.8			46.6		26.1		35.5	
Approach LOS		D			D		C		D	

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 106 (88%), Referenced to phase 2:NBT and 6:SBTL, Start of Yellow

Natural Cycle: 145

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.98

Intersection Signal Delay: 35.1

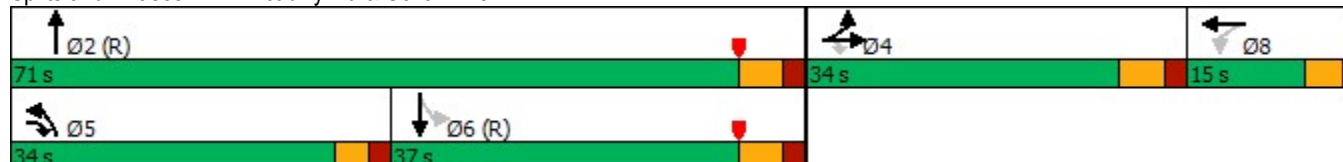
Intersection LOS: D

Intersection Capacity Utilization 86.1%

ICU Level of Service E

Analysis Period (min) 15

Splits and Phases: 1: Picadilly Rd & Colfax Ave



Queues

1: Picadilly Rd & Colfax Ave

2040 Total Conditions

AM Peak Hour



Lane Group	EBL	EBT	EBR	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	1004	5	479	15	643	903	5	1131	1384
v/c Ratio	0.93	0.01	0.56	0.18	0.87	0.31	0.03	0.98	0.94
Control Delay	60.4	35.6	9.3	46.6	50.4	8.7	31.2	60.6	15.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	60.4	35.6	9.3	46.6	50.4	8.7	31.2	60.6	15.1
Queue Length 50th (ft)	271	3	100	8	250	43	2	429	0
Queue Length 95th (ft)	#354	14	140	30	m315	m165	14	#710	#127
Internal Link Dist (ft)		479		447		398		388	
Turn Bay Length (ft)	325		325		300		150		150
Base Capacity (vph)	1079	402	873	132	769	2949	184	1158	1468
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.93	0.01	0.55	0.11	0.84	0.31	0.03	0.98	0.94

Intersection Summary

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

Queue shown is maximum after two cycles.






















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

HCM 6th Signalized Intersection Summary

1: Picadilly Rd & Colfax Ave

2040 Total Conditions

AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	954	5	455	5	5	5	611	853	5	5	1074	1315
Future Volume (veh/h)	954	5	455	5	5	5	611	853	5	5	1074	1315
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	1752	1752	1752	1752	1752	1752	1752	1752	1752	1752	1752	1752
Adj Flow Rate, veh/h	1004	5	479	5	5	5	643	898	5	5	1131	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	10	10	10	10	10	10	10	10	10	10	10	10
Cap, veh/h	1098	409	675	9	9	9	715	3007	17	262	1165	
Arrive On Green	0.23	0.23	0.23	0.02	0.02	0.02	0.07	0.20	0.20	0.35	0.35	0.00
Sat Flow, veh/h	4705	1752	1485	542	542	542	3237	4908	27	578	3328	1485
Grp Volume(v), veh/h	1004	5	479	15	0	0	643	583	320	5	1131	0
Grp Sat Flow(s),veh/h/ln	1568	1752	1485	1627	0	0	1618	1594	1747	578	1664	1485
Q Serve(g_s), s	25.0	0.3	28.0	1.1	0.0	0.0	23.7	18.6	18.6	0.7	40.1	0.0
Cycle Q Clear(g_c), s	25.0	0.3	28.0	1.1	0.0	0.0	23.7	18.6	18.6	0.7	40.1	0.0
Prop In Lane	1.00		1.00	0.33		0.33	1.00		0.02	1.00		1.00
Lane Grp Cap(c), veh/h	1098	409	675	27	0	0	715	1954	1070	262	1165	
V/C Ratio(X)	0.91	0.01	0.71	0.56	0.00	0.00	0.90	0.30	0.30	0.02	0.97	
Avail Cap(c_a), veh/h	1098	409	675	142	0	0	782	1954	1070	262	1165	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	44.8	35.4	26.4	58.6	0.0	0.0	54.3	26.0	26.0	25.6	38.4	0.0
Incr Delay (d2), s/veh	11.7	0.0	3.5	17.2	0.0	0.0	12.6	0.4	0.7	0.1	20.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	15.9	0.2	16.4	1.0	0.0	0.0	17.0	12.6	13.7	0.2	26.6	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	56.5	35.4	29.8	75.8	0.0	0.0	66.9	26.4	26.7	25.7	58.6	0.0
LnGrp LOS	E	D	C	E	A	A	E	C	C	C	E	
Approach Vol, veh/h	1488			15			1546			1136		
Approach Delay, s/veh	47.8			75.8			43.3			58.5		
Approach LOS	D			E			D			E		
Timer - Assigned Phs	2			4			6			8		
Phs Duration (G+Y+Rc), s	79.5			34.0			31.5			48.0		
Change Period (Y+Rc), s	6.0			6.0			5.0			6.0		
Max Green Setting (Gmax), s	65.0			28.0			29.0			31.0		
Max Q Clear Time (g_c+I1), s	20.6			30.0			25.7			42.1		
Green Ext Time (p_c), s	6.3			0.0			0.9			0.0		

Intersection Summary

HCM 6th Ctrl Delay 49.1

HCM 6th LOS D

Notes

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

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

HCM 6th TWSC
2: Picadilly Rd & Site Driveway #2

2040 Total Conditions
AM Peak Hour

Intersection												
Int Delay, s/veh	1.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations			↗			↗	↖ ↑ ↑ ↑			↖ ↑ ↑ ↑		
Traffic Vol, veh/h	0	0	73	0	0	197	52	1267	79	163	1289	77
Future Vol, veh/h	0	0	73	0	0	197	52	1267	79	163	1289	77
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	0	150	-	-	150	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	2	10	2	2	10	2
Mvmt Flow	0	0	77	0	0	207	55	1334	83	172	1357	81

Major/Minor	Minor2		Minor1		Major1		Major2	
Conflicting Flow All	-	-	719	-	-	709	1438	0
Stage 1	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	7.14	-	-	7.14	5.34	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.92	-	-	3.92	3.12	-
Pot Cap-1 Maneuver	0	0	*632	0	0	*632	750	-
Stage 1	0	0	-	0	0	-	-	-
Stage 2	0	0	-	0	0	-	-	-
Platoon blocked, %			1			1	1	-
Mov Cap-1 Maneuver	-	-	*632	-	-	*632	750	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	11.5	13.5	0.4	1.2
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	750	-	-	632	632	774	-
HCM Lane V/C Ratio	0.073	-	-	0.122	0.328	0.222	-
HCM Control Delay (s)	10.2	-	-	11.5	13.5	11	-
HCM Lane LOS	B	-	-	B	B	B	-
HCM 95th %tile Q(veh)	0.2	-	-	0.4	1.4	0.8	-

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

























HCM 6th TWSC
4: Picadilly Rd & Site Driveway #4

2040 Total Conditions
AM Peak Hour

Intersection						
Int Delay, s/veh	0.5					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↗	↑↑↑			↑↑↑
Traffic Vol, veh/h	0	116	1282	123	0	1345
Future Vol, veh/h	0	116	1282	123	0	1345
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	95	95	95	95	95	95
Heavy Vehicles, %	2	2	10	2	2	10
Mvmt Flow	0	122	1349	129	0	1416
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	-	739	0	0	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	7.14	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.92	-	-	-	-
Pot Cap-1 Maneuver	0	*642	-	-	0	-
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %		1	-	-		-
Mov Cap-1 Maneuver	-	*642	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s	11.9	0		0		
HCM LOS	B					
Minor Lane/Major Mvmt	NBT	NBRWBLn1		SBT		
Capacity (veh/h)	-	642		-		
HCM Lane V/C Ratio	-	0.19		-		
HCM Control Delay (s)	-	11.9		-		
HCM Lane LOS	-	B		-		
HCM 95th %tile Q(veh)	-	0.7		-		
Notes						
~: Volume exceeds capacity		\$: Delay exceeds 300s		+: Computation Not Defined		*: All major volume in platoon

Timings
5: Picadilly Rd & 13th Ave/Realigned Colfax Ave

2040 Total Conditions
AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	155	82	62	536	197	698	45	552	328	552	658	127
Future Volume (vph)	155	82	62	536	197	698	45	552	328	552	658	127
Turn Type	pm+pt	NA	Perm	Prot	NA	Perm	pm+pt	NA	pm+ov	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2	3	1	6	
Permitted Phases	4		4			8	2		2			6
Detector Phase	7	4	4	3	8	8	5	2	3	1	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	11.0	23.0	23.0	24.0	24.0	24.0	10.0	24.0	24.0	24.0	24.0	24.0
Total Split (s)	17.0	28.0	28.0	35.0	46.0	46.0	11.0	26.0	35.0	31.0	46.0	46.0
Total Split (%)	14.2%	23.3%	23.3%	29.2%	38.3%	38.3%	9.2%	21.7%	29.2%	25.8%	38.3%	38.3%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	4.0	3.0	3.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	6.0	5.0	5.0	6.0	6.0
Lead/Lag	Lead	Lead	Lead	Lag	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	C-Min	None	None	C-Min	C-Min
Act Effect Green (s)	11.9	11.3	11.3	39.5	38.9	38.9	30.3	23.4	63.8	24.8	44.4	44.4
Actuated g/C Ratio	0.10	0.09	0.09	0.33	0.32	0.32	0.25	0.20	0.53	0.21	0.37	0.37
v/c Ratio	1.01	0.53	0.23	0.54	0.92	0.60	0.22	0.63	0.38	0.88	0.40	0.21
Control Delay	126.5	62.9	1.8	35.2	58.2	6.3	25.3	49.0	2.8	42.7	14.6	1.7
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	126.5	62.9	1.8	35.2	58.2	6.3	25.3	49.0	2.8	42.7	14.6	1.7
LOS	F	E	A	D	E	A	C	D	A	D	B	A
Approach Delay		83.2			33.9			31.5			25.0	
Approach LOS		F			C			C			C	

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 23 (19%), Referenced to phase 2:NBTL and 6:SBT, Start of Yellow

Natural Cycle: 95

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.01

Intersection Signal Delay: 34.0

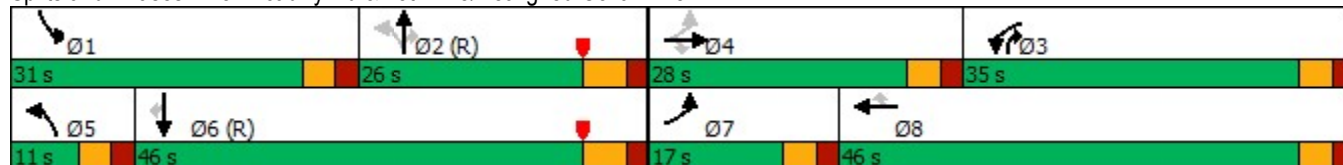
Intersection LOS: C

Intersection Capacity Utilization 77.1%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 5: Picadilly Rd & 13th Ave/Realigned Colfax Ave















Queues

2040 Total Conditions

5: Picadilly Rd & 13th Ave/Realigned Colfax Ave

AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	163	86	65	564	486	456	47	581	345	581	693	134
v/c Ratio	1.01	0.53	0.23	0.54	0.92	0.60	0.22	0.63	0.38	0.88	0.40	0.21
Control Delay	126.5	62.9	1.8	35.2	58.2	6.3	25.3	49.0	2.8	42.7	14.6	1.7
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	126.5	62.9	1.8	35.2	58.2	6.3	25.3	49.0	2.8	42.7	14.6	1.7
Queue Length 50th (ft)	128	65	0	177	331	0	21	158	10	176	142	17
Queue Length 95th (ft)	#271	115	0	246	#544	82	45	202	38	m178	m119	m9
Internal Link Dist (ft)		372			156			282			189	
Turn Bay Length (ft)	150		150	200			150		150	150		150
Base Capacity (vph)	164	331	413	1046	552	776	213	918	920	689	1745	640
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.99	0.26	0.16	0.54	0.88	0.59	0.22	0.63	0.38	0.84	0.40	0.21

Intersection Summary

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

























Queue shown is maximum after two cycles.

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

HCM 6th Signalized Intersection Summary

5: Picadilly Rd & 13th Ave/Realigned Colfax Ave

2040 Total Conditions
AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	155	82	62	536	197	698	45	552	328	552	658	127
Future Volume (veh/h)	155	82	62	536	197	698	45	552	328	552	658	127
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	1752	1752	1752	1752	1752	1752	1752	1752	1752	1752	1752	1752
Adj Flow Rate, veh/h	163	86	65	564	603	471	47	581	345	581	693	134
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	10	10	10	10	10	10	10	10	10	10	10	10
Cap, veh/h	227	121	102	1244	599	507	229	876	825	648	1676	520
Arrive On Green	0.10	0.07	0.07	0.37	0.34	0.34	0.03	0.18	0.18	0.07	0.12	0.12
Sat Flow, veh/h	1668	1752	1485	3337	1752	1485	1668	4782	1485	3237	4782	1485
Grp Volume(v), veh/h	163	86	65	564	603	471	47	581	345	581	693	134
Grp Sat Flow(s),veh/h/ln	1668	1752	1485	1668	1752	1485	1668	1594	1485	1618	1594	1485
Q Serve(g_s), s	11.7	5.8	4.5	15.3	41.0	36.7	2.7	13.6	8.8	21.4	16.2	9.9
Cycle Q Clear(g_c), s	11.7	5.8	4.5	15.3	41.0	36.7	2.7	13.6	8.8	21.4	16.2	9.9
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	227	121	102	1244	599	507	229	876	825	648	1676	520
V/C Ratio(X)	0.72	0.71	0.63	0.45	1.01	0.93	0.21	0.66	0.42	0.90	0.41	0.26
Avail Cap(c_a), veh/h	227	336	285	1244	599	507	257	876	825	701	1676	520
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	53.8	54.7	41.6	28.4	39.5	38.1	37.9	45.6	5.5	54.8	41.6	38.8
Incr Delay (d2), s/veh	10.5	7.5	6.3	0.3	38.6	23.6	0.4	3.9	1.6	13.6	0.8	1.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	9.4	5.0	3.7	10.2	31.9	23.1	2.0	9.4	4.8	15.8	11.3	7.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	64.2	62.2	48.0	28.7	78.1	61.7	38.4	49.5	7.1	68.5	42.4	40.0
LnGrp LOS	E	E	D	C	F	E	D	D	A	E	D	D
Approach Vol, veh/h	314				1638				973			
Approach Delay, s/veh	60.3				56.4				33.9			
Approach LOS	E				E				C			
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	29.0	28.0	49.7	13.3	9.0	48.0	17.0	46.0				
Change Period (Y+Rc), s	5.0	6.0	5.0	5.0	5.0	6.0	5.0	5.0				
Max Green Setting (Gmax), s	26.0	20.0	30.0	23.0	6.0	40.0	12.0	41.0				
Max Q Clear Time (g_c+I1), s	23.4	15.6	17.3	7.8	4.7	18.2	13.7	43.0				
Green Ext Time (p_c), s	0.6	2.0	1.8	0.5	0.0	4.9	0.0	0.0				
Intersection Summary												
HCM 6th Ctrl Delay	50.5											
HCM 6th LOS	D											
Notes												
User approved pedestrian interval to be less than phase max green.												
User approved volume balancing among the lanes for turning movement.												






HCM 6th TWSC
6: Picadilly Rd & Site Driveway #6

2040 Total Conditions
AM Peak Hour

Intersection						
Int Delay, s/veh	0.1					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↗ ↑↑↑	↗ ↑↑↑		↗ ↑↑↑	↗ ↑↑↑
Traffic Vol, veh/h	0	7	919	2	8	1273
Future Vol, veh/h	0	7	919	2	8	1273
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	-	-	150	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	10	2	2	10
Mvmt Flow	0	7	967	2	8	1340
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	-	485	0	0	969	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	7.14	-	-	5.34	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.92	-	-	3.12	-
Pot Cap-1 Maneuver	0	452	-	-	405	-
Stage 1	0	-	-	-	-	-
Stage 2	0	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	-	452	-	-	405	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s	13.1	0		0.1		
HCM LOS	B					
Minor Lane/Major Mvmt	NBT	NBRWBLn1		SBL	SBT	
Capacity (veh/h)	-	- 452		405	-	
HCM Lane V/C Ratio	-	- 0.016		0.021	-	
HCM Control Delay (s)	-	- 13.1		14.1	-	
HCM Lane LOS	-	- B		B	-	
HCM 95th %tile Q(veh)	-	- 0.1		0.1	-	

HCM 6th TWSC
7: 13th Ave & Site Driveway #7

2040 Total Conditions
AM Peak Hour

Intersection						
Int Delay, s/veh	1.4					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	4	249	364	7	60	9
Future Vol, veh/h	4	249	364	7	60	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	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	10	10	2	2	2
Mvmt Flow	4	262	383	7	63	9
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	390	0	-	0	657	387
Stage 1	-	-	-	-	387	-
Stage 2	-	-	-	-	270	-
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	*1182	-	-	-	*476	*790
Stage 1	-	-	-	-	*744	-
Stage 2	-	-	-	-	*775	-
Platoon blocked, %	1	-	-	-	1	1
Mov Cap-1 Maneuver	*1182	-	-	-	*475	*790
Mov Cap-2 Maneuver	-	-	-	-	*475	-
Stage 1	-	-	-	-	*742	-
Stage 2	-	-	-	-	*775	-
Approach	EB	WB		SB		
HCM Control Delay, s	0.1	0		13.4		
HCM LOS	B					
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	* 1182	-	-	-	501	
HCM Lane V/C Ratio	0.004	-	-	-	0.145	
HCM Control Delay (s)	8.1	-	-	-	13.4	
HCM Lane LOS	A	-	-	-	B	
HCM 95th %tile Q(veh)	0	-	-	-	0.5	
Notes						
~: Volume exceeds capacity		\$: Delay exceeds 300s		+: Computation Not Defined		*: All major volume in platoon

HCM 6th TWSC
8: Realigned Colfax Ave & Site Driveway #8

2040 Total Conditions
AM Peak Hour

Intersection						
Int Delay, s/veh	0.9					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑	↗		↗
Traffic Vol, veh/h	0	972	1334	52	0	122
Future Vol, veh/h	0	972	1334	52	0	122
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	150	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	10	10	2	2	2
Mvmt Flow	0	1023	1404	55	0	128
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	-	0	-	0	-	702
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.32
Pot Cap-1 Maneuver	0	-	-	-	0	381
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	-	-	-	-	-	381
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	EB	WB		SB		
HCM Control Delay, s	0	0		19.2		
HCM LOS	C					
Minor Lane/Major Mvmt	EBT	WBT	WBR	SBLn1		
Capacity (veh/h)	-	-	-	381		
HCM Lane V/C Ratio	-	-	-	0.337		
HCM Control Delay (s)	-	-	-	19.2		
HCM Lane LOS	-	-	-	C		
HCM 95th %tile Q(veh)	-	-	-	1.5		

HCM 6th TWSC
9: Realigned Colfax Ave & Site Driveway #3

2040 Total Conditions
AM Peak Hour

Intersection												
Int Delay, s/veh	0.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↰↱		↰	↰↱		↰	↰		↰	↰	
Traffic Vol, veh/h	20	952	0	2	1327	4	1	0	1	10	0	58
Future Vol, veh/h	20	952	0	2	1327	4	1	0	1	10	0	58
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	150	-	-	150	-	-	0	-	-	0	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	10	2	2	10	2	2	2	2	2	2	2
Mvmt Flow	21	1002	0	2	1397	4	1	0	1	11	0	61

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1401	0	0	1002	0	0	1747	2449	501	1946	2447	701
Stage 1	-	-	-	-	-	-	1044	1044	-	1403	1403	-
Stage 2	-	-	-	-	-	-	703	1405	-	543	1044	-
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	484	-	-	*1024	-	-	*121	*31	*685	*71	*31	381
Stage 1	-	-	-	-	-	-	*645	*566	-	*147	*205	-
Stage 2	-	-	-	-	-	-	*394	*204	-	*645	*566	-
Platoon blocked, %		-	-	1	-	-	1	1	1	1	1	
Mov Cap-1 Maneuver	484	-	-	*1024	-	-	*98	*30	*685	*68	*30	381
Mov Cap-2 Maneuver	-	-	-	-	-	-	*98	*30	-	*68	*30	-
Stage 1	-	-	-	-	-	-	*618	*542	-	*141	*205	-
Stage 2	-	-	-	-	-	-	*330	*204	-	*617	*542	-




















Approach	EB	WB	NB	SB
HCM Control Delay, s	0.3	0	26.2	23.7
HCM LOS			D	C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	98	685	484	-	-	*1024	-	-	68	381
HCM Lane V/C Ratio	0.011	0.002	0.043	-	-	0.002	-	-	0.155	0.16
HCM Control Delay (s)	42.1	10.3	12.8	-	-	8.5	-	-	67.4	16.2
HCM Lane LOS	E	B	B	-	-	A	-	-	F	C
HCM 95th %tile Q(veh)	0	0	0.1	-	-	0	-	-	0.5	0.6

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

Timings
1: Picadilly Rd & Colfax Ave

2040 Total Conditions
PM Peak Hour

										
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	1437	5	482	5	5	551	793	5	971	993
Future Volume (vph)	1437	5	482	5	5	551	793	5	971	993
Turn Type	Split	NA	pm+ov	Perm	NA	Prot	NA	Perm	NA	Free
Protected Phases	4	4	5		8	5	2		6	
Permitted Phases			4	8				6		Free
Detector Phase	4	4	5	8	8	5	2	6	6	
Switch Phase										
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	24.0	24.0	10.0	10.0	10.0	10.0	24.0	24.0	24.0	
Total Split (s)	45.0	45.0	29.0	10.0	10.0	29.0	65.0	36.0	36.0	
Total Split (%)	37.5%	37.5%	24.2%	8.3%	8.3%	24.2%	54.2%	30.0%	30.0%	
Yellow Time (s)	4.0	4.0	3.0	3.5	3.5	3.0	4.0	4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	1.0	1.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	6.0	6.0	5.0		4.5	5.0	6.0	6.0	6.0	
Lead/Lag			Lag			Lag		Lead	Lead	
Lead-Lag Optimize?			Yes			Yes		Yes	Yes	
Recall Mode	None	None	None	None	None	None	C-Min	C-Min	C-Min	
Act Effect Green (s)	39.0	39.0	68.8		5.5	23.8	65.0	36.2	36.2	120.0
Actuated g/C Ratio	0.32	0.32	0.57		0.05	0.20	0.54	0.30	0.30	1.00
v/c Ratio	1.01	0.01	0.56		0.19	0.92	0.33	0.04	1.03	0.71
Control Delay	65.4	27.6	13.5		48.6	55.0	8.5	34.4	78.7	3.0
Queue Delay	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	65.4	27.6	13.5		48.6	55.0	8.5	34.4	78.7	3.0
LOS	E	C	B		D	D	A	C	E	A
Approach Delay		52.3			48.6		27.5		40.4	
Approach LOS		D			D		C		D	

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 72 (60%), Referenced to phase 2:NBT and 6:SBTL, Start of Yellow

Natural Cycle: 140

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.03

Intersection Signal Delay: 41.5

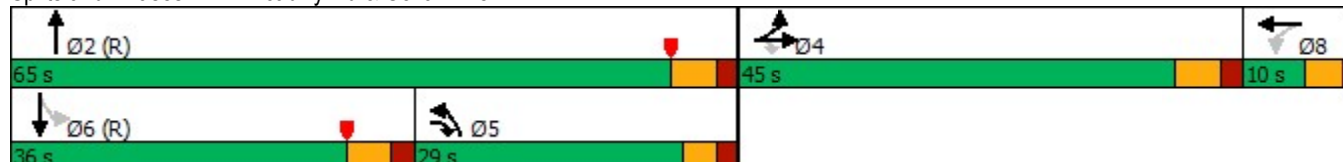
Intersection LOS: D

Intersection Capacity Utilization 90.7%

ICU Level of Service E

Analysis Period (min) 15

Splits and Phases: 1: Picadilly Rd & Colfax Ave



Queues
1: Picadilly Rd & Colfax Ave

2040 Total Conditions
PM Peak Hour



Lane Group	EBL	EBT	EBR	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	1513	5	507	15	580	840	5	1022	1045
v/c Ratio	1.01	0.01	0.56	0.19	0.92	0.33	0.04	1.03	0.71
Control Delay	65.4	27.6	13.5	48.6	55.0	8.5	34.4	78.7	3.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	65.4	27.6	13.5	48.6	55.0	8.5	34.4	78.7	3.0
Queue Length 50th (ft)	~419	3	161	8	237	69	3	401	0
Queue Length 95th (ft)	#528	12	260	31	m#332	m109	14	#652	0
Internal Link Dist (ft)		479		447		398		388	
Turn Bay Length (ft)	325		325		300		150		150
Base Capacity (vph)	1503	561	896	80	636	2552	139	990	1468
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.01	0.01	0.57	0.19	0.91	0.33	0.04	1.03	0.71

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.






















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

HCM 6th Signalized Intersection Summary

1: Picadilly Rd & Colfax Ave

2040 Total Conditions

PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1437	5	482	5	5	5	551	793	5	5	971	993
Future Volume (veh/h)	1437	5	482	5	5	5	551	793	5	5	971	993
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	1752	1752	1752	1752	1752	1752	1752	1752	1752	1752	1752	1752
Adj Flow Rate, veh/h	1513	5	507	5	5	5	580	835	5	5	1022	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	10	10	10	10	10	10	10	10	10	10	10	10
Cap, veh/h	1529	569	811	9	9	9	716	2556	15	213	832	
Arrive On Green	0.32	0.32	0.32	0.02	0.02	0.02	0.44	1.00	1.00	0.25	0.25	0.00
Sat Flow, veh/h	4705	1752	1485	542	542	542	3237	4905	29	613	3328	1485
Grp Volume(v), veh/h	1513	5	507	15	0	0	580	543	297	5	1022	0
Grp Sat Flow(s),veh/h/ln	1568	1752	1485	1627	0	0	1618	1594	1747	613	1664	1485
Q Serve(g_s), s	38.4	0.2	1.7	1.1	0.0	0.0	18.7	0.0	0.0	0.7	30.0	0.0
Cycle Q Clear(g_c), s	38.4	0.2	1.7	1.1	0.0	0.0	18.7	0.0	0.0	0.7	30.0	0.0
Prop In Lane	1.00		1.00	0.33		0.33	1.00		0.02	1.00		1.00
Lane Grp Cap(c), veh/h	1529	569	811	27	0	0	716	1661	910	213	832	
V/C Ratio(X)	0.99	0.01	0.63	0.56	0.00	0.00	0.81	0.33	0.33	0.02	1.23	
Avail Cap(c_a), veh/h	1529	569	811	75	0	0	716	1661	910	213	832	
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	0.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	40.3	27.4	18.8	58.6	0.0	0.0	31.3	0.0	0.0	34.0	45.0	0.0
Incr Delay (d2), s/veh	20.5	0.0	1.5	17.2	0.0	0.0	7.0	0.5	1.0	0.2	113.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	23.7	0.2	14.2	1.0	0.0	0.0	10.1	0.2	0.4	0.2	37.6	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	60.8	27.4	20.3	75.8	0.0	0.0	38.3	0.5	1.0	34.2	158.3	0.0
LnGrp LOS	E	C	C	E	A	A	D	A	A	C	F	
Approach Vol, veh/h	2025			15			1420			1027		
Approach Delay, s/veh	50.5			75.8			16.0			157.6		
Approach LOS	D			E			B			F		
Timer - Assigned Phs	2			4			6			8		
Phs Duration (G+Y+Rc), s	68.5			45.0			36.0			6.5		
Change Period (Y+Rc), s	6.0			6.0			* 6			4.5		
Max Green Setting (Gmax), s	59.0			39.0			* 30			5.5		
Max Q Clear Time (g_c+I1), s	2.0			40.4			20.7			32.0		
Green Ext Time (p_c), s	5.8			0.0			0.8			0.0		

Intersection Summary

HCM 6th Ctrl Delay 64.2

HCM 6th LOS E

Notes

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

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

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

HCM 6th TWSC
2: Picadilly Rd & Site Driveway #2

2040 Total Conditions
PM Peak Hour

Intersection												
Int Delay, s/veh	1.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations			↗			↗	↗ ↑↑↑			↗ ↑↑↑		
Traffic Vol, veh/h	0	0	68	0	0	149	56	1181	80	147	1250	56
Future Vol, veh/h	0	0	68	0	0	149	56	1181	80	147	1250	56
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	0	150	-	-	150	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	2	10	2	2	10	2
Mvmt Flow	0	0	72	0	0	157	59	1243	84	155	1316	59

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	-	-	688	-	-	664	1375	0	0	1327	0	0
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	7.14	-	-	7.14	5.34	-	-	5.34	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.92	-	-	3.92	3.12	-	-	3.12	-	-
Pot Cap-1 Maneuver	0	0	*632	0	0	*653	*794	-	-	783	-	-
Stage 1	0	0	-	0	0	-	-	-	-	-	-	-
Stage 2	0	0	-	0	0	-	-	-	-	-	-	-
Platoon blocked, %			1			1	1	-	-	1	-	-
Mov Cap-1 Maneuver	-	-	*632	-	-	*653	*794	-	-	783	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	11.4		12.2		0.4		1.1	
HCM LOS	B		B					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	* 794	-	-	632	653	783	-
HCM Lane V/C Ratio	0.074	-	-	0.113	0.24	0.198	-
HCM Control Delay (s)	9.9	-	-	11.4	12.2	10.7	-
HCM Lane LOS	A	-	-	B	B	B	-
HCM 95th %tile Q(veh)	0.2	-	-	0.4	0.9	0.7	-

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

























HCM 6th TWSC
4: Picadilly Rd & Site Driveway #4

2040 Total Conditions
PM Peak Hour

Intersection						
Int Delay, s/veh	0.2					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↗ ↘ ↘ ↘	↗ ↘ ↘ ↘			↗ ↘ ↘ ↘
Traffic Vol, veh/h	0	54	1277	80	0	1290
Future Vol, veh/h	0	54	1277	80	0	1290
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	95	95	95	95	95	95
Heavy Vehicles, %	2	2	10	2	2	10
Mvmt Flow	0	57	1344	84	0	1358
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	-	714	0	0	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	7.14	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.92	-	-	-	-
Pot Cap-1 Maneuver	0	*642	-	-	0	-
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %		1	-	-		-
Mov Cap-1 Maneuver	-	*642	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s	11.2	0		0		
HCM LOS	B					
Minor Lane/Major Mvmt	NBT	NBRWBLn1		SBT		
Capacity (veh/h)	-	642		-		
HCM Lane V/C Ratio	-	0.089		-		
HCM Control Delay (s)	-	11.2		-		
HCM Lane LOS	-	B		-		
HCM 95th %tile Q(veh)	-	0.3		-		
Notes						
~: Volume exceeds capacity		\$: Delay exceeds 300s		+: Computation Not Defined		*: All major volume in platoon

Timings 5: Picadilly Rd & 13th Ave/Realigned Colfax Ave

2040 Total Conditions
PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	248	190	65	532	90	565	40	544	405	571	580	120
Future Volume (vph)	248	190	65	532	90	565	40	544	405	571	580	120
Turn Type	pm+pt	NA	Perm	Prot	NA	Perm	pm+pt	NA	pm+ov	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2	3	1	6	
Permitted Phases	4		4			8	2		2			6
Detector Phase	7	4	4	3	8	8	5	2	3	1	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	11.0	23.0	23.0	24.0	24.0	24.0	10.0	24.0	24.0	24.0	24.0	24.0
Total Split (s)	23.0	26.0	26.0	35.0	38.0	38.0	12.0	27.0	35.0	32.0	47.0	47.0
Total Split (%)	19.2%	21.7%	21.7%	29.2%	31.7%	31.7%	10.0%	22.5%	29.2%	26.7%	39.2%	39.2%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	4.0	3.0	3.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	6.0	5.0	5.0	6.0	6.0
Lead/Lag	Lag	Lead	Lead	Lag	Lead	Lead	Lead	Lead	Lag	Lag	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	C-Min	None	None	C-Min	C-Min
Act Effect Green (s)	36.0	17.9	17.9	26.5	26.3	26.3	29.9	28.9	61.4	25.7	50.0	50.0
Actuated g/C Ratio	0.30	0.15	0.15	0.22	0.22	0.22	0.25	0.24	0.51	0.21	0.42	0.42
v/c Ratio	0.86	0.78	0.17	0.80	0.86	0.59	0.24	0.51	0.52	0.88	0.31	0.18
Control Delay	68.6	69.0	0.9	53.1	50.1	8.3	43.3	43.2	16.9	43.4	14.5	0.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	68.6	69.0	0.9	53.1	50.1	8.3	43.3	43.2	16.9	43.4	14.5	0.9
LOS	E	E	A	D	D	A	D	D	B	D	B	A
Approach Delay		60.1			40.1			32.4			26.2	
Approach LOS		E			D			C			C	

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 80 (67%), Referenced to phase 2:NBTL and 6:SBT, Start of Yellow

Natural Cycle: 95

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.88

Intersection Signal Delay: 36.2

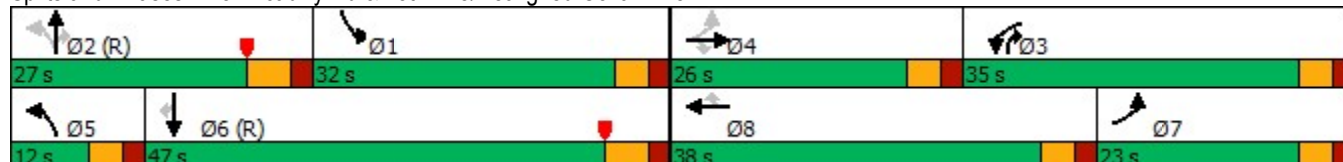
Intersection LOS: D

Intersection Capacity Utilization 74.3%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 5: Picadilly Rd & 13th Ave/Realigned Colfax Ave















Queues

5: Picadilly Rd & 13th Ave/Realigned Colfax Ave

2040 Total Conditions

PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	261	200	68	560	351	339	42	573	426	601	611	126
v/c Ratio	0.86	0.78	0.17	0.80	0.86	0.59	0.24	0.51	0.52	0.88	0.31	0.18
Control Delay	68.6	69.0	0.9	53.1	50.1	8.3	43.3	43.2	16.9	43.4	14.5	0.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	68.6	69.0	0.9	53.1	50.1	8.3	43.3	43.2	16.9	43.4	14.5	0.9
Queue Length 50th (ft)	134	149	0	209	190	0	26	147	154	232	91	6
Queue Length 95th (ft)	#260	229	0	267	303	80	61	197	261	m259	m99	m5
Internal Link Dist (ft)		372			156			282			189	
Turn Bay Length (ft)	150		150	200			150		150	150		150
Base Capacity (vph)	306	302	436	795	483	629	176	1134	806	716	1965	702
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.85	0.66	0.16	0.70	0.73	0.54	0.24	0.51	0.53	0.84	0.31	0.18

Intersection Summary

























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

Queue shown is maximum after two cycles.

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

HCM 6th Signalized Intersection Summary 5: Picadilly Rd & 13th Ave/Realigned Colfax Ave

2040 Total Conditions
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	248	190	65	532	90	565	40	544	405	571	580	120
Future Volume (veh/h)	248	190	65	532	90	565	40	544	405	571	580	120
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1752	1752	1752	1752	1752	1752	1752	1752	1752	1752	1752	1752
Adj Flow Rate, veh/h	261	200	68	560	0	658	42	573	426	601	611	126
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	10	10	10	10	10	10	10	10	10	10	10	10
Cap, veh/h	293	234	198	640	0	724	142	726	510	1099	2239	695
Arrive On Green	0.08	0.13	0.13	0.19	0.00	0.24	0.03	0.15	0.15	0.57	0.78	0.78
Sat Flow, veh/h	1668	1752	1485	3337	0	2969	1668	4782	1485	3237	4782	1485
Grp Volume(v), veh/h	261	200	68	560	0	658	42	573	426	601	611	126
Grp Sat Flow(s),veh/h/ln	1668	1752	1485	1668	0	1485	1668	1594	1485	1618	1594	1485
Q Serve(g_s), s	7.1	13.4	4.3	19.6	0.0	25.8	2.7	13.9	8.7	14.0	4.2	1.7
Cycle Q Clear(g_c), s	7.1	13.4	4.3	19.6	0.0	25.8	2.7	13.9	8.7	14.0	4.2	1.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	293	234	198	640	0	724	142	726	510	1099	2239	695
V/C Ratio(X)	0.89	0.86	0.34	0.87	0.00	0.91	0.30	0.79	0.83	0.55	0.27	0.18
Avail Cap(c_a), veh/h	407	307	260	834	0	817	187	837	545	1099	2239	695
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.67	1.67	1.67
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	48.8	50.9	35.5	47.1	0.0	44.1	47.1	49.0	36.2	20.2	7.4	3.3
Incr Delay (d2), s/veh	16.4	16.5	1.0	8.3	0.0	13.1	1.2	8.5	14.9	0.6	0.3	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	13.8	11.3	3.4	13.7	0.0	16.1	2.1	9.9	19.4	7.6	2.4	1.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	65.1	67.4	36.6	55.4	0.0	57.2	48.3	57.6	51.1	20.8	7.7	3.9
LnGrp LOS	E	E	D	E	A	E	D	E	D	C	A	A
Approach Vol, veh/h	529		1218				1041		1338			
Approach Delay, s/veh	62.3		56.3				54.6		13.2			
Approach LOS	E		E				D		B			
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	46.7	24.2	28.0	21.0	8.8	62.2	14.8	34.3				
Change Period (Y+Rc), s	6.0	* 6	5.0	5.0	5.0	6.0	5.0	5.0				
Max Green Setting (Gmax), s	27.0	* 21	30.0	21.0	7.0	41.0	18.0	33.0				
Max Q Clear Time (g_c+I1), s	16.0	15.9	21.6	15.4	4.7	6.2	9.1	27.8				
Green Ext Time (p_c), s	1.7	2.4	1.5	0.6	0.0	4.7	0.5	1.4				

Intersection Summary

HCM 6th Ctrl Delay 42.7
HCM 6th LOS D

Notes

User approved volume balancing among the lanes for turning movement.

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






HCM 6th TWSC
6: Picadilly Rd & Site Driveway #6

2040 Total Conditions
PM Peak Hour

Intersection						
Int Delay, s/veh	0.2					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↗ ↑↑↑	↗ ↑↑↑		↗ ↑↑↑	↗ ↑↑↑
Traffic Vol, veh/h	0	13	976	2	12	1165
Future Vol, veh/h	0	13	976	2	12	1165
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	-	-	150	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	10	2	2	10
Mvmt Flow	0	14	1027	2	13	1226
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	-	515	0	0	1029	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	7.14	-	-	5.34	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.92	-	-	3.12	-
Pot Cap-1 Maneuver	0	432	-	-	379	-
Stage 1	0	-	-	-	-	-
Stage 2	0	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	-	432	-	-	379	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s	13.6	0		0.2		
HCM LOS	B					
Minor Lane/Major Mvmt	NBT	NBRWBLn1		SBL	SBT	
Capacity (veh/h)	-	432		379	-	
HCM Lane V/C Ratio	-	0.032		0.033	-	
HCM Control Delay (s)	-	13.6		14.8	-	
HCM Lane LOS	-	B		B	-	
HCM 95th %tile Q(veh)	-	0.1		0.1	-	

HCM 6th TWSC
7: 13th Ave & Site Driveway #7

2040 Total Conditions
PM Peak Hour

Intersection						
Int Delay, s/veh	2.1					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	8	409	242	12	79	26
Future Vol, veh/h	8	409	242	12	79	26
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	95	95	95	95	95	95
Heavy Vehicles, %	2	10	10	2	2	2
Mvmt Flow	8	431	255	13	83	27
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	268	0	-	0	709	262
Stage 1	-	-	-	-	262	-
Stage 2	-	-	-	-	447	-
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	1332	-	-	-	*414	*894
Stage 1	-	-	-	-	*843	-
Stage 2	-	-	-	-	*644	-
Platoon blocked, %	1	-	-	-	1	1
Mov Cap-1 Maneuver	1332	-	-	-	*411	*894
Mov Cap-2 Maneuver	-	-	-	-	*411	-
Stage 1	-	-	-	-	*838	-
Stage 2	-	-	-	-	*644	-
Approach	EB	WB		SB		
HCM Control Delay, s	0.1	0		14.9		
HCM LOS	B					
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1332	-	-	-	474	
HCM Lane V/C Ratio	0.006	-	-	-	0.233	
HCM Control Delay (s)	7.7	-	-	-	14.9	
HCM Lane LOS	A	-	-	-	B	
HCM 95th %tile Q(veh)	0	-	-	-	0.9	
Notes						
~: Volume exceeds capacity		\$: Delay exceeds 300s		+: Computation Not Defined		*: All major volume in platoon









HCM 6th TWSC
8: Realigned Colfax Ave & Site Driveway #8

2040 Total Conditions
PM Peak Hour

Intersection						
Int Delay, s/veh	0.6					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑	↗		↗
Traffic Vol, veh/h	0	1150	1083	41	0	95
Future Vol, veh/h	0	1150	1083	41	0	95
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	150	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	10	10	2	2	2
Mvmt Flow	0	1211	1140	43	0	100
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	-	0	-	0	-	570
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.32
Pot Cap-1 Maneuver	0	-	-	-	0	465
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	-	-	-	-	-	465
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	EB	WB		SB		
HCM Control Delay, s	0	0		14.9		
HCM LOS	B					
Minor Lane/Major Mvmt	EBT	WBT	WBR	SBLn1		
Capacity (veh/h)	-	-	-	465		
HCM Lane V/C Ratio	-	-	-	0.215		
HCM Control Delay (s)	-	-	-	14.9		
HCM Lane LOS	-	-	-	B		
HCM 95th %tile Q(veh)	-	-	-	0.8		

HCM 6th TWSC
9: Realigned Colfax Ave & Site Driveway #3

2040 Total Conditions
PM Peak Hour

Intersection												
Int Delay, s/veh	0.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	29	1121	0	2	1067	5	3	0	3	4	0	22
Future Vol, veh/h	29	1121	0	2	1067	5	3	0	3	4	0	22
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	150	-	-	150	-	-	0	-	-	0	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	10	2	2	10	2	2	2	2	2	2	2
Mvmt Flow	31	1180	0	2	1123	5	3	0	3	4	0	23

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1128	0	0	1180	0	0	1808	2374	590	1782	2372	564
Stage 1	-	-	-	-	-	-	1242	1242	-	1130	1130	-
Stage 2	-	-	-	-	-	-	566	1132	-	652	1242	-
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	615	-	-	*907	-	-	*137	*39	*607	*148	*40	469
Stage 1	-	-	-	-	-	-	*572	*501	-	*217	*277	-
Stage 2	-	-	-	-	-	-	*476	*276	-	*572	*501	-
Platoon blocked, %		-	-	1	-	-	1	1	1	1	1	
Mov Cap-1 Maneuver	615	-	-	*907	-	-	*125	*37	*607	*142	*38	469
Mov Cap-2 Maneuver	-	-	-	-	-	-	*125	*37	-	*142	*38	-
Stage 1	-	-	-	-	-	-	*543	*476	-	*206	*276	-
Stage 2	-	-	-	-	-	-	*451	*275	-	*540	*476	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.3	0	22.8	15.9
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	125	607	615	-	-	*907	-	-	142	469
HCM Lane V/C Ratio	0.025	0.005	0.05	-	-	0.002	-	-	0.03	0.049
HCM Control Delay (s)	34.5	11	11.2	-	-	9	-	-	31.1	13.1
HCM Lane LOS	D	B	B	-	-	A	-	-	D	B
HCM 95th %tile Q(veh)	0.1	0	0.2	-	-	0	-	-	0.1	0.2

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