
TRAFFIC IMPACT REPORT

EAST BANK APARTMENTS

AURORA, COLORADO

March 29, 2021

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I. INTRODUCTION

A. Project Overview

Kimco Realty is proposing to redevelop approximately a 3.8 acre portion of an existing commercial/retail development located within the jurisdictional boundaries of the Aurora, Colorado. The subject property currently consists of typical commercial/retail strip center land uses with associated surface parking. The development site is bound on the south by the continuation of the existing commercial/retail development and E. Quincy Ave., on the east by S. Atchison Way, on the north by a residential neighborhood, and on the west by the continuation of the existing commercial/retail development and S. Parker Rd. (SH 83). Upon build-out, the proposed development will consist of a 321 unit residential apartment complex with associated amenities. The proposed development will be known as East Bank Apartments. Figure 1 provides a site location map of the proposed project and surrounding transportation system.

The proposed East Bank Apartments development will be served by four points of access to the surrounding transportation network. These include the existing access driveway intersection with S. Parker Rd. (SH 83) just south of the existing McDonalds (NW Site Access), the existing access driveway intersection with S. Parker Rd. (SH 83) just south of the existing Circle K Convenience Store (SW Site Access), the existing access driveway intersection with E. Quincy Ave. between S. Parker Rd. and S. Atchison Way (South Site Access), and a proposed access driveway intersection with S. Atchison Way at the northeast corner of the site to be constructed with the development (NE Site Access). Figure 2 provides a graphical illustration of the conceptual site plan and access points for the proposed development.

B. Purpose of Study

The purpose of this study is to evaluate the impacts of the vehicular trips projected to be generated by the proposed East Bank Apartments development on the study area intersections and roadway system. The study includes 2021 (existing), 2024 (year of anticipated buildout), and 2040 (long-range) analysis horizons.

C. Study Area

The study area encompasses the existing roadway system in the vicinity of the project site. Specifically, the following roadways and intersections are included in the study:

Study Area Roadways:

- S. Parker Rd. (SH 83)
- E. Quincy Ave.
- S. Atchison Way

Study Area Intersections:

- S. Parker Rd. (SH 83)/S. Atchison Way
- S. Parker Rd. (SH 83)/NW Site Access Driveway
- S. Parker Rd. (SH 83)/SW Site Access Driveway
- S. Parker Rd. (SH 83)/E. Quincy Ave.
- E. Quincy Ave./South Site Access Driveway
- E. Quincy Ave./S. Atchison Way

- S. Atchison Way/NE Site Access Driveway (proposed)

II. EXISTING CONDITIONS

A. Existing Traffic Volumes

Existing peak hour intersection turning movement traffic volume counts were collected for this study at the following intersections on Tuesday, March 2, 2021:

- S. Parker Rd. (SH 83)/S. Atchison Way
- S. Parker Rd. (SH 83)/NW Site Access Driveway
- S. Parker Rd. (SH 83)/SW Site Access Driveway
- S. Parker Rd. (SH 83)/E. Quincy Ave.
- E. Quincy Ave./South Site Access Driveway
- E. Quincy Ave./S. Atchison Way

72-hour directional traffic volume counts were collected for this study at the following locations on March 2, 3, and 4, 2021:

- S. Parker Rd. (SH 83) north of NW Site Access Driveway
- S. Parker Rd. (SH 83) south of NW Site Access Driveway
- NW Site Access Driveway east of S. Parker Rd. (SH 83)
- E. Quincy Ave. west of S. Atchison Way
- E. Quincy Ave. east of S. Atchison Way
- S. Atchison Way north of E. Quincy Ave.

In order to account for the ongoing COVID-19 pandemic and its impact on current traffic volumes, the 2021 existing traffic volume counts collected for this study were adjusted based on the following methodology.

- Determine Average Annual Traffic Volume Growth Rate for Study Area Roadways - The Denver Regional Council of Governments (DRCOG) travel models for 2015 and 2040 daily traffic volumes were utilized to forecast the average annual traffic volume growth rate (AGR) for the study area roadways (S. Parker Rd. (SH 83) and E. Quincy Ave.). Based on this data it was found that the average forecast AGR for the study area roadways is 0.97% on S. Parker Rd. (SH 83) and 0.66% on E. Quincy Ave. Similarly, CDOT's Online Transportation Information System (OTIS) was utilized to provide a comparative AGR forecast. At OTIS station #103609 (S. Parker Rd. (SH 83) south of E. Hampden Ave.) it was found that the forecast AGR is 0.87%. At OTIS station #103608 (S. Parker Rd. (SH 83) south of E. Quincy Ave.) it was found that the forecast AGR is 1.2%. In comparison with other traffic studies done in the area and in accordance with City of Aurora TIS standards, it was ultimately determined that an AGR of 2.0% would be utilized to forecast future background traffic volumes for this study.
- Determine COVID Adjustment Factor – In order to determine the COVID Adjustment Factor for the 2021 (existing) traffic volumes collected, the AGR determined for the study area roadways was applied to available 2018 pre-COVID traffic volume count data provided by the city of Aurora for the of S. Parker Rd. (SH 83)/E. Quincy Ave. intersection to forecast the equivalent 2021 traffic volumes. The forecast 2021 traffic volumes using available pre-COVID count data were then compared to the actual 2021 existing traffic volumes collected for the same intersection. The ratio of these two

volumes establishes the COVID Adjustment Factor for the study. For the purposes of this study the 2018 a.m. and p.m. peak hour entering volumes at the S. Parker Rd. (SH 83)/E. Quincy Ave. intersection provided by the city were adjusted utilizing the 2.0% AGR to project their equivalent 2021 volumes. These projected 2021 peak hour volumes were then compared to the actual 2021 peak hour volumes collected to determine the COVID Adjustment Factor. The resultant COVID Adjustment Factor was determined to be 1.18 for the a.m. peak hour and 1.008 for the p.m. peak hour. The average of these values was determined to be 1.1 and ultimately used as the COVID Adjustment Factor for this study. This factor was applied to the actual 2021 traffic volumes collected for this study to project their equivalent non-COVID 2021 values.

A summary of the 2021 (existing) COVID adjusted peak hour intersection turning movement traffic volume counts and 72-hour directional traffic volume counts collected for this study are illustrated in Figure 3. Detailed traffic volume count data collected for this study is provided in Appendix "A".

B. Existing Roadway System

The existing transportation network in the vicinity of the proposed East Bank Apartments development is graphically illustrated in Figure 1. The following narrative provides a description of the study area roadways and associated intersections as they currently exist in 2021:

Study Area Roadways:

- **S. Parker Rd. (SH 83)** – S. Parker Rd. (SH 83) is classified as a Non-Rural Regional Arterial (NR-A) roadway under the jurisdiction of the Colorado Department of Transportation. Adjacent to the proposed development site, the roadway section consists of three travel lanes in each direction with a raised center median. There is curb and gutter along both sides of the roadway, and an attached sidewalk along the east side of the roadway. The posted speed limit is 45 mph within the study area.
- **E. Quincy Ave.** – East of S. Parker Rd. (SH 83), E. Quincy Ave. is classified as a major arterial roadway under the jurisdiction of the City of Aurora. Adjacent to the project site, the roadway section consists of three travel lanes in each direction with a raised center median. There is curb and gutter along both sides of the roadway. There is attached sidewalk along the north side of the roadway and attached/detached sidewalk along the south side of the roadway. The posted speed limit is 40 mph. West of S. Parker Rd. (SH 83), the roadway section consists of one travel lane in each direction. There is curb and gutter and detached sidewalk along the south side of the roadway between S. Parker Rd. (SH 83) and the existing carwash exit. There is curb and gutter and attached sidewalk along the north side of the road between S. Parker Rd. (SH 83) and the access to Parker Rd. Trail. The speed limit is not posted and assumed to be 25mph.
- **S. Atchison Way** – S. Atchison Way is classified as a collector roadway under the jurisdiction of the City of Aurora. The roadway section consists of one travel lane in each direction with on-street parking along both sides. There is curb and gutter and attached/detached sidewalk along both sides of the roadway. The posted speed limit is 30 mph.

Study Area Intersections:

- **S. Parker Rd. (SH 83)/S. Atchison Way** – The S. Parker Rd. (SH 83)/S. Atchison Way intersection is a three-quarter movement “T” intersection operating under stop sign control on the westbound approach. The east leg of the intersection has one right turn lane on the westbound approach, and one eastbound departure lane. The north leg of the intersection has one left turn lane with approximately 650 feet of storage and three through lanes on the southbound approach, and three northbound departure lanes. The south leg of the intersection has two through lanes and one shared through/right turn lane on the northbound approach, and three southbound departure lanes.
- **S. Parker Rd. (SH 83)/NW Site Access Driveway** – The S. Parker Rd. (SH 83)/NW Site Access Driveway intersection is a full movement “T” intersection operating under stop sign control on the westbound approach. The east leg of the intersection has one left turn lane and one right turn lane on the westbound approach, and one eastbound departure lane. The north leg of the intersection has one left turn lane with approximately 650 feet of storage and three through lanes on the southbound approach, and three northbound departure lanes. The south leg of the intersection has two through lanes and one shared through/right turn lane on the northbound approach, and three southbound departure lanes.
- **S. Parker Rd. (SH 83)/SW Site Access Driveway** – The S. Parker Rd. (SH 83)/SW Site Access Driveway intersection is a “T” intersection operating under stop sign control on the westbound approach and is restricted to right-in/right-out only access. The east leg of the intersection has one right turn lane on the westbound approach, and one eastbound departure lane. The north leg of the intersection has three through lanes on the southbound approach, and three northbound departure lanes. The south leg of the intersection has two through lanes and one shared through/right turn lane on the northbound approach, and three southbound departure lanes.
- **S. Parker Rd. (SH 83)/E. Quincy Ave.** – The S. Parker Rd. (SH 83)/E. Quincy Ave. intersection is a four-legged intersection operating under actuated/coordinated traffic signal control with protected only left turn phasing on the northbound and southbound approaches, and permissive only phasing on the westbound approach. The east leg of the intersection has one left turn lane with approximately 250 feet of storage, one shared left turn/through lane, and two right turn lanes on the westbound approach, and three eastbound departure lanes. The west leg of the intersection has one shared left/through/right turn lane on the eastbound approach, and one westbound departure lane. The north leg of the intersection has three left turn lanes with approximately a total of 2200 feet of storage, two through lanes and one shared through/right turn lane on the southbound approach, and three northbound departure lanes. The south leg of the intersection has one left turn lane with approximately 250 feet of storage, two through lanes, and one shared through/right turn lane on the northbound approach, and three southbound departure lanes.
- **E. Quincy Ave./South Site Access Driveway** – The E. Quincy Ave./South Site Access Driveway intersection is a four-legged intersection operating under actuated/coordinated traffic signal control with protected/permissive left turn phasing on the eastbound and westbound approaches, and permissive only phasing on the northbound and southbound approaches. The east leg of the intersection has one left turn lane with approximately 100 feet of storage, two through lanes, and one shared through/right turn lane on the westbound approach, and three eastbound departure lanes. The west leg of

the intersection has one left turn lane with approximately 200 feet of storage, two through lanes, and one shared through/right turn lane on the eastbound approach, and three westbound departure lanes. The north leg of the intersection has one shared left turn/through lane and one right turn lane on the southbound approach, and one northbound departure lane. The south leg of the intersection has one shared left turn/through lane and one right turn lane on the northbound approach, and one southbound departure lane.

- **E. Quincy Ave./S. Atchison Way** – The E. Quincy Ave./S. Atchison Way intersection is a four-legged intersection operating under stop sign control on the northbound and southbound approaches. The east leg of the intersection has one left turn lane with approximately 115 feet of storage, two through lanes, and one shared through/right turn lane on the westbound approach, and three eastbound departure lanes. The west leg of the intersection has one left turn lane with approximately 125 feet of storage, two through lanes, and one shared through/right turn lane on the eastbound approach, and three westbound departure lanes. The north leg of the intersection has one left turn lane with approximately 125 feet of storage, one through lane, and one right turn lane with approximately 125 feet of storage on the southbound approach, and one northbound departure lane. The south leg of the intersection has one left turn lane and one shared through/right turn lane on the northbound approach, and one southbound departure lane.

III. BACKGROUND TRAFFIC

A. Background Traffic Volumes

Background traffic volume forecasts for the 2024 (buildout) and 2040 (long-range) analysis horizons were developed for this study utilizing the following strategy:

- Study Area Roadway Network Modifications/Improvements:
 - Based on the *Parker Road/Quincy Avenue/Smoky Hill Road Intersection Improvement Study, David Evans And Associates, (September 2016)*, it was assumed that by the 2024 (buildout) analysis horizon, the east leg of the S. Parker Rd. (SH 83)/E. Quincy Ave. intersection would be modified to have one shared left turn/through lane and three right turn lanes on the westbound approach.
- It was assumed that the peak hour distribution of background intersection approach traffic (left turn, through, right turn) will remain constant through the 2024 (buildout) and 2040 (long-range) analysis horizons.
- The established 2.0% AGR, described above, was applied to the existing 2021 COVID adjusted traffic volumes at the study area roadways and intersections to forecast the 2024 (build-out) and 2040 (long-range) background traffic volumes. A 2.0% growth rate equates to a 3-year growth factor (2021 to 2024) of 1.06 and a 19-year growth factor (2021 to 2040) of 1.45.

Figures 4 and 5 graphically illustrate the projected background traffic volumes for the 2024 (buildout) and 2040 (long-range) analysis horizons, respectively.

B. Background Traffic Operational Analysis

In order to establish a base condition in which to evaluate the impact of the traffic generated by the proposed East Bank Apartments development on the study area intersections, peak hour capacity analyses were performed for the 2021 (existing), 2024 (buildout) and 2040 (long-range) analysis horizon background traffic conditions. These analyses are based on the methodologies contained in the *Highway Capacity Manual 6th Edition* (HCM 6) employing *Synchro 10* software and result in a qualitative measure of the operational characteristics of the intersection described by a letter designation ranging from “A” to “F” known as “Level of Service” (LOS). LOS “A” represents ideal free flow operating conditions, whereas LOS “F” represents excessive congestion and delay. Un-signalized intersection capacity analysis reports a LOS designation for each impeded intersection movement. Signalized intersection capacity analysis reports the overall LOS designation for the intersection, as well as for each lane group and approach. LOS “D” is considered the minimum acceptable standard of operation.

The following study area intersections were analyzed for the 2021 (existing) traffic conditions, as well as for the 2024 (buildout) and 2040 (long-range) analysis horizons background traffic scenarios:

- S. Parker Rd. (SH 83)/S. Atchison Way
- S. Parker Rd. (SH 83)/NW Site Access Driveway
- S. Parker Rd. (SH 83)/SW Site Access Driveway
- S. Parker Rd. (SH 83)/E. Quincy Ave.
- E. Quincy Ave./South Site Access Driveway
- E. Quincy Ave./S. Atchison Way

The results of these background traffic operational analyses are summarized graphically for the 2021 (existing) traffic conditions, as well as for the 2024 (buildout) and 2040 (long-range) analysis horizons background traffic scenarios in Figures 6, 7, and 8, respectively. A summary of the results of the intersection capacity analyses is provided in Table 2 and detailed *Synchro 10* software intersection capacity analysis reports in Appendix “B”.

IV. PROJECT DEVELOPMENT

A. Trip Generation

Project generated vehicular trip projections for the proposed East Bank Apartments development were forecast using the publication *Trip Generation, 10th Edition*, by the Institute of Transportation Engineers (ITE). Estimates of total daily traffic volumes, as well as a.m. and p.m. peak hour traffic volumes were computed. Trip generation reductions due to transportation demand management, internal trip capture, or transit use were not considered.

For the purposes of this study it was assumed that the proposed East Bank Apartments development will be fully built out by 2024 and consist of a 321 unit apartment complex with associated amenities. Based on these parameters, at buildout, the proposed East Bank Apartments development is projected to generate 1,748 daily vehicle trips of which 107 are projected to be generated during the a.m. peak hour and 136 are projected to be generated during the p.m. peak hour. Trip Generation projections are provided in Table 1.

**TABLE 1
SUMMARY OF SITE GENERATED TRIPS**

Trip Generation													
Land Use	Intensity	ITE Code	Daily (vpd)	AM Peak Hour (vph)					PM Peak Hour (vph)				
				Total	% In	% Out	In	Out	Total	% In	% Out	In	Out
Multifamily Housing (Mid-Rise)	321 DU	221	1748	107	26%	74%	28	79	136	61%	39%	83	53
Total			1,748	107			28	79	136			83	53

B. Trip Distribution

The distribution of the forecast vehicle trips generated by the proposed development were established based on current and projected future traffic patterns on the surrounding transportation system, efficiency of access to/from the principal transportation corridors serving the proposed development, and the potential trip origins/destinations for the proposed land uses within the proposed development. Figure 9 illustrates the projected trip distribution patterns for the development.

C. Trip Assignment

The vehicular traffic volumes estimated to be generated by the proposed Trip Generation projections shown in Table 1 were assigned to the study area roadways and intersections utilizing the trip distribution methodology described above. Figure 10 illustrates the site generated trip assignment for the development.

V. TOTAL TRAFFIC

Total traffic forecasts for the 2024 (buildout) and 2040 (long-range) analysis horizons were computed by combining the associated 2024 (buildout) and 2040 (long-range) background traffic volumes with the projected site generated traffic volumes. Figures 11 and 12 graphically illustrate the total traffic projections for the study area intersections for the 2024 (buildout) and 2040 (long-range) analysis horizons, respectively.

VI. PROJECT ANALYSIS

A. Operational Analysis

In order to evaluate the impact of the proposed East Bank Apartments development on the study area roadway system, peak hour intersection capacity analyses for total traffic conditions (background traffic plus proposed development traffic) were performed for the 2024 (buildout) and 2040 (long-range) analysis horizons at each of the study area intersections listed below.

- S. Parker Rd. (SH 83)/S. Atchison Way
- S. Parker Rd. (SH 83)/NW Site Access Driveway
- S. Parker Rd. (SH 83)/SW Site Access Driveway
- S. Parker Rd. (SH 83)/E. Quincy Ave.
- E. Quincy Ave./South Site Access Driveway
- E. Quincy Ave./S. Atchison Way
- S. Atchison Way/NE Site Access Driveway (proposed)

A narrative of the summary of the analyses and comparison to background traffic conditions for the 2024 (buildout) and 2040 (long-range) analysis horizons is provided below. The results of the total traffic operational analyses are summarized graphically for the 2024 (buildout) and 2040 (long-range) analysis horizons in Figures 13 and 14, respectively. A summary of the results of the intersection capacity analysis is provided in Table 2 and detailed *Synchro 10* software intersection capacity analysis reports in Appendix “B”.

Study-Area Intersections – Summary of Results:

- **S. Parker Rd. (SH 83)/S. Atchison Way** – The S. Parker Rd. (SH 83)/S. Atchison Way intersection is not anticipated to undergo any significant geometric or operational modifications through the 2040 (long-range) analysis horizon. Therefore, the intersection is anticipated to remain as a three-quarter movement “T” intersection under stop sign control on the westbound approach. Based on these parameters, it is projected that all impeded lane groups (WB R, SB L) will operate at failing levels of service (LOS “F”) under existing conditions and will continue to do so through the 2040 (long-range) analysis horizon. This is due to the high northbound and southbound through volumes on S. Parker Rd. (SH 83) causing substantial delay for the southbound left turn and westbound right turn movements. Under existing and background conditions S. Parker Rd. (SH 83) is well over capacity, and the addition of the projected site generated traffic has an insignificant impact on traffic operations. No operational modifications are recommended for this intersection as a result of the construction of the proposed East Bank Apartments development.

S. Parker Rd. (SH 83)/NW Site Access Driveway – The S. Parker Rd. (SH 83)/NW Site Access Driveway intersection is not anticipated to undergo any significant geometric or operational modifications through the 2040 (long-range) analysis horizon. Therefore, the intersection is anticipated to remain a “T” intersection under stop sign control on the westbound approach. Based on these parameters, it is projected that all impeded lane groups (WB L, WB R, SB L) will operate at failing levels of service (LOS “F”) under existing conditions and will continue to do so through the 2040 (long-range) analysis horizon. This is due to the high northbound and southbound through volumes on S. Parker Rd. (SH 83) causing substantial delay for the southbound left turn and westbound left and right turn movements. Under existing and background conditions S. Parker Rd. (SH 83) is well over capacity, and the addition of the projected site generated traffic has an insignificant impact on traffic operations.

To further analyze this intersection, a traffic signal warrant analysis was conducted. Specifically, Warrant 1 – Eight Hour Vehicular Volume, Warrant 2 – Four Hour Vehicular Volume, and Warrant 3 – Peak Hour were evaluated based on existing and projected background and total traffic volumes (see Section VI. C. of this study for a detailed analysis). Based on this evaluation, the intersection does meet Warrant 1 – Eight Hour Vehicular Volume, and Warrant 2 – Four Hour Vehicular Volume by the 2024 total traffic scenario. Detailed traffic signal warrant analysis worksheets are provided in Appendix “C”.

Since this intersection is projected to satisfy traffic signal warrants 1 and 2 by the 2024 total traffic scenario, it was analyzed as an actuated/coordinated signalized intersection with protected/permissive left turn phasing on southbound approach. Based on these parameters, it is projected that the intersection would still have multiple failing lane

groups due to S. Parker Rd. (SH 83) being over capacity. The addition of the projected site generated traffic would have an insignificant impact on traffic operations.

- **S. Parker Rd. (SH 83)/SW Site Access Driveway** – The S. Parker Rd. (SH 83)/SW Site Access Driveway intersection is not anticipated to undergo any significant geometric or operational modifications through the 2040 (long-range) analysis horizon. Therefore, the intersection is anticipated to remain as a “T” intersection under stop sign control on the westbound approach and restricted to right-in/out only access. Based on these parameters, it is projected that the westbound right turn lane will operate at a failing level of service (LOS “F”) under existing conditions and will continue to do so through the 2040 (long-range) analysis horizon. This is due to the high northbound and southbound through volumes on S. Parker Rd. (SH 83) causing substantial delay for the westbound right turn movement. Under existing and background conditions S. Parker Rd. (SH 83) is well over capacity, and the addition of the projected site generated traffic has an insignificant impact on traffic operations. No operational modifications are recommended for this intersection as a result of the construction of the proposed East Bank Apartments development.
- **S. Parker Rd. (SH 83)/E. Quincy Ave.** – The S. Parker Rd. (SH 83)/E. Quincy Ave. intersection currently operates at poor to failing levels of service (LOS “E” or worse) in its existing configuration. This is due to the high through volumes on S. Parker Rd. (SH 83) and the high westbound right turn volume during the a.m. peak hour. Prior to the 2024 (build-out) background analysis horizon, it was assumed that the east leg of this intersection will be modified based on the *Parker Road/Quincy Avenue/Smoky Hill Road Intersection Improvement Study, David Evans and Associates, (September 2016)*. The east leg will be modified to have one shared left turn/through lane, and three right turn lanes on the westbound approach, and three east bound departure lanes. The three westbound right turn lanes will continue to operate with protected plus overlap signalized control. Based on these parameters, it is projected that the westbound right turn lanes will operate with reduced delay. However, the intersection, overall, along with multiple lane groups are still projected to have failing levels of service. These failing levels of service are projected to continue through the 2040 (long-range) analysis horizon. Under existing and background conditions S. Parker Rd. (SH 83) is well over capacity, and the addition of the projected site generated traffic has an insignificant impact on traffic operations. No additional operational modifications are recommended for this intersection as a result of the construction of the proposed East Bank Apartments development.
- **E. Quincy Ave./South Site Access Driveway** – The E. Quincy Ave./South Site Access Driveway intersection is not anticipated to undergo any significant geometric or operational modifications through the 2040 (long-range) analysis horizon. Therefore, the intersection is anticipated to remain under actuated/coordinated signalized control with protected/permissive left turn phasing on the eastbound and westbound approaches, and permissive only phasing on the northbound and southbound approaches. Based on these parameters, it is projected that the intersection, overall, along with all lane groups will operate at acceptable levels of service (LOS “D” or better) through the 2024 (build-out) analysis horizon, with the exception of the northbound and southbound shared left turn/through lanes which are projected to fail during the a.m. and p.m. peak hours under existing conditions. This is due to the high through volumes on E. Quincy Ave causing substantial delay on the minor street approaches. By the 2040 (long-range) analysis horizon, it is projected that the intersection, overall, will fail in the p.m. peak hour due to

the increase in background traffic volumes. The addition of the projected site generated traffic to this intersection will have an insignificant impact on traffic operations. No operational modifications are recommended for this intersection as a result of the construction of the proposed East Bank Apartments development.

- **E. Quincy Ave./S. Atchison Way** – The E. Quincy Ave./S. Atchison Way intersection is not anticipated to undergo any significant geometric or operational modifications through the 2040 (long-range) analysis horizon. Therefore, the intersection is anticipated to remain under stop sign control on the northbound and southbound approaches. Based on these parameters, it is projected that the westbound left turn lane during the a.m. peak hour and northbound and southbound left turn lanes during the a.m. and p.m. peak hours will have poor to failing levels of service (LOS “E” or worse) under existing conditions and will continue to do so through the 2040 (long-range) analysis horizon. By 2024, the eastbound left turn lane will be failing in the a.m. peak hour, and by 2040 will be failing in the a.m. and p.m. peak hour. By 2040, the northbound shared through/right turn lane will be failing in the p.m. peak hour, and the southbound right turn lane will be failing in the a.m. peak hour. These failing movements are due to high through volumes on E. Quincy Ave causing substantial delay on the minor street approaches. The addition of the projected site generated traffic to this intersection will have an insignificant impact on traffic operations. No operational modifications are recommended for this intersection as a result of the construction of the proposed East Bank Apartments development.

To further analyze this intersection, a traffic signal warrant analysis was conducted. Specifically, Warrant 1 – Eight Hour Vehicular Volume, Warrant 2 – Four Hour Vehicular Volume, and Warrant 3 – Peak Hour were evaluated based on existing and projected background and total traffic volumes (see Section VI. C. of this study for a detailed analysis). Based on this evaluation, the intersection is not projected to meet Warrant 1 – Eight Hour Vehicular Volume, Warrant 2 – Four Hour Vehicular Volume, or Warrant 3 – Peak Hour by the 2040 total traffic scenario. Detailed traffic signal warrant analysis worksheets are provided in Appendix “C”.

- **S. Atchison Way/NE Site Access Driveway** – The S. Atchison Way/NE Site Access Driveway intersection will be constructed concurrently with the proposed development as a “T” intersection with stop sign control on the eastbound approach. The west leg of the intersection will have one shared left/right turn lane on the eastbound approach, and one westbound departure lane. The north leg of the intersection will have one shared through/right turn lane on the southbound approach, and one northbound departure lane. The south leg of the intersection will have one shared left turn/through lane on the northbound approach, and one southbound departure lane. Based on these parameters, the intersection, overall, as well as all lane groups will operate at acceptable levels of service (LOS “D” or better) through the 2040 (long-range) analysis horizon.

**TABLE 2
SUMMARY OF RESULTS - INTERSECTION CAPACITY ANALYSIS**

INTERSECTION	CONTROL	2021		2024		2024		2040		2040	
		EXISTING TRAFFIC		BACKGROUND TRAFFIC		TOTAL TRAFFIC		BACKGROUND TRAFFIC		TOTAL TRAFFIC	
		AM PEAK LOS	PM PEAK LOS	AM PEAK LOS	PM PEAK LOS	AM PEAK LOS	PM PEAK LOS	AM PEAK LOS	PM PEAK LOS	AM PEAK LOS	PM PEAK LOS
1. S. Parker Rd./S. Atchison Way a. WB R b. NB TR c. SB L d. SB T e. INTERSECTION	TWSC										
	Stop	F	F	F	F	F	F	F	F	F	F
		A	A	A	A	A	A	A	A	A	A
		F	F	F	F	F	F	F	F	F	F
		A	A	A	A	A	A	A	A	A	A
		A	B	B	B	C	C	F	F	F	F
2. S. Parker Rd./NW Site Access a. WB L b. WB R c. NB TR d. SB L e. SB T f. INTERSECTION	TWSC										
	Stop	F	F	F	F	F	F	F	F	F	F
		F	F	F	F	F	F	F	F	F	F
		A	A	A	A	A	A	A	A	A	A
		F	F	F	F	F	F	F	F	F	F
		A	A	A	A	A	A	A	A	A	A
		D	C	E	D	F	F	F	F	F	F
2.A. S. Parker Rd./NW Site Access a. WB L b. WB R c. NB TR d. SB L (Prot+Perm) e. SB T f. INTERSECTION	Signal										
		-	-	-	-	D	D	D	D	D	D
		-	-	-	-	E	E	E	E	E	E
		-	-	-	-	F	C	F	F	F	F
		-	-	-	-	D	E	D	F	D	F
		-	-	-	-	C	F	C	F	C	F
		-	-	-	-	E	D	F	F	F	F
3. S. Parker Rd./SW Site Access a. WB R b. NB TR c. SB T d. INTERSECTION	TWSC										
	Stop	F	F	F	F	F	F	F	F	F	F
		A	A	A	A	A	A	A	A	A	A
		A	A	A	A	A	A	A	A	A	A
		C	A	D	A	D	A	F	C	F	C
4. S. Parker Rd./E. Quincy Ave. a. EB LTR b. WB L (Perm) c. WB LT (Perm) d. WB R (Prot+ov) (Dual) e. WB R (Prot+ov) (Triple) f. NB L (Prot) g. NB TR h. SB L (Prot) (Triple) i. SB TR j. INTERSECTION	Signal										
		D	D	D	F	D	F	D	F	D	F
		D	D	-	-	-	-	-	-	-	-
		D	D	F	F	F	F	F	F	F	F
		F	D	-	-	-	-	-	-	-	-
		-	-	F	D	F	D	F	D	F	D
		E	E	E	E	E	E	E	F	E	F
		F	F	F	F	F	F	F	F	F	F
		D	F	D	F	D	F	F	F	F	F
		B	C	B	C	B	C	C	C	F	D
		E	F	F	F	F	F	F	F	F	F
		E	F	F	F	F	F	F	F	F	F
5. South Site Access/E. Quincy Ave. a. EB L (Prot+Perm) b. EB TR c. WB L (Prot+Perm) d. WB TR e. NB LT (Perm) f. NB R g. SB LT (Perm) h. SB R i. INTERSECTION	Signal										
		C	B	C	B	C	B	C	B	C	B
		C	C	C	C	C	C	C	C	C	C
		B	C	B	C	B	C	B	D	B	D
		C	C	C	C	C	C	C	C	C	C
		F	F	F	F	F	F	F	F	F	F
		C	C	C	C	C	C	D	D	D	D
		F	F	F	F	F	F	F	F	F	F
		C	C	C	C	C	C	C	D	D	D
		C	D	C	D	C	D	D	E	D	D
		C	B	C	B	C	B	C	B	C	B
6. S. Atchison Way/E. Quincy Ave. a. EB L b. EB TR c. WB L d. WB TR e. NB L f. NB TR g. SB L h. SB T i. SB R j. INTERSECTION	TWSC										
	Stop	D	C	E	D	E	D	F	F	F	F
		A	A	A	A	A	A	A	A	A	A
		B	E	C	F	C	F	C	F	C	F
		A	A	A	A	A	A	A	A	A	A
		F	F	F	F	F	F	F	F	F	F
		B	D	B	D	B	D	B	F	B	F
		F	F	F	F	F	F	F	F	F	F
		A	A	A	A	A	A	A	A	A	A
		C	C	D	C	D	C	F	D	F	D
		A	A	B	A	B	B	B	F	B	F
		A	A	B	B	B	F	B	F	F	
7. S. Atchison Way/NE Site Access a. EB LR b. NB LT c. SB TR d. INTERSECTION	TWSC										
	Stop	-	-	-	-	A	A	-	-	A	A
		-	-	-	-	A	A	-	-	A	A
		-	-	-	-	A	A	-	-	A	A
		-	-	-	-	A	A	-	-	A	A

B. Queue Lengths and Storage Required

Queue lengths and associated storage requirements for auxiliary lanes (turn bays) at the study area intersections were calculated for the 2021 (existing) and 2024 (build-out) and 2040 (long-range) analysis horizon background and total traffic scenarios using the results of the *Synchro 10*, 95th percentile reported queues. Reported queue lengths are based on a 25-foot vehicle length. All queue lengths are reported in total (cumulative) feet. Results of the queuing analyses are provided in Table 3. A narrative of the summary of the queuing analyses and comparison to existing turn bay storage is provided below.

- **S. Parker Rd. (SH 83)/S. Atchison Way** – Based on the results of the queuing analysis it is projected, that under existing conditions, the westbound right turn lane queue will spill back through the S. Atchison Way/S. Atchison Way intersection during the a.m. peak hour. By the 2040 (long-range) analysis horizon, it is projected that the westbound right turn lane queue will spill back through the S. Atchison Way/S. Atchison Way intersection during the a.m. and p.m. peak hours. The southbound left turn bay is projected to have sufficient capacity through the 2040 (long-range) analysis horizon. The addition of the projected site generated traffic is not projected to significantly increase any of the projected background traffic queues.
- **S. Parker Rd. (SH 83)/NW Site Access Driveway** – Based on the results of the queuing analysis it is projected that under existing conditions the westbound right turn lane queue will spill back through the McDonalds/Einstein Bros. parking lot access intersection during the a.m. peak hour. By the 2024 (buildout) total traffic analysis horizon, the westbound right turn lane queue will spill back through the McDonalds/Einstein Bros. intersection during both the a.m. and p.m. peak hours with the addition of the projected site generated traffic. The installation of a traffic signal at this intersection would mitigate the projected westbound approach queues. However, by the 2040 (long-range) analysis horizon a traffic signal would produce queues on S. Parker Rd. (SH 83) that would spill back into the upstream and downstream intersections. The southbound left turn bay is projected to have sufficient capacity through the 2040 (long-range) analysis horizon, with or without the installation of a traffic signal.
- **S. Parker Rd. (SH 83)/SW Site Access Driveway** – Based on the results of the queuing analysis it is projected that under existing conditions the westbound right turn lane queue will spill back through the Circle K Convenience Store access driveway intersection during the a.m. peak hour. By the 2040 (long-range) analysis horizon, the westbound right turn lane queue is projected to spill back through the Circle K Convenience Store access driveway intersection during the a.m. and p.m. peak hours. The addition of the projected site generated traffic is not projected to significantly increase any of the projected background traffic queues.
- **S. Parker Rd. (SH 83)/E. Quincy Ave.** – Based on the results of the queuing analysis it is projected that under existing conditions the eastbound approach queue will spill back through the Dutch Car Wash exit driveway/E. Quincy Ave. intersection during the p.m. peak hour and the westbound right turn lane queue will spill back through the E. Quincy Ave./South Site Access Driveway intersection during the a.m. peak hour. By the 2024 (buildout) analysis horizon, with the assumed east leg modifications, the westbound right turn lanes will no longer exceed their capacity. However, the westbound shared left turn/through lane will exceed its capacity, and will continue to do so through the 2040 (long-range) analysis horizon. By the 2040 (long-range) analysis horizon, the westbound right turn lane queue will again spill back through the E. Quincy Ave./South Site Access

Driveway intersection during the a.m. peak hour. In addition, the northbound through lanes queue is projected to spill back through the S. Parker Rd. (SH 83)/E. Rice Pl. intersection during the a.m. and p.m. peak hours. The addition of the projected site generated traffic is not projected to significantly increase any of the projected background traffic queues.

- E. Quincy Ave./South Site Access Driveway** – Based on the results of the queuing analysis it is projected that under existing conditions the northbound shared left turn/through lane and right turn lane, and southbound shared left turn/through lane queues will spill back and block parking lot access drives, and are projected to do so through the 2040 (long-range) analysis horizon. By the 2040 (long-range) analysis horizon, it is projected that the westbound left turn lane will exceed its capacity during the p.m. peak hour and the queue will spill back into the westbound through lane. Increasing the westbound left turn bay length an additional 50 feet to provide sufficient capacity would require shortening the eastbound left turn bay at the E. Quincy Ave. /S. Atchison Way intersection. Based on the queuing analysis this would be acceptable as the eastbound left turn bay at E. Quincy Ave./S. Atchison Way is projected to have over 75 feet of excess capacity in the 2040 (long-range) analysis horizon. The addition of the projected site generated traffic is not projected to significantly increase any of the projected background traffic queues.
- E. Quincy Ave./S. Atchison Way** - Based on the results of the queuing analysis, it is projected that all turn bays will have adequate capacity to serve the intersection through the 2024 (buildout) analysis horizon total traffic scenario. By the 2040 (long-range) background analysis horizon, it is projected that the southbound left turn bay will exceed its capacity during the p.m. peak hour and spill back into the southbound through lane. The addition of the projected site generated traffic is not projected to significantly increase any of the projected background traffic queues.
- S. Atchison Way/NE Site Access Driveway** - Based on the results of the queuing analysis, it is projected that there will not be any queuing impacts associated with this intersection through the 2040 (long-range) analysis horizon total traffic scenario.

**TABLE 3
SUMMARY OF RESULTS – QUEUING ANALYSIS**

INTERSECTION (# OF LANES IN LANE GROUP)	EXISTING/PROPOSED STORAGE (CUMULATIVE) (FT)	2021 EXISTING TRAFFIC		2024 BACKGROUND TRAFFIC		2024 TOTAL TRAFFIC		2040 BACKGROUND TRAFFIC		2040 TOTAL TRAFFIC	
		QUEUE LENGTH (FT) 95TH%		QUEUE LENGTH (FT) 95TH%		QUEUE LENGTH (FT) 95TH%		QUEUE LENGTH (FT) 95TH%		QUEUE LENGTH (FT) 95TH%	
		AM PEAK	PM PEAK								
1. S. Parker Rd. (SH 83)/S. Atchison Way											
a. WB R (1)	175	193	90	223	113	250	128	360	245	388	263
b. NB TR (3)	2100	0	0	0	0	0	0	0	0	0	0
c. SB L (1)	650	55	200	58	223	73	250	85	328	98	358
d. SB T (3)	3600	0	0	0	0	0	0	0	0	0	0
2. S. Parker Rd. (SH 83)/NW Site Access Driveway (TWSC)											
a. WB L (1)	100	0	0	0	0	0	0	0	0	0	0
b. WB R (1)	200	350	163	393	195	473	245	603	380	683	435
c. NB TR (3)	1700	0	0	0	0	0	0	0	0	0	0
d. SB L (1)	650	210	280	230	310	275	435	313	450	358	578
e. SB T (3)	2250	0	0	0	0	0	0	0	0	0	0

**TABLE 3 (CONTINUED)
SUMMARY OF RESULTS – QUEUING ANALYSIS**

INTERSECTION (# OF LANES IN LANE GROUP)	EXISTING/PROPOSED STORAGE (CUMULATIVE) (FT)	2021 EXISTING TRAFFIC		2024 BACKGROUND TRAFFIC		2024 TOTAL TRAFFIC		2040 BACKGROUND TRAFFIC		2040 TOTAL TRAFFIC	
		QUEUE LENGTH (FT) 95TH%		QUEUE LENGTH (FT) 95TH%		QUEUE LENGTH (FT) 95TH%		QUEUE LENGTH (FT) 95TH%		QUEUE LENGTH (FT) 95TH%	
		AM PEAK	PM PEAK								
2.A. S. Parker Rd. (SH 83)/NW Site Access Driveway (Signal)											
a. WB L (1)	100	-	-	-	-	16	24	19	22	19	27
b. WB R (1)	200	-	-	-	-	139	72	162	98	166	120
c. NB TR (3)	1700	-	-	-	-	1655	1231	2575	1983	2617	1988
d. SB L (1)	650	-	-	-	-	66	118	83	142	82	253
e. SB T (3)	2250	-	-	-	-	441	1569	1301	2565	1252	2591
3. S. Parker Rd. (SH 83)/SW Site Access Driveway											
a. WB R (1)	200	325	118	363	145	403	170	568	300	613	330
b. NB TR (3)	900	0	0	0	0	0	0	0	0	0	0
c. SB T (3)	1950	0	0	0	0	0	0	0	0	0	0
4. S. Parker Rd. (SH 83)/E. Quincy Ave.											
a. EB LTR (1)	100	21	185	22	356	23	356	27	409	27	421
b. WB L (1)	250	130	250	-	-	-	-	-	-	-	-
c. WB LT (1)	340/250	131	249	372	541	428	566	469	514	508	541
d. WB R (2)	680	1044	526	-	-	-	-	-	-	-	-
e. WB R (3)	1020	-	-	691	411	707	412	1191	570	1189	594
f. NB L (1)	250	33	71	35	75	35	75	44	128	44	128
g. NB TR (3)	1425	966	1146	1116	1175	1102	1191	1632	1975	1638	1978
h. SB L (3)	2175	264	520	278	590	278	590	565	929	565	941
i. SB TR (3)	2925	376	978	442	1034	429	1035	923	1878	926	1879
5. South Site Access Driveway/E. Quincy Ave.											
a. EB L (1)	200	10	13	10	12	11	14	11	13	12	14
b. EB TR (3)	1020	143	278	150	261	149	261	164	283	163	284
c. WB L (1)	100	29	87	31	98	31	98	40	138	40	138
d. WB TR (3)	780	367	219	401	237	403	239	720	375	722	374
e. NB LT (1)	50	67	107	70	114	70	114	89	173	89	164
f. NB R (1)	50	35	98	36	111	36	111	42	169	42	174
g. SB LT (1)	50	95	138	99	146	107	151	130	229	140	231
h. SB R (1)	50	16	30	19	33	36	38	31	40	40	37
6. S. Atchison Way/E. Quincy Ave.											
a. EB L (1)	125	5	10	5	13	8	13	23	38	23	38
b. EB TR (3)	825	0	0	0	0	0	0	0	0	0	0
c. WB L (1)	115	3	15	3	20	3	20	8	70	8	73
d. WB TR (3)	1350	0	0	0	0	0	0	0	0	0	0
e. NB L (1)	135	25	48	28	53	28	53	38	70	38	70
f. NB TR (1)	135	3	5	5	8	5	8	8	20	8	20
g. SB L (1)	125	30	93	40	115	50	120	88	190	95	203
h. SB T (1)	360	0	0	0	0	0	0	0	0	0	0
i. SB R (1)	100	8	13	10	15	10	15	25	35	25	35
7. S. Atchison Way/NE Site Access Driveway											
a. EB LR (1)	-	-	-	-	-	0	0	-	-	0	0
b. NB LT (1)	100	-	-	-	-	0	0	-	-	0	0
c. SB TR (1)	350	-	-	-	-	0	0	-	-	0	0

C. Traffic Signal Warrant Analysis

Existing and forecast traffic volumes were evaluated for satisfying the criteria for the installation of a traffic signal based on the methodology presented in the *Manual on Uniform Traffic Control Devices for Streets and Highways, 2009* at the S. Parker Rd. (SH 83)/NW Site Access Driveway

and E. Quincy Ave./S. Atchison Way intersections of . Warrants 1 – Eight Hour Vehicular Volume, 2 – Four Hour Vehicular Volume, and 3 – Peak Hour were evaluated based on existing and projected background and total traffic volumes. Hourly approach volumes were derived by taking the average hourly approach volumes from the 72 hour directional counts taken on March 2, 3, and 4, 2021 at the following locations:

- S. Parker Rd. (SH 83) north of NW Site Access Driveway
- S. Parker Rd. (SH 83) south of NW Site Access Driveway
- NW Site Access Driveway east of S. Parker Rd. (SH 83)
- E. Quincy Ave. west of S. Atchison Way
- E. Quincy Ave. east of S. Atchison Way
- S. Atchison Way north of E. Quincy Ave.

These 2021 (existing) hourly volumes were adjusted based on the COVID Factor developed for this study, as described above, and projected to the 2024 (build-out) and 2040 (long-range) analysis horizons using an AGR of 2.0%. Site generated traffic was distributed based on the existing traffic hourly distribution. A 50% right turn reduction was applied to the minor street approach volumes per direction from the City. Turn movement distribution percentage for the hourly volume counts was determined based on the turn movement distribution (left turn, through, right turn) of the peak hour volumes that were collected for this study.

Based on this analysis, the following was determined:

- S. Parker Rd. (SH 83)/NW Site Access Driveway:
 - This intersection is projected to meet Warrants 1 and 2 by the 2024 (build-out) total traffic analysis horizon.
- E. Quincy Ave./S. Atchison Way:
 - This intersection is not projected to meet Warrants 1, 2, or 3 by the 2040 (long-range) total traffic analysis horizon.

A summary of the results of the traffic signal warrant analysis is presented in Table 4. Detailed peak hour traffic signal warrant analysis worksheets and volume data are provided in Appendix “C”.

**TABLE 4
SUMMARY OF TRAFFIC SIGNAL WARRANT ANALYSIS**

	Analysis Horizon	Eight Hour - Warrant 1 Met?	Four Hour - Warrant 2 Met?	Peak Hour - Warrant 3 Met?
S. Parker Rd. (SH 83) & NW Site Access Driveway	2021 Existing Traffic	NO	NO	NO
	2024 Background Traffic	NO	NO	NO
	2024 Total Traffic	YES	YES	NO
	2040 Background Traffic	YES	YES	NO
	2040 Total Traffic	YES	YES	NO
E. Quincy Ave. & S. Atchison Way	Analysis Horizon	Eight Hour - Warrant 1 Met?	Four Hour - Warrant 2 Met?	Peak Hour - Warrant 3 Met?
	2021 Existing Traffic	NO	NO	NO
	2024 Background Traffic	NO	NO	NO
	2024 Total Traffic	NO	NO	NO
	2040 Background Traffic	NO	NO	NO
	2040 Total Traffic	NO	NO	NO

D. Safety Analysis

Based on field observations and the existing topography of the study area there does not appear to be any notable traffic safety hazards in the vicinity of the proposed East Bank Apartments development project site. Additionally, no traffic safety hazards are anticipated to be created by the construction of the proposed East Bank Apartments development.

VII. SUMMARY

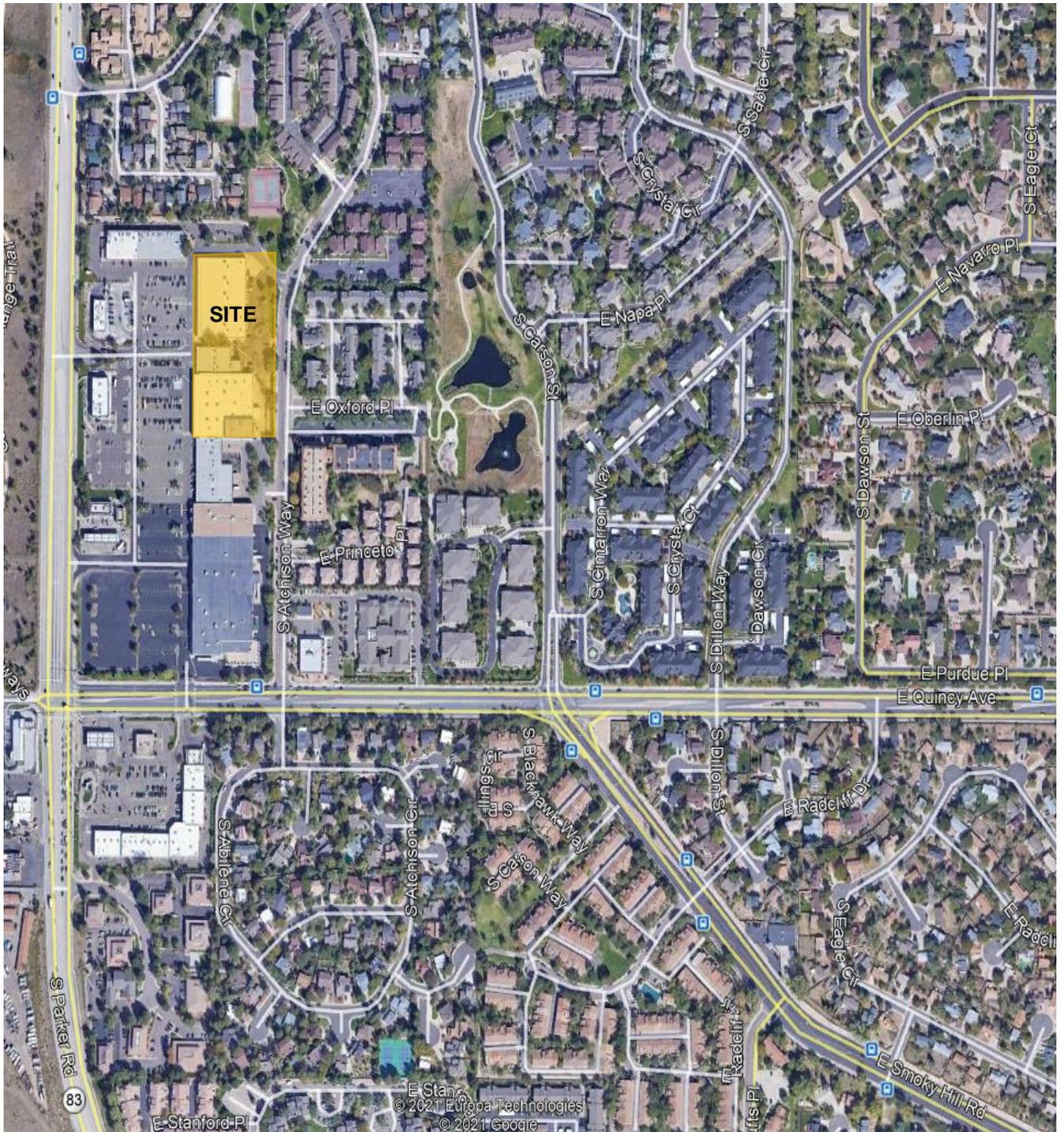
Kimco Realty is proposing to redevelop approximately a 3.8 acre portion of an existing commercial/retail development located within the jurisdictional boundaries of the Aurora, Colorado. The subject property currently consists of typical commercial/retail strip center land uses with associated surface parking. The development site is bound on the south by the continuation of the existing commercial/retail development and E. Quincy Ave., on the east by S. Atchison Way, on the north by a residential neighborhood, and on the west by the continuation of the existing commercial/retail development and S. Parker Rd. (SH 83). Upon buildout, the proposed development, to be known as East Bank Apartments, will consist of a 321 unit residential apartment complex with associated amenities. The proposed East Bank Apartments development is projected to generate 1,748 daily vehicle trips of which 107 are projected to be generated during the a.m. peak hour and 136 are projected to be generated during the p.m. peak hour.

The proposed East Bank Apartments development will be served by four points of access to the surrounding transportation network. These include the existing access driveway intersection with S. Parker Rd. (SH 83) just south of the existing McDonalds (NW Site Access), the existing access driveway intersection with S. Parker Rd. (SH 83) just south of the existing Circle K Convenience Store (SW Site Access), the existing access driveway intersection with E. Quincy Ave. between S. Parker Rd. and S. Atchison Way (South Site Access), and a proposed access driveway intersection with S. Atchison Way at the northeast corner of the site to be constructed with the development (NE Site Access).

Based on the analyses contained herein, Table 5, below, presents the summary of recommendations for the study area intersections required to accommodate the proposed East Bank Apartments development.

**TABLE 5
SUMMARY OF RECOMMENDATIONS**

Intersection	Recommendations	Responsible	Timing
S. Parker Rd. (SH 83)/S. Atchison Way	No geometric or operational modifications are recommended as a result of the development of the proposed project.	N/A	N/A
S. Parker Rd. (SH 83)/NW Site Access Driveway	<p>No geometric or operational modifications are recommended as a result of the development of the proposed project.</p> <p>In the 2024 (build-out) total traffic scenario, this intersection is projected to meet traffic signal warrants 1 and 2 (Eight-Hour Vehicular Volume, Four-Hour Vehicular Volume). The proposed site is projected to contribute 0.9% of the total entering traffic to this intersection in the higher volume peak hour (p.m.) scenario.</p> <p>If constructed, the traffic signal is to be actuated/coordinated with protected/permissive left turn phasing on the southbound approach.</p>	Developer/ City	TBD
S. Parker Rd. (SH 83)/SW Site Access Driveway	No geometric or operational modifications are recommended as a result of the development of the proposed project.	N/A	N/A
S. Parker Rd. (SH 83)/E. Quincy Ave.	No geometric or operational modifications are recommended as a result of the development of the proposed project.	N/A	N/A
E. Quincy Ave./South Site Access Driveway	No geometric or operational modifications are recommended as a result of the development of the proposed project.	N/A	N/A
E. Quincy Ave./S. Atchison Way	No geometric or operational modifications are recommended as a result of the development of the proposed project.	N/A	N/A
S. Atchison Way/NE Site Access Driveway	Construct concurrently with the proposed East Bank Apartments development. The intersection will operate as a “T” intersection with stop sign control on the eastbound approach. The west leg of the intersection will have one shared left/right turn lane on the eastbound approach, and one westbound departure lane. The north leg of the intersection will have one shared through/right turn lane on the southbound approach, and one northbound departure lane. The south leg of the intersection will have one shared left turn/through lane on the northbound approach, and one southbound departure lane.	Developer	Concurrently with Project



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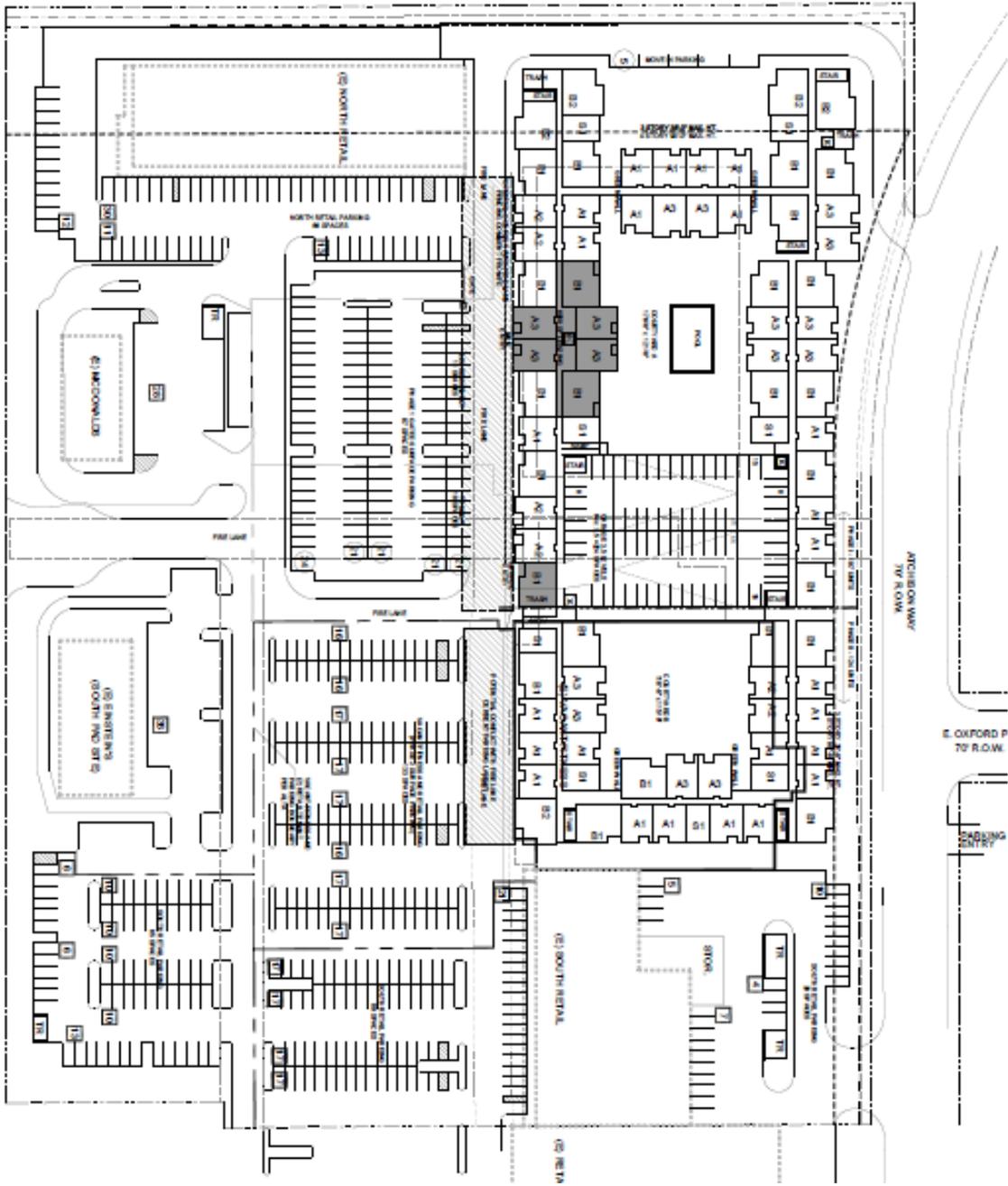
Site Location Map

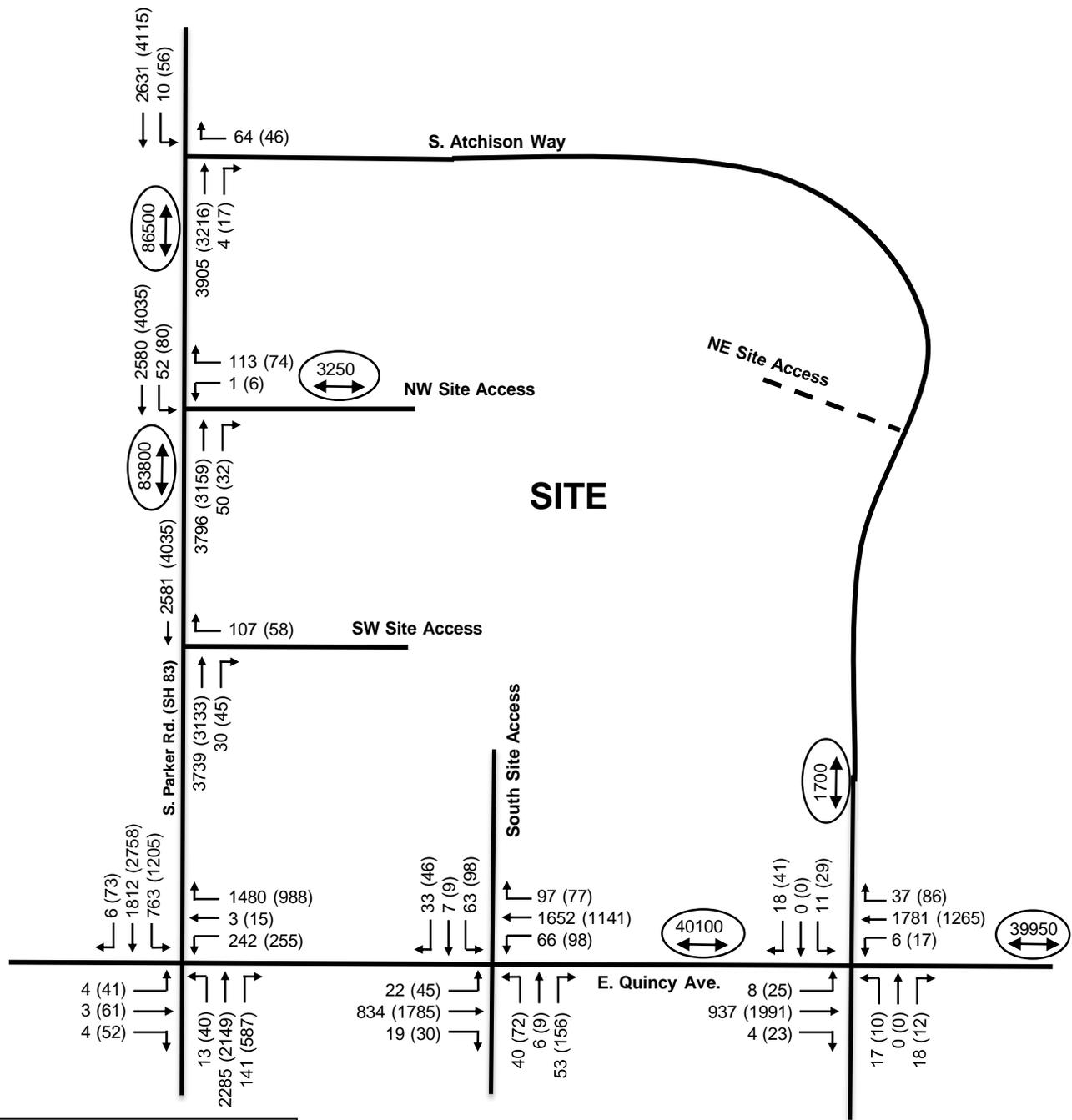
East Bank Apartments

Kimco Realty

HKS #201102

Figure 1





Legend: Drawing Not To Scale

- ↖ 5 (8) Weekday AM (PM)
- ← 64 (50) Peak Hour
- ↙ 8 (7) Traffic Volumes, vph
- ↔ 3200 Daily Traffic Volumes, vpd

----- Proposed Roadway

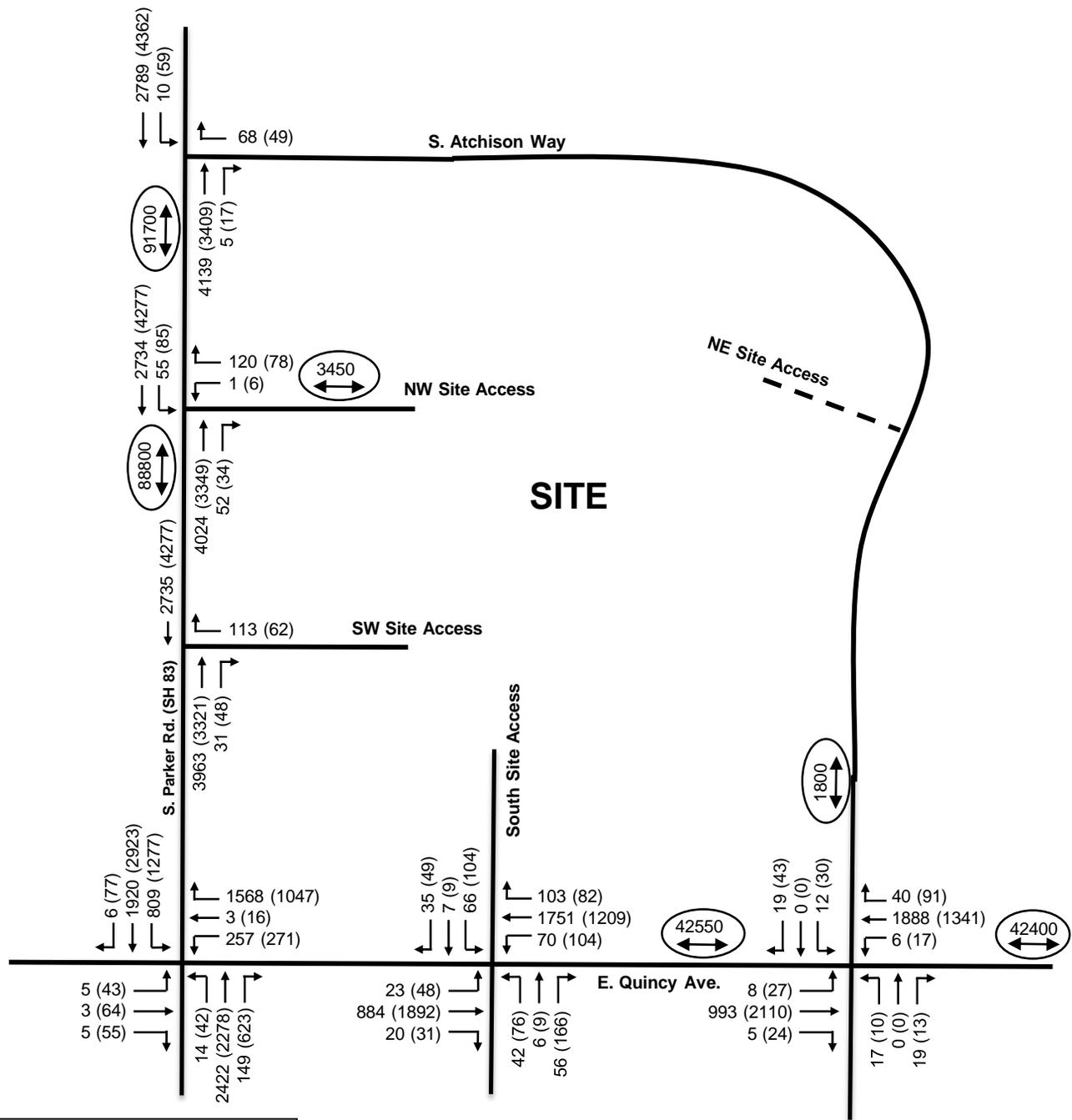


2021 Existing (COVID Adjusted) Traffic Volumes

East Bank Apartments

Kimco Realty
HKS #201102

Figure 3



Legend: Drawing Not To Scale

- ↑ 5 (8) Weekday AM (PM)
- ← 64 (50) Peak Hour
- ↘ 8 (7) Traffic Volumes, vph
- ↔ (3200) Daily Traffic Volumes, vpd

----- Proposed Roadway

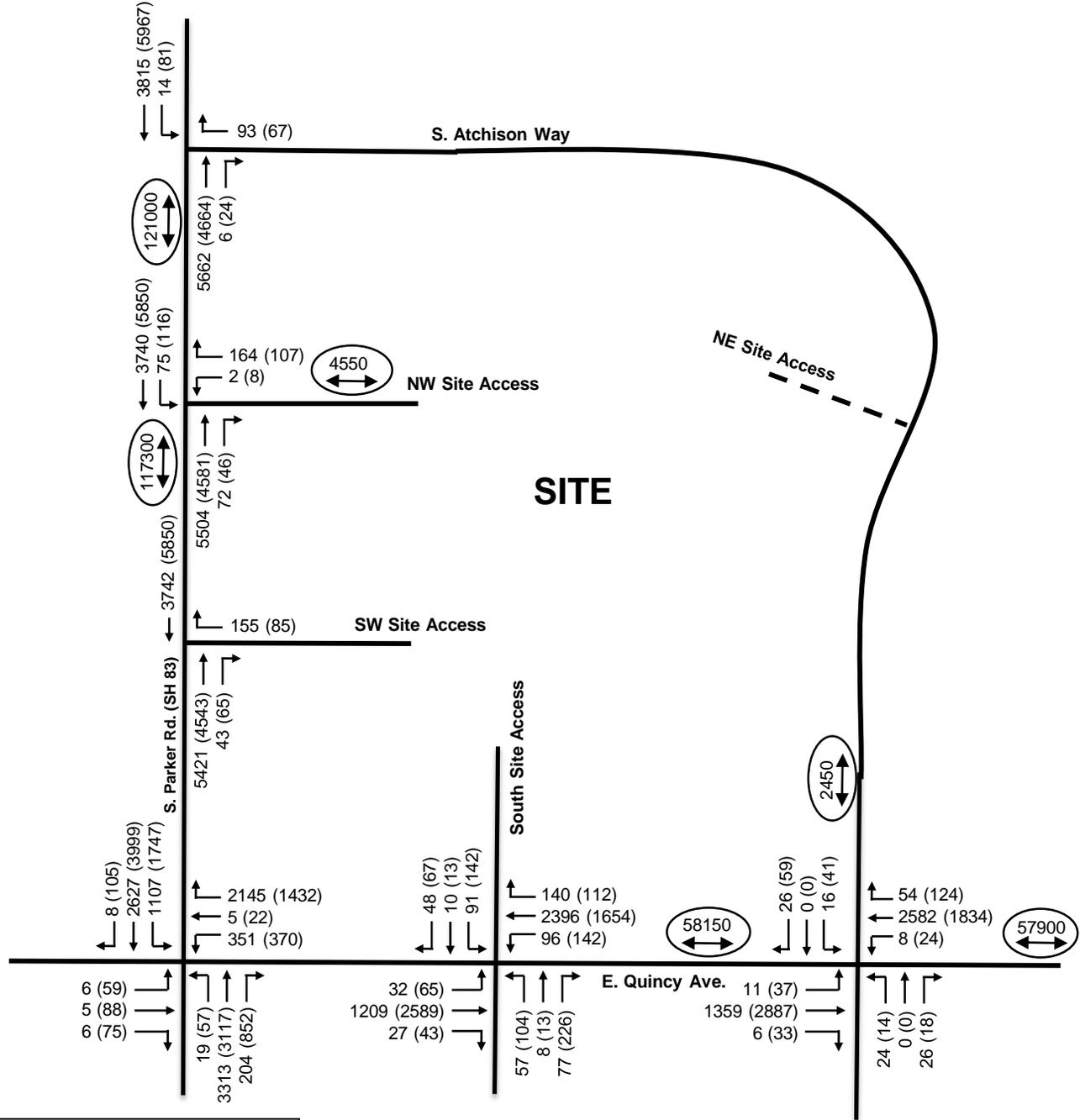


2024 Background Traffic Volumes

East Bank Apartments

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Figure 4



Legend: Drawing Not To Scale

- ↑ 5 (8) Weekday AM (PM)
- ← 64 (50) Peak Hour
- ↘ 8 (7) Traffic Volumes, vph
- ↔ 3200 Daily Traffic Volumes, vpd

----- Proposed Roadway

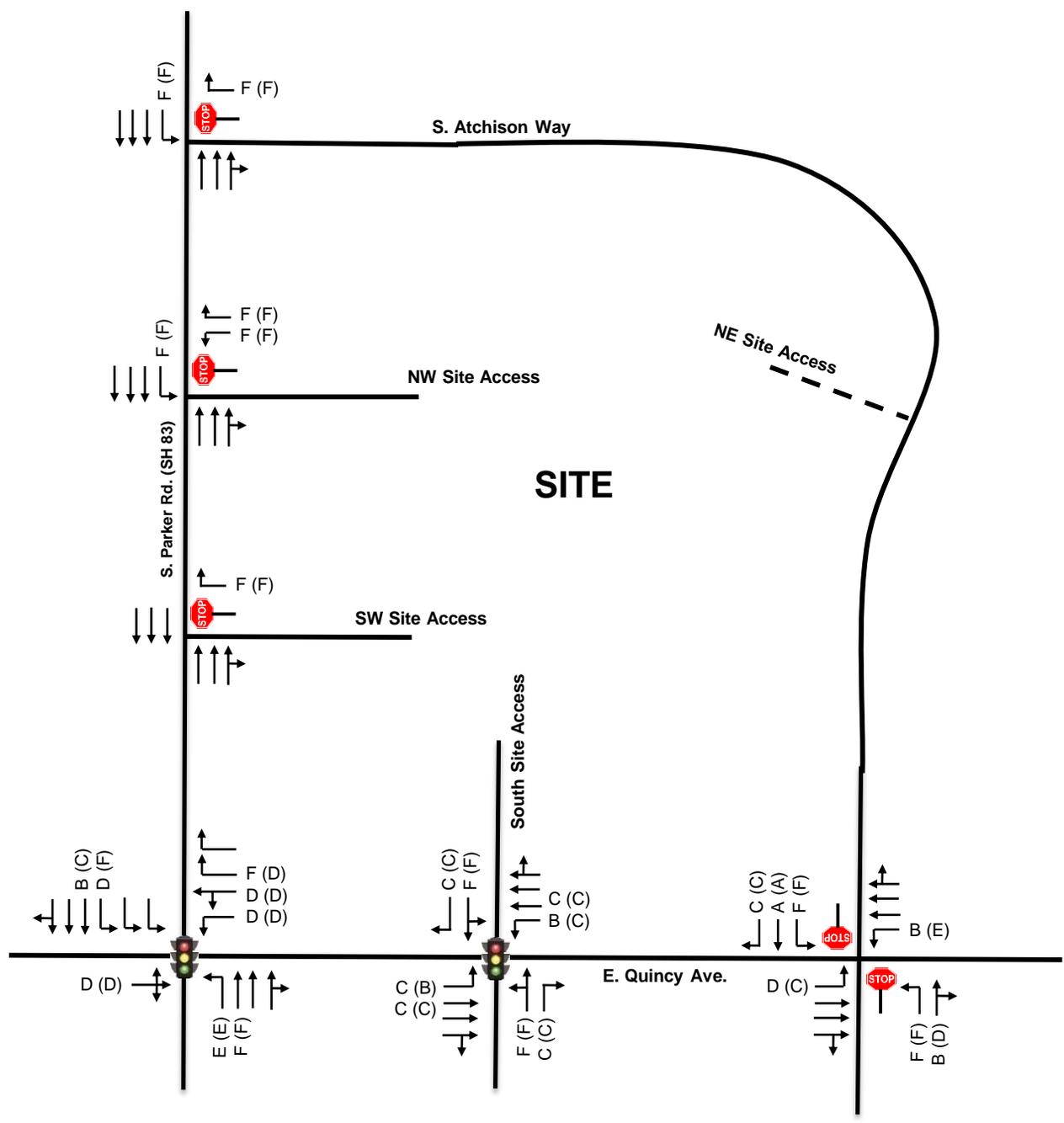


2040 Background Traffic Volumes

East Bank Apartments

Kimco Realty
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Figure 5



Legend: Drawing Not To Scale

	A (B)	Weekday AM (PM)
	B (C)	Peak Hour
	D (D)	Level of Service

----- Proposed Roadway

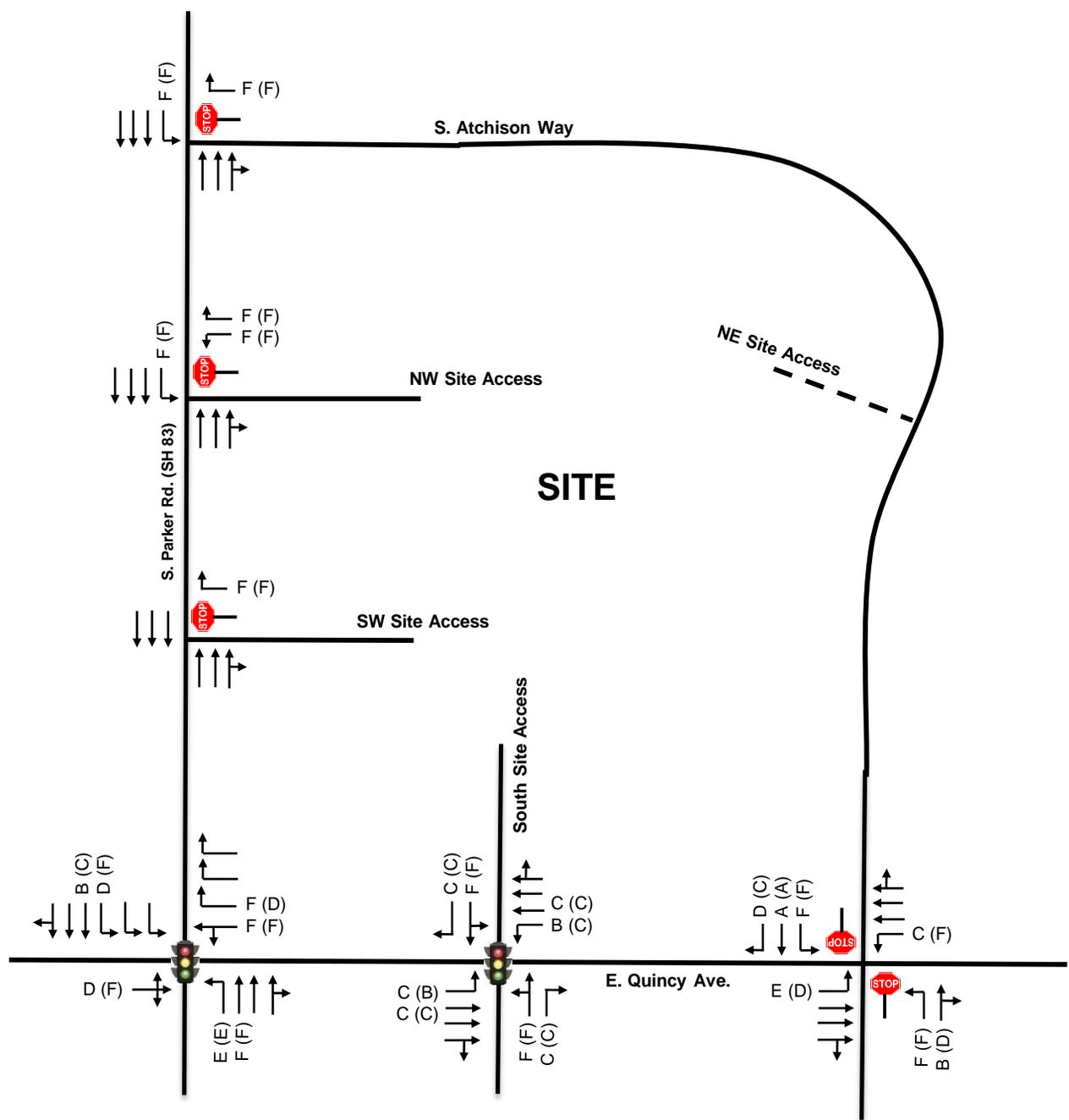


2021 Existing Traffic Operational Conditions

East Bank Apartments

Kimco Realty
HKS #201102

Figure 6



Legend: Drawing Not To Scale

	A (B)	Weekday AM (PM)
	B (C)	Peak Hour
	D (D)	Level of Service

Proposed Roadway

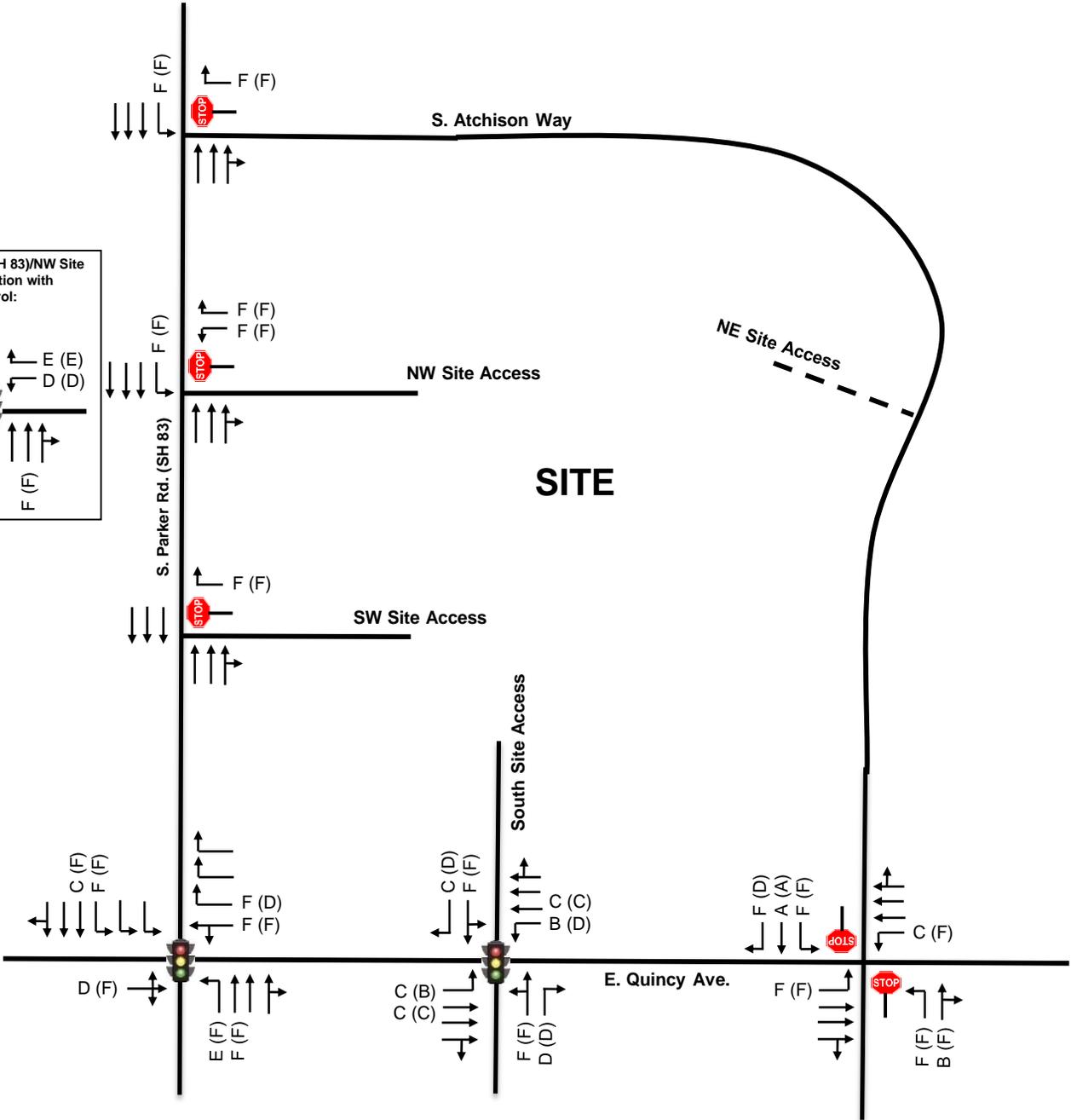
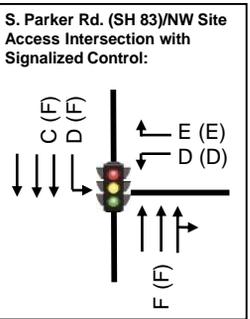


2024 Background Traffic Operational Conditions

East Bank Apartments

Kimco Realty
HKS #201102

Figure 7



Legend: Drawing Not To Scale

	A (B)	Weekday AM (PM)
	B (C)	Peak Hour
	D (D)	Level of Service

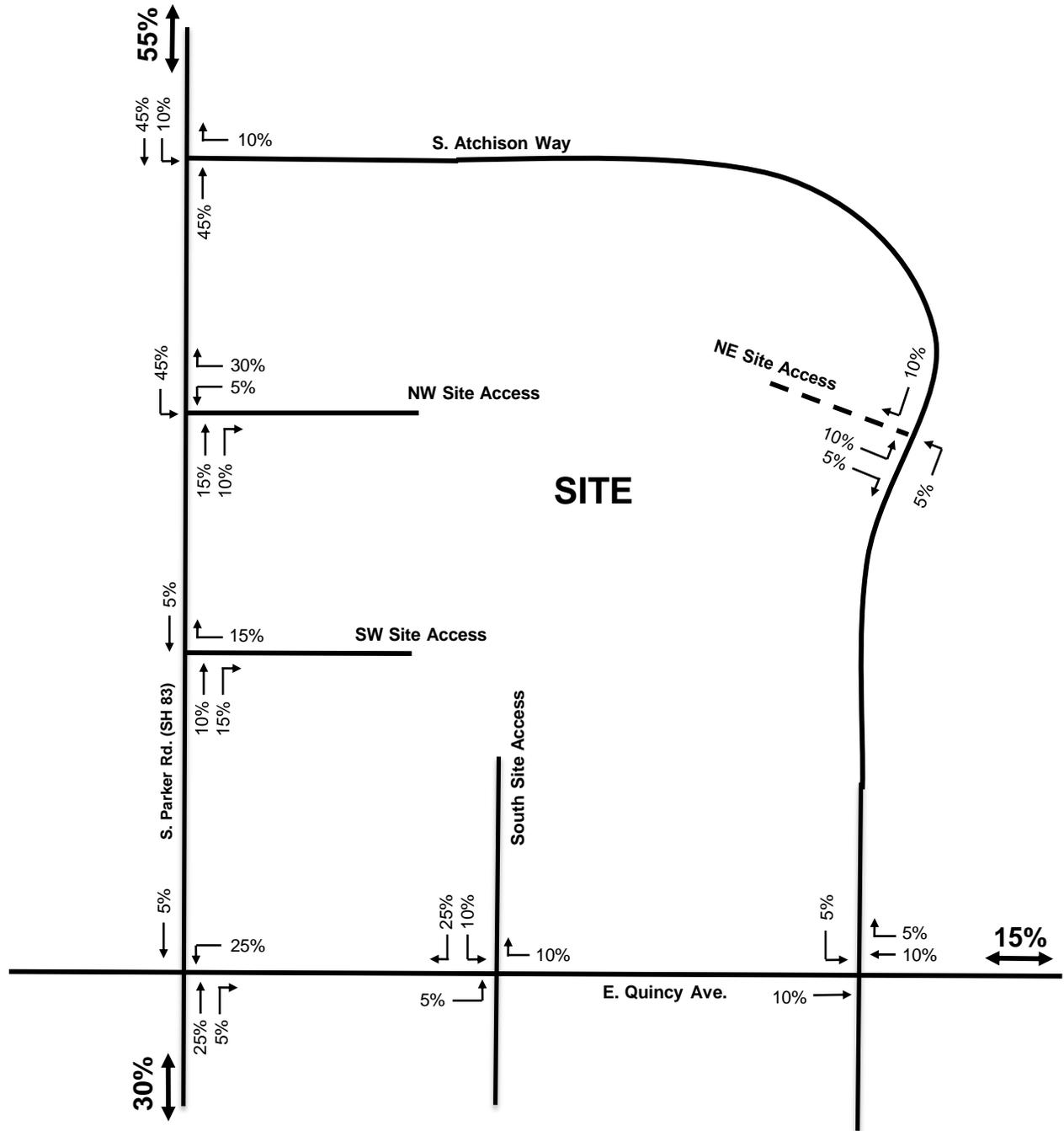
Proposed Roadway



2040 Background Traffic Operational Conditions

East Bank Apartments
 Kimco Realty
 HKS #201102

Figure 8



Legend: Drawing Not To Scale

XX% Site-Generated Trip Distribution

----- Proposed Roadway

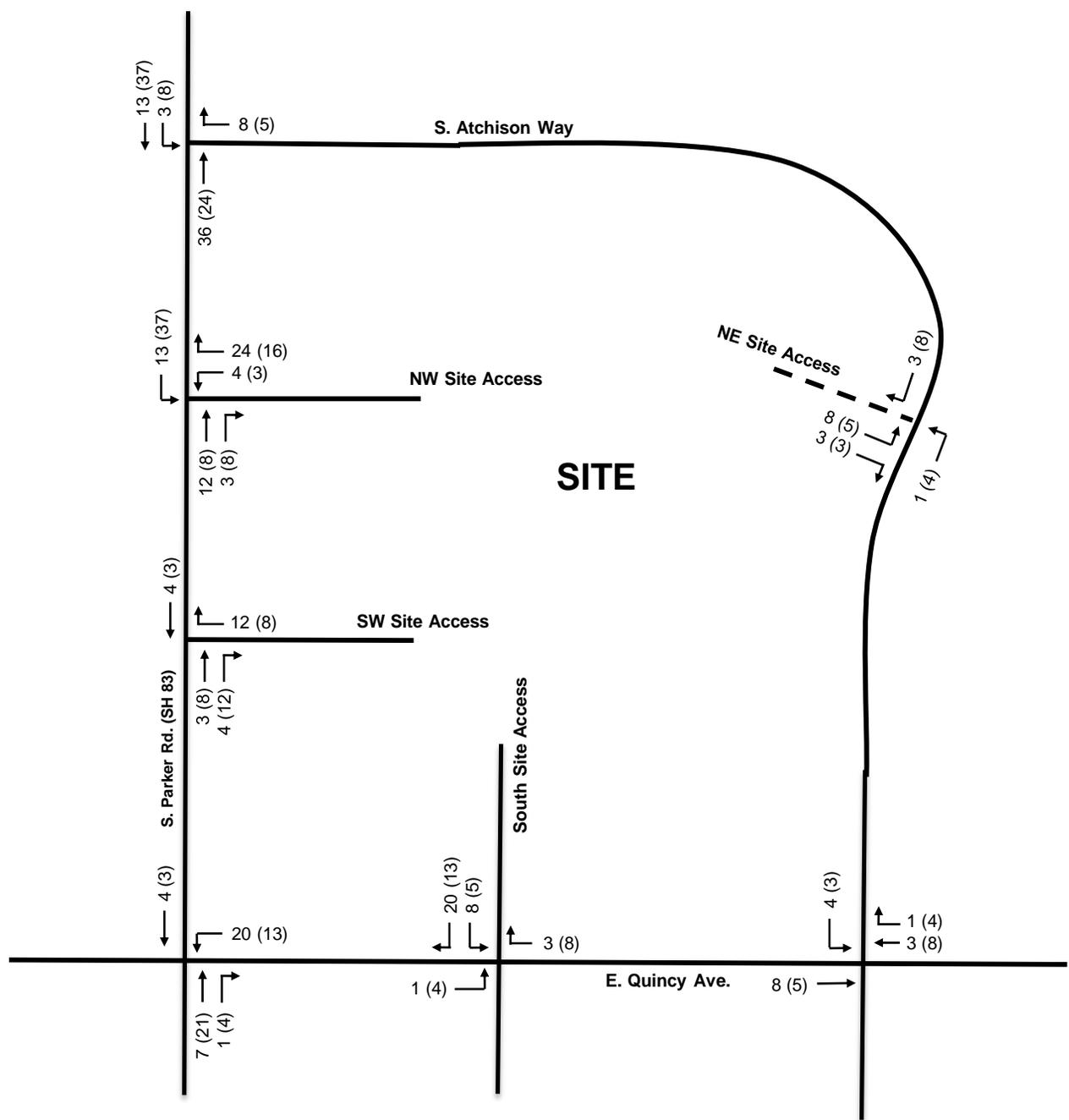


Site Generated Trip Distribution

East Bank Apartments

Kimco Realty
HKS #201102

Figure 9



Legend: Drawing Not To Scale

	5 (8)	Weekday AM (PM)
	64 (50)	Peak Hour
	8 (7)	Traffic Volumes, vph

----- Proposed Roadway

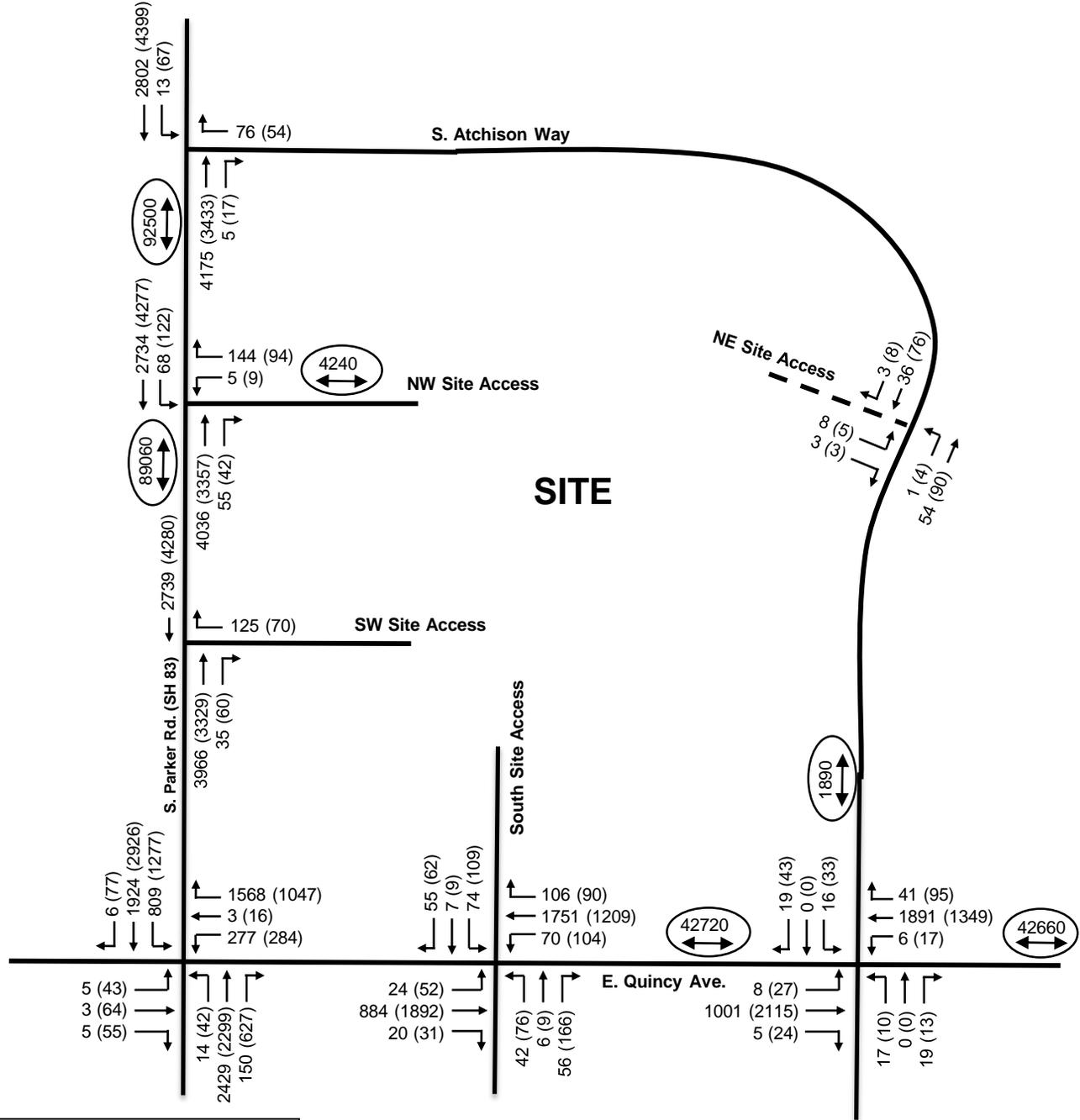


Site Generated Trip Assignment

East Bank Apartments

Kimco Realty
HKS #201102

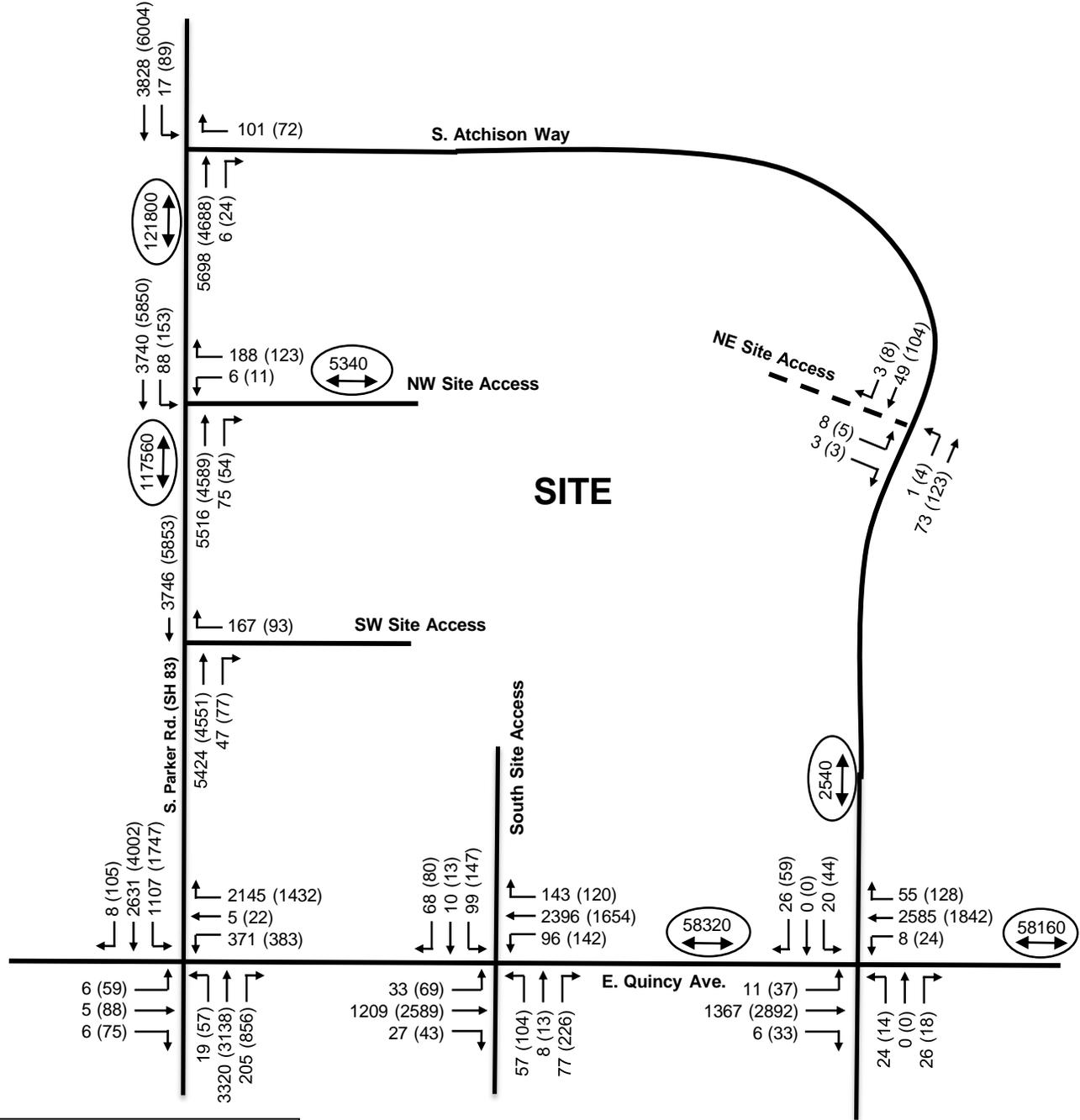
Figure 10



2024 Total Traffic Volumes (Background + Site Generated)

East Bank Apartments
 Kimco Realty
 HKS #201102

Figure 11



Legend: Drawing Not To Scale

- 5 (8) Weekday AM (PM)
- 64 (50) Peak Hour
- 8 (7) Traffic Volumes, vph
- 3200 Daily Traffic Volumes, vpd

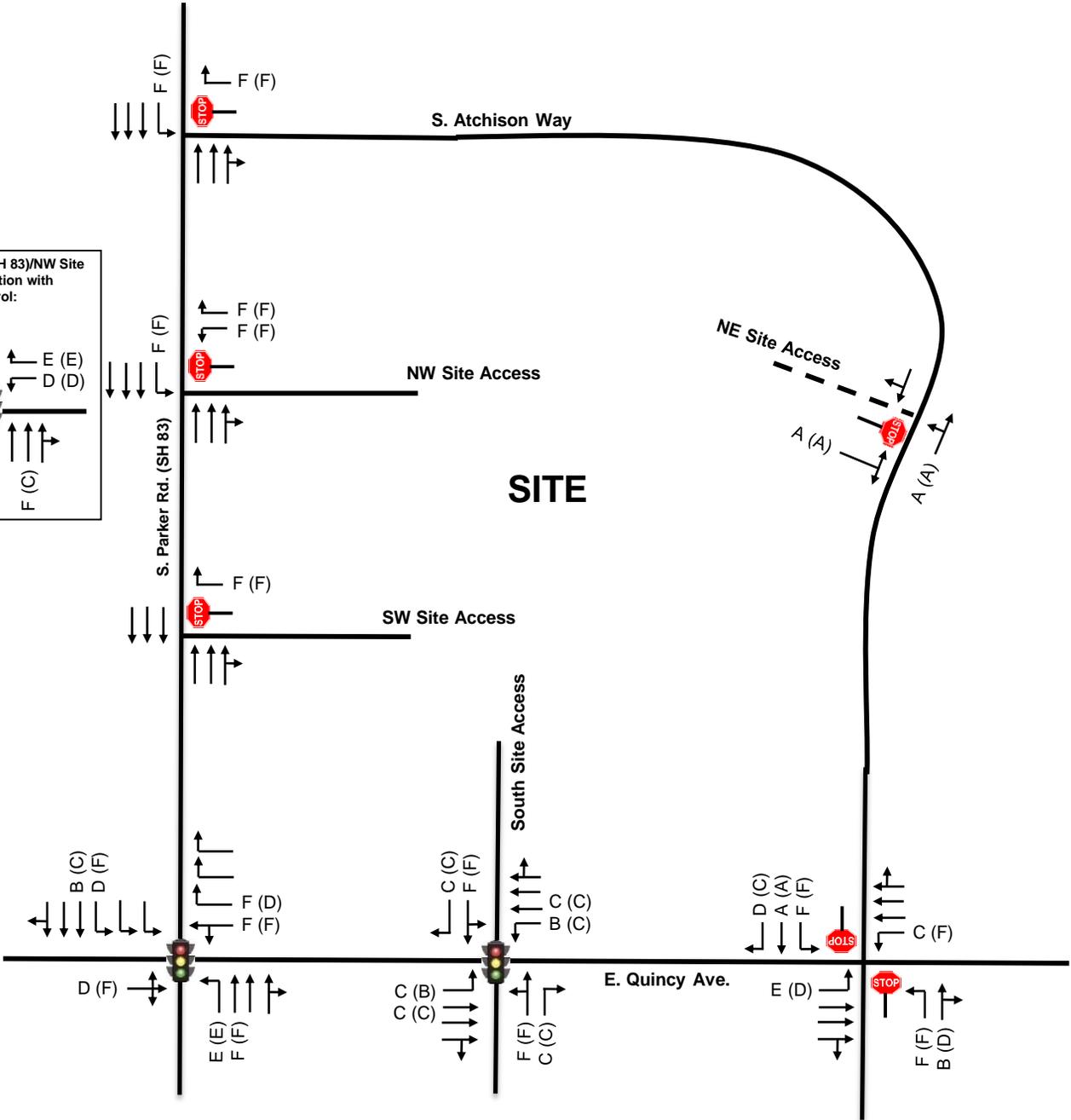
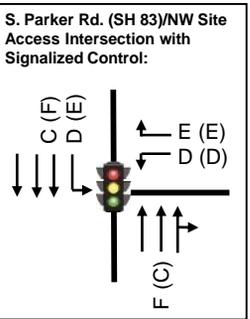
----- Proposed Roadway



2040 Total Traffic Volumes (Background + Site Generated)

East Bank Apartments
 Kimco Realty
 HKS #201102

Figure 12



Legend: Drawing Not To Scale

	A (B)	Weekday AM (PM)
	B (C)	Peak Hour
	D (D)	Level of Service

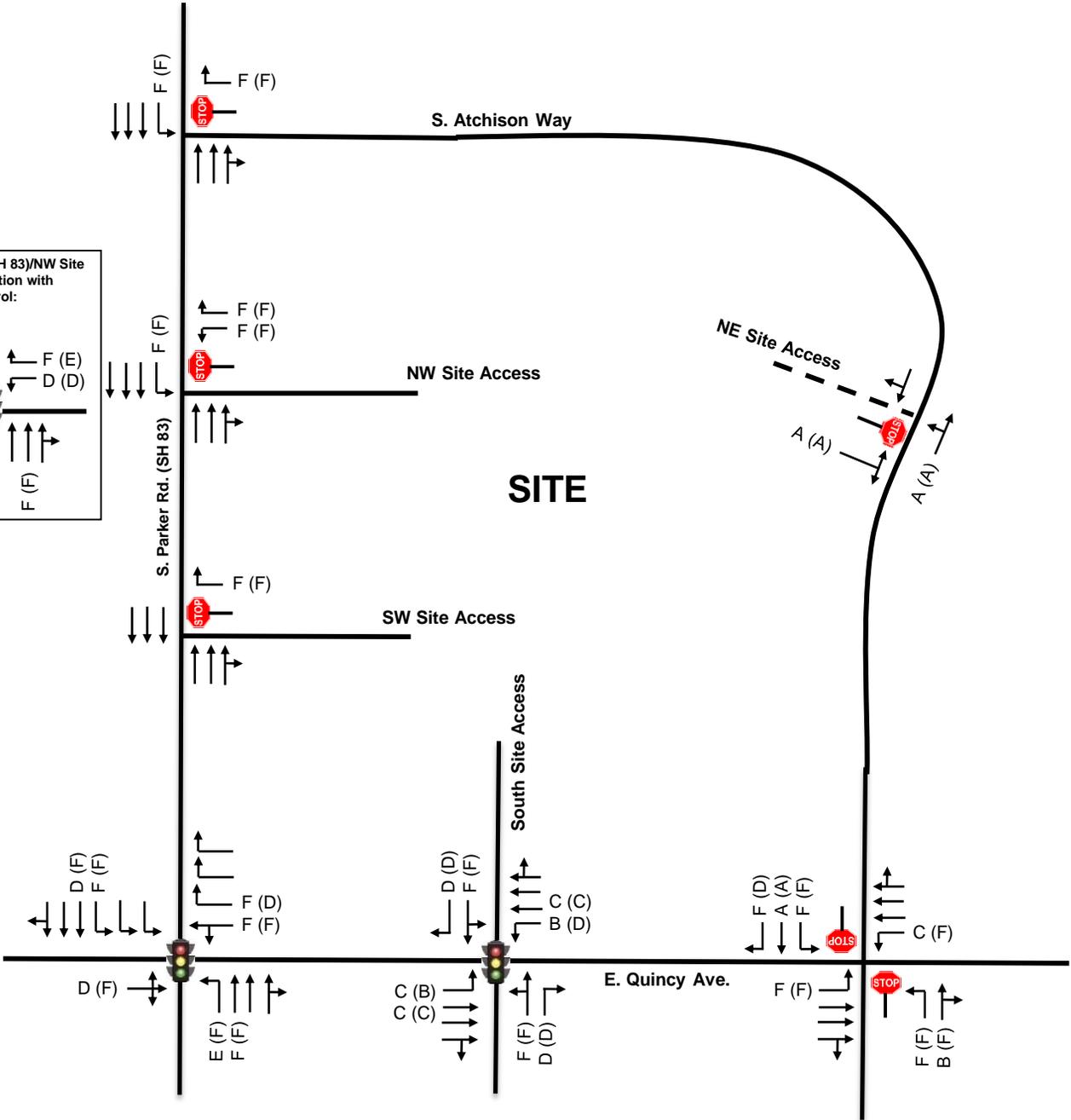
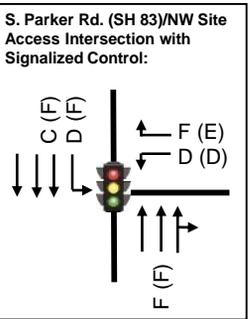
Proposed Roadway



2024 Total Traffic Operational Conditions

East Bank Apartments
 Kimco Realty
 HKS #201102

Figure 13



Legend: Drawing Not To Scale

	A (B)	Weekday AM (PM)
	B (C)	Peak Hour
	D (D)	Level of Service

Proposed Roadway



2040 Total Traffic Operational Conditions

East Bank Apartments
 Kimco Realty
 HKS #201102

Figure 14

APPENDIX “A”

**2021 EXISTING
TRAFFIC VOLUME COUNTS**

All Traffic Data Services

www.alltrafficdata.net

Date Start: 02-Mar-21
 Site Code: 9
 Station ID: 9
 PARKER RD N.O. NW SITE ACCESS

Start Time	02-Mar-21 Tue	NB	SB	Total						
12:00 AM		187	230	417						
01:00		142	156	298						
02:00		172	114	286						
03:00		214	135	349						
04:00		468	242	710						
05:00		1353	644	1997						
06:00		2581	1588	4169						
07:00		3535	2351	5886						
08:00		3088	2099	5187						
09:00		2519	1917	4436						
10:00		2353	1814	4167						
11:00		2323	1932	4255						
12:00 PM		2370	2258	4628						
01:00		2450	2275	4725						
02:00		2522	2637	5159						
03:00		2589	3133	5722						
04:00		2930	3518	6448						
05:00		2820	3440	6260						
06:00		2307	3145	5452						
07:00		1508	2094	3602						
08:00		1099	1504	2603						
09:00		838	1050	1888						
10:00		544	760	1304						
11:00		338	454	792						
Total		41250	39490	80740						
Percent		51.1%	48.9%							
AM Peak	-	07:00	07:00	-	-	-	-	-	-	07:00
Vol.	-	3535	2351	-	-	-	-	-	-	5886
PM Peak	-	16:00	16:00	-	-	-	-	-	-	16:00
Vol.	-	2930	3518	-	-	-	-	-	-	6448

All Traffic Data Services
www.alltrafficdata.net

Date Start: 02-Mar-21
Site Code: 10
Station ID: 10
PARKER RD S.O. NW SITE ACCESS

Start Time	02-Mar-21 Tue	NB	SB							Total
12:00 AM		184	201							385
01:00		138	139							277
02:00		170	106							276
03:00		208	132							340
04:00		454	229							683
05:00		1318	636							1954
06:00		2537	1574							4111
07:00		3494	2342							5836
08:00		3051	2021							5072
09:00		2479	1815							4294
10:00		2298	1874							4172
11:00		2253	2052							4305
12:00 PM		2299	2377							4676
01:00		2281	2379							4660
02:00		2349	2757							5106
03:00		2411	3160							5571
04:00		2868	3508							6376
05:00		2874	3259							6133
06:00		2238	2850							5088
07:00		1464	1899							3363
08:00		1046	1396							2442
09:00		798	1012							1810
10:00		517	744							1261
11:00		321	444							765
Total		40050	38906							78956
Percent		50.7%	49.3%							
AM Peak	-	07:00	07:00	-	-	-	-	-	-	07:00
Vol.	-	3494	2342	-	-	-	-	-	-	5836
PM Peak	-	17:00	16:00	-	-	-	-	-	-	16:00
Vol.	-	2874	3508	-	-	-	-	-	-	6376

All Traffic Data Services

www.alltrafficdata.net

Date Start: 02-Mar-21
 Site Code: 10
 Station ID: 10
 PARKER RD S.O. NW SITE ACCESS

Start Time	03-Mar-21 Wed	NB	SB							Total
12:00 AM		228	303							531
01:00		108	168							276
02:00		129	109							238
03:00		221	141							362
04:00		472	271							743
05:00		1366	616							1982
06:00		2439	1653							4092
07:00		3287	2638							5925
08:00		2836	2237							5073
09:00		2418	1822							4240
10:00		2242	1771							4013
11:00		2140	2007							4147
12:00 PM		2204	2164							4368
01:00		2313	2233							4546
02:00		2350	2600							4950
03:00		2397	3094							5491
04:00		2374	3387							5761
05:00		2251	3403							5654
06:00		2150	2645							4795
07:00		1259	1805							3064
08:00		994	1273							2267
09:00		679	856							1535
10:00		513	524							1037
11:00		324	382							706
Total		37694	38102							75796
Percent		49.7%	50.3%							
AM Peak	-	07:00	07:00	-	-	-	-	-	-	07:00
Vol.	-	3287	2638	-	-	-	-	-	-	5925
PM Peak	-	15:00	17:00	-	-	-	-	-	-	16:00
Vol.	-	2397	3403	-	-	-	-	-	-	5761

All Traffic Data Services
www.alltrafficdata.net

Date Start: 02-Mar-21
Site Code: 10
Station ID: 10
PARKER RD S.O. NW SITE ACCESS

Start Time	04-Mar-21 Thu	NB	SB	Total						
12:00 AM		170	204	374						
01:00		104	140	244						
02:00		112	106	218						
03:00		104	130	234						
04:00		229	220	449						
05:00		826	611	1437						
06:00		1596	1510	3106						
07:00		2515	2376	4891						
08:00		2183	2056	4239						
09:00		2265	1840	4105						
10:00		2331	1911	4242						
11:00		2213	2094	4307						
12:00 PM		2390	2298	4688						
01:00		2445	2294	4739						
02:00		2307	2737	5044						
03:00		2489	3296	5785						
04:00		2604	3521	6125						
05:00		2403	3580	5983						
06:00		2068	2736	4804						
07:00		1340	1820	3160						
08:00		1001	1311	2312						
09:00		753	871	1624						
10:00		539	547	1086						
11:00		278	376	654						
Total		35265	38585	73850						
Percent		47.8%	52.2%							
AM Peak	-	07:00	07:00	-	-	-	-	-	-	07:00
Vol.	-	2515	2376	-	-	-	-	-	-	4891
PM Peak	-	16:00	17:00	-	-	-	-	-	-	16:00
Vol.	-	2604	3580	-	-	-	-	-	-	6125
Grand Total		113009	115593							228602
Percent		49.4%	50.6%							
ADT		ADT 76,201	AADT 76,201							

All Traffic Data Services
www.alltrafficdata.net

Date Start: 02-Mar-21
Site Code: 11
Station ID: 11
NW SITE ACCESS E.O. PARKER RD

Start Time	02-Mar-21 Tue	EB	WB							Total
12:00 AM		21	14							35
01:00		17	8							25
02:00		17	8							25
03:00		3	8							11
04:00		26	16							42
05:00		40	40							80
06:00		41	58							99
07:00		95	103							198
08:00		92	76							168
09:00		95	100							195
10:00		84	63							147
11:00		112	81							193
12:00 PM		155	105							260
01:00		111	83							194
02:00		106	76							182
03:00		92	82							174
04:00		121	60							181
05:00		112	67							179
06:00		98	57							155
07:00		68	57							125
08:00		30	40							70
09:00		32	26							58
10:00		31	16							47
11:00		30	12							42
Total		1629	1256							2885
Percent		56.5%	43.5%							
AM Peak	-	11:00	07:00	-	-	-	-	-	-	07:00
Vol.	-	112	103	-	-	-	-	-	-	198
PM Peak	-	12:00	12:00	-	-	-	-	-	-	12:00
Vol.	-	155	105	-	-	-	-	-	-	260

All Traffic Data Services
www.alltrafficdata.net

Date Start: 02-Mar-21
Site Code: 11
Station ID: 11
NW SITE ACCESS E.O. PARKER RD

Start Time	03-Mar-21 Wed	EB	WB							Total
12:00 AM		25	14							39
01:00		15	11							26
02:00		18	12							30
03:00		12	10							22
04:00		23	23							46
05:00		44	46							90
06:00		65	76							141
07:00		89	95							184
08:00		109	107							216
09:00		105	78							183
10:00		74	60							134
11:00		129	84							213
12:00 PM		117	87							204
01:00		114	98							212
02:00		103	81							184
03:00		104	67							171
04:00		108	67							175
05:00		122	59							181
06:00		90	65							155
07:00		59	50							109
08:00		52	43							95
09:00		51	35							86
10:00		31	17							48
11:00		32	16							48
Total		1691	1301							2992
Percent		56.5%	43.5%							
AM Peak	-	11:00	08:00	-	-	-	-	-	-	08:00
Vol.	-	129	107	-	-	-	-	-	-	216
PM Peak	-	17:00	13:00	-	-	-	-	-	-	13:00
Vol.	-	122	98	-	-	-	-	-	-	212

All Traffic Data Services
www.alltrafficdata.net

Date Start: 02-Mar-21
Site Code: 11
Station ID: 11
NW SITE ACCESS E.O. PARKER RD

Start Time	04-Mar-21 Thu	EB	WB							Total
12:00 AM		14	11							25
01:00		10	7							17
02:00		25	12							37
03:00		9	3							12
04:00		30	24							54
05:00		40	41							81
06:00		64	73							137
07:00		94	109							203
08:00		105	89							194
09:00		96	97							193
10:00		110	77							187
11:00		110	77							187
12:00 PM		136	95							231
01:00		107	93							200
02:00		124	75							199
03:00		136	83							219
04:00		116	80							196
05:00		122	75							197
06:00		78	43							121
07:00		56	43							99
08:00		56	30							86
09:00		30	30							60
10:00		29	27							56
11:00		20	12							32
Total		1717	1306							3023
Percent		56.8%	43.2%							
AM Peak	-	10:00	07:00	-	-	-	-	-	-	07:00
Vol.	-	110	109	-	-	-	-	-	-	203
PM Peak	-	12:00	12:00	-	-	-	-	-	-	12:00
Vol.	-	136	95	-	-	-	-	-	-	231
Grand Total		5037	3863							8900
Percent		56.6%	43.4%							
ADT		ADT 2,967	AADT 2,967							

All Traffic Data Services
www.alltrafficdata.net

Date Start: 02-Mar-21
Site Code: 12
Station ID: 12
QUINCY AVE W.O. ATCHINSON WAY

Start Time	02-Mar-21 Tue	EB	WB							Total
12:00 AM		135	76							211
01:00		103	59							162
02:00		73	63							136
03:00		57	103							160
04:00		83	245							328
05:00		165	695							860
06:00		394	1258							1652
07:00		787	1603							2390
08:00		748	1535							2283
09:00		755	1254							2009
10:00		787	1073							1860
11:00		932	1040							1972
12:00 PM		1123	1080							2203
01:00		1117	1096							2213
02:00		1349	1163							2512
03:00		1509	1218							2727
04:00		1728	1144							2872
05:00		1727	1182							2909
06:00		1460	1019							2479
07:00		1115	707							1822
08:00		773	495							1268
09:00		572	409							981
10:00		405	214							619
11:00		261	148							409
Total		18158	18879							37037
Percent		49.0%	51.0%							
AM Peak	-	11:00	07:00	-	-	-	-	-	-	07:00
Vol.	-	932	1603	-	-	-	-	-	-	2390
PM Peak	-	16:00	15:00	-	-	-	-	-	-	17:00
Vol.	-	1728	1218	-	-	-	-	-	-	2909

All Traffic Data Services
www.alltrafficdata.net

Date Start: 02-Mar-21
Site Code: 12
Station ID: 12
QUINCY AVE W.O. ATCHINSON WAY

Start Time	03-Mar-21 Wed	EB	WB							Total
12:00 AM		175	103							278
01:00		83	61							144
02:00		53	54							107
03:00		58	86							144
04:00		80	194							274
05:00		141	761							902
06:00		425	1248							1673
07:00		778	1580							2358
08:00		830	1522							2352
09:00		805	1253							2058
10:00		758	1160							1918
11:00		998	1059							2057
12:00 PM		1111	1170							2281
01:00		1106	1068							2174
02:00		1284	1174							2458
03:00		1436	1248							2684
04:00		1682	1170							2852
05:00		1680	1183							2863
06:00		1506	973							2479
07:00		1043	651							1694
08:00		713	488							1201
09:00		569	342							911
10:00		410	250							660
11:00		258	165							423
Total		17982	18963							36945
Percent		48.7%	51.3%							
AM Peak	-	11:00	07:00	-	-	-	-	-	-	07:00
Vol.	-	998	1580	-	-	-	-	-	-	2358
PM Peak	-	16:00	15:00	-	-	-	-	-	-	17:00
Vol.	-	1682	1248	-	-	-	-	-	-	2863

All Traffic Data Services
www.alltrafficdata.net

Date Start: 02-Mar-21
Site Code: 12
Station ID: 12
QUINCY AVE W.O. ATCHINSON WAY

Start Time	04-Mar-21 Thu	EB	WB							Total
12:00 AM		168	95							263
01:00		85	55							140
02:00		58	53							111
03:00		49	100							149
04:00		82	235							317
05:00		156	715							871
06:00		441	1192							1633
07:00		765	1536							2301
08:00		823	1377							2200
09:00		808	1184							1992
10:00		773	1099							1872
11:00		874	1080							1954
12:00 PM		1015	1095							2110
01:00		1028	1064							2092
02:00		1252	1073							2325
03:00		1521	1166							2687
04:00		1603	1140							2743
05:00		1643	1061							2704
06:00		1466	902							2368
07:00		1038	586							1624
08:00		734	431							1165
09:00		500	345							845
10:00		346	232							578
11:00		250	133							383
Total		17478	17949							35427
Percent		49.3%	50.7%							
AM Peak	-	11:00	07:00	-	-	-	-	-	-	07:00
Vol.	-	874	1536	-	-	-	-	-	-	2301
PM Peak	-	17:00	15:00	-	-	-	-	-	-	16:00
Vol.	-	1643	1166	-	-	-	-	-	-	2743
Grand Total		53618	55791							109409
Percent		49.0%	51.0%							
ADT		ADT 36,470	AADT 36,470							

All Traffic Data Services
www.alltrafficdata.net

Date Start: 02-Mar-21
Site Code: 13
Station ID: 13
QUINCY AVE E.O. ATCHINSON WAY

Start Time	02-Mar-21 Tue	EB	WB							Total
12:00 AM		132	72							204
01:00		102	56							158
02:00		73	59							132
03:00		57	103							160
04:00		82	249							331
05:00		161	706							867
06:00		384	1277							1661
07:00		786	1605							2391
08:00		752	1533							2285
09:00		766	1227							1993
10:00		776	1082							1858
11:00		912	1056							1968
12:00 PM		1100	1098							2198
01:00		1095	1089							2184
02:00		1322	1129							2451
03:00		1479	1182							2661
04:00		1725	1176							2901
05:00		1720	1212							2932
06:00		1482	1034							2516
07:00		1101	682							1783
08:00		754	470							1224
09:00		564	389							953
10:00		399	206							605
11:00		253	144							397
Total		17977	18836							36813
Percent		48.8%	51.2%							
AM Peak	-	11:00	07:00	-	-	-	-	-	-	07:00
Vol.	-	912	1605	-	-	-	-	-	-	2391
PM Peak	-	16:00	17:00	-	-	-	-	-	-	17:00
Vol.	-	1725	1212	-	-	-	-	-	-	2932

All Traffic Data Services
www.alltrafficdata.net

Date Start: 02-Mar-21
Site Code: 13
Station ID: 13
QUINCY AVE E.O. ATCHINSON WAY

Start Time	03-Mar-21 Wed	EB	WB							Total
12:00 AM		171	99							270
01:00		85	51							136
02:00		54	44							98
03:00		58	110							168
04:00		80	248							328
05:00		139	742							881
06:00		416	1227							1643
07:00		757	1569							2326
08:00		810	1527							2337
09:00		788	1258							2046
10:00		753	1164							1917
11:00		1013	1054							2067
12:00 PM		1127	1147							2274
01:00		1122	1048							2170
02:00		1303	1153							2456
03:00		1457	1216							2673
04:00		1636	1136							2772
05:00		1630	1150							2780
06:00		1462	946							2408
07:00		1012	639							1651
08:00		694	480							1174
09:00		564	333							897
10:00		411	243							654
11:00		260	161							421
Total		17802	18745							36547
Percent		48.7%	51.3%							
AM Peak	-	11:00	07:00	-	-	-	-	-	-	08:00
Vol.	-	1013	1569	-	-	-	-	-	-	2337
PM Peak	-	16:00	15:00	-	-	-	-	-	-	17:00
Vol.	-	1636	1216	-	-	-	-	-	-	2780

All Traffic Data Services
www.alltrafficdata.net

Date Start: 02-Mar-21
Site Code: 13
Station ID: 13
QUINCY AVE E.O. ATCHINSON WAY

Start Time	04-Mar-21 Thu	EB	WB							Total
12:00 AM		179	95							274
01:00		90	55							145
02:00		58	53							111
03:00		49	101							150
04:00		82	238							320
05:00		155	725							880
06:00		438	1211							1649
07:00		773	1539							2312
08:00		835	1379							2214
09:00		815	1202							2017
10:00		768	913							1681
11:00		892	1085							1977
12:00 PM		1042	1101							2143
01:00		1054	1068							2122
02:00		1279	1068							2347
03:00		1544	1166							2710
04:00		1628	1140							2768
05:00		1667	1070							2737
06:00		1475	916							2391
07:00		1040	594							1634
08:00		734	437							1171
09:00		508	347							855
10:00		351	232							583
11:00		254	134							388
Total		17710	17869							35579
Percent		49.8%	50.2%							
AM Peak	-	11:00	07:00	-	-	-	-	-	-	07:00
Vol.	-	892	1539	-	-	-	-	-	-	2312
PM Peak	-	17:00	15:00	-	-	-	-	-	-	16:00
Vol.	-	1667	1166	-	-	-	-	-	-	2768
Grand Total		53489	55450							108939
Percent		49.1%	50.9%							
ADT		ADT 36,313	AADT 36,313							

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Date Start: 02-Mar-21
Site Code: 14
Station ID: 14
ATCHINSON WAY N.O. QUINCY AVE

Start Time	02-Mar-21 Tue	NB	SB	Total						
12:00 AM		2	4	6						
01:00		3	0	3						
02:00		0	2	2						
03:00		1	4	5						
04:00		12	14	26						
05:00		11	30	41						
06:00		23	38	61						
07:00		43	33	76						
08:00		40	29	69						
09:00		44	34	78						
10:00		42	50	92						
11:00		46	34	80						
12:00 PM		48	48	96						
01:00		52	50	102						
02:00		78	48	126						
03:00		87	53	140						
04:00		103	54	157						
05:00		68	62	130						
06:00		59	46	105						
07:00		36	32	68						
08:00		21	17	38						
09:00		17	15	32						
10:00		10	6	16						
11:00		4	6	10						
Total		850	709	1559						
Percent		54.5%	45.5%							
AM Peak	-	11:00	10:00	-	-	-	-	-	-	10:00
Vol.	-	46	50	-	-	-	-	-	-	92
PM Peak	-	16:00	17:00	-	-	-	-	-	-	16:00
Vol.	-	103	62	-	-	-	-	-	-	157

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Date Start: 02-Mar-21
Site Code: 14
Station ID: 14
ATCHINSON WAY N.O. QUINCY AVE

Start Time	03-Mar-21 Wed	NB	SB	Total						
12:00 AM		0	4	4						
01:00		3	0	3						
02:00		4	2	6						
03:00		1	6	7						
04:00		8	12	20						
05:00		8	28	36						
06:00		24	40	64						
07:00		38	43	81						
08:00		45	31	76						
09:00		52	43	95						
10:00		45	37	82						
11:00		44	56	100						
12:00 PM		44	45	89						
01:00		58	48	106						
02:00		70	57	127						
03:00		67	44	111						
04:00		82	51	133						
05:00		64	45	109						
06:00		62	44	106						
07:00		36	29	65						
08:00		28	34	62						
09:00		9	18	27						
10:00		14	10	24						
11:00		4	1	5						
Total		810	728	1538						
Percent		52.7%	47.3%							
AM Peak	-	09:00	11:00	-	-	-	-	-	-	11:00
Vol.	-	52	56	-	-	-	-	-	-	100
PM Peak	-	16:00	14:00	-	-	-	-	-	-	16:00
Vol.	-	82	57	-	-	-	-	-	-	133

All Traffic Data Services

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Date Start: 02-Mar-21
 Site Code: 14
 Station ID: 14
 ATCHINSON WAY N.O. QUINCY AVE

Start Time	04-Mar-21 Thu	NB	SB							Total
12:00 AM		4	2							6
01:00		0	2							2
02:00		0	1							1
03:00		2	4							6
04:00		11	12							23
05:00		11	29							40
06:00		29	30							59
07:00		35	27							62
08:00		39	29							68
09:00		49	52							101
10:00		43	47							90
11:00		55	47							102
12:00 PM		54	47							101
01:00		40	44							84
02:00		52	61							113
03:00		88	49							137
04:00		80	47							127
05:00		64	58							122
06:00		55	43							98
07:00		22	18							40
08:00		20	27							47
09:00		10	10							20
10:00		4	9							13
11:00		2	4							6
Total		769	699							1468
Percent		52.4%	47.6%							
AM Peak	-	11:00	09:00	-	-	-	-	-	-	11:00
Vol.	-	55	52	-	-	-	-	-	-	102
PM Peak	-	15:00	14:00	-	-	-	-	-	-	15:00
Vol.	-	88	61	-	-	-	-	-	-	137
Grand Total		2429	2136							4565
Percent		53.2%	46.8%							
ADT		ADT 1,522	AADT 1,522							



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Location: 1 PARKER RD & ATCHINSON WAY AM

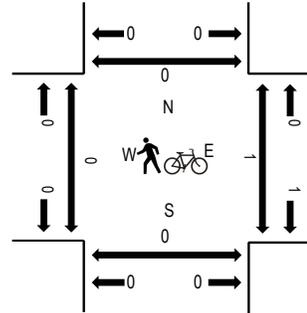
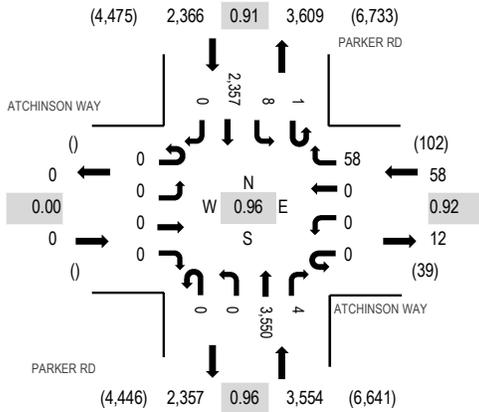
Date: Tuesday, March 2, 2021

Peak Hour: 07:00 AM - 08:00 AM

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

Peak Hour - All Vehicles

Peak Hour - Pedestrians/Bicycles on Crosswalk



Note: Total study counts contained in parentheses.

Traffic Counts

Interval Start Time	ATCHINSON WAY Eastbound				ATCHINSON WAY Westbound				PARKER RD Northbound				PARKER 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	0	0	0	0	0	0	12	0	0	846	1	1	1	502	0	1,363	5,978	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	16	0	0	885	1	0	3	646	0	1,551	5,898	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	16	0	0	925	1	0	1	618	0	1,561	5,708	0	1	0	0
7:45 AM	0	0	0	0	0	0	0	0	14	0	0	894	1	0	3	591	0	1,503	5,409	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	13	0	0	801	0	0	3	466	0	1,283	5,240	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	9	0	0	798	4	0	5	545	0	1,361		0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	9	0	0	742	3	0	4	504	0	1,262		0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	13	0	0	739	0	0	8	574	0	1,334		0	0	0	0
Count Total	0	0	0	0	0	0	0	0	102	0	0	6,630	11	1	28	4,446	0	11,218		0	1	0	0
Peak Hour	0	0	0	0	0	0	0	0	58	0	0	3,550	4	1	8	2,357	0	5,978		0	1	0	0



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Location: 2 PARKER RD & NW SITE ACCESS AM

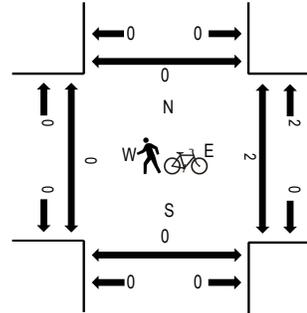
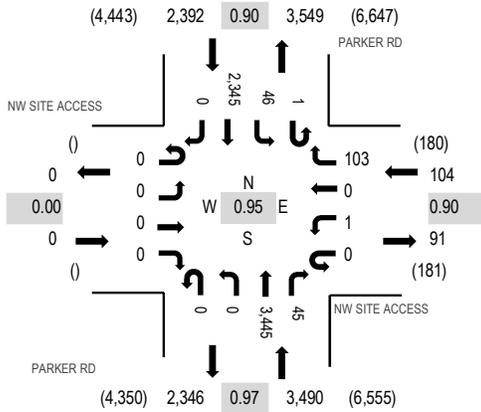
Date: Tuesday, March 2, 2021

Peak Hour: 07:00 AM - 08:00 AM

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

Peak Hour - All Vehicles

Peak Hour - Pedestrians/Bicycles on Crosswalk



Note: Total study counts contained in parentheses.

Traffic Counts

Interval Start Time	NW SITE ACCESS Eastbound				NW SITE ACCESS Westbound				PARKER RD Northbound				PARKER 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	0	0	0	1	0	24	0	0	824	10	1	8	484	0	1,352	5,986	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	24	0	0	870	13	0	9	659	0	1,575	5,936	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	26	0	0	890	8	0	13	625	0	1,562	5,685	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	29	0	0	861	14	0	16	577	0	1,497	5,409	0	2	0	0
8:00 AM	0	0	0	0	0	0	0	19	0	0	788	9	0	9	477	0	1,302	5,192	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	20	0	0	779	12	0	11	502	0	1,324		0	0	0	0
8:30 AM	0	0	0	0	0	0	0	22	0	0	727	11	0	10	516	0	1,286		0	0	0	0
8:45 AM	0	0	0	0	0	1	0	14	0	0	729	10	0	18	508	0	1,280		0	0	0	0
Count Total	0	0	0	0	0	2	0	178	0	0	6,468	87	1	94	4,348	0	11,178		0	2	0	0
Peak Hour	0	0	0	0	0	1	0	103	0	0	3,445	45	1	46	2,345	0	5,986		0	2	0	0



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Location: 3 PARKER RD & SW SITE ACCESS AM

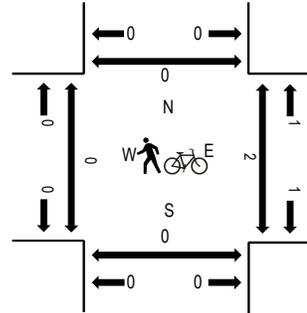
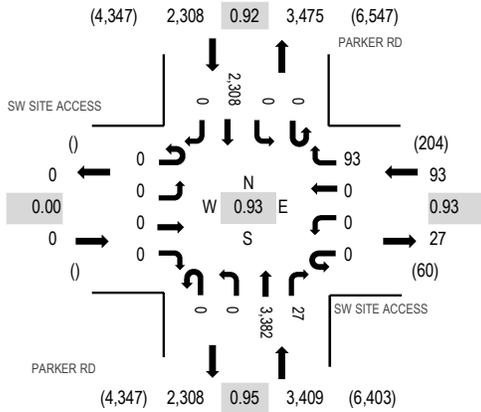
Date: Tuesday, March 2, 2021

Peak Hour: 07:00 AM - 08:00 AM

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

Peak Hour - All Vehicles

Peak Hour - Pedestrians/Bicycles on Crosswalk

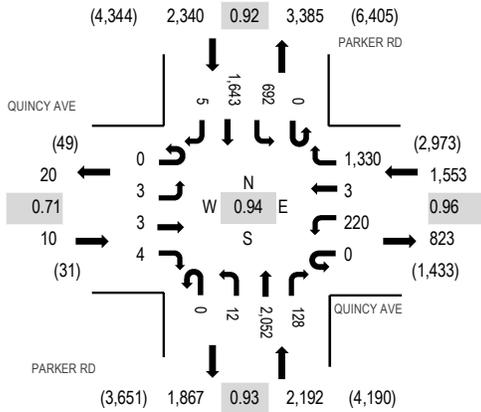


Note: Total study counts contained in parentheses.

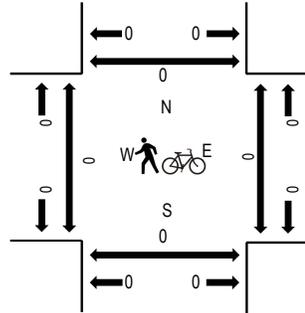
Traffic Counts

Interval Start Time	SW SITE ACCESS Eastbound				SW SITE ACCESS Westbound				PARKER RD Northbound			PARKER 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	0	0	0	0	0	0	28	0	0	803	8	0	0	481	0	1,320	5,810	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	19	0	0	844	8	0	0	632	0	1,503	5,805	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	27	0	0	892	7	0	0	632	0	1,558	5,597	0	1	0	0
7:45 AM	0	0	0	0	0	0	0	0	19	0	0	843	4	0	0	563	0	1,429	5,311	0	1	0	0
8:00 AM	0	0	0	0	0	0	0	0	30	0	0	770	10	0	0	505	0	1,315	5,144	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	27	0	0	763	7	0	0	498	0	1,295		0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	30	0	0	709	7	0	0	526	0	1,272		0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	24	0	0	719	9	0	0	510	0	1,262		0	0	0	0
Count Total	0	0	0	0	0	0	0	0	204	0	0	6,343	60	0	0	4,347	0	10,954		0	2	0	0
Peak Hour	0	0	0	0	0	0	0	0	93	0	0	3,382	27	0	0	2,308	0	5,810		0	2	0	0

Peak Hour - All Vehicles



Peak Hour - Pedestrians/Bicycles on Crosswalk



Note: Total study counts contained in parentheses.

Traffic Counts

Interval Start Time	QUINCY AVE Eastbound				QUINCY AVE Westbound				PARKER RD Northbound				PARKER 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	3	0	0	51	2	316	0	5	493	17	0	124	356	1	1,368	6,083	0	0	0	0
7:15 AM	0	1	1	1	0	45	1	359	0	1	495	21	0	180	451	1	1,557	6,095	0	0	0	0
7:30 AM	0	0	1	0	0	56	1	350	0	3	546	32	0	199	438	1	1,627	5,909	0	0	0	0
7:45 AM	0	1	1	2	0	63	0	314	0	2	549	46	0	129	424	0	1,531	5,611	0	0	0	0
8:00 AM	0	1	0	1	0	56	1	307	0	6	462	29	0	184	330	3	1,380	5,455	0	0	0	0
8:15 AM	0	2	2	2	0	78	1	290	0	5	482	31	0	123	352	3	1,371		0	0	0	0
8:30 AM	0	1	2	2	0	64	1	302	0	1	408	42	0	109	395	2	1,329		0	0	0	0
8:45 AM	0	4	1	2	0	50	1	264	0	2	458	54	0	102	432	5	1,375		0	0	0	0
Count Total	0	10	11	10	0	463	8	2,502	0	25	3,893	272	0	1,150	3,178	16	11,538		0	0	0	0
Peak Hour	0	3	3	4	0	220	3	1,330	0	12	2,052	128	0	692	1,643	5	6,095		0	0	0	0

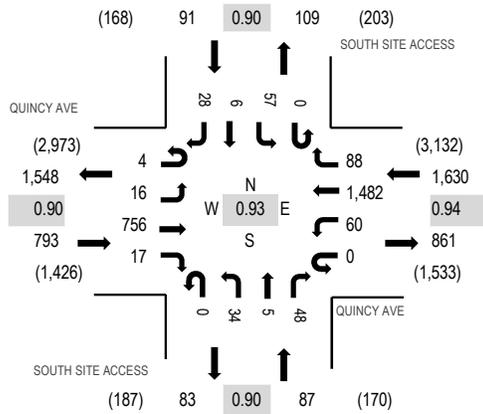
Location: 5 SOUTH SITE ACCESS & QUINCY AVE AM

Date: Tuesday, March 2, 2021

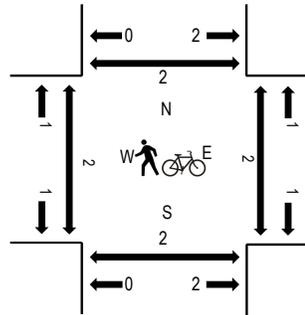
Peak Hour: 07:15 AM - 08:15 AM

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

Peak Hour - All Vehicles



Peak Hour - Pedestrians/Bicycles on Crosswalk



Note: Total study counts contained in parentheses.

Traffic Counts

Interval Start Time	QUINCY AVE Eastbound				QUINCY AVE Westbound				SOUTH SITE ACCESS Northbound				SOUTH SITE ACCESS 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	3	0	127	3	0	9	356	14	0	4	0	8	0	6	1	7	538	2,511	0	0	0	0
7:15 AM	2	5	177	4	0	11	394	17	0	4	1	12	0	12	1	5	645	2,601	1	0	1	0
7:30 AM	1	4	213	3	0	14	393	28	0	5	1	15	0	12	2	9	700	2,548	1	1	0	1
7:45 AM	0	5	176	3	0	19	355	17	0	11	2	14	0	17	2	7	628	2,452	0	1	1	1
8:00 AM	1	2	190	7	0	16	340	26	0	14	1	7	0	16	1	7	628	2,385	0	0	0	0
8:15 AM	2	2	146	5	0	21	346	15	0	12	2	13	0	16	1	11	592		0	0	0	0
8:30 AM	3	3	157	3	0	23	348	32	0	10	1	8	0	7	1	8	604		1	0	0	1
8:45 AM	6	6	163	4	0	30	291	17	0	10	2	13	0	8	3	8	561		0	0	0	0
Count Total	18	27	1,349	32	0	143	2,823	166	0	70	10	90	0	94	12	62	4,896		3	2	2	3
Peak Hour	4	16	756	17	0	60	1,482	88	0	34	5	48	0	57	6	28	2,601		2	2	2	2



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Location: 6 ATCHINSON WAY & QUINCY AVE AM

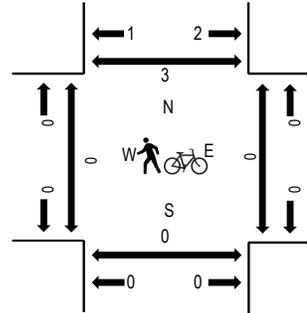
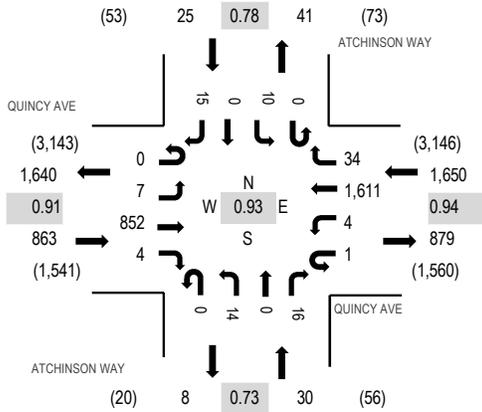
Date: Tuesday, March 2, 2021

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

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

Peak Hour - All Vehicles

Peak Hour - Pedestrians/Bicycles on Crosswalk



Note: Total study counts contained in parentheses.

Traffic Counts

Interval Start Time	QUINCY AVE Eastbound				QUINCY AVE Westbound				ATCHINSON WAY Northbound				ATCHINSON WAY 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	142	0	1	0	375	2	0	4	0	0	0	0	2	0	6	533	2,483	0	0	0	0
7:15 AM	0	1	200	0	0	0	426	8	0	3	0	2	0	0	0	0	6	646	2,568	0	0	0	1
7:30 AM	0	2	233	2	1	0	425	11	0	6	0	5	0	0	0	0	7	692	2,497	0	0	0	1
7:45 AM	0	2	207	1	0	3	380	6	0	1	0	6	0	4	0	2	612	2,397	0	0	0	1	
8:00 AM	0	2	212	1	0	1	380	9	0	4	0	3	0	6	0	0	618	2,313	0	0	0	0	
8:15 AM	0	5	168	4	1	1	372	8	0	6	0	1	0	3	0	6	575		0	0	0	0	
8:30 AM	0	3	169	2	0	1	397	6	0	4	0	3	0	4	0	3	592		0	0	0	0	
8:45 AM	0	3	180	1	2	3	323	4	0	6	0	2	0	3	0	1	528		0	0	0	0	
Count Total	0	19	1,511	11	5	9	3,078	54	0	34	0	22	0	22	0	31	4,796		0	0	0	3	
Peak Hour	0	7	852	4	1	4	1,611	34	0	14	0	16	0	10	0	15	2,568		0	0	0	3	

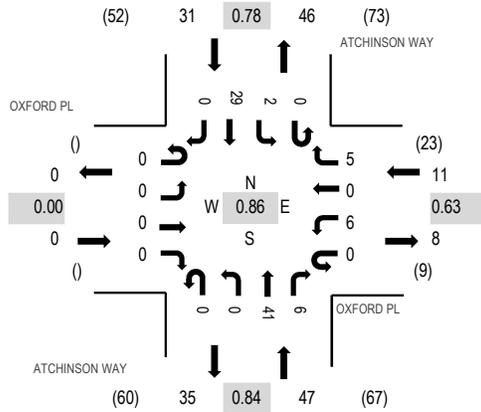
Location: 7 ATCHINSON WAY & OXFORD PL AM

Date: Tuesday, March 2, 2021

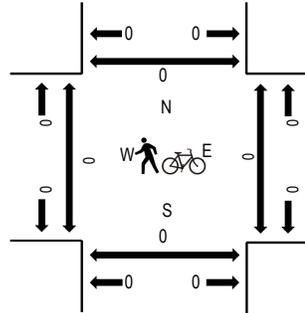
Peak Hour: 07:30 AM - 08:30 AM

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

Peak Hour - All Vehicles



Peak Hour - Pedestrians/Bicycles on Crosswalk



Note: Total study counts contained in parentheses.

Traffic Counts

Interval Start Time	OXFORD PL Eastbound				OXFORD PL Westbound				ATCHINSON WAY Northbound				ATCHINSON WAY 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	0	0	0	1	0	5	0	0	4	0	0	0	6	0	16	81	0	1	1	0
7:15 AM	0	0	0	0	0	3	0	2	0	0	8	0	0	1	5	0	19	85	0	0	0	2
7:30 AM	0	0	0	0	0	2	0	0	0	0	14	0	0	1	9	0	26	89	0	0	0	0
7:45 AM	0	0	0	0	0	1	0	1	0	0	7	2	0	0	9	0	20	74	0	0	0	0
8:00 AM	0	0	0	0	0	2	0	1	0	0	10	2	0	0	5	0	20	61	0	0	0	0
8:15 AM	0	0	0	0	0	1	0	3	0	0	10	2	0	1	6	0	23		0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	5	0	0	0	6	0	11		0	0	0	1
8:45 AM	0	0	0	0	0	1	0	0	0	0	3	0	0	0	3	0	7		0	0	0	2
Count Total	0	0	0	0	0	11	0	12	0	0	61	6	0	3	49	0	142		0	1	1	5
Peak Hour	0	0	0	0	0	6	0	5	0	0	41	6	0	2	29	0	89		0	0	0	0



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Location: 8 13950 OXFORD PL & QUINCY AVE AM

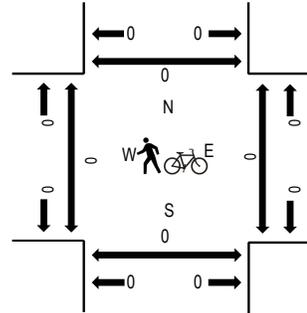
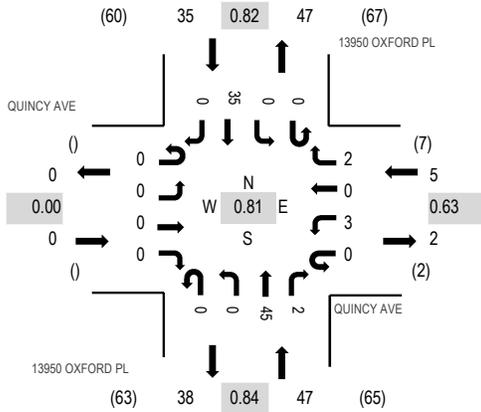
Date: Tuesday, March 2, 2021

Peak Hour: 07:30 AM - 08:30 AM

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

Peak Hour - All Vehicles

Peak Hour - Pedestrians/Bicycles on Crosswalk



Note: Total study counts contained in parentheses.

Traffic Counts

Interval Start Time	QUINCY AVE Eastbound				QUINCY AVE Westbound				13950 OXFORD PL Northbound				13950 OXFORD PL 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	0	0	0	0	0	0	1	0	0	3	0	0	0	7	0	11	74	0	2	0	0
7:15 AM	0	0	0	0	0	0	0	0	1	0	0	7	0	0	0	8	0	16	82	0	0	0	0
7:30 AM	0	0	0	0	0	1	0	1	0	0	14	0	0	0	11	0	27	87	0	0	0	0	
7:45 AM	0	0	0	0	0	1	0	0	0	0	8	1	0	0	10	0	20	71	0	0	0	0	
8:00 AM	0	0	0	0	0	0	0	1	0	0	11	0	0	0	7	0	19	58	0	0	0	0	
8:15 AM	0	0	0	0	0	1	0	0	0	0	12	1	0	0	7	0	21		0	0	0	0	
8:30 AM	0	0	0	0	0	0	0	0	0	0	5	0	0	0	6	0	11		0	0	0	0	
8:45 AM	0	0	0	0	0	0	0	0	0	0	3	0	0	0	4	0	7		0	0	0	0	
Count Total	0	0	0	0	0	3	0	4	0	0	63	2	0	0	60	0	132		0	2	0	0	
Peak Hour	0	0	0	0	0	3	0	2	0	0	45	2	0	0	35	0	87		0	0	0	0	



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Location: 1 PARKER RD & ATCHINSON WAY PM

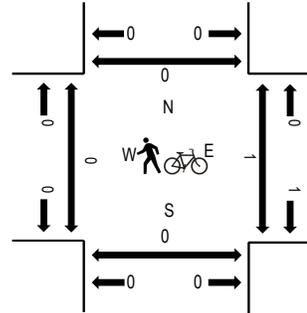
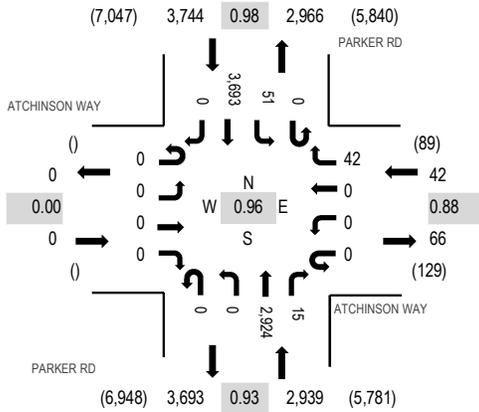
Date: Tuesday, March 2, 2021

Peak Hour: 04:30 PM - 05:30 PM

Peak 15-Minutes: 05:15 PM - 05:30 PM

Peak Hour - All Vehicles

Peak Hour - Pedestrians/Bicycles on Crosswalk



Note: Total study counts contained in parentheses.

Traffic Counts

Interval Start Time	ATCHINSON WAY Eastbound				ATCHINSON WAY Westbound				PARKER RD Northbound				PARKER RD Southbound				Total	Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
4:00 PM	0	0	0	0	0	0	0	14	0	0	712	4	0	13	900	0	1,643	6,632	0	2	0	0
4:15 PM	0	0	0	0	0	0	0	11	0	0	692	4	0	11	896	0	1,614	6,586	0	1	0	0
4:30 PM	0	0	0	0	0	0	0	13	0	0	780	3	0	18	874	0	1,688	6,725	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	15	0	0	723	4	0	12	933	0	1,687	6,574	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	4	0	0	637	4	0	11	941	0	1,597	6,285	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	10	0	0	784	4	0	10	945	0	1,753		0	0	0	0
5:30 PM	0	0	0	0	0	0	0	11	0	0	750	4	0	7	765	0	1,537		0	0	0	0
5:45 PM	0	0	0	0	0	0	0	11	0	0	672	4	1	16	694	0	1,398		0	0	0	0
Count Total	0	0	0	0	0	0	0	89	0	0	5,750	31	1	98	6,948	0	12,917		0	3	0	0
Peak Hour	0	0	0	0	0	0	0	42	0	0	2,924	15	0	51	3,693	0	6,725		0	0	0	0



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Location: 2 PARKER RD & NW SITE ACCESS PM

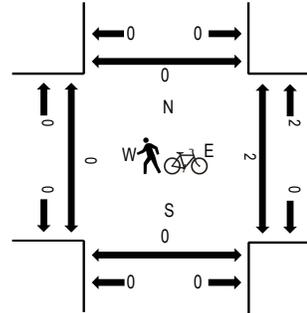
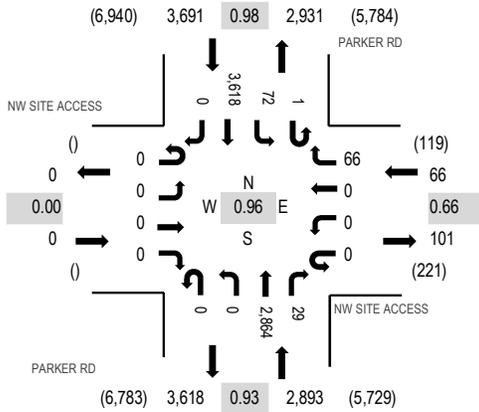
Date: Tuesday, March 2, 2021

Peak Hour: 04:30 PM - 05:30 PM

Peak 15-Minutes: 05:15 PM - 05:30 PM

Peak Hour - All Vehicles

Peak Hour - Pedestrians/Bicycles on Crosswalk



Note: Total study counts contained in parentheses.

Traffic Counts

Interval Start Time	NW SITE ACCESS Eastbound				NW SITE ACCESS Westbound				PARKER RD Northbound				PARKER RD Southbound				Total	Rolling Hour	Pedestrian Crossings				
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North	
4:00 PM	0	0	0	0	0	0	0	0	5	0	0	722	3	0	21	852	0	1,603	6,546	0	0	0	0
4:15 PM	0	0	0	0	0	1	0	12	0	0	0	682	11	0	23	883	0	1,612	6,529	0	1	0	0
4:30 PM	0	0	0	0	0	0	0	25	0	0	0	750	2	1	27	857	0	1,662	6,650	0	1	0	0
4:45 PM	0	0	0	0	0	0	0	15	0	0	0	712	11	0	17	914	0	1,669	6,519	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	13	0	0	0	636	7	0	11	919	0	1,586	6,242	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	13	0	0	0	766	9	0	17	928	0	1,733		0	1	0	0
5:30 PM	0	0	0	0	0	0	0	14	0	0	0	742	10	0	17	748	0	1,531		0	0	0	0
5:45 PM	0	0	0	0	0	0	0	21	0	0	0	655	11	0	24	681	0	1,392		0	0	0	0
Count Total	0	0	0	0	0	1	0	118	0	0	0	5,665	64	1	157	6,782	0	12,788		0	3	0	0
Peak Hour	0	0	0	0	0	0	0	66	0	0	0	2,864	29	1	72	3,618	0	6,650		0	2	0	0



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Location: 3 PARKER RD & SW SITE ACCESS PM

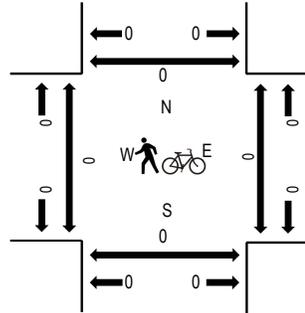
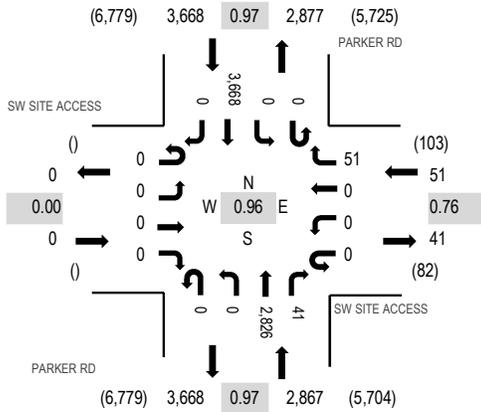
Date: Tuesday, March 2, 2021

Peak Hour: 04:30 PM - 05:30 PM

Peak 15-Minutes: 05:15 PM - 05:30 PM

Peak Hour - All Vehicles

Peak Hour - Pedestrians/Bicycles on Crosswalk



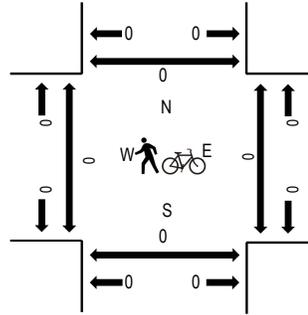
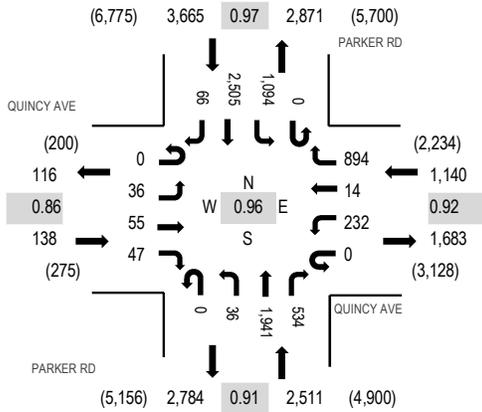
Note: Total study counts contained in parentheses.

Traffic Counts

Interval Start Time	SW SITE ACCESS Eastbound				SW SITE ACCESS Westbound				PARKER RD Northbound			PARKER RD Southbound				Total	Rolling Hour	Pedestrian Crossings				
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru			Right	West	East	South	North
4:00 PM	0	0	0	0	0	0	0	18	0	0	710	15	0	0	845	0	1,588	6,446	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	9	0	0	687	10	0	0	859	0	1,565	6,433	0	1	0	0
4:30 PM	0	0	0	0	0	0	0	10	0	0	736	13	0	0	911	0	1,670	6,586	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	11	0	0	710	13	0	0	889	0	1,623	6,384	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	13	0	0	631	7	0	0	924	0	1,575	6,140	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	17	0	0	749	8	0	0	944	0	1,718		0	0	0	0
5:30 PM	0	0	0	0	0	0	0	7	0	0	741	8	0	0	712	0	1,468		0	0	0	0
5:45 PM	0	0	0	0	0	0	0	18	0	0	658	8	0	0	695	0	1,379		0	0	0	0
Count Total	0	0	0	0	0	0	0	103	0	0	5,622	82	0	0	6,779	0	12,586		0	1	0	0
Peak Hour	0	0	0	0	0	0	0	51	0	0	2,826	41	0	0	3,668	0	6,586		0	0	0	0

Peak Hour - All Vehicles

Peak Hour - Pedestrians/Bicycles on Crosswalk



Note: Total study counts contained in parentheses.

Traffic Counts

Interval Start Time	QUINCY AVE Eastbound				QUINCY AVE Westbound				PARKER RD Northbound				PARKER 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	8	17	12	0	58	3	221	0	5	482	105	0	242	588	16	1,757	7,231	0	0	0	0
4:15 PM	0	11	21	12	0	46	3	212	0	5	461	137	0	231	609	19	1,767	7,301	0	0	0	0
4:30 PM	0	12	13	10	0	67	2	228	0	10	504	176	0	251	638	21	1,932	7,454	0	0	0	0
4:45 PM	0	11	15	9	0	56	3	196	0	6	512	76	0	278	597	16	1,775	7,108	0	0	0	0
5:00 PM	0	7	11	13	0	58	6	213	0	11	419	171	0	244	663	11	1,827	6,953	0	0	0	0
5:15 PM	0	6	16	15	0	51	3	257	0	9	506	111	0	321	607	18	1,920		0	0	0	0
5:30 PM	0	6	19	10	0	45	2	251	0	7	500	34	0	261	441	10	1,586		0	0	0	0
5:45 PM	0	11	7	3	0	66	3	184	0	5	482	166	0	205	482	6	1,620		0	0	0	0
Count Total	0	72	119	84	0	447	25	1,762	0	58	3,866	976	0	2,033	4,625	117	14,184		0	0	0	0
Peak Hour	0	36	55	47	0	232	14	894	0	36	1,941	534	0	1,094	2,505	66	7,454		0	0	0	0

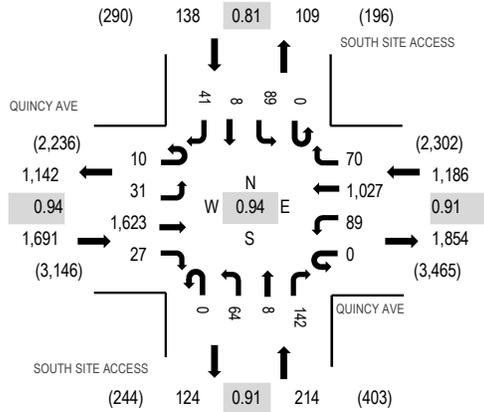
Location: 5 SOUTH SITE ACCESS & QUINCY AVE PM

Date: Tuesday, March 2, 2021

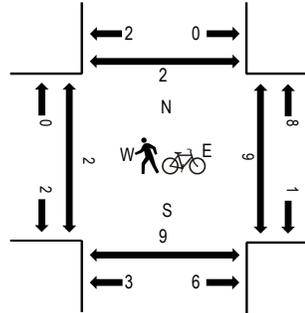
Peak Hour: 04:30 PM - 05:30 PM

Peak 15-Minutes: 05:15 PM - 05:30 PM

Peak Hour - All Vehicles



Peak Hour - Pedestrians/Bicycles on Crosswalk



Note: Total study counts contained in parentheses.

Traffic Counts

Interval Start Time	QUINCY AVE Eastbound				QUINCY AVE Westbound				SOUTH SITE ACCESS Northbound				SOUTH SITE ACCESS 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	3	351	13	0	22	253	19	0	15	0	31	0	25	1	12	745	3,050	0	0	0	0
4:15 PM	5	5	373	11	0	21	239	12	0	13	3	27	0	21	1	9	740	3,112	1	1	1	1
4:30 PM	2	7	429	7	0	23	264	20	0	19	1	36	0	24	1	14	847	3,229	0	1	0	0
4:45 PM	2	8	355	4	0	15	222	16	0	19	3	37	0	23	3	11	718	3,089	2	4	3	2
5:00 PM	3	9	408	8	0	32	257	11	0	12	1	36	0	22	1	7	807	3,091	0	0	1	0
5:15 PM	3	7	431	8	0	19	284	23	0	14	3	33	0	20	3	9	857		0	2	4	0
5:30 PM	2	5	301	7	0	11	263	17	0	24	0	32	0	31	3	11	707		0	0	0	0
5:45 PM	2	5	365	7	0	19	224	16	0	17	2	25	0	29	4	5	720		0	0	0	0
Count Total	19	49	3,013	65	0	162	2,006	134	0	133	13	257	0	195	17	78	6,141		3	8	9	3
Peak Hour	10	31	1,623	27	0	89	1,027	70	0	64	8	142	0	89	8	41	3,229		2	7	8	2



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Location: 6 ATCHINSON WAY & QUINCY AVE PM

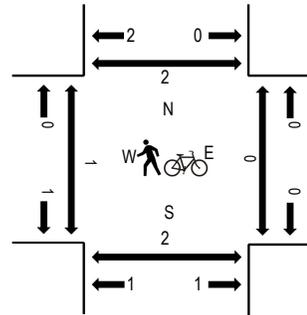
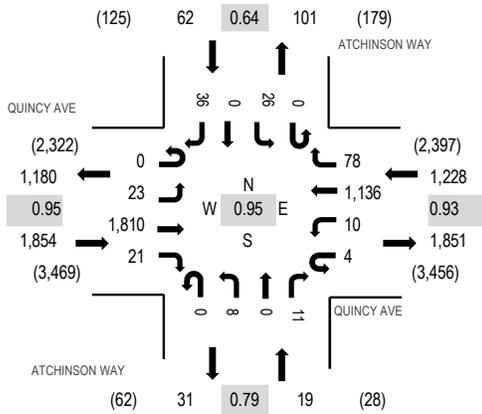
Date: Tuesday, March 2, 2021

Peak Hour: 04:30 PM - 05:30 PM

Peak 15-Minutes: 05:15 PM - 05:30 PM

Peak Hour - All Vehicles

Peak Hour - Pedestrians/Bicycles on Crosswalk



Note: Total study counts contained in parentheses.

Traffic Counts

Interval Start Time	QUINCY AVE Eastbound				QUINCY AVE Westbound				ATCHINSON WAY Northbound				ATCHINSON WAY 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	7	389	3	1	3	290	10	0	0	0	1	0	8	0	9	721	2,978	0	0	0	0
4:15 PM	0	10	418	4	2	0	279	9	0	2	0	1	0	6	0	3	734	3,062	0	0	0	2
4:30 PM	0	8	473	4	0	0	284	24	0	3	0	2	0	6	0	9	813	3,163	0	0	0	0
4:45 PM	0	7	395	9	3	5	244	18	0	3	0	0	0	13	0	13	710	3,034	0	0	0	0
5:00 PM	0	1	463	6	0	3	297	21	0	0	0	5	0	4	0	5	805	3,041	1	0	1	1
5:15 PM	0	7	479	2	1	2	311	15	0	2	0	4	0	3	0	9	835		0	0	1	1
5:30 PM	0	8	351	4	0	3	281	20	0	3	0	1	0	5	0	8	684		0	0	0	1
5:45 PM	0	5	409	7	1	7	254	9	0	0	0	1	0	11	0	13	717		0	0	0	1
Count Total	0	53	3,377	39	8	23	2,240	126	0	13	0	15	0	56	0	69	6,019		1	0	2	6
Peak Hour	0	23	1,810	21	4	10	1,136	78	0	8	0	11	0	26	0	36	3,163		1	0	2	2



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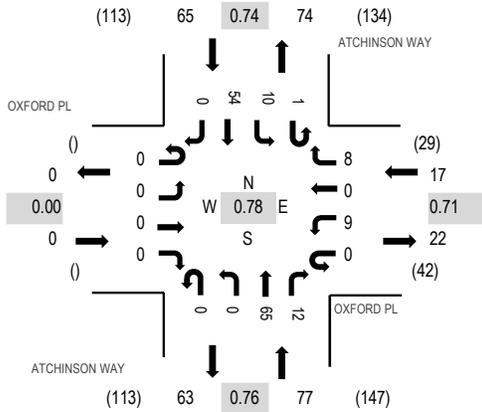
Location: 7 ATCHINSON WAY & OXFORD PL PM

Date: Tuesday, March 2, 2021

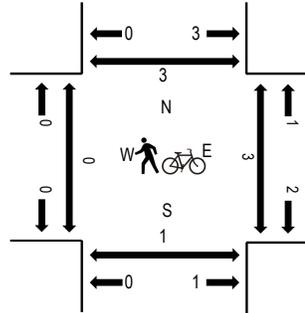
Peak Hour: 04:00 PM - 05:00 PM

Peak 15-Minutes: 04:30 PM - 04:45 PM

Peak Hour - All Vehicles



Peak Hour - Pedestrians/Bicycles on Crosswalk



Note: Total study counts contained in parentheses.

Traffic Counts

Interval Start Time	OXFORD PL Eastbound				OXFORD PL Westbound				ATCHINSON WAY Northbound				ATCHINSON WAY Southbound				Total	Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
4:00 PM	0	0	0	0	0	3	0	1	0	0	12	1	0	3	11	0	31	159	0	0	0	1
4:15 PM	0	0	0	0	0	0	0	1	0	0	14	2	1	1	8	0	27	150	0	2	0	1
4:30 PM	0	0	0	0	0	1	0	5	0	0	23	3	0	4	15	0	51	150	0	0	0	0
4:45 PM	0	0	0	0	0	5	0	1	0	0	16	6	0	2	20	0	50	132	0	1	1	1
5:00 PM	0	0	0	0	0	1	0	0	0	0	10	3	0	1	7	0	22	130	0	0	1	0
5:15 PM	0	0	0	0	0	3	0	1	0	0	14	4	0	0	5	0	27		0	0	0	0
5:30 PM	0	0	0	0	0	2	0	2	0	0	16	6	0	0	7	0	33		0	0	0	0
5:45 PM	0	0	0	0	0	1	0	2	0	0	15	2	0	4	24	0	48		0	1	0	3
Count Total	0	0	0	0	0	16	0	13	0	0	120	27	1	15	97	0	289		0	4	2	6
Peak Hour	0	0	0	0	0	9	0	8	0	0	65	12	1	10	54	0	159		0	3	1	3

Location: 8 13950 OXFORD PL & QUINCY AVE PM

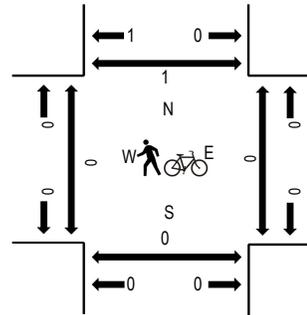
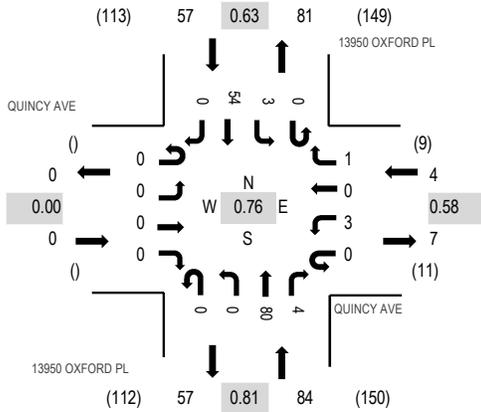
Date: Tuesday, March 2, 2021

Peak Hour: 04:30 PM - 05:30 PM

Peak 15-Minutes: 04:45 PM - 05:00 PM

Peak Hour - All Vehicles

Peak Hour - Pedestrians/Bicycles on Crosswalk



Note: Total study counts contained in parentheses.

Traffic Counts

Interval Start Time	QUINCY AVE Eastbound				QUINCY AVE Westbound				13950 OXFORD PL Northbound				13950 OXFORD PL Southbound				Total	Rolling Hour	Pedestrian Crossings				
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North	
4:00 PM	0	0	0	0	0	0	0	0	2	0	0	11	1	0	0	13	0	27	142	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	16	0	0	0	9	0	25	142	0	1	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	26	0	0	2	14	0	42	145	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	22	1	0	0	25	0	48	135	0	0	0	1
5:00 PM	0	0	0	0	0	2	0	0	0	0	0	15	2	0	1	7	0	27	130	0	0	0	0
5:15 PM	0	0	0	0	0	1	0	1	0	0	0	17	1	0	0	8	0	28	0	0	0	0	
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	22	1	0	0	9	0	32	0	1	0	0	
5:45 PM	0	0	0	0	0	1	0	2	0	0	0	15	0	0	2	23	0	43	0	1	0	0	
Count Total	0	0	0	0	0	4	0	5	0	0	0	144	6	0	5	108	0	272	0	3	0	1	
Peak Hour	0	0	0	0	0	3	0	1	0	0	0	80	4	0	3	54	0	145	0	0	0	1	

APPENDIX “B”

**INTERSECTION
CAPACITY ANALYSIS
WORKSHEETS**

Lanes and Geometrics
 1: S. Parker Rd. (SH 83) & S Atchison Way

East Bank
 03/17/2021



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↗	↕↕↕↕		↖	↕↕↕↕
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%		0%			0%
Storage Length (ft)	0	0		0	200	
Storage Lanes	0	1		0	1	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	0.91	0.91	1.00	0.91
Ped Bike Factor						
Frt		0.865				
Flt Protected					0.950	
Satd. Flow (prot)	0	1611	5085	0	1770	5085
Flt Permitted					0.950	
Satd. Flow (perm)	0	1611	5085	0	1770	5085
Link Speed (mph)	30		30			30
Link Distance (ft)	538		680			507
Travel Time (s)	12.2		15.5			11.5

Intersection Summary

Area Type: Other

Intersection						
Int Delay, s/veh	8.4					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↑ ↑ ↑	↑ ↑ ↑		↑ ↑ ↑	↑ ↑ ↑
Traffic Vol, veh/h	0	64	3905	4	10	2631
Future Vol, veh/h	0	64	3905	4	10	2631
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	200	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	70	4245	4	11	2860

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	-	2125	0 0 4249 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	~ 35	- - ~ 8 -
Stage 1	0	-	- - - -
Stage 2	0	-	- - - -
Platoon blocked, %			- - - -
Mov Cap-1 Maneuver	-	~ 35	- - ~ 8 -
Mov Cap-2 Maneuver	-	-	- - - -
Stage 1	-	-	- - - -
Stage 2	-	-	- - - -

Approach	WB	NB	SB
HCM Control Delay, s	706.1	0	4
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	35 ~ 8	-
HCM Lane V/C Ratio	-	-	1.988 1.359	-
HCM Control Delay (s)	-	-	706.1 1066.4	-
HCM Lane LOS	-	-	F F	-
HCM 95th %tile Q(veh)	-	-	7.7 2.2	-

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

Lanes and Geometrics
 2: S. Parker Rd. (SH 83) & NW Site Access

East Bank
 03/17/2021



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%		0%			0%
Storage Length (ft)	0	150		0	400	
Storage Lanes	1	1		0	1	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	0.91	0.91	1.00	0.91
Ped Bike Factor						
Frt		0.850	0.998			
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1770	1583	5075	0	1770	5085
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1770	1583	5075	0	1770	5085
Link Speed (mph)	30		30			30
Link Distance (ft)	484		560			680
Travel Time (s)	11.0		12.7			15.5

Intersection Summary

Area Type: Other

Intersection						
Int Delay, s/veh	25.2					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↵	↵ ↵ ↵ ↵	↵ ↵ ↵ ↵		↵ ↵ ↵ ↵	↵ ↵ ↵ ↵
Traffic Vol, veh/h	1	113	3796	50	52	2580
Future Vol, veh/h	1	113	3796	50	52	2580
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	-	-	400	-
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	1	123	4126	54	57	2804

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	5389	2090	0	0	4180
Stage 1	4153	-	-	-	-
Stage 2	1236	-	-	-	-
Critical Hdwy	5.74	7.14	-	-	5.34
Critical Hdwy Stg 1	6.64	-	-	-	-
Critical Hdwy Stg 2	6.04	-	-	-	-
Follow-up Hdwy	3.82	3.92	-	-	3.12
Pot Cap-1 Maneuver	~ 1	~ 37	-	-	~ 9
Stage 1	2	-	-	-	-
Stage 2	213	-	-	-	-
Platoon blocked, %					
Mov Cap-1 Maneuver	0	~ 37	-	-	~ 9
Mov Cap-2 Maneuver	0	-	-	-	-
Stage 1	2	-	-	-	-
Stage 2	0	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s		0	63
HCM LOS	-		

Minor Lane/Major Mvmt	NBT	NBRWBLn1WBLn2	SBL	SBT
Capacity (veh/h)	-	-	37	~ 9
HCM Lane V/C Ratio	-	-	3.32	6.28
HCM Control Delay (s)	-	-	\$ 1270	\$ 3187.4
HCM Lane LOS	-	-	F	F
HCM 95th %tile Q(veh)	-	-	14	8.4

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

Lanes and Geometrics
 3: SW Site Access & S. Parker Rd. (SH 83)

East Bank
 03/17/2021



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↑	↑↑↑			↑↑↑
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%		0%			0%
Storage Length (ft)	0	0		0	0	
Storage Lanes	0	1		0	0	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	0.91	0.91	1.00	0.91
Ped Bike Factor						
Frt		0.865	0.999			
Flt Protected						
Satd. Flow (prot)	0	1611	5080	0	0	5085
Flt Permitted						
Satd. Flow (perm)	0	1611	5080	0	0	5085
Link Speed (mph)	30		30			30
Link Distance (ft)	488		526			560
Travel Time (s)	11.1		12.0			12.7

Intersection Summary

Area Type: Other

Intersection

Int Delay, s/veh 18.4

Movement WBL WBR NBT NBR SBL SBT

Lane Configurations		↑ ↑↑			↑↑↑	
Traffic Vol, veh/h	0	107	3739	30	0	2581
Future Vol, veh/h	0	107	3739	30	0	2581
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	116	4064	33	0	2805

Major/Minor Minor1 Major1 Major2

Conflicting Flow All	-	2049	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	~ 39	-	-	0	-
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %			-	-	-	-
Mov Cap-1 Maneuver	-	~ 39	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach WB NB SB

HCM Control Delay, \$	1111.4	0	0
HCM LOS	F		

Minor Lane/Major Mvmt NBT NBRWBLn1 SBT

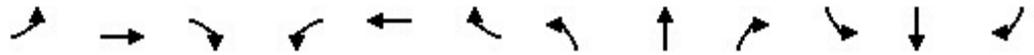
Capacity (veh/h)	-	-	39	-
HCM Lane V/C Ratio	-	-	2.982	-
HCM Control Delay (s)	-	-	\$ 1111.4	-
HCM Lane LOS	-	-	F	-
HCM 95th %tile Q(veh)	-	-	13	-

Notes

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

Lanes and Geometrics
 4: S. Parker Rd. (SH 83) & E Quincy Ave.

East Bank
 03/17/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕		↖	↖	↖↖	↖	↕↕↕		↖↖↖	↕↕↕	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%				0%
Storage Length (ft)	200		0	200		0	150		400	400		500
Storage Lanes	0		0	1		2	1		0	3		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	0.88	1.00	0.91	0.91	0.94	0.91	0.91
Ped Bike Factor												
Frt		0.951				0.850		0.991				0.999
Flt Protected		0.982		0.950	0.953		0.950			0.950		
Satd. Flow (prot)	0	1740	0	1681	1686	2787	1770	5040	0	4990	5080	0
Flt Permitted		0.925		0.750	0.723		0.950			0.950		
Satd. Flow (perm)	0	1639	0	1327	1279	2787	1770	5040	0	4990	5080	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		4				27		10				1
Link Speed (mph)		30			30			30				30
Link Distance (ft)		385			481			793				526
Travel Time (s)		8.8			10.9			18.0				12.0

Intersection Summary

Area Type: Other

Timings
4: S. Parker Rd. (SH 83) & E Quincy Ave.

East Bank
03/17/2021

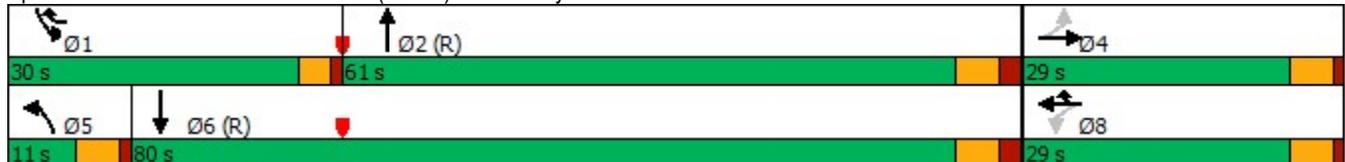


Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations		↔	↗	↖	↗↖	↗	↗↖↗	↗↖↗	↗↖↗
Traffic Volume (vph)	4	3	242	3	1480	13	2285	763	1812
Future Volume (vph)	4	3	242	3	1480	13	2285	763	1812
Turn Type	Perm	NA	Perm	NA	pt+ov	Prot	NA	Prot	NA
Protected Phases		4		8	8 1	5	2	1	6
Permitted Phases	4		8						
Detector Phase	4	4	8	8	8 1	5	2	1	6
Switch Phase									
Minimum Initial (s)	5.0	5.0	3.0	3.0		5.0	20.0	5.0	5.0
Minimum Split (s)	20.0	20.0	23.0	23.0		10.0	26.0	9.5	24.0
Total Split (s)	29.0	29.0	29.0	29.0		11.0	61.0	30.0	80.0
Total Split (%)	24.2%	24.2%	24.2%	24.2%		9.2%	50.8%	25.0%	66.7%
Yellow Time (s)	4.0	4.0	4.0	4.0		4.0	4.0	3.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0		1.0	2.0	1.0	2.0
Lost Time Adjust (s)		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	6.0	4.0	6.0
Lead/Lag						Lead	Lag	Lead	Lag
Lead-Lag Optimize?						Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None		None	C-Max	None	C-Max
Act Effct Green (s)		24.0	24.0	24.0	54.0	5.8	55.0	26.0	80.6
Actuated g/C Ratio		0.20	0.20	0.20	0.45	0.05	0.46	0.22	0.67
v/c Ratio		0.03	0.51	0.52	1.27	0.16	1.14	0.77	0.58
Control Delay		31.6	35.3	35.9	147.8	59.2	99.8	49.6	12.1
Queue Delay		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		31.6	35.3	35.9	147.8	59.2	99.8	49.6	12.1
LOS		C	D	D	F	E	F	D	B
Approach Delay		31.6		131.9			99.6		23.2
Approach LOS		C		F			F		C

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green
 Natural Cycle: 140
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.27
 Intersection Signal Delay: 78.5
 Intersection Capacity Utilization 116.6%
 Analysis Period (min) 15
 Intersection LOS: E
 ICU Level of Service H

Splits and Phases: 4: S. Parker Rd. (SH 83) & E Quincy Ave.



Queues
4: S. Parker Rd. (SH 83) & E Quincy Ave.

East Bank
03/17/2021



Lane Group	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	11	134	132	1609	14	2637	829	1977
v/c Ratio	0.03	0.51	0.52	1.27	0.16	1.14	0.77	0.58
Control Delay	31.6	35.3	35.9	147.8	59.2	99.8	49.6	12.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	31.6	35.3	35.9	147.8	59.2	99.8	49.6	12.1
Queue Length 50th (ft)	4	57	57	~892	11	~875	215	238
Queue Length 95th (ft)	21	130	131	#1044	33	#966	264	376
Internal Link Dist (ft)	305		401			713		446
Turn Bay Length (ft)		200			150		400	
Base Capacity (vph)	331	265	255	1269	88	2315	1081	3412
Starvation Cap Reductn	0	0	0	1	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.03	0.51	0.52	1.27	0.16	1.14	0.77	0.58

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

HCM 6th Signalized Intersection Summary
4: S. Parker Rd. (SH 83) & E Quincy Ave.

East Bank
03/17/2021



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔		↵	↵	↵↵	↵	↵↵↵		↵↵↵	↵↵↵	
Traffic Volume (veh/h)	4	3	4	242	3	1480	13	2285	141	763	1812	6
Future Volume (veh/h)	4	3	4	242	3	1480	13	2285	141	763	1812	6
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	4	3	4	265	0	1609	14	2484	153	829	1970	7
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	82	63	59	687	0	1236	28	2387	145	955	3420	12
Arrive On Green	0.20	0.20	0.20	0.20	0.00	0.20	0.02	0.48	0.48	0.19	0.65	0.65
Sat Flow, veh/h	203	315	296	2817	0	3170	1781	4921	299	5023	5252	19
Grp Volume(v), veh/h	11	0	0	265	0	1609	14	1708	929	829	1277	700
Grp Sat Flow(s),veh/h/ln	814	0	0	1409	0	1585	1781	1702	1817	1674	1702	1867
Q Serve(g_s), s	0.0	0.0	0.0	9.2	0.0	24.0	0.9	58.2	58.2	19.2	25.1	25.1
Cycle Q Clear(g_c), s	0.6	0.0	0.0	9.8	0.0	24.0	0.9	58.2	58.2	19.2	25.1	25.1
Prop In Lane	0.36		0.36	1.00		1.00	1.00		0.16	1.00		0.01
Lane Grp Cap(c), veh/h	204	0	0	687	0	1236	28	1651	881	955	2216	1216
V/C Ratio(X)	0.05	0.00	0.00	0.39	0.00	1.30	0.51	1.03	1.05	0.87	0.58	0.58
Avail Cap(c_a), veh/h	204	0	0	687	0	1236	89	1651	881	1088	2216	1216
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	0.68	0.00	0.68	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	38.6	0.0	0.0	42.3	0.0	36.6	58.6	30.9	30.9	47.1	11.7	11.7
Incr Delay (d2), s/veh	0.1	0.0	0.0	0.2	0.0	139.7	13.6	31.6	45.7	7.0	1.1	2.0
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	0.5	0.0	0.0	6.0	0.0	57.9	0.9	40.2	47.4	13.4	14.3	15.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	38.8	0.0	0.0	42.5	0.0	176.3	72.2	62.6	76.6	54.1	12.8	13.7
LnGrp LOS	D	A	A	D	A	F	E	F	F	D	B	B
Approach Vol, veh/h		11			1874			2651			2806	
Approach Delay, s/veh		38.8			157.4			67.5			25.2	
Approach LOS		D			F			E			C	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	26.8	64.2		29.0	6.9	84.1		29.0				
Change Period (Y+Rc), s	4.0	6.0		5.0	5.0	6.0		5.0				
Max Green Setting (Gmax), s	26.0	55.0		24.0	6.0	74.0		24.0				
Max Q Clear Time (g_c+I1), s	21.2	60.2		2.6	2.9	27.1		26.0				
Green Ext Time (p_c), s	1.6	0.0		0.0	0.0	24.1		0.0				

Intersection Summary

HCM 6th Ctrl Delay	74.3
HCM 6th LOS	E

Notes

- User approved pedestrian interval to be less than phase max green.
- User approved volume balancing among the lanes for turning movement.

Lanes and Geometrics
5: E Quincy Ave. & South Site Access

East Bank
03/17/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	150		0	100		0	0		100	0		0
Storage Lanes	1		0	1		0	0		1	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.91	0.91	1.00	0.91	0.91	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.997			0.992				0.850			0.850
Flt Protected	0.950			0.950				0.959			0.957	
Satd. Flow (prot)	1770	5070	0	1770	5045	0	0	1786	1583	0	1783	1583
Flt Permitted	0.062			0.249				0.767			0.745	
Satd. Flow (perm)	115	5070	0	464	5045	0	0	1429	1583	0	1388	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		5			13				58			55
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		481			367			333			210	
Travel Time (s)		10.9			8.3			7.6			4.8	

Intersection Summary

Area Type: Other

Timings
5: E Quincy Ave. & South Site Access

East Bank
03/17/2021

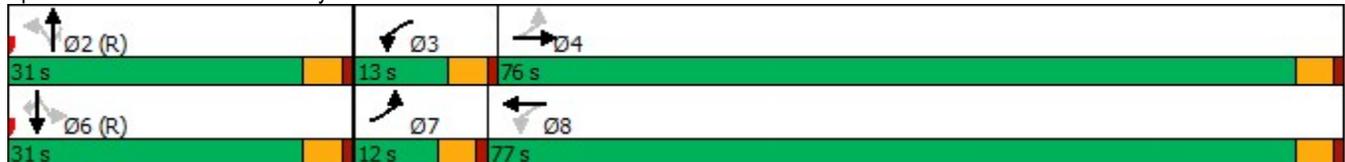


Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↑↑↑	↖	↑↑↑		↖	↖		↖	↖
Traffic Volume (vph)	22	834	66	1652	40	6	53	63	7	33
Future Volume (vph)	22	834	66	1652	40	6	53	63	7	33
Turn Type	pm+pt	NA	pm+pt	NA	Perm	NA	Perm	Perm	NA	Perm
Protected Phases	7	4	3	8		2			6	
Permitted Phases	4		8		2		2	6		6
Detector Phase	7	4	3	8	2	2	2	6	6	6
Switch Phase										
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.5	22.5	9.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5
Total Split (s)	12.0	76.0	13.0	77.0	31.0	31.0	31.0	31.0	31.0	31.0
Total Split (%)	10.0%	63.3%	10.8%	64.2%	25.8%	25.8%	25.8%	25.8%	25.8%	25.8%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5		4.5	4.5		4.5	4.5
Lead/Lag	Lead	Lag	Lead	Lag						
Lead-Lag Optimize?	Yes	Yes	Yes	Yes						
Recall Mode	None	None	None	None	C-Max	C-Max	C-Max	C-Max	C-Max	C-Max
Act Effct Green (s)	68.5	63.0	70.6	65.9		38.2	38.2		38.2	38.2
Actuated g/C Ratio	0.57	0.52	0.59	0.55		0.32	0.32		0.32	0.32
v/c Ratio	0.15	0.35	0.20	0.69		0.11	0.11		0.17	0.07
Control Delay	24.0	31.7	9.0	20.5		35.6	10.0		35.8	4.8
Queue Delay	0.0	0.0	0.0	0.7		0.0	0.0		0.0	0.0
Total Delay	24.0	31.7	9.0	21.2		35.6	10.0		35.8	4.8
LOS	C	C	A	C		D	A		D	A
Approach Delay		31.5		20.8		21.9			25.9	
Approach LOS		C		C		C			C	

Intersection Summary

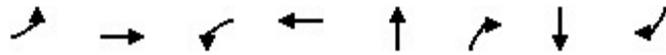
Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
 Natural Cycle: 60
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.69
 Intersection Signal Delay: 24.2
 Intersection Capacity Utilization 60.0%
 Analysis Period (min) 15
 Intersection LOS: C
 ICU Level of Service B

Splits and Phases: 5: E Quincy Ave. & South Site Access



Queues
5: E Quincy Ave. & South Site Access

East Bank
03/17/2021



Lane Group	EBL	EBT	WBL	WBT	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	24	928	72	1901	50	58	76	36
v/c Ratio	0.15	0.35	0.20	0.69	0.11	0.11	0.17	0.07
Control Delay	24.0	31.7	9.0	20.5	35.6	10.0	35.8	4.8
Queue Delay	0.0	0.0	0.0	0.7	0.0	0.0	0.0	0.0
Total Delay	24.0	31.7	9.0	21.2	35.6	10.0	35.8	4.8
Queue Length 50th (ft)	11	172	19	362	29	0	45	0
Queue Length 95th (ft)	m10	m143	29	367	67	35	95	16
Internal Link Dist (ft)		401		287	253		130	
Turn Bay Length (ft)	150		100			100		
Base Capacity (vph)	169	3024	366	3053	454	542	441	540
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	713	0	0	0	7
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.14	0.31	0.20	0.81	0.11	0.11	0.17	0.07

Intersection Summary

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

HCM 6th Signalized Intersection Summary
5: E Quincy Ave. & South Site Access

East Bank
03/17/2021



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↗	↑↑↑		↖	↑↑↑			↑	↗		↑	↖
Traffic Volume (veh/h)	22	834	19	66	1652	97	40	6	53	63	7	33
Future Volume (veh/h)	22	834	19	66	1652	97	40	6	53	63	7	33
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	24	907	21	72	1796	105	43	7	58	68	8	36
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	143	2381	55	338	2362	138	56	5	612	57	4	612
Arrive On Green	0.02	0.46	0.46	0.04	0.48	0.48	0.39	0.39	0.39	0.39	0.39	0.39
Sat Flow, veh/h	1781	5134	119	1781	4935	288	0	13	1585	0	10	1585
Grp Volume(v), veh/h	24	601	327	72	1238	663	50	0	58	76	0	36
Grp Sat Flow(s),veh/h/ln	1781	1702	1849	1781	1702	1819	13	0	1585	10	0	1585
Q Serve(g_s), s	0.8	13.8	13.8	2.5	35.7	35.9	0.0	0.0	2.8	0.0	0.0	1.7
Cycle Q Clear(g_c), s	0.8	13.8	13.8	2.5	35.7	35.9	46.3	0.0	2.8	46.3	0.0	1.7
Prop In Lane	1.00		0.06	1.00		0.16	0.86		1.00	0.89		1.00
Lane Grp Cap(c), veh/h	143	1579	858	338	1630	871	61	0	612	61	0	612
V/C Ratio(X)	0.17	0.38	0.38	0.21	0.76	0.76	0.82	0.00	0.09	1.26	0.00	0.06
Avail Cap(c_a), veh/h	214	2028	1102	396	2057	1099	61	0	612	61	0	612
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)	0.57	0.57	0.57	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	21.4	20.9	21.0	16.4	25.6	25.7	55.3	0.0	23.5	57.2	0.0	23.2
Incr Delay (d2), s/veh	0.3	0.1	0.2	0.3	1.3	2.4	71.8	0.0	0.3	199.5	0.0	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.6	8.4	9.0	1.9	20.6	22.2	4.9	0.0	2.0	9.3	0.0	1.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	21.7	21.0	21.1	16.7	26.9	28.1	127.1	0.0	23.8	256.7	0.0	23.3
LnGrp LOS	C	C	C	B	C	C	F	A	C	F	A	C
Approach Vol, veh/h		952			1973			108				112
Approach Delay, s/veh		21.1			26.9			71.6				181.7
Approach LOS		C			C			E				F
Timer - Assigned Phs		2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s		50.8	9.0	60.2		50.8	7.3	61.9				
Change Period (Y+Rc), s		4.5	4.5	4.5		4.5	4.5	4.5				
Max Green Setting (Gmax), s		26.5	8.5	71.5		26.5	7.5	72.5				
Max Q Clear Time (g_c+I1), s		48.3	4.5	15.8		48.3	2.8	37.9				
Green Ext Time (p_c), s		0.0	0.0	7.7		0.0	0.0	19.6				
Intersection Summary												
HCM 6th Ctrl Delay				32.2								
HCM 6th LOS				C								

Lanes and Geometrics
6: E Quincy Ave. & S Atchison Way

East Bank
03/17/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	150		100	125		0	100		0	150		200
Storage Lanes	1		0	1		0	1		0	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.91	0.91	1.00	0.91	0.91	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		0.999			0.997			0.850				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	5080	0	1770	5070	0	1770	1583	0	1770	1863	1583
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1770	5080	0	1770	5070	0	1770	1583	0	1770	1863	1583
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		367			446			235			1056	
Travel Time (s)		8.3			10.1			5.3			24.0	

Intersection Summary

Area Type: Other

Intersection												
Int Delay, s/veh	1.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↵ ↑↑↑			↵ ↑↑↑			↵	↵		↵	↑	↵
Traffic Vol, veh/h	8	937	4	6	1781	37	17	0	18	11	0	18
Future Vol, veh/h	8	937	4	6	1781	37	17	0	18	11	0	18
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	-	-	125	-	-	100	-	-	150	-	200
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	9	1018	4	7	1936	40	18	0	20	12	0	20

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1976	0	0	1022	0	0	1826	3028	511	2395	3010	988
Stage 1	-	-	-	-	-	-	1038	1038	-	1970	1970	-
Stage 2	-	-	-	-	-	-	788	1990	-	425	1040	-
Critical Hdwy	5.34	-	-	5.34	-	-	6.44	6.54	7.14	6.44	6.54	7.14
Critical Hdwy Stg 1	-	-	-	-	-	-	7.34	5.54	-	7.34	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.74	5.54	-	6.74	5.54	-
Follow-up Hdwy	3.12	-	-	3.12	-	-	3.82	4.02	3.92	3.82	4.02	3.92
Pot Cap-1 Maneuver	129	-	-	382	-	-	81	13	435	36	13	211
Stage 1	-	-	-	-	-	-	187	306	-	40	107	-
Stage 2	-	-	-	-	-	-	318	104	-	528	306	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	129	-	-	382	-	-	69	12	435	32	12	211
Mov Cap-2 Maneuver	-	-	-	-	-	-	69	12	-	32	12	-
Stage 1	-	-	-	-	-	-	174	285	-	37	105	-
Stage 2	-	-	-	-	-	-	283	102	-	469	285	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.3			0			43.6			80.6		
HCM LOS							E			F		

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2	SBLn3
Capacity (veh/h)	69	435	129	-	-	382	-	-	32	-	211
HCM Lane V/C Ratio	0.268	0.045	0.067	-	-	0.017	-	-	0.374	-	0.093
HCM Control Delay (s)	75.3	13.7	34.9	-	-	14.6	-	-	173.5	0	23.8
HCM Lane LOS	F	B	D	-	-	B	-	-	F	A	C
HCM 95th %tile Q(veh)	1	0.1	0.2	-	-	0.1	-	-	1.2	-	0.3

Lanes and Geometrics
 1: S. Parker Rd. (SH 83) & S Atchison Way

East Bank
 03/17/2021



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↗	↑↑↑		↘	↑↑↑
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%		0%			0%
Storage Length (ft)	0	0		0	200	
Storage Lanes	0	1		0	1	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	0.91	0.91	1.00	0.91
Ped Bike Factor						
Frt		0.865	0.999			
Flt Protected					0.950	
Satd. Flow (prot)	0	1611	5080	0	1770	5085
Flt Permitted					0.950	
Satd. Flow (perm)	0	1611	5080	0	1770	5085
Link Speed (mph)	30		30			30
Link Distance (ft)	538		680			507
Travel Time (s)	12.2		15.5			11.5

Intersection Summary

Area Type: Other

Intersection						
Int Delay, s/veh	10.9					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↗ ↑↑↑	↗ ↑↑↑		↘ ↑↑↑	↘ ↑↑↑
Traffic Vol, veh/h	0	46	3216	17	56	4115
Future Vol, veh/h	0	46	3216	17	56	4115
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	200	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	50	3496	18	61	4473

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	-	1757	0	0	3514
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	63	-	-	~ 20
Stage 1	0	-	-	-	-
Stage 2	0	-	-	-	-
Platoon blocked, %					
Mov Cap-1 Maneuver	-	63	-	-	~ 20
Mov Cap-2 Maneuver	-	-	-	-	-
Stage 1	-	-	-	-	-
Stage 2	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	165.9	0	17.7
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	63	~ 20
HCM Lane V/C Ratio	-	-	0.794	3.043
HCM Control Delay (s)	-	-	165.9	1321.5
HCM Lane LOS	-	-	F	F
HCM 95th %tile Q(veh)	-	-	3.6	8

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

Lanes and Geometrics
 2: S. Parker Rd. (SH 83) & NW Site Access

East Bank
 03/17/2021



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%		0%			0%
Storage Length (ft)	0	150		0	400	
Storage Lanes	1	1		0	1	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	0.91	0.91	1.00	0.91
Ped Bike Factor						
Frt		0.850	0.998			
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1770	1583	5075	0	1770	5085
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1770	1583	5075	0	1770	5085
Link Speed (mph)	30		30			30
Link Distance (ft)	484		560			680
Travel Time (s)	11.0		12.7			15.5

Intersection Summary

Area Type: Other

Intersection						
Int Delay, s/veh	19.4					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↵	↵ ↵ ↵ ↵	↵ ↵ ↵ ↵		↵ ↵ ↵ ↵	↵ ↵ ↵ ↵
Traffic Vol, veh/h	5	74	3159	32	80	4035
Future Vol, veh/h	5	74	3159	32	80	4035
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	-	-	400	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	5	80	3434	35	87	4386

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	5380	1735	0	0	3469
Stage 1	3452	-	-	-	-
Stage 2	1928	-	-	-	-
Critical Hdwy	5.74	7.14	-	-	5.34
Critical Hdwy Stg 1	6.64	-	-	-	-
Critical Hdwy Stg 2	6.04	-	-	-	-
Follow-up Hdwy	3.82	3.92	-	-	3.12
Pot Cap-1 Maneuver	~ 1	~ 65	-	-	~ 21
Stage 1	6	-	-	-	-
Stage 2	87	-	-	-	-
Platoon blocked, %					
Mov Cap-1 Maneuver	0	~ 65	-	-	~ 21
Mov Cap-2 Maneuver	0	-	-	-	-
Stage 1	6	-	-	-	-
Stage 2	0	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s		0	34.8
HCM LOS	-		

Minor Lane/Major Mvmt	NBT	NBRWBLn1WBLn2	SBL	SBT
Capacity (veh/h)	-	-	65	~ 21
HCM Lane V/C Ratio	-	-	1.237	4.141
HCM Control Delay (s)	-	-	297.4	\$ 1788
HCM Lane LOS	-	-	F	F
HCM 95th %tile Q(veh)	-	-	6.5	11.2

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

Lanes and Geometrics
 3: SW Site Access & S. Parker Rd. (SH 83)

East Bank
 03/17/2021



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↑	↑↑↑			↑↑↑
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%		0%			0%
Storage Length (ft)	0	0		0	0	
Storage Lanes	0	1		0	0	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	0.91	0.91	1.00	0.91
Ped Bike Factor						
Frt		0.865	0.998			
Flt Protected						
Satd. Flow (prot)	0	1611	5075	0	0	5085
Flt Permitted						
Satd. Flow (perm)	0	1611	5075	0	0	5085
Link Speed (mph)	30		30			30
Link Distance (ft)	488		526			560
Travel Time (s)	11.1		12.0			12.7

Intersection Summary

Area Type: Other

Intersection						
Int Delay, s/veh	1.6					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↑ ↑↑	↑↑↑			↑↑↑
Traffic Vol, veh/h	0	58	3133	45	0	4035
Future Vol, veh/h	0	58	3133	45	0	4035
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	63	3405	49	0	4386

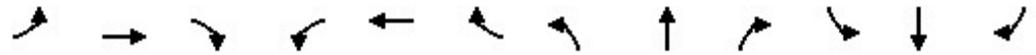
Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	-	1727	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	7.14	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	3.92	-
Pot Cap-1 Maneuver	0	66	-
Stage 1	0	-	-
Stage 2	0	-	-
Platoon blocked, %			
Mov Cap-1 Maneuver	-	66	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	202.9	0	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBT
Capacity (veh/h)	-	-	66
HCM Lane V/C Ratio	-	-	0.955
HCM Control Delay (s)	-	-	202.9
HCM Lane LOS	-	-	F
HCM 95th %tile Q(veh)	-	-	4.7

Lanes and Geometrics
 4: S. Parker Rd. (SH 83) & E Quincy Ave.

East Bank
 03/17/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕		↙	↘	↗	↙	↕		↗	↘	↙
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%				0%
Storage Length (ft)	200		0	200		0	150		400	400		500
Storage Lanes	0		0	1		2	1		0	3		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	0.88	1.00	0.91	0.91	0.94	0.91	0.91
Ped Bike Factor												
Frt		0.954				0.850		0.968				0.996
Flt Protected		0.987		0.950	0.957		0.950			0.950		
Satd. Flow (prot)	0	1754	0	1681	1694	2787	1770	4923	0	4990	5065	0
Flt Permitted		0.798		0.513	0.517		0.950			0.950		
Satd. Flow (perm)	0	1418	0	908	915	2787	1770	4923	0	4990	5065	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		19				27		77				6
Link Speed (mph)		30			30			30				30
Link Distance (ft)		385			481			793				526
Travel Time (s)		8.8			10.9			18.0				12.0

Intersection Summary

Area Type: Other

Timings
4: S. Parker Rd. (SH 83) & E Quincy Ave.

East Bank
03/17/2021

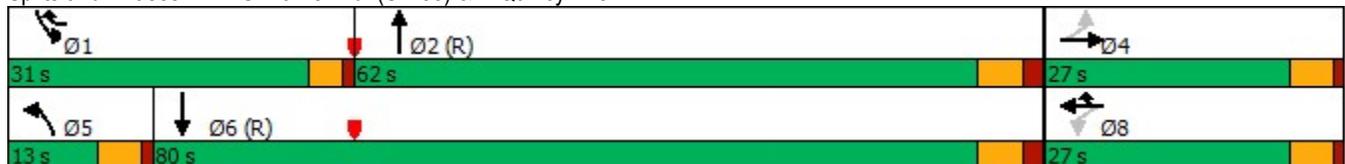


Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations		↔	↗	↖	↗↖	↗	↗↖↗	↗↖↗	↗↖↗
Traffic Volume (vph)	41	61	255	15	988	40	2149	1205	2758
Future Volume (vph)	41	61	255	15	988	40	2149	1205	2758
Turn Type	Perm	NA	Perm	NA	pt+ov	Prot	NA	Prot	NA
Protected Phases		4		8	8 1	5	2	1	6
Permitted Phases	4		8						
Detector Phase	4	4	8	8	8 1	5	2	1	6
Switch Phase									
Minimum Initial (s)	5.0	5.0	3.0	3.0		5.5	20.0	5.0	5.0
Minimum Split (s)	20.0	20.0	23.0	23.0		10.5	26.0	9.5	24.0
Total Split (s)	27.0	27.0	27.0	27.0		13.0	62.0	31.0	80.0
Total Split (%)	22.5%	22.5%	22.5%	22.5%		10.8%	51.7%	25.8%	66.7%
Yellow Time (s)	4.0	4.0	4.0	4.0		4.0	4.0	3.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0		1.0	2.0	1.0	2.0
Lost Time Adjust (s)		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	6.0	4.0	6.0
Lead/Lag						Lead	Lag	Lead	Lag
Lead-Lag Optimize?						Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None		None	C-Max	None	C-Max
Act Effct Green (s)		22.0	22.0	22.0	53.0	7.3	56.0	27.0	76.8
Actuated g/C Ratio		0.18	0.18	0.18	0.44	0.06	0.47	0.22	0.64
v/c Ratio		0.61	0.89	0.87	0.86	0.40	1.27	1.17	0.95
Control Delay		50.4	81.2	79.1	28.2	65.1	155.1	126.8	28.7
Queue Delay		1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		51.3	81.2	79.1	28.2	65.1	155.1	126.8	28.7
LOS		D	F	E	C	E	F	F	C
Approach Delay		51.3		39.3			153.9		58.0
Approach LOS		D		D			F		E

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green
 Natural Cycle: 150
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.27
 Intersection Signal Delay: 87.4
 Intersection Capacity Utilization 111.2%
 Analysis Period (min) 15
 Intersection LOS: F
 ICU Level of Service H

Splits and Phases: 4: S. Parker Rd. (SH 83) & E Quincy Ave.



Queues
4: S. Parker Rd. (SH 83) & E Quincy Ave.

East Bank
03/17/2021



Lane Group	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	168	147	146	1074	43	2974	1310	3077
v/c Ratio	0.61	0.89	0.87	0.86	0.40	1.27	1.17	0.95
Control Delay	50.4	81.2	79.1	28.2	65.1	155.1	126.8	28.7
Queue Delay	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	51.3	81.2	79.1	28.2	65.1	155.1	126.8	28.7
Queue Length 50th (ft)	107	118	117	417	32	~1059	~428	796
Queue Length 95th (ft)	185	#250	#249	526	71	#1146	#520	#978
Internal Link Dist (ft)	305		401			713		446
Turn Bay Length (ft)		200			150		400	
Base Capacity (vph)	275	166	167	1246	118	2338	1122	3243
Starvation Cap Reductn	0	0	0	1	0	0	0	0
Spillback Cap Reductn	20	0	0	0	0	38	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.66	0.89	0.87	0.86	0.36	1.29	1.17	0.95

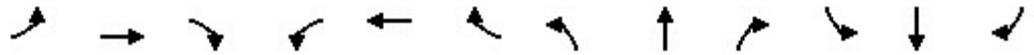
Intersection Summary

~ 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
 4: S. Parker Rd. (SH 83) & E Quincy Ave.

East Bank
 03/17/2021



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔		↵	↵	↵↵	↵	↵↵↵		↵↵↵	↵↵↵	
Traffic Volume (veh/h)	41	61	52	255	15	988	40	2149	587	1205	2758	73
Future Volume (veh/h)	41	61	52	255	15	988	40	2149	587	1205	2758	73
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	45	66	57	288	0	1074	43	2336	638	1310	2998	79
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	78	110	77	452	0	1294	62	1900	476	1130	3318	87
Arrive On Green	0.18	0.18	0.18	0.18	0.00	0.18	0.03	0.47	0.47	0.22	0.65	0.65
Sat Flow, veh/h	218	598	419	2536	0	3170	1781	4070	1020	5023	5117	134
Grp Volume(v), veh/h	168	0	0	288	0	1074	43	1919	1055	1310	1986	1091
Grp Sat Flow(s),veh/h/ln	1236	0	0	1268	0	1585	1781	1702	1687	1674	1702	1846
Q Serve(g_s), s	9.0	0.0	0.0	5.4	0.0	22.0	2.9	56.0	56.0	27.0	59.1	61.0
Cycle Q Clear(g_c), s	14.2	0.0	0.0	19.6	0.0	22.0	2.9	56.0	56.0	27.0	59.1	61.0
Prop In Lane	0.27		0.34	1.00		1.00	1.00		0.60	1.00		0.07
Lane Grp Cap(c), veh/h	265	0	0	452	0	1294	62	1589	787	1130	2207	1197
V/C Ratio(X)	0.63	0.00	0.00	0.64	0.00	0.83	0.69	1.21	1.34	1.16	0.90	0.91
Avail Cap(c_a), veh/h	265	0	0	452	0	1294	119	1589	787	1130	2207	1197
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	0.90	0.00	0.90	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	45.0	0.0	0.0	49.3	0.0	31.8	57.3	32.0	32.0	46.5	17.8	18.1
Incr Delay (d2), s/veh	4.9	0.0	0.0	2.7	0.0	4.2	12.8	99.9	161.5	81.7	6.4	11.9
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	8.7	0.0	0.0	7.7	0.0	20.3	2.7	63.0	84.5	29.2	30.9	36.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	49.9	0.0	0.0	51.9	0.0	36.0	70.1	131.9	193.5	128.2	24.2	30.0
LnGrp LOS	D	A	A	D	A	D	E	F	F	F	C	C
Approach Vol, veh/h		168			1362			3017			4387	
Approach Delay, s/veh		49.9			39.4			152.5			56.7	
Approach LOS		D			D			F			E	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	31.0	62.0		27.0	9.2	83.8		27.0				
Change Period (Y+Rc), s	4.0	6.0		5.0	5.0	6.0		5.0				
Max Green Setting (Gmax), s	27.0	56.0		22.0	8.0	74.0		22.0				
Max Q Clear Time (g_c+I1), s	29.0	58.0		16.2	4.9	63.0		24.0				
Green Ext Time (p_c), s	0.0	0.0		0.5	0.0	10.7		0.0				

Intersection Summary

HCM 6th Ctrl Delay	86.3
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.

Lanes and Geometrics
5: E Quincy Ave. & South Site Access

East Bank
03/17/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	150		0	100		0	0		100	0		0
Storage Lanes	1		0	1		0	0		1	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.91	0.91	1.00	0.91	0.91	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.997			0.990				0.850			0.850
Flt Protected	0.950			0.950				0.958			0.956	
Satd. Flow (prot)	1770	5070	0	1770	5034	0	0	1785	1583	0	1781	1583
Flt Permitted	0.163			0.057				0.690			0.680	
Satd. Flow (perm)	304	5070	0	106	5034	0	0	1285	1583	0	1267	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		4			16				115			55
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		481			367			333			210	
Travel Time (s)		10.9			8.3			7.6			4.8	

Intersection Summary

Area Type: Other

Timings
5: E Quincy Ave. & South Site Access

East Bank
03/17/2021

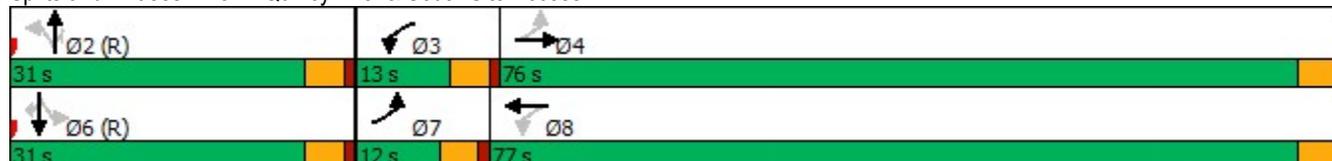


Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↑↑↑	↖	↑↑↑		↖	↗		↖	↗
Traffic Volume (vph)	45	1785	98	1141	72	9	156	98	9	46
Future Volume (vph)	45	1785	98	1141	72	9	156	98	9	46
Turn Type	pm+pt	NA	pm+pt	NA	Perm	NA	Perm	Perm	NA	Perm
Protected Phases	7	4	3	8		2			6	
Permitted Phases	4		8		2		2	6		6
Detector Phase	7	4	3	8	2	2	2	6	6	6
Switch Phase										
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.5	22.5	9.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5
Total Split (s)	12.0	76.0	13.0	77.0	31.0	31.0	31.0	31.0	31.0	31.0
Total Split (%)	10.0%	63.3%	10.8%	64.2%	25.8%	25.8%	25.8%	25.8%	25.8%	25.8%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5		4.5	4.5		4.5	4.5
Lead/Lag	Lead	Lag	Lead	Lag						
Lead-Lag Optimize?	Yes	Yes	Yes	Yes						
Recall Mode	None	None	None	None	C-Max	C-Max	C-Max	C-Max	C-Max	C-Max
Act Effct Green (s)	73.5	67.0	77.1	70.5		31.5	31.5		31.5	31.5
Actuated g/C Ratio	0.61	0.56	0.64	0.59		0.26	0.26		0.26	0.26
v/c Ratio	0.18	0.70	0.60	0.45		0.26	0.34		0.35	0.11
Control Delay	11.5	34.3	32.1	14.1		40.0	16.0		41.8	9.5
Queue Delay	0.0	2.3	0.0	0.0		0.0	0.0		0.0	0.0
Total Delay	11.5	36.6	32.1	14.2		40.0	16.0		41.8	9.5
LOS	B	D	C	B		D	B		D	A
Approach Delay		36.0		15.5		24.2			32.1	
Approach LOS		D		B		C			C	

Intersection Summary

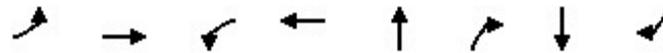
Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
 Natural Cycle: 60
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.70
 Intersection Signal Delay: 27.5
 Intersection Capacity Utilization 64.4%
 Analysis Period (min) 15
 Intersection LOS: C
 ICU Level of Service C

Splits and Phases: 5: E Quincy Ave. & South Site Access



Queues
5: E Quincy Ave. & South Site Access

East Bank
03/17/2021



Lane Group	EBL	EBT	WBL	WBT	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	49	1973	107	1324	88	170	117	50
v/c Ratio	0.18	0.70	0.60	0.45	0.26	0.34	0.35	0.11
Control Delay	11.5	34.3	32.1	14.1	40.0	16.0	41.8	9.5
Queue Delay	0.0	2.3	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	11.5	36.6	32.1	14.2	40.0	16.0	41.8	9.5
Queue Length 50th (ft)	18	416	28	195	56	34	76	0
Queue Length 95th (ft)	m13	m278	87	219	108	98	138	30
Internal Link Dist (ft)		401		287	253		130	
Turn Bay Length (ft)	150		100			100		
Base Capacity (vph)	280	3022	185	3052	337	500	332	456
Starvation Cap Reductn	0	872	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	197	0	0	0	2
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.17	0.92	0.58	0.46	0.26	0.34	0.35	0.11

Intersection Summary

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

HCM 6th Signalized Intersection Summary
5: E Quincy Ave. & South Site Access

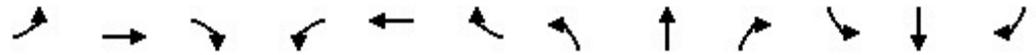
East Bank
03/17/2021



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↗	↑↑↑		↖	↑↑↑			↑	↗		↑	↗
Traffic Volume (veh/h)	45	1785	30	98	1141	77	72	9	156	98	9	46
Future Volume (veh/h)	45	1785	30	98	1141	77	72	9	156	98	9	46
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	49	1940	33	107	1240	84	78	10	170	107	10	50
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	257	2526	43	181	2445	166	57	4	560	57	3	560
Arrive On Green	0.03	0.49	0.49	0.05	0.50	0.50	0.35	0.35	0.35	0.35	0.35	0.35
Sat Flow, veh/h	1781	5171	88	1781	4884	331	0	11	1585	0	8	1585
Grp Volume(v), veh/h	49	1277	696	107	864	460	88	0	170	117	0	50
Grp Sat Flow(s),veh/h/ln	1781	1702	1855	1781	1702	1811	11	0	1585	8	0	1585
Q Serve(g_s), s	1.6	36.8	36.9	3.6	20.4	20.4	0.0	0.0	9.3	0.0	0.0	2.5
Cycle Q Clear(g_c), s	1.6	36.8	36.9	3.6	20.4	20.4	42.4	0.0	9.3	42.4	0.0	2.5
Prop In Lane	1.00		0.05	1.00		0.18	0.89		1.00	0.91		1.00
Lane Grp Cap(c), veh/h	257	1663	906	181	1704	907	61	0	560	60	0	560
V/C Ratio(X)	0.19	0.77	0.77	0.59	0.51	0.51	1.45	0.00	0.30	1.94	0.00	0.09
Avail Cap(c_a), veh/h	308	2028	1105	226	2057	1094	61	0	560	60	0	560
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	0.09	0.09	0.09	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	15.8	25.1	25.1	24.1	20.1	20.1	57.2	0.0	28.1	58.0	0.0	25.9
Incr Delay (d2), s/veh	0.0	0.1	0.2	3.0	0.2	0.4	274.4	0.0	1.4	477.0	0.0	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	1.1	16.4	17.8	2.9	12.7	13.4	11.6	0.0	6.8	17.7	0.0	1.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	15.8	25.2	25.4	27.1	20.3	20.5	331.6	0.0	29.5	534.9	0.0	26.2
LnGrp LOS	B	C	C	C	C	C	F	A	C	F	A	C
Approach Vol, veh/h		2022			1431			258				167
Approach Delay, s/veh		25.1			20.9			132.5				382.6
Approach LOS		C			C			F				F
Timer - Assigned Phs		2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s		46.9	10.0	63.1		46.9	8.5	64.6				
Change Period (Y+Rc), s		4.5	4.5	4.5		4.5	4.5	4.5				
Max Green Setting (Gmax), s		26.5	8.5	71.5		26.5	7.5	72.5				
Max Q Clear Time (g_c+I1), s		44.4	5.6	38.9		44.4	3.6	22.4				
Green Ext Time (p_c), s		0.0	0.1	19.7		0.0	0.0	12.9				
Intersection Summary												
HCM 6th Ctrl Delay			46.1									
HCM 6th LOS			D									

Lanes and Geometrics
6: E Quincy Ave. & S Atchison Way

East Bank
03/17/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	150		100	125		0	100		0	150		200
Storage Lanes	1		0	1		0	1		0	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.91	0.91	1.00	0.91	0.91	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.998			0.990			0.850				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	5075	0	1770	5034	0	1770	1583	0	1770	1863	1583
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1770	5075	0	1770	5034	0	1770	1583	0	1770	1863	1583
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		367			446			235			1056	
Travel Time (s)		8.3			10.1			5.3			24.0	

Intersection Summary

Area Type: Other

Intersection												
Int Delay, s/veh	6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖ ↑↑↑			↖ ↑↑↑			↖	↗		↖	↑	↗
Traffic Vol, veh/h	25	1991	23	17	1265	86	10	0	12	29	0	41
Future Vol, veh/h	25	1991	23	17	1265	86	10	0	12	29	0	41
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	-	-	125	-	-	100	-	-	150	-	200
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	27	2164	25	18	1375	93	11	0	13	32	0	45

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1468	0	0	2189	0	0	2817	3735	1095	2378	3701	734
Stage 1	-	-	-	-	-	-	2231	2231	-	1458	1458	-
Stage 2	-	-	-	-	-	-	586	1504	-	920	2243	-
Critical Hdwy	5.34	-	-	5.34	-	-	6.44	6.54	7.14	6.44	6.54	7.14
Critical Hdwy Stg 1	-	-	-	-	-	-	7.34	5.54	-	7.34	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.74	5.54	-	6.74	5.54	-
Follow-up Hdwy	3.12	-	-	3.12	-	-	3.82	4.02	3.92	3.82	4.02	3.92
Pot Cap-1 Maneuver	231	-	-	100	-	-	19	4	179	37	5	311
Stage 1	-	-	-	-	-	-	26	79	-	95	192	-
Stage 2	-	-	-	-	-	-	422	183	-	264	77	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	231	-	-	100	-	-	13	3	179	~ 27	4	311
Mov Cap-2 Maneuver	-	-	-	-	-	-	13	3	-	~ 27	4	-
Stage 1	-	-	-	-	-	-	23	70	-	84	157	-
Stage 2	-	-	-	-	-	-	296	150	-	216	68	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.3	0.6	273.6	194.5
HCM LOS			F	F

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2	SBLn3
Capacity (veh/h)	13	179	231	-	-	100	-	-	27	-	311
HCM Lane V/C Ratio	0.836	0.073	0.118	-	-	0.185	-	-	1.167	-	0.143
HCM Control Delay (s)	\$ 569.9	26.7	22.7	-	-	49	-	-	\$ 443.4	0	18.5
HCM Lane LOS	F	D	C	-	-	E	-	-	F	A	C
HCM 95th %tile Q(veh)	1.9	0.2	0.4	-	-	0.6	-	-	3.7	-	0.5

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

Lanes and Geometrics
 1: S. Parker Rd. (SH 83) & S Atchison Way

East Bank
 03/17/2021



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↑	↑↑↑		↑	↑↑↑
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%		0%			0%
Storage Length (ft)	0	0		0	200	
Storage Lanes	0	1		0	1	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	0.91	0.91	1.00	0.91
Ped Bike Factor						
Frt		0.865				
Flt Protected					0.950	
Satd. Flow (prot)	0	1611	5085	0	1770	5085
Flt Permitted					0.950	
Satd. Flow (perm)	0	1611	5085	0	1770	5085
Link Speed (mph)	30		30			30
Link Distance (ft)	538		680			507
Travel Time (s)	12.2		15.5			11.5

Intersection Summary

Area Type: Other

Intersection						
Int Delay, s/veh	12.2					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↑ ↑↑↑			↑ ↑↑↑	
Traffic Vol, veh/h	0	68	4139	5	10	2789
Future Vol, veh/h	0	68	4139	5	10	2789
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	200	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	74	4499	5	11	3032

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	-	2252	0	0	4504
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	~ 28	-	-	~ 6
Stage 1	0	-	-	-	-
Stage 2	0	-	-	-	-
Platoon blocked, %					
Mov Cap-1 Maneuver	-	~ 28	-	-	~ 6
Mov Cap-2 Maneuver	-	-	-	-	-
Stage 1	-	-	-	-	-
Stage 2	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s \$ 1040		0	5.4
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	28	~ 6
HCM Lane V/C Ratio	-	-	2.64	1.812
HCM Control Delay (s)	-	-	\$ 1040	1510.4
HCM Lane LOS	-	-	F	F
HCM 95th %tile Q(veh)	-	-	8.9	2.3

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

Lanes and Geometrics
 2: S. Parker Rd. (SH 83) & NW Site Access

East Bank
 03/17/2021



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%		0%			0%
Storage Length (ft)	0	150		0	400	
Storage Lanes	1	1		0	1	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	0.91	0.91	1.00	0.91
Ped Bike Factor						
Frt		0.850	0.998			
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1770	1583	5075	0	1770	5085
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1770	1583	5075	0	1770	5085
Link Speed (mph)	30		30			30
Link Distance (ft)	484		560			680
Travel Time (s)	11.0		12.7			15.5

Intersection Summary

Area Type: Other

Intersection						
Int Delay, s/veh	41.1					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↵	↵ ↵ ↵ ↵	↵ ↵ ↵ ↵		↵ ↵ ↵ ↵	↵ ↵ ↵ ↵
Traffic Vol, veh/h	1	120	4024	52	55	2734
Future Vol, veh/h	1	120	4024	52	55	2734
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	-	-	400	-
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	1	130	4374	57	60	2972

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	5712	2216	0	0	4431
Stage 1	4403	-	-	-	-
Stage 2	1309	-	-	-	-
Critical Hdwy	5.74	7.14	-	-	5.34
Critical Hdwy Stg 1	6.64	-	-	-	-
Critical Hdwy Stg 2	6.04	-	-	-	-
Follow-up Hdwy	3.82	3.92	-	-	3.12
Pot Cap-1 Maneuver	~ 1	~ 30	-	-	~ 6
Stage 1	~ 1	-	-	-	-
Stage 2	194	-	-	-	-
Platoon blocked, %					
Mov Cap-1 Maneuver	0	~ 30	-	-	~ 6
Mov Cap-2 Maneuver	0	-	-	-	-
Stage 1	~ 1	-	-	-	-
Stage 2	0	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s		0	103
HCM LOS	-		

Minor Lane/Major Mvmt	NBT	NBRWBLn1WBLn2	SBL	SBT
Capacity (veh/h)	-	-	30	~ 6
HCM Lane V/C Ratio	-	-	4.348	9.964
HCM Control Delay (s)	-	-	\$ 1773.9	\$ 5221.4
HCM Lane LOS	-	-	F	F
HCM 95th %tile Q(veh)	-	-	15.7	9.2

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

Lanes and Geometrics
 3: SW Site Access & S. Parker Rd. (SH 83)

East Bank
 03/17/2021



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↑	↑↑↑			↑↑↑
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%		0%			0%
Storage Length (ft)	0	0		0	0	
Storage Lanes	0	1		0	0	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	0.91	0.91	1.00	0.91
Ped Bike Factor						
Frt		0.865	0.999			
Flt Protected						
Satd. Flow (prot)	0	1611	5080	0	0	5085
Flt Permitted						
Satd. Flow (perm)	0	1611	5080	0	0	5085
Link Speed (mph)	30		30			30
Link Distance (ft)	488		526			560
Travel Time (s)	11.1		12.0			12.7

Intersection Summary

Area Type: Other

Intersection						
Int Delay, s/veh	25.3					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↑ ↑ ↑	↑ ↑ ↑			↑ ↑ ↑
Traffic Vol, veh/h	0	113	3963	31	0	2735
Future Vol, veh/h	0	113	3963	31	0	2735
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	123	4308	34	0	2973

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	-	2171	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	~ 32	-	-	0
Stage 1	0	-	-	-	0
Stage 2	0	-	-	-	0
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	-	~ 32	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-
Stage 1	-	-	-	-	-
Stage 2	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, \$	1532.1	0	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBT
Capacity (veh/h)	-	-	32
HCM Lane V/C Ratio	-	-	3.838
HCM Control Delay (s)	-	\$	1532.1
HCM Lane LOS	-	-	F
HCM 95th %tile Q(veh)	-	-	14.5

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

Lanes and Geometrics
 4: S. Parker Rd. (SH 83) & E Quincy Ave.

East Bank
 03/17/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕	↔↔↔	↕	↕↕↕		↕↕↕	↕↕↕	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	200		0	200		0	150		400	400		500
Storage Lanes	0		0	1		3	1		0	3		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	0.76	1.00	0.91	0.91	0.94	0.91	0.91
Ped Bike Factor												
Frt		0.948				0.850		0.991				0.999
Flt Protected		0.981			0.953		0.950			0.950		
Satd. Flow (prot)	0	1732	0	0	1775	3610	1770	5040	0	4990	5080	0
Flt Permitted		0.896			0.719		0.950			0.950		
Satd. Flow (perm)	0	1582	0	0	1339	3610	1770	5040	0	4990	5080	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		5				27		10				1
Link Speed (mph)		30			30		30			30		30
Link Distance (ft)		385			481		793			526		
Travel Time (s)		8.8			10.9		18.0			12.0		

Intersection Summary

Area Type: Other

Timings
4: S. Parker Rd. (SH 83) & E Quincy Ave.

East Bank
03/17/2021

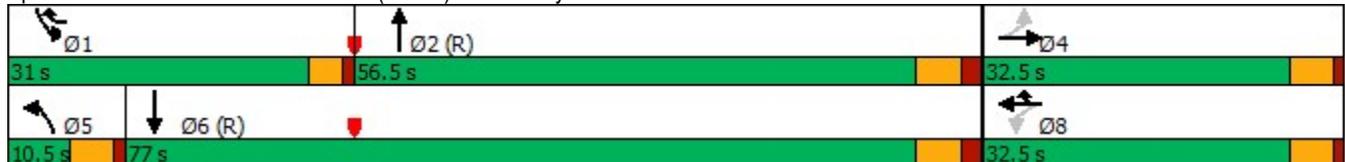


Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations		↕		↕	↕↕↕	↕	↕↕↕	↕↕↕	↕↕↕
Traffic Volume (vph)	5	3	257	3	1568	14	2422	809	1920
Future Volume (vph)	5	3	257	3	1568	14	2422	809	1920
Turn Type	Perm	NA	Perm	NA	pt+ov	Prot	NA	Prot	NA
Protected Phases		4		8	8 1	5	2	1	6
Permitted Phases	4		8						
Detector Phase	4	4	8	8	8 1	5	2	1	6
Switch Phase									
Minimum Initial (s)	5.0	5.0	3.0	3.0		5.5	20.0	5.0	5.0
Minimum Split (s)	20.0	20.0	23.0	23.0		10.5	26.0	9.5	24.0
Total Split (s)	32.5	32.5	32.5	32.5		10.5	56.5	31.0	77.0
Total Split (%)	27.1%	27.1%	27.1%	27.1%		8.8%	47.1%	25.8%	64.2%
Yellow Time (s)	4.0	4.0	4.0	4.0		4.0	4.0	3.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0		1.0	2.0	1.0	2.0
Lost Time Adjust (s)		0.0		0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)		5.0		5.0		5.0	6.0	4.0	6.0
Lead/Lag						Lead	Lag	Lead	Lag
Lead-Lag Optimize?						Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None		None	C-Max	None	C-Max
Act Effct Green (s)		27.5		27.5	58.5	5.5	50.5	27.0	77.3
Actuated g/C Ratio		0.23		0.23	0.49	0.05	0.42	0.22	0.64
v/c Ratio		0.04		0.92	0.96	0.19	1.31	0.78	0.64
Control Delay		27.9		64.1	28.0	60.6	176.0	49.5	14.7
Queue Delay		0.0		0.0	0.1	0.0	0.0	0.0	0.0
Total Delay		27.9		64.1	28.0	60.6	176.0	49.5	14.7
LOS		C		E	C	E	F	D	B
Approach Delay		27.9		33.1			175.4		25.0
Approach LOS		C		C			F		C

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green
 Natural Cycle: 130
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.31
 Intersection Signal Delay: 81.4
 Intersection Capacity Utilization 104.2%
 Analysis Period (min) 15
 Intersection LOS: F
 ICU Level of Service G

Splits and Phases: 4: S. Parker Rd. (SH 83) & E Quincy Ave.



Queues

4: S. Parker Rd. (SH 83) & E Quincy Ave.



Lane Group	EBT	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	13	282	1704	15	2795	879	2094
v/c Ratio	0.04	0.92	0.96	0.19	1.31	0.78	0.64
Control Delay	27.9	64.1	28.0	60.6	176.0	49.5	14.7
Queue Delay	0.0	0.0	0.1	0.0	0.0	0.0	0.0
Total Delay	27.9	64.1	28.0	60.6	176.0	49.5	14.7
Queue Length 50th (ft)	5	156	540	11	~1027	228	294
Queue Length 95th (ft)	22	#372	#691	35	#1116	278	442
Internal Link Dist (ft)	305	401			713		446
Turn Bay Length (ft)				150		400	
Base Capacity (vph)	366	306	1773	81	2126	1122	3272
Starvation Cap Reductn	0	0	1	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.04	0.92	0.96	0.19	1.31	0.78	0.64

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
 4: S. Parker Rd. (SH 83) & E Quincy Ave.

East Bank
 03/17/2021



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕	↕↕↕	↕	↕↕↕		↕↕↕	↕↕↕	
Traffic Volume (veh/h)	5	3	5	257	3	1568	14	2422	149	809	1920	6
Future Volume (veh/h)	5	3	5	257	3	1568	14	2422	149	809	1920	6
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	5	3	5	279	3	1704	15	2633	162	879	2087	7
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	42	29	18	228	2	1551	32	2194	133	1005	3254	11
Arrive On Green	0.23	0.23	0.23	0.23	0.23	0.23	0.02	0.45	0.45	0.20	0.62	0.62
Sat Flow, veh/h	0	125	78	734	8	3614	1781	4923	298	5023	5254	18
Grp Volume(v), veh/h	13	0	0	282	0	1704	15	1807	988	879	1352	742
Grp Sat Flow(s),veh/h/ln	203	0	0	742	0	1205	1781	1702	1817	1674	1702	1867
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	27.5	1.0	53.5	53.5	20.4	30.1	30.1
Cycle Q Clear(g_c), s	27.5	0.0	0.0	27.5	0.0	27.5	1.0	53.5	53.5	20.4	30.1	30.1
Prop In Lane	0.38		0.38	0.99		1.00	1.00		0.16	1.00		0.01
Lane Grp Cap(c), veh/h	88	0	0	230	0	1551	32	1517	810	1005	2109	1157
V/C Ratio(X)	0.15	0.00	0.00	1.23	0.00	1.10	0.47	1.19	1.22	0.87	0.64	0.64
Avail Cap(c_a), veh/h	88	0	0	230	0	1551	82	1517	810	1130	2109	1157
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	0.00	0.00	0.67	0.00	0.67	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	38.4	0.0	0.0	49.8	0.0	34.2	58.3	33.3	33.3	46.5	14.4	14.4
Incr Delay (d2), s/veh	0.8	0.0	0.0	125.4	0.0	51.7	10.2	92.8	110.2	7.2	1.5	2.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.6	0.0	0.0	22.5	0.0	30.0	1.0	58.1	67.6	14.1	17.0	18.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	39.1	0.0	0.0	175.2	0.0	85.9	68.5	126.0	143.4	53.7	15.9	17.2
LnGrp LOS	D	A	A	F	A	F	E	F	F	D	B	B
Approach Vol, veh/h		13			1986			2810			2973	
Approach Delay, s/veh		39.1			98.6			131.8			27.4	
Approach LOS		D			F			F			C	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	28.0	59.5		32.5	7.2	80.3		32.5				
Change Period (Y+Rc), s	4.0	6.0		5.0	5.0	6.0		5.0				
Max Green Setting (Gmax), s	27.0	50.5		27.5	5.5	71.0		27.5				
Max Q Clear Time (g_c+I1), s	22.4	55.5		29.5	3.0	32.1		29.5				
Green Ext Time (p_c), s	1.7	0.0		0.0	0.0	23.7		0.0				

Intersection Summary												
HCM 6th Ctrl Delay	83.3											
HCM 6th LOS	F											

Notes

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

Lanes and Geometrics
5: E Quincy Ave. & South Site Access

East Bank
03/17/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	150		0	100		0	0		100	0		0
Storage Lanes	1		0	1		0	0		1	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.91	0.91	1.00	0.91	0.91	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.997			0.992				0.850			0.850
Flt Protected	0.950			0.950				0.958			0.957	
Satd. Flow (prot)	1770	5070	0	1770	5045	0	0	1785	1583	0	1783	1583
Flt Permitted	0.060			0.236				0.756			0.736	
Satd. Flow (perm)	112	5070	0	440	5045	0	0	1408	1583	0	1371	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		5			14				61			55
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		481			367			333			210	
Travel Time (s)		10.9			8.3			7.6			4.8	

Intersection Summary

Area Type: Other

Timings
5: E Quincy Ave. & South Site Access

East Bank
03/17/2021

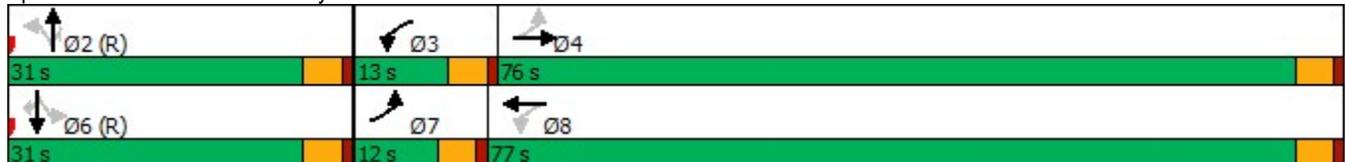


Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↑↑↑	↖	↑↑↑		↖	↗		↖	↗
Traffic Volume (vph)	23	884	70	1751	42	6	56	66	7	35
Future Volume (vph)	23	884	70	1751	42	6	56	66	7	35
Turn Type	pm+pt	NA	pm+pt	NA	Perm	NA	Perm	Perm	NA	Perm
Protected Phases	7	4	3	8		2			6	
Permitted Phases	4		8		2		2	6		6
Detector Phase	7	4	3	8	2	2	2	6	6	6
Switch Phase										
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.5	22.5	9.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5
Total Split (s)	12.0	76.0	13.0	77.0	31.0	31.0	31.0	31.0	31.0	31.0
Total Split (%)	10.0%	63.3%	10.8%	64.2%	25.8%	25.8%	25.8%	25.8%	25.8%	25.8%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5		4.5	4.5		4.5	4.5
Lead/Lag	Lead	Lag	Lead	Lag						
Lead-Lag Optimize?	Yes	Yes	Yes	Yes						
Recall Mode	None	None	None	None	C-Max	C-Max	C-Max	C-Max	C-Max	C-Max
Act Effct Green (s)	71.2	65.7	73.2	68.5		35.5	35.5		35.5	35.5
Actuated g/C Ratio	0.59	0.55	0.61	0.57		0.30	0.30		0.30	0.30
v/c Ratio	0.16	0.35	0.22	0.70		0.13	0.12		0.20	0.07
Control Delay	22.5	29.2	8.5	19.5		37.0	9.9		37.5	5.4
Queue Delay	0.0	0.0	0.0	0.3		0.0	0.0		0.0	0.0
Total Delay	22.5	29.2	8.5	19.8		37.0	9.9		37.5	5.4
LOS	C	C	A	B		D	A		D	A
Approach Delay		29.0		19.4		22.5			27.2	
Approach LOS		C		B		C			C	

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
 Natural Cycle: 65
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.70
 Intersection Signal Delay: 22.7
 Intersection Capacity Utilization 62.2%
 Analysis Period (min) 15
 Intersection LOS: C
 ICU Level of Service B

Splits and Phases: 5: E Quincy Ave. & South Site Access



Queues
5: E Quincy Ave. & South Site Access

East Bank
03/17/2021



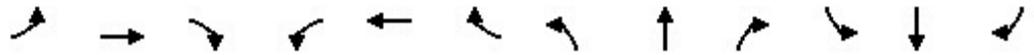
Lane Group	EBL	EBT	WBL	WBT	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	25	983	76	2015	53	61	80	38
v/c Ratio	0.16	0.35	0.22	0.70	0.13	0.12	0.20	0.07
Control Delay	22.5	29.2	8.5	19.5	37.0	9.9	37.5	5.4
Queue Delay	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0
Total Delay	22.5	29.2	8.5	19.8	37.0	9.9	37.5	5.4
Queue Length 50th (ft)	9	133	18	369	32	0	50	0
Queue Length 95th (ft)	m10	m150	31	401	70	36	99	19
Internal Link Dist (ft)		401		287	253		130	
Turn Bay Length (ft)	150		100			100		
Base Capacity (vph)	170	3031	363	3055	416	511	405	507
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	431	0	0	0	4
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.15	0.32	0.21	0.77	0.13	0.12	0.20	0.08

Intersection Summary

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

HCM 6th Signalized Intersection Summary
5: E Quincy Ave. & South Site Access

East Bank
03/17/2021



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↗	↑↑↑		↗	↑↑↑			↑	↗		↑	↗
Traffic Volume (veh/h)	23	884	20	70	1751	103	42	6	56	66	7	35
Future Volume (veh/h)	23	884	20	70	1751	103	42	6	56	66	7	35
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	25	961	22	76	1903	112	46	7	61	72	8	38
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	142	2498	57	339	2473	145	56	5	575	57	3	575
Arrive On Green	0.02	0.49	0.49	0.04	0.50	0.50	0.36	0.36	0.36	0.36	0.36	0.36
Sat Flow, veh/h	1781	5136	117	1781	4933	290	0	13	1585	0	10	1585
Grp Volume(v), veh/h	25	637	346	76	1312	703	53	0	61	80	0	38
Grp Sat Flow(s),veh/h/ln	1781	1702	1849	1781	1702	1818	13	0	1585	10	0	1585
Q Serve(g_s), s	0.8	14.2	14.2	2.5	37.5	37.8	0.0	0.0	3.1	0.0	0.0	1.9
Cycle Q Clear(g_c), s	0.8	14.2	14.2	2.5	37.5	37.8	43.5	0.0	3.1	43.5	0.0	1.9
Prop In Lane	1.00		0.06	1.00		0.16	0.87		1.00	0.90		1.00
Lane Grp Cap(c), veh/h	142	1656	900	339	1706	911	61	0	575	60	0	575
V/C Ratio(X)	0.18	0.38	0.38	0.22	0.77	0.77	0.87	0.00	0.11	1.32	0.00	0.07
Avail Cap(c_a), veh/h	211	2028	1102	397	2057	1099	61	0	575	60	0	575
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	0.54	0.54	0.54	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	20.7	19.5	19.5	15.1	24.3	24.3	56.1	0.0	25.3	57.5	0.0	25.0
Incr Delay (d2), s/veh	0.3	0.1	0.1	0.3	1.5	2.8	82.8	0.0	0.4	224.4	0.0	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.6	8.4	9.1	1.9	21.4	23.1	5.4	0.0	2.2	10.1	0.0	1.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	21.0	19.5	19.6	15.5	25.8	27.2	138.9	0.0	25.7	281.9	0.0	25.2
LnGrp LOS	C	B	B	B	C	C	F	A	C	F	A	C
Approach Vol, veh/h		1008			2091			114				118
Approach Delay, s/veh		19.6			25.9			78.3				199.2
Approach LOS		B			C			E				F
Timer - Assigned Phs		2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s		48.0	9.1	62.9		48.0	7.3	64.7				
Change Period (Y+Rc), s		4.5	4.5	4.5		4.5	4.5	4.5				
Max Green Setting (Gmax), s		26.5	8.5	71.5		26.5	7.5	72.5				
Max Q Clear Time (g_c+I1), s		45.5	4.5	16.2		45.5	2.8	39.8				
Green Ext Time (p_c), s		0.0	0.0	8.3		0.0	0.0	20.4				
Intersection Summary												
HCM 6th Ctrl Delay				31.9								
HCM 6th LOS				C								

Lanes and Geometrics
6: E Quincy Ave. & S Atchison Way

East Bank
03/17/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	150		100	125		0	100		0	150		200
Storage Lanes	1		0	1		0	1		0	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.91	0.91	1.00	0.91	0.91	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		0.999			0.997			0.850				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	5080	0	1770	5070	0	1770	1583	0	1770	1863	1583
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1770	5080	0	1770	5070	0	1770	1583	0	1770	1863	1583
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		367			446			235			1056	
Travel Time (s)		8.3			10.1			5.3			24.0	

Intersection Summary

Area Type: Other

Intersection												
Int Delay, s/veh	1.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↵ ↑↑↑ ↵			↵ ↑↑↑ ↵			↵ ↵		↵ ↵		↵ ↵	
Traffic Vol, veh/h	8	993	5	6	1888	40	17	0	19	12	0	19
Future Vol, veh/h	8	993	5	6	1888	40	17	0	19	12	0	19
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	-	-	125	-	-	100	-	-	150	-	200
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	9	1079	5	7	2052	43	18	0	21	13	0	21

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	2095	0	0	1084	0	0	1935	3209	542	2538	3190	1048
Stage 1	-	-	-	-	-	-	1100	1100	-	2088	2088	-
Stage 2	-	-	-	-	-	-	835	2109	-	450	1102	-
Critical Hdwy	5.34	-	-	5.34	-	-	6.44	6.54	7.14	6.44	6.54	7.14
Critical Hdwy Stg 1	-	-	-	-	-	-	7.34	5.54	-	7.34	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.74	5.54	-	6.74	5.54	-
Follow-up Hdwy	3.12	-	-	3.12	-	-	3.82	4.02	3.92	3.82	4.02	3.92
Pot Cap-1 Maneuver	112	-	-	356	-	-	70	10	415	29	10	193
Stage 1	-	-	-	-	-	-	170	286	-	33	93	-
Stage 2	-	-	-	-	-	-	298	91	-	510	286	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	112	-	-	356	-	-	58	9	415	25	9	193
Mov Cap-2 Maneuver	-	-	-	-	-	-	58	9	-	25	9	-
Stage 1	-	-	-	-	-	-	156	263	-	30	91	-
Stage 2	-	-	-	-	-	-	261	89	-	446	263	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.3			0			51.7			114.4		
HCM LOS							F			F		

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2	SBLn3
Capacity (veh/h)	58	415	112	-	-	356	-	-	25	-	193
HCM Lane V/C Ratio	0.319	0.05	0.078	-	-	0.018	-	-	0.522	-	0.107
HCM Control Delay (s)	93.8	14.1	39.8	-	-	15.3	-	-	254.4	0	25.9
HCM Lane LOS	F	B	E	-	-	C	-	-	F	A	D
HCM 95th %tile Q(veh)	1.1	0.2	0.2	-	-	0.1	-	-	1.6	-	0.4

Lanes and Geometrics
 1: S. Parker Rd. (SH 83) & S Atchison Way

East Bank
 03/17/2021



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↖	↕↕↕↖		↗	↕↕↕
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%		0%			0%
Storage Length (ft)	0	0		0	200	
Storage Lanes	0	1		0	1	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	0.91	0.91	1.00	0.91
Ped Bike Factor						
Frt		0.865	0.999			
Flt Protected					0.950	
Satd. Flow (prot)	0	1611	5080	0	1770	5085
Flt Permitted					0.950	
Satd. Flow (perm)	0	1611	5080	0	1770	5085
Link Speed (mph)	30		30			30
Link Distance (ft)	538		680			507
Travel Time (s)	12.2		15.5			11.5

Intersection Summary

Area Type: Other

Intersection						
Int Delay, s/veh	16.4					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↑ ↑↑↑	↑ ↑↑↑		↑ ↑↑↑	↑ ↑↑↑
Traffic Vol, veh/h	0	49	3409	17	59	4362
Future Vol, veh/h	0	49	3409	17	59	4362
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	200	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	53	3705	18	64	4741

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	-	1862	0	0	3723
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	~ 53	-	-	~ 15
Stage 1	0	-	-	-	-
Stage 2	0	-	-	-	-
Platoon blocked, %					
Mov Cap-1 Maneuver	-	~ 53	-	-	~ 15
Mov Cap-2 Maneuver	-	-	-	-	-
Stage 1	-	-	-	-	-
Stage 2	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	249.3	0	26.5
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	53	~ 15
HCM Lane V/C Ratio	-	-	1.005	4.275
HCM Control Delay (s)	-	-	249.3	1984.4
HCM Lane LOS	-	-	F	F
HCM 95th %tile Q(veh)	-	-	4.5	8.9

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

Lanes and Geometrics
 2: S. Parker Rd. (SH 83) & NW Site Access

East Bank
 03/17/2021



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%		0%			0%
Storage Length (ft)	0	150		0	400	
Storage Lanes	1	1		0	1	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	0.91	0.91	1.00	0.91
Ped Bike Factor						
Frt		0.850	0.998			
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1770	1583	5075	0	1770	5085
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1770	1583	5075	0	1770	5085
Link Speed (mph)	30		30			30
Link Distance (ft)	484		560			680
Travel Time (s)	11.0		12.7			15.5

Intersection Summary

Area Type: Other

Intersection						
Int Delay, s/veh	28.5					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↵	↵ ↵ ↵ ↵			↵ ↵ ↵ ↵	
Traffic Vol, veh/h	6	78	3349	34	85	4277
Future Vol, veh/h	6	78	3349	34	85	4277
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	-	-	400	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	7	85	3640	37	92	4649

Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	5703	1839	0	0	3677	0
Stage 1	3659	-	-	-	-	-
Stage 2	2044	-	-	-	-	-
Critical Hdwy	5.74	7.14	-	-	5.34	-
Critical Hdwy Stg 1	6.64	-	-	-	-	-
Critical Hdwy Stg 2	6.04	-	-	-	-	-
Follow-up Hdwy	3.82	3.92	-	-	3.12	-
Pot Cap-1 Maneuver	~ 1	~ 55	-	-	~ 16	-
Stage 1	~ 4	-	-	-	-	-
Stage 2	75	-	-	-	-	-
Platoon blocked, %						
Mov Cap-1 Maneuver	0	~ 55	-	-	~ 16	-
Mov Cap-2 Maneuver	0	-	-	-	-	-
Stage 1	~ 4	-	-	-	-	-
Stage 2	0	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s		0	51.1
HCM LOS	-		

Minor Lane/Major Mvmt	NBT	NBRWBLn1WBLn2	SBL	SBT
Capacity (veh/h)	-	-	55	~ 16
HCM Lane V/C Ratio	-	-	1.542	5.774
HCM Control Delay (s)	-	-	\$ 437.	\$ 2622.8
HCM Lane LOS	-	-	F	F
HCM 95th %tile Q(veh)	-	-	7.8	12.4

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

Lanes and Geometrics
 3: SW Site Access & S. Parker Rd. (SH 83)

East Bank
 03/17/2021



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↑	↑↑↑			↑↑↑
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%		0%			0%
Storage Length (ft)	0	0		0	0	
Storage Lanes	0	1		0	0	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	0.91	0.91	1.00	0.91
Ped Bike Factor						
Frt		0.865	0.998			
Flt Protected						
Satd. Flow (prot)	0	1611	5075	0	0	5085
Flt Permitted						
Satd. Flow (perm)	0	1611	5075	0	0	5085
Link Speed (mph)	30		30			30
Link Distance (ft)	488		526			560
Travel Time (s)	11.1		12.0			12.7

Intersection Summary

Area Type: Other

Intersection						
Int Delay, s/veh	2.5					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↑ ↑↑	↑↑↑			↑↑↑
Traffic Vol, veh/h	0	62	3321	48	0	4277
Future Vol, veh/h	0	62	3321	48	0	4277
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	67	3610	52	0	4649

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	-	1831	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	~ 56	-
Stage 1	0	-	-
Stage 2	0	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	~ 56	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	307.2	0	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBT
Capacity (veh/h)	-	-	56
HCM Lane V/C Ratio	-	-	1.203
HCM Control Delay (s)	-	-	307.2
HCM Lane LOS	-	-	F
HCM 95th %tile Q(veh)	-	-	5.8

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

Lanes and Geometrics
 4: S. Parker Rd. (SH 83) & E Quincy Ave.

East Bank
 03/17/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕	↕↕↕	↕	↕↕↕		↕↕↕	↕↕↕	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	200		0	200		0	150		400	400		500
Storage Lanes	0		0	1		3	1		0	3		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	0.76	1.00	0.91	0.91	0.94	0.91	0.91
Ped Bike Factor												
Frt		0.954				0.850		0.968				0.996
Flt Protected		0.987			0.955		0.950			0.950		
Satd. Flow (prot)	0	1754	0	0	1779	3610	1770	4923	0	4990	5065	0
Flt Permitted		0.141			0.444		0.950			0.950		
Satd. Flow (perm)	0	251	0	0	827	3610	1770	4923	0	4990	5065	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		18				27		85				6
Link Speed (mph)		30			30		30			30		30
Link Distance (ft)		385			481		793			526		
Travel Time (s)		8.8			10.9		18.0			12.0		

Intersection Summary

Area Type: Other

Timings
4: S. Parker Rd. (SH 83) & E Quincy Ave.

East Bank
03/17/2021

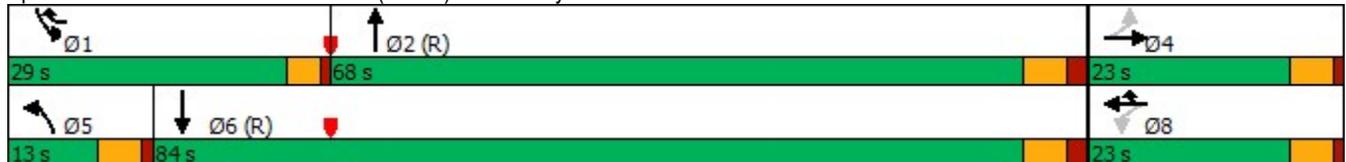


Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations		↔		↔	↔↔↔	↔	↔↔↔	↔↔↔	↔↔↔
Traffic Volume (vph)	43	64	271	16	1047	42	2278	1277	2923
Future Volume (vph)	43	64	271	16	1047	42	2278	1277	2923
Turn Type	Perm	NA	Perm	NA	pt+ov	Prot	NA	Prot	NA
Protected Phases		4		8	8 1	5	2	1	6
Permitted Phases	4		8						
Detector Phase	4	4	8	8	8 1	5	2	1	6
Switch Phase									
Minimum Initial (s)	5.0	5.0	3.0	3.0		5.5	20.0	5.0	5.0
Minimum Split (s)	20.0	20.0	23.0	23.0		10.5	26.0	9.5	24.0
Total Split (s)	23.0	23.0	23.0	23.0		13.0	68.0	29.0	84.0
Total Split (%)	19.2%	19.2%	19.2%	19.2%		10.8%	56.7%	24.2%	70.0%
Yellow Time (s)	4.0	4.0	4.0	4.0		4.0	4.0	3.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0		1.0	2.0	1.0	2.0
Lost Time Adjust (s)		0.0		0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)		5.0		5.0		5.0	6.0	4.0	6.0
Lead/Lag						Lead	Lag	Lead	Lag
Lead-Lag Optimize?						Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None		None	C-Max	None	C-Max
Act Effct Green (s)		18.0		18.0	47.0	7.3	62.0	25.0	80.8
Actuated g/C Ratio		0.15		0.15	0.39	0.06	0.52	0.21	0.67
v/c Ratio		3.40		2.52	0.80	0.43	1.22	1.34	0.96
Control Delay		1144.0		724.3	26.9	66.2	130.5	195.6	27.4
Queue Delay		1.4		0.0	0.0	0.0	0.1	0.0	0.0
Total Delay		1145.4		724.3	26.9	66.2	130.6	195.6	27.4
LOS		F		F	C	E	F	F	C
Approach Delay		1145.4		177.0			129.7		77.6
Approach LOS		F		F			F		E

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green
 Natural Cycle: 150
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 3.40
 Intersection Signal Delay: 130.4
 Intersection Capacity Utilization 117.2%
 Analysis Period (min) 15
 Intersection LOS: F
 ICU Level of Service H

Splits and Phases: 4: S. Parker Rd. (SH 83) & E Quincy Ave.



Queues
4: S. Parker Rd. (SH 83) & E Quincy Ave.

East Bank
03/17/2021



Lane Group	EBT	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	177	312	1138	46	3153	1388	3261
v/c Ratio	3.40	2.52	0.80	0.43	1.22	1.34	0.96
Control Delay	1144.0	724.3	26.9	66.2	130.5	195.6	27.4
Queue Delay	1.4	0.0	0.0	0.0	0.1	0.0	0.0
Total Delay	1145.4	724.3	26.9	66.2	130.6	195.6	27.4
Queue Length 50th (ft)	~233	~393	337	35	~1091	~496	837
Queue Length 95th (ft)	#356	#541	411	75	#1175	#590	#1034
Internal Link Dist (ft)	305	401			713		446
Turn Bay Length (ft)				150		400	
Base Capacity (vph)	52	124	1430	118	2584	1039	3410
Starvation Cap Reductn	0	0	1	0	0	0	0
Spillback Cap Reductn	2	0	0	0	137	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	3.54	2.52	0.80	0.39	1.29	1.34	0.96

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

HCM 6th Signalized Intersection Summary
 4: S. Parker Rd. (SH 83) & E Quincy Ave.

East Bank
 03/17/2021



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕	↕↕↕	↕	↕↕↕		↕↕↕	↕↕↕	
Traffic Volume (veh/h)	43	64	55	271	16	1047	42	2278	623	1277	2923	77
Future Volume (veh/h)	43	64	55	271	16	1047	42	2278	623	1277	2923	77
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	47	70	60	295	17	1138	46	2476	677	1388	3177	84
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	38	36	19	151	5	1295	64	2103	528	1047	3483	91
Arrive On Green	0.15	0.15	0.15	0.15	0.15	0.15	0.04	0.52	0.52	0.21	0.68	0.68
Sat Flow, veh/h	0	243	125	620	36	3614	1781	4069	1021	5023	5116	134
Grp Volume(v), veh/h	177	0	0	312	0	1138	46	2035	1118	1388	2105	1156
Grp Sat Flow(s),veh/h/ln	368	0	0	655	0	1205	1781	1702	1687	1674	1702	1846
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	18.0	3.1	62.0	62.0	25.0	62.1	64.2
Cycle Q Clear(g_c), s	18.0	0.0	0.0	18.0	0.0	18.0	3.1	62.0	62.0	25.0	62.1	64.2
Prop In Lane	0.27		0.34	0.95		1.00	1.00		0.61	1.00		0.07
Lane Grp Cap(c), veh/h	93	0	0	157	0	1295	64	1759	871	1047	2317	1257
V/C Ratio(X)	1.90	0.00	0.00	1.99	0.00	0.88	0.72	1.16	1.28	1.33	0.91	0.92
Avail Cap(c_a), veh/h	93	0	0	157	0	1295	119	1759	871	1047	2317	1257
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	0.89	0.00	0.89	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	50.5	0.0	0.0	54.4	0.0	36.1	57.2	29.0	29.0	47.5	16.0	16.4
Incr Delay (d2), s/veh	442.9	0.0	0.0	465.9	0.0	6.5	14.0	77.5	136.2	153.5	6.6	12.3
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	24.8	0.0	0.0	40.6	0.0	16.2	2.9	60.0	82.5	38.3	31.5	37.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	493.3	0.0	0.0	520.2	0.0	42.5	71.2	106.5	165.2	201.0	22.6	28.7
LnGrp LOS	F	A	A	F	A	D	E	F	F	F	C	C
Approach Vol, veh/h		177			1450			3199			4649	
Approach Delay, s/veh		493.3			145.3			126.5			77.4	
Approach LOS		F			F			F			E	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	29.0	68.0		23.0	9.3	87.7		23.0				
Change Period (Y+Rc), s	4.0	6.0		5.0	5.0	6.0		5.0				
Max Green Setting (Gmax), s	25.0	62.0		18.0	8.0	78.0		18.0				
Max Q Clear Time (g_c+I1), s	27.0	64.0		20.0	5.1	66.2		20.0				
Green Ext Time (p_c), s	0.0	0.0		0.0	0.0	11.5		0.0				

Intersection Summary

HCM 6th Ctrl Delay	112.1
HCM 6th LOS	F

Notes

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

Lanes and Geometrics
5: E Quincy Ave. & South Site Access

East Bank
03/17/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	150		0	100		0	0		100	0		0
Storage Lanes	1		0	1		0	0		1	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.91	0.91	1.00	0.91	0.91	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.998			0.990				0.850			0.850
Flt Protected	0.950			0.950				0.957			0.956	
Satd. Flow (prot)	1770	5075	0	1770	5034	0	0	1783	1583	0	1781	1583
Flt Permitted	0.149			0.055				0.651			0.666	
Satd. Flow (perm)	278	5075	0	102	5034	0	0	1213	1583	0	1241	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		3			16				112			55
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		481			367			333			210	
Travel Time (s)		10.9			8.3			7.6			4.8	

Intersection Summary

Area Type: Other

Timings
5: E Quincy Ave. & South Site Access

East Bank
03/17/2021

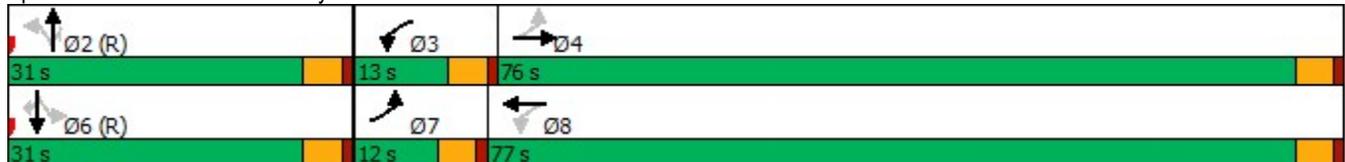


Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↑↑↑	↖	↑↑↑		↖	↗		↖	↗
Traffic Volume (vph)	48	1892	104	1209	76	9	166	104	9	49
Future Volume (vph)	48	1892	104	1209	76	9	166	104	9	49
Turn Type	pm+pt	NA	pm+pt	NA	Perm	NA	Perm	Perm	NA	Perm
Protected Phases	7	4	3	8		2			6	
Permitted Phases	4		8		2		2	6		6
Detector Phase	7	4	3	8	2	2	2	6	6	6
Switch Phase										
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.5	22.5	9.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5
Total Split (s)	12.0	76.0	13.0	77.0	31.0	31.0	31.0	31.0	31.0	31.0
Total Split (%)	10.0%	63.3%	10.8%	64.2%	25.8%	25.8%	25.8%	25.8%	25.8%	25.8%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5		4.5	4.5		4.5	4.5
Lead/Lag	Lead	Lag	Lead	Lag						
Lead-Lag Optimize?	Yes	Yes	Yes	Yes						
Recall Mode	None	None	None	None	C-Max	C-Max	C-Max	C-Max	C-Max	C-Max
Act Effct Green (s)	75.6	69.1	79.1	72.5		29.5	29.5		29.5	29.5
Actuated g/C Ratio	0.63	0.58	0.66	0.60		0.25	0.25		0.25	0.25
v/c Ratio	0.20	0.72	0.64	0.46		0.31	0.38		0.40	0.12
Control Delay	12.1	35.1	36.2	13.5		42.2	18.3		44.2	10.2
Queue Delay	0.0	23.5	0.0	0.0		0.0	0.0		0.0	0.0
Total Delay	12.1	58.5	36.2	13.5		42.2	18.3		44.2	10.2
LOS	B	E	D	B		D	B		D	B
Approach Delay		57.4		15.2		26.5			34.0	
Approach LOS		E		B		C			C	

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
 Natural Cycle: 65
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.72
 Intersection Signal Delay: 38.8
 Intersection Capacity Utilization 67.2%
 Analysis Period (min) 15
 Intersection LOS: D
 ICU Level of Service C

Splits and Phases: 5: E Quincy Ave. & South Site Access



Queues
5: E Quincy Ave. & South Site Access

East Bank
03/17/2021



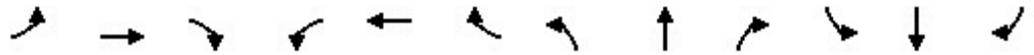
Lane Group	EBL	EBT	WBL	WBT	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	52	2091	113	1403	93	180	123	53
v/c Ratio	0.20	0.72	0.64	0.46	0.31	0.38	0.40	0.12
Control Delay	12.1	35.1	36.2	13.5	42.2	18.3	44.2	10.2
Queue Delay	0.0	23.5	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	12.1	58.5	36.2	13.5	42.2	18.3	44.2	10.2
Queue Length 50th (ft)	16	443	33	197	61	43	83	0
Queue Length 95th (ft)	m12	m261	#98	237	114	111	146	33
Internal Link Dist (ft)		401		287	253		130	
Turn Bay Length (ft)	150		100			100		
Base Capacity (vph)	270	3025	185	3068	297	473	305	430
Starvation Cap Reductn	0	1017	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.19	1.04	0.61	0.46	0.31	0.38	0.40	0.12

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: E Quincy Ave. & South Site Access

East Bank
03/17/2021



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↗	↑↑↑		↖	↑↑↑			↑	↗		↑	↖
Traffic Volume (veh/h)	48	1892	31	104	1209	82	76	9	166	104	9	49
Future Volume (veh/h)	48	1892	31	104	1209	82	76	9	166	104	9	49
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	52	2057	34	113	1314	89	83	10	180	113	10	53
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	254	2639	44	179	2549	173	57	4	525	58	3	525
Arrive On Green	0.03	0.51	0.51	0.05	0.52	0.52	0.33	0.33	0.33	0.33	0.33	0.33
Sat Flow, veh/h	1781	5174	85	1781	4884	331	0	11	1585	0	8	1585
Grp Volume(v), veh/h	52	1353	738	113	916	487	93	0	180	123	0	53
Grp Sat Flow(s),veh/h/ln	1781	1702	1855	1781	1702	1811	11	0	1585	8	0	1585
Q Serve(g_s), s	1.6	38.8	38.9	3.6	21.1	21.1	0.0	0.0	10.3	0.0	0.0	2.8
Cycle Q Clear(g_c), s	1.6	38.8	38.9	3.6	21.1	21.1	39.8	0.0	10.3	39.8	0.0	2.8
Prop In Lane	1.00		0.05	1.00		0.18	0.89		1.00	0.92		1.00
Lane Grp Cap(c), veh/h	254	1736	946	179	1776	945	61	0	525	60	0	525
V/C Ratio(X)	0.20	0.78	0.78	0.63	0.52	0.52	1.54	0.00	0.34	2.04	0.00	0.10
Avail Cap(c_a), veh/h	304	2028	1105	223	2057	1094	61	0	525	60	0	525
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	0.09	0.09	0.09	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	14.7	23.9	23.9	24.6	18.8	18.8	57.5	0.0	30.3	58.2	0.0	27.8
Incr Delay (d2), s/veh	0.0	0.2	0.3	3.8	0.2	0.4	308.1	0.0	1.8	520.2	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	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	1.1	17.0	18.5	3.2	12.9	13.7	12.6	0.0	7.6	19.0	0.0	2.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	14.7	24.1	24.2	28.4	19.0	19.2	365.7	0.0	32.0	578.4	0.0	28.1
LnGrp LOS	B	C	C	C	B	B	F	A	C	F	A	C
Approach Vol, veh/h		2143			1516			273				176
Approach Delay, s/veh		23.9			19.8			145.7				412.7
Approach LOS		C			B			F				F
Timer - Assigned Phs		2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s		44.3	10.0	65.7		44.3	8.6	67.1				
Change Period (Y+Rc), s		4.5	4.5	4.5		4.5	4.5	4.5				
Max Green Setting (Gmax), s		26.5	8.5	71.5		26.5	7.5	72.5				
Max Q Clear Time (g_c+I1), s		41.8	5.6	40.9		41.8	3.6	23.1				
Green Ext Time (p_c), s		0.0	0.1	20.3		0.0	0.0	14.1				
Intersection Summary												
HCM 6th Ctrl Delay				47.1								
HCM 6th LOS				D								

Lanes and Geometrics
6: E Quincy Ave. & S Atchison Way

East Bank
03/17/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	150		100	125		0	100		0	150		200
Storage Lanes	1		0	1		0	1		0	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.91	0.91	1.00	0.91	0.91	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.998			0.990			0.850				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	5075	0	1770	5034	0	1770	1583	0	1770	1863	1583
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1770	5075	0	1770	5034	0	1770	1583	0	1770	1863	1583
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		367			446			235			1056	
Travel Time (s)		8.3			10.1			5.3			24.0	

Intersection Summary

Area Type: Other

Intersection												
Int Delay, s/veh	8.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖ ↑↑↑ ↗			↖ ↑↑↑ ↗			↖ ↗		↖ ↗		↖ ↗	
Traffic Vol, veh/h	27	2110	24	17	1341	91	10	0	13	30	0	43
Future Vol, veh/h	27	2110	24	17	1341	91	10	0	13	30	0	43
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	-	-	125	-	-	100	-	-	150	-	200
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	29	2293	26	18	1458	99	11	0	14	33	0	47

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1557	0	0	2319	0	0	2983	3957	1160	2519	3921	779
Stage 1	-	-	-	-	-	-	2364	2364	-	1544	1544	-
Stage 2	-	-	-	-	-	-	619	1593	-	975	2377	-
Critical Hdwy	5.34	-	-	5.34	-	-	6.44	6.54	7.14	6.44	6.54	7.14
Critical Hdwy Stg 1	-	-	-	-	-	-	7.34	5.54	-	7.34	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.74	5.54	-	6.74	5.54	-
Follow-up Hdwy	3.12	-	-	3.12	-	-	3.82	4.02	3.92	3.82	4.02	3.92
Pot Cap-1 Maneuver	209	-	-	86	-	-	15	3	162	~30	3	291
Stage 1	-	-	-	-	-	-	21	67	-	82	175	-
Stage 2	-	-	-	-	-	-	403	165	-	244	66	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	209	-	-	86	-	-	~9	2	162	~21	2	291
Mov Cap-2 Maneuver	-	-	-	-	-	-	~9	2	-	~21	2	-
Stage 1	-	-	-	-	-	-	18	58	-	71	138	-
Stage 2	-	-	-	-	-	-	267	131	-	192	57	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.3	0.7	\$ 416.7	286.4
HCM LOS			F	F

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2	SBLn3
Capacity (veh/h)	9	162	209	-	-	86	-	-	21	-	291
HCM Lane V/C Ratio	1.208	0.087	0.14	-	-	0.215	-	-	1.553	-	0.161
HCM Control Delay (s)	\$ 920.3	29.3	25	-	-	58	-	-	\$ 668.6	0	19.7
HCM Lane LOS	F	D	D	-	-	F	-	-	F	A	C
HCM 95th %tile Q(veh)	2.1	0.3	0.5	-	-	0.8	-	-	4.3	-	0.6

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

Lanes and Geometrics
 1: S. Parker Rd. (SH 83) & S Atchison Way

East Bank
 03/17/2021



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↑	↑↑↑		↑	↑↑↑
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%		0%			0%
Storage Length (ft)	0	0		0	200	
Storage Lanes	0	1		0	1	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	0.91	0.91	1.00	0.91
Ped Bike Factor						
Frt		0.865				
Flt Protected					0.950	
Satd. Flow (prot)	0	1611	5085	0	1770	5085
Flt Permitted					0.950	
Satd. Flow (perm)	0	1611	5085	0	1770	5085
Link Speed (mph)	30		30			30
Link Distance (ft)	538		680			507
Travel Time (s)	12.2		15.5			11.5

Intersection Summary

Area Type: Other

Intersection						
Int Delay, s/veh	17.3					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↑ ↑ ↑	↑ ↑ ↑		↑ ↑ ↑	↑ ↑ ↑
Traffic Vol, veh/h	0	76	4175	5	13	2802
Future Vol, veh/h	0	76	4175	5	13	2802
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	200	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	83	4538	5	14	3046

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	-	2272	0	0	4543
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	~ 27	-	-	~ 5
Stage 1	0	-	-	-	-
Stage 2	0	-	-	-	-
Platoon blocked, %					
Mov Cap-1 Maneuver	-	~ 27	-	-	~ 5
Mov Cap-2 Maneuver	-	-	-	-	-
Stage 1	-	-	-	-	-
Stage 2	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, \$	1232.9	0	10.1
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	27	~ 5
HCM Lane V/C Ratio	-	-	3.06	2.826
HCM Control Delay (s)	-	-	\$ 1232.9	\$ 2177.2
HCM Lane LOS	-	-	F	F
HCM 95th %tile Q(veh)	-	-	10	2.9

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

Lanes and Geometrics
 2: S. Parker Rd. (SH 83) & NW Site Access

East Bank
 03/17/2021



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%		0%			0%
Storage Length (ft)	0	150		0	400	
Storage Lanes	1	1		0	1	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	0.91	0.91	1.00	0.91
Ped Bike Factor						
Frt		0.850	0.998			
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1770	1583	5075	0	1770	5085
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1770	1583	5075	0	1770	5085
Link Speed (mph)	30		30			30
Link Distance (ft)	484		560			680
Travel Time (s)	11.0		12.7			15.5

Intersection Summary

Area Type: Other

Intersection						
Int Delay, s/veh	60.7					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↵	↵ ↵ ↵ ↵	↵ ↵ ↵ ↵		↵ ↵ ↵ ↵	↵ ↵ ↵ ↵
Traffic Vol, veh/h	5	144	4036	55	68	2734
Future Vol, veh/h	5	144	4036	55	68	2734
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	-	-	400	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	5	157	4387	60	74	2972

Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	5754	2224	0	0	4447	0
Stage 1	4417	-	-	-	-	-
Stage 2	1337	-	-	-	-	-
Critical Hdwy	5.74	7.14	-	-	5.34	-
Critical Hdwy Stg 1	6.64	-	-	-	-	-
Critical Hdwy Stg 2	6.04	-	-	-	-	-
Follow-up Hdwy	3.82	3.92	-	-	3.12	-
Pot Cap-1 Maneuver	~ 1	~ 30	-	-	~ 6	-
Stage 1	~ 1	-	-	-	-	-
Stage 2	187	-	-	-	-	-
Platoon blocked, %						
Mov Cap-1 Maneuver	0	~ 30	-	-	~ 6	-
Mov Cap-2 Maneuver	0	-	-	-	-	-
Stage 1	~ 1	-	-	-	-	-
Stage 2	0	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s		0	152.5
HCM LOS	-		

Minor Lane/Major Mvmt	NBT	NBRWBLn1WBLn2	SBL	SBT
Capacity (veh/h)	-	-	30	~ 6
HCM Lane V/C Ratio	-	-	5.217	12.319
HCM Control Delay (s)	-	-	\$ 2161.1	\$ 6284.1
HCM Lane LOS	-	-	F	F
HCM 95th %tile Q(veh)	-	-	18.9	11

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

Lanes and Geometrics
 3: SW Site Access & S. Parker Rd. (SH 83)

East Bank
 03/17/2021



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↑	↑↑↑			↑↑↑
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%		0%			0%
Storage Length (ft)	0	0		0	0	
Storage Lanes	0	1		0	0	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	0.91	0.91	1.00	0.91
Ped Bike Factor						
Frt		0.865	0.999			
Flt Protected						
Satd. Flow (prot)	0	1611	5080	0	0	5085
Flt Permitted						
Satd. Flow (perm)	0	1611	5080	0	0	5085
Link Speed (mph)	30		30			30
Link Distance (ft)	488		526			560
Travel Time (s)	11.1		12.0			12.7

Intersection Summary

Area Type: Other

Intersection						
Int Delay, s/veh	31.2					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↑ ↑↑	↑↑↑			↑↑↑
Traffic Vol, veh/h	0	125	3966	35	0	2739
Future Vol, veh/h	0	125	3966	35	0	2739
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	136	4311	38	0	2977

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	-	2175	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	~ 32	-	-	0
Stage 1	0	-	-	-	0
Stage 2	0	-	-	-	0
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	-	~ 32	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-
Stage 1	-	-	-	-	-
Stage 2	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, \$	1712.9	0	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBT
Capacity (veh/h)	-	-	32
HCM Lane V/C Ratio	-	-	4.246
HCM Control Delay (s)	-	\$	1712.9
HCM Lane LOS	-	-	F
HCM 95th %tile Q(veh)	-	-	16.1

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

Lanes and Geometrics
 4: S. Parker Rd. (SH 83) & E Quincy Ave.

East Bank
 03/17/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕	↔↔↔	↕	↕↕↕		↕↕↕	↕↕↕	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	200		0	200		0	150		400	400		500
Storage Lanes	0		0	1		3	1		0	3		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	0.76	1.00	0.91	0.91	0.94	0.91	0.91
Ped Bike Factor												
Frt		0.948				0.850		0.991				0.999
Flt Protected		0.981			0.953		0.950			0.950		
Satd. Flow (prot)	0	1732	0	0	1775	3610	1770	5040	0	4990	5080	0
Flt Permitted		0.889			0.719		0.950			0.950		
Satd. Flow (perm)	0	1570	0	0	1339	3610	1770	5040	0	4990	5080	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		5				27		10				1
Link Speed (mph)		30			30		30			30		30
Link Distance (ft)		385			481		793			526		
Travel Time (s)		8.8			10.9		18.0			12.0		

Intersection Summary

Area Type: Other

Timings
4: S. Parker Rd. (SH 83) & E Quincy Ave.

East Bank
03/17/2021



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations		↕		↕	↕↕↕	↕	↕↕↕	↕↕↕	↕↕↕
Traffic Volume (vph)	5	3	277	3	1568	14	2429	809	1924
Future Volume (vph)	5	3	277	3	1568	14	2429	809	1924
Turn Type	Perm	NA	Perm	NA	pt+ov	Prot	NA	Prot	NA
Protected Phases		4		8	8 1	5	2	1	6
Permitted Phases	4		8						
Detector Phase	4	4	8	8	8 1	5	2	1	6
Switch Phase									
Minimum Initial (s)	5.0	5.0	3.0	3.0		5.5	20.0	5.0	5.0
Minimum Split (s)	20.0	20.0	23.0	23.0		10.5	26.0	9.5	24.0
Total Split (s)	31.0	31.0	31.0	31.0		10.5	58.0	31.0	78.5
Total Split (%)	25.8%	25.8%	25.8%	25.8%		8.8%	48.3%	25.8%	65.4%
Yellow Time (s)	4.0	4.0	4.0	4.0		4.0	4.0	3.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0		1.0	2.0	1.0	2.0
Lost Time Adjust (s)		0.0		0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)		5.0		5.0		5.0	6.0	4.0	6.0
Lead/Lag						Lead	Lag	Lead	Lag
Lead-Lag Optimize?						Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None		None	C-Max	None	C-Max
Act Effct Green (s)		26.0		26.0	57.0	5.5	52.0	27.0	78.8
Actuated g/C Ratio		0.22		0.22	0.48	0.05	0.43	0.22	0.66
v/c Ratio		0.04		1.05	0.99	0.19	1.28	0.78	0.63
Control Delay		28.8		95.5	34.2	60.6	160.8	49.5	13.8
Queue Delay		0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		28.8		95.5	34.2	60.6	160.8	49.5	13.8
LOS		C		F	C	E	F	D	B
Approach Delay		28.8		43.5			160.2		24.3
Approach LOS		C		D			F		C

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green
 Natural Cycle: 130
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.28
 Intersection Signal Delay: 78.3
 Intersection LOS: E
 Intersection Capacity Utilization 104.3%
 ICU Level of Service G
 Analysis Period (min) 15

Splits and Phases: 4: S. Parker Rd. (SH 83) & E Quincy Ave.



Queues
4: S. Parker Rd. (SH 83) & E Quincy Ave.

East Bank
03/17/2021



Lane Group	EBT	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	13	304	1704	15	2803	879	2098
v/c Ratio	0.04	1.05	0.99	0.19	1.28	0.78	0.63
Control Delay	28.8	95.5	34.2	60.6	160.8	49.5	13.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	28.8	95.5	34.2	60.6	160.8	49.5	13.8
Queue Length 50th (ft)	5	~245	553	11	~1012	228	282
Queue Length 95th (ft)	23	#428	#707	35	#1102	278	429
Internal Link Dist (ft)	305	401			713		446
Turn Bay Length (ft)				150		400	
Base Capacity (vph)	344	290	1728	81	2189	1122	3335
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.04	1.05	0.99	0.19	1.28	0.78	0.63

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
 4: S. Parker Rd. (SH 83) & E Quincy Ave.

East Bank
 03/17/2021



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕	↑↑↑	↕	↑↑↑		↕↕↕	↑↑↑	
Traffic Volume (veh/h)	5	3	5	277	3	1568	14	2429	150	809	1924	6
Future Volume (veh/h)	5	3	5	277	3	1568	14	2429	150	809	1924	6
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	5	3	5	301	3	1704	15	2640	163	879	2091	7
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	42	29	18	220	2	1506	32	2255	137	1005	3320	11
Arrive On Green	0.22	0.22	0.22	0.22	0.22	0.22	0.02	0.46	0.46	0.20	0.63	0.63
Sat Flow, veh/h	0	132	83	739	7	3614	1781	4922	299	5023	5254	18
Grp Volume(v), veh/h	13	0	0	304	0	1704	15	1812	991	879	1355	743
Grp Sat Flow(s),veh/h/ln	215	0	0	746	0	1205	1781	1702	1817	1674	1702	1867
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	26.0	1.0	55.0	55.0	20.4	29.2	29.2
Cycle Q Clear(g_c), s	26.0	0.0	0.0	26.0	0.0	26.0	1.0	55.0	55.0	20.4	29.2	29.2
Prop In Lane	0.38		0.38	0.99		1.00	1.00		0.16	1.00		0.01
Lane Grp Cap(c), veh/h	88	0	0	221	0	1506	32	1560	832	1005	2151	1180
V/C Ratio(X)	0.15	0.00	0.00	1.37	0.00	1.13	0.47	1.16	1.19	0.87	0.63	0.63
Avail Cap(c_a), veh/h	88	0	0	221	0	1506	82	1560	832	1130	2151	1180
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	0.00	0.00	0.67	0.00	0.67	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	39.3	0.0	0.0	50.5	0.0	35.0	58.3	32.5	32.5	46.5	13.5	13.5
Incr Delay (d2), s/veh	0.8	0.0	0.0	186.1	0.0	65.3	10.2	80.3	97.7	7.2	1.4	2.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.6	0.0	0.0	27.8	0.0	32.0	1.0	55.2	64.6	14.1	16.4	18.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	40.0	0.0	0.0	236.6	0.0	100.3	68.5	112.8	130.2	53.7	14.9	16.1
LnGrp LOS	D	A	A	F	A	F	E	F	F	D	B	B
Approach Vol, veh/h		13			2008			2818			2977	
Approach Delay, s/veh		40.0			121.0			118.6			26.7	
Approach LOS		D			F			F			C	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	28.0	61.0		31.0	7.2	81.8		31.0				
Change Period (Y+Rc), s	4.0	6.0		5.0	5.0	6.0		5.0				
Max Green Setting (Gmax), s	27.0	52.0		26.0	5.5	72.5		26.0				
Max Q Clear Time (g_c+I1), s	22.4	57.0		28.0	3.0	31.2		28.0				
Green Ext Time (p_c), s	1.7	0.0		0.0	0.0	24.6		0.0				

Intersection Summary

HCM 6th Ctrl Delay	84.1
HCM 6th LOS	F

Notes

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

Lanes and Geometrics
5: E Quincy Ave. & South Site Access

East Bank
03/17/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	150		0	100		0	0		100	0		0
Storage Lanes	1		0	1		0	0		1	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.91	0.91	1.00	0.91	0.91	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.997			0.991				0.850			0.850
Flt Protected	0.950			0.950				0.958			0.957	
Satd. Flow (prot)	1770	5070	0	1770	5040	0	0	1785	1583	0	1783	1583
Flt Permitted	0.060			0.236				0.752			0.728	
Satd. Flow (perm)	112	5070	0	440	5040	0	0	1401	1583	0	1356	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		5			14				61			60
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		481			367			333			210	
Travel Time (s)		10.9			8.3			7.6			4.8	

Intersection Summary

Area Type: Other

Timings
5: E Quincy Ave. & South Site Access

East Bank
03/17/2021

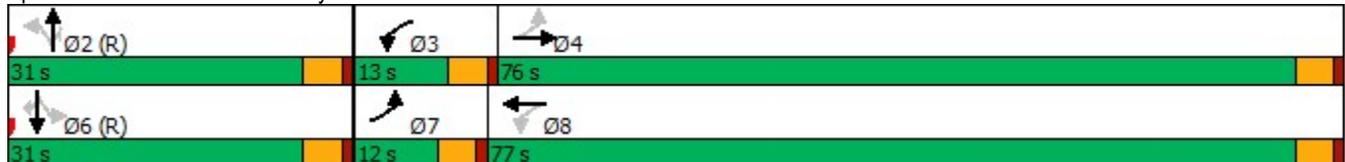


Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↑↑↑	↖	↑↑↑		↖	↗		↖	↗
Traffic Volume (vph)	24	884	70	1751	42	6	56	74	7	55
Future Volume (vph)	24	884	70	1751	42	6	56	74	7	55
Turn Type	pm+pt	NA	pm+pt	NA	Perm	NA	Perm	Perm	NA	Perm
Protected Phases	7	4	3	8		2			6	
Permitted Phases	4		8		2		2	6		6
Detector Phase	7	4	3	8	2	2	2	6	6	6
Switch Phase										
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.5	22.5	9.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5
Total Split (s)	12.0	76.0	13.0	77.0	31.0	31.0	31.0	31.0	31.0	31.0
Total Split (%)	10.0%	63.3%	10.8%	64.2%	25.8%	25.8%	25.8%	25.8%	25.8%	25.8%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5		4.5	4.5		4.5	4.5
Lead/Lag	Lead	Lag	Lead	Lag						
Lead-Lag Optimize?	Yes	Yes	Yes	Yes						
Recall Mode	None	None	None	None	C-Max	C-Max	C-Max	C-Max	C-Max	C-Max
Act Effct Green (s)	71.3	65.8	73.2	68.5		35.5	35.5		35.5	35.5
Actuated g/C Ratio	0.59	0.55	0.61	0.57		0.30	0.30		0.30	0.30
v/c Ratio	0.17	0.35	0.22	0.70		0.13	0.12		0.22	0.12
Control Delay	23.0	29.0	8.5	19.5		37.0	10.0		37.8	10.0
Queue Delay	0.0	0.0	0.0	0.4		0.0	0.0		0.0	0.0
Total Delay	23.0	29.0	8.5	19.9		37.0	10.0		37.8	10.0
LOS	C	C	A	B		D	A		D	A
Approach Delay		28.9		19.5		22.5			26.5	
Approach LOS		C		B		C			C	

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
 Natural Cycle: 65
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.70
 Intersection Signal Delay: 22.7
 Intersection LOS: C
 Intersection Capacity Utilization 62.7%
 ICU Level of Service B
 Analysis Period (min) 15

Splits and Phases: 5: E Quincy Ave. & South Site Access



Queues
5: E Quincy Ave. & South Site Access

East Bank
03/17/2021



Lane Group	EBL	EBT	WBL	WBT	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	26	983	76	2018	53	61	88	60
v/c Ratio	0.17	0.35	0.22	0.70	0.13	0.12	0.22	0.12
Control Delay	23.0	29.0	8.5	19.5	37.0	10.0	37.8	10.0
Queue Delay	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.0
Total Delay	23.0	29.0	8.5	19.9	37.0	10.0	37.8	10.0
Queue Length 50th (ft)	9	131	18	369	32	0	55	0
Queue Length 95th (ft)	m11	m149	31	403	70	36	107	36
Internal Link Dist (ft)		401		287	253		130	
Turn Bay Length (ft)	150		100			100		
Base Capacity (vph)	170	3031	364	3051	414	510	400	510
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	492	0	0	0	5
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.15	0.32	0.21	0.79	0.13	0.12	0.22	0.12

Intersection Summary

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

HCM 6th Signalized Intersection Summary
5: E Quincy Ave. & South Site Access

East Bank
03/17/2021



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↗	↑↑↑		↖	↑↑↑			↑	↗		↑	↖
Traffic Volume (veh/h)	24	884	20	70	1751	106	42	6	56	74	7	55
Future Volume (veh/h)	24	884	20	70	1751	106	42	6	56	74	7	55
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	26	961	22	76	1903	115	46	7	61	80	8	60
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	143	2505	57	340	2472	149	56	5	573	57	3	573
Arrive On Green	0.02	0.49	0.49	0.04	0.50	0.50	0.36	0.36	0.36	0.36	0.36	0.36
Sat Flow, veh/h	1781	5136	117	1781	4924	297	0	13	1585	0	9	1585
Grp Volume(v), veh/h	26	637	346	76	1314	704	53	0	61	88	0	60
Grp Sat Flow(s),veh/h/ln	1781	1702	1849	1781	1702	1817	13	0	1585	9	0	1585
Q Serve(g_s), s	0.9	14.1	14.2	2.5	37.6	37.8	0.0	0.0	3.1	0.0	0.0	3.0
Cycle Q Clear(g_c), s	0.9	14.1	14.2	2.5	37.6	37.8	43.4	0.0	3.1	43.4	0.0	3.0
Prop In Lane	1.00		0.06	1.00		0.16	0.87		1.00	0.91		1.00
Lane Grp Cap(c), veh/h	143	1660	902	340	1709	912	61	0	573	60	0	573
V/C Ratio(X)	0.18	0.38	0.38	0.22	0.77	0.77	0.87	0.00	0.11	1.46	0.00	0.10
Avail Cap(c_a), veh/h	211	2028	1102	398	2057	1098	61	0	573	60	0	573
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)	0.54	0.54	0.54	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	20.7	19.4	19.4	15.0	24.2	24.3	56.1	0.0	25.4	57.8	0.0	25.4
Incr Delay (d2), s/veh	0.3	0.1	0.1	0.3	1.5	2.9	82.8	0.0	0.4	276.4	0.0	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.7	8.4	9.0	1.9	21.4	23.1	5.4	0.0	2.2	11.7	0.0	2.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	21.0	19.4	19.5	15.4	25.7	27.2	138.9	0.0	25.8	334.2	0.0	25.8
LnGrp LOS	C	B	B	B	C	C	F	A	C	F	A	C
Approach Vol, veh/h		1009			2094			114				148
Approach Delay, s/veh		19.5			25.8			78.4				209.2
Approach LOS		B			C			E				F
Timer - Assigned Phs		2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s		47.9	9.1	63.0		47.9	7.4	64.7				
Change Period (Y+Rc), s		4.5	4.5	4.5		4.5	4.5	4.5				
Max Green Setting (Gmax), s		26.5	8.5	71.5		26.5	7.5	72.5				
Max Q Clear Time (g_c+I1), s		45.4	4.5	16.2		45.4	2.9	39.8				
Green Ext Time (p_c), s		0.0	0.0	8.3		0.0	0.0	20.4				
Intersection Summary												
HCM 6th Ctrl Delay				33.8								
HCM 6th LOS				C								

Lanes and Geometrics
6: E Quincy Ave. & S Atchison Way

East Bank
03/17/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	150		100	125		0	100		0	150		200
Storage Lanes	1		0	1		0	1		0	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.91	0.91	1.00	0.91	0.91	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.999			0.997			0.850				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	5080	0	1770	5070	0	1770	1583	0	1770	1863	1583
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1770	5080	0	1770	5070	0	1770	1583	0	1770	1863	1583
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		367			446			235			1293	
Travel Time (s)		8.3			10.1			5.3			29.4	

Intersection Summary

Area Type: Other

Intersection

Int Delay, s/veh 0.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘ ↑↑↑			↘ ↑↑↑			↘	↘		↘	↑	↗
Traffic Vol, veh/h	8	1001	5	6	1888	41	17	0	19	16	0	19
Future Vol, veh/h	8	1001	5	6	1888	41	17	0	19	16	0	19
Conflicting Peds, #/hr	0	0	0	1891	0	6	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	-	-	125	-	-	100	-	-	150	-	200
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	9	1088	5	7	2052	45	18	0	21	17	0	21

Major/Minor	Major1	Major2	Minor1	Minor2
Conflicting Flow All	2103	0	0	2984
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Critical Hdwy	5.34	-	-	5.34
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	3.12	-	-	3.12
Pot Cap-1 Maneuver	111	-	-	39
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Platoon blocked, %	-	-	-	-
Mov Cap-1 Maneuver	110	-	-	~ -31
Mov Cap-2 Maneuver	-	-	-	-
Stage 1	-	-	-	-
Stage 2	-	-	-	-

Approach

EB WB NB SB

HCM Control Delay, s 0.3

HCM LOS -

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2	SBLn3
Capacity (veh/h)	-	-	110	-	-	+	-	-	-	-	190
HCM Lane V/C Ratio	-	-	0.079	-	-	-	-	-	-	-	0.109
HCM Control Delay (s)	-	-	40.5	-	-	-	-	-	-	0	26.2
HCM Lane LOS	-	-	E	-	-	-	-	-	-	A	D
HCM 95th %tile Q(veh)	-	-	0.3	-	-	-	-	-	-	-	0.4

Notes

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

Lanes and Geometrics
 7: S. Atchison Way & NE Site Access Driveway

East Bank
 03/17/2021



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%			0%	0%	
Storage Length (ft)	0	0	0			0
Storage Lanes	1	0	0			0
Taper Length (ft)	25		25			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.966				0.990	
Flt Protected	0.964			0.999		
Satd. Flow (prot)	1735	0	0	1861	1844	0
Flt Permitted	0.964			0.999		
Satd. Flow (perm)	1735	0	0	1861	1844	0
Link Speed (mph)	30			30	30	
Link Distance (ft)	332			1293	507	
Travel Time (s)	7.5			29.4	11.5	

Intersection Summary

Area Type: Other

Intersection						
Int Delay, s/veh	1					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	T			T		T
Traffic Vol, veh/h	8	3	1	54	36	3
Future Vol, veh/h	8	3	1	54	36	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	9	3	1	59	39	3

Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	102	41	42	0	0
Stage 1	41	-	-	-	-
Stage 2	61	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-
Pot Cap-1 Maneuver	896	1030	1567	-	-
Stage 1	981	-	-	-	-
Stage 2	962	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	895	1030	1567	-	-
Mov Cap-2 Maneuver	895	-	-	-	-
Stage 1	980	-	-	-	-
Stage 2	962	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	8.9	0.1	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1567	-	928	-	-
HCM Lane V/C Ratio	0.001	-	0.013	-	-
HCM Control Delay (s)	7.3	0	8.9	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Lanes and Geometrics
 200: S. Parker Rd. (SH 83) & NW Site Access

East Bank
 03/17/2021



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%		0%			0%
Storage Length (ft)	0	150		0	300	
Storage Lanes	1	1		0	1	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	0.91	0.91	1.00	0.91
Ped Bike Factor						
Frt		0.850	0.998			
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1770	1583	5075	0	1770	5085
Flt Permitted	0.950				0.043	
Satd. Flow (perm)	1770	1583	5075	0	80	5085
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		62	4			
Link Speed (mph)	30		30			30
Link Distance (ft)	503		547			540
Travel Time (s)	11.4		12.4			12.3

Intersection Summary

Area Type: Other

Timings
200: S. Parker Rd. (SH 83) & NW Site Access

East Bank
03/17/2021

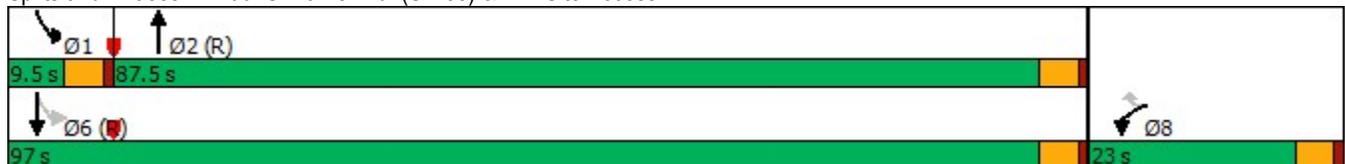


Lane Group	WBL	WBR	NBT	SBL	SBT
Lane Configurations	↵	↵	↑↑↑	↵	↑↑↑
Traffic Volume (vph)	5	144	4036	68	2734
Future Volume (vph)	5	144	4036	68	2734
Turn Type	Prot	Perm	NA	pm+pt	NA
Protected Phases	8		2	1	6
Permitted Phases		8		6	
Detector Phase	8	8	2	1	6
Switch Phase					
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	22.5	9.5	22.5
Total Split (s)	23.0	23.0	87.5	9.5	97.0
Total Split (%)	19.2%	19.2%	72.9%	7.9%	80.8%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5
Lead/Lag			Lag	Lead	
Lead-Lag Optimize?			Yes	Yes	
Recall Mode	None	None	C-Max	None	C-Max
Act Effct Green (s)	12.6	12.6	89.8	98.4	98.4
Actuated g/C Ratio	0.10	0.10	0.75	0.82	0.82
v/c Ratio	0.03	0.71	1.17	0.49	0.71
Control Delay	45.0	47.9	98.5	24.1	6.5
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	45.0	47.9	98.5	24.1	6.5
LOS	D	D	F	C	A
Approach Delay	47.8		98.5		6.9
Approach LOS	D		F		A

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBTL, Start of Green
 Natural Cycle: 150
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.17
 Intersection Signal Delay: 61.0
 Intersection Capacity Utilization 95.6%
 Analysis Period (min) 15
 Intersection LOS: E
 ICU Level of Service F

Splits and Phases: 200: S. Parker Rd. (SH 83) & NW Site Access





Lane Group	WBL	WBR	NBT	SBL	SBT
Lane Group Flow (vph)	5	157	4447	74	2972
v/c Ratio	0.03	0.71	1.17	0.49	0.71
Control Delay	45.0	47.9	98.5	24.1	6.5
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	45.0	47.9	98.5	24.1	6.5
Queue Length 50th (ft)	4	71	~1542	9	288
Queue Length 95th (ft)	16	139	#1655	#66	441
Internal Link Dist (ft)	423		467		460
Turn Bay Length (ft)		150		300	
Base Capacity (vph)	272	296	3799	151	4170
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.02	0.53	1.17	0.49	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.

HCM 6th Signalized Intersection Summary
 200: S. Parker Rd. (SH 83) & NW Site Access

East Bank
 03/17/2021



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↶	↶	↶↶↶		↶	↶↶↶
Traffic Volume (veh/h)	5	144	4036	55	68	2734
Future Volume (veh/h)	5	144	4036	55	68	2734
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	5	157	4387	60	74	2972
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	205	182	3812	52	128	4136
Arrive On Green	0.12	0.12	0.73	0.73	0.04	0.81
Sat Flow, veh/h	1781	1585	5359	71	1781	5274
Grp Volume(v), veh/h	5	157	2870	1577	74	2972
Grp Sat Flow(s),veh/h/ln	1781	1585	1702	1858	1781	1702
Q Serve(g_s), s	0.3	11.7	88.1	88.1	1.1	31.8
Cycle Q Clear(g_c), s	0.3	11.7	88.1	88.1	1.1	31.8
Prop In Lane	1.00	1.00		0.04	1.00	
Lane Grp Cap(c), veh/h	205	182	2500	1364	128	4136
V/C Ratio(X)	0.02	0.86	1.15	1.16	0.58	0.72
Avail Cap(c_a), veh/h	275	244	2500	1364	134	4136
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	47.1	52.2	15.9	15.9	36.6	5.2
Incr Delay (d2), s/veh	0.0	20.3	71.8	78.9	5.6	1.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.2	9.6	73.3	83.2	3.3	13.5
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	47.2	72.5	87.8	94.8	42.2	6.3
LnGrp LOS	D	E	F	F	D	A
Approach Vol, veh/h			4447			3046
Approach Delay, s/veh			90.3			7.2
Approach LOS			F			A
Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	9.1	92.6			101.7	18.3
Change Period (Y+Rc), s	4.5	4.5			4.5	4.5
Max Green Setting (Gmax), s	5.0	83.0			92.5	18.5
Max Q Clear Time (g_c+I1), s	3.1	90.1			33.8	13.7
Green Ext Time (p_c), s	0.0	0.0			50.5	0.2

Intersection Summary

HCM 6th Ctrl Delay	56.8
HCM 6th LOS	E

Notes

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

Lanes and Geometrics
 1: S. Parker Rd. (SH 83) & S Atchison Way

East Bank
 03/17/2021



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↗	↕↕↕↗		↘	↕↕↕
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%		0%			0%
Storage Length (ft)	0	0		0	200	
Storage Lanes	0	1		0	1	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	0.91	0.91	1.00	0.91
Ped Bike Factor						
Frt		0.865	0.999			
Flt Protected					0.950	
Satd. Flow (prot)	0	1611	5080	0	1770	5085
Flt Permitted					0.950	
Satd. Flow (perm)	0	1611	5080	0	1770	5085
Link Speed (mph)	30		30			30
Link Distance (ft)	538		680			507
Travel Time (s)	12.2		15.5			11.5

Intersection Summary

Area Type: Other

Intersection						
Int Delay, s/veh	20.8					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↑ ↑↑↑			↑ ↑↑↑	
Traffic Vol, veh/h	0	54	3433	17	67	4399
Future Vol, veh/h	0	54	3433	17	67	4399
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	200	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	59	3732	18	73	4782

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	-	1875	0	0	3750
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	~ 52	-	-	~ 15
Stage 1	0	-	-	-	-
Stage 2	0	-	-	-	-
Platoon blocked, %					
Mov Cap-1 Maneuver	-	~ 52	-	-	~ 15
Mov Cap-2 Maneuver	-	-	-	-	-
Stage 1	-	-	-	-	-
Stage 2	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	293	0	33.6
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	52	~ 15
HCM Lane V/C Ratio	-	-	1.129	4.855
HCM Control Delay (s)	-	-	293	2242.3
HCM Lane LOS	-	-	F	F
HCM 95th %tile Q(veh)	-	-	5.1	10

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

Lanes and Geometrics
 2: S. Parker Rd. (SH 83) & NW Site Access

East Bank
 03/17/2021



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%		0%			0%
Storage Length (ft)	0	150		0	400	
Storage Lanes	1	1		0	1	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	0.91	0.91	1.00	0.91
Ped Bike Factor						
Frt		0.850	0.998			
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1770	1583	5075	0	1770	5085
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1770	1583	5075	0	1770	5085
Link Speed (mph)	30		30			30
Link Distance (ft)	484		560			680
Travel Time (s)	11.0		12.7			15.5

Intersection Summary

Area Type: Other

Intersection						
Int Delay, s/veh	57.8					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔	↔ ↑↑↑	↑↑↑		↔	↑↑↑
Traffic Vol, veh/h	9	94	3357	42	122	4277
Future Vol, veh/h	9	94	3357	42	122	4277
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	-	-	400	-
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	10	102	3649	46	133	4649

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	5798	1848	0	0	3695
Stage 1	3672	-	-	-	-
Stage 2	2126	-	-	-	-
Critical Hdwy	5.74	7.14	-	-	5.34
Critical Hdwy Stg 1	6.64	-	-	-	-
Critical Hdwy Stg 2	6.04	-	-	-	-
Follow-up Hdwy	3.82	3.92	-	-	3.12
Pot Cap-1 Maneuver	~ 1	~ 55	-	-	~ 16
Stage 1	~ 4	-	-	-	-
Stage 2	67	-	-	-	-
Platoon blocked, %					
Mov Cap-1 Maneuver	0	~ 55	-	-	~ 16
Mov Cap-2 Maneuver	0	-	-	-	-
Stage 1	~ 4	-	-	-	-
Stage 2	0	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s		0	103.9
HCM LOS	-		

Minor Lane/Major Mvmt	NBT	NBRWBLn1WBLn2	SBL	SBT
Capacity (veh/h)	-	-	55	~ 16
HCM Lane V/C Ratio	-	-	1.858	8.288
HCM Control Delay (s)	-	-	\$ 566	\$ 3748.1
HCM Lane LOS	-	-	F	F
HCM 95th %tile Q(veh)	-	-	9.8	17.4

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

Lanes and Geometrics
 3: SW Site Access & S. Parker Rd. (SH 83)

East Bank
 03/17/2021



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↑	↑↑↑			↑↑↑
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%		0%			0%
Storage Length (ft)	0	0		0	0	
Storage Lanes	0	1		0	0	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	0.91	0.91	1.00	0.91
Ped Bike Factor						
Frt		0.865	0.997			
Flt Protected						
Satd. Flow (prot)	0	1611	5070	0	0	5085
Flt Permitted						
Satd. Flow (perm)	0	1611	5070	0	0	5085
Link Speed (mph)	30		30			30
Link Distance (ft)	488		526			560
Travel Time (s)	11.1		12.0			12.7

Intersection Summary

Area Type: Other

Intersection

Int Delay, s/veh 3.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↑ ↑↑	↑↑↑			↑↑↑
Traffic Vol, veh/h	0	70	3329	60	0	4280
Future Vol, veh/h	0	70	3329	60	0	4280
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	76	3618	65	0	4652

Major/Minor

	Minor1	Major1	Major2		
Conflicting Flow All	-	1842	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	~ 55	-	-	0
Stage 1	0	-	-	-	0
Stage 2	0	-	-	-	0
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	-	~ 55	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-
Stage 1	-	-	-	-	-
Stage 2	-	-	-	-	-

Approach

	WB	NB	SB
HCM Control Delay, s	376.2	0	0
HCM LOS	F		

Minor Lane/Major Mvmt

	NBT	NBRWBLn1	SBT
Capacity (veh/h)	-	-	55
HCM Lane V/C Ratio	-	-	1.383
HCM Control Delay (s)	-	-	376.2
HCM Lane LOS	-	-	F
HCM 95th %tile Q(veh)	-	-	6.8

Notes

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

Lanes and Geometrics
 4: S. Parker Rd. (SH 83) & E Quincy Ave.

East Bank
 03/17/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕	↕↕↕	↕	↕↕↕		↕↕↕	↕↕↕	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	200		0	200		0	150		400	400		500
Storage Lanes	0		0	1		3	1		0	3		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	0.76	1.00	0.91	0.91	0.94	0.91	0.91
Ped Bike Factor												
Frt		0.954				0.850		0.968				0.996
Flt Protected		0.987			0.955		0.950			0.950		
Satd. Flow (prot)	0	1754	0	0	1779	3610	1770	4923	0	4990	5065	0
Flt Permitted		0.141			0.443		0.950			0.950		
Satd. Flow (perm)	0	251	0	0	825	3610	1770	4923	0	4990	5065	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		18				27		85				6
Link Speed (mph)		30			30			30				30
Link Distance (ft)		385			481			793				526
Travel Time (s)		8.8			10.9			18.0				12.0

Intersection Summary

Area Type: Other

Timings
4: S. Parker Rd. (SH 83) & E Quincy Ave.

East Bank
03/17/2021

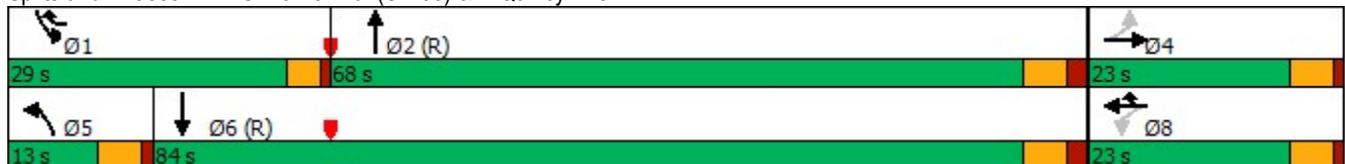


Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations		↔		↔	↔↔↔	↔	↔↔↔	↔↔↔	↔↔↔
Traffic Volume (vph)	43	64	284	16	1047	42	2299	1277	2926
Future Volume (vph)	43	64	284	16	1047	42	2299	1277	2926
Turn Type	Perm	NA	Perm	NA	pt+ov	Prot	NA	Prot	NA
Protected Phases		4		8	8 1	5	2	1	6
Permitted Phases	4		8						
Detector Phase	4	4	8	8	8 1	5	2	1	6
Switch Phase									
Minimum Initial (s)	5.0	5.0	3.0	3.0		5.5	20.0	5.0	5.0
Minimum Split (s)	20.0	20.0	23.0	23.0		10.5	26.0	9.5	24.0
Total Split (s)	23.0	23.0	23.0	23.0		13.0	68.0	29.0	84.0
Total Split (%)	19.2%	19.2%	19.2%	19.2%		10.8%	56.7%	24.2%	70.0%
Yellow Time (s)	4.0	4.0	4.0	4.0		4.0	4.0	3.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0		1.0	2.0	1.0	2.0
Lost Time Adjust (s)		0.0		0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)		5.0		5.0		5.0	6.0	4.0	6.0
Lead/Lag						Lead	Lag	Lead	Lag
Lead-Lag Optimize?						Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None		None	C-Max	None	C-Max
Act Effct Green (s)		18.0		18.0	47.0	7.3	62.0	25.0	80.8
Actuated g/C Ratio		0.15		0.15	0.39	0.06	0.52	0.21	0.67
v/c Ratio		3.40		2.65	0.80	0.43	1.23	1.34	0.96
Control Delay		1144.0		783.4	27.0	66.2	135.2	195.6	27.5
Queue Delay		1.4		0.0	0.0	0.0	0.1	0.0	0.0
Total Delay		1145.4		783.4	27.0	66.2	135.3	195.6	27.5
LOS		F		F	C	E	F	F	C
Approach Delay		1145.4		195.4			134.3		77.7
Approach LOS		F		F			F		E

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green
 Natural Cycle: 150
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 3.40
 Intersection Signal Delay: 134.8
 Intersection Capacity Utilization 118.4%
 Analysis Period (min) 15
 Intersection LOS: F
 ICU Level of Service H

Splits and Phases: 4: S. Parker Rd. (SH 83) & E Quincy Ave.



Queues
4: S. Parker Rd. (SH 83) & E Quincy Ave.

East Bank
03/17/2021



Lane Group	EBT	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	177	326	1138	46	3181	1388	3264
v/c Ratio	3.40	2.65	0.80	0.43	1.23	1.34	0.96
Control Delay	1144.0	783.4	27.0	66.2	135.2	195.6	27.5
Queue Delay	1.4	0.0	0.0	0.0	0.1	0.0	0.0
Total Delay	1145.4	783.4	27.0	66.2	135.3	195.6	27.5
Queue Length 50th (ft)	~233	~416	336	35	~1108	~496	839
Queue Length 95th (ft)	#356	#566	412	75	#1191	#590	#1035
Internal Link Dist (ft)	305	401			713		446
Turn Bay Length (ft)				150		400	
Base Capacity (vph)	52	123	1430	118	2584	1039	3410
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	2	0	0	0	137	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	3.54	2.65	0.80	0.39	1.30	1.34	0.96

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

HCM 6th Signalized Intersection Summary
 4: S. Parker Rd. (SH 83) & E Quincy Ave.

East Bank
 03/17/2021



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕	↕↕↕	↕	↕↕↕		↕↕↕	↕↕↕	
Traffic Volume (veh/h)	43	64	55	284	16	1047	42	2299	627	1277	2926	77
Future Volume (veh/h)	43	64	55	284	16	1047	42	2299	627	1277	2926	77
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	47	70	60	309	17	1138	46	2499	682	1388	3180	84
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	38	36	19	151	5	1295	64	2103	527	1047	3483	91
Arrive On Green	0.15	0.15	0.15	0.15	0.15	0.15	0.04	0.52	0.52	0.21	0.68	0.68
Sat Flow, veh/h	0	243	125	620	34	3614	1781	4071	1020	5023	5116	134
Grp Volume(v), veh/h	177	0	0	326	0	1138	46	2053	1128	1388	2107	1157
Grp Sat Flow(s),veh/h/ln	368	0	0	654	0	1205	1781	1702	1687	1674	1702	1846
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	18.0	3.1	62.0	62.0	25.0	62.2	64.4
Cycle Q Clear(g_c), s	18.0	0.0	0.0	18.0	0.0	18.0	3.1	62.0	62.0	25.0	62.2	64.4
Prop In Lane	0.27		0.34	0.95		1.00	1.00		0.60	1.00		0.07
Lane Grp Cap(c), veh/h	93	0	0	157	0	1295	64	1759	872	1047	2317	1257
V/C Ratio(X)	1.90	0.00	0.00	2.08	0.00	0.88	0.72	1.17	1.29	1.33	0.91	0.92
Avail Cap(c_a), veh/h	93	0	0	157	0	1295	119	1759	872	1047	2317	1257
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	0.00	0.00	0.89	0.00	0.89	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	50.5	0.0	0.0	54.4	0.0	36.1	57.2	29.0	29.0	47.5	16.0	16.4
Incr Delay (d2), s/veh	442.9	0.0	0.0	505.9	0.0	6.5	14.0	81.8	141.0	153.5	6.7	12.4
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	24.8	0.0	0.0	43.3	0.0	16.2	2.9	61.7	84.4	38.3	31.6	37.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	493.3	0.0	0.0	560.3	0.0	42.5	71.2	110.8	170.0	201.0	22.7	28.8
LnGrp LOS	F	A	A	F	A	D	E	F	F	F	C	C
Approach Vol, veh/h		177			1464			3227			4652	
Approach Delay, s/veh		493.3			157.8			131.0			77.4	
Approach LOS		F			F			F			E	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	29.0	68.0		23.0	9.3	87.7		23.0				
Change Period (Y+Rc), s	4.0	6.0		5.0	5.0	6.0		5.0				
Max Green Setting (Gmax), s	25.0	62.0		18.0	8.0	78.0		18.0				
Max Q Clear Time (g_c+I1), s	27.0	64.0		20.0	5.1	66.4		20.0				
Green Ext Time (p_c), s	0.0	0.0		0.0	0.0	11.3		0.0				

Intersection Summary

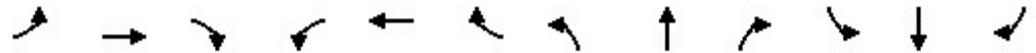
HCM 6th Ctrl Delay	115.7
HCM 6th LOS	F

Notes

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

Lanes and Geometrics
5: E Quincy Ave. & South Site Access

East Bank
03/17/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	150		0	100		0	0		100	0		0
Storage Lanes	1		0	1		0	0		1	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.91	0.91	1.00	0.91	0.91	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.998			0.990				0.850			0.850
Flt Protected	0.950			0.950				0.957			0.956	
Satd. Flow (prot)	1770	5075	0	1770	5034	0	0	1783	1583	0	1781	1583
Flt Permitted	0.147			0.055				0.641			0.665	
Satd. Flow (perm)	274	5075	0	102	5034	0	0	1194	1583	0	1239	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		3			18				112			67
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		481			367			333			210	
Travel Time (s)		10.9			8.3			7.6			4.8	

Intersection Summary

Area Type: Other

Timings
5: E Quincy Ave. & South Site Access

East Bank
03/17/2021

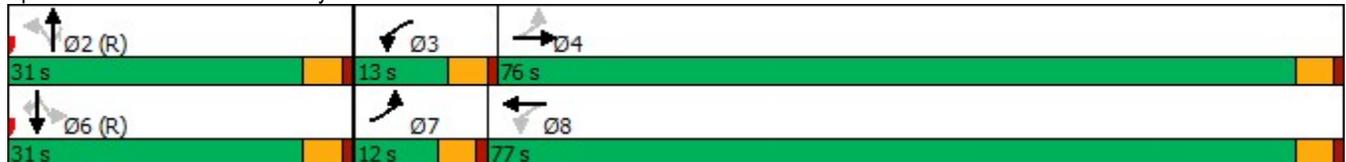


Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↕↕↕	↖	↕↕↕		↖	↖		↖	↖
Traffic Volume (vph)	52	1892	104	1209	76	9	166	109	9	62
Future Volume (vph)	52	1892	104	1209	76	9	166	109	9	62
Turn Type	pm+pt	NA	pm+pt	NA	Perm	NA	Perm	Perm	NA	Perm
Protected Phases	7	4	3	8		2			6	
Permitted Phases	4		8		2		2	6		6
Detector Phase	7	4	3	8	2	2	2	6	6	6
Switch Phase										
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.5	22.5	9.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5
Total Split (s)	12.0	76.0	13.0	77.0	31.0	31.0	31.0	31.0	31.0	31.0
Total Split (%)	10.0%	63.3%	10.8%	64.2%	25.8%	25.8%	25.8%	25.8%	25.8%	25.8%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5		4.5	4.5		4.5	4.5
Lead/Lag	Lead	Lag	Lead	Lag						
Lead-Lag Optimize?	Yes	Yes	Yes	Yes						
Recall Mode	None	None	None	None	C-Max	C-Max	C-Max	C-Max	C-Max	C-Max
Act Effct Green (s)	75.7	69.1	79.1	72.4		29.5	29.5		29.5	29.5
Actuated g/C Ratio	0.63	0.58	0.66	0.60		0.25	0.25		0.25	0.25
v/c Ratio	0.22	0.72	0.64	0.46		0.32	0.38		0.42	0.15
Control Delay	12.7	35.0	36.2	13.5		42.3	18.3		44.7	9.8
Queue Delay	0.0	23.7	0.0	0.0		0.0	0.0		0.0	0.0
Total Delay	12.7	58.7	36.2	13.5		42.3	18.3		44.7	9.8
LOS	B	E	D	B		D	B		D	A
Approach Delay		57.4		15.2		26.5			32.7	
Approach LOS		E		B		C			C	

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
 Natural Cycle: 65
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.72
 Intersection Signal Delay: 38.7
 Intersection Capacity Utilization 67.4%
 Analysis Period (min) 15
 Intersection LOS: D
 ICU Level of Service C

Splits and Phases: 5: E Quincy Ave. & South Site Access



Queues
5: E Quincy Ave. & South Site Access

East Bank
03/17/2021



Lane Group	EBL	EBT	WBL	WBT	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	57	2091	113	1412	93	180	128	67
v/c Ratio	0.22	0.72	0.64	0.46	0.32	0.38	0.42	0.15
Control Delay	12.7	35.0	36.2	13.5	42.3	18.3	44.7	9.8
Queue Delay	0.0	23.7	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	12.7	58.7	36.2	13.5	42.3	18.3	44.7	9.8
Queue Length 50th (ft)	18	443	33	200	61	43	87	0
Queue Length 95th (ft)	m14	m261	#98	239	114	111	151	38
Internal Link Dist (ft)		401		287	253		130	
Turn Bay Length (ft)	150		100			100		
Base Capacity (vph)	268	3025	185	3067	293	473	304	439
Starvation Cap Reductn	0	1018	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.21	1.04	0.61	0.46	0.32	0.38	0.42	0.15

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: E Quincy Ave. & South Site Access

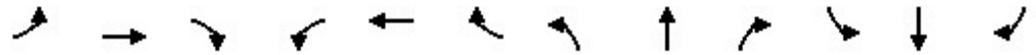
East Bank
03/17/2021



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↗	↑↑↑		↖	↑↑↑			↑	↗		↑	↗
Traffic Volume (veh/h)	52	1892	31	104	1209	90	76	9	166	109	9	62
Future Volume (veh/h)	52	1892	31	104	1209	90	76	9	166	109	9	62
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	57	2057	34	113	1314	98	83	10	180	118	10	67
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	254	2639	44	179	2524	188	57	4	525	58	3	525
Arrive On Green	0.04	0.51	0.51	0.05	0.52	0.52	0.33	0.33	0.33	0.33	0.33	0.33
Sat Flow, veh/h	1781	5174	85	1781	4848	362	0	11	1585	0	8	1585
Grp Volume(v), veh/h	57	1353	738	113	923	489	93	0	180	128	0	67
Grp Sat Flow(s),veh/h/ln	1781	1702	1855	1781	1702	1805	11	0	1585	8	0	1585
Q Serve(g_s), s	1.8	38.8	38.9	3.6	21.4	21.4	0.0	0.0	10.3	0.0	0.0	3.5
Cycle Q Clear(g_c), s	1.8	38.8	38.9	3.6	21.4	21.4	39.8	0.0	10.3	39.8	0.0	3.5
Prop In Lane	1.00		0.05	1.00		0.20	0.89		1.00	0.92		1.00
Lane Grp Cap(c), veh/h	254	1736	946	179	1773	940	61	0	525	60	0	525
V/C Ratio(X)	0.22	0.78	0.78	0.63	0.52	0.52	1.54	0.00	0.34	2.12	0.00	0.13
Avail Cap(c_a), veh/h	302	2028	1105	223	2057	1091	61	0	525	60	0	525
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	0.09	0.09	0.09	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	14.8	23.9	23.9	24.6	18.9	18.9	57.5	0.0	30.3	58.3	0.0	28.0
Incr Delay (d2), s/veh	0.0	0.2	0.3	3.8	0.2	0.4	308.1	0.0	1.8	556.5	0.0	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	1.1	17.0	18.5	3.2	13.1	13.8	12.6	0.0	7.6	20.1	0.0	2.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	14.8	24.1	24.2	28.4	19.1	19.4	365.7	0.0	32.0	614.8	0.0	28.5
LnGrp LOS	B	C	C	C	B	B	F	A	C	F	A	C
Approach Vol, veh/h		2148			1525			273				195
Approach Delay, s/veh		23.9			19.9			145.7				413.3
Approach LOS		C			B			F				F
Timer - Assigned Phs		2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s		44.3	10.0	65.7		44.3	8.8	67.0				
Change Period (Y+Rc), s		4.5	4.5	4.5		4.5	4.5	4.5				
Max Green Setting (Gmax), s		26.5	8.5	71.5		26.5	7.5	72.5				
Max Q Clear Time (g_c+I1), s		41.8	5.6	40.9		41.8	3.8	23.4				
Green Ext Time (p_c), s		0.0	0.1	20.3		0.0	0.0	14.3				
Intersection Summary												
HCM 6th Ctrl Delay			48.8									
HCM 6th LOS			D									

Lanes and Geometrics
6: E Quincy Ave. & S. Atchison Way

East Bank
03/17/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↶	↶↶↶		↶	↶↶↶		↶	↶		↶	↶	↶
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	150		100	125		0	100		0	150		200
Storage Lanes	1		0	1		0	1		0	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.91	0.91	1.00	0.91	0.91	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		0.998			0.990			0.850				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	5075	0	1770	5034	0	1770	1583	0	1770	1863	1583
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1770	5075	0	1770	5034	0	1770	1583	0	1770	1863	1583
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		367			446			235			1258	
Travel Time (s)		8.3			10.1			5.3			28.6	

Intersection Summary

Area Type: Other

Intersection												
Int Delay, s/veh	10.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖ ↑↑↑ ↗			↖ ↑↑↑ ↗			↖	↗		↖	↑	↗
Traffic Vol, veh/h	27	2115	24	17	1349	95	10	0	13	33	0	43
Future Vol, veh/h	27	2115	24	17	1349	95	10	0	13	33	0	43
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	-	-	125	-	-	100	-	-	150	-	200
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	29	2299	26	18	1466	103	11	0	14	36	0	47

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1569	0	0	2325	0	0	2992	3975	1163	2532	3937	785
Stage 1	-	-	-	-	-	-	2370	2370	-	1554	1554	-
Stage 2	-	-	-	-	-	-	622	1605	-	978	2383	-
Critical Hdwy	5.34	-	-	5.34	-	-	6.44	6.54	7.14	6.44	6.54	7.14
Critical Hdwy Stg 1	-	-	-	-	-	-	7.34	5.54	-	7.34	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.74	5.54	-	6.74	5.54	-
Follow-up Hdwy	3.12	-	-	3.12	-	-	3.82	4.02	3.92	3.82	4.02	3.92
Pot Cap-1 Maneuver	206	-	-	85	-	-	15	3	161	~29	3	288
Stage 1	-	-	-	-	-	-	21	66	-	81	173	-
Stage 2	-	-	-	-	-	-	402	163	-	243	65	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	206	-	-	85	-	-	~9	2	161	~20	2	288
Mov Cap-2 Maneuver	-	-	-	-	-	-	~9	2	-	~20	2	-
Stage 1	-	-	-	-	-	-	18	57	-	70	136	-
Stage 2	-	-	-	-	-	-	265	128	-	190	56	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.3			0.7			\$ 416.8			\$ 351.9		
HCM LOS							F			F		

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2	SBLn3
Capacity (veh/h)	9	161	206	-	-	85	-	-	20	-	288
HCM Lane V/C Ratio	1.208	0.088	0.142	-	-	0.217	-	-	1.793	-	0.162
HCM Control Delay (s)	\$ 920.3	29.5	25.4	-	-	58.7	-	-	\$ 784.4	0	19.9
HCM Lane LOS	F	D	D	-	-	F	-	-	F	A	C
HCM 95th %tile Q(veh)	2.1	0.3	0.5	-	-	0.8	-	-	4.8	-	0.6

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

Lanes and Geometrics
 7: S. Atchison Way & NE Site Access Driveway

East Bank
 03/17/2021



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%			0%	0%	
Storage Length (ft)	0	0	0			0
Storage Lanes	1	0	0			0
Taper Length (ft)	25		25			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.949				0.987	
Flt Protected	0.970			0.998		
Satd. Flow (prot)	1715	0	0	1859	1839	0
Flt Permitted	0.970			0.998		
Satd. Flow (perm)	1715	0	0	1859	1839	0
Link Speed (mph)	30			30	30	
Link Distance (ft)	445			1258	580	
Travel Time (s)	10.1			28.6	13.2	

Intersection Summary

Area Type: Other

Intersection						
Int Delay, s/veh	0.6					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	5	3	4	90	76	8
Future Vol, veh/h	5	3	4	90	76	8
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	5	3	4	98	83	9

Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	194	88	92	0	0
Stage 1	88	-	-	-	-
Stage 2	106	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-
Pot Cap-1 Maneuver	795	970	1503	-	-
Stage 1	935	-	-	-	-
Stage 2	918	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	793	970	1503	-	-
Mov Cap-2 Maneuver	793	-	-	-	-
Stage 1	932	-	-	-	-
Stage 2	918	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.3	0.3	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1503	-	851	-	-
HCM Lane V/C Ratio	0.003	-	0.01	-	-
HCM Control Delay (s)	7.4	0	9.3	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Lanes and Geometrics
 200: S. Parker Rd. (SH 83) & NW Site Access

East Bank
 03/17/2021



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%		0%			0%
Storage Length (ft)	0	150		0	150	
Storage Lanes	1	1		0	1	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	0.91	0.91	1.00	0.91
Ped Bike Factor						
Frt		0.850	0.998			
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1770	1583	5075	0	1770	5085
Flt Permitted	0.950				0.043	
Satd. Flow (perm)	1770	1583	5075	0	80	5085
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		78	3			
Link Speed (mph)	30		30			30
Link Distance (ft)	699		689			580
Travel Time (s)	15.9		15.7			13.2

Intersection Summary

Area Type: Other

Timings
200: S. Parker Rd. (SH 83) & NW Site Access

East Bank
03/17/2021

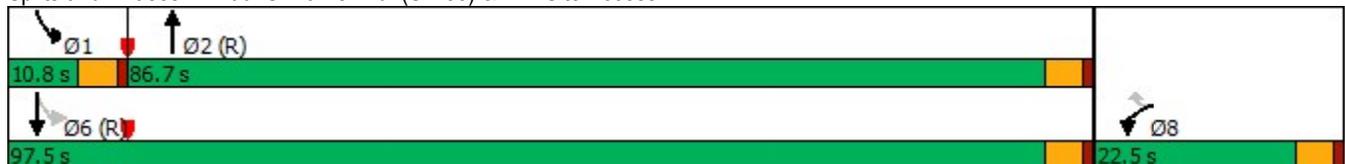


Lane Group	WBL	WBR	NBT	SBL	SBT
Lane Configurations	↶	↷	↑↑↑	↶	↑↑↑
Traffic Volume (vph)	9	94	3357	122	4277
Future Volume (vph)	9	94	3357	122	4277
Turn Type	Prot	Perm	NA	pm+pt	NA
Protected Phases	8		2	1	6
Permitted Phases		8		6	
Detector Phase	8	8	2	1	6
Switch Phase					
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	22.5	9.5	22.5
Total Split (s)	22.5	22.5	86.7	10.8	97.5
Total Split (%)	18.8%	18.8%	72.3%	9.0%	81.3%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5
Lead/Lag			Lag	Lead	
Lead-Lag Optimize?			Yes	Yes	
Recall Mode	None	None	C-Max	None	C-Max
Act Effct Green (s)	8.2	8.2	87.8	102.8	102.8
Actuated g/C Ratio	0.07	0.07	0.73	0.86	0.86
v/c Ratio	0.08	0.57	0.99	0.62	1.07
Control Delay	51.7	29.9	30.4	36.5	47.0
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	51.7	29.9	30.4	36.5	47.0
LOS	D	C	C	D	D
Approach Delay	31.8		30.4		46.7
Approach LOS	C		C		D

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBTL, Start of Green
 Natural Cycle: 150
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.07
 Intersection Signal Delay: 39.5
 Intersection LOS: D
 Intersection Capacity Utilization 94.3%
 ICU Level of Service F
 Analysis Period (min) 15

Splits and Phases: 200: S. Parker Rd. (SH 83) & NW Site Access





Lane Group	WBL	WBR	NBT	SBL	SBT
Lane Group Flow (vph)	10	102	3695	133	4649
v/c Ratio	0.08	0.57	0.99	0.62	1.07
Control Delay	51.7	29.9	30.4	36.5	47.0
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	51.7	29.9	30.4	36.5	47.0
Queue Length 50th (ft)	8	18	903	47	~1447
Queue Length 95th (ft)	24	72	#1231	118	#1569
Internal Link Dist (ft)	619		609		500
Turn Bay Length (ft)		150		150	
Base Capacity (vph)	265	303	3715	216	4357
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.04	0.34	0.99	0.62	1.07

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
 200: S. Parker Rd. (SH 83) & NW Site Access

East Bank
 03/17/2021



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↶	↶	↑↑↑		↷	↑↑↑
Traffic Volume (veh/h)	9	94	3357	42	122	4277
Future Volume (veh/h)	9	94	3357	42	122	4277
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	10	102	3649	46	133	4649
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	142	126	3929	49	159	4317
Arrive On Green	0.08	0.08	0.76	0.76	0.05	0.85
Sat Flow, veh/h	1781	1585	5366	65	1781	5274
Grp Volume(v), veh/h	10	102	2385	1310	133	4649
Grp Sat Flow(s),veh/h/ln	1781	1585	1702	1859	1781	1702
Q Serve(g_s), s	0.6	7.6	68.5	70.0	4.3	101.5
Cycle Q Clear(g_c), s	0.6	7.6	68.5	70.0	4.3	101.5
Prop In Lane	1.00	1.00		0.04	1.00	
Lane Grp Cap(c), veh/h	142	126	2573	1405	159	4317
V/C Ratio(X)	0.07	0.81	0.93	0.93	0.83	1.08
Avail Cap(c_a), veh/h	267	238	2573	1405	160	4317
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	51.1	54.3	11.9	12.1	43.8	9.3
Incr Delay (d2), s/veh	0.2	11.6	7.2	12.5	29.8	39.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.5	6.2	31.4	36.9	9.0	50.4
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	51.3	65.9	19.2	24.6	73.6	48.9
LnGrp LOS	D	E	B	C	E	F
Approach Vol, veh/h	112		3695			4782
Approach Delay, s/veh	64.6		21.1			49.6
Approach LOS	E		C			D
Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	10.7	95.2			106.0	14.0
Change Period (Y+Rc), s	4.5	4.5			4.5	4.5
Max Green Setting (Gmax), s	6.3	82.2			93.0	18.0
Max Q Clear Time (g_c+I1), s	6.3	72.0			103.5	9.6
Green Ext Time (p_c), s	0.0	10.1			0.0	0.2
Intersection Summary						
HCM 6th Ctrl Delay			37.5			
HCM 6th LOS			D			

Lanes and Geometrics
 1: S. Parker Rd. (SH 83) & S Atchison Way

East Bank
 03/16/2021



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↗	↑↑↑↔		↖	↑↑↑
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%		0%			0%
Storage Length (ft)	0	0		0	200	
Storage Lanes	0	1		0	1	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	0.91	0.91	1.00	0.91
Ped Bike Factor						
Frt		0.865				
Flt Protected					0.950	
Satd. Flow (prot)	0	1611	5085	0	1770	5085
Flt Permitted					0.950	
Satd. Flow (perm)	0	1611	5085	0	1770	5085
Link Speed (mph)	30		30			30
Link Distance (ft)	538		680			507
Travel Time (s)	12.2		15.5			11.5

Intersection Summary

Area Type: Other

Intersection						
Int Delay, s/veh	87.2					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↑ ↑↑↑			↑ ↑↑↑	
Traffic Vol, veh/h	0	93	5662	6	14	3815
Future Vol, veh/h	0	93	5662	6	14	3815
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	200	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	101	6154	7	15	4147

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	-	3081	0	0	6161
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	~ 7	-	-	~ 1
Stage 1	0	-	-	-	-
Stage 2	0	-	-	-	-
Platoon blocked, %					
Mov Cap-1 Maneuver	-	~ 7	-	-	~ 1
Mov Cap-2 Maneuver	-	-	-	-	-
Stage 1	-	-	-	-	-
Stage 2	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, \$	7077.3	0	46.5
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	7	~ 1
HCM Lane V/C Ratio	-	-	14.441	15.217
HCM Control Delay (s)	-	\$ 7077.3	127	10.3
HCM Lane LOS	-	-	F	F
HCM 95th %tile Q(veh)	-	-	14.4	3.4

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

Lanes and Geometrics
 2: S. Parker Rd. (SH 83) & NW Site Access

East Bank
 03/16/2021



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%		0%			0%
Storage Length (ft)	0	150		0	400	
Storage Lanes	1	1		0	1	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	0.91	0.91	1.00	0.91
Ped Bike Factor						
Frt		0.850	0.998			
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1770	1583	5075	0	1770	5085
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1770	1583	5075	0	1770	5085
Link Speed (mph)	30		30			30
Link Distance (ft)	484		560			680
Travel Time (s)	11.0		12.7			15.5

Intersection Summary

Area Type: Other

Intersection						
Int Delay, s/veh	338.8					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↘	↗ ↑↑↑	↑↑↑		↘	↑↑↑
Traffic Vol, veh/h	2	164	5504	72	75	3740
Future Vol, veh/h	2	164	5504	72	75	3740
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	-	-	400	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	2	178	5983	78	82	4065

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	7812	3031	0	0	6061
Stage 1	6022	-	-	-	-
Stage 2	1790	-	-	-	-
Critical Hdwy	5.74	7.14	-	-	5.34
Critical Hdwy Stg 1	6.64	-	-	-	-
Critical Hdwy Stg 2	6.04	-	-	-	-
Follow-up Hdwy	3.82	3.92	-	-	3.12
Pot Cap-1 Maneuver	0	~ 8	-	-	~ 1
Stage 1	0	-	-	-	-
Stage 2	104	-	-	-	-
Platoon blocked, %					
Mov Cap-1 Maneuver	0	~ 8	-	-	~ 1
Mov Cap-2 Maneuver	0	-	-	-	-
Stage 1	0	-	-	-	-
Stage 2	0	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s		0	\$ 848.8
HCM LOS	-		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	-	8	~ 1
HCM Lane V/C Ratio	-	-	-	22.283	81.522
HCM Control Delay (s)	-	-	-	\$ 1048.8	\$ 23177.1
HCM Lane LOS	-	-	-	F	F
HCM 95th %tile Q(veh)	-	-	-	24.1	12.5

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

Lanes and Geometrics
 3: SW Site Access & S. Parker Rd. (SH 83)

East Bank
 03/16/2021



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↑	↑↑↑			↑↑↑
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%		0%			0%
Storage Length (ft)	0	0		0	0	
Storage Lanes	0	1		0	0	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	0.91	0.91	1.00	0.91
Ped Bike Factor						
Frt		0.865	0.999			
Flt Protected						
Satd. Flow (prot)	0	1611	5080	0	0	5085
Flt Permitted						
Satd. Flow (perm)	0	1611	5080	0	0	5085
Link Speed (mph)	30		30			30
Link Distance (ft)	488		526			560
Travel Time (s)	11.1		12.0			12.7

Intersection Summary

Area Type: Other

Intersection						
Int Delay, s/veh	145.4					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↑ ↑↑	↑↑↑			↑↑↑
Traffic Vol, veh/h	0	155	5421	43	0	3742
Future Vol, veh/h	0	155	5421	43	0	3742
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	168	5892	47	0	4067

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	-	2970	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	~ 9	-	-	0
Stage 1	0	-	-	-	0
Stage 2	0	-	-	-	0
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	-	~ 9	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-
Stage 1	-	-	-	-	-
Stage 2	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, \$	8781.2	0	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBT
Capacity (veh/h)	-	-	9
HCM Lane V/C Ratio	-	-	18.72
HCM Control Delay (s)	-	\$	8781.2
HCM Lane LOS	-	-	F
HCM 95th %tile Q(veh)	-	-	22.7

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

Lanes and Geometrics
 4: S. Parker Rd. (SH 83) & E Quincy Ave.

East Bank
 03/16/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕	↔↔↔	↕	↕↕↕		↕↕↕	↕↕↕	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	200		0	200		0	150		400	400		500
Storage Lanes	0		0	1		3	1		0	3		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	0.76	1.00	0.91	0.91	0.94	0.91	0.91
Ped Bike Factor												
Frt		0.950				0.850		0.991				
Flt Protected		0.982			0.953		0.950			0.950		
Satd. Flow (prot)	0	1738	0	0	1775	3610	1770	5040	0	4990	5085	0
Flt Permitted		0.791			0.715		0.950			0.950		
Satd. Flow (perm)	0	1400	0	0	1332	3610	1770	5040	0	4990	5085	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		7				27		11				1
Link Speed (mph)		30			30		30			30		30
Link Distance (ft)		385			481		793			526		
Travel Time (s)		8.8			10.9		18.0			12.0		

Intersection Summary

Area Type: Other

Timings
4: S. Parker Rd. (SH 83) & E Quincy Ave.

East Bank
03/16/2021

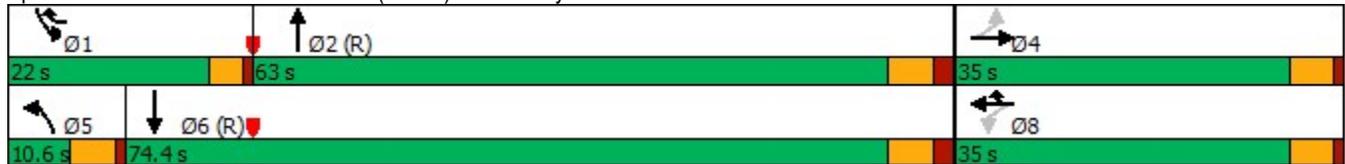


Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations		↕		↕	↔↔↔	↕	↔↔↔	↕↕↕	↔↔↔
Traffic Volume (vph)	6	5	351	5	2145	19	3313	1107	2627
Future Volume (vph)	6	5	351	5	2145	19	3313	1107	2627
Turn Type	Perm	NA	Perm	NA	pt+ov	Prot	NA	Prot	NA
Protected Phases		4		8	8 1	5	2	1	6
Permitted Phases	4		8						
Detector Phase	4	4	8	8	8 1	5	2	1	6
Switch Phase									
Minimum Initial (s)	5.0	5.0	3.0	3.0		5.5	20.0	5.0	5.0
Minimum Split (s)	20.0	20.0	23.0	23.0		10.5	26.0	9.5	24.0
Total Split (s)	35.0	35.0	35.0	35.0		10.6	63.0	22.0	74.4
Total Split (%)	29.2%	29.2%	29.2%	29.2%		8.8%	52.5%	18.3%	62.0%
Yellow Time (s)	4.0	4.0	4.0	4.0		4.0	4.0	3.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0		1.0	2.0	1.0	2.0
Lost Time Adjust (s)		0.0		0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)		5.0		5.0		5.0	6.0	4.0	6.0
Lead/Lag						Lead	Lag	Lead	Lag
Lead-Lag Optimize?						Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None		None	C-Max	None	C-Max
Act Effct Green (s)		30.0		30.0	52.0	5.6	57.0	18.0	74.8
Actuated g/C Ratio		0.25		0.25	0.43	0.05	0.48	0.15	0.62
v/c Ratio		0.05		1.16	1.48	0.26	1.59	1.61	0.90
Control Delay		26.1		126.9	238.7	63.2	295.5	313.8	25.6
Queue Delay		0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		26.1		126.9	238.7	63.2	295.5	313.8	25.6
LOS		C		F	F	E	F	F	C
Approach Delay		26.1		222.8			294.2		110.8
Approach LOS		C		F			F		F

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green
 Natural Cycle: 150
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.61
 Intersection Signal Delay: 205.5
 Intersection Capacity Utilization 136.1%
 Analysis Period (min) 15
 Intersection LOS: F
 ICU Level of Service H

Splits and Phases: 4: S. Parker Rd. (SH 83) & E Quincy Ave.



Queues
4: S. Parker Rd. (SH 83) & E Quincy Ave.

East Bank
03/16/2021



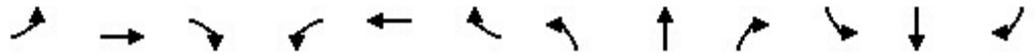
Lane Group	EBT	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	19	387	2332	21	3823	1203	2864
v/c Ratio	0.05	1.16	1.48	0.26	1.59	1.61	0.90
Control Delay	26.1	126.9	238.7	63.2	295.5	313.8	25.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	26.1	126.9	238.7	63.2	295.5	313.8	25.6
Queue Length 50th (ft)	7	~348	~1095	16	~1561	~473	583
Queue Length 95th (ft)	27	m#469	#1191	44	#1632	#565	#923
Internal Link Dist (ft)	305	401			713		446
Turn Bay Length (ft)				150		400	
Base Capacity (vph)	355	333	1579	82	2399	748	3167
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.05	1.16	1.48	0.26	1.59	1.61	0.90

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

HCM 6th Signalized Intersection Summary
 4: S. Parker Rd. (SH 83) & E Quincy Ave.

East Bank
 03/16/2021



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕	↕↕↕	↕	↕↕↕		↕↕↕	↕↕↕	
Traffic Volume (veh/h)	6	5	6	351	5	2145	19	3313	204	1107	2627	8
Future Volume (veh/h)	6	5	6	351	5	2145	19	3313	204	1107	2627	8
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	7	5	7	382	5	2332	21	3601	222	1203	2855	9
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	41	32	18	235	2	1446	41	2339	141	753	3119	10
Arrive On Green	0.25	0.25	0.25	0.25	0.25	0.25	0.02	0.47	0.47	0.15	0.59	0.59
Sat Flow, veh/h	0	126	74	701	9	3614	1781	4923	298	5023	5255	17
Grp Volume(v), veh/h	19	0	0	387	0	2332	21	2467	1356	1203	1848	1016
Grp Sat Flow(s),veh/h/ln	200	0	0	710	0	1205	1781	1702	1817	1674	1702	1867
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	30.0	1.4	57.0	57.0	18.0	58.0	58.1
Cycle Q Clear(g_c), s	30.0	0.0	0.0	30.0	0.0	30.0	1.4	57.0	57.0	18.0	58.0	58.1
Prop In Lane	0.37		0.37	0.99		1.00	1.00		0.16	1.00		0.01
Lane Grp Cap(c), veh/h	91	0	0	237	0	1446	41	1617	863	753	2021	1108
V/C Ratio(X)	0.21	0.00	0.00	1.63	0.00	1.61	0.51	1.53	1.57	1.60	0.91	0.92
Avail Cap(c_a), veh/h	91	0	0	237	0	1446	83	1617	863	753	2021	1108
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	0.00	0.00	0.44	0.00	0.44	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	37.1	0.0	0.0	48.8	0.0	36.0	57.9	31.5	31.5	51.0	21.7	21.7
Incr Delay (d2), s/veh	1.1	0.0	0.0	292.8	0.0	277.4	9.5	239.9	262.5	274.7	7.9	13.2
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	0.8	0.0	0.0	40.2	0.0	74.0	1.3	116.9	133.5	41.9	31.8	36.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	38.2	0.0	0.0	341.5	0.0	313.4	67.4	271.4	294.0	325.7	29.6	34.9
LnGrp LOS	D	A	A	F	A	F	E	F	F	F	C	C
Approach Vol, veh/h		19			2719			3844			4067	
Approach Delay, s/veh		38.2			317.4			278.2			118.5	
Approach LOS		D			F			F			F	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	22.0	63.0		35.0	7.8	77.2		35.0				
Change Period (Y+Rc), s	4.0	6.0		5.0	5.0	6.0		5.0				
Max Green Setting (Gmax), s	18.0	57.0		30.0	5.6	68.4		30.0				
Max Q Clear Time (g_c+I1), s	20.0	59.0		32.0	3.4	60.1		32.0				
Green Ext Time (p_c), s	0.0	0.0		0.0	0.0	7.9		0.0				

Intersection Summary

HCM 6th Ctrl Delay	226.8
HCM 6th LOS	F

Notes

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

Lanes and Geometrics
5: E Quincy Ave. & South Site Access

East Bank
03/16/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	150		0	100		0	0		100	0		0
Storage Lanes	1		0	1		0	0		1	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.91	0.91	1.00	0.91	0.91	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.997			0.992				0.850			0.850
Flt Protected	0.950			0.950				0.958			0.957	
Satd. Flow (prot)	1770	5070	0	1770	5045	0	0	1785	1583	0	1783	1583
Flt Permitted	0.054			0.152				0.701			0.697	
Satd. Flow (perm)	101	5070	0	283	5045	0	0	1306	1583	0	1298	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		5			13				84			55
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		481			367			333			210	
Travel Time (s)		10.9			8.3			7.6			4.8	

Intersection Summary

Area Type: Other

Timings
5: E Quincy Ave. & South Site Access

East Bank
03/16/2021



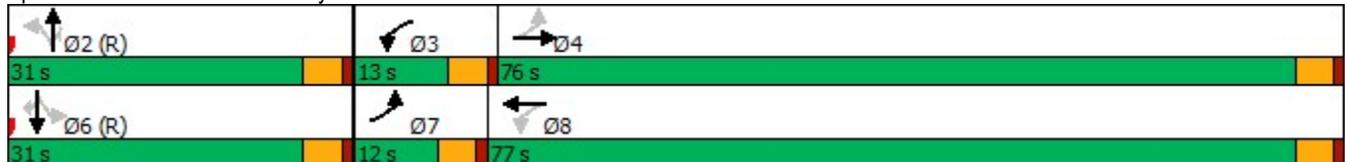
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↑↑↑	↖	↑↑↑		↖	↗		↖	↗
Traffic Volume (vph)	32	1209	96	2396	57	8	77	91	10	48
Future Volume (vph)	32	1209	96	2396	57	8	77	91	10	48
Turn Type	pm+pt	NA	pm+pt	NA	Perm	NA	Perm	Perm	NA	Perm
Protected Phases	7	4	3	8		2			6	
Permitted Phases	4		8		2		2	6		6
Detector Phase	7	4	3	8	2	2	2	6	6	6
Switch Phase										
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.5	22.5	9.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5
Total Split (s)	12.0	76.0	13.0	77.0	31.0	31.0	31.0	31.0	31.0	31.0
Total Split (%)	10.0%	63.3%	10.8%	64.2%	25.8%	25.8%	25.8%	25.8%	25.8%	25.8%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5		4.5	4.5		4.5	4.5
Lead/Lag	Lead	Lag	Lead	Lag						
Lead-Lag Optimize?	Yes	Yes	Yes	Yes						
Recall Mode	None	None	None	None	C-Max	C-Max	C-Max	C-Max	C-Max	C-Max
Act Effct Green (s)	79.2	72.5	82.3	77.4		26.5	26.5		26.5	26.5
Actuated g/C Ratio	0.66	0.60	0.69	0.64		0.22	0.22		0.22	0.22
v/c Ratio	0.22	0.44	0.36	0.85		0.25	0.20		0.38	0.13
Control Delay	25.6	38.3	9.3	20.9		41.3	9.2		44.5	10.2
Queue Delay	0.0	1.0	0.0	46.7		0.0	0.0		0.0	0.0
Total Delay	25.6	39.3	9.3	67.6		41.3	9.2		44.5	10.2
LOS	C	D	A	E		D	A		D	B
Approach Delay		39.0		65.4		23.9			33.5	
Approach LOS		D		E		C			C	

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
 Natural Cycle: 80
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.85
 Intersection Signal Delay: 54.9
 Intersection Capacity Utilization 77.1%
 Analysis Period (min) 15

Intersection LOS: D
 ICU Level of Service D

Splits and Phases: 5: E Quincy Ave. & South Site Access



Queues
5: E Quincy Ave. & South Site Access

East Bank
03/16/2021



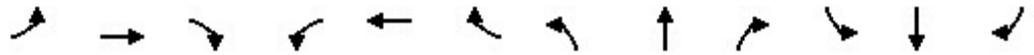
Lane Group	EBL	EBT	WBL	WBT	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	35	1343	104	2756	71	84	110	52
v/c Ratio	0.22	0.44	0.36	0.85	0.25	0.20	0.38	0.13
Control Delay	25.6	38.3	9.3	20.9	41.3	9.2	44.5	10.2
Queue Delay	0.0	1.0	0.0	46.7	0.0	0.0	0.0	0.0
Total Delay	25.6	39.3	9.3	67.6	41.3	9.2	44.5	10.2
Queue Length 50th (ft)	21	317	23	631	46	0	73	0
Queue Length 95th (ft)	m11	m164	40	720	89	42	130	31
Internal Link Dist (ft)		401		287	253		130	
Turn Bay Length (ft)	150		100			100		
Base Capacity (vph)	171	3064	299	3258	288	415	286	392
Starvation Cap Reductn	0	1343	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	1089	0	0	0	11
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.20	0.78	0.35	1.27	0.25	0.20	0.38	0.14

Intersection Summary

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

HCM 6th Signalized Intersection Summary
 5: E Quincy Ave. & South Site Access

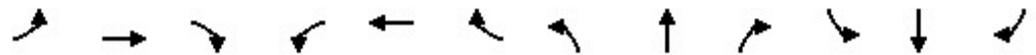
East Bank
 03/16/2021



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↗	↑↑↑		↖	↑↑↑			↑	↗		↑	↖
Traffic Volume (veh/h)	32	1209	27	96	2396	140	57	8	77	91	10	48
Future Volume (veh/h)	32	1209	27	96	2396	140	57	8	77	91	10	48
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	35	1314	29	104	2604	152	62	9	84	99	11	52
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	124	2998	66	311	2938	169	56	5	418	57	3	418
Arrive On Green	0.03	0.58	0.58	0.04	0.59	0.59	0.26	0.26	0.26	0.26	0.26	0.26
Sat Flow, veh/h	1781	5141	113	1781	4939	284	0	17	1585	0	13	1585
Grp Volume(v), veh/h	35	870	473	104	1782	974	71	0	84	110	0	52
Grp Sat Flow(s),veh/h/ln	1781	1702	1850	1781	1702	1819	17	0	1585	13	0	1585
Q Serve(g_s), s	0.9	17.2	17.2	2.8	53.4	56.0	0.0	0.0	4.9	0.0	0.0	3.0
Cycle Q Clear(g_c), s	0.9	17.2	17.2	2.8	53.4	56.0	31.7	0.0	4.9	31.7	0.0	3.0
Prop In Lane	1.00		0.06	1.00		0.16	0.87		1.00	0.90		1.00
Lane Grp Cap(c), veh/h	124	1985	1079	311	2025	1082	61	0	418	60	0	418
V/C Ratio(X)	0.28	0.44	0.44	0.33	0.88	0.90	1.17	0.00	0.20	1.82	0.00	0.12
Avail Cap(c_a), veh/h	184	2028	1102	365	2057	1099	61	0	418	60	0	418
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	0.09	0.09	0.09	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	26.8	14.0	14.0	10.7	20.7	21.2	57.7	0.0	34.3	58.2	0.0	33.6
Incr Delay (d2), s/veh	0.1	0.0	0.0	0.6	4.7	10.0	168.6	0.0	1.1	425.9	0.0	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	1.0	7.7	8.3	2.0	28.8	33.5	8.4	0.0	3.7	16.2	0.0	2.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	26.9	14.0	14.0	11.3	25.4	31.2	226.3	0.0	35.4	484.1	0.0	34.2
LnGrp LOS	C	B	B	B	C	C	F	A	D	F	A	C
Approach Vol, veh/h		1378			2860			155				162
Approach Delay, s/veh		14.3			26.9			122.8				339.7
Approach LOS		B			C			F				F
Timer - Assigned Phs		2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s		36.2	9.3	74.5		36.2	7.9	75.9				
Change Period (Y+Rc), s		4.5	4.5	4.5		4.5	4.5	4.5				
Max Green Setting (Gmax), s		26.5	8.5	71.5		26.5	7.5	72.5				
Max Q Clear Time (g_c+I1), s		33.7	4.8	19.2		33.7	2.9	58.0				
Green Ext Time (p_c), s		0.0	0.1	13.2		0.0	0.0	13.4				
Intersection Summary												
HCM 6th Ctrl Delay				37.5								
HCM 6th LOS				D								

Lanes and Geometrics
6: E Quincy Ave. & S Atchison Way

East Bank
03/16/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	150		100	125		0	100		0	150		200
Storage Lanes	1		0	1		0	1		0	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.91	0.91	1.00	0.91	0.91	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		0.999			0.997			0.850				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	5080	0	1770	5070	0	1770	1583	0	1770	1863	1583
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1770	5080	0	1770	5070	0	1770	1583	0	1770	1863	1583
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		367			446			235			1293	
Travel Time (s)		8.3			10.1			5.3			29.4	

Intersection Summary

Area Type: Other

Intersection												
Int Delay, s/veh	0.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↵ ↑↑↑			↵ ↑↑↑			↵	↵		↵	↑	↵
Traffic Vol, veh/h	11	1359	6	8	2582	54	24	0	26	16	0	26
Future Vol, veh/h	11	1359	6	8	2582	54	24	0	26	16	0	26
Conflicting Peds, #/hr	0	0	0	1891	0	6	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	-	-	125	-	-	100	-	-	150	-	200
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	12	1477	7	9	2807	59	26	0	28	17	0	28

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	2872	0	0	3375	0	0	4537	6286	2633	3476	6260	1439
Stage 1	-	-	-	-	-	-	3396	3396	-	2861	2861	-
Stage 2	-	-	-	-	-	-	1141	2890	-	615	3399	-
Critical Hdwy	5.34	-	-	5.34	-	-	6.44	6.54	7.14	6.44	6.54	7.14
Critical Hdwy Stg 1	-	-	-	-	-	-	7.34	5.54	-	7.34	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.74	5.54	-	6.74	5.54	-
Follow-up Hdwy	3.12	-	-	3.12	-	-	3.82	4.02	3.92	3.82	4.02	3.92
Pot Cap-1 Maneuver	44	-	-	24	-	-	~1	0	~15	~7	0	105
Stage 1	-	-	-	-	-	-	~3	19	-	~9	37	-
Stage 2	-	-	-	-	-	-	192	35	-	406	19	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	44	-	-	~19	-	-	-	0	~12	-	0	104
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	0	-	-	0	-
Stage 1	-	-	-	-	-	-	~3	~11	-	~7	37	-
Stage 2	-	-	-	-	-	-	140	35	-	991	~11	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.9			
HCM LOS	-			

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2	SBLn3
Capacity (veh/h)	-	-	44	-	-	+	-	-	-	-	104
HCM Lane V/C Ratio	-	-	0.272	-	-	-	-	-	-	-	0.272
HCM Control Delay (s)	-	-	114.9	-	-	-	-	-	-	0	52.1
HCM Lane LOS	-	-	F	-	-	-	-	-	-	A	F
HCM 95th %tile Q(veh)	-	-	0.9	-	-	-	-	-	-	-	1

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

Lanes and Geometrics
 200: S. Parker Rd. (SH 83) & NW Site Access

East Bank
 03/16/2021



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%		0%			0%
Storage Length (ft)	0	150		0	300	
Storage Lanes	1	1		0	1	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	0.91	0.91	1.00	0.91
Ped Bike Factor						
Frt		0.850	0.998			
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1770	1583	5075	0	1770	5085
Flt Permitted	0.950				0.043	
Satd. Flow (perm)	1770	1583	5075	0	80	5085
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		62	4			
Link Speed (mph)	30		30			30
Link Distance (ft)	503		547			540
Travel Time (s)	11.4		12.4			12.3

Intersection Summary

Area Type: Other

Timings
200: S. Parker Rd. (SH 83) & NW Site Access

East Bank
03/16/2021

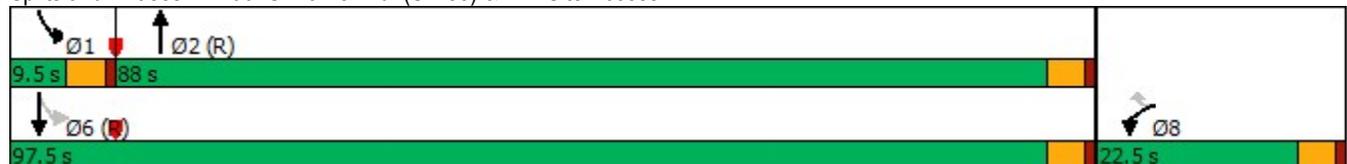


Lane Group	WBL	WBR	NBT	SBL	SBT
Lane Configurations	↰	↱	↑↑↑	↰	↑↑↑
Traffic Volume (vph)	2	164	5504	75	3740
Future Volume (vph)	2	164	5504	75	3740
Turn Type	Prot	Perm	NA	pm+pt	NA
Protected Phases	8		2	1	6
Permitted Phases		8		6	
Detector Phase	8	8	2	1	6
Switch Phase					
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	22.5	9.5	22.5
Total Split (s)	22.5	22.5	88.0	9.5	97.5
Total Split (%)	18.8%	18.8%	73.3%	7.9%	81.3%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5
Lead/Lag			Lag	Lead	
Lead-Lag Optimize?			Yes	Yes	
Recall Mode	None	None	C-Max	None	C-Max
Act Effct Green (s)	13.7	13.7	89.0	97.3	97.3
Actuated g/C Ratio	0.11	0.11	0.74	0.81	0.81
v/c Ratio	0.01	0.76	1.61	0.55	0.99
Control Delay	44.0	53.1	295.9	29.7	23.1
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	44.0	53.1	295.9	29.7	23.1
LOS	D	D	F	C	C
Approach Delay	53.0		295.9		23.2
Approach LOS	D		F		C

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBTL, Start of Green
 Natural Cycle: 150
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.61
 Intersection Signal Delay: 182.8
 Intersection Capacity Utilization 125.6%
 Analysis Period (min) 15
 Intersection LOS: F
 ICU Level of Service H

Splits and Phases: 200: S. Parker Rd. (SH 83) & NW Site Access





Lane Group	WBL	WBR	NBT	SBL	SBT
Lane Group Flow (vph)	2	178	6061	82	4065
v/c Ratio	0.01	0.76	1.61	0.55	0.99
Control Delay	44.0	53.1	295.9	29.7	23.1
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	44.0	53.1	295.9	29.7	23.1
Queue Length 50th (ft)	1	87	~2537	12	900
Queue Length 95th (ft)	9	162	#2575	#83	#1301
Internal Link Dist (ft)	423		467		460
Turn Bay Length (ft)		150		300	
Base Capacity (vph)	265	290	3764	148	4124
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.01	0.61	1.61	0.55	0.99

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

HCM 6th Signalized Intersection Summary
 200: S. Parker Rd. (SH 83) & NW Site Access

East Bank
 03/16/2021



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↶	↶	↑↑↑		↷	↓↓↓
Traffic Volume (veh/h)	2	164	5504	72	75	3740
Future Volume (veh/h)	2	164	5504	72	75	3740
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	2	178	5983	78	82	4065
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	228	203	3744	49	129	4070
Arrive On Green	0.13	0.13	0.72	0.72	0.04	0.80
Sat Flow, veh/h	1781	1585	5363	67	1781	5274
Grp Volume(v), veh/h	2	178	3912	2149	82	4065
Grp Sat Flow(s),veh/h/ln	1781	1585	1702	1858	1781	1702
Q Serve(g_s), s	0.1	13.2	86.5	86.5	1.3	95.0
Cycle Q Clear(g_c), s	0.1	13.2	86.5	86.5	1.3	95.0
Prop In Lane	1.00	1.00		0.04	1.00	
Lane Grp Cap(c), veh/h	228	203	2453	1339	129	4070
V/C Ratio(X)	0.01	0.88	1.59	1.60	0.63	1.00
Avail Cap(c_a), veh/h	267	238	2453	1339	134	4070
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	45.7	51.4	16.8	16.8	35.9	12.1
Incr Delay (d2), s/veh	0.0	26.3	269.5	275.7	8.9	13.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.1	11.0	188.7	209.2	3.8	40.2
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	45.7	77.7	286.2	292.5	44.8	25.9
LnGrp LOS	D	E	F	F	D	C
Approach Vol, veh/h	180		6061			4147
Approach Delay, s/veh	77.3		288.4			26.3
Approach LOS	E		F			C
Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	9.2	91.0			100.2	19.8
Change Period (Y+Rc), s	4.5	4.5			4.5	4.5
Max Green Setting (Gmax), s	5.0	83.5			93.0	18.0
Max Q Clear Time (g_c+I1), s	3.3	88.5			97.0	15.2
Green Ext Time (p_c), s	0.0	0.0			0.0	0.1

Intersection Summary

HCM 6th Ctrl Delay	180.1
HCM 6th LOS	F

Notes

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

Lanes and Geometrics
 1: S. Parker Rd. (SH 83) & S Atchison Way

East Bank
 03/16/2021



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↗	↑↑↑↘		↘	↑↑↑
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%		0%			0%
Storage Length (ft)	0	0		0	200	
Storage Lanes	0	1		0	1	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	0.91	0.91	1.00	0.91
Ped Bike Factor						
Frt		0.865	0.999			
Flt Protected					0.950	
Satd. Flow (prot)	0	1611	5080	0	1770	5085
Flt Permitted					0.950	
Satd. Flow (perm)	0	1611	5080	0	1770	5085
Link Speed (mph)	30		30			30
Link Distance (ft)	538		680			507
Travel Time (s)	12.2		15.5			11.5

Intersection Summary

Area Type: Other

Intersection

Int Delay, s/veh 125.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↑ ↑↑↑			↑ ↑↑↑	
Traffic Vol, veh/h	0	67	4664	24	81	5967
Future Vol, veh/h	0	67	4664	24	81	5967
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	200	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	73	5070	26	88	6486

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	- 2548	0	0 5096
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 ~ 17	-	- ~ 3
Stage 1	0	-	-
Stage 2	0	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	- ~ 17	-	- ~ 3
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	WB	NB	SB
HCM Control Delay, \$	1932.5	0	202.3
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	- 17	~ 3	-
HCM Lane V/C Ratio	-	- 4.284	29.348	-
HCM Control Delay (s)	-	\$ 1932.5	101.9	-
HCM Lane LOS	-	- F	F	-
HCM 95th %tile Q(veh)	-	- 9.8	13.1	-

Notes

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

Lanes and Geometrics
 2: S. Parker Rd. (SH 83) & NW Site Access

East Bank
 03/16/2021



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%		0%			0%
Storage Length (ft)	0	150		0	400	
Storage Lanes	1	1		0	1	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	0.91	0.91	1.00	0.91
Ped Bike Factor						
Frt		0.850	0.999			
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1770	1583	5080	0	1770	5085
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1770	1583	5080	0	1770	5085
Link Speed (mph)	30		30			30
Link Distance (ft)	484		560			680
Travel Time (s)	11.0		12.7			15.5

Intersection Summary

Area Type: Other

Intersection						
Int Delay, s/veh	225.6					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↘	↗ ↑↑↑	↑↑↑		↘	↑↑↑
Traffic Vol, veh/h	8	107	4581	46	116	5850
Future Vol, veh/h	8	107	4581	46	116	5850
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	-	-	400	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	9	116	4979	50	126	6359

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	7800	2515	0	0	5029
Stage 1	5004	-	-	-	-
Stage 2	2796	-	-	-	-
Critical Hdwy	5.74	7.14	-	-	5.34
Critical Hdwy Stg 1	6.64	-	-	-	-
Critical Hdwy Stg 2	6.04	-	-	-	-
Follow-up Hdwy	3.82	3.92	-	-	3.12
Pot Cap-1 Maneuver	0	~ 18	-	-	~ 3
Stage 1	0	-	-	-	-
Stage 2	27	-	-	-	-
Platoon blocked, %					
Mov Cap-1 Maneuver	0	~ 18	-	-	~ 3
Mov Cap-2 Maneuver	0	-	-	-	-
Stage 1	0	-	-	-	-
Stage 2	0	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s		0	\$ 404.9
HCM LOS	-		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	-	18	~ 3
HCM Lane V/C Ratio	-	-	-	6.461	42.029
HCM Control Delay (s)	-	-	-	\$ 288.0	20824.8
HCM Lane LOS	-	-	-	F	F
HCM 95th %tile Q(veh)	-	-	-	15.2	18

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

Lanes and Geometrics
 3: SW Site Access & S. Parker Rd. (SH 83)

East Bank
 03/16/2021



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↑	↑↑↑			↑↑↑
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%		0%			0%
Storage Length (ft)	0	0		0	0	
Storage Lanes	0	1		0	0	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	0.91	0.91	1.00	0.91
Ped Bike Factor						
Frt		0.865	0.998			
Flt Protected						
Satd. Flow (prot)	0	1611	5075	0	0	5085
Flt Permitted						
Satd. Flow (perm)	0	1611	5075	0	0	5085
Link Speed (mph)	30		30			30
Link Distance (ft)	488		526			560
Travel Time (s)	11.1		12.0			12.7

Intersection Summary

Area Type: Other

Intersection						
Int Delay, s/veh	17.3					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↑ ↑↑	↑↑↑			↑↑↑
Traffic Vol, veh/h	0	85	4543	65	0	5850
Future Vol, veh/h	0	85	4543	65	0	5850
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	92	4938	71	0	6359

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	-	2505	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	~ 19	-
Stage 1	0	-	-
Stage 2	0	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	-	~ 19	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	WB	NB	SB
HCM Control Delay, \$	2145.2	0	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBT
Capacity (veh/h)	-	-	19
HCM Lane V/C Ratio	-	-	4.863
HCM Control Delay (s)	-	\$	2145.2
HCM Lane LOS	-	-	F
HCM 95th %tile Q(veh)	-	-	12

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

Lanes and Geometrics
 4: S. Parker Rd. (SH 83) & E Quincy Ave.

East Bank
 03/16/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕	↔↔↔	↕	↕↕↕		↕↕↕	↕↕↕	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	200		0	200		0	150		400	400		500
Storage Lanes	0		0	1		3	1		0	3		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	0.76	1.00	0.91	0.91	0.94	0.91	0.91
Ped Bike Factor												
Frt		0.954				0.850		0.968				0.996
Flt Protected		0.987			0.955		0.950			0.950		
Satd. Flow (prot)	0	1754	0	0	1779	3610	1770	4923	0	4990	5065	0
Flt Permitted		0.328			0.479		0.950			0.950		
Satd. Flow (perm)	0	583	0	0	892	3610	1770	4923	0	4990	5065	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		21				27		72				5
Link Speed (mph)		30			30		30			30		30
Link Distance (ft)		385			481		793			526		
Travel Time (s)		8.8			10.9		18.0			12.0		

Intersection Summary

Area Type: Other

Timings
4: S. Parker Rd. (SH 83) & E Quincy Ave.

East Bank
03/16/2021



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations		↕		↕	↔↔↔	↕	↕↕↕	↕↕↕	↕↕↕
Traffic Volume (vph)	59	88	370	22	1432	57	3117	1747	3999
Future Volume (vph)	59	88	370	22	1432	57	3117	1747	3999
Turn Type	Perm	NA	Perm	NA	pt+ov	Prot	NA	Prot	NA
Protected Phases		4		8	8 1	5	2	1	6
Permitted Phases	4		8						
Detector Phase	4	4	8	8	8 1	5	2	1	6
Switch Phase									
Minimum Initial (s)	5.0	5.0	3.0	3.0		5.5	20.0	5.0	5.0
Minimum Split (s)	20.0	20.0	23.0	23.0		10.5	26.0	9.5	24.0
Total Split (s)	37.0	37.0	37.0	37.0		10.5	58.0	25.0	72.5
Total Split (%)	30.8%	30.8%	30.8%	30.8%		8.8%	48.3%	20.8%	60.4%
Yellow Time (s)	4.0	4.0	4.0	4.0		4.0	4.0	3.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0		1.0	2.0	1.0	2.0
Lost Time Adjust (s)		0.0		0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)		5.0		5.0		5.0	6.0	4.0	6.0
Lead/Lag						Lead	Lag	Lead	Lag
Lead-Lag Optimize?						Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None		None	C-Max	None	C-Max
Act Effct Green (s)		32.0		32.0	57.0	5.5	52.0	21.0	68.6
Actuated g/C Ratio		0.27		0.27	0.48	0.05	0.43	0.18	0.57
v/c Ratio		1.42		1.80	0.90	0.77	1.98	2.18	1.54
Control Delay		252.9		397.3	25.7	106.6	468.0	558.0	269.0
Queue Delay		9.9		0.0	0.0	0.0	1.2	0.3	0.0
Total Delay		262.8		397.3	25.7	106.6	469.1	558.3	269.0
LOS		F		F	C	F	F	F	F
Approach Delay		262.8		105.5			464.0		355.4
Approach LOS		F		F			F		F

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green
 Natural Cycle: 150
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 2.18
 Intersection Signal Delay: 352.1
 Intersection LOS: F
 Intersection Capacity Utilization 163.3%
 ICU Level of Service H
 Analysis Period (min) 15

Splits and Phases: 4: S. Parker Rd. (SH 83) & E Quincy Ave.



Queues
4: S. Parker Rd. (SH 83) & E Quincy Ave.

East Bank
03/16/2021



Lane Group	EBT	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	242	426	1557	62	4314	1899	4461
v/c Ratio	1.42	1.80	0.90	0.77	1.98	2.18	1.54
Control Delay	252.9	397.3	25.7	106.6	468.0	558.0	269.0
Queue Delay	9.9	0.0	0.0	0.0	1.2	0.3	0.0
Total Delay	262.8	397.3	25.7	106.6	469.1	558.3	269.0
Queue Length 50th (ft)	~242	~363	476	48	~1914	~835	~1820
Queue Length 95th (ft)	#409	#514	570	#128	#1975	#929	#1878
Internal Link Dist (ft)	305	401			713		446
Turn Bay Length (ft)				150		400	
Base Capacity (vph)	170	237	1728	81	2174	873	2897
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	66	0	0	0	714	45	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	2.33	1.80	0.90	0.77	2.95	2.29	1.54

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
4: S. Parker Rd. (SH 83) & E Quincy Ave.

East Bank
03/16/2021



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕	↕↕↕	↕	↕↕↕		↕↕↕	↕↕↕	
Traffic Volume (veh/h)	59	88	75	370	22	1432	57	3117	852	1747	3999	105
Future Volume (veh/h)	59	88	75	370	22	1432	57	3117	852	1747	3999	105
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	64	96	82	402	24	1557	62	3388	926	1899	4347	114
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	38	54	27	197	8	1596	80	1764	442	879	2842	74
Arrive On Green	0.27	0.27	0.27	0.27	0.27	0.27	0.04	0.43	0.43	0.17	0.56	0.56
Sat Flow, veh/h	0	201	103	520	31	3614	1781	4070	1021	5023	5117	133
Grp Volume(v), veh/h	242	0	0	426	0	1557	62	2784	1530	1899	2879	1582
Grp Sat Flow(s),veh/h/ln	304	0	0	551	0	1205	1781	1702	1687	1674	1702	1846
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	32.0	4.1	52.0	52.0	21.0	66.6	66.6
Cycle Q Clear(g_c), s	32.0	0.0	0.0	32.0	0.0	32.0	4.1	52.0	52.0	21.0	66.6	66.6
Prop In Lane	0.26		0.34	0.94		1.00	1.00		0.61	1.00		0.07
Lane Grp Cap(c), veh/h	119	0	0	205	0	1596	80	1475	731	879	1890	1025
V/C Ratio(X)	2.03	0.00	0.00	2.07	0.00	0.98	0.78	1.89	2.09	2.16	1.52	1.54
Avail Cap(c_a), veh/h	119	0	0	205	0	1596	82	1475	731	879	1890	1025
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	0.78	0.00	0.78	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	40.1	0.0	0.0	48.5	0.0	32.9	56.7	34.0	34.0	49.5	26.7	26.7
Incr Delay (d2), s/veh	492.8	0.0	0.0	496.4	0.0	14.5	36.5	401.9	496.6	525.9	238.1	249.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	34.8	0.0	0.0	56.4	0.0	22.4	4.8	163.7	194.8	81.0	135.0	151.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	532.9	0.0	0.0	544.9	0.0	47.4	93.2	435.9	530.6	575.4	264.8	275.8
LnGrp LOS	F	A	A	F	A	D	F	F	F	F	F	F
Approach Vol, veh/h		242			1983			4376			6360	
Approach Delay, s/veh		532.9			154.3			464.2			360.2	
Approach LOS		F			F			F			F	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	25.0	58.0		37.0	10.4	72.6		37.0				
Change Period (Y+Rc), s	4.0	6.0		5.0	5.0	6.0		5.0				
Max Green Setting (Gmax), s	21.0	52.0		32.0	5.5	66.5		32.0				
Max Q Clear Time (g_c+I1), s	23.0	54.0		34.0	6.1	68.6		34.0				
Green Ext Time (p_c), s	0.0	0.0		0.0	0.0	0.0		0.0				

Intersection Summary

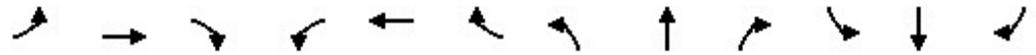
HCM 6th Ctrl Delay	367.0
HCM 6th LOS	F

Notes

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

Lanes and Geometrics
5: E Quincy Ave. & South Site Access

East Bank
03/16/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	150		0	100		0	0		100	0		0
Storage Lanes	1		0	1		0	0		1	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.91	0.91	1.00	0.91	0.91	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.998			0.990				0.850			0.850
Flt Protected	0.950			0.950				0.957			0.956	
Satd. Flow (prot)	1770	5075	0	1770	5034	0	0	1783	1583	0	1781	1583
Flt Permitted	0.076			0.053				0.499			0.582	
Satd. Flow (perm)	142	5075	0	99	5034	0	0	930	1583	0	1084	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		3			16				125			73
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		481			367			333			210	
Travel Time (s)		10.9			8.3			7.6			4.8	

Intersection Summary

Area Type: Other

Timings
5: E Quincy Ave. & South Site Access

East Bank
03/16/2021



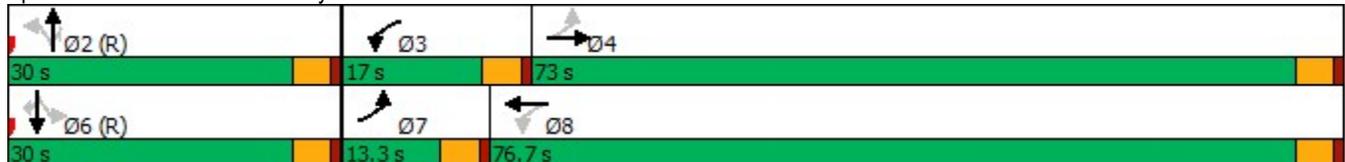
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↕	↖	↕		↕	↖		↕	↖
Traffic Volume (vph)	65	2589	142	1654	104	13	226	142	13	67
Future Volume (vph)	65	2589	142	1654	104	13	226	142	13	67
Turn Type	pm+pt	NA	pm+pt	NA	Perm	NA	Perm	Perm	NA	Perm
Protected Phases	7	4	3	8		2			6	
Permitted Phases	4		8		2		2	6		6
Detector Phase	7	4	3	8	2	2	2	6	6	6
Switch Phase										
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.5	22.5	9.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5
Total Split (s)	13.3	73.0	17.0	76.7	30.0	30.0	30.0	30.0	30.0	30.0
Total Split (%)	11.1%	60.8%	14.2%	63.9%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5		4.5	4.5		4.5	4.5
Lead/Lag	Lead	Lag	Lead	Lag						
Lead-Lag Optimize?	Yes	Yes	Yes	Yes						
Recall Mode	None	None	None	None	C-Max	C-Max	C-Max	C-Max	C-Max	C-Max
Act Effct Green (s)	77.6	70.6	85.0	76.0		25.5	25.5		25.5	25.5
Actuated g/C Ratio	0.65	0.59	0.71	0.63		0.21	0.21		0.21	0.21
v/c Ratio	0.38	0.96	0.72	0.60		0.64	0.57		0.73	0.19
Control Delay	20.2	50.4	43.4	14.4		59.6	26.0		63.7	10.0
Queue Delay	0.0	44.4	0.0	0.1		0.0	0.0		0.0	0.0
Total Delay	20.2	94.8	43.4	14.5		59.6	26.0		63.7	10.0
LOS	C	F	D	B		E	C		E	A
Approach Delay		93.0		16.6		37.4			47.4	
Approach LOS		F		B		D			D	

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
 Natural Cycle: 90
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.96
 Intersection Signal Delay: 59.2
 Intersection Capacity Utilization 85.3%
 Analysis Period (min) 15

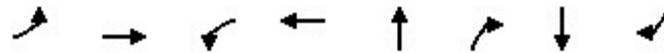
Intersection LOS: E
 ICU Level of Service E

Splits and Phases: 5: E Quincy Ave. & South Site Access



Queues
5: E Quincy Ave. & South Site Access

East Bank
03/16/2021



Lane Group	EBL	EBT	WBL	WBT	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	71	2861	154	1920	127	246	168	73
v/c Ratio	0.38	0.96	0.72	0.60	0.64	0.57	0.73	0.19
Control Delay	20.2	50.4	43.4	14.4	59.6	26.0	63.7	10.0
Queue Delay	0.0	44.4	0.0	0.1	0.0	0.0	0.0	0.0
Total Delay	20.2	94.8	43.4	14.5	59.6	26.0	63.7	10.0
Queue Length 50th (ft)	35	746	64	312	91	82	122	0
Queue Length 95th (ft)	m13	m283	138	375	#173	169	#229	40
Internal Link Dist (ft)		401		287	253		130	
Turn Bay Length (ft)	150		100			100		
Base Capacity (vph)	213	2985	244	3194	197	434	230	393
Starvation Cap Reductn	0	1059	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	219	0	0	0	3
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.33	1.49	0.63	0.65	0.64	0.57	0.73	0.19

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: E Quincy Ave. & South Site Access

East Bank
03/16/2021



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↗	↑↑↑		↖	↑↑↑			↑	↗		↑	↖
Traffic Volume (veh/h)	65	2589	43	142	1654	112	104	13	226	142	13	67
Future Volume (veh/h)	65	2589	43	142	1654	112	104	13	226	142	13	67
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	71	2814	47	154	1798	122	113	14	246	154	14	73
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	212	2948	49	183	2922	198	57	4	399	58	0	399
Arrive On Green	0.04	0.57	0.57	0.07	0.60	0.60	0.25	0.25	0.25	0.25	0.25	0.25
Sat Flow, veh/h	1781	5173	86	1781	4884	331	0	15	1585	0	0	1585
Grp Volume(v), veh/h	71	1847	1014	154	1252	668	127	0	246	168	0	73
Grp Sat Flow(s),veh/h/ln	1781	1702	1855	1781	1702	1811	15	0	1585	0	0	1585
Q Serve(g_s), s	2.0	61.2	62.3	5.8	28.0	28.2	0.0	0.0	16.5	0.0	0.0	4.3
Cycle Q Clear(g_c), s	2.0	61.2	62.3	5.8	28.0	28.2	30.2	0.0	16.5	30.2	0.0	4.3
Prop In Lane	1.00		0.05	1.00		0.18	0.89		1.00	0.92		1.00
Lane Grp Cap(c), veh/h	212	1940	1057	183	2036	1083	61	0	399	58	0	399
V/C Ratio(X)	0.34	0.95	0.96	0.84	0.61	0.62	2.10	0.00	0.62	2.92	0.00	0.18
Avail Cap(c_a), veh/h	275	1943	1059	250	2048	1090	61	0	399	58	0	399
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	0.09	0.09	0.09	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	13.3	24.3	24.5	35.8	15.3	15.3	58.1	0.0	39.8	60.0	0.0	35.2
Incr Delay (d2), s/veh	0.1	1.4	2.9	17.0	0.5	1.0	545.2	0.0	7.0	910.0	0.0	1.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	1.2	25.9	29.1	9.2	15.9	17.0	19.8	0.0	11.6	29.3	0.0	3.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	13.4	25.7	27.4	52.8	15.9	16.4	603.3	0.0	46.8	970.0	0.0	36.2
LnGrp LOS	B	C	C	D	B	B	F	A	D	F	A	D
Approach Vol, veh/h		2932			2074			373				241
Approach Delay, s/veh		26.0			18.8			236.3				687.2
Approach LOS		C			B			F				F
Timer - Assigned Phs		2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s		34.7	12.4	72.9		34.7	9.0	76.3				
Change Period (Y+Rc), s		4.5	4.5	4.5		4.5	4.5	4.5				
Max Green Setting (Gmax), s		25.5	12.5	68.5		25.5	8.8	72.2				
Max Q Clear Time (g_c+I1), s		32.2	7.8	64.3		32.2	4.0	30.2				
Green Ext Time (p_c), s		0.0	0.2	4.1		0.0	0.0	22.0				
Intersection Summary												
HCM 6th Ctrl Delay			65.6									
HCM 6th LOS			E									

Lanes and Geometrics
6: E Quincy Ave. & S. Atchison Way

East Bank
03/16/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	150		100	125		0	100		0	150		200
Storage Lanes	1		0	1		0	1		0	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.91	0.91	1.00	0.91	0.91	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.998			0.990			0.850				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	5075	0	1770	5034	0	1770	1583	0	1770	1863	1583
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1770	5075	0	1770	5034	0	1770	1583	0	1770	1863	1583
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		367			446			235			1258	
Travel Time (s)		8.3			10.1			5.3			28.6	

Intersection Summary

Area Type: Other

Intersection												
Int Delay, s/veh	215.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖ ↑↑↑ ↗			↖ ↑↑↑ ↗			↖ ↗		↖ ↗		↖ ↗	
Traffic Vol, veh/h	37	2887	33	24	1834	124	14	0	18	41	0	59
Future Vol, veh/h	37	2887	33	24	1834	124	14	0	18	41	0	59
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	-	-	125	-	-	100	-	-	150	-	200
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	40	3138	36	26	1993	135	15	0	20	45	0	64

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	2128	0	0	3174	0	0	4085	5416	1587	3448	5367	1064
Stage 1	-	-	-	-	-	-	3236	3236	-	2113	2113	-
Stage 2	-	-	-	-	-	-	849	2180	-	1335	3254	-
Critical Hdwy	5.34	-	-	5.34	-	-	6.44	6.54	7.14	6.44	6.54	7.14
Critical Hdwy Stg 1	-	-	-	-	-	-	7.34	5.54	-	7.34	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.74	5.54	-	6.74	5.54	-
Follow-up Hdwy	3.12	-	-	3.12	-	-	3.82	4.02	3.92	3.82	4.02	3.92
Pot Cap-1 Maneuver	108	-	-	31	-	-	~3	0	83	~7	0	188
Stage 1	-	-	-	-	-	-	~5	23	-	~32	90	-
Stage 2	-	-	-	-	-	-	292	83	-	145	22	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	108	-	-	31	-	-	0	0	83	~1	0	188
Mov Cap-2 Maneuver	-	-	-	-	-	-	0	0	-	~1	0	-
Stage 1	-	-	-	-	-	-	~3	14	-	~20	14	-
Stage 2	-	-	-	-	-	-	31	13	-	70	14	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.7	3.6		\$ 10835.5
HCM LOS			-	F

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2	SBLn3	
Capacity (veh/h)	-	83	108	-	-	31	-	-	-	1	-	188
HCM Lane V/C Ratio	-	0.236	0.372	-	-	0.842	-	-	-	44.565	-	0.341
HCM Control Delay (s)	-	61.3	56.9	-	-	298.2	-	-	\$ 26379.4	0	33.8	
HCM Lane LOS	-	F	F	-	-	F	-	-	F	A	D	
HCM 95th %tile Q(veh)	-	0.8	1.5	-	-	2.8	-	-	7.6	-	1.4	

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

Lanes and Geometrics
 200: S. Parker Rd. (SH 83) & NW Site Access

East Bank
 03/16/2021



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%		0%			0%
Storage Length (ft)	0	150		0	150	
Storage Lanes	1	1		0	1	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	0.91	0.91	1.00	0.91
Ped Bike Factor						
Frt		0.850	0.999			
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1770	1583	5080	0	1770	5085
Flt Permitted	0.950				0.044	
Satd. Flow (perm)	1770	1583	5080	0	82	5085
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		62	3			
Link Speed (mph)	30		30			30
Link Distance (ft)	699		689			580
Travel Time (s)	15.9		15.7			13.2

Intersection Summary

Area Type: Other

Timings
 200: S. Parker Rd. (SH 83) & NW Site Access

East Bank
 03/16/2021

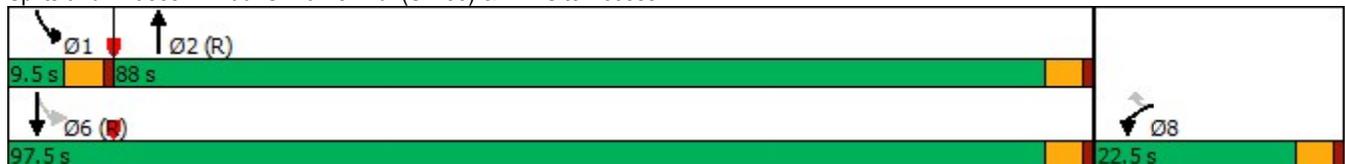


Lane Group	WBL	WBR	NBT	SBL	SBT
Lane Configurations	↶	↷	↑↑↑	↷	↑↑↑
Traffic Volume (vph)	8	107	4581	116	5850
Future Volume (vph)	8	107	4581	116	5850
Turn Type	Prot	Perm	NA	pm+pt	NA
Protected Phases	8		2	1	6
Permitted Phases		8		6	
Detector Phase	8	8	2	1	6
Switch Phase					
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	22.5	9.5	22.5
Total Split (s)	22.5	22.5	88.0	9.5	97.5
Total Split (%)	18.8%	18.8%	73.3%	7.9%	81.3%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5
Lead/Lag			Lag	Lead	
Lead-Lag Optimize?			Yes	Yes	
Recall Mode	None	None	C-Max	None	C-Max
Act Effct Green (s)	10.0	10.0	86.8	101.0	101.0
Actuated g/C Ratio	0.08	0.08	0.72	0.84	0.84
v/c Ratio	0.06	0.62	1.37	0.61	1.49
Control Delay	48.8	40.0	188.6	36.0	237.2
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	48.8	40.0	188.6	36.0	237.2
LOS	D	D	F	D	F
Approach Delay	40.6		188.6		233.3
Approach LOS	D		F		F

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBTL, Start of Green
 Natural Cycle: 150
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.49
 Intersection Signal Delay: 211.9
 Intersection Capacity Utilization 124.7%
 Analysis Period (min) 15
 Intersection LOS: F
 ICU Level of Service H

Splits and Phases: 200: S. Parker Rd. (SH 83) & NW Site Access





Lane Group	WBL	WBR	NBT	SBL	SBT
Lane Group Flow (vph)	9	116	5029	126	6359
v/c Ratio	0.06	0.62	1.37	0.61	1.49
Control Delay	48.8	40.0	188.6	36.0	237.2
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	48.8	40.0	188.6	36.0	237.2
Queue Length 50th (ft)	7	41	~1915	42	~2486
Queue Length 95th (ft)	22	98	#1983	#142	#2565
Internal Link Dist (ft)	619		609		500
Turn Bay Length (ft)		150		150	
Base Capacity (vph)	265	290	3673	206	4281
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.03	0.40	1.37	0.61	1.49

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
 200: S. Parker Rd. (SH 83) & NW Site Access

East Bank
 03/16/2021



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↶	↶	↑↑↑		↷	↓↓↓
Traffic Volume (veh/h)	8	107	4581	46	116	5850
Future Volume (veh/h)	8	107	4581	46	116	5850
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	9	116	4979	50	126	6359
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	158	141	3947	40	134	4270
Arrive On Green	0.09	0.09	0.76	0.76	0.04	0.84
Sat Flow, veh/h	1781	1585	5381	52	1781	5274
Grp Volume(v), veh/h	9	116	3246	1783	126	6359
Grp Sat Flow(s),veh/h/ln	1781	1585	1702	1861	1781	1702
Q Serve(g_s), s	0.6	8.6	90.9	90.9	4.4	100.4
Cycle Q Clear(g_c), s	0.6	8.6	90.9	90.9	4.4	100.4
Prop In Lane	1.00	1.00		0.03	1.00	
Lane Grp Cap(c), veh/h	158	141	2577	1409	134	4270
V/C Ratio(X)	0.06	0.82	1.26	1.27	0.94	1.49
Avail Cap(c_a), veh/h	267	238	2577	1409	134	4270
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	50.1	53.8	14.6	14.6	45.6	9.8
Incr Delay (d2), s/veh	0.1	11.4	120.0	125.4	59.1	221.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.5	7.0	102.1	114.1	10.0	170.9
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	50.2	65.1	134.6	139.9	104.7	231.2
LnGrp LOS	D	E	F	F	F	F
Approach Vol, veh/h	125		5029			6485
Approach Delay, s/veh	64.1		136.5			228.8
Approach LOS	E		F			F
Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	9.5	95.4			104.9	15.1
Change Period (Y+Rc), s	4.5	4.5			4.5	4.5
Max Green Setting (Gmax), s	5.0	83.5			93.0	18.0
Max Q Clear Time (g_c+I1), s	6.4	92.9			102.4	10.6
Green Ext Time (p_c), s	0.0	0.0			0.0	0.2
Intersection Summary						
HCM 6th Ctrl Delay			187.1			
HCM 6th LOS			F			

Lanes and Geometrics
 1: S. Parker Rd. (SH 83) & S Atchison Way

East Bank
 03/17/2021



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↗	↑↑↑↔		↖	↑↑↑
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%		0%			0%
Storage Length (ft)	0	0		0	200	
Storage Lanes	0	1		0	1	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	0.91	0.91	1.00	0.91
Ped Bike Factor						
Frt		0.865				
Flt Protected					0.950	
Satd. Flow (prot)	0	1611	5085	0	1770	5085
Flt Permitted					0.950	
Satd. Flow (perm)	0	1611	5085	0	1770	5085
Link Speed (mph)	30		30			30
Link Distance (ft)	538		680			507
Travel Time (s)	12.2		15.5			11.5

Intersection Summary

Area Type: Other

Intersection						
Int Delay, s/veh	105.1					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↑ ↑↑↑			↑ ↑↑↑	
Traffic Vol, veh/h	0	101	5698	6	17	3828
Future Vol, veh/h	0	101	5698	6	17	3828
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	200	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	110	6193	7	18	4161

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	- 3100	0	0 6200
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 ~ 7	-	- ~ 1
Stage 1	0 -	-	- -
Stage 2	0 -	-	- -
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	- ~ 7	-	- ~ 1
Mov Cap-2 Maneuver	- -	-	- -
Stage 1	- -	-	- -
Stage 2	- -	-	- -

Approach	WB	NB	SB
HCM Control Delay, \$	7636.7	0	63.1
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	- 7	~ 1	-
HCM Lane V/C Ratio	-	- 15.683	18.478	-
HCM Control Delay (s)	-	\$ 7636.7	14275.6	-
HCM Lane LOS	-	- F	F	-
HCM 95th %tile Q(veh)	-	- 15.5	3.9	-

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

Lanes and Geometrics
 2: S. Parker Rd. (SH 83) & NW Site Access

East Bank
 03/17/2021



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%		0%			0%
Storage Length (ft)	0	150		0	400	
Storage Lanes	1	1		0	1	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	0.91	0.91	1.00	0.91
Ped Bike Factor						
Frt		0.850	0.998			
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1770	1583	5075	0	1770	5085
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1770	1583	5075	0	1770	5085
Link Speed (mph)	30		30			30
Link Distance (ft)	484		560			680
Travel Time (s)	11.0		12.7			15.5

Intersection Summary

Area Type: Other

Intersection

Int Delay, s/veh 453.8

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↘	↗ ↑↑↑	↑↑↑		↘	↑↑↑
Traffic Vol, veh/h	6	188	5516	75	88	3740
Future Vol, veh/h	6	188	5516	75	88	3740
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	-	-	400	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	7	204	5996	82	96	4065

Major/Minor

	Minor1	Major1	Major2		
Conflicting Flow All	7855	3039	0	0	6078
Stage 1	6037	-	-	-	-
Stage 2	1818	-	-	-	-
Critical Hdwy	5.74	7.14	-	-	5.34
Critical Hdwy Stg 1	6.64	-	-	-	-
Critical Hdwy Stg 2	6.04	-	-	-	-
Follow-up Hdwy	3.82	3.92	-	-	3.12
Pot Cap-1 Maneuver	0	~ 8	-	-	~ 1
Stage 1	0	-	-	-	-
Stage 2	101	-	-	-	-
Platoon blocked, %					
Mov Cap-1 Maneuver	0	~ 8	-	-	~ 1
Mov Cap-2 Maneuver	0	-	-	-	-
Stage 1	0	-	-	-	-
Stage 2	0	-	-	-	-

Approach

	WB	NB	SB
HCM Control Delay, s		0	\$ 1139.5
HCM LOS	-		

Minor Lane/Major Mvmt

	NBT	NBRWBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	-	8	~ 1
HCM Lane V/C Ratio	-	-	-	25.543	95.652
HCM Control Delay (s)	-	-	\$ 1194.6	1095.69	7
HCM Lane LOS	-	-	-	F	F
HCM 95th %tile Q(veh)	-	-	-	27.3	14.3

Notes

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

Lanes and Geometrics
 3: SW Site Access & S. Parker Rd. (SH 83)



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↑	↑↑↑			↑↑↑
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%		0%			0%
Storage Length (ft)	0	0		0	0	
Storage Lanes	0	1		0	0	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	0.91	0.91	1.00	0.91
Ped Bike Factor						
Frt		0.865	0.999			
Flt Protected						
Satd. Flow (prot)	0	1611	5080	0	0	5085
Flt Permitted						
Satd. Flow (perm)	0	1611	5080	0	0	5085
Link Speed (mph)	30		30			30
Link Distance (ft)	488		526			560
Travel Time (s)	11.1		12.0			12.7

Intersection Summary

Area Type: Other

Intersection						
Int Delay, s/veh	189.8					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↑ ↑↑↑	↑↑↑			↑↑↑
Traffic Vol, veh/h	0	167	5424	47	0	3746
Future Vol, veh/h	0	167	5424	47	0	3746
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	182	5896	51	0	4072

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	-	2974	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	~ 8	-	-	0
Stage 1	0	-	-	-	0
Stage 2	0	-	-	-	0
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	-	~ 8	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-
Stage 1	-	-	-	-	-
Stage 2	-	-	-	-	-

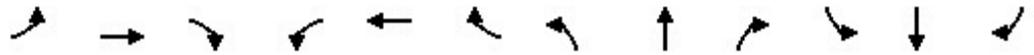
Approach	WB	NB	SB
HCM Control Delay \$	10665.6	0	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBT
Capacity (veh/h)	-	-	8
HCM Lane V/C Ratio	-	-	22.69
HCM Control Delay (s)	-	\$	10665.6
HCM Lane LOS	-	-	F
HCM 95th %tile Q(veh)	-	-	24.5

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

Lanes and Geometrics
 4: S. Parker Rd. (SH 83) & E Quincy Ave.

East Bank
 03/17/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕	↕↕↕	↕	↕↕↕		↕↕↕	↕↕↕	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	200		0	200		0	150		400	400		500
Storage Lanes	0		0	1		3	1		0	3		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	0.76	1.00	0.91	0.91	0.94	0.91	0.91
Ped Bike Factor												
Frt		0.950				0.850		0.991				
Flt Protected		0.982			0.953		0.950			0.950		
Satd. Flow (prot)	0	1738	0	0	1775	3610	1770	5040	0	4990	5085	0
Flt Permitted		0.747			0.715		0.950			0.950		
Satd. Flow (perm)	0	1322	0	0	1332	3610	1770	5040	0	4990	5085	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		7				27		11				1
Link Speed (mph)		30			30		30					30
Link Distance (ft)		385			481		793					526
Travel Time (s)		8.8			10.9		18.0					12.0

Intersection Summary

Area Type: Other

Timings
4: S. Parker Rd. (SH 83) & E Quincy Ave.

East Bank
03/17/2021

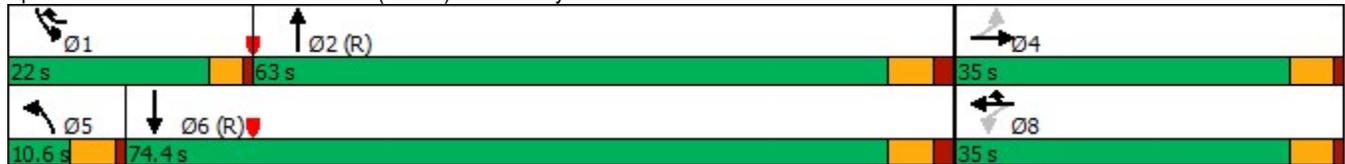


Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations		↔		↔	↑↑↑	↔	↑↑↑	↔↔↔	↑↑↑
Traffic Volume (vph)	6	5	371	5	2145	19	3320	1107	2631
Future Volume (vph)	6	5	371	5	2145	19	3320	1107	2631
Turn Type	Perm	NA	Perm	NA	pt+ov	Prot	NA	Prot	NA
Protected Phases		4		8	8 1	5	2	1	6
Permitted Phases	4		8						
Detector Phase	4	4	8	8	8 1	5	2	1	6
Switch Phase									
Minimum Initial (s)	5.0	5.0	3.0	3.0		5.5	20.0	5.0	5.0
Minimum Split (s)	20.0	20.0	23.0	23.0		10.5	26.0	9.5	24.0
Total Split (s)	35.0	35.0	35.0	35.0		10.6	63.0	22.0	74.4
Total Split (%)	29.2%	29.2%	29.2%	29.2%		8.8%	52.5%	18.3%	62.0%
Yellow Time (s)	4.0	4.0	4.0	4.0		4.0	4.0	3.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0		1.0	2.0	1.0	2.0
Lost Time Adjust (s)		0.0		0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)		5.0		5.0		5.0	6.0	4.0	6.0
Lead/Lag						Lead	Lag	Lead	Lag
Lead-Lag Optimize?						Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None		None	C-Max	None	C-Max
Act Effct Green (s)		30.0		30.0	52.0	5.6	57.0	18.0	74.8
Actuated g/C Ratio		0.25		0.25	0.43	0.05	0.48	0.15	0.62
v/c Ratio		0.06		1.23	1.48	0.26	1.60	1.61	0.91
Control Delay		26.2		151.1	238.8	63.2	297.1	313.8	25.7
Queue Delay		0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		26.2		151.1	238.8	63.2	297.1	313.8	25.7
LOS		C		F	F	E	F	F	C
Approach Delay		26.2		225.7			295.8		110.8
Approach LOS		C		F			F		F

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green
 Natural Cycle: 150
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.61
 Intersection Signal Delay: 206.9
 Intersection Capacity Utilization 136.2%
 Analysis Period (min) 15
 Intersection LOS: F
 ICU Level of Service H

Splits and Phases: 4: S. Parker Rd. (SH 83) & E Quincy Ave.



Queues
4: S. Parker Rd. (SH 83) & E Quincy Ave.

East Bank
03/17/2021



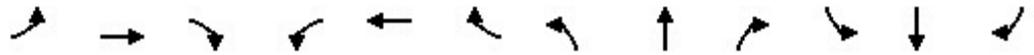
Lane Group	EBT	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	19	408	2332	21	3832	1203	2869
v/c Ratio	0.06	1.23	1.48	0.26	1.60	1.61	0.91
Control Delay	26.2	151.1	238.8	63.2	297.1	313.8	25.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	26.2	151.1	238.8	63.2	297.1	313.8	25.7
Queue Length 50th (ft)	7	~383	~1094	16	~1566	~473	586
Queue Length 95th (ft)	27	m#508	#1189	44	#1638	#565	#926
Internal Link Dist (ft)	305	401			713		446
Turn Bay Length (ft)				150		400	
Base Capacity (vph)	335	333	1579	82	2399	748	3167
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.06	1.23	1.48	0.26	1.60	1.61	0.91

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
 4: S. Parker Rd. (SH 83) & E Quincy Ave.

East Bank
 03/17/2021



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕	↑↑↑	↕	↑↑↑		↕↕↕	↑↑↑	
Traffic Volume (veh/h)	6	5	6	371	5	2145	19	3320	205	1107	2631	8
Future Volume (veh/h)	6	5	6	371	5	2145	19	3320	205	1107	2631	8
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	7	5	7	403	5	2332	21	3609	223	1203	2860	9
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	41	32	18	235	2	1446	41	2338	142	753	3119	10
Arrive On Green	0.25	0.25	0.25	0.25	0.25	0.25	0.02	0.47	0.47	0.15	0.59	0.59
Sat Flow, veh/h	0	126	74	701	9	3614	1781	4923	298	5023	5255	17
Grp Volume(v), veh/h	19	0	0	408	0	2332	21	2473	1359	1203	1852	1017
Grp Sat Flow(s),veh/h/ln	200	0	0	710	0	1205	1781	1702	1817	1674	1702	1867
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	30.0	1.4	57.0	57.0	18.0	58.2	58.4
Cycle Q Clear(g_c), s	30.0	0.0	0.0	30.0	0.0	30.0	1.4	57.0	57.0	18.0	58.2	58.4
Prop In Lane	0.37		0.37	0.99		1.00	1.00		0.16	1.00		0.01
Lane Grp Cap(c), veh/h	91	0	0	237	0	1446	41	1617	863	753	2021	1108
V/C Ratio(X)	0.21	0.00	0.00	1.72	0.00	1.61	0.51	1.53	1.57	1.60	0.92	0.92
Avail Cap(c_a), veh/h	91	0	0	237	0	1446	83	1617	863	753	2021	1108
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	0.45	0.00	0.45	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	37.1	0.0	0.0	48.8	0.0	36.0	57.9	31.5	31.5	51.0	21.7	21.8
Incr Delay (d2), s/veh	1.1	0.0	0.0	332.4	0.0	277.4	9.5	241.5	264.2	274.7	8.0	13.3
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	0.8	0.0	0.0	44.5	0.0	74.1	1.3	117.5	134.2	41.9	31.9	36.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	38.2	0.0	0.0	381.1	0.0	313.4	67.4	273.0	295.7	325.7	29.8	35.1
LnGrp LOS	D	A	A	F	A	F	E	F	F	F	C	D
Approach Vol, veh/h		19			2740			3853			4072	
Approach Delay, s/veh		38.2			323.5			279.9			118.5	
Approach LOS		D			F			F			F	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	22.0	63.0		35.0	7.8	77.2		35.0				
Change Period (Y+Rc), s	4.0	6.0		5.0	5.0	6.0		5.0				
Max Green Setting (Gmax), s	18.0	57.0		30.0	5.6	68.4		30.0				
Max Q Clear Time (g_c+I1), s	20.0	59.0		32.0	3.4	60.4		32.0				
Green Ext Time (p_c), s	0.0	0.0		0.0	0.0	7.7		0.0				

Intersection Summary

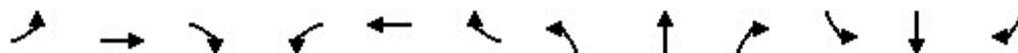
HCM 6th Ctrl Delay	229.1
HCM 6th LOS	F

Notes

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

Lanes and Geometrics
5: E Quincy Ave. & South Site Access

East Bank
03/17/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	150		0	100		0	0		100	0		0
Storage Lanes	1		0	1		0	0		1	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.91	0.91	1.00	0.91	0.91	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.997			0.992				0.850			0.850
Flt Protected	0.950			0.950				0.958			0.957	
Satd. Flow (prot)	1770	5070	0	1770	5045	0	0	1785	1583	0	1783	1583
Flt Permitted	0.054			0.152				0.685			0.695	
Satd. Flow (perm)	101	5070	0	283	5045	0	0	1276	1583	0	1295	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		5			14				84			74
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		481			367			333			210	
Travel Time (s)		10.9			8.3			7.6			4.8	

Intersection Summary

Area Type: Other

Timings
5: E Quincy Ave. & South Site Access

East Bank
03/17/2021

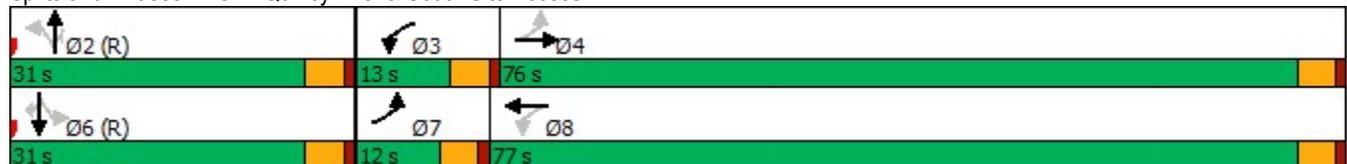


Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↑↑↑	↖	↑↑↑		↖	↗		↖	↗
Traffic Volume (vph)	33	1209	96	2396	57	8	77	99	10	68
Future Volume (vph)	33	1209	96	2396	57	8	77	99	10	68
Turn Type	pm+pt	NA	pm+pt	NA	Perm	NA	Perm	Perm	NA	Perm
Protected Phases	7	4	3	8		2			6	
Permitted Phases	4		8		2		2	6		6
Detector Phase	7	4	3	8	2	2	2	6	6	6
Switch Phase										
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.5	22.5	9.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5
Total Split (s)	12.0	76.0	13.0	77.0	31.0	31.0	31.0	31.0	31.0	31.0
Total Split (%)	10.0%	63.3%	10.8%	64.2%	25.8%	25.8%	25.8%	25.8%	25.8%	25.8%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5		4.5	4.5		4.5	4.5
Lead/Lag	Lead	Lag	Lead	Lag						
Lead-Lag Optimize?	Yes	Yes	Yes	Yes						
Recall Mode	None	None	None	None	C-Max	C-Max	C-Max	C-Max	C-Max	C-Max
Act Effct Green (s)	79.2	72.5	82.3	77.4		26.5	26.5		26.5	26.5
Actuated g/C Ratio	0.66	0.60	0.69	0.64		0.22	0.22		0.22	0.22
v/c Ratio	0.23	0.44	0.36	0.85		0.25	0.20		0.42	0.18
Control Delay	25.7	38.3	9.3	20.9		41.5	9.2		45.4	9.6
Queue Delay	0.0	1.0	0.0	46.7		0.0	0.0		0.0	0.0
Total Delay	25.7	39.3	9.3	67.6		41.5	9.2		45.4	9.7
LOS	C	D	A	E		D	A		D	A
Approach Delay		38.9		65.5		24.0			31.7	
Approach LOS		D		E		C			C	

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
 Natural Cycle: 80
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.85
 Intersection Signal Delay: 54.7
 Intersection LOS: D
 Intersection Capacity Utilization 77.6%
 ICU Level of Service D
 Analysis Period (min) 15

Splits and Phases: 5: E Quincy Ave. & South Site Access



Queues
5: E Quincy Ave. & South Site Access

East Bank
03/17/2021



Lane Group	EBL	EBT	WBL	WBT	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	36	1343	104	2759	71	84	119	74
v/c Ratio	0.23	0.44	0.36	0.85	0.25	0.20	0.42	0.18
Control Delay	25.7	38.3	9.3	20.9	41.5	9.2	45.4	9.6
Queue Delay	0.0	1.0	0.0	46.7	0.0	0.0	0.0	0.0
Total Delay	25.7	39.3	9.3	67.6	41.5	9.2	45.4	9.7
Queue Length 50th (ft)	22	317	23	631	46	0	80	0
Queue Length 95th (ft)	m12	m163	40	722	89	42	140	40
Internal Link Dist (ft)		401		287	253		130	
Turn Bay Length (ft)	150		100			100		
Base Capacity (vph)	171	3064	299	3258	281	415	285	407
Starvation Cap Reductn	0	1343	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	1092	0	0	0	15
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.21	0.78	0.35	1.27	0.25	0.20	0.42	0.19

Intersection Summary

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

HCM 6th Signalized Intersection Summary
5: E Quincy Ave. & South Site Access

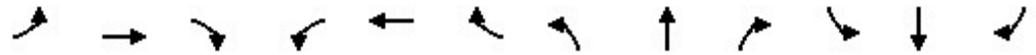
East Bank
03/17/2021



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↗	↑↑↑		↖	↑↑↑			↑	↗		↑	↖
Traffic Volume (veh/h)	33	1209	27	96	2396	143	57	8	77	99	10	68
Future Volume (veh/h)	33	1209	27	96	2396	143	57	8	77	99	10	68
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	36	1314	29	104	2604	155	62	9	84	108	11	74
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	125	3001	66	311	2936	172	56	5	417	57	3	417
Arrive On Green	0.03	0.58	0.58	0.04	0.60	0.60	0.26	0.26	0.26	0.26	0.26	0.26
Sat Flow, veh/h	1781	5141	113	1781	4933	289	0	17	1585	0	12	1585
Grp Volume(v), veh/h	36	870	473	104	1784	975	71	0	84	119	0	74
Grp Sat Flow(s),veh/h/ln	1781	1702	1850	1781	1702	1818	17	0	1585	12	0	1585
Q Serve(g_s), s	1.0	17.1	17.2	2.8	53.5	56.1	0.0	0.0	4.9	0.0	0.0	4.3
Cycle Q Clear(g_c), s	1.0	17.1	17.2	2.8	53.5	56.1	31.6	0.0	4.9	31.6	0.0	4.3
Prop In Lane	1.00		0.06	1.00		0.16	0.87		1.00	0.91		1.00
Lane Grp Cap(c), veh/h	125	1987	1080	311	2026	1082	61	0	417	60	0	417
V/C Ratio(X)	0.29	0.44	0.44	0.33	0.88	0.90	1.17	0.00	0.20	1.97	0.00	0.18
Avail Cap(c_a), veh/h	184	2028	1102	366	2057	1099	61	0	417	60	0	417
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)	0.09	0.09	0.09	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	26.9	14.0	14.0	10.6	20.7	21.2	57.7	0.0	34.4	58.3	0.0	34.2
Incr Delay (d2), s/veh	0.1	0.0	0.0	0.6	4.8	10.1	168.6	0.0	1.1	490.4	0.0	0.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	1.0	7.7	8.3	2.0	28.8	33.6	8.4	0.0	3.7	18.1	0.0	3.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	27.0	14.0	14.0	11.3	25.5	31.3	226.3	0.0	35.5	548.8	0.0	35.1
LnGrp LOS	C	B	B	B	C	C	F	A	D	F	A	D
Approach Vol, veh/h		1379			2863			155				193
Approach Delay, s/veh		14.3			26.9			122.9				351.8
Approach LOS		B			C			F				F
Timer - Assigned Phs		2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s		36.1	9.3	74.6		36.1	8.0	75.9				
Change Period (Y+Rc), s		4.5	4.5	4.5		4.5	4.5	4.5				
Max Green Setting (Gmax), s		26.5	8.5	71.5		26.5	7.5	72.5				
Max Q Clear Time (g_c+I1), s		33.6	4.8	19.2		33.6	3.0	58.1				
Green Ext Time (p_c), s		0.0	0.1	13.2		0.0	0.0	13.3				
Intersection Summary												
HCM 6th Ctrl Delay			40.0									
HCM 6th LOS			D									

Lanes and Geometrics
6: E Quincy Ave. & S Atchison Way

East Bank
03/17/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	150		100	125		0	100		0	150		200
Storage Lanes	1		0	1		0	1		0	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.91	0.91	1.00	0.91	0.91	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		0.999			0.997			0.850				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	5080	0	1770	5070	0	1770	1583	0	1770	1863	1583
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1770	5080	0	1770	5070	0	1770	1583	0	1770	1863	1583
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		367			446			235			1293	
Travel Time (s)		8.3			10.1			5.3			29.4	

Intersection Summary

Area Type: Other

Intersection												
Int Delay, s/veh	0.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖ ↑↑↑ ↗			↖ ↑↑↑ ↗			↖ ↗		↖ ↗		↖ ↗	
Traffic Vol, veh/h	11	1367	6	8	2585	55	24	0	26	20	0	26
Future Vol, veh/h	11	1367	6	8	2585	55	24	0	26	20	0	26
Conflicting Peds, #/hr	0	0	0	1891	0	6	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	-	-	125	-	-	100	-	-	150	-	200
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	12	1486	7	9	2810	60	26	0	28	22	0	28

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	2876	0	0	3384	0	0	4547	6299	2638	3482	6272	1441
Stage 1	-	-	-	-	-	-	3405	3405	-	2864	2864	-
Stage 2	-	-	-	-	-	-	1142	2894	-	618	3408	-
Critical Hdwy	5.34	-	-	5.34	-	-	6.44	6.54	7.14	6.44	6.54	7.14
Critical Hdwy Stg 1	-	-	-	-	-	-	7.34	5.54	-	7.34	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.74	5.54	-	6.74	5.54	-
Follow-up Hdwy	3.12	-	-	3.12	-	-	3.82	4.02	3.92	3.82	4.02	3.92
Pot Cap-1 Maneuver	44	-	-	24	-	-	~1	0	~15	~7	0	104
Stage 1	-	-	-	-	-	-	~3	18	-	~9	36	-
Stage 2	-	-	-	-	-	-	192	35	-	404	18	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	44	-	-	~19	-	-	-	0	~12	-	0	103
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	0	-	-	0	-
Stage 1	-	-	-	-	-	-	~3	~10	-	~7	36	-
Stage 2	-	-	-	-	-	-	139	35	-	986	~10	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.9			
HCM LOS	-			

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2	SBLn3
Capacity (veh/h)	-	-	44	-	-	+	-	-	-	-	103
HCM Lane V/C Ratio	-	-	0.272	-	-	-	-	-	-	-	0.274
HCM Control Delay (s)	-	-	114.9	-	-	-	-	-	-	0	52.7
HCM Lane LOS	-	-	F	-	-	-	-	-	-	A	F
HCM 95th %tile Q(veh)	-	-	0.9	-	-	-	-	-	-	-	1

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

Lanes and Geometrics
 7: S. Atchison Way & NE Site Access Driveway

East Bank
 03/17/2021



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%			0%	0%	
Storage Length (ft)	0	0	0			0
Storage Lanes	1	0	0			0
Taper Length (ft)	25		25			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.966				0.993	
Flt Protected	0.964			0.999		
Satd. Flow (prot)	1735	0	0	1861	1850	0
Flt Permitted	0.964			0.999		
Satd. Flow (perm)	1735	0	0	1861	1850	0
Link Speed (mph)	30			30	30	
Link Distance (ft)	332			1293	507	
Travel Time (s)	7.5			29.4	11.5	

Intersection Summary

Area Type: Other

Intersection						
Int Delay, s/veh	0.8					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	8	3	1	73	49	3
Future Vol, veh/h	8	3	1	73	49	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	9	3	1	79	53	3

Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	136	55	56	0	0
Stage 1	55	-	-	-	-
Stage 2	81	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-
Pot Cap-1 Maneuver	857	1012	1549	-	-
Stage 1	968	-	-	-	-
Stage 2	942	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	856	1012	1549	-	-
Mov Cap-2 Maneuver	856	-	-	-	-
Stage 1	967	-	-	-	-
Stage 2	942	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.1	0.1	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1549	-	894	-	-
HCM Lane V/C Ratio	0.001	-	0.013	-	-
HCM Control Delay (s)	7.3	0	9.1	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Lanes and Geometrics
 200: S. Parker Rd. (SH 83) & NW Site Access

East Bank
 03/17/2021



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%		0%			0%
Storage Length (ft)	0	150		0	300	
Storage Lanes	1	1		0	1	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	0.91	0.91	1.00	0.91
Ped Bike Factor						
Frt		0.850	0.998			
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1770	1583	5075	0	1770	5085
Flt Permitted	0.950				0.044	
Satd. Flow (perm)	1770	1583	5075	0	82	5085
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		92	4			
Link Speed (mph)	30		30			30
Link Distance (ft)	503		547			540
Travel Time (s)	11.4		12.4			12.3

Intersection Summary

Area Type: Other

Timings
 200: S. Parker Rd. (SH 83) & NW Site Access

East Bank
 03/17/2021

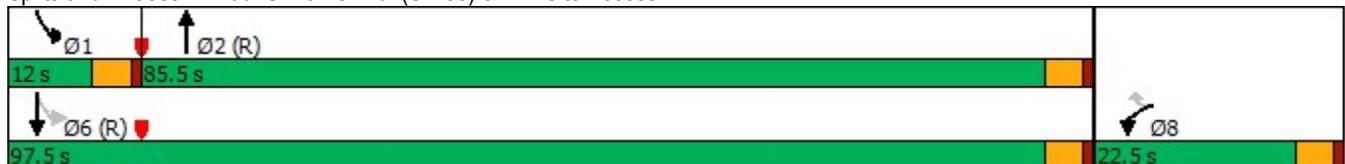


Lane Group	WBL	WBR	NBT	SBL	SBT
Lane Configurations	↵	↶	↑↑↑	↵	↑↑↑
Traffic Volume (vph)	6	188	5516	88	3740
Future Volume (vph)	6	188	5516	88	3740
Turn Type	Prot	Perm	NA	pm+pt	NA
Protected Phases	8		2	1	6
Permitted Phases		8		6	
Detector Phase	8	8	2	1	6
Switch Phase					
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	22.5	9.5	22.5
Total Split (s)	22.5	22.5	85.5	12.0	97.5
Total Split (%)	18.8%	18.8%	71.3%	10.0%	81.3%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5
Lead/Lag			Lag	Lead	
Lead-Lag Optimize?			Yes	Yes	
Recall Mode	None	None	C-Max	None	C-Max
Act Effct Green (s)	13.4	13.4	86.1	97.6	97.6
Actuated g/C Ratio	0.11	0.11	0.72	0.81	0.81
v/c Ratio	0.04	0.79	1.67	0.59	0.96
Control Delay	44.8	48.9	322.4	32.5	19.0
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	44.8	48.9	322.4	32.5	19.0
LOS	D	D	F	C	B
Approach Delay	48.8		322.4		19.3
Approach LOS	D		F		B

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBTL, Start of Green
 Natural Cycle: 150
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.67
 Intersection Signal Delay: 197.6
 Intersection LOS: F
 Intersection Capacity Utilization 127.4%
 ICU Level of Service H
 Analysis Period (min) 15

Splits and Phases: 200: S. Parker Rd. (SH 83) & NW Site Access





Lane Group	WBL	WBR	NBT	SBL	SBT
Lane Group Flow (vph)	7	204	6078	96	3979
v/c Ratio	0.04	0.79	1.67	0.59	0.96
Control Delay	44.8	48.9	322.4	32.5	19.0
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	44.8	48.9	322.4	32.5	19.0
Queue Length 50th (ft)	5	85	~2551	21	807
Queue Length 95th (ft)	19	166	#2617	82	#1252
Internal Link Dist (ft)	423		467		460
Turn Bay Length (ft)		150		300	
Base Capacity (vph)	265	315	3643	173	4134
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.03	0.65	1.67	0.55	0.96

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

HCM 6th Signalized Intersection Summary
 200: S. Parker Rd. (SH 83) & NW Site Access

East Bank
 03/17/2021



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↶	↶	↑↑↑		↷	↑↑↑
Traffic Volume (veh/h)	6	188	5516	75	88	3740
Future Volume (veh/h)	6	188	5516	75	88	3740
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	7	204	5996	82	96	3979
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.94
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	256	227	3655	50	131	3990
Arrive On Green	0.14	0.14	0.70	0.70	0.04	0.78
Sat Flow, veh/h	1781	1585	5359	71	1781	5274
Grp Volume(v), veh/h	7	204	3923	2155	96	3979
Grp Sat Flow(s),veh/h/ln	1781	1585	1702	1858	1781	1702
Q Serve(g_s), s	0.4	15.2	84.5	84.5	2.3	92.6
Cycle Q Clear(g_c), s	0.4	15.2	84.5	84.5	2.3	92.6
Prop In Lane	1.00	1.00		0.04	1.00	
Lane Grp Cap(c), veh/h	256	227	2396	1308	131	3990
V/C Ratio(X)	0.03	0.90	1.64	1.65	0.73	1.00
Avail Cap(c_a), veh/h	267	238	2396	1308	171	3990
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	44.2	50.5	17.8	17.8	37.7	13.0
Incr Delay (d2), s/veh	0.0	31.7	288.5	295.1	10.7	13.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.3	12.7	196.5	217.8	5.8	40.8
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	44.2	82.2	306.3	312.8	48.4	26.6
LnGrp LOS	D	F	F	F	D	C
Approach Vol, veh/h	211		6078			4075
Approach Delay, s/veh	81.0		308.6			27.1
Approach LOS	F		F			C
Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	9.3	89.0			98.3	21.7
Change Period (Y+Rc), s	4.5	4.5			4.5	4.5
Max Green Setting (Gmax), s	7.5	81.0			93.0	18.0
Max Q Clear Time (g_c+I1), s	4.3	86.5			94.6	17.2
Green Ext Time (p_c), s	0.1	0.0			0.0	0.1

Intersection Summary

HCM 6th Ctrl Delay	193.3
HCM 6th LOS	F

Notes

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

Lanes and Geometrics
 1: S. Parker Rd. (SH 83) & S Atchison Way

East Bank
 03/17/2021



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↗	↑↑↑		↘	↑↑↑
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%		0%			0%
Storage Length (ft)	0	0		0	200	
Storage Lanes	0	1		0	1	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	0.91	0.91	1.00	0.91
Ped Bike Factor						
Frt		0.865	0.999			
Flt Protected					0.950	
Satd. Flow (prot)	0	1611	5080	0	1770	5085
Flt Permitted					0.950	
Satd. Flow (perm)	0	1611	5080	0	1770	5085
Link Speed (mph)	30		30			30
Link Distance (ft)	538		680			507
Travel Time (s)	12.2		15.5			11.5

Intersection Summary

Area Type: Other

Intersection						
Int Delay, s/veh	148					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↑ ↑↑↑			↑ ↑↑↑	
Traffic Vol, veh/h	0	72	4688	24	89	6004
Future Vol, veh/h	0	72	4688	24	89	6004
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	200	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	78	5096	26	97	6526

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	-	2561	0	0	5122
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	~ 17	-	-	~ 3
Stage 1	0	-	-	-	-
Stage 2	0	-	-	-	-
Platoon blocked, %					
Mov Cap-1 Maneuver	-	~ 17	-	-	~ 3
Mov Cap-2 Maneuver	-	-	-	-	-
Stage 1	-	-	-	-	-
Stage 2	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, \$	2074.5	0	239.7
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	17	~ 3
HCM Lane V/C Ratio	-	-	4.604	32.246
HCM Control Delay (s)	-	\$ 2074.	\$ 16411	-
HCM Lane LOS	-	-	F	F
HCM 95th %tile Q(veh)	-	-	10.5	14.3

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

Lanes and Geometrics
 2: S. Parker Rd. (SH 83) & NW Site Access

East Bank
 03/17/2021



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%		0%			0%
Storage Length (ft)	0	150		0	400	
Storage Lanes	1	1		0	1	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	0.91	0.91	1.00	0.91
Ped Bike Factor						
Frt		0.850	0.998			
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1770	1583	5075	0	1770	5085
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1770	1583	5075	0	1770	5085
Link Speed (mph)	30		30			30
Link Distance (ft)	484		560			680
Travel Time (s)	11.0		12.7			15.5

Intersection Summary

Area Type: Other

Intersection						
Int Delay, s/veh	381.3					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↵	↵ ↵ ↵ ↵	↵ ↵ ↵ ↵		↵ ↵ ↵ ↵	↵ ↵ ↵ ↵
Traffic Vol, veh/h	11	123	4589	54	153	5850
Future Vol, veh/h	11	123	4589	54	153	5850
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	-	-	400	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	12	134	4988	59	166	6359

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	7894	2524	0	0	5047
Stage 1	5018	-	-	-	-
Stage 2	2876	-	-	-	-
Critical Hdwy	5.74	7.14	-	-	5.34
Critical Hdwy Stg 1	6.64	-	-	-	-
Critical Hdwy Stg 2	6.04	-	-	-	-
Follow-up Hdwy	3.82	3.92	-	-	3.12
Pot Cap-1 Maneuver	0	~ 18	-	-	~ 3
Stage 1	0	-	-	-	-
Stage 2	24	-	-	-	-
Platoon blocked, %					
Mov Cap-1 Maneuver	0	~ 18	-	-	~ 3
Mov Cap-2 Maneuver	0	-	-	-	-
Stage 1	0	-	-	-	-
Stage 2	0	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s		0	\$ 684.8
HCM LOS	-		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	-	18	~ 3
HCM Lane V/C Ratio	-	-	-	7.428	55.435
HCM Control Delay (s)	-	-	-	\$ 331.2	\$ 26867.1
HCM Lane LOS	-	-	-	F	F
HCM 95th %tile Q(veh)	-	-	-	17.4	23.1

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

Lanes and Geometrics
 3: SW Site Access & S. Parker Rd. (SH 83)

East Bank
 03/17/2021



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%		0%			0%
Storage Length (ft)	0	0		0	0	
Storage Lanes	0	1		0	0	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	0.91	0.91	1.00	0.91
Ped Bike Factor						
Frt		0.865	0.997			
Flt Protected						
Satd. Flow (prot)	0	1611	5070	0	0	5085
Flt Permitted						
Satd. Flow (perm)	0	1611	5070	0	0	5085
Link Speed (mph)	30		30			30
Link Distance (ft)	488		526			560
Travel Time (s)	11.1		12.0			12.7

Intersection Summary

Area Type: Other

Intersection

Int Delay, s/veh 22

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↑ ↑↑	↑↑↑			↑↑↑
Traffic Vol, veh/h	0	93	4551	77	0	5853
Future Vol, veh/h	0	93	4551	77	0	5853
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	101	4947	84	0	6362

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	-	2516	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	~ 18	-
Stage 1	0	-	-
Stage 2	0	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	~ 18	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	WB	NB	SB
HCM Control Delay, \$	2502.2	0	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBT
Capacity (veh/h)	-	-	18
HCM Lane V/C Ratio	-	-	5.616
HCM Control Delay (s)	-	\$	2502.2
HCM Lane LOS	-	-	F
HCM 95th %tile Q(veh)	-	-	13.2

Notes

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

Lanes and Geometrics
 4: S. Parker Rd. (SH 83) & E Quincy Ave.

East Bank
 03/17/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕	↕↕↕	↕	↕↕↕		↕↕↕	↕↕↕	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	200		0	200		0	150		400	400		500
Storage Lanes	0		0	1		3	1		0	3		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	0.76	1.00	0.91	0.91	0.94	0.91	0.91
Ped Bike Factor												
Frt		0.954				0.850		0.968				0.996
Flt Protected		0.987			0.955		0.950			0.950		
Satd. Flow (prot)	0	1754	0	0	1779	3610	1770	4923	0	4990	5065	0
Flt Permitted		0.298			0.478		0.950			0.950		
Satd. Flow (perm)	0	530	0	0	890	3610	1770	4923	0	4990	5065	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		21				27		73				5
Link Speed (mph)		30			30			30				30
Link Distance (ft)		385			481			793				526
Travel Time (s)		8.8			10.9			18.0				12.0

Intersection Summary

Area Type: Other

Timings
4: S. Parker Rd. (SH 83) & E Quincy Ave.

East Bank
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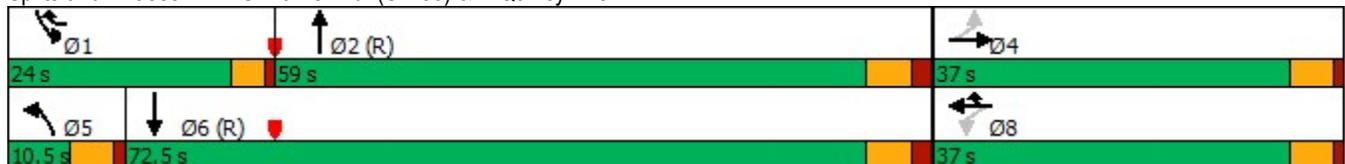


Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations		↕		↕	↕↕↕	↕	↕↕↕	↕↕↕	↕↕↕
Traffic Volume (vph)	59	88	383	22	1432	57	3138	1747	4002
Future Volume (vph)	59	88	383	22	1432	57	3138	1747	4002
Turn Type	Perm	NA	Perm	NA	pt+ov	Prot	NA	Prot	NA
Protected Phases		4		8	8 1	5	2	1	6
Permitted Phases	4		8						
Detector Phase	4	4	8	8	8 1	5	2	1	6
Switch Phase									
Minimum Initial (s)	5.0	5.0	3.0	3.0		5.5	20.0	5.0	5.0
Minimum Split (s)	20.0	20.0	23.0	23.0		10.5	26.0	9.5	24.0
Total Split (s)	37.0	37.0	37.0	37.0		10.5	59.0	24.0	72.5
Total Split (%)	30.8%	30.8%	30.8%	30.8%		8.8%	49.2%	20.0%	60.4%
Yellow Time (s)	4.0	4.0	4.0	4.0		4.0	4.0	3.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0		1.0	2.0	1.0	2.0
Lost Time Adjust (s)		0.0		0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)		5.0		5.0		5.0	6.0	4.0	6.0
Lead/Lag						Lead	Lag	Lead	Lag
Lead-Lag Optimize?						Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None		None	C-Max	None	C-Max
Act Effct Green (s)		32.0		32.0	56.0	5.5	53.0	20.0	68.6
Actuated g/C Ratio		0.27		0.27	0.47	0.05	0.44	0.17	0.57
v/c Ratio		1.55		1.86	0.92	0.77	1.96	2.29	1.54
Control Delay		306.7		422.7	27.3	106.6	457.0	606.5	269.5
Queue Delay		10.3		0.0	0.0	0.0	1.2	0.4	0.0
Total Delay		317.0		422.7	27.3	106.6	458.1	606.9	269.5
LOS		F		F	C	F	F	F	F
Approach Delay		317.0		114.4			453.2		370.2
Approach LOS		F		F			F		F

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green
 Natural Cycle: 150
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 2.29
 Intersection Signal Delay: 358.0
 Intersection LOS: F
 Intersection Capacity Utilization 164.5%
 ICU Level of Service H
 Analysis Period (min) 15

Splits and Phases: 4: S. Parker Rd. (SH 83) & E Quincy Ave.



Queues
4: S. Parker Rd. (SH 83) & E Quincy Ave.

East Bank
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Lane Group	EBT	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	242	440	1557	62	4341	1899	4464
v/c Ratio	1.55	1.86	0.92	0.77	1.96	2.29	1.54
Control Delay	306.7	422.7	27.3	106.6	457.0	606.5	269.5
Queue Delay	10.3	0.0	0.0	0.0	1.2	0.4	0.0
Total Delay	317.0	422.7	27.3	106.6	458.1	606.9	269.5
Queue Length 50th (ft)	~253	~380	483	48	~1917	~847	~1822
Queue Length 95th (ft)	#421	#541	#594	#128	#1978	#941	#1879
Internal Link Dist (ft)	305	401			713		446
Turn Bay Length (ft)				150		400	
Base Capacity (vph)	156	237	1699	81	2215	831	2897
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	60	0	0	0	728	56	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	2.52	1.86	0.92	0.77	2.92	2.45	1.54

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
 4: S. Parker Rd. (SH 83) & E Quincy Ave.

East Bank
 03/17/2021



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕	↕↕↕	↕	↕↕↕		↕↕↕	↕↕↕	
Traffic Volume (veh/h)	59	88	75	383	22	1432	57	3138	856	1747	4002	105
Future Volume (veh/h)	59	88	75	383	22	1432	57	3138	856	1747	4002	105
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	64	96	82	416	24	1557	62	3411	930	1899	4350	114
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	38	54	27	197	8	1566	80	1798	450	837	2842	74
Arrive On Green	0.27	0.27	0.27	0.27	0.27	0.27	0.04	0.44	0.44	0.17	0.56	0.56
Sat Flow, veh/h	0	201	103	521	30	3614	1781	4072	1019	5023	5118	133
Grp Volume(v), veh/h	242	0	0	440	0	1557	62	2802	1539	1899	2881	1583
Grp Sat Flow(s),veh/h/ln	304	0	0	551	0	1205	1781	1702	1687	1674	1702	1846
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	32.0	4.1	53.0	53.0	20.0	66.6	66.6
Cycle Q Clear(g_c), s	32.0	0.0	0.0	32.0	0.0	32.0	4.1	53.0	53.0	20.0	66.6	66.6
Prop In Lane	0.26		0.34	0.95		1.00	1.00		0.60	1.00		0.07
Lane Grp Cap(c), veh/h	119	0	0	205	0	1566	80	1503	745	837	1890	1025
V/C Ratio(X)	2.03	0.00	0.00	2.14	0.00	0.99	0.78	1.86	2.07	2.27	1.52	1.54
Avail Cap(c_a), veh/h	119	0	0	205	0	1566	82	1503	745	837	1890	1025
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	0.00	0.00	0.78	0.00	0.78	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	40.1	0.0	0.0	48.6	0.0	33.9	56.7	33.5	33.5	50.0	26.7	26.7
Incr Delay (d2), s/veh	492.8	0.0	0.0	527.4	0.0	18.7	36.5	391.1	484.4	574.5	238.5	249.6
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	34.8	0.0	0.0	59.3	0.0	23.3	4.8	163.1	194.4	83.0	135.2	151.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	532.9	0.0	0.0	575.9	0.0	52.5	93.2	424.6	517.9	624.5	265.2	276.2
LnGrp LOS	F	A	A	F	A	D	F	F	F	F	F	F
Approach Vol, veh/h		242			1997			4403			6363	
Approach Delay, s/veh		532.9			167.9			452.6			375.2	
Approach LOS		F			F			F			F	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	24.0	59.0		37.0	10.4	72.6		37.0				
Change Period (Y+Rc), s	4.0	6.0		5.0	5.0	6.0		5.0				
Max Green Setting (Gmax), s	20.0	53.0		32.0	5.5	66.5		32.0				
Max Q Clear Time (g_c+I1), s	22.0	55.0		34.0	6.1	68.6		34.0				
Green Ext Time (p_c), s	0.0	0.0		0.0	0.0	0.0		0.0				

Intersection Summary

HCM 6th Ctrl Delay	372.5
HCM 6th LOS	F

Notes

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

Lanes and Geometrics
5: E Quincy Ave. & South Site Access

East Bank
03/17/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	150		0	100		0	0		100	0		0
Storage Lanes	1		0	1		0	0		1	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.91	0.91	1.00	0.91	0.91	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.998			0.990				0.850			0.850
Flt Protected	0.950			0.950				0.957			0.956	
Satd. Flow (prot)	1770	5075	0	1770	5034	0	0	1783	1583	0	1781	1583
Flt Permitted	0.074			0.053				0.494			0.586	
Satd. Flow (perm)	138	5075	0	99	5034	0	0	920	1583	0	1092	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		3			17				116			95
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		481			367			333			210	
Travel Time (s)		10.9			8.3			7.6			4.8	

Intersection Summary

Area Type: Other

Timings
5: E Quincy Ave. & South Site Access

East Bank
03/17/2021

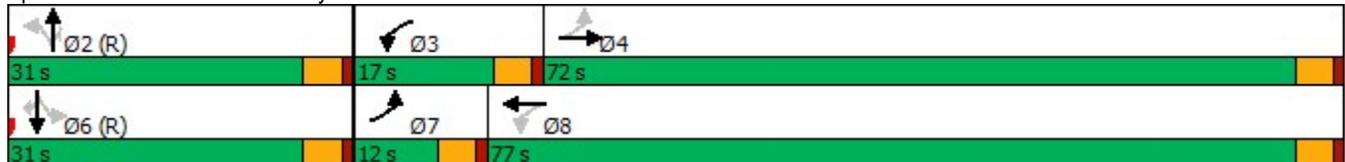


Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↑↑↑	↖	↑↑↑		↖	↖		↖	↖
Traffic Volume (vph)	69	2589	142	1654	104	13	226	147	13	80
Future Volume (vph)	69	2589	142	1654	104	13	226	147	13	80
Turn Type	pm+pt	NA	pm+pt	NA	Perm	NA	Perm	Perm	NA	Perm
Protected Phases	7	4	3	8		2			6	
Permitted Phases	4		8		2		2	6		6
Detector Phase	7	4	3	8	2	2	2	6	6	6
Switch Phase										
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.5	22.5	9.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5
Total Split (s)	12.0	72.0	17.0	77.0	31.0	31.0	31.0	31.0	31.0	31.0
Total Split (%)	10.0%	60.0%	14.2%	64.2%	25.8%	25.8%	25.8%	25.8%	25.8%	25.8%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5		4.5	4.5		4.5	4.5
Lead/Lag	Lead	Lag	Lead	Lag						
Lead-Lag Optimize?	Yes	Yes	Yes	Yes						
Recall Mode	None	None	None	None	C-Max	C-Max	C-Max	C-Max	C-Max	C-Max
Act Effct Green (s)	76.4	69.6	84.1	75.2		26.5	26.5		26.5	26.5
Actuated g/C Ratio	0.64	0.58	0.70	0.63		0.22	0.22		0.22	0.22
v/c Ratio	0.41	0.97	0.72	0.61		0.63	0.56		0.72	0.21
Control Delay	21.7	52.7	43.9	14.9		57.4	27.0		61.6	7.7
Queue Delay	0.0	43.3	0.0	0.1		0.0	0.0		0.0	0.0
Total Delay	21.7	96.0	43.9	15.0		57.4	27.0		61.6	7.7
LOS	C	F	D	B		E	C		E	A
Approach Delay		94.1		17.1		37.3			43.7	
Approach LOS		F		B		D			D	

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
 Natural Cycle: 90
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.97
 Intersection Signal Delay: 59.7
 Intersection Capacity Utilization 85.6%
 Analysis Period (min) 15
 Intersection LOS: E
 ICU Level of Service E

Splits and Phases: 5: E Quincy Ave. & South Site Access



Queues
5: E Quincy Ave. & South Site Access

East Bank
03/17/2021



Lane Group	EBL	EBT	WBL	WBT	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	75	2861	154	1928	127	246	174	87
v/c Ratio	0.41	0.97	0.72	0.61	0.63	0.56	0.72	0.21
Control Delay	21.7	52.7	43.9	14.9	57.4	27.0	61.6	7.7
Queue Delay	0.0	43.3	0.0	0.1	0.0	0.0	0.0	0.0
Total Delay	21.7	96.0	43.9	15.0	57.4	27.0	61.6	7.7
Queue Length 50th (ft)	39	760	65	322	90	88	126	0
Queue Length 95th (ft)	m14	m284	138	374	#164	174	#231	37
Internal Link Dist (ft)		401		287	253		130	
Turn Bay Length (ft)	150		100			100		
Base Capacity (vph)	190	2943	243	3161	203	439	241	423
Starvation Cap Reductn	0	1063	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	241	0	0	0	4
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.39	1.52	0.63	0.66	0.63	0.56	0.72	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: E Quincy Ave. & South Site Access

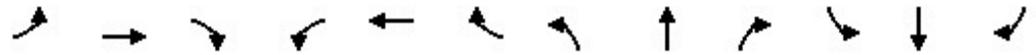
East Bank
03/17/2021



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↗	↑↑↑		↖	↑↑↑			↑	↗		↑	↖
Traffic Volume (veh/h)	69	2589	43	142	1654	120	104	13	226	147	13	80
Future Volume (veh/h)	69	2589	43	142	1654	120	104	13	226	147	13	80
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	75	2814	47	154	1798	130	113	14	246	160	14	87
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	209	2908	48	183	2872	207	57	4	409	58	0	409
Arrive On Green	0.04	0.56	0.56	0.07	0.59	0.59	0.26	0.26	0.26	0.26	0.26	0.26
Sat Flow, veh/h	1781	5173	86	1781	4861	351	0	15	1585	0	0	1585
Grp Volume(v), veh/h	75	1847	1014	154	1258	670	127	0	246	174	0	87
Grp Sat Flow(s),veh/h/ln	1781	1702	1855	1781	1702	1807	15	0	1585	0	0	1585
Q Serve(g_s), s	2.1	62.3	63.4	5.9	28.8	28.9	0.0	0.0	16.4	0.0	0.0	5.2
Cycle Q Clear(g_c), s	2.1	62.3	63.4	5.9	28.8	28.9	31.0	0.0	16.4	31.0	0.0	5.2
Prop In Lane	1.00		0.05	1.00		0.19	0.89		1.00	0.92		1.00
Lane Grp Cap(c), veh/h	209	1913	1043	183	2011	1068	61	0	409	58	0	409
V/C Ratio(X)	0.36	0.97	0.97	0.84	0.63	0.63	2.10	0.00	0.60	3.02	0.00	0.21
Avail Cap(c_a), veh/h	252	1915	1043	249	2057	1092	61	0	409	58	0	409
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)	0.09	0.09	0.09	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	14.0	25.1	25.4	35.9	15.9	16.0	58.0	0.0	39.1	60.0	0.0	34.9
Incr Delay (d2), s/veh	0.1	2.0	4.0	17.2	0.6	1.1	545.2	0.0	6.4	954.2	0.0	1.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	1.3	26.6	30.0	9.3	16.3	17.4	19.8	0.0	11.4	30.6	0.0	3.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	14.1	27.1	29.4	53.1	16.5	17.1	603.3	0.0	45.5	1014.2	0.0	36.1
LnGrp LOS	B	C	C	D	B	B	F	A	D	F	A	D
Approach Vol, veh/h		2936			2082			373				261
Approach Delay, s/veh		27.6			19.4			235.4				688.2
Approach LOS		C			B			F				F
Timer - Assigned Phs		2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s		35.5	12.5	72.0		35.5	9.1	75.4				
Change Period (Y+Rc), s		4.5	4.5	4.5		4.5	4.5	4.5				
Max Green Setting (Gmax), s		26.5	12.5	67.5		26.5	7.5	72.5				
Max Q Clear Time (g_c+I1), s		33.0	7.9	65.4		33.0	4.1	30.9				
Green Ext Time (p_c), s		0.0	0.2	2.1		0.0	0.0	22.0				
Intersection Summary												
HCM 6th Ctrl Delay				68.8								
HCM 6th LOS				E								

Lanes and Geometrics
6: E Quincy Ave. & S. Atchison Way

East Bank
03/17/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↶	↶↶↶		↶	↶↶↶		↶	↶		↶	↶	↶
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	150		100	125		0	100		0	150		200
Storage Lanes	1		0	1		0	1		0	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.91	0.91	1.00	0.91	0.91	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.998			0.990			0.850				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	5075	0	1770	5034	0	1770	1583	0	1770	1863	1583
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1770	5075	0	1770	5034	0	1770	1583	0	1770	1863	1583
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		367			446			235			1258	
Travel Time (s)		8.3			10.1			5.3			28.6	

Intersection Summary

Area Type: Other

Intersection												
Int Delay, s/veh	243.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖ ↑↑↑ ↗			↖ ↑↑↑ ↗			↖ ↗		↖ ↗		↖ ↗	
Traffic Vol, veh/h	37	2892	33	24	1842	128	14	0	18	44	0	59
Future Vol, veh/h	37	2892	33	24	1842	128	14	0	18	44	0	59
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	-	-	125	-	-	100	-	-	150	-	200
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	40	3143	36	26	2002	139	15	0	20	48	0	64

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	2141	0	0	3179	0	0	4094	5434	1590	3461	5383	1071
Stage 1	-	-	-	-	-	-	3241	3241	-	2124	2124	-
Stage 2	-	-	-	-	-	-	853	2193	-	1337	3259	-
Critical Hdwy	5.34	-	-	5.34	-	-	6.44	6.54	7.14	6.44	6.54	7.14
Critical Hdwy Stg 1	-	-	-	-	-	-	7.34	5.54	-	7.34	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.74	5.54	-	6.74	5.54	-
Follow-up Hdwy	3.12	-	-	3.12	-	-	3.82	4.02	3.92	3.82	4.02	3.92
Pot Cap-1 Maneuver	106	-	-	30	-	-	~3	0	83	~7	0	186
Stage 1	-	-	-	-	-	-	~5	23	-	~31	89	-
Stage 2	-	-	-	-	-	-	290	82	-	144	22	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	106	-	-	30	-	-	0	0	83	~1	0	186
Mov Cap-2 Maneuver	-	-	-	-	-	-	0	0	-	~1	0	-
Stage 1	-	-	-	-	-	-	~3	14	-	~19	12	-
Stage 2	-	-	-	-	-	-	25	11	-	69	14	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.7	3.8		\$ 11925.1
HCM LOS			-	F

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2	SBLn3
Capacity (veh/h)	-	83	106	-	-	30	-	-	-	1	186
HCM Lane V/C Ratio	-	0.236	0.379	-	-	0.87	-	-	-	47.826	0.345
HCM Control Delay (s)	-	61.3	58.4	-	-	\$ 314.3	-	-	-	\$ 27869.8	0 34.2
HCM Lane LOS	-	F	F	-	-	F	-	-	-	F	A D
HCM 95th %tile Q(veh)	-	0.8	1.5	-	-	2.9	-	-	-	8.1	1.4

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

Lanes and Geometrics
 7: S. Atchison Way & NE Site Access Driveway

East Bank
 03/17/2021



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%			0%	0%	
Storage Length (ft)	0	0	0			0
Storage Lanes	1	0	0			0
Taper Length (ft)	25		25			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.949				0.990	
Flt Protected	0.970			0.999		
Satd. Flow (prot)	1715	0	0	1861	1844	0
Flt Permitted	0.970			0.999		
Satd. Flow (perm)	1715	0	0	1861	1844	0
Link Speed (mph)	30			30	30	
Link Distance (ft)	445			1258	580	
Travel Time (s)	10.1			28.6	13.2	

Intersection Summary

Area Type: Other

Intersection						
Int Delay, s/veh	0.4					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	T			T		
Traffic Vol, veh/h	5	3	4	123	104	8
Future Vol, veh/h	5	3	4	123	104	8
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	5	3	4	134	113	9

Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	260	118	122	0	0
Stage 1	118	-	-	-	-
Stage 2	142	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-
Pot Cap-1 Maneuver	729	934	1465	-	-
Stage 1	907	-	-	-	-
Stage 2	885	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	727	934	1465	-	-
Mov Cap-2 Maneuver	727	-	-	-	-
Stage 1	904	-	-	-	-
Stage 2	885	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.6	0.2	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1465	-	793	-	-
HCM Lane V/C Ratio	0.003	-	0.011	-	-
HCM Control Delay (s)	7.5	0	9.6	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Lanes and Geometrics
 200: S. Parker Rd. (SH 83) & NW Site Access

East Bank
 03/17/2021



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%		0%			0%
Storage Length (ft)	0	150		0	150	
Storage Lanes	1	1		0	1	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	0.91	0.91	1.00	0.91
Ped Bike Factor						
Frt		0.850	0.998			
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1770	1583	5075	0	1770	5085
Flt Permitted	0.950				0.045	
Satd. Flow (perm)	1770	1583	5075	0	84	5085
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		56	3			
Link Speed (mph)	30		30			30
Link Distance (ft)	699		689			580
Travel Time (s)	15.9		15.7			13.2

Intersection Summary

Area Type: Other

Timings
200: S. Parker Rd. (SH 83) & NW Site Access

East Bank
03/17/2021

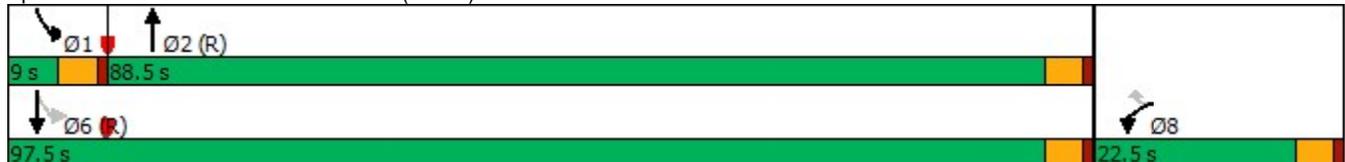


Lane Group	WBL	WBR	NBT	SBL	SBT
Lane Configurations	↙	↗	↑↑↑	↙	↑↑↑
Traffic Volume (vph)	11	123	4589	153	5850
Future Volume (vph)	11	123	4589	153	5850
Turn Type	Prot	Perm	NA	pm+pt	NA
Protected Phases	8		2	1	6
Permitted Phases		8		6	
Detector Phase	8	8	2	1	6
Switch Phase					
Minimum Initial (s)	5.0	5.0	5.0	4.5	5.0
Minimum Split (s)	22.5	22.5	22.5	9.0	22.5
Total Split (s)	22.5	22.5	88.5	9.0	97.5
Total Split (%)	18.8%	18.8%	73.8%	7.5%	81.3%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5
Lead/Lag			Lag	Lead	
Lead-Lag Optimize?			Yes	Yes	
Recall Mode	None	None	C-Max	None	C-Max
Act Effect Green (s)	11.5	11.5	84.0	99.5	99.5
Actuated g/C Ratio	0.10	0.10	0.70	0.83	0.83
v/c Ratio	0.07	0.66	1.42	0.74	1.51
Control Delay	47.3	45.5	212.3	49.0	247.8
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	47.3	45.5	212.3	49.0	247.8
LOS	D	D	F	D	F
Approach Delay	45.7		212.3		242.7
Approach LOS	D		F		F

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBTL, Start of Green
 Natural Cycle: 150
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.51
 Intersection Signal Delay: 227.2
 Intersection Capacity Utilization 124.7%
 Analysis Period (min) 15
 Intersection LOS: F
 ICU Level of Service H

Splits and Phases: 200: S. Parker Rd. (SH 83) & NW Site Access





Lane Group	WBL	WBR	NBT	SBL	SBT
Lane Group Flow (vph)	12	134	5047	166	6359
v/c Ratio	0.07	0.66	1.42	0.74	1.51
Control Delay	47.3	45.5	212.3	49.0	247.8
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	47.3	45.5	212.3	49.0	247.8
Queue Length 50th (ft)	9	59	~1945	74	~2508
Queue Length 95th (ft)	27	120	#1988	#253	#2591
Internal Link Dist (ft)	619		609		500
Turn Bay Length (ft)		150		150	
Base Capacity (vph)	265	285	3553	224	4217
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.05	0.47	1.42	0.74	1.51

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
 200: S. Parker Rd. (SH 83) & NW Site Access

East Bank
 03/17/2021



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↶	↶↷	↶↷↶↷		↷	↶↶↶
Traffic Volume (veh/h)	11	123	4589	54	153	5850
Future Volume (veh/h)	11	123	4589	54	153	5850
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	12	134	4988	59	166	6359
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	179	159	3899	46	127	4210
Arrive On Green	0.10	0.10	0.75	0.75	0.04	0.82
Sat Flow, veh/h	1781	1585	5370	61	1781	5274
Grp Volume(v), veh/h	12	134	3257	1790	166	6359
Grp Sat Flow(s),veh/h/ln	1781	1585	1702	1859	1781	1702
Q Serve(g_s), s	0.7	10.0	89.9	89.9	4.5	98.9
Cycle Q Clear(g_c), s	0.7	10.0	89.9	89.9	4.5	98.9
Prop In Lane	1.00	1.00		0.03	1.00	
Lane Grp Cap(c), veh/h	179	159	2551	1393	127	4210
V/C Ratio(X)	0.07	0.84	1.28	1.28	1.31	1.51
Avail Cap(c_a), veh/h	267	238	2551	1393	127	4210
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	48.9	53.0	15.0	15.0	45.5	10.5
Incr Delay (d2), s/veh	0.2	15.5	127.7	133.6	184.5	231.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.6	8.2	106.2	118.9	16.7	177.4
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	49.0	68.5	142.8	148.6	230.0	241.5
LnGrp LOS	D	E	F	F	F	F
Approach Vol, veh/h	146		5047			6525
Approach Delay, s/veh	66.9		144.8			241.3
Approach LOS	E		F			F
Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	9.0	94.4			103.4	16.6
Change Period (Y+Rc), s	4.5	4.5			4.5	4.5
Max Green Setting (Gmax), s	4.5	84.0			93.0	18.0
Max Q Clear Time (g_c+I1), s	6.5	91.9			100.9	12.0
Green Ext Time (p_c), s	0.0	0.0			0.0	0.2
Intersection Summary						
HCM 6th Ctrl Delay			197.6			
HCM 6th LOS			F			

APPENDIX “C”

**TRAFFIC SIGNAL WARRANT ANALYSIS
WORKSHEETS**

2021 Existing - S. Parker Rd./NW Site Access Traffic Signal Warrant Summary Worksheet

70%

The Worksheet(s) attached are provided as an attachment to the Engineering Investigation Study for:

Intersection: S. Parker Rd./NW Site Access

County: Arapahoe

City: Aurora

Major Street: S. Parker Rd.

Minor Street: NW Site Access

Critical Approach Speed: 45 mph

Critical Approach Speed: 25 mph

Lanes: 2 or more lanes

Lanes: 1 lane

% Right Turns Included

From North (SB) 100%

From East (WB) 50%

From South (NB) 100%

From West (EB) 50%

In built-up area of isolated community of < 10,000 population? No

Total number of approaches at intersection? 3

If it is a "T" intersection, inflate minor threshold to 150%? No

Manually set volume level? No

Analysis based on **EXISTING** volume data.

Date	Day of the Week	Time (HH:MM)			
		From	AM / PM	To	AM / PM
2021					

Warrant Evaluation Summary	Warrant Met:
Warrant 1: Eight - Hour Vehicular Volume	No
Condition A: Minimum Vehicular Volume	No
Condition B: Interruption of Continuous Traffic	No
Condition C: Combination: 80% of A and B	No
Warrant 2: Four-Hour Volume	No
Warrant 3: Peak Hour Volume	No
Warrant 4: Pedestrian Volume	N/A
Criterion A: Four-Hour	N/A
Criterion B: Peak-Hour	N/A
Warrant 5: School Crossing	N/A
Warrant 6: Coordinated Signal System	N/A
Warrant 7: Crash Experience	N/A
Warrant 8: Roadway Network	N/A
Warrant 9: Intersection Near a Grade Crossing	N/A

Warrant Analysis Conducted By:

Name: BSL

Agency: HKS

Date: 3/16/2021

Warrant 1: Eight - Hour Vehicular Volume

70%

Warrant Evaluated? Yes

Condition A :		
Min. Veh. Volume		
Volume Level	70%	56%
Major Rd. Req	420	336
Minor Rd. Req	105	84
Number of Hours	0	0

Satisfied? No

Condition B:		
Interruption of Continuous Traffic		
Volume Level	70%	56%
Major Rd. Req	630	504
Minor Rd. Req	53	42
Number of Hours	2	8

Satisfied? No

Condition C:		
Combination of A & B at 56%		

Satisfied? No

Warrant Satisfied? No

Manually Set To:

6:00 AM		Enter Start Time (Military Time) (HH:MM)			Total
Time Period	From	To	Major Road: Both App. (VPH)	Minor Road: High App. (VPH)	
1	6:00	7:00	4214	39	4253
2	7:00	8:00	6180	59	6239
3	8:00	9:00	5383	52	5435
4	9:00	10:00	4692	52	4744
5	10:00	11:00	4549	38	4587
6	11:00	12:00	4623	46	4669
7	12:00	13:00	5020	55	5075
8	13:00	14:00	5125	52	5177
9	14:00	15:00	5549	46	5595
10	15:00	16:00	6218	44	6262
11	16:00	17:00	6667	39	6706
12	17:00	18:00	6655	38	6693
13	18:00	19:00	5643	31	5674
14	19:00	20:00	3717	22	3739
15	20:00	21:00	2781	22	2803
16	21:00	22:00	1969	17	1986

Warrant 2: Four-Hour Volume

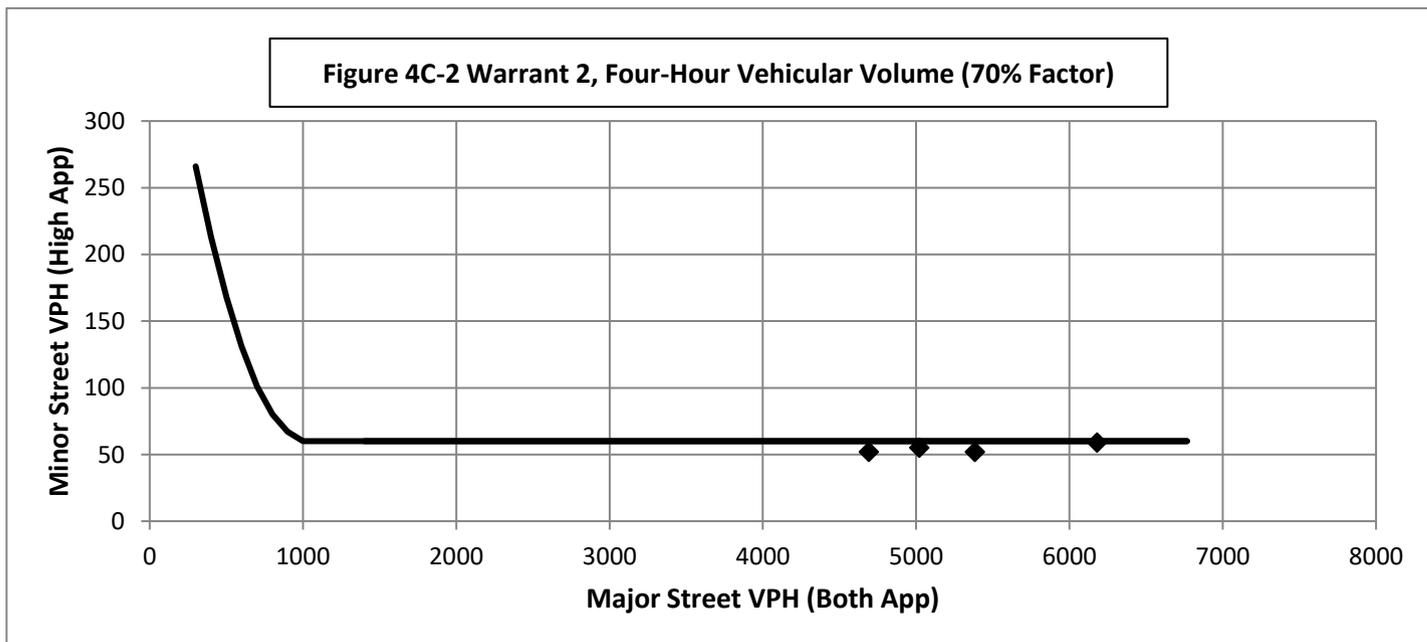
70%

Warrant Evaluated? Yes

Warrant Satisfied? No

Manually Set To:

Hour Start	7:00	12:00	8:00	9:00
Major Road Vol.	6180	5020	5383	4692
Minor Road Vol.	59	55	52	52



Warrant 3: Peak Hour Volume

70%

Warrant Evaluated? Yes

Warrant Satisfied? No

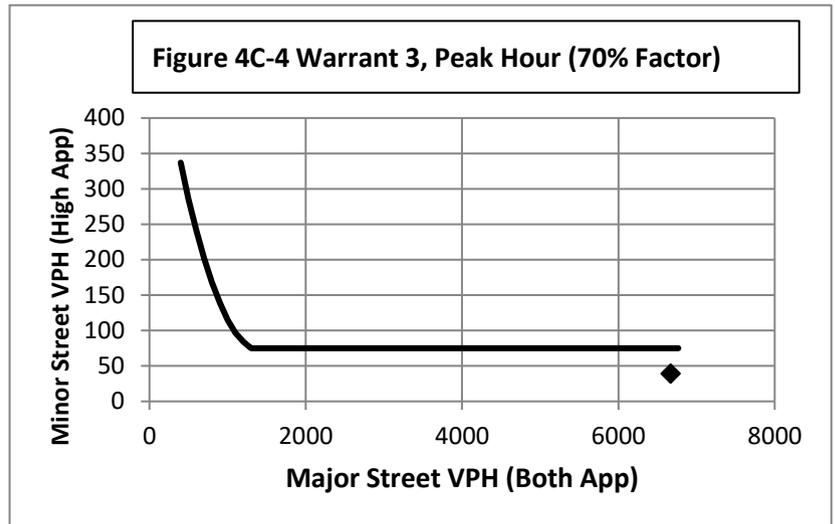
Manually Set To:

Condition justifying use of warrant:

Criteria		Met?
Delay on Minor Approach	4	No
Volume on Minor Approach	100	No
Total Entering Volume (veh/h)	650	

Manually Set Peak Hour? No

Peak Hour	Major Road Vol. (Both App.)	Minor Road Vol. (High App.)
16:00	6667	39



2024 Background - S. Parker Rd./NW Site Access Traffic Signal Warrant Summary Worksheet

70%

The Worksheet(s) attached are provided as an attachment to the Engineering Investigation Study for:

Intersection: S. Parker Rd./NW Site Access

County: Arapahoe

City: Aurora

Major Street: S. Parker Rd.

Minor Street: NW Site Access

Critical Approach Speed: 45 mph

Critical Approach Speed: 25 mph

Lanes: 2 or more lanes

Lanes: 1 lane

% Right Turns Included

From North (SB) 100%

From East (WB) 50%

From South (NB) 100%

From West (EB) 50%

In built-up area of isolated community of < 10,000 population? No

Total number of approaches at intersection? 3

If it is a "T" intersection, inflate minor threshold to 150%? No

Manually set volume level? No

Analysis based on **PROJECTED** volume data.

Forecast Year	Within 5 Years of Construction?	Time (HH:MM)			
		From	AM / PM	To	AM / PM
2024	Yes				

Warrant Evaluation Summary	Warrant Met:
Warrant 1: Eight - Hour Vehicular Volume	No
Condition A: Minimum Vehicular Volume	No
Condition B: Interruption of Continuous Traffic	No
Condition C: Combination: 80% of A and B	No
Warrant 2: Four-Hour Volume	No
Warrant 3: Peak Hour Volume	No
Warrant 4: Pedestrian Volume	N/A
Criterion A: Four-Hour	N/A
Criterion B: Peak-Hour	N/A
Warrant 5: School Crossing	N/A
Warrant 6: Coordinated Signal System	N/A
Warrant 7: Crash Experience	N/A
Warrant 8: Roadway Network	N/A
Warrant 9: Intersection Near a Grade Crossing	N/A

Warrant Analysis Conducted By:

Name: BSL

Agency: HKS

Date: 3/16/2021

Warrant 1: Eight - Hour Vehicular Volume

70%

Warrant Evaluated? Yes

Condition A : Min. Veh. Volume		
Volume Level	70%	56%
Major Rd. Req	420	336
Minor Rd. Req	105	84
Number of Hours	0	0

Satisfied? No

Condition B: Interruption of Continuous Traffic		
Volume Level	70%	56%
Major Rd. Req	630	504
Minor Rd. Req	53	42
Number of Hours	5	10

Satisfied? No

Condition C: Combination of A & B at 56%		
---	--	--

Satisfied? No

Warrant Satisfied? No

Manually Set To:

6:00 AM		Enter Start Time (Military Time) (HH:MM)			Total
Time Period	From	To	Major Road: Both App. (VPH)	Minor Road: High App. (VPH)	
1	6:00	7:00	4467	42	4509
2	7:00	8:00	6551	62	6613
3	8:00	9:00	5706	55	5761
4	9:00	10:00	4973	56	5029
5	10:00	11:00	4822	40	4862
6	11:00	12:00	4901	49	4950
7	12:00	13:00	5321	58	5379
8	13:00	14:00	5433	55	5488
9	14:00	15:00	5882	49	5931
10	15:00	16:00	6591	47	6638
11	16:00	17:00	7067	42	7109
12	17:00	18:00	7054	41	7095
13	18:00	19:00	5981	33	6014
14	19:00	20:00	3940	30	3970
15	20:00	21:00	2948	23	2971
16	21:00	22:00	2088	18	2106

Warrant 2: Four-Hour Volume

70%

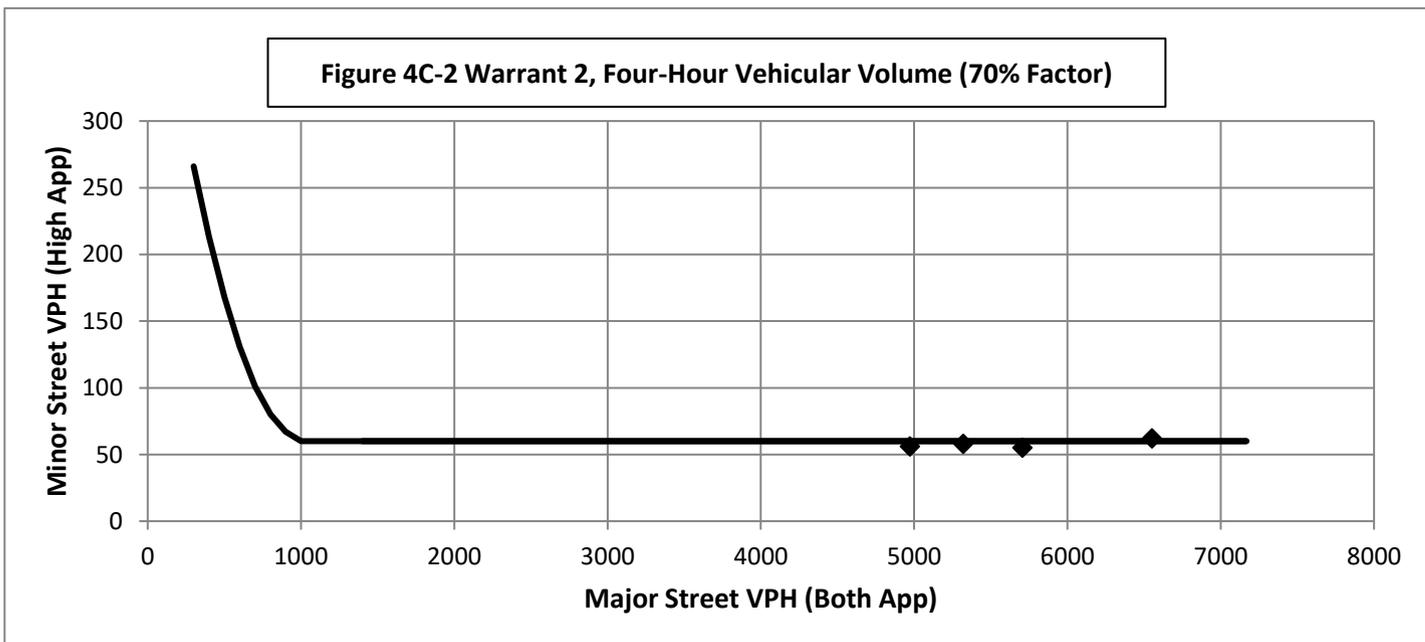
Warrant Evaluated? Yes

Warrant Satisfied? No

Manually Set To:

Hour Start	7:00	12:00	9:00	8:00
Major Road Vol.	6551	5321	4973	5706
Minor Road Vol.	62	58	56	55

Figure 4C-2 Warrant 2, Four-Hour Vehicular Volume (70% Factor)



Warrant 3: Peak Hour Volume

70%

Warrant Evaluated? Yes

Warrant Satisfied? No

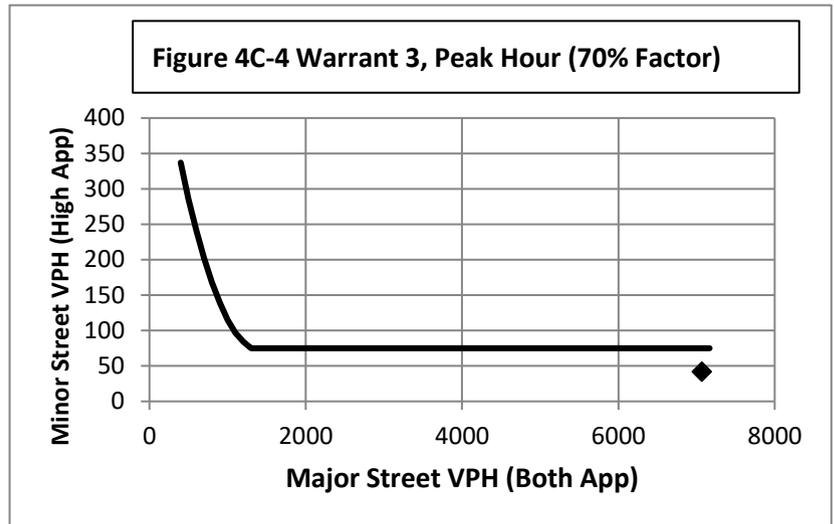
Manually Set To:

Condition justifying use of warrant:

Criteria		Met?
Delay on Minor Approach	4	No
Volume on Minor Approach	100	No
Total Entering Volume (veh/h)	650	

Manually Set Peak Hour? No

Peak Hour	Major Road Vol. (Both App.)	Minor Road Vol. (High App.)
16:00	7067	42



2024 Total Traffic - S. Parker Rd./NW Site Access Traffic Signal Warrant Summary Worksheet

70%

The Worksheet(s) attached are provided as an attachment to the Engineering Investigation Study for:

Intersection: S. Parker Rd./NW Site Access

County: Arapahoe

City: Aurora

Major Street: S. Parker Rd.

Minor Street: NW Site Access

Critical Approach Speed: 45 mph

Critical Approach Speed: 25 mph

Lanes: 2 or more lanes

Lanes: 1 lane

% Right Turns Included

From North (SB) 100%

From East (WB) 50%

From South (NB) 100%

From West (EB) 50%

In built-up area of isolated community of < 10,000 population? No

Total number of approaches at intersection? 3

If it is a "T" intersection, inflate minor threshold to 150%? No

Manually set volume level? No

Analysis based on **PROJECTED** volume data.

Forecast Year	Within 5 Years of Construction?	Time (HH:MM)			
		From	AM / PM	To	AM / PM
2024	Yes				

Warrant Evaluation Summary	Warrant Met:
Warrant 1: Eight - Hour Vehicular Volume	Yes
Condition A: Minimum Vehicular Volume	No
Condition B: Interruption of Continuous Traffic	Yes
Condition C: Combination: 80% of A and B	No
Warrant 2: Four-Hour Volume	Yes
Warrant 3: Peak Hour Volume	No
Warrant 4: Pedestrian Volume	N/A
Criterion A: Four-Hour	N/A
Criterion B: Peak-Hour	N/A
Warrant 5: School Crossing	N/A
Warrant 6: Coordinated Signal System	N/A
Warrant 7: Crash Experience	N/A
Warrant 8: Roadway Network	N/A
Warrant 9: Intersection Near a Grade Crossing	N/A

Warrant Analysis Conducted By:

Name: BSL

Agency: HKS

Date: 3/16/2021

Warrant 1: Eight - Hour Vehicular Volume

70%

Warrant Evaluated? Yes

Condition A : Min. Veh. Volume		
Volume Level	70%	56%
Major Rd. Req	420	336
Minor Rd. Req	105	84
Number of Hours	0	0

Satisfied? No

Condition B: Interruption of Continuous Traffic		
Volume Level	70%	56%
Major Rd. Req	630	504
Minor Rd. Req	53	42
Number of Hours	8	12

Satisfied? Yes

Condition C: Combination of A & B at 56%		
---	--	--

Satisfied? No

Warrant Satisfied? Yes

Manually Set To:

6:00 AM		Enter Start Time (Military Time) (HH:MM)			Total
Time Period	From	To	Major Road: Both App. (VPH)	Minor Road: High App. (VPH)	
1	6:00	7:00	4515	51	4566
2	7:00	8:00	6622	76	6698
3	8:00	9:00	5769	67	5836
4	9:00	10:00	5037	68	5105
5	10:00	11:00	4868	49	4917
6	11:00	12:00	4957	60	5017
7	12:00	13:00	5388	71	5459
8	13:00	14:00	5496	68	5564
9	14:00	15:00	5938	60	5998
10	15:00	16:00	6645	57	6702
11	16:00	17:00	7115	51	7166
12	17:00	18:00	7101	50	7151
13	18:00	19:00	6020	41	6061
14	19:00	20:00	3975	37	4012
15	20:00	21:00	2974	28	3002
16	21:00	22:00	2109	23	2132

Warrant 2: Four-Hour Volume

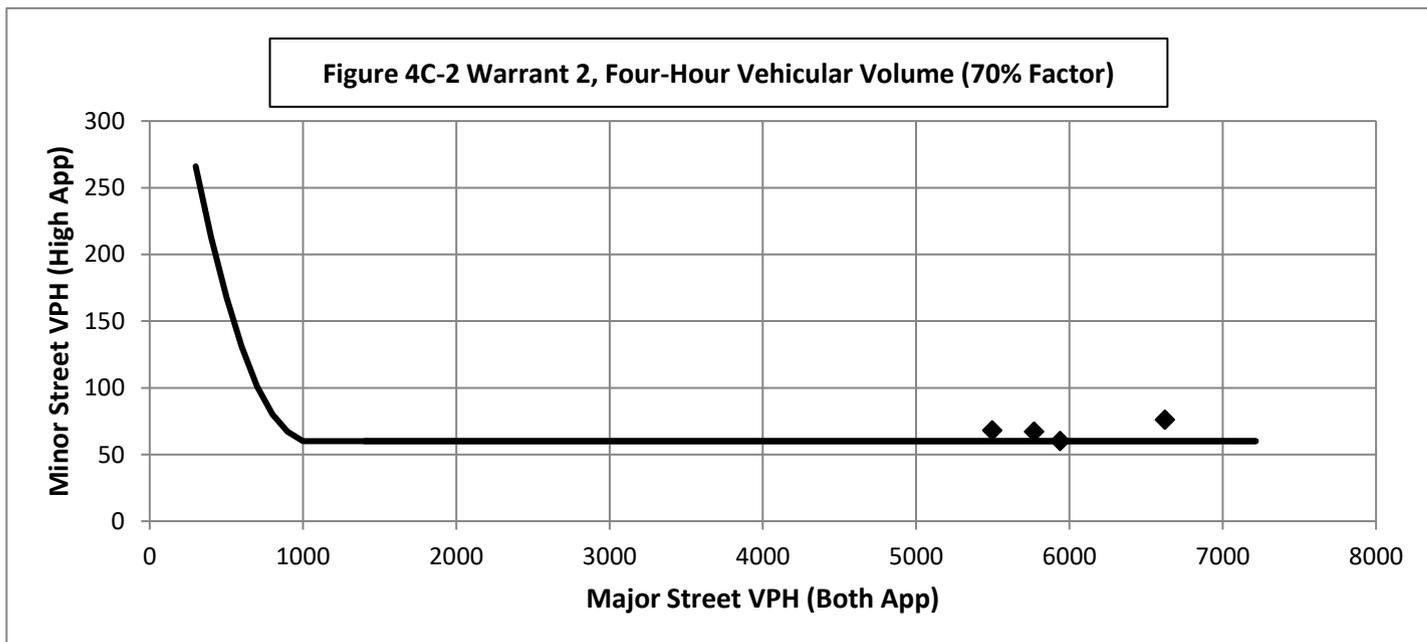
70%

Hour Start	7:00	14:00	8:00	13:00
Major Road Vol.	6622	5938	5769	5496
Minor Road Vol.	76	60	67	68

Warrant Evaluated? Yes

Warrant Satisfied? Yes

Manually Set To:



Warrant 3: Peak Hour Volume

70%

Warrant Evaluated? Yes

Warrant Satisfied? No

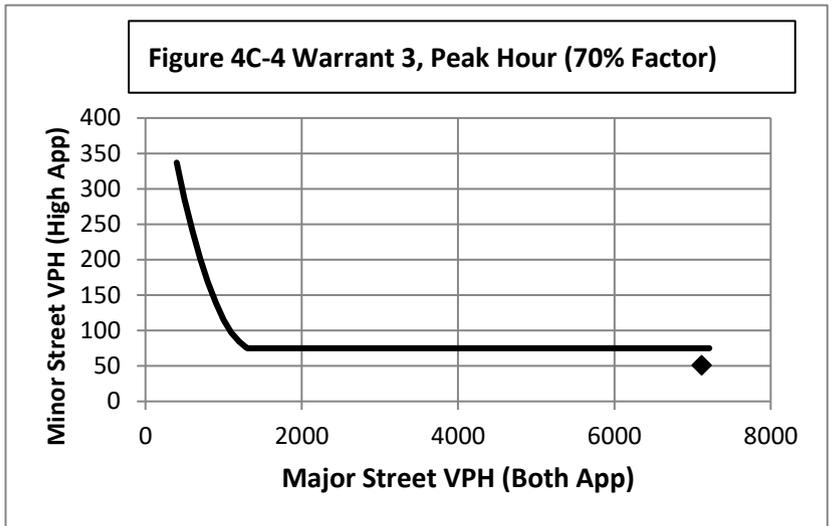
Manually Set To:

Condition justifying use of warrant:

Criteria		Met?
Delay on Minor Approach	4	No
Volume on Minor Approach	100	No
Total Entering Volume (veh/h)	650	

Manually Set Peak Hour? No

Peak Hour	Major Road Vol. (Both App.)	Minor Road Vol. (High App.)
16:00	7115	51



2040 Background - S. Parker Rd./NW Site Access Traffic Signal Warrant Summary Worksheet

70%

The Worksheet(s) attached are provided as an attachment to the Engineering Investigation Study for:

Intersection: S. Parker Rd./NW Site Access
County: Arapahoe
City: Aurora

Major Street: S. Parker Rd.
Critical Approach Speed: 45 mph
Lanes: 2 or more lanes

Minor Street: NW Site Access
Critical Approach Speed: 25 mph
Lanes: 1 lane

% Right Turns Included	In built-up area of isolated community of < 10,000 population? No
From North (SB) 100%	Total number of approaches at intersection? 3
From East (WB) 50%	If it is a "T" intersection, inflate minor threshold to 150%? No
From South (NB) 100%	Manually set volume level? No
From West (EB) 50%	

Analysis based on PROJECTED volume data.

Forecast Year	Within 5 Years of Construction?	Time (HH:MM)			
		From	AM / PM	To	AM / PM
2040	No				

Warrant Evaluation Summary	Warrant Met:
Warrant 1: Eight - Hour Vehicular Volume	Yes
Condition A: Minimum Vehicular Volume	No
Condition B: Interruption of Continuous Traffic	Yes
Condition C: Combination: 80% of A and B	No
Warrant 2: Four-Hour Volume	Yes
Warrant 3: Peak Hour Volume	No
Warrant 4: Pedestrian Volume	N/A
Criterion A: Four-Hour	N/A
Criterion B: Peak-Hour	N/A
Warrant 5: School Crossing	N/A
Warrant 6: Coordinated Signal System	N/A
Warrant 7: Crash Experience	N/A
Warrant 8: Roadway Network	N/A
Warrant 9: Intersection Near a Grade Crossing	N/A

Warrant Analysis Conducted By:

Name: BSL
Agency: HKS
Date: 3/16/2021

Warrant 1: Eight - Hour Vehicular Volume

70%

Warrant Evaluated? Yes

Condition A : Min. Veh. Volume		
Volume Level	70%	56%
Major Rd. Req	420	336
Minor Rd. Req	105	84
Number of Hours	0	1

Satisfied? No

Condition B: Interruption of Continuous Traffic		
Volume Level	70%	56%
Major Rd. Req	630	504
Minor Rd. Req	53	42
Number of Hours	12	14

Satisfied? Yes

Condition C: Combination of A & B at 56%		
---	--	--

Satisfied? No

Warrant Satisfied? Yes

Manually Set To:

Time Period	6:00 AM		Enter Start Time (Military Time) (HH:MM)		Total
	From	To	Major Road: Both App. (VPH)	Minor Road: High App. (VPH)	
1	6:00	7:00	6153	58	6211
2	7:00	8:00	9023	85	9108
3	8:00	9:00	7859	76	7935
4	9:00	10:00	6850	77	6927
5	10:00	11:00	6641	56	6697
6	11:00	12:00	6750	67	6817
7	12:00	13:00	7329	80	7409
8	13:00	14:00	7483	76	7559
9	14:00	15:00	8102	67	8169
10	15:00	16:00	9079	65	9144
11	16:00	17:00	9734	58	9792
12	17:00	18:00	9716	56	9772
13	18:00	19:00	8238	46	8284
14	19:00	20:00	5427	42	5469
15	20:00	21:00	4060	31	4091
16	21:00	22:00	2875	25	2900

Warrant 2: Four-Hour Volume

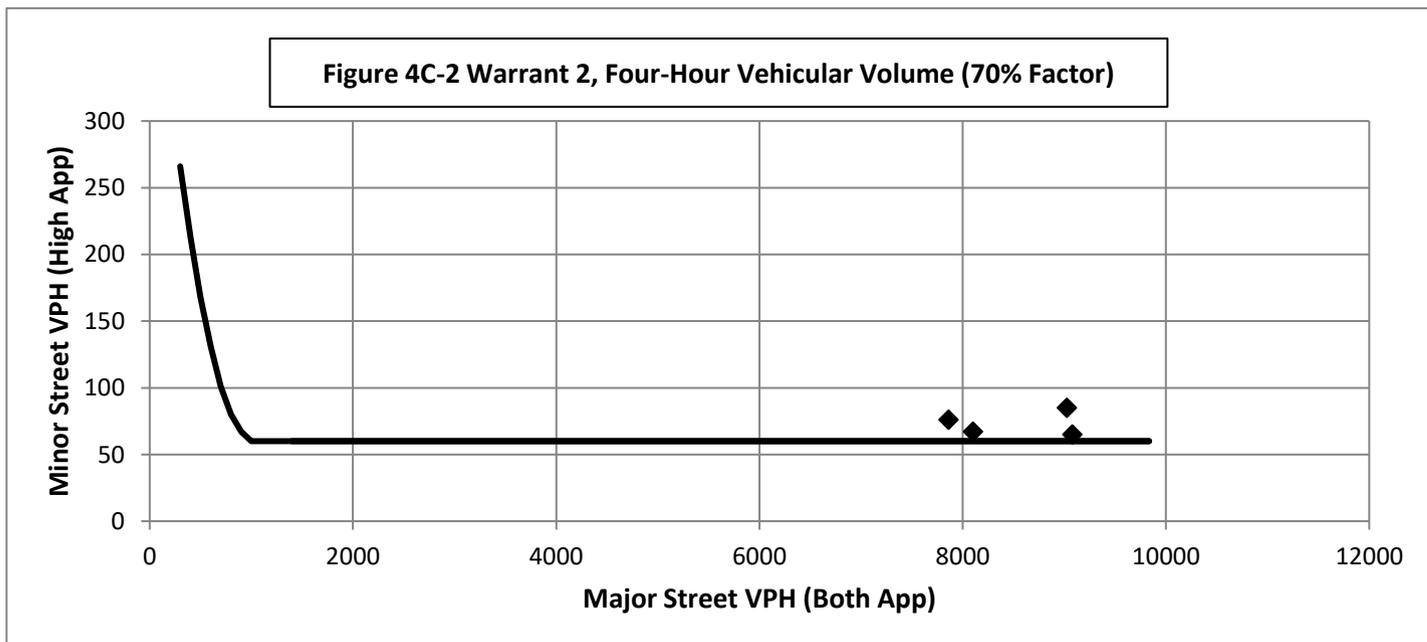
70%

Hour Start	15:00	7:00	14:00	8:00
Major Road Vol.	9079	9023	8102	7859
Minor Road Vol.	65	85	67	76

Warrant Evaluated? Yes

Warrant Satisfied? Yes

Manually Set To:



Warrant 3: Peak Hour Volume

70%

Warrant Evaluated? Yes

Warrant Satisfied? No

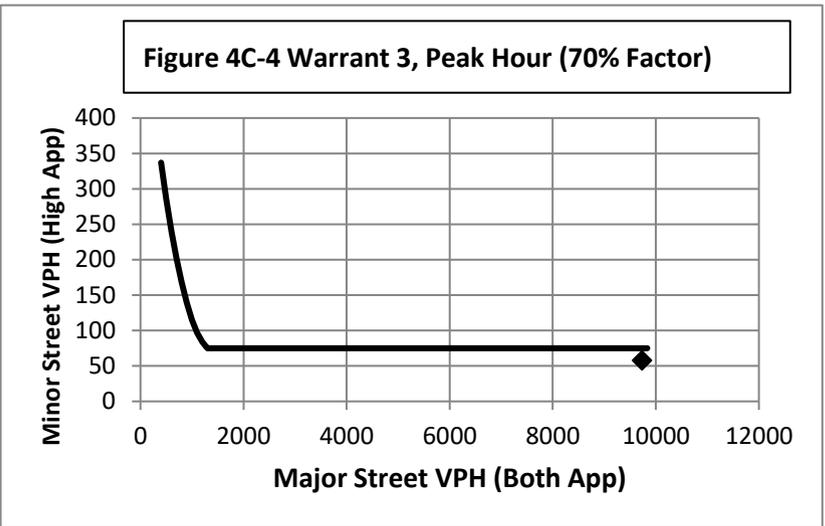
Manually Set To:

Condition justifying use of warrant:

Criteria		Met?
Delay on Minor Approach	4	No
Volume on Minor Approach	100	No
Total Entering Volume (veh/h)	650	

Manually Set Peak Hour? No

Peak Hour	Major Road Vol. (Both App.)	Minor Road Vol. (High App.)
16:00	9734	58



2040 Total Traffic - S. Parker Rd./NW Site Access Traffic Signal Warrant Summary Worksheet

70%

The Worksheet(s) attached are provided as an attachment to the Engineering Investigation Study for:

Intersection: S. Parker Rd./NW Site Access
County: Arapahoe
City: Aurora

Major Street: S. Parker Rd.
Critical Approach Speed: 45 mph
Lanes: 2 or more lanes

Minor Street: NW Site Access
Critical Approach Speed: 25 mph
Lanes: 1 lane

% Right Turns Included	In built-up area of isolated community of < 10,000 population? No
From North (SB) 100%	Total number of approaches at intersection? 3
From East (WB) 50%	If it is a "T" intersection, inflate minor threshold to 150%? No
From South (NB) 100%	Manually set volume level? No
From West (EB) 50%	

Analysis based on PROJECTED volume data.

Forecast Year	Within 5 Years of Construction?	Time (HH:MM)			
		From	AM / PM	To	AM / PM
2040	No				

Warrant Evaluation Summary	Warrant Met:
Warrant 1: Eight - Hour Vehicular Volume	Yes
Condition A: Minimum Vehicular Volume	No
Condition B: Interruption of Continuous Traffic	Yes
Condition C: Combination: 80% of A and B	No
Warrant 2: Four-Hour Volume	Yes
Warrant 3: Peak Hour Volume	No
Warrant 4: Pedestrian Volume	N/A
Criterion A: Four-Hour	N/A
Criterion B: Peak-Hour	N/A
Warrant 5: School Crossing	N/A
Warrant 6: Coordinated Signal System	N/A
Warrant 7: Crash Experience	N/A
Warrant 8: Roadway Network	N/A
Warrant 9: Intersection Near a Grade Crossing	N/A

Warrant Analysis Conducted By:

Name: BSL
Agency: HKS
Date: 3/16/2021

Warrant 1: Eight - Hour Vehicular Volume

70%

Warrant Evaluated? Yes

Condition A : Min. Veh. Volume		
Volume Level	70%	56%
Major Rd. Req	420	336
Minor Rd. Req	105	84
Number of Hours	0	5

Satisfied? No

Condition B: Interruption of Continuous Traffic		
Volume Level	70%	56%
Major Rd. Req	630	504
Minor Rd. Req	53	42
Number of Hours	13	14

Satisfied? Yes

Condition C: Combination of A & B at 56%		
---	--	--

Satisfied? No

Warrant Satisfied? Yes

Manually Set To:

Time Period	6:00 AM		Enter Start Time (Military Time) (HH:MM)		Total
	From	To	Major Road: Both App. (VPH)	Minor Road: High App. (VPH)	
1	6:00	7:00	6201	67	6268
2	7:00	8:00	9094	99	9193
3	8:00	9:00	7922	88	8010
4	9:00	10:00	6913	89	7002
5	10:00	11:00	6688	65	6753
6	11:00	12:00	6806	78	6884
7	12:00	13:00	7395	93	7488
8	13:00	14:00	7547	89	7636
9	14:00	15:00	8158	78	8236
10	15:00	16:00	9133	75	9208
11	16:00	17:00	9782	67	9849
12	17:00	18:00	9762	65	9827
13	18:00	19:00	8277	53	8330
14	19:00	20:00	5462	49	5511
15	20:00	21:00	4086	37	4123
16	21:00	22:00	2896	29	2925

Warrant 2: Four-Hour Volume

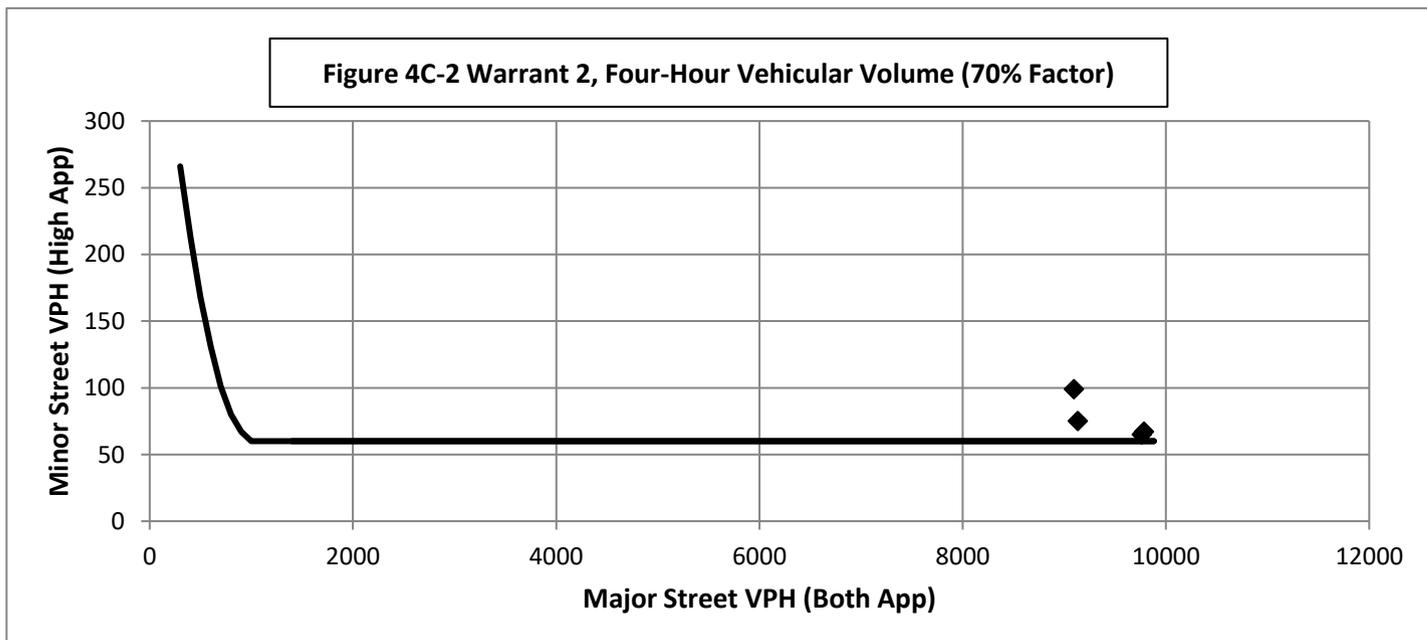
70%

Warrant Evaluated? Yes

Warrant Satisfied? Yes

Manually Set To:

Hour Start	16:00	17:00	15:00	7:00
Major Road Vol.	9782	9762	9133	9094
Minor Road Vol.	67	65	75	99



Warrant 3: Peak Hour Volume

70%

Warrant Evaluated? Yes

Warrant Satisfied? No

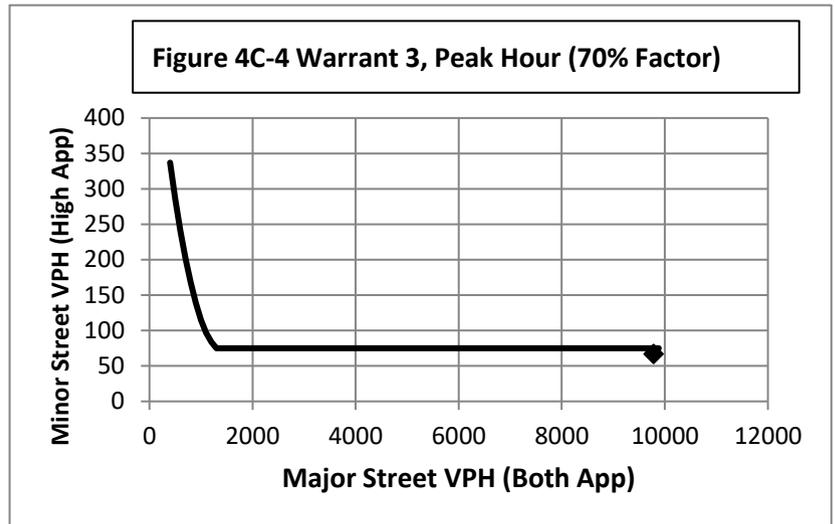
Manually Set To:

Condition justifying use of warrant:

Criteria		Met?
Delay on Minor Approach	4	No
Volume on Minor Approach	100	No
Total Entering Volume (veh/h)	650	

Manually Set Peak Hour? No

Peak Hour	Major Road Vol. (Both App.)	Minor Road Vol. (High App.)
16:00	9782	67



2021 Existing - E. Quincy Ave./S. Atchison Way Traffic Signal Warrant Summary Worksheet

100%

The Worksheet(s) attached are provided as an attachment to the Engineering Investigation Study for:

Intersection: E. Quincy Ave/S. Atchison Way
County: Arapahoe
City: Aurora

Major Street: E. Quincy Ave.
Critical Approach Speed: 40 mph
Lanes: 2 or more lanes

Minor Street: S. Atchison Way
Critical Approach Speed: 30 mph
Lanes: 1 lane

% Right Turns Included	In built-up area of isolated community of < 10,000 population? No
From North (SB) 50%	Total number of approaches at intersection? 4 or more
From East (WB) 100%	If it is a "T" intersection, inflate minor threshold to 150%? No
From South (NB) 50%	Manually set volume level? No
From West (EB) 100%	

Analysis based on EXISTING volume data.

Date	Day of the Week	Time (HH:MM)			
		From	AM / PM	To	AM / PM
2021					

Warrant Evaluation Summary	Warrant Met:
Warrant 1: Eight - Hour Vehicular Volume	No
Condition A: Minimum Vehicular Volume	No
Condition B: Interruption of Continuous Traffic	No
Condition C: Combination: 80% of A and B	No
Warrant 2: Four-Hour Volume	No
Warrant 3: Peak Hour Volume	No
Warrant 4: Pedestrian Volume	N/A
Criterion A: Four-Hour	N/A
Criterion B: Peak-Hour	N/A
Warrant 5: School Crossing	N/A
Warrant 6: Coordinated Signal System	N/A
Warrant 7: Crash Experience	N/A
Warrant 8: Roadway Network	N/A
Warrant 9: Intersection Near a Grade Crossing	N/A

Warrant Analysis Conducted By:

Name: BSL
Agency: HKS
Date: 3/16/2021

Warrant 1: Eight - Hour Vehicular Volume

100%

Warrant Evaluated? Yes

Condition A :		
Min. Veh. Volume		
Volume Level	100%	80%
Major Rd. Req	600	480
Minor Rd. Req	150	120
Number of Hours	0	0

Satisfied? No

Condition B:		
Interruption of Continuous Traffic		
Volume Level	100%	80%
Major Rd. Req	900	720
Minor Rd. Req	75	60
Number of Hours	0	0

Satisfied? No

Condition C:		
Combination of A & B at 80%		

Satisfied? No

Warrant Satisfied? No

Manually Set To:

6:00 AM		Enter Start Time (Military Time) (HH:MM)			Total
Time Period	From	To	Major Road: Both App. (VPH)	Minor Road: High App. (VPH)	
1	6:00	7:00	1824	28	1852
2	7:00	8:00	2582	26	2608
3	8:00	9:00	2508	23	2531
4	9:00	10:00	2220	33	2253
5	10:00	11:00	2008	34	2042
6	11:00	12:00	2200	35	2235
7	12:00	13:00	2418	36	2454
8	13:00	14:00	2367	36	2403
9	14:00	15:00	2653	43	2696
10	15:00	16:00	2941	37	2978
11	16:00	17:00	3104	39	3143
12	17:00	18:00	3110	42	3152
13	18:00	19:00	2687	34	2721
14	19:00	20:00	1874	20	1894
15	20:00	21:00	1323	20	1343
16	21:00	22:00	994	11	1005

Warrant 2: Four-Hour Volume

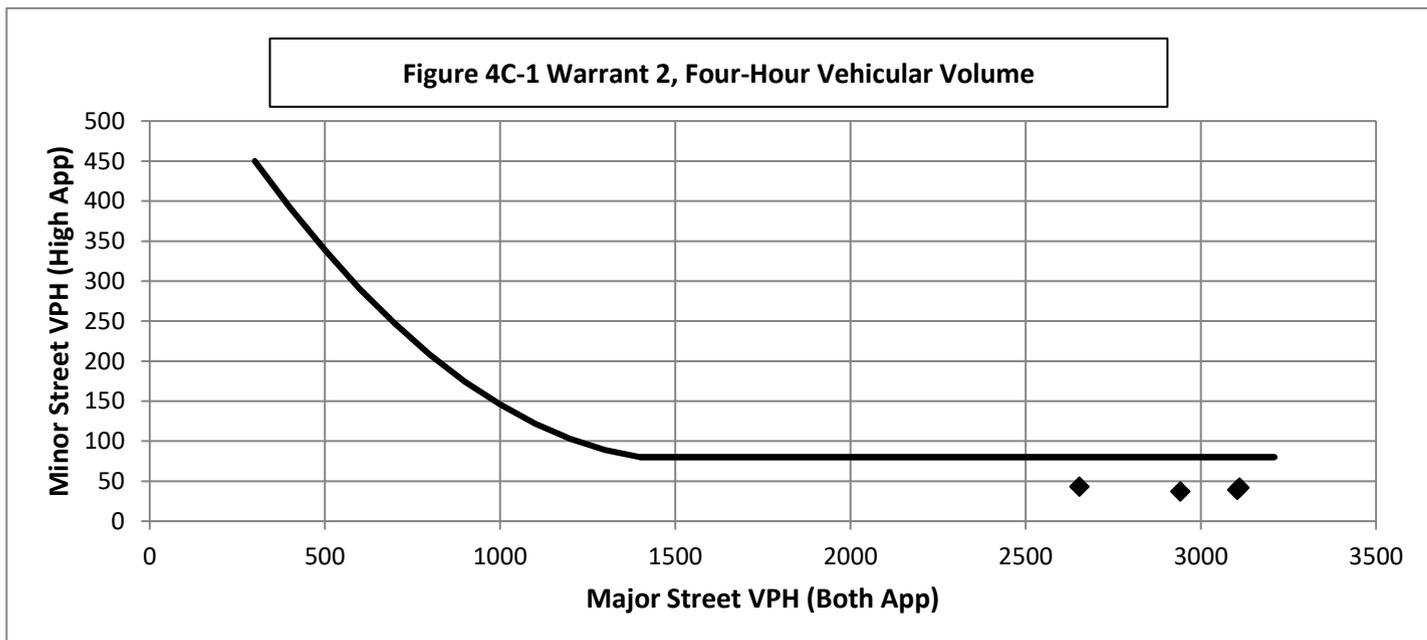
100%

Warrant Evaluated? Yes

Warrant Satisfied? No

Manually Set To:

Hour Start	14:00	17:00	16:00	15:00
Major Road Vol.	2653	3110	3104	2941
Minor Road Vol.	43	42	39	37



Warrant 3: Peak Hour Volume

100%

Warrant Evaluated? Yes

Warrant Satisfied? No

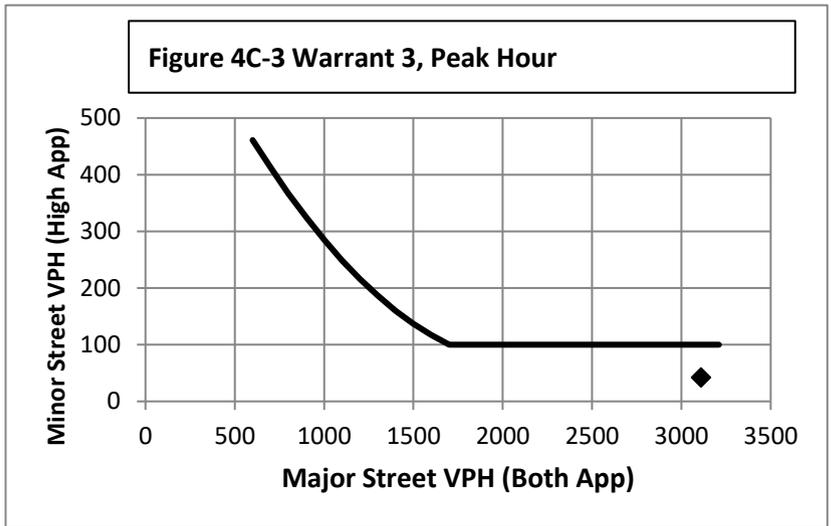
Manually Set To:

Condition justifying use of warrant:

Criteria		Met?
Delay on Minor Approach	4	No
Volume on Minor Approach	100	
Total Entering Volume (veh/h)	800	

Manually Set Peak Hour?

Peak Hour	Major Road Vol. (Both App.)	Minor Road Vol. (High App.)
17:00	3110	42



2024 Background - E. Quincy Ave./S. Atchison Way Traffic Signal Warrant Summary Worksheet

100%

The Worksheet(s) attached are provided as an attachment to the Engineering Investigation Study for:

Intersection: E. Quincy Ave/S. Atchison Way
County: Arapahoe
City: Aurora

Major Street: E. Quincy Ave.
Critical Approach Speed: 40 mph
Lanes: 2 or more lanes

Minor Street: S. Atchison Way
Critical Approach Speed: 30 mph
Lanes: 1 lane

% Right Turns Included	In built-up area of isolated community of < 10,000 population? No
From North (SB) 50%	Total number of approaches at intersection? 4 or more
From East (WB) 100%	If it is a "T" intersection, inflate minor threshold to 150%? No
From South (NB) 50%	Manually set volume level? No
From West (EB) 100%	

Analysis based on PROJECTED volume data.

Forecast Year	Within 5 Years of Construction?	Time (HH:MM)			
		From	AM / PM	To	AM / PM
2024	Yes				

Warrant Evaluation Summary	Warrant Met:
Warrant 1: Eight - Hour Vehicular Volume	No
Condition A: Minimum Vehicular Volume	No
Condition B: Interruption of Continuous Traffic	No
Condition C: Combination: 80% of A and B	No
Warrant 2: Four-Hour Volume	No
Warrant 3: Peak Hour Volume	No
Warrant 4: Pedestrian Volume	N/A
Criterion A: Four-Hour	N/A
Criterion B: Peak-Hour	N/A
Warrant 5: School Crossing	N/A
Warrant 6: Coordinated Signal System	N/A
Warrant 7: Crash Experience	N/A
Warrant 8: Roadway Network	N/A
Warrant 9: Intersection Near a Grade Crossing	N/A

Warrant Analysis Conducted By:

Name: BSL
Agency: HKS
Date: 3/16/2021

Warrant 1: Eight - Hour Vehicular Volume

100%

Warrant Evaluated? Yes

Condition A : Min. Veh. Volume		
Volume Level	100%	80%
Major Rd. Req	600	480
Minor Rd. Req	150	120
Number of Hours	0	0

Satisfied? No

Condition B: Interruption of Continuous Traffic		
Volume Level	100%	80%
Major Rd. Req	900	720
Minor Rd. Req	75	60
Number of Hours	0	0

Satisfied? No

Condition C: Combination of A & B at 80%		
---	--	--

Satisfied? No

Warrant Satisfied? No

Manually Set To:

6:00 AM		Enter Start Time (Military Time) (HH:MM)			Total
Time Period	From	To	Major Road: Both App. (VPH)	Minor Road: High App. (VPH)	
1	6:00	7:00	1934	29	1963
2	7:00	8:00	2737	28	2765
3	8:00	9:00	2658	24	2682
4	9:00	10:00	2353	35	2388
5	10:00	11:00	2129	36	2165
6	11:00	12:00	2332	37	2369
7	12:00	13:00	2563	38	2601
8	13:00	14:00	2509	39	2548
9	14:00	15:00	2812	45	2857
10	15:00	16:00	3117	40	3157
11	16:00	17:00	3290	41	3331
12	17:00	18:00	3297	45	3342
13	18:00	19:00	2848	36	2884
14	19:00	20:00	1986	21	2007
15	20:00	21:00	1402	21	1423
16	21:00	22:00	1053	12	1065

Warrant 2: Four-Hour Volume

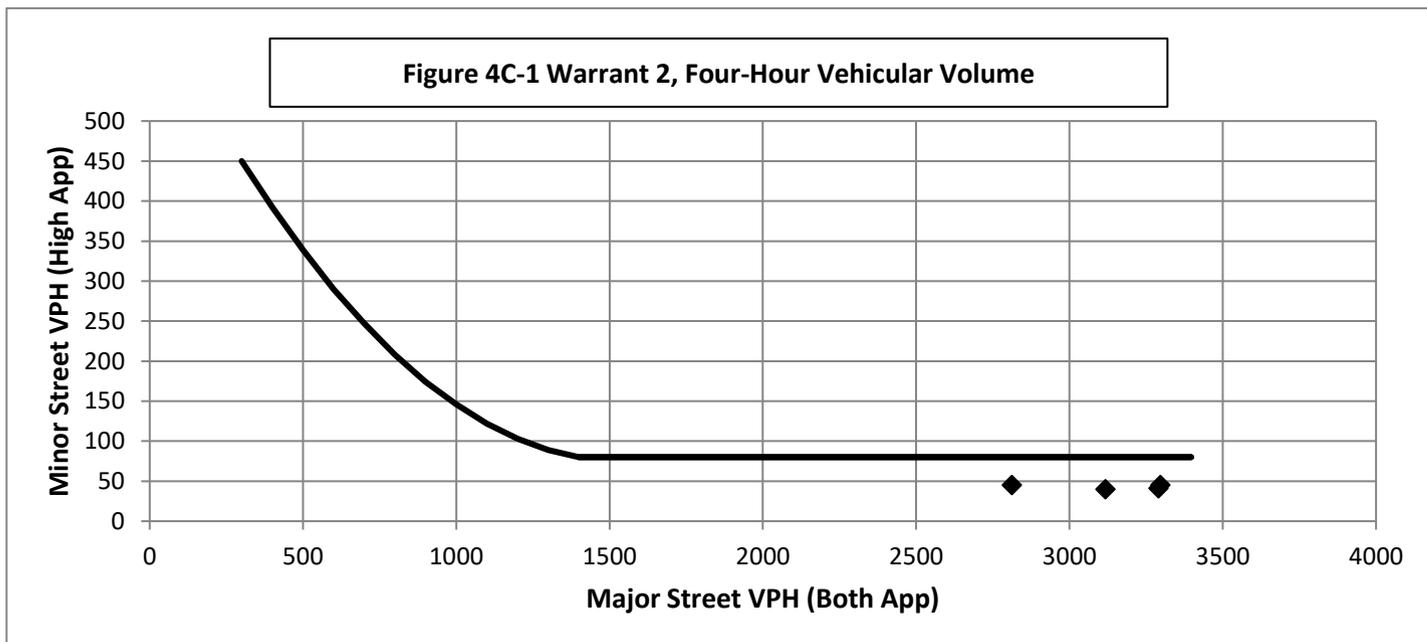
100%

Warrant Evaluated? Yes

Warrant Satisfied? No

Manually Set To:

Hour Start	14:00	17:00	16:00	15:00
Major Road Vol.	2812	3297	3290	3117
Minor Road Vol.	45	45	41	40



Warrant 3: Peak Hour Volume

100%

Warrant Evaluated? Yes

Warrant Satisfied? No

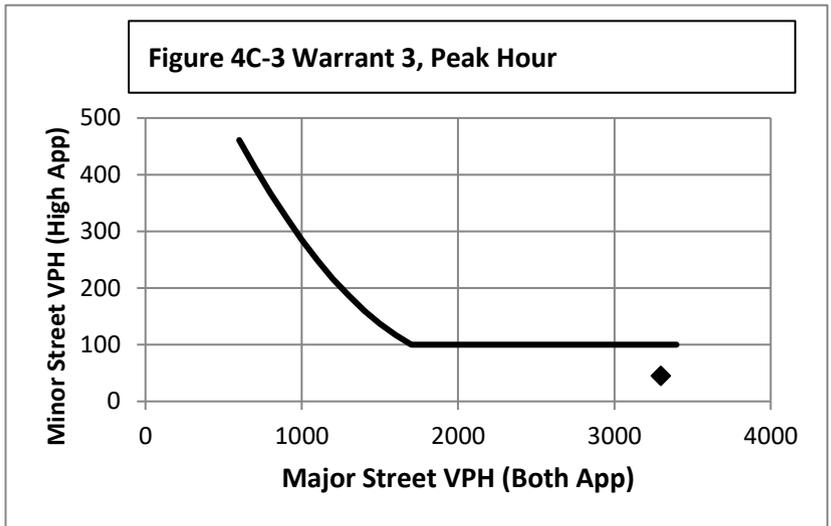
Manually Set To:

Condition justifying use of warrant:

Criteria		Met?
Delay on Minor Approach	4	No
Volume on Minor Approach	100	No
Total Entering Volume (veh/h)	800	

Manually Set Peak Hour? No

Peak Hour	Major Road Vol. (Both App.)	Minor Road Vol. (High App.)
17:00	3297	45



2024 Total Traffic - E. Quincy Ave./S. Atchison Way Traffic Signal Warrant Summary Worksheet

100%

The Worksheet(s) attached are provided as an attachment to the Engineering Investigation Study for:

Intersection: E. Quincy Ave/S. Atchison Way
County: Arapahoe
City: Aurora

Major Street: E. Quincy Ave.
Critical Approach Speed: 40 mph
Lanes: 2 or more lanes

Minor Street: S. Atchison Way
Critical Approach Speed: 30 mph
Lanes: 1 lane

% Right Turns Included	In built-up area of isolated community of < 10,000 population? No	
From North (SB) 50%	Total number of approaches at intersection? 4 or more	
From East (WB) 100%	If it is a "T" intersection, inflate minor threshold to 150%? No	
From South (NB) 50%	Manually set volume level? No	
From West (EB) 100%		

Analysis based on PROJECTED volume data.

Forecast Year	Within 5 Years of Construction?	Time (HH:MM)			
		From	AM / PM	To	AM / PM
2024	Yes				

Warrant Evaluation Summary	Warrant Met:
Warrant 1: Eight - Hour Vehicular Volume	No
Condition A: Minimum Vehicular Volume	No
Condition B: Interruption of Continuous Traffic	No
Condition C: Combination: 80% of A and B	No
Warrant 2: Four-Hour Volume	No
Warrant 3: Peak Hour Volume	No
Warrant 4: Pedestrian Volume	N/A
Criterion A: Four-Hour	N/A
Criterion B: Peak-Hour	N/A
Warrant 5: School Crossing	N/A
Warrant 6: Coordinated Signal System	N/A
Warrant 7: Crash Experience	N/A
Warrant 8: Roadway Network	N/A
Warrant 9: Intersection Near a Grade Crossing	N/A

Warrant Analysis Conducted By:

Name: BSL
Agency: HKS
Date: 3/16/2021

Warrant 1: Eight - Hour Vehicular Volume

100%

Warrant Evaluated? Yes

Condition A : Min. Veh. Volume		
Volume Level	100%	80%
Major Rd. Req	600	480
Minor Rd. Req	150	120
Number of Hours	0	0

Satisfied? No

Condition B: Interruption of Continuous Traffic		
Volume Level	100%	80%
Major Rd. Req	900	720
Minor Rd. Req	75	60
Number of Hours	0	0

Satisfied? No

Condition C: Combination of A & B at 80%		
---	--	--

Satisfied? No

Warrant Satisfied? No

Manually Set To:

Time Period	6:00 AM		Enter Start Time (Military Time) (HH:MM)		Total
	From	To	Major Road: Both App. (VPH)	Minor Road: High App. (VPH)	
1	6:00	7:00	1947	34	1981
2	7:00	8:00	2750	32	2782
3	8:00	9:00	2670	28	2698
4	9:00	10:00	2369	41	2410
5	10:00	11:00	2145	42	2187
6	11:00	12:00	2349	43	2392
7	12:00	13:00	2581	44	2625
8	13:00	14:00	2527	45	2572
9	14:00	15:00	2833	52	2885
10	15:00	16:00	3135	46	3181
11	16:00	17:00	3309	48	3357
12	17:00	18:00	3317	52	3369
13	18:00	19:00	2865	42	2907
14	19:00	20:00	1996	25	2021
15	20:00	21:00	1412	25	1437
16	21:00	22:00	1059	14	1073

Warrant 2: Four-Hour Volume

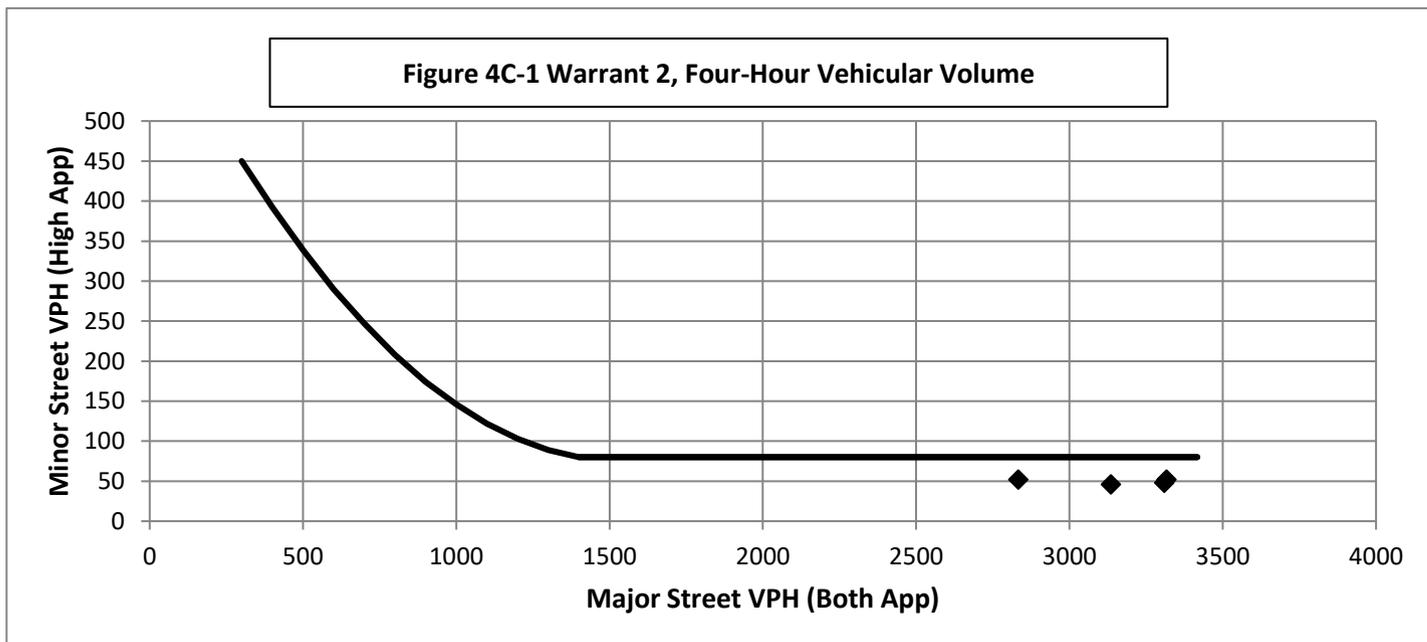
100%

Warrant Evaluated? Yes

Warrant Satisfied? No

Manually Set To:

Hour Start	14:00	17:00	16:00	15:00
Major Road Vol.	2833	3317	3309	3135
Minor Road Vol.	52	52	48	46



Warrant 3: Peak Hour Volume

100%

Warrant Evaluated? Yes

Warrant Satisfied? No

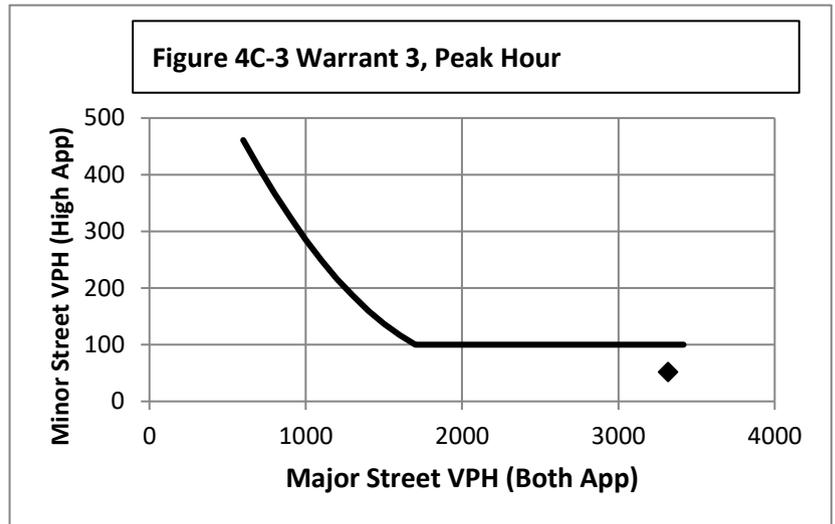
Manually Set To:

Condition justifying use of warrant:

Criteria		Met?
Delay on Minor Approach	4	No
Volume on Minor Approach	100	No
Total Entering Volume (veh/h)	800	

Manually Set Peak Hour? No

Peak Hour	Major Road Vol. (Both App.)	Minor Road Vol. (High App.)
17:00	3317	52



2040 Background - E. Quincy Ave./S. Atchison Way Traffic Signal Warrant Summary Worksheet

100%

The Worksheet(s) attached are provided as an attachment to the Engineering Investigation Study for:

Intersection: E. Quincy Ave/S. Atchison Way
County: Arapahoe
City: Aurora

Major Street: E. Quincy Ave.
Critical Approach Speed: 40 mph
Lanes: 2 or more lanes

Minor Street: S. Atchison Way
Critical Approach Speed: 30 mph
Lanes: 1 lane

% Right Turns Included	In built-up area of isolated community of < 10,000 population? No
From North (SB) 50%	Total number of approaches at intersection? 4 or more
From East (WB) 100%	If it is a "T" intersection, inflate minor threshold to 150%? No
From South (NB) 50%	Manually set volume level? No
From West (EB) 100%	

Analysis based on PROJECTED volume data.

Forecast Year	Within 5 Years of Construction?	Time (HH:MM)			
		From	AM / PM	To	AM / PM
2040	No				

Warrant Evaluation Summary	Warrant Met:
Warrant 1: Eight - Hour Vehicular Volume	No
Condition A: Minimum Vehicular Volume	No
Condition B: Interruption of Continuous Traffic	No
Condition C: Combination: 80% of A and B	No
Warrant 2: Four-Hour Volume	No
Warrant 3: Peak Hour Volume	No
Warrant 4: Pedestrian Volume	N/A
Criterion A: Four-Hour	N/A
Criterion B: Peak-Hour	N/A
Warrant 5: School Crossing	N/A
Warrant 6: Coordinated Signal System	N/A
Warrant 7: Crash Experience	N/A
Warrant 8: Roadway Network	N/A
Warrant 9: Intersection Near a Grade Crossing	N/A

Warrant Analysis Conducted By:

Name: BSL
Agency: HKS
Date: 3/16/2021

Warrant 1: Eight - Hour Vehicular Volume

100%

Warrant Evaluated? Yes

Condition A : Min. Veh. Volume		
Volume Level	100%	80%
Major Rd. Req	600	480
Minor Rd. Req	150	120
Number of Hours	0	0

Satisfied? No

Condition B: Interruption of Continuous Traffic		
Volume Level	100%	80%
Major Rd. Req	900	720
Minor Rd. Req	75	60
Number of Hours	0	2

Satisfied? No

Condition C: Combination of A & B at 80%		
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Satisfied? No

Warrant Satisfied? No

Manually Set To:

6:00 AM		Enter Start Time (Military Time) (HH:MM)			Total
Time Period	From	To	Major Road: Both App. (VPH)	Minor Road: High App. (VPH)	
1	6:00	7:00	2663	40	2703
2	7:00	8:00	3770	39	3809
3	8:00	9:00	3662	33	3695
4	9:00	10:00	3241	48	3289
5	10:00	11:00	2932	50	2982
6	11:00	12:00	3211	51	3262
7	12:00	13:00	3531	52	3583
8	13:00	14:00	3456	53	3509
9	14:00	15:00	3873	62	3935
10	15:00	16:00	4293	55	4348
11	16:00	17:00	4532	57	4589
12	17:00	18:00	4541	62	4603
13	18:00	19:00	3923	50	3973
14	19:00	20:00	2736	30	2766
15	20:00	21:00	1931	29	1960
16	21:00	22:00	1451	16	1467

Warrant 2: Four-Hour Volume

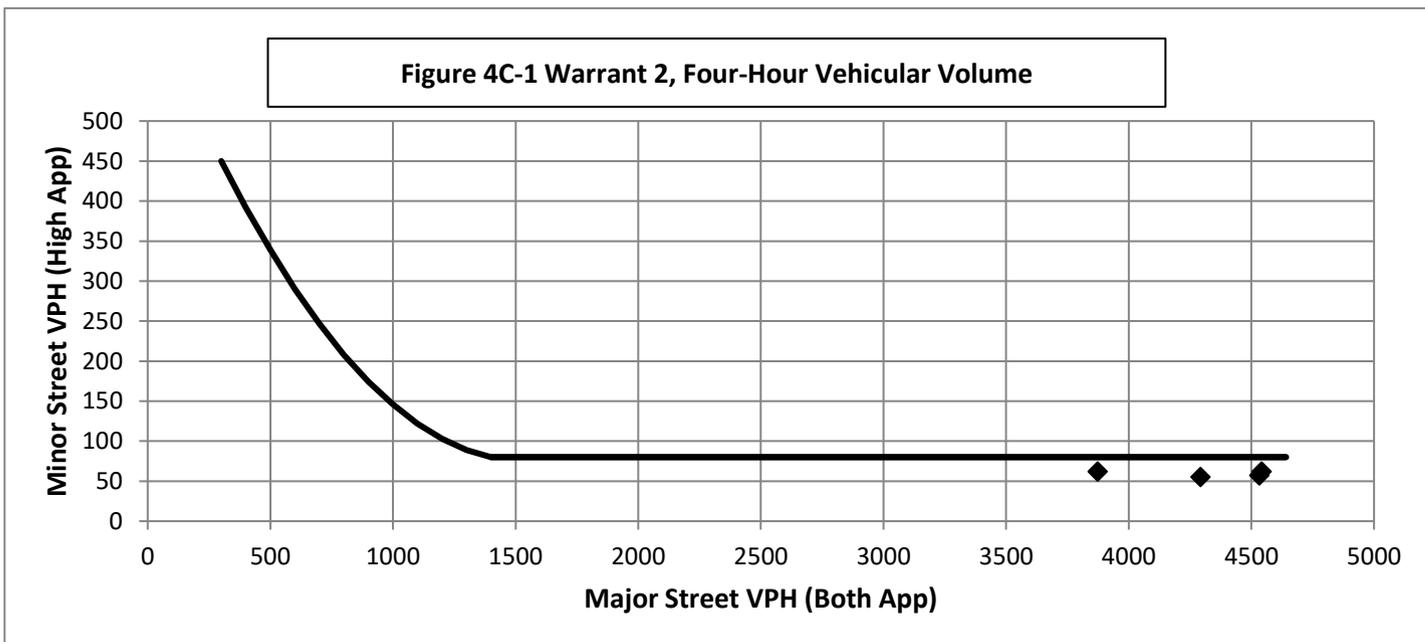
100%

Warrant Evaluated? Yes

Warrant Satisfied? No

Manually Set To:

Hour Start	14:00	17:00	16:00	15:00
Major Road Vol.	3873	4541	4532	4293
Minor Road Vol.	62	62	57	55



Warrant 3: Peak Hour Volume

100%

Warrant Evaluated? Yes

Warrant Satisfied? No

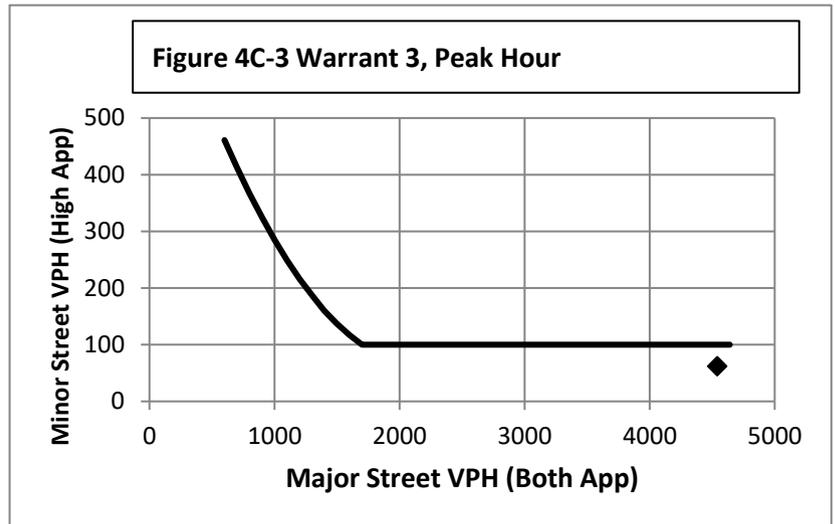
Manually Set To:

Condition justifying use of warrant:

Criteria		Met?
Delay on Minor Approach	4	No
Volume on Minor Approach	100	No
Total Entering Volume (veh/h)	800	

Manually Set Peak Hour? No

Peak Hour	Major Road Vol. (Both App.)	Minor Road Vol. (High App.)
17:00	4541	62



2040 Total Traffic - E. Quincy Ave./S. Atchison Way Traffic Signal Warrant Summary Worksheet

100%

The Worksheet(s) attached are provided as an attachment to the Engineering Investigation Study for:

Intersection: E. Quincy Ave/S. Atchison Way
County: Arapahoe
City: Aurora

Major Street: E. Quincy Ave.
Critical Approach Speed: 40 mph
Lanes: 2 or more lanes

Minor Street: S. Atchison Way
Critical Approach Speed: 30 mph
Lanes: 1 lane

% Right Turns Included	In built-up area of isolated community of < 10,000 population? No	
From North (SB) 50%	Total number of approaches at intersection? 4 or more	
From East (WB) 100%	If it is a "T" intersection, inflate minor threshold to 150%? No	
From South (NB) 50%	Manually set volume level? No	
From West (EB) 100%		

Analysis based on PROJECTED volume data.

Forecast Year	Within 5 Years of Construction?	Time (HH:MM)			
		From	AM / PM	To	AM / PM
2040	No				

Warrant Evaluation Summary	Warrant Met:
Warrant 1: Eight - Hour Vehicular Volume	No
Condition A: Minimum Vehicular Volume	No
Condition B: Interruption of Continuous Traffic	No
Condition C: Combination: 80% of A and B	No
Warrant 2: Four-Hour Volume	No
Warrant 3: Peak Hour Volume	No
Warrant 4: Pedestrian Volume	N/A
Criterion A: Four-Hour	N/A
Criterion B: Peak-Hour	N/A
Warrant 5: School Crossing	N/A
Warrant 6: Coordinated Signal System	N/A
Warrant 7: Crash Experience	N/A
Warrant 8: Roadway Network	N/A
Warrant 9: Intersection Near a Grade Crossing	N/A

Warrant Analysis Conducted By:

Name: BSL
Agency: HKS
Date: 3/16/2021

Warrant 1: Eight - Hour Vehicular Volume

100%

Warrant Evaluated? Yes

Condition A : Min. Veh. Volume		
Volume Level	100%	80%
Major Rd. Req	600	480
Minor Rd. Req	150	120
Number of Hours	0	0

Satisfied? No

Condition B: Interruption of Continuous Traffic		
Volume Level	100%	80%
Major Rd. Req	900	720
Minor Rd. Req	75	60
Number of Hours	0	4

Satisfied? No

Condition C: Combination of A & B at 80%		
---	--	--

Satisfied? No

Warrant Satisfied? No

Manually Set To:

Time Period	6:00 AM		Enter Start Time (Military Time) (HH:MM)		Total
	From	To	Major Road: Both App. (VPH)	Minor Road: High App. (VPH)	
1	6:00	7:00	2677	45	2722
2	7:00	8:00	3783	43	3826
3	8:00	9:00	3673	37	3710
4	9:00	10:00	3257	54	3311
5	10:00	11:00	2949	56	3005
6	11:00	12:00	3228	57	3285
7	12:00	13:00	3548	58	3606
8	13:00	14:00	3474	59	3533
9	14:00	15:00	3894	69	3963
10	15:00	16:00	4311	61	4372
11	16:00	17:00	4550	63	4613
12	17:00	18:00	4561	69	4630
13	18:00	19:00	3939	55	3994
14	19:00	20:00	2746	33	2779
15	20:00	21:00	1941	18	1959
16	21:00	22:00	1456	10	1466

Warrant 2: Four-Hour Volume

100%

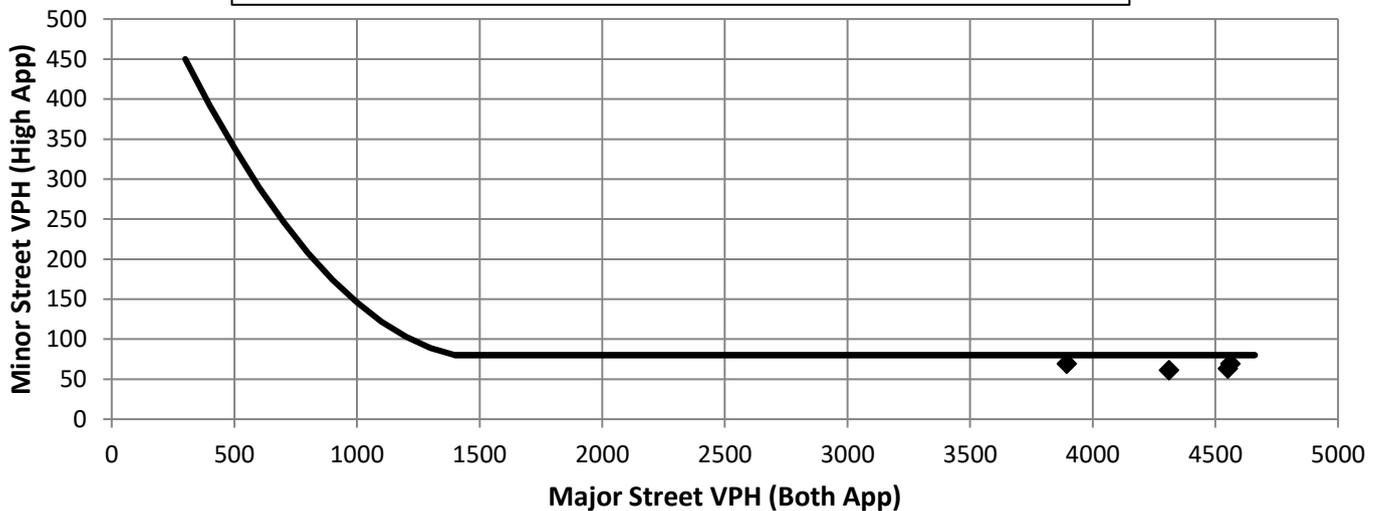
Warrant Evaluated? Yes

Warrant Satisfied? No

Manually Set To:

Hour Start	14:00	17:00	16:00	15:00
Major Road Vol.	3894	4561	4550	4311
Minor Road Vol.	69	69	63	61

Figure 4C-1 Warrant 2, Four-Hour Vehicular Volume



Warrant 3: Peak Hour Volume

100%

Warrant Evaluated? Yes

Warrant Satisfied? No

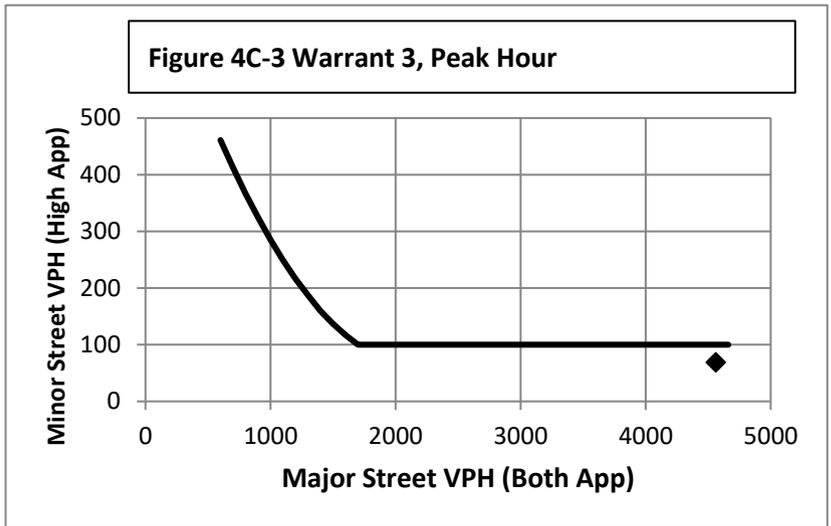
Manually Set To:

Condition justifying use of warrant:

Criteria		Met?
Delay on Minor Approach	4	No
Volume on Minor Approach	100	No
Total Entering Volume (veh/h)	800	

Manually Set Peak Hour? No

Peak Hour	Major Road Vol. (Both App.)	Minor Road Vol. (High App.)
17:00	4561	69



Parker Rd & NW Site Access Traffic Volumes

COVID factor: 1.1

*48% reduction to account for 50% Right turn deduction

	UNADJUSTED TRAFFIC VOLUME COUNTS														NB + SB
	SB (3-Days)		SB Average		SB COVID ADJ	NB (3-Days)		NB Average		NB COVID ADJ	WB (3-Days)		WB Average	WB COVID ADJ	
0:00	230	309	301	280	308	184	228	170	194	213	14	14	11	7	521
1:00	156	172	174	167	184	138	108	104	117	128	8	11	7	5	312
2:00	114	113	143	123	136	170	129	112	137	151	8	12	12	6	286
3:00	135	145	127	136	149	208	221	104	178	195	8	10	3	4	345
4:00	242	277	271	263	290	454	472	229	385	424	16	23	24	11	713
5:00	644	629	631	635	698	1318	1366	826	1170	1287	40	46	41	22	1985
6:00	1588	1688	1646	1641	1805	2537	2439	1596	2191	2410	58	76	73	36	4214
7:00	2351	2695	2512	2519	2771	3494	3287	2515	3099	3409	103	95	109	53	6180
8:00	2099	2284	2227	2203	2424	3051	2836	2183	2690	2959	76	107	89	47	5383
9:00	1917	1992	1724	1878	2065	2479	2418	2265	2387	2626	100	78	97	48	4692
10:00	1814	1824	1897	1845	2030	2298	2242	2331	2290	2519	63	60	77	35	4549
11:00	1932	1994	2077	2001	2201	2253	2140	2213	2202	2422	81	84	77	42	4623
12:00	2258	2168	2371	2266	2492	2299	2204	2390	2298	2527	105	87	95	50	5020
13:00	2275	2306	2358	2313	2544	2281	2313	2445	2346	2581	83	98	93	47	5125
14:00	2637	2680	2811	2709	2980	2349	2350	2307	2335	2569	76	81	85	42	5549
15:00	3133	3143	3386	3221	3543	2411	2397	2489	2432	2676	82	67	83	40	6218
16:00	3518	3203	3616	3446	3790	2868	2374	2604	2615	2877	60	67	80	36	6667
17:00	3440	3491	3690	3540	3894	2874	2251	2403	2509	2760	67	59	75	35	6655
18:00	3145	2938	2850	2978	3275	2238	2150	2068	2152	2367	57	65	43	29	5643
19:00	2094	2085	1896	2025	2228	1464	1259	1340	1354	1490	57	50	43	26	3717
20:00	1504	1676	1363	1514	1666	1046	994	1001	1014	1115	40	43	30	20	2781
21:00	1050	1194	897	1047	1152	798	679	753	743	818	26	35	30	16	1969
22:00	760	778	563	700	770	517	513	539	523	575	16	17	27	10	1346
23:00	454	546	387	462	509	321	324	278	308	338	12	16	12	7	847

2024 Traffic Volumes									
	2021 NB + SB	2021 WB	2024 NB + SB	2024 WB	Hourly Distribution	NB/SB Site Traffic	WB Site Traffic	NB/SB Total	WB Total
0:00	521	7	553	8	1.01%	9	2	562	10
1:00	312	5	331	5	0.67%	6	1	337	6
2:00	286	6	304	6	0.83%	7	1	311	8
3:00	345	4	365	4	0.54%	5	1	370	5
4:00	713	12	756	13	1.63%	15	3	771	16
5:00	1985	24	2104	26	3.28%	30	6	2134	31
6:00	4214	39	4467	42	5.34%	48	9	4515	51
7:00	6180	59	6551	62	7.93%	71	14	6622	76
8:00	5383	52	5706	55	7.02%	63	12	5769	67
9:00	4692	52	4973	56	7.10%	64	12	5037	68
10:00	4549	38	4822	40	5.16%	46	9	4868	49
11:00	4623	46	4901	49	6.25%	56	11	4957	60
12:00	5020	55	5321	58	7.41%	67	13	5388	71
13:00	5125	52	5433	55	7.07%	64	12	5496	68
14:00	5549	46	5882	49	6.25%	56	11	5938	60
15:00	6218	44	6591	47	5.99%	54	10	6645	57
16:00	6667	39	7067	42	5.34%	48	9	7115	51
17:00	6655	38	7054	41	5.19%	47	9	7101	50
18:00	5643	31	5981	33	4.26%	38	7	6020	41
19:00	3717	29	3940	30	3.87%	35	7	3975	37
20:00	2781	22	2948	23	2.92%	26	5	2974	28
21:00	1969	17	2088	18	2.35%	21	4	2109	23
22:00	1346	11	1426	12	1.55%	14	3	1440	15
23:00	847	8	898	8	1.03%	9	2	907	10
	738				100.00%	900	175		

3 Year GF: 1.06

NB/SB Site Traffic: 900
WB Site Traffic: 175

2040 Traffic Volumes									
	2021 NB + SB	2021 WB	2040 NB + SB	2040 WB	Hourly Distribution	NB/SB Site Traffic	WB Site Traffic	NB/SB Total	WB Total
0:00	521	7	761	11	1.01%	9	2	770	13
1:00	312	5	456	7	0.67%	6	1	462	8
2:00	286	6	418	9	0.83%	7	1	426	10
3:00	345	4	503	6	0.54%	5	1	508	7
4:00	713	12	1041	18	1.63%	15	3	1056	20
5:00	1985	24	2898	35	3.28%	30	6	2928	41
6:00	4214	39	6153	58	5.34%	48	9	6201	67
7:00	6180	59	9023	85	7.93%	71	14	9094	99
8:00	5383	52	7859	76	7.02%	63	12	7922	88
9:00	4692	52	6850	77	7.10%	64	12	6913	89
10:00	4549	38	6641	56	5.16%	46	9	6688	65
11:00	4623	46	6750	67	6.25%	56	11	6806	78
12:00	5020	55	7329	80	7.41%	67	13	7395	93
13:00	5125	52	7483	76	7.07%	64	12	7547	89
14:00	5549	46	8102	67	6.25%	56	11	8158	78
15:00	6218	44	9079	65	5.99%	54	10	9133	75
16:00	6667	39	9734	58	5.34%	48	9	9782	67
17:00	6655	38	9716	56	5.19%	47	9	9762	65
18:00	5643	31	8238	46	4.26%	38	7	8277	53
19:00	3717	29	5427	42	3.87%	35	7	5462	49
20:00	2781	22	4060	31	2.92%	26	5	4086	37
21:00	1969	17	2875	25	2.35%	21	4	2896	29
22:00	1346	11	1965	17	1.55%	14	3	1979	19
23:00	847	8	1237	11	1.03%	9	2	1246	13
	738				100.00%	900	175		

19 Year GF: 1.46

NB/SB Site Traffic: 900
WB Site Traffic: 175

Quincy & Atchison Traffic Volumes

COVID factor: 1.1

*30% reduction to account for 50% Right turn deduction

	UNADJUSTED TRAFFIC VOLUME COUNTS				EB COVID ADJ		WB (3-Days)		WB Average		WB COVID ADJ		SB (3-Days)			SB Average		SB COVID ADJ		EB + WB
	EB (3-Days)		EB Average																	
0:00	135	175	168	159	175	72	99	95	89	98	4	4	2	2	3				273	
1:00	103	83	85	90	99	56	51	55	54	59	0	0	2	0	1				159	
2:00	73	53	58	61	67	59	44	53	52	57	2	2	1	1	1				125	
3:00	57	58	49	55	60	103	110	101	105	115	4	6	4	3	4				175	
4:00	83	80	82	82	90	249	248	238	245	270	14	12	12	9	10				359	
5:00	165	141	156	154	169	706	742	725	724	797	30	28	29	20	22				966	
6:00	394	425	441	420	462	1277	1277	1211	1238	1362	38	40	30	25	28				1824	
7:00	787	778	765	777	854	1605	1569	1539	1571	1728	33	43	27	24	26				2582	
8:00	748	830	823	800	880	1533	1527	1379	1480	1628	29	31	29	21	23				2508	
9:00	755	805	808	789	868	1227	1258	1202	1229	1352	34	43	52	30	33				2220	
10:00	787	758	773	773	850	1082	1164	913	1053	1158	50	37	47	31	34				2008	
11:00	932	998	874	935	1028	1056	1054	1085	1065	1172	34	56	47	32	35				2200	
12:00	1123	1111	1015	1083	1191	1098	1147	1101	1115	1227	48	45	47	33	36				2418	
13:00	1117	1106	1028	1084	1192	1089	1048	1068	1068	1175	50	48	44	33	36				2367	
14:00	1349	1284	1252	1295	1425	1129	1153	1068	1117	1228	48	57	61	39	43				2653	
15:00	1509	1426	1521	1485	1634	1182	1216	1166	1188	1307	53	44	49	34	37				2941	
16:00	1728	1682	1603	1671	1838	1176	1136	1140	1151	1266	54	51	47	35	39				3104	
17:00	1727	1680	1643	1683	1852	1212	1150	1070	1144	1258	62	45	58	39	42				3110	
18:00	1460	1506	1466	1477	1625	1034	946	916	965	1062	46	44	43	31	34				2687	
19:00	1115	1043	1038	1065	1172	682	639	594	638	702	32	29	18	18	20				1874	
20:00	773	713	734	740	814	470	480	437	462	509	17	34	27	18	20				1323	
21:00	572	569	500	547	602	389	333	347	356	392	15	18	10	10	11				994	
22:00	405	410	346	387	426	206	243	232	227	250	6	10	9	6	6				675	
23:00	261	258	250	256	282	144	161	134	146	161	6	1	4	3	3				443	

2024 Traffic Volumes									
	2021 EB + WB	2021 SB	2024 EB + WB	2024 SB	Hourly Distribution	EB/WB Site Traffic	SB Site Traffic	EB/WB Total	SB Total
0:00	273	3	289	3	0.47%	1	0	290	3
1:00	159	1	168	1	0.09%	0	0	169	1
2:00	125	1	132	1	0.23%	1	0	133	2
3:00	175	4	186	4	0.66%	2	1	188	4
4:00	359	10	381	10	1.78%	5	2	386	12
5:00	966	22	1024	24	4.07%	11	4	1035	27
6:00	1824	28	1934	29	5.06%	13	5	1947	34
7:00	2582	26	2737	28	4.82%	13	4	2750	32
8:00	2508	23	2658	24	4.17%	11	4	2670	28
9:00	2220	33	2353	35	6.04%	16	5	2369	41
10:00	2008	34	2129	36	6.27%	17	6	2145	42
11:00	2200	35	2332	37	6.41%	17	6	2349	43
12:00	2418	36	2563	38	6.55%	17	6	2581	44
13:00	2367	36	2509	39	6.65%	18	6	2527	45
14:00	2653	43	2812	45	7.77%	21	7	2833	52
15:00	2941	37	3117	40	6.84%	18	6	3135	46
16:00	3104	39	3290	41	7.12%	19	6	3309	48
17:00	3110	42	3297	45	7.72%	20	7	3317	52
18:00	2687	34	2848	36	6.23%	17	6	2865	42
19:00	1874	20	1986	21	3.70%	10	3	1996	25
20:00	1323	20	1402	21	3.65%	10	3	1412	25
21:00	994	11	1053	12	2.01%	5	2	1059	14
22:00	675	6	716	7	1.17%	3	1	719	8
23:00	443	3	470	3	0.51%	1	0	471	3
	548				100.00%	265	90		

3 Year GF: 1.06

EB/WB Site Traffic: 265
SB Site Traffic: 90

2040 Traffic Volumes									
	2021 EB + WB	2021 SB	2040 EB + WB	2040 SB	Hourly Distribution	EB/WB Site Traffic	SB Site Traffic	EB/WB Total	SB Total
0:00	273	3	398	4	0.47%	1	0	400	4
1:00	159	1	232	1	0.09%	0	0	232	1
2:00	125	1	182	2	0.23%	1	0	183	2
3:00	175	4	256	5	0.66%	2	1	258	6
4:00	359	10	525	14	1.78%	5	2	529	16
5:00	966	22	1411	33	4.07%	11	4	1421	36
6:00	1824	28	2663	40	5.06%	13	5	2677	45
7:00	2582	26	3770	39	4.82%	13	4	3783	43
8:00	2508	23	3662	33	4.17%	11	4	3673	37
9:00	2220	33	3241	48	6.04%	16	5	3257	54
10:00	2008	34	2932	50	6.27%	17	6	2949	56
11:00	2200	35	3211	51	6.41%	17	6	3228	57
12:00	2418	36	3531	52	6.55%	17	6	3548	58
13:00	2367	36	3456	53	6.65%	18	6	3474	59
14:00	2653	43	3873	62	7.77%	21	7	3894	69
15:00	2941	37	4293	55	6.84%	18	6	4311	61
16:00	3104	39	4532	57	7.12%	19	6	4550	63
17:00	3110	42	4541	62	7.72%	20	7	4561	69
18:00	2687	34	3923	50	6.23%	17	6	3939	55
19:00	1874	20	2736	30	3.70%	10	3	2746	33
20:00	1323	20	1931	29	3.65%	10	3	1941	33
21:00	994	11	1451	16	2.01%	5	2	1456	18
22:00	675	6	986	9	1.17%	3	1	989	10
23:00	443	3	647	4	0.51%	1	0	648	5
	548				100.00%	265	90		

19 Year GF: 1.46

EB/WB Site Traffic: 265
SB Site Traffic: 90