TOWER LANDFILL

Traffic Impact Analysis

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FELSBURG HOLT & ULLEVIG
connecting & enhancing communities

FHU Reference No. 124216-01

July 2024

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I. EXECUTIVE SUMMARY

The Tower Landfill is located east of Tower Road, south of 88th Avenue, and west of E-470 in Commerce City, Colorado. **Figure 1** shows the site's location relative to major roadways in the area. There are currently two main access points to Tower Landfill, one on Tower Road and one on 88th Avenue.

The landfill's owner is expanding the active area within the landfill site and needs to update access to the facility. The existing 88th Avenue access point is anticipated to shift further east to align with Himalaya Street. **Figure 2** shows the site plan, including the proposed new access location. The landfill is assumed to be currently operating near capacity, so new traffic associated with the site expansion would be minimal.

The purpose of this study is to assess the traffic impacts on the adjacent roadways and intersections related to the access relocations and to identify improvements needed to accommodate projected traffic volumes.

The following intersections were analyzed in this study:

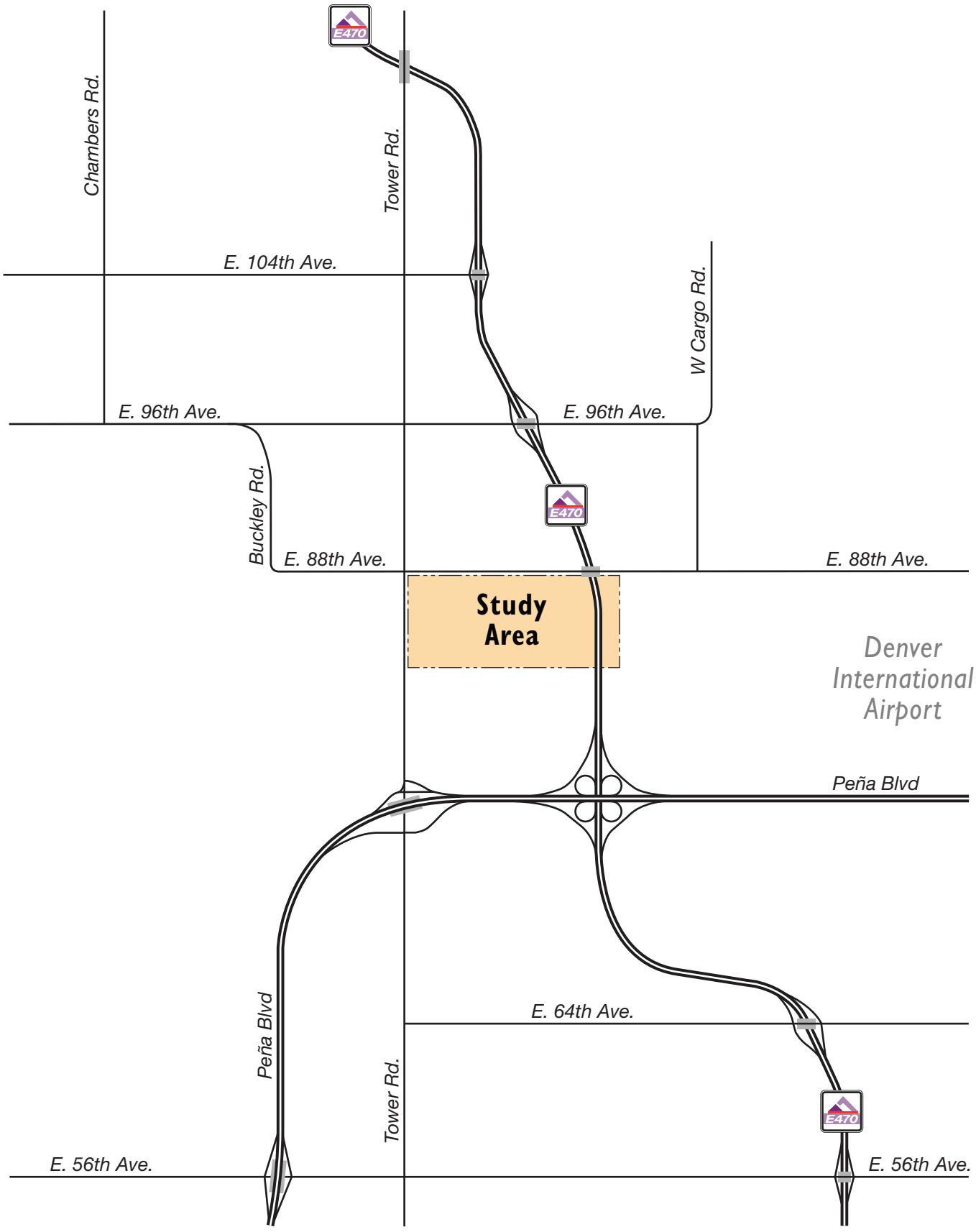
- 88th Avenue & Tower Road
- 88th Avenue & Existing Site Access
- Tower Road & Existing Site Access
- 88th Avenue & Proposed Site Access
- 88th Avenue & E-470 Interchange (proposed by 2045)

The following time periods were analyzed:

- Existing (2023) AM and PM peak hours
- Short-term future (2026) AM and PM peak hours (expected buildout of access adjustment)
- Long-term future (2045) AM and PM peak hours (city planning horizon)

Shifting the existing site entrance to align with Himalaya Street is not anticipated to have a significant impact on traffic operations in the short-term future time horizon. In the long-term future, the adjustment is anticipated to improve traffic operations for the Tower Landfill site and for 88th Avenue in general. Consolidating access points for Tower Landfill and the nearby Legato development would reduce conflicts, decrease left turn delays, and improve safety on 88th Avenue. Realignment would also allow Tower Landfill traffic to utilize a proposed traffic signal on 88th Avenue at Himalaya Street described in other traffic studies for the Legato development.

Although new traffic associated with the expansion is expected to be minimal, operational analyses of site accesses demonstrate reserve capacity if traffic volumes generated by the site were to increase in the future.



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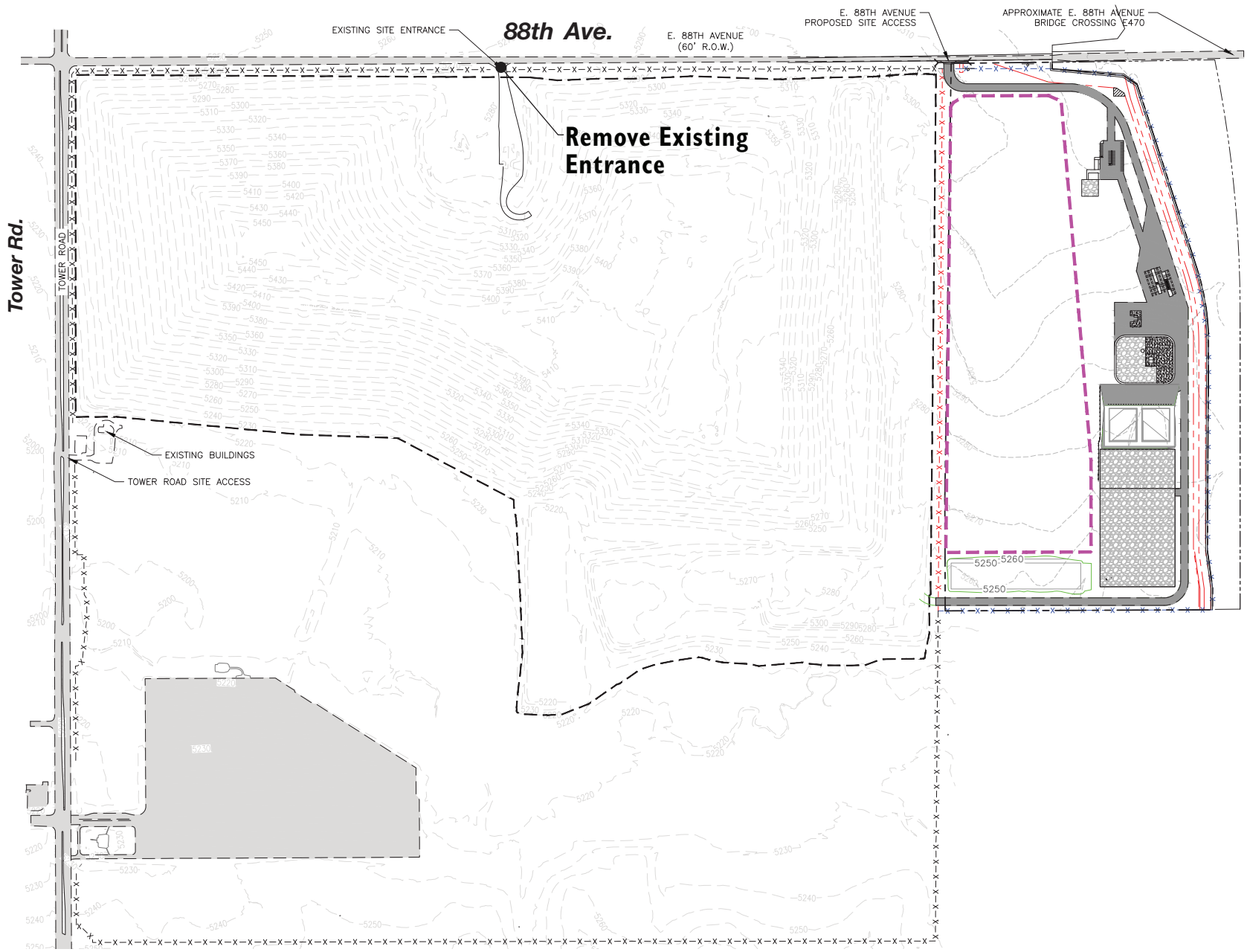
NOTE: Drawing Not to Scale

FIGURE 1
Vicinity Map

Tower Landfill - UPDATE 124216-01 7/18/24



NORTH

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NOTE: Drawing Not to Scale

FIGURE 2
Site Plan

Tower Landfill - UPDATE 124216-01 7/18/24

II. EXISTING CONDITIONS

II.A Existing Site

The Tower Landfill expansion is located east of the currently active Tower Landfill between Himalaya Street and E-470. Most of the land surrounding the site is agricultural with airport parking to the south and west. Legato is a development north of the site between 88th Avenue and 96th Avenue. It is expected to include single-family and multi-family homes, offices, a school, and commercial uses.

II.B Existing Roadway Network

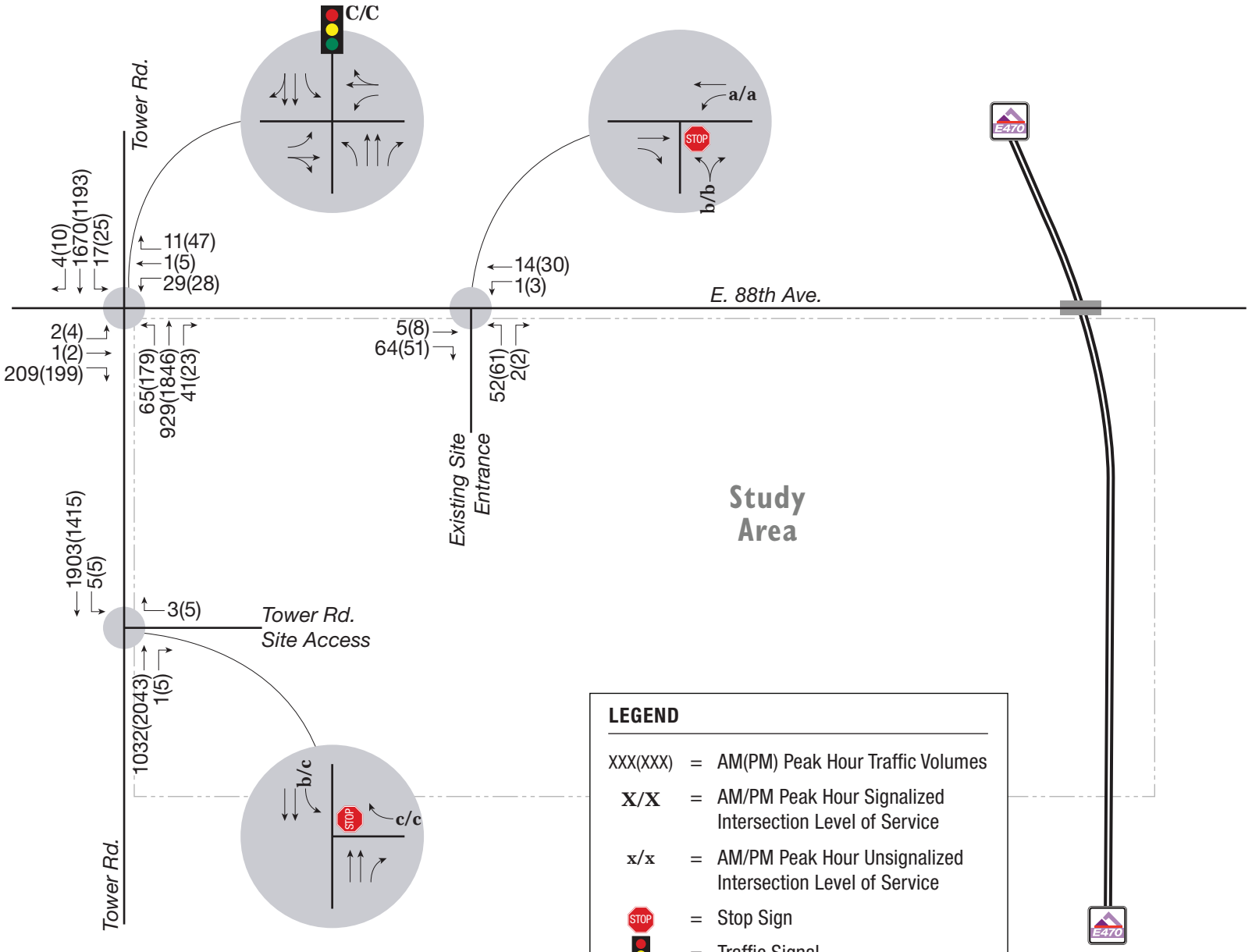
The roadway network surrounding the site consists of the following facilities:

- **88th Avenue** is a two-lane paved roadway running east-west. According to the City of Commerce City, *C3 Vision Comprehensive Plan*, July 2010, 88th Avenue is a minor arterial on the east side of Tower Road and a multimodal arterial on the west side of Tower Road. The posted speed limit on 88th Avenue is 45 miles per hour (mph) east of Tower Road and 30 mph west of Tower Road. There is not currently access to E-470 from 88th Avenue.
- **Tower Road** is a north-south roadway extending from Colfax Avenue on the south to 128th Avenue on the north. It parallels both Peña Boulevard and E-470. Adjacent to the development, the cross section consists of a newly reconstructed four-lane paved roadway. According to the *C3 Vision Comprehensive Plan,* Tower Road is a principal arterial. The speed limit near the project site is 45 mph.
- **E-470** is a privately-operated freeway that serves as a beltway around the east side of the Denver metro area. There is an interchange with Peña Boulevard southeast of the site. North of the site, E-470 has another interchange with 96th Avenue. The speed limit near the project site is 75 mph.

II.C Existing Traffic Volumes

Weekday peak hour turning movement counts were recorded in June 2024 in support of traffic analysis. An earlier set of traffic counts from March 2021 was also used for the site access intersection on Tower Road. While Tower Landfill experiences peak traffic volumes from 1:00 PM to 2:00 PM, peak hour traffic counts were collected in 15-minute intervals between 7:00 AM to 9:00 AM and 4:00 PM to 6:00 PM to match the peak traffic volumes of the adjacent streets. Daily traffic counts were also recorded on 88th Avenue east of Tower Road in June 2024.

Figure 3 presents the Existing (2024) traffic volumes. **Appendix A** includes the raw turning movement count data, and **Appendix B** shows 24-hour count data for the landfill. As shown in the figure, Tower Road south of 88th Avenue serves nearly 2,950 vehicles per hour (vph) during the AM peak and about 3,450 vph during the PM peak. Southbound traffic is more prevalent during the AM peak, while northbound traffic is more prevalent during the PM peak. East of Tower Road, 88th Avenue currently serves about 130-150 vph during peak hours. 88th Avenue currently serves about 1,850 vehicles per day (vpd) east of Tower Road.



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NOTE: Drawing Not to Scale

FIGURE 3
Existing (2024) Traffic Conditions

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II.D Existing Traffic Operations

Traffic operations within the study area were evaluated according to techniques documented in the *Highway Capacity Manual, 6th Edition* (HCM) using the existing traffic volumes and intersection geometry. Level of Service (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 signalized intersections, LOS is reported as an average for the entire intersection. For stop-sign controlled intersections, LOS is calculated for each movement that must yield the right-of-way. Commerce City provided current timing plans for the traffic signal at the 88th Avenue/Tower Road intersection.

Using HCM methodologies, the 88th Avenue/Tower Road intersection operates at LOS C during AM and PM peak hours. Additionally, all unsignalized movements in the study area operate at LOS C or better during AM and PM peak hours.

Figure 3 shows the results of the capacity analyses and **Appendix C** contains the existing traffic operational analysis worksheets.

III. FUTURE TRAFFIC CONDITONS

III.A Future Roadway Network

When the short-term horizon (2026) arrives, it is anticipated that the 88th Avenue/Tower Road and Tower Road Site Access intersections will not change from their current configuration. However, the 88th Avenue Site Access is anticipated to move east to align with Himalaya Street.

Figure 4 shows the anticipated 2026 roadway network and lane geometry. Access from the Legato development to 88th Avenue is not shown because current progress on the Legato development does not indicate that the 88th Avenue/Himalaya Street intersection will be connected to that site by 2026.

The anticipated long-term (2045) roadway network and lane geometry are shown on **Figure 5**. In the long-term time horizon (2045) several roadways would be widened as recommended in the *C3 Vision Comprehensive Plan*. 88th Avenue would become a four-lane roadway. Tower Road corridor would be widened to a six-lane roadway as recommended in the *Tower Road Laneage Recommendations Study*.

Additionally, the traffic impact analysis for the Legato development indicates 88th Avenue/Tower Road intersection would provide dual left turn lanes and channelized right turn lanes on the northbound and southbound approaches as well as triple left turn lanes and free flow right turn lanes on the east and westbound approaches. A new E-470/88th Avenue interchange is also anticipated by 2045.

III.B Future Traffic Volumes

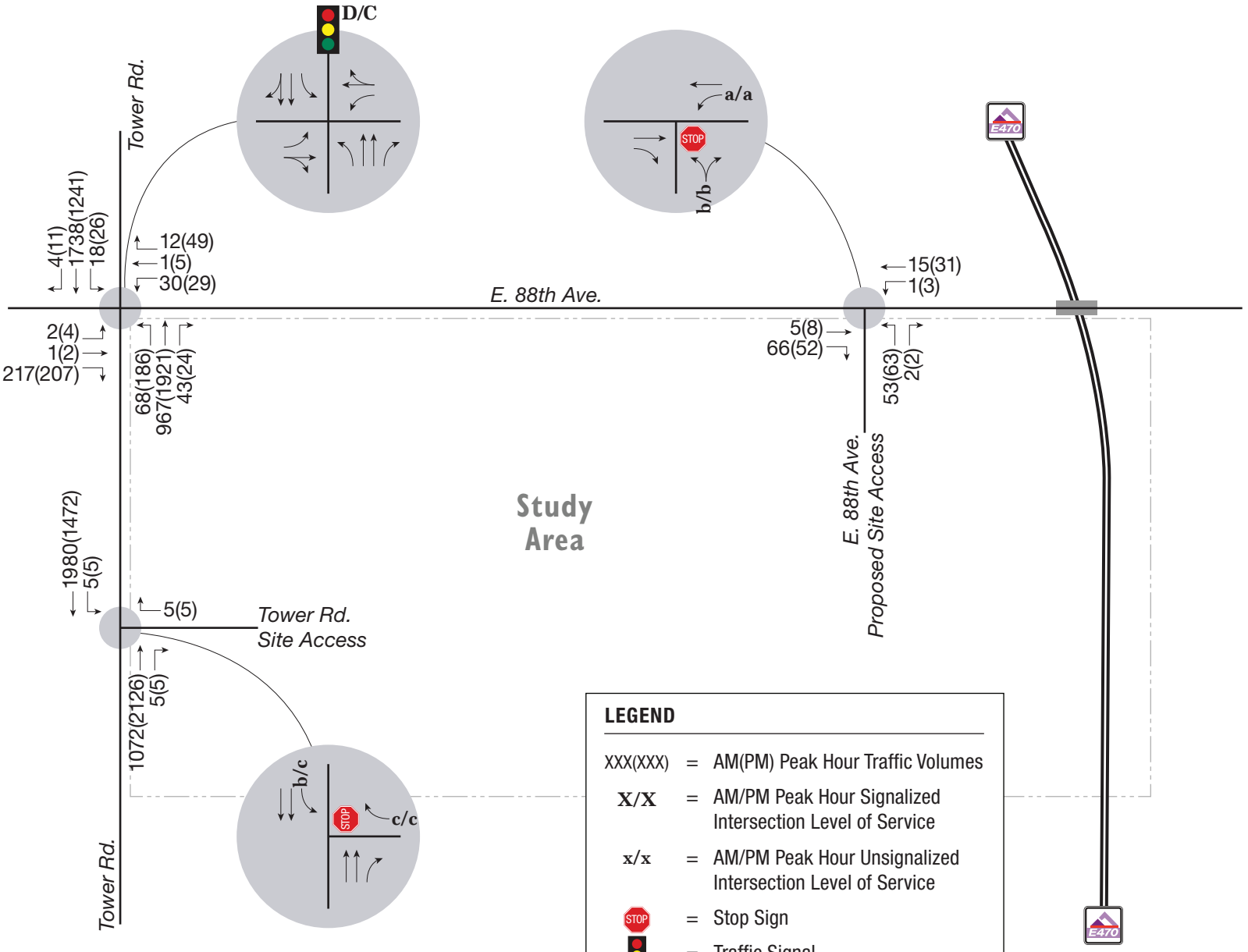
Short-Term Horizon

The short-term future traffic volumes are based on the regional growth rates projected by other traffic studies in the area. Turning movement volumes were grown 2 percent per year for 2 years to develop Short Term (2026) traffic volumes. **Figure 4** shows the resultant short-term anticipated traffic volumes.

Long-Term Horizon

Figure 5 shows the resultant long-term (2045) anticipated traffic volumes. Although most existing traffic on 88th Avenue accesses the Tower Landfill, the future interchange between E-470 and E 88th Avenue would introduce large volumes of background traffic to the roadway. Therefore, the traffic projections shown for 2045 are largely based on other traffic studies of the area, namely the Legato traffic impact analysis. In addition to regional growth, site-generated trips from the Legato development (as documented in the Legato traffic impact analysis) were included in the volumes for the long-term time horizon (2045).

By 2045, 50 percent of site traffic associated with the landfill was assumed to use the new E-470/88th Avenue interchange to avoid Tower Road congestion – 20 percent of landfill to/from the north on E-470 and 30 percent to/from the south. The remaining 50 percent of site traffic from the landfill was assumed to use Tower Road. These distributions were used to assign the existing Tower Landfill site traffic to the proposed 2045 roadway network.



FELSBURG HOLT & ULLEVIG

NOTE: Drawing Not to Scale

FIGURE 4
Year 2026 Traffic Conditions

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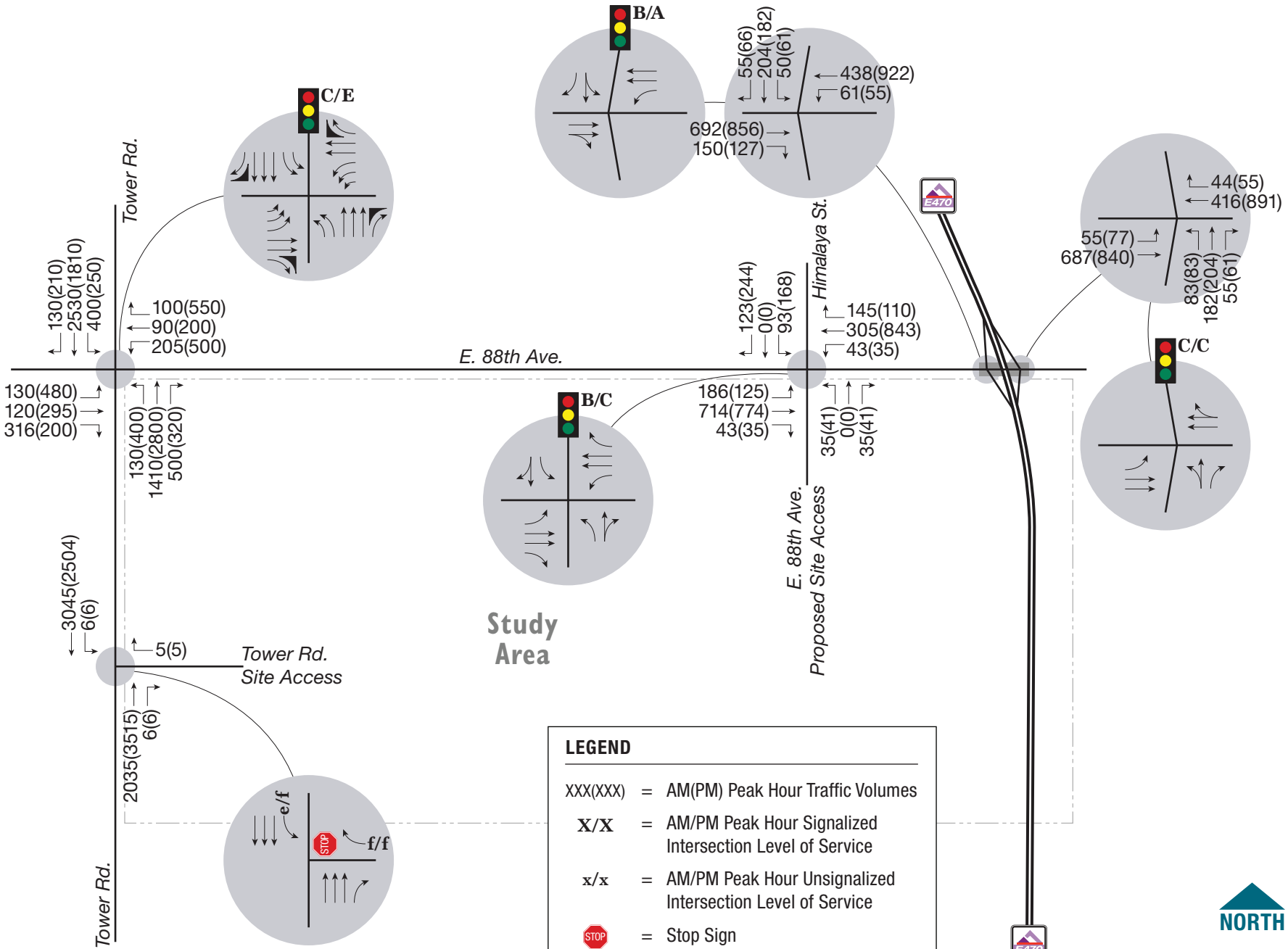

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NOTE: Drawing Not to Scale

FIGURE 5
Year 2045 Traffic Conditions

Tower Landfill - UPDATE 124216-01 7/18/24

III.C Future Traffic Operations

Short-Term Horizon

All movements at all unsignalized study intersections are anticipated to operate at LOS C or better during the AM and PM peak hours under projected 2026 traffic conditions. The signalized 88th Avenue/Tower Road intersection is expected to operate at LOS D during the AM peak hour and at LOS C during the PM peak hour.

LOS conditions are nearly identical to existing conditions with the exception of the 88th Avenue/Tower Road intersection, which degraded from LOS C to LOS D during the AM peak hour. This change is due to the 2 percent increase in all traffic volumes from regional growth and not due to the site access adjustment.

Figure 4 shows short-term future traffic operations for Year 2026, and **Appendix D** contains the traffic operational analysis worksheets.

Long-Term Horizon

The signalized 88th Avenue/Tower Road intersection is expected to operate at LOS C in the AM peak hour and LOS E in the PM peak hour. Excessive delays experienced at this intersection would primarily be due to the large traffic volumes anticipated on Tower Road. However, drivers would have an option to use E-470 instead of Tower Road and many motorists may choose E-470 during the times when Tower Road becomes congested.

The signalized 88th Avenue/Himalya Street intersection is anticipated to operate at LOS B in the AM peak hour and LOS C in the PM peak hour. The E-470 Southbound/88th Avenue intersection would operate LOS B/A during AM/PM peak hours, and the E-470 Northbound/88th Avenue would operate at LOS C during both AM and PM peak hours.

Unsignalized movements at the Tower Road/Site Access intersection are both anticipated to operate at LOS E or LOS F in the AM and PM peak hours. However, it is not uncommon for side street movements to experience larger delays when traffic volumes on the main street are as high as those anticipated on Tower Road in 2045. The turning movements at this intersection are minimal and no added site generated traffic is anticipated. Additionally, alternative access to the Tower Landfill would be provided at the 88th Avenue/Himalya Street intersection.

Figure 5 shows short-term future traffic operations for Year 2045 and **Appendix D** contains the operational analysis worksheets.

III.D Future Auxiliary Lanes

Short-Term Horizon

It is recommended that the newly shifted site access provide an exclusive left-turn lane on the westbound approach of 88th Avenue and an exclusive right-turn lane on the eastbound approach 88th Avenue in the short-term time horizon. No additional improvements are recommended for other intersections in the study area in the short-term time horizon based on traffic related to the Tower Landfill.

The 88th Avenue/Himalaya Street intersection should be designed according to current Commerce City design standards. Sight triangles and proper intersection sight distance are also recommended to be provided at each access point in accordance with the *AASHTO Geometric Design of Highways and Streets (Green Book)*. Sight triangles are defined as the areas in each corner of the intersection where obstructions (fences, vegetation, and signs) must be lower than 3.5 feet. The area depends on the classification of the two intersecting roads. Intersection sight distance is based on the speed of the major roadway, the driver's eye height, and the height of the obstruction. The sight distance is measured assuming a minimum of 14 feet back of the edge of the traveled way on the minor street to the center of the lane in question on the major street. The sight distance parameters should be checked at the time of design.

Long-Term Horizon

At the 88th Avenue/Tower Road intersection, the Legato traffic impact analysis recommends dual left turn lanes on the northbound and southbound approaches, triple left turn lanes at the eastbound and westbound approaches, and channelized free flow right turn lanes at all four approaches based on anticipated traffic demand in 2045.

The 88th Avenue/Himalaya Street intersection (Proposed Site Access) is recommended to provide exclusive left turn lanes on all four approaches and exclusive right turn lanes on the eastbound and westbound approaches for the long-term (2045) time horizon.

IV. SUMMARY AND RECOMMENDATIONS

The Tower Landfill is located east of Tower Road, south of 88th Avenue, and west of E-470 in Commerce City, Colorado. There are currently two access points: one on E 88th Avenue and one on Tower Road. The 88th Avenue access is proposed to shift to the east and align with Himalaya Street. This will move the access closer to the location of future activity within the site. Site traffic associated with the expansion is anticipated to be minimal; however, should traffic associated with the landfill increase in coming years, the accesses provide enough reserve capacity to accommodate significant volume increases.

The following summarizes the findings, anticipated improvements, and recommendations for the study roadway network:

Short Term (2026) Horizon

- Design and construct the 88th Avenue Proposed Site Access (aligned with Himalya Street) consistent with the City's standards.
- Provide an exclusive right-turn lane on the eastbound approach and an exclusive right turn lane on the westbound approach of the 88th Avenue proposed site access (aligned with Himalya Street).
- Coordinate with Legato developers and the City to ensure that future changes to the 88th Avenue/ Himalya Street intersection are made in an efficient manner.

Long Term (2045) Horizon

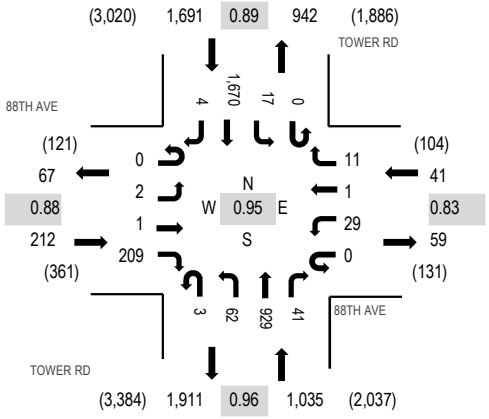
- Major changes to the roadway network are expected based on the *C3 Vision Comprehensive Plan* and the *Tower Road Laneage Recommendations Study*.
  - Tower Road would include six through lanes of traffic
  - The 88th Avenue corridor adjacent to the property is expected to widen to a four-lane arterial cross section.
  - Dual left turn lanes and free-flow right turn lanes anticipated on the northbound and southbound approaches at the 88th Avenue/Tower Road intersection.
  - Triple left turn lanes and free-flow right turn lanes anticipated on the eastbound and westbound approaches at the 88th Avenue/Tower Road intersection.
- Traffic signals, constructed to current Commerce City design standards, are recommended at the following intersections once signal warrants are met:
  - 88th Avenue/Himalaya Street (Proposed Site Access)
  - E-470 Northbound Ramps/88th Avenue
  - E-470 Southbound Ramps/88th Avenue
- Shifting the Existing Site Entrance to align with Himalaya Street is anticipated to improve operations for the Tower Landfill site traffic.
  - This realignment will allow Tower Landfill traffic to utilize the signal recommended by the legato study and decrease left turn delays onto 88th Avenue.
  - Consolidating the Tower Landfill and Legato access points will also decrease conflicts and improve safety in the area.

Appendix A. Existing Traffic Counts

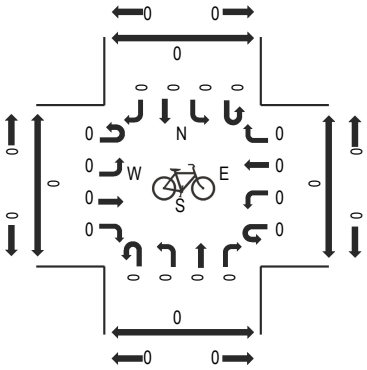
ALL TRAFFIC DATA SERVICES
(303) 216-2439
www.alltrafficdata.net

Location: 1 TOWER RD & 88TH AVE AM
Date: Thursday, June 13, 2024
Peak Hour: 07:00 AM - 08:00 AM
Peak 15-Minutes: 07:00 AM - 07:15 AM

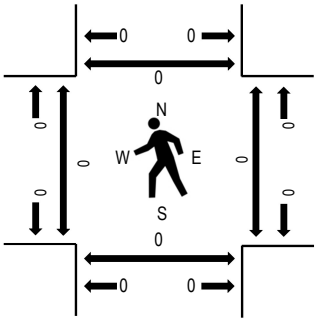
Peak Hour - Motorized Vehicles



Peak Hour - Bicycles



Peak Hour - Pedestrians



Note: Total study counts contained in parentheses.

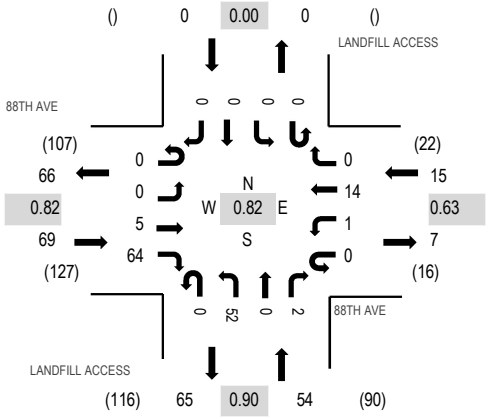
Traffic Counts - Motorized Vehicles

Interval Start Time	88TH AVE Eastbound				88TH AVE Westbound				TOWER RD Northbound				TOWER RD Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
7:00 AM	0	0	0	57	0	10	1	2	1	15	210	10	0	3	471	2	782	2,979	0	0	0	0
7:15 AM	0	0	0	44	0	3	0	0	1	22	246	8	0	6	416	0	746	2,861	0	0	0	0
7:30 AM	0	1	0	50	0	10	0	3	0	9	233	13	0	5	415	1	740	2,784	0	0	0	0
7:45 AM	0	1	1	58	0	6	0	6	1	16	240	10	0	3	368	1	711	2,650	0	0	0	0
8:00 AM	0	1	0	38	0	10	1	2	2	11	243	11	0	7	337	1	664	2,543	0	0	0	0
8:15 AM	0	2	0	37	0	6	0	10	0	15	218	7	0	7	365	2	669		0	0	0	0
8:30 AM	0	1	0	37	0	10	0	5	0	7	218	9	0	11	307	1	606		0	0	0	0
8:45 AM	0	3	0	30	0	9	0	10	1	16	231	13	0	7	284	0	604		0	0	0	0
Count Total	0	9	1	351	0	64	2	38	6	111	1,839	81	0	49	2,963	8	5,522		0	0	0	0
Peak Hour	0	2	1	209	0	29	1	11	3	62	929	41	0	17	1,670	4	2,979		0	0	0	0

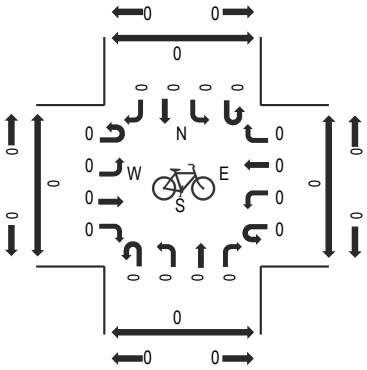
ALL TRAFFIC DATA SERVICES
(303) 216-2439
www.alltrafficdata.net

Location: 2 LANDFILL ACCESS & 88TH AVE AM
Date: Thursday, June 13, 2024
Peak Hour: 08:00 AM - 09:00 AM
Peak 15-Minutes: 08:45 AM - 09:00 AM

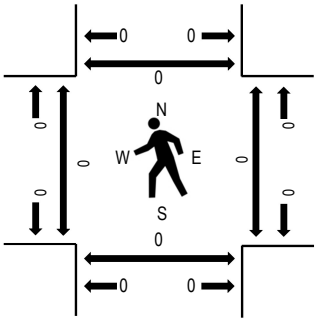
Peak Hour - Motorized Vehicles



Peak Hour - Bicycles



Peak Hour - Pedestrians



Note: Total study counts contained in parentheses.

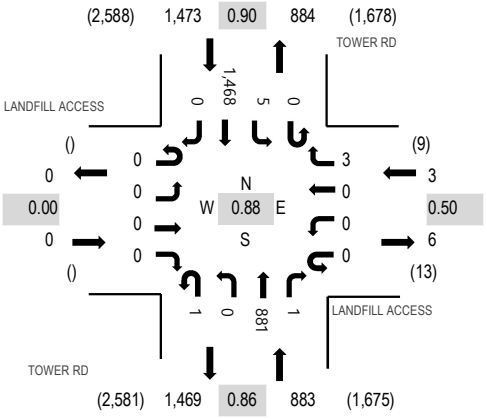
Traffic Counts - Motorized Vehicles

Interval Start Time	88TH AVE Eastbound				88TH AVE Westbound				LANDFILL ACCESS Northbound				LANDFILL ACCESS Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
7:00 AM	0	0	1	10	0	0	4	0	0	9	0	1	0	0	0	0	25	101	0	0	0	0
7:15 AM	0	0	2	13	0	0	0	0	0	3	0	0	0	0	0	0	18	109	0	0	0	0
7:30 AM	0	0	3	13	0	0	2	0	0	10	0	0	0	0	0	0	28	121	0	0	0	0
7:45 AM	0	0	2	14	0	1	0	0	0	13	0	0	0	0	0	0	30	126	0	0	0	0
8:00 AM	0	0	1	17	0	0	3	0	0	12	0	0	0	0	0	0	33	138	0	0	0	0
8:15 AM	0	0	1	12	0	0	3	0	0	13	0	1	0	0	0	0	30		0	0	0	0
8:30 AM	0	0	2	15	0	0	3	0	0	12	0	1	0	0	0	0	33		0	0	0	0
8:45 AM	0	0	1	20	0	1	5	0	0	15	0	0	0	0	0	0	42		0	0	0	0
Count Total	0	0	13	114	0	2	20	0	0	87	0	3	0	0	0	0	239		0	0	0	0
Peak Hour	0	0	5	64	0	1	14	0	0	52	0	2	0	0	0	0	138		0	0	0	0

All Traffic Data Services Inc.
(303) 216-2439
www.alltrafficdata.net

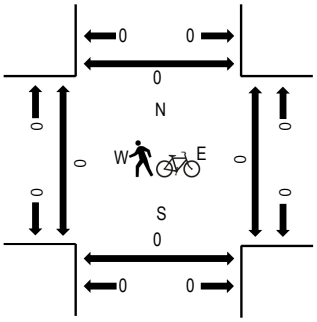
Location: 3 TOWER RD & LANDFILL ACCESS AM
Date: Thursday, March 4, 2021
Peak Hour: 07:00 AM - 08:00 AM
Peak 15-Minutes: 07:30 AM - 07:45 AM

Peak Hour - All Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles on Crosswalk



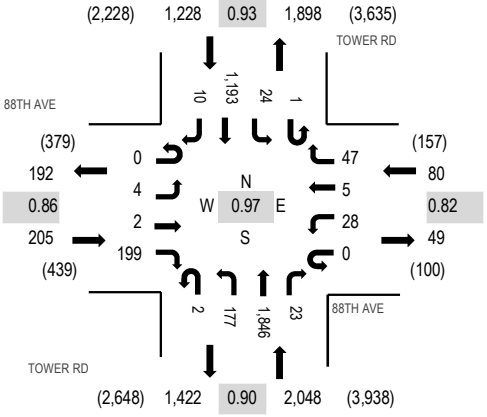
Traffic Counts

Interval Start Time	LANDFILL ACCESS Eastbound				LANDFILL ACCESS Westbound				TOWER RD Northbound				TOWER RD Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
7:00 AM	0	0	0	0	0	0	0	1	0	0	218	0	0	1	305	0	525	2,359	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	192	0	0	2	401	0	595	2,335	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	1	0	0	259	1	0	1	411	0	673	2,272	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	1	1	0	212	0	0	1	351	0	566	2,024	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	1	0	0	188	1	0	0	311	0	501	1,913	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	1	0	0	235	0	0	0	296	0	532		0	0	0	0
8:30 AM	0	0	0	0	0	0	0	1	0	0	171	1	0	3	249	0	425		0	0	0	0
8:45 AM	0	0	0	0	0	0	0	3	0	0	194	2	0	0	256	0	455		0	0	0	0
Count Total	0	0	0	0	0	0	0	9	1	0	1,669	5	0	8	2,580	0	4,272		0	0	0	0
Peak Hour	0	0	0	0	0	0	0	3	1	0	881	1	0	5	1,468	0	2,359		0	0	0	0

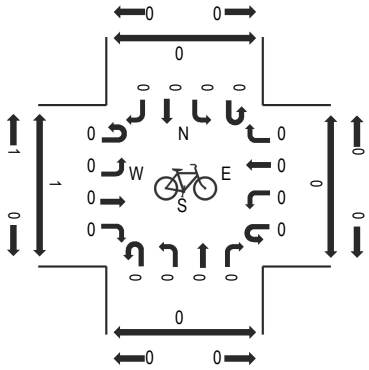
ALL TRAFFIC DATA SERVICES
(303) 216-2439
www.alltrafficdata.net

Location: 1 TOWER RD & 88TH AVE PM
Date: Thursday, June 13, 2024
Peak Hour: 04:30 PM - 05:30 PM
Peak 15-Minutes: 04:30 PM - 04:45 PM

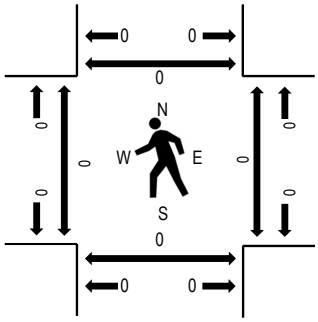
Peak Hour - Motorized Vehicles



Peak Hour - Bicycles



Peak Hour - Pedestrians



Note: Total study counts contained in parentheses.

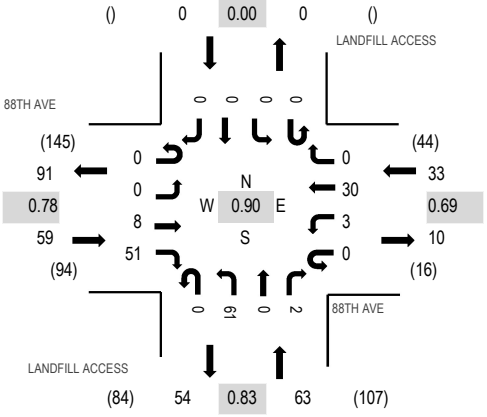
Traffic Counts - Motorized Vehicles

Interval Start Time	88TH AVE Eastbound				88TH AVE Westbound				TOWER RD Northbound				TOWER RD Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
4:00 PM	0	3	3	84	0	9	2	9	0	39	434	12	0	5	173	2	775	3,288	0	0	0	0
4:15 PM	0	1	2	75	0	6	1	23	0	37	362	7	0	8	173	3	698	3,423	0	4	0	0
4:30 PM	0	1	1	77	0	9	1	18	1	43	428	5	1	6	321	3	915	3,561	0	0	0	0
4:45 PM	0	2	1	60	0	7	1	12	0	37	459	10	0	7	303	1	900	3,559	0	0	0	0
5:00 PM	0	1	0	34	0	8	1	5	1	50	524	4	0	6	271	5	910	3,474	0	0	0	0
5:15 PM	0	0	0	28	0	4	2	12	0	47	435	4	0	5	298	1	836		0	0	0	0
5:30 PM	0	0	0	42	0	7	0	11	0	48	470	3	0	4	327	1	913		0	0	0	0
5:45 PM	0	0	1	23	0	4	0	5	2	54	419	3	0	3	301	0	815		0	0	0	0
Count Total	0	8	8	423	0	54	8	95	4	355	3,531	48	1	44	2,167	16	6,762		0	4	0	0
Peak Hour	0	4	2	199	0	28	5	47	2	177	1,846	23	1	24	1,193	10	3,561		0	0	0	0

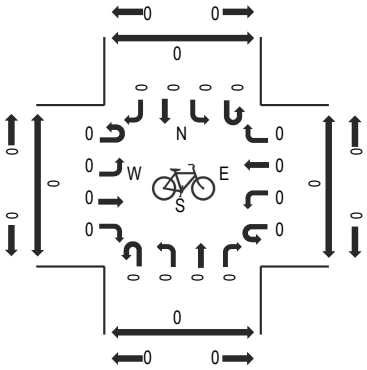
ALL TRAFFIC DATA SERVICES
(303) 216-2439
www.alltrafficdata.net

Location: 2 LANDFILL ACCESS & 88TH AVE PM
Date: Thursday, June 13, 2024
Peak Hour: 04:00 PM - 05:00 PM
Peak 15-Minutes: 04:00 PM - 04:15 PM

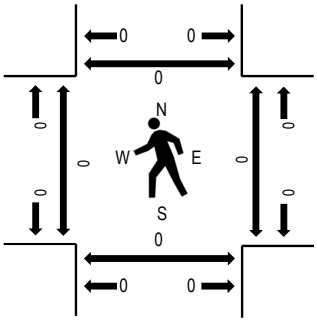
Peak Hour - Motorized Vehicles



Peak Hour - Bicycles



Peak Hour - Pedestrians



Note: Total study counts contained in parentheses.

Traffic Counts - Motorized Vehicles

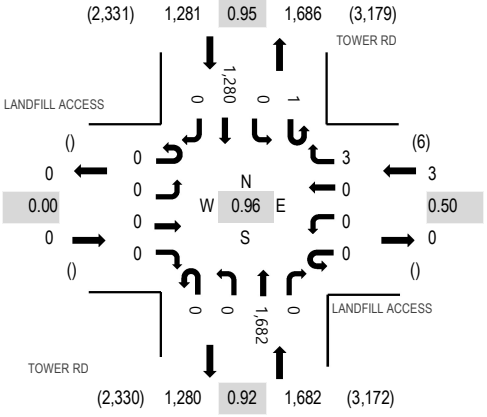
Interval Start Time	88TH AVE Eastbound				88TH AVE Westbound				LANDFILL ACCESS Northbound				LANDFILL ACCESS Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
4:00 PM	0	0	0	19	0	2	7	0	0	15	0	0	0	0	0	0	43	155	0	0	0	0
4:15 PM	0	0	0	10	0	1	11	0	0	18	0	1	0	0	0	0	41	140	0	0	0	0
4:30 PM	0	0	2	12	0	0	8	0	0	10	0	1	0	0	0	0	33	127	0	0	0	0
4:45 PM	0	0	6	10	0	0	4	0	0	18	0	0	0	0	0	0	38	112	0	0	0	0
5:00 PM	0	0	0	13	0	0	4	0	0	10	0	1	0	0	0	0	28	90	0	0	0	0
5:15 PM	0	0	2	7	0	0	2	0	0	17	0	0	0	0	0	0	28		0	0	0	0
5:30 PM	0	0	2	4	0	0	1	0	0	11	0	0	0	0	0	0	18		0	0	0	0
5:45 PM	0	0	1	6	0	0	4	0	0	5	0	0	0	0	0	0	16		0	0	0	0
Count Total	0	0	13	81	0	3	41	0	0	104	0	3	0	0	0	0	245		0	0	0	0
Peak Hour	0	0	8	51	0	3	30	0	0	61	0	2	0	0	0	0	155		0	0	0	0

All Traffic Data Services Inc.

(303) 216-2439
www.alltrafficdata.net

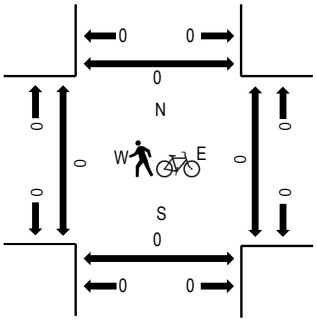
Location: 3 TOWER RD & LANDFILL ACCESS PM
Date: Thursday, March 4, 2021
Peak Hour: 04:00 PM - 05:00 PM
Peak 15-Minutes: 04:45 PM - 05:00 PM

Peak Hour - All Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles on Crosswalk



Traffic Counts

Interval Start Time	LANDFILL ACCESS Eastbound				LANDFILL ACCESS Westbound				TOWER RD Northbound				TOWER RD Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
4:00 PM	0	0	0	0	0	0	0	1	0	0	420	0	1	0	321	0	743	2,966	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	418	0	0	0	337	0	755	2,887	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	2	0	0	385	0	0	0	312	0	699	2,834	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	459	0	0	0	310	0	769	2,746	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	1	0	0	389	0	0	0	274	0	664	2,543	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	1	0	0	425	0	0	0	276	0	702		0	0	0	0
5:30 PM	0	0	0	0	0	0	0	1	0	0	338	0	0	0	272	0	611		0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	338	0	0	0	228	0	566		0	0	0	0
Count Total	0	0	0	0	0	0	0	6	0	0	3,172	0	1	0	2,330	0	5,509		0	0	0	0
Peak Hour	0	0	0	0	0	0	0	3	0	0	1,682	0	1	0	1,280	0	2,966		0	0	0	0

Appendix B. 24-Hour Landfill Traffic Count Data

All Traffic Data Services

3 - 88TH AVE EAST OF TOWER RD

Time	EB	WB	Total
6/13/2024	1	0	1
6/13/2024 12:15:00 AM	1	1	2
6/13/2024 12:30:00 AM	0	1	1
6/13/2024 12:45:00 AM	0	0	0
6/13/2024 1:00:00 AM	0	0	0
6/13/2024 1:15:00 AM	1	0	1
6/13/2024 1:30:00 AM	0	0	0
6/13/2024 1:45:00 AM	0	1	1
6/13/2024 2:00:00 AM	0	0	0
6/13/2024 2:15:00 AM	0	0	0
6/13/2024 2:30:00 AM	2	0	2
6/13/2024 2:45:00 AM	1	0	1
6/13/2024 3:00:00 AM	0	0	0
6/13/2024 3:15:00 AM	0	1	1
6/13/2024 3:30:00 AM	0	0	0
6/13/2024 3:45:00 AM	0	0	0
6/13/2024 4:00:00 AM	1	0	1
6/13/2024 4:15:00 AM	3	0	3
6/13/2024 4:30:00 AM	3	0	3
6/13/2024 4:45:00 AM	1	2	3
6/13/2024 5:00:00 AM	11	4	15
6/13/2024 5:15:00 AM	10	7	17
6/13/2024 5:30:00 AM	6	6	12
6/13/2024 5:45:00 AM	17	7	24
6/13/2024 6:00:00 AM	18	7	25
6/13/2024 6:15:00 AM	24	7	31
6/13/2024 6:30:00 AM	18	10	28
6/13/2024 6:45:00 AM	19	9	28
6/13/2024 7:00:00 AM	13	13	26
6/13/2024 7:15:00 AM	14	3	17
6/13/2024 7:30:00 AM	18	13	31
6/13/2024 7:45:00 AM	14	12	26
6/13/2024 8:00:00 AM	18	13	31
6/13/2024 8:15:00 AM	14	16	30
6/13/2024 8:30:00 AM	20	15	35
6/13/2024 8:45:00 AM	20	19	39
6/13/2024 9:00:00 AM	8	23	31
6/13/2024 9:15:00 AM	20	18	38
6/13/2024 9:30:00 AM	22	11	33
6/13/2024 9:45:00 AM	19	21	40
6/13/2024 10:00:00 AM	14	15	29
6/13/2024 10:15:00 AM	16	10	26
6/13/2024 10:30:00 AM	22	15	37
6/13/2024 10:45:00 AM	19	18	37
6/13/2024 11:00:00 AM	17	20	37
6/13/2024 11:15:00 AM	9	18	27
6/13/2024 11:30:00 AM	20	18	38
6/13/2024 11:45:00 AM	22	14	36
Total	476	368	844
Percentage	56.4%	43.6%	
Peak Hour	6:00 AM	8:30 AM	8:30 AM
Volume	79	75	143
PHF	0.823	0.815	0.917

All Traffic Data Services

3 - 88TH AVE EAST OF TOWER RD

Time	EB	WB	Total
6/13/2024 12:00:00 PM	19	14	33
6/13/2024 12:15:00 PM	19	22	41
6/13/2024 12:30:00 PM	17	28	45
6/13/2024 12:45:00 PM	20	20	40
6/13/2024 1:00:00 PM	18	14	32
6/13/2024 1:15:00 PM	13	24	37
6/13/2024 1:30:00 PM	21	17	38
6/13/2024 1:45:00 PM	14	14	28
6/13/2024 2:00:00 PM	19	19	38
6/13/2024 2:15:00 PM	14	17	31
6/13/2024 2:30:00 PM	16	18	34
6/13/2024 2:45:00 PM	26	19	45
6/13/2024 3:00:00 PM	14	19	33
6/13/2024 3:15:00 PM	12	18	30
6/13/2024 3:30:00 PM	8	11	19
6/13/2024 3:45:00 PM	24	20	44
6/13/2024 4:00:00 PM	20	20	40
6/13/2024 4:15:00 PM	17	30	47
6/13/2024 4:30:00 PM	12	28	40
6/13/2024 4:45:00 PM	18	20	38
6/13/2024 5:00:00 PM	10	14	24
6/13/2024 5:15:00 PM	9	18	27
6/13/2024 5:30:00 PM	7	18	25
6/13/2024 5:45:00 PM	7	9	16
6/13/2024 6:00:00 PM	3	12	15
6/13/2024 6:15:00 PM	5	10	15
6/13/2024 6:30:00 PM	6	0	6
6/13/2024 6:45:00 PM	6	4	10
6/13/2024 7:00:00 PM	2	11	13
6/13/2024 7:15:00 PM	1	5	6
6/13/2024 7:30:00 PM	4	4	8
6/13/2024 7:45:00 PM	3	2	5
6/13/2024 8:00:00 PM	2	6	8
6/13/2024 8:15:00 PM	1	3	4
6/13/2024 8:30:00 PM	5	0	5
6/13/2024 8:45:00 PM	3	3	6
6/13/2024 9:00:00 PM	6	4	10
6/13/2024 9:15:00 PM	7	2	9
6/13/2024 9:30:00 PM	5	4	9
6/13/2024 9:45:00 PM	2	5	7
6/13/2024 10:00:00 PM	3	4	7
6/13/2024 10:15:00 PM	3	4	7
6/13/2024 10:30:00 PM	3	2	5
6/13/2024 10:45:00 PM	2	4	6
6/13/2024 11:00:00 PM	1	3	4
6/13/2024 11:15:00 PM	2	0	2
6/13/2024 11:30:00 PM	1	0	1
6/13/2024 11:45:00 PM	0	4	4
Total	450	547	997
Percentage	45.1%	54.9%	
Peak Hour	12:00 PM	3:45 PM	3:45 PM
Volume	75	98	171
PHF	0.938	0.817	0.910
Grand Total	926	915	1,841
Percentage	50.3%	49.7%	

Appendix C. Existing Traffic Operational Analysis Worksheets

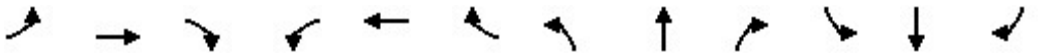
Intersection	
Int Delay, s/veh	0

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	3	1032	1	5	1903
Future Vol, veh/h	0	3	1032	1	5	1903
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	200	125	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	65	65	7	7	40	5
Mvmt Flow	0	3	1173	1	6	2163

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	-	587	0	0	1174	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	8.2	-	-	4.9	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.95	-	-	2.6	-
Pot Cap-1 Maneuver	0	325	-	-	415	-
Stage 1	0	-	-	-	-	-
Stage 2	0	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	-	325	-	-	415	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	16.2	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	325	415	-
HCM Lane V/C Ratio	-	-	0.01	0.014	-
HCM Control Delay (s)	-	-	16.2	13.8	-
HCM Lane LOS	-	-	C	B	-
HCM 95th %tile Q(veh)	-	-	0	0	-



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	2	1	209	29	1	11	65	929	41	17	1670	4
Future Volume (veh/h)	2	1	209	29	1	11	65	929	41	17	1670	4
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1841	1841	1841	566	566	566	1826	1826	788	640	1826	1826
Adj Flow Rate, veh/h	2	1	230	32	1	12	71	1021	45	19	1835	4
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	4	4	4	90	90	90	5	5	75	85	5	5
Cap, veh/h	304	1	258	85	7	88	150	2020	389	146	2003	4
Arrive On Green	0.00	0.17	0.17	0.03	0.20	0.20	0.04	0.58	0.58	0.02	0.56	0.56
Sat Flow, veh/h	1753	7	1554	539	37	448	1739	3469	668	610	3551	8
Grp Volume(v), veh/h	2	0	231	32	0	13	71	1021	45	19	896	943
Grp Sat Flow(s),veh/h/ln	1753	0	1561	539	0	486	1739	1735	668	610	1735	1825
Q Serve(g_s), s	0.1	0.0	17.4	3.9	0.0	2.7	2.0	20.9	3.6	1.5	55.9	56.0
Cycle Q Clear(g_c), s	0.1	0.0	17.4	3.9	0.0	2.7	2.0	20.9	3.6	1.5	55.9	56.0
Prop In Lane	1.00		1.00	1.00		0.92	1.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	304	0	259	85	0	95	150	2020	389	146	978	1029
V/C Ratio(X)	0.01	0.00	0.89	0.38	0.00	0.14	0.47	0.51	0.12	0.13	0.92	0.92
Avail Cap(c_a), veh/h	504	0	312	130	0	97	359	2020	389	230	978	1029
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	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	38.6	0.0	49.0	47.9	0.0	39.9	27.0	14.8	11.2	11.9	23.6	23.6
Incr Delay (d2), s/veh	0.0	0.0	23.0	2.8	0.0	0.6	2.3	0.9	0.6	0.4	14.5	14.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.1	0.0	13.2	0.8	0.0	0.6	2.1	12.3	1.0	0.4	32.4	33.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	38.7	0.0	72.0	50.6	0.0	40.6	29.3	15.7	11.8	12.3	38.1	37.6
LnGrp LOS	D	A	E	D	A	D	C	B	B	B	D	D
Approach Vol, veh/h		233			45			1137			1858	
Approach Delay, s/veh		71.7			47.7			16.4			37.5	
Approach LOS		E			D			B			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.3	75.9	9.9	25.9	10.5	73.7	6.3	29.5
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Green Setting (Gmax), s	19.0	39.0	14.0	24.0	19.0	39.0	14.0	24.0
Max Q Clear Time (g_c+I1), s	3.5	22.9	5.9	19.4	4.0	58.0	2.1	4.7
Green Ext Time (p_c), s	0.0	6.2	0.0	0.5	0.1	0.0	0.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	32.8
HCM 6th LOS	C

Notes

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

Intersection	
Int Delay, s/veh	4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	5	64	1	14	52	2
Future Vol, veh/h	5	64	1	14	52	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	100	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	77	77	77	77	77	77
Heavy Vehicles, %	25	95	2	2	98	98
Mvmt Flow	6	83	1	18	68	3

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	89	0	26	6
Stage 1	-	-	-	-	6	-
Stage 2	-	-	-	-	20	-
Critical Hdwy	-	-	4.12	-	7.38	7.18
Critical Hdwy Stg 1	-	-	-	-	6.38	-
Critical Hdwy Stg 2	-	-	-	-	6.38	-
Follow-up Hdwy	-	-	2.218	-	4.382	4.182
Pot Cap-1 Maneuver	-	-	1506	-	791	854
Stage 1	-	-	-	-	816	-
Stage 2	-	-	-	-	803	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1506	-	790	854
Mov Cap-2 Maneuver	-	-	-	-	790	-
Stage 1	-	-	-	-	816	-
Stage 2	-	-	-	-	802	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.5	10
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	792	-	-	1506	-
HCM Lane V/C Ratio	0.089	-	-	0.001	-
HCM Control Delay (s)	10	-	-	7.4	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.3	-	-	0	-

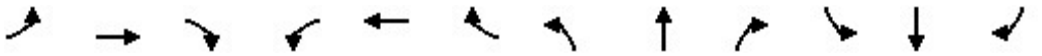
Intersection	
Int Delay, s/veh	0

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	3	2045	0	1	1419
Future Vol, veh/h	0	3	2045	0	1	1419
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	200	125	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	2	2	4	4	3	3
Mvmt Flow	0	3	2130	0	1	1478

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	2871	1065	0	0	2130	0
Stage 1	2130	-	-	-	-	-
Stage 2	741	-	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	4.16	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	2.23	-
Pot Cap-1 Maneuver	13	219	-	-	248	-
Stage 1	77	-	-	-	-	-
Stage 2	432	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	13	219	-	-	248	-
Mov Cap-2 Maneuver	13	-	-	-	-	-
Stage 1	77	-	-	-	-	-
Stage 2	430	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	21.7	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	219	248	-
HCM Lane V/C Ratio	-	-	0.014	0.004	-
HCM Control Delay (s)	-	-	21.7	19.6	-
HCM Lane LOS	-	-	C	C	-
HCM 95th %tile Q(veh)	-	-	0	0	-



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	4	2	199	28	5	47	179	1846	23	25	1193	10
Future Volume (veh/h)	4	2	199	28	5	47	179	1846	23	25	1193	10
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1011	1011	1011	1856	1856	714	507	1856	1856
Adj Flow Rate, veh/h	4	2	207	29	5	49	186	1923	24	26	1243	10
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	60	60	60	3	3	80	94	3	3
Cap, veh/h	227	2	237	99	14	135	316	2112	363	79	2005	16
Arrive On Green	0.01	0.15	0.15	0.03	0.17	0.17	0.06	0.60	0.60	0.02	0.56	0.56
Sat Flow, veh/h	1781	15	1572	963	80	788	1767	3526	605	483	3584	29
Grp Volume(v), veh/h	4	0	209	29	0	54	186	1923	24	26	611	642
Grp Sat Flow(s),veh/h/ln	1781	0	1587	963	0	869	1767	1763	605	483	1763	1850
Q Serve(g_s), s	0.2	0.0	15.5	3.1	0.0	6.6	5.3	57.7	2.0	2.6	28.1	28.1
Cycle Q Clear(g_c), s	0.2	0.0	15.5	3.1	0.0	6.6	5.3	57.7	2.0	2.6	28.1	28.1
Prop In Lane	1.00		0.99	1.00		0.91	1.00		1.00	1.00		0.02
Lane Grp Cap(c), veh/h	227	0	239	99	0	149	316	2112	363	79	986	1035
V/C Ratio(X)	0.02	0.00	0.87	0.29	0.00	0.36	0.59	0.91	0.07	0.33	0.62	0.62
Avail Cap(c_a), veh/h	425	0	317	186	0	174	483	2112	363	144	986	1035
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	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	40.9	0.0	49.9	43.0	0.0	43.9	15.2	21.2	10.0	28.6	17.8	17.8
Incr Delay (d2), s/veh	0.0	0.0	18.3	1.6	0.0	1.5	1.7	7.3	0.4	2.4	2.9	2.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.2	0.0	11.8	1.4	0.0	2.6	3.6	30.8	0.5	0.9	16.7	17.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	41.0	0.0	68.2	44.6	0.0	45.4	17.0	28.6	10.4	31.0	20.8	20.6
LnGrp LOS	D	A	E	D	A	D	B	C	B	C	C	C
Approach Vol, veh/h		213			83			2133			1279	
Approach Delay, s/veh		67.7			45.1			27.4			20.9	
Approach LOS		E			D			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.9	77.9	9.2	24.1	13.7	73.1	6.6	26.6
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Green Setting (Gmax), s	19.0	39.0	14.0	24.0	19.0	39.0	14.0	24.0
Max Q Clear Time (g_c+I1), s	4.6	59.7	5.1	17.5	7.3	30.1	2.2	8.6
Green Ext Time (p_c), s	0.0	0.0	0.0	0.6	0.4	4.8	0.0	0.2

Intersection Summary	
HCM 6th Ctrl Delay	27.8
HCM 6th LOS	C

Notes

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

Intersection	
Int Delay, s/veh	4.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	8	51	3	30	61	2
Future Vol, veh/h	8	51	3	30	61	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	100	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	83	83	83	83	83	83
Heavy Vehicles, %	2	88	2	33	78	78
Mvmt Flow	10	61	4	36	73	2

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	71	0	54	10
Stage 1	-	-	-	-	10	-
Stage 2	-	-	-	-	44	-
Critical Hdwy	-	-	4.12	-	7.18	6.98
Critical Hdwy Stg 1	-	-	-	-	6.18	-
Critical Hdwy Stg 2	-	-	-	-	6.18	-
Follow-up Hdwy	-	-	2.218	-	4.202	4.002
Pot Cap-1 Maneuver	-	-	1529	-	794	887
Stage 1	-	-	-	-	847	-
Stage 2	-	-	-	-	815	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1529	-	792	887
Mov Cap-2 Maneuver	-	-	-	-	792	-
Stage 1	-	-	-	-	847	-
Stage 2	-	-	-	-	813	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.7	10
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	795	-	-	1529	-
HCM Lane V/C Ratio	0.095	-	-	0.002	-
HCM Control Delay (s)	10	-	-	7.4	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.3	-	-	0	-

Appendix D. Future Traffic Operational Analysis Worksheets

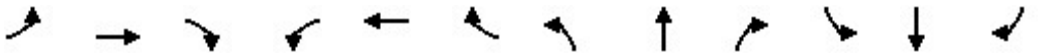
Intersection	
Int Delay, s/veh	0

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	5	1072	5	5	1980
Future Vol, veh/h	0	5	1072	5	5	1980
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	200	125	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	65	65	7	7	40	5
Mvmt Flow	0	6	1218	6	6	2250

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	-	609	0	0	1224	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	8.2	-	-	4.9	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.95	-	-	2.6	-
Pot Cap-1 Maneuver	0	312	-	-	394	-
Stage 1	0	-	-	-	-	-
Stage 2	0	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	-	312	-	-	394	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	16.8	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	312	394	-
HCM Lane V/C Ratio	-	-	0.018	0.014	-
HCM Control Delay (s)	-	-	16.8	14.3	-
HCM Lane LOS	-	-	C	B	-
HCM 95th %tile Q(veh)	-	-	0.1	0	-



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	2	1	217	30	1	12	68	967	43	18	1738	4
Future Volume (veh/h)	2	1	217	30	1	12	68	967	43	18	1738	4
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1841	1841	1841	566	566	566	1826	1826	788	640	1826	1826
Adj Flow Rate, veh/h	2	1	238	33	1	13	75	1063	47	20	1910	4
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	4	4	4	90	90	90	5	5	75	85	5	5
Cap, veh/h	313	1	269	86	7	92	135	1988	383	139	1971	4
Arrive On Green	0.00	0.17	0.17	0.03	0.20	0.20	0.04	0.57	0.57	0.02	0.56	0.56
Sat Flow, veh/h	1753	7	1554	539	35	450	1739	3469	668	610	3552	7
Grp Volume(v), veh/h	2	0	239	33	0	14	75	1063	47	20	932	982
Grp Sat Flow(s),veh/h/ln	1753	0	1561	539	0	485	1739	1735	668	610	1735	1825
Q Serve(g_s), s	0.1	0.0	17.9	4.0	0.0	2.8	2.2	22.6	3.9	1.7	62.1	62.2
Cycle Q Clear(g_c), s	0.1	0.0	17.9	4.0	0.0	2.8	2.2	22.6	3.9	1.7	62.1	62.2
Prop In Lane	1.00		1.00	1.00		0.93	1.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	313	0	271	86	0	99	135	1988	383	139	963	1013
V/C Ratio(X)	0.01	0.00	0.88	0.38	0.00	0.14	0.56	0.53	0.12	0.14	0.97	0.97
Avail Cap(c_a), veh/h	382	0	364	91	0	113	141	1988	383	152	963	1013
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	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	37.8	0.0	48.4	47.2	0.0	39.1	28.6	15.8	11.8	12.7	25.7	25.7
Incr Delay (d2), s/veh	0.0	0.0	17.4	2.8	0.0	0.6	4.4	1.0	0.7	0.5	22.3	21.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.1	0.0	13.0	0.8	0.0	0.6	2.3	13.3	1.1	0.4	37.4	39.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	37.8	0.0	65.8	50.0	0.0	39.8	33.0	16.8	12.4	13.1	48.0	47.5
LnGrp LOS	D	A	E	D	A	D	C	B	B	B	D	D
Approach Vol, veh/h		241			47			1185			1934	
Approach Delay, s/veh		65.6			46.9			17.7			47.4	
Approach LOS		E			D			B			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.4	74.8	10.0	26.8	10.6	72.6	6.3	30.5
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Green Setting (Gmax), s	5.0	58.0	5.0	28.0	5.0	58.0	5.0	28.0
Max Q Clear Time (g_c+I1), s	3.7	24.6	6.0	19.9	4.2	64.2	2.1	4.8
Green Ext Time (p_c), s	0.0	8.6	0.0	0.9	0.0	0.0	0.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	38.3
HCM 6th LOS	D

Notes

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

Intersection	
Int Delay, s/veh	3.9

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	5	66	1	15	53	2
Future Vol, veh/h	5	66	1	15	53	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	100	100	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	77	77	77	77	77	77
Heavy Vehicles, %	25	95	2	2	98	98
Mvmt Flow	6	86	1	19	69	3

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	92	0	27	6
Stage 1	-	-	-	-	6	-
Stage 2	-	-	-	-	21	-
Critical Hdwy	-	-	4.12	-	7.38	7.18
Critical Hdwy Stg 1	-	-	-	-	6.38	-
Critical Hdwy Stg 2	-	-	-	-	6.38	-
Follow-up Hdwy	-	-	2.218	-	4.382	4.182
Pot Cap-1 Maneuver	-	-	1503	-	790	854
Stage 1	-	-	-	-	816	-
Stage 2	-	-	-	-	802	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1503	-	789	854
Mov Cap-2 Maneuver	-	-	-	-	789	-
Stage 1	-	-	-	-	816	-
Stage 2	-	-	-	-	801	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.5	10
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	791	-	-	1503	-
HCM Lane V/C Ratio	0.09	-	-	0.001	-
HCM Control Delay (s)	10	-	-	7.4	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0.3	-	-	0	-

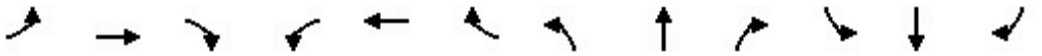
Intersection	
Int Delay, s/veh	0.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	5	2126	5	5	1472
Future Vol, veh/h	0	5	2126	5	5	1472
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	200	125	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	2	2	4	4	3	3
Mvmt Flow	0	5	2215	5	5	1533

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	-	1108	0	0	2220	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.94	-	-	4.16	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.32	-	-	2.23	-
Pot Cap-1 Maneuver	0	204	-	-	228	-
Stage 1	0	-	-	-	-	-
Stage 2	0	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	-	204	-	-	228	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	23.1	0	0.1
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	204	228	-
HCM Lane V/C Ratio	-	-	0.026	0.023	-
HCM Control Delay (s)	-	-	23.1	21.2	-
HCM Lane LOS	-	-	C	C	-
HCM 95th %tile Q(veh)	-	-	0.1	0.1	-



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	4	2	207	29	5	49	186	1921	24	26	1241	11
Future Volume (veh/h)	4	2	207	29	5	49	186	1921	24	26	1241	11
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1011	1011	1011	1856	1856	714	507	1856	1856
Adj Flow Rate, veh/h	4	2	216	30	5	51	194	2001	25	27	1293	11
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	60	60	60	3	3	80	94	3	3
Cap, veh/h	236	2	249	101	14	142	300	2080	357	75	1966	17
Arrive On Green	0.01	0.16	0.16	0.03	0.18	0.18	0.07	0.59	0.59	0.02	0.55	0.55
Sat Flow, veh/h	1781	15	1573	963	78	791	1767	3526	605	483	3582	30
Grp Volume(v), veh/h	4	0	218	30	0	56	194	2001	25	27	636	668
Grp Sat Flow(s),veh/h/ln	1781	0	1587	963	0	868	1767	1763	605	483	1763	1850
Q Serve(g_s), s	0.2	0.0	16.1	3.1	0.0	6.8	5.7	64.6	2.1	2.7	30.6	30.6
Cycle Q Clear(g_c), s	0.2	0.0	16.1	3.1	0.0	6.8	5.7	64.6	2.1	2.7	30.6	30.6
Prop In Lane	1.00		0.99	1.00		0.91	1.00		1.00	1.00		0.02
Lane Grp Cap(c), veh/h	236	0	251	101	0	156	300	2080	357	75	968	1015
V/C Ratio(X)	0.02	0.00	0.87	0.30	0.00	0.36	0.65	0.96	0.07	0.36	0.66	0.66
Avail Cap(c_a), veh/h	301	0	370	115	0	203	375	2080	357	83	968	1015
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	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	40.1	0.0	49.3	42.3	0.0	43.1	17.3	23.3	10.5	30.0	19.1	19.1
Incr Delay (d2), s/veh	0.0	0.0	13.7	1.6	0.0	1.4	2.6	12.6	0.4	2.9	3.5	3.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.2	0.0	11.8	1.4	0.0	2.7	4.0	35.5	0.5	0.9	18.1	18.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	40.1	0.0	63.0	43.9	0.0	44.5	19.9	35.9	10.9	32.9	22.6	22.4
LnGrp LOS	D	A	E	D	A	D	B	D	B	C	C	C
Approach Vol, veh/h		222			86			2220			1331	
Approach Delay, s/veh		62.6			44.3			34.2			22.7	
Approach LOS		E			D			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.0	76.8	9.3	25.0	13.9	71.9	6.6	27.6
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Green Setting (Gmax), s	5.0	58.0	5.0	28.0	13.0	50.0	5.0	28.0
Max Q Clear Time (g_c+I1), s	4.7	66.6	5.1	18.1	7.7	32.6	2.2	8.8
Green Ext Time (p_c), s	0.0	0.0	0.0	0.9	0.2	7.7	0.0	0.2

Intersection Summary	
HCM 6th Ctrl Delay	32.1
HCM 6th LOS	C

Notes

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

Intersection	
Int Delay, s/veh	4.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	8	52	3	31	63	2
Future Vol, veh/h	8	52	3	31	63	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	100	100	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	77	77	77	77	77	77
Heavy Vehicles, %	25	95	2	2	98	98
Mvmt Flow	10	68	4	40	82	3

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	78	0	58	10
Stage 1	-	-	-	-	10	-
Stage 2	-	-	-	-	48	-
Critical Hdwy	-	-	4.12	-	7.38	7.18
Critical Hdwy Stg 1	-	-	-	-	6.38	-
Critical Hdwy Stg 2	-	-	-	-	6.38	-
Follow-up Hdwy	-	-	2.218	-	4.382	4.182
Pot Cap-1 Maneuver	-	-	1520	-	755	849
Stage 1	-	-	-	-	812	-
Stage 2	-	-	-	-	777	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1520	-	753	849
Mov Cap-2 Maneuver	-	-	-	-	753	-
Stage 1	-	-	-	-	812	-
Stage 2	-	-	-	-	775	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.7	10.4
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	756	-	-	1520	-
HCM Lane V/C Ratio	0.112	-	-	0.003	-
HCM Control Delay (s)	10.4	-	-	7.4	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0.4	-	-	0	-

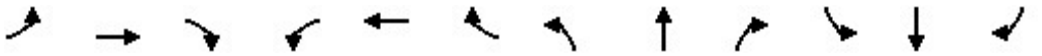
Intersection	
Int Delay, s/veh	0.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	5	2035	6	6	3045
Future Vol, veh/h	0	5	2035	6	6	3045
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	200	125	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	65	65	7	7	40	5
Mvmt Flow	0	6	2313	7	7	3460

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	-	1157	0	0	2320	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	8.4	-	-	6.1	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	4.55	-	-	3.5	-
Pot Cap-1 Maneuver	0	101	-	-	51	-
Stage 1	0	-	-	-	-	-
Stage 2	0	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	-	101	-	-	51	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	42.8	0	0.2
HCM LOS	E		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	101	51	-
HCM Lane V/C Ratio	-	-	0.056	0.134	-
HCM Control Delay (s)	-	-	42.8	86.2	-
HCM Lane LOS	-	-	E	F	-
HCM 95th %tile Q(veh)	-	-	0.2	0.4	-



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	130	120	275	205	90	100	130	1410	500	400	2530	130
Future Volume (veh/h)	130	120	275	205	90	100	130	1410	500	400	2530	130
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	143	132	0	225	99	0	143	1549	0	440	2780	0
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	221	185		310	248		190	2983		491	3428	
Arrive On Green	0.04	0.05	0.00	0.06	0.07	0.00	0.05	0.58	0.00	0.14	0.67	0.00
Sat Flow, veh/h	5023	3554	1585	5023	3554	1585	3456	5106	1585	3456	5106	1585
Grp Volume(v), veh/h	143	132	0	225	99	0	143	1549	0	440	2780	0
Grp Sat Flow(s),veh/h/ln	1674	1777	1585	1674	1777	1585	1728	1702	1585	1728	1702	1585
Q Serve(g_s), s	4.2	5.5	0.0	6.6	4.0	0.0	6.1	27.2	0.0	18.8	58.9	0.0
Cycle Q Clear(g_c), s	4.2	5.5	0.0	6.6	4.0	0.0	6.1	27.2	0.0	18.8	58.9	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	221	185		310	248		190	2983		491	3428	
V/C Ratio(X)	0.65	0.71		0.73	0.40		0.75	0.52		0.90	0.81	
Avail Cap(c_a), veh/h	804	332		804	332		276	2983		553	3428	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	0.99	0.99	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	70.6	70.0	0.0	69.1	66.8	0.0	69.9	18.6	0.0	63.3	17.8	0.0
Incr Delay (d2), s/veh	3.2	5.0	0.0	3.2	1.0	0.0	6.7	0.6	0.0	16.0	2.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	3.4	4.7	0.0	5.2	3.3	0.0	5.1	15.7	0.0	14.2	28.9	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	73.7	75.0	0.0	72.4	67.8	0.0	76.6	19.3	0.0	79.3	20.0	0.0
LnGrp LOS	E	E		E	E		E	B		E	B	
Approach Vol, veh/h		275			324			1692			3220	
Approach Delay, s/veh		74.3			71.0			24.1			28.1	
Approach LOS		E			E			C			C	

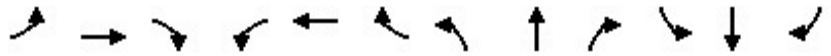
Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	27.3	93.6	15.2	13.8	14.2	106.7	12.6	16.5
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Green Setting (Gmax), s	24.0	64.0	24.0	14.0	12.0	76.0	24.0	14.0
Max Q Clear Time (g_c+I1), s	20.8	29.2	8.6	7.5	8.1	60.9	6.2	6.0
Green Ext Time (p_c), s	0.5	13.8	0.6	0.3	0.1	13.8	0.4	0.2

Intersection Summary	
HCM 6th Ctrl Delay	31.7
HCM 6th LOS	C

Notes

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

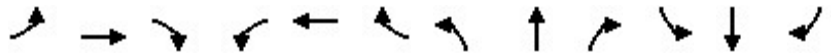
Unsignalized Delay for [NBR, EBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	186	714	43	43	305	145	35	0	35	93	0	123
Future Volume (veh/h)	186	714	43	43	305	145	35	0	35	93	0	123
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1530	492	1870	1870	1870	448	1870	448	1870	1870	1870
Adj Flow Rate, veh/h	202	927	56	56	396	158	45	0	45	101	0	134
Peak Hour Factor	0.92	0.77	0.77	0.77	0.77	0.92	0.77	0.92	0.77	0.92	0.92	0.92
Percent Heavy Veh, %	2	25	95	2	2	2	98	2	98	2	2	2
Cap, veh/h	683	1825	262	382	2141	955	91	0	157	271	0	163
Arrive On Green	0.06	0.63	0.63	0.07	1.00	1.00	0.06	0.00	0.10	0.06	0.00	0.10
Sat Flow, veh/h	1781	2906	417	1781	3554	1585	426	0	1585	1781	0	1585
Grp Volume(v), veh/h	202	927	56	56	396	158	45	0	45	101	0	134
Grp Sat Flow(s),veh/h/ln	1781	1453	417	1781	1777	1585	426	0	1585	1781	0	1585
Q Serve(g_s), s	5.1	20.9	6.9	1.4	0.0	0.0	7.1	0.0	3.2	6.0	0.0	9.9
Cycle Q Clear(g_c), s	5.1	20.9	6.9	1.4	0.0	0.0	7.1	0.0	3.2	6.0	0.0	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	683	1825	262	382	2141	955	91	0	157	271	0	163
V/C Ratio(X)	0.30	0.51	0.21	0.15	0.18	0.17	0.49	0.00	0.29	0.37	0.00	0.82
Avail Cap(c_a), veh/h	745	1825	262	416	2141	955	107	0	317	271	0	264
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.83	0.83	0.83	0.99	0.99	0.99	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	7.5	12.2	9.6	9.3	0.0	0.0	51.2	0.0	50.1	44.7	0.0	52.8
Incr Delay (d2), s/veh	0.2	0.8	1.5	0.2	0.2	0.4	4.1	0.0	1.0	0.9	0.0	10.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	3.1	10.0	1.2	0.9	0.1	0.2	1.2	0.0	2.4	4.9	0.0	7.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	7.7	13.0	11.1	9.4	0.2	0.4	55.3	0.0	51.1	45.6	0.0	63.1
LnGrp LOS	A	B	B	A	A	A	E	A	D	D	A	E
Approach Vol, veh/h		1185			610			90			235	
Approach Delay, s/veh		12.0			1.1			53.2			55.5	
Approach LOS		B			A			D			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	12.0	17.9	8.7	81.4	11.6	18.3	11.8	78.3
Change Period (Y+Rc), s	4.5	6.0	4.5	6.0	4.5	6.0	4.5	6.0
Max Green Setting (Gmax), s	7.5	24.0	6.5	61.0	11.5	20.0	11.5	56.0
Max Q Clear Time (g_c+I1), s	8.0	5.2	3.4	22.9	9.1	11.9	7.1	2.0
Green Ext Time (p_c), s	0.0	0.2	0.0	7.5	0.0	0.4	0.2	3.1

Intersection Summary	
HCM 6th Ctrl Delay	15.5
HCM 6th LOS	B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	692	150	61	438	0	0	0	0	50	204	55
Future Volume (veh/h)	0	692	150	61	438	0	0	0	0	50	204	55
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Work Zone On Approach		No			No						No	
Adj Sat Flow, veh/h/ln	0	1870	1870	1870	1870	0				1870	1870	1870
Adj Flow Rate, veh/h	0	752	163	66	476	0				54	222	60
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92				0.92	0.92	0.92
Percent Heavy Veh, %	0	2	2	2	2	0				2	2	2
Cap, veh/h	0	1961	425	538	2664	0				64	261	278
Arrive On Green	0.00	1.00	1.00	0.07	1.00	0.00				0.18	0.18	0.18
Sat Flow, veh/h	0	2998	629	1781	3647	0				362	1490	1585
Grp Volume(v), veh/h	0	460	455	66	476	0				276	0	60
Grp Sat Flow(s),veh/h/ln	0	1777	1757	1781	1777	0				1852	0	1585
Q Serve(g_s), s	0.0	0.0	0.0	1.3	0.0	0.0				17.3	0.0	3.9
Cycle Q Clear(g_c), s	0.0	0.0	0.0	1.3	0.0	0.0				17.3	0.0	3.9
Prop In Lane	0.00		0.36	1.00		0.00				0.20		1.00
Lane Grp Cap(c), veh/h	0	1200	1186	538	2664	0				325	0	278
V/C Ratio(X)	0.00	0.38	0.38	0.12	0.18	0.00				0.85	0.00	0.22
Avail Cap(c_a), veh/h	0	1200	1186	613	2664	0				594	0	509
HCM Platoon Ratio	1.00	2.00	2.00	2.00	2.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	0.87	0.87	0.66	0.66	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	4.4	0.0	0.0				47.9	0.0	42.4
Incr Delay (d2), s/veh	0.0	0.8	0.8	0.1	0.1	0.0				6.2	0.0	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.0	0.5	0.5	0.7	0.1	0.0				13.3	0.0	2.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	0.8	0.8	4.5	0.1	0.0				54.2	0.0	42.8
LnGrp LOS	A	A	A	A	A	A				D	A	D
Approach Vol, veh/h		915			542						336	
Approach Delay, s/veh		0.8			0.6						52.1	
Approach LOS		A			A						D	

Timer - Assigned Phs		3	4		6		8			
Phs Duration (G+Y+Rc), s		8.9	85.5		25.5		94.5			
Change Period (Y+Rc), s		4.5	4.5		4.5		4.5			
Max Green Setting (Gmax), s		9.5	58.5		38.5		72.5			
Max Q Clear Time (g_c+I1), s		3.3	2.0		19.3		2.0			
Green Ext Time (p_c), s		0.1	7.5		1.7		3.2			

Intersection Summary	
HCM 6th Ctrl Delay	10.4
HCM 6th LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	55	687	0	0	416	44	83	182	55	0	0	0
Future Volume (veh/h)	55	687	0	0	416	44	83	182	55	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	1870	1870	0	0	1870	1870	1870	1870	1870			
Adj Flow Rate, veh/h	60	747	0	0	452	48	90	198	60			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92			
Percent Heavy Veh, %	2	2	0	0	2	2	2	2	2			
Cap, veh/h	163	885	0	0	563	59	389	856	1072			
Arrive On Green	0.08	0.50	0.00	0.00	0.17	0.17	0.68	0.68	0.68			
Sat Flow, veh/h	1781	3647	0	0	3336	343	575	1266	1585			
Grp Volume(v), veh/h	60	747	0	0	247	253	288	0	60			
Grp Sat Flow(s),veh/h/ln	1781	1777	0	0	1777	1809	1842	0	1585			
Q Serve(g_s), s	3.2	21.9	0.0	0.0	16.0	16.1	7.2	0.0	1.5			
Cycle Q Clear(g_c), s	3.2	21.9	0.0	0.0	16.0	16.1	7.2	0.0	1.5			
Prop In Lane	1.00		0.00	0.00		0.19	0.31		1.00			
Lane Grp Cap(c), veh/h	163	885	0	0	308	314	1245	0	1072			
V/C Ratio(X)	0.37	0.84	0.00	0.00	0.80	0.81	0.23	0.00	0.06			
Avail Cap(c_a), veh/h	281	1732	0	0	614	625	1245	0	1072			
HCM Platoon Ratio	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.92	0.92	0.00	0.00	1.00	1.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	36.9	28.1	0.0	0.0	47.6	47.7	7.5	0.0	6.5			
Incr Delay (d2), s/veh	1.3	2.1	0.0	0.0	4.8	4.9	0.4	0.0	0.1			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(95%),veh/ln	2.5	11.6	0.0	0.0	11.7	12.0	5.1	0.0	0.9			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	38.2	30.2	0.0	0.0	52.4	52.6	7.9	0.0	6.6			
LnGrp LOS	D	C	A	A	D	D	A	A	A			
Approach Vol, veh/h		807			500			348				
Approach Delay, s/veh		30.8			52.5			7.7				
Approach LOS		C			D			A				

Timer - Assigned Phs	2	4	7	8
Phs Duration (G+Y+Rc), s	85.6	34.4	9.1	25.3
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	52.5	58.5	12.5	41.5
Max Q Clear Time (g_c+I1), s	9.2	23.9	5.2	18.1
Green Ext Time (p_c), s	2.1	6.0	0.1	2.7

Intersection Summary	
HCM 6th Ctrl Delay	32.5
HCM 6th LOS	C

Intersection	
Int Delay, s/veh	1.6

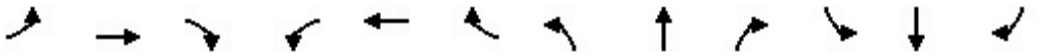
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	5	3515	6	6	2504
Future Vol, veh/h	0	5	3515	6	6	2504
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	200	125	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	65	65	7	7	40	5
Mvmt Flow	0	6	3994	7	7	2845

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	-	1997	0	0	4001	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	8.4	-	-	6.1	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	4.55	-	-	3.5	-
Pot Cap-1 Maneuver	0	21	-	-	~ 5	-
Stage 1	0	-	-	-	-	-
Stage 2	0	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	-	21	-	-	~ 5	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	231	0	3.5
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	21	~ 5	-
HCM Lane V/C Ratio	-	-	0.271	1.364	-
HCM Control Delay (s)	-	-	23$	1476.5	-
HCM Lane LOS	-	-	F	F	-
HCM 95th %tile Q(veh)	-	-	0.8	1.7	-

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	480	295	200	500	200	550	400	2800	320	250	1810	210
Future Volume (veh/h)	480	295	200	500	200	550	400	2800	320	250	1810	210
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	500	307	0	521	208	0	417	2917	0	260	1885	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	562	355		569	360		465	2750		304	2513	
Arrive On Green	0.11	0.10	0.00	0.11	0.10	0.00	0.13	0.54	0.00	0.09	0.49	0.00
Sat Flow, veh/h	5023	3554	1585	5023	3554	1585	3456	5106	1585	3456	5106	1585
Grp Volume(v), veh/h	500	307	0	521	208	0	417	2917	0	260	1885	0
Grp Sat Flow(s),veh/h/ln	1674	1777	1585	1674	1777	1585	1728	1702	1585	1728	1702	1585
Q Serve(g_s), s	14.7	12.8	0.0	15.4	8.4	0.0	17.8	80.8	0.0	11.1	44.6	0.0
Cycle Q Clear(g_c), s	14.7	12.8	0.0	15.4	8.4	0.0	17.8	80.8	0.0	11.1	44.6	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	562	355		569	360		465	2750		304	2513	
V/C Ratio(X)	0.89	0.86		0.92	0.58		0.90	1.06		0.85	0.75	
Avail Cap(c_a), veh/h	569	379		569	379		507	2750		323	2513	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	0.84	0.84	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	65.7	66.5	0.0	65.8	64.3	0.0	63.9	34.6	0.0	67.4	30.7	0.0
Incr Delay (d2), s/veh	15.8	17.5	0.0	17.1	1.7	0.0	17.7	36.0	0.0	18.8	2.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	11.5	10.9	0.0	11.5	6.8	0.0	13.7	53.3	0.0	9.5	25.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	81.5	84.0	0.0	82.9	66.0	0.0	81.6	70.6	0.0	86.2	32.8	0.0
LnGrp LOS	F	F		F	E		F	F		F	C	
Approach Vol, veh/h		807			729			3334			2145	
Approach Delay, s/veh		82.4			78.1			72.0			39.2	
Approach LOS		F			E			E			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	19.2	86.8	23.0	21.0	26.2	79.8	22.8	21.2
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Green Setting (Gmax), s	14.0	79.0	17.0	16.0	22.0	71.0	17.0	16.0
Max Q Clear Time (g_c+I1), s	13.1	82.8	17.4	14.8	19.8	46.6	16.7	10.4
Green Ext Time (p_c), s	0.1	0.0	0.0	0.2	0.4	14.9	0.1	0.5

Intersection Summary	
HCM 6th Ctrl Delay	63.8
HCM 6th LOS	E

Notes

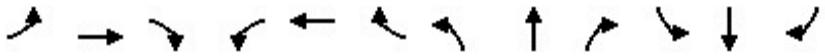
User approved pedestrian interval to be less than phase max green.

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	125	774	35	35	843	110	41	0	41	168	0	244
Future Volume (veh/h)	125	774	35	35	843	110	41	0	41	168	0	244
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1530	492	1870	1870	1870	448	1870	448	1870	1870	1870
Adj Flow Rate, veh/h	136	1005	45	45	1095	120	53	0	53	183	0	265
Peak Hour Factor	0.92	0.77	0.77	0.77	0.77	0.92	0.77	0.92	0.77	0.92	0.92	0.92
Percent Heavy Veh, %	2	25	95	2	2	2	98	2	98	2	2	2
Cap, veh/h	391	1558	224	274	1832	817	97	0	245	411	0	277
Arrive On Green	0.05	0.54	0.54	0.06	1.00	1.00	0.08	0.00	0.15	0.10	0.00	0.17
Sat Flow, veh/h	1781	2906	417	1781	3554	1585	426	0	1585	1781	0	1585
Grp Volume(v), veh/h	136	1005	45	45	1095	120	53	0	53	183	0	265
Grp Sat Flow(s),veh/h/ln	1781	1453	417	1781	1777	1585	426	0	1585	1781	0	1585
Q Serve(g_s), s	4.3	29.4	6.7	1.4	0.0	0.0	9.8	0.0	3.5	10.2	0.0	19.9
Cycle Q Clear(g_c), s	4.3	29.4	6.7	1.4	0.0	0.0	9.8	0.0	3.5	10.2	0.0	19.9
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	391	1558	224	274	1832	817	97	0	245	411	0	277
V/C Ratio(X)	0.35	0.65	0.20	0.16	0.60	0.15	0.54	0.00	0.22	0.44	0.00	0.96
Avail Cap(c_a), veh/h	453	1558	224	298	1832	817	104	0	254	430	0	277
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.77	0.77	0.77	0.94	0.94	0.94	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	12.1	19.7	14.5	15.4	0.0	0.0	44.6	0.0	44.4	37.0	0.0	49.0
Incr Delay (d2), s/veh	0.4	1.6	1.6	0.3	1.4	0.4	5.0	0.0	0.4	0.8	0.0	41.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	2.9	13.9	1.3	1.0	0.6	0.1	1.1	0.0	2.6	8.0	0.0	16.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	12.5	21.4	16.0	15.6	1.4	0.4	49.6	0.0	44.8	37.8	0.0	90.9
LnGrp LOS	B	C	B	B	A	A	D	A	D	D	A	F
Approach Vol, veh/h		1186			1260			106			448	
Approach Delay, s/veh		20.1			1.8			47.2			69.2	
Approach LOS		C			A			D			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	16.7	24.5	8.4	70.3	14.3	27.0	10.8	67.9
Change Period (Y+Rc), s	4.5	6.0	4.5	6.0	4.5	6.0	4.5	6.0
Max Green Setting (Gmax), s	13.5	19.2	5.5	60.8	11.7	21.0	10.5	55.8
Max Q Clear Time (g_c+I1), s	12.2	5.5	3.4	31.4	11.8	21.9	6.3	2.0
Green Ext Time (p_c), s	0.1	0.2	0.0	7.9	0.0	0.0	0.1	9.9

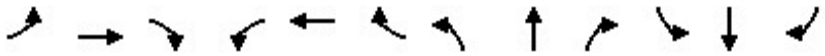
Intersection Summary	
HCM 6th Ctrl Delay	20.7
HCM 6th LOS	C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	856	127	55	922	0	0	0	0	61	182	66
Future Volume (veh/h)	0	856	127	55	922	0	0	0	0	61	182	66
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Work Zone On Approach		No			No						No	
Adj Sat Flow, veh/h/ln	0	1870	1870	1870	1870	0				1870	1870	1870
Adj Flow Rate, veh/h	0	930	138	60	1002	0				66	198	72
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92				0.92	0.92	0.92
Percent Heavy Veh, %	0	2	2	2	2	0				2	2	2
Cap, veh/h	0	2119	314	485	2688	0				78	234	267
Arrive On Green	0.00	1.00	1.00	0.07	1.00	0.00				0.17	0.17	0.17
Sat Flow, veh/h	0	3197	460	1781	3647	0				462	1385	1585
Grp Volume(v), veh/h	0	532	536	60	1002	0				264	0	72
Grp Sat Flow(s),veh/h/ln	0	1777	1787	1781	1777	0				1847	0	1585
Q Serve(g_s), s	0.0	0.0	0.0	1.1	0.0	0.0				16.6	0.0	4.7
Cycle Q Clear(g_c), s	0.0	0.0	0.0	1.1	0.0	0.0				16.6	0.0	4.7
Prop In Lane	0.00		0.26	1.00		0.00				0.25		1.00
Lane Grp Cap(c), veh/h	0	1213	1221	485	2688	0				312	0	267
V/C Ratio(X)	0.00	0.44	0.44	0.12	0.37	0.00				0.85	0.00	0.27
Avail Cap(c_a), veh/h	0	1213	1221	547	2688	0				546	0	469
HCM Platoon Ratio	1.00	2.00	2.00	2.00	2.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	0.79	0.79	0.50	0.50	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	4.2	0.0	0.0				48.4	0.0	43.4
Incr Delay (d2), s/veh	0.0	0.9	0.9	0.1	0.2	0.0				6.3	0.0	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.0	0.6	0.6	0.6	0.1	0.0				12.9	0.0	3.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	0.9	0.9	4.3	0.2	0.0				54.7	0.0	44.0
LnGrp LOS	A	A	A	A	A	A				D	A	D
Approach Vol, veh/h		1068			1062						336	
Approach Delay, s/veh		0.9			0.4						52.4	
Approach LOS		A			A						D	

Timer - Assigned Phs		3	4		6		8					
Phs Duration (G+Y+Rc), s		8.8	86.4		24.7		95.3					
Change Period (Y+Rc), s		4.5	4.5		4.5		4.5					
Max Green Setting (Gmax), s		8.5	62.5		35.5		75.5					
Max Q Clear Time (g_c+I1), s		3.1	2.0		18.6		2.0					
Green Ext Time (p_c), s		0.0	9.4		1.6		8.2					

Intersection Summary	
HCM 6th Ctrl Delay	7.7
HCM 6th LOS	A



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	77	840	0	0	891	55	83	204	61	0	0	0
Future Volume (veh/h)	77	840	0	0	891	55	83	204	61	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	1870	1870	0	0	1870	1870	1870	1870	1870			
Adj Flow Rate, veh/h	84	913	0	0	968	60	90	222	66			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92			
Percent Heavy Veh, %	2	2	0	0	2	2	2	2	2			
Cap, veh/h	176	1476	0	0	1133	70	271	669	808			
Arrive On Green	0.09	0.83	0.00	0.00	0.33	0.33	0.51	0.51	0.51			
Sat Flow, veh/h	1781	3647	0	0	3492	211	532	1312	1585			
Grp Volume(v), veh/h	84	913	0	0	506	522	312	0	66			
Grp Sat Flow(s),veh/h/ln	1781	1777	0	0	1777	1832	1844	0	1585			
Q Serve(g_s), s	3.6	10.7	0.0	0.0	31.9	31.9	12.0	0.0	2.6			
Cycle Q Clear(g_c), s	3.6	10.7	0.0	0.0	31.9	31.9	12.0	0.0	2.6			
Prop In Lane	1.00		0.00	0.00		0.11	0.29		1.00			
Lane Grp Cap(c), veh/h	176	1476	0	0	592	611	940	0	808			
V/C Ratio(X)	0.48	0.62	0.00	0.00	0.85	0.85	0.33	0.00	0.08			
Avail Cap(c_a), veh/h	253	2058	0	0	807	832	940	0	808			
HCM Platoon Ratio	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.88	0.88	0.00	0.00	1.00	1.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	27.4	6.9	0.0	0.0	37.3	37.3	17.4	0.0	15.1			
Incr Delay (d2), s/veh	1.8	0.4	0.0	0.0	6.7	6.5	0.9	0.0	0.2			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(95%),veh/ln	2.8	4.4	0.0	0.0	20.5	21.0	9.1	0.0	1.7			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	29.1	7.2	0.0	0.0	44.0	43.8	18.3	0.0	15.2			
LnGrp LOS	C	A	A	A	D	D	B	A	B			
Approach Vol, veh/h		997			1028			378				
Approach Delay, s/veh		9.1			43.9			17.8				
Approach LOS		A			D			B				

Timer - Assigned Phs	2	4	7	8
Phs Duration (G+Y+Rc), s	65.7	54.3	9.8	44.5
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	41.5	69.5	10.5	54.5
Max Q Clear Time (g_c+I1), s	14.0	12.7	5.6	33.9
Green Ext Time (p_c), s	2.2	8.3	0.1	6.2

Intersection Summary	
HCM 6th Ctrl Delay	25.3
HCM 6th LOS	C