La Petite Ecole (English-French Private School)
City of San Diego (PTS #449777)
8401 Aero Dr San Diego, California

March 31, 2016
Revised June 2, 2016
Revised July 1, 2016
Revised July 28, 2016
Revised August 23, 2016

Transportation Impact Study

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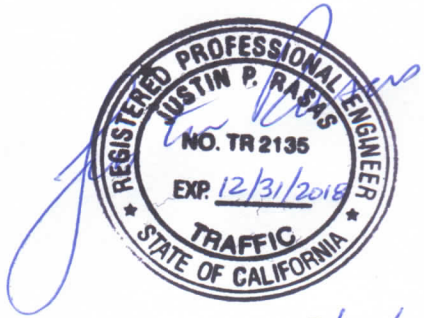

SEALED ON 8/23/2016

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Executive Summary

The proposed project is an English-French Pre-K through 12th Grade Private School (La Petite Ecole) with up to 540 total students to be located at 8401 Aero Drive San Diego, California. The site is approximately 2.76 acres and has a building of approximately 55,560 square feet. The project is planned to open in 2017 with an initial estimate of 300 students and may reach a maximum student count of 540 as early as 2022.

The project includes two phases and two different land uses. The initial phase (opening year 2017) includes a private school with up to 300 students and up to 10,000 square feet of office space for lease (non-school use). The final phase (as early as 2022) will include up to 540 students with no outside lease of office space. The previous office space from the initial phase will be converted to classrooms and some office space will remain for school administration purposes as an ancillary use to the school (with no outside leasing). The trip generation for the office spaces is based on the City of San Diego trip rates. The Institute of Transportation Engineers (ITE) 9th Edition Trip Generation was used to calculate the school related project traffic because the City of San Diego trip rates do not include private school trip rates. Three study hours were analyzed. ITE includes private school rates for the AM drop-off (when school starts), afternoon pickup (when school ends), and after school pick-up from daycare/after school activities.

The initial project phase with up to 300 students and up to 10,000 sf of office is calculated to generate 1,040 daily trips with 282 AM trips (183 inbound and 99 outbound), 215 afternoon trips (81 inbound and 134 outbound), and 92 PM trips (30 inbound and 62 outbound).

The final project phase with up to 540 students is calculated to generate 1,339 daily trips with 437 AM trips (266 inbound and 171 outbound), 313 afternoon trips (131 inbound and 182 outbound), and 92 PM trips (40 inbound and 52 outbound).

Based on the study area and cumulative projects, the following scenarios were analyzed: Existing, Existing with Project (Phase 1), Year 2017, Year 2017 with Project (Phase 1), Year 2022, Year 2022 with Project (Phase 2), Horizon Year 2035, and Horizon Year 2035 with Project (Phase 2) Conditions. For each scenario, the findings include:

1) Under existing conditions, all of the study locations were calculated to operate at LOS D or better, except for the intersections of:
    1) Aero Dr/Convoy St (LOS E 4:45-5:45pm), and
    2) Aero Dr/Kearny Villa Rd (LOS E 4:45-5:45pm).

   The segment of Mesa College Drive from SR-163 to I-805 was calculated to operate at LOS E on a daily basis. The metered freeway on-ramp at Mesa College/SB I-805 was calculated and observed to operate with minimal delay (maximum observed delay for the study period was approximately 1 minute).
2) Under existing with project (phase 1) conditions, all of the study locations were calculated to operate at LOS D or better, except for the intersections of:
    1) Aero Dr/Convoy St (LOS E 4:45-5:45pm), and
    2) Aero Dr/Kearny Villa Rd (LOS E 4:45-5:45pm).

The segment of Mesa College Drive from SR-163 to I-805 was calculated to operate at LOS E on a daily basis. The metered freeway on-ramp at Mesa College/SB I-805 was calculated to operate with minimal delay (no significant change is anticipated with the addition of project traffic). There are no project impacts to the above locations because the project traffic does NOT exceed the City's traffic impact significance thresholds.

3) Under year 2017 without project conditions, all of the study locations were calculated to operate at LOS D or better, except for the intersections of:
    1) Aero Dr/Convoy St (LOS E 4:45-5:45pm), and
    2) Aero Dr/Kearny Villa Rd (LOS E 4:45-5:45pm).

    The segment of Mesa College Drive from SR-163 to I-805 was calculated to operate at LOS E on a daily basis. The metered freeway on-ramp at Mesa College/SB I-805 was calculated to operate with minimal delay and estimated to have similar queues and delays in 2017 as observed under existing conditions.

4) Under year 2017 with project (phase 1) conditions, all of the study locations were calculated to operate at LOS D or better, except for the intersections of:
    1) Aero Dr/Convoy St (LOS E 4:45-5:45pm), and
    2) Aero Dr/Kearny Villa Rd (LOS E 4:45-5:45pm).

    The segment of Mesa College Drive from SR-163 to I-805 was calculated to operate at LOS E on a daily basis. The metered freeway on-ramp at Mesa College/SB I-805 was calculated to operate with minimal delay and estimated to have similar queues and delays in 2017 as observed under existing conditions (no significant change is anticipated with the addition of project traffic). There are no project impacts to the above locations because the project traffic does NOT exceed the City's traffic impact significance thresholds.

5) Under year 2022 without project conditions, all of the study locations were calculated to operate at LOS D or better, except for the intersections of:
    1) Aero Dr/Convoy St (LOS E 4:45-5:45pm),
    2) Aero Dr/Kearny Villa Rd (LOS E 4:45-5:45pm),
    3) Kearny Mesa Rd at Armour St (LOS E 4:45-5:45pm), and
    4) Mesa College Dr at Annrae St (LOS E 4:45-5:45pm).

    The segment of Mesa College Drive from SR-163 to I-805 was calculated to operate at LOS E on a daily basis. The metered freeway on-ramp at Mesa College/SB I-805 was calculated to operate with minimal delay and is expected to have similar queues and delays in 2022 as observed under existing conditions.

6) Under year 2022 with project (phase 2) conditions, all of the study locations were calculated to operate at LOS D or better, except for the intersections of:
    1) Aero Dr/Convoy St (LOS E 4:45-5:45pm),
    2) Aero Dr/Kearny Villa Rd (LOS E 4:45-5:45pm),
    3) Kearny Mesa Rd at Armour St (LOS E 4:45-5:45pm), and
    4) Mesa College Dr at Annrae St (LOS E 4:45-5:45pm).

    The segment of Mesa College Drive from SR-163 to I-805 was calculated to operate at LOS E on a daily basis. The metered freeway on-ramp at Mesa College/SB I-805 was calculated to operate with minimal delay and is expected to have similar queues and delays in 2022 as observed under existing conditions (no significant change is anticipated with the addition of project traffic). There are no project impacts to the

above locations because the project traffic does NOT exceed the City's traffic impact significance thresholds.

7) Under horizon year without project conditions, all of the study locations were calculated to operate at LOS D or better, except for the intersections of:
   1) Aero Dr/Convoy St (LOS E 4:45-5:45pm),
   2) Aero Dr/Kearny Villa Rd (LOS E 4:45-5:45pm),
   3) Aero Dr/Aero Ct (LOS E 4:45-5:45pm),
   4) Aero Dr/Afton Rd (LOS E 4:45-5:45pm),
   5) Aero Dr/Sandrock Rd (LOS E 4:45-5:45pm),
   6) Kearny Mesa Rd at Armour St (LOS E 4:45-5:45pm), and
   7) Mesa College Dr at Annrae St (LOS E 4:45-5:45pm).

   Two segments were calculated to operate below LOS D, which included Aero Drive from Kearny Villa Rd to Aero Ct (LOS E daily) and Mesa College Drive from SR-163 to I-805 (LOS F daily). The metered freeway on-ramp at Mesa College/SB I-805 was calculated to operate with minimal delay; however, by the horizon year a stopped queue and some delays are anticipated based on existing observations.

8) Under horizon year with project (phase 2) conditions, all of the study locations were calculated to operate at LOS D or better, except for the intersections of:
   1) Aero Dr/Convoy St (LOS E 4:45-5:45pm),
   2) Aero Dr/Kearny Villa Rd (LOS E 4:45-5:45pm),
   3) Aero Dr/Aero Ct (LOS E 4:45-5:45pm),
   4) Aero Dr/Afton Rd (LOS E 4:45-5:45pm),
   5) Aero Dr/Sandrock Rd (LOS E 4:45-5:45pm),
   6) Kearny Mesa Rd at Armour St (LOS E 4:45-5:45pm), and
   7) Mesa College Dr at Annrae St (LOS E 4:45-5:45pm).

   Two segments were calculated to operate below LOS D, which included Aero Drive from Kearny Villa Rd to Aero Ct (LOS E daily) and Mesa College Drive from SR-163 to I-805 (LOS F daily). The metered freeway on-ramp at Mesa College/SB I-805 was calculated to operate with minimal delay; however, by the horizon year a stopped queue and some delays are anticipated based on existing observations (no significant change is anticipated with the addition of project traffic). The project exceeds the significance thresholds on one segment and is calculated to have one cumulative segment impact on Aero Drive from Kearny Villa Rd to Aero Ct (> 0.02 change in V/C ratio at LOS E).

To mitigate the horizon year 2035 cumulative impact along the segment of Aero Drive from Kearny Villa Road to Aero Court to below a level of significance, the project owner/applicant shall pay a fair share of 21.5% towards the impacted segment of Aero Drive (being approximately 750 feet of the overall 3,370 feet of improvements identified in KM-T20 in the *Kearny Mesa Public Facilities Financing Plan Fiscal Year 2003*) when enrollment of 449 students is reached, satisfactory to the City Engineer. As part of the mitigation measure, the school owner/applicant shall submit the student enrollment each year to the City of San Diego by September 15th.

1.0 Introduction

The proposed project is an English-French Pre-K through 12th Grade Private School (La Petite Ecole) with up to 540 total students to be located at 8401 Aero Drive San Diego, California. The site is approximately 2.76 acres and has a building of approximately 55,560 square feet. The project is planned to be opened by 2017. The location of the project is shown in **Figure 1**. A vicinity map is shown in **Figure 2** and a site plan is shown in **Figure 3**.

The purpose of this study is to analyze how the proposed project traffic will affect the study roadways and intersections during weekday daily, school start, school end, and at the end of after school care periods when the project is completed. This report includes the following chapters:

1.0 Introduction
2.0 Study Methodology
3.0 Existing Conditions
4.0 Project Description
5.0 Existing with Project Conditions
6.0 Year 2017 without Project Conditions
7.0 Year 2017 with Project (Phase 1) Conditions
8.0 Year 2022 without Project Conditions
9.0 Year 2022 with Project (Phase 2) Conditions
10.0 Horizon Year without Project Conditions
11.0 Horizon Year with Project (Phase 2) Conditions
12.0 Summary of Potential Impacts
13.0 Parking
14.0 On-Site Circulation
15.0 Transit and Other Transportation Modes
16.0 Transportation Demand Management
17.0 Conclusion and Recommendations
18.0 References and List of Prepares

Figure 1: Project Location

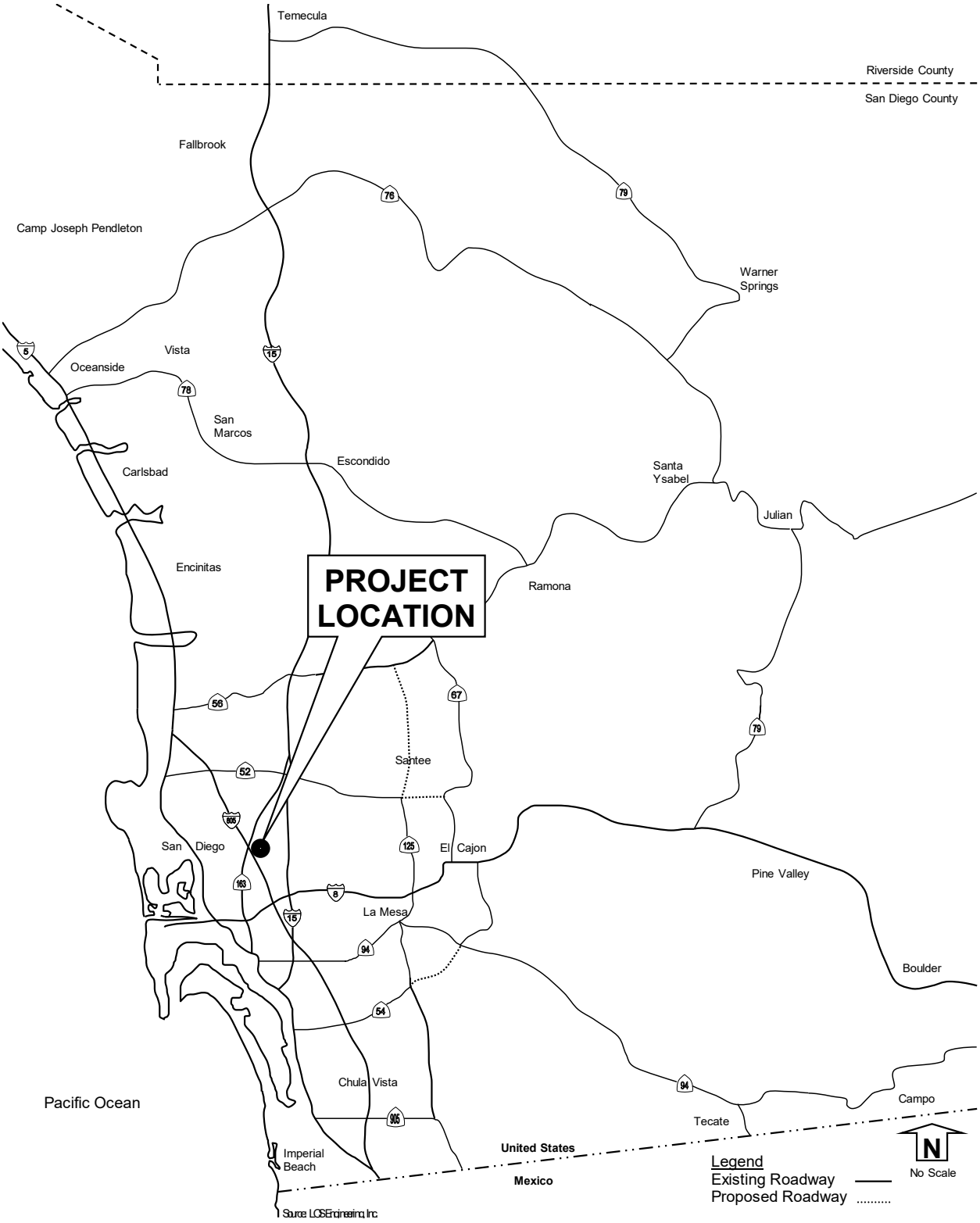
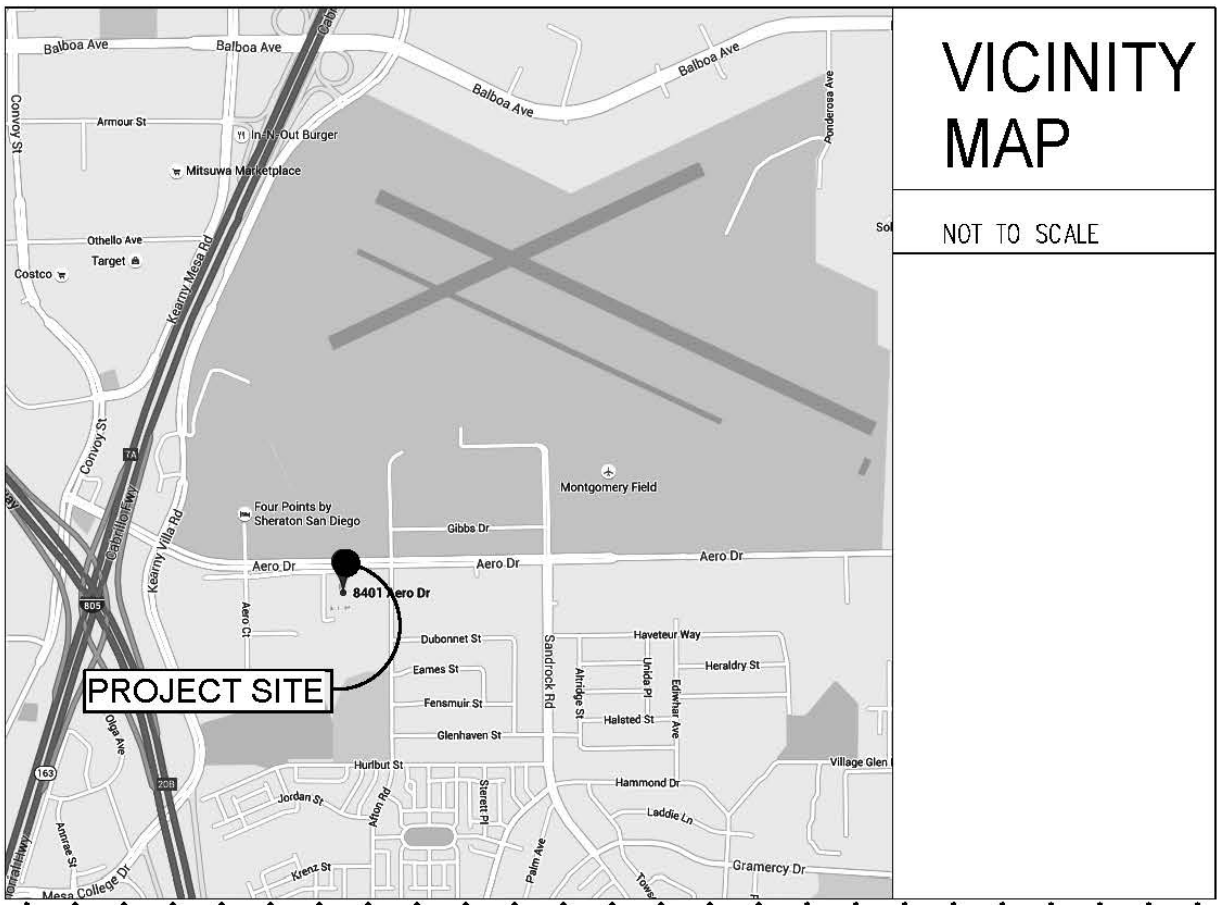
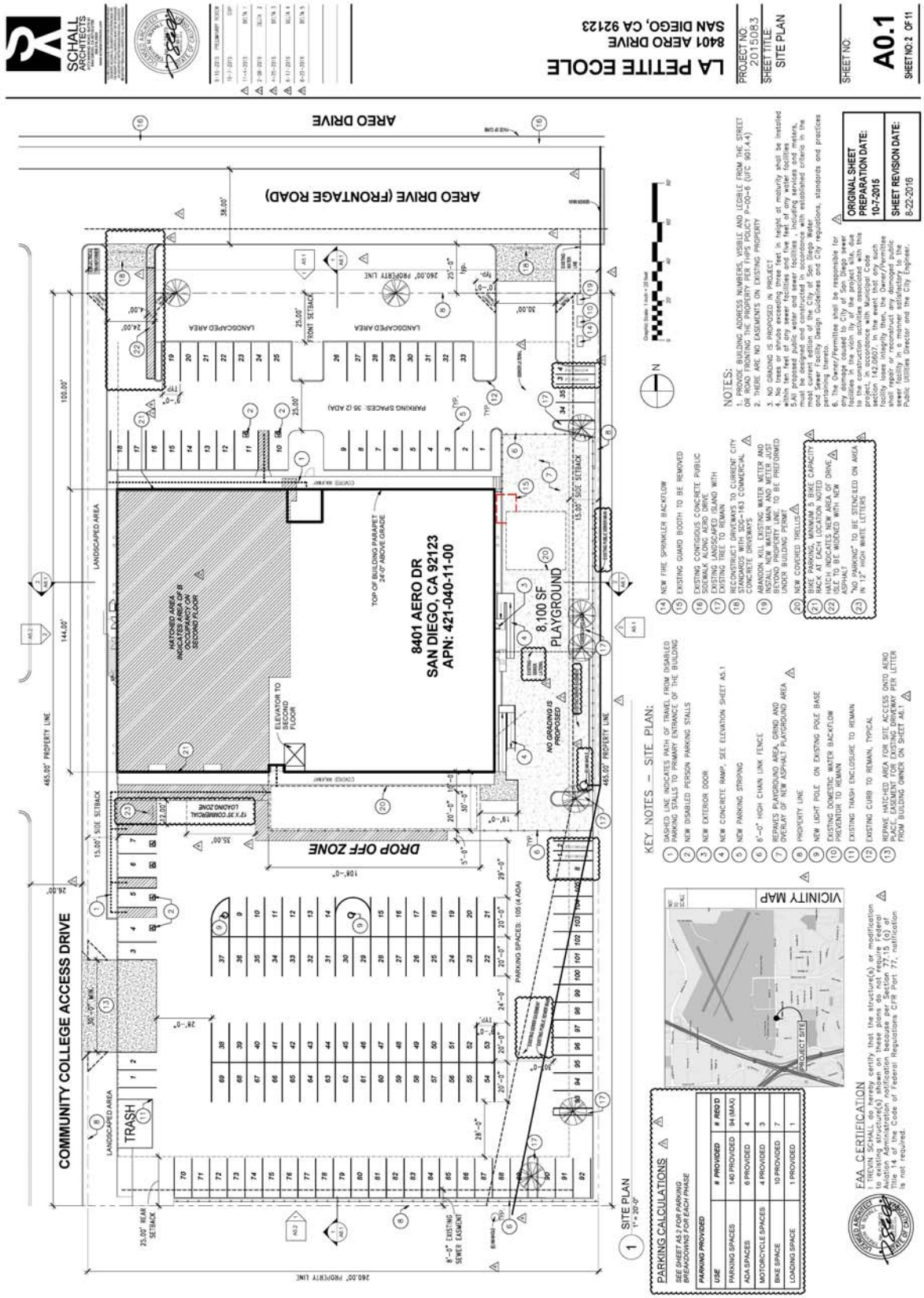


Figure 2: Vicinity Map



Source: Schall Architects

Figure 3: Site Plan



Source: Schall Architects

2.0 Study Methodology

The parameters by which this transportation impact analysis was prepared included the determination of what transportation facilities are to be analyzed, the scenarios to be analyzed and the methods required for analysis. The study area is typically determined (with input by City staff) by the extent of 50 peak hour directional trip and 20 peak hour trips at metered freeway on-ramps. The criteria for each of these parameters are included herein.

2.1.1 Study Area Criteria

The project study area is generally determined by the City of San Diego *Traffic Impact Study Manual* (July 1998) and the *SANTEC/ITE Guidelines for Traffic Impact Studies in the San Diego Region* (March 2000). For this project, the following intersections were included in this study:

1) Aero Dr/Linda Vista/Convoy St (signalized)
2) Aero Dr/Kearny Villa Rd (signalized)
3) Aero Dr/Aero Ct (signalized)
4) Aero Dr/Afton Rd (signalized)
5) Aero Dr/Sandrock Rd (signalized)
6) Aero Dr/Ruffin Rd (signalized)
7) Aero Dr/W. Canyon Ave (signalized)
8) Aero Ct/Aero Dr (un-signalized)
9) Aero Ct/Aero Pl (un-signalized)
10) Kearny Villa Rd/SR-163 NB ramp south of Balboa (signalized)
11) Kearny Mesa Rd/Armour St/SR-163 SB ramp (signalized)
12) Kearny Mesa Rd/Convoy St (signalized)
13) Mesa College Dr/SR-163 NB Ramp (signalized)
14) Mesa College Dr/Annrae St (signalized)
15) Mesa College Dr/Berger/I-805 SB Ramp (signalized)
16) Kearny Villa Rd/I-805 NB Ramp (signalized)

The following street segments were also analyzed as part of this study:

1) Aero Ct from Aero Dr to Aero Place
2) Aero Dr from Convoy St to Kearny Villa Rd
3) Aero Dr from Kearny Villa Rd to Aero Ct
4) Aero Dr from Aero Ct to Afton Rd
5) Aero Dr from Afton Rd to Sandrock Rd
6) Aero Dr from Sandrock Rd to Ruffin Rd
7) Aero Dr from Ruffin Rd to W. Canyon Ave
8) Convoy St from Kearny Mesa Rd to Aero Dr
9) Kearny Mesa Rd from Armour St to Convoy St
10) Kearny Villa Rd from Balboa Ave to Aero Dr
11) Mesa College Dr from Aero Dr to I-805
12) Mesa College Dr from I-805 to SR-163

Additionally, the I-805/Mesa College Drive southbound on-ramp was analyzed as part of this study. Traffic count data are included in **Appendix A.**

2.1.2 Scenario Criteria

Based on discussion with City staff, the following study scenarios were included:

1) Existing without Project Conditions
2) Existing with Project Conditions
3) Year 2017 (opening day) without Project Conditions
4) Year 2017 (opening day) with Project Conditions
5) Year 2022 (full school capacity) without Project Conditions
6) Year 2022 (full school capacity) with Project Conditions
7) Horizon Year without Project Conditions
8) Horizon Year with Project Conditions

2.1.3 Traffic Analysis Criteria

The traffic analyses prepared for this study were based on the *2000 Highway Capacity Manual* (HCM) operations analysis using Level of Service (LOS) evaluation criteria. The operating conditions of the study intersections were measured using the HCM LOS designations, which ranges from A through F. LOS A represents the best operating condition and LOS F denotes the worst operating condition. For this traffic study, the intersections were analyzed using the City of San Diego criteria (traffic study checklist included in **Appendix B**). The LOS criteria for each roadway component are described below.

2.1.3.1 Intersections

The study intersections were analyzed based on the **operational analysis** outlined in the 2000 HCM. This process defines LOS in terms of **average control delay** per vehicle, which is measured in seconds. LOS at the intersections were calculated using the computer software program Synchro 8.0 (Trafficware Corporation). The HCM LOS for the range of delay by seconds for un-signalized and signalized intersections is described in **Table 1**.

TABLE 1: UN-SIGNALIZED AND SIGNALIZED INTERSECTION LEVEL OF SERVICE (HCM 2000)

Level of Service	Un-Signalized Average Control Delay (seconds/vehicle)	Signalized Average Control Delay (seconds/vehicle)
A	0-10	0-10
B	> 10-15	> 10-20
C	> 15-25	> 20-35
D	> 25-35	> 35-55
E	> 35-50	> 55-80
F	> 50	> 80

Source: Highway Capacity Manual 2000.

2.1.4 Street Segments

The street segments were analyzed based on the functional classification of the roadway using the City of San Diego *Average Daily Vehicle Trips* capacity lookup table. The roadway segment capacity and LOS standards used to analyze street segments are summarized in **Table 2**.

TABLE 2: STREET SEGMENT DAILY CAPACITY AND LOS (CITY OF SAN DIEGO)

Circulation Element Road Classification	LOS A	LOS B	LOS C	LOS D	LOS E
Expressway – 6 Lanes	<30,000	<42,000	<60,000	<70,000	<80,000
Prime Arterial – 6 Lanes	<25,000	<35,000	<50,000	<55,000	<60,000
Major Arterial – 6 Lanes	<20,000	<28,000	<40,000	<45,000	<50,000
Major Arterial – 4 Lanes	<15,000	<21,000	<30,000	<35,000	<40,000
Collector – 4 Lanes	<10,000	<14,000	<20,000	<25,000	<30,000
Collector (no Center Ln) – 4 Lanes	<5,000	<7,000		<13,000	<15,000
Collector (with TWLTL) – 2 Lanes			<10,000		
Collector – 2 Lanes (no fronting property)	<4,000	<5,500	<7,500	<9,000	<10,000
Collector – 2 Lanes (commercial-industrial fronting)	<2,500	<3,500	<5,000	<6,500	<8,000
Collector – 2 Lanes (multi-family)	<2,500	<3,500	<5,000	<6,500	<8,000
Sub-Collector – 2 Lanes (multi-family)			<2,200		

Source: City of San Diego *Traffic Impact Study Manual* July 1998, page 8.

2.1.5 Metered Freeway On-Ramps

The freeway on-ramp at Mesa College Dr/I-805 was analyzed based on the City of San Diego ramp metering analysis as outlined in Appendix 2 of the City of San Diego *Traffic Impact Study Manual*, July 1998. Most restrictive meter rates for the study on-ramps were obtained from Caltrans. The southbound on-ramp has one Single Occupancy Vehicle (SOV) lane and one High Occupancy Vehicle (HOV) lane. The usage split between the SOV and HOV lanes was calculated from counts collected on Wednesday, 2/17/2016. Excerpts from the City of San Diego traffic study manual, Caltrans' on-ramp meter rates, SOV/HOV usage split, and pictures documenting the on-ramp observations are included in **Appendix C**.

2.1.6 Traffic Significance Criteria

A project is considered to have caused a significant impact if the new project traffic degrades a facility from acceptable LOS to unacceptable LOS or decreases the operations on the surrounding roadways by the City of San Diego defined thresholds as shown in **Table 3**.

TABLE 3: CITY OF SAN DIEGO TRAFFIC IMPACT SIGNIFICANCE THRESHOLDS

Level of Service with Project	Allowable Increase Due to Project Impacts[1]		
	Roadway Segments		Intersections
	V/C	Speed (mph)	Delay (sec.)
E[2]	0.02	1.0	2.0
F[2]	0.01	0.5	1.0

Source: City of San Diego. Notes: [1] If a proposed project's traffic impacts exceed the values shown in the table, then the impacts are deemed "significant." If the project traffic causes an acceptable LOS (i.e. A-C) to degrade to LOS E or F, then the impact is deemed "significant". The project applicant shall identify "feasible mitigations" to achieve LOS D or better. [2] The acceptable Level of Service (LOS) standard for roadways and intersections in San Diego is LOS D. However, for undeveloped locations, the goal is to achieve a LOS C. Delay measured in seconds. V/C = Volume to Capacity Ratio (capacity at LOS E should be used). Speed = Arterial speed measured in miles per hour for CMP

If a significant impact is calculated due to the addition of project traffic, then feasible mitigation is required to reduce the facility to the pre-project conditions or better. If the mitigation does not reduce the impact to LOS D, the impact is considered significant and unmitigated.

3.0 Existing Conditions

This section describes the study area street system, morning intersection volumes between 8:00 AM and 9:00 AM for a school starting bell time of 8:45 AM; afternoon intersection volume between 3:15 PM and 4:15 PM for a school ending bell time of 3:30 PM (pre-Kindergarten and Kindergarten) and 3:45 PM (Grades 1 through 12); evening intersection volumes between 4:45 PM and 5:45 PM for the remaining students that may use the after school day care facilities that close at 5:45 PM. Daily volumes and LOS for the aforementioned periods are described below.

3.1.1 Existing Street System

In the vicinity of the project, the following roadways were analyzed as part of this study:

Aero Court from Aero Drive to Aero Place is not classified in the Kearny Mesa Community Plan (adopted by City Council on April 26, 2011, excerpts included in **Appendix D**). Aero Court from Aero Drive to Aero Place is constructed as an un-divided roadway with two travel lanes (one lane each direction) and on-street parking allowed on both sides of the roadway within approximately 42 feet of pavement. This segment of Aero Court functions as a two lane collector (commercial-industrial fronting) and has design elements that match a two lane collector (curb to curb width of at least 36 feet) as noted in the City of San Diego *Street Design Manual*, 2002 (excerpts included in Appendix D). Therefore, this segment is analyzed with a Collector capacity of 8,000 daily trips at LOS E. A posted speed limit was not observed on this segment.

Aero Drive is classified as a *6-Lane Prime* from Convoy Street to Sandrock Road and as a *4-Lane Major* from Sandrock Road to W. Canyon Avenue in the Kearny Mesa Community Plan (excerpts included in Appendix D). Aero Drive from Convoy Street to Sandrock Road is generally constructed as a 4 lane divided roadway with a bike lane in each direction, and parking prohibited on both sides of the roadway. A short segment of Aero Drive from Broadstone Driveway to Sandrock Road is constructed with three travel lanes in the eastbound direction. Aero Drive from Sandrock Road to Ruffin Road is generally constructed as a 4 lane un-divided roadway with a center two way left turn lane, a bike lane in each direction, and parking prohibited on both sides of the roadway. Aero Drive from Ruffin Road to W. Canyon Avenue is generally construct as a 4 lane divided roadway, a bike lane in each direction, and parking prohibited on both sides of the roadway. The posted speed limit from Convoy Street to Sandrock Road is 40 Miles per Hour (MPH) while the posted speed limit from Sandrock Road to W. Canyon Avenue is 45 MPH.

Aero Place from Aero Court to the project access is not classified in the Kearny Mesa Community Plan (excerpts included in Appendix D). Aero Place from Aero Court to the project access is constructed as a cul-de-sac with two travel lanes (one lane each direction) and on-street parking allowed on both sides of the roadway within approximately 40 feet of pavement. This segment of Aero Place functions as a two lane collector (commercial-industrial fronting) and has design elements that match a two lane collector (curb to curb width of at least 36 feet) as noted in the City of San Diego *Street Design Manual*, 2002 (excerpts included in Appendix D). Therefore, this segment is analyzed with a Collector capacity of 8,000 daily trips at LOS E. A posted speed limit was not observed on this segment.

Convoy Street is classified as a *4-Lane Major* from Kearny Mesa Road to Aero Drive in the Kearny Mesa Community Plan (excerpts included in Appendix D). Convoy Street from Kearny Mesa Road to Aero Drive is constructed as a 4 lane divided roadway with parking generally allowed on both sides of the roadway. A posted speed limit was not observed on this segment.

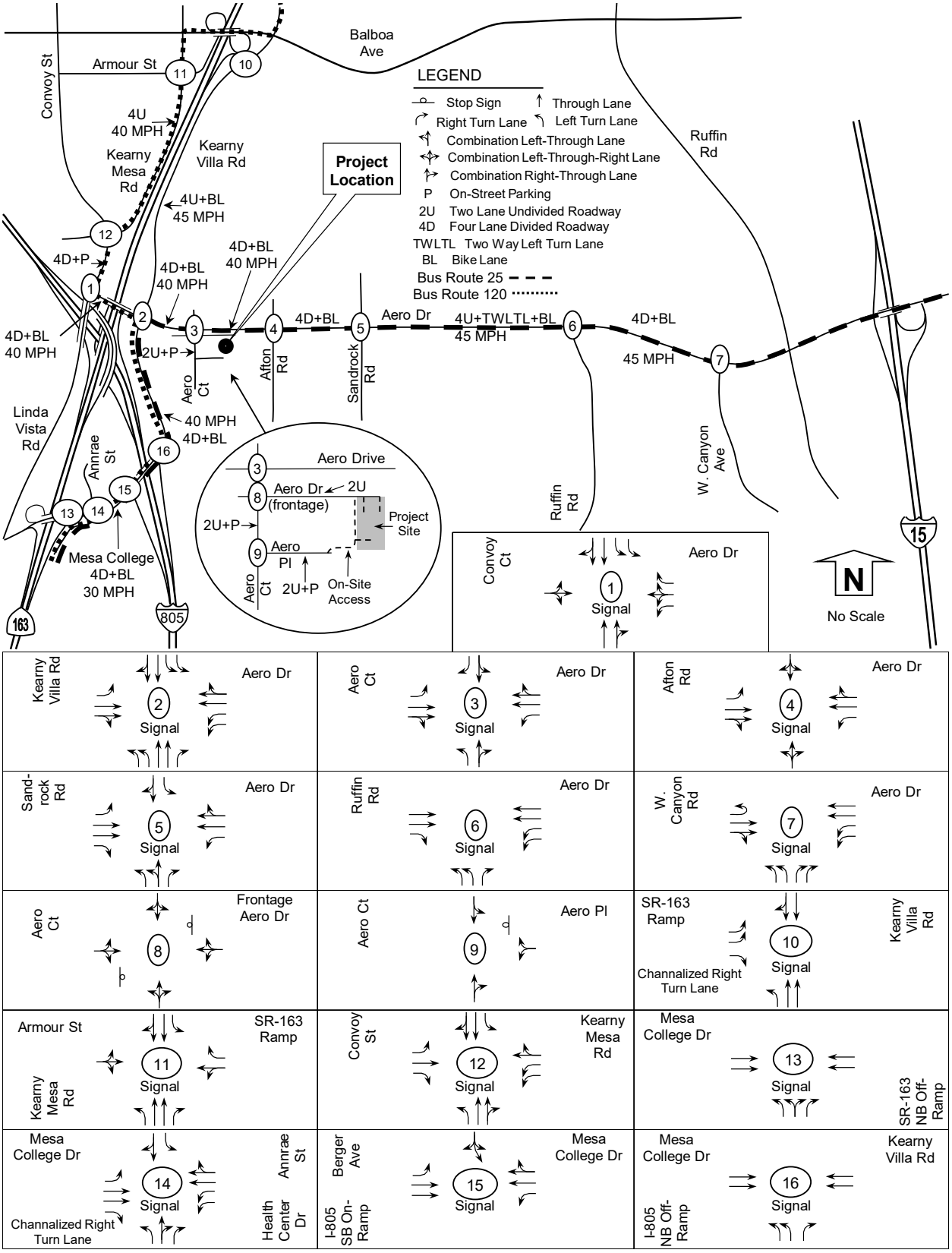
Kearny Mesa Road is classified as a *4-Lane Collector* from Armour Street to Convoy Street in the Kearny Mesa Community Plan (excerpts included in Appendix D). Kearny Mesa Road from Armour Street to Convoy Street is generally constructed as a 4 lane un-divided roadway with portions having a center two way left turn lane and limited on-street parking. The posted speed limit is generally 40 MPH.

Kearny Villa Road is classified as a *4-Lane Major* from SR-163 northbound on-ramp (just south of Balboa Ave) to I-805 in the Kearny Mesa Community Plan (excerpts included in Appendix D). Kearny Villa Road from the SR-163 northbound on-ramp (just south of Balboa Ave) to Aero Drive is generally constructed as a 4 lane un-divided roadway with a painted double yellow median, intermittent left turn lanes, a bike lane in each direction, parking prohibited on both sides of the roadway, and a posted speed limit of 45 MPH. Kearny Villa Road from Aero Drive to I-805 is generally constructed as a 4 lane divided roadway, a bike lane in each direction, parking prohibited on both sides of the roadway, and a posted speed limit of 40 MPH.

Mesa College Drive is classified as a *4-Lane Collector* from SR-163 to I-805 in the Serra Mesa Community Plan (adopted by City Council on April 26, 2011, excerpts included in Appendix D). Mesa College Drive from SR-163 to I-805 is generally constructed with a raised median, two travel lanes in each direction, a bike lane in each direction, and parking prohibited on both sides of the roadway. The posted speed limit in the westbound direction is 30 MPH. A posted speed limit was not observed in the eastbound direction.

The existing roadway conditions along with bus routes are shown in **Figure 4**.

Figure 4: Existing Roadway Conditions



3.1.2 Existing Traffic Volumes and LOS Analysis

Counts were collected between 8:00 AM and 9:00 AM for a school starting bell time of 8:45 AM; between 3:15 PM and 4:15 PM for a school ending bell time of 3:30 PM (pre-Kindergarten and Kindergarten) and 3:45 PM (remaining students); and between 4:45 PM and 5:45 PM for students that may use the after school day care facilities that will close at 5:45 PM. The count dates are noted in parentheses for the study intersections below:

1) Aero Dr/Linda Vista/Convoy St (Tuesday, 2/2/2016)
2) Aero Dr/Kearny Villa Rd (Tuesday, 2/2/2016)
3) Aero Dr/Aero Ct (Tuesday, 2/2/2016)
4) Aero Dr/Afton Rd (Tuesday, 2/2/2016)
5) Aero Dr/Sandrock Rd (Tuesday, 2/2/2016)
6) Aero Dr/Ruffin Rd (Tuesday, 2/2/2016)
7) Aero Dr/W. Canyon Ave (Tuesday, 2/2/2016)
8) Aero Ct/Aero Dr (Tuesday, 2/2/2016)
9) Aero Ct/Aero Pl (Tuesday, 2/2/2016)
10) Kearny Villa Rd/SR-163 NB ramp (Tuesday, 2/2/2016)
11) Kearny Mesa Rd/Armour St/SR-163 SB ramp (Tuesday, 2/2/2016)
12) Kearny Mesa Rd/Convoy St (Tuesday, 2/2/2016)
13) Mesa College Dr/SR-163 NB Ramp (Tuesday, 2/2/2016)
14) Mesa College Dr/Annrae St (Tuesday, 2/2/2016)
15) Mesa College Dr/Berger/I-805 SB Ramp (Tuesday, 2/2/2016)
16) Kearny Villa Rd/I-805 NB Ramp (Tuesday, 2/2/2016)

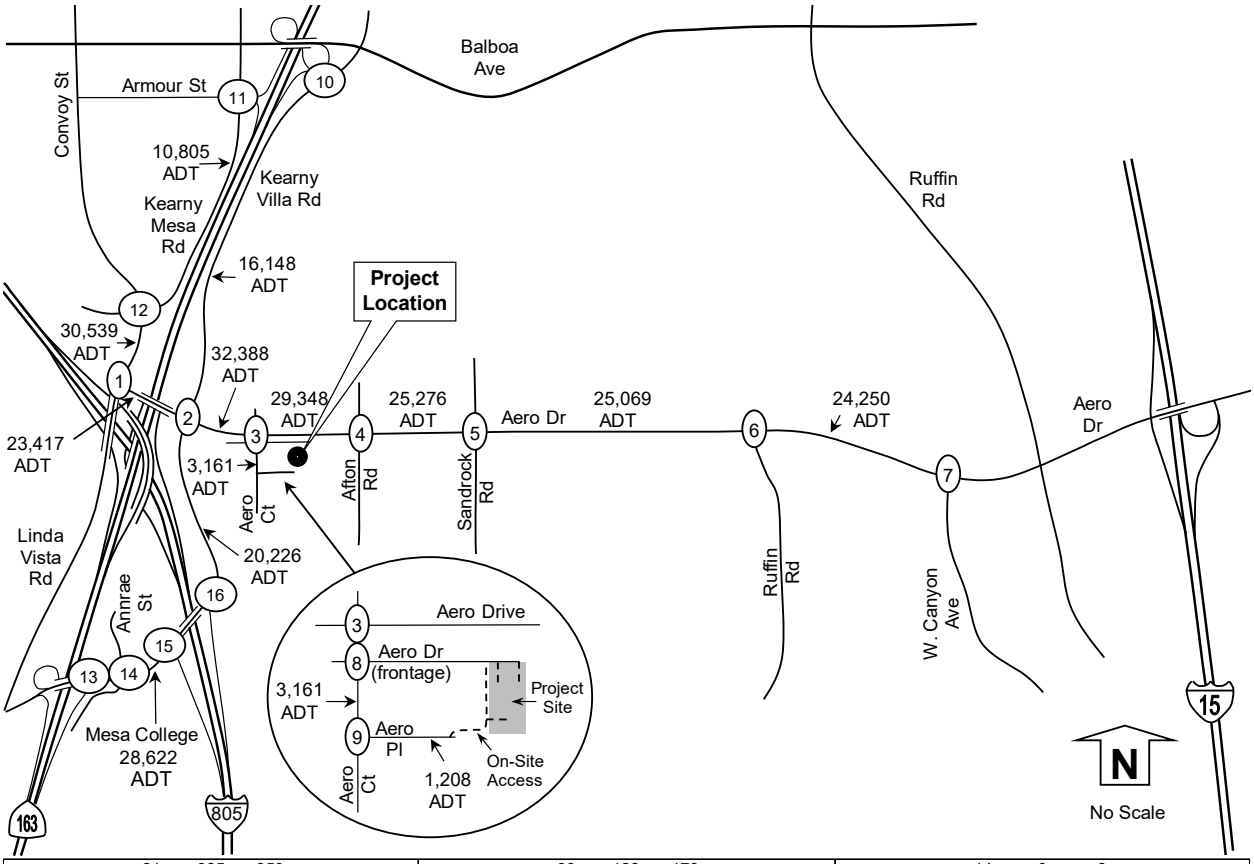
The following street segment volumes were collected on the dates noted below:

1) Aero Ct from Aero Dr to Aero Place (Tuesday, 1/26/2016)
2) Aero Dr from Convoy St to Kearny Villa Rd (Tuesday, 1/26/2016)
3) Aero Dr from Kearny Villa Rd to Aero Ct (Tuesday, 1/26/2016)
4) Aero Dr from Aero Ct to Afton Rd (Tuesday, 1/26/2016)
5) Aero Dr from Afton Rd to Sandrock Rd (Tuesday, 1/26/2016)
6) Aero Dr from Sandrock Rd to Ruffin Rd (Tuesday, 1/26/2016)
7) Aero Dr from Ruffin Rd to W. Canyon Ave (Tuesday, 1/26/2016)
8) Convoy St from Kearny Mesa Rd to Aero Dr (Tuesday, 2/2/2016)
9) Kearny Mesa Rd from Armour St to Convoy St (Tuesday, 2/2/2016)
10) Kearny Villa Rd from Balboa Ave to Aero Dr (Tuesday, 1/26/2016)
11) Mesa College Dr from Aero Dr to I-805 (Tuesday, 1/26/2016)
12) Mesa College Dr from I-805 to SR-163 (Tuesday, 1/26/2016)

Additionally, the I-805/Mesa College Dr southbound on-ramp SOV/HOV split was collected on Wednesday, 2/17/2016.

The existing weekday daily, 8:00-9:00 AM, 3:15-4:15 PM, and 4:45-5:45 PM volumes are shown in **Figures 5a and 5b**.

Figure 5a: Existing Volumes



Convoy Ct			Aero Dr			Kearny Villa Rd			Aero Dr			Aero Ct			Aero Dr		
	21	385	359				39	128	173				14	0	3		
	(5)	(1063)	(819)				(138)	(339)	(741)				(12)	(2)	(43)		
4	(10)			623	(468)	142	(140)			472	(332)	9	(7)			13	(10)
3	(46)	1		54	(4)	475	(995)	2		789	(607)	870	(1983)	3		1418	(1051)
1	(23)			419	(444)	96	(204)			254	(266)	182	(158)			64	(56)
		499	377				311	188	415				85	0	38		
		(542)	(487)				(202)	(268)	(411)				(131)	(1)	(46)		

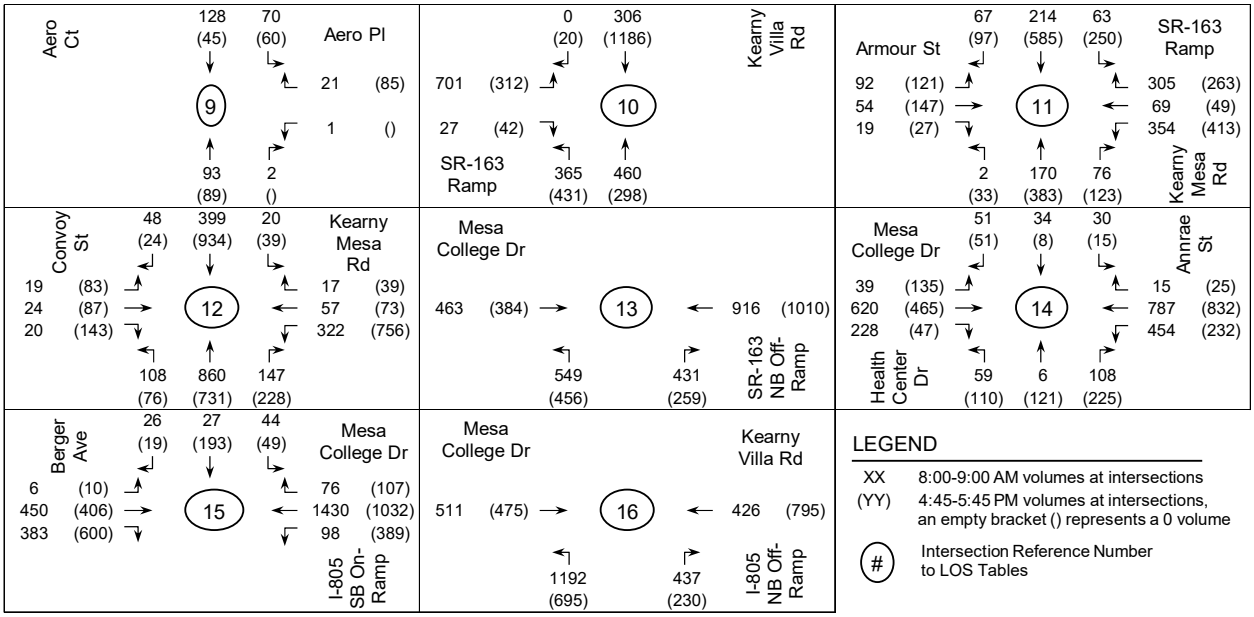
Afton Rd			Aero Dr			Sand-rock Rd			Aero Dr			Ruffin Rd			Aero Dr		
	15	0	3				16	6	14								
	(90)	(5)	(12)				(44)	(69)	(65)								
69	(46)			7	(5)	41	(50)			55	(24)						
687	(1683)	4		1203	(892)	504	(976)	5		732	(623)	539	(698)	6		517	(727)
154	(324)			59	(37)	182	(706)			115	(293)	115	(572)			167	(824)
	256	4	52				505	38	209				442		516		
	(148)	(3)	(54)				(281)	(30)	(152)				(161)		(245)		

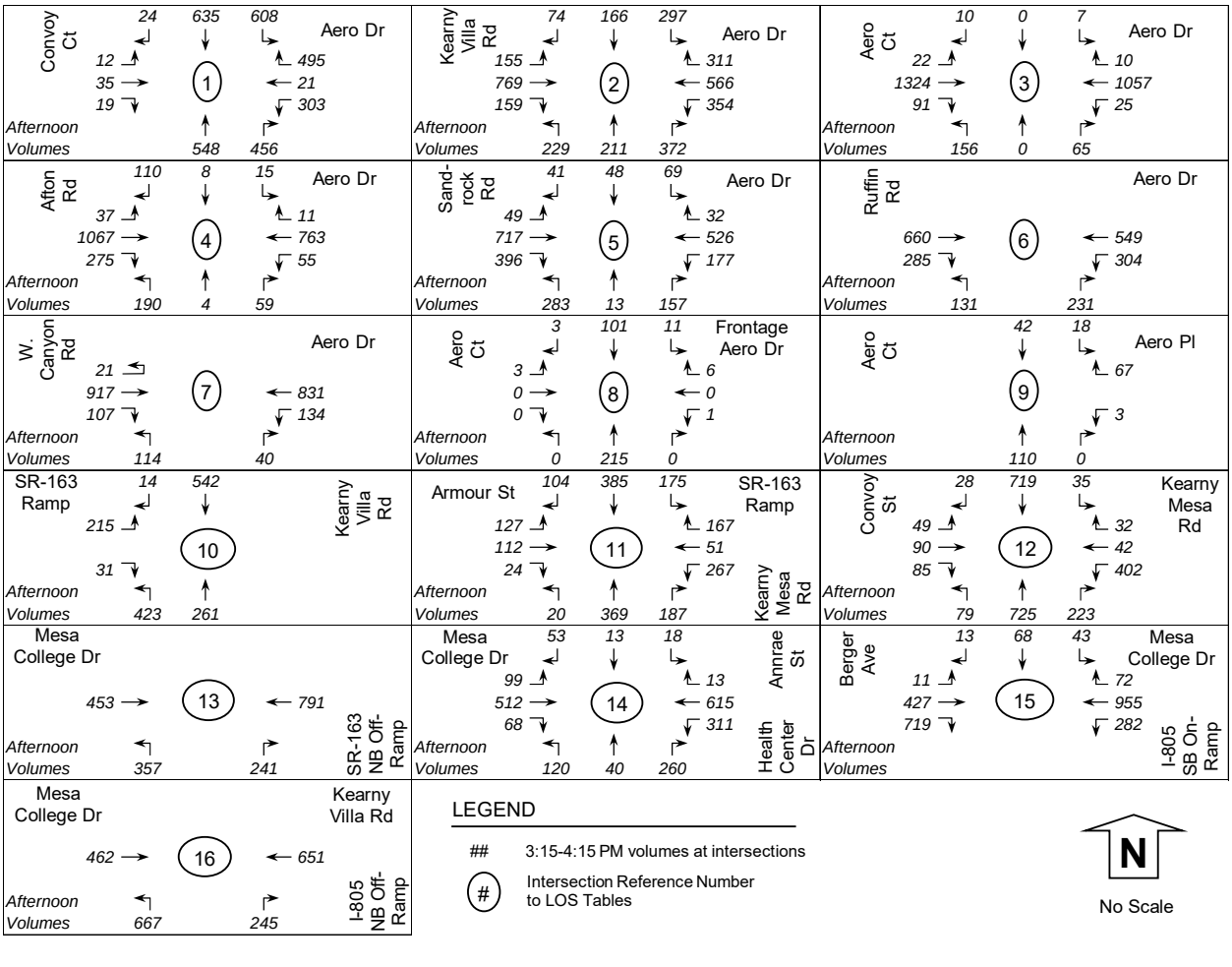
W. Canyon Rd			Aero Dr			Aero Ct			Frontage Aero Dr		
19	(9)						2	232	12		
							(7)	(159)	(48)		
977	(827)	7		606	(1331)	0	(4)			8	(16)
119	(139)			116	(164)	0	(1)	8		0	()
	84		57			2	(4)			0	(2)
	(159)		(63)				0	114	1		
							()	(161)	(6)		

LEGEND

Z,ZZZ 24 Hr Average Daily Traffic (ADT) on segments
XX 8:00-9:00 AM volumes at intersections
(YY) 4:45-5:45 PM volumes at intersections, an empty bracket () represents a 0 volume
(#) Intersection Reference Number to LOS Tables
Existing Roadways

Figure 5b: Existing Volumes





The LOS calculated for the study roadway elements are included in **Tables 4 through 6**. Intersection LOS calculations are included in **Appendix E**.

TABLE 4: EXISTING INTERSECTION LEVEL OF SERVICE

Intersection and (Analysis)[1]	Movement	Study Period	Existing Delay[2]	Existing LOS[3]
1) Aero Dr at	All	8:00-9:00am	29.5	C
Convoy St (S)	All	3:15-4:15pm	43.8	D
	All	4:45-5:45pm	56.1	E
2) Aero Dr at	All	8:00-9:00am	37.9	D
Kearny Villa	All	3:15-4:15pm	37.4	D
Rd (S)	All	4:45-5:45pm	57.1	E
3) Aero Dr at	All	8:00-9:00am	11.4	B
Aero Ct (S)	All	3:15-4:15pm	16.6	B
	All	4:45-5:45pm	31.3	C
4) Aero Dr at	All	8:00-9:00am	25.7	C
Afton Rd (S)	All	3:15-4:15pm	27.8	C
	All	4:45-5:45pm	30.5	C
5) Aero Dr at	All	8:00-9:00am	25.2	C
Sandrock Rd	All	3:15-4:15pm	29.5	C
(S)	All	4:45-5:45pm	40.7	D
6) Aero Dr at	All	8:00-9:00am	18.3	B
Ruffin Rd (S)	All	3:15-4:15pm	15.2	B
	All	4:45-5:45pm	23.0	C
7) Aero Dr at	All	8:00-9:00am	15.5	B
W. Canyon	All	3:15-4:15pm	16.2	B
Ave (S)	All	4:45-5:45pm	16.6	B
8) Aero Ct at	EB LTR	8:00-9:00am	10.3	B
Aero Frontage	WB LTR	8:00-9:00am	9.2	A
(U)	EB LTR	3:15-4:15pm	11.7	B
	WB LTR	3:15-4:15pm	9.9	A
	EB LTR	4:45-5:45pm	12.4	B
	WB LTR	4:45-5:45pm	10.1	B
9) Aero Ct at	WB LR	8:00-9:00am	9.6	A
Aero Pl (U)	WB LR	3:15-4:15pm	9.9	A
	WB LR	4:45-5:45pm	9.3	A
10) Kearny Villa	All	8:00-9:00am	27.4	C
Rd at SR-163	All	3:15-4:15pm	22.2	C
NB On-Ramp (S)	All	4:45-5:45pm	34.5	C
11) Kearny Mesa	All	8:00-9:00am	31.4	C
Rd at Armour St	All	3:15-4:15pm	34.9	C
(S)	All	4:45-5:45pm	51.4	D
12) Kearny Mesa	All	8:00-9:00am	22.4	C
Rd at Convoy	All	3:15-4:15pm	30.8	C
St (S)	All	4:45-5:45pm	35.8	D
13) Mesa College	All	8:00-9:00am	29.3	C
Dr at SR-163	All	3:15-4:15pm	21.9	C
NB Off-Ramp (S)	All	4:45-5:45pm	24.3	C
14) Mesa College	All	8:00-9:00am	25.0	C
Dr at Annrae St	All	3:15-4:15pm	27.0	C
(S)	All	4:45-5:45pm	27.7	C
15) Mesa College	All	8:00-9:00am	16.0	B
Dr at I-805 SB	All	3:15-4:15pm	21.6	C
On-Ramp (S)	All	4:45-5:45pm	31.2	C
16) Mesa College	All	8:00-9:00am	14.1	B
Dr at I-805 NB	All	3:15-4:15pm	9.9	A
Off-Ramp (S)	All	4:45-5:45pm	10.7	B

Notes: 1) Intersection Analysis - (S) Signalized, (U) Unsignalized. 2) Delay - HCM Average Control Delay in seconds. 3) LOS: Level of Service.

TABLE 5: EXISTING SEGMENT VOLUMES AND LEVEL OF SERVICE

Segment	Classification (as built)	Existing			
		Daily Volume	LOS E Capacity	V/C	LOS
Aero Court					
From Aero Dr to Aero Pl	Not Classified (2U+P)*	3,161	8,000	0.40	B
Aero Drive					
From Convoy Ct to Kearney Villa Rd	6 Lane Prime (4D+BL)	23,417	40,000	0.59	C
From Kearny Villa Rd to Aero Ct	6 Lane Prime (4D+BL)	32,388	40,000	0.81	D
From Aero Ct to Afton Rd	6 Lane Prime (4D+BL)	29,348	40,000	0.73	C
From Afton Rd to Sandrock Rd	6 Lane Prime (4D+BL)	25,276	40,000	0.63	C
From Sandrock Rd to Ruffin Rd	4 Lane Major (4U+TWLTL+BL)	25,069	40,000	0.63	C
From Ruffin Rd to W. Canyon Rd	4 Lane Major (4D+BL)	24,250	40,000	0.61	C
Aero Place					
From Aero Ct to Project Access	Not Classified (2U+P)*	1,208	8,000	0.15	A
Convoy Street					
From Kearny Mesa Rd to Aero Dr	4 Lane Major (4D+P)	30,539	40,000	0.76	D
Kearny Mesa Road					
From Armour/SR-163 SB to Convoy St	4 Lane Collector (4U)	10,805	30,000	0.36	B
Kearny Villa Road					
From SR-163 NB Ramp to Aero Dr	4 Lane Major (4U)**	16,148	40,000	0.40	B
From Aero Dr to I-805 NB Ramp	4 Lane Major (4D)	20,226	40,000	0.51	B
Mesa College Drive					
From SR-163 to I-805	4 Lane Collector (4D)	28,622	30,000	0.95	E

Notes: Classification: 2U+P = 2 lane undivided roadway with on-street parking; 6D: 6 lane divided roadway; BL=Bike Lane. Daily volume is a 24 hour volume. LOS: Level of Service. *Functions as industrial fronting Collector with LOS capacity of 8,000. **Painted Median (two sets of double yellow lines establishing median).

TABLE 6: EXISTING ON-RAMP OPERATIONS

I-805 at Mesa College Dr SB On-Ramp & Study Period	Scenario	Vehicle Demand (veh/hr)	Number and type of lanes (1)	CALTRANS Provided Rate per lane (2)	On-Ramp Rate (veh/hr)	Excess Demand (veh/hr)	Calculated Delay (minutes)	Hourly Calculated Queue (feet)	Maximum Observed Stopped Queue (ft)	Maximum Observed Delay (minutes)
3:15 - 4:15 PM	Existing	748	1 SOV	900	900	0	0.0	0	About 100 ft	< 1
SB On-Ramp	Existing	321	1 HOV	900	900	0	0.0	0	About 25 ft	< 1
Total (SOV & HOV)		1,069								
4:45 - 5:45 PM	Existing	768	1 SOV	900	900	0	0.0	0	About 200 ft	About 1 min
SB On-Ramp	Existing	414	1 HOV	900	900	0	0.0	0	About 25 ft	< 1 min
Total (SOV & HOV)		1,182								

Notes: (1) SOV: Single Occupancy Vehicle, HOV: High Occupancy Vehicle, Split between SOV and HOV based on count data that documented 70% SOV with 30% HOV from 3:15pm-4:15pm on 2/17/16 and 65% SOV with 35% HOV from 4:45pm-5:45pm on 2/17/16 (Appendix C). (2) Rate provided by CALTRANS (Appendix C). Max observed stopped queue is when vehicles require stop and go as opposed to a slow rolling approach to the stop bar.

Under existing conditions, all of the study locations were calculated to operate at LOS D or better, except for the intersections of:

1) Aero Dr/Convoy St (LOS E 4:45-5:45pm), and
2) Aero Dr/Kearny Villa Rd (LOS E 4:45-5:45pm).

The segment of Mesa College Drive from SR-163 to I-805 was calculated to operate at LOS E on a daily basis. The metered freeway on-ramp at Mesa College/SB I-805 was calculated and observed to operate with minimal delay (maximum observed delay for the study period was approximately 1 minute).

4.0 Project Description

The proposed project is an English-French Pre-K through 12th Grade Private School (La Petite Ecole) with up to 540 total students to be located at 8401 Aero Drive San Diego, California. The site is approximately 2.76 acres and has a building of approximately 55,560 square feet. The project is planned to open in 2017. The land use for the project site is "Industrial and Business Parks". The Community Plan zoning maps are included in Appendix D. The existing building was previously used for education by the San Diego Community College District. The proposed use is education.

As part of the school there is a pre-school and after school on-site services (using school class rooms) to watch the students similar to a day care; however, this pre- and post-school service only operates from 7:45 to 8:45am and from 3:45 to 5:45pm, thus is not an independent day care from the school and is not open in the middle of the day. The students in the pre- and post-care facility are the same students that attend the school. This provides parents/guardians the ability to drop off a child early and do a pick up after work (until 5:45pm).

4.1 Project Trip Generation

The project includes two phases and two different land uses. The initial phase (opening day anticipated to be year 2017) includes a private school with up to 300 students and up to 10,000 square feet of office space. The final phase will include up to 540 students with no outside lease of office space. The previous office space from the initial phase will be converted to classrooms and some office space will remain for school administration purposes as an ancillary use to the school (with no outside leasing). The final phase is estimated to be year 2022 because this is the earliest the forecasted maximum student count may be reached.

The trip generation for the office spaces is based on the City of San Diego trip rates. The Institute of Transportation Engineers (ITE) 9th Edition Trip Generation was used to calculate the school related project traffic because the City of San Diego trip rates do not include private school trip rates (ITE rates are included in **Appendix F**). Three study hours were analyzed. ITE includes private school rates for the AM drop-off (when school starts), afternoon pickup (when school ends), and after school pick-up from daycare/after school activities. The City of San Diego trip rates do not include afternoon rates for the office use; therefore, a conservative application of the PM peak hour was applied to the afternoon period for the office use.

The initial project phase with up to 300 students and 10,000 sf of office is calculated to generate 1,040 daily trips with 282 AM trips (183 inbound and 99 outbound), 215 afternoon trips (81 inbound and 134 outbound), and 92 PM trips (30 inbound and 62 outbound).

The final project phase with up to 540 students is calculated to generate 1,339 daily trips with 437 AM trips (266 inbound and 171 outbound), 313 afternoon trips (131 inbound and 182 outbound), and 92 PM trips (40 inbound and 52 outbound).

The trip generation for the initial and final phases are shown in **Table 7**.

TABLE 7: PROJECT TRIP GENERATION

Proposed Uses	Rate, Size & Units	ADT	School Starts 8:00-9:00 AM			School Ends 3:15-4:15 PM			After Sch Pick Up 4:45-5:45 PM		
			% of ADT	Split IN	Split OUT	% of ADT	Split IN	Split OUT	% of ADT	Split IN	Split OUT
Initial Phase: Opening Day Year 2017											
Private School K-12	2.48 /Student		0.81	0.61	0.39	0.58	0.42	0.58	0.17	0.43	0.57
	300 Students	**744**		**148**	**95**		**73**	**101**		**22**	**29**
Office Ln Equation			13%	0.9	0.1	14%	0.2	0.8	14%	0.2	0.8
	10,000 SF	**296**		**35**	**4**		**8**	**33**		**8**	**33**
	Initial Phase Totals:	*1,040*		*183*	*99*		*81*	*134*		*30*	*62*
Final Phase: Year 2022											
Private School K-12	2.48 /Student		0.81	0.61	0.39	0.58	0.42	0.58	0.17	0.43	0.57
Final Phase Totals:	540 Students	**1,339**		**266**	**171**		**131**	**182**		**40**	**52**

Source: Institute of Transportation Engineers (ITE) 9th Edition Trip Generation, 2012 for the private school and City of San Diego Trip Generation for the initial phase office building. ADT - Average Daily Traffic; Split-percent inbound & outbound. Excel rounding may cause values to be slightly higher or lower than whole number.

4.2 Project Distribution and Assignment

The project is a private school; therefore, the travel patterns reflect students arriving from the greater San Diego area. This reflects the current school operations in which students are driven to school from many different areas around San Diego based on data maintained by the school. Therefore, about 80% of project traffic will use freeways to reach the site while the remaining 20% will arrive without using freeways. The distribution is shown in **Figure 6** with the assignment of trips for the initial phase with up to 300 students and up to 10,000 sf of office space (year 2017) are included in **Figures 7a and 7b** and the final phase with up to 540 students (year 2022) are included in **Figures 8a and 8b.**

Figure 6: Project Distribution

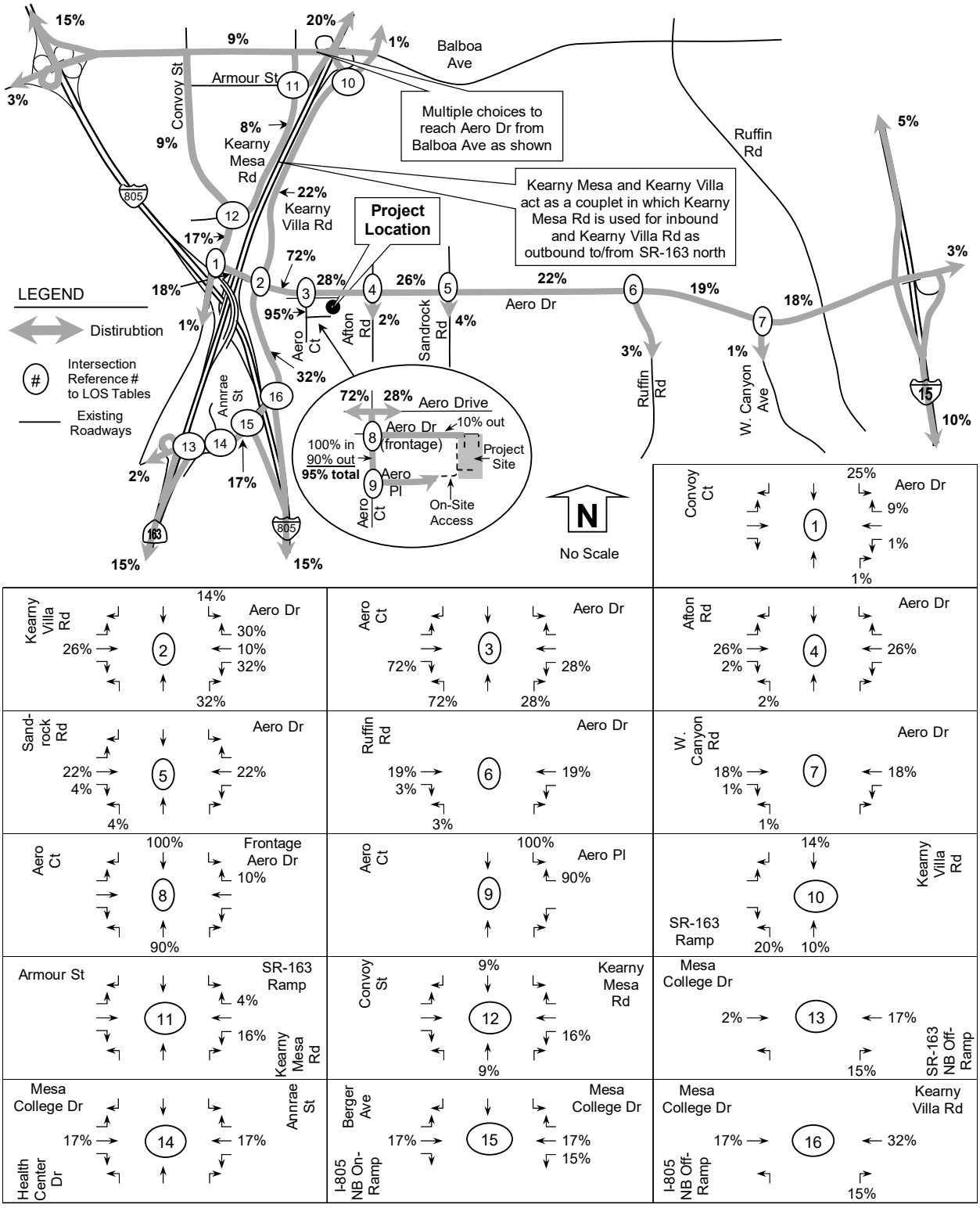
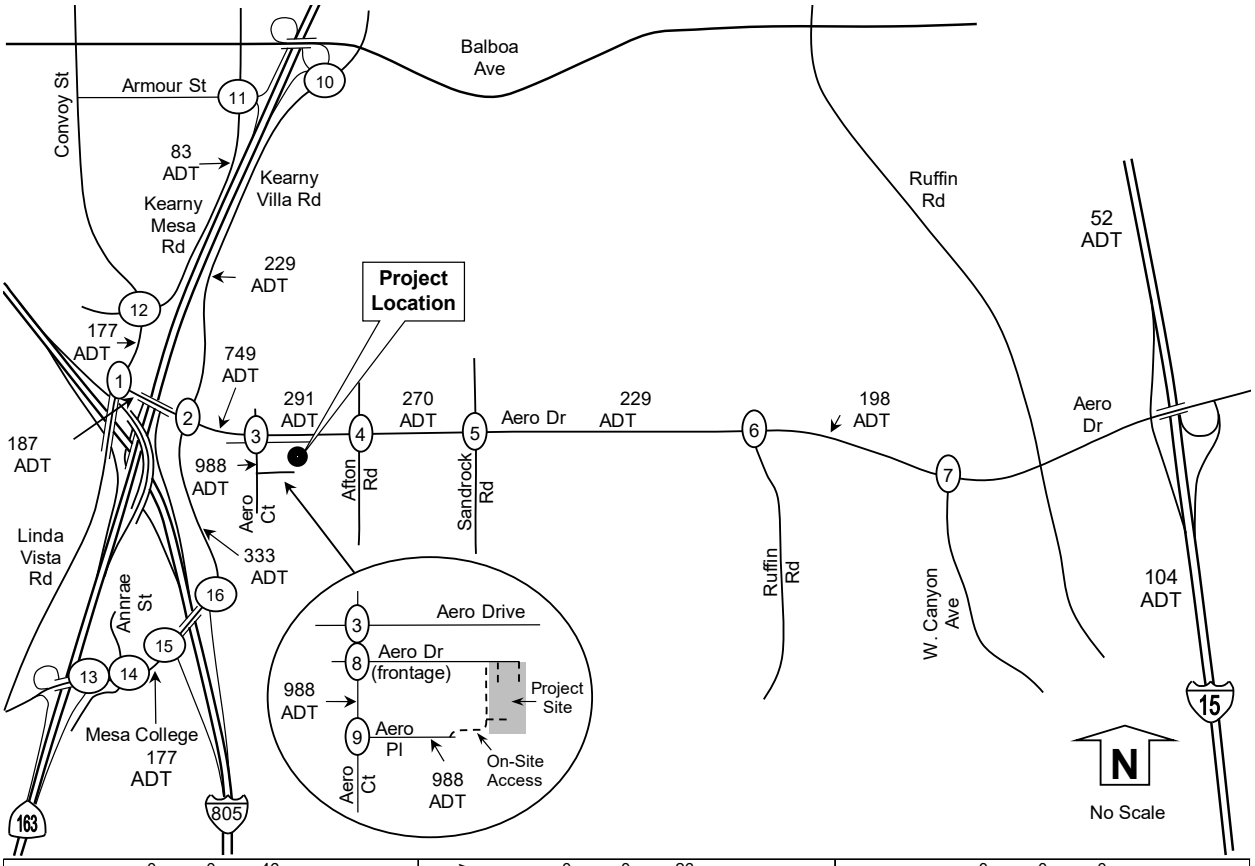


Figure 7a: Project Assignment Year 2017 (Phase 1: 300 Students and Office)



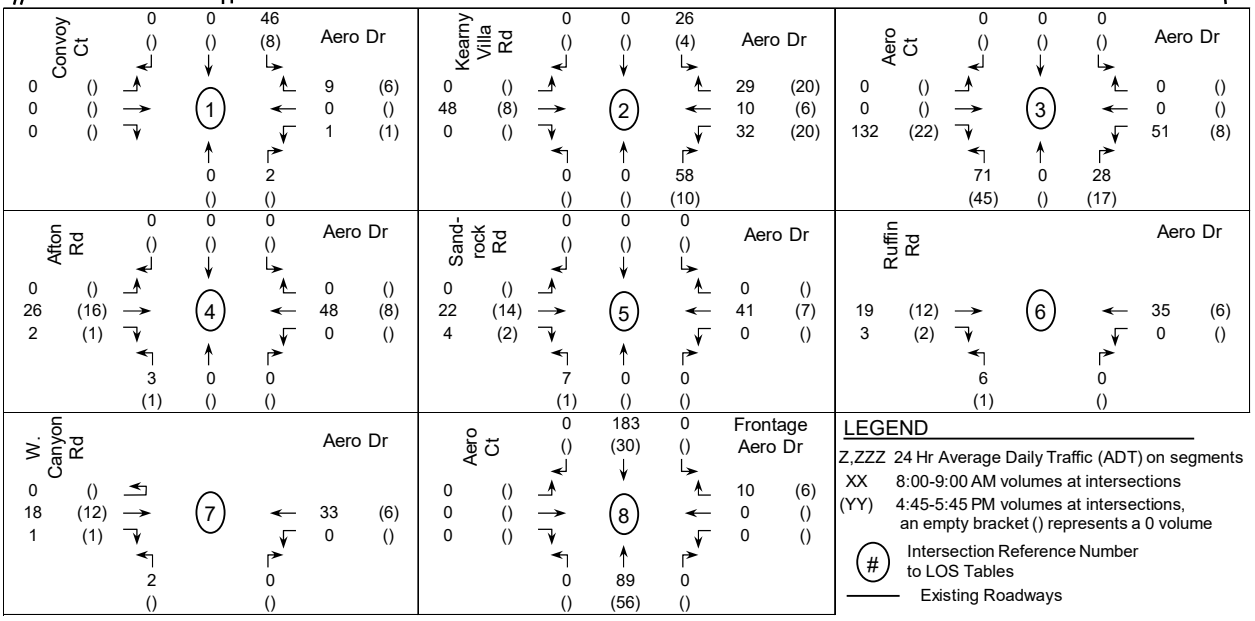
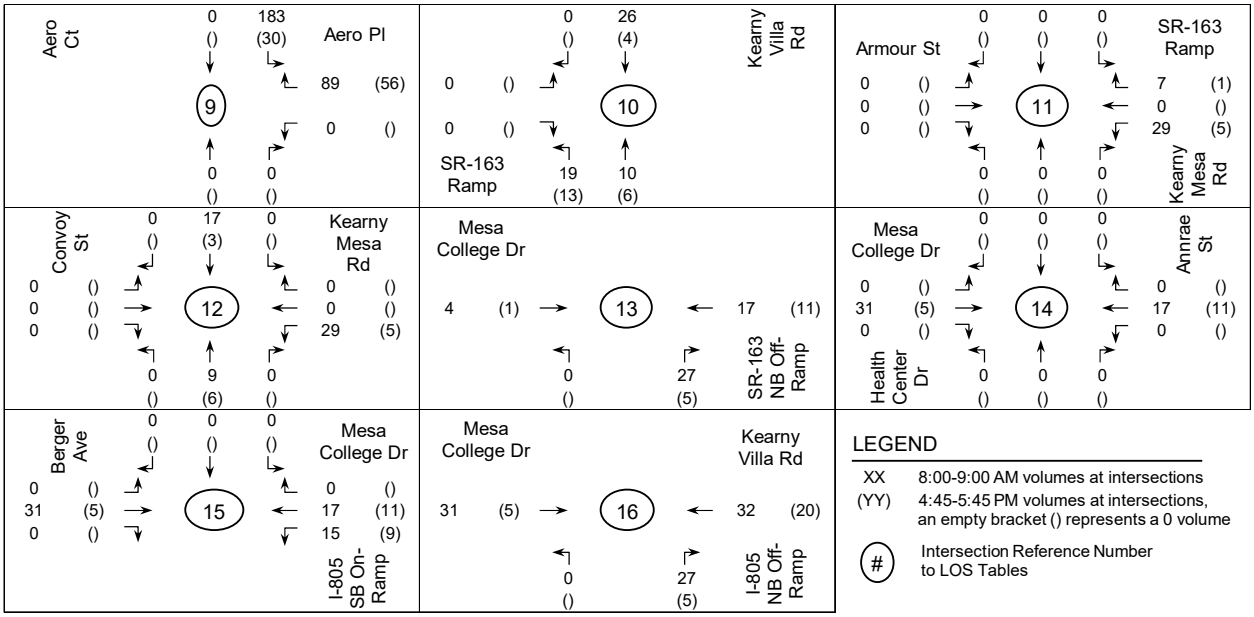


Figure 7b: Project Assignment Year 2017 (Phase 1: 300 Students and Office)



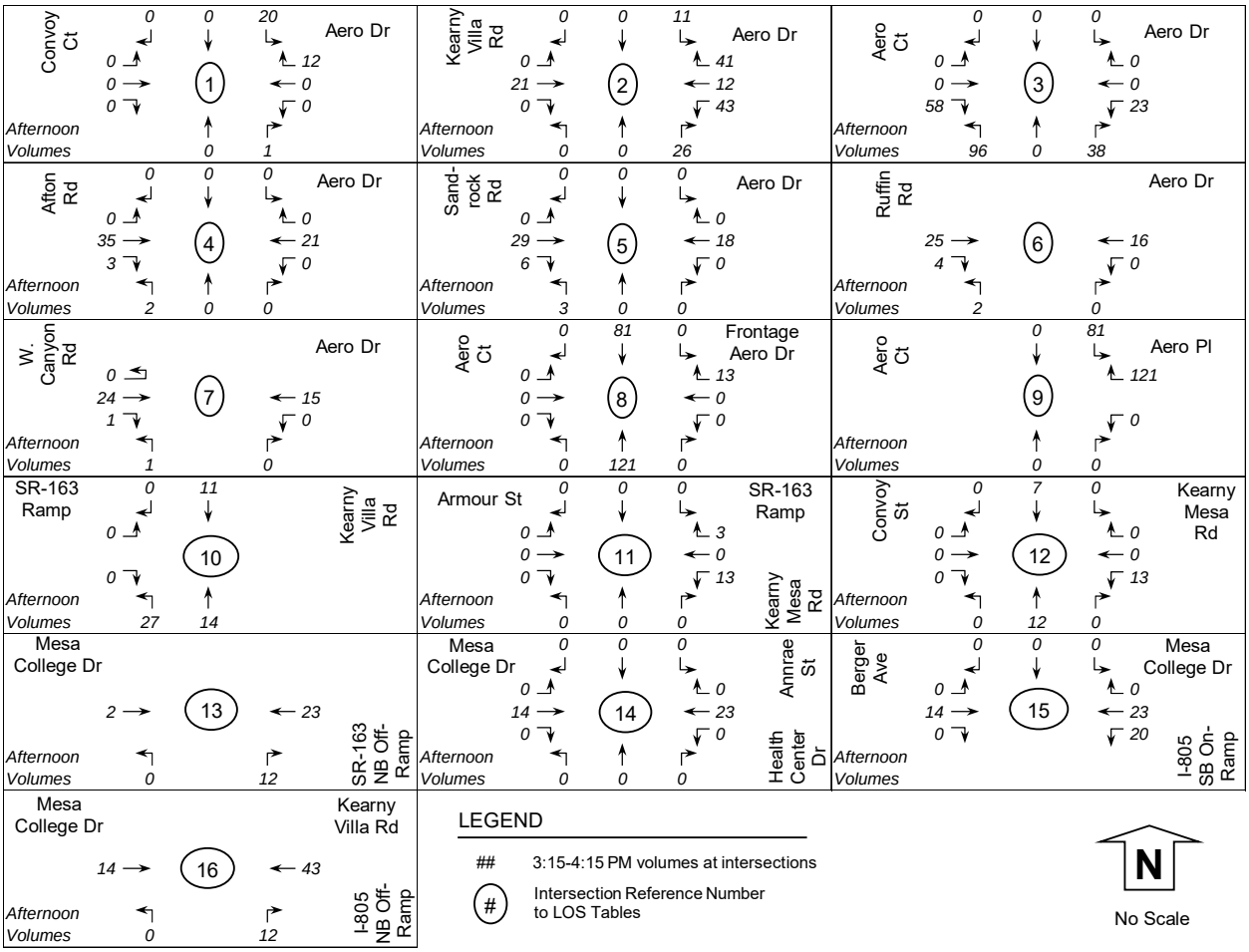
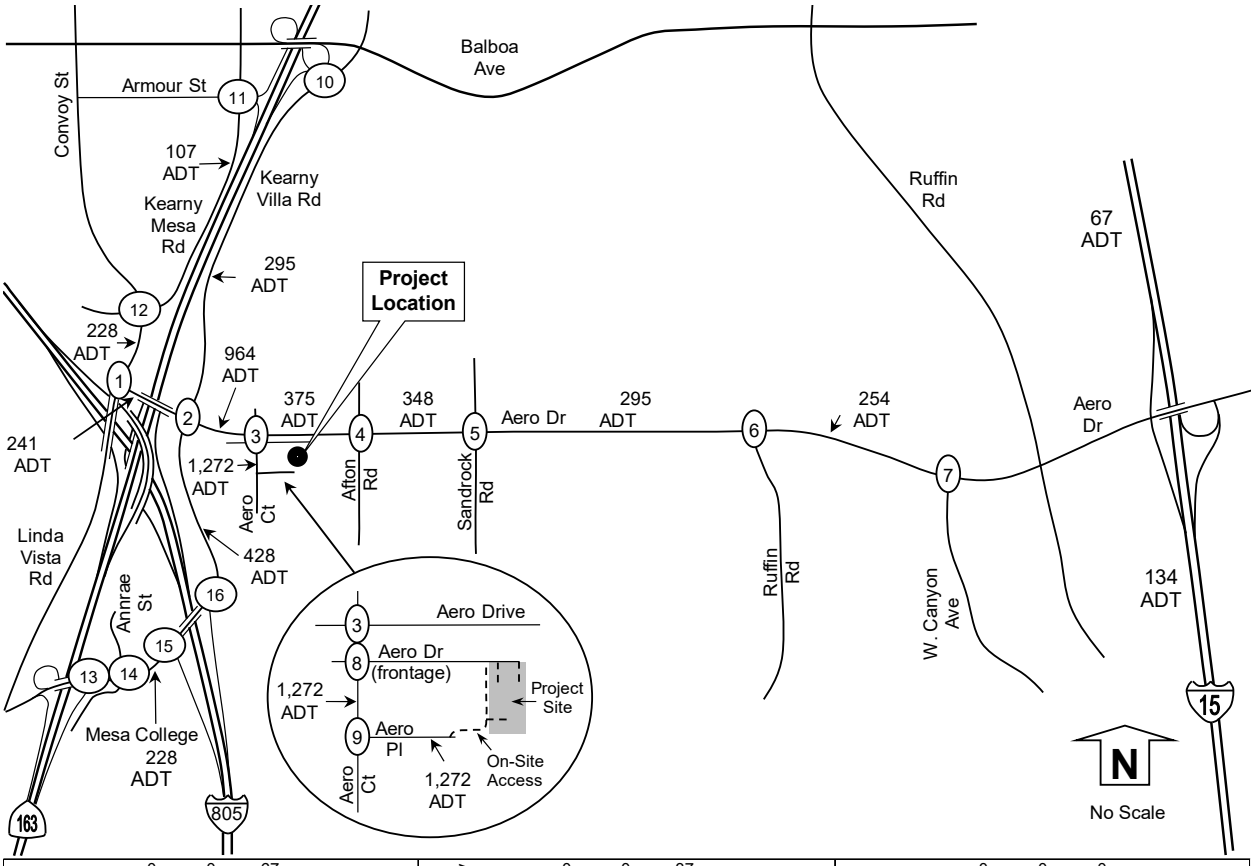


Figure 8a: Project Assignment Year 2022 (Phase 2: up to 540 Students)



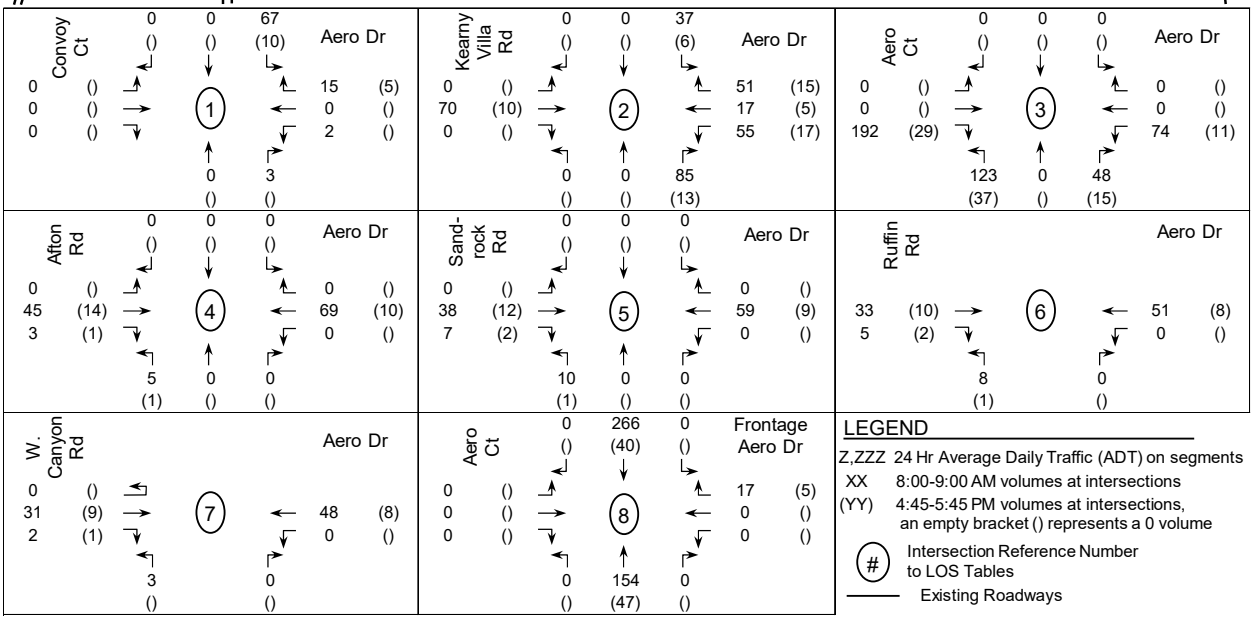
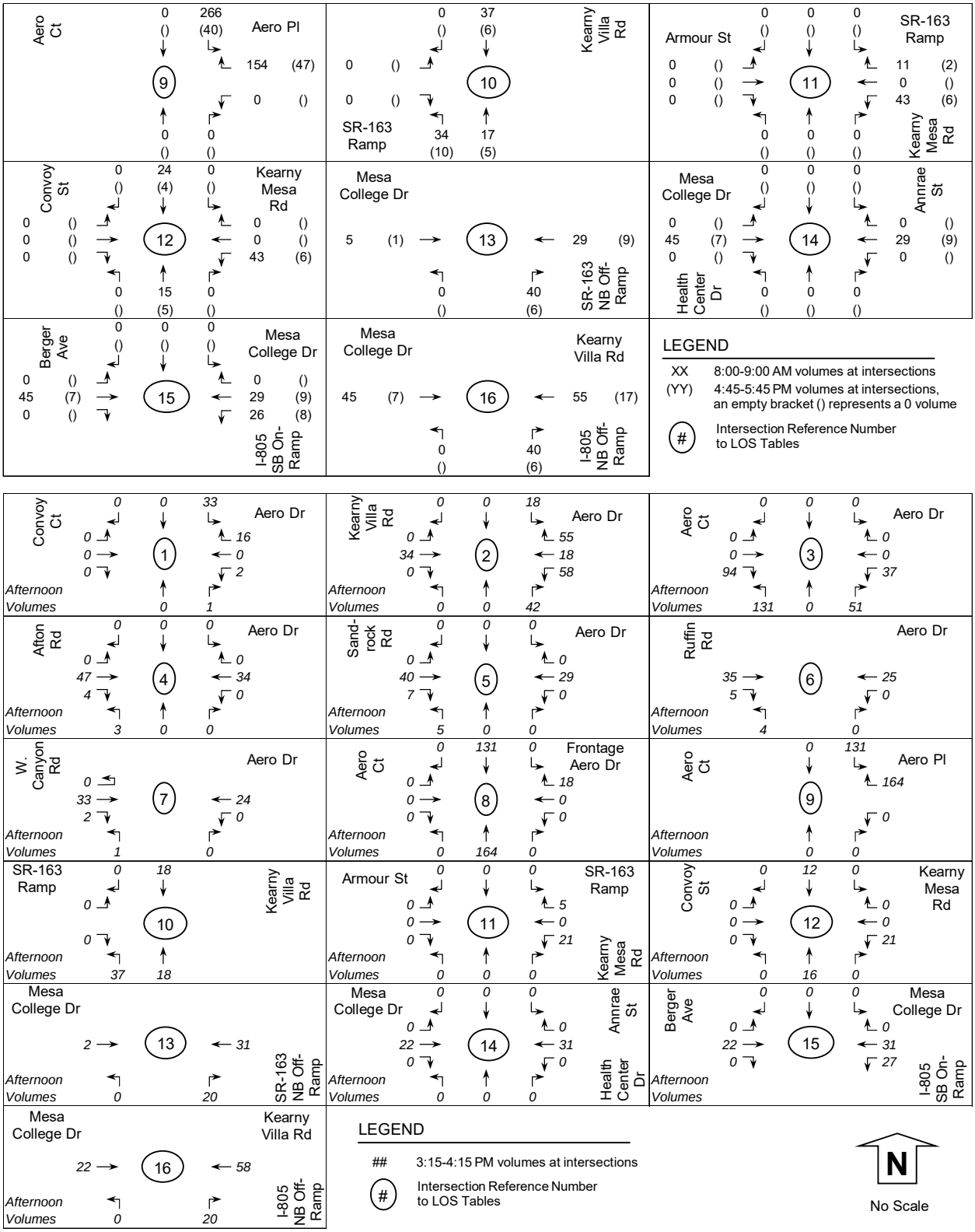


Figure 8b: Project Assignment Year 2022 (Phase 2: up to 540 Students)



5.0 Existing with Project (Phase 1) Conditions

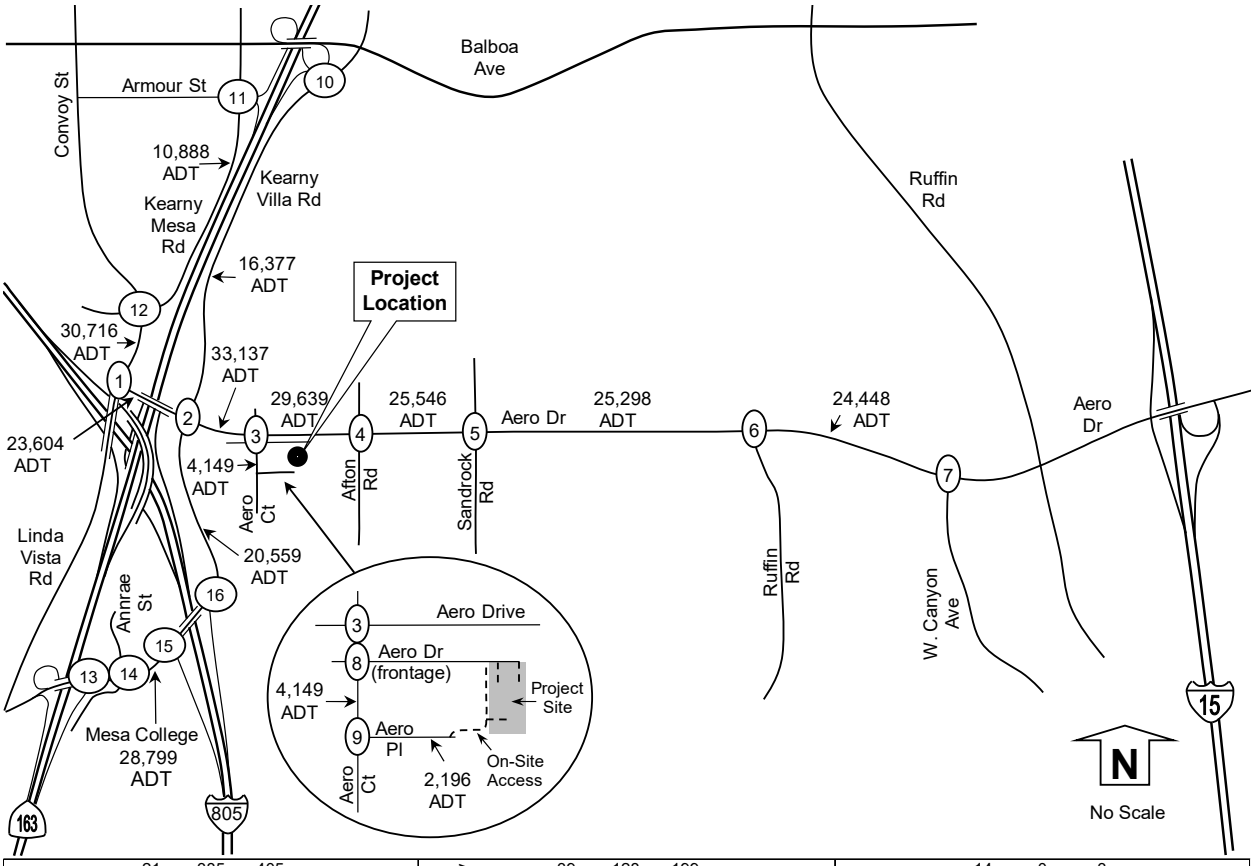
This scenario accounts for the addition of project (phase 1) traffic onto existing conditions. The traffic volumes are shown in **Figures 9a and 9b**. The LOS calculated for the study roadway elements are included in **Tables 8 through 10**. Intersection LOS calculations are included in **Appendix G**.

TABLE 8: EXISTING + PROJECT (PHASE 1) INTERSECTION LEVEL OF SERVICE (HCM)

Intersection and	Movement	Study	Existing		Existing + Project (Phase 1)			
(Analysis)[1]		Period	Delay[2]	LOS[3]	Delay[2]	LOS[3]	Delta[4]	Direct Impact?[5]
1) Aero Dr at	All	8:00-9:00am	29.5	C	30.5	C	1.0	No
Convoy St (S)	All	3:15-4:15pm	43.8	D	45.0	D	1.2	No
	All	4:45-5:45pm	56.1	E	57.0	E	0.9	No
2) Aero Dr at	All	8:00-9:00am	37.9	D	41.2	D	3.3	No
Kearny Villa	All	3:15-4:15pm	37.4	D	40.2	D	2.8	No
Rd (S)	All	4:45-5:45pm	57.1	E	58.3	E	1.2	No
3) Aero Dr at	All	8:00-9:00am	11.4	B	16.7	B	5.3	No
Aero Ct (S)	All	3:15-4:15pm	16.6	B	25.2	C	8.6	No
	All	4:45-5:45pm	31.3	C	34.7	C	3.4	No
4) Aero Dr at	All	8:00-9:00am	25.7	C	26.8	C	1.1	No
Afton Rd (S)	All	3:15-4:15pm	27.8	C	29.8	C	2.0	No
	All	4:45-5:45pm	30.5	C	31.8	C	1.3	No
5) Aero Dr at	All	8:00-9:00am	25.2	C	25.5	C	0.3	No
Sandrock Rd	All	3:15-4:15pm	29.5	C	30.0	C	0.5	No
(S)	All	4:45-5:45pm	40.7	D	40.9	D	0.2	No
6) Aero Dr at	All	8:00-9:00am	18.3	B	18.3	B	0.0	No
Ruffin Rd (S)	All	3:15-4:15pm	15.2	B	15.3	B	0.1	No
	All	4:45-5:45pm	23.0	C	23.1	C	0.1	No
7) Aero Dr at	All	8:00-9:00am	15.5	B	15.6	B	0.1	No
W. Canyon	All	3:15-4:15pm	16.2	B	16.4	B	0.2	No
Ave (S)	All	4:45-5:45pm	16.6	B	16.7	B	0.1	No
8) Aero Ct at	EB LTR	8:00-9:00am	10.3	B	12.7	B	2.4	No
Aero Frontage	WB LTR	8:00-9:00am	9.2	A	10.2	B	1.0	No
(U)	EB LTR	3:15-4:15pm	11.7	B	15.2	C	3.5	No
	WB LTR	3:15-4:15pm	9.9	A	11.0	B	1.1	No
	EB LTR	4:45-5:45pm	12.4	B	13.7	B	1.3	No
	WB LTR	4:45-5:45pm	10.1	B	10.7	B	0.6	No
9) Aero Ct at	WB LR	8:00-9:00am	9.6	A	10.8	B	1.2	No
Aero Pl (U)	WB LR	3:15-4:15pm	9.9	A	11.8	B	1.9	No
	WB LR	4:45-5:45pm	9.3	A	9.7	A	0.4	No
10) Kearny Villa	All	8:00-9:00am	27.4	C	28.0	C	0.6	No
Rd at SR-163	All	3:15-4:15pm	22.2	C	23.1	C	0.9	No
NB On-Ramp (S)	All	4:45-5:45pm	34.5	C	35.5	D	1.0	No
11) Kearny Mesa	All	8:00-9:00am	31.4	C	32.5	C	1.1	No
Rd at Armour St	All	3:15-4:15pm	34.9	C	35.6	D	0.7	No
(S)	All	4:45-5:45pm	51.4	D	51.7	D	0.3	No
12) Kearny Mesa	All	8:00-9:00am	22.4	C	23.0	C	0.6	No
Rd at Convoy	All	3:15-4:15pm	30.8	C	31.0	C	0.2	No
St (S)	All	4:45-5:45pm	35.8	D	36.1	D	0.3	No
13) Mesa College	All	8:00-9:00am	29.3	C	30.0	C	0.7	No
Dr at SR-163	All	3:15-4:15pm	21.9	C	22.2	C	0.3	No
NB Off-Ramp (S)	All	4:45-5:45pm	24.3	C	24.6	C	0.3	No
14) Mesa College	All	8:00-9:00am	25.0	C	25.1	C	0.1	No
Dr at Annrae St	All	3:15-4:15pm	27.0	C	27.1	C	0.1	No
(S)	All	4:45-5:45pm	27.7	C	27.8	C	0.1	No
15) Mesa College	All	8:00-9:00am	16.0	B	16.4	B	0.4	No
Dr at I-805 SB	All	3:15-4:15pm	21.6	C	22.9	C	1.3	No
On-Ramp (S)	All	4:45-5:45pm	31.2	C	32.7	C	1.5	No
16) Mesa College	All	8:00-9:00am	14.1	B	14.7	B	0.6	No
Dr at I-805 NB	All	3:15-4:15pm	9.9	A	10.1	B	0.2	No
Off-Ramp (S)	All	4:45-5:45pm	10.7	B	10.8	B	0.1	No

Notes: 1) Intersection Analysis - (S) Signalized, (U) Unsignalized. 2) Delay - HCM Average Control Delay in seconds. 3) LOS: Level of Service. 4) Delta is the increase in delay from project. 5) Direct impact if project traffic exceeds threshold.

Figure 9a: Existing with Project (Phase 1) Volumes



Convoy Ct			Aero Dr		
	21 (5)	385 (1063)	405 (827)		
4 (10)				632	(474)
3 (46)		(1)		54	(4)
1 (23)				420	(445)
		499 (542)	379 (487)		

Kearny Villa Rd			Aero Dr		
	39 (138)	128 (339)	199 (745)		
142 (140)				501	(352)
523 (1003)		(2)		799	(613)
96 (204)				286	(286)
	311 (202)	188 (268)	473 (421)		

Aero Ct			Aero Dr		
	14 (12)	0 (2)	3 (43)		
9 (7)				13	(10)
870 (1983)		(3)		1418	(1051)
314 (180)				115	(64)
	156 (176)	0 (1)	66 (63)		

Afton Rd			Aero Dr		
	15 (90)	0 (5)	3 (12)		
69 (46)				7	(5)
713 (1699)		(4)		1251	(900)
156 (325)				59	(37)
	259 (149)	4 (3)	52 (54)		

Sand-rock Rd			Aero Dr		
	16 (44)	6 (69)	14 (65)		
41 (50)				55	(24)
526 (990)		(5)		773	(630)
186 (708)				115	(293)
	512 (282)	38 (30)	209 (152)		

Ruffin Rd			Aero Dr		
558 (710)		(6)		552	(733)
118 (574)				167	(824)
	448 (162)		516 (245)		

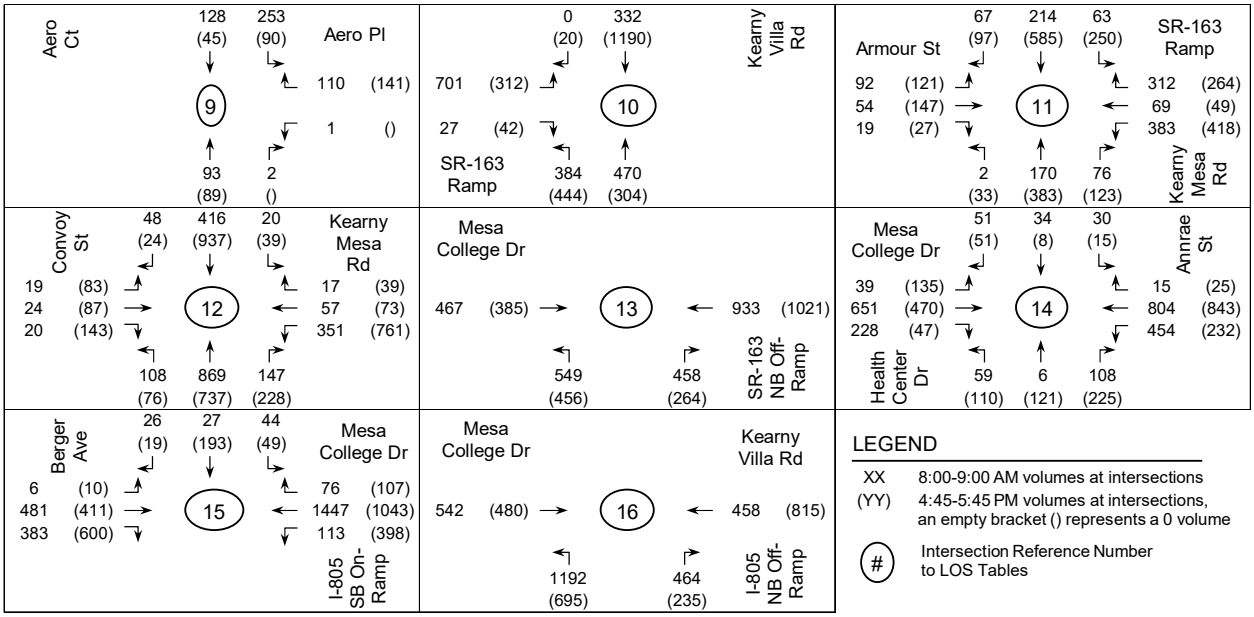
W. Canyon Rd			Aero Dr		
19 (9)					
995 (839)		(7)		639	(1337)
120 (140)				116	(164)
	86 (159)		57 (63)		

Aero Ct			Frontage Aero Dr	
	2 (7)	415 (189)	12 (48)	
0 (4)				18 (22)
0 (1)		(8)		0 ()
2 (4)				0 (2)
	0 ()	203 (217)	1 (6)	

LEGEND

Z,ZZZ 24 Hr Average Daily Traffic (ADT) on segments
XX 8:00-9:00 AM volumes at intersections
(YY) 4:45-5:45 PM volumes at intersections, an empty bracket () represents a 0 volume
(#) Intersection Reference Number to LOS Tables
Existing Roadways

Figure 9b: Existing with Project (Phase 1) Volumes



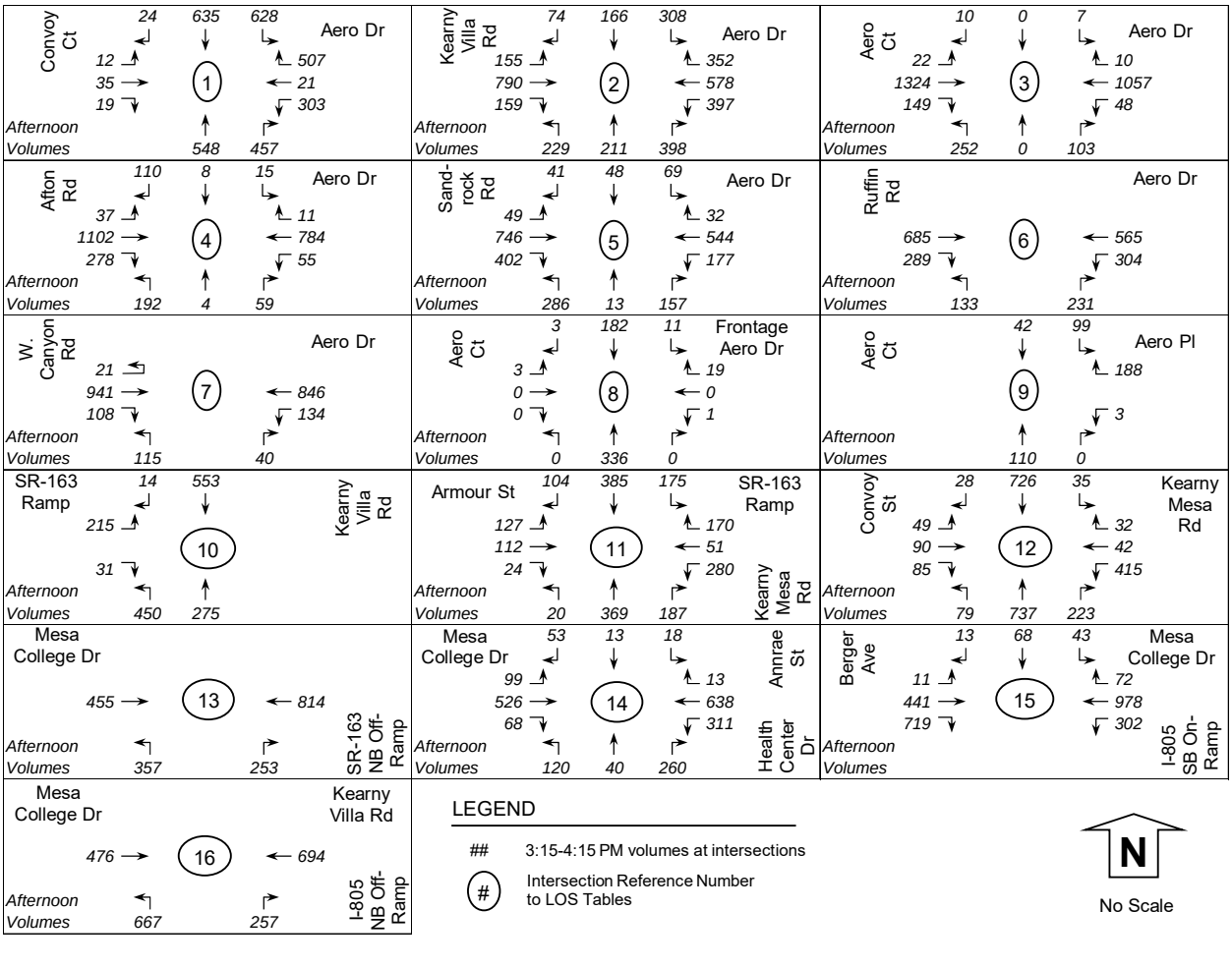


TABLE 9: EXISTING + PROJECT (PHASE 1) SEGMENT VOLUMES AND LEVEL OF SERVICE

Segment	Classification (as built)	Existing				Project	Existing + Project (Phase 1)					
		Daily Volume	LOS E Capacity*	V/C	LOS	Daily Volume	Daily Volume	LOS E Capacity*	V/C	LOS	Change in V/C	Direct Impact?
Aero Court												
From Aero Dr to Aero Pl	Not Classified (2U+P)*	3,161	8,000	0.395	B	988	4,149	8,000	0.519	C	0.124	No
Aero Drive												
From Convoy Ct to Kearney Villa Rd	6 Lane Prime (4D+BL)	23,417	40,000	0.585	C	187	23,604	40,000	0.590	C	0.005	No
From Kearny Villa Rd to Aero Ct	6 Lane Prime (4D+BL)	32,388	40,000	0.810	D	749	33,137	40,000	0.828	D	0.019	No
From Aero Ct to Afton Rd	6 Lane Prime (4D+BL)	29,348	40,000	0.734	C	291	29,639	40,000	0.741	C	0.007	No
From Afton Rd to Sandrock Rd	6 Lane Prime (4D+BL)	25,276	40,000	0.632	C	270	25,546	40,000	0.639	C	0.007	No
From Sandrock Rd to Ruffin Rd	4 Lane Major (4U+TWLTL+BL)	25,069	40,000	0.627	C	229	25,298	40,000	0.632	C	0.006	No
From Ruffin Rd to W. Canyon Rd	4 Lane Major (4D+BL)	24,250	40,000	0.606	C	198	24,448	40,000	0.611	C	0.005	No
Aero Place												
From Aero Ct to Project Access	Not Classified (2U+P)*	1,208	8,000	0.151	A	988	2,196	8,000	0.275	A	0.124	No
Convoy Street												
From Kearny Mesa Rd to Aero Dr	4 Lane Major (4D+P)	30,539	40,000	0.763	D	177	30,716	40,000	0.768	D	0.004	No
Kearny Mesa Road												
From Armour/SR-163 SB to Convoy St	4 Lane Collector (4U)	10,805	30,000	0.360	B	83	10,888	30,000	0.363	B	0.003	No
Kearny Villa Road												
From SR-163 NB Ramp to Aero Dr	4 Lane Major (4U)**	16,148	40,000	0.404	B	229	16,377	40,000	0.409	B	0.006	No
From Aero Dr to I-805 NB Ramp	4 Lane Major (4D)	20,226	40,000	0.506	B	333	20,559	40,000	0.514	B	0.008	No
Mesa College Drive												
From SR-163 to I-805	4 Lane Collector (4D)	28,622	30,000	0.954	E	177	28,799	30,000	0.960	E	0.006	No

Notes: Classification: 2U+P = 2 lane undivided roadway with on-street parking; 6D: 6 lane divided roadway; BL=Bike Lane. Daily volume is a 24 hour volume. LOS: Level of Service. *Functions as industrial fronting Collector with LOS capacity of 8,000. **Painted Median (two sets of double yellow lines establishing median).

TABLE 10: EXISTING + PROJECT (PHASE 1) ON-RAMP OPERATIONS

I-805 at Mesa College Dr SB On-Ramp & Study Period	Scenario	Vehicle Demand (veh/hr)	Number and type of lanes (1)	CALTRANS Provided Rate per lane (2)	On-Ramp Rate (veh/hr)	Excess Demand (veh/hr)	Calculated Delay (minutes)	Calculated Queue in Feet	Maximum Observed Stopped Queue (ft)	Maximum Observed Delay (minutes)	Impact?
3:15 - 4:15 PM	Existing	748	1 SOV	900	900	0	0.0	0	About 100 ft	< 1	
	Project SOV = 1*	1							No significant change		
	E+P	749	1 SOV	900	900	0	0.0	0	anticipated to SOV lane		No
	Existing	321	1 HOV	900	900	0	0.0	0	About 25 ft	< 1	
	Project HOV = 19*	19							No significant change		
	E+P	340	1 HOV	900	900	0	0.0	0	anticipated to HOV lane		No
4:45 - 5:45 PM	Existing	768	1 SOV	900	900	0	0.0	0	About 200 ft	About 1 min	
	Project SOV = 5*	5							No significant change		
	E+P	773	1 SOV	900	900	0	0.0	0	anticipated to SOV lane		No
	Existing	414	1 HOV	900	900	0	0.0	0	About 25 ft	< 1	
	Project HOV = 4*	4							No significant change		
	E+P	418	1 HOV	900	900	0	0.0	0	anticipated to HOV lane		No

Notes: (1) SOV: Single Occupancy Vehicle, HOV: High Occupancy Vehicle, Split between SOV and HOV based on count data that documented 70% SOV with 30% HOV from 3:15pm-4:15pm on 2/17/16 and 65% SOV with 35% HOV from 4:45pm-5:45pm on 2/17/16 (Appendix C). (2) Rate provided by CALTRANS (Appendix C). *Project is mostly a school and limited office; therefore, most of the 3:15-4:15pm traffic consists of driver plus child or children, thus most are HOV trips. From 4:45-5:45pm, there may be a teacher in the mix along with SOV office vehicles, thus about 50% are SOV and 50% are HOV. Maximum observed stopped queue is when vehicles require stop and go as opposed to a slow rolling approach to the stop bar.

Under existing with project (phase 1) conditions, all of the study locations were calculated to operate at LOS D or better, except for the intersections of:

1) Aero Dr/Convoy St (LOS E 4:45-5:45pm), and
2) Aero Dr/Kearny Villa Rd (LOS E 4:45-5:45pm).

The segment of Mesa College Drive from SR-163 to I-805 was calculated to operate at LOS E on a daily basis. The metered freeway on-ramp at Mesa College/SB I-805 was calculated to operate with minimal delay (no significant change anticipated with the addition of project traffic). There are no project impacts to be above locations because the project traffic does NOT exceed the City's traffic impact significance thresholds.

6.0 Year 2017 without Project Conditions

Year 2017 without project conditions describe the anticipated roadway operations for opening day anticipated to be year 2017. To represent year 2017 conditions, traffic from a growth factor and nearby cumulative projects were added to existing traffic volumes.

A growth factor of 0.58% per year was calculated from the overall increase in daily traffic between existing and year 2035 daily volumes and then divided by the number of years between 2016 and 2035 (calculations included in **Appendix H**). The growth factor was calculated from traffic volumes on Aero Drive, Convoy Street, Kearny Mesa Road, Kearny Villa Road, and Mesa College Drive. The year 2017 growth factor of 0.58% was applied to existing year 2016 counts. The volumes representing the 0.58% growth factor are also included in Appendix H.

The following cumulative projects are anticipated to add traffic to the study area:

1) Kaiser Central Medical Center - Medical facilities with up to 450 beds and approximately 938,981 square feet generally located on the southeast corner of Clairemont Mesa Blvd at Ruffin Rd.

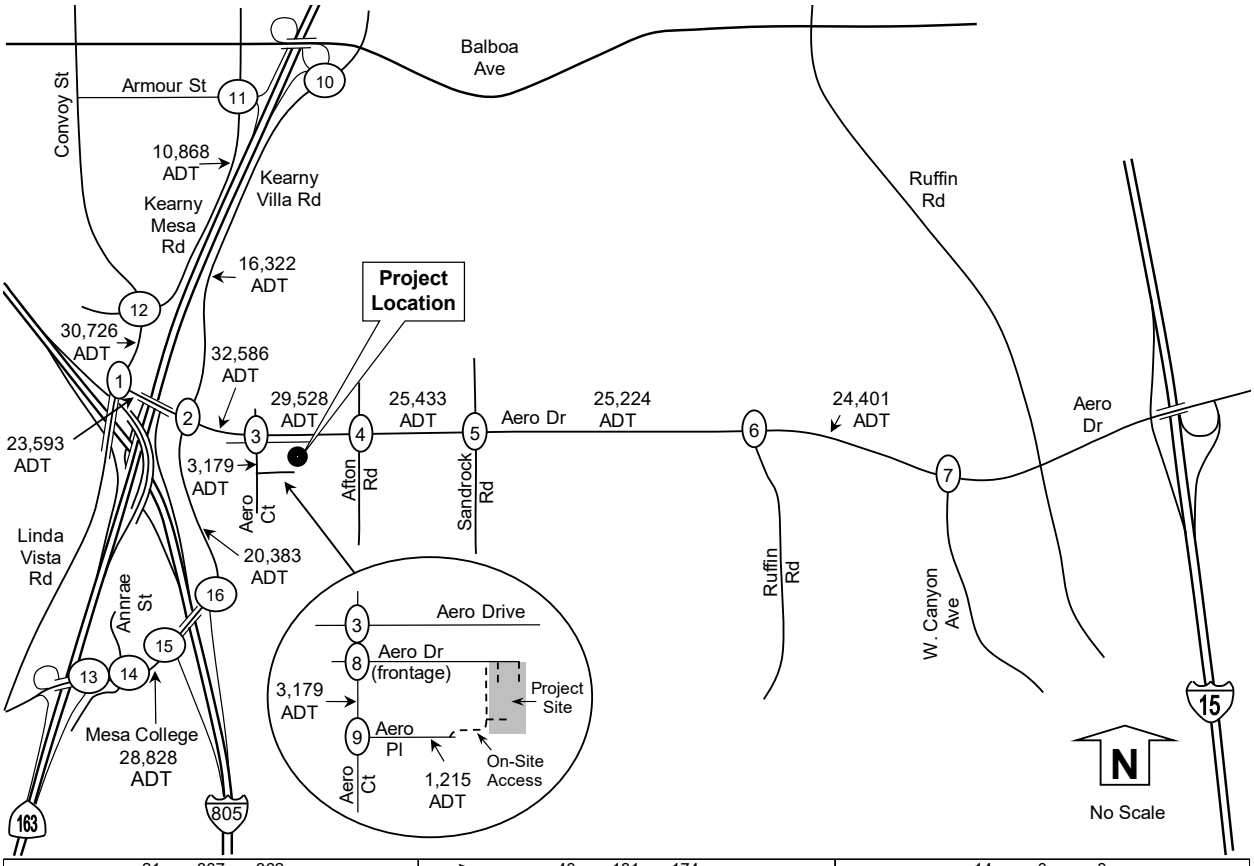
2) Centrumplace: Building 2 – Commercial Office with approximately 284,000 square feet generally bound by Spectrum Center Boulevard on the south, Lightwave Avenue on the north, Sunroad Centrum Lane on the east and Kearny Villa Road on the west.

3) Tech Way Business Hotel – A 105 room hotel located on Tech Way midway between Kearny Villa Road and Overland Avenue.

4) Ariva Apartments – Multi-family project with a total of 254 apartments (96 remaining vacant units per leasing office on 4/22/15) generally located east of Kearny Villa Rd between Lightwave Ave and Spectrum Center Blvd.

Cumulative project information is included in **Appendix I**. Near-term traffic volumes (existing + growth + cumulative project traffic) without the project are shown in **Figures 10a and 10b**. The LOS calculated for the study roadway elements are shown in **Tables 11 through 13**. Intersection LOS calculations are included in **Appendix J**.

Figure 10a: Year 2017 without Project Volumes



Convoy Ct			Aero Dr		
	21 (5)	387 (1069)	362 (824)		
4 (10)				627	(471)
3 (46)		(1)		54	(4)
1 (23)				421	(447)
		502 (545)	382 (491)		

Kearny Villa Rd			Aero Dr		
	40 (143)	131 (346)	174 (746)		
147 (142)				477	(334)
478 (1001)		(2)		794	(611)
97 (205)				255	(268)
	313 (203)	194 (272)	417 (413)		

Aero Ct			Aero Dr		
	14 (12)	0 (2)	3 (43)		
9 (7)				13	(10)
875 (1997)		(3)		1428	(1057)
183 (159)				64	(56)
	85 (132)	0 (1)	38 (46)		

Afton Rd			Aero Dr		
	15 (91)	0 (5)	3 (12)		
69 (46)				7	(5)
691 (1695)		(4)		1212	(897)
155 (326)				59	(37)
	257 (149)	4 (3)	52 (54)		

Sand-rock Rd			Aero Dr		
	16 (44)	6 (69)	14 (65)		
41 (50)				55	(24)
507 (984)		(5)		738	(627)
183 (710)				116	(295)
	508 (283)	38 (30)	210 (153)		

Ruffin Rd			Aero Dr		
542 (704)		(6)		522	(731)
116 (575)				168	(829)
	445 (162)		519 (246)		

W. Canyon Rd			Aero Dr		
19 (9)					
983 (834)		(7)		612	(1339)
120 (140)				117	(165)
	84 (160)		57 (63)		

Aero Ct			Frontage Aero Dr	
	2 (7)	233 (160)	12 (48)	
0 (4)				8 (16)
0 (1)		(8)		0 ()
2 (4)				0 (2)
	0 ()	115 (162)	1 (6)	

LEGEND

Z,ZZZ 24 Hr Average Daily Traffic (ADT) on segments
XX 8:00-9:00 AM volumes at intersections
(YY) 4:45-5:45 PM volumes at intersections, an empty bracket () represents a 0 volume
(#) Intersection Reference Number to LOS Tables
Existing Roadways

Figure 10b: Year 2017 without Project Volumes

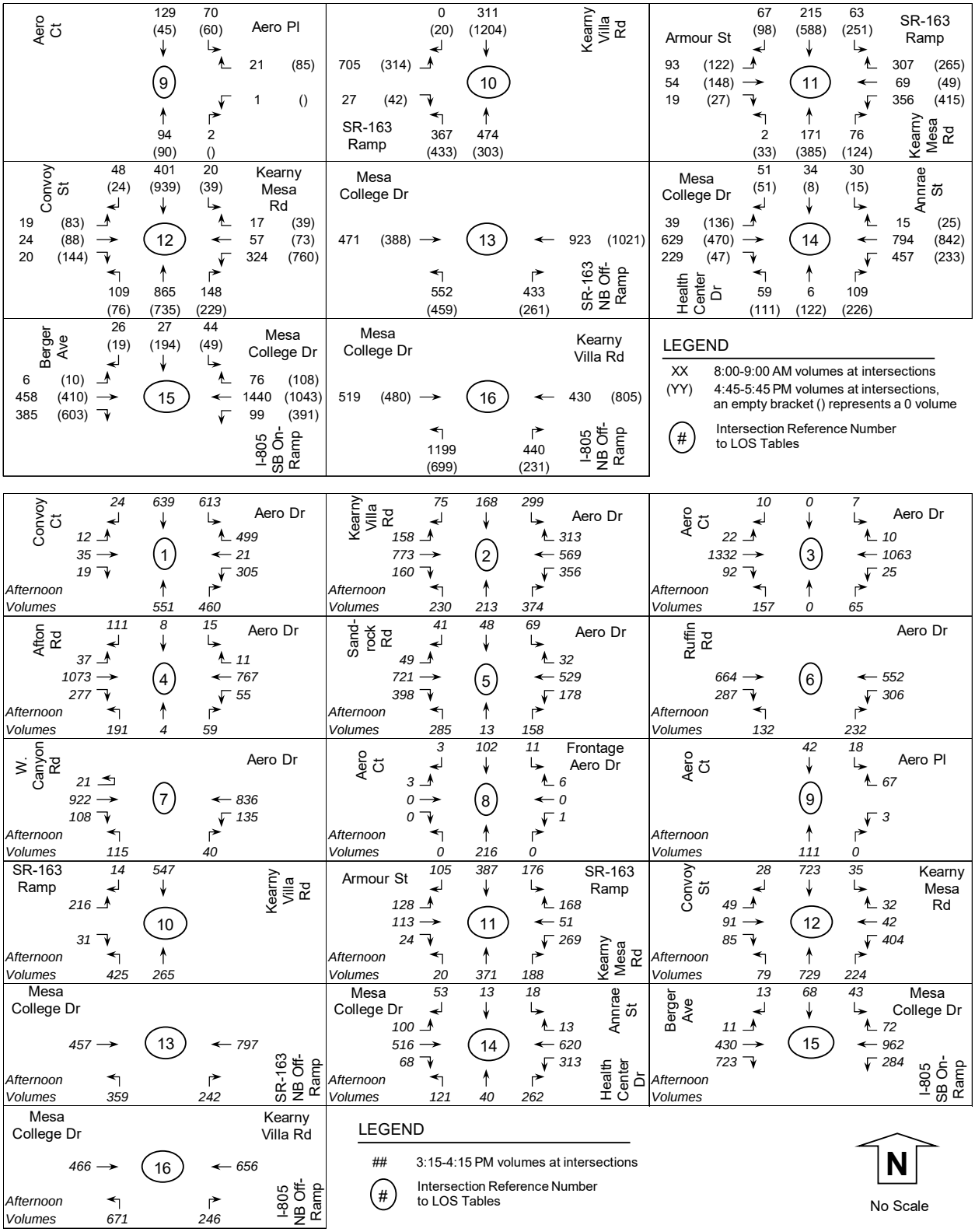


TABLE 11: YEAR 2017 WITHOUT PROJECT INTERSECTION LEVEL OF SERVICE (HCM)

Intersection and (Analysis)[1]	Movement	Study Period	Year 2017 Delay[2]	Year 2017 LOS[3]
1) Aero Dr at	All	8:00-9:00am	29.7	C
Convoy St (S)	All	3:15-4:15pm	44.6	D
	All	4:45-5:45pm	57.5	E
2) Aero Dr at	All	8:00-9:00am	38.5	D
Kearny Villa	All	3:15-4:15pm	38.0	D
Rd (S)	All	4:45-5:45pm	57.4	E
3) Aero Dr at	All	8:00-9:00am	11.5	B
Aero Ct (S)	All	3:15-4:15pm	16.8	B
	All	4:45-5:45pm	31.6	C
4) Aero Dr at	All	8:00-9:00am	25.9	C
Afton Rd (S)	All	3:15-4:15pm	28.4	C
	All	4:45-5:45pm	31.6	C
5) Aero Dr at	All	8:00-9:00am	25.3	C
Sandrock Rd	All	3:15-4:15pm	29.7	C
(S)	All	4:45-5:45pm	41.0	D
6) Aero Dr at	All	8:00-9:00am	18.4	B
Ruffin Rd (S)	All	3:15-4:15pm	15.3	B
	All	4:45-5:45pm	23.2	C
7) Aero Dr at	All	8:00-9:00am	15.5	B
W. Canyon	All	3:15-4:15pm	16.3	B
Ave (S)	All	4:45-5:45pm	16.7	B
8) Aero Ct at	EB LTR	8:00-9:00am	10.3	B
Aero Frontage	WB LTR	8:00-9:00am	9.2	A
(U)	EB LTR	3:15-4:15pm	11.7	B
	WB LTR	3:15-4:15pm	9.9	A
	EB LTR	4:45-5:45pm	12.4	B
	WB LTR	4:45-5:45pm	10.1	B
9) Aero Ct at	WB LR	8:00-9:00am	9.6	A
Aero Pl (U)	WB LR	3:15-4:15pm	9.9	A
	WB LR	4:45-5:45pm	9.3	A
10) Kearny Villa	All	8:00-9:00am	27.5	C
Rd at SR-163	All	3:15-4:15pm	22.4	C
NB On-Ramp (S)	All	4:45-5:45pm	35.1	D
11) Kearny Mesa	All	8:00-9:00am	31.5	C
Rd at Armour St	All	3:15-4:15pm	35.1	D
(S)	All	4:45-5:45pm	51.5	D
12) Kearny Mesa	All	8:00-9:00am	22.4	C
Rd at Convoy	All	3:15-4:15pm	30.9	C
St (S)	All	4:45-5:45pm	36.0	D
13) Mesa College	All	8:00-9:00am	29.7	C
Dr at SR-163	All	3:15-4:15pm	22.1	C
NB Off-Ramp (S)	All	4:45-5:45pm	24.7	C
14) Mesa College	All	8:00-9:00am	25.0	C
Dr at Annrae St	All	3:15-4:15pm	27.2	C
(S)	All	4:45-5:45pm	27.9	C
15) Mesa College	All	8:00-9:00am	16.1	B
Dr at I-805 SB	All	3:15-4:15pm	21.8	C
On-Ramp (S)	All	4:45-5:45pm	31.6	C
16) Mesa College	All	8:00-9:00am	14.2	B
Dr at I-805 NB	All	3:15-4:15pm	10.0	B
Off-Ramp (S)	All	4:45-5:45pm	10.8	B

Notes: 1) Intersection Analysis - (S) Signalized, (U) Unsignalized. 2) Delay - HCM Average Control Delay in seconds. 3) LOS: Level of Service. 4) Delta is the increase in delay from project. 5) Direct impact if project traffic exceeds threshold.

TABLE 12: YEAR 2017 WITHOUT PROJECT SEGMENT VOLUMES AND LEVEL OF SERVICE

Segment	Classification (as built)	Existing				Cumulative & Ambient Volume	Year 2017			
		Daily Volume	LOS E Capacity*	V/C	LOS		Daily Volume	LOS E Capacity*	V/C	LOS
Aero Court										
From Aero Dr to Aero Pl	Not Classified (2U+P)*	3,161	8,000	0.395	B	18	3,179	8,000	0.397	B
Aero Drive										
From Convoy Ct to Kearney Villa Rd	6 Lane Prime (4D+BL)	23,417	40,000	0.585	C	176	23,593	40,000	0.590	C
From Kearny Villa Rd to Aero Ct	6 Lane Prime (4D+BL)	32,388	40,000	0.810	D	198	32,586	40,000	0.815	D
From Aero Ct to Afton Rd	6 Lane Prime (4D+BL)	29,348	40,000	0.734	C	180	29,528	40,000	0.738	C
From Afton Rd to Sandrock Rd	6 Lane Prime (4D+BL)	25,276	40,000	0.632	C	157	25,433	40,000	0.636	C
From Sandrock Rd to Ruffin Rd	4 Lane Major (4U+TWLTL+BL)	25,069	40,000	0.627	C	155	25,224	40,000	0.631	C
From Ruffin Rd to W. Canyon Rd	4 Lane Major (4D+BL)	24,250	40,000	0.606	C	151	24,401	40,000	0.610	C
Aero Place										
From Aero Ct to Project Access	Not Classified (2U+P)*	1,208	8,000	0.151	A	7	1,215	8,000	0.152	A
Convoy Street										
From Kearny Mesa Rd to Aero Dr	4 Lane Major (4D+P)	30,539	40,000	0.763	D	187	30,726	40,000	0.768	D
Kearny Mesa Road										
From Armour/SR-163 SB to Convoy St	4 Lane Collector (4U)	10,805	30,000	0.360	B	63	10,868	30,000	0.362	B
Kearny Villa Road										
From SR-163 NB Ramp to Aero Dr	4 Lane Major (4U)**	16,148	40,000	0.404	B	174	16,322	40,000	0.408	B
From Aero Dr to I-805 NB Ramp	4 Lane Major (4D)	20,226	40,000	0.506	B	157	20,383	40,000	0.510	B
Mesa College Drive										
From SR-163 to I-805	4 Lane Collector (4D)	28,622	30,000	0.954	E	206	28,828	30,000	0.961	E

Notes: Classification: 2U+P = 2 lane undivided roadway with on-street parking; 6D: 6 lane divided roadway; BL=Bike Lane. Daily volume is a 24 hour volume. LOS: Level of Service. *Functions as industrial fronting Collector with LOS capacity of 8,000. **Painted Median (two sets of double yellow lines establishing median).

TABLE 13: YEAR 2017 WITHOUT PROJECT ON-RAMP OPERATIONS

I-805 at Mesa College Dr SB On-Ramp & Study Period	Scenario	Vehicle Demand (veh/hr)	Number and type of lanes (1)	CALTRANS Provided Rate per lane (2)	On-Ramp Rate (veh/hr)	Excess Demand (veh/hr)	Calculated Delay (minutes)	Calculated Queue in Feet	Maximum Observed Stopped Queue (ft)	Maximum Observed Delay (minutes)
3:15 - 4:15 PM	Year 2017	753	1 SOV	900	900	0	0.0	0	Est. 100 ft	Est. < 1
SB On-Ramp	Year 2017	323	1 HOV	900	900	0	0.0	0	Est. 25 ft	Est. < 1
Total (SOV & HOV)		1,075								
4:45 - 5:45 PM	Year 2017	772	1 SOV	900	900	0	0.0	0	Est. 200 ft	Est. 1 min
SB On-Ramp	Year 2017	416	1 HOV	900	900	0	0.0	0	Est. 25 ft	Est. < 1 min
Total (SOV & HOV)		1,188								

Notes: (1) SOV: Single Occupancy Vehicle, HOV: High Occupancy Vehicle, Split between SOV and HOV based on count data that documented 70% SOV with 30% HOV from 3:15pm-4:15pm on 2/17/16 and 65% SOV with 35% HOV from 4:45pm-5:45pm on 2/17/16 (Appendix C). (2) Rate provided by CALTRANS (Appendix C). Maximum observed stopped queue is estimated (est.) for year 2017 based on existing observations. The stopped queue is when vehicles require stop and go as opposed to a slow rolling to approach the stop bar.

Under year 2017 conditions, all of the study locations were calculated to operate at LOS D or better, except for the intersections of:

1) Aero Dr/Convoy St (LOS E 4:45-5:45pm), and
2) Aero Dr/Kearny Villa Rd (LOS E 4:45-5:45pm).

The segment of Mesa College Drive from SR-163 to I-805 was calculated to operate at LOS E on a daily basis. The metered freeway on-ramp at Mesa College/SB I-805 was calculated to operate with minimal delay and estimated to have similar queues and delays in 2017 as observed under existing conditions.

7.0 Year 2017 with Project (Phase 1) Conditions

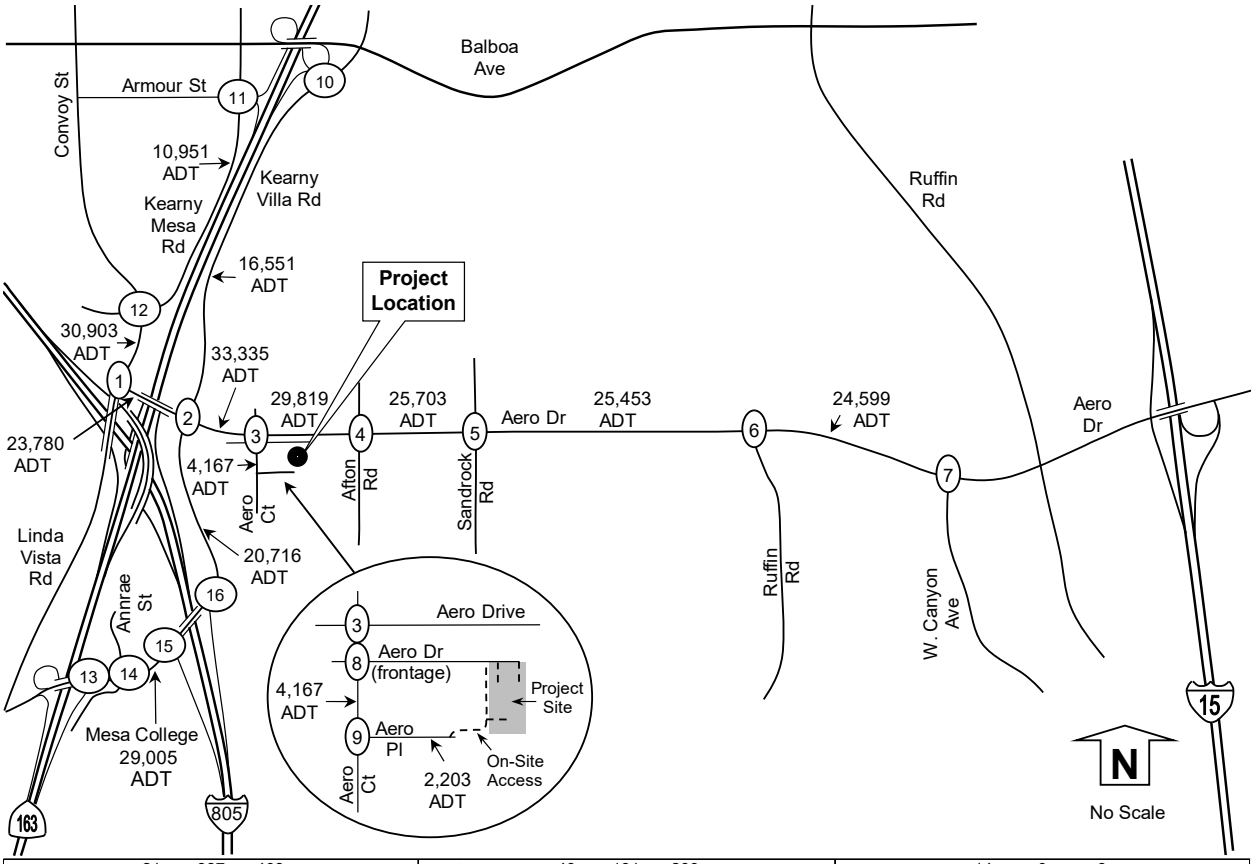
The year 2017 with project conditions describe the anticipated roadway operations during opening day of the project. Year 2017 with project (phase 1) traffic volumes are shown in **Figures 11a and 11b.** The LOS calculated for the study roadway elements are included in **Tables 14 through 16**. Intersection LOS calculations are included in **Appendix K**.

TABLE 14: YEAR 2017 WITH PROJECT (PHASE 1) INTERSECTION LEVEL OF SERVICE (HCM)

Intersection and	Movement	Study	Year 2017		Year 2017 + Project (Phase 1)			
(Analysis)[1]		Period	Delay[2]	LOS[3]	Delay[2]	LOS[3]	Delta[4]	Direct Impact[5]
1) Aero Dr at	All	8:00-9:00am	29.7	C	30.6	C	0.9	No
Convoy St (S)	All	3:15-4:15pm	44.6	D	46.0	D	1.4	No
	All	4:45-5:45pm	57.5	E	58.6	E	1.1	No
2) Aero Dr at	All	8:00-9:00am	38.5	D	41.8	D	3.3	No
Kearny Villa	All	3:15-4:15pm	38.0	D	40.7	D	2.7	No
Rd (S)	All	4:45-5:45pm	57.4	E	59.2	E	1.8	No
3) Aero Dr at	All	8:00-9:00am	11.5	B	16.8	B	5.3	No
Aero Ct (S)	All	3:15-4:15pm	16.8	B	25.5	C	8.7	No
	All	4:45-5:45pm	31.6	C	36.0	D	4.4	No
4) Aero Dr at	All	8:00-9:00am	25.9	C	27.2	C	1.3	No
Afton Rd (S)	All	3:15-4:15pm	28.4	C	30.5	C	2.1	No
	All	4:45-5:45pm	31.6	C	33.1	C	1.5	No
5) Aero Dr at	All	8:00-9:00am	25.3	C	25.7	C	0.4	No
Sandrock Rd	All	3:15-4:15pm	29.7	C	30.1	C	0.4	No
(S)	All	4:45-5:45pm	41.0	D	41.5	D	0.5	No
6) Aero Dr at	All	8:00-9:00am	18.4	B	18.5	B	0.1	No
Ruffin Rd (S)	All	3:15-4:15pm	15.3	B	15.4	B	0.1	No
	All	4:45-5:45pm	23.2	C	23.2	C	0.0	No
7) Aero Dr at	All	8:00-9:00am	15.5	B	15.6	B	0.1	No
W. Canyon	All	3:15-4:15pm	16.3	B	16.5	B	0.2	No
Ave (S)	All	4:45-5:45pm	16.7	B	16.8	B	0.1	No
8) Aero Ct at	EB LTR	8:00-9:00am	10.3	B	12.7	B	2.4	No
Aero Frontage	WB LTR	8:00-9:00am	9.2	A	10.2	B	1.0	No
(U)	EB LTR	3:15-4:15pm	11.7	B	15.2	C	3.5	No
	WB LTR	3:15-4:15pm	9.9	A	11.0	B	1.1	No
	EB LTR	4:45-5:45pm	12.4	B	13.7	B	1.3	No
	WB LTR	4:45-5:45pm	10.1	B	10.7	B	0.6	No
9) Aero Ct at	WB LR	8:00-9:00am	9.6	A	10.8	B	1.2	No
Aero Pl (U)	WB LR	3:15-4:15pm	9.9	A	11.8	B	1.9	No
	WB LR	4:45-5:45pm	9.3	A	9.7	A	0.4	No
10) Kearny Villa	All	8:00-9:00am	27.5	C	28.0	C	0.5	No
Rd at SR-163	All	3:15-4:15pm	22.4	C	23.1	C	0.7	No
NB On-Ramp (S)	All	4:45-5:45pm	35.1	D	36.1	D	1.0	No
11) Kearny Mesa	All	8:00-9:00am	31.5	C	32.7	C	1.2	No
Rd at Armour St	All	3:15-4:15pm	35.1	D	35.9	D	0.8	No
(S)	All	4:45-5:45pm	51.5	D	52.1	D	0.6	No
12) Kearny Mesa	All	8:00-9:00am	22.4	C	23.0	C	0.6	No
Rd at Convoy	All	3:15-4:15pm	30.9	C	31.1	C	0.2	No
St (S)	All	4:45-5:45pm	36.0	D	36.2	D	0.2	No
13) Mesa College	All	8:00-9:00am	29.7	C	30.3	C	0.6	No
Dr at SR-163	All	3:15-4:15pm	22.1	C	22.3	C	0.2	No
NB Off-Ramp (S)	All	4:45-5:45pm	24.7	C	24.8	C	0.1	No
14) Mesa College	All	8:00-9:00am	25.0	C	25.3	C	0.3	No
Dr at Annrae St	All	3:15-4:15pm	27.2	C	27.2	C	0.0	No
(S)	All	4:45-5:45pm	27.9	C	28.1	C	0.2	No
15) Mesa College	All	8:00-9:00am	16.1	B	16.5	B	0.4	No
Dr at I-805 SB	All	3:15-4:15pm	21.8	C	23.1	C	1.3	No
On-Ramp (S)	All	4:45-5:45pm	31.6	C	33.1	C	1.5	No
16) Mesa College	All	8:00-9:00am	14.2	B	14.8	B	0.6	No
Dr at I-805 NB	All	3:15-4:15pm	10.0	B	10.2	B	0.2	No
Off-Ramp (S)	All	4:45-5:45pm	10.8	B	10.9	B	0.1	No

Notes: 1) Intersection Analysis - (S) Signalized, (U) Unsignalized. 2) Delay - HCM Average Control Delay in seconds. 3) LOS: Level of Service. 4) Delta is the increase in delay from project. 5) Direct impact if project traffic exceeds threshold.

Figure 11a: Year 2017 with Project (Phase 1) Volumes



Convoy Ct			Aero Dr		
	21 (5)	387 (1069)	408 (832)		
4 (10)				636	(477)
3 (46)		1		54	(4)
1 (23)				422	(448)
		502 (545)	384 (491)		

Kearny Villa Rd			Aero Dr		
	40 (143)	131 (346)	200 (750)		
147 (142)				506	(354)
526 (1009)		2		804	(617)
97 (205)				287	(288)
	313 (203)	194 (272)	475 (423)		

Aero Ct			Aero Dr		
	14 (12)	0 (2)	3 (43)		
9 (7)				13	(10)
875 (1997)		3		1428	(1057)
315 (181)				115	(64)
	156 (177)	0 (1)	66 (63)		

Afton Rd			Aero Dr		
	15 (91)	0 (5)	3 (12)		
69 (46)				7	(5)
717 (1711)		4		1260	(905)
157 (327)				59	(37)
	260 (150)	4 (3)	52 (54)		

Sand-rock Rd			Aero Dr		
	16 (44)	6 (69)	14 (65)		
41 (50)				55	(24)
529 (998)		5		779	(634)
187 (712)				116	(295)
	515 (284)	38 (30)	210 (153)		

Ruffin Rd			Aero Dr		
561 (716)		6		557	(737)
119 (577)				168	(829)
	451 (163)		519 (246)		

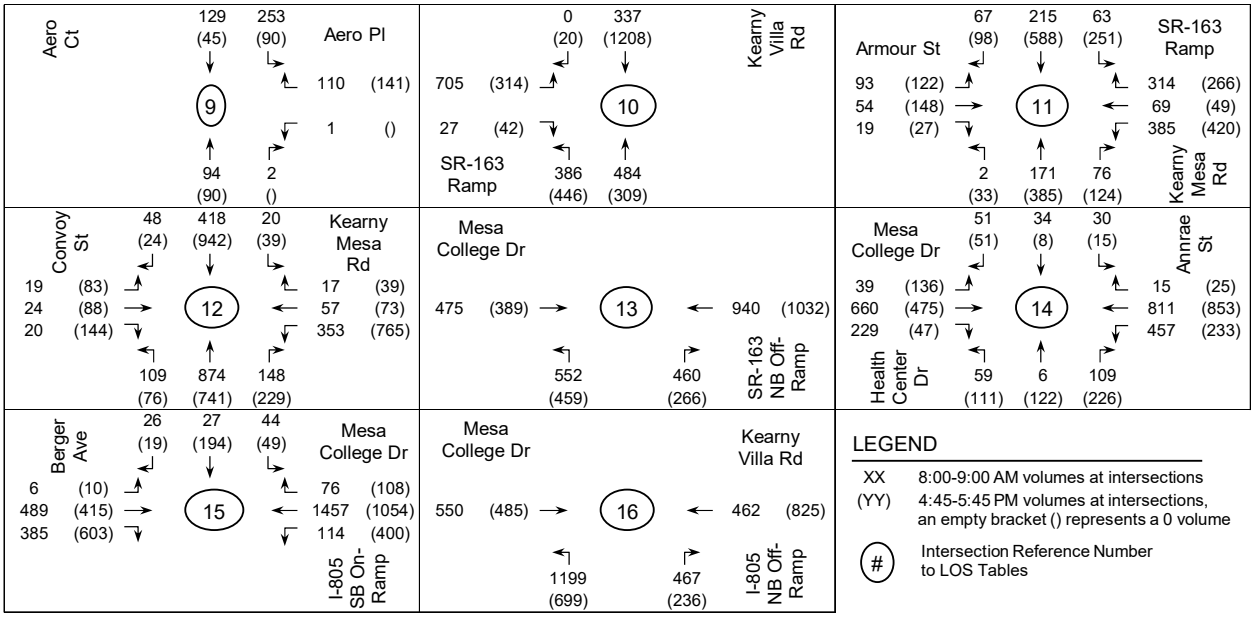
W. Canyon Rd			Aero Dr		
19 (9)					
1001 (846)		7		645	(1345)
121 (141)				117	(165)
	86 (160)		57 (63)		

Aero Ct			Frontage Aero Dr	
	2 (7)	416 (190)	12 (48)	
0 (4)			18	(22)
0 (1)	8		0	()
2 (4)			0	(2)
	0 ()	204 (218)	1 (6)	

LEGEND

Z,ZZZ 24 Hr Average Daily Traffic (ADT) on segments
XX 8:00-9:00 AM volumes at intersections
(YY) 4:45-5:45 PM volumes at intersections, an empty bracket () represents a 0 volume
(#) Intersection Reference Number to LOS Tables
Existing Roadways

Figure 11b: Year 2017 with Project (Phase 1) Volumes



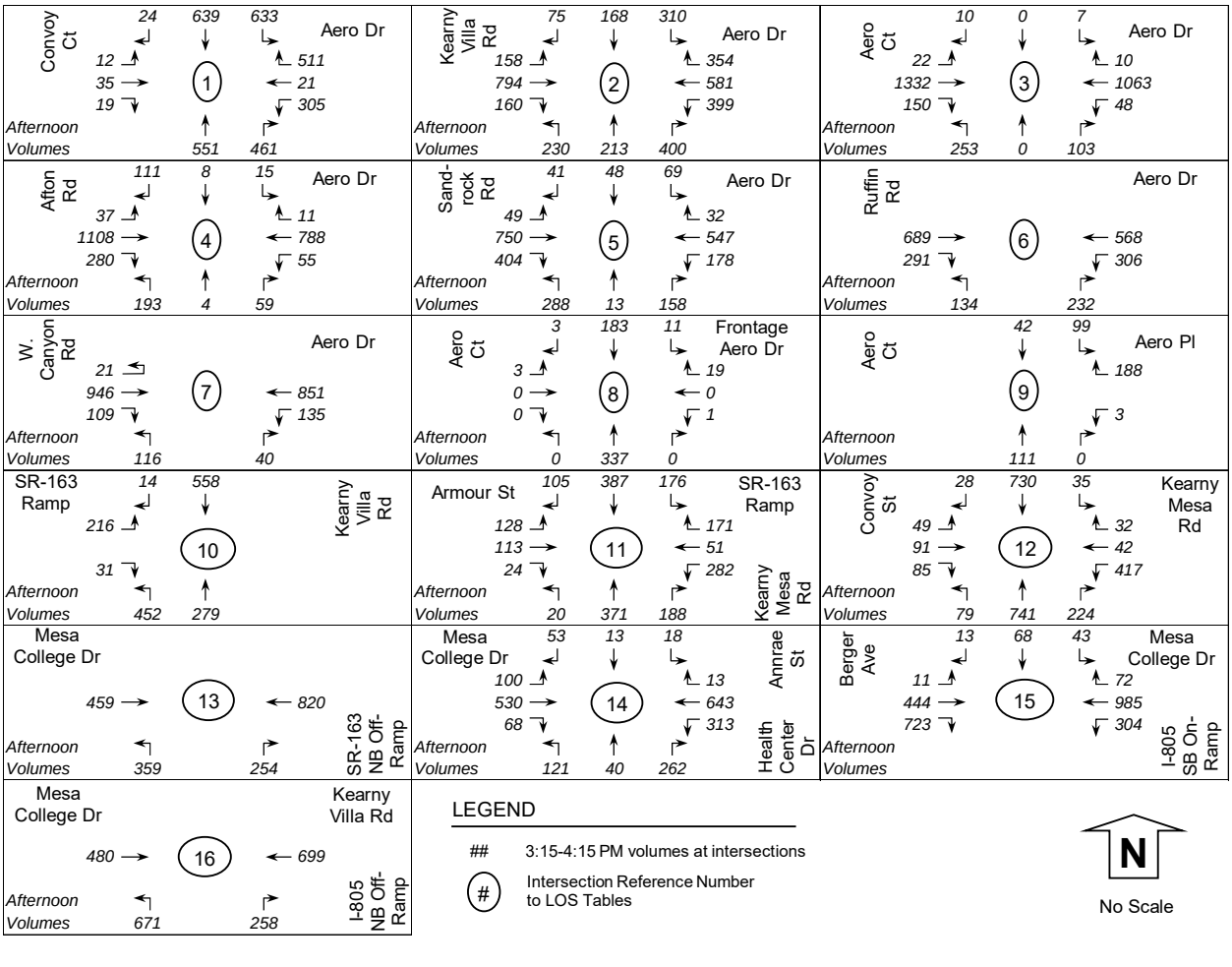


TABLE 15: YEAR 2017 WITH PROJECT (PHASE 1) SEGMENT VOLUMES AND LEVEL OF SERVICE

Segment	Classification (as built)	Year 2017 Daily Volume	Year 2017 LOS E Capacity*	Year 2017 V/C	Year 2017 LOS	Project Daily Volumes	Year 2017 + Project (Phase 1) Daily Volume	Year 2017 + Project (Phase 1) LOS E Capacity*	Year 2017 + Project (Phase 1) V/C	Year 2017 + Project (Phase 1) LOS	Change in V/C	Direct Impact?
Aero Court												
From Aero Dr to Aero Pl	Not Classified (2U+P)*	3,179	8,000	0.397	B	988	4,167	8,000	0.521	C	0.124	No
Aero Drive												
From Convoy Ct to Kearney Villa Rd	6 Lane Prime (4D+BL)	23,593	40,000	0.590	C	187	23,780	40,000	0.595	C	0.005	No
From Kearny Villa Rd to Aero Ct	6 Lane Prime (4D+BL)	32,586	40,000	0.815	D	749	33,335	40,000	0.833	D	0.019	No
From Aero Ct to Afton Rd	6 Lane Prime (4D+BL)	29,528	40,000	0.738	C	291	29,819	40,000	0.745	C	0.007	No
From Afton Rd to Sandrock Rd	6 Lane Prime (4D+BL)	25,433	40,000	0.636	C	270	25,703	40,000	0.643	C	0.007	No
From Sandrock Rd to Ruffin Rd	4 Lane Major (4U+TWLTL+BL)	25,224	40,000	0.631	C	229	25,453	40,000	0.636	C	0.006	No
From Ruffin Rd to W. Canyon Rd	4 Lane Major (4D+BL)	24,401	40,000	0.610	C	198	24,599	40,000	0.615	C	0.005	No
Aero Place												
From Aero Ct to Project Access	Not Classified (2U+P)*	1,215	8,000	0.152	A	988	2,203	8,000	0.275	A	0.124	No
Convoy Street												
From Kearny Mesa Rd to Aero Dr	4 Lane Major (4D+P)	30,726	40,000	0.768	D	177	30,903	40,000	0.773	D	0.004	No
Kearny Mesa Road												
From Armour/SR-163 SB to Convoy St	4 Lane Collector (4U)	10,868	30,000	0.362	B	83	10,951	30,000	0.365	B	0.003	No
Kearny Villa Road												
From SR-163 NB Ramp to Aero Dr	4 Lane Major (4U)**	16,322	40,000	0.408	B	229	16,551	40,000	0.414	B	0.006	No
From Aero Dr to I-805 NB Ramp	4 Lane Major (4D)	20,383	40,000	0.510	B	333	20,716	40,000	0.518	B	0.008	No
Mesa College Drive												
From SR-163 to I-805	4 Lane Collector (4D)	28,828	30,000	0.961	E	177	29,005	30,000	0.967	E	0.006	No

Notes: Classification: 2U+P = 2 lane undivided roadway with on-street parking; 6D: 6 lane divided roadway; BL=Bike Lane. Daily volume is a 24 hour volume. LOS: Level of Service. *Functions as industrial fronting Collector with LOS capacity of 8,000. **Painted Median (two sets of double yellow lines establishing median).

TABLE 16: YEAR 2017 WITH PROJECT (PHASE 1) ON-RAMP OPERATIONS

I-805 at Mesa College Dr SB On-Ramp & Study Period	Scenario	Vehicle Demand (veh/hr)	Number and type of lanes (1)	CALTRANS Provided Rate per lane (2)	On-Ramp Rate (veh/hr)	Excess Demand (veh/hr)	Calculated Delay (minutes)	Calculated Queue in Feet	Maximum Observed Stopped Queue (ft)	Maximum Observed Delay (minutes)	Impact?
3:15 - 4:15 PM	Year 2017	753	1 SOV	900	900	0	0.0	0	Est. 100 ft	Est. < 1	
	Project SOV = 1*	1							No significant change		
	Yr2017+P	754	1 SOV	900	900	0	0.0	0	anticipated to SOV lane		No
	Year 2017	323	1 HOV	900	900	0	0.0	0	Est. 25 ft	Est. < 1	
	Project HOV = 19*	19							No significant change		
	Yr2017+P	342	1 HOV	900	900	0	0.0	0	anticipated to HOV lane		No
4:45 - 5:45 PM	Year 2017	772	1 SOV	900	900	0	0.0	0	Est. 200 ft	Est. 1 min	
	Project SOV = 5*	5							No significant change		
	Yr2017+P	777	1 SOV	900	900	0	0.0	0	anticipated to SOV lane		No
	Year 2017	416	1 HOV	900	900	0	0.0	0	Est. 25 ft	Est. < 1 min	
	Project HOV = 4*	4							No significant change		
	Yr2017+P	420	1 HOV	900	900	0	0.0	0	anticipated to HOV lane		No

Notes: (1) SOV: Single Occupancy Vehicle, HOV: High Occupancy Vehicle, Split between SOV and HOV based on count data that documented 70% SOV with 30% HOV from 3:15pm-4:15pm on 2/17/16 and 65% SOV with 35% HOV from 4:45pm-5:45pm on 2/17/16 (Appendix C). (2) Rate provided by CALTRANS (Appendix C). *Project is mostly a school and limited office; therefore, most of the 3:15-4:15pm traffic consists of driver plus child or children, thus most are HOV trips. From 4:45-5:45pm, there may be a teacher in the mix along with SOV office vehicles, thus about 50% are SOV and 50% are HOV. Maximum observed stopped queue is estimated for 2017 based on existing observations. The stopped queue is when vehicles require stop and go as opposed to a slow rolling to approach the stop bar.

Under year 2017 with project (phase 1) conditions, all of the study locations were calculated to operate at LOS D or better, except for the intersections of:

1) Aero Dr/Convoy St (LOS E 4:45-5:45pm), and
2) Aero Dr/Kearny Villa Rd (LOS E 4:45-5:45pm).

The segment of Mesa College Drive from SR-163 to I-805 was calculated to operate at LOS E on a daily basis. The metered freeway on-ramp at Mesa College/SB I-805 was calculated to operate with minimal delay and estimated to have similar queues and delays in 2017 as observed under existing conditions (no significant change is anticipated with the addition of project traffic). <u>There are no project impacts to be above locations because the project traffic does NOT exceed the City's traffic impact significance thresholds.</u>

8.0 Year 2022 without Project Conditions

Year 2022 without project conditions describe the anticipated roadway operations for a maximum enrollment of 540 students anticipated to be year 2022. To represent year 2022 conditions, traffic from a growth factor and nearby cumulative projects were added to existing traffic volumes.

A growth factor of 0.58% per year was calculated from the overall increase in daily traffic between existing and year 2035 daily volumes and then divided by the number of years between 2016 and 2035 (calculations included in Appendix H). The growth factor was calculated from traffic volumes on Aero Drive, Convoy Street, Kearny Mesa Road, Kearny Villa Road, and Mesa College Drive. The year 2022 growth factor is 3.5% (6 years between 2016 and 2022 times 0.58% per year). The volumes representing the 3.5% growth factor are also included in Appendix H.

The following cumulative projects are anticipated to add traffic to the study area:

1) Kaiser Central Medical Center - Medical facilities with up to 450 beds and approximately 938,981 square feet generally located on the southeast corner of Clairemont Mesa Blvd at Ruffin Rd.

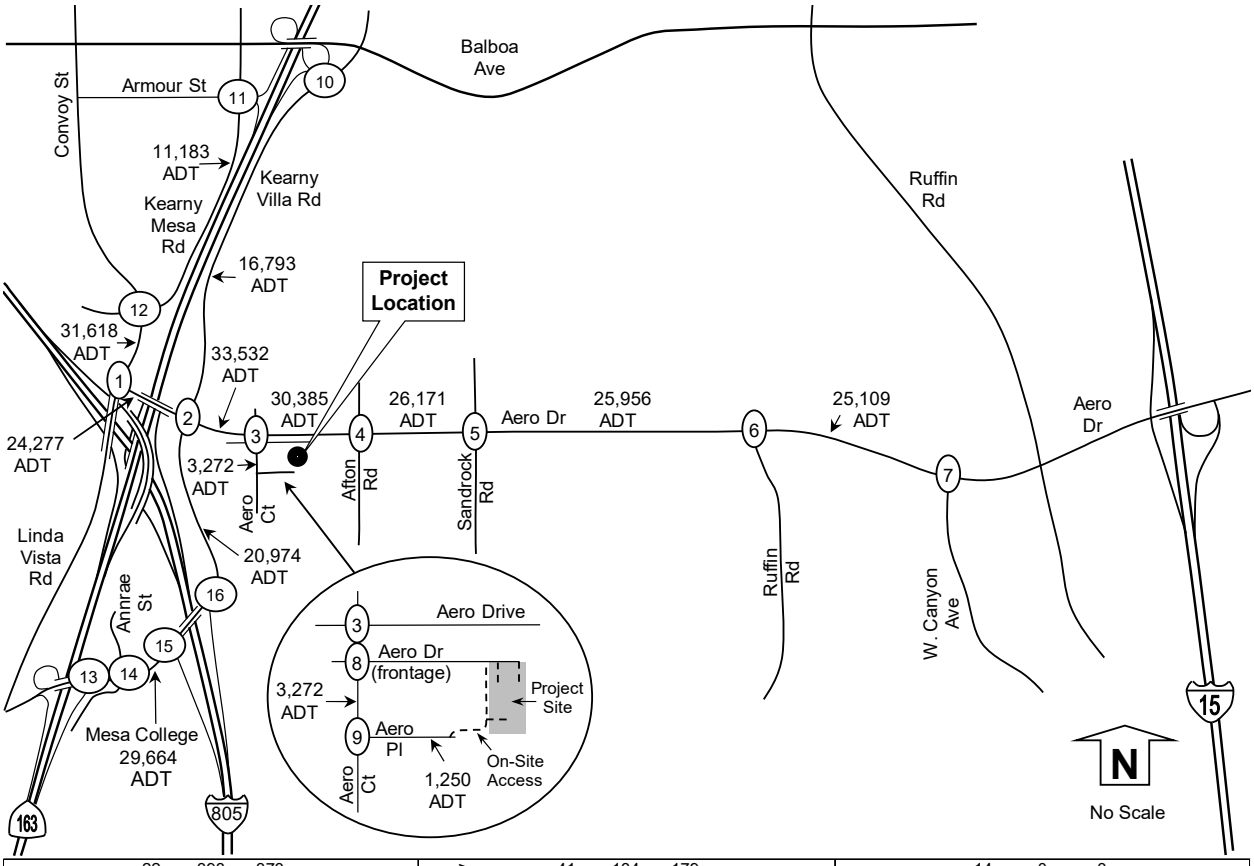
2) Centrumplace: Building 2 – Commercial Office with approximately 284,000 square feet generally bound by Spectrum Center Boulevard on the south, Lightwave Avenue on the north, Sunroad Centrum Lane on the east and Kearny Villa Road on the west.

3) Tech Way Business Hotel – A 105 room hotel located on Tech Way midway between Kearny Villa Road and Overland Avenue.

4) Ariva Apartments – Multi-family project with a total of 254 apartments (96 remaining vacant units per leasing office on 4/22/15) generally located east of Kearny Villa Rd between Lightwave Ave and Spectrum Center Blvd.

Cumulative project information is included in Appendix I. Near-term traffic volumes (existing + growth + cumulative project traffic) without the project are shown in **Figures 12a and 12b**. The LOS calculated for the study roadway elements are included in **Tables 17 through 19**. Intersection LOS calculations are included in **Appendix L**.

Figure 12a: Year 2022 without Project Volumes



Convoy Ct			Aero Dr		
	22 (5)	398 (1100)	373 (848)		
4 (10)				645	(484)
3 (48)		(1)		56	(4)
1 (24)				434	(460)
		516 (561)	393 (505)		

Kearny Villa Rd			Aero Dr		
	41 (147)	134 (356)	179 (768)		
151 (146)				491	(344)
492 (1030)		(2)		817	(628)
99 (211)				263	(275)
	322 (209)	200 (279)	430 (425)		

Aero Ct			Aero Dr		
	14 (12)	0 (2)	3 (45)		
9 (7)				13	(10)
900 (2054)		(3)		1470	(1088)
188 (164)				66	(58)
	88 (136)	0 (1)	39 (48)		

Afton Rd			Aero Dr		
	16 (93)	0 (5)	3 (12)		
71 (48)				7	(5)
711 (1744)		(4)		1247	(923)
159 (335)				61	(38)
	265 (153)	4 (3)	54 (56)		

Sand-rock Rd			Aero Dr		
	17 (46)	6 (71)	14 (67)		
42 (52)				57	(25)
522 (1012)		(5)		760	(645)
188 (731)				119	(303)
	523 (291)	39 (31)	216 (157)		

Ruffin Rd			Aero Dr		
558 (724)		(6)		537	(752)
119 (592)				173	(853)
	457 (167)		534 (254)		

W. Canyon Rd			Aero Dr		
20 (9)					
1011 (858)		(7)		629	(1378)
123 (144)				120	(170)
	87 (165)		59 (65)		

Aero Ct			Frontage Aero Dr		
	2 (7)	240 (165)	12 (50)		
0 (4)				8	(17)
0 (1)		(8)		0	()
2 (4)				0	(2)
	0 ()	118 (167)	1 (6)		

LEGEND

Z,ZZZ 24 Hr Average Daily Traffic (ADT) on segments
XX 8:00-9:00 AM volumes at intersections
(YY) 4:45-5:45 PM volumes at intersections, an empty bracket () represents a 0 volume
(#) Intersection Reference Number to LOS Tables
Existing Roadways

Figure 12b: Year 2022 without Project Volumes

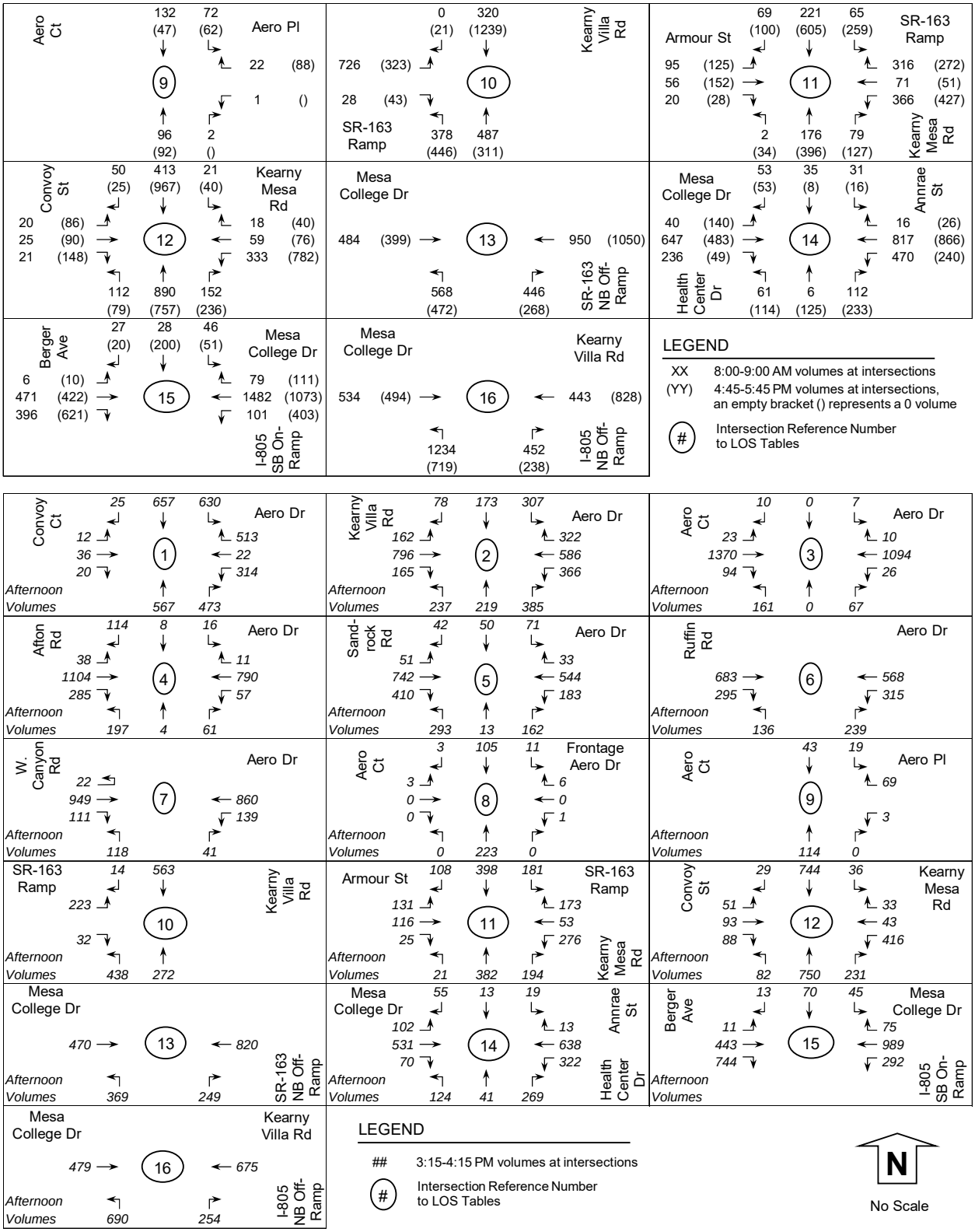


TABLE 17: YEAR 2022 WITHOUT PROJECT INTERSECTION LEVEL OF SERVICE (HCM)

Intersection and (Analysis)[1]	Movement	Study Period	Year 2022 Delay[2]	Year 2022 LOS[3]
1) Aero Dr at	All	8:00-9:00am	30.7	C
Convoy St (S)	All	3:15-4:15pm	49.5	D
	All	4:45-5:45pm	58.3	E
2) Aero Dr at	All	8:00-9:00am	40.4	D
Kearny Villa	All	3:15-4:15pm	40.0	D
Rd (S)	All	4:45-5:45pm	62.2	E
3) Aero Dr at	All	8:00-9:00am	11.9	B
Aero Ct (S)	All	3:15-4:15pm	17.4	B
	All	4:45-5:45pm	32.1	C
4) Aero Dr at	All	8:00-9:00am	27.8	C
Afton Rd (S)	All	3:15-4:15pm	32.1	C
	All	4:45-5:45pm	39.7	D
5) Aero Dr at	All	8:00-9:00am	26.6	C
Sandrock Rd	All	3:15-4:15pm	30.7	C
(S)	All	4:45-5:45pm	42.2	D
6) Aero Dr at	All	8:00-9:00am	19.0	B
Ruffin Rd (S)	All	3:15-4:15pm	15.4	B
	All	4:45-5:45pm	23.7	C
7) Aero Dr at	All	8:00-9:00am	15.9	B
W. Canyon	All	3:15-4:15pm	16.8	B
Ave (S)	All	4:45-5:45pm	17.1	B
8) Aero Ct at	EB LTR	8:00-9:00am	10.4	B
Aero Frontage	WB LTR	8:00-9:00am	9.3	A
(U)	EB LTR	3:15-4:15pm	11.8	B
	WB LTR	3:15-4:15pm	10.0	A
	EB LTR	4:45-5:45pm	12.6	B
	WB LTR	4:45-5:45pm	10.2	B
9) Aero Ct at	WB LR	8:00-9:00am	9.6	A
Aero Pl (U)	WB LR	3:15-4:15pm	10.0	A
	WB LR	4:45-5:45pm	9.3	A
10) Kearny Villa	All	8:00-9:00am	28.7	C
Rd at SR-163	All	3:15-4:15pm	23.0	C
NB On-Ramp (S)	All	4:45-5:45pm	37.3	D
11) Kearny Mesa	All	8:00-9:00am	32.3	C
Rd at Armour St	All	3:15-4:15pm	36.3	D
(S)	All	4:45-5:45pm	55.4	E
12) Kearny Mesa	All	8:00-9:00am	22.8	C
Rd at Convoy	All	3:15-4:15pm	31.2	C
St (S)	All	4:45-5:45pm	37.9	D
13) Mesa College	All	8:00-9:00am	30.8	C
Dr at SR-163	All	3:15-4:15pm	22.5	C
NB Off-Ramp (S)	All	4:45-5:45pm	25.5	C
14) Mesa College	All	8:00-9:00am	25.5	C
Dr at Annrae St	All	3:15-4:15pm	27.7	C
(S)	All	4:45-5:45pm	56.1	E
15) Mesa College	All	8:00-9:00am	16.3	B
Dr at I-805 SB	All	3:15-4:15pm	22.7	C
On-Ramp (S)	All	4:45-5:45pm	34.3	C
16) Mesa College	All	8:00-9:00am	14.8	B
Dr at I-805 NB	All	3:15-4:15pm	10.2	B
Off-Ramp (S)	All	4:45-5:45pm	11.1	B

Notes: 1) Intersection Analysis - (S) Signalized, (U) Unsignalized. 2) Delay - HCM Average Control Delay in seconds. 3) LOS: Level of Service.

TABLE 18: YEAR 2022 WITHOUT PROJECT SEGMENT VOLUMES AND LEVEL OF SERVICE

Segment	Classification (as built)	Existing				Cumulative & Ambient Volume	Year 2022			
		Daily Volume	LOS E Capacity*	V/C	LOS		Daily Volume	LOS E Capacity*	V/C	LOS
Aero Court										
From Aero Dr to Aero Pl	Not Classified (2U+P)*	3,161	8,000	0.395	B	111	3,272	8,000	0.409	B
Aero Drive										
From Convoy Ct to Kearney Villa Rd	6 Lane Prime (4D+BL)	23,417	40,000	0.585	C	860	24,277	40,000	0.607	C
From Kearny Villa Rd to Aero Ct	6 Lane Prime (4D+BL)	32,388	40,000	0.810	D	1144	33,532	40,000	0.838	D
From Aero Ct to Afton Rd	6 Lane Prime (4D+BL)	29,348	40,000	0.734	C	1037	30,385	40,000	0.760	D
From Afton Rd to Sandrock Rd	6 Lane Prime (4D+BL)	25,276	40,000	0.632	C	895	26,171	40,000	0.654	C
From Sandrock Rd to Ruffin Rd	4 Lane Major (4U+TWLTL+BL)	25,069	40,000	0.627	C	887	25,956	40,000	0.649	C
From Ruffin Rd to W. Canyon Rd	4 Lane Major (4D+BL)	24,250	40,000	0.606	C	859	25,109	40,000	0.628	C
Aero Place										
From Aero Ct to Project Access	Not Classified (2U+P)*	1,208	8,000	0.151	A	42	1,250	8,000	0.156	A
Convoy Street										
From Kearny Mesa Rd to Aero Dr	4 Lane Major (4D+P)	30,539	40,000	0.763	D	1079	31,618	40,000	0.790	D
Kearny Mesa Road										
From Armour/SR-163 SB to Convoy St	4 Lane Collector (4U)	10,805	30,000	0.360	B	378	11,183	30,000	0.373	B
Kearny Villa Road										
From SR-163 NB Ramp to Aero Dr	4 Lane Major (4U)**	16,148	40,000	0.404	B	645	16,793	40,000	0.420	B
From Aero Dr to I-805 NB Ramp	4 Lane Major (4D)	20,226	40,000	0.506	B	748	20,974	40,000	0.524	B
Mesa College Drive										
From SR-163 to I-805	4 Lane Collector (4D)	28,622	30,000	0.954	E	1042	29,664	30,000	0.989	E

Notes: Classification: 2U+P = 2 lane undivided roadway with on-street parking; 6D: 6 lane divided roadway; BL=Bike Lane. Daily volume is a 24 hour volume. LOS: Level of Service. *Functions as industrial fronting Collector with LOS capacity of 8,000. **Painted Median (two sets of double yellow lines establishing median).

TABLE 19: YEAR 2022 WITHOUT PROJECT ON-RAMP OPERATIONS

I-805 at Mesa College Dr SB On-Ramp & Study Period	Scenario	Vehicle Demand (veh/hr)	Number and type of lanes (1)	CALTRANS Provided Rate per lane (2)	On-Ramp Rate (veh/hr)	Excess Demand (veh/hr)	Calculated Delay (minutes)	Calculated Queue in Feet	Maximum Observed Stopped Queue (ft)	Maximum Observed Delay (minutes)
3:15 - 4:15 PM	Year 2022	774	1 SOV	900	900	0	0.0	0	Est. 100 ft	Est. < 1
SB On-Ramp	Year 2022	332	1 HOV	900	900	0	0.0	0	Est. 25 ft	Est. < 1
Total (SOV & HOV)		1,106							Based on 2016 observations	
4:45 - 5:45 PM	Year 2022	796	1 SOV	900	900	0	0.0	0	Est. 200 ft	Est. 1 min
SB On-Ramp	Year 2022	428	1 HOV	900	900	0	0.0	0	Est. 25 ft	Est. < 1 min
Total (SOV & HOV)		1,224							Based on 2016 observations	

Notes: (1) SOV: Single Occupancy Vehicle, HOV: High Occupancy Vehicle, Split between SOV and HOV based on count data that documented 70% SOV with 30% HOV from 3:15pm-4:15pm on 2/17/16 and 65% SOV with 35% HOV from 4:45pm-5:45pm on 2/17/16 (Appendix C). (2) Rate provided by CALTRANS (Appendix C). Maximum observed stopped queue is estimated for 2022 based on existing observations. The stopped queue is when vehicles require stop and go as opposed to a slow rolling to approach the stop bar.

Under year 2022 conditions, all of the study locations were calculated to operate at LOS D or better, except for the intersections of:

1) Aero Dr/Convoy St (LOS E 4:45-5:45pm),
2) Aero Dr/Kearny Villa Rd (LOS E 4:45-5:45pm),
3) Kearny Mesa Rd at Armour St (LOS E 4:45-5:45pm), and
4) Mesa College Dr at Annrae St (LOS E 4:45-5:45pm).

The segment of Mesa College Drive from SR-163 to I-805 was calculated to operate at LOS E on a daily basis. The metered freeway on-ramp at Mesa College/SB I-805 was calculated to operate with minimal delay and is expected to have similar queues and delays in 2022 as observed under existing conditions.

9.0 Year 2022 with Project (Phase 2) Conditions

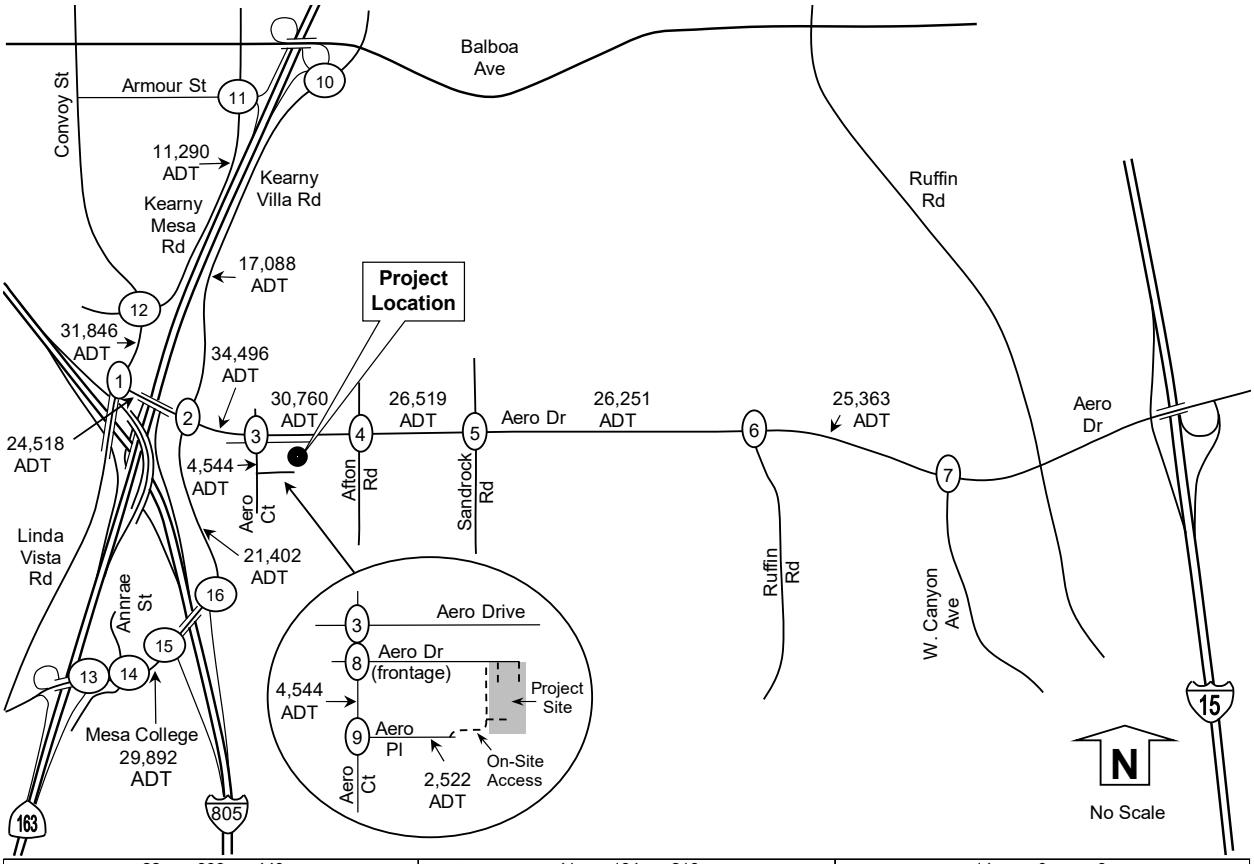
The year 2022 with project (phase 2) conditions describe the anticipated roadway operations during maximum student enrollment in year 2022. Year 2022 with project (phase 2) traffic volumes are shown in **Figures 13a and 13b**. The LOS calculated for the study roadway elements are included in **Tables 20 through 22**. Intersection LOS calculations are included in **Appendix M**.

TABLE 20: YEAR 2022 WITH PROJECT (PHASE 2) INTERSECTION LEVEL OF SERVICE (HCM)

Intersection and	Movement	Study	Year 2022		Year 2022 + Project (Phase 2)			
(Analysis)[1]		Period	Delay[2]	LOS[3]	Delay[2]	LOS[3]	Delta[4]	Direct Impact[5]
1) Aero Dr at	All	8:00-9:00am	30.7	C	32.9	C	2.2	No
Convoy St (S)	All	3:15-4:15pm	49.5	D	52.7	D	3.2	No
	All	4:45-5:45pm	58.3	E	59.7	E	1.4	No
2) Aero Dr at	All	8:00-9:00am	40.4	D	46.0	D	5.6	No
Kearny Villa	All	3:15-4:15pm	40.0	D	45.4	D	5.4	No
Rd (S)	All	4:45-5:45pm	62.2	E	64.2	E	2.0	No
3) Aero Dr at	All	8:00-9:00am	11.9	B	22.6	C	10.7	No
Aero Ct (S)	All	3:15-4:15pm	17.4	B	39.7	D	22.3	No
	All	4:45-5:45pm	32.1	C	35.2	D	3.1	No
4) Aero Dr at	All	8:00-9:00am	27.8	C	30.7	C	2.9	No
Afton Rd (S)	All	3:15-4:15pm	32.1	C	36.8	D	4.7	No
	All	4:45-5:45pm	39.7	D	41.2	D	1.5	No
5) Aero Dr at	All	8:00-9:00am	26.6	C	27.3	C	0.7	No
Sandrock Rd	All	3:15-4:15pm	30.7	C	31.5	C	0.8	No
(S)	All	4:45-5:45pm	42.2	D	42.7	D	0.5	No
6) Aero Dr at	All	8:00-9:00am	19.0	B	19.1	B	0.1	No
Ruffin Rd (S)	All	3:15-4:15pm	15.4	B	15.6	B	0.2	No
	All	4:45-5:45pm	23.7	C	23.8	C	0.1	No
7) Aero Dr at	All	8:00-9:00am	15.9	B	16.0	B	0.1	No
W. Canyon	All	3:15-4:15pm	16.8	B	17.1	B	0.3	No
Ave (S)	All	4:45-5:45pm	17.1	B	17.2	B	0.1	No
8) Aero Ct at	EB LTR	8:00-9:00am	10.4	B	14.3	B	3.9	No
Aero Frontage	WB LTR	8:00-9:00am	9.3	A	11.1	B	1.8	No
(U)	EB LTR	3:15-4:15pm	11.8	B	17.7	C	5.9	No
	WB LTR	3:15-4:15pm	10.0	A	11.5	B	1.5	No
	EB LTR	4:45-5:45pm	12.6	B	14.0	B	1.4	No
	WB LTR	4:45-5:45pm	10.2	B	10.7	B	0.5	No
9) Aero Ct at	WB LR	8:00-9:00am	9.6	A	12.4	B	2.8	No
Aero Pl (U)	WB LR	3:15-4:15pm	10.0	A	13.1	B	3.1	No
	WB LR	4:45-5:45pm	9.3	A	9.6	A	0.3	No
10) Kearny Villa	All	8:00-9:00am	28.7	C	30.0	C	1.3	No
Rd at SR-163	All	3:15-4:15pm	23.0	C	24.1	C	1.1	No
NB On-Ramp (S)	All	4:45-5:45pm	37.3	D	38.5	D	1.2	No
11) Kearny Mesa	All	8:00-9:00am	32.3	C	34.7	C	2.4	No
Rd at Armour St	All	3:15-4:15pm	36.3	D	37.4	D	1.1	No
(S)	All	4:45-5:45pm	55.4	E	56.1	E	0.7	No
12) Kearny Mesa	All	8:00-9:00am	22.8	C	23.6	C	0.8	No
Rd at Convoy	All	3:15-4:15pm	31.2	C	31.4	C	0.2	No
St (S)	All	4:45-5:45pm	37.9	D	38.2	D	0.3	No
13) Mesa College	All	8:00-9:00am	30.8	C	32.0	C	1.2	No
Dr at SR-163	All	3:15-4:15pm	22.5	C	23.0	C	0.5	No
NB Off-Ramp (S)	All	4:45-5:45pm	25.5	C	25.8	C	0.3	No
14) Mesa College	All	8:00-9:00am	25.5	C	25.8	C	0.3	No
Dr at Annrae St	All	3:15-4:15pm	27.7	C	27.9	C	0.2	No
(S)	All	4:45-5:45pm	56.1	E	57.3	E	1.2	No
15) Mesa College	All	8:00-9:00am	16.3	B	17.2	B	0.9	No
Dr at I-805 SB	All	3:15-4:15pm	22.7	C	24.9	C	2.2	No
On-Ramp (S)	All	4:45-5:45pm	34.3	C	35.8	D	1.5	No
16) Mesa College	All	8:00-9:00am	14.8	B	15.7	B	0.9	No
Dr at I-805 NB	All	3:15-4:15pm	10.2	B	10.5	B	0.3	No
Off-Ramp (S)	All	4:45-5:45pm	11.1	B	11.2	B	0.1	No

Notes: 1) Intersection Analysis - (S) Signalized, (U) Unsignalized. 2) Delay - HCM Average Control Delay in seconds. 3) LOS: Level of Service. 4) Delta is the increase in delay from project. 5) Direct impact if project traffic exceeds threshold.

Figure 13a: Year 2022 with Project (Phase 2) Volumes



Convoy Ct			Aero Dr		
	22 (5)	398 (1100)	440 (858)		
4 (10)				660	(489)
3 (48)		1		56	(4)
1 (24)				436	(460)
		516 (561)	396 (505)		

Kearny Villa Rd			Aero Dr		
	41 (147)	134 (356)	216 (774)		
151 (146)				542	(359)
562 (1040)		2		834	(633)
99 (211)				318	(292)
	322 (209)	200 (279)	515 (438)		

Aero Ct			Aero Dr		
	14 (12)	0 (2)	3 (45)		
9 (7)				13	(10)
900 (2054)		3		1470	(1088)
380 (193)				140	(69)
	211 (173)	0 (1)	87 (63)		

Afton Rd			Aero Dr		
	16 (93)	0 (5)	3 (12)		
71 (48)				7	(5)
756 (1758)		4		1316	(933)
162 (336)				61	(38)
	270 (154)	4 (3)	54 (56)		

Sand-rock Rd			Aero Dr		
	17 (46)	6 (71)	14 (67)		
42 (52)				57	(25)
560 (1024)		5		819	(654)
195 (733)				119	(303)
	533 (292)	39 (31)	216 (157)		

Ruffin Rd			Aero Dr		
591 (734)		6		588	(760)
124 (594)				173	(853)
	465 (168)		534 (254)		

W. Canyon Rd			Aero Dr		
20 (9)					
1042 (867)		7		677	(1386)
125 (145)				120	(170)
	90 (165)		59 (65)		

Aero Ct			Frontage Aero Dr	
	2 (7)	506 (205)	12 (50)	
0 (4)				25 (22)
0 (1)		8		0 ()
2 (4)				0 (2)
	0 ()	272 (214)	1 (6)	

LEGEND

Z,ZZZ 24 Hr Average Daily Traffic (ADT) on segments
XX 8:00-9:00 AM volumes at intersections
(YY) 4:45-5:45 PM volumes at intersections, an empty bracket () represents a 0 volume
(#) Intersection Reference Number to LOS Tables
Existing Roadways

Figure 13b: Year 2022 with Project (Phase 2) Volumes

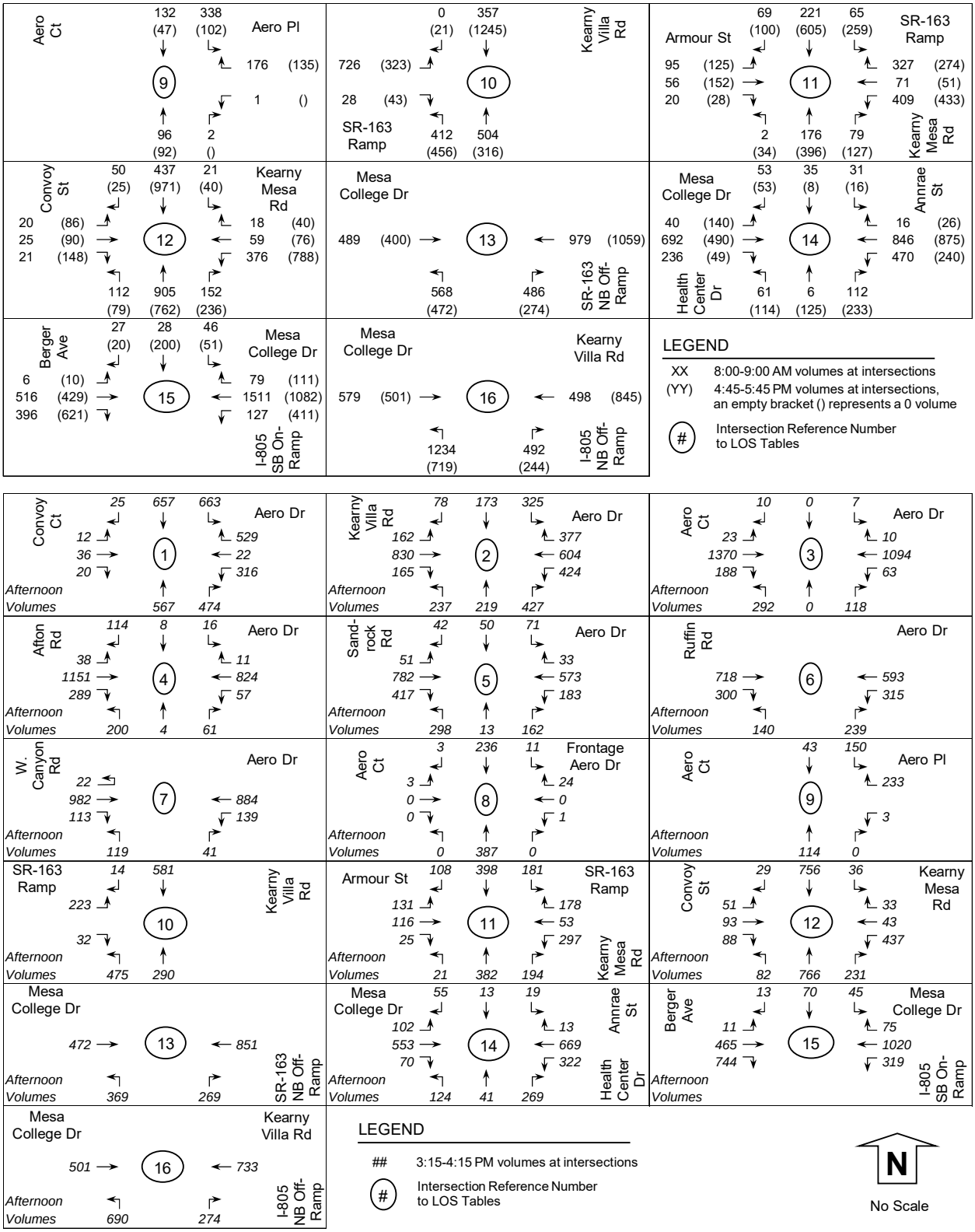


TABLE 21: YEAR 2022 WITH PROJECT (PHASE 2) SEGMENT VOLUMES AND LEVEL OF SERVICE

Segment	Classification (as built)	Year 2022 Daily Volume	Year 2022 LOS E Capacity*	Year 2022 V/C	Year 2022 LOS	Project Daily Volumes	Year 2022 + Project (Phase 2) Daily Volume	Year 2022 + Project (Phase 2) LOS E Capacity*	Year 2022 + Project (Phase 2) V/C	Year 2022 + Project (Phase 2) LOS	Change in V/C	Direct Impact?
Aero Court												
From Aero Dr to Aero Pl	Not Classified (2U+P)*	3,272	8,000	0.409	B	1,272	4,544	8,000	0.568	C	0.159	No
Aero Drive												
From Convoy Ct to Kearney Villa Rd	6 Lane Prime (4D+BL)	24,277	40,000	0.607	C	241	24,518	40,000	0.613	C	0.006	No
From Kearny Villa Rd to Aero Ct	6 Lane Prime (4D+BL)	33,532	40,000	0.838	D	964	34,496	40,000	0.862	D	0.024	No
From Aero Ct to Afton Rd	6 Lane Prime (4D+BL)	30,385	40,000	0.760	D	375	30,760	40,000	0.769	D	0.009	No
From Afton Rd to Sandrock Rd	6 Lane Prime (4D+BL)	26,171	40,000	0.654	C	348	26,519	40,000	0.663	C	0.009	No
From Sandrock Rd to Ruffin Rd	4 Lane Major (4U+TWLTL+BL)	25,956	40,000	0.649	C	295	26,251	40,000	0.656	C	0.007	No
From Ruffin Rd to W. Canyon Rd	4 Lane Major (4D+BL)	25,109	40,000	0.628	C	254	25,363	40,000	0.634	C	0.006	No
Aero Place												
From Aero Ct to Project Access	Not Classified (2U+P)*	1,250	8,000	0.156	A	1,272	2,522	8,000	0.315	B	0.159	No
Convoy Street												
From Kearny Mesa Rd to Aero Dr	4 Lane Major (4D+P)	31,618	40,000	0.790	D	228	31,846	40,000	0.796	D	0.006	No
Kearny Mesa Road												
From Armour/SR-163 SB to Convoy St	4 Lane Collector (4U)	11,183	30,000	0.373	B	107	11,290	30,000	0.376	B	0.004	No
Kearny Villa Road												
From SR-163 NB Ramp to Aero Dr	4 Lane Major (4U)**	16,793	40,000	0.420	B	295	17,088	40,000	0.427	B	0.007	No
From Aero Dr to I-805 NB Ramp	4 Lane Major (4D)	20,974	40,000	0.524	B	428	21,402	40,000	0.535	C	0.011	No
Mesa College Drive												
From SR-163 to I-805	4 Lane Collector (4D)	29,664	30,000	0.989	E	228	29,892	30,000	0.996	E	0.008	No

Notes: Classification: 2U+P = 2 lane undivided roadway with on-street parking; 6D: 6 lane divided roadway; BL=Bike Lane. Daily volume is a 24 hour volume. LOS: Level of Service. *Functions as industrial fronting Collector with LOS capacity of 8,000. **Painted Median (two sets of double yellow lines establishing median).

TABLE 22: YEAR 2022 WITH PROJECT (PHASE 2) ON-RAMP OPERATIONS

I-805 at Mesa College Dr SB On-Ramp & Study Period	Scenario	Vehicle Demand (veh/hr)	Number and type of lanes (1)	CALTRANS Provided Rate per lane (2)	On-Ramp Rate (veh/hr)	Excess Demand (veh/hr)	Calculated Delay (minutes)	Calculated Queue in Feet	Maximum Observed Stopped Queue (ft)	Maximum Observed Delay (minutes)	Impact?
3:15 - 4:15 PM	Year 2022	774	1 SOV	900	900	0	0.0	0	Est. 100 ft	Est. < 1	
Project SOV = 0*		0							No significant change		
	Yr2022+P	774	1 SOV	900	900	0	0.0	0	anticipated to SOV lane		No
	Year 2018	332	1 HOV	900	900	0	0.0	0	Est. 25 ft	Est. < 1	
Project HOV = 27*		27							No significant change		
Proj HOV = 20	Yr2022+P	359	1 HOV	900	900	0	0.0	0	anticipated to HOV lane		No
4:45 - 5:45 PM	Year 2022	796	1 SOV	900	900	0	0.0	0	Est. 200 ft	Est. 1 min	
Project SOV = 1*		1							No significant change		
	Yr2022+P	797	1 SOV	900	900	0	0.0	0	anticipated to SOV lane		No
	Year 2022	428	1 HOV	900	900	0	0.0	0	Est. 25 ft	Est. < 1 min	
Project HOV = 7*		7							No significant change		
	Yr2022+P	435	1 HOV	900	900	0	0.0	0	anticipated to HOV lane		No

Notes: (1) SOV: Single Occupancy Vehicle, HOV: High Occupancy Vehicle, Split between SOV and HOV based on count data that documented 70% SOV with 30% HOV from 3:15pm-4:15pm on 2/17/16 and 65% SOV with 35% HOV from 4:45pm-5:45pm on 2/17/16 (Appendix C). (2) Rate provided by CALTRANS (Appendix C). *Project is a only school in year 2022; therefore, all 3:15-4:15pm traffic consists of driver plus child or children, thus all are HOV trips. From 4:45-5:45pm, there may be a teacher in the mix, thus about 10% are SOV and 90% are HOV. Maximum observed stopped queue is estimated for 2022 based on existing observations.

Under year 2022 with project (phase 2) conditions, all of the study locations were calculated to operate at LOS D or better, except for the intersections of:

1) Aero Dr/Convoy St (LOS E 4:45-5:45pm),
2) Aero Dr/Kearny Villa Rd (LOS E 4:45-5:45pm),
3) Kearny Mesa Rd at Armour St (LOS E 4:45-5:45pm), and
4) Mesa College Dr at Annrae St (LOS E 4:45-5:45pm).

The segment of Mesa College Drive from SR-163 to I-805 was calculated to operate at LOS E on a daily basis. The metered freeway on-ramp at Mesa College/SB I-805 was calculated to operate with minimal delay and is expected to have similar queues and delays in 2022 as observed under existing conditions (no significant change is anticipated with the addition of project traffic). There are no project impacts to the above locations because the project traffic does NOT exceed the City's traffic impact significance thresholds.

10.0 Horizon Year 2035 without Project Conditions

Horizon Year 2035 without project conditions were analyzed using the San Diego Association of Governments SANDAG's Series 12 Year 2035 forecasted ADTs for the study area roadway segments.

The intersection operations were analyzed using traffic volumes that were factored up from existing counts by applying a growth factor of 10.9% that was calculated as the average increase in ADTs from the study area segments (calculations included in Appendix H). The growth factor was calculated from traffic volumes on Aero Drive, Convoy Street, Kearny Mesa Road, Kearny Villa Road, and Mesa College Drive. Existing ADTs were factored up to year 2035 by applying the 10.9% growth factor and were rounded to the nearest 100 while the factored up turning movement counts were not rounded.

The existing roadway conditions were held constant for the 2035 analysis as shown in **Figure 14**. The horizon year 2035 volumes without project traffic are shown in **Figures 15a and 15b.** The LOS calculated for the study roadway elements are included in **Tables 23 through 25**. Intersection LOS calculations are included in **Appendix N**.

Figure 14: Horizon Year 2035 Analysis Roadway Geometry

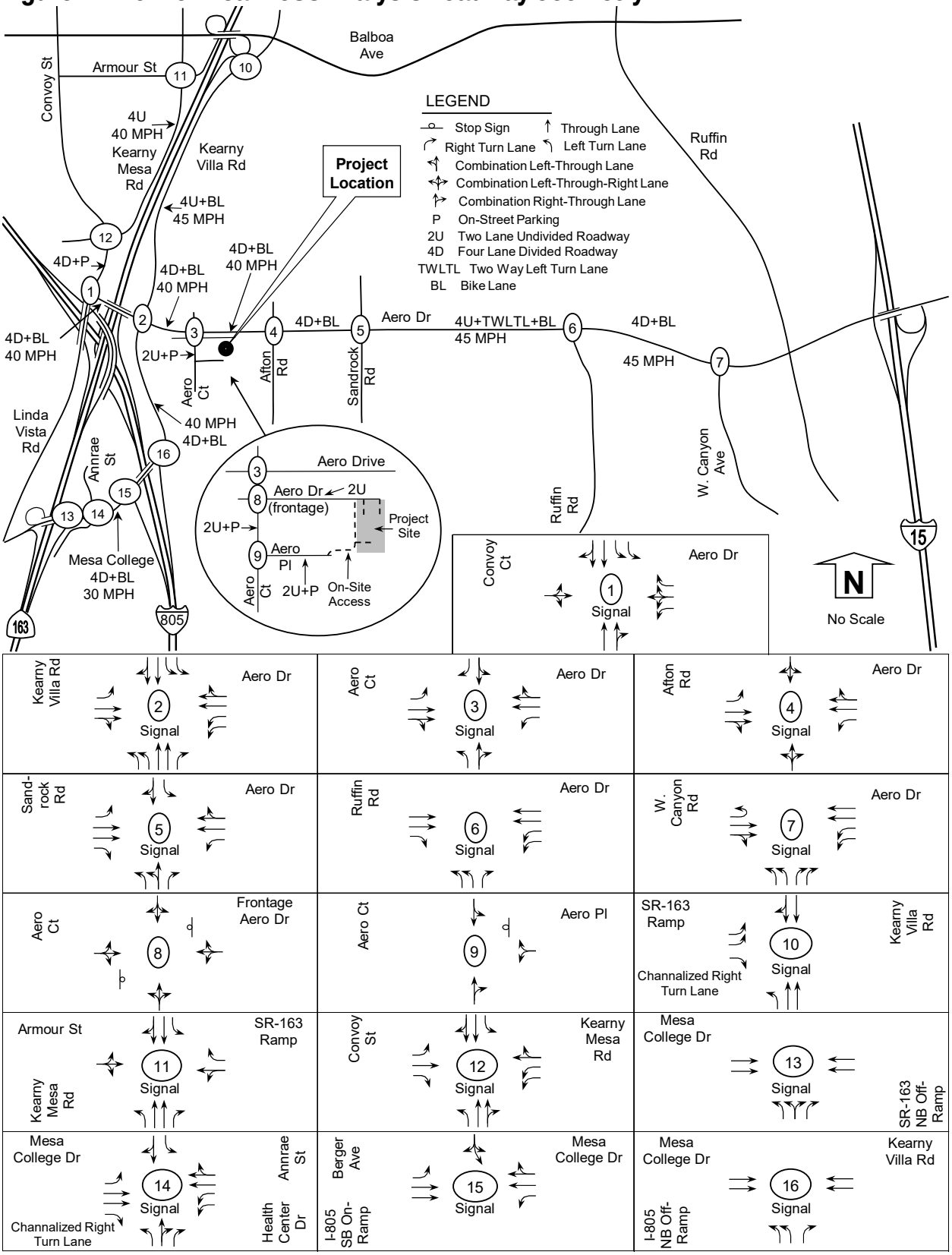
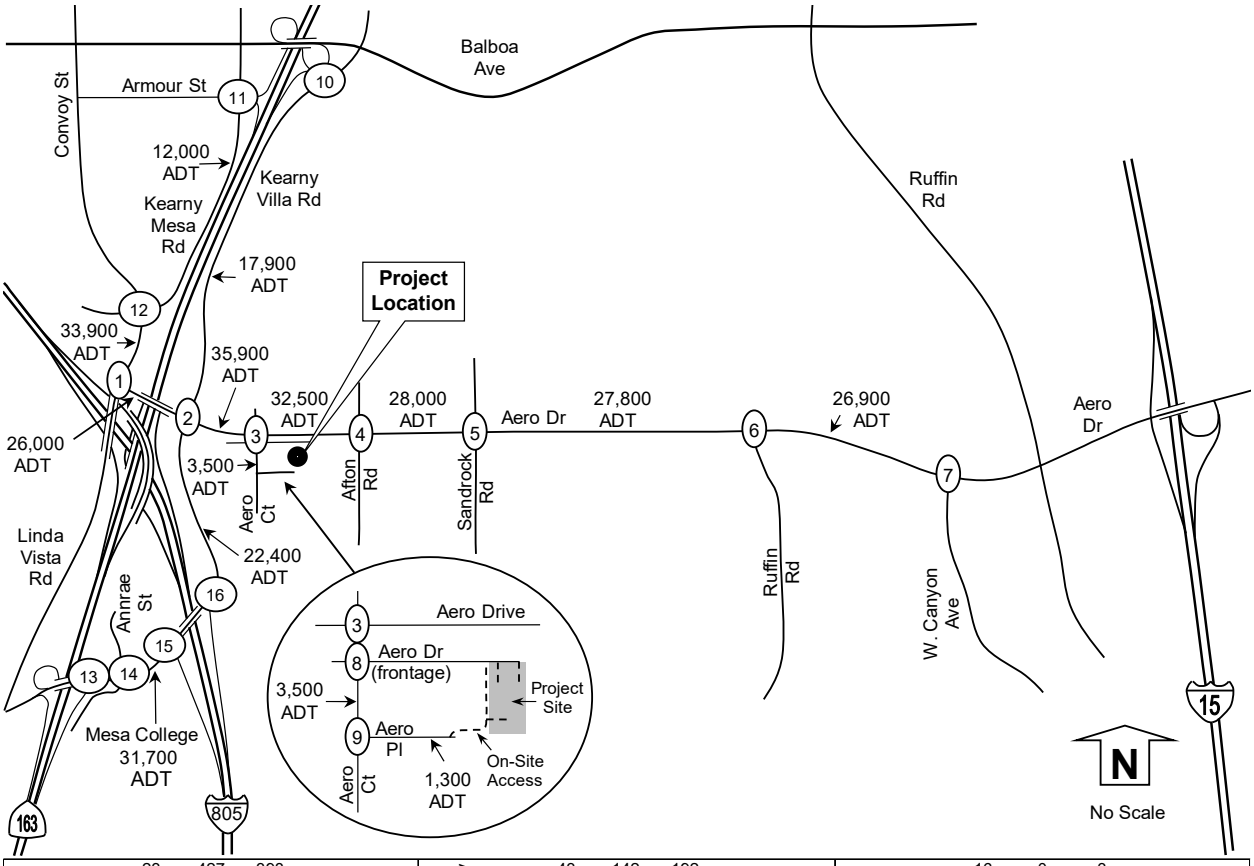


Figure 15a: Horizon Year 2035 without Project Volumes



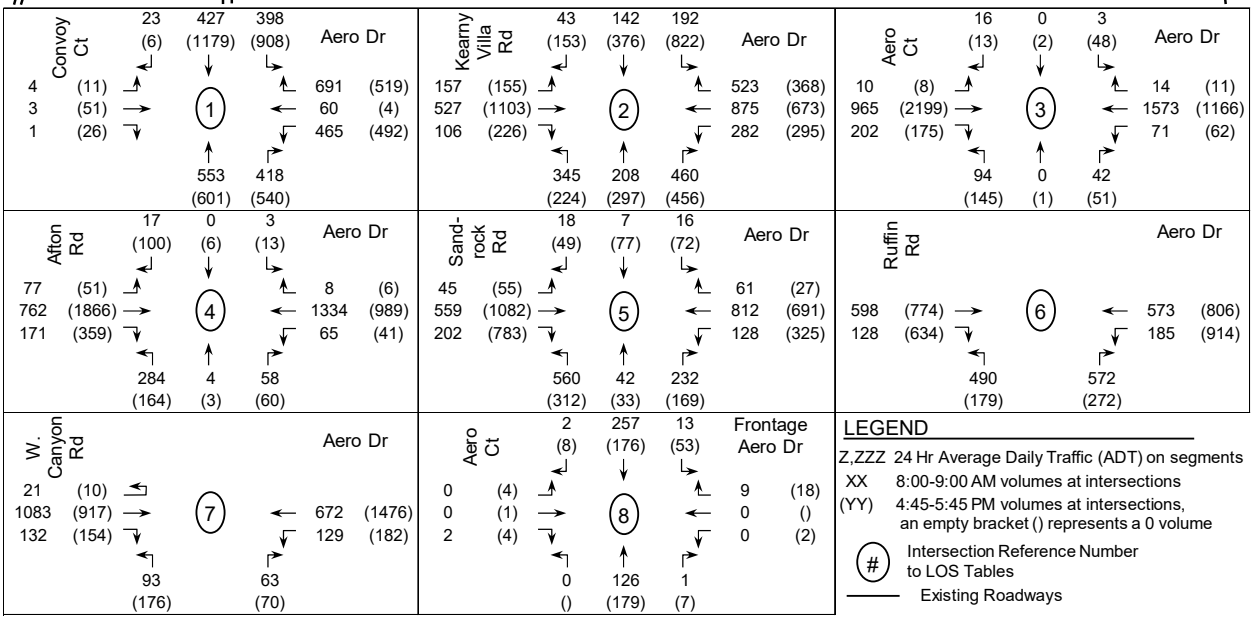
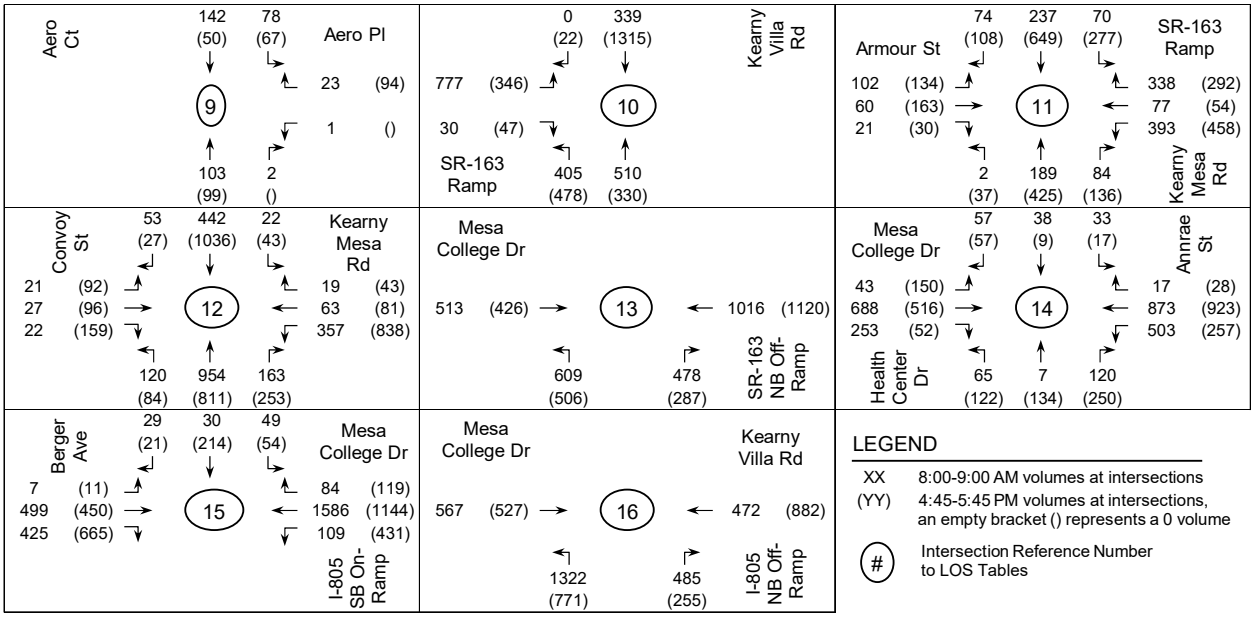


Figure 15b: Horizon Year 2035 without Project Volumes



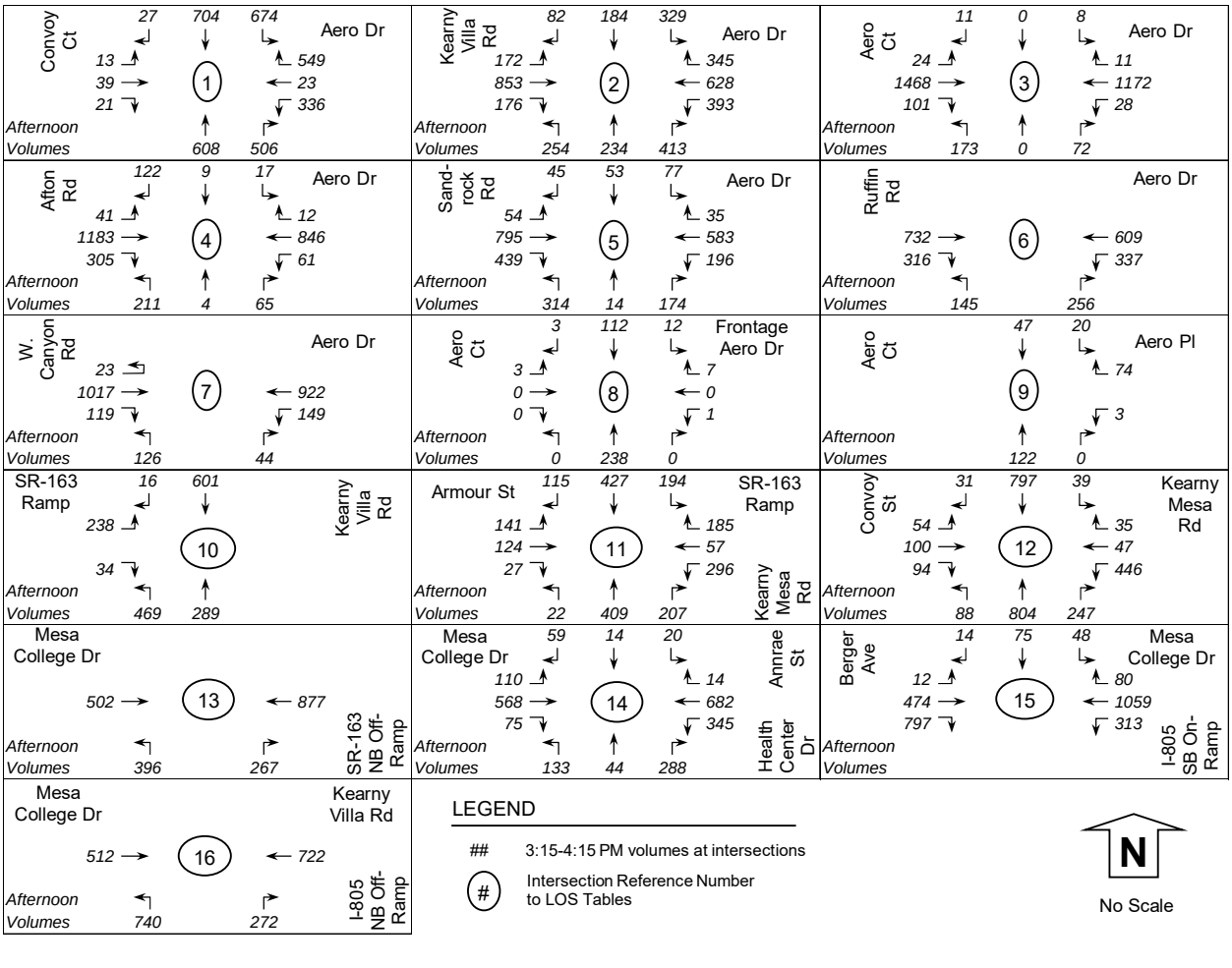


TABLE 23: HORIZON YEAR 2035 WITHOUT PROJECT INTERSECTION LEVEL OF SERVICE (HCM)

Intersection and (Analysis)[1]	Movement	Study Period	Horizon Year 2035 Delay[2]	Horizon Year 2035 LOS[3]
1) Aero Dr at Convoy St (S)	All	8:00-9:00am	35.8	D
	All	3:15-4:15pm	45.7	D
	All	4:45-5:45pm	68.2	E
2) Aero Dr at Kearny Villa Rd (S)	All	8:00-9:00am	44.2	D
	All	3:15-4:15pm	38.9	D
	All	4:45-5:45pm	76.5	E
3) Aero Dr at Aero Ct (S)	All	8:00-9:00am	11.8	B
	All	3:15-4:15pm	19.2	B
	All	4:45-5:45pm	55.3	E
4) Aero Dr at Afton Rd (S)	All	8:00-9:00am	28.1	C
	All	3:15-4:15pm	27.0	C
	All	4:45-5:45pm	58.9	E
5) Aero Dr at Sandrock Rd (S)	All	8:00-9:00am	25.2	C
	All	3:15-4:15pm	26.9	C
	All	4:45-5:45pm	60.2	E
6) Aero Dr at Ruffin Rd (S)	All	8:00-9:00am	18.1	B
	All	3:15-4:15pm	15.7	B
	All	4:45-5:45pm	25.5	C
7) Aero Dr at W. Canyon Ave (S)	All	8:00-9:00am	14.7	B
	All	3:15-4:15pm	14.4	B
	All	4:45-5:45pm	15.1	B
8) Aero Ct at Aero Frontage (U)	EB LTR	8:00-9:00am	9.7	A
	WB LTR	8:00-9:00am	9.0	A
	EB LTR	3:15-4:15pm	11.6	B
	WB LTR	3:15-4:15pm	9.9	A
	EB LTR	4:45-5:45pm	11.4	B
	WB LTR	4:45-5:45pm	9.7	A
9) Aero Ct at Aero Pl (U)	WB LR	8:00-9:00am	9.0	A
	WB LR	3:15-4:15pm	9.3	A
	WB LR	4:45-5:45pm	9.2	A
10) Kearny Villa Rd at SR-163 NB On-Ramp (S)	All	8:00-9:00am	28.9	C
	All	3:15-4:15pm	23.0	C
	All	4:45-5:45pm	43.5	D
11) Kearny Mesa Rd at Armour St (S)	All	8:00-9:00am	34.7	C
	All	3:15-4:15pm	40.9	D
	All	4:45-5:45pm	64.3	E
12) Kearny Mesa Rd at Convoy St (S)	All	8:00-9:00am	24.0	C
	All	3:15-4:15pm	30.0	C
	All	4:45-5:45pm	43.1	D
13) Mesa College Dr at SR-163 NB offramp (S)	All	8:00-9:00am	33.4	C
	All	3:15-4:15pm	24.2	C
	All	4:45-5:45pm	28.5	C
14) Mesa College Dr at Annrae St (S)	All	8:00-9:00am	26.5	C
	All	3:15-4:15pm	28.2	C
	All	4:45-5:45pm	65.3	E
15) Mesa College Dr at I-805 SB On-Ramp (S)	All	8:00-9:00am	16.7	B
	All	3:15-4:15pm	25.0	C
	All	4:45-5:45pm	39.7	D
16) Mesa College Dr at I-805 NB Off-Ramp (S)	All	8:00-9:00am	15.7	B
	All	3:15-4:15pm	10.9	B
	All	4:45-5:45pm	11.9	B

Notes: 1) Intersection Analysis - (S) Signalized, (U) Unsignalized. 2) Delay - HCM Average Control Delay in seconds. 3) LOS: Level of Service.

TABLE 24: HORIZON YEAR 2035 WITHOUT PROJECT SEGMENT VOLUMES AND LEVEL OF SERVICE

Segment	Classification (as built)	Horizon Year (2035)			
		Daily Volume	LOS E Capacity*	V/C	LOS
Aero Court					
From Aero Dr to Aero Pl	Not Classified (2U+P)*	3,500	8,000	0.438	C
Aero Drive					
From Convoy Ct to Kearney Villa Rd	6 Lane Prime (4D+BL)	26,000	40,000	0.650	C
From Kearny Villa Rd to Aero Ct	6 Lane Prime (4D+BL)	35,900	40,000	0.898	E
From Aero Ct to Afton Rd	6 Lane Prime (4D+BL)	32,500	40,000	0.813	D
From Afton Rd to Sandrock Rd	6 Lane Prime (4D+BL)	28,000	40,000	0.700	C
From Sandrock Rd to Ruffin Rd	4 Lane Major (4U+TWLTL+BL)	27,800	40,000	0.695	C
From Ruffin Rd to W. Canyon Rd	4 Lane Major (4D+BL)	26,900	40,000	0.673	C
From Aero Ct to Project Access	Not Classified (2U+P)*	1,300	8,000	0.163	A
Convoy Street					
From Kearny Mesa Rd to Aero Dr	4 Lane Major (4D+P)	33,900	40,000	0.848	D
Kearny Mesa Road					
From Armour/SR-163 SB to Convoy St	4 Lane Collector (4U)	12,000	30,000	0.400	B
Kearny Villa Road					
From SR-163 NB Ramp to Aero Dr	4 Lane Major (4U)**	17,900	40,000	0.448	B
From Aero Dr to I-805 NB Ramp	4 Lane Major (4D)	22,400	40,000	0.560	C
Mesa College Drive					
From SR-163 to I-805	4 Lane Collector (4D)	31,700	30,000	1.057	F

Notes: Classification: 2U+P = 2 lane undivided roadway with on-street parking; 6D: 6 lane divided roadway; BL=Bike Lane. Daily volume is a 24 hour volume. LOS: Level of Service. *Functions as industrial fronting Collector with LOS capacity of 8,000. **Painted Median (two sets of double yellow lines establishing median).

TABLE 25: HORIZON YEAR 2035 WITHOUT PROJECT ON-RAMP OPERATIONS

I-805 at Mesa College Dr SB On-Ramp & Study Period	Scenario	Vehicle Demand (veh/hr)	Number and type of lanes (1)	CALTRANS Provided Rate per lane (2)	On-Ramp Rate (veh/hr)	Excess Demand (veh/hr)	Calculated Delay (minutes)	Calculated Queue in Feet	Possible Stopped Queue	Possible Delays
3:15 - 4:15 PM	Year 2035	830	1 SOV	900	900	0	0.0	0	A stopped queue and some delay anticipated in the horizon year based on existing observations	
SB On-Ramp	Year 2035	356	1 HOV	900	900	0	0.0	0		
Total (SOV & HOV)		1,185								
4:45 - 5:45 PM	Year 2018	852	1 SOV	900	900	0	0.0	0		
SB On-Ramp	Year 2018	459	1 HOV	900	900	0	0.0	0		
Total (SOV & HOV)		1,310								

Notes: (1) SOV: Single Occupancy Vehicle, HOV: High Occupancy Vehicle, Split between SOV and HOV based on count data that documented 70% SOV with 30% HOV from 3:15pm-4:15pm on 2/17/16 and 65% SOV with 35% HOV from 4:45pm-5:45pm on 2/17/16 (Appendix C). (2) Rate provided by CALTRANS (Appendix C).

Under horizon year 2035 conditions, all of the study locations were calculated to operate at LOS D or better, except for the intersections of:

1) Aero Dr/Convoy St (LOS E 4:45-5:45pm),
2) Aero Dr/Kearny Villa Rd (LOS E 4:45-5:45pm),
3) Aero Dr/Aero Ct (LOS E 4:45-5:45pm),
4) Aero Dr/Afton Rd (LOS E 4:45-5:45pm),
5) Aero Dr/Sandrock Rd (LOS E 4:45-5:45pm),
6) Kearny Mesa Rd at Armour St (LOS E 4:45-5:45pm), and
7) Mesa College Dr at Annrae St (LOS E 4:45-5:45pm).

Two segments were calculated to operate below LOS D, which included Aero Drive from Kearny Villa Rd to Aero Ct (LOS E daily) and Mesa College Drive from SR-163 to I-805 (LOS F daily). The metered freeway on-ramp at Mesa College/SB I-805 was calculated to operate with minimal delay; however, by the horizon year a stopped queue and some delays are anticipated based on existing observations.

11.0 Horizon Year 2035 with Project (Phase 2) Conditions

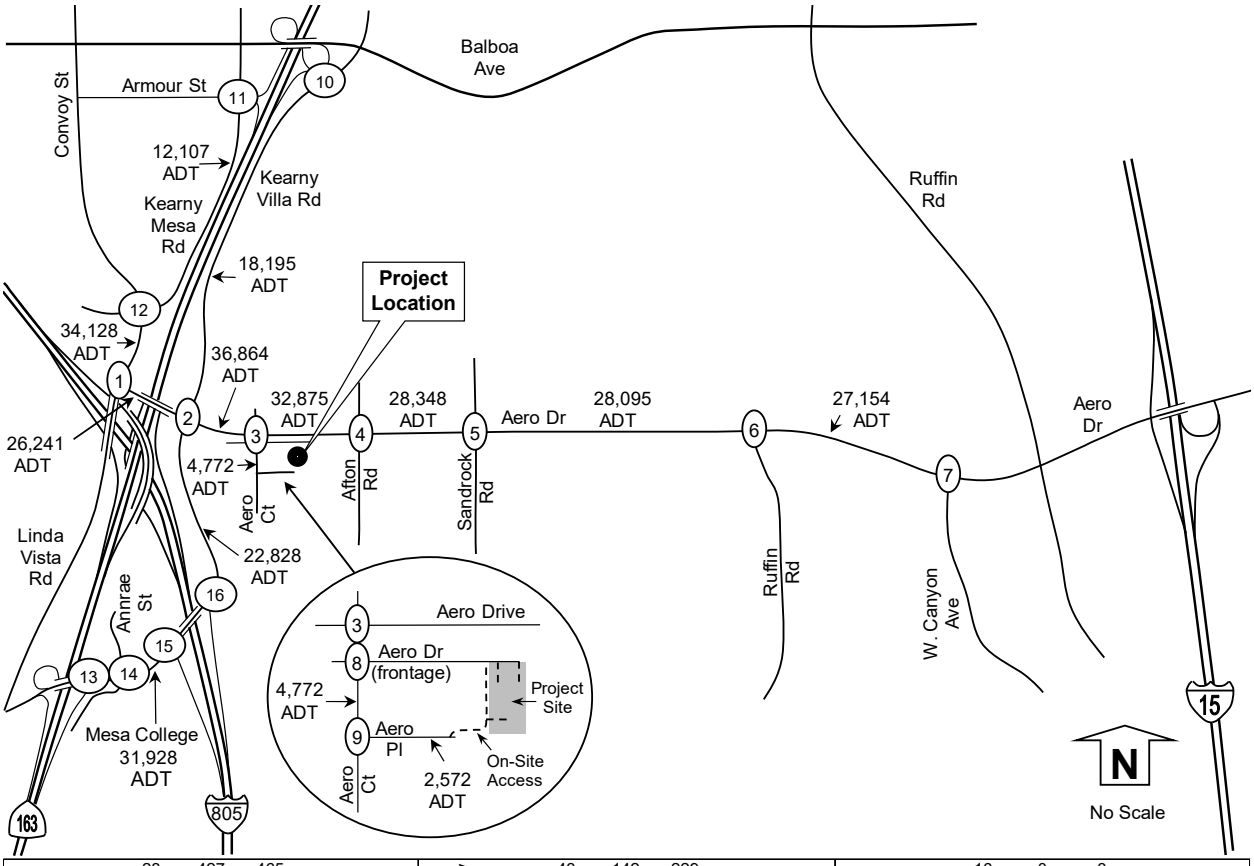
The Horizon Year 2035 with the project (phase 2) conditions were analyzed by adding the project traffic onto horizon year 2035 volumes. The horizon year 2035 volumes with project traffic are shown in **Figures 16a and 16b.** The LOS calculated for the study roadway elements are included in **Tables 26 through 28**. LOS calculations are included in **Appendix O**.

TABLE 26: HORIZON YEAR 2035 WITH PROJECT (PHASE 2) INTERSECTION LEVEL OF SERVICE (HCM)

Intersection and (Analysis)[1]	Movement	Study Hour	Horizon Year 2035		Horizon Year 2035 + Project (Phase 2)			
			Delay[2]	LOS[3]	Delay[2]	LOS[3]	Delta[4]	Cumulative Impact?[5]
1) Aero Dr at	All	8:00-9:00am	35.8	D	37.9	D	2.1	No
Convoy St (S)	All	3:15-4:15pm	45.7	D	49.8	D	4.1	No
	All	4:45-5:45pm	68.2	E	68.7	E	0.5	No
2) Aero Dr at	All	8:00-9:00am	44.2	D	49.6	D	5.4	No
Kearny Villa	All	3:15-4:15pm	38.9	D	44.2	D	5.3	No
Rd (S)	All	4:45-5:45pm	76.5	E	78.4	E	1.9	No
3) Aero Dr at	All	8:00-9:00am	11.8	B	21.9	C	10.1	No
Aero Ct (S)	All	3:15-4:15pm	19.2	B	32.7	C	13.5	No
	All	4:45-5:45pm	55.3	E	56.6	E	1.3	No
4) Aero Dr at	All	8:00-9:00am	28.1	C	31.3	C	3.2	No
Afton Rd (S)	All	3:15-4:15pm	27.0	C	29.1	C	2.1	No
	All	4:45-5:45pm	58.9	E	60.7	E	1.8	No
5) Aero Dr at	All	8:00-9:00am	25.2	C	25.6	C	0.4	No
Sandrock Rd	All	3:15-4:15pm	26.9	C	27.2	C	0.3	No
(S)	All	4:45-5:45pm	60.2	E	61.3	E	1.1	No
6) Aero Dr at	All	8:00-9:00am	18.1	B	18.3	B	0.2	No
Ruffin Rd (S)	All	3:15-4:15pm	15.7	B	15.9	B	0.2	No
	All	4:45-5:45pm	25.5	C	25.7	C	0.2	No
7) Aero Dr at	All	8:00-9:00am	14.7	B	14.9	B	0.2	No
W. Canyon	All	3:15-4:15pm	14.4	B	14.7	B	0.3	No
Ave (S)	All	4:45-5:45pm	15.1	B	15.2	B	0.1	No
8) Aero Ct at	EB LTR	8:00-9:00am	9.7	A	11.8	B	2.1	No
Aero Frontage	WB LTR	8:00-9:00am	9.0	A	10.0	B	1.0	No
(U)	EB LTR	3:15-4:15pm	11.6	B	16.4	C	4.8	No
	WB LTR	3:15-4:15pm	9.9	A	11.2	B	1.3	No
	EB LTR	4:45-5:45pm	11.4	B	12.3	B	0.9	No
	WB LTR	4:45-5:45pm	9.7	A	10.0	B	0.3	No
9) Aero Ct at	WB LR	8:00-9:00am	9.0	A	9.9	A	0.9	No
Aero Pl (U)	WB LR	3:15-4:15pm	9.3	A	10.5	B	1.2	No
	WB LR	4:45-5:45pm	9.2	A	9.5	A	0.3	No
10) Kearny Villa	All	8:00-9:00am	28.9	C	30.1	C	1.2	No
Rd at SR-163	All	3:15-4:15pm	23.0	C	24.1	C	1.1	No
NB On-Ramp (S)	All	4:45-5:45pm	43.5	D	45.0	D	1.5	No
11) Kearny Mesa	All	8:00-9:00am	34.7	C	37.4	D	2.7	No
Rd at Armour St	All	3:15-4:15pm	40.9	D	43.8	D	2.9	No
(S)	All	4:45-5:45pm	64.3	E	64.9	E	0.6	No
12) Kearny Mesa	All	8:00-9:00am	24.0	C	24.9	C	0.9	No
Rd at Convoy	All	3:15-4:15pm	30.0	C	30.5	C	0.5	No
St (S)	All	4:45-5:45pm	43.1	D	43.4	D	0.3	No
13) Mesa College	All	8:00-9:00am	33.4	C	34.8	C	1.4	No
Dr at SR-163	All	3:15-4:15pm	24.2	C	24.7	C	0.5	No
NB offramp (S)	All	4:45-5:45pm	28.5	C	28.8	C	0.3	No
14) Mesa College	All	8:00-9:00am	26.5	C	26.9	C	0.4	No
Dr at Annrae St	All	3:15-4:15pm	28.2	C	28.6	C	0.4	No
(S)	All	4:45-5:45pm	65.3	E	66.6	E	1.3	No
15) Mesa College	All	8:00-9:00am	16.7	B	17.6	B	0.9	No
Dr at I-805 SB	All	3:15-4:15pm	25.0	C	27.9	C	2.9	No
On-Ramp (S)	All	4:45-5:45pm	39.7	D	41.3	D	1.6	No
16) Mesa College	All	8:00-9:00am	15.7	B	16.5	B	0.8	No
Dr at I-805 NB	All	3:15-4:15pm	10.9	B	11.1	B	0.2	No
Off-Ramp (S)	All	4:45-5:45pm	11.9	B	12.0	B	0.1	No

Notes: 1) Intersection Analysis - (S) Signalized, (U) Unsignalized. 2) Delay - HCM Average Control Delay in seconds. 3) LOS: Level of Service. 4) Delta is the increase in delay from project. 5) Cumulative impact if project traffic exceeds threshold.

Figure 16a: Horizon Year 2035 with Project (Phase 2) Volumes



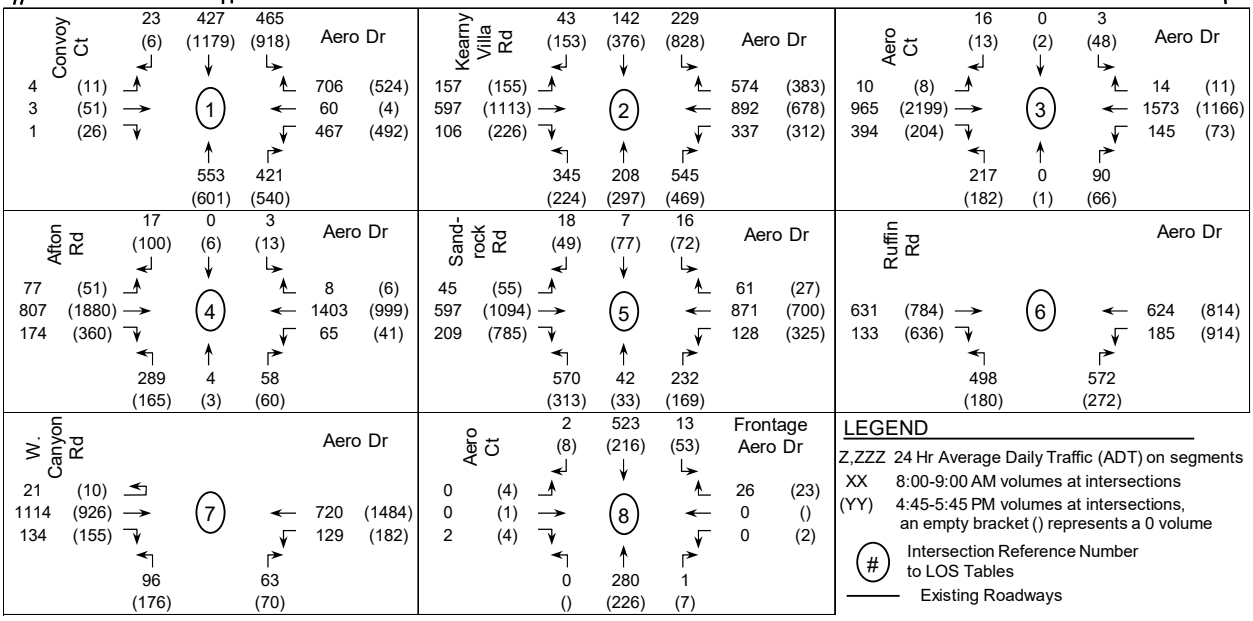
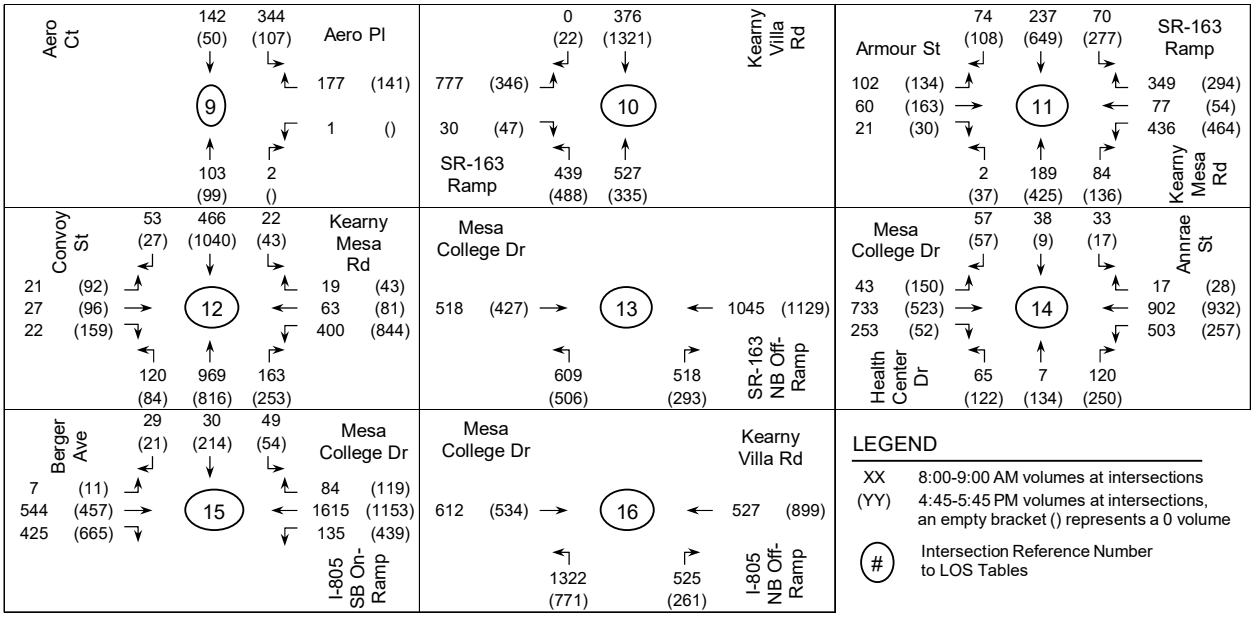


Figure 16b: Horizon Year 2035 with Project (Phase 2) Volumes



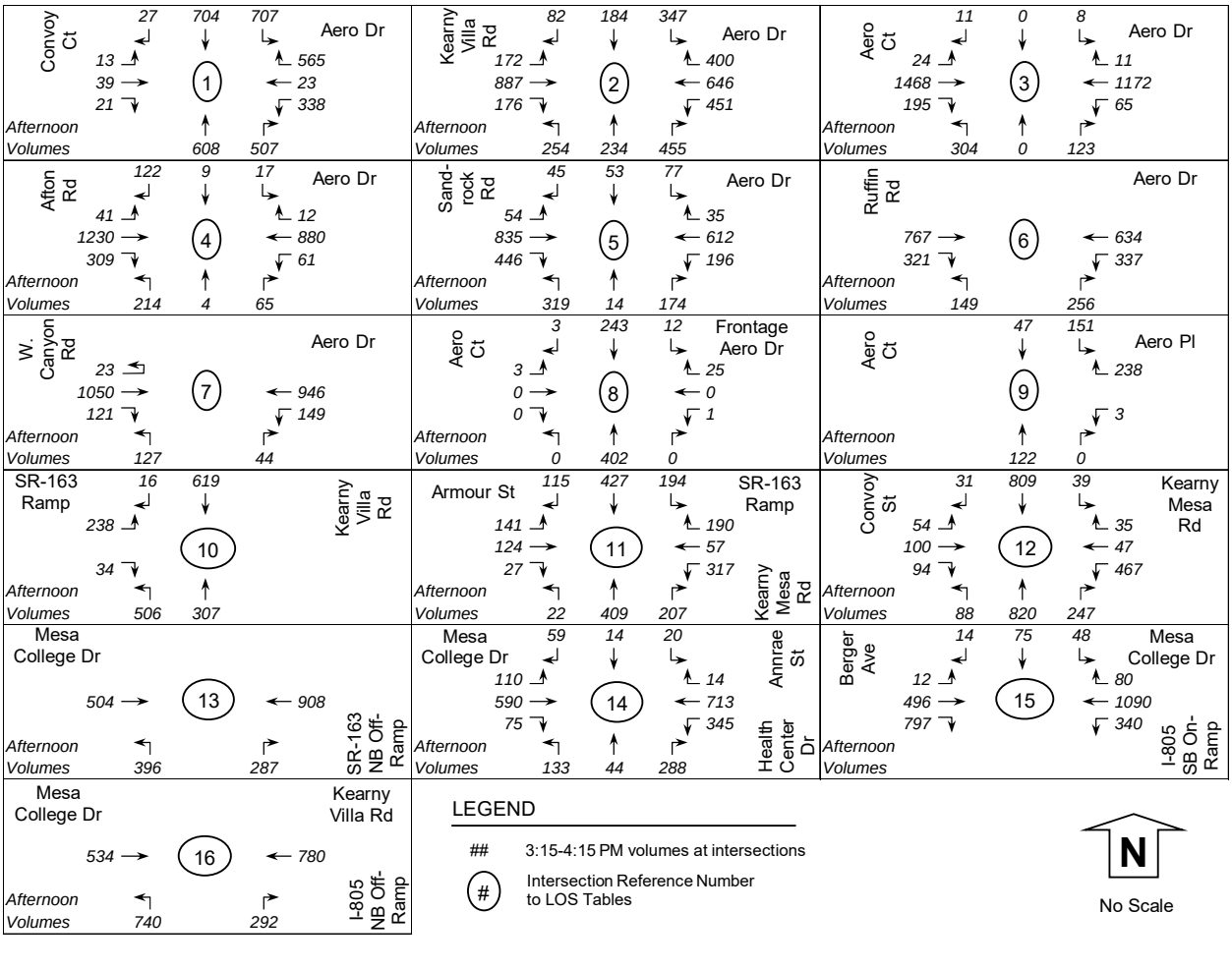


TABLE 27: HORIZON YEAR 2035 WITH PROJECT (PHASE 2) SEGMENT VOLUMES AND LEVEL OF SERVICE

Segment	Classification (as built)	Horizon Year (2035)				Project	Horizon Year (2035) + Project Phase 2					
		Daily Volume	LOS E Capacity*	V/C	LOS	Daily Volumes	Daily Volume	LOS E Capacity*	V/C	LOS	V/C Inc.	Cumulative Impact?
Aero Court												
From Aero Dr to Aero Pl	Not Classified (2U+P)*	3,500	8,000	0.438	C	1,272	4,772	8,000	0.597	C	0.159	No
Aero Drive												
From Convoy Ct to Kearney Villa Rd	6 Lane Prime (4D+BL)	26,000	40,000	0.650	C	241	26,241	40,000	0.656	C	0.006	No
From Kearny Villa Rd to Aero Ct	6 Lane Prime (4D+BL)	35,900	40,000	0.898	E	964	36,864	40,000	0.922	E	0.024	Yes
From Aero Ct to Afton Rd	6 Lane Prime (4D+BL)	32,500	40,000	0.813	D	375	32,875	40,000	0.822	D	0.009	No
From Afton Rd to Sandrock Rd	6 Lane Prime (4D+BL)	28,000	40,000	0.700	C	348	28,348	40,000	0.709	C	0.009	No
From Sandrock Rd to Ruffin Rd	4 Lane Major (4U+TWLTL+BL)	27,800	40,000	0.695	C	295	28,095	40,000	0.702	C	0.007	No
From Ruffin Rd to W. Canyon Rd	4 Lane Major (4D+BL)	26,900	40,000	0.673	C	254	27,154	40,000	0.679	C	0.006	No
From Aero Ct to Project Access	Not Classified (2U+P)*	1,300	8,000	0.163	A	1,272	2,572	8,000	0.322	B	0.159	No
Convoy Street												
From Kearny Mesa Rd to Aero Dr	4 Lane Major (4D+P)	33,900	40,000	0.848	D	228	34,128	40,000	0.853	D	0.006	No
Kearny Mesa Road												
From Armour/SR-163 SB to Convoy St	4 Lane Collector (4U)	12,000	30,000	0.400	B	107	12,107	30,000	0.404	B	0.004	No
Kearny Villa Road												
From SR-163 NB Ramp to Aero Dr	4 Lane Major (4U)**	17,900	40,000	0.448	B	295	18,195	40,000	0.455	B	0.007	No
From Aero Dr to I-805 NB Ramp	4 Lane Major (4D)	22,400	40,000	0.560	C	428	22,828	40,000	0.571	C	0.011	No
Mesa College Drive												
From SR-163 to I-805	4 Lane Collector (4D)	31,700	30,000	1.057	F	228	31,928	30,000	1.064	F	0.008	No

Notes: Classification: 2U+P = 2 lane undivided roadway with on-street parking; 6D: 6 lane divided roadway; BL=Bike Lane. Daily volume is a 24 hour volume. LOS: Level of Service. *Functions as industrial fronting Collector with LOS capacity of 8,000. **Painted Median (two sets of double yellow lines establishing median).

TABLE 28: HORIZON YEAR 2035 WITH PROJECT (PHASE 2) ON-RAMP OPERATIONS

I-805 at Mesa College Dr SB On-Ramp & Study Period	Scenario	Vehicle Demand (veh/hr)	Number and type of lanes (1)	CALTRANS Provided Rate per lane (2)	On-Ramp Rate (veh/hr)	Excess Demand (veh/hr)	Calculated Delay (minutes)	Calculated Queue in Feet	Possible Stopped Queue	Possible Delays	Impact?
3:15 - 4:15 PM	Year 2035	830	1 SOV	900	900	0	0.0	0	Some queuing and delays anticipated. No significant change from project.		
	Project SOV = 0*	0									
	Yr2035+P	830	1 SOV	900	900	0	0.0	0			No
	Year 2035	356	1 HOV	900	900	0	0.0	0	Some queuing and delays anticipated. No significant change from project.		
	Project HOV = 27*	27									
	Yr2035+P	383	1 HOV	900	900	0	0.0	0			No
4:45 - 5:45 PM	Year 2035	852	1 SOV	900	900	0	0.0	0	Some queuing and delays anticipated. No significant change from project.		
	Project SOV = 1*	1									
	Yr2035+P	853	1 SOV	900	900	0	0.0	0			No
	Year 2035	459	1 HOV	900	900	0	0.0	0	Some queuing and delays anticipated. No significant change from project.		
	Project HOV = 7*	7									
	Yr2035+P	466	1 HOV	900	900	0	0.0	0			No

Notes: (1) SOV: Single Occupancy Vehicle, HOV: High Occupancy Vehicle, Split between SOV and HOV based on count data that documented 70% SOV with 30% HOV from 3:15pm-4:15pm on 2/17/16 and 65% SOV with 35% HOV from 4:45pm-5:45pm on 2/17/16 (Appendix C). (2) Rate provided by CALTRANS (Appendix C). *Project is a only school in year 2035; therefore, all 3:15-4:15pm traffic consists of driver plus child or children, thus all are HOV trips. From 4:45-5:45pm, there may be a teacher in the mix, thus about 10% are SOV and 90% are HOV.

Under horizon year 2035 with project (phase 2) conditions, all of the study locations were calculated to operate at LOS D or better, except for the intersections of:

1) Aero Dr/Convoy St (LOS E 4:45-5:45pm),
2) Aero Dr/Kearny Villa Rd (LOS E 4:45-5:45pm),
3) Aero Dr/Aero Ct (LOS E 4:45-5:45pm),
4) Aero Dr/Afton Rd (LOS E 4:45-5:45pm),
5) Aero Dr/Sandrock Rd (LOS E 4:45-5:45pm),
6) Kearny Mesa Rd at Armour St (LOS E 4:45-5:45pm), and
7) Mesa College Dr at Annrae St (LOS E 4:45-5:45pm).

Two segments were calculated to operate below LOS D, which included Aero Drive from Kearny Villa Rd to Aero Ct (LOS E daily) and Mesa College Drive from SR-163 to I-805 (LOS F daily). The metered freeway on-ramp at Mesa College/SB I-805 was calculated to operate with minimal delay; however, by the horizon year a stopped queue and some delays are anticipated based on existing observations (no significant change is anticipated with the addition of project traffic).

The project exceeds the significance thresholds on one segment and is calculated to have one cumulative segment impact on Aero Drive from Kearny Villa Rd to Aero Ct (> 0.02 V/C ratio at LOS E).

12.0 Summary of Potential Impacts

The project is calculated to have one horizon year 2035 cumulative impact on the segment of Aero Drive from Kearny Villa Rd to Aero Ct (> 0.02 change in V/C ratio at LOS E).

To mitigate the horizon year 2035 cumulative impact to below a level of significance, the project owner/applicant shall pay a fair share of 21.5% towards the impacted segment of Aero Drive (being approximately 750 feet of the overall 3,370 feet of improvements identified in KM-T20 in the *Kearny Mesa Public Facilities Financing Plan Fiscal Year 2003*) when enrollment of 449 students is reached. As part of the mitigation measure, the school owner/applicant shall submit the student enrollment each year to the City of San Diego by September 15th. The Public Facilities Financing Plan (PFFP) project KM-T20 is described as the widening of Aero Drive from Kearny Villa Road to Sandrock Road to a six lane primary arterial with bike lanes (details in **Appendix P**). The proposed fair share of 21.5% is toward the segment widening of Aero Drive from Kearny Villa Road to Aero Court and not the entire PFFP KM-T20 because this cumulative impact is along the segment from Kearny Villa Road and Aero Court (approximately 750 ft of the overall 3,370 ft). As shown in **Table 29**, the segment LOS would be improved to LOS C with the widening (fair share calculations included in Appendix P).

TABLE 29: SEGMENT OF AERO DR FROM KEARNY VILLA TO AERO CT LOS WITH KM-T20 IMPROVEMENTS

Segment		Horizon Year (2035)				Project	Horizon Year (2035) + Project Phase 2					
		Daily Volume	LOS E Capacity	V/C	LOS	Daily Volumes	Daily Volume	LOS E Capacity	V/C	LOS	V/C Inc.	Cumulative Impact?
Aero Drive	Current Roadway											
From Kearny Villa Rd to Aero Ct	4 Lanes	35,900	40,000	0.898	E	964	36,864	40,000	0.922	E	0.024	Yes
MITIGATED OPERATIONS WITH IMPROVEMENT IDENTIFIED IN PFFP KM-T20												
Aero Drive	PFFP Improvement											
From Kearny Villa Rd to Aero Ct	6 Lanes	35,900	50,000	0.718	C	964	36,864	50,000	0.737	C	0.019	No

Notes: Daily volume is a 24 hour volume. LOS: Level of Service. PFFP: Project Facilities Financing Plan.

The trigger for the fair share is based on 449 students because at 448 students, the segment impact is less than significant. At 448 students, the project daily volumes is calculated at 1,111 daily trips (i.e. 448 students times 2.48 daily trip per student = 1,111 daily trips). Aero Drive from Kearny Villa Rd to Aero Ct has 72% of the distribution, thus the segment would have 1,111 daily project trips times 72% = 800 daily project trips. As shown in **Table 30**, there is no cumulative segment impact because the project adds up to the allowed 0.02 change in V/C before a cumulative impact is calculated.

TABLE 30: SEGMENT OF AERO DR FROM KEARNY VILLA TO AERO CT LOS WITH 448 STUDENTS

Segment	Functional Classification	Horizon Year (2035)				Project	Horizon Year (2035) + Project Phase 2					
		Daily Volume	LOS E Capacity	V/C	LOS	Daily Volumes	Daily Volume	LOS E Capacity	V/C	LOS	V/C Inc.	Cumulative Impact?
Aero Drive												
From Kearny Villa Rd to Aero Ct	4 Lane Major	35,900	40,000	0.898	E	800	36,700	40,000	0.918	E	0.020	No

Notes: Daily volume is a 24 hour volume. LOS: Level of Service.

12.1 Impacts and Proposed Mitigation Summary

A summary table of calculated impacts is included as **Table 31.**

TABLE 31: DIRECT AND CUMULATIVE IMPACT SUMMARY AND PROPOSED MITIGATION

Roadway Facility	Existing, Year 2017, and Year 2022 Project Direct Impacts	Mitigation
Intersection	None	None
Segment	None	None
On-Ramp	None	None
Roadway Facility	**Horizon Year (2035) Plus Project Cumulative Impacts**	**Mitigation**
Intersection	None	None
Segment	1) Aero Drive from Kearny Villa Rd to Aero Ct	To mitigate the horizon year 2035 cumulative impact to below a level of significance, the project owner/applicant shall pay a fair share of 21.5% towards the impacted segment of Aero Dr (being approximately 750 feet of the overall 3,370 feet of improvements identified in KM-T20 in the *Kearny Mesa Public Facilities Financing Plan Fiscal Year 2003)* when enrollment of 449 students is reached. As part of this mitigation measure, the school owner/applicant shall submit the student enrollment each year to the City of San Diego by September 15th.
On-Ramp	None	None

13.0 Parking

On-site parking will include 140 total parking spaces divided between the north and south side of the school. The north parking area will provide parking for the non-school office space while the south side will be for school parking. When the office space is absorbed by the school (estimated by year 2022), the north side parking will be used by the school. The initial and final proposed parking are shown in **Tables 32 and 33**.

TABLE 32: INITIAL PHASE PARKING SUMMARY

# Classes	*Grade*	Students/Class	Total per grade	Teachers
1	*Toddler*	6	12	2
2	*Preschool*	12	23	2
3	*Pre-kindergarten*	12	35	3
2	*Kindergarten*	14	28	2
2	*1st grade*	10	20	2
2	*2nd grade*	12	24	2
1	*3rd grade*	18	18	2
1	*4th grade*	11	11	1
1	*5th grade*	10	10	1
1	6th grade	2	2	1
TOTAL			183	18

6,125 SF COMMERCIAL OFFICES 2ND FLOOR	31 SPACES REQUIRED
12,500 SF OFFICES (ACCESSORY TO E)	42 SPACES REQUIRED
TODDLER (12 students / 6 = 2)	2 SPACES REQUIRED
PRESCHOOL (58 students / 12 = 4.83)	5 SPACES REQUIRED
GRADES K - 9 (113 students/14 = 8.07)	10 SPACES REQUIRED
OFFICE 1ST FLOOR (976 SF)	4 SPACES REQUIRED
TOTAL REQUIRED	94 TOTAL
PARKING PROVIDED:	140 - 6 ADA

State of California Child Care Requirements

Infants (0 - 18mo.) = 1 staff / 4 children Toddlers (18 - 36 mo.) = 1 staff / 6 children
Pre-school (36 mo. - 5 yrs) = 1 staff / 12 students
K - 9th grade = 1 staff / 14 students
10th - 12th grade = 1 space / 5 students
(Accessory Office): 3.3 space/1,000 SF

City Parking Requirements

(Commercial Offices) 5 spaces/1,000 SF

Source: Schall Architects

TABLE 33: FINAL PHASE PARKING SUMMARY

# Classes	Grade	kids/class	Total/level	Teachers Per Grade
3	*Toddler*	6	36	6
3	*Preschool*	12	36	3
4	*Pre-k - Junior K*	12	48	4
4	*Kindergarten*	12	48	4
4	*1st grade*	12	48	4
4	*2nd grade*	12	48	4
4	*3rd grade*	12	48	4
4	*4th grade*	12	48	4
4	*5th grade*	12	48	4
2	6th grade	12	24	**2**
2	7th grade	12	24	**2**
2	8th grade	12	24	**2**
2	9th grade	12	24	**2**
1	10th grade	12	12	**1**
1	11th grade	12	12	**1**
1	12th grade	12	12	**1**
45	**classes**		**540**	**48**

4,000 SF OFFICES (ACCESSORY TO E)	14 SPACES REQUIRED
TODDLER (36 students / 6 = 6)	6 SPACES REQUIRED
PRESCHOOL (84 students / 12 = 7)	7 SPACES REQUIRED
GRADES K - 9 (384 students/14 = 27.4)	28 SPACES REQUIRED
GRADES 10-12 (36 STUDENTS/5)	8 SPACES REQUIRED
TOTAL REQUIRED	63 TOTAL
PARKING PROVIDED:	140 - 6 ADA

State of California Child Care Requirements

Infants (0 - 18mo.) = 1 staff / 4 children Toddlers (18 - 36 mo.) = 1 staff / 6 children
Pre-school (36 mo. - 5 yrs) = 1 staff / 12 students
K - 9th grade = 1 staff / 14 students
10th - 12th grade = 1 space / 5 students
(Accessory Office): 3.3 space/1,000 SF

City Parking Requirements

(Commercial Offices) 5 spaces/1,000 SF

Source: Schall Architects

14.0 On-Site Circulation

The project site has three points of access. Two existing driveways on Aero Drive Frontage Road and from the Community College Access Drive that connect Aero Place with Aero Drive Frontage Road via an access easement with the San Diego Community College District (correspondence included in **Appendix Q**). The Community College Access Drive will be the primary ingress and egress access. The school drop-off and pick-up will be located on the south side of the school with Community College Access Drive being the closest point of access. The drop-off and pick-up circulation will occur in the south parking area and will be monitored and enforced by school staff. School staff may use signs, cones, or flag personnel to control the circulation.

The anticipated on-site queuing was based on historical queuing observations collected at a K-12 charter school located at 8775 Magnolia Avenue in the City of Riverside on Thursday May 22, 2014. Student drop-off typically has less dwell time; therefore, the required stacking was based on the longest observed queue during the afternoon pick-up period. The observed school divides the pickup into two groups: K-6, which occurs first and then after most if not all K-6 students were picked-up (217 in attendance on 5/22/14), then the 7-12 grade students were picked up (200 in attendance on 5/22/14). The K-6 pick-up queue was observed to extend to a maximum of about 590 feet for a rate of 2.7 linear feet per student (590 feet / 217 students). The 7-12 pick-up queue was observed to extend to a maximum of about 440 feet for a rate of 2.2 linear feet per student (440 feet / 200students). The combined or average queue is 2.5 linear feet per student.

The proposed school with 540 students would require about 1,350 feet for queuing (540 students times 2.5 feet/student); however, not all students are picked up after school as some will attend the afterschool day care. The existing after school day care currently serves about 59% (109 students in day care out of current 185 enrollment) to which the after school pick-up occurs over two hours and does not have a concentration of pickup just before the closing of the day care (based on information provided by the current owner/operator). When parents pick up their child or children from day care, they park and walk in. Therefore, the anticipated queue when school ends would be about 41% of 1,350 feet, or about 555 feet. As shown in **Figure 17**, the proposed on-site parking area can accommodate about 1,080 feet of queuing before reaching the adjacent San Diego Community College on-site circulation roadway to which there is about 300 additional feet of on-site roadway before Aero Court for a total of about 1,380 feet of off-street queuing space. Therefore, there is sufficient on-site storage to accommodate student drop-off and pick-up.

Figure 17: On-Site Drop-Off/Pick-Up Circulation

Source: USGS

15.0 Transit and Other Transportation Modes

Metropolitan Transit System lists Bus Routes 25 and 120 near the project site. The transit routes are shown in Figure 4. Bus stops for Route 25 are located near the intersection of Aero Drive/Afton Road, about 800 feet from the project front entrance. Bus stops for Route 120 are located near the intersection of Aero Drive/Kearny Villa Road, about 1,900 feet from the project front entrance. The Monday through Friday service for Route 25 starts around 6:30am and ends around 7pm with hourly service. The Monday through Friday service for Route 120 starts around 5am and ends around 11:50pm with half hour frequency in the vicinity of the project site. The specific days and service times with frequency are outlined in the bus schedule included in **Appendix R**.

According to the City of San Diego *Bicycle Master Plan Update*, June 2013, there are Class II bike lanes on:

1) Aero Drive from Convoy Street to W. Canyon Avenue (bike lanes observed on pavement),
2) Kearny Villa Road from I-805 NB off-ramp to SR-163 northbound on-ramp (bike lanes observed on pavement), and
3) Mesa College Drive from SR-163 to I-805 (bike lanes observed on pavement).

Excerpts from the City of San Diego *Bicycle Master Plan Update* are included in **Appendix S**.

Currently, La Petite Ecole with a staff of 27 has two teachers who carpool and two teachers who bike to school.

16.0 Transportation Demand Management

A Transportation Demand Management (TDM) plan will provide the means to disseminate information to help parents, teachers, and staff learn about and use alternative forms of transportation other than single occupancy vehicles. The following TDM plan will be shared with La Petite Ecole parents, teachers, staff, and with the office users during the initial phase when extra office space will be available for lease.

1) Provide information about the existing icommute program (www.icommutesd.com),

2) Encourage parent, teacher, and staff carpooling,

3) Encourage bike and transit usage,

4) Display maps, routes, and schedules for public transit near the site, and

5) Provide a bike rack.

17.0 Conclusion and Recommendations

The proposed project is an English-French Pre-K through 12th Grade Private School (La Petite Ecole) with up to 540 total students to be located at 8401 Aero Drive San Diego, California. The site is approximately 2.76 acres and has a building of approximately 55,560 square feet. The project is planned to open in 2017 with an initial estimate of 300 students and may reach a maximum student count of 540 as early as 2022.

The project includes two phases and two different land uses. The initial phase (opening year 2017) includes a private school with up to 300 students and up to 10,000 square feet of office space for lease (non-school use). The final phase (as early as 2022) will include up to 540 students with no outside lease of office space. The previous office space from the initial phase will be converted to classrooms and some office space will remain for school administration purposes as an ancillary use to the school (with no outside leasing). The trip generation for the office spaces is based on the City of San Diego trip rates. The Institute of Transportation Engineers (ITE) 9th Edition Trip Generation was used to calculate the school related project traffic because the City of San Diego trip rates do not include private school trip rates. Three study hours were analyzed. ITE includes private school rates for the AM drop-off (when school starts), afternoon pickup (when school ends), and after school pick-up from daycare/after school activities.

The initial project phase with up to 300 students and up to 10,000 sf of office is calculated to generate 1,040 daily trips with 282 AM trips (183 inbound and 99 outbound), 215 afternoon trips (81 inbound and 134 outbound), and 92 PM trips (30 inbound and 62 outbound).

The final project phase with up to 540 students is calculated to generate 1,339 daily trips with 437 AM trips (266 inbound and 171 outbound), 313 afternoon trips (131 inbound and 182 outbound), and 92 PM trips (40 inbound and 52 outbound).

Based on the study area and cumulative projects, the following scenarios were analyzed: Existing, Existing with Project (Phase 1), Year 2017, Year 2017 with Project (Phase 1), Year 2022, Year 2022 with Project (Phase 2), Horizon Year 2035, and Horizon Year 2035 with Project (Phase 2) Conditions. For each scenario, the findings include:

1) Under existing conditions, all of the study locations were calculated to operate at LOS D or better, except for the intersections of:
    1) Aero Dr/Convoy St (LOS E 4:45-5:45pm), and
    2) Aero Dr/Kearny Villa Rd (LOS E 4:45-5:45pm).

    The segment of Mesa College Drive from SR-163 to I-805 was calculated to operate at LOS E on a daily basis. The metered freeway on-ramp at Mesa College/SB I-805 was calculated and observed to operate with minimal delay (maximum observed delay for the study period was approximately 1 minute).

2) Under existing with project (phase 1) conditions, all of the study locations were calculated to operate at LOS D or better, except for the intersections of:
    1) Aero Dr/Convoy St (LOS E 4:45-5:45pm), and
    2) Aero Dr/Kearny Villa Rd (LOS E 4:45-5:45pm).

The segment of Mesa College Drive from SR-163 to I-805 was calculated to operate at LOS E on a daily basis. The metered freeway on-ramp at Mesa College/SB I-805 was calculated to operate with minimal delay (no significant change is anticipated with the addition of project traffic). There are no project impacts to the above locations because the project traffic does NOT exceed the City's traffic impact significance thresholds.

3) Under year 2017 without project conditions, all of the study locations were calculated to operate at LOS D or better, except for the intersections of:
    3) Aero Dr/Convoy St (LOS E 4:45-5:45pm), and
    4) Aero Dr/Kearny Villa Rd (LOS E 4:45-5:45pm).

    The segment of Mesa College Drive from SR-163 to I-805 was calculated to operate at LOS E on a daily basis. The metered freeway on-ramp at Mesa College/SB I-805 was calculated to operate with minimal delay and estimated to have similar queues and delays in 2017 as observed under existing conditions.

4) Under year 2017 with project (phase 1) conditions, all of the study locations were calculated to operate at LOS D or better, except for the intersections of:
    1) Aero Dr/Convoy St (LOS E 4:45-5:45pm), and
    2) Aero Dr/Kearny Villa Rd (LOS E 4:45-5:45pm).

    The segment of Mesa College Drive from SR-163 to I-805 was calculated to operate at LOS E on a daily basis. The metered freeway on-ramp at Mesa College/SB I-805 was calculated to operate with minimal delay and estimated to have similar queues and delays in 2017 as observed under existing conditions (no significant change is anticipated with the addition of project traffic). There are no project impacts to theabove locations because the project traffic does NOT exceed the City's traffic impact significance thresholds.

5) Under year 2022 without project conditions, all of the study locations were calculated to operate at LOS D or better, except for the intersections of:
    1) Aero Dr/Convoy St (LOS E 4:45-5:45pm),
    2) Aero Dr/Kearny Villa Rd (LOS E 4:45-5:45pm),
    3) Kearny Mesa Rd at Armour St (LOS E 4:45-5:45pm), and
    4) Mesa College Dr at Annrae St (LOS E 4:45-5:45pm).

    The segment of Mesa College Drive from SR-163 to I-805 was calculated to operate at LOS E on a daily basis. The metered freeway on-ramp at Mesa College/SB I-805 was calculated to operate with minimal delay and is expected to have similar queues and delays in 2022 as observed under existing conditions.

6) Under year 2022 with project (phase 2) conditions, all of the study locations were calculated to operate at LOS D or better, except for the intersections of:
    1) Aero Dr/Convoy St (LOS E 4:45-5:45pm),
    2) Aero Dr/Kearny Villa Rd (LOS E 4:45-5:45pm),
    3) Kearny Mesa Rd at Armour St (LOS E 4:45-5:45pm), and
    4) Mesa College Dr at Annrae St (LOS E 4:45-5:45pm).

    The segment of Mesa College Drive from SR-163 to I-805 was calculated to operate at LOS E on a daily basis. The metered freeway on-ramp at Mesa College/SB I-805 was calculated to operate with minimal delay and is expected to have similar queues and

delays in 2022 as observed under existing conditions (no significant change is anticipated with the addition of project traffic). There are no project impacts to the above locations because the project traffic does NOT exceed the City's traffic impact significance thresholds.

7) Under horizon year without project conditions, all of the study locations were calculated to operate at LOS D or better, except for the intersections of:
    1) Aero Dr/Convoy St (LOS E 4:45-5:45pm),
    2) Aero Dr/Kearny Villa Rd (LOS E 4:45-5:45pm),
    3) Aero Dr/Aero Ct (LOS E 4:45-5:45pm),
    4) Aero Dr/Afton Rd (LOS E 4:45-5:45pm),
    5) Aero Dr/Sandrock Rd (LOS E 4:45-5:45pm),
    6) Kearny Mesa Rd at Armour St (LOS E 4:45-5:45pm), and
    7) Mesa College Dr at Annrae St (LOS E 4:45-5:45pm).

    Two segments were calculated to operate below LOS D, which included Aero Drive from Kearny Villa Rd to Aero Ct (LOS E daily) and Mesa College Drive from SR-163 to I-805 (LOS F daily). The metered freeway on-ramp at Mesa College/SB I-805 was calculated to operate with minimal delay; however, by the horizon year a stopped queue and some delays are anticipated based on existing observations.

8) Under horizon year with project (phase 2) conditions, all of the study locations were calculated to operate at LOS D or better, except for the intersections of:
    1) Aero Dr/Convoy St (LOS E 4:45-5:45pm),
    2) Aero Dr/Kearny Villa Rd (LOS E 4:45-5:45pm),
    3) Aero Dr/Aero Ct (LOS E 4:45-5:45pm),
    4) Aero Dr/Afton Rd (LOS E 4:45-5:45pm),
    5) Aero Dr/Sandrock Rd (LOS E 4:45-5:45pm),
    6) Kearny Mesa Rd at Armour St (LOS E 4:45-5:45pm), and
    7) Mesa College Dr at Annrae St (LOS E 4:45-5:45pm).

    Two segments were calculated to operate below LOS D, which included Aero Drive from Kearny Villa Rd to Aero Ct (LOS E daily) and Mesa College Drive from SR-163 to I-805 (LOS F daily). The metered freeway on-ramp at Mesa College/SB I-805 was calculated to operate with minimal delay; however, by the horizon year a stopped queue and some delays are anticipated based on existing observations (no significant change is anticipated with the addition of project traffic). The project exceeds the significance thresholds on one segment and is calculated to have one cumulative segment impact on Aero Drive from Kearny Villa Rd to Aero Ct (> 0.02 change in V/C ratio at LOS E).

To mitigate the horizon year 2035 cumulative impact along the segment of Aero Drive from Kearny Villa Road to Aero Court to below a level of significance, the project owner/applicant shall pay a fair share of 21.5% towards the impacted segment of Aero Drive (being approximately 750 feet of the overall 3,370 feet of improvements identified in KM-T20 in the *Kearny Mesa Public Facilities Financing Plan Fiscal Year 2003*) when enrollment of 449 students is reached, satisfactory to the City Engineer. As part of the mitigation measure, the school owner/applicant shall submit the student enrollment figure each year to the City of San Diego by September 15th.

18.0 References and List of Preparers

18.1 References

City of San Diego *Traffic Impact Study Manual,* July 1998.

Institute of Transportation Engineers *Trip Generation Manual*, 9th Edition. 2012

San Diego Traffic Engineers' Council (SANTEC). March 2, 2002. *SANTEC/ITE Guidelines for Traffic Impact Studies in the San Diego Region.*

Trafficware Corporation, 2006. Synchro Version 8.0 computer software.

Transportation Research Board National Research Council Washington, D.C. 2000. *Highway Capacity Manual 2000*. CD ROM.

18.2 List of Preparers

Justin Rasas, P.E. (TR 2135), LOS Engineering, Inc. Author

Appendix A

Count Data and Signal Timing Sheets

INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: PACIFIC TECHNICAL DATA

DATE:	LOCATION:	KEARNY MESA	PROJECT #:	PTD16-0129-02
2/2/16	NORTH & SOUTH:	CONVOY	LOCATION #:	1
TUESDAY	EAST & WEST:	AERO	CONTROL:	SIGNAL

NOTES:

AM / PM / MD / OTHER / OTHER

▲ N ◄ W E ► S ▼

		NORTHBOUND CONVOY			SOUTHBOUND CONVOY			EASTBOUND AERO			WESTBOUND AERO			
	LANES:	NL X	NT 2	NR 0	SL 2	ST 2	SR 0	EL 0	ET 1	ER 0	WL 0.3	WT 0.3	WR 1.3	TOTAL
WEEKDAY AM	8:00 AM		120	101	92	88	2	0	0	0	85	16	171	675
	8:15 AM		115	66	87	100	6	1	3	1	110	15	155	659
	8:30 AM		134	121	92	96	5	0	0	0	106	15	144	713
	8:45 AM		130	89	88	101	8	3	0	0	118	8	153	698
	VOLUMES	0	499	377	359	385	21	4	3	1	419	54	623	2,745
	APPROACH %	0%	57%	43%	47%	50%	3%	50%	38%	13%	38%	5%	57%	
	APP/DEPART	876	/	1,126	765	/	805	8	/	739	1,096	/	75	0
	BEGIN PEAK HR		8:00 AM											
	VOLUMES	0	499	377	359	385	21	4	3	1	419	54	623	2,745
	APPROACH %	0%	57%	43%	47%	50%	3%	50%	38%	13%	38%	5%	57%	
	PEAK HR FACTOR													0.96
	APP/DEPART	876	/	1,126	765	/	805	8	/	739	1,096	/	75	0
WEEKDAY AM	3:15 PM		130	82	154	132	6	3	5	4	71	4	114	705
	3:30 PM		113	85	124	167	9	5	15	3	72	5	108	706
	3:45 PM		148	134	148	148	4	1	6	8	92	7	140	836
	4:00 PM		157	155	182	188	5	3	9	4	68	5	133	909
	VOLUMES	0	548	456	608	635	24	12	35	19	303	21	495	3,156
	APPROACH %	0%	55%	45%	48%	50%	2%	18%	53%	29%	37%	3%	60%	
	APP/DEPART	1,004	/	1,055	1,267	/	957	66	/	1,099	819	/	45	0
	BEGIN PEAK HR		3:15 PM											
	VOLUMES	0	548	456	608	635	24	12	35	19	303	21	495	3,156
	APPROACH %	0%	55%	45%	48%	50%	2%	18%	53%	29%	37%	3%	60%	
	PEAK HR FACTOR													0.87
	APP/DEPART	1,004	/	1,055	1,267	/	957	66	/	1,099	819	/	45	0
WEEKDAY PM	4:45 PM		143	133	195	241	2	3	8	5	111	2	121	964
	5:00 PM		139	100	222	260	1	5	18	8	93	0	116	962
	5:15 PM		126	127	177	279	0	0	15	6	146	2	128	1,006
	5:30 PM		134	127	225	283	2	2	5	4	94	0	103	979
	VOLUMES	0	542	487	819	1,063	5	10	46	23	444	4	468	3,911
	APPROACH %	0%	53%	47%	43%	56%	0%	13%	58%	29%	48%	0%	51%	
	APP/DEPART	1,029	/	1,020	1,887	/	1,530	79	/	1,352	916	/	9	0
	BEGIN PEAK HR		4:45 PM											
	VOLUMES	0	542	487	819	1,063	5	10	46	23	444	4	468	3,911
	APPROACH %	0%	53%	47%	43%	56%	0%	13%	58%	29%	48%	0%	51%	
	PEAK HR FACTOR													0.97
	APP/DEPART	1,029	/	1,020	1,887	/	1,530	79	/	1,352	916	/	9	0

INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: PACIFIC TECHNICAL DATA

DATE:	LOCATION:	KEARNY MESA	PROJECT #:	PTD16-0129-02
2/2/16	NORTH & SOUTH:	KEARNY VILLA	LOCATION #:	2
TUESDAY	EAST & WEST:	AERO	CONTROL:	SIGNAL

NOTES:

AM / PM / MD / OTHER / OTHER — ▲ N, ◄ W, E ►, S ▼

		NORTHBOUND KEARNY VILLA			SOUTHBOUND KEARNY VILLA			EASTBOUND AERO			WESTBOUND AERO			
	LANES:	NL 2	NT 2	NR 1	SL 2	ST 2	SR 0	EL 1	ET 2	ER 0	WL 2	WT 2	WR 0	TOTAL
WEEKDAY AM	8:00 AM	69	37	107	39	30	10	48	125	15	79	218	148	925
	8:15 AM	78	47	86	45	36	8	26	109	35	55	209	119	853
	8:30 AM	61	72	114	39	30	10	49	123	23	64	175	99	859
	8:45 AM	103	32	108	50	32	11	19	118	23	56	187	106	845
	VOLUMES	311	188	415	173	128	39	142	475	96	254	789	472	3,482
	APPROACH %	34%	21%	45%	51%	38%	11%	20%	67%	13%	17%	52%	31%	
	APP/DEPART	914	/	802	340	/	478	713	/	1,063	1,515	/	1,139	0
	BEGIN PEAK HR		8:00 AM											
	VOLUMES	311	188	415	173	128	39	142	475	96	254	789	472	3,482
	APPROACH %	34%	21%	45%	51%	38%	11%	20%	67%	13%	17%	52%	31%	
	PEAK HR FACTOR													0.94
	APP/DEPART	914	/	802	340	/	478	713	/	1,063	1,515	/	1,139	0
WEEKDAY AM	3:15 PM	53	57	88	60	41	14	33	166	27	70	116	56	781
	3:30 PM	51	49	86	75	52	19	32	153	41	84	150	86	878
	3:45 PM	67	54	99	76	34	21	50	218	42	90	136	81	968
	4:00 PM	58	51	99	86	39	20	40	232	49	110	164	88	1,036
	VOLUMES	229	211	372	297	166	74	155	769	159	354	566	311	3,663
	APPROACH %	28%	26%	46%	55%	31%	14%	14%	71%	15%	29%	46%	25%	
	APP/DEPART	812	/	677	537	/	679	1,083	/	1,438	1,231	/	869	0
	BEGIN PEAK HR		3:15 PM											
	VOLUMES	229	211	372	297	166	74	155	769	159	354	566	311	3,663
	APPROACH %	28%	26%	46%	55%	31%	14%	14%	71%	15%	29%	46%	25%	
	PEAK HR FACTOR													0.88
	APP/DEPART	812	/	677	537	/	679	1,083	/	1,438	1,231	/	869	0
WEEKDAY PM	4:45 PM	58	77	105	176	81	24	32	247	49	63	168	90	1,170
	5:00 PM	50	68	111	167	100	36	23	239	62	84	159	82	1,181
	5:15 PM	60	55	107	184	85	45	42	274	52	60	159	83	1,206
	5:30 PM	34	68	88	214	73	33	43	235	41	59	121	77	1,086
	VOLUMES	202	268	411	741	339	138	140	995	204	266	607	332	4,643
	APPROACH %	23%	30%	47%	61%	28%	11%	10%	74%	15%	22%	50%	28%	
	APP/DEPART	881	/	740	1,218	/	809	1,339	/	2,147	1,205	/	947	0
	BEGIN PEAK HR		4:45 PM											
	VOLUMES	202	268	411	741	339	138	140	995	204	266	607	332	4,643
	APPROACH %	23%	30%	47%	61%	28%	11%	10%	74%	15%	22%	50%	28%	
	PEAK HR FACTOR													0.96
	APP/DEPART	881	/	740	1,218	/	809	1,339	/	2,147	1,205	/	947	0

INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: PACIFIC TECHNICAL DATA

DATE:	LOCATION:	KEARNY MESA	PROJECT #:	PTD16-0129-02
2/2/16	NORTH & SOUTH:	AERO CT.	LOCATION #:	3
TUESDAY	EAST & WEST:	AERO	CONTROL:	SIGNAL

NOTES:

AM / PM / MD / OTHER / OTHER — ▲ N, ◄ W, E ►, S ▼

		NORTHBOUND AERO CT.			SOUTHBOUND AERO CT.			EASTBOUND AERO			WESTBOUND AERO			
	LANES:	NL 1	NT 0.5	NR 0.5	SL 0.5	ST 0.5	SR 1	EL 1	ET 2	ER 0	WL 1	WT 2	WR 0	TOTAL
WEEKDAY AM	8:00 AM	35	0	24	2	0	5	2	211	62	26	385	6	758
	8:15 AM	21	0	4	0	0	5	2	191	39	20	359	2	643
	8:30 AM	14	0	2	1	0	2	2	239	40	8	339	4	651
	8:45 AM	15	0	8	0	0	2	3	229	41	10	335	1	644
	VOLUMES	85	0	38	3	0	14	9	870	182	64	1,418	13	2,696
	APPROACH %	69%	0%	31%	18%	0%	82%	1%	82%	17%	4%	95%	1%	
	APP/DEPART	123	/	22	17	/	246	1,061	/	911	1,495	/	1,517	0
	BEGIN PEAK HR		8:00 AM											
	VOLUMES	85	0	38	3	0	14	9	870	182	64	1,418	13	2,696
	APPROACH %	69%	0%	31%	18%	0%	82%	1%	82%	17%	4%	95%	1%	
	PEAK HR FACTOR													0.89
	APP/DEPART	123	/	22	17	/	246	1,061	/	911	1,495	/	1,517	0
WEEKDAY AM	3:15 PM	40	0	10	1	0	1	3	294	30	5	191	2	577
	3:30 PM	31	0	14	2	0	5	5	299	20	4	285	3	668
	3:45 PM	49	0	14	2	0	1	9	342	16	7	255	4	699
	4:00 PM	36	0	27	2	0	3	5	389	25	9	326	1	823
	VOLUMES	156	0	65	7	0	10	22	1,324	91	25	1,057	10	2,767
	APPROACH %	71%	0%	29%	41%	0%	59%	2%	92%	6%	2%	97%	1%	
	APP/DEPART	221	/	32	17	/	116	1,437	/	1,396	1,092	/	1,223	0
	BEGIN PEAK HR		3:15 PM											
	VOLUMES	156	0	65	7	0	10	22	1,324	91	25	1,057	10	2,767
	APPROACH %	71%	0%	29%	41%	0%	59%	2%	92%	6%	2%	97%	1%	
	PEAK HR FACTOR													0.84
	APP/DEPART	221	/	32	17	/	116	1,437	/	1,396	1,092	/	1,223	0
WEEKDAY PM	4:45 PM	26	0	7	4	0	3	3	480	27	16	241	1	808
	5:00 PM	34	0	21	7	0	4	1	454	58	23	312	3	917
	5:15 PM	37	1	13	12	2	0	0	508	52	14	277	4	920
	5:30 PM	34	0	5	20	0	5	3	541	21	3	221	2	855
	VOLUMES	131	1	46	43	2	12	7	1,983	158	56	1,051	10	3,500
	APPROACH %	74%	1%	26%	75%	4%	21%	0%	92%	7%	5%	94%	1%	
	APP/DEPART	178	/	18	57	/	216	2,148	/	2,072	1,117	/	1,194	0
	BEGIN PEAK HR		4:45 PM											
	VOLUMES	131	1	46	43	2	12	7	1,983	158	56	1,051	10	3,500
	APPROACH %	74%	1%	26%	75%	4%	21%	0%	92%	7%	5%	94%	1%	
	PEAK HR FACTOR													0.95
	APP/DEPART	178	/	18	57	/	216	2,148	/	2,072	1,117	/	1,194	0

INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: PACIFIC TECHNICAL DATA

DATE:	LOCATION:	KEARNY MESA	PROJECT #:	PTD16-0129-02
2/2/16	NORTH & SOUTH:	AFTON	LOCATION #:	4
TUESDAY	EAST & WEST:	AERO	CONTROL:	SIGNAL

NOTES:

AM / PM / MD / OTHER / OTHER — ▲ N, ◄ W, E ►, S ▼

		NORTHBOUND AFTON			SOUTHBOUND AFTON			EASTBOUND AERO			WESTBOUND AERO			
	LANES:	NL 0	NT 1	NR 0	SL 0	ST 1	SR 0	EL 1	ET 2	ER 0	WL 1	WT 2	WR 0	TOTAL
WEEKDAY AM	8:00 AM	72	1	10	1	0	4	24	176	56	13	346	2	705
	8:15 AM	67	1	14	1	0	2	8	149	24	14	308	2	590
	8:30 AM	57	0	16	1	0	5	16	188	34	14	271	1	603
	8:45 AM	60	2	12	0	0	4	21	174	40	18	278	2	611
	VOLUMES	256	4	52	3	0	15	69	687	154	59	1,203	7	2,509
	APPROACH %	82%	1%	17%	17%	0%	83%	8%	75%	17%	5%	95%	1%	
	APP/DEPART	312	/	80	18	/	213	910	/	742	1,269	/	1,474	0
	BEGIN PEAK HR		8:00 AM											
	VOLUMES	256	4	52	3	0	15	69	687	154	59	1,203	7	2,509
	APPROACH %	82%	1%	17%	17%	0%	83%	8%	75%	17%	5%	95%	1%	
	PEAK HR FACTOR													0.89
	APP/DEPART	312	/	80	18	/	213	910	/	742	1,269	/	1,474	0
WEEKDAY AM	3:15 PM	24	0	7	0	0	12	13	222	72	15	162	2	529
	3:30 PM	66	1	21	2	1	21	9	228	73	13	200	6	641
	3:45 PM	70	2	18	3	1	15	7	296	61	8	176	2	659
	4:00 PM	30	1	13	10	6	62	8	321	69	19	225	1	765
	VOLUMES	190	4	59	15	8	110	37	1,067	275	55	763	11	2,594
	APPROACH %	75%	2%	23%	11%	6%	83%	3%	77%	20%	7%	92%	1%	
	APP/DEPART	253	/	52	133	/	338	1,379	/	1,141	829	/	1,063	0
	BEGIN PEAK HR		3:15 PM											
	VOLUMES	190	4	59	15	8	110	37	1,067	275	55	763	11	2,594
	APPROACH %	75%	2%	23%	11%	6%	83%	3%	77%	20%	7%	92%	1%	
	PEAK HR FACTOR													0.85
	APP/DEPART	253	/	52	133	/	338	1,379	/	1,141	829	/	1,063	0
WEEKDAY PM	4:45 PM	39	3	11	1	0	9	9	382	97	4	217	1	773
	5:00 PM	37	0	13	4	3	30	12	399	71	10	242	2	823
	5:15 PM	39	0	14	5	2	30	12	446	71	10	231	2	862
	5:30 PM	33	0	16	2	0	21	13	456	85	13	202	0	841
	VOLUMES	148	3	54	12	5	90	46	1,683	324	37	892	5	3,299
	APPROACH %	72%	1%	26%	11%	5%	84%	2%	82%	16%	4%	96%	1%	
	APP/DEPART	205	/	54	107	/	366	2,053	/	1,749	934	/	1,130	0
	BEGIN PEAK HR		4:45 PM											
	VOLUMES	148	3	54	12	5	90	46	1,683	324	37	892	5	3,299
	APPROACH %	72%	1%	26%	11%	5%	84%	2%	82%	16%	4%	96%	1%	
	PEAK HR FACTOR													0.96
	APP/DEPART	205	/	54	107	/	366	2,053	/	1,749	934	/	1,130	0

INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: PACIFIC TECHNICAL DATA

DATE:	LOCATION:	KEARNY MESA	PROJECT #:	PTD16-0129-02
2/2/16	NORTH & SOUTH:	SANDROCK	LOCATION #:	5
TUESDAY	EAST & WEST:	AERO	CONTROL:	SIGNAL

NOTES:

AM / PM / MD / OTHER / OTHER — ▲ N, ◄ W, E ►, S ▼

		NORTHBOUND SANDROCK			SOUTHBOUND SANDROCK			EASTBOUND AERO			WESTBOUND AERO			
	LANES:	NL 0.5	NT 0.5	NR 1	SL 1	ST 0.5	SR 0.5	EL 1	ET 2	ER 1	WL 1	WT 2	WR 0	TOTAL
WEEKDAY AM	8:00 AM	151	13	90	4	2	4	12	124	39	31	212	21	703
	8:15 AM	137	6	53	3	2	3	12	119	41	25	171	8	580
	8:30 AM	103	9	30	4	0	5	3	140	48	31	168	13	554
	8:45 AM	114	10	36	3	2	4	14	121	54	28	181	13	580
	VOLUMES	505	38	209	14	6	16	41	504	182	115	732	55	2,417
	APPROACH %	67%	5%	28%	39%	17%	44%	6%	69%	25%	13%	81%	6%	
	APP/DEPART	752	/	134	36	/	303	727	/	727	902	/	1,253	0
	BEGIN PEAK HR		8:00 AM											
	VOLUMES	505	38	209	14	6	16	41	504	182	115	732	55	2,417
	APPROACH %	67%	5%	28%	39%	17%	44%	6%	69%	25%	13%	81%	6%	
	PEAK HR FACTOR													0.86
	APP/DEPART	752	/	134	36	/	303	727	/	727	902	/	1,253	0
WEEKDAY AM	3:15 PM	72	0	32	7	5	6	12	146	75	34	105	10	504
	3:30 PM	67	8	41	15	16	6	13	155	89	40	144	5	599
	3:45 PM	62	1	40	15	10	16	10	194	103	52	115	7	625
	4:00 PM	82	4	44	32	17	13	14	222	129	51	162	10	780
	VOLUMES	283	13	157	69	48	41	49	717	396	177	526	32	2,508
	APPROACH %	62%	3%	35%	44%	30%	26%	4%	62%	34%	24%	72%	4%	
	APP/DEPART	453	/	94	158	/	621	1,162	/	943	735	/	850	0
	BEGIN PEAK HR		3:15 PM											
	VOLUMES	283	13	157	69	48	41	49	717	396	177	526	32	2,508
	APPROACH %	62%	3%	35%	44%	30%	26%	4%	62%	34%	24%	72%	4%	
	PEAK HR FACTOR													0.80
	APP/DEPART	453	/	94	158	/	621	1,162	/	943	735	/	850	0
WEEKDAY PM	4:45 PM	77	9	39	15	18	13	10	207	172	54	147	5	766
	5:00 PM	78	6	36	15	25	6	17	241	162	83	183	10	862
	5:15 PM	76	7	37	18	16	14	9	267	187	80	154	1	866
	5:30 PM	50	8	40	17	10	11	14	261	185	76	139	8	819
	VOLUMES	281	30	152	65	69	44	50	976	706	293	623	24	3,313
	APPROACH %	61%	6%	33%	37%	39%	25%	3%	56%	41%	31%	66%	3%	
	APP/DEPART	463	/	104	178	/	1,068	1,732	/	1,193	940	/	948	0
	BEGIN PEAK HR		4:45 PM											
	VOLUMES	281	30	152	65	69	44	50	976	706	293	623	24	3,313
	APPROACH %	61%	6%	33%	37%	39%	25%	3%	56%	41%	31%	66%	3%	
	PEAK HR FACTOR													0.96
	APP/DEPART	463	/	104	178	/	1,068	1,732	/	1,193	940	/	948	0

INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: PACIFIC TECHNICAL DATA

DATE:	LOCATION:	KEARNY MESA	PROJECT #:	PTD16-0129-02
2/2/16	NORTH & SOUTH:	RUFFIN	LOCATION #:	6
TUESDAY	EAST & WEST:	AERO	CONTROL:	SIGNAL

NOTES:

AM / PM / MD / OTHER / OTHER — ▲ N, ◄ W, E ►, S ▼

		NORTHBOUND RUFFIN			SOUTHBOUND RUFFIN			EASTBOUND AERO			WESTBOUND AERO			
	LANES:	NL 2	NT X	NR 1	SL X	ST X	SR X	EL X	ET 2	ER 1	WL 2	WT 2	WR X	TOTAL
WEEKDAY AM	8:00 AM	126		157					182	27	41	146		679
	8:15 AM	102		128					136	28	48	113		555
	8:30 AM	116		138					117	30	36	114		551
	8:45 AM	98		93					104	30	42	144		511
	VOLUMES	442	0	516	0	0	0	0	539	115	167	517	0	2,296
	APPROACH %	46%	0%	54%	0%	0%	0%	0%	82%	18%	24%	76%	0%	
	APP/DEPART	958	/	0	0	/	282	654	/	1,055	684	/	959	0
	BEGIN PEAK HR		8:00 AM											
	VOLUMES	442	0	516	0	0	0	0	539	115	167	517	0	2,296
	APPROACH %	46%	0%	54%	0%	0%	0%	0%	82%	18%	24%	76%	0%	
	PEAK HR FACTOR													0.85
	APP/DEPART	958	/	0	0	/	282	654	/	1,055	684	/	959	0
WEEKDAY AM	3:15 PM	26		39					131	65	54	108		423
	3:30 PM	49		76					164	55	69	150		563
	3:45 PM	27		58					187	87	89	138		586
	4:00 PM	29		58					178	78	92	153		588
	VOLUMES	131	0	231	0	0	0	0	660	285	304	549	0	2,160
	APPROACH %	36%	0%	64%	0%	0%	0%	0%	70%	30%	36%	64%	0%	
	APP/DEPART	362	/	0	0	/	589	945	/	891	853	/	680	0
	BEGIN PEAK HR		3:15 PM											
	VOLUMES	131	0	231	0	0	0	0	660	285	304	549	0	2,160
	APPROACH %	36%	0%	64%	0%	0%	0%	0%	70%	30%	36%	64%	0%	
	PEAK HR FACTOR													0.92
	APP/DEPART	362	/	0	0	/	589	945	/	891	853	/	680	0
WEEKDAY PM	4:45 PM	48		47					157	135	174	169		730
	5:00 PM	43		72					178	144	179	200		816
	5:15 PM	36		60					184	147	233	173		833
	5:30 PM	34		66					179	146	238	185		848
	VOLUMES	161	0	245	0	0	0	0	698	572	824	727	0	3,227
	APPROACH %	40%	0%	60%	0%	0%	0%	0%	55%	45%	53%	47%	0%	
	APP/DEPART	406	/	0	0	/	1,396	1,270	/	943	1,551	/	888	0
	BEGIN PEAK HR		4:45 PM											
	VOLUMES	161	0	245	0	0	0	0	698	572	824	727	0	3,227
	APPROACH %	40%	0%	60%	0%	0%	0%	0%	55%	45%	53%	47%	0%	
	PEAK HR FACTOR													0.95
	APP/DEPART	406	/	0	0	/	1,396	1,270	/	943	1,551	/	888	0

INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: PACIFIC TECHNICAL DATA

DATE:	LOCATION:	KEARNY MESA	PROJECT #:	PTD16-0129-02
2/2/16	NORTH & SOUTH:	CANYON	LOCATION #:	7
TUESDAY	EAST & WEST:	AERO	CONTROL:	SIGNAL

NOTES:

AM / PM / MD / OTHER / OTHER — ▲ N, ◄ W, E ►, S ▼

		NORTHBOUND CANYON			SOUTHBOUND CANYON			EASTBOUND AERO			WESTBOUND AERO			
	LANES:	NL 2	NT X	NR 2	SL X	ST X	SR X	EL X	ET 2	ER 0	WL 2	WT 2	WR X	TOTAL
WEEKDAY AM	8:00 AM	20		13					286	30	30	166		545
	8:15 AM	25		10					264	32	25	141		497
	8:30 AM	18		19					239	32	26	135		469
	8:45 AM	21		15					188	25	35	164		448
	VOLUMES	84	0	57	0	0	0	0	977	119	116	606	0	1,959
	APPROACH %	60%	0%	40%	0%	0%	0%	0%	89%	11%	16%	84%	0%	
	APP/DEPART	141	/	0	0	/	235	1,096	/	1,034	722	/	690	0
	BEGIN PEAK HR		8:00 AM											
	VOLUMES	84	0	57	0	0	0	0	977	119	116	606	0	1,959
	APPROACH %	60%	0%	40%	0%	0%	0%	0%	89%	11%	16%	84%	0%	
	PEAK HR FACTOR													0.90
	APP/DEPART	141	/	0	0	/	235	1,096	/	1,034	722	/	690	0
WEEKDAY AM	3:15 PM	25		10					176	21	34	156		422
	3:30 PM	31		10					246	27	30	199		543
	3:45 PM	31		11					241	29	31	209		552
	4:00 PM	27		9					254	30	39	267		626
	VOLUMES	114	0	40	0	0	0	0	917	107	134	831	0	2,143
	APPROACH %	74%	0%	26%	0%	0%	0%	0%	90%	10%	14%	86%	0%	
	APP/DEPART	154	/	0	0	/	241	1,024	/	957	965	/	945	0
	BEGIN PEAK HR		3:15 PM											
	VOLUMES	114	0	40	0	0	0	0	917	107	134	831	0	2,143
	APPROACH %	74%	0%	26%	0%	0%	0%	0%	90%	10%	14%	86%	0%	
	PEAK HR FACTOR													0.86
	APP/DEPART	154	/	0	0	/	241	1,024	/	957	965	/	945	0
WEEKDAY PM	4:45 PM	32		13					191	30	40	305		611
	5:00 PM	46		18					230	30	37	332		693
	5:15 PM	40		15					195	50	49	382		731
	5:30 PM	41		17					211	29	38	312		648
	VOLUMES	159	0	63	0	0	0	0	827	139	164	1,331	0	2,683
	APPROACH %	72%	0%	28%	0%	0%	0%	0%	86%	14%	11%	89%	0%	
	APP/DEPART	222	/	0	0	/	303	966	/	890	1,495	/	1,490	0
	BEGIN PEAK HR		4:45 PM											
	VOLUMES	159	0	63	0	0	0	0	827	139	164	1,331	0	2,683
	APPROACH %	72%	0%	28%	0%	0%	0%	0%	86%	14%	11%	89%	0%	
	PEAK HR FACTOR													0.92
	APP/DEPART	222	/	0	0	/	303	966	/	890	1,495	/	1,490	0

INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: PACIFIC TECHNICAL DATA

DATE:	LOCATION:	KEARNY MESA	PROJECT #:	PTD16-0129-02
2/2/16	NORTH & SOUTH:	AERO CT	LOCATION #:	8
TUESDAY	EAST & WEST:	AERO FRONTAGE	CONTROL:	SIGNAL

NOTES:

AM / PM / MD / OTHER / OTHER — ▲ N, ◄ W, E ►, S ▼

		NORTHBOUND AERO CT			SOUTHBOUND AERO CT			EASTBOUND AERO FRONTAGE			WESTBOUND AERO FRONTAGE			
	LANES:	NL 0	NT 1	NR 0	SL 0	ST 1	SR 0	EL 0	ET 1	ER 0	WL 0	WT 1	WR 0	TOTAL
WEEKDAY AM	8:00 AM	0	56	0	2	85	0	0	0	0	0	0	3	146
	8:15 AM	0	22	0	4	58	0	0	0	0	0	0	1	85
	8:30 AM	0	13	1	2	43	1	0	0	1	0	0	2	63
	8:45 AM	0	23	0	4	46	1	0	0	1	0	0	2	77
	VOLUMES	0	114	1	12	232	2	0	0	2	0	0	8	371
	APPROACH %	0%	99%	1%	5%	94%	1%	0%	0%	100%	0%	0%	100%	
	APP/DEPART	115	/	122	246	/	234	2	/	13	8	/	2	0
	BEGIN PEAK HR		8:00 AM											
	VOLUMES	0	114	1	12	232	2	0	0	2	0	0	8	371
	APPROACH %	0%	99%	1%	5%	94%	1%	0%	0%	100%	0%	0%	100%	
	PEAK HR FACTOR													0.64
	APP/DEPART	115	/	122	246	/	234	2	/	13	8	/	2	0
WEEKDAY AM	3:15 PM	0	45	0	2	30	3	3	0	0	0	0	3	86
	3:30 PM	0	43	0	3	21	0	0	0	0	0	0	1	68
	3:45 PM	0	62	0	2	20	0	0	0	0	0	0	1	85
	4:00 PM	0	65	0	4	30	0	0	0	0	1	0	1	101
	VOLUMES	0	215	0	11	101	3	3	0	0	1	0	6	340
	APPROACH %	0%	100%	0%	10%	88%	3%	100%	0%	0%	14%	0%	86%	
	APP/DEPART	215	/	224	115	/	102	3	/	11	7	/	3	0
	BEGIN PEAK HR		3:15 PM											
	VOLUMES	0	215	0	11	101	3	3	0	0	1	0	6	340
	APPROACH %	0%	100%	0%	10%	88%	3%	100%	0%	0%	14%	0%	86%	
	PEAK HR FACTOR													0.84
	APP/DEPART	215	/	224	115	/	102	3	/	11	7	/	3	0
WEEKDAY PM	4:45 PM	0	33	2	10	30	1	0	0	1	1	0	1	79
	5:00 PM	0	50	3	22	56	3	0	0	1	1	0	5	141
	5:15 PM	0	47	0	9	54	3	4	1	2	0	0	2	122
	5:30 PM	0	31	1	7	19	0	0	0	0	0	0	8	66
	VOLUMES	0	161	6	48	159	7	4	1	4	2	0	16	408
	APPROACH %	0%	96%	4%	22%	74%	3%	44%	11%	44%	11%	0%	89%	
	APP/DEPART	167	/	181	214	/	165	9	/	55	18	/	7	0
	BEGIN PEAK HR		4:45 PM											
	VOLUMES	0	161	6	48	159	7	4	1	4	2	0	16	408
	APPROACH %	0%	96%	4%	22%	74%	3%	44%	11%	44%	11%	0%	89%	
	PEAK HR FACTOR													0.72
	APP/DEPART	167	/	181	214	/	165	9	/	55	18	/	7	0

INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: PACIFIC TECHNICAL DATA

DATE:	LOCATION:	KEARNY MESA	PROJECT #:	PTD16-0129-02
2/2/16	NORTH & SOUTH:	AERO CT	LOCATION #:	9
TUESDAY	EAST & WEST:	AERO PL	CONTROL:	1-WAY STOP (WB)

NOTES:

AM / PM / MD / OTHER / OTHER

▲ N ◄ W E ► S ▼

		NORTHBOUND AERO CT			SOUTHBOUND AERO CT			EASTBOUND AERO PL			WESTBOUND AERO PL			
	LANES:	NL X	NT 1	NR 0	SL 0	ST 1	SR X	EL X	ET X	ER X	WL 0.5	WT X	WR 0.5	TOTAL
WEEKDAY AM	8:00 AM		53	0	21	65					0		4	143
	8:15 AM		15	1	24	21					0		4	65
	8:30 AM		10	1	13	17					1		5	47
	8:45 AM		15	0	12	25					0		8	60
	VOLUMES	0	93	2	70	128	0	0	0	0	1	0	21	315
	APPROACH %	0%	98%	2%	35%	65%	0%	0%	0%	0%	5%	0%	95%	
	APP/DEPART	95	/	114	198	/	129	0	/	72	22	/	0	0
	BEGIN PEAK HR		8:00 AM											
	VOLUMES	0	93	2	70	128	0	0	0	0	1	0	21	315
	APPROACH %	0%	98%	2%	35%	65%	0%	0%	0%	0%	5%	0%	95%	
	PEAK HR FACTOR													0.55
	APP/DEPART	95	/	114	198	/	129	0	/	72	22	/	0	0
WEEKDAY AM	3:15 PM		20	0	3	8					1		18	50
	3:30 PM		17	0	3	9					2		23	54
	3:45 PM		18	0	5	5					0		8	36
	4:00 PM		55	0	7	20					0		18	100
	VOLUMES	0	110	0	18	42	0	0	0	0	3	0	67	240
	APPROACH %	0%	100%	0%	30%	70%	0%	0%	0%	0%	4%	0%	96%	
	APP/DEPART	110	/	177	60	/	45	0	/	18	70	/	0	0
	BEGIN PEAK HR		3:15 PM											
	VOLUMES	0	110	0	18	42	0	0	0	0	3	0	67	240
	APPROACH %	0%	100%	0%	30%	70%	0%	0%	0%	0%	4%	0%	96%	
	PEAK HR FACTOR													0.60
	APP/DEPART	110	/	177	60	/	45	0	/	18	70	/	0	0
WEEKDAY PM	4:45 PM		19	0	13	11					0		20	63
	5:00 PM		26	0	9	10					0		21	66
	5:15 PM		24	0	21	16					0		24	85
	5:30 PM		20	0	17	8					0		20	65
	VOLUMES	0	89	0	60	45	0	0	0	0	0	0	85	279
	APPROACH %	0%	100%	0%	57%	43%	0%	0%	0%	0%	0%	0%	100%	
	APP/DEPART	89	/	174	105	/	45	0	/	60	85	/	0	0
	BEGIN PEAK HR		4:45 PM											
	VOLUMES	0	89	0	60	45	0	0	0	0	0	0	85	279
	APPROACH %	0%	100%	0%	57%	43%	0%	0%	0%	0%	0%	0%	100%	
	PEAK HR FACTOR													0.82
	APP/DEPART	89	/	174	105	/	45	0	/	60	85	/	0	0

INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: PACIFIC TECHNICAL DATA

DATE:	LOCATION:	KEARNY MESA	PROJECT #:	PTD16-0129-02
2/2/16	NORTH & SOUTH:	KEARNY VILLA	LOCATION #:	10
TUESDAY	EAST & WEST:	163 NB RAMP	CONTROL:	SIGNAL

NOTES:

AM / PM / MD / OTHER / OTHER — ▲ N, ◄ W, E ►, S ▼

		NORTHBOUND KEARNY VILLA			SOUTHBOUND KEARNY VILLA			EASTBOUND 163 NB RAMP			WESTBOUND 163 NB RAMP			
	LANES:	NL 1	NT 2	NR X	SL X	ST 2	SR 0	EL 2	ET X	ER 1	WL X	WT X	WR X	TOTAL
WEEKDAY AM	8:00 AM	105	133			77	0	205		5				525
	8:15 AM	93	114			79	0	153		5				444
	8:30 AM	103	118			73	0	172		7				473
	8:45 AM	64	95			77	0	171		10				417
	VOLUMES	365	460	0	0	306	0	701	0	27	0	0	0	1,859
	APPROACH %	44%	56%	0%	0%	100%	0%	96%	0%	4%	0%	0%	0%	
	APP/DEPART	825	/	1,161	306	/	333	728	/	0	0	/	365	0
	BEGIN PEAK HR		8:00 AM											
	VOLUMES	365	460	0	0	306	0	701	0	27	0	0	0	1,859
	APPROACH %	44%	56%	0%	0%	100%	0%	96%	0%	4%	0%	0%	0%	
	PEAK HR FACTOR													0.89
	APP/DEPART	825	/	1,161	306	/	333	728	/	0	0	/	365	0
WEEKDAY AM	3:15 PM	90	59			126	4	53		4				336
	3:30 PM	106	65			134	4	48		11				368
	3:45 PM	113	69			121	1	55		5				364
	4:00 PM	114	68			161	5	59		11				418
	VOLUMES	423	261	0	0	542	14	215	0	31	0	0	0	1,486
	APPROACH %	62%	38%	0%	0%	97%	3%	87%	0%	13%	0%	0%	0%	
	APP/DEPART	684	/	476	556	/	573	246	/	0	0	/	437	0
	BEGIN PEAK HR		3:15 PM											
	VOLUMES	423	261	0	0	542	14	215	0	31	0	0	0	1,486
	APPROACH %	62%	38%	0%	0%	97%	3%	87%	0%	13%	0%	0%	0%	
	PEAK HR FACTOR													0.89
	APP/DEPART	684	/	476	556	/	573	246	/	0	0	/	437	0
WEEKDAY PM	4:45 PM	106	89			268	6	82		7				558
	5:00 PM	106	68			318	3	79		14				588
	5:15 PM	116	69			311	5	92		9				602
	5:30 PM	103	72			289	6	59		12				541
	VOLUMES	431	298	0	0	1,186	20	312	0	42	0	0	0	2,289
	APPROACH %	59%	41%	0%	0%	98%	2%	88%	0%	12%	0%	0%	0%	
	APP/DEPART	729	/	610	1,206	/	1,228	354	/	0	0	/	451	0
	BEGIN PEAK HR		4:45 PM											
	VOLUMES	431	298	0	0	1,186	20	312	0	42	0	0	0	2,289
	APPROACH %	59%	41%	0%	0%	98%	2%	88%	0%	12%	0%	0%	0%	
	PEAK HR FACTOR													0.95
	APP/DEPART	729	/	610	1,206	/	1,228	354	/	0	0	/	451	0

INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: PACIFIC TECHNICAL DATA

DATE:	LOCATION:	KEARNY MESA	PROJECT #:	PTD16-0129-02
2/2/16	NORTH & SOUTH:	KEARNY MESA	LOCATION #:	11
TUESDAY	EAST & WEST:	ARMOUR/163 SB RAMP	CONTROL:	SIGNAL

NOTES:

AM / PM / MD / OTHER / OTHER — ▲ N, ◄ W, E ►, S ▼

		NORTHBOUND KEARNY MESA			SOUTHBOUND KEARNY MESA			EASTBOUND ARMOUR/163 SB RAMP			WESTBOUND ARMOUR/163 SB RAMP			
	LANES:	NL 1	NT 2	NR 1	SL 1	ST 2	SR 0	EL 0	ET 1	ER 0	WL 0.5	WT 0.5	WR 1	TOTAL
WEEKDAY AM	8:00 AM	0	37	14	13	48	21	19	12	4	91	14	85	358
	8:15 AM	0	52	27	12	51	11	31	15	6	81	16	91	393
	8:30 AM	0	51	19	10	48	17	27	10	3	89	19	68	361
	8:45 AM	2	30	16	28	67	18	15	17	6	93	20	61	373
	VOLUMES	2	170	76	63	214	67	92	54	19	354	69	305	1,485
	APPROACH %	1%	69%	31%	18%	62%	19%	56%	33%	12%	49%	9%	42%	
	APP/DEPART	248	/	567	344	/	587	165	/	193	728	/	138	0
	BEGIN PEAK HR		8:00 AM											
	VOLUMES	2	170	76	63	214	67	92	54	19	354	69	305	1,485
	APPROACH %	1%	69%	31%	18%	62%	19%	56%	33%	12%	49%	9%	42%	
	PEAK HR FACTOR													0.94
	APP/DEPART	248	/	567	344	/	587	165	/	193	728	/	138	0
WEEKDAY AM	3:15 PM	5	91	50	43	85	25	35	31	5	56	14	25	465
	3:30 PM	4	82	52	46	105	27	36	29	10	62	13	48	514
	3:45 PM	6	80	48	50	92	27	26	22	4	86	10	44	495
	4:00 PM	5	116	37	36	103	25	30	30	5	63	14	50	514
	VOLUMES	20	369	187	175	385	104	127	112	24	267	51	167	1,988
	APPROACH %	3%	64%	32%	26%	58%	16%	48%	43%	9%	55%	11%	34%	
	APP/DEPART	576	/	663	664	/	676	263	/	474	485	/	175	0
	BEGIN PEAK HR		3:15 PM											
	VOLUMES	20	369	187	175	385	104	127	112	24	267	51	167	1,988
	APPROACH %	3%	64%	32%	26%	58%	16%	48%	43%	9%	55%	11%	34%	
	PEAK HR FACTOR													0.97
	APP/DEPART	576	/	663	664	/	676	263	/	474	485	/	175	0
WEEKDAY PM	4:45 PM	9	106	29	62	141	23	29	35	5	98	13	59	609
	5:00 PM	8	101	31	71	143	19	28	44	6	103	14	61	629
	5:15 PM	10	92	33	61	150	30	32	33	9	113	8	74	645
	5:30 PM	6	84	30	56	151	25	32	35	7	99	14	69	608
	VOLUMES	33	383	123	250	585	97	121	147	27	413	49	263	2,491
	APPROACH %	6%	71%	23%	27%	63%	10%	41%	50%	9%	57%	7%	36%	
	APP/DEPART	539	/	767	932	/	1,025	295	/	520	725	/	179	0
	BEGIN PEAK HR		4:45 PM											
	VOLUMES	33	383	123	250	585	97	121	147	27	413	49	263	2,491
	APPROACH %	6%	71%	23%	27%	63%	10%	41%	50%	9%	57%	7%	36%	
	PEAK HR FACTOR													0.97
	APP/DEPART	539	/	767	932	/	1,025	295	/	520	725	/	179	0

INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: PACIFIC TECHNICAL DATA

DATE:	LOCATION:	KEARNY MESA	PROJECT #:	PTD16-0129-02
2/2/16	NORTH & SOUTH:	CONVOY	LOCATION #:	12
TUESDAY	EAST & WEST:	KEARNY MESA	CONTROL:	SIGNAL

NOTES:

AM / PM / MD / OTHER / OTHER

▲ N ◄ W E ► S ▼

		NORTHBOUND CONVOY			SOUTHBOUND CONVOY			EASTBOUND KEARNY MESA			WESTBOUND KEARNY MESA			
	LANES:	NL 1	NT 2	NR 0	SL 1	ST 2	SR 0	EL 1	ET 1	ER 1	WL 2	WT 1	WR 0	TOTAL
WEEKDAY AM	8:00 AM	30	213	40	2	100	13	3	4	6	77	18	3	509
	8:15 AM	25	203	43	7	96	12	4	9	3	85	13	3	503
	8:30 AM	23	213	39	4	106	11	7	6	7	83	13	5	517
	8:45 AM	30	231	25	7	97	12	5	5	4	77	13	6	512
	VOLUMES	108	860	147	20	399	48	19	24	20	322	57	17	2,041
	APPROACH %	10%	77%	13%	4%	85%	10%	30%	38%	32%	81%	14%	4%	
	APP/DEPART	1,115	/	896	467	/	741	63	/	191	396	/	213	0
	BEGIN PEAK HR		8:00 AM											
	VOLUMES	108	860	147	20	399	48	19	24	20	322	57	17	2,041
	APPROACH %	10%	77%	13%	4%	85%	10%	30%	38%	32%	81%	14%	4%	
	PEAK HR FACTOR													0.99
	APP/DEPART	1,115	/	896	467	/	741	63	/	191	396	/	213	0
WEEKDAY AM	3:15 PM	16	178	60	9	183	7	14	15	18	65	10	11	586
	3:30 PM	10	151	48	4	170	4	9	27	25	116	12	9	585
	3:45 PM	23	225	50	9	177	9	8	19	17	96	7	5	645
	4:00 PM	30	171	65	13	189	8	18	29	25	125	13	7	693
	VOLUMES	79	725	223	35	719	28	49	90	85	402	42	32	2,509
	APPROACH %	8%	71%	22%	4%	92%	4%	22%	40%	38%	84%	9%	7%	
	APP/DEPART	1,027	/	806	782	/	1,206	224	/	348	476	/	149	0
	BEGIN PEAK HR		3:15 PM											
	VOLUMES	79	725	223	35	719	28	49	90	85	402	42	32	2,509
	APPROACH %	8%	71%	22%	4%	92%	4%	22%	40%	38%	84%	9%	7%	
	PEAK HR FACTOR													0.91
	APP/DEPART	1,027	/	806	782	/	1,206	224	/	348	476	/	149	0
WEEKDAY PM	4:45 PM	20	210	55	7	256	8	14	21	21	194	11	10	827
	5:00 PM	19	171	57	13	217	5	27	29	40	165	14	19	776
	5:15 PM	23	183	69	8	237	4	22	19	40	200	15	9	829
	5:30 PM	14	167	47	11	224	7	20	18	42	197	33	1	781
	VOLUMES	76	731	228	39	934	24	83	87	143	756	73	39	3,213
	APPROACH %	7%	71%	22%	4%	94%	2%	27%	28%	46%	87%	8%	4%	
	APP/DEPART	1,035	/	853	997	/	1,833	313	/	354	868	/	173	0
	BEGIN PEAK HR		4:45 PM											
	VOLUMES	76	731	228	39	934	24	83	87	143	756	73	39	3,213
	APPROACH %	7%	71%	22%	4%	94%	2%	27%	28%	46%	87%	8%	4%	
	PEAK HR FACTOR													0.97
	APP/DEPART	1,035	/	853	997	/	1,833	313	/	354	868	/	173	0

INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: PACIFIC TECHNICAL DATA

DATE:	LOCATION:	KEARNY MESA	PROJECT #:	PTD16-0129-02
2/2/16	NORTH & SOUTH:	163 NB RAMP	LOCATION #:	13
TUESDAY	EAST & WEST:	MESA COLLEGE	CONTROL:	SIGNAL

NOTES:

AM / PM / MD / OTHER / OTHER — ▲ N, ◄ W, E ►, S ▼

		NORTHBOUND 163 NB RAMP			SOUTHBOUND 163 NB RAMP			EASTBOUND MESA COLLEGE			WESTBOUND MESA COLLEGE			
	LANES:	NL 1.5	NT X	NR 1.5	SL X	ST X	SR X	EL X	ET 2	ER X	WL X	WT 2	WR X	TOTAL
WEEKDAY AM	8:00 AM	111		103					132			227		573
	8:15 AM	123		103					107			246		579
	8:30 AM	148		111					141			230		630
	8:45 AM	167		114					83			213		577
	VOLUMES	549	0	431	0	0	0	0	463	0	0	916	0	2,359
	APPROACH %	56%	0%	44%	0%	0%	0%	0%	100%	0%	0%	100%	0%	
	APP/DEPART	980	/	0	0	/	0	463	/	894	916	/	1,465	0
	BEGIN PEAK HR		8:00 AM											
	VOLUMES	549	0	431	0	0	0	0	463	0	0	916	0	2,359
	APPROACH %	56%	0%	44%	0%	0%	0%	0%	100%	0%	0%	100%	0%	
	PEAK HR FACTOR													0.94
	APP/DEPART	980	/	0	0	/	0	463	/	894	916	/	1,465	0
WEEKDAY AM	3:15 PM	82		66					112			194		454
	3:30 PM	100		42					142			195		479
	3:45 PM	99		78					98			207		482
	4:00 PM	76		55					101			195		427
	VOLUMES	357	0	241	0	0	0	0	453	0	0	791	0	1,842
	APPROACH %	60%	0%	40%	0%	0%	0%	0%	100%	0%	0%	100%	0%	
	APP/DEPART	598	/	0	0	/	0	453	/	694	791	/	1,148	0
	BEGIN PEAK HR		3:15 PM											
	VOLUMES	357	0	241	0	0	0	0	453	0	0	791	0	1,842
	APPROACH %	60%	0%	40%	0%	0%	0%	0%	100%	0%	0%	100%	0%	
	PEAK HR FACTOR													0.96
	APP/DEPART	598	/	0	0	/	0	453	/	694	791	/	1,148	0
WEEKDAY PM	4:45 PM	105		59					111			265		540
	5:00 PM	114		89					102			251		556
	5:15 PM	117		49					81			266		513
	5:30 PM	120		62					90			228		500
	VOLUMES	456	0	259	0	0	0	0	384	0	0	1,010	0	2,109
	APPROACH %	64%	0%	36%	0%	0%	0%	0%	100%	0%	0%	100%	0%	
	APP/DEPART	715	/	0	0	/	0	384	/	643	1,010	/	1,466	0
	BEGIN PEAK HR		4:45 PM											
	VOLUMES	456	0	259	0	0	0	0	384	0	0	1,010	0	2,109
	APPROACH %	64%	0%	36%	0%	0%	0%	0%	100%	0%	0%	100%	0%	
	PEAK HR FACTOR													0.95
	APP/DEPART	715	/	0	0	/	0	384	/	643	1,010	/	1,466	0

INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: PACIFIC TECHNICAL DATA

DATE:	LOCATION:	KEARNY MESA	PROJECT #:	PTD16-0129-02
2/2/16	NORTH & SOUTH:	ANNRAE/ HEALTH CENTER	LOCATION #:	14
TUESDAY	EAST & WEST:	MESA COLLEGE	CONTROL:	SIGNAL

NOTES:

AM / PM / MD / OTHER / OTHER

▲ N ◄ W E ► S ▼

		NORTHBOUND ANNRAE/ HEALTH CENTER			SOUTHBOUND ANNRAE/ HEALTH CENTER			EASTBOUND MESA COLLEGE			WESTBOUND MESA COLLEGE			
	LANES:	NL 1	NT 0.5	NR 1.5	SL 0.5	ST 0.5	SR 1	EL 1	ET 2	ER 1	WL 2	WT 2	WR 0	TOTAL
WEEKDAY AM	8:00 AM	15	1	37	7	13	15	8	141	76	101	192	7	613
	8:15 AM	11	2	21	10	9	16	13	151	48	107	207	1	596
	8:30 AM	20	0	30	10	7	17	9	188	52	124	193	4	654
	8:45 AM	13	3	20	3	5	3	9	140	52	122	195	3	568
	VOLUMES	59	6	108	30	34	51	39	620	228	454	787	15	2,431
	APPROACH %	34%	3%	62%	26%	30%	44%	4%	70%	26%	36%	63%	1%	
	APP/DEPART	173	/	60	115	/	716	887	/	758	1,256	/	897	0
	BEGIN PEAK HR		8:00 AM											
	VOLUMES	59	6	108	30	34	51	39	620	228	454	787	15	2,431
	APPROACH %	34%	3%	62%	26%	30%	44%	4%	70%	26%	36%	63%	1%	
	PEAK HR FACTOR													0.93
	APP/DEPART	173	/	60	115	/	716	887	/	758	1,256	/	897	0
WEEKDAY AM	3:15 PM	24	8	60	4	4	13	19	134	23	71	147	2	509
	3:30 PM	30	9	63	5	2	14	25	135	20	73	155	4	535
	3:45 PM	32	12	68	6	2	16	26	136	19	82	152	3	554
	4:00 PM	34	11	69	3	5	10	29	107	6	85	161	4	524
	VOLUMES	120	40	260	18	13	53	99	512	68	311	615	13	2,122
	APPROACH %	29%	10%	62%	21%	15%	63%	15%	75%	10%	33%	65%	1%	
	APP/DEPART	420	/	152	84	/	392	679	/	790	939	/	788	0
	BEGIN PEAK HR		3:15 PM											
	VOLUMES	120	40	260	18	13	53	99	512	68	311	615	13	2,122
	APPROACH %	29%	10%	62%	21%	15%	63%	15%	75%	10%	33%	65%	1%	
	PEAK HR FACTOR													0.96
	APP/DEPART	420	/	152	84	/	392	679	/	790	939	/	788	0
WEEKDAY PM	4:45 PM	25	28	51	5	2	15	31	142	14	68	219	6	606
	5:00 PM	34	32	65	2	4	13	33	135	13	57	205	5	598
	5:15 PM	30	35	67	5	0	18	42	78	8	54	215	6	558
	5:30 PM	21	26	42	3	2	5	29	110	12	53	193	8	504
	VOLUMES	110	121	225	15	8	51	135	465	47	232	832	25	2,266
	APPROACH %	24%	27%	49%	20%	11%	69%	21%	72%	7%	21%	76%	2%	
	APP/DEPART	456	/	281	74	/	287	647	/	705	1,089	/	993	0
	BEGIN PEAK HR		4:45 PM											
	VOLUMES	110	121	225	15	8	51	135	465	47	232	832	25	2,266
	APPROACH %	24%	27%	49%	20%	11%	69%	21%	72%	7%	21%	76%	2%	
	PEAK HR FACTOR													0.93
	APP/DEPART	456	/	281	74	/	287	647	/	705	1,089	/	993	0

INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: PACIFIC TECHNICAL DATA

DATE:	LOCATION:	KEARNY MESA	PROJECT #:	PTD16-0129-02
2/2/16	NORTH & SOUTH:	805 SB RAMP/ BERGER	LOCATION #:	15
TUESDAY	EAST & WEST:	MESA COLLEGE	CONTROL:	SIGNAL

NOTES:

AM / PM / MD / OTHER / OTHER — ▲ N, ◄ W, E ►, S ▼

		NORTHBOUND 805 SB RAMP/ BERGER			SOUTHBOUND 805 SB RAMP/ BERGER			EASTBOUND MESA COLLEGE			WESTBOUND MESA COLLEGE			
	LANES:	NL X	NT X	NR X	SL 0	ST 1	SR 0	EL 1	ET 2	ER 0	WL 1	WT 2	WR 0	TOTAL
WEEKDAY AM	8:00 AM				9	8	5	0	105	105	24	329	26	611
	8:15 AM				7	8	8	2	101	87	19	347	17	596
	8:30 AM				17	8	8	3	133	108	31	364	17	689
	8:45 AM				11	3	5	1	111	83	24	390	16	644
	VOLUMES	0	0	0	44	27	26	6	450	383	98	1,430	76	2,540
	APPROACH %	0%	0%	0%	45%	28%	27%	1%	54%	46%	6%	89%	5%	
	APP/DEPART	0	/	82	97	/	508	839	/	494	1,604	/	1,456	0
	BEGIN PEAK HR		8:00 AM											
	VOLUMES	0	0	0	44	27	26	6	450	383	98	1,430	76	2,540
	APPROACH %	0%	0%	0%	45%	28%	27%	1%	54%	46%	6%	89%	5%	
	PEAK HR FACTOR													0.92
	APP/DEPART	0	/	82	97	/	508	839	/	494	1,604	/	1,456	0
WEEKDAY AM	3:15 PM				15	14	2	3	90	189	58	221	11	603
	3:30 PM				9	21	5	3	96	183	76	280	20	693
	3:45 PM				17	15	3	4	120	173	61	235	25	653
	4:00 PM				2	18	3	1	121	174	87	219	16	641
	VOLUMES	0	0	0	43	68	13	11	427	719	282	955	72	2,590
	APPROACH %	0%	0%	0%	35%	55%	10%	1%	37%	62%	22%	73%	6%	
	APP/DEPART	0	/	83	124	/	1,069	1,157	/	470	1,309	/	968	0
	BEGIN PEAK HR		3:15 PM											
	VOLUMES	0	0	0	43	68	13	11	427	719	282	955	72	2,590
	APPROACH %	0%	0%	0%	35%	55%	10%	1%	37%	62%	22%	73%	6%	
	PEAK HR FACTOR													0.93
	APP/DEPART	0	/	83	124	/	1,069	1,157	/	470	1,309	/	968	0
WEEKDAY PM	4:45 PM				13	39	5	3	118	140	100	270	25	713
	5:00 PM				10	47	6	2	110	199	105	251	24	754
	5:15 PM				15	67	2	3	80	119	81	231	37	635
	5:30 PM				11	40	6	2	98	142	103	280	21	703
	VOLUMES	0	0	0	49	193	19	10	406	600	389	1,032	107	2,805
	APPROACH %	0%	0%	0%	19%	74%	7%	1%	40%	59%	25%	68%	7%	
	APP/DEPART	0	/	117	261	/	1,182	1,016	/	455	1,528	/	1,051	0
	BEGIN PEAK HR		4:45 PM											
	VOLUMES	0	0	0	49	193	19	10	406	600	389	1,032	107	2,805
	APPROACH %	0%	0%	0%	19%	74%	7%	1%	40%	59%	25%	68%	7%	
	PEAK HR FACTOR													0.93
	APP/DEPART	0	/	117	261	/	1,182	1,016	/	455	1,528	/	1,051	0

INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: PACIFIC TECHNICAL DATA

DATE:	LOCATION:	KEARNY MESA	PROJECT #:	PTD16-0129-02
2/2/16	NORTH & SOUTH:	805 NB RAMP	LOCATION #:	16
TUESDAY	EAST & WEST:	KEARNY VILLA/ MESA COLLEGE	CONTROL:	SIGNAL

NOTES:

AM / PM / MD / OTHER / OTHER

▲ N ◄ W E ► S ▼

		NORTHBOUND 805 NB RAMP			SOUTHBOUND 805 NB RAMP			EASTBOUND KEARNY VILLA/ MESA COLLEGE			WESTBOUND KEARNY VILLA/ MESA COLLEGE			
	LANES:	NL 1	NT X	NR 1	SL X	ST X	SR X	EL X	ET 2	ER X	WL X	WT 2	WR X	TOTAL
WEEKDAY AM	8:00 AM	250		112					121			128		611
	8:15 AM	299		106					105			95		605
	8:30 AM	293		99					157			104		653
	8:45 AM	350		120					128			99		697
	VOLUMES	1,192	0	437	0	0	0	0	511	0	0	426	0	2,566
	APPROACH %	73%	0%	27%	0%	0%	0%	0%	100%	0%	0%	100%	0%	
	APP/DEPART	1,629	/	0	0	/	0	511	/	948	426	/	1,618	0
	BEGIN PEAK HR		8:00 AM											
	VOLUMES	1,192	0	437	0	0	0	0	511	0	0	426	0	2,566
	APPROACH %	73%	0%	27%	0%	0%	0%	0%	100%	0%	0%	100%	0%	
	PEAK HR FACTOR													0.92
	APP/DEPART	1,629	/	0	0	/	0	511	/	948	426	/	1,618	0
WEEKDAY AM	3:15 PM	181		66					104			120		471
	3:30 PM	189		67					107			175		538
	3:45 PM	166		59					138			170		533
	4:00 PM	131		53					113			186		483
	VOLUMES	667	0	245	0	0	0	0	462	0	0	651	0	2,025
	APPROACH %	73%	0%	27%	0%	0%	0%	0%	100%	0%	0%	100%	0%	
	APP/DEPART	912	/	0	0	/	0	462	/	707	651	/	1,318	0
	BEGIN PEAK HR		3:15 PM											
	VOLUMES	667	0	245	0	0	0	0	462	0	0	651	0	2,025
	APPROACH %	73%	0%	27%	0%	0%	0%	0%	100%	0%	0%	100%	0%	
	PEAK HR FACTOR													0.94
	APP/DEPART	912	/	0	0	/	0	462	/	707	651	/	1,318	0
WEEKDAY PM	4:45 PM	199		69					131			181		580
	5:00 PM	157		57					122			233		569
	5:15 PM	159		59					93			201		512
	5:30 PM	180		45					129			180		534
	VOLUMES	695	0	230	0	0	0	0	475	0	0	795	0	2,195
	APPROACH %	75%	0%	25%	0%	0%	0%	0%	100%	0%	0%	100%	0%	
	APP/DEPART	925	/	0	0	/	0	475	/	705	795	/	1,490	0
	BEGIN PEAK HR		4:45 PM											
	VOLUMES	695	0	230	0	0	0	0	475	0	0	795	0	2,195
	APPROACH %	75%	0%	25%	0%	0%	0%	0%	100%	0%	0%	100%	0%	
	PEAK HR FACTOR													0.95
	APP/DEPART	925	/	0	0	/	0	475	/	705	795	/	1,490	0

TUESDAY- JANUARY 26, 2016 CITY: KEARNEY MESA PROJECT: PTD16-0129-02

AERO CT - AERO DR. TO AERO PL.

AM Period	NB		SB		EB	WB		PM Period	NB		SB		EB	WB	
00:00	2		1					12:00	36		23				
00:15	2		0					12:15	35		33				
00:30	0		0					12:30	33		26				
00:45	0	4	0	1			5	12:45	26	130	22	104			234
01:00	0		0					13:00	23		20				
01:15	1		1					13:15	19		14				
01:30	2		2					13:30	21		23				
01:45	0	3	0	3			6	13:45	23	86	16	73			159
02:00	0		0					14:00	34		19				
02:15	0		0					14:15	22		21				
02:30	0		0					14:30	16		19				
02:45	1	1	0	0			1	14:45	18	90	22	81			171
03:00	0		1					15:00	21		16				
03:15	0		0					15:15	13		11				
03:30	0		0					15:30	23		12				
03:45	0	0	2	3			3	15:45	42	99	10	49			148
04:00	0		1					16:00	73		27				
04:15	0		2					16:15	41		19				
04:30	0		1					16:30	70		18				
04:45	0	0	2	6			6	16:45	39	223	24	88			311
05:00	1		3					17:00	47		19				
05:15	1		8					17:15	48		37				
05:30	2		7					17:30	40		25				
05:45	4	8	9	27			35	17:45	31	166	19	100			266
06:00	6		16					18:00	26		13				
06:15	5		23					18:15	17		6				
06:30	16		20					18:30	18		3				
06:45	13	40	45	104			144	18:45	21	82	2	24			106
07:00	16		36					19:00	17		4				
07:15	18		55					19:15	8		3				
07:30	26		57					19:30	19		5				
07:45	51	111	100	248			359	19:45	6	50	2	14			64
08:00	57		86					20:00	9		5				
08:15	19		45					20:15	9		3				
08:30	15		30					20:30	8		2				
08:45	23	114	37	198			312	20:45	14	40	2	12			52
09:00	33		31					21:00	12		2				
09:15	28		38					21:15	23		1				
09:30	20		40					21:30	19		0				
09:45	19	100	44	153			253	21:45	12	66	1	4			70
10:00	20		35					22:00	15		2				
10:15	19		24					22:15	9		0				
10:30	21		22					22:30	8		1				
10:45	33	93	28	109			202	22:45	5	37	1	4			41
11:00	43		18					23:00	6		0				
11:15	32		22					23:15	1		0				
11:30	25		20					23:30	1		0				
11:45	18	118	26	86			204	23:45	0	8	1	1			9
Total Vol.		592		938			**1530**			1077		554			**1631**

Daily Totals

NB	SB	EB	WB	**Combined**
1669	1492			**3161**

	AM			**PM**		
Split %	38.7%	61.3%	**48.4%**	66.0%	34.0%	**51.6%**
Peak Hour	07:30	07:15	**07:15**	15:45	16:45	**16:00**
Volume	153	298	**450**	226	105	**311**
P.H.F.	0.67	0.75	**0.75**	0.67	0.71	**0.78**

TUESDAY- JANUARY 26, 2016 CITY: KEARNEY MESA PROJECT: PTD16-0129-02

AERO DR. - CONVOY TO KEARNEY VILLA

AM Period	NB	SB	EB		WB			PM Period	NB	SB	EB		WB		
00:00			16		13			12:00			173		214		
00:15			11		5			12:15			202		205		
00:30			19		7			12:30			187		179		
00:45			9	55	2	27	82	12:45			190	752	181	779	1531
01:00			6		6			13:00			190		192		
01:15			7		6			13:15			173		157		
01:30			6		10			13:30			185		147		
01:45			7	26	6	28	54	13:45			192	740	186	682	1422
02:00			6		8			14:00			196		190		
02:15			4		8			14:15			205		186		
02:30			7		5			14:30			221		136		
02:45			2	19	8	29	48	14:45			219	841	184	696	1537
03:00			5		8			15:00			208		179		
03:15			4		6			15:15			265		181		
03:30			4		10			15:30			243		203		
03:45			1	14	17	41	55	15:45			312	1028	219	782	1810
04:00			6		10			16:00			297		197		
04:15			6		17			16:15			313		202		
04:30			8		9			16:30			313		218		
04:45			6	26	25	61	87	16:45			270	1193	229	846	2039
05:00			16		19			17:00			262		239		
05:15			24		22			17:15			297		248		
05:30			29		43			17:30			247		245		
05:45			34	103	65	149	252	17:45			331	1137	188	920	2057
06:00			47		64			18:00			321		167		
06:15			58		70			18:15			281		160		
06:30			71		104			18:30			214		137		
06:45			131	307	144	382	689	18:45			191	1007	145	609	1616
07:00			132		154			19:00			194		112		
07:15			147		236			19:15			135		93		
07:30			188		237			19:30			125		93		
07:45			236	703	283	910	1613	19:45			120	574	62	360	934
08:00			172		285			20:00			106		93		
08:15			171		253			20:15			106		91		
08:30			224		272			20:30			89		74		
08:45			186	753	264	1074	1827	20:45			86	387	65	323	710
09:00			173		223			21:00			118		61		
09:15			132		206			21:15			80		55		
09:30			169		178			21:30			74		50		
09:45			151	625	167	774	1399	21:45			61	333	45	211	544
10:00			131		176			22:00			64		50		
10:15			120		150			22:15			49		34		
10:30			135		155			22:30			56		25		
10:45			158	544	203	684	1228	22:45			29	198	33	142	340
11:00			125		196			23:00			33		23		
11:15			157		164			23:15			29		19		
11:30			160		193			23:30			22		16		
11:45			162	604	199	752	1356	23:45			22	106	23	81	187
Total Vol.			3779		4911		**8690**				8296		6431		**14727**

	Daily Totals				
	NB	SB	EB	WB	**Combined**
			12075	11342	**23417**
			PM		
Split %			56.3%	43.7%	**62.9%**
Peak Hour			15:45	16:45	**16:30**
Volume			1235	961	**2076**
P.H.F.			0.99	0.97	**0.95**

	AM		
Split %	43.5%	56.5%	**37.1%**
Peak Hour	07:45	07:45	**07:45**
Volume	803	1093	**1896**
P.H.F.	0.85	0.96	**0.91**

TUESDAY- JANUARY 26, 2016 CITY: KEARNEY MESA PROJECT: PTD16-0129-02

AERO DR. - KEARNEY VILLA TO AERO CT.

AM Period	NB	SB	EB		WB			PM Period	NB	SB	EB		WB		
00:00			24		18			12:00			230		275		
00:15			13		11			12:15			279		231		
00:30			24		9			12:30			217		231		
00:45			17	78	10	48	126	12:45			251	977	210	947	1924
01:00			8		8			13:00			235		242		
01:15			16		3			13:15			214		203		
01:30			6		7			13:30			255		205		
01:45			13	43	4	22	65	13:45			247	951	222	872	1823
02:00			9		10			14:00			246		225		
02:15			11		6			14:15			281		255		
02:30			9		8			14:30			267		196		
02:45			4	33	6	30	63	14:45			312	1106	262	938	2044
03:00			5		5			15:00			277		283		
03:15			6		8			15:15			357		251		
03:30			4		12			15:30			337		313		
03:45			6	21	12	37	58	15:45			401	1372	311	1158	2530
04:00			6		11			16:00			416		341		
04:15			9		14			16:15			473		313		
04:30			10		25			16:30			461		387		
04:45			15	40	33	83	123	16:45			506	1856	273	1314	3170
05:00			24		33			17:00			493		344		
05:15			38		42			17:15			502		323		
05:30			44		59			17:30			470		326		
05:45			53	159	86	220	379	17:45			537	2002	239	1232	3234
06:00			62		119			18:00			530		231		
06:15			95		114			18:15			386		180		
06:30			103		190			18:30			300		166		
06:45			162	422	248	671	1093	18:45			255	1471	169	746	2217
07:00			173		284			19:00			225		166		
07:15			214		354			19:15			177		117		
07:30			257		330			19:30			171		128		
07:45			333	977	385	1353	2330	19:45			143	716	88	499	1215
08:00			295		420			20:00			119		130		
08:15			228		375			20:15			128		115		
08:30			287		358			20:30			105		115		
08:45			261	1071	334	1487	2558	20:45			103	455	109	469	924
09:00			245		267			21:00			142		92		
09:15			195		247			21:15			100		89		
09:30			225		219			21:30			91		93		
09:45			206	871	206	939	1810	21:45			85	418	127	401	819
10:00			191		196			22:00			75		85		
10:15			188		174			22:15			62		51		
10:30			169		201			22:30			57		37		
10:45			200	748	190	761	1509	22:45			38	232	38	211	443
11:00			200		216			23:00			43		36		
11:15			217		193			23:15			38		15		
11:30			218		213			23:30			31		18		
11:45			211	846	228	850	1696	23:45			29	141	25	94	235
Total Vol.			5309		6501	**11810**					11697		8881		**20578**

	Daily Totals				
	NB	SB	EB	WB	**Combined**
			17006	15382	**32388**
			PM		
Split %			56.8%	43.2%	**63.5%**
Peak Hour			17:15	15:45	**16:30**
Volume			2039	1352	**3289**
P.H.F.			0.95	0.87	**0.97**

	AM		
Split %	45.0%	55.0%	**36.5%**
Peak Hour	07:45	07:45	**07:45**
Volume	1143	1538	**2681**
P.H.F.	0.86	0.92	**0.93**

TUESDAY- JANUARY 26, 2016 CITY: KEARNEY MESA PROJECT: PTD16-0129-02

AERO DR. - AERO CT. TO AFTON

AM Period	NB	SB	EB		WB			PM Period	NB	SB	EB		WB		
00:00			26		19			12:00			201		241		
00:15			12		9			12:15			241		209		
00:30			25		8			12:30			196		196		
00:45			16	79	10	46	125	12:45			221	859	193	839	1698
01:00			8		8			13:00			210		212		
01:15			15		3			13:15			204		194		
01:30			6		7			13:30			210		181		
01:45			12	41	3	21	62	13:45			227	851	205	792	1643
02:00			9		11			14:00			226		191		
02:15			11		7			14:15			247		217		
02:30			9		7			14:30			235		178		
02:45			3	32	6	31	63	14:45			269	977	244	830	1807
03:00			5		5			15:00			269		215		
03:15			6		8			15:15			323		213		
03:30			3		13			15:30			301		292		
03:45			5	19	12	38	57	15:45			400	1293	282	1002	2295
04:00			5		9			16:00			413		303		
04:15			4		12			16:15			467		274		
04:30			6		25			16:30			426		344		
04:45			11	26	33	79	105	16:45			482	1788	244	1165	2953
05:00			13		36			17:00			447		308		
05:15			21		42			17:15			481		288		
05:30			29		54			17:30			475		290		
05:45			43	106	85	217	323	17:45			516	1919	208	1094	3013
06:00			48		110			18:00			497		215		
06:15			74		113			18:15			389		165		
06:30			81		181			18:30			276		147		
06:45			118	321	245	649	970	18:45			264	1426	139	666	2092
07:00			146		271			19:00			225		143		
07:15			155		328			19:15			172		112		
07:30			206		350			19:30			170		108		
07:45			270	777	368	1317	2094	19:45			129	696	78	441	1137
08:00			236		386			20:00			131		113		
08:15			185		378			20:15			116		99		
08:30			249		361			20:30			99		98		
08:45			235	905	319	1444	2349	20:45			93	439	79	389	828
09:00			212		268			21:00			133		68		
09:15			171		235			21:15			98		66		
09:30			184		212			21:30			99		48		
09:45			167	734	181	896	1630	21:45			91	421	47	229	650
10:00			156		171			22:00			73		56		
10:15			162		164			22:15			61		36		
10:30			148		186			22:30			51		31		
10:45			165	631	171	692	1323	22:45			35	220	35	158	378
11:00			187		187			23:00			40		29		
11:15			197		174			23:15			37		14		
11:30			196		181			23:30			27		18		
11:45			195	775	221	763	1538	23:45			28	132	22	83	215
Total Vol.				4446		6193	**10639**					11021		7688	**18709**

	Daily Totals				
	NB	SB	EB	WB	**Combined**
			15467	13881	**29348**

	AM			**PM**		
Split %	41.8%	58.2%	**36.3%**	58.9%	41.1%	**63.7%**
Peak Hour	07:45	07:45	**07:45**	17:15	15:45	**16:30**
Volume	940	1493	**2433**	1969	1203	**3020**
P.H.F.	0.87	0.97	**0.95**	0.95	0.87	**0.98**

TUESDAY- JANUARY 26, 2016 CITY: KEARNEY MESA PROJECT: PTD16-0129-02

AERO DR. - AFTON TO SANDROCK

AM Period	NB	SB	EB		WB			PM Period	NB	SB	EB		WB		
00:00			23		13			12:00			188		222		
00:15			11		9			12:15			207		189		
00:30			19		5			12:30			182		178		
00:45			10	63	8	35	98	12:45			203	780	182	771	1551
01:00			7		4			13:00			194		194		
01:15			13		4			13:15			189		174		
01:30			5		7			13:30			189		172		
01:45			9	34	2	17	51	13:45			189	761	180	720	1481
02:00			10		11			14:00			208		167		
02:15			11		6			14:15			221		181		
02:30			8		7			14:30			211		165		
02:45			1	30	6	30	60	14:45			230	870	195	708	1578
03:00			4		4			15:00			221		188		
03:15			3		6			15:15			256		188		
03:30			0		7			15:30			241		237		
03:45			2	9	9	26	35	15:45			356	1074	204	817	1891
04:00			3		9			16:00			337		243		
04:15			4		12			16:15			408		218		
04:30			4		19			16:30			353		273		
04:45			10	21	26	66	87	16:45			383	1481	203	937	2418
05:00			12		22			17:00			398		270		
05:15			17		30			17:15			437		248		
05:30			25		43			17:30			405		247		
05:45			33	87	67	162	249	17:45			445	1685	189	954	2639
06:00			40		82			18:00			428		193		
06:15			58		90			18:15			332		141		
06:30			67		145			18:30			240		134		
06:45			100	265	201	518	783	18:45			212	1212	132	600	1812
07:00			105		218			19:00			182		127		
07:15			120		305			19:15			144		93		
07:30			182		321			19:30			141		93		
07:45			197	604	346	1190	1794	19:45			120	587	71	384	971
08:00			197		335			20:00			116		95		
08:15			171		321			20:15			98		83		
08:30			201		313			20:30			95		83		
08:45			199	768	300	1269	2037	20:45			74	383	60	321	704
09:00			181		231			21:00			113		66		
09:15			163		212			21:15			85		56		
09:30			166		190			21:30			84		42		
09:45			154	664	163	796	1460	21:45			75	357	41	205	562
10:00			145		147			22:00			52		49		
10:15			138		135			22:15			49		27		
10:30			140		171			22:30			39		26		
10:45			150	573	151	604	1177	22:45			29	169	35	137	306
11:00			161		161			23:00			36		24		
11:15			174		154			23:15			25		14		
11:30			182		164			23:30			23		20		
11:45			162	679	195	674	1353	23:45			24	108	13	71	179
Total Vol.			3797		5387		**9184**				9467		6625		**16092**

	Daily Totals				
	NB	SB	EB	WB	**Combined**
			13264	12012	**25276**
	AM			**PM**	
Split %	41.3%	58.7%	**36.3%**	58.8%	41.2%	**63.7%**
Peak Hour	08:00	07:30	**07:45**	17:15	16:30	**17:00**
Volume	768	1323	**2081**	1715	994	**2639**
P.H.F.	0.96	0.96	**0.96**	0.96	0.91	**0.96**

PACIFIC TECHNICAL DATA

TUESDAY- JANUARY 26, 2016 CITY: KEARNEY MESA PROJECT: PTD16-0129-02

AERO DR. - SANDROCK TO RUFFIN

AM Period	NB	SB	EB		WB			PM Period	NB	SB	EB		WB		
00:00			9		15			12:00			167		254		
00:15			12		14			12:15			156		252		
00:30			4		7			12:30			147		268		
00:45			5	30	9	45	75	12:45			167	637	266	1040	1677
01:00			1		1			13:00			159		285		
01:15			4		8			13:15			135		255		
01:30			8		11			13:30			142		232		
01:45			5	18	8	28	46	13:45			149	585	250	1022	1607
02:00			6		9			14:00			130		230		
02:15			3		3			14:15			142		247		
02:30			5		6			14:30			159		250		
02:45			7	21	7	25	46	14:45			151	582	281	1008	1590
03:00			5		6			15:00			157		291		
03:15			8		8			15:15			157		275		
03:30			2		4			15:30			214		323		
03:45			7	22	7	25	47	15:45			182	710	305	1194	1904
04:00			5		7			16:00			218		339		
04:15			11		14			16:15			207		335		
04:30			9		10			16:30			241		343		
04:45			18	43	22	53	96	16:45			208	874	311	1328	2202
05:00			13		17			17:00			244		378		
05:15			27		32			17:15			256		382		
05:30			35		41			17:30			250		361		
05:45			58	133	67	157	290	17:45			189	939	339	1460	2399
06:00			73		89			18:00			166		299		
06:15			66		82			18:15			143		247		
06:30			106		125			18:30			135		200		
06:45			142	387	176	472	859	18:45			111	555	175	921	1476
07:00			163		202			19:00			109		173		
07:15			208		258			19:15			89		134		
07:30			221		276			19:30			84		127		
07:45			282	874	345	1081	1955	19:45			58	340	93	527	867
08:00			259		331			20:00			68		105		
08:15			236		311			20:15			61		91		
08:30			239		300			20:30			60		96		
08:45			241	975	306	1248	2223	20:45			50	239	68	360	599
09:00			180		238			21:00			65		108		
09:15			154		206			21:15			42		79		
09:30			130		188			21:30			39		57		
09:45			108	572	170	802	1374	21:45			37	183	61	305	488
10:00			120		167			22:00			49		64		
10:15			133		198			22:15			19		31		
10:30			131		200			22:30			18		31		
10:45			139	523	197	762	1285	22:45			26	112	41	167	279
11:00			125		187			23:00			20		27		
11:15			147		208			23:15			13		17		
11:30			174		259			23:30			16		20		
11:45			185	631	264	918	1549	23:45			9	58	14	78	136
Total Vol.			4229		5616	**9845**					5814		9410		**15224**

	AM			PM		
Split %	43.0%	57.0%	**39.3%**	38.2%	61.8%	**60.7%**
Peak Hour	07:45	07:45	**07:45**	16:45	17:00	**17:00**
Volume	1016	1287	**2303**	958	1460	**2399**
P.H.F.	0.90	0.93	**0.92**	0.94	0.96	**0.94**

Daily Totals

NB	SB	EB	WB	Combined
		10043	15026	**25069**

TUESDAY- JANUARY 26, 2016 CITY: KEARNEY MESA PROJECT: PTD16-0129-02

AERO DR. - RUFFIN TO CANYON

AM Period	NB	SB	EB		WB			PM Period	NB	SB	EB		WB		
00:00			23		13			12:00			190		192		
00:15			8		11			12:15			201		189		
00:30			10		10			12:30			215		178		
00:45			10	51	6	40	91	12:45			196	802	200	759	1561
01:00			9		7			13:00			217		177		
01:15			10		5			13:15			186		164		
01:30			14		9			13:30			187		185		
01:45			11	44	10	31	75	13:45			170	760	164	690	1450
02:00			7		5			14:00			196		145		
02:15			7		10			14:15			208		175		
02:30			12		3			14:30			201		209		
02:45			3	29	6	24	53	14:45			218	823	188	717	1540
03:00			4		9			15:00			252		209		
03:15			6		7			15:15			188		211		
03:30			9		4			15:30			267		253		
03:45			12	31	8	28	59	15:45			252	959	231	904	1863
04:00			8		4			16:00			264		272		
04:15			15		10			16:15			210		305		
04:30			12		12			16:30			237		320		
04:45			19	54	21	47	101	16:45			206	917	313	1210	2127
05:00			32		17			17:00			236		399		
05:15			41		34			17:15			198		405		
05:30			54		46			17:30			235		322		
05:45			66	193	70	167	360	17:45			236	905	310	1436	2341
06:00			69		64			18:00			200		271		
06:15			103		66			18:15			189		216		
06:30			135		90			18:30			170		196		
06:45			190	497	132	352	849	18:45			143	702	157	840	1542
07:00			246		131			19:00			153		145		
07:15			270		177			19:15			115		115		
07:30			309		186			19:30			104		108		
07:45			351	1176	254	748	1924	19:45			98	470	83	451	921
08:00			355		194			20:00			107		82		
08:15			291		177			20:15			81		93		
08:30			246		164			20:30			85		82		
08:45			196	1088	210	745	1833	20:45			70	343	76	333	676
09:00			208		174			21:00			89		83		
09:15			166		173			21:15			83		64		
09:30			172		133			21:30			71		53		
09:45			141	687	120	600	1287	21:45			78	321	54	254	575
10:00			128		134			22:00			58		62		
10:15			142		138			22:15			45		27		
10:30			166		135			22:30			30		30		
10:45			146	582	165	572	1154	22:45			37	170	36	155	325
11:00			124		141			23:00			32		37		
11:15			170		164			23:15			17		33		
11:30			173		196			23:30			24		20		
11:45			176	643	198	699	1342	23:45			26	99	12	102	201
Total Vol.				5075		4053	**9128**					7271		7851	**15122**

	Daily Totals				
	NB	SB	EB	WB	**Combined**
			12346	11904	**24250**
	AM			**PM**	
Split %	55.6%	44.4%	**37.6%**	48.1%	51.9%	**62.4%**
Peak Hour	07:30	07:15	**07:30**	15:30	16:45	**17:00**
Volume	1306	811	**2117**	993	1439	**2341**
P.H.F.	0.92	0.80	**0.87**	0.93	0.89	**0.92**

TUESDAY- JANUARY 26, 2016 CITY: KEARNEY MESA PROJECT: PTD16-0129-02

AERO PL. - E/O AERO CT.

AM Period	NB	SB	EB		WB			PM Period	NB	SB	EB		WB		
00:00			0		0			12:00			10		26		
00:15			0		0			12:15			21		26		
00:30			1		0			12:30			17		27		
00:45			1	2	1	1	3	12:45			11	59	15	94	153
01:00			0		1			13:00			14		13		
01:15			0		2			13:15			8		14		
01:30			0		0			13:30			13		6		
01:45			0	0	0	3	3	13:45			9	44	16	49	93
02:00			1		0			14:00			7		12		
02:15			0		0			14:15			5		18		
02:30			2		0			14:30			10		11		
02:45			0	3	0	0	3	14:45			5	27	16	57	84
03:00			0		0			15:00			4		9		
03:15			0		0			15:15			9		12		
03:30			0		0			15:30			3		25		
03:45			0	0	0	0		15:45			5	21	8	54	75
04:00			0		0			16:00			7		18		
04:15			0		1			16:15			4		13		
04:30			1		0			16:30			4		26		
04:45			0	1	0	1	2	16:45			13	28	20	77	105
05:00			0		0			17:00			9		21		
05:15			2		1			17:15			21		24		
05:30			3		0			17:30			17		20		
05:45			2	7	0	1	8	17:45			9	56	11	76	132
06:00			4		0			18:00			6		7		
06:15			5		1			18:15			2		6		
06:30			10		13			18:30			0		3		
06:45			9	28	1	15	43	18:45			0	8	3	19	27
07:00			10		3			19:00			0		6		
07:15			19		3			19:15			0		0		
07:30			11		1			19:30			0		6		
07:45			20	60	7	14	74	19:45			1	1	2	14	15
08:00			21		4			20:00			4		5		
08:15			25		4			20:15			0		3		
08:30			14		6			20:30			1		5		
08:45			12	72	8	22	94	20:45			0	5	7	20	25
09:00			10		9			21:00			1		5		
09:15			8		10			21:15			0		8		
09:30			9		8			21:30			0		3		
09:45			8	35	9	36	71	21:45			0	1	2	18	19
10:00			7		11			22:00			0		1		
10:15			5		16			22:15			1		2		
10:30			6		8			22:30			1		2		
10:45			5	23	10	45	68	22:45			0	2	2	7	9
11:00			4		11			23:00			0		1		
11:15			9		17			23:15			0		0		
11:30			7		21			23:30			1		0		
11:45			15	35	15	64	99	23:45			0	1	1	2	3
Total Vol.				266		202	**468**					253		487	**740**

	Daily Totals				
	NB	SB	EB	WB	**Combined**
			519	689	**1208**

	AM			**PM**		
Split %	56.8%	43.2%	**38.7%**	34.2%	65.8%	**61.3%**
Peak Hour	07:45	11:45	**11:45**	12:15	12:00	**12:00**
Volume	80	94	**157**	63	94	**153**
P.H.F.	0.80	0.87	**0.84**	0.75	0.87	**0.81**

TUESDAY- FEBUARY 2ND, 2016 CITY: KEARNEY MESA PROJECT: PTD16-0129-02

CONVOY - KEARNEY MESA TO AERO DR.

AM Period	NB		SB		EB	WB		PM Period	NB		SB		EB	WB	
00:00	16		34					12:00	261		228				
00:15	15		31					12:15	259		285				
00:30	12		16					12:30	264		241				
00:45	3	46	33	114			160	12:45	258	1042	267	1021			2063
01:00	3		11					13:00	267		212				
01:15	10		9					13:15	238		257				
01:30	12		11					13:30	224		258				
01:45	13	38	13	44			82	13:45	265	994	266	993			1987
02:00	6		11					14:00	276		272				
02:15	7		10					14:15	268		261				
02:30	10		9					14:30	256		265				
02:45	7	30	9	39			69	14:45	264	1064	262	1060			2124
03:00	14		5					15:00	245		249				
03:15	4		12					15:15	234		262				
03:30	11		5					15:30	245		313				
03:45	21	50	7	29			79	15:45	301	1025	290	1114			2139
04:00	15		2					16:00	298		352				
04:15	25		5					16:15	241		358				
04:30	29		11					16:30	262		408				
04:45	37	106	12	30			136	16:45	280	1081	482	1600			2681
05:00	34		11					17:00	267		471				
05:15	47		15					17:15	271		491				
05:30	68		50					17:30	247		481				
05:45	84	233	35	111			344	17:45	250	1035	465	1908			2943
06:00	82		41					18:00	205		402				
06:15	130		69					18:15	208		365				
06:30	148		77					18:30	176		316				
06:45	189	549	105	292			841	18:45	180	769	272	1355			2124
07:00	171		131					19:00	168		228				
07:15	211		148					19:15	151		200				
07:30	248		182					19:30	129		178				
07:45	283	913	258	719			1632	19:45	126	574	160	766			1340
08:00	302		178					20:00	135		172				
08:15	258		186					20:15	93		142				
08:30	294		204					20:30	89		144				
08:45	299	1153	185	753			1906	20:45	102	419	122	580			999
09:00	247		202					21:00	109		110				
09:15	215		194					21:15	76		129				
09:30	267		167					21:30	93		108				
09:45	254	983	186	749			1732	21:45	67	345	101	448			793
10:00	206		183					22:00	62		100				
10:15	229		169					22:15	53		76				
10:30	228		204					22:30	44		77				
10:45	232	895	198	754			1649	22:45	42	201	62	315			516
11:00	247		197					23:00	26		49				
11:15	271		218					23:15	24		59				
11:30	279		204					23:30	23		39				
11:45	270	1067	228	847			1914	23:45	22	95	44	191			286
Total Vol.		6063		4481			**10544**			8644		11351			**19995**

Daily Totals

NB	SB	EB	WB	Combined
14707	15832			**30539**

	AM			PM		
Split %	57.5%	42.5%	**34.5%**	43.2%	56.8%	**65.5%**
Peak Hour	08:00	11:45	**11:45**	15:45	16:45	**16:45**
Volume	1153	982	**2036**	1102	1925	**2990**
P.H.F.	0.95	0.86	**0.94**	0.90	0.98	**0.98**

TUESDAY- FEBUARY 2ND, 2016 CITY: KEARNEY MESA PROJECT: PTD16-0129-02

KEARNEY MESA - ARMOUR TO CONVOY

AM Period	NB		SB		EB	WB		PM Period	NB		SB		EB	WB	
00:00	9		4					12:00	73		134				
00:15	0		9					12:15	95		127				
00:30	3		3					12:30	83		105				
00:45	0	12	11	27			39	12:45	71	322	112	478			800
01:00	2		3					13:00	62		104				
01:15	8		5					13:15	82		106				
01:30	4		4					13:30	74		89				
01:45	1	15	2	14			29	13:45	96	314	112	411			725
02:00	1		4					14:00	104		113				
02:15	4		1					14:15	94		98				
02:30	0		3					14:30	97		107				
02:45	1	6	3	11			17	14:45	97	392	107	425			817
03:00	1		0					15:00	95		99				
03:15	2		3					15:15	67		103				
03:30	3		3					15:30	75		142				
03:45	3	9	4	10			19	15:45	83	320	123	467			787
04:00	1		1					16:00	93		125				
04:15	3		1					16:15	64		158				
04:30	7		6					16:30	78		210				
04:45	9	20	6	14			34	16:45	58	293	235	728			1021
05:00	7		7					17:00	78		231				
05:15	9		8					17:15	77		244				
05:30	11		17					17:30	58		253				
05:45	22	49	21	53			102	17:45	69	282	185	913			1195
06:00	16		26					18:00	64		155				
06:15	24		22					18:15	61		150				
06:30	20		50					18:30	50		125				
06:45	30	90	60	158			248	18:45	66	241	118	548			789
07:00	30		67					19:00	55		90				
07:15	37		73					19:15	47		72				
07:30	39		105					19:30	50		50				
07:45	32	138	113	358			496	19:45	55	207	62	274			481
08:00	41		105					20:00	40		61				
08:15	49		94					20:15	40		56				
08:30	52		108					20:30	35		44				
08:45	32	174	92	399			573	20:45	42	157	38	199			356
09:00	48		117					21:00	36		35				
09:15	45		71					21:15	30		36				
09:30	60		65					21:30	23		34				
09:45	70	223	95	348			571	21:45	30	119	34	139			258
10:00	48		82					22:00	22		20				
10:15	46		75					22:15	14		20				
10:30	59		85					22:30	14		16				
10:45	71	224	106	348			572	22:45	14	64	10	66			130
11:00	68		97					23:00	15		9				
11:15	80		96					23:15	2		11				
11:30	79		93					23:30	10		9				
11:45	60	287	111	397			684	23:45	4	31	2	31			62
Total Vol.		1247		2137			**3384**			2742		4679			**7421**

Daily Totals

NB	SB	EB	WB	**Combined**
3989	6816			**10805**

	AM			PM		
Split %	36.8%	63.2%	**31.3%**	36.9%	63.1%	**68.7%**
Peak Hour	11:45	11:45	**11:45**	14:00	16:45	**16:45**
Volume	311	477	**788**	392	963	**1234**
P.H.F.	0.82	0.89	**0.89**	0.94	0.95	**0.96**

TUESDAY- JANUARY 26, 2016 CITY: KEARNEY MESA PROJECT: PTD16-0129-02

KEARNEY VILLA - BALBOA TO AERO

AM Period	NB		SB		EB	WB		PM Period	NB		SB		EB	WB	
00:00	4		3					12:00	171		102				
00:15	8		7					12:15	157		84				
00:30	6		5					12:30	126		89				
00:45	7	25	6	21			46	12:45	152	606	84	359			965
01:00	3		7					13:00	129		86				
01:15	5		6					13:15	133		101				
01:30	5		3					13:30	137		91				
01:45	5	18	1	17			35	13:45	143	542	87	365			907
02:00	6		2					14:00	129		99				
02:15	4		11					14:15	144		99				
02:30	4		3					14:30	165		100				
02:45	6	20	2	18			38	14:45	137	575	104	402			977
03:00	0		0					15:00	155		118				
03:15	2		2					15:15	129		127				
03:30	6		5					15:30	151		148				
03:45	4	12	5	12			24	15:45	200	635	129	522			1157
04:00	5		1					16:00	199		164				
04:15	7		6					16:15	175		192				
04:30	9		2					16:30	230		236				
04:45	21	42	14	23			65	16:45	159	763	259	851			1614
05:00	29		8					17:00	180		316				
05:15	39		11					17:15	190		327				
05:30	42		11					17:30	149		306				
05:45	58	168	34	64			232	17:45	129	648	224	1173			1821
06:00	83		19					18:00	146		237				
06:15	79		38					18:15	129		148				
06:30	135		43					18:30	113		114				
06:45	161	458	54	154			612	18:45	99	487	87	586			1073
07:00	210		51					19:00	112		67				
07:15	206		82					19:15	77		48				
07:30	218		105					19:30	72		42				
07:45	225	859	130	368			1227	19:45	56	317	38	195			512
08:00	218		110					20:00	83		32				
08:15	235		97					20:15	71		37				
08:30	186		86					20:30	63		33				
08:45	199	838	102	395			1233	20:45	52	269	33	135			404
09:00	133		116					21:00	49		35				
09:15	154		74					21:15	40		28				
09:30	158		89					21:30	46		25				
09:45	119	564	88	367			931	21:45	53	188	23	111			299
10:00	122		78					22:00	44		20				
10:15	100		80					22:15	25		18				
10:30	122		59					22:30	27		19				
10:45	121	465	92	309			774	22:45	11	107	17	74			181
11:00	145		89					23:00	12		11				
11:15	140		88					23:15	13		9				
11:30	132		93					23:30	12		10				
11:45	162	579	89	359			938	23:45	8	45	8	38			83
Total Vol.		4048		2107			**6155**			5182		4811			**9993**

Daily Totals

NB	SB	EB	WB	**Combined**
9230	6918			**16148**

	AM			PM		
Split %	65.8%	34.2%	**38.1%**	51.9%	48.1%	**61.9%**
Peak Hour	07:30	07:30	**07:30**	15:45	16:45	**16:30**
Volume	896	442	**1338**	804	1208	**1897**
P.H.F.	0.95	0.85	**0.94**	0.94	0.92	**0.92**

TUESDAY- JANUARY 26, 2016 CITY: KEARNEY MESA PROJECT: PTD16-0129-02

KEARNY VILLA - AERO TO I-805

AM Period	NB		SB		EB	WB		PM Period	NB		SB		EB	WB	
00:00	14		11					12:00	195		111				
00:15	6		8					12:15	237		113				
00:30	10		3					12:30	190		130				
00:45	9	39	9	31			70	12:45	217	839	110	464			1303
01:00	4		7					13:00	215		119				
01:15	14		6					13:15	166		141				
01:30	12		7					13:30	206		117				
01:45	13	43	3	23			66	13:45	206	793	113	490			1283
02:00	8		6					14:00	216		119				
02:15	7		4					14:15	200		149				
02:30	7		9					14:30	195		157				
02:45	12	34	4	23			57	14:45	209	820	157	582			1402
03:00	4		1					15:00	180		168				
03:15	3		3					15:15	188		151				
03:30	8		6					15:30	204		181				
03:45	16	31	5	15			46	15:45	216	788	150	650			1438
04:00	10		9					16:00	186		232				
04:15	13		8					16:15	216		183				
04:30	11		17					16:30	200		224				
04:45	28	62	14	48			110	16:45	222	824	191	830			1654
05:00	36		15					17:00	239		245				
05:15	44		21					17:15	204		218				
05:30	61		18					17:30	192		199				
05:45	101	242	42	96			338	17:45	181	816	175	837			1653
06:00	70		45					18:00	178		152				
06:15	109		39					18:15	182		174				
06:30	133		77					18:30	138		104				
06:45	183	495	75	236			731	18:45	137	635	108	538			1173
07:00	165		94					19:00	107		97				
07:15	215		100					19:15	95		52				
07:30	222		108					19:30	94		60				
07:45	312	914	149	451			1365	19:45	72	368	56	265			633
08:00	308		154					20:00	91		64				
08:15	228		126					20:15	87		65				
08:30	264		127					20:30	64		59				
08:45	248	1048	113	520			1568	20:45	60	302	63	251			553
09:00	242		116					21:00	71		70				
09:15	242		128					21:15	55		65				
09:30	255		121					21:30	48		57				
09:45	237	976	102	467			1443	21:45	59	233	84	276			509
10:00	190		103					22:00	45		53				
10:15	173		90					22:15	40		32				
10:30	184		93					22:30	36		39				
10:45	214	761	96	382			1143	22:45	25	146	30	154			300
11:00	205		86					23:00	18		21				
11:15	204		96					23:15	27		12				
11:30	221		108					23:30	23		15				
11:45	218	848	100	390			1238	23:45	18	86	16	64			150
Total Vol.		5493		2682			**8175**			6650		5401			**12051**

Daily Totals

NB	SB	EB	WB	**Combined**
12143	8083			**20226**

	AM			PM		
Split %	67.2%	32.8%	**40.4%**	55.2%	44.8%	**59.6%**
Peak Hour	07:45	07:45	**07:45**	16:15	16:30	**16:30**
Volume	1112	556	**1668**	877	878	**1743**
P.H.F.	0.89	0.90	**0.90**	0.97	0.90	**0.90**

TUESDAY- JANUARY 26, 2016 CITY: KEARNEY MESA PROJECT: PTD16-0129-02

MESA COLLEGE - SR-163 TO I-805

AM Period	NB	SB	EB		WB			PM Period	NB	SB	EB		WB		
00:00			11		33			12:00			147		285		
00:15			7		20			12:15			185		338		
00:30			10		9			12:30			140		302		
00:45			10	38	23	85	123	12:45			158	630	243	1168	1798
01:00			3		12			13:00			162		290		
01:15			15		14			13:15			106		316		
01:30			7		8			13:30			142		313		
01:45			9	34	8	42	76	13:45			188	598	355	1274	1872
02:00			9		18			14:00			163		322		
02:15			4		13			14:15			175		359		
02:30			5		17			14:30			140		347		
02:45			9	27	6	54	81	14:45			150	628	309	1337	1965
03:00			1		11			15:00			124		321		
03:15			5		11			15:15			151		307		
03:30			6		14			15:30			149		331		
03:45			5	17	18	54	71	15:45			197	621	342	1301	1922
04:00			5		16			16:00			158		332		
04:15			2		32			16:15			198		360		
04:30			8		50			16:30			156		384		
04:45			7	22	59	157	179	16:45			177	689	383	1459	2148
05:00			14		85			17:00			154		351		
05:15			19		112			17:15			146		416		
05:30			16		139			17:30			151		368		
05:45			25	74	199	535	609	17:45			175	626	340	1475	2101
06:00			26		185			18:00			172		287		
06:15			56		222			18:15			142		325		
06:30			60		325			18:30			120		267		
06:45			71	213	335	1067	1280	18:45			112	546	244	1123	1669
07:00			77		369			19:00			82		186		
07:15			90		390			19:15			88		123		
07:30			140		331			19:30			86		144		
07:45			171	478	374	1464	1942	19:45			71	327	132	585	912
08:00			142		411			20:00			76		117		
08:15			138		386			20:15			74		116		
08:30			161		413			20:30			67		101		
08:45			155	596	365	1575	2171	20:45			46	263	117	451	714
09:00			168		419			21:00			61		108		
09:15			148		442			21:15			47		117		
09:30			147		378			21:30			48		93		
09:45			158	621	312	1551	2172	21:45			56	212	119	437	649
10:00			132		277			22:00			43		82		
10:15			114		290			22:15			32		85		
10:30			143		368			22:30			33		70		
10:45			143	532	338	1273	1805	22:45			19	127	71	308	435
11:00			165		283			23:00			20		42		
11:15			149		270			23:15			19		34		
11:30			155		265			23:30			19		22		
11:45			187	656	256	1074	1730	23:45			14	72	28	126	198
Total Vol.				3308		8931	**12239**					5339		11044	**16383**

Daily Totals

NB	SB	EB	WB	Combined
		8647	19975	**28622**

	AM			PM		
Split %	27.0%	73.0%	**42.8%**	32.6%	67.4%	**57.2%**
Peak Hour	11:30	08:30	**08:30**	15:45	16:30	**16:30**
Volume	674	1639	**2271**	709	1534	**2167**
P.H.F.	0.90	0.93	**0.96**	0.90	0.92	**0.96**

INTERSECTION: CONVOY ST & AERO DR

223 Program

Group Assignment:
Field Master Assignment:
N/S Street Name: LINDA VISTA RD
E/W Street Name: AERO DR
Last Database Change:
System Ref. Number:

N

LINDA VISTA RD | CONVOY ST | AERO DR

Phase Timing - Bank 1
F + Phase + Row

Row	Column # ----> / Phase # ---->	1	2	3	4	5	6	7	8
		↳	↑				↓	→	←
0	Ped Walk		7				7	7	
1	Ped FDW		(1) 23				5	21	(2)
2	Min Green	4	14 ~~10~~				10	4	8 ~~4~~
3	Type 3 Limit								
4	Add/Veh		1.6				1.6		
5	Veh Extn	2.0	4.6				5.3	2.0	2.0
6	Max Gap	2.0	4.6				5.3	2.0	2.0
7	Min Gap	2.0	2.0				2.0	2.0	2.0
8	Max Limit	40	40				40	30	40
9	Max Limit 2								
A	Bus Adv								
B	Call to Phs								
C	Reduce By		0.1				0.1		
D	Every		1.1				0.9		
E	Yellow	3.4	4.2				3.9	3.9	3.9
F	Red Clear	1.0	1.0				1.0	1.0	1.0
	Grade								

<F Page>

Preempt Timing
F + E + Row

Row	E
RR-1 Delay	
RR-1 Clear	
EV-A Delay	
EV-A Clear	
EV-B Delay	
EV-B Clear	
EV-C Delay	
EV-C Clear	
EV-D Delay	0
EV-D Clear	0
RR-2 Delay	
RR-2 Clear	
View EV Delay	---
View EV Clear	---
View RR Delay	---
View RR Clear	---

Phase Functions <F Page>
F + F + Row

Row	F	Row
Permit	12___678	0
Red Lock		1
Yellow Lock		2
Min Recall	_2___6__	3
Ped Recall		4
Peds (View)	_2___67_	5
Rest In Walk		6
Red Rest		7
Dbl Entry		8
Max Recall		9
Soft Recall		A
Max 2		B
Cond Serv		C
Ped Lock	12345678	D
Yellow Start	_2___6__	E
1st Phases	_____8	F

Max Initial	20	F + 0 + E
Red Revert	5.0	F + 0 + F
All Red Start	0.0	F + C + O

Start / Revert Times

Drop Number	10	C + 0 + 0
Zone Number	10	C + 0 + 1
Area Number	5	C + 0 + 2
Area Address	35	C + 0 + 3
QuicNet Channel	DIGI34	(QuicNet)

Communication Addresses

C + F + O	F	Row
Free Lag	_2___6_8	0

<C Page>

Overlap Timing

	Row	9 Green Clear	C Yellow Change	D Red Clear	0 Load-Switch #
Overlap A	A				
Overlap B	B				
Overlap C	C				
Overlap D	D				

<F Page>
F + COLOR +

<D Page>
D + 0 + OVERLAP

Manual Plan	0	C + A + 1
Manual Offset	0	C + B + 1

Manual Selection

Manual Plan
0 = Automatic
1-9 = Plan 1-9
14 = Free
15 = Flash

Manual Offset
0 = Automatic
1 = Offset A
2 = Offset B
3 = Offset C

Downtime Flash	255	(minutes)

Downtime Before Auto Manual Flash
F + 0 +8

Disable Ports	_234___

Disable Communication Ports
D + D + 9

Timing Sheet By: MC1
Approved By: EFF
Drawing Number:
Timing Implemented On: 11/27/2012

(1) DAMAGED LOOPS 4/30/09

(2) DAMAGED LOOPS 6/15/09

INTERSECTION: CONVOY ST & AERO DR

Row	Time	Function	Day of Week	Column F Phases/Bits
0				
1	08 : 00	3	_23456__	1_____
2	18 : 00	3	_23456__	_2___6__
3				
4				
5				
6				
7				
8				
9				
A				
B				
C				
D				
E				
F				

TOD Function

7 + ROW

<D Page>

D + F + ROW

T.O.D. Functions
0 = Permitted Phases
1 = Red Lock
2 = Yellow Lock
3 = Veh Min Recall
4 = Ped Recall
5 =
6 = Rest In Walk
7 = Red Rest
8 = Double Entry
9 = Veh Max Recall
A = Veh Soft Recall
B = Maximum 2
C = Conditional Service
D = Free Lag Phases
E = Bit 1 - Local Override
Bit 2 - Phase Bank 2
Bit 3 - Phase Bank 3
Bit 4 - Disable Detector OFF Monitor
Bit 7 - Detector Count Monitor
Bit 8 - Real Time Split Monitor
F = Output Bits 1 thru 4

Row		F
0		
1	RR Overlap A - Phases	
2	RR Overlap B - Phases	
3	RR Overlap C - Phases	
4	RR Overlap D - Phases	
5	Ped 2P	_2_____
6	Ped 6P	____6__
7	Ped 4P	
8	Ped 8P	_____7_
9	Yellow Flash Phases	
A	Overlap A - Phases	
B	Overlap B - Phases	
C	Overlap C - Phases	
D	Overlap D - Phases	
E	Restricted Phases	
F	Assign 5 Outputs	

Configuration <E Page>

E + F + ROW

Row		E
0	Exclusive Phases	
1	RR-1 Clear Phases	
2	RR-2 Clear Phases	
3	RR-2 Limited Service	
4	Prot / Perm Phases	
5	Overlap A - Green Omit	
6	Overlap B - Green Omit	
7	Overlap C - Green Omit	
8	Overlap D - Green Omit	
9	Overlap Yellow Flash	
A	EV-A Phases	
B	EV-B Phases	
C	EV-C Phases	
D	EV-D Phases	_____8
E	Extra 1 Config. Bits	1__345___
F	IC Select (Interconnect)	_2_____

Configuration

For access, set F + 9 + E = 1

E + E + ROW

Extra 1 Flags
1 = TBC Type 1
2 = NEMA Ext. Coord
3 = Auto Daylight Savings
4 = EV Advance
5 = Remote Download
6 = Special Event
7 = Pretimed Operation
8 = Split Ring Operation

IC Select Flags
1 =
2 = Modem
3 = 7-Wire Slave
4 = Flash / Free
5 =
6 = Simplex Master
7 = 7-Wire Master
8 = Offset Interrupter

Day of Week

1 = Sunday
2 = Monday
3 = Tuesday
4 = Wednesday
5 = Thursday
6 = Friday
7 = Saturday

Assign 5 Outputs
1 = Right Turn Overlap
2 = TOD Outputs
3 = EV Beacon - Steady
4 = EV Beacon - Flashing
5 = Special Event Outputs
6 = Phase 3 & 7 Ped
7 = Advanced Warning Sign
8 =

Time and Date

8-0 Hour, Minute, Day-of-Week
8-1 Day-of-Month, Year, Month
8-F Seconds

Disable Parity	0	D+B+0

Dial-Up Telephone Communications
(If set to a non-zero value, parity will be disabled)

Program Information

C + C + 0 = program
C + C + F = version

Remote Download

C + 0 + 4 = 1 -255
w/ E + E + E bit 5 on

Row	1 Delay	3 Carry-over
0		
1		
2		
3		
4		
5		
6		
7		
8		
9		
A		
B		
C		
D		
E	---	---
F	---	---

Detector Name	332 Input File	Detector Number
	1I1	14
	2I2U	1
	2I2L	5
	2I3U	21
	2I3L	25
	2I4	9
	3I5	16
	4I6U	3
	4I6L	7
	4I7U	23
	4I7L	27
	4I8	11
	1I9U	18
	3I9L	20
---	---	---
---	---	---

Row	2 Delay	4 Carry-over
0		
1		
2		
3		
4		
5		
6		
7	10.0	
8		1.8
9		
A		
B		
C		
D		
E	---	---
F	---	---

Detector Name	332 Input File	Detector Number
	5J1	13
	6J2U	2
	6J2L	6
	6J3U	22
	6J3L	26
	6J4	10
	7J5	15
	8J6U	4
	8J6L	8
	8J7U	24
	8J7L	28
	8J8	12
	5J9U	17
	7J9L	19
---	---	---
---	---	---

Detector Delay & Carryover <D Page>

D + X (across) + ROW

Row	Detector Numbers	E
A	1 2 3 4 5 6 7 8	12345678
B	9 10 11 12 -- -- -- --	1234
C	13 14 15 16 17 18 19 20	12345678
D	-- -- -- -- 21 22 23 24	5678
E	-- -- -- -- -- -- -- --	1234
F	-- 25 26 27 28 -- -- --	2345

Active Detectors <D Page>

Row		0 Detector #
0		
1	System Det. # 1	0
2	System Det. # 2	0
3	System Det. # 3	0
4	System Det. # 4	0
5	System Det. # 5	0
6	System Det. # 6	0
7	System Det. # 7	0
8	System Det. # 8	0

System Detectors <D Page>

Max ON (min)	5	D+A+E
Max OFF (min)	60	D+A+F

Detector Failure Monitor

Phase Number	0	F+C+1
Time Before Yellow	0.0	F+C+3

Advance Warning Beacon - Sign 1

Phase Number	0	F+D+1
Time Before Yellow	0.0	F+D+3

Advance Warning Beacon - Sign 2

Long Failure	0.5	F+0+6
Short Failure	0.5	F+0+7

Power Cycle Correction (Default = 0.5)

INTERSECTION: CONVOY ST & AERO DR

223 Program

Coordination Timing By: MC1
Implemented On: 1/27/2012

Row	Plan Name ---->	Plan 1	2	3	4	5 (3PM)	6	7	8	9
0	Cycle Length		100		110	120				
1	Phase 1 - ForceOff		36		24	36				
2	Phase 2 - ForceOff		0		0	0				
3	Phase 3 - ForceOff									
4	Phase 4 - ForceOff									
5	Phase 5 - ForceOff		0							
6	Phase 6 - ForceOff		36		24	36				
7	Phase 7 - ForceOff		51		40	52				
8	Phase 8 - ForceOff		82		75	85				
9	Ring Offset									
A	Offset A		1		72	56				
B	Offset B		1							
C	Offset C									
D	Permissive		10		11	12				
E	Hold Release		255		255	255				
F	Ped Shift		10		0	10				

Coordination <C Page>
C + Plan + ROW

FOR OBSERVATION ONLY

Master Plan	C + A + 2
Current Plan	C + A + 3
Next Plan	C + A + 4
T.O.D. Plan	C + A + 5
Master Cycle	C + A + 0
Ring A Cycle	C + B + 0
Ring B Cycle	C + D + 0
Min Cycle	C + A + E
Max Cycle	C + B + E

Row	Time	Plan	Offset	Day of Week
0	08 : 00	4	A	_23456_
1	11 : 30	2	B	_23456_
2	15 : 00	5	A	_23456_
3	18 : 00	E	A	1234567
4				
5				
6				
7				
8				
9				
A				
B				
C				
D				
E				
F				

TOD Coordination
<9 Key with C+0+9=1>

Plan Select
1 thru 9 = Coordination Plan 1 thru 9
14 or E = Free
15 or F = Flash

	E
Plan 1	
Plan 2	_2__6__
Plan 3	
Plan 4	_2__6__
Plan 5	_2__6__
Plan 6	
Plan 7	
Plan 8	
Plan 9	
Coord Ped*	
NEMA Hold	

Sync Phases
C + E + FUNCTION #

Row		F
0	Free Lag	_2__6_8
1	Plan 1 - Lag	
2	Plan 2 - Lag	1__6_8
3	Plan 3 - Lag	
4	Plan 4 - Lag	1__6_8
5	Plan 5 - Lag	1__6_8
6	Plan 6 - Lag	
7	Plan 7 - Lag	
8	Plan 8 - Lag	
9	Plan 9 - Lag	
A	Coord Max *	
B	Coord Lag *	
C		
D		
E		
F		

Lag Phases <C Page>
C + F + FUNCTION #

Transition Type	0

TBC Transition
C + D + D

Transition Type
0 = Shortway
Non-zero = Lengthen

INTERSECTION: AERO & KEARNY VILLA

Program:

Group Assignment: 4019
Field Master Assignment: NONE

Street Name: KEARNY VILLA
CW Street Name: AERO

Last Database Change: 0 .01 15:35
Timing Sheet By: MMH
Approved By: MM
System Ref. Number: 112
Drawing Number: 27602-5-D
Timing Implemented On: 11/5/01

Row	Column # --->	AERO DR.		KEARNY VILLA RD.		AERO DR.		KEARNY VILLA RD.	
	Phase # --->	1	2	3	4	5	6	7	8
		OPLA1+8							
0	Ped Walk		7		7		7		7
1	Ped FDW		26		22		24		33
2	Min Green	4	7	4	7	4	7	4	7
3	Type 3 Limit								
4	Add/Veh								
5	Veh Extn	2.0	2.3	2.0	2.6	2.0	5.0	2.0	3.1
6	Max Gap	2.0	2.3	2.0	2.6	2.0	5.0	2.0	3.1
7	Min Gap	2.0	0.2	2.0	0.2	2.0	0.2	2.0	0.2
8	Max Limit	30	40	30	40	30	40	30	40
9	Max Limit 2								
A	Bus Adv								
B	Call to Phs								
C	Reduce By		0.1		0.1		0.1		0.1
D	Every		1.4		1.2		0.6		1.0
E	Yellow	3.0	4.3	3.0	5.0	3.0	4.3	3.0	4.7
F	Red Clear	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0

Phase Timing - Bank 1
F + Phase + Row
<F Page>

	E	Row
RR-1 Delay		
RR-1 Clear		
EV-A Delay	0	
EV-A Clear	0	
EV-B Delay	0	
EV-B Clear	0	
EV-C Delay	0	
EV-C Clear	0	
EV-D Delay	0	
EV-D Clear	0	
RR-2 Delay		
RR-2 Clear		
View EV Delay	---	
View EV Clear	---	
View RR Delay	---	
View RR Clear	---	

Preempt Timing
F + E + Row

	F	Row
Permit	12345678	0
Red Lock		1
Yellow Lock		2
Min Recall		3
Ped Recall		4
Peds (View)	_2_4_6_8	5
Rest In Walk		6
Red Rest		7
Dbl Entry		8
Max Recall		9
Soft Recall	_2___6__	A
Max 2		B
Cond Serv		C
Ped Lock	12345678	D
Yellow Start	_2___6__	E
1st Phases	__3___7_	F

Phase Functions <F Page>
F + F + Row

Max Initial	0 F + 0 + E
Red Revert	5.0 F + 0 + F
All Red Start	0.0 F + C + O

Start / Revert Times

Drop Number	11	C + 0 + 0
Zone Number	11	C + 0 + 1
Area Number	5	C + 0 + 2
Area Address	33	C + 0 + 3
QuicNet Channel	DIGI34:	(QuicNet)

Communication Addresses

C + F + O	F	Row
Free Lag	_2_4_6_8	0

Lag Phases <C Page>

Overlap Timing

	Row	9 Green Clear	C Yellow Change	D Red Clear	0 Load-Switch #
Overlap A	A				
Overlap B	B				
Overlap C	C				
Overlap D	D				

<F Page> F + COLOR +
<D Page> D + 0 + OVERLAP

RUNS FREE

Manual Plan	14	C + A + 1
Manual Offset	0	C + B + 1

Manual Selection

Manual Plan	Manual Offset
0 = Automatic	0 = Automatic
1-9 = Plan 1-9	1 = Offset A
14 = Free	2 = Offset B
15 = Flash	3 = Offset C

Downtime Flash	255	(minutes)

Downtime Before Auto Manual Flash
F + 0 +8

Disable Ports	_234___

Disable Communication Ports
D + D + 9

INTERSECTION: AERO & KEARNY VILLA

Row	Time	Function	Day of Week	Column F Phases/Bits
0	:			
1	:			
2	:			
3	:			
4	:			
5	:			
6	:			
7	:			
8	:			
9	:			
A	:			
B	:			
C	:			
D	:			
E	:			
F	:			

TOD Function

7 + ROW

T.O.D. Functions
0 = Permitted Phases
1 = Red Lock
2 = Yellow Lock
3 = Veh Min Recall
4 = Ped Recall
5 =
6 = Rest In Walk
7 = Red Rest
8 = Double Entry
9 = Veh Max Recall
A = Veh Soft Recall
B = Maximum 2
C = Conditional Service
D = Free Lag Phases
E = Bit 1 - Local Override
Bit 2 - Phase Bank 2
Bit 3 - Phase Bank 3
Bit 4 - Disable Detector OFF Monitor
Bit 7 - Detector Count Monitor
Bit 8 - Real Time Split Monitor
F = Output Bits 1 thru 4

Row		F
0		
1	RR Overlap A - Phases	
2	RR Overlap B - Phases	
3	RR Overlap C - Phases	
4	RR Overlap D - Phases	
5	Ped 2P	2
6	Ped 6P	6
7	Ped 4P	4
8	Ped 8P	8
9	Yellow Flash Phases	
A	Overlap A - Phases	1 8
B	Overlap B - Phases	
C	Overlap C - Phases	
D	Overlap D - Phases	
E	Restricted Phases	
F	Assign 5 Outputs	1

<D Page>

D + F + ROW

Configuration

E + F + ROW

<E Page>

Row		E
0	Exclusive Phases	
1	RR-1 Clear Phases	
2	RR-2 Clear Phases	
3	RR-2 Limited Service	
4	Prot / Perm Phases	
5	Overlap A - Green Omit	8
6	Overlap B - Green Omit	
7	Overlap C - Green Omit	
8	Overlap D - Green Omit	
9	Overlap Yellow Flash	
A	EV-A Phases	2 5
B	EV-B Phases	4 7
C	EV-C Phases	1 6
D	EV-D Phases	3 8
E	Extra 1 Config. Bits	1 345
F	IC Select (Interconnect)	2

Configuration

For access, set F + 9 + E = 1

E + E + ROW

Extra 1 Flags
1 = TBC Type 1
2 = NEMA Ext. Coord
3 = Auto Daylight Savings
4 = EV Advance
5 = Remote Download
6 = Special Event
7 = Pretimed Operation
8 = Split Ring Operation

IC Select Flags
1 =
2 = Modem
3 = 7-Wire Slave
4 = Flash / Free
5 =
6 = Simplex Master
7 = 7-Wire Master
8 = Offset Interrupter

Day of Week

1 = Sunday
2 = Monday
3 = Tuesday
4 = Wednesday
5 = Thursday
6 = Friday
7 = Saturday

Assign 5 Outputs
1 = Right Turn Overlap
2 = TOD Outputs
3 = EV Beacon - Steady
4 = EV Beacon - Flashing
5 = Special Event Outputs
6 = Phase 3 & 7 Ped
7 = Advanced Warning Sign
8 =

Time and Date

8-0 Hour, Minute, Day-of-Week

8-1 Day-of-Month, Year, Month

8-F Seconds

Disable Parity	0	D+B+0

Dial-Up Telephone Communications

(If set to a non-zero value, parity will be disabled)

Program Information

C + C + 0 = program

C + C + F = version

Remote Download

C + 0 + 4 = 1 -255

w/ E + E + E bit 5 on

INTERSECTION: AERO & AERO CT

2 Program

Group Assignment: 4019
Field Master Assignment: NONE

Street Name: AERO CT
E/W Street Name: AERO

Last Database Change: 07/ 11:48
Timing Sheet By: MMH
System Ref. Number: 111
Approved By: mm
Drawing Number: 27300-8
Timing Implemented On: 11/5/01

Row	Column # ---->	1	2	3	4	5	6	7	8
	Phase # ---->		AERO DR.		AERO CT.		AERO DR.		
		↓	→		↓↑	←	←		
0	Ped Walk		7		7		7		
1	Ped FDW		13		23		21		
2	Min Green	4	10		4	4	10		
3	Type 3 Limit								
4	Add/Veh								
5	Veh Extn	2.0	4.0		2.0	2.0	3.8		
6	Max Gap	2.0	4.0		2.0	2.0	3.8		
7	Min Gap	2.0	0.2		2.0	2.0	0.2		
8	Max Limit	30	60		40	30	60		
9	Max Limit 2								
A	Bus Adv								
B	Call to Phs								
C	Reduce By		0.1				0.1		
D	Every		0.8				0.8		
E	Yellow	3.4 ~~3.0~~	4.3		3.9 ~~3.0~~	3.4 ~~3.0~~	4.3		
F	Red Clear	1.0	1.0		1.0	1.0	1.0		

BL 11/21/09

Phase Timing - Bank 1
F + Phase + Row

<F Page>

Row	E	
		RR-1 Delay
		RR-1 Clear
	0	EV-A Delay
	0	EV-A Clear
		EV-B Delay
		EV-B Clear
	0	EV-C Delay
	0	EV-C Clear
		EV-D Delay
		EV-D Clear
		RR-2 Delay
		RR-2 Clear
	---	View EV Delay
	---	View EV Clear
	---	View RR Delay
	---	View RR Clear

Preempt Timing
F + E + Row

Row	F	
0	12_456__	Permit
1		Red Lock
2		Yellow Lock
3	_2_6_	Min Recall
4		Ped Recall
5	_2_4_6__	Peds (View)
6		Rest In Walk
7		Red Rest
8		Dbl Entry
9		Max Recall
A	~~2~~ ~~6~~	Soft Recall
B		Max 2
C		Cond Serv
D	12345678	Ped Lock
E	_2___6__	Yellow Start
F	___4____	1st Phases

Phase Functions
F + F + Row

<F Page>

Runs Free

Max Initial	0
Red Revert	5.0
All Red Start	0.0

F + 0 + E
F + 0 + F
F + C + O

Start / Revert Times

Drop Number	12
Zone Number	12
Area Number	5
Area Address	30
QuicNet Channel	DIGI34:

C + 0 + 0
C + 0 + 1
C + 0 + 2
C + 0 + 3
(QuicNet)

Communication Addresses

C + F + O	F	Row
Free Lag	_2_4_6__	0

Lag Phases <C Page>

Overlap Timing

Row	9 Green Clear	C Yellow Change	D Red Clear	0 Load-Switch #
Overlap A	A			
Overlap B	B			
Overlap C	C			
Overlap D	D			

<F Page> F + COLOR +

<D Page> D + 0 + OVERLAP

Manual Plan	14
Manual Offset	0

C + A + 1
C + B + 1

Manual Selection

Manual Plan
0 = Automatic
1-9 = Plan 1-9
14 = Free
15 = Flash

Manual Offset
0 = Automatic
1 = Offset A
2 = Offset B
3 = Offset C

Downtime Flash	255

(minutes)

Downtime Before Auto Manual Flash
F + 0 +8

Disable Ports	_234___

Disable Communication Ports
D + D + 9

INTERSECTION: AERO & AERO CT

Row	Time	Function	Day of Week	Column F Phases/Bits
0	:			
1	:			
2	:			
3	:			
4	:			
5	:			
6	:			
7	:			
8	:			
9	:			
A	:			
B	:			
C	:			
D	:			
E	:			
F	:			

TOD Function

7 + ROW

<D Page>

D + F + ROW

T.O.D. Functions
0 = Permitted Phases
1 = Red Lock
2 = Yellow Lock
3 = Veh Min Recall
4 = Ped Recall
5 =
6 = Rest In Walk
7 = Red Rest
8 = Double Entry
9 = Veh Max Recall
A = Veh Soft Recall
B = Maximum 2
C = Conditional Service
D = Free Lag Phases
E = Bit 1 - Local Override
Bit 2 - Phase Bank 2
Bit 3 - Phase Bank 3
Bit 4 - Disable Detector OFF Monitor
Bit 7 - Detector Count Monitor
Bit 8 - Real Time Split Monitor
F = Output Bits 1 thru 4

Row		F
0		
1	RR Overlap A - Phases	
2	RR Overlap B - Phases	
3	RR Overlap C - Phases	
4	RR Overlap D - Phases	
5	Ped 2P	2
6	Ped 6P	6
7	Ped 4P	4
8	Ped 8P	
9	Yellow Flash Phases	
A	Overlap A - Phases	
B	Overlap B - Phases	
C	Overlap C - Phases	
D	Overlap D - Phases	
E	Restricted Phases	
F	Assign 5 Outputs	

Configuration

<E Page>

E + F + ROW

Row		E
0	Exclusive Phases	
1	RR-1 Clear Phases	
2	RR-2 Clear Phases	
3	RR-2 Limited Service	
4	Prot / Perm Phases	
5	Overlap A - Green Omit	
6	Overlap B - Green Omit	
7	Overlap C - Green Omit	
8	Overlap D - Green Omit	
9	Overlap Yellow Flash	
A	EV-A Phases	2 5
B	EV-B Phases	
C	EV-C Phases	1 6
D	EV-D Phases	
E	Extra 1 Config. Bits	1 3 4 5
F	IC Select (Interconnect)	2

Configuration

For access, set F + 9 + E = 1

E + E + ROW

Extra 1 Flags
1 = TBC Type 1
2 = NEMA Ext. Coord
3 = Auto Daylight Savings
4 = EV Advance
5 = Remote Download
6 = Special Event
7 = Pretimed Operation
8 = Split Ring Operation

IC Select Flags
1 =
2 = Modem
3 = 7-Wire Slave
4 = Flash / Free
5 =
6 = Simplex Master
7 = 7-Wire Master
8 = Offset Interrupter

Day of Week

1 = Sunday
2 = Monday
3 = Tuesday
4 = Wednesday
5 = Thursday
6 = Friday
7 = Saturday

Assign 5 Outputs
1 = Right Turn Overlap
2 = TOD Outputs
3 = EV Beacon - Steady
4 = EV Beacon - Flashing
5 = Special Event Outputs
6 = Phase 3 & 7 Ped
7 = Advanced Warning Sign
8 =

Time and Date

8-0 Hour, Minute, Day-of-Week

8-1 Day-of-Month, Year, Month

8-F Seconds

Disable Parity	0	D+B+0

Dial-Up Telephone Communications

(If set to a non-zero value, parity will be disabled)

Program Information

C + C + 0 = program

C + C + F = version

Remote Download

C + 0 + 4 = 1 -255

w/ E + E + E bit 5 on

INTERSECTION: AFTON @ AERO

223 P

Group Assignment: 4019
Field Master Assignment: NONE
N/S Street Name: AFTON
E/W Street Name: AERO
Last Database Change: 3/3/2010 15:42
System Ref. Number: 96

N

Column # ---->		AERO DR		GLEN H. CURTIS RD		AERO DR		AFTON RD	
		Phase							
Row	Phase # ---->	1	2	3	4	5	6	7	8
0	Ped Walk		7						7
1	Ped FDW		10						23
2	Min Green	4	10		4	4	10		4
3	Type 3 Limit								
4	Add/Veh								
5	Veh Extn	2.0	3.9		2.0	2.0	3.6		2.0
6	Max Gap	2.0	3.9		2.0	2.0	3.6		2.0
7	Min Gap	2.0	0.2		2.0	2.0	0.2		2.0
8	Max Limit	30	60		40	30	60		40
9	Max Limit 2								
A	Bus Adv								
B	Call to Phs								
C	Reduce By		0.1				0.1		
D	Every		0.8				0.9		
E	Yellow	3.4	4.4		3.9	3.4	4.3		3.9
F	Red Clear	1.0	1.0		1.0	1.0	1.0		1.0

Phase Timing - Bank 1 <F Page>
F + Phase + Row

Row		E
	RR-1 Delay	
	RR-1 Clear	
	EV-A Delay	0
	EV-A Clear	0
	EV-B Delay	0
	EV-B Clear	0
	EV-C Delay	0
	EV-C Clear	0
	EV-D Delay	0
	EV-D Clear	0
	RR-2 Delay	
	RR-2 Clear	
	View EV Delay	---
	View EV Clear	---
	View RR Delay	---
	View RR Clear	---

Preempt Timing
F + E + Row

Row		F
0	Permit	12_456_8
1	Red Lock	
2	Yellow Lock	
3	Min Recall	_2___6__
4	Ped Recall	
5	Peds (View)	_2_____8
6	Rest In Walk	
7	Red Rest	
8	Dbl Entry	___4___8
9	Max Recall	
A	Soft Recall	
B	Max 2	
C	Cond Serv	
D	Ped Lock	12345678
E	Yellow Start	_2___6__
F	1st Phases	___4___8

Phase Functions <F Page>
F + F + Row

Max Initial	0
Red Revert	5.0
All Red Start	0.0

F + 0 + E
F + 0 + F
F + C + O

Start / Revert Times

Drop Number	13	C + 0 + 0
Zone Number	13	C + 0 + 1
Area Number	5	C + 0 + 2
Area Address	31	C + 0 + 3
QuicNet Channel	DIGI34	(QuicNet)

Communication Addresses

C + F + O	F	Row
Free Lag	_2_4_6_8	0

Lag Phases <C Page>

Overlap Timing

	Row	9 Green Clear	C Yellow Change	D Red Clear	0 Load-Switch #
Overlap A	A				
Overlap B	B				
Overlap C	C				
Overlap D	D				

<F Page>
F + COLOR +

<D Page>
D + 0 + OVERLAP

Manual Plan	14
Manual Offset	0

C + A + 1
C + B + 1

Manual Selection

Manual Plan
0 = Automatic
1-9 = Plan 1-9
14 = Free
15 = Flash

Manual Offset
0 = Automatic
1 = Offset A
2 = Offset B
3 = Offset C

Downtime Flash	255	(minutes)

Downtime Before Auto Manual Flash
F + 0 +8

Disable Ports	_234____

Disable Communication Ports
D + D + 9

Timing Sheet By: FLG
Approved By: EFF
Drawing Number:
Timing Implemented On:

INTERSECTION: AFTON @ AERO

223 Program

Row	Time	Function	Day of Week	Column F Phases/Bits
0	:			
1	:			
2	:			
3	:			
4	:			
5	:			
6	:			
7	:			
8	:			
9	:			
A	:			
B	:			
C	:			
D	:			
E	:			
F	:			

TOD Function

7 + ROW

<D Page>

D + F + ROW

T.O.D. Functions
0 = Permitted Phases
1 = Red Lock
2 = Yellow Lock
3 = Veh Min Recall
4 = Ped Recall
5 =
6 = Rest In Walk
7 = Red Rest
8 = Double Entry
9 = Veh Max Recall
A = Veh Soft Recall
B = Maximum 2
C = Conditional Service
D = Free Lag Phases
E = Bit 1 - Local Override
Bit 2 - Phase Bank 2
Bit 3 - Phase Bank 3
Bit 4 - Disable Detector OFF Monitor
Bit 7 - Detector Count Monitor
Bit 8 - Real Time Split Monitor
F = Output Bits 1 thru 4

Row		F
0		
1	RR Overlap A - Phases	
2	RR Overlap B - Phases	
3	RR Overlap C - Phases	
4	RR Overlap D - Phases	
5	Ped 2P	2
6	Ped 6P	
7	Ped 4P	
8	Ped 8P	8
9	Yellow Flash Phases	
A	Overlap A - Phases	
B	Overlap B - Phases	
C	Overlap C - Phases	
D	Overlap D - Phases	
E	Restricted Phases	
F	Assign 5 Outputs	

Configuration

E + F + ROW

<E Page>

Row		E
0	Exclusive Phases	
1	RR-1 Clear Phases	
2	RR-2 Clear Phases	
3	RR-2 Limited Service	
4	Prot / Perm Phases	
5	Overlap A - Green Omit	
6	Overlap B - Green Omit	
7	Overlap C - Green Omit	
8	Overlap D - Green Omit	
9	Overlap Yellow Flash	
A	EV-A Phases	2 5
B	EV-B Phases	4
C	EV-C Phases	1 6
D	EV-D Phases	8
E	Extra 1 Config. Bits	1 45
F	IC Select (Interconnect)	2

Configuration

For access, set F + 9 + E = 1

E + E + ROW

Extra 1 Flags
1 = TBC Type 1
2 = NEMA Ext. Coord
3 = Auto Daylight Savings
4 = EV Advance
5 = Remote Download
6 = Special Event
7 = Pretimed Operation
8 = Split Ring Operation

IC Select Flags
1 =
2 = Modem
3 = 7-Wire Slave
4 = Flash / Free
5 =
6 = Simplex Master
7 = 7-Wire Master
8 = Offset Interrupter

Day of Week

1 = Sunday
2 = Monday
3 = Tuesday
4 = Wednesday
5 = Thursday
6 = Friday
7 = Saturday

Assign 5 Outputs
1 = Right Turn Overlap
2 = TOD Outputs
3 = EV Beacon - Steady
4 = EV Beacon - Flashing
5 = Special Event Outputs
6 = Phase 3 & 7 Ped
7 = Advanced Warning Sign
8 =

Time and Date

8-0 Hour, Minute, Day-of-Week

8-1 Day-of-Month, Year, Month

8-F Seconds

Disable Parity	0	D+B+0

Dial-Up Telephone Communications

(If set to a non-zero value, parity will be disabled)

Program Information

C + C + 0 = program

C + C + F = version

Remote Download

C + 0 + 4 = 1 -255

w/ E + E + E bit 5 on

INTERSECTION: AERO DR & SANDROCK RD / JOHN MONTGOMERY DR

233 Program

Group Assignment:
Field Master Assignment:
System Reference Number:

N/S Street: Sandrock Rd
E/W Street: Aero Dr

Last Database Change:

Timing sheets by: CAC
Approved by:
Timing implemented on: 7/2/2015

Aero Dr | Aero Dr | Sandrock Rd

Row	Phase Numbers---->	1	2	3	4	5	6	7	8
		↙	→			↗	←	↓	↑
0	Ped Walk		7				7	7	7
1	Ped FDW		20				18	24	21
2	Min Green	4	10			4	10	4	4
3	Type 3 Disconnect								
4	Added per Vehicle								
5	Veh Extension	2.0	4.7			2.0	3.4	2.0	2.6
6	Max Gap	2.0	4.7			2.0	3.4	2.0	2.6
7	Min Gap	2.0	0.2			2.0	0.2	2.0	0.2
8	Max Limit	30	60			30	60	40	40
9	Max Limit 2								
A	Adv. / Delay Walk								
B	PE Min Ped FDW								
C	Cond Serv Check								
D	Reduce Every		0.7				0.9		1.3
E	Yellow Change	3.4	4.2			3.4	4.2	3.9	4.0
F	Red Clear	1.0	1.0			1.0	1.0	1.0	1.0

Phase Timing - Bank 1 <F/1+Phase+Row>

	E
RR-1 Delay	
RR-1 Clear	
EV-A Delay	0
EV-A Clear	0
EV-B Delay	0
EV-B Clear	0
EV-C Delay	0
EV-C Clear	0
EV-D Delay	0
EV-D Clear	0
RR-2 Delay	
RR-2 Clear	
View EV Delay	- - -
View EV Clear	- - -
View RR Delay	- - -
View RR Clear	- - -

Preempt Timing <F/1+E+Row>

	F	Row
Permit	12__5678	0
Red Lock		1
Yellow Lock		2
Min Recall	_2___6__	3
Ped Recall		4
View Set Peds	_2___678	5
Rest In Walk		6
Red Rest		7
Double Entry		8
Max Recall		9
Soft Recall		A
Max 2		B
Cond. Service		C
Man Cntrl Calls		D
Yellow Start	_2___6__	E
First Phases	_____8	F

Phase Functions <F/1+F+Row>

Current Calculated Cycle Length: C/0 + B + F

	9	A	B	C	D
	- - -	- - -	- - -	- - -	- - -
Phase 1					
Phase 2					
Phase 3					
Phase 4					
Phase 5					
Phase 6					
Phase 7					
Phase 8					
Max Initial					
Alternate Walk					
Alternate FDW					
Alternate Initial					
Alternate Extension					

Alternate Timing <F/1+Column+Phase>

Drop Number	14	<C/0+0+0>
Zone Number	14	<C/0+0+1>
Area Number	5	<C/0+0+2>
Area Address	32	<C/0+0+3>
QuicNet Channel	DIGI 34	(QuicNet)

Communication Addresses

(Outputs specified in Assignable Outputs at E/127+A+E & F)

Exclusive Walk	0	<F/1+0+0>
Exclusive FDW	0	<F/1+0+1>
All Red Clear	0.0	<F/1+0+2>

Exclusive Ped Phase

Manual Plan
0 = Automatic
1-9 = Plan 1-9
14 = Free
15 = Flash

Flash Start	0	<F/1+0+E>
Red Revert	5.0	<F/1+0+F>
All Red Start	0.0	<F/1+C+0>

Start / Revert Times

Manual Offset
0 = Automatic
1 = Offset A
2 = Offset B
3 = Offset C

Manual Plan	14	<C/0+A+1>
Manual Offset	0	<C/0+B+1>

Manual Selection

Free Lag	_2___6_8	<C/1+F+0>

How to Set Page Access Code:
F/1 -- C + 0 + F = 1
F + 9 + E = 1

Notes: 37203-17-D

Version: 233 RV
Rivision: San Diego 1

INTERSECTION: AERO DR & SANDROCK RD / JOHN MONTGOMERY DR

233 Program

Row		Overlap 1	2	3	4	5	6	7	8
0	Load Switch Number								
1	Veh Set 1 - Phases								
2	Veh Set 2 - Phases								
3	Veh Set 3 - Phases								
4	Neg Veh Phases								
5	Neg Ped Phases								
6	Green Omit Phases								
7	Green Clear Omit Phs.								
8									
9									
A									
B									
C									
D	Green Clear								
E	Yellow Change								
F	Red Clear								

Overlap Assignments <E/29+Column+Row>

	F
Fast Green Flash Phase	
Green Flash Phases	
Flashing Walk Phases	
Guaranteed Passage	
Simultaneous Gap Term	
Sequential Timing	
Advance Walk Phases	
Delay Walk Phases	
External Recall	
Start-up Overlap Green	
Max Extension	
Inhibit Ped Reservice	
Semi-Actuated	
Start-up Overlap Yellow	
Start-up Vehicle Calls	
Start-up Ped Calls	

Specials <F/2+F+Row>

Row
0
1
2
3
4
5
6
7
8
9
A
B
C
D
E
F

Row		E
0	Exclusive Phases	
1	RR-1 Clear Phases	
2	RR-2 Clear Phases	
3	RR-2 Limited Service	
4	Prot / Perm Phases	
5	Flash to PE Circuits	
6	Flash Entry Phases	
7	Disable Yellow Range	
8	Disable Ovp Yel Range	
9	Overlap Yellow Flash	
A	EV-A Phases	2 5
B	EV-B Phases	7
C	EV-C Phases	1 6
D	EV-D Phases	8
E	Extra 1 Config. Bits	1 345
F	IC Select (Interconnect)	2

Configuration <E/125+E+Row>

	F
Ext. Permit 1 Phases	
Ext. Permit 2 Phases	
Exclusive Ped Assign	
Preempt Non-Lock	12345678
Ped for 2P Output	2
Ped for 6P Output	6
Ped for 4P Output	7
Ped for 8P Output	8
Yellow Flash Phases	
Low Priority A Phases	
Low Priority B Phases	
Low Priority C Phases	
Low Priority D Phases	
Restricted Phases	
Extra 2 Config. Bits	3

Configuration <E/125+F+Row>

	C
EV-A	
EV-B	
EV-C	
EV-D	
RR-1 *	- - -
RR-2 *	- - -
SE-1	0
SE-2	0

<E/125+C+Row>

Preemption Priority

(* RR-1 is always Highest, and RR-2 is always Second Highest)

Row
0
1
2
3
4
5
6
7
8
9
A
B
C
D
E
F

	2
Phase 1	0
Phase 2	0
Phase 3	0
Phase 4	0
Phase 5	0
Phase 6	0
Phase 7	0
Phase 8	0

<C/5+2+Row>

Coordination Transition Minimums

Row
0
1
2
3
4
5
6
7
8
9
A
B
C
D
E
F

Extra 1 Flags
1 = TBC Type 1
2 = NEMA Ext. Coord
3 = Auto Daylight Savings
4 = EV Advance
5 = Extended Status
6 = International Ped
7 = Flash - Clear Outputs
8 = Split Ring

IC Select Flags
1 =
2 = Modem
3 = 7-Wire Slave
4 = Flash / Free
5 =
6 = Simplex Master
7 = 7-Wire Master
8 = Offset Interrupter

Extra 2 Flags
1 = AWB During Initial
2 = LMU Installed
3 = Disable Min Walk
4 = QuicNet/4 System
5 = Ignore P/P on EV
6 =
7 = Reserved
8 =

Flash to PE & PE Non-Lock
1 = EV A 5 = RR 1
2 = EV B 6 = RR 2
3 = EV C 7 = SE 1
4 = EV D 8 = SE 2

8-0 Hour, Minute, Day-of-Week
8-1 Day-of-Month, Year, Month
8-F Seconds

Time and Date

Begin Month	0	<C/5+2+A>
Begin Week	0	<C/5+2+B>
End Month	0	<C/5+2+C>
End Week	0	<C/5+2+D>

Daylight Savings Time

Daylight Savings Date:
If set to all zeros, standard dates will be used.

RSECTION: AERO DR & W. CANYON AV

223 Pr

Group Assignment: None
Field Master Assignment: None
N/S Street Nam. EST CANYON
E/W Street Name: AERO
Last Change:
Timing Sheet By: EFF
Approved By: MM
Drawing Number: 24689
System Ref. Num.:
Timing implemented on: 3/15/01

N

Row	Column # ---->	AERO 1	2	3	4	AERO 5	6	7	WEST CANYON 8
	Phase # ---->	1	2	3	4	5	6	7	8
0	Ped Walk		7						7
1	Ped FDW		21						23
2	Min Green	4	10			4	10		4
3	Type 3 Limit								
4	Add/Veh								
5	Veh Extn	2.0	3.8			2.0	3.8		2.0
6	Max Gap	2.0	3.8			2.0	3.8		2.0
7	Min Gap	2.0	0.2			2.0	0.2		2.0
8	Max Limit	30	60			30	60		40
9	Max Limit 2								
A	Bus Adv								
B	Call to Phs								
C	Reduce By		0.1				0.1		
D	Every		0.8				0.8		
E	Yellow	3.4 3.0	5.3			3.4 3.0	4.6		3.4 3.0
F	Red Clear	1.0	1.0			1.0	1.0		1.0

Phase Timing - Bank 1
F + Phase + Row
<F Page>

Row	E	
		RR-1 Delay
		RR-1 Clear
	0	EV-A Delay
	3	EV-A Clear
		EV-B Delay
		EV-B Clear
	0	EV-C Delay
	3	EV-C Clear
	0	EV-D Delay
	3	EV-D Clear
		RR-2 Delay
		RR-2 Clear
	---	View EV Delay
	---	View EV Clear
	---	View RR Delay
	---	View RR Clear

Preempt Timing
F + E + Row

Row	F	
	12__56_8	Permit
		Red Lock
		Yellow Lock
	_2___6__	Min Recall
		Ped Recall
	_2_____8	Peds (View)
		Rest In Walk
		Red Rest
		Dbl Entry
		Max Recall
		Soft Recall
		Max 2
		Cond Serv
	12345678	Ped Lock
	_2___6__	Yellow Start
	_____8	1st Phases

Phase Functions <F Page>
F + F + Row

DWH 1/24/03

Max Initial	0	F + 0 + E
Red Revert	5.0	F + 0 + F
All Red Start	0.0	F + C + O

Start / Revert Times

Drop Number	1	C + 0 + 0
Zone Number		C + 0 + 1
Area Number		C + 0 + 2
Area Address		C + 0 + 3
QuicNet Channel		(QuicNet)

Communication Addresses

Row	Overlap	9 Green Clear	C Yellow Change	D Red Clear	0 Load-Switch #
A	Overlap A				
B	Overlap B				
C	Overlap C				
D	Overlap D				

Overlap Timing <F Page> <D Page>
F + COLOR + D + 0 + OVERLAP

Manual Plan	0 C + A + 1
Manual Offset	0 C + B + 1

Manual Selection

Manual Plan
0 = Automatic
1-9 = Plan 1-9
14 = Free
15 = Flash

Manual Offset 0
= Automatic
1 = Offset A
2 = Offset B
3 = Offset C

C + F + O

Free Lag	F	Row
	_2___6_8	0

Lag Phases <C Page>

Downtime Flash	60 (minutes)

Downtime Before Auto Manual Flash
F + 0 + 8

Disable Ports	234

Disable Communications Ports
D + D + 9

(1)

La Petite Ecole Traffic Impact Study Appendix

INTERSECTION: AERO DR & W. CANYON AV

Row	Time	Function	Day of Week	Column F Phases/Bits
0				
1				
2				
3				
4				
5				
6				
7				
8				
9				
A				
B				
C				
D				
E				
F				

TOD Function 7 + ROW <D Page> D + F + ROW

T.O.D. Functions
0 = Permitted Phases
1 = Red Lock
2 = Yellow Lock
3 = Veh Min Recall
4 = Ped Recall
5 =
6 = Rest In Walk
7 = Red Rest
8 = Double Entry
9 = Veh Max Recall
A = Veh Soft Recall
B = Maximum 2
C = Conditional Service
D = Free Lag Phases
E = Bit 1 - Local Override
Bit 2 - Phase Bank 2
Bit 3 - Phase Bank 3
Bit 4 - Disable Detector OFF Monitor
Bit 7 - Detector Count Monitor
Bit 8 - Real Time Split Monitor
F = Output Bits 1 thru 4

Row		F
0		
1	RR Overlap A - Phases	
2	RR Overlap B - Phases	
3	RR Overlap C - Phases	
4	RR Overlap D - Phases	
5	Ped 2P	2
6	Ped 6P	
7	Ped 4P	
8	Ped 8P	8
9	Yellow Flash Phases	
A	Overlap A - Phases	
B	Overlap B - Phases	
C	Overlap C - Phases	
D	Overlap D - Phases	
E	Restricted Phases	
F	Assign 5 Outputs	

Configuration <E Page> E + F + ROW

Row		E
0	Exclusive Phases	
1	RR-1 Clear Phases	
2	RR-2 Clear Phases	
3	RR-2 Limited Service	
4	Prot / Perm Phases	
5	Overlap A - Green Omit	
6	Overlap B - Green Omit	
7	Overlap C - Green Omit	
8	Overlap D - Green Omit	
9	Overlap Yellow Flash	
A	EV-A Phases	2
B	EV-B Phases	
C	EV-C Phases	1 6
D	EV-D Phases	8
E	Extra 1 Config. Bits	1 345
F	IC Select (Interconnect)	2

Configuration

For access, set F + 9 + E = 1 E + E + ROW

Extra 1 Flags
1 = TBC Type 1
2 = NEMA Ext. Coord
3 = Auto Daylight Savings
4 = EV Advance
5 = Remote Download
6 = Special Event
7 = Pretimed Operation
8 = Split Ring Operation

IC Select Flags
1 =
2 = Modem
3 = 7-Wire Slave
4 = Flash / Free
5 =
6 = Simplex Master
7 = 7-Wire Master
8 = Offset Interrupter

Day of Week
1 = Sunday
2 = Monday
3 = Tuesday
4 = Wednesday
5 = Thursday
6 = Friday
7 = Saturday

Assign 5 Outputs
1 = Right Turn Overlap
2 = TOD Outputs
3 = EV Beacon - Steady
4 = EV Beacon - Flashing
5 = Special Event Outputs
6 = Phase 3 & 7 Ped
7 = Advanced Warning Sign
8 =

Time and Date
8-0 Hour, Minute, Day-of-Week
8-1 Day-of-Month, Year, Month
8-F Seconds

Disable Parity	0	D+B+0

Dial-Up Telephone Communications
(If set to a non-zero value, parity will be disabled)
(This parameter is NOT downloaded)

Program Information
C + C + 0 = program
C + C + F = version

Remote Download
C + 0 + 4 = 1 -255
w/ E + E + E bit 5 on

Row	1 Delay	3 Carry-over	Detector Name	332 Input File	Detector Number
0				1I1	14
1				2I2U	1
2		1.8		2I2L	5
3				2I3U	21
4				2I3L	25
5				2I4	9
6				3I5	16
7				4I6U	3
8				4I6L	7
9				4I7U	23
A				4I7L	27
B				4I8	11
C				1I9U	18
D				3I9L	20
E		---	---	---	---
F	---	---	---	---	---

Row	2 Delay	4 Carry-over	Detector Name	332 Input File	Detector Number
0				5J1	13
1		1.8		6J2U	2
2				6J2L	6
3				6J3U	22
4				6J3L	26
5				6J4	10
6				7J5	15
7				8J6U	4
8				8J6L	8
9				8J7U	24
A	10.0			8J7L	28
B				8J8	12
C				5J9U	17
D				7J9L	19
E	---	---	---	---	---
F	---	---	---	---	---

Detector Delay & Carryover <D Page>

D + X (across) + ROW

Row	Detector Numbers 1 2 3 4 5 6 7 8	E 12345678
A	1 2 3 4 5 6 7 8	12345678
B	9 10 11 12 -- -- -- --	1234____
C	13 14 15 16 17 18 19 20	12345678
D	-- -- -- -- 21 22 23 24	____5678
E	-- -- -- -- -- -- -- --	1234____
F	-- 25 26 27 28 -- -- --	_2345___

Active Detectors <D Page>

Row		0 Detector #
0		
1	System Det. # 1	0
2	System Det. # 2	0
3	System Det. # 3	0
4	System Det. # 4	0
5	System Det. # 5	0
6	System Det. # 6	0
7	System Det. # 7	0
8	System Det. # 8	0

System Detectors <D Page>

Max ON (min)	5	D+A+E
Max OFF (min)	60	D+A+F

Detector Failure Monitor

Phase Number	0	F+C+1
Time Before Yellow	0.0	F+C+3

Advance Warning Beacon - Sign 1

Phase Number	0	F+D+1
Time Before Yellow	0.0	F+D+3

Advance Warning Beacon - Sign 2

Long Failure	0.5	F+0+6
Short Failure	0.5	F+0+7

Power Cycle Correction (Default = 0.5)

(These parameters are NOT downloaded.)

INTERSECTION: AERO DR & W. CANYON AV

223 Program

Coordination Timing By: EFF
Implemented On: 05/01/01

Row	Plan Name	Plan 1 (AM)	Plan 2	Plan 3 (3PM)	Plan 4	Plan 5	Plan 6	Plan 7	Plan 8	Plan 9
0	Cycle Length	110		130						
1	Phase 1 - ForceOff	44		42						
2	Phase 2 - ForceOff									
3	Phase 3 - ForceOff									
4	Phase 4 - ForceOff									
5	Phase 5 - ForceOff	44		42						
6	Phase 6 - ForceOff									
7	Phase 7 - ForceOff									
8	Phase 8 - ForceOff	24		23						
9	Ring Offset									
A	Offset A	20		128						
B	Offset B									
C	Offset C									
D	Permissive	10		10						
E	Hold Release	255		255						
F	Ped Shift	10		10						

Coordination <C Page>
C + Plan + ROW

FOR OBSERVATION ONLY

Master Plan	C + A + 2
Current Plan	C + A + 3
Next Plan	C + A + 4
T.O.D. Plan	C + A + 5
Master Cycle	C + A + 0
Ring A Cycle	C + B + 0
Ring B Cycle	C + D + 0
Min Cycle	C + A + E
Max Cycle	C + B + E

Row	Time	Plan	Offset	Day of Week
0	06:45	1	A	_23456_
1	08:35	E	A	_23456_
2	15:00	3	A	_23456_
3	17:45	E	A	1234567
4				
5				
6				
7				
8				
9				
A				
B				
C				
D				
E				
F				

TOD Coordination
<9 Key with C+0+9=1>

Plan Select
1 thru 9 = Coordination Plan 1 thru 9
14 or E = Free
15 or F = Flash

	E	Row		F
		0	Free Lag	_2___6_8
Plan 1	_2___6__	1	Plan 1 - Lag	_2___6_8
Plan 2		2	Plan 2 - Lag	
Plan 3	2 6	3	Plan 3 - Lag	2 6 8
Plan 4		4	Plan 4 - Lag	
Plan 5		5	Plan 5 - Lag	
Plan 6		6	Plan 6 - Lag	
Plan 7		7	Plan 7 - Lag	
Plan 8		8	Plan 8 - Lag	
Plan 9		9	Plan 9 - Lag	
Coord Ped*		A	Coord Max *	
NEMA Hold		B	Coord Lag *	
		C		
		D		
		E		
		F		

Sync Phases **Lag Phases** <C Page>
C + E + FUNCTION # C + F + FUNCTION #

Transition Type	0

TBC Transition
C + D + D

Transition Type
0 = Shortway
Non-zero = Lengthen

NOTE: SIMPLEX MASTER LOCATED AT AERO DR & MURPHY CANYON RD

LOCATION: **RTE 163 NB / KEARNY VILLA ROAD (SOB)**

CALTRANS C8 Version 3 DATE: 3/4/2015 PAGE 1

F PAGE

	INTERVAL	PHASE TIMING 1	2	3	4	5	6	7	8	9
0	WALK	1	1	1	7	1	7	1	1	CLK RST
1	DONT WALK	1	1	1	27	1	17	1	1	
2	MIN GREEN	1	10	1	5	5	14	1	1	
3	TYPE 3 DET	0	0	0	0	0	0	0	0	
4	ADD/VEH	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
5	PASSAGE	0.9	2.0	0.9	2.0	2.0	2.0	0.9	0.9	
6	MAX GAP	0.9	2.0	0.9	2.0	2.0	2.0	0.9	0.9	
7	MIN GAP	0.9	2.0	0.9	2.0	2.0	2.0	0.9	0.9	
8	MAX EXT	9	45	9	45	25	45	9	9	
9	MAX 2									YR
A	MAX 3									MO
B										DAY
C	REDUCE BY	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	DOW
D	EVERY	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	HR
E	YELLOW	3.0	4.8	3.0	4.1	3.7	4.8	3.0	3.0	MIN
F	RED	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	SEC
	PED XING FT				94		60			
	BIKE XING FT		45				112			

	PRE-EMPTION E		F FLAGS	1	2	3	4	5	6	7	8	
	EV SEL	0	PERMIT	1	2	3	4	5	6	7	8	0
	RR1 CLR	5	RED LOCK				4	5				1
	EVA DLY	0	YEL LOCK									2
	EVA CLR	5	V RECALL		2				6			3
	EVB DLY	0	P RECALL									4
	EVB CLR	5	PED PHASES				4		6			5
	EVC DLY	0	RT OLA									6
	EVC CLR	5	RT OLB									7
	EVD DLY	0	DBL ENTRY									8
	EVD CLR	5	MAX 2 PHASES									9
	MAX EV	255	LAG PHASES	READ ONLY								A
	RR2 CLR	5	RED REST									B
			REST-IN-WALK									C
			MAX 3 PHASES									D
			YEL START UP		2				6			E
			FIRST PHASE				4					F
				1	2	3	4	5	6	7	8	

FOC LONG FAILURE	
FOD SHORT FAILURE	
FOE	0
FOF	5

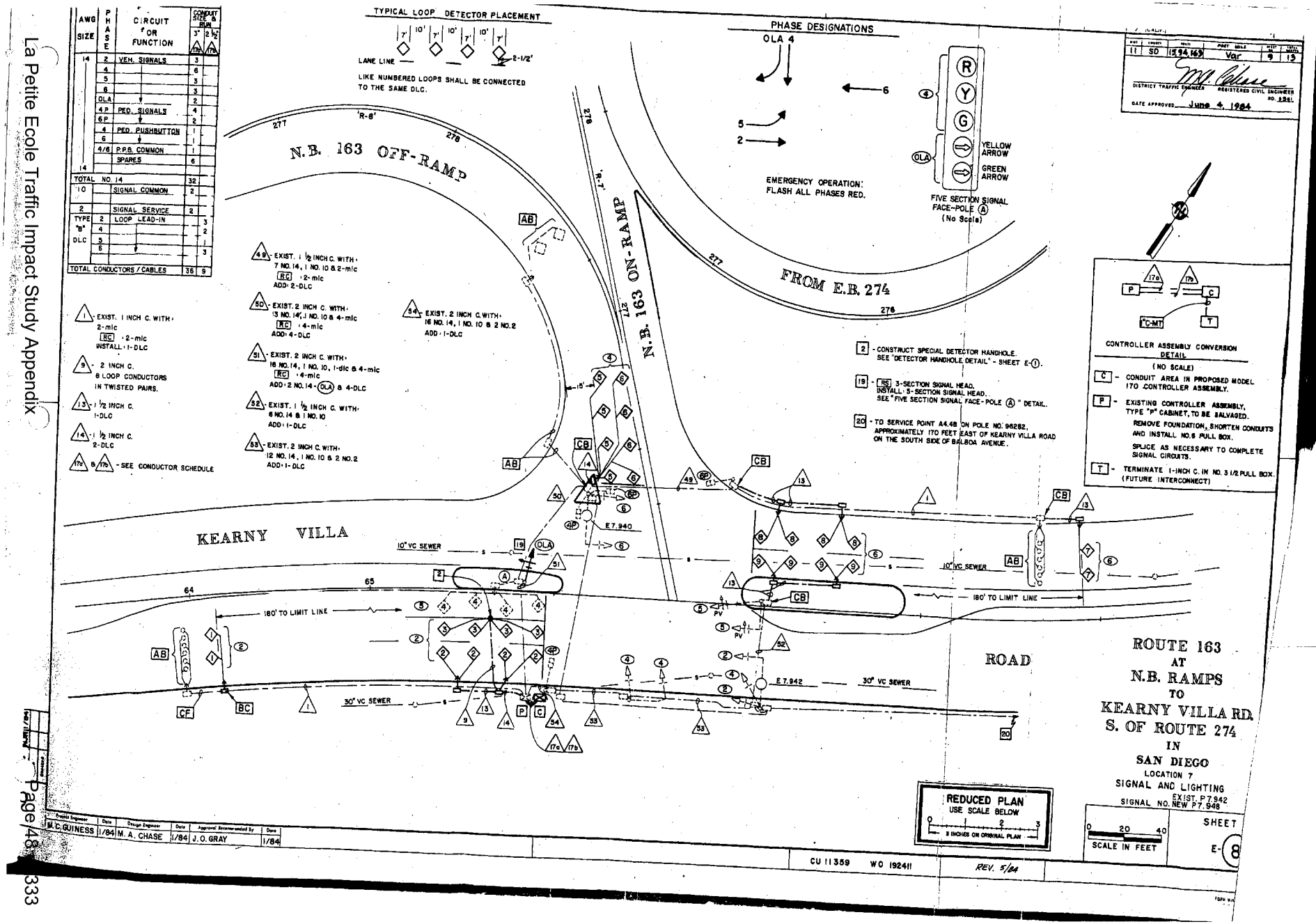
FCO	3
FC1	3
FC2	10
FCA	0.0
FCB	0.0
FCC	0.0
FCD	0.0

FDO TB SELECT	1
FD3 PED SELECT	0
FD4 7 WIRE	0
FD5 PERMISSIVE	0
FD8 OS SEEKING	1

CO5 FLASH TYPE	1
CC2 DOWNLOAD	1

NOTES:

ENTRIES IN THESE LOCATIONS CAN BE CHANGED IN CC1 FLASH ONLY



AWG SIZE	PHASE	CIRCUIT OR FUNCTION	CONDUIT SIZE & RUN 3" (1)	2 1/2" (17b)
14	2	VEH. SIGNALS	3	
	4		6	
	5		3	
	6		3	
	OLA		2	
	4P	PED. SIGNALS	4	
	6P		2	
	4	PED. PUSHBUTTON	1	
	6		1	
	4/6	P.P.B. COMMON	1	
		SPARES	6	
TOTAL NO. 14			32	
10		SIGNAL COMMON	2	
2		SIGNAL SERVICE	2	
TYPE "B" DLC	2	LOOP LEAD-IN		3
	4			2
	5			1
	6			3
TOTAL CONDUCTORS / CABLES			36	9

LOCATION: RTE 163 SB / MERCURY - ARMOUR STREET
CALTRANS C8 V ion 3 DATE: 3/4/2015 PAG
F PAGE

	INTERVAL	PHASE TIMING 1	2	3	4	5	6	7	8	9
0	WALK	1	7	7	7	1	7	1	1	CLK RST
1	DONT WALK	1	26	33	33	1	20	1	1	
2	MIN GREEN	5	13	15	5	13	12	1	1	
3	TYPE 3 DET	0	0	0	0	0	0	0	0	
4	ADD/VEH	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
5	PASSAGE	2.0	2.0	2.0	2.0	2.0	2.0	0.9	0.9	
6	MAX GAP	2.0	2.0	2.0	2.0	2.0	2.0	0.9	0.9	
7	MIN GAP	2.0	2.0	2.0	2.0	2.0	2.0	0.9	0.9	
8	MAX EXT	40	45	40	35	25	45	9	9	
9	MAX 2									YR
A	MAX 3									MO
B										DAY
C	REDUCE BY	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	DOW
D	EVERY	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	HR
E	YELLOW	3.7	4.5	4.1	4.1	3.7	4.5	3.0	3.0	MIN
F	RED	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	SEC
	PED XING FT		90	115	115		69			
	BIKE XING FT		90	123		100	87			

PRE-EMPTION E		FLAGS	1	2	3	4	5	6	7	8	F
EV SEL	0	PERMIT	1	2	3	4	5	6	7	8	0
RR1 CLR	5	RED LOCK	1		3	4	5				1
EVA DLY	0	YEL LOCK									2
EVA CLR	5	V RECALL		2				6			3
EVB DLY	0	P RECALL									4
EVB CLR	5	PED PHASES		2	3	4		6			5
EVC DLY	0	RT OLA									6
EVC CLR	5	RT OLB									7
EVD DLY	0	DBL ENTRY									8
EVD CLR	5	MAX 2 PHASES									9
MAX EV	255	LAG PHASES	READ ONLY								A
RR2 CLR	5	RED REST									B
		REST-IN-WALK									C
		MAX 3 PHASES									D
		YEL START UP		2				6			E
		FIRST PHASE			3						F
			1	2	3	4	5	6	7	8	

FOC LONG FAILURE	
FOD SHORT FAILURE	
FOE	0
FOF	5

FCO	3
FC1	3
FC2	10
FCA	0.0
FCB	0.0
FCC	0.0
FCD	0.0

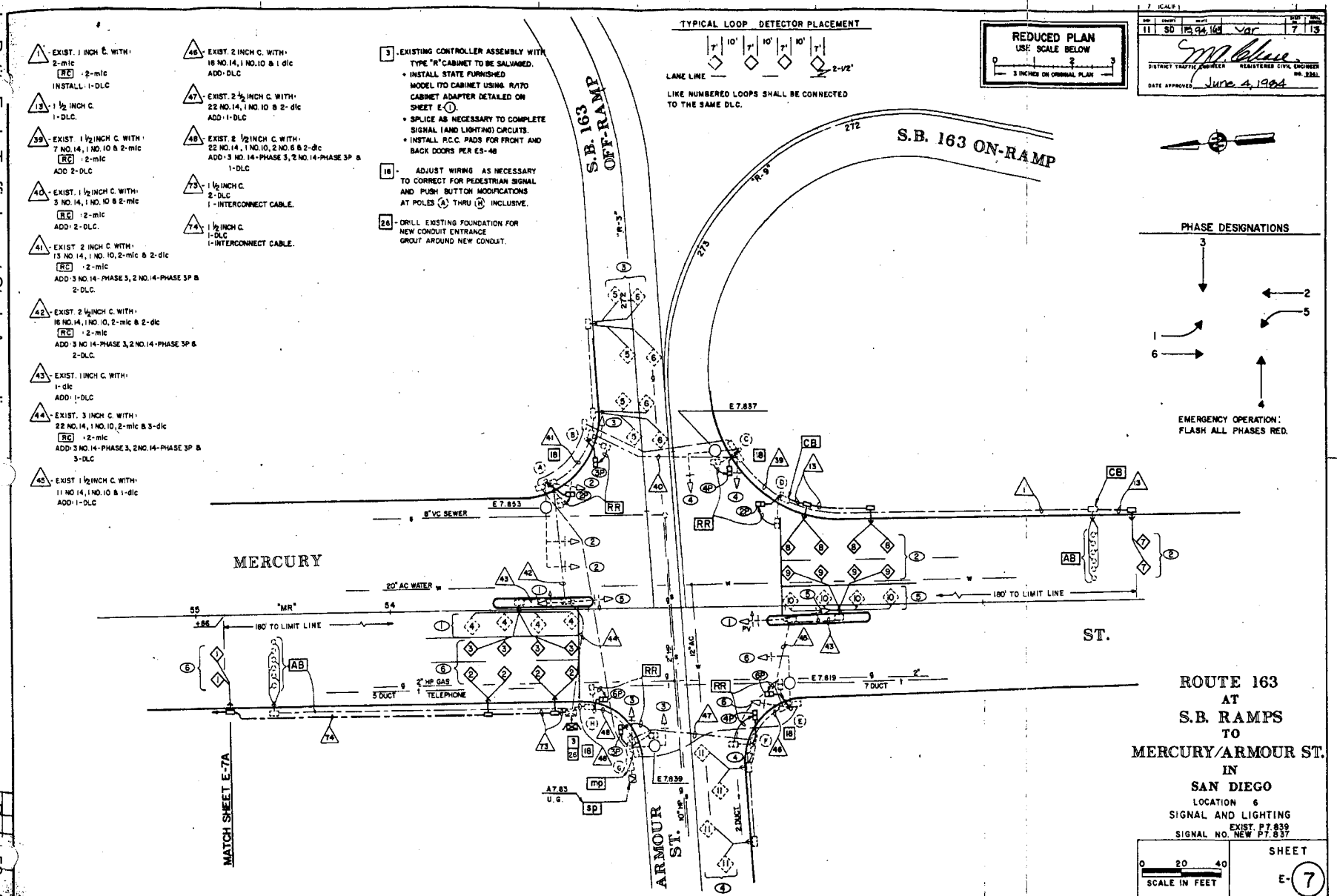
FDO TB SELECT	1
FD3 PED SELECT	0
FD4 7 WIRE	0
FD5 PERMISSIVE	0
FD8 OS SEEKING	1

CO5 FLASH TYPE	1
CC2 DOWNLOAD	1

NOTES:

3/4 SPLIT

ENTRIES IN THESE LOCATIONS CAN BE CHANGED IN CC1 FLASH ONLY



La Petite Ecole Traffic Impact Study Appendix

INTERSECTION: CONVOY ST & OSTROW

223 ogram

Group Assignment: NONE
Field Master Assignment: NONE

N/S Street Name: CONVOY ST
E/W Street Name: OSTROW

Last Database Change: 07/25/2 :23
Timing Sheet By: MMH
Approved By: mm
System Ref. Number: 119
Drawing Number: 27300-6
Timing Implemented On: 12/17/01

		CONVOY ST.		OSTROW ST.		CONVOY ST.		KEARNY MESA RD.	
Column # →		Phase							
Phase # →		1	2	3	4	5	6	7	8
Row									
0	Ped Walk		7		7		7		7
1	Ped FDW		17		24		17		23
2	Min Green	4	10	4	4	4	10	4	4
3	Type 3 Limit								
4	Add/Veh								
5	Veh Extn	2.0	2.7	2.0	2.0	2.0	2.7	2.0	2.0
6	Max Gap	2.0	2.7	2.0	2.0	2.0	2.7	2.0	2.0
7	Min Gap	2.0	0.2	2.0	2.0	2.0	0.2	2.0	2.0
8	Max Limit	30	60	30	40	30	60	30	40
9	Max Limit 2								
A	Bus Adv								
B	Call to Phs								
C	Reduce By		0.1				0.1		
D	Every		1.2				1.2		
E	Yellow	~~3.4~~ 3.0	4.3	~~3.4~~ 3.0	~~3.9~~ 3.0	~~3.4~~ 3.0	4.0	~~3.4~~ 3.0	~~3.9~~ 3.6
F	Red Clear	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0

BH 1/22/01

Phase Timing - Bank 1
F + Phase + Row
<F Page>

Row		E
	RR-1 Delay	
	RR-1 Clear	
	EV-A Delay	0
	EV-A Clear	0
	EV-B Delay	0
	EV-B Clear	0
	EV-C Delay	0
	EV-C Clear	0
	EV-D Delay	0
	EV-D Clear	0
	RR-2 Delay	
	RR-2 Clear	
	View EV Delay	---
	View EV Clear	---
	View RR Delay	---
	View RR Clear	---

Preempt Timing
F + E + Row

Row		F
0	Permit	12345678
1	Red Lock	
2	Yellow Lock	
3	Min Recall	
4	Ped Recall	
5	Peds (View)	_2_4_6_8
6	Rest In Walk	
7	Red Rest	
8	Dbl Entry	
9	Max Recall	
A	Soft Recall	_2___6__
B	Max 2	
C	Cond Serv	
D	Ped Lock	12345678
E	Yellow Start	_2___6__
F	1st Phases	___4___8

Phase Functions
<F Page>
F + F + Row

Max Initial	0	F + 0 + E
Red Revert	5.0	F + 0 + F
All Red Start	0.0	F + C + O

Start / Revert Times

Drop Number	9	C + 0 + 0
Zone Number	9	C + 0 + 1
Area Number	5	C + 0 + 2
Area Address	38	C + 0 + 3
QuicNet Channel	DIGI34:	(QuicNet)

Communication Addresses

Overlap Timing

Row		9 Green Clear	C Yellow Change	D Red Clear	0 Load-Switch #
Overlap A	A				
Overlap B	B				
Overlap C	C				
Overlap D	D				

<F Page>
F + COLOR +
<D Page>
D + 0 + OVERLAP

Manual Plan	0	C + A + 1
Manual Offset	0	C + B + 1

Manual Selection

Manual Plan	Manual Offset
0 = Automatic	0 = Automatic
1-9 = Plan 1-9	1 = Offset A
14 = Free	2 = Offset B
15 = Flash	3 = Offset C

	F	Row
C + F + O		
Free Lag	_2_4_6_8	0

Lag Phases <C Page>

Downtime Flash	255	(minutes)

Downtime Before Auto Manual Flash
F + 0 +8

Disable Ports	234

Disable Communication Ports
D + D + 9

(8)

La Petite Ecole Traffic Impact Study Appendix

INTERSECTION: CONVOY ST & OSTROW — 223 Program

Coordination Timing By: MXM
Implemented On: 10/20/98

Row	Column # ---> / Plan Name --->	Plan 1	2	3	4	5	6	7	8	9
0	Cycle Length		100							
1	Phase 1 - ForceOff		67							
2	Phase 2 - ForceOff									
3	Phase 3 - ForceOff		25							
4	Phase 4 - ForceOff		53							
5	Phase 5 - ForceOff		70							
6	Phase 6 - ForceOff									
7	Phase 7 - ForceOff		19							
8	Phase 8 - ForceOff		53							
9	Ring Offset									
A	Offset A		14							
B	Offset B		15							
C	Offset C									
D	Permissive		10							
E	Hold Release		255							
F	Ped Shift		7							

FOR OBSERVATION ONLY

Master Plan	C + A + 2
Current Plan	C + A + 3
Next Plan	C + A + 4
T.O.D. Plan	C + A + 5
Master Cycle	C + A + 0
Ring A Cycle	C + B + 0
Ring B Cycle	C + D + 0
Min Cycle	C + A + E
Max Cycle	C + B + E

Coordination <C Page>

C + Plan + ROW

Row	Time	Plan	Offset	Day of Week
0	09 : 00	2	A	_23456_
1	11 : 30	2	B	_23456_
2	13 : 30	2	A	_23456_
3	18 : 00	E	A	1234567
4	:			
5	:			
6	:			
7	:			
8	:			
9	:			
A	:			
B	:			
C	:			
D	:			
E	:			
F	:			

TOD Coordination

<9 Key with C+0+9=1>

	E
Plan 1	
Plan 2	_2_ 6
Plan 3	EFF
Plan 4	2/25/02
Plan 5	
Plan 6	
Plan 7	
Plan 8	
Plan 9	
Coord Ped*	
NEMA Hold	

Sync Phases

C + E + FUNCTION #

Row		F
0	Free Lag	_2_4_6_8
1	Plan 1 - Lag	
2	Plan 2 - Lag	_2_4_6_8
3	Plan 3 - Lag	
4	Plan 4 - Lag	
5	Plan 5 - Lag	
6	Plan 6 - Lag	
7	Plan 7 - Lag	
8	Plan 8 - Lag	
9	Plan 9 - Lag	
A	Coord Max *	
B	Coord Lag *	
C		
D		
E		
F		

Lag Phases <C Page>

C + F + FUNCTION #

Plan Select
1 thru 9 = Coordination
Plan 1 thru 9
14 or E = Free
15 or F = Flash

TOD 80

Transition Type	0

TBC Transition
C + D + D

Transition Type
0 = Shortway
Non-zero = Lengthen

Printed on 08/08/2001 2:48 PM PAGE 4 City of San Diego

LOCATION: RTE 163 NB / MESA COLLEGE DRIVE

CALTRANS C8 Version 3 DATE: 3/5/2015 PAGE 1

F PAGE

	INTERVAL	PHASE TIMING 1	2	3	4	5	6	7	8	9
0	WALK	1	1	1	1	1	1	1	1	CLK RST
1	DONT WALK	1	1	1	1	1	1	1	1	
2	MIN GREEN	1	5	1	5	1	5	1	1	
3	TYPE 3 DET	0	0	0	0	0	0	0	0	
4	ADD/VEH	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
5	PASSAGE	0.9	2.0	0.9	2.0	0.9	2.0	0.9	0.9	
6	MAX GAP	0.9	2.0	0.9	2.0	0.9	2.0	0.9	0.9	
7	MIN GAP	0.9	2.0	0.9	2.0	0.9	2.0	0.9	0.9	
8	MAX EXT	9	35	9	35	9	35	9	9	
9	MAX 2									YR
A	MAX 3									MO
B										DAY
C	REDUCE BY	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	DOW
D	EVERY	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	HR
E	YELLOW	3.0	4.1	3.0	4.1	3.0	4.1	3.0	3.0	MIN
F	RED	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	SEC
	PED XING FT									

	PRE-EMPTION E		F FLAGS	1	2	3	4	5	6	7	8	
0	EV SEL	0	PERMIT	1	2	3	4	5	6	7	8	0
1	RR1 CLR	5	RED LOCK				4					1
2	EVA DLY	0	YEL LOCK									2
3	EVA CLR	5	V RECALL		2				6			3
4	EVB DLY	0	P RECALL									4
5	EVB CLR	5	PED PHASES									5
6	EVC DLY	0	RT OLA									6
7	EVC CLR	5	RT OLB									7
8	EVD DLY	0	DBL ENTRY									8
9	EVD CLR	5	MAX 2 PHASES									9
A	MAX EV	255	LAG PHASES	READ ONLY								A
B	RR2 CLR	5	RED REST									B
C			REST-IN-WALK									C
D			MAX 3 PHASES									D
E			YEL START UP		2				6			E
F			FIRST PHASE				4					F
				1	2	3	4	5	6	7	8	

FOC LONG FAILURE	
FOD SHORT FAILURE	
FOE	0
FOF	5

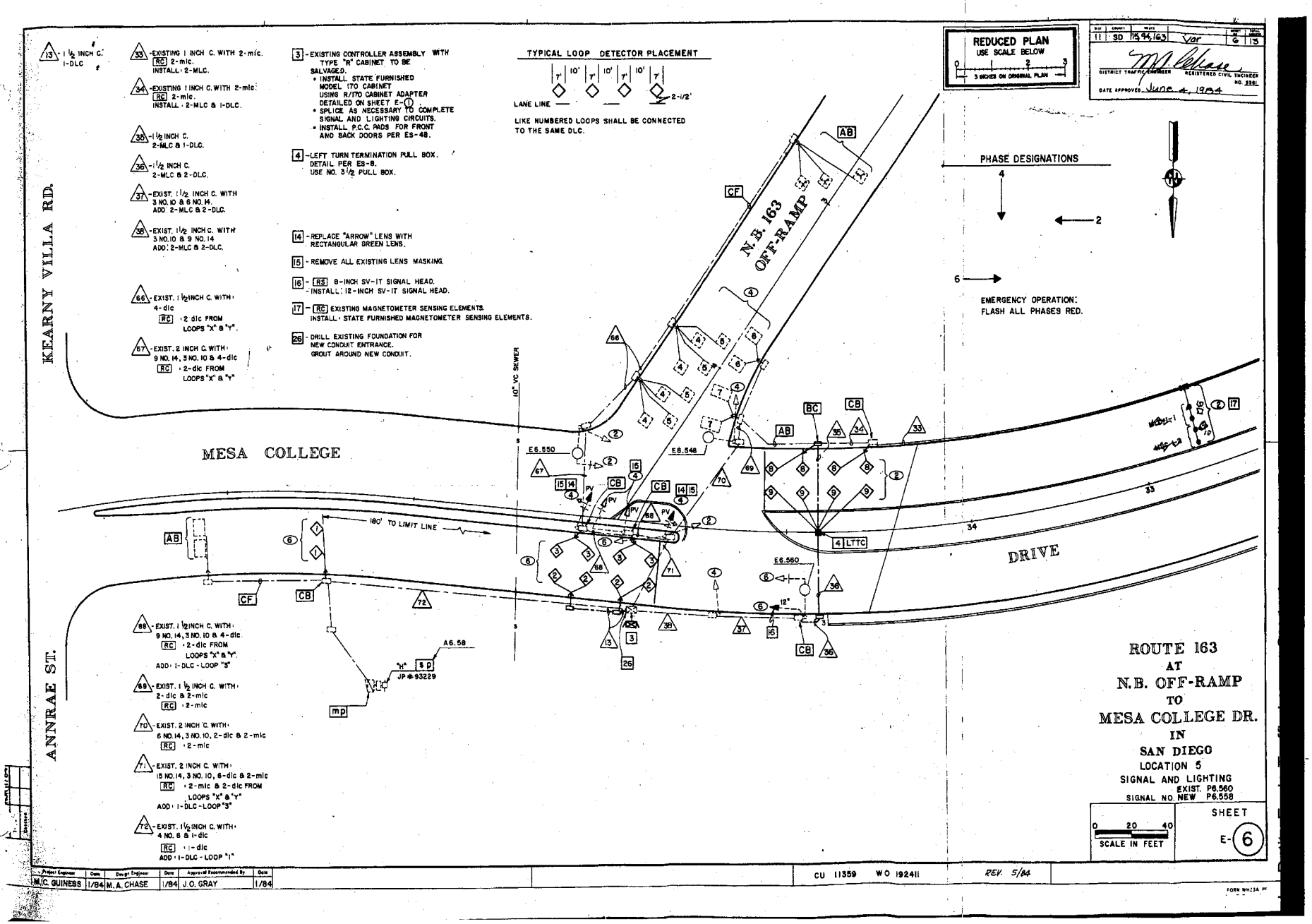
FC0	3
FC1	3
FC2	10
FCA	0.0
FCB	0.0
FCC	0.0
FCD	0.0

FD0 TB SELECT	1
FD3 PED SELECT	0
FD4 7 WIRE	0
FD5 PERMISSIVE	0
FD8 OS SEEKING	1

CO5 FLASH TYPE	1
CC2 DOWNLOAD	1

NOTES:

ENTRIES IN THESE LOCATIONS CAN BE CHANGED IN CC1 FLASH ONLY ▒



13 - 1½ INCH C. 1-DLC

33 - EXISTING 1 INCH C. WITH 2-mlc. RC 2-mlc. INSTALL: 2-MLC.

34 - EXISTING 1 INCH C. WITH 2-mlc. RC 2-mlc. INSTALL: 2-MLC & 1-DLC.

35 - 1½ INCH C. 2-MLC & 1-DLC.

36 - 1½ INCH C. 2-MLC & 2-DLC.

37 - EXIST. 1½ INCH C. WITH 3 NO. 10 & 6 NO. 14. ADD: 2-MLC & 2-DLC.

38 - EXIST. 1½ INCH C. WITH 3 NO. 10 & 9 NO. 14 ADD: 2-MLC & 2-DLC.

66 - EXIST. 1½ INCH C. WITH: 4-dlc RC: 2 dlc FROM LOOPS "X" & "Y".

67 - EXIST. 2 INCH C. WITH: 9 NO. 14, 3 NO. 10 & 4-dlc RC: 2-dlc FROM LOOPS "X" & "Y".

3 - EXISTING CONTROLLER ASSEMBLY WITH TYPE "R" CABINET TO BE SALVAGED.
- INSTALL STATE FURNISHED MODEL 170 CABINET USING R/170 CABINET ADAPTER DETAILED ON SHEET E-(1)
- SPLICE AS NECESSARY TO COMPLETE SIGNAL AND LIGHTING CIRCUITS.
- INSTALL P.C.C. PADS FOR FRONT AND BACK DOORS PER ES-4B.

4 - LEFT TURN TERMINATION PULL BOX. DETAIL PER ES-8. USE NO. 3½ PULL BOX.

14 - REPLACE "ARROW" LENS WITH RECTANGULAR GREEN LENS.

15 - REMOVE ALL EXISTING LENS MASKING.

16 - RS 8-INCH SV-IT SIGNAL HEAD. INSTALL: 12-INCH SV-IT SIGNAL HEAD.

17 - RC EXISTING MAGNETOMETER SENSING ELEMENTS. INSTALL: STATE FURNISHED MAGNETOMETER SENSING ELEMENTS.

26 - DRILL EXISTING FOUNDATION FOR NEW CONDUIT ENTRANCE. GROUT AROUND NEW CONDUIT.

TYPICAL LOOP DETECTOR PLACEMENT

7' | 10' | 7' | 10' | 7' | 10' | 7'

LANE LINE — 2-1/2'

LIKE NUMBERED LOOPS SHALL BE CONNECTED TO THE SAME DLC.

68 - EXIST. 1½ INCH C. WITH: 9 NO. 14, 3 NO. 10 & 4-dlc RC: 2-dlc FROM LOOPS "X" & "Y". ADD: 1-DLC - LOOP "3"

69 - EXIST. 1½ INCH C. WITH: 2-dlc & 2-mlc RC: 2-mlc

70 - EXIST. 2 INCH C. WITH: 6 NO. 14, 3 NO. 10, 2-dlc & 2-mlc RC: 2-mlc

71 - EXIST. 2 INCH C. WITH: 15 NO. 14, 3 NO. 10, 6-dlc & 2-mlc RC: 2-mlc & 2-dlc FROM LOOPS "X" & "Y" ADD: 1-DLC - LOOP "3"

72 - EXIST. 1½ INCH C. WITH: 4 NO. 6 & 1-dlc RC: 1-dlc ADD: 1-DLC - LOOP "1"

PHASE DESIGNATIONS

4 ↓ ← 2

6 →

EMERGENCY OPERATION: FLASH ALL PHASES RED.

REDUCED PLAN
USE SCALE BELOW
0 1 2 3
3 INCHES ON ORIGINAL PLAN

DIST	COUNTY	ROUTE	SHEET NO.	TOTAL SHEETS
11	SD	15,94,163	6	13

DISTRICT TRAFFIC ENGINEER — REGISTERED CIVIL ENGINEER NO. 22611

DATE APPROVED June 4, 1984

ROUTE 163 AT N.B. OFF-RAMP TO MESA COLLEGE DR. IN SAN DIEGO

LOCATION 5

SIGNAL AND LIGHTING

EXIST. P6.560

SIGNAL NO. NEW P6.558

SCALE IN FEET 0 20 40

SHEET E-6

Project Engineer	Date	Design Engineer	Date	Approval Recommended By	Date
M.C. GUINESS	1/84	M. A. CHASE	1/84	J. O. GRAY	1/84

CU 11359 WO 19241

REV. 5/84

FORM WH23A PF

INTERSECTION: Health Center Drive/Annrae Street and Mesa College Drive

Group Assignment:
Field Master Assignment:
System Reference Number: **1112**

N/S Street Name: **Health Center Dr/Annrae St**
E/W Street Name: **Mesa College Drive**

Last Database Change: **5/21/2009 10:33**

Change Record					
Change	By	Date	Change	By	Date
new printed	eml	4/11/2012			
timing sheets					

Notes: ***LPI for phase 3 was installed on October 17, 2011***

Manual Plan
0 = Automatic
1-9 = Plan 1-9
14 = Free
15 = Flash

Manual Offset
0 = Automatic
1 = Offset A
2 = Offset B
3 = Offset C

Drop Number		<C/0+0+0>
Zone Number		<C/0+0+1>
Area Number		<C/0+0+2>
Area Address		<C/0+0+3>
QuicNet Channel	Com 38	(QuicNet)

Communication Addresses

Manual Plan	14	<C/0+A+1>
Manual Offset	0	<C/0+B+1>

Manual Selection

Flash Start	0	<F/1+0+E>
Red Revert	5.0	<F/1+0+F>
All Red Start	0.0	<F/1+C+0>

Start / Revert Times

Exclusive Walk	0	<F/1+0+0>
Exclusive FDW	0	<F/1+0+1>
All Red Clear	0.0	<F/1+0+2>

Exclusive Ped Phase
(Outputs specified in Assignable Outputs at E/127+A+E & F)

EB NB SB WB

Row	Phase Names ⟶	Phase 1	2	3	4	5	6	7	8
	Column Numbers ⟶	1	2	3	4	5	6	7	8
0	Ped Walk			7			7		
1	Ped FDW			24			10		
2	Min Green	4	10	10	4	4	10		
3	Type 3 Disconnect								
4	Added per Vehicle								
5	Veh Extension	2.5	4.4	2.0	2.0	2.0	4.3		
6	Max Gap	2.5	4.4	2.0	2.0	2.0	4.3		
7	Min Gap	2.5	0.2	2.0	2.0	2.0	0.2		
8	Max Limit	40	60	40	40	20	60		
9	Max Limit 2								
A	Adv. / Delay Walk			7					
B	PE Min Ped FDW								
C	Cond Serv Check								
D	Reduce Every		0.7				0.7		
E	Yellow Change	3.4	3.9	3.9	3.9	3.4	3.9		
F	Red Clear	1.0	1.0	1.0	1.0	1.0	1.0		

Phase Timing - Bank 1 <C+0+F=1>

	9	A	B	C	D
	---	---	---	---	---
Phase 1	0	0	0	0	0.0
Phase 2	0	0	0	0	0.0
Phase 3	0	0	0	0	0.0
Phase 4	0	0	0	0	0.0
Phase 5	0	0	0	0	0.0
Phase 6	0	0	0	0	0.0
Phase 7	0	0	0	0	0.0
Phase 8	0	0	0	0	0.0
Max Initial					
Alternate Walk					
Alternate FDW					
Alternate Initial					
Alternate Extension					

Alternate Timing <C+0+F=1>

	E
RR-1 Delay	
RR-1 Clear	
EV-A Delay	0
EV-A Clear	0
EV-B Delay	0
EV-B Clear	0
EV-C Delay	0
EV-C Clear	0
EV-D Delay	0
EV-D Clear	0
RR-2 Delay	
RR-2 Clear	
View EV Delay	---
View EV Clear	---
View RR Delay	---
View RR Clear	---

Preempt Timing

Row		F
0	Permit	123456
1	Red Lock	
2	Yellow Lock	
3	Min Recall	2 6
4	Ped Recall	
5	*View Set Peds*	-----
6	Rest In Walk	
7	Red Rest	
8	Dual Entry	
9	Max Recall	
A	Soft Recall	
B	Max 2	
C	Cond. Service	
D	Man Cntrl Calls	
E	Yellow Start	2 6
F	First Phases	3

Phase Functions <C+0+F=1>

Row	Column Numbers --->	Overlap 1	2	3	4	5	6	7	8
	Overlap Name --->								
0	Load Switch Number	0	0	0	0	0	0	0	0
1	Veh Set 1 - Phases								
2	Veh Set 2 - Phases								
3	Veh Set 3 - Phases								
4	Neg Veh Phases								
5	Neg Ped Phases								
6	Green Omit Phases								
7	Green Clear Omit Phs.								
8									
9									
A									
B									
C									
D	Green Clear	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
E	Yellow Change	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
F	Red Clear	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Overlap Assignments <C+0+E=29>

Extra 1 Flags
1 = TBC Type 1
2 = NEMA Ext. Coord
3 = Auto Daylight Savings
4 = Solid FDW on EV
5 = Extended Status
6 = International Ped
7 = Flash - Clear Outputs
8 = Split Ring

Extra 2 Flags
1 = AWB During Initial
2 = LMU Installed
3 = Disable Min Walk
4 = QuicNet/4 System
5 = Ignore P/P on EV
6 =
7 = Reserved
8 =

Row		C
0	EV-A	0
1	EV-B	0
2	EV-C	0
3	EV-D	0
4	RR-1 *	---
5	RR-2 *	---
6	SE-1	0
7	SE-2	0

Preempt Priority
<C+0+E=125>
(* RR-1 is always Highest, and RR-2 is always Second Highest)

Row	Column Numbers --->	E
0	Exclusive Phases	
1	RR-1 Clear Phases	
2	RR-2 Clear Phases	
3	RR-2 Limited Service	
4	Prot / Perm Phases	
5	Flash to PE Circuits	
6	Flash Entry Phases	
7	Disable Yellow Range	
8	Disable Ovp Yel Range	
9	Overlap Yellow Flash	
A	EV-A Phases	2 5
B	EV-B Phases	4
C	EV-C Phases	1 6
D	EV-D Phases	3
E	Extra 1 Config. Bits	1 34
F	IC Select (Interconnect)	2

Configuration <C+0+E=125>

	F
Ext. Permit 1 Phases	
Ext. Permit 2 Phases	
Exclusive Ped Assign	
Preempt Non-Lock	
Ped for 2P Output	2
Ped for 6P Output	6
Ped for 4P Output	
Ped for 8P Output	3
Yellow Flash Phases	
Low Priority A Phases	
Low Priority B Phases	
Low Priority C Phases	
Low Priority D Phases	
Restricted Phases	
Extra 2 Config. Bits	3

Configuration <C+0+E=125>

	F
Fast Green Flash Phase	
Green Flash Phases	
Flashing Walk Phases	
Guaranteed Passage	
Simultaneous Gap Term	
Sequential Timing	
Advance Walk Phases	3
Delay Walk Phases	
External Recall	
Start-up Overlap Green	
Max Extension	
Inhibit Ped Reservice	
Semi-Actuated	
Start-up Overlap Yellow	
Start-up Vehicle Calls	
Start-up Ped Calls	

Specials <C+0+F=2>

Flash to PE & PE Non-Lock
1 = EV A 5 = RR 1
2 = EV B 6 = RR 2
3 = EV C 7 = SE 1
4 = EV D 8 = SE 2

IC Select Flags
1 =
2 = Modem
3 = 7-Wire Slave
4 = Flash / Free
5 =
6 = Simplex Master
7 = 7-Wire Master
8 = Offset Interrupter

Row		2
0		
1	Phase 1	0
2	Phase 2	10
3	Phase 3	0
4	Phase 4	10
5	Phase 5	0
6	Phase 6	0
7	Phase 7	0
8	Phase 8	0

Coordination Transition Minimums
<C+0+C=5>

LOCATION: **RTE 805 SB @ MESA COLLEGE DR.**

CALTRANS C8 Version 3 DATE: 2/26/2015 PAGE 1

F PAGE

	INTERVAL	PHASE TIMING 1	2	3	4	5	6	7	8	9
0	WALK	1	1	1	7	1	7	1	1	CLK RST
1	DONT WALK	1	1	1	26	1	25	1	1	
2	MIN GREEN	5	22	1	10	10	14	1	1	
3	TYPE 3 DET	0	0	0	0	0	0	0	0	
4	ADD/VEH	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
5	PASSAGE	2.0	2.0	0.9	2.0	2.0	2.0	0.9	0.9	
6	MAX GAP	2.0	2.0	0.9	2.0	2.0	2.0	0.9	0.9	
7	MIN GAP	2.0	2.0	0.9	2.0	2.0	2.0	0.9	0.9	
8	MAX EXT	25	45	9	25	25	45	9	9	
9	MAX 2		60							YR
A	MAX 3		60			5	60			MO
B										DAY
C	REDUCE BY	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	DOW
D	EVERY	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	HR
E	YELLOW	3.7	4.1	3.0	4.5	3.7	4.1	3.0	3.0	MIN
F	RED	2.0	4.9	1.0	2.0	1.0	4.9	1.0	1.0	SEC
	PED XING FT				92		87			
	BIKE XING FT		226		194	106	107			

	PRE-EMPTION E		F FLAGS	1	2	3	4	5	6	7	8	
	EV SEL	0	PERMIT	1	2	3	4	5	6	7	8	0
	RR1 CLR	5	RED LOCK									1
	EVA DLY	0	YEL LOCK									2
	EVA CLR	5	V RECALL		2				6			3
	EVB DLY	0	P RECALL									4
	EVB CLR	5	PED PHASES				4		6			5
	EVC DLY	0	RT OLA									6
	EVC CLR	5	RT OLB									7
	EVD DLY	0	DBL ENTRY									8
	EVD CLR	5	MAX 2 PHASES		2							9
	MAX EV	255	LAG PHASES	READ ONLY								A
	RR2 CLR	5	RED REST									B
			REST-IN-WALK									C
			MAX 3 PHASES		2			5	6			D
			YEL START UP		2				6			E
			FIRST PHASE				4					F
				1	2	3	4	5	6	7	8	

FOC LONG FAILURE	
FOD SHORT FAILURE	
FOE	0
FOF	5

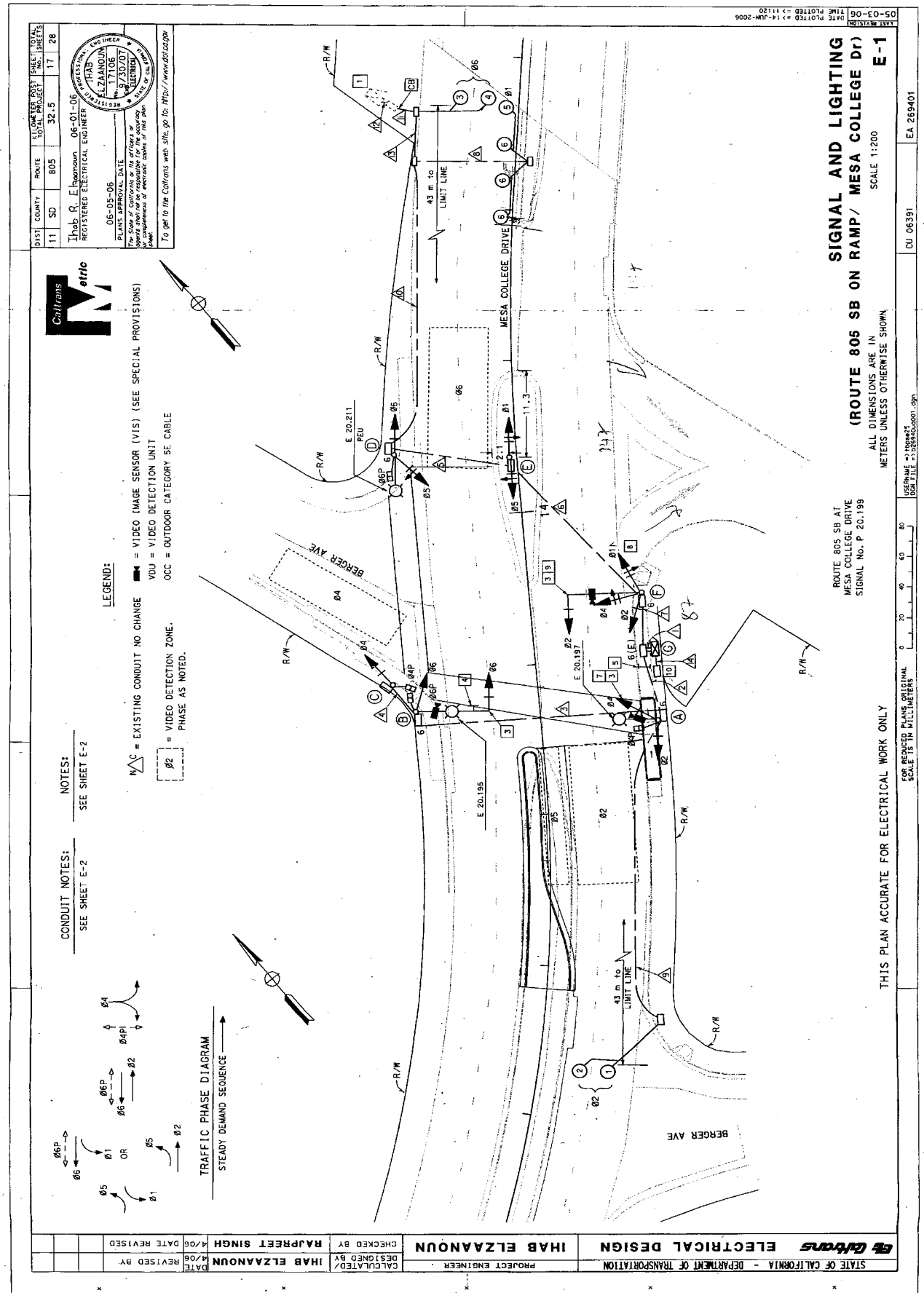
FCO	3
FC1	3
FC2	10
FCA	0.0
FCB	0.0
FCC	0.0
FCD	0.0

FDO TB SELECT	1
FD3 PED SELECT	0
FD4 7 WIRE	0
FD5 PERMISSIVE	0
FD8 OS SEEKING	1

CO5 FLASH TYPE	1
CC2 DOWNLOAD	1

NOTES:

ENTRIES IN THESE LOCATIONS CAN BE CHANGED IN CC1 FLASH ONLY ▒


SIGNAL AND LIGHTING
(ROUTE 805 SB ON RAMP/ MESA COLLEGE Dr)
SCALE 1:200
E-1
ALL DIMENSIONS ARE IN METERS UNLESS OTHERWISE SHOWN
ROUTE 805 SB AT MESA COLLEGE DRIVE SIGNAL No. P 20.199
THIS PLAN ACCURATE FOR ELECTRICAL WORK ONLY
FOR REDUCED PLANS ORIGINAL SCALE IS IN MILLIMETERS
CU 06391
EA 269401
LEGEND:
= EXISTING CONDUIT NO CHANGE
= VIDEO IMAGE SENSOR (VIS) (SEE SPECIAL PROVISIONS)
VDU = VIDEO DETECTION UNIT
OCC = OUTDOOR CATEGORY 5E CABLE
= VIDEO DETECTION ZONE. PHASE AS NOTED.
CONDUIT NOTES: SEE SHEET E-2
NOTES: SEE SHEET E-2
TRAFFIC PHASE DIAGRAM
STEADY DEMAND SEQUENCE
MESA COLLEGE DRIVE
BERGER AVE
43 m to LIMIT LINE
E 20.211 PEU
E 20.197
E 20.195
Caltrans Metric
Ihab R. Elzaanoun 06-01-06
REGISTERED ELECTRICAL ENGINEER
06-05-06
PLANS APPROVAL DATE
To get to the Caltrans web site, go to: http://www.dot.ca.gov
DIST 11 COUNTY SD ROUTE 805 KILOMETER POST TOTAL PROJECT 32.5 SHEET NO. 17 TOTAL SHEETS 28
STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans ELECTRICAL DESIGN
PROJECT ENGINEER
IHAB ELZAANOUN
CHECKED BY
RAJPREET SINGH
DATE REVISED
REVISED BY
CALCULATED/ DESIGNED BY
IHAB ELZAANOUN
DATE 4/06
DATE REVISED
LAST REVISION 05-03-06
DATE PLOTTED => 14-JUN-2006
TIME PLOTTED => 11:20

LOCATION: **RTE 805 NB / MESA COLLEGE DRIVE**

CALTRANS C8 Version 3 DATE: 2/26/2015

F PAGE

	INTERVAL	PHASE TIMING 1	2	3	4	5	6	7	8	9	PRE-EMPTION E		F FLAGS	1	2	3	4	5	6	7	8	
0	WALK	1	7	1	1	1	1	1	7	CLK RST	EV SEL	0	PERMIT	1	2	3	4	5	6	7	8	0
1	DONT WALK	1	22	1	1	1	1	1	23		RR1 CLR	5	RED LOCK								8	1
2	MIN GREEN	5	13	1	1	1	10	1	5		EVA DLY	0	YEL LOCK									2
3	TYPE 3 DET	0	0	0	0	0	0	0	0		EVA CLR	5	V RECALL		2				6			3
4	ADD/VEH	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		EVB DLY	0	P RECALL									4
5	PASSAGE	2.0	2.0	0.9	0.9	0.9	2.0	0.9	2.0		EVB CLR	5	PED PHASES		2						8	5
6	MAX GAP	2.0	2.0	0.9	0.9	0.9	2.0	0.9	2.0		EVC DLY	0	RT OLA									6
7	MIN GAP	2.0	2.0	0.9	0.9	0.9	3.0	0.9	2.0		EVC CLR	5	RT OLB									7
8	MAX EXT	15	35	9	9	9	35	9	35		EVD DLY	0	DBL ENTRY									8
9	MAX 2		25				25		65	YR	EVD CLR	5	MAX 2 PHASES		2				6		8	9
A	MAX 3									MO	MAX EV	255	LAG PHASES	READ ONLY								A
B										DAY	RR2 CLR	5	RED REST									B
C	REDUCE BY	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	DOW			REST-IN-WALK									C
D	EVERY	1.0	0.0	1.0	1.0	1.0	0.0	1.0	1.0	HR			MAX 3 PHASES									D
E	YELLOW	3.7	4.5	3.0	3.0	3.0	4.5	3.0	4.1	MIN			YEL START UP		2				6			E
F	RED	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	SEC			FIRST PHASE								8	F
	PED XING FT		77						80					1	2	3	4	5	6	7	8	
	BIKE XING FT		101				46															

FOC LONG FAILURE	
FOD SHORT FAILURE	
FOE	24
FOF	5

FCO	3
FC1	3
FC2	10
FCA	0.0
FCB	0.0
FCC	0.0
FCD	0.0

FDO TB SELECT	1
FD3 PED SELECT	0
FD4 7 WIRE	0
FD5 PERMISSIVE	0
FD8 OS SEEKING	1

CO5 FLASH TYPE	1
CC2 DOWNLOAD	1

NOTES:

ENTRIES IN THESE LOCATIONS CAN BE CHANGED IN CC1 FLASH ONLY ▒

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET TOTAL No. SHEETS
11	SD	805		

Enrique P. Bernal
REGISTERED ELECTRICAL ENGINEER DATE
01-25-10
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER E.P. BERNAL No. 15675 Exp. 6-30-12 ELECTRICAL STATE OF CALIFORNIA

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

NOTES:

1 - FOR COMPLETE RIGHT OF WAY AND ACCURATE ACCESS DATA, SEE RIGHT OF WAY RECORD MAPS AT DISTRICT OFFICE.

2 - Exist SIGNAL & LIGHTING SYSTEM PARTIALLY SHOWN.

3 - Exist CONDUITS, CONDUCTORS, AND PULL BOXES TO REMAIN UNLESS OTHERWISE NOTED.

4 - THE CONTRACTOR SHALL VERIFY ALL CONTROLLING FIELD FIELD DIMENSIONS BEFORE ORDERING OR FABRICATING ANY MATERIAL.

[5] - CONDUIT SHALL BE INSTALLED BY JACK/DRILLING METHOD.

[6] - CONDUIT TO ENTER CONTROLLER THROUGH THE CABINET ADAPTER'S OPENING. ADAPTER OPENING MEASURES: 11" X 21".

[7] - FURNISH AND INSTALL VDU, VIDEO DISPLAY, AND COMMUNICATION CARD IN THE EXISTING MODEL 332 CABINET.

[8] - [AB] DETECTOR LOOPS.
[RC] EX dlcs FROM CONDUIT GOING TO CONTROLLER CABINET.

[9] - [AB] EX LOOP. EX dlcs TO CONTROLLER CABINET TO REMAIN.

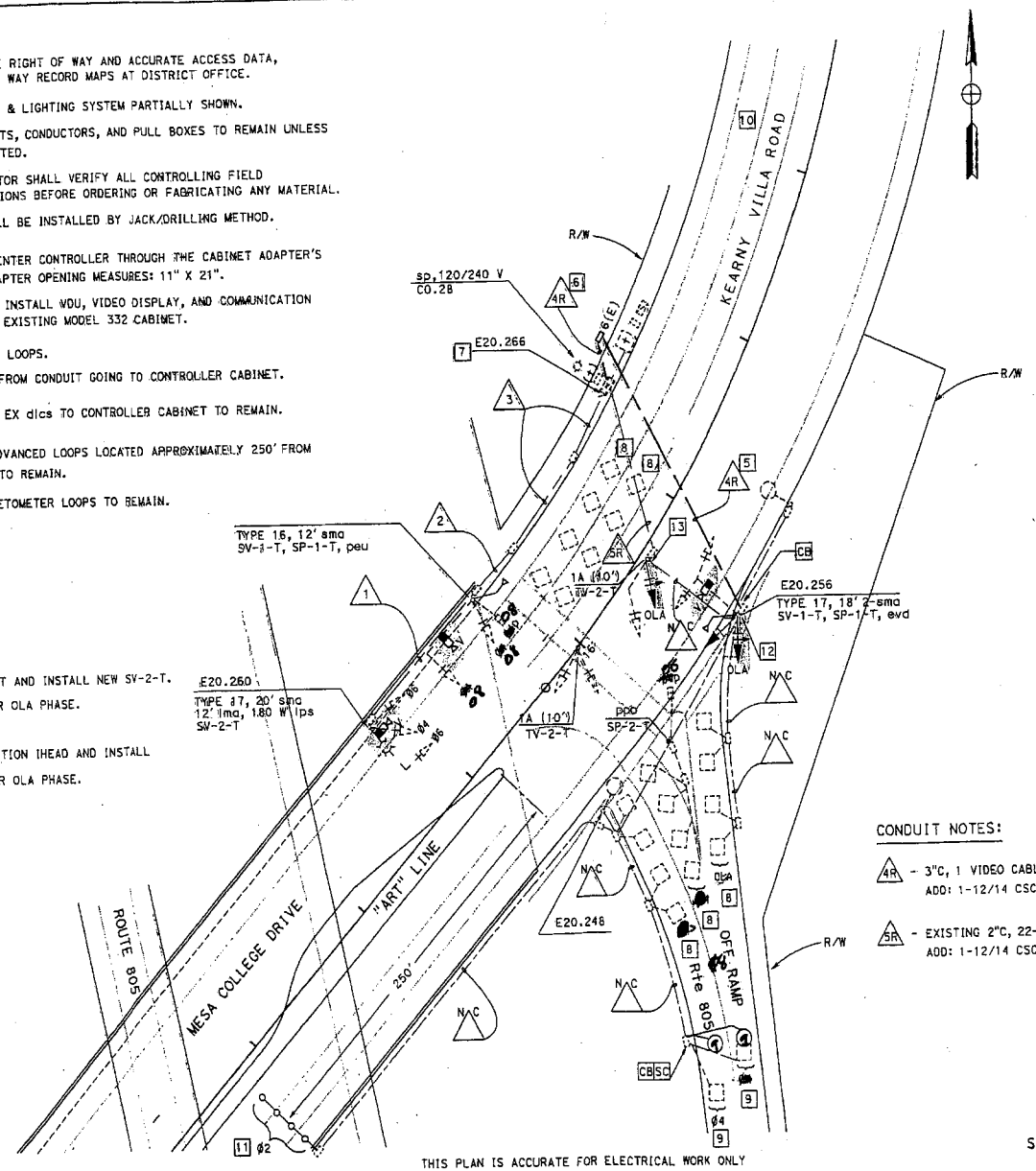
[10] - Exist Ø6 ADVANCED LOOPS LOCATED APPROXIMATELY 250' FROM LIMIT LINE TO REMAIN.

[11] - Exist MAGNETOMETER LOOPS TO REMAIN.

CCO NOTES:

[12] - [RC] EXISTING SV-2-T AND INSTALL NEW SV-2-T. 5-SECTION HEAD FOR OLA PHASE.

[13] - [RC] EXISTING 3 SECTION HEAD AND INSTALL 5-SECTION HEAD FOR OLA PHASE.



LEGEND:

EX = EXISTING

VDU = VIDEO DETECTION UNIT

N/C = EXISTING ELECTRICAL CIRCUIT, NO CHANGE UNLESS AS INDICATED IN [8]

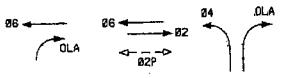
CONDUIT NOTES:

1 - EX 1½"C, 9#14, 3#10
ADD: 1 VIDEO CABLE HARNESS, Ø6

2 - EX 2"C, 12#14, 3#10
ADD: 2 VIDEO CABLES HARNESS, Ø4 & Ø6

3 - EX 2"C, 12#14, 3#10, 2 dlc
[RC] dlcs
ADD: 2 VIDEO CABLES HARNESS, Ø4 & Ø6

4 - 3"C, 1 VIDEO CABLE HARNESS, Ø2



TRAFFIC PHASE DIAGRAM
STEADY DEMAND SEQUENCE

CONDUIT NOTES:

4R - 3"C, 1 VIDEO CABLE HARNESS, Ø2
ADD: 1-12/14 CSC

5R - EXISTING 2"C, 22-12/14 csc, 7 dlc, AND 1#8
ADD: 1-12/14 CSC

11-2M0704	
CCO XX	
SHT	OF
2	2

SIGNAL AND LIGHTING

SCALE: 1"=20'

E-1

THIS PLAN IS ACCURATE FOR ELECTRICAL WORK ONLY

RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3

USERNAME => s134815
DGN FILE => Rev-b2M07Oud002.dgn

CU 2833

EA 11-00000436

LAST REVISION DATE PLOTTED => 04-JAN-2011

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans TRAFFIC ELECTRICAL
FUNCTIONAL SUPERVISOR: DALE J. WILSON
CALCULATED-DESIGNED BY: ANTONIO A. RODRIGUEZ
CHECKED BY: ENRIQUE BERNAL
REVISED BY
DATE REVISED

Appendix B

City of San Diego Traffic Study Checklist

CITY OF SAN DIEGO
TRANSPORTATION DEVELOPMENT SECTION
TRAFFIC IMPACT STUDY
SCREEN CHECK

To be completed by City Staff:
Date Received _____
Reviewer _____
Date Screen Check _____

To be completed by consultant (including page #):
Name of Traffic Study LA PETITE ECOLE
Consultant LOS ENGINEERING, INC
Date Submitted MARCH 2016 & JUNE 2016

Indicate Page # in report:		Satisfactory YES	NO	NOT REQUIRED
pg. C	1. Table of contents, list of figures and list of tables.	☐	☐	
pg. V	2. Executive summary.	☐	☐	
pg. 2&3	3. Map of the proposed project location	☐	☐	
	4. General project description and background information:			
pg. 17	a. Proposed project description (acres, dwelling units....)	☐	☐	
pg. 18	b. Total trip generation of proposed project.	☐	☐	
pg. 17	c. Community plan assumption for the proposed site.	☐	☐	
pg. NA	d. Discuss how project affects the Congestion Management program.	☐	☐	
pg. 61-63	5. Parking, transit and on-site circulation discussions are included.	☐	☐	
pg. 11	6. Map of the Transportation Impact Study Area and specific intersections studied in the traffic report.	☐	☐	
pg. 9	7. Existing Transportation Conditions:			
	a. Figure identifying roadway conditions including raised medians, median openings, separate left and right turn lanes, roadway and intersection dimensions, bike lanes, parking, number of travel lanes, posted speed, intersection controls, turn restrictions and intersection lane configurations.	☐	☐	
13, 14	b. Figure indicating the daily (ADT) and peak hour volumes.	☐	☐	
15, 16	c. Figure or table showing level of service (LOS) for intersections during peak hours and roadway sections within the study area (analysis sheets included in the appendix).	☐	☐	
	8. Project Trip Generation:			
pg. 18	Table showing the calculated project generated daily (ADT) and the peak hour volumes.	☐	☐	
pg. 19	9. Project Trip Distribution using the current TRANPLAN Computer Traffic Model (provide a computer plot) or manual assignment if previously approved. (Identify which method was used.)	☐	☐	
	10. Project Traffic Assignment:			
pg. 20-23	a. Figure indicating the daily (ADT) and peak hour volumes.	☐	☐	
pg. NA	b. Figure showing pass-by-trip adjustments, if cumulative trip rates are used.	☐	☐	☐
	11. Existing + Other Pending Projects:			
pg. 28-45	a. Figure indicating the daily (ADT) and peak hour volumes.	☐	☐	
pg. 28-45	b. Figure or table showing the projected LOS for intersections during peak hours and roadway sections within the study area (analysis sheets included in the appendix).	☐	☐	
pg. NA	c. Traffic signal warrant analysis for appropriate locations (signal warrants included in the appendix).	☐	☐	

		Satisfactory YES	NO	NOT REQUIRED
	12. Existing + Other Pending Projects + Project (short term cumulative):			
pg. 28-45	a. Figure or table showing the projected LOS for intersections during peak hours and roadway sections with the project (analysis sheets included in the appendix).	☐	☐	
pg. 28-45	b. Figure showing other projects that were included in the study, and the assignment of their site traffic.	☐	☐	
pg. NA	c. Traffic signal warrant analysis for appropriate locations (signal warrants in the appendix).	☐	☐	
	13. Build-out Transportation Conditions (if project conforms to the community plan):			
pg. 46-56	a. Build-out ADT and street classification that reflect the community plan.	☐	☐	☐
pg. 46-56	b. Figure or table showing the build-out LOS for intersections during peak hours and roadway sections with the project (analysis sheets included in the appendix).	☐	☐	☐
pg. NA	c. Traffic signal warrant analysis at appropriate locations (signal warrants included in the appendix).	☐	☐	☐
	14. Build-out Transportation Conditions (if project does not conform to the community plan).			
pg. NA	a. Build-out ADT and street classification as shown in the community plan.	☐	☐	☐
pg. NA	b. Build-out ADT and street classification for two scenarios: with the proposed project and with the land use assumed in the community plan.	☐	☐	☐
pg. NA	c. Figure or table showing the build-out LOS for intersections during peak hours and roadway sections for two scenarios: with the proposed project and with the land use assumed in the community plan (analysis sheets included in the appendix).	☐	☐	☐
pg. NA	d. Traffic signal warrant analysis at appropriate locations with the land use assumed in the community plan (signal warrants included in the appendix).	☐	☐	☐
pg. THROUGHT OUT REPORT	15. A summary table showing the comparison of Existing, Existing + Other Pending Projects, Existing + Other Pending Projects + Proposed Project, and Buildout, LOS on roadway sections and intersections during peak hours.	☐	☐	
	16. Transportation Mitigation Measures.			
pg. 58	a. Table identifying the mitigations required that are the responsibility of the developer and others. A phasing plan is required if mitigations are proposed in phases.	☐	☐	
pg. APP. P	b. Figure showing all proposed mitigations that include: intersection lane configurations, lane widths, raised medians, median openings, roadway and intersection dimensions, right-of-way, offset, etc.	☐	☐	
pg. UPON FINAL	17. The traffic study is signed by a California Registered Traffic Engineer.	☐	☐	
pg. 6	18. The Highway Capacity Manual Operational Method or other approved method is used at appropriate locations within the study area.	☐	☐	
pg. NA	19. Analysis complies with Congestion Management requirements.	☐	☐	☐
pg. NA	20. Appropriate freeway analysis is included.	☐	☐	☐
pg. 7	21. Appropriate freeway ramp metering analysis is included.	☐	☐	☐

THE TRAFFIC STUDY SCREEN CHECK FOR THE SUBJECT PROJECT IS:

_____ Approved

_____ Not approved because the following items are missing:

_____

_____

_____

_____

_____

Appendix C

Caltrans' On Ramp Rates, Data, and Observations

Location (I.D.)	Route	Dir	Period	Cars per green	Sec./ Cycle	(per lane) Veh./hr	Total # lanes	HOV
Mesa College Dr (11209)	805	SB	1500 - 1900	2	8.0	900	2	Lt

The meters normally operate in a traffic responsive mode.
There are 15 separate rates or steps between the slowest and the fastest discharge rate that depend on the mainlane volumes.

INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: PACIFIC TECHNICAL DATA

DATE:	LOCATION:	KEARNY MESA	PROJECT #:	PTD16-0129-02
2/17/16	NORTH & SOUTH:	I-805 SB RAMPS	LOCATION #:	1
WEDNESDAY	EAST & WEST:	MESA COLLEGE	CONTROL:	SIGNAL

NOTES:

AM / PM / MD / OTHER / OTHER — ▲ N ◄ W E ► S ▼

		CARPOOL I-805 SB RAMPS			OPEN LANE I-805 SB RAMPS			EASTBOUND MESA COLLEGE			WESTBOUND MESA COLLEGE			
	LANES:	NL	NT 1	NR	SL	ST 1	SR	EL	ET	ER	WL	WT	WR	TOTAL
AM	3:15 PM		89			197								286
	3:30 PM		93			212								305
	3:45 PM		79			208								287
	4:00 PM		95			211								306
	4:15 PM													0
	4:30 PM													0
	4:45 PM													0
	5:00 PM													0
	VOLUMES	0	356	0	0	828	0	0	0	0	0	0	0	1,184
	APPROACH %	0%	100%	0%	0%	100%	0%	0%	0%	0%	0%	0%	0%	
	APP/DEPART	356	/	356	828	/	828	0	/	0	0	/	0	0
	BEGIN PEAK HR		3:15 PM											
	VOLUMES	0	356	0	0	828	0	0	0	0	0	0	0	1,184
	APPROACH %	0%	100%	0%	0%	100%	0%	0%	0%	0%	0%	0%	0%	
	PEAK HR FACTOR													0.97
	APP/DEPART	356	/	356	828	/	828	0	/	0	0	/	0	0
PM	4:45 PM		109			186								295
	5:00 PM		108			204								312
	5:15 PM		105			207								312
	5:30 PM		102			175								277
	5:45 PM													0
	6:00 PM													0
	6:15 PM													0
	6:30 PM													0
	VOLUMES	0	424	0	0	772	0	0	0	0	0	0	0	1,196
	APPROACH %	0%	100%	0%	0%	100%	0%	0%	0%	0%	0%	0%	0%	
	APP/DEPART	424	/	424	772	/	772	0	/	0	0	/	0	0
	BEGIN PEAK HR		4:45 PM											
	VOLUMES	0	424	0	0	772	0	0	0	0	0	0	0	1,196
	APPROACH %	0%	100%	0%	0%	100%	0%	0%	0%	0%	0%	0%	0%	
	PEAK HR FACTOR													0.96
	APP/DEPART	424	/	424	772	/	772	0	/	0	0	/	0	0

I-805 SB RAMPS

NORTH SIDE

MESA COLLEGE WEST SIDE EAST SIDE **MESA COLLEGE**

SOUTH SIDE

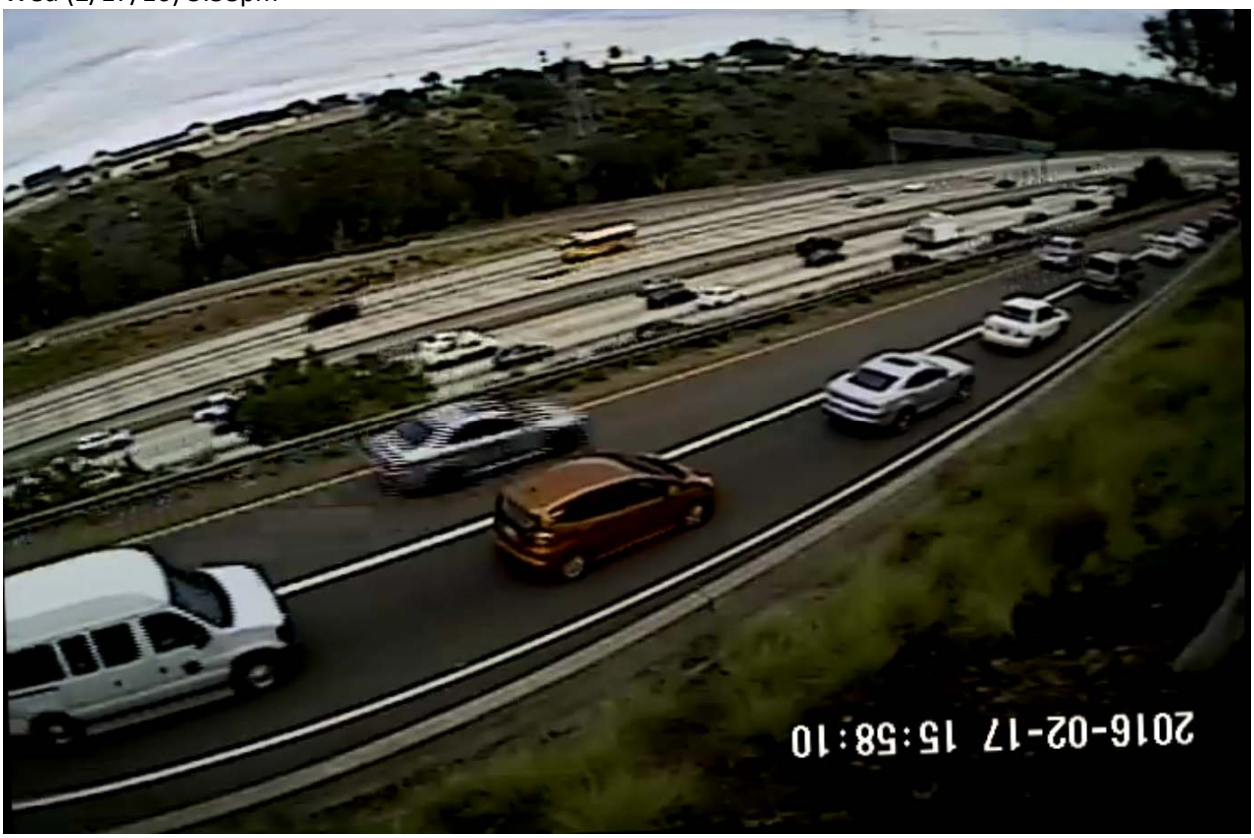
I-805 SB RAMPS

SOUTHBOUND I-805 AT MESA COLLEGE ON-RAMP QUEUE

Observations made on Wednesday 2/17/16 from 3:15-4:15pm and from 4:45-5:45pm
Queue was not observed to spill back to signal on Mesa College, rather queue was always moving as documented in the following pictures.

Wed (2/17/16) 3:35pm

Wed (2/17/16) 3:58pm



Wed (2/17/16) 4:58pm

Wed (2/17/16) 5:26pm

TRAFFIC IMPACT STUDY MANUAL

JULY
1998

APPENDIX 2. RAMP METERING ANALYSIS

Ramp metering analysis should be performed for each horizon year scenario in which ramp metering is expected. The following table shows relevant information that should be included in the ramp meter analysis (calculations are shown in the footnotes):

LOCATION	DEMAND[1] (veh/hr)	METER RATE[2] (veh/hr)	EXCESS DEMAND[3] (veh/hr)	AVERAGE DELAY[4] (veh/hr)	AVERAGE QUEUE[5] (feet)
I-5/Carmel Mountain Road (SB/AM Peak)	985	788	197	15.0[6]	4,925
I-5/Carmel Mountain Road (SB/PM Peak)	510	1,000	0	0	0

Notes:

[1] DEMAND is the peak hour demand expected to use the on-ramp.

[2] METER RATE is the peak hour capacity expected to be processed through the ramp meter. This value is usually available from Caltrans.

[3] EXCESS DEMAND = (DEMAND) – (METER RATE) or zero, whichever is greater

[4] AVERAGE DELAY = $\frac{\text{EXCESS DEMAND}}{\text{METER RATE}}$ * 60 minutes/hour

[5] AVERAGE QUEUE = (EXCESS DEMAND) * 25 feet/vehicle

[6] Ramp meter delays above 15 minutes are not acceptable.

Appendix D

City of San Diego Community Plan and Collector Capacity Excerpts

Kearny Mesa

COMMUNITY PLAN

City of San Diego Planning Department
202 C Street, MS 4A
San Diego, CA 92101

Printed on recycled paper.
This information, or this document (or portions thereof), will be made available in alternative formats upon request.

KEARNY MESA COMMUNITY PLAN

The following information has been incorporated into this April 2011 posting of this Plan:

Amendment	Date Approved by Planning Commission	Resolution Number	Date Adopted by City Council	Resolution Number
Kearny Mesa Community Plan Adopted.			October 6, 1992	R-280821
Redesignate the land use at 5150 Murphy Canyon Road from Industrial and Business Park to General Commercial			February 9, 1994	R-283392
Amend the Stonecrest Specific Plan to redesignate areas from Office to Residential			January 30, 1996	R-286859
Montgomery Field (Reduce the length of the Flight Activity Zone)	November 16, 1995		August 6, 1996	R-287765
New Century Center (Master PID/PCD for former General Dynamics site)			November 18, 1997	R-289450
Stonecrest Office Uses (Allow office use where currently prohibited)	May 11, 2000	P-00-089	July 18, 2000	R-293496
San Diego Spectrum Apartments (Redesignates from Commercial and Industrial to Residential and Mixed Use)	August 17, 2000	P-00-118	October 3, 2000	R-293930
Extended Stay America (To allow a business hotel in an industrial area)	February 8, 2001	P-01-011	February 27, 2001	R-294596
Sunroad (Redesignates Commercial and Industrial to Mixed Use for 570 additional dwellings)	June 13, 2002	P-02-073	November 12, 2002	R-297295
Land use designation change from Industrial to Mixed Use for a six-acre parcel at the south end of Aero Court	September 15, 2005	3843-PC	October 25, 2005	R-300978

Amendment	Date Approved by Planning Commission	Resolution Number	Date Adopted by City Council	Resolution Number
Added Montgomery Field and MCAS Miramar ALUCP policy language and deleted references and maps to the NAS Miramar and Montgomery Field CLUPs.	February 17, 2011		April 26, 2011	R-306737

MAYOR

Maureen O'Connor

CITY COUNCIL

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Ron Roberts
John Hartley
George Stevens
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Judy McCarty
Bob Filner

CITY ATTORNEY

John W. Witt

CITY MANAGER

Jack McGrory

PLANNING COMMISSION

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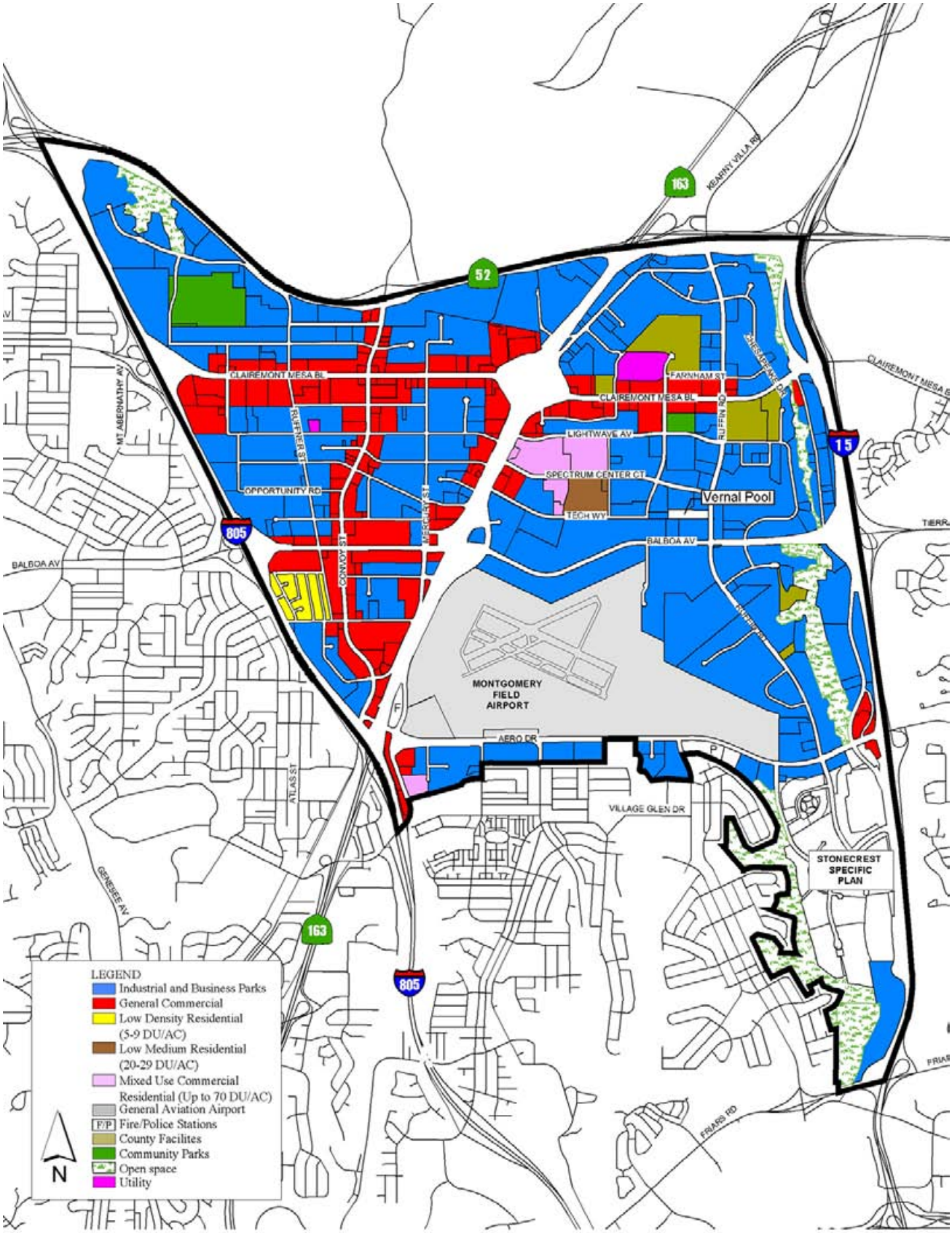
Ralph Pesqueira
Edward Reynolds
Scott Bernet
Lynn Benn
Chris Calkins
Verna Quinn

PLANNING DEPARTMENT

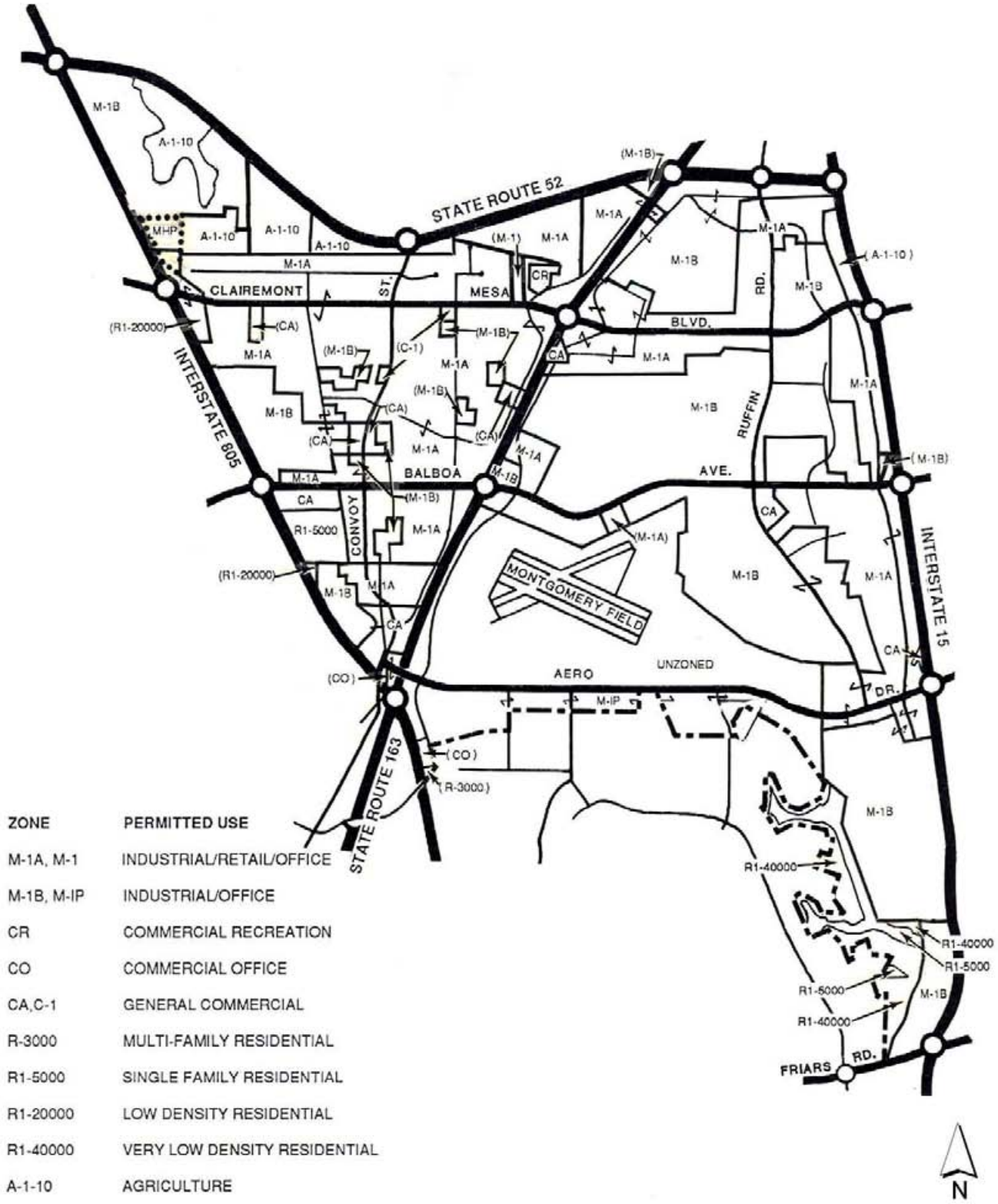
Ernest Freeman, Planning Director
George Arimes, Assistant Planning Director
Rachel Hurst, Principal Planner
Chris Jacobs, Project Manager
Alice Lopez, Word Processing
Janet Atha, Mapping
Sam Riordan, Graphics



Recommended Land Use

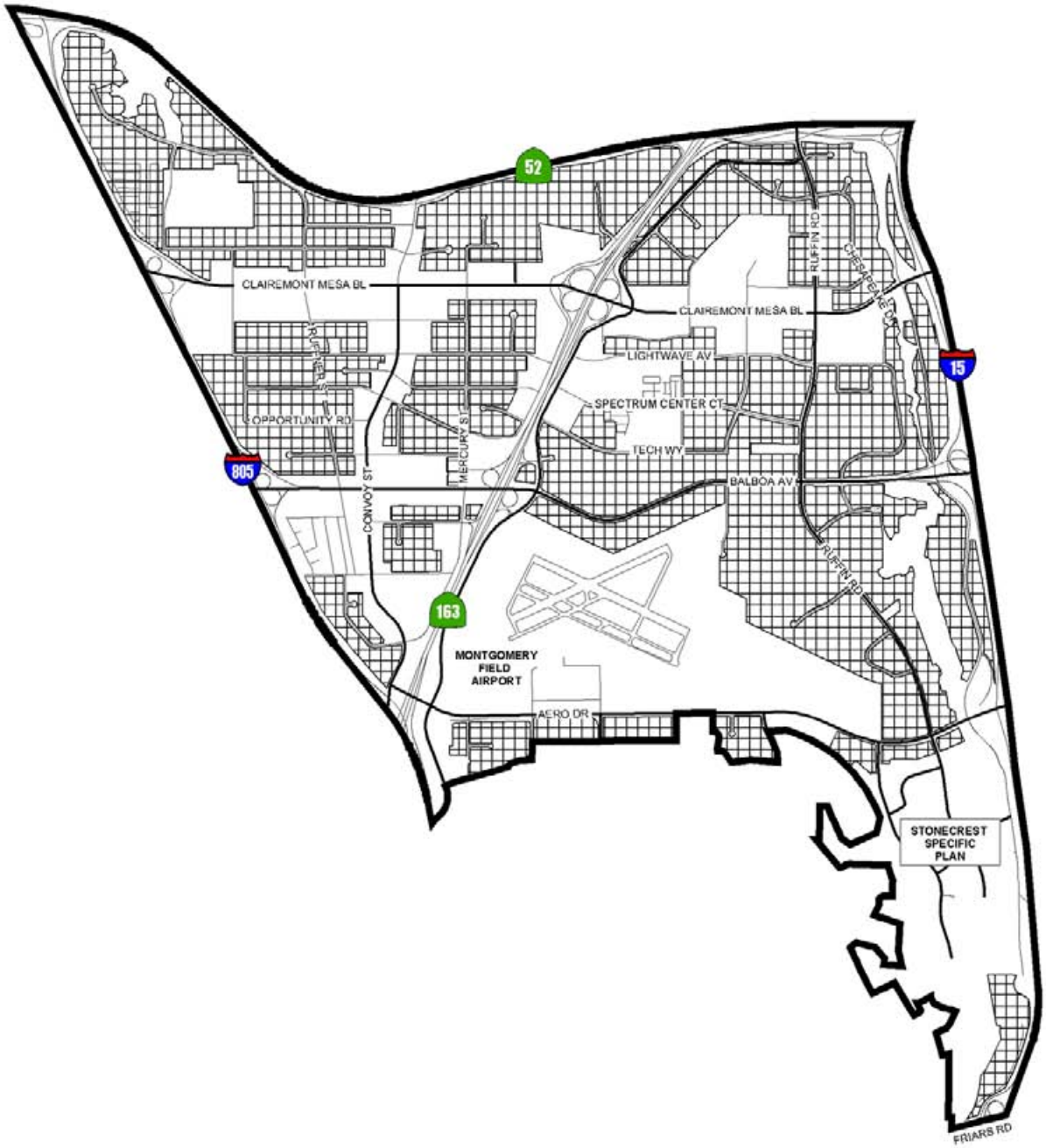
Kearny Mesa Community Plan

4 FIGURE



ZONE	PERMITTED USE
M-1A, M-1	INDUSTRIAL/RETAIL/OFFICE
M-1B, M-IP	INDUSTRIAL/OFFICE
CR	COMMERCIAL RECREATION
CO	COMMERCIAL OFFICE
CA,C-1	GENERAL COMMERCIAL
R-3000	MULTI-FAMILY RESIDENTIAL
R1-5000	SINGLE FAMILY RESIDENTIAL
R1-20000	LOW DENSITY RESIDENTIAL
R1-40000	VERY LOW DENSITY RESIDENTIAL
A-1-10	AGRICULTURE

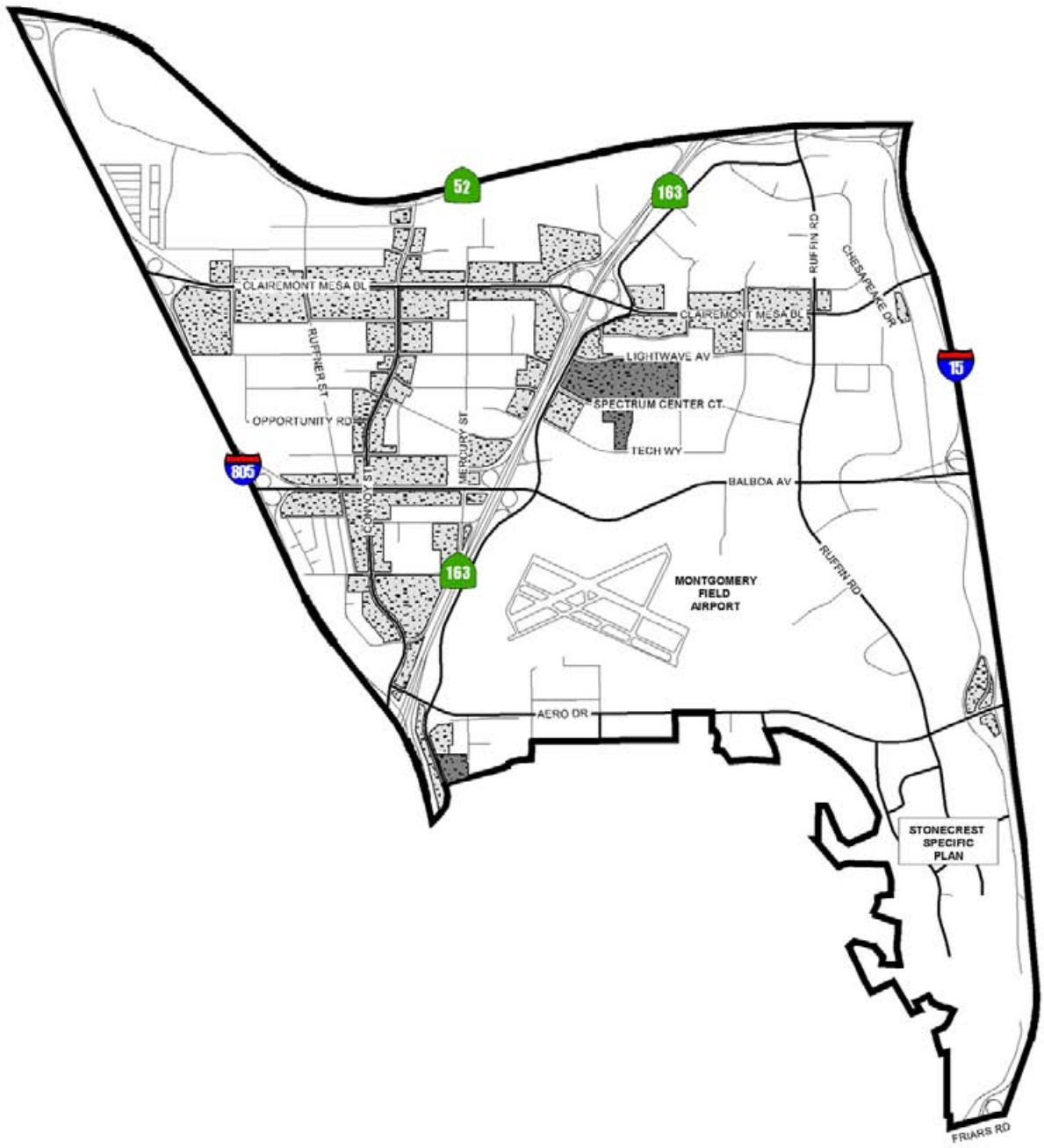
Existing Zoning (1992)
Kearny Mesa Community Plan
6 FIGURE



Recommended Industrial Land Use

Kearny Mesa Community Plan

7 FIGURE



LEGEND

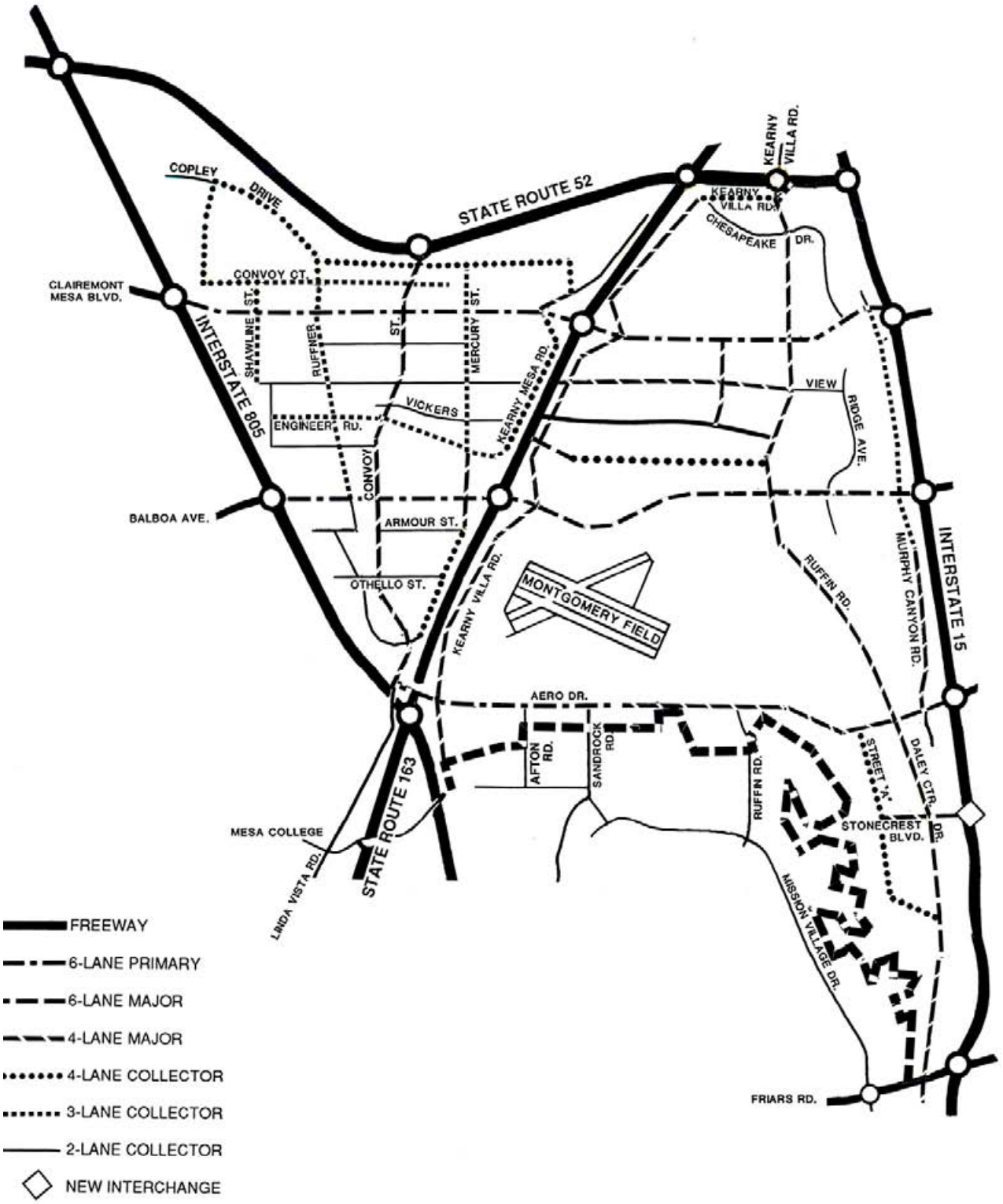
General Commercial Mixed Use Commercial/Residential

N

Recommended Commercial Land Use

Kearny Mesa Community Plan

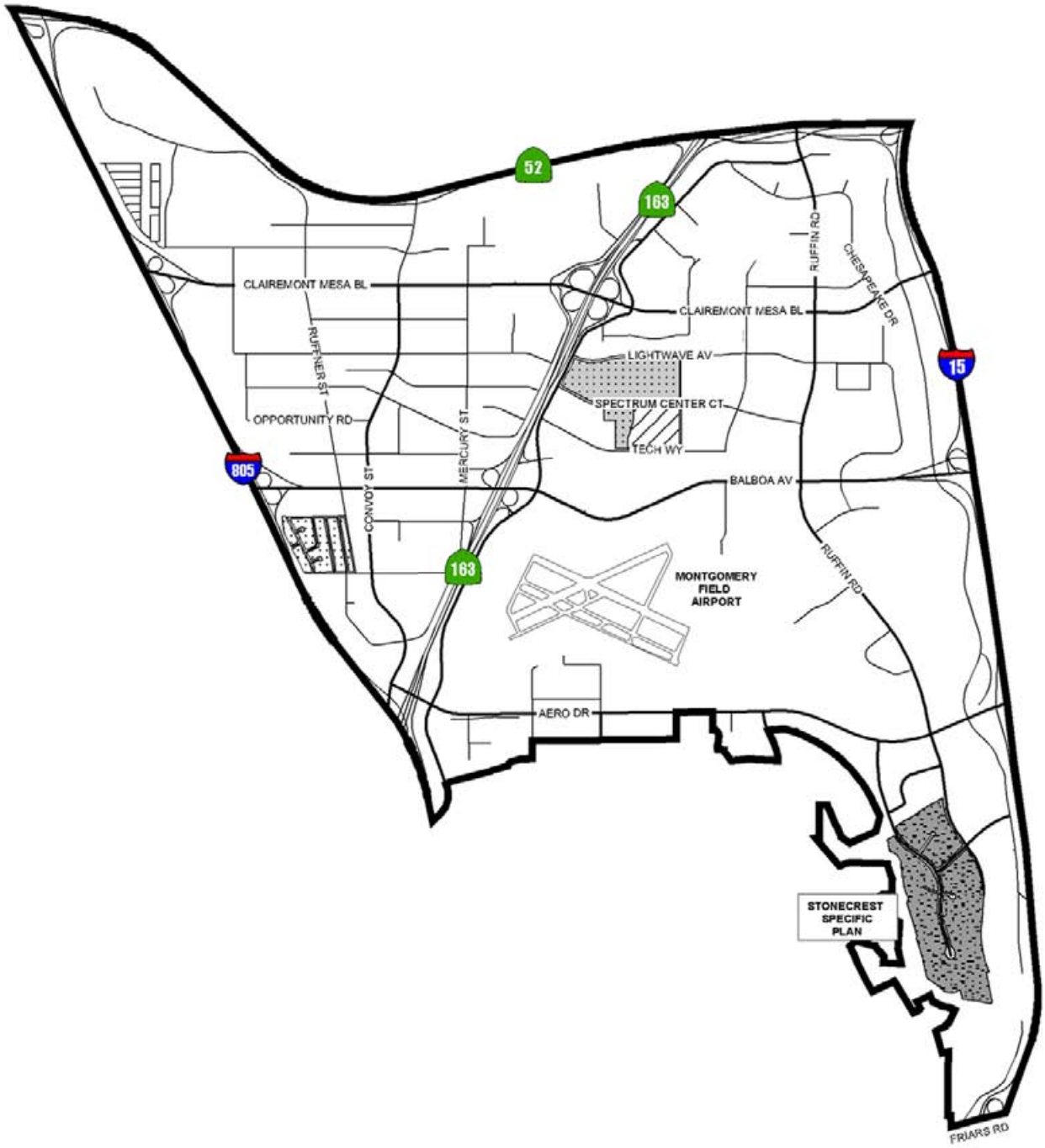
8 FIGURE



Recommended Roadway Facility Classifications

Kearny Mesa Community Plan

13 FIGURE



LEGEND

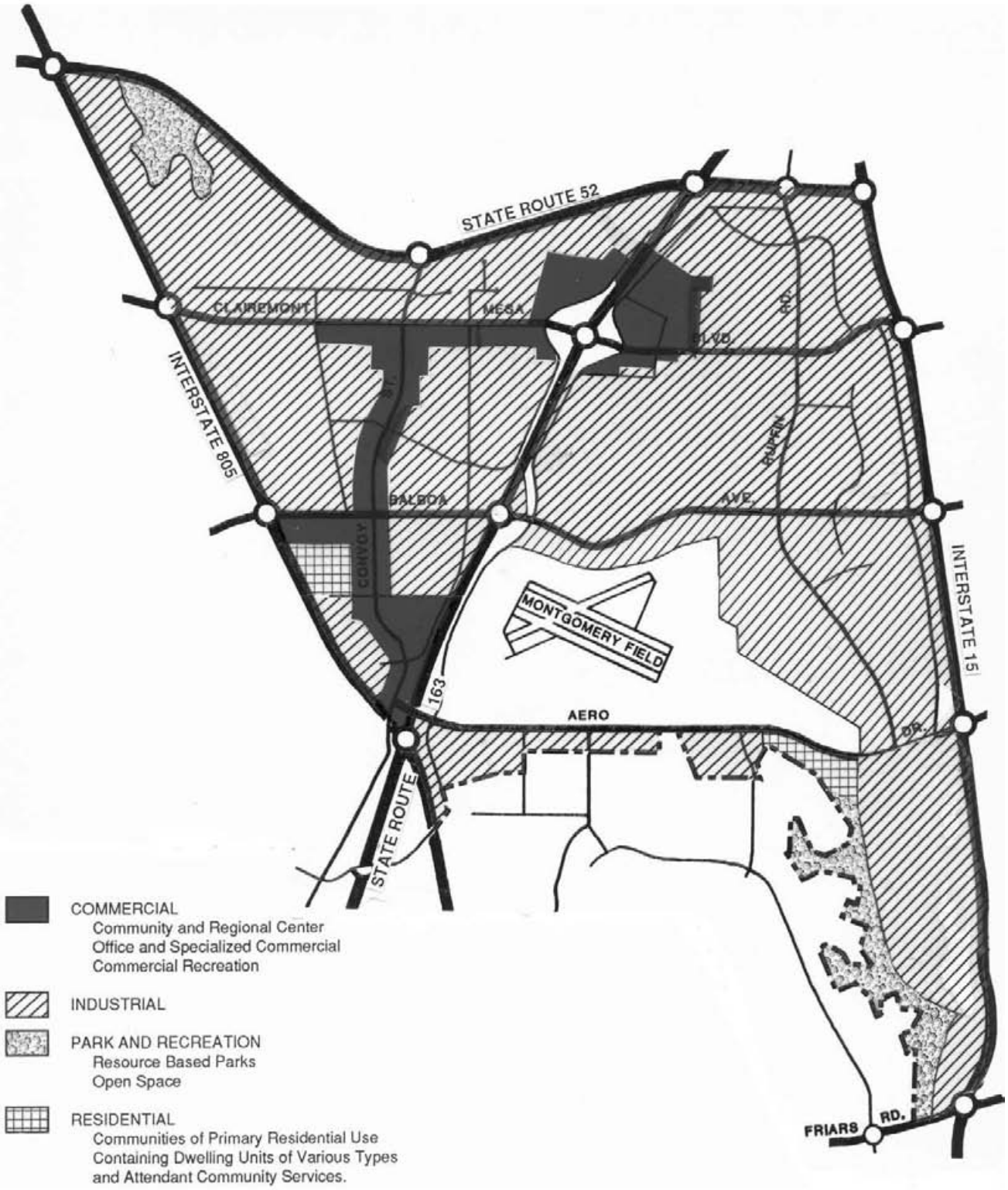
- Low Density Residential (5-9 DU/AC) (Approx. 143 Single-Family Detached Units)
- Low Medium Residential
- Medium Residential (Approx. 1235 Units)
- Mixed Use Commercial Residential

N

Recommended Residential Land Uses

Kearny Mesa Community Plan

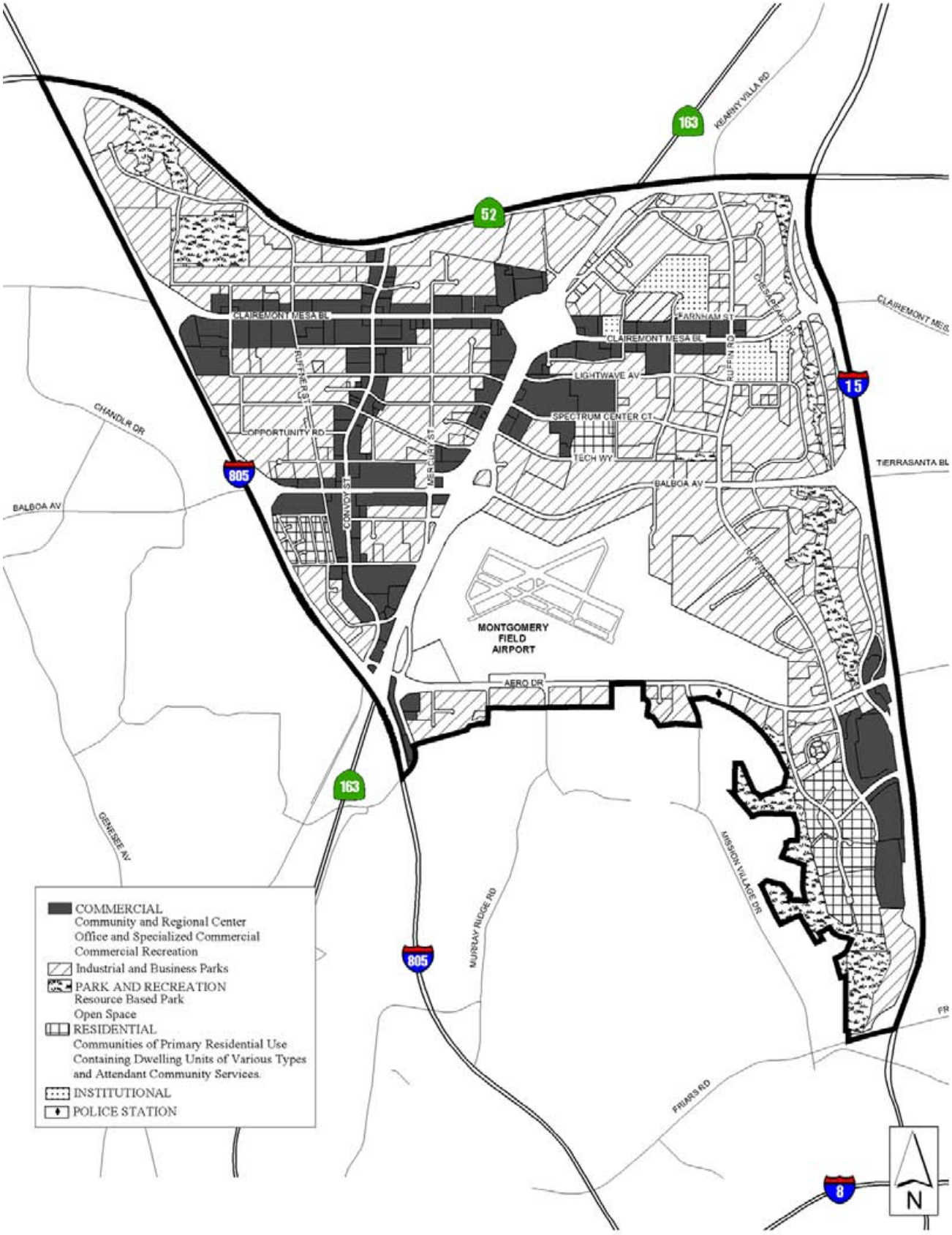
17 FIGURE



General Plan Land Use Designations Prior to Plan Adoption

Kearny Mesa Community Plan

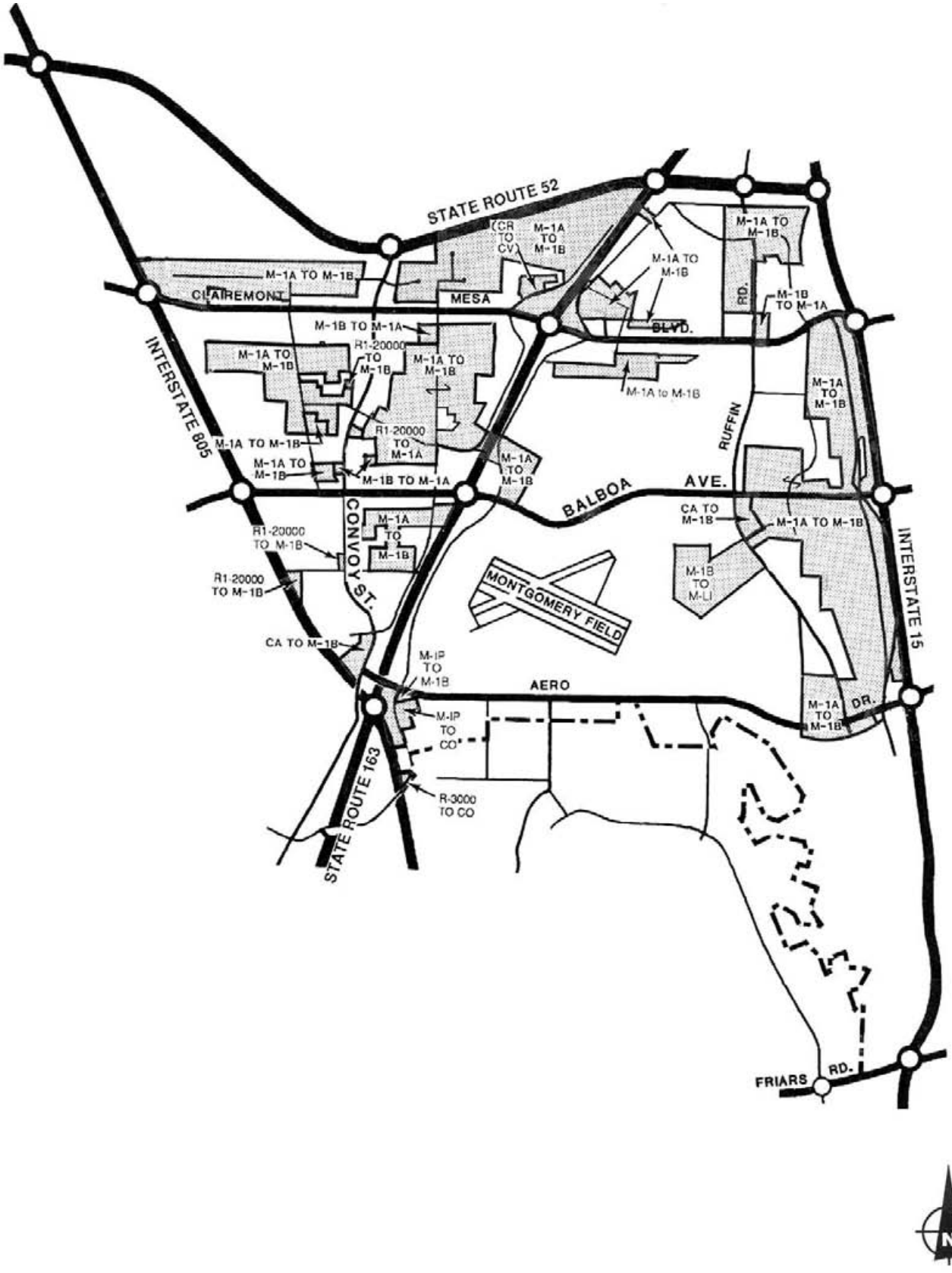
28 FIGURE



Proposed General Plan Land Use Designations

Kearny Mesa Community Plan

29 FIGURE



Proposed Rezoning (1992)

Kearny Mesa Community Plan

30 FIGURE

SERRA MESA
COMMUNITY PLAN

Prepared by
The Serra Mesa Community Planning Group

and

City of San Diego Planning Department
202 C Street, MS 4A
San Diego, CA 92101

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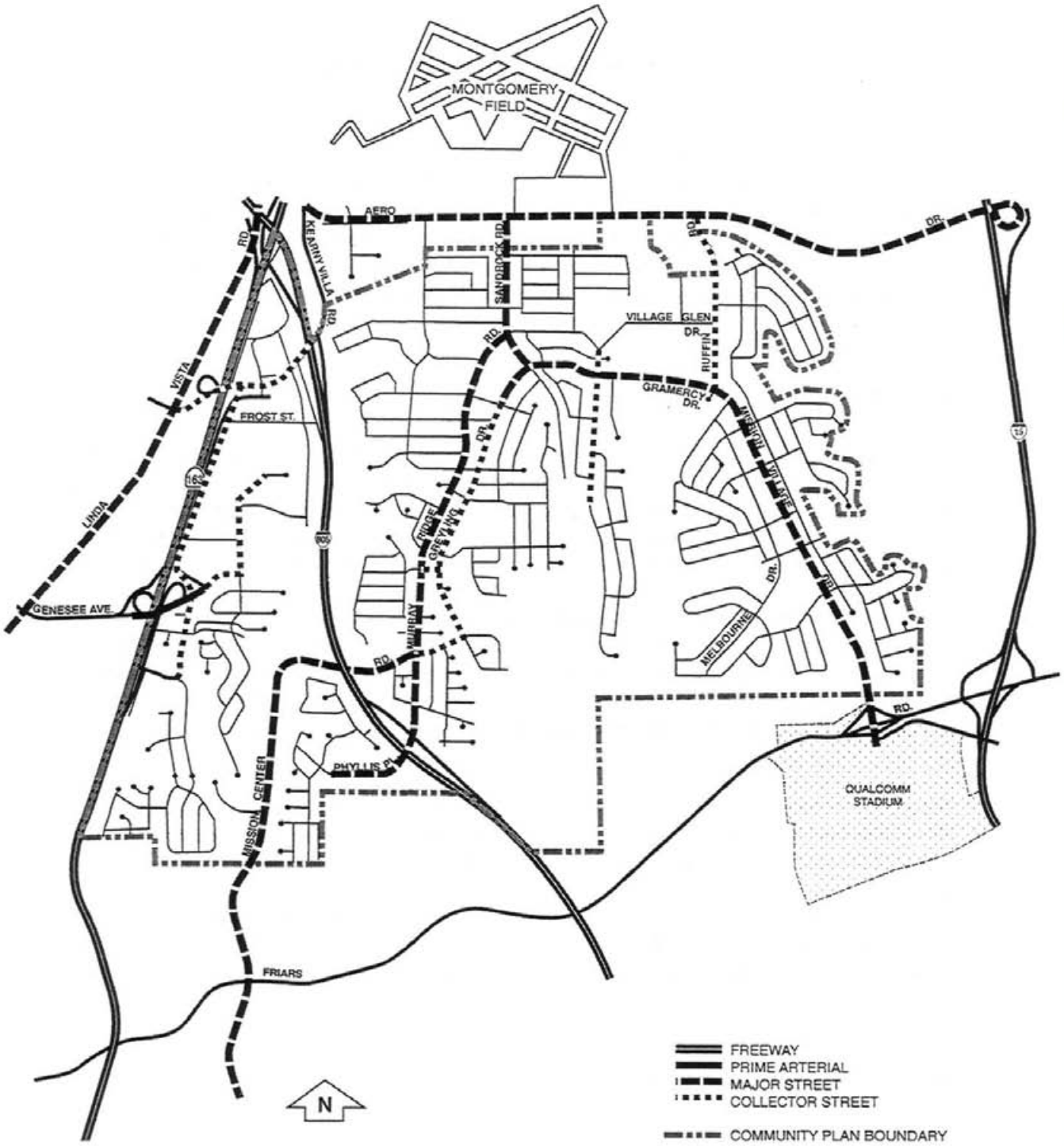
SERRA MESA COMMUNITY PLAN

The following information has been incorporated into this April 2011 posting of this Plan:

Amendment	Date Approved by Planning Commission	Resolution Number	Date Adopted by City Council	Resolution Number
Adoption of the Serra Mesa Community Plan	March 3, 1977	840	July 27, 1977	R-218949
Southern boundaries of Serra Mesa incorporated into the Mission Valley Community Plan	September 8, 1994 January 24, 1985	2123-PC	June 25, 1985	R-263537
Adoption of Stonecrest Specific Plan	November 19, 1987		February 9, 1988	R-270335
Redesignate 2.5 acres in Murphy Canyon Gateway from light industrial to visitor-serving commercial	April 24, 1986		June 10, 1986	R-265932
Adopt the alignment for State Route 52	June 5, 1986	6340-PC	June 17, 1986	R-266024
Graves Tract, Lot 2, redesignated	February 12, 1987		March 31, 1987	R-268002
Adoption of Highlands Corporate Center	August 17, 1989		November 21, 1989	R-274777
Kearny Mesa Community Plan adopted separating the commercial and industrial areas from the SMCP			October 6, 1992	R-280821
Update existing conditions information, update Housing & Environmental Management Elements in conjunction w/ rezonings for Open Space Element	October 28, 1999	2869-PC	May 16, 2000	R-293135
Added Montgomery Field ALUCP policy language and deleted references to the Montgomery Field CLUP.	February 17, 2011		April 26, 2011	R-306737

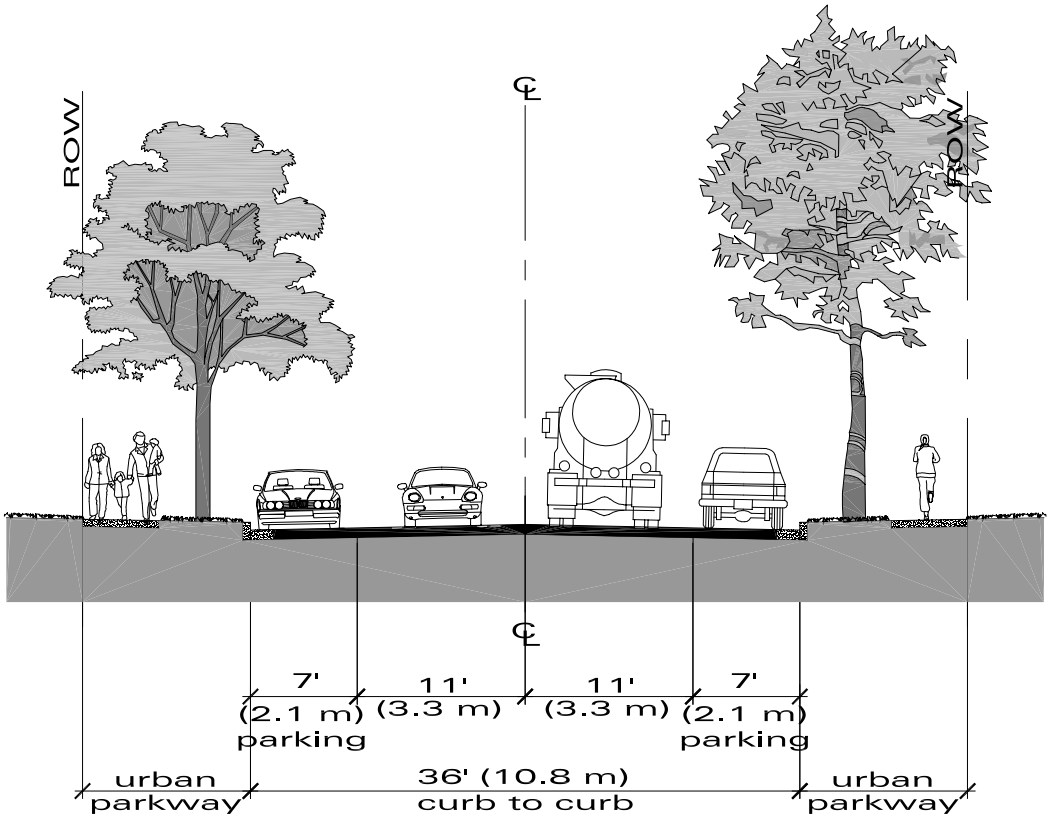


Street Classification

Serra Mesa Community Plan

9 FIGURE

Width, Right-of-Way **(with added bike lanes)**		60 ft. (18.0 m) - 86 ft. (25.8 m) 70 ft. (21.0 m) - 96 ft. (28.8 m)
Design ADT	LOS C LOS D	5,000 6,500
Design Speed		30 mph (50 km/h)
Width, Curb-to-Curb **(with added bike lanes)**		36 ft. (10.8 m) 46 ft. (13.8 m)
Maximum Grade		10% (8% in commercial area)
Minimum Curve Radius		500 ft. (160 m) above 6% grade 450 ft. (145 m) at or below 6% grade
Land Use **Parkway Options**		Large Lot Single Dwelling Residential - no front yards, Single Dwelling Residential - no front yards, Low Density Multiple Dwelling Residential - no front yards, Open Space-Park U-3; U-4 (a)
Land Use **Parkway Options**		Commercial; School, Church, or Public Building U-5 (a,b); U-6 (a,b)



section A-A (not to scale)

Appendix E

Existing LOS Calculations

8:00-9:00 AM Existing
1: Aero Dr & Convoy St

HCM Signalized Intersection Capacity Analysis

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	4	3	1	419	54	623	0	499	377	359	385	21
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.9		4.9	4.9	4.9		5.2		4.5	4.5	
Lane Util. Factor		1.00		0.95	0.91	0.95		0.95		0.97	0.95	
Frpb, ped/bikes		0.99		1.00	0.99	0.98		0.99		1.00	1.00	
Flpb, ped/bikes		1.00		1.00	1.00	1.00		1.00		1.00	1.00	
Frt		0.98		1.00	0.89	0.85		0.94		1.00	0.99	
Flt Protected		0.98		0.95	0.99	1.00		1.00		0.95	1.00	
Satd. Flow (prot)		1762		1681	1482	1481		3265		3433	3502	
Flt Permitted		0.98		0.95	0.99	1.00		1.00		0.95	1.00	
Satd. Flow (perm)		1762		1681	1482	1481		3265		3433	3502	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	4	3	1	436	56	649	0	520	393	374	401	22
RTOR Reduction (vph)	0	1	0	0	107	255	0	146	0	0	4	0
Lane Group Flow (vph)	0	7	0	392	272	115	0	767	0	374	419	0
Confl. Peds. (#/hr)			10						10			10
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Split	NA		Split	NA	Perm		NA		Prot	NA	
Protected Phases	7	7		8	8			2		1	6	
Permitted Phases						8						
Actuated Green, G (s)		1.2		27.9	27.9	27.9		28.1		13.3	46.6	
Effective Green, g (s)		1.2		27.9	27.9	27.9		28.1		13.3	46.6	
Actuated g/C Ratio		0.01		0.31	0.31	0.31		0.31		0.15	0.52	
Clearance Time (s)		4.9		4.9	4.9	4.9		5.2		4.5	4.5	
Vehicle Extension (s)		3.0		3.0	3.0	3.0		3.0		3.0	3.0	
Lane Grp Cap (vph)		23		521	459	459		1019		507	1813	
v/s Ratio Prot		c0.00		c0.23	0.18			c0.23		c0.11	0.12	
v/s Ratio Perm						0.08						
v/c Ratio		0.30		0.75	0.59	0.25		0.75		0.74	0.23	
Uniform Delay, d1		44.0		27.9	26.2	23.2		27.8		36.7	11.9	
Progression Factor		1.00		1.00	1.00	1.00		1.00		1.00	1.00	
Incremental Delay, d2		7.4		6.1	2.1	0.3		5.1		5.5	0.3	
Delay (s)		51.4		34.0	28.3	23.5		33.0		42.2	12.2	
Level of Service		D		C	C	C		C		D	B	
Approach Delay (s)		51.4			28.7			33.0			26.3	
Approach LOS		D			C			C			C	

Intersection Summary				
HCM 2000 Control Delay	29.5	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.74			
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	19.5	
Intersection Capacity Utilization	74.8%	ICU Level of Service	D	
Analysis Period (min)	15			
c Critical Lane Group				

8:00-9:00 AM Existing
2: Kearny Villa Rd & Aero Dr

HCM Signalized Intersection Capacity Analysis

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	142	475	96	254	789	472	311	188	415	173	128	39
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.3		4.5	5.3		4.5	5.7	5.7	4.5	6.0	
Lane Util. Factor	1.00	0.95		0.97	0.95		0.97	0.95	1.00	0.97	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	0.99		1.00	1.00	0.99	1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.97		1.00	0.94		1.00	1.00	0.85	1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3430		3433	3297		3433	3539	1560	3433	3384	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	3430		3433	3297		3433	3539	1560	3433	3384	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	151	505	102	270	839	502	331	200	441	184	136	41
RTOR Reduction (vph)	0	13	0	0	75	0	0	0	114	0	24	0
Lane Group Flow (vph)	151	594	0	270	1266	0	331	200	327	184	153	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Prot	NA		Prot	NA		Prot	NA	custom	Prot	NA	
Protected Phases	5	2		1	6		3	8	8	7	4	
Permitted Phases									1			
Actuated Green, G (s)	11.6	45.7		14.1	48.2		15.2	19.9	34.0	10.4	14.8	
Effective Green, g (s)	11.6	45.7		14.1	48.2		15.2	19.9	34.0	10.4	14.8	
Actuated g/C Ratio	0.11	0.42		0.13	0.44		0.14	0.18	0.31	0.09	0.13	
Clearance Time (s)	4.5	5.3		4.5	5.3		4.5	5.7	5.7	4.5	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	186	1423		439	1443		473	639	562	324	454	
v/s Ratio Prot	c0.09	0.17		0.08	c0.38		c0.10	0.06	c0.11	0.05	0.05	
v/s Ratio Perm									0.10			
v/c Ratio	0.81	0.42		0.62	0.88		0.70	0.31	0.58	0.57	0.34	
Uniform Delay, d1	48.2	22.8		45.4	28.3		45.3	39.2	32.1	47.7	43.2	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	22.9	0.2		2.6	6.3		4.5	0.3	1.5	2.3	0.4	
Delay (s)	71.1	23.0		48.0	34.6		49.8	39.4	33.6	50.0	43.6	
Level of Service	E	C		D	C		D	D	C	D	D	
Approach Delay (s)		32.6			36.8			40.3			46.9	
Approach LOS		C			D			D			D	

Intersection Summary				
HCM 2000 Control Delay	37.9	HCM 2000 Level of Service	D	
HCM 2000 Volume to Capacity ratio	0.83			
Actuated Cycle Length (s)	110.1	Sum of lost time (s)	20.3	
Intersection Capacity Utilization	78.4%	ICU Level of Service	D	
Analysis Period (min)	15			
c Critical Lane Group				

8:00-9:00 AM Existing
3: Aero Ct & Aero Dr

HCM Signalized Intersection Capacity Analysis

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	9	870	182	64	1418	13	85	0	38	3	0	14
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.3		4.5	5.3		4.9	4.9			4.9	4.9
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00			1.00	1.00
Frpb, ped/bikes	1.00	0.99		1.00	1.00		1.00	0.97			1.00	0.97
Flpb, ped/bikes	1.00	1.00		1.00	1.00		0.99	1.00			0.99	1.00
Frt	1.00	0.97		1.00	1.00		1.00	0.85			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00			0.95	1.00
Satd. Flow (prot)	1766	3423		1770	3533		1751	1535			1752	1535
Flt Permitted	0.95	1.00		0.95	1.00		0.76	1.00			0.73	1.00
Satd. Flow (perm)	1766	3423		1770	3533		1393	1535			1345	1535
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	10	978	204	72	1593	15	96	0	43	3	0	16
RTOR Reduction (vph)	0	21	0	0	1	0	0	37	0	0	0	14
Lane Group Flow (vph)	10	1161	0	72	1607	0	96	6	0	0	3	2
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	Perm
Protected Phases	5	2		1	6			4			4	
Permitted Phases							4			4		4
Actuated Green, G (s)	0.7	30.7		3.4	33.4		7.3	7.3			7.3	7.3
Effective Green, g (s)	0.7	30.7		3.4	33.4		7.3	7.3			7.3	7.3
Actuated g/C Ratio	0.01	0.55		0.06	0.60		0.13	0.13			0.13	0.13
Clearance Time (s)	4.5	5.3		4.5	5.3		4.9	4.9			4.9	4.9
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0			3.0	3.0
Lane Grp Cap (vph)	22	1873		107	2103		181	199			175	199
v/s Ratio Prot	0.01	0.34		c0.04	c0.45			0.00				
v/s Ratio Perm							c0.07				0.00	0.00
v/c Ratio	0.45	0.62		0.67	0.76		0.53	0.03			0.02	0.01
Uniform Delay, d1	27.5	8.7		25.8	8.4		22.8	21.3			21.3	21.3
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00			1.00	1.00
Incremental Delay, d2	14.2	0.6		15.4	1.7		3.0	0.1			0.0	0.0
Delay (s)	41.7	9.3		41.2	10.1		25.8	21.4			21.3	21.3
Level of Service	D	A		D	B		C	C			C	C
Approach Delay (s)		9.6			11.5			24.4			21.3	
Approach LOS		A			B			C			C	

Intersection Summary					
HCM 2000 Control Delay	11.4	HCM 2000 Level of Service	B		
HCM 2000 Volume to Capacity ratio	0.75				
Actuated Cycle Length (s)	56.1	Sum of lost time (s)	14.7		
Intersection Capacity Utilization	67.1%	ICU Level of Service	C		
Analysis Period (min)	15				
c Critical Lane Group					

8:00-9:00 AM Existing
4: Afton Rd & Aero Dr

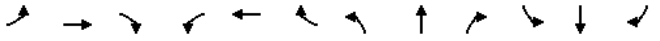
HCM Signalized Intersection Capacity Analysis

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	69	687	154	59	1203	7	256	4	52	3	0	15
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.4		4.5	5.3			4.9			4.9	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	
Frpb, ped/bikes	1.00	0.99		1.00	1.00			1.00			0.98	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			0.99			1.00	
Frt	1.00	0.97		1.00	1.00			0.98			0.89	
Flt Protected	0.95	1.00		0.95	1.00			0.96			0.99	
Satd. Flow (prot)	1770	3414		1770	3535			1723			1599	
Flt Permitted	0.95	1.00		0.95	1.00			0.75			0.95	
Satd. Flow (perm)	1770	3414		1770	3535			1346			1531	
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	78	772	173	66	1352	8	288	4	58	3	0	17
RTOR Reduction (vph)	0	27	0	0	1	0	0	10	0	0	14	0
Lane Group Flow (vph)	78	918	0	66	1359	0	0	340	0	0	6	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8			4		
Actuated Green, G (s)	3.5	30.4		3.9	30.9			19.2			19.2	
Effective Green, g (s)	3.5	30.4		3.9	30.9			19.2			19.2	
Actuated g/C Ratio	0.05	0.45		0.06	0.45			0.28			0.28	
Clearance Time (s)	4.5	5.4		4.5	5.3			4.9			4.9	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	90	1519		101	1599			378			430	
v/s Ratio Prot	c0.04	0.27		0.04	c0.38							
v/s Ratio Perm								c0.25			0.00	
v/c Ratio	0.87	0.60		0.65	0.85			0.90			0.01	
Uniform Delay, d1	32.2	14.4		31.5	16.6			23.6			17.7	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	53.4	1.8		14.2	5.9			23.2			0.0	
Delay (s)	85.6	16.2		45.7	22.5			46.8			17.7	
Level of Service	F	B		D	C			D			B	
Approach Delay (s)		21.5			23.6			46.8			17.7	
Approach LOS		C			C			D			B	

Intersection Summary					
HCM 2000 Control Delay	25.7	HCM 2000 Level of Service	C		
HCM 2000 Volume to Capacity ratio	0.87				
Actuated Cycle Length (s)	68.3	Sum of lost time (s)	14.8		
Intersection Capacity Utilization	74.0%	ICU Level of Service	D		
Analysis Period (min)	15				
c Critical Lane Group					

8:00-9:00 AM Existing
5: Sandrock Rd & Aero Dr

HCM Signalized Intersection Capacity Analysis



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	41	504	182	115	732	55	505	38	209	14	6	16
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.2	5.2	4.5	5.2		5.0	5.0	5.0	4.9	4.9	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		0.95	0.95	1.00	1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.95	1.00	1.00		1.00	1.00	0.97	1.00	0.97	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85	1.00	0.89	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	0.96	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3539	1510	1770	3491		1681	1697	1538	1770	1605	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	0.96	1.00	0.95	1.00	
Satd. Flow (perm)	1770	3539	1510	1770	3491		1681	1697	1538	1770	1605	
Peak-hour factor, PHF	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Adj. Flow (vph)	48	586	212	134	851	64	587	44	243	16	7	19
RTOR Reduction (vph)	0	0	146	0	6	0	0	0	167	0	18	0
Lane Group Flow (vph)	48	586	66	134	909	0	317	314	76	16	8	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Prot	NA	Perm	Prot	NA		Split	NA	Perm	Split	NA	
Protected Phases	5	2		1	6		8	8		7	7	
Permitted Phases			2						8			
Actuated Green, G (s)	2.2	21.0	21.0	6.7	25.5		16.1	16.1	16.1	3.6	3.6	
Effective Green, g (s)	2.2	21.0	21.0	6.7	25.5		16.1	16.1	16.1	3.6	3.6	
Actuated g/C Ratio	0.03	0.31	0.31	0.10	0.38		0.24	0.24	0.24	0.05	0.05	
Clearance Time (s)	4.5	5.2	5.2	4.5	5.2		5.0	5.0	5.0	4.9	4.9	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	58	1109	473	177	1328		403	407	369	95	86	
v/s Ratio Prot	0.03	0.17		c0.08	c0.26		c0.19	0.19		c0.01	0.00	
v/s Ratio Perm			0.04						0.05			
v/c Ratio	0.83	0.53	0.14	0.76	0.68		0.79	0.77	0.21	0.17	0.09	
Uniform Delay, d1	32.2	18.9	16.5	29.4	17.4		23.8	23.7	20.3	30.3	30.1	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	59.9	1.8	0.6	16.8	1.5		9.7	8.8	0.3	0.8	0.5	
Delay (s)	92.1	20.7	17.1	46.1	18.9		33.6	32.5	20.6	31.1	30.6	
Level of Service	F	C	B	D	B		C	C	C	C	C	
Approach Delay (s)		23.9			22.3			29.6			30.8	
Approach LOS		C			C			C			C	

Intersection Summary				
HCM 2000 Control Delay	25.2	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.71			
Actuated Cycle Length (s)	67.0	Sum of lost time (s)	19.6	
Intersection Capacity Utilization	59.3%	ICU Level of Service	B	
Analysis Period (min)	15			
c Critical Lane Group				

8:00-9:00 AM Existing
6: Ruffin Rd & Aero Dr

HCM Signalized Intersection Capacity Analysis

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	539	115	167	517	442	516
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.2	5.2	4.5	4.5	5.5	5.5
Lane Util. Factor	0.95	1.00	0.97	0.95	0.97	1.00
Frpb, ped/bikes	1.00	0.99	1.00	1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	3539	1562	3433	3539	3433	1542
Flt Permitted	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)	3539	1562	3433	3539	3433	1542
Peak-hour factor, PHF	0.85	0.85	0.85	0.85	0.85	0.85
Adj. Flow (vph)	634	135	196	608	520	607
RTOR Reduction (vph)	0	21	0	0	0	192
Lane Group Flow (vph)	634	114	196	608	520	415
Confl. Peds. (#/hr)		10	10		10	10
Confl. Bikes (#/hr)		5				5
Turn Type	NA	custom	Prot	NA	Prot	Perm
Protected Phases	2	2	1	6	8	
Permitted Phases		8				8
Actuated Green, G (s)	17.4	39.3	5.5	28.1	21.9	21.9
Effective Green, g (s)	17.4	39.3	5.5	28.1	21.9	21.9
Actuated g/C Ratio	0.29	0.65	0.09	0.47	0.36	0.36
Clearance Time (s)	5.2	5.2	4.5	4.5	5.5	5.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	1026	1158	314	1657	1253	562
v/s Ratio Prot	c0.18	0.03	c0.06	0.17	0.15	
v/s Ratio Perm		0.04				c0.27
v/c Ratio	0.62	0.10	0.62	0.37	0.42	0.74
Uniform Delay, d1	18.4	3.8	26.3	10.2	14.3	16.6
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	2.8	0.2	3.8	0.1	1.0	8.5
Delay (s)	21.2	4.0	30.1	10.4	15.3	25.0
Level of Service	C	A	C	B	B	C
Approach Delay (s)	18.2			15.2	20.5	
Approach LOS	B			B	C	

Intersection Summary				
HCM 2000 Control Delay	18.3	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.68			
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	15.2	
Intersection Capacity Utilization	56.8%	ICU Level of Service	B	
Analysis Period (min)	15			
c Critical Lane Group				

Movement	EBU	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations							
Volume (vph)	19	977	119	116	606	84	57
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5		4.5	4.5	4.5	4.5
Lane Util. Factor	1.00	0.95		0.97	0.95	0.97	0.88
Frpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	0.95
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00
Frt	1.00	0.98		1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	0.95	1.00
Satd. Flow (prot)	1770	3471		3433	3539	3433	2643
Flt Permitted	0.95	1.00		0.95	1.00	0.95	1.00
Satd. Flow (perm)	1770	3471		3433	3539	3433	2643
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	21	1086	132	129	673	93	63
RTOR Reduction (vph)	0	10	0	0	0	0	49
Lane Group Flow (vph)	21	1208	0	129	673	93	14
Confl. Peds. (#/hr)			10	10		10	10
Confl. Bikes (#/hr)			5				5
Turn Type	Prot	NA		Prot	NA	Prot	Perm
Protected Phases	5	2		1	6	8	
Permitted Phases							8
Actuated Green, G (s)	1.6	38.4		7.0	43.8	16.1	16.1
Effective Green, g (s)	1.6	38.4		7.0	43.8	16.1	16.1
Actuated g/C Ratio	0.02	0.51		0.09	0.58	0.21	0.21
Clearance Time (s)	4.5	4.5		4.5	4.5	4.5	4.5
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	37	1777		320	2066	736	567
v/s Ratio Prot	0.01	c0.35		c0.04	0.19	c0.03	
v/s Ratio Perm							0.01
v/c Ratio	0.57	0.68		0.40	0.33	0.13	0.02
Uniform Delay, d1	36.4	13.7		32.0	8.0	23.8	23.2
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2	18.4	2.1		0.8	0.4	0.4	0.1
Delay (s)	54.8	15.8		32.9	8.4	24.1	23.3
Level of Service	D	B		C	A	C	C
Approach Delay (s)		16.5			12.4	23.8	
Approach LOS		B			B	C	

Intersection Summary				
HCM 2000 Control Delay	15.5	HCM 2000 Level of Service		B
HCM 2000 Volume to Capacity ratio	0.50			
Actuated Cycle Length (s)	75.0	Sum of lost time (s)		13.5
Intersection Capacity Utilization	58.8%	ICU Level of Service		B
Analysis Period (min)	15			
c Critical Lane Group				

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	2	0	0	8	0	114	1	12	232	2
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64
Hourly flow rate (vph)	0	0	3	0	0	12	0	178	2	19	362	3
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)											142	
pX, platoon unblocked												
vC, conflicting volume	593	581	364	584	582	179	366			180		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	593	581	364	584	582	179	366			180		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	100	100	100	99	100			99		
cM capacity (veh/h)	407	419	681	417	419	864	1193			1396		

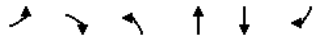
Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	3	12	180	384
Volume Left	0	0	0	19
Volume Right	3	12	2	3
cSH	681	864	1193	1396
Volume to Capacity	0.00	0.01	0.00	0.01
Queue Length 95th (ft)	0	1	0	1
Control Delay (s)	10.3	9.2	0.0	0.5
Lane LOS	B	A		A
Approach Delay (s)	10.3	9.2	0.0	0.5
Approach LOS	B	A		

Intersection Summary				
Average Delay		0.6		
Intersection Capacity Utilization		29.7%	ICU Level of Service	A
Analysis Period (min)		15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	1	21	93	2	70	128
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.55	0.55	0.55	0.55	0.55	0.55
Hourly flow rate (vph)	2	38	169	4	127	233
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						635
pX, platoon unblocked						
vC, conflicting volume	658	171			173	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	658	171			173	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	96			91	
cM capacity (veh/h)	390	873			1404	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	40	173	360
Volume Left	2	0	127
Volume Right	38	4	0
cSH	826	1700	1404
Volume to Capacity	0.05	0.10	0.09
Queue Length 95th (ft)	4	0	7
Control Delay (s)	9.6	0.0	3.3
Lane LOS	A		A
Approach Delay (s)	9.6	0.0	3.3
Approach LOS	A		

Intersection Summary			
Average Delay		2.7	
Intersection Capacity Utilization		27.3%	ICU Level of Service A
Analysis Period (min)		15	



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	701	27	365	460	306	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.1	4.7	4.7	5.8	5.8	
Lane Util. Factor	0.97	1.00	1.00	0.95	0.95	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.85	1.00	1.00	1.00	
Flt Protected	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	3433	1583	1770	3539	3539	
Flt Permitted	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (perm)	3433	1583	1770	3539	3539	
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	788	30	410	517	344	0
RTOR Reduction (vph)	0	14	0	0	0	0
Lane Group Flow (vph)	788	16	410	517	344	0
Confl. Peds. (#/hr)						10
Confl. Bikes (#/hr)						5
Turn Type	Prot	pm+ov	Prot	NA	NA	
Protected Phases	4	5	5	2	6	
Permitted Phases		4				
Actuated Green, G (s)	19.3	39.7	20.4	44.2	19.1	
Effective Green, g (s)	19.3	39.7	20.4	44.2	19.1	
Actuated g/C Ratio	0.26	0.53	0.27	0.59	0.26	
Clearance Time (s)	5.1	4.7	4.7	5.8	5.8	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	890	844	485	2102	908	
v/s Ratio Prot	c0.23	0.01	c0.23	0.15	c0.10	
v/s Ratio Perm		0.01				
v/c Ratio	0.89	0.02	0.85	0.25	0.38	
Uniform Delay, d1	26.5	8.2	25.5	7.2	22.8	
Progression Factor	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	10.5	0.0	12.8	0.3	1.2	
Delay (s)	37.0	8.2	38.3	7.5	24.0	
Level of Service	D	A	D	A	C	
Approach Delay (s)	35.9			21.1	24.0	
Approach LOS	D			C	C	

Intersection Summary				
HCM 2000 Control Delay	27.4	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.71			
Actuated Cycle Length (s)	74.4	Sum of lost time (s)	15.6	
Intersection Capacity Utilization	66.6%	ICU Level of Service	C	
Analysis Period (min)	15			
c Critical Lane Group				

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	92	54	19	354	69	305	2	170	76	63	214	67
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.1			5.1	5.1	4.7	5.5	5.5	4.7	5.5	
Lane Util. Factor		1.00			1.00	1.00	1.00	0.95	1.00	1.00	0.95	
Frpb, ped/bikes		1.00			1.00	0.97	1.00	1.00	0.95	1.00	0.99	
Flpb, ped/bikes		1.00			1.00	1.00	0.98	1.00	1.00	1.00	1.00	
Frt		0.98			1.00	0.85	1.00	1.00	0.85	1.00	0.96	
Flt Protected		0.97			0.96	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1777			1788	1535	1741	3539	1500	1770	3371	
Flt Permitted		0.97			0.96	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)		1777			1788	1535	1741	3539	1500	1770	3371	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	98	57	20	377	73	324	2	181	81	67	228	71
RTOR Reduction (vph)	0	5	0	0	0	184	0	0	60	0	30	0
Lane Group Flow (vph)	0	170	0	0	450	140	2	181	21	67	269	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Split	NA		Split	NA	Perm	Prot	NA	Perm	Prot	NA	
Protected Phases	4	4		3	3		5	2		1	6	
Permitted Phases						3			2			
Actuated Green, G (s)		12.5			25.0	25.0	0.7	21.0	21.0	4.0	24.3	
Effective Green, g (s)		12.5			25.0	25.0	0.7	21.0	21.0	4.0	24.3	
Actuated g/C Ratio		0.15			0.30	0.30	0.01	0.25	0.25	0.05	0.29	
Clearance Time (s)		5.1			5.1	5.1	4.7	5.5	5.5	4.7	5.5	
Vehicle Extension (s)		3.0			3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)		267			539	462	14	896	379	85	988	
v/s Ratio Prot		c0.10			c0.25		0.00	0.05		c0.04	c0.08	
v/s Ratio Perm						0.09			0.01			
v/c Ratio		0.64			0.83	0.30	0.14	0.20	0.05	0.79	0.27	
Uniform Delay, d1		33.1			27.0	22.3	40.8	24.4	23.4	39.0	22.5	
Progression Factor		1.00			1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2		4.9			10.7	0.4	4.7	0.5	0.3	37.0	0.7	
Delay (s)		38.0			37.8	22.6	45.5	24.9	23.7	76.0	23.2	
Level of Service		D			D	C	D	C	C	E	C	
Approach Delay (s)		38.0			31.4			24.7			32.9	
Approach LOS		D			C			C			C	

Intersection Summary				
HCM 2000 Control Delay	31.4	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.60			
Actuated Cycle Length (s)	82.9	Sum of lost time (s)	20.4	
Intersection Capacity Utilization	59.5%	ICU Level of Service	B	
Analysis Period (min)	15			
c Critical Lane Group				

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	19	24	20	322	57	17	108	860	147	20	399	48
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.9	4.9	4.5	4.9		4.5	5.3		4.5	5.0	
Lane Util. Factor	1.00	1.00	1.00	0.97	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	1.00	0.85	1.00	0.97		1.00	0.98		1.00	0.98	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1863	1583	3433	1799		1770	3462		1770	3483	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	1863	1583	3433	1799		1770	3462		1770	3483	
Peak-hour factor, PHF	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Adj. Flow (vph)	19	24	20	325	58	17	109	869	148	20	403	48
RTOR Reduction (vph)	0	0	19	0	12	0	0	10	0	0	7	0
Lane Group Flow (vph)	19	24	1	325	63	0	109	1007	0	20	444	0
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4									
Actuated Green, G (s)	2.3	5.3	5.3	14.5	17.5		11.4	57.9		3.1	49.9	
Effective Green, g (s)	2.3	5.3	5.3	14.5	17.5		11.4	57.9		3.1	49.9	
Actuated g/C Ratio	0.02	0.05	0.05	0.14	0.18		0.11	0.58		0.03	0.50	
Clearance Time (s)	4.5	4.9	4.9	4.5	4.9		4.5	5.3		4.5	5.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	40	98	83	497	314		201	2004		54	1738	
v/s Ratio Prot	0.01	0.01		c0.09	c0.03		c0.06	c0.29		0.01	0.13	
v/s Ratio Perm			0.00									
v/c Ratio	0.47	0.24	0.01	0.65	0.20		0.54	0.50		0.37	0.26	
Uniform Delay, d1	48.3	45.4	44.9	40.4	35.3		41.8	12.5		47.5	14.4	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	8.6	1.3	0.1	3.1	0.3		3.0	0.9		4.2	0.4	
Delay (s)	56.9	46.7	44.9	43.5	35.6		44.8	13.4		51.7	14.7	
Level of Service	E	D	D	D	D		D	B		D	B	
Approach Delay (s)		49.2			42.0			16.4			16.3	
Approach LOS		D			D			B			B	

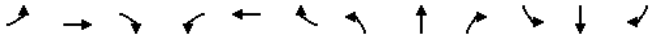
Intersection Summary				
HCM 2000 Control Delay	22.4	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.54			
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	19.2	
Intersection Capacity Utilization	59.9%	ICU Level of Service	B	
Analysis Period (min)	15			
c Critical Lane Group				

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	463	0	0	916	549	431
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.1			5.1	5.1	5.1
Lane Util. Factor	0.95			0.95	0.97	0.91
Frt	1.00			1.00	0.97	0.85
Flt Protected	1.00			1.00	0.96	1.00
Satd. Flow (prot)	3539			3539	3376	1441
Flt Permitted	1.00			1.00	0.96	1.00
Satd. Flow (perm)	3539			3539	3376	1441
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	493	0	0	974	584	459
RTOR Reduction (vph)	0	0	0	0	23	241
Lane Group Flow (vph)	493	0	0	974	694	85
Turn Type	NA			NA	Prot	Perm
Protected Phases	2			6	4	
Permitted Phases						4
Actuated Green, G (s)	16.2			28.1	21.1	21.1
Effective Green, g (s)	16.2			28.1	21.1	21.1
Actuated g/C Ratio	0.20			0.35	0.26	0.26
Clearance Time (s)	5.1			5.1	5.1	5.1
Vehicle Extension (s)	3.0			3.0	3.0	3.0
Lane Grp Cap (vph)	710			1232	882	376
v/s Ratio Prot	c0.14			c0.28	c0.21	
v/s Ratio Perm						0.06
v/c Ratio	0.69			0.79	0.79	0.23
Uniform Delay, d1	30.0			23.7	27.7	23.4
Progression Factor	1.00			1.00	1.00	1.00
Incremental Delay, d2	3.0			3.5	4.7	0.3
Delay (s)	32.9			27.2	32.4	23.7
Level of Service	C			C	C	C
Approach Delay (s)	32.9			27.2	29.7	
Approach LOS	C			C	C	

Intersection Summary				
HCM 2000 Control Delay	29.3	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.77			
Actuated Cycle Length (s)	80.7	Sum of lost time (s)	15.3	
Intersection Capacity Utilization	54.0%	ICU Level of Service	A	
Analysis Period (min)	15			
c Critical Lane Group				

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	39	620	228	454	787	15	59	6	108	30	34	51
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.9	4.0	4.5	4.9		4.9	4.9	4.9		4.9	4.9
Lane Util. Factor	1.00	0.95	1.00	0.97	0.95		1.00	0.95	0.95		1.00	1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	0.97	0.97		1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00		1.00	0.86	0.85		1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00		0.98	1.00
Satd. Flow (prot)	1770	3539	1583	3433	3526		1770	1485	1455		1821	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00		0.98	1.00
Satd. Flow (perm)	1770	3539	1583	3433	3526		1770	1485	1455		1821	1583
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	42	667	245	488	846	16	63	6	116	32	37	55
RTOR Reduction (vph)	0	0	0	0	1	0	0	0	0	0	0	0
Lane Group Flow (vph)	42	667	245	488	861	0	63	62	60	0	69	55
Confl. Peds. (#/hr)						10			10			
Confl. Bikes (#/hr)						5			5			
Turn Type	Prot	NA	Free	Prot	NA		Split	NA	Perm	Split	NA	Perm
Protected Phases	5	2		1	6		3	3		4	4	
Permitted Phases			Free						3			4
Actuated Green, G (s)	2.6	25.5	83.1	15.1	38.0		16.2	16.2	16.2		7.1	7.1
Effective Green, g (s)	2.6	25.5	83.1	15.1	38.0		16.2	16.2	16.2		7.1	7.1
Actuated g/C Ratio	0.03	0.31	1.00	0.18	0.46		0.19	0.19	0.19		0.09	0.09
Clearance Time (s)	4.5	4.9		4.5	4.9		4.9	4.9	4.9		4.9	4.9
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	55	1085	1583	623	1612		345	289	283		155	135
v/s Ratio Prot	0.02	c0.19		c0.14	0.24		0.04	c0.04			c0.04	
v/s Ratio Perm			0.15						0.04			0.03
v/c Ratio	0.76	0.61	0.15	0.78	0.53		0.18	0.21	0.21		0.45	0.41
Uniform Delay, d1	39.9	24.6	0.0	32.4	16.2		27.9	28.1	28.1		36.1	36.0
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	46.0	2.6	0.2	6.4	0.3		1.2	1.7	1.7		2.0	2.0
Delay (s)	86.0	27.2	0.2	38.8	16.5		29.1	29.8	29.8		38.2	38.0
Level of Service	F	C	A	D	B		C	C	C		D	D
Approach Delay (s)		22.9			24.6			29.6			38.1	
Approach LOS		C			C			C			D	

Intersection Summary				
HCM 2000 Control Delay	25.0	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.53			
Actuated Cycle Length (s)	83.1	Sum of lost time (s)	19.2	
Intersection Capacity Utilization	55.3%	ICU Level of Service	B	
Analysis Period (min)	15			
c Critical Lane Group				



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	6	450	383	98	1430	76	0	0	0	44	27	26
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.7	5.1		4.7	5.1						5.5	
Lane Util. Factor	1.00	0.95		1.00	0.95						1.00	
Frpb, ped/bikes	1.00	0.99		1.00	1.00						0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00						1.00	
Frt	1.00	0.93		1.00	0.99						0.96	
Flt Protected	0.95	1.00		0.95	1.00						0.98	
Satd. Flow (prot)	1765	3264		1770	3504						1741	
Flt Permitted	0.95	1.00		0.95	1.00						0.98	
Satd. Flow (perm)	1765	3264		1770	3504						1741	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	7	489	416	107	1554	83	0	0	0	48	29	28
RTOR Reduction (vph)	0	170	0	0	5	0	0	0	0	0	14	0
Lane Group Flow (vph)	7	735	0	107	1632	0	0	0	0	0	91	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Prot	NA		Prot	NA					Split	NA	
Protected Phases	5	2		1	6					4	4	
Permitted Phases												
Actuated Green, G (s)	0.7	37.0		8.5	44.8						16.4	
Effective Green, g (s)	0.7	37.0		8.5	44.8						16.4	
Actuated g/C Ratio	0.01	0.48		0.11	0.58						0.21	
Clearance Time (s)	4.7	5.1		4.7	5.1						5.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0						3.0	
Lane Grp Cap (vph)	16	1564		194	2033						369	
v/s Ratio Prot	0.00	0.23		c0.06	c0.47						c0.05	
v/s Ratio Perm												
v/c Ratio	0.44	0.47		0.55	0.80						0.25	
Uniform Delay, d1	38.1	13.5		32.5	12.7						25.3	
Progression Factor	1.00	1.00		1.00	1.00						1.00	
Incremental Delay, d2	18.0	0.2		3.4	2.4						1.6	
Delay (s)	56.0	13.7		35.9	15.1						26.8	
Level of Service	E	B		D	B						C	
Approach Delay (s)		14.1			16.4			0.0			26.8	
Approach LOS		B			B			A			C	

Intersection Summary				
HCM 2000 Control Delay	16.0	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.67			
Actuated Cycle Length (s)	77.2	Sum of lost time (s)	15.3	
Intersection Capacity Utilization	71.4%	ICU Level of Service	C	
Analysis Period (min)	15			
c Critical Lane Group				

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	511	0	0	426	1192	437
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.5			5.5	4.5	5.5
Lane Util. Factor	0.95			0.95	0.97	1.00
Frpb, ped/bikes	1.00			1.00	1.00	0.97
Flpb, ped/bikes	1.00			1.00	1.00	1.00
Frt	1.00			1.00	1.00	0.85
Flt Protected	1.00			1.00	0.95	1.00
Satd. Flow (prot)	3539			3539	3433	1544
Flt Permitted	1.00			1.00	0.95	1.00
Satd. Flow (perm)	3539			3539	3433	1544
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	555	0	0	463	1296	475
RTOR Reduction (vph)	0	0	0	0	0	329
Lane Group Flow (vph)	555	0	0	463	1296	146
Confl. Peds. (#/hr)						10
Confl. Bikes (#/hr)						5
Turn Type	NA			NA	Prot	Perm
Protected Phases	2			6	4	
Permitted Phases						6
Actuated Green, G (s)	17.1			17.1	28.5	17.1
Effective Green, g (s)	17.1			17.1	28.5	17.1
Actuated g/C Ratio	0.31			0.31	0.51	0.31
Clearance Time (s)	5.5			5.5	4.5	5.5
Vehicle Extension (s)	3.0			3.0	3.0	3.0
Lane Grp Cap (vph)	1088			1088	1759	474
v/s Ratio Prot	c0.16			0.13	c0.38	
v/s Ratio Perm						0.09
v/c Ratio	0.51			0.43	0.74	0.31
Uniform Delay, d1	15.8			15.3	10.6	14.7
Progression Factor	1.00			1.00	1.00	1.00
Incremental Delay, d2	0.4			0.3	1.6	0.4
Delay (s)	16.2			15.6	12.3	15.1
Level of Service	B			B	B	B
Approach Delay (s)	16.2			15.6	13.0	
Approach LOS	B			B	B	

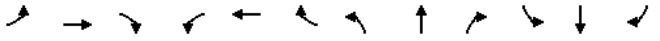
Intersection Summary				
HCM 2000 Control Delay	14.1	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.65			
Actuated Cycle Length (s)	55.6	Sum of lost time (s)	10.0	
Intersection Capacity Utilization	56.5%	ICU Level of Service	B	
Analysis Period (min)	15			
c Critical Lane Group				

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	12	35	19	303	21	495	0	548	456	608	635	24
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.9		4.9	4.9	4.9		5.2		4.5	4.5	
Lane Util. Factor		1.00		0.95	0.91	0.95		0.95		0.97	0.95	
Frpb, ped/bikes		0.99		1.00	0.99	0.98		0.98		1.00	1.00	
Flpb, ped/bikes		1.00		1.00	1.00	1.00		1.00		1.00	1.00	
Frt		0.96		1.00	0.88	0.85		0.93		1.00	0.99	
Flt Protected		0.99		0.95	0.99	1.00		1.00		0.95	1.00	
Satd. Flow (prot)		1749		1681	1459	1478		3248		3433	3513	
Flt Permitted		0.99		0.95	0.99	1.00		1.00		0.95	1.00	
Satd. Flow (perm)		1749		1681	1459	1478		3248		3433	3513	
Peak-hour factor, PHF	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Adj. Flow (vph)	14	40	22	348	24	569	0	630	524	699	730	28
RTOR Reduction (vph)	0	15	0	0	154	251	0	151	0	0	3	0
Lane Group Flow (vph)	0	61	0	313	161	62	0	1003	0	699	755	0
Confl. Peds. (#/hr)			10						10			10
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Split	NA		Split	NA	Perm		NA		Prot	NA	
Protected Phases	7	7		8	8			2		1	6	
Permitted Phases						8						
Actuated Green, G (s)		6.0		19.9	19.9	19.9		33.2		21.4	59.8	
Effective Green, g (s)		6.0		19.9	19.9	19.9		33.2		21.4	59.8	
Actuated g/C Ratio		0.06		0.20	0.20	0.20		0.33		0.21	0.60	
Clearance Time (s)		4.9		4.9	4.9	4.9		5.2		4.5	4.5	
Vehicle Extension (s)		3.0		3.0	3.0	3.0		3.0		3.0	3.0	
Lane Grp Cap (vph)		104		334	290	294		1078		734	2100	
v/s Ratio Prot		c0.03		c0.19	0.11			c0.31		c0.20	0.21	
v/s Ratio Perm						0.04						
v/c Ratio		0.59		0.94	0.56	0.21		0.93		0.95	0.36	
Uniform Delay, d1		45.8		39.4	36.1	33.5		32.3		38.8	10.3	
Progression Factor		1.00		1.00	1.00	1.00		1.00		1.15	1.16	
Incremental Delay, d2		8.2		33.0	2.3	0.4		15.1		20.4	0.4	
Delay (s)		54.0		72.4	38.4	33.9		47.4		64.9	12.4	
Level of Service		D		E	D	C		D		E	B	
Approach Delay (s)		54.0			48.2			47.4			37.6	
Approach LOS		D			D			D			D	

Intersection Summary				
HCM 2000 Control Delay	43.8	HCM 2000 Level of Service	D	
HCM 2000 Volume to Capacity ratio	0.91			
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	19.5	
Intersection Capacity Utilization	80.4%	ICU Level of Service	D	
Analysis Period (min)	15			
c Critical Lane Group				

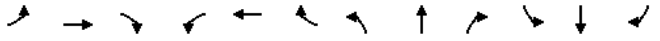
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	155	769	159	354	566	311	229	211	372	297	166	74
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.3		4.5	5.3		4.5	5.7	5.7	4.5	6.0	
Lane Util. Factor	1.00	0.95		0.97	0.95		0.97	0.95	1.00	0.97	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	0.99		1.00	1.00	0.99	1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.97		1.00	0.95		1.00	1.00	0.85	1.00	0.95	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3429		3433	3314		3433	3539	1561	3433	3340	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	3429		3433	3314		3433	3539	1561	3433	3340	
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	176	874	181	402	643	353	260	240	423	338	189	84
RTOR Reduction (vph)	0	19	0	0	83	0	0	0	55	0	56	0
Lane Group Flow (vph)	176	1036	0	402	913	0	260	240	368	338	217	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Prot	NA		Prot	NA		Prot	NA	custom	Prot	NA	
Protected Phases	5	2		1	6		3	8	8	7	4	
Permitted Phases									1			
Actuated Green, G (s)	10.4	29.1		13.1	31.8		9.5	15.6	28.7	10.7	16.5	
Effective Green, g (s)	10.4	29.1		13.1	31.8		9.5	15.6	28.7	10.7	16.5	
Actuated g/C Ratio	0.12	0.33		0.15	0.36		0.11	0.18	0.32	0.12	0.19	
Clearance Time (s)	4.5	5.3		4.5	5.3		4.5	5.7	5.7	4.5	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	208	1127		508	1190		368	623	606	415	622	
v/s Ratio Prot	0.10	c0.30		c0.12	c0.28		0.08	0.07	c0.11	c0.10	0.06	
v/s Ratio Perm									0.13			
v/c Ratio	0.85	0.92		0.79	0.77		0.71	0.39	0.61	0.81	0.35	
Uniform Delay, d1	38.3	28.6		36.4	25.1		38.2	32.2	25.2	37.9	31.3	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	25.8	11.7		8.2	3.0		6.1	0.4	1.7	11.6	0.3	
Delay (s)	64.1	40.3		44.6	28.1		44.2	32.6	26.9	49.6	31.7	
Level of Service	E	D		D	C		D	C	C	D	C	
Approach Delay (s)		43.7			32.9			33.3			41.6	
Approach LOS		D			C			C			D	

Intersection Summary				
HCM 2000 Control Delay	37.4	HCM 2000 Level of Service	D	
HCM 2000 Volume to Capacity ratio	0.83			
Actuated Cycle Length (s)	88.5	Sum of lost time (s)	20.3	
Intersection Capacity Utilization	72.0%	ICU Level of Service	C	
Analysis Period (min)	15			
c Critical Lane Group				



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	22	1324	91	25	1057	10	156	0	65	7	0	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.3		4.5	5.3		4.9	4.9			4.9	4.9
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00			1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.97			1.00	0.97
Flpb, ped/bikes	1.00	1.00		1.00	1.00		0.99	1.00			0.99	1.00
Frt	1.00	0.99		1.00	1.00		1.00	0.85			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00			0.95	1.00
Satd. Flow (prot)	1770	3495		1770	3533		1745	1534			1747	1534
Flt Permitted	0.95	1.00		0.95	1.00		0.75	1.00			0.71	1.00
Satd. Flow (perm)	1770	3495		1770	3533		1382	1534			1300	1534
Peak-hour factor, PHF	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Adj. Flow (vph)	26	1576	108	30	1258	12	186	0	77	8	0	12
RTOR Reduction (vph)	0	5	0	0	1	0	0	61	0	0	0	10
Lane Group Flow (vph)	26	1679	0	30	1269	0	186	16	0	0	8	2
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	Perm
Protected Phases	5	2		1	6			4			4	
Permitted Phases							4			4		4
Actuated Green, G (s)	1.9	43.4		1.6	43.1		15.6	15.6			15.6	15.6
Effective Green, g (s)	1.9	43.4		1.6	43.1		15.6	15.6			15.6	15.6
Actuated g/C Ratio	0.03	0.58		0.02	0.57		0.21	0.21			0.21	0.21
Clearance Time (s)	4.5	5.3		4.5	5.3		4.9	4.9			4.9	4.9
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0			3.0	3.0
Lane Grp Cap (vph)	44	2014		37	2022		286	317			269	317
v/s Ratio Prot	0.01	c0.48		c0.02	0.36			0.01				
v/s Ratio Perm							c0.13				0.01	0.00
v/c Ratio	0.59	0.83		0.81	0.63		0.65	0.05			0.03	0.01
Uniform Delay, d1	36.3	13.0		36.7	10.7		27.4	23.9			23.8	23.7
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00			1.00	1.00
Incremental Delay, d2	19.5	3.1		76.5	0.6		5.2	0.1			0.0	0.0
Delay (s)	55.8	16.1		113.2	11.4		32.6	24.0			23.9	23.7
Level of Service	E	B		F	B		C	C			C	C
Approach Delay (s)		16.7			13.7			30.1			23.8	
Approach LOS		B			B			C			C	

Intersection Summary				
HCM 2000 Control Delay	16.6	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.79			
Actuated Cycle Length (s)	75.3	Sum of lost time (s)	14.7	
Intersection Capacity Utilization	63.4%	ICU Level of Service	B	
Analysis Period (min)	15			
c Critical Lane Group				



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	37	1067	275	55	763	11	190	4	59	15	8	110
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.4		4.5	5.3			4.9			4.9	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	
Frpb, ped/bikes	1.00	0.99		1.00	1.00			0.99			0.98	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			0.99			1.00	
Frt	1.00	0.97		1.00	1.00			0.97			0.89	
Flt Protected	0.95	1.00		0.95	1.00			0.96			0.99	
Satd. Flow (prot)	1770	3397		1770	3529			1714			1608	
Flt Permitted	0.95	1.00		0.95	1.00			0.67			0.95	
Satd. Flow (perm)	1770	3397		1770	3529			1186			1538	
Peak-hour factor, PHF	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Adj. Flow (vph)	44	1255	324	65	898	13	224	5	69	18	9	129
RTOR Reduction (vph)	0	27	0	0	1	0	0	14	0	0	94	0
Lane Group Flow (vph)	44	1552	0	65	910	0	0	284	0	0	62	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8			4		
Actuated Green, G (s)	3.6	38.0		3.3	37.8			20.9			20.9	
Effective Green, g (s)	3.6	38.0		3.3	37.8			20.9			20.9	
Actuated g/C Ratio	0.05	0.49		0.04	0.49			0.27			0.27	
Clearance Time (s)	4.5	5.4		4.5	5.3			4.9			4.9	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	82	1676		75	1732			321			417	
v/s Ratio Prot	0.02	c0.46		c0.04	0.26							
v/s Ratio Perm								c0.24			0.04	
v/c Ratio	0.54	0.93		0.87	0.53			0.89			0.15	
Uniform Delay, d1	35.9	18.2		36.6	13.4			26.9			21.3	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	6.6	10.3		60.4	1.1			23.9			0.2	
Delay (s)	42.5	28.5		97.0	14.6			50.8			21.5	
Level of Service	D	C		F	B			D			C	
Approach Delay (s)		28.9			20.1			50.8			21.5	
Approach LOS		C			C			D			C	

Intersection Summary				
HCM 2000 Control Delay	27.8	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.91			
Actuated Cycle Length (s)	77.0	Sum of lost time (s)	14.8	
Intersection Capacity Utilization	75.4%	ICU Level of Service	D	
Analysis Period (min)	15			
c Critical Lane Group				

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	49	717	396	177	526	32	283	13	157	69	48	41
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.2	5.2	4.5	5.2		5.0	5.0	5.0	4.9	4.9	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		0.95	0.95	1.00	1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.95	1.00	1.00		1.00	1.00	0.97	1.00	0.98	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85	1.00	0.93	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	0.96	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3539	1503	1770	3499		1681	1692	1530	1770	1705	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	0.96	1.00	0.95	1.00	
Satd. Flow (perm)	1770	3539	1503	1770	3499		1681	1692	1530	1770	1705	
Peak-hour factor, PHF	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
Adj. Flow (vph)	61	896	495	221	658	40	354	16	196	86	60	51
RTOR Reduction (vph)	0	0	221	0	4	0	0	0	164	0	36	0
Lane Group Flow (vph)	61	896	274	221	694	0	184	186	32	86	75	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Prot	NA	Perm	Prot	NA		Split	NA	Perm	Split	NA	
Protected Phases	5	2		1	6		8	8		7	7	
Permitted Phases			2						8			
Actuated Green, G (s)	5.6	27.1	27.1	12.4	33.9		13.3	13.3	13.3	9.3	9.3	
Effective Green, g (s)	5.6	27.1	27.1	12.4	33.9		13.3	13.3	13.3	9.3	9.3	
Actuated g/C Ratio	0.07	0.33	0.33	0.15	0.41		0.16	0.16	0.16	0.11	0.11	
Clearance Time (s)	4.5	5.2	5.2	4.5	5.2		5.0	5.0	5.0	4.9	4.9	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	121	1173	498	268	1451		273	275	249	201	194	
v/s Ratio Prot	0.03	c0.25		c0.12	0.20		0.11	c0.11		c0.05	0.04	
v/s Ratio Perm			0.18						0.02			
v/c Ratio	0.50	0.76	0.55	0.82	0.48		0.67	0.68	0.13	0.43	0.38	
Uniform Delay, d1	36.7	24.4	22.3	33.6	17.4		32.2	32.2	29.2	33.7	33.5	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	3.3	4.8	4.3	18.3	0.2		6.4	6.4	0.2	1.5	1.3	
Delay (s)	40.0	29.2	26.7	51.9	17.7		38.6	38.6	29.5	35.2	34.8	
Level of Service	D	C	C	D	B		D	D	C	D	C	
Approach Delay (s)		28.8			25.9			35.4			35.0	
Approach LOS		C			C			D			C	

Intersection Summary				
HCM 2000 Control Delay	29.5	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.71			
Actuated Cycle Length (s)	81.7	Sum of lost time (s)	19.6	
Intersection Capacity Utilization	56.7%	ICU Level of Service	B	
Analysis Period (min)	15			
c Critical Lane Group				

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	660	285	304	549	131	231
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.2	5.2	4.5	4.5	5.5	5.5
Lane Util. Factor	0.95	1.00	0.97	0.95	0.97	1.00
Frpb, ped/bikes	1.00	0.99	1.00	1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	3539	1566	3433	3539	3433	1541
Flt Permitted	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)	3539	1566	3433	3539	3433	1541
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	717	310	330	597	142	251
RTOR Reduction (vph)	0	27	0	0	0	184
Lane Group Flow (vph)	717	283	330	597	142	67
Confl. Peds. (#/hr)		10	10		10	10
Confl. Bikes (#/hr)		5				5
Turn Type	NA	custom	Prot	NA	Prot	Perm
Protected Phases	2	2	1	6	8	
Permitted Phases		8				8
Actuated Green, G (s)	19.3	35.3	9.2	33.7	16.0	16.0
Effective Green, g (s)	19.3	35.3	9.2	33.7	16.0	16.0
Actuated g/C Ratio	0.32	0.59	0.15	0.56	0.27	0.27
Clearance Time (s)	5.2	5.2	4.5	4.5	5.5	5.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	1144	1062	529	1997	920	412
v/s Ratio Prot	c0.20	c0.09	c0.10	0.17	0.04	
v/s Ratio Perm		0.09				0.04
v/c Ratio	0.63	0.27	0.62	0.30	0.15	0.16
Uniform Delay, d1	17.1	5.9	23.6	6.8	16.7	16.7
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	2.6	0.6	2.3	0.1	0.4	0.9
Delay (s)	19.7	6.5	25.9	6.9	17.0	17.6
Level of Service	B	A	C	A	B	B
Approach Delay (s)	15.8			13.7	17.4	
Approach LOS	B			B	B	

Intersection Summary				
HCM 2000 Control Delay	15.2	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.51			
Actuated Cycle Length (s)	59.7	Sum of lost time (s)	15.2	
Intersection Capacity Utilization	52.9%	ICU Level of Service	A	
Analysis Period (min)	15			
c Critical Lane Group				

3:15-4:15 PM Existing
26: W. Canyon Ave & Aero Dr

HCM Signalized Intersection Capacity Analysis

Movement	EBU	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations							
Volume (vph)	21	917	107	134	831	114	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5		4.5	4.5	4.5	4.5
Lane Util. Factor	1.00	0.95		0.97	0.95	0.97	0.88
Frpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	0.95
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00
Frt	1.00	0.98		1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	0.95	1.00
Satd. Flow (prot)	1770	3474		3433	3539	3433	2643
Flt Permitted	0.95	1.00		0.95	1.00	0.95	1.00
Satd. Flow (perm)	1770	3474		3433	3539	3433	2643
Peak-hour factor, PHF	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Adj. Flow (vph)	24	1066	124	156	966	133	47
RTOR Reduction (vph)	0	10	0	0	0	0	37
Lane Group Flow (vph)	24	1180	0	156	966	133	10
Confl. Peds. (#/hr)			10	10		10	10
Confl. Bikes (#/hr)			5				5
Turn Type	Prot	NA		Prot	NA	Prot	Perm
Protected Phases	5	2		1	6	8	
Permitted Phases							8
Actuated Green, G (s)	1.6	36.7		8.7	43.8	16.1	16.1
Effective Green, g (s)	1.6	36.7		8.7	43.8	16.1	16.1
Actuated g/C Ratio	0.02	0.49		0.12	0.58	0.21	0.21
Clearance Time (s)	4.5	4.5		4.5	4.5	4.5	4.5
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	37	1699		398	2066	736	567
v/s Ratio Prot	0.01	c0.34		c0.05	c0.27	c0.04	
v/s Ratio Perm							0.00
v/c Ratio	0.65	0.69		0.39	0.47	0.18	0.02
Uniform Delay, d1	36.4	14.8		30.7	8.9	24.1	23.2
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2	33.0	2.4		0.6	0.8	0.5	0.1
Delay (s)	69.4	17.2		31.3	9.7	24.6	23.3
Level of Service	E	B		C	A	C	C
Approach Delay (s)		18.2			12.7	24.3	
Approach LOS		B			B	C	

Intersection Summary				
HCM 2000 Control Delay	16.2	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.52			
Actuated Cycle Length (s)	75.0	Sum of lost time (s)	13.5	
Intersection Capacity Utilization	57.3%	ICU Level of Service	B	
Analysis Period (min)	15			
c Critical Lane Group				

3:15-4:15 PM Existing
27: Aero Ct & Aero Dr Frontage

HCM Unsignalized Intersection Capacity Analysis

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	3	0	0	1	0	6	0	215	0	11	101	3
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Hourly flow rate (vph)	4	0	0	1	0	7	0	256	0	13	120	4
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)											142	
pX, platoon unblocked												
vC, conflicting volume	411	404	122	404	406	256	124			256		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	411	404	122	404	406	256	124			256		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	99	100	100	100	100	99	100			99		
cM capacity (veh/h)	542	530	929	553	529	783	1463			1309		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	4	8	256	137
Volume Left	4	1	0	13
Volume Right	0	7	0	4
cSH	542	739	1463	1309
Volume to Capacity	0.01	0.01	0.00	0.01
Queue Length 95th (ft)	0	1	0	1
Control Delay (s)	11.7	9.9	0.0	0.8
Lane LOS	B	A		A
Approach Delay (s)	11.7	9.9	0.0	0.8
Approach LOS	B	A		

Intersection Summary				
Average Delay	0.6			
Intersection Capacity Utilization	24.7%	ICU Level of Service	A	
Analysis Period (min)	15			

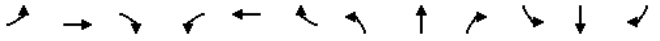
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	3	67	110	0	18	42
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.60	0.60	0.60	0.60	0.60	0.60
Hourly flow rate (vph)	5	112	183	0	30	70
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						635
pX, platoon unblocked						
vC, conflicting volume	313	183			183	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	313	183			183	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	99	87			98	
cM capacity (veh/h)	665	859			1392	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	117	183	100
Volume Left	5	0	30
Volume Right	112	0	0
cSH	848	1700	1392
Volume to Capacity	0.14	0.11	0.02
Queue Length 95th (ft)	12	0	2
Control Delay (s)	9.9	0.0	2.4
Lane LOS	A		A
Approach Delay (s)	9.9	0.0	2.4
Approach LOS	A		

Intersection Summary			
Average Delay		3.5	
Intersection Capacity Utilization		20.9%	ICU Level of Service A
Analysis Period (min)		15	

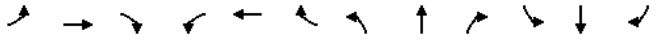
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	215	31	423	261	542	14
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.1	4.7	4.7	5.8	5.8	
Lane Util. Factor	0.97	1.00	1.00	0.95	0.95	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.85	1.00	1.00	1.00	
Flt Protected	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	3433	1583	1770	3539	3521	
Flt Permitted	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (perm)	3433	1583	1770	3539	3521	
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	242	35	475	293	609	16
RTOR Reduction (vph)	0	14	0	0	2	0
Lane Group Flow (vph)	242	21	475	293	623	0
Confl. Peds. (#/hr)						10
Confl. Bikes (#/hr)						5
Turn Type	Prot	pm+ov	Prot	NA	NA	
Protected Phases	4	5	5	2	6	
Permitted Phases		4				
Actuated Green, G (s)	10.1	32.5	22.4	48.1	21.0	
Effective Green, g (s)	10.1	32.5	22.4	48.1	21.0	
Actuated g/C Ratio	0.15	0.47	0.32	0.70	0.30	
Clearance Time (s)	5.1	4.7	4.7	5.8	5.8	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	501	744	573	2463	1070	
v/s Ratio Prot	c0.07	0.01	c0.27	0.08	c0.18	
v/s Ratio Perm		0.00				
v/c Ratio	0.48	0.03	0.83	0.12	0.58	
Uniform Delay, d1	27.1	9.8	21.6	3.5	20.3	
Progression Factor	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.7	0.0	9.6	0.1	2.3	
Delay (s)	27.8	9.8	31.2	3.6	22.7	
Level of Service	C	A	C	A	C	
Approach Delay (s)	25.6			20.7	22.7	
Approach LOS	C			C	C	

Intersection Summary				
HCM 2000 Control Delay	22.2	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.67			
Actuated Cycle Length (s)	69.1	Sum of lost time (s)	15.6	
Intersection Capacity Utilization	58.0%	ICU Level of Service	B	
Analysis Period (min)	15			
c Critical Lane Group				



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	127	112	24	267	51	167	20	369	187	175	385	104
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.1			5.1	5.1	4.7	5.5	5.5	4.7	5.5	
Lane Util. Factor		1.00			1.00	1.00	1.00	0.95	1.00	1.00	0.95	
Frpb, ped/bikes		1.00			1.00	0.97	1.00	1.00	0.95	1.00	0.99	
Flpb, ped/bikes		1.00			1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt		0.99			1.00	0.85	1.00	1.00	0.85	1.00	0.97	
Flt Protected		0.98			0.96	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1791			1788	1531	1770	3539	1497	1770	3389	
Flt Permitted		0.98			0.96	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)		1791			1788	1531	1770	3539	1497	1770	3389	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	131	115	25	275	53	172	21	380	193	180	397	107
RTOR Reduction (vph)	0	4	0	0	0	134	0	0	150	0	24	0
Lane Group Flow (vph)	0	267	0	0	328	38	21	380	43	180	480	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Split	NA		Split	NA	Perm	Prot	NA	Perm	Prot	NA	
Protected Phases	4	4		3	3		5	2		1	6	
Permitted Phases						3			2			
Actuated Green, G (s)		16.5			19.0	19.0	2.0	19.2	19.2	11.5	28.7	
Effective Green, g (s)		16.5			19.0	19.0	2.0	19.2	19.2	11.5	28.7	
Actuated g/C Ratio		0.19			0.22	0.22	0.02	0.22	0.22	0.13	0.33	
Clearance Time (s)		5.1			5.1	5.1	4.7	5.5	5.5	4.7	5.5	
Vehicle Extension (s)		3.0			3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)		341			392	335	40	784	331	235	1123	
v/s Ratio Prot		c0.15			c0.18		0.01	c0.11		c0.10	0.14	
v/s Ratio Perm						0.02			0.03			
v/c Ratio		0.78			0.84	0.11	0.53	0.48	0.13	0.77	0.43	
Uniform Delay, d1		33.3			32.3	27.1	41.8	29.4	27.0	36.3	22.5	
Progression Factor		1.00			1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2		11.1			14.3	0.2	11.9	2.1	0.8	13.8	1.2	
Delay (s)		44.5			46.7	27.2	53.7	31.5	27.8	50.1	23.7	
Level of Service		D			D	C	D	C	C	D	C	
Approach Delay (s)		44.5			40.0			31.1			30.7	
Approach LOS		D			D			C			C	

Intersection Summary				
HCM 2000 Control Delay	34.9	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.71			
Actuated Cycle Length (s)	86.6	Sum of lost time (s)	20.4	
Intersection Capacity Utilization	64.5%	ICU Level of Service	C	
Analysis Period (min)	15			
c Critical Lane Group				



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	49	90	85	402	42	32	79	725	223	35	719	28
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.9	4.9	4.5	4.9		4.5	5.3		4.5	5.0	
Lane Util. Factor	1.00	1.00	1.00	0.97	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	1.00	0.85	1.00	0.94		1.00	0.96		1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1863	1583	3433	1742		1770	3414		1770	3519	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	1863	1583	3433	1742		1770	3414		1770	3519	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	54	99	93	442	46	35	87	797	245	38	790	31
RTOR Reduction (vph)	0	0	82	0	27	0	0	25	0	0	2	0
Lane Group Flow (vph)	54	99	11	442	54	0	87	1017	0	38	819	0
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4									
Actuated Green, G (s)	6.7	11.5	11.5	17.3	22.1		8.5	47.4		4.6	43.8	
Effective Green, g (s)	6.7	11.5	11.5	17.3	22.1		8.5	47.4		4.6	43.8	
Actuated g/C Ratio	0.07	0.12	0.12	0.17	0.22		0.08	0.47		0.05	0.44	
Clearance Time (s)	4.5	4.9	4.9	4.5	4.9		4.5	5.3		4.5	5.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	118	214	182	593	384		150	1618		81	1541	
v/s Ratio Prot	0.03	c0.05		c0.13	0.03		c0.05	c0.30		0.02	0.23	
v/s Ratio Perm			0.01									
v/c Ratio	0.46	0.46	0.06	0.75	0.14		0.58	0.63		0.47	0.53	
Uniform Delay, d1	44.9	41.4	39.4	39.3	31.3		44.0	19.7		46.5	20.6	
Progression Factor	1.00	1.00	1.00	1.00	1.00		0.93	1.33		1.00	1.00	
Incremental Delay, d2	2.8	1.6	0.1	5.1	0.2		3.3	1.1		4.2	1.3	
Delay (s)	47.7	42.9	39.6	44.3	31.5		44.0	27.4		50.8	21.9	
Level of Service	D	D	D	D	C		D	C		D	C	
Approach Delay (s)		42.7			42.3			28.7			23.2	
Approach LOS		D			D			C			C	

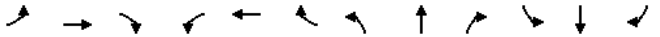
Intersection Summary				
HCM 2000 Control Delay	30.8	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.64			
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	19.2	
Intersection Capacity Utilization	60.9%	ICU Level of Service	B	
Analysis Period (min)	15			
c Critical Lane Group				

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	453	0	0	791	357	241
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.1			5.1	5.1	5.1
Lane Util. Factor	0.95			0.95	0.97	0.91
Frt	1.00			1.00	0.98	0.85
Flt Protected	1.00			1.00	0.96	1.00
Satd. Flow (prot)	3539			3539	3394	1441
Flt Permitted	1.00			1.00	0.96	1.00
Satd. Flow (perm)	3539			3539	3394	1441
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	472	0	0	824	372	251
RTOR Reduction (vph)	0	0	0	0	18	154
Lane Group Flow (vph)	472	0	0	824	412	39
Turn Type	NA			NA	Prot	Perm
Protected Phases	2			6	4	
Permitted Phases						4
Actuated Green, G (s)	13.8			21.5	12.8	12.8
Effective Green, g (s)	13.8			21.5	12.8	12.8
Actuated g/C Ratio	0.22			0.34	0.20	0.20
Clearance Time (s)	5.1			5.1	5.1	5.1
Vehicle Extension (s)	3.0			3.0	3.0	3.0
Lane Grp Cap (vph)	770			1200	685	290
v/s Ratio Prot	c0.13			c0.23	c0.12	
v/s Ratio Perm						0.03
v/c Ratio	0.61			0.69	0.60	0.13
Uniform Delay, d1	22.4			18.0	23.0	20.8
Progression Factor	1.00			1.00	1.00	1.00
Incremental Delay, d2	1.5			1.7	1.5	0.2
Delay (s)	23.8			19.7	24.5	21.0
Level of Service	C			B	C	C
Approach Delay (s)	23.8			19.7	23.4	
Approach LOS	C			B	C	

Intersection Summary				
HCM 2000 Control Delay	21.9	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.64			
Actuated Cycle Length (s)	63.4	Sum of lost time (s)	15.3	
Intersection Capacity Utilization	43.1%	ICU Level of Service	A	
Analysis Period (min)	15			
c Critical Lane Group				

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	99	512	68	311	615	13	120	40	260	18	13	53
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.9	4.0	4.5	4.9		4.9	4.9	4.9		4.9	4.9
Lane Util. Factor	1.00	0.95	1.00	0.97	0.95		1.00	0.95	0.95		1.00	1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	0.98	0.97		1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00		1.00	0.89	0.85		1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00		0.97	1.00
Satd. Flow (prot)	1770	3539	1583	3433	3524		1770	1541	1461		1811	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00		0.97	1.00
Satd. Flow (perm)	1770	3539	1583	3433	3524		1770	1541	1461		1811	1583
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	103	533	71	324	641	14	125	42	271	19	14	55
RTOR Reduction (vph)	0	0	0	0	2	0	0	0	0	0	0	0
Lane Group Flow (vph)	103	533	71	324	653	0	125	159	154	0	33	55
Confl. Peds. (#/hr)						10			10			
Confl. Bikes (#/hr)						5			5			
Turn Type	Prot	NA	Free	Prot	NA		Split	NA	Perm	Split	NA	Perm
Protected Phases	5	2		1	6		3	3		4	4	
Permitted Phases			Free						3			4
Actuated Green, G (s)	4.5	17.3	67.7	8.6	21.4		16.1	16.1	16.1		6.5	6.5
Effective Green, g (s)	4.5	17.3	67.7	8.6	21.4		16.1	16.1	16.1		6.5	6.5
Actuated g/C Ratio	0.07	0.26	1.00	0.13	0.32		0.24	0.24	0.24		0.10	0.10
Clearance Time (s)	4.5	4.9		4.5	4.9		4.9	4.9	4.9		4.9	4.9
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	117	904	1583	436	1113		420	366	347		173	151
v/s Ratio Prot	0.06	0.15		c0.09	c0.19		0.07	0.10			0.02	
v/s Ratio Perm			0.04						c0.11			c0.03
v/c Ratio	0.88	0.59	0.04	0.74	0.59		0.30	0.43	0.44		0.19	0.36
Uniform Delay, d1	31.3	22.1	0.0	28.5	19.4		21.2	21.9	22.0		28.2	28.7
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	48.2	2.8	0.1	6.7	0.8		1.8	3.7	4.1		0.5	1.5
Delay (s)	79.6	24.9	0.1	35.2	20.2		23.0	25.7	26.1		28.7	30.2
Level of Service	E	C	A	D	C		C	C	C		C	C
Approach Delay (s)		30.4			25.2			25.0			29.6	
Approach LOS		C			C			C			C	

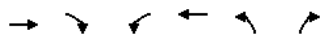
Intersection Summary				
HCM 2000 Control Delay	27.0	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.55			
Actuated Cycle Length (s)	67.7	Sum of lost time (s)	19.2	
Intersection Capacity Utilization	51.6%	ICU Level of Service	A	
Analysis Period (min)	15			
c Critical Lane Group				



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	11	427	719	282	955	72	0	0	0	43	68	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.7	5.1		4.7	5.1						5.5	
Lane Util. Factor	1.00	0.95		1.00	0.95						1.00	
Frpb, ped/bikes	1.00	0.99		1.00	1.00						1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00						1.00	
Frt	1.00	0.91		1.00	0.99						0.99	
Flt Protected	0.95	1.00		0.95	1.00						0.98	
Satd. Flow (prot)	1761	3161		1770	3491						1799	
Flt Permitted	0.95	1.00		0.95	1.00						0.98	
Satd. Flow (perm)	1761	3161		1770	3491						1799	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	12	459	773	303	1027	77	0	0	0	46	73	14
RTOR Reduction (vph)	0	267	0	0	7	0	0	0	0	0	6	0
Lane Group Flow (vph)	12	965	0	303	1097	0	0	0	0	0	127	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Prot	NA		Prot	NA					Split	NA	
Protected Phases	5	2		1	6					4	4	
Permitted Phases												
Actuated Green, G (s)	0.8	29.5		15.3	44.0						16.1	
Effective Green, g (s)	0.8	29.5		15.3	44.0						16.1	
Actuated g/C Ratio	0.01	0.39		0.20	0.58						0.21	
Clearance Time (s)	4.7	5.1		4.7	5.1						5.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0						3.0	
Lane Grp Cap (vph)	18	1223		355	2015						380	
v/s Ratio Prot	0.01	c0.31		c0.17	0.31						c0.07	
v/s Ratio Perm												
v/c Ratio	0.67	0.93dr		0.85	0.54						0.34	
Uniform Delay, d1	37.6	20.6		29.4	9.9						25.5	
Progression Factor	1.00	1.00		1.00	1.00						1.00	
Incremental Delay, d2	66.1	3.5		17.7	0.3						2.4	
Delay (s)	103.7	24.1		47.1	10.2						27.9	
Level of Service	F	C		D	B						C	
Approach Delay (s)		24.8			18.2			0.0			27.9	
Approach LOS		C			B			A			C	

Intersection Summary				
HCM 2000 Control Delay	21.6	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.68			
Actuated Cycle Length (s)	76.2	Sum of lost time (s)	15.3	
Intersection Capacity Utilization	77.5%	ICU Level of Service	D	
Analysis Period (min)	15			

dr Defacto Right Lane. Recode with 1 though lane as a right lane.
c Critical Lane Group



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	462	0	0	651	667	245
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.5			5.5	4.5	5.5
Lane Util. Factor	0.95			0.95	0.97	1.00
Frpb, ped/bikes	1.00			1.00	1.00	0.98
Flpb, ped/bikes	1.00			1.00	1.00	1.00
Frt	1.00			1.00	1.00	0.85
Flt Protected	1.00			1.00	0.95	1.00
Satd. Flow (prot)	3539			3539	3433	1549
Flt Permitted	1.00			1.00	0.95	1.00
Satd. Flow (perm)	3539			3539	3433	1549
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	491	0	0	693	710	261
RTOR Reduction (vph)	0	0	0	0	0	154
Lane Group Flow (vph)	491	0	0	693	710	107
Confl. Peds. (#/hr)						10
Confl. Bikes (#/hr)						5
Turn Type	NA			NA	Prot	Perm
Protected Phases	2			6	4	
Permitted Phases						6
Actuated Green, G (s)	17.5			17.5	15.1	17.5
Effective Green, g (s)	17.5			17.5	15.1	17.5
Actuated g/C Ratio	0.41			0.41	0.35	0.41
Clearance Time (s)	5.5			5.5	4.5	5.5
Vehicle Extension (s)	3.0			3.0	3.0	3.0
Lane Grp Cap (vph)	1453			1453	1216	636
v/s Ratio Prot	0.14			c0.20	c0.21	
v/s Ratio Perm						0.07
v/c Ratio	0.34			0.48	0.58	0.17
Uniform Delay, d1	8.6			9.2	11.2	7.9
Progression Factor	1.00			1.00	1.00	1.00
Incremental Delay, d2	0.1			0.2	0.7	0.1
Delay (s)	8.7			9.4	11.9	8.1
Level of Service	A			A	B	A
Approach Delay (s)	8.7			9.4	10.9	
Approach LOS	A			A	B	

Intersection Summary				
HCM 2000 Control Delay	9.9	HCM 2000 Level of Service	A	
HCM 2000 Volume to Capacity ratio	0.53			
Actuated Cycle Length (s)	42.6	Sum of lost time (s)	10.0	
Intersection Capacity Utilization	45.4%	ICU Level of Service	A	
Analysis Period (min)	15			

c Critical Lane Group

4:45-5:45 PM Existing
1: Aero Dr & Convoy St

HCM Signalized Intersection Capacity Analysis

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	10	46	23	444	4	468	0	542	487	819	1063	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.9		4.9	4.9	4.9		5.2		4.5	4.5	
Lane Util. Factor		1.00		0.95	0.91	0.95		0.95		0.97	0.95	
Frpb, ped/bikes		0.99		1.00	0.99	0.98		0.98		1.00	1.00	
Flpb, ped/bikes		1.00		1.00	1.00	1.00		1.00		1.00	1.00	
Frt		0.96		1.00	0.91	0.85		0.93		1.00	1.00	
Flt Protected		0.99		0.95	0.98	1.00		1.00		0.95	1.00	
Satd. Flow (prot)		1752		1681	1502	1479		3229		3433	3536	
Flt Permitted		0.99		0.95	0.98	1.00		1.00		0.95	1.00	
Satd. Flow (perm)		1752		1681	1502	1479		3229		3433	3536	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	10	47	24	458	4	482	0	559	502	844	1096	5
RTOR Reduction (vph)	0	14	0	0	38	225	0	137	0	0	0	0
Lane Group Flow (vph)	0	67	0	330	277	74	0	924	0	844	1101	0
Confl. Peds. (#/hr)			10						10			10
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Split	NA		Split	NA	Perm		NA		Prot	NA	
Protected Phases	7	7		8	8			2		1	6	
Permitted Phases						8						
Actuated Green, G (s)		8.8		29.7	29.7	29.7		33.7		28.3	67.2	
Effective Green, g (s)		8.8		29.7	29.7	29.7		33.7		28.3	67.2	
Actuated g/C Ratio		0.07		0.25	0.25	0.25		0.28		0.24	0.56	
Clearance Time (s)		4.9		4.9	4.9	4.9		5.2		4.5	4.5	
Vehicle Extension (s)		3.0		3.0	3.0	3.0		3.0		3.0	3.0	
Lane Grp Cap (vph)		128		416	371	366		906		809	1980	
v/s Ratio Prot		c0.04		c0.20	0.18			c0.29		c0.25	0.31	
v/s Ratio Perm						0.05						
v/c Ratio		0.52		0.79	0.75	0.20		1.02		1.04	0.56	
Uniform Delay, d1		53.6		42.3	41.7	35.8		43.1		45.9	16.9	
Progression Factor		1.00		1.00	1.00	1.00		1.00		1.00	1.00	
Incremental Delay, d2		3.8		10.0	7.9	0.3		34.9		43.5	1.1	
Delay (s)		57.4		52.3	49.6	36.0		78.0		89.3	18.0	
Level of Service		E		D	D	D		E		F	B	
Approach Delay (s)		57.4			46.2			78.0			49.0	
Approach LOS		E			D			E			D	

Intersection Summary			
HCM 2000 Control Delay	56.1	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.92		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	19.5
Intersection Capacity Utilization	90.5%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

4:45-5:45 PM Existing
2: Kearny Villa Rd & Aero Dr

HCM Signalized Intersection Capacity Analysis

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	140	995	204	266	607	332	202	268	411	741	339	138
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.3		4.5	5.3		4.5	5.7	4.5	4.5	6.0	
Lane Util. Factor	1.00	0.95		0.97	0.95		0.97	0.95	1.00	0.97	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	0.99		1.00	1.00	0.98	1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.97		1.00	0.95		1.00	1.00	0.85	1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3427		3433	3306		3433	3539	1553	3433	3347	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	3427		3433	3306		3433	3539	1553	3433	3347	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	146	1036	212	277	632	346	210	279	428	772	353	144
RTOR Reduction (vph)	0	13	0	0	55	0	0	0	73	0	34	0
Lane Group Flow (vph)	146	1235	0	277	923	0	210	279	355	772	463	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Prot	NA		Prot	NA		Prot	NA	pm+ov	Prot	NA	
Protected Phases	5	2		1	6		3	8	1	7	4	
Permitted Phases									8			
Actuated Green, G (s)	14.3	45.9		15.4	47.0		12.8	14.3	29.7	30.6	31.8	
Effective Green, g (s)	14.3	45.9		15.4	47.0		12.8	14.3	29.7	30.6	31.8	
Actuated g/C Ratio	0.11	0.36		0.12	0.37		0.10	0.11	0.24	0.24	0.25	
Clearance Time (s)	4.5	5.3		4.5	5.3		4.5	5.7	4.5	4.5	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	200	1246		418	1231		348	401	365	832	843	
v/s Ratio Prot	0.08	c0.36		0.08	0.28		0.06	0.08	c0.12	c0.22	0.14	
v/s Ratio Perm									0.11			
v/c Ratio	0.73	0.99		0.66	0.75		0.60	0.70	0.97	0.93	0.55	
Uniform Delay, d1	54.1	40.0		52.9	34.5		54.3	53.9	47.9	46.7	41.0	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	12.5	23.3		3.9	2.6		2.9	5.2	39.8	16.2	0.7	
Delay (s)	66.6	63.3		56.8	37.1		57.2	59.0	87.7	62.9	41.7	
Level of Service	E	E		E	D		E	E	F	E	D	
Approach Delay (s)		63.6			41.5			72.0			54.6	
Approach LOS		E			D			E			D	

Intersection Summary			
HCM 2000 Control Delay	57.1	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.97		
Actuated Cycle Length (s)	126.2	Sum of lost time (s)	20.3
Intersection Capacity Utilization	93.7%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

4:45-5:45 PM Existing
3: Aero Ct & Aero Dr

HCM Signalized Intersection Capacity Analysis

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	7	1983	158	56	1051	10	131	1	46	43	2	12
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.3		4.5	5.3		4.9	4.9			4.9	4.9
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00			1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.96			1.00	0.96
Flpb, ped/bikes	0.99	1.00		1.00	1.00		0.98	1.00			0.99	1.00
Frt	1.00	0.99		1.00	1.00		1.00	0.85			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00			0.95	1.00
Satd. Flow (prot)	1760	3487		1770	3532		1742	1533			1751	1526
Flt Permitted	0.95	1.00		0.95	1.00		0.73	1.00			0.70	1.00
Satd. Flow (perm)	1760	3487		1770	3532		1332	1533			1288	1526
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	7	2087	166	59	1106	11	138	1	48	45	2	13
RTOR Reduction (vph)	0	6	0	0	1	0	0	41	0	0	0	11
Lane Group Flow (vph)	7	2247	0	59	1116	0	138	8	0	0	47	2
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	Perm
Protected Phases	5	2		1	6			4			4	
Permitted Phases							4			4		4
Actuated Green, G (s)	0.8	56.2		5.7	61.1		12.6	12.6			12.6	12.6
Effective Green, g (s)	0.8	56.2		5.7	61.1		12.6	12.6			12.6	12.6
Actuated g/C Ratio	0.01	0.63		0.06	0.68		0.14	0.14			0.14	0.14
Clearance Time (s)	4.5	5.3		4.5	5.3		4.9	4.9			4.9	4.9
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0			3.0	3.0
Lane Grp Cap (vph)	15	2196		113	2419		188	216			181	215
v/s Ratio Prot	0.00	c0.64		c0.03	0.32			0.01				
v/s Ratio Perm							c0.10				0.04	0.00
v/c Ratio	0.47	1.02		0.52	0.46		0.73	0.04			0.26	0.01
Uniform Delay, d1	44.0	16.5		40.4	6.5		36.7	33.1			34.1	32.9
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00			1.00	1.00
Incremental Delay, d2	21.2	25.4		4.3	0.1		13.8	0.1			0.8	0.0
Delay (s)	65.2	41.9		44.7	6.6		50.5	33.1			34.9	32.9
Level of Service	E	D		D	A		D	C			C	C
Approach Delay (s)		41.9			8.5			45.9			34.5	
Approach LOS		D			A			D			C	

Intersection Summary				
HCM 2000 Control Delay	31.3	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.94			
Actuated Cycle Length (s)	89.2	Sum of lost time (s)	14.7	
Intersection Capacity Utilization	82.3%	ICU Level of Service	E	
Analysis Period (min)	15			
c Critical Lane Group				

LOS Engineering, Inc.

Synchro 8 Report

4:45-5:45 PM Existing
4: Afton Rd & Aero Dr

HCM Signalized Intersection Capacity Analysis

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	46	1683	324	37	892	5	148	3	54	12	5	90
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.4		4.5	5.3			4.9			4.9	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	
Frpb, ped/bikes	1.00	0.99		1.00	1.00			0.99			0.97	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			0.99			1.00	
Frt	1.00	0.98		1.00	1.00			0.96			0.89	
Flt Protected	0.95	1.00		0.95	1.00			0.97			0.99	
Satd. Flow (prot)	1770	3425		1770	3535			1702			1595	
Flt Permitted	0.95	1.00		0.95	1.00			0.70			0.96	
Satd. Flow (perm)	1770	3425		1770	3535			1232			1546	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	48	1753	338	39	929	5	154	3	56	12	5	94
RTOR Reduction (vph)	0	14	0	0	0	0	0	14	0	0	75	0
Lane Group Flow (vph)	48	2077	0	39	934	0	0	199	0	0	36	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8			4		
Actuated Green, G (s)	4.7	57.5		2.4	55.3			18.9			18.9	
Effective Green, g (s)	4.7	57.5		2.4	55.3			18.9			18.9	
Actuated g/C Ratio	0.05	0.61		0.03	0.59			0.20			0.20	
Clearance Time (s)	4.5	5.4		4.5	5.3			4.9			4.9	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	88	2104		45	2088			248			312	
v/s Ratio Prot	c0.03	c0.61		0.02	0.26							
v/s Ratio Perm								c0.16			0.02	
v/c Ratio	0.55	0.99		0.87	0.45			0.80			0.12	
Uniform Delay, d1	43.4	17.7		45.4	10.6			35.6			30.5	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	6.7	16.8		84.0	0.7			17.0			0.2	
Delay (s)	50.2	34.5		129.5	11.3			52.6			30.7	
Level of Service	D	C		F	B			D			C	
Approach Delay (s)		34.9			16.1			52.6			30.7	
Approach LOS		C			B			D			C	

Intersection Summary				
HCM 2000 Control Delay	30.5	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.94			
Actuated Cycle Length (s)	93.6	Sum of lost time (s)	14.8	
Intersection Capacity Utilization	84.2%	ICU Level of Service	E	
Analysis Period (min)	15			
c Critical Lane Group				

LOS Engineering, Inc.

Synchro 8 Report

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	50	976	706	293	623	24	281	30	152	65	69	44
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.2	5.2	4.5	5.2		5.0	5.0	5.0	4.9	4.9	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		0.95	0.95	1.00	1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.94	1.00	1.00		1.00	1.00	0.96	1.00	0.98	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85	1.00	0.94	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	0.96	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3539	1495	1770	3512		1681	1701	1523	1770	1726	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	0.96	1.00	0.95	1.00	
Satd. Flow (perm)	1770	3539	1495	1770	3512		1681	1701	1523	1770	1726	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	52	1017	735	305	649	25	293	31	158	68	72	46
RTOR Reduction (vph)	0	0	235	0	2	0	0	0	136	0	22	0
Lane Group Flow (vph)	52	1017	500	305	672	0	161	163	22	68	96	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Prot	NA	Perm	Prot	NA		Split	NA	Perm	Split	NA	
Protected Phases	5	2		1	6		8	8		7	7	
Permitted Phases			2						8			
Actuated Green, G (s)	6.5	35.1	35.1	20.2	48.8		14.0	14.0	14.0	10.8	10.8	
Effective Green, g (s)	6.5	35.1	35.1	20.2	48.8		14.0	14.0	14.0	10.8	10.8	
Actuated g/C Ratio	0.07	0.35	0.35	0.20	0.49		0.14	0.14	0.14	0.11	0.11	
Clearance Time (s)	4.5	5.2	5.2	4.5	5.2		5.0	5.0	5.0	4.9	4.9	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	115	1245	526	358	1719		236	238	213	191	186	
v/s Ratio Prot	0.03	0.29		c0.17	0.19		0.10	c0.10		0.04	c0.06	
v/s Ratio Perm			c0.33						0.01			
v/c Ratio	0.45	0.82	0.95	0.85	0.39		0.68	0.68	0.10	0.36	0.51	
Uniform Delay, d1	44.9	29.4	31.4	38.3	16.1		40.7	40.8	37.4	41.2	42.0	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	2.8	6.0	28.7	17.4	0.1		7.9	7.9	0.2	1.1	2.4	
Delay (s)	47.7	35.4	60.1	55.7	16.2		48.6	48.7	37.6	42.4	44.4	
Level of Service	D	D	E	E	B		D	D	D	D	D	
Approach Delay (s)		45.8			28.5			45.0			43.6	
Approach LOS		D			C			D			D	

Intersection Summary				
HCM 2000 Control Delay	40.7	HCM 2000 Level of Service	D	
HCM 2000 Volume to Capacity ratio	0.82			
Actuated Cycle Length (s)	99.7	Sum of lost time (s)	19.6	
Intersection Capacity Utilization	81.7%	ICU Level of Service	D	
Analysis Period (min)	15			
c Critical Lane Group				

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	698	572	824	727	161	245
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.2	5.2	4.5	4.5	5.5	5.5
Lane Util. Factor	0.95	1.00	0.97	0.95	0.97	1.00
Frpb, ped/bikes	1.00	0.99	1.00	1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	3539	1567	3433	3539	3433	1530
Flt Permitted	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)	3539	1567	3433	3539	3433	1530
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	735	602	867	765	169	258
RTOR Reduction (vph)	0	13	0	0	0	211
Lane Group Flow (vph)	735	589	867	765	169	47
Confl. Peds. (#/hr)		10	10		10	10
Confl. Bikes (#/hr)		5				5
Turn Type	NA	custom	Prot	NA	Prot	Perm
Protected Phases	2	2	1	6	8	
Permitted Phases		8				8
Actuated Green, G (s)	30.4	46.4	25.9	61.5	16.0	16.0
Effective Green, g (s)	30.4	46.4	25.9	61.5	16.0	16.0
Actuated g/C Ratio	0.35	0.53	0.30	0.70	0.18	0.18
Clearance Time (s)	5.2	5.2	4.5	4.5	5.5	5.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	1229	924	1016	2487	627	279
v/s Ratio Prot	0.21	c0.22	c0.25	0.22	0.05	
v/s Ratio Perm		0.15				0.03
v/c Ratio	0.60	0.64	0.85	0.31	0.27	0.17
Uniform Delay, d1	23.5	14.6	29.0	4.9	30.7	30.1
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	2.2	3.4	7.1	0.1	1.1	1.3
Delay (s)	25.7	17.9	36.1	5.0	31.8	31.5
Level of Service	C	B	D	A	C	C
Approach Delay (s)	22.2			21.5	31.6	
Approach LOS	C			C	C	

Intersection Summary				
HCM 2000 Control Delay	23.0	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.76			
Actuated Cycle Length (s)	87.5	Sum of lost time (s)	15.2	
Intersection Capacity Utilization	68.8%	ICU Level of Service	C	
Analysis Period (min)	15			
c Critical Lane Group				

4:45-5:45 PM Existing
7: W. Canyon Ave & Aero Dr

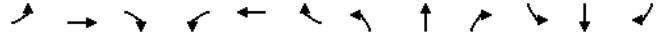
HCM Signalized Intersection Capacity Analysis

Movement	EBU	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations							
Volume (vph)	9	827	139	164	1331	159	63
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5		4.5	4.5	4.5	4.5
Lane Util. Factor	1.00	0.95		0.97	0.95	0.97	0.88
Frpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	0.95
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00
Frt	1.00	0.98		1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	0.95	1.00
Satd. Flow (prot)	1770	3449		3433	3539	3433	2649
Flt Permitted	0.95	1.00		0.95	1.00	0.95	1.00
Satd. Flow (perm)	1770	3449		3433	3539	3433	2649
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	10	899	151	178	1447	173	68
RTOR Reduction (vph)	0	16	0	0	0	0	52
Lane Group Flow (vph)	10	1034	0	178	1447	173	16
Confl. Peds. (#/hr)			10	10		10	10
Confl. Bikes (#/hr)			5				5
Turn Type	Prot	NA		Prot	NA	Prot	Perm
Protected Phases	5	2		1	6	8	
Permitted Phases							8
Actuated Green, G (s)	0.8	31.6		8.9	39.7	16.0	16.0
Effective Green, g (s)	0.8	31.6		8.9	39.7	16.0	16.0
Actuated g/C Ratio	0.01	0.45		0.13	0.57	0.23	0.23
Clearance Time (s)	4.5	4.5		4.5	4.5	4.5	4.5
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	20	1556		436	2007	784	605
v/s Ratio Prot	0.01	0.30		c0.05	c0.41	c0.05	
v/s Ratio Perm							0.01
v/c Ratio	0.50	0.66		0.41	0.72	0.22	0.03
Uniform Delay, d1	34.4	15.0		28.1	11.1	21.9	21.0
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2	18.3	2.3		0.6	2.3	0.6	0.1
Delay (s)	52.7	17.3		28.8	13.4	22.6	21.0
Level of Service	D	B		C	B	C	C
Approach Delay (s)		17.6			15.1	22.1	
Approach LOS		B			B	C	

Intersection Summary				
HCM 2000 Control Delay	16.6	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.59			
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	13.5	
Intersection Capacity Utilization	64.7%	ICU Level of Service	C	
Analysis Period (min)	15			
c Critical Lane Group				

4:45-5:45 PM Existing
8: Aero Ct & Aero Dr Frontage

HCM Unsignalized Intersection Capacity Analysis



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	4	1	4	2	0	16	0	161	6	48	159	7
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72
Hourly flow rate (vph)	6	1	6	3	0	22	0	224	8	67	221	10
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)											142	
pX, platoon unblocked												
vC, conflicting volume	609	591	226	593	592	228	231			232		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	609	591	226	593	592	228	231			232		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	99	100	99	99	100	97	100			95		
cM capacity (veh/h)	381	399	814	398	398	812	1337			1336		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	12	25	232	297
Volume Left	6	3	0	67
Volume Right	6	22	8	10
cSH	502	727	1337	1336
Volume to Capacity	0.02	0.03	0.00	0.05
Queue Length 95th (ft)	2	3	0	4
Control Delay (s)	12.4	10.1	0.0	2.1
Lane LOS	B	B		A
Approach Delay (s)	12.4	10.1	0.0	2.1
Approach LOS	B	B		

Intersection Summary				
Average Delay	1.8			
Intersection Capacity Utilization	33.6%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	0	85	89	0	60	45
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82
Hourly flow rate (vph)	0	104	109	0	73	55
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						635
pX, platoon unblocked						
vC, conflicting volume	310	109			109	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	310	109			109	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	89			95	
cM capacity (veh/h)	649	945			1482	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	104	109	128
Volume Left	0	0	73
Volume Right	104	0	0
cSH	945	1700	1482
Volume to Capacity	0.11	0.06	0.05
Queue Length 95th (ft)	9	0	4
Control Delay (s)	9.3	0.0	4.5
Lane LOS	A		A
Approach Delay (s)	9.3	0.0	4.5
Approach LOS	A		

Intersection Summary			
Average Delay		4.5	
Intersection Capacity Utilization		24.3%	ICU Level of Service A
Analysis Period (min)		15	

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	312	42	431	298	1186	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.1	4.7	4.7	5.8	5.8	
Lane Util. Factor	0.97	1.00	1.00	0.95	0.95	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.85	1.00	1.00	1.00	
Flt Protected	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	3433	1583	1770	3539	3527	
Flt Permitted	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (perm)	3433	1583	1770	3539	3527	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	328	44	454	314	1248	21
RTOR Reduction (vph)	0	8	0	0	1	0
Lane Group Flow (vph)	328	36	454	314	1268	0
Confl. Peds. (#/hr)						10
Confl. Bikes (#/hr)						5
Turn Type	Prot	pm+ov	Prot	NA	NA	
Protected Phases	4	5	5	2	6	
Permitted Phases		4				
Actuated Green, G (s)	14.0	41.3	27.3	73.1	41.1	
Effective Green, g (s)	14.0	41.3	27.3	73.1	41.1	
Actuated g/C Ratio	0.14	0.42	0.28	0.75	0.42	
Clearance Time (s)	5.1	4.7	4.7	5.8	5.8	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	490	667	493	2639	1479	
v/s Ratio Prot	c0.10	0.01	c0.26	0.09	c0.36	
v/s Ratio Perm		0.01				
v/c Ratio	0.67	0.05	0.92	0.12	0.86	
Uniform Delay, d1	39.8	16.8	34.3	3.5	25.8	
Progression Factor	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	3.5	0.0	22.7	0.1	6.6	
Delay (s)	43.3	16.8	57.0	3.6	32.4	
Level of Service	D	B	E	A	C	
Approach Delay (s)	40.1			35.1	32.4	
Approach LOS	D			D	C	

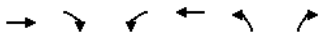
Intersection Summary			
HCM 2000 Control Delay	34.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	98.0	Sum of lost time (s)	15.6
Intersection Capacity Utilization	79.2%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	121	147	27	413	49	263	33	383	123	250	585	97
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.1			5.1	5.1	4.7	5.5	5.5	4.7	5.5	
Lane Util. Factor		1.00			1.00	1.00	1.00	0.95	1.00	1.00	0.95	
Frpb, ped/bikes		1.00			1.00	0.96	1.00	1.00	0.94	1.00	0.99	
Flpb, ped/bikes		1.00			1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt		0.99			1.00	0.85	1.00	1.00	0.85	1.00	0.98	
Flt Protected		0.98			0.96	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1797			1783	1527	1770	3539	1483	1770	3435	
Flt Permitted		0.98			0.96	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)		1797			1783	1527	1770	3539	1483	1770	3435	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	125	152	28	426	51	271	34	395	127	258	603	100
RTOR Reduction (vph)	0	3	0	0	0	121	0	0	105	0	11	0
Lane Group Flow (vph)	0	302	0	0	477	150	34	395	22	258	692	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Split	NA		Split	NA	Perm	Prot	NA	Perm	Prot	NA	
Protected Phases	4	4		3	3		5	2		1	6	
Permitted Phases						3			2			
Actuated Green, G (s)		21.9			30.0	30.0	2.5	18.1	18.1	16.3	31.9	
Effective Green, g (s)		21.9			30.0	30.0	2.5	18.1	18.1	16.3	31.9	
Actuated g/C Ratio		0.21			0.28	0.28	0.02	0.17	0.17	0.15	0.30	
Clearance Time (s)		5.1			5.1	5.1	4.7	5.5	5.5	4.7	5.5	
Vehicle Extension (s)		3.0			3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)		368			501	429	41	600	251	270	1026	
v/s Ratio Prot		c0.17			c0.27		0.02	0.11		c0.15	c0.20	
v/s Ratio Perm						0.10			0.01			
v/c Ratio		0.82			0.95	0.35	0.83	0.66	0.09	0.96	0.67	
Uniform Delay, d1		40.5			37.6	30.6	51.9	41.4	37.3	44.8	32.8	
Progression Factor		1.00			1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2		13.6			28.4	0.5	76.2	5.6	0.7	42.3	3.5	
Delay (s)		54.1			66.0	31.1	128.1	47.0	38.0	87.2	36.4	
Level of Service		D			E	C	F	D	D	F	D	
Approach Delay (s)		54.1			53.3			49.9			50.0	
Approach LOS		D			D			D			D	

Intersection Summary				
HCM 2000 Control Delay	51.4	HCM 2000 Level of Service	D	
HCM 2000 Volume to Capacity ratio	0.88			
Actuated Cycle Length (s)	106.7	Sum of lost time (s)	20.4	
Intersection Capacity Utilization	85.8%	ICU Level of Service	E	
Analysis Period (min)	15			
c Critical Lane Group				

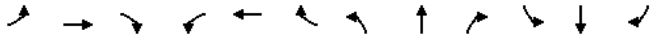
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	83	87	143	756	73	39	76	731	228	39	934	24
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.9	4.9	4.5	4.9		4.5	5.3		4.5	5.0	
Lane Util. Factor	1.00	1.00	1.00	0.97	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	1.00	0.85	1.00	0.95		1.00	0.96		1.00	1.00	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1863	1583	3433	1766		1770	3413		1770	3526	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	1863	1583	3433	1766		1770	3413		1770	3526	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	86	90	147	779	75	40	78	754	235	40	963	25
RTOR Reduction (vph)	0	0	131	0	20	0	0	27	0	0	2	0
Lane Group Flow (vph)	86	90	16	779	95	0	78	962	0	40	986	0
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4									
Actuated Green, G (s)	8.8	11.0	11.0	26.3	28.5		7.6	39.0		4.5	36.2	
Effective Green, g (s)	8.8	11.0	11.0	26.3	28.5		7.6	39.0		4.5	36.2	
Actuated g/C Ratio	0.09	0.11	0.11	0.26	0.28		0.08	0.39		0.04	0.36	
Clearance Time (s)	4.5	4.9	4.9	4.5	4.9		4.5	5.3		4.5	5.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	155	204	174	902	503		134	1331		79	1276	
v/s Ratio Prot	0.05	c0.05		c0.23	0.05		c0.04	c0.28		0.02	c0.28	
v/s Ratio Perm			0.01									
v/c Ratio	0.55	0.44	0.09	0.86	0.19		0.58	0.72		0.51	0.77	
Uniform Delay, d1	43.7	41.6	40.0	35.1	27.0		44.7	25.9		46.7	28.3	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	4.3	1.5	0.2	8.6	0.2		6.3	3.4		5.0	4.6	
Delay (s)	48.0	43.1	40.2	43.7	27.2		51.0	29.3		51.7	32.8	
Level of Service	D	D	D	D	C		D	C		D	C	
Approach Delay (s)		43.1			41.6			30.9			33.6	
Approach LOS		D			D			C			C	

Intersection Summary				
HCM 2000 Control Delay	35.8	HCM 2000 Level of Service	D	
HCM 2000 Volume to Capacity ratio	0.74			
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	19.2	
Intersection Capacity Utilization	71.3%	ICU Level of Service	C	
Analysis Period (min)	15			
c Critical Lane Group				



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	384	0	0	1010	456	259
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.1			5.1	5.1	5.1
Lane Util. Factor	0.95			0.95	0.97	0.91
Frt	1.00			1.00	0.99	0.85
Flt Protected	1.00			1.00	0.96	1.00
Satd. Flow (prot)	3539			3539	3416	1441
Flt Permitted	1.00			1.00	0.96	1.00
Satd. Flow (perm)	3539			3539	3416	1441
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	404	0	0	1063	480	273
RTOR Reduction (vph)	0	0	0	0	9	186
Lane Group Flow (vph)	404	0	0	1063	509	49
Turn Type	NA			NA	Prot	Perm
Protected Phases	2			6	4	
Permitted Phases						4
Actuated Green, G (s)	12.4			23.6	13.5	13.5
Effective Green, g (s)	12.4			23.6	13.5	13.5
Actuated g/C Ratio	0.19			0.36	0.21	0.21
Clearance Time (s)	5.1			5.1	5.1	5.1
Vehicle Extension (s)	3.0			3.0	3.0	3.0
Lane Grp Cap (vph)	677			1288	711	300
v/s Ratio Prot	c0.11			c0.30	c0.15	
v/s Ratio Perm						0.03
v/c Ratio	0.60			0.83	0.72	0.16
Uniform Delay, d1	23.9			18.7	23.9	21.0
Progression Factor	1.00			1.00	1.00	1.00
Incremental Delay, d2	1.4			4.4	3.4	0.3
Delay (s)	25.3			23.2	27.3	21.3
Level of Service	C			C	C	C
Approach Delay (s)	25.3			23.2	25.4	
Approach LOS	C			C	C	

Intersection Summary				
HCM 2000 Control Delay	24.3	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.74			
Actuated Cycle Length (s)	64.8	Sum of lost time (s)	15.3	
Intersection Capacity Utilization	52.1%	ICU Level of Service	A	
Analysis Period (min)	15			
c Critical Lane Group				



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	135	465	47	232	832	25	110	121	225	15	8	51
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.9	4.0	4.5	4.9		4.9	4.9	4.9		4.9	4.9
Lane Util. Factor	1.00	0.95	1.00	0.97	0.95		1.00	0.95	0.95		1.00	1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	0.99	0.97		1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00		1.00	0.95	0.85		1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00		0.97	1.00
Satd. Flow (prot)	1770	3539	1583	3433	3519		1770	1665	1460		1805	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00		0.97	1.00
Satd. Flow (perm)	1770	3539	1583	3433	3519		1770	1665	1460		1805	1583
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	145	500	51	249	895	27	118	130	242	16	9	55
RTOR Reduction (vph)	0	0	0	0	3	0	0	0	0	0	0	0
Lane Group Flow (vph)	145	500	51	249	919	0	118	195	177	0	25	55
Confl. Peds. (#/hr)						10			10			
Confl. Bikes (#/hr)						5			5			
Turn Type	Prot	NA	Free	Prot	NA		Split	NA	Perm	Split	NA	Perm
Protected Phases	5	2		1	6		3	3		4	4	
Permitted Phases			Free						3			4
Actuated Green, G (s)	8.0	20.2	70.3	9.5	21.7		16.3	16.3	16.3		5.1	5.1
Effective Green, g (s)	8.0	20.2	70.3	9.5	21.7		16.3	16.3	16.3		5.1	5.1
Actuated g/C Ratio	0.11	0.29	1.00	0.14	0.31		0.23	0.23	0.23		0.07	0.07
Clearance Time (s)	4.5	4.9		4.5	4.9		4.9	4.9	4.9		4.9	4.9
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	201	1016	1583	463	1086		410	386	338		130	114
v/s Ratio Prot	c0.08	0.14		0.07	c0.26		0.07	0.12			0.01	
v/s Ratio Perm			c0.03						c0.12			c0.03
v/c Ratio	0.72	0.49	0.03	0.54	0.85		0.29	0.51	0.52		0.19	0.48
Uniform Delay, d1	30.1	20.8	0.0	28.4	22.7		22.2	23.5	23.6		30.7	31.3
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	12.0	1.7	0.0	1.2	6.2		1.8	4.7	5.7		0.7	3.2
Delay (s)	42.1	22.5	0.0	29.6	29.0		24.0	28.2	29.3		31.4	34.5
Level of Service	D	C	A	C	C		C	C	C		C	C
Approach Delay (s)		24.9			29.1			27.6			33.5	
Approach LOS		C			C			C			C	

Intersection Summary				
HCM 2000 Control Delay	27.7	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.69			
Actuated Cycle Length (s)	70.3	Sum of lost time (s)	19.2	
Intersection Capacity Utilization	56.9%	ICU Level of Service	B	
Analysis Period (min)	15			
c Critical Lane Group				

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	10	406	600	389	1032	107	0	0	0	49	193	19
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.7	5.1		4.7	5.1						5.5	
Lane Util. Factor	1.00	0.95		1.00	0.95						1.00	
Frpb, ped/bikes	1.00	0.99		1.00	1.00						1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00						1.00	
Frt	1.00	0.91		1.00	0.99						0.99	
Flt Protected	0.95	1.00		0.95	1.00						0.99	
Satd. Flow (prot)	1763	3178		1770	3474						1824	
Flt Permitted	0.95	1.00		0.95	1.00						0.99	
Satd. Flow (perm)	1763	3178		1770	3474						1824	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	11	437	645	418	1110	115	0	0	0	53	208	20
RTOR Reduction (vph)	0	139	0	0	10	0	0	0	0	0	4	0
Lane Group Flow (vph)	11	943	0	418	1215	0	0	0	0	0	277	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Prot	NA		Prot	NA					Split	NA	
Protected Phases	5	2		1	6					4	4	
Permitted Phases												
Actuated Green, G (s)	0.8	26.2		16.3	41.7						16.0	
Effective Green, g (s)	0.8	26.2		16.3	41.7						16.0	
Actuated g/C Ratio	0.01	0.36		0.22	0.57						0.22	
Clearance Time (s)	4.7	5.1		4.7	5.1						5.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0						3.0	
Lane Grp Cap (vph)	19	1128		390	1962						395	
v/s Ratio Prot	0.01	c0.30		c0.24	0.35						c0.15	
v/s Ratio Perm												
v/c Ratio	0.58	1.00dr		1.07	0.62						0.70	
Uniform Delay, d1	36.3	21.8		28.8	10.7						26.7	
Progression Factor	1.00	1.00		1.00	1.00						1.00	
Incremental Delay, d2	36.3	5.5		66.0	0.6						10.0	
Delay (s)	72.6	27.4		94.8	11.3						36.7	
Level of Service	E	C		F	B						D	
Approach Delay (s)		27.8			32.6			0.0			36.7	
Approach LOS		C			C			A			D	

Intersection Summary				
HCM 2000 Control Delay	31.2	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.86			
Actuated Cycle Length (s)	73.8	Sum of lost time (s)	15.3	
Intersection Capacity Utilization	86.2%	ICU Level of Service	E	
Analysis Period (min)	15			

dr Defacto Right Lane. Recode with 1 though lane as a right lane.
c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	475	0	0	795	695	230
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.5			5.5	4.5	5.5
Lane Util. Factor	0.95			0.95	0.97	1.00
Frpb, ped/bikes	1.00			1.00	1.00	0.98
Flpb, ped/bikes	1.00			1.00	1.00	1.00
Frt	1.00			1.00	1.00	0.85
Flt Protected	1.00			1.00	0.95	1.00
Satd. Flow (prot)	3539			3539	3433	1550
Flt Permitted	1.00			1.00	0.95	1.00
Satd. Flow (perm)	3539			3539	3433	1550
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	500	0	0	837	732	242
RTOR Reduction (vph)	0	0	0	0	0	135
Lane Group Flow (vph)	500	0	0	837	732	107
Confl. Peds. (#/hr)						10
Confl. Bikes (#/hr)						5
Turn Type	NA			NA	Prot	Perm
Protected Phases	2			6	4	
Permitted Phases						6
Actuated Green, G (s)	21.0			21.0	16.3	21.0
Effective Green, g (s)	21.0			21.0	16.3	21.0
Actuated g/C Ratio	0.44			0.44	0.34	0.44
Clearance Time (s)	5.5			5.5	4.5	5.5
Vehicle Extension (s)	3.0			3.0	3.0	3.0
Lane Grp Cap (vph)	1571			1571	1183	688
v/s Ratio Prot	0.14			c0.24	c0.21	
v/s Ratio Perm						0.07
v/c Ratio	0.32			0.53	0.62	0.16
Uniform Delay, d1	8.5			9.6	12.9	7.9
Progression Factor	1.00			1.00	1.00	1.00
Incremental Delay, d2	0.1			0.3	1.0	0.1
Delay (s)	8.6			9.9	13.9	8.0
Level of Service	A			A	B	A
Approach Delay (s)	8.6			9.9	12.4	
Approach LOS	A			A	B	

Intersection Summary				
HCM 2000 Control Delay	10.7	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.57			
Actuated Cycle Length (s)	47.3	Sum of lost time (s)	10.0	
Intersection Capacity Utilization	50.1%	ICU Level of Service	A	
Analysis Period (min)	15			

c Critical Lane Group

Appendix F

Institute of Transportation Engineers' Private School Trip Rate

Private School (K-12)
(536)

Average Vehicle Trip Ends vs: Students
On a: Weekday

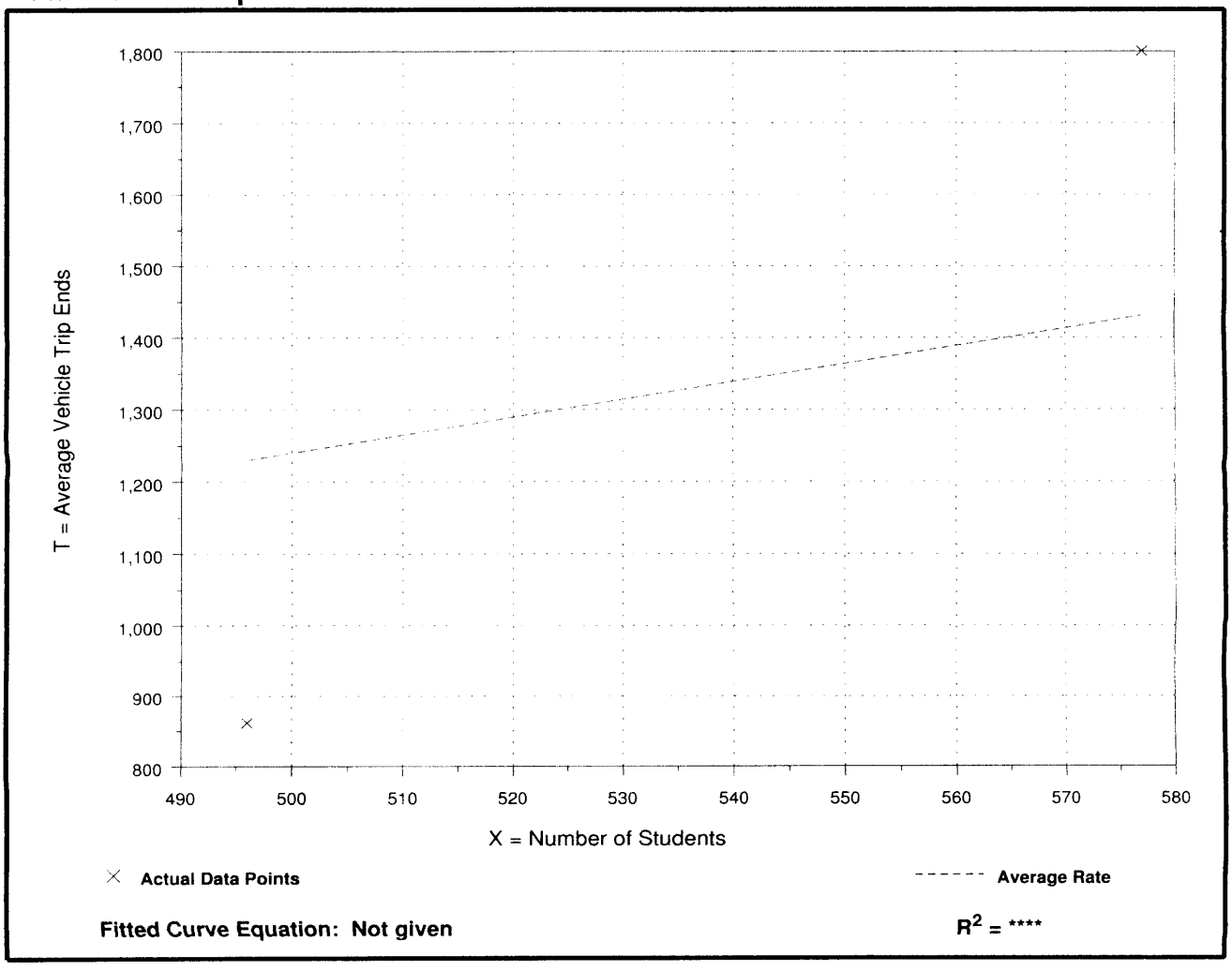
Number of Studies: 2
Average Number of Students: 537
Directional Distribution: 50% entering, 50% exiting

Trip Generation per Student

Average Rate	Range of Rates	Standard Deviation
2.48	1.74 - 3.12	*

Data Plot and Equation

Caution - Use Carefully - Small Sample Size



Fitted Curve Equation: Not given

R^2 = ****

Private School (K-12)
(536)

Average Vehicle Trip Ends vs: Students
On a: Weekday,
A.M. Peak Hour

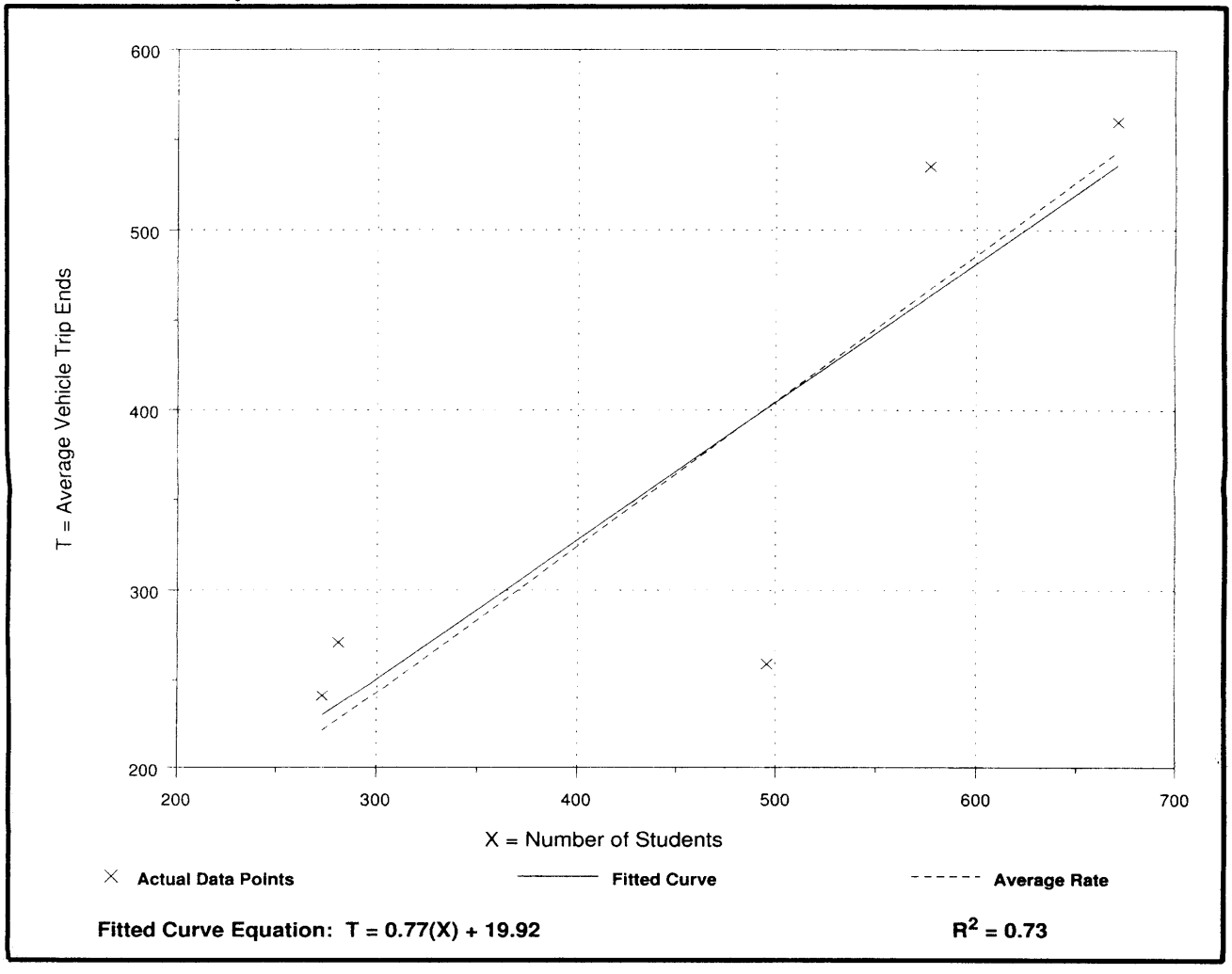
Number of Studies: 5
Average Number of Students: 460
Directional Distribution: 61% entering, 39% exiting

Trip Generation per Student

Average Rate	Range of Rates	Standard Deviation
0.81	0.52 - 0.96	0.91

Data Plot and Equation

Caution - Use Carefully - Small Sample Size



Fitted Curve Equation: T = 0.77(X) + 19.92

R^2 = 0.73

Private School (K-12)
(536)

Average Vehicle Trip Ends vs: Students
On a: Weekday,
P.M. Peak Hour of Generator

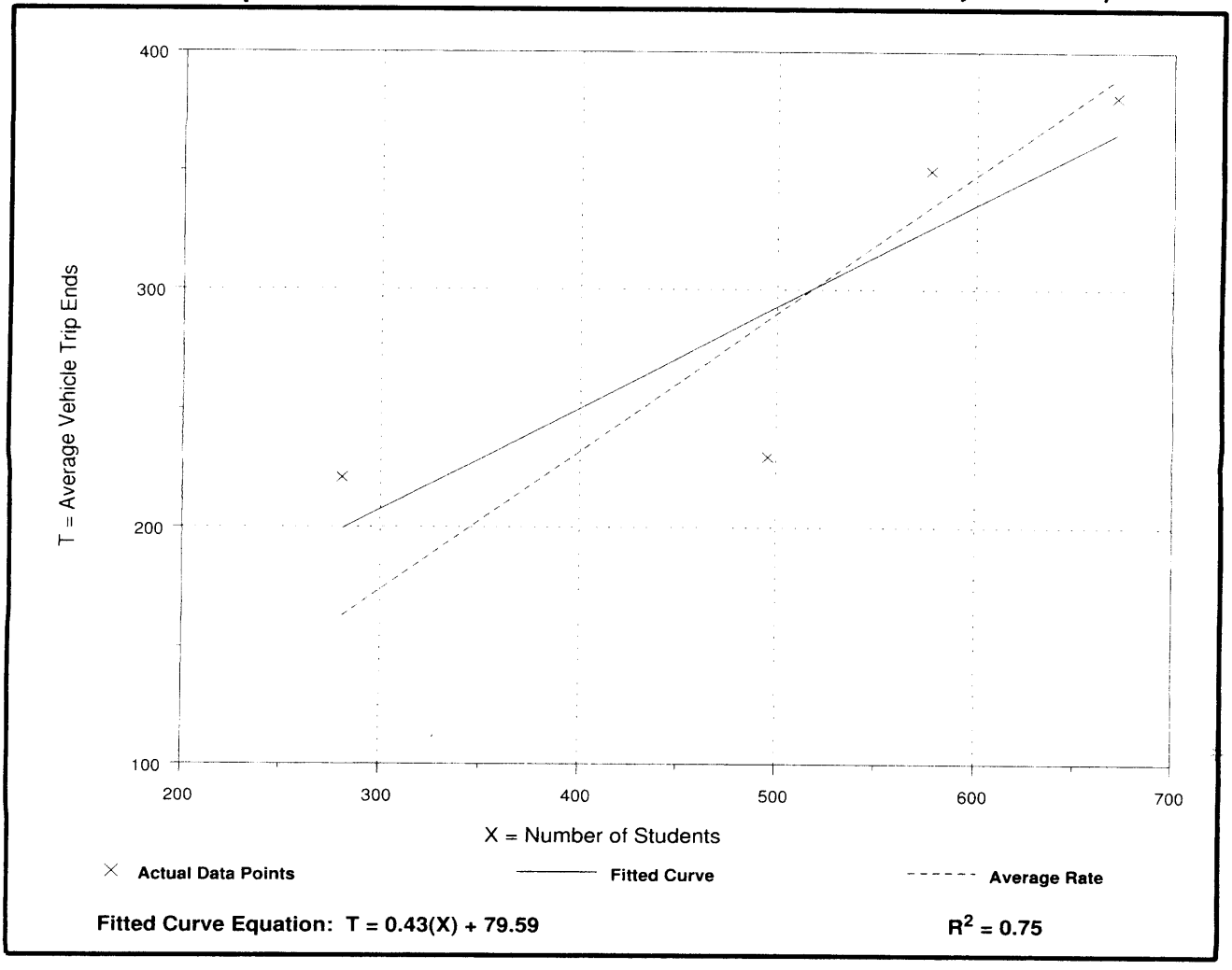
Number of Studies: 4
Average Number of Students: 506
Directional Distribution: 42% entering, 58% exiting

Trip Generation per Student

Average Rate	Range of Rates	Standard Deviation
0.58	0.46 - 0.79	0.77

Data Plot and Equation

Caution - Use Carefully - Small Sample Size



Fitted Curve Equation: T = 0.43(X) + 79.59

R^2 = 0.75

Private School (K-12)
(536)

Average Vehicle Trip Ends vs: Students
On a: Weekday,
Peak Hour of Adjacent Street Traffic,
One Hour Between 4 and 6 p.m.

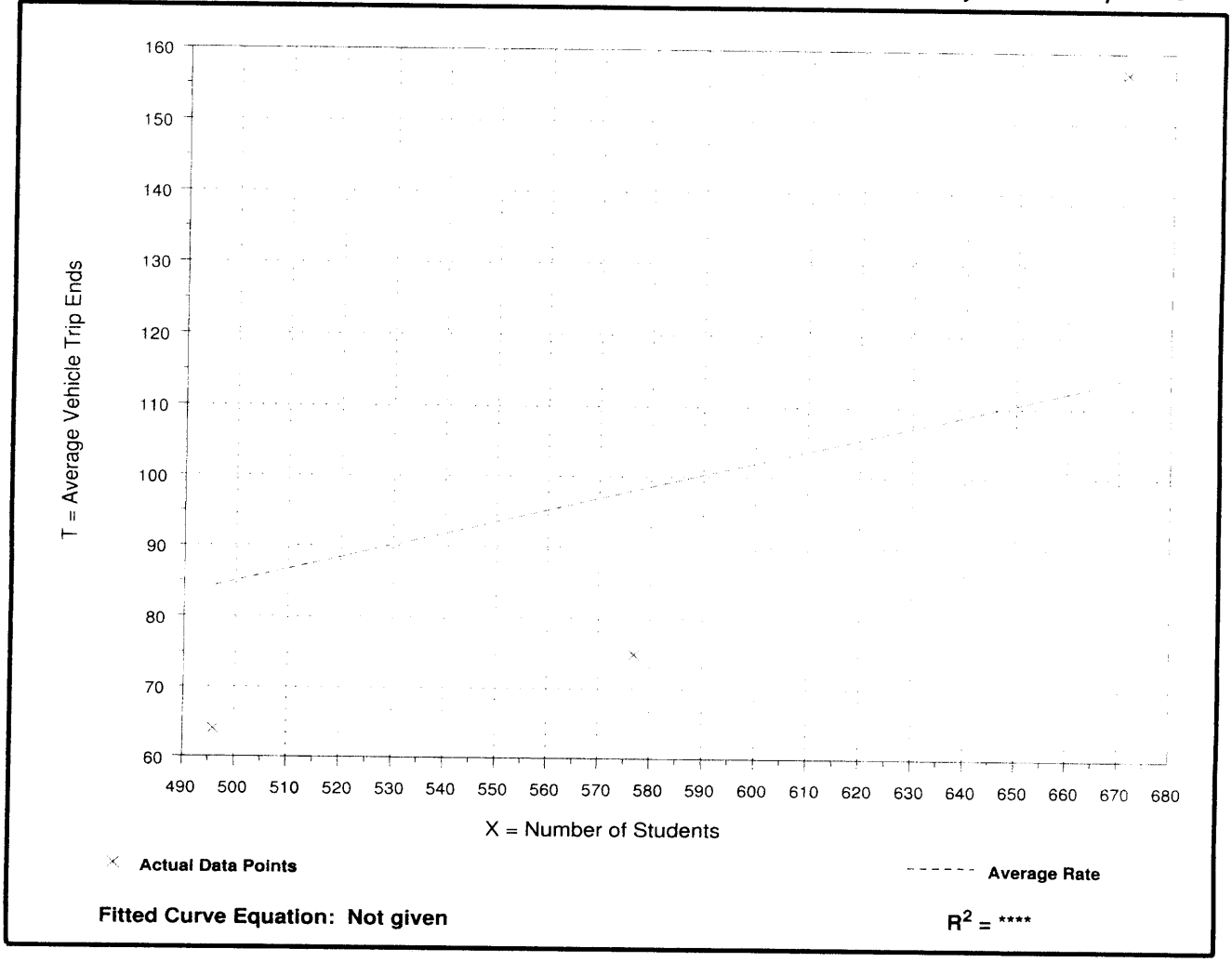
Number of Studies: 3
Average Number of Students: 581
Directional Distribution: 43% entering, 57% exiting

Trip Generation per Student

Average Rate	Range of Rates	Standard Deviation
0.17	0.13 - 0.23	0.41

Data Plot and Equation

Caution - Use Carefully - Small Sample Size



Fitted Curve Equation: Not given

R^2 = ****

Appendix G

Existing with Project (Phase 1) LOS Calculations

8:00-9:00 AM Existing + Project (Phase 1)
1: Aero Dr & Convoy St
HCM Signalized Intersection Capacity Analysis

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	4	3	1	420	54	632	0	499	379	405	385	21
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.9		4.9	4.9	4.9		5.2		4.5	4.5	
Lane Util. Factor		1.00		0.95	0.91	0.95		0.95		0.97	0.95	
Frpb, ped/bikes		0.99		1.00	0.99	0.98		0.99		1.00	1.00	
Flpb, ped/bikes		1.00		1.00	1.00	1.00		1.00		1.00	1.00	
Frt		0.98		1.00	0.89	0.85		0.94		1.00	0.99	
Flt Protected		0.98		0.95	0.99	1.00		1.00		0.95	1.00	
Satd. Flow (prot)		1762		1681	1481	1481		3264		3433	3502	
Flt Permitted		0.98		0.95	0.99	1.00		1.00		0.95	1.00	
Satd. Flow (perm)		1762		1681	1481	1481		3264		3433	3502	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	4	3	1	438	56	658	0	520	395	422	401	22
RTOR Reduction (vph)	0	1	0	0	108	258	0	149	0	0	4	0
Lane Group Flow (vph)	0	7	0	394	275	117	0	766	0	422	419	0
Confl. Peds. (#/hr)			10						10			10
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Split	NA		Split	NA	Perm		NA		Prot	NA	
Protected Phases	7	7		8	8			2		1	6	
Permitted Phases						8						
Actuated Green, G (s)		1.2		28.0	28.0	28.0		27.1		14.2	46.5	
Effective Green, g (s)		1.2		28.0	28.0	28.0		27.1		14.2	46.5	
Actuated g/C Ratio		0.01		0.31	0.31	0.31		0.30		0.16	0.52	
Clearance Time (s)		4.9		4.9	4.9	4.9		5.2		4.5	4.5	
Vehicle Extension (s)		3.0		3.0	3.0	3.0		3.0		3.0	3.0	
Lane Grp Cap (vph)		23		522	460	460		982		541	1809	
v/s Ratio Prot		c0.00		c0.23	0.19			c0.23		c0.12	0.12	
v/s Ratio Perm						0.08						
v/c Ratio		0.30		0.75	0.60	0.25		0.78		0.78	0.23	
Uniform Delay, d1		44.0		27.9	26.2	23.2		28.7		36.4	11.9	
Progression Factor		1.00		1.00	1.00	1.00		1.00		1.00	1.00	
Incremental Delay, d2		7.4		6.1	2.1	0.3		6.1		7.2	0.3	
Delay (s)		51.4		34.0	28.3	23.5		34.9		43.6	12.2	
Level of Service		D		C	C	C		C		D	B	
Approach Delay (s)		51.4			28.7			34.9			27.9	
Approach LOS		D			C			C			C	

Intersection Summary				
HCM 2000 Control Delay	30.5	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.76			
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	19.5	
Intersection Capacity Utilization	76.3%	ICU Level of Service	D	
Analysis Period (min)	15			
c Critical Lane Group				

8:00-9:00 AM Existing + Project (Phase 1)
2: Kearny Villa Rd & Aero Dr
HCM Signalized Intersection Capacity Analysis

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	142	523	96	286	799	501	311	188	473	199	128	39
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.3		4.5	5.3		4.5	5.7	5.7	4.5	6.0	
Lane Util. Factor	1.00	0.95		0.97	0.95		0.97	0.95	1.00	0.97	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	0.99		1.00	1.00	0.99	1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.98		1.00	0.94		1.00	1.00	0.85	1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3438		3433	3289		3433	3539	1560	3433	3384	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	3438		3433	3289		3433	3539	1560	3433	3384	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	151	556	102	304	850	533	331	200	503	212	136	41
RTOR Reduction (vph)	0	12	0	0	83	0	0	0	91	0	24	0
Lane Group Flow (vph)	151	646	0	304	1300	0	331	200	412	212	153	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Prot	NA		Prot	NA		Prot	NA	custom	Prot	NA	
Protected Phases	5	2		1	6		3	8	8	7	4	
Permitted Phases									1			
Actuated Green, G (s)	11.5	46.9		15.2	50.6		15.5	22.3	37.5	10.8	17.3	
Effective Green, g (s)	11.5	46.9		15.2	50.6		15.5	22.3	37.5	10.8	17.3	
Actuated g/C Ratio	0.10	0.41		0.13	0.44		0.13	0.19	0.33	0.09	0.15	
Clearance Time (s)	4.5	5.3		4.5	5.3		4.5	5.7	5.7	4.5	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	176	1399		452	1444		461	685	585	321	508	
v/s Ratio Prot	0.09	0.19		0.09	c0.40		c0.10	0.06	c0.14	0.06	0.05	
v/s Ratio Perm									0.13			
v/c Ratio	0.86	0.46		0.67	0.90		0.72	0.29	0.70	0.66	0.30	
Uniform Delay, d1	51.0	24.9		47.6	30.0		47.8	39.7	34.0	50.4	43.6	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	31.5	0.2		3.9	8.0		5.3	0.2	3.8	5.0	0.3	
Delay (s)	82.5	25.2		51.5	38.0		53.0	39.9	37.8	55.5	43.9	
Level of Service	F	C		D	D		D	D	D	E	D	
Approach Delay (s)		35.9			40.4			43.1			50.2	
Approach LOS		D			D			D			D	

Intersection Summary				
HCM 2000 Control Delay	41.2	HCM 2000 Level of Service	D	
HCM 2000 Volume to Capacity ratio	0.89			
Actuated Cycle Length (s)	115.2	Sum of lost time (s)	20.3	
Intersection Capacity Utilization	79.6%	ICU Level of Service	D	
Analysis Period (min)	15			
c Critical Lane Group				

8:00-9:00 AM Existing + Project (Phase 1)
3: Aero Ct & Aero Dr

HCM Signalized Intersection Capacity Analysis

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	9	870	314	115	1418	13	156	0	66	3	0	14
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.3		4.5	5.3		4.9	4.9			4.9	4.9
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00			1.00	1.00
Frpb, ped/bikes	1.00	0.99		1.00	1.00		1.00	0.97			1.00	0.97
Flpb, ped/bikes	1.00	1.00		1.00	1.00		0.99	1.00			0.99	1.00
Frt	1.00	0.96		1.00	1.00		1.00	0.85			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00			0.95	1.00
Satd. Flow (prot)	1766	3360		1770	3533		1749	1536			1751	1536
Flt Permitted	0.95	1.00		0.95	1.00		0.76	1.00			0.71	1.00
Satd. Flow (perm)	1766	3360		1770	3533		1392	1536			1307	1536
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	10	978	353	129	1593	15	175	0	74	3	0	16
RTOR Reduction (vph)	0	46	0	0	1	0	0	62	0	0	0	13
Lane Group Flow (vph)	10	1285	0	129	1607	0	175	12	0	0	3	3
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	Perm
Protected Phases	5	2		1	6			4			4	
Permitted Phases							4			4		4
Actuated Green, G (s)	0.7	32.3		4.9	36.5		10.0	10.0			10.0	10.0
Effective Green, g (s)	0.7	32.3		4.9	36.5		10.0	10.0			10.0	10.0
Actuated g/C Ratio	0.01	0.52		0.08	0.59		0.16	0.16			0.16	0.16
Clearance Time (s)	4.5	5.3		4.5	5.3		4.9	4.9			4.9	4.9
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0			3.0	3.0
Lane Grp Cap (vph)	19	1753		140	2083		224	248			211	248
v/s Ratio Prot	0.01	0.38		c0.07	c0.45			0.01				
v/s Ratio Perm							c0.13				0.00	0.00
v/c Ratio	0.53	0.73		0.92	0.77		0.78	0.05			0.01	0.01
Uniform Delay, d1	30.4	11.5		28.3	9.6		24.9	21.9			21.8	21.8
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00			1.00	1.00
Incremental Delay, d2	23.9	1.6		52.8	1.8		16.1	0.1			0.0	0.0
Delay (s)	54.3	13.1		81.1	11.4		41.0	22.0			21.8	21.8
Level of Service	D	B		F	B		D	C			C	C
Approach Delay (s)		13.4			16.6			35.3			21.8	
Approach LOS		B			B			D			C	

Intersection Summary				
HCM 2000 Control Delay	16.7	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.81			
Actuated Cycle Length (s)	61.9	Sum of lost time (s)	14.7	
Intersection Capacity Utilization	70.5%	ICU Level of Service	C	
Analysis Period (min)	15			
c Critical Lane Group				

8:00-9:00 AM Existing + Project (Phase 1)
4: Afton Rd & Aero Dr

HCM Signalized Intersection Capacity Analysis

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	69	713	156	59	1251	7	259	4	52	3	0	15
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.4		4.5	5.3			4.9			4.9	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	
Frpb, ped/bikes	1.00	0.99		1.00	1.00			1.00			0.98	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			0.99			1.00	
Frt	1.00	0.97		1.00	1.00			0.98			0.89	
Flt Protected	0.95	1.00		0.95	1.00			0.96			0.99	
Satd. Flow (prot)	1770	3416		1770	3535			1723			1599	
Flt Permitted	0.95	1.00		0.95	1.00			0.75			0.95	
Satd. Flow (perm)	1770	3416		1770	3535			1345			1530	
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	78	801	175	66	1406	8	291	4	58	3	0	17
RTOR Reduction (vph)	0	26	0	0	1	0	0	10	0	0	14	0
Lane Group Flow (vph)	78	950	0	66	1413	0	0	343	0	0	6	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8			4		
Actuated Green, G (s)	3.5	30.4		3.9	30.9			19.2			19.2	
Effective Green, g (s)	3.5	30.4		3.9	30.9			19.2			19.2	
Actuated g/C Ratio	0.05	0.45		0.06	0.45			0.28			0.28	
Clearance Time (s)	4.5	5.4		4.5	5.3			4.9			4.9	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	90	1520		101	1599			378			430	
v/s Ratio Prot	c0.04	0.28		0.04	c0.40							
v/s Ratio Perm								c0.25			0.00	
v/c Ratio	0.87	0.63		0.65	0.88			0.91			0.01	
Uniform Delay, d1	32.2	14.6		31.5	17.1			23.7			17.7	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	53.4	2.0		14.2	7.5			24.6			0.0	
Delay (s)	85.6	16.5		45.7	24.6			48.3			17.7	
Level of Service	F	B		D	C			D			B	
Approach Delay (s)		21.6			25.5			48.3			17.7	
Approach LOS		C			C			D			B	

Intersection Summary				
HCM 2000 Control Delay	26.8	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.89			
Actuated Cycle Length (s)	68.3	Sum of lost time (s)	14.8	
Intersection Capacity Utilization	75.4%	ICU Level of Service	D	
Analysis Period (min)	15			
c Critical Lane Group				

8:00-9:00 AM Existing + Project (Phase 1)
5: Sandrock Rd & Aero Dr

HCM Signalized Intersection Capacity Analysis

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	41	526	186	115	773	55	512	38	209	14	6	16
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.2	5.2	4.5	5.2		5.0	5.0	5.0	4.9	4.9	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		0.95	0.95	1.00	1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.95	1.00	1.00		1.00	1.00	0.97	1.00	0.97	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85	1.00	0.89	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	0.96	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3539	1510	1770	3493		1681	1697	1538	1770	1604	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	0.96	1.00	0.95	1.00	
Satd. Flow (perm)	1770	3539	1510	1770	3493		1681	1697	1538	1770	1604	
Peak-hour factor, PHF	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Adj. Flow (vph)	48	612	216	134	899	64	595	44	243	16	7	19
RTOR Reduction (vph)	0	0	149	0	6	0	0	0	167	0	18	0
Lane Group Flow (vph)	48	612	67	134	957	0	321	318	76	16	8	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Prot	NA	Perm	Prot	NA		Split	NA	Perm	Split	NA	
Protected Phases	5	2		1	6		8	8		7	7	
Permitted Phases			2						8			
Actuated Green, G (s)	2.2	20.9	20.9	6.8	25.5		16.3	16.3	16.3	3.6	3.6	
Effective Green, g (s)	2.2	20.9	20.9	6.8	25.5		16.3	16.3	16.3	3.6	3.6	
Actuated g/C Ratio	0.03	0.31	0.31	0.10	0.38		0.24	0.24	0.24	0.05	0.05	
Clearance Time (s)	4.5	5.2	5.2	4.5	5.2		5.0	5.0	5.0	4.9	4.9	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	57	1100	469	179	1325		407	411	373	94	85	
v/s Ratio Prot	0.03	0.17		c0.08	c0.27		c0.19	0.19		c0.01	0.00	
v/s Ratio Perm			0.04						0.05			
v/c Ratio	0.84	0.56	0.14	0.75	0.72		0.79	0.77	0.20	0.17	0.09	
Uniform Delay, d1	32.3	19.3	16.7	29.4	17.8		23.8	23.7	20.3	30.4	30.2	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	65.3	2.0	0.6	15.7	2.0		9.8	8.8	0.3	0.9	0.5	
Delay (s)	97.6	21.3	17.3	45.0	19.8		33.6	32.5	20.6	31.2	30.7	
Level of Service	F	C	B	D	B		C	C	C	C	C	
Approach Delay (s)		24.5			22.9			29.6			30.9	
Approach LOS		C			C			C			C	

Intersection Summary				
HCM 2000 Control Delay	25.5	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.74			
Actuated Cycle Length (s)	67.2	Sum of lost time (s)	19.6	
Intersection Capacity Utilization	60.6%	ICU Level of Service	B	
Analysis Period (min)	15			
c Critical Lane Group				

8:00-9:00 AM Existing + Project (Phase 1)
6: Ruffin Rd & Aero Dr

HCM Signalized Intersection Capacity Analysis

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	558	118	167	552	448	516
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.2	5.2	4.5	4.5	5.5	5.5
Lane Util. Factor	0.95	1.00	0.97	0.95	0.97	1.00
Frpb, ped/bikes	1.00	0.99	1.00	1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	3539	1562	3433	3539	3433	1542
Flt Permitted	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)	3539	1562	3433	3539	3433	1542
Peak-hour factor, PHF	0.85	0.85	0.85	0.85	0.85	0.85
Adj. Flow (vph)	656	139	196	649	527	607
RTOR Reduction (vph)	0	21	0	0	0	189
Lane Group Flow (vph)	656	118	196	649	527	418
Confl. Peds. (#/hr)		10	10		10	10
Confl. Bikes (#/hr)		5				5
Turn Type	NA	custom	Prot	NA	Prot	Perm
Protected Phases	2	2	1	6	8	
Permitted Phases		8				8
Actuated Green, G (s)	17.4	39.3	5.5	28.1	21.9	21.9
Effective Green, g (s)	17.4	39.3	5.5	28.1	21.9	21.9
Actuated g/C Ratio	0.29	0.65	0.09	0.47	0.36	0.36
Clearance Time (s)	5.2	5.2	4.5	4.5	5.5	5.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	1026	1158	314	1657	1253	562
v/s Ratio Prot	c0.19	0.03	c0.06	0.18	0.15	
v/s Ratio Perm		0.05				c0.27
v/c Ratio	0.64	0.10	0.62	0.39	0.42	0.74
Uniform Delay, d1	18.6	3.8	26.3	10.4	14.3	16.6
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	3.1	0.2	3.8	0.2	1.0	8.6
Delay (s)	21.6	4.0	30.1	10.5	15.3	25.2
Level of Service	C	A	C	B	B	C
Approach Delay (s)	18.5			15.1	20.6	
Approach LOS	B			B	C	

Intersection Summary				
HCM 2000 Control Delay	18.3	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.69			
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	15.2	
Intersection Capacity Utilization	57.3%	ICU Level of Service	B	
Analysis Period (min)	15			
c Critical Lane Group				

Movement	EBU	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations							
Volume (vph)	19	995	120	116	639	86	57
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5		4.5	4.5	4.5	4.5
Lane Util. Factor	1.00	0.95		0.97	0.95	0.97	0.88
Frpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	0.95
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00
Frt	1.00	0.98		1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	0.95	1.00
Satd. Flow (prot)	1770	3472		3433	3539	3433	2643
Flt Permitted	0.95	1.00		0.95	1.00	0.95	1.00
Satd. Flow (perm)	1770	3472		3433	3539	3433	2643
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	21	1106	133	129	710	96	63
RTOR Reduction (vph)	0	10	0	0	0	0	49
Lane Group Flow (vph)	21	1229	0	129	710	96	14
Confl. Peds. (#/hr)			10	10		10	10
Confl. Bikes (#/hr)			5				5
Turn Type	Prot	NA		Prot	NA	Prot	Perm
Protected Phases	5	2		1	6	8	
Permitted Phases							8
Actuated Green, G (s)	1.6	38.4		7.0	43.8	16.1	16.1
Effective Green, g (s)	1.6	38.4		7.0	43.8	16.1	16.1
Actuated g/C Ratio	0.02	0.51		0.09	0.58	0.21	0.21
Clearance Time (s)	4.5	4.5		4.5	4.5	4.5	4.5
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	37	1777		320	2066	736	567
v/s Ratio Prot	0.01	c0.35		c0.04	0.20	c0.03	
v/s Ratio Perm							0.01
v/c Ratio	0.57	0.69		0.40	0.34	0.13	0.02
Uniform Delay, d1	36.4	13.8		32.0	8.1	23.8	23.2
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2	18.4	2.2		0.8	0.5	0.4	0.1
Delay (s)	54.8	16.1		32.9	8.6	24.2	23.3
Level of Service	D	B		C	A	C	C
Approach Delay (s)		16.7			12.3	23.8	
Approach LOS		B			B	C	

Intersection Summary				
HCM 2000 Control Delay	15.6	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.51			
Actuated Cycle Length (s)	75.0	Sum of lost time (s)	13.5	
Intersection Capacity Utilization	59.4%	ICU Level of Service	B	
Analysis Period (min)	15			
c Critical Lane Group				

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	2	0	0	18	0	203	1	12	415	2
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64
Hourly flow rate (vph)	0	0	3	0	0	28	0	317	2	19	648	3
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)											142	
pX, platoon unblocked												
vC, conflicting volume	1034	1006	650	1009	1007	318	652			319		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1034	1006	650	1009	1007	318	652			319		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	99	100	100	96	100			98		
cM capacity (veh/h)	200	237	469	215	237	723	935			1241		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	3	28	319	670
Volume Left	0	0	0	19
Volume Right	3	28	2	3
cSH	469	723	935	1241
Volume to Capacity	0.01	0.04	0.00	0.02
Queue Length 95th (ft)	1	3	0	1
Control Delay (s)	12.7	10.2	0.0	0.4
Lane LOS	B	B		A
Approach Delay (s)	12.7	10.2	0.0	0.4
Approach LOS	B	B		

Intersection Summary				
Average Delay	0.6			
Intersection Capacity Utilization	41.6%	ICU Level of Service	A	
Analysis Period (min)	15			

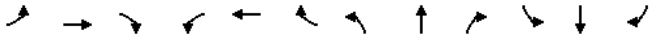
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	1	110	93	2	253	128
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.55	0.55	0.55	0.55	0.55	0.55
Hourly flow rate (vph)	2	200	169	4	460	233
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						635
pX, platoon unblocked						
vC, conflicting volume	1324	171			173	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1324	171			173	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	98	77			67	
cM capacity (veh/h)	116	873			1404	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	202	173	693
Volume Left	2	0	460
Volume Right	200	4	0
cSH	824	1700	1404
Volume to Capacity	0.24	0.10	0.33
Queue Length 95th (ft)	24	0	36
Control Delay (s)	10.8	0.0	7.0
Lane LOS	B		A
Approach Delay (s)	10.8	0.0	7.0
Approach LOS	B		

Intersection Summary			
Average Delay	6.6		
Intersection Capacity Utilization	40.9%	ICU Level of Service	A
Analysis Period (min)	15		

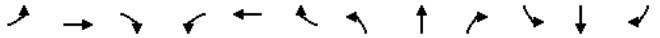
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	701	27	384	470	332	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.1	4.7	4.7	5.8	5.8	
Lane Util. Factor	0.97	1.00	1.00	0.95	0.95	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.85	1.00	1.00	1.00	
Flt Protected	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	3433	1583	1770	3539	3539	
Flt Permitted	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (perm)	3433	1583	1770	3539	3539	
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	788	30	431	528	373	0
RTOR Reduction (vph)	0	13	0	0	0	0
Lane Group Flow (vph)	788	17	431	528	373	0
Confl. Peds. (#/hr)						10
Confl. Bikes (#/hr)						5
Turn Type	Prot	pm+ov	Prot	NA	NA	
Protected Phases	4	5	5	2	6	
Permitted Phases		4				
Actuated Green, G (s)	19.3	40.1	20.8	44.2	18.7	
Effective Green, g (s)	19.3	40.1	20.8	44.2	18.7	
Actuated g/C Ratio	0.26	0.54	0.28	0.59	0.25	
Clearance Time (s)	5.1	4.7	4.7	5.8	5.8	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	890	853	494	2102	889	
v/s Ratio Prot	c0.23	0.01	c0.24	0.15	c0.11	
v/s Ratio Perm		0.01				
v/c Ratio	0.89	0.02	0.87	0.25	0.42	
Uniform Delay, d1	26.5	8.0	25.5	7.2	23.3	
Progression Factor	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	10.5	0.0	15.5	0.3	1.5	
Delay (s)	37.0	8.0	41.1	7.5	24.8	
Level of Service	D	A	D	A	C	
Approach Delay (s)	35.9			22.6	24.8	
Approach LOS	D			C	C	

Intersection Summary					
HCM 2000 Control Delay	28.0	HCM 2000 Level of Service	C		
HCM 2000 Volume to Capacity ratio	0.73				
Actuated Cycle Length (s)	74.4	Sum of lost time (s)	15.6		
Intersection Capacity Utilization	67.6%	ICU Level of Service	C		
Analysis Period (min)	15				
c Critical Lane Group					



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	92	54	19	383	69	312	2	170	76	63	214	67
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.1			5.1	5.1	4.7	5.5	5.5	4.7	5.5	
Lane Util. Factor		1.00			1.00	1.00	1.00	0.95	1.00	1.00	0.95	
Frpb, ped/bikes		1.00			1.00	0.97	1.00	1.00	0.95	1.00	0.99	
Flpb, ped/bikes		1.00			1.00	1.00	0.98	1.00	1.00	1.00	1.00	
Frt		0.98			1.00	0.85	1.00	1.00	0.85	1.00	0.96	
Flt Protected		0.97			0.96	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1777			1787	1534	1740	3539	1499	1770	3371	
Flt Permitted		0.97			0.96	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)		1777			1787	1534	1740	3539	1499	1770	3371	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	98	57	20	407	73	332	2	181	81	67	228	71
RTOR Reduction (vph)	0	5	0	0	0	174	0	0	61	0	30	0
Lane Group Flow (vph)	0	170	0	0	480	158	2	181	20	67	269	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Split	NA		Split	NA	Perm	Prot	NA	Perm	Prot	NA	
Protected Phases	4	4		3	3		5	2		1	6	
Permitted Phases						3			2			
Actuated Green, G (s)		12.6			26.5	26.5	0.7	20.9	20.9	4.0	24.2	
Effective Green, g (s)		12.6			26.5	26.5	0.7	20.9	20.9	4.0	24.2	
Actuated g/C Ratio		0.15			0.31	0.31	0.01	0.25	0.25	0.05	0.29	
Clearance Time (s)		5.1			5.1	5.1	4.7	5.5	5.5	4.7	5.5	
Vehicle Extension (s)		3.0			3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)		265			561	481	14	876	371	83	966	
v/s Ratio Prot		c0.10			c0.27		0.00	0.05		c0.04	c0.08	
v/s Ratio Perm						0.10			0.01			
v/c Ratio		0.64			0.86	0.33	0.14	0.21	0.05	0.81	0.28	
Uniform Delay, d1		33.8			27.2	22.2	41.6	25.2	24.2	39.8	23.3	
Progression Factor		1.00			1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2		5.2			12.2	0.4	4.7	0.5	0.3	41.7	0.7	
Delay (s)		39.0			39.3	22.6	46.2	25.7	24.5	81.5	24.1	
Level of Service		D			D	C	D	C	C	F	C	
Approach Delay (s)		39.0			32.5			25.5			34.6	
Approach LOS		D			C			C			C	

Intersection Summary				
HCM 2000 Control Delay	32.5	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.62			
Actuated Cycle Length (s)	84.4	Sum of lost time (s)	20.4	
Intersection Capacity Utilization	61.1%	ICU Level of Service	B	
Analysis Period (min)	15			
c Critical Lane Group				



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	19	24	20	351	57	17	108	869	147	20	416	48
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.9	4.9	4.5	4.9		4.5	5.3		4.5	5.0	
Lane Util. Factor	1.00	1.00	1.00	0.97	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	1.00	0.85	1.00	0.97		1.00	0.98		1.00	0.98	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1863	1583	3433	1799		1770	3463		1770	3485	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	1863	1583	3433	1799		1770	3463		1770	3485	
Peak-hour factor, PHF	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Adj. Flow (vph)	19	24	20	355	58	17	109	878	148	20	420	48
RTOR Reduction (vph)	0	0	19	0	12	0	0	10	0	0	7	0
Lane Group Flow (vph)	19	24	1	355	63	0	109	1016	0	20	461	0
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4									
Actuated Green, G (s)	2.3	5.3	5.3	15.1	18.1		11.4	57.3		3.1	49.3	
Effective Green, g (s)	2.3	5.3	5.3	15.1	18.1		11.4	57.3		3.1	49.3	
Actuated g/C Ratio	0.02	0.05	0.05	0.15	0.18		0.11	0.57		0.03	0.49	
Clearance Time (s)	4.5	4.9	4.9	4.5	4.9		4.5	5.3		4.5	5.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	40	98	83	518	325		201	1984		54	1718	
v/s Ratio Prot	0.01	0.01		c0.10	c0.03		c0.06	c0.29		0.01	0.13	
v/s Ratio Perm			0.00									
v/c Ratio	0.47	0.24	0.01	0.69	0.19		0.54	0.51		0.37	0.27	
Uniform Delay, d1	48.3	45.4	44.9	40.2	34.8		41.8	12.9		47.5	14.8	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	8.6	1.3	0.1	3.7	0.3		3.0	0.9		4.2	0.4	
Delay (s)	56.9	46.7	44.9	43.9	35.0		44.8	13.8		51.7	15.2	
Level of Service	E	D	D	D	D		D	B		D	B	
Approach Delay (s)		49.2			42.4			16.8			16.7	
Approach LOS		D			D			B			B	

Intersection Summary				
HCM 2000 Control Delay	23.0	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.55			
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	19.2	
Intersection Capacity Utilization	61.0%	ICU Level of Service	B	
Analysis Period (min)	15			
c Critical Lane Group				

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	467	0	0	933	549	458
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.1			5.1	5.1	5.1
Lane Util. Factor	0.95			0.95	0.97	0.91
Frt	1.00			1.00	0.97	0.85
Flt Protected	1.00			1.00	0.96	1.00
Satd. Flow (prot)	3539			3539	3369	1441
Flt Permitted	1.00			1.00	0.96	1.00
Satd. Flow (perm)	3539			3539	3369	1441
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	497	0	0	993	584	487
RTOR Reduction (vph)	0	0	0	0	27	248
Lane Group Flow (vph)	497	0	0	993	708	88
Turn Type	NA			NA	Prot	Perm
Protected Phases	2			6	4	
Permitted Phases						4
Actuated Green, G (s)	16.3			28.4	21.3	21.3
Effective Green, g (s)	16.3			28.4	21.3	21.3
Actuated g/C Ratio	0.20			0.35	0.26	0.26
Clearance Time (s)	5.1			5.1	5.1	5.1
Vehicle Extension (s)	3.0			3.0	3.0	3.0
Lane Grp Cap (vph)	709			1236	882	377
v/s Ratio Prot	c0.14			c0.28	c0.21	
v/s Ratio Perm						0.06
v/c Ratio	0.70			0.80	0.80	0.23
Uniform Delay, d1	30.2			23.9	28.0	23.6
Progression Factor	1.00			1.00	1.00	1.00
Incremental Delay, d2	3.1			3.9	5.3	0.3
Delay (s)	33.4			27.8	33.4	23.9
Level of Service	C			C	C	C
Approach Delay (s)	33.4			27.8	30.4	
Approach LOS	C			C	C	

Intersection Summary				
HCM 2000 Control Delay	30.0	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.78			
Actuated Cycle Length (s)	81.3	Sum of lost time (s)	15.3	
Intersection Capacity Utilization	54.7%	ICU Level of Service	A	
Analysis Period (min)	15			
c Critical Lane Group				

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	39	651	228	454	804	15	59	6	108	30	34	51
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.9	4.0	4.5	4.9		4.9	4.9	4.9		4.9	4.9
Lane Util. Factor	1.00	0.95	1.00	0.97	0.95		1.00	0.95	0.95		1.00	1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	0.97	0.97		1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00		1.00	0.86	0.85		1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00		0.98	1.00
Satd. Flow (prot)	1770	3539	1583	3433	3526		1770	1485	1455		1821	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00		0.98	1.00
Satd. Flow (perm)	1770	3539	1583	3433	3526		1770	1485	1455		1821	1583
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	42	700	245	488	865	16	63	6	116	32	37	55
RTOR Reduction (vph)	0	0	0	0	1	0	0	0	0	0	0	0
Lane Group Flow (vph)	42	700	245	488	880	0	63	62	60	0	69	55
Confl. Peds. (#/hr)						10			10			
Confl. Bikes (#/hr)						5			5			
Turn Type	Prot	NA	Free	Prot	NA		Split	NA	Perm	Split	NA	Perm
Protected Phases	5	2		1	6		3	3		4	4	
Permitted Phases			Free						3			4
Actuated Green, G (s)	2.6	25.5	83.1	15.1	38.0		16.2	16.2	16.2		7.1	7.1
Effective Green, g (s)	2.6	25.5	83.1	15.1	38.0		16.2	16.2	16.2		7.1	7.1
Actuated g/C Ratio	0.03	0.31	1.00	0.18	0.46		0.19	0.19	0.19		0.09	0.09
Clearance Time (s)	4.5	4.9		4.5	4.9		4.9	4.9	4.9		4.9	4.9
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	55	1085	1583	623	1612		345	289	283		155	135
v/s Ratio Prot	0.02	c0.20		c0.14	0.25		0.04	c0.04			c0.04	
v/s Ratio Perm			0.15						0.04			0.03
v/c Ratio	0.76	0.65	0.15	0.78	0.55		0.18	0.21	0.21		0.45	0.41
Uniform Delay, d1	39.9	24.9	0.0	32.4	16.3		27.9	28.1	28.1		36.1	36.0
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	46.0	3.0	0.2	6.4	0.4		1.2	1.7	1.7		2.0	2.0
Delay (s)	86.0	27.9	0.2	38.8	16.7		29.1	29.8	29.8		38.2	38.0
Level of Service	F	C	A	D	B		C	C	C		D	D
Approach Delay (s)		23.5			24.6			29.6			38.1	
Approach LOS		C			C			C			D	

Intersection Summary				
HCM 2000 Control Delay	25.1	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.55			
Actuated Cycle Length (s)	83.1	Sum of lost time (s)	19.2	
Intersection Capacity Utilization	56.2%	ICU Level of Service	B	
Analysis Period (min)	15			
c Critical Lane Group				

8:00-9:00 AM Existing + Project (Phase 1)
15: I-805 SB Ramp/Berger Ave & Mesa College Dr — HCM Signalized Intersection Capacity Analysis

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	6	481	383	113	1447	76	0	0	0	44	27	26
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.7	5.1		4.7	5.1						5.5	
Lane Util. Factor	1.00	0.95		1.00	0.95						1.00	
Frpb, ped/bikes	1.00	0.99		1.00	1.00						0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00						1.00	
Frt	1.00	0.93		1.00	0.99						0.96	
Flt Protected	0.95	1.00		0.95	1.00						0.98	
Satd. Flow (prot)	1766	3274		1770	3504						1741	
Flt Permitted	0.95	1.00		0.95	1.00						0.98	
Satd. Flow (perm)	1766	3274		1770	3504						1741	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	7	523	416	123	1573	83	0	0	0	48	29	28
RTOR Reduction (vph)	0	159	0	0	5	0	0	0	0	0	14	0
Lane Group Flow (vph)	7	780	0	123	1651	0	0	0	0	0	91	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Prot	NA		Prot	NA					Split	NA	
Protected Phases	5	2		1	6					4	4	
Permitted Phases												
Actuated Green, G (s)	0.7	37.1		9.0	45.4						16.4	
Effective Green, g (s)	0.7	37.1		9.0	45.4						16.4	
Actuated g/C Ratio	0.01	0.48		0.12	0.58						0.21	
Clearance Time (s)	4.7	5.1		4.7	5.1						5.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0						3.0	
Lane Grp Cap (vph)	15	1561		204	2044						366	
v/s Ratio Prot	0.00	0.24		c0.07	c0.47						c0.05	
v/s Ratio Perm												
v/c Ratio	0.47	0.50		0.60	0.81						0.25	
Uniform Delay, d1	38.4	14.0		32.7	12.8						25.6	
Progression Factor	1.00	1.00		1.00	1.00						1.00	
Incremental Delay, d2	21.2	0.3		5.0	2.4						1.6	
Delay (s)	59.6	14.2		37.7	15.2						27.2	
Level of Service	E	B		D	B						C	
Approach Delay (s)		14.6			16.8			0.0			27.2	
Approach LOS		B			B			A			C	

Intersection Summary				
HCM 2000 Control Delay	16.4	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.68			
Actuated Cycle Length (s)	77.8	Sum of lost time (s)	15.3	
Intersection Capacity Utilization	71.9%	ICU Level of Service	C	
Analysis Period (min)	15			
c Critical Lane Group				

8:00-9:00 AM Existing + Project (Phase 1)
16: I-805 NB Off-Ramp & Mesa College Dr/Kearny Villa Rd — HCM Signalized Intersection Capacity Analysis

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	542	0	0	458	1192	464
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.5			5.5	4.5	5.5
Lane Util. Factor	0.95			0.95	0.97	1.00
Frpb, ped/bikes	1.00			1.00	1.00	0.98
Flpb, ped/bikes	1.00			1.00	1.00	1.00
Frt	1.00			1.00	1.00	0.85
Flt Protected	1.00			1.00	0.95	1.00
Satd. Flow (prot)	3539			3539	3433	1544
Flt Permitted	1.00			1.00	0.95	1.00
Satd. Flow (perm)	3539			3539	3433	1544
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	589	0	0	498	1296	504
RTOR Reduction (vph)	0	0	0	0	0	342
Lane Group Flow (vph)	589	0	0	498	1296	162
Confl. Peds. (#/hr)						10
Confl. Bikes (#/hr)						5
Turn Type	NA			NA	Prot	Perm
Protected Phases	2			6	4	
Permitted Phases						6
Actuated Green, G (s)	18.6			18.6	29.4	18.6
Effective Green, g (s)	18.6			18.6	29.4	18.6
Actuated g/C Ratio	0.32			0.32	0.51	0.32
Clearance Time (s)	5.5			5.5	4.5	5.5
Vehicle Extension (s)	3.0			3.0	3.0	3.0
Lane Grp Cap (vph)	1134			1134	1740	495
v/s Ratio Prot	c0.17			0.14	c0.38	
v/s Ratio Perm						0.10
v/c Ratio	0.52			0.44	0.74	0.33
Uniform Delay, d1	16.1			15.6	11.3	14.9
Progression Factor	1.00			1.00	1.00	1.00
Incremental Delay, d2	0.4			0.3	1.8	0.4
Delay (s)	16.5			15.8	13.1	15.3
Level of Service	B			B	B	B
Approach Delay (s)	16.5			15.8	13.7	
Approach LOS	B			B	B	

Intersection Summary				
HCM 2000 Control Delay	14.7	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.66			
Actuated Cycle Length (s)	58.0	Sum of lost time (s)	10.0	
Intersection Capacity Utilization	57.3%	ICU Level of Service	B	
Analysis Period (min)	15			
c Critical Lane Group				

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	12	35	19	303	21	507	0	548	457	628	635	24
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.9		4.9	4.9	4.9		5.2		4.5	4.5	
Lane Util. Factor		1.00		0.95	0.91	0.95		0.95		0.97	0.95	
Frpb, ped/bikes		0.99		1.00	0.99	0.98		0.98		1.00	1.00	
Flpb, ped/bikes		1.00		1.00	1.00	1.00		1.00		1.00	1.00	
Frt		0.96		1.00	0.88	0.85		0.93		1.00	0.99	
Flt Protected		0.99		0.95	0.99	1.00		1.00		0.95	1.00	
Satd. Flow (prot)		1749		1681	1457	1478		3247		3433	3513	
Flt Permitted		0.99		0.95	0.99	1.00		1.00		0.95	1.00	
Satd. Flow (perm)		1749		1681	1457	1478		3247		3433	3513	
Peak-hour factor, PHF	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Adj. Flow (vph)	14	40	22	348	24	583	0	630	525	722	730	28
RTOR Reduction (vph)	0	15	0	0	161	252	0	153	0	0	3	0
Lane Group Flow (vph)	0	61	0	313	166	63	0	1002	0	722	755	0
Confl. Peds. (#/hr)			10						10			10
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Split	NA		Split	NA	Perm		NA		Prot	NA	
Protected Phases	7	7		8	8			2		1	6	
Permitted Phases						8						
Actuated Green, G (s)		6.0		19.9	19.9	19.9		32.7		21.9	59.8	
Effective Green, g (s)		6.0		19.9	19.9	19.9		32.7		21.9	59.8	
Actuated g/C Ratio		0.06		0.20	0.20	0.20		0.33		0.22	0.60	
Clearance Time (s)		4.9		4.9	4.9	4.9		5.2		4.5	4.5	
Vehicle Extension (s)		3.0		3.0	3.0	3.0		3.0		3.0	3.0	
Lane Grp Cap (vph)		104		334	289	294		1061		751	2100	
v/s Ratio Prot		c0.03		c0.19	0.11			c0.31		c0.21	0.21	
v/s Ratio Perm						0.04						
v/c Ratio		0.59		0.94	0.57	0.21		0.94		0.96	0.36	
Uniform Delay, d1		45.8		39.4	36.2	33.5		32.8		38.6	10.3	
Progression Factor		1.00		1.00	1.00	1.00		1.00		1.15	1.17	
Incremental Delay, d2		8.2		33.0	2.8	0.4		17.1		21.7	0.4	
Delay (s)		54.0		72.4	39.0	33.9		49.9		66.2	12.5	
Level of Service		D		E	D	C		D		E	B	
Approach Delay (s)		54.0			48.2			49.9			38.7	
Approach LOS		D			D			D			D	

Intersection Summary				
HCM 2000 Control Delay	45.0	HCM 2000 Level of Service	D	
HCM 2000 Volume to Capacity ratio	0.92			
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	19.5	
Intersection Capacity Utilization	81.1%	ICU Level of Service	D	
Analysis Period (min)	15			
c Critical Lane Group				

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	155	790	159	397	578	352	229	211	398	308	166	74
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.3		4.5	5.3		4.5	5.7	5.7	4.5	6.0	
Lane Util. Factor	1.00	0.95		0.97	0.95		0.97	0.95	1.00	0.97	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	0.99		1.00	1.00	0.99	1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.97		1.00	0.94		1.00	1.00	0.85	1.00	0.95	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3432		3433	3299		3433	3539	1560	3433	3340	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	3432		3433	3299		3433	3539	1560	3433	3340	
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	176	898	181	451	657	400	260	240	452	350	189	84
RTOR Reduction (vph)	0	19	0	0	103	0	0	0	55	0	56	0
Lane Group Flow (vph)	176	1060	0	451	954	0	260	240	397	350	217	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Prot	NA		Prot	NA		Prot	NA	custom	Prot	NA	
Protected Phases	5	2		1	6		3	8	8	7	4	
Permitted Phases									1			
Actuated Green, G (s)	10.5	29.5		13.5	32.5		9.5	16.1	29.6	10.7	17.0	
Effective Green, g (s)	10.5	29.5		13.5	32.5		9.5	16.1	29.6	10.7	17.0	
Actuated g/C Ratio	0.12	0.33		0.15	0.36		0.11	0.18	0.33	0.12	0.19	
Clearance Time (s)	4.5	5.3		4.5	5.3		4.5	5.7	5.7	4.5	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	206	1127		516	1193		363	634	613	409	632	
v/s Ratio Prot	0.10	c0.31		c0.13	c0.29		0.08	0.07	c0.12	c0.10	0.06	
v/s Ratio Perm									0.14			
v/c Ratio	0.85	0.94		0.87	0.80		0.72	0.38	0.65	0.86	0.34	
Uniform Delay, d1	38.9	29.3		37.3	25.7		38.8	32.4	25.7	38.8	31.6	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	27.5	14.8		15.1	3.9		6.6	0.4	2.4	15.9	0.3	
Delay (s)	66.4	44.1		52.4	29.6		45.4	32.8	28.0	54.7	31.9	
Level of Service	E	D		D	C		D	C	C	D	C	
Approach Delay (s)		47.2			36.4			34.0			44.7	
Approach LOS		D			D			C			D	

Intersection Summary				
HCM 2000 Control Delay	40.2	HCM 2000 Level of Service	D	
HCM 2000 Volume to Capacity ratio	0.87			
Actuated Cycle Length (s)	89.8	Sum of lost time (s)	20.3	
Intersection Capacity Utilization	74.5%	ICU Level of Service	D	
Analysis Period (min)	15			
c Critical Lane Group				

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	22	1324	149	48	1057	10	252	0	103	7	0	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.3		4.5	5.3		4.9	4.9			4.9	4.9
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00			1.00	1.00
Frpb, ped/bikes	1.00	0.99		1.00	1.00		1.00	0.97			1.00	0.97
Flpb, ped/bikes	1.00	1.00		1.00	1.00		0.98	1.00			0.99	1.00
Frt	1.00	0.98		1.00	1.00		1.00	0.85			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00			0.95	1.00
Satd. Flow (prot)	1770	3468		1770	3533		1741	1532			1745	1532
Flt Permitted	0.95	1.00		0.95	1.00		0.75	1.00			0.68	1.00
Satd. Flow (perm)	1770	3468		1770	3533		1379	1532			1245	1532
Peak-hour factor, PHF	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Adj. Flow (vph)	26	1576	177	57	1258	12	300	0	123	8	0	12
RTOR Reduction (vph)	0	9	0	0	1	0	0	91	0	0	0	9
Lane Group Flow (vph)	26	1744	0	57	1269	0	300	32	0	0	8	3
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	Perm
Protected Phases	5	2		1	6			4			4	
Permitted Phases							4			4		4
Actuated Green, G (s)	2.2	48.1		3.7	49.6		21.4	21.4			21.4	21.4
Effective Green, g (s)	2.2	48.1		3.7	49.6		21.4	21.4			21.4	21.4
Actuated g/C Ratio	0.03	0.55		0.04	0.56		0.24	0.24			0.24	0.24
Clearance Time (s)	4.5	5.3		4.5	5.3		4.9	4.9			4.9	4.9
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0			3.0	3.0
Lane Grp Cap (vph)	44	1897		74	1993		335	372			303	372
v/s Ratio Prot	0.01	c0.50		c0.03	0.36			0.02				
v/s Ratio Perm							c0.22				0.01	0.00
v/c Ratio	0.59	0.92		0.77	0.64		0.90	0.09			0.03	0.01
Uniform Delay, d1	42.4	18.1		41.7	13.0		32.2	25.7			25.3	25.2
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00			1.00	1.00
Incremental Delay, d2	19.5	7.6		38.0	0.7		24.8	0.1			0.0	0.0
Delay (s)	61.9	25.8		79.7	13.7		57.0	25.8			25.4	25.2
Level of Service	E	C		E	B		E	C			C	C
Approach Delay (s)		26.3			16.5			47.9			25.3	
Approach LOS		C			B			D			C	

Intersection Summary				
HCM 2000 Control Delay	25.2	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.90			
Actuated Cycle Length (s)	87.9	Sum of lost time (s)	14.7	
Intersection Capacity Utilization	70.6%	ICU Level of Service	C	
Analysis Period (min)	15			
c Critical Lane Group				

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	37	1102	278	55	784	11	192	4	59	15	8	110
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.4		4.5	5.3			4.9			4.9	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	
Frpb, ped/bikes	1.00	0.99		1.00	1.00			0.99			0.98	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			0.99			1.00	
Frt	1.00	0.97		1.00	1.00			0.97			0.89	
Flt Protected	0.95	1.00		0.95	1.00			0.96			0.99	
Satd. Flow (prot)	1770	3400		1770	3530			1714			1608	
Flt Permitted	0.95	1.00		0.95	1.00			0.67			0.95	
Satd. Flow (perm)	1770	3400		1770	3530			1186			1538	
Peak-hour factor, PHF	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Adj. Flow (vph)	44	1296	327	65	922	13	226	5	69	18	9	129
RTOR Reduction (vph)	0	26	0	0	1	0	0	14	0	0	94	0
Lane Group Flow (vph)	44	1597	0	65	934	0	0	286	0	0	62	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8			4		
Actuated Green, G (s)	3.6	38.0		3.3	37.8			21.1			21.1	
Effective Green, g (s)	3.6	38.0		3.3	37.8			21.1			21.1	
Actuated g/C Ratio	0.05	0.49		0.04	0.49			0.27			0.27	
Clearance Time (s)	4.5	5.4		4.5	5.3			4.9			4.9	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	82	1673		75	1728			324			420	
v/s Ratio Prot	0.02	c0.47		c0.04	0.26							
v/s Ratio Perm								c0.24			0.04	
v/c Ratio	0.54	0.95		0.87	0.54			0.88			0.15	
Uniform Delay, d1	36.0	18.8		36.7	13.7			26.9			21.2	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	6.6	13.6		60.4	1.2			23.5			0.2	
Delay (s)	42.6	32.4		97.1	14.9			50.4			21.4	
Level of Service	D	C		F	B			D			C	
Approach Delay (s)		32.6			20.2			50.4			21.4	
Approach LOS		C			C			D			C	

Intersection Summary				
HCM 2000 Control Delay	29.8	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.93			
Actuated Cycle Length (s)	77.2	Sum of lost time (s)	14.8	
Intersection Capacity Utilization	75.6%	ICU Level of Service	D	
Analysis Period (min)	15			
c Critical Lane Group				

3:15-4:15 PM Existing + Project (Phase 1)
24: Sandrock Rd & Aero Dr

HCM Signalized Intersection Capacity Analysis

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	49	746	402	177	544	32	286	13	157	69	48	41
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.2	5.2	4.5	5.2		5.0	5.0	5.0	4.9	4.9	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		0.95	0.95	1.00	1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.95	1.00	1.00		1.00	1.00	0.97	1.00	0.98	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85	1.00	0.93	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	0.96	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3539	1503	1770	3500		1681	1692	1530	1770	1705	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	0.96	1.00	0.95	1.00	
Satd. Flow (perm)	1770	3539	1503	1770	3500		1681	1692	1530	1770	1705	
Peak-hour factor, PHF	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
Adj. Flow (vph)	61	932	502	221	680	40	358	16	196	86	60	51
RTOR Reduction (vph)	0	0	215	0	4	0	0	0	164	0	36	0
Lane Group Flow (vph)	61	932	287	221	716	0	186	188	32	86	75	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Prot	NA	Perm	Prot	NA		Split	NA	Perm	Split	NA	
Protected Phases	5	2		1	6		8	8		7	7	
Permitted Phases			2						8			
Actuated Green, G (s)	5.6	27.1	27.1	12.4	33.9		13.4	13.4	13.4	9.3	9.3	
Effective Green, g (s)	5.6	27.1	27.1	12.4	33.9		13.4	13.4	13.4	9.3	9.3	
Actuated g/C Ratio	0.07	0.33	0.33	0.15	0.41		0.16	0.16	0.16	0.11	0.11	
Clearance Time (s)	4.5	5.2	5.2	4.5	5.2		5.0	5.0	5.0	4.9	4.9	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	121	1172	497	268	1450		275	277	250	201	193	
v/s Ratio Prot	0.03	c0.26		c0.12	0.20		0.11	c0.11		c0.05	0.04	
v/s Ratio Perm			0.19						0.02			
v/c Ratio	0.50	0.80	0.58	0.82	0.49		0.68	0.68	0.13	0.43	0.39	
Uniform Delay, d1	36.8	24.8	22.6	33.6	17.6		32.2	32.2	29.2	33.8	33.6	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	3.3	5.6	4.8	18.3	0.3		6.4	6.5	0.2	1.5	1.3	
Delay (s)	40.0	30.5	27.4	51.9	17.9		38.6	38.6	29.4	35.2	34.9	
Level of Service	D	C	C	D	B		D	D	C	D	C	
Approach Delay (s)		29.8			25.9			35.5			35.0	
Approach LOS		C			C			D			D	

Intersection Summary				
HCM 2000 Control Delay	30.0	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.72			
Actuated Cycle Length (s)	81.8	Sum of lost time (s)	19.6	
Intersection Capacity Utilization	57.6%	ICU Level of Service	B	
Analysis Period (min)	15			
c Critical Lane Group				

3:15-4:15 PM Existing + Project (Phase 1)
25: Ruffin Rd & Aero Dr

HCM Signalized Intersection Capacity Analysis

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	685	289	304	565	133	231
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.2	5.2	4.5	4.5	5.5	5.5
Lane Util. Factor	0.95	1.00	0.97	0.95	0.97	1.00
Frpb, ped/bikes	1.00	0.99	1.00	1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	3539	1566	3433	3539	3433	1541
Flt Permitted	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)	3539	1566	3433	3539	3433	1541
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	745	314	330	614	145	251
RTOR Reduction (vph)	0	27	0	0	0	184
Lane Group Flow (vph)	745	287	330	614	145	67
Confl. Peds. (#/hr)		10	10		10	10
Confl. Bikes (#/hr)		5				5
Turn Type	NA	custom	Prot	NA	Prot	Perm
Protected Phases	2	2	1	6	8	
Permitted Phases		8				8
Actuated Green, G (s)	19.3	35.3	9.2	33.7	16.0	16.0
Effective Green, g (s)	19.3	35.3	9.2	33.7	16.0	16.0
Actuated g/C Ratio	0.32	0.59	0.15	0.56	0.27	0.27
Clearance Time (s)	5.2	5.2	4.5	4.5	5.5	5.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	1144	1062	529	1997	920	412
v/s Ratio Prot	c0.21	c0.09	c0.10	0.17	0.04	
v/s Ratio Perm		0.10				0.04
v/c Ratio	0.65	0.27	0.62	0.31	0.16	0.16
Uniform Delay, d1	17.3	5.9	23.6	6.9	16.7	16.7
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	2.9	0.6	2.3	0.1	0.4	0.9
Delay (s)	20.2	6.6	25.9	6.9	17.1	17.6
Level of Service	C	A	C	A	B	B
Approach Delay (s)	16.2			13.6	17.4	
Approach LOS	B			B	B	

Intersection Summary				
HCM 2000 Control Delay	15.3	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.52			
Actuated Cycle Length (s)	59.7	Sum of lost time (s)	15.2	
Intersection Capacity Utilization	53.6%	ICU Level of Service	A	
Analysis Period (min)	15			
c Critical Lane Group				

Movement	EBU	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations							
Volume (vph)	21	941	108	134	846	115	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5		4.5	4.5	4.5	4.5
Lane Util. Factor	1.00	0.95		0.97	0.95	0.97	0.88
Frpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	0.95
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00
Frt	1.00	0.98		1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	0.95	1.00
Satd. Flow (prot)	1770	3474		3433	3539	3433	2643
Flt Permitted	0.95	1.00		0.95	1.00	0.95	1.00
Satd. Flow (perm)	1770	3474		3433	3539	3433	2643
Peak-hour factor, PHF	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Adj. Flow (vph)	24	1094	126	156	984	134	47
RTOR Reduction (vph)	0	10	0	0	0	0	37
Lane Group Flow (vph)	24	1210	0	156	984	134	10
Confl. Peds. (#/hr)			10	10		10	10
Confl. Bikes (#/hr)			5				5
Turn Type	Prot	NA		Prot	NA	Prot	Perm
Protected Phases	5	2		1	6	8	
Permitted Phases							8
Actuated Green, G (s)	1.6	36.7		8.7	43.8	16.1	16.1
Effective Green, g (s)	1.6	36.7		8.7	43.8	16.1	16.1
Actuated g/C Ratio	0.02	0.49		0.12	0.58	0.21	0.21
Clearance Time (s)	4.5	4.5		4.5	4.5	4.5	4.5
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	37	1699		398	2066	736	567
v/s Ratio Prot	0.01	c0.35		c0.05	c0.28	c0.04	
v/s Ratio Perm							0.00
v/c Ratio	0.65	0.71		0.39	0.48	0.18	0.02
Uniform Delay, d1	36.4	15.0		30.7	9.0	24.1	23.2
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2	33.0	2.6		0.6	0.8	0.5	0.1
Delay (s)	69.4	17.6		31.3	9.8	24.6	23.3
Level of Service	E	B		C	A	C	C
Approach Delay (s)		18.6			12.7	24.3	
Approach LOS		B			B	C	

Intersection Summary				
HCM 2000 Control Delay	16.4	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.53			
Actuated Cycle Length (s)	75.0	Sum of lost time (s)	13.5	
Intersection Capacity Utilization	58.0%	ICU Level of Service	B	
Analysis Period (min)	15			
c Critical Lane Group				

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	3	0	0	1	0	19	0	336	0	11	182	3
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Hourly flow rate (vph)	4	0	0	1	0	23	0	400	0	13	217	4
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)											142	
pX, platoon unblocked												
vC, conflicting volume	667	645	218	645	646	400	220			400		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	667	645	218	645	646	400	220			400		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	99	100	100	100	100	97	100			99		
cM capacity (veh/h)	356	387	821	382	386	650	1349			1159		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	4	24	400	233
Volume Left	4	1	0	13
Volume Right	0	23	0	4
cSH	356	628	1349	1159
Volume to Capacity	0.01	0.04	0.00	0.01
Queue Length 95th (ft)	1	3	0	1
Control Delay (s)	15.2	11.0	0.0	0.6
Lane LOS	C	B		A
Approach Delay (s)	15.2	11.0	0.0	0.6
Approach LOS	C	B		

Intersection Summary				
Average Delay	0.7			
Intersection Capacity Utilization	28.8%	ICU Level of Service	A	
Analysis Period (min)	15			

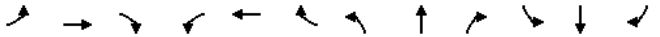
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	3	188	110	0	99	42
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.60	0.60	0.60	0.60	0.60	0.60
Hourly flow rate (vph)	5	313	183	0	165	70
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						635
pX, platoon unblocked						
vC, conflicting volume	583	183			183	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	583	183			183	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	99	64			88	
cM capacity (veh/h)	418	859			1392	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	318	183	235
Volume Left	5	0	165
Volume Right	313	0	0
cSH	845	1700	1392
Volume to Capacity	0.38	0.11	0.12
Queue Length 95th (ft)	44	0	10
Control Delay (s)	11.8	0.0	5.9
Lane LOS	B		A
Approach Delay (s)	11.8	0.0	5.9
Approach LOS	B		

Intersection Summary			
Average Delay		7.0	
Intersection Capacity Utilization		32.8%	ICU Level of Service A
Analysis Period (min)		15	

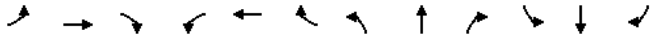
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	215	31	450	275	553	14
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.1	4.7	4.7	5.8	5.8	
Lane Util. Factor	0.97	1.00	1.00	0.95	0.95	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.85	1.00	1.00	1.00	
Flt Protected	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	3433	1583	1770	3539	3522	
Flt Permitted	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (perm)	3433	1583	1770	3539	3522	
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	242	35	506	309	621	16
RTOR Reduction (vph)	0	12	0	0	2	0
Lane Group Flow (vph)	242	23	506	309	635	0
Confl. Peds. (#/hr)						10
Confl. Bikes (#/hr)						5
Turn Type	Prot	pm+ov	Prot	NA	NA	
Protected Phases	4	5	5	2	6	
Permitted Phases		4				
Actuated Green, G (s)	10.1	33.3	23.2	48.1	20.2	
Effective Green, g (s)	10.1	33.3	23.2	48.1	20.2	
Actuated g/C Ratio	0.15	0.48	0.34	0.70	0.29	
Clearance Time (s)	5.1	4.7	4.7	5.8	5.8	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	501	762	594	2463	1029	
v/s Ratio Prot	c0.07	0.01	c0.29	0.09	c0.18	
v/s Ratio Perm		0.00				
v/c Ratio	0.48	0.03	0.85	0.13	0.62	
Uniform Delay, d1	27.1	9.4	21.4	3.5	21.1	
Progression Factor	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.7	0.0	11.3	0.1	2.8	
Delay (s)	27.8	9.4	32.7	3.6	23.9	
Level of Service	C	A	C	A	C	
Approach Delay (s)	25.5			21.6	23.9	
Approach LOS	C			C	C	

Intersection Summary			
HCM 2000 Control Delay	23.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	69.1	Sum of lost time (s)	15.6
Intersection Capacity Utilization	59.8%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	127	112	24	280	51	170	20	369	187	175	385	104
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.1			5.1	5.1	4.7	5.5	5.5	4.7	5.5	
Lane Util. Factor		1.00			1.00	1.00	1.00	0.95	1.00	1.00	0.95	
Frpb, ped/bikes		1.00			1.00	0.97	1.00	1.00	0.95	1.00	0.99	
Flpb, ped/bikes		1.00			1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt		0.99			1.00	0.85	1.00	1.00	0.85	1.00	0.97	
Flt Protected		0.98			0.96	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1791			1787	1531	1770	3539	1496	1770	3389	
Flt Permitted		0.98			0.96	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)		1791			1787	1531	1770	3539	1496	1770	3389	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	131	115	25	289	53	175	21	380	193	180	397	107
RTOR Reduction (vph)	0	4	0	0	0	136	0	0	151	0	24	0
Lane Group Flow (vph)	0	267	0	0	342	39	21	380	42	180	480	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Split	NA		Split	NA	Perm	Prot	NA	Perm	Prot	NA	
Protected Phases	4	4		3	3		5	2		1	6	
Permitted Phases						3			2			
Actuated Green, G (s)		16.5			19.4	19.4	2.0	19.1	19.1	11.6	28.7	
Effective Green, g (s)		16.5			19.4	19.4	2.0	19.1	19.1	11.6	28.7	
Actuated g/C Ratio		0.19			0.22	0.22	0.02	0.22	0.22	0.13	0.33	
Clearance Time (s)		5.1			5.1	5.1	4.7	5.5	5.5	4.7	5.5	
Vehicle Extension (s)		3.0			3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)		339			398	341	40	776	328	236	1117	
v/s Ratio Prot		c0.15			c0.19		0.01	c0.11		c0.10	0.14	
v/s Ratio Perm						0.03			0.03			
v/c Ratio		0.79			0.86	0.11	0.53	0.49	0.13	0.76	0.43	
Uniform Delay, d1		33.6			32.5	27.0	42.0	29.7	27.3	36.4	22.8	
Progression Factor		1.00			1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2		11.5			16.6	0.2	11.9	2.2	0.8	13.6	1.2	
Delay (s)		45.0			49.1	27.1	53.9	31.9	28.1	49.9	24.0	
Level of Service		D			D	C	D	C	C	D	C	
Approach Delay (s)		45.0			41.7			31.4			30.8	
Approach LOS		D			D			C			C	

Intersection Summary				
HCM 2000 Control Delay	35.6	HCM 2000 Level of Service	D	
HCM 2000 Volume to Capacity ratio	0.72			
Actuated Cycle Length (s)	87.0	Sum of lost time (s)	20.4	
Intersection Capacity Utilization	65.8%	ICU Level of Service	C	
Analysis Period (min)	15			
c Critical Lane Group				



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	49	90	85	415	42	32	79	737	223	35	726	28
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.9	4.9	4.5	4.9		4.5	5.3		4.5	5.0	
Lane Util. Factor	1.00	1.00	1.00	0.97	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	1.00	0.85	1.00	0.94		1.00	0.97		1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1863	1583	3433	1742		1770	3416		1770	3519	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	1863	1583	3433	1742		1770	3416		1770	3519	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	54	99	93	456	46	35	87	810	245	38	798	31
RTOR Reduction (vph)	0	0	82	0	27	0	0	25	0	0	2	0
Lane Group Flow (vph)	54	99	11	456	54	0	87	1030	0	38	827	0
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4									
Actuated Green, G (s)	6.7	11.5	11.5	17.5	22.3		8.5	47.2		4.6	43.6	
Effective Green, g (s)	6.7	11.5	11.5	17.5	22.3		8.5	47.2		4.6	43.6	
Actuated g/C Ratio	0.07	0.12	0.12	0.18	0.22		0.08	0.47		0.05	0.44	
Clearance Time (s)	4.5	4.9	4.9	4.5	4.9		4.5	5.3		4.5	5.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	118	214	182	600	388		150	1612		81	1534	
v/s Ratio Prot	0.03	c0.05		c0.13	0.03		c0.05	c0.30		0.02	0.23	
v/s Ratio Perm			0.01									
v/c Ratio	0.46	0.46	0.06	0.76	0.14		0.58	0.64		0.47	0.54	
Uniform Delay, d1	44.9	41.4	39.4	39.3	31.1		44.0	20.0		46.5	20.8	
Progression Factor	1.00	1.00	1.00	1.00	1.00		0.93	1.32		1.00	1.00	
Incremental Delay, d2	2.8	1.6	0.1	5.6	0.2		3.2	1.2		4.2	1.4	
Delay (s)	47.7	42.9	39.6	44.9	31.3		44.2	27.5		50.8	22.2	
Level of Service	D	D	D	D	C		D	C		D	C	
Approach Delay (s)		42.7			42.8			28.8			23.4	
Approach LOS		D			D			C			C	

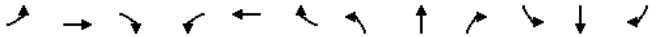
Intersection Summary				
HCM 2000 Control Delay	31.0	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.65			
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	19.2	
Intersection Capacity Utilization	61.6%	ICU Level of Service	B	
Analysis Period (min)	15			
c Critical Lane Group				

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	455	0	0	814	357	253
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.1			5.1	5.1	5.1
Lane Util. Factor	0.95			0.95	0.97	0.91
Frt	1.00			1.00	0.98	0.85
Flt Protected	1.00			1.00	0.96	1.00
Satd. Flow (prot)	3539			3539	3388	1441
Flt Permitted	1.00			1.00	0.96	1.00
Satd. Flow (perm)	3539			3539	3388	1441
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	474	0	0	848	372	264
RTOR Reduction (vph)	0	0	0	0	20	158
Lane Group Flow (vph)	474	0	0	848	418	40
Turn Type	NA			NA	Prot	Perm
Protected Phases	2			6	4	
Permitted Phases						4
Actuated Green, G (s)	13.9			21.8	12.9	12.9
Effective Green, g (s)	13.9			21.8	12.9	12.9
Actuated g/C Ratio	0.22			0.34	0.20	0.20
Clearance Time (s)	5.1			5.1	5.1	5.1
Vehicle Extension (s)	3.0			3.0	3.0	3.0
Lane Grp Cap (vph)	769			1207	683	290
v/s Ratio Prot	c0.13			c0.24	c0.12	
v/s Ratio Perm						0.03
v/c Ratio	0.62			0.70	0.61	0.14
Uniform Delay, d1	22.6			18.2	23.2	20.9
Progression Factor	1.00			1.00	1.00	1.00
Incremental Delay, d2	1.5			1.9	1.6	0.2
Delay (s)	24.1			20.1	24.9	21.2
Level of Service	C			C	C	C
Approach Delay (s)	24.1			20.1	23.7	
Approach LOS	C			C	C	

Intersection Summary				
HCM 2000 Control Delay	22.2	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.65			
Actuated Cycle Length (s)	63.9	Sum of lost time (s)	15.3	
Intersection Capacity Utilization	43.8%	ICU Level of Service	A	
Analysis Period (min)	15			
c Critical Lane Group				

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	99	526	68	311	638	13	120	40	260	18	13	53
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.9	4.0	4.5	4.9		4.9	4.9	4.9		4.9	4.9
Lane Util. Factor	1.00	0.95	1.00	0.97	0.95		1.00	0.95	0.95		1.00	1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	0.98	0.97		1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00		1.00	0.89	0.85		1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00		0.97	1.00
Satd. Flow (prot)	1770	3539	1583	3433	3525		1770	1541	1461		1811	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00		0.97	1.00
Satd. Flow (perm)	1770	3539	1583	3433	3525		1770	1541	1461		1811	1583
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	103	548	71	324	665	14	125	42	271	19	14	55
RTOR Reduction (vph)	0	0	0	0	2	0	0	0	0	0	0	0
Lane Group Flow (vph)	103	548	71	324	677	0	125	159	154	0	33	55
Confl. Peds. (#/hr)						10			10			
Confl. Bikes (#/hr)						5			5			
Turn Type	Prot	NA	Free	Prot	NA		Split	NA	Perm	Split	NA	Perm
Protected Phases	5	2		1	6		3	3		4	4	
Permitted Phases			Free						3			4
Actuated Green, G (s)	4.5	17.3	67.7	8.6	21.4		16.1	16.1	16.1		6.5	6.5
Effective Green, g (s)	4.5	17.3	67.7	8.6	21.4		16.1	16.1	16.1		6.5	6.5
Actuated g/C Ratio	0.07	0.26	1.00	0.13	0.32		0.24	0.24	0.24		0.10	0.10
Clearance Time (s)	4.5	4.9		4.5	4.9		4.9	4.9	4.9		4.9	4.9
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	117	904	1583	436	1114		420	366	347		173	151
v/s Ratio Prot	0.06	0.15		c0.09	c0.19		0.07	0.10			0.02	
v/s Ratio Perm			0.04						c0.11			c0.03
v/c Ratio	0.88	0.61	0.04	0.74	0.61		0.30	0.43	0.44		0.19	0.36
Uniform Delay, d1	31.3	22.2	0.0	28.5	19.6		21.2	21.9	22.0		28.2	28.7
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	48.2	3.0	0.1	6.7	0.9		1.8	3.7	4.1		0.5	1.5
Delay (s)	79.6	25.2	0.1	35.2	20.5		23.0	25.7	26.1		28.7	30.2
Level of Service	E	C	A	D	C		C	C	C		C	C
Approach Delay (s)		30.5			25.3			25.0			29.6	
Approach LOS		C			C			C			C	

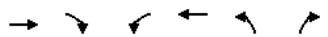
Intersection Summary				
HCM 2000 Control Delay	27.1	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.56			
Actuated Cycle Length (s)	67.7	Sum of lost time (s)	19.2	
Intersection Capacity Utilization	52.2%	ICU Level of Service	A	
Analysis Period (min)	15			
c Critical Lane Group				



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	11	441	719	302	978	72	0	0	0	43	68	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.7	5.1		4.7	5.1						5.5	
Lane Util. Factor	1.00	0.95		1.00	0.95						1.00	
Frpb, ped/bikes	1.00	0.99		1.00	1.00						1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00						1.00	
Frt	1.00	0.91		1.00	0.99						0.99	
Flt Protected	0.95	1.00		0.95	1.00						0.98	
Satd. Flow (prot)	1761	3166		1770	3492						1799	
Flt Permitted	0.95	1.00		0.95	1.00						0.98	
Satd. Flow (perm)	1761	3166		1770	3492						1799	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	12	474	773	325	1052	77	0	0	0	46	73	14
RTOR Reduction (vph)	0	261	0	0	6	0	0	0	0	0	6	0
Lane Group Flow (vph)	12	986	0	325	1123	0	0	0	0	0	127	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Prot	NA		Prot	NA					Split	NA	
Protected Phases	5	2		1	6					4	4	
Permitted Phases												
Actuated Green, G (s)	0.8	29.8		15.7	44.7						16.0	
Effective Green, g (s)	0.8	29.8		15.7	44.7						16.0	
Actuated g/C Ratio	0.01	0.39		0.20	0.58						0.21	
Clearance Time (s)	4.7	5.1		4.7	5.1						5.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0						3.0	
Lane Grp Cap (vph)	18	1228		361	2032						374	
v/s Ratio Prot	0.01	c0.31		c0.18	0.32						c0.07	
v/s Ratio Perm												
v/c Ratio	0.67	0.93dr		0.90	0.55						0.34	
Uniform Delay, d1	37.9	20.9		29.8	9.9						25.9	
Progression Factor	1.00	1.00		1.00	1.00						1.00	
Incremental Delay, d2	66.1	3.9		24.5	0.3						2.5	
Delay (s)	104.0	24.8		54.3	10.2						28.4	
Level of Service	F	C		D	B						C	
Approach Delay (s)		25.5			20.1			0.0			28.4	
Approach LOS		C			C			A			C	

Intersection Summary			
HCM 2000 Control Delay	22.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	76.8	Sum of lost time (s)	15.3
Intersection Capacity Utilization	79.0%	ICU Level of Service	D
Analysis Period (min)	15		

dr Defacto Right Lane. Recode with 1 though lane as a right lane.
c Critical Lane Group



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	476	0	0	694	667	257
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.5			5.5	4.5	5.5
Lane Util. Factor	0.95			0.95	0.97	1.00
Frpb, ped/bikes	1.00			1.00	1.00	0.98
Flpb, ped/bikes	1.00			1.00	1.00	1.00
Frt	1.00			1.00	1.00	0.85
Flt Protected	1.00			1.00	0.95	1.00
Satd. Flow (prot)	3539			3539	3433	1549
Flt Permitted	1.00			1.00	0.95	1.00
Satd. Flow (perm)	3539			3539	3433	1549
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	506	0	0	738	710	273
RTOR Reduction (vph)	0	0	0	0	0	158
Lane Group Flow (vph)	506	0	0	738	710	115
Confl. Peds. (#/hr)						10
Confl. Bikes (#/hr)						5
Turn Type	NA			NA	Prot	Perm
Protected Phases	2			6	4	
Permitted Phases						6
Actuated Green, G (s)	18.7			18.7	15.6	18.7
Effective Green, g (s)	18.7			18.7	15.6	18.7
Actuated g/C Ratio	0.42			0.42	0.35	0.42
Clearance Time (s)	5.5			5.5	4.5	5.5
Vehicle Extension (s)	3.0			3.0	3.0	3.0
Lane Grp Cap (vph)	1493			1493	1208	653
v/s Ratio Prot	0.14			c0.21	c0.21	
v/s Ratio Perm						0.07
v/c Ratio	0.34			0.49	0.59	0.18
Uniform Delay, d1	8.6			9.3	11.7	8.0
Progression Factor	1.00			1.00	1.00	1.00
Incremental Delay, d2	0.1			0.3	0.7	0.1
Delay (s)	8.8			9.6	12.5	8.1
Level of Service	A			A	B	A
Approach Delay (s)	8.8			9.6	11.3	
Approach LOS	A			A	B	

Intersection Summary			
HCM 2000 Control Delay	10.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	44.3	Sum of lost time (s)	10.0
Intersection Capacity Utilization	46.5%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

4:45-5:45 PM Existing + Project (Phase 1)
1: Aero Dr & Convoy St
HCM Signalized Intersection Capacity Analysis

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	10	46	23	445	4	474	0	542	487	827	1063	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.9		4.9	4.9	4.9		5.2		4.5	4.5	
Lane Util. Factor		1.00		0.95	0.91	0.95		0.95		0.97	0.95	
Frpb, ped/bikes		0.99		1.00	0.99	0.98		0.98		1.00	1.00	
Flpb, ped/bikes		1.00		1.00	1.00	1.00		1.00		1.00	1.00	
Frt		0.96		1.00	0.91	0.85		0.93		1.00	1.00	
Flt Protected		0.99		0.95	0.98	1.00		1.00		0.95	1.00	
Satd. Flow (prot)		1752		1681	1502	1479		3229		3433	3536	
Flt Permitted		0.99		0.95	0.98	1.00		1.00		0.95	1.00	
Satd. Flow (perm)		1752		1681	1502	1479		3229		3433	3536	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	10	47	24	459	4	489	0	559	502	853	1096	5
RTOR Reduction (vph)	0	14	0	0	38	228	0	137	0	0	0	0
Lane Group Flow (vph)	0	67	0	330	281	75	0	924	0	853	1101	0
Confl. Peds. (#/hr)			10						10			10
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Split	NA		Split	NA	Perm		NA		Prot	NA	
Protected Phases	7	7		8	8			2		1	6	
Permitted Phases						8						
Actuated Green, G (s)		8.8		29.7	29.7	29.7		33.7		28.3	67.2	
Effective Green, g (s)		8.8		29.7	29.7	29.7		33.7		28.3	67.2	
Actuated g/C Ratio		0.07		0.25	0.25	0.25		0.28		0.24	0.56	
Clearance Time (s)		4.9		4.9	4.9	4.9		5.2		4.5	4.5	
Vehicle Extension (s)		3.0		3.0	3.0	3.0		3.0		3.0	3.0	
Lane Grp Cap (vph)		128		416	371	366		906		809	1980	
v/s Ratio Prot		c0.04		c0.20	0.19			c0.29		c0.25	0.31	
v/s Ratio Perm						0.05						
v/c Ratio		0.52		0.79	0.76	0.20		1.02		1.05	0.56	
Uniform Delay, d1		53.6		42.3	41.8	35.8		43.1		45.9	16.9	
Progression Factor		1.00		1.00	1.00	1.00		1.00		1.00	1.00	
Incremental Delay, d2		3.8		10.0	8.5	0.3		34.9		47.0	1.1	
Delay (s)		57.4		52.3	50.3	36.1		78.0		92.8	18.0	
Level of Service		E		D	D	D		E		F	B	
Approach Delay (s)		57.4			46.5			78.0			50.7	
Approach LOS		E			D			E			D	

Intersection Summary			
HCM 2000 Control Delay	57.0	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.92		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	19.5
Intersection Capacity Utilization	90.8%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

4:45-5:45 PM Existing + Project (Phase 1)
2: Kearny Villa Rd & Aero Dr
HCM Signalized Intersection Capacity Analysis

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	140	1003	204	286	613	352	202	268	421	745	339	138
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.3		4.5	5.3		4.5	5.7	4.5	4.5	6.0	
Lane Util. Factor	1.00	0.95		0.97	0.95		0.97	0.95	1.00	0.97	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	0.99		1.00	1.00	0.98	1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.97		1.00	0.95		1.00	1.00	0.85	1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3427		3433	3299		3433	3539	1553	3433	3346	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	3427		3433	3299		3433	3539	1553	3433	3346	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	146	1045	212	298	639	367	210	279	439	776	353	144
RTOR Reduction (vph)	0	13	0	0	61	0	0	0	72	0	34	0
Lane Group Flow (vph)	146	1244	0	298	945	0	210	279	367	776	463	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Prot	NA		Prot	NA		Prot	NA	pm+ov	Prot	NA	
Protected Phases	5	2		1	6		3	8	1	7	4	
Permitted Phases									8			
Actuated Green, G (s)	14.4	48.1		16.0	49.7		12.3	14.4	30.4	29.5	31.3	
Effective Green, g (s)	14.4	48.1		16.0	49.7		12.3	14.4	30.4	29.5	31.3	
Actuated g/C Ratio	0.11	0.38		0.12	0.39		0.10	0.11	0.24	0.23	0.24	
Clearance Time (s)	4.5	5.3		4.5	5.3		4.5	5.7	4.5	4.5	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	199	1287		429	1280		329	398	368	791	818	
v/s Ratio Prot	0.08	c0.36		0.09	0.29		0.06	0.08	c0.12	c0.23	0.14	
v/s Ratio Perm									0.11			
v/c Ratio	0.73	0.97		0.69	0.74		0.64	0.70	1.00	0.98	0.57	
Uniform Delay, d1	54.9	39.2		53.7	33.6		55.7	54.7	48.7	49.0	42.4	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	13.1	17.5		4.8	2.3		4.0	5.5	45.6	27.2	0.9	
Delay (s)	68.0	56.6		58.5	35.8		59.7	60.2	94.3	76.2	43.3	
Level of Service	E	E		E	D		E	E	F	E	D	
Approach Delay (s)		57.8			41.0			76.2			63.3	
Approach LOS		E			D			E			E	

Intersection Summary			
HCM 2000 Control Delay	58.3	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.98		
Actuated Cycle Length (s)	128.0	Sum of lost time (s)	20.3
Intersection Capacity Utilization	94.7%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

4:45-5:45 PM Existing + Project (Phase 1)
3: Aero Ct & Aero Dr

HCM Signalized Intersection Capacity Analysis

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	7	1983	180	64	1051	10	176	1	63	43	2	12
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.3		4.5	5.3		4.9	4.9			4.9	4.9
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00			1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.97			1.00	0.96
Flpb, ped/bikes	0.99	1.00		1.00	1.00		0.98	1.00			0.98	1.00
Frt	1.00	0.99		1.00	1.00		1.00	0.85			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00			0.95	1.00
Satd. Flow (prot)	1759	3480		1770	3532		1741	1532			1751	1527
Flt Permitted	0.95	1.00		0.95	1.00		0.73	1.00			0.71	1.00
Satd. Flow (perm)	1759	3480		1770	3532		1331	1532			1301	1527
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	7	2087	189	67	1106	11	185	1	66	45	2	13
RTOR Reduction (vph)	0	7	0	0	1	0	0	47	0	0	0	11
Lane Group Flow (vph)	7	2269	0	67	1116	0	185	20	0	0	47	2
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	Perm
Protected Phases	5	2		1	6			4			4	
Permitted Phases							4			4		4
Actuated Green, G (s)	0.7	59.4		2.5	61.2		15.4	15.4			15.4	15.4
Effective Green, g (s)	0.7	59.4		2.5	61.2		15.4	15.4			15.4	15.4
Actuated g/C Ratio	0.01	0.65		0.03	0.67		0.17	0.17			0.17	0.17
Clearance Time (s)	4.5	5.3		4.5	5.3		4.9	4.9			4.9	4.9
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0			3.0	3.0
Lane Grp Cap (vph)	13	2246		48	2349		222	256			217	255
v/s Ratio Prot	0.00	c0.65		c0.04	0.32			0.01				
v/s Ratio Perm							c0.14				0.04	0.00
v/c Ratio	0.54	1.01		1.40	0.48		0.83	0.08			0.22	0.01
Uniform Delay, d1	45.5	16.3		44.8	7.5		37.1	32.3			33.1	31.9
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00			1.00	1.00
Incremental Delay, d2	36.8	21.5		266.5	0.2		22.7	0.1			0.5	0.0
Delay (s)	82.3	37.8		311.3	7.7		59.7	32.4			33.6	31.9
Level of Service	F	D		F	A		E	C			C	C
Approach Delay (s)		38.0			24.9			52.5			33.2	
Approach LOS		D			C			D			C	

Intersection Summary				
HCM 2000 Control Delay	34.7	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.99			
Actuated Cycle Length (s)	92.0	Sum of lost time (s)	14.7	
Intersection Capacity Utilization	85.6%	ICU Level of Service	E	
Analysis Period (min)	15			
c Critical Lane Group				

4:45-5:45 PM Existing + Project (Phase 1)
4: Afton Rd & Aero Dr

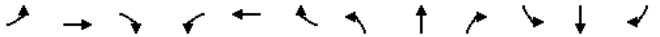
HCM Signalized Intersection Capacity Analysis

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	46	1699	325	37	900	5	149	3	54	12	5	90
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.4		4.5	5.3			4.9			4.9	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	
Frpb, ped/bikes	1.00	0.99		1.00	1.00			0.99			0.97	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			0.99			1.00	
Frt	1.00	0.98		1.00	1.00			0.96			0.89	
Flt Protected	0.95	1.00		0.95	1.00			0.97			0.99	
Satd. Flow (prot)	1770	3425		1770	3535			1702			1595	
Flt Permitted	0.95	1.00		0.95	1.00			0.70			0.96	
Satd. Flow (perm)	1770	3425		1770	3535			1231			1546	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	48	1770	339	39	938	5	155	3	56	12	5	94
RTOR Reduction (vph)	0	14	0	0	0	0	0	14	0	0	75	0
Lane Group Flow (vph)	48	2095	0	39	943	0	0	200	0	0	36	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8			4		
Actuated Green, G (s)	4.7	57.5		2.4	55.3			18.9			18.9	
Effective Green, g (s)	4.7	57.5		2.4	55.3			18.9			18.9	
Actuated g/C Ratio	0.05	0.61		0.03	0.59			0.20			0.20	
Clearance Time (s)	4.5	5.4		4.5	5.3			4.9			4.9	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	88	2104		45	2088			248			312	
v/s Ratio Prot	c0.03	c0.61		0.02	0.27							
v/s Ratio Perm								c0.16			0.02	
v/c Ratio	0.55	1.00		0.87	0.45			0.81			0.12	
Uniform Delay, d1	43.4	17.9		45.4	10.7			35.6			30.5	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	6.7	18.7		84.0	0.7			17.3			0.2	
Delay (s)	50.2	36.6		129.5	11.4			52.9			30.7	
Level of Service	D	D		F	B			D			C	
Approach Delay (s)		36.9			16.1			52.9			30.7	
Approach LOS		D			B			D			C	

Intersection Summary				
HCM 2000 Control Delay	31.8	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.95			
Actuated Cycle Length (s)	93.6	Sum of lost time (s)	14.8	
Intersection Capacity Utilization	84.7%	ICU Level of Service	E	
Analysis Period (min)	15			
c Critical Lane Group				

4:45-5:45 PM Existing + Project (Phase 1)
5: Sandrock Rd & Aero Dr

HCM Signalized Intersection Capacity Analysis

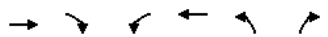


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	50	990	708	293	630	24	282	30	152	65	69	44
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.2	5.2	4.5	5.2		5.0	5.0	5.0	4.9	4.9	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		0.95	0.95	1.00	1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.94	1.00	1.00		1.00	1.00	0.96	1.00	0.98	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85	1.00	0.94	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	0.96	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3539	1495	1770	3513		1681	1701	1523	1770	1726	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	0.96	1.00	0.95	1.00	
Satd. Flow (perm)	1770	3539	1495	1770	3513		1681	1701	1523	1770	1726	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	52	1031	738	305	656	25	294	31	158	68	72	46
RTOR Reduction (vph)	0	0	234	0	2	0	0	0	135	0	21	0
Lane Group Flow (vph)	52	1031	504	305	679	0	162	163	23	68	97	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Prot	NA	Perm	Prot	NA		Split	NA	Perm	Split	NA	
Protected Phases	5	2		1	6		8	8		7	7	
Permitted Phases			2						8			
Actuated Green, G (s)	6.5	36.0	36.0	19.9	49.4		14.8	14.8	14.8	10.8	10.8	
Effective Green, g (s)	6.5	36.0	36.0	19.9	49.4		14.8	14.8	14.8	10.8	10.8	
Actuated g/C Ratio	0.06	0.36	0.36	0.20	0.49		0.15	0.15	0.15	0.11	0.11	
Clearance Time (s)	4.5	5.2	5.2	4.5	5.2		5.0	5.0	5.0	4.9	4.9	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	113	1260	532	348	1716		246	249	222	189	184	
v/s Ratio Prot	0.03	0.29		c0.17	0.19		c0.10	0.10		0.04	c0.06	
v/s Ratio Perm			c0.34						0.02			
v/c Ratio	0.46	0.82	0.95	0.88	0.40		0.66	0.65	0.10	0.36	0.52	
Uniform Delay, d1	45.6	29.6	31.6	39.4	16.4		40.8	40.7	37.4	41.9	42.7	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	3.0	6.0	27.8	21.1	0.2		6.2	6.1	0.2	1.2	2.7	
Delay (s)	48.6	35.6	59.4	60.5	16.5		47.0	46.8	37.6	43.1	45.4	
Level of Service	D	D	E	E	B		D	D	D	D	D	
Approach Delay (s)		45.6			30.1			43.9			44.6	
Approach LOS		D			C			D			D	

Intersection Summary				
HCM 2000 Control Delay	40.9	HCM 2000 Level of Service	D	
HCM 2000 Volume to Capacity ratio	0.82			
Actuated Cycle Length (s)	101.1	Sum of lost time (s)	19.6	
Intersection Capacity Utilization	81.9%	ICU Level of Service	D	
Analysis Period (min)	15			
c Critical Lane Group				

4:45-5:45 PM Existing + Project (Phase 1)
6: Ruffin Rd & Aero Dr

HCM Signalized Intersection Capacity Analysis



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	710	574	824	733	162	245
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.2	5.2	4.5	4.5	5.5	5.5
Lane Util. Factor	0.95	1.00	0.97	0.95	0.97	1.00
Frpb, ped/bikes	1.00	0.99	1.00	1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	3539	1567	3433	3539	3433	1530
Flt Permitted	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)	3539	1567	3433	3539	3433	1530
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	747	604	867	772	171	258
RTOR Reduction (vph)	0	13	0	0	0	211
Lane Group Flow (vph)	747	591	867	772	171	47
Confl. Peds. (#/hr)		10	10		10	10
Confl. Bikes (#/hr)		5				5
Turn Type	NA	custom	Prot	NA	Prot	Perm
Protected Phases	2	2	1	6	8	
Permitted Phases		8				8
Actuated Green, G (s)	30.4	46.4	25.9	61.5	16.0	16.0
Effective Green, g (s)	30.4	46.4	25.9	61.5	16.0	16.0
Actuated g/C Ratio	0.35	0.53	0.30	0.70	0.18	0.18
Clearance Time (s)	5.2	5.2	4.5	4.5	5.5	5.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	1229	924	1016	2487	627	279
v/s Ratio Prot	0.21	c0.22	c0.25	0.22	0.05	
v/s Ratio Perm		0.16				0.03
v/c Ratio	0.61	0.64	0.85	0.31	0.27	0.17
Uniform Delay, d1	23.6	14.6	29.0	4.9	30.7	30.1
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	2.2	3.4	7.1	0.1	1.1	1.3
Delay (s)	25.9	18.0	36.1	5.0	31.8	31.5
Level of Service	C	B	D	A	C	C
Approach Delay (s)	22.3			21.5	31.6	
Approach LOS	C			C	C	

Intersection Summary				
HCM 2000 Control Delay	23.1	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.76			
Actuated Cycle Length (s)	87.5	Sum of lost time (s)	15.2	
Intersection Capacity Utilization	69.1%	ICU Level of Service	C	
Analysis Period (min)	15			
c Critical Lane Group				

Movement	EBU	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations							
Volume (vph)	9	839	140	164	1337	159	63
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5		4.5	4.5	4.5	4.5
Lane Util. Factor	1.00	0.95		0.97	0.95	0.97	0.88
Frpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	0.95
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00
Frt	1.00	0.98		1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	0.95	1.00
Satd. Flow (prot)	1770	3450		3433	3539	3433	2649
Flt Permitted	0.95	1.00		0.95	1.00	0.95	1.00
Satd. Flow (perm)	1770	3450		3433	3539	3433	2649
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	10	912	152	178	1453	173	68
RTOR Reduction (vph)	0	16	0	0	0	0	52
Lane Group Flow (vph)	10	1048	0	178	1453	173	16
Confl. Peds. (#/hr)			10	10		10	10
Confl. Bikes (#/hr)			5				5
Turn Type	Prot	NA		Prot	NA	Prot	Perm
Protected Phases	5	2		1	6	8	
Permitted Phases							8
Actuated Green, G (s)	0.8	31.6		8.9	39.7	16.0	16.0
Effective Green, g (s)	0.8	31.6		8.9	39.7	16.0	16.0
Actuated g/C Ratio	0.01	0.45		0.13	0.57	0.23	0.23
Clearance Time (s)	4.5	4.5		4.5	4.5	4.5	4.5
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	20	1557		436	2007	784	605
v/s Ratio Prot	0.01	0.30		c0.05	c0.41	c0.05	
v/s Ratio Perm							0.01
v/c Ratio	0.50	0.67		0.41	0.72	0.22	0.03
Uniform Delay, d1	34.4	15.1		28.1	11.1	21.9	21.0
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2	18.3	2.3		0.6	2.3	0.6	0.1
Delay (s)	52.7	17.5		28.8	13.4	22.6	21.0
Level of Service	D	B		C	B	C	C
Approach Delay (s)		17.8			15.1	22.1	
Approach LOS		B			B	C	

Intersection Summary				
HCM 2000 Control Delay	16.7	HCM 2000 Level of Service		B
HCM 2000 Volume to Capacity ratio	0.59			
Actuated Cycle Length (s)	70.0	Sum of lost time (s)		13.5
Intersection Capacity Utilization	64.9%	ICU Level of Service		C
Analysis Period (min)	15			
c Critical Lane Group				

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	4	1	4	2	0	22	0	217	6	48	189	7
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72
Hourly flow rate (vph)	6	1	6	3	0	31	0	301	8	67	262	10
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)											142	
pX, platoon unblocked												
vC, conflicting volume	737	710	267	712	711	306	272			310		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	737	710	267	712	711	306	272			310		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	98	100	99	99	100	96	100			95		
cM capacity (veh/h)	307	339	771	330	339	734	1291			1251		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	12	33	310	339
Volume Left	6	3	0	67
Volume Right	6	31	8	10
cSH	426	666	1291	1251
Volume to Capacity	0.03	0.05	0.00	0.05
Queue Length 95th (ft)	2	4	0	4
Control Delay (s)	13.7	10.7	0.0	2.0
Lane LOS	B	B		A
Approach Delay (s)	13.7	10.7	0.0	2.0
Approach LOS	B	B		

Intersection Summary				
Average Delay	1.7			
Intersection Capacity Utilization	38.1%	ICU Level of Service		A
Analysis Period (min)	15			

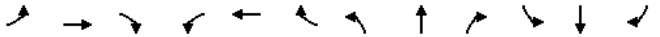
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	0	141	89	0	90	45
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82
Hourly flow rate (vph)	0	172	109	0	110	55
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						635
pX, platoon unblocked						
vC, conflicting volume	383	109			109	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	383	109			109	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	82			93	
cM capacity (veh/h)	574	945			1482	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	172	109	165
Volume Left	0	0	110
Volume Right	172	0	0
cSH	945	1700	1482
Volume to Capacity	0.18	0.06	0.07
Queue Length 95th (ft)	17	0	6
Control Delay (s)	9.7	0.0	5.3
Lane LOS	A		A
Approach Delay (s)	9.7	0.0	5.3
Approach LOS	A		

Intersection Summary			
Average Delay		5.7	
Intersection Capacity Utilization		29.4%	ICU Level of Service A
Analysis Period (min)		15	

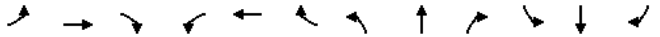
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	312	42	444	304	1190	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.1	4.7	4.7	5.8	5.8	
Lane Util. Factor	0.97	1.00	1.00	0.95	0.95	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.85	1.00	1.00	1.00	
Flt Protected	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	3433	1583	1770	3539	3527	
Flt Permitted	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (perm)	3433	1583	1770	3539	3527	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	328	44	467	320	1253	21
RTOR Reduction (vph)	0	8	0	0	1	0
Lane Group Flow (vph)	328	36	467	320	1273	0
Confl. Peds. (#/hr)						10
Confl. Bikes (#/hr)						5
Turn Type	Prot	pm+ov	Prot	NA	NA	
Protected Phases	4	5	5	2	6	
Permitted Phases		4				
Actuated Green, G (s)	14.0	41.7	27.7	73.2	40.8	
Effective Green, g (s)	14.0	41.7	27.7	73.2	40.8	
Actuated g/C Ratio	0.14	0.43	0.28	0.75	0.42	
Clearance Time (s)	5.1	4.7	4.7	5.8	5.8	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	489	672	499	2640	1466	
v/s Ratio Prot	c0.10	0.02	c0.26	0.09	c0.36	
v/s Ratio Perm		0.01				
v/c Ratio	0.67	0.05	0.94	0.12	0.87	
Uniform Delay, d1	39.9	16.6	34.3	3.5	26.2	
Progression Factor	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	3.6	0.0	25.0	0.1	7.2	
Delay (s)	43.5	16.6	59.4	3.6	33.4	
Level of Service	D	B	E	A	C	
Approach Delay (s)	40.3			36.7	33.4	
Approach LOS	D			D	C	

Intersection Summary				
HCM 2000 Control Delay	35.5	HCM 2000 Level of Service	D	
HCM 2000 Volume to Capacity ratio	0.86			
Actuated Cycle Length (s)	98.1	Sum of lost time (s)	15.6	
Intersection Capacity Utilization	80.0%	ICU Level of Service	D	
Analysis Period (min)	15			
c Critical Lane Group				



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	121	147	27	418	49	264	33	383	123	250	585	97
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.1			5.1	5.1	4.7	5.5	5.5	4.7	5.5	
Lane Util. Factor		1.00			1.00	1.00	1.00	0.95	1.00	1.00	0.95	
Frpb, ped/bikes		1.00			1.00	0.96	1.00	1.00	0.94	1.00	0.99	
Flpb, ped/bikes		1.00			1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt		0.99			1.00	0.85	1.00	1.00	0.85	1.00	0.98	
Flt Protected		0.98			0.96	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1797			1783	1527	1770	3539	1483	1770	3435	
Flt Permitted		0.98			0.96	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)		1797			1783	1527	1770	3539	1483	1770	3435	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	125	152	28	431	51	272	34	395	127	258	603	100
RTOR Reduction (vph)	0	3	0	0	0	121	0	0	106	0	11	0
Lane Group Flow (vph)	0	302	0	0	482	151	34	395	21	258	692	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Split	NA		Split	NA	Perm	Prot	NA	Perm	Prot	NA	
Protected Phases	4	4		3	3		5	2		1	6	
Permitted Phases						3			2			
Actuated Green, G (s)		21.9			30.0	30.0	2.6	18.0	18.0	16.3	31.7	
Effective Green, g (s)		21.9			30.0	30.0	2.6	18.0	18.0	16.3	31.7	
Actuated g/C Ratio		0.21			0.28	0.28	0.02	0.17	0.17	0.15	0.30	
Clearance Time (s)		5.1			5.1	5.1	4.7	5.5	5.5	4.7	5.5	
Vehicle Extension (s)		3.0			3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)		369			501	429	43	597	250	270	1021	
v/s Ratio Prot		c0.17			c0.27		0.02	0.11		c0.15	c0.20	
v/s Ratio Perm						0.10			0.01			
v/c Ratio		0.82			0.96	0.35	0.79	0.66	0.09	0.96	0.68	
Uniform Delay, d1		40.4			37.7	30.5	51.7	41.5	37.4	44.8	33.0	
Progression Factor		1.00			1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2		13.1			30.6	0.5	63.1	5.7	0.7	42.3	3.6	
Delay (s)		53.6			68.3	31.0	114.8	47.1	38.0	87.1	36.6	
Level of Service		D			E	C	F	D	D	F	D	
Approach Delay (s)		53.6			54.9			49.2			50.1	
Approach LOS		D			D			D			D	

Intersection Summary				
HCM 2000 Control Delay	51.7	HCM 2000 Level of Service	D	
HCM 2000 Volume to Capacity ratio	0.88			
Actuated Cycle Length (s)	106.6	Sum of lost time (s)	20.4	
Intersection Capacity Utilization	86.1%	ICU Level of Service	E	
Analysis Period (min)	15			
c Critical Lane Group				



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	83	87	143	761	73	39	76	737	228	39	937	24
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.9	4.9	4.5	4.9		4.5	5.3		4.5	5.0	
Lane Util. Factor	1.00	1.00	1.00	0.97	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	1.00	0.85	1.00	0.95		1.00	0.96		1.00	1.00	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1863	1583	3433	1766		1770	3414		1770	3526	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	1863	1583	3433	1766		1770	3414		1770	3526	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	86	90	147	785	75	40	78	760	235	40	966	25
RTOR Reduction (vph)	0	0	131	0	20	0	0	26	0	0	2	0
Lane Group Flow (vph)	86	90	16	785	95	0	78	969	0	40	989	0
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4									
Actuated Green, G (s)	8.8	11.1	11.1	26.3	28.6		7.6	38.9		4.5	36.1	
Effective Green, g (s)	8.8	11.1	11.1	26.3	28.6		7.6	38.9		4.5	36.1	
Actuated g/C Ratio	0.09	0.11	0.11	0.26	0.29		0.08	0.39		0.04	0.36	
Clearance Time (s)	4.5	4.9	4.9	4.5	4.9		4.5	5.3		4.5	5.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	155	206	175	902	505		134	1328		79	1272	
v/s Ratio Prot	0.05	c0.05		c0.23	0.05		c0.04	c0.28		0.02	c0.28	
v/s Ratio Perm			0.01									
v/c Ratio	0.55	0.44	0.09	0.87	0.19		0.58	0.73		0.51	0.78	
Uniform Delay, d1	43.7	41.5	39.9	35.2	26.9		44.7	26.1		46.7	28.4	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	4.3	1.5	0.2	9.2	0.2		6.3	3.6		5.0	4.7	
Delay (s)	48.0	43.0	40.2	44.4	27.1		51.0	29.6		51.7	33.1	
Level of Service	D	D	D	D	C		D	C		D	C	
Approach Delay (s)		43.0			42.2			31.2			33.8	
Approach LOS		D			D			C			C	

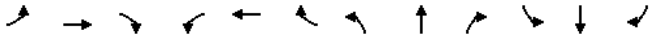
Intersection Summary				
HCM 2000 Control Delay	36.1	HCM 2000 Level of Service	D	
HCM 2000 Volume to Capacity ratio	0.74			
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	19.2	
Intersection Capacity Utilization	71.6%	ICU Level of Service	C	
Analysis Period (min)	15			
c Critical Lane Group				

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	385	0	0	1021	456	264
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.1			5.1	5.1	5.1
Lane Util. Factor	0.95			0.95	0.97	0.91
Frt	1.00			1.00	0.99	0.85
Flt Protected	1.00			1.00	0.96	1.00
Satd. Flow (prot)	3539			3539	3413	1441
Flt Permitted	1.00			1.00	0.96	1.00
Satd. Flow (perm)	3539			3539	3413	1441
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	405	0	0	1075	480	278
RTOR Reduction (vph)	0	0	0	0	10	187
Lane Group Flow (vph)	405	0	0	1075	512	49
Turn Type	NA			NA	Prot	Perm
Protected Phases	2			6	4	
Permitted Phases						4
Actuated Green, G (s)	12.5			23.9	13.6	13.6
Effective Green, g (s)	12.5			23.9	13.6	13.6
Actuated g/C Ratio	0.19			0.37	0.21	0.21
Clearance Time (s)	5.1			5.1	5.1	5.1
Vehicle Extension (s)	3.0			3.0	3.0	3.0
Lane Grp Cap (vph)	677			1295	710	300
v/s Ratio Prot	c0.11			c0.30	c0.15	
v/s Ratio Perm						0.03
v/c Ratio	0.60			0.83	0.72	0.16
Uniform Delay, d1	24.1			18.9	24.1	21.2
Progression Factor	1.00			1.00	1.00	1.00
Incremental Delay, d2	1.4			4.7	3.6	0.3
Delay (s)	25.5			23.5	27.7	21.4
Level of Service	C			C	C	C
Approach Delay (s)	25.5			23.5	25.8	
Approach LOS	C			C	C	

Intersection Summary				
HCM 2000 Control Delay	24.6	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.74			
Actuated Cycle Length (s)	65.3	Sum of lost time (s)	15.3	
Intersection Capacity Utilization	52.5%	ICU Level of Service	A	
Analysis Period (min)	15			
c Critical Lane Group				

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	135	470	47	232	843	25	110	121	225	15	8	51
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.9	4.0	4.5	4.9		4.9	4.9	4.9		4.9	4.9
Lane Util. Factor	1.00	0.95	1.00	0.97	0.95		1.00	0.95	0.95		1.00	1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	0.99	0.97		1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00		1.00	0.95	0.85		1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00		0.97	1.00
Satd. Flow (prot)	1770	3539	1583	3433	3519		1770	1665	1460		1805	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00		0.97	1.00
Satd. Flow (perm)	1770	3539	1583	3433	3519		1770	1665	1460		1805	1583
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	145	505	51	249	906	27	118	130	242	16	9	55
RTOR Reduction (vph)	0	0	0	0	3	0	0	0	0	0	0	0
Lane Group Flow (vph)	145	505	51	249	930	0	118	195	177	0	25	55
Confl. Peds. (#/hr)						10			10			
Confl. Bikes (#/hr)						5			5			
Turn Type	Prot	NA	Free	Prot	NA		Split	NA	Perm	Split	NA	Perm
Protected Phases	5	2		1	6		3	3		4	4	
Permitted Phases			Free						3			4
Actuated Green, G (s)	7.8	20.2	70.3	9.5	21.9		16.3	16.3	16.3		5.1	5.1
Effective Green, g (s)	7.8	20.2	70.3	9.5	21.9		16.3	16.3	16.3		5.1	5.1
Actuated g/C Ratio	0.11	0.29	1.00	0.14	0.31		0.23	0.23	0.23		0.07	0.07
Clearance Time (s)	4.5	4.9		4.5	4.9		4.9	4.9	4.9		4.9	4.9
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	196	1016	1583	463	1096		410	386	338		130	114
v/s Ratio Prot	c0.08	0.14		0.07	c0.26		0.07	0.12			0.01	
v/s Ratio Perm			c0.03						c0.12			c0.03
v/c Ratio	0.74	0.50	0.03	0.54	0.85		0.29	0.51	0.52		0.19	0.48
Uniform Delay, d1	30.3	20.8	0.0	28.4	22.7		22.2	23.5	23.6		30.7	31.3
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	13.6	1.7	0.0	1.2	6.3		1.8	4.7	5.7		0.7	3.2
Delay (s)	43.9	22.6	0.0	29.6	28.9		24.0	28.2	29.3		31.4	34.5
Level of Service	D	C	A	C	C		C	C	C		C	C
Approach Delay (s)		25.3			29.1			27.6			33.5	
Approach LOS		C			C			C			C	

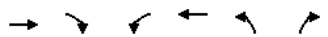
Intersection Summary				
HCM 2000 Control Delay	27.8	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.69			
Actuated Cycle Length (s)	70.3	Sum of lost time (s)	19.2	
Intersection Capacity Utilization	57.2%	ICU Level of Service	B	
Analysis Period (min)	15			
c Critical Lane Group				



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	10	411	600	398	1043	107	0	0	0	49	193	19
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.7	5.1		4.7	5.1						5.5	
Lane Util. Factor	1.00	0.95		1.00	0.95						1.00	
Frpb, ped/bikes	1.00	0.99		1.00	1.00						1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00						1.00	
Frt	1.00	0.91		1.00	0.99						0.99	
Flt Protected	0.95	1.00		0.95	1.00						0.99	
Satd. Flow (prot)	1763	3179		1770	3475						1824	
Flt Permitted	0.95	1.00		0.95	1.00						0.99	
Satd. Flow (perm)	1763	3179		1770	3475						1824	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	11	442	645	428	1122	115	0	0	0	53	208	20
RTOR Reduction (vph)	0	137	0	0	10	0	0	0	0	0	4	0
Lane Group Flow (vph)	11	950	0	428	1227	0	0	0	0	0	277	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Prot	NA		Prot	NA					Split	NA	
Protected Phases	5	2		1	6					4	4	
Permitted Phases												
Actuated Green, G (s)	0.8	26.2		16.3	41.7						16.0	
Effective Green, g (s)	0.8	26.2		16.3	41.7						16.0	
Actuated g/C Ratio	0.01	0.36		0.22	0.57						0.22	
Clearance Time (s)	4.7	5.1		4.7	5.1						5.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0						3.0	
Lane Grp Cap (vph)	19	1128		390	1963						395	
v/s Ratio Prot	0.01	c0.30		c0.24	0.35						c0.15	
v/s Ratio Perm												
v/c Ratio	0.58	1.00dr		1.10	0.63						0.70	
Uniform Delay, d1	36.3	21.9		28.8	10.8						26.7	
Progression Factor	1.00	1.00		1.00	1.00						1.00	
Incremental Delay, d2	36.3	5.8		74.5	0.6						10.0	
Delay (s)	72.6	27.7		103.2	11.4						36.7	
Level of Service	E	C		F	B						D	
Approach Delay (s)		28.2			35.0			0.0			36.7	
Approach LOS		C			D			A			D	

Intersection Summary				
HCM 2000 Control Delay	32.7	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.87			
Actuated Cycle Length (s)	73.8	Sum of lost time (s)	15.3	
Intersection Capacity Utilization	86.9%	ICU Level of Service	E	
Analysis Period (min)	15			

dr Defacto Right Lane. Recode with 1 though lane as a right lane.
c Critical Lane Group



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	480	0	0	815	695	235
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.5			5.5	4.5	5.5
Lane Util. Factor	0.95			0.95	0.97	1.00
Frpb, ped/bikes	1.00			1.00	1.00	0.98
Flpb, ped/bikes	1.00			1.00	1.00	1.00
Frt	1.00			1.00	1.00	0.85
Flt Protected	1.00			1.00	0.95	1.00
Satd. Flow (prot)	3539			3539	3433	1550
Flt Permitted	1.00			1.00	0.95	1.00
Satd. Flow (perm)	3539			3539	3433	1550
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	505	0	0	858	732	247
RTOR Reduction (vph)	0	0	0	0	0	136
Lane Group Flow (vph)	505	0	0	858	732	111
Confl. Peds. (#/hr)						10
Confl. Bikes (#/hr)						5
Turn Type	NA			NA	Prot	Perm
Protected Phases	2			6	4	
Permitted Phases						6
Actuated Green, G (s)	21.5			21.5	16.4	21.5
Effective Green, g (s)	21.5			21.5	16.4	21.5
Actuated g/C Ratio	0.45			0.45	0.34	0.45
Clearance Time (s)	5.5			5.5	4.5	5.5
Vehicle Extension (s)	3.0			3.0	3.0	3.0
Lane Grp Cap (vph)	1588			1588	1175	695
v/s Ratio Prot	0.14			c0.24	c0.21	
v/s Ratio Perm						0.07
v/c Ratio	0.32			0.54	0.62	0.16
Uniform Delay, d1	8.5			9.6	13.2	7.8
Progression Factor	1.00			1.00	1.00	1.00
Incremental Delay, d2	0.1			0.4	1.0	0.1
Delay (s)	8.6			10.0	14.2	7.9
Level of Service	A			A	B	A
Approach Delay (s)	8.6			10.0	12.6	
Approach LOS	A			A	B	

Intersection Summary				
HCM 2000 Control Delay	10.8	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.58			
Actuated Cycle Length (s)	47.9	Sum of lost time (s)	10.0	
Intersection Capacity Utilization	50.7%	ICU Level of Service	A	
Analysis Period (min)	15			

c Critical Lane Group

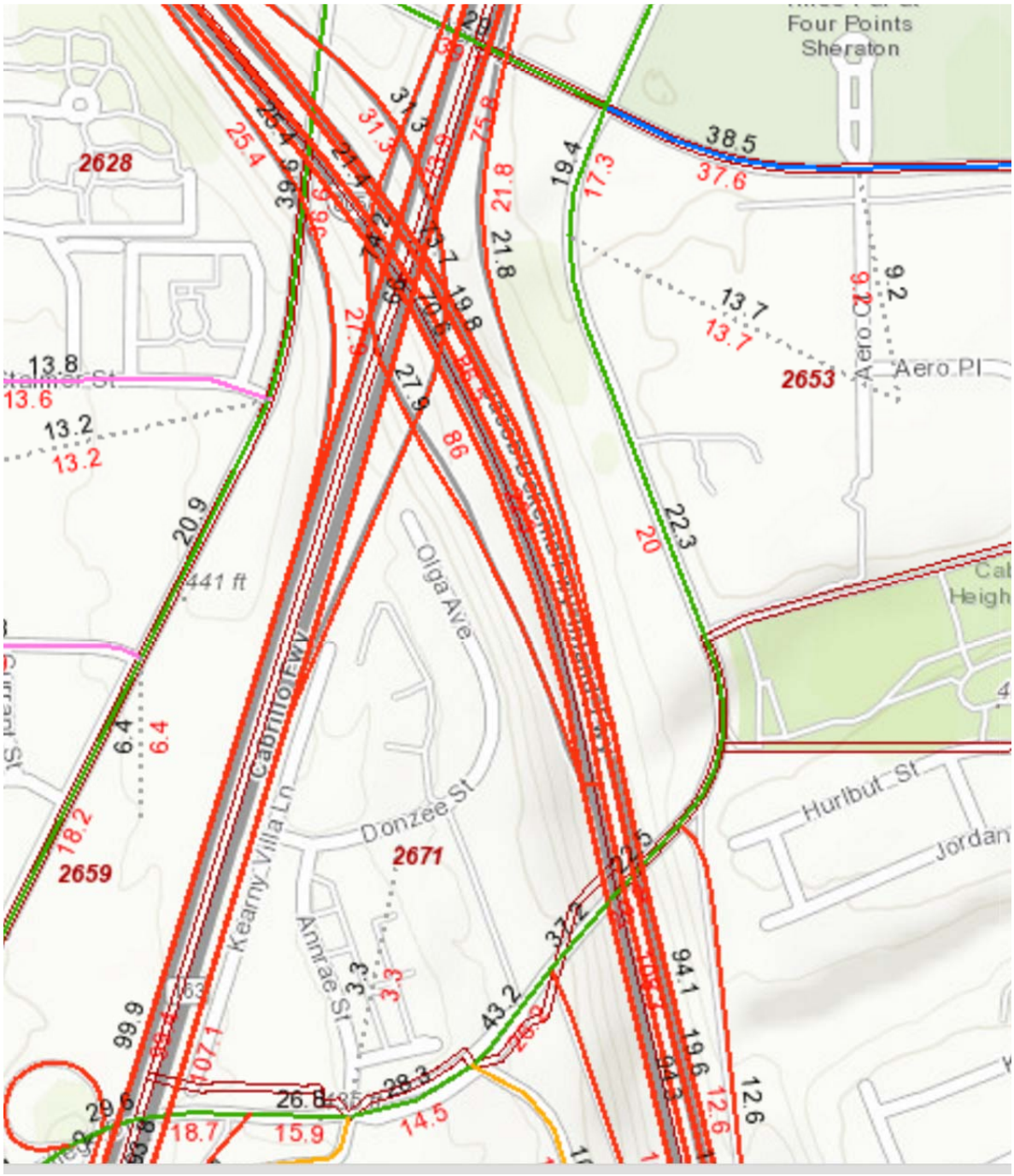
Appendix H

SANDAG 2035 ADTs and Growth Factor Calculations

Average Traffic Volume Growth Factor

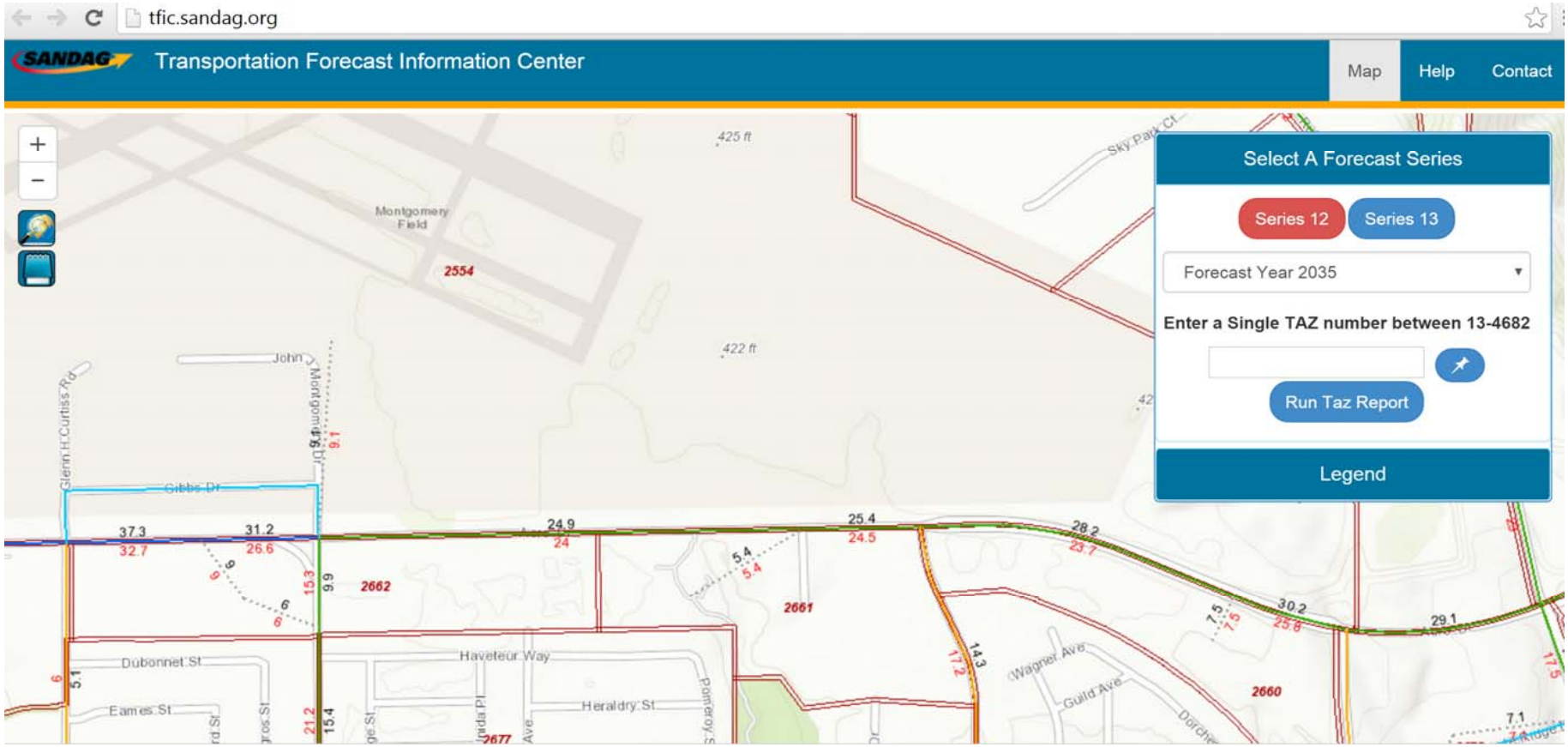
Calculated from an average increase/decrease in 2016 daily volumes vs. SANDAG 2035 daily volumes. SANDAG 2035 volumes on next page.

Segment	Existing Year 2016	SANDAG Year 2035	Percent Change	Increase or Decrease
Aero Drive				
From Convoy Ct to Kearney Villa Rd	23,417	29,000	19.3%	Increase
From Kearny Villa Rd to Aero Ct	32,388	38,500	15.9%	Increase
From Aero Ct to Afton Rd	29,348	39,500	25.7%	Increase
From Afton Rd to Sandrock Rd	25,276	34,300	26.3%	Increase
From Sandrock Rd to Ruffin Rd	25,069	25,200	0.5%	Increase
From Ruffin Rd to W. Canyon Rd	24,250	29,200	17.0%	Increase
Convoy Street				
From Kearny Mesa Rd to Aero Dr	30,539	27,100	-12.7%	Decrease
Kearny Mesa Road				
From Armour/SR-163 SB to Convoy St	10,805	11,200	3.5%	Increase
Kearny Villa Road				
From SR-163 NB Ramp to Aero Dr	16,148	18,600	13.2%	Increase
From Aero Dr to I-805 NB Ramp	20,226	20,900	3.2%	Increase
Mesa College Drive				
From SR-163 to I-805	28,622	31,300	8.6%	Increase
Average between 2016 and 2035:			**10.9%**	**Increase**
Yearly Increase (average divided by 19 years):			**0.58%**	**Per Year**



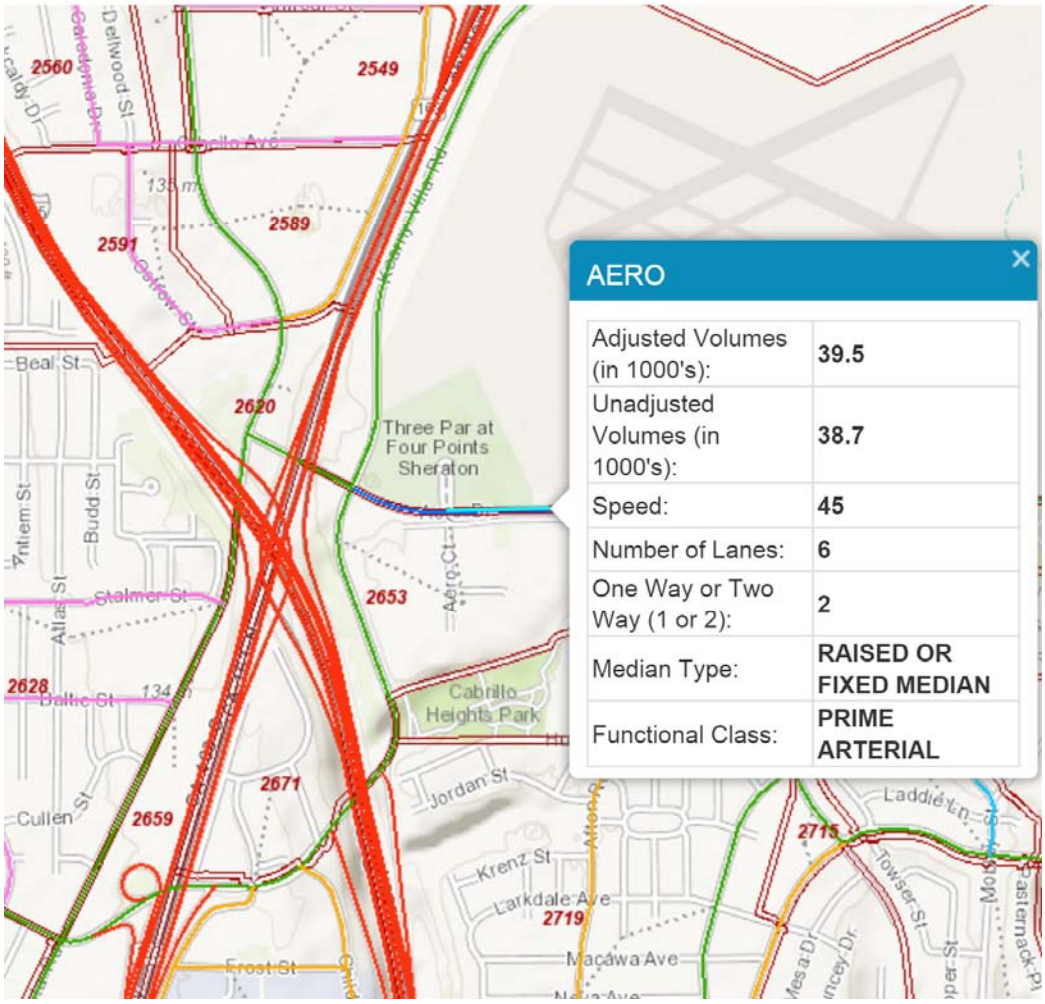
Mesa College Drive (SR-163 to I-805)

Individual segment	29,600
Individual segment	26,800
Individual segment	28,300
Individual segment	43,200
Individual segment	37,200
Individual segment	22,500
Average	**31,300**

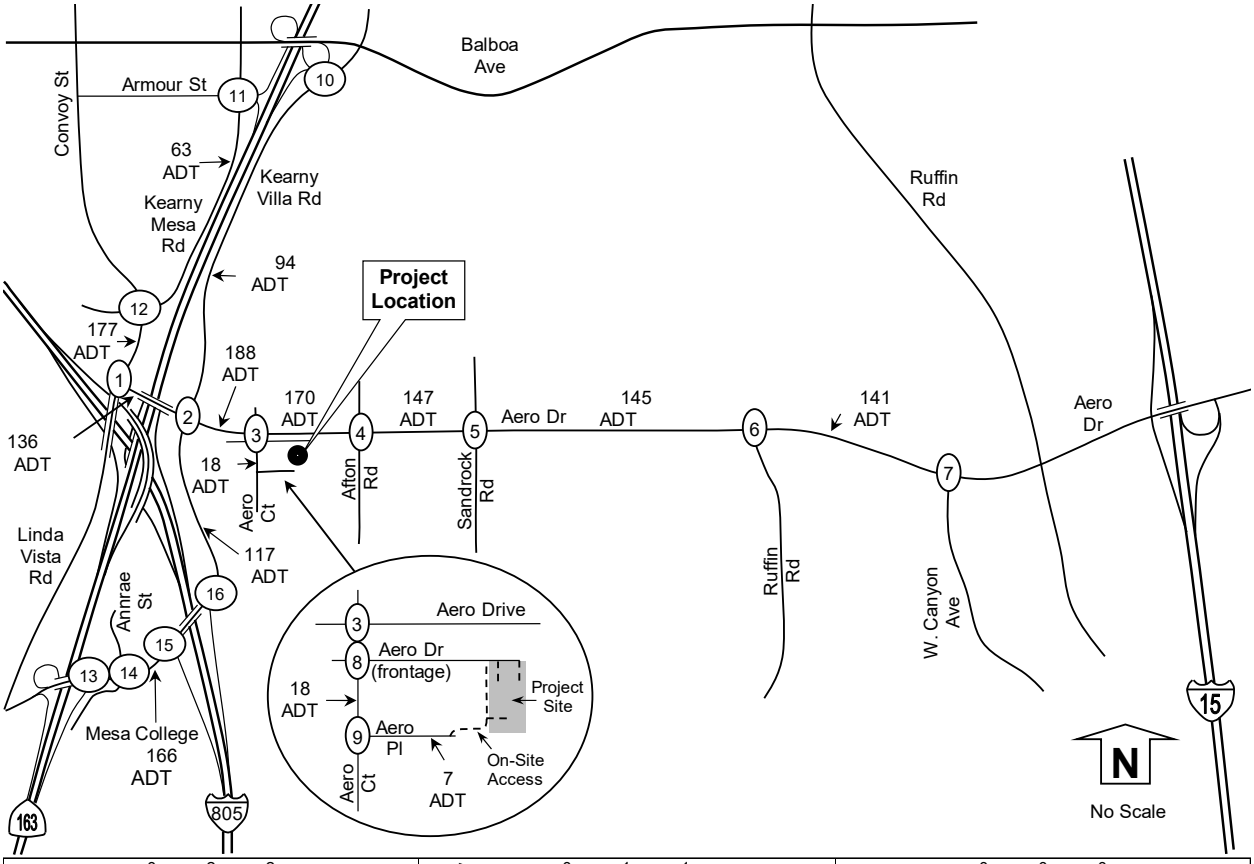

tfic.sandag.org
SANDAG
Transportation Forecast Information Center
Map
Help
Contact
Select A Forecast Series
Series 12
Series 13
Forecast Year 2035
Enter a Single TAZ number between 13-4682
Run Taz Report
Legend
Montgomery Field
2554
2662
2661
2660
Gibbs Dr
Dubonnet St
Eames St
Haveteur Way
Heraldry St
Wagner Ave
Guild Ave
425 ft
422 ft

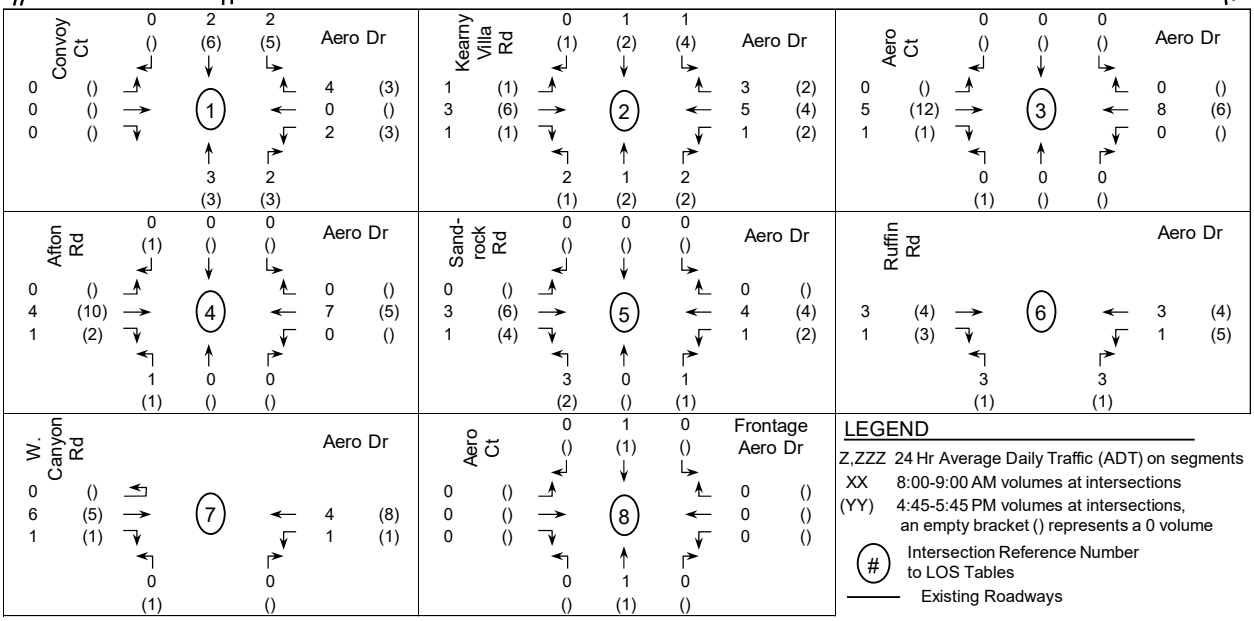
tfic.sandag.org

Transportation Forecast Information Center

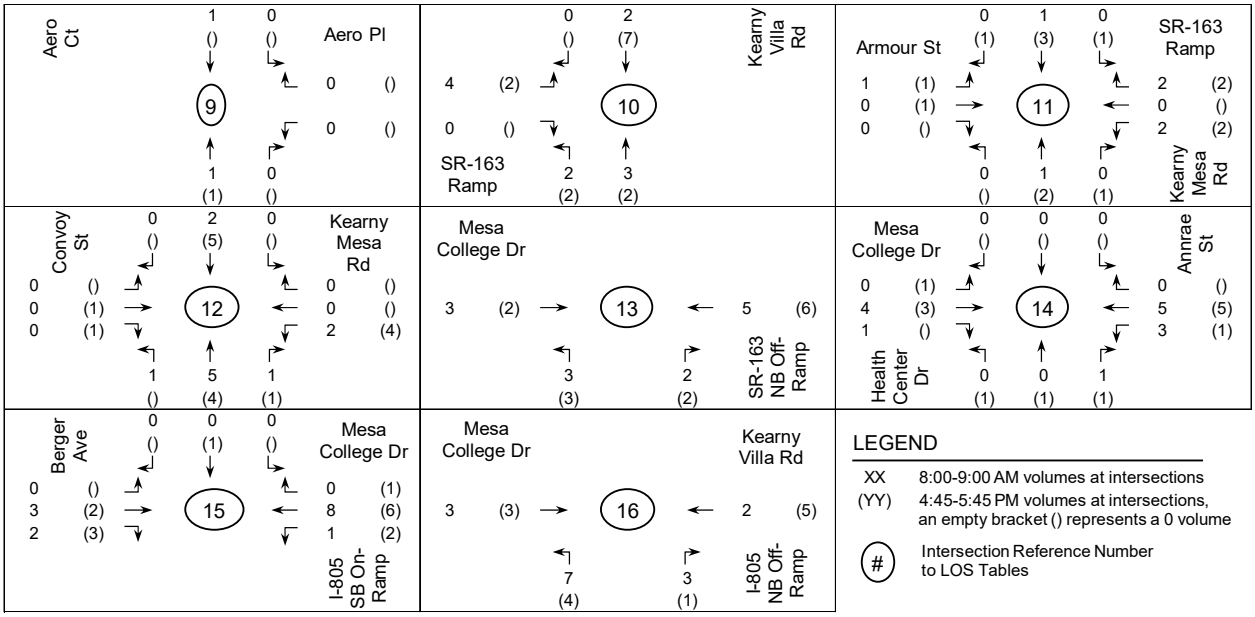


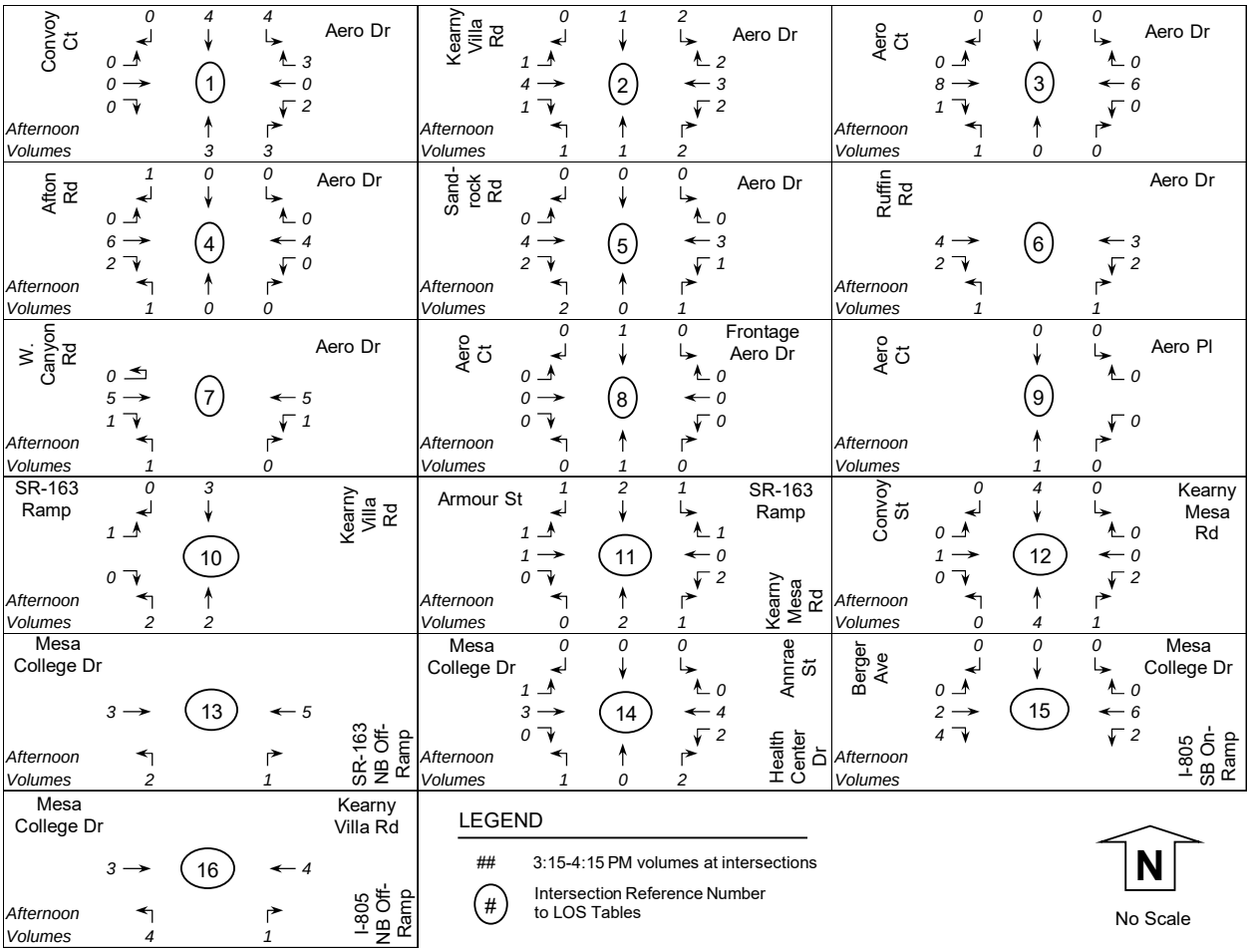
Growth factor of 0.0058 multiplied against existing counts for 2017



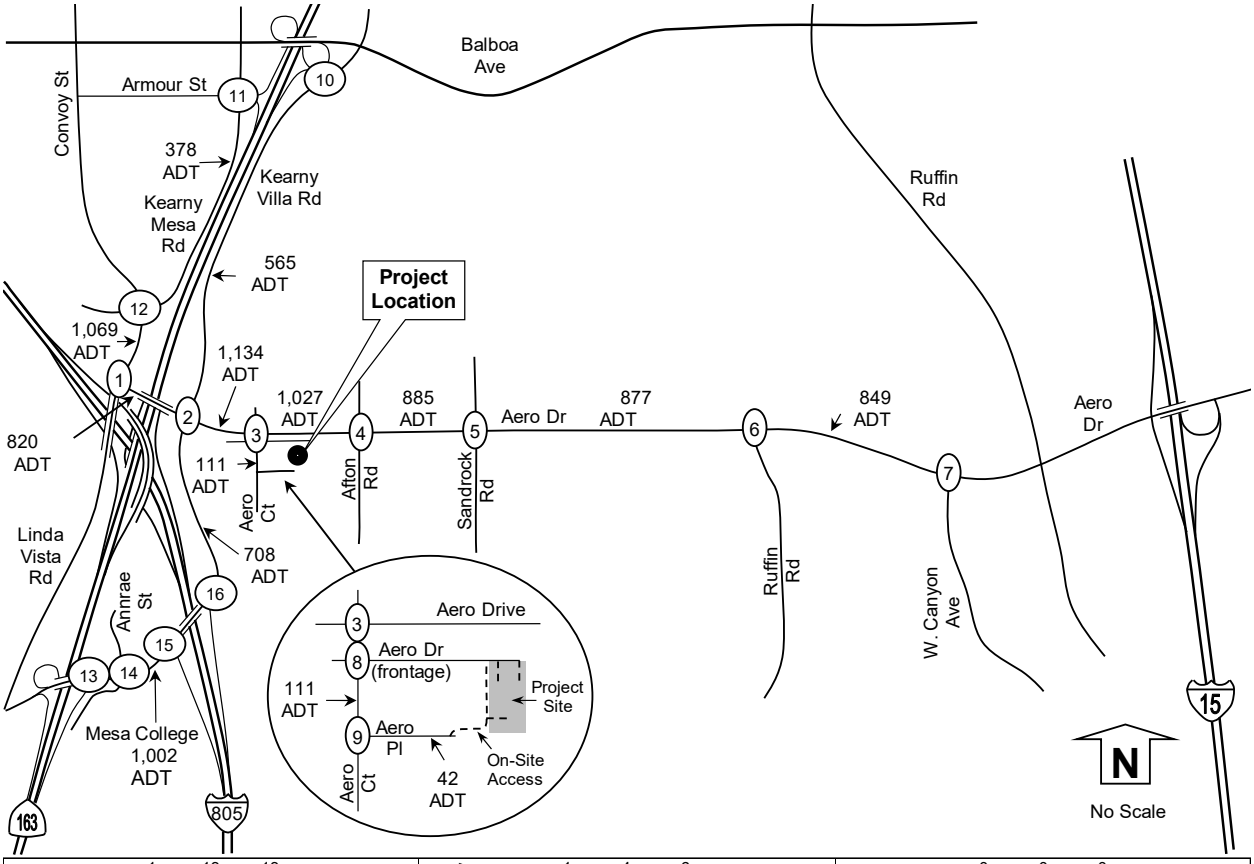


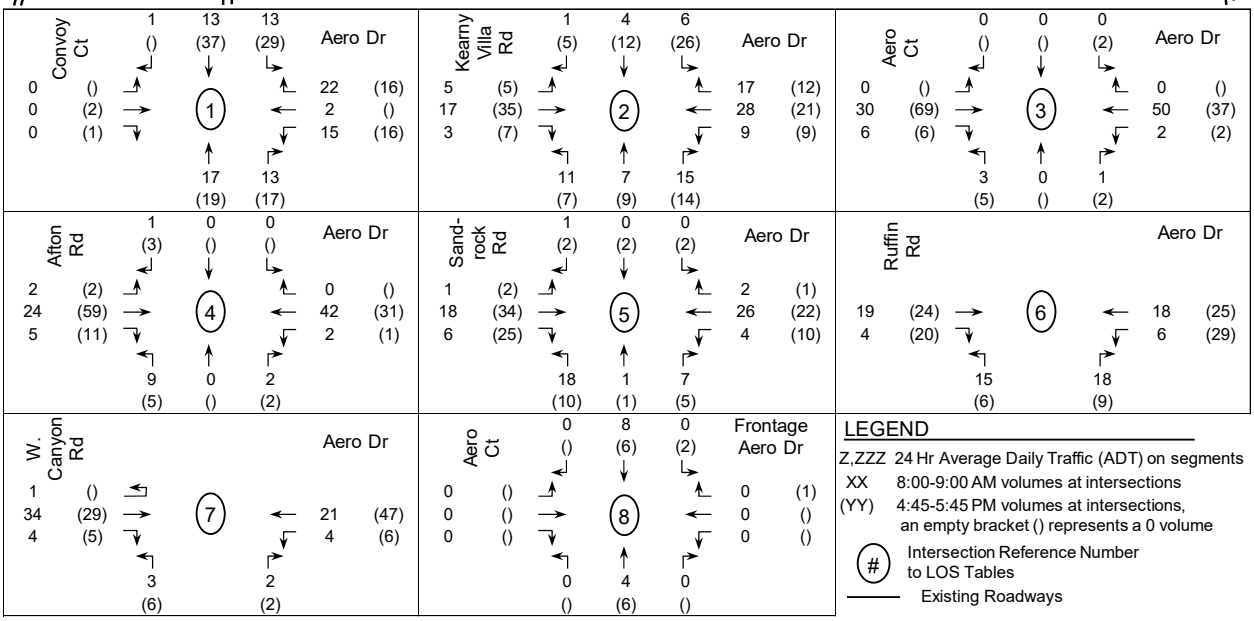
Growth factor of 0.0058 multiplied against existing counts for 2017



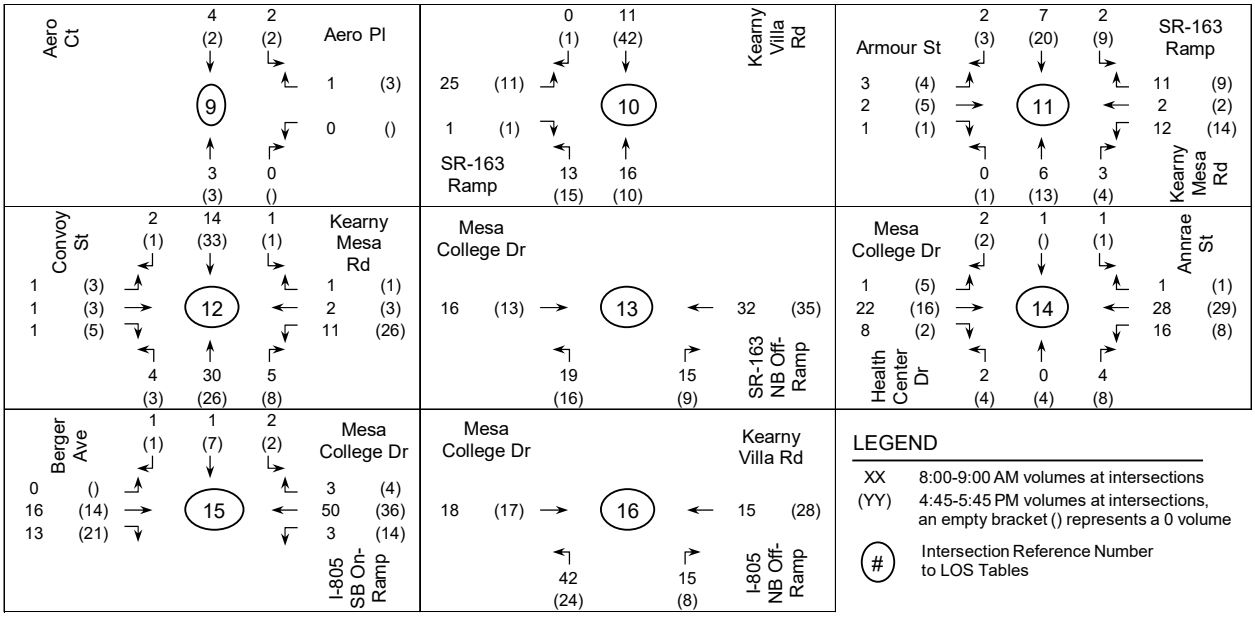


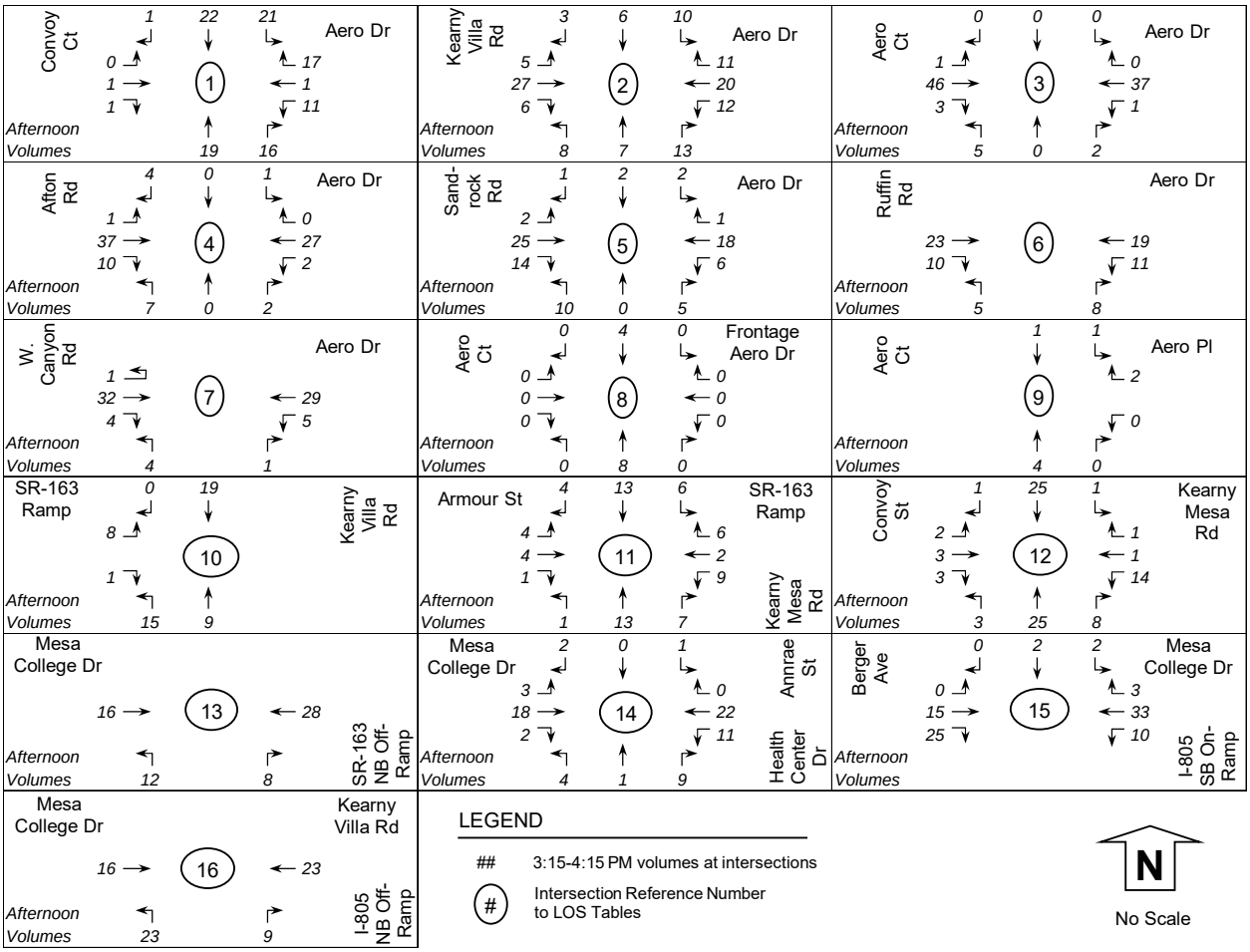
Growth factor of 0.035 multiplied against existing counts for year 2022





Growth factor of 0.035 multiplied against existing counts for year 2022

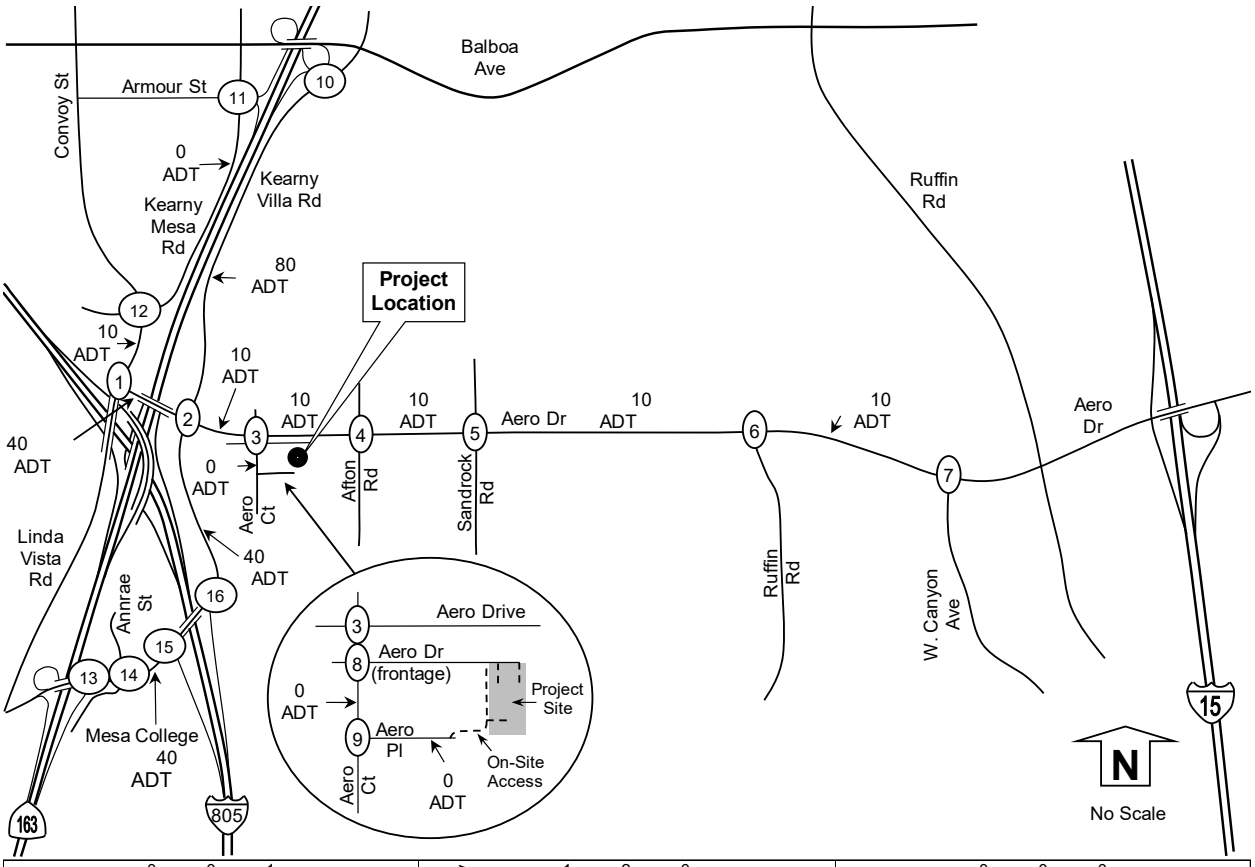


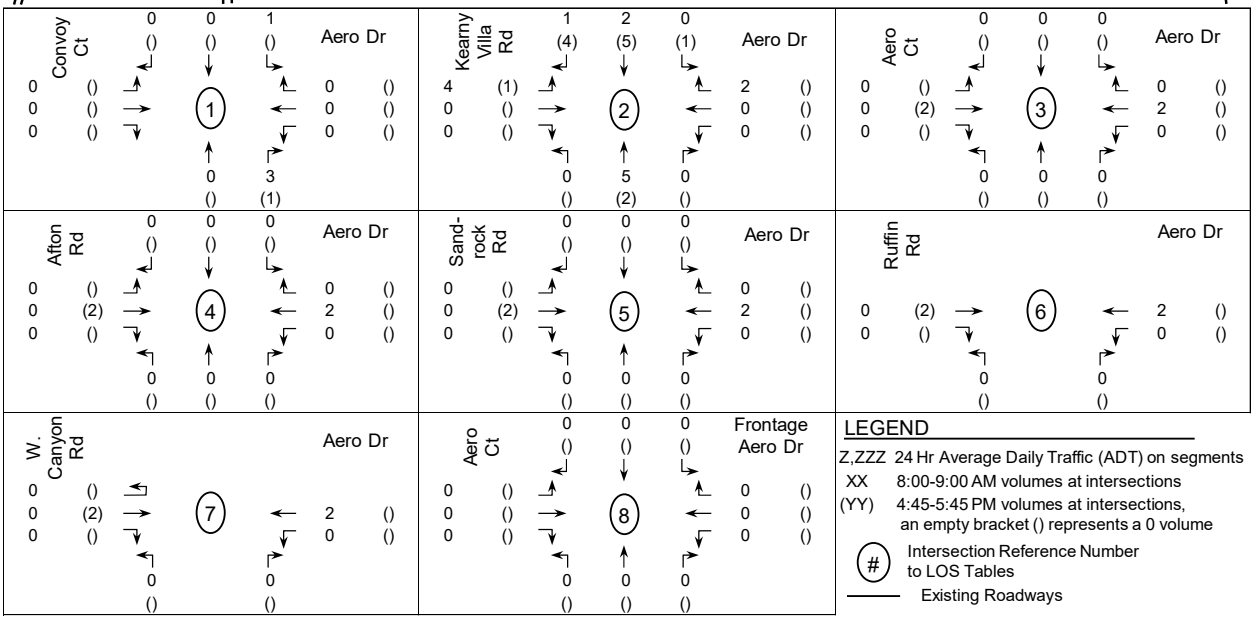


Appendix I

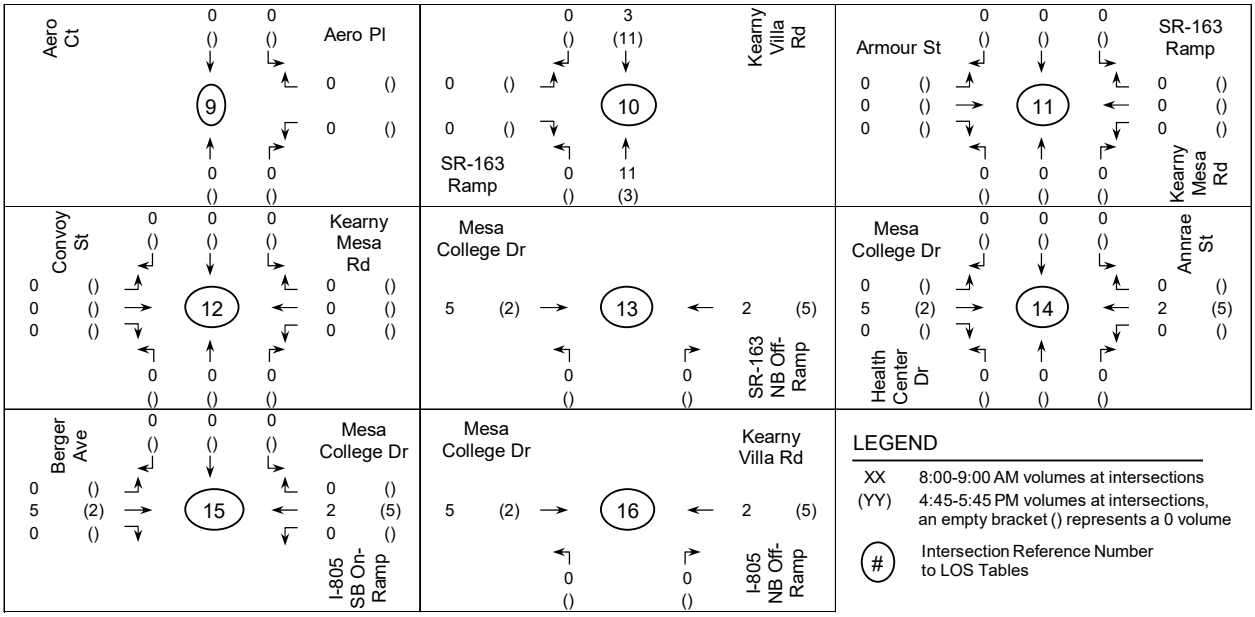
Cumulative Project Details

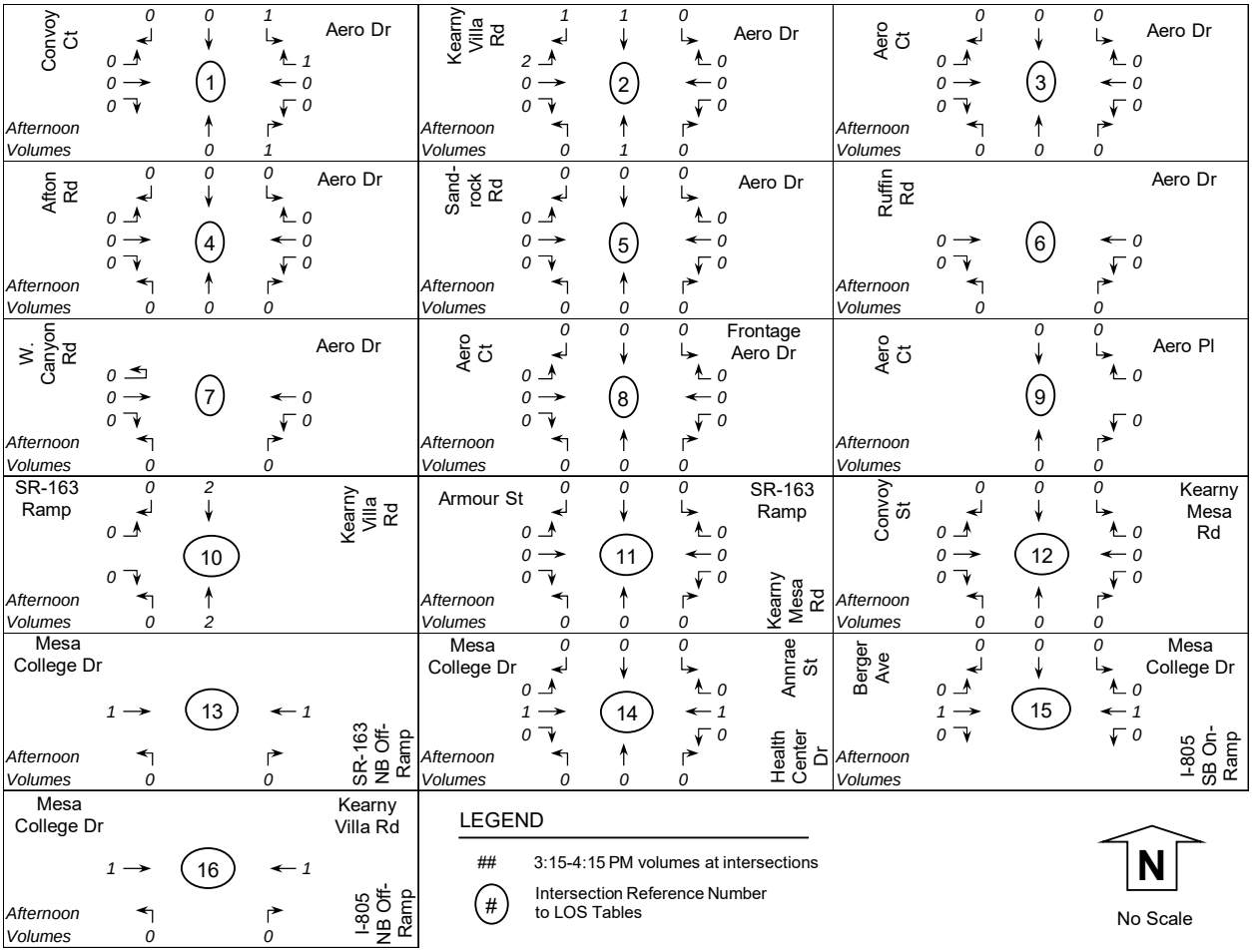
Summary of cumulative volumes





Summary of cumulative volumes





TRAFFIC IMPACT ANALYSIS

KAISER SAN DIEGO CENTRAL MEDICAL CENTER

San Diego, California

May 17th, 2013

1.0 EXECUTIVE SUMMARY

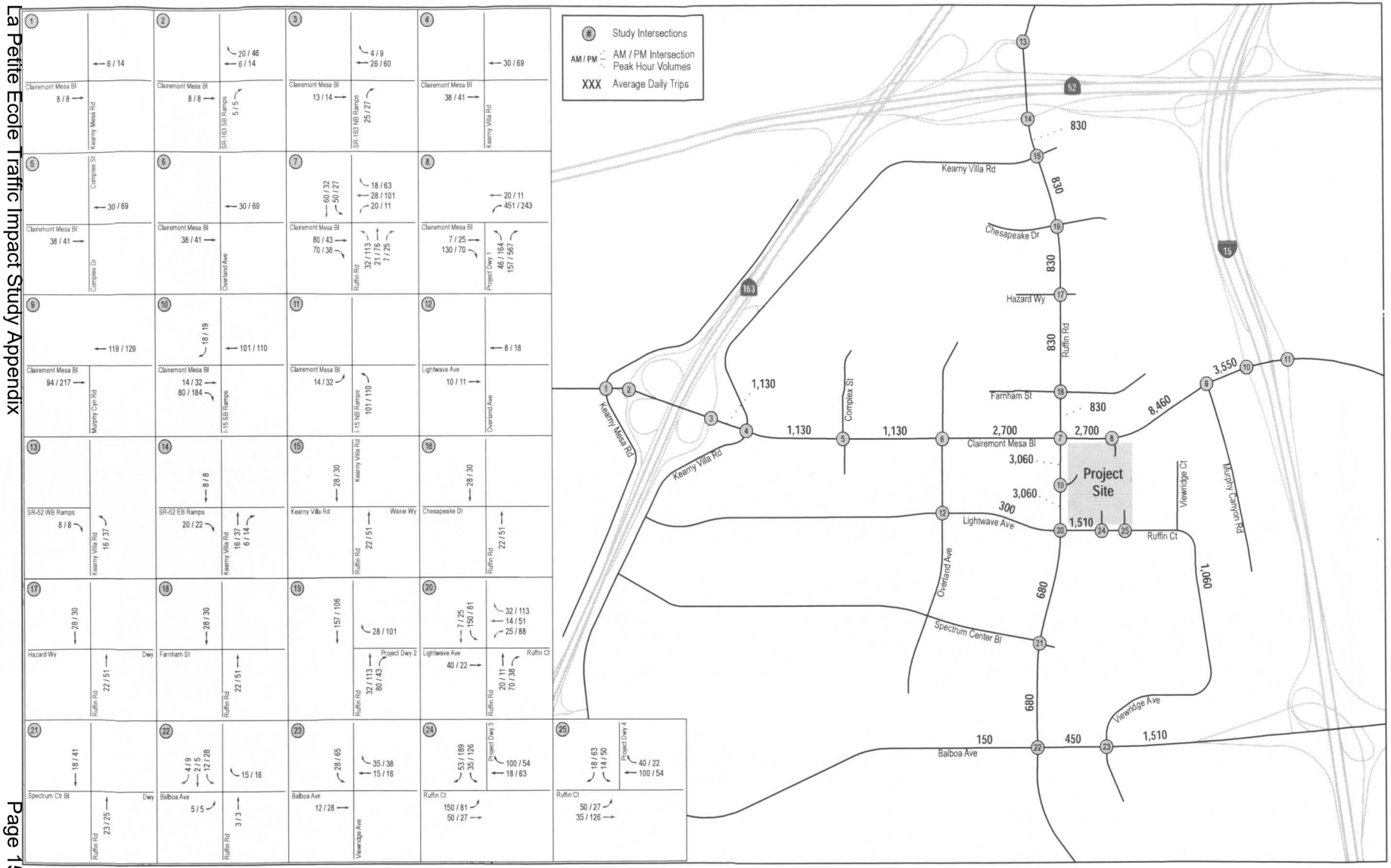
1.1 Project Description

Kaiser Foundation Hospitals (Kaiser) is proposing the Kaiser Permanente San Diego Central Medical Center Project to be implemented in two phases on a site located on the southeast corner of the Clairemont Mesa Boulevard / Ruffin Road intersection in the City of San Diego. As summarized in ***Table 1-1*** below, Phase I (Year 2017) consists of a seven-story, 321 bed Kaiser Permanente general acute and tertiary care hospital (the "Hospital"), a 75,000 SF Medical Office Building (MOB), a surface parking lot with 100 parking spaces adjacent to the Emergency Department (ED) and a parking structure with 1,359 parking spaces for a total of 1,459 parking spaces.

Phase II (Year 2035) will add 129 beds to the hospital, 105,000 SF of MOB and expand the parking structure to provide an additional 1,134 parking spaces, for a total of 450-beds, 180,000 SF of MOB space and 2,593 parking spaces. The total building area for the entire hospital, MOB and ancillary uses is 938,981 SF. The project proposes to provide one surface parking lot with 100 spaces at the northwest corner of the site and a parking structure with 2,493 spaces at the southeast corner of the site, for a total of 2,593 spaces.

TABLE 1-1
PROJECT DESCRIPTION

Description	Phase I (2017)		Phase II (2030)		Total Project	
Parking	1,459	Spaces	1,134	Spaces	**2,593**	**Spaces**
Beds	321	Beds	129	Beds	**450**	**Beds**
Hospital	565,000	SF	155,000	SF		
Medical Office Building (MOB)	75,000	SF	105,000	SF		
Central Plant	39,981	SF				
Building	**678,981**	**SF**	**260,000**	**SF**	**938,981**	**SF**



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Date: 6/25/12

LINSCOTT LAW & GREENSPAN engineers

Figure 7-4

Entire Project Traffic Volumes

KAISER SAN DIEGO CENTRAL MEDICAL CENTER

4 PROJECT TRAFFIC

The following section describes the trip generation, distribution, and assignment related to the proposed Centrumplace: Building 2 development.

4.1 TRIP GENERATION

Trip generation for the Centrumplace: Building 2 development was extracted from the *AM Supplemental Evaluation (Centrum 2) Study* submitted August 11, 2015 to the City of San Diego. **Table 4-1** summarizes the trip generation for the site. As shown in the table, the site would generate a total of 3,717 new daily trips, including 483 (435 in, 48 out) a.m. peak-hour trips, and 520 (104 in, 416 out) p.m. peak-hour trips.

Table 4-1 Trip Generation Summary

Building	Land Use	Size	ADT	AM In	AM Out	AM Total	PM In	PM Out	PM Total
Building 2	Commercial Office	284 ksf	3,717	435	48	483	104	416	520

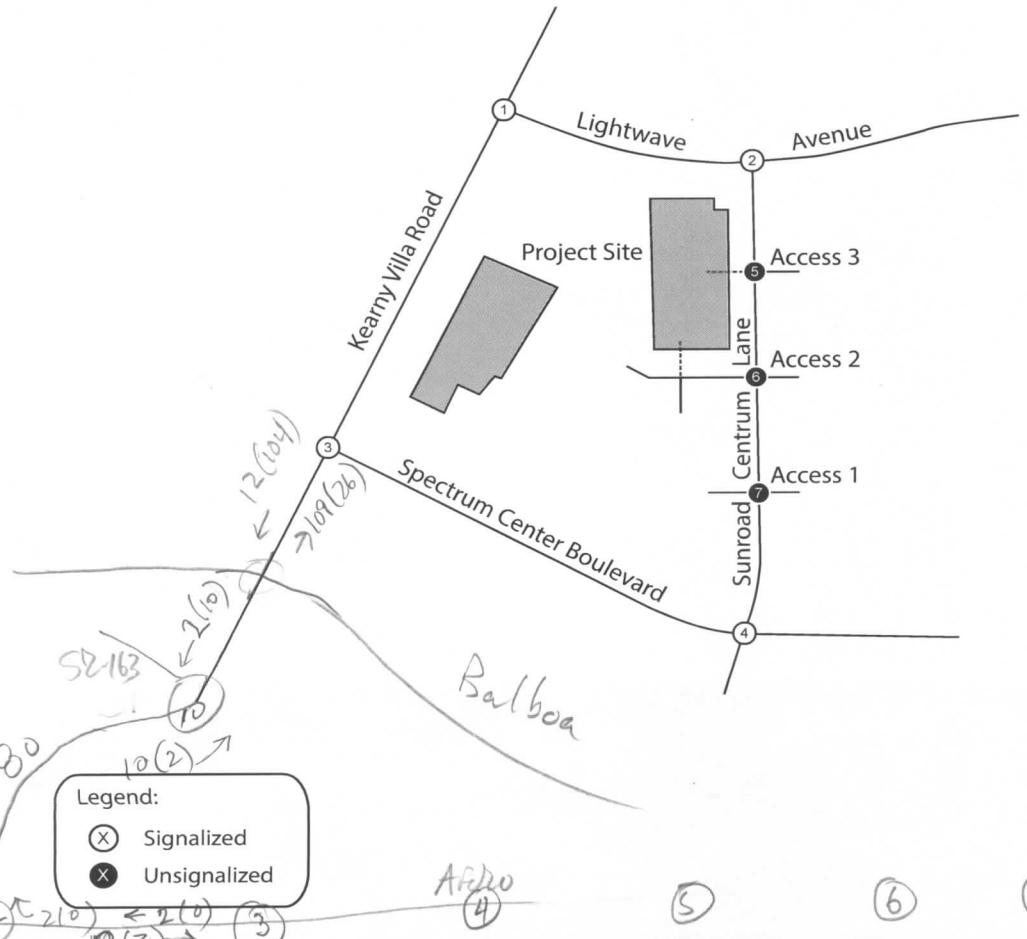
4.2 TRIP DISTRIBUTION

The project's trip distribution was based on the data collected from the *San Diego Spectrum Trip Generation Analysis* submitted to the City of San Diego on May 9, 2014. The overall distribution for the Spectrum Center was modified to be specific for the Centrumplace: Building 2 project location. **Figure 4-1** shows the project traffic distribution.

4.3 TRIP ASSIGNMENT

Based on the project trip distributions, daily and a.m. and p.m. peak-hour project trips were assigned to the local roadway network through the study intersections. **Figure 4-2** presents the project traffic assignment.

1 109 / 26 22 / 5 Kearny Villa Rd 2 / 21 10 / 83 Lightwave Ave 12 / 104 87 / 21	**2** 109 / 26 Lightwave Ave 109 / 26 12 / 104 12 / 104	**3** 10 / 83 109 / 26 Kearny Villa Rd 12 / 104 2 / 21 Spectrum Center Blvd 87 / 21 22 / 5	**4** 14 / 125 10 / 83 Sunroad Centrum Ln 87 / 21 Spectrum Center Blvd 131 / 31
5 152 / 36 65 / 16 Sunroad Centrum Ln Access 3 5 / 42 2 / 21 19 / 166	**6** 65 / 16 2 / 21 Sunroad Centrum Ln Access 2 19 / 166 10 / 83 152 / 36	**7** 12 / 104 Sunroad Centrum Ln Access 1 12 / 104 65 / 16 152 / 36	

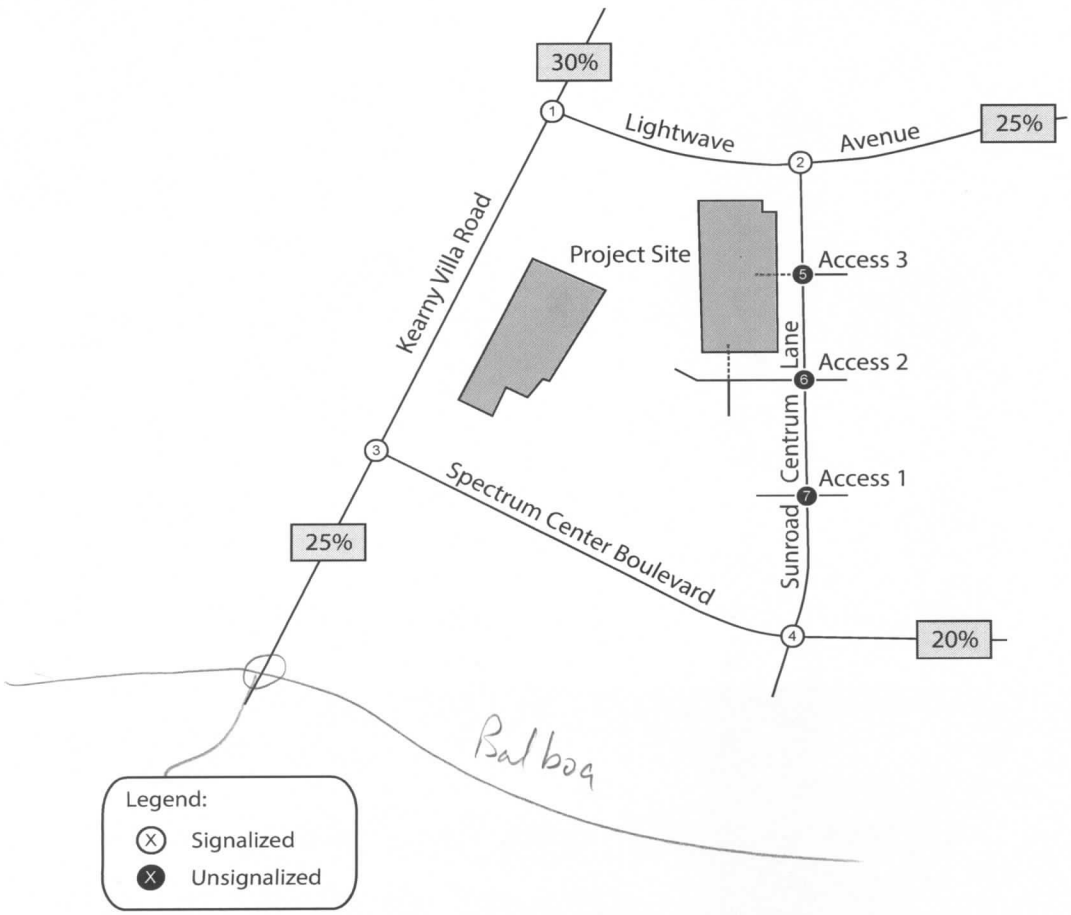


Kimley»Horn

FIGURE 4-2
Project Trip Assignment

K:\SND_TPTO\095128021 - Spectrum Center\Illustrator

1 25% 5% Kearny Villa Rd (5%) (20%) Lightwave Ave (25%) 20%	2 25% Lightwave Ave 25% (25%) (25%)	3 (20%) 25% Kearny Villa Rd (25%) (5%) Spectrum Center Blvd 20% 5%	4 (30%) (20%) Sunroad Centrum Ln 20% Spectrum Center Blvd 30%
5 35% 15% Sunroad Centrum Ln Access 3 (10%) (5%) (40%)	6 15% (5%) Sunroad Centrum Ln Access 2 (40%) (20%) 35%	7 (25%) Sunroad Centrum Ln Access 1 (25%) 15% 35%	

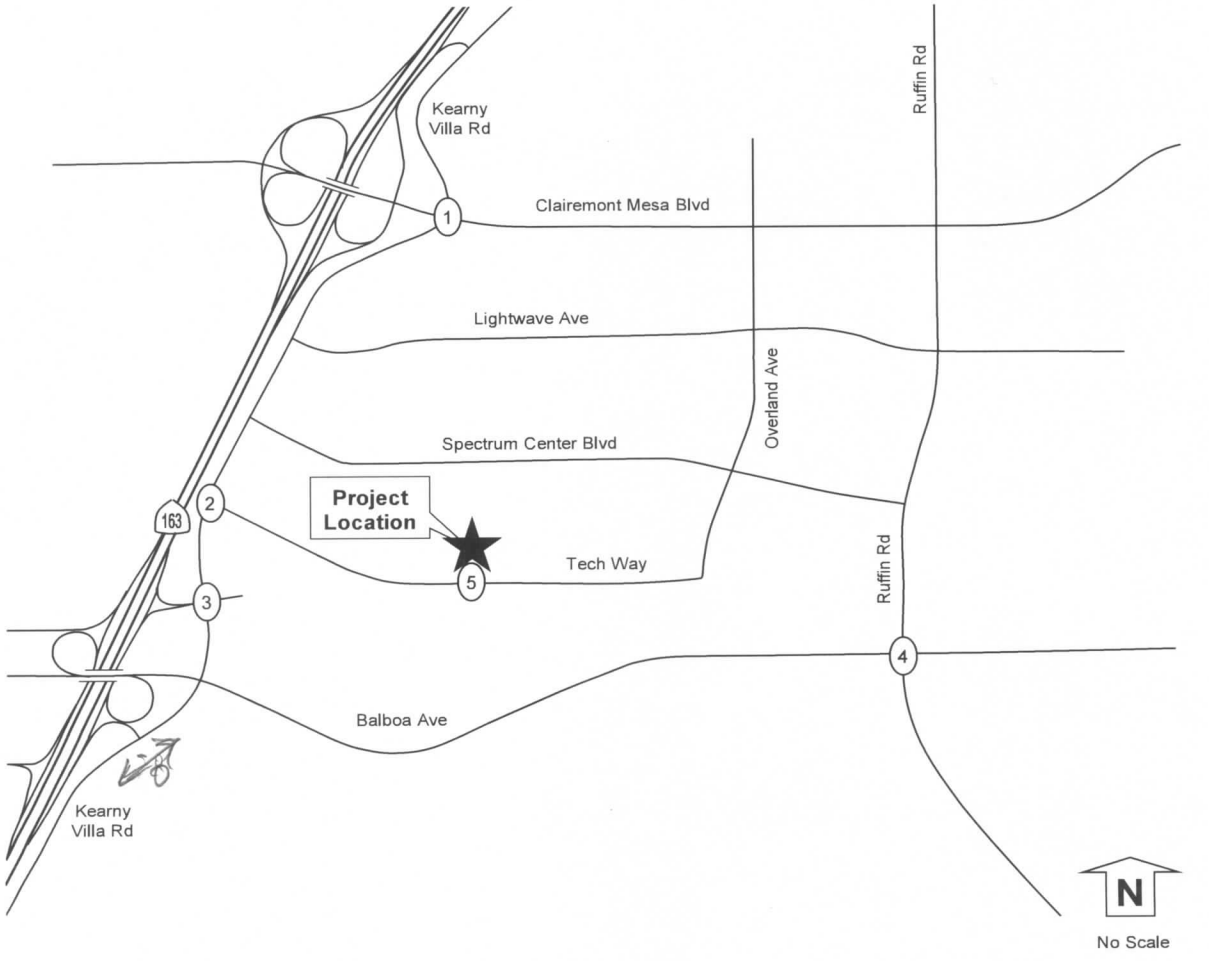


Kimley»Horn

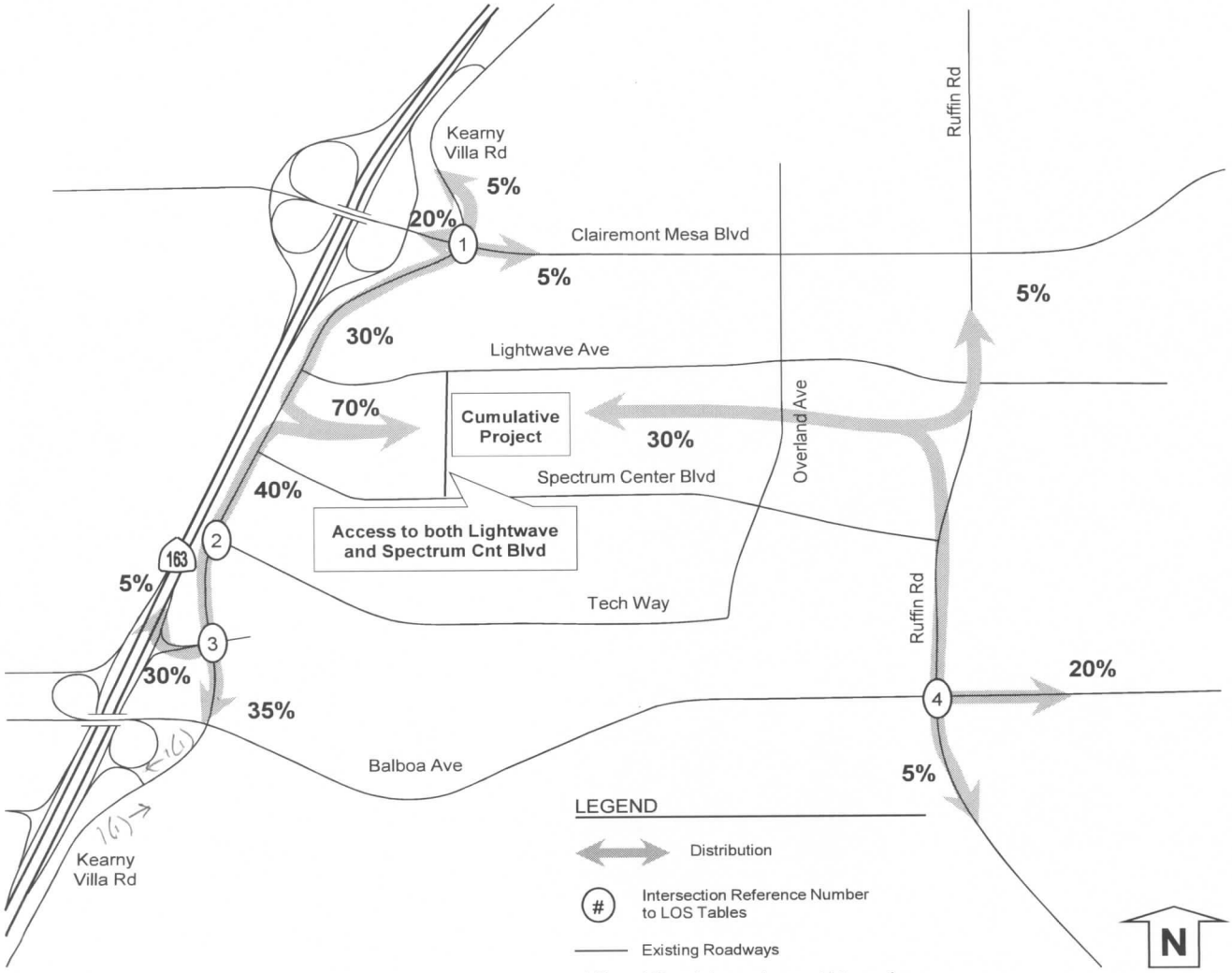
FIGURE 4-1
Project Trip Distribution

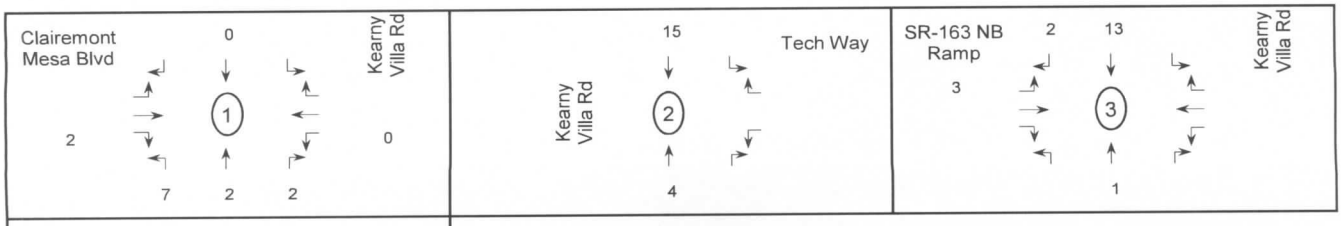
K:\SND_TPTO\095128021 - Spectrum Center\Illustrator

Figure 6: Project Assignment



Cumulative Project: Ariva Apts. Vacancy details obtained by visiting leasing office on 4/22/15





Trip Generation for remaining vacant 96 units

Land Use	Rate	Size & Units		ADT	%	Split		AM IN	AM OUT
Apts	6 /Apt	96	Apts	576	8%	0.2	0.8	9	37
					Distribution	5%		0	2
					Distribution	10%		1	4
					Distribution	20%		2	7
					Distribution	30%		3	11
					Distribution	35%		3	13
					Distribution	40%		4	15

The City of San Diego Development Services Department web site was reviewed for other cumulative projects near the project site to which there were two projects in addition to the previously noted four cumulative projects. However, upon review of these two additional DSD projects, they were determined to not generator new traffic.

Approval #433938 - Easement Vacation

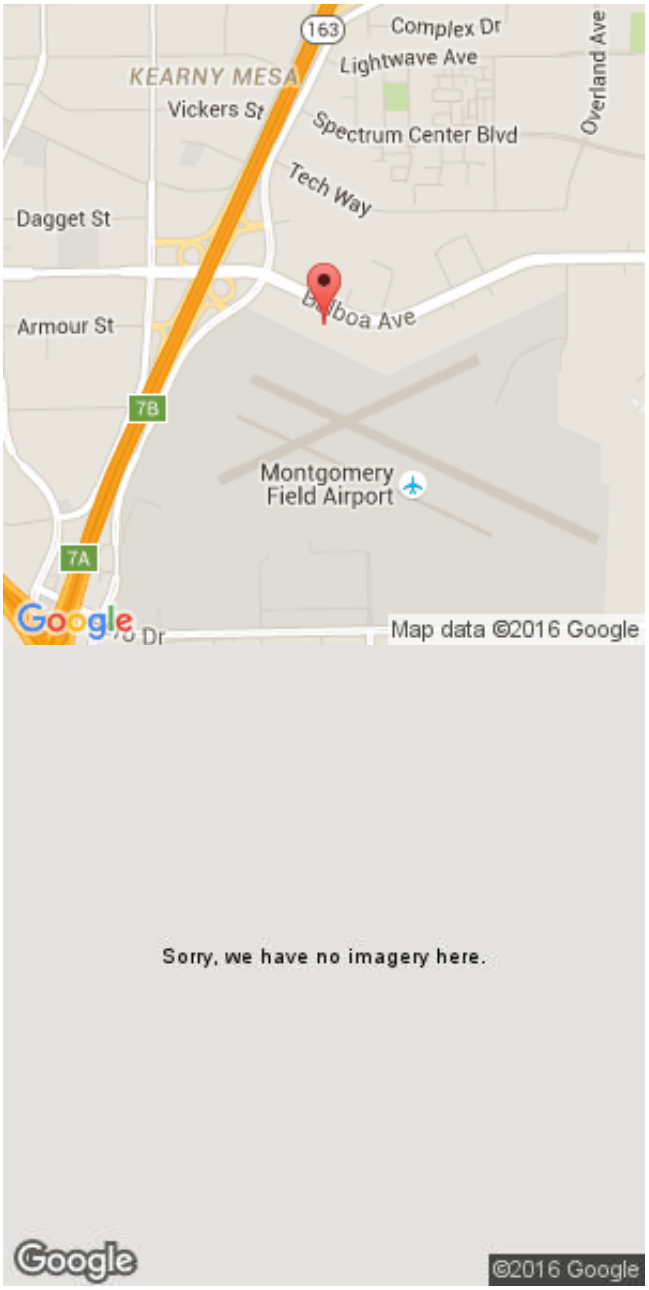
Application 03/27/2007 › Issuance › Inspection › Completion

Approval Information

Status	Created
Issued	
Issued by	
Permit Holder	
Net Change DU	
Valuation	$0.00
Sq. Footage	
First Inspection	
Complete Date	
Scope	Easement Vacation for general utilities. New site design no longer requires this easement.

Job

Map



Address 8611 BALBOA AV

APN 369-140-17-00

BC Codes

Project

Project ID 126479 (/web/Projects/Details/126479)

Account 23427613

Admin Hold No

Project Name Kyocera G U Easement Vacation

Project Contact	Huff, Sandra (619)446-5419 shuff@sandiego.gov
Project Scope	KEARNY MESA JO#427613 Easement Vacation for general utilities at lot 6 of unit 1 map 3978 and lot 8 unit 2 map 4113. IL-2-1/AEOZ. COUNCIL DISTRICT 6 -----notice cards 2

Fees

Exceptions

Inspections

Issues

Dependent Approvals

Dependent Packages

Data TimeStamp: 03/03/2016 16:24:40

Approval Status FAQ (http://www.sandiego.gov/development-services/opendsd/approvalreports.shtml)

Approval #1076640 - Conditional Use Permit

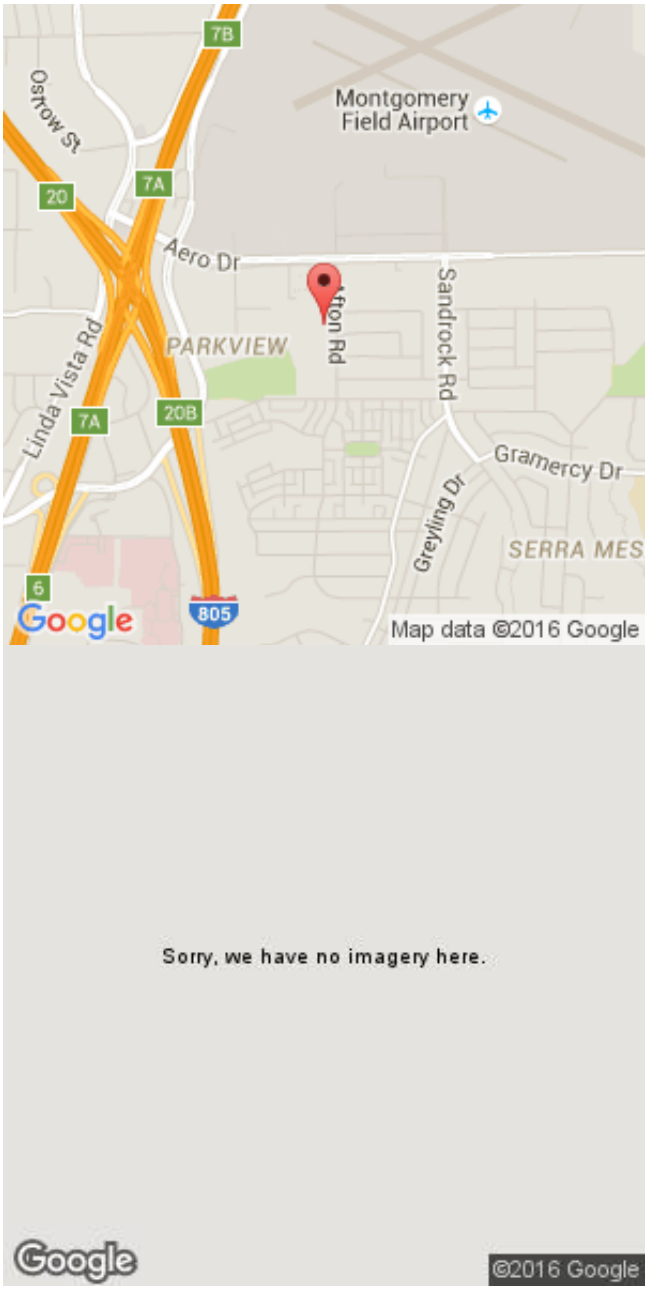
Application 01/08/2013 › Issuance 02/14/2014 › Inspection › Completion

Approval Information

Status	Issued
Issued	02/14/2014
Issued by	Zounes, Will
Permit Holder	Mark Schroeder
Net Change DU	0
Valuation	$0.00
Sq. Footage	0
First Inspection	
Complete Date	
Scope	Conditional Use Permit (CUP) to Amend CUP No. 456664 to maintain an existing church use within an existing 12,276 square foot building on a 1.08 acre site located at 3550 Afton Road. The site is in the IP-2-1 zone within the Kearny Mesa Community Plan. Council District 7 Approved 1/29/14 Reso No. HO-6690

Job

Map



Address 3550 AFTON RD

APN 421-040-12-00

BC Codes

Project

Project ID 307296 (/web/Projects/Details/307296)

Account 24003482

Admin Hold No

Project Name Pacific Hope Church CUP

Project Zounes, Will

Contact	(619)687-5942 wzounes@sandiego.gov
Project Scope	KEARNY MESA: (Process 3) IO# 24003482 Conditional Use Permit (CUP) to Amend CUP No. 456664 to maintain an existing church use within an existing 12,276 square foot building on a 1.08 acre site located at 3550 Afton Road. The site is in the IP-2-1 zone within the Kearny Mesa Community Plan. Council District 7. Notice Card=1.

Fees

Exceptions

Inspections

Issues

Dependent Approvals

Dependent Packages

Data TimeStamp: 03/03/2016 16:29:55

Approval Status FAQ (http://www.sandiego.gov/development-services/opendsd/approvalreports.shtml)

Appendix J

Year 2017 LOS Calculations

8:00-9:00 AM Year 2017 + Cumulative
1: Aero Dr & Convoy St

HCM Signalized Intersection Capacity Analysis

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	4	3	1	421	54	627	0	502	382	362	387	21
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.9		4.9	4.9	4.9		5.2		4.5	4.5	
Lane Util. Factor		1.00		0.95	0.91	0.95		0.95		0.97	0.95	
Frpb, ped/bikes		0.99		1.00	0.99	0.98		0.99		1.00	1.00	
Flpb, ped/bikes		1.00		1.00	1.00	1.00		1.00		1.00	1.00	
Frt		0.98		1.00	0.89	0.85		0.94		1.00	0.99	
Flt Protected		0.98		0.95	0.99	1.00		1.00		0.95	1.00	
Satd. Flow (prot)		1762		1681	1482	1481		3264		3433	3502	
Flt Permitted		0.98		0.95	0.99	1.00		1.00		0.95	1.00	
Satd. Flow (perm)		1762		1681	1482	1481		3264		3433	3502	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	4	3	1	439	56	653	0	523	398	377	403	22
RTOR Reduction (vph)	0	1	0	0	107	256	0	149	0	0	4	0
Lane Group Flow (vph)	0	7	0	395	274	116	0	772	0	377	421	0
Confl. Peds. (#/hr)			10						10			10
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Split	NA		Split	NA	Perm		NA		Prot	NA	
Protected Phases	7	7		8	8			2		1	6	
Permitted Phases						8						
Actuated Green, G (s)		1.2		28.1	28.1	28.1		27.8		13.4	46.4	
Effective Green, g (s)		1.2		28.1	28.1	28.1		27.8		13.4	46.4	
Actuated g/C Ratio		0.01		0.31	0.31	0.31		0.31		0.15	0.52	
Clearance Time (s)		4.9		4.9	4.9	4.9		5.2		4.5	4.5	
Vehicle Extension (s)		3.0		3.0	3.0	3.0		3.0		3.0	3.0	
Lane Grp Cap (vph)		23		524	462	462		1008		511	1805	
v/s Ratio Prot		c0.00		c0.23	0.18			c0.24		c0.11	0.12	
v/s Ratio Perm						0.08						
v/c Ratio		0.30		0.75	0.59	0.25		0.77		0.74	0.23	
Uniform Delay, d1		44.0		27.8	26.1	23.1		28.2		36.6	12.0	
Progression Factor		1.00		1.00	1.00	1.00		1.00		1.00	1.00	
Incremental Delay, d2		7.4		6.1	2.0	0.3		5.6		5.5	0.3	
Delay (s)		51.4		33.9	28.2	23.4		33.7		42.1	12.3	
Level of Service		D		C	C	C		C		D	B	
Approach Delay (s)		51.4			28.6			33.7			26.3	
Approach LOS		D			C			C			C	

Intersection Summary			
HCM 2000 Control Delay	29.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	19.5
Intersection Capacity Utilization	75.2%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

8:00-9:00 AM Year 2017 + Cumulative
2: Kearny Villa Rd & Aero Dr

HCM Signalized Intersection Capacity Analysis

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	147	478	97	255	794	477	313	194	417	174	131	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.3		4.5	5.3		4.5	5.7	5.7	4.5	6.0	
Lane Util. Factor	1.00	0.95		0.97	0.95		0.97	0.95	1.00	0.97	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	0.99		1.00	1.00	0.99	1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.97		1.00	0.94		1.00	1.00	0.85	1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3430		3433	3296		3433	3539	1560	3433	3381	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	3430		3433	3296		3433	3539	1560	3433	3381	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	156	509	103	271	845	507	333	206	444	185	139	43
RTOR Reduction (vph)	0	13	0	0	75	0	0	0	112	0	24	0
Lane Group Flow (vph)	156	599	0	271	1277	0	333	206	332	185	158	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Prot	NA		Prot	NA		Prot	NA	custom	Prot	NA	
Protected Phases	5	2		1	6		3	8	8	7	4	
Permitted Phases									1			
Actuated Green, G (s)	11.7	46.4		14.2	48.9		15.3	20.2	34.4	10.4	15.0	
Effective Green, g (s)	11.7	46.4		14.2	48.9		15.3	20.2	34.4	10.4	15.0	
Actuated g/C Ratio	0.11	0.42		0.13	0.44		0.14	0.18	0.31	0.09	0.13	
Clearance Time (s)	4.5	5.3		4.5	5.3		4.5	5.7	5.7	4.5	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	186	1431		438	1449		472	642	562	321	456	
v/s Ratio Prot	c0.09	0.17		0.08	c0.39		c0.10	0.06	c0.11	0.05	0.05	
v/s Ratio Perm									0.11			
v/c Ratio	0.84	0.42		0.62	0.88		0.71	0.32	0.59	0.58	0.35	
Uniform Delay, d1	48.8	22.9		45.9	28.5		45.8	39.5	32.5	48.3	43.6	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	26.8	0.2		2.6	6.6		4.8	0.3	1.7	2.5	0.5	
Delay (s)	75.6	23.1		48.5	35.1		50.6	39.8	34.1	50.8	44.1	
Level of Service	E	C		D	D		D	D	C	D	D	
Approach Delay (s)		33.7			37.4			40.9			47.5	
Approach LOS		C			D			D			D	

Intersection Summary			
HCM 2000 Control Delay	38.5	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	111.2	Sum of lost time (s)	20.3
Intersection Capacity Utilization	79.1%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

8:00-9:00 AM Year 2017 + Cumulative
3: Aero Ct & Aero Dr

HCM Signalized Intersection Capacity Analysis

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	9	875	183	64	1428	13	85	0	38	3	0	14
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.3		4.5	5.3		4.9	4.9			4.9	4.9
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00			1.00	1.00
Frpb, ped/bikes	1.00	0.99		1.00	1.00		1.00	0.97			1.00	0.97
Flpb, ped/bikes	1.00	1.00		1.00	1.00		0.99	1.00			0.99	1.00
Frt	1.00	0.97		1.00	1.00		1.00	0.85			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00			0.95	1.00
Satd. Flow (prot)	1766	3423		1770	3533		1751	1535			1752	1535
Flt Permitted	0.95	1.00		0.95	1.00		0.76	1.00			0.73	1.00
Satd. Flow (perm)	1766	3423		1770	3533		1393	1535			1344	1535
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	10	983	206	72	1604	15	96	0	43	3	0	16
RTOR Reduction (vph)	0	21	0	0	1	0	0	37	0	0	0	14
Lane Group Flow (vph)	10	1168	0	72	1618	0	96	6	0	0	3	2
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	Perm
Protected Phases	5	2		1	6			4			4	
Permitted Phases							4			4		4
Actuated Green, G (s)	0.7	30.9		3.5	33.7		7.4	7.4			7.4	7.4
Effective Green, g (s)	0.7	30.9		3.5	33.7		7.4	7.4			7.4	7.4
Actuated g/C Ratio	0.01	0.55		0.06	0.60		0.13	0.13			0.13	0.13
Clearance Time (s)	4.5	5.3		4.5	5.3		4.9	4.9			4.9	4.9
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0			3.0	3.0
Lane Grp Cap (vph)	21	1872		109	2107		182	201			176	201
v/s Ratio Prot	0.01	0.34		c0.04	c0.46			0.00				
v/s Ratio Perm							c0.07				0.00	0.00
v/c Ratio	0.48	0.62		0.66	0.77		0.53	0.03			0.02	0.01
Uniform Delay, d1	27.7	8.8		25.9	8.5		22.9	21.4			21.4	21.4
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00			1.00	1.00
Incremental Delay, d2	16.0	0.7		14.0	1.7		2.7	0.1			0.0	0.0
Delay (s)	43.8	9.5		39.9	10.2		25.7	21.5			21.4	21.4
Level of Service	D	A		D	B		C	C			C	C
Approach Delay (s)		9.7			11.5			24.4			21.4	
Approach LOS		A			B			C			C	

Intersection Summary				
HCM 2000 Control Delay	11.5	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.75			
Actuated Cycle Length (s)	56.5	Sum of lost time (s)	14.7	
Intersection Capacity Utilization	67.4%	ICU Level of Service	C	
Analysis Period (min)	15			
c Critical Lane Group				

8:00-9:00 AM Year 2017 + Cumulative
4: Afton Rd & Aero Dr

HCM Signalized Intersection Capacity Analysis

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	69	691	155	59	1212	7	257	4	52	3	0	15
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.4		4.5	5.3			4.9			4.9	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	
Frpb, ped/bikes	1.00	0.99		1.00	1.00			1.00			0.98	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			0.99			1.00	
Frt	1.00	0.97		1.00	1.00			0.98			0.89	
Flt Protected	0.95	1.00		0.95	1.00			0.96			0.99	
Satd. Flow (prot)	1770	3414		1770	3535			1723			1599	
Flt Permitted	0.95	1.00		0.95	1.00			0.75			0.95	
Satd. Flow (perm)	1770	3414		1770	3535			1345			1531	
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	78	776	174	66	1362	8	289	4	58	3	0	17
RTOR Reduction (vph)	0	27	0	0	1	0	0	10	0	0	14	0
Lane Group Flow (vph)	78	923	0	66	1369	0	0	341	0	0	6	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8			4		
Actuated Green, G (s)	3.5	30.4		3.9	30.9			19.2			19.2	
Effective Green, g (s)	3.5	30.4		3.9	30.9			19.2			19.2	
Actuated g/C Ratio	0.05	0.45		0.06	0.45			0.28			0.28	
Clearance Time (s)	4.5	5.4		4.5	5.3			4.9			4.9	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	90	1519		101	1599			378			430	
v/s Ratio Prot	c0.04	0.27		0.04	c0.39							
v/s Ratio Perm								c0.25			0.00	
v/c Ratio	0.87	0.61		0.65	0.86			0.90			0.01	
Uniform Delay, d1	32.2	14.4		31.5	16.7			23.6			17.7	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	53.4	1.8		14.2	6.1			23.9			0.0	
Delay (s)	85.6	16.2		45.7	22.9			47.5			17.7	
Level of Service	F	B		D	C			D			B	
Approach Delay (s)		21.5			23.9			47.5			17.7	
Approach LOS		C			C			D			B	

Intersection Summary				
HCM 2000 Control Delay	25.9	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.87			
Actuated Cycle Length (s)	68.3	Sum of lost time (s)	14.8	
Intersection Capacity Utilization	74.3%	ICU Level of Service	D	
Analysis Period (min)	15			
c Critical Lane Group				

8:00-9:00 AM Year 2017 + Cumulative
5: Sandrock Rd & Aero Dr

HCM Signalized Intersection Capacity Analysis

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	41	507	183	116	738	55	508	38	210	14	6	16
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.2	5.2	4.5	5.2		5.0	5.0	5.0	4.9	4.9	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		0.95	0.95	1.00	1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.95	1.00	1.00		1.00	1.00	0.97	1.00	0.97	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85	1.00	0.89	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	0.96	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3539	1510	1770	3491		1681	1697	1538	1770	1604	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	0.96	1.00	0.95	1.00	
Satd. Flow (perm)	1770	3539	1510	1770	3491		1681	1697	1538	1770	1604	
Peak-hour factor, PHF	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Adj. Flow (vph)	48	590	213	135	858	64	591	44	244	16	7	19
RTOR Reduction (vph)	0	0	147	0	6	0	0	0	167	0	18	0
Lane Group Flow (vph)	48	590	66	135	916	0	319	316	77	16	8	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Prot	NA	Perm	Prot	NA		Split	NA	Perm	Split	NA	
Protected Phases	5	2		1	6		8	8		7	7	
Permitted Phases			2						8			
Actuated Green, G (s)	2.2	20.9	20.9	6.8	25.5		16.2	16.2	16.2	3.6	3.6	
Effective Green, g (s)	2.2	20.9	20.9	6.8	25.5		16.2	16.2	16.2	3.6	3.6	
Actuated g/C Ratio	0.03	0.31	0.31	0.10	0.38		0.24	0.24	0.24	0.05	0.05	
Clearance Time (s)	4.5	5.2	5.2	4.5	5.2		5.0	5.0	5.0	4.9	4.9	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	58	1102	470	179	1326		405	409	371	94	86	
v/s Ratio Prot	0.03	0.17		c0.08	c0.26		c0.19	0.19		c0.01	0.00	
v/s Ratio Perm			0.04						0.05			
v/c Ratio	0.83	0.54	0.14	0.75	0.69		0.79	0.77	0.21	0.17	0.09	
Uniform Delay, d1	32.3	19.1	16.6	29.3	17.5		23.8	23.7	20.3	30.3	30.2	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	59.9	1.9	0.6	16.4	1.6		9.8	8.8	0.3	0.9	0.5	
Delay (s)	92.1	21.0	17.3	45.7	19.1		33.6	32.5	20.6	31.2	30.7	
Level of Service	F	C	B	D	B		C	C	C	C	C	
Approach Delay (s)		24.0			22.5			29.6			30.9	
Approach LOS		C			C			C			C	

Intersection Summary				
HCM 2000 Control Delay	25.3	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.73			
Actuated Cycle Length (s)	67.1	Sum of lost time (s)	19.6	
Intersection Capacity Utilization	59.5%	ICU Level of Service	B	
Analysis Period (min)	15			
c Critical Lane Group				

8:00-9:00 AM Year 2017 + Cumulative
6: Ruffin Rd & Aero Dr

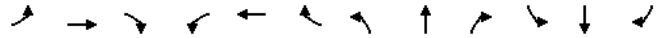
HCM Signalized Intersection Capacity Analysis

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	542	116	168	522	445	519
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.2	5.2	4.5	4.5	5.5	5.5
Lane Util. Factor	0.95	1.00	0.97	0.95	0.97	1.00
Frpb, ped/bikes	1.00	0.99	1.00	1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	3539	1562	3433	3539	3433	1542
Flt Permitted	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)	3539	1562	3433	3539	3433	1542
Peak-hour factor, PHF	0.85	0.85	0.85	0.85	0.85	0.85
Adj. Flow (vph)	638	136	198	614	524	611
RTOR Reduction (vph)	0	21	0	0	0	192
Lane Group Flow (vph)	638	115	198	614	524	419
Confl. Peds. (#/hr)		10	10		10	10
Confl. Bikes (#/hr)		5				5
Turn Type	NA	custom	Prot	NA	Prot	Perm
Protected Phases	2	2	1	6	8	
Permitted Phases		8				8
Actuated Green, G (s)	17.4	39.3	5.5	28.1	21.9	21.9
Effective Green, g (s)	17.4	39.3	5.5	28.1	21.9	21.9
Actuated g/C Ratio	0.29	0.65	0.09	0.47	0.36	0.36
Clearance Time (s)	5.2	5.2	4.5	4.5	5.5	5.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	1026	1158	314	1657	1253	562
v/s Ratio Prot	c0.18	0.03	c0.06	0.17	0.15	
v/s Ratio Perm		0.04				c0.27
v/c Ratio	0.62	0.10	0.63	0.37	0.42	0.75
Uniform Delay, d1	18.5	3.8	26.3	10.3	14.3	16.6
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	2.8	0.2	4.1	0.1	1.0	8.7
Delay (s)	21.3	4.0	30.4	10.4	15.3	25.4
Level of Service	C	A	C	B	B	C
Approach Delay (s)	18.2			15.3	20.7	
Approach LOS	B			B	C	

Intersection Summary				
HCM 2000 Control Delay	18.4	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.68			
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	15.2	
Intersection Capacity Utilization	57.1%	ICU Level of Service	B	
Analysis Period (min)	15			
c Critical Lane Group				

Movement	EBU	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations							
Volume (vph)	19	983	120	117	612	84	57
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5		4.5	4.5	4.5	4.5
Lane Util. Factor	1.00	0.95		0.97	0.95	0.97	0.88
Frpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	0.95
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00
Frt	1.00	0.98		1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	0.95	1.00
Satd. Flow (prot)	1770	3471		3433	3539	3433	2643
Flt Permitted	0.95	1.00		0.95	1.00	0.95	1.00
Satd. Flow (perm)	1770	3471		3433	3539	3433	2643
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	21	1092	133	130	680	93	63
RTOR Reduction (vph)	0	10	0	0	0	0	49
Lane Group Flow (vph)	21	1215	0	130	680	93	14
Confl. Peds. (#/hr)			10	10		10	10
Confl. Bikes (#/hr)			5				5
Turn Type	Prot	NA		Prot	NA	Prot	Perm
Protected Phases	5	2		1	6	8	
Permitted Phases							8
Actuated Green, G (s)	1.6	38.4		7.0	43.8	16.1	16.1
Effective Green, g (s)	1.6	38.4		7.0	43.8	16.1	16.1
Actuated g/C Ratio	0.02	0.51		0.09	0.58	0.21	0.21
Clearance Time (s)	4.5	4.5		4.5	4.5	4.5	4.5
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	37	1777		320	2066	736	567
v/s Ratio Prot	0.01	c0.35		c0.04	0.19	c0.03	
v/s Ratio Perm							0.01
v/c Ratio	0.57	0.68		0.41	0.33	0.13	0.02
Uniform Delay, d1	36.4	13.7		32.0	8.0	23.8	23.2
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2	18.4	2.2		0.8	0.4	0.4	0.1
Delay (s)	54.8	15.9		32.9	8.5	24.1	23.3
Level of Service	D	B		C	A	C	C
Approach Delay (s)		16.6			12.4	23.8	
Approach LOS		B			B	C	

Intersection Summary				
HCM 2000 Control Delay	15.5	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.51			
Actuated Cycle Length (s)	75.0	Sum of lost time (s)	13.5	
Intersection Capacity Utilization	59.0%	ICU Level of Service	B	
Analysis Period (min)	15			
c Critical Lane Group				



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	2	0	0	8	0	115	1	12	233	2
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64
Hourly flow rate (vph)	0	0	3	0	0	12	0	180	2	19	364	3
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)											142	
pX, platoon unblocked												
vC, conflicting volume	596	584	366	587	585	180	367			181		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	596	584	366	587	585	180	367			181		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	100	100	100	99	100			99		
cM capacity (veh/h)	405	418	680	415	417	862	1191			1394		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	3	12	181	386
Volume Left	0	0	0	19
Volume Right	3	12	2	3
cSH	680	862	1191	1394
Volume to Capacity	0.00	0.01	0.00	0.01
Queue Length 95th (ft)	0	1	0	1
Control Delay (s)	10.3	9.2	0.0	0.5
Lane LOS	B	A		A
Approach Delay (s)	10.3	9.2	0.0	0.5
Approach LOS	B	A		

Intersection Summary				
Average Delay	0.6			
Intersection Capacity Utilization	29.7%	ICU Level of Service	A	
Analysis Period (min)	15			

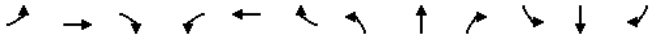
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	1	21	94	2	70	129
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.55	0.55	0.55	0.55	0.55	0.55
Hourly flow rate (vph)	2	38	171	4	127	235
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						635
pX, platoon unblocked						
vC, conflicting volume	662	173			175	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	662	173			175	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	96			91	
cM capacity (veh/h)	388	871			1402	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	40	175	362
Volume Left	2	0	127
Volume Right	38	4	0
cSH	824	1700	1402
Volume to Capacity	0.05	0.10	0.09
Queue Length 95th (ft)	4	0	7
Control Delay (s)	9.6	0.0	3.3
Lane LOS	A		A
Approach Delay (s)	9.6	0.0	3.3
Approach LOS	A		

Intersection Summary			
Average Delay		2.7	
Intersection Capacity Utilization		27.3%	ICU Level of Service A
Analysis Period (min)		15	

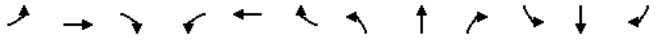
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	705	27	367	474	311	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.1	4.7	4.7	5.8	5.8	
Lane Util. Factor	0.97	1.00	1.00	0.95	0.95	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.85	1.00	1.00	1.00	
Flt Protected	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	3433	1583	1770	3539	3539	
Flt Permitted	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (perm)	3433	1583	1770	3539	3539	
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	792	30	412	533	349	0
RTOR Reduction (vph)	0	14	0	0	0	0
Lane Group Flow (vph)	792	16	412	533	349	0
Confl. Peds. (#/hr)						10
Confl. Bikes (#/hr)						5
Turn Type	Prot	pm+ov	Prot	NA	NA	
Protected Phases	4	5	5	2	6	
Permitted Phases		4				
Actuated Green, G (s)	19.4	39.8	20.4	44.2	19.1	
Effective Green, g (s)	19.4	39.8	20.4	44.2	19.1	
Actuated g/C Ratio	0.26	0.53	0.27	0.59	0.26	
Clearance Time (s)	5.1	4.7	4.7	5.8	5.8	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	893	845	484	2099	907	
v/s Ratio Prot	c0.23	0.01	c0.23	0.15	c0.10	
v/s Ratio Perm		0.01				
v/c Ratio	0.89	0.02	0.85	0.25	0.38	
Uniform Delay, d1	26.5	8.2	25.6	7.3	22.9	
Progression Factor	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	10.6	0.0	13.5	0.3	1.2	
Delay (s)	37.1	8.2	39.1	7.5	24.1	
Level of Service	D	A	D	A	C	
Approach Delay (s)	36.0			21.3	24.1	
Approach LOS	D			C	C	

Intersection Summary				
HCM 2000 Control Delay	27.5	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.71			
Actuated Cycle Length (s)	74.5	Sum of lost time (s)	15.6	
Intersection Capacity Utilization	66.8%	ICU Level of Service	C	
Analysis Period (min)	15			
c Critical Lane Group				



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	93	54	19	356	69	307	2	171	76	63	215	67
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.1			5.1	5.1	4.7	5.5	5.5	4.7	5.5	
Lane Util. Factor		1.00			1.00	1.00	1.00	0.95	1.00	1.00	0.95	
Frpb, ped/bikes		1.00			1.00	0.97	1.00	1.00	0.95	1.00	0.99	
Flpb, ped/bikes		1.00			1.00	1.00	0.98	1.00	1.00	1.00	1.00	
Frt		0.98			1.00	0.85	1.00	1.00	0.85	1.00	0.96	
Flt Protected		0.97			0.96	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1777			1788	1535	1741	3539	1500	1770	3372	
Flt Permitted		0.97			0.96	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)		1777			1788	1535	1741	3539	1500	1770	3372	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	99	57	20	379	73	327	2	182	81	67	229	71
RTOR Reduction (vph)	0	5	0	0	0	184	0	0	60	0	29	0
Lane Group Flow (vph)	0	171	0	0	452	143	2	182	21	67	271	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Split	NA		Split	NA	Perm	Prot	NA	Perm	Prot	NA	
Protected Phases	4	4		3	3		5	2		1	6	
Permitted Phases						3			2			
Actuated Green, G (s)		12.5			25.0	25.0	0.7	21.0	21.0	4.0	24.3	
Effective Green, g (s)		12.5			25.0	25.0	0.7	21.0	21.0	4.0	24.3	
Actuated g/C Ratio		0.15			0.30	0.30	0.01	0.25	0.25	0.05	0.29	
Clearance Time (s)		5.1			5.1	5.1	4.7	5.5	5.5	4.7	5.5	
Vehicle Extension (s)		3.0			3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)		267			539	462	14	896	379	85	988	
v/s Ratio Prot		c0.10			c0.25		0.00	0.05		c0.04	c0.08	
v/s Ratio Perm						0.09			0.01			
v/c Ratio		0.64			0.84	0.31	0.14	0.20	0.05	0.79	0.27	
Uniform Delay, d1		33.1			27.1	22.3	40.8	24.4	23.4	39.0	22.5	
Progression Factor		1.00			1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2		5.2			11.0	0.4	4.7	0.5	0.3	37.0	0.7	
Delay (s)		38.2			38.0	22.7	45.5	24.9	23.7	76.0	23.2	
Level of Service		D			D	C	D	C	C	E	C	
Approach Delay (s)		38.2			31.6			24.7			32.9	
Approach LOS		D			C			C			C	

Intersection Summary				
HCM 2000 Control Delay	31.5	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.61			
Actuated Cycle Length (s)	82.9	Sum of lost time (s)	20.4	
Intersection Capacity Utilization	59.6%	ICU Level of Service	B	
Analysis Period (min)	15			
c Critical Lane Group				



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	19	24	20	324	57	17	109	865	148	20	401	48
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.9	4.9	4.5	4.9		4.5	5.3		4.5	5.0	
Lane Util. Factor	1.00	1.00	1.00	0.97	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	1.00	0.85	1.00	0.97		1.00	0.98		1.00	0.98	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1863	1583	3433	1799		1770	3462		1770	3483	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	1863	1583	3433	1799		1770	3462		1770	3483	
Peak-hour factor, PHF	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Adj. Flow (vph)	19	24	20	327	58	17	110	874	149	20	405	48
RTOR Reduction (vph)	0	0	19	0	12	0	0	10	0	0	7	0
Lane Group Flow (vph)	19	24	1	327	63	0	110	1013	0	20	446	0
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4									
Actuated Green, G (s)	2.3	5.3	5.3	14.5	17.5		11.5	57.9		3.1	49.8	
Effective Green, g (s)	2.3	5.3	5.3	14.5	17.5		11.5	57.9		3.1	49.8	
Actuated g/C Ratio	0.02	0.05	0.05	0.14	0.18		0.12	0.58		0.03	0.50	
Clearance Time (s)	4.5	4.9	4.9	4.5	4.9		4.5	5.3		4.5	5.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	40	98	83	497	314		203	2004		54	1734	
v/s Ratio Prot	0.01	0.01		c0.10	c0.03		c0.06	c0.29		0.01	0.13	
v/s Ratio Perm			0.00									
v/c Ratio	0.47	0.24	0.01	0.66	0.20		0.54	0.51		0.37	0.26	
Uniform Delay, d1	48.3	45.4	44.9	40.4	35.3		41.8	12.5		47.5	14.5	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	8.6	1.3	0.1	3.1	0.3		2.9	0.9		4.2	0.4	
Delay (s)	56.9	46.7	44.9	43.5	35.6		44.7	13.4		51.7	14.8	
Level of Service	E	D	D	D	D		D	B		D	B	
Approach Delay (s)		49.2			42.1			16.5			16.4	
Approach LOS		D			D			B			B	

Intersection Summary				
HCM 2000 Control Delay	22.4	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.54			
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	19.2	
Intersection Capacity Utilization	60.1%	ICU Level of Service	B	
Analysis Period (min)	15			
c Critical Lane Group				

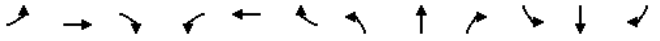
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	471	0	0	923	552	433
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.1			5.1	5.1	5.1
Lane Util. Factor	0.95			0.95	0.97	0.91
Frt	1.00			1.00	0.97	0.85
Flt Protected	1.00			1.00	0.96	1.00
Satd. Flow (prot)	3539			3539	3376	1441
Flt Permitted	1.00			1.00	0.96	1.00
Satd. Flow (perm)	3539			3539	3376	1441
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	501	0	0	982	587	461
RTOR Reduction (vph)	0	0	0	0	23	242
Lane Group Flow (vph)	501	0	0	982	698	85
Turn Type	NA			NA	Prot	Perm
Protected Phases	2			6	4	
Permitted Phases						4
Actuated Green, G (s)	16.4			28.3	21.1	21.1
Effective Green, g (s)	16.4			28.3	21.1	21.1
Actuated g/C Ratio	0.20			0.35	0.26	0.26
Clearance Time (s)	5.1			5.1	5.1	5.1
Vehicle Extension (s)	3.0			3.0	3.0	3.0
Lane Grp Cap (vph)	715			1234	878	374
v/s Ratio Prot	c0.14			c0.28	c0.21	
v/s Ratio Perm						0.06
v/c Ratio	0.70			0.80	0.80	0.23
Uniform Delay, d1	30.1			23.8	28.0	23.6
Progression Factor	1.00			1.00	1.00	1.00
Incremental Delay, d2	3.1			3.6	5.0	0.3
Delay (s)	33.2			27.4	33.0	23.9
Level of Service	C			C	C	C
Approach Delay (s)	33.2			27.4	30.2	
Approach LOS	C			C	C	

Intersection Summary				
HCM 2000 Control Delay	29.7	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.77			
Actuated Cycle Length (s)	81.1	Sum of lost time (s)	15.3	
Intersection Capacity Utilization	54.3%	ICU Level of Service	A	
Analysis Period (min)	15			
c Critical Lane Group				

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	39	629	229	457	794	15	59	6	109	30	34	51
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.9	4.0	4.5	4.9		4.9	4.9	4.9		4.9	4.9
Lane Util. Factor	1.00	0.95	1.00	0.97	0.95		1.00	0.95	0.95		1.00	1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	0.97	0.97		1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00		1.00	0.86	0.85		1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00		0.98	1.00
Satd. Flow (prot)	1770	3539	1583	3433	3526		1770	1485	1455		1821	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00		0.98	1.00
Satd. Flow (perm)	1770	3539	1583	3433	3526		1770	1485	1455		1821	1583
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	42	676	246	491	854	16	63	6	117	32	37	55
RTOR Reduction (vph)	0	0	0	0	1	0	0	0	0	0	0	0
Lane Group Flow (vph)	42	676	246	491	869	0	63	62	61	0	69	55
Confl. Peds. (#/hr)						10			10			
Confl. Bikes (#/hr)						5			5			
Turn Type	Prot	NA	Free	Prot	NA		Split	NA	Perm	Split	NA	Perm
Protected Phases	5	2		1	6		3	3		4	4	
Permitted Phases			Free						3			4
Actuated Green, G (s)	2.6	25.5	83.1	15.1	38.0		16.2	16.2	16.2		7.1	7.1
Effective Green, g (s)	2.6	25.5	83.1	15.1	38.0		16.2	16.2	16.2		7.1	7.1
Actuated g/C Ratio	0.03	0.31	1.00	0.18	0.46		0.19	0.19	0.19		0.09	0.09
Clearance Time (s)	4.5	4.9		4.5	4.9		4.9	4.9	4.9		4.9	4.9
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	55	1085	1583	623	1612		345	289	283		155	135
v/s Ratio Prot	0.02	c0.19		c0.14	0.25		0.04	0.04			c0.04	
v/s Ratio Perm			0.16						c0.04			0.03
v/c Ratio	0.76	0.62	0.16	0.79	0.54		0.18	0.21	0.22		0.45	0.41
Uniform Delay, d1	39.9	24.7	0.0	32.5	16.2		27.9	28.1	28.1		36.1	36.0
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	46.0	2.7	0.2	6.6	0.3		1.2	1.7	1.7		2.0	2.0
Delay (s)	86.0	27.4	0.2	39.0	16.6		29.1	29.8	29.8		38.2	38.0
Level of Service	F	C	A	D	B		C	C	C		D	D
Approach Delay (s)		23.0			24.7			29.6			38.1	
Approach LOS		C			C			C			D	

Intersection Summary				
HCM 2000 Control Delay	25.0	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.54			
Actuated Cycle Length (s)	83.1	Sum of lost time (s)	19.2	
Intersection Capacity Utilization	55.7%	ICU Level of Service	B	
Analysis Period (min)	15			
c Critical Lane Group				

8:00-9:00 AM Year 2017 + Cumulative
15: I-805 SB Ramp/Berger Ave & Mesa College Dr — HCM Signalized Intersection Capacity Analysis



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	6	458	385	99	1440	76	0	0	0	44	27	26
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.7	5.1		4.7	5.1						5.5	
Lane Util. Factor	1.00	0.95		1.00	0.95						1.00	
Frpb, ped/bikes	1.00	0.99		1.00	1.00						0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00						1.00	
Frt	1.00	0.93		1.00	0.99						0.96	
Flt Protected	0.95	1.00		0.95	1.00						0.98	
Satd. Flow (prot)	1765	3266		1770	3504						1741	
Flt Permitted	0.95	1.00		0.95	1.00						0.98	
Satd. Flow (perm)	1765	3266		1770	3504						1741	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	7	498	418	108	1565	83	0	0	0	48	29	28
RTOR Reduction (vph)	0	167	0	0	5	0	0	0	0	0	14	0
Lane Group Flow (vph)	7	749	0	108	1643	0	0	0	0	0	91	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Prot	NA		Prot	NA					Split	NA	
Protected Phases	5	2		1	6					4	4	
Permitted Phases												
Actuated Green, G (s)	0.7	37.2		8.5	45.0						16.4	
Effective Green, g (s)	0.7	37.2		8.5	45.0						16.4	
Actuated g/C Ratio	0.01	0.48		0.11	0.58						0.21	
Clearance Time (s)	4.7	5.1		4.7	5.1						5.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0						3.0	
Lane Grp Cap (vph)	15	1569		194	2037						368	
v/s Ratio Prot	0.00	0.23		c0.06	c0.47						c0.05	
v/s Ratio Perm												
v/c Ratio	0.47	0.48		0.56	0.81						0.25	
Uniform Delay, d1	38.2	13.5		32.7	12.8						25.4	
Progression Factor	1.00	1.00		1.00	1.00						1.00	
Incremental Delay, d2	21.2	0.2		3.4	2.4						1.6	
Delay (s)	59.4	13.8		36.1	15.2						27.0	
Level of Service	E	B		D	B						C	
Approach Delay (s)		14.1			16.5			0.0			27.0	
Approach LOS		B			B			A			C	

Intersection Summary				
HCM 2000 Control Delay	16.1	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.68			
Actuated Cycle Length (s)	77.4	Sum of lost time (s)	15.3	
Intersection Capacity Utilization	71.7%	ICU Level of Service	C	
Analysis Period (min)	15			
c Critical Lane Group				

8:00-9:00 AM Year 2017 + Cumulative
16: I-805 NB Off-Ramp & Mesa College Dr/Kearny Villa Rd — HCM Signalized Intersection Capacity Analysis

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	519	0	0	430	1199	440
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.5			5.5	4.5	5.5
Lane Util. Factor	0.95			0.95	0.97	1.00
Frpb, ped/bikes	1.00			1.00	1.00	0.97
Flpb, ped/bikes	1.00			1.00	1.00	1.00
Frt	1.00			1.00	1.00	0.85
Flt Protected	1.00			1.00	0.95	1.00
Satd. Flow (prot)	3539			3539	3433	1544
Flt Permitted	1.00			1.00	0.95	1.00
Satd. Flow (perm)	3539			3539	3433	1544
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	564	0	0	467	1303	478
RTOR Reduction (vph)	0	0	0	0	0	330
Lane Group Flow (vph)	564	0	0	467	1303	148
Confl. Peds. (#/hr)						10
Confl. Bikes (#/hr)						5
Turn Type	NA			NA	Prot	Perm
Protected Phases	2			6	4	
Permitted Phases						6
Actuated Green, G (s)	17.4			17.4	28.9	17.4
Effective Green, g (s)	17.4			17.4	28.9	17.4
Actuated g/C Ratio	0.31			0.31	0.51	0.31
Clearance Time (s)	5.5			5.5	4.5	5.5
Vehicle Extension (s)	3.0			3.0	3.0	3.0
Lane Grp Cap (vph)	1093			1093	1762	477
v/s Ratio Prot	c0.16			0.13	c0.38	
v/s Ratio Perm						0.10
v/c Ratio	0.52			0.43	0.74	0.31
Uniform Delay, d1	16.0			15.5	10.7	14.9
Progression Factor	1.00			1.00	1.00	1.00
Incremental Delay, d2	0.4			0.3	1.7	0.4
Delay (s)	16.4			15.8	12.4	15.2
Level of Service	B			B	B	B
Approach Delay (s)	16.4			15.8	13.2	
Approach LOS	B			B	B	

Intersection Summary				
HCM 2000 Control Delay	14.2	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.66			
Actuated Cycle Length (s)	56.3	Sum of lost time (s)	10.0	
Intersection Capacity Utilization	56.9%	ICU Level of Service	B	
Analysis Period (min)	15			
c Critical Lane Group				

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	12	35	19	305	21	499	0	551	460	613	639	24
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.9		4.9	4.9	4.9		5.2		4.5	4.5	
Lane Util. Factor		1.00		0.95	0.91	0.95		0.95		0.97	0.95	
Frpb, ped/bikes		0.99		1.00	0.99	0.98		0.98		1.00	1.00	
Flpb, ped/bikes		1.00		1.00	1.00	1.00		1.00		1.00	1.00	
Frt		0.96		1.00	0.88	0.85		0.93		1.00	0.99	
Flt Protected		0.99		0.95	0.99	1.00		1.00		0.95	1.00	
Satd. Flow (prot)		1749		1681	1458	1478		3247		3433	3513	
Flt Permitted		0.99		0.95	0.99	1.00		1.00		0.95	1.00	
Satd. Flow (perm)		1749		1681	1458	1478		3247		3433	3513	
Peak-hour factor, PHF	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Adj. Flow (vph)	14	40	22	351	24	574	0	633	529	705	734	28
RTOR Reduction (vph)	0	15	0	0	158	248	0	153	0	0	3	0
Lane Group Flow (vph)	0	61	0	316	165	62	0	1009	0	705	759	0
Confl. Peds. (#/hr)			10						10			10
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Split	NA		Split	NA	Perm		NA		Prot	NA	
Protected Phases	7	7		8	8			2		1	6	
Permitted Phases						8						
Actuated Green, G (s)		6.0		20.0	20.0	20.0		32.9		21.6	59.7	
Effective Green, g (s)		6.0		20.0	20.0	20.0		32.9		21.6	59.7	
Actuated g/C Ratio		0.06		0.20	0.20	0.20		0.33		0.22	0.60	
Clearance Time (s)		4.9		4.9	4.9	4.9		5.2		4.5	4.5	
Vehicle Extension (s)		3.0		3.0	3.0	3.0		3.0		3.0	3.0	
Lane Grp Cap (vph)		104		336	291	295		1068		741	2097	
v/s Ratio Prot		c0.03		c0.19	0.11			c0.31		c0.21	0.22	
v/s Ratio Perm						0.04						
v/c Ratio		0.59		0.94	0.57	0.21		0.94		0.95	0.36	
Uniform Delay, d1		45.8		39.4	36.1	33.4		32.7		38.7	10.4	
Progression Factor		1.00		1.00	1.00	1.00		1.00		1.15	1.16	
Incremental Delay, d2		8.2		33.8	2.5	0.4		17.1		20.1	0.4	
Delay (s)		54.0		73.2	38.6	33.8		49.8		64.6	12.4	
Level of Service		D		E	D	C		D		E	B	
Approach Delay (s)		54.0			48.5			49.8			37.5	
Approach LOS		D			D			D			D	

Intersection Summary				
HCM 2000 Control Delay	44.6	HCM 2000 Level of Service	D	
HCM 2000 Volume to Capacity ratio	0.92			
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	19.5	
Intersection Capacity Utilization	80.9%	ICU Level of Service	D	
Analysis Period (min)	15			
c Critical Lane Group				

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	158	773	160	356	569	313	230	213	374	299	168	75
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.3		4.5	5.3		4.5	5.7	5.7	4.5	6.0	
Lane Util. Factor	1.00	0.95		0.97	0.95		0.97	0.95	1.00	0.97	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	0.99		1.00	1.00	0.99	1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.97		1.00	0.95		1.00	1.00	0.85	1.00	0.95	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3429		3433	3314		3433	3539	1561	3433	3340	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	3429		3433	3314		3433	3539	1561	3433	3340	
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	180	878	182	405	647	356	261	242	425	340	191	85
RTOR Reduction (vph)	0	19	0	0	83	0	0	0	55	0	57	0
Lane Group Flow (vph)	180	1041	0	405	920	0	261	242	370	340	219	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Prot	NA		Prot	NA		Prot	NA	custom	Prot	NA	
Protected Phases	5	2		1	6		3	8	8	7	4	
Permitted Phases									1			
Actuated Green, G (s)	10.5	29.2		13.1	31.8		9.5	15.7	28.8	10.7	16.6	
Effective Green, g (s)	10.5	29.2		13.1	31.8		9.5	15.7	28.8	10.7	16.6	
Actuated g/C Ratio	0.12	0.33		0.15	0.36		0.11	0.18	0.32	0.12	0.19	
Clearance Time (s)	4.5	5.3		4.5	5.3		4.5	5.7	5.7	4.5	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	209	1128		507	1188		367	626	607	414	625	
v/s Ratio Prot	0.10	c0.30		c0.12	c0.28		0.08	0.07	c0.11	c0.10	0.07	
v/s Ratio Perm									0.13			
v/c Ratio	0.86	0.92		0.80	0.77		0.71	0.39	0.61	0.82	0.35	
Uniform Delay, d1	38.4	28.7		36.5	25.3		38.3	32.2	25.2	38.1	31.4	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	28.5	12.3		8.6	3.2		6.4	0.4	1.7	12.3	0.3	
Delay (s)	66.9	40.9		45.1	28.5		44.7	32.6	26.9	50.4	31.7	
Level of Service	E	D		D	C		D	C	C	D	C	
Approach Delay (s)		44.7			33.3			33.4			42.0	
Approach LOS		D			C			C			D	

Intersection Summary				
HCM 2000 Control Delay	38.0	HCM 2000 Level of Service	D	
HCM 2000 Volume to Capacity ratio	0.84			
Actuated Cycle Length (s)	88.7	Sum of lost time (s)	20.3	
Intersection Capacity Utilization	72.3%	ICU Level of Service	C	
Analysis Period (min)	15			
c Critical Lane Group				

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	22	1332	92	25	1063	10	157	0	65	7	0	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.3		4.5	5.3		4.9	4.9			4.9	4.9
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00			1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.97			1.00	0.97
Flpb, ped/bikes	1.00	1.00		1.00	1.00		0.99	1.00			0.99	1.00
Frt	1.00	0.99		1.00	1.00		1.00	0.85			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00			0.95	1.00
Satd. Flow (prot)	1770	3494		1770	3533		1745	1534			1747	1534
Flt Permitted	0.95	1.00		0.95	1.00		0.75	1.00			0.71	1.00
Satd. Flow (perm)	1770	3494		1770	3533		1382	1534			1300	1534
Peak-hour factor, PHF	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Adj. Flow (vph)	26	1586	110	30	1265	12	187	0	77	8	0	12
RTOR Reduction (vph)	0	5	0	0	1	0	0	61	0	0	0	10
Lane Group Flow (vph)	26	1691	0	30	1276	0	187	16	0	0	8	2
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	Perm
Protected Phases	5	2		1	6			4			4	
Permitted Phases							4			4		4
Actuated Green, G (s)	1.9	43.6		1.6	43.3		15.7	15.7			15.7	15.7
Effective Green, g (s)	1.9	43.6		1.6	43.3		15.7	15.7			15.7	15.7
Actuated g/C Ratio	0.03	0.58		0.02	0.57		0.21	0.21			0.21	0.21
Clearance Time (s)	4.5	5.3		4.5	5.3		4.9	4.9			4.9	4.9
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0			3.0	3.0
Lane Grp Cap (vph)	44	2015		37	2023		287	318			269	318
v/s Ratio Prot	0.01	c0.48		c0.02	0.36			0.01				
v/s Ratio Perm							c0.14				0.01	0.00
v/c Ratio	0.59	0.84		0.81	0.63		0.65	0.05			0.03	0.01
Uniform Delay, d1	36.5	13.1		36.8	10.8		27.4	24.0			23.9	23.8
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00			1.00	1.00
Incremental Delay, d2	19.5	3.2		76.5	0.6		5.2	0.1			0.0	0.0
Delay (s)	55.9	16.4		113.3	11.5		32.7	24.0			23.9	23.8
Level of Service	E	B		F	B		C	C			C	C
Approach Delay (s)		17.0			13.8			30.2			23.8	
Approach LOS		B			B			C			C	

Intersection Summary				
HCM 2000 Control Delay	16.8	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.79			
Actuated Cycle Length (s)	75.6	Sum of lost time (s)	14.7	
Intersection Capacity Utilization	63.7%	ICU Level of Service	B	
Analysis Period (min)	15			
c Critical Lane Group				

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	37	1073	277	55	767	11	191	4	59	15	8	111
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.4		4.5	5.3			4.9			4.9	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	
Frpb, ped/bikes	1.00	0.99		1.00	1.00			0.99			0.98	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			0.99			1.00	
Frt	1.00	0.97		1.00	1.00			0.97			0.89	
Flt Protected	0.95	1.00		0.95	1.00			0.96			0.99	
Satd. Flow (prot)	1770	3397		1770	3529			1714			1607	
Flt Permitted	0.95	1.00		0.95	1.00			0.66			0.95	
Satd. Flow (perm)	1770	3397		1770	3529			1181			1538	
Peak-hour factor, PHF	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Adj. Flow (vph)	44	1262	326	65	902	13	225	5	69	18	9	131
RTOR Reduction (vph)	0	27	0	0	1	0	0	14	0	0	95	0
Lane Group Flow (vph)	44	1561	0	65	914	0	0	285	0	0	63	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8			4		
Actuated Green, G (s)	3.6	38.0		3.3	37.8			21.1			21.1	
Effective Green, g (s)	3.6	38.0		3.3	37.8			21.1			21.1	
Actuated g/C Ratio	0.05	0.49		0.04	0.49			0.27			0.27	
Clearance Time (s)	4.5	5.4		4.5	5.3			4.9			4.9	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	82	1672		75	1727			322			420	
v/s Ratio Prot	0.02	c0.46		c0.04	0.26							
v/s Ratio Perm								c0.24			0.04	
v/c Ratio	0.54	0.93		0.87	0.53			0.89			0.15	
Uniform Delay, d1	36.0	18.4		36.7	13.6			26.9			21.3	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	6.6	11.1		60.4	1.2			23.9			0.2	
Delay (s)	42.6	29.5		97.1	14.7			50.8			21.4	
Level of Service	D	C		F	B			D			C	
Approach Delay (s)		29.8			20.2			50.8			21.4	
Approach LOS		C			C			D			C	

Intersection Summary				
HCM 2000 Control Delay	28.4	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.91			
Actuated Cycle Length (s)	77.2	Sum of lost time (s)	14.8	
Intersection Capacity Utilization	75.5%	ICU Level of Service	D	
Analysis Period (min)	15			
c Critical Lane Group				

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	49	721	398	178	529	32	285	13	158	69	48	41
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.2	5.2	4.5	5.2		5.0	5.0	5.0	4.9	4.9	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		0.95	0.95	1.00	1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.95	1.00	1.00		1.00	1.00	0.97	1.00	0.98	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85	1.00	0.93	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	0.96	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3539	1503	1770	3499		1681	1692	1530	1770	1705	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	0.96	1.00	0.95	1.00	
Satd. Flow (perm)	1770	3539	1503	1770	3499		1681	1692	1530	1770	1705	
Peak-hour factor, PHF	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
Adj. Flow (vph)	61	901	498	222	661	40	356	16	198	86	60	51
RTOR Reduction (vph)	0	0	221	0	4	0	0	0	166	0	36	0
Lane Group Flow (vph)	61	901	277	222	697	0	185	187	32	86	75	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Prot	NA	Perm	Prot	NA		Split	NA	Perm	Split	NA	
Protected Phases	5	2		1	6		8	8		7	7	
Permitted Phases			2						8			
Actuated Green, G (s)	5.6	27.1	27.1	12.4	33.9		13.3	13.3	13.3	9.3	9.3	
Effective Green, g (s)	5.6	27.1	27.1	12.4	33.9		13.3	13.3	13.3	9.3	9.3	
Actuated g/C Ratio	0.07	0.33	0.33	0.15	0.41		0.16	0.16	0.16	0.11	0.11	
Clearance Time (s)	4.5	5.2	5.2	4.5	5.2		5.0	5.0	5.0	4.9	4.9	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	121	1173	498	268	1451		273	275	249	201	194	
v/s Ratio Prot	0.03	c0.25		c0.13	0.20		0.11	c0.11		c0.05	0.04	
v/s Ratio Perm			0.18						0.02			
v/c Ratio	0.50	0.77	0.56	0.83	0.48		0.68	0.68	0.13	0.43	0.38	
Uniform Delay, d1	36.7	24.5	22.4	33.6	17.5		32.2	32.2	29.2	33.7	33.5	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	3.3	4.9	4.4	18.6	0.3		6.5	6.7	0.2	1.5	1.3	
Delay (s)	40.0	29.3	26.8	52.2	17.7		38.7	38.9	29.5	35.2	34.8	
Level of Service	D	C	C	D	B		D	D	C	D	C	
Approach Delay (s)		28.9			26.0			35.6			35.0	
Approach LOS		C			C			D			C	

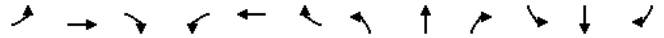
Intersection Summary				
HCM 2000 Control Delay	29.7	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.71			
Actuated Cycle Length (s)	81.7	Sum of lost time (s)	19.6	
Intersection Capacity Utilization	56.9%	ICU Level of Service	B	
Analysis Period (min)	15			
c Critical Lane Group				

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	664	287	306	552	132	232
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.2	5.2	4.5	4.5	5.5	5.5
Lane Util. Factor	0.95	1.00	0.97	0.95	0.97	1.00
Frpb, ped/bikes	1.00	0.99	1.00	1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	3539	1566	3433	3539	3433	1541
Flt Permitted	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)	3539	1566	3433	3539	3433	1541
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	722	312	333	600	143	252
RTOR Reduction (vph)	0	27	0	0	0	184
Lane Group Flow (vph)	722	285	333	600	143	68
Confl. Peds. (#/hr)		10	10		10	10
Confl. Bikes (#/hr)		5				5
Turn Type	NA	custom	Prot	NA	Prot	Perm
Protected Phases	2	2	1	6	8	
Permitted Phases		8				8
Actuated Green, G (s)	19.3	35.3	9.2	33.7	16.0	16.0
Effective Green, g (s)	19.3	35.3	9.2	33.7	16.0	16.0
Actuated g/C Ratio	0.32	0.59	0.15	0.56	0.27	0.27
Clearance Time (s)	5.2	5.2	4.5	4.5	5.5	5.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	1144	1062	529	1997	920	412
v/s Ratio Prot	c0.20	c0.09	c0.10	0.17	0.04	
v/s Ratio Perm		0.10				0.04
v/c Ratio	0.63	0.27	0.63	0.30	0.16	0.16
Uniform Delay, d1	17.2	5.9	23.7	6.8	16.7	16.7
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	2.6	0.6	2.3	0.1	0.4	0.9
Delay (s)	19.8	6.5	26.0	6.9	17.0	17.6
Level of Service	B	A	C	A	B	B
Approach Delay (s)	15.8			13.7	17.4	
Approach LOS	B			B	B	

Intersection Summary				
HCM 2000 Control Delay	15.3	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.52			
Actuated Cycle Length (s)	59.7	Sum of lost time (s)	15.2	
Intersection Capacity Utilization	53.1%	ICU Level of Service	A	
Analysis Period (min)	15			
c Critical Lane Group				

Movement	EBU	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations							
Volume (vph)	21	922	108	135	836	115	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5		4.5	4.5	4.5	4.5
Lane Util. Factor	1.00	0.95		0.97	0.95	0.97	0.88
Frpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	0.95
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00
Frt	1.00	0.98		1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	0.95	1.00
Satd. Flow (prot)	1770	3473		3433	3539	3433	2643
Flt Permitted	0.95	1.00		0.95	1.00	0.95	1.00
Satd. Flow (perm)	1770	3473		3433	3539	3433	2643
Peak-hour factor, PHF	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Adj. Flow (vph)	24	1072	126	157	972	134	47
RTOR Reduction (vph)	0	10	0	0	0	0	37
Lane Group Flow (vph)	24	1188	0	157	972	134	10
Confl. Peds. (#/hr)			10	10		10	10
Confl. Bikes (#/hr)			5				5
Turn Type	Prot	NA		Prot	NA	Prot	Perm
Protected Phases	5	2		1	6	8	
Permitted Phases							8
Actuated Green, G (s)	1.6	36.6		8.8	43.8	16.1	16.1
Effective Green, g (s)	1.6	36.6		8.8	43.8	16.1	16.1
Actuated g/C Ratio	0.02	0.49		0.12	0.58	0.21	0.21
Clearance Time (s)	4.5	4.5		4.5	4.5	4.5	4.5
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	37	1694		402	2066	736	567
v/s Ratio Prot	0.01	c0.34		c0.05	c0.27	c0.04	
v/s Ratio Perm							0.00
v/c Ratio	0.65	0.70		0.39	0.47	0.18	0.02
Uniform Delay, d1	36.4	14.9		30.6	8.9	24.1	23.2
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2	33.0	2.4		0.6	0.8	0.5	0.1
Delay (s)	69.4	17.4		31.2	9.7	24.6	23.3
Level of Service	E	B		C	A	C	C
Approach Delay (s)		18.4			12.7	24.3	
Approach LOS		B			B	C	

Intersection Summary				
HCM 2000 Control Delay	16.3	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.52			
Actuated Cycle Length (s)	75.0	Sum of lost time (s)	13.5	
Intersection Capacity Utilization	57.5%	ICU Level of Service	B	
Analysis Period (min)	15			
c Critical Lane Group				



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	3	0	0	1	0	6	0	216	0	11	102	3
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Hourly flow rate (vph)	4	0	0	1	0	7	0	257	0	13	121	4
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)											142	
pX, platoon unblocked												
vC, conflicting volume	414	407	123	407	408	257	125			257		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	414	407	123	407	408	257	125			257		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	99	100	100	100	100	99	100			99		
cM capacity (veh/h)	540	528	928	551	527	781	1462			1308		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	4	8	257	138
Volume Left	4	1	0	13
Volume Right	0	7	0	4
cSH	540	737	1462	1308
Volume to Capacity	0.01	0.01	0.00	0.01
Queue Length 95th (ft)	0	1	0	1
Control Delay (s)	11.7	9.9	0.0	0.8
Lane LOS	B	A		A
Approach Delay (s)	11.7	9.9	0.0	0.8
Approach LOS	B	A		

Intersection Summary				
Average Delay	0.6			
Intersection Capacity Utilization	24.7%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	3	67	111	0	18	42
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.60	0.60	0.60	0.60	0.60	0.60
Hourly flow rate (vph)	5	112	185	0	30	70
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						635
pX, platoon unblocked						
vC, conflicting volume	315	185			185	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	315	185			185	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	99	87			98	
cM capacity (veh/h)	663	857			1390	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	117	185	100
Volume Left	5	0	30
Volume Right	112	0	0
cSH	847	1700	1390
Volume to Capacity	0.14	0.11	0.02
Queue Length 95th (ft)	12	0	2
Control Delay (s)	9.9	0.0	2.4
Lane LOS	A		A
Approach Delay (s)	9.9	0.0	2.4
Approach LOS	A		

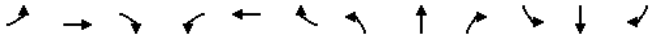
Intersection Summary			
Average Delay		3.5	
Intersection Capacity Utilization		20.9%	ICU Level of Service A
Analysis Period (min)		15	

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	216	31	425	265	547	14
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.1	4.7	4.7	5.8	5.8	
Lane Util. Factor	0.97	1.00	1.00	0.95	0.95	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.85	1.00	1.00	1.00	
Flt Protected	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	3433	1583	1770	3539	3522	
Flt Permitted	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (perm)	3433	1583	1770	3539	3522	
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	243	35	478	298	615	16
RTOR Reduction (vph)	0	13	0	0	2	0
Lane Group Flow (vph)	243	22	478	298	629	0
Confl. Peds. (#/hr)						10
Confl. Bikes (#/hr)						5
Turn Type	Prot	pm+ov	Prot	NA	NA	
Protected Phases	4	5	5	2	6	
Permitted Phases		4				
Actuated Green, G (s)	10.1	32.6	22.5	48.2	21.0	
Effective Green, g (s)	10.1	32.6	22.5	48.2	21.0	
Actuated g/C Ratio	0.15	0.47	0.33	0.70	0.30	
Clearance Time (s)	5.1	4.7	4.7	5.8	5.8	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	501	745	575	2465	1068	
v/s Ratio Prot	c0.07	0.01	c0.27	0.08	c0.18	
v/s Ratio Perm		0.00				
v/c Ratio	0.49	0.03	0.83	0.12	0.59	
Uniform Delay, d1	27.2	9.8	21.6	3.5	20.4	
Progression Factor	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.7	0.0	9.9	0.1	2.4	
Delay (s)	27.9	9.8	31.5	3.6	22.8	
Level of Service	C	A	C	A	C	
Approach Delay (s)	25.6			20.8	22.8	
Approach LOS	C			C	C	

Intersection Summary			
HCM 2000 Control Delay	22.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	69.2	Sum of lost time (s)	15.6
Intersection Capacity Utilization	58.3%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

3:15-4:15 PM Year 2017 + Cumulative
30: Convoy/Mercury & Armour St/SR-163 SB Ramp

HCM Signalized Intersection Capacity Analysis

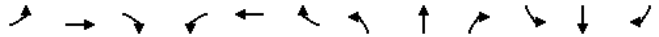


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	128	113	24	269	51	168	20	371	188	176	387	105
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.1			5.1	5.1	4.7	5.5	5.5	4.7	5.5	
Lane Util. Factor		1.00			1.00	1.00	1.00	0.95	1.00	1.00	0.95	
Frpb, ped/bikes		1.00			1.00	0.97	1.00	1.00	0.95	1.00	0.99	
Flpb, ped/bikes		1.00			1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt		0.99			1.00	0.85	1.00	1.00	0.85	1.00	0.97	
Flt Protected		0.98			0.96	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1791			1788	1531	1770	3539	1497	1770	3388	
Flt Permitted		0.98			0.96	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)		1791			1788	1531	1770	3539	1497	1770	3388	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	132	116	25	277	53	173	21	382	194	181	399	108
RTOR Reduction (vph)	0	4	0	0	0	135	0	0	151	0	24	0
Lane Group Flow (vph)	0	269	0	0	330	38	21	382	43	181	483	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Split	NA		Split	NA	Perm	Prot	NA	Perm	Prot	NA	
Protected Phases	4	4		3	3		5	2		1	6	
Permitted Phases						3			2			
Actuated Green, G (s)		16.6			19.1	19.1	2.0	19.1	19.1	11.6	28.7	
Effective Green, g (s)		16.6			19.1	19.1	2.0	19.1	19.1	11.6	28.7	
Actuated g/C Ratio		0.19			0.22	0.22	0.02	0.22	0.22	0.13	0.33	
Clearance Time (s)		5.1			5.1	5.1	4.7	5.5	5.5	4.7	5.5	
Vehicle Extension (s)		3.0			3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)		342			393	336	40	778	329	236	1120	
v/s Ratio Prot		c0.15			c0.18		0.01	c0.11		c0.10	0.14	
v/s Ratio Perm						0.02			0.03			
v/c Ratio		0.79			0.84	0.11	0.53	0.49	0.13	0.77	0.43	
Uniform Delay, d1		33.4			32.4	27.1	41.9	29.6	27.2	36.3	22.7	
Progression Factor		1.00			1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2		11.3			14.5	0.2	11.9	2.2	0.8	13.8	1.2	
Delay (s)		44.7			46.9	27.2	53.8	31.8	28.0	50.1	23.9	
Level of Service		D			D	C	D	C	C	D	C	
Approach Delay (s)		44.7			40.1			31.3			30.8	
Approach LOS		D			D			C			C	

Intersection Summary				
HCM 2000 Control Delay	35.1	HCM 2000 Level of Service	D	
HCM 2000 Volume to Capacity ratio	0.71			
Actuated Cycle Length (s)	86.8	Sum of lost time (s)	20.4	
Intersection Capacity Utilization	64.7%	ICU Level of Service	C	
Analysis Period (min)	15			
c Critical Lane Group				

3:15-4:15 PM Year 2017 + Cumulative
31: Convoy St & Ostrow St/Kearny Mesa Rd

HCM Signalized Intersection Capacity Analysis



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	49	91	85	404	42	32	79	729	224	35	723	28
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.9	4.9	4.5	4.9		4.5	5.3		4.5	5.0	
Lane Util. Factor	1.00	1.00	1.00	0.97	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	1.00	0.85	1.00	0.94		1.00	0.96		1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1863	1583	3433	1742		1770	3414		1770	3519	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	1863	1583	3433	1742		1770	3414		1770	3519	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	54	100	93	444	46	35	87	801	246	38	795	31
RTOR Reduction (vph)	0	0	82	0	27	0	0	25	0	0	2	0
Lane Group Flow (vph)	54	100	11	444	54	0	87	1022	0	38	824	0
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4									
Actuated Green, G (s)	6.7	11.6	11.6	17.3	22.2		8.5	47.3		4.6	43.7	
Effective Green, g (s)	6.7	11.6	11.6	17.3	22.2		8.5	47.3		4.6	43.7	
Actuated g/C Ratio	0.07	0.12	0.12	0.17	0.22		0.08	0.47		0.05	0.44	
Clearance Time (s)	4.5	4.9	4.9	4.5	4.9		4.5	5.3		4.5	5.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	118	216	183	593	386		150	1614		81	1537	
v/s Ratio Prot	0.03	c0.05		c0.13	0.03		c0.05	c0.30		0.02	0.23	
v/s Ratio Perm			0.01									
v/c Ratio	0.46	0.46	0.06	0.75	0.14		0.58	0.63		0.47	0.54	
Uniform Delay, d1	44.9	41.3	39.3	39.3	31.2		44.0	19.8		46.5	20.7	
Progression Factor	1.00	1.00	1.00	1.00	1.00		0.93	1.33		1.00	1.00	
Incremental Delay, d2	2.8	1.6	0.1	5.2	0.2		3.2	1.1		4.2	1.3	
Delay (s)	47.7	42.9	39.5	44.4	31.4		44.0	27.4		50.8	22.0	
Level of Service	D	D	D	D	C		D	C		D	C	
Approach Delay (s)		42.6			42.4			28.7			23.3	
Approach LOS		D			D			C			C	

Intersection Summary				
HCM 2000 Control Delay	30.9	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.64			
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	19.2	
Intersection Capacity Utilization	61.1%	ICU Level of Service	B	
Analysis Period (min)	15			
c Critical Lane Group				

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	457	0	0	797	359	242
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.1			5.1	5.1	5.1
Lane Util. Factor	0.95			0.95	0.97	0.91
Frt	1.00			1.00	0.98	0.85
Flt Protected	1.00			1.00	0.96	1.00
Satd. Flow (prot)	3539			3539	3394	1441
Flt Permitted	1.00			1.00	0.96	1.00
Satd. Flow (perm)	3539			3539	3394	1441
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	476	0	0	830	374	252
RTOR Reduction (vph)	0	0	0	0	17	155
Lane Group Flow (vph)	476	0	0	830	415	39
Turn Type	NA			NA	Prot	Perm
Protected Phases	2			6	4	
Permitted Phases						4
Actuated Green, G (s)	13.9			21.6	12.9	12.9
Effective Green, g (s)	13.9			21.6	12.9	12.9
Actuated g/C Ratio	0.22			0.34	0.20	0.20
Clearance Time (s)	5.1			5.1	5.1	5.1
Vehicle Extension (s)	3.0			3.0	3.0	3.0
Lane Grp Cap (vph)	772			1200	687	291
v/s Ratio Prot	c0.13			c0.23	c0.12	
v/s Ratio Perm						0.03
v/c Ratio	0.62			0.69	0.60	0.14
Uniform Delay, d1	22.5			18.2	23.1	20.8
Progression Factor	1.00			1.00	1.00	1.00
Incremental Delay, d2	1.5			1.7	1.5	0.2
Delay (s)	24.0			19.9	24.6	21.0
Level of Service	C			B	C	C
Approach Delay (s)	24.0			19.9	23.5	
Approach LOS	C			B	C	

Intersection Summary				
HCM 2000 Control Delay	22.1	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.65			
Actuated Cycle Length (s)	63.7	Sum of lost time (s)	15.3	
Intersection Capacity Utilization	43.3%	ICU Level of Service	A	
Analysis Period (min)	15			
c Critical Lane Group				

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	100	516	68	313	620	13	121	40	262	18	13	53
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.9	4.0	4.5	4.9		4.9	4.9	4.9		4.9	4.9
Lane Util. Factor	1.00	0.95	1.00	0.97	0.95		1.00	0.95	0.95		1.00	1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	0.98	0.97		1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00		1.00	0.89	0.85		1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00		0.97	1.00
Satd. Flow (prot)	1770	3539	1583	3433	3524		1770	1541	1461		1811	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00		0.97	1.00
Satd. Flow (perm)	1770	3539	1583	3433	3524		1770	1541	1461		1811	1583
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	104	538	71	326	646	14	126	42	273	19	14	55
RTOR Reduction (vph)	0	0	0	0	2	0	0	0	0	0	0	0
Lane Group Flow (vph)	104	538	71	326	658	0	126	159	156	0	33	55
Confl. Peds. (#/hr)						10			10			
Confl. Bikes (#/hr)						5			5			
Turn Type	Prot	NA	Free	Prot	NA		Split	NA	Perm	Split	NA	Perm
Protected Phases	5	2		1	6		3	3		4	4	
Permitted Phases			Free						3			4
Actuated Green, G (s)	4.5	17.3	67.7	8.6	21.4		16.1	16.1	16.1		6.5	6.5
Effective Green, g (s)	4.5	17.3	67.7	8.6	21.4		16.1	16.1	16.1		6.5	6.5
Actuated g/C Ratio	0.07	0.26	1.00	0.13	0.32		0.24	0.24	0.24		0.10	0.10
Clearance Time (s)	4.5	4.9		4.5	4.9		4.9	4.9	4.9		4.9	4.9
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	117	904	1583	436	1113		420	366	347		173	151
v/s Ratio Prot	0.06	0.15		c0.09	c0.19		0.07	0.10			0.02	
v/s Ratio Perm			0.04						c0.11			c0.03
v/c Ratio	0.89	0.60	0.04	0.75	0.59		0.30	0.43	0.45		0.19	0.36
Uniform Delay, d1	31.4	22.1	0.0	28.5	19.5		21.2	21.9	22.0		28.2	28.7
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	49.8	2.9	0.1	6.9	0.8		1.8	3.7	4.2		0.5	1.5
Delay (s)	81.2	25.0	0.1	35.4	20.3		23.0	25.7	26.2		28.7	30.2
Level of Service	F	C	A	D	C		C	C	C		C	C
Approach Delay (s)		30.7			25.3			25.1			29.6	
Approach LOS		C			C			C			C	

Intersection Summary				
HCM 2000 Control Delay	27.2	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.56			
Actuated Cycle Length (s)	67.7	Sum of lost time (s)	19.2	
Intersection Capacity Utilization	51.8%	ICU Level of Service	A	
Analysis Period (min)	15			
c Critical Lane Group				

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	11	430	723	284	962	72	0	0	0	43	68	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.7	5.1		4.7	5.1						5.5	
Lane Util. Factor	1.00	0.95		1.00	0.95						1.00	
Frpb, ped/bikes	1.00	0.99		1.00	1.00						1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00						1.00	
Frt	1.00	0.91		1.00	0.99						0.99	
Flt Protected	0.95	1.00		0.95	1.00						0.98	
Satd. Flow (prot)	1761	3161		1770	3491						1799	
Flt Permitted	0.95	1.00		0.95	1.00						0.98	
Satd. Flow (perm)	1761	3161		1770	3491						1799	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	12	462	777	305	1034	77	0	0	0	46	73	14
RTOR Reduction (vph)	0	266	0	0	6	0	0	0	0	0	6	0
Lane Group Flow (vph)	12	973	0	305	1105	0	0	0	0	0	127	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Prot	NA		Prot	NA					Split	NA	
Protected Phases	5	2		1	6					4	4	
Permitted Phases												
Actuated Green, G (s)	0.8	29.6		15.3	44.1						16.1	
Effective Green, g (s)	0.8	29.6		15.3	44.1						16.1	
Actuated g/C Ratio	0.01	0.39		0.20	0.58						0.21	
Clearance Time (s)	4.7	5.1		4.7	5.1						5.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0						3.0	
Lane Grp Cap (vph)	18	1226		354	2017						379	
v/s Ratio Prot	0.01	c0.31		c0.17	0.32						c0.07	
v/s Ratio Perm												
v/c Ratio	0.67	0.93dr		0.86	0.55						0.34	
Uniform Delay, d1	37.6	20.7		29.5	9.9						25.6	
Progression Factor	1.00	1.00		1.00	1.00						1.00	
Incremental Delay, d2	66.1	3.6		18.9	0.3						2.4	
Delay (s)	103.7	24.3		48.3	10.2						28.0	
Level of Service	F	C		D	B						C	
Approach Delay (s)		25.0			18.5			0.0			28.0	
Approach LOS		C			B			A			C	

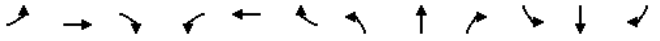
Intersection Summary				
HCM 2000 Control Delay	21.8	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.69			
Actuated Cycle Length (s)	76.3	Sum of lost time (s)	15.3	
Intersection Capacity Utilization	77.8%	ICU Level of Service	D	
Analysis Period (min)	15			

dr Defacto Right Lane. Recode with 1 though lane as a right lane.
c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	466	0	0	656	671	246
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.5			5.5	4.5	5.5
Lane Util. Factor	0.95			0.95	0.97	1.00
Frpb, ped/bikes	1.00			1.00	1.00	0.98
Flpb, ped/bikes	1.00			1.00	1.00	1.00
Frt	1.00			1.00	1.00	0.85
Flt Protected	1.00			1.00	0.95	1.00
Satd. Flow (prot)	3539			3539	3433	1549
Flt Permitted	1.00			1.00	0.95	1.00
Satd. Flow (perm)	3539			3539	3433	1549
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	496	0	0	698	714	262
RTOR Reduction (vph)	0	0	0	0	0	154
Lane Group Flow (vph)	496	0	0	698	714	108
Confl. Peds. (#/hr)						10
Confl. Bikes (#/hr)						5
Turn Type	NA			NA	Prot	Perm
Protected Phases	2			6	4	
Permitted Phases						6
Actuated Green, G (s)	17.7			17.7	15.2	17.7
Effective Green, g (s)	17.7			17.7	15.2	17.7
Actuated g/C Ratio	0.41			0.41	0.35	0.41
Clearance Time (s)	5.5			5.5	4.5	5.5
Vehicle Extension (s)	3.0			3.0	3.0	3.0
Lane Grp Cap (vph)	1460			1460	1216	639
v/s Ratio Prot	0.14			c0.20	c0.21	
v/s Ratio Perm						0.07
v/c Ratio	0.34			0.48	0.59	0.17
Uniform Delay, d1	8.6			9.2	11.3	8.0
Progression Factor	1.00			1.00	1.00	1.00
Incremental Delay, d2	0.1			0.2	0.7	0.1
Delay (s)	8.7			9.5	12.0	8.1
Level of Service	A			A	B	A
Approach Delay (s)	8.7			9.5	11.0	
Approach LOS	A			A	B	

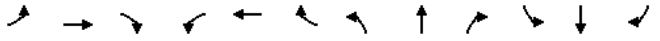
Intersection Summary				
HCM 2000 Control Delay	10.0	HCM 2000 Level of Service	A	
HCM 2000 Volume to Capacity ratio	0.53			
Actuated Cycle Length (s)	42.9	Sum of lost time (s)	10.0	
Intersection Capacity Utilization	45.6%	ICU Level of Service	A	
Analysis Period (min)	15			

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	10	46	23	447	4	471	0	545	491	824	1069	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.9		4.9	4.9	4.9		5.2		4.5	4.5	
Lane Util. Factor		1.00		0.95	0.91	0.95		0.95		0.97	0.95	
Frpb, ped/bikes		0.99		1.00	0.99	0.98		0.98		1.00	1.00	
Flpb, ped/bikes		1.00		1.00	1.00	1.00		1.00		1.00	1.00	
Frt		0.96		1.00	0.91	0.85		0.93		1.00	1.00	
Flt Protected		0.99		0.95	0.98	1.00		1.00		0.95	1.00	
Satd. Flow (prot)		1752		1681	1502	1479		3229		3433	3536	
Flt Permitted		0.99		0.95	0.98	1.00		1.00		0.95	1.00	
Satd. Flow (perm)		1752		1681	1502	1479		3229		3433	3536	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	10	47	24	461	4	486	0	562	506	849	1102	5
RTOR Reduction (vph)	0	14	0	0	38	226	0	137	0	0	0	0
Lane Group Flow (vph)	0	67	0	332	280	75	0	931	0	849	1107	0
Confl. Peds. (#/hr)			10						10			10
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Split	NA		Split	NA	Perm		NA		Prot	NA	
Protected Phases	7	7		8	8			2		1	6	
Permitted Phases						8						
Actuated Green, G (s)		8.8		29.8	29.8	29.8		33.8		28.1	67.1	
Effective Green, g (s)		8.8		29.8	29.8	29.8		33.8		28.1	67.1	
Actuated g/C Ratio		0.07		0.25	0.25	0.25		0.28		0.23	0.56	
Clearance Time (s)		4.9		4.9	4.9	4.9		5.2		4.5	4.5	
Vehicle Extension (s)		3.0		3.0	3.0	3.0		3.0		3.0	3.0	
Lane Grp Cap (vph)		128		417	372	367		909		803	1977	
v/s Ratio Prot		c0.04		c0.20	0.19			c0.29		c0.25	0.31	
v/s Ratio Perm						0.05						
v/c Ratio		0.52		0.80	0.75	0.20		1.02		1.06	0.56	
Uniform Delay, d1		53.6		42.3	41.7	35.7		43.1		46.0	17.0	
Progression Factor		1.00		1.00	1.00	1.00		1.00		1.00	1.00	
Incremental Delay, d2		3.8		10.1	8.3	0.3		36.1		48.0	1.2	
Delay (s)		57.4		52.4	50.0	36.0		79.2		93.9	18.1	
Level of Service		E		D	D	D		E		F	B	
Approach Delay (s)		57.4			46.4			79.2			51.0	
Approach LOS		E			D			E			D	

Intersection Summary			
HCM 2000 Control Delay	57.5	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.92		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	19.5
Intersection Capacity Utilization	90.9%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	142	1001	205	268	611	334	203	272	413	746	346	143
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.3		4.5	5.3		4.5	5.7	4.5	4.5	6.0	
Lane Util. Factor	1.00	0.95		0.97	0.95		0.97	0.95	1.00	0.97	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	0.99		1.00	1.00	0.98	1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.97		1.00	0.95		1.00	1.00	0.85	1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3426		3433	3306		3433	3539	1553	3433	3344	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	3426		3433	3306		3433	3539	1553	3433	3344	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	148	1043	214	279	636	348	211	283	430	777	360	149
RTOR Reduction (vph)	0	13	0	0	55	0	0	0	73	0	35	0
Lane Group Flow (vph)	148	1244	0	279	929	0	211	283	357	777	474	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Prot	NA		Prot	NA		Prot	NA	pm+ov	Prot	NA	
Protected Phases	5	2		1	6		3	8	1	7	4	
Permitted Phases									8			
Actuated Green, G (s)	14.5	48.1		15.6	49.2		12.3	14.5	30.1	29.5	31.4	
Effective Green, g (s)	14.5	48.1		15.6	49.2		12.3	14.5	30.1	29.5	31.4	
Actuated g/C Ratio	0.11	0.38		0.12	0.39		0.10	0.11	0.24	0.23	0.25	
Clearance Time (s)	4.5	5.3		4.5	5.3		4.5	5.7	4.5	4.5	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	200	1290		419	1273		330	401	366	793	822	
v/s Ratio Prot	0.08	c0.36		0.08	0.28		0.06	0.08	c0.12	c0.23	0.14	
v/s Ratio Perm									0.11			
v/c Ratio	0.74	0.96		0.67	0.73		0.64	0.71	0.98	0.98	0.58	
Uniform Delay, d1	54.8	39.0		53.6	33.6		55.6	54.5	48.4	48.8	42.3	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	13.4	17.1		4.0	2.1		4.0	5.6	40.4	26.7	1.0	
Delay (s)	68.2	56.0		57.5	35.7		59.6	60.1	88.8	75.5	43.3	
Level of Service	E	E		E	D		E	E	F	E	D	
Approach Delay (s)		57.3			40.5			73.4			62.7	
Approach LOS		E			D			E			E	

Intersection Summary			
HCM 2000 Control Delay	57.4	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.97		
Actuated Cycle Length (s)	127.7	Sum of lost time (s)	20.3
Intersection Capacity Utilization	94.2%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	7	1997	159	56	1057	10	132	1	46	43	2	12
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.3		4.5	5.3		4.9	4.9			4.9	4.9
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00			1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.97			1.00	0.97
Flpb, ped/bikes	0.99	1.00		1.00	1.00		0.98	1.00			0.99	1.00
Frt	1.00	0.99		1.00	1.00		1.00	0.85			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00			0.95	1.00
Satd. Flow (prot)	1760	3487		1770	3532		1743	1535			1752	1528
Flt Permitted	0.95	1.00		0.95	1.00		0.73	1.00			0.72	1.00
Satd. Flow (perm)	1760	3487		1770	3532		1332	1535			1313	1528
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	7	2102	167	59	1113	11	139	1	48	45	2	13
RTOR Reduction (vph)	0	5	0	0	1	0	0	40	0	0	0	11
Lane Group Flow (vph)	7	2264	0	59	1123	0	139	9	0	0	47	2
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	Perm
Protected Phases	5	2		1	6			4			4	
Permitted Phases							4			4		4
Actuated Green, G (s)	0.6	55.5		2.5	57.4		13.9	13.9			13.9	13.9
Effective Green, g (s)	0.6	55.5		2.5	57.4		13.9	13.9			13.9	13.9
Actuated g/C Ratio	0.01	0.64		0.03	0.66		0.16	0.16			0.16	0.16
Clearance Time (s)	4.5	5.3		4.5	5.3		4.9	4.9			4.9	4.9
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0			3.0	3.0
Lane Grp Cap (vph)	12	2234		51	2341		213	246			210	245
v/s Ratio Prot	0.00	c0.65		c0.03	0.32			0.01				
v/s Ratio Perm							c0.10				0.04	0.00
v/c Ratio	0.58	1.01		1.16	0.48		0.65	0.04			0.22	0.01
Uniform Delay, d1	42.9	15.5		42.0	7.2		34.1	30.7			31.7	30.6
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00			1.00	1.00
Incremental Delay, d2	56.2	22.4		175.4	0.2		7.0	0.1			0.5	0.0
Delay (s)	99.1	37.9		217.4	7.4		41.1	30.7			32.2	30.6
Level of Service	F	D		F	A		D	C			C	C
Approach Delay (s)		38.1			17.9			38.4			31.8	
Approach LOS		D			B			D			C	

Intersection Summary				
HCM 2000 Control Delay	31.6	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.95			
Actuated Cycle Length (s)	86.6	Sum of lost time (s)	14.7	
Intersection Capacity Utilization	82.8%	ICU Level of Service	E	
Analysis Period (min)	15			
c Critical Lane Group				

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	46	1695	326	37	897	5	149	3	54	12	5	91
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.4		4.5	5.3			4.9			4.9	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	
Frpb, ped/bikes	1.00	0.99		1.00	1.00			0.99			0.97	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			0.99			1.00	
Frt	1.00	0.98		1.00	1.00			0.96			0.89	
Flt Protected	0.95	1.00		0.95	1.00			0.97			0.99	
Satd. Flow (prot)	1770	3425		1770	3535			1702			1595	
Flt Permitted	0.95	1.00		0.95	1.00			0.70			0.96	
Satd. Flow (perm)	1770	3425		1770	3535			1227			1546	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	48	1766	340	39	934	5	155	3	56	12	5	95
RTOR Reduction (vph)	0	14	0	0	0	0	0	14	0	0	76	0
Lane Group Flow (vph)	48	2092	0	39	939	0	0	200	0	0	36	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8			4		
Actuated Green, G (s)	4.7	57.5		2.4	55.3			18.9			18.9	
Effective Green, g (s)	4.7	57.5		2.4	55.3			18.9			18.9	
Actuated g/C Ratio	0.05	0.61		0.03	0.59			0.20			0.20	
Clearance Time (s)	4.5	5.4		4.5	5.3			4.9			4.9	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	88	2104		45	2088			247			312	
v/s Ratio Prot	c0.03	c0.61		0.02	0.27							
v/s Ratio Perm								c0.16			0.02	
v/c Ratio	0.55	0.99		0.87	0.45			0.81			0.12	
Uniform Delay, d1	43.4	17.9		45.4	10.7			35.6			30.5	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	6.7	18.3		84.0	0.7			18.0			0.2	
Delay (s)	50.2	36.2		129.5	11.4			53.7			30.7	
Level of Service	D	D		F	B			D			C	
Approach Delay (s)		36.5			16.1			53.7			30.7	
Approach LOS		D			B			D			C	

Intersection Summary				
HCM 2000 Control Delay	31.6	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.95			
Actuated Cycle Length (s)	93.6	Sum of lost time (s)	14.8	
Intersection Capacity Utilization	84.6%	ICU Level of Service	E	
Analysis Period (min)	15			
c Critical Lane Group				

4:45-5:45 PM Year 2017 + Cumulative
5: Sandrock Rd & Aero Dr

HCM Signalized Intersection Capacity Analysis

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	50	984	710	295	627	24	283	30	153	65	69	44
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.2	5.2	4.5	5.2		5.0	5.0	5.0	4.9	4.9	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		0.95	0.95	1.00	1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.94	1.00	1.00		1.00	1.00	0.96	1.00	0.98	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85	1.00	0.94	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	0.96	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3539	1495	1770	3513		1681	1701	1523	1770	1726	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	0.96	1.00	0.95	1.00	
Satd. Flow (perm)	1770	3539	1495	1770	3513		1681	1701	1523	1770	1726	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	52	1025	740	307	653	25	295	31	159	68	72	46
RTOR Reduction (vph)	0	0	237	0	2	0	0	0	136	0	21	0
Lane Group Flow (vph)	52	1025	503	307	676	0	162	164	23	68	97	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Prot	NA	Perm	Prot	NA		Split	NA	Perm	Split	NA	
Protected Phases	5	2		1	6		8	8		7	7	
Permitted Phases			2						8			
Actuated Green, G (s)	6.5	36.0	36.0	20.0	49.5		14.8	14.8	14.8	10.8	10.8	
Effective Green, g (s)	6.5	36.0	36.0	20.0	49.5		14.8	14.8	14.8	10.8	10.8	
Actuated g/C Ratio	0.06	0.36	0.36	0.20	0.49		0.15	0.15	0.15	0.11	0.11	
Clearance Time (s)	4.5	5.2	5.2	4.5	5.2		5.0	5.0	5.0	4.9	4.9	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	113	1258	531	349	1718		245	248	222	188	184	
v/s Ratio Prot	0.03	0.29		c0.17	0.19		0.10	c0.10		0.04	c0.06	
v/s Ratio Perm			c0.34						0.02			
v/c Ratio	0.46	0.81	0.95	0.88	0.39		0.66	0.66	0.10	0.36	0.52	
Uniform Delay, d1	45.7	29.6	31.7	39.4	16.4		40.8	40.8	37.5	42.0	42.8	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	3.0	5.9	27.9	21.4	0.1		6.5	6.5	0.2	1.2	2.7	
Delay (s)	48.6	35.5	59.6	60.8	16.5		47.4	47.3	37.7	43.2	45.5	
Level of Service	D	D	E	E	B		D	D	D	D	D	
Approach Delay (s)		45.7			30.3			44.2			44.6	
Approach LOS		D			C			D			D	

Intersection Summary				
HCM 2000 Control Delay	41.0	HCM 2000 Level of Service	D	
HCM 2000 Volume to Capacity ratio	0.82			
Actuated Cycle Length (s)	101.2	Sum of lost time (s)	19.6	
Intersection Capacity Utilization	82.1%	ICU Level of Service	E	
Analysis Period (min)	15			
c Critical Lane Group				

4:45-5:45 PM Year 2017 + Cumulative
6: Ruffin Rd & Aero Dr

HCM Signalized Intersection Capacity Analysis

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	704	575	829	731	162	246
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.2	5.2	4.5	4.5	5.5	5.5
Lane Util. Factor	0.95	1.00	0.97	0.95	0.97	1.00
Frpb, ped/bikes	1.00	0.99	1.00	1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	3539	1567	3433	3539	3433	1529
Flt Permitted	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)	3539	1567	3433	3539	3433	1529
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	741	605	873	769	171	259
RTOR Reduction (vph)	0	12	0	0	0	212
Lane Group Flow (vph)	741	593	873	769	171	47
Confl. Peds. (#/hr)		10	10		10	10
Confl. Bikes (#/hr)		5				5
Turn Type	NA	custom	Prot	NA	Prot	Perm
Protected Phases	2	2	1	6	8	
Permitted Phases		8				8
Actuated Green, G (s)	30.3	46.3	26.1	61.6	16.0	16.0
Effective Green, g (s)	30.3	46.3	26.1	61.6	16.0	16.0
Actuated g/C Ratio	0.35	0.53	0.30	0.70	0.18	0.18
Clearance Time (s)	5.2	5.2	4.5	4.5	5.5	5.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	1224	921	1022	2488	627	279
v/s Ratio Prot	0.21	c0.22	c0.25	0.22	0.05	
v/s Ratio Perm		0.16				0.03
v/c Ratio	0.61	0.64	0.85	0.31	0.27	0.17
Uniform Delay, d1	23.7	14.8	29.0	4.9	30.8	30.2
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	2.2	3.5	7.1	0.1	1.1	1.3
Delay (s)	25.9	18.2	36.0	5.0	31.9	31.5
Level of Service	C	B	D	A	C	C
Approach Delay (s)	22.5			21.5	31.7	
Approach LOS	C			C	C	

Intersection Summary				
HCM 2000 Control Delay	23.2	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.77			
Actuated Cycle Length (s)	87.6	Sum of lost time (s)	15.2	
Intersection Capacity Utilization	69.1%	ICU Level of Service	C	
Analysis Period (min)	15			
c Critical Lane Group				

Movement	EBU	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations							
Volume (vph)	9	834	140	165	1339	160	63
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5		4.5	4.5	4.5	4.5
Lane Util. Factor	1.00	0.95		0.97	0.95	0.97	0.88
Frpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	0.95
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00
Frt	1.00	0.98		1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	0.95	1.00
Satd. Flow (prot)	1770	3449		3433	3539	3433	2649
Flt Permitted	0.95	1.00		0.95	1.00	0.95	1.00
Satd. Flow (perm)	1770	3449		3433	3539	3433	2649
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	10	907	152	179	1455	174	68
RTOR Reduction (vph)	0	17	0	0	0	0	52
Lane Group Flow (vph)	10	1043	0	179	1455	174	16
Confl. Peds. (#/hr)			10	10		10	10
Confl. Bikes (#/hr)			5				5
Turn Type	Prot	NA		Prot	NA	Prot	Perm
Protected Phases	5	2		1	6	8	
Permitted Phases							8
Actuated Green, G (s)	0.8	31.5		9.0	39.7	16.0	16.0
Effective Green, g (s)	0.8	31.5		9.0	39.7	16.0	16.0
Actuated g/C Ratio	0.01	0.45		0.13	0.57	0.23	0.23
Clearance Time (s)	4.5	4.5		4.5	4.5	4.5	4.5
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	20	1552		441	2007	784	605
v/s Ratio Prot	0.01	0.30		c0.05	c0.41	c0.05	
v/s Ratio Perm							0.01
v/c Ratio	0.50	0.67		0.41	0.72	0.22	0.03
Uniform Delay, d1	34.4	15.2		28.0	11.1	21.9	21.0
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2	18.3	2.3		0.6	2.3	0.7	0.1
Delay (s)	52.7	17.5		28.7	13.5	22.6	21.0
Level of Service	D	B		C	B	C	C
Approach Delay (s)		17.8			15.1	22.2	
Approach LOS		B			B	C	

Intersection Summary				
HCM 2000 Control Delay	16.7	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.59			
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	13.5	
Intersection Capacity Utilization	64.9%	ICU Level of Service	C	
Analysis Period (min)	15			
c Critical Lane Group				

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	4	1	4	2	0	16	0	162	6	48	160	7
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72
Hourly flow rate (vph)	6	1	6	3	0	22	0	225	8	67	222	10
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)											142	
pX, platoon unblocked												
vC, conflicting volume	612	594	227	596	594	229	232			233		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	612	594	227	596	594	229	232			233		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	99	100	99	99	100	97	100			95		
cM capacity (veh/h)	379	397	812	396	397	810	1336			1334		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	12	25	233	299
Volume Left	6	3	0	67
Volume Right	6	22	8	10
cSH	500	726	1336	1334
Volume to Capacity	0.02	0.03	0.00	0.05
Queue Length 95th (ft)	2	3	0	4
Control Delay (s)	12.4	10.1	0.0	2.1
Lane LOS	B	B		A
Approach Delay (s)	12.4	10.1	0.0	2.1
Approach LOS	B	B		

Intersection Summary				
Average Delay	1.8			
Intersection Capacity Utilization	33.7%	ICU Level of Service	A	
Analysis Period (min)	15			

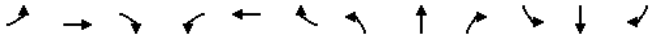
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	0	85	90	0	60	45
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82
Hourly flow rate (vph)	0	104	110	0	73	55
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						635
pX, platoon unblocked						
vC, conflicting volume	311	110			110	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	311	110			110	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	89			95	
cM capacity (veh/h)	648	944			1480	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	104	110	128
Volume Left	0	0	73
Volume Right	104	0	0
cSH	944	1700	1480
Volume to Capacity	0.11	0.06	0.05
Queue Length 95th (ft)	9	0	4
Control Delay (s)	9.3	0.0	4.5
Lane LOS	A		A
Approach Delay (s)	9.3	0.0	4.5
Approach LOS	A		

Intersection Summary			
Average Delay		4.5	
Intersection Capacity Utilization		24.3%	ICU Level of Service A
Analysis Period (min)		15	

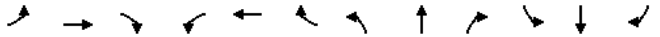
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	314	42	433	303	1204	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.1	4.7	4.7	5.8	5.8	
Lane Util. Factor	0.97	1.00	1.00	0.95	0.95	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.85	1.00	1.00	1.00	
Flt Protected	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	3433	1583	1770	3539	3527	
Flt Permitted	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (perm)	3433	1583	1770	3539	3527	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	331	44	456	319	1267	21
RTOR Reduction (vph)	0	8	0	0	1	0
Lane Group Flow (vph)	331	36	456	319	1287	0
Confl. Peds. (#/hr)						10
Confl. Bikes (#/hr)						5
Turn Type	Prot	pm+ov	Prot	NA	NA	
Protected Phases	4	5	5	2	6	
Permitted Phases		4				
Actuated Green, G (s)	14.0	41.4	27.4	73.1	41.0	
Effective Green, g (s)	14.0	41.4	27.4	73.1	41.0	
Actuated g/C Ratio	0.14	0.42	0.28	0.75	0.42	
Clearance Time (s)	5.1	4.7	4.7	5.8	5.8	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	490	668	494	2639	1475	
v/s Ratio Prot	c0.10	0.02	c0.26	0.09	c0.36	
v/s Ratio Perm		0.01				
v/c Ratio	0.68	0.05	0.92	0.12	0.87	
Uniform Delay, d1	39.8	16.7	34.3	3.5	26.1	
Progression Factor	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	3.7	0.0	22.9	0.1	7.4	
Delay (s)	43.5	16.8	57.2	3.6	33.5	
Level of Service	D	B	E	A	C	
Approach Delay (s)	40.4			35.1	33.5	
Approach LOS	D			D	C	

Intersection Summary			
HCM 2000 Control Delay	35.1	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	98.0	Sum of lost time (s)	15.6
Intersection Capacity Utilization	79.9%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



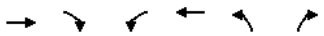
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	122	148	27	415	49	265	33	385	124	251	588	98
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.1			5.1	5.1	4.7	5.5	5.5	4.7	5.5	
Lane Util. Factor		1.00			1.00	1.00	1.00	0.95	1.00	1.00	0.95	
Frpb, ped/bikes		1.00			1.00	0.96	1.00	1.00	0.94	1.00	0.99	
Flpb, ped/bikes		1.00			1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt		0.99			1.00	0.85	1.00	1.00	0.85	1.00	0.98	
Flt Protected		0.98			0.96	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1797			1783	1527	1770	3539	1483	1770	3434	
Flt Permitted		0.98			0.96	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)		1797			1783	1527	1770	3539	1483	1770	3434	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	126	153	28	428	51	273	34	397	128	259	606	101
RTOR Reduction (vph)	0	3	0	0	0	121	0	0	106	0	11	0
Lane Group Flow (vph)	0	304	0	0	479	152	34	397	22	259	696	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Split	NA		Split	NA	Perm	Prot	NA	Perm	Prot	NA	
Protected Phases	4	4		3	3		5	2		1	6	
Permitted Phases						3			2			
Actuated Green, G (s)		21.9			30.3	30.3	2.6	18.0	18.0	16.4	31.8	
Effective Green, g (s)		21.9			30.3	30.3	2.6	18.0	18.0	16.4	31.8	
Actuated g/C Ratio		0.20			0.28	0.28	0.02	0.17	0.17	0.15	0.30	
Clearance Time (s)		5.1			5.1	5.1	4.7	5.5	5.5	4.7	5.5	
Vehicle Extension (s)		3.0			3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)		367			504	432	43	595	249	271	1020	
v/s Ratio Prot		c0.17			c0.27		0.02	0.11		c0.15	c0.20	
v/s Ratio Perm						0.10			0.01			
v/c Ratio		0.83			0.95	0.35	0.79	0.67	0.09	0.96	0.68	
Uniform Delay, d1		40.7			37.6	30.5	51.9	41.7	37.6	44.9	33.1	
Progression Factor		1.00			1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2		14.2			28.0	0.5	63.1	5.8	0.7	42.3	3.7	
Delay (s)		54.9			65.6	31.0	115.0	47.5	38.2	87.2	36.8	
Level of Service		D			E	C	F	D	D	F	D	
Approach Delay (s)		54.9			53.0			49.5			50.3	
Approach LOS		D			D			D			D	

Intersection Summary				
HCM 2000 Control Delay	51.5	HCM 2000 Level of Service	D	
HCM 2000 Volume to Capacity ratio	0.88			
Actuated Cycle Length (s)	107.0	Sum of lost time (s)	20.4	
Intersection Capacity Utilization	86.1%	ICU Level of Service	E	
Analysis Period (min)	15			
c Critical Lane Group				



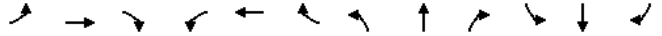
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	83	88	144	760	73	39	76	735	229	39	939	24
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.9	4.9	4.5	4.9		4.5	5.3		4.5	5.0	
Lane Util. Factor	1.00	1.00	1.00	0.97	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	1.00	0.85	1.00	0.95		1.00	0.96		1.00	1.00	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1863	1583	3433	1766		1770	3413		1770	3526	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	1863	1583	3433	1766		1770	3413		1770	3526	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	86	91	148	784	75	40	78	758	236	40	968	25
RTOR Reduction (vph)	0	0	132	0	20	0	0	27	0	0	2	0
Lane Group Flow (vph)	86	91	16	784	95	0	78	967	0	40	991	0
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4									
Actuated Green, G (s)	8.8	11.1	11.1	26.3	28.6		7.5	38.9		4.5	36.2	
Effective Green, g (s)	8.8	11.1	11.1	26.3	28.6		7.5	38.9		4.5	36.2	
Actuated g/C Ratio	0.09	0.11	0.11	0.26	0.29		0.08	0.39		0.04	0.36	
Clearance Time (s)	4.5	4.9	4.9	4.5	4.9		4.5	5.3		4.5	5.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	155	206	175	902	505		132	1327		79	1276	
v/s Ratio Prot	0.05	c0.05		c0.23	0.05		c0.04	c0.28		0.02	c0.28	
v/s Ratio Perm			0.01									
v/c Ratio	0.55	0.44	0.09	0.87	0.19		0.59	0.73		0.51	0.78	
Uniform Delay, d1	43.7	41.6	39.9	35.2	26.9		44.8	26.1		46.7	28.3	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	4.3	1.5	0.2	8.9	0.2		6.9	3.5		5.0	4.7	
Delay (s)	48.0	43.1	40.2	44.1	27.1		51.7	29.6		51.7	33.0	
Level of Service	D	D	D	D	C		D	C		D	C	
Approach Delay (s)		43.0			42.0			31.2			33.7	
Approach LOS		D			D			C			C	

Intersection Summary				
HCM 2000 Control Delay	36.0	HCM 2000 Level of Service	D	
HCM 2000 Volume to Capacity ratio	0.74			
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	19.2	
Intersection Capacity Utilization	71.6%	ICU Level of Service	C	
Analysis Period (min)	15			
c Critical Lane Group				



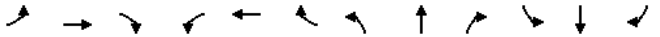
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	388	0	0	1021	459	261
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.1			5.1	5.1	5.1
Lane Util. Factor	0.95			0.95	0.97	0.91
Frt	1.00			1.00	0.99	0.85
Flt Protected	1.00			1.00	0.96	1.00
Satd. Flow (prot)	3539			3539	3415	1441
Flt Permitted	1.00			1.00	0.96	1.00
Satd. Flow (perm)	3539			3539	3415	1441
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	408	0	0	1075	483	275
RTOR Reduction (vph)	0	0	0	0	9	187
Lane Group Flow (vph)	408	0	0	1075	513	49
Turn Type	NA			NA	Prot	Perm
Protected Phases	2			6	4	
Permitted Phases						4
Actuated Green, G (s)	12.5			23.9	13.6	13.6
Effective Green, g (s)	12.5			23.9	13.6	13.6
Actuated g/C Ratio	0.19			0.37	0.21	0.21
Clearance Time (s)	5.1			5.1	5.1	5.1
Vehicle Extension (s)	3.0			3.0	3.0	3.0
Lane Grp Cap (vph)	677			1295	711	300
v/s Ratio Prot	c0.12			c0.30	c0.15	
v/s Ratio Perm						0.03
v/c Ratio	0.60			0.83	0.72	0.16
Uniform Delay, d1	24.1			18.9	24.1	21.2
Progression Factor	1.00			1.00	1.00	1.00
Incremental Delay, d2	1.5			4.7	3.6	0.3
Delay (s)	25.6			23.5	27.7	21.4
Level of Service	C			C	C	C
Approach Delay (s)	25.6			23.5	25.8	
Approach LOS	C			C	C	

Intersection Summary				
HCM 2000 Control Delay	24.7	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.74			
Actuated Cycle Length (s)	65.3	Sum of lost time (s)	15.3	
Intersection Capacity Utilization	52.5%	ICU Level of Service	A	
Analysis Period (min)	15			
c Critical Lane Group				



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	136	470	47	233	842	25	111	122	226	15	8	51
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.9	4.0	4.5	4.9		4.9	4.9	4.9		4.9	4.9
Lane Util. Factor	1.00	0.95	1.00	0.97	0.95		1.00	0.95	0.95		1.00	1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	0.99	0.97		1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00		1.00	0.95	0.85		1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00		0.97	1.00
Satd. Flow (prot)	1770	3539	1583	3433	3519		1770	1664	1460		1805	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00		0.97	1.00
Satd. Flow (perm)	1770	3539	1583	3433	3519		1770	1664	1460		1805	1583
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	146	505	51	251	905	27	119	131	243	16	9	55
RTOR Reduction (vph)	0	0	0	0	3	0	0	0	0	0	0	0
Lane Group Flow (vph)	146	505	51	251	929	0	119	197	177	0	25	55
Confl. Peds. (#/hr)						10			10			
Confl. Bikes (#/hr)						5			5			
Turn Type	Prot	NA	Free	Prot	NA		Split	NA	Perm	Split	NA	Perm
Protected Phases	5	2		1	6		3	3		4	4	
Permitted Phases			Free						3			4
Actuated Green, G (s)	7.8	20.2	70.3	9.5	21.9		16.3	16.3	16.3		5.1	5.1
Effective Green, g (s)	7.8	20.2	70.3	9.5	21.9		16.3	16.3	16.3		5.1	5.1
Actuated g/C Ratio	0.11	0.29	1.00	0.14	0.31		0.23	0.23	0.23		0.07	0.07
Clearance Time (s)	4.5	4.9		4.5	4.9		4.9	4.9	4.9		4.9	4.9
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	196	1016	1583	463	1096		410	385	338		130	114
v/s Ratio Prot	c0.08	0.14		0.07	c0.26		0.07	0.12			0.01	
v/s Ratio Perm			c0.03						c0.12			c0.03
v/c Ratio	0.74	0.50	0.03	0.54	0.85		0.29	0.51	0.52		0.19	0.48
Uniform Delay, d1	30.3	20.8	0.0	28.4	22.6		22.2	23.5	23.6		30.7	31.3
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	14.2	1.7	0.0	1.3	6.2		1.8	4.8	5.7		0.7	3.2
Delay (s)	44.5	22.6	0.0	29.7	28.9		24.0	28.3	29.3		31.4	34.5
Level of Service	D	C	A	C	C		C	C	C		C	C
Approach Delay (s)		25.5			29.0			27.6			33.5	
Approach LOS		C			C			C			C	

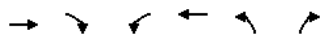
Intersection Summary				
HCM 2000 Control Delay	27.9	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.69			
Actuated Cycle Length (s)	70.3	Sum of lost time (s)	19.2	
Intersection Capacity Utilization	57.2%	ICU Level of Service	B	
Analysis Period (min)	15			
c Critical Lane Group				



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	10	410	603	391	1043	108	0	0	0	49	194	19
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.7	5.1		4.7	5.1						5.5	
Lane Util. Factor	1.00	0.95		1.00	0.95						1.00	
Frpb, ped/bikes	1.00	0.99		1.00	1.00						1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00						1.00	
Frt	1.00	0.91		1.00	0.99						0.99	
Flt Protected	0.95	1.00		0.95	1.00						0.99	
Satd. Flow (prot)	1763	3179		1770	3474						1824	
Flt Permitted	0.95	1.00		0.95	1.00						0.99	
Satd. Flow (perm)	1763	3179		1770	3474						1824	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	11	441	648	420	1122	116	0	0	0	53	209	20
RTOR Reduction (vph)	0	138	0	0	10	0	0	0	0	0	4	0
Lane Group Flow (vph)	11	951	0	420	1228	0	0	0	0	0	278	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Prot	NA		Prot	NA					Split	NA	
Protected Phases	5	2		1	6					4	4	
Permitted Phases												
Actuated Green, G (s)	0.8	26.2		16.3	41.7						16.0	
Effective Green, g (s)	0.8	26.2		16.3	41.7						16.0	
Actuated g/C Ratio	0.01	0.36		0.22	0.57						0.22	
Clearance Time (s)	4.7	5.1		4.7	5.1						5.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0						3.0	
Lane Grp Cap (vph)	19	1128		390	1962						395	
v/s Ratio Prot	0.01	c0.30		c0.24	0.35						c0.15	
v/s Ratio Perm												
v/c Ratio	0.58	1.01dr		1.08	0.63						0.70	
Uniform Delay, d1	36.3	21.9		28.8	10.8						26.7	
Progression Factor	1.00	1.00		1.00	1.00						1.00	
Incremental Delay, d2	36.3	5.9		67.7	0.6						10.1	
Delay (s)	72.6	27.8		96.4	11.4						36.8	
Level of Service	E	C		F	B						D	
Approach Delay (s)		28.2			33.0			0.0			36.8	
Approach LOS		C			C			A			D	

Intersection Summary				
HCM 2000 Control Delay	31.6	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.87			
Actuated Cycle Length (s)	73.8	Sum of lost time (s)	15.3	
Intersection Capacity Utilization	86.6%	ICU Level of Service	E	
Analysis Period (min)	15			

dr Defacto Right Lane. Recode with 1 though lane as a right lane.
c Critical Lane Group



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	480	0	0	805	699	231
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.5			5.5	4.5	5.5
Lane Util. Factor	0.95			0.95	0.97	1.00
Frpb, ped/bikes	1.00			1.00	1.00	0.98
Flpb, ped/bikes	1.00			1.00	1.00	1.00
Frt	1.00			1.00	1.00	0.85
Flt Protected	1.00			1.00	0.95	1.00
Satd. Flow (prot)	3539			3539	3433	1550
Flt Permitted	1.00			1.00	0.95	1.00
Satd. Flow (perm)	3539			3539	3433	1550
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	505	0	0	847	736	243
RTOR Reduction (vph)	0	0	0	0	0	135
Lane Group Flow (vph)	505	0	0	847	736	108
Confl. Peds. (#/hr)						10
Confl. Bikes (#/hr)						5
Turn Type	NA			NA	Prot	Perm
Protected Phases	2			6	4	
Permitted Phases						6
Actuated Green, G (s)	21.4			21.4	16.6	21.4
Effective Green, g (s)	21.4			21.4	16.6	21.4
Actuated g/C Ratio	0.45			0.45	0.35	0.45
Clearance Time (s)	5.5			5.5	4.5	5.5
Vehicle Extension (s)	3.0			3.0	3.0	3.0
Lane Grp Cap (vph)	1577			1577	1187	691
v/s Ratio Prot	0.14			c0.24	c0.21	
v/s Ratio Perm						0.07
v/c Ratio	0.32			0.54	0.62	0.16
Uniform Delay, d1	8.6			9.7	13.1	7.9
Progression Factor	1.00			1.00	1.00	1.00
Incremental Delay, d2	0.1			0.4	1.0	0.1
Delay (s)	8.7			10.0	14.1	8.0
Level of Service	A			B	B	A
Approach Delay (s)	8.7			10.0	12.6	
Approach LOS	A			B	B	

Intersection Summary				
HCM 2000 Control Delay	10.8	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.57			
Actuated Cycle Length (s)	48.0	Sum of lost time (s)	10.0	
Intersection Capacity Utilization	50.5%	ICU Level of Service	A	
Analysis Period (min)	15			

c Critical Lane Group

Appendix K

Year 2017 with Project (Phase 1) LOS Calculations

8:00-9:00 AM Year 2017 + Cumulative + Project (Phase 1)
1: Aero Dr & Convoy St
HCM Signalized Intersection Capacity Analysis

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	4	3	1	422	54	636	0	502	384	408	387	21
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.9		4.9	4.9	4.9		5.2		4.5	4.5	
Lane Util. Factor		1.00		0.95	0.91	0.95		0.95		0.97	0.95	
Frpb, ped/bikes		0.99		1.00	0.99	0.98		0.99		1.00	1.00	
Flpb, ped/bikes		1.00		1.00	1.00	1.00		1.00		1.00	1.00	
Frt		0.98		1.00	0.89	0.85		0.93		1.00	0.99	
Flt Protected		0.98		0.95	0.99	1.00		1.00		0.95	1.00	
Satd. Flow (prot)		1762		1681	1481	1481		3263		3433	3502	
Flt Permitted		0.98		0.95	0.99	1.00		1.00		0.95	1.00	
Satd. Flow (perm)		1762		1681	1481	1481		3263		3433	3502	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	4	3	1	440	56	662	0	523	400	425	403	22
RTOR Reduction (vph)	0	1	0	0	109	259	0	151	0	0	4	0
Lane Group Flow (vph)	0	7	0	396	276	118	0	772	0	425	421	0
Confl. Peds. (#/hr)			10						10			10
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Split	NA		Split	NA	Perm		NA		Prot	NA	
Protected Phases	7	7		8	8			2		1	6	
Permitted Phases						8						
Actuated Green, G (s)		1.2		28.1	28.1	28.1		26.9		14.3	46.4	
Effective Green, g (s)		1.2		28.1	28.1	28.1		26.9		14.3	46.4	
Actuated g/C Ratio		0.01		0.31	0.31	0.31		0.30		0.16	0.52	
Clearance Time (s)		4.9		4.9	4.9	4.9		5.2		4.5	4.5	
Vehicle Extension (s)		3.0		3.0	3.0	3.0		3.0		3.0	3.0	
Lane Grp Cap (vph)		23		524	462	462		975		545	1805	
v/s Ratio Prot		c0.00		c0.24	0.19			c0.24		c0.12	0.12	
v/s Ratio Perm						0.08						
v/c Ratio		0.30		0.76	0.60	0.25		0.79		0.78	0.23	
Uniform Delay, d1		44.0		27.9	26.2	23.1		29.0		36.3	12.0	
Progression Factor		1.00		1.00	1.00	1.00		1.00		1.00	1.00	
Incremental Delay, d2		7.4		6.1	2.1	0.3		6.5		7.0	0.3	
Delay (s)		51.4		34.0	28.3	23.4		35.5		43.3	12.3	
Level of Service		D		C	C	C		D		D	B	
Approach Delay (s)		51.4			28.6			35.5			27.8	
Approach LOS		D			C			D			C	

Intersection Summary			
HCM 2000 Control Delay	30.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	19.5
Intersection Capacity Utilization	76.7%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

8:00-9:00 AM Year 2017 + Cumulative + Project (Phase 1)
2: Kearny Villa Rd & Aero Dr
HCM Signalized Intersection Capacity Analysis

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	147	526	97	287	804	506	313	194	475	200	131	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.3		4.5	5.3		4.5	5.7	5.7	4.5	6.0	
Lane Util. Factor	1.00	0.95		0.97	0.95		0.97	0.95	1.00	0.97	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	0.99		1.00	1.00	0.99	1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.98		1.00	0.94		1.00	1.00	0.85	1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3437		3433	3288		3433	3539	1560	3433	3381	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	3437		3433	3288		3433	3539	1560	3433	3381	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	156	560	103	305	855	538	333	206	505	213	139	43
RTOR Reduction (vph)	0	12	0	0	84	0	0	0	90	0	24	0
Lane Group Flow (vph)	156	651	0	305	1309	0	333	206	415	213	158	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Prot	NA		Prot	NA		Prot	NA	custom	Prot	NA	
Protected Phases	5	2		1	6		3	8	8	7	4	
Permitted Phases									1			
Actuated Green, G (s)	11.6	47.1		15.3	50.8		15.5	22.3	37.6	10.9	17.4	
Effective Green, g (s)	11.6	47.1		15.3	50.8		15.5	22.3	37.6	10.9	17.4	
Actuated g/C Ratio	0.10	0.41		0.13	0.44		0.13	0.19	0.33	0.09	0.15	
Clearance Time (s)	4.5	5.3		4.5	5.3		4.5	5.7	5.7	4.5	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	177	1400		454	1444		460	682	584	323	508	
v/s Ratio Prot	0.09	0.19		0.09	c0.40		c0.10	0.06	c0.14	0.06	0.05	
v/s Ratio Perm									0.13			
v/c Ratio	0.88	0.46		0.67	0.91		0.72	0.30	0.71	0.66	0.31	
Uniform Delay, d1	51.3	25.0		47.8	30.2		48.0	40.0	34.2	50.6	43.8	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	36.3	0.2		3.9	8.5		5.6	0.3	4.1	4.8	0.4	
Delay (s)	87.6	25.3		51.6	38.7		53.6	40.2	38.3	55.4	44.1	
Level of Service	F	C		D	D		D	D	D	E	D	
Approach Delay (s)		37.2			41.0			43.6			50.2	
Approach LOS		D			D			D			D	

Intersection Summary			
HCM 2000 Control Delay	41.8	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.90		
Actuated Cycle Length (s)	115.6	Sum of lost time (s)	20.3
Intersection Capacity Utilization	80.3%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

8:00-9:00 AM Year 2017 + Cumulative + Project (Phase 1)
3: Aero Ct & Aero Dr

HCM Signalized Intersection Capacity Analysis

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	9	875	315	115	1428	13	156	0	66	3	0	14
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.3		4.5	5.3		4.9	4.9			4.9	4.9
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00			1.00	1.00
Frpb, ped/bikes	1.00	0.99		1.00	1.00		1.00	0.97			1.00	0.97
Flpb, ped/bikes	1.00	1.00		1.00	1.00		0.99	1.00			0.99	1.00
Frt	1.00	0.96		1.00	1.00		1.00	0.85			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00			0.95	1.00
Satd. Flow (prot)	1766	3360		1770	3533		1749	1536			1751	1536
Flt Permitted	0.95	1.00		0.95	1.00		0.76	1.00			0.71	1.00
Satd. Flow (perm)	1766	3360		1770	3533		1392	1536			1307	1536
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	10	983	354	129	1604	15	175	0	74	3	0	16
RTOR Reduction (vph)	0	46	0	0	1	0	0	62	0	0	0	13
Lane Group Flow (vph)	10	1291	0	129	1618	0	175	12	0	0	3	3
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	Perm
Protected Phases	5	2		1	6			4			4	
Permitted Phases							4			4		4
Actuated Green, G (s)	0.7	32.4		4.9	36.6		10.0	10.0			10.0	10.0
Effective Green, g (s)	0.7	32.4		4.9	36.6		10.0	10.0			10.0	10.0
Actuated g/C Ratio	0.01	0.52		0.08	0.59		0.16	0.16			0.16	0.16
Clearance Time (s)	4.5	5.3		4.5	5.3		4.9	4.9			4.9	4.9
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0			3.0	3.0
Lane Grp Cap (vph)	19	1755		139	2085		224	247			210	247
v/s Ratio Prot	0.01	0.38		c0.07	c0.46			0.01				
v/s Ratio Perm							c0.13				0.00	0.00
v/c Ratio	0.53	0.74		0.93	0.78		0.78	0.05			0.01	0.01
Uniform Delay, d1	30.5	11.5		28.4	9.6		25.0	22.0			21.9	21.8
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00			1.00	1.00
Incremental Delay, d2	23.9	1.6		54.4	1.9		16.1	0.1			0.0	0.0
Delay (s)	54.3	13.1		82.7	11.5		41.0	22.1			21.9	21.9
Level of Service	D	B		F	B		D	C			C	C
Approach Delay (s)		13.4			16.7			35.4			21.9	
Approach LOS		B			B			D			C	

Intersection Summary					
HCM 2000 Control Delay	16.8	HCM 2000 Level of Service	B		
HCM 2000 Volume to Capacity ratio	0.82				
Actuated Cycle Length (s)	62.0	Sum of lost time (s)	14.7		
Intersection Capacity Utilization	70.8%	ICU Level of Service	C		
Analysis Period (min)	15				
c Critical Lane Group					

8:00-9:00 AM Year 2017 + Cumulative + Project (Phase 1)
4: Afton Rd & Aero Dr

HCM Signalized Intersection Capacity Analysis

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	69	717	157	59	1260	7	260	4	52	3	0	15
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.4		4.5	5.3			4.9			4.9	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	
Frpb, ped/bikes	1.00	0.99		1.00	1.00			1.00			0.98	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			0.99			1.00	
Frt	1.00	0.97		1.00	1.00			0.98			0.89	
Flt Protected	0.95	1.00		0.95	1.00			0.96			0.99	
Satd. Flow (prot)	1770	3416		1770	3535			1723			1599	
Flt Permitted	0.95	1.00		0.95	1.00			0.75			0.95	
Satd. Flow (perm)	1770	3416		1770	3535			1345			1531	
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	78	806	176	66	1416	8	292	4	58	3	0	17
RTOR Reduction (vph)	0	26	0	0	1	0	0	10	0	0	14	0
Lane Group Flow (vph)	78	956	0	66	1423	0	0	344	0	0	6	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8			4		
Actuated Green, G (s)	3.5	30.4		3.9	30.9			19.3			19.3	
Effective Green, g (s)	3.5	30.4		3.9	30.9			19.3			19.3	
Actuated g/C Ratio	0.05	0.44		0.06	0.45			0.28			0.28	
Clearance Time (s)	4.5	5.4		4.5	5.3			4.9			4.9	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	90	1518		100	1596			379			431	
v/s Ratio Prot	c0.04	0.28		0.04	c0.40							
v/s Ratio Perm								c0.26			0.00	
v/c Ratio	0.87	0.63		0.66	0.89			0.91			0.01	
Uniform Delay, d1	32.2	14.7		31.6	17.2			23.7			17.7	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	53.4	2.0		15.1	8.0			24.6			0.0	
Delay (s)	85.6	16.7		46.7	25.2			48.3			17.7	
Level of Service	F	B		D	C			D			B	
Approach Delay (s)		21.7			26.2			48.3			17.7	
Approach LOS		C			C			D			B	

Intersection Summary					
HCM 2000 Control Delay	27.2	HCM 2000 Level of Service	C		
HCM 2000 Volume to Capacity ratio	0.90				
Actuated Cycle Length (s)	68.4	Sum of lost time (s)	14.8		
Intersection Capacity Utilization	75.8%	ICU Level of Service	D		
Analysis Period (min)	15				
c Critical Lane Group					

8:00-9:00 AM Year 2017 + Cumulative + Project (Phase 1)
5: Sandrock Rd & Aero Dr

HCM Signalized Intersection Capacity Analysis

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	41	529	187	116	779	55	515	38	210	14	6	16
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.2	5.2	4.5	5.2		5.0	5.0	5.0	4.9	4.9	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		0.95	0.95	1.00	1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.95	1.00	1.00		1.00	1.00	0.97	1.00	0.97	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85	1.00	0.89	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	0.96	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3539	1510	1770	3494		1681	1696	1538	1770	1604	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	0.96	1.00	0.95	1.00	
Satd. Flow (perm)	1770	3539	1510	1770	3494		1681	1696	1538	1770	1604	
Peak-hour factor, PHF	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Adj. Flow (vph)	48	615	217	135	906	64	599	44	244	16	7	19
RTOR Reduction (vph)	0	0	150	0	6	0	0	0	166	0	18	0
Lane Group Flow (vph)	48	615	67	135	964	0	317	326	78	16	8	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Prot	NA	Perm	Prot	NA		Split	NA	Perm	Split	NA	
Protected Phases	5	2		1	6		8	8		7	7	
Permitted Phases			2						8			
Actuated Green, G (s)	2.2	20.8	20.8	6.8	25.4		16.4	16.4	16.4	3.6	3.6	
Effective Green, g (s)	2.2	20.8	20.8	6.8	25.4		16.4	16.4	16.4	3.6	3.6	
Actuated g/C Ratio	0.03	0.31	0.31	0.10	0.38		0.24	0.24	0.24	0.05	0.05	
Clearance Time (s)	4.5	5.2	5.2	4.5	5.2		5.0	5.0	5.0	4.9	4.9	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	57	1095	467	179	1320		410	413	375	94	85	
v/s Ratio Prot	0.03	0.17		c0.08	c0.28		0.19	c0.19		c0.01	0.00	
v/s Ratio Perm			0.04						0.05			
v/c Ratio	0.84	0.56	0.14	0.75	0.73		0.77	0.79	0.21	0.17	0.09	
Uniform Delay, d1	32.3	19.4	16.8	29.4	18.0		23.7	23.8	20.2	30.4	30.2	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	65.3	2.1	0.6	16.4	2.1		8.8	9.7	0.3	0.9	0.5	
Delay (s)	97.6	21.5	17.4	45.8	20.1		32.5	33.4	20.5	31.2	30.7	
Level of Service	F	C	B	D	C		C	C	C	C	C	
Approach Delay (s)		24.6			23.2			29.5			30.9	
Approach LOS		C			C			C			C	

Intersection Summary				
HCM 2000 Control Delay	25.7	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.75			
Actuated Cycle Length (s)	67.2	Sum of lost time (s)	19.6	
Intersection Capacity Utilization	60.9%	ICU Level of Service	B	
Analysis Period (min)	15			
c Critical Lane Group				

8:00-9:00 AM Year 2017 + Cumulative + Project (Phase 1)
6: Ruffin Rd & Aero Dr

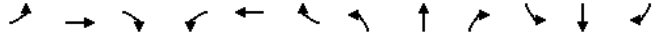
HCM Signalized Intersection Capacity Analysis

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	561	119	168	557	451	519
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.2	5.2	4.5	4.5	5.5	5.5
Lane Util. Factor	0.95	1.00	0.97	0.95	0.97	1.00
Frpb, ped/bikes	1.00	0.99	1.00	1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	3539	1562	3433	3539	3433	1542
Flt Permitted	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)	3539	1562	3433	3539	3433	1542
Peak-hour factor, PHF	0.85	0.85	0.85	0.85	0.85	0.85
Adj. Flow (vph)	660	140	198	655	531	611
RTOR Reduction (vph)	0	21	0	0	0	189
Lane Group Flow (vph)	660	119	198	655	531	422
Confl. Peds. (#/hr)		10	10		10	10
Confl. Bikes (#/hr)		5				5
Turn Type	NA	custom	Prot	NA	Prot	Perm
Protected Phases	2	2	1	6	8	
Permitted Phases		8				8
Actuated Green, G (s)	17.4	39.3	5.5	28.1	21.9	21.9
Effective Green, g (s)	17.4	39.3	5.5	28.1	21.9	21.9
Actuated g/C Ratio	0.29	0.65	0.09	0.47	0.36	0.36
Clearance Time (s)	5.2	5.2	4.5	4.5	5.5	5.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	1026	1158	314	1657	1253	562
v/s Ratio Prot	c0.19	0.03	c0.06	0.19	0.15	
v/s Ratio Perm		0.05				c0.27
v/c Ratio	0.64	0.10	0.63	0.40	0.42	0.75
Uniform Delay, d1	18.6	3.8	26.3	10.4	14.3	16.7
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	3.1	0.2	4.1	0.2	1.1	8.9
Delay (s)	21.7	4.0	30.4	10.6	15.4	25.6
Level of Service	C	A	C	B	B	C
Approach Delay (s)	18.6			15.2	20.8	
Approach LOS	B			B	C	

Intersection Summary				
HCM 2000 Control Delay	18.5	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.69			
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	15.2	
Intersection Capacity Utilization	57.6%	ICU Level of Service	B	
Analysis Period (min)	15			
c Critical Lane Group				

Movement	EBU	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations							
Volume (vph)	19	1001	121	117	645	86	57
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5		4.5	4.5	4.5	4.5
Lane Util. Factor	1.00	0.95		0.97	0.95	0.97	0.88
Frpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	0.95
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00
Frt	1.00	0.98		1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	0.95	1.00
Satd. Flow (prot)	1770	3472		3433	3539	3433	2643
Flt Permitted	0.95	1.00		0.95	1.00	0.95	1.00
Satd. Flow (perm)	1770	3472		3433	3539	3433	2643
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	21	1112	134	130	717	96	63
RTOR Reduction (vph)	0	10	0	0	0	0	49
Lane Group Flow (vph)	21	1236	0	130	717	96	14
Confl. Peds. (#/hr)			10	10		10	10
Confl. Bikes (#/hr)			5				5
Turn Type	Prot	NA		Prot	NA	Prot	Perm
Protected Phases	5	2		1	6	8	
Permitted Phases							8
Actuated Green, G (s)	1.6	38.4		7.0	43.8	16.1	16.1
Effective Green, g (s)	1.6	38.4		7.0	43.8	16.1	16.1
Actuated g/C Ratio	0.02	0.51		0.09	0.58	0.21	0.21
Clearance Time (s)	4.5	4.5		4.5	4.5	4.5	4.5
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	37	1777		320	2066	736	567
v/s Ratio Prot	0.01	c0.36		c0.04	0.20	c0.03	
v/s Ratio Perm							0.01
v/c Ratio	0.57	0.70		0.41	0.35	0.13	0.02
Uniform Delay, d1	36.4	13.9		32.0	8.1	23.8	23.2
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2	18.4	2.3		0.8	0.5	0.4	0.1
Delay (s)	54.8	16.1		32.9	8.6	24.2	23.3
Level of Service	D	B		C	A	C	C
Approach Delay (s)		16.8			12.3	23.8	
Approach LOS		B			B	C	

Intersection Summary				
HCM 2000 Control Delay	15.6	HCM 2000 Level of Service		B
HCM 2000 Volume to Capacity ratio	0.51			
Actuated Cycle Length (s)	75.0	Sum of lost time (s)		13.5
Intersection Capacity Utilization	59.6%	ICU Level of Service		B
Analysis Period (min)	15			
c Critical Lane Group				



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	2	0	0	18	0	204	1	12	416	2
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64
Hourly flow rate (vph)	0	0	3	0	0	28	0	319	2	19	650	3
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)											142	
pX, platoon unblocked												
vC, conflicting volume	1037	1009	652	1012	1010	320	653			320		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1037	1009	652	1012	1010	320	653			320		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	99	100	100	96	100			98		
cM capacity (veh/h)	199	236	468	214	236	721	934			1240		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	3	28	320	672
Volume Left	0	0	0	19
Volume Right	3	28	2	3
cSH	468	721	934	1240
Volume to Capacity	0.01	0.04	0.00	0.02
Queue Length 95th (ft)	1	3	0	1
Control Delay (s)	12.7	10.2	0.0	0.4
Lane LOS	B	B		A
Approach Delay (s)	12.7	10.2	0.0	0.4
Approach LOS	B	B		

Intersection Summary				
Average Delay	0.6			
Intersection Capacity Utilization	41.7%	ICU Level of Service		A
Analysis Period (min)	15			

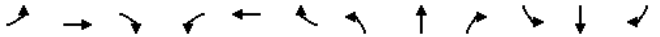
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	1	110	94	2	253	129
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.55	0.55	0.55	0.55	0.55	0.55
Hourly flow rate (vph)	2	200	171	4	460	235
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						635
pX, platoon unblocked						
vC, conflicting volume	1327	173			175	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1327	173			175	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	98	77			67	
cM capacity (veh/h)	115	871			1402	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	202	175	695
Volume Left	2	0	460
Volume Right	200	4	0
cSH	822	1700	1402
Volume to Capacity	0.25	0.10	0.33
Queue Length 95th (ft)	24	0	36
Control Delay (s)	10.8	0.0	7.0
Lane LOS	B		A
Approach Delay (s)	10.8	0.0	7.0
Approach LOS	B		

Intersection Summary			
Average Delay	6.6		
Intersection Capacity Utilization	41.0%	ICU Level of Service	A
Analysis Period (min)	15		

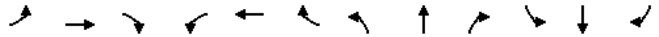
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	705	27	386	484	337	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.1	4.7	4.7	5.8	5.8	
Lane Util. Factor	0.97	1.00	1.00	0.95	0.95	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.85	1.00	1.00	1.00	
Flt Protected	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	3433	1583	1770	3539	3539	
Flt Permitted	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (perm)	3433	1583	1770	3539	3539	
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	792	30	434	544	379	0
RTOR Reduction (vph)	0	13	0	0	0	0
Lane Group Flow (vph)	792	17	434	544	379	0
Confl. Peds. (#/hr)						10
Confl. Bikes (#/hr)						5
Turn Type	Prot	pm+ov	Prot	NA	NA	
Protected Phases	4	5	5	2	6	
Permitted Phases		4				
Actuated Green, G (s)	19.4	40.3	20.9	44.2	18.6	
Effective Green, g (s)	19.4	40.3	20.9	44.2	18.6	
Actuated g/C Ratio	0.26	0.54	0.28	0.59	0.25	
Clearance Time (s)	5.1	4.7	4.7	5.8	5.8	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	893	856	496	2099	883	
v/s Ratio Prot	c0.23	0.01	c0.25	0.15	c0.11	
v/s Ratio Perm		0.01				
v/c Ratio	0.89	0.02	0.88	0.26	0.43	
Uniform Delay, d1	26.5	7.9	25.6	7.3	23.5	
Progression Factor	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	10.6	0.0	15.7	0.3	1.5	
Delay (s)	37.1	7.9	41.3	7.6	25.0	
Level of Service	D	A	D	A	C	
Approach Delay (s)	36.0			22.5	25.0	
Approach LOS	D			C	C	

Intersection Summary					
HCM 2000 Control Delay	28.0	HCM 2000 Level of Service	C		
HCM 2000 Volume to Capacity ratio	0.74				
Actuated Cycle Length (s)	74.5	Sum of lost time (s)	15.6		
Intersection Capacity Utilization	67.8%	ICU Level of Service	C		
Analysis Period (min)	15				
c Critical Lane Group					



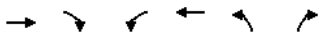
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	93	54	19	385	69	314	2	171	76	63	215	67
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.1			5.1	5.1	4.7	5.5	5.5	4.7	5.5	
Lane Util. Factor		1.00			1.00	1.00	1.00	0.95	1.00	1.00	0.95	
Frpb, ped/bikes		1.00			1.00	0.97	1.00	1.00	0.95	1.00	0.99	
Flpb, ped/bikes		1.00			1.00	1.00	0.98	1.00	1.00	1.00	1.00	
Frt		0.98			1.00	0.85	1.00	1.00	0.85	1.00	0.96	
Flt Protected		0.97			0.96	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1777			1787	1534	1740	3539	1499	1770	3371	
Flt Permitted		0.97			0.96	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)		1777			1787	1534	1740	3539	1499	1770	3371	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	99	57	20	410	73	334	2	182	81	67	229	71
RTOR Reduction (vph)	0	5	0	0	0	173	0	0	61	0	29	0
Lane Group Flow (vph)	0	171	0	0	483	161	2	182	20	67	271	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Split	NA		Split	NA	Perm	Prot	NA	Perm	Prot	NA	
Protected Phases	4	4		3	3		5	2		1	6	
Permitted Phases						3			2			
Actuated Green, G (s)		12.6			26.6	26.6	0.7	20.9	20.9	4.0	24.2	
Effective Green, g (s)		12.6			26.6	26.6	0.7	20.9	20.9	4.0	24.2	
Actuated g/C Ratio		0.15			0.31	0.31	0.01	0.25	0.25	0.05	0.29	
Clearance Time (s)		5.1			5.1	5.1	4.7	5.5	5.5	4.7	5.5	
Vehicle Extension (s)		3.0			3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)		264			562	482	14	875	370	83	965	
v/s Ratio Prot		c0.10			c0.27		0.00	0.05		c0.04	c0.08	
v/s Ratio Perm						0.10			0.01			
v/c Ratio		0.65			0.86	0.33	0.14	0.21	0.05	0.81	0.28	
Uniform Delay, d1		33.9			27.2	22.2	41.6	25.2	24.3	39.9	23.4	
Progression Factor		1.00			1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2		5.4			12.4	0.4	4.7	0.5	0.3	41.7	0.7	
Delay (s)		39.2			39.6	22.6	46.3	25.8	24.5	81.6	24.1	
Level of Service		D			D	C	D	C	C	F	C	
Approach Delay (s)		39.2			32.7			25.5			34.6	
Approach LOS		D			C			C			C	

Intersection Summary				
HCM 2000 Control Delay	32.7	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.63			
Actuated Cycle Length (s)	84.5	Sum of lost time (s)	20.4	
Intersection Capacity Utilization	61.2%	ICU Level of Service	B	
Analysis Period (min)	15			
c Critical Lane Group				



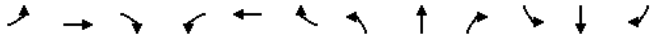
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	19	24	20	353	57	17	109	874	148	20	418	48
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.9	4.9	4.5	4.9		4.5	5.3		4.5	5.0	
Lane Util. Factor	1.00	1.00	1.00	0.97	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	1.00	0.85	1.00	0.97		1.00	0.98		1.00	0.98	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1863	1583	3433	1799		1770	3463		1770	3485	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	1863	1583	3433	1799		1770	3463		1770	3485	
Peak-hour factor, PHF	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Adj. Flow (vph)	19	24	20	357	58	17	110	883	149	20	422	48
RTOR Reduction (vph)	0	0	19	0	12	0	0	10	0	0	7	0
Lane Group Flow (vph)	19	24	1	357	63	0	110	1022	0	20	463	0
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4									
Actuated Green, G (s)	2.3	5.4	5.4	15.1	18.2		11.5	57.2		3.1	49.1	
Effective Green, g (s)	2.3	5.4	5.4	15.1	18.2		11.5	57.2		3.1	49.1	
Actuated g/C Ratio	0.02	0.05	0.05	0.15	0.18		0.12	0.57		0.03	0.49	
Clearance Time (s)	4.5	4.9	4.9	4.5	4.9		4.5	5.3		4.5	5.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	40	100	85	518	327		203	1980		54	1711	
v/s Ratio Prot	0.01	0.01		c0.10	c0.03		c0.06	c0.30		0.01	0.13	
v/s Ratio Perm			0.00									
v/c Ratio	0.47	0.24	0.01	0.69	0.19		0.54	0.52		0.37	0.27	
Uniform Delay, d1	48.3	45.3	44.8	40.2	34.7		41.8	13.0		47.5	14.9	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	8.6	1.2	0.1	3.8	0.3		2.9	1.0		4.2	0.4	
Delay (s)	56.9	46.6	44.8	44.0	35.0		44.7	14.0		51.7	15.3	
Level of Service	E	D	D	D	C		D	B		D	B	
Approach Delay (s)		49.1			42.5			16.9			16.8	
Approach LOS		D			D			B			B	

Intersection Summary				
HCM 2000 Control Delay	23.0	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.55			
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	19.2	
Intersection Capacity Utilization	61.2%	ICU Level of Service	B	
Analysis Period (min)	15			
c Critical Lane Group				



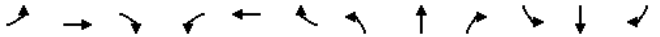
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	475	0	0	940	552	460
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.1			5.1	5.1	5.1
Lane Util. Factor	0.95			0.95	0.97	0.91
Frt	1.00			1.00	0.97	0.85
Flt Protected	1.00			1.00	0.96	1.00
Satd. Flow (prot)	3539			3539	3368	1441
Flt Permitted	1.00			1.00	0.96	1.00
Satd. Flow (perm)	3539			3539	3368	1441
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	505	0	0	1000	587	489
RTOR Reduction (vph)	0	0	0	0	27	249
Lane Group Flow (vph)	505	0	0	1000	712	88
Turn Type	NA			NA	Prot	Perm
Protected Phases	2			6	4	
Permitted Phases						4
Actuated Green, G (s)	16.5			28.7	21.4	21.4
Effective Green, g (s)	16.5			28.7	21.4	21.4
Actuated g/C Ratio	0.20			0.35	0.26	0.26
Clearance Time (s)	5.1			5.1	5.1	5.1
Vehicle Extension (s)	3.0			3.0	3.0	3.0
Lane Grp Cap (vph)	712			1240	880	376
v/s Ratio Prot	c0.14			c0.28	c0.21	
v/s Ratio Perm						0.06
v/c Ratio	0.71			0.81	0.81	0.23
Uniform Delay, d1	30.5			24.1	28.3	23.8
Progression Factor	1.00			1.00	1.00	1.00
Incremental Delay, d2	3.2			3.9	5.6	0.3
Delay (s)	33.7			28.0	33.9	24.1
Level of Service	C			C	C	C
Approach Delay (s)	33.7			28.0	30.8	
Approach LOS	C			C	C	

Intersection Summary				
HCM 2000 Control Delay	30.3	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.78			
Actuated Cycle Length (s)	81.9	Sum of lost time (s)	15.3	
Intersection Capacity Utilization	55.0%	ICU Level of Service	B	
Analysis Period (min)	15			
c Critical Lane Group				



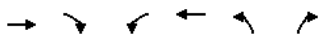
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	39	660	229	457	811	15	59	6	109	30	34	51
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.9	4.0	4.5	4.9		4.9	4.9	4.9		4.9	4.9
Lane Util. Factor	1.00	0.95	1.00	0.97	0.95		1.00	0.95	0.95		1.00	1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	0.97	0.97		1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00		1.00	0.86	0.85		1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00		0.98	1.00
Satd. Flow (prot)	1770	3539	1583	3433	3527		1770	1485	1455		1821	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00		0.98	1.00
Satd. Flow (perm)	1770	3539	1583	3433	3527		1770	1485	1455		1821	1583
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	42	710	246	491	872	16	63	6	117	32	37	55
RTOR Reduction (vph)	0	0	0	0	1	0	0	0	0	0	0	0
Lane Group Flow (vph)	42	710	246	491	887	0	63	62	61	0	69	55
Confl. Peds. (#/hr)						10			10			
Confl. Bikes (#/hr)						5			5			
Turn Type	Prot	NA	Free	Prot	NA		Split	NA	Perm	Split	NA	Perm
Protected Phases	5	2		1	6		3	3		4	4	
Permitted Phases			Free						3			4
Actuated Green, G (s)	2.6	25.5	83.1	15.1	38.0		16.2	16.2	16.2		7.1	7.1
Effective Green, g (s)	2.6	25.5	83.1	15.1	38.0		16.2	16.2	16.2		7.1	7.1
Actuated g/C Ratio	0.03	0.31	1.00	0.18	0.46		0.19	0.19	0.19		0.09	0.09
Clearance Time (s)	4.5	4.9		4.5	4.9		4.9	4.9	4.9		4.9	4.9
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	55	1085	1583	623	1612		345	289	283		155	135
v/s Ratio Prot	0.02	c0.20		c0.14	0.25		0.04	0.04			c0.04	
v/s Ratio Perm			0.16						c0.04			0.03
v/c Ratio	0.76	0.65	0.16	0.79	0.55		0.18	0.21	0.22		0.45	0.41
Uniform Delay, d1	39.9	25.0	0.0	32.5	16.4		27.9	28.1	28.1		36.1	36.0
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	46.0	3.1	0.2	6.6	0.4		1.2	1.7	1.7		2.0	2.0
Delay (s)	86.0	28.1	0.2	39.0	16.8		29.1	29.8	29.8		38.2	38.0
Level of Service	F	C	A	D	B		C	C	C		D	D
Approach Delay (s)		23.6			24.7			29.6			38.1	
Approach LOS		C			C			C			D	

Intersection Summary				
HCM 2000 Control Delay	25.3	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.55			
Actuated Cycle Length (s)	83.1	Sum of lost time (s)	19.2	
Intersection Capacity Utilization	56.5%	ICU Level of Service	B	
Analysis Period (min)	15			
c Critical Lane Group				



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	6	489	385	114	1457	76	0	0	0	44	27	26
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.7	5.1		4.7	5.1						5.5	
Lane Util. Factor	1.00	0.95		1.00	0.95						1.00	
Frpb, ped/bikes	1.00	0.99		1.00	1.00						0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00						1.00	
Frt	1.00	0.93		1.00	0.99						0.96	
Flt Protected	0.95	1.00		0.95	1.00						0.98	
Satd. Flow (prot)	1766	3276		1770	3505						1741	
Flt Permitted	0.95	1.00		0.95	1.00						0.98	
Satd. Flow (perm)	1766	3276		1770	3505						1741	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	7	532	418	124	1584	83	0	0	0	48	29	28
RTOR Reduction (vph)	0	157	0	0	5	0	0	0	0	0	14	0
Lane Group Flow (vph)	7	793	0	124	1662	0	0	0	0	0	91	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Prot	NA		Prot	NA					Split	NA	
Protected Phases	5	2		1	6					4	4	
Permitted Phases												
Actuated Green, G (s)	0.7	37.3		9.1	45.7						16.4	
Effective Green, g (s)	0.7	37.3		9.1	45.7						16.4	
Actuated g/C Ratio	0.01	0.48		0.12	0.59						0.21	
Clearance Time (s)	4.7	5.1		4.7	5.1						5.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0						3.0	
Lane Grp Cap (vph)	15	1564		206	2050						365	
v/s Ratio Prot	0.00	0.24		c0.07	c0.47						c0.05	
v/s Ratio Perm												
v/c Ratio	0.47	0.51		0.60	0.81						0.25	
Uniform Delay, d1	38.5	14.1		32.8	12.8						25.7	
Progression Factor	1.00	1.00		1.00	1.00						1.00	
Incremental Delay, d2	21.2	0.3		4.9	2.5						1.6	
Delay (s)	59.7	14.3		37.7	15.3						27.3	
Level of Service	E	B		D	B						C	
Approach Delay (s)		14.7			16.9			0.0			27.3	
Approach LOS		B			B			A			C	

Intersection Summary				
HCM 2000 Control Delay	16.5	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.68			
Actuated Cycle Length (s)	78.1	Sum of lost time (s)	15.3	
Intersection Capacity Utilization	72.2%	ICU Level of Service	C	
Analysis Period (min)	15			
c Critical Lane Group				



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	550	0	0	462	1199	467
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.5			5.5	4.5	5.5
Lane Util. Factor	0.95			0.95	0.97	1.00
Frpb, ped/bikes	1.00			1.00	1.00	0.98
Flpb, ped/bikes	1.00			1.00	1.00	1.00
Frt	1.00			1.00	1.00	0.85
Flt Protected	1.00			1.00	0.95	1.00
Satd. Flow (prot)	3539			3539	3433	1544
Flt Permitted	1.00			1.00	0.95	1.00
Satd. Flow (perm)	3539			3539	3433	1544
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	598	0	0	502	1303	508
RTOR Reduction (vph)	0	0	0	0	0	344
Lane Group Flow (vph)	598	0	0	502	1303	164
Confl. Peds. (#/hr)						10
Confl. Bikes (#/hr)						5
Turn Type	NA			NA	Prot	Perm
Protected Phases	2			6	4	
Permitted Phases						6
Actuated Green, G (s)	18.9			18.9	29.8	18.9
Effective Green, g (s)	18.9			18.9	29.8	18.9
Actuated g/C Ratio	0.32			0.32	0.51	0.32
Clearance Time (s)	5.5			5.5	4.5	5.5
Vehicle Extension (s)	3.0			3.0	3.0	3.0
Lane Grp Cap (vph)	1139			1139	1742	497
v/s Ratio Prot	c0.17			0.14	c0.38	
v/s Ratio Perm						0.11
v/c Ratio	0.53			0.44	0.75	0.33
Uniform Delay, d1	16.2			15.7	11.5	15.1
Progression Factor	1.00			1.00	1.00	1.00
Incremental Delay, d2	0.4			0.3	1.8	0.4
Delay (s)	16.7			16.0	13.3	15.5
Level of Service	B			B	B	B
Approach Delay (s)	16.7			16.0	13.9	
Approach LOS	B			B	B	

Intersection Summary				
HCM 2000 Control Delay	14.8	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.66			
Actuated Cycle Length (s)	58.7	Sum of lost time (s)	10.0	
Intersection Capacity Utilization	57.7%	ICU Level of Service	B	
Analysis Period (min)	15			
c Critical Lane Group				

3:15-4:15 PM Year 2017 + Cumulative + Project (Phase 1)
20: Aero Dr & Convoy St

HCM Signalized Intersection Capacity Analysis

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	12	35	19	305	21	511	0	551	461	633	639	24
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.9		4.9	4.9	4.9		5.2		4.5	4.5	
Lane Util. Factor		1.00		0.95	0.91	0.95		0.95		0.97	0.95	
Frpb, ped/bikes		0.99		1.00	0.99	0.98		0.98		1.00	1.00	
Flpb, ped/bikes		1.00		1.00	1.00	1.00		1.00		1.00	1.00	
Frt		0.96		1.00	0.88	0.85		0.93		1.00	0.99	
Flt Protected		0.99		0.95	0.99	1.00		1.00		0.95	1.00	
Satd. Flow (prot)		1749		1681	1457	1478		3247		3433	3513	
Flt Permitted		0.99		0.95	0.99	1.00		1.00		0.95	1.00	
Satd. Flow (perm)		1749		1681	1457	1478		3247		3433	3513	
Peak-hour factor, PHF	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Adj. Flow (vph)	14	40	22	351	24	587	0	633	530	728	734	28
RTOR Reduction (vph)	0	15	0	0	162	254	0	154	0	0	3	0
Lane Group Flow (vph)	0	61	0	316	167	63	0	1009	0	728	759	0
Confl. Peds. (#/hr)			10						10			10
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Split	NA		Split	NA	Perm		NA		Prot	NA	
Protected Phases	7	7		8	8			2		1	6	
Permitted Phases						8						
Actuated Green, G (s)		6.0		20.0	20.0	20.0		32.8		21.7	59.7	
Effective Green, g (s)		6.0		20.0	20.0	20.0		32.8		21.7	59.7	
Actuated g/C Ratio		0.06		0.20	0.20	0.20		0.33		0.22	0.60	
Clearance Time (s)		4.9		4.9	4.9	4.9		5.2		4.5	4.5	
Vehicle Extension (s)		3.0		3.0	3.0	3.0		3.0		3.0	3.0	
Lane Grp Cap (vph)		104		336	291	295		1065		744	2097	
v/s Ratio Prot		c0.03		c0.19	0.11			c0.31		c0.21	0.22	
v/s Ratio Perm						0.04						
v/c Ratio		0.59		0.94	0.57	0.21		0.95		0.98	0.36	
Uniform Delay, d1		45.8		39.4	36.1	33.4		32.8		38.9	10.4	
Progression Factor		1.00		1.00	1.00	1.00		1.00		1.15	1.17	
Incremental Delay, d2		8.2		33.8	2.7	0.4		17.5		25.4	0.4	
Delay (s)		54.0		73.2	38.8	33.8		50.3		70.1	12.6	
Level of Service		D		E	D	C		D		E	B	
Approach Delay (s)		54.0			48.5			50.3			40.7	
Approach LOS		D			D			D			D	

Intersection Summary				
HCM 2000 Control Delay	46.0	HCM 2000 Level of Service	D	
HCM 2000 Volume to Capacity ratio	0.93			
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	19.5	
Intersection Capacity Utilization	81.6%	ICU Level of Service	D	
Analysis Period (min)	15			
c Critical Lane Group				

3:15-4:15 PM Year 2017 + Cumulative + Project (Phase 1)
21: Kearny Villa Rd & Aero Dr

HCM Signalized Intersection Capacity Analysis

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	158	794	160	399	581	354	230	213	400	310	168	75
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.3		4.5	5.3		4.5	5.7	5.7	4.5	6.0	
Lane Util. Factor	1.00	0.95		0.97	0.95		0.97	0.95	1.00	0.97	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	0.99		1.00	1.00	0.99	1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.97		1.00	0.94		1.00	1.00	0.85	1.00	0.95	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3432		3433	3298		3433	3539	1560	3433	3340	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	3432		3433	3298		3433	3539	1560	3433	3340	
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	180	902	182	453	660	402	261	242	455	352	191	85
RTOR Reduction (vph)	0	19	0	0	102	0	0	0	55	0	57	0
Lane Group Flow (vph)	180	1065	0	453	960	0	261	242	400	352	219	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Prot	NA		Prot	NA		Prot	NA	custom	Prot	NA	
Protected Phases	5	2		1	6		3	8	8	7	4	
Permitted Phases									1			
Actuated Green, G (s)	10.5	29.5		13.5	32.5		9.5	16.1	29.6	10.7	17.0	
Effective Green, g (s)	10.5	29.5		13.5	32.5		9.5	16.1	29.6	10.7	17.0	
Actuated g/C Ratio	0.12	0.33		0.15	0.36		0.11	0.18	0.33	0.12	0.19	
Clearance Time (s)	4.5	5.3		4.5	5.3		4.5	5.7	5.7	4.5	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	206	1127		516	1193		363	634	613	409	632	
v/s Ratio Prot	0.10	c0.31		c0.13	c0.29		0.08	0.07	c0.12	c0.10	0.07	
v/s Ratio Perm									0.14			
v/c Ratio	0.87	0.95		0.88	0.80		0.72	0.38	0.65	0.86	0.35	
Uniform Delay, d1	39.0	29.4		37.3	25.8		38.9	32.5	25.7	38.8	31.6	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	31.0	15.3		15.5	4.0		6.7	0.4	2.5	16.7	0.3	
Delay (s)	70.0	44.7		52.8	29.8		45.5	32.9	28.2	55.5	31.9	
Level of Service	E	D		D	C		D	C	C	E	C	
Approach Delay (s)		48.3			36.7			34.1			45.1	
Approach LOS		D			D			C			D	

Intersection Summary				
HCM 2000 Control Delay	40.7	HCM 2000 Level of Service	D	
HCM 2000 Volume to Capacity ratio	0.88			
Actuated Cycle Length (s)	89.8	Sum of lost time (s)	20.3	
Intersection Capacity Utilization	74.8%	ICU Level of Service	D	
Analysis Period (min)	15			
c Critical Lane Group				

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	22	1332	150	48	1063	10	253	0	103	7	0	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.3		4.5	5.3		4.9	4.9			4.9	4.9
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00			1.00	1.00
Frpb, ped/bikes	1.00	0.99		1.00	1.00		1.00	0.97			1.00	0.97
Flpb, ped/bikes	1.00	1.00		1.00	1.00		0.98	1.00			0.99	1.00
Frt	1.00	0.98		1.00	1.00		1.00	0.85			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00			0.95	1.00
Satd. Flow (prot)	1770	3468		1770	3533		1741	1532			1745	1532
Flt Permitted	0.95	1.00		0.95	1.00		0.75	1.00			0.68	1.00
Satd. Flow (perm)	1770	3468		1770	3533		1379	1532			1245	1532
Peak-hour factor, PHF	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Adj. Flow (vph)	26	1586	179	57	1265	12	301	0	123	8	0	12
RTOR Reduction (vph)	0	9	0	0	1	0	0	90	0	0	0	9
Lane Group Flow (vph)	26	1756	0	57	1276	0	301	33	0	0	8	3
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	Perm
Protected Phases	5	2		1	6			4			4	
Permitted Phases							4			4		4
Actuated Green, G (s)	2.2	48.5		3.7	50.0		21.5	21.5			21.5	21.5
Effective Green, g (s)	2.2	48.5		3.7	50.0		21.5	21.5			21.5	21.5
Actuated g/C Ratio	0.02	0.55		0.04	0.57		0.24	0.24			0.24	0.24
Clearance Time (s)	4.5	5.3		4.5	5.3		4.9	4.9			4.9	4.9
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0			3.0	3.0
Lane Grp Cap (vph)	44	1902		74	1998		335	372			302	372
v/s Ratio Prot	0.01	c0.51		c0.03	0.36			0.02				
v/s Ratio Perm							c0.22				0.01	0.00
v/c Ratio	0.59	0.92		0.77	0.64		0.90	0.09			0.03	0.01
Uniform Delay, d1	42.7	18.2		41.9	13.1		32.4	25.9			25.5	25.4
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00			1.00	1.00
Incremental Delay, d2	19.5	8.0		38.0	0.7		25.2	0.1			0.0	0.0
Delay (s)	62.1	26.3		80.0	13.7		57.6	26.0			25.5	25.4
Level of Service	E	C		E	B		E	C			C	C
Approach Delay (s)		26.8			16.6			48.5			25.4	
Approach LOS		C			B			D			C	

Intersection Summary					
HCM 2000 Control Delay	25.5	HCM 2000 Level of Service	C		
HCM 2000 Volume to Capacity ratio	0.91				
Actuated Cycle Length (s)	88.4	Sum of lost time (s)	14.7		
Intersection Capacity Utilization	70.9%	ICU Level of Service	C		
Analysis Period (min)	15				
c Critical Lane Group					

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	37	1108	280	55	788	11	193	4	59	15	8	111
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.4		4.5	5.3			4.9			4.9	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	
Frpb, ped/bikes	1.00	0.99		1.00	1.00			0.99			0.98	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			0.99			1.00	
Frt	1.00	0.97		1.00	1.00			0.97			0.89	
Flt Protected	0.95	1.00		0.95	1.00			0.96			0.99	
Satd. Flow (prot)	1770	3400		1770	3530			1714			1607	
Flt Permitted	0.95	1.00		0.95	1.00			0.66			0.95	
Satd. Flow (perm)	1770	3400		1770	3530			1181			1538	
Peak-hour factor, PHF	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Adj. Flow (vph)	44	1304	329	65	927	13	227	5	69	18	9	131
RTOR Reduction (vph)	0	26	0	0	1	0	0	14	0	0	95	0
Lane Group Flow (vph)	44	1607	0	65	939	0	0	287	0	0	63	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8			4		
Actuated Green, G (s)	3.6	38.0		3.3	37.8			21.2			21.2	
Effective Green, g (s)	3.6	38.0		3.3	37.8			21.2			21.2	
Actuated g/C Ratio	0.05	0.49		0.04	0.49			0.27			0.27	
Clearance Time (s)	4.5	5.4		4.5	5.3			4.9			4.9	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	82	1671		75	1726			323			421	
v/s Ratio Prot	0.02	c0.47		c0.04	0.27							
v/s Ratio Perm								c0.24			0.04	
v/c Ratio	0.54	0.96		0.87	0.54			0.89			0.15	
Uniform Delay, d1	36.0	18.9		36.8	13.8			26.9			21.2	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	6.6	14.6		60.4	1.2			24.3			0.2	
Delay (s)	42.6	33.6		97.1	15.0			51.2			21.4	
Level of Service	D	C		F	B			D			C	
Approach Delay (s)		33.8			20.3			51.2			21.4	
Approach LOS		C			C			D			C	

Intersection Summary					
HCM 2000 Control Delay	30.5	HCM 2000 Level of Service	C		
HCM 2000 Volume to Capacity ratio	0.93				
Actuated Cycle Length (s)	77.3	Sum of lost time (s)	14.8		
Intersection Capacity Utilization	75.6%	ICU Level of Service	D		
Analysis Period (min)	15				
c Critical Lane Group					

3:15-4:15 PM Year 2017 + Cumulative + Project (Phase 1)
24: Sandrock Rd & Aero Dr

HCM Signalized Intersection Capacity Analysis

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	49	750	404	178	547	32	288	13	158	69	48	41
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.2	5.2	4.5	5.2		5.0	5.0	5.0	4.9	4.9	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		0.95	0.95	1.00	1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.95	1.00	1.00		1.00	1.00	0.97	1.00	0.98	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85	1.00	0.93	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	0.96	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3539	1503	1770	3500		1681	1692	1530	1770	1705	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	0.96	1.00	0.95	1.00	
Satd. Flow (perm)	1770	3539	1503	1770	3500		1681	1692	1530	1770	1705	
Peak-hour factor, PHF	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
Adj. Flow (vph)	61	938	505	222	684	40	360	16	198	86	60	51
RTOR Reduction (vph)	0	0	215	0	4	0	0	0	166	0	36	0
Lane Group Flow (vph)	61	938	290	222	720	0	187	189	32	86	75	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Prot	NA	Perm	Prot	NA		Split	NA	Perm	Split	NA	
Protected Phases	5	2		1	6		8	8		7	7	
Permitted Phases			2						8			
Actuated Green, G (s)	5.6	27.1	27.1	12.4	33.9		13.4	13.4	13.4	9.3	9.3	
Effective Green, g (s)	5.6	27.1	27.1	12.4	33.9		13.4	13.4	13.4	9.3	9.3	
Actuated g/C Ratio	0.07	0.33	0.33	0.15	0.41		0.16	0.16	0.16	0.11	0.11	
Clearance Time (s)	4.5	5.2	5.2	4.5	5.2		5.0	5.0	5.0	4.9	4.9	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	121	1172	497	268	1450		275	277	250	201	193	
v/s Ratio Prot	0.03	c0.27		c0.13	0.21		0.11	c0.11		c0.05	0.04	
v/s Ratio Perm			0.19						0.02			
v/c Ratio	0.50	0.80	0.58	0.83	0.50		0.68	0.68	0.13	0.43	0.39	
Uniform Delay, d1	36.8	24.9	22.7	33.7	17.7		32.2	32.2	29.2	33.8	33.6	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	3.3	5.8	4.9	18.6	0.3		6.7	6.8	0.2	1.5	1.3	
Delay (s)	40.0	30.7	27.6	52.3	17.9		38.9	39.0	29.5	35.2	34.9	
Level of Service	D	C	C	D	B		D	D	C	D	C	
Approach Delay (s)		30.0			26.0			35.7			35.0	
Approach LOS		C			C			D			D	

Intersection Summary				
HCM 2000 Control Delay	30.1	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.72			
Actuated Cycle Length (s)	81.8	Sum of lost time (s)	19.6	
Intersection Capacity Utilization	57.8%	ICU Level of Service	B	
Analysis Period (min)	15			
c Critical Lane Group				

3:15-4:15 PM Year 2017 + Cumulative + Project (Phase 1)
25: Ruffin Rd & Aero Dr

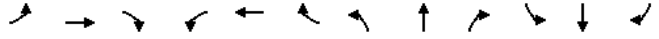
HCM Signalized Intersection Capacity Analysis

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	689	291	306	568	134	232
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.2	5.2	4.5	4.5	5.5	5.5
Lane Util. Factor	0.95	1.00	0.97	0.95	0.97	1.00
Frpb, ped/bikes	1.00	0.99	1.00	1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	3539	1566	3433	3539	3433	1541
Flt Permitted	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)	3539	1566	3433	3539	3433	1541
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	749	316	333	617	146	252
RTOR Reduction (vph)	0	27	0	0	0	184
Lane Group Flow (vph)	749	289	333	617	146	68
Confl. Peds. (#/hr)		10	10		10	10
Confl. Bikes (#/hr)		5				5
Turn Type	NA	custom	Prot	NA	Prot	Perm
Protected Phases	2	2	1	6	8	
Permitted Phases		8				8
Actuated Green, G (s)	19.3	35.3	9.2	33.7	16.0	16.0
Effective Green, g (s)	19.3	35.3	9.2	33.7	16.0	16.0
Actuated g/C Ratio	0.32	0.59	0.15	0.56	0.27	0.27
Clearance Time (s)	5.2	5.2	4.5	4.5	5.5	5.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	1144	1062	529	1997	920	412
v/s Ratio Prot	c0.21	c0.09	c0.10	0.17	0.04	
v/s Ratio Perm		0.10				0.04
v/c Ratio	0.65	0.27	0.63	0.31	0.16	0.16
Uniform Delay, d1	17.3	5.9	23.7	6.9	16.7	16.7
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	2.9	0.6	2.3	0.1	0.4	0.9
Delay (s)	20.3	6.6	26.0	6.9	17.1	17.6
Level of Service	C	A	C	A	B	B
Approach Delay (s)	16.2			13.6	17.4	
Approach LOS	B			B	B	

Intersection Summary				
HCM 2000 Control Delay	15.4	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.53			
Actuated Cycle Length (s)	59.7	Sum of lost time (s)	15.2	
Intersection Capacity Utilization	53.8%	ICU Level of Service	A	
Analysis Period (min)	15			
c Critical Lane Group				

Movement	EBU	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations							
Volume (vph)	21	946	109	135	851	116	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5		4.5	4.5	4.5	4.5
Lane Util. Factor	1.00	0.95		0.97	0.95	0.97	0.88
Frpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	0.95
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00
Frt	1.00	0.98		1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	0.95	1.00
Satd. Flow (prot)	1770	3474		3433	3539	3433	2643
Flt Permitted	0.95	1.00		0.95	1.00	0.95	1.00
Satd. Flow (perm)	1770	3474		3433	3539	3433	2643
Peak-hour factor, PHF	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Adj. Flow (vph)	24	1100	127	157	990	135	47
RTOR Reduction (vph)	0	10	0	0	0	0	37
Lane Group Flow (vph)	24	1217	0	157	990	135	10
Confl. Peds. (#/hr)			10	10		10	10
Confl. Bikes (#/hr)			5				5
Turn Type	Prot	NA		Prot	NA	Prot	Perm
Protected Phases	5	2		1	6	8	
Permitted Phases							8
Actuated Green, G (s)	1.6	36.6		8.8	43.8	16.1	16.1
Effective Green, g (s)	1.6	36.6		8.8	43.8	16.1	16.1
Actuated g/C Ratio	0.02	0.49		0.12	0.58	0.21	0.21
Clearance Time (s)	4.5	4.5		4.5	4.5	4.5	4.5
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	37	1695		402	2066	736	567
v/s Ratio Prot	0.01	c0.35		c0.05	c0.28	c0.04	
v/s Ratio Perm							0.00
v/c Ratio	0.65	0.72		0.39	0.48	0.18	0.02
Uniform Delay, d1	36.4	15.1		30.6	9.0	24.1	23.2
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2	33.0	2.7		0.6	0.8	0.5	0.1
Delay (s)	69.4	17.8		31.2	9.8	24.6	23.3
Level of Service	E	B		C	A	C	C
Approach Delay (s)		18.8			12.7	24.3	
Approach LOS		B			B	C	

Intersection Summary				
HCM 2000 Control Delay	16.5	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.53			
Actuated Cycle Length (s)	75.0	Sum of lost time (s)	13.5	
Intersection Capacity Utilization	58.2%	ICU Level of Service	B	
Analysis Period (min)	15			
c Critical Lane Group				



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	3	0	0	1	0	19	0	337	0	11	183	3
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Hourly flow rate (vph)	4	0	0	1	0	23	0	401	0	13	218	4
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)											142	
pX, platoon unblocked												
vC, conflicting volume	670	647	220	647	649	401	221			401		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	670	647	220	647	649	401	221			401		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	99	100	100	100	100	97	100			99		
cM capacity (veh/h)	355	385	820	381	384	649	1348			1157		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	4	24	401	235
Volume Left	4	1	0	13
Volume Right	0	23	0	4
cSH	355	627	1348	1157
Volume to Capacity	0.01	0.04	0.00	0.01
Queue Length 95th (ft)	1	3	0	1
Control Delay (s)	15.2	11.0	0.0	0.6
Lane LOS	C	B		A
Approach Delay (s)	15.2	11.0	0.0	0.6
Approach LOS	C	B		

Intersection Summary				
Average Delay	0.7			
Intersection Capacity Utilization	28.8%	ICU Level of Service	A	
Analysis Period (min)	15			

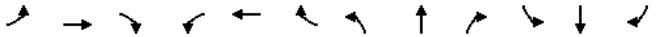
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	3	188	111	0	99	42
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.60	0.60	0.60	0.60	0.60	0.60
Hourly flow rate (vph)	5	313	185	0	165	70
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						635
pX, platoon unblocked						
vC, conflicting volume	585	185			185	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	585	185			185	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	99	63			88	
cM capacity (veh/h)	417	857			1390	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	318	185	235
Volume Left	5	0	165
Volume Right	313	0	0
cSH	843	1700	1390
Volume to Capacity	0.38	0.11	0.12
Queue Length 95th (ft)	44	0	10
Control Delay (s)	11.8	0.0	5.9
Lane LOS	B		A
Approach Delay (s)	11.8	0.0	5.9
Approach LOS	B		

Intersection Summary			
Average Delay		7.0	
Intersection Capacity Utilization		32.8%	ICU Level of Service A
Analysis Period (min)		15	

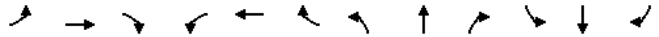
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	216	31	452	279	558	14
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.1	4.7	4.7	5.8	5.8	
Lane Util. Factor	0.97	1.00	1.00	0.95	0.95	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.85	1.00	1.00	1.00	
Flt Protected	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	3433	1583	1770	3539	3522	
Flt Permitted	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (perm)	3433	1583	1770	3539	3522	
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	243	35	508	313	627	16
RTOR Reduction (vph)	0	12	0	0	2	0
Lane Group Flow (vph)	243	23	508	313	641	0
Confl. Peds. (#/hr)						10
Confl. Bikes (#/hr)						5
Turn Type	Prot	pm+ov	Prot	NA	NA	
Protected Phases	4	5	5	2	6	
Permitted Phases		4				
Actuated Green, G (s)	10.1	33.4	23.3	48.1	20.1	
Effective Green, g (s)	10.1	33.4	23.3	48.1	20.1	
Actuated g/C Ratio	0.15	0.48	0.34	0.70	0.29	
Clearance Time (s)	5.1	4.7	4.7	5.8	5.8	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	501	765	596	2463	1024	
v/s Ratio Prot	c0.07	0.01	c0.29	0.09	c0.18	
v/s Ratio Perm		0.00				
v/c Ratio	0.49	0.03	0.85	0.13	0.63	
Uniform Delay, d1	27.1	9.4	21.3	3.5	21.2	
Progression Factor	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.7	0.0	11.3	0.1	2.9	
Delay (s)	27.9	9.4	32.6	3.6	24.1	
Level of Service	C	A	C	A	C	
Approach Delay (s)	25.5			21.6	24.1	
Approach LOS	C			C	C	

Intersection Summary			
HCM 2000 Control Delay	23.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	69.1	Sum of lost time (s)	15.6
Intersection Capacity Utilization	60.1%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			



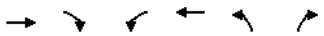
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	128	113	24	282	51	171	20	371	188	176	387	105
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.1			5.1	5.1	4.7	5.5	5.5	4.7	5.5	
Lane Util. Factor		1.00			1.00	1.00	1.00	0.95	1.00	1.00	0.95	
Frpb, ped/bikes		1.00			1.00	0.97	1.00	1.00	0.95	1.00	0.99	
Flpb, ped/bikes		1.00			1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt		0.99			1.00	0.85	1.00	1.00	0.85	1.00	0.97	
Flt Protected		0.98			0.96	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1791			1787	1531	1770	3539	1496	1770	3388	
Flt Permitted		0.98			0.96	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)		1791			1787	1531	1770	3539	1496	1770	3388	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	132	116	25	291	53	176	21	382	194	181	399	108
RTOR Reduction (vph)	0	4	0	0	0	137	0	0	152	0	24	0
Lane Group Flow (vph)	0	269	0	0	344	39	21	382	42	181	483	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Split	NA		Split	NA	Perm	Prot	NA	Perm	Prot	NA	
Protected Phases	4	4		3	3		5	2		1	6	
Permitted Phases						3			2			
Actuated Green, G (s)		16.6			19.5	19.5	2.0	19.1	19.1	11.6	28.7	
Effective Green, g (s)		16.6			19.5	19.5	2.0	19.1	19.1	11.6	28.7	
Actuated g/C Ratio		0.19			0.22	0.22	0.02	0.22	0.22	0.13	0.33	
Clearance Time (s)		5.1			5.1	5.1	4.7	5.5	5.5	4.7	5.5	
Vehicle Extension (s)		3.0			3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)		340			399	342	40	775	327	235	1115	
v/s Ratio Prot		c0.15			c0.19		0.01	c0.11		c0.10	0.14	
v/s Ratio Perm						0.03			0.03			
v/c Ratio		0.79			0.86	0.12	0.53	0.49	0.13	0.77	0.43	
Uniform Delay, d1		33.6			32.6	27.0	42.1	29.8	27.4	36.5	22.9	
Progression Factor		1.00			1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2		11.9			17.2	0.2	11.9	2.2	0.8	14.4	1.2	
Delay (s)		45.5			49.7	27.1	54.0	32.0	28.2	50.9	24.1	
Level of Service		D			D	C	D	C	C	D	C	
Approach Delay (s)		45.5			42.1			31.6			31.2	
Approach LOS		D			D			C			C	

Intersection Summary				
HCM 2000 Control Delay	35.9	HCM 2000 Level of Service	D	
HCM 2000 Volume to Capacity ratio	0.72			
Actuated Cycle Length (s)	87.2	Sum of lost time (s)	20.4	
Intersection Capacity Utilization	66.0%	ICU Level of Service	C	
Analysis Period (min)	15			
c Critical Lane Group				



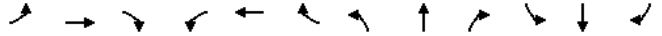
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	49	91	85	417	42	32	79	741	224	35	730	28
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.9	4.9	4.5	4.9		4.5	5.3		4.5	5.0	
Lane Util. Factor	1.00	1.00	1.00	0.97	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	1.00	0.85	1.00	0.94		1.00	0.97		1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1863	1583	3433	1742		1770	3416		1770	3519	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	1863	1583	3433	1742		1770	3416		1770	3519	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	54	100	93	458	46	35	87	814	246	38	802	31
RTOR Reduction (vph)	0	0	82	0	27	0	0	25	0	0	2	0
Lane Group Flow (vph)	54	100	11	458	54	0	87	1035	0	38	831	0
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4									
Actuated Green, G (s)	6.7	11.5	11.5	17.6	22.4		8.5	47.1		4.6	43.5	
Effective Green, g (s)	6.7	11.5	11.5	17.6	22.4		8.5	47.1		4.6	43.5	
Actuated g/C Ratio	0.07	0.12	0.12	0.18	0.22		0.08	0.47		0.05	0.44	
Clearance Time (s)	4.5	4.9	4.9	4.5	4.9		4.5	5.3		4.5	5.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	118	214	182	604	390		150	1608		81	1530	
v/s Ratio Prot	0.03	c0.05		c0.13	0.03		c0.05	c0.30		0.02	0.24	
v/s Ratio Perm			0.01									
v/c Ratio	0.46	0.47	0.06	0.76	0.14		0.58	0.64		0.47	0.54	
Uniform Delay, d1	44.9	41.4	39.4	39.2	31.1		44.0	20.1		46.5	20.9	
Progression Factor	1.00	1.00	1.00	1.00	1.00		0.93	1.32		1.00	1.00	
Incremental Delay, d2	2.8	1.6	0.1	5.4	0.2		3.2	1.2		4.2	1.4	
Delay (s)	47.7	43.0	39.6	44.6	31.2		44.2	27.7		50.8	22.3	
Level of Service	D	D	D	D	C		D	C		D	C	
Approach Delay (s)		42.7			42.6			28.9			23.5	
Approach LOS		D			D			C			C	

Intersection Summary				
HCM 2000 Control Delay	31.1	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.65			
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	19.2	
Intersection Capacity Utilization	61.8%	ICU Level of Service	B	
Analysis Period (min)	15			
c Critical Lane Group				



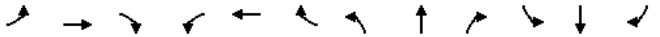
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	459	0	0	820	359	254
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.1			5.1	5.1	5.1
Lane Util. Factor	0.95			0.95	0.97	0.91
Frt	1.00			1.00	0.98	0.85
Flt Protected	1.00			1.00	0.96	1.00
Satd. Flow (prot)	3539			3539	3388	1441
Flt Permitted	1.00			1.00	0.96	1.00
Satd. Flow (perm)	3539			3539	3388	1441
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	478	0	0	854	374	265
RTOR Reduction (vph)	0	0	0	0	20	159
Lane Group Flow (vph)	478	0	0	854	420	40
Turn Type	NA			NA	Prot	Perm
Protected Phases	2			6	4	
Permitted Phases						4
Actuated Green, G (s)	13.9			21.9	13.0	13.0
Effective Green, g (s)	13.9			21.9	13.0	13.0
Actuated g/C Ratio	0.22			0.34	0.20	0.20
Clearance Time (s)	5.1			5.1	5.1	5.1
Vehicle Extension (s)	3.0			3.0	3.0	3.0
Lane Grp Cap (vph)	767			1209	687	292
v/s Ratio Prot	c0.14			c0.24	c0.12	
v/s Ratio Perm						0.03
v/c Ratio	0.62			0.71	0.61	0.14
Uniform Delay, d1	22.7			18.3	23.3	21.0
Progression Factor	1.00			1.00	1.00	1.00
Incremental Delay, d2	1.6			1.9	1.6	0.2
Delay (s)	24.3			20.2	24.9	21.2
Level of Service	C			C	C	C
Approach Delay (s)	24.3			20.2	23.7	
Approach LOS	C			C	C	

Intersection Summary				
HCM 2000 Control Delay	22.3	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.66			
Actuated Cycle Length (s)	64.1	Sum of lost time (s)	15.3	
Intersection Capacity Utilization	44.1%	ICU Level of Service	A	
Analysis Period (min)	15			
c Critical Lane Group				



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	100	530	68	313	643	13	121	40	262	18	13	53
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.9	4.0	4.5	4.9		4.9	4.9	4.9		4.9	4.9
Lane Util. Factor	1.00	0.95	1.00	0.97	0.95		1.00	0.95	0.95		1.00	1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	0.98	0.97		1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00		1.00	0.89	0.85		1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00		0.97	1.00
Satd. Flow (prot)	1770	3539	1583	3433	3525		1770	1541	1461		1811	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00		0.97	1.00
Satd. Flow (perm)	1770	3539	1583	3433	3525		1770	1541	1461		1811	1583
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	104	552	71	326	670	14	126	42	273	19	14	55
RTOR Reduction (vph)	0	0	0	0	2	0	0	0	0	0	0	0
Lane Group Flow (vph)	104	552	71	326	682	0	126	159	156	0	33	55
Confl. Peds. (#/hr)						10			10			
Confl. Bikes (#/hr)						5			5			
Turn Type	Prot	NA	Free	Prot	NA		Split	NA	Perm	Split	NA	Perm
Protected Phases	5	2		1	6		3	3		4	4	
Permitted Phases			Free						3			4
Actuated Green, G (s)	4.5	17.3	67.7	8.6	21.4		16.1	16.1	16.1		6.5	6.5
Effective Green, g (s)	4.5	17.3	67.7	8.6	21.4		16.1	16.1	16.1		6.5	6.5
Actuated g/C Ratio	0.07	0.26	1.00	0.13	0.32		0.24	0.24	0.24		0.10	0.10
Clearance Time (s)	4.5	4.9		4.5	4.9		4.9	4.9	4.9		4.9	4.9
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	117	904	1583	436	1114		420	366	347		173	151
v/s Ratio Prot	0.06	0.16		c0.09	c0.19		0.07	0.10			0.02	
v/s Ratio Perm			0.04						c0.11			c0.03
v/c Ratio	0.89	0.61	0.04	0.75	0.61		0.30	0.43	0.45		0.19	0.36
Uniform Delay, d1	31.4	22.2	0.0	28.5	19.6		21.2	21.9	22.0		28.2	28.7
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	49.8	3.1	0.1	6.9	1.0		1.8	3.7	4.2		0.5	1.5
Delay (s)	81.2	25.3	0.1	35.4	20.6		23.0	25.7	26.2		28.7	30.2
Level of Service	F	C	A	D	C		C	C	C		C	C
Approach Delay (s)		30.8			25.4			25.1			29.6	
Approach LOS		C			C			C			C	

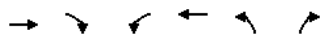
Intersection Summary				
HCM 2000 Control Delay	27.2	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.57			
Actuated Cycle Length (s)	67.7	Sum of lost time (s)	19.2	
Intersection Capacity Utilization	52.4%	ICU Level of Service	A	
Analysis Period (min)	15			
c Critical Lane Group				



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	11	444	723	304	985	72	0	0	0	43	68	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.7	5.1		4.7	5.1						5.5	
Lane Util. Factor	1.00	0.95		1.00	0.95						1.00	
Frpb, ped/bikes	1.00	0.99		1.00	1.00						1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00						1.00	
Frt	1.00	0.91		1.00	0.99						0.99	
Flt Protected	0.95	1.00		0.95	1.00						0.98	
Satd. Flow (prot)	1761	3166		1770	3492						1799	
Flt Permitted	0.95	1.00		0.95	1.00						0.98	
Satd. Flow (perm)	1761	3166		1770	3492						1799	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	12	477	777	327	1059	77	0	0	0	46	73	14
RTOR Reduction (vph)	0	260	0	0	6	0	0	0	0	0	6	0
Lane Group Flow (vph)	12	994	0	327	1130	0	0	0	0	0	127	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Prot	NA		Prot	NA					Split	NA	
Protected Phases	5	2		1	6					4	4	
Permitted Phases												
Actuated Green, G (s)	0.8	29.9		15.7	44.8						16.0	
Effective Green, g (s)	0.8	29.9		15.7	44.8						16.0	
Actuated g/C Ratio	0.01	0.39		0.20	0.58						0.21	
Clearance Time (s)	4.7	5.1		4.7	5.1						5.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0						3.0	
Lane Grp Cap (vph)	18	1230		361	2034						374	
v/s Ratio Prot	0.01	c0.31		c0.18	0.32						c0.07	
v/s Ratio Perm												
v/c Ratio	0.67	0.94dr		0.91	0.56						0.34	
Uniform Delay, d1	37.9	20.9		29.9	9.9						26.0	
Progression Factor	1.00	1.00		1.00	1.00						1.00	
Incremental Delay, d2	66.1	4.0		25.2	0.3						2.5	
Delay (s)	104.0	25.0		55.1	10.2						28.4	
Level of Service	F	C		E	B						C	
Approach Delay (s)		25.7			20.3			0.0			28.4	
Approach LOS		C			C			A			C	

Intersection Summary				
HCM 2000 Control Delay	23.1	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.71			
Actuated Cycle Length (s)	76.9	Sum of lost time (s)	15.3	
Intersection Capacity Utilization	79.3%	ICU Level of Service	D	
Analysis Period (min)	15			

dr Defacto Right Lane. Recode with 1 though lane as a right lane.
c Critical Lane Group



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	480	0	0	699	671	258
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.5			5.5	4.5	5.5
Lane Util. Factor	0.95			0.95	0.97	1.00
Frpb, ped/bikes	1.00			1.00	1.00	0.98
Flpb, ped/bikes	1.00			1.00	1.00	1.00
Frt	1.00			1.00	1.00	0.85
Flt Protected	1.00			1.00	0.95	1.00
Satd. Flow (prot)	3539			3539	3433	1549
Flt Permitted	1.00			1.00	0.95	1.00
Satd. Flow (perm)	3539			3539	3433	1549
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	511	0	0	744	714	274
RTOR Reduction (vph)	0	0	0	0	0	158
Lane Group Flow (vph)	511	0	0	744	714	116
Confl. Peds. (#/hr)						10
Confl. Bikes (#/hr)						5
Turn Type	NA			NA	Prot	Perm
Protected Phases	2			6	4	
Permitted Phases						6
Actuated Green, G (s)	18.8			18.8	15.7	18.8
Effective Green, g (s)	18.8			18.8	15.7	18.8
Actuated g/C Ratio	0.42			0.42	0.35	0.42
Clearance Time (s)	5.5			5.5	4.5	5.5
Vehicle Extension (s)	3.0			3.0	3.0	3.0
Lane Grp Cap (vph)	1495			1495	1211	654
v/s Ratio Prot	0.14			c0.21	c0.21	
v/s Ratio Perm						0.07
v/c Ratio	0.34			0.50	0.59	0.18
Uniform Delay, d1	8.7			9.4	11.8	8.0
Progression Factor	1.00			1.00	1.00	1.00
Incremental Delay, d2	0.1			0.3	0.7	0.1
Delay (s)	8.8			9.7	12.5	8.2
Level of Service	A			A	B	A
Approach Delay (s)	8.8			9.7	11.3	
Approach LOS	A			A	B	

Intersection Summary				
HCM 2000 Control Delay	10.2	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.54			
Actuated Cycle Length (s)	44.5	Sum of lost time (s)	10.0	
Intersection Capacity Utilization	46.8%	ICU Level of Service	A	
Analysis Period (min)	15			

c Critical Lane Group

4:45-5:45 PM Year 2017 + Cumulative + Project (Phase 1)
1: Aero Dr & Convoy St
HCM Signalized Intersection Capacity Analysis

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	10	46	23	448	4	477	0	545	491	832	1069	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.9		4.9	4.9	4.9		5.2		4.5	4.5	
Lane Util. Factor		1.00		0.95	0.91	0.95		0.95		0.97	0.95	
Frpb, ped/bikes		0.99		1.00	0.99	0.98		0.98		1.00	1.00	
Flpb, ped/bikes		1.00		1.00	1.00	1.00		1.00		1.00	1.00	
Frt		0.96		1.00	0.91	0.85		0.93		1.00	1.00	
Flt Protected		0.99		0.95	0.98	1.00		1.00		0.95	1.00	
Satd. Flow (prot)		1752		1681	1501	1479		3229		3433	3536	
Flt Permitted		0.99		0.95	0.98	1.00		1.00		0.95	1.00	
Satd. Flow (perm)		1752		1681	1501	1479		3229		3433	3536	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	10	47	24	462	4	492	0	562	506	858	1102	5
RTOR Reduction (vph)	0	14	0	0	39	229	0	137	0	0	0	0
Lane Group Flow (vph)	0	67	0	333	281	76	0	931	0	858	1107	0
Confl. Peds. (#/hr)			10						10			10
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Split	NA		Split	NA	Perm		NA		Prot	NA	
Protected Phases	7	7		8	8			2		1	6	
Permitted Phases						8						
Actuated Green, G (s)		8.8		29.9	29.9	29.9		33.7		28.1	67.0	
Effective Green, g (s)		8.8		29.9	29.9	29.9		33.7		28.1	67.0	
Actuated g/C Ratio		0.07		0.25	0.25	0.25		0.28		0.23	0.56	
Clearance Time (s)		4.9		4.9	4.9	4.9		5.2		4.5	4.5	
Vehicle Extension (s)		3.0		3.0	3.0	3.0		3.0		3.0	3.0	
Lane Grp Cap (vph)		128		418	373	368		906		803	1974	
v/s Ratio Prot		c0.04		c0.20	0.19			c0.29		c0.25	0.31	
v/s Ratio Perm						0.05						
v/c Ratio		0.52		0.80	0.75	0.21		1.03		1.07	0.56	
Uniform Delay, d1		53.6		42.2	41.6	35.7		43.1		46.0	17.0	
Progression Factor		1.00		1.00	1.00	1.00		1.00		1.00	1.00	
Incremental Delay, d2		3.8		10.1	8.4	0.3		37.0		51.7	1.2	
Delay (s)		57.4		52.3	50.0	35.9		80.2		97.6	18.2	
Level of Service		E		D	D	D		F		F	B	
Approach Delay (s)		57.4			46.3			80.2			52.9	
Approach LOS		E			D			F			D	

Intersection Summary				
HCM 2000 Control Delay	58.6	HCM 2000 Level of Service	E	
HCM 2000 Volume to Capacity ratio	0.92			
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	19.5	
Intersection Capacity Utilization	91.3%	ICU Level of Service	F	
Analysis Period (min)	15			
c Critical Lane Group				

4:45-5:45 PM Year 2017 + Cumulative + Project (Phase 1)
2: Kearny Villa Rd & Aero Dr
HCM Signalized Intersection Capacity Analysis

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	142	1009	205	288	617	354	203	272	423	750	346	143
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.3		4.5	5.3		4.5	5.7	4.5	4.5	6.0	
Lane Util. Factor	1.00	0.95		0.97	0.95		0.97	0.95	1.00	0.97	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	0.99		1.00	1.00	0.98	1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.97		1.00	0.95		1.00	1.00	0.85	1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3427		3433	3299		3433	3539	1553	3433	3344	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	3427		3433	3299		3433	3539	1553	3433	3344	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	148	1051	214	300	643	369	211	283	441	781	360	149
RTOR Reduction (vph)	0	13	0	0	61	0	0	0	73	0	34	0
Lane Group Flow (vph)	148	1252	0	300	951	0	211	283	368	781	475	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Prot	NA		Prot	NA		Prot	NA	pm+ov	Prot	NA	
Protected Phases	5	2		1	6		3	8	1	7	4	
Permitted Phases									8			
Actuated Green, G (s)	14.6	49.0		15.5	49.9		12.9	14.0	29.5	30.5	31.3	
Effective Green, g (s)	14.6	49.0		15.5	49.9		12.9	14.0	29.5	30.5	31.3	
Actuated g/C Ratio	0.11	0.38		0.12	0.39		0.10	0.11	0.23	0.24	0.24	
Clearance Time (s)	4.5	5.3		4.5	5.3		4.5	5.7	4.5	4.5	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	200	1301		412	1276		343	384	355	811	811	
v/s Ratio Prot	0.08	c0.37		0.09	0.29		0.06	0.08	c0.12	c0.23	0.14	
v/s Ratio Perm									0.11			
v/c Ratio	0.74	0.96		0.73	0.75		0.62	0.74	1.04	0.96	0.59	
Uniform Delay, d1	55.4	39.1		54.7	34.1		55.7	55.7	49.8	48.7	43.1	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	13.4	16.7		6.3	2.4		3.3	7.2	57.3	22.8	1.1	
Delay (s)	68.7	55.8		61.0	36.5		58.9	62.9	107.1	71.5	44.2	
Level of Service	E	E		E	D		E	E	F	E	D	
Approach Delay (s)		57.1			42.1			82.9			60.7	
Approach LOS		E			D			F			E	

Intersection Summary				
HCM 2000 Control Delay	58.9	HCM 2000 Level of Service	E	
HCM 2000 Volume to Capacity ratio	0.98			
Actuated Cycle Length (s)	129.0	Sum of lost time (s)	20.3	
Intersection Capacity Utilization	95.1%	ICU Level of Service	F	
Analysis Period (min)	15			
c Critical Lane Group				

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	7	1997	181	64	1057	10	177	1	63	43	2	12
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.3		4.5	5.3		4.9	4.9			4.9	4.9
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00			1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.97			1.00	0.96
Flpb, ped/bikes	0.99	1.00		1.00	1.00		0.98	1.00			0.98	1.00
Frt	1.00	0.99		1.00	1.00		1.00	0.85			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00			0.95	1.00
Satd. Flow (prot)	1759	3480		1770	3532		1741	1532			1751	1527
Flt Permitted	0.95	1.00		0.95	1.00		0.73	1.00			0.71	1.00
Satd. Flow (perm)	1759	3480		1770	3532		1331	1532			1301	1527
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	7	2102	191	67	1113	11	186	1	66	45	2	13
RTOR Reduction (vph)	0	7	0	0	1	0	0	47	0	0	0	11
Lane Group Flow (vph)	7	2286	0	67	1123	0	186	20	0	0	47	2
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	Perm
Protected Phases	5	2		1	6			4			4	
Permitted Phases							4			4		4
Actuated Green, G (s)	0.7	59.4		2.5	61.2		15.4	15.4			15.4	15.4
Effective Green, g (s)	0.7	59.4		2.5	61.2		15.4	15.4			15.4	15.4
Actuated g/C Ratio	0.01	0.65		0.03	0.67		0.17	0.17			0.17	0.17
Clearance Time (s)	4.5	5.3		4.5	5.3		4.9	4.9			4.9	4.9
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0			3.0	3.0
Lane Grp Cap (vph)	13	2246		48	2349		222	256			217	255
v/s Ratio Prot	0.00	c0.66		c0.04	0.32			0.01				
v/s Ratio Perm							c0.14				0.04	0.00
v/c Ratio	0.54	1.02		1.40	0.48		0.84	0.08			0.22	0.01
Uniform Delay, d1	45.5	16.3		44.8	7.6		37.1	32.3			33.1	31.9
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00			1.00	1.00
Incremental Delay, d2	36.8	23.6		266.5	0.2		23.2	0.1			0.5	0.0
Delay (s)	82.3	39.9		311.3	7.7		60.2	32.4			33.6	31.9
Level of Service	F	D		F	A		E	C			C	C
Approach Delay (s)		40.0			24.8			52.9			33.2	
Approach LOS		D			C			D			C	

Intersection Summary				
HCM 2000 Control Delay	36.0	HCM 2000 Level of Service	D	
HCM 2000 Volume to Capacity ratio	0.99			
Actuated Cycle Length (s)	92.0	Sum of lost time (s)	14.7	
Intersection Capacity Utilization	86.0%	ICU Level of Service	E	
Analysis Period (min)	15			
c Critical Lane Group				

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	46	1711	327	37	905	5	150	3	54	12	5	91
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.4		4.5	5.3			4.9			4.9	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	
Frpb, ped/bikes	1.00	0.99		1.00	1.00			0.99			0.97	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			0.99			1.00	
Frt	1.00	0.98		1.00	1.00			0.96			0.89	
Flt Protected	0.95	1.00		0.95	1.00			0.96			0.99	
Satd. Flow (prot)	1770	3425		1770	3535			1702			1595	
Flt Permitted	0.95	1.00		0.95	1.00			0.70			0.96	
Satd. Flow (perm)	1770	3425		1770	3535			1228			1546	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	48	1782	341	39	943	5	156	3	56	12	5	95
RTOR Reduction (vph)	0	14	0	0	0	0	0	14	0	0	76	0
Lane Group Flow (vph)	48	2109	0	39	948	0	0	201	0	0	36	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8			4		
Actuated Green, G (s)	4.7	57.4		2.4	55.2			19.0			19.0	
Effective Green, g (s)	4.7	57.4		2.4	55.2			19.0			19.0	
Actuated g/C Ratio	0.05	0.61		0.03	0.59			0.20			0.20	
Clearance Time (s)	4.5	5.4		4.5	5.3			4.9			4.9	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	88	2100		45	2084			249			313	
v/s Ratio Prot	c0.03	c0.62		0.02	0.27							
v/s Ratio Perm								c0.16			0.02	
v/c Ratio	0.55	1.00		0.87	0.45			0.81			0.12	
Uniform Delay, d1	43.4	18.1		45.4	10.8			35.6			30.4	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	6.7	20.7		84.0	0.7			17.3			0.2	
Delay (s)	50.2	38.8		129.5	11.5			52.9			30.6	
Level of Service	D	D		F	B			D			C	
Approach Delay (s)		39.0			16.1			52.9			30.6	
Approach LOS		D			B			D			C	

Intersection Summary				
HCM 2000 Control Delay	33.1	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.96			
Actuated Cycle Length (s)	93.6	Sum of lost time (s)	14.8	
Intersection Capacity Utilization	85.2%	ICU Level of Service	E	
Analysis Period (min)	15			
c Critical Lane Group				

4:45-5:45 PM Year 2017 + Cumulative + Project (Phase 1)
5: Sandrock Rd & Aero Dr

HCM Signalized Intersection Capacity Analysis

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	50	998	712	295	634	24	284	30	153	65	69	44
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.2	5.2	4.5	5.2		5.0	5.0	5.0	4.9	4.9	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		0.95	0.95	1.00	1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.94	1.00	1.00		1.00	1.00	0.96	1.00	0.98	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85	1.00	0.94	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	0.96	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3539	1495	1770	3513		1681	1701	1523	1770	1726	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	0.96	1.00	0.95	1.00	
Satd. Flow (perm)	1770	3539	1495	1770	3513		1681	1701	1523	1770	1726	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	52	1040	742	307	660	25	296	31	159	68	72	46
RTOR Reduction (vph)	0	0	235	0	2	0	0	0	136	0	21	0
Lane Group Flow (vph)	52	1040	507	307	683	0	163	164	23	68	97	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Prot	NA	Perm	Prot	NA		Split	NA	Perm	Split	NA	
Protected Phases	5	2		1	6		8	8		7	7	
Permitted Phases			2						8			
Actuated Green, G (s)	6.5	36.0	36.0	20.0	49.5		14.8	14.8	14.8	10.8	10.8	
Effective Green, g (s)	6.5	36.0	36.0	20.0	49.5		14.8	14.8	14.8	10.8	10.8	
Actuated g/C Ratio	0.06	0.36	0.36	0.20	0.49		0.15	0.15	0.15	0.11	0.11	
Clearance Time (s)	4.5	5.2	5.2	4.5	5.2		5.0	5.0	5.0	4.9	4.9	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	113	1258	531	349	1718		245	248	222	188	184	
v/s Ratio Prot	0.03	0.29		c0.17	0.19		c0.10	0.10		0.04	c0.06	
v/s Ratio Perm			c0.34						0.02			
v/c Ratio	0.46	0.83	0.96	0.88	0.40		0.67	0.66	0.10	0.36	0.52	
Uniform Delay, d1	45.7	29.8	31.8	39.4	16.4		40.9	40.8	37.5	42.0	42.8	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	3.0	6.3	29.5	21.4	0.2		6.7	6.5	0.2	1.2	2.7	
Delay (s)	48.6	36.1	61.3	60.8	16.5		47.5	47.3	37.7	43.2	45.5	
Level of Service	D	D	E	E	B		D	D	D	D	D	
Approach Delay (s)		46.6			30.3			44.2			44.6	
Approach LOS		D			C			D			D	

Intersection Summary				
HCM 2000 Control Delay	41.5	HCM 2000 Level of Service	D	
HCM 2000 Volume to Capacity ratio	0.83			
Actuated Cycle Length (s)	101.2	Sum of lost time (s)	19.6	
Intersection Capacity Utilization	82.2%	ICU Level of Service	E	
Analysis Period (min)	15			
c Critical Lane Group				

4:45-5:45 PM Year 2017 + Cumulative + Project (Phase 1)
6: Ruffin Rd & Aero Dr

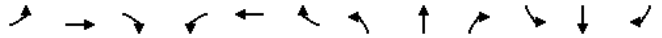
HCM Signalized Intersection Capacity Analysis

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	716	577	829	737	163	246
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.2	5.2	4.5	4.5	5.5	5.5
Lane Util. Factor	0.95	1.00	0.97	0.95	0.97	1.00
Frpb, ped/bikes	1.00	0.99	1.00	1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	3539	1567	3433	3539	3433	1529
Flt Permitted	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)	3539	1567	3433	3539	3433	1529
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	754	607	873	776	172	259
RTOR Reduction (vph)	0	12	0	0	0	212
Lane Group Flow (vph)	754	595	873	776	172	47
Confl. Peds. (#/hr)		10	10		10	10
Confl. Bikes (#/hr)		5				5
Turn Type	NA	custom	Prot	NA	Prot	Perm
Protected Phases	2	2	1	6	8	
Permitted Phases		8				8
Actuated Green, G (s)	30.3	46.3	26.1	61.6	16.0	16.0
Effective Green, g (s)	30.3	46.3	26.1	61.6	16.0	16.0
Actuated g/C Ratio	0.35	0.53	0.30	0.70	0.18	0.18
Clearance Time (s)	5.2	5.2	4.5	4.5	5.5	5.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	1224	921	1022	2488	627	279
v/s Ratio Prot	0.21	c0.22	c0.25	0.22	0.05	
v/s Ratio Perm		0.16				0.03
v/c Ratio	0.62	0.65	0.85	0.31	0.27	0.17
Uniform Delay, d1	23.8	14.8	29.0	4.9	30.8	30.2
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	2.3	3.5	7.1	0.1	1.1	1.3
Delay (s)	26.1	18.3	36.0	5.0	31.9	31.5
Level of Service	C	B	D	A	C	C
Approach Delay (s)	22.6			21.4	31.7	
Approach LOS	C			C	C	

Intersection Summary				
HCM 2000 Control Delay	23.2	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.77			
Actuated Cycle Length (s)	87.6	Sum of lost time (s)	15.2	
Intersection Capacity Utilization	69.4%	ICU Level of Service	C	
Analysis Period (min)	15			
c Critical Lane Group				

Movement	EBU	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations							
Volume (vph)	9	846	141	165	1345	160	63
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5		4.5	4.5	4.5	4.5
Lane Util. Factor	1.00	0.95		0.97	0.95	0.97	0.88
Frpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	0.95
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00
Frt	1.00	0.98		1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	0.95	1.00
Satd. Flow (prot)	1770	3450		3433	3539	3433	2649
Flt Permitted	0.95	1.00		0.95	1.00	0.95	1.00
Satd. Flow (perm)	1770	3450		3433	3539	3433	2649
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	10	920	153	179	1462	174	68
RTOR Reduction (vph)	0	16	0	0	0	0	52
Lane Group Flow (vph)	10	1057	0	179	1462	174	16
Confl. Peds. (#/hr)			10	10		10	10
Confl. Bikes (#/hr)			5				5
Turn Type	Prot	NA		Prot	NA	Prot	Perm
Protected Phases	5	2		1	6	8	
Permitted Phases							8
Actuated Green, G (s)	0.8	31.5		9.0	39.7	16.0	16.0
Effective Green, g (s)	0.8	31.5		9.0	39.7	16.0	16.0
Actuated g/C Ratio	0.01	0.45		0.13	0.57	0.23	0.23
Clearance Time (s)	4.5	4.5		4.5	4.5	4.5	4.5
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	20	1552		441	2007	784	605
v/s Ratio Prot	0.01	0.31		c0.05	c0.41	c0.05	
v/s Ratio Perm							0.01
v/c Ratio	0.50	0.68		0.41	0.73	0.22	0.03
Uniform Delay, d1	34.4	15.3		28.0	11.2	21.9	21.0
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2	18.3	2.4		0.6	2.4	0.7	0.1
Delay (s)	52.7	17.7		28.7	13.5	22.6	21.0
Level of Service	D	B		C	B	C	C
Approach Delay (s)		18.0			15.2	22.2	
Approach LOS		B			B	C	

Intersection Summary				
HCM 2000 Control Delay	16.8	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.59			
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	13.5	
Intersection Capacity Utilization	65.1%	ICU Level of Service	C	
Analysis Period (min)	15			
c Critical Lane Group				



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	4	1	4	2	0	22	0	218	6	48	190	7
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72
Hourly flow rate (vph)	6	1	6	3	0	31	0	303	8	67	264	10
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)											142	
pX, platoon unblocked												
vC, conflicting volume	740	713	269	715	714	307	274			311		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	740	713	269	715	714	307	274			311		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	98	100	99	99	100	96	100			95		
cM capacity (veh/h)	306	338	770	328	338	733	1290			1249		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	12	33	311	340
Volume Left	6	3	0	67
Volume Right	6	31	8	10
cSH	424	665	1290	1249
Volume to Capacity	0.03	0.05	0.00	0.05
Queue Length 95th (ft)	2	4	0	4
Control Delay (s)	13.7	10.7	0.0	2.0
Lane LOS	B	B		A
Approach Delay (s)	13.7	10.7	0.0	2.0
Approach LOS	B	B		

Intersection Summary				
Average Delay	1.7			
Intersection Capacity Utilization	38.2%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	0	141	90	0	90	45
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82
Hourly flow rate (vph)	0	172	110	0	110	55
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						635
pX, platoon unblocked						
vC, conflicting volume	384	110			110	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	384	110			110	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	82			93	
cM capacity (veh/h)	573	944			1480	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	172	110	165
Volume Left	0	0	110
Volume Right	172	0	0
cSH	944	1700	1480
Volume to Capacity	0.18	0.06	0.07
Queue Length 95th (ft)	17	0	6
Control Delay (s)	9.7	0.0	5.3
Lane LOS	A		A
Approach Delay (s)	9.7	0.0	5.3
Approach LOS	A		

Intersection Summary			
Average Delay	5.7		
Intersection Capacity Utilization	29.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	314	42	446	309	1208	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.1	4.7	4.7	5.8	5.8	
Lane Util. Factor	0.97	1.00	1.00	0.95	0.95	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.85	1.00	1.00	1.00	
Flt Protected	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	3433	1583	1770	3539	3527	
Flt Permitted	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (perm)	3433	1583	1770	3539	3527	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	331	44	469	325	1272	21
RTOR Reduction (vph)	0	7	0	0	1	0
Lane Group Flow (vph)	331	37	469	325	1292	0
Confl. Peds. (#/hr)						10
Confl. Bikes (#/hr)						5
Turn Type	Prot	pm+ov	Prot	NA	NA	
Protected Phases	4	5	5	2	6	
Permitted Phases		4				
Actuated Green, G (s)	14.0	41.7	27.7	73.1	40.7	
Effective Green, g (s)	14.0	41.7	27.7	73.1	40.7	
Actuated g/C Ratio	0.14	0.43	0.28	0.75	0.42	
Clearance Time (s)	5.1	4.7	4.7	5.8	5.8	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	490	673	500	2639	1464	
v/s Ratio Prot	c0.10	0.02	c0.27	0.09	c0.37	
v/s Ratio Perm		0.01				
v/c Ratio	0.68	0.05	0.94	0.12	0.88	
Uniform Delay, d1	39.8	16.6	34.3	3.5	26.4	
Progression Factor	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	3.7	0.0	25.3	0.1	8.0	
Delay (s)	43.5	16.6	59.7	3.6	34.5	
Level of Service	D	B	E	A	C	
Approach Delay (s)	40.4			36.7	34.5	
Approach LOS	D			D	C	

Intersection Summary					
HCM 2000 Control Delay	36.1	HCM 2000 Level of Service	D		
HCM 2000 Volume to Capacity ratio	0.87				
Actuated Cycle Length (s)	98.0	Sum of lost time (s)	15.6		
Intersection Capacity Utilization	80.7%	ICU Level of Service	D		
Analysis Period (min)	15				
c Critical Lane Group					

4:45-5:45 PM Year 2017 + Cumulative + Project (Phase 1)
11: Convoy/Mercury & Armour St/SR-163 SB Ramp — HCM Signalized Intersection Capacity Analysis

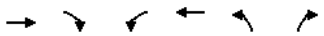
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	122	148	27	420	49	266	33	385	124	251	588	98
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.1			5.1	5.1	4.7	5.5	5.5	4.7	5.5	
Lane Util. Factor		1.00			1.00	1.00	1.00	0.95	1.00	1.00	0.95	
Frpb, ped/bikes		1.00			1.00	0.96	1.00	1.00	0.94	1.00	0.99	
Flpb, ped/bikes		1.00			1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt		0.99			1.00	0.85	1.00	1.00	0.85	1.00	0.98	
Flt Protected		0.98			0.96	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1797			1783	1527	1770	3539	1483	1770	3434	
Flt Permitted		0.98			0.96	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)		1797			1783	1527	1770	3539	1483	1770	3434	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	126	153	28	433	51	274	34	397	128	259	606	101
RTOR Reduction (vph)	0	3	0	0	0	121	0	0	106	0	11	0
Lane Group Flow (vph)	0	304	0	0	484	153	34	397	22	259	696	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Split	NA		Split	NA	Perm	Prot	NA	Perm	Prot	NA	
Protected Phases	4	4		3	3		5	2		1	6	
Permitted Phases						3			2			
Actuated Green, G (s)		22.0			30.6	30.6	2.6	18.1	18.1	16.3	31.8	
Effective Green, g (s)		22.0			30.6	30.6	2.6	18.1	18.1	16.3	31.8	
Actuated g/C Ratio		0.20			0.28	0.28	0.02	0.17	0.17	0.15	0.30	
Clearance Time (s)		5.1			5.1	5.1	4.7	5.5	5.5	4.7	5.5	
Vehicle Extension (s)		3.0			3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)		368			508	435	42	596	249	268	1016	
v/s Ratio Prot		c0.17			c0.27		0.02	0.11		c0.15	c0.20	
v/s Ratio Perm						0.10			0.01			
v/c Ratio		0.83			0.95	0.35	0.81	0.67	0.09	0.97	0.68	
Uniform Delay, d1		40.9			37.7	30.5	52.2	41.8	37.7	45.3	33.4	
Progression Factor		1.00			1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2		14.0			28.2	0.5	68.7	5.8	0.7	45.3	3.7	
Delay (s)		54.9			65.9	31.0	120.9	47.6	38.4	90.6	37.1	
Level of Service		D			E	C	F	D	D	F	D	
Approach Delay (s)		54.9			53.3			50.0			51.4	
Approach LOS		D			D			D			D	

Intersection Summary				
HCM 2000 Control Delay	52.1	HCM 2000 Level of Service	D	
HCM 2000 Volume to Capacity ratio	0.89			
Actuated Cycle Length (s)	107.4	Sum of lost time (s)	20.4	
Intersection Capacity Utilization	86.4%	ICU Level of Service	E	
Analysis Period (min)	15			
c Critical Lane Group				

4:45-5:45 PM Year 2017 + Cumulative + Project (Phase 1)
12: Convoy St & Ostrow St/Kearny Mesa Rd — HCM Signalized Intersection Capacity Analysis

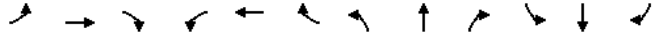
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	83	88	144	765	73	39	76	741	229	39	942	24
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.9	4.9	4.5	4.9		4.5	5.3		4.5	5.0	
Lane Util. Factor	1.00	1.00	1.00	0.97	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	1.00	0.85	1.00	0.95		1.00	0.96		1.00	1.00	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1863	1583	3433	1766		1770	3414		1770	3526	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	1863	1583	3433	1766		1770	3414		1770	3526	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	86	91	148	789	75	40	78	764	236	40	971	25
RTOR Reduction (vph)	0	0	132	0	20	0	0	27	0	0	2	0
Lane Group Flow (vph)	86	91	16	789	95	0	78	973	0	40	994	0
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4									
Actuated Green, G (s)	8.8	11.1	11.1	26.4	28.7		7.5	38.8		4.5	36.1	
Effective Green, g (s)	8.8	11.1	11.1	26.4	28.7		7.5	38.8		4.5	36.1	
Actuated g/C Ratio	0.09	0.11	0.11	0.26	0.29		0.08	0.39		0.04	0.36	
Clearance Time (s)	4.5	4.9	4.9	4.5	4.9		4.5	5.3		4.5	5.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	155	206	175	906	506		132	1324		79	1272	
v/s Ratio Prot	0.05	c0.05		c0.23	0.05		c0.04	c0.29		0.02	c0.28	
v/s Ratio Perm			0.01									
v/c Ratio	0.55	0.44	0.09	0.87	0.19		0.59	0.73		0.51	0.78	
Uniform Delay, d1	43.7	41.6	39.9	35.2	26.9		44.8	26.2		46.7	28.4	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	4.3	1.5	0.2	9.2	0.2		6.9	3.7		5.0	4.8	
Delay (s)	48.0	43.1	40.2	44.3	27.0		51.7	29.9		51.7	33.3	
Level of Service	D	D	D	D	C		D	C		D	C	
Approach Delay (s)		43.0			42.1			31.4			34.0	
Approach LOS		D			D			C			C	

Intersection Summary				
HCM 2000 Control Delay	36.2	HCM 2000 Level of Service	D	
HCM 2000 Volume to Capacity ratio	0.75			
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	19.2	
Intersection Capacity Utilization	71.9%	ICU Level of Service	C	
Analysis Period (min)	15			
c Critical Lane Group				



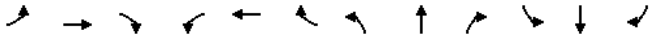
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	389	0	0	1032	459	266
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.1			5.1	5.1	5.1
Lane Util. Factor	0.95			0.95	0.97	0.91
Frt	1.00			1.00	0.99	0.85
Flt Protected	1.00			1.00	0.96	1.00
Satd. Flow (prot)	3539			3539	3413	1441
Flt Permitted	1.00			1.00	0.96	1.00
Satd. Flow (perm)	3539			3539	3413	1441
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	409	0	0	1086	483	280
RTOR Reduction (vph)	0	0	0	0	10	189
Lane Group Flow (vph)	409	0	0	1086	515	49
Turn Type	NA			NA	Prot	Perm
Protected Phases	2			6	4	
Permitted Phases						4
Actuated Green, G (s)	12.5			24.0	13.6	13.6
Effective Green, g (s)	12.5			24.0	13.6	13.6
Actuated g/C Ratio	0.19			0.37	0.21	0.21
Clearance Time (s)	5.1			5.1	5.1	5.1
Vehicle Extension (s)	3.0			3.0	3.0	3.0
Lane Grp Cap (vph)	676			1298	709	299
v/s Ratio Prot	c0.12			c0.31	c0.15	
v/s Ratio Perm						0.03
v/c Ratio	0.61			0.84	0.73	0.17
Uniform Delay, d1	24.2			18.9	24.2	21.2
Progression Factor	1.00			1.00	1.00	1.00
Incremental Delay, d2	1.5			4.9	3.7	0.3
Delay (s)	25.7			23.8	27.9	21.5
Level of Service	C			C	C	C
Approach Delay (s)	25.7			23.8	25.9	
Approach LOS	C			C	C	

Intersection Summary				
HCM 2000 Control Delay	24.8	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.75			
Actuated Cycle Length (s)	65.4	Sum of lost time (s)	15.3	
Intersection Capacity Utilization	52.9%	ICU Level of Service	A	
Analysis Period (min)	15			
c Critical Lane Group				



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	136	475	47	233	853	25	111	122	226	15	8	51
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.9	4.0	4.5	4.9		4.9	4.9	4.9		4.9	4.9
Lane Util. Factor	1.00	0.95	1.00	0.97	0.95		1.00	0.95	0.95		1.00	1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	0.99	0.97		1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00		1.00	0.95	0.85		1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00		0.97	1.00
Satd. Flow (prot)	1770	3539	1583	3433	3519		1770	1664	1460		1805	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00		0.97	1.00
Satd. Flow (perm)	1770	3539	1583	3433	3519		1770	1664	1460		1805	1583
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	146	511	51	251	917	27	119	131	243	16	9	55
RTOR Reduction (vph)	0	0	0	0	3	0	0	0	0	0	0	0
Lane Group Flow (vph)	146	511	51	251	941	0	119	197	177	0	25	55
Confl. Peds. (#/hr)						10			10			
Confl. Bikes (#/hr)						5			5			
Turn Type	Prot	NA	Free	Prot	NA		Split	NA	Perm	Split	NA	Perm
Protected Phases	5	2		1	6		3	3		4	4	
Permitted Phases			Free						3			4
Actuated Green, G (s)	7.8	20.4	70.5	9.5	22.1		16.3	16.3	16.3		5.1	5.1
Effective Green, g (s)	7.8	20.4	70.5	9.5	22.1		16.3	16.3	16.3		5.1	5.1
Actuated g/C Ratio	0.11	0.29	1.00	0.13	0.31		0.23	0.23	0.23		0.07	0.07
Clearance Time (s)	4.5	4.9		4.5	4.9		4.9	4.9	4.9		4.9	4.9
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	195	1024	1583	462	1103		409	384	337		130	114
v/s Ratio Prot	c0.08	0.14		0.07	c0.27		0.07	0.12			0.01	
v/s Ratio Perm			c0.03						c0.12			c0.03
v/c Ratio	0.75	0.50	0.03	0.54	0.85		0.29	0.51	0.53		0.19	0.48
Uniform Delay, d1	30.4	20.8	0.0	28.5	22.7		22.3	23.6	23.7		30.8	31.4
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	14.5	1.7	0.0	1.3	6.6		1.8	4.8	5.8		0.7	3.2
Delay (s)	44.9	22.5	0.0	29.8	29.2		24.1	28.5	29.5		31.5	34.6
Level of Service	D	C	A	C	C		C	C	C		C	C
Approach Delay (s)		25.5			29.4			27.8			33.6	
Approach LOS		C			C			C			C	

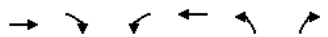
Intersection Summary				
HCM 2000 Control Delay	28.1	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.70			
Actuated Cycle Length (s)	70.5	Sum of lost time (s)	19.2	
Intersection Capacity Utilization	57.5%	ICU Level of Service	B	
Analysis Period (min)	15			
c Critical Lane Group				



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	10	415	603	400	1054	108	0	0	0	49	194	19
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.7	5.1		4.7	5.1						5.5	
Lane Util. Factor	1.00	0.95		1.00	0.95						1.00	
Frpb, ped/bikes	1.00	0.99		1.00	1.00						1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00						1.00	
Frt	1.00	0.91		1.00	0.99						0.99	
Flt Protected	0.95	1.00		0.95	1.00						0.99	
Satd. Flow (prot)	1763	3180		1770	3475						1824	
Flt Permitted	0.95	1.00		0.95	1.00						0.99	
Satd. Flow (perm)	1763	3180		1770	3475						1824	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	11	446	648	430	1133	116	0	0	0	53	209	20
RTOR Reduction (vph)	0	136	0	0	10	0	0	0	0	0	4	0
Lane Group Flow (vph)	11	958	0	430	1239	0	0	0	0	0	278	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Prot	NA		Prot	NA					Split	NA	
Protected Phases	5	2		1	6					4	4	
Permitted Phases												
Actuated Green, G (s)	0.8	26.2		16.3	41.7						16.0	
Effective Green, g (s)	0.8	26.2		16.3	41.7						16.0	
Actuated g/C Ratio	0.01	0.36		0.22	0.57						0.22	
Clearance Time (s)	4.7	5.1		4.7	5.1						5.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0						3.0	
Lane Grp Cap (vph)	19	1128		390	1963						395	
v/s Ratio Prot	0.01	c0.30		c0.24	0.36						c0.15	
v/s Ratio Perm												
v/c Ratio	0.58	1.01dr		1.10	0.63						0.70	
Uniform Delay, d1	36.3	22.0		28.8	10.9						26.7	
Progression Factor	1.00	1.00		1.00	1.00						1.00	
Incremental Delay, d2	36.3	6.1		76.2	0.7						10.1	
Delay (s)	72.6	28.1		105.0	11.5						36.8	
Level of Service	E	C		F	B						D	
Approach Delay (s)		28.6			35.5			0.0			36.8	
Approach LOS		C			D			A			D	

Intersection Summary				
HCM 2000 Control Delay	33.1	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.88			
Actuated Cycle Length (s)	73.8	Sum of lost time (s)	15.3	
Intersection Capacity Utilization	87.2%	ICU Level of Service	E	
Analysis Period (min)	15			

dr Defacto Right Lane. Recode with 1 though lane as a right lane.
c Critical Lane Group



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	485	0	0	825	699	236
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.5			5.5	4.5	5.5
Lane Util. Factor	0.95			0.95	0.97	1.00
Frpb, ped/bikes	1.00			1.00	1.00	0.98
Flpb, ped/bikes	1.00			1.00	1.00	1.00
Frt	1.00			1.00	1.00	0.85
Flt Protected	1.00			1.00	0.95	1.00
Satd. Flow (prot)	3539			3539	3433	1550
Flt Permitted	1.00			1.00	0.95	1.00
Satd. Flow (perm)	3539			3539	3433	1550
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	511	0	0	868	736	248
RTOR Reduction (vph)	0	0	0	0	0	137
Lane Group Flow (vph)	511	0	0	868	736	111
Confl. Peds. (#/hr)						10
Confl. Bikes (#/hr)						5
Turn Type	NA			NA	Prot	Perm
Protected Phases	2			6	4	
Permitted Phases						6
Actuated Green, G (s)	21.6			21.6	16.7	21.6
Effective Green, g (s)	21.6			21.6	16.7	21.6
Actuated g/C Ratio	0.45			0.45	0.35	0.45
Clearance Time (s)	5.5			5.5	4.5	5.5
Vehicle Extension (s)	3.0			3.0	3.0	3.0
Lane Grp Cap (vph)	1582			1582	1186	693
v/s Ratio Prot	0.14			c0.25	c0.21	
v/s Ratio Perm						0.07
v/c Ratio	0.32			0.55	0.62	0.16
Uniform Delay, d1	8.6			9.8	13.2	7.9
Progression Factor	1.00			1.00	1.00	1.00
Incremental Delay, d2	0.1			0.4	1.0	0.1
Delay (s)	8.7			10.2	14.2	8.1
Level of Service	A			B	B	A
Approach Delay (s)	8.7			10.2	12.6	
Approach LOS	A			B	B	

Intersection Summary				
HCM 2000 Control Delay	10.9	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.58			
Actuated Cycle Length (s)	48.3	Sum of lost time (s)	10.0	
Intersection Capacity Utilization	51.1%	ICU Level of Service	A	
Analysis Period (min)	15			

c Critical Lane Group

Appendix L

Year 2022 LOS Calculations

8:00-9:00 AM Year 2022 + Cumulative
1: Aero Dr & Convoy St

HCM Signalized Intersection Capacity Analysis

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	4	3	1	434	56	645	0	516	393	373	398	22
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.9		4.9	4.9	4.9		5.2		4.5	4.5	
Lane Util. Factor		1.00		0.95	0.91	0.95		0.95		0.97	0.95	
Frpb, ped/bikes		0.99		1.00	0.99	0.98		0.99		1.00	1.00	
Flpb, ped/bikes		1.00		1.00	1.00	1.00		1.00		1.00	1.00	
Frt		0.98		1.00	0.89	0.85		0.94		1.00	0.99	
Flt Protected		0.98		0.95	0.99	1.00		1.00		0.95	1.00	
Satd. Flow (prot)		1762		1681	1482	1481		3264		3433	3502	
Flt Permitted		0.98		0.95	0.99	1.00		1.00		0.95	1.00	
Satd. Flow (perm)		1762		1681	1482	1481		3264		3433	3502	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	4	3	1	452	58	672	0	538	409	389	415	23
RTOR Reduction (vph)	0	1	0	0	100	257	0	159	0	0	5	0
Lane Group Flow (vph)	0	7	0	407	292	126	0	789	0	389	434	0
Confl. Peds. (#/hr)			10						10			10
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Split	NA		Split	NA	Perm		NA		Prot	NA	
Protected Phases	7	7		8	8			2		1	6	
Permitted Phases						8						
Actuated Green, G (s)		1.2		29.5	29.5	29.5		26.6		13.2	45.0	
Effective Green, g (s)		1.2		29.5	29.5	29.5		26.6		13.2	45.0	
Actuated g/C Ratio		0.01		0.33	0.33	0.33		0.30		0.15	0.50	
Clearance Time (s)		4.9		4.9	4.9	4.9		5.2		4.5	4.5	
Vehicle Extension (s)		3.0		3.0	3.0	3.0		3.0		3.0	3.0	
Lane Grp Cap (vph)		23		550	485	485		964		503	1751	
v/s Ratio Prot		c0.00		c0.24	0.20			c0.24		c0.11	0.12	
v/s Ratio Perm						0.08						
v/c Ratio		0.30		0.74	0.60	0.26		0.82		0.77	0.25	
Uniform Delay, d1		44.0		26.8	25.3	22.2		29.5		37.0	12.8	
Progression Factor		1.00		1.00	1.00	1.00		1.00		1.00	1.00	
Incremental Delay, d2		7.4		5.2	2.1	0.3		7.7		7.3	0.3	
Delay (s)		51.4		32.0	27.4	22.5		37.1		44.2	13.2	
Level of Service		D		C	C	C		D		D	B	
Approach Delay (s)		51.4			27.4			37.1			27.8	
Approach LOS		D			C			D			C	

Intersection Summary				
HCM 2000 Control Delay	30.7	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.77			
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	19.5	
Intersection Capacity Utilization	76.9%	ICU Level of Service	D	
Analysis Period (min)	15			
c Critical Lane Group				

8:00-9:00 AM Year 2022 + Cumulative
2: Kearny Villa Rd & Aero Dr

HCM Signalized Intersection Capacity Analysis

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	151	492	99	263	817	491	322	200	430	179	134	41
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.3		4.5	5.3		4.5	5.7	5.7	4.5	6.0	
Lane Util. Factor	1.00	0.95		0.97	0.95		0.97	0.95	1.00	0.97	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	0.99		1.00	1.00	0.99	1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.97		1.00	0.94		1.00	1.00	0.85	1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3430		3433	3296		3433	3539	1560	3433	3382	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	3430		3433	3296		3433	3539	1560	3433	3382	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	161	523	105	280	869	522	343	213	457	190	143	44
RTOR Reduction (vph)	0	13	0	0	75	0	0	0	106	0	25	0
Lane Group Flow (vph)	161	615	0	280	1316	0	343	213	351	190	162	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Prot	NA		Prot	NA		Prot	NA	custom	Prot	NA	
Protected Phases	5	2		1	6		3	8	8	7	4	
Permitted Phases									1			
Actuated Green, G (s)	11.6	47.3		14.5	50.2		15.6	21.0	35.5	10.5	15.6	
Effective Green, g (s)	11.6	47.3		14.5	50.2		15.6	21.0	35.5	10.5	15.6	
Actuated g/C Ratio	0.10	0.42		0.13	0.44		0.14	0.19	0.31	0.09	0.14	
Clearance Time (s)	4.5	5.3		4.5	5.3		4.5	5.7	5.7	4.5	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	181	1431		439	1460		472	655	567	318	465	
v/s Ratio Prot	c0.09	0.18		0.08	c0.40		c0.10	0.06	c0.11	0.06	0.05	
v/s Ratio Perm									0.11			
v/c Ratio	0.89	0.43		0.64	0.90		0.73	0.33	0.62	0.60	0.35	
Uniform Delay, d1	50.2	23.4		46.9	29.3		46.8	40.0	33.1	49.4	44.2	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	37.1	0.2		3.0	8.0		5.5	0.3	2.0	3.0	0.5	
Delay (s)	87.3	23.6		49.9	37.3		52.3	40.3	35.2	52.4	44.7	
Level of Service	F	C		D	D		D	D	D	D	D	
Approach Delay (s)		36.6			39.4			42.1			48.6	
Approach LOS		D			D			D			D	

Intersection Summary				
HCM 2000 Control Delay	40.4	HCM 2000 Level of Service	D	
HCM 2000 Volume to Capacity ratio	0.86			
Actuated Cycle Length (s)	113.3	Sum of lost time (s)	20.3	
Intersection Capacity Utilization	80.7%	ICU Level of Service	D	
Analysis Period (min)	15			
c Critical Lane Group				

8:00-9:00 AM Year 2022 + Cumulative
3: Aero Ct & Aero Dr

HCM Signalized Intersection Capacity Analysis

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	9	900	188	66	1470	13	88	0	39	3	0	14
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.3		4.5	5.3		4.9	4.9			4.9	4.9
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00			1.00	1.00
Frpb, ped/bikes	1.00	0.99		1.00	1.00		1.00	0.97			1.00	0.97
Flpb, ped/bikes	1.00	1.00		1.00	1.00		0.99	1.00			0.99	1.00
Frt	1.00	0.97		1.00	1.00		1.00	0.85			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00			0.95	1.00
Satd. Flow (prot)	1767	3423		1770	3533		1751	1534			1752	1534
Flt Permitted	0.95	1.00		0.95	1.00		0.76	1.00			0.73	1.00
Satd. Flow (perm)	1767	3423		1770	3533		1393	1534			1343	1534
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	10	1011	211	74	1652	15	99	0	44	3	0	16
RTOR Reduction (vph)	0	21	0	0	1	0	0	38	0	0	0	14
Lane Group Flow (vph)	10	1201	0	74	1666	0	99	6	0	0	3	2
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	Perm
Protected Phases	5	2		1	6			4			4	
Permitted Phases							4			4		4
Actuated Green, G (s)	0.7	31.8		3.5	34.6		7.6	7.6			7.6	7.6
Effective Green, g (s)	0.7	31.8		3.5	34.6		7.6	7.6			7.6	7.6
Actuated g/C Ratio	0.01	0.55		0.06	0.60		0.13	0.13			0.13	0.13
Clearance Time (s)	4.5	5.3		4.5	5.3		4.9	4.9			4.9	4.9
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0			3.0	3.0
Lane Grp Cap (vph)	21	1889		107	2122		183	202			177	202
v/s Ratio Prot	0.01	0.35		c0.04	c0.47			0.00				
v/s Ratio Perm							c0.07				0.00	0.00
v/c Ratio	0.48	0.64		0.69	0.79		0.54	0.03			0.02	0.01
Uniform Delay, d1	28.3	8.9		26.5	8.7		23.4	21.8			21.8	21.7
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00			1.00	1.00
Incremental Delay, d2	16.0	0.7		17.5	2.0		3.2	0.1			0.0	0.0
Delay (s)	44.3	9.6		44.1	10.7		26.6	21.8			21.8	21.8
Level of Service	D	A		D	B		C	C			C	C
Approach Delay (s)		9.9			12.1			25.1			21.8	
Approach LOS		A			B			C			C	

Intersection Summary					
HCM 2000 Control Delay	11.9	HCM 2000 Level of Service	B		
HCM 2000 Volume to Capacity ratio	0.77				
Actuated Cycle Length (s)	57.6	Sum of lost time (s)	14.7		
Intersection Capacity Utilization	68.7%	ICU Level of Service	C		
Analysis Period (min)	15				
c Critical Lane Group					

8:00-9:00 AM Year 2022 + Cumulative
4: Afton Rd & Aero Dr

HCM Signalized Intersection Capacity Analysis

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	71	711	159	61	1247	7	265	4	54	3	0	16
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.4		4.5	5.3			4.9			4.9	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	
Frpb, ped/bikes	1.00	0.99		1.00	1.00			1.00			0.98	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			0.99			1.00	
Frt	1.00	0.97		1.00	1.00			0.98			0.88	
Flt Protected	0.95	1.00		0.95	1.00			0.96			0.99	
Satd. Flow (prot)	1770	3414		1770	3535			1723			1598	
Flt Permitted	0.95	1.00		0.95	1.00			0.75			0.95	
Satd. Flow (perm)	1770	3414		1770	3535			1345			1532	
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	80	799	179	69	1401	8	298	4	61	3	0	18
RTOR Reduction (vph)	0	26	0	0	1	0	0	11	0	0	15	0
Lane Group Flow (vph)	80	952	0	69	1408	0	0	352	0	0	6	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8			4		
Actuated Green, G (s)	3.5	30.2		3.9	30.7			19.5			19.5	
Effective Green, g (s)	3.5	30.2		3.9	30.7			19.5			19.5	
Actuated g/C Ratio	0.05	0.44		0.06	0.45			0.29			0.29	
Clearance Time (s)	4.5	5.4		4.5	5.3			4.9			4.9	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	90	1507		100	1586			383			436	
v/s Ratio Prot	c0.05	0.28		0.04	c0.40							
v/s Ratio Perm								c0.26			0.00	
v/c Ratio	0.89	0.63		0.69	0.89			0.92			0.01	
Uniform Delay, d1	32.3	14.8		31.7	17.3			23.7			17.5	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	59.2	2.0		18.0	7.8			26.6			0.0	
Delay (s)	91.5	16.8		49.7	25.1			50.3			17.6	
Level of Service	F	B		D	C			D			B	
Approach Delay (s)		22.5			26.2			50.3			17.6	
Approach LOS		C			C			D			B	

Intersection Summary					
HCM 2000 Control Delay	27.8	HCM 2000 Level of Service	C		
HCM 2000 Volume to Capacity ratio	0.90				
Actuated Cycle Length (s)	68.4	Sum of lost time (s)	14.8		
Intersection Capacity Utilization	75.9%	ICU Level of Service	D		
Analysis Period (min)	15				
c Critical Lane Group					

8:00-9:00 AM Year 2022 + Cumulative
5: Sandrock Rd & Aero Dr

HCM Signalized Intersection Capacity Analysis

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	42	522	188	119	760	57	523	39	216	14	6	17
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.2	5.2	4.5	5.2		5.0	5.0	5.0	4.9	4.9	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		0.95	0.95	1.00	1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.95	1.00	1.00		1.00	1.00	0.97	1.00	0.97	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85	1.00	0.89	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	0.96	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3539	1509	1770	3491		1681	1697	1537	1770	1601	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	0.96	1.00	0.95	1.00	
Satd. Flow (perm)	1770	3539	1509	1770	3491		1681	1697	1537	1770	1601	
Peak-hour factor, PHF	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Adj. Flow (vph)	49	607	219	138	884	66	608	45	251	16	7	20
RTOR Reduction (vph)	0	0	152	0	6	0	0	0	169	0	19	0
Lane Group Flow (vph)	49	607	67	138	944	0	328	325	82	16	8	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Prot	NA	Perm	Prot	NA		Split	NA	Perm	Split	NA	
Protected Phases	5	2		1	6		8	8		7	7	
Permitted Phases			2						8			
Actuated Green, G (s)	2.3	21.5	21.5	8.7	27.9		16.2	16.2	16.2	3.8	3.8	
Effective Green, g (s)	2.3	21.5	21.5	8.7	27.9		16.2	16.2	16.2	3.8	3.8	
Actuated g/C Ratio	0.03	0.31	0.31	0.12	0.40		0.23	0.23	0.23	0.05	0.05	
Clearance Time (s)	4.5	5.2	5.2	4.5	5.2		5.0	5.0	5.0	4.9	4.9	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	58	1090	464	220	1395		390	393	356	96	87	
v/s Ratio Prot	0.03	0.17		c0.08	c0.27		c0.20	0.19		c0.01	0.01	
v/s Ratio Perm			0.04						0.05			
v/c Ratio	0.84	0.56	0.15	0.63	0.68		0.84	0.83	0.23	0.17	0.09	
Uniform Delay, d1	33.6	20.2	17.5	29.0	17.2		25.6	25.5	21.7	31.5	31.4	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	65.1	2.1	0.7	5.5	1.3		15.0	13.3	0.3	0.8	0.5	
Delay (s)	98.6	22.2	18.2	34.5	18.6		40.6	38.8	22.1	32.3	31.8	
Level of Service	F	C	B	C	B		D	D	C	C	C	
Approach Delay (s)		25.5			20.6			34.8			32.0	
Approach LOS		C			C			C			C	

Intersection Summary				
HCM 2000 Control Delay	26.6	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.72			
Actuated Cycle Length (s)	69.8	Sum of lost time (s)	19.6	
Intersection Capacity Utilization	60.7%	ICU Level of Service	B	
Analysis Period (min)	15			
c Critical Lane Group				

8:00-9:00 AM Year 2022 + Cumulative
6: Ruffin Rd & Aero Dr

HCM Signalized Intersection Capacity Analysis

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	558	119	173	537	457	534
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.2	5.2	4.5	4.5	5.5	5.5
Lane Util. Factor	0.95	1.00	0.97	0.95	0.97	1.00
Frpb, ped/bikes	1.00	0.99	1.00	1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	3539	1562	3433	3539	3433	1542
Flt Permitted	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)	3539	1562	3433	3539	3433	1542
Peak-hour factor, PHF	0.85	0.85	0.85	0.85	0.85	0.85
Adj. Flow (vph)	656	140	204	632	538	628
RTOR Reduction (vph)	0	19	0	0	0	189
Lane Group Flow (vph)	656	121	204	632	538	439
Confl. Peds. (#/hr)		10	10		10	10
Confl. Bikes (#/hr)		5				5
Turn Type	NA	custom	Prot	NA	Prot	Perm
Protected Phases	2	2	1	6	8	
Permitted Phases		8				8
Actuated Green, G (s)	17.4	39.3	5.5	28.1	21.9	21.9
Effective Green, g (s)	17.4	39.3	5.5	28.1	21.9	21.9
Actuated g/C Ratio	0.29	0.65	0.09	0.47	0.36	0.36
Clearance Time (s)	5.2	5.2	4.5	4.5	5.5	5.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	1026	1158	314	1657	1253	562
v/s Ratio Prot	c0.19	0.03	c0.06	0.18	0.16	
v/s Ratio Perm		0.05				c0.28
v/c Ratio	0.64	0.10	0.65	0.38	0.43	0.78
Uniform Delay, d1	18.6	3.8	26.3	10.3	14.3	16.9
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	3.1	0.2	4.6	0.1	1.1	10.3
Delay (s)	21.6	4.0	30.9	10.5	15.4	27.2
Level of Service	C	A	C	B	B	C
Approach Delay (s)	18.5			15.5	21.8	
Approach LOS	B			B	C	

Intersection Summary				
HCM 2000 Control Delay	19.0	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.71			
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	15.2	
Intersection Capacity Utilization	58.4%	ICU Level of Service	B	
Analysis Period (min)	15			
c Critical Lane Group				

Movement	EBU	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations							
Volume (vph)	20	1011	123	120	629	87	59
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5		4.5	4.5	4.5	4.5
Lane Util. Factor	1.00	0.95		0.97	0.95	0.97	0.88
Frpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	0.95
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00
Frt	1.00	0.98		1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	0.95	1.00
Satd. Flow (prot)	1770	3471		3433	3539	3433	2643
Flt Permitted	0.95	1.00		0.95	1.00	0.95	1.00
Satd. Flow (perm)	1770	3471		3433	3539	3433	2643
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	22	1123	137	133	699	97	66
RTOR Reduction (vph)	0	10	0	0	0	0	52
Lane Group Flow (vph)	22	1250	0	133	699	97	14
Confl. Peds. (#/hr)			10	10		10	10
Confl. Bikes (#/hr)			5				5
Turn Type	Prot	NA		Prot	NA	Prot	Perm
Protected Phases	5	2		1	6	8	
Permitted Phases							8
Actuated Green, G (s)	1.6	38.4		7.0	43.8	16.1	16.1
Effective Green, g (s)	1.6	38.4		7.0	43.8	16.1	16.1
Actuated g/C Ratio	0.02	0.51		0.09	0.58	0.21	0.21
Clearance Time (s)	4.5	4.5		4.5	4.5	4.5	4.5
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	37	1777		320	2066	736	567
v/s Ratio Prot	0.01	c0.36		c0.04	0.20	c0.03	
v/s Ratio Perm							0.01
v/c Ratio	0.59	0.70		0.42	0.34	0.13	0.02
Uniform Delay, d1	36.4	14.0		32.1	8.1	23.8	23.3
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2	23.1	2.4		0.9	0.4	0.4	0.1
Delay (s)	59.4	16.3		32.9	8.5	24.2	23.3
Level of Service	E	B		C	A	C	C
Approach Delay (s)		17.1			12.4	23.8	
Approach LOS		B			B	C	

Intersection Summary				
HCM 2000 Control Delay	15.9	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.52			
Actuated Cycle Length (s)	75.0	Sum of lost time (s)	13.5	
Intersection Capacity Utilization	60.0%	ICU Level of Service	B	
Analysis Period (min)	15			
c Critical Lane Group				

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	2	0	0	8	0	118	1	12	240	2
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64
Hourly flow rate (vph)	0	0	3	0	0	12	0	184	2	19	375	3
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)											142	
pX, platoon unblocked												
vC, conflicting volume	612	600	377	602	601	185	378			186		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	612	600	377	602	601	185	378			186		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	100	100	100	99	100			99		
cM capacity (veh/h)	395	409	670	405	409	857	1180			1389		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	3	12	186	397
Volume Left	0	0	0	19
Volume Right	3	12	2	3
cSH	670	857	1180	1389
Volume to Capacity	0.00	0.01	0.00	0.01
Queue Length 95th (ft)	0	1	0	1
Control Delay (s)	10.4	9.3	0.0	0.5
Lane LOS	B	A		A
Approach Delay (s)	10.4	9.3	0.0	0.5
Approach LOS	B	A		

Intersection Summary				
Average Delay	0.6			
Intersection Capacity Utilization	30.1%	ICU Level of Service	A	
Analysis Period (min)	15			

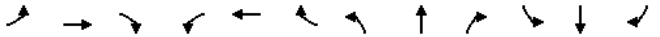
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	1	22	96	2	72	132
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.55	0.55	0.55	0.55	0.55	0.55
Hourly flow rate (vph)	2	40	175	4	131	240
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						635
pX, platoon unblocked						
vC, conflicting volume	678	176			178	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	678	176			178	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	95			91	
cM capacity (veh/h)	378	867			1398	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	42	178	371
Volume Left	2	0	131
Volume Right	40	4	0
cSH	821	1700	1398
Volume to Capacity	0.05	0.10	0.09
Queue Length 95th (ft)	4	0	8
Control Delay (s)	9.6	0.0	3.3
Lane LOS	A		A
Approach Delay (s)	9.6	0.0	3.3
Approach LOS	A		

Intersection Summary			
Average Delay		2.8	
Intersection Capacity Utilization		27.6%	ICU Level of Service A
Analysis Period (min)		15	

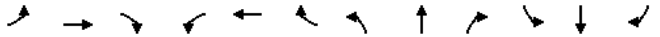
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	726	28	378	487	320	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.1	4.7	4.7	5.8	5.8	
Lane Util. Factor	0.97	1.00	1.00	0.95	0.95	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.85	1.00	1.00	1.00	
Flt Protected	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	3433	1583	1770	3539	3539	
Flt Permitted	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (perm)	3433	1583	1770	3539	3539	
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	816	31	425	547	360	0
RTOR Reduction (vph)	0	13	0	0	0	0
Lane Group Flow (vph)	816	18	425	547	360	0
Confl. Peds. (#/hr)						10
Confl. Bikes (#/hr)						5
Turn Type	Prot	pm+ov	Prot	NA	NA	
Protected Phases	4	5	5	2	6	
Permitted Phases		4				
Actuated Green, G (s)	19.6	40.3	20.7	44.2	18.8	
Effective Green, g (s)	19.6	40.3	20.7	44.2	18.8	
Actuated g/C Ratio	0.26	0.54	0.28	0.59	0.25	
Clearance Time (s)	5.1	4.7	4.7	5.8	5.8	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	900	854	490	2094	890	
v/s Ratio Prot	c0.24	0.01	c0.24	0.15	c0.10	
v/s Ratio Perm		0.01				
v/c Ratio	0.91	0.02	0.87	0.26	0.40	
Uniform Delay, d1	26.7	8.0	25.7	7.4	23.3	
Progression Factor	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	12.6	0.0	14.9	0.3	1.4	
Delay (s)	39.2	8.0	40.6	7.7	24.7	
Level of Service	D	A	D	A	C	
Approach Delay (s)	38.1			22.1	24.7	
Approach LOS	D			C	C	

Intersection Summary				
HCM 2000 Control Delay	28.7	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.73			
Actuated Cycle Length (s)	74.7	Sum of lost time (s)	15.6	
Intersection Capacity Utilization	68.0%	ICU Level of Service	C	
Analysis Period (min)	15			
c Critical Lane Group				



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	95	56	20	366	71	316	2	176	79	65	221	69
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.1			5.1	5.1	4.7	5.5	5.5	4.7	5.5	
Lane Util. Factor		1.00			1.00	1.00	1.00	0.95	1.00	1.00	0.95	
Frpb, ped/bikes		1.00			1.00	0.97	1.00	1.00	0.95	1.00	0.99	
Flpb, ped/bikes		1.00			1.00	1.00	0.98	1.00	1.00	1.00	1.00	
Frt		0.98			1.00	0.85	1.00	1.00	0.85	1.00	0.96	
Flt Protected		0.97			0.96	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1777			1788	1534	1741	3539	1500	1770	3371	
Flt Permitted		0.97			0.96	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)		1777			1788	1534	1741	3539	1500	1770	3371	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	101	60	21	389	76	336	2	187	84	69	235	73
RTOR Reduction (vph)	0	5	0	0	0	183	0	0	63	0	29	0
Lane Group Flow (vph)	0	177	0	0	465	153	2	187	21	69	279	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Split	NA		Split	NA	Perm	Prot	NA	Perm	Prot	NA	
Protected Phases	4	4		3	3		5	2		1	6	
Permitted Phases						3			2			
Actuated Green, G (s)		12.7			25.9	25.9	0.7	20.9	20.9	4.0	24.2	
Effective Green, g (s)		12.7			25.9	25.9	0.7	20.9	20.9	4.0	24.2	
Actuated g/C Ratio		0.15			0.31	0.31	0.01	0.25	0.25	0.05	0.29	
Clearance Time (s)		5.1			5.1	5.1	4.7	5.5	5.5	4.7	5.5	
Vehicle Extension (s)		3.0			3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)		268			551	473	14	881	373	84	972	
v/s Ratio Prot		c0.10			c0.26		0.00	0.05		c0.04	c0.08	
v/s Ratio Perm						0.10			0.01			
v/c Ratio		0.66			0.84	0.32	0.14	0.21	0.06	0.82	0.29	
Uniform Delay, d1		33.6			27.1	22.3	41.3	25.0	24.0	39.6	23.2	
Progression Factor		1.00			1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2		6.0			11.3	0.4	4.7	0.5	0.3	45.0	0.7	
Delay (s)		39.5			38.4	22.7	46.0	25.5	24.3	84.6	23.9	
Level of Service		D			D	C	D	C	C	F	C	
Approach Delay (s)		39.5			31.8			25.3			35.0	
Approach LOS		D			C			C			D	

Intersection Summary				
HCM 2000 Control Delay	32.3	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.62			
Actuated Cycle Length (s)	83.9	Sum of lost time (s)	20.4	
Intersection Capacity Utilization	60.4%	ICU Level of Service	B	
Analysis Period (min)	15			
c Critical Lane Group				



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	20	25	21	333	59	18	112	890	152	21	413	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.9	4.9	4.5	4.9		4.5	5.3		4.5	5.0	
Lane Util. Factor	1.00	1.00	1.00	0.97	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	1.00	0.85	1.00	0.97		1.00	0.98		1.00	0.98	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1863	1583	3433	1798		1770	3462		1770	3481	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	1863	1583	3433	1798		1770	3462		1770	3481	
Peak-hour factor, PHF	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Adj. Flow (vph)	20	25	21	336	60	18	113	899	154	21	417	51
RTOR Reduction (vph)	0	0	20	0	12	0	0	10	0	0	7	0
Lane Group Flow (vph)	20	25	1	336	66	0	113	1043	0	21	461	0
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4									
Actuated Green, G (s)	2.3	5.4	5.4	14.7	17.8		11.7	57.5		3.2	49.3	
Effective Green, g (s)	2.3	5.4	5.4	14.7	17.8		11.7	57.5		3.2	49.3	
Actuated g/C Ratio	0.02	0.05	0.05	0.15	0.18		0.12	0.58		0.03	0.49	
Clearance Time (s)	4.5	4.9	4.9	4.5	4.9		4.5	5.3		4.5	5.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	40	100	85	504	320		207	1990		56	1716	
v/s Ratio Prot	0.01	0.01		c0.10	c0.04		c0.06	c0.30		0.01	0.13	
v/s Ratio Perm			0.00									
v/c Ratio	0.50	0.25	0.01	0.67	0.21		0.55	0.52		0.38	0.27	
Uniform Delay, d1	48.3	45.4	44.8	40.3	35.1		41.6	12.9		47.4	14.8	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	9.5	1.3	0.1	3.3	0.3		2.9	1.0		4.2	0.4	
Delay (s)	57.8	46.7	44.8	43.7	35.4		44.6	13.9		51.6	15.2	
Level of Service	E	D	D	D	D		D	B		D	B	
Approach Delay (s)		49.5			42.1			16.9			16.8	
Approach LOS		D			D			B			B	

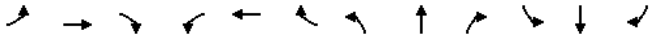
Intersection Summary				
HCM 2000 Control Delay	22.8	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.55			
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	19.2	
Intersection Capacity Utilization	61.2%	ICU Level of Service	B	
Analysis Period (min)	15			
c Critical Lane Group				

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	484	0	0	950	568	446
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.1			5.1	5.1	5.1
Lane Util. Factor	0.95			0.95	0.97	0.91
Frt	1.00			1.00	0.97	0.85
Flt Protected	1.00			1.00	0.96	1.00
Satd. Flow (prot)	3539			3539	3376	1441
Flt Permitted	1.00			1.00	0.96	1.00
Satd. Flow (perm)	3539			3539	3376	1441
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	515	0	0	1011	604	474
RTOR Reduction (vph)	0	0	0	0	22	249
Lane Group Flow (vph)	515	0	0	1011	719	88
Turn Type	NA			NA	Prot	Perm
Protected Phases	2			6	4	
Permitted Phases						4
Actuated Green, G (s)	16.7			29.0	21.6	21.6
Effective Green, g (s)	16.7			29.0	21.6	21.6
Actuated g/C Ratio	0.20			0.35	0.26	0.26
Clearance Time (s)	5.1			5.1	5.1	5.1
Vehicle Extension (s)	3.0			3.0	3.0	3.0
Lane Grp Cap (vph)	715			1242	882	376
v/s Ratio Prot	c0.15			c0.29	c0.21	
v/s Ratio Perm						0.06
v/c Ratio	0.72			0.81	0.82	0.23
Uniform Delay, d1	30.8			24.3	28.6	24.0
Progression Factor	1.00			1.00	1.00	1.00
Incremental Delay, d2	3.6			4.2	5.8	0.3
Delay (s)	34.3			28.6	34.5	24.3
Level of Service	C			C	C	C
Approach Delay (s)	34.3			28.6	31.3	
Approach LOS	C			C	C	

Intersection Summary				
HCM 2000 Control Delay	30.8	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.79			
Actuated Cycle Length (s)	82.6	Sum of lost time (s)	15.3	
Intersection Capacity Utilization	55.6%	ICU Level of Service	B	
Analysis Period (min)	15			
c Critical Lane Group				

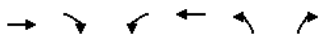
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	40	647	236	470	817	16	61	6	112	31	35	53
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.9	4.0	4.5	4.9		4.9	4.9	4.9		4.9	4.9
Lane Util. Factor	1.00	0.95	1.00	0.97	0.95		1.00	0.95	0.95		1.00	1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	0.97	0.97		1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00		1.00	0.86	0.85		1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00		0.98	1.00
Satd. Flow (prot)	1770	3539	1583	3433	3526		1770	1483	1455		1820	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00		0.98	1.00
Satd. Flow (perm)	1770	3539	1583	3433	3526		1770	1483	1455		1820	1583
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	43	696	254	505	878	17	66	6	120	33	38	57
RTOR Reduction (vph)	0	0	0	0	1	0	0	0	0	0	0	0
Lane Group Flow (vph)	43	696	254	505	894	0	66	64	62	0	71	57
Confl. Peds. (#/hr)						10			10			
Confl. Bikes (#/hr)						5			5			
Turn Type	Prot	NA	Free	Prot	NA		Split	NA	Perm	Split	NA	Perm
Protected Phases	5	2		1	6		3	3		4	4	
Permitted Phases			Free						3			4
Actuated Green, G (s)	2.6	25.5	83.4	15.3	38.2		16.2	16.2	16.2		7.2	7.2
Effective Green, g (s)	2.6	25.5	83.4	15.3	38.2		16.2	16.2	16.2		7.2	7.2
Actuated g/C Ratio	0.03	0.31	1.00	0.18	0.46		0.19	0.19	0.19		0.09	0.09
Clearance Time (s)	4.5	4.9		4.5	4.9		4.9	4.9	4.9		4.9	4.9
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	55	1082	1583	629	1615		343	288	282		157	136
v/s Ratio Prot	0.02	c0.20		c0.15	0.25		0.04	c0.04			c0.04	
v/s Ratio Perm			0.16						0.04			0.04
v/c Ratio	0.78	0.64	0.16	0.80	0.55		0.19	0.22	0.22		0.45	0.42
Uniform Delay, d1	40.1	25.0	0.0	32.6	16.4		28.1	28.3	28.3		36.2	36.1
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	50.5	2.9	0.2	7.3	0.4		1.2	1.8	1.8		2.1	2.1
Delay (s)	90.6	28.0	0.2	39.9	16.8		29.4	30.1	30.1		38.3	38.2
Level of Service	F	C	A	D	B		C	C	C		D	D
Approach Delay (s)		23.6			25.2			29.8			38.3	
Approach LOS		C			C			C			D	

Intersection Summary				
HCM 2000 Control Delay	25.5	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.55			
Actuated Cycle Length (s)	83.4	Sum of lost time (s)	19.2	
Intersection Capacity Utilization	56.5%	ICU Level of Service	B	
Analysis Period (min)	15			
c Critical Lane Group				



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	6	471	396	101	1482	79	0	0	0	46	28	27
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.7	5.1		4.7	5.1						5.5	
Lane Util. Factor	1.00	0.95		1.00	0.95						1.00	
Frpb, ped/bikes	1.00	0.99		1.00	1.00						0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00						1.00	
Frt	1.00	0.93		1.00	0.99						0.96	
Flt Protected	0.95	1.00		0.95	1.00						0.98	
Satd. Flow (prot)	1766	3266		1770	3504						1741	
Flt Permitted	0.95	1.00		0.95	1.00						0.98	
Satd. Flow (perm)	1766	3266		1770	3504						1741	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	7	512	430	110	1611	86	0	0	0	50	30	29
RTOR Reduction (vph)	0	164	0	0	5	0	0	0	0	0	14	0
Lane Group Flow (vph)	7	778	0	110	1692	0	0	0	0	0	95	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Prot	NA		Prot	NA					Split	NA	
Protected Phases	5	2		1	6					4	4	
Permitted Phases												
Actuated Green, G (s)	0.7	38.5		8.6	46.4						16.3	
Effective Green, g (s)	0.7	38.5		8.6	46.4						16.3	
Actuated g/C Ratio	0.01	0.49		0.11	0.59						0.21	
Clearance Time (s)	4.7	5.1		4.7	5.1						5.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0						3.0	
Lane Grp Cap (vph)	15	1597		193	2065						360	
v/s Ratio Prot	0.00	0.24		c0.06	c0.48						c0.05	
v/s Ratio Perm												
v/c Ratio	0.47	0.49		0.57	0.82						0.26	
Uniform Delay, d1	38.8	13.5		33.3	12.8						26.2	
Progression Factor	1.00	1.00		1.00	1.00						1.00	
Incremental Delay, d2	21.2	0.2		3.8	2.7						1.8	
Delay (s)	60.0	13.7		37.1	15.5						27.9	
Level of Service	E	B		D	B						C	
Approach Delay (s)		14.1			16.8			0.0			27.9	
Approach LOS		B			B			A			C	

Intersection Summary				
HCM 2000 Control Delay	16.3	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.69			
Actuated Cycle Length (s)	78.7	Sum of lost time (s)	15.3	
Intersection Capacity Utilization	72.9%	ICU Level of Service	C	
Analysis Period (min)	15			
c Critical Lane Group				



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	534	0	0	443	1234	452
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.5			5.5	4.5	5.5
Lane Util. Factor	0.95			0.95	0.97	1.00
Frpb, ped/bikes	1.00			1.00	1.00	0.97
Flpb, ped/bikes	1.00			1.00	1.00	1.00
Frt	1.00			1.00	1.00	0.85
Flt Protected	1.00			1.00	0.95	1.00
Satd. Flow (prot)	3539			3539	3433	1544
Flt Permitted	1.00			1.00	0.95	1.00
Satd. Flow (perm)	3539			3539	3433	1544
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	580	0	0	482	1341	491
RTOR Reduction (vph)	0	0	0	0	0	339
Lane Group Flow (vph)	580	0	0	482	1341	152
Confl. Peds. (#/hr)						10
Confl. Bikes (#/hr)						5
Turn Type	NA			NA	Prot	Perm
Protected Phases	2			6	4	
Permitted Phases						6
Actuated Green, G (s)	18.0			18.0	30.5	18.0
Effective Green, g (s)	18.0			18.0	30.5	18.0
Actuated g/C Ratio	0.31			0.31	0.52	0.31
Clearance Time (s)	5.5			5.5	4.5	5.5
Vehicle Extension (s)	3.0			3.0	3.0	3.0
Lane Grp Cap (vph)	1088			1088	1789	475
v/s Ratio Prot	c0.16			0.14	c0.39	
v/s Ratio Perm						0.10
v/c Ratio	0.53			0.44	0.75	0.32
Uniform Delay, d1	16.8			16.2	11.0	15.6
Progression Factor	1.00			1.00	1.00	1.00
Incremental Delay, d2	0.5			0.3	1.8	0.4
Delay (s)	17.3			16.5	12.8	15.9
Level of Service	B			B	B	B
Approach Delay (s)	17.3			16.5	13.6	
Approach LOS	B			B	B	

Intersection Summary				
HCM 2000 Control Delay	14.8	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.67			
Actuated Cycle Length (s)	58.5	Sum of lost time (s)	10.0	
Intersection Capacity Utilization	58.3%	ICU Level of Service	B	
Analysis Period (min)	15			
c Critical Lane Group				

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	12	36	20	314	22	513	0	567	473	630	657	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.9		4.9	4.9	4.9		5.2		4.5	4.5	
Lane Util. Factor		1.00		0.95	0.91	0.95		0.95		0.97	0.95	
Frpb, ped/bikes		0.99		1.00	0.99	0.98		0.98		1.00	1.00	
Flpb, ped/bikes		1.00		1.00	1.00	1.00		1.00		1.00	1.00	
Frt		0.96		1.00	0.88	0.85		0.93		1.00	0.99	
Flt Protected		0.99		0.95	0.99	1.00		1.00		0.95	1.00	
Satd. Flow (prot)		1748		1681	1459	1478		3247		3433	3513	
Flt Permitted		0.99		0.95	0.99	1.00		1.00		0.95	1.00	
Satd. Flow (perm)		1748		1681	1459	1478		3247		3433	3513	
Peak-hour factor, PHF	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Adj. Flow (vph)	14	41	23	361	25	590	0	652	544	724	755	29
RTOR Reduction (vph)	0	15	0	0	152	260	0	153	0	0	3	0
Lane Group Flow (vph)	0	63	0	325	175	64	0	1043	0	724	781	0
Confl. Peds. (#/hr)			10						10			10
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Split	NA		Split	NA	Perm		NA		Prot	NA	
Protected Phases	7	7		8	8			2		1	6	
Permitted Phases						8						
Actuated Green, G (s)		6.3		19.8	19.8	19.8		33.9		20.5	59.6	
Effective Green, g (s)		6.3		19.8	19.8	19.8		33.9		20.5	59.6	
Actuated g/C Ratio		0.06		0.20	0.20	0.20		0.34		0.20	0.60	
Clearance Time (s)		4.9		4.9	4.9	4.9		5.2		4.5	4.5	
Vehicle Extension (s)		3.0		3.0	3.0	3.0		3.0		3.0	3.0	
Lane Grp Cap (vph)		110		332	288	292		1100		703	2093	
v/s Ratio Prot		c0.04		c0.19	0.12			c0.32		c0.21	0.22	
v/s Ratio Perm						0.04						
v/c Ratio		0.57		0.98	0.61	0.22		0.95		1.03	0.37	
Uniform Delay, d1		45.5		39.9	36.6	33.6		32.2		39.8	10.5	
Progression Factor		1.00		1.00	1.00	1.00		1.00		1.17	1.10	
Incremental Delay, d2		7.0		43.2	3.6	0.4		17.3		39.7	0.4	
Delay (s)		52.6		83.1	40.2	34.0		49.5		86.0	12.0	
Level of Service		D		F	D	C		D		F	B	
Approach Delay (s)		52.6			52.4			49.5			47.5	
Approach LOS		D			D			D			D	

Intersection Summary				
HCM 2000 Control Delay	49.5	HCM 2000 Level of Service	D	
HCM 2000 Volume to Capacity ratio	0.95			
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	19.5	
Intersection Capacity Utilization	82.6%	ICU Level of Service	E	
Analysis Period (min)	15			
c Critical Lane Group				

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	162	796	165	366	586	322	237	219	385	307	173	78
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.3		4.5	5.3		4.5	5.7	5.7	4.5	6.0	
Lane Util. Factor	1.00	0.95		0.97	0.95		0.97	0.95	1.00	0.97	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	0.99		1.00	1.00	0.99	1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.97		1.00	0.95		1.00	1.00	0.85	1.00	0.95	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3429		3433	3314		3433	3539	1561	3433	3338	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	3429		3433	3314		3433	3539	1561	3433	3338	
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	184	905	188	416	666	366	269	249	438	349	197	89
RTOR Reduction (vph)	0	19	0	0	82	0	0	0	55	0	58	0
Lane Group Flow (vph)	184	1074	0	416	950	0	269	249	383	349	228	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Prot	NA		Prot	NA		Prot	NA	custom	Prot	NA	
Protected Phases	5	2		1	6		3	8	8	7	4	
Permitted Phases									1			
Actuated Green, G (s)	10.5	29.5		13.2	32.2		9.6	15.9	29.1	10.7	16.7	
Effective Green, g (s)	10.5	29.5		13.2	32.2		9.6	15.9	29.1	10.7	16.7	
Actuated g/C Ratio	0.12	0.33		0.15	0.36		0.11	0.18	0.33	0.12	0.19	
Clearance Time (s)	4.5	5.3		4.5	5.3		4.5	5.7	5.7	4.5	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	208	1132		507	1194		369	630	608	411	624	
v/s Ratio Prot	0.10	c0.31		c0.12	c0.29		0.08	0.07	c0.11	c0.10	0.07	
v/s Ratio Perm									0.13			
v/c Ratio	0.88	0.95		0.82	0.80		0.73	0.40	0.63	0.85	0.37	
Uniform Delay, d1	38.8	29.2		36.9	25.6		38.6	32.4	25.5	38.5	31.7	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	32.8	15.7		10.3	3.7		7.0	0.4	2.0	15.0	0.4	
Delay (s)	71.6	44.9		47.2	29.3		45.6	32.9	27.6	53.5	32.0	
Level of Service	E	D		D	C		D	C	C	D	C	
Approach Delay (s)		48.8			34.5			34.0			43.9	
Approach LOS		D			C			C			D	

Intersection Summary				
HCM 2000 Control Delay	40.0	HCM 2000 Level of Service	D	
HCM 2000 Volume to Capacity ratio	0.86			
Actuated Cycle Length (s)	89.3	Sum of lost time (s)	20.3	
Intersection Capacity Utilization	74.0%	ICU Level of Service	D	
Analysis Period (min)	15			
c Critical Lane Group				

3:15-4:15 PM Year 2022 + Cumulative
22: Aero Ct & Aero Dr

HCM Signalized Intersection Capacity Analysis

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	23	1370	94	26	1094	10	161	0	67	7	0	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.3		4.5	5.3		4.9	4.9			4.9	4.9
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00			1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.97			1.00	0.97
Flpb, ped/bikes	1.00	1.00		1.00	1.00		0.99	1.00			0.99	1.00
Frt	1.00	0.99		1.00	1.00		1.00	0.85			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00			0.95	1.00
Satd. Flow (prot)	1770	3495		1770	3533		1744	1533			1747	1533
Flt Permitted	0.95	1.00		0.95	1.00		0.75	1.00			0.70	1.00
Satd. Flow (perm)	1770	3495		1770	3533		1381	1533			1296	1533
Peak-hour factor, PHF	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Adj. Flow (vph)	27	1631	112	31	1302	12	192	0	80	8	0	12
RTOR Reduction (vph)	0	5	0	0	0	0	0	64	0	0	0	10
Lane Group Flow (vph)	27	1738	0	31	1314	0	192	16	0	0	8	2
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	Perm
Protected Phases	5	2		1	6			4			4	
Permitted Phases							4			4		4
Actuated Green, G (s)	1.9	45.1		1.7	44.9		15.9	15.9			15.9	15.9
Effective Green, g (s)	1.9	45.1		1.7	44.9		15.9	15.9			15.9	15.9
Actuated g/C Ratio	0.02	0.58		0.02	0.58		0.21	0.21			0.21	0.21
Clearance Time (s)	4.5	5.3		4.5	5.3		4.9	4.9			4.9	4.9
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0			3.0	3.0
Lane Grp Cap (vph)	43	2036		38	2049		283	314			266	314
v/s Ratio Prot	0.02	c0.50		c0.02	0.37			0.01				
v/s Ratio Perm							c0.14				0.01	0.00
v/c Ratio	0.63	0.85		0.82	0.64		0.68	0.05			0.03	0.01
Uniform Delay, d1	37.4	13.4		37.7	10.9		28.4	24.7			24.6	24.5
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00			1.00	1.00
Incremental Delay, d2	25.3	3.7		76.1	0.7		6.3	0.1			0.0	0.0
Delay (s)	62.7	17.1		113.8	11.6		34.7	24.8			24.6	24.5
Level of Service	E	B		F	B		C	C			C	C
Approach Delay (s)		17.8			13.9			31.8			24.5	
Approach LOS		B			B			C			C	

Intersection Summary					
HCM 2000 Control Delay	17.4	HCM 2000 Level of Service		B	
HCM 2000 Volume to Capacity ratio	0.81				
Actuated Cycle Length (s)	77.4	Sum of lost time (s)		14.7	
Intersection Capacity Utilization	65.0%	ICU Level of Service		C	
Analysis Period (min)	15				
c Critical Lane Group					

3:15-4:15 PM Year 2022 + Cumulative
23: Afton Rd & Aero Dr

HCM Signalized Intersection Capacity Analysis

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	38	1104	285	57	790	11	197	4	61	16	8	114
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.4		4.5	5.3			4.9			4.9	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	
Frpb, ped/bikes	1.00	0.99		1.00	1.00			0.99			0.98	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			0.99			1.00	
Frt	1.00	0.97		1.00	1.00			0.97			0.89	
Flt Protected	0.95	1.00		0.95	1.00			0.96			0.99	
Satd. Flow (prot)	1770	3397		1770	3530			1714			1608	
Flt Permitted	0.95	1.00		0.95	1.00			0.66			0.95	
Satd. Flow (perm)	1770	3397		1770	3530			1173			1535	
Peak-hour factor, PHF	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Adj. Flow (vph)	45	1299	335	67	929	13	232	5	72	19	9	134
RTOR Reduction (vph)	0	27	0	0	1	0	0	14	0	0	97	0
Lane Group Flow (vph)	45	1607	0	67	941	0	0	295	0	0	65	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8			4		
Actuated Green, G (s)	3.6	37.9		3.3	37.7			21.7			21.7	
Effective Green, g (s)	3.6	37.9		3.3	37.7			21.7			21.7	
Actuated g/C Ratio	0.05	0.49		0.04	0.49			0.28			0.28	
Clearance Time (s)	4.5	5.4		4.5	5.3			4.9			4.9	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	82	1656		75	1712			327			428	
v/s Ratio Prot	0.03	c0.47		c0.04	0.27							
v/s Ratio Perm								c0.25			0.04	
v/c Ratio	0.55	0.97		0.89	0.55			0.90			0.15	
Uniform Delay, d1	36.3	19.4		37.0	14.0			27.0			21.1	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	7.3	16.1		68.3	1.3			26.4			0.2	
Delay (s)	43.6	35.5		105.4	15.3			53.4			21.2	
Level of Service	D	D		F	B			D			C	
Approach Delay (s)		35.7			21.3			53.4			21.2	
Approach LOS		D			C			D			C	

Intersection Summary					
HCM 2000 Control Delay	32.1	HCM 2000 Level of Service		C	
HCM 2000 Volume to Capacity ratio	0.94				
Actuated Cycle Length (s)	77.7	Sum of lost time (s)		14.8	
Intersection Capacity Utilization	83.9%	ICU Level of Service		E	
Analysis Period (min)	15				
c Critical Lane Group					

3:15-4:15 PM Year 2022 + Cumulative
24: Sandrock Rd & Aero Dr

HCM Signalized Intersection Capacity Analysis

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	51	742	410	183	544	33	293	13	162	71	50	42
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.2	5.2	4.5	5.2		5.0	5.0	5.0	4.9	4.9	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		0.95	0.95	1.00	1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.95	1.00	1.00		1.00	1.00	0.97	1.00	0.98	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85	1.00	0.93	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	0.96	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3539	1503	1770	3499		1681	1692	1530	1770	1706	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	0.96	1.00	0.95	1.00	
Satd. Flow (perm)	1770	3539	1503	1770	3499		1681	1692	1530	1770	1706	
Peak-hour factor, PHF	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
Adj. Flow (vph)	64	928	512	229	680	41	366	16	202	89	62	52
RTOR Reduction (vph)	0	0	222	0	4	0	0	0	169	0	36	0
Lane Group Flow (vph)	64	928	290	229	717	0	190	192	33	89	78	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Prot	NA	Perm	Prot	NA		Split	NA	Perm	Split	NA	
Protected Phases	5	2		1	6		8	8		7	7	
Permitted Phases			2						8			
Actuated Green, G (s)	5.6	27.0	27.0	12.6	34.0		13.5	13.5	13.5	9.5	9.5	
Effective Green, g (s)	5.6	27.0	27.0	12.6	34.0		13.5	13.5	13.5	9.5	9.5	
Actuated g/C Ratio	0.07	0.33	0.33	0.15	0.41		0.16	0.16	0.16	0.12	0.12	
Clearance Time (s)	4.5	5.2	5.2	4.5	5.2		5.0	5.0	5.0	4.9	4.9	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	120	1162	493	271	1447		276	277	251	204	197	
v/s Ratio Prot	0.04	c0.26		c0.13	0.20		0.11	c0.11		c0.05	0.05	
v/s Ratio Perm			0.19						0.02			
v/c Ratio	0.53	0.80	0.59	0.85	0.50		0.69	0.69	0.13	0.44	0.39	
Uniform Delay, d1	37.0	25.1	23.0	33.9	17.8		32.4	32.4	29.3	33.9	33.7	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	4.5	5.8	5.1	20.8	0.3		7.0	7.3	0.2	1.5	1.3	
Delay (s)	41.5	30.9	28.1	54.6	18.0		39.3	39.7	29.6	35.3	35.0	
Level of Service	D	C	C	D	B		D	D	C	D	C	
Approach Delay (s)		30.4			26.9			36.1			35.1	
Approach LOS		C			C			D			D	

Intersection Summary				
HCM 2000 Control Delay	30.7	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.73			
Actuated Cycle Length (s)	82.2	Sum of lost time (s)	19.6	
Intersection Capacity Utilization	58.0%	ICU Level of Service	B	
Analysis Period (min)	15			
c Critical Lane Group				

3:15-4:15 PM Year 2022 + Cumulative
25: Ruffin Rd & Aero Dr

HCM Signalized Intersection Capacity Analysis

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	683	295	315	568	136	239
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.2	5.2	4.5	4.5	5.5	5.5
Lane Util. Factor	0.95	1.00	0.97	0.95	0.97	1.00
Frpb, ped/bikes	1.00	0.99	1.00	1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	3539	1566	3433	3539	3433	1541
Flt Permitted	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)	3539	1566	3433	3539	3433	1541
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	742	321	342	617	148	260
RTOR Reduction (vph)	0	25	0	0	0	190
Lane Group Flow (vph)	742	296	342	617	148	70
Confl. Peds. (#/hr)		10	10		10	10
Confl. Bikes (#/hr)		5				5
Turn Type	NA	custom	Prot	NA	Prot	Perm
Protected Phases	2	2	1	6	8	
Permitted Phases		8				8
Actuated Green, G (s)	19.3	35.3	9.2	33.7	16.0	16.0
Effective Green, g (s)	19.3	35.3	9.2	33.7	16.0	16.0
Actuated g/C Ratio	0.32	0.59	0.15	0.56	0.27	0.27
Clearance Time (s)	5.2	5.2	4.5	4.5	5.5	5.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	1144	1062	529	1997	920	412
v/s Ratio Prot	c0.21	c0.09	c0.10	0.17	0.04	
v/s Ratio Perm		0.10				0.05
v/c Ratio	0.65	0.28	0.65	0.31	0.16	0.17
Uniform Delay, d1	17.3	6.0	23.7	6.9	16.7	16.8
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	2.9	0.7	2.7	0.1	0.4	0.9
Delay (s)	20.1	6.6	26.4	6.9	17.1	17.6
Level of Service	C	A	C	A	B	B
Approach Delay (s)	16.1			13.9	17.4	
Approach LOS	B			B	B	

Intersection Summary				
HCM 2000 Control Delay	15.4	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.53			
Actuated Cycle Length (s)	59.7	Sum of lost time (s)	15.2	
Intersection Capacity Utilization	53.9%	ICU Level of Service	A	
Analysis Period (min)	15			
c Critical Lane Group				

Movement	EBU	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations							
Volume (vph)	22	949	111	139	860	118	41
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5		4.5	4.5	4.5	4.5
Lane Util. Factor	1.00	0.95		0.97	0.95	0.97	0.88
Frpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	0.95
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00
Frt	1.00	0.98		1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	0.95	1.00
Satd. Flow (prot)	1770	3473		3433	3539	3433	2643
Flt Permitted	0.95	1.00		0.95	1.00	0.95	1.00
Satd. Flow (perm)	1770	3473		3433	3539	3433	2643
Peak-hour factor, PHF	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Adj. Flow (vph)	26	1103	129	162	1000	137	48
RTOR Reduction (vph)	0	10	0	0	0	0	38
Lane Group Flow (vph)	26	1222	0	162	1000	137	10
Confl. Peds. (#/hr)			10	10		10	10
Confl. Bikes (#/hr)			5				5
Turn Type	Prot	NA		Prot	NA	Prot	Perm
Protected Phases	5	2		1	6	8	
Permitted Phases							8
Actuated Green, G (s)	1.6	36.5		8.9	43.8	16.1	16.1
Effective Green, g (s)	1.6	36.5		8.9	43.8	16.1	16.1
Actuated g/C Ratio	0.02	0.49		0.12	0.58	0.21	0.21
Clearance Time (s)	4.5	4.5		4.5	4.5	4.5	4.5
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	37	1690		407	2066	736	567
v/s Ratio Prot	0.01	c0.35		c0.05	c0.28	c0.04	
v/s Ratio Perm							0.00
v/c Ratio	0.70	0.72		0.40	0.48	0.19	0.02
Uniform Delay, d1	36.5	15.2		30.6	9.0	24.1	23.2
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2	46.2	2.7		0.6	0.8	0.6	0.1
Delay (s)	82.6	18.0		31.2	9.9	24.6	23.3
Level of Service	F	B		C	A	C	C
Approach Delay (s)		19.3			12.8	24.3	
Approach LOS		B			B	C	

Intersection Summary				
HCM 2000 Control Delay	16.8	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.54			
Actuated Cycle Length (s)	75.0	Sum of lost time (s)	13.5	
Intersection Capacity Utilization	58.4%	ICU Level of Service	B	
Analysis Period (min)	15			
c Critical Lane Group				

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	3	0	0	1	0	6	0	223	0	11	105	3
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Hourly flow rate (vph)	4	0	0	1	0	7	0	265	0	13	125	4
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)											142	
pX, platoon unblocked												
vC, conflicting volume	426	418	127	418	420	265	129			265		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	426	418	127	418	420	265	129			265		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	99	100	100	100	100	99	100			99		
cM capacity (veh/h)	530	520	923	541	519	773	1457			1298		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	4	8	265	142
Volume Left	4	1	0	13
Volume Right	0	7	0	4
cSH	530	728	1457	1298
Volume to Capacity	0.01	0.01	0.00	0.01
Queue Length 95th (ft)	1	1	0	1
Control Delay (s)	11.8	10.0	0.0	0.8
Lane LOS	B	A		A
Approach Delay (s)	11.8	10.0	0.0	0.8
Approach LOS	B	A		

Intersection Summary					
Average Delay	0.6				
Intersection Capacity Utilization	24.9%	ICU Level of Service		A	
Analysis Period (min)	15				

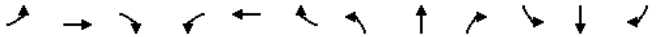
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	3	69	114	0	19	43
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.60	0.60	0.60	0.60	0.60	0.60
Hourly flow rate (vph)	5	115	190	0	32	72
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						635
pX, platoon unblocked						
vC, conflicting volume	325	190			190	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	325	190			190	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	99	86			98	
cM capacity (veh/h)	654	852			1384	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	120	190	103
Volume Left	5	0	32
Volume Right	115	0	0
cSH	841	1700	1384
Volume to Capacity	0.14	0.11	0.02
Queue Length 95th (ft)	12	0	2
Control Delay (s)	10.0	0.0	2.5
Lane LOS	A		A
Approach Delay (s)	10.0	0.0	2.5
Approach LOS	A		

Intersection Summary			
Average Delay		3.5	
Intersection Capacity Utilization		21.1%	ICU Level of Service A
Analysis Period (min)		15	

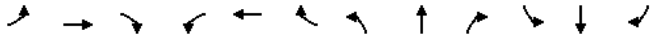
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	223	32	438	272	563	14
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.1	4.7	4.7	5.8	5.8	
Lane Util. Factor	0.97	1.00	1.00	0.95	0.95	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.85	1.00	1.00	1.00	
Flt Protected	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	3433	1583	1770	3539	3522	
Flt Permitted	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (perm)	3433	1583	1770	3539	3522	
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	251	36	492	306	633	16
RTOR Reduction (vph)	0	11	0	0	2	0
Lane Group Flow (vph)	251	25	492	306	647	0
Confl. Peds. (#/hr)						10
Confl. Bikes (#/hr)						5
Turn Type	Prot	pm+ov	Prot	NA	NA	
Protected Phases	4	5	5	2	6	
Permitted Phases		4				
Actuated Green, G (s)	10.3	33.1	22.8	48.1	20.6	
Effective Green, g (s)	10.3	33.1	22.8	48.1	20.6	
Actuated g/C Ratio	0.15	0.48	0.33	0.69	0.30	
Clearance Time (s)	5.1	4.7	4.7	5.8	5.8	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	510	756	582	2456	1046	
v/s Ratio Prot	c0.07	0.01	c0.28	0.09	c0.18	
v/s Ratio Perm		0.00				
v/c Ratio	0.49	0.03	0.85	0.12	0.62	
Uniform Delay, d1	27.1	9.6	21.6	3.5	21.0	
Progression Factor	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.8	0.0	10.9	0.1	2.7	
Delay (s)	27.8	9.6	32.5	3.7	23.7	
Level of Service	C	A	C	A	C	
Approach Delay (s)	25.6			21.4	23.7	
Approach LOS	C			C	C	

Intersection Summary			
HCM 2000 Control Delay	23.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	69.3	Sum of lost time (s)	15.6
Intersection Capacity Utilization	59.7%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	131	116	25	276	53	173	21	382	194	181	398	108
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.1			5.1	5.1	4.7	5.5	5.5	4.7	5.5	
Lane Util. Factor		1.00			1.00	1.00	1.00	0.95	1.00	1.00	0.95	
Frpb, ped/bikes		1.00			1.00	0.97	1.00	1.00	0.94	1.00	0.99	
Flpb, ped/bikes		1.00			1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt		0.99			1.00	0.85	1.00	1.00	0.85	1.00	0.97	
Flt Protected		0.98			0.96	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1791			1788	1531	1770	3539	1496	1770	3388	
Flt Permitted		0.98			0.96	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)		1791			1788	1531	1770	3539	1496	1770	3388	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	135	120	26	285	55	178	22	394	200	187	410	111
RTOR Reduction (vph)	0	4	0	0	0	139	0	0	156	0	24	0
Lane Group Flow (vph)	0	277	0	0	340	39	22	394	44	187	497	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Split	NA		Split	NA	Perm	Prot	NA	Perm	Prot	NA	
Protected Phases	4	4		3	3		5	2		1	6	
Permitted Phases						3			2			
Actuated Green, G (s)		16.9			19.4	19.4	2.0	19.1	19.1	11.7	28.8	
Effective Green, g (s)		16.9			19.4	19.4	2.0	19.1	19.1	11.7	28.8	
Actuated g/C Ratio		0.19			0.22	0.22	0.02	0.22	0.22	0.13	0.33	
Clearance Time (s)		5.1			5.1	5.1	4.7	5.5	5.5	4.7	5.5	
Vehicle Extension (s)		3.0			3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)		345			396	339	40	772	326	236	1115	
v/s Ratio Prot		c0.15			c0.19		0.01	c0.11		c0.11	0.15	
v/s Ratio Perm						0.03			0.03			
v/c Ratio		0.80			0.86	0.12	0.55	0.51	0.13	0.79	0.45	
Uniform Delay, d1		33.7			32.7	27.2	42.3	30.1	27.5	36.7	23.1	
Progression Factor		1.00			1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2		12.6			16.6	0.2	15.3	2.4	0.9	16.5	1.3	
Delay (s)		46.4			49.4	27.4	57.6	32.5	28.4	53.2	24.4	
Level of Service		D			D	C	E	C	C	D	C	
Approach Delay (s)		46.4			41.8			32.1			32.0	
Approach LOS		D			D			C			C	

Intersection Summary				
HCM 2000 Control Delay	36.3	HCM 2000 Level of Service	D	
HCM 2000 Volume to Capacity ratio	0.73			
Actuated Cycle Length (s)	87.5	Sum of lost time (s)	20.4	
Intersection Capacity Utilization	65.8%	ICU Level of Service	C	
Analysis Period (min)	15			
c Critical Lane Group				



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	51	93	88	416	43	33	82	750	231	36	744	29
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.9	4.9	4.5	4.9		4.5	5.3		4.5	5.0	
Lane Util. Factor	1.00	1.00	1.00	0.97	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	1.00	0.85	1.00	0.93		1.00	0.96		1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1863	1583	3433	1742		1770	3414		1770	3519	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	1863	1583	3433	1742		1770	3414		1770	3519	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	56	102	97	457	47	36	90	824	254	40	818	32
RTOR Reduction (vph)	0	0	86	0	28	0	0	25	0	0	2	0
Lane Group Flow (vph)	56	102	11	457	55	0	90	1053	0	40	848	0
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4									
Actuated Green, G (s)	6.7	11.6	11.6	17.9	22.8		8.4	46.9		4.4	43.2	
Effective Green, g (s)	6.7	11.6	11.6	17.9	22.8		8.4	46.9		4.4	43.2	
Actuated g/C Ratio	0.07	0.12	0.12	0.18	0.23		0.08	0.47		0.04	0.43	
Clearance Time (s)	4.5	4.9	4.9	4.5	4.9		4.5	5.3		4.5	5.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	118	216	183	614	397		148	1601		77	1520	
v/s Ratio Prot	0.03	c0.05		c0.13	0.03		c0.05	c0.31		0.02	0.24	
v/s Ratio Perm			0.01									
v/c Ratio	0.47	0.47	0.06	0.74	0.14		0.61	0.66		0.52	0.56	
Uniform Delay, d1	45.0	41.3	39.4	38.9	30.8		44.2	20.4		46.8	21.3	
Progression Factor	1.00	1.00	1.00	1.00	1.00		0.92	1.30		1.00	1.00	
Incremental Delay, d2	3.0	1.6	0.1	4.9	0.2		4.0	1.2		5.8	1.5	
Delay (s)	47.9	43.0	39.5	43.8	30.9		44.9	27.8		52.6	22.7	
Level of Service	D	D	D	D	C		D	C		D	C	
Approach Delay (s)		42.7			41.8			29.1			24.1	
Approach LOS		D			D			C			C	

Intersection Summary				
HCM 2000 Control Delay	31.2	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.66			
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	19.2	
Intersection Capacity Utilization	62.2%	ICU Level of Service	B	
Analysis Period (min)	15			
c Critical Lane Group				

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	470	0	0	820	369	249
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.1			5.1	5.1	5.1
Lane Util. Factor	0.95			0.95	0.97	0.91
Frt	1.00			1.00	0.98	0.85
Flt Protected	1.00			1.00	0.96	1.00
Satd. Flow (prot)	3539			3539	3394	1441
Flt Permitted	1.00			1.00	0.96	1.00
Satd. Flow (perm)	3539			3539	3394	1441
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	490	0	0	854	384	259
RTOR Reduction (vph)	0	0	0	0	18	159
Lane Group Flow (vph)	490	0	0	854	426	40
Turn Type	NA			NA	Prot	Perm
Protected Phases	2			6	4	
Permitted Phases						4
Actuated Green, G (s)	14.1			22.0	13.0	13.0
Effective Green, g (s)	14.1			22.0	13.0	13.0
Actuated g/C Ratio	0.22			0.34	0.20	0.20
Clearance Time (s)	5.1			5.1	5.1	5.1
Vehicle Extension (s)	3.0			3.0	3.0	3.0
Lane Grp Cap (vph)	774			1208	685	290
v/s Ratio Prot	c0.14			c0.24	c0.13	
v/s Ratio Perm						0.03
v/c Ratio	0.63			0.71	0.62	0.14
Uniform Delay, d1	22.8			18.4	23.5	21.1
Progression Factor	1.00			1.00	1.00	1.00
Incremental Delay, d2	1.7			1.9	1.8	0.2
Delay (s)	24.5			20.3	25.2	21.3
Level of Service	C			C	C	C
Approach Delay (s)	24.5			20.3	24.0	
Approach LOS	C			C	C	

Intersection Summary				
HCM 2000 Control Delay	22.5	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.66			
Actuated Cycle Length (s)	64.4	Sum of lost time (s)	15.3	
Intersection Capacity Utilization	44.3%	ICU Level of Service	A	
Analysis Period (min)	15			
c Critical Lane Group				

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	102	531	70	322	638	13	124	41	269	19	13	55
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.9	4.0	4.5	4.9		4.9	4.9	4.9		4.9	4.9
Lane Util. Factor	1.00	0.95	1.00	0.97	0.95		1.00	0.95	0.95		1.00	1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	0.98	0.97		1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00		1.00	0.89	0.85		1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00		0.97	1.00
Satd. Flow (prot)	1770	3539	1583	3433	3525		1770	1541	1461		1810	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00		0.97	1.00
Satd. Flow (perm)	1770	3539	1583	3433	3525		1770	1541	1461		1810	1583
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	106	553	73	335	665	14	129	43	280	20	14	57
RTOR Reduction (vph)	0	0	0	0	2	0	0	0	0	0	0	0
Lane Group Flow (vph)	106	553	73	335	677	0	129	163	160	0	34	57
Confl. Peds. (#/hr)						10			10			
Confl. Bikes (#/hr)						5			5			
Turn Type	Prot	NA	Free	Prot	NA		Split	NA	Perm	Split	NA	Perm
Protected Phases	5	2		1	6		3	3		4	4	
Permitted Phases			Free						3			4
Actuated Green, G (s)	4.5	17.3	67.7	8.6	21.4		16.1	16.1	16.1		6.5	6.5
Effective Green, g (s)	4.5	17.3	67.7	8.6	21.4		16.1	16.1	16.1		6.5	6.5
Actuated g/C Ratio	0.07	0.26	1.00	0.13	0.32		0.24	0.24	0.24		0.10	0.10
Clearance Time (s)	4.5	4.9		4.5	4.9		4.9	4.9	4.9		4.9	4.9
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	117	904	1583	436	1114		420	366	347		173	151
v/s Ratio Prot	0.06	0.16		c0.10	c0.19		0.07	0.11			0.02	
v/s Ratio Perm			0.05						c0.11			c0.04
v/c Ratio	0.91	0.61	0.05	0.77	0.61		0.31	0.45	0.46		0.20	0.38
Uniform Delay, d1	31.4	22.2	0.0	28.6	19.6		21.2	22.0	22.1		28.2	28.7
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	54.5	3.1	0.1	7.9	0.9		1.9	3.9	4.4		0.6	1.6
Delay (s)	85.8	25.3	0.1	36.5	20.5		23.1	25.9	26.4		28.8	30.3
Level of Service	F	C	A	D	C		C	C	C		C	C
Approach Delay (s)		31.6			25.8			25.3			29.7	
Approach LOS		C			C			C			C	

Intersection Summary				
HCM 2000 Control Delay	27.7	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.57			
Actuated Cycle Length (s)	67.7	Sum of lost time (s)	19.2	
Intersection Capacity Utilization	53.3%	ICU Level of Service	A	
Analysis Period (min)	15			
c Critical Lane Group				

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	11	443	744	292	989	75	0	0	0	45	70	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.7	5.1		4.7	5.1						5.5	
Lane Util. Factor	1.00	0.95		1.00	0.95						1.00	
Frpb, ped/bikes	1.00	0.99		1.00	1.00						1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00						1.00	
Frt	1.00	0.91		1.00	0.99						0.99	
Flt Protected	0.95	1.00		0.95	1.00						0.98	
Satd. Flow (prot)	1761	3161		1770	3490						1800	
Flt Permitted	0.95	1.00		0.95	1.00						0.98	
Satd. Flow (perm)	1761	3161		1770	3490						1800	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	12	476	800	314	1063	81	0	0	0	48	75	14
RTOR Reduction (vph)	0	260	0	0	7	0	0	0	0	0	6	0
Lane Group Flow (vph)	12	1016	0	314	1137	0	0	0	0	0	131	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Prot	NA		Prot	NA					Split	NA	
Protected Phases	5	2		1	6					4	4	
Permitted Phases												
Actuated Green, G (s)	0.8	30.0		15.6	44.8						16.0	
Effective Green, g (s)	0.8	30.0		15.6	44.8						16.0	
Actuated g/C Ratio	0.01	0.39		0.20	0.58						0.21	
Clearance Time (s)	4.7	5.1		4.7	5.1						5.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0						3.0	
Lane Grp Cap (vph)	18	1233		359	2033						374	
v/s Ratio Prot	0.01	c0.32		c0.18	0.33						c0.07	
v/s Ratio Perm												
v/c Ratio	0.67	0.96dr		0.87	0.56						0.35	
Uniform Delay, d1	37.9	21.1		29.7	9.9						26.0	
Progression Factor	1.00	1.00		1.00	1.00						1.00	
Incremental Delay, d2	66.1	4.6		20.4	0.3						2.6	
Delay (s)	104.0	25.7		50.1	10.3						28.6	
Level of Service	F	C		D	B						C	
Approach Delay (s)		26.4			18.8			0.0			28.6	
Approach LOS		C			B			A			C	

Intersection Summary			
HCM 2000 Control Delay	22.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	76.9	Sum of lost time (s)	15.3
Intersection Capacity Utilization	79.5%	ICU Level of Service	D
Analysis Period (min)	15		

dr Defacto Right Lane. Recode with 1 though lane as a right lane.
c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	479	0	0	675	690	254
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.5			5.5	4.5	5.5
Lane Util. Factor	0.95			0.95	0.97	1.00
Frpb, ped/bikes	1.00			1.00	1.00	0.98
Flpb, ped/bikes	1.00			1.00	1.00	1.00
Frt	1.00			1.00	1.00	0.85
Flt Protected	1.00			1.00	0.95	1.00
Satd. Flow (prot)	3539			3539	3433	1549
Flt Permitted	1.00			1.00	0.95	1.00
Satd. Flow (perm)	3539			3539	3433	1549
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	510	0	0	718	734	270
RTOR Reduction (vph)	0	0	0	0	0	158
Lane Group Flow (vph)	510	0	0	718	734	112
Confl. Peds. (#/hr)						10
Confl. Bikes (#/hr)						5
Turn Type	NA			NA	Prot	Perm
Protected Phases	2			6	4	
Permitted Phases						6
Actuated Green, G (s)	18.2			18.2	15.8	18.2
Effective Green, g (s)	18.2			18.2	15.8	18.2
Actuated g/C Ratio	0.41			0.41	0.36	0.41
Clearance Time (s)	5.5			5.5	4.5	5.5
Vehicle Extension (s)	3.0			3.0	3.0	3.0
Lane Grp Cap (vph)	1463			1463	1232	640
v/s Ratio Prot	0.14			c0.20	c0.21	
v/s Ratio Perm						0.07
v/c Ratio	0.35			0.49	0.60	0.17
Uniform Delay, d1	8.8			9.5	11.5	8.2
Progression Factor	1.00			1.00	1.00	1.00
Incremental Delay, d2	0.1			0.3	0.8	0.1
Delay (s)	9.0			9.8	12.3	8.3
Level of Service	A			A	B	A
Approach Delay (s)	9.0			9.8	11.2	
Approach LOS	A			A	B	

Intersection Summary			
HCM 2000 Control Delay	10.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	44.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	46.7%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

4:45-5:45 PM Year 2022 + Cumulative
1: Aero Dr & Convoy St

HCM Signalized Intersection Capacity Analysis

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	10	48	24	460	4	484	0	561	505	848	1100	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.9		4.9	4.9	4.9		5.2		4.5	4.5	
Lane Util. Factor		1.00		0.95	0.91	0.95		0.95		0.97	0.95	
Frpb, ped/bikes		0.99		1.00	0.99	0.98		0.98		1.00	1.00	
Flpb, ped/bikes		1.00		1.00	1.00	1.00		1.00		1.00	1.00	
Frt		0.96		1.00	0.91	0.85		0.93		1.00	1.00	
Flt Protected		0.99		0.95	0.98	1.00		1.00		0.95	1.00	
Satd. Flow (prot)		1751		1681	1502	1479		3229		3433	3536	
Flt Permitted		0.99		0.95	0.98	1.00		1.00		0.95	1.00	
Satd. Flow (perm)		1751		1681	1502	1479		3229		3433	3536	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	10	49	25	474	4	499	0	578	521	874	1134	5
RTOR Reduction (vph)	0	13	0	0	40	240	0	138	0	0	0	0
Lane Group Flow (vph)	0	71	0	341	287	69	0	961	0	874	1139	0
Confl. Peds. (#/hr)			10						10			10
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Split	NA		Split	NA	Perm		NA		Prot	NA	
Protected Phases	7	7		8	8			2		1	6	
Permitted Phases						8						
Actuated Green, G (s)		8.5		26.7	26.7	26.7		37.8		27.5	70.5	
Effective Green, g (s)		8.5		26.7	26.7	26.7		37.8		27.5	70.5	
Actuated g/C Ratio		0.07		0.22	0.22	0.22		0.31		0.23	0.59	
Clearance Time (s)		4.9		4.9	4.9	4.9		5.2		4.5	4.5	
Vehicle Extension (s)		3.0		3.0	3.0	3.0		3.0		3.0	3.0	
Lane Grp Cap (vph)		124		374	334	329		1017		786	2077	
v/s Ratio Prot		c0.04		c0.20	0.19			c0.30		c0.25	0.32	
v/s Ratio Perm						0.05						
v/c Ratio		0.57		0.91	0.86	0.21		0.95		1.11	0.55	
Uniform Delay, d1		54.0		45.5	44.8	38.0		40.1		46.2	15.1	
Progression Factor		1.00		1.00	1.00	1.00		1.00		1.00	1.00	
Incremental Delay, d2		6.3		25.8	19.1	0.3		17.8		67.4	1.0	
Delay (s)		60.2		71.3	63.9	38.4		57.8		113.6	16.1	
Level of Service		E		E	E	D		E		F	B	
Approach Delay (s)		60.2			58.4			57.8			58.5	
Approach LOS		E			E			E			E	

Intersection Summary				
HCM 2000 Control Delay	58.3	HCM 2000 Level of Service	E	
HCM 2000 Volume to Capacity ratio	0.95			
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	19.5	
Intersection Capacity Utilization	93.0%	ICU Level of Service	F	
Analysis Period (min)	15			
c Critical Lane Group				

4:45-5:45 PM Year 2022 + Cumulative
2: Kearny Villa Rd & Aero Dr

HCM Signalized Intersection Capacity Analysis

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	146	1030	211	275	628	344	209	279	425	768	356	147
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.3		4.5	5.3		4.5	5.7	4.5	4.5	6.0	
Lane Util. Factor	1.00	0.95		0.97	0.95		0.97	0.95	1.00	0.97	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	0.99		1.00	1.00	0.98	1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.97		1.00	0.95		1.00	1.00	0.85	1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3426		3433	3306		3433	3539	1553	3433	3345	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	3426		3433	3306		3433	3539	1553	3433	3345	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	152	1073	220	286	654	358	218	291	443	800	371	153
RTOR Reduction (vph)	0	13	0	0	55	0	0	0	72	0	34	0
Lane Group Flow (vph)	152	1280	0	286	957	0	218	291	371	800	490	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Prot	NA		Prot	NA		Prot	NA	pm+ov	Prot	NA	
Protected Phases	5	2		1	6		3	8	1	7	4	
Permitted Phases									8			
Actuated Green, G (s)	14.7	48.0		16.2	49.5		12.4	14.6	30.8	29.5	31.4	
Effective Green, g (s)	14.7	48.0		16.2	49.5		12.4	14.6	30.8	29.5	31.4	
Actuated g/C Ratio	0.11	0.37		0.13	0.39		0.10	0.11	0.24	0.23	0.24	
Clearance Time (s)	4.5	5.3		4.5	5.3		4.5	5.7	4.5	4.5	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	202	1281		433	1275		331	402	372	789	818	
v/s Ratio Prot	0.09	c0.37		0.08	0.29		0.06	0.08	c0.13	c0.23	0.15	
v/s Ratio Perm									0.11			
v/c Ratio	0.75	1.00		0.66	0.75		0.66	0.72	1.00	1.01	0.60	
Uniform Delay, d1	55.0	40.1		53.4	34.1		55.9	54.9	48.7	49.4	42.9	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	14.6	24.7		3.8	2.5		4.7	6.3	45.5	35.6	1.2	
Delay (s)	69.6	64.9		57.2	36.6		60.6	61.2	94.2	85.0	44.1	
Level of Service	E	E		E	D		E	E	F	F	D	
Approach Delay (s)		65.4			41.1			76.4			68.8	
Approach LOS		E			D			E			E	

Intersection Summary				
HCM 2000 Control Delay	62.1	HCM 2000 Level of Service	E	
HCM 2000 Volume to Capacity ratio	1.00			
Actuated Cycle Length (s)	128.3	Sum of lost time (s)	20.3	
Intersection Capacity Utilization	96.6%	ICU Level of Service	F	
Analysis Period (min)	15			
c Critical Lane Group				

4:45-5:45 PM Year 2022 + Cumulative
3: Aero Ct & Aero Dr

HCM Signalized Intersection Capacity Analysis

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	7	2054	164	58	1088	10	136	1	48	45	2	12
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.3		4.5	5.3		4.9	4.9			4.9	4.9
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00			1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.96			1.00	0.96
Flpb, ped/bikes	1.00	1.00		1.00	1.00		0.98	1.00			0.98	1.00
Frt	1.00	0.99		1.00	1.00		1.00	0.85			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00			0.95	1.00
Satd. Flow (prot)	1770	3486		1770	3532		1738	1530			1748	1524
Flt Permitted	0.95	1.00		0.95	1.00		0.73	1.00			0.71	1.00
Satd. Flow (perm)	1770	3486		1770	3532		1327	1530			1303	1524
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	7	2162	173	61	1145	11	143	1	51	47	2	13
RTOR Reduction (vph)	0	3	0	0	0	0	0	43	0	0	0	11
Lane Group Flow (vph)	7	2332	0	61	1156	0	143	9	0	0	49	2
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	Perm
Protected Phases	5	2		1	6			4			4	
Permitted Phases							4			4		4
Actuated Green, G (s)	1.0	66.1		4.2	69.3		15.7	15.7			15.7	15.7
Effective Green, g (s)	1.0	66.1		4.2	69.3		15.7	15.7			15.7	15.7
Actuated g/C Ratio	0.01	0.66		0.04	0.69		0.16	0.16			0.16	0.16
Clearance Time (s)	4.5	5.3		4.5	5.3		4.9	4.9			4.9	4.9
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0			3.0	3.0
Lane Grp Cap (vph)	17	2288		73	2430		206	238			203	237
v/s Ratio Prot	0.00	c0.67		c0.03	c0.33			0.01				
v/s Ratio Perm							c0.11				0.04	0.00
v/c Ratio	0.41	1.02		0.84	0.48		0.69	0.04			0.24	0.01
Uniform Delay, d1	49.6	17.3		47.9	7.3		40.2	36.1			37.3	35.9
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00			1.00	1.00
Incremental Delay, d2	15.4	23.8		53.1	0.1		9.7	0.1			0.6	0.0
Delay (s)	65.0	41.1		101.0	7.4		49.9	36.2			37.9	35.9
Level of Service	E	D		F	A		D	D			D	D
Approach Delay (s)		41.1			12.1			46.3			37.5	
Approach LOS		D			B			D			D	

Intersection Summary					
HCM 2000 Control Delay	32.1	HCM 2000 Level of Service	C		
HCM 2000 Volume to Capacity ratio	0.94				
Actuated Cycle Length (s)	100.7	Sum of lost time (s)	14.7		
Intersection Capacity Utilization	84.8%	ICU Level of Service	E		
Analysis Period (min)	15				
c Critical Lane Group					

4:45-5:45 PM Year 2022 + Cumulative
4: Afton Rd & Aero Dr

HCM Signalized Intersection Capacity Analysis

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	48	1744	335	38	923	5	153	3	56	12	5	93
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.4		4.5	5.3			4.9			4.9	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	
Frpb, ped/bikes	1.00	0.99		1.00	1.00			0.99			0.97	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			0.99			1.00	
Frt	1.00	0.98		1.00	1.00			0.96			0.89	
Flt Protected	0.95	1.00		0.95	1.00			0.97			0.99	
Satd. Flow (prot)	1770	3425		1770	3536			1701			1595	
Flt Permitted	0.95	1.00		0.95	1.00			0.69			0.96	
Satd. Flow (perm)	1770	3425		1770	3536			1220			1547	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	50	1817	349	40	961	5	159	3	58	12	5	97
RTOR Reduction (vph)	0	14	0	0	0	0	0	13	0	0	77	0
Lane Group Flow (vph)	50	2152	0	40	966	0	0	207	0	0	37	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8			4		
Actuated Green, G (s)	4.8	57.3		3.1	55.7			19.7			19.7	
Effective Green, g (s)	4.8	57.3		3.1	55.7			19.7			19.7	
Actuated g/C Ratio	0.05	0.60		0.03	0.59			0.21			0.21	
Clearance Time (s)	4.5	5.4		4.5	5.3			4.9			4.9	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	89	2067		57	2075			253			321	
v/s Ratio Prot	c0.03	c0.63		0.02	0.27							
v/s Ratio Perm								c0.17			0.02	
v/c Ratio	0.56	1.04		0.70	0.47			0.82			0.12	
Uniform Delay, d1	44.0	18.8		45.4	11.1			35.9			30.5	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	7.9	31.4		32.3	0.8			18.1			0.2	
Delay (s)	51.9	50.2		77.8	11.9			53.9			30.7	
Level of Service	D	D		E	B			D			C	
Approach Delay (s)		50.3			14.5			53.9			30.7	
Approach LOS		D			B			D			C	

Intersection Summary					
HCM 2000 Control Delay	39.7	HCM 2000 Level of Service	D		
HCM 2000 Volume to Capacity ratio	0.98				
Actuated Cycle Length (s)	94.9	Sum of lost time (s)	14.8		
Intersection Capacity Utilization	86.6%	ICU Level of Service	E		
Analysis Period (min)	15				
c Critical Lane Group					

4:45-5:45 PM Year 2022 + Cumulative
5: Sandrock Rd & Aero Dr

HCM Signalized Intersection Capacity Analysis

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	52	1012	731	303	645	25	291	31	157	67	71	46
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.2	5.2	4.5	5.2		5.0	5.0	5.0	4.9	4.9	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		0.95	0.95	1.00	1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.94	1.00	1.00		1.00	1.00	0.96	1.00	0.98	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85	1.00	0.94	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	0.96	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3539	1495	1770	3512		1681	1701	1523	1770	1725	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	0.96	1.00	0.95	1.00	
Satd. Flow (perm)	1770	3539	1495	1770	3512		1681	1701	1523	1770	1725	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	54	1054	761	316	672	26	303	32	164	70	74	48
RTOR Reduction (vph)	0	0	237	0	2	0	0	0	141	0	22	0
Lane Group Flow (vph)	54	1054	524	316	696	0	167	168	23	70	100	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Prot	NA	Perm	Prot	NA		Split	NA	Perm	Split	NA	
Protected Phases	5	2		1	6		8	8		7	7	
Permitted Phases			2						8			
Actuated Green, G (s)	6.6	37.9	37.9	18.6	49.9		14.3	14.3	14.3	11.1	11.1	
Effective Green, g (s)	6.6	37.9	37.9	18.6	49.9		14.3	14.3	14.3	11.1	11.1	
Actuated g/C Ratio	0.07	0.37	0.37	0.18	0.49		0.14	0.14	0.14	0.11	0.11	
Clearance Time (s)	4.5	5.2	5.2	4.5	5.2		5.0	5.0	5.0	4.9	4.9	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	115	1321	558	324	1726		236	239	214	193	188	
v/s Ratio Prot	0.03	0.30		c0.18	0.20		c0.10	0.10		0.04	c0.06	
v/s Ratio Perm			c0.35						0.02			
v/c Ratio	0.47	0.80	0.94	0.98	0.40		0.71	0.70	0.11	0.36	0.53	
Uniform Delay, d1	45.8	28.4	30.7	41.2	16.4		41.6	41.6	38.0	41.9	42.7	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	3.0	5.1	25.7	42.9	0.2		9.3	9.0	0.2	1.2	2.9	
Delay (s)	48.8	33.5	56.4	84.2	16.5		50.9	50.6	38.3	43.1	45.6	
Level of Service	D	C	E	F	B		D	D	D	D	D	
Approach Delay (s)		43.3			37.6			46.6			44.7	
Approach LOS		D			D			D			D	

Intersection Summary				
HCM 2000 Control Delay	42.2	HCM 2000 Level of Service	D	
HCM 2000 Volume to Capacity ratio	0.85			
Actuated Cycle Length (s)	101.5	Sum of lost time (s)	19.6	
Intersection Capacity Utilization	84.0%	ICU Level of Service	E	
Analysis Period (min)	15			
c Critical Lane Group				

4:45-5:45 PM Year 2022 + Cumulative
6: Ruffin Rd & Aero Dr

HCM Signalized Intersection Capacity Analysis

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	724	592	853	752	167	254
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.2	5.2	4.5	4.5	5.5	5.5
Lane Util. Factor	0.95	1.00	0.97	0.95	0.97	1.00
Frpb, ped/bikes	1.00	0.99	1.00	1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	3539	1567	3433	3539	3433	1529
Flt Permitted	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)	3539	1567	3433	3539	3433	1529
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	762	623	898	792	176	267
RTOR Reduction (vph)	0	11	0	0	0	218
Lane Group Flow (vph)	762	612	898	792	176	49
Confl. Peds. (#/hr)		10	10		10	10
Confl. Bikes (#/hr)		5				5
Turn Type	NA	custom	Prot	NA	Prot	Perm
Protected Phases	2	2	1	6	8	
Permitted Phases		8				8
Actuated Green, G (s)	30.3	46.3	26.5	62.0	16.0	16.0
Effective Green, g (s)	30.3	46.3	26.5	62.0	16.0	16.0
Actuated g/C Ratio	0.34	0.53	0.30	0.70	0.18	0.18
Clearance Time (s)	5.2	5.2	4.5	4.5	5.5	5.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	1218	917	1033	2493	624	278
v/s Ratio Prot	0.22	c0.23	c0.26	0.22	0.05	
v/s Ratio Perm		0.16				0.03
v/c Ratio	0.63	0.67	0.87	0.32	0.28	0.17
Uniform Delay, d1	24.1	15.2	29.1	4.9	31.0	30.4
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	2.4	3.8	7.9	0.1	1.1	1.4
Delay (s)	26.5	19.1	37.0	5.0	32.2	31.8
Level of Service	C	B	D	A	C	C
Approach Delay (s)	23.2			22.0	31.9	
Approach LOS	C			C	C	

Intersection Summary				
HCM 2000 Control Delay	23.7	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.79			
Actuated Cycle Length (s)	88.0	Sum of lost time (s)	15.2	
Intersection Capacity Utilization	70.3%	ICU Level of Service	C	
Analysis Period (min)	15			
c Critical Lane Group				

Movement	EBU	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations							
Volume (vph)	9	858	144	170	1378	165	65
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5		4.5	4.5	4.5	4.5
Lane Util. Factor	1.00	0.95		0.97	0.95	0.97	0.88
Frpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	0.95
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00
Frt	1.00	0.98		1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	0.95	1.00
Satd. Flow (prot)	1770	3449		3433	3539	3433	2649
Flt Permitted	0.95	1.00		0.95	1.00	0.95	1.00
Satd. Flow (perm)	1770	3449		3433	3539	3433	2649
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	10	933	157	185	1498	179	71
RTOR Reduction (vph)	0	17	0	0	0	0	55
Lane Group Flow (vph)	10	1073	0	185	1498	179	16
Confl. Peds. (#/hr)			10	10		10	10
Confl. Bikes (#/hr)			5				5
Turn Type	Prot	NA		Prot	NA	Prot	Perm
Protected Phases	5	2		1	6	8	
Permitted Phases							8
Actuated Green, G (s)	0.8	31.4		9.1	39.7	16.0	16.0
Effective Green, g (s)	0.8	31.4		9.1	39.7	16.0	16.0
Actuated g/C Ratio	0.01	0.45		0.13	0.57	0.23	0.23
Clearance Time (s)	4.5	4.5		4.5	4.5	4.5	4.5
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	20	1547		446	2007	784	605
v/s Ratio Prot	0.01	0.31		c0.05	c0.42	c0.05	
v/s Ratio Perm							0.01
v/c Ratio	0.50	0.69		0.41	0.75	0.23	0.03
Uniform Delay, d1	34.4	15.5		28.0	11.4	22.0	21.0
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2	18.3	2.6		0.6	2.6	0.7	0.1
Delay (s)	52.7	18.0		28.6	14.0	22.7	21.0
Level of Service	D	B		C	B	C	C
Approach Delay (s)		18.4			15.6	22.2	
Approach LOS		B			B	C	

Intersection Summary				
HCM 2000 Control Delay	17.1	HCM 2000 Level of Service		B
HCM 2000 Volume to Capacity ratio	0.61			
Actuated Cycle Length (s)	70.0	Sum of lost time (s)		13.5
Intersection Capacity Utilization	66.0%	ICU Level of Service		C
Analysis Period (min)	15			
c Critical Lane Group				

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	4	1	4	2	0	17	0	167	6	50	165	7
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72
Hourly flow rate (vph)	6	1	6	3	0	24	0	232	8	69	229	10
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)											142	
pX, platoon unblocked												
vC, conflicting volume	633	613	234	615	614	236	239			240		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	633	613	234	615	614	236	239			240		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	98	100	99	99	100	97	100			95		
cM capacity (veh/h)	366	386	805	383	386	803	1328			1326		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	12	26	240	308
Volume Left	6	3	0	69
Volume Right	6	24	8	10
cSH	487	720	1328	1326
Volume to Capacity	0.03	0.04	0.00	0.05
Queue Length 95th (ft)	2	3	0	4
Control Delay (s)	12.6	10.2	0.0	2.1
Lane LOS	B	B		A
Approach Delay (s)	12.6	10.2	0.0	2.1
Approach LOS	B	B		

Intersection Summary				
Average Delay	1.8			
Intersection Capacity Utilization	34.4%	ICU Level of Service		A
Analysis Period (min)	15			

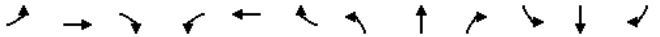
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	0	88	92	0	62	47
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82
Hourly flow rate (vph)	0	107	112	0	76	57
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						635
pX, platoon unblocked						
vC, conflicting volume	321	112			112	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	321	112			112	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	89			95	
cM capacity (veh/h)	638	941			1477	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	107	112	133
Volume Left	0	0	76
Volume Right	107	0	0
cSH	941	1700	1477
Volume to Capacity	0.11	0.07	0.05
Queue Length 95th (ft)	10	0	4
Control Delay (s)	9.3	0.0	4.5
Lane LOS	A		A
Approach Delay (s)	9.3	0.0	4.5
Approach LOS	A		

Intersection Summary			
Average Delay		4.5	
Intersection Capacity Utilization		24.7%	ICU Level of Service A
Analysis Period (min)		15	

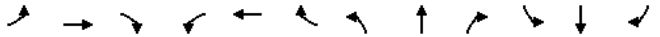
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	323	43	446	311	1239	21
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.1	4.7	4.7	5.8	5.8	
Lane Util. Factor	0.97	1.00	1.00	0.95	0.95	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.85	1.00	1.00	1.00	
Flt Protected	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	3433	1583	1770	3539	3527	
Flt Permitted	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (perm)	3433	1583	1770	3539	3527	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	340	45	469	327	1304	22
RTOR Reduction (vph)	0	6	0	0	1	0
Lane Group Flow (vph)	340	39	469	327	1325	0
Confl. Peds. (#/hr)						10
Confl. Bikes (#/hr)						5
Turn Type	Prot	pm+ov	Prot	NA	NA	
Protected Phases	4	5	5	2	6	
Permitted Phases		4				
Actuated Green, G (s)	14.1	41.8	27.7	73.1	40.7	
Effective Green, g (s)	14.1	41.8	27.7	73.1	40.7	
Actuated g/C Ratio	0.14	0.43	0.28	0.75	0.41	
Clearance Time (s)	5.1	4.7	4.7	5.8	5.8	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	493	674	499	2637	1463	
v/s Ratio Prot	c0.10	0.02	c0.27	0.09	c0.38	
v/s Ratio Perm		0.01				
v/c Ratio	0.69	0.06	0.94	0.12	0.91	
Uniform Delay, d1	39.9	16.6	34.4	3.5	26.9	
Progression Factor	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	4.0	0.0	25.7	0.1	9.6	
Delay (s)	43.9	16.6	60.1	3.6	36.5	
Level of Service	D	B	E	A	D	
Approach Delay (s)	40.7			36.9	36.5	
Approach LOS	D			D	D	

Intersection Summary			
HCM 2000 Control Delay	37.3	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	98.1	Sum of lost time (s)	15.6
Intersection Capacity Utilization	81.9%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



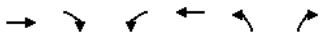
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	125	152	28	427	51	272	34	396	127	259	605	100
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.1			5.1	5.1	4.7	5.5	5.5	4.7	5.5	
Lane Util. Factor		1.00			1.00	1.00	1.00	0.95	1.00	1.00	0.95	
Frpb, ped/bikes		1.00			1.00	0.96	1.00	1.00	0.94	1.00	0.99	
Flpb, ped/bikes		1.00			1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt		0.99			1.00	0.85	1.00	1.00	0.85	1.00	0.98	
Flt Protected		0.98			0.96	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1797			1783	1527	1770	3539	1483	1770	3435	
Flt Permitted		0.98			0.96	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)		1797			1783	1527	1770	3539	1483	1770	3435	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	129	157	29	440	53	280	35	408	131	267	624	103
RTOR Reduction (vph)	0	4	0	0	0	123	0	0	109	0	11	0
Lane Group Flow (vph)	0	311	0	0	493	157	35	408	22	267	716	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Split	NA		Split	NA	Perm	Prot	NA	Perm	Prot	NA	
Protected Phases	4	4		3	3		5	2		1	6	
Permitted Phases						3			2			
Actuated Green, G (s)		22.6			29.0	29.0	2.7	18.0	18.0	16.3	31.6	
Effective Green, g (s)		22.6			29.0	29.0	2.7	18.0	18.0	16.3	31.6	
Actuated g/C Ratio		0.21			0.27	0.27	0.03	0.17	0.17	0.15	0.30	
Clearance Time (s)		5.1			5.1	5.1	4.7	5.5	5.5	4.7	5.5	
Vehicle Extension (s)		3.0			3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)		382			486	416	44	599	251	271	1021	
v/s Ratio Prot		c0.17			c0.28		0.02	0.12		c0.15	c0.21	
v/s Ratio Perm						0.10			0.01			
v/c Ratio		0.81			1.01	0.38	0.80	0.68	0.09	0.99	0.70	
Uniform Delay, d1		39.9			38.6	31.3	51.5	41.5	37.2	44.9	33.2	
Progression Factor		1.00			1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2		12.5			44.5	0.6	62.9	6.2	0.7	50.2	4.0	
Delay (s)		52.4			83.1	31.9	114.5	47.6	37.9	95.1	37.2	
Level of Service		D			F	C	F	D	D	F	D	
Approach Delay (s)		52.4			64.6			49.5			52.7	
Approach LOS		D			E			D			D	

Intersection Summary				
HCM 2000 Control Delay	55.4	HCM 2000 Level of Service	E	
HCM 2000 Volume to Capacity ratio	0.91			
Actuated Cycle Length (s)	106.3	Sum of lost time (s)	20.4	
Intersection Capacity Utilization	87.7%	ICU Level of Service	E	
Analysis Period (min)	15			
c Critical Lane Group				



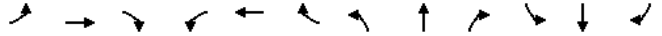
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	86	90	148	782	76	40	79	757	236	40	967	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.9	4.9	4.5	4.9		4.5	5.3		4.5	5.0	
Lane Util. Factor	1.00	1.00	1.00	0.97	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	1.00	0.85	1.00	0.95		1.00	0.96		1.00	1.00	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1863	1583	3433	1766		1770	3413		1770	3526	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	1863	1583	3433	1766		1770	3413		1770	3526	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	89	93	153	806	78	41	81	780	243	41	997	26
RTOR Reduction (vph)	0	0	136	0	19	0	0	27	0	0	2	0
Lane Group Flow (vph)	89	93	17	806	100	0	81	996	0	41	1021	0
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4									
Actuated Green, G (s)	8.9	11.2	11.2	26.8	29.1		9.0	38.4		4.4	34.1	
Effective Green, g (s)	8.9	11.2	11.2	26.8	29.1		9.0	38.4		4.4	34.1	
Actuated g/C Ratio	0.09	0.11	0.11	0.27	0.29		0.09	0.38		0.04	0.34	
Clearance Time (s)	4.5	4.9	4.9	4.5	4.9		4.5	5.3		4.5	5.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	157	208	177	920	513		159	1310		77	1202	
v/s Ratio Prot	0.05	c0.05		c0.23	0.06		c0.05	c0.29		0.02	c0.29	
v/s Ratio Perm			0.01									
v/c Ratio	0.57	0.45	0.10	0.88	0.19		0.51	0.76		0.53	0.85	
Uniform Delay, d1	43.7	41.5	39.9	35.0	26.6		43.4	26.8		46.8	30.6	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	4.6	1.5	0.2	9.4	0.2		2.6	4.2		6.9	7.6	
Delay (s)	48.3	43.0	40.1	44.4	26.8		46.0	31.0		53.7	38.2	
Level of Service	D	D	D	D	C		D	C		D	D	
Approach Delay (s)		43.1			42.1			32.1			38.8	
Approach LOS		D			D			C			D	

Intersection Summary				
HCM 2000 Control Delay	37.9	HCM 2000 Level of Service	D	
HCM 2000 Volume to Capacity ratio	0.77			
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	19.2	
Intersection Capacity Utilization	73.0%	ICU Level of Service	D	
Analysis Period (min)	15			
c Critical Lane Group				



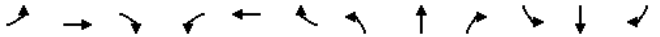
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	399	0	0	1050	472	268
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.1			5.1	5.1	5.1
Lane Util. Factor	0.95			0.95	0.97	0.91
Frt	1.00			1.00	0.99	0.85
Flt Protected	1.00			1.00	0.96	1.00
Satd. Flow (prot)	3539			3539	3416	1441
Flt Permitted	1.00			1.00	0.96	1.00
Satd. Flow (perm)	3539			3539	3416	1441
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	420	0	0	1105	497	282
RTOR Reduction (vph)	0	0	0	0	9	192
Lane Group Flow (vph)	420	0	0	1105	527	51
Turn Type	NA			NA	Prot	Perm
Protected Phases	2			6	4	
Permitted Phases						4
Actuated Green, G (s)	12.6			24.1	13.7	13.7
Effective Green, g (s)	12.6			24.1	13.7	13.7
Actuated g/C Ratio	0.19			0.37	0.21	0.21
Clearance Time (s)	5.1			5.1	5.1	5.1
Vehicle Extension (s)	3.0			3.0	3.0	3.0
Lane Grp Cap (vph)	678			1298	712	300
v/s Ratio Prot	c0.12			c0.31	c0.15	
v/s Ratio Perm						0.04
v/c Ratio	0.62			0.85	0.74	0.17
Uniform Delay, d1	24.4			19.2	24.3	21.3
Progression Factor	1.00			1.00	1.00	1.00
Incremental Delay, d2	1.7			5.6	4.2	0.3
Delay (s)	26.0			24.7	28.5	21.6
Level of Service	C			C	C	C
Approach Delay (s)	26.0			24.7	26.3	
Approach LOS	C			C	C	

Intersection Summary			
HCM 2000 Control Delay	25.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	65.7	Sum of lost time (s)	15.3
Intersection Capacity Utilization	53.8%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	140	483	49	240	866	26	114	125	233	16	8	53
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.9	4.0	4.5	4.9		4.9	4.9	4.9		4.9	4.9
Lane Util. Factor	1.00	0.95	1.00	0.97	0.95		1.00	0.95	0.95		1.00	1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	0.99	0.97		1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00		1.00	0.95	0.85		1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00		0.97	1.00
Satd. Flow (prot)	1770	3539	1583	3433	3519		1770	1665	1463		1804	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00		0.97	1.00
Satd. Flow (perm)	1770	3539	1583	3433	3519		1770	1665	1463		1804	1583
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	151	519	53	258	931	28	123	134	251	17	9	57
RTOR Reduction (vph)	0	0	0	0	3	0	0	0	0	0	0	0
Lane Group Flow (vph)	151	519	53	258	956	0	123	202	183	0	26	57
Confl. Peds. (#/hr)						10			10			
Confl. Bikes (#/hr)						5			5			
Turn Type	Prot	NA	Free	Prot	NA		Split	NA	Perm	Split	NA	Perm
Protected Phases	5	2		1	6		3	3		4	4	
Permitted Phases			Free						3			4
Actuated Green, G (s)	4.1	15.9	60.3	4.1	15.9		16.2	16.2	16.2		4.9	4.9
Effective Green, g (s)	4.1	15.9	60.3	4.1	15.9		16.2	16.2	16.2		4.9	4.9
Actuated g/C Ratio	0.07	0.26	1.00	0.07	0.26		0.27	0.27	0.27		0.08	0.08
Clearance Time (s)	4.5	4.9		4.5	4.9		4.9	4.9	4.9		4.9	4.9
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	120	933	1583	233	927		475	447	393		146	128
v/s Ratio Prot	c0.09	0.15		0.08	c0.27		0.07	0.12			0.01	
v/s Ratio Perm			0.03						c0.13			c0.04
v/c Ratio	1.26	0.56	0.03	1.11	1.03		0.26	0.45	0.47		0.18	0.45
Uniform Delay, d1	28.1	19.2	0.0	28.1	22.2		17.3	18.4	18.4		25.8	26.4
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	167.1	2.4	0.0	90.7	37.9		1.3	3.3	3.9		0.6	2.5
Delay (s)	195.2	21.5	0.0	118.8	60.1		18.7	21.6	22.4		26.4	28.9
Level of Service	F	C	A	F	E		B	C	C		C	C
Approach Delay (s)		56.2			72.5			21.2			28.1	
Approach LOS		E			E			C			C	

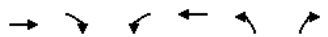
Intersection Summary			
HCM 2000 Control Delay	56.1	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	60.3	Sum of lost time (s)	19.2
Intersection Capacity Utilization	59.0%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	10	422	621	403	1073	111	0	0	0	51	200	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.7	5.1		4.7	5.1						5.5	
Lane Util. Factor	1.00	0.95		1.00	0.95						1.00	
Frpb, ped/bikes	1.00	0.99		1.00	1.00						1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00						1.00	
Frt	1.00	0.91		1.00	0.99						0.99	
Flt Protected	0.95	1.00		0.95	1.00						0.99	
Satd. Flow (prot)	1763	3178		1770	3475						1822	
Flt Permitted	0.95	1.00		0.95	1.00						0.99	
Satd. Flow (perm)	1763	3178		1770	3475						1822	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	11	454	668	433	1154	119	0	0	0	55	215	22
RTOR Reduction (vph)	0	132	0	0	10	0	0	0	0	0	4	0
Lane Group Flow (vph)	11	990	0	433	1263	0	0	0	0	0	288	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Prot	NA		Prot	NA					Split	NA	
Protected Phases	5	2		1	6					4	4	
Permitted Phases												
Actuated Green, G (s)	0.8	26.2		16.3	41.7						16.0	
Effective Green, g (s)	0.8	26.2		16.3	41.7						16.0	
Actuated g/C Ratio	0.01	0.36		0.22	0.57						0.22	
Clearance Time (s)	4.7	5.1		4.7	5.1						5.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0						3.0	
Lane Grp Cap (vph)	19	1128		390	1963						395	
v/s Ratio Prot	0.01	c0.31		c0.24	0.36						c0.16	
v/s Ratio Perm												
v/c Ratio	0.58	1.05dr		1.11	0.64						0.73	
Uniform Delay, d1	36.3	22.3		28.8	11.0						26.9	
Progression Factor	1.00	1.00		1.00	1.00						1.00	
Incremental Delay, d2	36.3	7.9		78.9	0.7						11.2	
Delay (s)	72.6	30.2		107.6	11.7						38.1	
Level of Service	E	C		F	B						D	
Approach Delay (s)		30.6			36.0			0.0			38.1	
Approach LOS		C			D			A			D	

Intersection Summary				
HCM 2000 Control Delay	34.3	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.90			
Actuated Cycle Length (s)	73.8	Sum of lost time (s)	15.3	
Intersection Capacity Utilization	88.7%	ICU Level of Service	E	
Analysis Period (min)	15			

dr Defacto Right Lane. Recode with 1 though lane as a right lane.
c Critical Lane Group



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	494	0	0	828	719	238
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.5			5.5	4.5	5.5
Lane Util. Factor	0.95			0.95	0.97	1.00
Frpb, ped/bikes	1.00			1.00	1.00	0.98
Flpb, ped/bikes	1.00			1.00	1.00	1.00
Frt	1.00			1.00	1.00	0.85
Flt Protected	1.00			1.00	0.95	1.00
Satd. Flow (prot)	3539			3539	3433	1550
Flt Permitted	1.00			1.00	0.95	1.00
Satd. Flow (perm)	3539			3539	3433	1550
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	520	0	0	872	757	251
RTOR Reduction (vph)	0	0	0	0	0	139
Lane Group Flow (vph)	520	0	0	872	757	112
Confl. Peds. (#/hr)						10
Confl. Bikes (#/hr)						5
Turn Type	NA			NA	Prot	Perm
Protected Phases	2			6	4	
Permitted Phases						6
Actuated Green, G (s)	21.8			21.8	17.1	21.8
Effective Green, g (s)	21.8			21.8	17.1	21.8
Actuated g/C Ratio	0.45			0.45	0.35	0.45
Clearance Time (s)	5.5			5.5	4.5	5.5
Vehicle Extension (s)	3.0			3.0	3.0	3.0
Lane Grp Cap (vph)	1577			1577	1200	691
v/s Ratio Prot	0.15			c0.25	c0.22	
v/s Ratio Perm						0.07
v/c Ratio	0.33			0.55	0.63	0.16
Uniform Delay, d1	8.8			10.0	13.3	8.1
Progression Factor	1.00			1.00	1.00	1.00
Incremental Delay, d2	0.1			0.4	1.1	0.1
Delay (s)	8.9			10.4	14.4	8.2
Level of Service	A			B	B	A
Approach Delay (s)	8.9			10.4	12.8	
Approach LOS	A			B	B	

Intersection Summary				
HCM 2000 Control Delay	11.1	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.59			
Actuated Cycle Length (s)	48.9	Sum of lost time (s)	10.0	
Intersection Capacity Utilization	51.7%	ICU Level of Service	A	
Analysis Period (min)	15			

c Critical Lane Group

Appendix M

Year 2022 with Project (Phase 2) LOS Calculations

8:00-9:00 AM Year 2022 + Cumulative + Project (Phase 2)
1: Aero Dr & Convoy St
HCM Signalized Intersection Capacity Analysis

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	4	3	1	436	56	660	0	516	396	440	398	22
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.9		4.9	4.9	4.9		5.2		4.5	4.5	
Lane Util. Factor		1.00		0.95	0.91	0.95		0.95		0.97	0.95	
Frpb, ped/bikes		0.99		1.00	0.99	0.98		0.99		1.00	1.00	
Flpb, ped/bikes		1.00		1.00	1.00	1.00		1.00		1.00	1.00	
Frt		0.98		1.00	0.89	0.85		0.93		1.00	0.99	
Flt Protected		0.98		0.95	0.99	1.00		1.00		0.95	1.00	
Satd. Flow (prot)		1762		1681	1481	1481		3263		3433	3502	
Flt Permitted		0.98		0.95	0.99	1.00		1.00		0.95	1.00	
Satd. Flow (perm)		1762		1681	1481	1481		3263		3433	3502	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	4	3	1	454	58	688	0	538	412	458	415	23
RTOR Reduction (vph)	0	1	0	0	102	262	0	161	0	0	5	0
Lane Group Flow (vph)	0	7	0	409	297	130	0	789	0	458	433	0
Confl. Peds. (#/hr)			10						10			10
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Split	NA		Split	NA	Perm		NA		Prot	NA	
Protected Phases	7	7		8	8			2		1	6	
Permitted Phases						8						
Actuated Green, G (s)		1.2		29.8	29.8	29.8		25.9		13.6	44.7	
Effective Green, g (s)		1.2		29.8	29.8	29.8		25.9		13.6	44.7	
Actuated g/C Ratio		0.01		0.33	0.33	0.33		0.29		0.15	0.50	
Clearance Time (s)		4.9		4.9	4.9	4.9		5.2		4.5	4.5	
Vehicle Extension (s)		3.0		3.0	3.0	3.0		3.0		3.0	3.0	
Lane Grp Cap (vph)		23		556	490	490		939		518	1739	
v/s Ratio Prot		c0.00		c0.24	0.20			c0.24		c0.13	0.12	
v/s Ratio Perm						0.09						
v/c Ratio		0.30		0.74	0.61	0.26		0.84		0.88	0.25	
Uniform Delay, d1		44.0		26.6	25.2	22.1		30.1		37.4	13.0	
Progression Factor		1.00		1.00	1.00	1.00		1.00		1.00	1.00	
Incremental Delay, d2		7.4		5.0	2.1	0.3		9.0		16.3	0.3	
Delay (s)		51.4		31.6	27.3	22.4		39.1		53.7	13.4	
Level of Service		D		C	C	C		D		D	B	
Approach Delay (s)		51.4			27.2			39.1			34.0	
Approach LOS		D			C			D			C	

Intersection Summary				
HCM 2000 Control Delay	32.9	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.79			
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	19.5	
Intersection Capacity Utilization	79.1%	ICU Level of Service	D	
Analysis Period (min)	15			
c Critical Lane Group				

LOS Engineering, Inc.
Synchro 8 Report

8:00-9:00 AM Year 2022 + Cumulative + Project (Phase 2)
2: Kearny Villa Rd & Aero Dr
HCM Signalized Intersection Capacity Analysis

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	151	562	99	318	834	542	322	200	515	216	134	41
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.3		4.5	5.3		4.5	5.7	5.7	4.5	6.0	
Lane Util. Factor	1.00	0.95		0.97	0.95		0.97	0.95	1.00	0.97	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	0.99		1.00	1.00	0.98	1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.98		1.00	0.94		1.00	1.00	0.85	1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3441		3433	3282		3433	3539	1559	3433	3382	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	3441		3433	3282		3433	3539	1559	3433	3382	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	161	598	105	338	887	577	343	213	548	230	143	44
RTOR Reduction (vph)	0	11	0	0	90	0	0	0	76	0	25	0
Lane Group Flow (vph)	161	692	0	338	1374	0	343	213	472	230	162	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Prot	NA		Prot	NA		Prot	NA	custom	Prot	NA	
Protected Phases	5	2		1	6		3	8	8	7	4	
Permitted Phases									1			
Actuated Green, G (s)	11.5	47.9		16.3	52.7		16.0	23.6	39.9	11.1	18.4	
Effective Green, g (s)	11.5	47.9		16.3	52.7		16.0	23.6	39.9	11.1	18.4	
Actuated g/C Ratio	0.10	0.40		0.14	0.44		0.13	0.20	0.34	0.09	0.15	
Clearance Time (s)	4.5	5.3		4.5	5.3		4.5	5.7	5.7	4.5	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	171	1386		470	1454		461	702	597	320	523	
v/s Ratio Prot	0.09	0.20		0.10	c0.42		c0.10	0.06	c0.16	0.07	0.05	
v/s Ratio Perm									0.15			
v/c Ratio	0.94	0.50		0.72	0.95		0.74	0.30	0.79	0.72	0.31	
Uniform Delay, d1	53.4	26.5		49.1	31.7		49.5	40.6	35.7	52.4	44.6	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	51.7	0.3		5.2	12.7		6.4	0.2	6.9	7.5	0.3	
Delay (s)	105.1	26.8		54.3	44.5		55.9	40.9	42.6	59.9	45.0	
Level of Service	F	C		D	D		E	D	D	E	D	
Approach Delay (s)		41.4			46.3			46.4			53.2	
Approach LOS		D			D			D			D	

Intersection Summary				
HCM 2000 Control Delay	46.0	HCM 2000 Level of Service	D	
HCM 2000 Volume to Capacity ratio	0.95			
Actuated Cycle Length (s)	118.9	Sum of lost time (s)	20.3	
Intersection Capacity Utilization	82.8%	ICU Level of Service	E	
Analysis Period (min)	15			
c Critical Lane Group				

LOS Engineering, Inc.
Synchro 8 Report

8:00-9:00 AM Year 2022 + Cumulative + Project (Phase 2)
3: Aero Ct & Aero Dr

HCM Signalized Intersection Capacity Analysis

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	9	900	380	140	1470	13	211	0	87	3	0	14
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.3		4.5	5.3		4.9	4.9			4.9	4.9
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00			1.00	1.00
Frpb, ped/bikes	1.00	0.99		1.00	1.00		1.00	0.97			1.00	0.97
Flpb, ped/bikes	1.00	1.00		1.00	1.00		0.99	1.00			0.99	1.00
Frt	1.00	0.96		1.00	1.00		1.00	0.85			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00			0.95	1.00
Satd. Flow (prot)	1766	3337		1770	3533		1748	1537			1750	1537
Flt Permitted	0.95	1.00		0.95	1.00		0.76	1.00			0.69	1.00
Satd. Flow (perm)	1766	3337		1770	3533		1390	1537			1278	1537
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	10	1011	427	157	1652	15	237	0	98	3	0	16
RTOR Reduction (vph)	0	66	0	0	1	0	0	77	0	0	0	13
Lane Group Flow (vph)	10	1372	0	157	1666	0	237	21	0	0	3	3
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	Perm
Protected Phases	5	2		1	6			4			4	
Permitted Phases							4			4		4
Actuated Green, G (s)	0.8	31.2		6.7	37.1		14.2	14.2			14.2	14.2
Effective Green, g (s)	0.8	31.2		6.7	37.1		14.2	14.2			14.2	14.2
Actuated g/C Ratio	0.01	0.47		0.10	0.56		0.21	0.21			0.21	0.21
Clearance Time (s)	4.5	5.3		4.5	5.3		4.9	4.9			4.9	4.9
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0			3.0	3.0
Lane Grp Cap (vph)	21	1558		177	1962		295	326			271	326
v/s Ratio Prot	0.01	0.41		c0.09	c0.47			0.01				
v/s Ratio Perm							c0.17				0.00	0.00
v/c Ratio	0.48	0.88		0.89	0.85		0.80	0.06			0.01	0.01
Uniform Delay, d1	32.8	16.1		29.7	12.5		25.0	21.0			20.8	20.8
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00			1.00	1.00
Incremental Delay, d2	16.0	6.2		37.2	3.6		14.6	0.1			0.0	0.0
Delay (s)	48.8	22.3		66.9	16.1		39.5	21.1			20.8	20.8
Level of Service	D	C		E	B		D	C			C	C
Approach Delay (s)		22.5			20.5			34.1			20.8	
Approach LOS		C			C			C			C	

Intersection Summary					
HCM 2000 Control Delay	22.6	HCM 2000 Level of Service	C		
HCM 2000 Volume to Capacity ratio	0.88				
Actuated Cycle Length (s)	66.8	Sum of lost time (s)	14.7		
Intersection Capacity Utilization	75.7%	ICU Level of Service	D		
Analysis Period (min)	15				
c Critical Lane Group					

8:00-9:00 AM Year 2022 + Cumulative + Project (Phase 2)
4: Afton Rd & Aero Dr

HCM Signalized Intersection Capacity Analysis

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	71	756	162	61	1316	7	270	4	54	3	0	16
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.4		4.5	5.3			4.9			4.9	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	
Frpb, ped/bikes	1.00	0.99		1.00	1.00			1.00			0.98	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			0.99			1.00	
Frt	1.00	0.97		1.00	1.00			0.98			0.88	
Flt Protected	0.95	1.00		0.95	1.00			0.96			0.99	
Satd. Flow (prot)	1770	3418		1770	3536			1723			1598	
Flt Permitted	0.95	1.00		0.95	1.00			0.75			0.95	
Satd. Flow (perm)	1770	3418		1770	3536			1344			1532	
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	80	849	182	69	1479	8	303	4	61	3	0	18
RTOR Reduction (vph)	0	25	0	0	1	0	0	10	0	0	15	0
Lane Group Flow (vph)	80	1006	0	69	1486	0	0	358	0	0	6	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8			4		
Actuated Green, G (s)	3.5	30.1		3.9	30.6			19.7			19.7	
Effective Green, g (s)	3.5	30.1		3.9	30.6			19.7			19.7	
Actuated g/C Ratio	0.05	0.44		0.06	0.45			0.29			0.29	
Clearance Time (s)	4.5	5.4		4.5	5.3			4.9			4.9	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	90	1501		100	1579			386			440	
v/s Ratio Prot	c0.05	0.29		0.04	c0.42							
v/s Ratio Perm								c0.27			0.00	
v/c Ratio	0.89	0.67		0.69	0.94			0.93			0.01	
Uniform Delay, d1	32.3	15.3		31.7	18.1			23.7			17.5	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	59.2	2.4		18.0	12.4			28.0			0.0	
Delay (s)	91.5	17.7		49.7	30.5			51.7			17.5	
Level of Service	F	B		D	C			D			B	
Approach Delay (s)		23.0			31.4			51.7			17.5	
Approach LOS		C			C			D			B	

Intersection Summary					
HCM 2000 Control Delay	30.7	HCM 2000 Level of Service	C		
HCM 2000 Volume to Capacity ratio	0.93				
Actuated Cycle Length (s)	68.5	Sum of lost time (s)	14.8		
Intersection Capacity Utilization	78.1%	ICU Level of Service	D		
Analysis Period (min)	15				
c Critical Lane Group					

8:00-9:00 AM Year 2022 + Cumulative + Project (Phase 2)
5: Sandrock Rd & Aero Dr
HCM Signalized Intersection Capacity Analysis

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	42	560	195	119	819	57	533	39	216	14	6	17
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.2	5.2	4.5	5.2		5.0	5.0	5.0	4.9	4.9	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		0.95	0.95	1.00	1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.95	1.00	1.00		1.00	1.00	0.97	1.00	0.97	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85	1.00	0.89	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	0.96	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3539	1509	1770	3494		1681	1696	1537	1770	1601	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	0.96	1.00	0.95	1.00	
Satd. Flow (perm)	1770	3539	1509	1770	3494		1681	1696	1537	1770	1601	
Peak-hour factor, PHF	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Adj. Flow (vph)	49	651	227	138	952	66	620	45	251	16	7	20
RTOR Reduction (vph)	0	0	152	0	5	0	0	0	169	0	19	0
Lane Group Flow (vph)	49	651	75	138	1013	0	329	336	82	16	8	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Prot	NA	Perm	Prot	NA		Split	NA	Perm	Split	NA	
Protected Phases	5	2		1	6		8	8		7	7	
Permitted Phases			2						8			
Actuated Green, G (s)	2.3	21.5	21.5	8.7	27.9		16.2	16.2	16.2	3.8	3.8	
Effective Green, g (s)	2.3	21.5	21.5	8.7	27.9		16.2	16.2	16.2	3.8	3.8	
Actuated g/C Ratio	0.03	0.31	0.31	0.12	0.40		0.23	0.23	0.23	0.05	0.05	
Clearance Time (s)	4.5	5.2	5.2	4.5	5.2		5.0	5.0	5.0	4.9	4.9	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	58	1090	464	220	1396		390	393	356	96	87	
v/s Ratio Prot	0.03	0.18		c0.08	c0.29		0.20	c0.20		c0.01	0.01	
v/s Ratio Perm			0.05						0.05			
v/c Ratio	0.84	0.60	0.16	0.63	0.73		0.84	0.85	0.23	0.17	0.09	
Uniform Delay, d1	33.6	20.5	17.6	29.0	17.7		25.6	25.7	21.7	31.5	31.4	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	65.1	2.4	0.7	5.5	1.9		15.2	16.4	0.3	0.8	0.5	
Delay (s)	98.6	22.9	18.3	34.5	19.6		40.8	42.1	22.1	32.3	31.8	
Level of Service	F	C	B	C	B		D	D	C	C	C	
Approach Delay (s)		25.8			21.4			36.1			32.0	
Approach LOS		C			C			D			C	

Intersection Summary				
HCM 2000 Control Delay	27.3	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.74			
Actuated Cycle Length (s)	69.8	Sum of lost time (s)	19.6	
Intersection Capacity Utilization	62.6%	ICU Level of Service	B	
Analysis Period (min)	15			
c Critical Lane Group				

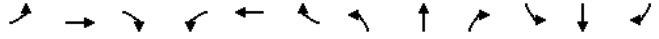
8:00-9:00 AM Year 2022 + Cumulative + Project (Phase 2)
6: Ruffin Rd & Aero Dr
HCM Signalized Intersection Capacity Analysis

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	591	124	173	588	465	534
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.2	5.2	4.5	4.5	5.5	5.5
Lane Util. Factor	0.95	1.00	0.97	0.95	0.97	1.00
Frpb, ped/bikes	1.00	0.99	1.00	1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	3539	1562	3433	3539	3433	1542
Flt Permitted	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)	3539	1562	3433	3539	3433	1542
Peak-hour factor, PHF	0.85	0.85	0.85	0.85	0.85	0.85
Adj. Flow (vph)	695	146	204	692	547	628
RTOR Reduction (vph)	0	19	0	0	0	185
Lane Group Flow (vph)	695	127	204	692	547	443
Confl. Peds. (#/hr)		10	10		10	10
Confl. Bikes (#/hr)		5				5
Turn Type	NA	custom	Prot	NA	Prot	Perm
Protected Phases	2	2	1	6	8	
Permitted Phases		8				8
Actuated Green, G (s)	17.4	39.3	5.5	28.1	21.9	21.9
Effective Green, g (s)	17.4	39.3	5.5	28.1	21.9	21.9
Actuated g/C Ratio	0.29	0.65	0.09	0.47	0.36	0.36
Clearance Time (s)	5.2	5.2	4.5	4.5	5.5	5.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	1026	1158	314	1657	1253	562
v/s Ratio Prot	c0.20	0.03	c0.06	0.20	0.16	
v/s Ratio Perm		0.05				c0.29
v/c Ratio	0.68	0.11	0.65	0.42	0.44	0.79
Uniform Delay, d1	18.8	3.8	26.3	10.5	14.4	17.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	3.6	0.2	4.6	0.2	1.1	10.7
Delay (s)	22.4	4.0	30.9	10.7	15.5	27.7
Level of Service	C	A	C	B	B	C
Approach Delay (s)	19.2			15.3	22.0	
Approach LOS	B			B	C	

Intersection Summary				
HCM 2000 Control Delay	19.1	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.73			
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	15.2	
Intersection Capacity Utilization	59.4%	ICU Level of Service	B	
Analysis Period (min)	15			
c Critical Lane Group				

Movement	EBU	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations							
Volume (vph)	20	1042	125	120	677	90	59
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5		4.5	4.5	4.5	4.5
Lane Util. Factor	1.00	0.95		0.97	0.95	0.97	0.88
Frpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	0.95
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00
Frt	1.00	0.98		1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	0.95	1.00
Satd. Flow (prot)	1770	3472		3433	3539	3433	2643
Flt Permitted	0.95	1.00		0.95	1.00	0.95	1.00
Satd. Flow (perm)	1770	3472		3433	3539	3433	2643
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	22	1158	139	133	752	100	66
RTOR Reduction (vph)	0	10	0	0	0	0	52
Lane Group Flow (vph)	22	1287	0	133	752	100	14
Confl. Peds. (#/hr)			10	10		10	10
Confl. Bikes (#/hr)			5				5
Turn Type	Prot	NA		Prot	NA	Prot	Perm
Protected Phases	5	2		1	6	8	
Permitted Phases							8
Actuated Green, G (s)	1.6	38.4		7.0	43.8	16.1	16.1
Effective Green, g (s)	1.6	38.4		7.0	43.8	16.1	16.1
Actuated g/C Ratio	0.02	0.51		0.09	0.58	0.21	0.21
Clearance Time (s)	4.5	4.5		4.5	4.5	4.5	4.5
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	37	1777		320	2066	736	567
v/s Ratio Prot	0.01	c0.37		c0.04	0.21	c0.03	
v/s Ratio Perm							0.01
v/c Ratio	0.59	0.72		0.42	0.36	0.14	0.02
Uniform Delay, d1	36.4	14.2		32.1	8.2	23.8	23.3
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2	23.1	2.6		0.9	0.5	0.4	0.1
Delay (s)	59.4	16.8		32.9	8.7	24.2	23.3
Level of Service	E	B		C	A	C	C
Approach Delay (s)		17.5			12.4	23.9	
Approach LOS		B			B	C	

Intersection Summary				
HCM 2000 Control Delay	16.0	HCM 2000 Level of Service		B
HCM 2000 Volume to Capacity ratio	0.53			
Actuated Cycle Length (s)	75.0	Sum of lost time (s)		13.5
Intersection Capacity Utilization	60.9%	ICU Level of Service		B
Analysis Period (min)	15			
c Critical Lane Group				



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	2	0	0	25	0	272	1	12	506	2
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64
Hourly flow rate (vph)	0	0	3	0	0	39	0	425	2	19	791	3
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)											142	
pX, platoon unblocked												
vC, conflicting volume	1295	1256	792	1259	1257	426	794			427		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1295	1256	792	1259	1257	426	794			427		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	99	100	100	94	100			98		
cM capacity (veh/h)	129	168	389	145	168	629	827			1133		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	3	39	427	812
Volume Left	0	0	0	19
Volume Right	3	39	2	3
cSH	389	629	827	1133
Volume to Capacity	0.01	0.06	0.00	0.02
Queue Length 95th (ft)	1	5	0	1
Control Delay (s)	14.3	11.1	0.0	0.4
Lane LOS	B	B		A
Approach Delay (s)	14.3	11.1	0.0	0.4
Approach LOS	B	B		

Intersection Summary				
Average Delay		0.7		
Intersection Capacity Utilization		46.4%	ICU Level of Service	A
Analysis Period (min)		15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	1	176	96	2	338	132
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.55	0.55	0.55	0.55	0.55	0.55
Hourly flow rate (vph)	2	320	175	4	615	240
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						635
pX, platoon unblocked						
vC, conflicting volume	1645	176			178	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1645	176			178	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	97	63			56	
cM capacity (veh/h)	61	867			1398	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	322	178	855
Volume Left	2	0	615
Volume Right	320	4	0
cSH	807	1700	1398
Volume to Capacity	0.40	0.10	0.44
Queue Length 95th (ft)	48	0	58
Control Delay (s)	12.4	0.0	8.3
Lane LOS	B		A
Approach Delay (s)	12.4	0.0	8.3
Approach LOS	B		

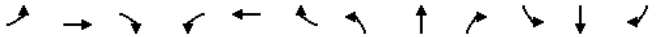
Intersection Summary			
Average Delay		8.2	
Intersection Capacity Utilization		49.9%	ICU Level of Service A
Analysis Period (min)		15	

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	726	28	412	504	357	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.1	4.7	4.7	5.8	5.8	
Lane Util. Factor	0.97	1.00	1.00	0.95	0.95	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.85	1.00	1.00	1.00	
Flt Protected	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	3433	1583	1770	3539	3539	
Flt Permitted	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (perm)	3433	1583	1770	3539	3539	
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	816	31	463	566	401	0
RTOR Reduction (vph)	0	13	0	0	0	0
Lane Group Flow (vph)	816	18	463	566	401	0
Confl. Peds. (#/hr)						10
Confl. Bikes (#/hr)						5
Turn Type	Prot	pm+ov	Prot	NA	NA	
Protected Phases	4	5	5	2	6	
Permitted Phases		4				
Actuated Green, G (s)	19.6	41.1	21.5	44.2	18.0	
Effective Green, g (s)	19.6	41.1	21.5	44.2	18.0	
Actuated g/C Ratio	0.26	0.55	0.29	0.59	0.24	
Clearance Time (s)	5.1	4.7	4.7	5.8	5.8	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	900	870	509	2094	852	
v/s Ratio Prot	c0.24	0.01	c0.26	0.16	c0.11	
v/s Ratio Perm		0.01				
v/c Ratio	0.91	0.02	0.91	0.27	0.47	
Uniform Delay, d1	26.7	7.6	25.7	7.4	24.3	
Progression Factor	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	12.6	0.0	20.0	0.3	1.9	
Delay (s)	39.2	7.7	45.7	7.7	26.1	
Level of Service	D	A	D	A	C	
Approach Delay (s)	38.1			24.8	26.1	
Approach LOS	D			C	C	

Intersection Summary				
HCM 2000 Control Delay	30.0	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.77			
Actuated Cycle Length (s)	74.7	Sum of lost time (s)	15.6	
Intersection Capacity Utilization	69.9%	ICU Level of Service	C	
Analysis Period (min)	15			
c Critical Lane Group				

8:00-9:00 AM Year 2022 + Cumulative + Project (Phase 2)
11: Convoy/Mercury & Armour St/SR-163 SB Ramp

HCM Signalized Intersection Capacity Analysis

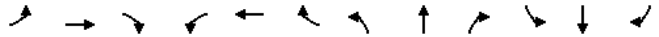


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	95	56	20	409	71	327	2	176	79	65	221	69
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.1			5.1	5.1	4.7	5.5	5.5	4.7	5.5	
Lane Util. Factor		1.00			1.00	1.00	1.00	0.95	1.00	1.00	0.95	
Frpb, ped/bikes		1.00			1.00	0.97	1.00	1.00	0.95	1.00	0.99	
Flpb, ped/bikes		1.00			1.00	1.00	0.98	1.00	1.00	1.00	1.00	
Frt		0.98			1.00	0.85	1.00	1.00	0.85	1.00	0.96	
Flt Protected		0.97			0.96	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1777			1787	1534	1740	3539	1499	1770	3371	
Flt Permitted		0.97			0.96	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)		1777			1787	1534	1740	3539	1499	1770	3371	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	101	60	21	435	76	348	2	187	84	69	235	73
RTOR Reduction (vph)	0	5	0	0	0	169	0	0	64	0	29	0
Lane Group Flow (vph)	0	177	0	0	511	179	2	187	20	69	279	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Split	NA		Split	NA	Perm	Prot	NA	Perm	Prot	NA	
Protected Phases	4	4		3	3		5	2		1	6	
Permitted Phases						3			2			
Actuated Green, G (s)		12.8			27.4	27.4	0.7	20.8	20.8	4.0	24.1	
Effective Green, g (s)		12.8			27.4	27.4	0.7	20.8	20.8	4.0	24.1	
Actuated g/C Ratio		0.15			0.32	0.32	0.01	0.24	0.24	0.05	0.28	
Clearance Time (s)		5.1			5.1	5.1	4.7	5.5	5.5	4.7	5.5	
Vehicle Extension (s)		3.0			3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)		266			573	492	14	861	365	82	951	
v/s Ratio Prot		c0.10			c0.29		0.00	0.05		c0.04	c0.08	
v/s Ratio Perm						0.12			0.01			
v/c Ratio		0.67			0.89	0.36	0.14	0.22	0.06	0.84	0.29	
Uniform Delay, d1		34.3			27.6	22.3	42.1	25.8	24.8	40.4	24.0	
Progression Factor		1.00			1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2		6.1			16.0	0.5	4.7	0.6	0.3	50.7	0.8	
Delay (s)		40.4			43.6	22.8	46.7	26.4	25.1	91.1	24.8	
Level of Service		D			D	C	D	C	C	F	C	
Approach Delay (s)		40.4			35.2			26.1			36.9	
Approach LOS		D			D			C			D	

Intersection Summary				
HCM 2000 Control Delay	34.7	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.65			
Actuated Cycle Length (s)	85.4	Sum of lost time (s)	20.4	
Intersection Capacity Utilization	62.7%	ICU Level of Service	B	
Analysis Period (min)	15			
c Critical Lane Group				

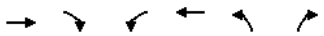
8:00-9:00 AM Year 2022 + Cumulative + Project (Phase 2)
12: Convoy St & Ostrow St/Kearny Mesa Rd

HCM Signalized Intersection Capacity Analysis



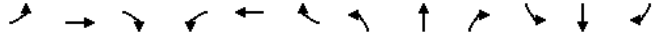
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	20	25	21	376	59	18	112	905	152	21	437	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.9	4.9	4.5	4.9		4.5	5.3		4.5	5.0	
Lane Util. Factor	1.00	1.00	1.00	0.97	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	1.00	0.85	1.00	0.97		1.00	0.98		1.00	0.98	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1863	1583	3433	1798		1770	3463		1770	3484	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	1863	1583	3433	1798		1770	3463		1770	3484	
Peak-hour factor, PHF	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Adj. Flow (vph)	20	25	21	380	60	18	113	914	154	21	441	51
RTOR Reduction (vph)	0	0	20	0	12	0	0	10	0	0	7	0
Lane Group Flow (vph)	20	25	1	380	66	0	113	1058	0	21	485	0
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4									
Actuated Green, G (s)	2.3	5.4	5.4	15.5	18.6		11.7	56.7		3.2	48.5	
Effective Green, g (s)	2.3	5.4	5.4	15.5	18.6		11.7	56.7		3.2	48.5	
Actuated g/C Ratio	0.02	0.05	0.05	0.16	0.19		0.12	0.57		0.03	0.48	
Clearance Time (s)	4.5	4.9	4.9	4.5	4.9		4.5	5.3		4.5	5.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	40	100	85	532	334		207	1963		56	1689	
v/s Ratio Prot	0.01	0.01		c0.11	c0.04		c0.06	c0.31		0.01	0.14	
v/s Ratio Perm			0.00									
v/c Ratio	0.50	0.25	0.01	0.71	0.20		0.55	0.54		0.38	0.29	
Uniform Delay, d1	48.3	45.4	44.8	40.1	34.4		41.6	13.5		47.4	15.4	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	9.5	1.3	0.1	4.5	0.3		2.9	1.1		4.2	0.4	
Delay (s)	57.8	46.7	44.8	44.7	34.7		44.6	14.6		51.6	15.8	
Level of Service	E	D	D	D	C		D	B		D	B	
Approach Delay (s)		49.5			43.0			17.4			17.3	
Approach LOS		D			D			B			B	

Intersection Summary				
HCM 2000 Control Delay	23.6	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.57			
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	19.2	
Intersection Capacity Utilization	62.8%	ICU Level of Service	B	
Analysis Period (min)	15			
c Critical Lane Group				



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	489	0	0	979	568	486
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.1			5.1	5.1	5.1
Lane Util. Factor	0.95			0.95	0.97	0.91
Frt	1.00			1.00	0.97	0.85
Flt Protected	1.00			1.00	0.96	1.00
Satd. Flow (prot)	3539			3539	3365	1441
Flt Permitted	1.00			1.00	0.96	1.00
Satd. Flow (perm)	3539			3539	3365	1441
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	520	0	0	1041	604	517
RTOR Reduction (vph)	0	0	0	0	29	259
Lane Group Flow (vph)	520	0	0	1041	740	93
Turn Type	NA			NA	Prot	Perm
Protected Phases	2			6	4	
Permitted Phases						4
Actuated Green, G (s)	16.8			29.8	22.3	22.3
Effective Green, g (s)	16.8			29.8	22.3	22.3
Actuated g/C Ratio	0.20			0.35	0.26	0.26
Clearance Time (s)	5.1			5.1	5.1	5.1
Vehicle Extension (s)	3.0			3.0	3.0	3.0
Lane Grp Cap (vph)	706			1252	891	381
v/s Ratio Prot	c0.15			c0.29	c0.22	
v/s Ratio Perm						0.06
v/c Ratio	0.74			0.83	0.83	0.24
Uniform Delay, d1	31.6			24.9	29.2	24.3
Progression Factor	1.00			1.00	1.00	1.00
Incremental Delay, d2	4.0			4.9	6.6	0.3
Delay (s)	35.6			29.8	35.8	24.7
Level of Service	D			C	D	C
Approach Delay (s)	35.6			29.8	32.3	
Approach LOS	D			C	C	

Intersection Summary			
HCM 2000 Control Delay	32.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	84.2	Sum of lost time (s)	15.3
Intersection Capacity Utilization	56.9%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	40	692	236	470	846	16	61	6	112	31	35	53
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.9	4.0	4.5	4.9		4.9	4.9	4.9		4.9	4.9
Lane Util. Factor	1.00	0.95	1.00	0.97	0.95		1.00	0.95	0.95		1.00	1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	0.97	0.97		1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00		1.00	0.86	0.85		1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00		0.98	1.00
Satd. Flow (prot)	1770	3539	1583	3433	3526		1770	1483	1455		1820	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00		0.98	1.00
Satd. Flow (perm)	1770	3539	1583	3433	3526		1770	1483	1455		1820	1583
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	43	744	254	505	910	17	66	6	120	33	38	57
RTOR Reduction (vph)	0	0	0	0	1	0	0	0	0	0	0	0
Lane Group Flow (vph)	43	744	254	505	926	0	66	64	62	0	71	57
Confl. Peds. (#/hr)						10			10			
Confl. Bikes (#/hr)						5			5			
Turn Type	Prot	NA	Free	Prot	NA		Split	NA	Perm	Split	NA	Perm
Protected Phases	5	2		1	6		3	3		4	4	
Permitted Phases			Free						3			4
Actuated Green, G (s)	2.6	25.5	83.4	15.3	38.2		16.2	16.2	16.2		7.2	7.2
Effective Green, g (s)	2.6	25.5	83.4	15.3	38.2		16.2	16.2	16.2		7.2	7.2
Actuated g/C Ratio	0.03	0.31	1.00	0.18	0.46		0.19	0.19	0.19		0.09	0.09
Clearance Time (s)	4.5	4.9		4.5	4.9		4.9	4.9	4.9		4.9	4.9
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	55	1082	1583	629	1615		343	288	282		157	136
v/s Ratio Prot	0.02	c0.21		c0.15	0.26		0.04	c0.04			c0.04	
v/s Ratio Perm			0.16						0.04			0.04
v/c Ratio	0.78	0.69	0.16	0.80	0.57		0.19	0.22	0.22		0.45	0.42
Uniform Delay, d1	40.1	25.4	0.0	32.6	16.6		28.1	28.3	28.3		36.2	36.1
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	50.5	3.6	0.2	7.3	0.5		1.2	1.8	1.8		2.1	2.1
Delay (s)	90.6	29.0	0.2	39.9	17.1		29.4	30.1	30.1		38.3	38.2
Level of Service	F	C	A	D	B		C	C	C		D	D
Approach Delay (s)		24.5			25.2			29.8			38.3	
Approach LOS		C			C			C			D	

Intersection Summary			
HCM 2000 Control Delay	25.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	83.4	Sum of lost time (s)	19.2
Intersection Capacity Utilization	57.8%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

8:00-9:00 AM Year 2022 + Cumulative + Project (Phase 2)
15: I-805 SB Ramp/Berger Ave & Mesa College Dr — HCM Signalized Intersection Capacity Analysis

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	6	516	396	127	1511	79	0	0	0	46	28	27
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.7	5.1		4.7	5.1						5.5	
Lane Util. Factor	1.00	0.95		1.00	0.95						1.00	
Frpb, ped/bikes	1.00	0.99		1.00	1.00						0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00						1.00	
Frt	1.00	0.93		1.00	0.99						0.96	
Flt Protected	0.95	1.00		0.95	1.00						0.98	
Satd. Flow (prot)	1766	3279		1770	3504						1741	
Flt Permitted	0.95	1.00		0.95	1.00						0.98	
Satd. Flow (perm)	1766	3279		1770	3504						1741	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	7	561	430	138	1642	86	0	0	0	50	30	29
RTOR Reduction (vph)	0	156	0	0	4	0	0	0	0	0	14	0
Lane Group Flow (vph)	7	835	0	138	1724	0	0	0	0	0	95	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Prot	NA		Prot	NA					Split	NA	
Protected Phases	5	2		1	6					4	4	
Permitted Phases												
Actuated Green, G (s)	0.7	37.1		11.2	47.6						16.3	
Effective Green, g (s)	0.7	37.1		11.2	47.6						16.3	
Actuated g/C Ratio	0.01	0.46		0.14	0.60						0.20	
Clearance Time (s)	4.7	5.1		4.7	5.1						5.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0						3.0	
Lane Grp Cap (vph)	15	1522		248	2087						355	
v/s Ratio Prot	0.00	0.25		c0.08	c0.49						c0.05	
v/s Ratio Perm												
v/c Ratio	0.47	0.55		0.56	0.83						0.27	
Uniform Delay, d1	39.4	15.4		32.0	12.9						26.8	
Progression Factor	1.00	1.00		1.00	1.00						1.00	
Incremental Delay, d2	21.2	0.4		2.7	2.8						1.8	
Delay (s)	60.6	15.8		34.7	15.7						28.6	
Level of Service	E	B		C	B						C	
Approach Delay (s)		16.1			17.1			0.0			28.6	
Approach LOS		B			B			A			C	

Intersection Summary				
HCM 2000 Control Delay	17.2	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.70			
Actuated Cycle Length (s)	79.9	Sum of lost time (s)	15.3	
Intersection Capacity Utilization	73.7%	ICU Level of Service	D	
Analysis Period (min)	15			
c Critical Lane Group				

LOS Engineering, Inc. — Synchro 8 Report

8:00-9:00 AM Year 2022 + Cumulative + Project (Phase 2)
16: I-805 NB Off-Ramp & Mesa College Dr/Kearny Villa Rd — HCM Signalized Intersection Capacity Analysis

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	579	0	0	498	1234	492
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.5			5.5	4.5	5.5
Lane Util. Factor	0.95			0.95	0.97	1.00
Frpb, ped/bikes	1.00			1.00	1.00	0.98
Flpb, ped/bikes	1.00			1.00	1.00	1.00
Frt	1.00			1.00	1.00	0.85
Flt Protected	1.00			1.00	0.95	1.00
Satd. Flow (prot)	3539			3539	3433	1545
Flt Permitted	1.00			1.00	0.95	1.00
Satd. Flow (perm)	3539			3539	3433	1545
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	629	0	0	541	1341	535
RTOR Reduction (vph)	0	0	0	0	0	357
Lane Group Flow (vph)	629	0	0	541	1341	178
Confl. Peds. (#/hr)						10
Confl. Bikes (#/hr)						5
Turn Type	NA			NA	Prot	Perm
Protected Phases	2			6	4	
Permitted Phases						6
Actuated Green, G (s)	20.4			20.4	31.6	20.4
Effective Green, g (s)	20.4			20.4	31.6	20.4
Actuated g/C Ratio	0.33			0.33	0.51	0.33
Clearance Time (s)	5.5			5.5	4.5	5.5
Vehicle Extension (s)	3.0			3.0	3.0	3.0
Lane Grp Cap (vph)	1164			1164	1749	508
v/s Ratio Prot	c0.18			0.15	c0.39	
v/s Ratio Perm						0.12
v/c Ratio	0.54			0.46	0.77	0.35
Uniform Delay, d1	17.0			16.5	12.2	15.8
Progression Factor	1.00			1.00	1.00	1.00
Incremental Delay, d2	0.5			0.3	2.1	0.4
Delay (s)	17.5			16.8	14.3	16.2
Level of Service	B			B	B	B
Approach Delay (s)	17.5			16.8	14.8	
Approach LOS	B			B	B	

Intersection Summary				
HCM 2000 Control Delay	15.7	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.68			
Actuated Cycle Length (s)	62.0	Sum of lost time (s)	10.0	
Intersection Capacity Utilization	59.5%	ICU Level of Service	B	
Analysis Period (min)	15			
c Critical Lane Group				

LOS Engineering, Inc. — Synchro 8 Report

3:15-4:15 PM Year 2022 + Cumulative + Project (Phase 2)
20: Aero Dr & Convoy St

HCM Signalized Intersection Capacity Analysis

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	12	36	20	316	22	529	0	567	474	663	657	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.9		4.9	4.9	4.9		5.2		4.5	4.5	
Lane Util. Factor		1.00		0.95	0.91	0.95		0.95		0.97	0.95	
Frpb, ped/bikes		0.99		1.00	0.99	0.98		0.98		1.00	1.00	
Flpb, ped/bikes		1.00		1.00	1.00	1.00		1.00		1.00	1.00	
Frt		0.96		1.00	0.88	0.85		0.93		1.00	0.99	
Flt Protected		0.99		0.95	0.99	1.00		1.00		0.95	1.00	
Satd. Flow (prot)		1748		1681	1457	1478		3247		3433	3513	
Flt Permitted		0.99		0.95	0.99	1.00		1.00		0.95	1.00	
Satd. Flow (perm)		1748		1681	1457	1478		3247		3433	3513	
Peak-hour factor, PHF	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Adj. Flow (vph)	14	41	23	363	25	608	0	652	545	762	755	29
RTOR Reduction (vph)	0	15	0	0	160	263	0	153	0	0	3	0
Lane Group Flow (vph)	0	63	0	327	181	65	0	1044	0	762	781	0
Confl. Peds. (#/hr)			10						10			10
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Split	NA		Split	NA	Perm		NA		Prot	NA	
Protected Phases	7	7		8	8			2		1	6	
Permitted Phases						8						
Actuated Green, G (s)		6.3		19.8	19.8	19.8		33.9		20.5	59.6	
Effective Green, g (s)		6.3		19.8	19.8	19.8		33.9		20.5	59.6	
Actuated g/C Ratio		0.06		0.20	0.20	0.20		0.34		0.20	0.60	
Clearance Time (s)		4.9		4.9	4.9	4.9		5.2		4.5	4.5	
Vehicle Extension (s)		3.0		3.0	3.0	3.0		3.0		3.0	3.0	
Lane Grp Cap (vph)		110		332	288	292		1100		703	2093	
v/s Ratio Prot		c0.04		c0.19	0.12			c0.32		c0.22	0.22	
v/s Ratio Perm						0.04						
v/c Ratio		0.57		0.98	0.63	0.22		0.95		1.08	0.37	
Uniform Delay, d1		45.5		40.0	36.7	33.6		32.2		39.8	10.5	
Progression Factor		1.00		1.00	1.00	1.00		1.00		1.06	1.13	
Incremental Delay, d2		7.0		45.0	4.3	0.4		17.4		56.3	0.4	
Delay (s)		52.6		84.9	41.0	34.0		49.6		98.4	12.3	
Level of Service		D		F	D	C		D		F	B	
Approach Delay (s)		52.6			53.1			49.6			54.7	
Approach LOS		D			D			D			D	

Intersection Summary			
HCM 2000 Control Delay	52.7	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.96		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	19.5
Intersection Capacity Utilization	83.8%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

3:15-4:15 PM Year 2022 + Cumulative + Project (Phase 2)
21: Kearny Villa Rd & Aero Dr

HCM Signalized Intersection Capacity Analysis

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	162	830	165	424	604	377	237	219	427	325	173	78
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.3		4.5	5.3		4.5	5.7	5.7	4.5	6.0	
Lane Util. Factor	1.00	0.95		0.97	0.95		0.97	0.95	1.00	0.97	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	0.99		1.00	1.00	0.99	1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.98		1.00	0.94		1.00	1.00	0.85	1.00	0.95	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3433		3433	3295		3433	3539	1561	3433	3338	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	3433		3433	3295		3433	3539	1561	3433	3338	
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	184	943	188	482	686	428	269	249	485	369	197	89
RTOR Reduction (vph)	0	18	0	0	108	0	0	0	55	0	58	0
Lane Group Flow (vph)	184	1113	0	482	1006	0	269	249	430	369	228	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Prot	NA		Prot	NA		Prot	NA	custom	Prot	NA	
Protected Phases	5	2		1	6		3	8	8	7	4	
Permitted Phases									1			
Actuated Green, G (s)	11.3	29.5		13.5	31.7		9.6	16.3	29.8	10.7	17.1	
Effective Green, g (s)	11.3	29.5		13.5	31.7		9.6	16.3	29.8	10.7	17.1	
Actuated g/C Ratio	0.13	0.33		0.15	0.35		0.11	0.18	0.33	0.12	0.19	
Clearance Time (s)	4.5	5.3		4.5	5.3		4.5	5.7	5.7	4.5	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	222	1125		514	1160		366	640	615	408	634	
v/s Ratio Prot	0.10	c0.32		c0.14	0.31		0.08	0.07	c0.13	c0.11	0.07	
v/s Ratio Perm									0.15			
v/c Ratio	0.83	0.99		0.94	0.87		0.73	0.39	0.70	0.90	0.36	
Uniform Delay, d1	38.4	30.1		37.8	27.2		39.0	32.5	26.2	39.1	31.7	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	21.8	23.9		24.8	7.0		7.5	0.4	3.5	22.9	0.4	
Delay (s)	60.2	54.0		62.7	34.2		46.4	32.9	29.7	62.0	32.0	
Level of Service	E	D		E	C		D	C	C	E	C	
Approach Delay (s)		54.9			42.8			35.0			48.9	
Approach LOS		D			D			C			D	

Intersection Summary			
HCM 2000 Control Delay	45.4	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.93		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	20.3
Intersection Capacity Utilization	78.0%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

3:15-4:15 PM Year 2022 + Cumulative + Project (Phase 2)
22: Aero Ct & Aero Dr

HCM Signalized Intersection Capacity Analysis

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	23	1370	188	63	1094	10	292	0	118	7	0	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.3		4.5	5.3		4.9	4.9			4.9	4.9
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00			1.00	1.00
Frpb, ped/bikes	1.00	0.99		1.00	1.00		1.00	0.97			1.00	0.97
Flpb, ped/bikes	1.00	1.00		1.00	1.00		0.98	1.00			0.99	1.00
Frt	1.00	0.98		1.00	1.00		1.00	0.85			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00			0.95	1.00
Satd. Flow (prot)	1770	3454		1770	3533		1740	1532			1746	1532
Flt Permitted	0.95	1.00		0.95	1.00		0.75	1.00			0.65	1.00
Satd. Flow (perm)	1770	3454		1770	3533		1378	1532			1197	1532
Peak-hour factor, PHF	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Adj. Flow (vph)	27	1631	224	75	1302	12	348	0	140	8	0	12
RTOR Reduction (vph)	0	11	0	0	0	0	0	87	0	0	0	9
Lane Group Flow (vph)	27	1844	0	75	1314	0	348	53	0	0	8	3
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	Perm
Protected Phases	5	2		1	6			4			4	
Permitted Phases							4			4		4
Actuated Green, G (s)	2.2	46.5		3.8	48.1		24.2	24.2			24.2	24.2
Effective Green, g (s)	2.2	46.5		3.8	48.1		24.2	24.2			24.2	24.2
Actuated g/C Ratio	0.02	0.52		0.04	0.54		0.27	0.27			0.27	0.27
Clearance Time (s)	4.5	5.3		4.5	5.3		4.9	4.9			4.9	4.9
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0			3.0	3.0
Lane Grp Cap (vph)	43	1800		75	1905		373	415			324	415
v/s Ratio Prot	0.02	c0.53		c0.04	0.37			0.03				
v/s Ratio Perm							c0.25				0.01	0.00
v/c Ratio	0.63	1.02		1.00	0.69		0.93	0.13			0.02	0.01
Uniform Delay, d1	43.1	21.4		42.7	15.1		31.7	24.5			23.8	23.7
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00			1.00	1.00
Incremental Delay, d2	25.3	27.6		103.9	1.1		29.9	0.1			0.0	0.0
Delay (s)	68.4	48.9		146.6	16.1		61.6	24.7			23.9	23.7
Level of Service	E	D		F	B		E	C			C	C
Approach Delay (s)		49.2			23.2			51.0			23.8	
Approach LOS		D			C			D			C	

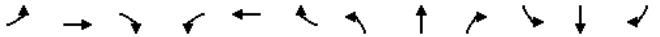
Intersection Summary					
HCM 2000 Control Delay	39.7	HCM 2000 Level of Service		D	
HCM 2000 Volume to Capacity ratio	0.99				
Actuated Cycle Length (s)	89.2	Sum of lost time (s)		14.7	
Intersection Capacity Utilization	82.6%	ICU Level of Service		E	
Analysis Period (min)	15				
c Critical Lane Group					

3:15-4:15 PM Year 2022 + Cumulative + Project (Phase 2)
23: Afton Rd & Aero Dr

HCM Signalized Intersection Capacity Analysis

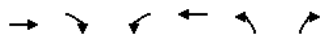
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	38	1151	289	57	824	11	200	4	61	16	8	114
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.4		4.5	5.3			4.9			4.9	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	
Frpb, ped/bikes	1.00	0.99		1.00	1.00			0.99			0.98	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			0.99			1.00	
Frt	1.00	0.97		1.00	1.00			0.97			0.89	
Flt Protected	0.95	1.00		0.95	1.00			0.96			0.99	
Satd. Flow (prot)	1770	3400		1770	3530			1714			1608	
Flt Permitted	0.95	1.00		0.95	1.00			0.66			0.95	
Satd. Flow (perm)	1770	3400		1770	3530			1173			1535	
Peak-hour factor, PHF	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Adj. Flow (vph)	45	1354	340	67	969	13	235	5	72	19	9	134
RTOR Reduction (vph)	0	26	0	0	1	0	0	14	0	0	96	0
Lane Group Flow (vph)	45	1668	0	67	981	0	0	298	0	0	66	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8			4		
Actuated Green, G (s)	3.6	37.9		3.3	37.7			21.9			21.9	
Effective Green, g (s)	3.6	37.9		3.3	37.7			21.9			21.9	
Actuated g/C Ratio	0.05	0.49		0.04	0.48			0.28			0.28	
Clearance Time (s)	4.5	5.4		4.5	5.3			4.9			4.9	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	81	1654		74	1708			329			431	
v/s Ratio Prot	0.03	c0.49		c0.04	0.28							
v/s Ratio Perm								c0.25			0.04	
v/c Ratio	0.56	1.01		0.91	0.57			0.91			0.15	
Uniform Delay, d1	36.4	20.0		37.1	14.4			27.0			21.0	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	8.0	24.2		72.4	1.4			27.1			0.2	
Delay (s)	44.4	44.2		109.6	15.8			54.2			21.2	
Level of Service	D	D		F	B			D			C	
Approach Delay (s)		44.2			21.8			54.2			21.2	
Approach LOS		D			C			D			C	

Intersection Summary					
HCM 2000 Control Delay	36.8	HCM 2000 Level of Service		D	
HCM 2000 Volume to Capacity ratio	0.97				
Actuated Cycle Length (s)	77.9	Sum of lost time (s)		14.8	
Intersection Capacity Utilization	84.4%	ICU Level of Service		E	
Analysis Period (min)	15				
c Critical Lane Group					



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	51	782	417	183	573	33	298	13	162	71	50	42
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.2	5.2	4.5	5.2		5.0	5.0	5.0	4.9	4.9	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		0.95	0.95	1.00	1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.95	1.00	1.00		1.00	1.00	0.97	1.00	0.98	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85	1.00	0.93	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	0.96	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3539	1503	1770	3501		1681	1692	1530	1770	1706	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	0.96	1.00	0.95	1.00	
Satd. Flow (perm)	1770	3539	1503	1770	3501		1681	1692	1530	1770	1706	
Peak-hour factor, PHF	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
Adj. Flow (vph)	64	978	521	229	716	41	372	16	202	89	62	52
RTOR Reduction (vph)	0	0	214	0	4	0	0	0	169	0	36	0
Lane Group Flow (vph)	64	978	307	229	753	0	193	195	33	89	78	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Prot	NA	Perm	Prot	NA		Split	NA	Perm	Split	NA	
Protected Phases	5	2		1	6		8	8		7	7	
Permitted Phases			2						8			
Actuated Green, G (s)	5.6	27.0	27.0	12.6	34.0		13.6	13.6	13.6	9.5	9.5	
Effective Green, g (s)	5.6	27.0	27.0	12.6	34.0		13.6	13.6	13.6	9.5	9.5	
Actuated g/C Ratio	0.07	0.33	0.33	0.15	0.41		0.17	0.17	0.17	0.12	0.12	
Clearance Time (s)	4.5	5.2	5.2	4.5	5.2		5.0	5.0	5.0	4.9	4.9	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	120	1161	493	270	1446		277	279	252	204	196	
v/s Ratio Prot	0.04	c0.28		c0.13	0.22		0.11	c0.12		c0.05	0.05	
v/s Ratio Perm			0.20						0.02			
v/c Ratio	0.53	0.84	0.62	0.85	0.52		0.70	0.70	0.13	0.44	0.40	
Uniform Delay, d1	37.1	25.7	23.4	33.9	18.1		32.4	32.4	29.3	33.9	33.7	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	4.5	7.5	5.8	21.2	0.3		7.4	7.4	0.2	1.5	1.3	
Delay (s)	41.6	33.2	29.2	55.1	18.4		39.8	39.9	29.6	35.4	35.1	
Level of Service	D	C	C	E	B		D	D	C	D	D	
Approach Delay (s)		32.2			26.9			36.3			35.2	
Approach LOS		C			C			D			D	

Intersection Summary				
HCM 2000 Control Delay	31.5	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.75			
Actuated Cycle Length (s)	82.3	Sum of lost time (s)	19.6	
Intersection Capacity Utilization	59.3%	ICU Level of Service	B	
Analysis Period (min)	15			
c Critical Lane Group				

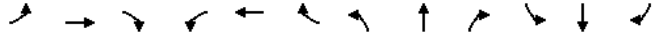


Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	718	300	315	593	140	239
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.2	5.2	4.5	4.5	5.5	5.5
Lane Util. Factor	0.95	1.00	0.97	0.95	0.97	1.00
Frpb, ped/bikes	1.00	0.99	1.00	1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	3539	1566	3433	3539	3433	1541
Flt Permitted	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)	3539	1566	3433	3539	3433	1541
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	780	326	342	645	152	260
RTOR Reduction (vph)	0	25	0	0	0	190
Lane Group Flow (vph)	780	301	342	645	152	70
Confl. Peds. (#/hr)		10	10		10	10
Confl. Bikes (#/hr)		5				5
Turn Type	NA	custom	Prot	NA	Prot	Perm
Protected Phases	2	2	1	6	8	
Permitted Phases		8				8
Actuated Green, G (s)	19.3	35.3	9.2	33.7	16.0	16.0
Effective Green, g (s)	19.3	35.3	9.2	33.7	16.0	16.0
Actuated g/C Ratio	0.32	0.59	0.15	0.56	0.27	0.27
Clearance Time (s)	5.2	5.2	4.5	4.5	5.5	5.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	1144	1062	529	1997	920	412
v/s Ratio Prot	c0.22	c0.09	c0.10	0.18	0.04	
v/s Ratio Perm		0.10				0.05
v/c Ratio	0.68	0.28	0.65	0.32	0.17	0.17
Uniform Delay, d1	17.5	6.0	23.7	6.9	16.7	16.8
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	3.3	0.7	2.7	0.1	0.4	0.9
Delay (s)	20.8	6.7	26.4	7.0	17.1	17.6
Level of Service	C	A	C	A	B	B
Approach Delay (s)	16.7			13.7	17.4	
Approach LOS	B			B	B	

Intersection Summary				
HCM 2000 Control Delay	15.6	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.55			
Actuated Cycle Length (s)	59.7	Sum of lost time (s)	15.2	
Intersection Capacity Utilization	54.8%	ICU Level of Service	A	
Analysis Period (min)	15			
c Critical Lane Group				

Movement	EBU	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations							
Volume (vph)	22	982	113	139	884	119	41
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5		4.5	4.5	4.5	4.5
Lane Util. Factor	1.00	0.95		0.97	0.95	0.97	0.88
Frpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	0.95
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00
Frt	1.00	0.98		1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	0.95	1.00
Satd. Flow (prot)	1770	3475		3433	3539	3433	2643
Flt Permitted	0.95	1.00		0.95	1.00	0.95	1.00
Satd. Flow (perm)	1770	3475		3433	3539	3433	2643
Peak-hour factor, PHF	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Adj. Flow (vph)	26	1142	131	162	1028	138	48
RTOR Reduction (vph)	0	10	0	0	0	0	38
Lane Group Flow (vph)	26	1263	0	162	1028	138	10
Confl. Peds. (#/hr)			10	10		10	10
Confl. Bikes (#/hr)			5				5
Turn Type	Prot	NA		Prot	NA	Prot	Perm
Protected Phases	5	2		1	6	8	
Permitted Phases							8
Actuated Green, G (s)	1.6	36.5		8.9	43.8	16.1	16.1
Effective Green, g (s)	1.6	36.5		8.9	43.8	16.1	16.1
Actuated g/C Ratio	0.02	0.49		0.12	0.58	0.21	0.21
Clearance Time (s)	4.5	4.5		4.5	4.5	4.5	4.5
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	37	1691		407	2066	736	567
v/s Ratio Prot	0.01	c0.36		c0.05	c0.29	c0.04	
v/s Ratio Perm							0.00
v/c Ratio	0.70	0.75		0.40	0.50	0.19	0.02
Uniform Delay, d1	36.5	15.5		30.6	9.1	24.1	23.2
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2	46.2	3.1		0.6	0.9	0.6	0.1
Delay (s)	82.6	18.6		31.2	10.0	24.7	23.3
Level of Service	F	B		C	B	C	C
Approach Delay (s)		19.9			12.9	24.3	
Approach LOS		B			B	C	

Intersection Summary				
HCM 2000 Control Delay	17.1	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.55			
Actuated Cycle Length (s)	75.0	Sum of lost time (s)	13.5	
Intersection Capacity Utilization	59.4%	ICU Level of Service	B	
Analysis Period (min)	15			
c Critical Lane Group				



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	3	0	0	1	0	24	0	387	0	11	236	3
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Hourly flow rate (vph)	4	0	0	1	0	29	0	461	0	13	281	4
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)											142	
pX, platoon unblocked												
vC, conflicting volume	798	770	283	770	771	461	285			461		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	798	770	283	770	771	461	285			461		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	99	100	100	100	100	95	100			99		
cM capacity (veh/h)	287	327	756	315	327	601	1278			1100		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	4	30	461	298
Volume Left	4	1	0	13
Volume Right	0	29	0	4
cSH	287	580	1278	1100
Volume to Capacity	0.01	0.05	0.00	0.01
Queue Length 95th (ft)	1	4	0	1
Control Delay (s)	17.7	11.5	0.0	0.5
Lane LOS	C	B		A
Approach Delay (s)	17.7	11.5	0.0	0.5
Approach LOS	C	B		

Intersection Summary				
Average Delay	0.7			
Intersection Capacity Utilization	31.6%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	3	233	114	0	150	43
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.60	0.60	0.60	0.60	0.60	0.60
Hourly flow rate (vph)	5	388	190	0	250	72
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						635
pX, platoon unblocked						
vC, conflicting volume	762	190			190	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	762	190			190	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	98	54			82	
cM capacity (veh/h)	306	852			1384	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	393	190	322
Volume Left	5	0	250
Volume Right	388	0	0
cSH	833	1700	1384
Volume to Capacity	0.47	0.11	0.18
Queue Length 95th (ft)	64	0	16
Control Delay (s)	13.1	0.0	6.7
Lane LOS	B		A
Approach Delay (s)	13.1	0.0	6.7
Approach LOS	B		

Intersection Summary			
Average Delay	8.1		
Intersection Capacity Utilization	38.5%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	223	32	475	290	581	14
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.1	4.7	4.7	5.8	5.8	
Lane Util. Factor	0.97	1.00	1.00	0.95	0.95	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.85	1.00	1.00	1.00	
Flt Protected	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	3433	1583	1770	3539	3522	
Flt Permitted	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (perm)	3433	1583	1770	3539	3522	
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	251	36	534	326	653	16
RTOR Reduction (vph)	0	10	0	0	2	0
Lane Group Flow (vph)	251	26	534	326	667	0
Confl. Peds. (#/hr)						10
Confl. Bikes (#/hr)						5
Turn Type	Prot	pm+ov	Prot	NA	NA	
Protected Phases	4	5	5	2	6	
Permitted Phases		4				
Actuated Green, G (s)	10.3	34.4	24.1	48.1	19.3	
Effective Green, g (s)	10.3	34.4	24.1	48.1	19.3	
Actuated g/C Ratio	0.15	0.50	0.35	0.69	0.28	
Clearance Time (s)	5.1	4.7	4.7	5.8	5.8	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	510	785	615	2456	980	
v/s Ratio Prot	c0.07	0.01	c0.30	0.09	c0.19	
v/s Ratio Perm		0.00				
v/c Ratio	0.49	0.03	0.87	0.13	0.68	
Uniform Delay, d1	27.1	8.9	21.1	3.6	22.3	
Progression Factor	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.8	0.0	12.4	0.1	3.8	
Delay (s)	27.8	9.0	33.5	3.7	26.1	
Level of Service	C	A	C	A	C	
Approach Delay (s)	25.5			22.2	26.1	
Approach LOS	C			C	C	

Intersection Summary					
HCM 2000 Control Delay	24.1	HCM 2000 Level of Service	C		
HCM 2000 Volume to Capacity ratio	0.73				
Actuated Cycle Length (s)	69.3	Sum of lost time (s)	15.6		
Intersection Capacity Utilization	62.2%	ICU Level of Service	B		
Analysis Period (min)	15				
c Critical Lane Group					

3:15-4:15 PM Year 2022 + Cumulative + Project (Phase 2)
30: Convoy/Mercury & Armour St/SR-163 SB Ramp — HCM Signalized Intersection Capacity Analysis

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	131	116	25	297	53	178	21	382	194	181	398	108
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.1			5.1	5.1	4.7	5.5	5.5	4.7	5.5	
Lane Util. Factor		1.00			1.00	1.00	1.00	0.95	1.00	1.00	0.95	
Frpb, ped/bikes		1.00			1.00	0.97	1.00	1.00	0.94	1.00	0.99	
Flpb, ped/bikes		1.00			1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt		0.99			1.00	0.85	1.00	1.00	0.85	1.00	0.97	
Flt Protected		0.98			0.96	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1791			1787	1531	1770	3539	1496	1770	3388	
Flt Permitted		0.98			0.96	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)		1791			1787	1531	1770	3539	1496	1770	3388	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	135	120	26	306	55	184	22	394	200	187	410	111
RTOR Reduction (vph)	0	4	0	0	0	142	0	0	157	0	24	0
Lane Group Flow (vph)	0	277	0	0	361	42	22	394	43	187	497	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Split	NA		Split	NA	Perm	Prot	NA	Perm	Prot	NA	
Protected Phases	4	4		3	3		5	2		1	6	
Permitted Phases						3			2			
Actuated Green, G (s)		17.0			20.1	20.1	2.0	19.0	19.0	11.7	28.7	
Effective Green, g (s)		17.0			20.1	20.1	2.0	19.0	19.0	11.7	28.7	
Actuated g/C Ratio		0.19			0.23	0.23	0.02	0.22	0.22	0.13	0.33	
Clearance Time (s)		5.1			5.1	5.1	4.7	5.5	5.5	4.7	5.5	
Vehicle Extension (s)		3.0			3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)		345			407	348	40	762	322	234	1102	
v/s Ratio Prot		c0.15			c0.20		0.01	c0.11		c0.11	0.15	
v/s Ratio Perm						0.03			0.03			
v/c Ratio		0.80			0.89	0.12	0.55	0.52	0.13	0.80	0.45	
Uniform Delay, d1		34.0			33.0	27.0	42.7	30.5	28.0	37.1	23.5	
Progression Factor		1.00			1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2		12.6			20.1	0.2	15.3	2.5	0.9	17.1	1.3	
Delay (s)		46.6			53.1	27.2	58.0	33.0	28.8	54.2	24.9	
Level of Service		D			D	C	E	C	C	D	C	
Approach Delay (s)		46.6			44.3			32.6			32.6	
Approach LOS		D			D			C			C	

Intersection Summary				
HCM 2000 Control Delay	37.4	HCM 2000 Level of Service	D	
HCM 2000 Volume to Capacity ratio	0.75			
Actuated Cycle Length (s)	88.2	Sum of lost time (s)	20.4	
Intersection Capacity Utilization	68.0%	ICU Level of Service	C	
Analysis Period (min)	15			
c Critical Lane Group				

3:15-4:15 PM Year 2022 + Cumulative + Project (Phase 2)
31: Convoy St & Ostrow St/Kearny Mesa Rd — HCM Signalized Intersection Capacity Analysis

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	51	93	88	437	43	33	82	766	231	36	756	29
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.9	4.9	4.5	4.9		4.5	5.3		4.5	5.0	
Lane Util. Factor	1.00	1.00	1.00	0.97	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	1.00	0.85	1.00	0.93		1.00	0.97		1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1863	1583	3433	1742		1770	3416		1770	3520	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	1863	1583	3433	1742		1770	3416		1770	3520	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	56	102	97	480	47	36	90	842	254	40	831	32
RTOR Reduction (vph)	0	0	86	0	28	0	0	24	0	0	2	0
Lane Group Flow (vph)	56	102	11	480	55	0	90	1072	0	40	861	0
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4									
Actuated Green, G (s)	5.2	11.7	11.7	16.2	22.7		9.1	47.6		5.3	44.1	
Effective Green, g (s)	5.2	11.7	11.7	16.2	22.7		9.1	47.6		5.3	44.1	
Actuated g/C Ratio	0.05	0.12	0.12	0.16	0.23		0.09	0.48		0.05	0.44	
Clearance Time (s)	4.5	4.9	4.9	4.5	4.9		4.5	5.3		4.5	5.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	92	217	185	556	395		161	1626		93	1552	
v/s Ratio Prot	0.03	c0.05		c0.14	0.03		c0.05	c0.31		0.02	0.24	
v/s Ratio Perm			0.01									
v/c Ratio	0.61	0.47	0.06	0.86	0.14		0.56	0.66		0.43	0.55	
Uniform Delay, d1	46.4	41.3	39.3	40.8	30.9		43.5	20.0		45.9	20.7	
Progression Factor	1.00	1.00	1.00	1.00	1.00		0.91	1.16		1.00	1.00	
Incremental Delay, d2	10.9	1.6	0.1	13.1	0.2		2.4	1.2		3.2	1.4	
Delay (s)	57.3	42.9	39.4	53.9	31.0		42.1	24.4		49.1	22.1	
Level of Service	E	D	D	D	C		D	C		D	C	
Approach Delay (s)		44.7			50.5			25.7			23.3	
Approach LOS		D			D			C			C	

Intersection Summary				
HCM 2000 Control Delay	31.4	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.68			
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	19.2	
Intersection Capacity Utilization	63.3%	ICU Level of Service	B	
Analysis Period (min)	15			
c Critical Lane Group				

3:15-4:15 PM Year 2022 + Cumulative + Project (Phase 2)
32: SR-163 NB Off-Ramp & Mesa College Dr — HCM Signalized Intersection Capacity Analysis

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	472	0	0	851	369	269
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.1			5.1	5.1	5.1
Lane Util. Factor	0.95			0.95	0.97	0.91
Frt	1.00			1.00	0.98	0.85
Flt Protected	1.00			1.00	0.96	1.00
Satd. Flow (prot)	3539			3539	3385	1441
Flt Permitted	1.00			1.00	0.96	1.00
Satd. Flow (perm)	3539			3539	3385	1441
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	492	0	0	886	384	280
RTOR Reduction (vph)	0	0	0	0	22	165
Lane Group Flow (vph)	492	0	0	886	435	42
Turn Type	NA			NA	Prot	Perm
Protected Phases	2			6	4	
Permitted Phases						4
Actuated Green, G (s)	14.2			22.6	13.3	13.3
Effective Green, g (s)	14.2			22.6	13.3	13.3
Actuated g/C Ratio	0.22			0.35	0.20	0.20
Clearance Time (s)	5.1			5.1	5.1	5.1
Vehicle Extension (s)	3.0			3.0	3.0	3.0
Lane Grp Cap (vph)	768			1222	688	293
v/s Ratio Prot	c0.14			c0.25	c0.13	
v/s Ratio Perm						0.03
v/c Ratio	0.64			0.73	0.63	0.14
Uniform Delay, d1	23.3			18.7	23.8	21.4
Progression Factor	1.00			1.00	1.00	1.00
Incremental Delay, d2	1.8			2.2	1.9	0.2
Delay (s)	25.1			20.9	25.7	21.6
Level of Service	C			C	C	C
Approach Delay (s)	25.1			20.9	24.4	
Approach LOS	C			C	C	

Intersection Summary				
HCM 2000 Control Delay	23.0	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.68			
Actuated Cycle Length (s)	65.4	Sum of lost time (s)	15.3	
Intersection Capacity Utilization	45.4%	ICU Level of Service	A	
Analysis Period (min)	15			
c Critical Lane Group				

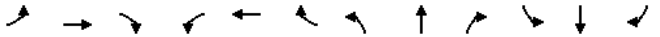
LOS Engineering, Inc. — Synchro 8 Report

3:15-4:15 PM Year 2022 + Cumulative + Project (Phase 2)
33: Health Center Dr/Annrea St & Mesa College Dr — HCM Signalized Intersection Capacity Analysis

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	102	553	70	322	669	13	124	41	269	19	13	55
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.9	4.0	4.5	4.9		4.9	4.9	4.9		4.9	4.9
Lane Util. Factor	1.00	0.95	1.00	0.97	0.95		1.00	0.95	0.95		1.00	1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	0.98	0.97		1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00		1.00	0.89	0.85		1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00		0.97	1.00
Satd. Flow (prot)	1770	3539	1583	3433	3526		1770	1541	1461		1810	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00		0.97	1.00
Satd. Flow (perm)	1770	3539	1583	3433	3526		1770	1541	1461		1810	1583
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	106	576	73	335	697	14	129	43	280	20	14	57
RTOR Reduction (vph)	0	0	0	0	1	0	0	0	0	0	0	0
Lane Group Flow (vph)	106	576	73	335	710	0	129	163	160	0	34	57
Confl. Peds. (#/hr)						10			10			
Confl. Bikes (#/hr)						5			5			
Turn Type	Prot	NA	Free	Prot	NA		Split	NA	Perm	Split	NA	Perm
Protected Phases	5	2		1	6		3	3		4	4	
Permitted Phases			Free						3			4
Actuated Green, G (s)	4.5	17.3	67.7	8.6	21.4		16.1	16.1	16.1		6.5	6.5
Effective Green, g (s)	4.5	17.3	67.7	8.6	21.4		16.1	16.1	16.1		6.5	6.5
Actuated g/C Ratio	0.07	0.26	1.00	0.13	0.32		0.24	0.24	0.24		0.10	0.10
Clearance Time (s)	4.5	4.9		4.5	4.9		4.9	4.9	4.9		4.9	4.9
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	117	904	1583	436	1114		420	366	347		173	151
v/s Ratio Prot	0.06	0.16		c0.10	c0.20		0.07	0.11			0.02	
v/s Ratio Perm			0.05						c0.11			c0.04
v/c Ratio	0.91	0.64	0.05	0.77	0.64		0.31	0.45	0.46		0.20	0.38
Uniform Delay, d1	31.4	22.4	0.0	28.6	19.8		21.2	22.0	22.1		28.2	28.7
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	54.5	3.4	0.1	7.9	1.2		1.9	3.9	4.4		0.6	1.6
Delay (s)	85.8	25.8	0.1	36.5	21.0		23.1	25.9	26.4		28.8	30.3
Level of Service	F	C	A	D	C		C	C	C		C	C
Approach Delay (s)		31.8			26.0			25.3			29.7	
Approach LOS		C			C			C			C	

Intersection Summary				
HCM 2000 Control Delay	27.9	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.59			
Actuated Cycle Length (s)	67.7	Sum of lost time (s)	19.2	
Intersection Capacity Utilization	54.1%	ICU Level of Service	A	
Analysis Period (min)	15			
c Critical Lane Group				

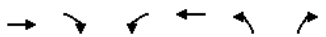
LOS Engineering, Inc. — Synchro 8 Report



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	11	465	744	319	1020	75	0	0	0	45	70	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.7	5.1		4.7	5.1						5.5	
Lane Util. Factor	1.00	0.95		1.00	0.95						1.00	
Frpb, ped/bikes	1.00	0.99		1.00	1.00						1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00						1.00	
Frt	1.00	0.91		1.00	0.99						0.99	
Flt Protected	0.95	1.00		0.95	1.00						0.98	
Satd. Flow (prot)	1762	3168		1770	3491						1800	
Flt Permitted	0.95	1.00		0.95	1.00						0.98	
Satd. Flow (perm)	1762	3168		1770	3491						1800	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	12	500	800	343	1097	81	0	0	0	48	75	14
RTOR Reduction (vph)	0	252	0	0	6	0	0	0	0	0	6	0
Lane Group Flow (vph)	12	1048	0	343	1172	0	0	0	0	0	131	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Prot	NA		Prot	NA					Split	NA	
Protected Phases	5	2		1	6					4	4	
Permitted Phases												
Actuated Green, G (s)	0.8	30.5		16.0	45.7						16.0	
Effective Green, g (s)	0.8	30.5		16.0	45.7						16.0	
Actuated g/C Ratio	0.01	0.39		0.21	0.59						0.21	
Clearance Time (s)	4.7	5.1		4.7	5.1						5.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0						3.0	
Lane Grp Cap (vph)	18	1241		364	2050						370	
v/s Ratio Prot	0.01	c0.33		c0.19	0.34						c0.07	
v/s Ratio Perm												
v/c Ratio	0.67	0.97dr		0.94	0.57						0.36	
Uniform Delay, d1	38.4	21.5		30.4	10.0						26.5	
Progression Factor	1.00	1.00		1.00	1.00						1.00	
Incremental Delay, d2	66.1	5.4		32.5	0.4						2.7	
Delay (s)	104.5	26.9		62.9	10.4						29.1	
Level of Service	F	C		E	B						C	
Approach Delay (s)		27.7			22.2			0.0			29.1	
Approach LOS		C			C			A			C	

Intersection Summary				
HCM 2000 Control Delay	24.9	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.74			
Actuated Cycle Length (s)	77.8	Sum of lost time (s)	15.3	
Intersection Capacity Utilization	81.6%	ICU Level of Service	D	
Analysis Period (min)	15			

dr Defacto Right Lane. Recode with 1 though lane as a right lane.
c Critical Lane Group



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	501	0	0	733	690	274
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.5			5.5	4.5	5.5
Lane Util. Factor	0.95			0.95	0.97	1.00
Frpb, ped/bikes	1.00			1.00	1.00	0.98
Flpb, ped/bikes	1.00			1.00	1.00	1.00
Frt	1.00			1.00	1.00	0.85
Flt Protected	1.00			1.00	0.95	1.00
Satd. Flow (prot)	3539			3539	3433	1550
Flt Permitted	1.00			1.00	0.95	1.00
Satd. Flow (perm)	3539			3539	3433	1550
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	533	0	0	780	734	291
RTOR Reduction (vph)	0	0	0	0	0	165
Lane Group Flow (vph)	533	0	0	780	734	126
Confl. Peds. (#/hr)						10
Confl. Bikes (#/hr)						5
Turn Type	NA			NA	Prot	Perm
Protected Phases	2			6	4	
Permitted Phases						6
Actuated Green, G (s)	20.2			20.2	16.3	20.2
Effective Green, g (s)	20.2			20.2	16.3	20.2
Actuated g/C Ratio	0.43			0.43	0.35	0.43
Clearance Time (s)	5.5			5.5	4.5	5.5
Vehicle Extension (s)	3.0			3.0	3.0	3.0
Lane Grp Cap (vph)	1537			1537	1203	673
v/s Ratio Prot	0.15			c0.22	c0.21	
v/s Ratio Perm						0.08
v/c Ratio	0.35			0.51	0.61	0.19
Uniform Delay, d1	8.8			9.5	12.5	8.1
Progression Factor	1.00			1.00	1.00	1.00
Incremental Delay, d2	0.1			0.3	0.9	0.1
Delay (s)	8.9			9.8	13.4	8.2
Level of Service	A			A	B	A
Approach Delay (s)	8.9			9.8	11.9	
Approach LOS	A			A	B	

Intersection Summary				
HCM 2000 Control Delay	10.5	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.55			
Actuated Cycle Length (s)	46.5	Sum of lost time (s)	10.0	
Intersection Capacity Utilization	48.3%	ICU Level of Service	A	
Analysis Period (min)	15			

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	10	48	24	460	4	489	0	561	505	858	1100	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.9		4.9	4.9	4.9		5.2		4.5	4.5	
Lane Util. Factor		1.00		0.95	0.91	0.95		0.95		0.97	0.95	
Frpb, ped/bikes		0.99		1.00	0.99	0.98		0.98		1.00	1.00	
Flpb, ped/bikes		1.00		1.00	1.00	1.00		1.00		1.00	1.00	
Frt		0.96		1.00	0.91	0.85		0.93		1.00	1.00	
Flt Protected		0.99		0.95	0.98	1.00		1.00		0.95	1.00	
Satd. Flow (prot)		1751		1681	1501	1479		3229		3433	3536	
Flt Permitted		0.99		0.95	0.98	1.00		1.00		0.95	1.00	
Satd. Flow (perm)		1751		1681	1501	1479		3229		3433	3536	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	10	49	25	474	4	504	0	578	521	885	1134	5
RTOR Reduction (vph)	0	13	0	0	40	243	0	138	0	0	0	0
Lane Group Flow (vph)	0	71	0	341	289	69	0	961	0	885	1139	0
Confl. Peds. (#/hr)			10						10			10
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Split	NA		Split	NA	Perm		NA		Prot	NA	
Protected Phases	7	7		8	8			2		1	6	
Permitted Phases						8						
Actuated Green, G (s)		8.5		26.7	26.7	26.7		37.8		27.5	70.5	
Effective Green, g (s)		8.5		26.7	26.7	26.7		37.8		27.5	70.5	
Actuated g/C Ratio		0.07		0.22	0.22	0.22		0.31		0.23	0.59	
Clearance Time (s)		4.9		4.9	4.9	4.9		5.2		4.5	4.5	
Vehicle Extension (s)		3.0		3.0	3.0	3.0		3.0		3.0	3.0	
Lane Grp Cap (vph)		124		374	333	329		1017		786	2077	
v/s Ratio Prot		c0.04		c0.20	0.19			c0.30		c0.26	0.32	
v/s Ratio Perm						0.05						
v/c Ratio		0.57		0.91	0.87	0.21		0.95		1.13	0.55	
Uniform Delay, d1		54.0		45.5	44.9	38.1		40.1		46.2	15.1	
Progression Factor		1.00		1.00	1.00	1.00		1.00		1.00	1.00	
Incremental Delay, d2		6.3		25.8	20.3	0.3		17.8		72.7	1.0	
Delay (s)		60.2		71.3	65.3	38.4		57.8		118.9	16.1	
Level of Service		E		E	E	D		E		F	B	
Approach Delay (s)		60.2			58.8			57.8			61.1	
Approach LOS		E			E			E			E	

Intersection Summary				
HCM 2000 Control Delay	59.7	HCM 2000 Level of Service	E	
HCM 2000 Volume to Capacity ratio	0.95			
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	19.5	
Intersection Capacity Utilization	93.3%	ICU Level of Service	F	
Analysis Period (min)	15			
c Critical Lane Group				

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	146	1040	211	292	633	359	209	279	438	774	356	147
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.3		4.5	5.3		4.5	5.7	4.5	4.5	6.0	
Lane Util. Factor	1.00	0.95		0.97	0.95		0.97	0.95	1.00	0.97	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	0.99		1.00	1.00	0.98	1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.97		1.00	0.95		1.00	1.00	0.85	1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3427		3433	3300		3433	3539	1554	3433	3345	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	3427		3433	3300		3433	3539	1554	3433	3345	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	152	1083	220	304	659	374	218	291	456	806	371	153
RTOR Reduction (vph)	0	13	0	0	60	0	0	0	72	0	34	0
Lane Group Flow (vph)	152	1290	0	304	973	0	218	291	384	806	490	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Prot	NA		Prot	NA		Prot	NA	pm+ov	Prot	NA	
Protected Phases	5	2		1	6		3	8	1	7	4	
Permitted Phases									8			
Actuated Green, G (s)	14.8	48.0		16.5	49.7		12.5	14.1	30.6	30.5	31.8	
Effective Green, g (s)	14.8	48.0		16.5	49.7		12.5	14.1	30.6	30.5	31.8	
Actuated g/C Ratio	0.11	0.37		0.13	0.38		0.10	0.11	0.24	0.24	0.25	
Clearance Time (s)	4.5	5.3		4.5	5.3		4.5	5.7	4.5	4.5	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	202	1274		438	1270		332	386	368	811	823	
v/s Ratio Prot	0.09	c0.38		0.09	0.29		0.06	0.08	c0.13	c0.23	0.15	
v/s Ratio Perm									0.11			
v/c Ratio	0.75	1.01		0.69	0.77		0.66	0.75	1.04	0.99	0.60	
Uniform Delay, d1	55.4	40.5		53.9	34.6		56.2	55.8	49.2	49.2	43.0	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	14.6	28.3		4.7	2.8		4.6	8.1	58.3	29.9	1.2	
Delay (s)	70.0	68.9		58.6	37.5		60.9	63.9	107.6	79.1	44.1	
Level of Service	E	E		E	D		E	E	F	E	D	
Approach Delay (s)		69.0			42.3			83.9			65.3	
Approach LOS		E			D			F			E	

Intersection Summary				
HCM 2000 Control Delay	63.8	HCM 2000 Level of Service	E	
HCM 2000 Volume to Capacity ratio	1.02			
Actuated Cycle Length (s)	129.1	Sum of lost time (s)	20.3	
Intersection Capacity Utilization	97.8%	ICU Level of Service	F	
Analysis Period (min)	15			
c Critical Lane Group				

4:45-5:45 PM Year 2022 + Cumulative + Project (Phase 2)
3: Aero Ct & Aero Dr

HCM Signalized Intersection Capacity Analysis

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	7	2054	193	69	1088	10	173	1	63	45	2	12
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.3		4.5	5.3		4.9	4.9			4.9	4.9
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00			1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.96			1.00	0.96
Flpb, ped/bikes	0.99	1.00		1.00	1.00		0.98	1.00			0.98	1.00
Frt	1.00	0.99		1.00	1.00		1.00	0.85			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00			0.95	1.00
Satd. Flow (prot)	1758	3476		1770	3532		1734	1527			1744	1522
Flt Permitted	0.95	1.00		0.95	1.00		0.73	1.00			0.71	1.00
Satd. Flow (perm)	1758	3476		1770	3532		1324	1527			1306	1522
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	7	2162	203	73	1145	11	182	1	66	47	2	13
RTOR Reduction (vph)	0	69	0	0	0	0	0	54	0	0	0	11
Lane Group Flow (vph)	7	2296	0	73	1156	0	182	13	0	0	49	2
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	Perm
Protected Phases	5	2		1	6			4			4	
Permitted Phases							4			4		4
Actuated Green, G (s)	0.8	74.3		4.5	78.0		20.3	20.3			20.3	20.3
Effective Green, g (s)	0.8	74.3		4.5	78.0		20.3	20.3			20.3	20.3
Actuated g/C Ratio	0.01	0.65		0.04	0.69		0.18	0.18			0.18	0.18
Clearance Time (s)	4.5	5.3		4.5	5.3		4.9	4.9			4.9	4.9
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0			3.0	3.0
Lane Grp Cap (vph)	12	2269		69	2420		236	272			232	271
v/s Ratio Prot	0.00	c0.66		c0.04	c0.33			0.01				
v/s Ratio Perm							c0.14				0.04	0.00
v/c Ratio	0.58	1.01		1.06	0.48		0.77	0.05			0.21	0.01
Uniform Delay, d1	56.3	19.8		54.6	8.4		44.5	38.7			39.9	38.5
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00			1.00	1.00
Incremental Delay, d2	56.2	21.8		125.2	0.1		14.4	0.1			0.5	0.0
Delay (s)	112.6	41.6		179.9	8.5		58.9	38.8			40.4	38.5
Level of Service	F	D		F	A		E	D			D	D
Approach Delay (s)		41.8			18.7			53.5			40.0	
Approach LOS		D			B			D			D	

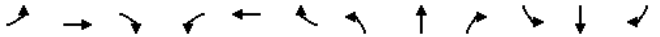
Intersection Summary				
HCM 2000 Control Delay	35.2	HCM 2000 Level of Service	D	
HCM 2000 Volume to Capacity ratio	0.95			
Actuated Cycle Length (s)	113.8	Sum of lost time (s)	14.7	
Intersection Capacity Utilization	87.8%	ICU Level of Service	E	
Analysis Period (min)	15			
c Critical Lane Group				

4:45-5:45 PM Year 2022 + Cumulative + Project (Phase 2)
4: Afton Rd & Aero Dr

HCM Signalized Intersection Capacity Analysis

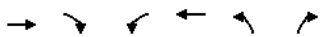
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	48	1758	336	38	933	5	154	3	56	12	5	93
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.4		4.5	5.3			4.9			4.9	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	
Frpb, ped/bikes	1.00	0.99		1.00	1.00			0.99			0.97	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			0.99			1.00	
Frt	1.00	0.98		1.00	1.00			0.96			0.89	
Flt Protected	0.95	1.00		0.95	1.00			0.97			0.99	
Satd. Flow (prot)	1770	3425		1770	3536			1702			1595	
Flt Permitted	0.95	1.00		0.95	1.00			0.69			0.96	
Satd. Flow (perm)	1770	3425		1770	3536			1219			1547	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	50	1831	350	40	972	5	160	3	58	12	5	97
RTOR Reduction (vph)	0	14	0	0	0	0	0	13	0	0	77	0
Lane Group Flow (vph)	50	2167	0	40	977	0	0	208	0	0	37	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8			4		
Actuated Green, G (s)	4.8	57.3		3.1	55.7			19.7			19.7	
Effective Green, g (s)	4.8	57.3		3.1	55.7			19.7			19.7	
Actuated g/C Ratio	0.05	0.60		0.03	0.59			0.21			0.21	
Clearance Time (s)	4.5	5.4		4.5	5.3			4.9			4.9	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	89	2067		57	2075			253			321	
v/s Ratio Prot	c0.03	c0.63		0.02	0.28							
v/s Ratio Perm								c0.17			0.02	
v/c Ratio	0.56	1.05		0.70	0.47			0.82			0.12	
Uniform Delay, d1	44.0	18.8		45.4	11.2			35.9			30.5	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	7.9	33.8		32.3	0.8			18.8			0.2	
Delay (s)	51.9	52.6		77.8	12.0			54.7			30.7	
Level of Service	D	D		E	B			D			C	
Approach Delay (s)		52.6			14.5			54.7			30.7	
Approach LOS		D			B			D			C	

Intersection Summary				
HCM 2000 Control Delay	41.2	HCM 2000 Level of Service	D	
HCM 2000 Volume to Capacity ratio	0.98			
Actuated Cycle Length (s)	94.9	Sum of lost time (s)	14.8	
Intersection Capacity Utilization	87.1%	ICU Level of Service	E	
Analysis Period (min)	15			
c Critical Lane Group				



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	52	1024	733	303	654	25	292	31	157	67	71	46
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.2	5.2	4.5	5.2		5.0	5.0	5.0	4.9	4.9	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		0.95	0.95	1.00	1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.94	1.00	1.00		1.00	1.00	0.96	1.00	0.98	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85	1.00	0.94	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	0.96	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3539	1495	1770	3513		1681	1701	1523	1770	1725	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	0.96	1.00	0.95	1.00	
Satd. Flow (perm)	1770	3539	1495	1770	3513		1681	1701	1523	1770	1725	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	54	1067	764	316	681	26	304	32	164	70	74	48
RTOR Reduction (vph)	0	0	234	0	2	0	0	0	141	0	22	0
Lane Group Flow (vph)	54	1067	530	316	705	0	167	169	23	70	100	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Prot	NA	Perm	Prot	NA		Split	NA	Perm	Split	NA	
Protected Phases	5	2		1	6		8	8		7	7	
Permitted Phases			2						8			
Actuated Green, G (s)	6.6	37.9	37.9	18.6	49.9		14.3	14.3	14.3	11.1	11.1	
Effective Green, g (s)	6.6	37.9	37.9	18.6	49.9		14.3	14.3	14.3	11.1	11.1	
Actuated g/C Ratio	0.07	0.37	0.37	0.18	0.49		0.14	0.14	0.14	0.11	0.11	
Clearance Time (s)	4.5	5.2	5.2	4.5	5.2		5.0	5.0	5.0	4.9	4.9	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	115	1321	558	324	1727		236	239	214	193	188	
v/s Ratio Prot	0.03	0.30		c0.18	0.20		0.10	c0.10		0.04	c0.06	
v/s Ratio Perm			c0.35						0.02			
v/c Ratio	0.47	0.81	0.95	0.98	0.41		0.71	0.71	0.11	0.36	0.53	
Uniform Delay, d1	45.8	28.5	30.9	41.2	16.4		41.6	41.6	38.0	41.9	42.7	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	3.0	5.4	27.4	42.9	0.2		9.3	9.2	0.2	1.2	2.9	
Delay (s)	48.8	33.9	58.3	84.2	16.6		50.9	50.8	38.3	43.1	45.6	
Level of Service	D	C	E	F	B		D	D	D	D	D	
Approach Delay (s)		44.2			37.4			46.7			44.7	
Approach LOS		D			D			D			D	

Intersection Summary				
HCM 2000 Control Delay	42.7	HCM 2000 Level of Service	D	
HCM 2000 Volume to Capacity ratio	0.86			
Actuated Cycle Length (s)	101.5	Sum of lost time (s)	19.6	
Intersection Capacity Utilization	84.1%	ICU Level of Service	E	
Analysis Period (min)	15			
c Critical Lane Group				

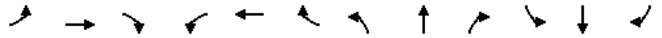


Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	734	594	853	760	168	254
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.2	5.2	4.5	4.5	5.5	5.5
Lane Util. Factor	0.95	1.00	0.97	0.95	0.97	1.00
Frpb, ped/bikes	1.00	0.99	1.00	1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	3539	1567	3433	3539	3433	1529
Flt Permitted	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)	3539	1567	3433	3539	3433	1529
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	773	625	898	800	177	267
RTOR Reduction (vph)	0	11	0	0	0	218
Lane Group Flow (vph)	773	614	898	800	177	49
Confl. Peds. (#/hr)		10	10		10	10
Confl. Bikes (#/hr)		5				5
Turn Type	NA	custom	Prot	NA	Prot	Perm
Protected Phases	2	2	1	6	8	
Permitted Phases		8				8
Actuated Green, G (s)	30.3	46.3	26.5	62.0	16.0	16.0
Effective Green, g (s)	30.3	46.3	26.5	62.0	16.0	16.0
Actuated g/C Ratio	0.34	0.53	0.30	0.70	0.18	0.18
Clearance Time (s)	5.2	5.2	4.5	4.5	5.5	5.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	1218	917	1033	2493	624	278
v/s Ratio Prot	0.22	c0.23	c0.26	0.23	0.05	
v/s Ratio Perm		0.16				0.03
v/c Ratio	0.63	0.67	0.87	0.32	0.28	0.17
Uniform Delay, d1	24.2	15.3	29.1	5.0	31.1	30.4
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	2.5	3.9	7.9	0.1	1.1	1.4
Delay (s)	26.7	19.1	37.0	5.0	32.2	31.8
Level of Service	C	B	D	A	C	C
Approach Delay (s)	23.3			22.0	31.9	
Approach LOS	C			C	C	

Intersection Summary				
HCM 2000 Control Delay	23.8	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.79			
Actuated Cycle Length (s)	88.0	Sum of lost time (s)	15.2	
Intersection Capacity Utilization	70.6%	ICU Level of Service	C	
Analysis Period (min)	15			
c Critical Lane Group				

Movement	EBU	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations							
Volume (vph)	9	867	145	170	1386	165	65
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5		4.5	4.5	4.5	4.5
Lane Util. Factor	1.00	0.95		0.97	0.95	0.97	0.88
Frpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	0.95
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00
Frt	1.00	0.98		1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	0.95	1.00
Satd. Flow (prot)	1770	3449		3433	3539	3433	2649
Flt Permitted	0.95	1.00		0.95	1.00	0.95	1.00
Satd. Flow (perm)	1770	3449		3433	3539	3433	2649
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	10	942	158	185	1507	179	71
RTOR Reduction (vph)	0	17	0	0	0	0	55
Lane Group Flow (vph)	10	1083	0	185	1507	179	16
Confl. Peds. (#/hr)			10	10		10	10
Confl. Bikes (#/hr)			5				5
Turn Type	Prot	NA		Prot	NA	Prot	Perm
Protected Phases	5	2		1	6	8	
Permitted Phases							8
Actuated Green, G (s)	0.8	31.4		9.1	39.7	16.0	16.0
Effective Green, g (s)	0.8	31.4		9.1	39.7	16.0	16.0
Actuated g/C Ratio	0.01	0.45		0.13	0.57	0.23	0.23
Clearance Time (s)	4.5	4.5		4.5	4.5	4.5	4.5
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	20	1547		446	2007	784	605
v/s Ratio Prot	0.01	0.31		c0.05	c0.43	c0.05	
v/s Ratio Perm							0.01
v/c Ratio	0.50	0.70		0.41	0.75	0.23	0.03
Uniform Delay, d1	34.4	15.5		28.0	11.4	22.0	21.0
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2	18.3	2.7		0.6	2.6	0.7	0.1
Delay (s)	52.7	18.2		28.6	14.1	22.7	21.0
Level of Service	D	B		C	B	C	C
Approach Delay (s)		18.5			15.7	22.2	
Approach LOS		B			B	C	

Intersection Summary				
HCM 2000 Control Delay	17.2	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.61			
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	13.5	
Intersection Capacity Utilization	66.2%	ICU Level of Service	C	
Analysis Period (min)	15			
c Critical Lane Group				



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	4	1	4	2	0	22	0	214	6	50	205	7
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72
Hourly flow rate (vph)	6	1	6	3	0	31	0	297	8	69	285	10
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)											142	
pX, platoon unblocked												
vC, conflicting volume	760	734	290	736	735	301	294			306		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	760	734	290	736	735	301	294			306		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	98	100	99	99	100	96	100			94		
cM capacity (veh/h)	296	328	750	317	328	738	1267			1255		

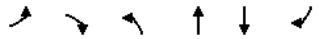
Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	12	33	306	364
Volume Left	6	3	0	69
Volume Right	6	31	8	10
cSH	411	665	1267	1255
Volume to Capacity	0.03	0.05	0.00	0.06
Queue Length 95th (ft)	2	4	0	4
Control Delay (s)	14.0	10.7	0.0	2.0
Lane LOS	B	B		A
Approach Delay (s)	14.0	10.7	0.0	2.0
Approach LOS	B	B		

Intersection Summary				
Average Delay	1.7			
Intersection Capacity Utilization	38.9%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	0	135	92	0	102	47
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82
Hourly flow rate (vph)	0	165	112	0	124	57
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						635
pX, platoon unblocked						
vC, conflicting volume	418	112			112	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	418	112			112	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	83			92	
cM capacity (veh/h)	541	941			1477	

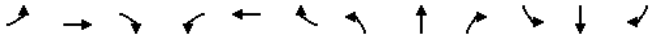
Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	165	112	182
Volume Left	0	0	124
Volume Right	165	0	0
cSH	941	1700	1477
Volume to Capacity	0.17	0.07	0.08
Queue Length 95th (ft)	16	0	7
Control Delay (s)	9.6	0.0	5.5
Lane LOS	A		A
Approach Delay (s)	9.6	0.0	5.5
Approach LOS	A		

Intersection Summary			
Average Delay		5.6	
Intersection Capacity Utilization		29.8%	ICU Level of Service A
Analysis Period (min)		15	



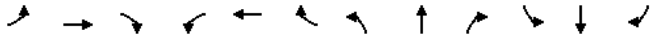
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	323	43	456	316	1245	21
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.1	4.7	4.7	5.8	5.8	
Lane Util. Factor	0.97	1.00	1.00	0.95	0.95	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.85	1.00	1.00	1.00	
Flt Protected	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	3433	1583	1770	3539	3527	
Flt Permitted	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (perm)	3433	1583	1770	3539	3527	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	340	45	480	333	1311	22
RTOR Reduction (vph)	0	6	0	0	1	0
Lane Group Flow (vph)	340	39	480	333	1332	0
Confl. Peds. (#/hr)						10
Confl. Bikes (#/hr)						5
Turn Type	Prot	pm+ov	Prot	NA	NA	
Protected Phases	4	5	5	2	6	
Permitted Phases		4				
Actuated Green, G (s)	14.1	42.1	28.0	73.1	40.4	
Effective Green, g (s)	14.1	42.1	28.0	73.1	40.4	
Actuated g/C Ratio	0.14	0.43	0.29	0.75	0.41	
Clearance Time (s)	5.1	4.7	4.7	5.8	5.8	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	493	679	505	2637	1452	
v/s Ratio Prot	c0.10	0.02	c0.27	0.09	c0.38	
v/s Ratio Perm		0.01				
v/c Ratio	0.69	0.06	0.95	0.13	0.92	
Uniform Delay, d1	39.9	16.4	34.4	3.5	27.3	
Progression Factor	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	4.0	0.0	27.9	0.1	10.7	
Delay (s)	43.9	16.4	62.3	3.6	37.9	
Level of Service	D	B	E	A	D	
Approach Delay (s)	40.7			38.3	37.9	
Approach LOS	D			D	D	

Intersection Summary			
HCM 2000 Control Delay	38.5	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.89		
Actuated Cycle Length (s)	98.1	Sum of lost time (s)	15.6
Intersection Capacity Utilization	82.6%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			



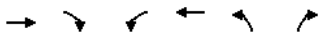
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	125	152	28	433	51	274	34	396	127	259	605	100
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.1			5.1	5.1	4.7	5.5	5.5	4.7	5.5	
Lane Util. Factor		1.00			1.00	1.00	1.00	0.95	1.00	1.00	0.95	
Frpb, ped/bikes		1.00			1.00	0.96	1.00	1.00	0.94	1.00	0.99	
Flpb, ped/bikes		1.00			1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt		0.99			1.00	0.85	1.00	1.00	0.85	1.00	0.98	
Flt Protected		0.98			0.96	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1797			1783	1527	1770	3539	1483	1770	3435	
Flt Permitted		0.98			0.96	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)		1797			1783	1527	1770	3539	1483	1770	3435	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	129	157	29	446	53	282	35	408	131	267	624	103
RTOR Reduction (vph)	0	4	0	0	0	123	0	0	109	0	11	0
Lane Group Flow (vph)	0	311	0	0	499	159	35	408	22	267	716	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Split	NA		Split	NA	Perm	Prot	NA	Perm	Prot	NA	
Protected Phases	4	4		3	3		5	2		1	6	
Permitted Phases						3			2			
Actuated Green, G (s)		22.6			29.0	29.0	2.7	18.0	18.0	16.3	31.6	
Effective Green, g (s)		22.6			29.0	29.0	2.7	18.0	18.0	16.3	31.6	
Actuated g/C Ratio		0.21			0.27	0.27	0.03	0.17	0.17	0.15	0.30	
Clearance Time (s)		5.1			5.1	5.1	4.7	5.5	5.5	4.7	5.5	
Vehicle Extension (s)		3.0			3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)		382			486	416	44	599	251	271	1021	
v/s Ratio Prot		c0.17			c0.28		0.02	0.12		c0.15	c0.21	
v/s Ratio Perm						0.10			0.01			
v/c Ratio		0.81			1.03	0.38	0.80	0.68	0.09	0.99	0.70	
Uniform Delay, d1		39.9			38.6	31.4	51.5	41.5	37.2	44.9	33.2	
Progression Factor		1.00			1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2		12.5			47.8	0.6	62.9	6.2	0.7	50.2	4.0	
Delay (s)		52.4			86.5	32.0	114.5	47.6	37.9	95.1	37.2	
Level of Service		D			F	C	F	D	D	F	D	
Approach Delay (s)		52.4			66.8			49.5			52.7	
Approach LOS		D			E			D			D	

Intersection Summary				
HCM 2000 Control Delay	56.1	HCM 2000 Level of Service	E	
HCM 2000 Volume to Capacity ratio	0.91			
Actuated Cycle Length (s)	106.3	Sum of lost time (s)	20.4	
Intersection Capacity Utilization	88.1%	ICU Level of Service	E	
Analysis Period (min)	15			
c Critical Lane Group				



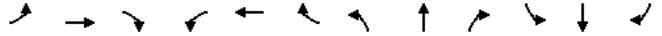
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	86	90	148	788	76	40	79	762	236	40	971	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.9	4.9	4.5	4.9		4.5	5.3		4.5	5.0	
Lane Util. Factor	1.00	1.00	1.00	0.97	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	1.00	0.85	1.00	0.95		1.00	0.96		1.00	1.00	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1863	1583	3433	1766		1770	3414		1770	3526	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	1863	1583	3433	1766		1770	3414		1770	3526	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	89	93	153	812	78	41	81	786	243	41	1001	26
RTOR Reduction (vph)	0	0	136	0	19	0	0	26	0	0	2	0
Lane Group Flow (vph)	89	93	17	812	100	0	81	1003	0	41	1025	0
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4									
Actuated Green, G (s)	8.9	11.2	11.2	26.8	29.1		9.0	38.4		4.4	34.1	
Effective Green, g (s)	8.9	11.2	11.2	26.8	29.1		9.0	38.4		4.4	34.1	
Actuated g/C Ratio	0.09	0.11	0.11	0.27	0.29		0.09	0.38		0.04	0.34	
Clearance Time (s)	4.5	4.9	4.9	4.5	4.9		4.5	5.3		4.5	5.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	157	208	177	920	513		159	1310		77	1202	
v/s Ratio Prot	0.05	c0.05		c0.24	0.06		c0.05	c0.29		0.02	c0.29	
v/s Ratio Perm			0.01									
v/c Ratio	0.57	0.45	0.10	0.88	0.19		0.51	0.77		0.53	0.85	
Uniform Delay, d1	43.7	41.5	39.9	35.1	26.6		43.4	26.9		46.8	30.6	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	4.6	1.5	0.2	10.0	0.2		2.6	4.3		6.9	7.8	
Delay (s)	48.3	43.0	40.1	45.1	26.8		46.0	31.2		53.7	38.4	
Level of Service	D	D	D	D	C		D	C		D	D	
Approach Delay (s)		43.1			42.8			32.3			39.0	
Approach LOS		D			D			C			D	

Intersection Summary				
HCM 2000 Control Delay	38.2	HCM 2000 Level of Service	D	
HCM 2000 Volume to Capacity ratio	0.77			
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	19.2	
Intersection Capacity Utilization	73.3%	ICU Level of Service	D	
Analysis Period (min)	15			
c Critical Lane Group				



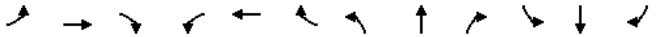
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	400	0	0	1059	472	274
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.1			5.1	5.1	5.1
Lane Util. Factor	0.95			0.95	0.97	0.91
Frt	1.00			1.00	0.99	0.85
Flt Protected	1.00			1.00	0.96	1.00
Satd. Flow (prot)	3539			3539	3413	1441
Flt Permitted	1.00			1.00	0.96	1.00
Satd. Flow (perm)	3539			3539	3413	1441
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	421	0	0	1115	497	288
RTOR Reduction (vph)	0	0	0	0	9	194
Lane Group Flow (vph)	421	0	0	1115	531	51
Turn Type	NA			NA	Prot	Perm
Protected Phases	2			6	4	
Permitted Phases						4
Actuated Green, G (s)	12.7			24.2	13.8	13.8
Effective Green, g (s)	12.7			24.2	13.8	13.8
Actuated g/C Ratio	0.19			0.37	0.21	0.21
Clearance Time (s)	5.1			5.1	5.1	5.1
Vehicle Extension (s)	3.0			3.0	3.0	3.0
Lane Grp Cap (vph)	680			1297	713	301
v/s Ratio Prot	c0.12			c0.32	c0.16	
v/s Ratio Perm						0.04
v/c Ratio	0.62			0.86	0.74	0.17
Uniform Delay, d1	24.4			19.3	24.4	21.4
Progression Factor	1.00			1.00	1.00	1.00
Incremental Delay, d2	1.7			5.9	4.2	0.3
Delay (s)	26.1			25.2	28.7	21.7
Level of Service	C			C	C	C
Approach Delay (s)	26.1			25.2	26.5	
Approach LOS	C			C	C	

Intersection Summary				
HCM 2000 Control Delay	25.8	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.77			
Actuated Cycle Length (s)	66.0	Sum of lost time (s)	15.3	
Intersection Capacity Utilization	54.1%	ICU Level of Service	A	
Analysis Period (min)	15			
c Critical Lane Group				



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	140	490	49	240	875	26	114	125	233	16	8	53
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.9	4.0	4.5	4.9		4.9	4.9	4.9		4.9	4.9
Lane Util. Factor	1.00	0.95	1.00	0.97	0.95		1.00	0.95	0.95		1.00	1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	0.99	0.97		1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00		1.00	0.95	0.85		1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00		0.97	1.00
Satd. Flow (prot)	1770	3539	1583	3433	3519		1770	1665	1463		1804	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00		0.97	1.00
Satd. Flow (perm)	1770	3539	1583	3433	3519		1770	1665	1463		1804	1583
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	151	527	53	258	941	28	123	134	251	17	9	57
RTOR Reduction (vph)	0	0	0	0	3	0	0	0	0	0	0	0
Lane Group Flow (vph)	151	527	53	258	966	0	123	202	183	0	26	57
Confl. Peds. (#/hr)						10			10			
Confl. Bikes (#/hr)						5			5			
Turn Type	Prot	NA	Free	Prot	NA		Split	NA	Perm	Split	NA	Perm
Protected Phases	5	2		1	6		3	3		4	4	
Permitted Phases			Free						3			4
Actuated Green, G (s)	4.1	15.9	60.3	4.1	15.9		16.2	16.2	16.2		4.9	4.9
Effective Green, g (s)	4.1	15.9	60.3	4.1	15.9		16.2	16.2	16.2		4.9	4.9
Actuated g/C Ratio	0.07	0.26	1.00	0.07	0.26		0.27	0.27	0.27		0.08	0.08
Clearance Time (s)	4.5	4.9		4.5	4.9		4.9	4.9	4.9		4.9	4.9
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	120	933	1583	233	927		475	447	393		146	128
v/s Ratio Prot	c0.09	0.15		0.08	c0.27		0.07	0.12			0.01	
v/s Ratio Perm			0.03						c0.13			c0.04
v/c Ratio	1.26	0.56	0.03	1.11	1.04		0.26	0.45	0.47		0.18	0.45
Uniform Delay, d1	28.1	19.2	0.0	28.1	22.2		17.3	18.4	18.4		25.8	26.4
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	167.1	2.5	0.0	90.7	41.1		1.3	3.3	3.9		0.6	2.5
Delay (s)	195.2	21.7	0.0	118.8	63.3		18.7	21.6	22.4		26.4	28.9
Level of Service	F	C	A	F	E		B	C	C		C	C
Approach Delay (s)		56.0			75.0			21.2			28.1	
Approach LOS		E			E			C			C	

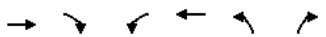
Intersection Summary				
HCM 2000 Control Delay	57.3	HCM 2000 Level of Service	E	
HCM 2000 Volume to Capacity ratio	0.76			
Actuated Cycle Length (s)	60.3	Sum of lost time (s)	19.2	
Intersection Capacity Utilization	59.3%	ICU Level of Service	B	
Analysis Period (min)	15			
c Critical Lane Group				



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	10	429	621	411	1082	111	0	0	0	51	200	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.7	5.1		4.7	5.1						5.5	
Lane Util. Factor	1.00	0.95		1.00	0.95						1.00	
Frpb, ped/bikes	1.00	0.99		1.00	1.00						1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00						1.00	
Frt	1.00	0.91		1.00	0.99						0.99	
Flt Protected	0.95	1.00		0.95	1.00						0.99	
Satd. Flow (prot)	1763	3181		1770	3475						1822	
Flt Permitted	0.95	1.00		0.95	1.00						0.99	
Satd. Flow (perm)	1763	3181		1770	3475						1822	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	11	461	668	442	1163	119	0	0	0	55	215	22
RTOR Reduction (vph)	0	131	0	0	10	0	0	0	0	0	4	0
Lane Group Flow (vph)	11	998	0	442	1272	0	0	0	0	0	288	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Prot	NA		Prot	NA					Split	NA	
Protected Phases	5	2		1	6					4	4	
Permitted Phases												
Actuated Green, G (s)	0.8	26.2		16.3	41.7						16.0	
Effective Green, g (s)	0.8	26.2		16.3	41.7						16.0	
Actuated g/C Ratio	0.01	0.36		0.22	0.57						0.22	
Clearance Time (s)	4.7	5.1		4.7	5.1						5.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0						3.0	
Lane Grp Cap (vph)	19	1129		390	1963						395	
v/s Ratio Prot	0.01	c0.31		c0.25	0.37						c0.16	
v/s Ratio Perm												
v/c Ratio	0.58	1.05dr		1.13	0.65						0.73	
Uniform Delay, d1	36.3	22.4		28.8	11.0						26.9	
Progression Factor	1.00	1.00		1.00	1.00						1.00	
Incremental Delay, d2	36.3	8.5		87.0	0.7						11.2	
Delay (s)	72.6	30.8		115.8	11.8						38.1	
Level of Service	E	C		F	B						D	
Approach Delay (s)		31.2			38.4			0.0			38.1	
Approach LOS		C			D			A			D	

Intersection Summary				
HCM 2000 Control Delay	35.8	HCM 2000 Level of Service	D	
HCM 2000 Volume to Capacity ratio	0.91			
Actuated Cycle Length (s)	73.8	Sum of lost time (s)	15.3	
Intersection Capacity Utilization	89.3%	ICU Level of Service	E	
Analysis Period (min)	15			

dr Defacto Right Lane. Recode with 1 though lane as a right lane.
c Critical Lane Group



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	501	0	0	845	719	244
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.5			5.5	4.5	5.5
Lane Util. Factor	0.95			0.95	0.97	1.00
Frpb, ped/bikes	1.00			1.00	1.00	0.98
Flpb, ped/bikes	1.00			1.00	1.00	1.00
Frt	1.00			1.00	1.00	0.85
Flt Protected	1.00			1.00	0.95	1.00
Satd. Flow (prot)	3539			3539	3433	1550
Flt Permitted	1.00			1.00	0.95	1.00
Satd. Flow (perm)	3539			3539	3433	1550
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	527	0	0	889	757	257
RTOR Reduction (vph)	0	0	0	0	0	142
Lane Group Flow (vph)	527	0	0	889	757	115
Confl. Peds. (#/hr)						10
Confl. Bikes (#/hr)						5
Turn Type	NA			NA	Prot	Perm
Protected Phases	2			6	4	
Permitted Phases						6
Actuated Green, G (s)	22.2			22.2	17.2	22.2
Effective Green, g (s)	22.2			22.2	17.2	22.2
Actuated g/C Ratio	0.45			0.45	0.35	0.45
Clearance Time (s)	5.5			5.5	4.5	5.5
Vehicle Extension (s)	3.0			3.0	3.0	3.0
Lane Grp Cap (vph)	1590			1590	1195	696
v/s Ratio Prot	0.15			c0.25	c0.22	
v/s Ratio Perm						0.07
v/c Ratio	0.33			0.56	0.63	0.17
Uniform Delay, d1	8.8			10.0	13.5	8.1
Progression Factor	1.00			1.00	1.00	1.00
Incremental Delay, d2	0.1			0.4	1.1	0.1
Delay (s)	8.9			10.4	14.6	8.2
Level of Service	A			B	B	A
Approach Delay (s)	8.9			10.4	13.0	
Approach LOS	A			B	B	

Intersection Summary				
HCM 2000 Control Delay	11.2	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.59			
Actuated Cycle Length (s)	49.4	Sum of lost time (s)	10.0	
Intersection Capacity Utilization	52.2%	ICU Level of Service	A	
Analysis Period (min)	15			

c Critical Lane Group

Appendix N

Horizon Year LOS Calculations

8:00-9:00 AM Horizon Year 2035
1: Aero Dr & Convoy St
HCM Signalized Intersection Capacity Analysis

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	4	3	1	465	60	691	0	553	418	398	427	23
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.9		4.9	4.9	4.9		5.2		4.5	4.5	
Lane Util. Factor		1.00		0.95	0.91	0.95		0.95		0.97	0.95	
Frpb, ped/bikes		0.99		1.00	0.99	0.98		0.99		1.00	1.00	
Flpb, ped/bikes		1.00		1.00	1.00	1.00		1.00		1.00	1.00	
Frt		0.98		1.00	0.89	0.85		0.94		1.00	0.99	
Flt Protected		0.98		0.95	0.99	1.00		1.00		0.95	1.00	
Satd. Flow (prot)		1765		1681	1482	1481		3265		3433	3503	
Flt Permitted		0.98		0.95	0.99	1.00		1.00		0.95	1.00	
Satd. Flow (perm)		1765		1681	1482	1481		3265		3433	3503	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	4	3	1	489	63	727	0	582	440	419	449	24
RTOR Reduction (vph)	0	1	0	0	95	273	0	162	0	0	5	0
Lane Group Flow (vph)	0	7	0	440	330	141	0	860	0	419	468	0
Confl. Peds. (#/hr)			10						10			10
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Split	NA		Split	NA	Perm		NA		Prot	NA	
Protected Phases	7	7		8	8			2		1	6	
Permitted Phases						8						
Actuated Green, G (s)		1.4		30.7	30.7	30.7		26.9		11.5	43.6	
Effective Green, g (s)		1.4		30.7	30.7	30.7		26.9		11.5	43.6	
Actuated g/C Ratio		0.02		0.34	0.34	0.34		0.30		0.13	0.48	
Clearance Time (s)		4.9		4.9	4.9	4.9		5.2		4.5	4.5	
Vehicle Extension (s)		3.0		3.0	3.0	3.0		3.0		3.0	3.0	
Lane Grp Cap (vph)		27		573	505	505		975		438	1697	
v/s Ratio Prot		c0.00		c0.26	0.22			c0.26		c0.12	0.13	
v/s Ratio Perm						0.10						
v/c Ratio		0.26		0.77	0.65	0.28		0.88		0.96	0.28	
Uniform Delay, d1		43.8		26.5	25.1	21.6		30.0		39.0	13.8	
Progression Factor		1.00		1.00	1.00	1.00		1.00		1.00	1.00	
Incremental Delay, d2		5.1		6.1	3.0	0.3		11.4		31.7	0.4	
Delay (s)		48.9		32.6	28.2	21.9		41.4		70.7	14.2	
Level of Service		D		C	C	C		D		E	B	
Approach Delay (s)		48.9			27.7			41.4			40.8	
Approach LOS		D			C			D			D	

Intersection Summary			
HCM 2000 Control Delay	35.8	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	19.5
Intersection Capacity Utilization	80.8%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

LOS Engineering, Inc.
Synchro 8 Report

8:00-9:00 AM Horizon Year 2035
2: Kearny Villa Rd & Aero Dr
HCM Signalized Intersection Capacity Analysis

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	157	527	106	282	875	523	345	208	460	192	142	43
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.3		4.5	5.3		4.5	5.7	5.7	4.5	6.0	
Lane Util. Factor	1.00	0.95		0.97	0.95		0.97	0.95	1.00	0.97	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	0.99		1.00	1.00	0.98	1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.97		1.00	0.94		1.00	1.00	0.85	1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3429		3433	3296		3433	3539	1559	3433	3384	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	3429		3433	3296		3433	3539	1559	3433	3384	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	165	555	112	297	921	551	363	219	484	202	149	45
RTOR Reduction (vph)	0	13	0	0	74	0	0	0	84	0	24	0
Lane Group Flow (vph)	165	654	0	297	1398	0	363	219	400	202	170	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Prot	NA		Prot	NA		Prot	NA	custom	Prot	NA	
Protected Phases	5	2		1	6		3	8	8	7	4	
Permitted Phases									1			
Actuated Green, G (s)	10.5	48.0		15.3	52.8		15.9	20.6	35.9	11.6	16.0	
Effective Green, g (s)	10.5	48.0		15.3	52.8		15.9	20.6	35.9	11.6	16.0	
Actuated g/C Ratio	0.09	0.42		0.13	0.46		0.14	0.18	0.31	0.10	0.14	
Clearance Time (s)	4.5	5.3		4.5	5.3		4.5	5.7	5.7	4.5	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	160	1425		454	1506		472	631	561	344	468	
v/s Ratio Prot	c0.09	0.19		0.09	c0.42		c0.11	0.06	c0.13	0.06	0.05	
v/s Ratio Perm									0.13			
v/c Ratio	1.03	0.46		0.65	0.93		0.77	0.35	0.71	0.59	0.36	
Uniform Delay, d1	52.5	24.4		47.6	29.6		48.0	41.6	35.2	49.7	45.1	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	79.6	0.2		3.4	10.3		7.4	0.3	4.3	2.6	0.5	
Delay (s)	132.1	24.6		51.0	39.8		55.4	41.9	39.5	52.2	45.6	
Level of Service	F	C		D	D		E	D	D	D	D	
Approach Delay (s)		45.9			41.7			45.4			49.0	
Approach LOS		D			D			D			D	

Intersection Summary			
HCM 2000 Control Delay	44.2	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.92		
Actuated Cycle Length (s)	115.5	Sum of lost time (s)	20.3
Intersection Capacity Utilization	84.5%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

LOS Engineering, Inc.
Synchro 8 Report

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	10	965	202	71	1573	14	94	0	42	3	0	16
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.3		4.5	5.3		4.9	4.9			4.9	4.9
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00			1.00	1.00
Frpb, ped/bikes	1.00	0.99		1.00	1.00		1.00	0.97			1.00	0.97
Flpb, ped/bikes	1.00	1.00		1.00	1.00		0.99	1.00			0.99	1.00
Frt	1.00	0.97		1.00	1.00		1.00	0.85			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00			0.95	1.00
Satd. Flow (prot)	1770	3422		1770	3533		1748	1532			1750	1532
Flt Permitted	0.95	1.00		0.95	1.00		0.76	1.00			0.73	1.00
Satd. Flow (perm)	1770	3422		1770	3533		1391	1532			1341	1532
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	11	1016	213	75	1656	15	99	0	44	3	0	17
RTOR Reduction (vph)	0	17	0	0	1	0	0	39	0	0	0	15
Lane Group Flow (vph)	11	1212	0	75	1670	0	99	5	0	0	3	2
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	Perm
Protected Phases	5	2		1	6			4			4	
Permitted Phases							4			4		4
Actuated Green, G (s)	1.1	35.0		6.4	40.3		7.9	7.9			7.9	7.9
Effective Green, g (s)	1.1	35.0		6.4	40.3		7.9	7.9			7.9	7.9
Actuated g/C Ratio	0.02	0.55		0.10	0.63		0.12	0.12			0.12	0.12
Clearance Time (s)	4.5	5.3		4.5	5.3		4.9	4.9			4.9	4.9
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0			3.0	3.0
Lane Grp Cap (vph)	30	1871		177	2224		171	189			165	189
v/s Ratio Prot	0.01	0.35		c0.04	c0.47			0.00				
v/s Ratio Perm							c0.07				0.00	0.00
v/c Ratio	0.37	0.65		0.42	0.75		0.58	0.03			0.02	0.01
Uniform Delay, d1	31.1	10.2		27.1	8.3		26.5	24.7			24.6	24.6
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00			1.00	1.00
Incremental Delay, d2	7.4	0.8		1.6	1.5		4.7	0.1			0.0	0.0
Delay (s)	38.6	11.0		28.7	9.8		31.2	24.7			24.7	24.6
Level of Service	D	B		C	A		C	C			C	C
Approach Delay (s)		11.2			10.6			29.2			24.7	
Approach LOS		B			B			C			C	

Intersection Summary					
HCM 2000 Control Delay	11.8	HCM 2000 Level of Service		B	
HCM 2000 Volume to Capacity ratio	0.73				
Actuated Cycle Length (s)	64.0	Sum of lost time (s)		14.7	
Intersection Capacity Utilization	71.8%	ICU Level of Service		C	
Analysis Period (min)	15				
c Critical Lane Group					

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	77	762	171	65	1334	8	284	4	58	3	0	17
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.4		4.5	5.3			4.9			4.9	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	
Frpb, ped/bikes	1.00	0.99		1.00	1.00			1.00			0.98	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			0.99			1.00	
Frt	1.00	0.97		1.00	1.00			0.98			0.88	
Flt Protected	0.95	1.00		0.95	1.00			0.96			0.99	
Satd. Flow (prot)	1770	3413		1770	3535			1723			1598	
Flt Permitted	0.95	1.00		0.95	1.00			0.75			0.95	
Satd. Flow (perm)	1770	3413		1770	3535			1345			1531	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	81	802	180	68	1404	8	299	4	61	3	0	18
RTOR Reduction (vph)	0	27	0	0	1	0	0	11	0	0	15	0
Lane Group Flow (vph)	81	955	0	68	1411	0	0	353	0	0	6	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8			4		
Actuated Green, G (s)	3.5	30.2		3.9	30.7			19.5			19.5	
Effective Green, g (s)	3.5	30.2		3.9	30.7			19.5			19.5	
Actuated g/C Ratio	0.05	0.44		0.06	0.45			0.29			0.29	
Clearance Time (s)	4.5	5.4		4.5	5.3			4.9			4.9	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	90	1506		100	1586			383			436	
v/s Ratio Prot	c0.05	0.28		0.04	c0.40							
v/s Ratio Perm								c0.26			0.00	
v/c Ratio	0.90	0.63		0.68	0.89			0.92			0.01	
Uniform Delay, d1	32.3	14.8		31.6	17.3			23.7			17.5	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	63.0	2.0		17.3	7.9			27.3			0.0	
Delay (s)	95.3	16.9		49.0	25.2			51.0			17.6	
Level of Service	F	B		D	C			D			B	
Approach Delay (s)		22.8			26.3			51.0			17.6	
Approach LOS		C			C			D			B	

Intersection Summary					
HCM 2000 Control Delay	28.1	HCM 2000 Level of Service		C	
HCM 2000 Volume to Capacity ratio	0.90				
Actuated Cycle Length (s)	68.4	Sum of lost time (s)		14.8	
Intersection Capacity Utilization	80.0%	ICU Level of Service		D	
Analysis Period (min)	15				
c Critical Lane Group					

8:00-9:00 AM Horizon Year 2035
5: Sandrock Rd & Aero Dr

HCM Signalized Intersection Capacity Analysis

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	45	559	202	128	812	61	560	42	232	16	7	18
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.2	5.2	4.5	5.2		5.0	5.0	5.0	4.9	4.9	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		0.95	0.95	1.00	1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.95	1.00	1.00		1.00	1.00	0.97	1.00	0.97	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85	1.00	0.89	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	0.96	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3539	1510	1770	3491		1681	1697	1538	1770	1605	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	0.96	1.00	0.95	1.00	
Satd. Flow (perm)	1770	3539	1510	1770	3491		1681	1697	1538	1770	1605	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	47	588	213	135	855	64	589	44	244	17	7	19
RTOR Reduction (vph)	0	0	146	0	6	0	0	0	167	0	18	0
Lane Group Flow (vph)	47	588	67	135	913	0	318	315	77	17	8	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Prot	NA	Perm	Prot	NA		Split	NA	Perm	Split	NA	
Protected Phases	5	2		1	6		8	8		7	7	
Permitted Phases			2						8			
Actuated Green, G (s)	2.2	21.0	21.0	6.7	25.5		16.1	16.1	16.1	3.6	3.6	
Effective Green, g (s)	2.2	21.0	21.0	6.7	25.5		16.1	16.1	16.1	3.6	3.6	
Actuated g/C Ratio	0.03	0.31	0.31	0.10	0.38		0.24	0.24	0.24	0.05	0.05	
Clearance Time (s)	4.5	5.2	5.2	4.5	5.2		5.0	5.0	5.0	4.9	4.9	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	58	1109	473	177	1328		403	407	369	95	86	
v/s Ratio Prot	0.03	0.17		c0.08	c0.26		c0.19	0.19		c0.01	0.00	
v/s Ratio Perm			0.04						0.05			
v/c Ratio	0.81	0.53	0.14	0.76	0.69		0.79	0.77	0.21	0.18	0.09	
Uniform Delay, d1	32.2	18.9	16.5	29.4	17.4		23.9	23.8	20.4	30.3	30.1	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	55.8	1.8	0.6	17.5	1.5		9.9	8.9	0.3	0.9	0.5	
Delay (s)	88.0	20.8	17.1	46.9	18.9		33.7	32.6	20.6	31.2	30.6	
Level of Service	F	C	B	D	B		C	C	C	C	C	
Approach Delay (s)		23.6			22.5			29.7			30.8	
Approach LOS		C			C			C			C	

Intersection Summary				
HCM 2000 Control Delay	25.2	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.72			
Actuated Cycle Length (s)	67.0	Sum of lost time (s)	19.6	
Intersection Capacity Utilization	63.3%	ICU Level of Service	B	
Analysis Period (min)	15			
c Critical Lane Group				

8:00-9:00 AM Horizon Year 2035
6: Ruffin Rd & Aero Dr

HCM Signalized Intersection Capacity Analysis

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	598	128	185	573	490	572
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.2	5.2	4.5	4.5	5.5	5.5
Lane Util. Factor	0.95	1.00	0.97	0.95	0.97	1.00
Frpb, ped/bikes	1.00	0.99	1.00	1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	3539	1562	3433	3539	3433	1542
Flt Permitted	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)	3539	1562	3433	3539	3433	1542
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	629	135	195	603	516	602
RTOR Reduction (vph)	0	22	0	0	0	192
Lane Group Flow (vph)	629	113	195	603	516	410
Confl. Peds. (#/hr)		10	10		10	10
Confl. Bikes (#/hr)		5				5
Turn Type	NA	custom	Prot	NA	Prot	Perm
Protected Phases	2	2	1	6	8	
Permitted Phases		8				8
Actuated Green, G (s)	17.4	39.3	5.5	28.1	21.9	21.9
Effective Green, g (s)	17.4	39.3	5.5	28.1	21.9	21.9
Actuated g/C Ratio	0.29	0.65	0.09	0.47	0.36	0.36
Clearance Time (s)	5.2	5.2	4.5	4.5	5.5	5.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	1026	1158	314	1657	1253	562
v/s Ratio Prot	c0.18	0.03	c0.06	0.17	0.15	
v/s Ratio Perm		0.04				c0.27
v/c Ratio	0.61	0.10	0.62	0.36	0.41	0.73
Uniform Delay, d1	18.4	3.8	26.2	10.2	14.2	16.5
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	2.7	0.2	3.8	0.1	1.0	8.1
Delay (s)	21.1	4.0	30.0	10.4	15.2	24.6
Level of Service	C	A	C	B	B	C
Approach Delay (s)	18.1			15.2	20.3	
Approach LOS	B			B	C	

Intersection Summary				
HCM 2000 Control Delay	18.1	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.67			
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	15.2	
Intersection Capacity Utilization	61.9%	ICU Level of Service	B	
Analysis Period (min)	15			
c Critical Lane Group				

Movement	EBU	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations							
Volume (vph)	0	1083	132	129	672	93	63
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5		4.5	4.5	4.5	4.5
Lane Util. Factor		0.95		0.97	0.95	0.97	0.88
Frpb, ped/bikes		1.00		1.00	1.00	1.00	0.95
Flpb, ped/bikes		1.00		1.00	1.00	1.00	1.00
Frt		0.98		1.00	1.00	1.00	0.85
Flt Protected		1.00		0.95	1.00	0.95	1.00
Satd. Flow (prot)		3471		3433	3539	3433	2643
Flt Permitted		1.00		0.95	1.00	0.95	1.00
Satd. Flow (perm)		3471		3433	3539	3433	2643
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	1140	139	136	707	98	66
RTOR Reduction (vph)	0	10	0	0	0	0	52
Lane Group Flow (vph)	0	1269	0	136	707	98	14
Confl. Peds. (#/hr)			10	10		10	10
Confl. Bikes (#/hr)			5				5
Turn Type	Prot	NA		Prot	NA	Prot	Perm
Protected Phases	5	2		1	6	8	
Permitted Phases							8
Actuated Green, G (s)		38.3		7.1	49.9	16.1	16.1
Effective Green, g (s)		38.3		7.1	49.9	16.1	16.1
Actuated g/C Ratio		0.51		0.09	0.67	0.21	0.21
Clearance Time (s)		4.5		4.5	4.5	4.5	4.5
Vehicle Extension (s)		3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)		1772		324	2354	736	567
v/s Ratio Prot		c0.37		c0.04	0.20	c0.03	
v/s Ratio Perm							0.01
v/c Ratio		0.72		0.42	0.30	0.13	0.02
Uniform Delay, d1		14.2		32.0	5.2	23.8	23.3
Progression Factor		1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2		2.5		0.9	0.3	0.4	0.1
Delay (s)		16.7		32.9	5.6	24.2	23.3
Level of Service		B		C	A	C	C
Approach Delay (s)		16.7			10.0	23.8	
Approach LOS		B			A	C	

Intersection Summary				
HCM 2000 Control Delay	14.7	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.53			
Actuated Cycle Length (s)	75.0	Sum of lost time (s)	13.5	
Intersection Capacity Utilization	62.5%	ICU Level of Service	B	
Analysis Period (min)	15			
c Critical Lane Group				

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	2	0	0	9	0	126	1	13	257	2
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	0	0	2	0	0	9	0	133	1	14	271	2
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)											142	
pX, platoon unblocked												
vC, conflicting volume	442	433	272	434	433	133	273			134		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	442	433	272	434	433	133	273			134		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	100	100	100	99	100			99		
cM capacity (veh/h)	517	511	767	527	511	916	1291			1451		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	2	9	134	286
Volume Left	0	0	0	14
Volume Right	2	9	1	2
cSH	767	916	1291	1451
Volume to Capacity	0.00	0.01	0.00	0.01
Queue Length 95th (ft)	0	1	0	1
Control Delay (s)	9.7	9.0	0.0	0.4
Lane LOS	A	A		A
Approach Delay (s)	9.7	9.0	0.0	0.4
Approach LOS	A	A		

Intersection Summary				
Average Delay	0.5			
Intersection Capacity Utilization	34.2%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	1	23	103	2	78	142
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	1	24	108	2	82	149
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						635
pX, platoon unblocked						
vC, conflicting volume	423	109			111	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	423	109			111	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	97			94	
cM capacity (veh/h)	555	944			1479	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	25	111	232
Volume Left	1	0	82
Volume Right	24	2	0
cSH	917	1700	1479
Volume to Capacity	0.03	0.07	0.06
Queue Length 95th (ft)	2	0	4
Control Delay (s)	9.0	0.0	3.0
Lane LOS	A		A
Approach Delay (s)	9.0	0.0	3.0
Approach LOS	A		

Intersection Summary			
Average Delay		2.5	
Intersection Capacity Utilization		28.5%	ICU Level of Service A
Analysis Period (min)		15	

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	777	30	405	510	339	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.1	4.7	4.7	5.8	5.8	
Lane Util. Factor	0.97	1.00	1.00	0.95	0.95	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.85	1.00	1.00	1.00	
Flt Protected	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	3433	1583	1770	3539	3539	
Flt Permitted	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (perm)	3433	1583	1770	3539	3539	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	818	32	426	537	357	0
RTOR Reduction (vph)	0	14	0	0	0	0
Lane Group Flow (vph)	818	18	426	537	357	0
Confl. Peds. (#/hr)						10
Confl. Bikes (#/hr)						5
Turn Type	Prot	pm+ov	Prot	NA	NA	
Protected Phases	4	5	5	2	6	
Permitted Phases		4				
Actuated Green, G (s)	19.6	40.3	20.7	44.2	18.8	
Effective Green, g (s)	19.6	40.3	20.7	44.2	18.8	
Actuated g/C Ratio	0.26	0.54	0.28	0.59	0.25	
Clearance Time (s)	5.1	4.7	4.7	5.8	5.8	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	900	854	490	2094	890	
v/s Ratio Prot	c0.24	0.01	c0.24	0.15	c0.10	
v/s Ratio Perm		0.01				
v/c Ratio	0.91	0.02	0.87	0.26	0.40	
Uniform Delay, d1	26.7	8.0	25.7	7.3	23.3	
Progression Factor	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	12.8	0.0	15.1	0.3	1.3	
Delay (s)	39.5	8.0	40.8	7.6	24.6	
Level of Service	D	A	D	A	C	
Approach Delay (s)	38.3			22.3	24.6	
Approach LOS	D			C	C	

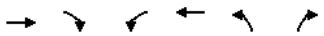
Intersection Summary				
HCM 2000 Control Delay	28.9	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.73			
Actuated Cycle Length (s)	74.7	Sum of lost time (s)	15.6	
Intersection Capacity Utilization	70.9%	ICU Level of Service	C	
Analysis Period (min)	15			
c Critical Lane Group				

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	102	60	21	393	77	338	2	189	84	70	237	74
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.1			5.1	5.1	4.7	5.5	5.5	4.7	5.5	
Lane Util. Factor		1.00			1.00	1.00	1.00	0.95	1.00	1.00	0.95	
Frpb, ped/bikes		1.00			1.00	0.97	1.00	1.00	0.95	1.00	0.99	
Flpb, ped/bikes		1.00			1.00	1.00	0.98	1.00	1.00	1.00	1.00	
Frt		0.98			1.00	0.85	1.00	1.00	0.85	1.00	0.96	
Flt Protected		0.97			0.96	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1777			1788	1534	1741	3539	1499	1770	3370	
Flt Permitted		0.97			0.96	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)		1777			1788	1534	1741	3539	1499	1770	3370	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	107	63	22	414	81	356	2	199	88	74	249	78
RTOR Reduction (vph)	0	5	0	0	0	180	0	0	67	0	30	0
Lane Group Flow (vph)	0	187	0	0	495	176	2	199	21	74	297	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Split	NA		Split	NA	Perm	Prot	NA	Perm	Prot	NA	
Protected Phases	4	4		3	3		5	2		1	6	
Permitted Phases						3			2			
Actuated Green, G (s)		13.0			27.0	27.0	0.7	20.8	20.8	4.0	24.1	
Effective Green, g (s)		13.0			27.0	27.0	0.7	20.8	20.8	4.0	24.1	
Actuated g/C Ratio		0.15			0.32	0.32	0.01	0.24	0.24	0.05	0.28	
Clearance Time (s)		5.1			5.1	5.1	4.7	5.5	5.5	4.7	5.5	
Vehicle Extension (s)		3.0			3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)		271			566	486	14	863	365	83	953	
v/s Ratio Prot		c0.11			c0.28		0.00	0.06		c0.04	c0.09	
v/s Ratio Perm						0.11			0.01			
v/c Ratio		0.69			0.87	0.36	0.14	0.23	0.06	0.89	0.31	
Uniform Delay, d1		34.2			27.5	22.5	42.0	25.8	24.7	40.4	24.0	
Progression Factor		1.00			1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2		7.1			14.1	0.5	4.7	0.6	0.3	63.7	0.9	
Delay (s)		41.3			41.6	22.9	46.6	26.4	25.0	104.1	24.9	
Level of Service		D			D	C	D	C	C	F	C	
Approach Delay (s)		41.3			33.8			26.1			39.5	
Approach LOS		D			C			C			D	

Intersection Summary				
HCM 2000 Control Delay	34.7	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.66			
Actuated Cycle Length (s)	85.2	Sum of lost time (s)	20.4	
Intersection Capacity Utilization	62.4%	ICU Level of Service	B	
Analysis Period (min)	15			
c Critical Lane Group				

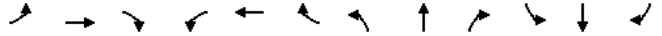
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	21	27	22	357	63	19	120	954	163	22	442	53
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.9	4.9	4.5	4.9		4.5	5.3		4.5	5.0	
Lane Util. Factor	1.00	1.00	1.00	0.97	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	1.00	0.85	1.00	0.97		1.00	0.98		1.00	0.98	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1863	1583	3433	1798		1770	3462		1770	3482	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	1863	1583	3433	1798		1770	3462		1770	3482	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	22	28	23	376	66	20	126	1004	172	23	465	56
RTOR Reduction (vph)	0	0	22	0	12	0	0	10	0	0	7	0
Lane Group Flow (vph)	22	28	1	376	74	0	126	1166	0	23	514	0
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4									
Actuated Green, G (s)	2.3	5.5	5.5	15.5	18.7		12.4	56.6		3.2	47.7	
Effective Green, g (s)	2.3	5.5	5.5	15.5	18.7		12.4	56.6		3.2	47.7	
Actuated g/C Ratio	0.02	0.06	0.06	0.16	0.19		0.12	0.57		0.03	0.48	
Clearance Time (s)	4.5	4.9	4.9	4.5	4.9		4.5	5.3		4.5	5.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	40	102	87	532	336		219	1959		56	1660	
v/s Ratio Prot	0.01	0.02		c0.11	c0.04		c0.07	c0.34		0.01	0.15	
v/s Ratio Perm			0.00									
v/c Ratio	0.55	0.27	0.01	0.71	0.22		0.58	0.59		0.41	0.31	
Uniform Delay, d1	48.3	45.3	44.7	40.1	34.5		41.3	14.2		47.5	16.0	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	15.3	1.5	0.1	4.3	0.3		3.6	1.3		4.8	0.5	
Delay (s)	63.7	46.8	44.8	44.4	34.8		44.9	15.5		52.3	16.5	
Level of Service	E	D	D	D	C		D	B		D	B	
Approach Delay (s)		51.2			42.6			18.4			18.0	
Approach LOS		D			D			B			B	

Intersection Summary				
HCM 2000 Control Delay	24.0	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.61			
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	19.2	
Intersection Capacity Utilization	64.0%	ICU Level of Service	C	
Analysis Period (min)	15			
c Critical Lane Group				



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	513	0	0	1016	609	478
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.1			5.1	5.1	5.1
Lane Util. Factor	0.95			0.95	0.97	0.91
Frt	1.00			1.00	0.97	0.85
Flt Protected	1.00			1.00	0.96	1.00
Satd. Flow (prot)	3539			3539	3376	1441
Flt Permitted	1.00			1.00	0.96	1.00
Satd. Flow (perm)	3539			3539	3376	1441
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	540	0	0	1069	641	503
RTOR Reduction (vph)	0	0	0	0	23	262
Lane Group Flow (vph)	540	0	0	1069	764	95
Turn Type	NA			NA	Prot	Perm
Protected Phases	2			6	4	
Permitted Phases						4
Actuated Green, G (s)	17.1			30.3	22.7	22.7
Effective Green, g (s)	17.1			30.3	22.7	22.7
Actuated g/C Ratio	0.20			0.35	0.27	0.27
Clearance Time (s)	5.1			5.1	5.1	5.1
Vehicle Extension (s)	3.0			3.0	3.0	3.0
Lane Grp Cap (vph)	708			1255	897	383
v/s Ratio Prot	c0.15			c0.30	c0.23	
v/s Ratio Perm						0.07
v/c Ratio	0.76			0.85	0.85	0.25
Uniform Delay, d1	32.2			25.5	29.8	24.6
Progression Factor	1.00			1.00	1.00	1.00
Incremental Delay, d2	4.9			5.8	7.9	0.3
Delay (s)	37.1			31.2	37.6	25.0
Level of Service	D			C	D	C
Approach Delay (s)	37.1			31.2	33.7	
Approach LOS	D			C	C	

Intersection Summary				
HCM 2000 Control Delay	33.4	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.83			
Actuated Cycle Length (s)	85.4	Sum of lost time (s)	15.3	
Intersection Capacity Utilization	59.0%	ICU Level of Service	B	
Analysis Period (min)	15			
c Critical Lane Group				



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	43	688	253	503	873	17	65	7	120	33	38	57
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.9	4.0	4.5	4.9		4.9	4.9	4.9		4.9	4.9
Lane Util. Factor	1.00	0.95	1.00	0.97	0.95		1.00	0.95	0.95		1.00	1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	0.97	0.97		1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00		1.00	0.87	0.85		1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00		0.98	1.00
Satd. Flow (prot)	1770	3539	1583	3433	3526		1770	1487	1454		1820	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00		0.98	1.00
Satd. Flow (perm)	1770	3539	1583	3433	3526		1770	1487	1454		1820	1583
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	45	724	266	529	919	18	68	7	126	35	40	60
RTOR Reduction (vph)	0	0	0	0	1	0	0	0	0	0	0	0
Lane Group Flow (vph)	45	724	266	529	936	0	68	67	66	0	75	60
Confl. Peds. (#/hr)						10			10			
Confl. Bikes (#/hr)						5			5			
Turn Type	Prot	NA	Free	Prot	NA		Split	NA	Perm	Split	NA	Perm
Protected Phases	5	2		1	6		3	3		4	4	
Permitted Phases			Free						3			4
Actuated Green, G (s)	2.6	25.5	83.9	15.6	38.5		16.2	16.2	16.2		7.4	7.4
Effective Green, g (s)	2.6	25.5	83.9	15.6	38.5		16.2	16.2	16.2		7.4	7.4
Actuated g/C Ratio	0.03	0.30	1.00	0.19	0.46		0.19	0.19	0.19		0.09	0.09
Clearance Time (s)	4.5	4.9		4.5	4.9		4.9	4.9	4.9		4.9	4.9
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	54	1075	1583	638	1618		341	287	280		160	139
v/s Ratio Prot	0.03	c0.20		c0.15	0.27		0.04	0.05			c0.04	
v/s Ratio Perm			0.17						c0.05			0.04
v/c Ratio	0.83	0.67	0.17	0.83	0.58		0.20	0.23	0.24		0.47	0.43
Uniform Delay, d1	40.4	25.6	0.0	32.9	16.7		28.4	28.6	28.6		36.4	36.3
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	65.0	3.4	0.2	8.8	0.5		1.3	1.9	2.0		2.2	2.1
Delay (s)	105.4	28.9	0.2	41.6	17.2		29.7	30.5	30.6		38.5	38.4
Level of Service	F	C	A	D	B		C	C	C		D	D
Approach Delay (s)		24.9			26.0			30.3			38.5	
Approach LOS		C			C			C			D	

Intersection Summary				
HCM 2000 Control Delay	26.5	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.58			
Actuated Cycle Length (s)	83.9	Sum of lost time (s)	19.2	
Intersection Capacity Utilization	58.6%	ICU Level of Service	B	
Analysis Period (min)	15			
c Critical Lane Group				

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	7	499	425	109	1586	84	0	0	0	49	30	29
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.7	5.1		4.7	5.1						5.5	
Lane Util. Factor	1.00	0.95		1.00	0.95						1.00	
Frpb, ped/bikes	1.00	0.99		1.00	1.00						0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00						1.00	
Frt	1.00	0.93		1.00	0.99						0.96	
Flt Protected	0.95	1.00		0.95	1.00						0.98	
Satd. Flow (prot)	1766	3265		1770	3504						1740	
Flt Permitted	0.95	1.00		0.95	1.00						0.98	
Satd. Flow (perm)	1766	3265		1770	3504						1740	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	7	525	447	115	1669	88	0	0	0	52	32	31
RTOR Reduction (vph)	0	162	0	0	4	0	0	0	0	0	14	0
Lane Group Flow (vph)	7	810	0	115	1753	0	0	0	0	0	101	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Prot	NA		Prot	NA					Split	NA	
Protected Phases	5	2		1	6					4	4	
Permitted Phases												
Actuated Green, G (s)	0.7	40.3		8.9	48.5						16.3	
Effective Green, g (s)	0.7	40.3		8.9	48.5						16.3	
Actuated g/C Ratio	0.01	0.50		0.11	0.60						0.20	
Clearance Time (s)	4.7	5.1		4.7	5.1						5.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0						3.0	
Lane Grp Cap (vph)	15	1628		194	2103						351	
v/s Ratio Prot	0.00	0.25		c0.06	c0.50						c0.06	
v/s Ratio Perm												
v/c Ratio	0.47	0.50		0.59	0.83						0.29	
Uniform Delay, d1	39.9	13.5		34.2	12.9						27.3	
Progression Factor	1.00	1.00		1.00	1.00						1.00	
Incremental Delay, d2	21.2	0.2		4.8	3.0						2.0	
Delay (s)	61.1	13.7		39.0	15.9						29.4	
Level of Service	E	B		D	B						C	
Approach Delay (s)		14.1			17.3			0.0			29.4	
Approach LOS		B			B			A			C	

Intersection Summary				
HCM 2000 Control Delay	16.7	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.71			
Actuated Cycle Length (s)	80.8	Sum of lost time (s)	15.3	
Intersection Capacity Utilization	76.0%	ICU Level of Service	D	
Analysis Period (min)	15			
c Critical Lane Group				

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	567	0	0	472	1322	485
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.5			5.5	4.5	5.5
Lane Util. Factor	0.95			0.95	0.97	1.00
Frpb, ped/bikes	1.00			1.00	1.00	0.98
Flpb, ped/bikes	1.00			1.00	1.00	1.00
Frt	1.00			1.00	1.00	0.85
Flt Protected	1.00			1.00	0.95	1.00
Satd. Flow (prot)	3539			3539	3433	1544
Flt Permitted	1.00			1.00	0.95	1.00
Satd. Flow (perm)	3539			3539	3433	1544
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	597	0	0	497	1392	511
RTOR Reduction (vph)	0	0	0	0	0	335
Lane Group Flow (vph)	597	0	0	497	1392	176
Confl. Peds. (#/hr)						10
Confl. Bikes (#/hr)						5
Turn Type	NA			NA	Prot	Perm
Protected Phases	2			6	4	
Permitted Phases						6
Actuated Green, G (s)	19.2			19.2	31.8	19.2
Effective Green, g (s)	19.2			19.2	31.8	19.2
Actuated g/C Ratio	0.31			0.31	0.52	0.31
Clearance Time (s)	5.5			5.5	4.5	5.5
Vehicle Extension (s)	3.0			3.0	3.0	3.0
Lane Grp Cap (vph)	1113			1113	1789	485
v/s Ratio Prot	c0.17			0.14	c0.41	
v/s Ratio Perm						0.11
v/c Ratio	0.54			0.45	0.78	0.36
Uniform Delay, d1	17.2			16.7	11.8	16.2
Progression Factor	1.00			1.00	1.00	1.00
Incremental Delay, d2	0.5			0.3	2.2	0.5
Delay (s)	17.7			17.0	14.0	16.6
Level of Service	B			B	B	B
Approach Delay (s)	17.7			17.0	14.7	
Approach LOS	B			B	B	

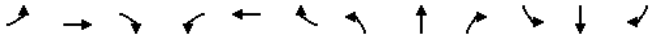
Intersection Summary				
HCM 2000 Control Delay	15.7	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.69			
Actuated Cycle Length (s)	61.0	Sum of lost time (s)	10.0	
Intersection Capacity Utilization	61.7%	ICU Level of Service	B	
Analysis Period (min)	15			
c Critical Lane Group				

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	13	39	21	336	23	549	0	608	506	674	704	27
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.9		4.9	4.9	4.9		5.2		4.5	4.5	
Lane Util. Factor		1.00		0.95	0.91	0.95		0.95		0.97	0.95	
Frpb, ped/bikes		0.99		1.00	0.99	0.98		0.99		1.00	1.00	
Flpb, ped/bikes		1.00		1.00	1.00	1.00		1.00		1.00	1.00	
Frt		0.96		1.00	0.88	0.85		0.93		1.00	0.99	
Flt Protected		0.99		0.95	0.99	1.00		1.00		0.95	1.00	
Satd. Flow (prot)		1751		1681	1457	1477		3250		3433	3513	
Flt Permitted		0.99		0.95	0.99	1.00		1.00		0.95	1.00	
Satd. Flow (perm)		1751		1681	1457	1477		3250		3433	3513	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	14	41	22	354	24	578	0	640	533	709	741	28
RTOR Reduction (vph)	0	16	0	0	171	253	0	166	0	0	3	0
Lane Group Flow (vph)	0	61	0	319	154	59	0	1007	0	709	766	0
Confl. Peds. (#/hr)			10						10			10
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Split	NA		Split	NA	Perm		NA		Prot	NA	
Protected Phases	7	7		8	8			2		1	6	
Permitted Phases						8						
Actuated Green, G (s)		5.7		17.5	17.5	17.5		30.8		18.5	54.5	
Effective Green, g (s)		5.7		17.5	17.5	17.5		30.8		18.5	54.5	
Actuated g/C Ratio		0.06		0.19	0.19	0.19		0.33		0.20	0.59	
Clearance Time (s)		4.9		4.9	4.9	4.9		5.2		4.5	4.5	
Vehicle Extension (s)		3.0		3.0	3.0	3.0		3.0		3.0	3.0	
Lane Grp Cap (vph)		108		319	277	280		1088		690	2081	
v/s Ratio Prot		c0.03		c0.19	0.11			c0.31		c0.21	0.22	
v/s Ratio Perm						0.04						
v/c Ratio		0.57		1.00	0.56	0.21		0.93		1.03	0.37	
Uniform Delay, d1		41.9		37.2	33.7	31.4		29.5		36.8	9.8	
Progression Factor		1.00		1.00	1.00	1.00		1.00		1.00	1.00	
Incremental Delay, d2		6.6		50.4	2.4	0.4		14.4		41.5	0.5	
Delay (s)		48.6		87.6	36.2	31.8		43.9		78.2	10.3	
Level of Service		D		F	D	C		D		E	B	
Approach Delay (s)		48.6			51.9			43.9			42.9	
Approach LOS		D			D			D			D	

Intersection Summary			
HCM 2000 Control Delay	45.7	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.94		
Actuated Cycle Length (s)	92.0	Sum of lost time (s)	19.5
Intersection Capacity Utilization	87.1%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

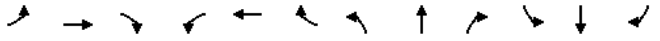
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	172	853	176	393	628	345	254	234	413	329	184	82
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.3		4.5	5.3		4.5	5.7	5.7	4.5	6.0	
Lane Util. Factor	1.00	0.95		0.97	0.95		0.97	0.95	1.00	0.97	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	0.99		1.00	1.00	0.99	1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.97		1.00	0.95		1.00	1.00	0.85	1.00	0.95	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3430		3433	3314		3433	3539	1560	3433	3341	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	3430		3433	3314		3433	3539	1560	3433	3341	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	181	898	185	414	661	363	267	246	435	346	194	86
RTOR Reduction (vph)	0	19	0	0	83	0	0	0	55	0	56	0
Lane Group Flow (vph)	181	1064	0	414	941	0	267	246	380	346	224	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Prot	NA		Prot	NA		Prot	NA	custom	Prot	NA	
Protected Phases	5	2		1	6		3	8	8	7	4	
Permitted Phases									1			
Actuated Green, G (s)	10.7	29.6		13.2	32.1		9.8	15.8	29.0	10.5	16.2	
Effective Green, g (s)	10.7	29.6		13.2	32.1		9.8	15.8	29.0	10.5	16.2	
Actuated g/C Ratio	0.12	0.33		0.15	0.36		0.11	0.18	0.33	0.12	0.18	
Clearance Time (s)	4.5	5.3		4.5	5.3		4.5	5.7	5.7	4.5	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	212	1139		508	1193		377	627	607	404	607	
v/s Ratio Prot	0.10	c0.31		c0.12	0.28		0.08	0.07	c0.11	c0.10	0.07	
v/s Ratio Perm									0.13			
v/c Ratio	0.85	0.93		0.81	0.79		0.71	0.39	0.63	0.86	0.37	
Uniform Delay, d1	38.4	28.8		36.8	25.5		38.3	32.4	25.5	38.6	32.0	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	26.8	13.6		9.7	3.5		6.0	0.4	2.0	16.2	0.4	
Delay (s)	65.2	42.4		46.5	29.0		44.3	32.8	27.5	54.7	32.3	
Level of Service	E	D		D	C		D	C	C	D	C	
Approach Delay (s)		45.7			34.1			33.6			44.7	
Approach LOS		D			C			C			D	

Intersection Summary			
HCM 2000 Control Delay	38.9	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	89.1	Sum of lost time (s)	20.3
Intersection Capacity Utilization	78.3%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	24	1468	101	28	1172	11	173	0	72	8	0	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.3		4.5	5.3		4.9	4.9			4.9	4.9
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00			1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.97			1.00	0.97
Flpb, ped/bikes	1.00	1.00		1.00	1.00		0.99	1.00			0.99	1.00
Frt	1.00	0.99		1.00	1.00		1.00	0.85			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00			0.95	1.00
Satd. Flow (prot)	1770	3496		1770	3533		1749	1538			1751	1538
Flt Permitted	0.95	1.00		0.95	1.00		0.75	1.00			0.71	1.00
Satd. Flow (perm)	1770	3496		1770	3533		1385	1538			1304	1538
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	25	1545	106	29	1234	12	182	0	76	8	0	12
RTOR Reduction (vph)	0	4	0	0	0	0	0	60	0	0	0	9
Lane Group Flow (vph)	25	1647	0	29	1246	0	182	16	0	0	8	3
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	Perm
Protected Phases	5	2		1	6			4			4	
Permitted Phases							4			4		4
Actuated Green, G (s)	2.5	31.6		2.6	31.7		13.2	13.2			13.2	13.2
Effective Green, g (s)	2.5	31.6		2.6	31.7		13.2	13.2			13.2	13.2
Actuated g/C Ratio	0.04	0.51		0.04	0.51		0.21	0.21			0.21	0.21
Clearance Time (s)	4.5	5.3		4.5	5.3		4.9	4.9			4.9	4.9
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0			3.0	3.0
Lane Grp Cap (vph)	71	1778		74	1803		294	326			277	326
v/s Ratio Prot	0.01	c0.47		c0.02	0.35			0.01				
v/s Ratio Perm							c0.13				0.01	0.00
v/c Ratio	0.35	0.93		0.39	0.69		0.62	0.05			0.03	0.01
Uniform Delay, d1	29.0	14.2		29.0	11.5		22.2	19.5			19.4	19.3
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00			1.00	1.00
Incremental Delay, d2	3.0	8.8		3.4	1.2		3.9	0.1			0.0	0.0
Delay (s)	32.0	22.9		32.4	12.7		26.0	19.5			19.4	19.3
Level of Service	C	C		C	B		C	B			B	B
Approach Delay (s)		23.1			13.1			24.1			19.3	
Approach LOS		C			B			C			B	

Intersection Summary				
HCM 2000 Control Delay	19.2	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.81			
Actuated Cycle Length (s)	62.1	Sum of lost time (s)	14.7	
Intersection Capacity Utilization	68.6%	ICU Level of Service	C	
Analysis Period (min)	15			
c Critical Lane Group				



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	41	1183	305	61	846	12	211	4	65	17	9	122
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.4		4.5	5.3			4.9			4.9	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	
Frpb, ped/bikes	1.00	0.99		1.00	1.00			0.99			0.98	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			0.99			1.00	
Frt	1.00	0.97		1.00	1.00			0.97			0.89	
Flt Protected	0.95	1.00		0.95	1.00			0.96			0.99	
Satd. Flow (prot)	1770	3397		1770	3529			1713			1608	
Flt Permitted	0.95	1.00		0.95	1.00			0.67			0.95	
Satd. Flow (perm)	1770	3397		1770	3529			1187			1538	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	43	1245	321	64	891	13	222	4	68	18	9	128
RTOR Reduction (vph)	0	27	0	0	1	0	0	14	0	0	93	0
Lane Group Flow (vph)	43	1539	0	64	903	0	0	280	0	0	62	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8			4		
Actuated Green, G (s)	3.6	38.1		3.3	37.9			20.8			20.8	
Effective Green, g (s)	3.6	38.1		3.3	37.9			20.8			20.8	
Actuated g/C Ratio	0.05	0.49		0.04	0.49			0.27			0.27	
Clearance Time (s)	4.5	5.4		4.5	5.3			4.9			4.9	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	82	1680		75	1737			320			415	
v/s Ratio Prot	0.02	c0.45		c0.04	0.26							
v/s Ratio Perm								c0.24			0.04	
v/c Ratio	0.52	0.92		0.85	0.52			0.88			0.15	
Uniform Delay, d1	35.9	18.0		36.6	13.3			26.9			21.4	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	5.9	9.4		57.0	1.1			22.4			0.2	
Delay (s)	41.8	27.4		93.6	14.5			49.2			21.5	
Level of Service	D	C		F	B			D			C	
Approach Delay (s)		27.7			19.7			49.2			21.5	
Approach LOS		C			B			D			C	

Intersection Summary				
HCM 2000 Control Delay	26.9	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.90			
Actuated Cycle Length (s)	77.0	Sum of lost time (s)	14.8	
Intersection Capacity Utilization	88.3%	ICU Level of Service	E	
Analysis Period (min)	15			
c Critical Lane Group				

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	54	795	439	196	583	35	314	14	174	77	53	45
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.2	5.2	4.5	5.2		5.0	5.0	5.0	4.9	4.9	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		0.95	0.95	1.00	1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.95	1.00	1.00		1.00	1.00	0.97	1.00	0.98	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85	1.00	0.93	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	0.96	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3539	1505	1770	3499		1681	1692	1530	1770	1705	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	0.96	1.00	0.95	1.00	
Satd. Flow (perm)	1770	3539	1505	1770	3499		1681	1692	1530	1770	1705	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	57	837	462	206	614	37	331	15	183	81	56	47
RTOR Reduction (vph)	0	0	212	0	4	0	0	0	154	0	37	0
Lane Group Flow (vph)	57	837	250	206	647	0	172	174	29	81	66	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Prot	NA	Perm	Prot	NA		Split	NA	Perm	Split	NA	
Protected Phases	5	2		1	6		8	8		7	7	
Permitted Phases			2						8			
Actuated Green, G (s)	4.0	28.6	28.6	12.0	36.6		12.8	12.8	12.8	7.5	7.5	
Effective Green, g (s)	4.0	28.6	28.6	12.0	36.6		12.8	12.8	12.8	7.5	7.5	
Actuated g/C Ratio	0.05	0.36	0.36	0.15	0.45		0.16	0.16	0.16	0.09	0.09	
Clearance Time (s)	4.5	5.2	5.2	4.5	5.2		5.0	5.0	5.0	4.9	4.9	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	87	1257	534	263	1590		267	269	243	164	158	
v/s Ratio Prot	0.03	c0.24		c0.12	0.18		0.10	c0.10		c0.05	0.04	
v/s Ratio Perm			0.17						0.02			
v/c Ratio	0.66	0.67	0.47	0.78	0.41		0.64	0.65	0.12	0.49	0.42	
Uniform Delay, d1	37.6	21.9	20.1	33.0	14.7		31.7	31.7	29.0	34.7	34.4	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	16.4	2.8	2.9	14.1	0.2		5.2	5.3	0.2	2.3	1.8	
Delay (s)	53.9	24.7	23.0	47.1	14.9		37.0	37.0	29.2	37.0	36.2	
Level of Service	D	C	C	D	B		D	D	C	D	D	
Approach Delay (s)		25.4			22.6			34.3			36.6	
Approach LOS		C			C			C			D	

Intersection Summary				
HCM 2000 Control Delay	26.9	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.66			
Actuated Cycle Length (s)	80.5	Sum of lost time (s)	19.6	
Intersection Capacity Utilization	60.8%	ICU Level of Service	B	
Analysis Period (min)	15			
c Critical Lane Group				

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	732	316	337	609	145	256
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.2	5.2	4.5	4.5	5.5	5.5
Lane Util. Factor	0.95	1.00	0.97	0.95	0.97	1.00
Frpb, ped/bikes	1.00	0.99	1.00	1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	3539	1566	3433	3539	3433	1541
Flt Permitted	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)	3539	1566	3433	3539	3433	1541
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	771	333	355	641	153	269
RTOR Reduction (vph)	0	22	0	0	0	197
Lane Group Flow (vph)	771	311	355	641	153	72
Confl. Peds. (#/hr)		10	10		10	10
Confl. Bikes (#/hr)		5				5
Turn Type	NA	custom	Prot	NA	Prot	Perm
Protected Phases	2	2	1	6	8	
Permitted Phases		8				8
Actuated Green, G (s)	19.3	35.3	9.2	33.7	16.0	16.0
Effective Green, g (s)	19.3	35.3	9.2	33.7	16.0	16.0
Actuated g/C Ratio	0.32	0.59	0.15	0.56	0.27	0.27
Clearance Time (s)	5.2	5.2	4.5	4.5	5.5	5.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	1144	1062	529	1997	920	412
v/s Ratio Prot	c0.22	c0.09	c0.10	0.18	0.04	
v/s Ratio Perm		0.10				0.05
v/c Ratio	0.67	0.29	0.67	0.32	0.17	0.17
Uniform Delay, d1	17.5	6.0	23.8	6.9	16.7	16.8
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	3.2	0.7	3.3	0.1	0.4	0.9
Delay (s)	20.7	6.7	27.2	7.0	17.1	17.7
Level of Service	C	A	C	A	B	B
Approach Delay (s)	16.5			14.2	17.5	
Approach LOS	B			B	B	

Intersection Summary				
HCM 2000 Control Delay	15.7	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.55			
Actuated Cycle Length (s)	59.7	Sum of lost time (s)	15.2	
Intersection Capacity Utilization	55.8%	ICU Level of Service	B	
Analysis Period (min)	15			
c Critical Lane Group				

Movement	EBU	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations							
Volume (vph)	0	1017	119	149	922	126	44
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5		4.5	4.5	4.5	4.5
Lane Util. Factor		0.95		0.97	0.95	0.97	0.88
Frpb, ped/bikes		1.00		1.00	1.00	1.00	0.95
Flpb, ped/bikes		1.00		1.00	1.00	1.00	1.00
Frt		0.98		1.00	1.00	1.00	0.85
Flt Protected		1.00		0.95	1.00	0.95	1.00
Satd. Flow (prot)		3474		3433	3539	3433	2643
Flt Permitted		1.00		0.95	1.00	0.95	1.00
Satd. Flow (perm)		3474		3433	3539	3433	2643
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	1071	125	157	971	133	46
RTOR Reduction (vph)	0	10	0	0	0	0	36
Lane Group Flow (vph)	0	1186	0	157	971	133	10
Confl. Peds. (#/hr)			10	10		10	10
Confl. Bikes (#/hr)			5				5
Turn Type	Prot	NA		Prot	NA	Prot	Perm
Protected Phases	5	2		1	6	8	
Permitted Phases							8
Actuated Green, G (s)		36.6		8.8	49.9	16.1	16.1
Effective Green, g (s)		36.6		8.8	49.9	16.1	16.1
Actuated g/C Ratio		0.49		0.12	0.67	0.21	0.21
Clearance Time (s)		4.5		4.5	4.5	4.5	4.5
Vehicle Extension (s)		3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)		1695		402	2354	736	567
v/s Ratio Prot		c0.34		0.05	c0.27	c0.04	
v/s Ratio Perm							0.00
v/c Ratio		0.70		0.39	0.41	0.18	0.02
Uniform Delay, d1		14.9		30.6	5.8	24.1	23.2
Progression Factor		1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2		2.4		0.6	0.5	0.5	0.1
Delay (s)		17.4		31.2	6.3	24.6	23.3
Level of Service		B		C	A	C	C
Approach Delay (s)		17.4			9.8	24.3	
Approach LOS		B			A	C	

Intersection Summary				
HCM 2000 Control Delay	14.4	HCM 2000 Level of Service		B
HCM 2000 Volume to Capacity ratio	0.54			
Actuated Cycle Length (s)	75.0	Sum of lost time (s)		13.5
Intersection Capacity Utilization	60.8%	ICU Level of Service		B
Analysis Period (min)	15			
c Critical Lane Group				

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	3	0	0	1	0	7	0	238	0	12	112	3
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	3	0	0	1	0	7	0	251	0	13	118	3
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)											142	
pX, platoon unblocked												
vC, conflicting volume	403	395	119	395	397	251	121			251		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	403	395	119	395	397	251	121			251		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	99	100	100	100	100	99	100			99		
cM capacity (veh/h)	549	536	932	560	535	788	1466			1315		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	3	8	251	134
Volume Left	3	1	0	13
Volume Right	0	7	0	3
cSH	549	750	1466	1315
Volume to Capacity	0.01	0.01	0.00	0.01
Queue Length 95th (ft)	0	1	0	1
Control Delay (s)	11.6	9.9	0.0	0.8
Lane LOS	B	A		A
Approach Delay (s)	11.6	9.9	0.0	0.8
Approach LOS	B	A		

Intersection Summary				
Average Delay	0.6			
Intersection Capacity Utilization	26.1%	ICU Level of Service		A
Analysis Period (min)	15			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	3	74	122	0	20	47
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	3	78	128	0	21	49
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						635
pX, platoon unblocked						
vC, conflicting volume	220	128			128	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	220	128			128	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	92			99	
cM capacity (veh/h)	757	922			1457	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	81	128	71
Volume Left	3	0	21
Volume Right	78	0	0
cSH	914	1700	1457
Volume to Capacity	0.09	0.08	0.01
Queue Length 95th (ft)	7	0	1
Control Delay (s)	9.3	0.0	2.3
Lane LOS	A		A
Approach Delay (s)	9.3	0.0	2.3
Approach LOS	A		

Intersection Summary			
Average Delay		3.3	
Intersection Capacity Utilization		24.7%	ICU Level of Service A
Analysis Period (min)		15	

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	238	34	469	289	601	16
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.1	4.7	4.7	5.8	5.8	
Lane Util. Factor	0.97	1.00	1.00	0.95	0.95	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.85	1.00	1.00	1.00	
Flt Protected	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	3433	1583	1770	3539	3521	
Flt Permitted	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (perm)	3433	1583	1770	3539	3521	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	251	36	494	304	633	17
RTOR Reduction (vph)	0	11	0	0	2	0
Lane Group Flow (vph)	251	25	494	304	648	0
Confl. Peds. (#/hr)						10
Confl. Bikes (#/hr)						5
Turn Type	Prot	pm+ov	Prot	NA	NA	
Protected Phases	4	5	5	2	6	
Permitted Phases		4				
Actuated Green, G (s)	10.3	33.2	22.9	48.2	20.6	
Effective Green, g (s)	10.3	33.2	22.9	48.2	20.6	
Actuated g/C Ratio	0.15	0.48	0.33	0.69	0.30	
Clearance Time (s)	5.1	4.7	4.7	5.8	5.8	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	509	757	584	2457	1045	
v/s Ratio Prot	c0.07	0.01	c0.28	0.09	c0.18	
v/s Ratio Perm		0.00				
v/c Ratio	0.49	0.03	0.85	0.12	0.62	
Uniform Delay, d1	27.2	9.6	21.6	3.5	21.0	
Progression Factor	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.8	0.0	10.9	0.1	2.8	
Delay (s)	27.9	9.6	32.5	3.6	23.8	
Level of Service	C	A	C	A	C	
Approach Delay (s)	25.6			21.5	23.8	
Approach LOS	C			C	C	

Intersection Summary				
HCM 2000 Control Delay	23.0	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.69			
Actuated Cycle Length (s)	69.4	Sum of lost time (s)	15.6	
Intersection Capacity Utilization	62.9%	ICU Level of Service	B	
Analysis Period (min)	15			
c Critical Lane Group				

3:15-4:15 PM Horizon Year 2035
30: Kearny Mesa & Armour St/SR-163 SB Ramp

HCM Signalized Intersection Capacity Analysis

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	141	124	27	296	57	185	22	409	207	194	427	115
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.1			5.1	5.1	4.7	5.5	5.5	4.7	5.5	
Lane Util. Factor		1.00			1.00	1.00	1.00	0.95	1.00	1.00	0.95	
Frpb, ped/bikes		1.00			1.00	0.97	1.00	1.00	0.94	1.00	0.99	
Flpb, ped/bikes		1.00			1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt		0.99			1.00	0.85	1.00	1.00	0.85	1.00	0.97	
Flt Protected		0.98			0.96	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1791			1788	1531	1770	3539	1495	1770	3388	
Flt Permitted		0.98			0.96	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)		1791			1788	1531	1770	3539	1495	1770	3388	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	148	131	28	312	60	195	23	431	218	204	449	121
RTOR Reduction (vph)	0	4	0	0	0	152	0	0	169	0	24	0
Lane Group Flow (vph)	0	303	0	0	372	43	23	431	49	204	546	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Split	NA		Split	NA	Perm	Prot	NA	Perm	Prot	NA	
Protected Phases	4	4		3	3		5	2		1	6	
Permitted Phases						3			2			
Actuated Green, G (s)		18.3			20.0	20.0	2.1	19.0	19.0	12.0	28.9	
Effective Green, g (s)		18.3			20.0	20.0	2.1	19.0	19.0	12.0	28.9	
Actuated g/C Ratio		0.20			0.22	0.22	0.02	0.21	0.21	0.13	0.32	
Clearance Time (s)		5.1			5.1	5.1	4.7	5.5	5.5	4.7	5.5	
Vehicle Extension (s)		3.0			3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)		365			398	341	41	749	316	236	1091	
v/s Ratio Prot		c0.17			c0.21		0.01	c0.12		c0.12	0.16	
v/s Ratio Perm						0.03			0.03			
v/c Ratio		0.83			0.93	0.13	0.56	0.58	0.16	0.86	0.50	
Uniform Delay, d1		34.2			34.2	27.9	43.3	31.7	28.8	38.1	24.6	
Progression Factor		1.00			1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2		14.7			29.0	0.2	16.4	3.2	1.1	26.4	1.6	
Delay (s)		48.9			63.2	28.0	59.7	34.9	29.9	64.4	26.2	
Level of Service		D			E	C	E	C	C	E	C	
Approach Delay (s)		48.9			51.1			34.1			36.3	
Approach LOS		D			D			C			D	

Intersection Summary				
HCM 2000 Control Delay	40.9	HCM 2000 Level of Service	D	
HCM 2000 Volume to Capacity ratio	0.80			
Actuated Cycle Length (s)	89.7	Sum of lost time (s)	20.4	
Intersection Capacity Utilization	68.6%	ICU Level of Service	C	
Analysis Period (min)	15			
c Critical Lane Group				

3:15-4:15 PM Horizon Year 2035
31: Convoy St & Ostrow St/Kearny Mesa Rd

HCM Signalized Intersection Capacity Analysis

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	54	100	94	446	47	35	88	804	247	39	797	31
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.9	4.9	4.5	4.9		4.5	5.3		4.5	5.0	
Lane Util. Factor	1.00	1.00	1.00	0.97	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	1.00	0.85	1.00	0.94		1.00	0.96		1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1863	1583	3433	1743		1770	3414		1770	3519	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	1863	1583	3433	1743		1770	3414		1770	3519	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	57	105	99	469	49	37	93	846	260	41	839	33
RTOR Reduction (vph)	0	0	87	0	29	0	0	26	0	0	2	0
Lane Group Flow (vph)	57	105	12	469	57	0	93	1080	0	41	870	0
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4									
Actuated Green, G (s)	6.8	11.9	11.9	17.7	22.8		8.6	46.6		4.6	42.9	
Effective Green, g (s)	6.8	11.9	11.9	17.7	22.8		8.6	46.6		4.6	42.9	
Actuated g/C Ratio	0.07	0.12	0.12	0.18	0.23		0.09	0.47		0.05	0.43	
Clearance Time (s)	4.5	4.9	4.9	4.5	4.9		4.5	5.3		4.5	5.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	120	221	188	607	397		152	1590		81	1509	
v/s Ratio Prot	0.03	c0.06		c0.14	0.03		c0.05	c0.32		0.02	0.25	
v/s Ratio Perm			0.01									
v/c Ratio	0.47	0.48	0.06	0.77	0.14		0.61	0.68		0.51	0.58	
Uniform Delay, d1	44.9	41.1	39.1	39.2	30.8		44.1	20.9		46.6	21.7	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	2.9	1.6	0.1	6.1	0.2		7.1	2.4		4.9	1.6	
Delay (s)	47.8	42.7	39.2	45.3	31.0		51.2	23.2		51.5	23.3	
Level of Service	D	D	D	D	C		D	C		D	C	
Approach Delay (s)		42.5			43.1			25.4			24.5	
Approach LOS		D			D			C			C	

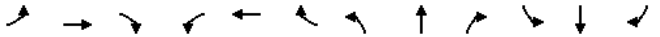
Intersection Summary				
HCM 2000 Control Delay	30.0	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.68			
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	19.2	
Intersection Capacity Utilization	65.1%	ICU Level of Service	C	
Analysis Period (min)	15			
c Critical Lane Group				

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	502	0	0	877	396	267
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.1			5.1	5.1	5.1
Lane Util. Factor	0.95			0.95	0.97	0.91
Frt	1.00			1.00	0.98	0.85
Flt Protected	1.00			1.00	0.96	1.00
Satd. Flow (prot)	3539			3539	3394	1441
Flt Permitted	1.00			1.00	0.96	1.00
Satd. Flow (perm)	3539			3539	3394	1441
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	528	0	0	923	417	281
RTOR Reduction (vph)	0	0	0	0	18	172
Lane Group Flow (vph)	528	0	0	923	464	44
Turn Type	NA			NA	Prot	Perm
Protected Phases	2			6	4	
Permitted Phases						4
Actuated Green, G (s)	14.7			23.7	13.7	13.7
Effective Green, g (s)	14.7			23.7	13.7	13.7
Actuated g/C Ratio	0.22			0.35	0.20	0.20
Clearance Time (s)	5.1			5.1	5.1	5.1
Vehicle Extension (s)	3.0			3.0	3.0	3.0
Lane Grp Cap (vph)	771			1244	689	292
v/s Ratio Prot	c0.15			c0.26	c0.14	
v/s Ratio Perm						0.03
v/c Ratio	0.68			0.74	0.67	0.15
Uniform Delay, d1	24.2			19.2	24.8	22.1
Progression Factor	1.00			1.00	1.00	1.00
Incremental Delay, d2	2.5			2.4	2.6	0.2
Delay (s)	26.8			21.6	27.4	22.3
Level of Service	C			C	C	C
Approach Delay (s)	26.8			21.6	25.8	
Approach LOS	C			C	C	

Intersection Summary				
HCM 2000 Control Delay	24.2	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.71			
Actuated Cycle Length (s)	67.4	Sum of lost time (s)	15.3	
Intersection Capacity Utilization	46.8%	ICU Level of Service	A	
Analysis Period (min)	15			
c Critical Lane Group				

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	110	568	75	345	682	14	133	44	288	20	14	59
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.9	4.0	4.5	4.9		4.9	4.9	4.9		4.9	4.9
Lane Util. Factor	1.00	0.95	1.00	0.97	0.95		1.00	0.95	0.95		1.00	1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	0.98	0.97		1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00		1.00	0.89	0.85		1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00		0.97	1.00
Satd. Flow (prot)	1770	3539	1583	3433	3525		1770	1539	1461		1810	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00		0.97	1.00
Satd. Flow (perm)	1770	3539	1583	3433	3525		1770	1539	1461		1810	1583
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	116	598	79	363	718	15	140	46	303	21	15	62
RTOR Reduction (vph)	0	0	0	0	2	0	0	0	0	0	0	0
Lane Group Flow (vph)	116	598	79	363	731	0	140	179	170	0	36	62
Confl. Peds. (#/hr)						10			10			
Confl. Bikes (#/hr)						5			5			
Turn Type	Prot	NA	Free	Prot	NA		Split	NA	Perm	Split	NA	Perm
Protected Phases	5	2		1	6		3	3		4	4	
Permitted Phases			Free						3			4
Actuated Green, G (s)	5.9	16.3	66.9	8.6	19.0		16.1	16.1	16.1		6.7	6.7
Effective Green, g (s)	5.9	16.3	66.9	8.6	19.0		16.1	16.1	16.1		6.7	6.7
Actuated g/C Ratio	0.09	0.24	1.00	0.13	0.28		0.24	0.24	0.24		0.10	0.10
Clearance Time (s)	4.5	4.9		4.5	4.9		4.9	4.9	4.9		4.9	4.9
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	156	862	1583	441	1001		425	370	351		181	158
v/s Ratio Prot	0.07	0.17		c0.11	c0.21		0.08	0.12			0.02	
v/s Ratio Perm			0.05						c0.12			c0.04
v/c Ratio	0.74	0.69	0.05	0.82	0.73		0.33	0.48	0.48		0.20	0.39
Uniform Delay, d1	29.8	23.0	0.0	28.4	21.6		20.9	21.8	21.8		27.6	28.2
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	17.3	4.6	0.1	11.8	2.8		2.1	4.5	4.7		0.5	1.6
Delay (s)	47.1	27.6	0.1	40.2	24.4		23.0	26.3	26.6		28.2	29.8
Level of Service	D	C	A	D	C		C	C	C		C	C
Approach Delay (s)		27.7			29.6			25.4			29.2	
Approach LOS		C			C			C			C	

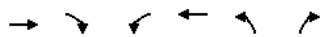
Intersection Summary				
HCM 2000 Control Delay	28.2	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.65			
Actuated Cycle Length (s)	66.9	Sum of lost time (s)	19.2	
Intersection Capacity Utilization	56.0%	ICU Level of Service	B	
Analysis Period (min)	15			
c Critical Lane Group				



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	12	474	797	313	1059	80	0	0	0	48	75	14
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.7	5.1		4.7	5.1						5.5	
Lane Util. Factor	1.00	0.95		1.00	0.95						1.00	
Frpb, ped/bikes	1.00	0.99		1.00	1.00						1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00						1.00	
Frt	1.00	0.91		1.00	0.99						0.99	
Flt Protected	0.95	1.00		0.95	1.00						0.98	
Satd. Flow (prot)	1762	3162		1770	3490						1799	
Flt Permitted	0.95	1.00		0.95	1.00						0.98	
Satd. Flow (perm)	1762	3162		1770	3490						1799	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	13	499	839	329	1115	84	0	0	0	51	79	15
RTOR Reduction (vph)	0	248	0	0	7	0	0	0	0	0	6	0
Lane Group Flow (vph)	13	1090	0	329	1192	0	0	0	0	0	139	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Prot	NA		Prot	NA					Split	NA	
Protected Phases	5	2		1	6					4	4	
Permitted Phases												
Actuated Green, G (s)	0.8	31.0		15.9	46.1						16.0	
Effective Green, g (s)	0.8	31.0		15.9	46.1						16.0	
Actuated g/C Ratio	0.01	0.40		0.20	0.59						0.20	
Clearance Time (s)	4.7	5.1		4.7	5.1						5.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0						3.0	
Lane Grp Cap (vph)	18	1253		359	2057						368	
v/s Ratio Prot	0.01	c0.34		c0.19	0.34						c0.08	
v/s Ratio Perm												
v/c Ratio	0.72	1.01dr		0.92	0.58						0.38	
Uniform Delay, d1	38.6	21.7		30.5	10.0						26.8	
Progression Factor	1.00	1.00		1.00	1.00						1.00	
Incremental Delay, d2	87.1	6.7		27.3	0.4						3.0	
Delay (s)	125.6	28.4		57.8	10.4						29.8	
Level of Service	F	C		E	B						C	
Approach Delay (s)		29.4			20.6			0.0			29.8	
Approach LOS		C			C			A			C	

Intersection Summary				
HCM 2000 Control Delay	25.0	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.76			
Actuated Cycle Length (s)	78.2	Sum of lost time (s)	15.3	
Intersection Capacity Utilization	83.7%	ICU Level of Service	E	
Analysis Period (min)	15			

dr Defacto Right Lane. Recode with 1 though lane as a right lane.
c Critical Lane Group



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	512	0	0	722	740	272
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.5			5.5	4.5	5.5
Lane Util. Factor	0.95			0.95	0.97	1.00
Frpb, ped/bikes	1.00			1.00	1.00	0.98
Flpb, ped/bikes	1.00			1.00	1.00	1.00
Frt	1.00			1.00	1.00	0.85
Flt Protected	1.00			1.00	0.95	1.00
Satd. Flow (prot)	3539			3539	3433	1549
Flt Permitted	1.00			1.00	0.95	1.00
Satd. Flow (perm)	3539			3539	3433	1549
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	539	0	0	760	779	286
RTOR Reduction (vph)	0	0	0	0	0	165
Lane Group Flow (vph)	539	0	0	760	779	121
Confl. Peds. (#/hr)						10
Confl. Bikes (#/hr)						5
Turn Type	NA			NA	Prot	Perm
Protected Phases	2			6	4	
Permitted Phases						6
Actuated Green, G (s)	20.0			20.0	17.2	20.0
Effective Green, g (s)	20.0			20.0	17.2	20.0
Actuated g/C Ratio	0.42			0.42	0.36	0.42
Clearance Time (s)	5.5			5.5	4.5	5.5
Vehicle Extension (s)	3.0			3.0	3.0	3.0
Lane Grp Cap (vph)	1499			1499	1251	656
v/s Ratio Prot	0.15			c0.21	c0.23	
v/s Ratio Perm						0.08
v/c Ratio	0.36			0.51	0.62	0.18
Uniform Delay, d1	9.2			10.0	12.3	8.5
Progression Factor	1.00			1.00	1.00	1.00
Incremental Delay, d2	0.1			0.3	1.0	0.1
Delay (s)	9.4			10.3	13.3	8.6
Level of Service	A			B	B	A
Approach Delay (s)	9.4			10.3	12.1	
Approach LOS	A			B	B	

Intersection Summary				
HCM 2000 Control Delay	10.9	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.56			
Actuated Cycle Length (s)	47.2	Sum of lost time (s)	10.0	
Intersection Capacity Utilization	49.4%	ICU Level of Service	A	
Analysis Period (min)	15			

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	11	51	26	492	4	519	0	601	540	908	1179	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.9		4.9	4.9	4.9		5.2		4.5	4.5	
Lane Util. Factor		1.00		0.95	0.91	0.95		0.95		0.97	0.95	
Frpb, ped/bikes		0.98		1.00	0.99	0.98		0.98		1.00	1.00	
Flpb, ped/bikes		1.00		1.00	1.00	1.00		1.00		1.00	1.00	
Frt		0.96		1.00	0.91	0.85		0.93		1.00	1.00	
Flt Protected		0.99		0.95	0.98	1.00		1.00		0.95	1.00	
Satd. Flow (prot)		1746		1681	1501	1478		3225		3433	3536	
Flt Permitted		0.99		0.95	0.98	1.00		1.00		0.95	1.00	
Satd. Flow (perm)		1746		1681	1501	1478		3225		3433	3536	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	12	54	27	518	4	546	0	633	568	956	1241	6
RTOR Reduction (vph)	0	11	0	0	36	265	0	116	0	0	0	0
Lane Group Flow (vph)	0	82	0	373	320	74	0	1085	0	956	1247	0
Confl. Peds. (#/hr)			10						10			10
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Split	NA		Split	NA	Perm		NA		Prot	NA	
Protected Phases	7	7		8	8			2		1	6	
Permitted Phases						8						
Actuated Green, G (s)		6.1		30.5	30.5	30.5		47.4		36.5	89.1	
Effective Green, g (s)		6.1		30.5	30.5	30.5		47.4		36.5	89.1	
Actuated g/C Ratio		0.04		0.22	0.22	0.22		0.34		0.26	0.64	
Clearance Time (s)		4.9		4.9	4.9	4.9		5.2		4.5	4.5	
Vehicle Extension (s)		3.0		3.0	3.0	3.0		3.0		3.0	3.0	
Lane Grp Cap (vph)		76		366	327	321		1091		895	2250	
v/s Ratio Prot		c0.05		c0.22	0.21			c0.34		c0.28	0.35	
v/s Ratio Perm						0.05						
v/c Ratio		1.09		1.02	0.98	0.23		0.99		1.07	0.55	
Uniform Delay, d1		67.0		54.8	54.4	45.1		46.2		51.8	14.3	
Progression Factor		1.00		1.00	1.00	1.00		1.00		1.00	1.00	
Incremental Delay, d2		128.4		52.0	43.5	0.4		26.0		50.0	1.0	
Delay (s)		195.4		106.7	97.9	45.5		72.2		101.8	15.3	
Level of Service		F		F	F	D		E		F	B	
Approach Delay (s)		195.4			84.3			72.2			52.8	
Approach LOS		F			F			E			D	

Intersection Summary				
HCM 2000 Control Delay	68.2	HCM 2000 Level of Service	E	
HCM 2000 Volume to Capacity ratio	1.03			
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	19.5	
Intersection Capacity Utilization	98.2%	ICU Level of Service	F	
Analysis Period (min)	15			
c Critical Lane Group				

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	155	1103	226	295	673	368	224	297	456	822	376	153
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.3		4.5	5.3		4.5	5.7	4.5	4.5	6.0	
Lane Util. Factor	1.00	0.95		0.97	0.95		0.97	0.95	1.00	0.97	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	0.99		1.00	1.00	0.98	1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.97		1.00	0.95		1.00	1.00	0.85	1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3426		3433	3305		3433	3539	1552	3433	3346	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	3426		3433	3305		3433	3539	1552	3433	3346	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	163	1161	238	311	708	387	236	313	480	865	396	161
RTOR Reduction (vph)	0	12	0	0	50	0	0	0	96	0	32	0
Lane Group Flow (vph)	163	1387	0	311	1045	0	236	313	384	865	525	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Prot	NA		Prot	NA		Prot	NA	pm+ov	Prot	NA	
Protected Phases	5	2		1	6		3	8	1	7	4	
Permitted Phases									8			
Actuated Green, G (s)	17.5	50.7		17.2	50.4		13.7	15.8	33.0	29.5	31.3	
Effective Green, g (s)	17.5	50.7		17.2	50.4		13.7	15.8	33.0	29.5	31.3	
Actuated g/C Ratio	0.13	0.38		0.13	0.38		0.10	0.12	0.25	0.22	0.23	
Clearance Time (s)	4.5	5.3		4.5	5.3		4.5	5.7	4.5	4.5	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	232	1304		443	1250		353	419	384	760	786	
v/s Ratio Prot	0.09	c0.40		0.09	0.32		0.07	0.09	c0.13	c0.25	0.16	
v/s Ratio Perm									0.12			
v/c Ratio	0.70	1.06		0.70	0.84		0.67	0.75	1.00	1.14	0.67	
Uniform Delay, d1	55.4	41.2		55.5	37.6		57.6	56.8	50.1	51.8	46.2	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	9.3	43.6		5.0	5.0		4.7	7.1	45.4	77.8	2.2	
Delay (s)	64.6	84.9		60.5	42.6		62.3	63.9	95.5	129.6	48.4	
Level of Service	E	F		E	D		E	E	F	F	D	
Approach Delay (s)		82.8			46.6			78.3			97.8	
Approach LOS		F			D			E			F	

Intersection Summary				
HCM 2000 Control Delay	76.5	HCM 2000 Level of Service	E	
HCM 2000 Volume to Capacity ratio	1.07			
Actuated Cycle Length (s)	133.2	Sum of lost time (s)	20.3	
Intersection Capacity Utilization	102.5%	ICU Level of Service	G	
Analysis Period (min)	15			
c Critical Lane Group				

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	8	2199	175	62	1166	11	145	1	51	48	2	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.3		4.5	5.3		4.9	4.9			4.9	4.9
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00			1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.96			1.00	0.96
Flpb, ped/bikes	0.99	1.00		1.00	1.00		0.98	1.00			0.98	1.00
Frt	1.00	0.99		1.00	1.00		1.00	0.85			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00			0.95	1.00
Satd. Flow (prot)	1759	3486		1770	3532		1736	1528			1745	1522
Flt Permitted	0.95	1.00		0.95	1.00		0.72	1.00			0.71	1.00
Satd. Flow (perm)	1759	3486		1770	3532		1320	1528			1293	1522
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	8	2315	184	65	1227	12	153	1	54	51	2	14
RTOR Reduction (vph)	0	3	0	0	0	0	0	45	0	0	0	12
Lane Group Flow (vph)	8	2496	0	65	1239	0	153	10	0	0	53	2
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	Perm
Protected Phases	5	2		1	6			4			4	
Permitted Phases							4			4		4
Actuated Green, G (s)	0.8	70.6		7.1	76.9		17.7	17.7			17.7	17.7
Effective Green, g (s)	0.8	70.6		7.1	76.9		17.7	17.7			17.7	17.7
Actuated g/C Ratio	0.01	0.64		0.06	0.70		0.16	0.16			0.16	0.16
Clearance Time (s)	4.5	5.3		4.5	5.3		4.9	4.9			4.9	4.9
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0			3.0	3.0
Lane Grp Cap (vph)	12	2235		114	2466		212	245			207	244
v/s Ratio Prot	0.00	c0.72		c0.04	0.35			0.01				
v/s Ratio Perm							c0.12				0.04	0.00
v/c Ratio	0.67	1.12		0.57	0.50		0.72	0.04			0.26	0.01
Uniform Delay, d1	54.5	19.8		50.0	7.7		43.9	39.0			40.4	38.8
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00			1.00	1.00
Incremental Delay, d2	89.5	59.5		6.7	0.2		11.5	0.1			0.7	0.0
Delay (s)	144.0	79.2		56.7	7.9		55.3	39.1			41.1	38.8
Level of Service	F	E		E	A		E	D			D	D
Approach Delay (s)		79.4			10.3			51.0			40.6	
Approach LOS		E			B			D			D	

Intersection Summary				
HCM 2000 Control Delay	55.3	HCM 2000 Level of Service	E	
HCM 2000 Volume to Capacity ratio	1.00			
Actuated Cycle Length (s)	110.1	Sum of lost time (s)	14.7	
Intersection Capacity Utilization	89.6%	ICU Level of Service	E	
Analysis Period (min)	15			
c Critical Lane Group				

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	51	1866	359	41	989	6	164	3	60	13	6	100
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.4		4.5	5.3			4.9			4.9	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	
Frpb, ped/bikes	1.00	0.99		1.00	1.00			0.99			0.97	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			0.99			1.00	
Frt	1.00	0.98		1.00	1.00			0.96			0.89	
Flt Protected	0.95	1.00		0.95	1.00			0.97			0.99	
Satd. Flow (prot)	1770	3424		1770	3535			1701			1598	
Flt Permitted	0.95	1.00		0.95	1.00			0.66			0.96	
Satd. Flow (perm)	1770	3424		1770	3535			1168			1543	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	54	1964	378	43	1041	6	173	3	63	14	6	105
RTOR Reduction (vph)	0	15	0	0	0	0	0	13	0	0	83	0
Lane Group Flow (vph)	54	2327	0	43	1047	0	0	226	0	0	42	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8			4		
Actuated Green, G (s)	6.5	60.3		3.1	57.0			20.7			20.7	
Effective Green, g (s)	6.5	60.3		3.1	57.0			20.7			20.7	
Actuated g/C Ratio	0.07	0.61		0.03	0.58			0.21			0.21	
Clearance Time (s)	4.5	5.4		4.5	5.3			4.9			4.9	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	116	2087		55	2037			244			322	
v/s Ratio Prot	0.03	c0.68		c0.02	0.30							
v/s Ratio Perm								c0.19			0.03	
v/c Ratio	0.47	1.11		0.78	0.51			0.93			0.13	
Uniform Delay, d1	44.5	19.3		47.6	12.6			38.4			31.8	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	2.9	59.0		50.5	0.9			38.0			0.2	
Delay (s)	47.5	78.3		98.1	13.5			76.4			32.0	
Level of Service	D	E		F	B			E			C	
Approach Delay (s)		77.6			16.9			76.4			32.0	
Approach LOS		E			B			E			C	

Intersection Summary				
HCM 2000 Control Delay	58.9	HCM 2000 Level of Service	E	
HCM 2000 Volume to Capacity ratio	1.06			
Actuated Cycle Length (s)	98.9	Sum of lost time (s)	14.8	
Intersection Capacity Utilization	91.6%	ICU Level of Service	F	
Analysis Period (min)	15			
c Critical Lane Group				

4:45-5:45 PM Horizon Year 2035
5: Sandrock Rd & Aero Dr

HCM Signalized Intersection Capacity Analysis

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	55	1082	783	325	691	27	312	33	169	72	77	49
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.2	5.2	4.5	5.2		5.0	5.0	5.0	4.9	4.9	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		0.95	0.95	1.00	1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.94	1.00	1.00		1.00	1.00	0.96	1.00	0.98	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85	1.00	0.94	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	0.96	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3539	1493	1770	3512		1681	1701	1523	1770	1726	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	0.96	1.00	0.95	1.00	
Satd. Flow (perm)	1770	3539	1493	1770	3512		1681	1701	1523	1770	1726	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	58	1139	824	342	727	28	328	35	178	76	81	52
RTOR Reduction (vph)	0	0	240	0	2	0	0	0	152	0	22	0
Lane Group Flow (vph)	58	1139	584	342	753	0	180	183	26	76	111	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Prot	NA	Perm	Prot	NA		Split	NA	Perm	Split	NA	
Protected Phases	5	2		1	6		8	8		7	7	
Permitted Phases			2						8			
Actuated Green, G (s)	6.7	34.9	34.9	21.6	49.8		14.9	14.9	14.9	11.8	11.8	
Effective Green, g (s)	6.7	34.9	34.9	21.6	49.8		14.9	14.9	14.9	11.8	11.8	
Actuated g/C Ratio	0.07	0.34	0.34	0.21	0.48		0.14	0.14	0.14	0.11	0.11	
Clearance Time (s)	4.5	5.2	5.2	4.5	5.2		5.0	5.0	5.0	4.9	4.9	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	115	1201	506	371	1701		243	246	220	203	198	
v/s Ratio Prot	0.03	0.32		c0.19	0.21		0.11	c0.11		0.04	c0.06	
v/s Ratio Perm			c0.39						0.02			
v/c Ratio	0.50	0.95	1.15	0.92	0.44		0.74	0.74	0.12	0.37	0.56	
Uniform Delay, d1	46.4	33.1	34.0	39.8	17.4		42.1	42.1	38.2	42.1	43.0	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	3.5	16.2	89.6	27.8	0.2		11.5	11.5	0.2	1.2	3.4	
Delay (s)	49.9	49.3	123.5	67.6	17.6		53.6	53.6	38.5	43.2	46.5	
Level of Service	D	D	F	E	B		D	D	D	D	D	
Approach Delay (s)		79.6			33.2			48.6			45.3	
Approach LOS		E			C			D			D	

Intersection Summary				
HCM 2000 Control Delay	60.2	HCM 2000 Level of Service	E	
HCM 2000 Volume to Capacity ratio	0.93			
Actuated Cycle Length (s)	102.8	Sum of lost time (s)	19.6	
Intersection Capacity Utilization	88.8%	ICU Level of Service	E	
Analysis Period (min)	15			
c Critical Lane Group				

4:45-5:45 PM Horizon Year 2035
6: Ruffin Rd & Aero Dr

HCM Signalized Intersection Capacity Analysis

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	774	634	914	806	179	272
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.2	5.2	4.5	4.5	5.5	5.5
Lane Util. Factor	0.95	1.00	0.97	0.95	0.97	1.00
Frpb, ped/bikes	1.00	0.99	1.00	1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	3539	1567	3433	3539	3433	1529
Flt Permitted	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)	3539	1567	3433	3539	3433	1529
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	815	667	962	848	188	286
RTOR Reduction (vph)	0	8	0	0	0	235
Lane Group Flow (vph)	815	659	962	848	188	51
Confl. Peds. (#/hr)		10	10		10	10
Confl. Bikes (#/hr)		5				5
Turn Type	NA	custom	Prot	NA	Prot	Perm
Protected Phases	2	2	1	6	8	
Permitted Phases		8				8
Actuated Green, G (s)	30.4	46.4	27.6	63.2	16.0	16.0
Effective Green, g (s)	30.4	46.4	27.6	63.2	16.0	16.0
Actuated g/C Ratio	0.34	0.52	0.31	0.71	0.18	0.18
Clearance Time (s)	5.2	5.2	4.5	4.5	5.5	5.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	1206	906	1062	2507	615	274
v/s Ratio Prot	0.23	c0.25	c0.28	0.24	0.05	
v/s Ratio Perm		0.17				0.03
v/c Ratio	0.68	0.73	0.91	0.34	0.31	0.19
Uniform Delay, d1	25.2	16.5	29.6	5.0	31.8	31.1
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	3.0	5.1	10.9	0.1	1.3	1.5
Delay (s)	28.2	21.6	40.4	5.1	33.1	32.6
Level of Service	C	C	D	A	C	C
Approach Delay (s)	25.2			23.9	32.8	
Approach LOS	C			C	C	

Intersection Summary				
HCM 2000 Control Delay	25.5	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.84			
Actuated Cycle Length (s)	89.2	Sum of lost time (s)	15.2	
Intersection Capacity Utilization	74.4%	ICU Level of Service	D	
Analysis Period (min)	15			
c Critical Lane Group				

Movement	EBU	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations							
Volume (vph)	0	917	154	182	1476	176	70
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5		4.5	4.5	4.5	4.5
Lane Util. Factor		0.95		0.97	0.95	0.97	0.88
Frpb, ped/bikes		1.00		1.00	1.00	1.00	0.95
Flpb, ped/bikes		1.00		1.00	1.00	1.00	1.00
Frt		0.98		1.00	1.00	1.00	0.85
Flt Protected		1.00		0.95	1.00	0.95	1.00
Satd. Flow (prot)		3449		3433	3539	3433	2649
Flt Permitted		1.00		0.95	1.00	0.95	1.00
Satd. Flow (perm)		3449		3433	3539	3433	2649
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	965	162	192	1554	185	74
RTOR Reduction (vph)	0	17	0	0	0	0	57
Lane Group Flow (vph)	0	1110	0	192	1554	185	17
Confl. Peds. (#/hr)			10	10		10	10
Confl. Bikes (#/hr)			5				5
Turn Type	Prot	NA		Prot	NA	Prot	Perm
Protected Phases	5	2		1	6	8	
Permitted Phases							8
Actuated Green, G (s)		31.3		9.2	45.0	16.0	16.0
Effective Green, g (s)		31.3		9.2	45.0	16.0	16.0
Actuated g/C Ratio		0.45		0.13	0.64	0.23	0.23
Clearance Time (s)		4.5		4.5	4.5	4.5	4.5
Vehicle Extension (s)		3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)		1542		451	2275	784	605
v/s Ratio Prot		0.32		0.06	c0.44	c0.05	
v/s Ratio Perm							0.01
v/c Ratio		0.72		0.43	0.68	0.24	0.03
Uniform Delay, d1		15.8		28.0	8.0	22.0	21.0
Progression Factor		1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2		2.9		0.6	1.7	0.7	0.1
Delay (s)		18.7		28.6	9.6	22.7	21.0
Level of Service		B		C	A	C	C
Approach Delay (s)		18.7			11.7	22.2	
Approach LOS		B			B	C	

Intersection Summary				
HCM 2000 Control Delay	15.1	HCM 2000 Level of Service		B
HCM 2000 Volume to Capacity ratio	0.61			
Actuated Cycle Length (s)	70.0	Sum of lost time (s)		13.5
Intersection Capacity Utilization	68.7%	ICU Level of Service		C
Analysis Period (min)	15			
c Critical Lane Group				

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	4	1	4	2	0	18	0	179	7	53	176	8
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	4	1	4	2	0	19	0	188	7	56	185	8
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)											142	
pX, platoon unblocked												
vC, conflicting volume	512	497	189	498	497	192	194			196		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	512	497	189	498	497	192	194			196		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	99	100	100	100	100	98	100			96		
cM capacity (veh/h)	448	455	852	465	455	849	1380			1377		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	9	21	196	249
Volume Left	4	2	0	56
Volume Right	4	19	7	8
cSH	569	785	1380	1377
Volume to Capacity	0.02	0.03	0.00	0.04
Queue Length 95th (ft)	1	2	0	3
Control Delay (s)	11.4	9.7	0.0	2.0
Lane LOS	B	A		A
Approach Delay (s)	11.4	9.7	0.0	2.0
Approach LOS	B	A		

Intersection Summary				
Average Delay	1.7			
Intersection Capacity Utilization	35.9%	ICU Level of Service		A
Analysis Period (min)	15			

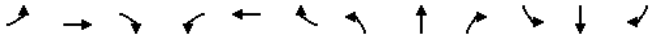
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	0	94	99	0	67	50
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	0	99	104	0	71	53
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						635
pX, platoon unblocked						
vC, conflicting volume	298	104			104	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	298	104			104	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	90			95	
cM capacity (veh/h)	661	950			1487	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	99	104	123
Volume Left	0	0	71
Volume Right	99	0	0
cSH	950	1700	1487
Volume to Capacity	0.10	0.06	0.05
Queue Length 95th (ft)	9	0	4
Control Delay (s)	9.2	0.0	4.5
Lane LOS	A		A
Approach Delay (s)	9.2	0.0	4.5
Approach LOS	A		

Intersection Summary			
Average Delay		4.5	
Intersection Capacity Utilization		25.5%	ICU Level of Service A
Analysis Period (min)		15	

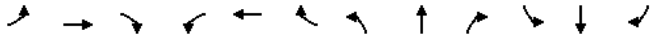
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	346	47	478	330	1315	22
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.1	4.7	4.7	5.8	5.8	
Lane Util. Factor	0.97	1.00	1.00	0.95	0.95	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.85	1.00	1.00	1.00	
Flt Protected	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	3433	1583	1770	3539	3527	
Flt Permitted	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (perm)	3433	1583	1770	3539	3527	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	364	49	503	347	1384	23
RTOR Reduction (vph)	0	6	0	0	1	0
Lane Group Flow (vph)	364	43	503	347	1406	0
Confl. Peds. (#/hr)						10
Confl. Bikes (#/hr)						5
Turn Type	Prot	pm+ov	Prot	NA	NA	
Protected Phases	4	5	5	2	6	
Permitted Phases		4				
Actuated Green, G (s)	15.1	47.2	32.1	83.0	46.2	
Effective Green, g (s)	15.1	47.2	32.1	83.0	46.2	
Actuated g/C Ratio	0.14	0.43	0.29	0.76	0.42	
Clearance Time (s)	5.1	4.7	4.7	5.8	5.8	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	475	685	521	2694	1494	
v/s Ratio Prot	c0.11	0.02	c0.28	0.10	c0.40	
v/s Ratio Perm		0.01				
v/c Ratio	0.77	0.06	0.97	0.13	0.94	
Uniform Delay, d1	45.2	18.0	37.9	3.4	30.1	
Progression Factor	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	7.3	0.0	30.5	0.1	12.9	
Delay (s)	52.5	18.1	68.4	3.5	43.0	
Level of Service	D	B	E	A	D	
Approach Delay (s)	48.4			41.9	43.0	
Approach LOS	D			D	D	

Intersection Summary			
HCM 2000 Control Delay	43.5	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.92		
Actuated Cycle Length (s)	109.0	Sum of lost time (s)	15.6
Intersection Capacity Utilization	86.4%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	134	163	30	458	54	292	37	425	136	277	649	108
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.1			5.1	5.1	4.7	5.5	5.5	4.7	5.5	
Lane Util. Factor		1.00			1.00	1.00	1.00	0.95	1.00	1.00	0.95	
Frpb, ped/bikes		1.00			1.00	0.96	1.00	1.00	0.94	1.00	0.99	
Flpb, ped/bikes		1.00			1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt		0.99			1.00	0.85	1.00	1.00	0.85	1.00	0.98	
Flt Protected		0.98			0.96	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1796			1783	1526	1770	3539	1481	1770	3434	
Flt Permitted		0.98			0.96	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)		1796			1783	1526	1770	3539	1481	1770	3434	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	141	172	32	482	57	307	39	447	143	292	683	114
RTOR Reduction (vph)	0	3	0	0	0	119	0	0	118	0	12	0
Lane Group Flow (vph)	0	342	0	0	539	188	39	447	25	292	785	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Split	NA		Split	NA	Perm	Prot	NA	Perm	Prot	NA	
Protected Phases	4	4		3	3		5	2		1	6	
Permitted Phases						3			2			
Actuated Green, G (s)		20.4			33.1	33.1	2.8	19.7	19.7	18.3	35.2	
Effective Green, g (s)		20.4			33.1	33.1	2.8	19.7	19.7	18.3	35.2	
Actuated g/C Ratio		0.18			0.30	0.30	0.03	0.18	0.18	0.16	0.31	
Clearance Time (s)		5.1			5.1	5.1	4.7	5.5	5.5	4.7	5.5	
Vehicle Extension (s)		3.0			3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)		327			527	451	44	623	260	289	1080	
v/s Ratio Prot		c0.19			c0.30		0.02	0.13		c0.17	c0.23	
v/s Ratio Perm						0.12			0.02			
v/c Ratio		1.05			1.02	0.42	0.89	0.72	0.10	1.01	0.73	
Uniform Delay, d1		45.8			39.4	31.6	54.4	43.5	38.6	46.8	34.1	
Progression Factor		1.00			1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2		62.0			45.1	0.6	92.1	7.0	0.7	55.6	4.3	
Delay (s)		107.8			84.5	32.3	146.5	50.4	39.4	102.4	38.4	
Level of Service		F			F	C	F	D	D	F	D	
Approach Delay (s)		107.8			65.5			53.9			55.5	
Approach LOS		F			E			D			E	

Intersection Summary				
HCM 2000 Control Delay	64.3	HCM 2000 Level of Service	E	
HCM 2000 Volume to Capacity ratio	0.98			
Actuated Cycle Length (s)	111.9	Sum of lost time (s)	20.4	
Intersection Capacity Utilization	91.8%	ICU Level of Service	F	
Analysis Period (min)	15			
c Critical Lane Group				



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	92	96	159	838	81	43	84	811	253	43	1036	27
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.9	4.9	4.5	4.9		4.5	5.3		4.5	5.0	
Lane Util. Factor	1.00	1.00	1.00	0.97	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	1.00	0.85	1.00	0.95		1.00	0.96		1.00	1.00	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1863	1583	3433	1766		1770	3413		1770	3526	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	1863	1583	3433	1766		1770	3413		1770	3526	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	97	101	167	882	85	45	88	854	266	45	1091	28
RTOR Reduction (vph)	0	0	141	0	18	0	0	25	0	0	1	0
Lane Group Flow (vph)	97	101	26	882	112	0	88	1095	0	45	1118	0
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4									
Actuated Green, G (s)	10.6	11.3	11.3	30.3	31.0		9.4	43.6		5.6	40.1	
Effective Green, g (s)	10.6	11.3	11.3	30.3	31.0		9.4	43.6		5.6	40.1	
Actuated g/C Ratio	0.10	0.10	0.10	0.28	0.28		0.09	0.40		0.05	0.36	
Clearance Time (s)	4.5	4.9	4.9	4.5	4.9		4.5	5.3		4.5	5.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	170	191	162	945	497		151	1352		90	1285	
v/s Ratio Prot	0.05	c0.05		c0.26	0.06		c0.05	c0.32		0.03	c0.32	
v/s Ratio Perm			0.02									
v/c Ratio	0.57	0.53	0.16	0.93	0.23		0.58	0.81		0.50	0.87	
Uniform Delay, d1	47.5	46.8	45.0	38.9	30.3		48.4	29.5		50.8	32.5	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	4.6	2.6	0.5	15.6	0.2		5.6	5.3		4.3	8.2	
Delay (s)	52.1	49.5	45.5	54.4	30.5		54.0	34.8		55.2	40.7	
Level of Service	D	D	D	D	C		D	C		E	D	
Approach Delay (s)		48.3			51.4			36.2			41.3	
Approach LOS		D			D			D			D	

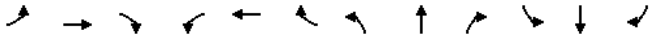
Intersection Summary				
HCM 2000 Control Delay	43.1	HCM 2000 Level of Service	D	
HCM 2000 Volume to Capacity ratio	0.82			
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	19.2	
Intersection Capacity Utilization	78.9%	ICU Level of Service	D	
Analysis Period (min)	15			
c Critical Lane Group				

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	426	0	0	1120	506	287
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.1			5.1	5.1	5.1
Lane Util. Factor	0.95			0.95	0.97	0.91
Frt	1.00			1.00	0.99	0.85
Flt Protected	1.00			1.00	0.96	1.00
Satd. Flow (prot)	3539			3539	3416	1441
Flt Permitted	1.00			1.00	0.96	1.00
Satd. Flow (perm)	3539			3539	3416	1441
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	448	0	0	1179	533	302
RTOR Reduction (vph)	0	0	0	0	9	205
Lane Group Flow (vph)	448	0	0	1179	566	55
Turn Type	NA			NA	Prot	Perm
Protected Phases	2			6	4	
Permitted Phases						4
Actuated Green, G (s)	13.0			24.8	14.2	14.2
Effective Green, g (s)	13.0			24.8	14.2	14.2
Actuated g/C Ratio	0.19			0.37	0.21	0.21
Clearance Time (s)	5.1			5.1	5.1	5.1
Vehicle Extension (s)	3.0			3.0	3.0	3.0
Lane Grp Cap (vph)	683			1304	720	304
v/s Ratio Prot	c0.13			c0.33	c0.17	
v/s Ratio Perm						0.04
v/c Ratio	0.66			0.90	0.79	0.18
Uniform Delay, d1	25.1			20.1	25.1	21.8
Progression Factor	1.00			1.00	1.00	1.00
Incremental Delay, d2	2.3			9.0	5.7	0.3
Delay (s)	27.4			29.2	30.8	22.1
Level of Service	C			C	C	C
Approach Delay (s)	27.4			29.2	28.1	
Approach LOS	C			C	C	

Intersection Summary				
HCM 2000 Control Delay	28.5	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.81			
Actuated Cycle Length (s)	67.3	Sum of lost time (s)	15.3	
Intersection Capacity Utilization	56.9%	ICU Level of Service	B	
Analysis Period (min)	15			
c Critical Lane Group				

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	150	516	52	257	923	28	122	134	250	17	9	57
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.9	4.0	4.5	4.9		4.9	4.9	4.9		4.9	4.9
Lane Util. Factor	1.00	0.95	1.00	0.97	0.95		1.00	0.95	0.95		1.00	1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	0.99	0.97		1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00		1.00	0.95	0.85		1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00		0.97	1.00
Satd. Flow (prot)	1770	3539	1583	3433	3519		1770	1665	1463		1803	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00		0.97	1.00
Satd. Flow (perm)	1770	3539	1583	3433	3519		1770	1665	1463		1803	1583
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	158	543	55	271	972	29	128	141	263	18	9	60
RTOR Reduction (vph)	0	0	0	0	3	0	0	0	0	0	0	0
Lane Group Flow (vph)	158	543	55	271	998	0	128	212	192	0	27	60
Confl. Peds. (#/hr)						10			10			
Confl. Bikes (#/hr)						5			5			
Turn Type	Prot	NA	Free	Prot	NA		Split	NA	Perm	Split	NA	Perm
Protected Phases	5	2		1	6		3	3		4	4	
Permitted Phases			Free						3			4
Actuated Green, G (s)	4.1	15.9	60.4	4.1	15.9		16.2	16.2	16.2		5.0	5.0
Effective Green, g (s)	4.1	15.9	60.4	4.1	15.9		16.2	16.2	16.2		5.0	5.0
Actuated g/C Ratio	0.07	0.26	1.00	0.07	0.26		0.27	0.27	0.27		0.08	0.08
Clearance Time (s)	4.5	4.9		4.5	4.9		4.9	4.9	4.9		4.9	4.9
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	120	931	1583	233	926		474	446	392		149	131
v/s Ratio Prot	c0.09	0.15		0.08	c0.28		0.07	0.13			0.01	
v/s Ratio Perm			0.03						c0.13			c0.04
v/c Ratio	1.32	0.58	0.03	1.16	1.08		0.27	0.48	0.49		0.18	0.46
Uniform Delay, d1	28.1	19.4	0.0	28.1	22.2		17.4	18.5	18.6		25.8	26.4
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	189.4	2.7	0.0	110.1	52.9		1.4	3.6	4.3		0.6	2.5
Delay (s)	217.6	22.0	0.0	138.3	75.1		18.8	22.1	22.9		26.4	28.9
Level of Service	F	C	A	F	E		B	C	C		C	C
Approach Delay (s)		61.3			88.6			21.6			28.1	
Approach LOS		E			F			C			C	

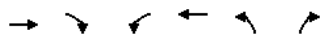
Intersection Summary				
HCM 2000 Control Delay	65.3	HCM 2000 Level of Service	E	
HCM 2000 Volume to Capacity ratio	0.79			
Actuated Cycle Length (s)	60.4	Sum of lost time (s)	19.2	
Intersection Capacity Utilization	62.2%	ICU Level of Service	B	
Analysis Period (min)	15			
c Critical Lane Group				



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	11	450	665	431	1144	119	0	0	0	54	214	21
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.7	5.1		4.7	5.1						5.5	
Lane Util. Factor	1.00	0.95		1.00	0.95						1.00	
Frpb, ped/bikes	1.00	0.99		1.00	1.00						1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00						1.00	
Frt	1.00	0.91		1.00	0.99						0.99	
Flt Protected	0.95	1.00		0.95	1.00						0.99	
Satd. Flow (prot)	1764	3178		1770	3474						1823	
Flt Permitted	0.95	1.00		0.95	1.00						0.99	
Satd. Flow (perm)	1764	3178		1770	3474						1823	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	12	474	700	454	1204	125	0	0	0	57	225	22
RTOR Reduction (vph)	0	123	0	0	10	0	0	0	0	0	4	0
Lane Group Flow (vph)	12	1051	0	454	1319	0	0	0	0	0	300	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Prot	NA		Prot	NA					Split	NA	
Protected Phases	5	2		1	6					4	4	
Permitted Phases												
Actuated Green, G (s)	0.8	26.2		16.3	41.7						16.0	
Effective Green, g (s)	0.8	26.2		16.3	41.7						16.0	
Actuated g/C Ratio	0.01	0.36		0.22	0.57						0.22	
Clearance Time (s)	4.7	5.1		4.7	5.1						5.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0						3.0	
Lane Grp Cap (vph)	19	1128		390	1962						395	
v/s Ratio Prot	0.01	c0.33		c0.26	0.38						c0.16	
v/s Ratio Perm												
v/c Ratio	0.63	1.11dr		1.16	0.67						0.76	
Uniform Delay, d1	36.4	22.9		28.8	11.3						27.1	
Progression Factor	1.00	1.00		1.00	1.00						1.00	
Incremental Delay, d2	52.7	13.5		98.4	0.9						12.9	
Delay (s)	89.1	36.4		127.2	12.2						40.0	
Level of Service	F	D		F	B						D	
Approach Delay (s)		37.0			41.5			0.0			40.0	
Approach LOS		D			D			A			D	

Intersection Summary				
HCM 2000 Control Delay	39.7	HCM 2000 Level of Service	D	
HCM 2000 Volume to Capacity ratio	0.95			
Actuated Cycle Length (s)	73.8	Sum of lost time (s)	15.3	
Intersection Capacity Utilization	93.4%	ICU Level of Service	F	
Analysis Period (min)	15			

dr Defacto Right Lane. Recode with 1 though lane as a right lane.
c Critical Lane Group



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	527	0	0	882	771	255
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.5			5.5	4.5	5.5
Lane Util. Factor	0.95			0.95	0.97	1.00
Frpb, ped/bikes	1.00			1.00	1.00	0.98
Flpb, ped/bikes	1.00			1.00	1.00	1.00
Frt	1.00			1.00	1.00	0.85
Flt Protected	1.00			1.00	0.95	1.00
Satd. Flow (prot)	3539			3539	3433	1550
Flt Permitted	1.00			1.00	0.95	1.00
Satd. Flow (perm)	3539			3539	3433	1550
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	555	0	0	928	812	268
RTOR Reduction (vph)	0	0	0	0	0	147
Lane Group Flow (vph)	555	0	0	928	812	121
Confl. Peds. (#/hr)						10
Confl. Bikes (#/hr)						5
Turn Type	NA			NA	Prot	Perm
Protected Phases	2			6	4	
Permitted Phases						6
Actuated Green, G (s)	23.6			23.6	18.6	23.6
Effective Green, g (s)	23.6			23.6	18.6	23.6
Actuated g/C Ratio	0.45			0.45	0.36	0.45
Clearance Time (s)	5.5			5.5	4.5	5.5
Vehicle Extension (s)	3.0			3.0	3.0	3.0
Lane Grp Cap (vph)	1600			1600	1223	700
v/s Ratio Prot	0.16			c0.26	c0.24	
v/s Ratio Perm						0.08
v/c Ratio	0.35			0.58	0.66	0.17
Uniform Delay, d1	9.3			10.6	14.2	8.5
Progression Factor	1.00			1.00	1.00	1.00
Incremental Delay, d2	0.1			0.5	1.4	0.1
Delay (s)	9.4			11.1	15.5	8.6
Level of Service	A			B	B	A
Approach Delay (s)	9.4			11.1	13.8	
Approach LOS	A			B	B	

Intersection Summary			
HCM 2000 Control Delay	11.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	52.2	Sum of lost time (s)	10.0
Intersection Capacity Utilization	54.7%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Appendix O

Horizon Year with Project (Phase 2) LOS Calculations

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	4	3	1	467	60	706	0	553	421	465	427	23
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.9		4.9	4.9	4.9		5.2		4.5	4.5	
Lane Util. Factor		1.00		0.95	0.91	0.95		0.95		0.97	0.95	
Frpb, ped/bikes		0.99		1.00	0.99	0.98		0.99		1.00	1.00	
Flpb, ped/bikes		1.00		1.00	1.00	1.00		1.00		1.00	1.00	
Frt		0.98		1.00	0.89	0.85		0.94		1.00	0.99	
Flt Protected		0.98		0.95	0.99	1.00		1.00		0.95	1.00	
Satd. Flow (prot)		1765		1681	1481	1481		3264		3433	3503	
Flt Permitted		0.98		0.95	0.99	1.00		1.00		0.95	1.00	
Satd. Flow (perm)		1765		1681	1481	1481		3264		3433	3503	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	4	3	1	492	63	743	0	582	443	489	449	24
RTOR Reduction (vph)	0	1	0	0	96	284	0	162	0	0	5	0
Lane Group Flow (vph)	0	7	0	443	335	140	0	863	0	489	468	0
Confl. Peds. (#/hr)			10						10			10
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Split	NA		Split	NA	Perm		NA		Prot	NA	
Protected Phases	7	7		8	8			2		1	6	
Permitted Phases						8						
Actuated Green, G (s)		1.4		29.7	29.7	29.7		25.9		13.5	44.6	
Effective Green, g (s)		1.4		29.7	29.7	29.7		25.9		13.5	44.6	
Actuated g/C Ratio		0.02		0.33	0.33	0.33		0.29		0.15	0.50	
Clearance Time (s)		4.9		4.9	4.9	4.9		5.2		4.5	4.5	
Vehicle Extension (s)		3.0		3.0	3.0	3.0		3.0		3.0	3.0	
Lane Grp Cap (vph)		27		554	488	488		939		514	1735	
v/s Ratio Prot		c0.00		c0.26	0.23			c0.26		c0.14	0.13	
v/s Ratio Perm						0.09						
v/c Ratio		0.26		0.80	0.69	0.29		0.92		0.95	0.27	
Uniform Delay, d1		43.8		27.4	26.1	22.3		31.0		37.9	13.2	
Progression Factor		1.00		1.00	1.00	1.00		1.00		1.00	1.00	
Incremental Delay, d2		5.1		7.9	4.0	0.3		15.3		27.8	0.4	
Delay (s)		48.9		35.4	30.1	22.6		46.3		65.7	13.6	
Level of Service		D		D	C	C		D		E	B	
Approach Delay (s)		48.9			29.5			46.3			40.1	
Approach LOS		D			C			D			D	

Intersection Summary			
HCM 2000 Control Delay	37.9	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.86		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	19.5
Intersection Capacity Utilization	83.0%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	157	597	106	337	892	574	345	208	545	229	142	43
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.3		4.5	5.3		4.5	5.7	5.7	4.5	6.0	
Lane Util. Factor	1.00	0.95		0.97	0.95		0.97	0.95	1.00	0.97	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	0.99		1.00	1.00	0.98	1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.98		1.00	0.94		1.00	1.00	0.85	1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3440		3433	3284		3433	3539	1557	3433	3383	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	3440		3433	3284		3433	3539	1557	3433	3383	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	165	628	112	355	939	604	363	219	574	241	149	45
RTOR Reduction (vph)	0	11	0	0	87	0	0	0	59	0	24	0
Lane Group Flow (vph)	165	729	0	355	1456	0	363	219	515	241	170	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Prot	NA		Prot	NA		Prot	NA	custom	Prot	NA	
Protected Phases	5	2		1	6		3	8	8	7	4	
Permitted Phases									1			
Actuated Green, G (s)	10.5	47.7		17.5	54.7		16.2	21.6	39.1	12.3	17.4	
Effective Green, g (s)	10.5	47.7		17.5	54.7		16.2	21.6	39.1	12.3	17.4	
Actuated g/C Ratio	0.09	0.40		0.15	0.46		0.14	0.18	0.33	0.10	0.15	
Clearance Time (s)	4.5	5.3		4.5	5.3		4.5	5.7	5.7	4.5	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	156	1377		504	1508		466	641	585	354	494	
v/s Ratio Prot	0.09	0.21		0.10	c0.44		c0.11	0.06	c0.16	0.07	0.05	
v/s Ratio Perm									0.17			
v/c Ratio	1.06	0.53		0.70	0.97		0.78	0.34	0.88	0.68	0.34	
Uniform Delay, d1	54.3	27.2		48.3	31.3		49.7	42.5	37.8	51.5	45.7	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	88.2	0.4		4.4	15.7		8.0	0.3	14.4	5.3	0.4	
Delay (s)	142.5	27.5		52.8	46.9		57.8	42.9	52.2	56.8	46.1	
Level of Service	F	C		D	D		E	D	D	E	D	
Approach Delay (s)		48.5			48.0			52.2			52.1	
Approach LOS		D			D			D			D	

Intersection Summary			
HCM 2000 Control Delay	49.6	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.00		
Actuated Cycle Length (s)	119.1	Sum of lost time (s)	20.3
Intersection Capacity Utilization	86.7%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

8:00-9:00 AM Horizon Year 2035 + Project (Phase 2)
3: Aero Ct & Aero Dr

HCM Signalized Intersection Capacity Analysis

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	10	965	394	145	1573	14	217	0	90	3	0	16
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.3		4.5	5.3		4.9	4.9			4.9	4.9
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00			1.00	1.00
Frpb, ped/bikes	1.00	0.99		1.00	1.00		1.00	0.97			1.00	0.97
Flpb, ped/bikes	1.00	1.00		1.00	1.00		0.99	1.00			0.99	1.00
Frt	1.00	0.96		1.00	1.00		1.00	0.85			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00			0.95	1.00
Satd. Flow (prot)	1770	3338		1770	3533		1744	1533			1747	1533
Flt Permitted	0.95	1.00		0.95	1.00		0.76	1.00			0.70	1.00
Satd. Flow (perm)	1770	3338		1770	3533		1387	1533			1279	1533
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	11	1016	415	153	1656	15	228	0	95	3	0	17
RTOR Reduction (vph)	0	49	0	0	1	0	0	76	0	0	0	14
Lane Group Flow (vph)	11	1382	0	153	1670	0	228	19	0	0	3	3
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	Perm
Protected Phases	5	2		1	6			4			4	
Permitted Phases							4			4		4
Actuated Green, G (s)	1.3	36.6		11.4	46.7		15.3	15.3			15.3	15.3
Effective Green, g (s)	1.3	36.6		11.4	46.7		15.3	15.3			15.3	15.3
Actuated g/C Ratio	0.02	0.47		0.15	0.60		0.20	0.20			0.20	0.20
Clearance Time (s)	4.5	5.3		4.5	5.3		4.9	4.9			4.9	4.9
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0			3.0	3.0
Lane Grp Cap (vph)	29	1566		258	2115		272	300			250	300
v/s Ratio Prot	0.01	c0.41		c0.09	c0.47			0.01				
v/s Ratio Perm							c0.16				0.00	0.00
v/c Ratio	0.38	0.88		0.59	0.79		0.84	0.06			0.01	0.01
Uniform Delay, d1	38.0	18.7		31.1	11.9		30.2	25.5			25.3	25.3
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00			1.00	1.00
Incremental Delay, d2	8.1	6.2		3.6	2.0		19.7	0.1			0.0	0.0
Delay (s)	46.1	25.0		34.8	14.0		49.8	25.6			25.3	25.3
Level of Service	D	C		C	B		D	C			C	C
Approach Delay (s)		25.1			15.7			42.7			25.3	
Approach LOS		C			B			D			C	

Intersection Summary				
HCM 2000 Control Delay	21.9	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.84			
Actuated Cycle Length (s)	78.0	Sum of lost time (s)	14.7	
Intersection Capacity Utilization	78.5%	ICU Level of Service	D	
Analysis Period (min)	15			
c Critical Lane Group				

8:00-9:00 AM Horizon Year 2035 + Project (Phase 2)
4: Afton Rd & Aero Dr

HCM Signalized Intersection Capacity Analysis

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	77	807	174	65	1403	8	289	4	58	3	0	17
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.4		4.5	5.3			4.9			4.9	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	
Frpb, ped/bikes	1.00	0.99		1.00	1.00			1.00			0.98	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			0.99			1.00	
Frt	1.00	0.97		1.00	1.00			0.98			0.88	
Flt Protected	0.95	1.00		0.95	1.00			0.96			0.99	
Satd. Flow (prot)	1770	3418		1770	3535			1723			1598	
Flt Permitted	0.95	1.00		0.95	1.00			0.75			0.95	
Satd. Flow (perm)	1770	3418		1770	3535			1344			1532	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	81	849	183	68	1477	8	304	4	61	3	0	18
RTOR Reduction (vph)	0	25	0	0	1	0	0	11	0	0	15	0
Lane Group Flow (vph)	81	1007	0	68	1484	0	0	358	0	0	6	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8			4		
Actuated Green, G (s)	3.5	29.6		3.9	30.1			19.9			19.9	
Effective Green, g (s)	3.5	29.6		3.9	30.1			19.9			19.9	
Actuated g/C Ratio	0.05	0.43		0.06	0.44			0.29			0.29	
Clearance Time (s)	4.5	5.4		4.5	5.3			4.9			4.9	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	90	1483		101	1560			392			447	
v/s Ratio Prot	c0.05	0.29		0.04	c0.42							
v/s Ratio Perm								c0.27			0.00	
v/c Ratio	0.90	0.68		0.67	0.95			0.91			0.01	
Uniform Delay, d1	32.2	15.5		31.5	18.3			23.3			17.2	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	63.0	2.5		16.3	13.9			25.3			0.0	
Delay (s)	95.2	18.0		47.8	32.2			48.6			17.2	
Level of Service	F	B		D	C			D			B	
Approach Delay (s)		23.6			32.9			48.6			17.2	
Approach LOS		C			C			D			B	

Intersection Summary				
HCM 2000 Control Delay	31.3	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.94			
Actuated Cycle Length (s)	68.2	Sum of lost time (s)	14.8	
Intersection Capacity Utilization	82.2%	ICU Level of Service	E	
Analysis Period (min)	15			
c Critical Lane Group				

8:00-9:00 AM Horizon Year 2035 + Project (Phase 2)
5: Sandrock Rd & Aero Dr

HCM Signalized Intersection Capacity Analysis

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	45	597	209	128	871	61	570	42	232	16	7	18
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.2	5.2	4.5	5.2		5.0	5.0	5.0	4.9	4.9	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		0.95	0.95	1.00	1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.95	1.00	1.00		1.00	1.00	0.97	1.00	0.97	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85	1.00	0.89	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	0.96	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3539	1510	1770	3494		1681	1696	1538	1770	1604	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	0.96	1.00	0.95	1.00	
Satd. Flow (perm)	1770	3539	1510	1770	3494		1681	1696	1538	1770	1604	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	47	628	220	135	917	64	600	44	244	17	7	19
RTOR Reduction (vph)	0	0	152	0	6	0	0	0	166	0	18	0
Lane Group Flow (vph)	47	628	68	135	975	0	318	326	78	17	8	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Prot	NA	Perm	Prot	NA		Split	NA	Perm	Split	NA	
Protected Phases	5	2		1	6		8	8		7	7	
Permitted Phases			2						8			
Actuated Green, G (s)	2.2	20.8	20.8	6.8	25.4		16.4	16.4	16.4	3.6	3.6	
Effective Green, g (s)	2.2	20.8	20.8	6.8	25.4		16.4	16.4	16.4	3.6	3.6	
Actuated g/C Ratio	0.03	0.31	0.31	0.10	0.38		0.24	0.24	0.24	0.05	0.05	
Clearance Time (s)	4.5	5.2	5.2	4.5	5.2		5.0	5.0	5.0	4.9	4.9	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	57	1095	467	179	1320		410	413	375	94	85	
v/s Ratio Prot	0.03	0.18		c0.08	c0.28		0.19	c0.19		c0.01	0.00	
v/s Ratio Perm			0.05						0.05			
v/c Ratio	0.82	0.57	0.15	0.75	0.74		0.78	0.79	0.21	0.18	0.09	
Uniform Delay, d1	32.3	19.5	16.8	29.4	18.0		23.7	23.8	20.2	30.4	30.2	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	60.0	2.2	0.7	16.4	2.2		8.9	9.7	0.3	0.9	0.5	
Delay (s)	92.3	21.7	17.4	45.8	20.2		32.6	33.4	20.5	31.3	30.7	
Level of Service	F	C	B	D	C		C	C	C	C	C	
Approach Delay (s)		24.3			23.3			29.6			31.0	
Approach LOS		C			C			C			C	

Intersection Summary				
HCM 2000 Control Delay	25.6	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.75			
Actuated Cycle Length (s)	67.2	Sum of lost time (s)	19.6	
Intersection Capacity Utilization	65.2%	ICU Level of Service	C	
Analysis Period (min)	15			
c Critical Lane Group				

8:00-9:00 AM Horizon Year 2035 + Project (Phase 2)
6: Ruffin Rd & Aero Dr

HCM Signalized Intersection Capacity Analysis

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	631	133	185	624	498	572
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.2	5.2	4.5	4.5	5.5	5.5
Lane Util. Factor	0.95	1.00	0.97	0.95	0.97	1.00
Frpb, ped/bikes	1.00	0.99	1.00	1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	3539	1562	3433	3539	3433	1542
Flt Permitted	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)	3539	1562	3433	3539	3433	1542
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	664	140	195	657	524	602
RTOR Reduction (vph)	0	22	0	0	0	189
Lane Group Flow (vph)	664	118	195	657	524	413
Confl. Peds. (#/hr)		10	10		10	10
Confl. Bikes (#/hr)		5				5
Turn Type	NA	custom	Prot	NA	Prot	Perm
Protected Phases	2	2	1	6	8	
Permitted Phases		8				8
Actuated Green, G (s)	17.4	39.3	5.5	28.1	21.9	21.9
Effective Green, g (s)	17.4	39.3	5.5	28.1	21.9	21.9
Actuated g/C Ratio	0.29	0.65	0.09	0.47	0.36	0.36
Clearance Time (s)	5.2	5.2	4.5	4.5	5.5	5.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	1026	1158	314	1657	1253	562
v/s Ratio Prot	c0.19	0.03	c0.06	0.19	0.15	
v/s Ratio Perm		0.05				c0.27
v/c Ratio	0.65	0.10	0.62	0.40	0.42	0.74
Uniform Delay, d1	18.6	3.8	26.2	10.4	14.3	16.5
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	3.2	0.2	3.8	0.2	1.0	8.3
Delay (s)	21.8	4.0	30.0	10.6	15.3	24.9
Level of Service	C	A	C	B	B	C
Approach Delay (s)	18.7			15.0	20.4	
Approach LOS	B			B	C	

Intersection Summary				
HCM 2000 Control Delay	18.3	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.69			
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	15.2	
Intersection Capacity Utilization	62.8%	ICU Level of Service	B	
Analysis Period (min)	15			
c Critical Lane Group				

Movement	EBU	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations							
Volume (vph)	0	1114	134	129	720	96	63
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5		4.5	4.5	4.5	4.5
Lane Util. Factor		0.95		0.97	0.95	0.97	0.88
Frpb, ped/bikes		1.00		1.00	1.00	1.00	0.95
Flpb, ped/bikes		1.00		1.00	1.00	1.00	1.00
Frt		0.98		1.00	1.00	1.00	0.85
Flt Protected		1.00		0.95	1.00	0.95	1.00
Satd. Flow (prot)		3472		3433	3539	3433	2643
Flt Permitted		1.00		0.95	1.00	0.95	1.00
Satd. Flow (perm)		3472		3433	3539	3433	2643
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	1173	141	136	758	101	66
RTOR Reduction (vph)	0	10	0	0	0	0	52
Lane Group Flow (vph)	0	1304	0	136	758	101	14
Confl. Peds. (#/hr)			10	10		10	10
Confl. Bikes (#/hr)			5				5
Turn Type	Prot	NA		Prot	NA	Prot	Perm
Protected Phases	5	2		1	6	8	
Permitted Phases							8
Actuated Green, G (s)		38.3		7.1	49.9	16.1	16.1
Effective Green, g (s)		38.3		7.1	49.9	16.1	16.1
Actuated g/C Ratio		0.51		0.09	0.67	0.21	0.21
Clearance Time (s)		4.5		4.5	4.5	4.5	4.5
Vehicle Extension (s)		3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)		1773		324	2354	736	567
v/s Ratio Prot		c0.38		c0.04	0.21	c0.03	
v/s Ratio Perm							0.01
v/c Ratio		0.74		0.42	0.32	0.14	0.02
Uniform Delay, d1		14.4		32.0	5.3	23.8	23.3
Progression Factor		1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2		2.8		0.9	0.4	0.4	0.1
Delay (s)		17.1		32.9	5.7	24.2	23.3
Level of Service		B		C	A	C	C
Approach Delay (s)		17.1			9.8	23.9	
Approach LOS		B			A	C	

Intersection Summary				
HCM 2000 Control Delay	14.9	HCM 2000 Level of Service		B
HCM 2000 Volume to Capacity ratio	0.54			
Actuated Cycle Length (s)	75.0	Sum of lost time (s)		13.5
Intersection Capacity Utilization	63.4%	ICU Level of Service		B
Analysis Period (min)	15			
c Critical Lane Group				

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	2	0	0	26	0	280	1	13	523	2
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	0	0	2	0	0	27	0	295	1	14	551	2
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)											142	
pX, platoon unblocked												
vC, conflicting volume	902	875	552	876	875	295	553			296		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	902	875	552	876	875	295	553			296		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	100	100	100	96	100			99		
cM capacity (veh/h)	247	285	534	266	285	744	1017			1266		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	2	27	296	566
Volume Left	0	0	0	14
Volume Right	2	27	1	2
cSH	534	744	1017	1266
Volume to Capacity	0.00	0.04	0.00	0.01
Queue Length 95th (ft)	0	3	0	1
Control Delay (s)	11.8	10.0	0.0	0.3
Lane LOS	B	B		A
Approach Delay (s)	11.8	10.0	0.0	0.3
Approach LOS	B	B		

Intersection Summary				
Average Delay	0.5			
Intersection Capacity Utilization	48.1%	ICU Level of Service		A
Analysis Period (min)	15			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	1	177	103	2	344	142
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	1	186	108	2	362	149
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						635
pX, platoon unblocked						
vC, conflicting volume	983	109			111	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	983	109			111	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	99	80			76	
cM capacity (veh/h)	208	944			1479	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	187	111	512
Volume Left	1	0	362
Volume Right	186	2	0
cSH	926	1700	1479
Volume to Capacity	0.20	0.07	0.24
Queue Length 95th (ft)	19	0	24
Control Delay (s)	9.9	0.0	6.5
Lane LOS	A		A
Approach Delay (s)	9.9	0.0	6.5
Approach LOS	A		

Intersection Summary			
Average Delay		6.4	
Intersection Capacity Utilization		50.9%	ICU Level of Service A
Analysis Period (min)		15	

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	777	30	439	527	376	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.1	4.7	4.7	5.8	5.8	
Lane Util. Factor	0.97	1.00	1.00	0.95	0.95	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.85	1.00	1.00	1.00	
Flt Protected	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	3433	1583	1770	3539	3539	
Flt Permitted	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (perm)	3433	1583	1770	3539	3539	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	818	32	462	555	396	0
RTOR Reduction (vph)	0	13	0	0	0	0
Lane Group Flow (vph)	818	19	462	555	396	0
Confl. Peds. (#/hr)						10
Confl. Bikes (#/hr)						5
Turn Type	Prot	pm+ov	Prot	NA	NA	
Protected Phases	4	5	5	2	6	
Permitted Phases		4				
Actuated Green, G (s)	19.6	41.1	21.5	44.2	18.0	
Effective Green, g (s)	19.6	41.1	21.5	44.2	18.0	
Actuated g/C Ratio	0.26	0.55	0.29	0.59	0.24	
Clearance Time (s)	5.1	4.7	4.7	5.8	5.8	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	900	870	509	2094	852	
v/s Ratio Prot	c0.24	0.01	c0.26	0.16	c0.11	
v/s Ratio Perm		0.01				
v/c Ratio	0.91	0.02	0.91	0.27	0.46	
Uniform Delay, d1	26.7	7.6	25.6	7.4	24.2	
Progression Factor	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	12.8	0.0	19.8	0.3	1.8	
Delay (s)	39.5	7.7	45.4	7.7	26.1	
Level of Service	D	A	D	A	C	
Approach Delay (s)	38.3			24.8	26.1	
Approach LOS	D			C	C	

Intersection Summary			
HCM 2000 Control Delay	30.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	74.7	Sum of lost time (s)	15.6
Intersection Capacity Utilization	72.8%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

8:00-9:00 AM Horizon Year 2035 + Project (Phase 2)
11: Kearny Mesa & Armour St/SR-163 SB Ramp

HCM Signalized Intersection Capacity Analysis

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	102	60	21	436	77	349	2	189	84	70	237	74
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.1			5.1	5.1	4.7	5.5	5.5	4.7	5.5	
Lane Util. Factor		1.00			1.00	1.00	1.00	0.95	1.00	1.00	0.95	
Frpb, ped/bikes		1.00			1.00	0.97	1.00	1.00	0.95	1.00	0.99	
Flpb, ped/bikes		1.00			1.00	1.00	0.98	1.00	1.00	1.00	1.00	
Frt		0.98			1.00	0.85	1.00	1.00	0.85	1.00	0.96	
Flt Protected		0.97			0.96	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1777			1787	1534	1741	3539	1498	1770	3369	
Flt Permitted		0.97			0.96	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)		1777			1787	1534	1741	3539	1498	1770	3369	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	107	63	22	459	81	367	2	199	88	74	249	78
RTOR Reduction (vph)	0	5	0	0	0	166	0	0	67	0	30	0
Lane Group Flow (vph)	0	187	0	0	540	201	2	199	21	74	297	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Split	NA		Split	NA	Perm	Prot	NA	Perm	Prot	NA	
Protected Phases	4	4		3	3		5	2		1	6	
Permitted Phases						3			2			
Actuated Green, G (s)		13.1			28.5	28.5	0.7	20.7	20.7	4.0	24.0	
Effective Green, g (s)		13.1			28.5	28.5	0.7	20.7	20.7	4.0	24.0	
Actuated g/C Ratio		0.15			0.33	0.33	0.01	0.24	0.24	0.05	0.28	
Clearance Time (s)		5.1			5.1	5.1	4.7	5.5	5.5	4.7	5.5	
Vehicle Extension (s)		3.0			3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)		268			587	504	14	844	357	81	932	
v/s Ratio Prot		c0.11			c0.30		0.00	0.06		c0.04	c0.09	
v/s Ratio Perm						0.13			0.01			
v/c Ratio		0.70			0.92	0.40	0.14	0.24	0.06	0.91	0.32	
Uniform Delay, d1		34.9			28.0	22.5	42.7	26.6	25.5	41.2	24.9	
Progression Factor		1.00			1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2		7.7			19.6	0.5	4.7	0.7	0.3	71.1	0.9	
Delay (s)		42.6			47.6	23.0	47.4	27.3	25.8	112.3	25.8	
Level of Service		D			D	C	D	C	C	F	C	
Approach Delay (s)		42.6			37.6			27.0			41.7	
Approach LOS		D			D			C			D	

Intersection Summary				
HCM 2000 Control Delay	37.4	HCM 2000 Level of Service	D	
HCM 2000 Volume to Capacity ratio	0.69			
Actuated Cycle Length (s)	86.7	Sum of lost time (s)	20.4	
Intersection Capacity Utilization	64.8%	ICU Level of Service	C	
Analysis Period (min)	15			
c Critical Lane Group				

8:00-9:00 AM Horizon Year 2035 + Project (Phase 2)
12: Convoy St & Ostrow St/Kearny Mesa Rd

HCM Signalized Intersection Capacity Analysis

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	21	27	22	400	63	19	120	969	163	22	466	53
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.9	4.9	4.5	4.9		4.5	5.3		4.5	5.0	
Lane Util. Factor	1.00	1.00	1.00	0.97	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	1.00	0.85	1.00	0.97		1.00	0.98		1.00	0.98	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1863	1583	3433	1798		1770	3463		1770	3485	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	1863	1583	3433	1798		1770	3463		1770	3485	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	22	28	23	421	66	20	126	1020	172	23	491	56
RTOR Reduction (vph)	0	0	22	0	12	0	0	11	0	0	7	0
Lane Group Flow (vph)	22	28	1	421	74	0	126	1181	0	23	540	0
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4									
Actuated Green, G (s)	2.3	5.5	5.5	16.2	19.4		12.4	55.9		3.2	47.0	
Effective Green, g (s)	2.3	5.5	5.5	16.2	19.4		12.4	55.9		3.2	47.0	
Actuated g/C Ratio	0.02	0.06	0.06	0.16	0.19		0.12	0.56		0.03	0.47	
Clearance Time (s)	4.5	4.9	4.9	4.5	4.9		4.5	5.3		4.5	5.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	40	102	87	556	348		219	1935		56	1637	
v/s Ratio Prot	0.01	0.02		c0.12	c0.04		c0.07	c0.34		0.01	0.15	
v/s Ratio Perm			0.00									
v/c Ratio	0.55	0.27	0.01	0.76	0.21		0.58	0.61		0.41	0.33	
Uniform Delay, d1	48.3	45.3	44.7	40.0	33.9		41.3	14.8		47.5	16.6	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	15.3	1.5	0.1	5.8	0.3		3.6	1.4		4.8	0.5	
Delay (s)	63.7	46.8	44.8	45.9	34.2		44.9	16.2		52.3	17.2	
Level of Service	E	D	D	D	C		D	B		D	B	
Approach Delay (s)		51.2			43.9			19.0			18.6	
Approach LOS		D			D			B			B	

Intersection Summary				
HCM 2000 Control Delay	24.9	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.63			
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	19.2	
Intersection Capacity Utilization	65.6%	ICU Level of Service	C	
Analysis Period (min)	15			
c Critical Lane Group				

8:00-9:00 AM Horizon Year 2035 + Project (Phase 2)
13: SR-163 NB Off-Ramp & Mesa College Dr

HCM Signalized Intersection Capacity Analysis

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	518	0	0	1045	609	518
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.1			5.1	5.1	5.1
Lane Util. Factor	0.95			0.95	0.97	0.91
Frt	1.00			1.00	0.97	0.85
Flt Protected	1.00			1.00	0.96	1.00
Satd. Flow (prot)	3539			3539	3366	1441
Flt Permitted	1.00			1.00	0.96	1.00
Satd. Flow (perm)	3539			3539	3366	1441
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	545	0	0	1100	641	545
RTOR Reduction (vph)	0	0	0	0	29	272
Lane Group Flow (vph)	545	0	0	1100	786	99
Turn Type	NA			NA	Prot	Perm
Protected Phases	2			6	4	
Permitted Phases						4
Actuated Green, G (s)	17.2			30.6	23.0	23.0
Effective Green, g (s)	17.2			30.6	23.0	23.0
Actuated g/C Ratio	0.20			0.36	0.27	0.27
Clearance Time (s)	5.1			5.1	5.1	5.1
Vehicle Extension (s)	3.0			3.0	3.0	3.0
Lane Grp Cap (vph)	706			1257	899	384
v/s Ratio Prot	c0.15			c0.31	c0.23	
v/s Ratio Perm						0.07
v/c Ratio	0.77			0.88	0.87	0.26
Uniform Delay, d1	32.6			26.0	30.2	24.8
Progression Factor	1.00			1.00	1.00	1.00
Incremental Delay, d2	5.2			7.1	9.5	0.4
Delay (s)	37.8			33.0	39.7	25.2
Level of Service	D			C	D	C
Approach Delay (s)	37.8			33.0	35.1	
Approach LOS	D			C	D	

Intersection Summary			
HCM 2000 Control Delay	34.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	86.1	Sum of lost time (s)	15.3
Intersection Capacity Utilization	60.2%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

8:00-9:00 AM Horizon Year 2035 + Project (Phase 2)
14: Health Center Dr/Annrea St & Mesa College Dr

HCM Signalized Intersection Capacity Analysis

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	43	733	253	503	902	17	65	7	120	33	38	57
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.9	4.0	4.5	4.9		4.9	4.9	4.9		4.9	4.9
Lane Util. Factor	1.00	0.95	1.00	0.97	0.95		1.00	0.95	0.95		1.00	1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	0.97	0.97		1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00		1.00	0.87	0.85		1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00		0.98	1.00
Satd. Flow (prot)	1770	3539	1583	3433	3526		1770	1487	1454		1820	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00		0.98	1.00
Satd. Flow (perm)	1770	3539	1583	3433	3526		1770	1487	1454		1820	1583
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	45	772	266	529	949	18	68	7	126	35	40	60
RTOR Reduction (vph)	0	0	0	0	1	0	0	0	0	0	0	0
Lane Group Flow (vph)	45	772	266	529	966	0	68	67	66	0	75	60
Confl. Peds. (#/hr)						10			10			
Confl. Bikes (#/hr)						5			5			
Turn Type	Prot	NA	Free	Prot	NA		Split	NA	Perm	Split	NA	Perm
Protected Phases	5	2		1	6		3	3		4	4	
Permitted Phases			Free						3			4
Actuated Green, G (s)	2.6	25.5	83.9	15.6	38.5		16.2	16.2	16.2		7.4	7.4
Effective Green, g (s)	2.6	25.5	83.9	15.6	38.5		16.2	16.2	16.2		7.4	7.4
Actuated g/C Ratio	0.03	0.30	1.00	0.19	0.46		0.19	0.19	0.19		0.09	0.09
Clearance Time (s)	4.5	4.9		4.5	4.9		4.9	4.9	4.9		4.9	4.9
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	54	1075	1583	638	1618		341	287	280		160	139
v/s Ratio Prot	0.03	c0.22		c0.15	0.27		0.04	0.05			c0.04	
v/s Ratio Perm			0.17						c0.05			0.04
v/c Ratio	0.83	0.72	0.17	0.83	0.60		0.20	0.23	0.24		0.47	0.43
Uniform Delay, d1	40.4	26.0	0.0	32.9	16.9		28.4	28.6	28.6		36.4	36.3
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	65.0	4.1	0.2	8.8	0.6		1.3	1.9	2.0		2.2	2.1
Delay (s)	105.4	30.1	0.2	41.6	17.5		29.7	30.5	30.6		38.5	38.4
Level of Service	F	C	A	D	B		C	C	C		D	D
Approach Delay (s)		25.9			26.0			30.3			38.5	
Approach LOS		C			C			C			D	

Intersection Summary			
HCM 2000 Control Delay	26.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	83.9	Sum of lost time (s)	19.2
Intersection Capacity Utilization	59.9%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

8:00-9:00 AM Horizon Year 2035 + Project (Phase 2)
15: I-805 SB Ramp/Berger Ave & Mesa College Dr — HCM Signalized Intersection Capacity Analysis

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	7	544	425	135	1615	84	0	0	0	49	30	29
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.7	5.1		4.7	5.1						5.5	
Lane Util. Factor	1.00	0.95		1.00	0.95						1.00	
Frpb, ped/bikes	1.00	0.99		1.00	1.00						0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00						1.00	
Frt	1.00	0.93		1.00	0.99						0.96	
Flt Protected	0.95	1.00		0.95	1.00						0.98	
Satd. Flow (prot)	1766	3277		1770	3505						1740	
Flt Permitted	0.95	1.00		0.95	1.00						0.98	
Satd. Flow (perm)	1766	3277		1770	3505						1740	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	7	573	447	142	1700	88	0	0	0	52	32	31
RTOR Reduction (vph)	0	157	0	0	4	0	0	0	0	0	14	0
Lane Group Flow (vph)	7	863	0	142	1784	0	0	0	0	0	101	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Prot	NA		Prot	NA					Split	NA	
Protected Phases	5	2		1	6					4	4	
Permitted Phases												
Actuated Green, G (s)	0.7	38.5		11.4	49.2						16.2	
Effective Green, g (s)	0.7	38.5		11.4	49.2						16.2	
Actuated g/C Ratio	0.01	0.47		0.14	0.60						0.20	
Clearance Time (s)	4.7	5.1		4.7	5.1						5.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0						3.0	
Lane Grp Cap (vph)	15	1549		247	2118						346	
v/s Ratio Prot	0.00	0.26		c0.08	c0.51						c0.06	
v/s Ratio Perm												
v/c Ratio	0.47	0.56		0.57	0.84						0.29	
Uniform Delay, d1	40.2	15.3		32.7	13.0						27.7	
Progression Factor	1.00	1.00		1.00	1.00						1.00	
Incremental Delay, d2	21.2	0.4		3.2	3.2						2.1	
Delay (s)	61.4	15.8		36.0	16.2						29.8	
Level of Service	E	B		D	B						C	
Approach Delay (s)		16.1			17.7			0.0			29.8	
Approach LOS		B			B			A			C	

Intersection Summary				
HCM 2000 Control Delay	17.6	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.72			
Actuated Cycle Length (s)	81.4	Sum of lost time (s)	15.3	
Intersection Capacity Utilization	76.8%	ICU Level of Service	D	
Analysis Period (min)	15			
c Critical Lane Group				

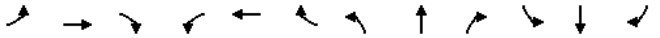
LOS Engineering, Inc. — Synchro 8 Report

8:00-9:00 AM Horizon Year 2035 + Project (Phase 2)
16: I-805 NB Off-Ramp & Mesa College Dr/Kearny Villa Rd — HCM Signalized Intersection Capacity Analysis

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	612	0	0	527	1322	525
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.5			5.5	4.5	5.5
Lane Util. Factor	0.95			0.95	0.97	1.00
Frpb, ped/bikes	1.00			1.00	1.00	0.98
Flpb, ped/bikes	1.00			1.00	1.00	1.00
Frt	1.00			1.00	1.00	0.85
Flt Protected	1.00			1.00	0.95	1.00
Satd. Flow (prot)	3539			3539	3433	1545
Flt Permitted	1.00			1.00	0.95	1.00
Satd. Flow (perm)	3539			3539	3433	1545
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	644	0	0	555	1392	553
RTOR Reduction (vph)	0	0	0	0	0	355
Lane Group Flow (vph)	644	0	0	555	1392	198
Confl. Peds. (#/hr)						10
Confl. Bikes (#/hr)						5
Turn Type	NA			NA	Prot	Perm
Protected Phases	2			6	4	
Permitted Phases						6
Actuated Green, G (s)	21.3			21.3	33.1	21.3
Effective Green, g (s)	21.3			21.3	33.1	21.3
Actuated g/C Ratio	0.33			0.33	0.51	0.33
Clearance Time (s)	5.5			5.5	4.5	5.5
Vehicle Extension (s)	3.0			3.0	3.0	3.0
Lane Grp Cap (vph)	1170			1170	1764	511
v/s Ratio Prot	c0.18			0.16	c0.41	
v/s Ratio Perm						0.13
v/c Ratio	0.55			0.47	0.79	0.39
Uniform Delay, d1	17.6			17.1	12.8	16.5
Progression Factor	1.00			1.00	1.00	1.00
Incremental Delay, d2	0.6			0.3	2.4	0.5
Delay (s)	18.2			17.4	15.2	17.0
Level of Service	B			B	B	B
Approach Delay (s)	18.2			17.4	15.7	
Approach LOS	B			B	B	

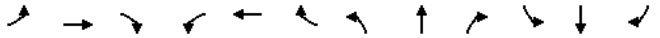
Intersection Summary				
HCM 2000 Control Delay	16.5	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.70			
Actuated Cycle Length (s)	64.4	Sum of lost time (s)	10.0	
Intersection Capacity Utilization	63.0%	ICU Level of Service	B	
Analysis Period (min)	15			
c Critical Lane Group				

LOS Engineering, Inc. — Synchro 8 Report



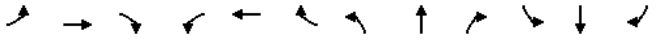
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	13	39	21	338	23	565	0	608	507	707	704	27
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.9		4.9	4.9	4.9		5.2		4.5	4.5	
Lane Util. Factor		1.00		0.95	0.91	0.95		0.95		0.97	0.95	
Frpb, ped/bikes		0.99		1.00	0.99	0.98		0.99		1.00	1.00	
Flpb, ped/bikes		1.00		1.00	1.00	1.00		1.00		1.00	1.00	
Frt		0.96		1.00	0.88	0.85		0.93		1.00	0.99	
Flt Protected		0.99		0.95	0.99	1.00		1.00		0.95	1.00	
Satd. Flow (prot)		1752		1681	1457	1477		3250		3433	3513	
Flt Permitted		0.99		0.95	0.99	1.00		1.00		0.95	1.00	
Satd. Flow (perm)		1752		1681	1457	1477		3250		3433	3513	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	14	41	22	356	24	595	0	640	534	744	741	28
RTOR Reduction (vph)	0	17	0	0	176	261	0	169	0	0	3	0
Lane Group Flow (vph)	0	60	0	320	158	60	0	1005	0	744	766	0
Confl. Peds. (#/hr)			10						10			10
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Split	NA		Split	NA	Perm		NA		Prot	NA	
Protected Phases	7	7		8	8			2		1	6	
Permitted Phases						8						
Actuated Green, G (s)		6.3		16.9	16.9	16.9		28.8		18.5	52.5	
Effective Green, g (s)		6.3		16.9	16.9	16.9		28.8		18.5	52.5	
Actuated g/C Ratio		0.07		0.19	0.19	0.19		0.32		0.21	0.58	
Clearance Time (s)		4.9		4.9	4.9	4.9		5.2		4.5	4.5	
Vehicle Extension (s)		3.0		3.0	3.0	3.0		3.0		3.0	3.0	
Lane Grp Cap (vph)		122		315	273	277		1040		705	2049	
v/s Ratio Prot		c0.03		c0.19	0.11			c0.31		c0.22	0.22	
v/s Ratio Perm						0.04						
v/c Ratio		0.49		1.02	0.58	0.22		0.97		1.06	0.37	
Uniform Delay, d1		40.3		36.5	33.3	31.0		30.1		35.8	10.0	
Progression Factor		1.00		1.00	1.00	1.00		1.00		1.00	1.00	
Incremental Delay, d2		3.1		54.8	3.0	0.4		20.8		49.4	0.5	
Delay (s)		43.4		91.4	36.3	31.3		51.0		85.2	10.5	
Level of Service		D		F	D	C		D		F	B	
Approach Delay (s)		43.4			52.7			51.0			47.2	
Approach LOS		D			D			D			D	

Intersection Summary				
HCM 2000 Control Delay	49.8	HCM 2000 Level of Service	D	
HCM 2000 Volume to Capacity ratio	0.96			
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	19.5	
Intersection Capacity Utilization	88.3%	ICU Level of Service	E	
Analysis Period (min)	15			
c Critical Lane Group				



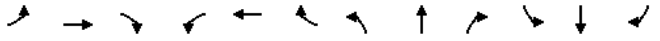
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	172	887	176	451	646	400	254	234	455	347	184	82
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.3		4.5	5.3		4.5	5.7	5.7	4.5	6.0	
Lane Util. Factor	1.00	0.95		0.97	0.95		0.97	0.95	1.00	0.97	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	0.99		1.00	1.00	0.99	1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.98		1.00	0.94		1.00	1.00	0.85	1.00	0.95	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3433		3433	3296		3433	3539	1561	3433	3340	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	3433		3433	3296		3433	3539	1561	3433	3340	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	181	934	185	475	680	421	267	246	479	365	194	86
RTOR Reduction (vph)	0	18	0	0	107	0	0	0	56	0	56	0
Lane Group Flow (vph)	181	1101	0	475	994	0	267	246	423	365	224	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Prot	NA		Prot	NA		Prot	NA	custom	Prot	NA	
Protected Phases	5	2		1	6		3	8	8	7	4	
Permitted Phases									1			
Actuated Green, G (s)	10.7	30.7		12.5	32.5		9.9	16.3	28.8	10.5	16.6	
Effective Green, g (s)	10.7	30.7		12.5	32.5		9.9	16.3	28.8	10.5	16.6	
Actuated g/C Ratio	0.12	0.34		0.14	0.36		0.11	0.18	0.32	0.12	0.18	
Clearance Time (s)	4.5	5.3		4.5	5.3		4.5	5.7	5.7	4.5	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	210	1171		476	1190		377	640	598	400	616	
v/s Ratio Prot	0.10	c0.32		c0.14	0.30		0.08	0.07	c0.13	c0.11	0.07	
v/s Ratio Perm									0.14			
v/c Ratio	0.86	0.94		1.00	0.84		0.71	0.38	0.71	0.91	0.36	
Uniform Delay, d1	38.9	28.8		38.7	26.3		38.7	32.4	26.9	39.3	32.1	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	28.5	14.0		40.4	5.2		6.0	0.4	3.8	24.7	0.4	
Delay (s)	67.4	42.8		79.1	31.5		44.6	32.8	30.7	64.0	32.4	
Level of Service	E	D		E	C		D	C	C	E	C	
Approach Delay (s)		46.2			45.9			35.0			50.3	
Approach LOS		D			D			C			D	

Intersection Summary				
HCM 2000 Control Delay	44.2	HCM 2000 Level of Service	D	
HCM 2000 Volume to Capacity ratio	0.93			
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	20.3	
Intersection Capacity Utilization	82.3%	ICU Level of Service	E	
Analysis Period (min)	15			
c Critical Lane Group				



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	24	1468	195	65	1172	11	304	0	123	8	0	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.3		4.5	5.3		4.9	4.9			4.9	4.9
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00			1.00	1.00
Frpb, ped/bikes	1.00	0.99		1.00	1.00		1.00	0.97			1.00	0.97
Flpb, ped/bikes	1.00	1.00		1.00	1.00		0.98	1.00			0.99	1.00
Frt	1.00	0.98		1.00	1.00		1.00	0.85			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00			0.95	1.00
Satd. Flow (prot)	1770	3456		1770	3532		1741	1532			1745	1532
Flt Permitted	0.95	1.00		0.95	1.00		0.75	1.00			0.67	1.00
Satd. Flow (perm)	1770	3456		1770	3532		1379	1532			1229	1532
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	25	1545	205	68	1234	12	320	0	129	8	0	12
RTOR Reduction (vph)	0	11	0	0	1	0	0	96	0	0	0	9
Lane Group Flow (vph)	25	1739	0	68	1245	0	320	33	0	0	8	3
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	Perm
Protected Phases	5	2		1	6			4			4	
Permitted Phases							4			4		4
Actuated Green, G (s)	2.1	44.8		6.3	49.0		22.4	22.4			22.4	22.4
Effective Green, g (s)	2.1	44.8		6.3	49.0		22.4	22.4			22.4	22.4
Actuated g/C Ratio	0.02	0.51		0.07	0.56		0.25	0.25			0.25	0.25
Clearance Time (s)	4.5	5.3		4.5	5.3		4.9	4.9			4.9	4.9
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0			3.0	3.0
Lane Grp Cap (vph)	42	1755		126	1962		350	389			312	389
v/s Ratio Prot	0.01	c0.50		c0.04	c0.35			0.02				
v/s Ratio Perm							c0.23				0.01	0.00
v/c Ratio	0.60	0.99		0.54	0.63		0.91	0.08			0.03	0.01
Uniform Delay, d1	42.6	21.5		39.5	13.5		32.0	25.1			24.7	24.6
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00			1.00	1.00
Incremental Delay, d2	20.6	19.3		4.4	0.7		27.4	0.1			0.0	0.0
Delay (s)	63.2	40.8		43.9	14.1		59.4	25.2			24.7	24.6
Level of Service	E	D		D	B		E	C			C	C
Approach Delay (s)		41.1			15.7			49.6			24.7	
Approach LOS		D			B			D			C	

Intersection Summary				
HCM 2000 Control Delay	32.7	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.93			
Actuated Cycle Length (s)	88.2	Sum of lost time (s)	14.7	
Intersection Capacity Utilization	86.0%	ICU Level of Service	E	
Analysis Period (min)	15			
c Critical Lane Group				



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	41	1230	309	61	880	12	214	4	65	17	9	122
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.4		4.5	5.3			4.9			4.9	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	
Frpb, ped/bikes	1.00	0.99		1.00	1.00			0.99			0.98	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			0.99			1.00	
Frt	1.00	0.97		1.00	1.00			0.97			0.89	
Flt Protected	0.95	1.00		0.95	1.00			0.96			0.99	
Satd. Flow (prot)	1770	3400		1770	3530			1714			1608	
Flt Permitted	0.95	1.00		0.95	1.00			0.67			0.95	
Satd. Flow (perm)	1770	3400		1770	3530			1186			1538	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	43	1295	325	64	926	13	225	4	68	18	9	128
RTOR Reduction (vph)	0	26	0	0	1	0	0	14	0	0	93	0
Lane Group Flow (vph)	43	1594	0	64	938	0	0	283	0	0	62	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8			4		
Actuated Green, G (s)	3.6	38.1		3.3	37.9			20.9			20.9	
Effective Green, g (s)	3.6	38.1		3.3	37.9			20.9			20.9	
Actuated g/C Ratio	0.05	0.49		0.04	0.49			0.27			0.27	
Clearance Time (s)	4.5	5.4		4.5	5.3			4.9			4.9	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	82	1680		75	1735			321			416	
v/s Ratio Prot	0.02	c0.47		c0.04	0.27							
v/s Ratio Perm								c0.24			0.04	
v/c Ratio	0.52	0.95		0.85	0.54			0.88			0.15	
Uniform Delay, d1	35.9	18.6		36.7	13.6			26.9			21.3	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	5.9	12.8		57.0	1.2			23.5			0.2	
Delay (s)	41.8	31.4		93.6	14.8			50.4			21.5	
Level of Service	D	C		F	B			D			C	
Approach Delay (s)		31.6			19.8			50.4			21.5	
Approach LOS		C			B			D			C	

Intersection Summary				
HCM 2000 Control Delay	29.1	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.92			
Actuated Cycle Length (s)	77.1	Sum of lost time (s)	14.8	
Intersection Capacity Utilization	89.3%	ICU Level of Service	E	
Analysis Period (min)	15			
c Critical Lane Group				

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	54	835	446	196	612	35	319	14	174	77	53	45
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.2	5.2	4.5	5.2		5.0	5.0	5.0	4.9	4.9	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		0.95	0.95	1.00	1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.95	1.00	1.00		1.00	1.00	0.97	1.00	0.98	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85	1.00	0.93	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	0.96	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3539	1505	1770	3501		1681	1692	1530	1770	1705	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	0.96	1.00	0.95	1.00	
Satd. Flow (perm)	1770	3539	1505	1770	3501		1681	1692	1530	1770	1705	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	57	879	469	206	644	37	336	15	183	81	56	47
RTOR Reduction (vph)	0	0	206	0	4	0	0	0	154	0	37	0
Lane Group Flow (vph)	57	879	263	206	677	0	175	176	29	81	66	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Prot	NA	Perm	Prot	NA		Split	NA	Perm	Split	NA	
Protected Phases	5	2		1	6		8	8		7	7	
Permitted Phases			2						8			
Actuated Green, G (s)	4.0	28.6	28.6	12.0	36.6		12.9	12.9	12.9	7.5	7.5	
Effective Green, g (s)	4.0	28.6	28.6	12.0	36.6		12.9	12.9	12.9	7.5	7.5	
Actuated g/C Ratio	0.05	0.35	0.35	0.15	0.45		0.16	0.16	0.16	0.09	0.09	
Clearance Time (s)	4.5	5.2	5.2	4.5	5.2		5.0	5.0	5.0	4.9	4.9	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	87	1255	534	263	1589		269	270	244	164	158	
v/s Ratio Prot	0.03	c0.25		c0.12	0.19		c0.10	0.10		c0.05	0.04	
v/s Ratio Perm			0.17						0.02			
v/c Ratio	0.66	0.70	0.49	0.78	0.43		0.65	0.65	0.12	0.49	0.42	
Uniform Delay, d1	37.6	22.3	20.3	33.0	14.9		31.7	31.7	29.0	34.7	34.5	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	16.4	3.3	3.2	14.1	0.2		5.5	5.5	0.2	2.3	1.8	
Delay (s)	54.0	25.6	23.6	47.1	15.1		37.3	37.3	29.2	37.1	36.3	
Level of Service	D	C	C	D	B		D	D	C	D	D	
Approach Delay (s)		26.1			22.5			34.5			36.6	
Approach LOS		C			C			C			D	

Intersection Summary				
HCM 2000 Control Delay	27.2	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.68			
Actuated Cycle Length (s)	80.6	Sum of lost time (s)	19.6	
Intersection Capacity Utilization	62.1%	ICU Level of Service	B	
Analysis Period (min)	15			
c Critical Lane Group				

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	767	321	337	634	149	256
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.2	5.2	4.5	4.5	5.5	5.5
Lane Util. Factor	0.95	1.00	0.97	0.95	0.97	1.00
Frpb, ped/bikes	1.00	0.99	1.00	1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	3539	1566	3433	3539	3433	1541
Flt Permitted	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)	3539	1566	3433	3539	3433	1541
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	807	338	355	667	157	269
RTOR Reduction (vph)	0	22	0	0	0	197
Lane Group Flow (vph)	807	316	355	667	157	72
Confl. Peds. (#/hr)		10	10		10	10
Confl. Bikes (#/hr)		5				5
Turn Type	NA	custom	Prot	NA	Prot	Perm
Protected Phases	2	2	1	6	8	
Permitted Phases		8				8
Actuated Green, G (s)	19.3	35.3	9.2	33.7	16.0	16.0
Effective Green, g (s)	19.3	35.3	9.2	33.7	16.0	16.0
Actuated g/C Ratio	0.32	0.59	0.15	0.56	0.27	0.27
Clearance Time (s)	5.2	5.2	4.5	4.5	5.5	5.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	1144	1062	529	1997	920	412
v/s Ratio Prot	c0.23	c0.10	c0.10	0.19	0.05	
v/s Ratio Perm		0.11				0.05
v/c Ratio	0.71	0.30	0.67	0.33	0.17	0.17
Uniform Delay, d1	17.7	6.1	23.8	7.0	16.8	16.8
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	3.7	0.7	3.3	0.1	0.4	0.9
Delay (s)	21.4	6.8	27.2	7.1	17.2	17.7
Level of Service	C	A	C	A	B	B
Approach Delay (s)	17.1			14.1	17.5	
Approach LOS	B			B	B	

Intersection Summary				
HCM 2000 Control Delay	15.9	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.57			
Actuated Cycle Length (s)	59.7	Sum of lost time (s)	15.2	
Intersection Capacity Utilization	56.8%	ICU Level of Service	B	
Analysis Period (min)	15			
c Critical Lane Group				

Movement	EBU	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations							
Volume (vph)	0	1050	121	149	946	127	44
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5		4.5	4.5	4.5	4.5
Lane Util. Factor		0.95		0.97	0.95	0.97	0.88
Frpb, ped/bikes		1.00		1.00	1.00	1.00	0.95
Flpb, ped/bikes		1.00		1.00	1.00	1.00	1.00
Frt		0.98		1.00	1.00	1.00	0.85
Flt Protected		1.00		0.95	1.00	0.95	1.00
Satd. Flow (prot)		3474		3433	3539	3433	2643
Flt Permitted		1.00		0.95	1.00	0.95	1.00
Satd. Flow (perm)		3474		3433	3539	3433	2643
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	1105	127	157	996	134	46
RTOR Reduction (vph)	0	10	0	0	0	0	36
Lane Group Flow (vph)	0	1222	0	157	996	134	10
Confl. Peds. (#/hr)			10	10		10	10
Confl. Bikes (#/hr)			5				5
Turn Type	Prot	NA		Prot	NA	Prot	Perm
Protected Phases	5	2		1	6	8	
Permitted Phases							8
Actuated Green, G (s)		36.6		8.8	49.9	16.1	16.1
Effective Green, g (s)		36.6		8.8	49.9	16.1	16.1
Actuated g/C Ratio		0.49		0.12	0.67	0.21	0.21
Clearance Time (s)		4.5		4.5	4.5	4.5	4.5
Vehicle Extension (s)		3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)		1695		402	2354	736	567
v/s Ratio Prot		c0.35		0.05	c0.28	c0.04	
v/s Ratio Perm							0.00
v/c Ratio		0.72		0.39	0.42	0.18	0.02
Uniform Delay, d1		15.2		30.6	5.8	24.1	23.2
Progression Factor		1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2		2.7		0.6	0.6	0.5	0.1
Delay (s)		17.9		31.2	6.4	24.6	23.3
Level of Service		B		C	A	C	C
Approach Delay (s)		17.9			9.8	24.3	
Approach LOS		B			A	C	

Intersection Summary				
HCM 2000 Control Delay	14.7	HCM 2000 Level of Service		B
HCM 2000 Volume to Capacity ratio	0.55			
Actuated Cycle Length (s)	75.0	Sum of lost time (s)		13.5
Intersection Capacity Utilization	61.8%	ICU Level of Service		B
Analysis Period (min)	15			
c Critical Lane Group				

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	3	0	0	1	0	25	0	402	0	12	243	3
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	3	0	0	1	0	26	0	423	0	13	256	3
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)											142	
pX, platoon unblocked												
vC, conflicting volume	732	706	257	706	707	423	259			423		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	732	706	257	706	707	423	259			423		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	99	100	100	100	100	96	100			99		
cM capacity (veh/h)	320	357	781	348	356	631	1306			1136		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	3	27	423	272
Volume Left	3	1	0	13
Volume Right	0	26	0	3
cSH	320	612	1306	1136
Volume to Capacity	0.01	0.04	0.00	0.01
Queue Length 95th (ft)	1	4	0	1
Control Delay (s)	16.4	11.2	0.0	0.5
Lane LOS	C	B		A
Approach Delay (s)	16.4	11.2	0.0	0.5
Approach LOS	C	B		

Intersection Summary				
Average Delay		0.7		
Intersection Capacity Utilization	32.8%	ICU Level of Service		A
Analysis Period (min)	15			

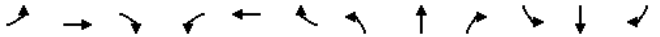
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	3	238	122	0	151	47
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	3	251	128	0	159	49
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						635
pX, platoon unblocked						
vC, conflicting volume	496	128			128	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	496	128			128	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	99	73			89	
cM capacity (veh/h)	475	922			1457	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	254	128	208
Volume Left	3	0	159
Volume Right	251	0	0
cSH	911	1700	1457
Volume to Capacity	0.28	0.08	0.11
Queue Length 95th (ft)	29	0	9
Control Delay (s)	10.5	0.0	6.1
Lane LOS	B		A
Approach Delay (s)	10.5	0.0	6.1
Approach LOS	B		

Intersection Summary			
Average Delay	6.7		
Intersection Capacity Utilization	42.2%	ICU Level of Service	A
Analysis Period (min)	15		

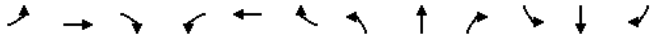
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	238	34	506	307	619	16
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.1	4.7	4.7	5.8	5.8	
Lane Util. Factor	0.97	1.00	1.00	0.95	0.95	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.85	1.00	1.00	1.00	
Flt Protected	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	3433	1583	1770	3539	3521	
Flt Permitted	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (perm)	3433	1583	1770	3539	3521	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	251	36	533	323	652	17
RTOR Reduction (vph)	0	10	0	0	2	0
Lane Group Flow (vph)	251	26	533	323	667	0
Confl. Peds. (#/hr)						10
Confl. Bikes (#/hr)						5
Turn Type	Prot	pm+ov	Prot	NA	NA	
Protected Phases	4	5	5	2	6	
Permitted Phases		4				
Actuated Green, G (s)	10.3	34.4	24.1	48.1	19.3	
Effective Green, g (s)	10.3	34.4	24.1	48.1	19.3	
Actuated g/C Ratio	0.15	0.50	0.35	0.69	0.28	
Clearance Time (s)	5.1	4.7	4.7	5.8	5.8	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	510	785	615	2456	980	
v/s Ratio Prot	c0.07	0.01	c0.30	0.09	c0.19	
v/s Ratio Perm		0.00				
v/c Ratio	0.49	0.03	0.87	0.13	0.68	
Uniform Delay, d1	27.1	8.9	21.1	3.6	22.3	
Progression Factor	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.8	0.0	12.3	0.1	3.8	
Delay (s)	27.8	9.0	33.4	3.7	26.1	
Level of Service	C	A	C	A	C	
Approach Delay (s)	25.5			22.2	26.1	
Approach LOS	C			C	C	

Intersection Summary				
HCM 2000 Control Delay	24.1	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.73			
Actuated Cycle Length (s)	69.3	Sum of lost time (s)	15.6	
Intersection Capacity Utilization	65.5%	ICU Level of Service	C	
Analysis Period (min)	15			
c Critical Lane Group				



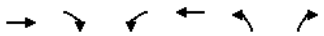
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	141	124	27	317	57	190	22	409	207	194	427	115
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.1			5.1	5.1	4.7	5.5	5.5	4.7	5.5	
Lane Util. Factor		1.00			1.00	1.00	1.00	0.95	1.00	1.00	0.95	
Frpb, ped/bikes		1.00			1.00	0.97	1.00	1.00	0.94	1.00	0.99	
Flpb, ped/bikes		1.00			1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt		0.99			1.00	0.85	1.00	1.00	0.85	1.00	0.97	
Flt Protected		0.98			0.96	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1791			1787	1531	1770	3539	1495	1770	3388	
Flt Permitted		0.98			0.96	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)		1791			1787	1531	1770	3539	1495	1770	3388	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	148	131	28	334	60	200	23	431	218	204	449	121
RTOR Reduction (vph)	0	4	0	0	0	152	0	0	168	0	24	0
Lane Group Flow (vph)	0	303	0	0	394	48	23	431	50	204	546	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Split	NA		Split	NA	Perm	Prot	NA	Perm	Prot	NA	
Protected Phases	4	4		3	3		5	2		1	6	
Permitted Phases						3			2			
Actuated Green, G (s)		18.3			21.6	21.6	2.1	19.1	19.1	10.3	27.3	
Effective Green, g (s)		18.3			21.6	21.6	2.1	19.1	19.1	10.3	27.3	
Actuated g/C Ratio		0.20			0.24	0.24	0.02	0.21	0.21	0.11	0.30	
Clearance Time (s)		5.1			5.1	5.1	4.7	5.5	5.5	4.7	5.5	
Vehicle Extension (s)		3.0			3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)		365			430	368	41	753	318	203	1031	
v/s Ratio Prot		c0.17			c0.22		0.01	0.12		c0.12	c0.16	
v/s Ratio Perm						0.03			0.03			
v/c Ratio		0.83			0.92	0.13	0.56	0.57	0.16	1.00	0.53	
Uniform Delay, d1		34.2			33.2	26.7	43.3	31.6	28.8	39.7	25.9	
Progression Factor		1.00			1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2		14.7			24.0	0.2	16.4	3.1	1.1	64.4	1.9	
Delay (s)		48.9			57.1	26.9	59.7	34.8	29.8	104.1	27.8	
Level of Service		D			E	C	E	C	C	F	C	
Approach Delay (s)		48.9			46.9			34.0			47.9	
Approach LOS		D			D			C			D	

Intersection Summary				
HCM 2000 Control Delay	43.8	HCM 2000 Level of Service	D	
HCM 2000 Volume to Capacity ratio	0.82			
Actuated Cycle Length (s)	89.7	Sum of lost time (s)	20.4	
Intersection Capacity Utilization	70.8%	ICU Level of Service	C	
Analysis Period (min)	15			
c Critical Lane Group				



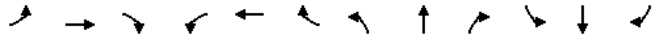
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	54	100	94	467	47	35	88	820	247	39	809	31
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.9	4.9	4.5	4.9		4.5	5.3		4.5	5.0	
Lane Util. Factor	1.00	1.00	1.00	0.97	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	1.00	0.85	1.00	0.94		1.00	0.97		1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1863	1583	3433	1743		1770	3416		1770	3519	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	1863	1583	3433	1743		1770	3416		1770	3519	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	57	105	99	492	49	37	93	863	260	41	852	33
RTOR Reduction (vph)	0	0	87	0	28	0	0	25	0	0	2	0
Lane Group Flow (vph)	57	105	12	492	58	0	93	1098	0	41	883	0
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4									
Actuated Green, G (s)	6.8	11.8	11.8	18.1	23.1		8.6	46.3		4.6	42.6	
Effective Green, g (s)	6.8	11.8	11.8	18.1	23.1		8.6	46.3		4.6	42.6	
Actuated g/C Ratio	0.07	0.12	0.12	0.18	0.23		0.09	0.46		0.05	0.43	
Clearance Time (s)	4.5	4.9	4.9	4.5	4.9		4.5	5.3		4.5	5.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	120	219	186	621	402		152	1581		81	1499	
v/s Ratio Prot	0.03	c0.06		c0.14	0.03		c0.05	c0.32		0.02	0.25	
v/s Ratio Perm			0.01									
v/c Ratio	0.47	0.48	0.06	0.79	0.14		0.61	0.69		0.51	0.59	
Uniform Delay, d1	44.9	41.2	39.2	39.2	30.6		44.1	21.2		46.6	22.0	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	2.9	1.7	0.1	6.9	0.2		7.1	2.5		4.9	1.7	
Delay (s)	47.8	42.9	39.3	46.0	30.7		51.2	23.8		51.5	23.7	
Level of Service	D	D	D	D	C		D	C		D	C	
Approach Delay (s)		42.6			43.7			25.9			24.9	
Approach LOS		D			D			C			C	

Intersection Summary				
HCM 2000 Control Delay	30.5	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.69			
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	19.2	
Intersection Capacity Utilization	66.1%	ICU Level of Service	C	
Analysis Period (min)	15			
c Critical Lane Group				



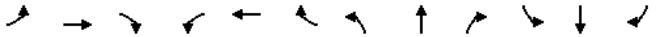
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	504	0	0	908	396	287
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.1			5.1	5.1	5.1
Lane Util. Factor	0.95			0.95	0.97	0.91
Frt	1.00			1.00	0.98	0.85
Flt Protected	1.00			1.00	0.96	1.00
Satd. Flow (prot)	3539			3539	3385	1441
Flt Permitted	1.00			1.00	0.96	1.00
Satd. Flow (perm)	3539			3539	3385	1441
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	531	0	0	956	417	302
RTOR Reduction (vph)	0	0	0	0	21	177
Lane Group Flow (vph)	531	0	0	956	475	46
Turn Type	NA			NA	Prot	Perm
Protected Phases	2			6	4	
Permitted Phases						4
Actuated Green, G (s)	14.8			24.0	13.9	13.9
Effective Green, g (s)	14.8			24.0	13.9	13.9
Actuated g/C Ratio	0.22			0.35	0.20	0.20
Clearance Time (s)	5.1			5.1	5.1	5.1
Vehicle Extension (s)	3.0			3.0	3.0	3.0
Lane Grp Cap (vph)	770			1249	691	294
v/s Ratio Prot	c0.15			c0.27	c0.14	
v/s Ratio Perm						0.03
v/c Ratio	0.69			0.77	0.69	0.16
Uniform Delay, d1	24.5			19.5	25.0	22.2
Progression Factor	1.00			1.00	1.00	1.00
Incremental Delay, d2	2.6			2.9	2.8	0.2
Delay (s)	27.1			22.4	27.9	22.5
Level of Service	C			C	C	C
Approach Delay (s)	27.1			22.4	26.2	
Approach LOS	C			C	C	

Intersection Summary				
HCM 2000 Control Delay	24.7	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.72			
Actuated Cycle Length (s)	68.0	Sum of lost time (s)	15.3	
Intersection Capacity Utilization	47.9%	ICU Level of Service	A	
Analysis Period (min)	15			
c Critical Lane Group				



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	110	590	75	345	713	14	133	44	288	20	14	59
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.9	4.0	4.5	4.9		4.9	4.9	4.9		4.9	4.9
Lane Util. Factor	1.00	0.95	1.00	0.97	0.95		1.00	0.95	0.95		1.00	1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	0.98	0.97		1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00		1.00	0.89	0.85		1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00		0.97	1.00
Satd. Flow (prot)	1770	3539	1583	3433	3526		1770	1539	1461		1810	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00		0.97	1.00
Satd. Flow (perm)	1770	3539	1583	3433	3526		1770	1539	1461		1810	1583
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	116	621	79	363	751	15	140	46	303	21	15	62
RTOR Reduction (vph)	0	0	0	0	1	0	0	0	0	0	0	0
Lane Group Flow (vph)	116	621	79	363	765	0	140	179	170	0	36	62
Confl. Peds. (#/hr)						10			10			
Confl. Bikes (#/hr)						5			5			
Turn Type	Prot	NA	Free	Prot	NA		Split	NA	Perm	Split	NA	Perm
Protected Phases	5	2		1	6		3	3		4	4	
Permitted Phases			Free						3			4
Actuated Green, G (s)	5.9	16.3	66.9	8.6	19.0		16.1	16.1	16.1		6.7	6.7
Effective Green, g (s)	5.9	16.3	66.9	8.6	19.0		16.1	16.1	16.1		6.7	6.7
Actuated g/C Ratio	0.09	0.24	1.00	0.13	0.28		0.24	0.24	0.24		0.10	0.10
Clearance Time (s)	4.5	4.9		4.5	4.9		4.9	4.9	4.9		4.9	4.9
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	156	862	1583	441	1001		425	370	351		181	158
v/s Ratio Prot	0.07	0.18		c0.11	c0.22		0.08	0.12			0.02	
v/s Ratio Perm			0.05						c0.12			c0.04
v/c Ratio	0.74	0.72	0.05	0.82	0.76		0.33	0.48	0.48		0.20	0.39
Uniform Delay, d1	29.8	23.2	0.0	28.4	21.9		20.9	21.8	21.8		27.6	28.2
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	17.3	5.2	0.1	11.8	3.5		2.1	4.5	4.7		0.5	1.6
Delay (s)	47.1	28.4	0.1	40.2	25.4		23.0	26.3	26.6		28.2	29.8
Level of Service	D	C	A	D	C		C	C	C		C	C
Approach Delay (s)		28.3			30.2			25.4			29.2	
Approach LOS		C			C			C			C	

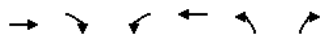
Intersection Summary				
HCM 2000 Control Delay	28.6	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.66			
Actuated Cycle Length (s)	66.9	Sum of lost time (s)	19.2	
Intersection Capacity Utilization	56.7%	ICU Level of Service	B	
Analysis Period (min)	15			
c Critical Lane Group				



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	12	496	797	340	1090	80	0	0	0	48	75	14
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.7	5.1		4.7	5.1						5.5	
Lane Util. Factor	1.00	0.95		1.00	0.95						1.00	
Frpb, ped/bikes	1.00	0.99		1.00	1.00						1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00						1.00	
Frt	1.00	0.91		1.00	0.99						0.99	
Flt Protected	0.95	1.00		0.95	1.00						0.98	
Satd. Flow (prot)	1762	3168		1770	3492						1799	
Flt Permitted	0.95	1.00		0.95	1.00						0.98	
Satd. Flow (perm)	1762	3168		1770	3492						1799	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	13	522	839	358	1147	84	0	0	0	51	79	15
RTOR Reduction (vph)	0	243	0	0	6	0	0	0	0	0	6	0
Lane Group Flow (vph)	13	1118	0	358	1225	0	0	0	0	0	139	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Prot	NA		Prot	NA					Split	NA	
Protected Phases	5	2		1	6					4	4	
Permitted Phases												
Actuated Green, G (s)	0.8	31.0		16.4	46.6						16.0	
Effective Green, g (s)	0.8	31.0		16.4	46.6						16.0	
Actuated g/C Ratio	0.01	0.39		0.21	0.59						0.20	
Clearance Time (s)	4.7	5.1		4.7	5.1						5.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0						3.0	
Lane Grp Cap (vph)	17	1247		368	2067						365	
v/s Ratio Prot	0.01	c0.35		c0.20	0.35						c0.08	
v/s Ratio Perm												
v/c Ratio	0.76	1.02dr		0.97	0.59						0.38	
Uniform Delay, d1	38.9	22.3		30.9	10.1						27.1	
Progression Factor	1.00	1.00		1.00	1.00						1.00	
Incremental Delay, d2	106.9	8.7		39.4	0.5						3.0	
Delay (s)	145.7	31.0		70.4	10.5						30.1	
Level of Service	F	C		E	B						C	
Approach Delay (s)		32.1			24.0			0.0			30.1	
Approach LOS		C			C			A			C	

Intersection Summary				
HCM 2000 Control Delay	27.9	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.79			
Actuated Cycle Length (s)	78.7	Sum of lost time (s)	15.3	
Intersection Capacity Utilization	85.8%	ICU Level of Service	E	
Analysis Period (min)	15			

dr Defacto Right Lane. Recode with 1 though lane as a right lane.
c Critical Lane Group



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	534	0	0	780	740	292
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.5			5.5	4.5	5.5
Lane Util. Factor	0.95			0.95	0.97	1.00
Frpb, ped/bikes	1.00			1.00	1.00	0.98
Flpb, ped/bikes	1.00			1.00	1.00	1.00
Frt	1.00			1.00	1.00	0.85
Flt Protected	1.00			1.00	0.95	1.00
Satd. Flow (prot)	3539			3539	3433	1550
Flt Permitted	1.00			1.00	0.95	1.00
Satd. Flow (perm)	3539			3539	3433	1550
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	562	0	0	821	779	307
RTOR Reduction (vph)	0	0	0	0	0	172
Lane Group Flow (vph)	562	0	0	821	779	135
Confl. Peds. (#/hr)						10
Confl. Bikes (#/hr)						5
Turn Type	NA			NA	Prot	Perm
Protected Phases	2			6	4	
Permitted Phases						6
Actuated Green, G (s)	21.6			21.6	17.6	21.6
Effective Green, g (s)	21.6			21.6	17.6	21.6
Actuated g/C Ratio	0.44			0.44	0.36	0.44
Clearance Time (s)	5.5			5.5	4.5	5.5
Vehicle Extension (s)	3.0			3.0	3.0	3.0
Lane Grp Cap (vph)	1553			1553	1228	680
v/s Ratio Prot	0.16			c0.23	c0.23	
v/s Ratio Perm						0.09
v/c Ratio	0.36			0.53	0.63	0.20
Uniform Delay, d1	9.2			10.1	13.1	8.5
Progression Factor	1.00			1.00	1.00	1.00
Incremental Delay, d2	0.1			0.3	1.1	0.1
Delay (s)	9.3			10.4	14.2	8.6
Level of Service	A			B	B	A
Approach Delay (s)	9.3			10.4	12.6	
Approach LOS	A			B	B	

Intersection Summary				
HCM 2000 Control Delay	11.1	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.58			
Actuated Cycle Length (s)	49.2	Sum of lost time (s)	10.0	
Intersection Capacity Utilization	51.0%	ICU Level of Service	A	
Analysis Period (min)	15			

c Critical Lane Group

4:45-5:45 PM Horizon Year 2035 + Project (Phase 2)
1: Aero Dr & Convoy St
HCM Signalized Intersection Capacity Analysis

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	11	51	26	492	4	524	0	601	540	918	1179	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.9		4.9	4.9	4.9		5.2		4.5	4.5	
Lane Util. Factor		1.00		0.95	0.91	0.95		0.95		0.97	0.95	
Frpb, ped/bikes		0.98		1.00	0.99	0.98		0.98		1.00	1.00	
Flpb, ped/bikes		1.00		1.00	1.00	1.00		1.00		1.00	1.00	
Frt		0.96		1.00	0.91	0.85		0.93		1.00	1.00	
Flt Protected		0.99		0.95	0.98	1.00		1.00		0.95	1.00	
Satd. Flow (prot)		1746		1681	1501	1478		3224		3433	3536	
Flt Permitted		0.99		0.95	0.98	1.00		1.00		0.95	1.00	
Satd. Flow (perm)		1746		1681	1501	1478		3224		3433	3536	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	12	54	27	518	4	552	0	633	568	966	1241	6
RTOR Reduction (vph)	0	11	0	0	36	267	0	116	0	0	0	0
Lane Group Flow (vph)	0	82	0	373	323	75	0	1085	0	966	1247	0
Confl. Peds. (#/hr)			10						10			10
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Split	NA		Split	NA	Perm		NA		Prot	NA	
Protected Phases	7	7		8	8			2		1	6	
Permitted Phases						8						
Actuated Green, G (s)		6.1		30.5	30.5	30.5		45.8		38.1	89.1	
Effective Green, g (s)		6.1		30.5	30.5	30.5		45.8		38.1	89.1	
Actuated g/C Ratio		0.04		0.22	0.22	0.22		0.33		0.27	0.64	
Clearance Time (s)		4.9		4.9	4.9	4.9		5.2		4.5	4.5	
Vehicle Extension (s)		3.0		3.0	3.0	3.0		3.0		3.0	3.0	
Lane Grp Cap (vph)		76		366	327	321		1054		934	2250	
v/s Ratio Prot		c0.05		c0.22	0.22			c0.34		c0.28	0.35	
v/s Ratio Perm						0.05						
v/c Ratio		1.09		1.02	0.99	0.23		1.03		1.03	0.55	
Uniform Delay, d1		67.0		54.8	54.6	45.1		47.1		51.0	14.3	
Progression Factor		1.00		1.00	1.00	1.00		1.00		1.00	1.00	
Incremental Delay, d2		128.4		52.0	46.0	0.4		35.6		38.6	1.0	
Delay (s)		195.4		106.7	100.6	45.5		82.7		89.6	15.3	
Level of Service		F		F	F	D		F		F	B	
Approach Delay (s)		195.4			85.2			82.7			47.7	
Approach LOS		F			F			F			D	

Intersection Summary				
HCM 2000 Control Delay	68.7	HCM 2000 Level of Service	E	
HCM 2000 Volume to Capacity ratio	1.03			
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	19.5	
Intersection Capacity Utilization	98.5%	ICU Level of Service	F	
Analysis Period (min)	15			
c Critical Lane Group				

4:45-5:45 PM Horizon Year 2035 + Project (Phase 2)
2: Kearny Villa Rd & Aero Dr
HCM Signalized Intersection Capacity Analysis

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	155	1113	226	312	678	383	224	297	469	828	376	153
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.3		4.5	5.3		4.5	5.7	4.5	4.5	6.0	
Lane Util. Factor	1.00	0.95		0.97	0.95		0.97	0.95	1.00	0.97	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	0.99		1.00	1.00	0.98	1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.97		1.00	0.95		1.00	1.00	0.85	1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3427		3433	3300		3433	3539	1553	3433	3346	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	3427		3433	3300		3433	3539	1553	3433	3346	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	163	1172	238	328	714	403	236	313	494	872	396	161
RTOR Reduction (vph)	0	12	0	0	54	0	0	0	97	0	32	0
Lane Group Flow (vph)	163	1398	0	328	1063	0	236	313	397	872	525	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Prot	NA		Prot	NA		Prot	NA	pm+ov	Prot	NA	
Protected Phases	5	2		1	6		3	8	1	7	4	
Permitted Phases									8			
Actuated Green, G (s)	17.5	50.7		17.5	50.7		13.8	15.4	32.9	30.5	31.8	
Effective Green, g (s)	17.5	50.7		17.5	50.7		13.8	15.4	32.9	30.5	31.8	
Actuated g/C Ratio	0.13	0.38		0.13	0.38		0.10	0.11	0.25	0.23	0.24	
Clearance Time (s)	4.5	5.3		4.5	5.3		4.5	5.7	4.5	4.5	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	230	1295		448	1247		353	406	381	780	793	
v/s Ratio Prot	0.09	c0.41		0.10	0.32		0.07	0.09	c0.14	c0.25	0.16	
v/s Ratio Perm									0.12			
v/c Ratio	0.71	1.08		0.73	0.85		0.67	0.77	1.04	1.12	0.66	
Uniform Delay, d1	55.9	41.7		56.0	38.3		57.9	57.6	50.6	51.8	46.3	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	9.6	49.3		6.1	5.8		4.7	8.8	57.8	69.7	2.1	
Delay (s)	65.4	91.0		62.1	44.1		62.7	66.4	108.4	121.5	48.4	
Level of Service	E	F		E	D		E	E	F	F	D	
Approach Delay (s)		88.4			48.2			85.4			93.0	
Approach LOS		F			D			F			F	

Intersection Summary				
HCM 2000 Control Delay	78.4	HCM 2000 Level of Service	E	
HCM 2000 Volume to Capacity ratio	1.08			
Actuated Cycle Length (s)	134.1	Sum of lost time (s)	20.3	
Intersection Capacity Utilization	103.8%	ICU Level of Service	G	
Analysis Period (min)	15			
c Critical Lane Group				

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	8	2199	204	73	1166	11	182	1	66	48	2	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.3		4.5	5.3		4.9	4.9			4.9	4.9
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00			1.00	1.00
Frpb, ped/bikes	1.00	0.99		1.00	1.00		1.00	0.96			1.00	0.95
Flpb, ped/bikes	1.00	1.00		1.00	1.00		0.97	1.00			0.98	1.00
Frt	1.00	0.99		1.00	1.00		1.00	0.85			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00			0.95	1.00
Satd. Flow (prot)	1770	3474		1770	3532		1724	1516			1734	1512
Flt Permitted	0.95	1.00		0.95	1.00		0.72	1.00			0.70	1.00
Satd. Flow (perm)	1770	3474		1770	3532		1311	1516			1276	1512
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	8	2315	215	77	1227	12	192	1	69	51	2	14
RTOR Reduction (vph)	0	4	0	0	0	0	0	57	0	0	0	12
Lane Group Flow (vph)	8	2526	0	77	1239	0	192	13	0	0	53	2
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	Perm
Protected Phases	5	2		1	6			4			4	
Permitted Phases							4			4		4
Actuated Green, G (s)	1.1	97.6		10.2	106.7		25.0	25.0			25.0	25.0
Effective Green, g (s)	1.1	97.6		10.2	106.7		25.0	25.0			25.0	25.0
Actuated g/C Ratio	0.01	0.66		0.07	0.72		0.17	0.17			0.17	0.17
Clearance Time (s)	4.5	5.3		4.5	5.3		4.9	4.9			4.9	4.9
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0			3.0	3.0
Lane Grp Cap (vph)	13	2298		122	2555		222	256			216	256
v/s Ratio Prot	0.00	c0.73		c0.04	0.35			0.01				
v/s Ratio Perm							c0.15				0.04	0.00
v/c Ratio	0.62	1.10		0.63	0.48		0.86	0.05			0.25	0.01
Uniform Delay, d1	73.0	25.0		66.8	8.7		59.6	51.3			53.1	50.9
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00			1.00	1.00
Incremental Delay, d2	64.0	52.1		10.2	0.1		27.7	0.1			0.6	0.0
Delay (s)	137.0	77.0		77.0	8.8		87.3	51.4			53.7	51.0
Level of Service	F	E		E	A		F	D			D	D
Approach Delay (s)		77.2			12.8			77.7			53.1	
Approach LOS		E			B			E			D	

Intersection Summary				
HCM 2000 Control Delay	56.6	HCM 2000 Level of Service	E	
HCM 2000 Volume to Capacity ratio	1.02			
Actuated Cycle Length (s)	147.5	Sum of lost time (s)	14.7	
Intersection Capacity Utilization	92.6%	ICU Level of Service	F	
Analysis Period (min)	15			
c Critical Lane Group				

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	51	1880	360	41	999	6	165	3	60	13	6	100
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.4		4.5	5.3			4.9			4.9	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	
Frpb, ped/bikes	1.00	0.99		1.00	1.00			0.99			0.97	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			0.99			1.00	
Frt	1.00	0.98		1.00	1.00			0.96			0.89	
Flt Protected	0.95	1.00		0.95	1.00			0.97			0.99	
Satd. Flow (prot)	1770	3424		1770	3535			1701			1598	
Flt Permitted	0.95	1.00		0.95	1.00			0.66			0.96	
Satd. Flow (perm)	1770	3424		1770	3535			1167			1543	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	54	1979	379	43	1052	6	174	3	63	14	6	105
RTOR Reduction (vph)	0	15	0	0	0	0	0	13	0	0	83	0
Lane Group Flow (vph)	54	2343	0	43	1058	0	0	227	0	0	42	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8			4		
Actuated Green, G (s)	6.5	60.4		3.1	57.1			20.7			20.7	
Effective Green, g (s)	6.5	60.4		3.1	57.1			20.7			20.7	
Actuated g/C Ratio	0.07	0.61		0.03	0.58			0.21			0.21	
Clearance Time (s)	4.5	5.4		4.5	5.3			4.9			4.9	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	116	2088		55	2038			244			322	
v/s Ratio Prot	0.03	c0.68		c0.02	0.30							
v/s Ratio Perm								c0.19			0.03	
v/c Ratio	0.47	1.12		0.78	0.52			0.93			0.13	
Uniform Delay, d1	44.6	19.3		47.6	12.7			38.5			31.8	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	2.9	61.9		50.5	0.9			39.3			0.2	
Delay (s)	47.5	81.2		98.1	13.6			77.7			32.0	
Level of Service	D	F		F	B			E			C	
Approach Delay (s)		80.5			16.9			77.7			32.0	
Approach LOS		F			B			E			C	

Intersection Summary				
HCM 2000 Control Delay	60.7	HCM 2000 Level of Service	E	
HCM 2000 Volume to Capacity ratio	1.06			
Actuated Cycle Length (s)	99.0	Sum of lost time (s)	14.8	
Intersection Capacity Utilization	92.1%	ICU Level of Service	F	
Analysis Period (min)	15			
c Critical Lane Group				

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	55	1094	785	325	700	27	313	33	169	72	77	49
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.2	5.2	4.5	5.2		5.0	5.0	5.0	4.9	4.9	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		0.95	0.95	1.00	1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.94	1.00	1.00		1.00	1.00	0.96	1.00	0.98	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85	1.00	0.94	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	0.96	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3539	1493	1770	3513		1681	1701	1523	1770	1726	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	0.96	1.00	0.95	1.00	
Satd. Flow (perm)	1770	3539	1493	1770	3513		1681	1701	1523	1770	1726	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	58	1152	826	342	737	28	329	35	178	76	81	52
RTOR Reduction (vph)	0	0	238	0	2	0	0	0	152	0	22	0
Lane Group Flow (vph)	58	1152	588	342	763	0	181	183	26	76	111	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Prot	NA	Perm	Prot	NA		Split	NA	Perm	Split	NA	
Protected Phases	5	2		1	6		8	8		7	7	
Permitted Phases			2						8			
Actuated Green, G (s)	6.7	34.9	34.9	21.6	49.8		14.9	14.9	14.9	11.8	11.8	
Effective Green, g (s)	6.7	34.9	34.9	21.6	49.8		14.9	14.9	14.9	11.8	11.8	
Actuated g/C Ratio	0.07	0.34	0.34	0.21	0.48		0.14	0.14	0.14	0.11	0.11	
Clearance Time (s)	4.5	5.2	5.2	4.5	5.2		5.0	5.0	5.0	4.9	4.9	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	115	1201	506	371	1701		243	246	220	203	198	
v/s Ratio Prot	0.03	0.33		c0.19	0.22		c0.11	0.11		0.04	c0.06	
v/s Ratio Perm			c0.39						0.02			
v/c Ratio	0.50	0.96	1.16	0.92	0.45		0.74	0.74	0.12	0.37	0.56	
Uniform Delay, d1	46.4	33.3	34.0	39.8	17.5		42.1	42.1	38.2	42.1	43.0	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	3.5	17.9	92.6	27.8	0.2		11.7	11.5	0.2	1.2	3.4	
Delay (s)	49.9	51.1	126.6	67.6	17.6		53.8	53.6	38.5	43.2	46.5	
Level of Service	D	D	F	E	B		D	D	D	D	D	
Approach Delay (s)		81.7			33.1			48.7			45.3	
Approach LOS		F			C			D			D	

Intersection Summary				
HCM 2000 Control Delay	61.3	HCM 2000 Level of Service	E	
HCM 2000 Volume to Capacity ratio	0.94			
Actuated Cycle Length (s)	102.8	Sum of lost time (s)	19.6	
Intersection Capacity Utilization	88.9%	ICU Level of Service	E	
Analysis Period (min)	15			
c Critical Lane Group				

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	784	636	914	814	180	272
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.2	5.2	4.5	4.5	5.5	5.5
Lane Util. Factor	0.95	1.00	0.97	0.95	0.97	1.00
Frpb, ped/bikes	1.00	0.99	1.00	1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	3539	1566	3433	3539	3433	1529
Flt Permitted	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)	3539	1566	3433	3539	3433	1529
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	825	669	962	857	189	286
RTOR Reduction (vph)	0	8	0	0	0	233
Lane Group Flow (vph)	825	661	962	857	189	53
Confl. Peds. (#/hr)		10	10		10	10
Confl. Bikes (#/hr)		5				5
Turn Type	NA	custom	Prot	NA	Prot	Perm
Protected Phases	2	2	1	6	8	
Permitted Phases		8				8
Actuated Green, G (s)	29.9	46.4	27.6	62.7	16.5	16.5
Effective Green, g (s)	29.9	46.4	27.6	62.7	16.5	16.5
Actuated g/C Ratio	0.34	0.52	0.31	0.70	0.18	0.18
Clearance Time (s)	5.2	5.2	4.5	4.5	5.5	5.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	1186	905	1062	2487	635	282
v/s Ratio Prot	0.23	c0.24	c0.28	0.24	0.06	
v/s Ratio Perm		0.18				0.03
v/c Ratio	0.70	0.73	0.91	0.34	0.30	0.19
Uniform Delay, d1	25.7	16.6	29.6	5.2	31.4	30.7
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	3.4	5.2	10.9	0.1	1.2	1.5
Delay (s)	29.1	21.7	40.4	5.3	32.5	32.2
Level of Service	C	C	D	A	C	C
Approach Delay (s)	25.8			23.9	32.3	
Approach LOS	C			C	C	

Intersection Summary				
HCM 2000 Control Delay	25.7	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.85			
Actuated Cycle Length (s)	89.2	Sum of lost time (s)	15.2	
Intersection Capacity Utilization	74.6%	ICU Level of Service	D	
Analysis Period (min)	15			
c Critical Lane Group				

Movement	EBU	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations							
Volume (vph)	0	926	155	182	1484	176	70
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5		4.5	4.5	4.5	4.5
Lane Util. Factor		0.95		0.97	0.95	0.97	0.88
Frpb, ped/bikes		1.00		1.00	1.00	1.00	0.95
Flpb, ped/bikes		1.00		1.00	1.00	1.00	1.00
Frt		0.98		1.00	1.00	1.00	0.85
Flt Protected		1.00		0.95	1.00	0.95	1.00
Satd. Flow (prot)		3450		3433	3539	3433	2649
Flt Permitted		1.00		0.95	1.00	0.95	1.00
Satd. Flow (perm)		3450		3433	3539	3433	2649
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	975	163	192	1562	185	74
RTOR Reduction (vph)	0	17	0	0	0	0	57
Lane Group Flow (vph)	0	1121	0	192	1562	185	17
Confl. Peds. (#/hr)			10	10		10	10
Confl. Bikes (#/hr)			5				5
Turn Type	Prot	NA		Prot	NA	Prot	Perm
Protected Phases	5	2		1	6	8	
Permitted Phases							8
Actuated Green, G (s)		31.3		9.2	45.0	16.0	16.0
Effective Green, g (s)		31.3		9.2	45.0	16.0	16.0
Actuated g/C Ratio		0.45		0.13	0.64	0.23	0.23
Clearance Time (s)		4.5		4.5	4.5	4.5	4.5
Vehicle Extension (s)		3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)		1542		451	2275	784	605
v/s Ratio Prot		0.33		0.06	c0.44	c0.05	
v/s Ratio Perm							0.01
v/c Ratio		0.73		0.43	0.69	0.24	0.03
Uniform Delay, d1		15.9		28.0	8.0	22.0	21.0
Progression Factor		1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2		3.0		0.6	1.7	0.7	0.1
Delay (s)		18.9		28.6	9.7	22.7	21.0
Level of Service		B		C	A	C	C
Approach Delay (s)		18.9			11.8	22.2	
Approach LOS		B			B	C	

Intersection Summary				
HCM 2000 Control Delay	15.2	HCM 2000 Level of Service		B
HCM 2000 Volume to Capacity ratio	0.61			
Actuated Cycle Length (s)	70.0	Sum of lost time (s)		13.5
Intersection Capacity Utilization	68.9%	ICU Level of Service		C
Analysis Period (min)	15			
c Critical Lane Group				

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	4	1	4	2	0	23	0	226	7	53	216	8
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	4	1	4	2	0	24	0	238	7	56	227	8
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)											142	
pX, platoon unblocked												
vC, conflicting volume	609	588	232	589	589	242	236			245		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	609	588	232	589	589	242	236			245		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	99	100	99	99	100	97	100			96		
cM capacity (veh/h)	382	403	808	403	403	797	1331			1321		

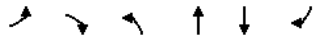
Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	9	26	245	292
Volume Left	4	2	0	56
Volume Right	4	24	7	8
cSH	503	739	1331	1321
Volume to Capacity	0.02	0.04	0.00	0.04
Queue Length 95th (ft)	1	3	0	3
Control Delay (s)	12.3	10.0	0.0	1.8
Lane LOS	B	B		A
Approach Delay (s)	12.3	10.0	0.0	1.8
Approach LOS	B	B		

Intersection Summary				
Average Delay	1.6			
Intersection Capacity Utilization	40.4%	ICU Level of Service		A
Analysis Period (min)	15			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	0	141	99	0	107	50
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	0	148	104	0	113	53
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						635
pX, platoon unblocked						
vC, conflicting volume	382	104			104	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	382	104			104	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	84			92	
cM capacity (veh/h)	573	950			1487	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	148	104	165
Volume Left	0	0	113
Volume Right	148	0	0
cSH	950	1700	1487
Volume to Capacity	0.16	0.06	0.08
Queue Length 95th (ft)	14	0	6
Control Delay (s)	9.5	0.0	5.4
Lane LOS	A		A
Approach Delay (s)	9.5	0.0	5.4
Approach LOS	A		

Intersection Summary			
Average Delay		5.5	
Intersection Capacity Utilization		30.6%	ICU Level of Service A
Analysis Period (min)		15	



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	346	47	488	335	1321	22
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.1	4.7	4.7	5.8	5.8	
Lane Util. Factor	0.97	1.00	1.00	0.95	0.95	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.85	1.00	1.00	1.00	
Flt Protected	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	3433	1583	1770	3539	3527	
Flt Permitted	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (perm)	3433	1583	1770	3539	3527	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	364	49	514	353	1391	23
RTOR Reduction (vph)	0	6	0	0	1	0
Lane Group Flow (vph)	364	43	514	353	1413	0
Confl. Peds. (#/hr)						10
Confl. Bikes (#/hr)						5
Turn Type	Prot	pm+ov	Prot	NA	NA	
Protected Phases	4	5	5	2	6	
Permitted Phases		4				
Actuated Green, G (s)	15.1	47.4	32.3	83.0	46.0	
Effective Green, g (s)	15.1	47.4	32.3	83.0	46.0	
Actuated g/C Ratio	0.14	0.43	0.30	0.76	0.42	
Clearance Time (s)	5.1	4.7	4.7	5.8	5.8	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	475	688	524	2694	1488	
v/s Ratio Prot	c0.11	0.02	c0.29	0.10	c0.40	
v/s Ratio Perm		0.01				
v/c Ratio	0.77	0.06	0.98	0.13	0.95	
Uniform Delay, d1	45.2	17.9	38.0	3.4	30.4	
Progression Factor	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	7.3	0.0	34.3	0.1	14.1	
Delay (s)	52.5	17.9	72.3	3.5	44.4	
Level of Service	D	B	E	A	D	
Approach Delay (s)	48.4			44.3	44.4	
Approach LOS	D			D	D	

Intersection Summary				
HCM 2000 Control Delay	45.0	HCM 2000 Level of Service	D	
HCM 2000 Volume to Capacity ratio	0.93			
Actuated Cycle Length (s)	109.0	Sum of lost time (s)	15.6	
Intersection Capacity Utilization	87.1%	ICU Level of Service	E	
Analysis Period (min)	15			
c Critical Lane Group				

4:45-5:45 PM Horizon Year 2035 + Project (Phase 2)
11: Kearny Mesa & Armour St/SR-163 SB Ramp

HCM Signalized Intersection Capacity Analysis

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	134	163	30	464	54	294	37	425	136	277	649	108
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.1			5.1	5.1	4.7	5.5	5.5	4.7	5.5	
Lane Util. Factor		1.00			1.00	1.00	1.00	0.95	1.00	1.00	0.95	
Frpb, ped/bikes		1.00			1.00	0.96	1.00	1.00	0.94	1.00	0.99	
Flpb, ped/bikes		1.00			1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt		0.99			1.00	0.85	1.00	1.00	0.85	1.00	0.98	
Flt Protected		0.98			0.96	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1796			1783	1526	1770	3539	1481	1770	3434	
Flt Permitted		0.98			0.96	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)		1796			1783	1526	1770	3539	1481	1770	3434	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	141	172	32	488	57	309	39	447	143	292	683	114
RTOR Reduction (vph)	0	3	0	0	0	119	0	0	118	0	12	0
Lane Group Flow (vph)	0	342	0	0	545	190	39	447	25	292	785	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Split	NA		Split	NA	Perm	Prot	NA	Perm	Prot	NA	
Protected Phases	4	4		3	3		5	2		1	6	
Permitted Phases						3			2			
Actuated Green, G (s)		20.4			33.1	33.1	2.8	19.7	19.7	18.3	35.2	
Effective Green, g (s)		20.4			33.1	33.1	2.8	19.7	19.7	18.3	35.2	
Actuated g/C Ratio		0.18			0.30	0.30	0.03	0.18	0.18	0.16	0.31	
Clearance Time (s)		5.1			5.1	5.1	4.7	5.5	5.5	4.7	5.5	
Vehicle Extension (s)		3.0			3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)		327			527	451	44	623	260	289	1080	
v/s Ratio Prot		c0.19			c0.31		0.02	0.13		c0.17	c0.23	
v/s Ratio Perm						0.12			0.02			
v/c Ratio		1.05			1.03	0.42	0.89	0.72	0.10	1.01	0.73	
Uniform Delay, d1		45.8			39.4	31.7	54.4	43.5	38.6	46.8	34.1	
Progression Factor		1.00			1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2		62.0			48.3	0.6	92.1	7.0	0.7	55.6	4.3	
Delay (s)		107.8			87.7	32.3	146.5	50.4	39.4	102.4	38.4	
Level of Service		F			F	C	F	D	D	F	D	
Approach Delay (s)		107.8			67.7			53.9			55.5	
Approach LOS		F			E			D			E	

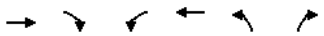
Intersection Summary				
HCM 2000 Control Delay	64.9	HCM 2000 Level of Service	E	
HCM 2000 Volume to Capacity ratio	0.98			
Actuated Cycle Length (s)	111.9	Sum of lost time (s)	20.4	
Intersection Capacity Utilization	92.1%	ICU Level of Service	F	
Analysis Period (min)	15			
c Critical Lane Group				

4:45-5:45 PM Horizon Year 2035 + Project (Phase 2)
12: Convoy St & Ostrow St/Kearny Mesa Rd

HCM Signalized Intersection Capacity Analysis

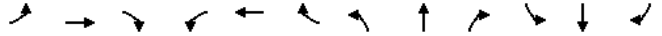
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	92	96	159	844	81	43	84	816	253	43	1040	27
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.9	4.9	4.5	4.9		4.5	5.3		4.5	5.0	
Lane Util. Factor	1.00	1.00	1.00	0.97	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	1.00	0.85	1.00	0.95		1.00	0.96		1.00	1.00	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1863	1583	3433	1766		1770	3414		1770	3526	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	1863	1583	3433	1766		1770	3414		1770	3526	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	97	101	167	888	85	45	88	859	266	45	1095	28
RTOR Reduction (vph)	0	0	141	0	18	0	0	25	0	0	1	0
Lane Group Flow (vph)	97	101	26	888	112	0	88	1100	0	45	1122	0
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4									
Actuated Green, G (s)	10.6	11.3	11.3	30.3	31.0		9.4	43.6		5.6	40.1	
Effective Green, g (s)	10.6	11.3	11.3	30.3	31.0		9.4	43.6		5.6	40.1	
Actuated g/C Ratio	0.10	0.10	0.10	0.28	0.28		0.09	0.40		0.05	0.36	
Clearance Time (s)	4.5	4.9	4.9	4.5	4.9		4.5	5.3		4.5	5.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	170	191	162	945	497		151	1353		90	1285	
v/s Ratio Prot	0.05	c0.05		c0.26	0.06		c0.05	c0.32		0.03	c0.32	
v/s Ratio Perm			0.02									
v/c Ratio	0.57	0.53	0.16	0.94	0.23		0.58	0.81		0.50	0.87	
Uniform Delay, d1	47.5	46.8	45.0	39.0	30.3		48.4	29.6		50.8	32.6	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	4.6	2.6	0.5	16.4	0.2		5.6	5.4		4.3	8.4	
Delay (s)	52.1	49.5	45.5	55.4	30.5		54.0	35.0		55.2	41.0	
Level of Service	D	D	D	E	C		D	C		E	D	
Approach Delay (s)		48.3			52.2			36.4			41.5	
Approach LOS		D			D			D			D	

Intersection Summary				
HCM 2000 Control Delay	43.4	HCM 2000 Level of Service	D	
HCM 2000 Volume to Capacity ratio	0.82			
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	19.2	
Intersection Capacity Utilization	79.1%	ICU Level of Service	D	
Analysis Period (min)	15			
c Critical Lane Group				



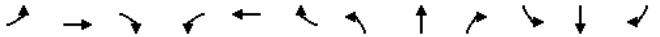
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	427	0	0	1129	506	293
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.1			5.1	5.1	5.1
Lane Util. Factor	0.95			0.95	0.97	0.91
Frt	1.00			1.00	0.99	0.85
Flt Protected	1.00			1.00	0.96	1.00
Satd. Flow (prot)	3539			3539	3414	1441
Flt Permitted	1.00			1.00	0.96	1.00
Satd. Flow (perm)	3539			3539	3414	1441
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	449	0	0	1188	533	308
RTOR Reduction (vph)	0	0	0	0	9	207
Lane Group Flow (vph)	449	0	0	1188	570	55
Turn Type	NA			NA	Prot	Perm
Protected Phases	2			6	4	
Permitted Phases						4
Actuated Green, G (s)	13.0			24.9	14.2	14.2
Effective Green, g (s)	13.0			24.9	14.2	14.2
Actuated g/C Ratio	0.19			0.37	0.21	0.21
Clearance Time (s)	5.1			5.1	5.1	5.1
Vehicle Extension (s)	3.0			3.0	3.0	3.0
Lane Grp Cap (vph)	682			1307	719	303
v/s Ratio Prot	c0.13			c0.34	c0.17	
v/s Ratio Perm						0.04
v/c Ratio	0.66			0.91	0.79	0.18
Uniform Delay, d1	25.1			20.2	25.2	21.8
Progression Factor	1.00			1.00	1.00	1.00
Incremental Delay, d2	2.3			9.4	6.0	0.3
Delay (s)	27.5			29.6	31.2	22.1
Level of Service	C			C	C	C
Approach Delay (s)	27.5			29.6	28.4	
Approach LOS	C			C	C	

Intersection Summary			
HCM 2000 Control Delay	28.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	67.4	Sum of lost time (s)	15.3
Intersection Capacity Utilization	57.2%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	150	523	52	257	932	28	122	134	250	17	9	57
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.9	4.0	4.5	4.9		4.9	4.9	4.9		4.9	4.9
Lane Util. Factor	1.00	0.95	1.00	0.97	0.95		1.00	0.95	0.95		1.00	1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	0.99	0.97		1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00		1.00	0.95	0.85		1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00		0.97	1.00
Satd. Flow (prot)	1770	3539	1583	3433	3519		1770	1665	1463		1803	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00		0.97	1.00
Satd. Flow (perm)	1770	3539	1583	3433	3519		1770	1665	1463		1803	1583
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	158	551	55	271	981	29	128	141	263	18	9	60
RTOR Reduction (vph)	0	0	0	0	3	0	0	0	0	0	0	0
Lane Group Flow (vph)	158	551	55	271	1007	0	128	212	192	0	27	60
Confl. Peds. (#/hr)						10			10			
Confl. Bikes (#/hr)						5			5			
Turn Type	Prot	NA	Free	Prot	NA		Split	NA	Perm	Split	NA	Perm
Protected Phases	5	2		1	6		3	3		4	4	
Permitted Phases			Free						3			4
Actuated Green, G (s)	4.1	15.9	60.4	4.1	15.9		16.2	16.2	16.2		5.0	5.0
Effective Green, g (s)	4.1	15.9	60.4	4.1	15.9		16.2	16.2	16.2		5.0	5.0
Actuated g/C Ratio	0.07	0.26	1.00	0.07	0.26		0.27	0.27	0.27		0.08	0.08
Clearance Time (s)	4.5	4.9		4.5	4.9		4.9	4.9	4.9		4.9	4.9
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	120	931	1583	233	926		474	446	392		149	131
v/s Ratio Prot	c0.09	0.16		0.08	c0.29		0.07	0.13			0.01	
v/s Ratio Perm			0.03						c0.13			c0.04
v/c Ratio	1.32	0.59	0.03	1.16	1.09		0.27	0.48	0.49		0.18	0.46
Uniform Delay, d1	28.1	19.4	0.0	28.1	22.2		17.4	18.5	18.6		25.8	26.4
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	189.4	2.8	0.0	110.1	56.3		1.4	3.6	4.3		0.6	2.5
Delay (s)	217.6	22.2	0.0	138.3	78.5		18.8	22.1	22.9		26.4	28.9
Level of Service	F	C	A	F	E		B	C	C		C	C
Approach Delay (s)		61.0			91.2			21.6			28.1	
Approach LOS		E			F			C			C	

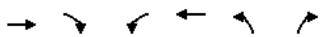
Intersection Summary			
HCM 2000 Control Delay	66.6	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	60.4	Sum of lost time (s)	19.2
Intersection Capacity Utilization	62.4%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	11	457	665	439	1153	119	0	0	0	54	214	21
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.7	5.1		4.7	5.1						5.5	
Lane Util. Factor	1.00	0.95		1.00	0.95						1.00	
Frpb, ped/bikes	1.00	0.99		1.00	1.00						1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00						1.00	
Frt	1.00	0.91		1.00	0.99						0.99	
Flt Protected	0.95	1.00		0.95	1.00						0.99	
Satd. Flow (prot)	1764	3180		1770	3475						1823	
Flt Permitted	0.95	1.00		0.95	1.00						0.99	
Satd. Flow (perm)	1764	3180		1770	3475						1823	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	12	481	700	462	1214	125	0	0	0	57	225	22
RTOR Reduction (vph)	0	122	0	0	10	0	0	0	0	0	4	0
Lane Group Flow (vph)	12	1059	0	462	1329	0	0	0	0	0	300	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Confl. Bikes (#/hr)			5			5			5			5
Turn Type	Prot	NA		Prot	NA					Split	NA	
Protected Phases	5	2		1	6					4	4	
Permitted Phases												
Actuated Green, G (s)	0.8	26.2		16.3	41.7						16.0	
Effective Green, g (s)	0.8	26.2		16.3	41.7						16.0	
Actuated g/C Ratio	0.01	0.36		0.22	0.57						0.22	
Clearance Time (s)	4.7	5.1		4.7	5.1						5.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0						3.0	
Lane Grp Cap (vph)	19	1128		390	1963						395	
v/s Ratio Prot	0.01	c0.33		c0.26	0.38						c0.16	
v/s Ratio Perm												
v/c Ratio	0.63	1.12dr		1.18	0.68						0.76	
Uniform Delay, d1	36.4	23.0		28.8	11.3						27.1	
Progression Factor	1.00	1.00		1.00	1.00						1.00	
Incremental Delay, d2	52.7	14.3		106.2	0.9						12.9	
Delay (s)	89.1	37.3		135.0	12.2						40.0	
Level of Service	F	D		F	B						D	
Approach Delay (s)		37.9			43.7			0.0			40.0	
Approach LOS		D			D			A			D	

Intersection Summary				
HCM 2000 Control Delay	41.3	HCM 2000 Level of Service	D	
HCM 2000 Volume to Capacity ratio	0.96			
Actuated Cycle Length (s)	73.8	Sum of lost time (s)	15.3	
Intersection Capacity Utilization	94.0%	ICU Level of Service	F	
Analysis Period (min)	15			

dr Defacto Right Lane. Recode with 1 though lane as a right lane.
c Critical Lane Group



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	534	0	0	899	771	261
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.5			5.5	4.5	5.5
Lane Util. Factor	0.95			0.95	0.97	1.00
Frpb, ped/bikes	1.00			1.00	1.00	0.98
Flpb, ped/bikes	1.00			1.00	1.00	1.00
Frt	1.00			1.00	1.00	0.85
Flt Protected	1.00			1.00	0.95	1.00
Satd. Flow (prot)	3539			3539	3433	1550
Flt Permitted	1.00			1.00	0.95	1.00
Satd. Flow (perm)	3539			3539	3433	1550
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	562	0	0	946	812	275
RTOR Reduction (vph)	0	0	0	0	0	149
Lane Group Flow (vph)	562	0	0	946	812	126
Confl. Peds. (#/hr)						10
Confl. Bikes (#/hr)						5
Turn Type	NA			NA	Prot	Perm
Protected Phases	2			6	4	
Permitted Phases						6
Actuated Green, G (s)	24.1			24.1	18.6	24.1
Effective Green, g (s)	24.1			24.1	18.6	24.1
Actuated g/C Ratio	0.46			0.46	0.35	0.46
Clearance Time (s)	5.5			5.5	4.5	5.5
Vehicle Extension (s)	3.0			3.0	3.0	3.0
Lane Grp Cap (vph)	1618			1618	1211	708
v/s Ratio Prot	0.16			c0.27	c0.24	
v/s Ratio Perm						0.08
v/c Ratio	0.35			0.58	0.67	0.18
Uniform Delay, d1	9.2			10.6	14.5	8.4
Progression Factor	1.00			1.00	1.00	1.00
Incremental Delay, d2	0.1			0.5	1.5	0.1
Delay (s)	9.4			11.1	15.9	8.6
Level of Service	A			B	B	A
Approach Delay (s)	9.4			11.1	14.1	
Approach LOS	A			B	B	

Intersection Summary				
HCM 2000 Control Delay	12.0	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.62			
Actuated Cycle Length (s)	52.7	Sum of lost time (s)	10.0	
Intersection Capacity Utilization	55.2%	ICU Level of Service	B	
Analysis Period (min)	15			

c Critical Lane Group

Appendix P

Fair Share and PFFP KM-T20 Details

FAIR SHARE CALCULATIONS FOR CUMULATIVE IMPACT

Segment of Aero Drive (From Kearny Villa Road to Aero Court)

A= 32,388 Existing number of vehicles on segment
B= 35,900 Horizon Year without Project number of vehicles on segment
C= 36,864 Horizon Year with Project number of vehicles on segment

Fair-Share (C-B)/(C-A) = **21.5%**

CITY OF SAN DIEGO
FACILITIES FINANCING PROGRAM

PROJECT: KM-T20

COUNCIL DISTRICT: 6
COMMUNITY: KEARNY MESA

TITLE: AERO DRIVE - KEARNY VILLA ROAD TO SANDROCK ROAD

DEPARTMENT: TRANSPORTATION

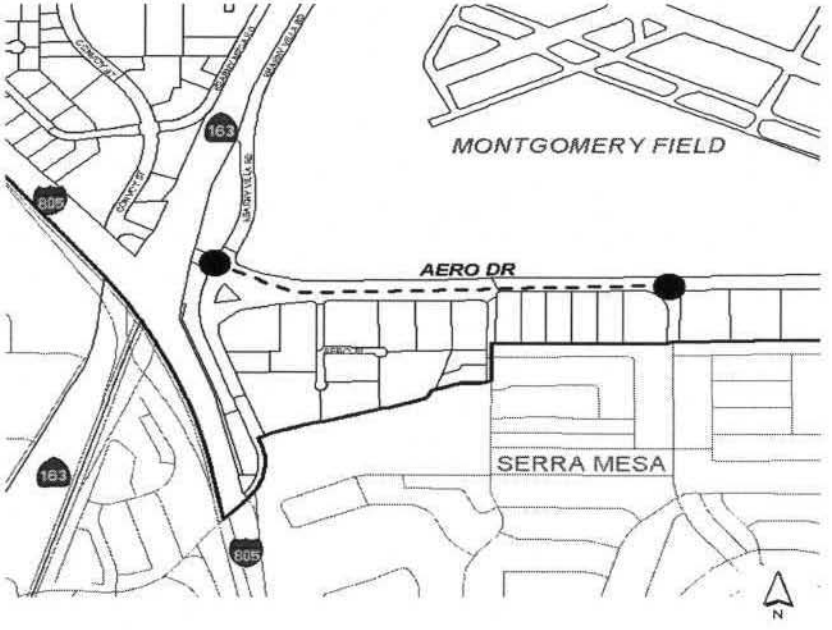
FUNDING:	SOURCE	EXPEN/ENCUM	CONT APPROP	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007
3,350,000	UNIDENTIFIED								
330,000	SUBDIVIDER								
3,680,000	**TOTAL**	0	0	0	0	0	0	0	0

DESCRIPTION: THIS PROJECT WILL PROVIDE FOR THE WIDENING OF AERO DRIVE FROM KEARNY VILLA ROAD TO SANDROCK ROAD TO A SIX LANE PRIMARY ARTERIAL WITH BIKE LANES.

JUSTIFICATION: THIS PROJECT WILL IMPLEMENT THE TRANSPORTATION ELEMENT OF THE COMMUNITY PLAN AND WILL IMPROVE TRAFFIC CIRCULATION TO MATCH CITY-WIDE LEVELS OF SERVICE. (PROJECT KM-9 IN 1996 FINANCING PLAN)

SCHEDULE: DESIGN AND CONSTRUCTION WILL BE SCHEDULED WHEN FUNDING IS IDENTIFIED.

RELATIONSHIP TO GENERAL AND COMMUNITY PLANS: THIS PROJECT IS CONSISTENT WITH THE KEARNY MESA COMMUNITY PLAN AND THE CITY'S GENERAL PLAN GUIDELINES.



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Appendix Q

Access Easement Correspondence

SAN DIEGO COMMUNITY COLLEGE DISTRICT

3375 Camino del Rio South
San Diego, California 92108-3883
619-388-6500
CITY COLLEGE | MESA COLLEGE | MIRAMAR COLLEGE | CONTINUING EDUCATION

Facilities Management
Vice Chancellor
District Architect
Construction Management
Real Property

619-388-6546
FAX **619-388-6509**

October 26, 2015

Lycee Francais et International of San Diego
Attn: Thierry Pasquet, Director
3219 Clairemont Mesa Boulevard
San Diego, CA 92117

Ladies and Gentlemen:

This letter is to express the intent of the San Diego Community College District (District) to grant an easement for the benefit of La Petite Ecole across the eastern edge of the property located at 8355 Aero Drive for the purpose of granting vehicular access to the neighboring property located at 8401 Aero Drive. The easement will allow nonexclusive use of the existing driveway that runs between the two properties and connects with both Aero Place on the south and Aero Drive Frontage Road on the north.

The creation of the easement shall be conditioned on the successful negotiation of the terms of a lease between the District and La Petite Ecole for the property located at 8401 Aero Drive and the easement shall exist for the duration of that lease.

Should you have any questions, please contact me or David Backensto at 619-388-6546.

Sincerely,

Christopher Manis
Vice Chancellor, Facilities Management

cc: Mike Conger, ECP Commercial
David Backensto, SDCCD

Appendix R

Transit Map and Schedule

805
27
Mercury
Complex Dr
960
870
120
Kearny Mesa
210
Balboa Av
960
Convoy St
Kearny Mesa Rd
Kearny Villa Rd
928
Murphy Cyn Rd
Montgomery Field
Ruffin Rd
20
870
Armstrong St
Ashford St
44
Aero Dr
25
Sandrock Rd
Ruffin Rd
College Dr
120
163
25
Gramercy Dr
Stonecrest Bl
Health Center Dr
928
Sharp Memorial Hospital
Linda Vista Rd
Murray Ridge Rd
Mission Village Dr
Rady Children's Hospital
Serra Mesa
Mission Center Rd
20
805
810
820
850
Fenton Parkway Green Line
Qualcomm Stadium P Green Line
Rio Vista
Qualcomm Stadium

CASH FARES / *Tarifas en efectivo*

Exact fare, please / *Favor de pagar la cantidad exacta*

Day Pass (Regional) / *Pase diario (Regional)* Compass Card required ($2) / *Se requiere un Compass Card ($2)*	$5.00
One-Way Fare / *Tarifa de una direccíon*	$2.25
Senior (60+)/Disabled/Medicare *Mayores de 60 años/Discapacitados/Medicare*	$1.10*
Children 5 & under / *Niños de 5 años o menos* Up to two children ride free per paying adult / *Máximo dos niños viajan gratis por cada adulto*	FREE / *GRATIS*

MONTHLY PASSES / *Pases mensual*

Adult / *Adulto*	$72.00
Senior (60+)/Disabled/Medicare *Mayores de 60 años/Discapacitados/Medicare*	$18.00*
Youths (18 and under) *Jóvenes (18 años o menos)*	$36.00*

*I.D. required for discount fare or pass.
**Se requiere identificación para tarifas o pases de descuento.*

DAY PASS (REGIONAL) / *Pase diario (Regional)*

All passes are sold on Compass Card, which can be reloaded and reused for up to five years. Compass Cards are available for $2 at select outlets. A $5 Day Pass requires a Compass Card. A paper Day Pass can be purchased on board buses for an additional $2 fee.

Todos los pases se venden en el Compass Card, el cual puede ser recargado y reutilizado por hasta cinco años. Compass Cards están disponibles por $2 en selectas sucursales. Un pase de un día por $5 requiere un Compass Card. Un pase de un día de papel se puede obtener a bordo los autobuses por un costo adicional de $2.

DIRECTORY / *Directorio*

Regional Transit Information *Información de transporte público regional*	**511** or/ó **(619) 233-3004**
TTY/TDD (teletype for hearing impaired) *Teletipo para sordos*	**(619) 234-5005** or/ó **(888) 722-4889**
InfoExpress (24-hour info via Touch-Tone phone) *Información las 24 horas (via teléfono de teclas)*	**(619) 685-4900**
Customer Service / Suggestions *Servicio al cliente / Sugerencias*	**(619) 557-4555**
SafeWatch	**(619) 557-4500**
Lost & Found *Objetos extraviados*	Route 25: **(877) 841-3278** Route 928: **(619) 409-4601**
The Transit Store	**(619) 234-1060** 1st & Broadway, Downtown San Diego M–F 9am–5pm
For MTS online trip planning *Planificación de viajes por Internet*	**www.sdmts.com**

For more information on riding MTS services, pick up a Rider's Guide on a bus or at The Transit Store, or visit **www.sdmts.com**.

*Para obtener más información sobre el uso de los servicios de MTS, recoja un 'Rider's Guide' en un autobús o en The Transit Store, o visita a **www.sdmts.com**.*

Thank you for riding MTS! ***¡Gracias por viajar con MTS!***

Effective JUNE 8, 2014

25

Fashion Valley – Kearny Mesa

via Linda Vista / Stonecrest

928

Fashion Valley – Kearny Mesa

via Serra Mesa / Stonecrest

DESTINATIONS

- Children's Hospital (25)
- Fashion Valley Mall
- Hazard Center (928)
- Kearny Mesa Courthouse
- Linda Vista Park & Rec Center (25)
- Serra High School (25)
- Sharp Hospital (25)
- Stonecrest Plaza

MTS Metropolitan Transit System

TROLLEY CONNECTIONS
Fashion Valley

09/15

Alternative formats available upon request. Please call: (619) 557-4555 / *Formato alternativo disponible al preguntar. Favor de llamar: (619) 557-4555*

Route 25 – Monday through Friday / *lunes a viernes*

Fashion Valley ➡ Linda Vista ➡ Tierrasanta ➡ Kearny Mesa

Ⓐ Fashion Valley Transit Center **DEPART**	Ⓑ Comstock St. & Linda Vista Rd.	Ⓒ Sharp Hospital (Health Center & Frost)	Ⓔ Stonecrest Plaza	Ⓕ Tierrasanta Bl. & Santo Rd.	Ⓖ Clairemont Mesa Bl. & Santo Rd.	Ⓘ Kearny Mesa Transit Center **ARRIVE**
—	—	—	6:41a	6:47a	6:51a	6:59a
7:10a	7:17a	7:28a	7:39	7:45	7:49	7:57
8:12	8:19	8:30	8:41	8:47	8:51	8:59
9:12	9:19	9:30	9:41	9:47	9:51	9:59
10:12	10:19	10:30	10:41	10:47	10:51	10:59
11:12	11:19	11:30	11:41	11:47	11:51	11:59
12:12p	**12:19p**	**12:30p**	**12:41p**	**12:47p**	**12:51p**	**12:59p**
1:12	**1:19**	**1:31**	**1:44**	**1:51**	**1:55**	**2:03**
2:12	**2:19**	**2:31**	**2:44**	**2:51**	**2:55**	**3:03**
3:14	**3:21**	**3:33**	**3:46**	**3:53**	**3:57**	**4:05**
4:14	**4:21**	**4:33**	**4:46**	**4:53**	**4:57**	**5:05**
5:16	**5:23**	**5:35**	**5:48**	**5:55**	**5:59**	**6:07**
6:18	**6:25**	**6:37**	**6:50**	**6:57**	**7:01**	**7:09**

Kearny Mesa ➡ Tierrasanta ➡ Linda Vista ➡ Fashion Valley

Ⓘ Kearny Mesa Transit Center• **DEPART**	Ⓖ Clairemont Mesa Bl. & Santo Rd.	Ⓕ Santo Rd. & Tierrasanta Bl.	Ⓔ Stonecrest Plaza	Ⓒ Sharp Hospital (Health Center & Frost)	Ⓑ Comstock St. & Linda Vista Rd.	Ⓐ Fashion Valley Transit Center **ARRIVE**
—	—	—	6:21a	6:36a	6:47a	6:54a
7:12a	7:18a	7:23a	7:32	7:47	7:58	8:05
8:12	8:18	8:23	8:32	8:47	8:58	9:05
9:12	9:18	9:23	9:32	9:47	9:58	10:05
10:10	10:16	10:21	10:30	10:45	10:56	11:03
11:10	11:16	11:21	11:30	11:45	11:56	**12:03p**
12:10p	**12:16p**	**12:21p**	**12:30p**	**12:45p**	**12:56p**	**1:03**
1:09	**1:15**	**1:20**	**1:29**	**1:45**	**1:57**	**2:05**
2:10	**2:16**	**2:21**	**2:30**	**2:46**	**2:58**	**3:06**
3:11	**3:17**	**3:22**	**3:31**	**3:47**	**3:59**	**4:07**
4:13	**4:19**	**4:24**	**4:33**	**4:49**	**5:01**	**5:09**
5:15	**5:21**	**5:26**	**5:35**	**5:51**	**6:03**	**6:11**
6:17	**6:23**	**6:28**	**6:36**	**6:50**	**7:01**	**7:08**

• = Board bus on Clairemont Mesa Bl. in front of Spice House Restaurant / *Encuentra el autobús en Clairemont Mesa Bl. en frente del restaurante Spice House*

Route 25 does not operate on weekends or on the following holidays and observed holidays:
La ruta 25 no ofrece servicio durante el fin de semana ó durante los siguientes días festivos y feriados observados: >>> New Year's Day, Presidents' Day, Memorial Day, Independence Day, Labor Day, Thanksgiving, Christmas

The schedules and other information shown in this timetable are subject to change. MTS does not assume responsibility for errors in timetables nor for any inconvenience caused by delayed buses.
Los horarios e información de este itinerario están sujetos a cambio. MTS no asume responsabilidad por errores en los itinerarios, ni por ningún perjuicio que se origine por los autobuses demorados.

Route 928 – Monday through Friday / *lunes a viernes*

Fashion Valley ➡ Kearny Mesa

Ⓐ Fashion Valley T.C. **DEPART**	Ⓓ Sandrock & Murray Ridge	Ⓔ Stonecrest Plaza	Ⓗ Ruffin Rd. & Balboa Av.	Ⓘ Kearny Mesa T.C. **ARRIVE**
5:25a	5:38a	5:48a	5:54a	6:01a
5:55	6:08	6:18	6:24	6:31
6:25	6:38	6:48	6:54	7:01
6:55	7:08	7:18	7:24	7:31
7:25	7:38	7:48	7:54	8:01
7:55	8:08	8:18	8:24	8:31
8:25	8:38	8:48	8:54	9:01
8:55	9:08	9:18	9:24	9:31
9:25	9:38	9:48	9:54	10:01
9:55	10:08	10:18	10:24	10:31
10:25	10:38	10:48	10:54	11:01
10:55	11:08	11:18	11:24	11:31
11:25	11:39	11:50	11:56	**12:04p**
11:55	**12:09p**	**12:20p**	**12:27p**	**12:35**
12:25p	**12:39**	**12:50**	**12:57**	**1:05**
12:55	**1:09**	**1:20**	**1:27**	**1:35**
1:25	**1:39**	**1:50**	**1:57**	**2:05**
1:55	**2:09**	**2:20**	**2:27**	**2:35**
2:25	**2:39**	**2:50**	**2:57**	**3:05**
2:55	**3:09**	**3:20**	**3:27**	**3:35**
3:19	**3:34**	**3:45**	**3:54**	**4:02**
3:49	**4:04**	**4:15**	**4:24**	**4:32**
4:19	**4:34**	**4:45**	**4:54**	**5:02**
4:49	**5:04**	**5:15**	**5:24**	**5:32**
5:19	**5:34**	**5:45**	**5:54**	**6:02**
5:49	**6:04**	**6:15**	**6:22**	**6:30**
6:19	**6:34**	**6:45**	**6:52**	**7:00**
6:55	**7:09**	**7:19**	—	—
7:37	**7:51**	**8:01**	**8:07**	**8:14**
8:35	**8:48**	**8:58**	—	—
9:37	**9:50**	**10:00**	—	—

Kearny Mesa ➡ Fashion Valley

Ⓘ Kearny Mesa T.C. **DEPART**	Ⓗ Ruffin Rd. & Balboa Av.	Ⓔ Stonecrest Plaza	Ⓓ Sandrock & Murray Ridge	Ⓐ Fashion Valley T.C. **ARRIVE**
—	—	4:47a	4:55a	5:10a
—	—	5:33	5:41	5:56
5:54a	5:58a	6:03	6:11	6:26
6:28	6:33	6:39	6:48	7:04
6:58	7:03	7:09	7:18	7:34
7:28	7:33	7:39	7:48	8:04
7:58	8:03	8:09	8:18	8:34
8:28	8:33	8:39	8:48	9:04
8:58	9:03	9:09	9:18	9:34
9:17	9:22	9:29	9:39	9:55
9:47	9:52	9:59	10:09	10:25
10:17	10:22	10:29	10:39	10:55
10:47	10:52	10:59	11:09	11:25
11:25	11:30	11:37	11:49	**12:05p**
11:55	**12:00p**	**12:07p**	**12:19p**	**12:35**
12:25p	**12:30**	**12:37**	**12:49**	**1:05**
12:55	**1:00**	**1:07**	**1:19**	**1:35**
1:25	**1:30**	**1:37**	**1:49**	**2:05**
1:55	**2:00**	**2:07**	**2:19**	**2:35**
2:25	**2:30**	**2:37**	**2:49**	**3:05**
2:55	**3:00**	**3:07**	**3:19**	**3:35**
3:25	**3:30**	**3:37**	**3:49**	**4:05**
3:55	**4:00**	**4:07**	**4:19**	**4:35**
4:25	**4:30**	**4:37**	**4:49**	**5:05**
4:55	**5:00**	**5:07**	**5:19**	**5:35**
5:25	**5:30**	**5:37**	**5:49**	**6:05**
5:54	**5:59**	**6:06**	**6:18**	**6:34**
6:25	**6:30**	**6:37**	**6:47**	**7:03**
7:45	**7:50**	**7:56**	**8:05**	**8:20**
—	—	**9:01**	**9:09**	**9:24**

Route 928 – Saturday / *sábado*

Fashion Valley ➡ Stonecrest

Ⓐ Fashion Valley T.C. **DEPART**	Ⓓ Sandrock & Murray Ridge	Ⓔ Stonecrest Plaza	Ⓗ Ruffin Rd. & Balboa Av.	Ⓘ Kearny Mesa T.C. **ARRIVE**
7:05a	7:17a	7:27a	—	—
8:05	8:17	8:27	—	—
9:05	9:17	9:27	—	—
10:05	10:17	10:27	—	—
11:05	11:17	11:27	—	—
12:04p	**12:18p**	**12:28p**	—	—
1:04	**1:18**	**1:28**	—	—
2:04	**2:18**	**2:28**	—	—
3:04	**3:18**	**3:28**	—	—
4:04	**4:18**	**4:28**	—	—
5:04	**5:18**	**5:28**	—	—
6:05	**6:19**	**6:29**	—	—
7:05	**7:18**	**7:28**	—	—
8:05	**8:18**	**8:28**	—	—
9:05	**9:17**	**9:27**	—	—

Stonecrest ➡ Fashion Valley

Ⓘ Kearny Mesa T.C. **DEPART**	Ⓗ Ruffin Rd. & Balboa Av.	Ⓔ Stonecrest Plaza	Ⓓ Sandrock & Murray Ridge	Ⓐ Fashion Valley T.C. **ARRIVE**
—	—	6:30a	6:39a	6:54a
—	—	7:30	7:39	7:54
—	—	8:30	8:39	8:54
—	—	9:30	9:39	9:54
—	—	10:29	10:39	10:55
—	—	11:29	11:39	11:55
—	—	**12:30p**	**12:40p**	**12:56p**
—	—	**1:30**	**1:40**	**1:56**
—	—	**2:30**	**2:40**	**2:56**
—	—	**3:30**	**3:40**	**3:56**
—	—	**4:30**	**4:40**	**4:56**
—	—	**5:30**	**5:40**	**5:56**
—	—	**6:31**	**6:40**	**6:55**
—	—	**7:31**	**7:40**	**7:55**
—	—	**8:32**	**8:40**	**8:55**

Route 928 – Sunday / *domingo*

Fashion Valley ➡ Stonecrest

Ⓐ Fashion Valley T.C. **DEPART**	Ⓓ Sandrock & Murray Ridge	Ⓔ Stonecrest Plaza	Ⓗ Ruffin Rd. & Balboa Av.	Ⓘ Kearny Mesa T.C. **ARRIVE**
9:05a	9:17a	9:27a	—	—
10:05	10:17	10:27	—	—
11:05	11:17	11:27	—	—
12:04p	**12:18p**	**12:28p**	—	—
1:04	**1:18**	**1:28**	—	—
2:04	**2:18**	**2:28**	—	—
3:04	**3:18**	**3:28**	—	—
4:04	**4:18**	**4:28**	—	—
5:04	**5:18**	**5:28**	—	—
6:05	**6:19**	**6:29**	—	—

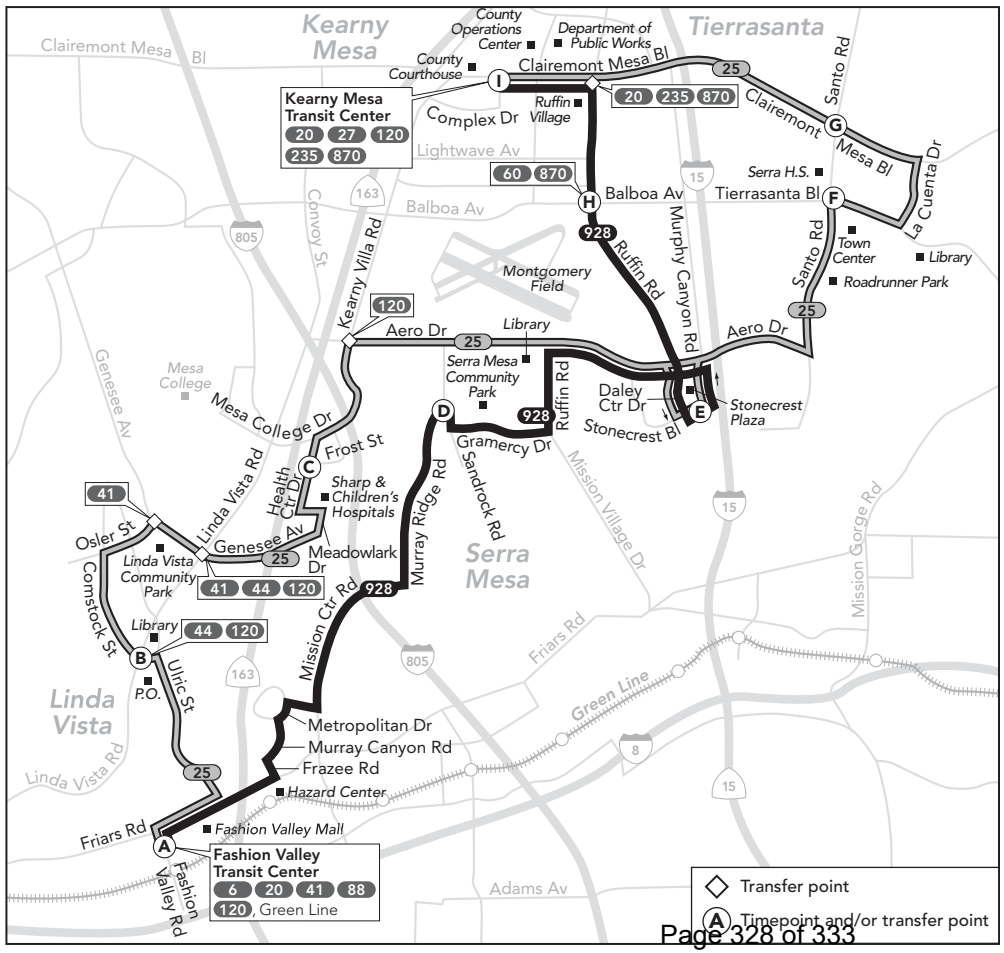
Stonecrest ➡ Fashion Valley

Ⓘ Kearny Mesa T.C. **DEPART**	Ⓗ Ruffin Rd. & Balboa Av.	Ⓔ Stonecrest Plaza	Ⓓ Sandrock & Murray Ridge	Ⓐ Fashion Valley T.C. **ARRIVE**
—	—	8:30a	8:39a	8:54a
—	—	9:30	9:39	9:54
—	—	10:29	10:39	10:55
—	—	11:29	11:39	11:55
—	—	**12:30p**	**12:40p**	**12:56p**
—	—	**1:30**	**1:40**	**1:56**
—	—	**2:30**	**2:40**	**2:56**
—	—	**3:30**	**3:40**	**3:56**
—	—	**4:30**	**4:40**	**4:56**
—	—	**5:30**	**5:40**	**5:56**

A Saturday or Sunday schedule will be operated on the following holidays and observed holidays

Se operará con horario de sábado o domingo durante los siguientes días festivos y feriados observados

>>> New Year's Day, Presidents' Day, Memorial Day, Independence Day, Labor Day, Thanksgiving, Christmas



CASH FARES / *Tarifas en efectivo*

Exact fare, please / *Favor de pagar la cantidad exacta*

Day Pass (Regional) / *Pase diario (Regional)* Compass Card required ($2) / *Se requiere un Compass Card ($2)*	$5.00
One-Way Fare / *Tarifa de una direccíon*	$2.25
Senior (60+)/Disabled/Medicare *Mayores de 60 años/Discapacitados/Medicare*	$1.10*
Children 5 & under / *Niños de 5 años o menos* Up to two children ride free per paying adult / *Máximo dos niños viajan gratis por cada adulto*	FREE / *GRATIS*

MONTHLY PASSES / *Pases mensual*

Adult / *Adulto*	$72.00
Senior (60+)/Disabled/Medicare *Mayores de 60 años/Discapacitados/Medicare*	$18.00*
Youths (18 and under) *Jóvenes (18 años o menos)*	$36.00*

*I.D. required for discount fare or pass.
**Se requiere identificación para tarifas o pases de descuento.*

DAY PASS (REGIONAL) / *Pase diario (Regional)*

All passes are sold on Compass Card, which can be reloaded and reused for up to five years. Compass Cards are available for $2 at select outlets. A $5 Day Pass requires a Compass Card. A paper Day Pass can be purchased on board buses for an additional $2 fee.

Todos los pases se venden en el Compass Card, el cual puede ser recargado y reutilizado por hasta cinco años. Compass Cards están disponibles por $2 en selectas sucursales. Un pase de un día por $5 requiere un Compass Card. Un pase de un día de papel se puede obtener a bordo los autobuses por un costo adicional de $2.

DIRECTORY / *Directorio*

Regional Transit Information *Información de transporte público regional*	**511** or/ó **(619) 233-3004**
TTY/TDD (teletype for hearing impaired) *Teletipo para sordos*	**(619) 234-5005** or/ó **(888) 722-4889**
InfoExpress (24-hour info via Touch-Tone phone) *Información las 24 horas (via teléfono de teclas)*	**(619) 685-4900**
Customer Service / Suggestions *Servicio al cliente / Sugerencias*	**(619) 557-4555**
SafeWatch	**(619) 557-4500**
The Transit Store / Lost & Found *The Transit Store / Objetos extraviados*	**(619) 234-1060**
Articles found on the bus are turned in at The Transit Store *Artículos encontrados en los autobuses son entregados a The Transit Store*	1st & Broadway Downtown San Diego M–F 9am–5pm
For MTS online trip planning *Planificación de viajes por Internet*	**www.sdmts.com**

For more information on riding MTS services, pick up a Rider's Guide on a bus or at The Transit Store, or visit **www.sdmts.com**.
*Para obtener más información sobre el uso de los servicios de MTS, recoja un 'Rider's Guide' en un autobús o en The Transit Store, o visita a **www.sdmts.com**.*

Thank you for riding MTS! ***¡Gracias por viajar con MTS!***

Effective AUGUST 20, 2014*

120

Downtown – Kearny Mesa Transit Center

via Hillcrest / Fashion Valley / Linda Vista

DESTINATIONS

- Fashion Valley Mall
- Horton Plaza
- Juvenile Hall
- Kearny Mesa Courthouse
- Mercy Hospital
- Sharp & Children's Hospitals

MTS Metropolitan Transit System

TROLLEY CONNECTIONS
5th Avenue
Fashion Valley

Alternative formats available upon request. Please call: (619) 557-4555 / *Formato alternativo disponible al preguntar. Favor de llamar: (619) 557-4555*

Route 120 – Sunday / *domingo*

Downtown ➡ Hillcrest ➡ Fashion Valley ➡ Sharp Hospital

Ⓐ 4th Av. & Broadway **DEPART**	Ⓑ 5th Av. & Broadway	Ⓒ 5th Av. & University Av.	Ⓓ Fashion Valley Transit Center **ARRIVE**	Ⓓ Fashion Valley Transit Center **DEPART**	Ⓔ Comstock St. & Linda Vista Rd.	Ⓕ Sharp Hospital (Health Center & Frost)	Ⓖ Kearny Mesa Transit Center **ARRIVE**
6:13a	6:14a	6:26a	6:35a	6:37a	6:44a	6:52a	
7:12	7:13	7:26	7:35	7:37	7:44	7:53	
8:10	8:11	8:25	8:35	8:37	8:45	8:54	
9:09	9:10	9:25	9:35	9:37	9:45	9:54	
9:39	9:40	9:55	10:05	10:07	10:15	10:24	
10:09	10:10	10:25	10:35	10:37	10:45	10:54	
10:39	10:40	10:55	11:05	11:07	11:15	11:24	
11:09	11:10	11:25	11:35	11:37	11:45	11:54	
11:39	11:40	11:55	**12:05p**	**12:07p**	**12:15p**	**12:24p**	
12:09p	**12:10p**	**12:25p**	**12:35**	**12:37**	**12:45**	**12:54**	
12:39	**12:40**	**12:55**	**1:05**	**1:07**	**1:15**	**1:24**	
1:09	**1:10**	**1:25**	**1:35**	**1:37**	**1:45**	**1:54**	
1:39	**1:40**	**1:55**	**2:05**	**2:07**	**2:15**	**2:24**	
2:09	**2:10**	**2:25**	**2:35**	**2:37**	**2:45**	**2:54**	
2:39	**2:40**	**2:55**	**3:05**	**3:07**	**3:15**	**3:24**	
3:09	**3:10**	**3:25**	**3:35**	**3:37**	**3:45**	**3:54**	
3:39	**3:40**	**3:55**	**4:05**	**4:07**	**4:15**	**4:24**	
4:09	**4:10**	**4:25**	**4:35**	**4:37**	**4:45**	**4:54**	
4:39	**4:40**	**4:55**	**5:05**	**5:07**	**5:15**	**5:24**	
5:09	**5:10**	**5:25**	**5:35**	**5:37**	**5:45**	**5:54**	
5:39	**5:40**	**5:55**	**6:05**	**6:07**	**6:15**	**6:24**	
6:10	**6:11**	**6:25**	**6:35**	**6:37**	**6:45**	**6:54**	
7:10	**7:11**	**7:25**	**7:35**	**7:37**	**7:45**	**7:54**	
8:11	**8:12**	**8:25**	**8:34**	**8:36**	**8:44**	**8:52**	
9:12	**9:13**	**9:25**	**9:34**	**9:36**	**9:43**	**9:50**	

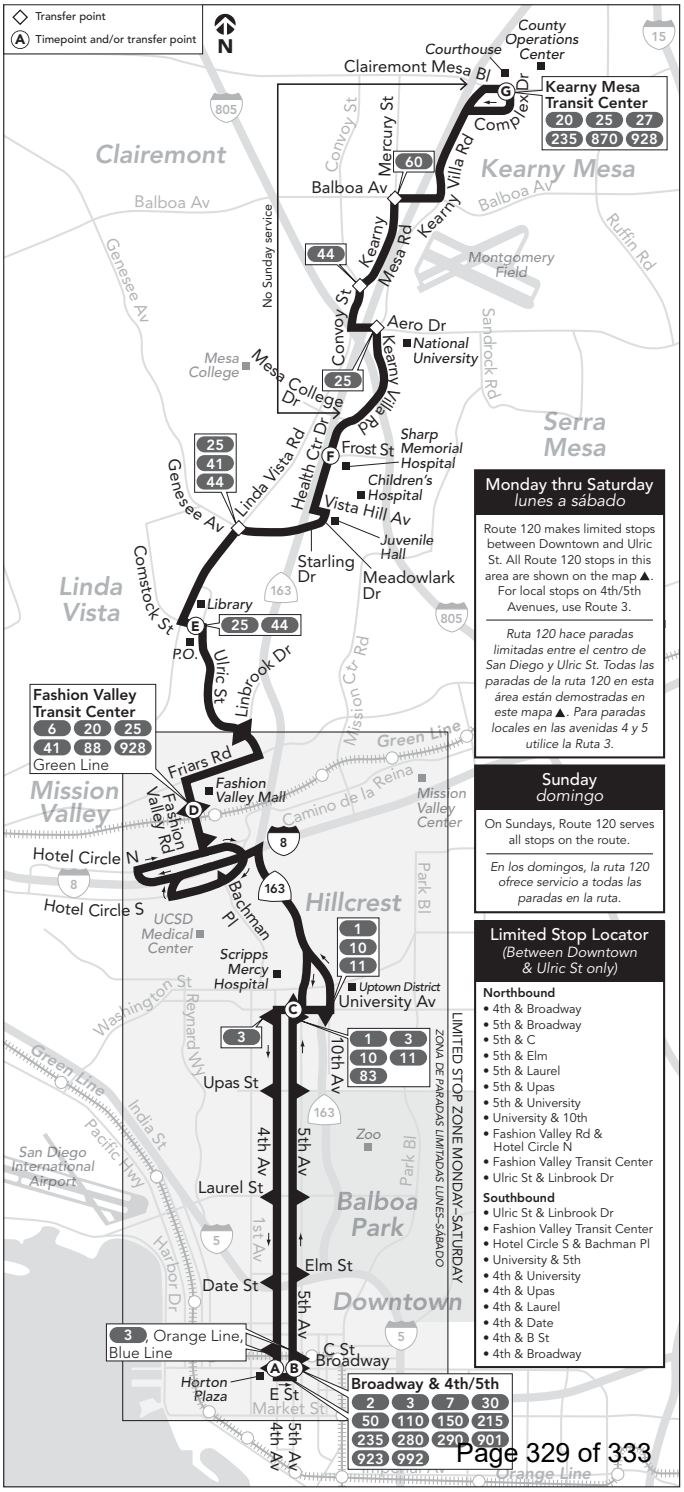
Alternate Sunday Kearny Mesa Transit Center service available on Routes 20 & 235.
Servicio de domingo alterno para Kearny Mesa Transit Center, por las rutas 20 y 235.

Route 120 – Sunday / *domingo*

Sharp Hospital ➡ Fashion Valley ➡ Hillcrest ➡ Downtown

Ⓖ Kearny Mesa Transit Center **DEPART**	Ⓕ Sharp Hospital (Health Center & Frost)	Ⓔ Comstock St. & Linda Vista Rd.	Ⓓ Fashion Valley Transit Center **ARRIVE**	Ⓓ Fashion Valley Transit Center **DEPART**	Ⓒ University Av. & 5th Av.	Ⓐ 4th Av. & Broadway **ARRIVE**
	6:22a	6:30a	6:37a	6:39a	6:45a	6:58a
	7:22	7:30	7:37	7:39	7:45	7:58
	8:22	8:30	8:37	8:39	8:45	8:58
	9:16	9:25	9:33	9:35	9:42	9:56
	9:46	9:55	10:03	10:05	10:12	10:26
	10:15	10:25	10:33	10:35	10:43	10:58
	10:45	10:55	11:03	11:05	11:13	11:28
	11:14	11:24	11:33	11:35	11:43	11:59
	11:44	11:54	**12:03p**	**12:05p**	**12:13p**	**12:29p**
	12:14p	**12:24p**	**12:33**	**12:35**	**12:43**	**12:59**
	12:44	**12:54**	**1:03**	**1:05**	**1:13**	**1:29**
	1:14	**1:24**	**1:33**	**1:35**	**1:43**	**1:59**
	1:44	**1:54**	**2:03**	**2:05**	**2:13**	**2:29**
	2:14	**2:24**	**2:33**	**2:35**	**2:43**	**2:59**
	2:44	**2:54**	**3:03**	**3:05**	**3:13**	**3:29**
	3:14	**3:24**	**3:33**	**3:35**	**3:43**	**3:59**
	3:44	**3:54**	**4:03**	**4:05**	**4:13**	**4:29**
	4:14	**4:24**	**4:33**	**4:35**	**4:43**	**4:59**
	4:44	**4:54**	**5:03**	**5:05**	**5:13**	**5:29**
	5:14	**5:24**	**5:33**	**5:35**	**5:43**	**5:58**
	5:46	**5:55**	**6:03**	**6:05**	**6:12**	**6:26**
	6:16	**6:25**	**6:33**	**6:35**	**6:42**	**6:56**
	7:18	**7:26**	**7:33**	**7:35**	**7:41**	**7:54**
	8:18	**8:26**	**8:33**	**8:35**	**8:41**	**8:54**
	9:18	**9:26**	**9:33**	**9:35**	**9:41**	**9:53**

Alternate Sunday Kearny Mesa Transit Center service available on Routes 20 & 235.
Servicio de domingo alterno para Kearny Mesa Transit Center, por las rutas 20 y 235.



Monday thru Saturday
lunes a sábado

Route 120 makes limited stops between Downtown and Ulric St. All Route 120 stops in this area are shown on the map ▲. For local stops on 4th/5th Avenues, use Route 3.

Ruta 120 hace paradas limitadas entre el centro de San Diego y Ulric St. Todas las paradas de la ruta 120 en esta área están demostradas en este mapa ▲. Para paradas locales en las avenidas 4 y 5 utilice la Ruta 3.

Sunday
domingo

On Sundays, Route 120 serves all stops on the route.

En los domingos, la ruta 120 ofrece servicio a todas las paradas en la ruta.

Limited Stop Locator
(Between Downtown & Ulric St only)

Northbound
- 4th & Broadway
- 5th & Broadway
- 5th & C
- 5th & Elm
- 5th & Laurel
- 5th & Upas
- 5th & University
- University & 10th
- Fashion Valley Rd & Hotel Circle N
- Fashion Valley Transit Center
- Ulric St & Linbrook Dr

Southbound
- Ulric St & Linbrook Dr
- Fashion Valley Transit Center
- Hotel Circle S & Bachman Pl
- University & 5th
- 4th & University
- 4th & Upas
- 4th & Laurel
- 4th & Date
- 4th & B St
- 4th & Broadway

The schedules and other information shown in this timetable are subject to change. MTS does not assume responsibility for errors in times or for delays caused by traffic or other causes.
Los horarios e información que se indican en este inerario están sujetos a cambios. MTS no asume responsabilidad por errores en los itinerarios, ni por ningún perjuicio que se origine por los autobuses demorados.

A Saturday or Sunday schedule will be operated on the following holidays and observed holidays >>> New Year's Day, Presidents' Day, Memorial Day, Independence Day, Labor Day, Thanksgiving, Christmas

Se operará con horario de sábado o domingo durante los siguientes días festivos y feriados observados

Route 120 – Monday through Friday / *lunes a viernes*

Downtown ➡ Hillcrest ➡ Fashion Valley ➡ Kearny Mesa

Ⓐ 4th Av. & Broadway DEPART	Ⓑ 5th Av. & Broadway	Ⓒ 5th Av. & University Av.	Ⓓ Fashion Valley Transit Center ARRIVE	Ⓓ Fashion Valley Transit Center DEPART	Ⓔ Comstock St. & Linda Vista Rd.	Ⓕ Sharp Hospital (Health Center & Frost)	Ⓖ Kearny Mesa Transit Center ARRIVE
—	5:01a	5:11a	5:19a	5:21a	5:27a	5:36a	5:49a
—	5:31	5:41	5:49	5:51	5:57	6:06	6:19
—	6:00	6:10	6:19	6:22	6:29	6:38	6:53
6:14a	6:15	6:25	6:34	—	—	—	—
6:29	6:30	6:40	6:49	6:52	6:59	7:08	7:23
6:44	6:45	6:55	7:04	—	—	—	—
6:59	7:00	7:10	7:19	7:22	7:29	7:38	7:53
7:13	7:14	7:25	7:34	—	—	—	—
7:28	7:29	7:40	7:49	7:52	7:59	8:10	8:25
7:42	7:43	7:54	8:04	—	—	—	—
7:57	7:58	8:09	8:19	8:22	8:29	8:41	8:56
8:12	8:13	8:24	8:34	—	—	—	—
8:27	8:28	8:39	8:49	8:52	8:59	9:11	9:26
8:42	8:43	8:54	9:04	—	—	—	—
8:57	8:58	9:09	9:19	9:22	9:29	9:41	9:56
9:12	9:13	9:24	9:34	—	—	—	—
9:27	9:28	9:39	9:49	9:52	9:59	10:11	10:26
9:42	9:43	9:54	10:04	—	—	—	—
9:57	9:58	10:09	10:19	10:22	10:29	10:41	10:56
10:12	10:13	10:24	10:34	—	—	—	—
10:27	10:28	10:39	10:49	10:52	10:59	11:11	11:26
10:42	10:43	10:54	11:04	—	—	—	—
10:57	10:58	11:09	11:19	11:22	11:29	11:41	11:56
11:11	11:12	11:24	11:34	—	—	—	—
11:26	11:27	11:39	11:49	11:52	**12:00p**	**12:12p**	**12:27p**
11:41	11:42	11:54	**12:04p**	—	—	—	—
11:56	11:57	**12:09p**	**12:19**	**12:22p**	**12:30**	**12:42**	**12:57**
12:11p	**12:12p**	**12:24**	**12:34**	—	—	—	—
12:26	**12:27**	**12:39**	**12:49**	**12:52**	**1:00**	**1:12**	**1:27**
12:41	**12:42**	**12:54**	**1:04**	—	—	—	—
12:56	**12:57**	**1:09**	**1:19**	**1:22**	**1:30**	**1:42**	**1:57**
1:11	**1:12**	**1:24**	**1:34**	—	—	—	—
1:25	**1:26**	**1:38**	**1:49**	**1:52**	**2:01**	**2:13**	**2:30**
1:40	**1:41**	**1:53**	**2:04**	—	—	—	—
1:55	**1:56**	**2:08**	**2:19**	**2:22**	**2:31**	**2:43**	**3:00**
2:10	**2:11**	**2:23**	**2:34**	—	—	—	—
2:25	**2:26**	**2:38**	**2:49**	**2:52**	**3:01**	**3:13**	**3:30**
2:40	**2:41**	**2:53**	**3:04**	—	—	—	—
2:55	**2:56**	**3:08**	**3:19**	**3:22**	**3:31**	**3:43**	**4:00**
3:10	**3:11**	**3:23**	**3:34**	—	—	—	—
3:25	**3:26**	**3:38**	**3:49**	**3:52**	**4:01**	**4:13**	**4:30**
3:40	**3:41**	**3:53**	**4:04**	—	—	—	—
3:55	**3:56**	**4:08**	**4:19**	**4:22**	**4:31**	**4:43**	**5:00**
4:10	**4:11**	**4:23**	**4:34**	—	—	—	—
4:25	**4:26**	**4:38**	**4:49**	**4:52**	**5:01**	**5:13**	**5:30**
4:40	**4:41**	**4:53**	**5:04**	—	—	—	—
4:55	**4:56**	**5:08**	**5:19**	**5:22**	**5:31**	**5:43**	**6:00**
5:10	**5:11**	**5:23**	**5:34**	—	—	—	—
5:25	**5:26**	**5:38**	**5:49**	**5:52**	**6:01**	**6:13**	**6:30**
5:40	**5:41**	**5:53**	**6:04**	—	—	—	—
5:56	**5:57**	**6:09**	**6:19**	**6:22**	**6:30**	**6:42**	**6:57**
6:27	**6:28**	**6:39**	**6:49**	**6:52**	**7:00**	**7:11**	**7:25**
6:57	**6:58**	**7:09**	**7:19**	**7:21**	**7:28**	**7:38**	**7:51**
7:27	**7:28**	**7:39**	**7:49**	**7:51**	**7:57**	**8:06**	**8:19**
7:58	**7:59**	**8:09**	**8:19**	**8:21**	**8:27**	**8:36**	**8:48**
8:28	**8:29**	**8:39**	**8:49**	**8:51**	**8:57**	**9:06**	**9:18**
8:58	**8:59**	**9:09**	**9:19**	**9:21**	**9:27**	**9:36**	**9:48**
9:30	**9:31**	**9:41**	**9:50**	**9:52**	**9:58**	**10:06**	**10:17**
10:00	**10:01**	**10:11**	**10:20**	**10:22**	**10:28**	**10:36**	**10:47**
10:35	**10:36**	**10:46**	**10:55**	—	—	—	—
11:05	**11:06**	**11:16**	**11:25**	—	—	—	—

LIMITED STOP ZONE / *ZONA DE PARADAS LIMITADAS*

Kearny Mesa ➡ Fashion Valley ➡ Hillcrest ➡ Downtown

Ⓖ Kearny Mesa Transit Center DEPART	Ⓕ Sharp Hospital (Health Center & Frost)	Ⓔ Comstock St. & Linda Vista Rd.	Ⓓ Fashion Valley Transit Center ARRIVE	Ⓓ Fashion Valley Transit Center DEPART	Ⓒ University Av. & 5th Av.	Ⓐ 4th Av. & Broadway ARRIVE
5:31a	5:41a	5:51a	5:58a	6:03a	6:12a	6:23a
5:57	6:07	6:17	6:24	6:27	6:33	6:44
—	—	—	—	6:42	6:48	7:00
6:27	6:37	6:47	6:54	6:57	7:03	7:14
—	—	—	—	7:12	7:19	7:32
6:53	7:05	7:16	7:24	7:27	7:33	7:45
—	—	—	—	7:42	7:49	8:02
7:19	7:34	7:46	7:54	7:57	8:04	8:17
—	—	—	—	8:12	8:19	8:32
7:49	8:04	8:16	8:24	8:27	8:34	8:47
—	—	—	—	8:42	8:49	9:02
8:19	8:34	8:46	8:54	8:57	9:04	9:17
—	—	—	—	9:12	9:19	9:32
8:49	9:04	9:16	9:24	9:27	9:34	9:47
—	—	—	—	9:42	9:49	10:02
9:19	9:34	9:46	9:54	9:57	10:04	10:17
—	—	—	—	10:12	10:19	10:32
9:51	10:05	10:16	10:24	10:27	10:34	10:47
—	—	—	—	10:42	10:49	11:02
10:21	10:35	10:46	10:54	10:57	11:04	11:17
—	—	—	—	11:12	11:19	11:32
10:51	11:05	11:16	11:24	11:27	11:34	11:47
—	—	—	—	11:42	11:49	**12:02p**
11:21	11:35	11:46	11:54	11:57	**12:04p**	**12:17**
—	—	—	—	**12:12p**	**12:19**	**12:32**
11:51	**12:05p**	**12:16p**	**12:24p**	**12:27**	**12:34**	**12:47**
—	—	—	—	**12:42**	**12:49**	**1:02**
12:17p	**12:32**	**12:44**	**12:54**	**12:57**	**1:04**	**1:17**
—	—	—	—	**1:12**	**1:19**	**1:32**
12:47	**1:02**	**1:14**	**1:24**	**1:27**	**1:34**	**1:47**
—	—	—	—	**1:42**	**1:49**	**2:02**
1:17	**1:32**	**1:44**	**1:54**	**1:57**	**2:04**	**2:17**
—	—	—	—	**2:12**	**2:19**	**2:32**
1:47	**2:02**	**2:14**	**2:24**	**2:27**	**2:34**	**2:47**
—	—	—	—	**2:42**	**2:49**	**3:02**
2:17	**2:32**	**2:44**	**2:54**	**2:57**	**3:04**	**3:17**
—	—	—	—	**3:12**	**3:19**	**3:32**
2:47	**3:02**	**3:14**	**3:24**	**3:27**	**3:34**	**3:47**
—	—	—	—	**3:42**	**3:49**	**4:02**
3:12	**3:28**	**3:42**	**3:53**	**3:56**	**4:04**	**4:17**
—	—	—	—	**4:11**	**4:19**	**4:32**
3:42	**3:58**	**4:12**	**4:23**	**4:26**	**4:34**	**4:47**
—	—	—	—	**4:41**	**4:49**	**5:02**
4:12	**4:28**	**4:42**	**4:53**	**4:56**	**5:04**	**5:17**
—	—	—	—	**5:11**	**5:19**	**5:32**
4:42	**4:58**	**5:12**	**5:23**	**5:26**	**5:34**	**5:47**
—	—	—	—	**5:41**	**5:49**	**6:02**
5:12	**5:28**	**5:42**	**5:53**	**5:56**	**6:04**	**6:17**
—	—	—	—	**6:11**	**6:18**	**6:30**
5:46	**6:01**	**6:13**	**6:23**	**6:26**	**6:33**	**6:45**
6:16	**6:31**	**6:43**	**6:53**	**6:56**	**7:03**	**7:15**
6:51	**7:04**	**7:14**	**7:23**	**7:26**	**7:33**	**7:45**
7:21	**7:34**	**7:44**	**7:53**	**7:56**	**8:03**	**8:15**
7:51	**8:04**	**8:14**	**8:23**	**8:26**	**8:33**	**8:45**
8:27	**8:40**	**8:49**	**8:56**	**9:03**	**9:10**	**9:22**
8:57	**9:10**	**9:19**	**9:26**	**9:33**	**9:40**	**9:52**
9:29	**9:41**	**9:49**	**9:56**	**10:03**	**10:09**	**10:20**
9:59	**10:11**	**10:19**	**10:26**	**10:33**	**10:39**	**10:50**
10:29	**10:41**	**10:49**	**10:56**	**11:03**	**11:09**	**11:20**
—	—	—	—	**11:33**	**11:39**	**11:50**

LIMITED STOP ZONE / *ZONA DE PARADAS LIMITADAS*

Route 120 – Saturday / *sábado*

Downtown ➡ Hillcrest ➡ Fashion Valley ➡ Kearny Mesa

Ⓐ 4th Av. & Broadway DEPART	Ⓑ 5th Av. & Broadway	Ⓒ 5th Av. & University Av.	Ⓓ Fashion Valley Transit Center ARRIVE	Ⓓ Fashion Valley Transit Center DEPART	Ⓔ Comstock St. & Linda Vista Rd.	Ⓕ Sharp Hospital (Health Center & Frost)	Ⓖ Kearny Mesa Transit Center ARRIVE
5:44a	5:45a	5:56a	6:04a	6:06a	6:13a	6:21a	6:31a
6:14	6:15	6:26	6:34	6:36	6:43	6:51	7:01
6:44	6:45	6:56	7:04	7:06	7:13	7:21	7:31
7:14	7:15	7:26	7:34	7:36	7:43	7:51	8:01
7:44	7:45	7:56	8:04	8:06	8:13	8:21	8:31
8:14	8:15	8:26	8:34	8:36	8:43	8:51	9:01
8:44	8:45	8:56	9:04	9:06	9:13	9:22	9:33
9:14	9:15	9:26	9:34	9:36	9:43	9:52	10:03
9:44	9:45	9:56	10:04	10:06	10:13	10:22	10:33
10:13	10:14	10:25	10:34	10:36	10:44	10:53	11:05
10:43	10:44	10:55	11:04	11:06	11:14	11:23	11:35
11:11	11:12	11:24	11:34	11:36	11:44	11:53	**12:06p**
11:41	11:42	11:54	**12:04p**	**12:06p**	**12:14p**	**12:23p**	**12:36**
12:11p	**12:12p**	**12:24p**	**12:34**	**12:36**	**12:44**	**12:53**	**1:06**
12:41	**12:42**	**12:54**	**1:04**	**1:06**	**1:14**	**1:23**	**1:36**
1:11	**1:12**	**1:24**	**1:34**	**1:36**	**1:44**	**1:53**	**2:06**
1:41	**1:42**	**1:54**	**2:04**	**2:06**	**2:14**	**2:23**	**2:36**
2:11	**2:12**	**2:24**	**2:34**	**2:36**	**2:44**	**2:53**	**3:06**
2:41	**2:42**	**2:54**	**3:04**	**3:06**	**3:14**	**3:23**	**3:36**
3:11	**3:12**	**3:24**	**3:34**	**3:36**	**3:44**	**3:53**	**4:06**
3:41	**3:42**	**3:54**	**4:04**	**4:06**	**4:14**	**4:23**	**4:36**
4:11	**4:12**	**4:24**	**4:34**	**4:36**	**4:44**	**4:53**	**5:06**
4:41	**4:42**	**4:54**	**5:04**	**5:06**	**5:14**	**5:23**	**5:36**
5:11	**5:12**	**5:24**	**5:34**	**5:36**	**5:44**	**5:53**	**6:06**
5:43	**5:44**	**5:55**	**6:04**	**6:06**	**6:14**	**6:22**	**6:34**
6:13	**6:14**	**6:25**	**6:34**	**6:36**	**6:44**	**6:52**	**7:04**
6:43	**6:44**	**6:55**	**7:04**	**7:06**	**7:14**	**7:22**	**7:34**
7:13	**7:14**	**7:25**	**7:34**	**7:36**	**7:44**	**7:52**	**8:04**
7:43	**7:44**	**7:55**	**8:04**	**8:06**	**8:13**	**8:20**	**8:30**
8:13	**8:14**	**8:25**	**8:34**	**8:36**	**8:43**	**8:50**	**9:00**
8:43	**8:44**	**8:55**	**9:04**	**9:06**	**9:13**	**9:20**	**9:30**
9:43	**9:44**	**9:55**	**10:04**	**10:06**	**10:13**	**10:20**	**10:30**

LIMITED STOP ZONE / *ZONA DE PARADAS LIMITADAS*

Kearny Mesa ➡ Fashion Valley ➡ Hillcrest ➡ Downtown

Ⓖ Kearny Mesa Transit Center DEPART	Ⓕ Sharp Hospital (Health Center & Frost)	Ⓔ Comstock St. & Linda Vista Rd.	Ⓓ Fashion Valley Transit Center ARRIVE	Ⓓ Fashion Valley Transit Center DEPART	Ⓒ University Av. & 5th Av.	Ⓐ 4th Av. & Broadway ARRIVE
—	5:51a	5:59a	6:06a	6:08a	6:14a	6:25a
6:10a	6:21	6:29	6:36	6:38	6:44	6:55
6:40	6:51	6:59	7:06	7:08	7:14	7:25
7:10	7:21	7:29	7:36	7:38	7:44	7:55
7:40	7:51	7:59	8:06	8:08	8:14	8:25
8:10	8:21	8:29	8:36	8:38	8:44	8:55
8:40	8:51	8:59	9:06	9:08	9:14	9:25
9:07	9:19	9:28	9:36	9:38	9:45	9:56
9:37	9:49	9:58	10:06	10:08	10:15	10:26
10:06	10:18	10:28	10:36	10:38	10:46	10:58
10:36	10:48	10:58	11:06	11:08	11:16	11:28
11:04	11:17	11:27	11:36	11:38	11:46	11:59
11:34	11:47	11:57	**12:06p**	**12:08p**	**12:16p**	**12:29p**
12:04p	**12:17p**	**12:27p**	**12:36**	**12:38**	**12:46**	**12:59**
12:34	**12:47**	**12:57**	**1:06**	**1:08**	**1:16**	**1:29**
1:04	**1:17**	**1:27**	**1:36**	**1:38**	**1:46**	**1:59**
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2:04	**2:17**	**2:27**	**2:36**	**2:38**	**2:46**	**2:59**
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8:10	**8:21**	**8:29**	**8:36**	**8:38**	**8:44**	**8:55**
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9:40	**9:51**	**9:59**	**10:06**	**10:08**	**10:15**	**10:23**

LIMITED STOP ZONE / *ZONA DE PARADAS LIMITADAS*

Appendix S

City of San Diego *Bicycle Master Plan Update* Excerpts

City of San Diego Bicycle Master Plan

Acknowledgements

Prepared for:

The City of San Diego

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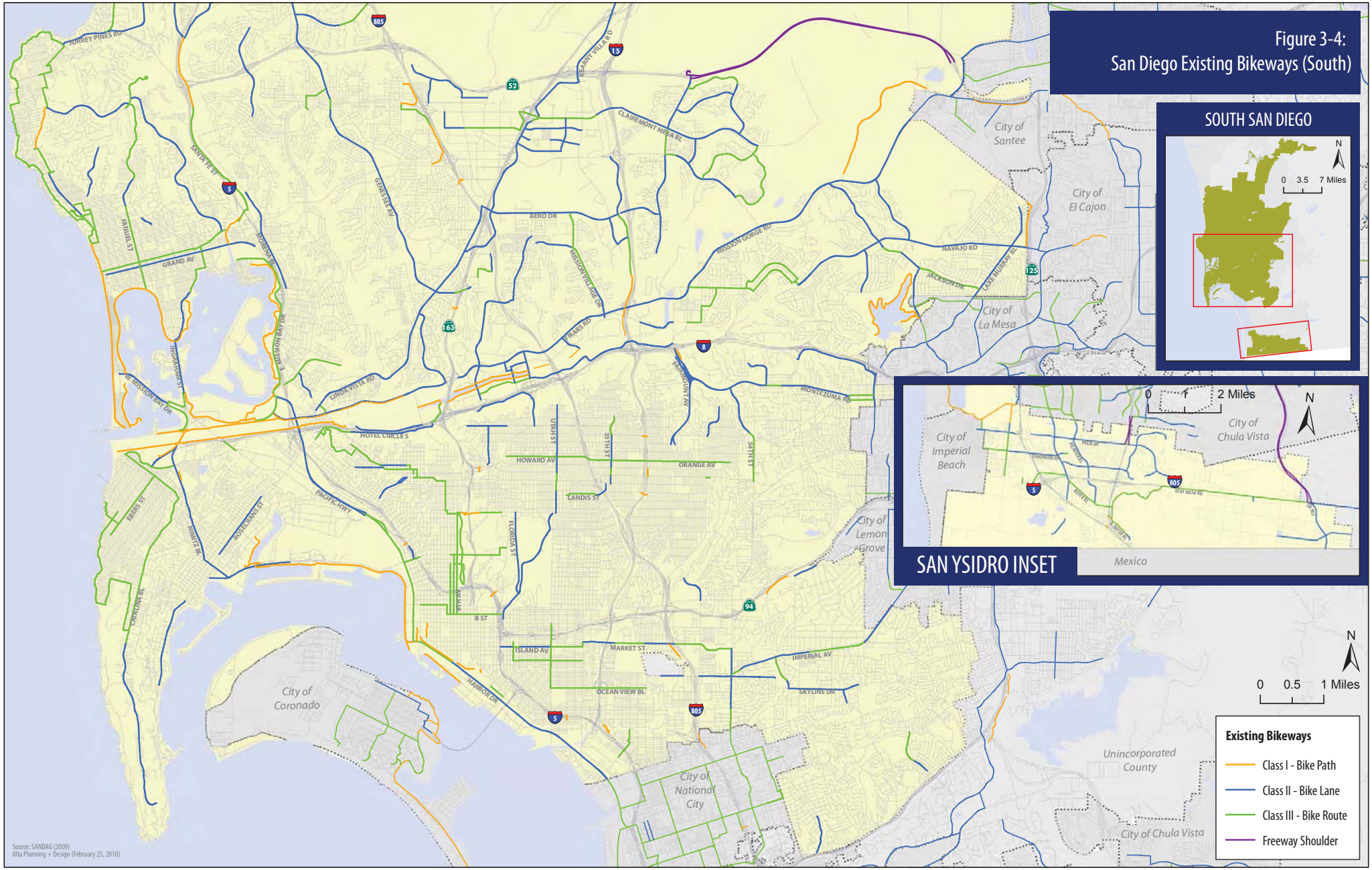
FINAL

July 2013



Source: SANDAG (2009)
Alta Planning + Design (February 25, 2010)