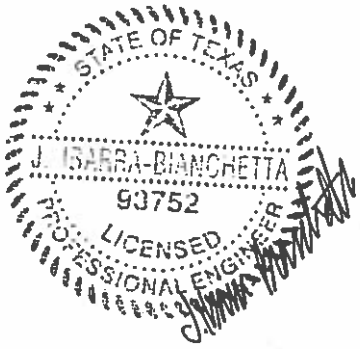
Final Report

Commerce/Buena Vista One-Way Couplet Conversion Traffic Study City of San Antonio, Texas

Prepared for

City of San Antonio, Texas



June 2015

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Contents

Section **Page**

Acronyms and Abbreviations ..... **v**

1 Introduction **1-1**
1.1 Background 1-1
1.2 Project Location 1-1
1.3 Overview of the Report 1-1

2 Analysis Approach **2-1**
2.1 General Strategy 2-1
2.2 Study Parameters 2-1
2.3 Scenarios Developed 2-1
2.3.1 Scenario 1 2-2
2.3.2 Scenario 2 2-3
2.3.3 Scenario 3 2-3

3 Traffic Evaluation **3-1**
3.1 Traffic Evaluation Approach (Methods and Assumptions) 3-1
3.1.1 Study Network 3-1
3.1.2 Performance Measures 3-2
3.1.3 Analysis Tools 3-3
3.1.4 Analysis Years 3-3
3.1.5 Data Collection 3-3
3.1.6 Model Calibration 3-4
3.2 Existing and No-Build Conditions 3-4
3.2.1 Traffic Volume Development 3-4
3.2.2 Existing and No-Build Operational Analysis Results 3-5
3.3 Scenario Evaluations 3-6
3.3.1 Traffic Volume Development 3-6
3.3.2 Build Scenarios Operational Analysis Results 3-7
3.4 Transit Impacts 3-11

4 Safety Evaluation **4-1**
4.1 Research Summary 4-1
4.2 Historical Safety Data 4-2
4.3 Scenario Evaluations 4-3

5 Cost Evaluation **5-1**
5.1 Cost Evaluation Approach 5-1
5.2 Cost Evaluation Summary 5-1
5.3 Right-of-Way Evaluation 5-2

6 Summary **6-1**

7 Disclaimer **7-1**

Appendices

A Build Scenarios Typical Cross-Sections
B Build Scenarios Tie-In Lane Transitions
C Data Collection Intersection Count Sheets
D Existing (2015) and 2020 No-Build Intersection Operations Reports
E Build Scenarios Intersection Operation Reports
F Build Scenarios Cost Estimates

Tables

2-1 Study Parameters 2-1
2-2 Summary of Proposed Improvements by Scenario 2-2
3-1 Intersections for Evaluation 3-2
3-2 HCM 2010 LOS Criteria for Intersections 3-3
3-3 Existing Conditions (2015) and 2020 No-Build Intersection LOS Summary [a] 3-5
3-4 Existing Conditions (2015) and 2020 No-Build Evaluations 3-6
3-5 2020 No-Build and Build Scenarios Intersection LOS Summary [a] 3-8
3-6 End-to-End Average Travel Time (in minutes) [a] 3-9
3-7 Network Vehicle Miles Traveled and Vehicle Hour Traveled 3-10
4-1 Crash Frequency by Severity 4-2
4-2 Crash Frequency by Location 4-2
4-3 Qualitative Safety Assessment 4-4
5-1 Summary of Costs by Scenario 5-1
5-2 Right-of-Way Impacts 5-2

Figures

1-1 Project Study Area 1-1
3-1 Intersections for Evaluation 3-1
3-2 Commerce Street and Buena Vista Street Travel Time Calibration 3-4
3-3 Intersection Delay Comparisons for No-Build and Build Scenarios 3-7
3-4 Arterial Travel Time Comparisons for No-Build and Build Scenarios 3-9
3-5 Network VMT Comparisons for No-Build and Build Scenarios 3-10
3-6 Network VHT Comparisons for No-Build and Build Scenarios 3-11
5-1 Summary of Costs by Scenario 5-2

Acronyms and Abbreviations

AASHTO	American Association of State Highway and Transportation Officials
ADT	average daily traffic
City	City of San Antonio
CMF	crash modification factor
ft^2	square feet
HCM	Highway Capacity Manual
HCS	Highway Capacity Software
IH-10	Interstate Highway 10
IH-35	Interstate Highway 35
LOS	level of service
PDO	property damage only
TCE	temporary construction easement
TWLTL	two-way left-turn lane
TWSC	two-way stop-controlled
TxDOT	Texas Department of Transportation
VHT	vehicle hours traveled
VIA	VIA Metropolitan Transit
VMT	vehicle miles traveled

SECTION 1

Introduction

1.1 Background

The City of San Antonio (City) is undertaking a review of potential improvements to the Commerce Street/Buena Vista Street one-way couplet, west of downtown. The goals for the study are to better understand the operations, safety, and cost impacts of converting the one-way couplet to two-way operations. The City has engaged CH2M HILL to conduct an independent technical study to assess the benefits and impacts.

1.2 Project Location

Figure 1-1 illustrates the general boundaries of the project study area. The study area is located west of downtown San Antonio, Texas. The study segments are Commence Street (westbound) and Buena Vista Street (eastbound). The eastern limit is at Pecos Street and Interstate Highway 10 (IH-10)/Interstate Highway 35 (IH-35). The western limit is at NW 22nd Street. The study area was selected to include the current one-way segments of Commerce and Buena Vista Streets, and the major cross-streets.

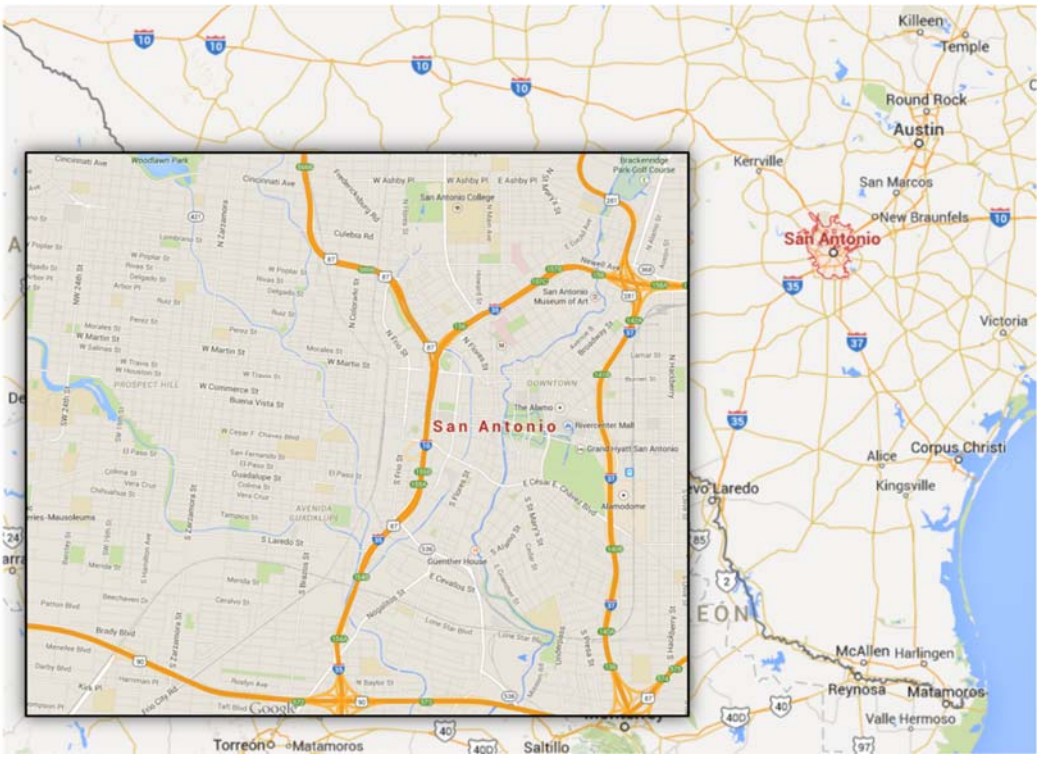


FIGURE 1-1
Project Study Area
Commerce/Buena Vista One-Way Couplet Conversion Traffic Study, City of San Antonio, Texas

1.3 Overview of the Report

Section 2 is an overview of the analysis approach, including the set of scenarios developed for the analysis. Detailed technical evaluations of traffic operations (Section 3), safety (Section 4), and cost (Section 5) are included. A summary of the results is presented in Section 6.

SECTION 2

Analysis Approach

2.1 General Strategy

The overall approach for the study was to use a set of two-way conversion scenarios to evaluate the potential for changing operations. The scenarios form a range of reasonable possibilities for converting the two-streets, and allow decision makers to better understand the benefits and impacts of a conversion. None of the scenarios would necessarily be the preferred solution, but they frame the likely types of improvements. If a two-way conversion was determined to be feasible and beneficial, additional studies would be needed to refine the design.

The scenarios were developed by identifying a set of key parameters (described in Section 2.2). These parameters define the study scenarios, which are described in Section 2.3. Once the scenarios were defined, a preliminary design for each was produced. Then, evaluations for traffic operations (Section 3), safety (Section 4), and cost (Section 5) were conducted and summarized.

2.2 Study Parameters

Study parameters are design variations that define the three scenarios. The parameters are highlighted in Table 2-1. The selection and range of the parameters were intended to have different right-of-way, construction cost, and schedule implications.

TABLE 2-1
Study Parameters
Commerce/Buena Vista One-Way Couplet Conversion Traffic Study, City of San Antonio, Texas

Parameters	Options
Number of lanes	One vs. two lanes
Bike lanes	Provided on Commerce Street, Buena Vista Street, or neither
On-street parking	Provided on Commerce Street, Buena Vista Street, or neither
Left-turn lanes/pockets	Pockets vs. through lanes
Right-turn pockets	Pockets vs. through lanes
Reversible lanes	On Commerce Street between Richter Street and Frio Street vs. no reversible lanes
Bridge widening	Over Alazan Creek vs. no bridge widening
Grind and overlay	Proposed on all scenarios
New signals	Proposed at all existing intersections for all scenarios

2.3 Scenarios Developed

Three scenarios were developed and encompass a wide range of proposed improvements. The approach was to provide a “low-build” solution (Scenario 1), an option that required major reconstruction (Scenario 3), and a focused approach that balances the previous two (Scenario 2). A summary of scenario evaluations is presented in Table 2-2.

TABLE 2-2
Summary of Proposed Improvements by Scenario
Commerce/Buena Vista One-Way Couplet Conversion Traffic Study, City of San Antonio, Texas

	Scenario 1	Scenario 2	Scenario 3
Parameter	**Basic Conversion**	**Focused Improvements**	**Major Reconstruction**
Basic Cross-Section	One lane in each direction	One lane in each direction	Two lanes in each direction on Commerce Street; one lane in each direction on Buena Vista Street
Bike Lanes	Two bike lanes in each direction	Two bike lanes on Buena Vista Street only	Two bike lanes on Buena Vista Street only
Parking	Eliminate on-street parking where necessary to save right-of-way	Maintain/expand on-street parking on Commerce Street; eliminate on-street parking on Buena Vista Street	Eliminate on-street parking to save right-of-way; off-peak parking may be allowed in right lane on Commerce Street
Continuous median left turn	None	Two-way left-turn lane (TWLTL) where space allows	None
Left turns at unsignalized intersections	Permissive, in lanes	Via TWLTL where available on Commerce Street; in lanes at other locations	Prohibited on Commerce Street; allowed in lanes on Buena Vista Street
Left turns at signalized intersections	Dedicated turn bays at all existing signals	Dedicated turn bays converted from TWLTL where present	Dedicated left-turn bays at all existing signals along Buena Vista Street only
Right turns	No dedicated right-turn bays; all right turns from through lane	Right-turn bays for signalized intersections on Commerce Street; no right-turn bays on Buena Vista Street	No dedicated right-turn bays on Commerce Street or Buena Vista Street; all right turns from through lane
Right-of-way impacts	None	Minimal	Significant

2.3.1 Scenario 1

Scenario 1 focuses on minimizing right-of-way impacts and reducing street widening and sidewalk reconstruction. A typical cross-section illustration for this scenario is provided in Appendix A. The lane transitions on each end of the alignment for this scenario are shown in Appendix B. This scenario includes:

- Restriping of Commerce Street and Buena Vista Street to allow one lane of travel in each direction.
- Updating and improving signal equipment at existing signalized intersections
- Constructing pavement improvements with a grind and overlay of Commerce Street and Buena Vista Street
- Implementing street parking or bike lanes on Commerce Street; implementing bike lanes only on Buena Vista Street

2.3.2 Scenario 2

Scenario 2 focuses on a balanced approach to proposing improvements that would allow for improved traffic movement while minimizing right-of-way impacts and reconstruction of bridge structures. A typical cross-section illustration for this scenario is provided in Appendix A. The lane transitions on each end of the alignment for this scenario are shown in Appendix B. This scenario includes:

- Restriping Commerce Street and Buena Vista Street to allow one lane of travel in each direction
- Installing right-turn pockets at the existing signalized intersections on Commerce Street
- Updating and improving signal equipment at existing signalized intersections
- Constructing pavement improvements with a grind and overlay of Commerce Street and Buena Vista Street
- Eliminating street parking or bike lanes on Commerce Street; implementing bike lanes only on Buena Vista Street

2.3.3 Scenario 3

Scenario 3 includes major reconstruction in the proposed improvements. This scenario has the most right-of-way acquisitions, highest construction cost, and longest construction schedule. A typical cross-section illustration for this scenario is provided in Appendix A. The lane transitions on each end of the alignment for this scenario are shown in Appendix B. This scenario includes:

- Restriping and widening Commerce Street to allow two lanes of travel in each direction
- Restriping Buena Vista Street to allow one lane of travel in each direction
- Adding a two-lane roundabout at the west end
- Adding reversible lanes along Commerce Street (between Richter Street and Frio Street) to avoid widening/reconstruction of the raised roadway structure
- Widening the south side of the Alazan Creek Bridge
- Updating and improving signal equipment at existing signalized intersections
- Constructing pavement improvements with a grind and overlay of Commerce Street and Buena Vista Street
- Eliminating street parking or bike lanes on Commerce Street; implementing bike lanes only on Buena Vista Street

SECTION 3

Traffic Evaluation

3.1 Traffic Evaluation Approach (Methods and Assumptions)

This section is a summary of the methodology that was used to evaluate the study intersections and evaluate traffic operations.

3.1.1 Study Network

A study network comprised of signalized and unsignalized intersections was developed. The intersections for evaluation are illustrated in Figure 3-1 and listed in Table 3-1. Eighteen signalized intersections between Pecos Street and NW 22nd Street were identified for analysis. Also, 41 unsignalized intersections were coded in the traffic model. For reporting, one intersection was selected as a representative two-way stop-controlled (TWSC) unsignalized intersection.

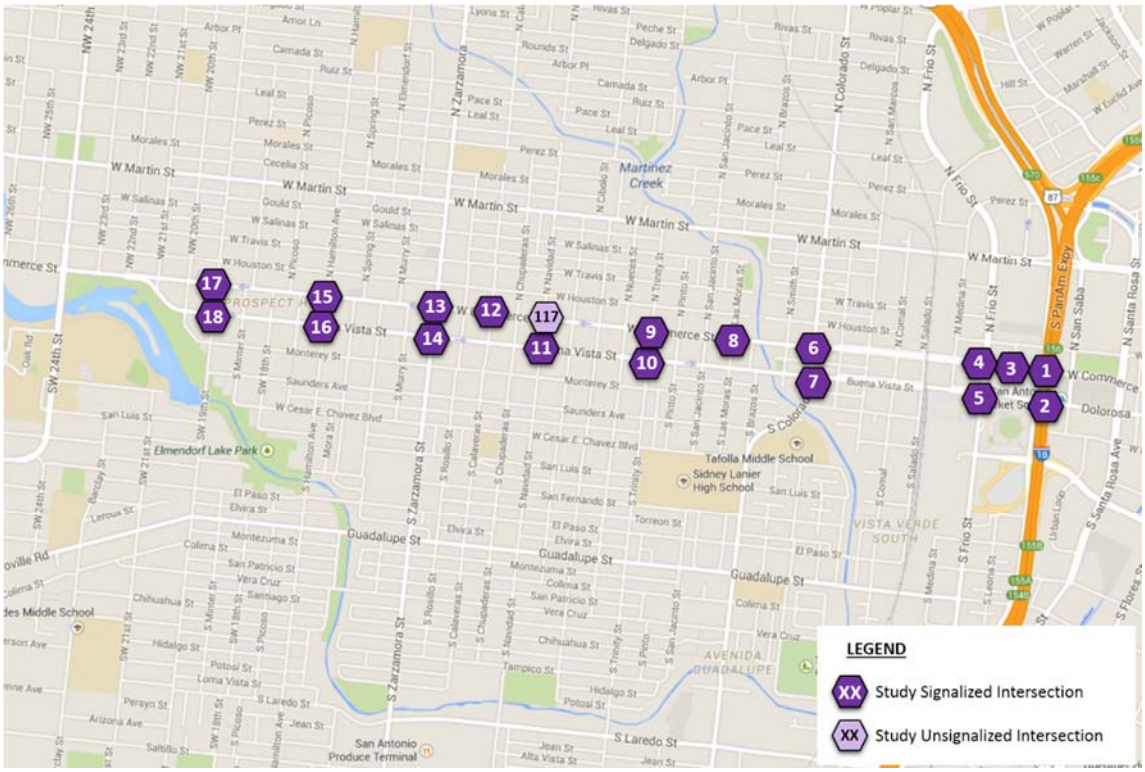


FIGURE 3-1

Intersections for Evaluation

Commerce/Buena Vista One-Way Couplet Conversion Traffic Study, City of San Antonio, Texas

TABLE 3-1
Intersections for Evaluation
Commerce/Buena Vista One-Way Couplet Conversion Traffic Study, City of San Antonio, Texas

No.	East/West Street	North/South Street	Control
1	Commerce Street	Pecos Street	Signalized
2	Buena Vista Street	Pecos Street	Signalized
3	Commerce Street	Leona Street	Signalized
4	Commerce Street	Frio Street	Signalized
5	Buena Vista Street	Frio Street	Signalized
6	Commerce Street	Colorado Street	Signalized
7	Buena Vista Street	Colorado Street	Signalized
8	Commerce Street	Las Moras Street	Signalized
9	Commerce Street	Trinity Street	Signalized
10	Buena Vista Street	Trinity Street	Signalized
11	Buena Vista Street	Navidad Street	Signalized
12	Commerce Street	Calaveras Street	Signalized
13	Commerce Street	Zarzamora Street	Signalized
14	Buena Vista Street	Zarzamora Street	Signalized
15	Commerce Street	Hamilton Street	Signalized
16	Buena Vista Street	Hamilton Street	Signalized
17	Commerce Street	19th Street	Signalized
18	Buena Vista Street	19th Street	Signalized
117	Commerce Street	Navidad Street	TWSC

3.1.2 Performance Measures

The following performance measures were used to evaluate the existing and future conditions:

- **Delay**: This is the average delay for a signalized intersection based on level of service (LOS) evaluations. The 2010 Highway Capacity Manual (HCM 2010) delay calculation was used to determine LOS, ranging from LOS A to LOS F using delay ranges summarized in Table 3-2. At the representative TWSC intersection (Commerce Street/Navidad Street), the average delay of the worst approach was used to determine the worst approach LOS using the ranges listed in Table 3-2. The implementation of the HCM 2010 has some analysis limitations based on lane geometry, number of approaches, and nonstandard phasing. For these special cases, the Highway Capacity Software (HCS) or the HCM 2000 methodology was used to report LOS.
- **Travel time**: Travel time is the total amount of time needed to drive the corridors between Pecos Street and 19th Street (traveling westbound) and between 19th Street and Pecos Street (traveling eastbound). The travel time calculation includes the stop delay for the through movements at each signalized intersection.
- **Vehicle Miles Traveled (VMT)**: VMT is the total number of miles traveled by all vehicles in the study network.
- **Vehicle Hours Traveled (VHT)**: VHT is the total number of hours driven by all vehicles in the study network (includes delays at signalized and unsignalized intersections).

TABLE 3-2
HCM 2010 LOS Criteria for Intersections
Commerce/Buena Vista One-Way Couplet Conversion Traffic Study, City of San Antonio, Texas

Signalized Intersections	Unsignalized Intersection	LOS
< 10.0	< 10.0	A
> 10.0 to < 20.0	> 10.0 to < 15.0	B
> 20.0 to < 35.0	> 15.0 to < 25.0	C
> 35.0 to < 55.0	> 25.0 to < 35.0	D
> 55.0 to < 80.0	> 35.0 to < 50.0	E
> 80.0	> 50.0	F

3.1.3 Analysis Tools

The HCM 2010 techniques were applied by using Synchro software (Version 8) and HCS (Version 6.50). The specific calculations were as follows:

- For signalized intersections, the HCM 2010 “Signalized Summary” report function in Synchro was used to determine the average intersection LOS and delay.
- For the representative unsignalized intersection, the TWSC function in HCS was used to determine the worst approach LOS and delay.
- The “Arterial LOS report” function in Synchro was used to calculate the running time, signal delay, and total travel time for a corridor.
- The “Measures of Effectiveness Summary” report function in Synchro was used to determine the network VMT and VHT.

3.1.4 Analysis Years

The following scenarios were analyzed:

- Existing Conditions (2015) – AM and PM peak hour
- 2020 No-Build Future Year – AM and PM peak hour
- 2020 Build Future Year – AM and PM peak hour for Scenario 1, Scenario 2, and Scenario 3

3.1.5 Data Collection

Peak hour traffic data were collected for the 18 signalized intersections in the evaluation. Counts were made between 7:00 and 9:00 AM and between 4:00 and 6:00 PM. Five intersection counts were performed on weekdays (Tuesday, Wednesday, and Thursday) between December 11 and 17, 2014. Twelve intersection counts were performed weekdays between January 6 and 13, 2015. One intersection count was a combination of both count periods. Intersection count sheets are provided in Appendix C.

Bicycle and pedestrian counts (AM and PM peak) were collected on December 16, 2014, and December 17, 2014, at the following four locations:

- Commerce Street/Colorado Street
- Commerce Street/Zarzamora Street
- Buena Vista Street/Trinity Street
- Buena Vista Street/Colorado Street

Travel time data were collected via floating car runs, using a vehicle driving with the prevailing flow of traffic during the two peak periods. These data were collected to calibrate the traffic model to existing conditions.

A field visit was conducted on January 8, 2015, to determine intersection lane configurations, signal phasing, and other applicable field conditions.

3.1.6 Model Calibration

The traffic model was calibrated to existing conditions by comparing field travel times to the travel time outputs from Synchro. Total travel time was measured and calculated from Pecos Street and 19th Street. Figure 3-2 illustrates the travel time comparisons between the field and model travel times. The data are organized by peak hour and direction. The travel times in both directions and peak periods from the model (the triangles in Figure 3-2) are in the range of the field travel times (the dots in Figure 3-2).

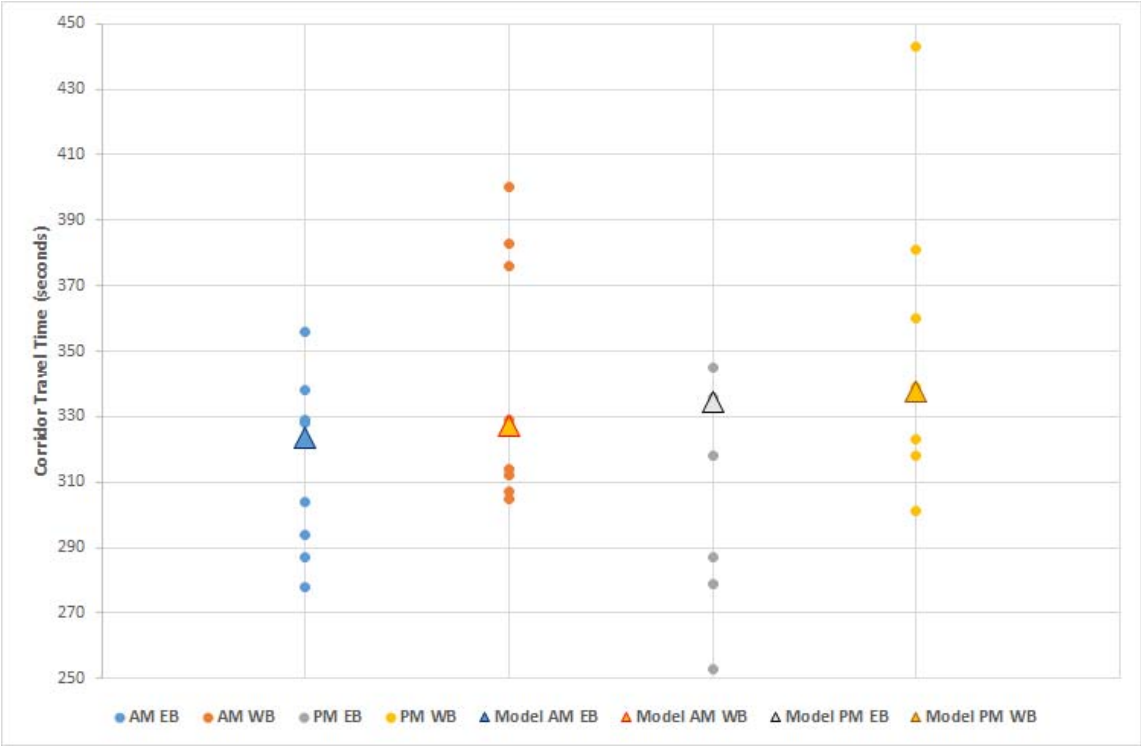


FIGURE 3-2
Commerce Street and Buena Vista Street Travel Time Calibration
Commerce/Buena Vista One-Way Couplet Conversion Traffic Study, City of San Antonio, Texas

3.2 Existing and No-Build Conditions

This section summarizes the existing (2015) conditions and 2020 No-Build analysis, including traffic volume development and operational summaries.

3.2.1 Traffic Volume Development

Existing traffic volumes were generated from field data. At each signalized intersection, an average of 2 days of field data were used. At unsignalized intersections, through volumes along Commerce Street and Buena Vista Street were determined from the network balancing process. Where traffic data were not available on minor cross-streets, all turning movement volumes to and from Commerce Street and Buena Vista were assumed to be 25 vehicles per hour.

The 2020 No-Build volumes at signalized intersections were generated by applying a 1.01 percent growth rate (compounded annually) to the existing traffic volumes. The growth rate was determined by calculating

the average growth rates from surrounding Average Daily Traffic (ADT) volumes supplied in the Texas Department of Transportation (TxDOT) Statewide Planning Maps (available at http://www.dot.state.tx.us/apps/statewide_mapping/StatewidePlanningMap.html).

3.2.2 Existing and No-Build Operational Analysis Results

Table 3-3 is a summary of the intersection LOS for existing conditions and 2020 No-Build for the AM and PM peak hours. The intersection with the worst operations is Buena Vista Street/Frio Street during the AM peak hour. This intersection operates at LOS C in existing conditions and is projected to operate at LOS D in the 2020 No-Build conditions. Intersection output reports for existing conditions and 2020 No-Build are provided in Appendix D.

Table 3-4 is a summary of the average delay and travel times. In general, delays increase slightly from existing (2015) to No-Build (2020) conditions. The travel time differences are negligible.

TABLE 3-3
Existing Conditions (2015) and 2020 No-Build Intersection LOS Summary [a]
Commerce/Buena Vista One-Way Couplet Conversion Traffic Study, City of San Antonio, Texas

			Existing Conditions				2020 No-Build			
			AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
No.	Intersection	Control	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
1	Commerce Street/ Pecos Street	Signal	10.5	B	12.0	B	10.7	B	12.4	B
2	Buena Vista Street/ Pecos Street	Signal	13.4	B	15.3	B	13.7	B	15.6	B
3	Commerce Street/ Leona Street	Signal	8.1	A	7.5	A	7.0	A	7.6	A
4	Commerce Street/ Frio Street	Signal	18.5	B	29.7	C	19.1	B	33.9	C
5	Buena Vista Street/ Frio Street	Signal	34.7	C	28.1	C	36.3	D	28.9	C
6	Commerce Street/ Colorado Street	Signal	11.2	B	15.1	B	11.4	B	15.6	B
7	Buena Vista Street/ Colorado Street	Signal	14.3	B	11.8	B	14.6	B	12.0	B
8	Commerce Street/ Las Moras Street	Signal	7.7	A	6.7	A	7.8	A	7.0	A
9	Commerce Street/ Trinity Street	Signal	14.1	B	16.1	B	15.3	B	16.3	B
10	Buena Vista Street/ Trinity Street	Signal	21.6	C	18.9	B	22.4	C	20.4	C
11	Buena Vista Street/ Navidad Street	Signal	18.5	B	15.6	B	18.7	B	17.1	B
12	Commerce Street/ Calaveras Street	Signal	17.4	B	20.6	C	17.3	B	21.3	C
13	Commerce Street/ Zarzamora Street	Signal	13.3	B	21.6	C	13.6	B	24.0	C
14	Buena Vista Street/ Zarzamora Street	Signal	18.5	B	11.4	B	18.2	B	11.9	B

TABLE 3-3
Existing Conditions (2015) and 2020 No-Build Intersection LOS Summary [a]
Commerce/Buena Vista One-Way Couplet Conversion Traffic Study, City of San Antonio, Texas

			Existing Conditions				2020 No-Build			
			AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
No.	Intersection	Control	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
15	Commerce Street/ Hamilton Street	Signal	12.2	B	10.5	B	12.1	B	10.5	B
16	Buena Vista Street/ Hamilton Street	Signal	10.7	B	11.7	B	11.6	B	11.9	B
17	Commerce Street/ 19th Street	Signal	13.2	B	12.3	B	13.2	B	11.9	B
18	Buena Vista Street/ 19th Street	Signal	10.5	B	12.1	B	10.4	B	12.3	B
117	Commerce Street/ Navidad Street	TWSC	14.3	B	25.3	D	14.9	B	27.7	D

[a] Delay reported in seconds per vehicle

TABLE 3-4
Existing Conditions (2015) and 2020 No-Build Evaluations
Commerce/Buena Vista One-Way Couplet Conversion Traffic Study, City of San Antonio, Texas

AM Peak Hour Signalized Intersections	Average Delay (in seconds)		Travel Time (in minutes)	
	Existing	2020 No-Build	Existing	2020 No-Build
Commerce Street (Westbound)	12.6	12.8	5:27	5:26
Buena Vista Street (Eastbound)	17.8	18.2	5:23	5:27
PM Peak Hour Signalized Intersections	**Existing**	**2020 No-Build**	**Existing**	**2020 No-Build**
Commerce Street (Westbound)	15.2	16.1	5:40	5:41
Buena Vista Street (Eastbound)	15.6	16.3	5:35	5:34
Typical Unsignalized Intersection	**Existing**	**2020 No-Build**		
AM Peak Hour	14.3	14.9		
PM Peak Hour	25.3	27.7		

3.3 Scenario Evaluations

This section summarizes the 2020 Scenario 1, Scenario 2, and Scenario 3 analysis, including traffic volume development and operational summaries.

3.3.1 Traffic Volume Development

The traffic volumes at signalized intersections in the build scenarios were developed by using the 2020 No-Build traffic volumes as base volumes and distributing along proposed two-way corridors based on estimated shifts in traffic demands. At unsignalized intersections, through volumes along Commerce Street and Buena Vista Street were determined from the network balancing process. All turning movement volumes to and from Commerce Street and Buena Vista were assumed to remain consistent at 25 vehicles per hour.

3.3.2 Build Scenarios Operational Analysis Results

Table 3-5 is a summary of the intersection LOS for build scenarios (and No-Build for comparison) for the AM and PM peak hours. Figure 3-3 is an illustration of the intersection delay comparisons between the build scenarios and No-Build. The average delay for Scenario 1 is 24 to 51 percent higher than the No-Build scenario. The average delay changes for Scenario 2 are both negative (up to 7 percent lower) and positive (up to 11 percent higher). For Scenario 3, the delay changes are both negative (up to 29 percent lower) and positive (up to 8 percent higher). Intersection output reports for the build scenarios are provided in Appendix E.

Table 3-6 is a summary of the arterial travel time comparisons between the build scenarios and No-Build. Figure 3-4 is an illustration of the arterial travel time comparisons. The travel times for all of the build scenarios are higher than No-Build. Scenario 1 has travel times that are 15 to 41 percent higher. The travel times for Scenarios 2 and 3 are close (within 16 percent) of No-Build.

Table 3-7 is a summary of the network VMT and VHT comparisons between the build scenarios and No-Build. Figure 3-5 is an illustration of the network VMT. Figure 3-6 is an illustration of the network VHT. Both VMT and VHT increase, by an average of 4 percent (VMT) and 32 percent (VHT).

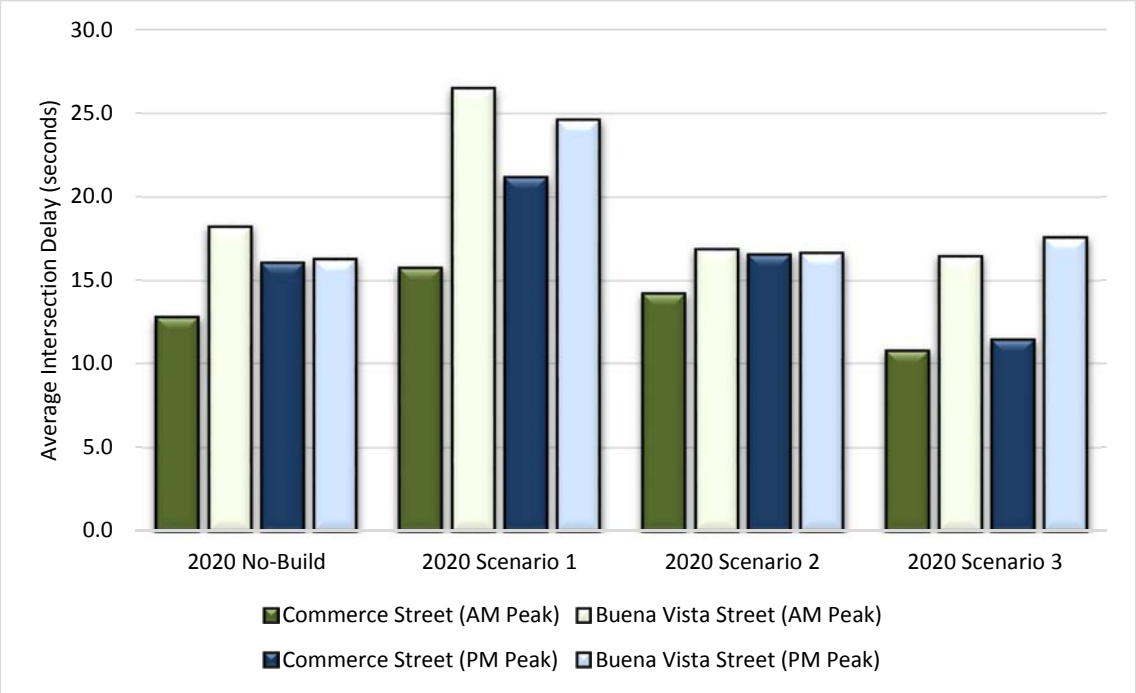


FIGURE 3-3
Intersection Delay Comparisons for No-Build and Build Scenarios
Commerce/Buena Vista One-Way Couplet Conversion Traffic Study, City of San Antonio, Texas

TABLE 3-5

2020 No-Build and Build Scenarios Intersection LOS Summary [a]

Commerce/Buena Vista One-Way Couplet Conversion Traffic Study, City of San Antonio, Texas

			2020 No-Build				2020 Scenario 1				2020 Scenario 2				2020 Scenario 3			
			AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
No.	**Intersection**	**Contr.**	**Delay**	**LOS**	**Delay**	**LOS**	**Delay**	**LOS**	**Delay**	**LOS**	**Delay**	**LOS**	**Delay**	**LOS**	**Delay**	**LOS**	**Delay**	**LOS**
1	Commerce Street/ Pecos Street	Signal	10.7	B	12.4	B	2.9	A	17.5	B	2.9	A	17.6	B	3.0	A	22.3	C
2	Buena Vista Street/ Pecos Street	Signal	13.7	B	15.6	B	22.7	C	29.1	C	21.1	C	26.9	C	21.2	C	26.9	C
3	Commerce Street/ Leona Street	Signal	7.0	A	7.6	A	10.8	B	10.3	B	11.5	B	11.2	B	6.7	A	7.3	A
4	Commerce Street/ Frio Street	Signal	19.1	B	33.9	C	31.3	C	41.1	D	32.8	C	35.9	D	23.9	C	28.0	C
5	Buena Vista Street/ Frio Street	Signal	36.3	D	28.9	C	**57.1**	**E**	39.7	D	40.4	D	38.8	D	41.1	D	38.5	D
6	Commerce Street/ Colorado Street	Signal	11.4	B	15.6	B	16.9	B	22.3	C	16.6	B	23.3	C	13.2	B	15.0	B
7	Buena Vista Street/ Colorado Street	Signal	14.6	B	12.0	B	27.0	C	21.1	C	14.2	B	16.1	B	15.2	B	18.2	B
8	Commerce Street/ Las Moras Street	Signal	7.8	A	7.0	A	10.8	B	13.8	B	4.0	A	9.4	A	7.4	A	1.5	A
9	Commerce Street/ Trinity Street	Signal	15.3	B	16.3	B	18.6	B	17.1	B	16.3	B	11.2	B	8.8	A	8.0	A
10	Buena Vista Street/ Trinity Street	Signal	22.4	C	20.4	C	21.5	C	21.3	C	8.3	A	13.4	B	11.7	B	13.7	B
11	Buena Vista Street/ Navidad Street	Signal	18.7	B	17.1	B	20.2	C	20.5	C	9.7	A	4.2	A	3.7	A	5.9	A
12	Commerce Street/ Calaveras Street	Signal	17.3	B	21.3	C	11.8	B	20.6	C	11.4	B	11.7	B	7.4	A	3.1	A
13	Commerce Street/ Zarzamora Street	Signal	13.6	B	24.0	C	22.0	C	31.9	C	16.7	B	20.1	C	14.7	B	12.4	B
14	Buena Vista Street/ Zarzamora Street	Signal	18.2	B	11.9	B	23.8	C	21.5	C	17.5	B	15.8	B	19.0	B	18.8	B
15	Commerce Street/ Hamilton Street	Signal	12.1	B	10.5	B	17.9	B	22.2	C	16.1	B	10.3	B	10.1	B	5.4	A
16	Buena Vista Street/ Hamilton Street	Signal	11.6	B	11.9	B	23.4	C	23.4	C	11.5	B	7.5	A	7.7	A	8.4	A
17	Commerce Street/ 19th Street	Signal	13.2	B	11.9	B	14.5	B	14.9	B	13.8	B	14.7	B	12.1	B	11.0	B
18	Buena Vista Street/ 19th Street	Signal	10.4	B	12.3	B	16.2	B	20.2	C	12.5	B	10.3	B	12.2	B	10.1	B
117	Commerce Street/ Navidad Street	TWSC	14.9	B	27.7	D	24.1	C	29.0	D	20.2	C	22.1	C	25.1	D	26.2	D

[a] Delay reported in seconds per vehicle

TABLE 3-6
End-to-End Average Travel Time (in minutes) [a]
Commerce/Buena Vista One-Way Couplet Conversion Traffic Study, City of San Antonio, Texas

Direction (Peak Hour)	2020 No-Build	2020 Scenario 1	2020 Scenario 2	2020 Scenario 3
Eastbound Commerce Street (AM Peak Hour)	-	6:36	6:28	5:29
Eastbound Buena Vista Street (AM Peak Hour)	5:27	8:02	6:11	6:10
Average Eastbound (AM Peak Hour)	**5:27**	**7:19**	**6:19**	**5:49**
Westbound Commerce Street (AM Peak Hour)	5:26	6:31	5:44	5:47
Westbound Buena Vista Street (AM Peak Hour)	-	6:01	5:42	5:41
Average Westbound (AM Peak Hour)	**5:26**	**6:16**	**5:43**	**5:44**
Eastbound Commerce Street (PM Peak Hour)	-	6:08	6:07	5:40
Eastbound Buena Vista Street (PM Peak Hour)	5:34	7:04	6:02	5:54
Average Eastbound (PM Peak Hour)	**5:34**	**6:36**	**6:04**	**5:47**
Westbound Commerce Street (PM Peak Hour)	5:41	8:35	6:35	5:33
Westbound Buena Vista Street (PM Peak Hour)	-	7:25	6:08	6:06
Average Westbound (PM Peak Hour)	**5:41**	**8:00**	**6:22**	**5:49**

[a] End-to-end travel time was calculated between 19th Street and Pecos Street in the eastbound direction and vice versa in the westbound direction

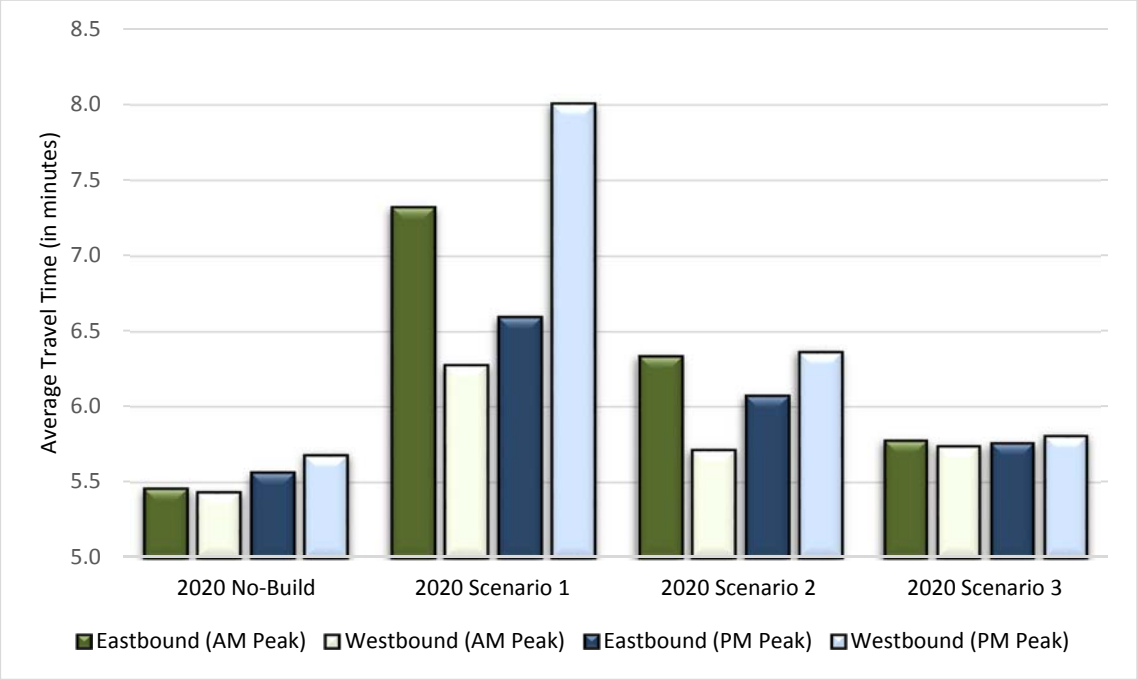


FIGURE 3-4
Arterial Travel Time Comparisons for No-Build and Build Scenarios
Commerce/Buena Vista One-Way Couplet Conversion Traffic Study, City of San Antonio, Texas

TABLE 3-7
Network Vehicle Miles Traveled and Vehicle Hour Traveled
Commerce/Buena Vista One-Way Couplet Conversion Traffic Study, City of San Antonio, Texas

Performance Measure (Peak Hour)	2020 No-Build	2020 Scenario 1	2020 Scenario 2	2020 Scenario 3
VMT (AM Peak Hour)	4959	5131	5146	5199
VMT (PM Peak Hour)	5380	5515	5523	5583
VHT (AM Peak Hour)	235	339	309	287
VHT (PM Peak Hour)	266	394	339	317

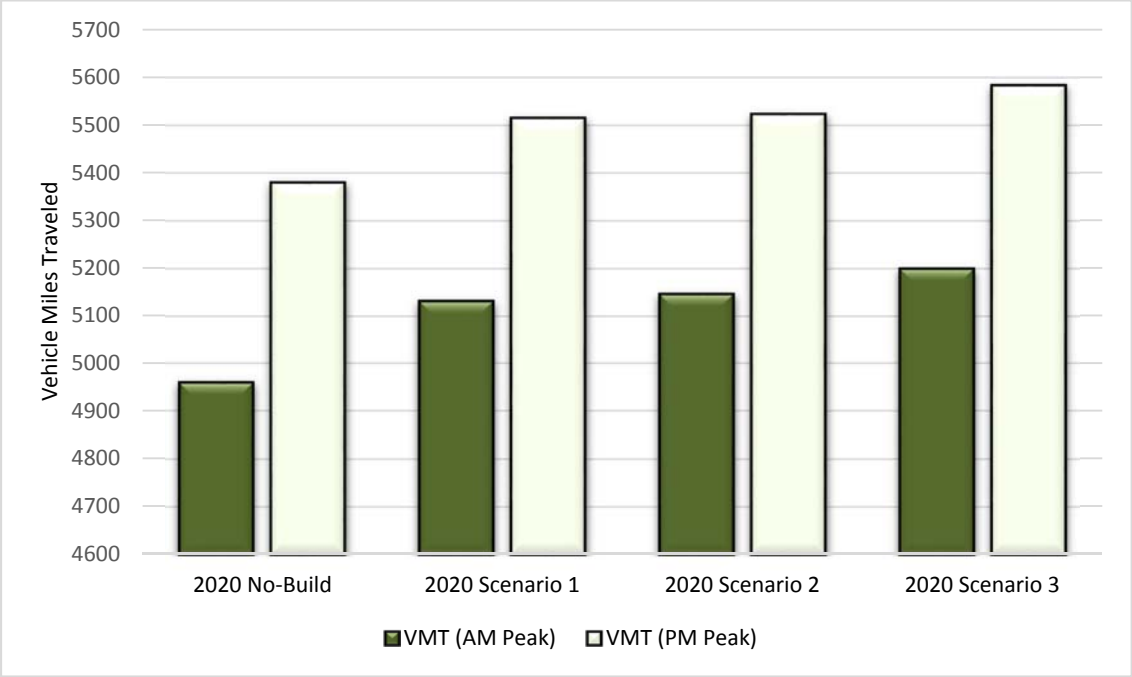


FIGURE 3-5
Network VMT Comparisons for No-Build and Build Scenarios
Commerce/Buena Vista One-Way Couplet Conversion Traffic Study, City of San Antonio, Texas

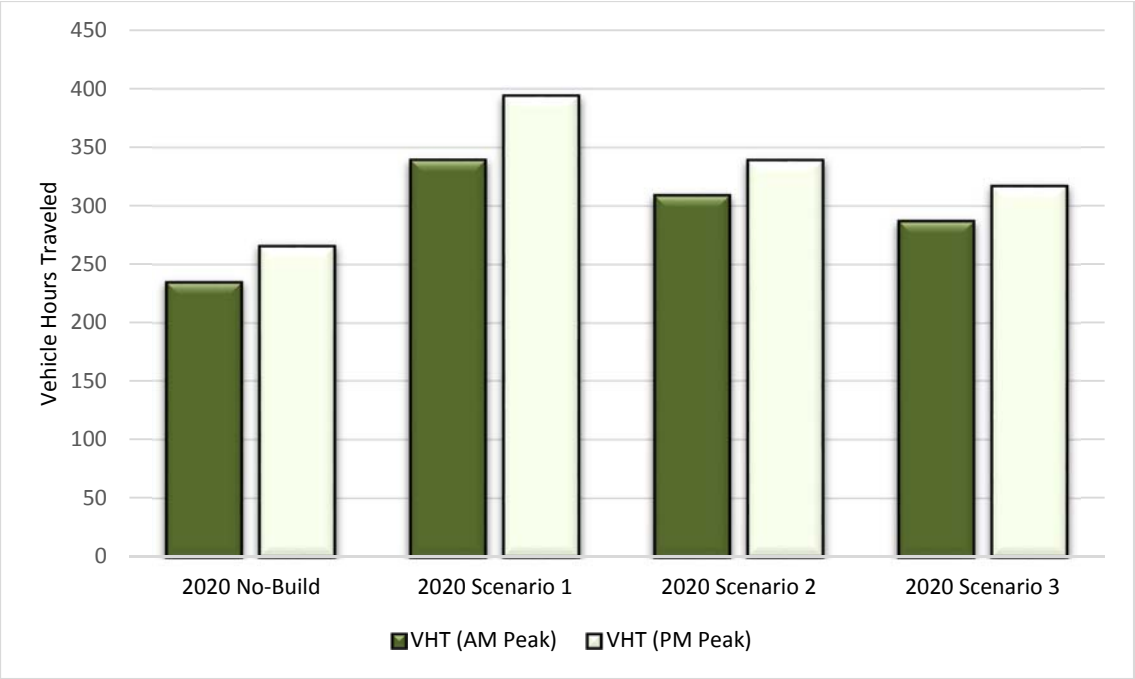


FIGURE 3-6
Network VHT Comparisons for No-Build and Build Scenarios
Commerce/Buena Vista One-Way Couplet Conversion Traffic Study, City of San Antonio, Texas

3.4 Transit Impacts

VIA Metropolitan Transit (VIA) provides bus service in the Commerce Street and Buena Vista Street corridors. Routes 66, 70, 75, and 76 use Commerce Street and/or Buena Vista Street. All of these routes have buses every 15 minutes except Route 70, which has buses once an hour. Route 76, the second most productive route in the system providing over 100,000 trips per month, is scheduled to receive major service enhancements beginning in September of 2015 to increase reliability and decrease travel times for patrons. Capital investment is scheduled to follow soon in the Commerce/Buena Vista Corridor.

The transit effects of the build scenarios were evaluated qualitatively by determining potential concerns for VIA operations. In general, VIA operations could be negatively affected by the increases in delay and travel time identified in Section 3.3. Because buses are making “through” trips on both streets, the loss of signal coordination and additional stops associated with two-way operations would be a negative impact on their service.

VIA staff also identified some specific concerns. The agency has made a sizable investment in improvements to the near Westside area, such as a signal and intersection improvements to provide a special phase for buses to enter eastbound Buena Vista Street. Additional investments include a signal at the Frio Street/Houston Street intersection to accommodate bus turning movements to/from the one-way couplets into Centro Plaza at VIA Villa (formally known as Westside Multimodal Transit Center).

SECTION 4

Safety Evaluation

The safety evaluation includes a literature review, an evaluation of historical safety data in the corridor, and a relative safety assessment of the changes related to two-way operations. Each element is summarized in the sections below.

4.1 Research Summary

Several studies and research papers have reviewed one-way vs. two-way operations. However, most of the published safety research and guidance is focused on the two-way to one-way conversion process. These studies can still be used, looking at the reverse: what would happen when converting one-way to two-way. In general, the findings are that one-way operations have safety benefits, so the logical conclusion is that converting back to two-way operations would increase the frequency of crashes.

Unfortunately, many of the studies have lacked substantive data, and are based only on professional opinions. Four references were identified that provided more concrete comparisons. These documents were reviewed to assess the potential impact of a one-way to two-way conversion for the study corridor.

The *Highway Safety Manual* (American Association of State Highway and Transportation Officials [AASHTO], Washington, D.C., 2010) and *The Traffic Safety Toolbox: A Primer on Traffic Safety* (Institute of Transportation Engineers, Washington D.C., 1999) include a discussion of the safety expectations for a two-way to one-way conversion. In certain conditions, the conversion would be expected to reduce crash frequency, particularly head-on crashes and left-turn crashes at intersections and driveways, although the magnitude of the crash decrease was not given. Another potential benefit is that improved operations of one-way systems may reduce the frequency of rear-end and congestion-related crashes. A related point is that one-way streets may allow for shorter traffic signal cycle lengths, increasing pedestrian compliance with the pedestrian phase. On the other hand, the studies suggested that one-way facilities may have an increase in minor mid-block sideswipe crashes related to increased weaving, pedestrians looking the wrong direction for approach vehicles, increased vehicle speeds, and longer travel distances for drivers.

The *Pedestrian Safety Guide and Countermeasure Selection System* (http://pedbikesafe.org/PEDSAFE/countermeasures_detail.cfm?CM_NUM=23) indicates that the benefits for one-way operations are dependent on the context of the corridor. For example, converting from a two-way to one-way operation is expected to reduce the frequency of pedestrian crashes at intersections because there would be lower turning volumes. However, a one-way street may result in higher travel speeds, which could result in more serious injuries if a pedestrian is hit by a vehicle.

Eisele et al., published 12 crash modification factors (CMFs) in *Safety and Economic Impacts of Converting Two-Way Frontage Roads to One-Way: Methodology and Findings* (Southwest Region University Transportation Center, College Station, TX, 2010). The study included five locations in Texas where freeway frontage roads were converted from two-way to one-way facilities, which included interchange ramp terminals at some locations. All 12 CMFs that were developed indicated the one-way conversion would reduce crash frequency. Additionally, the reduction was statistically significant for all 12 cases. Four CMFs that are most applicable for the Commerce/Buena Vista one-way couplet are:

- Total non-Property Damage Only (PDO) crashes = 0.43 [57 percent decrease]
- Opposition-direction non-PDO crashes = 0.04 [96 percent decrease]
- Segment angle non-PDO crashes = 0.17 [83 percent decrease]
- Segment rear-end non-PDO crashes = 0.27 [73 percent decrease]

4.2 Historical Safety Data

The City of San Antonio provided the 2013 crash records for the study area. The crashes were summarized and compared to citywide or statewide totals as available. A total of 164 crashes were identified in the corridor (Table 4-1). Two fatal crashes and seven incapacitating injury crashes, or severe crashes, were identified. Overall, 5 percent of the crashes in the study corridor were severe. In comparison, 14 percent of all crashes in the City of San Antonio were severe.

TABLE 4-1
Crash Frequency by Severity
Commerce/Buena Vista One-Way Couplet Conversion Traffic Study, City of San Antonio, Texas

Crash Severity	Commerce/Buena Vista Corridor [a]	City of San Antonio[b]
Fatal	2 (1%)	152 (0.4%)
Incapacitating Injury	7 (4%)	3,707 (14%)
Non-Incapacitating Injury	16 (10%)	7,905 (22%)
Possible Injury	33 (20%)	
Not Injured	102 (62%)	21,186 (60%)
Unknown	4 (3%)	1,908 (5%)
Total	**164**	**34,858**

[a] Source: City of San Antonio

[b] Source: 2013 Texas Motor Vehicle Crash Statistics; non-incapacitating injury and possible injury were combined and reported simply as "Other Injury."

Of the nine individuals that were killed or sustained incapacitating injuries, four were pedestrian, which is 44 percent of the severe injuries. According to the 2013 Texas Motor Vehicle Crash Statistics, 14 percent of 2013 traffic fatalities in Texas were pedestrians. However, pedestrians often account for a much higher percentage of fatalities and injuries in urban areas (like the Commerce/Buena Vista study area) than statewide. Therefore, the frequency of pedestrian crashes appears to be consistent with what would be expected in a developed urban area.

Of the 164 crashes, 55 percent were reported as occurring at an intersection (Table 4-2). Except for non-incapacitating injury crashes, crashes were nearly equally split between intersection and segments. However, nearly 70 percent of the non-incapacitating injury crashes were reported as at an intersection.

TABLE 4-2
Crash Frequency by Location
Commerce/Buena Vista One-Way Couplet Conversion Traffic Study, City of San Antonio, Texas

Crash Severity	At Intersection [a]	Segment
Fatal	1 (1%)	1 (1%)
Incapacitating Injury	4 (5%)	3 (4%)
Non-Incapacitating Injury	11 (12%)	5 (7%)
Possible Injury	19 (21%)	14 (19%)
Not Injured	54 (59%)	48 (66%)
Unknown	2 (2%)	2 (3%)
Total	**91**	**73**

[a] Source: City of San Antonio

Overall segment and intersection crash rates were estimated for the study area. Because only 1 year of crash data were available for the analysis, crash rates were not computed for individual locations (that is, intersections or segments).

The segment crash rate was computed using a weighted volume of 9,000 vehicles per day in the corridor. For the intersection crash rate, an average of 11,300 daily entering vehicles per intersection was used.

The resulting 2013 crash rates are:

- Segment: 5.1 crashes per million vehicle miles traveled
- Intersection: 0.33 crashes per million entering vehicles

The 2013 Texas Motor Vehicle Crash Statistics reports statewide urban crash rates are generally around 2.0; although none of the reported average crash rates are for one-way facilities. An average urban intersection crash rate was not available for comparison to the corridor, but the calculated crash rate of 0.33 is relatively low.

4.3 Scenario Evaluations

A qualitative safety assessment was completed for the base condition and the three scenarios (Table 4-3). This assessment summarizes the relative safety assessment of each scenario based on seven evaluation elements. Dark green and light green indicate potential safety benefits of the scenario, while yellow, orange, and red indicate increasing level of risk.

Of the seven evaluation elements, the existing one-way operation is expected to have a lower relative safety risk in five of the categories. The elements where the existing condition has a lower risk rating are related to the reduced conflicts with a one-way roadway. The alternative scenarios were given a lower risk rating primarily in the criterion of travel speeds, because of the potential to reduce injury severity when a crash occurs.

TABLE 4-3
Qualitative Safety Assessment
Commerce/Buena Vista One-Way Couplet Conversion Traffic Study, City of San Antonio, Texas

Evaluation Element	Base (Existing Conditions)	Scenario 1	Scenario 2	Scenario 3
Basic Cross Section	Fewer conflicts, generally considered to have fewer crashes.	Two-way traffic creates more conflicts; may increase vehicle crashes.		5-lane has highest expected crash frequency per the *Highway Safety Manual* (AASHTO, 201).
Bike Lanes	One-way traffic minimizes conflicts at intersections. Volumes balanced between Commerce and Buena Vista.	Higher volume on Commerce may increase bicycle crashes.	Lower volume on Buena Vista may benefit bicycle safety.	
Pedestrian	Traffic is one-way; minimizes conflicts while crossing.	Two-way conflicts considered detrimental to pedestrian safety.	Two-way conflicts; increased crossing distances at locations with widening.	Two-way conflicts; increased crossing distances at locations with widening.
Left-turns at Unsignalized Intersections	No conflicting movements.	In-lane turns may lead to rear-end crashes; opposing traffic may lead to head-on crashes.	In-lane turns on Buena Vista may lead to rear-end crashes; opposing traffic may lead to head-on crashes.	In-lane turns on Buena Vista may lead to rear-end crashes; opposing traffic may lead to head-on crashes.
Left-turns at Signalized Intersections	No conflicting movements.	Potential for head-on crashes and pedestrian conflicts with additional movements at each intersection.		Permissive phasing for dedicated left-turn lanes on Buena Vista; may lead to head-on crashes and pedestrian conflicts.
Right Turns	No dedicated right-turn lanes.	No dedicated right-turn lanes.	Right-turn lanes at key locations.	No dedicated right-turn lanes.
Travel Speeds	Typically have higher travel speeds, which can contribute to injury severity.	Two-way operations may decrease operating speeds in the corridor, may lead to a reduction in injury severity.		

LOWEST SAFETY RISK
LOWER SAFETY RISK
MODERATE SAFETY RISK
MODERATELY HIGH SAFETY RISK
HIGHEST SAFETY RISK

SECTION 5

Cost Evaluation

5.1 Cost Evaluation Approach

A cost estimate was prepared for each of the three scenarios. Each estimate is divided into roadway items, structure items, and right-of-way costs. Roadway items include earthwork, new pavement, sidewalks, striping, drainage, utilities, and traffic items (signals, fiber). Structure items include costs associated with widening the bridge over Alazan Creek. Right-of-way costs consider property acquisition, easements, relocation, clearance/demolition and related fees.

Mobilization is estimated as 10 percent of the main roadway and structures construction items. Roadway additions are separated into supplemental work and a contingency factor. Supplemental work provides funds for unpredictable or incalculable construction due to the uncertain nature or quantity of materials, and is estimated as 10 percent. Contingency factors for these estimates range from 5 to 25 percent. These factors account for unforeseen work that may surface as studies progress, and are calculated as a percentage of total main construction items plus minor items.

Most roadway unit costs represented in the estimate are based on recent project experience. Structure costs are based on previously reported bridge costs on similar bridge widenings in Texas.

Cost estimating assumptions are listed within each section of the cost estimate (Appendix F). Appendix A contains the typical roadway sections. Appendix B shows the tie-in points for each scenario.

5.2 Cost Evaluation Summary

Table 5-1 is a summary of construction costs by scenario. A graphical version is provided in Figure 5-1.

TABLE 5-1
Summary of Costs by Scenario
Commerce/Buena Vista One-Way Couplet Conversion Traffic Study, City of San Antonio, Texas

Items	Scenario 1 Cost ($M)	Scenario 2 Cost ($M)	Scenario 3 Cost ($M)
Roadway	$9.7	$10.7	$19.8
Structure	$0.6	$0.6	$1.5
Right-of-way	$0.3	$1.5	$6.7
Total	**$10.6**	**$12.8**	**$28.0**

$M – millions of dollars

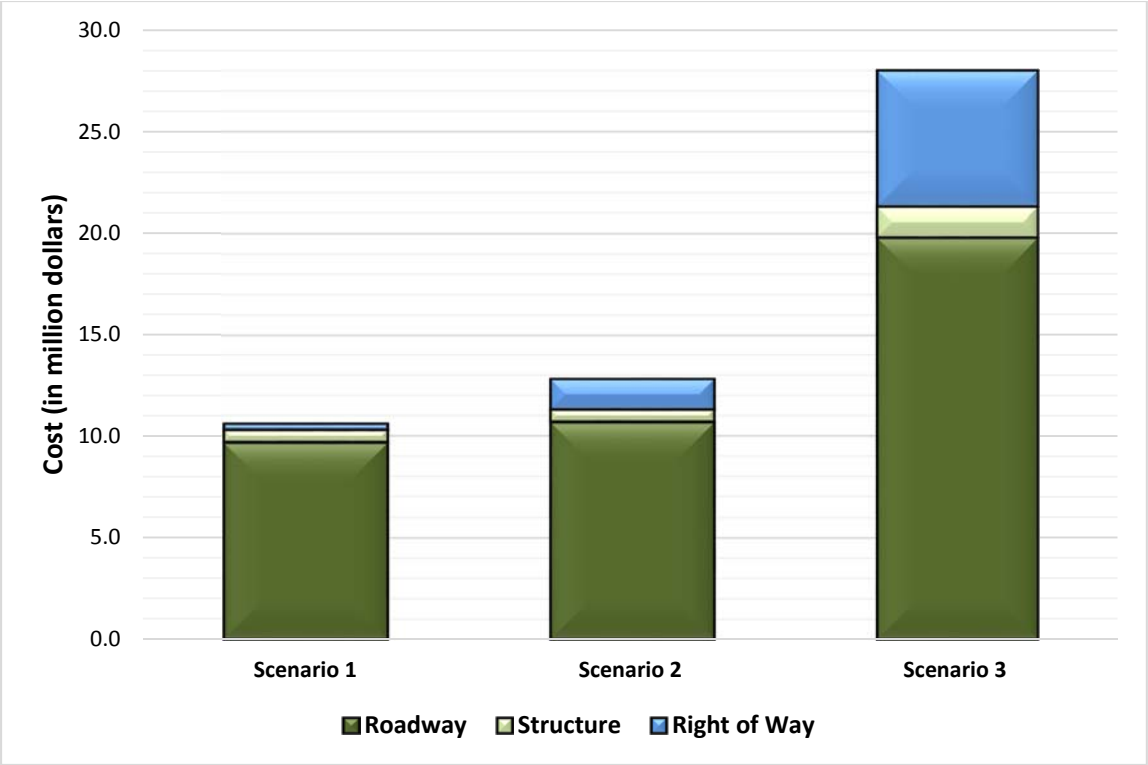


FIGURE 5-1
Summary of Costs by Scenario
Commerce/Buena Vista One-Way Couplet Conversion Traffic Study, City of San Antonio, Texas

5.3 Right-of-Way Evaluation

The right-of-way evaluation is summarized in Table 5-2. The evaluation includes partial and full fee acquisitions. Temporary construction easements (TCEs) of 10 feet beyond the limit of construction are included. Scenario 1 requires no permanent right-of-way acquisitions. Scenario 2 requires right-of-way acquisition at proposed right-turn pockets. Scenario 3 requires right-of-way acquisition along both sides of Commerce Street.

TABLE 5-2
Right-of-Way Impacts
Commerce/Buena Vista One-Way Couplet Conversion Traffic Study, City of San Antonio, Texas

Scenario	TCEs	Area of TCEs (ft^2)	Sliver/Partial Right-of-Way	Sliver/Partial Right-of-Way (ft^2)	Full Acquisitions	Full Acquisitions (ft^2)
Scenario 1	38	19,070	-	-	-	-
Scenario 2	55	32,700	24	15,070	3	14,440
Scenario 3	192	151,300	172	52,000	9	75,710

ft^2 – square feet

SECTION 6

Summary

This review of a potential one-way to two-way conversion of the Commerce Street/Buena Vista Street one-way couplet includes assessment of traffic operations, safety, and cost impacts. Three different scenarios were assessed, considering a range of potential improvements for cross-section, bike lanes, parking, and turn pockets. There are both positive and negative elements, but the overall assessment is that one-way operations (existing conditions) are better than any of the two-way scenarios:

- Traffic operations, including travel time and intersection delay, will degrade with two-way operations. Some scenarios will result in the loss of turn bays.
- Safety risk was evaluated for multiple elements. The safety risk assessment was better for existing conditions in most of the elements, especially related to the reduced conflicts with a one-way roadway.
- The estimated cost of conversion will be $10.6 to $28 million. The costs will include roadway, structure, and right-of-way costs. Traffic items (especially new signal equipment) and pavement grind/overlay will be major costs. There will also be right-of-way impacts, including partial acquisition of properties in all scenarios, and up to nine full property acquisitions in one scenario. Depending on the scenario, there will be some loss of parking and bike lanes.

There may be other opportunities for investment in the corridor, especially for economic redevelopment. The recommendation from this analysis is that infrastructure improvements other than a two-way conversion will be more effective.

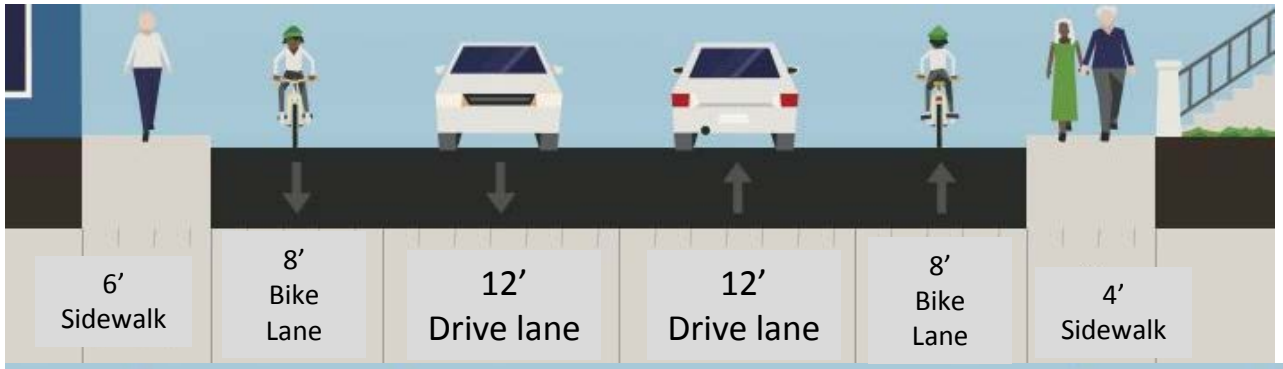
SECTION 7

Disclaimer

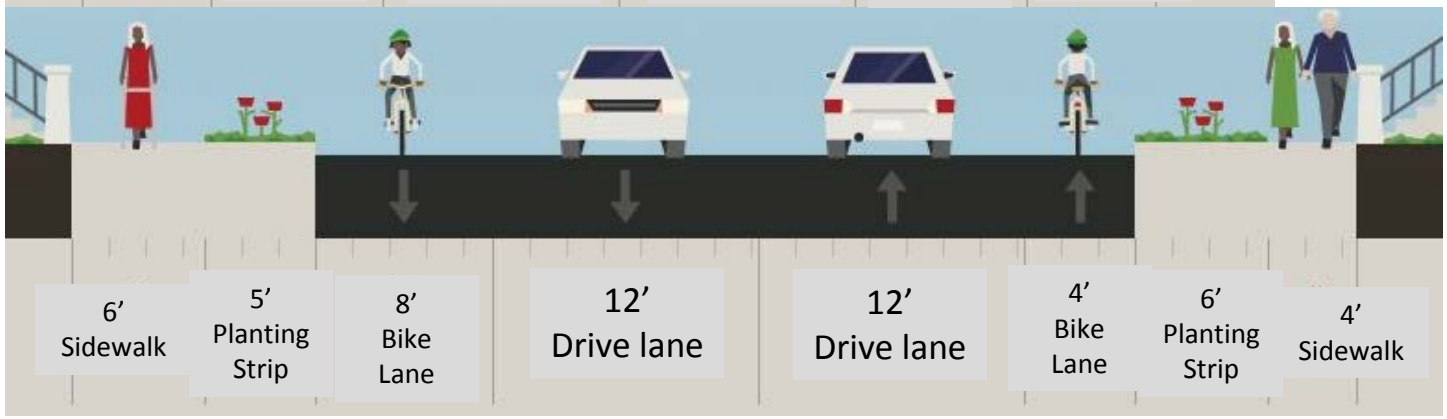
Estimates of traffic volumes and project costs are for comparative purposes only and are not intended for programming or funding decisions.

Appendix A
Build Scenarios Typical Cross-Sections

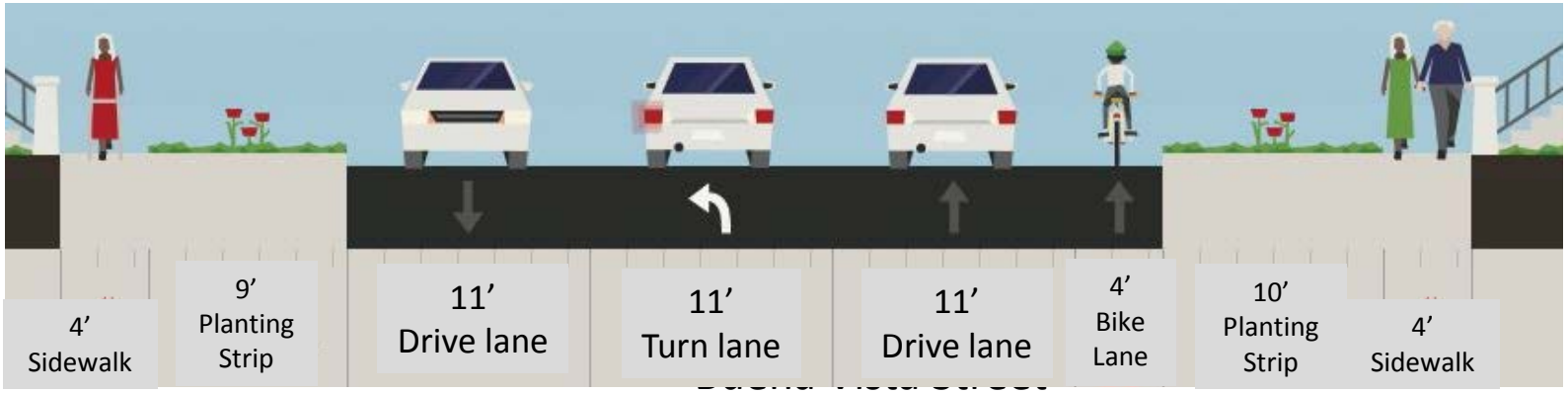
Scenario 1 – Basic Conversion



Commerce St



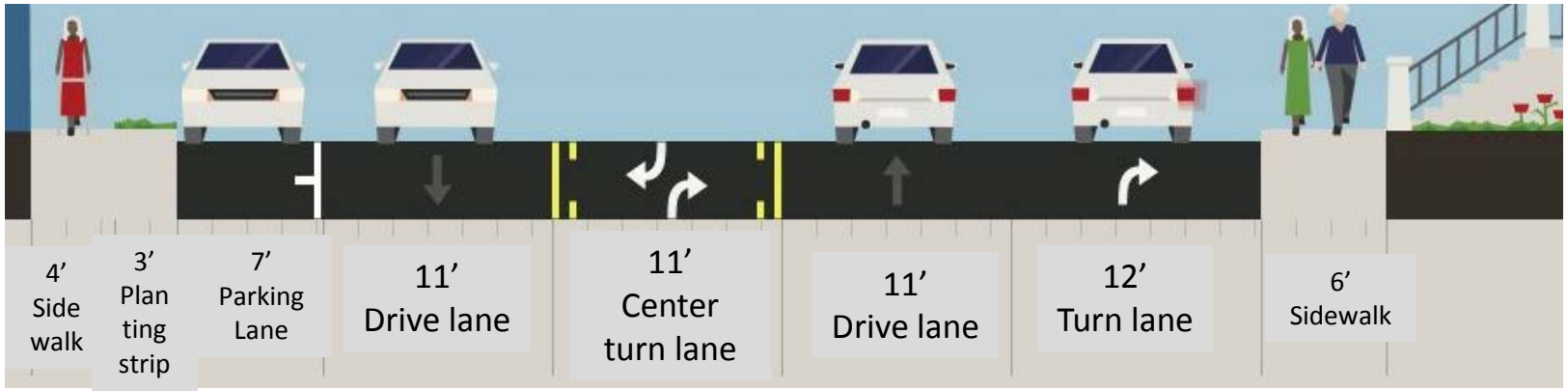
Buena Vista St



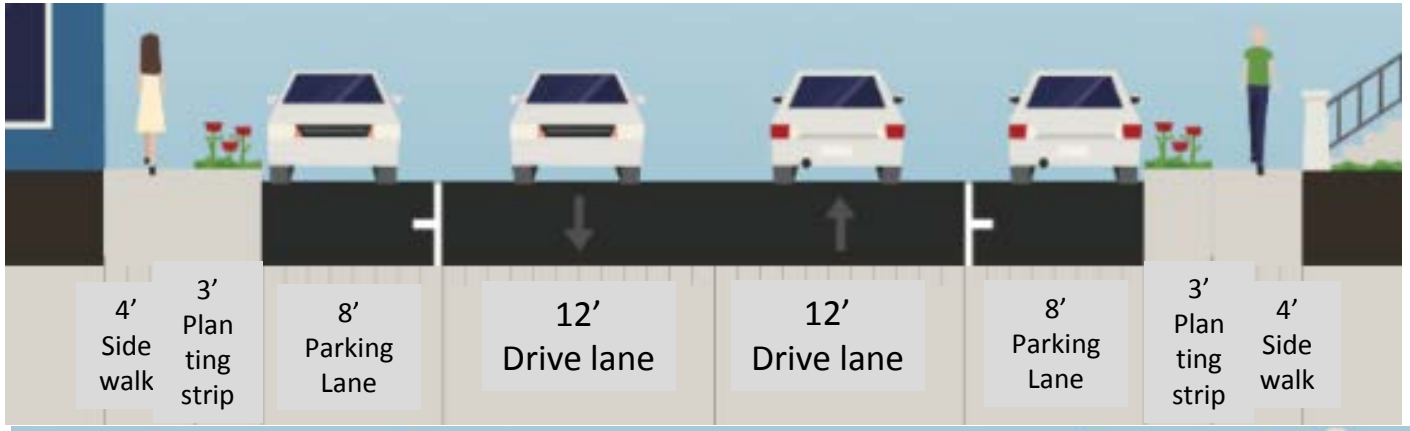
Buena Vista St (LH Turn Lane)

Note: Dimensions shown are representative of possible street sections.

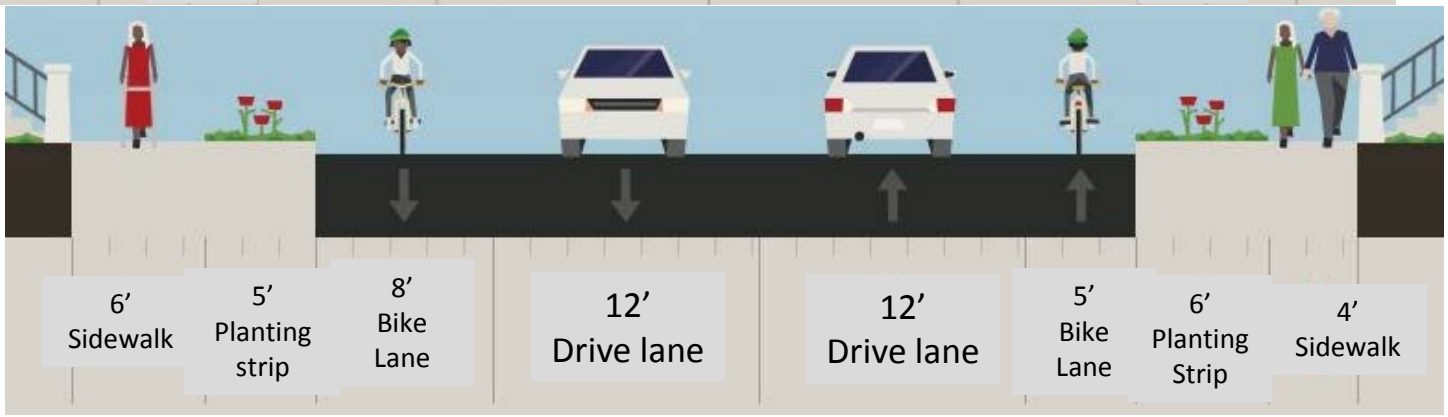
Scenario 2 – Focused Improvements



Commerce Street (TWLTL)



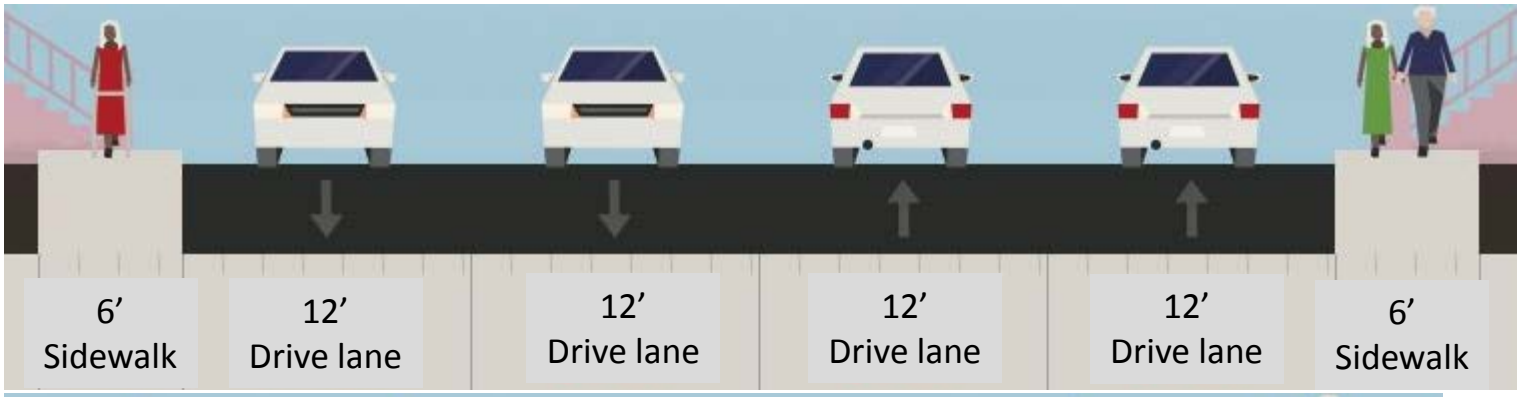
Commerce Street (On Street Parking)



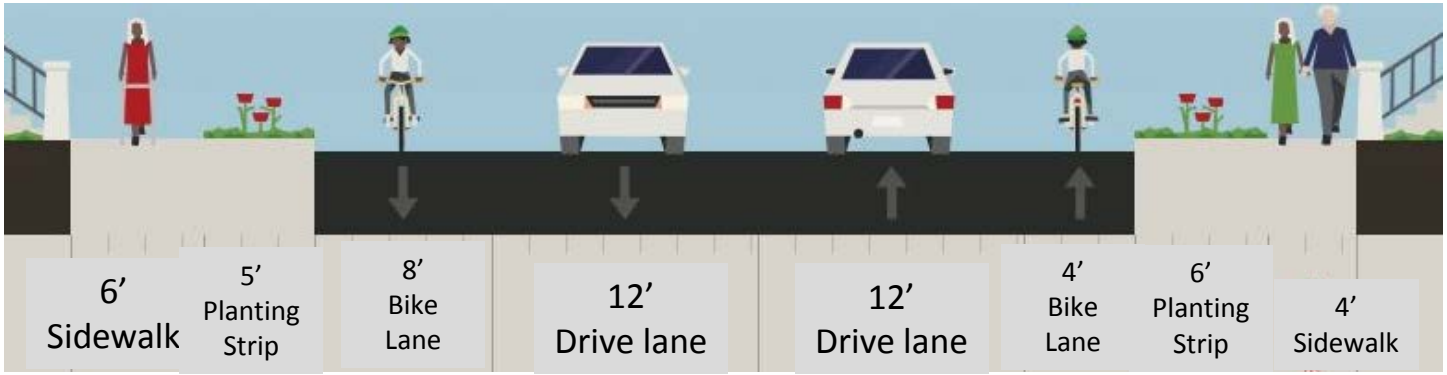
Buena Vista St

Note: Dimensions shown are representative of possible street sections.

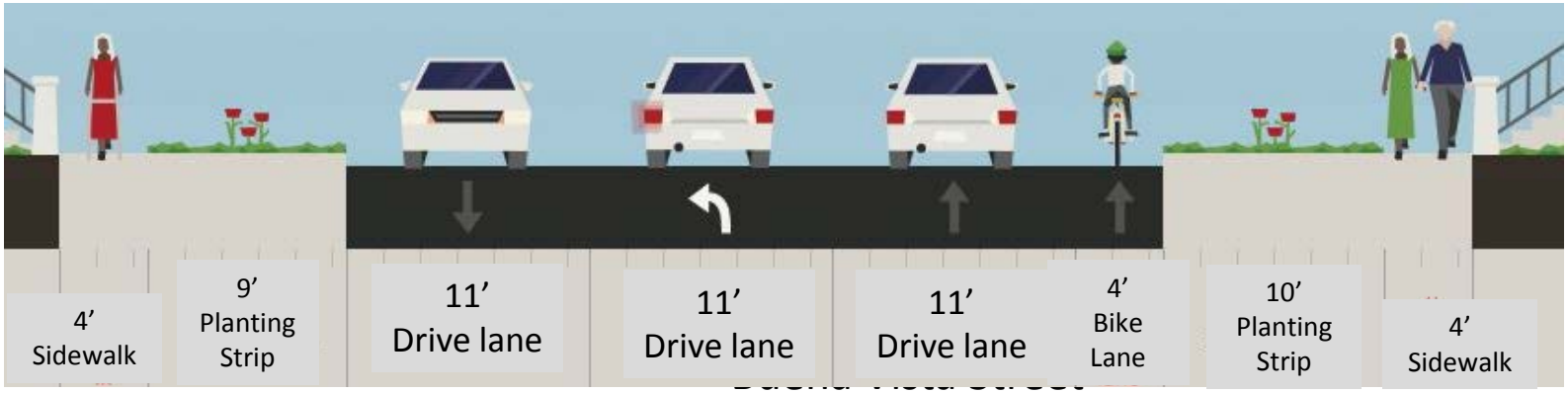
Scenario 3 – Major Reconstruction



Commerce Street



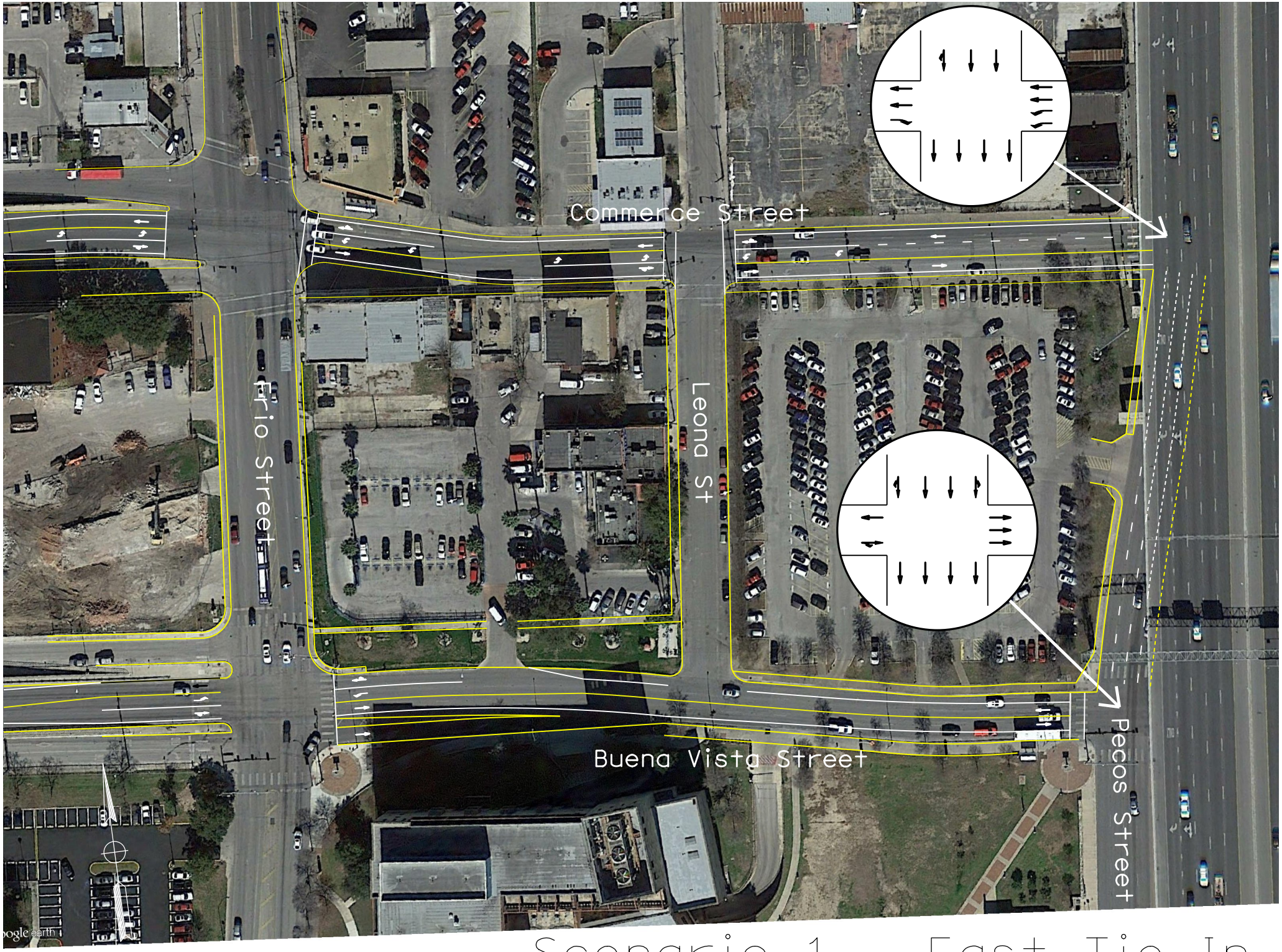
Buena Vista St



Buena Vista St (LH Turn Lane)

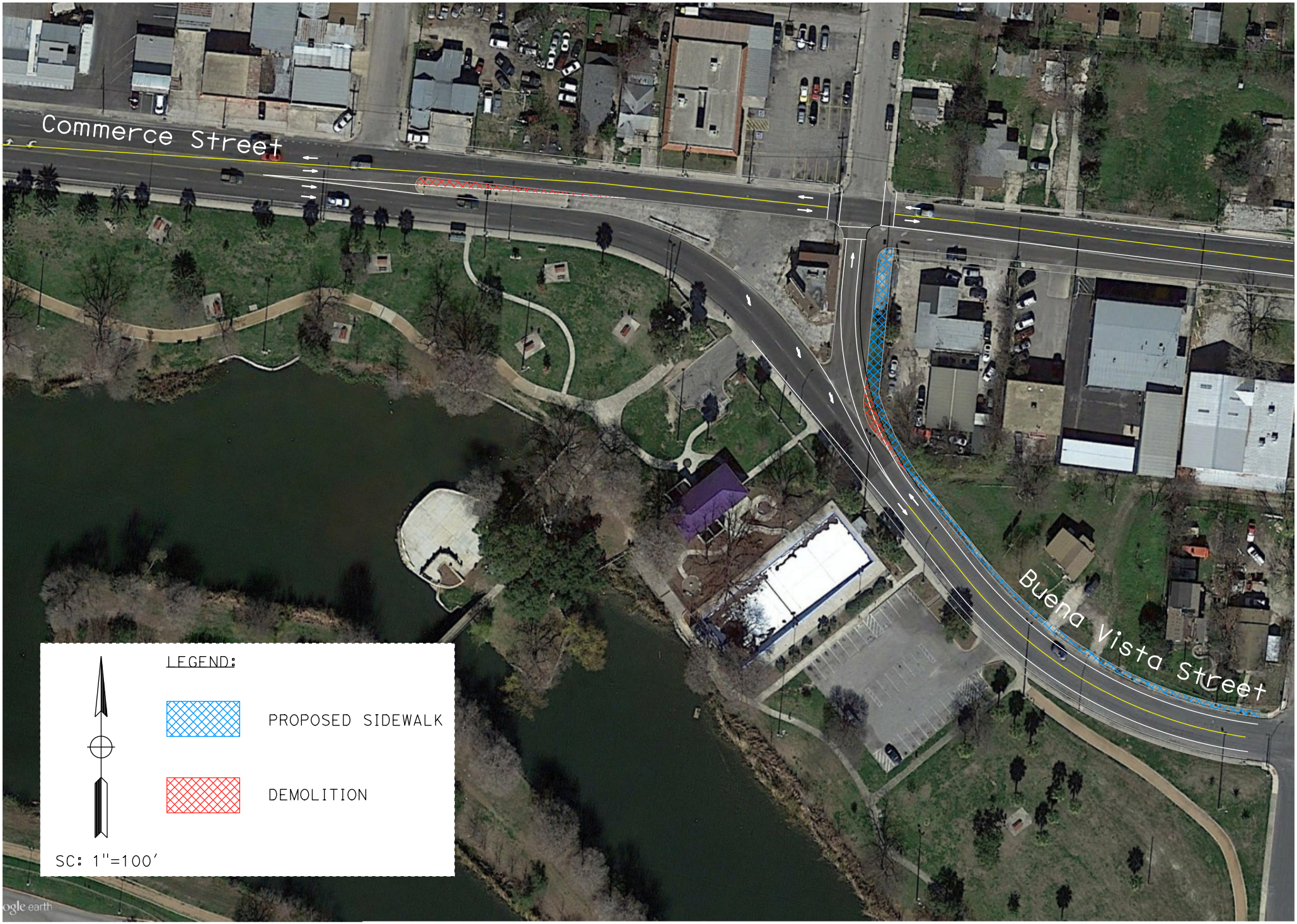
Note: Dimensions shown are representative of possible street sections.

Appendix B
Build Scenarios Tie-In Lane Transitions



SC: 1"=100'

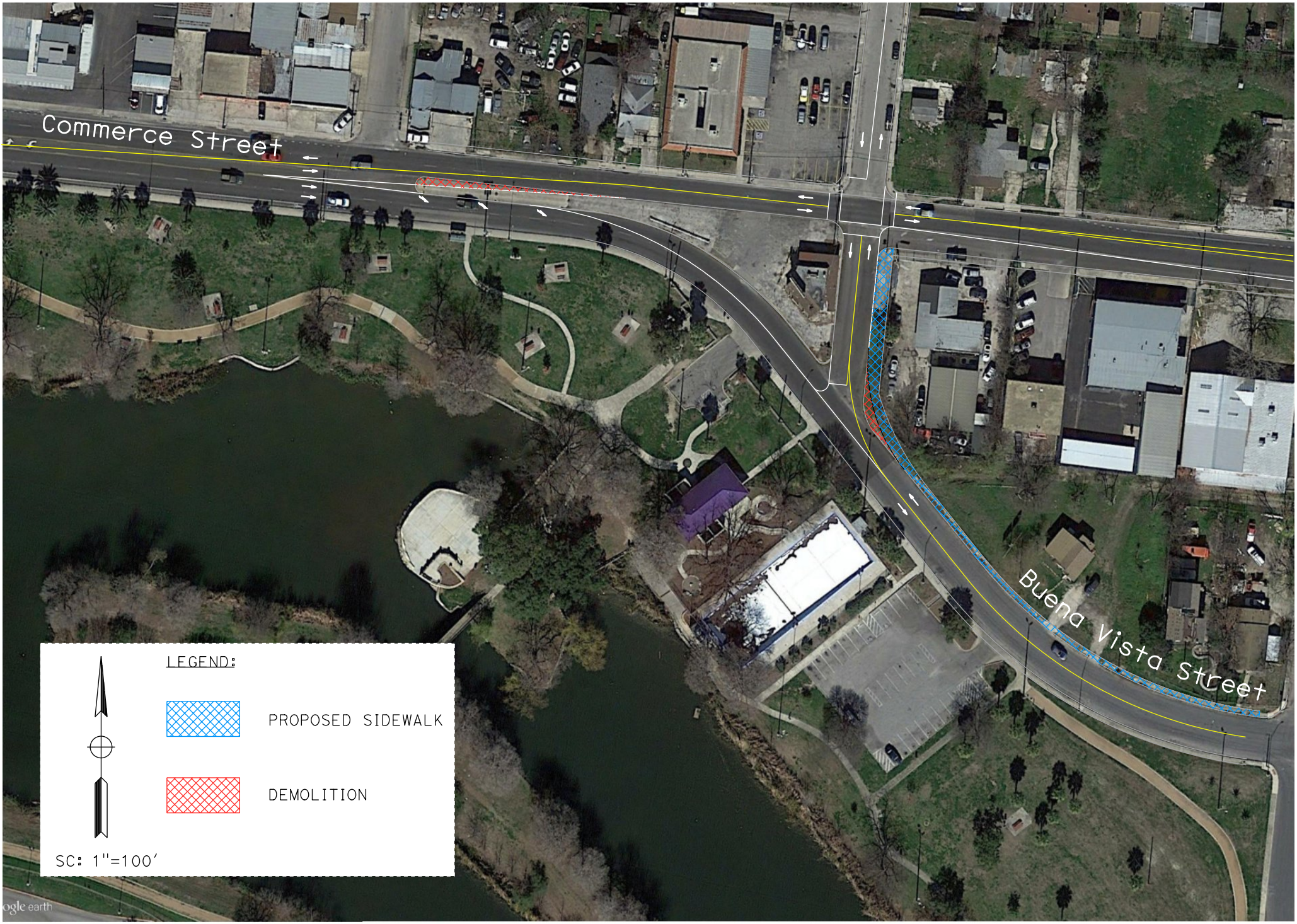
Scenario 1 - East Tie In



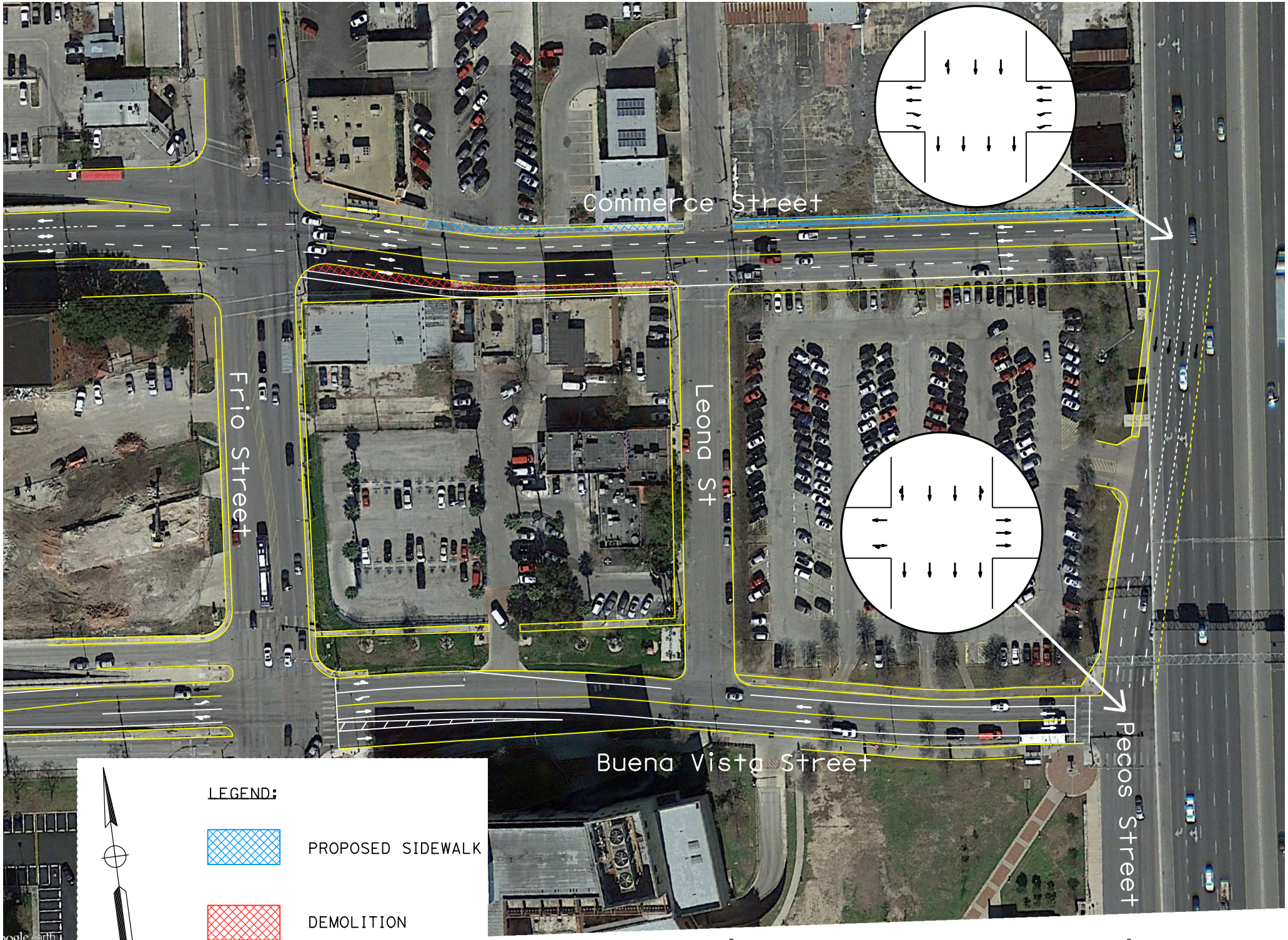
Scenario 1 - West Tie In

SC: 1"=100'

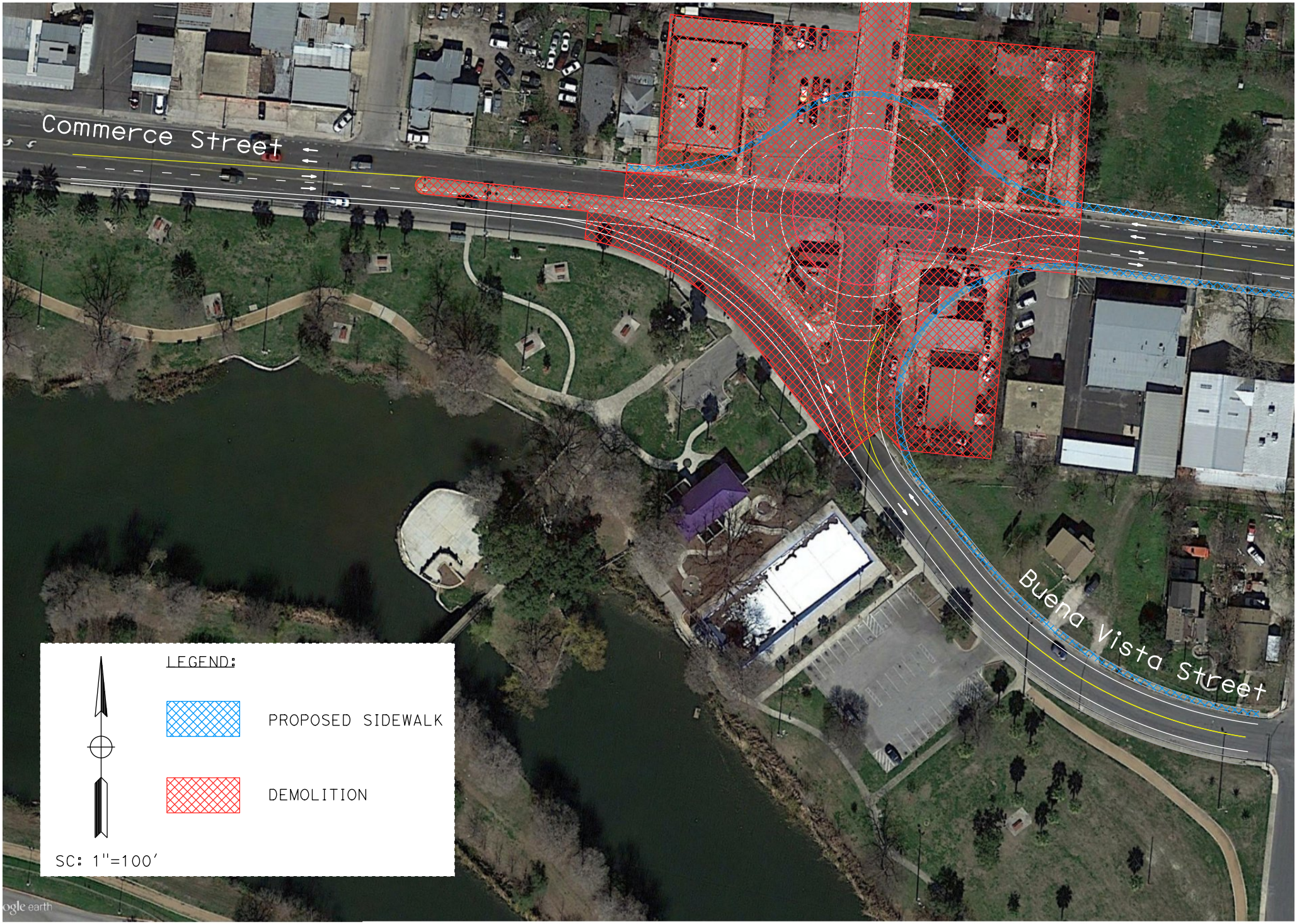
Scenario 2 - East Tie In



Scenario 2 - West Tie In



Scenario 3 - East Tie In



Scenario 3 - West Tie In

Appendix C
Data Collection Intersection Count Sheets

19th Street and Buena Vista Street

Intersection	North/South Street :	19th Street	
	East/West Street :	Buena Vista Street	
City / State	San Antonio, Texas		
Project No.	132-14	Peak Period :	1 — 7:00 AM - 9:00 AM
Date Recorded:	Thursday, January 08, 2015	Peak Hour:	7:15 AM to 8:15 AM

AC GROUP LLC — TRAFFIC ENGINEERING AND DATA COLLECTION

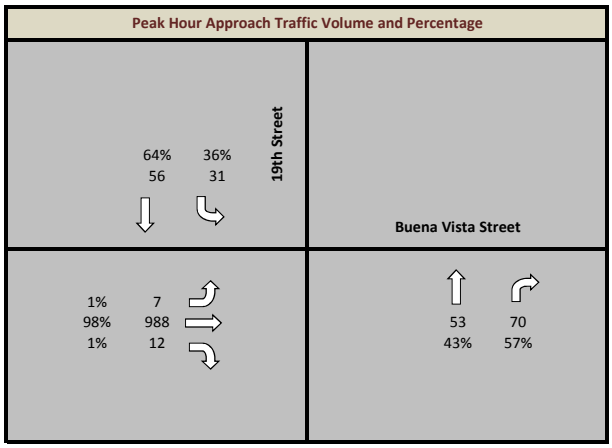
Start Time	Intersection Approaches																Traffic Control	
	19th Street				19th Street				Buena Vista Street				Buena Vista Street					
	Northbound				Southbound				Eastbound				Westbound					
	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Total	Hourly Total
7:00 AM		4	8		3	11			0	155	7						188	
7:15 AM		11	16		8	12			1	215	2						265	
7:30 AM		10	18		10	9			2	267	1						317	
7:45 AM		16	25		7	19			2	288	6						363	1133
8:00 AM		16	11		6	16			2	218	3						272	
8:15 AM		12	9		7	13			2	181	9						233	
8:30 AM		10	16		6	13			2	170	5						222	
8:45 AM		6	8		5	10			3	126	5						163	890

	Northbound			Southbound			Eastbound			Westbound				
	Left	Thur	Right	Left	Thur	Right	Left	Thur	Right	Left	Thur	Right	Total	Hourly Total
7:00 AM													0	
7:15 AM													0	
7:30 AM													0	
7:45 AM													0	0
8:00 AM													0	
8:15 AM													0	
8:30 AM													0	
8:45 AM													0	0

	Northbound				Southbound				Eastbound				Westbound					
	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Total	Hourly Total
7:00 AM	0	4	8	0	3	11	0	0	0	155	7	0	0	0	0	0	188	
7:15 AM	0	11	16	0	8	12	0	0	1	215	2	0	0	0	0	0	265	
7:30 AM	0	10	18	0	10	9	0	0	2	267	1	0	0	0	0	0	317	
7:45 AM	0	16	25	0	7	19	0	0	2	288	6	0	0	0	0	0	363	1133
8:00 AM	0	16	11	0	6	16	0	0	2	218	3	0	0	0	0	0	272	
8:15 AM	0	12	9	0	7	13	0	0	2	181	9	0	0	0	0	0	233	
8:30 AM	0	10	16	0	6	13	0	0	2	170	5	0	0	0	0	0	222	
8:45 AM	0	6	8	0	5	10	0	0	3	126	5	0	0	0	0	0	163	890
Total	0	85	111	0	52	103	0	0	14	1620	38	0	0	0	0	0		
Peak Total	0	53	70	0	31	56	0	0	7	988	12	0	0	0	0	0		
Peak Turn Percent	0%	43%	57%	0%	36%	64%	0%	0%	1%	98%	1%	0%	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!		
Peak Approach Total	123				87				1007				0					
FORMULA	0	64	100		40	76	0		8	1152	24		0	0	0			
PHF	#DIV/0!	0.8281	0.7		0.775	0.7368	#DIV/0!		0.875	0.8576	0.5		#DIV/0!	#DIV/0!	#DIV/0!			

Comments

Peak Hour Approach Traffic Volume and Percentage



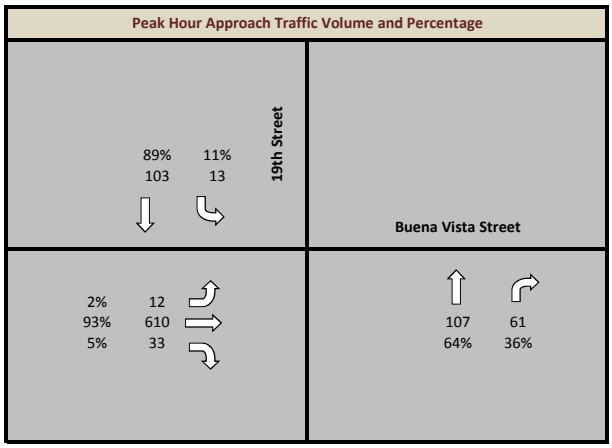
19th Street and Buena Vista Street

Intersection	North/South Street :	19th Street	
	East/West Street :	Buena Vista Street	
City / State	San Antonio, Texas		
Project No.	132-14	Peak Period :	3 — 4:00 PM - 6:00 PM
Date Recorded:	Thursday, January 08, 2015	Peak Hour:	4:45 PM to 5:45 PM

AC GROUP LLC — TRAFFIC ENGINEERING AND DATA COLLECTION

Start Time	Intersection Approaches																Traffic Control	
	19th Street				19th Street				Buena Vista Street				Buena Vista Street					
	Northbound				Southbound				Eastbound				Westbound					
	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Total	Hourly Total
4:00 PM		22	8		1	10			0	162	4						207	
4:15 PM		16	16		8	6			6	122	7						181	
4:30 PM		16	18		8	12			1	156	5						216	
4:45 PM		25	25		3	35			3	154	9						254	858
5:00 PM		27	11		2	19			0	155	9						223	
5:15 PM		26	9		3	27			6	149	7						227	
5:30 PM		29	16		5	22			3	152	8						235	
5:45 PM		21	8		6	29			0	145	12						221	906
	Northbound				Southbound				Eastbound				Westbound					
	Left	Thur	Right		Left	Thur	Right		Left	Thur	Right		Left	Thur	Right		Total	Hourly Total
4:00 PM																	0	
4:15 PM																	0	
4:30 PM																	0	
4:45 PM																	0	0
5:00 PM																	0	
5:15 PM																	0	
5:30 PM																	0	
5:45 PM																	0	0
	Northbound				Southbound				Eastbound				Westbound					
	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Total	Hourly Total
4:00 PM	0	22	8	0	1	10	0	0	0	162	4	0	0	0	0	0	207	
4:15 PM	0	16	16	0	8	6	0	0	6	122	7	0	0	0	0	0	181	
4:30 PM	0	16	18	0	8	12	0	0	1	156	5	0	0	0	0	0	216	
4:45 PM	0	25	25	0	3	35	0	0	3	154	9	0	0	0	0	0	254	858
5:00 PM	0	27	11	0	2	19	0	0	0	155	9	0	0	0	0	0	223	
5:15 PM	0	26	9	0	3	27	0	0	6	149	7	0	0	0	0	0	227	
5:30 PM	0	29	16	0	5	22	0	0	3	152	8	0	0	0	0	0	235	
5:45 PM	0	21	8	0	6	29	0	0	0	145	12	0	0	0	0	0	221	906
Total	0	182	111	0	36	160	0	0	19	1195	61	0	0	0	0	0		
Peak Total	0	107	61	0	13	103	0	0	12	610	33	0	0	0	0	0		
Peak Turn Percent	0%	64%	36%	0%	11%	89%	0%	0%	2%	93%	5%	0%	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!		
Peak Approach Total	168				116				655				0					
FORMULA	0	116	100		20	140	0		24	620	36		0	0	0			
PHF	#DIV/0!	0.9224	0.61		0.65	0.7357	#DIV/0!		0.5	0.9839	0.9167		#DIV/0!	#DIV/0!	#DIV/0!			
Comments																		

Peak Hour Approach Traffic Volume and Percentage



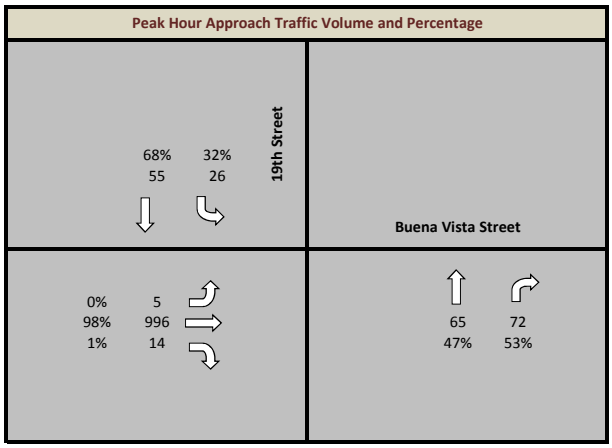
19th Street and Buena Vista Street

Intersection	North/South Street :	19th Street	
	East/West Street :	Buena Vista Street	
City / State	San Antonio, Texas		
Project No.	132-14	Peak Period :	1 — 7:00 AM - 9:00 AM
Date Recorded:	Tuesday, January 13, 2015	Peak Hour:	7:15 AM to 8:15 AM

AC GROUP LLC — TRAFFIC ENGINEERING AND DATA COLLECTION

Start Time	Intersection Approaches																Traffic Control	
	19th Street				19th Street				Buena Vista Street				Buena Vista Street					
	Northbound				Southbound				Eastbound				Westbound					
	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Total	Hourly Total
7:00 AM		0	4		1	8			0	169	7						189	
7:15 AM		18	12		4	9			1	204	0						248	
7:30 AM		17	25		6	13			1	279	2						343	
7:45 AM		11	22		8	19			1	283	6						350	1130
8:00 AM		19	13		8	14			2	230	6						292	
8:15 AM		9	11		5	6			2	179	3						215	
8:30 AM		8	5		11	9			1	157	4						195	
8:45 AM		10	14		5	9			3	120	6						167	869
	Northbound				Southbound				Eastbound				Westbound					
	Left	Thur	Right		Left	Thur	Right		Left	Thur	Right		Left	Thur	Right		Total	Hourly Total
7:00 AM																	0	
7:15 AM																	0	
7:30 AM																	0	
7:45 AM																	0	0
8:00 AM																	0	
8:15 AM																	0	
8:30 AM																	0	
8:45 AM																	0	0
	Northbound				Southbound				Eastbound				Westbound					
	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Total	Hourly Total
7:00 AM	0	0	4	0	1	8	0	0	0	169	7	0	0	0	0	0	189	
7:15 AM	0	18	12	0	4	9	0	0	1	204	0	0	0	0	0	0	248	
7:30 AM	0	17	25	0	6	13	0	0	1	279	2	0	0	0	0	0	343	
7:45 AM	0	11	22	0	8	19	0	0	1	283	6	0	0	0	0	0	350	1130
8:00 AM	0	19	13	0	8	14	0	0	2	230	6	0	0	0	0	0	292	
8:15 AM	0	9	11	0	5	6	0	0	2	179	3	0	0	0	0	0	215	
8:30 AM	0	8	5	0	11	9	0	0	1	157	4	0	0	0	0	0	195	
8:45 AM	0	10	14	0	5	9	0	0	3	120	6	0	0	0	0	0	167	869
Total	0	92	106	0	48	87	0	0	11	1621	34	0	0	0	0	0		
Peak Total	0	65	72	0	26	55	0	0	5	996	14	0	0	0	0	0		
Peak Turn Percent	0%	47%	53%	0%	32%	68%	0%	0%	0%	98%	1%	0%	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!		
Peak Approach Total	137				81				1015				0					
FORMULA	0	76	100		32	76	0		8	1132	24		0	0	0			
PHF	#DIV/0!	0.8553	0.72		0.8125	0.7237	#DIV/0!		0.625	0.8799	0.5833		#DIV/0!	#DIV/0!	#DIV/0!			
Comments																		

Peak Hour Approach Traffic Volume and Percentage



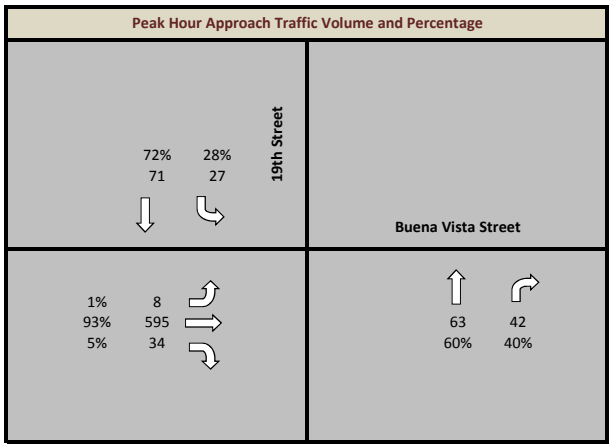
19th Street and Buena Vista Street

Intersection	North/South Street :	19th Street	
	East/West Street :	Buena Vista Street	
City / State	San Antonio, Texas		
Project No.	132-14	Peak Period :	3 — 4:00 PM - 6:00 PM
Date Recorded:	Tuesday, January 13, 2015	Peak Hour:	4:00 PM to 5:00 PM

AC GROUP LLC — TRAFFIC ENGINEERING AND DATA COLLECTION

Start Time	Intersection Approaches																Traffic Control	
	19th Street				19th Street				Buena Vista Street				Buena Vista Street					
	Northbound				Southbound				Eastbound				Westbound					
	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Total	Hourly Total
4:00 PM		19	11		7	20			2	163	9						231	
4:15 PM		16	11		9	20			3	139	8						206	
4:30 PM		21	7		8	15			2	142	7						202	
4:45 PM		7	13		3	16			1	151	10						201	840
5:00 PM		17	17		1	22			2	150	6						215	
5:15 PM		15	11		3	27			3	108	8						175	
5:30 PM		16	8		6	28			0	158	5						221	
5:45 PM		17	5		8	31			1	127	7						196	807
	Northbound				Southbound				Eastbound				Westbound					
	Left	Thur	Right		Left	Thur	Right		Left	Thur	Right		Left	Thur	Right		Total	Hourly Total
4:00 PM																	0	
4:15 PM																	0	
4:30 PM																	0	
4:45 PM																	0	0
5:00 PM																	0	
5:15 PM																	0	
5:30 PM																	0	
5:45 PM																	0	0
	Northbound				Southbound				Eastbound				Westbound					
	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Total	Hourly Total
4:00 PM	0	19	11	0	7	20	0	0	2	163	9	0	0	0	0	0	231	
4:15 PM	0	16	11	0	9	20	0	0	3	139	8	0	0	0	0	0	206	
4:30 PM	0	21	7	0	8	15	0	0	2	142	7	0	0	0	0	0	202	
4:45 PM	0	7	13	0	3	16	0	0	1	151	10	0	0	0	0	0	201	840
5:00 PM	0	17	17	0	1	22	0	0	2	150	6	0	0	0	0	0	215	
5:15 PM	0	15	11	0	3	27	0	0	3	108	8	0	0	0	0	0	175	
5:30 PM	0	16	8	0	6	28	0	0	0	158	5	0	0	0	0	0	221	
5:45 PM	0	17	5	0	8	31	0	0	1	127	7	0	0	0	0	0	196	807
Total	0	128	83	0	45	179	0	0	14	1138	60	0	0	0	0	0		
Peak Total	0	63	42	0	27	71	0	0	8	595	34	0	0	0	0	0		
Peak Turn Percent	0%	60%	40%	0%	28%	72%	0%	0%	1%	93%	5%	0%	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!		
Peak Approach Total	105				98				637				0					
FORMULA	0	84	52		36	80	0		12	652	40		0	0	0			
PHF	#DIV/0!	0.75	0.8077		0.75	0.8875	#DIV/0!		0.6667	0.9126	0.85		#DIV/0!	#DIV/0!	#DIV/0!			
Comments																		

Peak Hour Approach Traffic Volume and Percentage



19th Street and West Commerce Street

Intersection	North/South Street :	19th Street	
	East/West Street :	West Commerce Street	
City / State	San Antonio, Texas		
Project No.	132-14	Peak Period :	1 — 7:00 AM - 9:00 AM
Date Recorded:	Thursday, January 08, 2015	Peak Hour:	7:15 AM to 8:15 AM

AC GROUP LLC — TRAFFIC ENGINEERING AND DATA COLLECTION

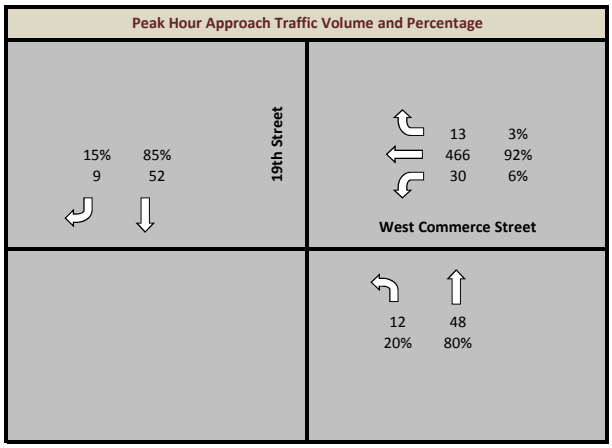
Start Time	Intersection Approaches																Traffic Control	
	19th Street				19th Street				West Commerce Street				West Commerce Street					
	Northbound				Southbound				Eastbound				Westbound					
	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Total	Hourly Total
7:00 AM	1	3				9	3						6	89	2		113	
7:15 AM	5	7				10	3						9	122	1		157	
7:30 AM	2	9				13	4						6	116	2		152	
7:45 AM	1	17				16	0						8	121	4		167	589
8:00 AM	4	15				13	2						7	107	6		154	
8:15 AM	6	7				15	2						5	103	7		145	
8:30 AM	3	9				15	3						7	119	5		161	
8:45 AM	3	7				8	4						5	133	7		167	627

	Northbound			Southbound			Eastbound			Westbound				
	Left	Thur	Right	Left	Thur	Right	Left	Thur	Right	Left	Thur	Right	Total	Hourly Total
7:00 AM													0	
7:15 AM													0	
7:30 AM													0	
7:45 AM													0	0
8:00 AM													0	
8:15 AM													0	
8:30 AM													0	
8:45 AM													0	0

	Northbound				Southbound				Eastbound				Westbound					
	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Total	Hourly Total
7:00 AM	1	3	0	0	0	9	3	0	0	0	0	0	6	89	2	0	113	
7:15 AM	5	7	0	0	0	10	3	0	0	0	0	0	9	122	1	0	157	
7:30 AM	2	9	0	0	0	13	4	0	0	0	0	0	6	116	2	0	152	
7:45 AM	1	17	0	0	0	16	0	0	0	0	0	0	8	121	4	0	167	589
8:00 AM	4	15	0	0	0	13	2	0	0	0	0	0	7	107	6	0	154	
8:15 AM	6	7	0	0	0	15	2	0	0	0	0	0	5	103	7	0	145	
8:30 AM	3	9	0	0	0	15	3	0	0	0	0	0	7	119	5	0	161	
8:45 AM	3	7	0	0	0	8	4	0	0	0	0	0	5	133	7	0	167	627
Total	25	74	0	0	0	99	21	0	0	0	0	0	53	910	34	0		
Peak Total	12	48	0	0	0	52	9	0	0	0	0	0	30	466	13	0		
Peak Turn Percent	20%	80%	0%	0%	0%	85%	15%	0%	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	6%	92%	3%	0%		
Peak Approach Total	60				61				0				509					
FORMULA	20	68	0		0	64	16		0	0	0		36	488	24			
PHF	0.6	0.7059	#DIV/0!		#DIV/0!	0.8125	0.5625		#DIV/0!	#DIV/0!	#DIV/0!		0.8333	0.9549	0.5417			

Comments

Peak Hour Approach Traffic Volume and Percentage



19th Street and West Commerce Street

Intersection	North/South Street :	19th Street	
	East/West Street :	West Commerce Street	
City / State	San Antonio, Texas		
Project No.	132-14	Peak Period :	3 — 4:00 PM - 6:00 PM
Date Recorded:	Thursday, January 08, 2015	Peak Hour:	4:45 PM to 5:45 PM

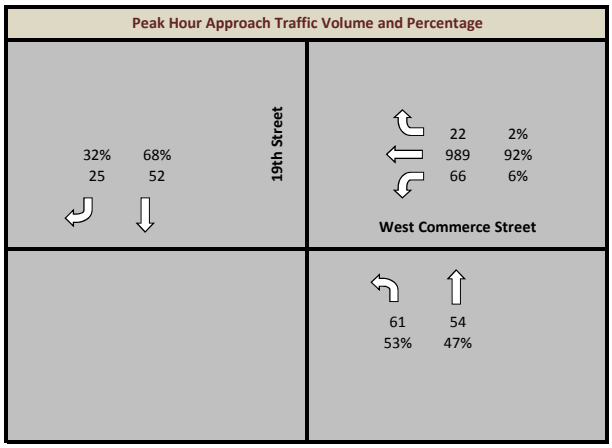
AC GROUP LLC — TRAFFIC ENGINEERING AND DATA COLLECTION

Start Time	Intersection Approaches																Traffic Control	
	19th Street				19th Street				West Commerce Street				West Commerce Street					
	Northbound				Southbound				Eastbound				Westbound					
	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Total	Hourly Total
4:00 PM	10	15				7	4						11	197	5		249	
4:15 PM	9	8				6	3						9	216	7		258	
4:30 PM	12	7				13	9						7	242	5		295	
4:45 PM	15	14				15	7						17	260	3		331	1133
5:00 PM	13	9				12	8						19	230	7		298	
5:15 PM	17	16				12	6						18	254	7		330	
5:30 PM	16	15				13	4						12	245	5		310	
5:45 PM	14	11				13	7						20	222	8		295	1233

	Northbound			Southbound			Eastbound			Westbound				
	Left	Thur	Right	Left	Thur	Right	Left	Thur	Right	Left	Thur	Right	Total	Hourly Total
4:00 PM													0	
4:15 PM													0	
4:30 PM													0	
4:45 PM													0	0
5:00 PM													0	
5:15 PM													0	
5:30 PM													0	
5:45 PM													0	0

	Northbound				Southbound				Eastbound				Westbound					
	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Total	Hourly Total
4:00 PM	10	15	0	0	0	7	4	0	0	0	0	0	11	197	5	0	249	
4:15 PM	9	8	0	0	0	6	3	0	0	0	0	0	9	216	7	0	258	
4:30 PM	12	7	0	0	0	13	9	0	0	0	0	0	7	242	5	0	295	
4:45 PM	15	14	0	0	0	15	7	0	0	0	0	0	17	260	3	0	331	1133
5:00 PM	13	9	0	0	0	12	8	0	0	0	0	0	19	230	7	0	298	
5:15 PM	17	16	0	0	0	12	6	0	0	0	0	0	18	254	7	0	330	
5:30 PM	16	15	0	0	0	13	4	0	0	0	0	0	12	245	5	0	310	
5:45 PM	14	11	0	0	0	13	7	0	0	0	0	0	20	222	8	0	295	1233
Total	106	95	0	0	0	91	48	0	0	0	0	0	113	1866	47	0		
Peak Total	61	54	0	0	0	52	25	0	0	0	0	0	66	989	22	0		
Peak Turn Percent	53%	47%	0%	0%	0%	68%	32%	0%	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	6%	92%	2%	0%		
Peak Approach Total	115				77				0				1077					
FORMULA	68	64	0		0	60	32		0	0	0		76	1040	28			
PHF	0.8971	0.8438	#DIV/0!		#DIV/0!	0.8667	0.7813		#DIV/0!	#DIV/0!	#DIV/0!		0.8684	0.951	0.7857			
Comments																		

Peak Hour Approach Traffic Volume and Percentage



19th Street and West Commerce Street

Intersection	North/South Street :	19th Street	
	East/West Street :	West Commerce Street	
City / State	San Antonio, Texas		
Project No.	132-14	Peak Period :	1 — 7:00 AM - 9:00 AM
Date Recorded:	Tuesday, January 13, 2015	Peak Hour:	7:45 AM to 8:45 AM

AC GROUP LLC — TRAFFIC ENGINEERING AND DATA COLLECTION

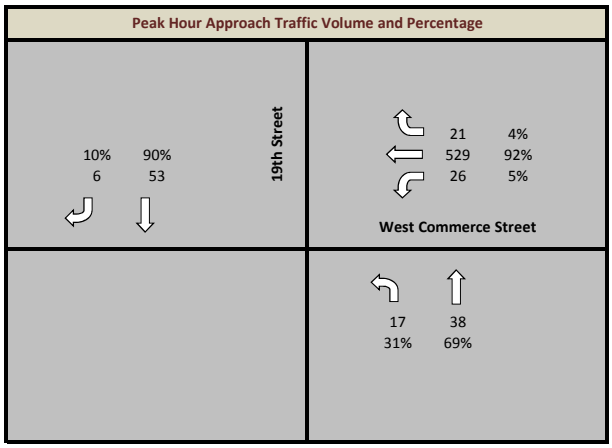
Start Time	Intersection Approaches																Traffic Control	
	19th Street				19th Street				West Commerce Street				West Commerce Street					
	Northbound				Southbound				Eastbound				Westbound					
	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Total	Hourly Total
7:00 AM	0	0				4	4						8	111	2		129	
7:15 AM	6	9				7	5						4	110	5		146	
7:30 AM	1	15				12	2						7	106	4		147	
7:45 AM	4	12				17	1						8	132	5		179	601
8:00 AM	7	11				15	2						8	137	7		187	
8:15 AM	3	9				9	1						3	126	4		155	
8:30 AM	3	6				12	2						7	134	5		169	
8:45 AM	3	10				9	6						6	125	7		166	677

	Northbound			Southbound			Eastbound			Westbound				
	Left	Thur	Right	Left	Thur	Right	Left	Thur	Right	Left	Thur	Right	Total	Hourly Total
7:00 AM													0	
7:15 AM													0	
7:30 AM													0	
7:45 AM													0	0
8:00 AM													0	
8:15 AM													0	
8:30 AM													0	
8:45 AM													0	0

	Northbound				Southbound				Eastbound				Westbound					
	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Total	Hourly Total
7:00 AM	0	0	0	0	0	4	4	0	0	0	0	0	8	111	2	0	129	
7:15 AM	6	9	0	0	0	7	5	0	0	0	0	0	4	110	5	0	146	
7:30 AM	1	15	0	0	0	12	2	0	0	0	0	0	7	106	4	0	147	
7:45 AM	4	12	0	0	0	17	1	0	0	0	0	0	8	132	5	0	179	601
8:00 AM	7	11	0	0	0	15	2	0	0	0	0	0	8	137	7	0	187	
8:15 AM	3	9	0	0	0	9	1	0	0	0	0	0	3	126	4	0	155	
8:30 AM	3	6	0	0	0	12	2	0	0	0	0	0	7	134	5	0	169	
8:45 AM	3	10	0	0	0	9	6	0	0	0	0	0	6	125	7	0	166	677
Total	27	72	0	0	0	85	23	0	0	0	0	0	51	981	39	0		
Peak Total	17	38	0	0	0	53	6	0	0	0	0	0	26	529	21	0		
Peak Turn Percent	31%	69%	0%	0%	0%	90%	10%	0%	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	5%	92%	4%	0%		
Peak Approach Total	55				59				0				576					
FORMULA	28	48	0		0	68	8		0	0	0		32	548	28			
PHF	0.6071	0.7917	#DIV/0!		#DIV/0!	0.7794	0.75		#DIV/0!	#DIV/0!	#DIV/0!		0.8125	0.9653	0.75			

Comments

Peak Hour Approach Traffic Volume and Percentage



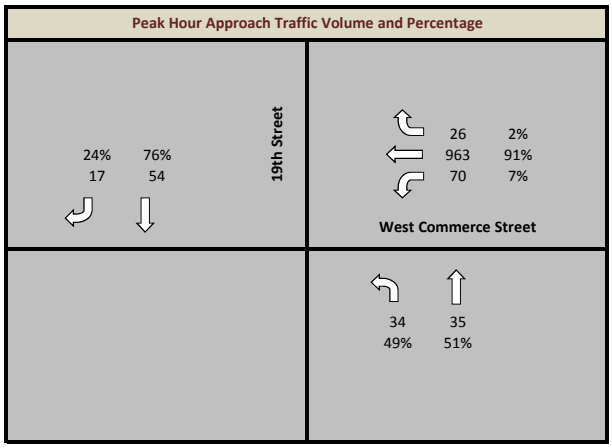
19th Street and West Commerce Street

Intersection	North/South Street :	19th Street	
	East/West Street :	West Commerce Street	
City / State	San Antonio, Texas		
Project No.	132-14	Peak Period : 3	4:00 PM - 6:00 PM
Date Recorded:	Tuesday, January 13, 2015	Peak Hour:	5:00 PM to 6:00 PM

AC GROUP LLC
TRAFFIC ENGINEERING AND DATA COLLECTION

Start Time	Intersection Approaches																Traffic Control	
	19th Street				19th Street				West Commerce Street				West Commerce Street					
	Northbound				Southbound				Eastbound				Westbound					
	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Total	Hourly Total
4:00 PM	7	13				21	7						12	171	3		234	
4:15 PM	6	14				8	4						16	236	8		292	
4:30 PM	8	16				14	4						11	235	6		294	
4:45 PM	5	3				7	3						8	244	6		276	1096
5:00 PM	12	6				10	3						18	242	9		300	
5:15 PM	8	11				12	4						18	250	1		304	
5:30 PM	8	9				16	3						16	247	12		311	
5:45 PM	6	9				16	7						18	224	4		284	1199
	Northbound				Southbound				Eastbound				Westbound					
	Left	Thur	Right		Left	Thur	Right		Left	Thur	Right		Left	Thur	Right		Total	Hourly Total
4:00 PM																	0	
4:15 PM																	0	
4:30 PM																	0	
4:45 PM																	0	0
5:00 PM																	0	
5:15 PM																	0	
5:30 PM																	0	
5:45 PM																	0	0
	Northbound				Southbound				Eastbound				Westbound					
	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Total	Hourly Total
4:00 PM	7	13	0	0	0	21	7	0	0	0	0	0	12	171	3	0	234	
4:15 PM	6	14	0	0	0	8	4	0	0	0	0	0	16	236	8	0	292	
4:30 PM	8	16	0	0	0	14	4	0	0	0	0	0	11	235	6	0	294	
4:45 PM	5	3	0	0	0	7	3	0	0	0	0	0	8	244	6	0	276	1096
5:00 PM	12	6	0	0	0	10	3	0	0	0	0	0	18	242	9	0	300	
5:15 PM	8	11	0	0	0	12	4	0	0	0	0	0	18	250	1	0	304	
5:30 PM	8	9	0	0	0	16	3	0	0	0	0	0	16	247	12	0	311	
5:45 PM	6	9	0	0	0	16	7	0	0	0	0	0	18	224	4	0	284	1199
Total	60	81	0	0	0	104	35	0	0	0	0	0	117	1849	49	0		
Peak Total	34	35	0	0	0	54	17	0	0	0	0	0	70	963	26	0		
Peak Turn Percent	49%	51%	0%	0%	0%	76%	24%	0%	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	7%	91%	2%	0%		
Peak Approach Total	69				71				0				1059					
FORMULA	48	44	0		0	64	28		0	0	0		72	1000	48			
PHF	0.7083	0.7955	#DIV/0!		#DIV/0!	0.8438	0.6071		#DIV/0!	#DIV/0!	#DIV/0!		0.9722	0.963	0.5417			
Comments																		

Peak Hour Approach Traffic Volume and Percentage



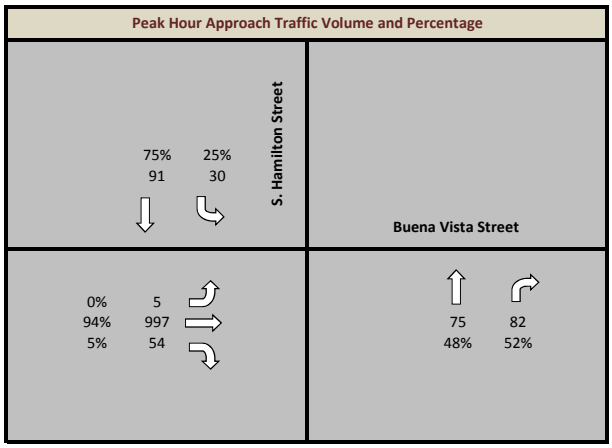
South Hamilton Street and Buena Vista Street

Intersection	North/South Street :	S. Hamilton Street	
	East/West Street :	Buena Vista Street	
City / State	San Antonio, Texas		
Project No.	132-14	Peak Period : 1	7:00 AM - 9:00 AM
Date Recorded:	Thursday, January 08, 2015	Peak Hour:	7:30 AM to 8:30 AM

AC GROUP LLC
TRAFFIC ENGINEERING AND DATA COLLECTION

Start Time	Intersection Approaches																Traffic Control	
	S. Hamilton Street				S. Hamilton Street				Buena Vista Street				Buena Vista Street					
	Northbound				Southbound				Eastbound				Westbound					
	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Total	Hourly Total
7:00 AM		13	12		2	13			4	141	7						192	
7:15 AM		15	14		3	14			3	209	11						269	
7:30 AM		16	19		8	22			0	243	9						317	
7:45 AM		21	18		5	28			3	307	17						399	1177
8:00 AM		20	21		5	17			1	247	18						329	
8:15 AM		18	24		12	24			1	200	10						289	
8:30 AM		17	12		5	26			3	189	8						260	
8:45 AM		15	15		6	18			2	134	8						198	1076
	Northbound				Southbound				Eastbound				Westbound					
	Left	Thur	Right		Left	Thur	Right		Left	Thur	Right		Left	Thur	Right		Total	Hourly Total
7:00 AM																	0	
7:15 AM																	0	
7:30 AM																	0	
7:45 AM																	0	0
8:00 AM																	0	
8:15 AM																	0	
8:30 AM																	0	
8:45 AM																	0	0
	Northbound				Southbound				Eastbound				Westbound					
	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Total	Hourly Total
7:00 AM	0	13	12	0	2	13	0	0	4	141	7	0	0	0	0	0	192	
7:15 AM	0	15	14	0	3	14	0	0	3	209	11	0	0	0	0	0	269	
7:30 AM	0	16	19	0	8	22	0	0	0	243	9	0	0	0	0	0	317	
7:45 AM	0	21	18	0	5	28	0	0	3	307	17	0	0	0	0	0	399	1177
8:00 AM	0	20	21	0	5	17	0	0	1	247	18	0	0	0	0	0	329	
8:15 AM	0	18	24	0	12	24	0	0	1	200	10	0	0	0	0	0	289	
8:30 AM	0	17	12	0	5	26	0	0	3	189	8	0	0	0	0	0	260	
8:45 AM	0	15	15	0	6	18	0	0	2	134	8	0	0	0	0	0	198	1076
Total	0	135	135	0	46	162	0	0	17	1670	88	0	0	0	0	0		
Peak Total	0	75	82	0	30	91	0	0	5	997	54	0	0	0	0	0		
Peak Turn Percent	0%	48%	52%	0%	25%	75%	0%	0%	0%	94%	5%	0%	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!		
Peak Approach Total	157				121				1056				0					
FORMULA	0	84	96		48	112	0		12	1228	72		0	0	0			
PHF	#DIV/0!	0.8929	0.8542		0.625	0.8125	#DIV/0!		0.4167	0.8119	0.75		#DIV/0!	#DIV/0!	#DIV/0!			
Comments																		

Peak Hour Approach Traffic Volume and Percentage



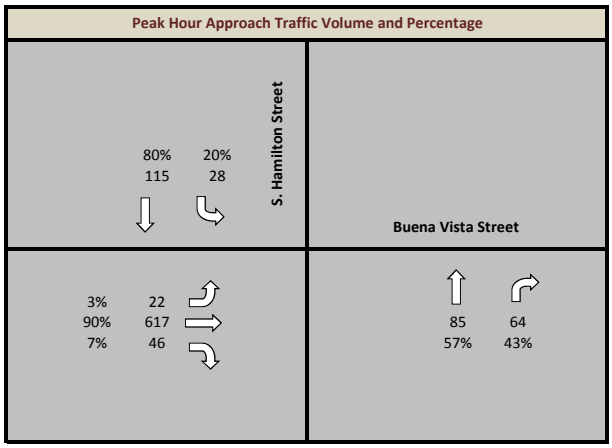
South Hamilton Street and Buena Vista Street

Intersection	North/South Street :	S. Hamilton Street	
	East/West Street :	Buena Vista Street	
City / State	San Antonio, Texas		
Project No.	132-14	Peak Period :	3 — 4:00 PM - 6:00 PM
Date Recorded:	Thursday, January 08, 2015	Peak Hour:	4:45 PM to 5:45 PM

AC GROUP LLC — TRAFFIC ENGINEERING AND DATA COLLECTION

Start Time	Intersection Approaches																Traffic Control	
	S. Hamilton Street				S. Hamilton Street				Buena Vista Street				Buena Vista Street					
	Northbound				Southbound				Eastbound				Westbound					
	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Total	Hourly Total
4:00 PM		18	9		7	23			3	160	11						231	
4:15 PM		25	11		8	25			1	124	11						205	
4:30 PM		26	12		6	21			2	130	7						204	
4:45 PM		19	13		1	27			8	176	12						256	896
5:00 PM		31	24		12	25			2	153	8						255	
5:15 PM		12	15		4	33			4	153	12						233	
5:30 PM		23	12		11	30			8	135	14						233	
5:45 PM		26	10		3	39			2	147	8						235	956
	Northbound				Southbound				Eastbound				Westbound					
	Left	Thur	Right		Left	Thur	Right		Left	Thur	Right		Left	Thur	Right		Total	Hourly Total
4:00 PM																	0	
4:15 PM																	0	
4:30 PM																	0	
4:45 PM																	0	0
5:00 PM																	0	
5:15 PM																	0	
5:30 PM																	0	
5:45 PM																	0	0
	Northbound				Southbound				Eastbound				Westbound					
	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Total	Hourly Total
4:00 PM	0	18	9	0	7	23	0	0	3	160	11	0	0	0	0	0	231	
4:15 PM	0	25	11	0	8	25	0	0	1	124	11	0	0	0	0	0	205	
4:30 PM	0	26	12	0	6	21	0	0	2	130	7	0	0	0	0	0	204	
4:45 PM	0	19	13	0	1	27	0	0	8	176	12	0	0	0	0	0	256	896
5:00 PM	0	31	24	0	12	25	0	0	2	153	8	0	0	0	0	0	255	
5:15 PM	0	12	15	0	4	33	0	0	4	153	12	0	0	0	0	0	233	
5:30 PM	0	23	12	0	11	30	0	0	8	135	14	0	0	0	0	0	233	
5:45 PM	0	26	10	0	3	39	0	0	2	147	8	0	0	0	0	0	235	956
Total	0	180	106	0	52	223	0	0	30	1178	83	0	0	0	0	0		
Peak Total	0	85	64	0	28	115	0	0	22	617	46	0	0	0	0	0		
Peak Turn Percent	0%	57%	43%	0%	20%	80%	0%	0%	3%	90%	7%	0%	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!		
Peak Approach Total	149				143				685				0					
FORMULA	0	124	96		48	132	0		32	704	56		0	0	0			
PHF	#DIV/0!	0.6855	0.6667		0.5833	0.8712	#DIV/0!		0.6875	0.8764	0.8214		#DIV/0!	#DIV/0!	#DIV/0!			
Comments																		

Peak Hour Approach Traffic Volume and Percentage



South Hamilton Street and Buena Vista Street

Intersection	North/South Street :	S. Hamilton Street	
	East/West Street :	Buena Vista Street	
City / State	San Antonio, Texas		
Project No.	132-14	Peak Period : 1	7:00 AM - 9:00 AM
Date Recorded:	Tuesday, January 13, 2015	Peak Hour:	7:15 AM to 8:15 AM

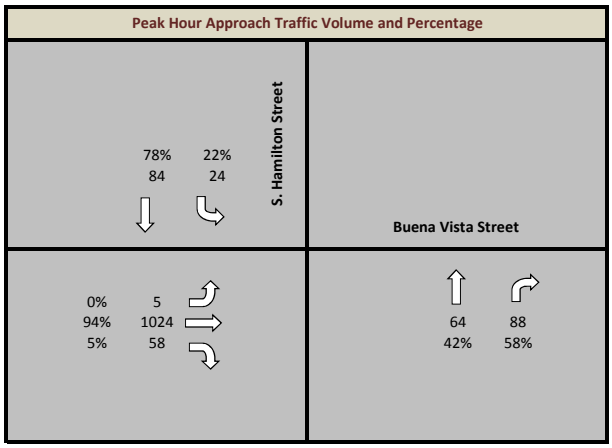
AC GROUP LLC
TRAFFIC ENGINEERING AND DATA COLLECTION

Start Time	Intersection Approaches																Traffic Control	
	S. Hamilton Street				S. Hamilton Street				Buena Vista Street				Buena Vista Street					
	Northbound				Southbound				Eastbound				Westbound					
	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Total	Hourly Total
7:00 AM		18	10		2	13			2	148	8						201	
7:15 AM		11	23		5	21			2	220	11						293	
7:30 AM		16	23		5	17			2	287	14						364	
7:45 AM		21	21		5	25			1	269	17						359	1217
8:00 AM		16	21		9	21			0	248	16						331	
8:15 AM		31	11		12	20			0	204	9						287	
8:30 AM		19	9		9	29			1	164	5						236	
8:45 AM		21	17		12	14			2	146	6						218	1072

	Northbound			Southbound			Eastbound			Westbound				
	Left	Thur	Right	Left	Thur	Right	Left	Thur	Right	Left	Thur	Right	Total	Hourly Total
7:00 AM													0	
7:15 AM													0	
7:30 AM													0	
7:45 AM													0	0
8:00 AM													0	
8:15 AM													0	
8:30 AM													0	
8:45 AM													0	0

	Northbound				Southbound				Eastbound				Westbound					
	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Total	Hourly Total
7:00 AM	0	18	10	0	2	13	0	0	2	148	8	0	0	0	0	0	201	
7:15 AM	0	11	23	0	5	21	0	0	2	220	11	0	0	0	0	0	293	
7:30 AM	0	16	23	0	5	17	0	0	2	287	14	0	0	0	0	0	364	
7:45 AM	0	21	21	0	5	25	0	0	1	269	17	0	0	0	0	0	359	1217
8:00 AM	0	16	21	0	9	21	0	0	0	248	16	0	0	0	0	0	331	
8:15 AM	0	31	11	0	12	20	0	0	0	204	9	0	0	0	0	0	287	
8:30 AM	0	19	9	0	9	29	0	0	1	164	5	0	0	0	0	0	236	
8:45 AM	0	21	17	0	12	14	0	0	2	146	6	0	0	0	0	0	218	1072
Total	0	153	135	0	59	160	0	0	10	1686	86	0	0	0	0	0		
Peak Total	0	64	88	0	24	84	0	0	5	1024	58	0	0	0	0	0		
Peak Turn Percent	0%	42%	58%	0%	22%	78%	0%	0%	0%	94%	5%	0%	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!		
Peak Approach Total	152				108				1087				0					
FORMULA	0	84	92		36	100	0		8	1148	68		0	0	0			
PHF	#DIV/0!	0.7619	0.9565		0.6667	0.84	#DIV/0!		0.625	0.892	0.8529		#DIV/0!	#DIV/0!	#DIV/0!			
Comments																		

Peak Hour Approach Traffic Volume and Percentage



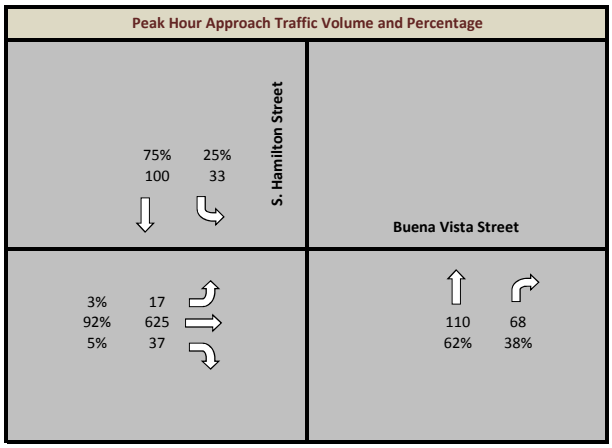
South Hamilton Street and Buena Vista Street

Intersection	North/South Street :	S. Hamilton Street	
	East/West Street :	Buena Vista Street	
City / State	San Antonio, Texas		
Project No.	132-14	Peak Period : 3	4:00 PM - 6:00 PM
Date Recorded:	Tuesday, January 13, 2015	Peak Hour:	4:00 PM to 5:00 PM

AC GROUP LLC
TRAFFIC ENGINEERING AND DATA COLLECTION

Start Time	Intersection Approaches																Traffic Control	
	S. Hamilton Street				S. Hamilton Street				Buena Vista Street				Buena Vista Street					
	Northbound				Southbound				Eastbound				Westbound					
	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Total	Hourly Total
4:00 PM		19	17		11	27			2	167	18						261	
4:15 PM		37	14		7	29			6	167	4						264	
4:30 PM		31	21		9	27			5	131	4						228	
4:45 PM		23	16		6	17			4	160	11						237	990
5:00 PM		21	6		7	19			1	160	11						225	
5:15 PM		22	15		9	40			2	119	9						216	
5:30 PM		23	15		5	30			1	162	11						247	
5:45 PM		20	20		7	38			3	140	12						240	928
	Northbound				Southbound				Eastbound				Westbound					
	Left	Thur	Right		Left	Thur	Right		Left	Thur	Right		Left	Thur	Right		Total	Hourly Total
4:00 PM																	0	
4:15 PM																	0	
4:30 PM																	0	
4:45 PM																	0	0
5:00 PM																	0	
5:15 PM																	0	
5:30 PM																	0	
5:45 PM																	0	0
	Northbound				Southbound				Eastbound				Westbound					
	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Total	Hourly Total
4:00 PM	0	19	17	0	11	27	0	0	2	167	18	0	0	0	0	0	261	
4:15 PM	0	37	14	0	7	29	0	0	6	167	4	0	0	0	0	0	264	
4:30 PM	0	31	21	0	9	27	0	0	5	131	4	0	0	0	0	0	228	
4:45 PM	0	23	16	0	6	17	0	0	4	160	11	0	0	0	0	0	237	990
5:00 PM	0	21	6	0	7	19	0	0	1	160	11	0	0	0	0	0	225	
5:15 PM	0	22	15	0	9	40	0	0	2	119	9	0	0	0	0	0	216	
5:30 PM	0	23	15	0	5	30	0	0	1	162	11	0	0	0	0	0	247	
5:45 PM	0	20	20	0	7	38	0	0	3	140	12	0	0	0	0	0	240	928
Total	0	196	124	0	61	227	0	0	24	1206	80	0	0	0	0	0		
Peak Total	0	110	68	0	33	100	0	0	17	625	37	0	0	0	0	0		
Peak Turn Percent	0%	62%	38%	0%	25%	75%	0%	0%	3%	92%	5%	0%	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!		
Peak Approach Total	178				133				679				0					
FORMULA	0	148	84		44	116	0		24	668	72		0	0	0			
PHF	#DIV/0!	0.7432	0.8095		0.75	0.8621	#DIV/0!		0.7083	0.9356	0.5139		#DIV/0!	#DIV/0!	#DIV/0!			
Comments																		

Peak Hour Approach Traffic Volume and Percentage



South Hamilton Street and West Commerce Street

Intersection	North/South Street :	S. Hamilton Street	
	East/West Street :	West Commerce Street	
City / State	San Antonio, Texas		
Project No.	132-14	Peak Period :	1 — 7:00 AM - 9:00 AM
Date Recorded:	Thursday, January 08, 2015	Peak Hour:	7:45 AM to 8:45 AM

AC GROUP LLC — TRAFFIC ENGINEERING AND DATA COLLECTION

Start Time	Intersection Approaches																Traffic Control	
	S. Hamilton Street				S. Hamilton Street				West Commerce Street				West Commerce Street					
	Northbound				Southbound				Eastbound				Westbound					
	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Total	Hourly Total
7:00 AM	5	8				7	4						6	89	1		120	
7:15 AM	2	14				13	4						3	117	8		161	
7:30 AM	2	15				20	10						8	114	7		176	
7:45 AM	4	20				27	5						6	129	5		196	653
8:00 AM	5	15				17	3						6	115	1		162	
8:15 AM	6	15				30	4						5	117	9		186	
8:30 AM	8	10				24	2						7	125	10		186	
8:45 AM	8	11				16	5						8	128	8		184	718

	Northbound			Southbound			Eastbound			Westbound				
	Left	Thur	Right	Left	Thur	Right	Left	Thur	Right	Left	Thur	Right	Total	Hourly Total
7:00 AM													0	
7:15 AM													0	
7:30 AM													0	
7:45 AM													0	0
8:00 AM													0	
8:15 AM													0	
8:30 AM													0	
8:45 AM													0	0

	Northbound				Southbound				Eastbound				Westbound					
	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Total	Hourly Total
7:00 AM	5	8	0	0	0	7	4	0	0	0	0	0	6	89	1	0	120	
7:15 AM	2	14	0	0	0	13	4	0	0	0	0	0	3	117	8	0	161	
7:30 AM	2	15	0	0	0	20	10	0	0	0	0	0	8	114	7	0	176	
7:45 AM	4	20	0	0	0	27	5	0	0	0	0	0	6	129	5	0	196	653
8:00 AM	5	15	0	0	0	17	3	0	0	0	0	0	6	115	1	0	162	
8:15 AM	6	15	0	0	0	30	4	0	0	0	0	0	5	117	9	0	186	
8:30 AM	8	10	0	0	0	24	2	0	0	0	0	0	7	125	10	0	186	
8:45 AM	8	11	0	0	0	16	5	0	0	0	0	0	8	128	8	0	184	718
Total	40	108	0	0	0	154	37	0	0	0	0	0	49	934	49	0		
Peak Total	23	60	0	0	0	98	14	0	0	0	0	0	24	486	25	0		
Peak Turn Percent	28%	72%	0%	0%	0%	88%	13%	0%	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	4%	91%	5%	0%		
Peak Approach Total	83				112				0				535					
FORMULA	32	80	0		0	120	20		0	0	0		28	516	40			
PHF	0.7188	0.75	#DIV/0!		#DIV/0!	0.8167	0.7		#DIV/0!	#DIV/0!	#DIV/0!		0.8571	0.9419	0.625			

Comments

Peak Hour Approach Traffic Volume and Percentage

S. Hamilton Street

13% 88%
14 98

West Commerce Street

25 5%
486 91%
24 4%

23 60
28% 72%

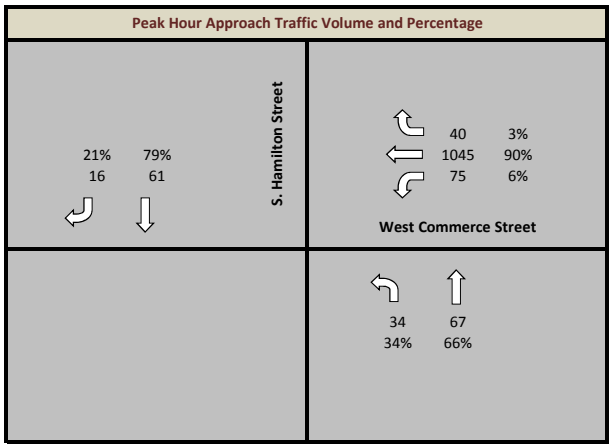
South Hamilton Street and West Commerce Street

Intersection	North/South Street :	S. Hamilton Street	
	East/West Street :	West Commerce Street	
City / State	San Antonio, Texas		
Project No.	132-14	Peak Period :	3 — 4:00 PM - 6:00 PM
Date Recorded:	Thursday, January 08, 2015	Peak Hour:	4:45 PM to 5:45 PM

AC GROUP LLC — TRAFFIC ENGINEERING AND DATA COLLECTION

Start Time	Intersection Approaches																Traffic Control	
	S. Hamilton Street				S. Hamilton Street				West Commerce Street				West Commerce Street					
	Northbound				Southbound				Eastbound				Westbound					
	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Total	Hourly Total
4:00 PM	7	14				21	3						10	197	9		261	
4:15 PM	13	15				22	6						10	210	13		289	
4:30 PM	9	30				17	6						7	254	9		332	
4:45 PM	10	12				9	5						18	277	5		336	1218
5:00 PM	8	17				22	4						15	229	15		310	
5:15 PM	7	13				11	6						23	277	7		344	
5:30 PM	9	25				19	1						19	262	13		348	
5:45 PM	10	16				16	4						17	226	7		296	1298
	Northbound				Southbound				Eastbound				Westbound					
	Left	Thur	Right		Left	Thur	Right		Left	Thur	Right		Left	Thur	Right		Total	Hourly Total
4:00 PM																	0	
4:15 PM																	0	
4:30 PM																	0	
4:45 PM																	0	0
5:00 PM																	0	
5:15 PM																	0	
5:30 PM																	0	
5:45 PM																	0	0
	Northbound				Southbound				Eastbound				Westbound					
	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Total	Hourly Total
4:00 PM	7	14	0	0	0	21	3	0	0	0	0	0	10	197	9	0	261	
4:15 PM	13	15	0	0	0	22	6	0	0	0	0	0	10	210	13	0	289	
4:30 PM	9	30	0	0	0	17	6	0	0	0	0	0	7	254	9	0	332	
4:45 PM	10	12	0	0	0	9	5	0	0	0	0	0	18	277	5	0	336	1218
5:00 PM	8	17	0	0	0	22	4	0	0	0	0	0	15	229	15	0	310	
5:15 PM	7	13	0	0	0	11	6	0	0	0	0	0	23	277	7	0	344	
5:30 PM	9	25	0	0	0	19	1	0	0	0	0	0	19	262	13	0	348	
5:45 PM	10	16	0	0	0	16	4	0	0	0	0	0	17	226	7	0	296	1298
Total	73	142	0	0	0	137	35	0	0	0	0	0	119	1932	78	0		
Peak Total	34	67	0	0	0	61	16	0	0	0	0	0	75	1045	40	0		
Peak Turn Percent	34%	66%	0%	0%	0%	79%	21%	0%	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	6%	90%	3%	0%		
Peak Approach Total	101				77				0				1160					
FORMULA	40	100	0		0	88	24		0	0	0		92	1108	60			
PHF	0.85	0.67	#DIV/0!		#DIV/0!	0.6932	0.6667		#DIV/0!	#DIV/0!	#DIV/0!		0.8152	0.9431	0.6667			
Comments																		

Peak Hour Approach Traffic Volume and Percentage



South Hamilton Street and West Commerce Street

Intersection	North/South Street :	S. Hamilton Street	
	East/West Street :	West Commerce Street	
City / State	San Antonio, Texas		
Project No.	132-14	Peak Period :	1 — 7:00 AM - 9:00 AM
Date Recorded:	Tuesday, January 13, 2015	Peak Hour:	7:45 AM to 8:45 AM

AC GROUP LLC — TRAFFIC ENGINEERING AND DATA COLLECTION

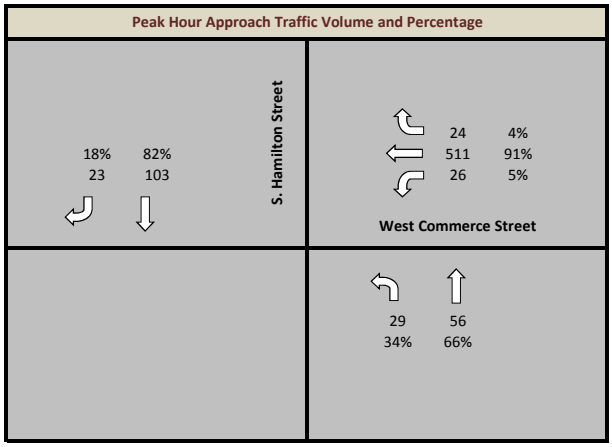
Start Time	Intersection Approaches																Traffic Control	
	S. Hamilton Street				S. Hamilton Street				West Commerce Street				West Commerce Street					
	Northbound				Southbound				Eastbound				Westbound					
	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Total	Hourly Total
7:00 AM	6	10				9	3						6	118	2		154	
7:15 AM	2	9				15	8						8	117	3		162	
7:30 AM	2	14				17	4						7	103	4		151	
7:45 AM	3	18				21	5						5	131	8		191	658
8:00 AM	6	12				29	8						4	137	6		202	
8:15 AM	12	18				24	7						10	115	5		191	
8:30 AM	8	8				29	3						7	128	5		188	
8:45 AM	7	15				13	5						11	124	8		183	764

	Northbound			Southbound			Eastbound			Westbound				
	Left	Thur	Right	Left	Thur	Right	Left	Thur	Right	Left	Thur	Right	Total	Hourly Total
7:00 AM													0	
7:15 AM													0	
7:30 AM													0	
7:45 AM													0	0
8:00 AM													0	
8:15 AM													0	
8:30 AM													0	
8:45 AM													0	0

	Northbound				Southbound				Eastbound				Westbound					
	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Total	Hourly Total
7:00 AM	6	10	0	0	0	9	3	0	0	0	0	0	6	118	2	0	154	
7:15 AM	2	9	0	0	0	15	8	0	0	0	0	0	8	117	3	0	162	
7:30 AM	2	14	0	0	0	17	4	0	0	0	0	0	7	103	4	0	151	
7:45 AM	3	18	0	0	0	21	5	0	0	0	0	0	5	131	8	0	191	658
8:00 AM	6	12	0	0	0	29	8	0	0	0	0	0	4	137	6	0	202	
8:15 AM	12	18	0	0	0	24	7	0	0	0	0	0	10	115	5	0	191	
8:30 AM	8	8	0	0	0	29	3	0	0	0	0	0	7	128	5	0	188	
8:45 AM	7	15	0	0	0	13	5	0	0	0	0	0	11	124	8	0	183	764
Total	46	104	0	0	0	157	43	0	0	0	0	0	58	973	41	0		
Peak Total	29	56	0	0	0	103	23	0	0	0	0	0	26	511	24	0		
Peak Turn Percent	34%	66%	0%	0%	0%	82%	18%	0%	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	5%	91%	4%	0%		
Peak Approach Total	85				126				0				561					
FORMULA	48	72	0		0	116	32		0	0	0		40	548	32			
PHF	0.6042	0.7778	#DIV/0!		#DIV/0!	0.8879	0.7188		#DIV/0!	#DIV/0!	#DIV/0!		0.65	0.9325	0.75			

Comments

Peak Hour Approach Traffic Volume and Percentage



South Hamilton Street and West Commerce Street

Intersection	North/South Street :	S. Hamilton Street	
	East/West Street :	West Commerce Street	
City / State	San Antonio, Texas		
Project No.	132-14	Peak Period :	3 — 4:00 PM - 6:00 PM
Date Recorded:	Tuesday, January 13, 2015	Peak Hour:	5:00 PM to 6:00 PM

AC GROUP LLC — TRAFFIC ENGINEERING AND DATA COLLECTION

Intersection Approaches — Traffic Control

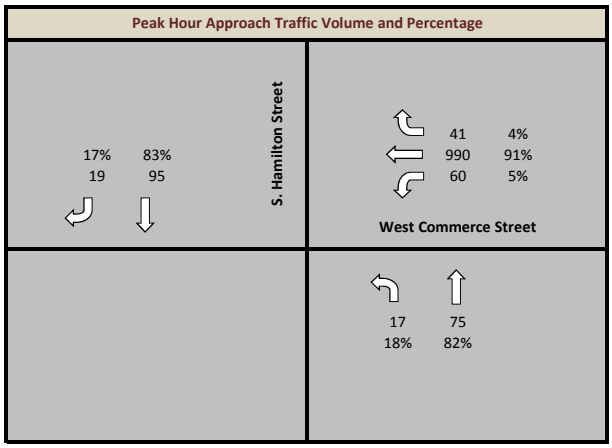
Start Time	S. Hamilton Street				S. Hamilton Street				West Commerce Street				West Commerce Street				Total	Hourly Total
	Northbound				Southbound				Eastbound				Westbound					
	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U		
4:00 PM	6	17				22	4						14	174	9		246	
4:15 PM	8	27				24	6						11	229	16		321	
4:30 PM	14	22				14	4						13	229	7		303	
4:45 PM	10	16				11	2						10	228	8		285	1155
5:00 PM	2	21				18	5						13	256	9		324	
5:15 PM	4	21				25	4						15	266	10		345	
5:30 PM	6	14				27	6						11	253	4		321	
5:45 PM	5	19				25	4						21	215	18		307	1297

	Northbound			Southbound			Eastbound			Westbound			Total	Hourly Total
	Left	Thur	Right	Left	Thur	Right	Left	Thur	Right	Left	Thur	Right		
4:00 PM													0	
4:15 PM													0	
4:30 PM													0	
4:45 PM													0	0
5:00 PM													0	
5:15 PM													0	
5:30 PM													0	
5:45 PM													0	0

	Northbound				Southbound				Eastbound				Westbound				Total	Hourly Total
	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U		
4:00 PM	6	17	0	0	0	22	4	0	0	0	0	0	14	174	9	0	246	
4:15 PM	8	27	0	0	0	24	6	0	0	0	0	0	11	229	16	0	321	
4:30 PM	14	22	0	0	0	14	4	0	0	0	0	0	13	229	7	0	303	
4:45 PM	10	16	0	0	0	11	2	0	0	0	0	0	10	228	8	0	285	1155
5:00 PM	2	21	0	0	0	18	5	0	0	0	0	0	13	256	9	0	324	
5:15 PM	4	21	0	0	0	25	4	0	0	0	0	0	15	266	10	0	345	
5:30 PM	6	14	0	0	0	27	6	0	0	0	0	0	11	253	4	0	321	
5:45 PM	5	19	0	0	0	25	4	0	0	0	0	0	21	215	18	0	307	1297
Total	55	157	0	0	0	166	35	0	0	0	0	0	108	1850	81	0		
Peak Total	17	75	0	0	0	95	19	0	0	0	0	0	60	990	41	0		
Peak Turn Percent	18%	82%	0%	0%	0%	83%	17%	0%	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	5%	91%	4%	0%		
Peak Approach Total	92				114				0				1091					
FORMULA	24	84	0		0	108	24		0	0	0		84	1064	72			
PHF	0.7083	0.8929	#DIV/0!		#DIV/0!	0.8796	0.7917		#DIV/0!	#DIV/0!	#DIV/0!		0.7143	0.9305	0.5694			

Comments

Peak Hour Approach Traffic Volume and Percentage



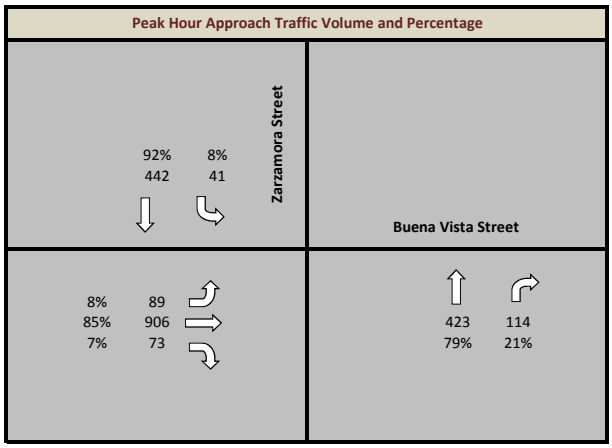
Zarzamora Street and Buena Vista Street

Intersection	**North/South Street :**	**Zarzamora Street**	
	East/West Street :	**Buena Vista Street**	
City / State	**San Antonio, Texas**		
Project No.	**132-14**	**Peak Period :** 1	**7:00 AM - 9:00 AM**
Date Recorded:	**Thursday, December 11, 2014**	**Peak Hour:**	**7:30 AM to 8:30 AM**

AC GROUP LLC
TRAFFIC ENGINEERING AND DATA COLLECTION

Start Time	Intersection Approaches																Traffic Control	
	Zarzamora Street				Zarzamora Street				Buena Vista Street				Buena Vista Street					
	Northbound				Southbound				Eastbound				Westbound					
	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Total	Hourly Total
7:00 AM		70	11		15	71			24	136	20						347	
7:15 AM		86	15		11	79			24	193	10						418	
7:30 AM		108	27		9	107			18	282	12						563	
7:45 AM		117	37		14	123			27	250	28						596	1924
8:00 AM		114	29		10	101			25	208	18						505	
8:15 AM		84	21		8	111			19	166	15						424	
8:30 AM		93	23		22	123			18	161	15						455	
8:45 AM		82	19		20	117			21	152	12						423	1807
	Northbound				Southbound				Eastbound				Westbound					
	Left	Thur	Right		Left	Thur	Right		Left	Thur	Right		Left	Thur	Right		Total	Hourly Total
7:00 AM																	0	
7:15 AM																	0	
7:30 AM																	0	
7:45 AM																	0	0
8:00 AM																	0	
8:15 AM																	0	
8:30 AM																	0	
8:45 AM																	0	0
	Northbound				Southbound				Eastbound				Westbound					
	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Total	Hourly Total
7:00 AM	0	70	11	0	15	71	0	0	24	136	20	0	0	0	0	0	347	
7:15 AM	0	86	15	0	11	79	0	0	24	193	10	0	0	0	0	0	418	
7:30 AM	0	108	27	0	9	107	0	0	18	282	12	0	0	0	0	0	563	
7:45 AM	0	117	37	0	14	123	0	0	27	250	28	0	0	0	0	0	596	1924
8:00 AM	0	114	29	0	10	101	0	0	25	208	18	0	0	0	0	0	505	
8:15 AM	0	84	21	0	8	111	0	0	19	166	15	0	0	0	0	0	424	
8:30 AM	0	93	23	0	22	123	0	0	18	161	15	0	0	0	0	0	455	
8:45 AM	0	82	19	0	20	117	0	0	21	152	12	0	0	0	0	0	423	1807
Total	0	754	182	0	109	832	0	0	176	1548	130	0	0	0	0	0		
Peak Total	0	423	114	0	41	442	0	0	89	906	73	0	0	0	0	0		
Peak Turn Percent	0%	79%	21%	0%	8%	92%	0%	0%	8%	85%	7%	0%	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!		
Peak Approach Total	537				483				1068				0					
FORMULA	0	468	148		56	492	0		108	1128	112		0	0	0			
PHF	#DIV/0!	0.9038	0.7703		0.7321	0.8984	#DIV/0!		0.8241	0.8032	0.6518		#DIV/0!	#DIV/0!	#DIV/0!			
Comments																		

Peak Hour Approach Traffic Volume and Percentage



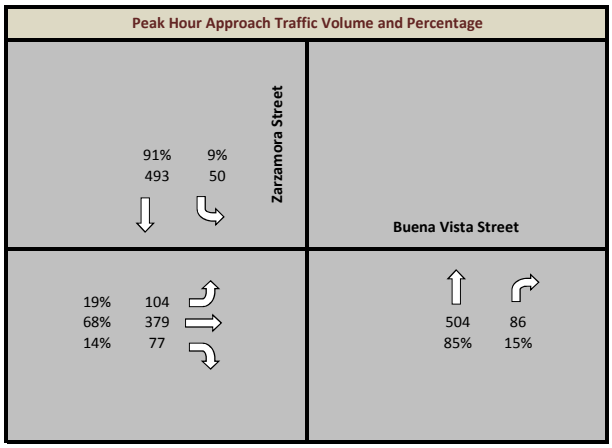
Zarzamora Street and Buena Vista Street

Intersection	North/South Street :	Zarzamora Street	
	East/West Street :	Buena Vista Street	
City / State	San Antonio, Texas		
Project No.	132-14	Peak Period :	3 — 4:00 PM - 6:00 PM
Date Recorded:	Thursday, December 11, 2014	Peak Hour:	5:00 PM to 6:00 PM

AC GROUP LLC — TRAFFIC ENGINEERING AND DATA COLLECTION

Start Time	Intersection Approaches																Traffic Control	
	Zarzamora Street				Zarzamora Street				Buena Vista Street				Buena Vista Street					
	Northbound				Southbound				Eastbound				Westbound					
	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Total	Hourly Total
4:00 PM		99	17		10	92			14	72	13						317	
4:15 PM		135	25		13	140			21	130	25						489	
4:30 PM		164	30		12	124			25	123	19						497	
4:45 PM		115	17		6	95			17	77	20						347	1650
5:00 PM		96	7		4	46			10	63	9						235	
5:15 PM		130	26		13	124			41	101	26						461	
5:30 PM		137	25		23	167			28	91	16						487	
5:45 PM		141	28		10	156			25	124	26						510	1693
	Northbound				Southbound				Eastbound				Westbound					
	Left	Thur	Right		Left	Thur	Right		Left	Thur	Right		Left	Thur	Right		Total	Hourly Total
4:00 PM																	0	
4:15 PM																	0	
4:30 PM																	0	
4:45 PM																	0	0
5:00 PM																	0	
5:15 PM																	0	
5:30 PM																	0	
5:45 PM																	0	0
	Northbound				Southbound				Eastbound				Westbound					
	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Total	Hourly Total
4:00 PM	0	99	17	0	10	92	0	0	14	72	13	0	0	0	0	0	317	
4:15 PM	0	135	25	0	13	140	0	0	21	130	25	0	0	0	0	0	489	
4:30 PM	0	164	30	0	12	124	0	0	25	123	19	0	0	0	0	0	497	
4:45 PM	0	115	17	0	6	95	0	0	17	77	20	0	0	0	0	0	347	1650
5:00 PM	0	96	7	0	4	46	0	0	10	63	9	0	0	0	0	0	235	
5:15 PM	0	130	26	0	13	124	0	0	41	101	26	0	0	0	0	0	461	
5:30 PM	0	137	25	0	23	167	0	0	28	91	16	0	0	0	0	0	487	
5:45 PM	0	141	28	0	10	156	0	0	25	124	26	0	0	0	0	0	510	1693
Total	0	1017	175	0	91	944	0	0	181	781	154	0	0	0	0	0		
Peak Total	0	504	86	0	50	493	0	0	104	379	77	0	0	0	0	0		
Peak Turn Percent	0%	85%	15%	0%	9%	91%	0%	0%	19%	68%	14%	0%	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!		
Peak Approach Total	590				543				560				0					
FORMULA	0	564	112		92	668	0		164	496	104		0	0	0			
PHF	#DIV/0!	0.8936	0.7679		0.5435	0.738	#DIV/0!		0.6341	0.7641	0.7404		#DIV/0!	#DIV/0!	#DIV/0!			
Comments																		

Peak Hour Approach Traffic Volume and Percentage



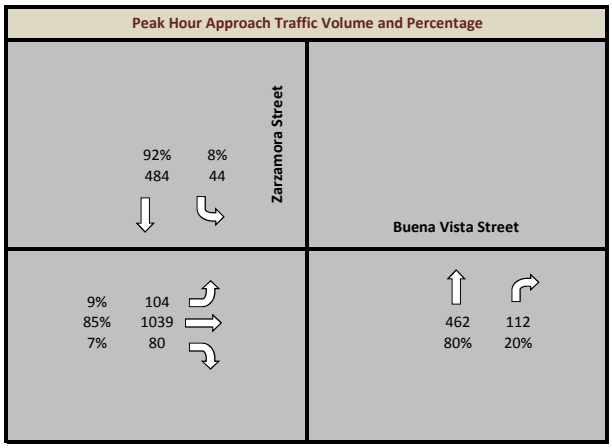
Zarzamora Street and Buena Vista Street

Intersection	North/South Street :	Zarzamora Street	
	East/West Street :	Buena Vista Street	
City / State	San Antonio, Texas		
Project No.	132-14	Peak Period : 1	7:00 AM - 9:00 AM
Date Recorded:	Tuesday, December 16, 2014	Peak Hour:	7:30 AM to 8:30 AM

AC GROUP LLC
TRAFFIC ENGINEERING AND DATA COLLECTION

Start Time	Intersection Approaches																Traffic Control	
	Zarzamora Street				Zarzamora Street				Buena Vista Street				Buena Vista Street					
	Northbound				Southbound				Eastbound				Westbound					
	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Total	Hourly Total
7:00 AM		51	15		7	63			21	144	19						320	
7:15 AM		89	19		10	75			33	221	21						468	
7:30 AM		104	20		10	105			28	292	22						581	
7:45 AM		118	36		13	115			34	287	26						629	1998
8:00 AM		135	31		12	129			23	243	12						585	
8:15 AM		105	25		9	135			19	217	20						530	
8:30 AM		105	28		13	121			29	153	16						465	
8:45 AM		118	22		20	127			16	147	20						470	2050
	Northbound				Southbound				Eastbound				Westbound					
	Left	Thur	Right		Left	Thur	Right		Left	Thur	Right		Left	Thur	Right		Total	Hourly Total
7:00 AM																	0	
7:15 AM																	0	
7:30 AM																	0	
7:45 AM																	0	0
8:00 AM																	0	
8:15 AM																	0	
8:30 AM																	0	
8:45 AM																	0	0
	Northbound				Southbound				Eastbound				Westbound					
	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Total	Hourly Total
7:00 AM	0	51	15	0	7	63	0	0	21	144	19	0	0	0	0	0	320	
7:15 AM	0	89	19	0	10	75	0	0	33	221	21	0	0	0	0	0	468	
7:30 AM	0	104	20	0	10	105	0	0	28	292	22	0	0	0	0	0	581	
7:45 AM	0	118	36	0	13	115	0	0	34	287	26	0	0	0	0	0	629	1998
8:00 AM	0	135	31	0	12	129	0	0	23	243	12	0	0	0	0	0	585	
8:15 AM	0	105	25	0	9	135	0	0	19	217	20	0	0	0	0	0	530	
8:30 AM	0	105	28	0	13	121	0	0	29	153	16	0	0	0	0	0	465	
8:45 AM	0	118	22	0	20	127	0	0	16	147	20	0	0	0	0	0	470	2050
Total	0	825	196	0	94	870	0	0	203	1704	156	0	0	0	0	0		
Peak Total	0	462	112	0	44	484	0	0	104	1039	80	0	0	0	0	0		
Peak Turn Percent	0%	80%	20%	0%	8%	92%	0%	0%	9%	85%	7%	0%	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!		
Peak Approach Total	574				528				1223				0					
FORMULA	0	540	144		52	540	0		136	1168	104		0	0	0			
PHF	#DIV/0!	0.8556	0.7778		0.8462	0.8963	#DIV/0!		0.7647	0.8896	0.7692		#DIV/0!	#DIV/0!	#DIV/0!			
Comments																		

Peak Hour Approach Traffic Volume and Percentage



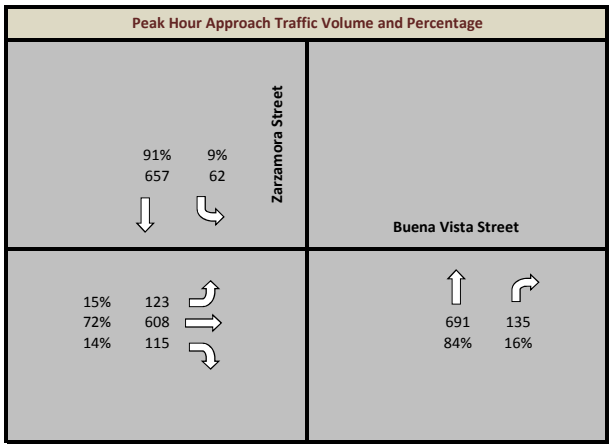
Zarzamora Street and Buena Vista Street

Intersection	North/South Street :	Zarzamora Street	
	East/West Street :	Buena Vista Street	
City / State	San Antonio, Texas		
Project No.	132-14	Peak Period :	3 — 4:00 PM - 6:00 PM
Date Recorded:	Tuesday, December 16, 2014	Peak Hour:	4:15 PM to 5:15 PM

AC GROUP LLC — TRAFFIC ENGINEERING AND DATA COLLECTION

Start Time	Intersection Approaches																Traffic Control	
	Zarzamora Street				Zarzamora Street				Buena Vista Street				Buena Vista Street					
	Northbound				Southbound				Eastbound				Westbound					Hourly
	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Total	Total
4:00 PM		178	28		18	131			33	151	12						551	
4:15 PM		155	37		19	174			21	164	32						602	
4:30 PM		190	37		10	155			23	139	27						581	
4:45 PM		160	29		20	187			39	171	22						628	2362
5:00 PM		186	32		13	141			40	134	34						580	
5:15 PM		120	26		13	179			34	100	21						493	
5:30 PM		174	22		26	186			30	116	27						581	
5:45 PM		146	29		12	153			36	109	31						516	2170
	Northbound				Southbound				Eastbound				Westbound					Hourly
	Left	Thur	Right		Left	Thur	Right		Left	Thur	Right		Left	Thur	Right		Total	Total
4:00 PM																	0	
4:15 PM																	0	
4:30 PM																	0	
4:45 PM																	0	0
5:00 PM																	0	
5:15 PM																	0	
5:30 PM																	0	
5:45 PM																	0	0
	Northbound				Southbound				Eastbound				Westbound					Hourly
	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Total	Total
4:00 PM	0	178	28	0	18	131	0	0	33	151	12	0	0	0	0	0	551	
4:15 PM	0	155	37	0	19	174	0	0	21	164	32	0	0	0	0	0	602	
4:30 PM	0	190	37	0	10	155	0	0	23	139	27	0	0	0	0	0	581	
4:45 PM	0	160	29	0	20	187	0	0	39	171	22	0	0	0	0	0	628	2362
5:00 PM	0	186	32	0	13	141	0	0	40	134	34	0	0	0	0	0	580	
5:15 PM	0	120	26	0	13	179	0	0	34	100	21	0	0	0	0	0	493	
5:30 PM	0	174	22	0	26	186	0	0	30	116	27	0	0	0	0	0	581	
5:45 PM	0	146	29	0	12	153	0	0	36	109	31	0	0	0	0	0	516	2170
Total	0	1309	240	0	131	1306	0	0	256	1084	206	0	0	0	0	0		
Peak Total	0	691	135	0	62	657	0	0	123	608	115	0	0	0	0	0		
Peak Turn Percent	0%	84%	16%	0%	9%	91%	0%	0%	15%	72%	14%	0%	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!		
Peak Approach Total	826				719				846				0					
FORMULA	0	760	148		80	748	0		160	684	136		0	0	0			
PHF	#DIV/0!	0.9092	0.9122		0.775	0.8783	#DIV/0!		0.7688	0.8889	0.8456		#DIV/0!	#DIV/0!	#DIV/0!			
Comments																		

Peak Hour Approach Traffic Volume and Percentage



Zarzamora Street and West Commerce Street

Intersection	North/South Street :	Zarzamora Street	
	East/West Street :	West Commerce Street	
City / State	San Antonio, Texas		
Project No.	132-14	Peak Period : 1	7:00 AM - 9:00 AM
Date Recorded:	Thursday, December 11, 2014	Peak Hour:	8:00 AM to 9:00 AM

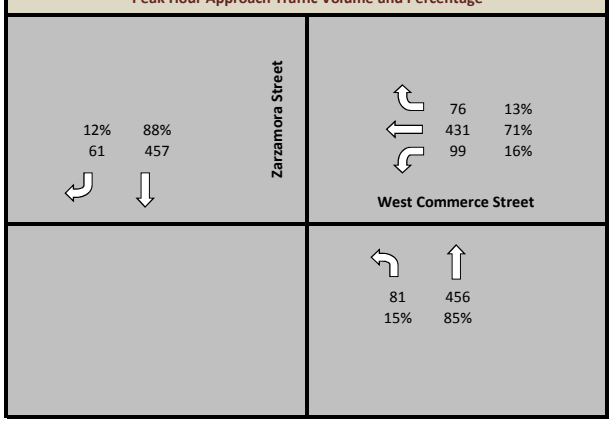
AC GROUP LLC
TRAFFIC ENGINEERING AND DATA COLLECTION

Start Time	Intersection Approaches																Traffic Control	
	Zarzamora Street				Zarzamora Street				West Commerce Street				West Commerce Street					
	Northbound				Southbound				Eastbound				Westbound					
	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Total	Hourly Total
7:00 AM	8	73				60	22						26	81	7		277	
7:15 AM	9	108				75	13						15	85	16		321	
7:30 AM	12	104				85	10						24	93	12		340	
7:45 AM	12	130				110	18						38	97	16		421	1359
8:00 AM	27	142				98	18						30	80	13		408	
8:15 AM	17	96				133	18						22	107	19		412	
8:30 AM	15	103				124	10						24	110	20		406	
8:45 AM	22	115				102	15						23	134	24		435	1661

	Northbound			Southbound			Eastbound			Westbound				
	Left	Thur	Right	Left	Thur	Right	Left	Thur	Right	Left	Thur	Right	Total	Hourly Total
7:00 AM													0	
7:15 AM													0	
7:30 AM													0	
7:45 AM													0	0
8:00 AM													0	
8:15 AM													0	
8:30 AM													0	
8:45 AM													0	0

	Northbound				Southbound				Eastbound				Westbound					
	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Total	Hourly Total
7:00 AM	8	73	0	0	0	60	22	0	0	0	0	0	26	81	7	0	277	
7:15 AM	9	108	0	0	0	75	13	0	0	0	0	0	15	85	16	0	321	
7:30 AM	12	104	0	0	0	85	10	0	0	0	0	0	24	93	12	0	340	
7:45 AM	12	130	0	0	0	110	18	0	0	0	0	0	38	97	16	0	421	1359
8:00 AM	27	142	0	0	0	98	18	0	0	0	0	0	30	80	13	0	408	
8:15 AM	17	96	0	0	0	133	18	0	0	0	0	0	22	107	19	0	412	
8:30 AM	15	103	0	0	0	124	10	0	0	0	0	0	24	110	20	0	406	
8:45 AM	22	115	0	0	0	102	15	0	0	0	0	0	23	134	24	0	435	1661
Total	122	871	0	0	0	787	124	0	0	0	0	0	202	787	127	0		
Peak Total	81	456	0	0	0	457	61	0	0	0	0	0	99	431	76	0		
Peak Turn Percent	15%	85%	0%	0%	0%	88%	12%	0%	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	16%	71%	13%	0%		
Peak Approach Total	537				518				0				606					
FORMULA	108	568	0		0	532	72		0	0	0		120	536	96			
PHF	0.75	0.8028	#DIV/0!		#DIV/0!	0.859	0.8472		#DIV/0!	#DIV/0!	#DIV/0!		0.825	0.8041	0.7917			
Comments																		

Peak Hour Approach Traffic Volume and Percentage



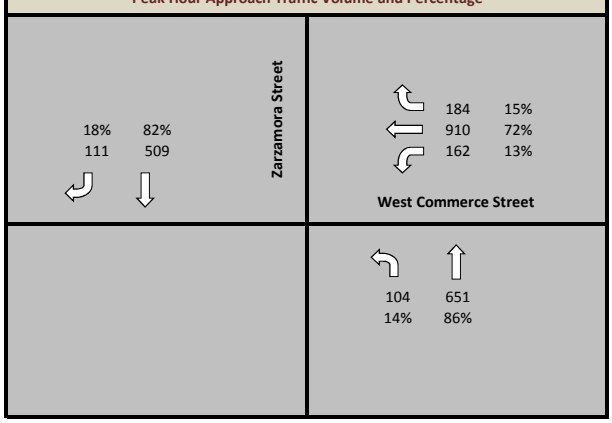
Zarzamora Street and West Commerce Street

Intersection	North/South Street :	Zarzamora Street	
	East/West Street :	West Commerce Street	
City / State	San Antonio, Texas		
Project No.	132-14	Peak Period :	3 — 4:00 PM - 6:00 PM
Date Recorded:	Thursday, December 11, 2014	Peak Hour:	4:30 PM to 5:30 PM

AC GROUP LLC — TRAFFIC ENGINEERING AND DATA COLLECTION

Start Time	Intersection Approaches																Traffic Control	
	Zarzamora Street				Zarzamora Street				West Commerce Street				West Commerce Street					
	Northbound				Southbound				Eastbound				Westbound					
	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Total	Hourly Total
4:00 PM	24	176				144	23						37	145	37		586	
4:15 PM	22	143				117	22						40	197	46		587	
4:30 PM	28	166				112	28						42	243	48		667	
4:45 PM	33	143				126	26						40	212	43		623	2463
5:00 PM	20	170				125	33						44	215	44		651	
5:15 PM	23	172				146	24						36	240	49		690	
5:30 PM	19	160				157	34						31	224	39		664	
5:45 PM	28	154				134	25						42	187	40		610	2615
	Northbound				Southbound				Eastbound				Westbound					
	Left	Thur	Right		Left	Thur	Right		Left	Thur	Right		Left	Thur	Right		Total	Hourly Total
4:00 PM																	0	
4:15 PM																	0	
4:30 PM																	0	
4:45 PM																	0	0
5:00 PM																	0	
5:15 PM																	0	
5:30 PM																	0	
5:45 PM																	0	0
	Northbound				Southbound				Eastbound				Westbound					
	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Total	Hourly Total
4:00 PM	24	176	0	0	0	144	23	0	0	0	0	0	37	145	37	0	586	
4:15 PM	22	143	0	0	0	117	22	0	0	0	0	0	40	197	46	0	587	
4:30 PM	28	166	0	0	0	112	28	0	0	0	0	0	42	243	48	0	667	
4:45 PM	33	143	0	0	0	126	26	0	0	0	0	0	40	212	43	0	623	2463
5:00 PM	20	170	0	0	0	125	33	0	0	0	0	0	44	215	44	0	651	
5:15 PM	23	172	0	0	0	146	24	0	0	0	0	0	36	240	49	0	690	
5:30 PM	19	160	0	0	0	157	34	0	0	0	0	0	31	224	39	0	664	
5:45 PM	28	154	0	0	0	134	25	0	0	0	0	0	42	187	40	0	610	2615
Total	197	1284	0	0	0	1061	215	0	0	0	0	0	312	1663	346	0		
Peak Total	104	651	0	0	0	509	111	0	0	0	0	0	162	910	184	0		
Peak Turn Percent	14%	86%	0%	0%	0%	82%	18%	0%	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	13%	72%	15%	0%		
Peak Approach Total	755				620				0				1256					
FORMULA	132	688	0		0	584	132		0	0	0		176	972	196			
PHF	0.7879	0.9462	#DIV/0!		#DIV/0!	0.8716	0.8409		#DIV/0!	#DIV/0!	#DIV/0!		0.9205	0.9362	0.9388			
Comments																		

Peak Hour Approach Traffic Volume and Percentage



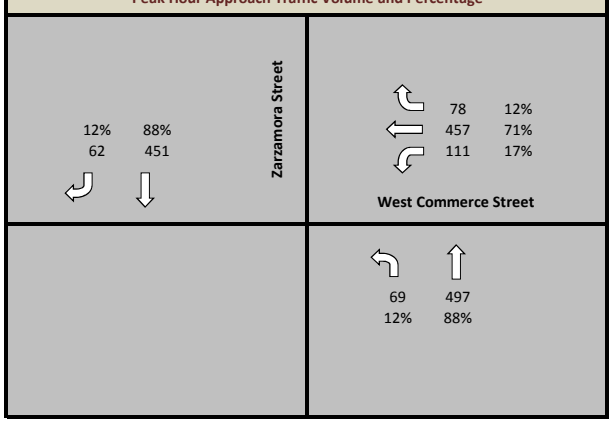
Zarzamora Street and West Commerce Street

Intersection	**North/South Street :**	**Zarzamora Street**	
	East/West Street :	**West Commerce Street**	
City / State	**San Antonio, Texas**		
Project No.	**132-14**	**Peak Period :**	**1** **7:00 AM - 9:00 AM**
Date Recorded:	**Tuesday, December 16, 2014**	**Peak Hour:**	**7:45 AM to 8:45 AM**

AC GROUP LLC
TRAFFIC ENGINEERING AND DATA COLLECTION

Start Time	Intersection Approaches																Traffic Control	
	Zarzamora Street				Zarzamora Street				West Commerce Street				West Commerce Street					
	Northbound				Southbound				Eastbound				Westbound					
	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Total	Hourly Total
7:00 AM	9	64				61	16						11	76	13		250	
7:15 AM	14	102				60	19						29	102	17		343	
7:30 AM	10	123				85	11						26	93	23		371	
7:45 AM	24	122				97	18						31	112	19		423	1387
8:00 AM	23	144				114	14						25	97	13		430	
8:15 AM	15	103				118	12						35	117	23		423	
8:30 AM	7	128				122	18						20	131	23		449	
8:45 AM	13	109				107	19						30	103	22		403	1705
	Northbound				Southbound				Eastbound				Westbound					
	Left	Thur	Right		Left	Thur	Right		Left	Thur	Right		Left	Thur	Right		Total	Hourly Total
7:00 AM																	0	
7:15 AM																	0	
7:30 AM																	0	
7:45 AM																	0	0
8:00 AM																	0	
8:15 AM																	0	
8:30 AM																	0	
8:45 AM																	0	0
	Northbound				Southbound				Eastbound				Westbound					
	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Total	Hourly Total
7:00 AM	9	64	0	0	0	61	16	0	0	0	0	0	11	76	13	0	250	
7:15 AM	14	102	0	0	0	60	19	0	0	0	0	0	29	102	17	0	343	
7:30 AM	10	123	0	0	0	85	11	0	0	0	0	0	26	93	23	0	371	
7:45 AM	24	122	0	0	0	97	18	0	0	0	0	0	31	112	19	0	423	1387
8:00 AM	23	144	0	0	0	114	14	0	0	0	0	0	25	97	13	0	430	
8:15 AM	15	103	0	0	0	118	12	0	0	0	0	0	35	117	23	0	423	
8:30 AM	7	128	0	0	0	122	18	0	0	0	0	0	20	131	23	0	449	
8:45 AM	13	109	0	0	0	107	19	0	0	0	0	0	30	103	22	0	403	1705
Total	115	895	0	0	0	764	127	0	0	0	0	0	207	831	153	0		
Peak Total	69	497	0	0	0	451	62	0	0	0	0	0	111	457	78	0		
Peak Turn Percent	12%	88%	0%	0%	0%	88%	12%	0%	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	17%	71%	12%	0%		
Peak Approach Total	566				513				0				646					
FORMULA	96	576	0		0	488	72		0	0	0		140	524	92			
PHF	0.7188	0.8628	#DIV/0!		#DIV/0!	0.9242	0.8611		#DIV/0!	#DIV/0!	#DIV/0!		0.7929	0.8721	0.8478			
Comments																		

Peak Hour Approach Traffic Volume and Percentage



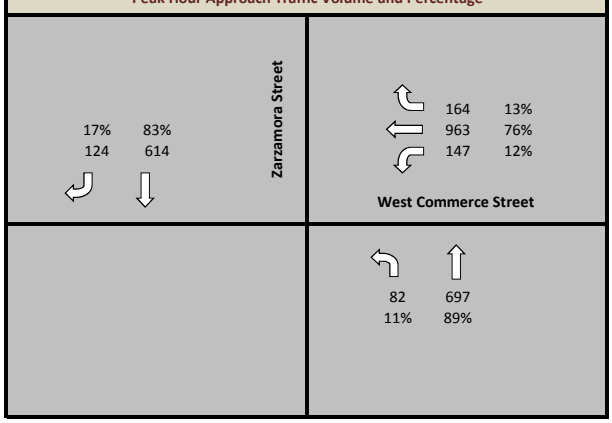
Zarzamora Street and West Commerce Street

Intersection	**North/South Street :**	**Zarzamora Street**	
	East/West Street :	**West Commerce Street**	
City / State	**San Antonio, Texas**		
Project No.	**132-14**	**Peak Period :**	**3** **4:00 PM - 6:00 PM**
Date Recorded:	**Tuesday, December 16, 2014**	**Peak Hour:**	**4:45 PM to 5:45 PM**

AC GROUP LLC
TRAFFIC ENGINEERING AND DATA COLLECTION

Start Time	Intersection Approaches																Traffic Control	
	Zarzamora Street				Zarzamora Street				West Commerce Street				West Commerce Street					
	Northbound				Southbound				Eastbound				Westbound					
	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Total	Hourly Total
4:00 PM	28	174				108	19						39	178	40		586	
4:15 PM	15	161				153	23						42	205	62		661	
4:30 PM	28	168				137	24						43	243	48		691	
4:45 PM	22	172				167	22						41	219	39		682	2620
5:00 PM	25	202				115	33						36	235	44		690	
5:15 PM	19	151				153	42						40	256	38		699	
5:30 PM	16	172				179	27						30	253	43		720	
5:45 PM	17	180				130	26						55	209	24		641	2750
	Northbound				Southbound				Eastbound				Westbound					
	Left	Thur	Right		Left	Thur	Right		Left	Thur	Right		Left	Thur	Right		Total	Hourly Total
4:00 PM																	0	
4:15 PM																	0	
4:30 PM																	0	
4:45 PM																	0	0
5:00 PM																	0	
5:15 PM																	0	
5:30 PM																	0	
5:45 PM																	0	0
	Northbound				Southbound				Eastbound				Westbound					
	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Total	Hourly Total
4:00 PM	28	174	0	0	0	108	19	0	0	0	0	0	39	178	40	0	586	
4:15 PM	15	161	0	0	0	153	23	0	0	0	0	0	42	205	62	0	661	
4:30 PM	28	168	0	0	0	137	24	0	0	0	0	0	43	243	48	0	691	
4:45 PM	22	172	0	0	0	167	22	0	0	0	0	0	41	219	39	0	682	2620
5:00 PM	25	202	0	0	0	115	33	0	0	0	0	0	36	235	44	0	690	
5:15 PM	19	151	0	0	0	153	42	0	0	0	0	0	40	256	38	0	699	
5:30 PM	16	172	0	0	0	179	27	0	0	0	0	0	30	253	43	0	720	
5:45 PM	17	180	0	0	0	130	26	0	0	0	0	0	55	209	24	0	641	2750
Total	170	1380	0	0	0	1142	216	0	0	0	0	0	326	1798	338	0		
Peak Total	82	697	0	0	0	614	124	0	0	0	0	0	147	963	164	0		
Peak Turn Percent	11%	89%	0%	0%	0%	83%	17%	0%	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	12%	76%	13%	0%		
Peak Approach Total	779				738				0				1274					
FORMULA	100	808	0		0	716	168		0	0	0		164	1024	176			
PHF	0.82	0.8626	#DIV/0!		#DIV/0!	0.8575	0.7381		#DIV/0!	#DIV/0!	#DIV/0!		0.8963	0.9404	0.9318			
Comments																		

Peak Hour Approach Traffic Volume and Percentage



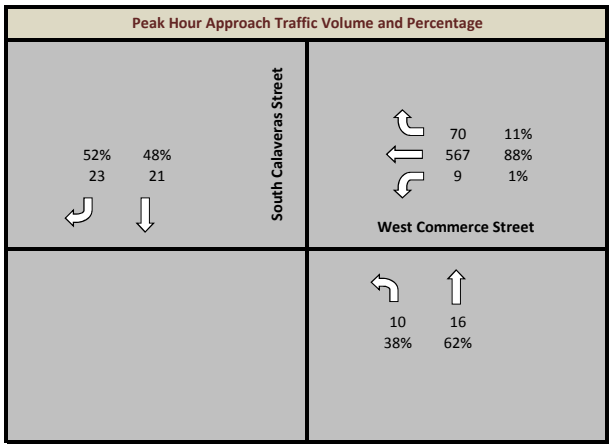
South Calaveras Street and West Commerce Street

Intersection	North/South Street :	South Calaveras Street	
	East/West Street :	West Commerce Street	
City / State	San Antonio, Texas		
Project No.	132-14	Peak Period :	1 — 7:00 AM - 9:00 AM
Date Recorded:	Thursday, January 08, 2015	Peak Hour:	8:00 AM to 9:00 AM

AC GROUP LLC — TRAFFIC ENGINEERING AND DATA COLLECTION

Start Time	Intersection Approaches																Traffic Control	
	South Calaveras Street				South Calaveras Street				West Commerce Street				West Commerce Street					
	Northbound				Southbound				Eastbound				Westbound					
	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Total	Hourly Total
7:00 AM	0	1				2	6						1	89	10		109	
7:15 AM	0	7				5	3						3	122	6		146	
7:30 AM	4	4				10	2						3	131	17		171	
7:45 AM	1	3				7	2						1	137	11		162	588
8:00 AM	2	7				8	0						2	127	17		163	
8:15 AM	2	3				5	7						3	139	13		172	
8:30 AM	2	1				5	7						0	136	19		170	
8:45 AM	4	5				3	9						4	165	21		211	716
	Northbound				Southbound				Eastbound				Westbound					
	Left	Thur	Right		Left	Thur	Right		Left	Thur	Right		Left	Thur	Right		Total	Hourly Total
7:00 AM																	0	
7:15 AM																	0	
7:30 AM																	0	
7:45 AM																	0	0
8:00 AM																	0	
8:15 AM																	0	
8:30 AM																	0	
8:45 AM																	0	0
	Northbound				Southbound				Eastbound				Westbound					
	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Total	Hourly Total
7:00 AM	0	1	0	0	0	2	6	0	0	0	0	0	1	89	10	0	109	
7:15 AM	0	7	0	0	0	5	3	0	0	0	0	0	3	122	6	0	146	
7:30 AM	4	4	0	0	0	10	2	0	0	0	0	0	3	131	17	0	171	
7:45 AM	1	3	0	0	0	7	2	0	0	0	0	0	1	137	11	0	162	588
8:00 AM	2	7	0	0	0	8	0	0	0	0	0	0	2	127	17	0	163	
8:15 AM	2	3	0	0	0	5	7	0	0	0	0	0	3	139	13	0	172	
8:30 AM	2	1	0	0	0	5	7	0	0	0	0	0	0	136	19	0	170	
8:45 AM	4	5	0	0	0	3	9	0	0	0	0	0	4	165	21	0	211	716
Total	15	31	0	0	0	45	36	0	0	0	0	0	17	1046	114	0		
Peak Total	10	16	0	0	0	21	23	0	0	0	0	0	9	567	70	0		
Peak Turn Percent	38%	62%	0%	0%	0%	48%	52%	0%	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	1%	88%	11%	0%		
Peak Approach Total	26				44				0				646					
FORMULA	16	28	0		0	32	36		0	0	0		16	660	84			
PHF	0.625	0.5714	#DIV/0!		#DIV/0!	0.6563	0.6389		#DIV/0!	#DIV/0!	#DIV/0!		0.5625	0.8591	0.8333			
Comments																		

Peak Hour Approach Traffic Volume and Percentage



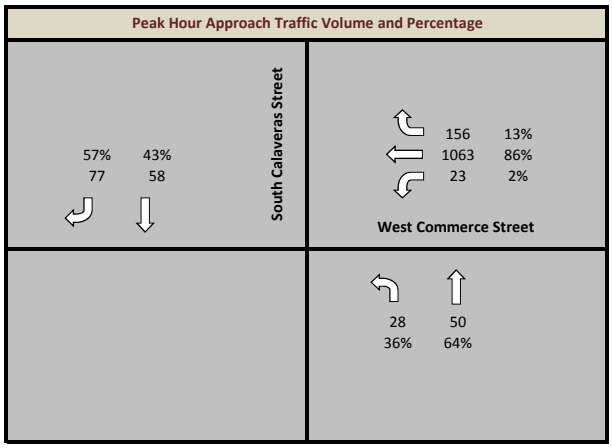
South Calaveras Street and West Commerce Street

Intersection	North/South Street :	South Calaveras Street	
	East/West Street :	West Commerce Street	
City / State	San Antonio, Texas		
Project No.	132-14	Peak Period :	3 — 4:00 PM - 6:00 PM
Date Recorded:	Thursday, January 08, 2015	Peak Hour:	5:00 PM to 6:00 PM

AC GROUP LLC — TRAFFIC ENGINEERING AND DATA COLLECTION

Start Time	Intersection Approaches																Traffic Control	
	South Calaveras Street				South Calaveras Street				West Commerce Street				West Commerce Street					
	Northbound				Southbound				Eastbound				Westbound					
	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Total	Hourly Total
4:00 PM	2	7				12	13						6	211	28		279	
4:15 PM	4	10				15	9						5	256	41		340	
4:30 PM	9	13				14	15						9	267	42		369	
4:45 PM	8	14				18	11						3	256	35		345	1333
5:00 PM	9	12				11	23						6	255	43		359	
5:15 PM	4	9				15	19						2	286	37		372	
5:30 PM	7	16				16	16						6	264	38		363	
5:45 PM	8	13				16	19						9	258	38		361	1455
	Northbound				Southbound				Eastbound				Westbound					
	Left	Thur	Right		Left	Thur	Right		Left	Thur	Right		Left	Thur	Right		Total	Hourly Total
4:00 PM																	0	
4:15 PM																	0	
4:30 PM																	0	
4:45 PM																	0	0
5:00 PM																	0	
5:15 PM																	0	
5:30 PM																	0	
5:45 PM																	0	0
	Northbound				Southbound				Eastbound				Westbound					
	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Total	Hourly Total
4:00 PM	2	7	0	0	0	12	13	0	0	0	0	0	6	211	28	0	279	
4:15 PM	4	10	0	0	0	15	9	0	0	0	0	0	5	256	41	0	340	
4:30 PM	9	13	0	0	0	14	15	0	0	0	0	0	9	267	42	0	369	
4:45 PM	8	14	0	0	0	18	11	0	0	0	0	0	3	256	35	0	345	1333
5:00 PM	9	12	0	0	0	11	23	0	0	0	0	0	6	255	43	0	359	
5:15 PM	4	9	0	0	0	15	19	0	0	0	0	0	2	286	37	0	372	
5:30 PM	7	16	0	0	0	16	16	0	0	0	0	0	6	264	38	0	363	
5:45 PM	8	13	0	0	0	16	19	0	0	0	0	0	9	258	38	0	361	1455
Total	51	94	0	0	0	117	125	0	0	0	0	0	46	2053	302	0		
Peak Total	28	50	0	0	0	58	77	0	0	0	0	0	23	1063	156	0		
Peak Turn Percent	36%	64%	0%	0%	0%	43%	57%	0%	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	2%	86%	13%	0%		
Peak Approach Total	78				135				0				1242					
FORMULA	36	64	0		0	64	92		0	0	0		36	1144	172			
PHF	0.7778	0.7813	#DIV/0!		#DIV/0!	0.9063	0.837		#DIV/0!	#DIV/0!	#DIV/0!		0.6389	0.9292	0.907			
Comments																		

Peak Hour Approach Traffic Volume and Percentage



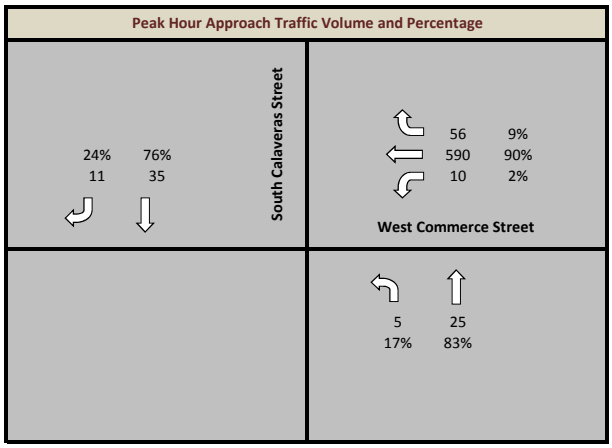
South Calaveras Street and West Commerce Street

Intersection	North/South Street :	South Calaveras Street	
	East/West Street :	West Commerce Street	
City / State	San Antonio, Texas		
Project No.	132-14	Peak Period : 1	7:00 AM - 9:00 AM
Date Recorded:	Tuesday, January 13, 2015	Peak Hour:	7:45 AM to 8:45 AM

AC GROUP LLC
TRAFFIC ENGINEERING AND DATA COLLECTION

Start Time	Intersection Approaches																Traffic Control	
	South Calaveras Street				South Calaveras Street				West Commerce Street				West Commerce Street					
	Northbound				Southbound				Eastbound				Westbound					
	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Total	Hourly Total
7:00 AM	1	1				9	2						0	114	9		136	
7:15 AM	0	3				9	2						3	120	5		142	
7:30 AM	1	6				9	6						4	114	10		150	
7:45 AM	1	9				7	1						2	183	10		213	641
8:00 AM	1	6				12	3						4	133	12		171	
8:15 AM	2	4				8	4						0	142	15		175	
8:30 AM	1	6				8	3						4	132	19		173	
8:45 AM	0	3				10	4						4	158	21		200	719
	Northbound				Southbound				Eastbound				Westbound					
	Left	Thur	Right		Left	Thur	Right		Left	Thur	Right		Left	Thur	Right		Total	Hourly Total
7:00 AM																	0	
7:15 AM																	0	
7:30 AM																	0	
7:45 AM																	0	0
8:00 AM																	0	
8:15 AM																	0	
8:30 AM																	0	
8:45 AM																	0	0
	Northbound				Southbound				Eastbound				Westbound					
	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Total	Hourly Total
7:00 AM	1	1	0	0	0	9	2	0	0	0	0	0	0	114	9	0	136	
7:15 AM	0	3	0	0	0	9	2	0	0	0	0	0	3	120	5	0	142	
7:30 AM	1	6	0	0	0	9	6	0	0	0	0	0	4	114	10	0	150	
7:45 AM	1	9	0	0	0	7	1	0	0	0	0	0	2	183	10	0	213	641
8:00 AM	1	6	0	0	0	12	3	0	0	0	0	0	4	133	12	0	171	
8:15 AM	2	4	0	0	0	8	4	0	0	0	0	0	0	142	15	0	175	
8:30 AM	1	6	0	0	0	8	3	0	0	0	0	0	4	132	19	0	173	
8:45 AM	0	3	0	0	0	10	4	0	0	0	0	0	4	158	21	0	200	719
Total	7	38	0	0	0	72	25	0	0	0	0	0	21	1096	101	0		
Peak Total	5	25	0	0	0	35	11	0	0	0	0	0	10	590	56	0		
Peak Turn Percent	17%	83%	0%	0%	0%	76%	24%	0%	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	2%	90%	9%	0%		
Peak Approach Total	30				46				0				656					
FORMULA	8	36	0		0	48	16		0	0	0		16	732	76			
PHF	0.625	0.6944	#DIV/0!		#DIV/0!	0.7292	0.6875		#DIV/0!	#DIV/0!	#DIV/0!		0.625	0.806	0.7368			
Comments																		

Peak Hour Approach Traffic Volume and Percentage



South Calaveras Street and West Commerce Street

Intersection	North/South Street :	South Calaveras Street	
	East/West Street :	West Commerce Street	
City / State	San Antonio, Texas		
Project No.	132-14	Peak Period : 3	4:00 PM - 6:00 PM
Date Recorded:	Tuesday, January 13, 2015	Peak Hour:	4:30 PM to 5:30 PM

AC GROUP LLC
TRAFFIC ENGINEERING AND DATA COLLECTION

Start Time	Intersection Approaches																Traffic Control	
	South Calaveras Street				South Calaveras Street				West Commerce Street				West Commerce Street					
	Northbound				Southbound				Eastbound				Westbound					
	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Total	Hourly Total
4:00 PM	3	16				6	12						1	209	32		279	
4:15 PM	7	14				19	11						8	275	33		367	
4:30 PM	7	16				13	17						6	270	40		369	
4:45 PM	5	14				14	11						1	267	39		351	1366
5:00 PM	4	13				13	19						3	264	42		358	
5:15 PM	4	11				16	14						5	283	42		375	
5:30 PM	7	11				12	14						1	289	27		361	
5:45 PM	3	11				14	20						4	247	41		340	1434
	Northbound				Southbound				Eastbound				Westbound					
	Left	Thur	Right		Left	Thur	Right		Left	Thur	Right		Left	Thur	Right		Total	Hourly Total
4:00 PM																	0	
4:15 PM																	0	
4:30 PM																	0	
4:45 PM																	0	0
5:00 PM																	0	
5:15 PM																	0	
5:30 PM																	0	
5:45 PM																	0	0
	Northbound				Southbound				Eastbound				Westbound					
	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Total	Hourly Total
4:00 PM	3	16	0	0	0	6	12	0	0	0	0	0	1	209	32	0	279	
4:15 PM	7	14	0	0	0	19	11	0	0	0	0	0	8	275	33	0	367	
4:30 PM	7	16	0	0	0	13	17	0	0	0	0	0	6	270	40	0	369	
4:45 PM	5	14	0	0	0	14	11	0	0	0	0	0	1	267	39	0	351	1366
5:00 PM	4	13	0	0	0	13	19	0	0	0	0	0	3	264	42	0	358	
5:15 PM	4	11	0	0	0	16	14	0	0	0	0	0	5	283	42	0	375	
5:30 PM	7	11	0	0	0	12	14	0	0	0	0	0	1	289	27	0	361	
5:45 PM	3	11	0	0	0	14	20	0	0	0	0	0	4	247	41	0	340	1434
Total	40	106	0	0	0	107	118	0	0	0	0	0	29	2104	296	0		
Peak Total	20	54	0	0	0	56	61	0	0	0	0	0	15	1084	163	0		
Peak Turn Percent	27%	73%	0%	0%	0%	48%	52%	0%	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	1%	86%	13%	0%		
Peak Approach Total	74				117				0				1262					
FORMULA	28	64	0		0	64	76		0	0	0		24	1132	168			
PHF	0.7143	0.8438	#DIV/0!		#DIV/0!	0.875	0.8026		#DIV/0!	#DIV/0!	#DIV/0!		0.625	0.9576	0.9702			
Comments																		

Peak Hour Approach Traffic Volume and Percentage

South Calaveras Street

52% 48% 0%
61 56 0

West Commerce Street

163 13%
1084 86%
15 1%

#DIV/0! 0
#DIV/0! 0
#DIV/0! 0

20 54 0
27% 73% 0%

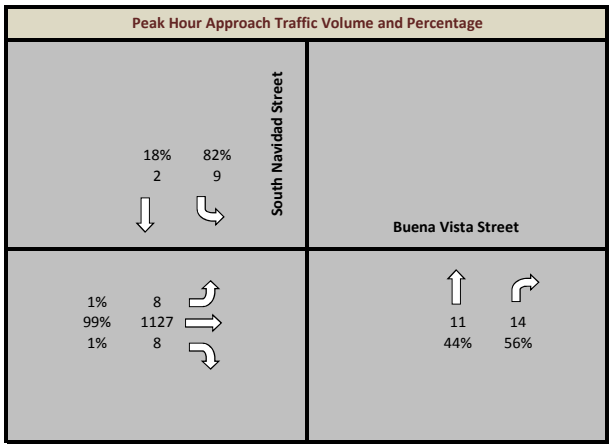
South Navidad Street and Buena Vista Street

Intersection	North/South Street :	South Navidad Street	
	East/West Street :	Buena Vista Street	
City / State	San Antonio, Texas		
Project No.	132-14	Peak Period : 1	7:00 AM - 9:00 AM
Date Recorded:	Tuesday, January 06, 2015	Peak Hour:	7:30 AM to 8:30 AM

AC GROUP LLC
TRAFFIC ENGINEERING AND DATA COLLECTION

Start Time	Intersection Approaches																Traffic Control	
	South Navidad Street				South Navidad Street				Buena Vista Street				Buena Vista Street					
	Northbound				Southbound				Eastbound				Westbound					
	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Total	Hourly Total
7:00 AM		1	0		1	1			1	171	0						175	
7:15 AM		2	1		0	1			0	223	0						227	
7:30 AM		4	5		2	0			3	316	2						332	
7:45 AM		5	2		1	0			1	325	1						335	1069
8:00 AM		1	3		3	1			1	265	0						274	
8:15 AM		1	4		3	1			3	221	5						238	
8:30 AM		5	2		0	2			1	208	1						219	
8:45 AM		4	1		2	2			2	149	2						162	893
	Northbound				Southbound				Eastbound				Westbound					
	Left	Thur	Right		Left	Thur	Right		Left	Thur	Right		Left	Thur	Right		Total	Hourly Total
7:00 AM																	0	
7:15 AM																	0	
7:30 AM																	0	
7:45 AM																	0	0
8:00 AM																	0	
8:15 AM																	0	
8:30 AM																	0	
8:45 AM																	0	0
	Northbound				Southbound				Eastbound				Westbound					
	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Total	Hourly Total
7:00 AM	0	1	0	0	1	1	0	0	1	171	0	0	0	0	0	0	175	
7:15 AM	0	2	1	0	0	1	0	0	0	223	0	0	0	0	0	0	227	
7:30 AM	0	4	5	0	2	0	0	0	3	316	2	0	0	0	0	0	332	
7:45 AM	0	5	2	0	1	0	0	0	1	325	1	0	0	0	0	0	335	1069
8:00 AM	0	1	3	0	3	1	0	0	1	265	0	0	0	0	0	0	274	
8:15 AM	0	1	4	0	3	1	0	0	3	221	5	0	0	0	0	0	238	
8:30 AM	0	5	2	0	0	2	0	0	1	208	1	0	0	0	0	0	219	
8:45 AM	0	4	1	0	2	2	0	0	2	149	2	0	0	0	0	0	162	893
Total	0	23	18	0	12	8	0	0	12	1878	11	0	0	0	0	0		
Peak Total	0	11	14	0	9	2	0	0	8	1127	8	0	0	0	0	0		
Peak Turn Percent	0%	44%	56%	0%	82%	18%	0%	0%	1%	99%	1%	0%	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!		
Peak Approach Total	25				11				1143				0					
FORMULA	0	20	20		12	4	0		12	1300	20		0	0	0			
PHF	#DIV/0!	0.55	0.7		0.75	0.5	#DIV/0!		0.6667	0.8669	0.4		#DIV/0!	#DIV/0!	#DIV/0!			
Comments																		

Peak Hour Approach Traffic Volume and Percentage



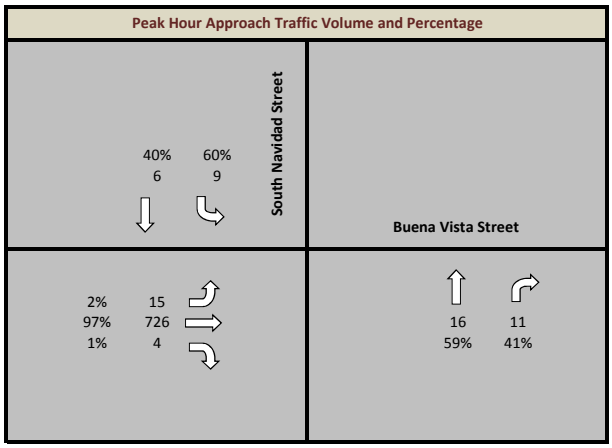
South Navidad Street and Buena Vista Street

Intersection	**North/South Street :**	**South Navidad Street**	
	East/West Street :	**Buena Vista Street**	
City / State	**San Antonio, Texas**		
Project No.	**132-14**	**Peak Period :**	**3** — **4:00 PM - 6:00 PM**
Date Recorded:	**Tuesday, January 06, 2015**	**Peak Hour:**	**4:00 PM to 5:00 PM**

AC GROUP LLC — TRAFFIC ENGINEERING AND DATA COLLECTION

Start Time	Intersection Approaches																Traffic Control	
	South Navidad Street				South Navidad Street				Buena Vista Street				Buena Vista Street					
	Northbound				Southbound				Eastbound				Westbound					
	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Total	Hourly Total
4:00 PM		1	3		1	1			8	202	2						218	
4:15 PM		6	2		3	1			0	190	1						203	
4:30 PM		4	4		1	0			4	156	0						169	
4:45 PM		5	2		4	4			3	178	1						197	787
5:00 PM		0	2		2	1			3	194	2						204	
5:15 PM		2	1		2	2			3	142	3						155	
5:30 PM		2	3		2	1			4	136	2						150	
5:45 PM		4	0		6	2			0	117	4						133	642
	Northbound				Southbound				Eastbound				Westbound					
	Left	Thur	Right		Left	Thur	Right		Left	Thur	Right		Left	Thur	Right		Total	Hourly Total
4:00 PM																	0	
4:15 PM																	0	
4:30 PM																	0	
4:45 PM																	0	0
5:00 PM																	0	
5:15 PM																	0	
5:30 PM																	0	
5:45 PM																	0	0
	Northbound				Southbound				Eastbound				Westbound					
	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Total	Hourly Total
4:00 PM	0	1	3	0	1	1	0	0	8	202	2	0	0	0	0	0	218	
4:15 PM	0	6	2	0	3	1	0	0	0	190	1	0	0	0	0	0	203	
4:30 PM	0	4	4	0	1	0	0	0	4	156	0	0	0	0	0	0	169	
4:45 PM	0	5	2	0	4	4	0	0	3	178	1	0	0	0	0	0	197	787
5:00 PM	0	0	2	0	2	1	0	0	3	194	2	0	0	0	0	0	204	
5:15 PM	0	2	1	0	2	2	0	0	3	142	3	0	0	0	0	0	155	
5:30 PM	0	2	3	0	2	1	0	0	4	136	2	0	0	0	0	0	150	
5:45 PM	0	4	0	0	6	2	0	0	0	117	4	0	0	0	0	0	133	642
Total	0	24	17	0	21	12	0	0	25	1315	15	0	0	0	0	0		
Peak Total	0	16	11	0	9	6	0	0	15	726	4	0	0	0	0	0		
Peak Turn Percent	0%	59%	41%	0%	60%	40%	0%	0%	2%	97%	1%	0%	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!		
Peak Approach Total	27				15				745				0					
FORMULA	0	24	16		16	16	0		32	808	8		0	0	0			
PHF	#DIV/0!	0.6667	0.6875		0.5625	0.375	#DIV/0!		0.4688	0.8985	0.5		#DIV/0!	#DIV/0!	#DIV/0!			
Comments																		

Peak Hour Approach Traffic Volume and Percentage



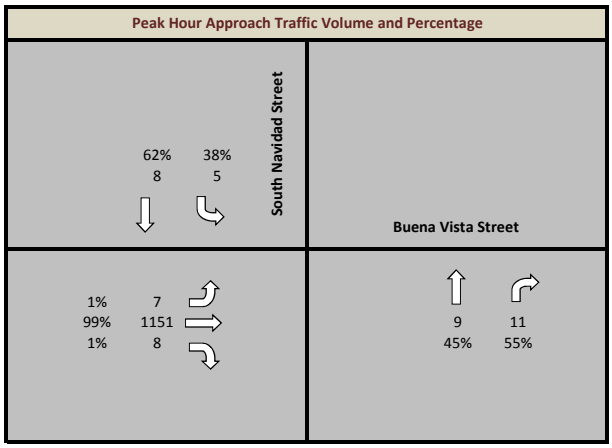
South Navidad Street and Buena Vista Street

Intersection	North/South Street :	South Navidad Street	
	East/West Street :	Buena Vista Street	
City / State	San Antonio, Texas		
Project No.	132-14	Peak Period : 1	7:00 AM - 9:00 AM
Date Recorded:	Wednesday, January 07, 2015	Peak Hour:	7:30 AM to 8:30 AM

AC GROUP LLC
TRAFFIC ENGINEERING AND DATA COLLECTION

Start Time	Intersection Approaches																Traffic Control	
	South Navidad Street				South Navidad Street				Buena Vista Street				Buena Vista Street					
	Northbound				Southbound				Eastbound				Westbound					
	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Total	Hourly Total
7:00 AM		1	4		2	1			1	155	2						166	
7:15 AM		3	3		1	1			4	236	0						248	
7:30 AM		2	2		1	2			2	345	1						355	
7:45 AM		4	1		0	4			3	321	1						334	1103
8:00 AM		1	5		3	1			0	245	3						258	
8:15 AM		2	3		1	1			2	240	3						252	
8:30 AM		2	1		2	0			2	223	1						231	
8:45 AM		2	3		2	0			2	156	1						166	907
	Northbound				Southbound				Eastbound				Westbound					
	Left	Thur	Right		Left	Thur	Right		Left	Thur	Right		Left	Thur	Right		Total	Hourly Total
7:00 AM																	0	
7:15 AM																	0	
7:30 AM																	0	
7:45 AM																	0	0
8:00 AM																	0	
8:15 AM																	0	
8:30 AM																	0	
8:45 AM																	0	0
	Northbound				Southbound				Eastbound				Westbound					
	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Total	Hourly Total
7:00 AM	0	1	4	0	2	1	0	0	1	155	2	0	0	0	0	0	166	
7:15 AM	0	3	3	0	1	1	0	0	4	236	0	0	0	0	0	0	248	
7:30 AM	0	2	2	0	1	2	0	0	2	345	1	0	0	0	0	0	355	
7:45 AM	0	4	1	0	0	4	0	0	3	321	1	0	0	0	0	0	334	1103
8:00 AM	0	1	5	0	3	1	0	0	0	245	3	0	0	0	0	0	258	
8:15 AM	0	2	3	0	1	1	0	0	2	240	3	0	0	0	0	0	252	
8:30 AM	0	2	1	0	2	0	0	0	2	223	1	0	0	0	0	0	231	
8:45 AM	0	2	3	0	2	0	0	0	2	156	1	0	0	0	0	0	166	907
Total	0	17	22	0	12	10	0	0	16	1921	12	0	0	0	0	0		
Peak Total	0	9	11	0	5	8	0	0	7	1151	8	0	0	0	0	0		
Peak Turn Percent	0%	45%	55%	0%	38%	62%	0%	0%	1%	99%	1%	0%	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!		
Peak Approach Total	20				13				1166				0					
FORMULA	0	16	20		12	16	0		12	1380	12		0	0	0			
PHF	#DIV/0!	0.5625	0.55		0.4167	0.5	#DIV/0!		0.5833	0.8341	0.6667		#DIV/0!	#DIV/0!	#DIV/0!			
Comments																		

Peak Hour Approach Traffic Volume and Percentage



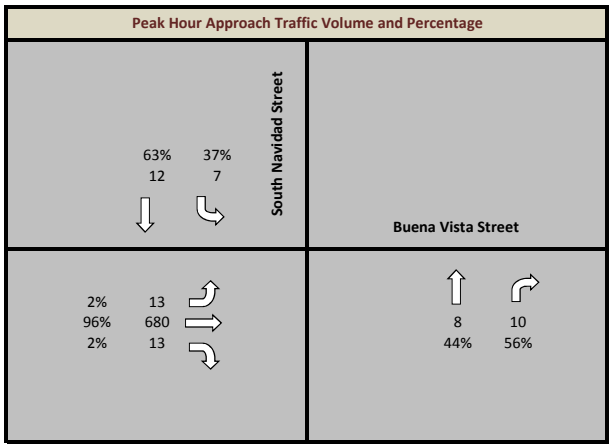
South Navidad Street and Buena Vista Street

Intersection	**North/South Street :**	**South Navidad Street**	
	East/West Street :	**Buena Vista Street**	
City / State	**San Antonio, Texas**		
Project No.	**132-14**	**Peak Period :**	**3** **4:00 PM - 6:00 PM**
Date Recorded:	**Wednesday, January 07, 2015**	**Peak Hour:**	**4:00 PM to 5:00 PM**

AC GROUP LLC
TRAFFIC ENGINEERING AND DATA COLLECTION

Start Time	Intersection Approaches																Traffic Control	
	South Navidad Street				South Navidad Street				Buena Vista Street				Buena Vista Street					
	Northbound				Southbound				Eastbound				Westbound					
	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Total	Hourly Total
4:00 PM		2	2		5	4			4	201	4						222	
4:15 PM		3	1		1	4			3	156	1						169	
4:30 PM		2	3		1	2			2	161	4						175	
4:45 PM		1	4		0	2			4	162	4						177	743
5:00 PM		4	2		4	3			1	151	6						171	
5:15 PM		3	4		2	2			3	174	4						192	
5:30 PM		4	4		2	2			1	134	3						150	
5:45 PM		5	3		2	2			5	151	1						169	682
	Northbound				Southbound				Eastbound				Westbound					
	Left	Thur	Right		Left	Thur	Right		Left	Thur	Right		Left	Thur	Right		Total	Hourly Total
4:00 PM																	0	
4:15 PM																	0	
4:30 PM																	0	
4:45 PM																	0	0
5:00 PM																	0	
5:15 PM																	0	
5:30 PM																	0	
5:45 PM																	0	0
	Northbound				Southbound				Eastbound				Westbound					
	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Total	Hourly Total
4:00 PM	0	2	2	0	5	4	0	0	4	201	4	0	0	0	0	0	222	
4:15 PM	0	3	1	0	1	4	0	0	3	156	1	0	0	0	0	0	169	
4:30 PM	0	2	3	0	1	2	0	0	2	161	4	0	0	0	0	0	175	
4:45 PM	0	1	4	0	0	2	0	0	4	162	4	0	0	0	0	0	177	743
5:00 PM	0	4	2	0	4	3	0	0	1	151	6	0	0	0	0	0	171	
5:15 PM	0	3	4	0	2	2	0	0	3	174	4	0	0	0	0	0	192	
5:30 PM	0	4	4	0	2	2	0	0	1	134	3	0	0	0	0	0	150	
5:45 PM	0	5	3	0	2	2	0	0	5	151	1	0	0	0	0	0	169	682
Total	0	24	23	0	17	21	0	0	23	1290	27	0	0	0	0	0		
Peak Total	0	8	10	0	7	12	0	0	13	680	13	0	0	0	0	0		
Peak Turn Percent	0%	44%	56%	0%	37%	63%	0%	0%	2%	96%	2%	0%	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!		
Peak Approach Total	18				19				706				0					
FORMULA	0	12	16		20	16	0		16	804	16		0	0	0			
PHF	#DIV/0!	0.6667	0.625		0.35	0.75	#DIV/0!		0.8125	0.8458	0.8125		#DIV/0!	#DIV/0!	#DIV/0!			
Comments																		

Peak Hour Approach Traffic Volume and Percentage



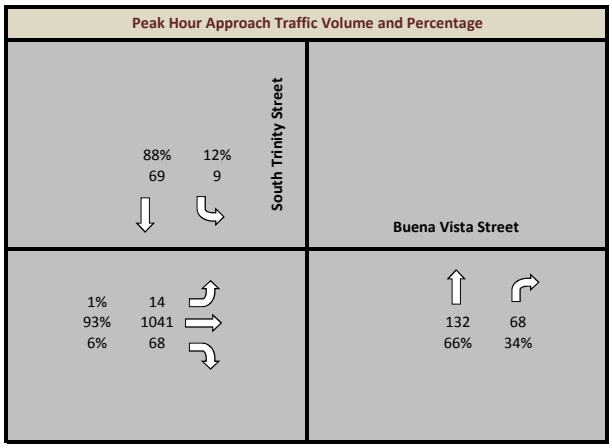
South Trinity Street and Buena Vista Street

Intersection	North/South Street :	South Trinity Street	
	East/West Street :	Buena Vista Street	
City / State	San Antonio, Texas		
Project No.	132-14	Peak Period : 1	7:00 AM - 9:00 AM
Date Recorded:	Tuesday, January 06, 2015	Peak Hour:	7:30 AM to 8:30 AM

AC GROUP LLC
TRAFFIC ENGINEERING AND DATA COLLECTION

Start Time	Intersection Approaches																Traffic Control	
	South Trinity Street				South Trinity Street				Buena Vista Street				Buena Vista Street					
	Northbound				Southbound				Eastbound				Westbound					
	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Total	Hourly Total
7:00 AM		18	8		4	8			1	167	10						216	
7:15 AM		10	14		0	17			7	214	20						282	
7:30 AM		27	17		1	10			1	305	16						377	
7:45 AM		39	22		3	19			1	292	19						395	1270
8:00 AM		37	17		0	16			7	243	15						335	
8:15 AM		29	12		5	24			5	201	18						294	
8:30 AM		39	4		3	18			6	203	28						301	
8:45 AM		42	13		6	23			7	129	23						243	1173
	Northbound				Southbound				Eastbound				Westbound					
	Left	Thur	Right		Left	Thur	Right		Left	Thur	Right		Left	Thur	Right		Total	Hourly Total
7:00 AM																	0	
7:15 AM																	0	
7:30 AM																	0	
7:45 AM																	0	0
8:00 AM																	0	
8:15 AM																	0	
8:30 AM																	0	
8:45 AM																	0	0
	Northbound				Southbound				Eastbound				Westbound					
	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Total	Hourly Total
7:00 AM	0	18	8	0	4	8	0	0	1	167	10	0	0	0	0	0	216	
7:15 AM	0	10	14	0	0	17	0	0	7	214	20	0	0	0	0	0	282	
7:30 AM	0	27	17	0	1	10	0	0	1	305	16	0	0	0	0	0	377	
7:45 AM	0	39	22	0	3	19	0	0	1	292	19	0	0	0	0	0	395	1270
8:00 AM	0	37	17	0	0	16	0	0	7	243	15	0	0	0	0	0	335	
8:15 AM	0	29	12	0	5	24	0	0	5	201	18	0	0	0	0	0	294	
8:30 AM	0	39	4	0	3	18	0	0	6	203	28	0	0	0	0	0	301	
8:45 AM	0	42	13	0	6	23	0	0	7	129	23	0	0	0	0	0	243	1173
Total	0	241	107	0	22	135	0	0	35	1754	149	0	0	0	0	0		
Peak Total	0	132	68	0	9	69	0	0	14	1041	68	0	0	0	0	0		
Peak Turn Percent	0%	66%	34%	0%	12%	88%	0%	0%	1%	93%	6%	0%	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!		
Peak Approach Total	200				78				1123				0					
FORMULA	0	156	88		20	96	0		28	1220	76		0	0	0			
PHF	#DIV/0!	0.8462	0.7727		0.45	0.7188	#DIV/0!		0.5	0.8533	0.8947		#DIV/0!	#DIV/0!	#DIV/0!			
Comments																		

Peak Hour Approach Traffic Volume and Percentage



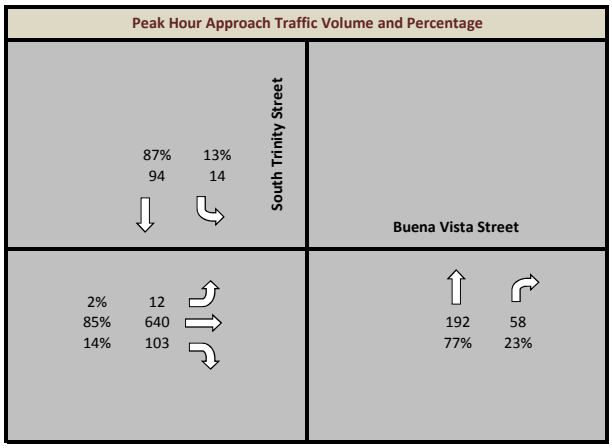
South Trinity Street and Buena Vista Street

Intersection	North/South Street :	South Trinity Street	
	East/West Street :	Buena Vista Street	
City / State	San Antonio, Texas		
Project No.	132-14	Peak Period : 3	4:00 PM - 6:00 PM
Date Recorded:	Tuesday, January 06, 2015	Peak Hour:	4:15 PM to 5:15 PM

AC GROUP LLC
TRAFFIC ENGINEERING AND DATA COLLECTION

Start Time	Intersection Approaches																Traffic Control	
	South Trinity Street				South Trinity Street				Buena Vista Street				Buena Vista Street					
	Northbound				Southbound				Eastbound				Westbound					
	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Total	Hourly Total
4:00 PM		31	8		2	31			3	160	26						261	
4:15 PM		68	15		5	29			1	158	33						309	
4:30 PM		60	14		2	23			2	150	26						277	
4:45 PM		33	13		4	28			8	160	13						259	1106
5:00 PM		31	16		3	14			1	172	31						268	
5:15 PM		32	17		5	31			4	119	26						234	
5:30 PM		34	12		6	29			4	147	14						246	
5:45 PM		21	7		3	16			5	117	25						194	942
	Northbound				Southbound				Eastbound				Westbound					
	Left	Thur	Right		Left	Thur	Right		Left	Thur	Right		Left	Thur	Right		Total	Hourly Total
4:00 PM																	0	
4:15 PM																	0	
4:30 PM																	0	
4:45 PM																	0	0
5:00 PM																	0	
5:15 PM																	0	
5:30 PM																	0	
5:45 PM																	0	0
	Northbound				Southbound				Eastbound				Westbound					
	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Total	Hourly Total
4:00 PM	0	31	8	0	2	31	0	0	3	160	26	0	0	0	0	0	261	
4:15 PM	0	68	15	0	5	29	0	0	1	158	33	0	0	0	0	0	309	
4:30 PM	0	60	14	0	2	23	0	0	2	150	26	0	0	0	0	0	277	
4:45 PM	0	33	13	0	4	28	0	0	8	160	13	0	0	0	0	0	259	1106
5:00 PM	0	31	16	0	3	14	0	0	1	172	31	0	0	0	0	0	268	
5:15 PM	0	32	17	0	5	31	0	0	4	119	26	0	0	0	0	0	234	
5:30 PM	0	34	12	0	6	29	0	0	4	147	14	0	0	0	0	0	246	
5:45 PM	0	21	7	0	3	16	0	0	5	117	25	0	0	0	0	0	194	942
Total	0	310	102	0	30	201	0	0	28	1183	194	0	0	0	0	0		
Peak Total	0	192	58	0	14	94	0	0	12	640	103	0	0	0	0	0		
Peak Turn Percent	0%	77%	23%	0%	13%	87%	0%	0%	2%	85%	14%	0%	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!		
Peak Approach Total	250				108				755				0					
FORMULA	0	272	64		20	116	0		32	688	132		0	0	0			
PHF	#DIV/0!	0.7059	0.9063		0.7	0.8103	#DIV/0!		0.375	0.9302	0.7803		#DIV/0!	#DIV/0!	#DIV/0!			
Comments																		

Peak Hour Approach Traffic Volume and Percentage



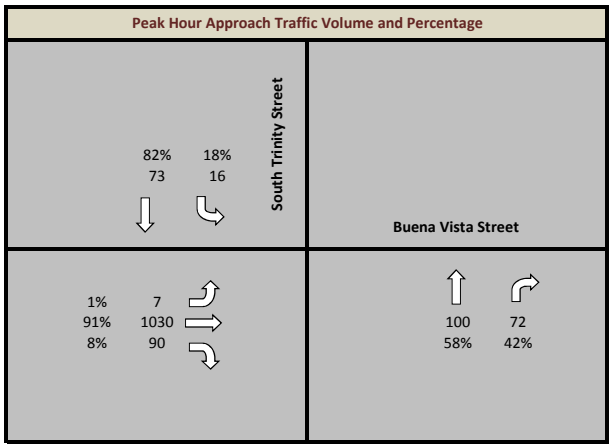
South Trinity Street and Buena Vista Street

Intersection	North/South Street :	South Trinity Street	
	East/West Street :	Buena Vista Street	
City / State	San Antonio, Texas		
Project No.	132-14	Peak Period : 1	7:00 AM - 9:00 AM
Date Recorded:	Wednesday, January 07, 2015	Peak Hour:	7:30 AM to 8:30 AM

AC GROUP LLC
TRAFFIC ENGINEERING AND DATA COLLECTION

Start Time	Intersection Approaches																Traffic Control	
	South Trinity Street				South Trinity Street				Buena Vista Street				Buena Vista Street					
	Northbound				Southbound				Eastbound				Westbound					
	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Total	Hourly Total
7:00 AM		18	4		5	12			1	170	12						222	
7:15 AM		21	11		1	9			2	217	18						279	
7:30 AM		17	27		2	17			1	268	14						346	
7:45 AM		24	20		6	20			1	299	20						390	1237
8:00 AM		27	15		7	18			0	241	22						330	
8:15 AM		32	10		1	18			5	222	34						322	
8:30 AM		46	16		3	27			5	196	34						327	
8:45 AM		33	4		3	20			2	145	42						249	1228
	Northbound				Southbound				Eastbound				Westbound					
	Left	Thur	Right		Left	Thur	Right		Left	Thur	Right		Left	Thur	Right		Total	Hourly Total
7:00 AM																	0	
7:15 AM																	0	
7:30 AM																	0	
7:45 AM																	0	0
8:00 AM																	0	
8:15 AM																	0	
8:30 AM																	0	
8:45 AM																	0	0
	Northbound				Southbound				Eastbound				Westbound					
	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Total	Hourly Total
7:00 AM	0	18	4	0	5	12	0	0	1	170	12	0	0	0	0	0	222	
7:15 AM	0	21	11	0	1	9	0	0	2	217	18	0	0	0	0	0	279	
7:30 AM	0	17	27	0	2	17	0	0	1	268	14	0	0	0	0	0	346	
7:45 AM	0	24	20	0	6	20	0	0	1	299	20	0	0	0	0	0	390	1237
8:00 AM	0	27	15	0	7	18	0	0	0	241	22	0	0	0	0	0	330	
8:15 AM	0	32	10	0	1	18	0	0	5	222	34	0	0	0	0	0	322	
8:30 AM	0	46	16	0	3	27	0	0	5	196	34	0	0	0	0	0	327	
8:45 AM	0	33	4	0	3	20	0	0	2	145	42	0	0	0	0	0	249	1228
Total	0	218	107	0	28	141	0	0	17	1758	196	0	0	0	0	0		
Peak Total	0	100	72	0	16	73	0	0	7	1030	90	0	0	0	0	0		
Peak Turn Percent	0%	58%	42%	0%	18%	82%	0%	0%	1%	91%	8%	0%	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!		
Peak Approach Total	172				89				1127				0					
FORMULA	0	128	108		28	80	0		20	1196	136		0	0	0			
PHF	#DIV/0!	0.7813	0.6667		0.5714	0.9125	#DIV/0!		0.35	0.8612	0.6618		#DIV/0!	#DIV/0!	#DIV/0!			
Comments																		

Peak Hour Approach Traffic Volume and Percentage



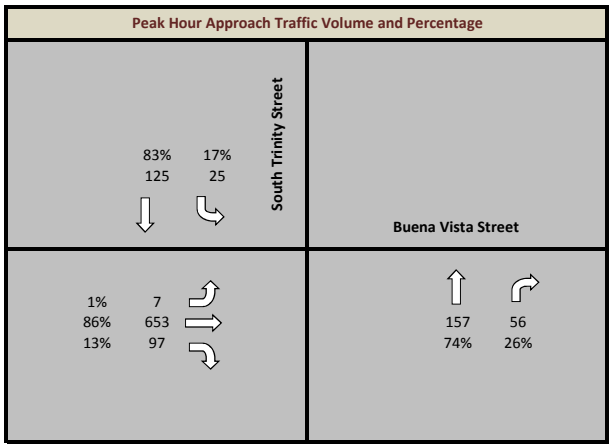
South Trinity Street and Buena Vista Street

Intersection	North/South Street :	South Trinity Street	
	East/West Street :	Buena Vista Street	
City / State	San Antonio, Texas		
Project No.	132-14	Peak Period : 3	4:00 PM - 6:00 PM
Date Recorded:	Wednesday, January 07, 2015	Peak Hour:	4:00 PM to 5:00 PM

AC GROUP LLC
TRAFFIC ENGINEERING AND DATA COLLECTION

Start Time	Intersection Approaches																Traffic Control	
	South Trinity Street				South Trinity Street				Buena Vista Street				Buena Vista Street					
	Northbound				Southbound				Eastbound				Westbound					
	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Total	Hourly Total
4:00 PM		28	9		3	33			2	164	24						263	
4:15 PM		64	14		6	31			2	159	36						312	
4:30 PM		41	14		9	30			2	180	16						292	
4:45 PM		24	19		7	31			1	150	21						253	1120
5:00 PM		33	15		5	22			4	155	20						254	
5:15 PM		27	10		4	21			1	152	25						240	
5:30 PM		38	11		4	25			3	119	15						215	
5:45 PM		30	7		2	18			3	121	19						200	909
	Northbound				Southbound				Eastbound				Westbound					
	Left	Thur	Right		Left	Thur	Right		Left	Thur	Right		Left	Thur	Right		Total	Hourly Total
4:00 PM																	0	
4:15 PM																	0	
4:30 PM																	0	
4:45 PM																	0	0
5:00 PM																	0	
5:15 PM																	0	
5:30 PM																	0	
5:45 PM																	0	0
	Northbound				Southbound				Eastbound				Westbound					
	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Total	Hourly Total
4:00 PM	0	28	9	0	3	33	0	0	2	164	24	0	0	0	0	0	263	
4:15 PM	0	64	14	0	6	31	0	0	2	159	36	0	0	0	0	0	312	
4:30 PM	0	41	14	0	9	30	0	0	2	180	16	0	0	0	0	0	292	
4:45 PM	0	24	19	0	7	31	0	0	1	150	21	0	0	0	0	0	253	1120
5:00 PM	0	33	15	0	5	22	0	0	4	155	20	0	0	0	0	0	254	
5:15 PM	0	27	10	0	4	21	0	0	1	152	25	0	0	0	0	0	240	
5:30 PM	0	38	11	0	4	25	0	0	3	119	15	0	0	0	0	0	215	
5:45 PM	0	30	7	0	2	18	0	0	3	121	19	0	0	0	0	0	200	909
Total	0	285	99	0	40	211	0	0	18	1200	176	0	0	0	0	0		
Peak Total	0	157	56	0	25	125	0	0	7	653	97	0	0	0	0	0		
Peak Turn Percent	0%	74%	26%	0%	17%	83%	0%	0%	1%	86%	13%	0%	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!		
Peak Approach Total	213				150				757				0					
FORMULA	0	256	76		36	132	0		8	720	144		0	0	0			
PHF	#DIV/0!	0.6133	0.7368		0.6944	0.947	#DIV/0!		0.875	0.9069	0.6736		#DIV/0!	#DIV/0!	#DIV/0!			
Comments																		

Peak Hour Approach Traffic Volume and Percentage



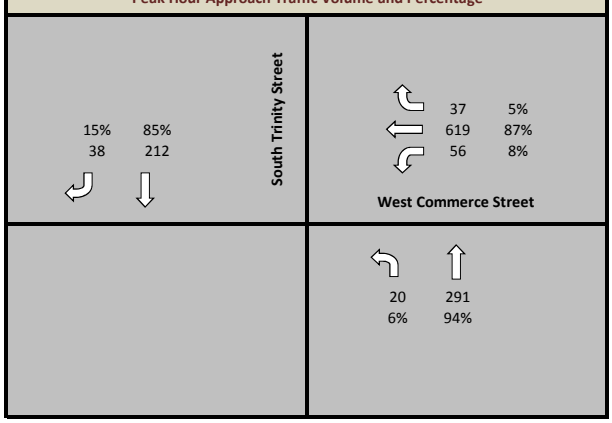
South Trinity Street and West Commerce Street

Intersection	North/South Street :	South Trinity Street	
	East/West Street :	West Commerce Street	
City / State	San Antonio, Texas		
Project No.	132-14	Peak Period : 1	7:00 AM - 9:00 AM
Date Recorded:	Tuesday, January 06, 2015	Peak Hour:	7:45 AM to 8:45 AM

AC GROUP LLC
TRAFFIC ENGINEERING AND DATA COLLECTION

Start Time	Intersection Approaches																Traffic Control	
	South Trinity Street				South Trinity Street				West Commerce Street				West Commerce Street					
	Northbound				Southbound				Eastbound				Westbound					
	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Total	Hourly Total
7:00 AM	6	55				26	14						15	93	6		215	
7:15 AM	3	81				44	14						11	97	12		262	
7:30 AM	5	92				53	26						10	112	16		314	
7:45 AM	1	72				54	13						14	161	9		324	1115
8:00 AM	10	71				60	19						19	154	7		340	
8:15 AM	3	67				48	2						10	155	9		294	
8:30 AM	6	81				50	4						13	149	12		315	
8:45 AM	6	58				30	15						6	168	7		290	1239
	Northbound				Southbound				Eastbound				Westbound					
	Left	Thur	Right		Left	Thur	Right		Left	Thur	Right		Left	Thur	Right		Total	Hourly Total
7:00 AM																	0	
7:15 AM																	0	
7:30 AM																	0	
7:45 AM																	0	0
8:00 AM																	0	
8:15 AM																	0	
8:30 AM																	0	
8:45 AM																	0	0
	Northbound				Southbound				Eastbound				Westbound					
	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Total	Hourly Total
7:00 AM	6	55	0	0	0	26	14	0	0	0	0	0	15	93	6	0	215	
7:15 AM	3	81	0	0	0	44	14	0	0	0	0	0	11	97	12	0	262	
7:30 AM	5	92	0	0	0	53	26	0	0	0	0	0	10	112	16	0	314	
7:45 AM	1	72	0	0	0	54	13	0	0	0	0	0	14	161	9	0	324	1115
8:00 AM	10	71	0	0	0	60	19	0	0	0	0	0	19	154	7	0	340	
8:15 AM	3	67	0	0	0	48	2	0	0	0	0	0	10	155	9	0	294	
8:30 AM	6	81	0	0	0	50	4	0	0	0	0	0	13	149	12	0	315	
8:45 AM	6	58	0	0	0	30	15	0	0	0	0	0	6	168	7	0	290	1239
Total	40	577	0	0	0	365	107	0	0	0	0	0	98	1089	78	0		
Peak Total	20	291	0	0	0	212	38	0	0	0	0	0	56	619	37	0		
Peak Turn Percent	6%	94%	0%	0%	0%	85%	15%	0%	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	8%	87%	5%	0%		
Peak Approach Total	311				250				0				712					
FORMULA	40	324	0		0	240	76		0	0	0		76	644	48			
PHF	0.5	0.8981	#DIV/0!		#DIV/0!	0.8833	0.5		#DIV/0!	#DIV/0!	#DIV/0!		0.7368	0.9612	0.7708			
Comments																		

Peak Hour Approach Traffic Volume and Percentage



South Trinity Street and West Commerce Street

Intersection	North/South Street :	South Trinity Street	
	East/West Street :	West Commerce Street	
City / State	San Antonio, Texas		
Project No.	132-14	Peak Period : 3	4:00 PM - 6:00 PM
Date Recorded:	Tuesday, January 06, 2015	Peak Hour:	4:30 PM to 5:30 PM

AC GROUP LLC
TRAFFIC ENGINEERING AND DATA COLLECTION

Start Time	Intersection Approaches																Traffic Control	
	South Trinity Street				South Trinity Street				West Commerce Street				West Commerce Street					
	Northbound				Southbound				Eastbound				Westbound					
	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Total	Hourly Total
4:00 PM	26	9				17	3						16	209	6		286	
4:15 PM	44	27				14	1						18	255	4		363	
4:30 PM	43	19				14	2						10	269	6		363	
4:45 PM	26	17				20	2						10	259	3		337	1349
5:00 PM	26	11				10	6						14	291	4		362	
5:15 PM	18	16				12	0						21	318	5		390	
5:30 PM	21	15				17	2						18	265	4		342	
5:45 PM	15	10				10	3						8	248	4		298	1392
	Northbound				Southbound				Eastbound				Westbound					
	Left	Thur	Right		Left	Thur	Right		Left	Thur	Right		Left	Thur	Right		Total	Hourly Total
4:00 PM																	0	
4:15 PM																	0	
4:30 PM																	0	
4:45 PM																	0	0
5:00 PM																	0	
5:15 PM																	0	
5:30 PM																	0	
5:45 PM																	0	0
	Northbound				Southbound				Eastbound				Westbound					
	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Total	Hourly Total
4:00 PM	26	9	0	0	0	17	3	0	0	0	0	0	16	209	6	0	286	
4:15 PM	44	27	0	0	0	14	1	0	0	0	0	0	18	255	4	0	363	
4:30 PM	43	19	0	0	0	14	2	0	0	0	0	0	10	269	6	0	363	
4:45 PM	26	17	0	0	0	20	2	0	0	0	0	0	10	259	3	0	337	1349
5:00 PM	26	11	0	0	0	10	6	0	0	0	0	0	14	291	4	0	362	
5:15 PM	18	16	0	0	0	12	0	0	0	0	0	0	21	318	5	0	390	
5:30 PM	21	15	0	0	0	17	2	0	0	0	0	0	18	265	4	0	342	
5:45 PM	15	10	0	0	0	10	3	0	0	0	0	0	8	248	4	0	298	1392
Total	219	124	0	0	0	114	19	0	0	0	0	0	115	2114	36	0		
Peak Total	113	63	0	0	0	56	10	0	0	0	0	0	55	1137	18	0		
Peak Turn Percent	64%	36%	0%	0%	0%	85%	15%	0%	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	5%	94%	1%	0%		
Peak Approach Total	176				66				0				1210					
FORMULA	172	76	0		0	80	24		0	0	0		84	1272	24			
PHF	0.657	0.8289	#DIV/0!		#DIV/0!	0.7	0.4167		#DIV/0!	#DIV/0!	#DIV/0!		0.6548	0.8939	0.75			
Comments																		

Peak Hour Approach Traffic Volume and Percentage

South Trinity Street

15% 85%
10 56

West Commerce Street

18 1%
1137 94%
55 5%

113 63
64% 36%

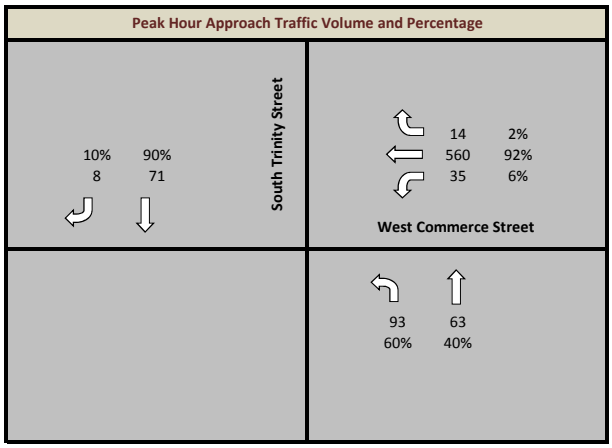
South Trinity Street and West Commerce Street

Intersection	**North/South Street :**	**South Trinity Street**	
	East/West Street :	**West Commerce Street**	
City / State	**San Antonio, Texas**		
Project No.	**132-14**	**Peak Period :**	**1** **7:00 AM - 9:00 AM**
Date Recorded:	**Wednesday, January 07, 2015**	**Peak Hour:**	**8:00 AM to 9:00 AM**

AC GROUP LLC
TRAFFIC ENGINEERING AND DATA COLLECTION

Start Time	Intersection Approaches																Traffic Control	
	South Trinity Street				South Trinity Street				West Commerce Street				West Commerce Street					
	Northbound				Southbound				Eastbound				Westbound					
	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Total	Hourly Total
7:00 AM	11	6				11	1						8	109	1		147	
7:15 AM	16	8				5	1						7	130	0		167	
7:30 AM	8	10				13	4						8	118	1		162	
7:45 AM	10	18				17	2						7	155	0		209	685
8:00 AM	15	12				17	2						13	140	7		206	
8:15 AM	19	15				12	1						7	112	1		167	
8:30 AM	32	23				24	4						9	157	4		253	
8:45 AM	27	13				18	1						6	151	2		218	844
	Northbound				Southbound				Eastbound				Westbound					
	Left	Thur	Right		Left	Thur	Right		Left	Thur	Right		Left	Thur	Right		Total	Hourly Total
7:00 AM																	0	
7:15 AM																	0	
7:30 AM																	0	
7:45 AM																	0	0
8:00 AM																	0	
8:15 AM																	0	
8:30 AM																	0	
8:45 AM																	0	0
	Northbound				Southbound				Eastbound				Westbound					
	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Total	Hourly Total
7:00 AM	11	6	0	0	0	11	1	0	0	0	0	0	8	109	1	0	147	
7:15 AM	16	8	0	0	0	5	1	0	0	0	0	0	7	130	0	0	167	
7:30 AM	8	10	0	0	0	13	4	0	0	0	0	0	8	118	1	0	162	
7:45 AM	10	18	0	0	0	17	2	0	0	0	0	0	7	155	0	0	209	685
8:00 AM	15	12	0	0	0	17	2	0	0	0	0	0	13	140	7	0	206	
8:15 AM	19	15	0	0	0	12	1	0	0	0	0	0	7	112	1	0	167	
8:30 AM	32	23	0	0	0	24	4	0	0	0	0	0	9	157	4	0	253	
8:45 AM	27	13	0	0	0	18	1	0	0	0	0	0	6	151	2	0	218	844
Total	138	105	0	0	0	117	16	0	0	0	0	0	65	1072	16	0		
Peak Total	93	63	0	0	0	71	8	0	0	0	0	0	35	560	14	0		
Peak Turn Percent	60%	40%	0%	0%	0%	90%	10%	0%	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	6%	92%	2%	0%		
Peak Approach Total	156				79				0				609					
FORMULA	128	92	0		0	96	16		0	0	0		52	628	28			
PHF	0.7266	0.6848	#DIV/0!		#DIV/0!	0.7396	0.5		#DIV/0!	#DIV/0!	#DIV/0!		0.6731	0.8917	0.5			
Comments																		

Peak Hour Approach Traffic Volume and Percentage



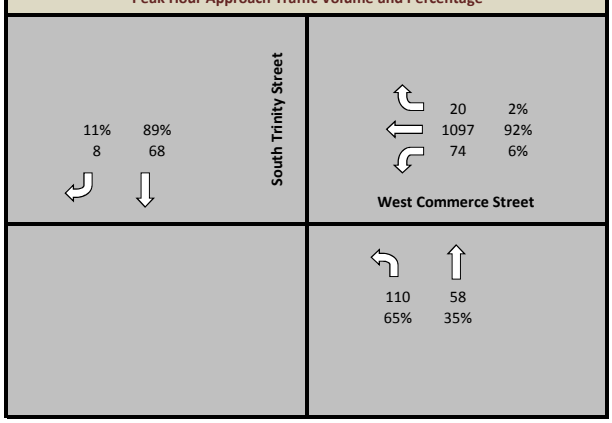
South Trinity Street and West Commerce Street

Intersection	North/South Street :	South Trinity Street	
	East/West Street :	West Commerce Street	
City / State	San Antonio, Texas		
Project No.	132-14	Peak Period : 3	4:00 PM - 6:00 PM
Date Recorded:	Wednesday, January 07, 2015	Peak Hour:	4:15 PM to 5:15 PM

AC GROUP LLC
TRAFFIC ENGINEERING AND DATA COLLECTION

Start Time	Intersection Approaches																Traffic Control	
	South Trinity Street				South Trinity Street				West Commerce Street				West Commerce Street					
	Northbound				Southbound				Eastbound				Westbound					
	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Total	Hourly Total
4:00 PM	26	7				19	3						10	224	6		295	
4:15 PM	42	19				27	1						15	264	6		374	
4:30 PM	27	17				19	2						21	269	6		361	
4:45 PM	17	11				14	2						18	278	5		345	1375
5:00 PM	24	11				8	3						20	286	3		355	
5:15 PM	19	8				7	3						15	283	10		345	
5:30 PM	30	11				15	1						15	249	1		322	
5:45 PM	25	10				10	3						12	232	2		294	1316
	Northbound				Southbound				Eastbound				Westbound					
	Left	Thur	Right		Left	Thur	Right		Left	Thur	Right		Left	Thur	Right		Total	Hourly Total
4:00 PM																	0	
4:15 PM																	0	
4:30 PM																	0	
4:45 PM																	0	0
5:00 PM																	0	
5:15 PM																	0	
5:30 PM																	0	
5:45 PM																	0	0
	Northbound				Southbound				Eastbound				Westbound					
	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Total	Hourly Total
4:00 PM	26	7	0	0	0	19	3	0	0	0	0	0	10	224	6	0	295	
4:15 PM	42	19	0	0	0	27	1	0	0	0	0	0	15	264	6	0	374	
4:30 PM	27	17	0	0	0	19	2	0	0	0	0	0	21	269	6	0	361	
4:45 PM	17	11	0	0	0	14	2	0	0	0	0	0	18	278	5	0	345	1375
5:00 PM	24	11	0	0	0	8	3	0	0	0	0	0	20	286	3	0	355	
5:15 PM	19	8	0	0	0	7	3	0	0	0	0	0	15	283	10	0	345	
5:30 PM	30	11	0	0	0	15	1	0	0	0	0	0	15	249	1	0	322	
5:45 PM	25	10	0	0	0	10	3	0	0	0	0	0	12	232	2	0	294	1316
Total	210	94	0	0	0	119	18	0	0	0	0	0	126	2085	39	0		
Peak Total	110	58	0	0	0	68	8	0	0	0	0	0	74	1097	20	0		
Peak Turn Percent	65%	35%	0%	0%	0%	89%	11%	0%	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	6%	92%	2%	0%		
Peak Approach Total	168				76				0				1191					
FORMULA	168	76	0		0	108	12		0	0	0		84	1144	24			
PHF	0.6548	0.7632	#DIV/0!		#DIV/0!	0.6296	0.6667		#DIV/0!	#DIV/0!	#DIV/0!		0.881	0.9589	0.8333			
Comments																		

Peak Hour Approach Traffic Volume and Percentage



Las Moras Street and West Commerce Street

Intersection	North/South Street :	Las Moras Street	
	East/West Street :	West Commerce Street	
City / State	San Antonio, Texas		
Project No.	132-14	Peak Period :	1 — 7:00 AM - 9:00 AM
Date Recorded:	Tuesday, January 06, 2015	Peak Hour:	8:00 AM to 9:00 AM

AC GROUP LLC — TRAFFIC ENGINEERING AND DATA COLLECTION

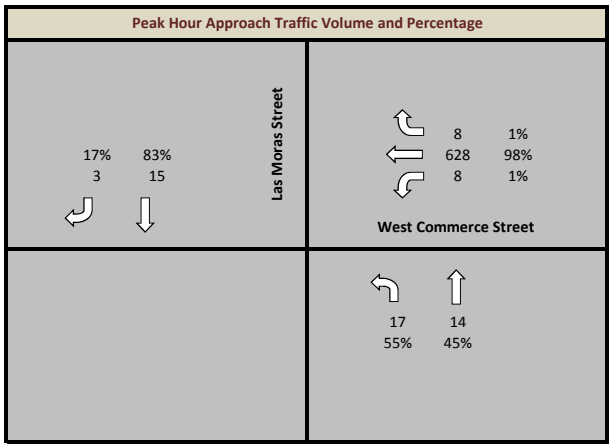
Start Time	Intersection Approaches																Traffic Control	
	Las Moras Street				Las Moras Street				West Commerce Street				West Commerce Street					
	Northbound				Southbound				Eastbound				Westbound					
	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Total	Hourly Total
7:00 AM	0	1				3	2						4	110	2		122	
7:15 AM	1	4				0	0						0	104	9		118	
7:30 AM	2	2				1	0						0	148	1		154	
7:45 AM	1	1				4	1						0	142	7		156	550
8:00 AM	3	1				2	1						0	158	0		165	
8:15 AM	2	7				4	1						2	151	3		170	
8:30 AM	7	2				4	1						2	138	1		155	
8:45 AM	5	4				5	0						4	181	4		203	693

	Northbound			Southbound			Eastbound			Westbound				
	Left	Thur	Right	Left	Thur	Right	Left	Thur	Right	Left	Thur	Right	Total	Hourly Total
7:00 AM													0	
7:15 AM													0	
7:30 AM													0	
7:45 AM													0	0
8:00 AM													0	
8:15 AM													0	
8:30 AM													0	
8:45 AM													0	0

	Northbound				Southbound				Eastbound				Westbound					
	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Total	Hourly Total
7:00 AM	0	1	0	0	0	3	2	0	0	0	0	0	4	110	2	0	122	
7:15 AM	1	4	0	0	0	0	0	0	0	0	0	0	0	104	9	0	118	
7:30 AM	2	2	0	0	0	1	0	0	0	0	0	0	0	148	1	0	154	
7:45 AM	1	1	0	0	0	4	1	0	0	0	0	0	0	142	7	0	156	550
8:00 AM	3	1	0	0	0	2	1	0	0	0	0	0	0	158	0	0	165	
8:15 AM	2	7	0	0	0	4	1	0	0	0	0	0	2	151	3	0	170	
8:30 AM	7	2	0	0	0	4	1	0	0	0	0	0	2	138	1	0	155	
8:45 AM	5	4	0	0	0	5	0	0	0	0	0	0	4	181	4	0	203	693
Total	21	22	0	0	0	23	6	0	0	0	0	0	12	1132	27	0		
Peak Total	17	14	0	0	0	15	3	0	0	0	0	0	8	628	8	0		
Peak Turn Percent	55%	45%	0%	0%	0%	83%	17%	0%	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	1%	98%	1%	0%		
Peak Approach Total	31				18				0				644					
FORMULA	28	28	0		0	20	4		0	0	0		16	724	16			
PHF	0.6071	0.5	#DIV/0!		#DIV/0!	0.75	0.75		#DIV/0!	#DIV/0!	#DIV/0!		0.5	0.8674	0.5			

Comments

Peak Hour Approach Traffic Volume and Percentage



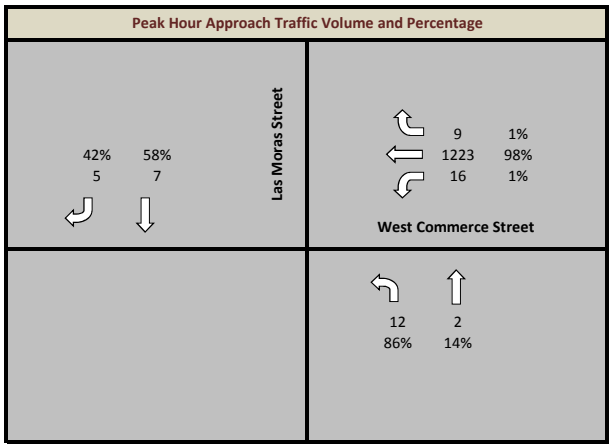
Las Moras Street and West Commerce Street

Intersection	North/South Street :	Las Moras Street	
	East/West Street :	West Commerce Street	
City / State	San Antonio, Texas		
Project No.	132-14	Peak Period :	3 — 4:00 PM - 6:00 PM
Date Recorded:	Tuesday, January 06, 2015	Peak Hour:	4:45 PM to 5:45 PM

AC GROUP LLC — TRAFFIC ENGINEERING AND DATA COLLECTION

Start Time	Intersection Approaches																Traffic Control	
	Las Moras Street				Las Moras Street				West Commerce Street				West Commerce Street					
	Northbound				Southbound				Eastbound				Westbound					
	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Total	Hourly Total
4:00 PM	3	0				3	1						5	239	6		257	
4:15 PM	17	5				0	2						6	246	1		277	
4:30 PM	5	0				7	3						2	269	1		287	
4:45 PM	3	0				4	1						4	274	1		287	1108
5:00 PM	3	1				1	3						7	313	4		332	
5:15 PM	2	1				1	0						4	352	4		364	
5:30 PM	4	0				1	1						1	284	0		291	
5:45 PM	0	2				1	0						4	274	0		281	1268
	Northbound				Southbound				Eastbound				Westbound					
	Left	Thur	Right		Left	Thur	Right		Left	Thur	Right		Left	Thur	Right		Total	Hourly Total
4:00 PM																	0	
4:15 PM																	0	
4:30 PM																	0	
4:45 PM																	0	0
5:00 PM																	0	
5:15 PM																	0	
5:30 PM																	0	
5:45 PM																	0	0
	Northbound				Southbound				Eastbound				Westbound					
	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Total	Hourly Total
4:00 PM	3	0	0	0	0	3	1	0	0	0	0	0	5	239	6	0	257	
4:15 PM	17	5	0	0	0	0	2	0	0	0	0	0	6	246	1	0	277	
4:30 PM	5	0	0	0	0	7	3	0	0	0	0	0	2	269	1	0	287	
4:45 PM	3	0	0	0	0	4	1	0	0	0	0	0	4	274	1	0	287	1108
5:00 PM	3	1	0	0	0	1	3	0	0	0	0	0	7	313	4	0	332	
5:15 PM	2	1	0	0	0	1	0	0	0	0	0	0	4	352	4	0	364	
5:30 PM	4	0	0	0	0	1	1	0	0	0	0	0	1	284	0	0	291	
5:45 PM	0	2	0	0	0	1	0	0	0	0	0	0	4	274	0	0	281	1268
Total	37	9	0	0	0	18	11	0	0	0	0	0	33	2251	17	0		
Peak Total	12	2	0	0	0	7	5	0	0	0	0	0	16	1223	9	0		
Peak Turn Percent	86%	14%	0%	0%	0%	58%	42%	0%	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	1%	98%	1%	0%		
Peak Approach Total	14				12				0				1248					
FORMULA	16	4	0		0	16	12		0	0	0		28	1408	16			
PHF	0.75	0.5	#DIV/0!		#DIV/0!	0.4375	0.4167		#DIV/0!	#DIV/0!	#DIV/0!		0.5714	0.8686	0.5625			
Comments																		

Peak Hour Approach Traffic Volume and Percentage



Las Moras Street and West Commerce Street

Intersection	North/South Street :	Las Moras Street	
	East/West Street :	West Commerce Street	
City / State	San Antonio, Texas		
Project No.	132-14	Peak Period :	1 — 7:00 AM - 9:00 AM
Date Recorded:	Wednesday, January 07, 2015	Peak Hour:	8:00 AM to 9:00 AM

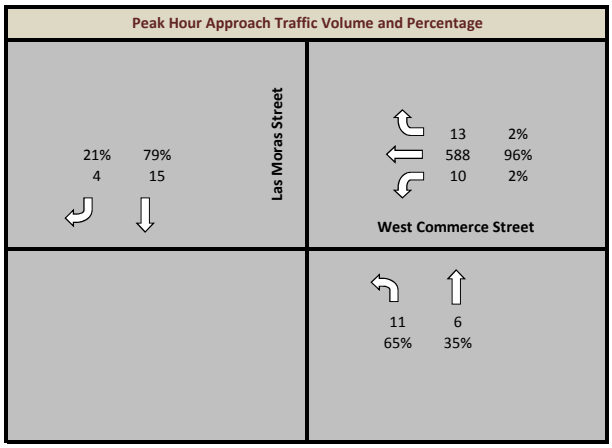
AC GROUP LLC — TRAFFIC ENGINEERING AND DATA COLLECTION

Start Time	Intersection Approaches																Traffic Control	
	Las Moras Street				Las Moras Street				West Commerce Street				West Commerce Street					
	Northbound				Southbound				Eastbound				Westbound					
	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Total	Hourly Total
7:00 AM	1	0				1	4						2	121	3		132	
7:15 AM	1	4				2	0						1	144	6		158	
7:30 AM	0	3				0	2						2	121	4		132	
7:45 AM	1	0				1	1						0	151	1		155	577
8:00 AM	2	0				3	0						1	155	4		165	
8:15 AM	1	1				2	0						3	112	4		123	
8:30 AM	4	2				8	3						3	172	1		193	
8:45 AM	4	3				2	1						3	149	4		166	647

	Northbound			Southbound			Eastbound			Westbound				
	Left	Thur	Right	Left	Thur	Right	Left	Thur	Right	Left	Thur	Right	Total	Hourly Total
7:00 AM													0	
7:15 AM													0	
7:30 AM													0	
7:45 AM													0	0
8:00 AM													0	
8:15 AM													0	
8:30 AM													0	
8:45 AM													0	0

	Northbound				Southbound				Eastbound				Westbound					
	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Total	Hourly Total
7:00 AM	1	0	0	0	0	1	4	0	0	0	0	0	2	121	3	0	132	
7:15 AM	1	4	0	0	0	2	0	0	0	0	0	0	1	144	6	0	158	
7:30 AM	0	3	0	0	0	0	2	0	0	0	0	0	2	121	4	0	132	
7:45 AM	1	0	0	0	0	1	1	0	0	0	0	0	0	151	1	0	155	577
8:00 AM	2	0	0	0	0	3	0	0	0	0	0	0	1	155	4	0	165	
8:15 AM	1	1	0	0	0	2	0	0	0	0	0	0	3	112	4	0	123	
8:30 AM	4	2	0	0	0	8	3	0	0	0	0	0	3	172	1	0	193	
8:45 AM	4	3	0	0	0	2	1	0	0	0	0	0	3	149	4	0	166	647
Total	14	13	0	0	0	19	11	0	0	0	0	0	15	1125	27	0		
Peak Total	11	6	0	0	0	15	4	0	0	0	0	0	10	588	13	0		
Peak Turn Percent	65%	35%	0%	0%	0%	79%	21%	0%	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	2%	96%	2%	0%		
Peak Approach Total	17				19				0				611					
FORMULA	16	12	0		0	32	12		0	0	0		12	688	16			
PHF	0.6875	0.5	#DIV/0!		#DIV/0!	0.4688	0.3333		#DIV/0!	#DIV/0!	#DIV/0!		0.8333	0.8547	0.8125			
Comments																		

Peak Hour Approach Traffic Volume and Percentage



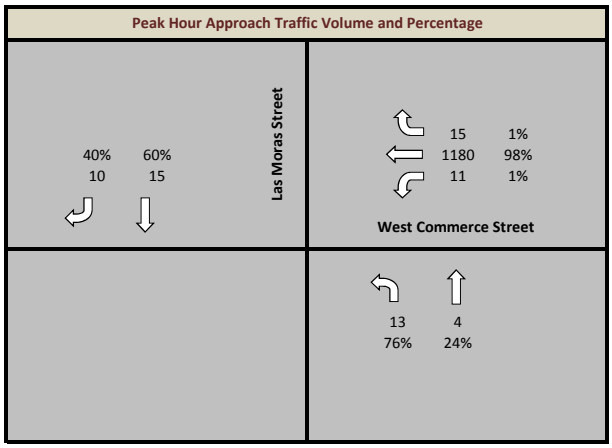
Las Moras Street and West Commerce Street

Intersection	North/South Street :	Las Moras Street	
	East/West Street :	West Commerce Street	
City / State	San Antonio, Texas		
Project No.	132-14	Peak Period :	3 — 4:00 PM - 6:00 PM
Date Recorded:	Wednesday, January 07, 2015	Peak Hour:	4:30 PM to 5:30 PM

AC GROUP LLC — TRAFFIC ENGINEERING AND DATA COLLECTION

Start Time	Intersection Approaches																Traffic Control	
	Las Moras Street				Las Moras Street				West Commerce Street				West Commerce Street					
	Northbound				Southbound				Eastbound				Westbound					
	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Total	Hourly Total
4:00 PM	5	2				0	3						3	231	1		245	
4:15 PM	12	3				1	2						3	249	2		272	
4:30 PM	6	2				9	5						1	286	7		316	
4:45 PM	1	1				2	3						2	288	2		299	1132
5:00 PM	5	1				2	2						3	300	3		316	
5:15 PM	1	0				2	0						5	306	3		317	
5:30 PM	1	2				1	0						3	259	1		267	
5:45 PM	3	2				2	0						0	246	1		254	1154
	Northbound				Southbound				Eastbound				Westbound					
	Left	Thur	Right		Left	Thur	Right		Left	Thur	Right		Left	Thur	Right		Total	Hourly Total
4:00 PM																	0	
4:15 PM																	0	
4:30 PM																	0	
4:45 PM																	0	0
5:00 PM																	0	
5:15 PM																	0	
5:30 PM																	0	
5:45 PM																	0	0
	Northbound				Southbound				Eastbound				Westbound					
	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Total	Hourly Total
4:00 PM	5	2	0	0	0	0	3	0	0	0	0	0	3	231	1	0	245	
4:15 PM	12	3	0	0	0	1	2	0	0	0	0	0	3	249	2	0	272	
4:30 PM	6	2	0	0	0	9	5	0	0	0	0	0	1	286	7	0	316	
4:45 PM	1	1	0	0	0	2	3	0	0	0	0	0	2	288	2	0	299	1132
5:00 PM	5	1	0	0	0	2	2	0	0	0	0	0	3	300	3	0	316	
5:15 PM	1	0	0	0	0	2	0	0	0	0	0	0	5	306	3	0	317	
5:30 PM	1	2	0	0	0	1	0	0	0	0	0	0	3	259	1	0	267	
5:45 PM	3	2	0	0	0	2	0	0	0	0	0	0	0	246	1	0	254	1154
Total	34	13	0	0	0	19	15	0	0	0	0	0	20	2165	20	0		
Peak Total	13	4	0	0	0	15	10	0	0	0	0	0	11	1180	15	0		
Peak Turn Percent	76%	24%	0%	0%	0%	60%	40%	0%	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	1%	98%	1%	0%		
Peak Approach Total	17				25				0				1206					
FORMULA	24	8	0		0	36	20		0	0	0		20	1224	28			
PHF	0.5417	0.5	#DIV/0!		#DIV/0!	0.4167	0.5		#DIV/0!	#DIV/0!	#DIV/0!		0.55	0.9641	0.5357			
Comments																		

Peak Hour Approach Traffic Volume and Percentage



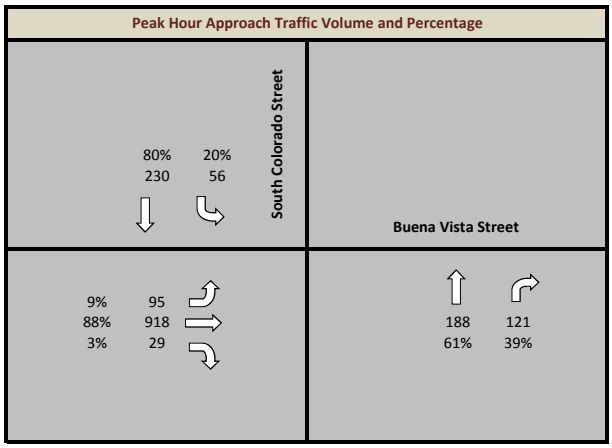
South Colorado Street and Buena Vista Street

Intersection	North/South Street :	South Colorado Street	
	East/West Street :	Buena Vista Street	
City / State	San Antonio, Texas		
Project No.	132-14	Peak Period : 1	7:00 AM - 9:00 AM
Date Recorded:	Thursday, December 11, 2014	Peak Hour:	7:30 AM to 8:30 AM

AC GROUP LLC
TRAFFIC ENGINEERING AND DATA COLLECTION

Start Time	Intersection Approaches																Traffic Control	
	South Colorado Street				South Colorado Street				Buena Vista Street				Buena Vista Street					
	Northbound				Southbound				Eastbound				Westbound					Hourly
	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Total	Total
7:00 AM		24	6		12	42			21	107	3						215	
7:15 AM		29	12		8	52			40	181	5						327	
7:30 AM		53	25		21	41			36	254	5						435	
7:45 AM		37	25		13	55			23	304	7						464	1441
8:00 AM		56	34		11	67			19	173	8						368	
8:15 AM		42	37		11	67			17	187	9						370	
8:30 AM		60	35		17	63			11	176	2						364	
8:45 AM		49	30		15	45			23	140	8						310	1412
	Northbound				Southbound				Eastbound				Westbound					Hourly
	Left	Thur	Right		Left	Thur	Right		Left	Thur	Right		Left	Thur	Right		Total	Total
7:00 AM																	0	
7:15 AM																	0	
7:30 AM																	0	
7:45 AM																	0	0
8:00 AM																	0	
8:15 AM																	0	
8:30 AM																	0	
8:45 AM																	0	0
	Northbound				Southbound				Eastbound				Westbound					Hourly
	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Total	Total
7:00 AM	0	24	6	0	12	42	0	0	21	107	3	0	0	0	0	0	215	
7:15 AM	0	29	12	0	8	52	0	0	40	181	5	0	0	0	0	0	327	
7:30 AM	0	53	25	0	21	41	0	0	36	254	5	0	0	0	0	0	435	
7:45 AM	0	37	25	0	13	55	0	0	23	304	7	0	0	0	0	0	464	1441
8:00 AM	0	56	34	0	11	67	0	0	19	173	8	0	0	0	0	0	368	
8:15 AM	0	42	37	0	11	67	0	0	17	187	9	0	0	0	0	0	370	
8:30 AM	0	60	35	0	17	63	0	0	11	176	2	0	0	0	0	0	364	
8:45 AM	0	49	30	0	15	45	0	0	23	140	8	0	0	0	0	0	310	1412
Total	0	350	204	0	108	432	0	0	190	1522	47	0	0	0	0	0		
Peak Total	0	188	121	0	56	230	0	0	95	918	29	0	0	0	0	0		
Peak Turn Percent	0%	61%	39%	0%	20%	80%	0%	0%	9%	88%	3%	0%	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!		
Peak Approach Total	309				286				1042				0					
FORMULA	0	224	148		84	268	0		144	1216	36		0	0	0			
PHF	#DIV/0!	0.8393	0.8176		0.6667	0.8582	#DIV/0!		0.6597	0.7549	0.8056		#DIV/0!	#DIV/0!	#DIV/0!			
Comments																		

Peak Hour Approach Traffic Volume and Percentage



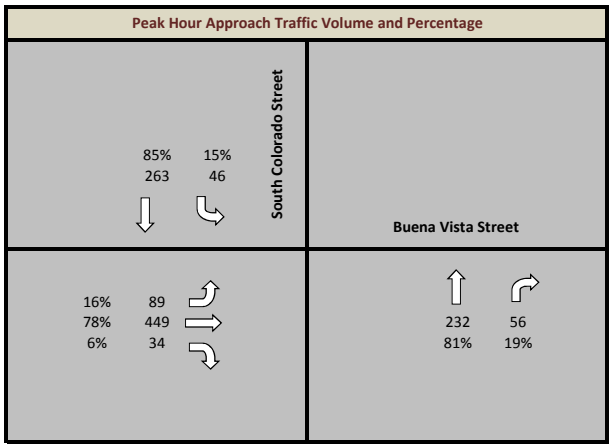
South Colorado Street and Buena Vista Street

Intersection	North/South Street :	South Colorado Street	
	East/West Street :	Buena Vista Street	
City / State	San Antonio, Texas		
Project No.	132-14	Peak Period : 3	4:00 PM - 6:00 PM
Date Recorded:	Thursday, December 11, 2014	Peak Hour:	4:45 PM to 5:45 PM

AC GROUP LLC
TRAFFIC ENGINEERING AND DATA COLLECTION

Start Time	Intersection Approaches																Traffic Control	
	South Colorado Street				South Colorado Street				Buena Vista Street				Buena Vista Street					
	Northbound				Southbound				Eastbound				Westbound					Hourly
	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Total	Total
4:00 PM		67	12		8	53			20	106	6						272	
4:15 PM		60	12		11	54			35	123	9						304	
4:30 PM		70	14		15	42			18	112	9						280	
4:45 PM		49	15		8	50			23	129	11						285	1141
5:00 PM		74	8		8	63			30	108	7						298	
5:15 PM		62	9		19	76			16	95	9						286	
5:30 PM		47	24		11	74			20	117	7						300	
5:45 PM		38	7		9	59			24	94	10						241	1125
	Northbound				Southbound				Eastbound				Westbound					Hourly
	Left	Thur	Right		Left	Thur	Right		Left	Thur	Right		Left	Thur	Right		Total	Total
4:00 PM																	0	
4:15 PM																	0	
4:30 PM																	0	
4:45 PM																	0	0
5:00 PM																	0	
5:15 PM																	0	
5:30 PM																	0	
5:45 PM																	0	0
	Northbound				Southbound				Eastbound				Westbound					Hourly
	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Total	Total
4:00 PM	0	67	12	0	8	53	0	0	20	106	6	0	0	0	0	0	272	
4:15 PM	0	60	12	0	11	54	0	0	35	123	9	0	0	0	0	0	304	
4:30 PM	0	70	14	0	15	42	0	0	18	112	9	0	0	0	0	0	280	
4:45 PM	0	49	15	0	8	50	0	0	23	129	11	0	0	0	0	0	285	1141
5:00 PM	0	74	8	0	8	63	0	0	30	108	7	0	0	0	0	0	298	
5:15 PM	0	62	9	0	19	76	0	0	16	95	9	0	0	0	0	0	286	
5:30 PM	0	47	24	0	11	74	0	0	20	117	7	0	0	0	0	0	300	
5:45 PM	0	38	7	0	9	59	0	0	24	94	10	0	0	0	0	0	241	1125
Total	0	467	101	0	89	471	0	0	186	884	68	0	0	0	0	0		
Peak Total	0	232	56	0	46	263	0	0	89	449	34	0	0	0	0	0		
Peak Turn Percent	0%	81%	19%	0%	15%	85%	0%	0%	16%	78%	6%	0%	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!		
Peak Approach Total	288				309				572				0					
FORMULA	0	296	96		76	304	0		120	516	44		0	0	0			
PHF	#DIV/0!	0.7838	0.5833		0.6053	0.8651	#DIV/0!		0.7417	0.8702	0.7727		#DIV/0!	#DIV/0!	#DIV/0!			
Comments																		

Peak Hour Approach Traffic Volume and Percentage



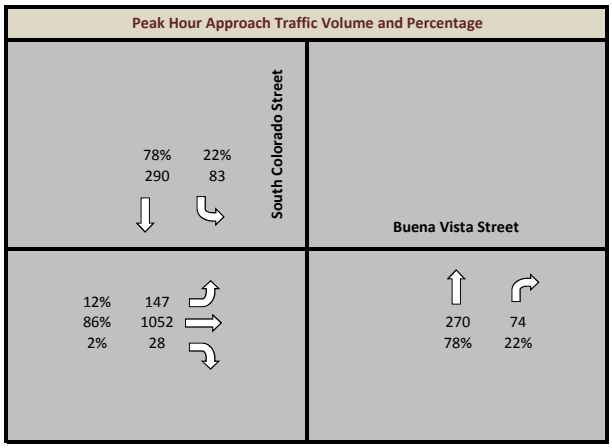
South Colorado Street and Buena Vista Street

Intersection	North/South Street :	South Colorado Street	
	East/West Street :	Buena Vista Street	
City / State	San Antonio, Texas		
Project No.	132-14	Peak Period : 1	7:00 AM - 9:00 AM
Date Recorded:	Wednesday, December 17, 2014	Peak Hour:	7:30 AM to 8:30 AM

AC GROUP LLC
TRAFFIC ENGINEERING AND DATA COLLECTION

Start Time	Intersection Approaches																Traffic Control	
	South Colorado Street				South Colorado Street				Buena Vista Street				Buena Vista Street					
	Northbound				Southbound				Eastbound				Westbound					Hourly
	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Total	Total
7:00 AM		36	10		7	27			25	126	1						232	
7:15 AM		36	11		8	35			43	181	4						318	
7:30 AM		58	13		8	43			38	277	13						450	
7:45 AM		76	26		43	81			41	342	3						612	1612
8:00 AM		66	15		16	87			35	242	8						469	
8:15 AM		70	20		16	79			33	191	4						413	
8:30 AM		53	21		4	62			36	175	8						359	
8:45 AM		59	23		6	50			34	128	7						307	1548
	Northbound				Southbound				Eastbound				Westbound					Hourly
	Left	Thur	Right		Left	Thur	Right		Left	Thur	Right		Left	Thur	Right		Total	Total
7:00 AM																	0	
7:15 AM																	0	
7:30 AM																	0	
7:45 AM																	0	0
8:00 AM																	0	
8:15 AM																	0	
8:30 AM																	0	
8:45 AM																	0	0
	Northbound				Southbound				Eastbound				Westbound					Hourly
	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Total	Total
7:00 AM	0	36	10	0	7	27	0	0	25	126	1	0	0	0	0	0	232	
7:15 AM	0	36	11	0	8	35	0	0	43	181	4	0	0	0	0	0	318	
7:30 AM	0	58	13	0	8	43	0	0	38	277	13	0	0	0	0	0	450	
7:45 AM	0	76	26	0	43	81	0	0	41	342	3	0	0	0	0	0	612	1612
8:00 AM	0	66	15	0	16	87	0	0	35	242	8	0	0	0	0	0	469	
8:15 AM	0	70	20	0	16	79	0	0	33	191	4	0	0	0	0	0	413	
8:30 AM	0	53	21	0	4	62	0	0	36	175	8	0	0	0	0	0	359	
8:45 AM	0	59	23	0	6	50	0	0	34	128	7	0	0	0	0	0	307	1548
Total	0	454	139	0	108	464	0	0	285	1662	48	0	0	0	0	0		
Peak Total	0	270	74	0	83	290	0	0	147	1052	28	0	0	0	0	0		
Peak Turn Percent	0%	78%	22%	0%	22%	78%	0%	0%	12%	86%	2%	0%	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!		
Peak Approach Total	344				373				1227				0					
FORMULA	0	304	104		172	348	0		164	1368	52		0	0	0			
PHF	#DIV/0!	0.8882	0.7115		0.4826	0.8333	#DIV/0!		0.8963	0.769	0.5385		#DIV/0!	#DIV/0!	#DIV/0!			
Comments																		

Peak Hour Approach Traffic Volume and Percentage



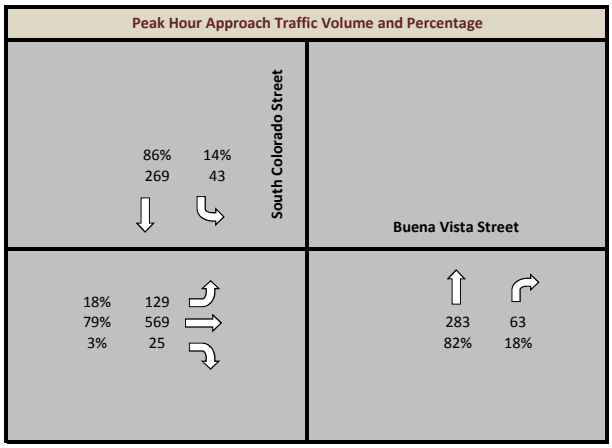
South Colorado Street and Buena Vista Street

Intersection	North/South Street :	South Colorado Street	
	East/West Street :	Buena Vista Street	
City / State	San Antonio, Texas		
Project No.	132-14	Peak Period :	3 — 4:00 PM - 6:00 PM
Date Recorded:	Wednesday, December 17, 2014	Peak Hour:	4:15 PM to 5:15 PM

AC GROUP LLC — TRAFFIC ENGINEERING AND DATA COLLECTION

Start Time	Intersection Approaches																Traffic Control	
	South Colorado Street				South Colorado Street				Buena Vista Street				Buena Vista Street					
	Northbound				Southbound				Eastbound				Westbound					
	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Total	Hourly Total
4:00 PM		62	20		16	56			23	131	9						317	
4:15 PM		65	17		9	68			37	130	9						335	
4:30 PM		78	13		8	76			29	142	6						352	
4:45 PM		63	17		12	53			26	147	4						322	1326
5:00 PM		77	16		14	72			37	150	6						372	
5:15 PM		51	16		11	86			16	110	8						298	
5:30 PM		57	12		12	83			16	113	6						299	
5:45 PM		44	19		12	78			24	96	8						281	1250
	Northbound				Southbound				Eastbound				Westbound					
	Left	Thur	Right		Left	Thur	Right		Left	Thur	Right		Left	Thur	Right		Total	Hourly Total
4:00 PM																	0	
4:15 PM																	0	
4:30 PM																	0	
4:45 PM																	0	0
5:00 PM																	0	
5:15 PM																	0	
5:30 PM																	0	
5:45 PM																	0	0
	Northbound				Southbound				Eastbound				Westbound					
	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Total	Hourly Total
4:00 PM	0	62	20	0	16	56	0	0	23	131	9	0	0	0	0	0	317	
4:15 PM	0	65	17	0	9	68	0	0	37	130	9	0	0	0	0	0	335	
4:30 PM	0	78	13	0	8	76	0	0	29	142	6	0	0	0	0	0	352	
4:45 PM	0	63	17	0	12	53	0	0	26	147	4	0	0	0	0	0	322	1326
5:00 PM	0	77	16	0	14	72	0	0	37	150	6	0	0	0	0	0	372	
5:15 PM	0	51	16	0	11	86	0	0	16	110	8	0	0	0	0	0	298	
5:30 PM	0	57	12	0	12	83	0	0	16	113	6	0	0	0	0	0	299	
5:45 PM	0	44	19	0	12	78	0	0	24	96	8	0	0	0	0	0	281	1250
Total	0	497	130	0	94	572	0	0	208	1019	56	0	0	0	0	0		
Peak Total	0	283	63	0	43	269	0	0	129	569	25	0	0	0	0	0		
Peak Turn Percent	0%	82%	18%	0%	14%	86%	0%	0%	18%	79%	3%	0%	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!		
Peak Approach Total	346				312				723				0					
FORMULA	0	312	68		56	304	0		148	600	36		0	0	0			
PHF	#DIV/0!	0.9071	0.9265		0.7679	0.8849	#DIV/0!		0.8716	0.9483	0.6944		#DIV/0!	#DIV/0!	#DIV/0!			
Comments																		

Peak Hour Approach Traffic Volume and Percentage



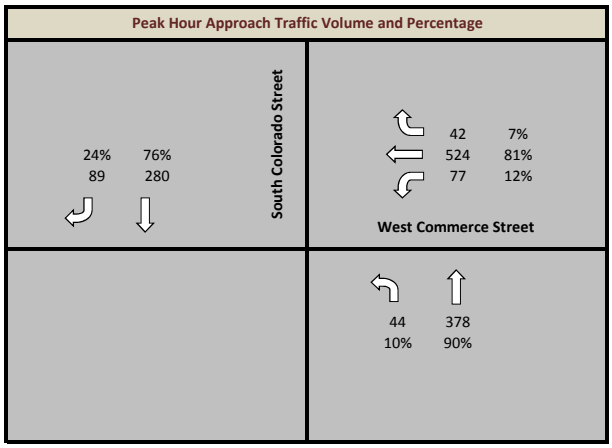
South Colorado Street and West Commerce Street

Intersection	North/South Street :	South Colorado Street	
	East/West Street :	West Commerce Street	
City / State	San Antonio, Texas		
Project No.	132-14	Peak Period :	1 — 7:00 AM - 9:00 AM
Date Recorded:	Thursday, December 11, 2014	Peak Hour:	7:45 AM to 8:45 AM

AC GROUP LLC — TRAFFIC ENGINEERING AND DATA COLLECTION

Start Time	Intersection Approaches																Traffic Control	
	South Colorado Street				South Colorado Street				West Commerce Street				West Commerce Street					
	Northbound				Southbound				Eastbound				Westbound					
	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Total	Hourly Total
7:00 AM	3	38				24	7						13	103	8		196	
7:15 AM	6	88				46	16						11	99	7		273	
7:30 AM	6	92				56	22						18	107	9		310	
7:45 AM	16	104				58	23						21	147	11		380	1159
8:00 AM	8	91				85	18						19	130	7		358	
8:15 AM	8	88				78	27						18	116	11		346	
8:30 AM	12	95				59	21						19	131	13		350	
8:45 AM	12	57				46	20						15	155	9		314	1368
	Northbound				Southbound				Eastbound				Westbound					
	Left	Thur	Right		Left	Thur	Right		Left	Thur	Right		Left	Thur	Right		Total	Hourly Total
7:00 AM																	0	
7:15 AM																	0	
7:30 AM																	0	
7:45 AM																	0	0
8:00 AM																	0	
8:15 AM																	0	
8:30 AM																	0	
8:45 AM																	0	0
	Northbound				Southbound				Eastbound				Westbound					
	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Total	Hourly Total
7:00 AM	3	38	0	0	0	24	7	0	0	0	0	0	13	103	8	0	196	
7:15 AM	6	88	0	0	0	46	16	0	0	0	0	0	11	99	7	0	273	
7:30 AM	6	92	0	0	0	56	22	0	0	0	0	0	18	107	9	0	310	
7:45 AM	16	104	0	0	0	58	23	0	0	0	0	0	21	147	11	0	380	1159
8:00 AM	8	91	0	0	0	85	18	0	0	0	0	0	19	130	7	0	358	
8:15 AM	8	88	0	0	0	78	27	0	0	0	0	0	18	116	11	0	346	
8:30 AM	12	95	0	0	0	59	21	0	0	0	0	0	19	131	13	0	350	
8:45 AM	12	57	0	0	0	46	20	0	0	0	0	0	15	155	9	0	314	1368
Total	71	653	0	0	0	452	154	0	0	0	0	0	134	988	75	0		
Peak Total	44	378	0	0	0	280	89	0	0	0	0	0	77	524	42	0		
Peak Turn Percent	10%	90%	0%	0%	0%	76%	24%	0%	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	12%	81%	7%	0%		
Peak Approach Total	422				369				0				643					
FORMULA	64	416	0		0	340	108		0	0	0		84	588	52			
PHF	0.6875	0.9087	#DIV/0!		#DIV/0!	0.8235	0.8241		#DIV/0!	#DIV/0!	#DIV/0!		0.9167	0.8912	0.8077			
Comments																		

Peak Hour Approach Traffic Volume and Percentage



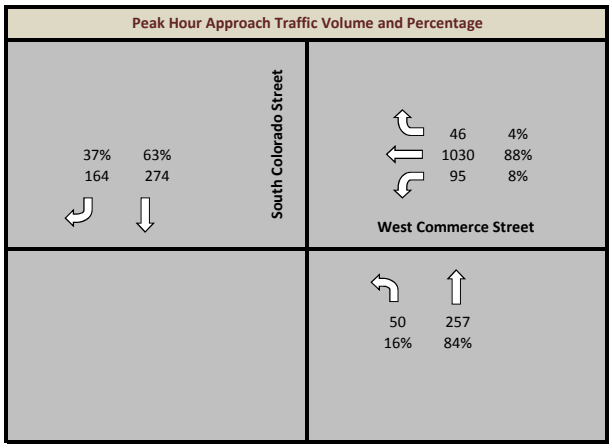
South Colorado Street and West Commerce Street

Intersection	North/South Street :	South Colorado Street	
	East/West Street :	West Commerce Street	
City / State	San Antonio, Texas		
Project No.	132-14	Peak Period :	3 — 4:00 PM - 6:00 PM
Date Recorded:	Thursday, December 11, 2014	Peak Hour:	4:45 PM to 5:45 PM

AC GROUP LLC — TRAFFIC ENGINEERING AND DATA COLLECTION

Start Time	Intersection Approaches																Traffic Control	
	South Colorado Street				South Colorado Street				West Commerce Street				West Commerce Street					
	Northbound				Southbound				Eastbound				Westbound					
	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Total	Hourly Total
4:00 PM	13	65				59	24						33	202	8		404	
4:15 PM	23	84				58	27						17	210	10		429	
4:30 PM	15	74				52	26						30	219	6		422	
4:45 PM	18	59				66	38						24	226	13		444	1699
5:00 PM	11	78				63	35						18	278	10		493	
5:15 PM	12	69				75	42						24	257	15		494	
5:30 PM	9	51				70	49						29	269	8		485	
5:45 PM	7	57				54	34						27	213	9		401	1873
	Northbound				Southbound				Eastbound				Westbound					
	Left	Thur	Right		Left	Thur	Right		Left	Thur	Right		Left	Thur	Right		Total	Hourly Total
4:00 PM																	0	
4:15 PM																	0	
4:30 PM																	0	
4:45 PM																	0	0
5:00 PM																	0	
5:15 PM																	0	
5:30 PM																	0	
5:45 PM																	0	0
	Northbound				Southbound				Eastbound				Westbound					
	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Total	Hourly Total
4:00 PM	13	65	0	0	0	59	24	0	0	0	0	0	33	202	8	0	404	
4:15 PM	23	84	0	0	0	58	27	0	0	0	0	0	17	210	10	0	429	
4:30 PM	15	74	0	0	0	52	26	0	0	0	0	0	30	219	6	0	422	
4:45 PM	18	59	0	0	0	66	38	0	0	0	0	0	24	226	13	0	444	1699
5:00 PM	11	78	0	0	0	63	35	0	0	0	0	0	18	278	10	0	493	
5:15 PM	12	69	0	0	0	75	42	0	0	0	0	0	24	257	15	0	494	
5:30 PM	9	51	0	0	0	70	49	0	0	0	0	0	29	269	8	0	485	
5:45 PM	7	57	0	0	0	54	34	0	0	0	0	0	27	213	9	0	401	1873
Total	108	537	0	0	0	497	275	0	0	0	0	0	202	1874	79	0		
Peak Total	50	257	0	0	0	274	164	0	0	0	0	0	95	1030	46	0		
Peak Turn Percent	16%	84%	0%	0%	0%	63%	37%	0%	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	8%	88%	4%	0%		
Peak Approach Total	307				438				0				1171					
FORMULA	72	312	0		0	300	196		0	0	0		116	1112	60			
PHF	0.6944	0.8237	#DIV/0!		#DIV/0!	0.9133	0.8367		#DIV/0!	#DIV/0!	#DIV/0!		0.819	0.9263	0.7667			
Comments																		

Peak Hour Approach Traffic Volume and Percentage



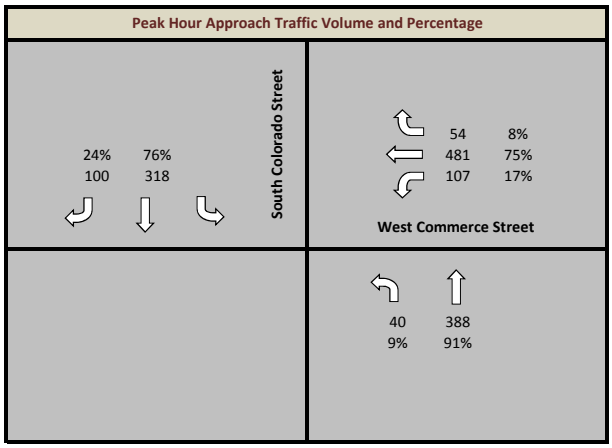
South Colorado Street and West Commerce Street

Intersection	North/South Street :	South Colorado Street	
	East/West Street :	West Commerce Street	
City / State	San Antonio, Texas		
Project No.	132-14	Peak Period : 1	7:00 AM - 9:00 AM
Date Recorded:	Wednesday, December 17, 2014	Peak Hour:	7:45 AM to 8:45 AM

AC GROUP LLC
TRAFFIC ENGINEERING AND DATA COLLECTION

Start Time	Intersection Approaches																Traffic Control	
	South Colorado Street				South Colorado Street				West Commerce Street				West Commerce Street					
	Northbound				Southbound				Eastbound				Westbound					
	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Total	Hourly Total
7:00 AM	5	58				20	21						12	104	5		225	
7:15 AM	4	71				41	21						10	110	11		268	
7:30 AM	5	82				53	23						11	108	10		292	
7:45 AM	10	131				109	30						29	115	17		441	1226
8:00 AM	8	90				66	18						37	130	12		361	
8:15 AM	10	84				87	29						23	122	12		367	
8:30 AM	12	83				56	23						18	114	13		319	
8:45 AM	16	74				47	19						13	115	19		303	1350
	Northbound				Southbound				Eastbound				Westbound					
	Left	Thur	Right		Left	Thur	Right		Left	Thur	Right		Left	Thur	Right		Total	Hourly Total
7:00 AM																	0	
7:15 AM																	0	
7:30 AM																	0	
7:45 AM																	0	0
8:00 AM																	0	
8:15 AM																	0	
8:30 AM																	0	
8:45 AM																	0	0
	Northbound				Southbound				Eastbound				Westbound					
	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Total	Hourly Total
7:00 AM	5	58	0	0	0	20	21	0	0	0	0	0	12	104	5	0	225	
7:15 AM	4	71	0	0	0	41	21	0	0	0	0	0	10	110	11	0	268	
7:30 AM	5	82	0	0	0	53	23	0	0	0	0	0	11	108	10	0	292	
7:45 AM	10	131	0	0	0	109	30	0	0	0	0	0	29	115	17	0	441	1226
8:00 AM	8	90	0	0	0	66	18	0	0	0	0	0	37	130	12	0	361	
8:15 AM	10	84	0	0	0	87	29	0	0	0	0	0	23	122	12	0	367	
8:30 AM	12	83	0	0	0	56	23	0	0	0	0	0	18	114	13	0	319	
8:45 AM	16	74	0	0	0	47	19	0	0	0	0	0	13	115	19	0	303	1350
Total	70	673	0	0	0	479	184	0	0	0	0	0	153	918	99	0		
Peak Total	40	388	0	0	0	318	100	0	0	0	0	0	107	481	54	0		
Peak Turn Percent	9%	91%	0%	0%	0%	76%	24%	0%	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	17%	75%	8%	0%		
Peak Approach Total	428				418				0				642					
FORMULA	48	524	0		0	436	120		0	0	0		148	520	68			
PHF	0.8333	0.7405	#DIV/0!		#DIV/0!	0.7294	0.8333		#DIV/0!	#DIV/0!	#DIV/0!		0.723	0.925	0.7941			
Comments																		

Peak Hour Approach Traffic Volume and Percentage



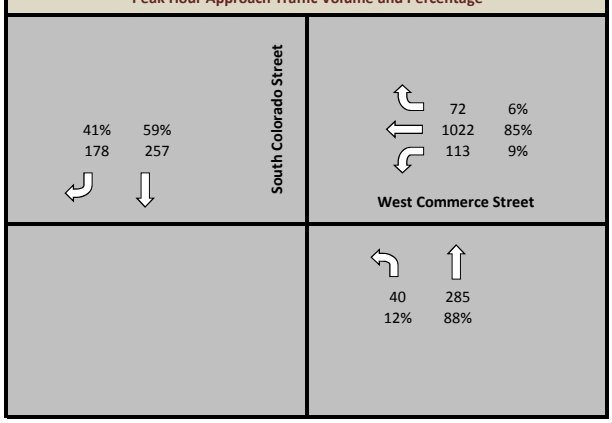
South Colorado Street and West Commerce Street

Intersection	**North/South Street :**	**South Colorado Street**	
	East/West Street :	**West Commerce Street**	
City / State	**San Antonio, Texas**		
Project No.	**132-14**	**Peak Period :**	**3** — **4:00 PM - 6:00 PM**
Date Recorded:	**Wednesday, December 17, 2014**	**Peak Hour:**	**5:00 PM to 6:00 PM**

AC GROUP LLC — TRAFFIC ENGINEERING AND DATA COLLECTION

Start Time	Intersection Approaches																Traffic Control	
	South Colorado Street				South Colorado Street				West Commerce Street				West Commerce Street					
	Northbound				Southbound				Eastbound				Westbound					
	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Total	Hourly Total
4:00 PM	13	75				61	23						19	227	19		437	
4:15 PM	15	86				44	27						23	194	16		405	
4:30 PM	14	96				56	39						27	203	17		452	
4:45 PM	5	83				48	33						20	246	12		447	1741
5:00 PM	10	100				63	42						24	275	18		532	
5:15 PM	10	59				63	50						37	291	21		531	
5:30 PM	6	66				67	40						28	233	7		447	
5:45 PM	14	60				64	46						24	223	26		457	1967
	Northbound				Southbound				Eastbound				Westbound					
	Left	Thur	Right		Left	Thur	Right		Left	Thur	Right		Left	Thur	Right		Total	Hourly Total
4:00 PM																	0	
4:15 PM																	0	
4:30 PM																	0	
4:45 PM																	0	0
5:00 PM																	0	
5:15 PM																	0	
5:30 PM																	0	
5:45 PM																	0	0
	Northbound				Southbound				Eastbound				Westbound					
	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Total	Hourly Total
4:00 PM	13	75	0	0	0	61	23	0	0	0	0	0	19	227	19	0	437	
4:15 PM	15	86	0	0	0	44	27	0	0	0	0	0	23	194	16	0	405	
4:30 PM	14	96	0	0	0	56	39	0	0	0	0	0	27	203	17	0	452	
4:45 PM	5	83	0	0	0	48	33	0	0	0	0	0	20	246	12	0	447	1741
5:00 PM	10	100	0	0	0	63	42	0	0	0	0	0	24	275	18	0	532	
5:15 PM	10	59	0	0	0	63	50	0	0	0	0	0	37	291	21	0	531	
5:30 PM	6	66	0	0	0	67	40	0	0	0	0	0	28	233	7	0	447	
5:45 PM	14	60	0	0	0	64	46	0	0	0	0	0	24	223	26	0	457	1967
Total	87	625	0	0	0	466	300	0	0	0	0	0	202	1892	136	0		
Peak Total	40	285	0	0	0	257	178	0	0	0	0	0	113	1022	72	0		
Peak Turn Percent	12%	88%	0%	0%	0%	59%	41%	0%	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	9%	85%	6%	0%		
Peak Approach Total	325				435				0				1207					
FORMULA	56	400	0		0	268	200		0	0	0		148	1164	104			
PHF	0.7143	0.7125	#DIV/0!		#DIV/0!	0.959	0.89		#DIV/0!	#DIV/0!	#DIV/0!		0.7635	0.878	0.6923			
Comments																		

Peak Hour Approach Traffic Volume and Percentage



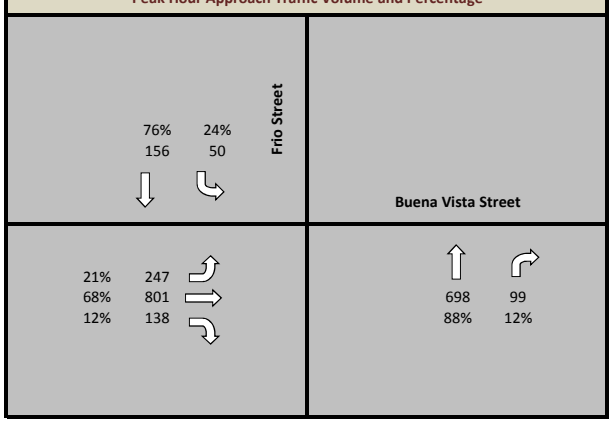
Frio Street and Buena Vista Street

Intersection	North/South Street :	Frio Street	
	East/West Street :	Buena Vista Street	
City / State	San Antonio, Texas		
Project No.	132-14	Peak Period : 1	7:00 AM - 9:00 AM
Date Recorded:	Thursday, December 11, 2014	Peak Hour:	7:30 AM to 8:30 AM

AC GROUP LLC
TRAFFIC ENGINEERING AND DATA COLLECTION

Start Time	Intersection Approaches																Traffic Control	
	Frio Street				Frio Street				Buena Vista Street				Buena Vista Street					
	Northbound				Southbound				Eastbound (Bridge)				Eastbound (Sidestreet)					
	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Total	Hourly Total
7:00 AM		115	9		10	35			27	88	34		0	0	2		320	
7:15 AM		124	16		8	47			33	150	42		1	0	2		423	
7:30 AM		161	24		7	32			64	215	28		0	0	0		531	
7:45 AM		173	20		13	35			68	227	40		1	0	2		579	1853
8:00 AM		211	30		12	46			52	207	49		0	0	2		609	
8:15 AM		153	25		18	43			63	152	21		0	0	3		478	
8:30 AM		159	50		18	65			39	150	33		1	0	4		519	
8:45 AM		145	49		14	63			27	112	32		1	0	4		447	2053
	Northbound				Southbound				Eastbound				Westbound					
	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Total	Hourly Total
7:00 AM																	0	
7:15 AM																	0	
7:30 AM																	0	
7:45 AM																	0	0
8:00 AM																	0	
8:15 AM																	0	
8:30 AM																	0	
8:45 AM																	0	0
	Northbound				Southbound				Eastbound				Westbound					
	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Total	Hourly Total
7:00 AM	0	115	9	0	10	35	0	0	27	88	34	0	0	0	2	0	320	
7:15 AM	0	124	16	0	8	47	0	0	33	150	42	0	1	0	2	0	423	
7:30 AM	0	161	24	0	7	32	0	0	64	215	28	0	0	0	0	0	531	
7:45 AM	0	173	20	0	13	35	0	0	68	227	40	0	1	0	2	0	579	1853
8:00 AM	0	211	30	0	12	46	0	0	52	207	49	0	0	0	2	0	609	
8:15 AM	0	153	25	0	18	43	0	0	63	152	21	0	0	0	3	0	478	
8:30 AM	0	159	50	0	18	65	0	0	39	150	33	0	1	0	4	0	519	
8:45 AM	0	145	49	0	14	63	0	0	27	112	32	0	1	0	4	0	447	2053
Total	0	1241	223	0	100	366	0	0	373	1301	279	0	4	0	19	0		
Peak Total	0	698	99	0	50	156	0	0	247	801	138	0	1	0	7	0		
Peak Turn Percent	0%	88%	12%	0%	24%	76%	0%	0%	21%	68%	12%	0%	13%	0%	88%	0%		
Peak Approach Total	797				206				1186				8					
FORMULA	0	844	120		72	184	0		272	908	196		4	0	12			
PHF	#DIV/0!	0.827	0.825		0.6944	0.8478	#DIV/0!		0.9081	0.8822	0.7041		0.25	#DIV/0!	0.5833			
Comments																		

Peak Hour Approach Traffic Volume and Percentage



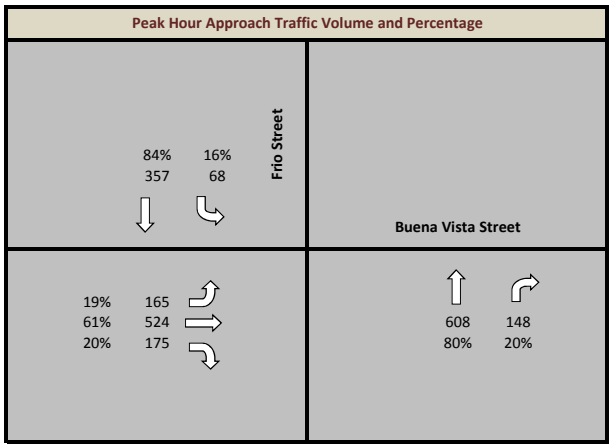
Frio Street and Buena Vista Street

Intersection	North/South Street :	Frio Street	
	East/West Street :	Buena Vista Street	
City / State	San Antonio, Texas		
Project No.	132-14	Peak Period :	3 — 4:00 PM - 6:00 PM
Date Recorded:	Thursday, December 11, 2014	Peak Hour:	4:15 PM to 5:15 PM

AC GROUP LLC — TRAFFIC ENGINEERING AND DATA COLLECTION

Start Time	Intersection Approaches																Traffic Control	
	Frio Street				Frio Street				Buena Vista Street				Buena Vista Street					
	Northbound				Southbound				Eastbound (Bridge)				Eastbound (Sidestreet)					Hourly
	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Total	Total
4:00 PM		140	37		12	100			17	117	21		2	0	2		448	
4:15 PM		165	51		24	88			22	125	41		6	1	6		529	
4:30 PM		152	32		14	89			38	134	48		9	2	1		519	
4:45 PM		136	29		9	94			45	125	42		10	6	9		505	2001
5:00 PM		155	36		21	86			60	140	44		2	0	2		546	
5:15 PM		128	28		11	100			46	95	33		3	1	2		447	
5:30 PM		112	23		25	161			29	98	10		0	0	4		462	
5:45 PM		117	23		27	104			31	73	5		3	0	4		387	1842
	Northbound				Southbound				Eastbound				Westbound					Hourly
	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Total	Total
4:00 PM																	0	
4:15 PM																	0	
4:30 PM																	0	
4:45 PM																	0	0
5:00 PM																	0	
5:15 PM																	0	
5:30 PM																	0	
5:45 PM																	0	0
	Northbound				Southbound				Eastbound				Westbound					Hourly
	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Total	Total
4:00 PM	0	140	37	0	12	100	0	0	17	117	21	0	2	0	2	0	448	
4:15 PM	0	165	51	0	24	88	0	0	22	125	41	0	6	1	6	0	529	
4:30 PM	0	152	32	0	14	89	0	0	38	134	48	0	9	2	1	0	519	
4:45 PM	0	136	29	0	9	94	0	0	45	125	42	0	10	6	9	0	505	2001
5:00 PM	0	155	36	0	21	86	0	0	60	140	44	0	2	0	2	0	546	
5:15 PM	0	128	28	0	11	100	0	0	46	95	33	0	3	1	2	0	447	
5:30 PM	0	112	23	0	25	161	0	0	29	98	10	0	0	0	4	0	462	
5:45 PM	0	117	23	0	27	104	0	0	31	73	5	0	3	0	4	0	387	1842
Total	0	1105	259	0	143	822	0	0	288	907	244	0	35	10	30	0		
Peak Total	0	608	148	0	68	357	0	0	165	524	175	0	27	9	18	0		
Peak Turn Percent	0%	80%	20%	0%	16%	84%	0%	0%	19%	61%	20%	0%	50%	17%	33%	0%		
Peak Approach Total	756				425				864				54					
FORMULA	0	660	204		96	376	0		240	560	192		40	24	36			
PHF	#DIV/0!	0.9212	0.7255		0.7083	0.9495	#DIV/0!		0.6875	0.9357	0.9115		0.675	0.375	0.5			
Comments																		

Peak Hour Approach Traffic Volume and Percentage



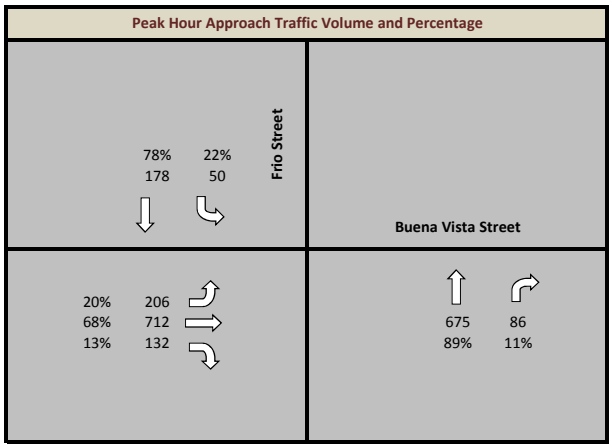
Frio Street and Buena Vista Street

Intersection	North/South Street :	Frio Street	
	East/West Street :	Buena Vista Street	
City / State	San Antonio, Texas		
Project No.	132-14	Peak Period :	1 — 7:00 AM - 9:00 AM
Date Recorded:	Thursday, January 08, 2015	Peak Hour:	7:30 AM to 8:30 AM

AC GROUP LLC — TRAFFIC ENGINEERING AND DATA COLLECTION

Start Time	Intersection Approaches																Traffic Control	
	Frio Street				Frio Street				Buena Vista Street				Buena Vista Street					
	Northbound				Southbound				Eastbound (Bridge)				Eastbound (Sidestreet)					Hourly
	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Total	Total
7:00 AM		82	13		7	36			22	73	21		1	0	1		256	
7:15 AM		134	17		8	39			38	124	36		1	0	2		399	
7:30 AM		140	18		20	34			59	196	37		0	0	2		506	
7:45 AM		206	19		10	37			63	223	41		0	0	0		599	1760
8:00 AM		179	30		5	57			43	156	33		0	0	4		507	
8:15 AM		150	19		15	50			41	137	21		2	1	3		439	
8:30 AM		138	18		11	54			22	133	30		0	0	5		411	
8:45 AM		135	18		12	58			23	104	36		0	0	0		386	1743
	Northbound				Southbound				Eastbound				Westbound					Hourly
	Left	Thur	Right		Left	Thur	Right		Left	Thur	Right		Left	Thur	Right		Total	Total
7:00 AM																	0	
7:15 AM																	0	
7:30 AM																	0	
7:45 AM																	0	0
8:00 AM																	0	
8:15 AM																	0	
8:30 AM																	0	
8:45 AM																	0	0
	Northbound				Southbound				Eastbound				Westbound					Hourly
	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Total	Total
7:00 AM	0	82	13	0	7	36	0	0	22	73	21	0	1	0	1	0	256	
7:15 AM	0	134	17	0	8	39	0	0	38	124	36	0	1	0	2	0	399	
7:30 AM	0	140	18	0	20	34	0	0	59	196	37	0	0	0	2	0	506	
7:45 AM	0	206	19	0	10	37	0	0	63	223	41	0	0	0	0	0	599	1760
8:00 AM	0	179	30	0	5	57	0	0	43	156	33	0	0	0	4	0	507	
8:15 AM	0	150	19	0	15	50	0	0	41	137	21	0	2	1	3	0	439	
8:30 AM	0	138	18	0	11	54	0	0	22	133	30	0	0	0	5	0	411	
8:45 AM	0	135	18	0	12	58	0	0	23	104	36	0	0	0	0	0	386	1743
Total	0	1164	152	0	88	365	0	0	311	1146	255	0	4	1	17	0		
Peak Total	0	675	86	0	50	178	0	0	206	712	132	0	2	1	9	0		
Peak Turn Percent	0%	89%	11%	0%	22%	78%	0%	0%	20%	68%	13%	0%	17%	8%	75%	0%		
Peak Approach Total	761				228				1050				12					
FORMULA	0	824	120		80	228	0		252	892	164		8	4	16			
PHF	#DIV/0!	0.8192	0.7167		0.625	0.7807	#DIV/0!		0.8175	0.7982	0.8049		0.25	0.25	0.5625			
Comments																		

Peak Hour Approach Traffic Volume and Percentage



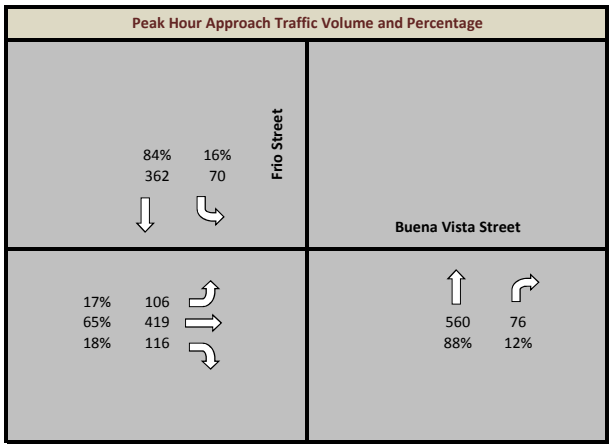
Frio Street and Buena Vista Street

Intersection	North/South Street :	Frio Street	
	East/West Street :	Buena Vista Street	
City / State	San Antonio, Texas		
Project No.	132-14	Peak Period :	3 — 4:00 PM - 6:00 PM
Date Recorded:	Thursday, January 08, 2015	Peak Hour:	4:30 PM to 5:30 PM

AC GROUP LLC — TRAFFIC ENGINEERING AND DATA COLLECTION

Start Time	Intersection Approaches																Traffic Control	
	Frio Street				Frio Street				Buena Vista Street				Buena Vista Street					
	Northbound				Southbound				Eastbound (Bridge)				Eastbound (Sidestreet)					Hourly
	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Total	Total
4:00 PM		135	17		16	103			18	99	30		0	0	7		425	
4:15 PM		128	19		7	77			19	104	41		1	0	2		398	
4:30 PM		155	24		16	95			24	106	32		2	0	3		457	
4:45 PM		126	12		16	69			26	113	43		4	4	2		415	1695
5:00 PM		146	25		18	113			28	104	20		3	2	3		462	
5:15 PM		133	15		20	85			28	96	21		0	0	2		400	
5:30 PM		116	18		17	90			35	84	16		1	1	2		380	
5:45 PM		123	10		16	70			27	99	15		0	0	0		360	1602
	Northbound				Southbound				Eastbound				Westbound					Hourly
	Left	Thur	Right		Left	Thur	Right		Left	Thur	Right		Left	Thur	Right		Total	Total
4:00 PM																	0	
4:15 PM																	0	
4:30 PM																	0	
4:45 PM																	0	0
5:00 PM																	0	
5:15 PM																	0	
5:30 PM																	0	
5:45 PM																	0	0
	Northbound				Southbound				Eastbound				Westbound					Hourly
	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Total	Total
4:00 PM	0	135	17	0	16	103	0	0	18	99	30	0	0	0	7	0	425	
4:15 PM	0	128	19	0	7	77	0	0	19	104	41	0	1	0	2	0	398	
4:30 PM	0	155	24	0	16	95	0	0	24	106	32	0	2	0	3	0	457	
4:45 PM	0	126	12	0	16	69	0	0	26	113	43	0	4	4	2	0	415	1695
5:00 PM	0	146	25	0	18	113	0	0	28	104	20	0	3	2	3	0	462	
5:15 PM	0	133	15	0	20	85	0	0	28	96	21	0	0	0	2	0	400	
5:30 PM	0	116	18	0	17	90	0	0	35	84	16	0	1	1	2	0	380	
5:45 PM	0	123	10	0	16	70	0	0	27	99	15	0	0	0	0	0	360	1602
Total	0	1062	140	0	126	702	0	0	205	805	218	0	11	7	21	0		
Peak Total	0	560	76	0	70	362	0	0	106	419	116	0	9	6	10	0		
Peak Turn Percent	0%	88%	12%	0%	16%	84%	0%	0%	17%	65%	18%	0%	36%	24%	40%	0%		
Peak Approach Total	636				432				641				25					
FORMULA	0	620	100		80	452	0		112	452	172		16	16	12			
PHF	#DIV/0!	0.9032	0.76		0.875	0.8009	#DIV/0!		0.9464	0.927	0.6744		0.5625	0.375	0.8333			
Comments																		

Peak Hour Approach Traffic Volume and Percentage



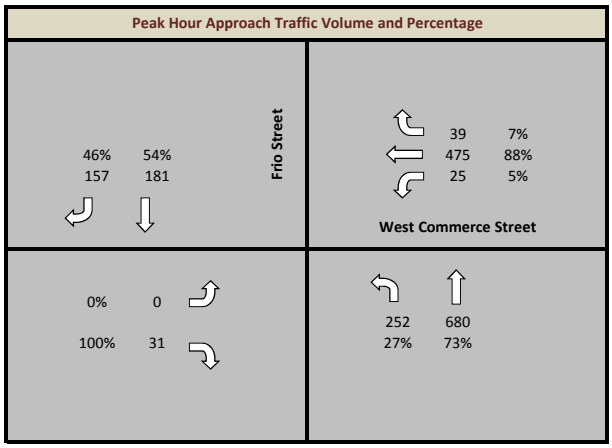
Frio Street and West Commerce Street

Intersection	North/South Street :	Frio Street	
	East/West Street :	West Commerce Street	
City / State	San Antonio, Texas		
Project No.	132-14	Peak Period : 1	7:00 AM - 9:00 AM
Date Recorded:	Thursday, December 11, 2014	Peak Hour:	7:45 AM to 8:45 AM

AC GROUP LLC
TRAFFIC ENGINEERING AND DATA COLLECTION

Start Time	Intersection Approaches																Traffic Control	
	Frio Street				Frio Street				West Commerce Street				West Commerce Street					
	Northbound				Southbound				Eastbound				Westbound					
	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Total	Hourly Total
7:00 AM	62	78				30	17		0		6		4	91	5		293	
7:15 AM	49	87				49	21		0		2		8	123	8		347	
7:30 AM	48	166				30	17		0		3		5	100	10		379	
7:45 AM	57	172				38	35		0		3		6	137	9		457	1476
8:00 AM	75	187				40	56		0		10		2	118	7		495	
8:15 AM	60	167				42	34		0		6		7	98	5		419	
8:30 AM	60	154				61	32		0		12		10	122	18		469	
8:45 AM	60	106				61	27		0		14		12	122	8		410	1793
	Northbound				Southbound				Eastbound				Westbound					
	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Total	Hourly Total
7:00 AM																	0	
7:15 AM																	0	
7:30 AM																	0	
7:45 AM																	0	0
8:00 AM																	0	
8:15 AM																	0	
8:30 AM																	0	
8:45 AM																	0	0
	Northbound				Southbound				Eastbound				Westbound					
	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Total	Hourly Total
7:00 AM	62	78	0	0	0	30	17	0	0	0	6	0	4	91	5	0	293	
7:15 AM	49	87	0	0	0	49	21	0	0	0	2	0	8	123	8	0	347	
7:30 AM	48	166	0	0	0	30	17	0	0	0	3	0	5	100	10	0	379	
7:45 AM	57	172	0	0	0	38	35	0	0	0	3	0	6	137	9	0	457	1476
8:00 AM	75	187	0	0	0	40	56	0	0	0	10	0	2	118	7	0	495	
8:15 AM	60	167	0	0	0	42	34	0	0	0	6	0	7	98	5	0	419	
8:30 AM	60	154	0	0	0	61	32	0	0	0	12	0	10	122	18	0	469	
8:45 AM	60	106	0	0	0	61	27	0	0	0	14	0	12	122	8	0	410	1793
Total	471	1117	0	0	0	351	239	0	0	0	56	0	54	911	70	0		
Peak Total	252	680	0	0	0	181	157	0	0	0	31	0	25	475	39	0		
Peak Turn Percent	27%	73%	0%	0%	0%	54%	46%	0%	0%	0%	100%	0%	5%	88%	7%	0%		
Peak Approach Total	932				338				31				539					
FORMULA	300	748	0		0	244	224		0	0	48		40	548	72			
PHF	0.84	0.9091	#DIV/0!		#DIV/0!	0.7418	0.7009		#DIV/0!	#DIV/0!	0.6458		0.625	0.8668	0.5417			
Comments																		

Peak Hour Approach Traffic Volume and Percentage



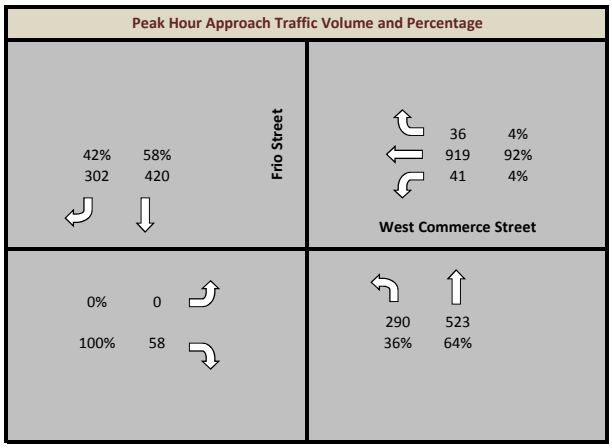
Frio Street and West Commerce Street

Intersection	North/South Street :	Frio Street	
	East/West Street :	West Commerce Street	
City / State	San Antonio, Texas		
Project No.	132-14	Peak Period :	3 — 4:00 PM - 6:00 PM
Date Recorded:	Thursday, December 11, 2014	Peak Hour:	4:30 PM to 5:30 PM

AC GROUP LLC — TRAFFIC ENGINEERING AND DATA COLLECTION

Start Time	Intersection Approaches																Traffic Control	
	Frio Street				Frio Street				West Commerce Street				West Commerce Street					
	Northbound				Southbound				Eastbound				Westbound					
	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Total	Hourly Total
4:00 PM	62	87				67	30		0		35		15	184	8		488	
4:15 PM	74	102				63	20		0		40		8	197	12		516	
4:30 PM	78	126				101	75		0		17		8	222	11		638	
4:45 PM	88	149				104	67		0		10		16	247	7		688	2330
5:00 PM	65	135				87	87		0		15		9	211	4		613	
5:15 PM	59	113				128	73		0		16		8	239	14		650	
5:30 PM	62	71				133	32		0		25		9	198	8		538	
5:45 PM	73	64				118	33		0		26		10	209	9		542	2343
	Northbound				Southbound				Eastbound				Westbound					
	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Total	Hourly Total
4:00 PM																	0	
4:15 PM																	0	
4:30 PM																	0	
4:45 PM																	0	0
5:00 PM																	0	
5:15 PM																	0	
5:30 PM																	0	
5:45 PM																	0	0
	Northbound				Southbound				Eastbound				Westbound					
	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Total	Hourly Total
4:00 PM	62	87	0	0	0	67	30	0	0	0	35	0	15	184	8	0	488	
4:15 PM	74	102	0	0	0	63	20	0	0	0	40	0	8	197	12	0	516	
4:30 PM	78	126	0	0	0	101	75	0	0	0	17	0	8	222	11	0	638	
4:45 PM	88	149	0	0	0	104	67	0	0	0	10	0	16	247	7	0	688	2330
5:00 PM	65	135	0	0	0	87	87	0	0	0	15	0	9	211	4	0	613	
5:15 PM	59	113	0	0	0	128	73	0	0	0	16	0	8	239	14	0	650	
5:30 PM	62	71	0	0	0	133	32	0	0	0	25	0	9	198	8	0	538	
5:45 PM	73	64	0	0	0	118	33	0	0	0	26	0	10	209	9	0	542	2343
Total	561	847	0	0	0	801	417	0	0	0	184	0	83	1707	73	0		
Peak Total	290	523	0	0	0	420	302	0	0	0	58	0	41	919	36	0		
Peak Turn Percent	36%	64%	0%	0%	0%	58%	42%	0%	0%	0%	100%	0%	4%	92%	4%	0%		
Peak Approach Total	813				722				58				996					
FORMULA	352	596	0		0	512	348		0	0	68		64	988	56			
PHF	0.8239	0.8775	#DIV/0!		#DIV/0!	0.8203	0.8678		#DIV/0!	#DIV/0!	0.8529		0.6406	0.9302	0.6429			
Comments																		

Peak Hour Approach Traffic Volume and Percentage



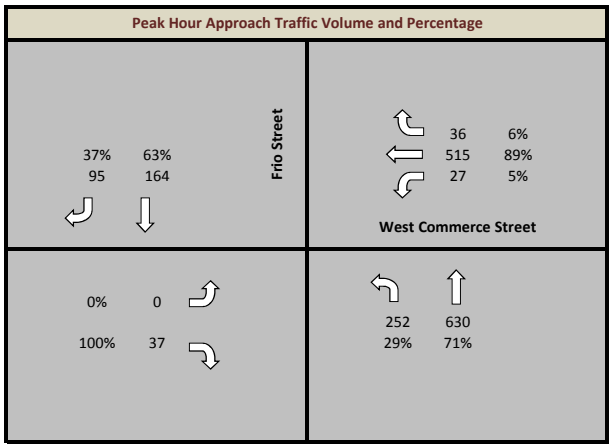
Frio Street and West Commerce Street

Intersection	North/South Street :	Frio Street	
	East/West Street :	West Commerce Street	
City / State	San Antonio, Texas		
Project No.	132-14	Peak Period :	1 — 7:00 AM - 9:00 AM
Date Recorded:	Thursday, January 08, 2015	Peak Hour:	7:30 AM to 8:30 AM

AC GROUP LLC — TRAFFIC ENGINEERING AND DATA COLLECTION

Start Time	Intersection Approaches																Traffic Control	
	Frio Street				Frio Street				West Commerce Street				West Commerce Street					
	Northbound				Southbound				Eastbound				Westbound					
	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Total	Hourly Total
7:00 AM	28	81				30	12		0		9		4	112	8		284	
7:15 AM	60	130				29	41		4		15		5	104	10		398	
7:30 AM	51	157				35	27		0		7		10	125	7		419	
7:45 AM	76	189				37	25		0		11		4	137	14		493	1594
8:00 AM	59	162				52	28		0		5		6	128	4		444	
8:15 AM	66	122				40	15		0		14		7	125	11		400	
8:30 AM	62	99				40	23		0		19		7	117	13		380	
8:45 AM	74	87				42	29		0		20		9	131	12		404	1628
	Northbound				Southbound				Eastbound				Westbound					
	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Total	Hourly Total
7:00 AM																	0	
7:15 AM																	0	
7:30 AM																	0	
7:45 AM																	0	0
8:00 AM																	0	
8:15 AM																	0	
8:30 AM																	0	
8:45 AM																	0	0
	Northbound				Southbound				Eastbound				Westbound					
	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Total	Hourly Total
7:00 AM	28	81	0	0	0	30	12	0	0	0	9	0	4	112	8	0	284	
7:15 AM	60	130	0	0	0	29	41	0	4	0	15	0	5	104	10	0	398	
7:30 AM	51	157	0	0	0	35	27	0	0	0	7	0	10	125	7	0	419	
7:45 AM	76	189	0	0	0	37	25	0	0	0	11	0	4	137	14	0	493	1594
8:00 AM	59	162	0	0	0	52	28	0	0	0	5	0	6	128	4	0	444	
8:15 AM	66	122	0	0	0	40	15	0	0	0	14	0	7	125	11	0	400	
8:30 AM	62	99	0	0	0	40	23	0	0	0	19	0	7	117	13	0	380	
8:45 AM	74	87	0	0	0	42	29	0	0	0	20	0	9	131	12	0	404	1628
Total	476	1027	0	0	0	305	200	0	4	0	100	0	52	979	79	0		
Peak Total	252	630	0	0	0	164	95	0	0	0	37	0	27	515	36	0		
Peak Turn Percent	29%	71%	0%	0%	0%	63%	37%	0%	0%	0%	100%	0%	5%	89%	6%	0%		
Peak Approach Total	882				259				37				578					
FORMULA	304	756	0		0	208	112		0	0	56		40	548	56			
PHF	0.8289	0.8333	#DIV/0!		#DIV/0!	0.7885	0.8482		#DIV/0!	#DIV/0!	0.6607		0.675	0.9398	0.6429			
Comments																		

Peak Hour Approach Traffic Volume and Percentage



Frio Street and West Commerce Street

Intersection	North/South Street :	Frio Street	
	East/West Street :	West Commerce Street	
City / State	San Antonio, Texas		
Project No.	132-14	Peak Period :	3 — 4:00 PM - 6:00 PM
Date Recorded:	Thursday, January 08, 2015	Peak Hour:	4:30 PM to 5:30 PM

AC GROUP LLC — TRAFFIC ENGINEERING AND DATA COLLECTION

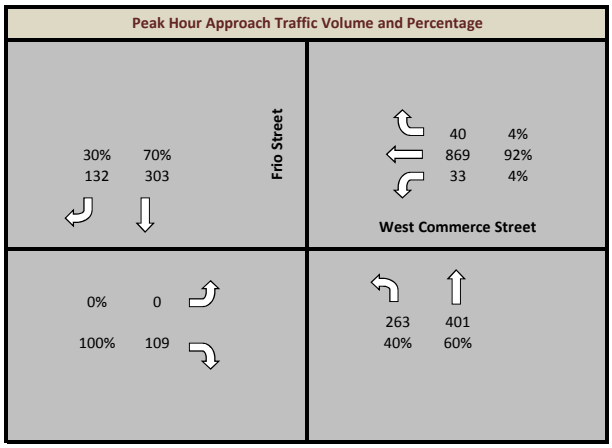
Start Time	Intersection Approaches																Traffic Control	
	Frio Street				Frio Street				West Commerce Street				West Commerce Street					
	Northbound				Southbound				Eastbound				Westbound					
	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Total	Hourly Total
4:00 PM	68	87				69	22		0		40		12	149	15		462	
4:15 PM	75	77				62	17		0		19		3	150	8		411	
4:30 PM	66	117				85	29		0		25		8	194	10		534	
4:45 PM	67	93				48	31		0		26		8	210	7		490	1897
5:00 PM	70	99				92	29		0		34		6	217	12		559	
5:15 PM	60	92				78	43		0		24		11	248	11		567	
5:30 PM	62	74				69	39		0		22		11	216	11		504	
5:45 PM	72	64				49	26		0		31		6	217	6		471	2101

	Northbound			Southbound			Eastbound			Westbound				
	Left	Thur	Right	Left	Thur	Right	Left	Thur	Right	Left	Thur	Right	Total	Hourly Total
4:00 PM													0	
4:15 PM													0	
4:30 PM													0	
4:45 PM													0	0
5:00 PM													0	
5:15 PM													0	
5:30 PM													0	
5:45 PM													0	0

	Northbound				Southbound				Eastbound				Westbound					
	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Total	Hourly Total
4:00 PM	68	87	0	0	0	69	22	0	0	0	40	0	12	149	15	0	462	
4:15 PM	75	77	0	0	0	62	17	0	0	0	19	0	3	150	8	0	411	
4:30 PM	66	117	0	0	0	85	29	0	0	0	25	0	8	194	10	0	534	
4:45 PM	67	93	0	0	0	48	31	0	0	0	26	0	8	210	7	0	490	1897
5:00 PM	70	99	0	0	0	92	29	0	0	0	34	0	6	217	12	0	559	
5:15 PM	60	92	0	0	0	78	43	0	0	0	24	0	11	248	11	0	567	
5:30 PM	62	74	0	0	0	69	39	0	0	0	22	0	11	216	11	0	504	
5:45 PM	72	64	0	0	0	49	26	0	0	0	31	0	6	217	6	0	471	2101
Total	540	703	0	0	0	552	236	0	0	0	221	0	65	1601	80	0		
Peak Total	263	401	0	0	0	303	132	0	0	0	109	0	33	869	40	0		
Peak Turn Percent	40%	60%	0%	0%	0%	70%	30%	0%	0%	0%	100%	0%	4%	92%	4%	0%		
Peak Approach Total	664				435				109				942					
FORMULA	280	468	0		0	368	172		0	0	136		44	992	48			
PHF	0.9393	0.8568	#DIV/0!		#DIV/0!	0.8234	0.7674		#DIV/0!	#DIV/0!	0.8015		0.75	0.876	0.8333			

Comments

Peak Hour Approach Traffic Volume and Percentage



South Leona Street and West Commerce Street

Intersection	North/South Street :	South Leona Street	
	East/West Street :	West Commerce Street	
City / State	San Antonio, Texas		
Project No.	132-14	Peak Period : 1	7:00 AM - 9:00 AM
Date Recorded:	Tuesday, January 06, 2015	Peak Hour:	7:45 AM to 8:45 AM

AC GROUP LLC
TRAFFIC ENGINEERING AND DATA COLLECTION

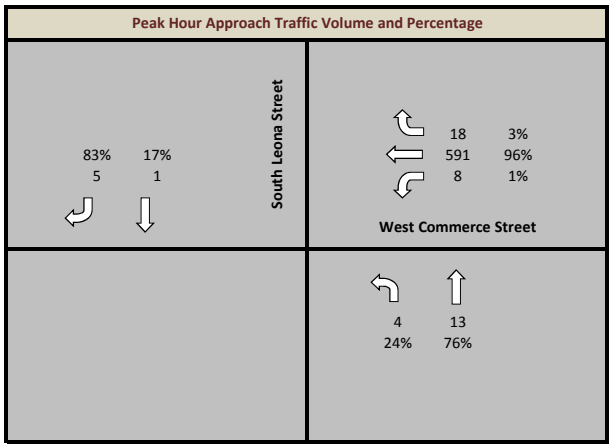
Start Time	Intersection Approaches																Traffic Control	
	South Leona Street				South Leona Street				West Commerce Street				West Commerce Street					
	Northbound				Southbound				Eastbound				Westbound					
	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Total	Hourly Total
7:00 AM	1	2				0	4						2	113	0		122	
7:15 AM	1	4				0	3						0	101	1		110	
7:30 AM	1	9				0	0						1	129	4		144	
7:45 AM	2	11				0	1						2	151	3		170	546
8:00 AM	1	0				0	2						1	140	4		148	
8:15 AM	1	1				1	2						3	150	4		162	
8:30 AM	0	1				0	0						2	150	7		160	
8:45 AM	2	1				0	1						3	151	3		161	631

	Northbound			Southbound			Eastbound			Westbound				
	Left	Thur	Right	Left	Thur	Right	Left	Thur	Right	Left	Thur	Right	Total	Hourly Total
7:00 AM													0	
7:15 AM													0	
7:30 AM													0	
7:45 AM													0	0
8:00 AM													0	
8:15 AM													0	
8:30 AM													0	
8:45 AM													0	0

	Northbound				Southbound				Eastbound				Westbound					
	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Total	Hourly Total
7:00 AM	1	2	0	0	0	0	4	0	0	0	0	0	2	113	0	0	122	
7:15 AM	1	4	0	0	0	0	3	0	0	0	0	0	0	101	1	0	110	
7:30 AM	1	9	0	0	0	0	0	0	0	0	0	0	1	129	4	0	144	
7:45 AM	2	11	0	0	0	0	1	0	0	0	0	0	2	151	3	0	170	546
8:00 AM	1	0	0	0	0	0	2	0	0	0	0	0	1	140	4	0	148	
8:15 AM	1	1	0	0	0	1	2	0	0	0	0	0	3	150	4	0	162	
8:30 AM	0	1	0	0	0	0	0	0	0	0	0	0	2	150	7	0	160	
8:45 AM	2	1	0	0	0	0	1	0	0	0	0	0	3	151	3	0	161	631
Total	9	29	0	0	0	1	13	0	0	0	0	0	14	1085	26	0		
Peak Total	4	13	0	0	0	1	5	0	0	0	0	0	8	591	18	0		
Peak Turn Percent	24%	76%	0%	0%	0%	17%	83%	0%	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	1%	96%	3%	0%		
Peak Approach Total	17				6				0				617					
FORMULA	8	44	0		0	4	8		0	0	0		12	604	28			
PHF	0.5	0.2955	#DIV/0!		#DIV/0!	0.25	0.625		#DIV/0!	#DIV/0!	#DIV/0!		0.6667	0.9785	0.6429			

Comments

Peak Hour Approach Traffic Volume and Percentage



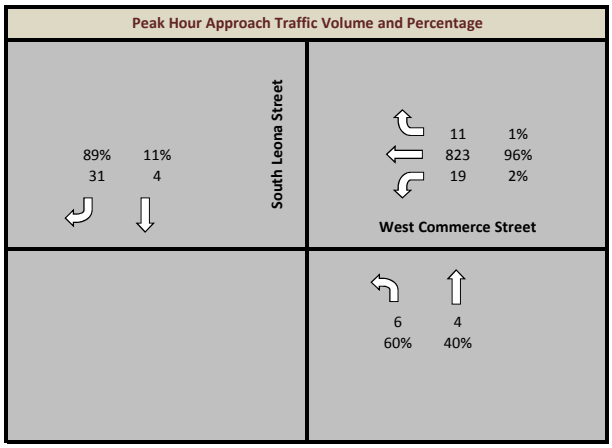
South Leona Street and West Commerce Street

Intersection	North/South Street :	South Leona Street	
	East/West Street :	West Commerce Street	
City / State	San Antonio, Texas		
Project No.	132-14	Peak Period : 3	4:00 PM - 6:00 PM
Date Recorded:	Tuesday, January 06, 2015	Peak Hour:	4:45 PM to 5:45 PM

AC GROUP LLC
TRAFFIC ENGINEERING AND DATA COLLECTION

Start Time	Intersection Approaches																Traffic Control	
	South Leona Street				South Leona Street				West Commerce Street				West Commerce Street					
	Northbound				Southbound				Eastbound				Westbound					
	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Total	Hourly Total
4:00 PM	3	1				0	7						1	174	3		189	
4:15 PM	1	0				2	1						2	171	3		180	
4:30 PM	2	0				1	5						6	178	1		193	
4:45 PM	0	1				3	9						9	191	4		217	779
5:00 PM	2	2				0	14						6	209	3		236	
5:15 PM	2	0				1	3						2	221	1		230	
5:30 PM	2	1				0	5						2	202	3		215	
5:45 PM	0	0				0	5						3	174	1		183	864
	Northbound				Southbound				Eastbound				Westbound					
	Left	Thur	Right		Left	Thur	Right		Left	Thur	Right		Left	Thur	Right		Total	Hourly Total
4:00 PM																	0	
4:15 PM																	0	
4:30 PM																	0	
4:45 PM																	0	0
5:00 PM																	0	
5:15 PM																	0	
5:30 PM																	0	
5:45 PM																	0	0
	Northbound				Southbound				Eastbound				Westbound					
	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Total	Hourly Total
4:00 PM	3	1	0	0	0	0	7	0	0	0	0	0	1	174	3	0	189	
4:15 PM	1	0	0	0	0	2	1	0	0	0	0	0	2	171	3	0	180	
4:30 PM	2	0	0	0	0	1	5	0	0	0	0	0	6	178	1	0	193	
4:45 PM	0	1	0	0	0	3	9	0	0	0	0	0	9	191	4	0	217	779
5:00 PM	2	2	0	0	0	0	14	0	0	0	0	0	6	209	3	0	236	
5:15 PM	2	0	0	0	0	1	3	0	0	0	0	0	2	221	1	0	230	
5:30 PM	2	1	0	0	0	0	5	0	0	0	0	0	2	202	3	0	215	
5:45 PM	0	0	0	0	0	0	5	0	0	0	0	0	3	174	1	0	183	864
Total	12	5	0	0	0	7	49	0	0	0	0	0	31	1520	19	0		
Peak Total	6	4	0	0	0	4	31	0	0	0	0	0	19	823	11	0		
Peak Turn Percent	60%	40%	0%	0%	0%	11%	89%	0%	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	2%	96%	1%	0%		
Peak Approach Total	10				35				0				853					
FORMULA	8	8	0		0	12	56		0	0	0		36	884	16			
PHF	0.75	0.5	#DIV/0!		#DIV/0!	0.3333	0.5536		#DIV/0!	#DIV/0!	#DIV/0!		0.5278	0.931	0.6875			
Comments																		

Peak Hour Approach Traffic Volume and Percentage



South Leona Street and West Commerce Street

Intersection	North/South Street :	South Leona Street	
	East/West Street :	West Commerce Street	
City / State	San Antonio, Texas		
Project No.	132-14	Peak Period :	1 — 7:00 AM - 9:00 AM
Date Recorded:	Wednesday, January 07, 2015	Peak Hour:	7:15 AM to 8:15 AM

AC GROUP LLC — TRAFFIC ENGINEERING AND DATA COLLECTION

Intersection Approaches — Traffic Control

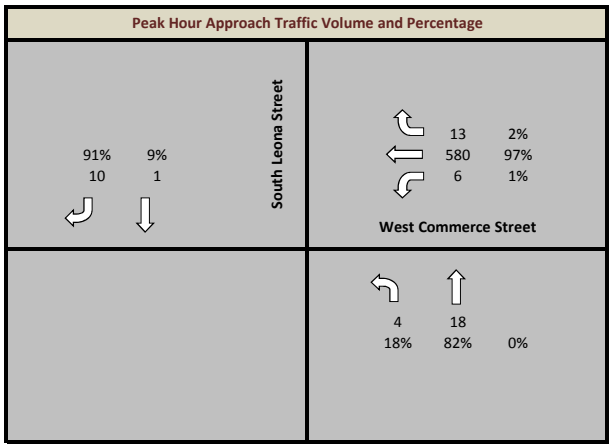
Start Time	South Leona Street				South Leona Street				West Commerce Street				West Commerce Street				Total	Hourly Total
	Northbound				Southbound				Eastbound				Westbound					
	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U		
7:00 AM	0	3				0	3						3	121	0		130	
7:15 AM	0	3				1	3						0	127	2		136	
7:30 AM	1	4				0	1						1	135	3		145	
7:45 AM	1	11				0	3						4	172	6		197	608
8:00 AM	2	0				0	3						1	146	2		154	
8:15 AM	3	3				0	1						2	116	0		125	
8:30 AM	0	3				0	2						1	142	1		149	
8:45 AM	2	1				0	1						3	110	1		118	546

	Northbound			Southbound			Eastbound			Westbound			Total	Hourly Total
	Left	Thur	Right	Left	Thur	Right	Left	Thur	Right	Left	Thur	Right		
7:00 AM													0	
7:15 AM													0	
7:30 AM													0	
7:45 AM													0	0
8:00 AM													0	
8:15 AM													0	
8:30 AM													0	
8:45 AM													0	0

	Northbound				Southbound				Eastbound				Westbound				Total	Hourly Total
	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U		
7:00 AM	0	3	0	0	0	0	3	0	0	0	0	0	3	121	0	0	130	
7:15 AM	0	3	0	0	0	1	3	0	0	0	0	0	0	127	2	0	136	
7:30 AM	1	4	0	0	0	0	1	0	0	0	0	0	1	135	3	0	145	
7:45 AM	1	11	0	0	0	0	3	0	0	0	0	0	4	172	6	0	197	608
8:00 AM	2	0	0	0	0	0	3	0	0	0	0	0	1	146	2	0	154	
8:15 AM	3	3	0	0	0	0	1	0	0	0	0	0	2	116	0	0	125	
8:30 AM	0	3	0	0	0	0	2	0	0	0	0	0	1	142	1	0	149	
8:45 AM	2	1	0	0	0	0	1	0	0	0	0	0	3	110	1	0	118	546
Total	9	28	0	0	0	1	17	0	0	0	0	0	15	1069	15	0		
Peak Total	4	18	0	0	0	1	10	0	0	0	0	0	6	580	13	0		
Peak Turn Percent	18%	82%	0%	0%	0%	9%	91%	0%	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	1%	97%	2%	0%		
Peak Approach Total	22				11				0				599					
FORMULA	8	44	0		0	4	12		0	0	0		16	688	24			
PHF	0.5	0.4091	#DIV/0!		#DIV/0!	0.25	0.8333		#DIV/0!	#DIV/0!	#DIV/0!		0.375	0.843	0.5417			

Comments

Peak Hour Approach Traffic Volume and Percentage



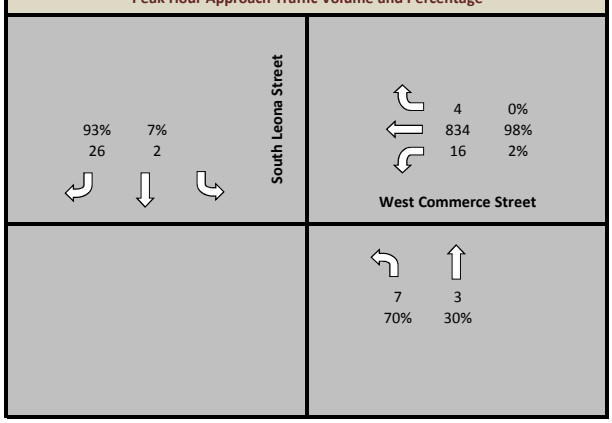
South Leona Street and West Commerce Street

Intersection	North/South Street :	South Leona Street	
	East/West Street :	West Commerce Street	
City / State	San Antonio, Texas		
Project No.	132-14	Peak Period :	3 — 4:00 PM - 6:00 PM
Date Recorded:	Wednesday, January 07, 2015	Peak Hour:	5:00 PM to 6:00 PM

AC GROUP LLC — TRAFFIC ENGINEERING AND DATA COLLECTION

Start Time	Intersection Approaches																Traffic Control	
	South Leona Street				South Leona Street				West Commerce Street				West Commerce Street					
	Northbound				Southbound				Eastbound				Westbound					
	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Total	Hourly Total
4:00 PM	4	2				0	1						2	182	1		192	
4:15 PM	1	2				2	5						2	174	3		189	
4:30 PM	2	3				1	5						3	190	4		208	
4:45 PM	3	0				1	7						2	175	3		191	780
5:00 PM	2	2				1	13						2	206	0		226	
5:15 PM	3	1				0	6						2	207	1		220	
5:30 PM	2	0				1	5						6	239	1		254	
5:45 PM	0	0				0	2						6	182	2		192	892
	Northbound				Southbound				Eastbound				Westbound					
	Left	Thur	Right		Left	Thur	Right		Left	Thur	Right		Left	Thur	Right		Total	Hourly Total
4:00 PM																	0	
4:15 PM																	0	
4:30 PM																	0	
4:45 PM																	0	0
5:00 PM																	0	
5:15 PM																	0	
5:30 PM																	0	
5:45 PM																	0	0
	Northbound				Southbound				Eastbound				Westbound					
	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Total	Hourly Total
4:00 PM	4	2	0	0	0	0	1	0	0	0	0	0	2	182	1	0	192	
4:15 PM	1	2	0	0	0	2	5	0	0	0	0	0	2	174	3	0	189	
4:30 PM	2	3	0	0	0	1	5	0	0	0	0	0	3	190	4	0	208	
4:45 PM	3	0	0	0	0	1	7	0	0	0	0	0	2	175	3	0	191	780
5:00 PM	2	2	0	0	0	1	13	0	0	0	0	0	2	206	0	0	226	
5:15 PM	3	1	0	0	0	0	6	0	0	0	0	0	2	207	1	0	220	
5:30 PM	2	0	0	0	0	1	5	0	0	0	0	0	6	239	1	0	254	
5:45 PM	0	0	0	0	0	0	2	0	0	0	0	0	6	182	2	0	192	892
Total	17	10	0	0	0	6	44	0	0	0	0	0	25	1555	15	0		
Peak Total	7	3	0	0	0	2	26	0	0	0	0	0	16	834	4	0		
Peak Turn Percent	70%	30%	0%	0%	0%	7%	93%	0%	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	2%	98%	0%	0%		
Peak Approach Total	10				28				0				854					
FORMULA	12	8	0		0	4	52		0	0	0		24	956	8			
PHF	0.5833	0.375	#DIV/0!		#DIV/0!	0.5	0.5		#DIV/0!	#DIV/0!	#DIV/0!		0.6667	0.8724	0.5			
Comments																		

Peak Hour Approach Traffic Volume and Percentage



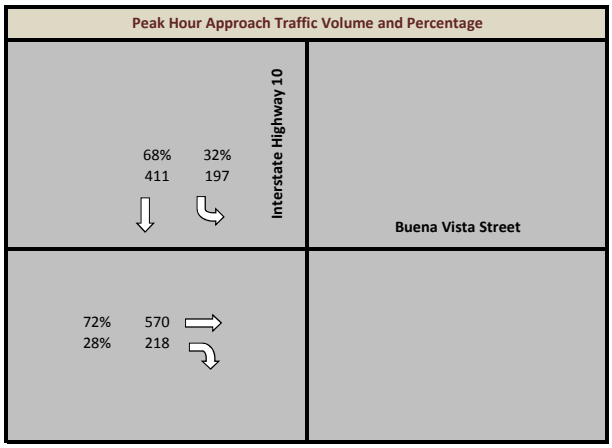
Interstate Highway 10 and Buena Vista Street

Intersection	North/South Street :	Interstate Highway 10	
	East/West Street :	Buena Vista Street	
City / State	San Antonio, Texas		
Project No.	132-14	Peak Period : 1	7:00 AM - 9:00 AM
Date Recorded:	Thursday, January 08, 2015	Peak Hour:	7:30 AM to 8:30 AM

AC GROUP LLC
TRAFFIC ENGINEERING AND DATA COLLECTION

Start Time	Intersection Approaches																Traffic Control	
	Interstate Highway 10				Interstate Highway 10				Buena Vista Street				Buena Vista Street					
	Northbound				Southbound				Eastbound				Westbound					
	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Total	Hourly Total
7:00 AM					17	84				54	26						181	
7:15 AM					25	104				89	46						264	
7:30 AM					50	108				139	53						350	
7:45 AM					45	103				170	63						381	1176
8:00 AM					49	98				149	51						347	
8:15 AM					53	102				112	51						318	
8:30 AM					39	94				125	35						293	
8:45 AM					36	87				121	31						275	1233
	Northbound				Southbound				Eastbound				Westbound					
	Left	Thur	Right		Left	Thur	Right		Left	Thur	Right		Left	Thur	Right		Total	Hourly Total
7:00 AM																	0	
7:15 AM																	0	
7:30 AM																	0	
7:45 AM																	0	0
8:00 AM																	0	
8:15 AM																	0	
8:30 AM																	0	
8:45 AM																	0	0
	Northbound				Southbound				Eastbound				Westbound					
	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Total	Hourly Total
7:00 AM	0	0	0	0	17	84	0	0	0	54	26	0	0	0	0	0	181	
7:15 AM	0	0	0	0	25	104	0	0	0	89	46	0	0	0	0	0	264	
7:30 AM	0	0	0	0	50	108	0	0	0	139	53	0	0	0	0	0	350	
7:45 AM	0	0	0	0	45	103	0	0	0	170	63	0	0	0	0	0	381	1176
8:00 AM	0	0	0	0	49	98	0	0	0	149	51	0	0	0	0	0	347	
8:15 AM	0	0	0	0	53	102	0	0	0	112	51	0	0	0	0	0	318	
8:30 AM	0	0	0	0	39	94	0	0	0	125	35	0	0	0	0	0	293	
8:45 AM	0	0	0	0	36	87	0	0	0	121	31	0	0	0	0	0	275	1233
Total	0	0	0	0	314	780	0	0	0	959	356	0	0	0	0	0		
Peak Total	0	0	0	0	197	411	0	0	0	570	218	0	0	0	0	0		
Peak Turn Percent	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	32%	68%	0%	0%	0%	72%	28%	0%	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!		
Peak Approach Total	0				608				788				0					
FORMULA	0	0	0		212	432	0		0	680	252		0	0	0			
PHF	#DIV/0!	#DIV/0!	#DIV/0!		0.9292	0.9514	#DIV/0!		#DIV/0!	0.8382	0.8651		#DIV/0!	#DIV/0!	#DIV/0!			
Comments																		

Peak Hour Approach Traffic Volume and Percentage



Interstate Highway 10 and Buena Vista Street

Intersection	North/South Street :	Interstate Highway 10	
	East/West Street :	Buena Vista Street	
City / State	San Antonio, Texas		
Project No.	132-14	Peak Period :	3 — 4:00 PM - 6:00 PM
Date Recorded:	Thursday, January 08, 2015	Peak Hour:	5:00 PM to 6:00 PM

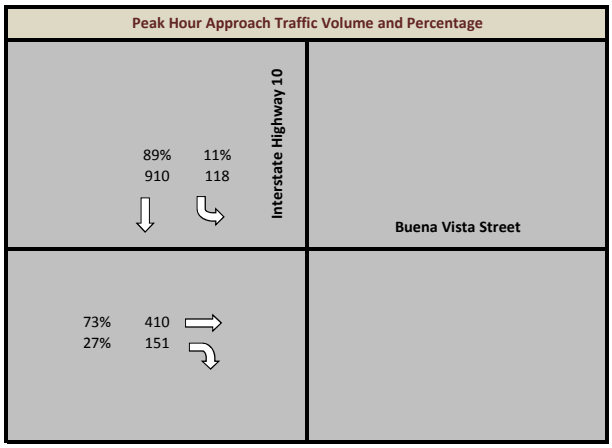
AC GROUP LLC — TRAFFIC ENGINEERING AND DATA COLLECTION

Start Time	Intersection Approaches																Traffic Control	
	Interstate Highway 10				Interstate Highway 10				Buena Vista Street				Buena Vista Street					
	Northbound				Southbound				Eastbound				Westbound					
	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Total	Hourly Total
4:00 PM					32	160				92	40						324	
4:15 PM					31	154				96	38						319	
4:30 PM					38	186				108	36						368	
4:45 PM					27	171				108	49						355	1366
5:00 PM					26	250				120	43						439	
5:15 PM					23	222				100	48						393	
5:30 PM					28	215				92	31						366	
5:45 PM					41	223				98	29						391	1589

	Northbound			Southbound			Eastbound			Westbound				
	Left	Thur	Right	Left	Thur	Right	Left	Thur	Right	Left	Thur	Right	Total	Hourly Total
4:00 PM													0	
4:15 PM													0	
4:30 PM													0	
4:45 PM													0	0
5:00 PM													0	
5:15 PM													0	
5:30 PM													0	
5:45 PM													0	0

	Northbound				Southbound				Eastbound				Westbound					
	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Total	Hourly Total
4:00 PM	0	0	0	0	32	160	0	0	0	92	40	0	0	0	0	0	324	
4:15 PM	0	0	0	0	31	154	0	0	0	96	38	0	0	0	0	0	319	
4:30 PM	0	0	0	0	38	186	0	0	0	108	36	0	0	0	0	0	368	
4:45 PM	0	0	0	0	27	171	0	0	0	108	49	0	0	0	0	0	355	1366
5:00 PM	0	0	0	0	26	250	0	0	0	120	43	0	0	0	0	0	439	
5:15 PM	0	0	0	0	23	222	0	0	0	100	48	0	0	0	0	0	393	
5:30 PM	0	0	0	0	28	215	0	0	0	92	31	0	0	0	0	0	366	
5:45 PM	0	0	0	0	41	223	0	0	0	98	29	0	0	0	0	0	391	1589
Total	0	0	0	0	246	1581	0	0	0	814	314	0	0	0	0	0		
Peak Total	0	0	0	0	118	910	0	0	0	410	151	0	0	0	0	0		
Peak Turn Percent	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	11%	89%	0%	0%	0%	73%	27%	0%	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!		
Peak Approach Total	0				1028				561				0					
FORMULA	0	0	0		164	1000	0		0	480	192		0	0	0			
PHF	#DIV/0!	#DIV/0!	#DIV/0!		0.7195	0.91	#DIV/0!		#DIV/0!	0.8542	0.7865		#DIV/0!	#DIV/0!	#DIV/0!			
Comments																		

Peak Hour Approach Traffic Volume and Percentage



Interstate Highway 10 and Buena Vista Street

Intersection	North/South Street :	Interstate Highway 10	
	East/West Street :	Buena Vista Street	
City / State	San Antonio, Texas		
Project No.	132-14	Peak Period : 1	7:00 AM - 9:00 AM
Date Recorded:	Tuesday, January 13, 2015	Peak Hour:	7:30 AM to 8:30 AM

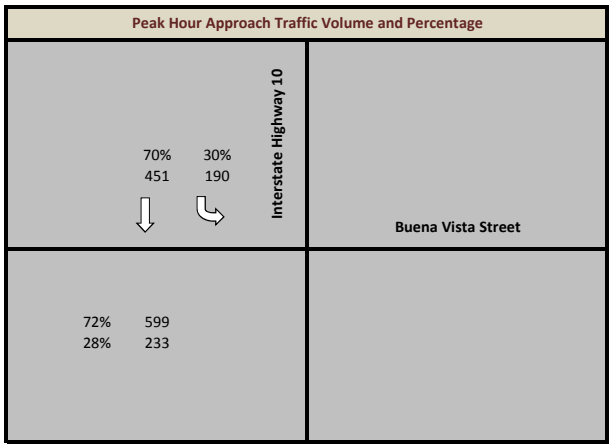
AC GROUP LLC
TRAFFIC ENGINEERING AND DATA COLLECTION

Start Time	Intersection Approaches																Traffic Control	
	Interstate Highway 10				Interstate Highway 10				Buena Vista Street				Buena Vista Street					
	Northbound				Southbound				Eastbound				Westbound					
	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Total	Hourly Total
7:00 AM					27	96				64	20						207	
7:15 AM					34	99				92	47						272	
7:30 AM					40	115				175	64						394	
7:45 AM					37	126				164	58						385	1258
8:00 AM					50	102				140	58						350	
8:15 AM					63	108				120	53						344	
8:30 AM					85	114				143	41						383	
8:45 AM					61	104				120	50						335	1412

	Northbound			Southbound			Eastbound			Westbound				
	Left	Thur	Right	Left	Thur	Right	Left	Thur	Right	Left	Thur	Right	Total	Hourly Total
7:00 AM													0	
7:15 AM													0	
7:30 AM													0	
7:45 AM													0	0
8:00 AM													0	
8:15 AM													0	
8:30 AM													0	
8:45 AM													0	0

	Northbound				Southbound				Eastbound				Westbound					
	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Total	Hourly Total
7:00 AM	0	0	0	0	27	96	0	0	0	64	20	0	0	0	0	0	207	
7:15 AM	0	0	0	0	34	99	0	0	0	92	47	0	0	0	0	0	272	
7:30 AM	0	0	0	0	40	115	0	0	0	175	64	0	0	0	0	0	394	
7:45 AM	0	0	0	0	37	126	0	0	0	164	58	0	0	0	0	0	385	1258
8:00 AM	0	0	0	0	50	102	0	0	0	140	58	0	0	0	0	0	350	
8:15 AM	0	0	0	0	63	108	0	0	0	120	53	0	0	0	0	0	344	
8:30 AM	0	0	0	0	85	114	0	0	0	143	41	0	0	0	0	0	383	
8:45 AM	0	0	0	0	61	104	0	0	0	120	50	0	0	0	0	0	335	1412
Total	0	0	0	0	397	864	0	0	0	1018	391	0	0	0	0	0		
Peak Total	0	0	0	0	190	451	0	0	0	599	233	0	0	0	0	0		
Peak Turn Percent	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	30%	70%	0%	0%	0%	72%	28%	0%	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!		
Peak Approach Total	0				641				832				0					
FORMULA	0	0	0		252	504	0		0	700	256		0	0	0			
PHF	#DIV/0!	#DIV/0!	#DIV/0!		0.754	0.8948	#DIV/0!		#DIV/0!	0.8557	0.9102		#DIV/0!	#DIV/0!	#DIV/0!			
Comments																		

Peak Hour Approach Traffic Volume and Percentage



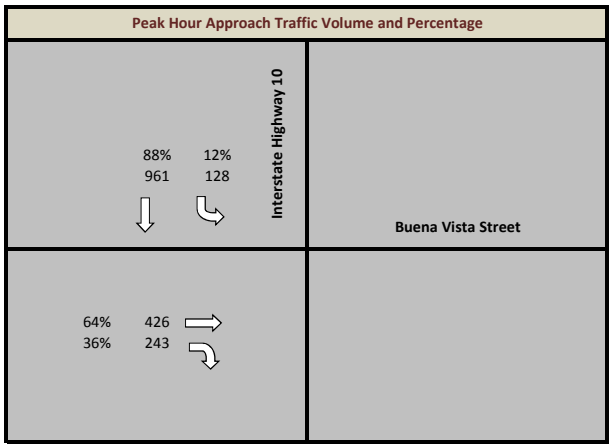
Interstate Highway 10 and Buena Vista Street

Intersection	North/South Street :	Interstate Highway 10	
	East/West Street :	Buena Vista Street	
City / State	San Antonio, Texas		
Project No.	132-14	Peak Period : 3	4:00 PM - 6:00 PM
Date Recorded:	Thursday, January 08, 2015	Peak Hour:	4:45 PM to 5:45 PM

AC GROUP LLC
TRAFFIC ENGINEERING AND DATA COLLECTION

Start Time	Intersection Approaches																Traffic Control	
	Interstate Highway 10				Interstate Highway 10				Buena Vista Street				Buena Vista Street					
	Northbound				Southbound				Eastbound				Westbound					
	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Total	Hourly Total
4:00 PM					30	195				125	74						424	
4:15 PM					30	176				152	53						411	
4:30 PM					35	217				117	61						430	
4:45 PM					33	203				119	53						408	1673
5:00 PM					34	267				120	67						488	
5:15 PM					25	232				93	65						415	
5:30 PM					36	259				94	58						447	
5:45 PM					24	225				101	37						387	1737
	Northbound				Southbound				Eastbound				Westbound					
	Left	Thur	Right		Left	Thur	Right		Left	Thur	Right		Left	Thur	Right		Total	Hourly Total
4:00 PM																	0	
4:15 PM																	0	
4:30 PM																	0	
4:45 PM																	0	0
5:00 PM																	0	
5:15 PM																	0	
5:30 PM																	0	
5:45 PM																	0	0
	Northbound				Southbound				Eastbound				Westbound					
	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Total	Hourly Total
4:00 PM	0	0	0	0	30	195	0	0	0	125	74	0	0	0	0	0	424	
4:15 PM	0	0	0	0	30	176	0	0	0	152	53	0	0	0	0	0	411	
4:30 PM	0	0	0	0	35	217	0	0	0	117	61	0	0	0	0	0	430	
4:45 PM	0	0	0	0	33	203	0	0	0	119	53	0	0	0	0	0	408	1673
5:00 PM	0	0	0	0	34	267	0	0	0	120	67	0	0	0	0	0	488	
5:15 PM	0	0	0	0	25	232	0	0	0	93	65	0	0	0	0	0	415	
5:30 PM	0	0	0	0	36	259	0	0	0	94	58	0	0	0	0	0	447	
5:45 PM	0	0	0	0	24	225	0	0	0	101	37	0	0	0	0	0	387	1737
Total	0	0	0	0	247	1774	0	0	0	921	468	0	0	0	0	0		
Peak Total	0	0	0	0	128	961	0	0	0	426	243	0	0	0	0	0		
Peak Turn Percent	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	12%	88%	0%	0%	0%	64%	36%	0%	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!		
Peak Approach Total	0				1089				669				0					
FORMULA	0	0	0		144	1068	0		0	480	268		0	0	0			
PHF	#DIV/0!	#DIV/0!	#DIV/0!		0.8889	0.8998	#DIV/0!		#DIV/0!	0.8875	0.9067		#DIV/0!	#DIV/0!	#DIV/0!			
Comments																		

Peak Hour Approach Traffic Volume and Percentage



Interstate Highway 10 and West Commerce Street

Intersection	North/South Street :	Interstate Highway 10	
	East/West Street :	West Commerce Street	
City / State	San Antonio, Texas		
Project No.	132-14	Peak Period :	1 — 7:00 AM - 9:00 AM
Date Recorded:	Wednesday, January 07, 2015	Peak Hour:	7:15 AM to 8:15 AM

AC GROUP LLC — TRAFFIC ENGINEERING AND DATA COLLECTION

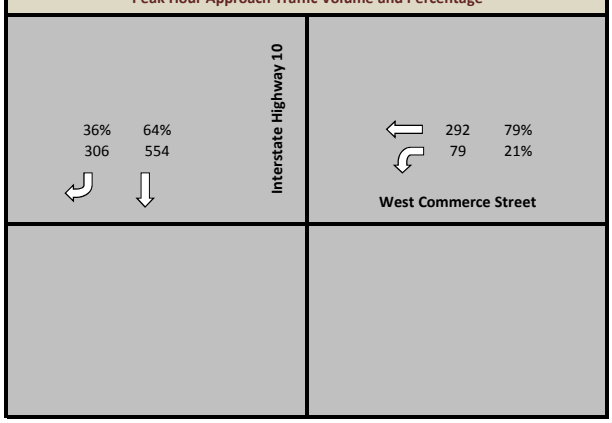
Start Time	Intersection Approaches																Traffic Control	
	Interstate Highway 10				Interstate Highway 10				West Commerce Street				West Commerce Street					
	Northbound				Southbound				Eastbound				Westbound					
	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Total	Hourly Total
7:00 AM						96	71						18	51			236	
7:15 AM						135	72						10	58			275	
7:30 AM						158	64						30	71			323	
7:45 AM						140	81						15	98			334	1168
8:00 AM						121	89						24	65			299	
8:15 AM						128	56						24	63			271	
8:30 AM						142	89						18	66			315	
8:45 AM						127	67						19	52			265	1150

	Northbound			Southbound			Eastbound			Westbound				
	Left	Thur	Right	Left	Thur	Right	Left	Thur	Right	Left	Thur	Right	Total	Hourly Total
7:00 AM													0	
7:15 AM													0	
7:30 AM													0	
7:45 AM													0	0
8:00 AM													0	
8:15 AM													0	
8:30 AM													0	
8:45 AM													0	0

	Northbound				Southbound				Eastbound				Westbound					
	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Total	Hourly Total
7:00 AM	0	0	0	0	0	96	71	0	0	0	0	0	18	51	0	0	236	
7:15 AM	0	0	0	0	0	135	72	0	0	0	0	0	10	58	0	0	275	
7:30 AM	0	0	0	0	0	158	64	0	0	0	0	0	30	71	0	0	323	
7:45 AM	0	0	0	0	0	140	81	0	0	0	0	0	15	98	0	0	334	1168
8:00 AM	0	0	0	0	0	121	89	0	0	0	0	0	24	65	0	0	299	
8:15 AM	0	0	0	0	0	128	56	0	0	0	0	0	24	63	0	0	271	
8:30 AM	0	0	0	0	0	142	89	0	0	0	0	0	18	66	0	0	315	
8:45 AM	0	0	0	0	0	127	67	0	0	0	0	0	19	52	0	0	265	1150
Total	0	0	0	0	0	1047	589	0	0	0	0	0	158	524	0	0		
Peak Total	0	0	0	0	0	554	306	0	0	0	0	0	79	292	0	0		
Peak Turn Percent	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	0%	64%	36%	0%	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	21%	79%	0%	0%		
Peak Approach Total	0				860				0				371					
FORMULA	0	0	0		0	632	356		0	0	0		120	392	0			
PHF	#DIV/0!	#DIV/0!	#DIV/0!		#DIV/0!	0.8766	0.8596		#DIV/0!	#DIV/0!	#DIV/0!		0.6583	0.7449	#DIV/0!			

Comments

Peak Hour Approach Traffic Volume and Percentage



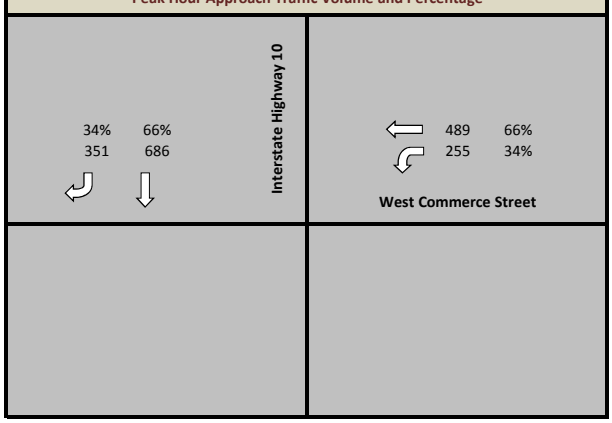
Interstate Highway 10 and West Commerce Street

Intersection	North/South Street :	Interstate Highway 10	
	East/West Street :	West Commerce Street	
City / State	San Antonio, Texas		
Project No.	132-14	Peak Period :	3 — 4:00 PM - 6:00 PM
Date Recorded:	Wednesday, January 07, 2015	Peak Hour:	4:45 PM to 5:45 PM

AC GROUP LLC — TRAFFIC ENGINEERING AND DATA COLLECTION

Start Time	Intersection Approaches																Traffic Control	
	Interstate Highway 10				Interstate Highway 10				West Commerce Street				West Commerce Street					
	Northbound				Southbound				Eastbound				Westbound					
	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Total	Hourly Total
4:00 PM						157	81						69	102			409	
4:15 PM						130	79						48	101			358	
4:30 PM						166	68						70	119			423	
4:45 PM						142	81						53	100			376	1566
5:00 PM						198	78						77	131			484	
5:15 PM						177	77						71	129			454	
5:30 PM						169	115						54	129			467	
5:45 PM						131	82						53	105			371	1776
	Northbound				Southbound				Eastbound				Westbound					
	Left	Thur	Right		Left	Thur	Right		Left	Thur	Right		Left	Thur	Right		Total	Hourly Total
4:00 PM																	0	
4:15 PM																	0	
4:30 PM																	0	
4:45 PM																	0	0
5:00 PM																	0	
5:15 PM																	0	
5:30 PM																	0	
5:45 PM																	0	0
	Northbound				Southbound				Eastbound				Westbound					
	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Total	Hourly Total
4:00 PM	0	0	0	0	0	157	81	0	0	0	0	0	69	102	0	0	409	
4:15 PM	0	0	0	0	0	130	79	0	0	0	0	0	48	101	0	0	358	
4:30 PM	0	0	0	0	0	166	68	0	0	0	0	0	70	119	0	0	423	
4:45 PM	0	0	0	0	0	142	81	0	0	0	0	0	53	100	0	0	376	1566
5:00 PM	0	0	0	0	0	198	78	0	0	0	0	0	77	131	0	0	484	
5:15 PM	0	0	0	0	0	177	77	0	0	0	0	0	71	129	0	0	454	
5:30 PM	0	0	0	0	0	169	115	0	0	0	0	0	54	129	0	0	467	
5:45 PM	0	0	0	0	0	131	82	0	0	0	0	0	53	105	0	0	371	1776
Total	0	0	0	0	0	1270	661	0	0	0	0	0	495	916	0	0		
Peak Total	0	0	0	0	0	686	351	0	0	0	0	0	255	489	0	0		
Peak Turn Percent	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	0%	66%	34%	0%	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	34%	66%	0%	0%		
Peak Approach Total	0				1037				0				744					
FORMULA	0	0	0		0	792	460		0	0	0		308	524	0			
PHF	#DIV/0!	#DIV/0!	#DIV/0!		#DIV/0!	0.8662	0.763		#DIV/0!	#DIV/0!	#DIV/0!		0.8279	0.9332	#DIV/0!			
Comments																		

Peak Hour Approach Traffic Volume and Percentage



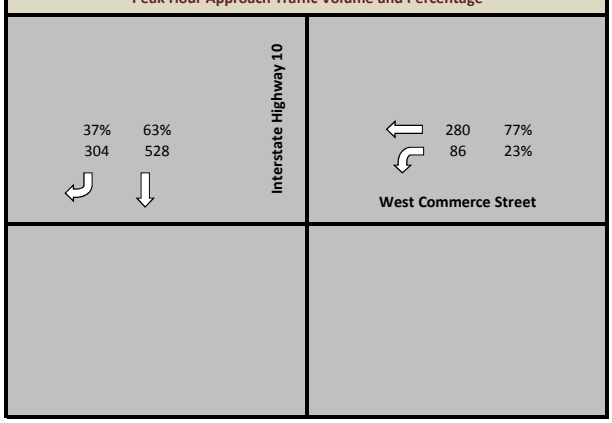
Interstate Highway 10 and West Commerce Street

Intersection	North/South Street :	Interstate Highway 10	
	East/West Street :	West Commerce Street	
City / State	San Antonio, Texas		
Project No.	132-14	Peak Period :	1 — 7:00 AM - 9:00 AM
Date Recorded:	Thursday, January 08, 2015	Peak Hour:	7:30 AM to 8:30 AM

AC GROUP LLC — TRAFFIC ENGINEERING AND DATA COLLECTION

Start Time	Intersection Approaches																Traffic Control	
	Interstate Highway 10				Interstate Highway 10				West Commerce Street				West Commerce Street					
	Northbound				Southbound				Eastbound				Westbound					
	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Total	Hourly Total
7:00 AM						87	64						13	49			213	
7:15 AM						99	57						23	59			238	
7:30 AM						129	65						24	81			299	
7:45 AM						140	77						16	77			310	1060
8:00 AM						123	73						26	60			282	
8:15 AM						136	89						20	62			307	
8:30 AM						107	64						18	73			262	
8:45 AM						112	79						17	82			290	1141
	Northbound				Southbound				Eastbound				Westbound					
	Left	Thur	Right		Left	Thur	Right		Left	Thur	Right		Left	Thur	Right		Total	Hourly Total
7:00 AM																	0	
7:15 AM																	0	
7:30 AM																	0	
7:45 AM																	0	0
8:00 AM																	0	
8:15 AM																	0	
8:30 AM																	0	
8:45 AM																	0	0
	Northbound				Southbound				Eastbound				Westbound					
	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Total	Hourly Total
7:00 AM	0	0	0	0	0	87	64	0	0	0	0	0	13	49	0	0	213	
7:15 AM	0	0	0	0	0	99	57	0	0	0	0	0	23	59	0	0	238	
7:30 AM	0	0	0	0	0	129	65	0	0	0	0	0	24	81	0	0	299	
7:45 AM	0	0	0	0	0	140	77	0	0	0	0	0	16	77	0	0	310	1060
8:00 AM	0	0	0	0	0	123	73	0	0	0	0	0	26	60	0	0	282	
8:15 AM	0	0	0	0	0	136	89	0	0	0	0	0	20	62	0	0	307	
8:30 AM	0	0	0	0	0	107	64	0	0	0	0	0	18	73	0	0	262	
8:45 AM	0	0	0	0	0	112	79	0	0	0	0	0	17	82	0	0	290	1141
Total	0	0	0	0	0	933	568	0	0	0	0	0	157	543	0	0		
Peak Total	0	0	0	0	0	528	304	0	0	0	0	0	86	280	0	0		
Peak Turn Percent	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	0%	63%	37%	0%	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	23%	77%	0%	0%		
Peak Approach Total	0				832				0				366					
FORMULA	0	0	0		0	560	356		0	0	0		104	324	0			
PHF	#DIV/0!	#DIV/0!	#DIV/0!		#DIV/0!	0.9429	0.8539		#DIV/0!	#DIV/0!	#DIV/0!		0.8269	0.8642	#DIV/0!			
Comments																		

Peak Hour Approach Traffic Volume and Percentage



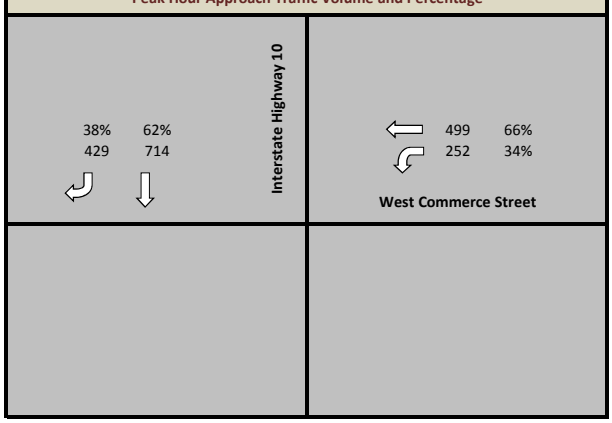
Interstate Highway 10 and West Commerce Street

Intersection	North/South Street :	Interstate Highway 10	
	East/West Street :	West Commerce Street	
City / State	San Antonio, Texas		
Project No.	132-14	Peak Period :	3 — 4:00 PM - 6:00 PM
Date Recorded:	Thursday, January 08, 2015	Peak Hour:	5:00 PM to 6:00 PM

AC GROUP LLC — TRAFFIC ENGINEERING AND DATA COLLECTION

Start Time	Intersection Approaches																Traffic Control	
	Interstate Highway 10				Interstate Highway 10				West Commerce Street				West Commerce Street					
	Northbound				Southbound				Eastbound				Westbound					
	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Total	Hourly Total
4:00 PM						142	59						47	113			361	
4:15 PM						133	64						49	96			342	
4:30 PM						140	90						63	129			422	
4:45 PM						130	82						64	131			407	1532
5:00 PM						193	89						65	125			472	
5:15 PM						166	108						68	160			502	
5:30 PM						174	119						59	105			457	
5:45 PM						181	113						60	109			463	1894
	Northbound				Southbound				Eastbound				Westbound					
	Left	Thur	Right		Left	Thur	Right		Left	Thur	Right		Left	Thur	Right		Total	Hourly Total
4:00 PM																	0	
4:15 PM																	0	
4:30 PM																	0	
4:45 PM																	0	0
5:00 PM																	0	
5:15 PM																	0	
5:30 PM																	0	
5:45 PM																	0	0
	Northbound				Southbound				Eastbound				Westbound					
	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Left	Thur	Right	U	Total	Hourly Total
4:00 PM	0	0	0	0	0	142	59	0	0	0	0	0	47	113	0	0	361	
4:15 PM	0	0	0	0	0	133	64	0	0	0	0	0	49	96	0	0	342	
4:30 PM	0	0	0	0	0	140	90	0	0	0	0	0	63	129	0	0	422	
4:45 PM	0	0	0	0	0	130	82	0	0	0	0	0	64	131	0	0	407	1532
5:00 PM	0	0	0	0	0	193	89	0	0	0	0	0	65	125	0	0	472	
5:15 PM	0	0	0	0	0	166	108	0	0	0	0	0	68	160	0	0	502	
5:30 PM	0	0	0	0	0	174	119	0	0	0	0	0	59	105	0	0	457	
5:45 PM	0	0	0	0	0	181	113	0	0	0	0	0	60	109	0	0	463	1894
Total	0	0	0	0	0	1259	724	0	0	0	0	0	475	968	0	0		
Peak Total	0	0	0	0	0	714	429	0	0	0	0	0	252	499	0	0		
Peak Turn Percent	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	0%	62%	38%	0%	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	34%	66%	0%	0%		
Peak Approach Total	0				1143				0				751					
FORMULA	0	0	0		0	772	476		0	0	0		272	640	0			
PHF	#DIV/0!	#DIV/0!	#DIV/0!		#DIV/0!	0.9249	0.9013		#DIV/0!	#DIV/0!	#DIV/0!		0.9265	0.7797	#DIV/0!			
Comments																		

Peak Hour Approach Traffic Volume and Percentage



Appendix D
Existing (2015) and 2020 No-Build Intersection Operations Reports

Existing (2015) Conditions AM Peak Hour

HCM 2010 Signalized Intersection Summary
1: Pecos Street & Commerce Street

4/17/2015

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	0	83	286	0	0	0	0	0	541	305
Number				3	8	18				1	6	16
Initial Q (Qb), veh				0	0	0				0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00				1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln				1863	1863	0				0	1863	1900
Adj Flow Rate, veh/h				90	311	0				0	588	118
Adj No. of Lanes				1	3	0				0	3	0
Peak Hour Factor				0.92	0.92	0.92				0.92	0.92	0.92
Percent Heavy Veh, %				2	2	0				0	2	2
Cap, veh/h				861	2054	0				0	1739	343
Arrive On Green				0.40	0.40	0.00				0.00	0.41	0.41
Sat Flow, veh/h				1774	5253	0				0	4431	841
Grp Volume(v), veh/h				90	311	0				0	466	240
Grp Sat Flow(s),veh/h/ln				1774	1695	0				0	1695	1714
Q Serve(g_s), s				1.6	1.9	0.0				0.0	4.7	4.8
Cycle Q Clear(g_c), s				1.6	1.9	0.0				0.0	4.7	4.8
Prop In Lane				1.00		0.00				0.00		0.49
Lane Grp Cap(c), veh/h				861	2054	0				0	1383	699
V/C Ratio(X)				0.10	0.15	0.00				0.00	0.34	0.34
Avail Cap(c_a), veh/h				861	2054	0				0	1383	699
HCM Platoon Ratio				1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)				1.00	1.00	0.00				0.00	1.00	1.00
Uniform Delay (d), s/veh				9.4	9.5	0.0				0.0	10.2	10.2
Incr Delay (d2), s/veh				0.2	0.2	0.0				0.0	0.7	1.3
Initial Q Delay(d3),s/veh				0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				0.8	0.9	0.0				0.0	2.3	2.5
LnGrp Delay(d),s/veh				9.6	9.6	0.0				0.0	10.8	11.5
LnGrp LOS				A	A						B	B
Approach Vol, veh/h					401						706	
Approach Delay, s/veh					9.6						11.1	
Approach LOS					A						B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs						6		8
Phs Duration (G+Y+Rc), s						25.0		25.0
Change Period (Y+Rc), s						4.6		4.8
Max Green Setting (Gmax), s						20.4		20.2
Max Q Clear Time (g_c+I1), s						6.8		3.9
Green Ext Time (p_c), s						3.9		2.0

Intersection Summary	
HCM 2010 Ctrl Delay	10.5
HCM 2010 LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	585	226	0	0	0	0	0	0	194	431	0
Number	7	4	14							1	6	16
Initial Q (Qb), veh	0	0	0							0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00							1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00							1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1863	1900							1900	1863	0
Adj Flow Rate, veh/h	0	636	95							211	468	0
Adj No. of Lanes	0	3	0							0	4	0
Peak Hour Factor	0.92	0.92	0.92							0.92	0.92	0.92
Percent Heavy Veh, %	0	2	2							2	2	0
Cap, veh/h	0	1808	267							720	1784	0
Arrive On Green	0.00	0.40	0.40							0.13	0.13	0.00
Sat Flow, veh/h	0	4643	661							1412	4611	0
Grp Volume(v), veh/h	0	480	251							211	468	0
Grp Sat Flow(s),veh/h/ln	0	1695	1746							1412	1458	0
Q Serve(g_s), s	0.0	4.9	5.0							6.8	4.8	0.0
Cycle Q Clear(g_c), s	0.0	4.9	5.0							6.8	4.8	0.0
Prop In Lane	0.00		0.38							1.00		0.00
Lane Grp Cap(c), veh/h	0	1370	705							720	1784	0
V/C Ratio(X)	0.00	0.35	0.36							0.29	0.26	0.00
Avail Cap(c_a), veh/h	0	1370	705							720	1784	0
HCM Platoon Ratio	1.00	1.00	1.00							0.33	0.33	1.00
Upstream Filter(I)	0.00	1.00	1.00							1.00	1.00	0.00
Uniform Delay (d), s/veh	0.0	10.3	10.4							15.8	14.9	0.0
Incr Delay (d2), s/veh	0.0	0.7	1.4							1.0	0.4	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0							0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	2.4	2.6							2.9	2.0	0.0
LnGrp Delay(d),s/veh	0.0	11.1	11.8							16.8	15.2	0.0
LnGrp LOS		B	B							B	B	
Approach Vol, veh/h		731									679	
Approach Delay, s/veh		11.3									15.7	
Approach LOS		B									B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6		
Phs Duration (G+Y+Rc), s				25.0		25.0		
Change Period (Y+Rc), s				* 4.8		4.6		
Max Green Setting (Gmax), s				* 20		20.4		
Max Q Clear Time (g_c+I1), s				7.0		8.8		
Green Ext Time (p_c), s				4.0		3.4		

Intersection Summary	
HCM 2010 Ctrl Delay	13.4
HCM 2010 LOS	B

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	0	7	586	16	4	16	0	0	1	8
Number				3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln				1863	1863	1900	1900	1863	0	0	1863	1900
Adj Flow Rate, veh/h				8	637	12	4	17	0	0	1	2
Adj No. of Lanes				1	3	0	0	1	0	0	1	0
Peak Hour Factor				0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %				2	2	2	2	2	0	0	2	2
Cap, veh/h				866	2508	47	149	528	0	0	182	364
Arrive On Green				0.49	0.49	0.49	0.33	0.33	0.00	0.00	0.33	0.33
Sat Flow, veh/h				1774	5139	97	192	1609	0	0	556	1111
Grp Volume(v), veh/h				8	420	229	21	0	0	0	0	3
Grp Sat Flow(s),veh/h/ln				1774	1695	1846	1801	0	0	0	0	1667
Q Serve(g_s), s				0.1	3.6	3.6	0.0	0.0	0.0	0.0	0.0	0.1
Cycle Q Clear(g_c), s				0.1	3.6	3.6	0.4	0.0	0.0	0.0	0.0	0.1
Prop In Lane				1.00		0.05	0.19		0.00	0.00		0.67
Lane Grp Cap(c), veh/h				866	1654	901	676	0	0	0	0	547
V/C Ratio(X)				0.01	0.25	0.25	0.03	0.00	0.00	0.00	0.00	0.01
Avail Cap(c_a), veh/h				866	1654	901	676	0	0	0	0	547
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00	1.00
Uniform Delay (d), s/veh				6.6	7.5	7.5	11.4	0.0	0.0	0.0	0.0	11.3
Incr Delay (d2), s/veh				0.0	0.4	0.7	0.1	0.0	0.0	0.0	0.0	0.0
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				0.1	1.8	2.0	0.2	0.0	0.0	0.0	0.0	0.0
LnGrp Delay(d),s/veh				6.6	7.8	8.2	11.5	0.0	0.0	0.0	0.0	11.3
LnGrp LOS				A	A	A	B					B
Approach Vol, veh/h					657			21			3	
Approach Delay, s/veh					7.9			11.5			11.3	
Approach LOS					A			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2				6		8
Phs Duration (G+Y+Rc), s		21.0				21.0		29.0
Change Period (Y+Rc), s		* 4.6				* 4.6		4.6
Max Green Setting (Gmax), s		* 16				* 16		24.4
Max Q Clear Time (g_c+I1), s		2.4				2.1		5.6
Green Ext Time (p_c), s		0.0				0.0		3.9

Intersection Summary	
HCM 2010 Ctrl Delay	8.1
HCM 2010 LOS	A

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	0	26	495	38	252	655	0	0	173	126
Number				3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln				1900	1863	1863	1863	1863	0	0	1863	1900
Adj Flow Rate, veh/h				28	538	19	274	712	0	0	188	5
Adj No. of Lanes				0	2	1	1	2	0	0	2	0
Peak Hour Factor				0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %				2	2	2	2	2	0	0	2	2
Cap, veh/h				49	992	455	464	2034	0	0	872	23
Arrive On Green				0.29	0.29	0.29	0.26	0.57	0.00	0.00	0.25	0.25
Sat Flow, veh/h				171	3452	1583	1774	3632	0	0	3616	93
Grp Volume(v), veh/h				303	263	19	274	712	0	0	94	99
Grp Sat Flow(s),veh/h/ln				1854	1770	1583	1774	1770	0	0	1770	1846
Q Serve(g_s), s				9.8	8.7	0.6	9.5	7.5	0.0	0.0	3.0	3.0
Cycle Q Clear(g_c), s				9.8	8.7	0.6	9.5	7.5	0.0	0.0	3.0	3.0
Prop In Lane				0.09		1.00	1.00		0.00	0.00		0.05
Lane Grp Cap(c), veh/h				533	508	455	464	2034	0	0	438	457
V/C Ratio(X)				0.57	0.52	0.04	0.59	0.35	0.00	0.00	0.22	0.22
Avail Cap(c_a), veh/h				533	508	455	464	2034	0	0	438	457
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh				21.3	21.0	18.1	22.7	8.0	0.0	0.0	21.0	21.0
Incr Delay (d2), s/veh				4.4	3.7	0.2	5.4	0.5	0.0	0.0	1.1	1.1
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				5.6	4.8	0.3	5.3	3.8	0.0	0.0	1.6	1.6
LnGrp Delay(d),s/veh				25.7	24.7	18.2	28.1	8.4	0.0	0.0	22.1	22.1
LnGrp LOS				C	C	B	C	A			C	C
Approach Vol, veh/h					585			986			193	
Approach Delay, s/veh					25.0			13.9			22.1	
Approach LOS					C			B			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2			5	6		8
Phs Duration (G+Y+Rc), s		45.3			23.3	22.0		25.0
Change Period (Y+Rc), s		* 4.9			* 4.9	* 4.6		4.8
Max Green Setting (Gmax), s		* 40			* 18	* 17		20.2
Max Q Clear Time (g_c+I1), s		9.5			11.5	5.0		11.8
Green Ext Time (p_c), s		6.5			3.2	0.8		2.2

Intersection Summary	
HCM 2010 Ctrl Delay	18.5
HCM 2010 LOS	B

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

HCM Signalized Intersection Capacity Analysis
5: Buena Vista Street So. Frontage & Frio Street & Buena Vista Street

4/17/2015

Movement	EBL	EBT	EBR	NBT	NBR	SBL	SBT	NEL	NER	NER2
Lane Configurations										
Volume (vph)	227	757	135	687	93	50	167	3	1	12
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0		4.0		4.0	4.0	4.0		4.0
Lane Util. Factor		0.91		0.95		1.00	0.95	1.00		0.95
Frt		0.98		0.98		1.00	1.00	0.90		0.85
Flt Protected		0.99		1.00		0.95	1.00	0.98		1.00
Satd. Flow (prot)		4943		3476		1770	3539	1649		1504
Flt Permitted		0.99		1.00		0.15	1.00	0.98		1.00
Satd. Flow (perm)		4943		3476		273	3539	1649		1504
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	247	823	147	747	101	54	182	3	1	13
RTOR Reduction (vph)	0	0	0	10	0	0	0	8	0	7
Lane Group Flow (vph)	0	1217	0	838	0	54	182	1	0	1
Turn Type	Perm	NA		NA		pm+pt	NA	Prot		Prot
Protected Phases		4		2		1	6	9		9
Permitted Phases	4					6				
Actuated Green, G (s)		33.5		38.0		47.9	47.9	16.0		16.0
Effective Green, g (s)		33.5		38.0		47.9	47.9	16.0		16.0
Actuated g/C Ratio		0.31		0.35		0.44	0.44	0.15		0.15
Clearance Time (s)		4.0		4.0		4.0	4.0	4.0		4.0
Vehicle Extension (s)		3.0		3.0		3.0	3.0	3.0		3.0
Lane Grp Cap (vph)		1513		1207		200	1549	241		219
v/s Ratio Prot				c0.24		c0.01	0.05	c0.00		0.00
v/s Ratio Perm		0.25				0.10				
v/c Ratio		0.80		0.69		0.27	0.12	0.01		0.01
Uniform Delay, d1		34.9		30.7		20.6	18.2	39.9		39.9
Progression Factor		1.00		1.00		1.00	1.00	1.00		1.00
Incremental Delay, d2		3.2		3.3		0.7	0.2	0.0		0.0
Delay (s)		38.1		34.0		21.3	18.4	39.9		39.9
Level of Service		D		C		C	B	D		D
Approach Delay (s)		38.1		34.0			19.1	39.9		
Approach LOS		D		C			B	D		

Intersection Summary			
HCM 2000 Control Delay	34.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	109.4	Sum of lost time (s)	16.0
Intersection Capacity Utilization	64.2%	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)	0	0	0	92	503	48	42	383	0	0	299	95
Number				3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln				1900	1863	1863	1900	1863	0	0	1863	1900
Adj Flow Rate, veh/h				100	547	12	46	416	0	0	325	62
Adj No. of Lanes				0	2	1	0	2	0	0	2	0
Peak Hour Factor				0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %				2	2	2	2	2	0	0	2	2
Cap, veh/h				224	1291	665	163	1367	0	0	1334	251
Arrive On Green				0.42	0.42	0.42	0.90	0.90	0.00	0.00	0.45	0.45
Sat Flow, veh/h				532	3073	1583	227	3133	0	0	3066	561
Grp Volume(v), veh/h				345	302	12	240	222	0	0	192	195
Grp Sat Flow(s),veh/h/ln				1836	1770	1583	1664	1610	0	0	1770	1764
Q Serve(g_s), s				9.4	8.4	0.3	0.0	1.4	0.0	0.0	4.7	4.8
Cycle Q Clear(g_c), s				9.4	8.4	0.3	1.2	1.4	0.0	0.0	4.7	4.8
Prop In Lane				0.29		1.00	0.19		0.00	0.00		0.32
Lane Grp Cap(c), veh/h				771	743	665	808	722	0	0	794	791
V/C Ratio(X)				0.45	0.41	0.02	0.30	0.31	0.00	0.00	0.24	0.25
Avail Cap(c_a), veh/h				771	743	665	808	722	0	0	794	791
HCM Platoon Ratio				1.00	1.00	1.00	2.00	2.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh				14.5	14.2	11.9	2.0	2.1	0.0	0.0	11.9	12.0
Incr Delay (d2), s/veh				1.9	1.6	0.0	0.9	1.1	0.0	0.0	0.7	0.7
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				5.1	4.4	0.1	0.7	0.7	0.0	0.0	2.5	2.5
LnGrp Delay(d),s/veh				16.4	15.8	11.9	3.0	3.2	0.0	0.0	12.7	12.7
LnGrp LOS				B	B	B	A	A			B	B
Approach Vol, veh/h					659			462			387	
Approach Delay, s/veh					16.0			3.1			12.7	
Approach LOS					B			A			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2				6		8
Phs Duration (G+Y+Rc), s		36.0				36.0		34.0
Change Period (Y+Rc), s		* 4.6				* 4.6		4.6
Max Green Setting (Gmax), s		* 31				* 31		29.4
Max Q Clear Time (g_c+I1), s		3.4				6.8		11.4
Green Ext Time (p_c), s		5.8				5.6		3.7

Intersection Summary	
HCM 2010 Ctrl Delay	11.2
HCM 2010 LOS	B

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	121	985	29	0	0	0	0	229	98	70	260	0
Number	7	4	14				5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1863				0	1863	1900	1900	1863	0
Adj Flow Rate, veh/h	132	1071	18				0	249	105	76	283	0
Adj No. of Lanes	0	2	1				0	2	0	0	2	0
Peak Hour Factor	0.92	0.92	0.92				0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2				0	2	2	2	2	0
Cap, veh/h	207	1765	864				0	784	321	215	778	0
Arrive On Green	0.55	0.55	0.55				0.00	0.32	0.32	0.64	0.64	0.00
Sat Flow, veh/h	379	3235	1583				0	2544	1005	441	2517	0
Grp Volume(v), veh/h	642	561	18				0	178	176	179	180	0
Grp Sat Flow(s),veh/h/ln	1844	1770	1583				0	1770	1685	1263	1610	0
Q Serve(g_s), s	17.0	14.7	0.4				0.0	5.3	5.6	1.4	3.6	0.0
Cycle Q Clear(g_c), s	17.0	14.7	0.4				0.0	5.3	5.6	7.0	3.6	0.0
Prop In Lane	0.21		1.00				0.00		0.60	0.43		0.00
Lane Grp Cap(c), veh/h	1006	966	864				0	566	539	477	515	0
V/C Ratio(X)	0.64	0.58	0.02				0.00	0.31	0.33	0.37	0.35	0.00
Avail Cap(c_a), veh/h	1006	966	864				0	566	539	477	515	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	2.00	2.00	1.00
Upstream Filter(I)	1.00	1.00	1.00				0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	11.1	10.6	7.3				0.0	18.0	18.1	9.4	9.2	0.0
Incr Delay (d2), s/veh	3.1	2.5	0.0				0.0	1.4	1.6	2.2	1.9	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	9.4	7.8	0.2				0.0	2.8	2.8	2.2	1.8	0.0
LnGrp Delay(d),s/veh	14.2	13.1	7.4				0.0	19.4	19.7	11.6	11.1	0.0
LnGrp LOS	B	B	A					B	B	B	B	
Approach Vol, veh/h		1221						354			359	
Approach Delay, s/veh		13.6						19.6			11.4	
Approach LOS		B						B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		27.0		43.0		27.0		
Change Period (Y+Rc), s		* 4.6		* 4.8		* 4.6		
Max Green Setting (Gmax), s		* 22		* 38		* 22		
Max Q Clear Time (g_c+I1), s		7.6		19.0		9.0		
Green Ext Time (p_c), s		3.9		8.0		3.7		

Intersection Summary	
HCM 2010 Ctrl Delay	14.3
HCM 2010 LOS	B

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	0	9	608	11	14	10	0	0	15	4
Number				3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln				1900	1863	1863	1900	1863	0	0	1863	1900
Adj Flow Rate, veh/h				10	661	8	15	11	0	0	16	1
Adj No. of Lanes				0	2	1	0	1	0	0	1	0
Peak Hour Factor				0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %				2	2	2	2	2	0	0	2	2
Cap, veh/h				32	2218	982	286	189	0	0	431	27
Arrive On Green				0.62	0.62	0.62	0.25	0.25	0.00	0.00	0.25	0.25
Sat Flow, veh/h				52	3578	1583	823	760	0	0	1735	108
Grp Volume(v), veh/h				360	311	8	26	0	0	0	0	17
Grp Sat Flow(s),veh/h/ln				1860	1770	1583	1583	0	0	0	0	1844
Q Serve(g_s), s				6.4	5.7	0.1	0.0	0.0	0.0	0.0	0.0	0.5
Cycle Q Clear(g_c), s				6.4	5.7	0.1	0.7	0.0	0.0	0.0	0.0	0.5
Prop In Lane				0.03		1.00	0.58		0.00	0.00		0.06
Lane Grp Cap(c), veh/h				1153	1097	982	475	0	0	0	0	458
V/C Ratio(X)				0.31	0.28	0.01	0.05	0.00	0.00	0.00	0.00	0.04
Avail Cap(c_a), veh/h				1153	1097	982	475	0	0	0	0	458
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00	1.00
Uniform Delay (d), s/veh				6.3	6.1	5.1	20.0	0.0	0.0	0.0	0.0	19.9
Incr Delay (d2), s/veh				0.7	0.6	0.0	0.2	0.0	0.0	0.0	0.0	0.2
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				3.4	3.0	0.1	0.4	0.0	0.0	0.0	0.0	0.3
LnGrp Delay(d),s/veh				7.0	6.8	5.1	20.3	0.0	0.0	0.0	0.0	20.1
LnGrp LOS				A	A	A	C					C
Approach Vol, veh/h					679			26			17	
Approach Delay, s/veh					6.9			20.3			20.1	
Approach LOS					A			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2				6		8
Phs Duration (G+Y+Rc), s		22.0				22.0		48.0
Change Period (Y+Rc), s		* 4.6				* 4.6		4.6
Max Green Setting (Gmax), s		* 17				* 17		43.4
Max Q Clear Time (g_c+I1), s		2.7				2.5		8.4
Green Ext Time (p_c), s		0.1				0.1		4.4

Intersection Summary	
HCM 2010 Ctrl Delay	7.7
HCM 2010 LOS	A

Notes

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	0	46	590	26	57	177	0	0	142	23
Number				3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln				1900	1863	1863	1900	1863	0	0	1863	1900
Adj Flow Rate, veh/h				50	641	15	62	192	0	0	154	15
Adj No. of Lanes				0	2	1	0	1	0	0	1	0
Peak Hour Factor				0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %				2	2	2	2	2	0	0	2	2
Cap, veh/h				108	1454	683	203	594	0	0	726	71
Arrive On Green				0.43	0.43	0.43	0.58	0.58	0.00	0.00	0.43	0.43
Sat Flow, veh/h				250	3369	1583	321	1369	0	0	1671	163
Grp Volume(v), veh/h				370	321	15	254	0	0	0	0	169
Grp Sat Flow(s),veh/h/ln				1850	1770	1583	1690	0	0	0	0	1834
Q Serve(g_s), s				9.9	8.8	0.4	0.0	0.0	0.0	0.0	0.0	4.0
Cycle Q Clear(g_c), s				9.9	8.8	0.4	4.9	0.0	0.0	0.0	0.0	4.0
Prop In Lane				0.14		1.00	0.24		0.00	0.00		0.09
Lane Grp Cap(c), veh/h				798	763	683	798	0	0	0	0	796
V/C Ratio(X)				0.46	0.42	0.02	0.32	0.00	0.00	0.00	0.00	0.21
Avail Cap(c_a), veh/h				798	763	683	798	0	0	0	0	796
HCM Platoon Ratio				1.00	1.00	1.00	1.33	1.33	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00	1.00
Uniform Delay (d), s/veh				14.1	13.8	11.4	9.4	0.0	0.0	0.0	0.0	12.3
Incr Delay (d2), s/veh				1.9	1.7	0.1	1.0	0.0	0.0	0.0	0.0	0.6
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				5.5	4.6	0.2	2.7	0.0	0.0	0.0	0.0	2.2
LnGrp Delay(d),s/veh				16.1	15.5	11.5	10.5	0.0	0.0	0.0	0.0	12.9
LnGrp LOS				B	B	B	B					B
Approach Vol, veh/h					706			254			169	
Approach Delay, s/veh					15.7			10.5			12.9	
Approach LOS					B			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2				6		8
Phs Duration (G+Y+Rc), s		35.0				35.0		35.0
Change Period (Y+Rc), s		* 4.6				* 4.6		4.8
Max Green Setting (Gmax), s		* 30				* 30		30.2
Max Q Clear Time (g_c+I1), s		6.9				6.0		11.9
Green Ext Time (p_c), s		2.6				2.6		4.0

Intersection Summary	
HCM 2010 Ctrl Delay	14.1
HCM 2010 LOS	B

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	11	1036	79	0	0	0	0	116	70	13	71	0
Number	7	4	14				5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1863				0	1863	1900	1900	1863	0
Adj Flow Rate, veh/h	12	1126	52				0	126	42	14	77	0
Adj No. of Lanes	0	2	1				0	1	0	0	1	0
Peak Hour Factor	0.92	0.92	0.92				0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2				0	2	2	2	2	0
Cap, veh/h	21	2059	907				0	390	130	102	477	0
Arrive On Green	0.19	0.19	0.19				0.00	0.29	0.29	0.29	0.29	0.00
Sat Flow, veh/h	37	3594	1583				0	1338	446	148	1635	0
Grp Volume(v), veh/h	610	528	52				0	0	168	91	0	0
Grp Sat Flow(s),veh/h/ln	1861	1770	1583				0	0	1784	1783	0	0
Q Serve(g_s), s	20.9	18.8	1.9				0.0	0.0	5.2	0.0	0.0	0.0
Cycle Q Clear(g_c), s	20.9	18.8	1.9				0.0	0.0	5.2	2.5	0.0	0.0
Prop In Lane	0.02		1.00				0.00		0.25	0.15		0.00
Lane Grp Cap(c), veh/h	1066	1014	907				0	0	520	579	0	0
V/C Ratio(X)	0.57	0.52	0.06				0.00	0.00	0.32	0.16	0.00	0.00
Avail Cap(c_a), veh/h	1066	1014	907				0	0	520	579	0	0
HCM Platoon Ratio	0.33	0.33	0.33				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00				0.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	20.6	19.7	12.9				0.0	0.0	19.4	18.5	0.0	0.0
Incr Delay (d2), s/veh	2.2	1.9	0.1				0.0	0.0	1.6	0.6	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	11.4	9.8	0.9				0.0	0.0	2.8	1.4	0.0	0.0
LnGrp Delay(d),s/veh	22.8	21.7	13.0				0.0	0.0	21.0	19.1	0.0	0.0
LnGrp LOS	C	C	B						C	B		
Approach Vol, veh/h		1190						168			91	
Approach Delay, s/veh		21.9						21.0			19.1	
Approach LOS		C						C			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		25.0		45.0		25.0		
Change Period (Y+Rc), s		* 4.6		* 4.9		* 4.6		
Max Green Setting (Gmax), s		* 20		* 40		* 20		
Max Q Clear Time (g_c+I1), s		7.2		22.9		4.5		
Green Ext Time (p_c), s		1.2		7.1		1.3		

Intersection Summary	
HCM 2010 Ctrl Delay	21.6
HCM 2010 LOS	C

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	8	1139	8	0	0	0	0	10	13	7	5	0
Number	7	4	14				5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1863				0	1863	1900	1900	1863	0
Adj Flow Rate, veh/h	9	1238	6				0	11	2	8	5	0
Adj No. of Lanes	0	2	1				0	1	0	0	1	0
Peak Hour Factor	0.92	0.92	0.92				0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2				0	2	2	2	2	0
Cap, veh/h	17	2442	1072				0	296	54	249	137	0
Arrive On Green	0.22	0.22	0.22				0.00	0.19	0.19	0.19	0.19	0.00
Sat Flow, veh/h	25	3606	1583				0	1535	279	863	711	0
Grp Volume(v), veh/h	669	578	6				0	0	13	13	0	0
Grp Sat Flow(s),veh/h/ln	1861	1770	1583				0	0	1814	1574	0	0
Q Serve(g_s), s	22.2	19.9	0.2				0.0	0.0	0.4	0.0	0.0	0.0
Cycle Q Clear(g_c), s	22.2	19.9	0.2				0.0	0.0	0.4	0.4	0.0	0.0
Prop In Lane	0.01		1.00				0.00		0.15	0.62		0.00
Lane Grp Cap(c), veh/h	1260	1198	1072				0	0	350	387	0	0
V/C Ratio(X)	0.53	0.48	0.01				0.00	0.00	0.04	0.03	0.00	0.00
Avail Cap(c_a), veh/h	1260	1198	1072				0	0	350	387	0	0
HCM Platoon Ratio	0.33	0.33	0.33				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00				0.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	17.4	16.5	8.9				0.0	0.0	23.0	23.0	0.0	0.0
Incr Delay (d2), s/veh	1.6	1.4	0.0				0.0	0.0	0.2	0.2	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	12.0	10.2	0.1				0.0	0.0	0.2	0.2	0.0	0.0
LnGrp Delay(d),s/veh	19.0	17.9	8.9				0.0	0.0	23.2	23.1	0.0	0.0
LnGrp LOS	B	B	A						C	C		
Approach Vol, veh/h		1253						13			13	
Approach Delay, s/veh		18.4						23.2			23.1	
Approach LOS		B						C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		18.0		52.0		18.0		
Change Period (Y+Rc), s		4.5		4.6		4.5		
Max Green Setting (Gmax), s		13.5		47.4		13.5		
Max Q Clear Time (g_c+I1), s		2.4		24.2		2.4		
Green Ext Time (p_c), s		0.0		9.0		0.0		

Intersection Summary	
HCM 2010 Ctrl Delay	18.5
HCM 2010 LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	0	10	579	63	8	21	0	0	28	17
Number				3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln				1900	1863	1863	1900	1863	0	0	1863	1863
Adj Flow Rate, veh/h				11	629	43	9	23	0	0	30	4
Adj No. of Lanes				0	2	1	0	1	0	0	1	1
Peak Hour Factor				0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %				2	2	2	2	2	0	0	2	2
Cap, veh/h				33	1999	887	178	417	0	0	569	484
Arrive On Green				0.18	0.18	0.18	0.31	0.31	0.00	0.00	0.31	0.31
Sat Flow, veh/h				60	3570	1583	365	1366	0	0	1863	1583
Grp Volume(v), veh/h				343	297	43	32	0	0	0	30	4
Grp Sat Flow(s),veh/h/ln				1860	1770	1583	1731	0	0	0	1863	1583
Q Serve(g_s), s				11.2	10.1	1.6	0.0	0.0	0.0	0.0	0.8	0.1
Cycle Q Clear(g_c), s				11.2	10.1	1.6	0.8	0.0	0.0	0.0	0.8	0.1
Prop In Lane				0.03		1.00	0.28		0.00	0.00		1.00
Lane Grp Cap(c), veh/h				1041	991	887	595	0	0	0	569	484
V/C Ratio(X)				0.33	0.30	0.05	0.05	0.00	0.00	0.00	0.05	0.01
Avail Cap(c_a), veh/h				1041	991	887	595	0	0	0	569	484
HCM Platoon Ratio				0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	1.00	1.00	1.00	0.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh				17.1	16.7	13.2	17.2	0.0	0.0	0.0	17.1	16.9
Incr Delay (d2), s/veh				0.8	0.8	0.1	0.2	0.0	0.0	0.0	0.2	0.0
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				6.0	5.2	0.7	0.5	0.0	0.0	0.0	0.4	0.1
LnGrp Delay(d),s/veh				18.0	17.5	13.3	17.3	0.0	0.0	0.0	17.3	16.9
LnGrp LOS				B	B	B	B				B	B
Approach Vol, veh/h					683			32			34	
Approach Delay, s/veh					17.5			17.3			17.3	
Approach LOS					B			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2				6		8
Phs Duration (G+Y+Rc), s		26.0				26.0		44.0
Change Period (Y+Rc), s		* 4.6				* 4.6		4.8
Max Green Setting (Gmax), s		* 21				* 21		39.2
Max Q Clear Time (g_c+I1), s		2.8				2.8		13.2
Green Ext Time (p_c), s		0.2				0.2		4.1

Intersection Summary	
HCM 2010 Ctrl Delay	17.4
HCM 2010 LOS	B

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	0	105	444	77	75	477	0	0	454	62
Number				3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln				1900	1863	1863	1900	1863	0	0	1863	1900
Adj Flow Rate, veh/h				114	483	25	82	518	0	0	493	51
Adj No. of Lanes				0	2	1	0	2	0	0	2	0
Peak Hour Factor				0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %				2	2	2	2	2	0	0	2	2
Cap, veh/h				246	1102	593	221	1325	0	0	1583	163
Arrive On Green				0.12	0.12	0.12	0.98	0.98	0.00	0.00	0.49	0.49
Sat Flow, veh/h				656	2943	1583	318	2798	0	0	3333	334
Grp Volume(v), veh/h				318	279	25	294	306	0	0	269	275
Grp Sat Flow(s),veh/h/ln				1830	1770	1583	1420	1610	0	0	1770	1804
Q Serve(g_s), s				11.3	10.2	1.0	0.9	0.5	0.0	0.0	6.4	6.5
Cycle Q Clear(g_c), s				11.3	10.2	1.0	7.4	0.5	0.0	0.0	6.4	6.5
Prop In Lane				0.36		1.00	0.28		0.00	0.00		0.19
Lane Grp Cap(c), veh/h				685	662	593	760	787	0	0	865	881
V/C Ratio(X)				0.46	0.42	0.04	0.39	0.39	0.00	0.00	0.31	0.31
Avail Cap(c_a), veh/h				685	662	593	760	787	0	0	865	881
HCM Platoon Ratio				0.33	0.33	0.33	2.00	2.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh				24.2	23.7	19.6	0.5	0.4	0.0	0.0	10.8	10.8
Incr Delay (d2), s/veh				2.3	2.0	0.1	1.5	1.4	0.0	0.0	0.9	0.9
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				6.2	5.4	0.4	0.5	0.5	0.0	0.0	3.4	3.4
LnGrp Delay(d),s/veh				26.4	25.6	19.8	1.9	1.9	0.0	0.0	11.7	11.7
LnGrp LOS				C	C	B	A	A			B	B
Approach Vol, veh/h					622			600			544	
Approach Delay, s/veh					25.8			1.9			11.7	
Approach LOS					C			A			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2				6		8
Phs Duration (G+Y+Rc), s		39.0				39.0		31.0
Change Period (Y+Rc), s		* 4.8				* 4.8		4.8
Max Green Setting (Gmax), s		* 34				* 34		26.2
Max Q Clear Time (g_c+I1), s		9.4				8.5		13.3
Green Ext Time (p_c), s		8.1				8.2		2.9

Intersection Summary	
HCM 2010 Ctrl Delay	13.3
HCM 2010 LOS	B

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	97	973	77	0	0	0	0	443	113	43	463	0
Number	7	4	14				5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1863				0	1863	1900	1900	1863	0
Adj Flow Rate, veh/h	105	1058	46				0	482	112	47	503	0
Adj No. of Lanes	0	2	1				0	2	0	0	2	0
Peak Hour Factor	0.92	0.92	0.92				0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2				0	2	2	2	2	0
Cap, veh/h	157	1662	796				0	1036	239	119	1124	0
Arrive On Green	0.50	0.50	0.50				0.00	0.36	0.36	0.24	0.24	0.00
Sat Flow, veh/h	312	3305	1583				0	2949	660	163	3182	0
Grp Volume(v), veh/h	621	542	46				0	298	296	284	266	0
Grp Sat Flow(s),veh/h/ln	1847	1770	1583				0	1770	1746	1651	1610	0
Q Serve(g_s), s	17.6	15.3	1.0				0.0	9.0	9.1	0.0	9.9	0.0
Cycle Q Clear(g_c), s	17.6	15.3	1.0				0.0	9.0	9.1	9.1	9.9	0.0
Prop In Lane	0.17		1.00				0.00		0.38	0.17		0.00
Lane Grp Cap(c), veh/h	929	890	796				0	642	634	659	584	0
V/C Ratio(X)	0.67	0.61	0.06				0.00	0.46	0.47	0.43	0.46	0.00
Avail Cap(c_a), veh/h	929	890	796				0	642	634	659	584	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	0.67	0.67	1.00
Upstream Filter(I)	1.00	1.00	1.00				0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	13.0	12.5	8.9				0.0	17.1	17.1	20.3	20.6	0.0
Incr Delay (d2), s/veh	3.8	3.1	0.1				0.0	2.4	2.5	2.0	2.6	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	9.8	8.1	0.5				0.0	4.8	4.8	5.0	4.8	0.0
LnGrp Delay(d),s/veh	16.9	15.6	9.0				0.0	19.5	19.6	22.3	23.2	0.0
LnGrp LOS	B	B	A					B	B	C	C	
Approach Vol, veh/h		1209						594			550	
Approach Delay, s/veh		16.0						19.5			22.7	
Approach LOS		B						B			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		30.0		40.0		30.0		
Change Period (Y+Rc), s		* 4.6		* 4.8		* 4.6		
Max Green Setting (Gmax), s		* 25		* 35		* 25		
Max Q Clear Time (g_c+I1), s		11.1		19.6		11.9		
Green Ext Time (p_c), s		6.2		7.2		6.1		

Intersection Summary	
HCM 2010 Ctrl Delay	18.5
HCM 2010 LOS	B

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	0	25	499	25	26	58	0	0	101	19
Number				3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln				1900	1863	1863	1900	1863	0	0	1863	1900
Adj Flow Rate, veh/h				27	542	17	28	63	0	0	110	10
Adj No. of Lanes				0	2	1	0	1	0	0	1	0
Peak Hour Factor				0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %				2	2	2	2	2	0	0	2	2
Cap, veh/h				83	1750	801	217	456	0	0	611	56
Arrive On Green				0.51	0.51	0.51	0.36	0.36	0.00	0.00	0.36	0.36
Sat Flow, veh/h				164	3460	1583	413	1256	0	0	1683	153
Grp Volume(v), veh/h				305	264	17	91	0	0	0	0	120
Grp Sat Flow(s),veh/h/ln				1855	1770	1583	1668	0	0	0	0	1836
Q Serve(g_s), s				6.8	6.1	0.4	0.0	0.0	0.0	0.0	0.0	3.1
Cycle Q Clear(g_c), s				6.8	6.1	0.4	2.3	0.0	0.0	0.0	0.0	3.1
Prop In Lane				0.09		1.00	0.31		0.00	0.00		0.08
Lane Grp Cap(c), veh/h				938	895	801	673	0	0	0	0	666
V/C Ratio(X)				0.32	0.30	0.02	0.14	0.00	0.00	0.00	0.00	0.18
Avail Cap(c_a), veh/h				938	895	801	673	0	0	0	0	666
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00	1.00
Uniform Delay (d), s/veh				10.2	10.1	8.6	14.9	0.0	0.0	0.0	0.0	15.2
Incr Delay (d2), s/veh				0.9	0.8	0.0	0.4	0.0	0.0	0.0	0.0	0.6
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				3.7	3.1	0.2	1.2	0.0	0.0	0.0	0.0	1.7
LnGrp Delay(d),s/veh				11.2	10.9	8.7	15.4	0.0	0.0	0.0	0.0	15.8
LnGrp LOS				B	B	A	B					B
Approach Vol, veh/h					586			91			120	
Approach Delay, s/veh					11.0			15.4			15.8	
Approach LOS					B			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2				6		8
Phs Duration (G+Y+Rc), s		30.0				30.0		40.0
Change Period (Y+Rc), s		* 4.6				* 4.6		4.6
Max Green Setting (Gmax), s		* 25				* 25		35.4
Max Q Clear Time (g_c+I1), s		4.3				5.1		8.8
Green Ext Time (p_c), s		1.1				1.1		3.5

Intersection Summary	
HCM 2010 Ctrl Delay	12.2
HCM 2010 LOS	B

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	5	1011	56	0	0	0	0	70	85	27	88	0
Number	7	4	14				5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1863				0	1863	1900	1900	1863	0
Adj Flow Rate, veh/h	5	1099	38				0	76	25	29	96	0
Adj No. of Lanes	0	2	1				0	1	0	0	1	0
Peak Hour Factor	0.92	0.92	0.92				0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2				0	2	2	2	2	0
Cap, veh/h	9	2184	956				0	356	117	133	392	0
Arrive On Green	0.60	0.60	0.60				0.00	0.26	0.26	0.53	0.53	0.00
Sat Flow, veh/h	16	3616	1583				0	1343	442	264	1481	0
Grp Volume(v), veh/h	592	512	38				0	0	101	125	0	0
Grp Sat Flow(s),veh/h/ln	1862	1770	1583				0	0	1785	1745	0	0
Q Serve(g_s), s	13.0	11.3	0.7				0.0	0.0	3.1	0.0	0.0	0.0
Cycle Q Clear(g_c), s	13.0	11.3	0.7				0.0	0.0	3.1	2.6	0.0	0.0
Prop In Lane	0.01		1.00				0.00		0.25	0.23		0.00
Lane Grp Cap(c), veh/h	1125	1069	956				0	0	473	526	0	0
V/C Ratio(X)	0.53	0.48	0.04				0.00	0.00	0.21	0.24	0.00	0.00
Avail Cap(c_a), veh/h	1125	1069	956				0	0	473	526	0	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	2.00	2.00	1.00
Upstream Filter(I)	1.00	1.00	1.00				0.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	8.1	7.7	5.6				0.0	0.0	20.1	12.7	0.0	0.0
Incr Delay (d2), s/veh	1.8	1.5	0.1				0.0	0.0	1.0	1.1	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.1	5.9	0.3				0.0	0.0	1.7	1.5	0.0	0.0
LnGrp Delay(d),s/veh	9.8	9.3	5.7				0.0	0.0	21.1	13.8	0.0	0.0
LnGrp LOS	A	A	A						C	B		
Approach Vol, veh/h		1142						101			125	
Approach Delay, s/veh		9.5						21.1			13.8	
Approach LOS		A						C			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		23.2		47.0		23.2		
Change Period (Y+Rc), s		* 4.6		4.6		* 4.6		
Max Green Setting (Gmax), s		* 18		42.4		* 19		
Max Q Clear Time (g_c+I1), s		5.1		15.0		4.6		
Green Ext Time (p_c), s		1.0		8.7		1.0		

Intersection Summary	
HCM 2010 Ctrl Delay	10.7
HCM 2010 LOS	B

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	0	28	498	17	15	43	0	0	53	8
Number				3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln				1900	1863	1863	1900	1863	0	0	1863	1900
Adj Flow Rate, veh/h				30	541	5	16	47	0	0	58	4
Adj No. of Lanes				0	2	1	0	1	0	0	1	0
Peak Hour Factor				0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %				2	2	2	2	2	0	0	2	2
Cap, veh/h				49	933	429	269	726	0	0	885	61
Arrive On Green				0.27	0.27	0.27	0.51	0.51	0.00	0.00	0.51	0.51
Sat Flow, veh/h				182	3441	1583	321	1414	0	0	1723	119
Grp Volume(v), veh/h				306	265	5	63	0	0	0	0	62
Grp Sat Flow(s),veh/h/ln				1854	1770	1583	1736	0	0	0	0	1842
Q Serve(g_s), s				6.3	5.6	0.1	0.0	0.0	0.0	0.0	0.0	0.7
Cycle Q Clear(g_c), s				6.3	5.6	0.1	0.7	0.0	0.0	0.0	0.0	0.7
Prop In Lane				0.10		1.00	0.25		0.00	0.00		0.06
Lane Grp Cap(c), veh/h				502	480	429	995	0	0	0	0	946
V/C Ratio(X)				0.61	0.55	0.01	0.06	0.00	0.00	0.00	0.00	0.07
Avail Cap(c_a), veh/h				1623	1550	1387	995	0	0	0	0	946
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00	1.00
Uniform Delay (d), s/veh				13.9	13.6	11.6	5.3	0.0	0.0	0.0	0.0	5.3
Incr Delay (d2), s/veh				1.2	1.0	0.0	0.1	0.0	0.0	0.0	0.0	0.1
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				3.3	2.9	0.0	0.4	0.0	0.0	0.0	0.0	0.4
LnGrp Delay(d),s/veh				15.1	14.6	11.6	5.5	0.0	0.0	0.0	0.0	5.5
LnGrp LOS				B	B	B	A					A
Approach Vol, veh/h					576			63			62	
Approach Delay, s/veh					14.8			5.5			5.5	
Approach LOS					B			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2				6		8
Phs Duration (G+Y+Rc), s		27.0				27.0		16.6
Change Period (Y+Rc), s		* 4.6				* 4.6		4.8
Max Green Setting (Gmax), s		* 22				* 22		38.2
Max Q Clear Time (g_c+I1), s		2.7				2.7		8.3
Green Ext Time (p_c), s		0.6				0.6		3.6

Intersection Summary	
HCM 2010 Ctrl Delay	13.2
HCM 2010 LOS	B

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	6	992	13	0	0	0	0	59	71	29	56	0
Number	7	4	14				5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1863				0	1863	1900	1900	1863	0
Adj Flow Rate, veh/h	7	1078	9				0	64	12	32	61	0
Adj No. of Lanes	0	2	1				0	1	0	0	1	0
Peak Hour Factor	0.92	0.92	0.92				0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2				0	2	2	2	2	0
Cap, veh/h	14	2227	977				0	379	71	179	308	0
Arrive On Green	0.62	0.62	0.62				0.00	0.25	0.25	0.25	0.25	0.00
Sat Flow, veh/h	22	3609	1583				0	1526	286	441	1239	0
Grp Volume(v), veh/h	582	503	9				0	0	76	93	0	0
Grp Sat Flow(s),veh/h/ln	1862	1770	1583				0	0	1812	1680	0	0
Q Serve(g_s), s	12.2	10.6	0.2				0.0	0.0	2.3	0.0	0.0	0.0
Cycle Q Clear(g_c), s	12.2	10.6	0.2				0.0	0.0	2.3	2.8	0.0	0.0
Prop In Lane	0.01		1.00				0.00		0.16	0.34		0.00
Lane Grp Cap(c), veh/h	1149	1092	977				0	0	450	487	0	0
V/C Ratio(X)	0.51	0.46	0.01				0.00	0.00	0.17	0.19	0.00	0.00
Avail Cap(c_a), veh/h	1149	1092	977				0	0	450	487	0	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00				0.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	7.5	7.2	5.2				0.0	0.0	20.6	20.8	0.0	0.0
Incr Delay (d2), s/veh	1.6	1.4	0.0				0.0	0.0	0.8	0.9	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.7	5.6	0.1				0.0	0.0	1.2	1.5	0.0	0.0
LnGrp Delay(d),s/veh	9.1	8.6	5.2				0.0	0.0	21.4	21.7	0.0	0.0
LnGrp LOS	A	A	A						C	C		
Approach Vol, veh/h		1094						76			93	
Approach Delay, s/veh		8.8						21.4			21.7	
Approach LOS		A						C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		22.0		48.0		22.0		
Change Period (Y+Rc), s		* 4.6		* 4.8		* 4.6		
Max Green Setting (Gmax), s		* 17		* 43		* 17		
Max Q Clear Time (g_c+I1), s		4.3		14.2		4.8		
Green Ext Time (p_c), s		0.7		8.5		0.7		

Intersection Summary	
HCM 2010 Ctrl Delay	10.5
HCM 2010 LOS	B

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	*JCH*	Intersection	*Commerce St/Navidad St*
Agency/Co.	*CH2M HILL*	Jurisdiction	*City of San Antonio*
Date Performed	*3/25/2015*	Analysis Year	*Existing 2015*
Analysis Time Period	*AM Peak Hour*		

Project Description *Commerce/Buena Vista One-Way Couplet Conversion Traff. Study*

East/West Street: *Commerce Street* | North/South Street: *Navidad Street*

Intersection Orientation: *East-West* | Study Period (hrs): *0.25*

Vehicle Volumes and Adjustments

Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)				20	660	20
Peak-Hour Factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Hourly Flow Rate, HFR (veh/h)	0	0	0	20	660	20
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	0	0	0	0	2	0
Configuration				LT		TR
Upstream Signal		0			0	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)	20	20			20	20
Peak-Hour Factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Hourly Flow Rate, HFR (veh/h)	20	20	0	0	20	20
Percent Heavy Vehicles	0	0	0	0	0	0
Percent Grade (%)	0			0		
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration	LT					TR

Delay, Queue Length, and Level of Service

Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		LT	LT					TR
v (veh/h)		20	40					40
C (m) (veh/h)		1636	425					474
v/c		0.01	0.09					0.08
95% queue length		0.04	0.31					0.28
Control Delay (s/veh)		7.2	14.3					13.3
LOS		A	B					B
Approach Delay (s/veh)	--	--	14.3			13.3		
Approach LOS	--	--	B			B		

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Existing (2015) Conditions PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	0	254	494	0	0	0	0	0	700	390
Number				3	8	18				1	6	16
Initial Q (Qb), veh				0	0	0				0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00				1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln				1863	1863	0				0	1863	1900
Adj Flow Rate, veh/h				276	537	0				0	761	301
Adj No. of Lanes				1	3	0				0	3	0
Peak Hour Factor				0.92	0.92	0.92				0.92	0.92	0.92
Percent Heavy Veh, %				2	2	0				0	2	2
Cap, veh/h				861	2054	0				0	1467	575
Arrive On Green				0.40	0.40	0.00				0.00	0.41	0.41
Sat Flow, veh/h				1774	5253	0				0	3763	1409
Grp Volume(v), veh/h				276	537	0				0	717	345
Grp Sat Flow(s),veh/h/ln				1774	1695	0				0	1695	1614
Q Serve(g_s), s				5.5	3.5	0.0				0.0	7.9	8.0
Cycle Q Clear(g_c), s				5.5	3.5	0.0				0.0	7.9	8.0
Prop In Lane				1.00		0.00				0.00		0.87
Lane Grp Cap(c), veh/h				861	2054	0				0	1383	659
V/C Ratio(X)				0.32	0.26	0.00				0.00	0.52	0.52
Avail Cap(c_a), veh/h				861	2054	0				0	1383	659
HCM Platoon Ratio				1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)				1.00	1.00	0.00				0.00	1.00	1.00
Uniform Delay (d), s/veh				10.5	9.9	0.0				0.0	11.1	11.1
Incr Delay (d2), s/veh				1.0	0.3	0.0				0.0	1.4	3.0
Initial Q Delay(d3),s/veh				0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				2.9	1.7	0.0				0.0	4.0	4.1
LnGrp Delay(d),s/veh				11.5	10.2	0.0				0.0	12.5	14.1
LnGrp LOS				B	B						B	B
Approach Vol, veh/h					813						1062	
Approach Delay, s/veh					10.7						13.0	
Approach LOS					B						B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs						6		8
Phs Duration (G+Y+Rc), s						25.0		25.0
Change Period (Y+Rc), s						4.6		4.8
Max Green Setting (Gmax), s						20.4		20.2
Max Q Clear Time (g_c+I1), s						10.0		7.5
Green Ext Time (p_c), s						5.1		3.5

Intersection Summary	
HCM 2010 Ctrl Delay	12.0
HCM 2010 LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	418	197	0	0	0	0	0	0	123	936	0
Number	7	4	14							1	6	16
Initial Q (Qb), veh	0	0	0							0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00							1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00							1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1863	1900							1900	1863	0
Adj Flow Rate, veh/h	0	454	189							134	1017	0
Adj No. of Lanes	0	3	0							0	4	0
Peak Hour Factor	0.92	0.92	0.92							0.92	0.92	0.92
Percent Heavy Veh, %	0	2	2							2	2	0
Cap, veh/h	0	1444	577							329	2243	0
Arrive On Green	0.00	0.40	0.40							0.13	0.13	0.00
Sat Flow, veh/h	0	3741	1428							561	5734	0
Grp Volume(v), veh/h	0	430	213							337	814	0
Grp Sat Flow(s),veh/h/ln	0	1695	1611							1684	1458	0
Q Serve(g_s), s	0.0	4.3	4.5							6.0	8.6	0.0
Cycle Q Clear(g_c), s	0.0	4.3	4.5							9.0	8.6	0.0
Prop In Lane	0.00		0.89							0.40		0.00
Lane Grp Cap(c), veh/h	0	1370	651							788	1784	0
V/C Ratio(X)	0.00	0.31	0.33							0.43	0.46	0.00
Avail Cap(c_a), veh/h	0	1370	651							788	1784	0
HCM Platoon Ratio	1.00	1.00	1.00							0.33	0.33	1.00
Upstream Filter(I)	0.00	1.00	1.00							1.00	1.00	0.00
Uniform Delay (d), s/veh	0.0	10.2	10.2							16.6	16.5	0.0
Incr Delay (d2), s/veh	0.0	0.6	1.3							1.7	0.8	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0							0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	2.1	2.3							4.7	3.6	0.0
LnGrp Delay(d),s/veh	0.0	10.8	11.6							18.3	17.4	0.0
LnGrp LOS		B	B							B	B	
Approach Vol, veh/h		643									1151	
Approach Delay, s/veh		11.0									17.6	
Approach LOS		B									B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6		
Phs Duration (G+Y+Rc), s				25.0		25.0		
Change Period (Y+Rc), s				* 4.8		4.6		
Max Green Setting (Gmax), s				* 20		20.4		
Max Q Clear Time (g_c+I1), s				6.5		11.0		
Green Ext Time (p_c), s				3.6		5.0		

Intersection Summary	
HCM 2010 Ctrl Delay	15.3
HCM 2010 LOS	B

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	0	18	829	8	7	4	0	0	3	29
Number				3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln				1863	1863	1900	1900	1863	0	0	1863	1900
Adj Flow Rate, veh/h				20	901	7	8	4	0	0	3	9
Adj No. of Lanes				1	3	0	0	1	0	0	1	0
Peak Hour Factor				0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %				2	2	2	2	2	0	0	2	2
Cap, veh/h				937	2748	21	392	173	0	0	118	355
Arrive On Green				0.53	0.53	0.53	0.29	0.29	0.00	0.00	0.29	0.29
Sat Flow, veh/h				1774	5205	40	945	602	0	0	411	1234
Grp Volume(v), veh/h				20	587	321	12	0	0	0	0	12
Grp Sat Flow(s),veh/h/ln				1774	1695	1856	1547	0	0	0	0	1645
Q Serve(g_s), s				0.3	4.9	4.9	0.0	0.0	0.0	0.0	0.0	0.3
Cycle Q Clear(g_c), s				0.3	4.9	4.9	0.2	0.0	0.0	0.0	0.0	0.3
Prop In Lane				1.00		0.02	0.67		0.00	0.00		0.75
Lane Grp Cap(c), veh/h				937	1790	980	566	0	0	0	0	474
V/C Ratio(X)				0.02	0.33	0.33	0.02	0.00	0.00	0.00	0.00	0.03
Avail Cap(c_a), veh/h				937	1790	980	566	0	0	0	0	474
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00	1.00
Uniform Delay (d), s/veh				5.6	6.7	6.7	12.8	0.0	0.0	0.0	0.0	12.8
Incr Delay (d2), s/veh				0.0	0.5	0.9	0.1	0.0	0.0	0.0	0.0	0.1
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				0.1	2.4	2.7	0.1	0.0	0.0	0.0	0.0	0.1
LnGrp Delay(d),s/veh				5.7	7.2	7.6	12.8	0.0	0.0	0.0	0.0	12.9
LnGrp LOS				A	A	A	B					B
Approach Vol, veh/h					928			12			12	
Approach Delay, s/veh					7.3			12.8			12.9	
Approach LOS					A			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2				6		8
Phs Duration (G+Y+Rc), s		19.0				19.0		31.0
Change Period (Y+Rc), s		* 4.6				* 4.6		4.6
Max Green Setting (Gmax), s		* 14				* 14		26.4
Max Q Clear Time (g_c+I1), s		2.2				2.3		6.9
Green Ext Time (p_c), s		0.0				0.0		5.8

Intersection Summary	
HCM 2010 Ctrl Delay	7.5
HCM 2010 LOS	A

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	0	37	894	38	277	462	0	0	362	217
Number				3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln				1900	1863	1863	1863	1863	0	0	1863	1900
Adj Flow Rate, veh/h				40	972	19	301	502	0	0	393	132
Adj No. of Lanes				0	2	1	1	2	0	0	2	0
Peak Hour Factor				0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %				2	2	2	2	2	0	0	2	2
Cap, veh/h				45	1151	523	363	1883	0	0	684	227
Arrive On Green				0.33	0.33	0.33	0.20	0.53	0.00	0.00	0.26	0.26
Sat Flow, veh/h				137	3488	1583	1774	3632	0	0	2705	867
Grp Volume(v), veh/h				542	470	19	301	502	0	0	265	260
Grp Sat Flow(s),veh/h/ln				1856	1770	1583	1774	1770	0	0	1770	1710
Q Serve(g_s), s				19.4	17.0	0.6	11.4	5.4	0.0	0.0	9.1	9.3
Cycle Q Clear(g_c), s				19.4	17.0	0.6	11.4	5.4	0.0	0.0	9.1	9.3
Prop In Lane				0.07		1.00	1.00		0.00	0.00		0.51
Lane Grp Cap(c), veh/h				612	584	523	363	1883	0	0	463	447
V/C Ratio(X)				0.88	0.81	0.04	0.83	0.27	0.00	0.00	0.57	0.58
Avail Cap(c_a), veh/h				612	584	523	363	1883	0	0	463	447
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh				22.3	21.5	16.0	26.8	9.0	0.0	0.0	22.5	22.6
Incr Delay (d2), s/veh				17.0	11.3	0.1	19.2	0.3	0.0	0.0	5.1	5.4
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				12.8	10.1	0.3	7.5	2.7	0.0	0.0	5.1	5.1
LnGrp Delay(d),s/veh				39.3	32.8	16.1	45.9	9.3	0.0	0.0	27.6	28.0
LnGrp LOS				D	C	B	D	A			C	C
Approach Vol, veh/h					1031			803			525	
Approach Delay, s/veh					35.9			23.0			27.8	
Approach LOS					D			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2			5	6		8
Phs Duration (G+Y+Rc), s		42.3			19.3	23.0		28.0
Change Period (Y+Rc), s		* 4.9			* 4.9	* 4.6		4.8
Max Green Setting (Gmax), s		* 37			* 14	* 18		23.2
Max Q Clear Time (g_c+I1), s		7.4			13.4	11.3		21.4
Green Ext Time (p_c), s		4.6			0.5	1.8		1.1

Intersection Summary	
HCM 2010 Ctrl Delay	29.7
HCM 2010 LOS	C

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

HCM Signalized Intersection Capacity Analysis
5: Buena Vista Street So. Frontage & Frio Street & Buena Vista Street

4/17/2015

Movement	EBL	EBT	EBR	NBT	NBR	SBL	SBT	NEL	NER	NER2
Lane Configurations										
Volume (vph)	136	472	146	584	112	69	360	18	8	14
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0		4.0		4.0	4.0	4.0		4.0
Lane Util. Factor		0.91		0.95		1.00	0.95	1.00		0.95
Frt		0.97		0.98		1.00	1.00	0.95		0.85
Flt Protected		0.99		1.00		0.95	1.00	0.97		1.00
Satd. Flow (prot)		4893		3454		1770	3539	1708		1504
Flt Permitted		0.99		1.00		0.21	1.00	0.97		1.00
Satd. Flow (perm)		4893		3454		397	3539	1708		1504
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	148	513	159	635	122	75	391	20	9	15
RTOR Reduction (vph)	0	0	0	15	0	0	0	26	0	11
Lane Group Flow (vph)	0	820	0	742	0	75	391	5	0	2
Turn Type	Perm	NA		NA		pm+pt	NA	Prot		Prot
Protected Phases		4		2		1	6	9		9
Permitted Phases	4					6				
Actuated Green, G (s)		23.4		38.0		48.0	48.0	16.0		16.0
Effective Green, g (s)		23.4		38.0		48.0	48.0	16.0		16.0
Actuated g/C Ratio		0.24		0.38		0.48	0.48	0.16		0.16
Clearance Time (s)		4.0		4.0		4.0	4.0	4.0		4.0
Vehicle Extension (s)		3.0		3.0		3.0	3.0	3.0		3.0
Lane Grp Cap (vph)		1151		1320		274	1708	274		242
v/s Ratio Prot				c0.21		c0.02	0.11	c0.00		0.00
v/s Ratio Perm		0.17				0.12				
v/c Ratio		0.71		0.56		0.27	0.23	0.02		0.01
Uniform Delay, d1		34.9		24.2		15.6	14.9	35.1		35.0
Progression Factor		1.00		1.00		1.00	1.00	1.00		1.00
Incremental Delay, d2		2.1		1.7		0.5	0.3	0.1		0.1
Delay (s)		37.0		25.9		16.1	15.3	35.2		35.1
Level of Service		D		C		B	B	D		D
Approach Delay (s)		37.0		25.9			15.4	35.2		
Approach LOS		D		C			B	D		

Intersection Summary			
HCM 2000 Control Delay	28.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	99.4	Sum of lost time (s)	16.0
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 (veh/h)	0	0	0	104	1026	59	45	271	0	0	266	171
Number				3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln				1900	1863	1863	1900	1863	0	0	1863	1900
Adj Flow Rate, veh/h				113	1115	15	49	295	0	0	289	184
Adj No. of Lanes				0	2	1	0	2	0	0	2	0
Peak Hour Factor				0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %				2	2	2	2	2	0	0	2	2
Cap, veh/h				170	1762	846	158	902	0	0	702	435
Arrive On Green				0.53	0.53	0.53	0.67	0.67	0.00	0.00	0.33	0.33
Sat Flow, veh/h				318	3298	1583	274	2784	0	0	2195	1301
Grp Volume(v), veh/h				656	572	15	173	171	0	0	242	231
Grp Sat Flow(s),veh/h/ln				1847	1770	1583	1363	1610	0	0	1770	1633
Q Serve(g_s), s				18.0	15.6	0.3	0.9	3.1	0.0	0.0	7.4	7.7
Cycle Q Clear(g_c), s				18.0	15.6	0.3	8.5	3.1	0.0	0.0	7.4	7.7
Prop In Lane				0.17		1.00	0.28		0.00	0.00		0.80
Lane Grp Cap(c), veh/h				987	945	846	522	538	0	0	592	546
V/C Ratio(X)				0.67	0.60	0.02	0.33	0.32	0.00	0.00	0.41	0.42
Avail Cap(c_a), veh/h				987	945	846	522	538	0	0	592	546
HCM Platoon Ratio				1.00	1.00	1.00	2.00	2.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh				11.8	11.2	7.7	8.3	8.2	0.0	0.0	18.0	18.1
Incr Delay (d2), s/veh				3.5	2.9	0.0	1.7	1.5	0.0	0.0	2.1	2.4
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				10.1	8.2	0.1	1.6	1.6	0.0	0.0	3.9	3.8
LnGrp Delay(d),s/veh				15.3	14.1	7.7	10.0	9.8	0.0	0.0	20.1	20.5
LnGrp LOS				B	B	A	B	A			C	C
Approach Vol, veh/h					1243			344			473	
Approach Delay, s/veh					14.7			9.9			20.3	
Approach LOS					B			A			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2				6		8
Phs Duration (G+Y+Rc), s		28.0				28.0		42.0
Change Period (Y+Rc), s		* 4.6				* 4.6		4.6
Max Green Setting (Gmax), s		* 23				* 23		37.4
Max Q Clear Time (g_c+I1), s		10.5				9.7		20.0
Green Ext Time (p_c), s		4.2				4.4		7.8

Intersection Summary	
HCM 2010 Ctrl Delay	15.1
HCM 2010 LOS	B

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	109	509	30	0	0	0	0	258	60	45	266	0
Number	7	4	14				5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1863				0	1863	1900	1900	1863	0
Adj Flow Rate, veh/h	118	553	7				0	280	38	49	289	0
Adj No. of Lanes	0	2	1				0	2	0	0	2	0
Peak Hour Factor	0.92	0.92	0.92				0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2				0	2	2	2	2	0
Cap, veh/h	287	1421	751				0	1228	165	202	1119	0
Arrive On Green	0.47	0.47	0.47				0.00	0.39	0.39	0.78	0.78	0.00
Sat Flow, veh/h	605	2997	1583				0	3230	421	348	2944	0
Grp Volume(v), veh/h	357	314	7				0	157	161	176	162	0
Grp Sat Flow(s),veh/h/ln	1832	1770	1583				0	1770	1788	1597	1610	0
Q Serve(g_s), s	8.9	7.9	0.2				0.0	4.1	4.2	0.0	1.9	0.0
Cycle Q Clear(g_c), s	8.9	7.9	0.2				0.0	4.1	4.2	1.8	1.9	0.0
Prop In Lane	0.33		1.00				0.00		0.24	0.28		0.00
Lane Grp Cap(c), veh/h	869	839	751				0	693	700	691	630	0
V/C Ratio(X)	0.41	0.37	0.01				0.00	0.23	0.23	0.25	0.26	0.00
Avail Cap(c_a), veh/h	869	839	751				0	693	700	691	630	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	2.00	2.00	1.00
Upstream Filter(I)	1.00	1.00	1.00				0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	12.0	11.8	9.7				0.0	14.2	14.2	4.8	4.8	0.0
Incr Delay (d2), s/veh	1.4	1.3	0.0				0.0	0.8	0.8	0.9	1.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.8	4.1	0.1				0.0	2.1	2.2	1.0	1.0	0.0
LnGrp Delay(d),s/veh	13.5	13.0	9.7				0.0	15.0	15.0	5.7	5.8	0.0
LnGrp LOS	B	B	A					B	B	A	A	
Approach Vol, veh/h		678						318			338	
Approach Delay, s/veh		13.2						15.0			5.8	
Approach LOS		B						B			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		32.0		38.0		32.0		
Change Period (Y+Rc), s		* 4.6		* 4.8		* 4.6		
Max Green Setting (Gmax), s		* 27		* 33		* 27		
Max Q Clear Time (g_c+I1), s		6.2		10.9		3.9		
Green Ext Time (p_c), s		4.0		4.1		4.1		

Intersection Summary	
HCM 2010 Ctrl Delay	11.8
HCM 2010 LOS	B

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	0	14	1202	12	13	3	0	0	11	8
Number				3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln				1900	1863	1863	1900	1863	0	0	1863	1900
Adj Flow Rate, veh/h				15	1307	8	14	3	0	0	12	1
Adj No. of Lanes				0	2	1	0	1	0	0	1	0
Peak Hour Factor				0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %				2	2	2	2	2	0	0	2	2
Cap, veh/h				28	2534	1117	282	52	0	0	276	23
Arrive On Green				0.71	0.71	0.71	0.16	0.16	0.00	0.00	0.16	0.16
Sat Flow, veh/h				39	3591	1583	1157	318	0	0	1696	141
Grp Volume(v), veh/h				709	613	8	17	0	0	0	0	13
Grp Sat Flow(s),veh/h/ln				1861	1770	1583	1475	0	0	0	0	1838
Q Serve(g_s), s				12.7	10.9	0.1	0.1	0.0	0.0	0.0	0.0	0.4
Cycle Q Clear(g_c), s				12.7	10.9	0.1	0.6	0.0	0.0	0.0	0.0	0.4
Prop In Lane				0.02		1.00	0.82		0.00	0.00		0.08
Lane Grp Cap(c), veh/h				1313	1249	1117	334	0	0	0	0	299
V/C Ratio(X)				0.54	0.49	0.01	0.05	0.00	0.00	0.00	0.00	0.04
Avail Cap(c_a), veh/h				1313	1249	1117	334	0	0	0	0	299
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00	1.00
Uniform Delay (d), s/veh				4.9	4.6	3.0	24.8	0.0	0.0	0.0	0.0	24.7
Incr Delay (d2), s/veh				1.6	1.4	0.0	0.3	0.0	0.0	0.0	0.0	0.3
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				6.9	5.6	0.0	0.3	0.0	0.0	0.0	0.0	0.2
LnGrp Delay(d),s/veh				6.5	6.0	3.1	25.0	0.0	0.0	0.0	0.0	25.0
LnGrp LOS				A	A	A	C					C
Approach Vol, veh/h					1330			17			13	
Approach Delay, s/veh					6.3			25.0			25.0	
Approach LOS					A			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2				6		8
Phs Duration (G+Y+Rc), s		16.0				16.0		54.0
Change Period (Y+Rc), s		* 4.6				* 4.6		4.6
Max Green Setting (Gmax), s		* 11				* 11		49.4
Max Q Clear Time (g_c+I1), s		2.6				2.4		14.7
Green Ext Time (p_c), s		0.0				0.0		11.4

Intersection Summary	
HCM 2010 Ctrl Delay	6.7
HCM 2010 LOS	A

Notes

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	0	65	1117	19	112	61	0	0	62	9
Number				3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln				1900	1863	1863	1900	1863	0	0	1863	1900
Adj Flow Rate, veh/h				71	1214	12	122	66	0	0	67	2
Adj No. of Lanes				0	2	1	0	1	0	0	1	0
Peak Hour Factor				0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %				2	2	2	2	2	0	0	2	2
Cap, veh/h				102	1824	841	380	189	0	0	602	18
Arrive On Green				0.53	0.53	0.53	0.33	0.33	0.00	0.00	0.33	0.33
Sat Flow, veh/h				191	3431	1583	884	564	0	0	1800	54
Grp Volume(v), veh/h				688	597	12	188	0	0	0	0	69
Grp Sat Flow(s),veh/h/ln				1853	1770	1583	1448	0	0	0	0	1853
Q Serve(g_s), s				19.4	16.7	0.3	5.5	0.0	0.0	0.0	0.0	1.8
Cycle Q Clear(g_c), s				19.4	16.7	0.3	7.3	0.0	0.0	0.0	0.0	1.8
Prop In Lane				0.10		1.00	0.65		0.00	0.00		0.03
Lane Grp Cap(c), veh/h				985	940	841	569	0	0	0	0	620
V/C Ratio(X)				0.70	0.64	0.01	0.33	0.00	0.00	0.00	0.00	0.11
Avail Cap(c_a), veh/h				985	940	841	569	0	0	0	0	620
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00	1.00
Uniform Delay (d), s/veh				12.2	11.6	7.7	18.0	0.0	0.0	0.0	0.0	16.1
Incr Delay (d2), s/veh				4.1	3.3	0.0	1.6	0.0	0.0	0.0	0.0	0.4
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				10.9	9.0	0.1	3.0	0.0	0.0	0.0	0.0	1.0
LnGrp Delay(d),s/veh				16.3	14.9	7.8	19.6	0.0	0.0	0.0	0.0	16.5
LnGrp LOS				B	B	A	B					B
Approach Vol, veh/h					1297			188			69	
Approach Delay, s/veh					15.6			19.6			16.5	
Approach LOS					B			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2				6		8
Phs Duration (G+Y+Rc), s		28.0				28.0		42.0
Change Period (Y+Rc), s		* 4.6				* 4.6		4.8
Max Green Setting (Gmax), s		* 23				* 23		37.2
Max Q Clear Time (g_c+I1), s		9.3				3.8		21.4
Green Ext Time (p_c), s		1.2				1.4		7.7

Intersection Summary	
HCM 2010 Ctrl Delay	16.1
HCM 2010 LOS	B

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	10	647	100	0	0	0	0	175	57	20	110	0
Number	7	4	14				5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1863				0	1863	1900	1900	1863	0
Adj Flow Rate, veh/h	11	703	67				0	190	44	22	120	0
Adj No. of Lanes	0	2	1				0	1	0	0	1	0
Peak Hour Factor	0.92	0.92	0.92				0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2				0	2	2	2	2	0
Cap, veh/h	25	1640	726				0	594	138	129	642	0
Arrive On Green	0.15	0.15	0.15				0.00	0.41	0.41	0.81	0.81	0.00
Sat Flow, veh/h	53	3576	1583				0	1464	339	171	1584	0
Grp Volume(v), veh/h	383	331	67				0	0	234	142	0	0
Grp Sat Flow(s),veh/h/ln	1860	1770	1583				0	0	1803	1755	0	0
Q Serve(g_s), s	13.1	11.9	2.5				0.0	0.0	6.2	0.0	0.0	0.0
Cycle Q Clear(g_c), s	13.1	11.9	2.5				0.0	0.0	6.2	1.2	0.0	0.0
Prop In Lane	0.03		1.00				0.00		0.19	0.15		0.00
Lane Grp Cap(c), veh/h	853	811	726				0	0	731	771	0	0
V/C Ratio(X)	0.45	0.41	0.09				0.00	0.00	0.32	0.18	0.00	0.00
Avail Cap(c_a), veh/h	853	811	726				0	0	731	771	0	0
HCM Platoon Ratio	0.33	0.33	0.33				1.00	1.00	1.00	2.00	2.00	1.00
Upstream Filter(I)	1.00	1.00	1.00				0.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	21.6	21.1	17.2				0.0	0.0	14.2	4.0	0.0	0.0
Incr Delay (d2), s/veh	1.7	1.5	0.3				0.0	0.0	1.2	0.5	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.1	6.1	1.2				0.0	0.0	3.3	0.7	0.0	0.0
LnGrp Delay(d),s/veh	23.4	22.6	17.4				0.0	0.0	15.4	4.6	0.0	0.0
LnGrp LOS	C	C	B						B	A		
Approach Vol, veh/h		781						234			142	
Approach Delay, s/veh		22.5						15.4			4.6	
Approach LOS		C						B			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		33.0		37.0		33.0		
Change Period (Y+Rc), s		* 4.6		* 4.9		* 4.6		
Max Green Setting (Gmax), s		* 28		* 32		* 28		
Max Q Clear Time (g_c+I1), s		8.2		15.1		3.2		
Green Ext Time (p_c), s		2.2		4.2		2.3		

Intersection Summary	
HCM 2010 Ctrl Delay	18.9
HCM 2010 LOS	B

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	14	703	9	0	0	0	0	12	11	8	9	0
Number	7	4	14				5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1863				0	1863	1900	1900	1863	0
Adj Flow Rate, veh/h	15	764	6				0	13	2	9	10	0
Adj No. of Lanes	0	2	1				0	1	0	0	1	0
Peak Hour Factor	0.92	0.92	0.92				0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2				0	2	2	2	2	0
Cap, veh/h	43	2310	1027				0	349	54	220	219	0
Arrive On Green	0.21	0.21	0.21				0.00	0.22	0.22	0.22	0.22	0.00
Sat Flow, veh/h	67	3562	1583				0	1577	243	652	990	0
Grp Volume(v), veh/h	417	362	6				0	0	15	19	0	0
Grp Sat Flow(s),veh/h/ln	1859	1770	1583				0	0	1820	1643	0	0
Q Serve(g_s), s	13.3	12.1	0.2				0.0	0.0	0.5	0.0	0.0	0.0
Cycle Q Clear(g_c), s	13.3	12.1	0.2				0.0	0.0	0.5	0.6	0.0	0.0
Prop In Lane	0.04		1.00				0.00		0.13	0.47		0.00
Lane Grp Cap(c), veh/h	1206	1148	1027				0	0	403	440	0	0
V/C Ratio(X)	0.35	0.31	0.01				0.00	0.00	0.04	0.04	0.00	0.00
Avail Cap(c_a), veh/h	1206	1148	1027				0	0	403	440	0	0
HCM Platoon Ratio	0.33	0.33	0.33				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00				0.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	14.9	14.4	9.7				0.0	0.0	21.4	21.4	0.0	0.0
Incr Delay (d2), s/veh	0.8	0.7	0.0				0.0	0.0	0.2	0.2	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.1	6.1	0.1				0.0	0.0	0.2	0.3	0.0	0.0
LnGrp Delay(d),s/veh	15.7	15.1	9.8				0.0	0.0	21.6	21.6	0.0	0.0
LnGrp LOS	B	B	A						C	C		
Approach Vol, veh/h		785						15			19	
Approach Delay, s/veh		15.4						21.6			21.6	
Approach LOS		B						C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		20.0		50.0		20.0		
Change Period (Y+Rc), s		4.5		4.6		4.5		
Max Green Setting (Gmax), s		15.5		45.4		15.5		
Max Q Clear Time (g_c+I1), s		2.5		15.3		2.6		
Green Ext Time (p_c), s		0.1		5.2		0.1		

Intersection Summary	
HCM 2010 Ctrl Delay	15.6
HCM 2010 LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	0	19	1074	160	24	52	0	0	57	69
Number				3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln				1900	1863	1863	1900	1863	0	0	1863	1863
Adj Flow Rate, veh/h				21	1167	110	26	57	0	0	62	20
Adj No. of Lanes				0	2	1	0	1	0	0	1	1
Peak Hour Factor				0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %				2	2	2	2	2	0	0	2	2
Cap, veh/h				37	2151	955	172	342	0	0	490	416
Arrive On Green				0.20	0.20	0.20	0.26	0.26	0.00	0.00	0.26	0.26
Sat Flow, veh/h				61	3568	1583	397	1299	0	0	1863	1583
Grp Volume(v), veh/h				637	551	110	83	0	0	0	62	20
Grp Sat Flow(s),veh/h/ln				1860	1770	1583	1696	0	0	0	1863	1583
Q Serve(g_s), s				21.6	19.5	4.0	0.0	0.0	0.0	0.0	1.8	0.7
Cycle Q Clear(g_c), s				21.6	19.5	4.0	2.4	0.0	0.0	0.0	1.8	0.7
Prop In Lane				0.03		1.00	0.31		0.00	0.00		1.00
Lane Grp Cap(c), veh/h				1121	1067	955	513	0	0	0	490	416
V/C Ratio(X)				0.57	0.52	0.12	0.16	0.00	0.00	0.00	0.13	0.05
Avail Cap(c_a), veh/h				1121	1067	955	513	0	0	0	490	416
HCM Platoon Ratio				0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	1.00	1.00	1.00	0.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh				19.8	18.9	12.7	19.9	0.0	0.0	0.0	19.7	19.3
Incr Delay (d2), s/veh				2.1	1.8	0.2	0.7	0.0	0.0	0.0	0.5	0.2
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				11.8	10.1	1.8	1.3	0.0	0.0	0.0	1.0	0.3
LnGrp Delay(d),s/veh				21.9	20.7	13.0	20.6	0.0	0.0	0.0	20.2	19.5
LnGrp LOS				C	C	B	C				C	B
Approach Vol, veh/h					1298			83			82	
Approach Delay, s/veh					20.6			20.6			20.0	
Approach LOS					C			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2				6		8
Phs Duration (G+Y+Rc), s		23.0				23.0		47.0
Change Period (Y+Rc), s		* 4.6				* 4.6		4.8
Max Green Setting (Gmax), s		* 18				* 18		42.2
Max Q Clear Time (g_c+I1), s		4.4				3.8		23.6
Green Ext Time (p_c), s		0.6				0.6		8.0

Intersection Summary	
HCM 2010 Ctrl Delay	20.6
HCM 2010 LOS	C

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	0	155	937	174	93	674	0	0	562	118
Number				3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln				1900	1863	1863	1900	1863	0	0	1863	1900
Adj Flow Rate, veh/h				168	1018	77	101	733	0	0	611	116
Adj No. of Lanes				0	2	1	0	2	0	0	2	0
Peak Hour Factor				0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %				2	2	2	2	2	0	0	2	2
Cap, veh/h				204	1301	660	167	1163	0	0	1324	251
Arrive On Green				0.14	0.14	0.14	0.89	0.89	0.00	0.00	0.45	0.45
Sat Flow, veh/h				488	3120	1583	229	2693	0	0	3063	563
Grp Volume(v), veh/h				633	553	77	397	437	0	0	364	363
Grp Sat Flow(s),veh/h/ln				1838	1770	1583	1227	1610	0	0	1770	1763
Q Serve(g_s), s				23.4	21.1	3.0	6.8	4.5	0.0	0.0	10.0	10.1
Cycle Q Clear(g_c), s				23.4	21.1	3.0	16.9	4.5	0.0	0.0	10.0	10.1
Prop In Lane				0.27		1.00	0.25		0.00	0.00		0.32
Lane Grp Cap(c), veh/h				767	738	660	611	718	0	0	789	786
V/C Ratio(X)				0.82	0.75	0.12	0.65	0.61	0.00	0.00	0.46	0.46
Avail Cap(c_a), veh/h				767	738	660	611	718	0	0	789	786
HCM Platoon Ratio				0.33	0.33	0.33	2.00	2.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh				27.7	26.7	18.9	3.0	2.4	0.0	0.0	13.5	13.5
Incr Delay (d2), s/veh				9.8	6.9	0.4	5.3	3.8	0.0	0.0	1.9	2.0
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				14.0	11.7	1.4	2.9	2.5	0.0	0.0	5.3	5.3
LnGrp Delay(d),s/veh				37.5	33.6	19.2	8.3	6.2	0.0	0.0	15.5	15.5
LnGrp LOS				D	C	B	A	A			B	B
Approach Vol, veh/h					1263			834			727	
Approach Delay, s/veh					34.7			7.2			15.5	
Approach LOS					C			A			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2				6		8
Phs Duration (G+Y+Rc), s		36.0				36.0		34.0
Change Period (Y+Rc), s		* 4.8				* 4.8		4.8
Max Green Setting (Gmax), s		* 31				* 31		29.2
Max Q Clear Time (g_c+I1), s		18.9				12.1		25.4
Green Ext Time (p_c), s		7.8				10.4		2.5

Intersection Summary	
HCM 2010 Ctrl Delay	21.6
HCM 2010 LOS	C

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	114	494	96	0	0	0	0	598	111	56	575	0
Number	7	4	14				5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1863				0	1863	1900	1900	1863	0
Adj Flow Rate, veh/h	124	537	31				0	650	97	61	625	0
Adj No. of Lanes	0	2	1				0	2	0	0	2	0
Peak Hour Factor	0.92	0.92	0.92				0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2				0	2	2	2	2	0
Cap, veh/h	241	1106	593				0	1519	226	152	1450	0
Arrive On Green	0.37	0.37	0.37				0.00	0.49	0.49	0.98	0.98	0.00
Sat Flow, veh/h	645	2955	1583				0	3184	461	187	3035	0
Grp Volume(v), veh/h	352	309	31				0	372	375	341	345	0
Grp Sat Flow(s),veh/h/ln	1830	1770	1583				0	1770	1781	1526	1610	0
Q Serve(g_s), s	10.4	9.3	0.9				0.0	9.5	9.5	0.6	0.4	0.0
Cycle Q Clear(g_c), s	10.4	9.3	0.9				0.0	9.5	9.5	10.1	0.4	0.0
Prop In Lane	0.35		1.00				0.00		0.26	0.18		0.00
Lane Grp Cap(c), veh/h	685	662	593				0	870	875	811	791	0
V/C Ratio(X)	0.51	0.47	0.05				0.00	0.43	0.43	0.42	0.44	0.00
Avail Cap(c_a), veh/h	685	662	593				0	870	875	811	791	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	2.00	2.00	1.00
Upstream Filter(I)	1.00	1.00	1.00				0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	17.0	16.6	14.0				0.0	11.5	11.5	0.3	0.3	0.0
Incr Delay (d2), s/veh	2.7	2.4	0.2				0.0	1.5	1.5	1.6	1.7	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.7	4.9	0.4				0.0	4.9	5.0	0.5	0.5	0.0
LnGrp Delay(d),s/veh	19.7	19.0	14.1				0.0	13.0	13.0	1.9	2.1	0.0
LnGrp LOS	B	B	B					B	B	A	A	
Approach Vol, veh/h		692						747			686	
Approach Delay, s/veh		19.1						13.0			2.0	
Approach LOS		B						B			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		39.0		31.0		39.0		
Change Period (Y+Rc), s		* 4.6		* 4.8		* 4.6		
Max Green Setting (Gmax), s		* 34		* 26		* 34		
Max Q Clear Time (g_c+I1), s		11.5		12.4		12.1		
Green Ext Time (p_c), s		10.3		3.6		10.2		

Intersection Summary	
HCM 2010 Ctrl Delay	11.4
HCM 2010 LOS	B

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	0	68	1018	41	26	71	0	0	78	18
Number				3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln				1900	1863	1863	1900	1863	0	0	1863	1900
Adj Flow Rate, veh/h				74	1107	28	28	77	0	0	85	7
Adj No. of Lanes				0	2	1	0	1	0	0	1	0
Peak Hour Factor				0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %				2	2	2	2	2	0	0	2	2
Cap, veh/h				138	2159	1004	137	333	0	0	398	33
Arrive On Green				0.63	0.63	0.63	0.23	0.23	0.00	0.00	0.23	0.23
Sat Flow, veh/h				217	3405	1583	308	1422	0	0	1698	140
Grp Volume(v), veh/h				632	549	28	105	0	0	0	0	92
Grp Sat Flow(s),veh/h/ln				1852	1770	1583	1729	0	0	0	0	1838
Q Serve(g_s), s				13.3	11.5	0.5	0.0	0.0	0.0	0.0	0.0	2.8
Cycle Q Clear(g_c), s				13.3	11.5	0.5	3.2	0.0	0.0	0.0	0.0	2.8
Prop In Lane				0.12		1.00	0.27		0.00	0.00		0.08
Lane Grp Cap(c), veh/h				1175	1122	1004	470	0	0	0	0	431
V/C Ratio(X)				0.54	0.49	0.03	0.22	0.00	0.00	0.00	0.00	0.21
Avail Cap(c_a), veh/h				1175	1122	1004	470	0	0	0	0	431
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00	1.00
Uniform Delay (d), s/veh				7.1	6.8	4.8	21.7	0.0	0.0	0.0	0.0	21.6
Incr Delay (d2), s/veh				1.8	1.5	0.1	1.1	0.0	0.0	0.0	0.0	1.1
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				7.2	6.0	0.2	1.8	0.0	0.0	0.0	0.0	1.6
LnGrp Delay(d),s/veh				8.9	8.3	4.8	22.8	0.0	0.0	0.0	0.0	22.7
LnGrp LOS				A	A	A	C					C
Approach Vol, veh/h					1209			105			92	
Approach Delay, s/veh					8.5			22.8			22.7	
Approach LOS					A			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2				6		8
Phs Duration (G+Y+Rc), s		21.0				21.0		49.0
Change Period (Y+Rc), s		* 4.6				* 4.6		4.6
Max Green Setting (Gmax), s		* 16				* 16		44.4
Max Q Clear Time (g_c+I1), s		5.2				4.8		15.3
Green Ext Time (p_c), s		0.7				0.8		9.2

Intersection Summary	
HCM 2010 Ctrl Delay	10.5
HCM 2010 LOS	B

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	20	621	42	0	0	0	0	98	66	31	108	0
Number	7	4	14				5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1863				0	1863	1900	1900	1863	0
Adj Flow Rate, veh/h	22	675	29				0	107	35	34	117	0
Adj No. of Lanes	0	2	1				0	1	0	0	1	0
Peak Hour Factor	0.92	0.92	0.92				0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2				0	2	2	2	2	0
Cap, veh/h	55	1774	798				0	491	160	165	526	0
Arrive On Green	0.50	0.50	0.50				0.00	0.36	0.36	0.73	0.73	0.00
Sat Flow, veh/h	109	3517	1583				0	1345	440	279	1443	0
Grp Volume(v), veh/h	373	324	29				0	0	142	151	0	0
Grp Sat Flow(s),veh/h/ln	1857	1770	1583				0	0	1785	1723	0	0
Q Serve(g_s), s	8.8	7.8	0.6				0.0	0.0	3.9	0.0	0.0	0.0
Cycle Q Clear(g_c), s	8.8	7.8	0.6				0.0	0.0	3.9	1.8	0.0	0.0
Prop In Lane	0.06		1.00				0.00		0.25	0.23		0.00
Lane Grp Cap(c), veh/h	937	892	798				0	0	651	691	0	0
V/C Ratio(X)	0.40	0.36	0.04				0.00	0.00	0.22	0.22	0.00	0.00
Avail Cap(c_a), veh/h	937	892	798				0	0	651	691	0	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	2.00	2.00	1.00
Upstream Filter(I)	1.00	1.00	1.00				0.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	10.8	10.6	8.8				0.0	0.0	15.4	6.3	0.0	0.0
Incr Delay (d2), s/veh	1.3	1.1	0.1				0.0	0.0	0.8	0.7	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.8	4.1	0.3				0.0	0.0	2.0	1.1	0.0	0.0
LnGrp Delay(d),s/veh	12.1	11.7	8.9				0.0	0.0	16.2	7.0	0.0	0.0
LnGrp LOS	B	B	A						B	A		
Approach Vol, veh/h		726						142			151	
Approach Delay, s/veh		11.8						16.2			7.0	
Approach LOS		B						B			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		30.2		40.0		30.2		
Change Period (Y+Rc), s		* 4.6		4.6		* 4.6		
Max Green Setting (Gmax), s		* 25		35.4		* 26		
Max Q Clear Time (g_c+I1), s		5.9		10.8		3.8		
Green Ext Time (p_c), s		1.6		4.7		1.7		

Intersection Summary	
HCM 2010 Ctrl Delay	11.7
HCM 2010 LOS	B

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	0	68	976	24	48	45	0	0	53	21
Number				3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln				1900	1863	1863	1900	1863	0	0	1863	1900
Adj Flow Rate, veh/h				74	1061	12	52	49	0	0	58	6
Adj No. of Lanes				0	2	1	0	1	0	0	1	0
Peak Hour Factor				0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %				2	2	2	2	2	0	0	2	2
Cap, veh/h				103	1553	724	365	314	0	0	607	63
Arrive On Green				0.46	0.46	0.46	0.37	0.37	0.00	0.00	0.37	0.37
Sat Flow, veh/h				226	3395	1583	719	858	0	0	1661	172
Grp Volume(v), veh/h				607	528	12	101	0	0	0	0	64
Grp Sat Flow(s),veh/h/ln				1851	1770	1583	1577	0	0	0	0	1832
Q Serve(g_s), s				14.1	12.2	0.2	0.1	0.0	0.0	0.0	0.0	1.2
Cycle Q Clear(g_c), s				14.1	12.2	0.2	1.9	0.0	0.0	0.0	0.0	1.2
Prop In Lane				0.12		1.00	0.51		0.00	0.00		0.09
Lane Grp Cap(c), veh/h				847	809	724	679	0	0	0	0	670
V/C Ratio(X)				0.72	0.65	0.02	0.15	0.00	0.00	0.00	0.00	0.10
Avail Cap(c_a), veh/h				1437	1374	1229	679	0	0	0	0	670
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00	1.00
Uniform Delay (d), s/veh				11.6	11.1	7.9	11.3	0.0	0.0	0.0	0.0	11.1
Incr Delay (d2), s/veh				1.2	0.9	0.0	0.5	0.0	0.0	0.0	0.0	0.3
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				7.4	6.1	0.1	1.1	0.0	0.0	0.0	0.0	0.7
LnGrp Delay(d),s/veh				12.8	12.0	7.9	11.8	0.0	0.0	0.0	0.0	11.4
LnGrp LOS				B	B	A	B					B
Approach Vol, veh/h					1147			101			64	
Approach Delay, s/veh					12.4			11.8			11.4	
Approach LOS					B			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2				6		8
Phs Duration (G+Y+Rc), s		24.0				24.0		29.1
Change Period (Y+Rc), s		* 4.6				* 4.6		4.8
Max Green Setting (Gmax), s		* 19				* 19		41.2
Max Q Clear Time (g_c+I1), s		3.9				3.2		16.1
Green Ext Time (p_c), s		0.7				0.7		8.2

Intersection Summary	
HCM 2010 Ctrl Delay	12.3
HCM 2010 LOS	B

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	10	603	34	0	0	0	0	85	52	20	87	0
Number	7	4	14				5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1863				0	1863	1900	1900	1863	0
Adj Flow Rate, veh/h	11	655	20				0	92	22	22	95	0
Adj No. of Lanes	0	2	1				0	1	0	0	1	0
Peak Hour Factor	0.92	0.92	0.92				0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2				0	2	2	2	2	0
Cap, veh/h	30	1898	841				0	486	116	133	518	0
Arrive On Green	0.53	0.53	0.53				0.00	0.33	0.33	0.33	0.33	0.00
Sat Flow, veh/h	57	3572	1583				0	1454	348	214	1550	0
Grp Volume(v), veh/h	357	309	20				0	0	114	117	0	0
Grp Sat Flow(s),veh/h/ln	1860	1770	1583				0	0	1801	1764	0	0
Q Serve(g_s), s	7.8	6.9	0.4				0.0	0.0	3.1	0.0	0.0	0.0
Cycle Q Clear(g_c), s	7.8	6.9	0.4				0.0	0.0	3.1	3.1	0.0	0.0
Prop In Lane	0.03		1.00				0.00		0.19	0.19		0.00
Lane Grp Cap(c), veh/h	988	940	841				0	0	602	651	0	0
V/C Ratio(X)	0.36	0.33	0.02				0.00	0.00	0.19	0.18	0.00	0.00
Avail Cap(c_a), veh/h	988	940	841				0	0	602	651	0	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00				0.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	9.5	9.3	7.8				0.0	0.0	16.6	16.6	0.0	0.0
Incr Delay (d2), s/veh	1.0	0.9	0.1				0.0	0.0	0.7	0.6	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.2	3.6	0.2				0.0	0.0	1.7	1.7	0.0	0.0
LnGrp Delay(d),s/veh	10.5	10.2	7.8				0.0	0.0	17.3	17.2	0.0	0.0
LnGrp LOS	B	B	A						B	B		
Approach Vol, veh/h		686						114			117	
Approach Delay, s/veh		10.3						17.3			17.2	
Approach LOS		B						B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		28.0		42.0		28.0		
Change Period (Y+Rc), s		* 4.6		* 4.8		* 4.6		
Max Green Setting (Gmax), s		* 23		* 37		* 23		
Max Q Clear Time (g_c+I1), s		5.1		9.8		5.1		
Green Ext Time (p_c), s		1.2		4.5		1.2		

Intersection Summary	
HCM 2010 Ctrl Delay	12.1
HCM 2010 LOS	B

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	JCH	Intersection	Commerce St/Navidad St
Agency/Co.	CH2M HILL	Jurisdiction	City of San Antonio
Date Performed	3/25/2015	Analysis Year	Existing 2015
Analysis Time Period	PM Peak Hour		

Project Description *Commerce/Buena Vista One-Way Couplet Conversion Traff. Study*

East/West Street: *Commerce Street* | North/South Street: *Navidad Street*

Intersection Orientation: *East-West* | Study Period (hrs): *0.25*

Vehicle Volumes and Adjustments

Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)				20	1228	20
Peak-Hour Factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Hourly Flow Rate, HFR (veh/h)	0	0	0	20	1228	20
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	0	0	0	0	2	0
Configuration				LT		TR
Upstream Signal		0			0	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)	20	20			20	20
Peak-Hour Factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Hourly Flow Rate, HFR (veh/h)	20	20	0	0	20	20
Percent Heavy Vehicles	0	0	0	0	0	0
Percent Grade (%)	0			0		
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration	LT					TR

Delay, Queue Length, and Level of Service

Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		LT	LT					TR
v (veh/h)		20	40					40
C (m) (veh/h)		1636	217					248
v/c		0.01	0.18					0.16
95% queue length		0.04	0.66					0.56
Control Delay (s/veh)		7.2	25.3					22.3
LOS		A	D					C
Approach Delay (s/veh)	--	--	25.3			22.3		
Approach LOS	--	--	D			C		

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2020 No-Build AM Peak Hour

HCM 2010 Signalized Intersection Summary
1: Pecos Street & Commerce Street

4/17/2015

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	0	88	304	0	0	0	0	0	574	324
Number				3	8	18				1	6	16
Initial Q (Qb), veh				0	0	0				0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00				1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln				1863	1863	0				0	1863	1900
Adj Flow Rate, veh/h				96	330	0				0	624	130
Adj No. of Lanes				1	3	0				0	3	0
Peak Hour Factor				0.92	0.92	0.92				0.92	0.92	0.92
Percent Heavy Veh, %				2	2	0				0	2	2
Cap, veh/h				861	2054	0				0	1727	354
Arrive On Green				0.40	0.40	0.00				0.00	0.41	0.41
Sat Flow, veh/h				1774	5253	0				0	4399	868
Grp Volume(v), veh/h				96	330	0				0	498	256
Grp Sat Flow(s),veh/h/ln				1774	1695	0				0	1695	1710
Q Serve(g_s), s				1.7	2.1	0.0				0.0	5.1	5.2
Cycle Q Clear(g_c), s				1.7	2.1	0.0				0.0	5.1	5.2
Prop In Lane				1.00		0.00				0.00		0.51
Lane Grp Cap(c), veh/h				861	2054	0				0	1383	698
V/C Ratio(X)				0.11	0.16	0.00				0.00	0.36	0.37
Avail Cap(c_a), veh/h				861	2054	0				0	1383	698
HCM Platoon Ratio				1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)				1.00	1.00	0.00				0.00	1.00	1.00
Uniform Delay (d), s/veh				9.4	9.5	0.0				0.0	10.3	10.3
Incr Delay (d2), s/veh				0.3	0.2	0.0				0.0	0.7	1.5
Initial Q Delay(d3),s/veh				0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				0.9	1.0	0.0				0.0	2.5	2.7
LnGrp Delay(d),s/veh				9.7	9.7	0.0				0.0	11.0	11.8
LnGrp LOS				A	A						B	B
Approach Vol, veh/h					426						754	
Approach Delay, s/veh					9.7						11.3	
Approach LOS					A						B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs						6		8
Phs Duration (G+Y+Rc), s						25.0		25.0
Change Period (Y+Rc), s						4.6		4.8
Max Green Setting (Gmax), s						20.4		20.2
Max Q Clear Time (g_c+I1), s						7.2		4.1
Green Ext Time (p_c), s						4.1		2.1

Intersection Summary	
HCM 2010 Ctrl Delay	10.7
HCM 2010 LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	621	240	0	0	0	0	0	0	206	458	0
Number	7	4	14							1	6	16
Initial Q (Qb), veh	0	0	0							0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00							1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00							1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1863	1900							1900	1863	0
Adj Flow Rate, veh/h	0	675	118							224	498	0
Adj No. of Lanes	0	3	0							0	4	0
Peak Hour Factor	0.92	0.92	0.92							0.92	0.92	0.92
Percent Heavy Veh, %	0	2	2							2	2	0
Cap, veh/h	0	1764	305							720	1784	0
Arrive On Green	0.00	0.40	0.40							0.13	0.13	0.00
Sat Flow, veh/h	0	4533	754							1412	4611	0
Grp Volume(v), veh/h	0	522	271							224	498	0
Grp Sat Flow(s),veh/h/ln	0	1695	1730							1412	1458	0
Q Serve(g_s), s	0.0	5.4	5.5							7.2	5.1	0.0
Cycle Q Clear(g_c), s	0.0	5.4	5.5							7.2	5.1	0.0
Prop In Lane	0.00		0.44							1.00		0.00
Lane Grp Cap(c), veh/h	0	1370	699							720	1784	0
V/C Ratio(X)	0.00	0.38	0.39							0.31	0.28	0.00
Avail Cap(c_a), veh/h	0	1370	699							720	1784	0
HCM Platoon Ratio	1.00	1.00	1.00							0.33	0.33	1.00
Upstream Filter(I)	0.00	1.00	1.00							1.00	1.00	0.00
Uniform Delay (d), s/veh	0.0	10.5	10.5							15.9	15.0	0.0
Incr Delay (d2), s/veh	0.0	0.8	1.6							1.1	0.4	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0							0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	2.7	2.9							3.0	2.1	0.0
LnGrp Delay(d),s/veh	0.0	11.3	12.1							17.1	15.4	0.0
LnGrp LOS		B	B							B	B	
Approach Vol, veh/h		793									722	
Approach Delay, s/veh		11.6									15.9	
Approach LOS		B									B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6		
Phs Duration (G+Y+Rc), s				25.0		25.0		
Change Period (Y+Rc), s				* 4.8		4.6		
Max Green Setting (Gmax), s				* 20		20.4		
Max Q Clear Time (g_c+I1), s				7.5		9.2		
Green Ext Time (p_c), s				4.3		3.6		

Intersection Summary	
HCM 2010 Ctrl Delay	13.7
HCM 2010 LOS	B

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	0	7	622	17	4	17	0	0	1	8
Number				3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln				1863	1863	1900	1900	1863	0	0	1863	1900
Adj Flow Rate, veh/h				8	676	11	4	18	0	0	1	2
Adj No. of Lanes				1	3	0	0	1	0	0	1	0
Peak Hour Factor				0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %				2	2	2	2	2	0	0	2	2
Cap, veh/h				937	2722	44	133	473	0	0	160	320
Arrive On Green				0.53	0.53	0.53	0.29	0.29	0.00	0.00	0.29	0.29
Sat Flow, veh/h				1774	5154	84	167	1642	0	0	556	1111
Grp Volume(v), veh/h				8	444	243	22	0	0	0	0	3
Grp Sat Flow(s),veh/h/ln				1774	1695	1848	1809	0	0	0	0	1667
Q Serve(g_s), s				0.1	3.6	3.6	0.0	0.0	0.0	0.0	0.0	0.1
Cycle Q Clear(g_c), s				0.1	3.6	3.6	0.4	0.0	0.0	0.0	0.0	0.1
Prop In Lane				1.00		0.05	0.18		0.00	0.00		0.67
Lane Grp Cap(c), veh/h				937	1790	976	606	0	0	0	0	480
V/C Ratio(X)				0.01	0.25	0.25	0.04	0.00	0.00	0.00	0.00	0.01
Avail Cap(c_a), veh/h				937	1790	976	606	0	0	0	0	480
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00	1.00
Uniform Delay (d), s/veh				5.6	6.4	6.4	12.8	0.0	0.0	0.0	0.0	12.7
Incr Delay (d2), s/veh				0.0	0.3	0.6	0.1	0.0	0.0	0.0	0.0	0.0
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				0.1	1.7	2.0	0.2	0.0	0.0	0.0	0.0	0.0
LnGrp Delay(d),s/veh				5.6	6.7	7.0	12.9	0.0	0.0	0.0	0.0	12.7
LnGrp LOS				A	A	A	B					B
Approach Vol, veh/h					695			22			3	
Approach Delay, s/veh					6.8			12.9			12.7	
Approach LOS					A			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2				6		8
Phs Duration (G+Y+Rc), s		19.0				19.0		31.0
Change Period (Y+Rc), s		* 4.6				* 4.6		4.6
Max Green Setting (Gmax), s		* 14				* 14		26.4
Max Q Clear Time (g_c+I1), s		2.4				2.1		5.6
Green Ext Time (p_c), s		0.0				0.0		4.3

Intersection Summary	
HCM 2010 Ctrl Delay	7.0
HCM 2010 LOS	A

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	0	28	526	40	268	696	0	0	184	134
Number				3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln				1900	1863	1863	1863	1863	0	0	1863	1900
Adj Flow Rate, veh/h				30	572	9	291	757	0	0	200	26
Adj No. of Lanes				0	2	1	1	2	0	0	2	0
Peak Hour Factor				0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %				2	2	2	2	2	0	0	2	2
Cap, veh/h				50	992	455	464	2034	0	0	781	100
Arrive On Green				0.29	0.29	0.29	0.26	0.57	0.00	0.00	0.25	0.25
Sat Flow, veh/h				173	3451	1583	1774	3632	0	0	3249	405
Grp Volume(v), veh/h				322	280	9	291	757	0	0	111	115
Grp Sat Flow(s),veh/h/ln				1854	1770	1583	1774	1770	0	0	1770	1791
Q Serve(g_s), s				10.5	9.4	0.3	10.2	8.1	0.0	0.0	3.5	3.6
Cycle Q Clear(g_c), s				10.5	9.4	0.3	10.2	8.1	0.0	0.0	3.5	3.6
Prop In Lane				0.09		1.00	1.00		0.00	0.00		0.23
Lane Grp Cap(c), veh/h				533	508	455	464	2034	0	0	438	443
V/C Ratio(X)				0.60	0.55	0.02	0.63	0.37	0.00	0.00	0.25	0.26
Avail Cap(c_a), veh/h				533	508	455	464	2034	0	0	438	443
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh				21.6	21.2	18.0	22.9	8.1	0.0	0.0	21.2	21.3
Incr Delay (d2), s/veh				5.0	4.2	0.1	6.3	0.5	0.0	0.0	1.4	1.4
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				6.1	5.2	0.1	5.7	4.0	0.0	0.0	1.9	2.0
LnGrp Delay(d),s/veh				26.6	25.4	18.0	29.2	8.6	0.0	0.0	22.6	22.7
LnGrp LOS				C	C	B	C	A			C	C
Approach Vol, veh/h					611			1048			226	
Approach Delay, s/veh					26.0			14.3			22.7	
Approach LOS					C			B			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2			5	6		8
Phs Duration (G+Y+Rc), s		45.3			23.3	22.0		25.0
Change Period (Y+Rc), s		* 4.9			* 4.9	* 4.6		4.8
Max Green Setting (Gmax), s		* 40			* 18	* 17		20.2
Max Q Clear Time (g_c+I1), s		10.1			12.2	5.6		12.5
Green Ext Time (p_c), s		7.0			3.1	0.9		2.2

Intersection Summary	
HCM 2010 Ctrl Delay	19.1
HCM 2010 LOS	B

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	NBT	NBR	SBL	SBT	NEL	NER	NER2
Lane Configurations										
Volume (vph)	241	804	143	729	99	53	177	3	1	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0		4.0		4.0	4.0	4.0		4.0
Lane Util. Factor		0.91		0.95		1.00	0.95	1.00		0.95
Frt		0.98		0.98		1.00	1.00	0.90		0.85
Flt Protected		0.99		1.00		0.95	1.00	0.98		1.00
Satd. Flow (prot)		4944		3476		1770	3539	1649		1504
Flt Permitted		0.99		1.00		0.12	1.00	0.98		1.00
Satd. Flow (perm)		4944		3476		226	3539	1649		1504
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	262	874	155	792	108	58	192	3	1	14
RTOR Reduction (vph)	0	0	0	11	0	0	0	8	0	8
Lane Group Flow (vph)	0	1291	0	889	0	58	192	1	0	1
Turn Type	Perm	NA		NA		pm+pt	NA	Prot		Prot
Protected Phases		4		2		1	6	9		9
Permitted Phases	4					6				
Actuated Green, G (s)		34.4		37.9		47.9	47.9	16.0		16.0
Effective Green, g (s)		34.4		37.9		47.9	47.9	16.0		16.0
Actuated g/C Ratio		0.31		0.34		0.43	0.43	0.15		0.15
Clearance Time (s)		4.0		4.0		4.0	4.0	4.0		4.0
Vehicle Extension (s)		3.0		3.0		3.0	3.0	3.0		3.0
Lane Grp Cap (vph)		1541		1194		182	1536	239		218
v/s Ratio Prot				c0.26		c0.02	0.05	0.00		c0.00
v/s Ratio Perm		0.26				0.12				
v/c Ratio		0.84		0.74		0.32	0.12	0.01		0.01
Uniform Delay, d1		35.4		31.9		21.6	18.7	40.3		40.3
Progression Factor		1.00		1.00		1.00	1.00	1.00		1.00
Incremental Delay, d2		4.2		4.2		1.0	0.2	0.0		0.0
Delay (s)		39.5		36.2		22.6	18.8	40.4		40.4
Level of Service		D		D		C	B	D		D
Approach Delay (s)		39.5		36.2			19.7	40.4		
Approach LOS		D		D			B	D		

Intersection Summary			
HCM 2000 Control Delay	36.3	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	110.3	Sum of lost time (s)	16.0
Intersection Capacity Utilization	66.9%	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)	0	0	0	98	534	51	45	407	0	0	317	101
Number				3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln				1900	1863	1863	1900	1863	0	0	1863	1900
Adj Flow Rate, veh/h				107	580	20	49	442	0	0	345	62
Adj No. of Lanes				0	2	1	0	2	0	0	2	0
Peak Hour Factor				0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %				2	2	2	2	2	0	0	2	2
Cap, veh/h				225	1289	665	163	1363	0	0	1347	240
Arrive On Green				0.42	0.42	0.42	0.90	0.90	0.00	0.00	0.45	0.45
Sat Flow, veh/h				536	3069	1583	227	3124	0	0	3097	534
Grp Volume(v), veh/h				366	321	20	254	237	0	0	202	205
Grp Sat Flow(s),veh/h/ln				1836	1770	1583	1656	1610	0	0	1770	1768
Q Serve(g_s), s				10.1	9.0	0.5	0.0	1.5	0.0	0.0	5.0	5.1
Cycle Q Clear(g_c), s				10.1	9.0	0.5	1.4	1.5	0.0	0.0	5.0	5.1
Prop In Lane				0.29		1.00	0.19		0.00	0.00		0.30
Lane Grp Cap(c), veh/h				771	743	665	804	722	0	0	794	793
V/C Ratio(X)				0.47	0.43	0.03	0.32	0.33	0.00	0.00	0.25	0.26
Avail Cap(c_a), veh/h				771	743	665	804	722	0	0	794	793
HCM Platoon Ratio				1.00	1.00	1.00	2.00	2.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh				14.7	14.4	11.9	2.1	2.1	0.0	0.0	12.0	12.0
Incr Delay (d2), s/veh				2.1	1.8	0.1	1.0	1.2	0.0	0.0	0.8	0.8
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				5.5	4.7	0.2	0.8	0.8	0.0	0.0	2.6	2.6
LnGrp Delay(d),s/veh				16.8	16.2	12.0	3.1	3.3	0.0	0.0	12.8	12.8
LnGrp LOS				B	B	B	A	A			B	B
Approach Vol, veh/h					707			491			407	
Approach Delay, s/veh					16.4			3.2			12.8	
Approach LOS					B			A			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2				6		8
Phs Duration (G+Y+Rc), s		36.0				36.0		34.0
Change Period (Y+Rc), s		* 4.6				* 4.6		4.6
Max Green Setting (Gmax), s		* 31				* 31		29.4
Max Q Clear Time (g_c+I1), s		3.5				7.1		12.1
Green Ext Time (p_c), s		6.2				5.9		3.9

Intersection Summary	
HCM 2010 Ctrl Delay	11.4
HCM 2010 LOS	B

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	128	1046	31	0	0	0	0	243	104	74	276	0
Number	7	4	14				5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1863				0	1863	1900	1900	1863	0
Adj Flow Rate, veh/h	139	1137	20				0	264	63	80	300	0
Adj No. of Lanes	0	2	1				0	2	0	0	2	0
Peak Hour Factor	0.92	0.92	0.92				0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2				0	2	2	2	2	0
Cap, veh/h	205	1767	864				0	911	214	220	792	0
Arrive On Green	0.55	0.55	0.55				0.00	0.32	0.32	0.64	0.64	0.00
Sat Flow, veh/h	376	3237	1583				0	2940	668	459	2561	0
Grp Volume(v), veh/h	681	595	20				0	162	165	191	189	0
Grp Sat Flow(s),veh/h/ln	1844	1770	1583				0	1770	1745	1324	1610	0
Q Serve(g_s), s	18.6	16.1	0.4				0.0	4.8	5.0	1.5	3.9	0.0
Cycle Q Clear(g_c), s	18.6	16.1	0.4				0.0	4.8	5.0	6.5	3.9	0.0
Prop In Lane	0.20		1.00				0.00		0.38	0.42		0.00
Lane Grp Cap(c), veh/h	1006	966	864				0	566	558	497	515	0
V/C Ratio(X)	0.68	0.62	0.02				0.00	0.29	0.29	0.38	0.37	0.00
Avail Cap(c_a), veh/h	1006	966	864				0	566	558	497	515	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	2.00	2.00	1.00
Upstream Filter(I)	1.00	1.00	1.00				0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	11.5	10.9	7.3				0.0	17.8	17.9	9.4	9.3	0.0
Incr Delay (d2), s/veh	3.7	2.9	0.0				0.0	1.3	1.3	2.2	2.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	10.3	8.5	0.2				0.0	2.5	2.6	2.2	2.0	0.0
LnGrp Delay(d),s/veh	15.1	13.8	7.4				0.0	19.1	19.2	11.7	11.3	0.0
LnGrp LOS	B	B	A					B	B	B	B	
Approach Vol, veh/h		1296						327			380	
Approach Delay, s/veh		14.4						19.2			11.5	
Approach LOS		B						B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		27.0		43.0		27.0		
Change Period (Y+Rc), s		* 4.6		* 4.8		* 4.6		
Max Green Setting (Gmax), s		* 22		* 38		* 22		
Max Q Clear Time (g_c+I1), s		7.0		20.6		8.5		
Green Ext Time (p_c), s		3.9		8.2		3.7		

Intersection Summary	
HCM 2010 Ctrl Delay	14.6
HCM 2010 LOS	B

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	0	10	646	12	15	11	0	0	16	4
Number				3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln				1900	1863	1863	1900	1863	0	0	1863	1900
Adj Flow Rate, veh/h				11	702	8	16	12	0	0	17	1
Adj No. of Lanes				0	2	1	0	1	0	0	1	0
Peak Hour Factor				0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %				2	2	2	2	2	0	0	2	2
Cap, veh/h				33	2217	982	283	192	0	0	433	25
Arrive On Green				0.62	0.62	0.62	0.25	0.25	0.00	0.00	0.25	0.25
Sat Flow, veh/h				54	3576	1583	814	771	0	0	1742	102
Grp Volume(v), veh/h				382	331	8	28	0	0	0	0	18
Grp Sat Flow(s),veh/h/ln				1860	1770	1583	1585	0	0	0	0	1845
Q Serve(g_s), s				6.9	6.1	0.1	0.0	0.0	0.0	0.0	0.0	0.5
Cycle Q Clear(g_c), s				6.9	6.1	0.1	0.8	0.0	0.0	0.0	0.0	0.5
Prop In Lane				0.03		1.00	0.57		0.00	0.00		0.06
Lane Grp Cap(c), veh/h				1153	1097	982	475	0	0	0	0	459
V/C Ratio(X)				0.33	0.30	0.01	0.06	0.00	0.00	0.00	0.00	0.04
Avail Cap(c_a), veh/h				1153	1097	982	475	0	0	0	0	459
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00	1.00
Uniform Delay (d), s/veh				6.4	6.2	5.1	20.1	0.0	0.0	0.0	0.0	20.0
Incr Delay (d2), s/veh				0.8	0.7	0.0	0.2	0.0	0.0	0.0	0.0	0.2
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				3.8	3.2	0.1	0.4	0.0	0.0	0.0	0.0	0.3
LnGrp Delay(d),s/veh				7.1	6.9	5.1	20.3	0.0	0.0	0.0	0.0	20.1
LnGrp LOS				A	A	A	C					C
Approach Vol, veh/h					721			28			18	
Approach Delay, s/veh					7.0			20.3			20.1	
Approach LOS					A			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2				6		8
Phs Duration (G+Y+Rc), s		22.0				22.0		48.0
Change Period (Y+Rc), s		* 4.6				* 4.6		4.6
Max Green Setting (Gmax), s		* 17				* 17		43.4
Max Q Clear Time (g_c+I1), s		2.8				2.5		8.9
Green Ext Time (p_c), s		0.1				0.1		4.7

Intersection Summary	
HCM 2010 Ctrl Delay	7.8
HCM 2010 LOS	A

Notes

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	0	49	626	28	61	188	0	0	151	24
Number				3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln				1900	1863	1863	1900	1863	0	0	1863	1900
Adj Flow Rate, veh/h				53	680	12	66	204	0	0	164	17
Adj No. of Lanes				0	2	1	0	1	0	0	1	0
Peak Hour Factor				0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %				2	2	2	2	2	0	0	2	2
Cap, veh/h				108	1454	683	203	593	0	0	721	75
Arrive On Green				0.43	0.43	0.43	0.43	0.43	0.00	0.00	0.43	0.43
Sat Flow, veh/h				250	3370	1583	321	1364	0	0	1660	172
Grp Volume(v), veh/h				392	341	12	270	0	0	0	0	181
Grp Sat Flow(s),veh/h/ln				1850	1770	1583	1685	0	0	0	0	1832
Q Serve(g_s), s				10.7	9.5	0.3	0.7	0.0	0.0	0.0	0.0	4.3
Cycle Q Clear(g_c), s				10.7	9.5	0.3	6.8	0.0	0.0	0.0	0.0	4.3
Prop In Lane				0.14		1.00	0.24		0.00	0.00		0.09
Lane Grp Cap(c), veh/h				798	763	683	796	0	0	0	0	796
V/C Ratio(X)				0.49	0.45	0.02	0.34	0.00	0.00	0.00	0.00	0.23
Avail Cap(c_a), veh/h				798	763	683	796	0	0	0	0	796
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00	1.00
Uniform Delay (d), s/veh				14.4	14.0	11.4	13.1	0.0	0.0	0.0	0.0	12.4
Incr Delay (d2), s/veh				2.2	1.9	0.0	1.2	0.0	0.0	0.0	0.0	0.7
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				5.9	5.0	0.1	3.7	0.0	0.0	0.0	0.0	2.3
LnGrp Delay(d),s/veh				16.5	15.9	11.4	14.3	0.0	0.0	0.0	0.0	13.1
LnGrp LOS				B	B	B	B					B
Approach Vol, veh/h					745			270			181	
Approach Delay, s/veh					16.2			14.3			13.1	
Approach LOS					B			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2				6		8
Phs Duration (G+Y+Rc), s		35.0				35.0		35.0
Change Period (Y+Rc), s		* 4.6				* 4.6		4.8
Max Green Setting (Gmax), s		* 30				* 30		30.2
Max Q Clear Time (g_c+I1), s		8.8				6.3		12.7
Green Ext Time (p_c), s		2.7				2.8		4.2

Intersection Summary	
HCM 2010 Ctrl Delay	15.3
HCM 2010 LOS	B

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	12	1100	84	0	0	0	0	123	74	14	75	0
Number	7	4	14				5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1863				0	1863	1900	1900	1863	0
Adj Flow Rate, veh/h	13	1196	51				0	134	47	15	82	0
Adj No. of Lanes	0	2	1				0	1	0	0	1	0
Peak Hour Factor	0.92	0.92	0.92				0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2				0	2	2	2	2	0
Cap, veh/h	21	2058	907				0	384	135	103	475	0
Arrive On Green	0.19	0.19	0.19				0.00	0.29	0.29	0.29	0.29	0.00
Sat Flow, veh/h	37	3593	1583				0	1319	463	149	1632	0
Grp Volume(v), veh/h	648	561	51				0	0	181	97	0	0
Grp Sat Flow(s),veh/h/ln	1861	1770	1583				0	0	1781	1780	0	0
Q Serve(g_s), s	22.3	20.1	1.8				0.0	0.0	5.6	0.0	0.0	0.0
Cycle Q Clear(g_c), s	22.3	20.1	1.8				0.0	0.0	5.6	2.7	0.0	0.0
Prop In Lane	0.02		1.00				0.00		0.26	0.15		0.00
Lane Grp Cap(c), veh/h	1066	1014	907				0	0	519	578	0	0
V/C Ratio(X)	0.61	0.55	0.06				0.00	0.00	0.35	0.17	0.00	0.00
Avail Cap(c_a), veh/h	1066	1014	907				0	0	519	578	0	0
HCM Platoon Ratio	0.33	0.33	0.33				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00				0.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	21.2	20.3	12.9				0.0	0.0	19.6	18.5	0.0	0.0
Incr Delay (d2), s/veh	2.6	2.2	0.1				0.0	0.0	1.8	0.6	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	12.3	10.5	0.8				0.0	0.0	3.0	1.5	0.0	0.0
LnGrp Delay(d),s/veh	23.8	22.4	13.0				0.0	0.0	21.4	19.2	0.0	0.0
LnGrp LOS	C	C	B						C	B		
Approach Vol, veh/h		1260						181			97	
Approach Delay, s/veh		22.7						21.4			19.2	
Approach LOS		C						C			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		25.0		45.0		25.0		
Change Period (Y+Rc), s		* 4.6		* 4.9		* 4.6		
Max Green Setting (Gmax), s		* 20		* 40		* 20		
Max Q Clear Time (g_c+I1), s		7.6		24.3		4.7		
Green Ext Time (p_c), s		1.2		7.3		1.4		

Intersection Summary	
HCM 2010 Ctrl Delay	22.4
HCM 2010 LOS	C

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	8	1209	8	0	0	0	0	11	14	7	5	0
Number	7	4	14				5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1863				0	1863	1900	1900	1863	0
Adj Flow Rate, veh/h	9	1314	6				0	12	2	8	5	0
Adj No. of Lanes	0	2	1				0	1	0	0	1	0
Peak Hour Factor	0.92	0.92	0.92				0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2				0	2	2	2	2	0
Cap, veh/h	16	2494	1095				0	278	46	236	129	0
Arrive On Green	0.23	0.23	0.23				0.00	0.18	0.18	0.18	0.18	0.00
Sat Flow, veh/h	24	3608	1583				0	1557	260	855	720	0
Grp Volume(v), veh/h	709	614	6				0	0	14	13	0	0
Grp Sat Flow(s),veh/h/ln	1862	1770	1583				0	0	1817	1575	0	0
Q Serve(g_s), s	23.6	21.2	0.2				0.0	0.0	0.4	0.0	0.0	0.0
Cycle Q Clear(g_c), s	23.6	21.2	0.2				0.0	0.0	0.4	0.4	0.0	0.0
Prop In Lane	0.01		1.00				0.00		0.14	0.62		0.00
Lane Grp Cap(c), veh/h	1287	1224	1095				0	0	324	364	0	0
V/C Ratio(X)	0.55	0.50	0.01				0.00	0.00	0.04	0.04	0.00	0.00
Avail Cap(c_a), veh/h	1287	1224	1095				0	0	324	364	0	0
HCM Platoon Ratio	0.33	0.33	0.33				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00				0.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	17.4	16.5	8.4				0.0	0.0	23.8	23.8	0.0	0.0
Incr Delay (d2), s/veh	1.7	1.5	0.0				0.0	0.0	0.3	0.2	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	12.8	10.9	0.1				0.0	0.0	0.2	0.2	0.0	0.0
LnGrp Delay(d),s/veh	19.1	18.0	8.4				0.0	0.0	24.0	24.0	0.0	0.0
LnGrp LOS	B	B	A						C	C		
Approach Vol, veh/h		1329						14			13	
Approach Delay, s/veh		18.5						24.0			24.0	
Approach LOS		B						C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		17.0		53.0		17.0		
Change Period (Y+Rc), s		4.5		4.6		4.5		
Max Green Setting (Gmax), s		12.5		48.4		12.5		
Max Q Clear Time (g_c+I1), s		2.4		25.6		2.4		
Green Ext Time (p_c), s		0.0		9.7		0.0		

Intersection Summary	
HCM 2010 Ctrl Delay	18.7
HCM 2010 LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	0	11	615	67	8	22	0	0	30	18
Number				3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln				1900	1863	1863	1900	1863	0	0	1863	1863
Adj Flow Rate, veh/h				12	668	39	9	24	0	0	33	6
Adj No. of Lanes				0	2	1	0	1	0	0	1	1
Peak Hour Factor				0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %				2	2	2	2	2	0	0	2	2
Cap, veh/h				35	2049	909	166	405	0	0	543	461
Arrive On Green				0.19	0.19	0.19	0.29	0.29	0.00	0.00	0.29	0.29
Sat Flow, veh/h				61	3568	1583	346	1390	0	0	1863	1583
Grp Volume(v), veh/h				364	316	39	33	0	0	0	33	6
Grp Sat Flow(s),veh/h/ln				1860	1770	1583	1736	0	0	0	1863	1583
Q Serve(g_s), s				11.9	10.7	1.4	0.0	0.0	0.0	0.0	0.9	0.2
Cycle Q Clear(g_c), s				11.9	10.7	1.4	0.9	0.0	0.0	0.0	0.9	0.2
Prop In Lane				0.03		1.00	0.27		0.00	0.00		1.00
Lane Grp Cap(c), veh/h				1068	1016	909	571	0	0	0	543	461
V/C Ratio(X)				0.34	0.31	0.04	0.06	0.00	0.00	0.00	0.06	0.01
Avail Cap(c_a), veh/h				1068	1016	909	571	0	0	0	543	461
HCM Platoon Ratio				0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	1.00	1.00	1.00	0.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh				16.9	16.4	12.6	17.9	0.0	0.0	0.0	17.9	17.6
Incr Delay (d2), s/veh				0.9	0.8	0.1	0.2	0.0	0.0	0.0	0.2	0.1
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				6.4	5.5	0.6	0.5	0.0	0.0	0.0	0.5	0.1
LnGrp Delay(d),s/veh				17.8	17.2	12.7	18.1	0.0	0.0	0.0	18.1	17.7
LnGrp LOS				B	B	B	B				B	B
Approach Vol, veh/h					719			33			39	
Approach Delay, s/veh					17.3			18.1			18.0	
Approach LOS					B			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2				6		8
Phs Duration (G+Y+Rc), s		25.0				25.0		45.0
Change Period (Y+Rc), s		* 4.6				* 4.6		4.8
Max Green Setting (Gmax), s		* 20				* 20		40.2
Max Q Clear Time (g_c+I1), s		2.9				2.9		13.9
Green Ext Time (p_c), s		0.2				0.2		4.4

Intersection Summary	
HCM 2010 Ctrl Delay	17.3
HCM 2010 LOS	B

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	0	111	471	82	80	507	0	0	482	66
Number				3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln				1900	1863	1863	1900	1863	0	0	1863	1900
Adj Flow Rate, veh/h				121	512	27	87	551	0	0	524	56
Adj No. of Lanes				0	2	1	0	2	0	0	2	0
Peak Hour Factor				0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %				2	2	2	2	2	0	0	2	2
Cap, veh/h				237	1059	570	224	1348	0	0	1623	173
Arrive On Green				0.12	0.12	0.12	1.00	1.00	0.00	0.00	0.50	0.50
Sat Flow, veh/h				657	2942	1583	314	2766	0	0	3321	344
Grp Volume(v), veh/h				337	296	27	309	329	0	0	287	293
Grp Sat Flow(s),veh/h/ln				1830	1770	1583	1385	1610	0	0	1770	1802
Q Serve(g_s), s				12.1	10.9	1.1	1.3	0.0	0.0	0.0	6.7	6.8
Cycle Q Clear(g_c), s				12.1	10.9	1.1	8.1	0.0	0.0	0.0	6.7	6.8
Prop In Lane				0.36		1.00	0.28		0.00	0.00		0.19
Lane Grp Cap(c), veh/h				659	637	570	762	810	0	0	890	906
V/C Ratio(X)				0.51	0.46	0.05	0.41	0.41	0.00	0.00	0.32	0.32
Avail Cap(c_a), veh/h				659	637	570	762	810	0	0	890	906
HCM Platoon Ratio				0.33	0.33	0.33	2.00	2.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh				25.1	24.6	20.2	0.1	0.0	0.0	0.0	10.3	10.3
Incr Delay (d2), s/veh				2.8	2.4	0.2	1.6	1.5	0.0	0.0	1.0	0.9
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				6.6	5.8	0.5	0.7	0.3	0.0	0.0	3.5	3.6
LnGrp Delay(d),s/veh				27.9	27.0	20.4	1.7	1.5	0.0	0.0	11.3	11.3
LnGrp LOS				C	C	C	A	A			B	B
Approach Vol, veh/h					660			638			580	
Approach Delay, s/veh					27.2			1.6			11.3	
Approach LOS					C			A			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2				6		8
Phs Duration (G+Y+Rc), s		40.0				40.0		30.0
Change Period (Y+Rc), s		* 4.8				* 4.8		4.8
Max Green Setting (Gmax), s		* 35				* 35		25.2
Max Q Clear Time (g_c+I1), s		10.1				8.8		14.1
Green Ext Time (p_c), s		8.8				9.0		2.9

Intersection Summary	
HCM 2010 Ctrl Delay	13.6
HCM 2010 LOS	B

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	103	1033	82	0	0	0	0	470	120	46	492	0
Number	7	4	14				5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1863				0	1863	1900	1900	1863	0
Adj Flow Rate, veh/h	112	1123	51				0	511	94	50	535	0
Adj No. of Lanes	0	2	1				0	2	0	0	2	0
Peak Hour Factor	0.92	0.92	0.92				0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2				0	2	2	2	2	0
Cap, veh/h	162	1708	819				0	1042	191	115	1054	0
Arrive On Green	0.52	0.52	0.52				0.00	0.35	0.35	0.35	0.35	0.00
Sat Flow, veh/h	313	3303	1583				0	3082	547	157	3109	0
Grp Volume(v), veh/h	660	575	51				0	302	303	300	285	0
Grp Sat Flow(s),veh/h/ln	1847	1770	1583				0	1770	1766	1570	1610	0
Q Serve(g_s), s	18.8	16.3	1.1				0.0	9.4	9.5	0.9	9.8	0.0
Cycle Q Clear(g_c), s	18.8	16.3	1.1				0.0	9.4	9.5	10.3	9.8	0.0
Prop In Lane	0.17		1.00				0.00		0.31	0.17		0.00
Lane Grp Cap(c), veh/h	955	915	819				0	617	616	607	561	0
V/C Ratio(X)	0.69	0.63	0.06				0.00	0.49	0.49	0.49	0.51	0.00
Avail Cap(c_a), veh/h	955	915	819				0	617	616	607	561	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00				0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	12.7	12.1	8.4				0.0	17.9	17.9	17.8	18.1	0.0
Incr Delay (d2), s/veh	4.1	3.3	0.1				0.0	2.8	2.8	2.8	3.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	10.6	8.7	0.5				0.0	5.0	5.0	5.1	4.9	0.0
LnGrp Delay(d),s/veh	16.8	15.3	8.6				0.0	20.7	20.7	20.6	21.3	0.0
LnGrp LOS	B	B	A					C	C	C	C	
Approach Vol, veh/h		1286						605			585	
Approach Delay, s/veh		15.8						20.7			21.0	
Approach LOS		B						C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		29.0		41.0		29.0		
Change Period (Y+Rc), s		* 4.6		* 4.8		* 4.6		
Max Green Setting (Gmax), s		* 24		* 36		* 24		
Max Q Clear Time (g_c+I1), s		11.5		20.8		12.3		
Green Ext Time (p_c), s		6.1		7.7		5.9		

Intersection Summary	
HCM 2010 Ctrl Delay	18.2
HCM 2010 LOS	B

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	0	27	530	27	28	62	0	0	107	20
Number				3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln				1900	1863	1863	1900	1863	0	0	1863	1900
Adj Flow Rate, veh/h				29	576	14	30	67	0	0	116	11
Adj No. of Lanes				0	2	1	0	1	0	0	1	0
Peak Hour Factor				0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %				2	2	2	2	2	0	0	2	2
Cap, veh/h				86	1798	823	211	437	0	0	584	55
Arrive On Green				0.52	0.52	0.52	0.35	0.35	0.00	0.00	0.35	0.35
Sat Flow, veh/h				166	3458	1583	411	1255	0	0	1676	159
Grp Volume(v), veh/h				324	281	14	97	0	0	0	0	127
Grp Sat Flow(s),veh/h/ln				1854	1770	1583	1665	0	0	0	0	1835
Q Serve(g_s), s				7.1	6.3	0.3	0.0	0.0	0.0	0.0	0.0	3.4
Cycle Q Clear(g_c), s				7.1	6.3	0.3	2.5	0.0	0.0	0.0	0.0	3.4
Prop In Lane				0.09		1.00	0.31		0.00	0.00		0.09
Lane Grp Cap(c), veh/h				964	920	823	648	0	0	0	0	640
V/C Ratio(X)				0.34	0.31	0.02	0.15	0.00	0.00	0.00	0.00	0.20
Avail Cap(c_a), veh/h				964	920	823	648	0	0	0	0	640
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00	1.00
Uniform Delay (d), s/veh				9.8	9.6	8.1	15.7	0.0	0.0	0.0	0.0	16.0
Incr Delay (d2), s/veh				0.9	0.9	0.0	0.5	0.0	0.0	0.0	0.0	0.7
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				3.9	3.3	0.1	1.4	0.0	0.0	0.0	0.0	1.8
LnGrp Delay(d),s/veh				10.7	10.4	8.2	16.2	0.0	0.0	0.0	0.0	16.7
LnGrp LOS				B	B	A	B					B
Approach Vol, veh/h					619			97			127	
Approach Delay, s/veh					10.5			16.2			16.7	
Approach LOS					B			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2				6		8
Phs Duration (G+Y+Rc), s		29.0				29.0		41.0
Change Period (Y+Rc), s		* 4.6				* 4.6		4.6
Max Green Setting (Gmax), s		* 24				* 24		36.4
Max Q Clear Time (g_c+I1), s		4.5				5.4		9.1
Green Ext Time (p_c), s		1.2				1.1		3.8

Intersection Summary	
HCM 2010 Ctrl Delay	12.1
HCM 2010 LOS	B

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	5	1074	59	0	0	0	0	74	90	29	93	0
Number	7	4	14				5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1863				0	1863	1900	1900	1863	0
Adj Flow Rate, veh/h	5	1167	37				0	80	31	32	101	0
Adj No. of Lanes	0	2	1				0	1	0	0	1	0
Peak Hour Factor	0.92	0.92	0.92				0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2				0	2	2	2	2	0
Cap, veh/h	9	2185	956				0	339	131	137	386	0
Arrive On Green	0.60	0.60	0.60				0.00	0.26	0.26	0.35	0.35	0.00
Sat Flow, veh/h	15	3617	1583				0	1279	496	277	1458	0
Grp Volume(v), veh/h	628	544	37				0	0	111	133	0	0
Grp Sat Flow(s),veh/h/ln	1862	1770	1583				0	0	1775	1736	0	0
Q Serve(g_s), s	14.2	12.3	0.7				0.0	0.0	3.4	0.0	0.0	0.0
Cycle Q Clear(g_c), s	14.2	12.3	0.7				0.0	0.0	3.4	3.6	0.0	0.0
Prop In Lane	0.01		1.00				0.00		0.28	0.24		0.00
Lane Grp Cap(c), veh/h	1125	1069	956				0	0	470	523	0	0
V/C Ratio(X)	0.56	0.51	0.04				0.00	0.00	0.24	0.25	0.00	0.00
Avail Cap(c_a), veh/h	1125	1069	956				0	0	470	523	0	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.33	1.33	1.00
Upstream Filter(I)	1.00	1.00	1.00				0.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	8.3	7.9	5.6				0.0	0.0	20.2	17.9	0.0	0.0
Incr Delay (d2), s/veh	2.0	1.7	0.1				0.0	0.0	1.2	1.2	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.8	6.4	0.3				0.0	0.0	1.8	2.0	0.0	0.0
LnGrp Delay(d),s/veh	10.3	9.7	5.7				0.0	0.0	21.4	19.0	0.0	0.0
LnGrp LOS	B	A	A						C	B		
Approach Vol, veh/h		1209						111			133	
Approach Delay, s/veh		9.9						21.4			19.0	
Approach LOS		A						C			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		23.2		47.0		23.2		
Change Period (Y+Rc), s		* 4.6		4.6		* 4.6		
Max Green Setting (Gmax), s		* 18		42.4		* 19		
Max Q Clear Time (g_c+I1), s		5.4		16.2		5.6		
Green Ext Time (p_c), s		1.1		9.3		1.1		

Intersection Summary	
HCM 2010 Ctrl Delay	11.6
HCM 2010 LOS	B

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	0	30	529	18	16	46	0	0	56	8
Number				3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln				1900	1863	1863	1900	1863	0	0	1863	1900
Adj Flow Rate, veh/h				33	575	5	17	50	0	0	61	4
Adj No. of Lanes				0	2	1	0	1	0	0	1	0
Peak Hour Factor				0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %				2	2	2	2	2	0	0	2	2
Cap, veh/h				53	974	449	264	714	0	0	873	57
Arrive On Green				0.28	0.28	0.28	0.50	0.50	0.00	0.00	0.50	0.50
Sat Flow, veh/h				188	3435	1583	321	1414	0	0	1729	113
Grp Volume(v), veh/h				325	283	5	67	0	0	0	0	65
Grp Sat Flow(s),veh/h/ln				1853	1770	1583	1735	0	0	0	0	1843
Q Serve(g_s), s				6.8	6.0	0.1	0.0	0.0	0.0	0.0	0.0	0.8
Cycle Q Clear(g_c), s				6.8	6.0	0.1	0.8	0.0	0.0	0.0	0.0	0.8
Prop In Lane				0.10		1.00	0.25		0.00	0.00		0.06
Lane Grp Cap(c), veh/h				525	502	449	977	0	0	0	0	930
V/C Ratio(X)				0.62	0.56	0.01	0.07	0.00	0.00	0.00	0.00	0.07
Avail Cap(c_a), veh/h				1595	1523	1363	977	0	0	0	0	930
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00	1.00
Uniform Delay (d), s/veh				13.8	13.6	11.4	5.6	0.0	0.0	0.0	0.0	5.6
Incr Delay (d2), s/veh				1.2	1.0	0.0	0.1	0.0	0.0	0.0	0.0	0.1
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				3.6	3.0	0.0	0.4	0.0	0.0	0.0	0.0	0.4
LnGrp Delay(d),s/veh				15.0	14.6	11.4	5.8	0.0	0.0	0.0	0.0	5.8
LnGrp LOS				B	B	B	A					A
Approach Vol, veh/h					613			67			65	
Approach Delay, s/veh					14.8			5.8			5.8	
Approach LOS					B			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2				6		8
Phs Duration (G+Y+Rc), s		27.0				27.0		17.4
Change Period (Y+Rc), s		* 4.6				* 4.6		4.8
Max Green Setting (Gmax), s		* 22				* 22		38.2
Max Q Clear Time (g_c+I1), s		2.8				2.8		8.8
Green Ext Time (p_c), s		0.6				0.6		3.8

Intersection Summary	
HCM 2010 Ctrl Delay	13.2
HCM 2010 LOS	B

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	6	1053	14	0	0	0	0	63	75	31	59	0
Number	7	4	14				5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1863				0	1863	1900	1900	1863	0
Adj Flow Rate, veh/h	7	1145	8				0	68	15	34	64	0
Adj No. of Lanes	0	2	1				0	1	0	0	1	0
Peak Hour Factor	0.92	0.92	0.92				0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2				0	2	2	2	2	0
Cap, veh/h	13	2280	1000				0	346	76	172	290	0
Arrive On Green	0.63	0.63	0.63				0.00	0.23	0.23	0.23	0.23	0.00
Sat Flow, veh/h	21	3610	1583				0	1479	326	438	1239	0
Grp Volume(v), veh/h	618	534	8				0	0	83	98	0	0
Grp Sat Flow(s),veh/h/ln	1862	1770	1583				0	0	1805	1678	0	0
Q Serve(g_s), s	12.8	11.2	0.1				0.0	0.0	2.6	0.0	0.0	0.0
Cycle Q Clear(g_c), s	12.8	11.2	0.1				0.0	0.0	2.6	3.0	0.0	0.0
Prop In Lane	0.01		1.00				0.00		0.18	0.35		0.00
Lane Grp Cap(c), veh/h	1176	1117	1000				0	0	423	462	0	0
V/C Ratio(X)	0.53	0.48	0.01				0.00	0.00	0.20	0.21	0.00	0.00
Avail Cap(c_a), veh/h	1176	1117	1000				0	0	423	462	0	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00				0.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	7.1	6.8	4.8				0.0	0.0	21.5	21.7	0.0	0.0
Incr Delay (d2), s/veh	1.7	1.5	0.0				0.0	0.0	1.0	1.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.1	5.8	0.1				0.0	0.0	1.4	1.7	0.0	0.0
LnGrp Delay(d),s/veh	8.8	8.3	4.8				0.0	0.0	22.5	22.7	0.0	0.0
LnGrp LOS	A	A	A						C	C		
Approach Vol, veh/h		1160						83			98	
Approach Delay, s/veh		8.5						22.5			22.7	
Approach LOS		A						C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		21.0		49.0		21.0		
Change Period (Y+Rc), s		* 4.6		* 4.8		* 4.6		
Max Green Setting (Gmax), s		* 16		* 44		* 16		
Max Q Clear Time (g_c+I1), s		4.6		14.8		5.0		
Green Ext Time (p_c), s		0.7		9.3		0.7		

Intersection Summary	
HCM 2010 Ctrl Delay	10.4
HCM 2010 LOS	B

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	*JCH*	Intersection	*Commerce St/Navidad St*
Agency/Co.	*CH2M HILL*	Jurisdiction	*City of San Antonio*
Date Performed	*3/25/2015*	Analysis Year	*2020 No-Build*
Analysis Time Period	*AM Peak Hour*		

Project Description *Commerce/Buena Vista One-Way Couplet Conversion Traff. Study*

East/West Street: *Commerce Street* | North/South Street: *Navidad Street*

Intersection Orientation: *East-West* | Study Period (hrs): *0.25*

Vehicle Volumes and Adjustments

Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)				*20*	*701*	*20*
Peak-Hour Factor, PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Hourly Flow Rate, HFR (veh/h)	*0*	*0*	*0*	*20*	*701*	*20*
Percent Heavy Vehicles	*0*	--	--	*0*	--	--
Median Type	*Undivided*					
RT Channelized			*0*			*0*
Lanes	*0*	*0*	*0*	*0*	*2*	*0*
Configuration				*LT*		*TR*
Upstream Signal		*0*			*0*	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)	*20*	*20*			*20*	*20*
Peak-Hour Factor, PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Hourly Flow Rate, HFR (veh/h)	*20*	*20*	*0*	*0*	*20*	*20*
Percent Heavy Vehicles	*0*	*0*	*0*	*0*	*0*	*0*
Percent Grade (%)		*0*			*0*	
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*0*	*1*	*0*	*0*	*1*	*0*
Configuration	*LT*					*TR*

Delay, Queue Length, and Level of Service

Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		*LT*	*LT*					*TR*
v (veh/h)		*20*	*40*					*40*
C (m) (veh/h)		*1636*	*405*					*454*
v/c		*0.01*	*0.10*					*0.09*
95% queue length		*0.04*	*0.33*					*0.29*
Control Delay (s/veh)		*7.2*	*14.9*					*13.7*
LOS		*A*	*B*					*B*
Approach Delay (s/veh)	--	--	*14.9*			*13.7*		
Approach LOS	--	--	*B*			*B*		

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2020 No-Build PM Peak Hour

HCM 2010 Signalized Intersection Summary
1: Pecos Street & Commerce Street

4/17/2015

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	0	270	525	0	0	0	0	0	743	414
Number				3	8	18				1	6	16
Initial Q (Qb), veh				0	0	0				0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00				1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln				1863	1863	0				0	1863	1900
Adj Flow Rate, veh/h				293	571	0				0	808	340
Adj No. of Lanes				1	3	0				0	3	0
Peak Hour Factor				0.92	0.92	0.92				0.92	0.92	0.92
Percent Heavy Veh, %				2	2	0				0	2	2
Cap, veh/h				861	2054	0				0	1436	601
Arrive On Green				0.40	0.40	0.00				0.00	0.41	0.41
Sat Flow, veh/h				1774	5253	0				0	3688	1472
Grp Volume(v), veh/h				293	571	0				0	778	370
Grp Sat Flow(s),veh/h/ln				1774	1695	0				0	1695	1603
Q Serve(g_s), s				5.9	3.8	0.0				0.0	8.8	8.9
Cycle Q Clear(g_c), s				5.9	3.8	0.0				0.0	8.8	8.9
Prop In Lane				1.00		0.00				0.00		0.92
Lane Grp Cap(c), veh/h				861	2054	0				0	1383	654
V/C Ratio(X)				0.34	0.28	0.00				0.00	0.56	0.57
Avail Cap(c_a), veh/h				861	2054	0				0	1383	654
HCM Platoon Ratio				1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)				1.00	1.00	0.00				0.00	1.00	1.00
Uniform Delay (d), s/veh				10.6	10.0	0.0				0.0	11.4	11.4
Incr Delay (d2), s/veh				1.1	0.3	0.0				0.0	1.7	3.5
Initial Q Delay(d3),s/veh				0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				3.1	1.8	0.0				0.0	4.4	4.5
LnGrp Delay(d),s/veh				11.7	10.3	0.0				0.0	13.0	14.9
LnGrp LOS				B	B						B	B
Approach Vol, veh/h					864						1148	
Approach Delay, s/veh					10.8						13.6	
Approach LOS					B						B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs						6		8
Phs Duration (G+Y+Rc), s						25.0		25.0
Change Period (Y+Rc), s						4.6		4.8
Max Green Setting (Gmax), s						20.4		20.2
Max Q Clear Time (g_c+I1), s						10.9		7.9
Green Ext Time (p_c), s						5.2		3.7

Intersection Summary	
HCM 2010 Ctrl Delay	12.4
HCM 2010 LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	444	209	0	0	0	0	0	0	131	994	0
Number	7	4	14							1	6	16
Initial Q (Qb), veh	0	0	0							0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00							1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00							1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1863	1900							1900	1863	0
Adj Flow Rate, veh/h	0	483	207							142	1080	0
Adj No. of Lanes	0	3	0							0	4	0
Peak Hour Factor	0.92	0.92	0.92							0.92	0.92	0.92
Percent Heavy Veh, %	0	2	2							2	2	0
Cap, veh/h	0	1428	590							332	2240	0
Arrive On Green	0.00	0.40	0.40							0.13	0.13	0.00
Sat Flow, veh/h	0	3703	1460							566	5727	0
Grp Volume(v), veh/h	0	462	228							357	865	0
Grp Sat Flow(s),veh/h/ln	0	1695	1605							1682	1458	0
Q Serve(g_s), s	0.0	4.7	4.9							6.8	9.2	0.0
Cycle Q Clear(g_c), s	0.0	4.7	4.9							9.7	9.2	0.0
Prop In Lane	0.00		0.91							0.40		0.00
Lane Grp Cap(c), veh/h	0	1370	648							787	1784	0
V/C Ratio(X)	0.00	0.34	0.35							0.45	0.48	0.00
Avail Cap(c_a), veh/h	0	1370	648							787	1784	0
HCM Platoon Ratio	1.00	1.00	1.00							0.33	0.33	1.00
Upstream Filter(I)	0.00	1.00	1.00							1.00	1.00	0.00
Uniform Delay (d), s/veh	0.0	10.3	10.3							16.9	16.8	0.0
Incr Delay (d2), s/veh	0.0	0.7	1.5							1.9	0.9	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0							0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	2.3	2.4							5.0	3.8	0.0
LnGrp Delay(d),s/veh	0.0	11.0	11.8							18.8	17.7	0.0
LnGrp LOS		B	B							B	B	
Approach Vol, veh/h		690									1222	
Approach Delay, s/veh		11.2									18.0	
Approach LOS		B									B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6		
Phs Duration (G+Y+Rc), s				25.0		25.0		
Change Period (Y+Rc), s				* 4.8		4.6		
Max Green Setting (Gmax), s				* 20		20.4		
Max Q Clear Time (g_c+I1), s				6.9		11.7		
Green Ext Time (p_c), s				3.8		5.0		

Intersection Summary	
HCM 2010 Ctrl Delay	15.6
HCM 2010 LOS	B

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	0	19	880	8	7	4	0	0	3	31
Number				3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln				1863	1863	1900	1900	1863	0	0	1863	1900
Adj Flow Rate, veh/h				21	957	7	8	4	0	0	3	8
Adj No. of Lanes				1	3	0	0	1	0	0	1	0
Peak Hour Factor				0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %				2	2	2	2	2	0	0	2	2
Cap, veh/h				937	2750	20	392	173	0	0	130	346
Arrive On Green				0.53	0.53	0.53	0.29	0.29	0.00	0.00	0.29	0.29
Sat Flow, veh/h				1774	5208	38	946	602	0	0	450	1201
Grp Volume(v), veh/h				21	623	341	12	0	0	0	0	11
Grp Sat Flow(s),veh/h/ln				1774	1695	1856	1548	0	0	0	0	1651
Q Serve(g_s), s				0.3	5.3	5.3	0.0	0.0	0.0	0.0	0.0	0.2
Cycle Q Clear(g_c), s				0.3	5.3	5.3	0.2	0.0	0.0	0.0	0.0	0.2
Prop In Lane				1.00		0.02	0.67		0.00	0.00		0.73
Lane Grp Cap(c), veh/h				937	1790	980	566	0	0	0	0	475
V/C Ratio(X)				0.02	0.35	0.35	0.02	0.00	0.00	0.00	0.00	0.02
Avail Cap(c_a), veh/h				937	1790	980	566	0	0	0	0	475
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00	1.00
Uniform Delay (d), s/veh				5.6	6.8	6.8	12.8	0.0	0.0	0.0	0.0	12.8
Incr Delay (d2), s/veh				0.0	0.5	1.0	0.1	0.0	0.0	0.0	0.0	0.1
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				0.1	2.6	2.9	0.1	0.0	0.0	0.0	0.0	0.1
LnGrp Delay(d),s/veh				5.7	7.4	7.8	12.8	0.0	0.0	0.0	0.0	12.8
LnGrp LOS				A	A	A	B					B
Approach Vol, veh/h					985			12			11	
Approach Delay, s/veh					7.5			12.8			12.8	
Approach LOS					A			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2				6		8
Phs Duration (G+Y+Rc), s		19.0				19.0		31.0
Change Period (Y+Rc), s		* 4.6				* 4.6		4.6
Max Green Setting (Gmax), s		* 14				* 14		26.4
Max Q Clear Time (g_c+I1), s		2.2				2.2		7.3
Green Ext Time (p_c), s		0.0				0.0		6.1

Intersection Summary	
HCM 2010 Ctrl Delay	7.6
HCM 2010 LOS	A

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	0	39	949	40	294	491	0	0	384	230
Number				3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln				1900	1863	1863	1863	1863	0	0	1863	1900
Adj Flow Rate, veh/h				42	1032	11	320	534	0	0	417	200
Adj No. of Lanes				0	2	1	1	2	0	0	2	0
Peak Hour Factor				0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %				2	2	2	2	2	0	0	2	2
Cap, veh/h				45	1152	523	363	1883	0	0	610	290
Arrive On Green				0.33	0.33	0.33	0.20	0.53	0.00	0.00	0.26	0.26
Sat Flow, veh/h				136	3490	1583	1774	3632	0	0	2424	1106
Grp Volume(v), veh/h				575	499	11	320	534	0	0	315	302
Grp Sat Flow(s),veh/h/ln				1856	1770	1583	1774	1770	0	0	1770	1668
Q Serve(g_s), s				21.1	18.5	0.3	12.3	5.8	0.0	0.0	11.3	11.5
Cycle Q Clear(g_c), s				21.1	18.5	0.3	12.3	5.8	0.0	0.0	11.3	11.5
Prop In Lane				0.07		1.00	1.00		0.00	0.00		0.66
Lane Grp Cap(c), veh/h				612	584	523	363	1883	0	0	463	436
V/C Ratio(X)				0.94	0.85	0.02	0.88	0.28	0.00	0.00	0.68	0.69
Avail Cap(c_a), veh/h				612	584	523	363	1883	0	0	463	436
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh				22.9	22.0	15.9	27.1	9.1	0.0	0.0	23.3	23.4
Incr Delay (d2), s/veh				24.1	14.8	0.1	24.9	0.4	0.0	0.0	7.9	8.7
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				14.8	11.4	0.2	8.5	2.9	0.0	0.0	6.4	6.3
LnGrp Delay(d),s/veh				46.9	36.7	16.0	52.1	9.4	0.0	0.0	31.2	32.1
LnGrp LOS				D	D	B	D	A			C	C
Approach Vol, veh/h					1085			854			617	
Approach Delay, s/veh					41.9			25.4			31.6	
Approach LOS					D			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2			5	6		8
Phs Duration (G+Y+Rc), s		42.3			19.3	23.0		28.0
Change Period (Y+Rc), s		* 4.9			* 4.9	* 4.6		4.8
Max Green Setting (Gmax), s		* 37			* 14	* 18		23.2
Max Q Clear Time (g_c+I1), s		7.8			14.3	13.5		23.1
Green Ext Time (p_c), s		5.0			0.1	1.7		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	33.9
HCM 2010 LOS	C

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

HCM Signalized Intersection Capacity Analysis
5: Buena Vista Street So. Frontage & Frio Street & Buena Vista Street

4/17/2015

Movement	EBL	EBT	EBR	NBT	NBR	SBL	SBT	NEL	NER	NER2
Lane Configurations										
Volume (vph)	144	501	155	620	119	73	382	19	8	15
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0		4.0		4.0	4.0	4.0		4.0
Lane Util. Factor		0.91		0.95		1.00	0.95	1.00		0.95
Frt		0.97		0.98		1.00	1.00	0.95		0.85
Flt Protected		0.99		1.00		0.95	1.00	0.97		1.00
Satd. Flow (prot)		4894		3454		1770	3539	1711		1504
Flt Permitted		0.99		1.00		0.19	1.00	0.97		1.00
Satd. Flow (perm)		4894		3454		349	3539	1711		1504
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	157	545	168	674	129	79	415	21	9	16
RTOR Reduction (vph)	0	0	0	15	0	0	0	27	0	12
Lane Group Flow (vph)	0	870	0	788	0	79	415	5	0	2
Turn Type	Perm	NA		NA		pm+pt	NA	Prot		Prot
Protected Phases		4		2		1	6	9		9
Permitted Phases	4					6				
Actuated Green, G (s)		25.0		37.9		47.9	47.9	16.0		16.0
Effective Green, g (s)		25.0		37.9		47.9	47.9	16.0		16.0
Actuated g/C Ratio		0.25		0.38		0.47	0.47	0.16		0.16
Clearance Time (s)		4.0		4.0		4.0	4.0	4.0		4.0
Vehicle Extension (s)		3.0		3.0		3.0	3.0	3.0		3.0
Lane Grp Cap (vph)		1212		1297		250	1680	271		238
v/s Ratio Prot				c0.23		c0.02	0.12	c0.00		0.00
v/s Ratio Perm		0.18				0.13				
v/c Ratio		0.72		0.61		0.32	0.25	0.02		0.01
Uniform Delay, d1		34.7		25.5		16.7	15.8	35.8		35.8
Progression Factor		1.00		1.00		1.00	1.00	1.00		1.00
Incremental Delay, d2		2.1		2.1		0.7	0.4	0.1		0.1
Delay (s)		36.8		27.6		17.4	16.1	36.0		35.8
Level of Service		D		C		B	B	D		D
Approach Delay (s)		36.8		27.6			16.3	35.9		
Approach LOS		D		C			B	D		

Intersection Summary			
HCM 2000 Control Delay	28.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	100.9	Sum of lost time (s)	16.0
Intersection Capacity Utilization	57.7%	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 (veh/h)	0	0	0	110	1089	63	48	288	0	0	282	182
Number				3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln				1900	1863	1863	1900	1863	0	0	1863	1900
Adj Flow Rate, veh/h				120	1184	33	52	313	0	0	307	158
Adj No. of Lanes				0	2	1	0	2	0	0	2	0
Peak Hour Factor				0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %				2	2	2	2	2	0	0	2	2
Cap, veh/h				170	1762	846	159	907	0	0	763	384
Arrive On Green				0.53	0.53	0.53	0.67	0.67	0.00	0.00	0.33	0.33
Sat Flow, veh/h				318	3298	1583	279	2798	0	0	2375	1148
Grp Volume(v), veh/h				697	607	33	184	181	0	0	236	229
Grp Sat Flow(s),veh/h/ln				1847	1770	1583	1382	1610	0	0	1770	1660
Q Serve(g_s), s				19.8	17.0	0.7	0.8	3.4	0.0	0.0	7.2	7.4
Cycle Q Clear(g_c), s				19.8	17.0	0.7	8.3	3.4	0.0	0.0	7.2	7.4
Prop In Lane				0.17		1.00	0.28		0.00	0.00		0.69
Lane Grp Cap(c), veh/h				987	945	846	528	538	0	0	592	555
V/C Ratio(X)				0.71	0.64	0.04	0.35	0.34	0.00	0.00	0.40	0.41
Avail Cap(c_a), veh/h				987	945	846	528	538	0	0	592	555
HCM Platoon Ratio				1.00	1.00	1.00	2.00	2.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh				12.2	11.6	7.8	8.3	8.3	0.0	0.0	17.9	18.0
Incr Delay (d2), s/veh				4.3	3.3	0.1	1.8	1.7	0.0	0.0	2.0	2.3
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				11.0	9.1	0.3	1.7	1.7	0.0	0.0	3.8	3.7
LnGrp Delay(d),s/veh				16.4	14.9	7.8	10.1	10.0	0.0	0.0	19.9	20.2
LnGrp LOS				B	B	A	B	A			B	C
Approach Vol, veh/h					1337			365			465	
Approach Delay, s/veh					15.5			10.0			20.1	
Approach LOS					B			B			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2				6		8
Phs Duration (G+Y+Rc), s		28.0				28.0		42.0
Change Period (Y+Rc), s		* 4.6				* 4.6		4.6
Max Green Setting (Gmax), s		* 23				* 23		37.4
Max Q Clear Time (g_c+I1), s		10.3				9.4		21.8
Green Ext Time (p_c), s		4.3				4.5		7.9

Intersection Summary	
HCM 2010 Ctrl Delay	15.6
HCM 2010 LOS	B

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	116	540	32	0	0	0	0	274	64	48	282	0
Number	7	4	14				5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1863				0	1863	1900	1900	1863	0
Adj Flow Rate, veh/h	126	587	15				0	298	38	52	307	0
Adj No. of Lanes	0	2	1				0	2	0	0	2	0
Peak Hour Factor	0.92	0.92	0.92				0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2				0	2	2	2	2	0
Cap, veh/h	288	1420	751				0	1238	156	202	1116	0
Arrive On Green	0.47	0.47	0.47				0.00	0.39	0.39	0.78	0.78	0.00
Sat Flow, veh/h	608	2994	1583				0	3255	400	347	2936	0
Grp Volume(v), veh/h	380	333	15				0	166	170	186	173	0
Grp Sat Flow(s),veh/h/ln	1832	1770	1583				0	1770	1792	1588	1610	0
Q Serve(g_s), s	9.6	8.5	0.4				0.0	4.4	4.5	0.0	2.1	0.0
Cycle Q Clear(g_c), s	9.6	8.5	0.4				0.0	4.4	4.5	1.9	2.1	0.0
Prop In Lane	0.33		1.00				0.00		0.22	0.28		0.00
Lane Grp Cap(c), veh/h	869	839	751				0	693	702	687	630	0
V/C Ratio(X)	0.44	0.40	0.02				0.00	0.24	0.24	0.27	0.27	0.00
Avail Cap(c_a), veh/h	869	839	751				0	693	702	687	630	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	2.00	2.00	1.00
Upstream Filter(I)	1.00	1.00	1.00				0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	12.2	11.9	9.8				0.0	14.3	14.3	4.8	4.9	0.0
Incr Delay (d2), s/veh	1.6	1.4	0.0				0.0	0.8	0.8	1.0	1.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.2	4.5	0.2				0.0	2.3	2.3	1.1	1.1	0.0
LnGrp Delay(d),s/veh	13.8	13.3	9.8				0.0	15.1	15.1	5.8	5.9	0.0
LnGrp LOS	B	B	A					B	B	A	A	
Approach Vol, veh/h		728						336			359	
Approach Delay, s/veh		13.5						15.1			5.9	
Approach LOS		B						B			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		32.0		38.0		32.0		
Change Period (Y+Rc), s		* 4.6		* 4.8		* 4.6		
Max Green Setting (Gmax), s		* 27		* 33		* 27		
Max Q Clear Time (g_c+I1), s		6.5		11.6		4.1		
Green Ext Time (p_c), s		4.2		4.4		4.4		

Intersection Summary	
HCM 2010 Ctrl Delay	12.0
HCM 2010 LOS	B

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	0	15	1276	13	14	3	0	0	12	8
Number				3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln				1900	1863	1863	1900	1863	0	0	1863	1900
Adj Flow Rate, veh/h				16	1387	10	15	3	0	0	13	0
Adj No. of Lanes				0	2	1	0	1	0	0	1	0
Peak Hour Factor				0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %				2	2	2	2	2	0	0	2	2
Cap, veh/h				28	2534	1117	285	49	0	0	303	0
Arrive On Green				0.71	0.71	0.71	0.16	0.16	0.00	0.00	0.16	0.00
Sat Flow, veh/h				40	3591	1583	1170	299	0	0	1863	0
Grp Volume(v), veh/h				752	651	10	18	0	0	0	13	0
Grp Sat Flow(s),veh/h/ln				1861	1770	1583	1469	0	0	0	1863	0
Q Serve(g_s), s				14.0	12.0	0.1	0.2	0.0	0.0	0.0	0.4	0.0
Cycle Q Clear(g_c), s				14.0	12.0	0.1	0.6	0.0	0.0	0.0	0.4	0.0
Prop In Lane				0.02		1.00	0.83		0.00	0.00		0.00
Lane Grp Cap(c), veh/h				1313	1249	1117	334	0	0	0	303	0
V/C Ratio(X)				0.57	0.52	0.01	0.05	0.00	0.00	0.00	0.04	0.00
Avail Cap(c_a), veh/h				1313	1249	1117	334	0	0	0	303	0
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	1.00	1.00	1.00	0.00	0.00	0.00	1.00	0.00
Uniform Delay (d), s/veh				5.1	4.8	3.1	24.8	0.0	0.0	0.0	24.7	0.0
Incr Delay (d2), s/veh				1.8	1.6	0.0	0.3	0.0	0.0	0.0	0.3	0.0
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				7.6	6.3	0.1	0.3	0.0	0.0	0.0	0.2	0.0
LnGrp Delay(d),s/veh				6.9	6.4	3.1	25.1	0.0	0.0	0.0	25.0	0.0
LnGrp LOS				A	A	A	C				C	
Approach Vol, veh/h					1413			18			13	
Approach Delay, s/veh					6.6			25.1			25.0	
Approach LOS					A			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2				6		8
Phs Duration (G+Y+Rc), s		16.0				16.0		54.0
Change Period (Y+Rc), s		* 4.6				* 4.6		4.6
Max Green Setting (Gmax), s		* 11				* 11		49.4
Max Q Clear Time (g_c+I1), s		2.6				2.4		16.0
Green Ext Time (p_c), s		0.0				0.0		12.4

Intersection Summary	
HCM 2010 Ctrl Delay	7.0
HCM 2010 LOS	A

Notes

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	0	69	1186	20	119	65	0	0	66	10
Number				3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln				1900	1863	1863	1900	1863	0	0	1863	1900
Adj Flow Rate, veh/h				75	1289	13	129	71	0	0	72	3
Adj No. of Lanes				0	2	1	0	1	0	0	1	0
Peak Hour Factor				0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %				2	2	2	2	2	0	0	2	2
Cap, veh/h				104	1873	864	361	181	0	0	568	24
Arrive On Green				0.55	0.55	0.55	0.32	0.32	0.00	0.00	0.32	0.32
Sat Flow, veh/h				190	3432	1583	864	567	0	0	1776	74
Grp Volume(v), veh/h				730	634	13	200	0	0	0	0	75
Grp Sat Flow(s),veh/h/ln				1853	1770	1583	1431	0	0	0	0	1850
Q Serve(g_s), s				20.7	17.7	0.3	6.2	0.0	0.0	0.0	0.0	2.0
Cycle Q Clear(g_c), s				20.7	17.7	0.3	8.2	0.0	0.0	0.0	0.0	2.0
Prop In Lane				0.10		1.00	0.64		0.00	0.00		0.04
Lane Grp Cap(c), veh/h				1011	966	864	543	0	0	0	0	592
V/C Ratio(X)				0.72	0.66	0.02	0.37	0.00	0.00	0.00	0.00	0.13
Avail Cap(c_a), veh/h				1011	966	864	543	0	0	0	0	592
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00	1.00
Uniform Delay (d), s/veh				11.9	11.3	7.3	19.1	0.0	0.0	0.0	0.0	16.9
Incr Delay (d2), s/veh				4.5	3.5	0.0	1.9	0.0	0.0	0.0	0.0	0.4
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				11.6	9.4	0.1	3.3	0.0	0.0	0.0	0.0	1.1
LnGrp Delay(d),s/veh				16.4	14.7	7.3	21.0	0.0	0.0	0.0	0.0	17.3
LnGrp LOS				B	B	A	C					B
Approach Vol, veh/h					1377			200			75	
Approach Delay, s/veh					15.5			21.0			17.3	
Approach LOS					B			C			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2				6		8
Phs Duration (G+Y+Rc), s		27.0				27.0		43.0
Change Period (Y+Rc), s		* 4.6				* 4.6		4.8
Max Green Setting (Gmax), s		* 22				* 22		38.2
Max Q Clear Time (g_c+I1), s		10.2				4.0		22.7
Green Ext Time (p_c), s		1.2				1.5		8.2

Intersection Summary	
HCM 2010 Ctrl Delay	16.3
HCM 2010 LOS	B

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	11	687	106	0	0	0	0	186	61	21	117	0
Number	7	4	14				5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1863				0	1863	1900	1900	1863	0
Adj Flow Rate, veh/h	12	747	51				0	202	48	23	127	0
Adj No. of Lanes	0	2	1				0	1	0	0	1	0
Peak Hour Factor	0.92	0.92	0.92				0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2				0	2	2	2	2	0
Cap, veh/h	27	1741	771				0	549	130	121	601	0
Arrive On Green	0.16	0.16	0.16				0.00	0.38	0.38	0.25	0.25	0.00
Sat Flow, veh/h	55	3575	1583				0	1456	346	163	1593	0
Grp Volume(v), veh/h	407	352	51				0	0	250	150	0	0
Grp Sat Flow(s),veh/h/ln	1860	1770	1583				0	0	1802	1756	0	0
Q Serve(g_s), s	13.8	12.5	1.9				0.0	0.0	7.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	13.8	12.5	1.9				0.0	0.0	7.0	4.5	0.0	0.0
Prop In Lane	0.03		1.00				0.00		0.19	0.15		0.00
Lane Grp Cap(c), veh/h	906	862	771				0	0	679	722	0	0
V/C Ratio(X)	0.45	0.41	0.07				0.00	0.00	0.37	0.21	0.00	0.00
Avail Cap(c_a), veh/h	906	862	771				0	0	679	722	0	0
HCM Platoon Ratio	0.33	0.33	0.33				1.00	1.00	1.00	0.67	0.67	1.00
Upstream Filter(I)	1.00	1.00	1.00				0.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	20.9	20.3	15.9				0.0	0.0	15.8	18.0	0.0	0.0
Incr Delay (d2), s/veh	1.6	1.4	0.2				0.0	0.0	1.5	0.7	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.5	6.5	0.9				0.0	0.0	3.8	2.4	0.0	0.0
LnGrp Delay(d),s/veh	22.5	21.8	16.0				0.0	0.0	17.3	18.6	0.0	0.0
LnGrp LOS	C	C	B						B	B		
Approach Vol, veh/h		810						250			150	
Approach Delay, s/veh		21.8						17.3			18.6	
Approach LOS		C						B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		31.0		39.0		31.0		
Change Period (Y+Rc), s		* 4.6		* 4.9		* 4.6		
Max Green Setting (Gmax), s		* 26		* 34		* 26		
Max Q Clear Time (g_c+I1), s		9.0		15.8		6.5		
Green Ext Time (p_c), s		2.2		4.5		2.3		

Intersection Summary	
HCM 2010 Ctrl Delay	20.4
HCM 2010 LOS	C

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	15	746	10	0	0	0	0	13	12	8	10	0
Number	7	4	14				5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1863				0	1863	1900	1900	1863	0
Adj Flow Rate, veh/h	16	811	7				0	14	2	9	11	0
Adj No. of Lanes	0	2	1				0	1	0	0	1	0
Peak Hour Factor	0.92	0.92	0.92				0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2				0	2	2	2	2	0
Cap, veh/h	42	2208	982				0	399	57	231	256	0
Arrive On Green	0.20	0.20	0.20				0.00	0.25	0.25	0.25	0.25	0.00
Sat Flow, veh/h	67	3562	1583				0	1595	228	626	1024	0
Grp Volume(v), veh/h	443	384	7				0	0	16	20	0	0
Grp Sat Flow(s),veh/h/ln	1859	1770	1583				0	0	1823	1651	0	0
Q Serve(g_s), s	14.4	13.0	0.2				0.0	0.0	0.5	0.0	0.0	0.0
Cycle Q Clear(g_c), s	14.4	13.0	0.2				0.0	0.0	0.5	0.6	0.0	0.0
Prop In Lane	0.04		1.00				0.00		0.12	0.45		0.00
Lane Grp Cap(c), veh/h	1153	1097	982				0	0	456	487	0	0
V/C Ratio(X)	0.38	0.35	0.01				0.00	0.00	0.04	0.04	0.00	0.00
Avail Cap(c_a), veh/h	1153	1097	982				0	0	456	487	0	0
HCM Platoon Ratio	0.33	0.33	0.33				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00				0.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	16.3	15.8	10.7				0.0	0.0	19.9	19.9	0.0	0.0
Incr Delay (d2), s/veh	1.0	0.9	0.0				0.0	0.0	0.1	0.2	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.7	6.6	0.1				0.0	0.0	0.2	0.3	0.0	0.0
LnGrp Delay(d),s/veh	17.3	16.6	10.7				0.0	0.0	20.0	20.1	0.0	0.0
LnGrp LOS	B	B	B						C	C		
Approach Vol, veh/h		834						16			20	
Approach Delay, s/veh		16.9						20.0			20.1	
Approach LOS		B						C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		22.0		48.0		22.0		
Change Period (Y+Rc), s		4.5		4.6		4.5		
Max Green Setting (Gmax), s		17.5		43.4		17.5		
Max Q Clear Time (g_c+I1), s		2.5		16.4		2.6		
Green Ext Time (p_c), s		0.1		5.5		0.1		

Intersection Summary	
HCM 2010 Ctrl Delay	17.1
HCM 2010 LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	0	20	1140	170	25	55	0	0	61	73
Number				3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln				1900	1863	1863	1900	1863	0	0	1863	1863
Adj Flow Rate, veh/h				22	1239	108	27	60	0	0	66	26
Adj No. of Lanes				0	2	1	0	1	0	0	1	1
Peak Hour Factor				0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %				2	2	2	2	2	0	0	2	2
Cap, veh/h				36	2151	955	170	342	0	0	490	416
Arrive On Green				0.20	0.20	0.20	0.26	0.26	0.00	0.00	0.26	0.26
Sat Flow, veh/h				61	3569	1583	390	1303	0	0	1863	1583
Grp Volume(v), veh/h				676	585	108	87	0	0	0	66	26
Grp Sat Flow(s),veh/h/ln				1860	1770	1583	1693	0	0	0	1863	1583
Q Serve(g_s), s				23.2	20.8	3.9	0.0	0.0	0.0	0.0	1.9	0.9
Cycle Q Clear(g_c), s				23.2	20.8	3.9	2.5	0.0	0.0	0.0	1.9	0.9
Prop In Lane				0.03		1.00	0.31		0.00	0.00		1.00
Lane Grp Cap(c), veh/h				1121	1067	955	512	0	0	0	490	416
V/C Ratio(X)				0.60	0.55	0.11	0.17	0.00	0.00	0.00	0.13	0.06
Avail Cap(c_a), veh/h				1121	1067	955	512	0	0	0	490	416
HCM Platoon Ratio				0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	1.00	1.00	1.00	0.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh				20.4	19.5	12.7	20.0	0.0	0.0	0.0	19.7	19.3
Incr Delay (d2), s/veh				2.4	2.0	0.2	0.7	0.0	0.0	0.0	0.6	0.3
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				12.7	10.8	1.8	1.4	0.0	0.0	0.0	1.0	0.4
LnGrp Delay(d),s/veh				22.8	21.5	12.9	20.7	0.0	0.0	0.0	20.3	19.6
LnGrp LOS				C	C	B	C				C	B
Approach Vol, veh/h					1369			87			92	
Approach Delay, s/veh					21.5			20.7			20.1	
Approach LOS					C			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2				6		8
Phs Duration (G+Y+Rc), s		23.0				23.0		47.0
Change Period (Y+Rc), s		* 4.6				* 4.6		4.8
Max Green Setting (Gmax), s		* 18				* 18		42.2
Max Q Clear Time (g_c+I1), s		4.5				3.9		25.2
Green Ext Time (p_c), s		0.7				0.7		8.2

Intersection Summary	
HCM 2010 Ctrl Delay	21.3
HCM 2010 LOS	C

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	0	165	995	185	99	716	0	0	597	125
Number				3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln				1900	1863	1863	1900	1863	0	0	1863	1900
Adj Flow Rate, veh/h				179	1082	129	108	778	0	0	649	118
Adj No. of Lanes				0	2	1	0	2	0	0	2	0
Peak Hour Factor				0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %				2	2	2	2	2	0	0	2	2
Cap, veh/h				200	1279	649	166	1154	0	0	1355	246
Arrive On Green				0.14	0.14	0.14	0.91	0.91	0.00	0.00	0.45	0.45
Sat Flow, veh/h				489	3119	1583	224	2633	0	0	3086	543
Grp Volume(v), veh/h				673	588	129	416	470	0	0	383	384
Grp Sat Flow(s),veh/h/ln				1838	1770	1583	1162	1610	0	0	1770	1767
Q Serve(g_s), s				25.2	22.6	5.1	9.9	4.6	0.0	0.0	10.6	10.6
Cycle Q Clear(g_c), s				25.2	22.6	5.1	20.5	4.6	0.0	0.0	10.6	10.6
Prop In Lane				0.27		1.00	0.26		0.00	0.00		0.31
Lane Grp Cap(c), veh/h				754	726	649	591	729	0	0	801	800
V/C Ratio(X)				0.89	0.81	0.20	0.70	0.64	0.00	0.00	0.48	0.48
Avail Cap(c_a), veh/h				754	726	649	591	729	0	0	801	800
HCM Platoon Ratio				0.33	0.33	0.33	2.00	2.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh				28.8	27.6	20.0	3.2	2.0	0.0	0.0	13.4	13.4
Incr Delay (d2), s/veh				15.1	9.5	0.7	6.9	4.3	0.0	0.0	2.0	2.1
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				16.0	13.0	2.3	4.1	2.4	0.0	0.0	5.6	5.6
LnGrp Delay(d),s/veh				43.9	37.2	20.7	10.1	6.4	0.0	0.0	15.4	15.4
LnGrp LOS				D	D	C	B	A			B	B
Approach Vol, veh/h					1390			886			767	
Approach Delay, s/veh					38.9			8.1			15.4	
Approach LOS					D			A			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2				6		8
Phs Duration (G+Y+Rc), s		36.5				36.5		33.5
Change Period (Y+Rc), s		* 4.8				* 4.8		4.8
Max Green Setting (Gmax), s		* 32				* 32		28.7
Max Q Clear Time (g_c+I1), s		22.5				12.6		27.2
Green Ext Time (p_c), s		6.5				11.1		1.1

Intersection Summary	
HCM 2010 Ctrl Delay	24.0
HCM 2010 LOS	C

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	121	525	102	0	0	0	0	635	118	59	611	0
Number	7	4	14				5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1863				0	1863	1900	1900	1863	0
Adj Flow Rate, veh/h	132	571	36				0	690	104	64	664	0
Adj No. of Lanes	0	2	1				0	2	0	0	2	0
Peak Hour Factor	0.92	0.92	0.92				0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2				0	2	2	2	2	0
Cap, veh/h	242	1106	593				0	1516	228	148	1432	0
Arrive On Green	0.37	0.37	0.37				0.00	0.49	0.49	0.98	0.98	0.00
Sat Flow, veh/h	646	2954	1583				0	3179	465	178	2999	0
Grp Volume(v), veh/h	374	329	36				0	395	399	360	368	0
Grp Sat Flow(s),veh/h/ln	1830	1770	1583				0	1770	1781	1481	1610	0
Q Serve(g_s), s	11.3	10.0	1.0				0.0	10.2	10.3	1.4	0.5	0.0
Cycle Q Clear(g_c), s	11.3	10.0	1.0				0.0	10.2	10.3	11.6	0.5	0.0
Prop In Lane	0.35		1.00				0.00		0.26	0.18		0.00
Lane Grp Cap(c), veh/h	685	662	593				0	870	875	789	791	0
V/C Ratio(X)	0.55	0.50	0.06				0.00	0.45	0.46	0.46	0.47	0.00
Avail Cap(c_a), veh/h	685	662	593				0	870	875	789	791	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	2.00	2.00	1.00
Upstream Filter(I)	1.00	1.00	1.00				0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	17.2	16.8	14.0				0.0	11.7	11.7	0.4	0.3	0.0
Incr Delay (d2), s/veh	3.1	2.6	0.2				0.0	1.7	1.7	1.9	2.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.2	5.3	0.5				0.0	5.4	5.4	0.6	0.6	0.0
LnGrp Delay(d),s/veh	20.3	19.5	14.2				0.0	13.4	13.4	2.3	2.3	0.0
LnGrp LOS	C	B	B					B	B	A	A	
Approach Vol, veh/h		739						794			728	
Approach Delay, s/veh		19.7						13.4			2.3	
Approach LOS		B						B			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		39.0		31.0		39.0		
Change Period (Y+Rc), s		* 4.6		* 4.8		* 4.6		
Max Green Setting (Gmax), s		* 34		* 26		* 34		
Max Q Clear Time (g_c+I1), s		12.3		13.3		13.6		
Green Ext Time (p_c), s		10.9		3.7		10.5		

Intersection Summary	
HCM 2010 Ctrl Delay	11.9
HCM 2010 LOS	B

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	0	72	1081	44	28	75	0	0	83	19
Number				3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln				1900	1863	1863	1900	1863	0	0	1863	1900
Adj Flow Rate, veh/h				78	1175	30	30	82	0	0	90	8
Adj No. of Lanes				0	2	1	0	1	0	0	1	0
Peak Hour Factor				0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %				2	2	2	2	2	0	0	2	2
Cap, veh/h				140	2209	1027	132	314	0	0	371	33
Arrive On Green				0.65	0.65	0.65	0.22	0.22	0.00	0.00	0.22	0.22
Sat Flow, veh/h				215	3406	1583	302	1427	0	0	1686	150
Grp Volume(v), veh/h				670	583	30	112	0	0	0	0	98
Grp Sat Flow(s),veh/h/ln				1852	1770	1583	1729	0	0	0	0	1836
Q Serve(g_s), s				14.0	12.1	0.5	0.0	0.0	0.0	0.0	0.0	3.1
Cycle Q Clear(g_c), s				14.0	12.1	0.5	3.5	0.0	0.0	0.0	0.0	3.1
Prop In Lane				0.12		1.00	0.27		0.00	0.00		0.08
Lane Grp Cap(c), veh/h				1201	1148	1027	446	0	0	0	0	404
V/C Ratio(X)				0.56	0.51	0.03	0.25	0.00	0.00	0.00	0.00	0.24
Avail Cap(c_a), veh/h				1201	1148	1027	446	0	0	0	0	404
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00	1.00
Uniform Delay (d), s/veh				6.8	6.4	4.4	22.7	0.0	0.0	0.0	0.0	22.5
Incr Delay (d2), s/veh				1.9	1.6	0.1	1.4	0.0	0.0	0.0	0.0	1.4
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				7.5	6.3	0.2	2.0	0.0	0.0	0.0	0.0	1.7
LnGrp Delay(d),s/veh				8.7	8.0	4.5	24.0	0.0	0.0	0.0	0.0	23.9
LnGrp LOS				A	A	A	C					C
Approach Vol, veh/h					1283			112			98	
Approach Delay, s/veh					8.3			24.0			23.9	
Approach LOS					A			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2				6		8
Phs Duration (G+Y+Rc), s		20.0				20.0		50.0
Change Period (Y+Rc), s		* 4.6				* 4.6		4.6
Max Green Setting (Gmax), s		* 15				* 15		45.4
Max Q Clear Time (g_c+I1), s		5.5				5.1		16.0
Green Ext Time (p_c), s		0.7				0.8		10.1

Intersection Summary	
HCM 2010 Ctrl Delay	10.5
HCM 2010 LOS	B

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	21	659	45	0	0	0	0	104	70	33	115	0
Number	7	4	14				5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1863				0	1863	1900	1900	1863	0
Adj Flow Rate, veh/h	23	716	23				0	113	39	36	125	0
Adj No. of Lanes	0	2	1				0	1	0	0	1	0
Peak Hour Factor	0.92	0.92	0.92				0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2				0	2	2	2	2	0
Cap, veh/h	54	1775	798				0	483	167	163	527	0
Arrive On Green	0.50	0.50	0.50				0.00	0.36	0.36	0.73	0.73	0.00
Sat Flow, veh/h	108	3519	1583				0	1325	457	276	1445	0
Grp Volume(v), veh/h	396	343	23				0	0	152	161	0	0
Grp Sat Flow(s),veh/h/ln	1857	1770	1583				0	0	1782	1721	0	0
Q Serve(g_s), s	9.4	8.4	0.5				0.0	0.0	4.2	0.0	0.0	0.0
Cycle Q Clear(g_c), s	9.4	8.4	0.5				0.0	0.0	4.2	2.0	0.0	0.0
Prop In Lane	0.06		1.00				0.00		0.26	0.22		0.00
Lane Grp Cap(c), veh/h	937	892	798				0	0	650	690	0	0
V/C Ratio(X)	0.42	0.38	0.03				0.00	0.00	0.23	0.23	0.00	0.00
Avail Cap(c_a), veh/h	937	892	798				0	0	650	690	0	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	2.00	2.00	1.00
Upstream Filter(I)	1.00	1.00	1.00				0.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	11.0	10.7	8.8				0.0	0.0	15.5	6.3	0.0	0.0
Incr Delay (d2), s/veh	1.4	1.3	0.1				0.0	0.0	0.8	0.8	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.1	4.3	0.2				0.0	0.0	2.2	1.1	0.0	0.0
LnGrp Delay(d),s/veh	12.4	12.0	8.8				0.0	0.0	16.3	7.1	0.0	0.0
LnGrp LOS	B	B	A						B	A		
Approach Vol, veh/h		762						152			161	
Approach Delay, s/veh		12.1						16.3			7.1	
Approach LOS		B						B			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		30.2		40.0		30.2		
Change Period (Y+Rc), s		* 4.6		4.6		* 4.6		
Max Green Setting (Gmax), s		* 25		35.4		* 26		
Max Q Clear Time (g_c+I1), s		6.2		11.4		4.0		
Green Ext Time (p_c), s		1.7		4.9		1.8		

Intersection Summary	
HCM 2010 Ctrl Delay	11.9
HCM 2010 LOS	B

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	0	72	1036	25	51	48	0	0	56	22
Number				3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln				1900	1863	1863	1900	1863	0	0	1863	1900
Adj Flow Rate, veh/h				78	1126	12	55	52	0	0	61	7
Adj No. of Lanes				0	2	1	0	1	0	0	1	0
Peak Hour Factor				0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %				2	2	2	2	2	0	0	2	2
Cap, veh/h				108	1634	762	346	297	0	0	564	65
Arrive On Green				0.48	0.48	0.48	0.34	0.34	0.00	0.00	0.34	0.34
Sat Flow, veh/h				224	3397	1583	712	864	0	0	1641	188
Grp Volume(v), veh/h				644	560	12	107	0	0	0	0	68
Grp Sat Flow(s),veh/h/ln				1852	1770	1583	1576	0	0	0	0	1830
Q Serve(g_s), s				14.8	12.9	0.2	0.3	0.0	0.0	0.0	0.0	1.4
Cycle Q Clear(g_c), s				14.8	12.9	0.2	2.2	0.0	0.0	0.0	0.0	1.4
Prop In Lane				0.12		1.00	0.51		0.00	0.00		0.10
Lane Grp Cap(c), veh/h				891	851	762	643	0	0	0	0	628
V/C Ratio(X)				0.72	0.66	0.02	0.17	0.00	0.00	0.00	0.00	0.11
Avail Cap(c_a), veh/h				1458	1394	1247	643	0	0	0	0	628
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00	1.00
Uniform Delay (d), s/veh				11.1	10.6	7.3	12.3	0.0	0.0	0.0	0.0	12.0
Incr Delay (d2), s/veh				1.1	0.9	0.0	0.6	0.0	0.0	0.0	0.0	0.3
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				7.8	6.4	0.1	1.2	0.0	0.0	0.0	0.0	0.7
LnGrp Delay(d),s/veh				12.2	11.4	7.3	12.8	0.0	0.0	0.0	0.0	12.3
LnGrp LOS				B	B	A	B					B
Approach Vol, veh/h					1216			107			68	
Approach Delay, s/veh					11.8			12.8			12.3	
Approach LOS					B			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2				6		8
Phs Duration (G+Y+Rc), s		23.0				23.0		30.6
Change Period (Y+Rc), s		* 4.6				* 4.6		4.8
Max Green Setting (Gmax), s		* 18				* 18		42.2
Max Q Clear Time (g_c+I1), s		4.2				3.4		16.8
Green Ext Time (p_c), s		0.7				0.8		8.9

Intersection Summary	
HCM 2010 Ctrl Delay	11.9
HCM 2010 LOS	B

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	11	640	36	0	0	0	0	90	55	21	92	0
Number	7	4	14				5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1863				0	1863	1900	1900	1863	0
Adj Flow Rate, veh/h	12	696	19				0	98	26	23	100	0
Adj No. of Lanes	0	2	1				0	1	0	0	1	0
Peak Hour Factor	0.92	0.92	0.92				0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2				0	2	2	2	2	0
Cap, veh/h	31	1898	841				0	475	126	132	518	0
Arrive On Green	0.53	0.53	0.53				0.00	0.33	0.33	0.33	0.33	0.00
Sat Flow, veh/h	59	3571	1583				0	1420	377	212	1550	0
Grp Volume(v), veh/h	379	329	19				0	0	124	123	0	0
Grp Sat Flow(s),veh/h/ln	1860	1770	1583				0	0	1796	1762	0	0
Q Serve(g_s), s	8.4	7.5	0.4				0.0	0.0	3.5	0.0	0.0	0.0
Cycle Q Clear(g_c), s	8.4	7.5	0.4				0.0	0.0	3.5	3.3	0.0	0.0
Prop In Lane	0.03		1.00				0.00		0.21	0.19		0.00
Lane Grp Cap(c), veh/h	988	940	841				0	0	600	650	0	0
V/C Ratio(X)	0.38	0.35	0.02				0.00	0.00	0.21	0.19	0.00	0.00
Avail Cap(c_a), veh/h	988	940	841				0	0	600	650	0	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00				0.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	9.7	9.4	7.8				0.0	0.0	16.7	16.6	0.0	0.0
Incr Delay (d2), s/veh	1.1	1.0	0.0				0.0	0.0	0.8	0.6	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.5	3.9	0.2				0.0	0.0	1.8	1.8	0.0	0.0
LnGrp Delay(d),s/veh	10.8	10.5	7.8				0.0	0.0	17.4	17.3	0.0	0.0
LnGrp LOS	B	B	A						B	B		
Approach Vol, veh/h		727						124			123	
Approach Delay, s/veh		10.6						17.4			17.3	
Approach LOS		B						B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		28.0		42.0		28.0		
Change Period (Y+Rc), s		* 4.6		* 4.8		* 4.6		
Max Green Setting (Gmax), s		* 23		* 37		* 23		
Max Q Clear Time (g_c+I1), s		5.5		10.4		5.3		
Green Ext Time (p_c), s		1.3		4.8		1.3		

Intersection Summary	
HCM 2010 Ctrl Delay	12.3
HCM 2010 LOS	B

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	*JCH*	Intersection	*Commerce St/Navidad St*
Agency/Co.	*CH2M HILL*	Jurisdiction	*City of San Antonio*
Date Performed	*3/25/2015*	Analysis Year	*2020 No-Build*
Analysis Time Period	*PM Peak Hour*		

Project Description *Commerce/Buena Vista One-Way Couplet Conversion Traff. Study*

East/West Street: *Commerce Street* | North/South Street: *Navidad Street*

Intersection Orientation: *East-West* | Study Period (hrs): *0.25*

Vehicle Volumes and Adjustments

Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)				*20*	*1304*	*20*
Peak-Hour Factor, PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Hourly Flow Rate, HFR (veh/h)	*0*	*0*	*0*	*20*	*1304*	*20*
Percent Heavy Vehicles	*0*	--	--	*0*	--	--
Median Type	*Undivided*					
RT Channelized			*0*			*0*
Lanes	*0*	*0*	*0*	*0*	*2*	*0*
Configuration				*LT*		*TR*
Upstream Signal		*0*			*0*	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)	*20*	*20*			*20*	*20*
Peak-Hour Factor, PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Hourly Flow Rate, HFR (veh/h)	*20*	*20*	*0*	*0*	*20*	*20*
Percent Heavy Vehicles	*0*	*0*	*0*	*0*	*0*	*0*
Percent Grade (%)		*0*			*0*	
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*0*	*1*	*0*	*0*	*1*	*0*
Configuration	*LT*					*TR*

Delay, Queue Length, and Level of Service

Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		*LT*	*LT*					*TR*
v (veh/h)		*20*	*40*					*40*
C (m) (veh/h)		*1636*	*198*					*226*
v/c		*0.01*	*0.20*					*0.18*
95% queue length		*0.04*	*0.73*					*0.63*
Control Delay (s/veh)		*7.2*	*27.7*					*24.3*
LOS		*A*	*D*					*C*
Approach Delay (s/veh)	--	--	*27.7*			*24.3*		
Approach LOS	--	--	*D*			*C*		

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Appendix E
Build Scenarios Intersection Operations Reports

2020 Scenario 1 AM Peak Hour

HCM 2010 Signalized Intersection Summary
1: Pecos Street & Commerce Street

4/17/2015

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	155	225	167	0	0	0	0	0	704	194
Number	7	4	14	3	8	18				1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	0	1863	1863	1863	0				0	1863	1900
Adj Flow Rate, veh/h	0	0	14	245	182	0				0	765	134
Adj No. of Lanes	0	0	1	2	2	0				0	3	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92				0.92	0.92	0.92
Percent Heavy Veh, %	0	0	2	2	2	0				0	2	0
Cap, veh/h	0	0	0	587	2860	0				0	0	0
Arrive On Green	0.00	0.00	0.00	0.81	0.81	0.00				0.00	0.00	0.00
Sat Flow, veh/h		0		2704	3632	0					0	
Grp Volume(v), veh/h		0.0		245	182	0					0.0	
Grp Sat Flow(s),veh/h/ln				1352	1770	0						
Q Serve(g_s), s				0.1	0.3	0.0						
Cycle Q Clear(g_c), s				0.1	0.3	0.0						
Prop In Lane				1.00		0.00						
Lane Grp Cap(c), veh/h				587	2860	0						
V/C Ratio(X)				0.42	0.06	0.00						
Avail Cap(c_a), veh/h				587	2860	0						
HCM Platoon Ratio				1.00	1.00	1.00						
Upstream Filter(I)				1.00	1.00	0.00						
Uniform Delay (d), s/veh				2.4	0.5	0.0						
Incr Delay (d2), s/veh				2.2	0.0	0.0						
Initial Q Delay(d3),s/veh				0.0	0.0	0.0						
%ile BackOfQ(50%),veh/ln				0.3	0.1	0.0						
LnGrp Delay(d),s/veh				4.6	0.5	0.0						
LnGrp LOS				A	A							
Approach Vol, veh/h					427							
Approach Delay, s/veh					2.9							
Approach LOS					A							

Timer	1	2	3	4	5	6	7	8
Assigned Phs								8
Phs Duration (G+Y+Rc), s								25.0
Change Period (Y+Rc), s								* 4.8
Max Green Setting (Gmax), s								* 20
Max Q Clear Time (g_c+I1), s								2.3
Green Ext Time (p_c), s								1.8

Intersection Summary	
HCM 2010 Ctrl Delay	2.9
HCM 2010 LOS	A

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	466	240	0	0	0	0	0	0	206	458	267
Number	7	4	14							1	6	16
Initial Q (Qb), veh	0	0	0							0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00							1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00							1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1863	1900							1900	1863	1900
Adj Flow Rate, veh/h	0	507	233							224	498	98
Adj No. of Lanes	0	1	0							0	4	0
Peak Hour Factor	0.92	0.92	0.92							0.92	0.92	0.92
Percent Heavy Veh, %	0	2	2							2	2	2
Cap, veh/h	0	694	319							489	1117	217
Arrive On Green	0.00	0.57	0.57							0.10	0.10	0.10
Sat Flow, veh/h	0	1209	556							1338	3832	744
Grp Volume(v), veh/h	0	0	740							240	374	206
Grp Sat Flow(s),veh/h/ln	0	0	1765							1435	1458	1564
Q Serve(g_s), s	0.0	0.0	21.5							11.2	8.5	8.7
Cycle Q Clear(g_c), s	0.0	0.0	21.5							11.2	8.5	8.7
Prop In Lane	0.00		0.31							0.93		0.48
Lane Grp Cap(c), veh/h	0	0	1013							518	850	456
V/C Ratio(X)	0.00	0.00	0.73							0.46	0.44	0.45
Avail Cap(c_a), veh/h	0	0	1013							518	850	456
HCM Platoon Ratio	1.00	1.00	1.00							0.33	0.33	0.33
Upstream Filter(I)	0.00	0.00	1.00							1.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	10.9							27.5	26.2	26.4
Incr Delay (d2), s/veh	0.0	0.0	4.6							3.0	1.7	3.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0							0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	11.6							4.9	3.6	4.2
LnGrp Delay(d),s/veh	0.0	0.0	15.6							30.5	27.9	29.6
LnGrp LOS			B							C	C	C
Approach Vol, veh/h		740									820	
Approach Delay, s/veh		15.6									29.1	
Approach LOS		B									C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6		
Phs Duration (G+Y+Rc), s				45.0		25.0		
Change Period (Y+Rc), s				* 4.8		4.6		
Max Green Setting (Gmax), s				* 40		20.4		
Max Q Clear Time (g_c+I1), s				23.5		13.2		
Green Ext Time (p_c), s				5.1		3.0		

Intersection Summary	
HCM 2010 Ctrl Delay	22.7
HCM 2010 LOS	C

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	5	200	65	6	342	15	2	17	0	0	1	5
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	5	217	53	7	372	11	2	18	0	0	1	1
Adj No. of Lanes	1	1	0	1	1	1	0	1	0	0	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	151	779	190	151	1003	852	67	339	0	0	162	162
Arrive On Green	0.08	0.54	0.54	0.08	0.54	0.54	0.19	0.19	0.00	0.00	0.19	0.19
Sat Flow, veh/h	1774	1447	353	1774	1863	1583	58	1786	0	0	856	856
Grp Volume(v), veh/h	5	0	270	7	372	11	20	0	0	0	0	2
Grp Sat Flow(s),veh/h/ln	1774	0	1800	1774	1863	1583	1844	0	0	0	0	1712
Q Serve(g_s), s	0.2	0.0	5.8	0.3	8.1	0.2	0.0	0.0	0.0	0.0	0.0	0.1
Cycle Q Clear(g_c), s	0.2	0.0	5.8	0.3	8.1	0.2	0.6	0.0	0.0	0.0	0.0	0.1
Prop In Lane	1.00		0.20	1.00		1.00	0.10		0.00	0.00		0.50
Lane Grp Cap(c), veh/h	151	0	969	151	1003	852	406	0	0	0	0	325
V/C Ratio(X)	0.03	0.00	0.28	0.05	0.37	0.01	0.05	0.00	0.00	0.00	0.00	0.01
Avail Cap(c_a), veh/h	151	0	969	151	1003	852	406	0	0	0	0	325
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00	1.00
Uniform Delay (d), s/veh	29.6	0.0	8.9	29.7	9.4	7.6	23.4	0.0	0.0	0.0	0.0	23.2
Incr Delay (d2), s/veh	0.4	0.0	0.7	0.6	1.1	0.0	0.2	0.0	0.0	0.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	0.0	3.0	0.1	4.4	0.1	0.3	0.0	0.0	0.0	0.0	0.0
LnGrp Delay(d),s/veh	30.0	0.0	9.6	30.3	10.5	7.6	23.7	0.0	0.0	0.0	0.0	23.2
LnGrp LOS	C		A	C	B	A	C					C
Approach Vol, veh/h		275			390			20			2	
Approach Delay, s/veh		9.9			10.7			23.7			23.2	
Approach LOS		A			B			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		18.0	10.0	42.6		18.0	10.0	42.6
Change Period (Y+Rc), s		* 4.6	4.0	* 4.6		* 4.6	4.0	4.6
Max Green Setting (Gmax), s		* 13	6.0	* 38		* 13	6.0	37.4
Max Q Clear Time (g_c+I1), s		2.6	2.3	7.8		2.1	2.2	10.1
Green Ext Time (p_c), s		0.0	0.0	4.2		0.0	0.0	4.1

Intersection Summary	
HCM 2010 Ctrl Delay	10.8
HCM 2010 LOS	B

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	121	241	117	22	316	36	134	576	50	29	162	127
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	132	262	100	24	343	32	146	626	44	32	176	27
Adj No. of Lanes	1	1	0	1	1	0	1	2	0	1	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	175	434	166	100	496	46	185	963	68	125	755	114
Arrive On Green	0.03	0.11	0.11	0.11	0.59	0.59	0.10	0.29	0.29	0.07	0.24	0.24
Sat Flow, veh/h	1774	1286	491	1774	1679	157	1774	3355	236	1774	3084	466
Grp Volume(v), veh/h	132	0	362	24	0	375	146	330	340	32	100	103
Grp Sat Flow(s),veh/h/ln	1774	0	1776	1774	0	1835	1774	1770	1821	1774	1770	1781
Q Serve(g_s), s	5.2	0.0	13.8	0.9	0.0	10.1	5.7	11.6	11.6	1.2	3.2	3.3
Cycle Q Clear(g_c), s	5.2	0.0	13.8	0.9	0.0	10.1	5.7	11.6	11.6	1.2	3.2	3.3
Prop In Lane	1.00		0.28	1.00		0.09	1.00		0.13	1.00		0.26
Lane Grp Cap(c), veh/h	175	0	600	100	0	542	185	508	523	125	433	436
V/C Ratio(X)	0.76	0.00	0.60	0.24	0.00	0.69	0.79	0.65	0.65	0.26	0.23	0.24
Avail Cap(c_a), veh/h	175	0	600	100	0	542	185	508	523	125	433	436
HCM Platoon Ratio	0.33	0.33	0.33	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	33.5	0.0	27.1	30.2	0.0	12.3	31.1	22.2	22.2	31.3	21.5	21.5
Incr Delay (d2), s/veh	25.8	0.0	4.5	5.6	0.0	7.1	28.3	6.3	6.2	4.9	1.2	1.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.8	0.0	7.5	0.6	0.0	6.0	4.3	6.6	6.8	0.8	1.7	1.8
LnGrp Delay(d),s/veh	59.4	0.0	31.5	35.8	0.0	19.4	59.4	28.5	28.4	36.2	22.7	22.8
LnGrp LOS	E		C	D		B	E	C	C	D	C	C
Approach Vol, veh/h		494			399			816			235	
Approach Delay, s/veh		39.0			20.4			34.0			24.6	
Approach LOS		D			C			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.0	25.3	8.0	28.8	12.0	22.3	11.0	25.8
Change Period (Y+Rc), s	4.0	* 4.9	4.0	* 4.8	* 4.6	* 4.9	4.0	* 4.8
Max Green Setting (Gmax), s	5.0	* 20	4.0	* 24	* 7.4	* 17	7.0	* 20
Max Q Clear Time (g_c+I1), s	3.2	13.6	2.9	15.8	7.7	5.3	7.2	12.1
Green Ext Time (p_c), s	0.0	2.8	0.0	2.8	0.0	4.3	0.0	2.8

Intersection Summary	
HCM 2010 Ctrl Delay	31.3
HCM 2010 LOS	C

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

HCM Signalized Intersection Capacity Analysis
5: Buena Vista Street So. Frontage & Frio Street & Buena Vista Street

4/17/2015

Movement	EBL	EBT	EBR	WBL2	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	121	563	86	6	210	4	134	645	50	84	171	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	0.98		1.00	1.00		1.00	0.99		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1826		1770	1858		1770	3501		1770	3517	
Flt Permitted	0.95	1.00		0.95	1.00		0.53	1.00		0.20	1.00	
Satd. Flow (perm)	1770	1826		1770	1858		990	3501		374	3517	
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)	132	612	93	7	228	4	146	701	54	91	186	8
RTOR Reduction (vph)	0	0	0	0	1	0	0	6	0	0	0	0
Lane Group Flow (vph)	132	705	0	7	231	0	146	749	0	91	194	0
Turn Type	Prot	NA		Prot	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases							2			6		
Actuated Green, G (s)	11.1	36.2		0.7	25.8		28.7	22.7		23.1	19.9	
Effective Green, g (s)	11.1	36.2		0.7	25.8		28.7	22.7		23.1	19.9	
Actuated g/C Ratio	0.11	0.37		0.01	0.26		0.29	0.23		0.23	0.20	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	198	669		12	485		334	804		132	708	
v/s Ratio Prot	c0.07	c0.39		0.00	0.12		c0.03	c0.21		c0.02	0.06	
v/s Ratio Perm							0.10			0.14		
v/c Ratio	0.67	1.05		0.58	0.48		0.44	0.93		0.69	0.27	
Uniform Delay, d1	42.1	31.3		48.9	30.8		27.3	37.3		34.4	33.3	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	8.2	49.8		56.2	0.7		0.9	18.9		14.0	1.0	
Delay (s)	50.3	81.1		105.1	31.5		28.2	56.2		48.4	34.3	
Level of Service	D	F		F	C		C	E		D	C	
Approach Delay (s)		76.3			33.7			51.6			38.8	
Approach LOS		E			C			D			D	

Intersection Summary			
HCM 2000 Control Delay	57.1	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	98.8	Sum of lost time (s)	20.0
Intersection Capacity Utilization	82.3%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	NEL	NER	NER2
Lane Configurations			
Volume (vph)	3	1	13
Ideal Flow (vphpl)	1900	1900	1900
Total Lost time (s)	4.0		4.0
Lane Util. Factor	1.00		0.95
Frt	0.90		0.85
Flt Protected	0.98		1.00
Satd. Flow (prot)	1649		1504
Flt Permitted	0.98		1.00
Satd. Flow (perm)	1649		1504
Peak-hour factor, PHF	0.92	0.92	0.92
Adj. Flow (vph)	3	1	14
RTOR Reduction (vph)	8	0	8
Lane Group Flow (vph)	1	0	1
Turn Type	Prot		Prot
Protected Phases	9		9
Permitted Phases			
Actuated Green, G (s)	16.0		16.0
Effective Green, g (s)	16.0		16.0
Actuated g/C Ratio	0.16		0.16
Clearance Time (s)	4.0		4.0
Vehicle Extension (s)	3.0		3.0
Lane Grp Cap (vph)	267		243
v/s Ratio Prot	0.00		c0.00
v/s Ratio Perm			
v/c Ratio	0.01		0.01
Uniform Delay, d1	34.7		34.7
Progression Factor	1.00		1.00
Incremental Delay, d2	0.0		0.0
Delay (s)	34.8		34.8
Level of Service	C		C
Approach Delay (s)	34.8		
Approach LOS	C		

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	64	366	12	78	294	46	23	343	52	41	281	96
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	70	398	11	85	320	41	25	373	40	45	305	61
Adj No. of Lanes	1	1	0	1	1	0	0	2	0	0	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	176	613	17	226	596	76	88	1043	109	143	873	171
Arrive On Green	0.20	0.68	0.68	0.13	0.37	0.37	0.69	0.69	0.69	0.35	0.35	0.35
Sat Flow, veh/h	1774	1804	50	1774	1619	207	92	3019	315	235	2525	494
Grp Volume(v), veh/h	70	0	409	85	0	361	230	0	208	212	0	199
Grp Sat Flow(s),veh/h/ln	1774	0	1854	1774	0	1826	1786	0	1640	1646	0	1608
Q Serve(g_s), s	2.4	0.0	8.9	3.1	0.0	11.0	0.0	0.0	3.7	0.0	0.0	6.5
Cycle Q Clear(g_c), s	2.4	0.0	8.9	3.1	0.0	11.0	3.6	0.0	3.7	5.9	0.0	6.5
Prop In Lane	1.00		0.03	1.00		0.11	0.11		0.19	0.21		0.31
Lane Grp Cap(c), veh/h	176	0	630	226	0	673	674	0	567	631	0	556
V/C Ratio(X)	0.40	0.00	0.65	0.38	0.00	0.54	0.34	0.00	0.37	0.34	0.00	0.36
Avail Cap(c_a), veh/h	176	0	630	226	0	673	674	0	567	631	0	556
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	26.5	0.0	8.9	28.2	0.0	17.6	7.7	0.0	7.7	17.1	0.0	17.2
Incr Delay (d2), s/veh	6.6	0.0	5.1	4.7	0.0	3.1	1.4	0.0	1.8	1.4	0.0	1.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.5	0.0	5.1	1.8	0.0	6.1	2.0	0.0	1.9	3.3	0.0	3.1
LnGrp Delay(d),s/veh	33.1	0.0	14.0	32.9	0.0	20.6	9.1	0.0	9.5	18.5	0.0	19.0
LnGrp LOS	C		B	C		C	A		A	B		B
Approach Vol, veh/h		479			446			438			411	
Approach Delay, s/veh		16.8			23.0			9.3			18.8	
Approach LOS		B			C			A			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		29.0	13.0	28.6		29.0	11.0	30.6
Change Period (Y+Rc), s		* 4.6	4.0	* 4.6		* 4.6	4.0	4.6
Max Green Setting (Gmax), s		* 24	9.0	* 24		* 24	7.0	25.4
Max Q Clear Time (g_c+I1), s		5.7	5.1	10.9		8.5	4.4	13.0
Green Ext Time (p_c), s		5.2	0.1	3.9		4.8	0.0	3.8

Intersection Summary	
HCM 2010 Ctrl Delay	16.9
HCM 2010 LOS	B

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	64	680	19	20	240	5	23	273	52	33	256	5
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	70	739	20	22	261	4	25	297	34	36	278	4
Adj No. of Lanes	1	1	0	1	1	0	0	2	0	0	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	175	867	23	100	801	12	90	814	90	126	847	12
Arrive On Green	0.03	0.16	0.16	0.06	0.44	0.44	0.27	0.27	0.27	0.55	0.55	0.55
Sat Flow, veh/h	1774	1805	49	1774	1830	28	117	2971	330	232	3092	44
Grp Volume(v), veh/h	70	0	759	22	0	265	187	0	169	164	0	154
Grp Sat Flow(s),veh/h/ln	1774	0	1854	1774	0	1858	1780	0	1637	1681	0	1687
Q Serve(g_s), s	2.7	0.0	28.2	0.8	0.0	6.6	0.0	0.0	5.9	0.0	0.0	3.6
Cycle Q Clear(g_c), s	2.7	0.0	28.2	0.8	0.0	6.6	5.7	0.0	5.9	3.4	0.0	3.6
Prop In Lane	1.00		0.03	1.00		0.02	0.13		0.20	0.22		0.03
Lane Grp Cap(c), veh/h	175	0	890	100	0	813	545	0	449	523	0	462
V/C Ratio(X)	0.40	0.00	0.85	0.22	0.00	0.33	0.34	0.00	0.38	0.31	0.00	0.33
Avail Cap(c_a), veh/h	175	0	890	100	0	813	545	0	449	523	0	462
HCM Platoon Ratio	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	32.2	0.0	27.3	31.9	0.0	13.0	20.7	0.0	20.8	12.4	0.0	12.4
Incr Delay (d2), s/veh	6.7	0.0	10.1	5.0	0.0	1.1	1.7	0.0	2.4	1.6	0.0	1.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.7	0.0	17.0	0.5	0.0	3.6	3.2	0.0	3.0	1.9	0.0	1.8
LnGrp Delay(d),s/veh	38.8	0.0	37.5	36.9	0.0	14.1	22.5	0.0	23.2	14.0	0.0	14.3
LnGrp LOS	D		D	D		B	C		C	B		B
Approach Vol, veh/h		829			287			356			318	
Approach Delay, s/veh		37.6			15.9			22.8			14.1	
Approach LOS		D			B			C			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		24.0	8.0	38.8		24.0	11.0	35.8
Change Period (Y+Rc), s		* 4.6	4.0	* 4.8		* 4.6	4.0	* 4.8
Max Green Setting (Gmax), s		* 19	4.0	* 33		* 19	7.0	* 31
Max Q Clear Time (g_c+I1), s		7.9	2.8	30.2		5.6	4.7	8.6
Green Ext Time (p_c), s		3.2	0.0	1.8		3.5	0.0	7.3

Intersection Summary	
HCM 2010 Ctrl Delay	27.0
HCM 2010 LOS	C

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	5	485	5	8	355	11	15	11	5	5	16	4
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	5	527	5	9	386	10	16	12	1	5	17	1
Adj No. of Lanes	1	1	0	1	1	0	0	1	0	0	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	126	1044	10	126	1024	27	211	139	10	98	263	14
Arrive On Green	0.09	0.75	0.75	0.05	0.38	0.38	0.18	0.18	0.18	0.18	0.18	0.18
Sat Flow, veh/h	1774	1842	17	1774	1808	47	749	794	55	205	1498	77
Grp Volume(v), veh/h	5	0	532	9	0	396	29	0	0	23	0	0
Grp Sat Flow(s),veh/h/ln	1774	0	1860	1774	0	1854	1598	0	0	1780	0	0
Q Serve(g_s), s	0.2	0.0	8.0	0.3	0.0	10.9	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.2	0.0	8.0	0.3	0.0	10.9	0.9	0.0	0.0	0.7	0.0	0.0
Prop In Lane	1.00		0.01	1.00		0.03	0.55		0.03	0.22		0.04
Lane Grp Cap(c), veh/h	126	0	1054	126	0	1051	360	0	0	375	0	0
V/C Ratio(X)	0.04	0.00	0.50	0.07	0.00	0.38	0.08	0.00	0.00	0.06	0.00	0.00
Avail Cap(c_a), veh/h	126	0	1054	126	0	1051	360	0	0	375	0	0
HCM Platoon Ratio	1.33	1.33	1.33	0.67	0.67	0.67	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	29.8	0.0	4.8	31.4	0.0	12.9	24.4	0.0	0.0	24.3	0.0	0.0
Incr Delay (d2), s/veh	0.6	0.0	1.7	1.1	0.0	1.0	0.4	0.0	0.0	0.3	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	0.0	4.5	0.2	0.0	5.9	0.5	0.0	0.0	0.4	0.0	0.0
LnGrp Delay(d),s/veh	30.4	0.0	6.5	32.5	0.0	13.9	24.8	0.0	0.0	24.6	0.0	0.0
LnGrp LOS	C		A	C		B	C			C		
Approach Vol, veh/h		537			405			29			23	
Approach Delay, s/veh		6.7			14.3			24.8			24.6	
Approach LOS		A			B			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		17.0	9.0	44.6		17.0	9.0	44.6
Change Period (Y+Rc), s		* 4.6	4.0	* 4.6		* 4.6	4.0	4.6
Max Green Setting (Gmax), s		* 12	5.0	* 40		* 12	5.0	39.4
Max Q Clear Time (g_c+I1), s		2.9	2.3	10.0		2.7	2.2	12.9
Green Ext Time (p_c), s		0.1	0.0	6.5		0.1	0.0	6.4

Intersection Summary	
HCM 2010 Ctrl Delay	10.8
HCM 2010 LOS	B

Notes

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	6	440	34	39	344	25	31	182	37	8	145	23
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	7	478	33	42	374	23	34	198	30	9	158	17
Adj No. of Lanes	1	1	0	1	1	0	0	1	0	0	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	100	706	49	150	761	47	98	452	64	63	512	53
Arrive On Green	0.02	0.14	0.14	0.17	0.88	0.88	0.63	0.63	0.63	0.32	0.32	0.32
Sat Flow, veh/h	1774	1723	119	1774	1737	107	128	1429	201	30	1617	168
Grp Volume(v), veh/h	7	0	511	42	0	397	262	0	0	184	0	0
Grp Sat Flow(s),veh/h/ln	1774	0	1842	1774	0	1844	1757	0	0	1815	0	0
Q Serve(g_s), s	0.3	0.0	18.7	1.5	0.0	3.3	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.3	0.0	18.7	1.5	0.0	3.3	5.2	0.0	0.0	5.4	0.0	0.0
Prop In Lane	1.00		0.06	1.00		0.06	0.13		0.11	0.05		0.09
Lane Grp Cap(c), veh/h	100	0	754	150	0	807	613	0	0	627	0	0
V/C Ratio(X)	0.07	0.00	0.68	0.28	0.00	0.49	0.43	0.00	0.00	0.29	0.00	0.00
Avail Cap(c_a), veh/h	100	0	754	150	0	807	613	0	0	627	0	0
HCM Platoon Ratio	0.33	0.33	0.33	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	32.9	0.0	26.2	27.5	0.0	2.7	9.8	0.0	0.0	18.4	0.0	0.0
Incr Delay (d2), s/veh	1.3	0.0	4.8	4.6	0.0	2.1	2.2	0.0	0.0	1.2	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	0.0	10.6	0.9	0.0	1.9	2.9	0.0	0.0	2.9	0.0	0.0
LnGrp Delay(d),s/veh	34.3	0.0	31.0	32.1	0.0	4.8	12.0	0.0	0.0	19.6	0.0	0.0
LnGrp LOS	C		C	C		A	B			B		
Approach Vol, veh/h		518			439			262			184	
Approach Delay, s/veh		31.1			7.4			12.0			19.6	
Approach LOS		C			A			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		27.0	10.0	33.8		27.0	8.0	35.8
Change Period (Y+Rc), s		* 4.6	4.0	* 4.8		* 4.6	4.0	* 4.8
Max Green Setting (Gmax), s		* 22	6.0	* 29		* 22	4.0	* 30
Max Q Clear Time (g_c+I1), s		7.2	3.5	20.7		7.4	2.3	5.3
Green Ext Time (p_c), s		2.4	0.0	3.5		2.3	0.0	6.1

Intersection Summary	
HCM 2010 Ctrl Delay	18.6
HCM 2010 LOS	B

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	6	660	50	10	282	3	31	130	37	6	65	1
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	7	717	50	11	307	3	34	141	27	7	71	0
Adj No. of Lanes	1	1	0	1	1	0	0	1	0	0	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	100	898	63	100	961	9	100	310	54	68	412	0
Arrive On Green	0.06	0.52	0.52	0.02	0.17	0.17	0.23	0.23	0.23	0.23	0.23	0.00
Sat Flow, veh/h	1774	1722	120	1774	1842	18	175	1341	234	54	1779	0
Grp Volume(v), veh/h	7	0	767	11	0	310	202	0	0	78	0	0
Grp Sat Flow(s),veh/h/ln	1774	0	1842	1774	0	1860	1750	0	0	1834	0	0
Q Serve(g_s), s	0.3	0.0	24.2	0.4	0.0	10.4	0.4	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.3	0.0	24.2	0.4	0.0	10.4	6.8	0.0	0.0	2.4	0.0	0.0
Prop In Lane	1.00		0.07	1.00		0.01	0.17		0.13	0.09		0.00
Lane Grp Cap(c), veh/h	100	0	961	100	0	970	464	0	0	479	0	0
V/C Ratio(X)	0.07	0.00	0.80	0.11	0.00	0.32	0.44	0.00	0.00	0.16	0.00	0.00
Avail Cap(c_a), veh/h	100	0	961	100	0	970	464	0	0	479	0	0
HCM Platoon Ratio	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	31.7	0.0	13.9	33.0	0.0	18.3	23.6	0.0	0.0	21.9	0.0	0.0
Incr Delay (d2), s/veh	1.3	0.0	6.9	2.2	0.0	0.9	3.0	0.0	0.0	0.7	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	0.0	14.0	0.3	0.0	5.6	3.8	0.0	0.0	1.3	0.0	0.0
LnGrp Delay(d),s/veh	33.0	0.0	20.8	35.2	0.0	19.2	26.5	0.0	0.0	22.6	0.0	0.0
LnGrp LOS	C		C	D		B	C			C		
Approach Vol, veh/h		774			321			202			78	
Approach Delay, s/veh		20.9			19.7			26.5			22.6	
Approach LOS		C			B			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		21.0	8.0	41.9		21.0	8.0	41.9
Change Period (Y+Rc), s		* 4.6	4.0	* 4.9		* 4.6	4.0	* 4.9
Max Green Setting (Gmax), s		* 16	4.0	* 36		* 16	4.0	* 37
Max Q Clear Time (g_c+I1), s		8.8	2.4	26.2		4.4	2.3	12.4
Green Ext Time (p_c), s		0.9	0.0	4.9		1.2	0.0	8.0

Intersection Summary	
HCM 2010 Ctrl Delay	21.5
HCM 2010 LOS	C

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	4	725	5	5	313	5	5	11	14	7	5	5
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	4	788	5	5	340	4	5	12	2	8	5	1
Adj No. of Lanes	1	1	0	1	1	0	0	1	0	0	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	101	1100	7	101	1093	13	108	211	30	205	114	18
Arrive On Green	0.02	0.20	0.20	0.08	0.79	0.79	0.16	0.16	0.16	0.16	0.16	0.16
Sat Flow, veh/h	1774	1849	12	1774	1837	22	265	1295	184	769	702	113
Grp Volume(v), veh/h	4	0	793	5	0	344	19	0	0	14	0	0
Grp Sat Flow(s),veh/h/ln	1774	0	1861	1774	0	1859	1744	0	0	1584	0	0
Q Serve(g_s), s	0.2	0.0	28.1	0.2	0.0	3.6	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.2	0.0	28.1	0.2	0.0	3.6	0.6	0.0	0.0	0.5	0.0	0.0
Prop In Lane	1.00		0.01	1.00		0.01	0.26		0.11	0.57		0.07
Lane Grp Cap(c), veh/h	101	0	1107	101	0	1106	348	0	0	338	0	0
V/C Ratio(X)	0.04	0.00	0.72	0.05	0.00	0.31	0.05	0.00	0.00	0.04	0.00	0.00
Avail Cap(c_a), veh/h	101	0	1107	101	0	1106	348	0	0	338	0	0
HCM Platoon Ratio	0.33	0.33	0.33	1.33	1.33	1.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	32.8	0.0	22.8	30.9	0.0	3.4	25.0	0.0	0.0	24.9	0.0	0.0
Incr Delay (d2), s/veh	0.7	0.0	4.0	0.9	0.0	0.7	0.3	0.0	0.0	0.2	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	0.0	15.7	0.1	0.0	1.9	0.3	0.0	0.0	0.3	0.0	0.0
LnGrp Delay(d),s/veh	33.5	0.0	26.8	31.8	0.0	4.1	25.3	0.0	0.0	25.2	0.0	0.0
LnGrp LOS	C		C	C		A	C			C		
Approach Vol, veh/h		797			349			19			14	
Approach Delay, s/veh		26.8			4.5			25.3			25.2	
Approach LOS		C			A			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		16.0	8.0	46.6		16.0	8.0	46.6
Change Period (Y+Rc), s		4.5	4.0	4.6		4.5	4.0	* 4.6
Max Green Setting (Gmax), s		11.5	4.0	41.4		11.5	4.0	* 42
Max Q Clear Time (g_c+I1), s		2.6	2.2	30.1		2.5	2.2	5.6
Green Ext Time (p_c), s		0.0	0.0	5.6		0.0	0.0	9.6

Intersection Summary	
HCM 2010 Ctrl Delay	20.2
HCM 2010 LOS	C

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	5	550	5	9	338	60	8	22	5	5	30	18
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1900	1863	1900	1900	1863	1863
Adj Flow Rate, veh/h	5	598	5	10	367	55	9	24	1	5	33	20
Adj No. of Lanes	1	1	0	1	1	0	0	1	0	0	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	100	964	8	100	828	124	135	319	12	82	399	367
Arrive On Green	0.11	1.00	1.00	0.02	0.17	0.17	0.23	0.23	0.23	0.23	0.23	0.23
Sat Flow, veh/h	1774	1845	15	1774	1584	237	307	1378	51	105	1721	1583
Grp Volume(v), veh/h	5	0	603	10	0	422	34	0	0	38	0	20
Grp Sat Flow(s),veh/h/ln	1774	0	1860	1774	0	1821	1736	0	0	1826	0	1583
Q Serve(g_s), s	0.2	0.0	0.0	0.4	0.0	14.7	0.0	0.0	0.0	0.0	0.0	0.7
Cycle Q Clear(g_c), s	0.2	0.0	0.0	0.4	0.0	14.7	1.0	0.0	0.0	1.1	0.0	0.7
Prop In Lane	1.00		0.01	1.00		0.13	0.26		0.03	0.13		1.00
Lane Grp Cap(c), veh/h	100	0	972	100	0	952	466	0	0	481	0	367
V/C Ratio(X)	0.05	0.00	0.62	0.10	0.00	0.44	0.07	0.00	0.00	0.08	0.00	0.05
Avail Cap(c_a), veh/h	100	0	972	100	0	952	466	0	0	481	0	367
HCM Platoon Ratio	2.00	2.00	2.00	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	29.7	0.0	0.0	33.0	0.0	20.1	21.3	0.0	0.0	21.3	0.0	21.2
Incr Delay (d2), s/veh	0.9	0.0	3.0	2.0	0.0	1.5	0.3	0.0	0.0	0.3	0.0	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	0.0	0.8	0.2	0.0	7.8	0.6	0.0	0.0	0.6	0.0	0.3
LnGrp Delay(d),s/veh	30.6	0.0	3.0	35.0	0.0	21.6	21.6	0.0	0.0	21.7	0.0	21.4
LnGrp LOS	C		A	C		C	C			C		C
Approach Vol, veh/h		608			432			34			58	
Approach Delay, s/veh		3.2			21.9			21.6			21.6	
Approach LOS		A			C			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		21.0	8.0	41.8		21.0	8.0	41.8
Change Period (Y+Rc), s		* 4.6	4.0	* 4.8		* 4.6	4.0	* 4.8
Max Green Setting (Gmax), s		* 16	4.0	* 37		* 16	4.0	* 36
Max Q Clear Time (g_c+I1), s		3.0	2.4	2.0		3.1	2.2	16.7
Green Ext Time (p_c), s		0.3	0.0	7.8		0.3	0.0	6.6

Intersection Summary	
HCM 2010 Ctrl Delay	11.8
HCM 2010 LOS	B

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	52	465	33	89	259	74	40	456	60	25	460	63
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	57	505	32	97	282	64	43	496	51	27	500	53
Adj No. of Lanes	1	1	0	1	1	0	0	2	0	0	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	150	686	43	175	602	137	98	876	91	80	947	98
Arrive On Green	0.03	0.13	0.13	0.20	0.82	0.82	0.63	0.63	0.63	0.31	0.31	0.31
Sat Flow, veh/h	1774	1734	110	1774	1470	334	126	2795	290	78	3019	313
Grp Volume(v), veh/h	57	0	537	97	0	346	301	0	289	303	0	277
Grp Sat Flow(s),veh/h/ln	1774	0	1843	1774	0	1804	1568	0	1644	1771	0	1640
Q Serve(g_s), s	2.2	0.0	19.8	3.5	0.0	4.0	1.1	0.0	7.2	0.0	0.0	9.9
Cycle Q Clear(g_c), s	2.2	0.0	19.8	3.5	0.0	4.0	10.9	0.0	7.2	9.4	0.0	9.9
Prop In Lane	1.00		0.06	1.00		0.18	0.14		0.18	0.09		0.19
Lane Grp Cap(c), veh/h	150	0	729	175	0	739	550	0	515	611	0	514
V/C Ratio(X)	0.38	0.00	0.74	0.55	0.00	0.47	0.55	0.00	0.56	0.50	0.00	0.54
Avail Cap(c_a), veh/h	150	0	729	175	0	739	550	0	515	611	0	514
HCM Platoon Ratio	0.33	0.33	0.33	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	32.6	0.0	27.2	27.0	0.0	4.1	10.3	0.0	10.4	19.9	0.0	20.1
Incr Delay (d2), s/veh	7.1	0.0	6.5	12.0	0.0	2.1	3.9	0.0	4.4	2.9	0.0	4.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.4	0.0	11.5	2.3	0.0	2.3	3.7	0.0	3.8	5.3	0.0	5.0
LnGrp Delay(d),s/veh	39.7	0.0	33.8	39.0	0.0	6.3	14.2	0.0	14.8	22.8	0.0	24.1
LnGrp LOS	D		C	D		A	B		B	C		C
Approach Vol, veh/h		594			443			590			580	
Approach Delay, s/veh		34.3			13.4			14.5			23.4	
Approach LOS		C			B			B			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		27.0	11.0	32.8		27.0	10.0	33.8
Change Period (Y+Rc), s		* 4.8	4.0	* 4.8		* 4.8	4.0	* 4.8
Max Green Setting (Gmax), s		* 22	7.0	* 28		* 22	6.0	* 28
Max Q Clear Time (g_c+I1), s		12.9	5.5	21.8		11.9	4.2	6.0
Green Ext Time (p_c), s		4.9	0.0	2.8		5.2	0.0	5.9

Intersection Summary	
HCM 2010 Ctrl Delay	22.0
HCM 2010 LOS	C

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	52	568	49	22	212	8	40	490	60	21	470	3
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	57	617	49	24	230	7	43	533	52	23	511	2
Adj No. of Lanes	1	1	0	1	1	0	0	2	0	0	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	150	770	61	100	762	23	99	888	85	75	1019	4
Arrive On Green	0.03	0.15	0.15	0.11	0.85	0.85	0.30	0.30	0.30	0.60	0.60	0.60
Sat Flow, veh/h	1774	1704	135	1774	1798	55	137	2938	281	67	3372	13
Grp Volume(v), veh/h	57	0	666	24	0	237	323	0	305	277	0	259
Grp Sat Flow(s),veh/h/ln	1774	0	1839	1774	0	1853	1711	0	1646	1759	0	1693
Q Serve(g_s), s	2.2	0.0	24.8	0.9	0.0	1.9	3.1	0.0	11.2	0.1	0.0	6.2
Cycle Q Clear(g_c), s	2.2	0.0	24.8	0.9	0.0	1.9	10.9	0.0	11.2	11.3	0.0	6.2
Prop In Lane	1.00		0.07	1.00		0.03	0.13		0.17	0.08		0.01
Lane Grp Cap(c), veh/h	150	0	831	100	0	785	575	0	497	587	0	512
V/C Ratio(X)	0.38	0.00	0.80	0.24	0.00	0.30	0.56	0.00	0.61	0.47	0.00	0.51
Avail Cap(c_a), veh/h	150	0	831	100	0	785	575	0	497	587	0	512
HCM Platoon Ratio	0.33	0.33	0.33	2.00	2.00	2.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	32.6	0.0	27.0	30.0	0.0	3.3	20.9	0.0	21.1	10.9	0.0	11.0
Incr Delay (d2), s/veh	7.1	0.0	8.0	5.6	0.0	1.0	4.0	0.0	5.5	2.7	0.0	3.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.4	0.0	14.5	0.6	0.0	1.1	6.0	0.0	5.8	3.3	0.0	3.3
LnGrp Delay(d),s/veh	39.7	0.0	35.1	35.6	0.0	4.2	24.8	0.0	26.7	13.6	0.0	14.6
LnGrp LOS	D		D	D		A	C		C	B		B
Approach Vol, veh/h		723			261			628			536	
Approach Delay, s/veh		35.4			7.1			25.7			14.1	
Approach LOS		D			A			C			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		26.0	8.0	36.8		26.0	10.0	34.8
Change Period (Y+Rc), s		* 4.6	4.0	* 4.8		* 4.6	4.0	* 4.8
Max Green Setting (Gmax), s		* 21	4.0	* 31		* 21	6.0	* 30
Max Q Clear Time (g_c+I1), s		13.2	2.9	26.8		13.3	4.2	3.9
Green Ext Time (p_c), s		4.4	0.0	2.3		4.4	0.0	6.7

Intersection Summary	
HCM 2010 Ctrl Delay	23.8
HCM 2010 LOS	C

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	3	537	24	22	292	24	14	60	45	16	92	19
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	3	584	24	24	317	22	15	65	14	17	100	11
Adj No. of Lanes	1	1	0	1	1	0	0	1	0	0	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	101	956	39	101	927	64	88	297	57	82	333	34
Arrive On Green	0.06	0.54	0.54	0.02	0.18	0.18	0.22	0.22	0.22	0.22	0.22	0.22
Sat Flow, veh/h	1774	1777	73	1774	1722	120	134	1360	261	111	1525	154
Grp Volume(v), veh/h	3	0	608	24	0	339	94	0	0	128	0	0
Grp Sat Flow(s),veh/h/ln	1774	0	1850	1774	0	1842	1755	0	0	1789	0	0
Q Serve(g_s), s	0.1	0.0	16.0	0.9	0.0	11.4	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.1	0.0	16.0	0.9	0.0	11.4	3.0	0.0	0.0	4.1	0.0	0.0
Prop In Lane	1.00		0.04	1.00		0.06	0.16		0.15	0.13		0.09
Lane Grp Cap(c), veh/h	101	0	996	101	0	991	442	0	0	448	0	0
V/C Ratio(X)	0.03	0.00	0.61	0.24	0.00	0.34	0.21	0.00	0.00	0.29	0.00	0.00
Avail Cap(c_a), veh/h	101	0	996	101	0	991	442	0	0	448	0	0
HCM Platoon Ratio	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	31.5	0.0	11.2	33.1	0.0	18.1	22.8	0.0	0.0	23.2	0.0	0.0
Incr Delay (d2), s/veh	0.6	0.0	2.8	5.5	0.0	0.9	1.1	0.0	0.0	1.6	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	0.0	8.9	0.6	0.0	6.0	1.6	0.0	0.0	2.3	0.0	0.0
LnGrp Delay(d),s/veh	32.0	0.0	14.0	38.7	0.0	19.0	23.9	0.0	0.0	24.8	0.0	0.0
LnGrp LOS	C		B	D		B	C			C		
Approach Vol, veh/h		611			363			94			128	
Approach Delay, s/veh		14.1			20.3			23.9			24.8	
Approach LOS		B			C			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		20.0	8.0	42.6		20.0	8.0	42.6
Change Period (Y+Rc), s		* 4.6	4.0	* 4.6		* 4.6	4.0	4.6
Max Green Setting (Gmax), s		* 15	4.0	* 38		* 15	4.0	37.4
Max Q Clear Time (g_c+I1), s		5.0	2.9	18.0		6.1	2.1	13.4
Green Ext Time (p_c), s		0.8	0.0	6.1		0.8	0.0	6.5

Intersection Summary	
HCM 2010 Ctrl Delay	17.9
HCM 2010 LOS	B

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	3	537	35	5	239	3	14	105	45	13	88	1
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	3	584	35	5	260	2	15	114	27	14	96	0
Adj No. of Lanes	1	1	0	1	1	0	0	1	0	0	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	100	909	54	100	965	7	73	327	72	80	402	0
Arrive On Green	0.02	0.17	0.17	0.02	0.17	0.17	0.23	0.23	0.23	0.47	0.47	0.00
Sat Flow, veh/h	1774	1740	104	1774	1846	14	75	1393	307	98	1715	0
Grp Volume(v), veh/h	3	0	619	5	0	262	156	0	0	110	0	0
Grp Sat Flow(s),veh/h/ln	1774	0	1844	1774	0	1860	1776	0	0	1814	0	0
Q Serve(g_s), s	0.1	0.0	22.1	0.2	0.0	8.7	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.1	0.0	22.1	0.2	0.0	8.7	5.1	0.0	0.0	2.5	0.0	0.0
Prop In Lane	1.00		0.06	1.00		0.01	0.10		0.17	0.13		0.00
Lane Grp Cap(c), veh/h	100	0	964	100	0	972	472	0	0	483	0	0
V/C Ratio(X)	0.03	0.00	0.64	0.05	0.00	0.27	0.33	0.00	0.00	0.23	0.00	0.00
Avail Cap(c_a), veh/h	100	0	964	100	0	972	472	0	0	483	0	0
HCM Platoon Ratio	0.33	0.33	0.33	0.33	0.33	0.33	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	32.8	0.0	23.1	32.9	0.0	17.6	22.7	0.0	0.0	15.1	0.0	0.0
Incr Delay (d2), s/veh	0.6	0.0	3.3	0.9	0.0	0.7	1.9	0.0	0.0	1.1	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	0.0	12.2	0.1	0.0	4.7	2.8	0.0	0.0	1.4	0.0	0.0
LnGrp Delay(d),s/veh	33.4	0.0	26.4	33.8	0.0	18.2	24.6	0.0	0.0	16.2	0.0	0.0
LnGrp LOS	C		C	C		B	C			B		
Approach Vol, veh/h		622			267			156			110	
Approach Delay, s/veh		26.5			18.5			24.6			16.2	
Approach LOS		C			B			C			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		21.2	8.0	41.6		21.2	8.0	41.6
Change Period (Y+Rc), s		* 4.6	4.0	4.6		* 4.6	4.0	* 4.6
Max Green Setting (Gmax), s		* 16	4.0	36.4		* 17	4.0	* 37
Max Q Clear Time (g_c+I1), s		7.1	2.2	24.1		4.5	2.1	10.7
Green Ext Time (p_c), s		1.0	0.0	4.6		1.1	0.0	6.5

Intersection Summary	
HCM 2010 Ctrl Delay	23.4
HCM 2010 LOS	C

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	3	579	6	24	291	17	8	43	38	17	39	8
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	3	629	6	26	316	14	9	47	13	18	42	2
Adj No. of Lanes	1	1	0	1	1	0	0	1	0	0	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	6	803	8	42	808	36	103	396	99	188	390	16
Arrive On Green	0.00	0.44	0.44	0.02	0.46	0.46	0.30	0.30	0.30	0.30	0.30	0.30
Sat Flow, veh/h	1774	1842	18	1774	1770	78	100	1334	333	348	1313	55
Grp Volume(v), veh/h	3	0	635	26	0	330	69	0	0	62	0	0
Grp Sat Flow(s),veh/h/ln	1774	0	1860	1774	0	1849	1767	0	0	1716	0	0
Q Serve(g_s), s	0.1	0.0	16.1	0.8	0.0	6.5	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.1	0.0	16.1	0.8	0.0	6.5	1.5	0.0	0.0	1.3	0.0	0.0
Prop In Lane	1.00		0.01	1.00		0.04	0.13		0.19	0.29		0.03
Lane Grp Cap(c), veh/h	6	0	811	42	0	844	599	0	0	594	0	0
V/C Ratio(X)	0.52	0.00	0.78	0.62	0.00	0.39	0.12	0.00	0.00	0.10	0.00	0.00
Avail Cap(c_a), veh/h	129	0	1213	161	0	1213	599	0	0	594	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	27.5	0.0	13.3	26.7	0.0	9.9	14.2	0.0	0.0	14.1	0.0	0.0
Incr Delay (d2), s/veh	57.4	0.0	2.0	13.6	0.0	0.3	0.4	0.0	0.0	0.4	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	0.0	8.6	0.6	0.0	3.4	0.8	0.0	0.0	0.7	0.0	0.0
LnGrp Delay(d),s/veh	84.9	0.0	15.3	40.3	0.0	10.2	14.6	0.0	0.0	14.4	0.0	0.0
LnGrp LOS	F		B	D		B	B			B		
Approach Vol, veh/h		638			356			69			62	
Approach Delay, s/veh		15.6			12.4			14.6			14.4	
Approach LOS		B			B			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		21.0	5.3	28.9		21.0	4.2	30.0
Change Period (Y+Rc), s		* 4.6	4.0	* 4.8		* 4.6	4.0	* 4.8
Max Green Setting (Gmax), s		* 16	5.0	* 36		* 16	4.0	* 36
Max Q Clear Time (g_c+I1), s		3.5	2.8	18.1		3.3	2.1	8.5
Green Ext Time (p_c), s		0.5	0.0	5.9		0.5	0.0	6.9

Intersection Summary	
HCM 2010 Ctrl Delay	14.5
HCM 2010 LOS	B

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	3	474	8	6	238	1	8	93	38	14	53	0
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	3	515	8	7	259	1	9	101	20	15	58	0
Adj No. of Lanes	1	1	0	1	1	0	0	1	0	0	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	100	930	14	100	943	4	65	363	68	114	380	0
Arrive On Green	0.06	0.51	0.51	0.04	0.34	0.34	0.25	0.25	0.25	0.25	0.25	0.00
Sat Flow, veh/h	1774	1829	28	1774	1854	7	45	1475	276	215	1547	0
Grp Volume(v), veh/h	3	0	523	7	0	260	130	0	0	73	0	0
Grp Sat Flow(s),veh/h/ln	1774	0	1858	1774	0	1861	1796	0	0	1761	0	0
Q Serve(g_s), s	0.1	0.0	13.6	0.3	0.0	7.2	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.1	0.0	13.6	0.3	0.0	7.2	4.1	0.0	0.0	2.2	0.0	0.0
Prop In Lane	1.00		0.02	1.00		0.00	0.07		0.15	0.21		0.00
Lane Grp Cap(c), veh/h	100	0	945	100	0	947	496	0	0	494	0	0
V/C Ratio(X)	0.03	0.00	0.55	0.07	0.00	0.27	0.26	0.00	0.00	0.15	0.00	0.00
Avail Cap(c_a), veh/h	100	0	945	100	0	947	496	0	0	494	0	0
HCM Platoon Ratio	1.00	1.00	1.00	0.67	0.67	0.67	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	31.6	0.0	11.9	32.3	0.0	13.8	21.7	0.0	0.0	21.0	0.0	0.0
Incr Delay (d2), s/veh	0.6	0.0	2.3	1.3	0.0	0.7	1.3	0.0	0.0	0.6	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	0.0	7.6	0.2	0.0	3.9	2.2	0.0	0.0	1.2	0.0	0.0
LnGrp Delay(d),s/veh	32.1	0.0	14.2	33.6	0.0	14.6	23.0	0.0	0.0	21.6	0.0	0.0
LnGrp LOS	C		B	C		B	C			C		
Approach Vol, veh/h		526			267			130			73	
Approach Delay, s/veh		14.3			15.1			23.0			21.6	
Approach LOS		B			B			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		22.0	8.0	40.8		22.0	8.0	40.8
Change Period (Y+Rc), s		* 4.6	4.0	* 4.8		* 4.6	4.0	* 4.8
Max Green Setting (Gmax), s		* 17	4.0	* 35		* 17	4.0	* 36
Max Q Clear Time (g_c+I1), s		6.1	2.3	15.6		4.2	2.1	9.2
Green Ext Time (p_c), s		0.8	0.0	5.0		0.9	0.0	5.5

Intersection Summary	
HCM 2010 Ctrl Delay	16.2
HCM 2010 LOS	B

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	JCH	Intersection	Commerce St/Navidad St
Agency/Co.	CH2M HILL	Jurisdiction	City of San Antonio
Date Performed	3/25/2015	Analysis Year	2020 Scenario 1
Analysis Time Period	AM Peak Hour		

Project Description *Commerce/Buena Vista One-Way Couplet Conversion Traff. Study*

East/West Street: *Commerce Street* | North/South Street: *Navidad Street*

Intersection Orientation: *East-West* | Study Period (hrs): *0.25*

Vehicle Volumes and Adjustments

Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)	20	550	20	20	388	20
Peak-Hour Factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Hourly Flow Rate, HFR (veh/h)	20	550	20	20	388	20
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration	LTR			LTR		
Upstream Signal		0			0	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)	20	20	20	20	20	20
Peak-Hour Factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Hourly Flow Rate, HFR (veh/h)	20	20	20	20	20	20
Percent Heavy Vehicles	0	0	0	0	0	0
Percent Grade (%)		0			0	
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	

Delay, Queue Length, and Level of Service

Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	LTR	LTR		LTR			LTR	
v (veh/h)	20	20		60			60	
C (m) (veh/h)	1162	1013		248			254	
v/c	0.02	0.02		0.24			0.24	
95% queue length	0.05	0.06		0.92			0.89	
Control Delay (s/veh)	8.2	8.6		24.1			23.5	
LOS	A	A		C			C	
Approach Delay (s/veh)	--	--	24.1			23.5		
Approach LOS	--	--	C			C		

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2020 Scenario 1 PM Peak Hour

HCM 2010 Signalized Intersection Summary
1: Pecos Street & Commerce Street

4/17/2015

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	111	506	289	0	0	0	0	0	1012	145
Number	7	4	14	3	8	18				1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	0	1863	1863	1863	0				0	1863	1900
Adj Flow Rate, veh/h	0	0	73	550	314	0				0	1100	129
Adj No. of Lanes	0	0	1	2	2	0				0	3	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92				0.92	0.92	0.92
Percent Heavy Veh, %	0	0	2	2	2	0				0	2	0
Cap, veh/h	0	0	0	586	2860	0				0	0	0
Arrive On Green	0.00	0.00	0.00	0.81	0.81	0.00				0.00	0.00	0.00
Sat Flow, veh/h		0		2564	3632	0					0	
Grp Volume(v), veh/h		0.0		550	314	0					0.0	
Grp Sat Flow(s),veh/h/ln				1282	1770	0						
Q Serve(g_s), s				0.1	0.5	0.0						
Cycle Q Clear(g_c), s				0.1	0.5	0.0						
Prop In Lane				1.00		0.00						
Lane Grp Cap(c), veh/h				586	2860	0						
V/C Ratio(X)				0.94	0.11	0.00						
Avail Cap(c_a), veh/h				586	2860	0						
HCM Platoon Ratio				1.00	1.00	1.00						
Upstream Filter(I)				1.00	1.00	0.00						
Uniform Delay (d), s/veh				2.4	0.5	0.0						
Incr Delay (d2), s/veh				24.7	0.1	0.0						
Initial Q Delay(d3),s/veh				0.0	0.0	0.0						
%ile BackOfQ(50%),veh/ln				2.4	0.2	0.0						
LnGrp Delay(d),s/veh				27.1	0.6	0.0						
LnGrp LOS				C	A							
Approach Vol, veh/h					864							
Approach Delay, s/veh					17.5							
Approach LOS					B							

Timer	1	2	3	4	5	6	7	8
Assigned Phs								8
Phs Duration (G+Y+Rc), s								25.0
Change Period (Y+Rc), s								* 4.8
Max Green Setting (Gmax), s								* 20
Max Q Clear Time (g_c+I1), s								2.5
Green Ext Time (p_c), s								4.1

Intersection Summary	
HCM 2010 Ctrl Delay	17.5
HCM 2010 LOS	B

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	333	209	0	0	0	0	0	0	131	994	505
Number	7	4	14							1	6	16
Initial Q (Qb), veh	0	0	0							0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00							1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00							1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1863	1900							1900	1863	1900
Adj Flow Rate, veh/h	0	362	217							142	1080	401
Adj No. of Lanes	0	1	0							0	4	0
Peak Hour Factor	0.92	0.92	0.92							0.92	0.92	0.92
Percent Heavy Veh, %	0	2	2							2	2	2
Cap, veh/h	0	549	329							241	1505	523
Arrive On Green	0.00	0.50	0.50							0.12	0.12	0.12
Sat Flow, veh/h	0	1092	655							479	4147	1441
Grp Volume(v), veh/h	0	0	579							462	760	401
Grp Sat Flow(s),veh/h/ln	0	0	1747							1710	1458	1441
Q Serve(g_s), s	0.0	0.0	17.2							16.1	17.6	18.9
Cycle Q Clear(g_c), s	0.0	0.0	17.2							18.2	17.6	18.9
Prop In Lane	0.00		0.37							0.31		1.00
Lane Grp Cap(c), veh/h	0	0	879							688	1058	523
V/C Ratio(X)	0.00	0.00	0.66							0.67	0.72	0.77
Avail Cap(c_a), veh/h	0	0	879							688	1058	523
HCM Platoon Ratio	1.00	1.00	1.00							0.33	0.33	0.33
Upstream Filter(I)	0.00	0.00	1.00							1.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	12.9							27.6	27.4	27.9
Incr Delay (d2), s/veh	0.0	0.0	3.9							5.2	4.2	10.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0							0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	9.1							9.6	7.7	9.0
LnGrp Delay(d),s/veh	0.0	0.0	16.8							32.7	31.6	38.3
LnGrp LOS			B							C	C	D
Approach Vol, veh/h		579									1623	
Approach Delay, s/veh		16.8									33.6	
Approach LOS		B									C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6		
Phs Duration (G+Y+Rc), s				40.0		30.0		
Change Period (Y+Rc), s				* 4.8		4.6		
Max Green Setting (Gmax), s				* 35		25.4		
Max Q Clear Time (g_c+I1), s				19.2		20.9		
Green Ext Time (p_c), s				3.7		3.5		

Intersection Summary	
HCM 2010 Ctrl Delay	29.1
HCM 2010 LOS	C

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	5	190	35	15	484	7	4	4	0	0	3	11
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	5	207	28	16	526	6	4	4	0	0	3	1
Adj No. of Lanes	1	1	0	1	1	1	0	1	0	0	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	126	910	123	151	1082	919	184	159	0	0	216	72
Arrive On Green	0.07	0.57	0.57	0.08	0.58	0.58	0.16	0.16	0.00	0.00	0.16	0.16
Sat Flow, veh/h	1774	1607	217	1774	1863	1583	664	984	0	0	1338	446
Grp Volume(v), veh/h	5	0	235	16	526	6	8	0	0	0	0	4
Grp Sat Flow(s),veh/h/ln	1774	0	1824	1774	1863	1583	1648	0	0	0	0	1784
Q Serve(g_s), s	0.2	0.0	4.5	0.6	11.6	0.1	0.0	0.0	0.0	0.0	0.0	0.1
Cycle Q Clear(g_c), s	0.2	0.0	4.5	0.6	11.6	0.1	0.3	0.0	0.0	0.0	0.0	0.1
Prop In Lane	1.00		0.12	1.00		1.00	0.50		0.00	0.00		0.25
Lane Grp Cap(c), veh/h	126	0	1034	151	1082	919	343	0	0	0	0	288
V/C Ratio(X)	0.04	0.00	0.23	0.11	0.49	0.01	0.02	0.00	0.00	0.00	0.00	0.01
Avail Cap(c_a), veh/h	126	0	1034	151	1082	919	343	0	0	0	0	288
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00	1.00
Uniform Delay (d), s/veh	30.6	0.0	7.6	29.8	8.6	6.2	24.9	0.0	0.0	0.0	0.0	24.9
Incr Delay (d2), s/veh	0.6	0.0	0.5	1.4	1.6	0.0	0.1	0.0	0.0	0.0	0.0	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	0.0	2.4	0.3	6.3	0.1	0.1	0.0	0.0	0.0	0.0	0.1
LnGrp Delay(d),s/veh	31.2	0.0	8.1	31.2	10.2	6.2	25.1	0.0	0.0	0.0	0.0	25.0
LnGrp LOS	C		A	C	B	A	C					C
Approach Vol, veh/h		240			548			8			4	
Approach Delay, s/veh		8.6			10.8			25.1			25.0	
Approach LOS		A			B			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		16.0	10.0	44.6		16.0	9.0	45.6
Change Period (Y+Rc), s		* 4.6	4.0	* 4.6		* 4.6	4.0	4.6
Max Green Setting (Gmax), s		* 11	6.0	* 40		* 11	5.0	40.4
Max Q Clear Time (g_c+I1), s		2.3	2.6	6.5		2.1	2.2	13.6
Green Ext Time (p_c), s		0.0	0.0	5.3		0.0	0.0	5.1

Intersection Summary	
HCM 2010 Ctrl Delay	10.3
HCM 2010 LOS	B

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	72	150	92	31	569	36	147	419	60	40	355	219
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	78	163	65	34	618	36	160	455	48	43	386	126
Adj No. of Lanes	1	1	0	1	1	0	1	2	0	1	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	100	428	171	125	613	36	160	928	97	100	644	208
Arrive On Green	0.02	0.11	0.11	0.14	0.70	0.70	0.09	0.29	0.29	0.06	0.24	0.24
Sat Flow, veh/h	1774	1268	506	1774	1743	102	1774	3233	340	1774	2633	849
Grp Volume(v), veh/h	78	0	228	34	0	654	160	248	255	43	258	254
Grp Sat Flow(s),veh/h/ln	1774	0	1774	1774	0	1845	1774	1770	1803	1774	1770	1713
Q Serve(g_s), s	3.1	0.0	8.5	1.2	0.0	25.0	6.4	8.3	8.3	1.7	9.2	9.4
Cycle Q Clear(g_c), s	3.1	0.0	8.5	1.2	0.0	25.0	6.4	8.3	8.3	1.7	9.2	9.4
Prop In Lane	1.00		0.29	1.00		0.06	1.00		0.19	1.00		0.50
Lane Grp Cap(c), veh/h	100	0	599	125	0	649	160	508	517	100	433	419
V/C Ratio(X)	0.78	0.00	0.38	0.27	0.00	1.01	1.00	0.49	0.49	0.43	0.60	0.61
Avail Cap(c_a), veh/h	100	0	599	125	0	649	160	508	517	100	433	419
HCM Platoon Ratio	0.33	0.33	0.33	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	34.5	0.0	24.7	28.9	0.0	10.6	32.3	21.0	21.1	32.4	23.7	23.8
Incr Delay (d2), s/veh	44.4	0.0	1.8	5.3	0.0	37.4	71.7	3.3	3.3	13.0	5.9	6.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.8	0.0	4.5	0.8	0.0	18.4	6.3	4.5	4.6	1.2	5.2	5.1
LnGrp Delay(d),s/veh	78.9	0.0	26.5	34.2	0.0	47.9	104.1	24.4	24.4	45.4	29.7	30.2
LnGrp LOS	E		C	C		F	F	C	C	D	C	C
Approach Vol, veh/h		306			688			663			555	
Approach Delay, s/veh		39.9			47.3			43.6			31.1	
Approach LOS		D			D			D			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.0	25.3	9.0	28.8	11.0	22.3	8.0	29.8
Change Period (Y+Rc), s	4.0	* 4.9	4.0	* 4.8	* 4.6	* 4.9	4.0	* 4.8
Max Green Setting (Gmax), s	4.0	* 20	5.0	* 24	* 6.4	* 17	4.0	* 24
Max Q Clear Time (g_c+I1), s	3.7	10.3	3.2	10.5	8.4	11.4	5.1	27.0
Green Ext Time (p_c), s	0.0	4.3	0.0	4.8	0.0	3.1	0.0	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	41.1
HCM 2010 LOS	D

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

HCM Signalized Intersection Capacity Analysis
5: Buena Vista Street So. Frontage & Frio Street & Buena Vista Street

4/17/2015

Movement	EBL	EBT	EBR	WBL2	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	72	351	93	8	380	4	147	533	60	63	374	12
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	0.97		1.00	1.00		1.00	0.98		1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1804		1770	1860		1770	3486		1770	3523	
Flt Permitted	0.95	1.00		0.95	1.00		0.31	1.00		0.22	1.00	
Satd. Flow (perm)	1770	1804		1770	1860		576	3486		415	3523	
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)	78	382	101	9	413	4	160	579	65	68	407	13
RTOR Reduction (vph)	0	0	0	0	1	0	0	11	0	0	0	0
Lane Group Flow (vph)	78	483	0	9	416	0	160	634	0	68	420	0
Turn Type	Prot	NA		Prot	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases							2			6		
Actuated Green, G (s)	4.6	29.0		0.8	25.2		29.0	23.0		23.2	20.1	
Effective Green, g (s)	4.6	29.0		0.8	25.2		29.0	23.0		23.2	20.1	
Actuated g/C Ratio	0.05	0.32		0.01	0.27		0.32	0.25		0.25	0.22	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	88	568		15	509		259	871		150	769	
v/s Ratio Prot	c0.04	c0.27		0.01	0.22		c0.04	c0.18		0.02	0.12	
v/s Ratio Perm							0.15			0.10		
v/c Ratio	0.89	0.85		0.60	0.82		0.62	0.73		0.45	0.55	
Uniform Delay, d1	43.4	29.5		45.4	31.3		24.6	31.6		27.2	31.9	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	59.6	11.7		51.0	9.9		4.3	5.3		2.2	2.8	
Delay (s)	103.0	41.1		96.5	41.1		28.9	36.9		29.4	34.7	
Level of Service	F	D		F	D		C	D		C	C	
Approach Delay (s)		49.7			42.3			35.3			33.9	
Approach LOS		D			D			D			C	

Intersection Summary			
HCM 2000 Control Delay	39.7	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	92.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	67.6%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	NEL	NER	NER2
Lane Configurations			
Volume (vph)	19	8	15
Ideal Flow (vphpl)	1900	1900	1900
Total Lost time (s)	4.0		4.0
Lane Util. Factor	1.00		0.95
Frt	0.95		0.85
Flt Protected	0.97		1.00
Satd. Flow (prot)	1711		1504
Flt Permitted	0.97		1.00
Satd. Flow (perm)	1711		1504
Peak-hour factor, PHF	0.92	0.92	0.92
Adj. Flow (vph)	21	9	16
RTOR Reduction (vph)	26	0	12
Lane Group Flow (vph)	6	0	2
Turn Type	Prot		Prot
Protected Phases	9		9
Permitted Phases			
Actuated Green, G (s)	16.1		16.1
Effective Green, g (s)	16.1		16.1
Actuated g/C Ratio	0.18		0.18
Clearance Time (s)	4.0		4.0
Vehicle Extension (s)	3.0		3.0
Lane Grp Cap (vph)	299		263
v/s Ratio Prot	c0.00		0.00
v/s Ratio Perm			
v/c Ratio	0.02		0.01
Uniform Delay, d1	31.4		31.4
Progression Factor	1.00		1.00
Incremental Delay, d2	0.1		0.1
Delay (s)	31.5		31.4
Level of Service	C		C
Approach Delay (s)	31.5		
Approach LOS	C		

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	58	189	13	88	599	57	24	230	32	26	265	173
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	63	205	10	96	651	57	26	250	20	28	288	51
Adj No. of Lanes	1	1	0	1	1	0	0	2	0	0	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	101	674	33	226	765	67	110	904	71	99	840	144
Arrive On Green	0.11	0.76	0.76	0.13	0.45	0.45	0.61	0.61	0.61	0.30	0.30	0.30
Sat Flow, veh/h	1774	1762	86	1774	1689	148	167	2984	233	135	2773	474
Grp Volume(v), veh/h	63	0	215	96	0	708	154	0	142	193	0	174
Grp Sat Flow(s),veh/h/ln	1774	0	1848	1774	0	1837	1730	0	1654	1770	0	1612
Q Serve(g_s), s	2.4	0.0	2.5	3.5	0.0	24.2	0.0	0.0	2.9	0.0	0.0	5.9
Cycle Q Clear(g_c), s	2.4	0.0	2.5	3.5	0.0	24.2	2.8	0.0	2.9	5.7	0.0	5.9
Prop In Lane	1.00		0.05	1.00		0.08	0.17		0.14	0.14		0.29
Lane Grp Cap(c), veh/h	101	0	707	226	0	832	584	0	501	595	0	488
V/C Ratio(X)	0.63	0.00	0.30	0.42	0.00	0.85	0.26	0.00	0.28	0.33	0.00	0.36
Avail Cap(c_a), veh/h	101	0	707	226	0	832	584	0	501	595	0	488
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	30.6	0.0	5.4	28.4	0.0	17.2	10.2	0.0	10.3	19.1	0.0	19.2
Incr Delay (d2), s/veh	26.0	0.0	1.1	5.7	0.0	10.6	1.1	0.0	1.4	1.5	0.0	2.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.9	0.0	1.4	2.1	0.0	14.6	1.5	0.0	1.4	3.1	0.0	2.9
LnGrp Delay(d),s/veh	56.6	0.0	6.5	34.2	0.0	27.8	11.3	0.0	11.7	20.6	0.0	21.2
LnGrp LOS	E		A	C		C	B		B	C		C
Approach Vol, veh/h		278			804			296			367	
Approach Delay, s/veh		17.9			28.6			11.5			20.9	
Approach LOS		B			C			B			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		26.0	13.0	31.6		26.0	8.0	36.6
Change Period (Y+Rc), s		* 4.6	4.0	* 4.6		* 4.6	4.0	4.6
Max Green Setting (Gmax), s		* 21	9.0	* 27		* 21	4.0	31.4
Max Q Clear Time (g_c+I1), s		4.9	5.5	4.5		7.9	4.4	26.2
Green Ext Time (p_c), s		3.7	0.1	6.4		3.4	0.0	2.6

Intersection Summary	
HCM 2010 Ctrl Delay	22.3
HCM 2010 LOS	C

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	58	351	19	22	490	6	24	282	32	22	260	9
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	63	382	18	24	533	7	26	307	23	24	283	7
Adj No. of Lanes	1	1	0	1	1	0	0	2	0	0	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	150	798	38	100	777	10	96	929	68	100	974	24
Arrive On Green	0.03	0.15	0.15	0.06	0.42	0.42	0.30	0.30	0.30	0.60	0.60	0.60
Sat Flow, veh/h	1774	1765	83	1774	1834	24	128	3075	224	137	3223	78
Grp Volume(v), veh/h	63	0	400	24	0	540	186	0	170	163	0	151
Grp Sat Flow(s),veh/h/ln	1774	0	1848	1774	0	1858	1771	0	1656	1756	0	1681
Q Serve(g_s), s	2.5	0.0	14.0	0.9	0.0	16.7	0.0	0.0	5.6	0.0	0.0	3.1
Cycle Q Clear(g_c), s	2.5	0.0	14.0	0.9	0.0	16.7	5.5	0.0	5.6	3.0	0.0	3.1
Prop In Lane	1.00		0.05	1.00		0.01	0.14		0.14	0.15		0.05
Lane Grp Cap(c), veh/h	150	0	835	100	0	787	593	0	500	589	0	508
V/C Ratio(X)	0.42	0.00	0.48	0.24	0.00	0.69	0.31	0.00	0.34	0.28	0.00	0.30
Avail Cap(c_a), veh/h	150	0	835	100	0	787	593	0	500	589	0	508
HCM Platoon Ratio	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	32.7	0.0	22.5	31.9	0.0	16.6	19.1	0.0	19.2	10.4	0.0	10.4
Incr Delay (d2), s/veh	8.4	0.0	2.0	5.6	0.0	4.8	1.4	0.0	1.8	1.2	0.0	1.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.6	0.0	7.6	0.6	0.0	9.6	3.0	0.0	2.8	1.7	0.0	1.6
LnGrp Delay(d),s/veh	41.1	0.0	24.4	37.5	0.0	21.4	20.5	0.0	21.0	11.5	0.0	11.9
LnGrp LOS	D		C	D		C	C		C	B		B
Approach Vol, veh/h		463			564			356			314	
Approach Delay, s/veh		26.7			22.1			20.8			11.7	
Approach LOS		C			C			C			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		26.0	8.0	36.8		26.0	10.0	34.8
Change Period (Y+Rc), s		* 4.6	4.0	* 4.8		* 4.6	4.0	* 4.8
Max Green Setting (Gmax), s		* 21	4.0	* 31		* 21	6.0	* 30
Max Q Clear Time (g_c+I1), s		7.6	2.9	16.0		5.1	4.5	18.7
Green Ext Time (p_c), s		3.4	0.0	5.2		3.7	0.0	4.5

Intersection Summary	
HCM 2010 Ctrl Delay	21.1
HCM 2010 LOS	C

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	5	317	5	12	702	12	14	3	5	5	12	8
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	5	345	4	13	763	12	15	3	1	5	13	0
Adj No. of Lanes	1	1	0	1	1	0	0	1	0	0	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	101	1119	13	101	1114	18	253	46	12	107	220	0
Arrive On Green	0.11	1.00	1.00	0.04	0.41	0.41	0.15	0.15	0.15	0.15	0.15	0.00
Sat Flow, veh/h	1774	1838	21	1774	1829	29	1097	309	78	281	1491	0
Grp Volume(v), veh/h	5	0	349	13	0	775	19	0	0	18	0	0
Grp Sat Flow(s),veh/h/ln	1774	0	1859	1774	0	1858	1484	0	0	1772	0	0
Q Serve(g_s), s	0.2	0.0	0.0	0.5	0.0	24.2	0.1	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.2	0.0	0.0	0.5	0.0	24.2	0.6	0.0	0.0	0.6	0.0	0.0
Prop In Lane	1.00		0.01	1.00		0.02	0.79		0.05	0.28		0.00
Lane Grp Cap(c), veh/h	101	0	1132	101	0	1131	310	0	0	326	0	0
V/C Ratio(X)	0.05	0.00	0.31	0.13	0.00	0.68	0.06	0.00	0.00	0.06	0.00	0.00
Avail Cap(c_a), veh/h	101	0	1132	101	0	1131	310	0	0	326	0	0
HCM Platoon Ratio	2.00	2.00	2.00	0.67	0.67	0.67	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	29.6	0.0	0.0	32.3	0.0	15.3	25.9	0.0	0.0	25.9	0.0	0.0
Incr Delay (d2), s/veh	0.9	0.0	0.7	2.6	0.0	3.4	0.4	0.0	0.0	0.3	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	0.0	0.2	0.3	0.0	13.4	0.3	0.0	0.0	0.3	0.0	0.0
LnGrp Delay(d),s/veh	30.5	0.0	0.7	34.9	0.0	18.7	26.3	0.0	0.0	26.2	0.0	0.0
LnGrp LOS	C		A	C		B	C			C		
Approach Vol, veh/h		354			788			19			18	
Approach Delay, s/veh		1.1			19.0			26.3			26.2	
Approach LOS		A			B			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		15.0	8.0	47.6		15.0	8.0	47.6
Change Period (Y+Rc), s		* 4.6	4.0	* 4.6		* 4.6	4.0	4.6
Max Green Setting (Gmax), s		* 10	4.0	* 43		* 10	4.0	42.4
Max Q Clear Time (g_c+I1), s		2.6	2.5	2.0		2.6	2.2	26.2
Green Ext Time (p_c), s		0.0	0.0	9.6		0.0	0.0	6.9

Intersection Summary	
HCM 2010 Ctrl Delay	13.8
HCM 2010 LOS	B

Notes

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	6	275	42	55	652	18	60	60	31	12	55	10
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	7	299	37	60	709	19	65	65	19	13	60	3
Adj No. of Lanes	1	1	0	1	1	0	0	1	0	0	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	100	712	88	150	842	23	244	229	58	110	441	20
Arrive On Green	0.02	0.14	0.14	0.17	0.93	0.93	0.29	0.29	0.29	0.29	0.29	0.29
Sat Flow, veh/h	1774	1626	201	1774	1806	48	594	795	203	176	1530	70
Grp Volume(v), veh/h	7	0	336	60	0	728	149	0	0	76	0	0
Grp Sat Flow(s),veh/h/ln	1774	0	1827	1774	0	1854	1591	0	0	1776	0	0
Q Serve(g_s), s	0.3	0.0	11.9	2.1	0.0	8.8	2.3	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.3	0.0	11.9	2.1	0.0	8.8	4.8	0.0	0.0	2.2	0.0	0.0
Prop In Lane	1.00		0.11	1.00		0.03	0.44		0.13	0.17		0.04
Lane Grp Cap(c), veh/h	100	0	800	150	0	864	532	0	0	571	0	0
V/C Ratio(X)	0.07	0.00	0.42	0.40	0.00	0.84	0.28	0.00	0.00	0.13	0.00	0.00
Avail Cap(c_a), veh/h	100	0	800	150	0	864	532	0	0	571	0	0
HCM Platoon Ratio	0.33	0.33	0.33	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	32.9	0.0	22.1	27.8	0.0	1.6	19.6	0.0	0.0	18.7	0.0	0.0
Incr Delay (d2), s/veh	1.3	0.0	1.6	7.7	0.0	9.8	1.3	0.0	0.0	0.5	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	0.0	6.4	1.3	0.0	5.0	2.5	0.0	0.0	1.2	0.0	0.0
LnGrp Delay(d),s/veh	34.3	0.0	23.7	35.5	0.0	11.4	20.9	0.0	0.0	19.2	0.0	0.0
LnGrp LOS	C		C	D		B	C			B		
Approach Vol, veh/h		343			788			149			76	
Approach Delay, s/veh		23.9			13.2			20.9			19.2	
Approach LOS		C			B			C			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		25.0	10.0	35.8		25.0	8.0	37.8
Change Period (Y+Rc), s		* 4.6	4.0	* 4.8		* 4.6	4.0	* 4.8
Max Green Setting (Gmax), s		* 20	6.0	* 31		* 20	4.0	* 32
Max Q Clear Time (g_c+I1), s		6.8	4.1	13.9		4.2	2.3	10.8
Green Ext Time (p_c), s		1.0	0.0	6.7		1.1	0.0	7.4

Intersection Summary	
HCM 2010 Ctrl Delay	17.1
HCM 2010 LOS	B

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	6	412	64	14	534	2	60	157	31	9	103	1
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	7	448	61	15	580	2	65	171	26	10	112	0
Adj No. of Lanes	1	1	0	1	1	0	0	1	0	0	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	100	747	102	100	864	3	149	353	48	70	512	0
Arrive On Green	0.08	0.62	0.62	0.02	0.15	0.15	0.29	0.29	0.29	0.58	0.58	0.00
Sat Flow, veh/h	1774	1606	219	1774	1855	6	299	1228	168	53	1779	0
Grp Volume(v), veh/h	7	0	509	15	0	582	262	0	0	122	0	0
Grp Sat Flow(s),veh/h/ln	1774	0	1824	1774	0	1862	1696	0	0	1832	0	0
Q Serve(g_s), s	0.3	0.0	12.0	0.6	0.0	20.9	3.4	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.3	0.0	12.0	0.6	0.0	20.9	8.8	0.0	0.0	2.3	0.0	0.0
Prop In Lane	1.00		0.12	1.00		0.00	0.25		0.10	0.08		0.00
Lane Grp Cap(c), veh/h	100	0	849	100	0	866	551	0	0	582	0	0
V/C Ratio(X)	0.07	0.00	0.60	0.15	0.00	0.67	0.48	0.00	0.00	0.21	0.00	0.00
Avail Cap(c_a), veh/h	100	0	849	100	0	866	551	0	0	582	0	0
HCM Platoon Ratio	1.33	1.33	1.33	0.33	0.33	0.33	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	31.1	0.0	9.5	33.1	0.0	24.9	21.0	0.0	0.0	11.2	0.0	0.0
Incr Delay (d2), s/veh	1.3	0.0	3.1	3.1	0.0	4.1	2.9	0.0	0.0	0.8	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	0.0	6.6	0.4	0.0	11.8	4.7	0.0	0.0	1.3	0.0	0.0
LnGrp Delay(d),s/veh	32.4	0.0	12.6	36.3	0.0	29.0	24.0	0.0	0.0	12.0	0.0	0.0
LnGrp LOS	C		B	D		C	C			B		
Approach Vol, veh/h		516			597			262			122	
Approach Delay, s/veh		12.9			29.2			24.0			12.0	
Approach LOS		B			C			C			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		25.0	8.0	37.9		25.0	8.0	37.9
Change Period (Y+Rc), s		* 4.6	4.0	* 4.9		* 4.6	4.0	* 4.9
Max Green Setting (Gmax), s		* 20	4.0	* 32		* 20	4.0	* 33
Max Q Clear Time (g_c+I1), s		10.8	2.6	14.0		4.3	2.3	22.9
Green Ext Time (p_c), s		1.6	0.0	6.8		2.0	0.0	4.9

Intersection Summary	
HCM 2010 Ctrl Delay	21.3
HCM 2010 LOS	C

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	8	448	6	5	594	5	5	13	12	8	10	5
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	9	487	6	5	646	5	5	14	2	9	11	1
Adj No. of Lanes	1	1	0	1	1	0	0	1	0	0	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	101	1014	12	101	1020	8	115	274	34	189	208	16
Arrive On Green	0.02	0.18	0.18	0.04	0.37	0.37	0.21	0.21	0.21	0.21	0.21	0.21
Sat Flow, veh/h	1774	1836	23	1774	1846	14	251	1332	167	567	1011	79
Grp Volume(v), veh/h	9	0	493	5	0	651	21	0	0	21	0	0
Grp Sat Flow(s),veh/h/ln	1774	0	1859	1774	0	1860	1750	0	0	1657	0	0
Q Serve(g_s), s	0.4	0.0	16.8	0.2	0.0	20.3	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.4	0.0	16.8	0.2	0.0	20.3	0.7	0.0	0.0	0.6	0.0	0.0
Prop In Lane	1.00		0.01	1.00		0.01	0.24		0.10	0.43		0.05
Lane Grp Cap(c), veh/h	101	0	1027	101	0	1028	422	0	0	413	0	0
V/C Ratio(X)	0.09	0.00	0.48	0.05	0.00	0.63	0.05	0.00	0.00	0.05	0.00	0.00
Avail Cap(c_a), veh/h	101	0	1027	101	0	1028	422	0	0	413	0	0
HCM Platoon Ratio	0.33	0.33	0.33	0.67	0.67	0.67	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	32.9	0.0	19.8	32.1	0.0	16.4	22.5	0.0	0.0	22.5	0.0	0.0
Incr Delay (d2), s/veh	1.8	0.0	1.6	0.9	0.0	3.0	0.2	0.0	0.0	0.2	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	0.0	9.1	0.1	0.0	11.2	0.4	0.0	0.0	0.4	0.0	0.0
LnGrp Delay(d),s/veh	34.6	0.0	21.4	33.1	0.0	19.3	22.8	0.0	0.0	22.8	0.0	0.0
LnGrp LOS	C		C	C		B	C			C		
Approach Vol, veh/h		502			656			21			21	
Approach Delay, s/veh		21.6			19.4			22.8			22.8	
Approach LOS		C			B			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		19.0	8.0	43.6		19.0	8.0	43.6
Change Period (Y+Rc), s		4.5	4.0	4.6		4.5	4.0	* 4.6
Max Green Setting (Gmax), s		14.5	4.0	38.4		14.5	4.0	* 39
Max Q Clear Time (g_c+I1), s		2.7	2.2	18.8		2.6	2.4	22.3
Green Ext Time (p_c), s		0.1	0.0	7.5		0.1	0.0	6.9

Intersection Summary	
HCM 2010 Ctrl Delay	20.5
HCM 2010 LOS	C

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	5	328	5	16	627	153	25	55	5	5	61	73
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1900	1863	1900	1900	1863	1863
Adj Flow Rate, veh/h	5	357	4	17	682	153	27	60	2	5	66	12
Adj No. of Lanes	1	1	0	1	1	0	0	1	0	0	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	100	1013	11	100	812	182	138	268	8	62	368	322
Arrive On Green	0.11	1.00	1.00	0.04	0.37	0.37	0.20	0.20	0.20	0.20	0.20	0.20
Sat Flow, veh/h	1774	1839	21	1774	1474	331	352	1319	38	37	1811	1583
Grp Volume(v), veh/h	5	0	361	17	0	835	89	0	0	71	0	12
Grp Sat Flow(s),veh/h/ln	1774	0	1859	1774	0	1804	1709	0	0	1848	0	1583
Q Serve(g_s), s	0.2	0.0	0.0	0.7	0.0	30.0	0.0	0.0	0.0	0.0	0.0	0.4
Cycle Q Clear(g_c), s	0.2	0.0	0.0	0.7	0.0	30.0	2.8	0.0	0.0	2.2	0.0	0.4
Prop In Lane	1.00		0.01	1.00		0.18	0.30		0.02	0.07		1.00
Lane Grp Cap(c), veh/h	100	0	1024	100	0	994	414	0	0	430	0	322
V/C Ratio(X)	0.05	0.00	0.35	0.17	0.00	0.84	0.22	0.00	0.00	0.17	0.00	0.04
Avail Cap(c_a), veh/h	100	0	1024	100	0	994	414	0	0	430	0	322
HCM Platoon Ratio	2.00	2.00	2.00	0.67	0.67	0.67	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	29.7	0.0	0.0	32.5	0.0	19.5	23.6	0.0	0.0	23.4	0.0	22.6
Incr Delay (d2), s/veh	0.9	0.0	1.0	3.6	0.0	8.5	1.2	0.0	0.0	0.8	0.0	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	0.0	0.3	0.4	0.0	17.2	1.6	0.0	0.0	1.2	0.0	0.2
LnGrp Delay(d),s/veh	30.6	0.0	1.0	36.1	0.0	28.0	24.8	0.0	0.0	24.2	0.0	22.9
LnGrp LOS	C		A	D		C	C			C		C
Approach Vol, veh/h		366			852			89			83	
Approach Delay, s/veh		1.4			28.2			24.8			24.0	
Approach LOS		A			C			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		19.0	8.0	43.8		19.0	8.0	43.8
Change Period (Y+Rc), s		* 4.6	4.0	* 4.8		* 4.6	4.0	* 4.8
Max Green Setting (Gmax), s		* 14	4.0	* 39		* 14	4.0	* 38
Max Q Clear Time (g_c+I1), s		4.8	2.7	2.0		4.2	2.2	32.0
Green Ext Time (p_c), s		0.5	0.0	10.7		0.6	0.0	3.9

Intersection Summary	
HCM 2010 Ctrl Delay	20.6
HCM 2010 LOS	C

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	61	236	41	132	547	167	50	656	59	32	571	119
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	66	257	35	143	595	165	54	713	54	35	621	104
Adj No. of Lanes	1	1	0	1	1	0	0	2	0	0	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	100	522	71	276	595	165	84	837	71	78	872	150
Arrive On Green	0.02	0.11	0.11	0.31	0.85	0.85	0.66	0.66	0.66	0.33	0.33	0.33
Sat Flow, veh/h	1774	1606	219	1774	1405	389	81	2553	218	70	2660	458
Grp Volume(v), veh/h	66	0	292	143	0	760	411	0	410	394	0	366
Grp Sat Flow(s),veh/h/ln	1774	0	1824	1774	0	1794	1195	0	1657	1574	0	1614
Q Serve(g_s), s	2.6	0.0	10.7	4.7	0.0	30.0	9.2	0.0	12.0	4.2	0.0	14.0
Cycle Q Clear(g_c), s	2.6	0.0	10.7	4.7	0.0	30.0	23.2	0.0	12.0	16.2	0.0	14.0
Prop In Lane	1.00		0.12	1.00		0.22	0.13		0.13	0.09		0.28
Lane Grp Cap(c), veh/h	100	0	593	276	0	760	449	0	543	571	0	529
V/C Ratio(X)	0.66	0.00	0.49	0.52	0.00	1.00	0.91	0.00	0.76	0.69	0.00	0.69
Avail Cap(c_a), veh/h	100	0	593	276	0	760	449	0	543	571	0	529
HCM Platoon Ratio	0.33	0.33	0.33	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	34.1	0.0	26.1	22.2	0.0	5.4	12.5	0.0	10.3	20.8	0.0	20.7
Incr Delay (d2), s/veh	29.1	0.0	2.9	6.8	0.0	32.6	25.7	0.0	9.4	6.7	0.0	7.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.1	0.0	5.9	2.8	0.0	19.3	10.9	0.0	6.6	7.9	0.0	7.3
LnGrp Delay(d),s/veh	63.2	0.0	29.0	29.1	0.0	38.0	38.2	0.0	19.7	27.5	0.0	28.0
LnGrp LOS	E		C	C		D	D		B	C		C
Approach Vol, veh/h		358			903			821			760	
Approach Delay, s/veh		35.3			36.6			29.0			27.7	
Approach LOS		D			D			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		28.0	15.0	27.8		28.0	8.0	34.8
Change Period (Y+Rc), s		* 4.8	4.0	* 4.8		* 4.8	4.0	* 4.8
Max Green Setting (Gmax), s		* 23	11.0	* 23		* 23	4.0	* 29
Max Q Clear Time (g_c+I1), s		25.2	6.7	12.7		18.2	4.6	32.0
Green Ext Time (p_c), s		0.0	0.1	5.1		3.8	0.0	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	31.9
HCM 2010 LOS	C

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	61	289	61	33	448	19	50	645	59	27	578	6
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	66	314	54	36	487	19	54	701	54	29	628	6
Adj No. of Lanes	1	1	0	1	1	0	0	2	0	0	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	125	569	98	100	629	25	112	1147	87	82	1275	12
Arrive On Green	0.02	0.12	0.12	0.06	0.35	0.35	0.39	0.39	0.39	0.77	0.77	0.77
Sat Flow, veh/h	1774	1549	266	1774	1781	69	141	2963	224	69	3296	31
Grp Volume(v), veh/h	66	0	368	36	0	506	409	0	400	338	0	325
Grp Sat Flow(s),veh/h/ln	1774	0	1816	1774	0	1850	1672	0	1656	1707	0	1690
Q Serve(g_s), s	2.6	0.0	13.5	1.4	0.0	17.2	4.1	0.0	13.8	0.4	0.0	5.0
Cycle Q Clear(g_c), s	2.6	0.0	13.5	1.4	0.0	17.2	13.0	0.0	13.8	14.3	0.0	5.0
Prop In Lane	1.00		0.15	1.00		0.04	0.13		0.14	0.09		0.02
Lane Grp Cap(c), veh/h	125	0	667	100	0	653	705	0	641	716	0	654
V/C Ratio(X)	0.53	0.00	0.55	0.36	0.00	0.77	0.58	0.00	0.62	0.47	0.00	0.50
Avail Cap(c_a), veh/h	125	0	667	100	0	653	705	0	641	716	0	654
HCM Platoon Ratio	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	33.4	0.0	25.6	32.2	0.0	20.4	17.1	0.0	17.5	5.4	0.0	5.5
Incr Delay (d2), s/veh	14.9	0.0	3.3	9.7	0.0	8.7	3.5	0.0	4.5	2.2	0.0	2.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.8	0.0	7.4	1.0	0.0	10.3	7.0	0.0	7.0	2.6	0.0	2.6
LnGrp Delay(d),s/veh	48.4	0.0	28.9	41.9	0.0	29.1	20.6	0.0	22.1	7.7	0.0	8.1
LnGrp LOS	D		C	D		C	C		C	A		A
Approach Vol, veh/h		434			542			809			663	
Approach Delay, s/veh		31.9			29.9			21.3			7.9	
Approach LOS		C			C			C			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		32.0	8.0	30.8		32.0	9.0	29.8
Change Period (Y+Rc), s		* 4.6	4.0	* 4.8		* 4.6	4.0	* 4.8
Max Green Setting (Gmax), s		* 27	4.0	* 25		* 27	5.0	* 25
Max Q Clear Time (g_c+I1), s		15.8	3.4	15.5		16.3	4.6	19.2
Green Ext Time (p_c), s		7.0	0.0	3.8		6.8	0.0	2.6

Intersection Summary	
HCM 2010 Ctrl Delay	21.5
HCM 2010 LOS	C

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	11	330	18	58	595	40	14	65	35	18	66	18
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	12	359	17	63	647	40	15	71	13	20	72	8
Adj No. of Lanes	1	1	0	1	1	0	0	1	0	0	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	101	950	45	151	984	61	82	268	44	96	273	27
Arrive On Green	0.06	0.54	0.54	0.03	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19
Sat Flow, veh/h	1774	1764	84	1774	1736	107	124	1413	232	182	1438	141
Grp Volume(v), veh/h	12	0	376	63	0	687	99	0	0	100	0	0
Grp Sat Flow(s),veh/h/ln	1774	0	1848	1774	0	1844	1770	0	0	1761	0	0
Q Serve(g_s), s	0.5	0.0	8.3	2.5	0.0	24.4	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.5	0.0	8.3	2.5	0.0	24.4	3.3	0.0	0.0	3.3	0.0	0.0
Prop In Lane	1.00		0.05	1.00		0.06	0.15		0.13	0.20		0.08
Lane Grp Cap(c), veh/h	101	0	995	151	0	1045	395	0	0	395	0	0
V/C Ratio(X)	0.12	0.00	0.38	0.42	0.00	0.66	0.25	0.00	0.00	0.25	0.00	0.00
Avail Cap(c_a), veh/h	101	0	995	151	0	1045	395	0	0	395	0	0
HCM Platoon Ratio	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	31.6	0.0	9.4	32.6	0.0	22.4	24.5	0.0	0.0	24.5	0.0	0.0
Incr Delay (d2), s/veh	2.4	0.0	1.1	8.3	0.0	3.2	1.5	0.0	0.0	1.5	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.0	4.5	1.6	0.0	13.4	1.8	0.0	0.0	1.8	0.0	0.0
LnGrp Delay(d),s/veh	34.0	0.0	10.5	40.9	0.0	25.6	26.0	0.0	0.0	26.0	0.0	0.0
LnGrp LOS	C		B	D		C	C			C		
Approach Vol, veh/h		388			750			99			100	
Approach Delay, s/veh		11.3			26.9			26.0			26.0	
Approach LOS		B			C			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		18.0	10.0	42.6		18.0	8.0	44.6
Change Period (Y+Rc), s		* 4.6	4.0	* 4.6		* 4.6	4.0	4.6
Max Green Setting (Gmax), s		* 13	6.0	* 38		* 13	4.0	39.4
Max Q Clear Time (g_c+I1), s		5.3	4.5	10.3		5.3	2.5	26.4
Green Ext Time (p_c), s		0.6	0.0	7.9		0.6	0.0	5.7

Intersection Summary	
HCM 2010 Ctrl Delay	22.2
HCM 2010 LOS	C

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	11	330	27	14	486	4	14	125	35	15	101	1
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	12	359	25	15	528	4	15	136	24	16	110	0
Adj No. of Lanes	1	1	0	1	1	0	0	1	0	0	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	100	827	58	100	887	7	73	410	68	87	470	0
Arrive On Green	0.02	0.16	0.16	0.02	0.16	0.16	0.28	0.28	0.28	0.55	0.55	0.00
Sat Flow, veh/h	1774	1722	120	1774	1846	14	65	1480	245	107	1699	0
Grp Volume(v), veh/h	12	0	384	15	0	532	175	0	0	126	0	0
Grp Sat Flow(s),veh/h/ln	1774	0	1842	1774	0	1860	1790	0	0	1806	0	0
Q Serve(g_s), s	0.5	0.0	13.3	0.6	0.0	18.8	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.5	0.0	13.3	0.6	0.0	18.8	5.5	0.0	0.0	2.5	0.0	0.0
Prop In Lane	1.00		0.07	1.00		0.01	0.09		0.14	0.13		0.00
Lane Grp Cap(c), veh/h	100	0	884	100	0	893	551	0	0	557	0	0
V/C Ratio(X)	0.12	0.00	0.43	0.15	0.00	0.60	0.32	0.00	0.00	0.23	0.00	0.00
Avail Cap(c_a), veh/h	100	0	884	100	0	893	551	0	0	557	0	0
HCM Platoon Ratio	0.33	0.33	0.33	0.33	0.33	0.33	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	33.0	0.0	21.1	33.1	0.0	23.4	20.5	0.0	0.0	12.0	0.0	0.0
Incr Delay (d2), s/veh	2.4	0.0	1.6	3.1	0.0	2.9	1.5	0.0	0.0	0.9	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.0	7.2	0.4	0.0	10.4	3.0	0.0	0.0	1.4	0.0	0.0
LnGrp Delay(d),s/veh	35.4	0.0	22.7	36.2	0.0	26.3	22.0	0.0	0.0	12.9	0.0	0.0
LnGrp LOS	D		C	D		C	C			B		
Approach Vol, veh/h		396			547			175			126	
Approach Delay, s/veh		23.0			26.6			22.0			12.9	
Approach LOS		C			C			C			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		24.2	8.0	38.6		24.2	8.0	38.6
Change Period (Y+Rc), s		* 4.6	4.0	4.6		* 4.6	4.0	* 4.6
Max Green Setting (Gmax), s		* 19	4.0	33.4		* 20	4.0	* 34
Max Q Clear Time (g_c+I1), s		7.5	2.6	15.3		4.5	2.5	20.8
Green Ext Time (p_c), s		1.3	0.0	5.8		1.5	0.0	4.9

Intersection Summary	
HCM 2010 Ctrl Delay	23.4
HCM 2010 LOS	C

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	6	352	14	58	570	24	26	43	28	12	44	21
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	7	383	12	63	620	23	28	47	10	13	48	7
Adj No. of Lanes	1	1	0	1	1	0	0	1	0	0	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	13	747	23	81	810	30	205	310	57	133	403	52
Arrive On Green	0.01	0.42	0.42	0.05	0.45	0.45	0.29	0.29	0.29	0.29	0.29	0.29
Sat Flow, veh/h	1774	1797	56	1774	1785	66	400	1077	197	182	1397	181
Grp Volume(v), veh/h	7	0	395	63	0	643	85	0	0	68	0	0
Grp Sat Flow(s),veh/h/ln	1774	0	1853	1774	0	1851	1673	0	0	1760	0	0
Q Serve(g_s), s	0.2	0.0	8.5	1.9	0.0	15.5	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.2	0.0	8.5	1.9	0.0	15.5	1.9	0.0	0.0	1.5	0.0	0.0
Prop In Lane	1.00		0.03	1.00		0.04	0.33		0.12	0.19		0.10
Lane Grp Cap(c), veh/h	13	0	770	81	0	840	572	0	0	587	0	0
V/C Ratio(X)	0.53	0.00	0.51	0.78	0.00	0.77	0.15	0.00	0.00	0.12	0.00	0.00
Avail Cap(c_a), veh/h	133	0	1248	199	0	1288	572	0	0	587	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	26.4	0.0	11.6	25.2	0.0	12.2	14.2	0.0	0.0	14.1	0.0	0.0
Incr Delay (d2), s/veh	29.8	0.0	0.5	14.9	0.0	1.5	0.5	0.0	0.0	0.4	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	0.0	4.4	1.2	0.0	8.2	1.0	0.0	0.0	0.8	0.0	0.0
LnGrp Delay(d),s/veh	56.2	0.0	12.1	40.2	0.0	13.7	14.8	0.0	0.0	14.5	0.0	0.0
LnGrp LOS	E		B	D		B	B			B		
Approach Vol, veh/h		402			706			85			68	
Approach Delay, s/veh		12.9			16.1			14.8			14.5	
Approach LOS		B			B			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		20.0	6.4	27.0		20.0	4.4	29.1
Change Period (Y+Rc), s		* 4.6	4.0	* 4.8		* 4.6	4.0	* 4.8
Max Green Setting (Gmax), s		* 15	6.0	* 36		* 15	4.0	* 37
Max Q Clear Time (g_c+I1), s		3.9	3.9	10.5		3.5	2.2	17.5
Green Ext Time (p_c), s		0.5	0.0	7.4		0.6	0.0	6.7

Intersection Summary	
HCM 2010 Ctrl Delay	14.9
HCM 2010 LOS	B

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	6	288	22	14	466	1	26	92	28	9	78	1
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	7	313	20	15	507	1	28	100	17	10	85	0
Adj No. of Lanes	1	1	0	1	1	0	0	1	0	0	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	100	881	56	100	945	2	108	331	50	74	431	0
Arrive On Green	0.06	0.51	0.51	0.02	0.17	0.17	0.25	0.25	0.25	0.25	0.25	0.00
Sat Flow, veh/h	1774	1733	111	1774	1858	4	194	1346	205	74	1755	0
Grp Volume(v), veh/h	7	0	333	15	0	508	145	0	0	95	0	0
Grp Sat Flow(s),veh/h/ln	1774	0	1843	1774	0	1862	1744	0	0	1828	0	0
Q Serve(g_s), s	0.3	0.0	7.7	0.6	0.0	17.7	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.3	0.0	7.7	0.6	0.0	17.7	4.6	0.0	0.0	2.9	0.0	0.0
Prop In Lane	1.00		0.06	1.00		0.00	0.19		0.12	0.11		0.00
Lane Grp Cap(c), veh/h	100	0	937	100	0	947	489	0	0	506	0	0
V/C Ratio(X)	0.07	0.00	0.36	0.15	0.00	0.54	0.30	0.00	0.00	0.19	0.00	0.00
Avail Cap(c_a), veh/h	100	0	937	100	0	947	489	0	0	506	0	0
HCM Platoon Ratio	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	31.6	0.0	10.4	33.1	0.0	21.8	21.9	0.0	0.0	21.2	0.0	0.0
Incr Delay (d2), s/veh	1.3	0.0	1.1	3.1	0.0	2.2	1.5	0.0	0.0	0.8	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	0.0	4.2	0.4	0.0	9.7	2.5	0.0	0.0	1.6	0.0	0.0
LnGrp Delay(d),s/veh	33.0	0.0	11.5	36.2	0.0	24.0	23.4	0.0	0.0	22.0	0.0	0.0
LnGrp LOS	C		B	D		C	C			C		
Approach Vol, veh/h		340			523			145			95	
Approach Delay, s/veh		11.9			24.4			23.4			22.0	
Approach LOS		B			C			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		22.0	8.0	40.8		22.0	8.0	40.8
Change Period (Y+Rc), s		* 4.6	4.0	* 4.8		* 4.6	4.0	* 4.8
Max Green Setting (Gmax), s		* 17	4.0	* 35		* 17	4.0	* 36
Max Q Clear Time (g_c+I1), s		6.6	2.6	9.7		4.9	2.3	19.7
Green Ext Time (p_c), s		0.9	0.0	5.9		1.0	0.0	5.0

Intersection Summary	
HCM 2010 Ctrl Delay	20.2
HCM 2010 LOS	C

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	*JCH*	Intersection	*Commerce St/Navidad St*
Agency/Co.	*CH2M HILL*	Jurisdiction	*City of San Antonio*
Date Performed	*3/25/2015*	Analysis Year	*2020 Scenario 1*
Analysis Time Period	*PM Peak Hour*		

Project Description *Commerce/Buena Vista One-Way Couplet Conversion Traff. Study*

East/West Street: *Commerce Street* | North/South Street: *Navidad Street*

Intersection Orientation: *East-West* | Study Period (hrs): *0.25*

Vehicle Volumes and Adjustments

Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)	*20*	*328*	*20*	*20*	*712*	*20*
Peak-Hour Factor, PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Hourly Flow Rate, HFR (veh/h)	*20*	*328*	*20*	*20*	*712*	*20*
Percent Heavy Vehicles	*0*	--	--	*0*	--	--
Median Type	*Undivided*					
RT Channelized			*0*			*0*
Lanes	*0*	*1*	*0*	*0*	*1*	*0*
Configuration	*LTR*			*LTR*		
Upstream Signal		*0*			*0*	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)	*20*	*20*	*20*	*20*	*20*	*20*
Peak-Hour Factor, PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Hourly Flow Rate, HFR (veh/h)	*20*	*20*	*20*	*20*	*20*	*20*
Percent Heavy Vehicles	*0*	*0*	*0*	*0*	*0*	*0*
Percent Grade (%)		*0*			*0*	
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*0*	*1*	*0*	*0*	*1*	*0*
Configuration		*LTR*			*LTR*	

Delay, Queue Length, and Level of Service

Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	*LTR*	*LTR*		*LTR*			*LTR*	
v (veh/h)	*20*	*20*		*60*			*60*	
C (m) (veh/h)	*882*	*1222*		*221*			*209*	
v/c	*0.02*	*0.02*		*0.27*			*0.29*	
95% queue length	*0.07*	*0.05*		*1.06*			*1.14*	
Control Delay (s/veh)	*9.2*	*8.0*		*27.3*			*29.0*	
LOS	*A*	*A*		*D*			*D*	
Approach Delay (s/veh)	--	--	*27.3*			*29.0*		
Approach LOS	--	--	*D*			*D*		

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2020 Scenario 2 AM Peak Hour

HCM 2010 Signalized Intersection Summary
1: Pecos Street & Commerce Street

4/17/2015

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	248	225	167	0	0	0	0	0	606	292
Number	7	4	14	3	8	18				1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	0	1863	1863	1863	0				0	1863	1900
Adj Flow Rate, veh/h	0	0	83	245	182	0				0	659	182
Adj No. of Lanes	0	0	1	2	2	0				0	3	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92				0.92	0.92	0.92
Percent Heavy Veh, %	0	0	2	2	2	0				0	2	0
Cap, veh/h	0	0	0	586	2860	0				0	0	0
Arrive On Green	0.00	0.00	0.00	0.81	0.81	0.00				0.00	0.00	0.00
Sat Flow, veh/h		0		2541	3632	0					0	
Grp Volume(v), veh/h		0.0		245	182	0					0.0	
Grp Sat Flow(s),veh/h/ln				1270	1770	0						
Q Serve(g_s), s				0.1	0.3	0.0						
Cycle Q Clear(g_c), s				0.1	0.3	0.0						
Prop In Lane				1.00		0.00						
Lane Grp Cap(c), veh/h				586	2860	0						
V/C Ratio(X)				0.42	0.06	0.00						
Avail Cap(c_a), veh/h				586	2860	0						
HCM Platoon Ratio				1.00	1.00	1.00						
Upstream Filter(I)				1.00	1.00	0.00						
Uniform Delay (d), s/veh				2.4	0.5	0.0						
Incr Delay (d2), s/veh				2.2	0.0	0.0						
Initial Q Delay(d3),s/veh				0.0	0.0	0.0						
%ile BackOfQ(50%),veh/ln				0.3	0.1	0.0						
LnGrp Delay(d),s/veh				4.6	0.5	0.0						
LnGrp LOS				A	A							
Approach Vol, veh/h					427							
Approach Delay, s/veh					2.9							
Approach LOS					A							

Timer	1	2	3	4	5	6	7	8
Assigned Phs								8
Phs Duration (G+Y+Rc), s								25.0
Change Period (Y+Rc), s								* 4.8
Max Green Setting (Gmax), s								* 20
Max Q Clear Time (g_c+I1), s								2.3
Green Ext Time (p_c), s								1.9

Intersection Summary	
HCM 2010 Ctrl Delay	2.9
HCM 2010 LOS	A

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	373	240	0	0	0	0	0	0	206	458	169
Number	7	4	14							1	6	16
Initial Q (Qb), veh	0	0	0							0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00							1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00							1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1863	1900							1900	1863	1900
Adj Flow Rate, veh/h	0	405	225							224	498	20
Adj No. of Lanes	0	1	0							0	4	0
Peak Hour Factor	0.92	0.92	0.92							0.92	0.92	0.92
Percent Heavy Veh, %	0	2	2							2	2	2
Cap, veh/h	0	615	342							555	1409	56
Arrive On Green	0.00	0.55	0.55							0.11	0.11	0.11
Sat Flow, veh/h	0	1126	626							1412	4404	176
Grp Volume(v), veh/h	0	0	630							224	329	189
Grp Sat Flow(s),veh/h/ln	0	0	1752							1412	1458	1664
Q Serve(g_s), s	0.0	0.0	17.9							10.5	7.3	7.4
Cycle Q Clear(g_c), s	0.0	0.0	17.9							10.5	7.3	7.4
Prop In Lane	0.00		0.36							1.00		0.11
Lane Grp Cap(c), veh/h	0	0	956							555	933	532
V/C Ratio(X)	0.00	0.00	0.66							0.40	0.35	0.36
Avail Cap(c_a), veh/h	0	0	956							555	933	532
HCM Platoon Ratio	1.00	1.00	1.00							0.33	0.33	0.33
Upstream Filter(I)	0.00	0.00	1.00							1.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	11.3							26.0	24.6	24.6
Incr Delay (d2), s/veh	0.0	0.0	3.6							2.2	1.0	1.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0							0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	9.5							4.4	3.1	3.7
LnGrp Delay(d),s/veh	0.0	0.0	14.8							28.2	25.6	26.4
LnGrp LOS			B							C	C	C
Approach Vol, veh/h		630									742	
Approach Delay, s/veh		14.8									26.6	
Approach LOS		B									C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6		
Phs Duration (G+Y+Rc), s				43.0		27.0		
Change Period (Y+Rc), s				* 4.8		4.6		
Max Green Setting (Gmax), s				* 38		22.4		
Max Q Clear Time (g_c+I1), s				19.9		12.5		
Green Ext Time (p_c), s				4.3		3.3		

Intersection Summary	
HCM 2010 Ctrl Delay	21.2
HCM 2010 LOS	C

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	20	260	75	6	342	14	2	17	0	0	1	7
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	22	283	66	7	372	15	2	18	0	0	1	1
Adj No. of Lanes	1	1	0	1	1	1	0	1	0	0	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	151	787	183	151	1003	852	67	339	0	0	162	162
Arrive On Green	0.08	0.54	0.54	0.08	0.54	0.54	0.19	0.19	0.00	0.00	0.19	0.19
Sat Flow, veh/h	1774	1462	341	1774	1863	1583	58	1786	0	0	856	856
Grp Volume(v), veh/h	22	0	349	7	372	15	20	0	0	0	0	2
Grp Sat Flow(s),veh/h/ln	1774	0	1803	1774	1863	1583	1844	0	0	0	0	1712
Q Serve(g_s), s	0.8	0.0	7.8	0.3	8.1	0.3	0.0	0.0	0.0	0.0	0.0	0.1
Cycle Q Clear(g_c), s	0.8	0.0	7.8	0.3	8.1	0.3	0.6	0.0	0.0	0.0	0.0	0.1
Prop In Lane	1.00		0.19	1.00		1.00	0.10		0.00	0.00		0.50
Lane Grp Cap(c), veh/h	151	0	970	151	1003	852	406	0	0	0	0	325
V/C Ratio(X)	0.15	0.00	0.36	0.05	0.37	0.02	0.05	0.00	0.00	0.00	0.00	0.01
Avail Cap(c_a), veh/h	151	0	970	151	1003	852	406	0	0	0	0	325
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00	1.00
Uniform Delay (d), s/veh	29.9	0.0	9.3	29.7	9.4	7.6	23.4	0.0	0.0	0.0	0.0	23.2
Incr Delay (d2), s/veh	2.0	0.0	1.0	0.6	1.1	0.0	0.2	0.0	0.0	0.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	0.0	4.2	0.1	4.4	0.1	0.3	0.0	0.0	0.0	0.0	0.0
LnGrp Delay(d),s/veh	32.0	0.0	10.4	30.3	10.5	7.6	23.7	0.0	0.0	0.0	0.0	23.2
LnGrp LOS	C		B	C	B	A	C					C
Approach Vol, veh/h		371			394			20			2	
Approach Delay, s/veh		11.7			10.7			23.7			23.2	
Approach LOS		B			B			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		18.0	10.0	42.6		18.0	10.0	42.6
Change Period (Y+Rc), s		* 4.6	4.0	* 4.6		* 4.6	4.0	4.6
Max Green Setting (Gmax), s		* 13	6.0	* 38		* 13	6.0	37.4
Max Q Clear Time (g_c+I1), s		2.6	2.3	9.8		2.1	2.8	10.1
Green Ext Time (p_c), s		0.0	0.0	4.7		0.0	0.0	4.7

Intersection Summary	
HCM 2010 Ctrl Delay	11.5
HCM 2010 LOS	B

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	145	322	134	22	316	34	134	551	50	29	168	121
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	158	350	122	24	343	9	146	599	43	32	183	27
Adj No. of Lanes	1	1	0	1	1	1	1	2	0	1	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	175	446	155	100	550	468	160	1008	72	100	803	117
Arrive On Green	0.13	0.45	0.45	0.11	0.59	0.59	0.09	0.30	0.30	0.06	0.26	0.26
Sat Flow, veh/h	1774	1321	460	1774	1863	1583	1774	3350	240	1774	3102	451
Grp Volume(v), veh/h	158	0	472	24	343	9	146	316	326	32	103	107
Grp Sat Flow(s),veh/h/ln	1774	0	1781	1774	1863	1583	1774	1770	1820	1774	1770	1783
Q Serve(g_s), s	6.2	0.0	16.0	0.9	8.5	0.2	5.8	10.8	10.8	1.2	3.3	3.4
Cycle Q Clear(g_c), s	6.2	0.0	16.0	0.9	8.5	0.2	5.8	10.8	10.8	1.2	3.3	3.4
Prop In Lane	1.00		0.26	1.00		1.00	1.00		0.13	1.00		0.25
Lane Grp Cap(c), veh/h	175	0	601	100	550	468	160	533	548	100	458	461
V/C Ratio(X)	0.90	0.00	0.78	0.24	0.62	0.02	0.91	0.59	0.59	0.32	0.23	0.23
Avail Cap(c_a), veh/h	175	0	601	100	550	468	160	533	548	100	458	461
HCM Platoon Ratio	1.33	1.33	1.33	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	30.6	0.0	17.4	30.2	12.0	10.3	32.1	21.1	21.2	32.2	20.7	20.8
Incr Delay (d2), s/veh	46.8	0.0	9.9	5.6	5.3	0.1	51.5	4.8	4.7	8.3	1.1	1.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.3	0.0	9.4	0.6	4.9	0.1	5.1	6.0	6.1	0.8	1.7	1.8
LnGrp Delay(d),s/veh	77.3	0.0	27.3	35.8	17.2	10.4	83.6	26.0	25.9	40.5	21.9	21.9
LnGrp LOS	E		C	D	B	B	F	C	C	D	C	C
Approach Vol, veh/h		630			376			788			242	
Approach Delay, s/veh		39.9			18.3			36.6			24.4	
Approach LOS		D			B			D			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.0	26.3	8.0	28.8	11.0	23.3	11.0	25.8
Change Period (Y+Rc), s	4.0	* 4.9	4.0	* 4.8	* 4.6	* 4.9	4.0	* 4.8
Max Green Setting (Gmax), s	4.0	* 21	4.0	* 24	* 6.4	* 18	7.0	* 20
Max Q Clear Time (g_c+I1), s	3.2	12.8	2.9	18.0	7.8	5.4	8.2	10.5
Green Ext Time (p_c), s	0.0	3.3	0.0	2.5	0.0	4.3	0.0	3.5

Intersection Summary	
HCM 2010 Ctrl Delay	32.8
HCM 2010 LOS	C

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

HCM Signalized Intersection Capacity Analysis
5: Buena Vista Street So. Frontage & Frio Street & Buena Vista Street

4/17/2015

Movement	EBL	EBT	EBR	WBL2	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Volume (vph)	96	482	79	0	6	210	6	134	645	50	94	171
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0				4.0		4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	1.00				1.00		1.00	0.95		1.00	0.95
Frt	1.00	0.98				1.00		1.00	0.99		1.00	0.99
Flt Protected	0.95	1.00				1.00		0.95	1.00		0.95	1.00
Satd. Flow (prot)	1770	1823				1852		1770	3501		1770	3502
Flt Permitted	0.95	1.00				0.89		0.54	1.00		0.18	1.00
Satd. Flow (perm)	1770	1823				1659		1007	3501		340	3502
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)	104	524	86	0	7	228	7	146	701	54	102	186
RTOR Reduction (vph)	0	0	0	0	0	2	0	0	6	0	0	0
Lane Group Flow (vph)	104	610	0	0	0	240	0	146	749	0	102	200
Turn Type	Prot	NA		Prot	Perm	NA		pm+pt	NA		pm+pt	NA
Protected Phases	7	4		3		8		5	2		1	6
Permitted Phases					8			2			6	
Actuated Green, G (s)	8.1	34.4				22.3		30.8	24.8		25.0	21.9
Effective Green, g (s)	8.1	34.4				22.3		30.8	24.8		25.0	21.9
Actuated g/C Ratio	0.09	0.36				0.24		0.33	0.26		0.27	0.23
Clearance Time (s)	4.0	4.0				4.0		4.0	4.0		4.0	4.0
Vehicle Extension (s)	3.0	3.0				3.0		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	152	665				392		377	920		137	813
v/s Ratio Prot	0.06	c0.33						c0.02	c0.21		c0.02	0.06
v/s Ratio Perm						0.14		0.10			0.17	
v/c Ratio	0.68	0.92				0.61		0.39	0.81		0.74	0.25
Uniform Delay, d1	41.9	28.6				32.2		23.4	32.6		31.0	29.5
Progression Factor	1.00	1.00				1.00		1.00	1.00		1.00	1.00
Incremental Delay, d2	12.0	17.5				2.8		0.7	7.8		19.5	0.7
Delay (s)	53.9	46.1				35.0		24.0	40.4		50.6	30.2
Level of Service	D	D				C		C	D		D	C
Approach Delay (s)		47.2				35.0			37.8			37.1
Approach LOS		D				C			D			D

Intersection Summary			
HCM 2000 Control Delay	40.4	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	94.3	Sum of lost time (s)	20.0
Intersection Capacity Utilization	86.5%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SBR	NEL	NER	NER2
Lane Configurations				
Volume (vph)	13	3	1	13
Ideal Flow (vphpl)	1900	1900	1900	1900
Total Lost time (s)		4.0		4.0
Lane Util. Factor		1.00		0.95
Frt		0.90		0.85
Flt Protected		0.98		1.00
Satd. Flow (prot)		1649		1504
Flt Permitted		0.98		1.00
Satd. Flow (perm)		1649		1504
Peak-hour factor, PHF	0.92	0.92	0.92	0.92
Adj. Flow (vph)	14	3	1	14
RTOR Reduction (vph)	0	7	0	7
Lane Group Flow (vph)	0	2	0	2
Turn Type		Prot		Prot
Protected Phases		9		9
Permitted Phases				
Actuated Green, G (s)		16.0		16.0
Effective Green, g (s)		16.0		16.0
Actuated g/C Ratio		0.17		0.17
Clearance Time (s)		4.0		4.0
Vehicle Extension (s)		3.0		3.0
Lane Grp Cap (vph)		279		255
v/s Ratio Prot		0.00		c0.00
v/s Ratio Perm				
v/c Ratio		0.01		0.01
Uniform Delay, d1		32.5		32.5
Progression Factor		1.00		1.00
Incremental Delay, d2		0.0		0.0
Delay (s)		32.6		32.6
Level of Service		C		C
Approach Delay (s)		32.6		
Approach LOS		C		

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	77	418	14	78	294	43	23	330	52	41	286	91
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	84	454	5	85	320	15	25	359	39	45	311	60
Adj No. of Lanes	1	1	1	1	1	1	0	2	0	0	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	201	712	606	201	712	606	87	954	101	133	814	153
Arrive On Green	0.23	0.76	0.76	0.11	0.38	0.38	0.63	0.63	0.63	0.32	0.32	0.32
Sat Flow, veh/h	1774	1863	1583	1774	1863	1583	96	3007	318	225	2565	482
Grp Volume(v), veh/h	84	454	5	85	320	15	222	0	201	216	0	200
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1781	0	1639	1661	0	1610
Q Serve(g_s), s	2.9	7.9	0.1	3.2	9.0	0.4	0.0	0.0	4.2	0.0	0.0	6.9
Cycle Q Clear(g_c), s	2.9	7.9	0.1	3.2	9.0	0.4	4.0	0.0	4.2	6.3	0.0	6.9
Prop In Lane	1.00		1.00	1.00		1.00	0.11		0.19	0.21		0.30
Lane Grp Cap(c), veh/h	201	712	606	201	712	606	622	0	520	589	0	511
V/C Ratio(X)	0.42	0.64	0.01	0.42	0.45	0.02	0.36	0.00	0.39	0.37	0.00	0.39
Avail Cap(c_a), veh/h	201	712	606	201	712	606	622	0	520	589	0	511
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	25.3	6.1	5.1	29.1	16.3	13.6	9.5	0.0	9.6	18.6	0.0	18.8
Incr Delay (d2), s/veh	6.3	4.3	0.0	6.4	2.0	0.1	1.6	0.0	2.2	1.8	0.0	2.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.7	4.6	0.0	1.9	5.0	0.2	2.2	0.0	2.2	3.5	0.0	3.3
LnGrp Delay(d),s/veh	31.6	10.4	5.2	35.6	18.3	13.7	11.1	0.0	11.7	20.4	0.0	21.0
LnGrp LOS	C	B	A	D	B	B	B		B	C		C
Approach Vol, veh/h		543			420			423			416	
Approach Delay, s/veh		13.6			21.6			11.4			20.7	
Approach LOS		B			C			B			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		27.0	12.0	31.6		27.0	12.0	31.6
Change Period (Y+Rc), s		* 4.6	4.0	* 4.6		* 4.6	4.0	4.6
Max Green Setting (Gmax), s		* 22	8.0	* 27		* 22	8.0	26.4
Max Q Clear Time (g_c+I1), s		6.2	5.2	9.9		8.9	4.9	11.0
Green Ext Time (p_c), s		4.8	0.0	4.4		4.4	0.0	4.2

Intersection Summary	
HCM 2010 Ctrl Delay	16.6
HCM 2010 LOS	B

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	51	628	17	20	240	8	23	273	52	33	256	10
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	55	683	16	22	261	7	25	297	34	36	278	7
Adj No. of Lanes	1	1	0	1	1	0	0	2	0	0	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	150	871	20	100	816	22	90	814	90	125	839	21
Arrive On Green	0.17	0.96	0.96	0.06	0.45	0.45	0.27	0.27	0.27	0.55	0.55	0.55
Sat Flow, veh/h	1774	1813	42	1774	1806	48	117	2970	330	229	3060	76
Grp Volume(v), veh/h	55	0	699	22	0	268	187	0	169	166	0	155
Grp Sat Flow(s),veh/h/ln	1774	0	1855	1774	0	1854	1780	0	1637	1684	0	1682
Q Serve(g_s), s	1.9	0.0	4.3	0.8	0.0	6.6	0.0	0.0	5.9	0.0	0.0	3.6
Cycle Q Clear(g_c), s	1.9	0.0	4.3	0.8	0.0	6.6	5.7	0.0	5.9	3.5	0.0	3.6
Prop In Lane	1.00		0.02	1.00		0.03	0.13		0.20	0.22		0.05
Lane Grp Cap(c), veh/h	150	0	891	100	0	838	545	0	449	523	0	461
V/C Ratio(X)	0.37	0.00	0.78	0.22	0.00	0.32	0.34	0.00	0.38	0.32	0.00	0.34
Avail Cap(c_a), veh/h	150	0	891	100	0	838	545	0	449	523	0	461
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	27.7	0.0	0.8	31.9	0.0	12.4	20.7	0.0	20.8	12.4	0.0	12.4
Incr Delay (d2), s/veh	6.7	0.0	6.9	5.0	0.0	1.0	1.7	0.0	2.4	1.6	0.0	2.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.2	0.0	2.7	0.5	0.0	3.6	3.2	0.0	3.0	1.9	0.0	1.9
LnGrp Delay(d),s/veh	34.5	0.0	7.7	36.9	0.0	13.4	22.5	0.0	23.2	14.0	0.0	14.4
LnGrp LOS	C		A	D		B	C		C	B		B
Approach Vol, veh/h		754			290			356			321	
Approach Delay, s/veh		9.6			15.2			22.8			14.2	
Approach LOS		A			B			C			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		24.0	8.0	38.8		24.0	10.0	36.8
Change Period (Y+Rc), s		* 4.6	4.0	* 4.8		* 4.6	4.0	* 4.8
Max Green Setting (Gmax), s		* 19	4.0	* 33		* 19	6.0	* 32
Max Q Clear Time (g_c+I1), s		7.9	2.8	6.3		5.6	3.9	8.6
Green Ext Time (p_c), s		3.2	0.0	7.1		3.5	0.0	6.8

Intersection Summary	
HCM 2010 Ctrl Delay	14.2
HCM 2010 LOS	B

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	20	595	20	8	355	10	15	11	20	20	16	4
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	22	647	12	9	386	7	16	12	2	22	17	1
Adj No. of Lanes	1	1	1	1	1	1	0	1	0	0	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	101	1108	942	101	1108	942	192	128	17	198	134	6
Arrive On Green	0.11	1.00	1.00	0.11	1.00	1.00	0.16	0.16	0.16	0.16	0.16	0.16
Sat Flow, veh/h	1774	1863	1583	1774	1863	1583	706	790	107	739	828	40
Grp Volume(v), veh/h	22	647	12	9	386	7	30	0	0	40	0	0
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1603	0	0	1607	0	0
Q Serve(g_s), s	0.8	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.8	0.0	0.0	0.3	0.0	0.0	1.0	0.0	0.0	1.3	0.0	0.0
Prop In Lane	1.00		1.00	1.00		1.00	0.53		0.07	0.55		0.02
Lane Grp Cap(c), veh/h	101	1108	942	101	1108	942	337	0	0	339	0	0
V/C Ratio(X)	0.22	0.58	0.01	0.09	0.35	0.01	0.09	0.00	0.00	0.12	0.00	0.00
Avail Cap(c_a), veh/h	101	1108	942	101	1108	942	337	0	0	339	0	0
HCM Platoon Ratio	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	29.9	0.0	0.0	29.7	0.0	0.0	25.2	0.0	0.0	25.4	0.0	0.0
Incr Delay (d2), s/veh	4.9	2.3	0.0	1.8	0.9	0.0	0.5	0.0	0.0	0.7	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	0.7	0.0	0.2	0.3	0.0	0.5	0.0	0.0	0.7	0.0	0.0
LnGrp Delay(d),s/veh	34.8	2.3	0.0	31.4	0.9	0.0	25.8	0.0	0.0	26.1	0.0	0.0
LnGrp LOS	C	A	A	C	A	A	C			C		
Approach Vol, veh/h		681			402			30			40	
Approach Delay, s/veh		3.3			1.5			25.8			26.1	
Approach LOS		A			A			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		16.0	8.0	46.6		16.0	8.0	46.6
Change Period (Y+Rc), s		* 4.6	4.0	* 4.6		* 4.6	4.0	4.6
Max Green Setting (Gmax), s		* 11	4.0	* 42		* 11	4.0	41.4
Max Q Clear Time (g_c+I1), s		3.0	2.3	2.0		3.3	2.8	2.0
Green Ext Time (p_c), s		0.1	0.0	8.2		0.1	0.0	8.2

Intersection Summary	
HCM 2010 Ctrl Delay	4.0
HCM 2010 LOS	A

Notes

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	7	550	38	39	344	24	31	181	37	8	146	22
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	8	598	23	42	374	11	34	197	30	9	159	15
Adj No. of Lanes	1	1	1	1	1	1	0	1	0	0	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	100	842	716	100	842	716	96	431	61	62	495	45
Arrive On Green	0.08	0.60	0.60	0.11	0.90	0.90	0.10	0.10	0.10	0.30	0.30	0.30
Sat Flow, veh/h	1774	1863	1583	1774	1863	1583	129	1426	202	30	1638	149
Grp Volume(v), veh/h	8	598	23	42	374	11	261	0	0	183	0	0
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1757	0	0	1818	0	0
Q Serve(g_s), s	0.3	15.8	0.4	1.6	2.3	0.0	0.6	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.3	15.8	0.4	1.6	2.3	0.0	9.6	0.0	0.0	5.5	0.0	0.0
Prop In Lane	1.00		1.00	1.00		1.00	0.13		0.11	0.05		0.08
Lane Grp Cap(c), veh/h	100	842	716	100	842	716	588	0	0	603	0	0
V/C Ratio(X)	0.08	0.71	0.03	0.42	0.44	0.02	0.44	0.00	0.00	0.30	0.00	0.00
Avail Cap(c_a), veh/h	100	842	716	100	842	716	588	0	0	603	0	0
HCM Platoon Ratio	1.33	1.33	1.33	2.00	2.00	2.00	0.33	0.33	0.33	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	31.0	10.9	7.8	30.3	2.0	1.9	26.5	0.0	0.0	19.1	0.0	0.0
Incr Delay (d2), s/veh	1.6	5.0	0.1	12.4	1.7	0.0	2.4	0.0	0.0	1.3	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	9.0	0.2	1.1	1.4	0.0	5.2	0.0	0.0	3.0	0.0	0.0
LnGrp Delay(d),s/veh	32.6	15.9	7.9	42.7	3.7	1.9	29.0	0.0	0.0	20.4	0.0	0.0
LnGrp LOS	C	B	A	D	A	A	C			C		
Approach Vol, veh/h		629			427			261			183	
Approach Delay, s/veh		15.9			7.5			29.0			20.4	
Approach LOS		B			A			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		26.0	8.0	36.8		26.0	8.0	36.8
Change Period (Y+Rc), s		* 4.6	4.0	* 4.8		* 4.6	4.0	* 4.8
Max Green Setting (Gmax), s		* 21	4.0	* 32		* 21	4.0	* 31
Max Q Clear Time (g_c+I1), s		11.6	3.6	17.8		7.5	2.3	4.3
Green Ext Time (p_c), s		1.9	0.0	5.4		2.3	0.0	7.0

Intersection Summary	
HCM 2010 Ctrl Delay	16.3
HCM 2010 LOS	B

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	5	550	46	10	282	4	31	130	37	6	65	2
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	5	598	46	11	307	4	34	141	28	7	71	0
Adj No. of Lanes	1	1	0	1	1	0	0	1	0	0	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	100	891	69	100	957	12	100	309	56	68	412	0
Arrive On Green	0.11	1.00	1.00	0.11	1.00	1.00	0.23	0.23	0.23	0.23	0.23	0.00
Sat Flow, veh/h	1774	1708	131	1774	1835	24	174	1334	241	54	1779	0
Grp Volume(v), veh/h	5	0	644	11	0	311	203	0	0	78	0	0
Grp Sat Flow(s),veh/h/ln	1774	0	1840	1774	0	1859	1749	0	0	1833	0	0
Q Serve(g_s), s	0.2	0.0	0.0	0.4	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.2	0.0	0.0	0.4	0.0	0.0	6.9	0.0	0.0	2.4	0.0	0.0
Prop In Lane	1.00		0.07	1.00		0.01	0.17		0.14	0.09		0.00
Lane Grp Cap(c), veh/h	100	0	960	100	0	970	464	0	0	479	0	0
V/C Ratio(X)	0.05	0.00	0.67	0.11	0.00	0.32	0.44	0.00	0.00	0.16	0.00	0.00
Avail Cap(c_a), veh/h	100	0	960	100	0	970	464	0	0	479	0	0
HCM Platoon Ratio	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	29.8	0.0	0.0	29.9	0.0	0.0	23.6	0.0	0.0	21.9	0.0	0.0
Incr Delay (d2), s/veh	0.9	0.0	3.7	2.2	0.0	0.9	3.0	0.0	0.0	0.7	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	0.0	1.0	0.3	0.0	0.2	3.8	0.0	0.0	1.3	0.0	0.0
LnGrp Delay(d),s/veh	30.7	0.0	3.7	32.1	0.0	0.9	26.6	0.0	0.0	22.6	0.0	0.0
LnGrp LOS	C		A	C		A	C			C		
Approach Vol, veh/h		649			322			203			78	
Approach Delay, s/veh		3.9			1.9			26.6			22.6	
Approach LOS		A			A			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		21.0	8.0	41.9		21.0	8.0	41.9
Change Period (Y+Rc), s		* 4.6	4.0	* 4.9		* 4.6	4.0	* 4.9
Max Green Setting (Gmax), s		* 16	4.0	* 36		* 16	4.0	* 37
Max Q Clear Time (g_c+I1), s		8.9	2.4	2.0		4.4	2.2	2.0
Green Ext Time (p_c), s		0.9	0.0	7.2		1.2	0.0	7.2

Intersection Summary	
HCM 2010 Ctrl Delay	8.3
HCM 2010 LOS	A

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	4	605	4	20	315	20	20	11	14	7	5	20
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	4	658	4	22	342	19	22	12	2	8	5	2
Adj No. of Lanes	1	1	0	1	1	0	0	1	0	0	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	101	1048	6	101	991	55	245	120	17	216	125	40
Arrive On Green	0.11	1.00	1.00	0.02	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19
Sat Flow, veh/h	1774	1850	11	1774	1748	97	852	629	87	719	653	211
Grp Volume(v), veh/h	4	0	662	22	0	361	36	0	0	15	0	0
Grp Sat Flow(s),veh/h/ln	1774	0	1861	1774	0	1846	1568	0	0	1584	0	0
Q Serve(g_s), s	0.1	0.0	0.0	0.9	0.0	12.0	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.1	0.0	0.0	0.9	0.0	12.0	1.1	0.0	0.0	0.5	0.0	0.0
Prop In Lane	1.00		0.01	1.00		0.05	0.61		0.06	0.53		0.13
Lane Grp Cap(c), veh/h	101	0	1054	101	0	1046	382	0	0	381	0	0
V/C Ratio(X)	0.04	0.00	0.63	0.22	0.00	0.35	0.09	0.00	0.00	0.04	0.00	0.00
Avail Cap(c_a), veh/h	101	0	1054	101	0	1046	382	0	0	381	0	0
HCM Platoon Ratio	2.00	2.00	2.00	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	29.6	0.0	0.0	33.1	0.0	17.3	23.6	0.0	0.0	23.3	0.0	0.0
Incr Delay (d2), s/veh	0.7	0.0	2.8	4.9	0.0	0.9	0.5	0.0	0.0	0.2	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	0.0	0.8	0.6	0.0	6.4	0.6	0.0	0.0	0.3	0.0	0.0
LnGrp Delay(d),s/veh	30.3	0.0	2.8	38.0	0.0	18.2	24.0	0.0	0.0	23.5	0.0	0.0
LnGrp LOS	C		A	D		B	C			C		
Approach Vol, veh/h		666			383			36			15	
Approach Delay, s/veh		3.0			19.4			24.0			23.5	
Approach LOS		A			B			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		18.0	8.0	44.6		18.0	8.0	44.6
Change Period (Y+Rc), s		4.5	4.0	4.6		4.5	4.0	* 4.6
Max Green Setting (Gmax), s		13.5	4.0	39.4		13.5	4.0	* 40
Max Q Clear Time (g_c+I1), s		3.1	2.9	2.0		2.5	2.1	14.0
Green Ext Time (p_c), s		0.1	0.0	8.0		0.1	0.0	7.3

Intersection Summary	
HCM 2010 Ctrl Delay	9.7
HCM 2010 LOS	A

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	20	602	20	9	338	57	8	22	20	20	30	18
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1900	1863	1900	1900	1863	1863
Adj Flow Rate, veh/h	22	654	12	10	367	30	9	24	4	22	33	3
Adj No. of Lanes	1	1	1	1	1	1	0	1	0	0	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	100	1000	850	100	1000	850	120	279	41	186	250	344
Arrive On Green	0.06	0.54	0.54	0.11	1.00	1.00	0.22	0.22	0.22	0.22	0.22	0.22
Sat Flow, veh/h	1774	1863	1583	1774	1863	1583	263	1283	187	528	1148	1583
Grp Volume(v), veh/h	22	654	12	10	367	30	37	0	0	55	0	3
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1734	0	0	1676	0	1583
Q Serve(g_s), s	0.8	17.7	0.3	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Cycle Q Clear(g_c), s	0.8	17.7	0.3	0.4	0.0	0.0	1.1	0.0	0.0	1.7	0.0	0.1
Prop In Lane	1.00		1.00	1.00		1.00	0.24		0.11	0.40		1.00
Lane Grp Cap(c), veh/h	100	1000	850	100	1000	850	440	0	0	436	0	344
V/C Ratio(X)	0.22	0.65	0.01	0.10	0.37	0.04	0.08	0.00	0.00	0.13	0.00	0.01
Avail Cap(c_a), veh/h	100	1000	850	100	1000	850	440	0	0	436	0	344
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	31.9	11.7	7.7	29.8	0.0	0.0	22.1	0.0	0.0	22.3	0.0	21.7
Incr Delay (d2), s/veh	5.0	3.3	0.0	2.0	1.0	0.1	0.4	0.0	0.0	0.6	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	10.0	0.1	0.2	0.3	0.0	0.6	0.0	0.0	0.9	0.0	0.1
LnGrp Delay(d),s/veh	36.9	15.0	7.7	31.8	1.0	0.1	22.5	0.0	0.0	22.9	0.0	21.8
LnGrp LOS	D	B	A	C	A	A	C			C		C
Approach Vol, veh/h		688			407			37			58	
Approach Delay, s/veh		15.6			1.7			22.5			22.9	
Approach LOS		B			A			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		20.0	8.0	42.8		20.0	8.0	42.8
Change Period (Y+Rc), s		* 4.6	4.0	* 4.8		* 4.6	4.0	* 4.8
Max Green Setting (Gmax), s		* 15	4.0	* 38		* 15	4.0	* 37
Max Q Clear Time (g_c+I1), s		3.1	2.4	19.7		3.7	2.8	2.0
Green Ext Time (p_c), s		0.3	0.0	6.5		0.3	0.0	8.0

Intersection Summary	
HCM 2010 Ctrl Delay	11.4
HCM 2010 LOS	B

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	57	517	37	89	259	70	40	450	60	25	463	59
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	62	562	19	97	282	27	43	489	50	27	503	50
Adj No. of Lanes	1	1	1	1	1	1	0	2	0	0	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	150	737	626	175	763	649	98	876	90	80	953	93
Arrive On Green	0.17	0.79	0.79	0.20	0.82	0.82	0.63	0.63	0.63	0.31	0.31	0.31
Sat Flow, veh/h	1774	1863	1583	1774	1863	1583	128	2795	288	78	3041	296
Grp Volume(v), veh/h	62	562	19	97	282	27	297	0	285	303	0	277
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1567	0	1644	1772	0	1643
Q Serve(g_s), s	2.2	11.3	0.2	3.5	2.8	0.2	1.0	0.0	7.0	0.0	0.0	9.9
Cycle Q Clear(g_c), s	2.2	11.3	0.2	3.5	2.8	0.2	10.9	0.0	7.0	9.4	0.0	9.9
Prop In Lane	1.00		1.00	1.00		1.00	0.14		0.18	0.09		0.18
Lane Grp Cap(c), veh/h	150	737	626	175	763	649	550	0	516	611	0	515
V/C Ratio(X)	0.41	0.76	0.03	0.55	0.37	0.04	0.54	0.00	0.55	0.50	0.00	0.54
Avail Cap(c_a), veh/h	150	737	626	175	763	649	550	0	516	611	0	515
HCM Platoon Ratio	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	27.8	5.7	4.5	27.0	4.0	3.8	10.3	0.0	10.4	19.9	0.0	20.1
Incr Delay (d2), s/veh	8.2	7.4	0.1	12.0	1.4	0.1	3.8	0.0	4.2	2.9	0.0	4.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.4	6.7	0.1	2.3	1.6	0.1	3.6	0.0	3.7	5.3	0.0	5.0
LnGrp Delay(d),s/veh	36.0	13.0	4.6	39.0	5.4	3.9	14.1	0.0	14.6	22.8	0.0	24.1
LnGrp LOS	D	B	A	D	A	A	B		B	C		C
Approach Vol, veh/h		643			406			582			580	
Approach Delay, s/veh		15.0			13.3			14.3			23.4	
Approach LOS		B			B			B			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		27.0	11.0	32.8		27.0	10.0	33.8
Change Period (Y+Rc), s		* 4.8	4.0	* 4.8		* 4.8	4.0	* 4.8
Max Green Setting (Gmax), s		* 22	7.0	* 28		* 22	6.0	* 28
Max Q Clear Time (g_c+I1), s		12.9	5.5	13.3		11.9	4.2	4.8
Green Ext Time (p_c), s		4.8	0.0	4.9		5.2	0.0	5.9

Intersection Summary	
HCM 2010 Ctrl Delay	16.7
HCM 2010 LOS	B

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	46	517	45	22	212	12	40	490	60	21	470	7
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	50	562	45	24	230	10	43	533	52	23	511	7
Adj No. of Lanes	1	1	0	1	1	0	0	2	0	0	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	150	769	62	100	751	33	99	888	85	75	1008	14
Arrive On Green	0.17	0.90	0.90	0.02	0.14	0.14	0.30	0.30	0.30	0.60	0.60	0.60
Sat Flow, veh/h	1774	1702	136	1774	1772	77	137	2937	281	66	3335	45
Grp Volume(v), veh/h	50	0	607	24	0	240	323	0	305	279	0	262
Grp Sat Flow(s),veh/h/ln	1774	0	1839	1774	0	1849	1709	0	1646	1759	0	1687
Q Serve(g_s), s	1.8	0.0	6.6	0.9	0.0	8.3	3.1	0.0	11.2	0.1	0.0	6.3
Cycle Q Clear(g_c), s	1.8	0.0	6.6	0.9	0.0	8.3	10.9	0.0	11.2	11.3	0.0	6.3
Prop In Lane	1.00		0.07	1.00		0.04	0.13		0.17	0.08		0.03
Lane Grp Cap(c), veh/h	150	0	831	100	0	784	574	0	497	587	0	510
V/C Ratio(X)	0.33	0.00	0.73	0.24	0.00	0.31	0.56	0.00	0.61	0.48	0.00	0.51
Avail Cap(c_a), veh/h	150	0	831	100	0	784	574	0	497	587	0	510
HCM Platoon Ratio	2.00	2.00	2.00	0.33	0.33	0.33	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	27.6	0.0	2.2	33.2	0.0	21.1	20.9	0.0	21.2	11.0	0.0	11.0
Incr Delay (d2), s/veh	5.9	0.0	5.6	5.6	0.0	1.0	4.0	0.0	5.5	2.8	0.0	3.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.1	0.0	3.9	0.6	0.0	4.5	6.0	0.0	5.8	3.3	0.0	3.4
LnGrp Delay(d),s/veh	33.5	0.0	7.8	38.8	0.0	22.1	24.9	0.0	26.7	13.7	0.0	14.7
LnGrp LOS	C		A	D		C	C		C	B		B
Approach Vol, veh/h		657			264			628			541	
Approach Delay, s/veh		9.7			23.6			25.7			14.2	
Approach LOS		A			C			C			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		26.0	8.0	36.8		26.0	10.0	34.8
Change Period (Y+Rc), s		* 4.6	4.0	* 4.8		* 4.6	4.0	* 4.8
Max Green Setting (Gmax), s		* 21	4.0	* 31		* 21	6.0	* 30
Max Q Clear Time (g_c+I1), s		13.2	2.9	8.6		13.3	3.8	10.3
Green Ext Time (p_c), s		4.4	0.0	5.8		4.4	0.0	5.5

Intersection Summary	
HCM 2010 Ctrl Delay	17.5
HCM 2010 LOS	B

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	3	591	27	22	292	23	14	59	45	16	93	18
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	3	642	16	24	317	13	15	64	14	17	101	10
Adj No. of Lanes	1	1	1	1	1	1	0	1	0	0	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	101	1029	875	101	1029	875	86	277	54	81	314	29
Arrive On Green	0.06	0.55	0.55	0.04	0.37	0.37	0.20	0.20	0.20	0.20	0.20	0.20
Sat Flow, veh/h	1774	1863	1583	1774	1863	1583	131	1360	264	113	1538	140
Grp Volume(v), veh/h	3	642	16	24	317	13	93	0	0	128	0	0
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1756	0	0	1791	0	0
Q Serve(g_s), s	0.1	16.6	0.3	0.9	8.5	0.4	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.1	16.6	0.3	0.9	8.5	0.4	3.0	0.0	0.0	4.2	0.0	0.0
Prop In Lane	1.00		1.00	1.00		1.00	0.16		0.15	0.13		0.08
Lane Grp Cap(c), veh/h	101	1029	875	101	1029	875	417	0	0	423	0	0
V/C Ratio(X)	0.03	0.62	0.02	0.24	0.31	0.01	0.22	0.00	0.00	0.30	0.00	0.00
Avail Cap(c_a), veh/h	101	1029	875	101	1029	875	417	0	0	423	0	0
HCM Platoon Ratio	1.00	1.00	1.00	0.67	0.67	0.67	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	31.5	10.8	7.1	32.5	12.6	10.1	23.6	0.0	0.0	24.0	0.0	0.0
Incr Delay (d2), s/veh	0.6	2.9	0.0	5.5	0.8	0.0	1.2	0.0	0.0	1.8	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	9.2	0.1	0.6	4.6	0.2	1.7	0.0	0.0	2.3	0.0	0.0
LnGrp Delay(d),s/veh	32.0	13.6	7.2	38.0	13.4	10.1	24.8	0.0	0.0	25.9	0.0	0.0
LnGrp LOS	C	B	A	D	B	B	C			C		
Approach Vol, veh/h		661			354			93			128	
Approach Delay, s/veh		13.6			15.0			24.8			25.9	
Approach LOS		B			B			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		19.0	8.0	43.6		19.0	8.0	43.6
Change Period (Y+Rc), s		* 4.6	4.0	* 4.6		* 4.6	4.0	4.6
Max Green Setting (Gmax), s		* 14	4.0	* 39		* 14	4.0	38.4
Max Q Clear Time (g_c+I1), s		5.0	2.9	18.6		6.2	2.1	10.5
Green Ext Time (p_c), s		0.8	0.0	6.3		0.7	0.0	7.0

Intersection Summary	
HCM 2010 Ctrl Delay	16.1
HCM 2010 LOS	B

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	2	483	32	5	239	4	14	105	45	13	88	2
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	2	525	32	5	260	3	15	114	27	14	96	1
Adj No. of Lanes	1	1	0	1	1	0	0	1	0	0	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	100	884	54	100	934	11	74	347	76	82	421	4
Arrive On Green	0.11	1.00	1.00	0.02	0.17	0.17	0.25	0.25	0.25	0.33	0.33	0.33
Sat Flow, veh/h	1774	1738	106	1774	1838	21	74	1395	307	100	1694	16
Grp Volume(v), veh/h	2	0	557	5	0	263	156	0	0	111	0	0
Grp Sat Flow(s),veh/h/ln	1774	0	1844	1774	0	1859	1776	0	0	1810	0	0
Q Serve(g_s), s	0.1	0.0	0.0	0.2	0.0	8.7	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.1	0.0	0.0	0.2	0.0	8.7	5.0	0.0	0.0	3.1	0.0	0.0
Prop In Lane	1.00		0.06	1.00		0.01	0.10		0.17	0.13		0.01
Lane Grp Cap(c), veh/h	100	0	938	100	0	945	497	0	0	507	0	0
V/C Ratio(X)	0.02	0.00	0.59	0.05	0.00	0.28	0.31	0.00	0.00	0.22	0.00	0.00
Avail Cap(c_a), veh/h	100	0	938	100	0	945	497	0	0	507	0	0
HCM Platoon Ratio	2.00	2.00	2.00	0.33	0.33	0.33	1.00	1.00	1.00	1.33	1.33	1.33
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	29.7	0.0	0.0	32.9	0.0	18.1	21.9	0.0	0.0	18.8	0.0	0.0
Incr Delay (d2), s/veh	0.4	0.0	2.8	0.9	0.0	0.7	1.6	0.0	0.0	1.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	0.7	0.1	0.0	4.7	2.7	0.0	0.0	1.7	0.0	0.0
LnGrp Delay(d),s/veh	30.0	0.0	2.8	33.8	0.0	18.9	23.5	0.0	0.0	19.8	0.0	0.0
LnGrp LOS	C		A	C		B	C			B		
Approach Vol, veh/h		559			268			156			111	
Approach Delay, s/veh		2.9			19.1			23.5			19.8	
Approach LOS		A			B			C			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		22.2	8.0	40.6		22.2	8.0	40.6
Change Period (Y+Rc), s		* 4.6	4.0	4.6		* 4.6	4.0	* 4.6
Max Green Setting (Gmax), s		* 17	4.0	35.4		* 18	4.0	* 36
Max Q Clear Time (g_c+I1), s		7.0	2.2	2.0		5.1	2.1	10.7
Green Ext Time (p_c), s		1.0	0.0	6.1		1.2	0.0	5.8

Intersection Summary	
HCM 2010 Ctrl Delay	11.5
HCM 2010 LOS	B

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	3	579	6	24	291	15	8	43	38	17	39	7
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	3	629	4	26	316	6	9	47	9	18	42	1
Adj No. of Lanes	1	1	1	1	1	1	0	1	0	0	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	6	815	692	43	853	725	108	411	71	188	387	8
Arrive On Green	0.00	0.44	0.44	0.02	0.46	0.46	0.29	0.29	0.29	0.29	0.29	0.29
Sat Flow, veh/h	1774	1863	1583	1774	1863	1583	107	1425	246	350	1344	28
Grp Volume(v), veh/h	3	629	4	26	316	6	65	0	0	61	0	0
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1779	0	0	1722	0	0
Q Serve(g_s), s	0.1	15.3	0.1	0.8	5.9	0.1	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.1	15.3	0.1	0.8	5.9	0.1	1.4	0.0	0.0	1.3	0.0	0.0
Prop In Lane	1.00		1.00	1.00		1.00	0.14		0.14	0.30		0.02
Lane Grp Cap(c), veh/h	6	815	692	43	853	725	589	0	0	583	0	0
V/C Ratio(X)	0.52	0.77	0.01	0.61	0.37	0.01	0.11	0.00	0.00	0.10	0.00	0.00
Avail Cap(c_a), veh/h	133	1289	1096	166	1296	1102	589	0	0	583	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	26.6	12.8	8.5	25.8	9.5	7.9	14.0	0.0	0.0	14.0	0.0	0.0
Incr Delay (d2), s/veh	57.3	1.6	0.0	13.4	0.3	0.0	0.4	0.0	0.0	0.4	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	8.0	0.0	0.5	3.0	0.0	0.8	0.0	0.0	0.7	0.0	0.0
LnGrp Delay(d),s/veh	83.9	14.4	8.5	39.2	9.7	7.9	14.4	0.0	0.0	14.4	0.0	0.0
LnGrp LOS	F	B	A	D	A	A	B			B		
Approach Vol, veh/h		636			348			65			61	
Approach Delay, s/veh		14.7			11.9			14.4			14.4	
Approach LOS		B			B			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		20.0	5.3	28.2		20.0	4.2	29.3
Change Period (Y+Rc), s		* 4.6	4.0	* 4.8		* 4.6	4.0	* 4.8
Max Green Setting (Gmax), s		* 15	5.0	* 37		* 15	4.0	* 37
Max Q Clear Time (g_c+I1), s		3.4	2.8	17.3		3.3	2.1	7.9
Green Ext Time (p_c), s		0.4	0.0	6.0		0.4	0.0	6.8

Intersection Summary	
HCM 2010 Ctrl Delay	13.8
HCM 2010 LOS	B

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	3	474	8	6	238	3	8	93	38	14	53	1
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	3	515	8	7	259	3	9	101	19	15	58	0
Adj No. of Lanes	1	1	0	1	1	0	0	1	0	0	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	100	930	14	100	934	11	66	366	65	114	380	0
Arrive On Green	0.06	0.51	0.51	0.11	1.00	1.00	0.25	0.25	0.25	0.25	0.25	0.00
Sat Flow, veh/h	1774	1829	28	1774	1838	21	45	1488	265	215	1547	0
Grp Volume(v), veh/h	3	0	523	7	0	262	129	0	0	73	0	0
Grp Sat Flow(s),veh/h/ln	1774	0	1858	1774	0	1859	1798	0	0	1762	0	0
Q Serve(g_s), s	0.1	0.0	13.6	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.1	0.0	13.6	0.2	0.0	0.0	4.1	0.0	0.0	2.2	0.0	0.0
Prop In Lane	1.00		0.02	1.00		0.01	0.07		0.15	0.21		0.00
Lane Grp Cap(c), veh/h	100	0	945	100	0	945	496	0	0	494	0	0
V/C Ratio(X)	0.03	0.00	0.55	0.07	0.00	0.28	0.26	0.00	0.00	0.15	0.00	0.00
Avail Cap(c_a), veh/h	100	0	945	100	0	945	496	0	0	494	0	0
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	31.6	0.0	11.9	29.7	0.0	0.0	21.7	0.0	0.0	21.0	0.0	0.0
Incr Delay (d2), s/veh	0.6	0.0	2.3	1.3	0.0	0.7	1.3	0.0	0.0	0.6	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	0.0	7.6	0.2	0.0	0.2	2.2	0.0	0.0	1.2	0.0	0.0
LnGrp Delay(d),s/veh	32.1	0.0	14.2	31.1	0.0	0.7	22.9	0.0	0.0	21.6	0.0	0.0
LnGrp LOS	C		B	C		A	C			C		
Approach Vol, veh/h		526			269			129			73	
Approach Delay, s/veh		14.3			1.5			22.9			21.6	
Approach LOS		B			A			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		22.0	8.0	40.8		22.0	8.0	40.8
Change Period (Y+Rc), s		* 4.6	4.0	* 4.8		* 4.6	4.0	* 4.8
Max Green Setting (Gmax), s		* 17	4.0	* 35		* 17	4.0	* 36
Max Q Clear Time (g_c+I1), s		6.1	2.2	15.6		4.2	2.1	2.0
Green Ext Time (p_c), s		0.8	0.0	5.0		0.8	0.0	5.8

Intersection Summary	
HCM 2010 Ctrl Delay	12.5
HCM 2010 LOS	B

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	JCH	Intersection	Commerce St/Navidad St
Agency/Co.	CH2M HILL	Jurisdiction	City of San Antonio
Date Performed	3/25/2015	Analysis Year	2020 Scenario 2
Analysis Time Period	AM Peak Hour		

Project Description *Commerce/Buena Vista One-Way Couplet Conversion Traff. Study*

East/West Street: *Commerce Street* | North/South Street: *Navidad Street*

Intersection Orientation: *East-West* | Study Period (hrs): *0.25*

Vehicle Volumes and Adjustments

Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)	20	602	20	20	358	20
Peak-Hour Factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Hourly Flow Rate, HFR (veh/h)	20	602	20	20	358	20
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type	Two Way Left Turn Lane					
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration	LTR			LTR		
Upstream Signal		0			0	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)	20	20	20	20	20	20
Peak-Hour Factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Hourly Flow Rate, HFR (veh/h)	20	20	20	20	20	20
Percent Heavy Vehicles	0	0	0	0	0	0
Percent Grade (%)		0			0	
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	

Delay, Queue Length, and Level of Service

Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	LTR	LTR		LTR			LTR	
v (veh/h)	20	20		60			60	
C (m) (veh/h)	1192	969		297			308	
v/c	0.02	0.02		0.20			0.19	
95% queue length	0.05	0.06		0.74			0.71	
Control Delay (s/veh)	8.1	8.8		20.2			19.5	
LOS	A	A		C			C	
Approach Delay (s/veh)	--	--	20.2			19.5		
Approach LOS	--	--	C			C		

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2020 Scenario 2 PM Peak Hour

HCM 2010 Signalized Intersection Summary
1: Pecos Street & Commerce Street

4/17/2015

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	178	506	289	0	0	0	0	0	784	373
Number	7	4	14	3	8	18				1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	0	1863	1863	1863	0				0	1863	1900
Adj Flow Rate, veh/h	0	0	138	550	314	0				0	852	272
Adj No. of Lanes	0	0	1	2	2	0				0	3	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92				0.92	0.92	0.92
Percent Heavy Veh, %	0	0	2	2	2	0				0	2	0
Cap, veh/h	0	0	0	586	2860	0				0	0	0
Arrive On Green	0.00	0.00	0.00	0.81	0.81	0.00				0.00	0.00	0.00
Sat Flow, veh/h		0		2417	3632	0					0	
Grp Volume(v), veh/h		0.0		550	314	0					0.0	
Grp Sat Flow(s),veh/h/ln				1209	1770	0						
Q Serve(g_s), s				0.1	0.5	0.0						
Cycle Q Clear(g_c), s				0.1	0.5	0.0						
Prop In Lane				1.00		0.00						
Lane Grp Cap(c), veh/h				586	2860	0						
V/C Ratio(X)				0.94	0.11	0.00						
Avail Cap(c_a), veh/h				586	2860	0						
HCM Platoon Ratio				1.00	1.00	1.00						
Upstream Filter(I)				1.00	1.00	0.00						
Uniform Delay (d), s/veh				2.4	0.5	0.0						
Incr Delay (d2), s/veh				24.9	0.1	0.0						
Initial Q Delay(d3),s/veh				0.0	0.0	0.0						
%ile BackOfQ(50%),veh/ln				2.4	0.2	0.0						
LnGrp Delay(d),s/veh				27.3	0.6	0.0						
LnGrp LOS				C	A							
Approach Vol, veh/h					864							
Approach Delay, s/veh					17.6							
Approach LOS					B							

Timer	1	2	3	4	5	6	7	8
Assigned Phs								8
Phs Duration (G+Y+Rc), s								25.0
Change Period (Y+Rc), s								* 4.8
Max Green Setting (Gmax), s								* 20
Max Q Clear Time (g_c+I1), s								2.5
Green Ext Time (p_c), s								4.3

Intersection Summary	
HCM 2010 Ctrl Delay	17.6
HCM 2010 LOS	B

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	266	209	0	0	0	0	0	0	131	994	277
Number	7	4	14							1	6	16
Initial Q (Qb), veh	0	0	0							0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00							1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00							1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1863	1900							1900	1863	1900
Adj Flow Rate, veh/h	0	289	218							142	1080	206
Adj No. of Lanes	0	1	0							0	4	0
Peak Hour Factor	0.92	0.92	0.92							0.92	0.92	0.92
Percent Heavy Veh, %	0	2	2							2	2	2
Cap, veh/h	0	510	385							258	1642	311
Arrive On Green	0.00	0.52	0.52							0.12	0.12	0.12
Sat Flow, veh/h	0	987	744							540	4710	893
Grp Volume(v), veh/h	0	0	507							406	668	355
Grp Sat Flow(s),veh/h/ln	0	0	1731							1690	1458	1537
Q Serve(g_s), s	0.0	0.0	14.0							14.1	15.4	15.5
Cycle Q Clear(g_c), s	0.0	0.0	14.0							16.1	15.4	15.5
Prop In Lane	0.00		0.43							0.35		0.58
Lane Grp Cap(c), veh/h	0	0	895							659	1016	536
V/C Ratio(X)	0.00	0.00	0.57							0.62	0.66	0.66
Avail Cap(c_a), veh/h	0	0	895							659	1016	536
HCM Platoon Ratio	1.00	1.00	1.00							0.33	0.33	0.33
Upstream Filter(I)	0.00	0.00	1.00							1.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	11.5							27.2	27.0	27.0
Incr Delay (d2), s/veh	0.0	0.0	2.6							4.3	3.3	6.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0							0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	7.3							8.3	6.7	7.5
LnGrp Delay(d),s/veh	0.0	0.0	14.1							31.5	30.3	33.3
LnGrp LOS			B							C	C	C
Approach Vol, veh/h		507									1428	
Approach Delay, s/veh		14.1									31.4	
Approach LOS		B									C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6		
Phs Duration (G+Y+Rc), s				41.0		29.0		
Change Period (Y+Rc), s				* 4.8		4.6		
Max Green Setting (Gmax), s				* 36		24.4		
Max Q Clear Time (g_c+I1), s				16.0		18.1		
Green Ext Time (p_c), s				3.4		4.3		

Intersection Summary	
HCM 2010 Ctrl Delay	26.9
HCM 2010 LOS	C

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	20	160	75	15	484	7	4	4	0	0	3	28
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	22	174	56	16	526	5	4	4	0	0	3	3
Adj No. of Lanes	1	1	0	1	1	1	0	1	0	0	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	151	785	253	126	1055	897	184	159	0	0	138	138
Arrive On Green	0.08	0.58	0.58	0.07	0.57	0.57	0.16	0.16	0.00	0.00	0.16	0.16
Sat Flow, veh/h	1774	1351	435	1774	1863	1583	663	983	0	0	856	856
Grp Volume(v), veh/h	22	0	230	16	526	5	8	0	0	0	0	6
Grp Sat Flow(s),veh/h/ln	1774	0	1786	1774	1863	1583	1646	0	0	0	0	1712
Q Serve(g_s), s	0.8	0.0	4.4	0.6	12.0	0.1	0.0	0.0	0.0	0.0	0.0	0.2
Cycle Q Clear(g_c), s	0.8	0.0	4.4	0.6	12.0	0.1	0.3	0.0	0.0	0.0	0.0	0.2
Prop In Lane	1.00		0.24	1.00		1.00	0.50		0.00	0.00		0.50
Lane Grp Cap(c), veh/h	151	0	1037	126	1055	897	342	0	0	0	0	276
V/C Ratio(X)	0.15	0.00	0.22	0.13	0.50	0.01	0.02	0.00	0.00	0.00	0.00	0.02
Avail Cap(c_a), veh/h	151	0	1037	126	1055	897	342	0	0	0	0	276
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00	1.00
Uniform Delay (d), s/veh	29.9	0.0	7.1	30.8	9.2	6.7	24.9	0.0	0.0	0.0	0.0	24.9
Incr Delay (d2), s/veh	2.0	0.0	0.5	2.1	1.7	0.0	0.1	0.0	0.0	0.0	0.0	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	0.0	2.3	0.4	6.6	0.0	0.1	0.0	0.0	0.0	0.0	0.1
LnGrp Delay(d),s/veh	32.0	0.0	7.6	32.8	10.9	6.7	25.1	0.0	0.0	0.0	0.0	25.1
LnGrp LOS	C		A	C	B	A	C					C
Approach Vol, veh/h		252			547			8			6	
Approach Delay, s/veh		9.7			11.5			25.1			25.1	
Approach LOS		A			B			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		16.0	9.0	45.6		16.0	10.0	44.6
Change Period (Y+Rc), s		* 4.6	4.0	* 4.6		* 4.6	4.0	4.6
Max Green Setting (Gmax), s		* 11	5.0	* 41		* 11	6.0	39.4
Max Q Clear Time (g_c+I1), s		2.3	2.6	6.4		2.2	2.8	14.0
Green Ext Time (p_c), s		0.0	0.0	5.3		0.0	0.0	5.0

Intersection Summary	
HCM 2010 Ctrl Delay	11.2
HCM 2010 LOS	B

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	86	200	140	31	569	34	147	405	60	40	367	207
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	93	217	113	34	618	20	160	440	48	43	399	102
Adj No. of Lanes	1	1	0	1	1	1	1	2	0	1	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	100	390	203	125	655	557	160	924	100	100	685	173
Arrive On Green	0.09	0.56	0.56	0.14	0.70	0.70	0.09	0.29	0.29	0.06	0.24	0.24
Sat Flow, veh/h	1774	1155	602	1774	1863	1583	1774	3221	350	1774	2799	708
Grp Volume(v), veh/h	93	0	330	34	618	20	160	241	247	43	251	250
Grp Sat Flow(s),veh/h/ln	1774	0	1757	1774	1863	1583	1774	1770	1801	1774	1770	1738
Q Serve(g_s), s	3.7	0.0	8.5	1.2	20.8	0.3	6.4	8.0	8.1	1.7	8.9	9.0
Cycle Q Clear(g_c), s	3.7	0.0	8.5	1.2	20.8	0.3	6.4	8.0	8.1	1.7	8.9	9.0
Prop In Lane	1.00		0.34	1.00		1.00	1.00		0.19	1.00		0.41
Lane Grp Cap(c), veh/h	100	0	593	125	655	557	160	508	517	100	433	425
V/C Ratio(X)	0.93	0.00	0.56	0.27	0.94	0.04	1.00	0.47	0.48	0.43	0.58	0.59
Avail Cap(c_a), veh/h	100	0	593	125	655	557	160	508	517	100	433	425
HCM Platoon Ratio	1.67	1.67	1.67	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	32.1	0.0	12.1	28.9	9.9	6.9	32.3	20.9	21.0	32.4	23.6	23.7
Incr Delay (d2), s/veh	73.0	0.0	3.7	5.3	23.7	0.1	71.7	3.2	3.2	13.0	5.6	5.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.8	0.0	4.7	0.8	14.1	0.1	6.3	4.3	4.4	1.2	5.0	5.0
LnGrp Delay(d),s/veh	105.0	0.0	15.9	34.2	33.7	7.0	104.1	24.1	24.1	45.4	29.2	29.6
LnGrp LOS	F		B	C	C	A	F	C	C	D	C	C
Approach Vol, veh/h		423			672			648			544	
Approach Delay, s/veh		35.5			32.9			43.8			30.6	
Approach LOS		D			C			D			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.0	25.3	9.0	28.8	11.0	22.3	8.0	29.8
Change Period (Y+Rc), s	4.0	* 4.9	4.0	* 4.8	* 4.6	* 4.9	4.0	* 4.8
Max Green Setting (Gmax), s	4.0	* 20	5.0	* 24	* 6.4	* 17	4.0	* 24
Max Q Clear Time (g_c+I1), s	3.7	10.1	3.2	10.5	8.4	11.0	5.7	22.8
Green Ext Time (p_c), s	0.0	4.3	0.0	5.2	0.0	3.1	0.0	0.8

Intersection Summary	
HCM 2010 Ctrl Delay	35.9
HCM 2010 LOS	D

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

HCM Signalized Intersection Capacity Analysis
5: Buena Vista Street So. Frontage & Frio Street & Buena Vista Street

4/17/2015

Movement	EBL	EBT	EBR	WBL2	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	58	301	85	8	380	6	147	533	60	103	374	23
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	0.97		1.00	1.00		1.00	0.98		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1801		1770	1858		1770	3486		1770	3508	
Flt Permitted	0.95	1.00		0.95	1.00		0.28	1.00		0.26	1.00	
Satd. Flow (perm)	1770	1801		1770	1858		512	3486		483	3508	
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)	63	327	92	9	413	7	160	579	65	112	407	25
RTOR Reduction (vph)	0	0	0	0	1	0	0	11	0	0	0	0
Lane Group Flow (vph)	63	419	0	9	419	0	160	633	0	112	432	0
Turn Type	Prot	NA		Prot	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases							2			6		
Actuated Green, G (s)	3.8	27.5		0.8	24.5		31.0	23.9		22.3	19.2	
Effective Green, g (s)	3.8	27.5		0.8	24.5		31.0	23.9		22.3	19.2	
Actuated g/C Ratio	0.04	0.30		0.01	0.27		0.34	0.26		0.24	0.21	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	73	541		15	497		280	910		161	736	
v/s Ratio Prot	c0.04	c0.23		0.01	0.23		c0.05	c0.18		0.02	0.12	
v/s Ratio Perm							0.14			0.15		
v/c Ratio	0.86	0.77		0.60	0.84		0.57	0.70		0.70	0.59	
Uniform Delay, d1	43.6	29.2		45.2	31.7		22.7	30.5		30.6	32.6	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	60.7	6.8		51.0	12.4		2.8	4.4		12.3	3.4	
Delay (s)	104.3	36.0		96.2	44.1		25.5	34.9		42.9	36.0	
Level of Service	F	D		F	D		C	C		D	D	
Approach Delay (s)		44.9			45.1			33.0			37.4	
Approach LOS		D			D			C			D	

Intersection Summary			
HCM 2000 Control Delay	38.8	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	91.5	Sum of lost time (s)	20.0
Intersection Capacity Utilization	66.7%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	NEL	NER	NER2
Lane Configurations			
Volume (vph)	19	8	15
Ideal Flow (vphpl)	1900	1900	1900
Total Lost time (s)	4.0		4.0
Lane Util. Factor	1.00		0.95
Frt	0.95		0.85
Flt Protected	0.97		1.00
Satd. Flow (prot)	1711		1504
Flt Permitted	0.97		1.00
Satd. Flow (perm)	1711		1504
Peak-hour factor, PHF	0.92	0.92	0.92
Adj. Flow (vph)	21	9	16
RTOR Reduction (vph)	26	0	12
Lane Group Flow (vph)	6	0	2
Turn Type	Prot		Prot
Protected Phases	9		9
Permitted Phases			
Actuated Green, G (s)	16.2		16.2
Effective Green, g (s)	16.2		16.2
Actuated g/C Ratio	0.18		0.18
Clearance Time (s)	4.0		4.0
Vehicle Extension (s)	3.0		3.0
Lane Grp Cap (vph)	302		266
v/s Ratio Prot	c0.00		0.00
v/s Ratio Perm			
v/c Ratio	0.02		0.01
Uniform Delay, d1	31.1		31.0
Progression Factor	1.00		1.00
Incremental Delay, d2	0.1		0.1
Delay (s)	31.2		31.1
Level of Service	C		C
Approach Delay (s)	31.2		
Approach LOS	C		

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	70	216	14	88	599	54	24	218	32	26	274	164
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	76	235	5	96	651	34	26	237	19	28	298	63
Adj No. of Lanes	1	1	1	1	1	1	0	2	0	0	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	126	712	606	226	818	695	114	897	70	95	820	167
Arrive On Green	0.02	0.13	0.13	0.13	0.44	0.44	0.61	0.61	0.61	0.30	0.30	0.30
Sat Flow, veh/h	1774	1863	1583	1774	1863	1583	178	2958	233	123	2706	550
Grp Volume(v), veh/h	76	235	5	96	651	34	147	0	135	206	0	183
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1714	0	1654	1781	0	1598
Q Serve(g_s), s	3.0	8.1	0.2	3.5	21.3	0.9	0.0	0.0	2.7	0.0	0.0	6.4
Cycle Q Clear(g_c), s	3.0	8.1	0.2	3.5	21.3	0.9	2.6	0.0	2.7	6.1	0.0	6.4
Prop In Lane	1.00		1.00	1.00		1.00	0.18		0.14	0.14		0.34
Lane Grp Cap(c), veh/h	126	712	606	226	818	695	580	0	501	598	0	484
V/C Ratio(X)	0.60	0.33	0.01	0.42	0.80	0.05	0.25	0.00	0.27	0.34	0.00	0.38
Avail Cap(c_a), veh/h	126	712	606	226	818	695	580	0	501	598	0	484
HCM Platoon Ratio	0.33	0.33	0.33	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	33.5	22.6	19.1	28.4	17.1	11.3	10.2	0.0	10.2	19.3	0.0	19.4
Incr Delay (d2), s/veh	19.7	1.2	0.0	5.7	7.9	0.1	1.1	0.0	1.3	1.6	0.0	2.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.2	4.4	0.1	2.1	12.6	0.4	1.4	0.0	1.4	3.4	0.0	3.1
LnGrp Delay(d),s/veh	53.2	23.8	19.2	34.2	25.0	11.5	11.2	0.0	11.5	20.8	0.0	21.6
LnGrp LOS	D	C	B	C	C	B	B		B	C		C
Approach Vol, veh/h		316			781			282			389	
Approach Delay, s/veh		30.8			25.5			11.4			21.2	
Approach LOS		C			C			B			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		26.0	13.0	31.6		26.0	9.0	35.6
Change Period (Y+Rc), s		* 4.6	4.0	* 4.6		* 4.6	4.0	4.6
Max Green Setting (Gmax), s		* 21	9.0	* 27		* 21	5.0	30.4
Max Q Clear Time (g_c+I1), s		4.7	5.5	10.1		8.4	5.0	23.3
Green Ext Time (p_c), s		3.8	0.1	5.4		3.4	0.0	3.2

Intersection Summary	
HCM 2010 Ctrl Delay	23.3
HCM 2010 LOS	C

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	46	324	18	22	490	9	24	282	32	22	260	18
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	50	352	17	24	533	9	26	307	23	24	283	12
Adj No. of Lanes	1	1	0	1	1	0	0	2	0	0	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	150	797	38	100	774	13	96	929	68	98	957	40
Arrive On Green	0.17	0.90	0.90	0.06	0.42	0.42	0.30	0.30	0.30	0.60	0.60	0.60
Sat Flow, veh/h	1774	1763	85	1774	1826	31	127	3074	224	133	3166	131
Grp Volume(v), veh/h	50	0	369	24	0	542	186	0	170	166	0	153
Grp Sat Flow(s),veh/h/ln	1774	0	1848	1774	0	1857	1770	0	1656	1759	0	1672
Q Serve(g_s), s	1.8	0.0	2.3	0.9	0.0	16.8	0.0	0.0	5.6	0.0	0.0	3.1
Cycle Q Clear(g_c), s	1.8	0.0	2.3	0.9	0.0	16.8	5.5	0.0	5.6	3.0	0.0	3.1
Prop In Lane	1.00		0.05	1.00		0.02	0.14		0.14	0.14		0.08
Lane Grp Cap(c), veh/h	150	0	835	100	0	787	593	0	500	590	0	505
V/C Ratio(X)	0.33	0.00	0.44	0.24	0.00	0.69	0.31	0.00	0.34	0.28	0.00	0.30
Avail Cap(c_a), veh/h	150	0	835	100	0	787	593	0	500	590	0	505
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	27.6	0.0	2.0	31.9	0.0	16.6	19.1	0.0	19.2	10.4	0.0	10.4
Incr Delay (d2), s/veh	5.9	0.0	1.7	5.6	0.0	4.9	1.4	0.0	1.8	1.2	0.0	1.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.1	0.0	1.3	0.6	0.0	9.7	3.0	0.0	2.8	1.7	0.0	1.6
LnGrp Delay(d),s/veh	33.5	0.0	3.7	37.5	0.0	21.5	20.5	0.0	21.0	11.6	0.0	11.9
LnGrp LOS	C		A	D		C	C		C	B		B
Approach Vol, veh/h		419			566			356			319	
Approach Delay, s/veh		7.2			22.2			20.8			11.7	
Approach LOS		A			C			C			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		26.0	8.0	36.8		26.0	10.0	34.8
Change Period (Y+Rc), s		* 4.6	4.0	* 4.8		* 4.6	4.0	* 4.8
Max Green Setting (Gmax), s		* 21	4.0	* 31		* 21	6.0	* 30
Max Q Clear Time (g_c+I1), s		7.6	2.9	4.3		5.1	3.8	18.8
Green Ext Time (p_c), s		3.5	0.0	6.3		3.7	0.0	4.3

Intersection Summary	
HCM 2010 Ctrl Delay	16.1
HCM 2010 LOS	B

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	20	386	20	12	702	11	14	3	20	20	12	8
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	22	420	13	13	763	8	15	3	1	22	13	0
Adj No. of Lanes	1	1	1	1	1	1	0	1	0	0	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	101	1161	987	101	1161	987	239	43	11	196	98	0
Arrive On Green	0.02	0.21	0.21	0.11	1.00	1.00	0.13	0.13	0.13	0.13	0.13	0.00
Sat Flow, veh/h	1774	1863	1583	1774	1863	1583	1107	320	79	852	735	0
Grp Volume(v), veh/h	22	420	13	13	763	8	19	0	0	35	0	0
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1507	0	0	1587	0	0
Q Serve(g_s), s	0.9	13.7	0.5	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.9	13.7	0.5	0.5	0.0	0.0	0.6	0.0	0.0	1.2	0.0	0.0
Prop In Lane	1.00		1.00	1.00		1.00	0.79		0.05	0.63		0.00
Lane Grp Cap(c), veh/h	101	1161	987	101	1161	987	292	0	0	294	0	0
V/C Ratio(X)	0.22	0.36	0.01	0.13	0.66	0.01	0.07	0.00	0.00	0.12	0.00	0.00
Avail Cap(c_a), veh/h	101	1161	987	101	1161	987	292	0	0	294	0	0
HCM Platoon Ratio	0.33	0.33	0.33	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	33.1	16.0	10.7	29.7	0.0	0.0	26.8	0.0	0.0	27.0	0.0	0.0
Incr Delay (d2), s/veh	4.9	0.9	0.0	2.6	2.9	0.0	0.4	0.0	0.0	0.8	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	7.3	0.2	0.3	0.9	0.0	0.4	0.0	0.0	0.7	0.0	0.0
LnGrp Delay(d),s/veh	38.0	16.9	10.8	32.4	2.9	0.0	27.2	0.0	0.0	27.9	0.0	0.0
LnGrp LOS	D	B	B	C	A	A	C			C		
Approach Vol, veh/h		455			784			19			35	
Approach Delay, s/veh		17.7			3.4			27.2			27.9	
Approach LOS		B			A			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		14.0	8.0	48.6		14.0	8.0	48.6
Change Period (Y+Rc), s		* 4.6	4.0	* 4.6		* 4.6	4.0	4.6
Max Green Setting (Gmax), s		* 9.4	4.0	* 44		* 9.4	4.0	43.4
Max Q Clear Time (g_c+I1), s		2.6	2.5	15.7		3.2	2.9	2.0
Green Ext Time (p_c), s		0.1	0.0	9.4		0.1	0.0	10.3

Intersection Summary	
HCM 2010 Ctrl Delay	9.4
HCM 2010 LOS	A

Notes

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	6	344	48	55	652	17	60	59	31	12	55	9
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	7	374	20	60	709	11	65	64	20	13	60	2
Adj No. of Lanes	1	1	1	1	1	1	0	1	0	0	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	100	816	693	150	868	738	244	226	62	111	447	14
Arrive On Green	0.11	0.88	0.88	0.17	0.93	0.93	0.29	0.29	0.29	0.29	0.29	0.29
Sat Flow, veh/h	1774	1863	1583	1774	1863	1583	593	783	213	180	1551	47
Grp Volume(v), veh/h	7	374	20	60	709	11	149	0	0	75	0	0
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1590	0	0	1778	0	0
Q Serve(g_s), s	0.2	3.0	0.1	2.1	7.7	0.0	2.3	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.2	3.0	0.1	2.1	7.7	0.0	4.9	0.0	0.0	2.1	0.0	0.0
Prop In Lane	1.00		1.00	1.00		1.00	0.44		0.13	0.17		0.03
Lane Grp Cap(c), veh/h	100	816	693	150	868	738	531	0	0	572	0	0
V/C Ratio(X)	0.07	0.46	0.03	0.40	0.82	0.01	0.28	0.00	0.00	0.13	0.00	0.00
Avail Cap(c_a), veh/h	100	816	693	150	868	738	531	0	0	572	0	0
HCM Platoon Ratio	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	29.7	2.7	2.5	27.8	1.5	1.3	19.6	0.0	0.0	18.7	0.0	0.0
Incr Delay (d2), s/veh	1.3	1.9	0.1	7.7	8.4	0.0	1.3	0.0	0.0	0.5	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	1.8	0.1	1.3	4.6	0.0	2.5	0.0	0.0	1.2	0.0	0.0
LnGrp Delay(d),s/veh	31.1	4.5	2.6	35.5	9.9	1.3	20.9	0.0	0.0	19.2	0.0	0.0
LnGrp LOS	C	A	A	D	A	A	C			B		
Approach Vol, veh/h		401			780			149			75	
Approach Delay, s/veh		4.9			11.8			20.9			19.2	
Approach LOS		A			B			C			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		25.0	10.0	35.8		25.0	8.0	37.8
Change Period (Y+Rc), s		* 4.6	4.0	* 4.8		* 4.6	4.0	* 4.8
Max Green Setting (Gmax), s		* 20	6.0	* 31		* 20	4.0	* 32
Max Q Clear Time (g_c+I1), s		6.9	4.1	5.0		4.1	2.2	9.7
Green Ext Time (p_c), s		1.0	0.0	8.1		1.1	0.0	7.7

Intersection Summary	
HCM 2010 Ctrl Delay	11.2
HCM 2010 LOS	B

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	5	344	58	14	534	3	60	157	31	9	103	1
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	5	374	53	15	580	3	65	171	25	10	112	0
Adj No. of Lanes	1	1	0	1	1	0	0	1	0	0	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	100	721	102	100	836	4	154	372	49	71	536	0
Arrive On Green	0.06	0.45	0.45	0.11	0.90	0.90	0.30	0.30	0.30	0.60	0.60	0.00
Sat Flow, veh/h	1774	1597	226	1774	1851	10	300	1234	162	54	1777	0
Grp Volume(v), veh/h	5	0	427	15	0	583	261	0	0	122	0	0
Grp Sat Flow(s),veh/h/ln	1774	0	1823	1774	0	1861	1696	0	0	1831	0	0
Q Serve(g_s), s	0.2	0.0	11.9	0.5	0.0	5.8	2.8	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.2	0.0	11.9	0.5	0.0	5.8	8.6	0.0	0.0	2.1	0.0	0.0
Prop In Lane	1.00		0.12	1.00		0.01	0.25		0.10	0.08		0.00
Lane Grp Cap(c), veh/h	100	0	823	100	0	840	575	0	0	608	0	0
V/C Ratio(X)	0.05	0.00	0.52	0.15	0.00	0.69	0.45	0.00	0.00	0.20	0.00	0.00
Avail Cap(c_a), veh/h	100	0	823	100	0	840	575	0	0	608	0	0
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	31.7	0.0	13.9	29.9	0.0	2.2	20.2	0.0	0.0	10.2	0.0	0.0
Incr Delay (d2), s/veh	0.9	0.0	2.3	3.1	0.0	4.7	2.6	0.0	0.0	0.7	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	0.0	6.5	0.4	0.0	3.5	4.5	0.0	0.0	1.2	0.0	0.0
LnGrp Delay(d),s/veh	32.6	0.0	16.3	33.1	0.0	6.9	22.8	0.0	0.0	11.0	0.0	0.0
LnGrp LOS	C		B	C		A	C			B		
Approach Vol, veh/h		432			598			261			122	
Approach Delay, s/veh		16.5			7.5			22.8			11.0	
Approach LOS		B			A			C			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		26.0	8.0	36.9		26.0	8.0	36.9
Change Period (Y+Rc), s		* 4.6	4.0	* 4.9		* 4.6	4.0	* 4.9
Max Green Setting (Gmax), s		* 21	4.0	* 31		* 21	4.0	* 32
Max Q Clear Time (g_c+I1), s		10.6	2.5	13.9		4.1	2.2	7.8
Green Ext Time (p_c), s		1.7	0.0	6.1		2.1	0.0	7.0

Intersection Summary	
HCM 2010 Ctrl Delay	13.4
HCM 2010 LOS	B

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	7	373	6	20	594	20	20	13	12	8	10	20
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	8	405	6	22	646	20	22	14	2	9	11	2
Adj No. of Lanes	1	1	0	1	1	0	0	1	0	0	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	101	1037	15	101	1018	32	233	133	16	172	188	29
Arrive On Green	0.11	1.00	1.00	0.11	1.00	1.00	0.19	0.19	0.19	0.19	0.19	0.19
Sat Flow, veh/h	1774	1831	27	1774	1797	56	800	697	83	523	985	151
Grp Volume(v), veh/h	8	0	411	22	0	666	38	0	0	22	0	0
Grp Sat Flow(s),veh/h/ln	1774	0	1858	1774	0	1853	1580	0	0	1659	0	0
Q Serve(g_s), s	0.3	0.0	0.0	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.3	0.0	0.0	0.8	0.0	0.0	1.2	0.0	0.0	0.7	0.0	0.0
Prop In Lane	1.00		0.01	1.00		0.03	0.58		0.05	0.41		0.09
Lane Grp Cap(c), veh/h	101	0	1053	101	0	1050	383	0	0	389	0	0
V/C Ratio(X)	0.08	0.00	0.39	0.22	0.00	0.63	0.10	0.00	0.00	0.06	0.00	0.00
Avail Cap(c_a), veh/h	101	0	1053	101	0	1050	383	0	0	389	0	0
HCM Platoon Ratio	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	29.7	0.0	0.0	29.9	0.0	0.0	23.6	0.0	0.0	23.4	0.0	0.0
Incr Delay (d2), s/veh	1.5	0.0	1.1	4.9	0.0	2.9	0.5	0.0	0.0	0.3	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	0.0	0.3	0.5	0.0	0.9	0.7	0.0	0.0	0.4	0.0	0.0
LnGrp Delay(d),s/veh	31.2	0.0	1.1	34.8	0.0	2.9	24.1	0.0	0.0	23.6	0.0	0.0
LnGrp LOS	C		A	C		A	C			C		
Approach Vol, veh/h		419			688			38			22	
Approach Delay, s/veh		1.7			3.9			24.1			23.6	
Approach LOS		A			A			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		18.0	8.0	44.6		18.0	8.0	44.6
Change Period (Y+Rc), s		4.5	4.0	4.6		4.5	4.0	* 4.6
Max Green Setting (Gmax), s		13.5	4.0	39.4		13.5	4.0	* 40
Max Q Clear Time (g_c+I1), s		3.2	2.8	2.0		2.7	2.3	2.0
Green Ext Time (p_c), s		0.1	0.0	8.6		0.1	0.0	8.6

Intersection Summary	
HCM 2010 Ctrl Delay	4.2
HCM 2010 LOS	A

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	20	354	20	16	627	145	25	55	20	20	61	73
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1900	1863	1900	1900	1863	1863
Adj Flow Rate, veh/h	22	385	11	17	682	93	27	60	8	22	66	12
Adj No. of Lanes	1	1	1	1	1	1	0	1	0	0	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	100	1000	850	100	1000	850	136	268	31	124	321	344
Arrive On Green	0.02	0.18	0.18	0.11	1.00	1.00	0.22	0.22	0.22	0.22	0.22	0.22
Sat Flow, veh/h	1774	1863	1583	1774	1863	1583	326	1232	143	276	1475	1583
Grp Volume(v), veh/h	22	385	11	17	682	93	95	0	0	88	0	12
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1702	0	0	1751	0	1583
Q Serve(g_s), s	0.9	12.9	0.4	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4
Cycle Q Clear(g_c), s	0.9	12.9	0.4	0.6	0.0	0.0	3.0	0.0	0.0	2.7	0.0	0.4
Prop In Lane	1.00		1.00	1.00		1.00	0.28		0.08	0.25		1.00
Lane Grp Cap(c), veh/h	100	1000	850	100	1000	850	435	0	0	445	0	344
V/C Ratio(X)	0.22	0.39	0.01	0.17	0.68	0.11	0.22	0.00	0.00	0.20	0.00	0.03
Avail Cap(c_a), veh/h	100	1000	850	100	1000	850	435	0	0	445	0	344
HCM Platoon Ratio	0.33	0.33	0.33	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	33.2	18.8	13.7	29.9	0.0	0.0	22.9	0.0	0.0	22.7	0.0	21.8
Incr Delay (d2), s/veh	5.0	1.1	0.0	3.6	3.8	0.3	1.1	0.0	0.0	1.0	0.0	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	7.0	0.2	0.4	1.0	0.1	1.7	0.0	0.0	1.5	0.0	0.2
LnGrp Delay(d),s/veh	38.2	19.9	13.7	33.5	3.8	0.3	24.0	0.0	0.0	23.7	0.0	22.0
LnGrp LOS	D	B	B	C	A	A	C			C		C
Approach Vol, veh/h		418			792			95			100	
Approach Delay, s/veh		20.7			4.0			24.0			23.5	
Approach LOS		C			A			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		20.0	8.0	42.8		20.0	8.0	42.8
Change Period (Y+Rc), s		* 4.6	4.0	* 4.8		* 4.6	4.0	* 4.8
Max Green Setting (Gmax), s		* 15	4.0	* 38		* 15	4.0	* 37
Max Q Clear Time (g_c+I1), s		5.0	2.6	14.9		4.7	2.9	2.0
Green Ext Time (p_c), s		0.7	0.0	7.8		0.7	0.0	8.9

Intersection Summary	
HCM 2010 Ctrl Delay	11.7
HCM 2010 LOS	B

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	67	263	46	132	547	157	50	649	59	32	577	113
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	73	286	12	143	595	105	54	705	54	35	627	99
Adj No. of Lanes	1	1	1	1	1	1	0	2	0	0	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	100	547	465	276	731	622	93	957	79	85	1014	157
Arrive On Green	0.08	0.39	0.39	0.31	0.79	0.79	0.72	0.72	0.72	0.36	0.36	0.36
Sat Flow, veh/h	1774	1863	1583	1774	1863	1583	98	2669	220	82	2826	437
Grp Volume(v), veh/h	73	286	12	143	595	105	407	0	406	395	0	366
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1330	0	1656	1727	0	1618
Q Serve(g_s), s	2.9	8.3	0.3	4.7	13.4	1.2	5.8	0.0	9.6	1.5	0.0	13.3
Cycle Q Clear(g_c), s	2.9	8.3	0.3	4.7	13.4	1.2	19.1	0.0	9.6	12.4	0.0	13.3
Prop In Lane	1.00		1.00	1.00		1.00	0.13		0.13	0.09		0.27
Lane Grp Cap(c), veh/h	100	547	465	276	731	622	535	0	594	675	0	580
V/C Ratio(X)	0.73	0.52	0.03	0.52	0.81	0.17	0.76	0.00	0.68	0.58	0.00	0.63
Avail Cap(c_a), veh/h	100	547	465	276	731	622	535	0	594	675	0	580
HCM Platoon Ratio	1.33	1.33	1.33	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	32.2	17.8	15.3	22.2	6.1	4.7	8.3	0.0	7.8	18.5	0.0	18.8
Incr Delay (d2), s/veh	37.0	3.5	0.1	6.8	9.6	0.6	9.8	0.0	6.3	3.7	0.0	5.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.4	4.8	0.2	2.8	8.1	0.6	5.2	0.0	5.2	6.9	0.0	6.7
LnGrp Delay(d),s/veh	69.2	21.3	15.4	29.1	15.7	5.3	18.1	0.0	14.0	22.2	0.0	24.0
LnGrp LOS	E	C	B	C	B	A	B		B	C		C
Approach Vol, veh/h		371			843			813			761	
Approach Delay, s/veh		30.5			16.7			16.1			23.0	
Approach LOS		C			B			B			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		30.2	15.0	25.6		30.2	8.0	32.6
Change Period (Y+Rc), s		* 4.8	4.0	* 4.8		* 4.8	4.0	* 4.8
Max Green Setting (Gmax), s		* 25	11.0	* 21		* 25	4.0	* 27
Max Q Clear Time (g_c+I1), s		21.1	6.7	10.3		15.3	4.9	15.4
Green Ext Time (p_c), s		3.3	0.1	4.4		6.7	0.0	4.6

Intersection Summary	
HCM 2010 Ctrl Delay	20.1
HCM 2010 LOS	C

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	54	263	56	33	448	28	50	645	59	27	578	13
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	59	286	49	36	487	27	54	701	54	29	628	12
Adj No. of Lanes	1	1	0	1	1	0	0	2	0	0	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	100	569	98	100	642	36	112	1146	87	82	1262	24
Arrive On Green	0.11	0.73	0.73	0.11	0.73	0.73	0.39	0.39	0.39	0.77	0.77	0.77
Sat Flow, veh/h	1774	1550	266	1774	1749	97	141	2962	224	69	3261	62
Grp Volume(v), veh/h	59	0	335	36	0	514	409	0	400	342	0	327
Grp Sat Flow(s),veh/h/ln	1774	0	1816	1774	0	1846	1670	0	1656	1707	0	1684
Q Serve(g_s), s	2.2	0.0	5.5	1.3	0.0	11.8	4.1	0.0	13.8	0.5	0.0	5.1
Cycle Q Clear(g_c), s	2.2	0.0	5.5	1.3	0.0	11.8	13.0	0.0	13.8	14.3	0.0	5.1
Prop In Lane	1.00		0.15	1.00		0.05	0.13		0.14	0.08		0.04
Lane Grp Cap(c), veh/h	100	0	667	100	0	678	704	0	641	716	0	652
V/C Ratio(X)	0.59	0.00	0.50	0.36	0.00	0.76	0.58	0.00	0.62	0.48	0.00	0.50
Avail Cap(c_a), veh/h	100	0	667	100	0	678	704	0	641	716	0	652
HCM Platoon Ratio	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	30.6	0.0	6.7	30.2	0.0	7.5	17.1	0.0	17.5	5.4	0.0	5.5
Incr Delay (d2), s/veh	22.9	0.0	2.7	9.7	0.0	7.8	3.5	0.0	4.5	2.3	0.0	2.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.7	0.0	3.0	0.9	0.0	7.0	7.0	0.0	7.0	2.7	0.0	2.6
LnGrp Delay(d),s/veh	53.5	0.0	9.4	40.0	0.0	15.3	20.6	0.0	22.1	7.7	0.0	8.2
LnGrp LOS	D		A	D		B	C		C	A		A
Approach Vol, veh/h		394			550			809			669	
Approach Delay, s/veh		16.0			16.9			21.3			8.0	
Approach LOS		B			B			C			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		32.0	8.0	30.8		32.0	8.0	30.8
Change Period (Y+Rc), s		* 4.6	4.0	* 4.8		* 4.6	4.0	* 4.8
Max Green Setting (Gmax), s		* 27	4.0	* 25		* 27	4.0	* 26
Max Q Clear Time (g_c+I1), s		15.8	3.3	7.5		16.3	4.2	13.8
Green Ext Time (p_c), s		7.0	0.0	5.1		6.8	0.0	4.3

Intersection Summary	
HCM 2010 Ctrl Delay	15.8
HCM 2010 LOS	B

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	12	362	20	58	595	37	14	63	35	18	67	17
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	13	393	11	63	647	23	15	68	13	20	73	7
Adj No. of Lanes	1	1	1	1	1	1	0	1	0	0	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	101	1003	852	151	1055	897	83	266	45	96	277	23
Arrive On Green	0.06	0.54	0.54	0.17	1.00	1.00	0.19	0.19	0.19	0.19	0.19	0.19
Sat Flow, veh/h	1774	1863	1583	1774	1863	1583	128	1400	239	182	1458	124
Grp Volume(v), veh/h	13	393	11	63	647	23	96	0	0	100	0	0
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1767	0	0	1764	0	0
Q Serve(g_s), s	0.5	8.7	0.2	2.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.5	8.7	0.2	2.2	0.0	0.0	3.2	0.0	0.0	3.3	0.0	0.0
Prop In Lane	1.00		1.00	1.00		1.00	0.16		0.14	0.20		0.07
Lane Grp Cap(c), veh/h	101	1003	852	151	1055	897	394	0	0	396	0	0
V/C Ratio(X)	0.13	0.39	0.01	0.42	0.61	0.03	0.24	0.00	0.00	0.25	0.00	0.00
Avail Cap(c_a), veh/h	101	1003	852	151	1055	897	394	0	0	396	0	0
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	31.6	9.5	7.6	27.7	0.0	0.0	24.5	0.0	0.0	24.5	0.0	0.0
Incr Delay (d2), s/veh	2.6	1.2	0.0	8.3	2.7	0.1	1.5	0.0	0.0	1.5	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	4.8	0.1	1.4	0.8	0.0	1.8	0.0	0.0	1.8	0.0	0.0
LnGrp Delay(d),s/veh	34.3	10.7	7.6	36.0	2.7	0.1	25.9	0.0	0.0	26.0	0.0	0.0
LnGrp LOS	C	B	A	D	A	A	C			C		
Approach Vol, veh/h		417			733			96			100	
Approach Delay, s/veh		11.3			5.4			25.9			26.0	
Approach LOS		B			A			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		18.0	10.0	42.6		18.0	8.0	44.6
Change Period (Y+Rc), s		* 4.6	4.0	* 4.6		* 4.6	4.0	4.6
Max Green Setting (Gmax), s		* 13	6.0	* 38		* 13	4.0	39.4
Max Q Clear Time (g_c+I1), s		5.2	4.2	10.7		5.3	2.5	2.0
Green Ext Time (p_c), s		0.6	0.0	7.7		0.6	0.0	8.3

Intersection Summary	
HCM 2010 Ctrl Delay	10.3
HCM 2010 LOS	B

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	9	297	25	14	486	7	14	125	35	15	101	2
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	10	323	23	15	528	7	15	136	24	16	110	1
Adj No. of Lanes	1	1	0	1	1	0	0	1	0	0	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	100	825	59	100	881	12	73	410	68	87	466	4
Arrive On Green	0.11	0.96	0.96	0.11	0.96	0.96	0.28	0.28	0.28	0.55	0.55	0.55
Sat Flow, veh/h	1774	1719	122	1774	1834	24	65	1480	245	106	1685	14
Grp Volume(v), veh/h	10	0	346	15	0	535	175	0	0	127	0	0
Grp Sat Flow(s),veh/h/ln	1774	0	1841	1774	0	1858	1790	0	0	1805	0	0
Q Serve(g_s), s	0.4	0.0	0.8	0.5	0.0	1.9	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.4	0.0	0.8	0.5	0.0	1.9	5.5	0.0	0.0	2.5	0.0	0.0
Prop In Lane	1.00		0.07	1.00		0.01	0.09		0.14	0.13		0.01
Lane Grp Cap(c), veh/h	100	0	884	100	0	892	551	0	0	557	0	0
V/C Ratio(X)	0.10	0.00	0.39	0.15	0.00	0.60	0.32	0.00	0.00	0.23	0.00	0.00
Avail Cap(c_a), veh/h	100	0	884	100	0	892	551	0	0	557	0	0
HCM Platoon Ratio	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	29.8	0.0	0.7	29.9	0.0	0.8	20.5	0.0	0.0	12.0	0.0	0.0
Incr Delay (d2), s/veh	2.0	0.0	1.3	3.1	0.0	3.0	1.5	0.0	0.0	1.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	0.0	0.6	0.4	0.0	1.2	3.0	0.0	0.0	1.4	0.0	0.0
LnGrp Delay(d),s/veh	31.8	0.0	2.0	33.0	0.0	3.7	22.0	0.0	0.0	12.9	0.0	0.0
LnGrp LOS	C		A	C		A	C			B		
Approach Vol, veh/h		356			550			175			127	
Approach Delay, s/veh		2.9			4.5			22.0			12.9	
Approach LOS		A			A			C			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		24.2	8.0	38.6		24.2	8.0	38.6
Change Period (Y+Rc), s		* 4.6	4.0	4.6		* 4.6	4.0	* 4.6
Max Green Setting (Gmax), s		* 19	4.0	33.4		* 20	4.0	* 34
Max Q Clear Time (g_c+I1), s		7.5	2.5	2.8		4.5	2.4	3.9
Green Ext Time (p_c), s		1.3	0.0	6.5		1.5	0.0	6.5

Intersection Summary	
HCM 2010 Ctrl Delay	7.5
HCM 2010 LOS	A

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	6	352	16	58	570	21	26	42	28	12	44	20
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	7	383	6	63	620	11	28	46	9	13	48	6
Adj No. of Lanes	1	1	1	1	1	1	0	1	0	0	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	13	752	639	81	824	700	214	317	53	137	417	46
Arrive On Green	0.01	0.40	0.40	0.05	0.44	0.44	0.29	0.29	0.29	0.29	0.29	0.29
Sat Flow, veh/h	1774	1863	1583	1774	1863	1583	413	1077	181	187	1418	158
Grp Volume(v), veh/h	7	383	6	63	620	11	83	0	0	67	0	0
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1671	0	0	1763	0	0
Q Serve(g_s), s	0.2	8.1	0.1	1.8	14.6	0.2	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.2	8.1	0.1	1.8	14.6	0.2	1.8	0.0	0.0	1.4	0.0	0.0
Prop In Lane	1.00		1.00	1.00		1.00	0.34		0.11	0.19		0.09
Lane Grp Cap(c), veh/h	13	752	639	81	824	700	584	0	0	601	0	0
V/C Ratio(X)	0.53	0.51	0.01	0.77	0.75	0.02	0.14	0.00	0.00	0.11	0.00	0.00
Avail Cap(c_a), veh/h	136	1281	1089	203	1324	1125	584	0	0	601	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	25.9	11.7	9.3	24.7	12.2	8.2	13.7	0.0	0.0	13.5	0.0	0.0
Incr Delay (d2), s/veh	29.7	0.5	0.0	14.4	1.4	0.0	0.5	0.0	0.0	0.4	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	4.3	0.1	1.2	7.7	0.1	1.0	0.0	0.0	0.8	0.0	0.0
LnGrp Delay(d),s/veh	55.6	12.2	9.3	39.1	13.6	8.2	14.2	0.0	0.0	13.9	0.0	0.0
LnGrp LOS	E	B	A	D	B	A	B			B		
Approach Vol, veh/h		396			694			83			67	
Approach Delay, s/veh		13.0			15.8			14.2			13.9	
Approach LOS		B			B			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		20.0	6.4	25.9		20.0	4.4	27.9
Change Period (Y+Rc), s		* 4.6	4.0	* 4.8		* 4.6	4.0	* 4.8
Max Green Setting (Gmax), s		* 15	6.0	* 36		* 15	4.0	* 37
Max Q Clear Time (g_c+I1), s		3.8	3.8	10.1		3.4	2.2	16.6
Green Ext Time (p_c), s		0.5	0.0	7.1		0.5	0.0	6.6

Intersection Summary	
HCM 2010 Ctrl Delay	14.7
HCM 2010 LOS	B

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	5	288	20	14	466	4	26	92	28	9	78	2
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	5	313	18	15	507	3	28	100	17	10	85	1
Adj No. of Lanes	1	1	0	1	1	0	0	1	0	0	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	100	862	50	100	914	5	112	348	53	76	450	5
Arrive On Green	0.06	0.49	0.49	0.11	0.99	0.99	0.26	0.26	0.26	0.26	0.26	0.26
Sat Flow, veh/h	1774	1745	100	1774	1850	11	199	1339	204	75	1731	19
Grp Volume(v), veh/h	5	0	331	15	0	510	145	0	0	96	0	0
Grp Sat Flow(s),veh/h/ln	1774	0	1845	1774	0	1861	1742	0	0	1824	0	0
Q Serve(g_s), s	0.2	0.0	7.8	0.5	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.2	0.0	7.8	0.5	0.0	0.5	4.5	0.0	0.0	2.9	0.0	0.0
Prop In Lane	1.00		0.05	1.00		0.01	0.19		0.12	0.10		0.01
Lane Grp Cap(c), veh/h	100	0	912	100	0	920	513	0	0	530	0	0
V/C Ratio(X)	0.05	0.00	0.36	0.15	0.00	0.55	0.28	0.00	0.00	0.18	0.00	0.00
Avail Cap(c_a), veh/h	100	0	912	100	0	920	513	0	0	530	0	0
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	31.6	0.0	11.0	29.9	0.0	0.2	21.1	0.0	0.0	20.4	0.0	0.0
Incr Delay (d2), s/veh	0.9	0.0	1.1	3.1	0.0	2.4	1.4	0.0	0.0	0.7	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	0.0	4.2	0.4	0.0	0.8	2.5	0.0	0.0	1.6	0.0	0.0
LnGrp Delay(d),s/veh	32.5	0.0	12.1	33.0	0.0	2.6	22.4	0.0	0.0	21.2	0.0	0.0
LnGrp LOS	C		B	C		A	C			C		
Approach Vol, veh/h		336			525			145			96	
Approach Delay, s/veh		12.5			3.5			22.4			21.2	
Approach LOS		B			A			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		23.0	8.0	39.8		23.0	8.0	39.8
Change Period (Y+Rc), s		* 4.6	4.0	* 4.8		* 4.6	4.0	* 4.8
Max Green Setting (Gmax), s		* 18	4.0	* 34		* 18	4.0	* 35
Max Q Clear Time (g_c+I1), s		6.5	2.5	9.8		4.9	2.2	2.5
Green Ext Time (p_c), s		1.0	0.0	5.8		1.1	0.0	6.2

Intersection Summary	
HCM 2010 Ctrl Delay	10.3
HCM 2010 LOS	B

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	JCH	Intersection	Commerce St/Navidad St
Agency/Co.	CH2M HILL	Jurisdiction	City of San Antonio
Date Performed	3/25/2015	Analysis Year	2020 Scenario 2
Analysis Time Period	PM Peak Hour		

Project Description *Commerce/Buena Vista One-Way Couplet Conversion Traff. Study*

East/West Street: *Commerce Street* | North/South Street: *Navidad Street*

Intersection Orientation: *East-West* | Study Period (hrs): *0.25*

Vehicle Volumes and Adjustments

Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)	20	354	20	20	682	20
Peak-Hour Factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Hourly Flow Rate, HFR (veh/h)	20	354	20	20	682	20
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type	Two Way Left Turn Lane					
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration	LTR			LTR		
Upstream Signal		0			0	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)	20	20	20	20	20	20
Peak-Hour Factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Hourly Flow Rate, HFR (veh/h)	20	20	20	20	20	20
Percent Heavy Vehicles	0	0	0	0	0	0
Percent Grade (%)		0			0	
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	

Delay, Queue Length, and Level of Service

Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	LTR	LTR		LTR			LTR	
v (veh/h)	20	20		60			60	
C (m) (veh/h)	905	1196		283			270	
v/c	0.02	0.02		0.21			0.22	
95% queue length	0.07	0.05		0.79			0.83	
Control Delay (s/veh)	9.1	8.1		21.1			22.1	
LOS	A	A		C			C	
Approach Delay (s/veh)	--	--	21.1			22.1		
Approach LOS	--	--	C			C		

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2020 Scenario 3 AM Peak Hour

HCM 2010 Signalized Intersection Summary
1: Pecos Street & Commerce Street

4/17/2015

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	248	225	167	0	0	0	0	0	606	292
Number	7	4	14	3	8	18				1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	0	1863	1863	1863	0				0	1863	1900
Adj Flow Rate, veh/h	0	0	19	245	182	0				0	659	182
Adj No. of Lanes	0	0	2	2	2	0				0	3	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92				0.92	0.92	0.92
Percent Heavy Veh, %	0	0	2	2	2	0				0	2	0
Cap, veh/h	0	0	0	564	2886	0				0	0	0
Arrive On Green	0.00	0.00	0.00	0.82	0.82	0.00				0.00	0.00	0.00
Sat Flow, veh/h		0		2692	3632	0					0	
Grp Volume(v), veh/h		0.0		245	182	0					0.0	
Grp Sat Flow(s),veh/h/ln				1346	1770	0						
Q Serve(g_s), s				0.1	0.3	0.0						
Cycle Q Clear(g_c), s				0.1	0.3	0.0						
Prop In Lane				1.00		0.00						
Lane Grp Cap(c), veh/h				564	2886	0						
V/C Ratio(X)				0.43	0.06	0.00						
Avail Cap(c_a), veh/h				564	2886	0						
HCM Platoon Ratio				1.00	1.00	1.00						
Upstream Filter(I)				1.00	1.00	0.00						
Uniform Delay (d), s/veh				2.4	0.5	0.0						
Incr Delay (d2), s/veh				2.4	0.0	0.0						
Initial Q Delay(d3),s/veh				0.0	0.0	0.0						
%ile BackOfQ(50%),veh/ln				0.3	0.1	0.0						
LnGrp Delay(d),s/veh				4.9	0.5	0.0						
LnGrp LOS				A	A							
Approach Vol, veh/h					427							
Approach Delay, s/veh					3.0							
Approach LOS					A							

Timer	1	2	3	4	5	6	7	8
Assigned Phs								8
Phs Duration (G+Y+Rc), s								26.0
Change Period (Y+Rc), s								* 4.8
Max Green Setting (Gmax), s								* 21
Max Q Clear Time (g_c+I1), s								2.3
Green Ext Time (p_c), s								1.9

Intersection Summary	
HCM 2010 Ctrl Delay	3.0
HCM 2010 LOS	A

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	373	240	0	0	0	0	0	0	206	458	169
Number	7	4	14							1	6	16
Initial Q (Qb), veh	0	0	0							0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00							1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00							1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1863	1900							1900	1863	1900
Adj Flow Rate, veh/h	0	405	225							224	498	20
Adj No. of Lanes	0	1	0							0	4	0
Peak Hour Factor	0.92	0.92	0.92							0.92	0.92	0.92
Percent Heavy Veh, %	0	2	2							2	2	2
Cap, veh/h	0	615	342							555	1409	56
Arrive On Green	0.00	0.55	0.55							0.11	0.11	0.11
Sat Flow, veh/h	0	1126	626							1412	4404	176
Grp Volume(v), veh/h	0	0	630							224	329	189
Grp Sat Flow(s),veh/h/ln	0	0	1752							1412	1458	1664
Q Serve(g_s), s	0.0	0.0	17.9							10.5	7.3	7.4
Cycle Q Clear(g_c), s	0.0	0.0	17.9							10.5	7.3	7.4
Prop In Lane	0.00		0.36							1.00		0.11
Lane Grp Cap(c), veh/h	0	0	956							555	933	532
V/C Ratio(X)	0.00	0.00	0.66							0.40	0.35	0.36
Avail Cap(c_a), veh/h	0	0	956							555	933	532
HCM Platoon Ratio	1.00	1.00	1.00							0.33	0.33	0.33
Upstream Filter(I)	0.00	0.00	1.00							1.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	11.3							26.0	24.6	24.6
Incr Delay (d2), s/veh	0.0	0.0	3.6							2.2	1.0	1.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0							0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	9.5							4.4	3.1	3.7
LnGrp Delay(d),s/veh	0.0	0.0	14.8							28.2	25.6	26.4
LnGrp LOS			B							C	C	C
Approach Vol, veh/h		630									742	
Approach Delay, s/veh		14.8									26.6	
Approach LOS		B									C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6		
Phs Duration (G+Y+Rc), s				43.0		27.0		
Change Period (Y+Rc), s				* 4.8		4.6		
Max Green Setting (Gmax), s				* 38		22.4		
Max Q Clear Time (g_c+I1), s				19.9		12.5		
Green Ext Time (p_c), s				4.3		3.3		

Intersection Summary	
HCM 2010 Ctrl Delay	21.2
HCM 2010 LOS	C

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	20	268	75	6	342	14	2	17	0	0	1	7
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1900	1900	1863	1900	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	22	291	45	7	372	10	2	18	0	0	1	1
Adj No. of Lanes	0	2	0	0	2	0	0	1	0	0	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	137	1632	247	71	1976	52	83	481	0	0	232	232
Arrive On Green	0.58	0.58	0.58	0.58	0.58	0.58	0.27	0.27	0.00	0.00	0.27	0.27
Sat Flow, veh/h	123	2826	427	16	3422	91	66	1776	0	0	856	856
Grp Volume(v), veh/h	187	0	171	204	0	185	20	0	0	0	0	2
Grp Sat Flow(s),veh/h/ln	1756	0	1620	1850	0	1679	1842	0	0	0	0	1712
Q Serve(g_s), s	0.0	0.0	3.0	0.0	0.0	3.2	0.0	0.0	0.0	0.0	0.0	0.1
Cycle Q Clear(g_c), s	2.9	0.0	3.0	3.1	0.0	3.2	0.5	0.0	0.0	0.0	0.0	0.1
Prop In Lane	0.12		0.26	0.03		0.05	0.10		0.00	0.00		0.50
Lane Grp Cap(c), veh/h	1081	0	935	1130	0	970	564	0	0	0	0	463
V/C Ratio(X)	0.17	0.00	0.18	0.18	0.00	0.19	0.04	0.00	0.00	0.00	0.00	0.00
Avail Cap(c_a), veh/h	1081	0	935	1130	0	970	564	0	0	0	0	463
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	0.00	0.00	1.00
Uniform Delay (d), s/veh	6.0	0.0	6.0	6.1	0.0	6.1	16.3	0.0	0.0	0.0	0.0	16.1
Incr Delay (d2), s/veh	0.3	0.0	0.4	0.4	0.0	0.4	0.1	0.0	0.0	0.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.6	0.0	1.4	1.7	0.0	1.6	0.3	0.0	0.0	0.0	0.0	0.0
LnGrp Delay(d),s/veh	6.4	0.0	6.5	6.4	0.0	6.5	16.4	0.0	0.0	0.0	0.0	16.2
LnGrp LOS	A		A	A		A	B					B
Approach Vol, veh/h		358			389			20			2	
Approach Delay, s/veh		6.4			6.5			16.4			16.2	
Approach LOS		A			A			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		21.0		39.6		21.0		39.6
Change Period (Y+Rc), s		* 4.6		* 4.6		* 4.6		4.6
Max Green Setting (Gmax), s		* 16		* 35		* 16		34.4
Max Q Clear Time (g_c+I1), s		2.5		5.0		2.1		5.2
Green Ext Time (p_c), s		0.0		4.7		0.0		4.7

Intersection Summary	
HCM 2010 Ctrl Delay	6.7
HCM 2010 LOS	A

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	145	322	142	22	316	34	161	551	54	32	166	121
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1900	1900	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	158	350	104	24	343	11	175	599	46	35	180	31
Adj No. of Lanes	0	2	0	0	1	1	1	2	0	1	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	221	534	180	79	612	552	236	1236	95	112	883	149
Arrive On Green	0.35	0.35	0.35	0.35	0.35	0.35	0.13	0.37	0.37	0.06	0.29	0.29
Sat Flow, veh/h	381	1532	516	54	1756	1583	1774	3332	255	1774	3029	513
Grp Volume(v), veh/h	289	0	323	367	0	11	175	318	327	35	104	107
Grp Sat Flow(s),veh/h/ln	826	0	1604	1809	0	1583	1774	1770	1818	1774	1770	1772
Q Serve(g_s), s	11.9	0.0	10.4	0.0	0.0	0.3	6.0	8.7	8.7	1.2	2.8	2.9
Cycle Q Clear(g_c), s	22.0	0.0	10.4	10.1	0.0	0.3	6.0	8.7	8.7	1.2	2.8	2.9
Prop In Lane	0.55		0.32	0.07		1.00	1.00		0.14	1.00		0.29
Lane Grp Cap(c), veh/h	376	0	559	692	0	552	236	656	674	112	516	517
V/C Ratio(X)	0.77	0.00	0.58	0.53	0.00	0.02	0.74	0.48	0.49	0.31	0.20	0.21
Avail Cap(c_a), veh/h	376	0	559	692	0	552	236	656	674	112	516	517
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	23.2	0.0	16.8	16.7	0.0	13.5	26.3	15.2	15.2	28.2	16.8	16.9
Incr Delay (d2), s/veh	14.0	0.0	4.3	2.9	0.0	0.1	18.8	2.5	2.5	7.1	0.9	0.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.4	0.0	5.2	5.7	0.0	0.1	4.1	4.7	4.8	0.8	1.5	1.5
LnGrp Delay(d),s/veh	37.2	0.0	21.1	19.6	0.0	13.5	45.1	17.8	17.7	35.3	17.7	17.8
LnGrp LOS	D		C	B		B	D	B	B	D	B	B
Approach Vol, veh/h		612			378			820			246	
Approach Delay, s/veh		28.7			19.4			23.6			20.2	
Approach LOS		C			B			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	8.0	28.3		26.8	13.0	23.3		26.8
Change Period (Y+Rc), s	4.0	* 4.9		* 4.8	* 4.6	* 4.9		* 4.8
Max Green Setting (Gmax), s	4.0	* 23		* 22	* 8.4	* 18		* 21
Max Q Clear Time (g_c+I1), s	3.2	10.7		24.0	8.0	4.9		12.1
Green Ext Time (p_c), s	0.0	4.2		0.0	0.0	4.4		4.1

Intersection Summary	
HCM 2010 Ctrl Delay	23.9
HCM 2010 LOS	C

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

HCM Signalized Intersection Capacity Analysis
5: Buena Vista Street So. Frontage & Frio Street & Buena Vista Street

4/17/2015

Movement	EBL	EBT	EBR	WBL2	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Volume (vph)	96	482	72	0	6	210	6	107	676	45	91	171
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0				4.0		4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	1.00				1.00		1.00	0.95		1.00	0.95
Frt	1.00	0.98				1.00		1.00	0.99		1.00	0.99
Flt Protected	0.95	1.00				1.00		0.95	1.00		0.95	1.00
Satd. Flow (prot)	1770	1827				1852		1770	3506		1770	3502
Flt Permitted	0.95	1.00				0.92		0.58	1.00		0.18	1.00
Satd. Flow (perm)	1770	1827				1712		1073	3506		342	3502
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)	104	524	78	0	7	228	7	116	735	49	99	186
RTOR Reduction (vph)	0	0	0	0	0	2	0	0	5	0	0	0
Lane Group Flow (vph)	104	602	0	0	0	240	0	116	779	0	99	200
Turn Type	Prot	NA		Prot	Perm	NA		pm+pt	NA		pm+pt	NA
Protected Phases	7	4		3		8		5	2		1	6
Permitted Phases					8			2			6	
Actuated Green, G (s)	8.0	33.6				21.6		27.9	23.3		24.9	21.8
Effective Green, g (s)	8.0	33.6				21.6		27.9	23.3		24.9	21.8
Actuated g/C Ratio	0.09	0.36				0.23		0.30	0.25		0.27	0.24
Clearance Time (s)	4.0	4.0				4.0		4.0	4.0		4.0	4.0
Vehicle Extension (s)	3.0	3.0				3.0		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	153	665				401		359	886		140	828
v/s Ratio Prot	0.06	c0.33						0.02	c0.22		c0.02	0.06
v/s Ratio Perm						0.14		0.08			0.17	
v/c Ratio	0.68	0.91				0.60		0.32	0.88		0.71	0.24
Uniform Delay, d1	40.9	27.8				31.4		24.0	33.1		30.1	28.5
Progression Factor	1.00	1.00				1.00		1.00	1.00		1.00	1.00
Incremental Delay, d2	11.4	15.8				2.4		0.5	12.1		15.0	0.7
Delay (s)	52.2	43.6				33.9		24.5	45.2		45.1	29.2
Level of Service	D	D				C		C	D		D	C
Approach Delay (s)		44.9				33.9			42.5			34.5
Approach LOS		D				C			D			C

Intersection Summary			
HCM 2000 Control Delay	41.1	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	92.2	Sum of lost time (s)	20.0
Intersection Capacity Utilization	86.6%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SBR	NEL	NER	NER2
Lane Configurations				
Volume (vph)	13	3	1	13
Ideal Flow (vphpl)	1900	1900	1900	1900
Total Lost time (s)		4.0		4.0
Lane Util. Factor		1.00		0.95
Frt		0.90		0.85
Flt Protected		0.98		1.00
Satd. Flow (prot)		1649		1504
Flt Permitted		0.98		1.00
Satd. Flow (perm)		1649		1504
Peak-hour factor, PHF	0.92	0.92	0.92	0.92
Adj. Flow (vph)	14	3	1	14
RTOR Reduction (vph)	0	7	0	7
Lane Group Flow (vph)	0	2	0	2
Turn Type		Prot		Prot
Protected Phases		9		9
Permitted Phases				
Actuated Green, G (s)		16.2		16.2
Effective Green, g (s)		16.2		16.2
Actuated g/C Ratio		0.18		0.18
Clearance Time (s)		4.0		4.0
Vehicle Extension (s)		3.0		3.0
Lane Grp Cap (vph)		289		264
v/s Ratio Prot		0.00		c0.00
v/s Ratio Perm				
v/c Ratio		0.01		0.01
Uniform Delay, d1		31.4		31.4
Progression Factor		1.00		1.00
Incremental Delay, d2		0.0		0.0
Delay (s)		31.4		31.4
Level of Service		C		C
Approach Delay (s)		31.4		
Approach LOS		C		

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	77	523	16	78	294	43	27	330	57	44	283	91
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1900	1900	1863	1900	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	84	568	14	85	320	31	29	359	38	48	308	52
Adj No. of Lanes	0	2	0	0	2	0	0	2	0	0	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	208	1276	31	240	919	95	118	1218	125	181	1050	174
Arrive On Green	0.44	0.44	0.44	0.44	0.44	0.44	0.41	0.41	0.41	0.41	0.41	0.41
Sat Flow, veh/h	303	2924	71	353	2108	217	121	2976	307	260	2565	425
Grp Volume(v), veh/h	333	0	333	199	0	237	223	0	203	210	0	198
Grp Sat Flow(s),veh/h/ln	1615	0	1683	1021	0	1657	1762	0	1641	1630	0	1620
Q Serve(g_s), s	1.9	0.0	8.3	3.3	0.0	5.6	0.0	0.0	5.0	0.0	0.0	4.9
Cycle Q Clear(g_c), s	7.7	0.0	8.3	11.6	0.0	5.6	4.8	0.0	5.0	4.5	0.0	4.9
Prop In Lane	0.25		0.04	0.43		0.13	0.13		0.19	0.23		0.26
Lane Grp Cap(c), veh/h	780	0	734	532	0	723	790	0	672	742	0	663
V/C Ratio(X)	0.43	0.00	0.45	0.38	0.00	0.33	0.28	0.00	0.30	0.28	0.00	0.30
Avail Cap(c_a), veh/h	780	0	734	532	0	723	790	0	672	742	0	663
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	11.6	0.0	11.8	12.3	0.0	11.0	11.8	0.0	11.9	11.7	0.0	11.8
Incr Delay (d2), s/veh	1.7	0.0	2.0	2.0	0.0	1.2	0.9	0.0	1.2	1.0	0.0	1.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.2	0.0	4.2	2.8	0.0	2.8	2.6	0.0	2.5	2.5	0.0	2.4
LnGrp Delay(d),s/veh	13.3	0.0	13.8	14.3	0.0	12.3	12.7	0.0	13.0	12.7	0.0	13.0
LnGrp LOS	B		B	B		B	B		B	B		B
Approach Vol, veh/h		666			436			426			408	
Approach Delay, s/veh		13.5			13.2			12.9			12.8	
Approach LOS		B			B			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		29.0		30.6		29.0		30.6
Change Period (Y+Rc), s		* 4.6		* 4.6		* 4.6		4.6
Max Green Setting (Gmax), s		* 24		* 26		* 24		25.4
Max Q Clear Time (g_c+I1), s		7.0		10.3		6.9		13.6
Green Ext Time (p_c), s		4.9		6.3		4.9		5.4

Intersection Summary	
HCM 2010 Ctrl Delay	13.2
HCM 2010 LOS	B

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	51	523	16	20	240	8	18	282	47	30	256	10
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	55	568	15	22	261	7	20	307	31	33	278	7
Adj No. of Lanes	1	1	0	1	1	0	0	2	0	0	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	150	842	22	100	791	21	81	882	86	121	891	22
Arrive On Green	0.17	0.93	0.93	0.06	0.44	0.44	0.29	0.29	0.29	0.29	0.29	0.29
Sat Flow, veh/h	1774	1807	48	1774	1806	48	85	3060	300	209	3092	77
Grp Volume(v), veh/h	55	0	583	22	0	268	188	0	170	164	0	154
Grp Sat Flow(s),veh/h/ln	1774	0	1854	1774	0	1854	1803	0	1642	1697	0	1682
Q Serve(g_s), s	1.9	0.0	4.1	0.8	0.0	6.7	0.0	0.0	5.8	0.0	0.0	5.1
Cycle Q Clear(g_c), s	1.9	0.0	4.1	0.8	0.0	6.7	5.7	0.0	5.8	4.9	0.0	5.1
Prop In Lane	1.00		0.03	1.00		0.03	0.11		0.18	0.20		0.05
Lane Grp Cap(c), veh/h	150	0	864	100	0	812	576	0	473	550	0	485
V/C Ratio(X)	0.37	0.00	0.67	0.22	0.00	0.33	0.33	0.00	0.36	0.30	0.00	0.32
Avail Cap(c_a), veh/h	150	0	864	100	0	812	576	0	473	550	0	485
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	27.7	0.0	1.4	31.9	0.0	13.1	20.0	0.0	20.0	19.7	0.0	19.7
Incr Delay (d2), s/veh	6.7	0.0	4.2	5.0	0.0	1.1	1.5	0.0	2.1	1.4	0.0	1.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.2	0.0	2.5	0.5	0.0	3.7	3.1	0.0	2.9	2.7	0.0	2.6
LnGrp Delay(d),s/veh	34.5	0.0	5.6	36.9	0.0	14.2	21.5	0.0	22.1	21.1	0.0	21.5
LnGrp LOS	C		A	D		B	C		C	C		C
Approach Vol, veh/h		638			290			358			318	
Approach Delay, s/veh		8.1			15.9			21.8			21.3	
Approach LOS		A			B			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		25.0	8.0	37.8		25.0	10.0	35.8
Change Period (Y+Rc), s		* 4.6	4.0	* 4.8		* 4.6	4.0	* 4.8
Max Green Setting (Gmax), s		* 20	4.0	* 32		* 20	6.0	* 31
Max Q Clear Time (g_c+I1), s		7.8	2.8	6.1		7.1	3.9	8.7
Green Ext Time (p_c), s		3.3	0.0	5.8		3.4	0.0	5.5

Intersection Summary	
HCM 2010 Ctrl Delay	15.2
HCM 2010 LOS	B

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	20	654	20	8	355	10	15	11	20	20	16	4
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1900	1900	1863	1900	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	22	711	18	9	386	8	16	12	5	22	17	1
Adj No. of Lanes	0	2	0	0	2	0	0	1	0	0	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	86	2031	51	76	2050	42	250	175	60	283	196	10
Arrive On Green	0.60	0.60	0.60	0.60	0.60	0.60	0.25	0.25	0.25	0.25	0.25	0.25
Sat Flow, veh/h	41	3382	84	25	3412	70	654	701	242	769	786	40
Grp Volume(v), veh/h	392	0	359	210	0	193	33	0	0	40	0	0
Grp Sat Flow(s),veh/h/ln	1827	0	1680	1824	0	1683	1597	0	0	1594	0	0
Q Serve(g_s), s	0.0	0.0	6.7	0.0	0.0	3.2	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	6.6	0.0	6.7	3.1	0.0	3.2	0.9	0.0	0.0	1.0	0.0	0.0
Prop In Lane	0.06		0.05	0.04		0.04	0.48		0.15	0.55		0.02
Lane Grp Cap(c), veh/h	1159	0	1009	1157	0	1011	486	0	0	489	0	0
V/C Ratio(X)	0.34	0.00	0.36	0.18	0.00	0.19	0.07	0.00	0.00	0.08	0.00	0.00
Avail Cap(c_a), veh/h	1159	0	1009	1157	0	1011	486	0	0	489	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	6.2	0.0	6.2	5.5	0.0	5.5	17.6	0.0	0.0	17.7	0.0	0.0
Incr Delay (d2), s/veh	0.8	0.0	1.0	0.3	0.0	0.4	0.3	0.0	0.0	0.3	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.5	0.0	3.4	1.7	0.0	1.6	0.5	0.0	0.0	0.6	0.0	0.0
LnGrp Delay(d),s/veh	7.0	0.0	7.2	5.9	0.0	6.0	17.9	0.0	0.0	18.0	0.0	0.0
LnGrp LOS	A		A	A		A	B			B		
Approach Vol, veh/h		751			403			33			40	
Approach Delay, s/veh		7.1			5.9			17.9			18.0	
Approach LOS		A			A			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		20.0		41.6		20.0		41.6
Change Period (Y+Rc), s		* 4.6		* 4.6		* 4.6		4.6
Max Green Setting (Gmax), s		* 15		* 37		* 15		36.4
Max Q Clear Time (g_c+I1), s		2.9		8.7		3.0		5.2
Green Ext Time (p_c), s		0.2		8.0		0.2		8.2

Intersection Summary	
HCM 2010 Ctrl Delay	7.4
HCM 2010 LOS	A

Notes

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	7	605	42	39	344	24	37	181	41	8	145	22
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1900	1900	1863	1900	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	8	658	37	42	374	18	40	197	33	9	158	15
Adj No. of Lanes	0	2	0	0	2	0	0	1	0	0	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	63	1480	83	158	1290	62	127	557	86	71	664	61
Arrive On Green	0.89	0.89	0.89	0.45	0.45	0.45	0.40	0.40	0.40	0.40	0.40	0.40
Sat Flow, veh/h	10	3320	185	201	2893	138	152	1378	213	28	1641	150
Grp Volume(v), veh/h	371	0	332	216	0	218	270	0	0	182	0	0
Grp Sat Flow(s),veh/h/ln	1853	0	1662	1562	0	1671	1743	0	0	1819	0	0
Q Serve(g_s), s	0.0	0.0	2.3	0.0	0.0	5.2	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	2.2	0.0	2.3	4.6	0.0	5.2	6.5	0.0	0.0	4.1	0.0	0.0
Prop In Lane	0.02		0.11	0.19		0.08	0.15		0.12	0.05		0.08
Lane Grp Cap(c), veh/h	885	0	741	765	0	745	771	0	0	796	0	0
V/C Ratio(X)	0.42	0.00	0.45	0.28	0.00	0.29	0.35	0.00	0.00	0.23	0.00	0.00
Avail Cap(c_a), veh/h	885	0	741	765	0	745	771	0	0	796	0	0
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	2.0	0.0	2.0	10.9	0.0	11.1	13.1	0.0	0.0	12.4	0.0	0.0
Incr Delay (d2), s/veh	1.5	0.0	2.0	0.9	0.0	1.0	1.3	0.0	0.0	0.7	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.3	0.0	1.3	2.5	0.0	2.6	3.5	0.0	0.0	2.2	0.0	0.0
LnGrp Delay(d),s/veh	3.5	0.0	4.0	11.8	0.0	12.1	14.3	0.0	0.0	13.0	0.0	0.0
LnGrp LOS	A		A	B		B	B			B		
Approach Vol, veh/h		703			434			270			182	
Approach Delay, s/veh		3.7			12.0			14.3			13.0	
Approach LOS		A			B			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		30.0		32.8		30.0		32.8
Change Period (Y+Rc), s		* 4.6		* 4.8		* 4.6		* 4.8
Max Green Setting (Gmax), s		* 25		* 28		* 25		* 27
Max Q Clear Time (g_c+I1), s		8.5		4.3		6.1		7.2
Green Ext Time (p_c), s		2.5		7.5		2.6		7.1

Intersection Summary	
HCM 2010 Ctrl Delay	8.8
HCM 2010 LOS	A

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	5	495	42	10	282	4	24	139	33	6	65	2
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	5	538	42	11	307	4	26	151	24	7	71	0
Adj No. of Lanes	1	1	0	1	1	0	0	1	0	0	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	100	866	68	100	932	12	87	354	52	69	436	0
Arrive On Green	0.08	0.68	0.68	0.11	1.00	1.00	0.25	0.25	0.25	0.25	0.25	0.00
Sat Flow, veh/h	1774	1706	133	1774	1835	24	123	1441	212	56	1777	0
Grp Volume(v), veh/h	5	0	580	11	0	311	201	0	0	78	0	0
Grp Sat Flow(s),veh/h/ln	1774	0	1839	1774	0	1859	1775	0	0	1832	0	0
Q Serve(g_s), s	0.2	0.0	12.5	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.2	0.0	12.5	0.4	0.0	0.0	6.6	0.0	0.0	2.3	0.0	0.0
Prop In Lane	1.00		0.07	1.00		0.01	0.13		0.12	0.09		0.00
Lane Grp Cap(c), veh/h	100	0	934	100	0	944	493	0	0	505	0	0
V/C Ratio(X)	0.05	0.00	0.62	0.11	0.00	0.33	0.41	0.00	0.00	0.15	0.00	0.00
Avail Cap(c_a), veh/h	100	0	934	100	0	944	493	0	0	505	0	0
HCM Platoon Ratio	1.33	1.33	1.33	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	31.0	0.0	7.7	29.9	0.0	0.0	22.7	0.0	0.0	21.1	0.0	0.0
Incr Delay (d2), s/veh	0.9	0.0	3.1	2.2	0.0	0.9	2.5	0.0	0.0	0.6	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	0.0	6.9	0.3	0.0	0.2	3.7	0.0	0.0	1.3	0.0	0.0
LnGrp Delay(d),s/veh	32.0	0.0	10.8	32.1	0.0	0.9	25.2	0.0	0.0	21.7	0.0	0.0
LnGrp LOS	C		B	C		A	C			C		
Approach Vol, veh/h		585			322			201			78	
Approach Delay, s/veh		11.0			2.0			25.2			21.7	
Approach LOS		B			A			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		22.0	8.0	40.9		22.0	8.0	40.9
Change Period (Y+Rc), s		* 4.6	4.0	* 4.9		* 4.6	4.0	* 4.9
Max Green Setting (Gmax), s		* 17	4.0	* 35		* 17	4.0	* 36
Max Q Clear Time (g_c+I1), s		8.6	2.4	14.5		4.3	2.2	2.0
Green Ext Time (p_c), s		1.0	0.0	5.7		1.3	0.0	6.5

Intersection Summary	
HCM 2010 Ctrl Delay	11.7
HCM 2010 LOS	B

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	3	544	4	20	309	20	20	11	14	7	5	20
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	3	591	4	22	336	18	22	12	2	8	5	4
Adj No. of Lanes	1	1	0	1	1	0	0	1	0	0	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	101	1021	7	101	968	52	258	127	18	202	123	77
Arrive On Green	0.11	1.00	1.00	0.11	1.00	1.00	0.21	0.21	0.21	0.21	0.21	0.21
Sat Flow, veh/h	1774	1848	13	1774	1752	94	857	620	87	618	597	374
Grp Volume(v), veh/h	3	0	595	22	0	354	36	0	0	17	0	0
Grp Sat Flow(s),veh/h/ln	1774	0	1861	1774	0	1846	1564	0	0	1589	0	0
Q Serve(g_s), s	0.1	0.0	0.0	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.1	0.0	0.0	0.8	0.0	0.0	1.1	0.0	0.0	0.5	0.0	0.0
Prop In Lane	1.00		0.01	1.00		0.05	0.61		0.06	0.47		0.24
Lane Grp Cap(c), veh/h	101	0	1028	101	0	1020	403	0	0	401	0	0
V/C Ratio(X)	0.03	0.00	0.58	0.22	0.00	0.35	0.09	0.00	0.00	0.04	0.00	0.00
Avail Cap(c_a), veh/h	101	0	1028	101	0	1020	403	0	0	401	0	0
HCM Platoon Ratio	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	29.6	0.0	0.0	29.9	0.0	0.0	22.7	0.0	0.0	22.5	0.0	0.0
Incr Delay (d2), s/veh	0.6	0.0	2.4	4.9	0.0	0.9	0.4	0.0	0.0	0.2	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	0.0	0.7	0.5	0.0	0.3	0.6	0.0	0.0	0.3	0.0	0.0
LnGrp Delay(d),s/veh	30.1	0.0	2.4	34.8	0.0	0.9	23.2	0.0	0.0	22.7	0.0	0.0
LnGrp LOS	C		A	C		A	C			C		
Approach Vol, veh/h		598			376			36			17	
Approach Delay, s/veh		2.5			2.9			23.2			22.7	
Approach LOS		A			A			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		19.0	8.0	43.6		19.0	8.0	43.6
Change Period (Y+Rc), s		4.5	4.0	4.6		4.5	4.0	* 4.6
Max Green Setting (Gmax), s		14.5	4.0	38.4		14.5	4.0	* 39
Max Q Clear Time (g_c+I1), s		3.1	2.8	2.0		2.5	2.1	2.0
Green Ext Time (p_c), s		0.1	0.0	7.1		0.1	0.0	7.1

Intersection Summary	
HCM 2010 Ctrl Delay	3.7
HCM 2010 LOS	A

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	20	713	20	9	338	57	8	22	20	20	30	18
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1900	1900	1863	1900	1900	1863	1900	1900	1863	1863
Adj Flow Rate, veh/h	22	775	19	10	367	39	9	24	6	22	33	5
Adj No. of Lanes	0	2	0	0	2	0	0	1	0	0	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	81	1834	44	74	1682	175	152	368	82	251	344	489
Arrive On Green	0.54	0.54	0.54	1.00	1.00	1.00	0.31	0.31	0.31	0.31	0.31	0.31
Sat Flow, veh/h	38	3388	82	26	3106	324	264	1191	265	552	1114	1583
Grp Volume(v), veh/h	426	0	390	219	0	197	39	0	0	55	0	5
Grp Sat Flow(s),veh/h/ln	1828	0	1681	1818	0	1638	1719	0	0	1666	0	1583
Q Serve(g_s), s	0.0	0.0	8.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Cycle Q Clear(g_c), s	8.5	0.0	8.7	0.0	0.0	0.0	1.0	0.0	0.0	1.3	0.0	0.1
Prop In Lane	0.05		0.05	0.05		0.20	0.23		0.15	0.40		1.00
Lane Grp Cap(c), veh/h	1050	0	910	1044	0	887	602	0	0	595	0	489
V/C Ratio(X)	0.41	0.00	0.43	0.21	0.00	0.22	0.06	0.00	0.00	0.09	0.00	0.01
Avail Cap(c_a), veh/h	1050	0	910	1044	0	887	602	0	0	595	0	489
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	8.6	0.0	8.6	0.0	0.0	0.0	15.3	0.0	0.0	15.5	0.0	15.0
Incr Delay (d2), s/veh	1.2	0.0	1.5	0.5	0.0	0.6	0.2	0.0	0.0	0.3	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.7	0.0	4.4	0.1	0.0	0.1	0.5	0.0	0.0	0.7	0.0	0.1
LnGrp Delay(d),s/veh	9.7	0.0	10.1	0.5	0.0	0.6	15.5	0.0	0.0	15.8	0.0	15.1
LnGrp LOS	A		B	A		A	B			B		B
Approach Vol, veh/h		816			416			39			60	
Approach Delay, s/veh		9.9			0.5			15.5			15.7	
Approach LOS		A			A			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		24.0		38.8		24.0		38.8
Change Period (Y+Rc), s		* 4.6		* 4.8		* 4.6		* 4.8
Max Green Setting (Gmax), s		* 19		* 34		* 19		* 33
Max Q Clear Time (g_c+I1), s		3.0		10.7		3.3		2.0
Green Ext Time (p_c), s		0.4		8.2		0.4		9.0

Intersection Summary	
HCM 2010 Ctrl Delay	7.4
HCM 2010 LOS	A

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	62	620	41	89	259	70	48	445	66	28	461	59
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1900	1900	1863	1900	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	67	674	37	97	282	46	52	484	54	30	501	47
Adj No. of Lanes	0	2	0	0	2	0	0	2	0	0	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	154	1344	72	244	777	137	138	1123	122	98	1214	111
Arrive On Green	0.44	0.44	0.44	0.44	0.44	0.44	0.40	0.40	0.40	0.40	0.40	0.40
Sat Flow, veh/h	192	3025	162	345	1750	309	172	2822	307	83	3049	279
Grp Volume(v), veh/h	398	0	380	181	0	244	301	0	289	301	0	277
Grp Sat Flow(s),veh/h/ln	1713	0	1666	764	0	1641	1660	0	1641	1766	0	1646
Q Serve(g_s), s	1.0	0.0	10.0	5.6	0.0	5.9	0.0	0.0	7.8	0.0	0.0	7.4
Cycle Q Clear(g_c), s	9.3	0.0	10.0	15.6	0.0	5.9	7.1	0.0	7.8	7.1	0.0	7.4
Prop In Lane	0.17		0.10	0.54		0.19	0.17		0.19	0.10		0.17
Lane Grp Cap(c), veh/h	830	0	740	430	0	729	730	0	653	768	0	655
V/C Ratio(X)	0.48	0.00	0.51	0.42	0.00	0.33	0.41	0.00	0.44	0.39	0.00	0.42
Avail Cap(c_a), veh/h	830	0	740	430	0	729	730	0	653	768	0	655
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	12.0	0.0	12.2	14.3	0.0	11.0	13.1	0.0	13.4	13.1	0.0	13.2
Incr Delay (d2), s/veh	2.0	0.0	2.5	3.0	0.0	1.2	1.7	0.0	2.2	1.5	0.0	2.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.1	0.0	5.1	2.8	0.0	2.9	3.9	0.0	3.9	3.9	0.0	3.7
LnGrp Delay(d),s/veh	13.9	0.0	14.7	17.3	0.0	12.3	14.9	0.0	15.5	14.6	0.0	15.2
LnGrp LOS	B		B	B		B	B		B	B		B
Approach Vol, veh/h		778			425			590			578	
Approach Delay, s/veh		14.3			14.4			15.2			14.9	
Approach LOS		B			B			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		29.0		31.8		29.0		31.8
Change Period (Y+Rc), s		* 4.8		* 4.8		* 4.8		* 4.8
Max Green Setting (Gmax), s		* 24		* 27		* 24		* 26
Max Q Clear Time (g_c+I1), s		9.8		12.0		9.4		17.6
Green Ext Time (p_c), s		6.5		7.0		6.6		4.9

Intersection Summary	
HCM 2010 Ctrl Delay	14.7
HCM 2010 LOS	B

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	41	413	41	22	212	12	32	504	54	18	470	7
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	45	449	40	24	230	10	35	548	47	20	511	7
Adj No. of Lanes	1	1	0	1	1	0	0	2	0	0	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	150	714	64	100	701	30	90	1005	84	73	1117	15
Arrive On Green	0.17	0.85	0.85	0.02	0.13	0.13	0.33	0.33	0.33	0.33	0.33	0.33
Sat Flow, veh/h	1774	1686	150	1774	1772	77	103	3040	255	55	3379	46
Grp Volume(v), veh/h	45	0	489	24	0	240	326	0	304	279	0	259
Grp Sat Flow(s),veh/h/ln	1774	0	1836	1774	0	1849	1748	0	1650	1793	0	1687
Q Serve(g_s), s	1.6	0.0	6.2	0.9	0.0	8.3	0.2	0.0	10.7	0.0	0.0	8.6
Cycle Q Clear(g_c), s	1.6	0.0	6.2	0.9	0.0	8.3	10.1	0.0	10.7	8.3	0.0	8.6
Prop In Lane	1.00		0.08	1.00		0.04	0.11		0.15	0.07		0.03
Lane Grp Cap(c), veh/h	150	0	778	100	0	731	634	0	545	647	0	558
V/C Ratio(X)	0.30	0.00	0.63	0.24	0.00	0.33	0.51	0.00	0.56	0.43	0.00	0.46
Avail Cap(c_a), veh/h	150	0	778	100	0	731	634	0	545	647	0	558
HCM Platoon Ratio	2.00	2.00	2.00	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	27.6	0.0	3.6	33.2	0.0	22.2	19.2	0.0	19.4	18.7	0.0	18.7
Incr Delay (d2), s/veh	5.0	0.0	3.8	5.6	0.0	1.2	3.0	0.0	4.1	2.1	0.0	2.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.0	0.0	3.4	0.6	0.0	4.5	5.7	0.0	5.4	4.6	0.0	4.4
LnGrp Delay(d),s/veh	32.6	0.0	7.4	38.8	0.0	23.4	22.2	0.0	23.5	20.8	0.0	21.5
LnGrp LOS	C		A	D		C	C		C	C		C
Approach Vol, veh/h		534			264			630			538	
Approach Delay, s/veh		9.5			24.8			22.8			21.1	
Approach LOS		A			C			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		28.0	8.0	34.8		28.0	10.0	32.8
Change Period (Y+Rc), s		* 4.6	4.0	* 4.8		* 4.6	4.0	* 4.8
Max Green Setting (Gmax), s		* 23	4.0	* 29		* 23	6.0	* 28
Max Q Clear Time (g_c+I1), s		12.7	2.9	8.2		10.6	3.6	10.3
Green Ext Time (p_c), s		5.3	0.0	4.6		6.0	0.0	4.4

Intersection Summary	
HCM 2010 Ctrl Delay	19.0
HCM 2010 LOS	B

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	3	644	30	22	292	23	17	59	50	17	92	18
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1900	1900	1863	1900	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	3	700	28	24	317	15	18	64	14	18	100	9
Adj No. of Lanes	0	2	0	0	2	0	0	1	0	0	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	59	1844	73	137	1656	78	128	398	78	105	475	39
Arrive On Green	0.54	0.54	0.54	0.54	0.54	0.54	0.31	0.31	0.31	0.31	0.31	0.31
Sat Flow, veh/h	2	3395	135	132	3049	143	193	1285	252	128	1533	127
Grp Volume(v), veh/h	385	0	346	181	0	175	96	0	0	127	0	0
Grp Sat Flow(s),veh/h/ln	1861	0	1671	1655	0	1670	1730	0	0	1787	0	0
Q Serve(g_s), s	0.0	0.0	7.5	0.0	0.0	3.3	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	7.5	0.0	7.5	3.1	0.0	3.3	2.4	0.0	0.0	3.2	0.0	0.0
Prop In Lane	0.01		0.08	0.13		0.09	0.19		0.15	0.14		0.07
Lane Grp Cap(c), veh/h	1069	0	908	964	0	907	605	0	0	620	0	0
V/C Ratio(X)	0.36	0.00	0.38	0.19	0.00	0.19	0.16	0.00	0.00	0.20	0.00	0.00
Avail Cap(c_a), veh/h	1069	0	908	964	0	907	605	0	0	620	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	8.2	0.0	8.2	7.2	0.0	7.3	15.7	0.0	0.0	16.0	0.0	0.0
Incr Delay (d2), s/veh	0.9	0.0	1.2	0.4	0.0	0.5	0.6	0.0	0.0	0.7	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.0	0.0	3.7	1.7	0.0	1.6	1.3	0.0	0.0	1.8	0.0	0.0
LnGrp Delay(d),s/veh	9.2	0.0	9.5	7.7	0.0	7.8	16.3	0.0	0.0	16.8	0.0	0.0
LnGrp LOS	A		A	A		A	B			B		
Approach Vol, veh/h		731			356			96			127	
Approach Delay, s/veh		9.3			7.7			16.3			16.8	
Approach LOS		A			A			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		24.0		38.6		24.0		38.6
Change Period (Y+Rc), s		* 4.6		* 4.6		* 4.6		4.6
Max Green Setting (Gmax), s		* 19		* 34		* 19		33.4
Max Q Clear Time (g_c+I1), s		4.4		9.5		5.2		5.3
Green Ext Time (p_c), s		1.0		7.2		1.0		7.4

Intersection Summary	
HCM 2010 Ctrl Delay	10.1
HCM 2010 LOS	B

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	2	430	30	5	239	4	11	112	41	12	88	2
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	2	467	29	5	260	3	12	122	27	13	96	1
Adj No. of Lanes	1	1	0	1	1	0	0	1	0	0	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	100	834	52	100	883	10	69	397	83	83	470	5
Arrive On Green	0.11	0.96	0.96	0.11	0.96	0.96	0.28	0.28	0.28	0.28	0.28	0.28
Sat Flow, veh/h	1774	1736	108	1774	1838	21	52	1436	300	95	1699	16
Grp Volume(v), veh/h	2	0	496	5	0	263	161	0	0	110	0	0
Grp Sat Flow(s),veh/h/ln	1774	0	1844	1774	0	1859	1787	0	0	1811	0	0
Q Serve(g_s), s	0.1	0.0	1.6	0.2	0.0	0.6	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.1	0.0	1.6	0.2	0.0	0.6	5.0	0.0	0.0	3.2	0.0	0.0
Prop In Lane	1.00		0.06	1.00		0.01	0.07		0.17	0.12		0.01
Lane Grp Cap(c), veh/h	100	0	885	100	0	893	549	0	0	558	0	0
V/C Ratio(X)	0.02	0.00	0.56	0.05	0.00	0.29	0.29	0.00	0.00	0.20	0.00	0.00
Avail Cap(c_a), veh/h	100	0	885	100	0	893	549	0	0	558	0	0
HCM Platoon Ratio	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	29.7	0.0	0.8	29.7	0.0	0.7	20.3	0.0	0.0	19.7	0.0	0.0
Incr Delay (d2), s/veh	0.4	0.0	2.6	0.9	0.0	0.8	1.4	0.0	0.0	0.8	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	1.0	0.1	0.0	0.4	2.7	0.0	0.0	1.8	0.0	0.0
LnGrp Delay(d),s/veh	30.0	0.0	3.3	30.6	0.0	1.6	21.7	0.0	0.0	20.5	0.0	0.0
LnGrp LOS	C		A	C		A	C			C		
Approach Vol, veh/h		498			268			161			110	
Approach Delay, s/veh		3.4			2.1			21.7			20.5	
Approach LOS		A			A			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		24.2	8.0	38.6		24.2	8.0	38.6
Change Period (Y+Rc), s		* 4.6	4.0	4.6		* 4.6	4.0	* 4.6
Max Green Setting (Gmax), s		* 19	4.0	33.4		* 20	4.0	* 34
Max Q Clear Time (g_c+I1), s		7.0	2.2	3.6		5.2	2.1	2.6
Green Ext Time (p_c), s		1.2	0.0	5.4		1.3	0.0	5.4

Intersection Summary	
HCM 2010 Ctrl Delay	7.7
HCM 2010 LOS	A

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	4	632	7	24	291	15	10	42	41	19	37	7
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1900	1900	1863	1900	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	4	687	6	26	316	8	11	46	19	21	40	4
Adj No. of Lanes	0	2	0	0	2	0	0	1	0	0	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	79	1208	11	124	1102	27	149	532	198	296	522	47
Arrive On Green	0.34	0.34	0.34	0.34	0.34	0.34	0.46	0.46	0.46	0.46	0.46	0.46
Sat Flow, veh/h	5	3514	31	104	3204	79	135	1166	434	426	1145	103
Grp Volume(v), veh/h	365	0	332	181	0	169	76	0	0	65	0	0
Grp Sat Flow(s),veh/h/ln	1859	0	1690	1707	0	1681	1736	0	0	1674	0	0
Q Serve(g_s), s	0.0	0.0	7.5	0.0	0.0	3.4	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	7.5	0.0	7.5	3.3	0.0	3.4	1.1	0.0	0.0	0.9	0.0	0.0
Prop In Lane	0.01		0.02	0.14		0.05	0.14		0.25	0.32		0.06
Lane Grp Cap(c), veh/h	717	0	581	675	0	578	879	0	0	865	0	0
V/C Ratio(X)	0.51	0.00	0.57	0.27	0.00	0.29	0.09	0.00	0.00	0.08	0.00	0.00
Avail Cap(c_a), veh/h	1341	0	1152	1167	0	1117	879	0	0	865	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	12.6	0.0	12.6	11.2	0.0	11.2	7.3	0.0	0.0	7.2	0.0	0.0
Incr Delay (d2), s/veh	0.6	0.0	0.9	0.2	0.0	0.3	0.2	0.0	0.0	0.2	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.0	0.0	3.6	1.7	0.0	1.6	0.6	0.0	0.0	0.5	0.0	0.0
LnGrp Delay(d),s/veh	13.1	0.0	13.5	11.4	0.0	11.5	7.5	0.0	0.0	7.4	0.0	0.0
LnGrp LOS	B		B	B		B	A			A		
Approach Vol, veh/h		697			350			76			65	
Approach Delay, s/veh		13.3			11.5			7.5			7.4	
Approach LOS		B			B			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		26.0		20.9		26.0		20.9
Change Period (Y+Rc), s		* 4.6		* 4.8		* 4.6		* 4.8
Max Green Setting (Gmax), s		* 21		* 32		* 21		* 31
Max Q Clear Time (g_c+I1), s		3.1		9.5		2.9		5.4
Green Ext Time (p_c), s		0.6		6.6		0.6		6.9

Intersection Summary	
HCM 2010 Ctrl Delay	12.1
HCM 2010 LOS	B

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	2	421	7	6	238	3	6	98	34	12	53	1
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	2	458	7	7	259	2	7	107	19	13	58	0
Adj No. of Lanes	1	1	0	1	1	0	0	1	0	0	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	100	905	14	100	913	7	62	394	67	108	413	0
Arrive On Green	0.06	0.49	0.49	0.11	0.99	0.99	0.26	0.26	0.26	0.26	0.26	0.00
Sat Flow, veh/h	1774	1830	28	1774	1846	14	31	1517	258	185	1589	0
Grp Volume(v), veh/h	2	0	465	7	0	261	133	0	0	71	0	0
Grp Sat Flow(s),veh/h/ln	1774	0	1858	1774	0	1860	1805	0	0	1774	0	0
Q Serve(g_s), s	0.1	0.0	12.0	0.2	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.1	0.0	12.0	0.2	0.0	0.2	4.1	0.0	0.0	2.1	0.0	0.0
Prop In Lane	1.00		0.02	1.00		0.01	0.05		0.14	0.18		0.00
Lane Grp Cap(c), veh/h	100	0	918	100	0	920	523	0	0	521	0	0
V/C Ratio(X)	0.02	0.00	0.51	0.07	0.00	0.28	0.25	0.00	0.00	0.14	0.00	0.00
Avail Cap(c_a), veh/h	100	0	918	100	0	920	523	0	0	521	0	0
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	31.5	0.0	12.1	29.7	0.0	0.2	20.9	0.0	0.0	20.2	0.0	0.0
Incr Delay (d2), s/veh	0.4	0.0	2.0	1.3	0.0	0.8	1.2	0.0	0.0	0.5	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	6.6	0.2	0.0	0.3	2.2	0.0	0.0	1.1	0.0	0.0
LnGrp Delay(d),s/veh	31.9	0.0	14.1	31.1	0.0	1.0	22.1	0.0	0.0	20.7	0.0	0.0
LnGrp LOS	C		B	C		A	C			C		
Approach Vol, veh/h		467			268			133			71	
Approach Delay, s/veh		14.1			1.8			22.1			20.7	
Approach LOS		B			A			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		23.0	8.0	39.8		23.0	8.0	39.8
Change Period (Y+Rc), s		* 4.6	4.0	* 4.8		* 4.6	4.0	* 4.8
Max Green Setting (Gmax), s		* 18	4.0	* 34		* 18	4.0	* 35
Max Q Clear Time (g_c+I1), s		6.1	2.2	14.0		4.1	2.1	2.2
Green Ext Time (p_c), s		0.8	0.0	4.6		0.9	0.0	5.1

Intersection Summary	
HCM 2010 Ctrl Delay	12.2
HCM 2010 LOS	B

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	*JCH*	Intersection	*Commerce St/Navidad St*
Agency/Co.	*CH2M HILL*	Jurisdiction	*City of San Antonio*
Date Performed	*3/25/2015*	Analysis Year	*2020 Scenario 3*
Analysis Time Period	*AM Peak Hour*		

Project Description *Commerce/Buena Vista One-Way Couplet Conversion Traff. Study*

East/West Street: *Commerce Street* | North/South Street: *Navidad Street*

Intersection Orientation: *East-West* | Study Period (hrs): *0.25*

Vehicle Volumes and Adjustments

Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)		*753*	*20*		*443*	*20*
Peak-Hour Factor, PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Hourly Flow Rate, HFR (veh/h)	*0*	*753*	*20*	*0*	*443*	*20*
Percent Heavy Vehicles	*0*	--	--	*0*	--	--
Median Type	*Undivided*					
RT Channelized			*0*			*0*
Lanes	*0*	*2*	*0*	*0*	*2*	*0*
Configuration		*T*	*TR*		*T*	*TR*
Upstream Signal		*0*			*0*	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)	*20*	*20*	*20*	*20*	*20*	*20*
Peak-Hour Factor, PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Hourly Flow Rate, HFR (veh/h)	*20*	*20*	*20*	*20*	*20*	*20*
Percent Heavy Vehicles	*0*	*0*	*0*	*0*	*0*	*0*
Percent Grade (%)		*0*			*0*	
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*0*	*1*	*0*	*0*	*1*	*0*
Configuration		*LTR*			*LTR*	

Delay, Queue Length, and Level of Service

Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration				*LTR*			*LTR*	
v (veh/h)				*60*			*60*	
C (m) (veh/h)				*238*			*271*	
v/c				*0.25*			*0.22*	
95% queue length				*0.97*			*0.83*	
Control Delay (s/veh)				*25.1*			*22.0*	
LOS				*D*			*C*	
Approach Delay (s/veh)	--	--	*25.1*			*22.0*		
Approach LOS	--	--	*D*			*C*		

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2020 Scenario 3 PM Peak Hour

HCM 2010 Signalized Intersection Summary
1: Pecos Street & Commerce Street

4/17/2015

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	178	506	289	0	0	0	0	0	784	373
Number	7	4	14	3	8	18				1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	0	1863	1863	1863	0				0	1863	1900
Adj Flow Rate, veh/h	0	0	64	550	314	0				0	852	272
Adj No. of Lanes	0	0	2	2	2	0				0	3	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92				0.92	0.92	0.92
Percent Heavy Veh, %	0	0	2	2	2	0				0	2	0
Cap, veh/h	0	0	0	564	2886	0				0	0	0
Arrive On Green	0.00	0.00	0.00	0.82	0.82	0.00				0.00	0.00	0.00
Sat Flow, veh/h		0		2585	3632	0					0	
Grp Volume(v), veh/h		0.0		550	314	0					0.0	
Grp Sat Flow(s),veh/h/ln				1292	1770	0						
Q Serve(g_s), s				0.1	0.5	0.0						
Cycle Q Clear(g_c), s				0.1	0.5	0.0						
Prop In Lane				1.00		0.00						
Lane Grp Cap(c), veh/h				564	2886	0						
V/C Ratio(X)				0.98	0.11	0.00						
Avail Cap(c_a), veh/h				564	2886	0						
HCM Platoon Ratio				1.00	1.00	1.00						
Upstream Filter(I)				1.00	1.00	0.00						
Uniform Delay (d), s/veh				2.4	0.5	0.0						
Incr Delay (d2), s/veh				32.3	0.1	0.0						
Initial Q Delay(d3),s/veh				0.0	0.0	0.0						
%ile BackOfQ(50%),veh/ln				2.9	0.2	0.0						
LnGrp Delay(d),s/veh				34.8	0.6	0.0						
LnGrp LOS				C	A							
Approach Vol, veh/h					864							
Approach Delay, s/veh					22.3							
Approach LOS					C							

Timer	1	2	3	4	5	6	7	8
Assigned Phs								8
Phs Duration (G+Y+Rc), s								26.0
Change Period (Y+Rc), s								* 4.8
Max Green Setting (Gmax), s								* 21
Max Q Clear Time (g_c+I1), s								2.5
Green Ext Time (p_c), s								4.1

Intersection Summary	
HCM 2010 Ctrl Delay	22.3
HCM 2010 LOS	C

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	266	209	0	0	0	0	0	0	131	994	277
Number	7	4	14							1	6	16
Initial Q (Qb), veh	0	0	0							0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00							1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00							1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1863	1900							1900	1863	1900
Adj Flow Rate, veh/h	0	289	218							142	1080	206
Adj No. of Lanes	0	1	0							0	4	0
Peak Hour Factor	0.92	0.92	0.92							0.92	0.92	0.92
Percent Heavy Veh, %	0	2	2							2	2	2
Cap, veh/h	0	510	385							258	1642	311
Arrive On Green	0.00	0.52	0.52							0.12	0.12	0.12
Sat Flow, veh/h	0	987	744							540	4710	893
Grp Volume(v), veh/h	0	0	507							406	668	355
Grp Sat Flow(s),veh/h/ln	0	0	1731							1690	1458	1537
Q Serve(g_s), s	0.0	0.0	14.0							14.1	15.4	15.5
Cycle Q Clear(g_c), s	0.0	0.0	14.0							16.1	15.4	15.5
Prop In Lane	0.00		0.43							0.35		0.58
Lane Grp Cap(c), veh/h	0	0	895							659	1016	536
V/C Ratio(X)	0.00	0.00	0.57							0.62	0.66	0.66
Avail Cap(c_a), veh/h	0	0	895							659	1016	536
HCM Platoon Ratio	1.00	1.00	1.00							0.33	0.33	0.33
Upstream Filter(I)	0.00	0.00	1.00							1.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	11.5							27.2	27.0	27.0
Incr Delay (d2), s/veh	0.0	0.0	2.6							4.3	3.3	6.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0							0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	7.3							8.3	6.7	7.5
LnGrp Delay(d),s/veh	0.0	0.0	14.1							31.5	30.3	33.3
LnGrp LOS			B							C	C	C
Approach Vol, veh/h		507									1428	
Approach Delay, s/veh		14.1									31.4	
Approach LOS		B									C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6		
Phs Duration (G+Y+Rc), s				41.0		29.0		
Change Period (Y+Rc), s				* 4.8		4.6		
Max Green Setting (Gmax), s				* 36		24.4		
Max Q Clear Time (g_c+I1), s				16.0		18.1		
Green Ext Time (p_c), s				3.4		4.3		

Intersection Summary	
HCM 2010 Ctrl Delay	26.9
HCM 2010 LOS	C

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	20	170	75	15	484	7	4	4	0	0	3	28
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1900	1900	1863	1900	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	22	185	44	16	526	6	4	4	0	0	3	7
Adj No. of Lanes	0	2	0	0	2	0	0	1	0	0	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	178	1399	329	84	1960	22	287	260	0	0	140	328
Arrive On Green	0.57	0.57	0.57	0.57	0.57	0.57	0.28	0.28	0.00	0.00	0.28	0.28
Sat Flow, veh/h	193	2462	580	39	3449	39	707	921	0	0	497	1161
Grp Volume(v), veh/h	130	0	121	286	0	262	8	0	0	0	0	10
Grp Sat Flow(s),veh/h/ln	1642	0	1593	1838	0	1688	1628	0	0	0	0	1658
Q Serve(g_s), s	0.0	0.0	2.2	0.0	0.0	4.9	0.0	0.0	0.0	0.0	0.0	0.3
Cycle Q Clear(g_c), s	2.0	0.0	2.2	4.8	0.0	4.9	0.2	0.0	0.0	0.0	0.0	0.3
Prop In Lane	0.17		0.36	0.06		0.02	0.50		0.00	0.00		0.70
Lane Grp Cap(c), veh/h	1001	0	905	1106	0	959	548	0	0	0	0	468
V/C Ratio(X)	0.13	0.00	0.13	0.26	0.00	0.27	0.01	0.00	0.00	0.00	0.00	0.02
Avail Cap(c_a), veh/h	1001	0	905	1106	0	959	548	0	0	0	0	468
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	0.00	0.00	1.00
Uniform Delay (d), s/veh	6.2	0.0	6.2	6.8	0.0	6.8	15.9	0.0	0.0	0.0	0.0	16.0
Incr Delay (d2), s/veh	0.3	0.0	0.3	0.6	0.0	0.7	0.0	0.0	0.0	0.0	0.0	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.1	0.0	1.0	2.6	0.0	2.4	0.1	0.0	0.0	0.0	0.0	0.1
LnGrp Delay(d),s/veh	6.4	0.0	6.5	7.4	0.0	7.5	16.0	0.0	0.0	0.0	0.0	16.0
LnGrp LOS	A		A	A		A	B					B
Approach Vol, veh/h		251			548			8			10	
Approach Delay, s/veh		6.5			7.4			16.0			16.0	
Approach LOS		A			A			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		22.0		39.6		22.0		39.6
Change Period (Y+Rc), s		* 4.6		* 4.6		* 4.6		4.6
Max Green Setting (Gmax), s		* 17		* 35		* 17		34.4
Max Q Clear Time (g_c+I1), s		2.2		4.2		2.3		6.9
Green Ext Time (p_c), s		0.0		5.2		0.0		5.1

Intersection Summary	
HCM 2010 Ctrl Delay	7.3
HCM 2010 LOS	A

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	86	200	148	31	569	34	176	405	65	44	363	207
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1900	1900	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	93	217	128	34	618	29	191	440	48	48	395	134
Adj No. of Lanes	0	1	0	0	2	0	1	2	0	1	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	136	265	137	96	1216	56	180	1092	119	112	760	255
Arrive On Green	0.64	0.64	0.64	0.38	0.38	0.38	0.10	0.34	0.34	0.06	0.29	0.29
Sat Flow, veh/h	176	696	360	87	3196	147	1774	3221	350	1774	2605	873
Grp Volume(v), veh/h	438	0	0	352	0	329	191	241	247	48	267	262
Grp Sat Flow(s),veh/h/ln	1232	0	0	1761	0	1669	1774	1770	1801	1774	1770	1709
Q Serve(g_s), s	11.4	0.0	0.0	0.0	0.0	9.6	6.4	6.6	6.6	1.6	7.9	8.1
Cycle Q Clear(g_c), s	21.0	0.0	0.0	9.1	0.0	9.6	6.4	6.6	6.6	1.6	7.9	8.1
Prop In Lane	0.21		0.29	0.10		0.09	1.00		0.19	1.00		0.51
Lane Grp Cap(c), veh/h	538	0	0	732	0	635	180	600	611	112	516	498
V/C Ratio(X)	0.81	0.00	0.00	0.48	0.00	0.52	1.06	0.40	0.40	0.43	0.52	0.53
Avail Cap(c_a), veh/h	538	0	0	732	0	635	180	600	611	112	516	498
HCM Platoon Ratio	1.67	1.67	1.67	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	11.0	0.0	0.0	14.9	0.0	15.1	28.3	15.9	16.0	28.4	18.6	18.7
Incr Delay (d2), s/veh	12.7	0.0	0.0	2.2	0.0	3.0	84.3	2.0	2.0	11.4	3.7	3.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.7	0.0	0.0	5.0	0.0	4.9	7.3	3.5	3.6	1.2	4.4	4.3
LnGrp Delay(d),s/veh	23.7	0.0	0.0	17.2	0.0	18.1	112.7	17.9	18.0	39.9	22.3	22.6
LnGrp LOS	C			B		B	F	B	B	D	C	C
Approach Vol, veh/h		438			681			679			577	
Approach Delay, s/veh		23.7			17.6			44.6			23.9	
Approach LOS		C			B			D			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	8.0	26.3		28.8	11.0	23.3		28.8
Change Period (Y+Rc), s	4.0	* 4.9		* 4.8	* 4.6	* 4.9		* 4.8
Max Green Setting (Gmax), s	4.0	* 21		* 24	* 6.4	* 18		* 23
Max Q Clear Time (g_c+I1), s	3.6	8.6		23.0	8.4	10.1		11.6
Green Ext Time (p_c), s	0.0	5.0		0.7	0.0	3.9		5.5

Intersection Summary	
HCM 2010 Ctrl Delay	28.0
HCM 2010 LOS	C

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

HCM Signalized Intersection Capacity Analysis
5: Buena Vista Street So. Frontage & Frio Street & Buena Vista Street

4/17/2015

Movement	EBL	EBT	EBR	WBL2	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Volume (vph)	58	301	78	0	8	380	6	118	568	54	99	374
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0				4.0		4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	1.00				1.00		1.00	0.95		1.00	0.95
Frt	1.00	0.97				1.00		1.00	0.99		1.00	0.99
Flt Protected	0.95	1.00				1.00		0.95	1.00		0.95	1.00
Satd. Flow (prot)	1770	1805				1856		1770	3493		1770	3508
Flt Permitted	0.95	1.00				0.99		0.32	1.00		0.20	1.00
Satd. Flow (perm)	1770	1805				1839		599	3493		380	3508
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)	63	327	85	0	9	413	7	128	617	59	108	407
RTOR Reduction (vph)	0	0	0	0	0	1	0	0	9	0	0	0
Lane Group Flow (vph)	63	412	0	0	0	428	0	128	667	0	108	432
Turn Type	Prot	NA		Prot	Perm	NA		pm+pt	NA		pm+pt	NA
Protected Phases	7	4		3		8		5	2		1	6
Permitted Phases					8			2			6	
Actuated Green, G (s)	3.8	29.9				22.1		27.8	22.5		23.2	20.2
Effective Green, g (s)	3.8	29.9				22.1		27.8	22.5		23.2	20.2
Actuated g/C Ratio	0.04	0.34				0.25		0.32	0.26		0.26	0.23
Clearance Time (s)	4.0	4.0				4.0		4.0	4.0		4.0	4.0
Vehicle Extension (s)	3.0	3.0				3.0		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	76	615				463		260	896		148	808
v/s Ratio Prot	0.04	c0.23						c0.03	c0.19		0.02	0.12
v/s Ratio Perm						c0.23		0.13			0.17	
v/c Ratio	0.83	0.67				0.92		0.49	0.74		0.73	0.53
Uniform Delay, d1	41.6	24.7				32.0		22.5	30.0		28.5	29.6
Progression Factor	1.00	1.00				1.00		1.00	1.00		1.00	1.00
Incremental Delay, d2	49.7	2.8				24.3		1.5	5.6		16.4	2.5
Delay (s)	91.3	27.5				56.3		23.9	35.5		44.9	32.2
Level of Service	F	C				E		C	D		D	C
Approach Delay (s)		35.9				56.3			33.7			34.7
Approach LOS		D				E			C			C

Intersection Summary			
HCM 2000 Control Delay	38.5	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	87.7	Sum of lost time (s)	20.0
Intersection Capacity Utilization	84.3%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SBR	NEL	NER	NER2
Lane Configurations				
Volume (vph)	23	19	8	15
Ideal Flow (vphpl)	1900	1900	1900	1900
Total Lost time (s)		4.0		4.0
Lane Util. Factor		1.00		0.95
Frt		0.95		0.85
Flt Protected		0.97		1.00
Satd. Flow (prot)		1711		1504
Flt Permitted		0.97		1.00
Satd. Flow (perm)		1711		1504
Peak-hour factor, PHF	0.92	0.92	0.92	0.92
Adj. Flow (vph)	25	21	9	16
RTOR Reduction (vph)	0	26	0	11
Lane Group Flow (vph)	0	6	0	3
Turn Type		Prot		Prot
Protected Phases		9		9
Permitted Phases				
Actuated Green, G (s)		16.3		16.3
Effective Green, g (s)		16.3		16.3
Actuated g/C Ratio		0.19		0.19
Clearance Time (s)		4.0		4.0
Vehicle Extension (s)		3.0		3.0
Lane Grp Cap (vph)		318		279
v/s Ratio Prot		c0.00		0.00
v/s Ratio Perm				
v/c Ratio		0.02		0.01
Uniform Delay, d1		29.2		29.1
Progression Factor		1.00		1.00
Incremental Delay, d2		0.1		0.1
Delay (s)		29.3		29.2
Level of Service		C		C
Approach Delay (s)		29.2		
Approach LOS		C		

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	70	270	16	88	599	54	29	218	35	29	271	164
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1900	1900	1863	1900	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	76	293	12	96	651	49	32	237	18	32	295	57
Adj No. of Lanes	0	2	0	0	2	0	0	2	0	0	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	244	1018	45	210	1323	98	160	1071	80	127	1008	188
Arrive On Green	0.16	0.16	0.16	0.48	0.48	0.48	0.37	0.37	0.37	0.37	0.37	0.37
Sat Flow, veh/h	333	2125	94	290	2760	206	241	2866	215	162	2697	503
Grp Volume(v), veh/h	166	0	215	400	0	396	148	0	139	202	0	182
Grp Sat Flow(s),veh/h/ln	873	0	1679	1597	0	1659	1665	0	1657	1755	0	1606
Q Serve(g_s), s	4.7	0.0	7.1	3.6	0.0	10.2	0.0	0.0	3.6	0.0	0.0	5.0
Cycle Q Clear(g_c), s	14.9	0.0	7.1	10.7	0.0	10.2	3.4	0.0	3.6	4.8	0.0	5.0
Prop In Lane	0.46		0.06	0.24		0.12	0.22		0.13	0.16		0.31
Lane Grp Cap(c), veh/h	502	0	804	837	0	795	692	0	619	723	0	600
V/C Ratio(X)	0.33	0.00	0.27	0.48	0.00	0.50	0.21	0.00	0.22	0.28	0.00	0.30
Avail Cap(c_a), veh/h	502	0	804	837	0	795	692	0	619	723	0	600
HCM Platoon Ratio	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	19.9	0.0	16.7	11.0	0.0	11.1	13.3	0.0	13.4	13.8	0.0	13.8
Incr Delay (d2), s/veh	1.8	0.0	0.8	2.0	0.0	2.2	0.7	0.0	0.8	1.0	0.0	1.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.9	0.0	3.5	5.1	0.0	5.1	1.9	0.0	1.8	2.6	0.0	2.4
LnGrp Delay(d),s/veh	21.6	0.0	17.5	13.0	0.0	13.4	14.0	0.0	14.2	14.7	0.0	15.1
LnGrp LOS	C		B	B		B	B		B	B		B
Approach Vol, veh/h		381			796			287			384	
Approach Delay, s/veh		19.3			13.2			14.1			14.9	
Approach LOS		B			B			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		28.0		34.6		28.0		34.6
Change Period (Y+Rc), s		* 4.6		* 4.6		* 4.6		4.6
Max Green Setting (Gmax), s		* 23		* 30		* 23		29.4
Max Q Clear Time (g_c+I1), s		5.6		16.9		7.0		12.7
Green Ext Time (p_c), s		3.9		6.2		3.8		7.1

Intersection Summary	
HCM 2010 Ctrl Delay	15.0
HCM 2010 LOS	B

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	46	270	16	22	490	9	19	290	29	19	260	18
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	50	293	14	24	533	9	21	315	21	21	283	12
Adj No. of Lanes	1	1	0	1	1	0	0	2	0	0	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	150	797	38	100	774	13	84	955	62	90	969	40
Arrive On Green	0.17	0.90	0.90	0.06	0.42	0.42	0.30	0.30	0.30	0.30	0.30	0.30
Sat Flow, veh/h	1774	1764	84	1774	1826	31	90	3161	205	110	3205	133
Grp Volume(v), veh/h	50	0	307	24	0	542	187	0	170	165	0	151
Grp Sat Flow(s),veh/h/ln	1774	0	1848	1774	0	1857	1797	0	1659	1776	0	1672
Q Serve(g_s), s	1.8	0.0	1.7	0.9	0.0	16.8	0.0	0.0	5.6	0.0	0.0	4.9
Cycle Q Clear(g_c), s	1.8	0.0	1.7	0.9	0.0	16.8	5.5	0.0	5.6	4.8	0.0	4.9
Prop In Lane	1.00		0.05	1.00		0.02	0.11		0.12	0.13		0.08
Lane Grp Cap(c), veh/h	150	0	835	100	0	787	600	0	501	594	0	505
V/C Ratio(X)	0.33	0.00	0.37	0.24	0.00	0.69	0.31	0.00	0.34	0.28	0.00	0.30
Avail Cap(c_a), veh/h	150	0	835	100	0	787	600	0	501	594	0	505
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	27.6	0.0	1.9	31.9	0.0	16.6	19.2	0.0	19.2	18.9	0.0	18.9
Incr Delay (d2), s/veh	5.9	0.0	1.2	5.6	0.0	4.9	1.4	0.0	1.8	1.2	0.0	1.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.1	0.0	0.9	0.6	0.0	9.7	3.0	0.0	2.8	2.7	0.0	2.5
LnGrp Delay(d),s/veh	33.5	0.0	3.2	37.5	0.0	21.5	20.5	0.0	21.0	20.1	0.0	20.5
LnGrp LOS	C		A	D		C	C		C	C		C
Approach Vol, veh/h		357			566			357			316	
Approach Delay, s/veh		7.4			22.2			20.8			20.3	
Approach LOS		A			C			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		26.0	8.0	36.8		26.0	10.0	34.8
Change Period (Y+Rc), s		* 4.6	4.0	* 4.8		* 4.6	4.0	* 4.8
Max Green Setting (Gmax), s		* 21	4.0	* 31		* 21	6.0	* 30
Max Q Clear Time (g_c+I1), s		7.6	2.9	3.7		6.9	3.8	18.8
Green Ext Time (p_c), s		3.4	0.0	5.8		3.5	0.0	4.0

Intersection Summary	
HCM 2010 Ctrl Delay	18.2
HCM 2010 LOS	B

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	20	424	20	12	702	11	14	3	20	20	12	8
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1900	1900	1863	1900	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	22	461	17	13	763	10	15	3	4	22	13	1
Adj No. of Lanes	0	2	0	0	2	0	0	1	0	0	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	108	1953	71	70	2105	27	329	69	67	306	163	11
Arrive On Green	1.00	1.00	1.00	1.00	1.00	1.00	0.25	0.25	0.25	0.25	0.25	0.25
Sat Flow, veh/h	75	3218	117	18	3468	45	946	279	272	866	661	44
Grp Volume(v), veh/h	257	0	243	411	0	375	22	0	0	36	0	0
Grp Sat Flow(s),veh/h/ln	1736	0	1674	1844	0	1687	1497	0	0	1571	0	0
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.0	0.0	0.9	0.0	0.0
Prop In Lane	0.09		0.07	0.03		0.03	0.68		0.18	0.61		0.03
Lane Grp Cap(c), veh/h	1116	0	1016	1179	0	1024	465	0	0	479	0	0
V/C Ratio(X)	0.23	0.00	0.24	0.35	0.00	0.37	0.05	0.00	0.00	0.08	0.00	0.00
Avail Cap(c_a), veh/h	1116	0	1016	1179	0	1024	465	0	0	479	0	0
HCM Platoon Ratio	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	18.0	0.0	0.0	18.1	0.0	0.0
Incr Delay (d2), s/veh	0.5	0.0	0.6	0.8	0.0	1.0	0.2	0.0	0.0	0.3	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	0.0	0.2	0.3	0.0	0.3	0.3	0.0	0.0	0.5	0.0	0.0
LnGrp Delay(d),s/veh	0.5	0.0	0.6	0.8	0.0	1.0	18.2	0.0	0.0	18.5	0.0	0.0
LnGrp LOS	A		A	A		A	B			B		
Approach Vol, veh/h		500			786			22			36	
Approach Delay, s/veh		0.5			0.9			18.2			18.5	
Approach LOS		A			A			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		20.0		42.6		20.0		42.6
Change Period (Y+Rc), s		* 4.6		* 4.6		* 4.6		4.6
Max Green Setting (Gmax), s		* 15		* 38		* 15		37.4
Max Q Clear Time (g_c+I1), s		2.6		2.0		2.9		2.0
Green Ext Time (p_c), s		0.1		9.8		0.1		9.8

Intersection Summary	
HCM 2010 Ctrl Delay	1.5
HCM 2010 LOS	A

Notes

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	7	378	53	55	652	17	71	58	34	13	54	9
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1900	1900	1863	1900	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	8	411	38	60	709	15	77	63	20	14	59	3
Adj No. of Lanes	0	2	0	0	2	0	0	1	0	0	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	67	1518	138	144	1508	31	335	259	73	145	554	26
Arrive On Green	0.32	0.32	0.32	0.96	0.96	0.96	0.37	0.37	0.37	0.37	0.37	0.37
Sat Flow, veh/h	15	3178	289	163	3158	65	671	696	195	208	1486	70
Grp Volume(v), veh/h	241	0	216	397	0	387	160	0	0	76	0	0
Grp Sat Flow(s),veh/h/ln	1839	0	1644	1702	0	1684	1563	0	0	1763	0	0
Q Serve(g_s), s	0.0	0.0	6.2	0.0	0.0	1.2	2.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	6.0	0.0	6.2	1.0	0.0	1.2	4.1	0.0	0.0	1.7	0.0	0.0
Prop In Lane	0.03		0.18	0.15		0.04	0.48		0.12	0.18		0.04
Lane Grp Cap(c), veh/h	938	0	785	879	0	804	667	0	0	725	0	0
V/C Ratio(X)	0.26	0.00	0.28	0.45	0.00	0.48	0.24	0.00	0.00	0.10	0.00	0.00
Avail Cap(c_a), veh/h	938	0	785	879	0	804	667	0	0	725	0	0
HCM Platoon Ratio	0.67	0.67	0.67	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	13.2	0.0	13.2	0.8	0.0	0.8	13.6	0.0	0.0	12.9	0.0	0.0
Incr Delay (d2), s/veh	0.7	0.0	0.9	1.7	0.0	2.1	0.8	0.0	0.0	0.3	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.3	0.0	3.0	0.8	0.0	0.8	2.1	0.0	0.0	0.9	0.0	0.0
LnGrp Delay(d),s/veh	13.9	0.0	14.1	2.4	0.0	2.8	14.4	0.0	0.0	13.2	0.0	0.0
LnGrp LOS	B		B	A		A	B			B		
Approach Vol, veh/h		457			784			160			76	
Approach Delay, s/veh		14.0			2.6			14.4			13.2	
Approach LOS		B			A			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		28.0		34.8		28.0		34.8
Change Period (Y+Rc), s		* 4.6		* 4.8		* 4.6		* 4.8
Max Green Setting (Gmax), s		* 23		* 30		* 23		* 29
Max Q Clear Time (g_c+I1), s		6.1		8.2		3.7		3.2
Green Ext Time (p_c), s		1.2		8.1		1.3		8.6

Intersection Summary	
HCM 2010 Ctrl Delay	8.0
HCM 2010 LOS	A

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	4	309	53	14	534	3	48	172	27	8	103	1
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	4	336	48	15	580	3	52	187	22	9	112	0
Adj No. of Lanes	1	1	0	1	1	0	0	1	0	0	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	100	720	103	100	836	4	129	410	44	68	540	0
Arrive On Green	0.06	0.45	0.45	0.11	0.90	0.90	0.30	0.30	0.30	0.30	0.30	0.00
Sat Flow, veh/h	1774	1595	228	1774	1851	10	227	1360	146	46	1790	0
Grp Volume(v), veh/h	4	0	384	15	0	583	261	0	0	121	0	0
Grp Sat Flow(s),veh/h/ln	1774	0	1823	1774	0	1861	1733	0	0	1835	0	0
Q Serve(g_s), s	0.2	0.0	10.4	0.5	0.0	5.8	1.4	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.2	0.0	10.4	0.5	0.0	5.8	8.3	0.0	0.0	3.4	0.0	0.0
Prop In Lane	1.00		0.13	1.00		0.01	0.20		0.08	0.07		0.00
Lane Grp Cap(c), veh/h	100	0	823	100	0	840	584	0	0	609	0	0
V/C Ratio(X)	0.04	0.00	0.47	0.15	0.00	0.69	0.45	0.00	0.00	0.20	0.00	0.00
Avail Cap(c_a), veh/h	100	0	823	100	0	840	584	0	0	609	0	0
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	31.6	0.0	13.5	29.9	0.0	2.2	20.2	0.0	0.0	18.5	0.0	0.0
Incr Delay (d2), s/veh	0.7	0.0	1.9	3.1	0.0	4.7	2.5	0.0	0.0	0.7	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	0.0	5.7	0.4	0.0	3.5	4.5	0.0	0.0	1.9	0.0	0.0
LnGrp Delay(d),s/veh	32.4	0.0	15.4	33.1	0.0	6.9	22.6	0.0	0.0	19.2	0.0	0.0
LnGrp LOS	C		B	C		A	C			B		
Approach Vol, veh/h		388			598			261			121	
Approach Delay, s/veh		15.6			7.5			22.6			19.2	
Approach LOS		B			A			C			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		26.0	8.0	36.9		26.0	8.0	36.9
Change Period (Y+Rc), s		* 4.6	4.0	* 4.9		* 4.6	4.0	* 4.9
Max Green Setting (Gmax), s		* 21	4.0	* 31		* 21	4.0	* 32
Max Q Clear Time (g_c+I1), s		10.3	2.5	12.4		5.4	2.2	7.8
Green Ext Time (p_c), s		1.7	0.0	6.0		2.0	0.0	6.6

Intersection Summary	
HCM 2010 Ctrl Delay	13.7
HCM 2010 LOS	B

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	6	336	5	20	582	20	20	13	12	8	10	20
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	7	365	4	22	633	20	22	14	2	9	11	4
Adj No. of Lanes	1	1	0	1	1	0	0	1	0	0	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	101	1016	11	101	992	31	246	141	17	167	187	57
Arrive On Green	0.08	0.73	0.73	0.11	1.00	1.00	0.21	0.21	0.21	0.21	0.21	0.21
Sat Flow, veh/h	1774	1839	20	1774	1796	57	806	688	83	470	909	276
Grp Volume(v), veh/h	7	0	369	22	0	653	38	0	0	24	0	0
Grp Sat Flow(s),veh/h/ln	1774	0	1859	1774	0	1853	1576	0	0	1655	0	0
Q Serve(g_s), s	0.3	0.0	5.1	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.3	0.0	5.1	0.8	0.0	0.0	1.2	0.0	0.0	0.8	0.0	0.0
Prop In Lane	1.00		0.01	1.00		0.03	0.58		0.05	0.37		0.17
Lane Grp Cap(c), veh/h	101	0	1027	101	0	1023	404	0	0	410	0	0
V/C Ratio(X)	0.07	0.00	0.36	0.22	0.00	0.64	0.09	0.00	0.00	0.06	0.00	0.00
Avail Cap(c_a), veh/h	101	0	1027	101	0	1023	404	0	0	410	0	0
HCM Platoon Ratio	1.33	1.33	1.33	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	30.9	0.0	4.9	29.9	0.0	0.0	22.8	0.0	0.0	22.6	0.0	0.0
Incr Delay (d2), s/veh	1.3	0.0	1.0	4.9	0.0	3.0	0.5	0.0	0.0	0.3	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	0.0	2.8	0.5	0.0	0.9	0.7	0.0	0.0	0.4	0.0	0.0
LnGrp Delay(d),s/veh	32.2	0.0	5.8	34.8	0.0	3.0	23.2	0.0	0.0	22.9	0.0	0.0
LnGrp LOS	C		A	C		A	C			C		
Approach Vol, veh/h		376			675			38			24	
Approach Delay, s/veh		6.3			4.1			23.2			22.9	
Approach LOS		A			A			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		19.0	8.0	43.6		19.0	8.0	43.6
Change Period (Y+Rc), s		4.5	4.0	4.6		4.5	4.0	* 4.6
Max Green Setting (Gmax), s		14.5	4.0	38.4		14.5	4.0	* 39
Max Q Clear Time (g_c+I1), s		3.2	2.8	7.1		2.8	2.3	2.0
Green Ext Time (p_c), s		0.1	0.0	7.7		0.2	0.0	7.9

Intersection Summary	
HCM 2010 Ctrl Delay	5.9
HCM 2010 LOS	A

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	20	415	20	16	627	145	25	55	20	20	61	73
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1900	1900	1863	1900	1900	1863	1900	1900	1863	1863
Adj Flow Rate, veh/h	22	451	17	17	682	124	27	60	7	22	66	20
Adj No. of Lanes	0	2	0	0	2	0	0	1	0	0	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	102	1741	65	73	1568	281	184	373	39	164	445	489
Arrive On Green	1.00	1.00	1.00	1.00	1.00	1.00	0.31	0.31	0.31	0.31	0.31	0.31
Sat Flow, veh/h	73	3216	119	25	2896	519	355	1208	126	300	1442	1583
Grp Volume(v), veh/h	252	0	238	440	0	383	94	0	0	88	0	20
Grp Sat Flow(s),veh/h/ln	1734	0	1674	1837	0	1604	1689	0	0	1742	0	1583
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6
Cycle Q Clear(g_c), s	0.0	0.0	0.0	0.0	0.0	0.0	2.3	0.0	0.0	2.2	0.0	0.6
Prop In Lane	0.09		0.07	0.04		0.32	0.29		0.07	0.25		1.00
Lane Grp Cap(c), veh/h	1001	0	906	1054	0	868	596	0	0	610	0	489
V/C Ratio(X)	0.25	0.00	0.26	0.42	0.00	0.44	0.16	0.00	0.00	0.14	0.00	0.04
Avail Cap(c_a), veh/h	1001	0	906	1054	0	868	596	0	0	610	0	489
HCM Platoon Ratio	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	15.8	0.0	0.0	15.7	0.0	15.2
Incr Delay (d2), s/veh	0.6	0.0	0.7	1.2	0.0	1.6	0.6	0.0	0.0	0.5	0.0	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	0.0	0.2	0.4	0.0	0.4	1.3	0.0	0.0	1.2	0.0	0.3
LnGrp Delay(d),s/veh	0.6	0.0	0.7	1.2	0.0	1.6	16.4	0.0	0.0	16.2	0.0	15.3
LnGrp LOS	A		A	A		A	B			B		B
Approach Vol, veh/h		490			823			94			108	
Approach Delay, s/veh		0.7			1.4			16.4			16.1	
Approach LOS		A			A			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		24.0		38.8		24.0		38.8
Change Period (Y+Rc), s		* 4.6		* 4.8		* 4.6		* 4.8
Max Green Setting (Gmax), s		* 19		* 34		* 19		* 33
Max Q Clear Time (g_c+I1), s		4.3		2.0		4.2		2.0
Green Ext Time (p_c), s		0.9		10.0		0.9		9.9

Intersection Summary	
HCM 2010 Ctrl Delay	3.1
HCM 2010 LOS	A

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	73	315	51	132	547	157	59	643	65	35	574	113
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1900	1900	1863	1900	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	79	342	38	143	595	135	64	699	59	38	624	97
Adj No. of Lanes	0	2	0	0	2	0	0	2	0	0	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	244	1002	113	268	974	218	119	1083	95	94	1099	172
Arrive On Green	0.89	0.89	0.89	0.89	0.89	0.89	0.40	0.40	0.40	0.40	0.40	0.40
Sat Flow, veh/h	371	2247	254	429	2184	489	132	2698	236	78	2738	428
Grp Volume(v), veh/h	212	0	247	429	0	444	409	0	413	392	0	367
Grp Sat Flow(s),veh/h/ln	1222	0	1650	1492	0	1609	1413	0	1653	1625	0	1620
Q Serve(g_s), s	0.5	0.0	1.5	0.0	0.0	4.2	5.1	0.0	12.5	0.5	0.0	11.0
Cycle Q Clear(g_c), s	4.7	0.0	1.5	2.9	0.0	4.2	16.1	0.0	12.5	13.0	0.0	11.0
Prop In Lane	0.37		0.15	0.33		0.30	0.16		0.14	0.10		0.26
Lane Grp Cap(c), veh/h	623	0	736	742	0	717	633	0	663	715	0	650
V/C Ratio(X)	0.34	0.00	0.34	0.58	0.00	0.62	0.65	0.00	0.62	0.55	0.00	0.56
Avail Cap(c_a), veh/h	623	0	736	742	0	717	633	0	663	715	0	650
HCM Platoon Ratio	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	2.0	0.0	2.0	2.0	0.0	2.1	15.4	0.0	15.0	14.3	0.0	14.6
Incr Delay (d2), s/veh	1.5	0.0	1.2	3.3	0.0	4.0	5.0	0.0	4.4	3.0	0.0	3.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	0.0	0.7	1.8	0.0	2.2	6.9	0.0	6.4	5.7	0.0	5.5
LnGrp Delay(d),s/veh	3.4	0.0	3.2	5.3	0.0	6.1	20.4	0.0	19.4	17.3	0.0	18.1
LnGrp LOS	A		A	A		A	C		B	B		B
Approach Vol, veh/h		459			873			822			759	
Approach Delay, s/veh		3.3			5.7			19.9			17.7	
Approach LOS		A			A			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		30.0		32.8		30.0		32.8
Change Period (Y+Rc), s		* 4.8		* 4.8		* 4.8		* 4.8
Max Green Setting (Gmax), s		* 25		* 28		* 25		* 27
Max Q Clear Time (g_c+I1), s		18.1		6.7		15.0		6.2
Green Ext Time (p_c), s		5.1		9.5		6.8		9.4

Intersection Summary	
HCM 2010 Ctrl Delay	12.4
HCM 2010 LOS	B

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	48	210	51	33	448	28	40	660	53	24	578	13
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	52	228	41	36	487	27	43	717	49	26	628	12
Adj No. of Lanes	1	1	0	1	1	0	0	2	0	0	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	100	586	105	100	667	37	94	1133	77	77	1225	23
Arrive On Green	0.11	0.76	0.76	0.11	0.76	0.76	0.37	0.37	0.37	0.37	0.37	0.37
Sat Flow, veh/h	1774	1537	276	1774	1749	97	101	3039	206	60	3284	62
Grp Volume(v), veh/h	52	0	269	36	0	514	414	0	395	342	0	324
Grp Sat Flow(s),veh/h/ln	1774	0	1814	1774	0	1846	1687	0	1659	1722	0	1684
Q Serve(g_s), s	2.0	0.0	3.5	1.3	0.0	10.6	3.3	0.0	13.9	0.2	0.0	10.6
Cycle Q Clear(g_c), s	2.0	0.0	3.5	1.3	0.0	10.6	13.9	0.0	13.9	14.0	0.0	10.6
Prop In Lane	1.00		0.15	1.00		0.05	0.10		0.12	0.08		0.04
Lane Grp Cap(c), veh/h	100	0	692	100	0	704	685	0	619	697	0	628
V/C Ratio(X)	0.52	0.00	0.39	0.36	0.00	0.73	0.60	0.00	0.64	0.49	0.00	0.52
Avail Cap(c_a), veh/h	100	0	692	100	0	704	685	0	619	697	0	628
HCM Platoon Ratio	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	30.5	0.0	5.6	30.2	0.0	6.4	18.0	0.0	18.3	17.1	0.0	17.2
Incr Delay (d2), s/veh	17.9	0.0	1.6	9.7	0.0	6.6	3.9	0.0	5.0	2.5	0.0	3.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.4	0.0	2.0	0.9	0.0	6.3	7.3	0.0	7.1	5.6	0.0	5.4
LnGrp Delay(d),s/veh	48.4	0.0	7.3	40.0	0.0	13.0	21.9	0.0	23.3	19.5	0.0	20.3
LnGrp LOS	D		A	D		B	C		C	B		C
Approach Vol, veh/h		321			550			809			666	
Approach Delay, s/veh		13.9			14.8			22.6			19.9	
Approach LOS		B			B			C			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		31.0	8.0	31.8		31.0	8.0	31.8
Change Period (Y+Rc), s		* 4.6	4.0	* 4.8		* 4.6	4.0	* 4.8
Max Green Setting (Gmax), s		* 26	4.0	* 26		* 26	4.0	* 27
Max Q Clear Time (g_c+I1), s		15.9	3.3	5.5		16.0	4.0	12.6
Green Ext Time (p_c), s		6.5	0.0	4.9		6.4	0.0	4.3

Intersection Summary	
HCM 2010 Ctrl Delay	18.8
HCM 2010 LOS	B

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	13	395	23	58	595	37	17	62	39	20	65	17
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1900	1900	1863	1900	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	14	429	17	63	647	33	18	67	10	22	71	5
Adj No. of Lanes	0	2	0	0	2	0	0	1	0	0	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	84	1901	74	181	1720	86	121	383	51	139	392	25
Arrive On Green	0.58	0.58	0.58	1.00	1.00	1.00	0.28	0.28	0.28	0.28	0.28	0.28
Sat Flow, veh/h	41	3306	129	198	2990	149	189	1379	184	245	1411	89
Grp Volume(v), veh/h	240	0	220	375	0	368	95	0	0	98	0	0
Grp Sat Flow(s),veh/h/ln	1803	0	1672	1669	0	1669	1752	0	0	1745	0	0
Q Serve(g_s), s	0.0	0.0	4.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	3.9	0.0	4.0	0.0	0.0	0.0	2.5	0.0	0.0	2.5	0.0	0.0
Prop In Lane	0.06		0.08	0.17		0.09	0.19		0.11	0.22		0.05
Lane Grp Cap(c), veh/h	1098	0	962	1027	0	960	555	0	0	556	0	0
V/C Ratio(X)	0.22	0.00	0.23	0.36	0.00	0.38	0.17	0.00	0.00	0.18	0.00	0.00
Avail Cap(c_a), veh/h	1098	0	962	1027	0	960	555	0	0	556	0	0
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	6.5	0.0	6.5	0.0	0.0	0.0	17.2	0.0	0.0	17.2	0.0	0.0
Incr Delay (d2), s/veh	0.5	0.0	0.6	1.0	0.0	1.2	0.7	0.0	0.0	0.7	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.1	0.0	2.0	0.3	0.0	0.3	1.3	0.0	0.0	1.4	0.0	0.0
LnGrp Delay(d),s/veh	6.9	0.0	7.1	1.0	0.0	1.2	17.9	0.0	0.0	17.9	0.0	0.0
LnGrp LOS	A		A	A		A	B			B		
Approach Vol, veh/h		460			743			95			98	
Approach Delay, s/veh		7.0			1.1			17.9			17.9	
Approach LOS		A			A			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		22.0		40.6		22.0		40.6
Change Period (Y+Rc), s		* 4.6		* 4.6		* 4.6		4.6
Max Green Setting (Gmax), s		* 17		* 36		* 17		35.4
Max Q Clear Time (g_c+I1), s		4.5		6.0		4.5		2.0
Green Ext Time (p_c), s		0.8		8.7		0.8		9.0

Intersection Summary	
HCM 2010 Ctrl Delay	5.4
HCM 2010 LOS	A

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	8	264	23	14	486	7	11	131	32	13	101	2
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	9	287	20	15	528	7	12	142	22	14	110	1
Adj No. of Lanes	1	1	0	1	1	0	0	1	0	0	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	100	827	58	100	881	12	68	423	62	81	474	4
Arrive On Green	0.11	0.96	0.96	0.11	0.96	0.96	0.28	0.28	0.28	0.28	0.28	0.28
Sat Flow, veh/h	1774	1722	120	1774	1834	24	48	1528	225	87	1712	15
Grp Volume(v), veh/h	9	0	307	15	0	535	176	0	0	125	0	0
Grp Sat Flow(s),veh/h/ln	1774	0	1842	1774	0	1858	1801	0	0	1814	0	0
Q Serve(g_s), s	0.3	0.0	0.7	0.5	0.0	1.9	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.3	0.0	0.7	0.5	0.0	1.9	5.5	0.0	0.0	3.7	0.0	0.0
Prop In Lane	1.00		0.07	1.00		0.01	0.07		0.12	0.11		0.01
Lane Grp Cap(c), veh/h	100	0	884	100	0	892	553	0	0	559	0	0
V/C Ratio(X)	0.09	0.00	0.35	0.15	0.00	0.60	0.32	0.00	0.00	0.22	0.00	0.00
Avail Cap(c_a), veh/h	100	0	884	100	0	892	553	0	0	559	0	0
HCM Platoon Ratio	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	29.8	0.0	0.7	29.9	0.0	0.8	20.5	0.0	0.0	19.8	0.0	0.0
Incr Delay (d2), s/veh	1.8	0.0	1.1	3.1	0.0	3.0	1.5	0.0	0.0	0.9	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	0.0	0.5	0.4	0.0	1.2	3.0	0.0	0.0	2.0	0.0	0.0
LnGrp Delay(d),s/veh	31.5	0.0	1.8	33.0	0.0	3.7	22.0	0.0	0.0	20.8	0.0	0.0
LnGrp LOS	C		A	C		A	C			C		
Approach Vol, veh/h		316			550			176			125	
Approach Delay, s/veh		2.7			4.5			22.0			20.8	
Approach LOS		A			A			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		24.2	8.0	38.6		24.2	8.0	38.6
Change Period (Y+Rc), s		* 4.6	4.0	4.6		* 4.6	4.0	* 4.6
Max Green Setting (Gmax), s		* 19	4.0	33.4		* 20	4.0	* 34
Max Q Clear Time (g_c+I1), s		7.5	2.5	2.7		5.7	2.3	3.9
Green Ext Time (p_c), s		1.3	0.0	6.2		1.4	0.0	6.1

Intersection Summary	
HCM 2010 Ctrl Delay	8.4
HCM 2010 LOS	A

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	7	384	18	58	570	21	31	41	30	13	43	20
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1900	1900	1863	1900	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	8	417	12	63	620	18	34	45	12	14	47	9
Adj No. of Lanes	0	2	0	0	2	0	0	1	0	0	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	88	1260	36	160	1147	33	318	392	91	186	552	95
Arrive On Green	0.37	0.37	0.37	0.37	0.37	0.37	0.42	0.42	0.42	0.42	0.42	0.42
Sat Flow, veh/h	17	3403	97	182	3099	88	494	924	215	215	1301	224
Grp Volume(v), veh/h	229	0	208	357	0	344	91	0	0	70	0	0
Grp Sat Flow(s),veh/h/ln	1839	0	1678	1690	0	1680	1633	0	0	1740	0	0
Q Serve(g_s), s	0.0	0.0	4.1	1.0	0.0	7.4	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	4.0	0.0	4.1	7.0	0.0	7.4	1.4	0.0	0.0	1.1	0.0	0.0
Prop In Lane	0.03		0.06	0.18		0.05	0.37		0.13	0.20		0.13
Lane Grp Cap(c), veh/h	762	0	621	718	0	622	801	0	0	833	0	0
V/C Ratio(X)	0.30	0.00	0.33	0.50	0.00	0.55	0.11	0.00	0.00	0.08	0.00	0.00
Avail Cap(c_a), veh/h	1426	0	1248	1286	0	1220	801	0	0	833	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	10.3	0.0	10.4	11.2	0.0	11.4	8.0	0.0	0.0	7.9	0.0	0.0
Incr Delay (d2), s/veh	0.2	0.0	0.3	0.5	0.0	0.8	0.3	0.0	0.0	0.2	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.1	0.0	1.9	3.6	0.0	3.5	0.7	0.0	0.0	0.6	0.0	0.0
LnGrp Delay(d),s/veh	10.6	0.0	10.7	11.8	0.0	12.2	8.3	0.0	0.0	8.1	0.0	0.0
LnGrp LOS	B		B	B		B	A			A		
Approach Vol, veh/h		437			701			91			70	
Approach Delay, s/veh		10.6			12.0			8.3			8.1	
Approach LOS		B			B			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		24.0		21.7		24.0		21.7
Change Period (Y+Rc), s		* 4.6		* 4.8		* 4.6		* 4.8
Max Green Setting (Gmax), s		* 19		* 34		* 19		* 33
Max Q Clear Time (g_c+I1), s		3.4		6.1		3.1		9.4
Green Ext Time (p_c), s		0.7		7.9		0.7		7.5

Intersection Summary	
HCM 2010 Ctrl Delay	11.0
HCM 2010 LOS	B

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	4	256	18	14	466	4	20	100	25	8	78	2
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	4	278	16	15	507	3	22	109	16	9	85	1
Adj No. of Lanes	1	1	0	1	1	0	0	1	0	0	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	100	862	50	100	914	5	93	375	50	72	454	5
Arrive On Green	0.06	0.49	0.49	0.11	0.99	0.99	0.26	0.26	0.26	0.26	0.26	0.26
Sat Flow, veh/h	1774	1745	100	1774	1850	11	134	1444	193	64	1746	19
Grp Volume(v), veh/h	4	0	294	15	0	510	147	0	0	95	0	0
Grp Sat Flow(s),veh/h/ln	1774	0	1845	1774	0	1861	1772	0	0	1829	0	0
Q Serve(g_s), s	0.2	0.0	6.8	0.5	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.2	0.0	6.8	0.5	0.0	0.5	4.6	0.0	0.0	2.8	0.0	0.0
Prop In Lane	1.00		0.05	1.00		0.01	0.15		0.11	0.09		0.01
Lane Grp Cap(c), veh/h	100	0	912	100	0	920	519	0	0	531	0	0
V/C Ratio(X)	0.04	0.00	0.32	0.15	0.00	0.55	0.28	0.00	0.00	0.18	0.00	0.00
Avail Cap(c_a), veh/h	100	0	912	100	0	920	519	0	0	531	0	0
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	31.6	0.0	10.8	29.9	0.0	0.2	21.1	0.0	0.0	20.4	0.0	0.0
Incr Delay (d2), s/veh	0.7	0.0	0.9	3.1	0.0	2.4	1.4	0.0	0.0	0.7	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	0.0	3.7	0.4	0.0	0.8	2.5	0.0	0.0	1.6	0.0	0.0
LnGrp Delay(d),s/veh	32.3	0.0	11.7	33.0	0.0	2.6	22.5	0.0	0.0	21.2	0.0	0.0
LnGrp LOS	C		B	C		A	C			C		
Approach Vol, veh/h		298			525			147			95	
Approach Delay, s/veh		12.0			3.5			22.5			21.2	
Approach LOS		B			A			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		23.0	8.0	39.8		23.0	8.0	39.8
Change Period (Y+Rc), s		* 4.6	4.0	* 4.8		* 4.6	4.0	* 4.8
Max Green Setting (Gmax), s		* 18	4.0	* 34		* 18	4.0	* 35
Max Q Clear Time (g_c+I1), s		6.6	2.5	8.8		4.8	2.2	2.5
Green Ext Time (p_c), s		1.0	0.0	5.6		1.1	0.0	5.9

Intersection Summary	
HCM 2010 Ctrl Delay	10.1
HCM 2010 LOS	B

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	*JCH*	Intersection	*Commerce St/Navidad St*
Agency/Co.	*CH2M HILL*	Jurisdiction	*City of San Antonio*
Date Performed	*3/25/2015*	Analysis Year	*2020 Scenario 3*
Analysis Time Period	*PM Peak Hour*		

Project Description *Commerce/Buena Vista One-Way Couplet Conversion Traff. Study*

East/West Street: *Commerce Street* | North/South Street: *Navidad Street*

Intersection Orientation: *East-West* | Study Period (hrs): *0.25*

Vehicle Volumes and Adjustments

Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)		*455*	*20*		*772*	*20*
Peak-Hour Factor, PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Hourly Flow Rate, HFR (veh/h)	*0*	*455*	*20*	*0*	*772*	*20*
Percent Heavy Vehicles	*0*	--	--	*0*	--	--
Median Type	*Undivided*					
RT Channelized			*0*			*0*
Lanes	*0*	*2*	*0*	*0*	*2*	*0*
Configuration		*T*	*TR*		*T*	*TR*
Upstream Signal		*0*			*0*	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)	*20*	*20*	*20*	*20*	*20*	*20*
Peak-Hour Factor, PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Hourly Flow Rate, HFR (veh/h)	*20*	*20*	*20*	*20*	*20*	*20*
Percent Heavy Vehicles	*0*	*0*	*0*	*0*	*0*	*0*
Percent Grade (%)		*0*			*0*	
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*0*	*1*	*0*	*0*	*1*	*0*
Configuration		*LTR*			*LTR*	

Delay, Queue Length, and Level of Service

Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration				*LTR*			*LTR*	
v (veh/h)				*60*			*60*	
C (m) (veh/h)				*261*			*229*	
v/c				*0.23*			*0.26*	
95% queue length				*0.87*			*1.02*	
Control Delay (s/veh)				*22.9*			*26.2*	
LOS				*C*			*D*	
Approach Delay (s/veh)	--	--	*22.9*			*26.2*		
Approach LOS	--	--	*C*			*D*		

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Appendix F
Build Scenarios Cost Estimate

CONCEPTUAL COST ESTIMATE SUMMARY FOR SAN ANTONIO COMMERCE ST/ BUENA VISTA ST CONVERSION ANALYSIS

4/9/2015 2:54 PM

PROJECT DESCRIPTION

San Antonio Commerce St/ Buena Vista St Analysis
Scenario 1
Basic Conversion

Proposed Improvement:

		Cost in 2015 $
ROADWAY ITEMS		$9,700,000
STRUCTURE ITEMS		$600,000
SUBTOTAL CONSTRUCTION		$10,300,000
RIGHT OF WAY		$310,000
	TOTAL COST	$10,610,000
	ROUNDED	$10,600,000

CONCEPTUAL COST ESTIMATE SUMMARY FOR SAN ANTONIO COMMERCE ST/ BUENA VISTA ST CONVERSION ANALYSIS

4/9/2015 2:54 PM

I. Roadway Items

Section 1 - Earthwork	Quantity	Unit	Unit Cost	Cost	Section Cost
Construction Site Management/SWPPP	1	LS	$10,000	$10,000	
Clearing and Grubbing	1	LS	$30,000	$30,000	
Roadway Excavation	38	CY	$150	$6,000	
Imported Borrow	10	CY	$8	$800	
				Total Earthwork	**$46,800**

Section 2 - Structural Section	Quantity	Unit	Unit Cost	Cost	Section Cost
Roadway Pvmt	515	SF	$10	$6,000	
Grind and Mill	109,056	SQYD	$2	$220,000	
HMA Overlay (2")	12,453	TON	$85	$1,058,505	
Concrete Sidewalk	12,780	SF	$6	$76,680	
Minor Concrete (Curb Ramp)	42	EA	$1,200	$50,400	
				Total Structural Section	**$1,412,000**

Assumptions:

1) SWPPP cost based on PPDG Table F-6; 9 months, 5 discharge locations, $100 per house for labor of inspector.

2) Minimal clearing and grubbing needed.

3) Roadway excavation and section is 2' deep.

4) This scenario assumes one 12' lane in each direction and two bike lanes in each direction.

5) All proposed sidewalks will be ADA compliant. Assuming new sidewalk at all signalized intersections resulting from mast arm foundation installation.

6) Miscellaneous roadway items are included in minor items Section 6.

7) No hazardous waste material.

8) Roadway excavation material is unsuitable for backfill or embankment.

CONCEPTUAL COST ESTIMATE SUMMARY FOR SAN ANTONIO COMMERCE ST/ BUENA VISTA ST CONVERSION ANALYSIS

4/9/2015 2:54 PM

I. Roadway Items (CONT.)

Section 3 - Drainage & Utilities			**%**		**Cost**	**Section Cost**
Onsite Drainage (5% of Structural Section)	$1,412,000	x	5%		$70,600	
	Quantity		**Unit**	**Unit Cost**	**Cost**	
Utilities	1		LS	$52,500	$52,500	
				Total Drainage & Utility Items		**$123,100**

Assumptions:

1) Utilities may include electrical, water, irrigation, storm drain, communication, and gas lines.

2) Utility relocation and protection needed in areas of new construction only. Utilities cost is a percentage of the sidewalk cost since many existing utilities lie within the sidewalk.

3) No major utility relocations, i.e. large diameter pipes or utility cooridors.

4) Onsite drainage includes items needed for storm water collection such as catch basins, manhole adjustment, etc.

5) Utility lump sum cost assumes 10.5 intersections at $5k per intersection.

CONCEPTUAL COST ESTIMATE SUMMARY FOR SAN ANTONIO COMMERCE ST/ BUENA VISTA ST CONVERSION ANALYSIS

4/9/2015 2:54 PM

I. Roadway Items (CONT.)

Section 4 - Specialty Items	Quantity	Unit	Unit Cost	Cost	Section Cost
Planting (includes planting, irrigation, and 3-year plant establishment)	0.00	Acre	$97,500	$0	
Retaining Wall (H=2-25 FT)	0	LF	$1,100	$0	
Bridge Demolition	0	SF	$9	$0	
				Total Specialty Items	**$0**

Section 5 - Traffic Items	Quantity	Unit	Unit Cost	Cost	Section Cost
Fiber Optic & Twisted Pair Cable system	5.00	MI	$650,000	$3,250,000	
Signalized Intersections	10.5	EA	$250,000	$2,625,000	
Delineate Traffic Striping	70,630	LF	$1.00	$71,000	
Construction Staging /Traffic Handling	1	LS	$70,000	$70,000	
				Total Traffic Items	**$6,016,000**
				SUBTOTAL ROADWAY ITEMS SECTIONS 1-5	**$7,598,000**

Assumptions:

1) Highway planting unit cost established by Caltrans.
2) No sound walls needed.
3) Fiber optics needed along both streets.
4) Existing signalized intersections include loop detectors, pull boxes, ramp metering, controller, conduits, etc.
5) No traffic control system needed.
6) Construction staging and traffic handling assumes $5k/day, and 14 days for Scenario 1.
7) No retaining walls required.

CONCEPTUAL COST ESTIMATE SUMMARY FOR SAN ANTONIO COMMERCE ST/ BUENA VISTA ST CONVERSION ANALYSIS

4/9/2015 2:54 PM

I. Roadway Items (CONT.)

Section 6 - Roadway Minor Items				**Cost**	**Section Cost**
Subtotal Sections 1-5	$7,598,000	x	5%	$379,900	
				Total Minor Items	**$380,000**

Section 7 - Roadway Mobilization				**Cost**	**Section Cost**
Subtotal Sections 1-5	$7,598,000				
Minor Items - Section 6	$380,000				
Subtotal Sections 1-6	$7,978,000	x	10% Mobilization (includes 10% of Mob Cost)	$886,445	
				Total Roadway Mobilization	**$887,000**

Section 8 - Roadway Additions				**Cost**	**Section Cost**
Supplemental					
Subtotal Sections 1-5	$7,598,000				
Minor Items - Section 6	$380,000				
Subtotal Sections 1-6	$7,978,000	x	5%	$398,900	
Contingencies					
Subtotal Sections 1-5	$7,598,000				
Minor Items - Section 6	$380,000				
Subtotal Sections 1-6	$7,978,000	x	5%	$398,900	
				Total Roadway Additions	**$798,000**
				Subtotal for Sections 6, 7 & 8	**$2,065,000**
				Subtotal for Sections 1-5	**$7,598,000**
				TOTAL ROADWAY ITEMS SECTIONS 1-8	**$9,700,000**

Notes:

1) Percentages of minor items, mobilization, additions and contingency above based on Caltrans (Project Development Procedures Manual) PDPM.

2) Contingency set at 5% which is appropriate for the proposed work of Scenario 1 at a planning level estimate.

CONCEPTUAL COST ESTIMATE SUMMARY FOR SAN ANTONIO COMMERCE ST/ BUENA VISTA ST CONVERSION ANALYSIS

4/9/2015 2:54 PM

II. Structure Items

Section 9 - Structure Items	**Quantity**		**Unit**	**Unit Cost**	**Cost**	**Section Cost**
Sidewalk widening (Commerce St) RR Crossing	133		CY	$1,500	$200,000	
Sidewalk widening (Buena Vista St) RR Crossing	133		CY	$1,500	$200,000	
					Total Structure Items	**$400,000**
Section 10 - Structure Mobilization						
Subtotal Sections 9	$400,000	x	10% Mobilization (includes 10% of Mob Cost)	$44,445		
					Total Structure Mobilization	**$45,000**
					Total Sections 9 & 10	**$445,000**
Section 11 - Structure Additions						
Contingencies						
Subtotal Section 9	$400,000	x	25%	$100,000		
					Total Structure Additions	**$100,000**
					Subtotal for Sections 10 & 11	**$145,000**
					Subtotal for Section 9	**$400,000**
					TOTAL STRUCTURE ITEMS SECTIONS 9-11	**$600,000**

Assumptions:

1) Bridge unit costs comparable to recently used data for Caltrans and Gulf Coast projects.
2) Contingency set at 25% which is appropriate for a planning level estimate.
3) No minor items for structures.
4) No bridge widening required for widening the sidewalk. Sidewalk will be widened towards the centerline of the bridge. This estimate assume a sawcut of the existing sidewalk and additional sidewalk to be poured and secured with dowels.
5) No strengthing of the bridge is needed for additional sidewalk concrete.

CONCEPTUAL COST ESTIMATE SUMMARY FOR SAN ANTONIO COMMERCE ST/ BUENA VISTA ST CONVERSION ANALYSIS

4/9/2015 2:54 PM

III. Right of Way Items

Section 12 - Right of Way

	Quantity	Unit	Unit Cost	Cost
R/W Acquisition	0	SF	$15	$0
R/W Acquisition (Temp Easement)	19,070	SF	$3	$58,000
Relocation Costs (RAP)	0	LS	$100,000	$0
Clearance/Demolition	0	SF	$7	$0
Title, Escrow, and Appraisal Fees (per parcel)	38	EA	$5,000	$190,000
			Total for Section 12	**$248,000**

Section 13 - ROW Additions

Contingencies

Subtotal Section 25	$248,000				
Sum	$248,000	x	25%	$62,000	
				Total for Section 13	**$62,000**

TOTAL RIGHT OF WAY ITEMS SECTION 12 & 13 **$310,000**

Assumptions:

1) $15/SF land value for full and part property takes.
2) Contingency set at 25% which is appropriate for a planning level estimate.
3) TCE assumes 10' width, where available.

CONCEPTUAL COST ESTIMATE SUMMARY FOR SAN ANTONIO COMMERCE ST/ BUENA VISTA ST CONVERSION ANALYSIS

4/9/2015 2:52 PM

PROJECT DESCRIPTION

San Antonio Commerce St/ Buena Vista St Analysis
Scenario 2
Focused Improvements

Proposed Improvement:

		Cost in 2015 $
ROADWAY ITEMS		$10,700,000
STRUCTURE ITEMS		$600,000
SUBTOTAL CONSTRUCTION		$11,300,000
RIGHT OF WAY		$1,450,000
	TOTAL COST	$12,750,000
	ROUNDED	$12,800,000

CONCEPTUAL COST ESTIMATE SUMMARY FOR SAN ANTONIO COMMERCE ST/ BUENA VISTA ST CONVERSION ANALYSIS

4/9/2015 2:52 PM

I. Roadway Items

Section 1 - Earthwork	Quantity	Unit	Unit Cost	Cost	Section Cost
Construction Site Management/SWPPP	1	LS	$10,000	$10,000	
Clearing and Grubbing	1	LS	$30,000	$30,000	
Roadway Excavation	992	CY	$100	$100,000	
Imported Borrow	248	CY	$8	$2,400	
				Total Earthwork	**$142,400**

Section 2 - Structural Section	Quantity	Unit	Unit Cost	Cost	Section Cost
Roadway Pvmt	13,390	SF	$6	$84,000	
Grind and Mill	109,056	SQYD	$2	$218,112	
HMA Overlay (2")	12,453	TON	$85	$1,058,505	
Concrete Sidewalk	23,525	SF	$6	$141,150	
Minor Concrete (Curb Ramp)	42	EA	$1,200	$50,400	
				Total Structural Section	**$1,553,000**

Assumptions:

1) SWPPP cost based on PPDG Table F-6; 9 months, 5 discharge locations, $100 per house for labor of inspector.

2) Minimal clearing and grubbing needed.

3) Roadway excavation and section is 2' deep.

4) This scenario assumes one 12' lane in each direction and two bike lanes in each direction on Buena Vista St, two-way left-turn lanes where space allows and right-turn bays for signalized intersections on Commerce St.

5) All proposed sidewalks will be ADA compliant. Assuming new sidewalk at all signalized intersections resulting from mast arm foundation installation.

6) Miscellaneous roadway items are included in minor items Section 6.

7) No hazardous waste material.

8) Roadway excavation material is unsuitable for backfill or embankment.

CONCEPTUAL COST ESTIMATE SUMMARY FOR SAN ANTONIO COMMERCE ST/ BUENA VISTA ST CONVERSION ANALYSIS

4/9/2015 2:52 PM

I. Roadway Items (CONT.)

Section 3 - Drainage & Utilities			**%**		**Cost**	**Section Cost**
Onsite Drainage (10% of Structural Section)	$1,553,000	x	10%		$155,300	
	Quantity		**Unit**	**Unit Cost**	**Cost**	
Utilities	1		LS	$105,000	$105,000	
					Total Drainage & Utility Items	**$260,300**

Assumptions:

1) Utilities may include electrical, water, irrigation, storm drain, communication, and gas lines.

2) Utility relocation and protection needed in areas of new construction only. Utilities cost is a percentage of the sidewalk cost since many existing utilities lie within the sidewalk.

3) No major utility relocations, i.e. large diameter pipes or utility cooridors.

4) Onsite drainage includes items needed for storm water collection such as catch basins, manhole adjustment, etc.

5) Utility lump sum cost assumes 10.5 intersections at $10k per intersection.

CONCEPTUAL COST ESTIMATE SUMMARY FOR SAN ANTONIO COMMERCE ST/ BUENA VISTA ST CONVERSION ANALYSIS

4/9/2015 2:52 PM

I. Roadway Items (CONT.)

Section 4 - Specialty Items	Quantity	Unit	Unit Cost	Cost	Section Cost
Planting (includes planting, irrigation, and 3-year plant establishment)	0.00	Acre	$97,500	$0	
Retaining Wall (H=2-25 FT)	0	LF	$1,100	$0	
Bridge Demolition	0	SF	$9	$0	
				Total Specialty Items	**$0**

Section 5 - Traffic Items	Quantity	Unit	Unit Cost	Cost	Section Cost
Fiber Optic & Twisted Pair Cable system	5.00	MI	$650,000	$3,250,000	
Signalized Intersections	10.5	EA	$250,000	$2,625,000	
Delineate Traffic Striping	70,630	LF	$1.00	$71,000	
Construction Staging /Traffic Handling	1	LS	$140,000	$140,000	
				Total Traffic Items	**$6,086,000**
				SUBTOTAL ROADWAY ITEMS SECTIONS 1-5	**$8,042,000**

Assumptions:

1) Highway planting unit cost established by Caltrans.
2) No sound walls needed.
3) Fiber optics needed along both streets.
4) Existing signalized intersections include loop detectors, pull boxes, ramp metering, controller, conduits, etc.
5) No traffic control system needed.
6) Construction Staging assumes $5k/day, and 28 days for Scenario 2.
7) No retaining walls required.

CONCEPTUAL COST ESTIMATE SUMMARY FOR SAN ANTONIO COMMERCE ST/ BUENA VISTA ST CONVERSION ANALYSIS

4/9/2015 2:52 PM

I. Roadway Items (CONT.)

Section 6 - Roadway Minor Items				**Cost**	**Section Cost**
Subtotal Sections 1-5	$8,042,000	x	5%	$402,100	
				Total Minor Items	**$403,000**

Section 7 - Roadway Mobilization				**Cost**	**Section Cost**
Subtotal Sections 1-5	$8,042,000				
Minor Items - Section 6	$403,000				
Subtotal Sections 1-6	$8,445,000	x	10% Mobilization (includes 10% of Mob Cost)	$938,334	
				Total Roadway Mobilization	**$939,000**

Section 8 - Roadway Additions				**Cost**	**Section Cost**
Supplemental					
Subtotal Sections 1-5	$8,042,000				
Minor Items - Section 6	$403,000				
Subtotal Sections 1-6	$8,445,000	x	5%	$422,250	
Contingencies					
Subtotal Sections 1-5	$8,042,000				
Minor Items - Section 6	$403,000				
Subtotal Sections 1-6	$8,445,000	x	10%	$844,500	
				Total Roadway Additions	**$1,267,000**
				Subtotal for Sections 6, 7 & 8	**$2,609,000**
				Subtotal for Sections 1-5	**$8,042,000**
				TOTAL ROADWAY ITEMS SECTIONS 1-8	**$10,700,000**

Notes:

1) Percentages of minor items, mobilization, additions and contingency above based on Caltrans (Project Development Procedures Manual) PDPM.

2) Contingency set at 5-10% which is appropriate for the proposed work of Scenario 2 at a planning level estimate.

CONCEPTUAL COST ESTIMATE SUMMARY FOR SAN ANTONIO COMMERCE ST/ BUENA VISTA ST CONVERSION ANALYSIS

4/9/2015 2:52 PM

II. Structure Items

Section 9 - Structure Items	**Quantity**		**Unit**	**Unit Cost**	**Cost**	**Section Cost**
Sidewalk widening (Commerce St) RR Crossing	133		CY	$1,500	$200,000	
Sidewalk widening (Buena Vista St) RR Crossing	133		CY	$1,500	$200,000	
					Total Structure Items	**$400,000**
Section 10 - Structure Mobilization						
Subtotal Sections 9	$400,000	x	10% Mobilization (includes 10% of Mob Cost)	$44,445		
					Total Structure Mobilization	**$45,000**
					Total Sections 9 & 10	**$445,000**
Section 11 - Structure Additions						
Contingencies						
Subtotal Section 9	$400,000	x	25%	$100,000		
					Total Structure Additions	**$100,000**
					Subtotal for Sections 10 & 11	**$145,000**
					Subtotal for Section 9	**$400,000**
					TOTAL STRUCTURE ITEMS SECTIONS 9-11	**$600,000**

Assumptions:

1) Bridge unit costs comparable to recently used data for Caltrans and Gulf Coast projects.
2) Contingency set at 25% which is appropriate for a planning level estimate.
3) No minor items for structures.
4) No bridge widening required for widening the sidewalk. Sidewalk will be widened towards the centerline of the bridge. This estimate assume a sawcut of the existing sidewalk and additional sidewalk to be poured and secured with dowels.
5) No strengthing of the bridge is needed for additional sidewalk concrete.

CONCEPTUAL COST ESTIMATE SUMMARY FOR SAN ANTONIO COMMERCE ST/ BUENA VISTA ST CONVERSION ANALYSIS

4/9/2015 2:52 PM

III. Right of Way Items

Section 12 - Right of Way

	Quantity	Unit	Unit Cost	Cost
R/W Acquisition	29,510	SF	$15	$443,000
R/W Acquisition (Temp Easement)	32,700	SF	$3	$98,100
Relocation Costs (RAP)	3	EA	$100,000	$300,000
Clearance/Demolition	0	SF	$7	$0
Title, Escrow, and Appraisal Fees (per parcel)	63	EA	$5,000	$315,000
			Total for Section 12	**$1,156,100**

Section 13 - ROW Additions

Contingencies

Subtotal Section 25	$1,156,100				
Sum	$1,156,100	x	25%	$290,000	
				Total for Section 13	**$290,000**

TOTAL RIGHT OF WAY ITEMS SECTION 12 & 13 **$1,450,000**

Assumptions:

1) $15/SF land value for full and part property takes.
2) Contingency set at 25% which is appropriate for a planning level estimate.
3) TCE assumes 10' width, where available.

CONCEPTUAL COST ESTIMATE SUMMARY FOR SAN ANTONIO COMMERCE ST/ BUENA VISTA ST CONVERSION ANALYSIS

4/9/2015 2:53 PM

PROJECT DESCRIPTION

San Antonio Commerce St/ Buena Vista St Analysis
Scenario 3
Major Reconstruction

Proposed Improvement:

		Cost in 2015 $
ROADWAY ITEMS		$19,800,000
STRUCTURE ITEMS		$1,500,000
SUBTOTAL CONSTRUCTION		$21,300,000
RIGHT OF WAY		$6,680,000
	TOTAL COST	$27,980,000
	ROUNDED	$28,000,000

CONCEPTUAL COST ESTIMATE SUMMARY FOR SAN ANTONIO COMMERCE ST/ BUENA VISTA ST CONVERSION ANALYSIS

4/9/2015 2:53 PM

I. Roadway Items

Section 1 - Earthwork	Quantity	Unit	Unit Cost	Cost	Section Cost
Construction Site Management/SWPPP	1	LS	$10,000	$10,000	
Clearing and Grubbing	1	LS	$30,000	$30,000	
Roadway Excavation	6,707	CY	$70	$476,000	
Imported Borrow	1,677	CY	$8	$16,000	
				Total Earthwork	**$532,000**

Section 2 - Structural Section	Quantity	Unit	Unit Cost	Cost	Section Cost
Roadway Pvmt	90,550	SF	$5	$455,000	
Grind and Mill	105,961	SQYD	$2	$212,000	
HMA Overlay (2")	12,099	TON	$85	$1,105,000	
Concrete Sidewalk	118,040	SF	$5	$595,000	
Minor Concrete (Curb Ramp)	104	EA	$1,000	$1,000,000	
				Total Structural Section	**$3,367,000**

Assumptions:

1) SWPPP cost based on PPDG Table F-6; 9 months, 5 discharge locations, $100 per house for labor of inspector.

2) Minimal clearing and grubbing needed.

3) Roadway excavation and section is 2' deep.

4) This scenario assumes one 12' lane in each direction and two bike lanes in each direction on Buena Vista St, two-way left-turn lanes where space allows and right-turn bays for signalized intersections on Commerce St.

5) All proposed sidewalks will be ADA compliant. Assuming new sidewalk at all signalized intersections resulting from mast arm foundation installation.

6) Miscellaneous roadway items are included in minor items Section 6.

7) No hazardous waste material.

8) Roadway excavation material is unsuitable for backfill or embankment.

CONCEPTUAL COST ESTIMATE SUMMARY FOR SAN ANTONIO COMMERCE ST/ BUENA VISTA ST CONVERSION ANALYSIS

4/9/2015 2:53 PM

I. Roadway Items (CONT.)

Section 3 - Drainage & Utilities			**%**		**Cost**	**Section Cost**
Onsite Drainage (25% of Structural Section)	$3,367,000	x	25%		$841,750	
	Quantity		**Unit**	**Unit Cost**	**Cost**	
Utilities	1		LS	$1,140,000	$1,140,000	
					Total Drainage & Utility Items	**$1,981,750**

Assumptions:

1) Utilities may include electrical, water, irrigation, storm drain, communication, and gas lines.

2) Utility relocation and protection needed in areas of new construction only. Utilities cost is a percentage of the sidewalk cost since many existing utilities lie within the sidewalk.

3) No major utility relocations, i.e. large diameter pipes or utility cooridors.

4) Onsite drainage includes items needed for storm water collection such as catch basins, manhole adjustment, etc.

5) Utility lump sum cost assumes 10.5 intersections at $10k per intersection and $5k per impacted property.

CONCEPTUAL COST ESTIMATE SUMMARY FOR SAN ANTONIO COMMERCE ST/ BUENA VISTA ST CONVERSION ANALYSIS

4/9/2015 2:53 PM

I. Roadway Items (CONT.)

Section 4 - Specialty Items	Quantity	Unit	Unit Cost	Cost	Section Cost
Planting (includes planting, irrigation, and 3-year plant establishment)	0.32	Acre	$97,500	$39,000	
Retaining Wall (H=2-25 FT)	0	LF	$1,100	$0	
Bridge Demolition	0	SF	$9	$0	
				Total Specialty Items	**$39,000**

Section 5 - Traffic Items	Quantity	Unit	Unit Cost	Cost	Section Cost
Fiber Optic & Twisted Pair Cable system	5.00	MI	$650,000	$3,250,000	
Signalized Intersections	10.50	EA	$250,000	$2,625,000	
Delineate Traffic Striping	72,580	LF	$1.00	$73,000	
Construction Staging /Traffic Handling	1	LS	$420,000	$420,000	
				Total Traffic Items	**$6,368,000**
				SUBTOTAL ROADWAY ITEMS SECTIONS 1-5	**$12,288,000**

Assumptions:

1) Highway planting unit cost established by Caltrans.
2) No sound walls needed.
3) Fiber optics needed along both streets.
4) Existing signalized intersections include loop detectors, pull boxes, ramp metering, controller, conduits, etc.
5) No traffic control system needed.
6) Construction Staging assumes $5k/day, and 84 days for Scenario 2.

CONCEPTUAL COST ESTIMATE SUMMARY FOR SAN ANTONIO COMMERCE ST/ BUENA VISTA ST CONVERSION ANALYSIS

4/9/2015 2:53 PM

I. Roadway Items (CONT.)

Section 6 - Roadway Minor Items				**Cost**	**Section Cost**
Subtotal Sections 1-5	$12,288,000	x	10%	$1,228,800	
				Total Minor Items	**$1,229,000**

Section 7 - Roadway Mobilization				**Cost**	**Section Cost**
Subtotal Sections 1-5	$12,288,000				
Minor Items - Section 6	$1,229,000				
Subtotal Sections 1-6	$13,517,000	x	10% Mobilization (includes 10% of Mob Cost)	$1,501,889	
				Total Roadway Mobilization	**$1,502,000**

Section 8 - Roadway Additions				**Cost**	**Section Cost**
Supplemental					
Subtotal Sections 1-5	$12,288,000				
Minor Items - Section 6	$1,229,000				
Subtotal Sections 1-6	$13,517,000	x	10%	$1,351,700	
Contingencies					
Subtotal Sections 1-5	$12,288,000				
Minor Items - Section 6	$1,229,000				
Subtotal Sections 1-6	$13,517,000	x	25%	$3,379,250	
				Total Roadway Additions	**$4,731,000**
				Subtotal for Sections 6, 7 & 8	**$7,462,000**
				Subtotal for Sections 1-5	**$12,288,000**
				TOTAL ROADWAY ITEMS SECTIONS 1-8	**$19,800,000**

Notes:

1) Percentages of minor items, mobilization, additions and contingency above based on Caltrans (Project Development Procedures Manual) PDPM.

2) Contingency set at 25% which is appropriate for a planning level estimate. Includes curb a gutter, retaining walls, etc.

CONCEPTUAL COST ESTIMATE SUMMARY FOR SAN ANTONIO COMMERCE ST/ BUENA VISTA ST CONVERSION ANALYSIS

4/9/2015 2:53 PM

II. Structure Items

Section 9 - Structure Items	**Quantity**	**Unit**	**Unit Cost**	**Cost**	**Section Cost**
Alazan Creek Bridge (Widen) along Commerce St	2,300	SF	$300	$690,000	
Sidewalk widening (Commerce St) RR Crossing	133	CY	$1,500	$200,000	
Sidewalk widening (Buena Vista St) RR Crossing	133	CY	$1,500	$200,000	
				Total Structure Items	**$1,090,000**

Section 10 - Structure Mobilization

Subtotal Sections 9	$1,090,000	x	10% Mobilization (includes 10% of Mob Cost)	$121,112
			Total Structure Mobilization	**$122,000**
			Total Sections 9 & 10	**$1,212,000**

Section 11 - Structure Additions

Contingencies

Subtotal Section 9	$1,090,000	x	25%	$273,000
			Total Structure Additions	**$273,000**
			Subtotal for Sections 10 & 11	**$395,000**
			Subtotal for Section 9	**$1,090,000**
			TOTAL STRUCTURE ITEMS SECTIONS 9-11	**$1,500,000**

Assumptions:

1) Bridge unit costs comparable to recently used data for Caltrans and Gulf Coast projects.
2) Contingency set at 25% which is appropriate for a planning level estimate.
3) No minor items for structures.
4) No bridge widening required for widening the sidewalk. Sidewalk will be widened towards the centerline of the bridge. This estimate assume a sawcut of the existing sidewalk and additional sidewalk to be poured and secured with dowels.
5) No strengthing of the bridge is needed for additional sidewalk concrete.

CONCEPTUAL COST ESTIMATE SUMMARY FOR SAN ANTONIO COMMERCE ST/ BUENA VISTA ST CONVERSION ANALYSIS

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III. Right of Way Items

Section 12 - Right of Way

	Quantity	Unit	Unit Cost	Cost
R/W Acquisition	125,240	SF	$15	$1,879,000
R/W Acquisition (Temp Easement)	151,300	SF	$3	$453,900
Relocation Costs (RAP)	9	EA	$100,000	$900,000
Clearance/Demolition	119,500	SF	$9	$1,076,000
Title, Escrow, and Appraisal Fees (per parcel)	207	EA	$5,000	$1,035,000
			Total for Section 12	**$5,343,900**

Section 13 - ROW Additions

Contingencies

Subtotal Section 25	$5,343,900				
Sum	$5,343,900	x	25%	$1,336,000	
				Total for Section 13	**$1,336,000**

TOTAL RIGHT OF WAY ITEMS SECTION 12 & 13 **$6,680,000**

Assumptions:

1) $15/SF land value for full and part property takes.
2) Contingency set at 25% which is appropriate for a planning level estimate.
3) TCE assumes 10' width, where available.
4) ROW sliver takes on both sides of Commerce St to minimize full takes.
5) Clearance/Demolition includes expenses for restablishing minor property damages.