Transportation Impact Study

218 South Lamar Development in Austin, Texas

Prepared for:
Generational Commercial Properties

Submitted to:
The City of Austin, Texas

August 2018

First Submittal

BIG RED DOG
ENGINEERING | CONSULTING

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CERTIFICATION

I hereby certify that this report complies with the Ordinance requirements and applicable technical requirements of the City of Austin, and that it is complete and accurate to the best of my knowledge.

	August 3, 2018
Signature of Responsible Engineer/Submitter	Date of Submittal
Dan Hennessey, TX 124270 Vice President	BIG RED DOG, Inc. F-11201
Printed Name of Responsible Engineer/Submitter, P.E. #	Firm Name

EXECUTIVE SUMMARY

This report presents the results of the transportation impact analysis (TIA) for the 218 South Lamar mixed use development project (Project) in the City of Austin, Texas. This analysis was conducted to identify potentially significant adverse impacts of the proposed Project on the surrounding transportation system and recommend mitigation measures, if necessary. This study addresses the Project's impacts on the roadway system and the adjacent bicycle, pedestrian and transit network. Project impacts were evaluated following the guidelines of the City of Austin.

The Project would consist of 167,000 square feet of office space and approximately 13,000 square feet of high-turnover restaurant space. The Project would be located near the northwest corner of South Lamar Boulevard and Toomey Road intersection.

The Project includes two access driveways to serve the land use. The primary access would be located at South Lamar Boulevard and an alternative access would be provided on Toomey Road.

A high-turnover restaurant is currently located on the premises of the Project site and would be removed with the Project. It is anticipated the Project would be completed in 2020.

Roadway system operations were evaluated under the following study scenarios:

- Existing Conditions
- No Build Conditions (2020)
- Build Conditions (2020)

Pedestrian, bicycle, and transit facilities were also evaluated.

INTERSECTION IMPACTS AND MITIGATION

Under Build Plus Project Conditions without mitigations, the following intersections **(bolded)** and movements are potentially impacted:

- **(#2) North Lamar Boulevard / West 5th Street (PM peak hour)**
    - Northbound through movement (AM peak hour)
    - Eastbound right-turn movement (PM peak hour)
- **(#3) West Cesar Chavez / B.R. Reynolds Drive (PM peak hour)**
    - Westbound through movement (AM and PM peak hour)

- (#4) West Cesar Chavez / Sandra Muraida Way
  - Southbound left-turn movement (AM and PM peak hour)
  - Southbound right-turn movement (AM and PM peak hour)
- **(#5) South Lamar Boulevard / West Riverside Drive (PM peak hour)**
  - Westbound left-turn movement (PM peak hour)
  - Southbound through/right-turn movement (PM peak hour)
- (#11) South Lamar Boulevard / Barton Springs Road
  - Westbound right-turn movement (AM peak hour)
  - Southbound left-turn movement (AM peak hour)
  - Southbound right-turn movement (AM peak hour)

RECOMMENDATIONS / IMPROVEMENT SUMMARY

The mitigations detailed in the previous section are summarized in **Table ES-1** with the pro-rata percentage for each improvement.

TABLE ES-1: MITIGATION SUMMARY

Intersections		Improvement	Total Cost	Pro-Rata Share	Pro-Rata Cost
1	North Lamar Boulevard / West 6th Street[1]	- Prohibit NBL at West 6th Street - Prohibit SBL at West 5th Street - Signal re-timing	$12,500	100%	$12,500
2	North Lamar Boulevard / West 5th Street[1]				
3	West Cesar Chavez Street / B.R. Reynolds Drive	- Signal re-timing	$5,000	100%	$5,000
5	South Lamar Boulevard / West Riverside Drive[1]	- Construct 2-way cycle tracks on both sides of South Lamar Boulevard - Raised landscape median with select openings at driveways - Protected bike facility at West Riverside Drive - Dual southbound left turn bays at Barton Springs Road			
7	South Lamar Boulevard / Toomey Road[1]		$2,416,667	4.8%	$115,809
8	South Lamar Boulevard / Butler Road[1]		$2,416,667	4.1%	$99,086
11	South Lamar Boulevard / Barton Springs Road[1]		$2,416,666	1.2%	$30,024
		Totals	***$7,267,500***	***3.6%***	***$262,419***

Notes:
1. Improvements per the *South Lamar Boulevard Corridor Improvement Program.*
2. Improvements and cost estimates per the *South Lamar Boulevard Corridor Improvement Program.*

Source: BIG RED DOG Engineering, 2018.

1. INTRODUCTION

PURPOSE AND PROJECT DESCRIPTION

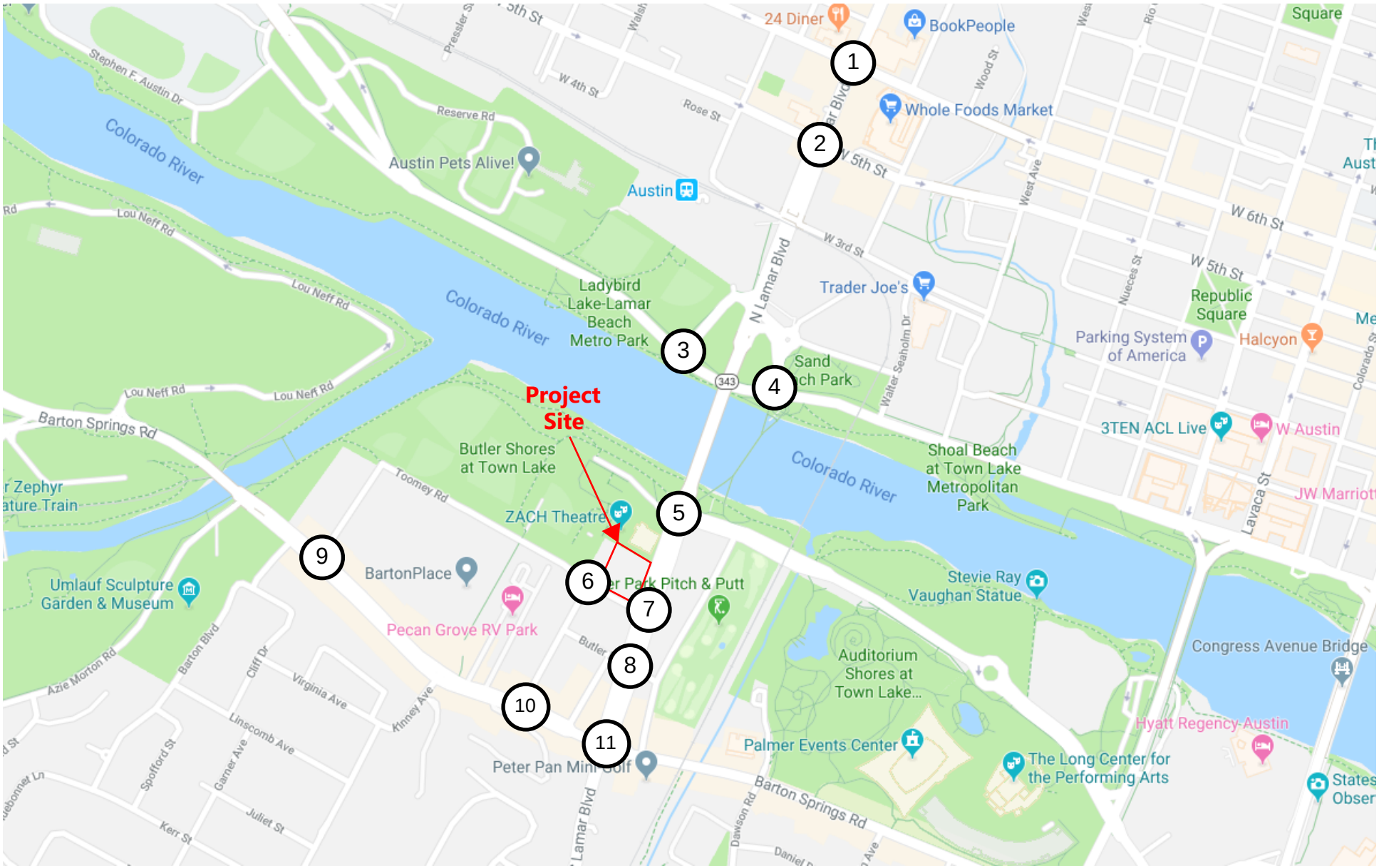
This report presents the results of the transportation impact analysis (TIA) for the 218 South Lamar mixed use development project (Project) in the City of Austin, Texas. This analysis was conducted to identify potentially significant adverse impacts of the proposed Project on the surrounding transportation system and recommend mitigation measures, if necessary. This study addresses the Project's impacts on the roadway system and the adjacent bicycle, pedestrian and transit network. Project impacts were evaluated following the guidelines of the City of Austin.

The Project would consist of 167,000 square feet of office space and approximately 13,000 square feet of high-turnover restaurant space. The Project would be located near the northwest corner of South Lamar Boulevard and Toomey Road intersection.

The Project includes two access driveways to serve the land use. The primary access would be located at South Lamar Boulevard and an alternative access would be provided on Toomey Road.

A high-turnover restaurant is currently located on the premises of the Project site and would be removed with the Project. It is anticipated the Project would be completed in 2020.

Figure 1 shows the location of the Project site, the surrounding transportation network, and study intersections. **Figure 2** shows the Project site plan.



Key: (x) Study Intersection

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Figure 1
Study Area and Intersections

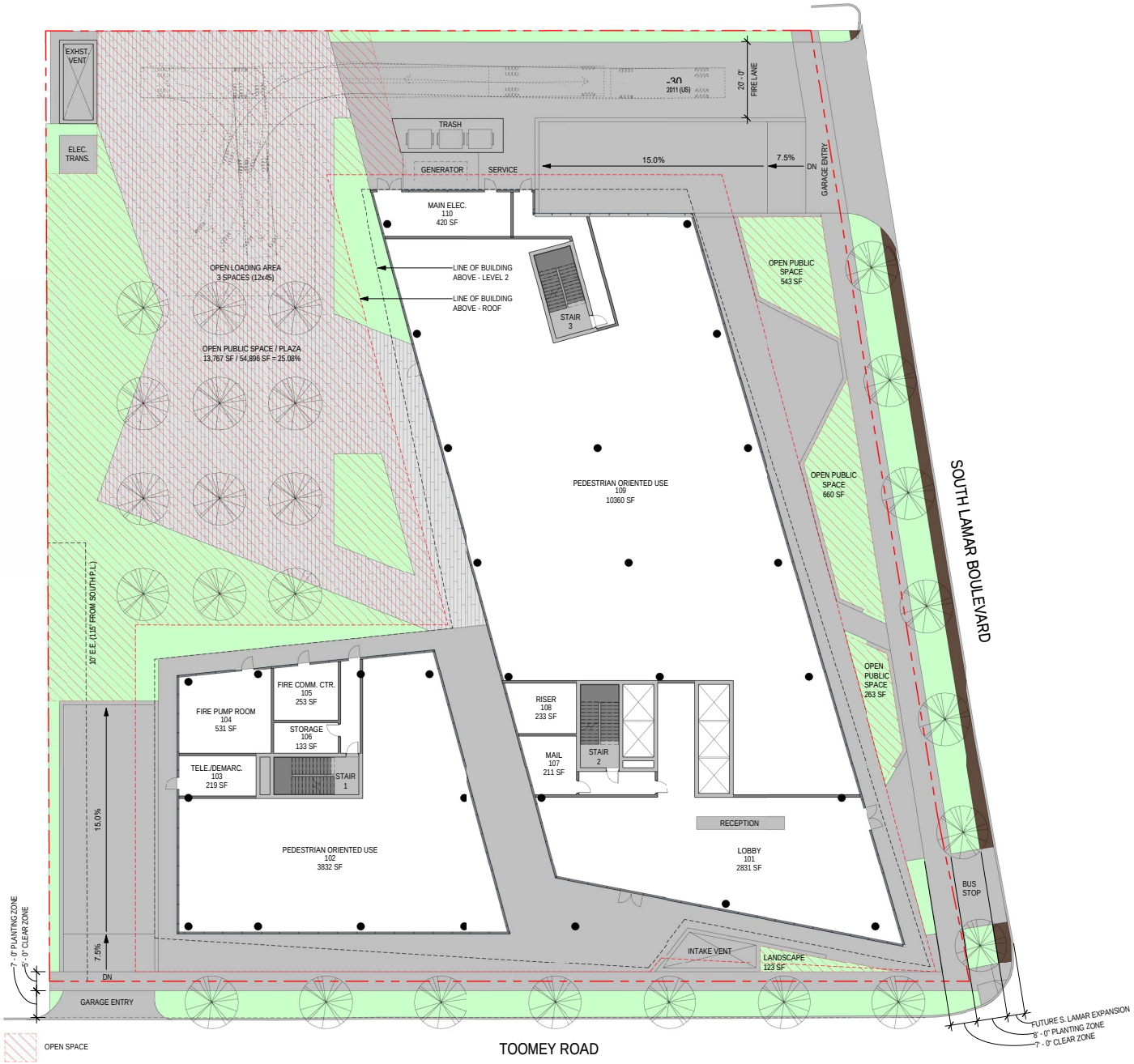

Figure 2
Project Site Plan

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PROJECT STUDY AREA

STUDY INTERSECTIONS

Project impacts on the study area roadway facilities were determined by measuring the effect Project traffic would have on intersection operations during the morning (7:00 to 9:00 AM) and evening (4:00 to 6:00 PM) peak periods, when traffic volumes on the surrounding roadways are highest.

A total of eleven external intersections were selected in consultation with City staff as study locations (the approved scope is attached in **Appendix A**). These intersections represent the locations most likely to experience traffic impacts associated with the Project. Also, two access driveways are included in the study. The study intersections are:

1. North Lamar Boulevard / West 6th Street
2. North Lamar Boulevard / West 5th Street
3. West Cesar Chavez Street / B.R. Reynolds Drive
4. West Cesar Chavez Street / Sandra Muraida Way
5. South Lamar Boulevard / West Riverside Drive
6. Jessie Street / Toomey Road
7. South Lamar Boulevard / Toomey Road
8. South Lamar Boulevard / Butler Road
9. Barton Springs Road / Sterzing Street
10. Barton Springs Road / Jessie Street
11. South Lamar Boulevard / Barton Springs Road
12. ***South Lamar Boulevard / Proposed Access Driveway***
13. ***Toomey Road / Proposed Access Driveway***

ANALYSIS SCENARIOS

The operations of the study intersections were evaluated during the weekday morning (AM) and weekday evening (PM) peak hours for the following three scenarios:

Scenario 1: *Existing Conditions* - Existing volumes obtained from counts collected in May of 2018.

Scenario 2: *No Build Conditions (2020)* – Existing volumes plus traffic from approved but not yet constructed developments in the area and growth for the year 2020, when the Project is projected to be completed.

Scenario 3: *Build Conditions (2020)* – Scenario 2 volumes plus traffic generated by the proposed Project.

TRAFFIC ANALYSIS METHODS

Operational traffic analyses focus on intersections rather than roadway segments, due to the capacity constraints typically occurring at the intersections. The operational performance of a roadway network is commonly described with the term level of service or LOS. LOS is a qualitative description of operating conditions, ranging from LOS A (free flow traffic conditions with little or no delay) to LOS F (oversaturated conditions where traffic flows exceed design capacity, resulting in long queues and delays). The LOS analysis methods outlined in the Highway Capacity Manual (Transportation Research Board, 2010) were used in this study. The HCM methods for calculating LOS for signalized intersections and unsignalized intersections are described below.

SIGNALIZED INTERSECTIONS

Traffic operations at signalized intersections were evaluated using the LOS method described in Chapter 18 of the 2010 Highway Capacity Manual. The Synchro software package was used to model traffic conditions throughout the Project study area. Synchro is a macrosimulation tool that uses deterministic equations to evaluate operations at an intersection. A signalized intersection's LOS is based on the weighted average control delay measured in seconds per vehicle. Control delay includes initial deceleration delay, queue move-up time (if multiple cycles are needed to clear the intersection), stopped delay, and final acceleration. **Table 1** summarizes the relationship between the control delay and LOS for signalized intersections.

TABLE 1: SIGNALIZED INTERSECTION LEVEL OF SERVICE DEFINITIONS

Level of Service	Description	Average Control Delay (seconds)
A	Operations with very low delay occurring with good traffic signal progression and/or short cycle lengths.	< 10
B	Operations with low delay occurring with good progression and/or short cycle lengths.	> 10 to 20
C	Operations with average delays resulting from fair progression. Individual cycle failures begin to appear.	> 20 to 35
D	Operations with longer delays due to a combination of unfavorable progression, long cycle lengths, or high V/C ratios. Many vehicles stop and individual cycle failures are noticeable.	> 35 to 55
E	Operations with high delay values indicating poor progression, long cycle lengths, and high V/C ratios. Individual cycle failures are frequent occurrences. This is considered to be the limit of acceptable delay.	> 55 to 80
F	Operations with delays unacceptable to most drivers occurring due to over-saturation.	> 80

Source: *Highway Capacity Manual*, Transportation Research Board, 2010.

UNSIGNALIZED INTERSECTIONS

In Chapters 19 and 20 of the Transportation Research Board's 2010 Highway Capacity Manual, the LOS for unsignalized intersections (side-street or all-way stop controlled intersections) is also defined by the average control delay per vehicle (measured in seconds). The control delay incorporates delay associated with deceleration, acceleration, stopping, and moving up in the queue. For side-street stop-controlled intersections, delay is calculated for each stop-controlled movement and for the uncontrolled left turns, if any, from the main street. The delay and LOS for the intersection as a whole and for the worst movement are reported for side-street stop intersections. The intersection average delay is reported for all-way stop intersections. **Table 2** summarizes the relationship between delay and LOS for unsignalized intersections. The delay ranges for unsignalized intersections are lower than for signalized intersections as drivers expect less delay at unsignalized intersections.

TABLE 2: UNSIGNALIZED INTERSECTION LEVEL OF SERVICE DEFINITIONS

Level of Service	Description	Average Control Delay Per Vehicle (Seconds)
A	Little or no delay.	≤ 10.0
B	Short traffic delays.	10.1 to 15.0
C	Average traffic delays.	15.1 to 25.0
D	Long traffic delays.	25.1 to 35.0
E	Very long traffic delays.	35.1 to 50.0
F	Extreme traffic delays with intersection capacity exceeded.	> 50.0

Source: *Highway Capacity Manual*, Transportation Research Board, 2010.

REGULATORY FRAMEWORK

Below are the key guiding and implementing policies that relate to this Project.

SOUTH LAMAR CORRIDOR IMPROVEMENT PLAN

South Lamar Corridor is part of the Corridor Construction Program funded by the 2016 Mobility Bond, which was approved by voters and would provide $482 million in funding for Corridor Improvement Projects. In April 2016, a Corridor Mobility Plan for South Lamar Boulevard was completed. The plan includes elements to improve safety, accessibility, and mobility for all users along the corridor. South Lamar Boulevard was categorized in six zones; the study area for this Project is represented in Zone 1 that starts at Riverside Drive and extends to Barton Springs Road.

The Plan envisions a cross-section that would include the existing four lanes of traffic, protected bike facilities and connected sidewalks for both sides of the road. Specific improvements within, near, and applicable to Zone 1 include:

- Prohibit left-turn movements from West 5th / 6th Street along North Lamar Boulevard during peak periods.
- Construct protected bike facility at intersection of South Lamar Boulevard and West Riverside Drive.
- Construct the recommended ultimate cross section described above between West Riverside Drive and Treadwell Street, including a raised landscaped median with opening at selected driveway.
- Construct a two-way cycle track in both directions on South Lamar Boulevard between Riverside Drive and Barton Springs Road.

- Install new traffic signals at South Lamar Boulevard / Riverside Drive and South Lamar Boulevard / Toomey Road for the updated cross-sections and intersection layouts.
- At South Lamar Boulevard / Barton Springs Road:
    - Construct protected bike facility at intersection.
    - Construct dual southbound left-turn bays.
    - Install northbound and southbound bus queue jumps using right-turn lanes (see page 17).
    - Convert northbound approach to two through lanes with third receiving lane for bus stop pullout (see page 17).

Other considerations for the entire corridor include reducing the posted speed limit to 35 mph, assigning right-of-way to buses at pullouts, modifying signal timings of pedestrian intervals at crosswalks, installation of B-cycle stations, installation of adaptive signal systems, and more.

The estimated cost for the entirety of the corridor's improvements is just over 60 million dollars. For the section between West Riverside Drive and Barton Springs Road, the estimated cost of construction is just over $7.2 million.

IMAGINE AUSTIN

In June 2012, the City of Austin City Council adopted a citywide comprehensive plan titled "*Imagine Austin*." The plan includes elements for land use and transportation, housing and neighborhoods, the economy, conservation and the environment, city facilities and services, society, and creativity, among others. With respect to the land uses and transportation, this Project would be consistent with the stated policies included in the plan. The Project would increase density closer to the urban core and be consistent with policies LUT P5, P6, P7, and P10, all regarding land use. Lamar Boulevard is designated as a corridor for redevelopment. No specific recommendations are made in the study area with respect to other transportation network improvements.

CITY OF AUSTIN BICYCLE MASTER PLAN

In November 2014, the City of Austin City Council adopted a citywide bicycle master plan. The plan includes recommendations for the City's bicycle network and elements of *Imagine Austin*. The plan recommends that protected bicycle lanes be installed on South Lamar Boulevard.

2025 AUSTIN METROPOLITAN AREA TRANSPORTATION PLAN

The 2025 Austin Metropolitan Area Transportation Plan (AMATP) guides planning for the future of transportation in Austin. The AMATP was adopted in its current form by the City of Austin City Council in

August of 2003. The AMATP envisions South Lamar Boulevard and Barton Springs Road as four-lane major divided arterials in the study area.

AUSTIN STRATEGIC MOBILITY PLAN

Austin City Council is expecting to adopt the Austin Strategic Mobility Plan (ASMP) by summer 2018. The ASMP would include policies, programs and projects recommendations for all modes of transportation for the next ten years. The plan would expand the vision of the Imagine Austin Comprehensive Plan into actionable mobility-related goals and objectives to guide Austin's near- and long-term transportation investments.

TRAFFIC IMPACT ANALYSIS/STUDY GUIDELINES

The City of Austin Transportation Criteria Manual (2014) provides the guidelines and requirements for a traffic impact analysis to be submitted as a support document with submittal documents. The scope for this Project has been reviewed with and approved by City of Austin staff. The guidelines include topics such as defining the study area, obtaining traffic counts, identifying the peak periods for analysis, defining analysis scenarios, discussion of on-site access and circulation, the intersection analysis method, forecasting traffic, assessment of traffic impact significance, mitigation approach, assessment of impacts on non-auto modes of travel, and assessment of the need for roadway upgrades.

SIGNIFICANT IMPACT CRITERIA

The impacts of the Project were evaluated by comparing the results of the level of service calculations of the Build Conditions to the results of the No Build Conditions. The City of Austin considers overall intersection levels of service A to D to be acceptable, while LOS E and LOS F are unacceptable. If an intersection operates at LOS E or LOS F without the Proposed Project (LOS of No Build Conditions or Scenario 2 of this report), then the standard is to maintain that same or better LOS for Build Conditions with the addition of traffic resulting from the Proposed Project.

The impacts of the Project were evaluated by comparing the results of the level of service calculations under Existing Plus Background Plus Project Conditions to the results under Existing Plus Background Conditions. As defined in Section 2.3.4 of the City of Austin Transportation Criteria Manual, LOS D shall be the minimum acceptable standard. If an intersection operates at LOS E or LOS F without the Proposed Project, the standard is to maintain the level of service with addition of traffic resulting from the Proposed Project.

New Draft Guidelines were issued on December 8, 2016, which include requirements to analyze individual movements at each study intersection at locations in the Non-Urban Core. For movements operating at LOS E or LOS F, volume-to-capacity ratios greater than 0.95, or exhibiting excessive queuing, mitigations should be identified to eliminate those conditions.

However, within the Urban Core, LOS E and LOS F may be considered acceptable based on the adjacent transportation system and the constraints with respect to making improvements.

Additionally, the Project has been reviewed with respect to non-auto modes, including:

- Potential conflicts for pedestrians and bicyclists;
- Satisfaction of Americans with Disabilities Act requirements;
- Exacerbation of a current unsafe pedestrian or bicycle condition;
- Potential internal circulation conflicts for pedestrians or motorists;
- Potential transit demand and ability of local providers to accommodate that demand;
- Project parking demand and ability proposed parking supply to accommodate that demand; or
- Insufficient or inadequate accessibility for delivery or service vehicles.

REPORT ORGANIZATION

This report is divided into chapters as described below:

- **Chapter 2 – Existing Conditions** describes the transportation system near the Project site, including the surrounding roadway network, existing bicycle and pedestrian facilities, morning and evening peak period intersection turning movement volumes and intersection levels of service.
- **Chapter 3 – Project Transportation Characteristics** describes the land use components of the Project and the method used to estimate the amount of traffic generated by it. The distribution and assignment of vehicle traffic on the roadway system is also discussed in this chapter.
- **Chapter 4 – No Build and Build Conditions (2020)** addresses the conditions with approved, but not yet constructed projects and other background growth by 2020, when construction of the Project is planned to be completed. The chapter discusses these conditions both without and with the Project.
- **Chapter 5 – Site Access and Circulation** describes the Project access and internal circulation for all travel modes and discusses Project vehicular, pedestrian and bicycle impacts.

2. EXISTING CONDITIONS

This chapter describes the Existing Conditions of the roadway facilities, pedestrian, bicycle facilities and transit service near the Project site. It also presents existing traffic volumes and operations for the study intersections with the results of level of service calculations.

EXISTING STREET SYSTEM

Regional vehicular access to the Project area is likely to be provided by TX-1, TX-71/US-290, TX-360, and I-35, while local access is provided by Lamar Boulevard, Cesar Chavez Street, West Riverside Drive, and Barton Springs Road. The local access roadway and other significant roadways in the study area are described as follows.

South Lamar Boulevard is a four-lane major arterial that connects TX-71/US-290 in the south with West Cesar Chavez Street in the north. North Lamar Boulevard connects West Cesar Chavez Street in the south with Howard Lane in the north. The posted speed limit is 40 miles per hour (mph) in the study area. Adjacent to the Project, South Lamar Boulevard has large, grassy medians with openings at certain intersections and driveways; there is an opening just south of the proposed Project driveway. Across the street from the site, there is a driveway providing access to Bridges on the Park condominium complex. There is also a driveway parallel to the proposed Project driveway providing access to ZACH Topfer Theatre. In the vicinity of the Project, sidewalks are provided on both sides, but bicycle lanes terminate south of Barton Springs Road and are not available to the north through the study area.

West Sixth Street is a three- to four-lane arterial (in the study area) that connects Lake Austin Boulevard in the west with Calles Street in the east. West of I-35, this street is for one-way travel, with vehicles heading westbound only. The posted speed is 30 mph in the study area. In the study area, sidewalks are continuous on both sides; there are no bike lanes on Sixth Street in the study area.

West Fifth Street is a three- to four-lane arterial (in the study area) that connects Lake Austin Boulevard in the west with Airport Boulevard in the east. West of I-35, this street is for one-way travel, with vehicles heading eastbound only (completing a couplet with West Sixth Street). There is a posted speed of 30 mph in the study area. In the study area, sidewalks are continuous on both sides; there are no bike lanes in this portion of the study area.

B.R. Reynolds Drive is a four-lane local road that connects North Lamar Boulevard in the north with West Cesar Chavez in the south. This street serves as a connector for movements to and from southbound Lamar

Boulevard and West Cesar Chavez Street; it also provides a connection to Austin's Amtrak Station, the Townlake YMCA, Austin Pets Alive!, and several park areas. In both directions, there is a left-turn only and a right-turn only lane. There is a posted speed of 30 mph. In the study area, sidewalks are continuous on the west side, and are discontinued after about 150 feet on the east side (at a Capital Metro bus stop).

Sandra Muraida Way is a three-lane local road that connects North Lamar Boulevard in the north with West Cesar Chavez in the south. This street serves as a connector for movements to and from northbound Lamar Boulevard and West Cesar Chavez Street; it also provides a connection to Gables Park and the Seaholm District. There are two southbound turn lanes (right-turn only and left-turn only) and one northbound lane leading to a roundabout. There is a posted speed of 30 mph. There is a shared use path on the east side of the road in the study area.

West Cesar Chavez Street is a four-lane arterial that connects MoPac Expressway (TX-1) in the west with Airport Boulevard / US-183 in the east. In the study area, there are two eastbound lanes and two westbound lanes, as well as dedicated left turn lanes when approaching certain intersections. There is a posted speed of 40 mph when going westbound and 35 mph when going eastbound. There are sidewalks and Class I bicycle lanes in the study area (Lance Armstrong Bikeway and the Ann and Roy Butler Hike and Bike Trail).

West Riverside Drive is a four-lane arterial that connects the Ann and Roy Butler Hike and Bike Trail in the west to US-183 in the east. In the study area, there are two eastbound lanes and two westbound lanes, as well as a dedicated eastbound left-turn lane when approaching the intersection. There is a posted speed of 30 mph east of South Lamar Boulevard and 15 mph west of South Lamar Boulevard. There are sidewalks on both sides of the road in the study area.

Barton Springs Road is a four-lane arterial that connects the MoPac Expressway (TX-1) in the west with South Congress Avenue in the East. In the study area, there are two eastbound lanes and two westbound lanes, as well as designated turn lanes at certain intersections. There are sidewalks in both directions in the study area. There are Class II bicycle lanes westbound and eastbound within the study area.

Toomey Road is a two-lane local road that connects Sterzing Street in the west to South Lamar Boulevard in the east. In the study area, there is one eastbound and one westbound lane. There is a posted speed of 30 mph. There are sidewalks on both sides of Toomey Road, though the west side is discontinued past Jessie Street.

Jessie Street is a two-lane local road that connects Toomey Road in the north with Barton Springs Road in the south. There is a posted speed of 30 mph. There are sidewalks on the west side of the road on the southern section, but other than that, sidewalks are sparse and discontinuous; construction on the east side of the street has a portion of sidewalk blocked.

Butler Road is a two-lane local road that connects Jessie Street in the west and Lee Barton Drive in the east. There is a posted speed of 20 mph. There are sidewalks on both sides of the road in the study area. Most left turns are not permitted at the intersection with South Lamar Boulevard (except southbound to eastbound).

Sterzing Street is a two-lane local road that connects Toomey Road in the north and Barton Springs Road in the south. There is a posted speed of 20 mph. There are sidewalks on the northwest side of the road, but other than that, sidewalks are sparse and discontinuous.

EXISTING PEDESTRIAN FACILITIES AND OBSERVATIONS

Pedestrian facilities include sidewalks, crosswalks, pedestrian signals and off-street pedestrian paths. As mentioned, there are complete sidewalks along North and South Lamar Boulevard, West 6th Street, West 5th Street, Sandra Muraida Way, West Riverside Drive, and Butler Road, with partial sidewalks on B.R. Reynolds Drive, Toomey Road, Jessie Street, and Sterzing Street near the study area.

Marked crosswalks are provided at all four crossings at (#1) North Lamar Boulevard / West 6th Street, (#2) North Lamar Boulevard / West 5th Street, (#5) South Lamar Boulevard / West Riverside Drive, (#8) South Lamar Boulevard / Barton Springs Road; three crossings at (#6) South Lamar Boulevard / Toomey Road; and two crossings at (#3) West Cesar Chavez / B.R. Reynolds Drive and West Cesar Chavez / Sandra Muraida Way. All referenced intersections also provide pedestrian signals for each crossing.

During data collection, the highest concentration of pedestrians were observed at the (#1) North Lamar Boulevard / West 6th intersection during both peak hours, with 133 pedestrians during the AM peak hour and 300 during the PM peak hour.

EXISTING BICYCLE FACILITIES AND OBSERVATIONS

Bikeway planning and design in Texas typically relies on guidelines and design standards established by the Texas Department of Transportation (TxDOT) in the Texas Manual on Uniform Traffic Control Devices (2011). Bicycle facilities comprise paths (Class I), lanes (Class II), and routes (Class III) as described below.

- *Class I Bikeway (Bicycle Path)* provides a completely separate right-of-way and is designated for the exclusive use of bicycles and pedestrians with vehicle and pedestrian cross-flow minimized. Class I paths are typically eight to ten feet wide excluding shoulders and are generally paved.

- *Class II Bikeway (Bicycle Lane)* provides a restricted right-of-way and is designated for the use of bicycles with a striped lane on a street or highway. Bicycle lanes are generally four to six feet wide. Adjacent vehicle parking and vehicle/pedestrian cross-flow are permitted.

- *Class III Bikeway (Bicycle Route)* provides for a right-of-way designated by signs or pavement markings (sharrows) for shared use with pedestrians or motor vehicles. Sharrows are a type of pavement marking (bike and arrow stencil) placed to guide bicyclists to the best place to ride on the road, avoid car doors, and remind drivers to share the road with cyclists.

Currently, there are no bike lanes on South Lamar Boulevard north of Barton Springs Road, though the Lance Armstrong Bikeway, a Class I bikeway, runs east/west through the Project study area along West Cesar Chavez Street. Class II bicycle lanes are also available on South Lamar Boulevard south of Barton Springs Road.

The highest concentration of cyclists was observed at the (#5) South Lamar Boulevard / West Riverside Drive intersection during both peak hours, with nine cyclists during the AM peak hour and 21 cyclists during the PM peak hour. The *South Lamar Boulevard Corridor Improvement Program* has suggested improvements by providing two-way bike lanes on both sides of South Lamar Boulevard between Riverside Drive and Barton Springs Road in the study area. Protected intersection treatments are also recommended. No bicycle improvements have been assumed as part of this analysis.

Existing bicycle facilities in the vicinity of the Project site are shown in **Figure 3**.

EXISTING TRANSIT SERVICE

CAPITAL METRO

Capital Metro is the City of Austin's regional public transportation provider. Since 1985, Capital Metro has provided service and now registers more than 30 million boardings per year. Capital Metro provides local routes, Express and MetroRapid routes, and shuttle routes to the University of Texas – Austin. Currently, several routes provide bus service near the Project site. The nearest Capital Metro Bus stop is on South Lamar Boulevard and Toomey Road, immediately adjacent to the Project site.

The **MetroBus 3 Burnet Manchaca** provides bus service between Turk Lane and Great Hills Trail. The route generally runs along Turk Lane, Cullen Lane, West Slaughter Lane, Manchaca Road, South Lamar Boulevard, Cesar Chavez Street, Lavaca Street, Guadalupe Street, West 38th Street, Medical Parkway, Burnet Road, West Braker Lane, Jollyville Road and Great Hills Trail. The nearest stop is Barton Springs Station (NB) on South

Lamar Boulevard, in front of the retail just south of the Project site and 220 Lamar Boulevard /Toomey Road (SB), in front of the southeast end of the Project site. The route operates on weekdays, running from 5:00 AM to 11:00 PM on weekdays in the north and southbound directions with 30-minute headways. During weekends the route operates from 6:00 AM to 11:00 PM (Saturdays) or 10:00 PM (Sundays) in the north and southbound directions with 30-minute headways.

The **MetroBus 3 7th Street** provides bus service between Shady Lane and Campbell Street along East/West 7th Street and West 5th Street. The nearest east and westbound stop is on West 5th Street on 5th and Baylor Street. The route operates seven days per week, running from 5:00 AM to 12:25 AM on weekdays with 15 to 30 minute headways typically. On weekends, the route operates from 6:00 AM to 12:25 AM (Saturdays) or 6:00 AM to 11:30 PM (Sundays) with the same headways.

The **MetroBus 30 Barton Creek Square** provides bus service between West 12th Street and Western Trails Boulevard. The route generally runs along Lavaca Street, South 1st Street, Barton Springs Road, South Mopac Expressway, Bee Caves Road, Walsh Tarlton Lane, West Ben White Boulevard, and Western trails Boulevard. The nearest north and southbound stop is at the intersection of Barton Springs Road and Jessie Street. The route operates seven days per week, running from 5:00 AM to 11:15 PM on weekdays with 25 to 35-minute headways typically. On the weekends, the route operates from 6:00 AM to 11:00 PM (Saturdays) or 6:00 AM to 10:00 PM (Sundays) with the same headways.

The **Metro Flyer 103** provides bus service between East Dean Keaton Street and the intersection of West Slaughter Lane and Riddle Road. In the northbound direction, the route runs along West Slaughter Road, Curlew Drive, Guidepost Trail, Leo Street, Seminary Ridge Drive, Manassas Drive, West Gate Boulevard, West William Cannon Drive, Manchaca Road, South Lamar Boulevard, West 5th Street, Lavaca Street, West 7th Street, Trinity Street, and San Jacinto Boulevard. The nearest northbound stop is 5th Street/Bowie located north of the river 0.7 miles from the Project site. Similarly, southbound travels along the same route with the exception of following San Jacinto Boulevard to 8th Street, Guadalupe Street and West 6th Street before picking up on North Lamar Boulevard. The nearest southbound stop is on 500 North Lamar Boulevard /5th Street, located north of the river about two-thirds of a mile from the Project site. The route operates only during weekdays, running from 6:15 AM to 6:45 PM with 27 to 30-minute headways.

The **MetroBus 111 South Mopac Flyer** provides bus service between South Bay Lane and East Dean Keaton Street. The route generally runs along Escarpment Boulevard, West Slaughter Lane, Beckett Road, Convict Hill Road, Brush Country Road, West William Cannon Drive, South Mopac Expressway, West Cesar Chavez Street, Lavaca Street, West 7th Street, Trinity Street, and San Jacinto Boulevard. The nearest north and southbound stop is the Seaholm Station on West Cesar Chavez Street, just east of the study area. The route

operates northbound in the mornings (6:30 AM to 9:00 AM) and southbound in the evenings (4:30 PM to 7:00 PM) and only operates on weekdays, with 30 minute headways.

The **MetroBus 171 Oak Hill Flyer** provides bus service between TX-71 and East 32nd Street. The route generally runs along Silvermine Drive, Red Willow Drive, Scenic Brook Drive, TX-71, Highway 290, South Mopac Expressway, West Cesar Chavez Drive, Lavaca Street, West 7th Street, East 7th Street, Trinity Street, San Jacinto Boulevard, East Dean Keeton Street, and Red River Street. The nearest north and southbound stop is the Seaholm Station on West Cesar Chavez Street, just east of the study area. The route operates only on weekdays, running northbound from 6:00 AM to 2:00 PM and running southbound from 12:30 PM to 7 PM. The route has roughly 20-minute headways.

The **MetroBus 484 – Night Owl South Lamar** provides bus service between Victory Drive and West 6th Street. The northbound route generally runs along Victory Drive, Panther Trail, South Lamar Boulevard, West 5th Street, Lavaca Street, West 7th Street, Congress Avenue and West 6th Street. The closest stop is on the corner of South Lamar Boulevard and Toomey Road, adjacent to the Project site. The route operates on weekdays and Saturdays, running from 12:10 AM to 3:35 AM with thirty-five minute headways typically.

The **MetroRapid 803 Lamar / Burnet** provides bus service between Western Trails Boulevard and Alterra Parkway near Burnet Road. The route generally runs along Western Trails Boulevard, West Gate Boulevard, Lamar Boulevard, Cesar Chavez Street, Lavaca Street, Guadalupe Street, West 38th Street, North Lamar Boulevard, Sunshine Drive, West 49th Street, Burnet Road, Read Granberry Trail, West Braker Lane, Burnet Road, Palm Way and Alterra Parkway. The nearest north and southbound stop is Barton Springs Station located just south of the Project site in front of retail. The route operates seven days per week, running from 5:00 AM to 12:45 AM on weekdays with 10 to 20-minute headways typically. On weekends, the route operates from 6:00 AM to 3:00 AM (Saturdays) or 6:00AM to 11:30 PM (Sundays) with the same headways.

The **MetroExpress 980 North Mopac Express** provides bus service between East Dean Keeton Street to Round Rock Avenue. The route generally runs along East Dean Keeton Street, Guadalupe Street, West Cesar Chavez Street, North Mopac Expressway, Century Park Boulevard, State Highway 45, I-35, and Round Rock Avenue. The route operates only on weekdays, running southbound in the morning (5:45 AM to 10:00 AM) and northbound in the afternoon (3:15 PM to 7:30 PM). The route has 15 to 30-minute headways.

The **MetroExpress 981 Oak Knoll Express** provides bus service between East Dean Keeton Street to Jollyville Road. The route generally runs along East Dean Keeton Street, Guadalupe Street, West Cesar Chavez Street, North Mopac Expressway, Research Boulevard, Great Hills Trail, and Jollyville Road. The route operates only on weekdays, running southbound in the morning (6:45 AM to 8:00 AM) and northbound in the afternoon (4:50 PM to 6:45 PM). The route has 15 to 20-minute headways.

The **MetroExpress 985 Leander/Lakeline Direct** provides bus service from San Jacinto Boulevard to West Metro Drive. The route generally runs along San Jacinto Boulevard, East 15th Street, West 15th Street, Guadalupe Street, West Cesar Chavez Street, North Mopac Expressway, State Highway 45, North Lake Creek Parkway, Lakeline Mall Drive, South Lakeline Boulevard, South Bell Boulevard, Ranch Road 2243, Highway 183, and West Metro Road. The route operates only on weekdays, running northbound from 6:30 AM to 11:50 PM and running southbound from 4:50 AM to 10:00 PM. The route typically operates with 30 minute to one hour headways.

CONNECTIONS 2025 TRANSIT PLAN

It is important to note that, as per the Connections 2025 Transit Plan, there would be no north/south buses running on Lamar Boulevard from West 5th Street to Barton Springs Road, roughly the extent of the study area. The MetroRapid 803 Lamar / Burnet would run down Guadalupe Street and South First Street instead, turn right onto Barton Springs Road, then turn left and continue south on South Lamar Boulevard. The Connections 2025 Transit Plan Route Descriptions states that all other routes along this corridor mentioned prior (MetroBus 3, Metro Flyer 103, and MetroBus 484) would be replaced by the improved 803 route.

All MetroExpress routes would remain unchanged through this plan.

The South Lamar Corridor Improvement Program has proposed northbound and southbound bus queue jumps (using right turn lanes) and a bus stop pullout on South Lamar Boulevard north of Barton Springs Road. Due to the fact that there would no longer be buses running north/south in the study area on Barton Springs Road, we are assuming that these changes would not be implemented. The Austin Transportation Department and Capital Metro would need to coordinate on these potential changes to their plans and services if they have not already.

Existing public transit facilities in the vicinity of the Project site are described below and shown in **Figure 4**. No transit improvements have been assumed as part of this analysis.

Key: Class I Bicycle Path
Class II Bicycle Lanes

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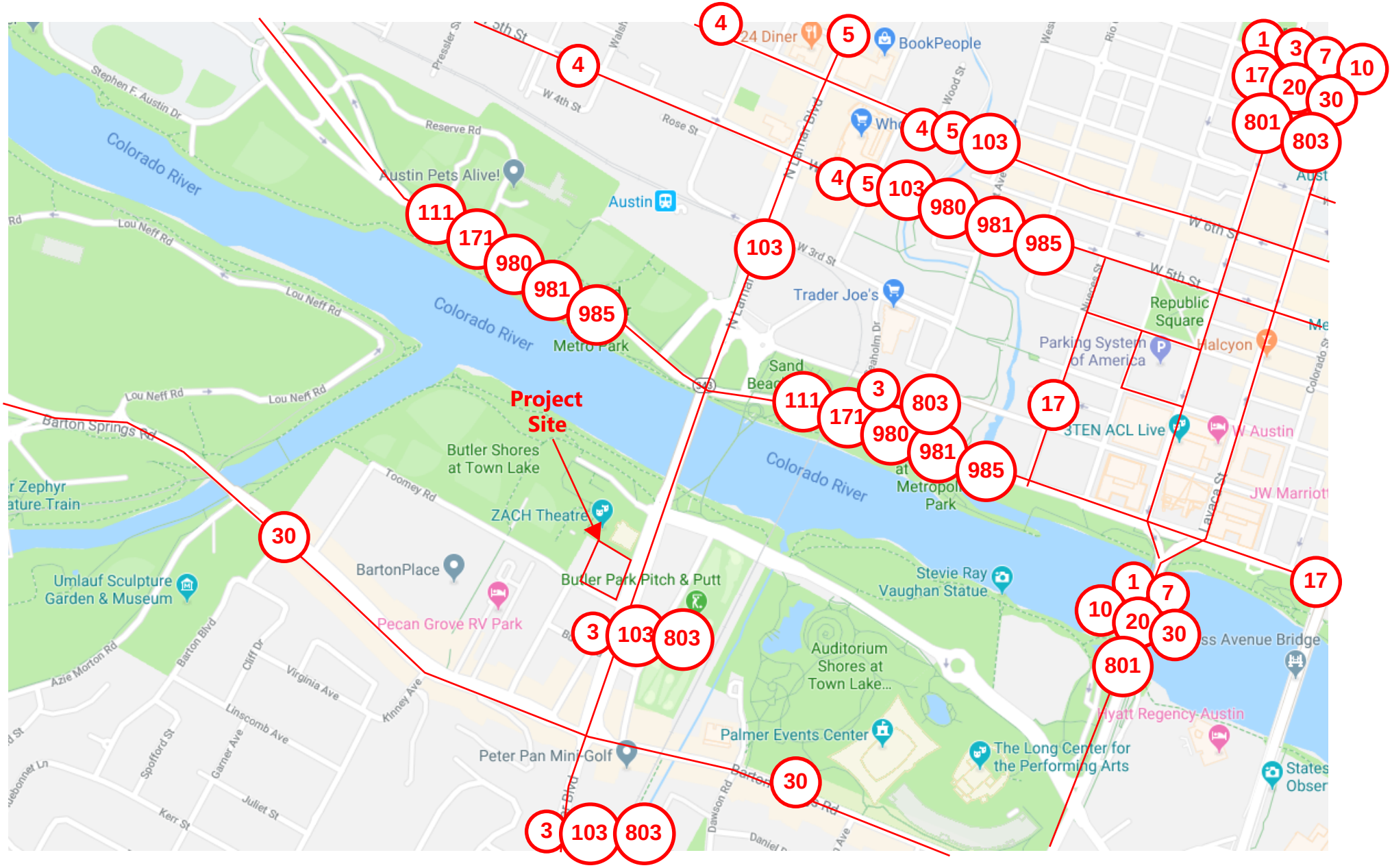
Figure 3
Existing Bicycle Facilities



Key: —30— Transit Route

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Figure 4
Existing Transit Facilities

EXISTING INTERSECTION VOLUMES AND LANE CONFIGURATIONS

Weekday morning (7:00 to 9:00 AM) and evening (4:00 to 6:00 PM) peak period intersection turning movement counts were conducted at the study locations in May of 2018 with area schools in-session. The single hour with the highest traffic volumes throughout the study area during each count period was identified as the peak hour (8:00 AM to 9:00 AM and 4:30 PM to 5:30 PM). Existing lane configurations and signal controls were obtained through field observations.

The peak hour volumes are presented in **Figure 5** with the existing lane configurations and traffic control devices (stops signs or traffic signals). Detailed count data and signal timing worksheets are contained in **Appendix B**. Existing intersection lane configurations, signal timings, and peak hour turning movement volumes were used to calculate the levels of service for the key intersections during each peak hour.

EXISTING INTERSECTION LEVELS OF SERVICE

The results of the LOS analysis for Existing Conditions are presented in **Table 3**. Field observations conducted during the peak periods were used to validate the results of the AM and PM peak hour Synchro analysis. **Appendix C** contains the corresponding Synchro output sheets, which show the delay (and corresponding level of service), volume-to-capacity (v/c) ratio, and 95th percentile queue length for each movement.

The results of the LOS calculations indicate that all signalized study intersections operate at acceptable levels of service according to its designated LOS standard. Although the intersections themselves are operating acceptably, many movements within the intersections are not performing up to standards. For each signalized intersection, there is at least one movement performing at LOS E or F.

During the AM peak hour, the following approaches or movements operate at LOS E or LOS F:

- Westbound through movement at (#1) North Lamar Boulevard / West 6th Street
- Eastbound left-turn movement, eastbound through/right-turn movement, and the southbound left-turn movement (#2) North Lamar Boulevard / West 5th Street
- Southbound left-turn movement at (#3) West Cesar Chavez Street / B.R. Reynolds Drive
- Southbound left-turn movement and southbound right-turn movement at (#4) West Cesar Chavez Street / Sandra Muraida Way
- Westbound through movement and westbound right-turn movements at (#5) South Lamar Boulevard / West Riverside Drive

- Eastbound left-turn movement at (#7) South Lamar Boulevard / Toomey Road
- Eastbound left-turn movement, westbound left-turn movement, westbound through movement, and southbound right-turn movement at (#11) South Lamar Boulevard / Barton Springs Road

During the AM peak hour, there is some congestion in the northbound direction on South Lamar Boulevard, emanating from the West 5th Street intersection and continuing through the West Riverside Drive and Barton Springs Road intersections. Congestion and queuing typically extend past Barton Springs Road to near Hether Street / West Mary Street, south of the study area.

During the PM peak hour, the following approaches or movements operate at LOS E or LOS F:

- Northbound left-turn movement at (#1) North Lamar Boulevard / West 6th Street
- Southbound left-turn movement at (#2) North Lamar Boulevard / West 5th Street
- Westbound through movement and southbound left-turn movement at (#3) West Cesar Chavez Street / B.R. Reynolds Drive
- Southbound left-turn movement and southbound right-turn movement at (#4) West Cesar Chavez Street / Sandra Muraida Way
- Westbound left-turn movement and northbound left-turn movement at (#5) South Lamar Boulevard / West Riverside Drive
- Eastbound left-turn movement and eastbound right-turn movement at (#7) South Lamar Boulevard / Toomey Road
- Southbound approach at (#9) Barton Springs Road / Sterzing Street
- Southbound approach at (#10) Barton Springs Road / Jessie Street
- Eastbound left-turn movement, eastbound through movement, eastbound right-turn movement, westbound left-turn movement, westbound through movement, and northbound left-turn movement at (#11) South Lamar Boulevard / Barton Springs Road

During the PM peak hour, there is corresponding congestion southbound on South Lamar Boulevard, emanating from the West Riverside Drive intersection. Queuing extends back north of West 24th Street.

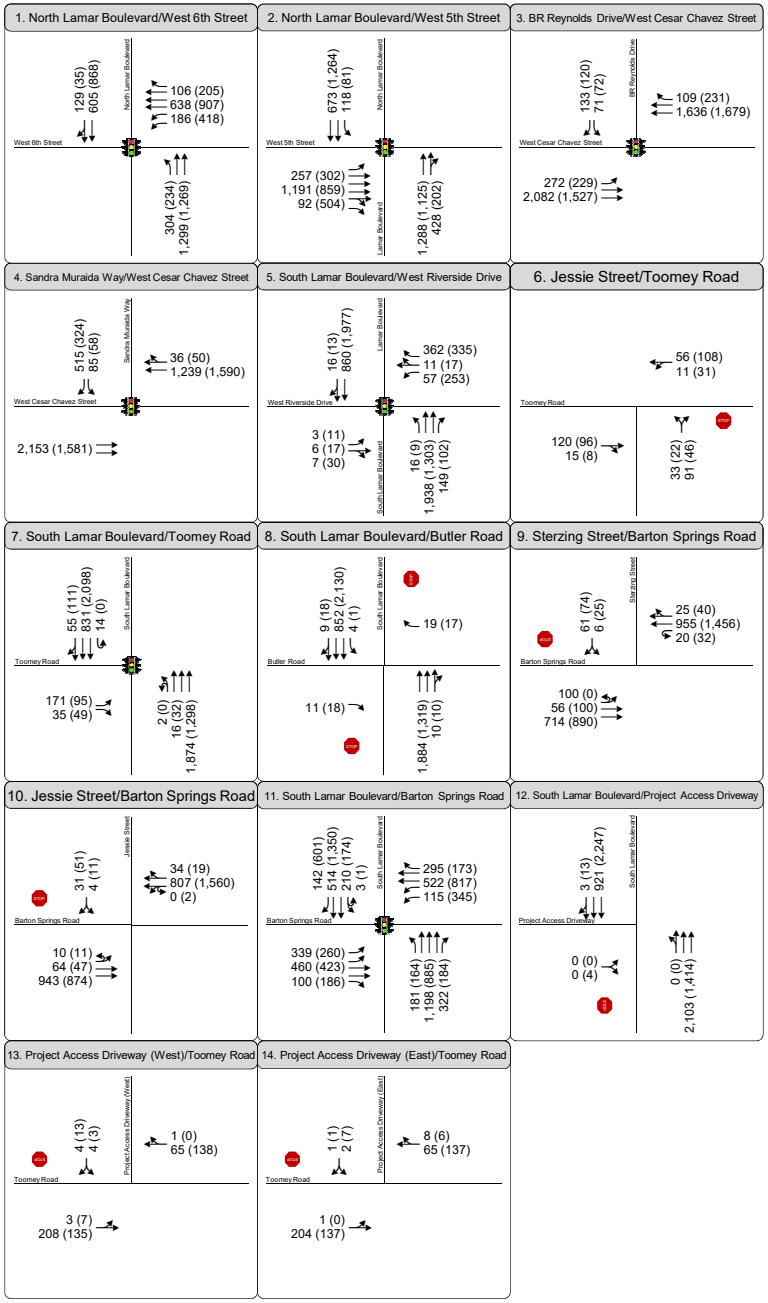

Figure 5
Lane Configurations, Traffic Controls, and Peak Hour Traffic Volumes
Existing Conditions

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TABLE 3: EXISTING INTERSECTION LEVELS OF SERVICE

	Intersection	Control	Peak Hour[1]	Delay[2]	LOS[3]
1	North Lamar Boulevard / West 6th Street	Signal	AM PM	30.1 34.9	C C
2	North Lamar Boulevard / West 5th Street	Signal	AM PM	42.9 35.5	D D
3	West Cesar Chavez Street / B.R. Reynolds Drive	Signal	AM PM	24.9 36.9	C D
4	West Cesar Chavez Street / Sandra Muraida Way	Signal	AM PM	18.8 17.2	B B
5	South Lamar Boulevard / West Riverside Drive	Signal	AM PM	16.6 37.7	B D
6	Jessie Street / Toomey Road	SSSC	AM PM	4.4 (10.1) 2.9 (9.8)	A (B) A (A)
7	South Lamar Boulevard / Toomey Road	Signal	AM PM	14.6 13.1	B B
8	South Lamar Boulevard / Butler Road	SSSC	AM PM	0.1 (15.5) 0.1 (10.3)	A (C) A (B)
9	Barton Springs Road / Sterzing Street	SSSC	AM PM	0.8 (14.1) 2.1 **(37.2)**	A (B) A (**E**)
10	Barton Springs Road / Jessie Street	SSSC	AM PM	0.6 (12.4) 1.7 **(53.4)**	A (B) A (**F**)
11	South Lamar Boulevard / Barton Springs Road	Signal	AM PM	40.7 51.5	D D

Notes:
1. AM = morning peak hour, PM = evening peak hour
2. Entire intersection weighted average control delay expressed in second per vehicle for signalized intersections and all-way stop-controlled intersections. Total control delay for the worst approach is also presented in parentheses for side-street stop controlled intersections.
3. LOS = Level of Service. LOS calculations conducted using the Synchro level of service analysis software package, which applies the method described in the Highway Capacity Manual.

Bold text indicates intersection operates at a deficient Level of Service.
AWSC = All-Way Stop Control; SSSC = Side-Street Stop Control
Source: BIG RED DOG Engineering, 2018.

3. PROJECT TRANSPORTATION CHARACTERISTICS

This chapter presents the method used to estimate the amount of traffic generated by the proposed development and how it would be distributed to the roadway system. The amount of traffic added to the roadway system is estimated using a three-step process: (1) trip generation, (2) trip distribution, and (3) trip assignment. The first step estimates the amount of traffic added to the roadway network. The second step estimates the directions of travel to and from the Project site. The new trips are assigned to specific street segments and intersection turning movements during the third step. The results of the process are described in the following sections.

TRIP GENERATION METHODOLOGY

The purpose of the vehicular trip generation estimate is to approximate the number of new vehicle trips entering and exiting the site for various purposes (e.g., resident, employee, and visitor trips) during a selected time period. Currently-accepted methodologies, such as the rates provided by the Institute of Transportation Engineers (ITE) *Trip Generation Manual, 10th Edition*, are primarily based on data collected at suburban, single-use, freestanding sites. However, this version of *Trip Generation Manual* accounts for different land uses, so "Dense Multi-Use Urban" estimates were used for this site. No modifications are made for internalization of trips, but a 15% reduction was taken into consideration, accounting for alternate modes of transit (bicycles, transit, walking).

Table 4 summarizes the estimated trip generation for the Project for a typical weekday. As shown in Table 4, the Project is estimated to generate 3,181 net daily external vehicle trips, with 294 net trips occurring during the AM peak hour, and 277 occurring during the PM peak hour. No consideration was given to the trips generated by the existing uses on the site, further providing a conservative analysis.

TABLE 4: 218 SOUTH LAMAR BOULEVARD DEVELOPMENT NET NEW EXTERNAL VEHICLE TRIPS

Description	Land Use	ITE Code	Units	Daily	Weekday AM Peak			Weekday PM Peak		
				Total	In	Out	Total	In	Out	Total
Office	General Office Building[1]	710	167 KSF	1,942	155	23	178	26	137	163
Services	High-Turnover Restaurant[2]	932	13 KSF	1,239	64	52	116	71	43	114
External Vehicle Trips				**3,181**	**219**	**75**	**294**	**97**	**180**	**277**

Notes:
1. ITE Trip Generation (10th Edition) Category 710 - General Office Building (Peak Hour, AM & PM):
   Daily: T = 13.68 * X * .85
   AM: T = 1.25 * X * .85 ; 87% in, 13% out
   PM: T = 1.15 * X * .85 ; 22% in, 78% out
   Where T= number of vehicle trips, X = units
2. ITE Trip Generation (10th Edition) Category 932 - High-Turnover Restaurant (Adj Streets, 7-9A, 4-6P):
   Daily: T = 112.18 * X * .85
   AM: T = 9.94 * X * .85 ; 55% in, 45% out
   PM: T = 9.77 * X * .85 ; 62% in, 38% out
Where T= number of vehicle trips, X= units
Source: BIG RED DOG Engineering, 2018.

TRIP DISTRIBUTION

Trip distribution is defined as the directions of approach and departure that vehicles would use to arrive at and depart from the site. The directions of approach and departure of Project trips were based on existing travel patterns in the area.

The destinations were generally tied to regional routes and destinations outside of the study area, including the surrounding freeways and Downtown Austin; these facilities generally lead to other retail areas as well as employment centers. South Lamar Boulevard, Barton Springs Road, West Cesar Chavez Street and the 5th Street/6th Street couplet have been assigned 90 percent of the total traffic as the significant arterials in the study area. The general directions of approach and departure, based on existing counts and additional engineering judgment, are summarized in **Table 5.**

TABLE 5: TRIP DISTRIBUTION

Location	Distribution
South Lamar Boulevard (north)	10%
South Lamar Boulevard (south)	10%
West 6th Street	8%
West 5th Street	14%
West Cesar Chavez Street (east)	15%
West Cesar Chavez Street (west)	17%
West Riverside Drive (east)	2%
Barton Springs Road (east)	8%
Barton Springs Road (west)	8%
Total	**100%**

Source: BIG RED DOG Engineering, 2018.

TRIP ASSIGNMENT

The Project trips were assigned to the roadway system based on the directions of approach and departure discussed above. **Figure 6** shows the number of net new Project trips assigned to each turning movement at each study intersection for the Project.

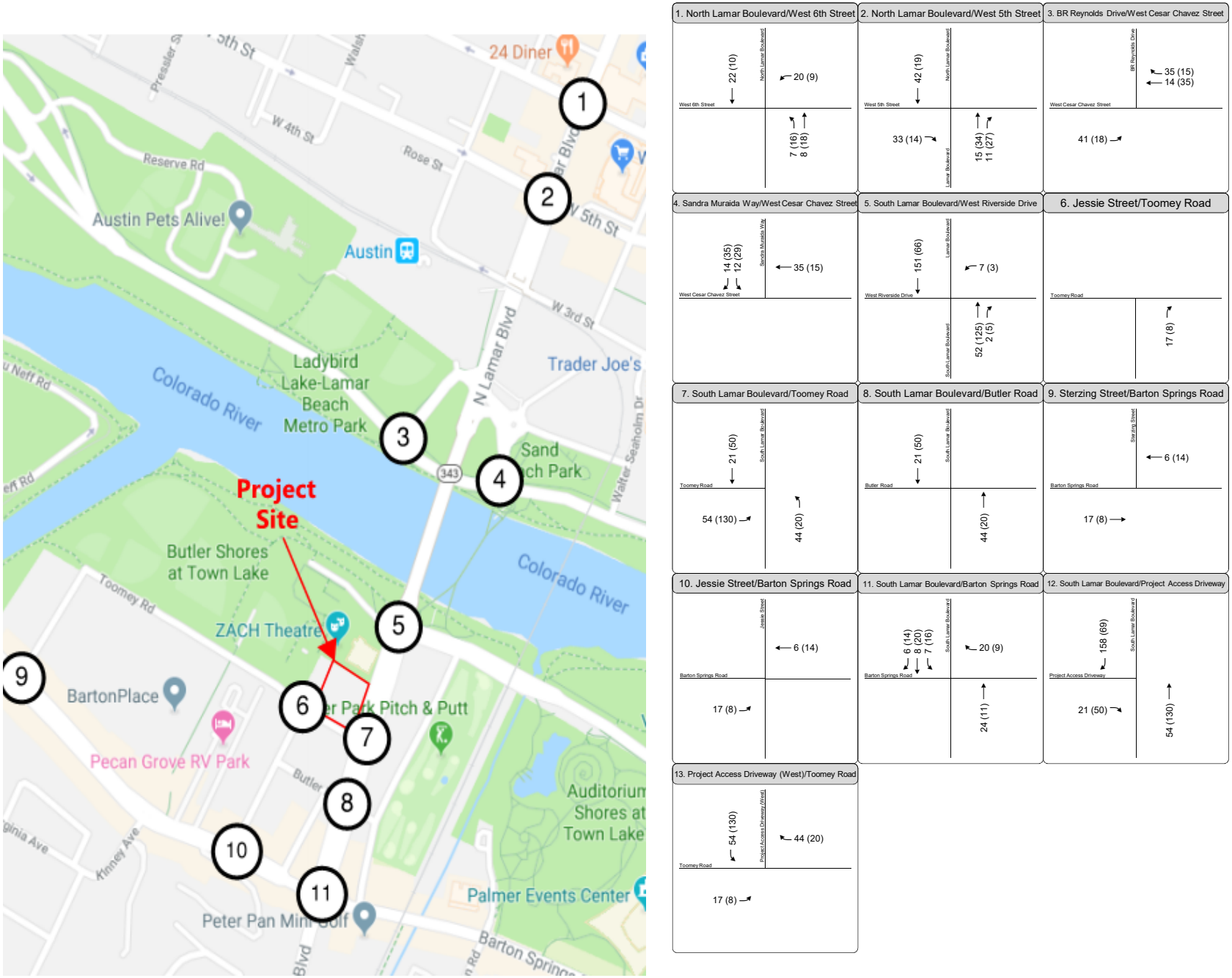

Figure 6
Project Trip Assigment

4. NO BUILD AND BUILD CONDITIONS

This chapter presents the results of the level of service calculations under No Build and Build Conditions. No Build Conditions are defined as conditions prior to completion and occupancy of the proposed development. Build Conditions are defined as No Build Conditions plus net new traffic generated by the proposed Project.

NO BUILD TRAFFIC VOLUMES

Projections of added traffic for No Build Conditions were based on approved and not occupied development projects in the vicinity of the site, as well as typical growth rates. Two specific developments were identified as background projects. The Riverside and Lamar Multifamily Project (SP-2012-0271C) was included as a background project as requested by the City of Austin. The project would consist of 197 units of multifamily housing and be located on the southeast corner of West Riverside Drive and South Lamar Boulevard. The second background project included was The Carpenter Hotel (SP-2016-0073C). The project would consist of 93 units and be located just off of South Lamar Boulevard on the corner of Butler Road and Josephine Street.

Background growth was added based on recent roadway ADT volumes as determined by the City of Austin. As a result, a four percent annual increase was applied per year throughout the study area. Volumes were adjusted for two years of growth (2018 to 2020) in this scenario at all locations. Volumes increased eight percent as compared to the 2018 counts. The resulting volumes are shown on **Figure 7.**

BUILD INTERSECTION VOLUMES

Net new site trips from the Project presented in Figure 6 were added to the No Build Conditions volumes in Figure 7 to develop the traffic volumes for Build Conditions; resulting volumes are shown on **Figure 8.**

NO BUILD AND BUILD INTERSECTION LEVELS OF SERVICE

Table 6 presents the level of service calculation results for the study intersections under No Build Conditions and Build Conditions. Tables 7A and 7B contain a summary with detailed level of service results by movements for study intersections and for all scenarios analyzed. Appendix C contains the corresponding Synchro output reports generated for each scenario analyzed.

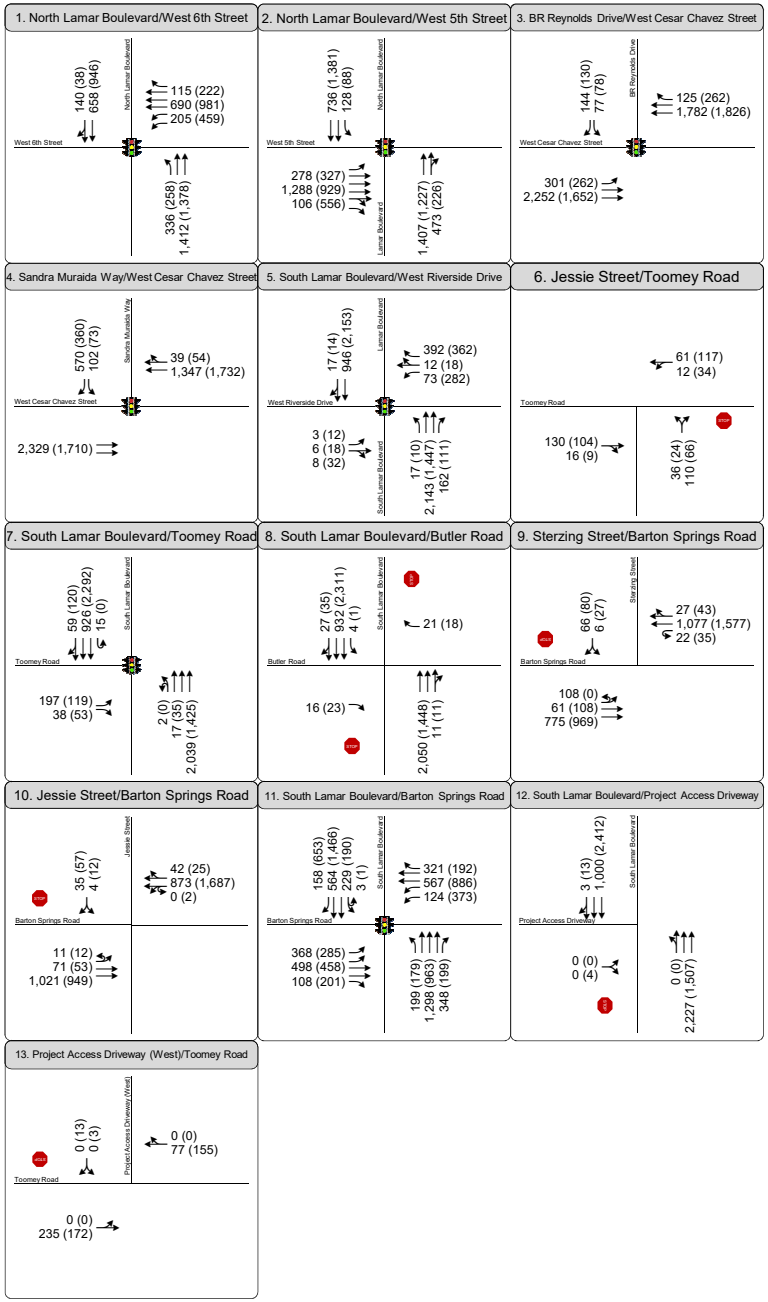

Figure 7
Lane Configurations, Traffic Controls, and Peak Hour Traffic Volumes
No Build Conditions (2020)

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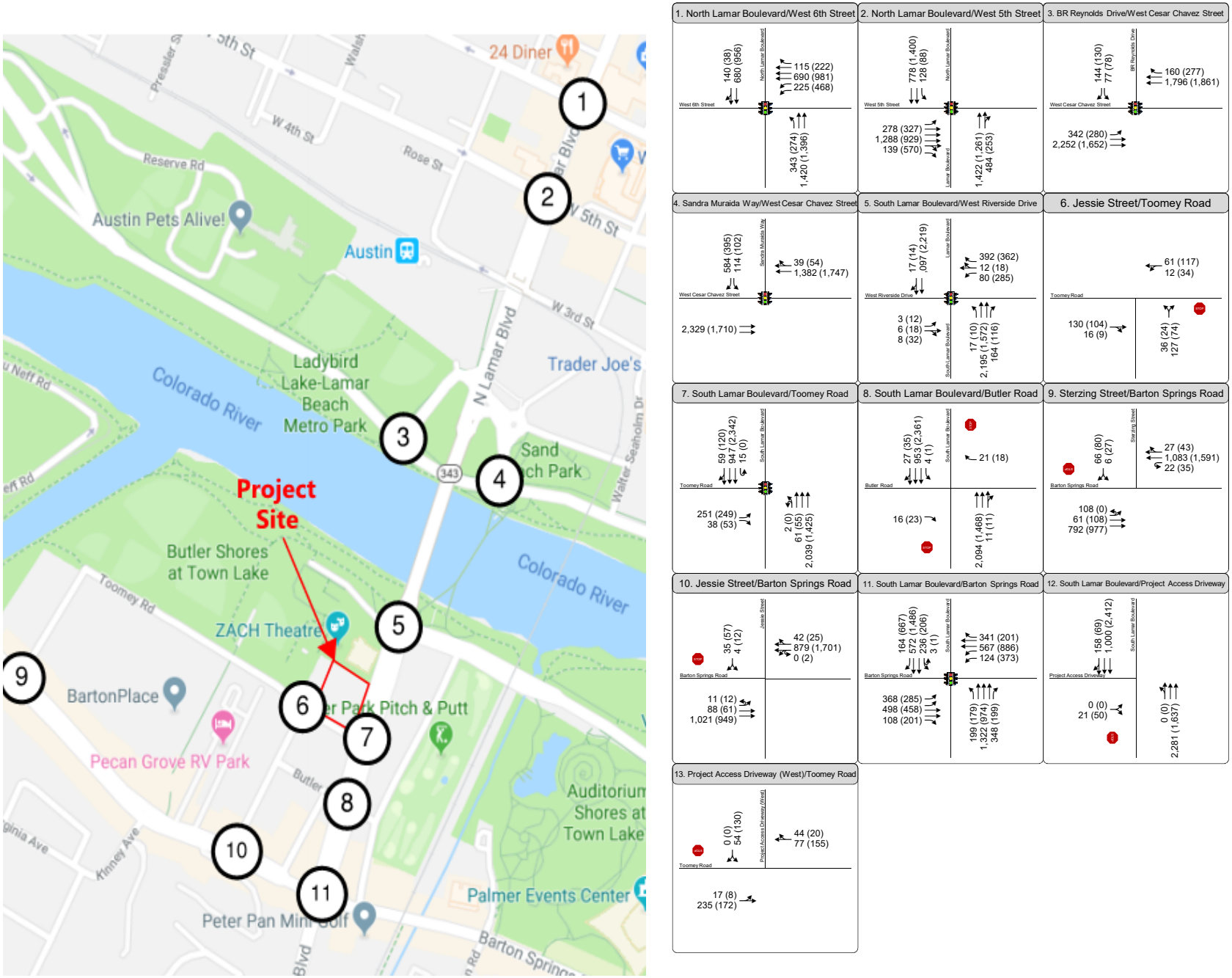

Figure 8

Lane Configurations, Traffic Controls, and Peak Hour Traffic Volumes
Build Conditions (2020)

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TABLE 6: NO BUILD AND BUILD CONDITIONS INTERSECTION LEVELS OF SERVICE (2020)

	Intersection	Peak Hour[1]	No Build Conditions		Build Conditions	
			Delay[2]	LOS[3]	Delay[2]	LOS[3]
1	North Lamar Boulevard / West 6th Street	AM PM	30.7 37.0	C D	31.1 38.3	C D
2	North Lamar Boulevard / West 5th Street	AM PM	54.5 38.7	D D	**56.0** 39.1	**E** D
3	West Cesar Chavez Street / B.R. Reynolds Drive	AM PM	41.1 **67.6**	D **E**	42.3 **74.2**	D **E**
4	West Cesar Chavez Street / Sandra Muraida Way	AM PM	26.6 20.1	C C	27.8 23.1	C C
5	South Lamar Boulevard / West Riverside Drive	AM PM	20.1 **66.3**	C **E**	20.8 **73.8**	C **E**
6	Jessie Street / Toomey Road	AM PM	4.8 (10.4) 3.2 (10.0)	A (B) A (A)	5.1 (10.5) 3.3 (10.0)	A (B) A (A)
7	South Lamar Boulevard / Toomey Road	AM PM	12.2 11.2	B B	22.2 16.2	C B
8	South Lamar Boulevard / Butler Road	AM PM	0.1 (9.5) 0.1 (10.8)	A (A) A (B)	0.1 (17.7) 0.1 (10.9)	A (A) A (B)
9	Barton Springs Road / Sterzing Street	AM PM	0.9 (15.3) 2.7 **(50.3)**	A (C) A **(F)**	0.9 (15.4) 2.7 **(51.6)**	A (C) A **(F)**
10	Barton Springs Road / Jessie Street	AM PM	0.6 (13.0) 3.4 **(111.0)**	A (B) A **(F)**	0.7 (13.5) 4.1 **(133.4)**	A (B) A **(F)**
11	South Lamar Boulevard / Barton Springs Road	AM PM	42.1 **55.2**	D **E**	44.4 54.2	D D
12	South Lamar Boulevard / Proposed Access Driveway	AM PM	- -	- -	0.1 (8.8) 0.2 (12.7)	A (A) A (B)
13	Toomey Road / Proposed Access Driveway	AM PM	- -	- -	1.5 (12.5) 3.3 (12.5)	A (B) A (B)

Notes:
1. AM = morning peak hour, PM = evening peak hour
2. For signalized intersections and all-way stop-controlled intersections, average intersection delay and LOS based on HCM method is shown. Average control delay and (total control delay for the worst movement) are presented for side-street stop controlled intersections
3. LOS = Level of Service. LOS calculations conducted using the method described in the HCM.

Bold text indicates intersection operates at a deficient Level of Service. **Bold and red** indicates a potentially significant impact.
Source: BIG RED DOG Engineering, 2018.

218 South Lamar Boulevard - SYNCHRO SUMMARY TABLE - AM PEAK HOUR																
Intersection/Movement	Existing Conditions				No Build Conditions				Build Conditions (2020)				Mitigations			
	Delay	LOS	V/C	95th % Queue (feet)	Delay	LOS	V/C	95th % Queue (feet)	Delay	LOS	V/C	95th % Queue (feet)	Delay	LOS	V/C	95th % Queue (feet)
#1 North Lamar Blvd & West 6th St	30.1	C	0.63	-	30.7	C	0.68	-	31.1	C	0.69	-	26.2	C	0.70	-
WBL	53.4	D	0.32	113	52.9	D	0.34	128	53.4	D	0.38	141	52.7	D	0.37	136
WBT	**59.6**	**E**	0.70	248	**59.8**	**E**	0.73	278	**59.9**	**E**	0.73	282	**58.7**	**E**	0.71	272
WBR	51.0	D	0.09	55	51.0	D	0.17	80	51.1	D	0.17	82	52.2	D	0.30	121
NBL	52.2	D	0.71	256	47.2	D	0.75	292	47.9	D	0.75	300	-	-	-	-
NBT	4.5	A	0.51	86	5.0	A	0.55	127	4.7	A	0.56	124	18.1	B	0.70	482
SBT/R	32.9	C	0.53	418	36.7	D	0.61	442	37.6	D	0.63	452	7.4	A	0.35	197
#2 North Lamar Blvd & West 5th Street	42.9	D	0.88	-	54.5	D	**0.97**	-	**56.0**	**E**	**0.98**	-	36.1	D	0.90	-
EBL	**55.7**	**E**	0.66	380	**61.6**	**E**	0.75	429	**61.6**	**E**	0.75	429	43.2	D	0.53	429
EBT	**61.2**	**E**	0.87	484	**78.1**	**E**	**0.98**	548	**79.0**	**E**	**0.99**	551	46.4	D	0.71	551
EBR	47.6	D	0.29	160	49.6	D	0.35	181	51.5	D	0.47	233	39.7	D	0.33	233
NBT/R	39.5	D	0.93	930	54.9	D	**1.01**	1187	**58.8**	**E**	**1.02**	1215	37.3	D	**0.95**	700
SBL	**76.9**	**E**	0.68	191	**76.9**	**E**	0.71	214	**76.7**	**E**	0.71	215	-	-	-	-
SBT	7.9	A	0.29	80	6.4	A	0.32	113	6.4	A	0.33	124	16.5	B	0.45	269
#3 West Cesar Chavez & B.R. Reynolds Dr	24.9	C	0.87	-	41.1	D	**0.97**	-	42.3	D	**0.97**	-	41.8	D	**0.99**	-
EBL	30.8	C	0.53	230	29.9	C	0.54	261	32.4	C	0.62	310	56.3	C	0.87	458
EBT	5.5	A	0.73	475	6.8	A	0.79	611	6.8	A	0.79	611	14.8	A	0.87	950
WBT	46.3	D	**0.95**	841	**86.8**	**F**	**1.09**	912	**89.7**	**F**	**1.10**	925	**73.6**	**F**	**1.07**	1017
WBR	26.9	C	0.11	62	27.4	C	0.14	61	27.9	C	0.18	74	21.2	C	0.17	63
SBL	**57.6**	**E**	0.53	99	**58.3**	**E**	0.56	105	**58.3**	**E**	0.56	105	**57.2**	**E**	0.73	223
SBR	28.2	C	0.21	106	26.2	C	0.21	117	26.2	C	0.21	117	27.4	C	0.22	118
#4 West Cesar Chavez & Sandra Muraida Way	18.8	B	0.87	-	26.6	C	**0.99**	-	27.8	C	**1.00**	-	22.7	C	0.94	-
EBT	5.4	A	0.77	333	7.9	A	0.86	441	8.4	A	0.87	441	9.6	A	0.91	484
WBT/R	18.9	B	0.68	465	18.9	B	0.72	556	20.1	C	0.75	595	30.5	C	0.86	680
SBL	**60.6**	**E**	0.61	113	**55.5**	**E**	0.58	130	**56.4**	**E**	0.61	141	**59.0**	**E**	0.64	145
SBR	**68.3**	**E**	**0.96**	586	**120.1**	**F**	**1.12**	669	**121.8**	**F**	**1.13**	682	51.0	D	0.90	599
#5 South Lamar Blvd & West Riverside Dr	16.6	B	0.83	-	19.8	B	0.92	-	21.1	C	0.94	-	45.4	D	**1.11**	-
EBL	48.6	D	0.04	10	47.3	D	0.04	10	47.3	D	0.04	10	43.4	D	0.02	10
EBT/R	48.6	D	0.05	17	47.3	D	0.05	17	47.3	D	0.05	17	43.6	D	0.04	17
WBL	51.0	D	0.27	84	50.3	D	0.32	103	50.7	D	0.36	111	45.2	D	0.18	75
WBT	**71.1**	**E**	0.78	235	**73.0**	**E**	0.82	264	**73.3**	**E**	0.82	265	45.0	D	0.16	74
WBR	**58.8**	**E**	0.62	193	**58.4**	**E**	0.65	212	**58.4**	**E**	0.65	212	**156.1**	**F**	**1.16**	565
NBL	3.2	A	0.04	2	3.8	A	0.05	3	5.2	A	0.05	3	6.7	A	0.05	2
NBT	10.7	B	0.80	1114	15.9	B	0.90	1235	17.4	B	0.92	1282	41.5	D	**1.04**	1458
NBR	1.8	A	0.11	-	1.3	A	0.12	1	1.0	A	0.13	5	-	-	-	-
SBT/R	10.1	B	0.38	380	10.8	B	0.42	398	13.7	B	0.50	424	16.3	B	0.53	424
#6 Toomey Rd & Jessie St	4.4	A	-	-	4.8	A	-	-	5.1	A	-	-	**NO CHANGE**			
EBT/R	-	-	0.08	-	-	-	0.09	-	-	-	0.09	-				
WBT/L	1.3	A	0.01	1	1.3	A	0.01	1	1.3	A	0.01	1				
NBL/R	10.1	B	0.17	15	10.4	B	0.19	19	10.5	B	0.23	22				
#7 South Lamar Blvd & Toomey Rd	14.6	B	0.61	-	12.4	B	0.67	-	22.3	C	0.71	-	25.8	C	**0.95**	-
EBL	**70.9**	**E**	0.76	252	**78.2**	**E**	0.82	307	**68.5**	**E**	0.81	421	**110.0**	**F**	**0.99**	421
EBR	51.5	D	0.02	33	50.8	D	0.03	34	46.1	D	0.03	34	49.7	D	0.03	34
NBL/NBU	2.8	A	0.04	3	2.5	A	0.05	2	4.3	A	0.11	8	5.3	A	0.12	6
NBT	4.6	A	0.61	101	4.8	A	0.66	112	5.3	A	0.70	117	14.7	B	**0.95**	1174
SBU	7.2	A	0.14	2	14.6	B	0.18	6	9.9	A	0.18	1	27.4	C	0.18	1
SBT/R	26.4	C	0.33	300	15.9	B	0.32	297	50.4	D	0.58	307	30.4	C	0.66	267
#8 South Lamar Blvd & Butler Rd	0.1	A	-	-	0.1	A	-	-	0.1	A	-	-	0.1	A	-	-
EBR	8.9	A	0.01	1	8.9	A	0.04	1	9.3	A	0.03	1	9.7	A	0.02	2
WBR	9.3	A	0.03	2	9.5	A	0.03	3	9.6	A	0.03	3	11.0	B	0.04	3
NBT/R	-	-	0.49	-	-	-	-	-	-	-	-	-	-	-	-	-
SBL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SBT/R	15.5	C	0.01	1	17.2	C	0.01	1	17.7	C	0.01	1	-	-	-	-
#9 Sterzing St & Barton Springs Rd	0.8	A	-	-	0.9	A	-	-	0.9	A	-	-	**NO CHANGE**			
EBL/T	10.6	B	0.09	7	11.4	B	0.11	9	11.5	B	0.11	9				
WBU	-	-	0.37	-	-	-	0.42	-	-	-	0.42	-				
WBT/R	-	-	0.20	-	-	-	0.23	-	-	-	0.23	-				
SBL/R	14.1	B	0.14	13	15.3	C	0.17	15	15.4	C	0.17	15				
#10 Jessie St & Barton Springs Rd	0.6	B	-	-	0.6	C	-	-	0.7	C	-	-	**NO CHANGE**			
EBL/U	9.5	A	0.08	7	9.8	A	0.09	8	10.0	A	0.12	10				
WBT/R	-	-	0.32	-	-	-	0.34	-	-	-	0.34	-				
SBL/R	12.4	B	0.07	5	13.0	B	0.08	6	13.5	B	0.08	7				
#11 South Lamar Blvd & Barton Springs Rd	40.7	D	0.77	-	42.1	D	0.84	-	44.3	D	0.86	-	44.6	D	0.87	-
EBL	**64.6**	**E**	0.76	203	**66.6**	**E**	0.80	220	**66.6**	**E**	0.80	220	**66.2**	**E**	0.80	220
EBT	45.5	D	0.54	242	45.2	D	0.56	264	45.2	D	0.56	265	44.2	D	0.55	265
EBR	38.8	D	0.07	8	39.0	D	0.07	16	39.1	D	0.07	16	38.2	D	0.07	16
WBL	**61.4**	**E**	0.48	81	**61.4**	**E**	0.50	87	**61.4**	**E**	0.50	87	**61.2**	**E**	0.49	86
WBT	**57.0**	**E**	0.77	288	**58.6**	**E**	0.81	315	**58.6**	**E**	0.81	315	**56.0**	**E**	0.78	314
WBR	51.0	D	0.54	210	52.7	D	0.61	243	**55.6**	**E**	0.68	270	53.7	D	0.66	268
NBL	27.3	C	0.54	183	33.2	C	0.66	202	34.3	C	0.67	202	30.0	C	0.63	202
NBT	31.3	C	0.61	406	35.4	D	0.70	451	36.3	D	0.72	463	53.1	D	**0.96**	891
NBR	26.6	C	0.29	123	29.5	C	0.35	151	29.9	C	0.35	155	28.8	C	0.41	228
SBL/U	49.8	D	0.78	299	**62.0**	**E**	0.88	357	**70.9**	**E**	0.91	377	39.6	D	0.68	117
SBT	21.5	C	0.35	309	19.5	B	0.40	327	20.7	C	0.40	330	12.2	B	0.41	175
SBR	**67.1**	**E**	0.09	145	44.1	D	0.10	139	**69.2**	**E**	0.11	146	31.9	C	0.11	80

218 South Lamar Boulevard - SYNCHRO SUMMARY TABLE - PM PEAK HOUR																
Intersection/Movement	Existing Conditions				No Build Conditions				Build Conditions (2020)				Mitigations			
	Delay	LOS	V/C	95th % Queue (feet)	Delay	LOS	V/C	95th % Queue (feet)	Delay	LOS	V/C	95th % Queue (feet)	Delay	LOS	V/C	95th % Queue (feet)
#1 North Lamar Blvd & West 6th St	34.9	C	0.65	-	37.0	D	0.72	-	38.3	D	0.74	-	28.2	C	0.71	-
WBL	47.8	D	0.51	237	48.9	D	0.57	272	50.1	D	0.59	278	47.3	D	0.55	278
WBT	51.2	D	0.68	346	52.9	D	0.74	393	54.0	D	0.75	393	50.7	D	0.71	393
WBR	45.5	D	0.35	167	46.7	D	0.42	209	47.4	D	0.43	209	46.5	D	0.48	253
NBL	**72.5**	**E**	0.63	221	**68.1**	**E**	0.61	225	**66.6**	**E**	0.59	232	-	-	-	-
NBT	7.7	A	0.53	242	8.3	A	0.58	275	8.4	A	0.58	276	16.5	B	0.72	719
SBT/R	38.8	D	0.64	455	45.3	D	0.75	487	49.3	D	0.80	488	12.6	B	0.42	234
#2 North Lamar Blvd & West 5th Street	35.5	D	0.76	-	38.7	D	0.84	-	39.1	D	0.87	-	36.5	D	0.76	-
EBL	46.7	D	0.62	387	45.5	D	0.63	427	46.5	D	0.64	427	46.7	D	0.65	500
EBT	46.2	D	0.66	362	45.0	D	0.68	404	46.0	D	0.70	407	46.2	D	0.70	458
EBR	53.7	D	0.73	471	54.3	D	0.76	555	**58.1**	**E**	0.80	577	**58.8**	**E**	0.80	640
NBT/R	41.7	D	0.78	580	52.2	D	0.89	662	52.8	D	0.92	704	34.0	C	0.74	586
SBL	**64.8**	**E**	0.59	150	**62.0**	**E**	0.61	159	**60.9**	**E**	0.61	156	-	-	-	-
SBT	12.5	B	0.62	285	14.0	B	0.70	312	12.6	B	0.70	317	25.2	C	0.74	456
#3 West Cesar Chavez & B.R. Reynolds Dr	36.9	D	0.85	-	**67.6**	**E**	0.94	-	**74.2**	**E**	**0.95**	-	36.4	D	0.92	-
EBL	25.3	C	0.40	150	24.3	C	0.42	178	24.7	C	0.45	193	45.3	D	0.75	349
EBT	3.5	A	0.54	253	3.9	A	0.59	300	3.9	A	0.59	300	7.0	A	0.63	409
WBT	**70.4**	**E**	**1.06**	1100	**139.8**	**F**	**1.22**	1231	**154.1**	**F**	**1.26**	1262	**62.4**	**E**	**1.05**	1005
WBR	20.0	C	0.27	153	23.0	C	0.33	180	23.6	C	0.35	192	16.5	C	0.28	115
SBL	**57.6**	**E**	0.54	99	**58.6**	**E**	0.57	106	**58.6**	**E**	0.57	106	**56.9**	**E**	0.68	188
SBR	25.1	C	0.18	76	23.0	C	0.18	83	22.7	C	0.18	83	30.0	C	0.22	114
#4 West Cesar Chavez & Sandra Muraida Way	17.2	B	0.75	-	20.1	C	0.83	-	23.1	C	0.86	-	23.4	C	0.86	-
EBT	3.1	A	0.54	251	4.4	A	0.60	325	5.5	A	0.61	385	5.7	A	0.64	394
WBT/R	19.1	B	0.73	650	22.1	C	0.80	670	25.2	C	0.83	745	28.5	C	0.86	924
SBL	**77.3**	**E**	0.61	111	**72.1**	**E**	0.59	132	**74.6**	**E**	0.68	170	**76.6**	**E**	0.69	173
SBR	**58.6**	**E**	0.77	410	**67.1**	**E**	0.86	581	**69.2**	**E**	0.89	627	**59.8**	**E**	0.84	494
#5 South Lamar Blvd & West Riverside Dr	37.7	D	0.93	-	**66.3**	**E**	**1.03**	-	**73.8**	**E**	**1.06**	-	42.8	D	**1.02**	-
EBL	36.8	D	0.05	25	34.2	C	0.05	26	34.1	C	0.05	26	38.8	C	0.05	26
EBT/R	36.7	D	0.06	45	34.1	C	0.06	47	33.9	C	0.06	47	38.9	C	0.07	47
WBL	**58.7**	**E**	0.74	393	**55.8**	**E**	0.74	465	**56.0**	**E**	0.75	469	50.4	D	0.50	224
WBT	44.0	D	0.21	114	41.6	D	0.26	149	41.7	D	0.28	161	50.6	D	0.51	225
WBR	43.9	D	0.21	111	41.5	D	0.26	147	41.4	D	0.26	147	**62.6**	**E**	0.77	428
NBL	**96.3**	**F**	0.15	11	**78.4**	**E**	0.14	9	**55.3**	**E**	0.14	5	47.9	D	0.14	4
NBT	22.1	C	0.59	774	24.5	C	0.69	862	25.1	C	0.75	928	16.7	B	0.75	663
NBR	28.1	C	0.07	64	25.5	C	0.08	59	8.4	A	0.08	13	-	-	-	-
SBT/R	44.3	D	**0.98**	1249	**102.3**	**F**	**1.13**	1439	**120.0**	**F**	**1.17**	1508	**58.0**	**E**	**1.08**	1474
#6 Toomey Rd & Jessie St	2.9	A	-	-	3.2	A	-	-	3.3	A	-	-	**NO CHANGE**			
EBT/R	-	-	0.06	-	-	-	0.07	-	-	-	0.07	-				
WBT/L	1.8	A	0.03	2	1.9	A	0.03	2	1.9	A	0.03	2				
NBL/R	9.8	A	0.08	7	10.0	A	0.11	9	10.0	A	0.12	10				
#7 South Lamar Blvd & Toomey Rd	13.1	B	0.59	-	11.2	B	0.65	-	16.3	B	0.74	-	26.5	C	**1.00**	-
EBL	**72.2**	**E**	0.61	150	**72.8**	**E**	0.65	177	**72.4**	**E**	0.80	317	**72.4**	**E**	0.80	317
EBR	**62.5**	**E**	0.03	41	**60.6**	**E**	0.03	42	51.2	D	0.03	38	51.2	D	0.03	38
NBL/NBU	8.7	A	0.10	13	10.8	B	0.11	17	21.4	C	0.15	35	33.1	C	0.23	20
NBT	16.8	B	0.44	293	13.6	B	0.47	275	18.1	B	0.57	218	16.0	B	0.72	293
SBU	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SBT/R	7.6	A	0.58	194	5.8	A	0.63	155	8.9	A	0.70	259	27.2	C	1.01	1473
#8 South Lamar Blvd & Butler Rd	0.1	A	-	-	0.1	B	-	-	0.1	A	-	-	0.1	A	-	-
EBR	9.2	A	0.02	2	9.3	A	0.03	2	9.9	B	0.03	13	17.8	B	0.08	6
WBR	9.1	A	0.02	1	9.2	A	0.02	2	9.3	A	0.02	2	9.9	A	0.02	2
NBT/R	-	-	0.33	-	-	A	0.36	-	-	A	0.37	-	-	-	-	-
SBL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SBT/R	10.3	B	-	-	10.8	B	-	-	10.9	B	-	-	-	-	-	-
#9 Sterzing St & Barton Springs Rd	2.1	B	-	-	2.7	C	-	-	2.7	C	-	-	**NO CHANGE**			
EBL/T	17.2	C	0.26	26	19.8	C	0.32	33	20.0	C	0.32	34				
WBU	-	-	-	-	-	-	-	-	-	-	-	-				
WBT/R	-	-	0.59	-	-	-	0.64	-	-	-	0.65	-				
SBL/R	**37.2**	**E**	0.49	61	**50.3**	**F**	0.60	84	**51.6**	**F**	0.61	85				
#10 Jessie St & Barton Springs Rd	1.7	B	-	-	3.4	C	-	-	4.1	C	-	-	**NO CHANGE**			
EBL/U	15.4	C	0.12	10	17.6	C	0.16	14	18.3	C	0.18	17				
WBT/R	-	-	-	-	-	-	-	-	-	-	-	-				
SBL/R	**53.4**	**F**	0.50	60	**111.0**	**F**	0.78	106	**133.4**	**F**	0.85	116				
#11 South Lamar Blvd & Barton Springs Rd	51.5	D	0.90	-	**55.2**	**E**	**0.98**	-	54.1	D	**0.98**	-	52.1	D	**0.98**	-
EBL	**89.6**	**F**	0.87	208	**106.2**	**F**	**0.95**	238	**106.2**	**F**	**0.95**	238	**106.2**	**F**	**0.95**	238
EBT	**65.2**	**E**	0.74	260	**65.1**	**E**	0.76	281	**65.2**	**E**	0.76	281	**65.2**	**E**	0.76	281
EBR	**55.2**	**E**	0.25	104	54.7	D	0.30	121	54.9	D	0.30	121	54.9	D	0.30	121
WBL	**60.4**	**E**	0.61	236	**63.2**	**E**	0.68	268	**63.2**	**E**	0.68	268	**63.2**	**E**	0.68	268
WBT	**71.6**	**E**	0.93	530	**85.3**	**F**	**1.00**	606	**85.3**	**F**	**1.00**	606	**85.3**	**F**	**1.00**	606
WBR	44.6	D	0.14	70	45.0	D	0.20	98	45.3	D	0.22	108	45.3	D	0.22	108
NBL	**80.1**	**F**	0.89	241	**105.9**	**F**	**0.99**	277	**106.9**	**F**	**1.00**	277	**102.5**	**F**	**0.99**	301
NBT	50.7	D	0.70	344	51.1	D	0.74	364	50.9	D	0.74	367	52.7	D	0.87	584
NBR	41.1	D	0.16	63	40.9	D	0.20	77	40.7	D	0.20	78	34.9	C	0.26	120
SBL/U	26.0	C	0.33	116	25.9	C	0.39	125	23.8	C	0.42	138	27.3	C	0.30	34
SBT	36.1	D	0.86	615	39.2	D	0.94	863	36.9	D	**0.95**	884	30.1	D	**0.95**	612
SBR	31.4	C	0.66	174	24.4	C	0.74	270	21.9	C	0.76	369	16.9	B	0.77	200

INTERSECTION IMPACTS AND MITIGATION

Based on the impact criteria listed in Chapter 1 (for intersections as well as for individual movements), under Build Plus Project Conditions without mitigations, the following intersections **(bolded)** and movements are potentially impacted:

- **(#2) North Lamar Boulevard / West 5th Street (AM peak hour)**
    - Northbound through movement (AM peak hour)
    - Eastbound right-turn movement (PM peak hour)
- **(#3) West Cesar Chavez / B.R. Reynolds Drive (PM peak hour)**
    - Westbound through movement (AM and PM peak hour)
- (#4) West Cesar Chavez / Sandra Muraida Way
    - Southbound left-turn movement (AM and PM peak hour)
    - Southbound right-turn movement (AM and PM peak hour)
- **(#5) South Lamar Boulevard / West Riverside Drive (PM peak hour)**
    - Westbound left-turn movement (PM peak hour)
    - Southbound through/right-turn movement (PM peak hour)
- (#11) South Lamar Boulevard / Barton Springs Road
    - Westbound right-turn movement (AM peak hour)
    - Southbound left-turn movement (AM peak hour)
    - Southbound right-turn movement (AM peak hour)

These intersections and movements are projected to operate at LOS E or LOS F with the Project, show an increase in delay as compared to the No Build Conditions scenario, and the Project contributes at least one peak hour trip to the specific movement/approach.

(#1) NORTH LAMAR BOULEVARD / WEST 6TH STREET
(#2) NORTH LAMAR BOULEVARD / WEST 5TH STREET

The intersection of (#1) North Lamar Boulevard / West 6th Street is anticipated to operate at LOS C in the AM peak hour and LOS D in the PM peak hour with the Project. Despite the overall acceptable LOS, the westbound through movement during the AM peak hour and the northbound left-turn movement during the PM peak hour are expected to operate at LOS E both with and without the Project. Because these movements remain the same LOS with the Project and the Project does not contribute any trips to these movements, no significant impacts have been identified at this intersection.

The intersection of (#2) North Lamar Boulevard / West 5th Street is anticipated to degrade from LOS D to LOS E in the AM peak hour with the Project. Additionally, the following movements are projected to operate at LOS E or LOS F during the AM peak hour:

- Eastbound left-turn movement
- Eastbound through movement
- Northbound through/right-turn movement
- Southbound left-turn movement

During the PM peak hour, the intersection operates at LOS D; the eastbound right-turn movement degrades to LOS E, and the southbound left-turn movement operates at LOS E as well.

The eastbound left-turn movement and eastbound through movement currently operate at LOS E during the AM peak hour, and continue to do so under No Build and Build Conditions. The Project adds zero trips to these movements; as such, these movements were not identified as significantly impacted by the Project. Similarly, the southbound left-turn movement operates at LOS E currently during both AM and PM peak hours, and continues to do so under No Build and Build Conditions. As there were no trips added to either movement by the Project, no improvements were considered specific to those movements.

The northbound through/right-turn movement operates at LOS D during the AM peak hour under current conditions, but degrades to LOS E under Build Conditions. The Project adds 26 trips to these movements, so it is significantly impacted by the Project.

Allotting more time to this movement would cause significant secondary impacts, resulting in the eastbound through movement performing at LOS F. Adding a third northbound lane would improve the northbound through movement to LOS C and would improve operations of the entire intersection, but is not a feasible improvement given the constraints of the area.

The eastbound right-turn movement is anticipated to operate at LOS D during the PM peak hour under No Build Conditions and degrades to LOS E with Build Conditions. The Project adds 14 trips to this movement, so the movement is significantly impacted by the Project. This movement can be improved with a **small change in signal timing** without affecting other movements.

The *South Lamar Boulevard Corridor Improvement Program* identifies **prohibition of left-turn movements along Lamar Boulevard at the 5th/6th Street couplet during peak hours** to improve the entire corridor. With the signal re-timing adjustment and the removal of northbound and southbound left-turn movements during peak hours, both intersections would improve to LOS D or better during both peak hours and movements would generally operate at LOS D or better.

(#3) WEST CESAR CHAVEZ STREET / B.R. REYNOLDS DRIVE

The westbound through movement and southbound left-turn movement are anticipated to operate unacceptably during both AM and PM peak hours under No Build Conditions. Both movements continue to operate at the same LOS under Build Conditions. Of these movements, the Project is expected to contribute to only the westbound through movement; as such, the movement is potentially significantly impacted by the Project. This can be improved by a **change in signal timing**; other improvements would require widening B.R. Reynolds Drive or prioritizing vehicles over pedestrians and bicyclists, unlikely with the Lance Armstrong Bikeway crossing the intersection.

Changing the signal timing could only improve the westbound through movement to a better LOS F. In order for the intersection, the westbound through movement, and the southbound left-turn movement to perform better than LOS E, additional West Cesar Chavez Street lanes would be required.

(#4) WEST CESAR CHAVEZ STREET / SANDRA MURAIDA WAY

The intersection of West Cesar Chavez Street and Sandra Muraida Way is projected to operate at LOS C under No Build Conditions and Build Conditions during both peak hours. The southbound left-turn movement and southbound right-turn movement are anticipated to operate unacceptably during No Build Conditions and Build Conditions during both AM and PM peak hours. During the AM peak hour, 14 trips are added to the southbound right-turn movement, and 12 trips to the southbound left-turn movement. During the PM peak hour, 29 trips are added to the southbound left-turn movement and 35 trips are added to the southbound right-turn movement.

Although Project trips are added to the southbound left-turn and southbound right-turn movements, the change in delay is less than 2.5 seconds in all cases; therefore, mitigating the impact is likely unnecessary. Signal timing improvements would prioritize the side-street over the coordination of West Cesar Chavez Street; changes here are unlikely. In order for the southbound left-turn and right-turn to perform better than LOS E, additional West Cesar Chavez Street lanes would be required. As such, no changes are recommended.

(#5) SOUTH LAMAR BOULEVARD / WEST RIVERSIDE DRIVE

The South Lamar Boulevard / West Riverside Drive intersection is projected to operate at LOS C during the AM peak hour under Build Conditions. No movements are identified as significantly impacted during the AM peak hour. However, during the PM peak hour, the intersection is anticipated to operate at LOS E under No Build Conditions and Build Conditions.

Three movements are anticipated to operate unacceptably during the PM peak hour. The westbound left-turn movement, the northbound left-turn movement, and the southbound through/right-turn movement all operate unacceptably under No Build Conditions. The movement westbound left-turn and southbound through/right-turn movements see an increase in delay with a contribution of expected volume due to the Project.

Because the delay for the southbound approach is so substantial, this cannot be mitigated by a change in signal timing. Adding a third southbound lane would improve delay significantly and would allow for the intersection to operate at LOS D. However, the southbound through movement would continue to operate unacceptably at LOS E; the *South Lamar Boulevard Corridor Improvement Program* does not contemplate widening South Lamar Boulevard (which would include widening the existing bridge connecting north of the river).

In the *South Lamar Boulevard Corridor Improvement Program,* improvements for the intersection include construction of a protected bike facility at the intersection, installation of new traffic signal at West Riverside Drive and Toomey Road, and construction of a raised landscaped median with select openings at driveways. Other improvements are implementation of a variable speed limit and construction of a two-way cycle track on South Lamar Boulevard.

Within the study area, the total cost of improvements listed in the *South Lamar Boulevard Corridor Improvement Plan* is $7,250,000. There are three signalized intersections in this stretch of South Lamar Boulevard; West Riverside Drive, Toomey Road, and Barton Springs Road. As such, the total cost was divided by three in order to represent each intersection and areas between them as $2,416,667 each for improvements.

The Project is to pay an amount roughly proportional to the impact the Project has on the intersection. During the AM peak hour, the Project represents a 5.3 percent share of traffic at this intersection. During the PM peak hour, the Project represents a 4.3 percent share of traffic at this intersection. As such, the Project would pay 4.8 percent of the total cost of improvements at the intersection, or $115,809. **Appendix D** includes a summary of the improvements and the calculations for these contributions.

We would note that this would allow for a more significant contribution than would typically be calculated per the City's TIA methodology (2.5 percent for westbound left-turn movement during the PM peak hour and 3.0 percent for southbound through/right-turn movements during the PM peak hour). Similar calculation were done for the remaining two signalized intersections along the corridor (even though (#7) South Lamar Boulevard / Toomey Road was not identified as an impact.

(#11) SOUTH LAMAR BOULEVARD / BARTON SPRINGS ROAD

The intersection of South Lamar Boulevard / Barton Springs Road is to perform acceptably during both peak hours under Build Conditions. However, several movements are impacted during the AM peak hour.

The eastbound left-turn movement operates at LOS E under No Build and Build Conditions during the AM peak hour, and LOS F during the PM peak hour. The Project adds no trips to this movement, and the movement was not identified as a significant impact. The westbound left-turn movement performs at LOS E under No Build and Build Conditions during both peak hours, but because there are no additional trips generated by the Project, no significant impact was identified. The westbound through movement performs at LOS E during the AM peak hour and LOS F during the PM peak hour under both No Build and Build Conditions, but no additional trips are anticipated to be generated by the Project; no significant impact was identified.

The southbound left-turn, southbound right-turn and westbound right-turn movements are all expected to degrade to LOS E under Build Conditions during the AM peak hour (or increase delay while already operating at LOS E). The Project contributes trips to all three of these movements, and all three movements have been identified as having been significantly impacted; these would all be improved through the changes proposed in the *South Lamar Corridor Improvement Plan*.

The *South Lamar Corridor Improvement Plan* proposes four changes specifically for this intersection, two of which are targeted at improving operations of vehicles. The first is to construct dual southbound left-turn bays, which should improve the LOS for the southbound left-turn movement. The second is to convert the northbound approach to two through lanes, with the third lane being a designated bus stop pullout. However, as mentioned prior, the Connections 2025 Transit Plan no longer shows north/south bus routes on Lamar Boulevard from West 5th Street to Barton Springs Road, so it is unlikely that this change would be implemented.

Other general improvements in this area are to construct raised landscape median with select openings at driveways, to consider implementation of a variable speed limit, and to construct two-way cycle tracks on South Lamar Boulevard.

As discussed previously, each of the three signalized intersections in the study area represent a total cost of $2,416,667 for improvements. The Project is to pay an amount roughly proportional to the impact the Project has on the intersection. During the AM peak hour, the Project represents a 1.3 percent share of traffic at this intersection. During the PM peak hour, the Project represents a 1.1 percent share of traffic at

this intersection. As such, the Project would pay 1.2 percent of the total cost of improvements at the intersection, or $30,024.

RECOMMENDATIONS / IMPROVEMENT SUMMARY

The mitigations detailed in the previous section are summarized in **Table 8** with the pro-rata percentage for each improvement.

TABLE 8: MITIGATION SUMMARY

Intersections		Improvement	Total Cost	Pro-Rata Share	Pro-Rata Cost
1	North Lamar Boulevard / West 6th Street[1]	- Prohibit NBL at West 6th Street - Prohibit SBL at West 5th Street - Signal re-timing	$12,500	100%	$12,500
2	North Lamar Boulevard / West 5th Street[1]				
3	West Cesar Chavez Street / B.R. Reynolds Drive	- Signal re-timing	$5,000	100%	$5,000
5	South Lamar Boulevard / West Riverside Drive[1]	- Construct 2-way cycle tracks on both sides of South Lamar Boulevard - Raised landscape median with select openings at driveways - Protected bike facility at West Riverside Drive - Dual southbound left turn bays at Barton Springs Road			
7	South Lamar Boulevard / Toomey Road[1]		$2,416,667	4.8%	$115,809
8	South Lamar Boulevard / Butler Road[1]		$2,416,667	4.1%	$99,086
11	South Lamar Boulevard / Barton Springs Road[1]		$2,416,666	1.2%	$30,024
		Totals	***$7,267,500***	***3.6%***	***$262,419***

Notes:
1. Improvements per the *South Lamar Boulevard Corridor Improvement Program.*
2. Improvements and cost estimates per the *South Lamar Boulevard Corridor Improvement Program.*

Source: BIG RED DOG Engineering, 2018.

Technical Appendices for

Transportation Impact Study

218 South Lamar Development in Austin, Texas

Prepared for:
Generational Commercial Properties

Submitted to:
The City of Austin, Texas

August 2018

BIG RED DOG
ENGINEERING | CONSULTING

1074.40.001

Technical Appendices for

Transportation Impact Study

218 South Lamar Development in Austin, Texas

Appendix A
Approved City of Austin Scope

August 2018

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1074.40.001

CITY OF AUSTIN

TRAFFIC IMPACT ANALYSIS (TIA) DETERMINATION WORKSHEET

APPLICANT MUST FILL IN WORKSHEET PRIOR TO SUBMITTING FOR TIA DETERMINATION

PROJECT NAME: 218 S Lamar Office

LOCATION: 218 S Lamar Blvd, Austin, Texas

APPLICANT'S AGENT: Big Red Dog, Inc (Dan Hennessey, P.E., PTOE) **TELEPHONE NO:**_512-669-5560_

APPLICATION STATUS: DEVELOPMENT ASSESSMENT:_____ZONING:___ X ____SITE PLAN:_ ___

EXISTING: **FOR OFFICE USE ONLY**

TRACT NUMBER	TRACT ACRES	INTENSITY	ZONING	LAND USE	I.T.E CODE	TRIP RATE	TRIPS PER DAY
1	1.3	9,295	CS-V	High Turnover Restaurant	932	EQ	1,024
							1,024

PROPOSED **FOR OFFICE USE ONLY**

TRACT NUMBER	TRACT ACRES	INTENSITY	ZONING	LAND USE	I.T.E CODE	TRIP RATE/EQ	TRIPS PER DAY
1	1.3	167,000	PUD	Office	710	EQ	1,745
2		13,000		High Turnover Restaurant	932	EQ	1,460
						Net total	2,181

ABUTTING ROADWAYS **FOR OFFICE USE ONLY**

STREET NAME	PROPOSED ACCESS	PAVEMENT WIDTH	CLASSIFICATION
Toomey Road	Yes (only One)		
South Lamar Boulevard	Yes		

FOR OFFICE USE ONLY

X A traffic impact analysis is required. The traffic consultant must meet with staff from Development Services/Land Use Review to discuss the TIA scope and requirements before beginning the study.

— A traffic impact analysis is NOT required. The traffic generated by the proposal does not exceed the thresholds established in the Land Development Code. **Mitigation of the site traffic may be required based on Austin Transportation Department review.** See Land Use Review/ Transportation Review staff for additional information.

— The traffic impact analysis has been waived for the following reason: deferred the TIA at the time of site plan.

— A neighborhood traffic analysis will be performed by the City for this project. The applicant may have to collect existing traffic counts. See a transportation planner for information.

REVIEWED BY:_ Mehmaz Mehraein, P.E. _____Mehraein_____DATE:__5-2-2018___ _____

DISTRIBUTION:

_____ FILE _____CAP. METRO _____SDHPT _____TRANS. REV. _____TRAVIS CO. _____TPSD TOTAL COPIES:_____

NOTE: A TIA determination must be made prior to submittal of any zoning or site plan application, therefore, this completed and reviewed form MUST ACCOMPANY any subsequent application for the IDENTICAL project. CHANGES to the proposed project will REQUIRE a new TIA determination to be made.

TRAFFIC IMPACT ANALYSIS SCOPE AND STUDY AREA

Project Name:	218 S Lamar Office	**Date:** May 3, 2018
Location:	218 S Lamar Blvd., Austin, TX	
Owner's Agent:	Big Red Dog, Inc. (Dan Hennessey, P.E., PTOE)	**Phone:** (512) 669 – 5560

Sections I and II of the scope must be approved prior to formal submittal of a Traffic Impact Analysis (TIA). You may receive signoff of both sections concurrently or separately.

I. Data Collection

1. Background Information

a. Completed TIA Determination Worksheet
b. Location/Study area map that specifies major roadways and intersections within study area
c. Following adopted plan and public infrastructure improvement project apply to this site:

- The South Lamar Corridor Regulating Plan applies to this location. All elements of the project are subject to the goals and objectives of this document (https://data.austintexas.gov/stories/s/Template-for-Corridor-Pages/jbxj-hq7b).

2. Intersections Level of Service

Calculations for a.m. and p.m. peak hours must be performed for the following intersections, showing (a) existing traffic conditions and (b) projected traffic conditions, identifying site, non-site, and total traffic:

a) North Lamar Boulevard and West 5th Street
b) West Cesar Chavez Street and B.R. Reynolds Drive
c) West Cesar Chavez Street and Sandra Muraida Way
d) South Lamar Boulevard and West Riverside Drive (four intersections)
e) South Lamar Boulevard and Toomey Road
f) South Lamar Boulevard and Butler Road
g) South Lamar Boulevard and Barton Springs Road
h) Toomey Road and Jessie Street
i) Jessie Street and Barton Springs Road
j) Sterzing Street and Barton Springs Road
k) Lamar Boulevard and 6th Street
l) All Site driveways

Notes: Existing signal timings shall be used for the intersection unless alternative timing proposals are approved by the Austin Transportation Department.

3. Roadways A capacity analysis must be performed for the following roadway segments. N/A

4. Neighborhood Traffic Assessment: N/A

5. Other Considerations: The project is likely to include 26,000 sq ft of ground floor retail/high turnover restaurant space. If that does not happen, the entirety of the 180,000 sq ft project space will be office space.
Only one driveway access will be permitted on Toomey Rd.

II. Study Assumptions

1. Data Assumptions The following assumptions must be included in the analysis. Any change in these assumptions must be approved prior to submittal of the TIA.

a. Background Traffic— Use 4% annual growth rate for background traffic.

b. Approved projects for background traffic calculations:

Project Name	Case Number
Riverside and Lamar Multi Family	SP-2012-0271C
The Carpenter	SP-2016-0073C

c. Internal Trips/pass-by trips – 0%

d. Transit Trips/Walking/Biking – 15% for both AM and PM for office use based on location
10% for both AM and PM for restaurant based on urban/suburban data only

2. Trip Distribution to be determined based on existing and historical data.

III. Submittal Requirements

1. Submit five (5) hard copies and five (5) CD's containing the following: PDF of the TIA, Synchro network for all conditions analyzed and a CAD file for the site plan, if available.

2. Traffic signal modeling requirements (Synchro files must be in real world coordinates):
   a. City of Austin timing sheets to be included in the appendix of the TIA
   b. All intersections must be modeled in one Synchro file (including unsignalized intersections).
   c. Synchro signal timing sheets to be included in the following format:
      - existing conditions (am + pm on one sheet),
      - six (6) future conditions:
        - (am background, am background + site, am background + site + mitigation)
        - (pm background, pm background + site, pm background + site + mitigation)
3. Maps:
   a. A map showing all bicycle routes, bus transit and bus stops within ½ mile of the site.
   b. A map showing all background projects and estimated trips for each project.
   c. A map showing all roadways and driveways analyzed (labeled and dimensioned).
   d. An aerial map of all intersections with roadway improvements (dimensioned), including above ground utilities called out.

This scope and study is based upon the assumed development uses and intensities in the TIA Determination sheet dated May 2, 2018. Any change in these assumptions may require a change in the scope. For more detailed discussion on preparation of the TIA, please contact Land Use Review/Transportation of the Development Services Department.

Prepared by: Mehraein Phone: (512) 974 - 1608
Mehrnaz Mehraein, P.E.

Technical Appendices for

Transportation Impact Study

218 South Lamar Development in Austin, Texas

Appendix B
Data Collection – Existing Counts and Signal Timing Sheets

August 2018

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1074.40.001

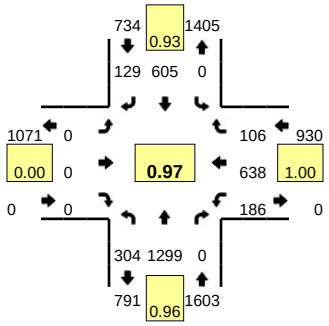
Type of peak hour being reported: System Peak

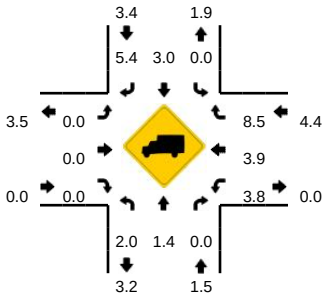
Method for determining peak hour: Total Entering Volume

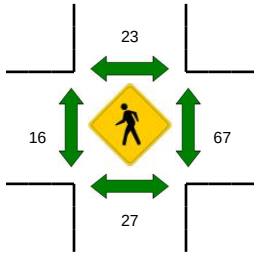
LOCATION: N Lamar Blvd -- W 6th St
CITY/STATE: Austin, TX

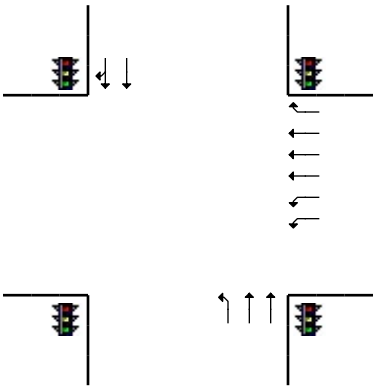
QC JOB #: 14701101
DATE: Tue, May 22 2018

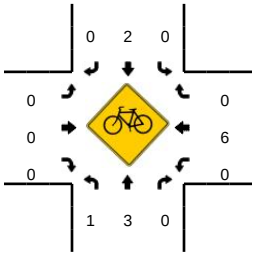
Peak-Hour: 8:00 AM -- 9:00 AM
Peak 15-Min: 8:00 AM -- 8:15 AM

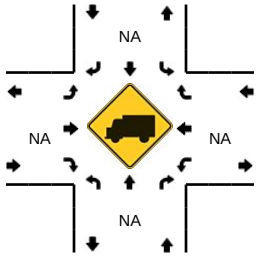


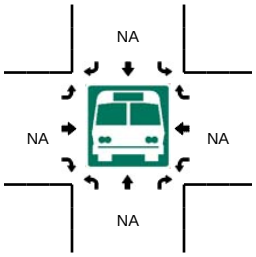












15-Min Count Period Beginning At	N Lamar Blvd (Northbound)				N Lamar Blvd (Southbound)				W 6th St (Eastbound)				W 6th St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	60	283	0	0	0	96	20	0	0	0	0	0	33	96	15	0	603	
7:15 AM	81	343	0	0	0	110	22	0	0	0	0	0	28	111	21	0	716	
7:30 AM	64	373	0	0	0	133	45	0	0	0	0	0	31	136	24	0	806	
7:45 AM	81	306	0	0	0	160	29	0	0	0	0	0	39	170	25	0	810	2935
8:00 AM	67	350	0	0	0	153	45	0	0	0	0	0	40	162	25	0	842	3174
8:15 AM	83	326	0	0	0	157	32	0	0	0	0	0	46	158	23	0	825	3283
8:30 AM	76	299	0	0	0	149	23	0	0	0	0	0	42	166	26	0	781	3258
8:45 AM	78	324	0	0	0	146	29	0	0	0	0	0	58	152	32	0	819	3267

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	268	1400	0	0	0	612	180	0	0	0	0	0	160	648	100	0	3368
Heavy Trucks	4	20	0		0	12	4		0	0	0		0	28	4		72
Pedestrians		12				16				12				40			80
Bicycles	0	1	0		0	1	0		0	0	0		0	1	0		3
Railroad																	
Stopped Buses																	

Comments:

Report generated on 6/13/2018 1:19 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

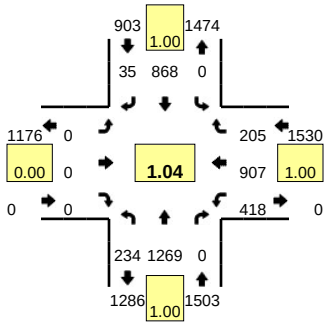
Type of peak hour being reported: System Peak

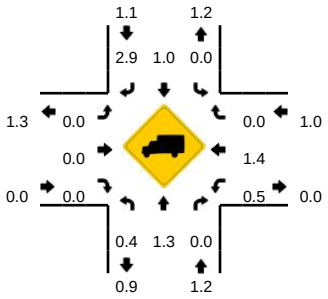
Method for determining peak hour: Total Entering Volume

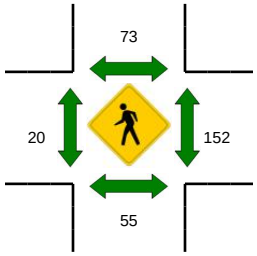
LOCATION: N Lamar Blvd -- W 6th St
CITY/STATE: Austin, TX

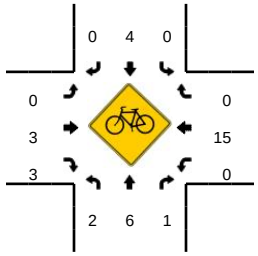
QC JOB #: 14701102
DATE: Tue, May 22 2018

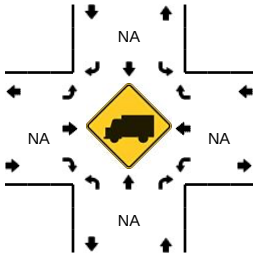
Peak-Hour: 4:30 PM -- 5:30 PM
Peak 15-Min: 5:15 PM -- 5:30 PM

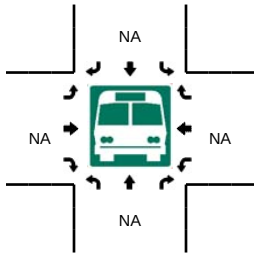












15-Min Count Period Beginning At	N Lamar Blvd (Northbound)				N Lamar Blvd (Southbound)				W 6th St (Eastbound)				W 6th St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	46	286	0	0	0	307	36	0	0	0	0	0	134	223	55	0	1087	
4:15 PM	60	258	0	0	0	245	16	0	0	0	0	0	122	220	64	0	985	
4:30 PM	58	331	0	0	0	250	12	0	0	0	0	0	112	199	57	0	1019	
4:45 PM	62	318	0	0	0	195	10	0	0	0	0	0	91	237	52	0	965	4056
5:00 PM	55	326	0	0	0	213	9	0	0	0	0	0	104	240	57	0	1004	3973
5:15 PM	59	294	0	0	0	210	4	0	0	0	0	0	111	231	39	0	948	3936
5:30 PM	56	265	0	0	0	177	14	0	0	0	0	0	96	216	43	0	867	3784
5:45 PM	60	283	0	0	0	207	11	0	0	0	0	0	99	213	60	0	933	3752

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	236	1176	0	0	0	840	16	0	0	0	0	0	444	924	156	0	3792
Heavy Trucks	0	4	0		0	8	0		0	0	0		0	4	0		16
Pedestrians		44				84				16				132			276
Bicycles	0	2	1		0	1	0		0	3	2		0	7	0		16
Railroad																	
Stopped Buses																	

Comments:

Report generated on 6/13/2018 1:20 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Quality Counts
TRANSPORTATION DATA
COLLECTION SERVICES

Location: N Lamar Blvd & W 5th St
Date: 5/22/2018
Site Code: 14701103

	N Lamar Blvd Southbound					W 5th St Westbound					N Lamar Blvd Northbound					N Lamar Blvd Service Rd Northbound					W 5th St Eastbound				
Start Time	Right	Thru to Service Rd	Thru	Left	U-Turns	Right	Thru	Left to Service Rd	Left	U-Turns	Right	Thru	Left	Left to Service Rd	U-Turns	Right to W 5th St	Thru to N Lamar Blvd	Left to W 5th St	Left to N Lamar Blvd	U-Turns	Right to Service Rd	Right	Thru	Left	U-Turns
07:00 AM	0	2	96	20	0	0	0	0	0	0	91	292	0	0	0	3	0	0	0	0	0	27	252	57	0
07:15 AM	0	1	110	30	0	0	0	0	0	0	76	324	0	0	0	2	0	0	0	0	0	33	266	73	0
07:30 AM	0	5	122	26	0	0	0	0	0	0	78	342	0	0	0	1	1	0	0	0	3	15	262	68	0
07:45 AM	0	13	151	26	0	0	0	0	0	0	91	315	0	0	0	4	0	0	0	0	3	25	298	66	0
08:00 AM	0	11	155	27	0	0	0	0	0	0	113	337	0	0	0	2	0	0	0	0	3	25	305	67	0
08:15 AM	0	7	163	30	0	0	0	0	0	0	103	329	0	0	0	0	0	0	0	0	1	16	299	60	0
08:30 AM	0	2	154	34	0	0	0	0	0	0	107	295	0	0	0	3	0	0	0	0	2	13	309	69	0
08:45 AM	0	12	169	27	0	0	0	0	0	0	105	327	0	0	0	3	0	0	0	0	1	31	278	61	0
Total	**0**	**53**	**1120**	**220**	**0**	**0**	**0**	**0**	**0**	**0**	**764**	**2561**	**0**	**0**	**0**	**18**	**1**	**0**	**0**	**0**	**13**	**185**	**2269**	**521**	**0**

Peak Hour: 8:00 AM - 9:00 AM
Peak 15: 8:00 AM - 8:15 AM
PHF: 0.970096

Quality Counts
TRANSPORTATION DATA
COLLECTION SERVICES

Location: N Lamar Blvd & W 5th St
Date: 5/22/2018
Site Code: 14701104

	N Lamar Blvd Southbound					W 5th St Westbound					N Lamar Blvd Northbound					N Lamar Blvd Service Rd Northbound					W 5th St Eastbound				
Start Time	Right	Thru to Service Rd	Thru	Left	U-Turns	Right	Thru	Left to Service Rd	Left	U-Turns	Right	Thru	Left	Left to Service Rd	U-Turns	Right to W 5th St	Thru to N Lamar Blvd	Left to W 5th St	Left to N Lamar Blvd	U-Turns	Right to Service Rd	Right	Thru	Left	U-Turns
04:00 PM	0	0	397	34	0	0	0	0	0	0	50	253	0	0	0	4	0	0	0	0	1	100	172	64	0
04:15 PM	0	0	320	33	0	0	0	0	0	0	52	230	0	0	0	7	0	0	0	0	3	113	161	65	0
04:30 PM	0	0	348	21	0	0	0	0	0	0	35	283	0	0	0	12	0	0	0	0	3	114	210	81	0
04:45 PM	0	0	276	16	0	0	0	0	0	0	55	292	0	0	0	2	0	0	0	0	2	137	212	75	0
05:00 PM	0	1	329	23	0	0	0	0	0	0	53	283	0	0	0	5	0	0	0	0	0	116	213	75	0
05:15 PM	0	0	311	21	0	0	0	0	0	0	59	267	0	0	0	8	0	0	0	0	1	137	224	71	0
05:30 PM	0	1	276	14	0	0	0	0	0	0	66	249	0	0	0	10	0	0	0	0	2	128	235	60	0
05:45 PM	0	1	295	15	0	0	0	0	0	0	67	259	0	0	0	8	0	0	0	0	1	112	225	59	0
Total	**0**	**3**	**2552**	**177**	**0**	**0**	**0**	**0**	**0**	**0**	**437**	**2116**	**0**	**0**	**0**	**56**	**0**	**0**	**0**	**0**	**13**	**957**	**1652**	**550**	**0**

Peak Hour: 4:30 PM - 5:30 PM
Peak 15: 4:30 PM - 4:45 PM
PHF: 0.987127

Type of peak hour being reported: System Peak

Method for determining peak hour: Total Entering Volume

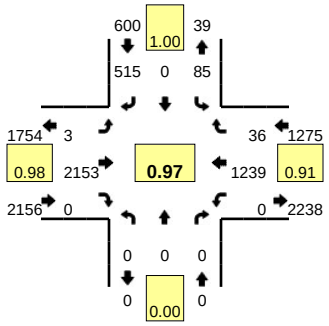
LOCATION: Sandra Muraida Way -- W Cesar Chavez St

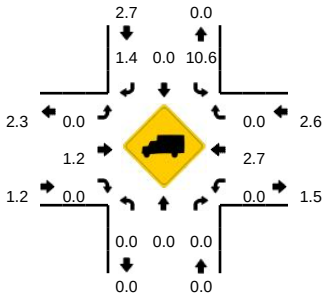
CITY/STATE: Austin, TX

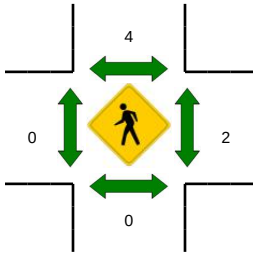
QC JOB #: 14701105

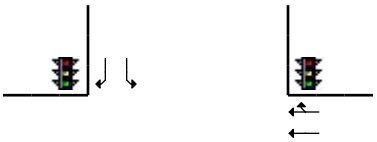
DATE: Tue, May 22 2018

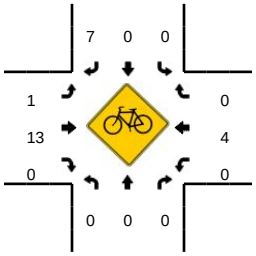
Peak-Hour: 8:00 AM -- 9:00 AM
Peak 15-Min: 8:00 AM -- 8:15 AM

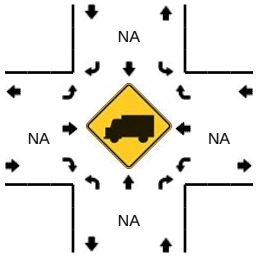


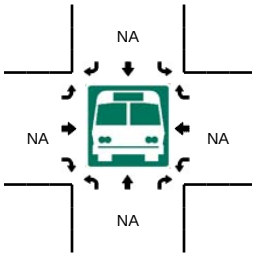












15-Min Count Period Beginning At	Sandra Muraida Way (Northbound)				Sandra Muraida Way (Southbound)				W Cesar Chavez St (Eastbound)				W Cesar Chavez St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	0	0	0	0	18	0	82	0	0	434	0	0	0	201	11	0	746	
7:15 AM	0	0	0	0	19	0	117	0	0	481	0	0	0	240	5	0	862	
7:30 AM	0	0	0	0	16	0	120	0	0	511	0	0	0	299	5	0	951	
7:45 AM	0	0	0	0	19	0	123	0	0	581	0	0	0	337	5	0	1065	3624
8:00 AM	0	0	0	0	18	0	123	0	0	550	0	0	0	343	8	0	1042	3920
8:15 AM	0	0	0	0	24	0	127	0	2	564	0	0	0	301	11	0	1029	4087
8:30 AM	0	0	0	0	22	0	125	0	0	516	0	0	0	317	9	0	989	4125
8:45 AM	0	0	0	0	21	0	140	0	1	523	0	0	0	278	8	0	971	4031

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	0	0	0	72	0	492	0	0	2200	0	0	0	1372	32	0	4168
Heavy Trucks	0	0	0		8	0	4		0	24	0		0	56	0		92
Pedestrians		0				0				0				4			4
Bicycles	0	0	0		0	0	0		1	2	0		0	0	0		3
Railroad																	
Stopped Buses																	

Comments:

Report generated on 6/13/2018 1:19 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: System Peak

Method for determining peak hour: Total Entering Volume

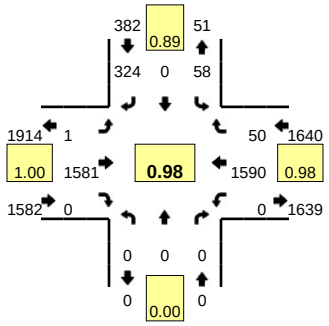
LOCATION: Sandra Muraida Way -- W Cesar Chavez St

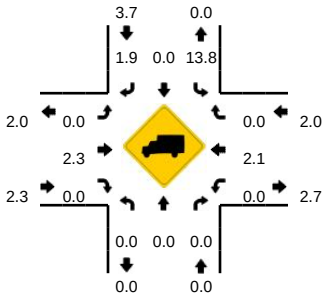
CITY/STATE: Austin, TX

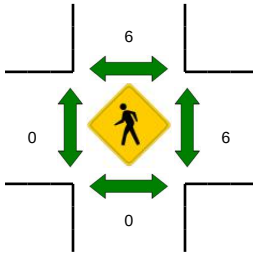
QC JOB #: 14701106

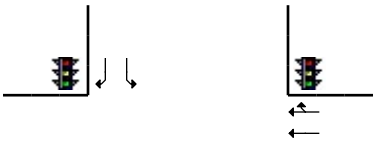
DATE: Tue, May 22 2018

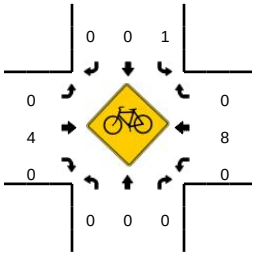
Peak-Hour: 4:30 PM -- 5:30 PM
Peak 15-Min: 5:15 PM -- 5:30 PM

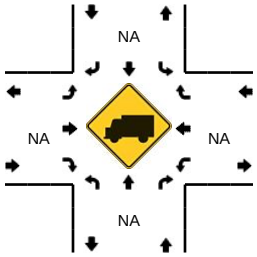


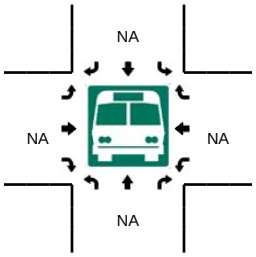












15-Min Count Period Beginning At	Sandra Muraida Way (Northbound)				Sandra Muraida Way (Southbound)				W Cesar Chavez St (Eastbound)				W Cesar Chavez St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	0	0	0	0	15	0	97	0	0	371	0	0	0	442	14	0	939	
4:15 PM	0	0	0	0	19	0	78	0	0	401	0	0	0	463	8	0	969	
4:30 PM	0	0	0	0	24	0	82	0	0	420	0	0	0	433	11	0	970	
4:45 PM	0	0	0	0	11	0	72	0	1	370	0	0	0	433	11	0	898	3776
5:00 PM	0	0	0	0	11	0	75	0	0	398	0	0	0	321	11	0	816	3653
5:15 PM	0	0	0	0	12	0	95	0	0	393	0	0	0	403	17	0	920	3604
5:30 PM	0	0	0	0	12	0	101	0	0	367	0	0	0	437	10	0	927	3561
5:45 PM	0	0	0	0	17	0	78	0	1	398	0	0	0	438	8	0	940	3603

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	0	0	0	48	0	380	0	0	1572	0	0	0	1612	68	0	3680
Heavy Trucks	0	0	0		8	0	8		0	44	0		0	24	0		84
Pedestrians		0				0				0				12			12
Bicycles	0	0	0		1	0	0		0	2	0		0	2	0		5
Railroad																	
Stopped Buses																	

Comments:

Report generated on 6/13/2018 1:20 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: System Peak

Method for determining peak hour: Total Entering Volume

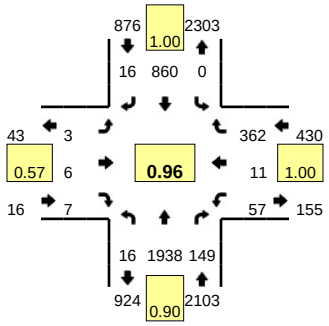
LOCATION: S Lamar Blvd -- W Riverside Dr

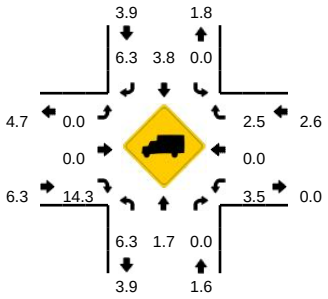
CITY/STATE: Austin, TX

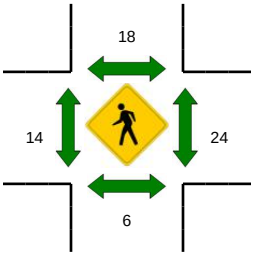
QC JOB #: 14701107

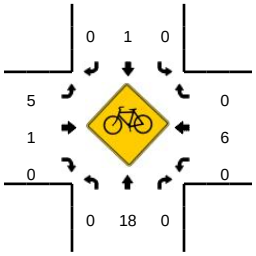
DATE: Tue, May 22 2018

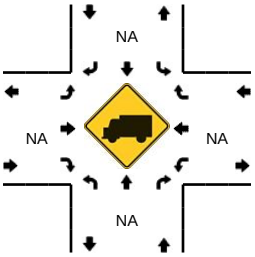
Peak-Hour: 8:00 AM -- 9:00 AM
Peak 15-Min: 8:00 AM -- 8:15 AM

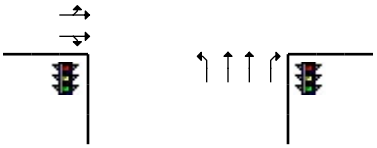


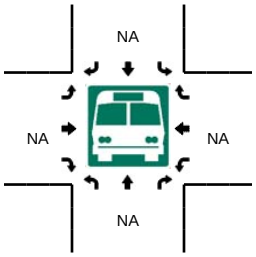












15-Min Count Period Beginning At	S Lamar Blvd (Northbound)				S Lamar Blvd (Southbound)				W Riverside Dr (Eastbound)				W Riverside Dr (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	7	386	15	0	0	159	1	0	1	1	0	0	8	1	48	0	627	
7:15 AM	5	496	20	0	0	184	2	0	1	0	3	0	6	1	59	0	777	
7:30 AM	3	502	38	0	0	158	4	0	2	2	0	0	15	6	64	0	794	
7:45 AM	2	445	36	0	0	190	4	0	0	1	3	0	9	6	92	0	788	2986
8:00 AM	4	539	44	0	0	207	7	0	1	4	2	0	14	3	63	0	888	3247
8:15 AM	7	476	35	0	0	213	2	0	1	1	1	0	18	5	100	0	859	3329
8:30 AM	5	430	34	0	0	210	2	0	1	0	2	0	13	3	111	0	811	3346
8:45 AM	0	493	36	0	0	230	5	0	0	1	2	0	12	0	88	0	867	3425

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	16	2156	176	0	0	828	28	0	4	16	8	0	56	12	252	0	3552
Heavy Trucks	0	52	0		0	16	0		0	0	0		4	0	4		76
Pedestrians		4				24				20				28			76
Bicycles	0	2	0		0	0	0		3	0	0		0	4	0		9
Railroad																	
Stopped Buses																	

Comments:

Report generated on 6/13/2018 1:19 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

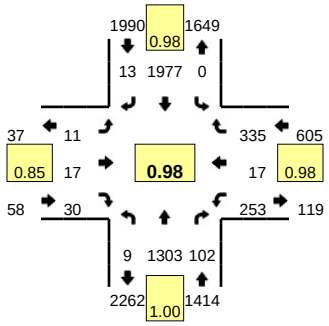
Type of peak hour being reported: System Peak

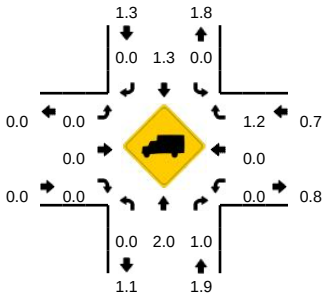
Method for determining peak hour: Total Entering Volume

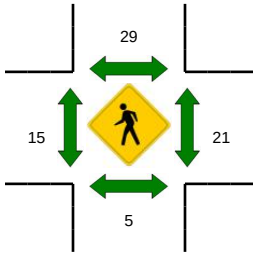
LOCATION: S Lamar Blvd -- W Riverside Dr
CITY/STATE: Austin, TX

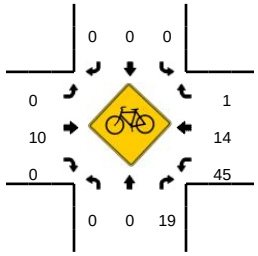
QC JOB #: 14701108
DATE: Tue, May 22 2018

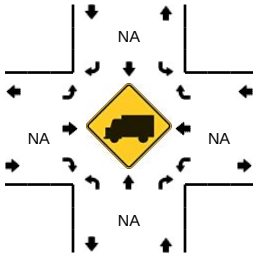
Peak-Hour: 4:30 PM -- 5:30 PM
Peak 15-Min: 5:15 PM -- 5:30 PM

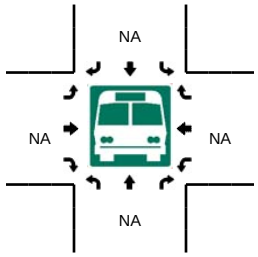












15-Min Count Period Beginning At	S Lamar Blvd (Northbound)				S Lamar Blvd (Southbound)				W Riverside Dr (Eastbound)				W Riverside Dr (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	1	306	24	1	0	481	5	0	5	1	9	0	22	0	71	0	926	
4:15 PM	0	277	29	0	0	488	2	0	1	1	6	0	46	2	84	0	936	
4:30 PM	0	313	23	1	0	495	4	0	2	5	8	0	43	1	103	0	998	
4:45 PM	4	344	24	0	0	468	2	0	2	1	3	0	73	2	85	0	1008	3868
5:00 PM	1	320	30	0	0	510	3	0	5	5	10	0	65	6	72	0	1027	3969
5:15 PM	2	326	25	1	0	504	4	0	2	6	9	0	72	8	75	0	1034	4067
5:30 PM	3	301	26	0	0	470	0	0	7	3	9	0	73	8	77	1	978	4047
5:45 PM	0	315	28	1	0	467	1	0	1	2	2	0	54	4	79	0	954	3993

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	8	1304	100	4	0	2016	16	0	8	24	36	0	288	32	300	0	4136
Heavy Trucks	0	4	0		0	16	0		0	0	0		0	0	4		24
Pedestrians		8				44				8				32			92
Bicycles	0	0	2		0	0	0		0	3	0		11	4	1		21
Railroad																	
Stopped Buses																	

Comments:

Report generated on 6/13/2018 1:20 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

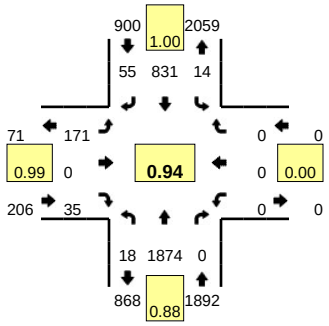
Type of peak hour being reported: System Peak

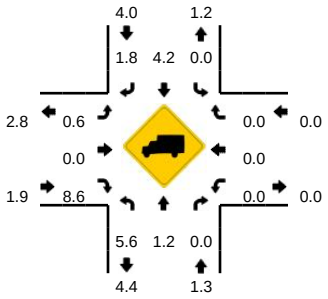
Method for determining peak hour: Total Entering Volume

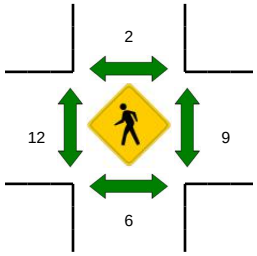
LOCATION: S Lamar Blvd -- Toomey Rd
CITY/STATE: Austin, TX

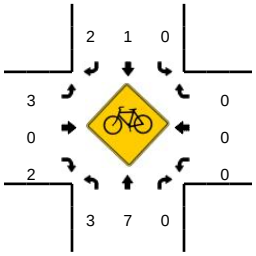
QC JOB #: 14701109
DATE: Tue, May 22 2018

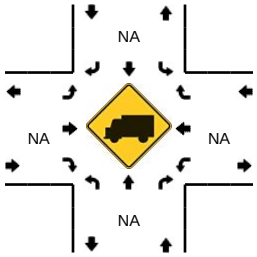
Peak-Hour: 8:00 AM -- 9:00 AM
Peak 15-Min: 8:00 AM -- 8:15 AM

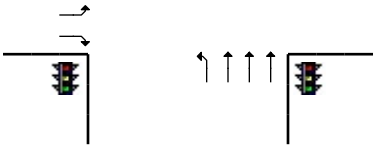


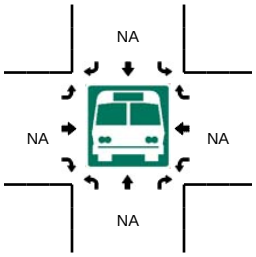












15-Min Count Period Beginning At	S Lamar Blvd (Northbound)				S Lamar Blvd (Southbound)				Toomey Rd (Eastbound)				Toomey Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	3	379	0	0	0	145	20	1	19	0	6	0	0	0	0	0	573	
7:15 AM	2	479	0	0	0	181	3	2	17	0	4	0	0	0	0	0	688	
7:30 AM	2	513	0	0	0	160	8	1	35	0	8	0	0	0	0	0	727	
7:45 AM	2	438	0	1	0	189	12	2	41	0	9	0	0	0	0	0	694	2682
8:00 AM	5	531	0	0	0	197	13	3	46	0	6	0	0	0	0	0	801	2910
8:15 AM	5	463	0	2	0	213	11	4	46	0	10	0	0	0	0	0	754	2976
8:30 AM	4	415	0	0	0	202	17	4	43	0	9	0	0	0	0	0	694	2943
8:45 AM	2	465	0	0	0	219	14	3	36	0	10	0	0	0	0	0	749	2998

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	20	2124	0	0	0	788	52	12	184	0	24	0	0	0	0	0	3204
Heavy Trucks	0	36	0		0	20	0		0	0	0		0	0	0		56
Pedestrians		4				0				20				8			32
Bicycles	0	1	0		0	0	0		0	0	0		0	0	0		1
Railroad																	
Stopped Buses																	

Comments:

Report generated on 6/13/2018 1:19 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

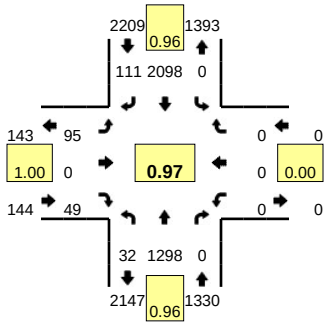
Type of peak hour being reported: System Peak

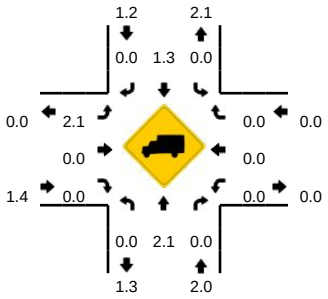
Method for determining peak hour: Total Entering Volume

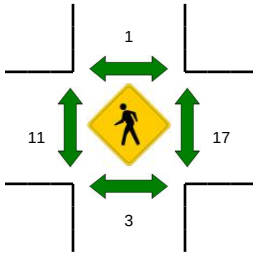
LOCATION: S Lamar Blvd -- Toomey Rd
CITY/STATE: Austin, TX

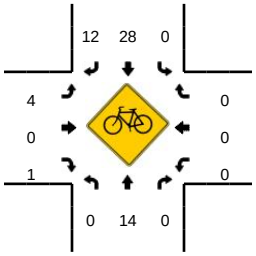
QC JOB #: 14701110
DATE: Tue, May 22 2018

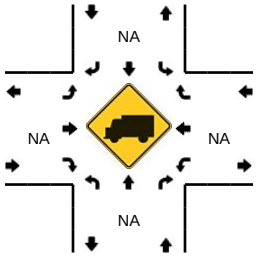
Peak-Hour: 4:30 PM -- 5:30 PM
Peak 15-Min: 5:15 PM -- 5:30 PM

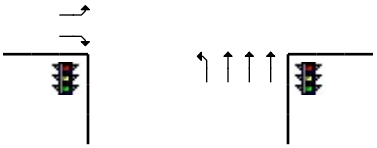


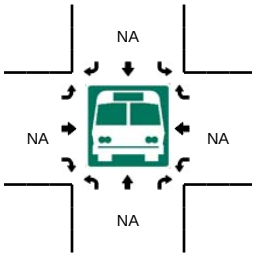












15-Min Count Period Beginning At	S Lamar Blvd (Northbound)				S Lamar Blvd (Southbound)				Toomey Rd (Eastbound)				Toomey Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	6	300	0	0	0	488	19	0	26	0	19	0	0	0	0	0	858	
4:15 PM	8	278	0	0	0	499	25	0	22	0	12	0	0	0	0	0	844	
4:30 PM	4	303	0	0	0	520	25	0	26	0	15	0	0	0	0	0	893	
4:45 PM	9	349	0	0	0	500	28	0	27	0	15	0	0	0	0	0	928	3523
5:00 PM	6	313	0	0	0	539	24	0	22	0	11	0	0	0	0	0	915	3580
5:15 PM	13	333	0	0	0	539	34	0	20	0	8	0	0	0	0	0	947	3683
5:30 PM	6	301	0	0	0	514	23	0	19	0	9	0	0	0	0	0	872	3662
5:45 PM	14	311	0	0	0	476	30	0	21	0	12	0	0	0	0	0	864	3598

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	52	1332	0	0	0	2156	136	0	80	0	32	0	0	0	0	0	3788
Heavy Trucks	0	12	0		0	24	0		0	0	0		0	0	0		36
Pedestrians		0				0				0				24			24
Bicycles	0	1	0		0	8	4		0	0	0		0	0	0		13
Railroad																	
Stopped Buses																	

Comments:

Report generated on 6/13/2018 1:20 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

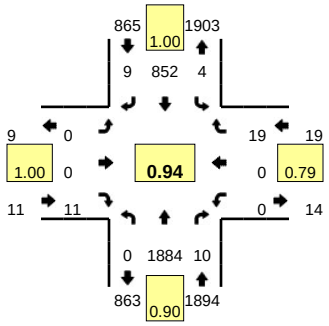
Type of peak hour being reported: System Peak

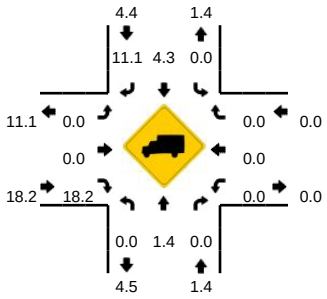
Method for determining peak hour: Total Entering Volume

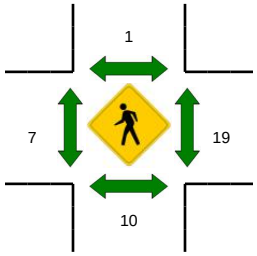
LOCATION: S Lamar Blvd -- Butler Rd
CITY/STATE: Austin, TX

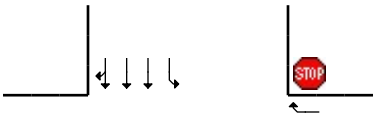
QC JOB #: 14701111
DATE: Tue, May 22 2018

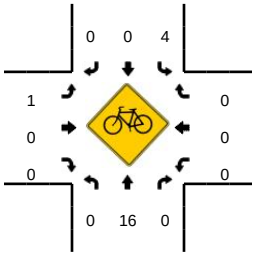
Peak-Hour: 8:00 AM -- 9:00 AM
Peak 15-Min: 8:00 AM -- 8:15 AM

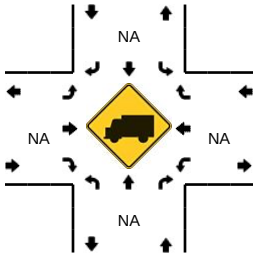


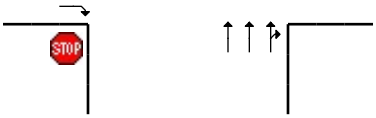


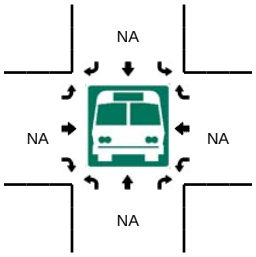












15-Min Count Period Beginning At	S Lamar Blvd (Northbound)				S Lamar Blvd (Southbound)				Butler Rd (Eastbound)				Butler Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	0	375	2	0	4	144	3	0	0	0	1	0	0	0	0	0	529	
7:15 AM	0	483	0	0	1	179	5	0	0	0	2	0	0	0	1	0	671	
7:30 AM	0	532	0	0	0	166	4	0	1	0	4	0	0	0	6	0	713	
7:45 AM	0	442	4	0	3	193	3	0	0	0	5	0	0	0	1	0	651	2564
8:00 AM	0	528	0	0	2	196	4	0	0	0	2	0	0	0	6	0	738	2773
8:15 AM	0	486	2	0	0	220	2	0	0	0	4	0	0	0	3	0	717	2819
8:30 AM	0	417	5	0	1	208	3	0	0	0	3	0	0	0	4	0	641	2747
8:45 AM	0	453	3	0	1	228	0	0	0	0	2	0	0	0	6	0	693	2789

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	2112	0	0	8	784	16	0	0	0	8	0	0	0	24	0	2952
Heavy Trucks	0	44	0		0	20	0		0	0	0		0	0	0		64
Pedestrians		0				0				8				28			36
Bicycles	0	2	0		0	0	0		1	0	0		0	0	0		3
Railroad																	
Stopped Buses																	

Comments:

Report generated on 6/13/2018 1:19 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

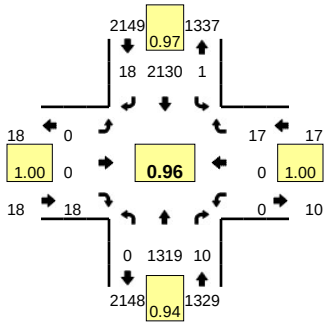
Type of peak hour being reported: System Peak

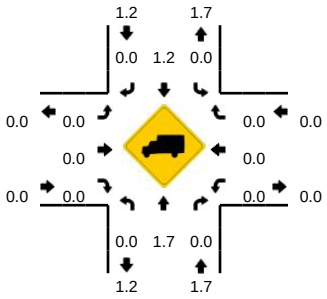
Method for determining peak hour: Total Entering Volume

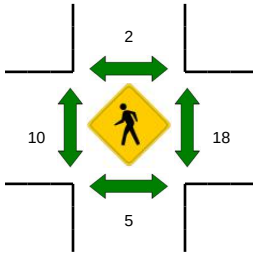
LOCATION: S Lamar Blvd -- Butler Rd
CITY/STATE: Austin, TX

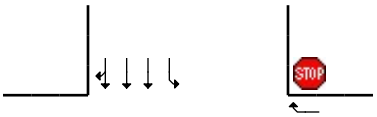
QC JOB #: 14701112
DATE: Tue, May 22 2018

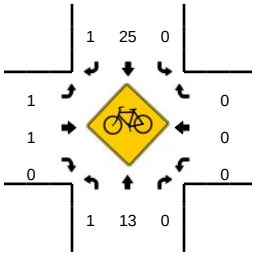
Peak-Hour: 4:30 PM -- 5:30 PM
Peak 15-Min: 5:15 PM -- 5:30 PM

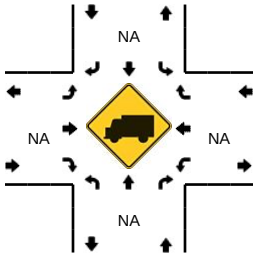


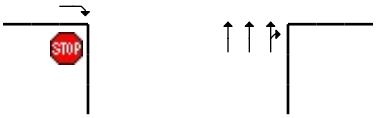


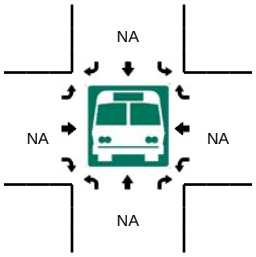












15-Min Count Period Beginning At	S Lamar Blvd (Northbound)				S Lamar Blvd (Southbound)				Butler Rd (Eastbound)				Butler Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	0	312	4	0	0	498	8	0	0	0	0	0	0	0	2	0	824	
4:15 PM	0	285	5	0	0	510	5	0	0	0	3	0	0	0	1	0	809	
4:30 PM	0	304	2	0	0	531	4	1	0	0	5	0	0	0	3	0	850	
4:45 PM	0	354	3	0	0	511	2	0	0	0	6	0	0	0	2	0	878	3361
5:00 PM	0	312	1	0	0	542	6	0	0	0	4	0	0	0	8	0	873	3410
5:15 PM	0	349	4	0	0	546	6	0	0	0	3	0	0	0	4	0	912	3513
5:30 PM	0	306	7	0	1	508	9	1	0	0	5	0	0	0	3	0	840	3503
5:45 PM	0	327	2	0	0	486	6	0	0	0	6	0	0	0	2	0	829	3454

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	1396	16	0	0	2184	24	0	0	0	12	0	0	0	16	0	3648
Heavy Trucks	0	4	0		0	20	0		0	0	0		0	0	0		24
Pedestrians		0				8				0				24			32
Bicycles	0	2	0		0	7	1		0	0	0		0	0	0		10
Railroad																	
Stopped Buses																	

Comments:

Report generated on 6/13/2018 1:20 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

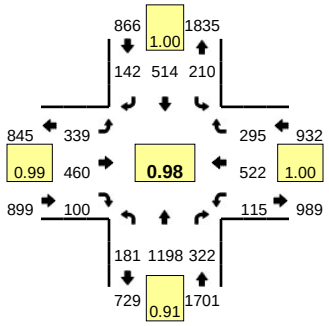
Type of peak hour being reported: System Peak

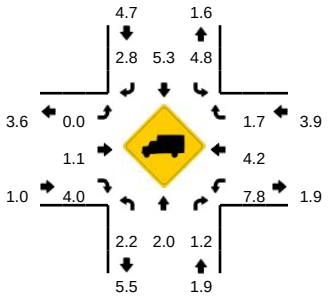
Method for determining peak hour: Total Entering Volume

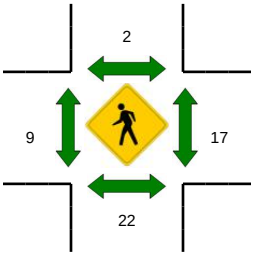
LOCATION: S Lamar Blvd -- Barton Springs Rd
CITY/STATE: Austin, TX

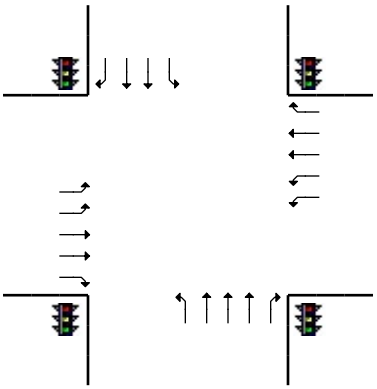
QC JOB #: 14701113
DATE: Tue, May 22 2018

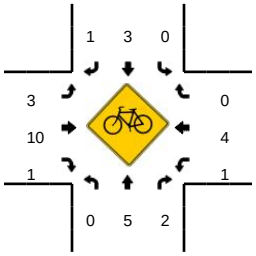
Peak-Hour: 8:00 AM -- 9:00 AM
Peak 15-Min: 8:00 AM -- 8:15 AM

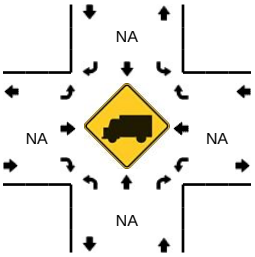


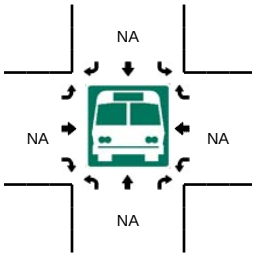












15-Min Count Period Beginning At	S Lamar Blvd (Northbound)				S Lamar Blvd (Southbound)				Barton Springs Rd (Eastbound)				Barton Springs Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	20	301	68	0	30	86	21	0	35	72	8	0	20	59	37	0	757	
7:15 AM	31	382	108	0	50	107	30	0	41	72	11	0	41	83	56	0	1012	
7:30 AM	45	383	82	0	34	99	30	0	87	131	27	0	18	100	63	0	1099	
7:45 AM	33	277	84	0	57	112	29	0	112	136	11	0	15	144	70	0	1080	3948
8:00 AM	40	335	92	0	55	111	36	1	77	124	25	0	26	128	76	0	1126	4317
8:15 AM	40	333	86	0	42	122	43	2	91	132	24	0	33	121	65	0	1134	4439
8:30 AM	50	244	66	0	53	136	29	0	91	108	26	0	28	126	79	0	1036	4376
8:45 AM	51	286	78	0	57	145	34	0	80	96	25	0	28	147	75	0	1102	4398

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	160	1340	368	0	220	444	144	4	308	496	100	0	104	512	304	0	4504
Heavy Trucks	4	36	0		8	12	0		0	4	0		8	28	4		104
Pedestrians		32				4				8				16			60
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

Report generated on 6/13/2018 1:19 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

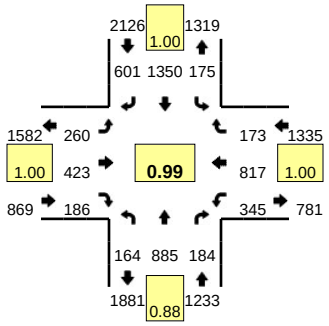
Type of peak hour being reported: System Peak

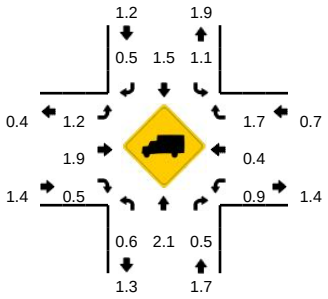
Method for determining peak hour: Total Entering Volume

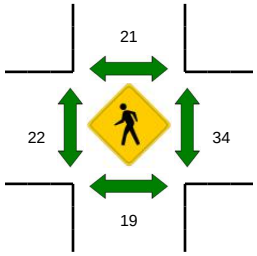
LOCATION: S Lamar Blvd -- Barton Springs Rd
CITY/STATE: Austin, TX

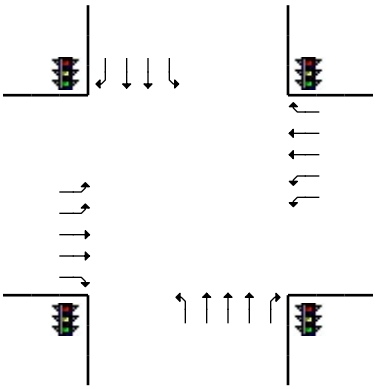
QC JOB #: 14701114
DATE: Tue, May 22 2018

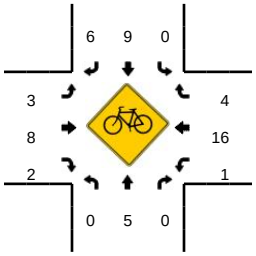
Peak-Hour: 4:30 PM -- 5:30 PM
Peak 15-Min: 5:15 PM -- 5:30 PM

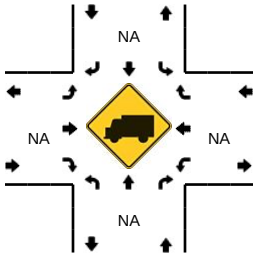


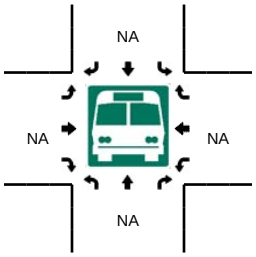












15-Min Count Period Beginning At	S Lamar Blvd (Northbound)				S Lamar Blvd (Southbound)				Barton Springs Rd (Eastbound)				Barton Springs Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	42	188	42	0	54	329	106	1	61	100	46	0	75	155	62	0	1261	
4:15 PM	39	184	40	0	39	368	116	1	61	89	34	0	77	188	39	0	1275	
4:30 PM	31	196	41	0	47	344	138	0	65	95	39	0	96	202	39	0	1333	
4:45 PM	45	237	42	0	36	331	141	0	70	119	51	0	74	202	48	0	1396	5265
5:00 PM	46	201	42	0	53	354	149	1	62	111	60	0	85	210	50	0	1424	5428
5:15 PM	42	251	59	0	38	321	173	0	63	98	36	0	90	203	36	0	1410	5563
5:30 PM	39	200	46	0	46	334	135	1	74	118	52	0	84	192	34	0	1355	5585
5:45 PM	42	218	47	0	42	326	126	1	66	104	70	0	92	196	48	0	1378	5567

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	168	1004	236	0	152	1284	692	0	252	392	144	0	360	812	144	0	5640
Heavy Trucks	0	4	0		0	24	0		0	0	4		0	4	4		40
Pedestrians		16				20				16				64			116
Bicycles	0	0	0		0	4	1		0	3	1		0	2	0		11
Railroad																	
Stopped Buses																	

Comments:

Report generated on 6/13/2018 1:20 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

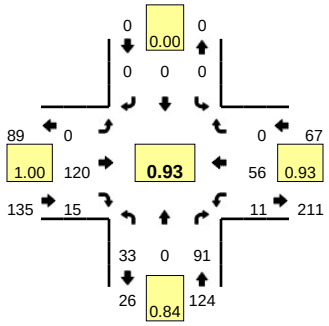
Type of peak hour being reported: System Peak

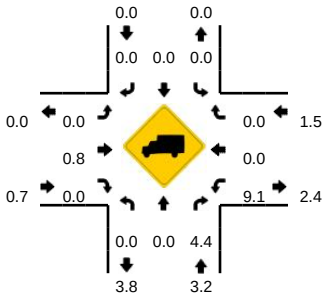
Method for determining peak hour: Total Entering Volume

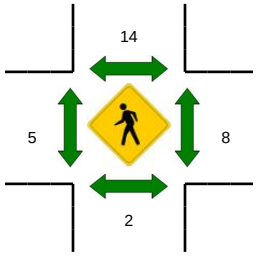
LOCATION: Jessie St -- Toomey Rd
CITY/STATE: Austin, TX

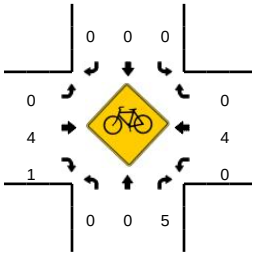
QC JOB #: 14701115
DATE: Tue, May 22 2018

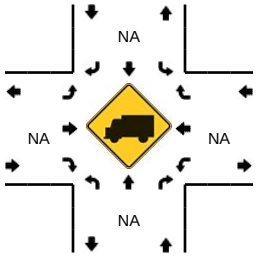
Peak-Hour: 8:00 AM -- 9:00 AM
Peak 15-Min: 8:00 AM -- 8:15 AM

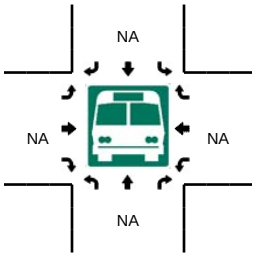












15-Min Count Period Beginning At	Jessie St (Northbound)				Jessie St (Southbound)				Toomey Rd (Eastbound)				Toomey Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	2	0	8	0	0	0	0	0	0	17	1	0	3	12	0	0	43	
7:15 AM	1	0	10	0	0	0	0	0	0	17	0	0	1	5	0	0	34	
7:30 AM	5	0	19	0	0	0	0	0	0	26	4	0	0	8	0	0	62	
7:45 AM	6	0	25	0	0	0	0	0	0	17	2	0	2	12	0	0	64	203
8:00 AM	8	0	29	0	0	0	0	0	0	31	2	0	2	16	0	0	88	248
8:15 AM	5	0	28	0	0	0	0	0	0	24	4	0	2	9	0	0	72	286
8:30 AM	13	0	15	0	0	0	0	0	0	30	4	0	4	16	0	0	82	306
8:45 AM	7	0	19	0	0	0	0	0	0	35	5	0	3	15	0	0	84	326

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	32	0	116	0	0	0	0	0	0	124	8	0	8	64	0	0	352
Heavy Trucks	0	0	0		0	0	0		0	0	0		0	0	0		0
Pedestrians		0				12				4				8			24
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

Report generated on 6/13/2018 1:19 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

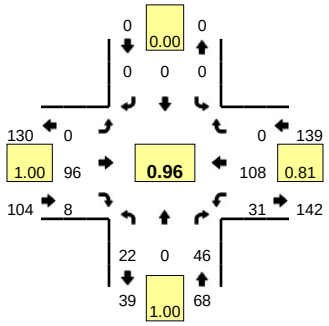
Type of peak hour being reported: System Peak

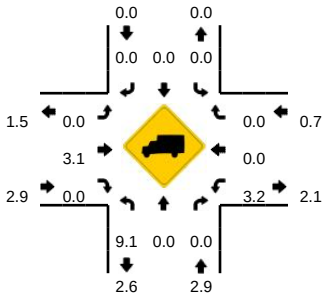
Method for determining peak hour: Total Entering Volume

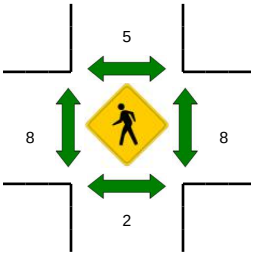
LOCATION: Jessie St -- Toomey Rd
CITY/STATE: Austin, TX

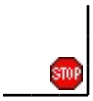
QC JOB #: 14701116
DATE: Tue, May 22 2018

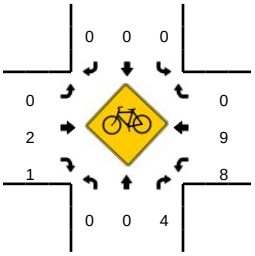
Peak-Hour: 4:30 PM -- 5:30 PM
Peak 15-Min: 5:15 PM -- 5:30 PM

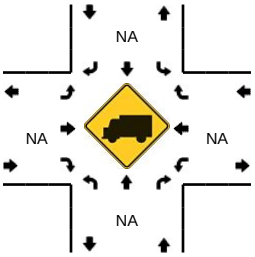


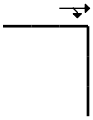


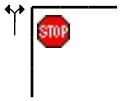


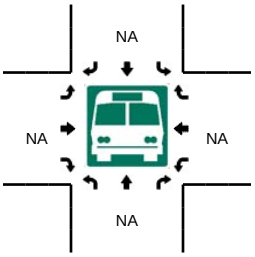












15-Min Count Period Beginning At	Jessie St (Northbound)				Jessie St (Southbound)				Toomey Rd (Eastbound)				Toomey Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	3	0	9	0	0	0	0	0	0	29	5	0	4	13	0	0	63	
4:15 PM	5	0	13	0	0	0	0	0	0	21	6	0	3	30	0	0	78	
4:30 PM	7	0	10	0	0	0	0	0	0	29	1	0	4	24	0	0	75	
4:45 PM	5	0	16	0	0	0	0	0	0	24	2	0	9	29	0	0	85	301
5:00 PM	4	0	9	0	0	0	0	0	0	24	3	0	6	24	0	0	70	308
5:15 PM	6	0	11	0	0	0	0	0	0	19	2	0	12	31	0	0	81	311
5:30 PM	7	0	7	0	0	0	0	0	0	23	4	0	4	18	0	0	63	299
5:45 PM	6	0	8	0	0	0	0	0	0	22	1	0	4	30	0	0	71	285

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	24	0	44	0	0	0	0	0	0	76	8	0	48	124	0	0	324
Heavy Trucks	0	0	0		0	0	0		0	0	0		0	0	0		0
Pedestrians		0				0				4				8			12
Bicycles	0	0	0		0	0	0		0	0	0		0	4	0		4
Railroad																	
Stopped Buses																	

Comments:

Report generated on 6/13/2018 1:20 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

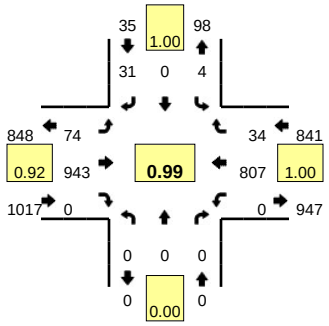
Type of peak hour being reported: System Peak

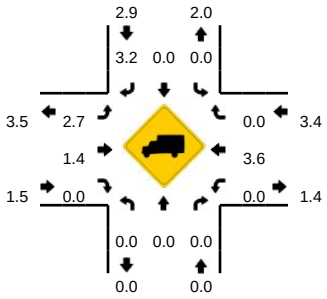
Method for determining peak hour: Total Entering Volume

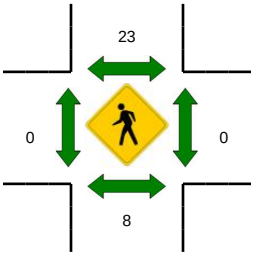
LOCATION: Jessie St -- Barton Springs Rd
CITY/STATE: Austin, TX

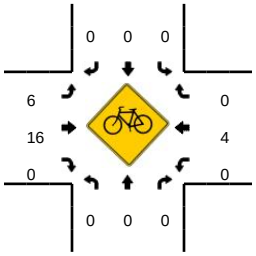
QC JOB #: 14701117
DATE: Tue, May 22 2018

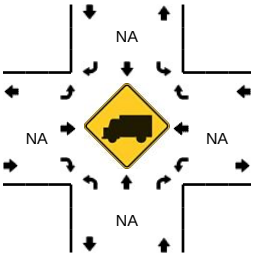
Peak-Hour: 8:00 AM -- 9:00 AM
Peak 15-Min: 8:00 AM -- 8:15 AM

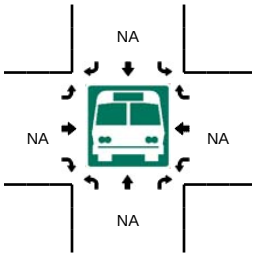












15-Min Count Period Beginning At	Jessie St (Northbound)				Jessie St (Southbound)				Barton Springs Rd (Eastbound)				Barton Springs Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	0	0	0	0	0	0	3	0	0	110	0	2	0	105	6	0	226	
7:15 AM	0	0	0	0	0	0	1	0	8	151	0	3	0	126	7	0	296	
7:30 AM	0	0	0	0	3	0	4	0	4	230	0	1	0	187	6	0	435	
7:45 AM	0	0	0	0	0	0	4	0	9	246	0	3	0	195	6	0	463	1420
8:00 AM	0	0	0	0	0	0	7	0	20	255	0	1	0	188	8	0	479	1673
8:15 AM	0	0	0	0	0	0	6	0	15	232	0	7	0	210	7	0	477	1854
8:30 AM	0	0	0	0	2	0	9	0	14	224	0	2	0	193	10	0	454	1873
8:45 AM	0	0	0	0	2	0	9	0	15	232	0	0	0	216	9	0	483	1893

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	0	0	0	0	0	28	0	80	1020	0	4	0	752	32	0	1916
Heavy Trucks	0	0	0		0	0	0		4	4	0		0	32	0		40
Pedestrians		12				16				0				0			28
Bicycles	0	0	0		0	0	0		0	1	0		0	0	0		1
Railroad																	
Stopped Buses																	

Comments:

Report generated on 6/13/2018 1:19 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

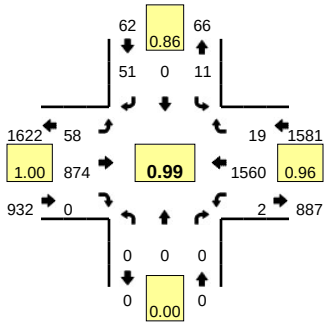
Type of peak hour being reported: System Peak

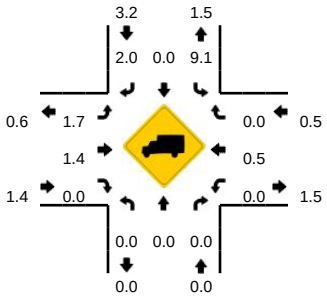
Method for determining peak hour: Total Entering Volume

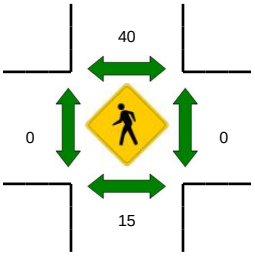
LOCATION: Jessie St -- Barton Springs Rd
CITY/STATE: Austin, TX

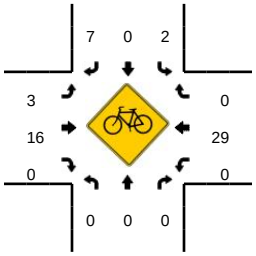
QC JOB #: 14701118
DATE: Tue, May 22 2018

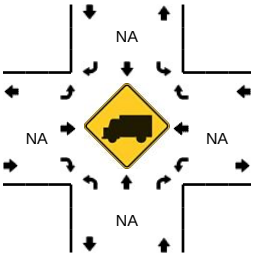
Peak-Hour: 4:30 PM -- 5:30 PM
Peak 15-Min: 5:15 PM -- 5:30 PM

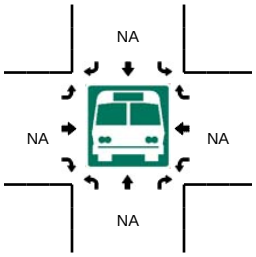












15-Min Count Period Beginning At	Jessie St (Northbound)				Jessie St (Southbound)				Barton Springs Rd (Eastbound)				Barton Springs Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	0	0	0	0	2	0	6	0	4	217	0	7	0	303	6	0	545	
4:15 PM	0	0	0	0	1	0	14	0	8	184	0	2	0	343	4	0	556	
4:30 PM	0	0	0	0	2	0	10	0	11	202	0	4	0	366	4	1	600	
4:45 PM	0	0	0	0	2	0	11	0	17	246	0	1	0	393	3	1	674	2375
5:00 PM	0	0	0	0	5	0	14	0	6	222	0	3	0	397	4	0	651	2481
5:15 PM	0	0	0	0	2	0	16	0	13	204	0	3	0	404	8	0	650	2575
5:30 PM	0	0	0	0	1	0	8	0	19	246	0	6	0	359	5	0	644	2619
5:45 PM	0	0	0	0	0	0	10	0	14	236	0	3	0	353	5	0	621	2566

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	0	0	0	8	0	64	0	52	816	0	12	0	1616	32	0	2600
Heavy Trucks	0	0	0		0	0	0		0	4	0		0	4	0		8
Pedestrians		8				8				0				0			16
Bicycles	0	0	0		0	0	1		0	4	0		0	6	0		11
Railroad																	
Stopped Buses																	

Comments:

Report generated on 6/13/2018 1:20 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

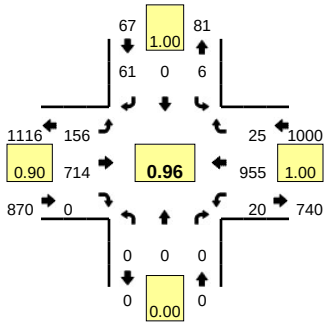
Type of peak hour being reported: System Peak

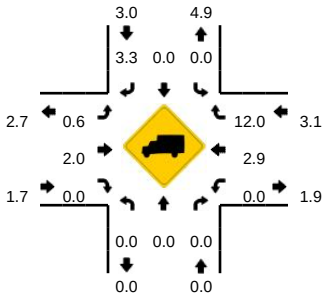
Method for determining peak hour: Total Entering Volume

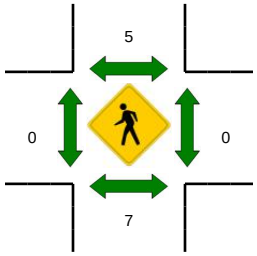
LOCATION: Sterzing St -- Barton Springs Rd
CITY/STATE: Austin, TX

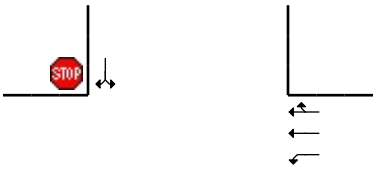
QC JOB #: 14701119
DATE: Tue, May 22 2018

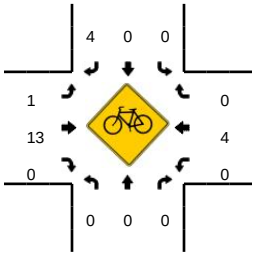
Peak-Hour: 8:00 AM -- 9:00 AM
Peak 15-Min: 8:00 AM -- 8:15 AM

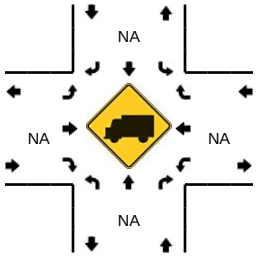


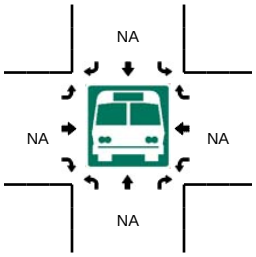












15-Min Count Period Beginning At	Sterzing St (Northbound)				Sterzing St (Southbound)				Barton Springs Rd (Eastbound)				Barton Springs Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	0	0	0	0	2	0	8	0	3	101	0	3	0	92	4	2	215	
7:15 AM	0	0	0	0	0	0	8	0	2	119	0	8	0	126	1	4	268	
7:30 AM	0	0	0	0	6	0	11	0	4	171	0	14	0	204	4	4	418	
7:45 AM	0	0	0	0	0	0	14	0	7	163	0	26	0	224	0	2	436	1337
8:00 AM	0	0	0	0	1	0	13	0	11	202	0	29	0	234	10	2	502	1624
8:15 AM	0	0	0	0	2	0	19	0	12	183	0	30	0	248	2	6	502	1858
8:30 AM	0	0	0	0	2	0	12	0	15	160	0	28	0	228	5	6	456	1896
8:45 AM	0	0	0	0	1	0	17	0	18	169	0	13	0	245	8	6	477	1937

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	0	0	0	4	0	52	0	44	808	0	116	0	936	40	8	2008
Heavy Trucks	0	0	0		0	0	4		0	8	0		0	20	8		40
Pedestrians		4				4				0				0			8
Bicycles	0	0	0		0	0	2		0	1	0		0	2	0		5
Railroad																	
Stopped Buses																	

Comments:

Report generated on 6/13/2018 1:20 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

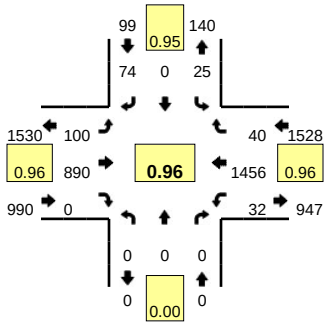
Type of peak hour being reported: System Peak

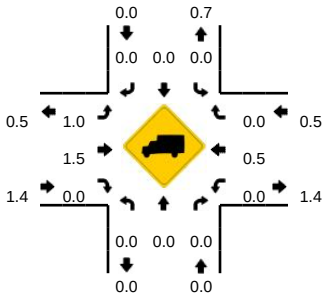
Method for determining peak hour: Total Entering Volume

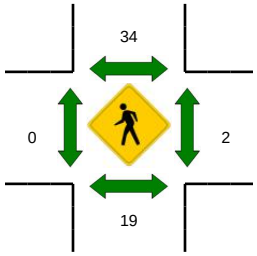
LOCATION: Sterzing St -- Barton Springs Rd
CITY/STATE: Austin, TX

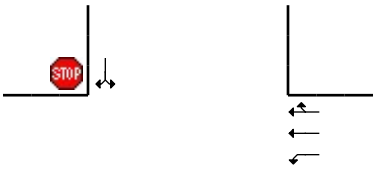
QC JOB #: 14701120
DATE: Tue, May 22 2018

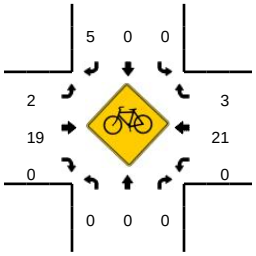
Peak-Hour: 4:30 PM -- 5:30 PM
Peak 15-Min: 5:15 PM -- 5:30 PM

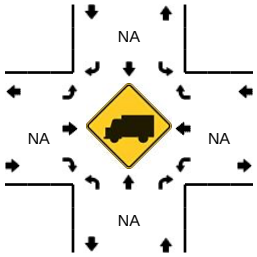


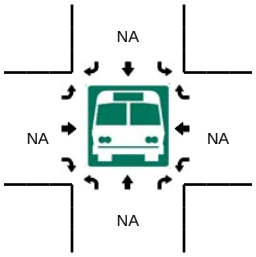












15-Min Count Period Beginning At	Sterzing St (Northbound)				Sterzing St (Southbound)				Barton Springs Rd (Eastbound)				Barton Springs Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	0	0	0	0	9	0	20	0	17	200	0	0	0	267	8	12	533	
4:15 PM	0	0	0	0	4	0	17	0	15	184	0	0	0	315	11	6	552	
4:30 PM	0	0	0	0	8	0	18	0	18	194	0	0	0	349	11	7	605	
4:45 PM	0	0	0	0	8	0	20	0	26	247	0	0	0	353	8	7	669	2359
5:00 PM	0	0	0	0	2	0	17	0	25	222	0	0	0	374	12	7	659	2485
5:15 PM	0	0	0	0	7	0	19	0	31	227	0	0	0	380	9	11	684	2617
5:30 PM	0	0	0	0	5	0	20	0	15	252	0	0	0	347	11	12	662	2674
5:45 PM	0	0	0	0	5	0	32	0	21	250	0	0	0	326	11	7	652	2657

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	0	0	0	28	0	76	0	124	908	0	0	0	1520	36	44	2736
Heavy Trucks	0	0	0		0	0	0		0	8	0		0	12	0		20
Pedestrians		8				24				0				0			32
Bicycles	0	0	0		0	0	1		0	5	0		0	5	0		11
Railroad																	
Stopped Buses																	

Comments:

Report generated on 6/13/2018 1:20 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: System Peak

Method for determining peak hour: Total Entering Volume

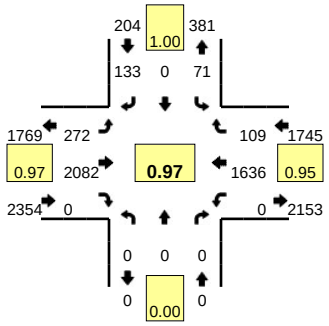
LOCATION: B R Reynolds Dr -- W Cesar Chavez St

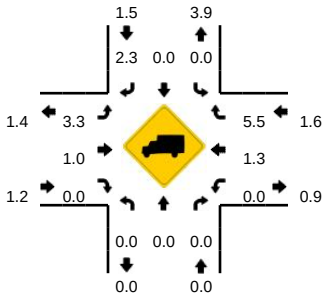
CITY/STATE: Austin, TX

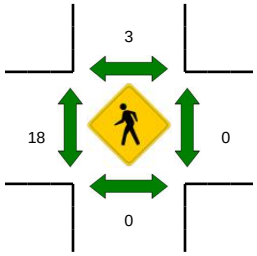
QC JOB #: 14701121

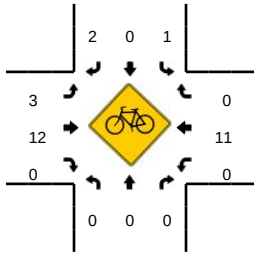
DATE: Tue, May 22 2018

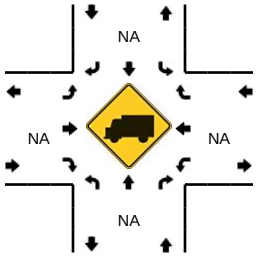
Peak-Hour: 8:00 AM -- 9:00 AM
Peak 15-Min: 8:00 AM -- 8:15 AM

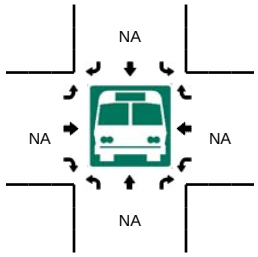












15-Min Count Period Beginning At	B R Reynolds Dr (Northbound)				B R Reynolds Dr (Southbound)				W Cesar Chavez St (Eastbound)				W Cesar Chavez St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	0	0	0	0	15	0	17	0	45	415	0	0	0	249	24	0	765	
7:15 AM	0	0	0	0	14	0	25	0	47	493	0	0	0	336	20	0	935	
7:30 AM	0	0	0	0	20	0	21	0	49	477	0	0	0	373	22	0	962	
7:45 AM	0	0	0	0	9	0	24	0	59	563	0	0	0	466	20	0	1141	3803
8:00 AM	0	0	0	0	19	0	27	0	63	544	0	0	0	431	27	0	1111	4149
8:15 AM	0	0	0	0	19	0	33	0	60	538	0	0	0	411	19	0	1080	4294
8:30 AM	0	0	0	0	14	0	33	0	74	505	0	0	0	415	27	0	1068	4400
8:45 AM	0	0	0	0	19	0	40	0	75	495	0	0	0	379	36	0	1044	4303

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	0	0	0	76	0	108	0	252	2176	0	0	0	1724	108	0	4444
Heavy Trucks	0	0	0		0	0	4		0	20	0		0	44	8		76
Pedestrians		0				0				44				0			44
Bicycles	0	0	0		0	0	0		1	2	0		0	0	0		3
Railroad																	
Stopped Buses																	

Comments:

Report generated on 6/13/2018 1:20 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

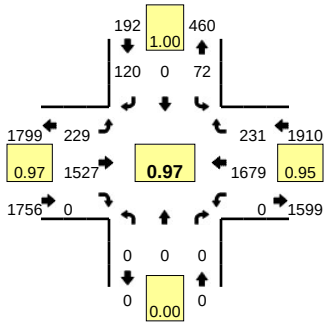
Type of peak hour being reported: System Peak

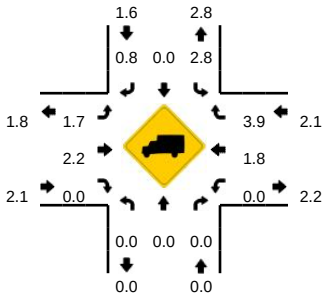
Method for determining peak hour: Total Entering Volume

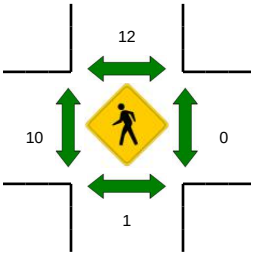
LOCATION: B R Reynolds Dr -- W Cesar Chavez St
CITY/STATE: Austin, TX

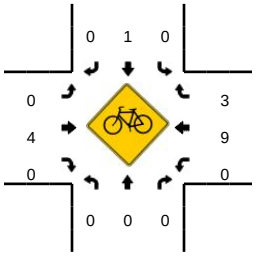
QC JOB #: 14701122
DATE: Tue, May 22 2018

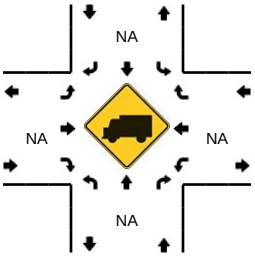
Peak-Hour: 4:30 PM -- 5:30 PM
Peak 15-Min: 5:15 PM -- 5:30 PM

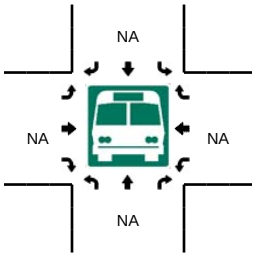












15-Min Count Period Beginning At	B R Reynolds Dr (Northbound)				B R Reynolds Dr (Southbound)				W Cesar Chavez St (Eastbound)				W Cesar Chavez St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	0	0	0	0	17	0	60	0	64	352	0	0	0	483	52	0	1028	
4:15 PM	0	0	0	0	24	0	41	0	69	380	0	0	0	492	44	0	1050	
4:30 PM	0	0	0	0	19	0	36	0	61	398	0	0	0	460	54	0	1028	
4:45 PM	0	0	0	0	17	0	31	0	58	354	0	0	0	448	56	0	964	4070
5:00 PM	0	0	0	0	20	0	27	0	53	381	0	0	0	342	45	0	868	3910
5:15 PM	0	0	0	0	16	0	26	0	57	394	0	0	0	429	76	0	998	3858
5:30 PM	0	0	0	0	9	0	20	0	64	342	0	0	0	465	61	0	961	3791
5:45 PM	0	0	0	0	18	0	25	0	63	383	0	0	0	459	56	0	1004	3831

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	0	0	0	64	0	104	0	228	1576	0	0	0	1716	304	0	3992
Heavy Trucks	0	0	0		4	0	0		0	44	0		0	28	4		80
Pedestrians		0				8				16				0			24
Bicycles	0	0	0		0	0	0		0	2	0		0	3	2		7
Railroad																	
Stopped Buses																	

Comments:

Report generated on 6/13/2018 1:20 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

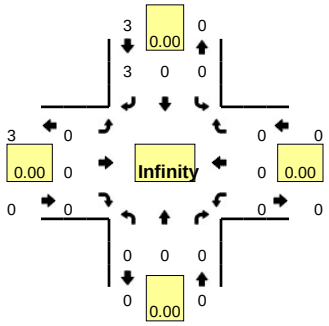
Type of peak hour being reported: System Peak

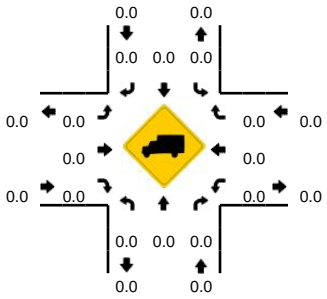
Method for determining peak hour: Total Entering Volume

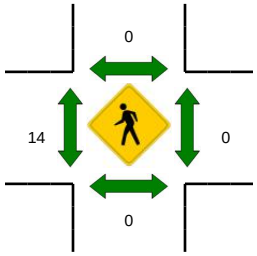
LOCATION: S Lamar Blvd -- Schlotzsky's Dwy
CITY/STATE: Austin, TX

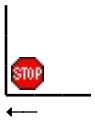
QC JOB #: 14701123
DATE: Tue, May 22 2018

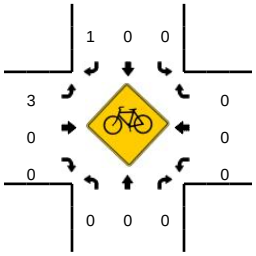
Peak-Hour: 8:00 AM -- 9:00 AM
Peak 15-Min: 8:00 AM -- 8:15 AM

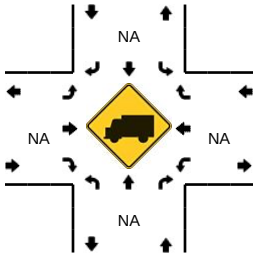


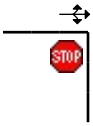


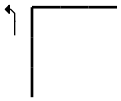


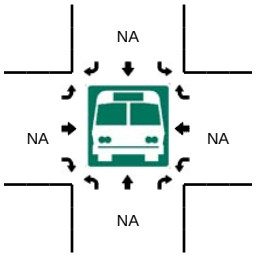












15-Min Count Period Beginning At	S Lamar Blvd (Northbound)				S Lamar Blvd (Southbound)				Schlotzsky's Dwy (Eastbound)				Schlotzsky's Dwy (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	2	
7:15 AM	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	2	
7:30 AM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	
7:45 AM	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	2	7
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
8:30 AM	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	2	4
8:45 AM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	3

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Heavy Trucks	0	0	0		0	0	0		0	0	0		0	0	0		0
Pedestrians		0				0				24				0			24
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

Report generated on 6/13/2018 1:20 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

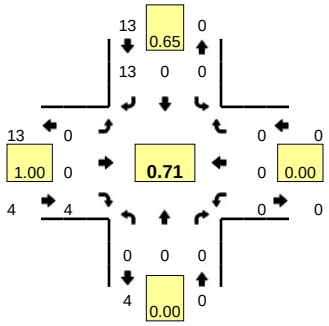
Type of peak hour being reported: System Peak

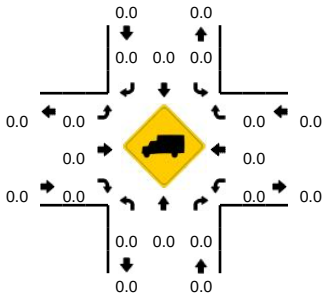
Method for determining peak hour: Total Entering Volume

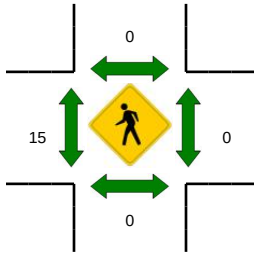
LOCATION: S Lamar Blvd -- Schlotzsky's Dwy
CITY/STATE: Austin, TX

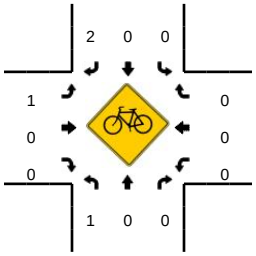
QC JOB #: 14701124
DATE: Tue, May 22 2018

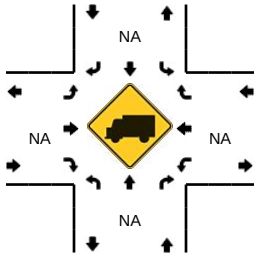
Peak-Hour: 4:30 PM -- 5:30 PM
Peak 15-Min: 5:15 PM -- 5:30 PM

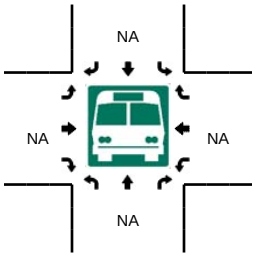












15-Min Count Period Beginning At	S Lamar Blvd (Northbound)				S Lamar Blvd (Southbound)				Schlotzsky's Dwy (Eastbound)				Schlotzsky's Dwy (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	2	
4:15 PM	0	0	0	0	0	0	4	0	0	0	1	0	0	0	0	0	5	
4:30 PM	0	0	0	0	0	0	1	0	0	0	2	0	0	0	0	0	3	
4:45 PM	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	2	12
5:00 PM	0	0	0	0	0	0	5	0	0	0	1	0	0	0	0	0	6	16
5:15 PM	0	0	0	0	0	0	5	0	0	0	1	0	0	0	0	0	6	17
5:30 PM	0	0	0	0	0	0	5	0	0	0	2	0	0	0	0	0	7	21
5:45 PM	1	0	0	0	0	0	3	0	2	0	2	0	0	0	0	0	8	27

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	0	0	0	0	0	20	0	0	0	4	0	0	0	0	0	24
Heavy Trucks	0	0	0		0	0	0		0	0	0		0	0	0		0
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

Report generated on 6/13/2018 1:20 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

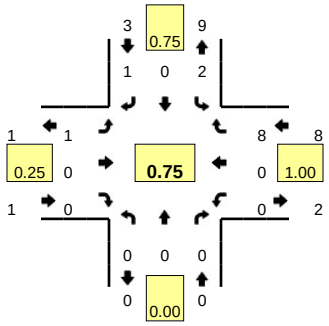
Type of peak hour being reported: System Peak

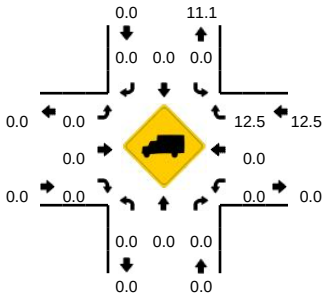
Method for determining peak hour: Total Entering Volume

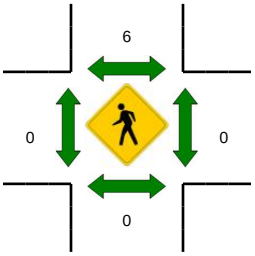
LOCATION: Schlotzsky's East Dwy -- Toomey Rd
CITY/STATE: Austin, TX

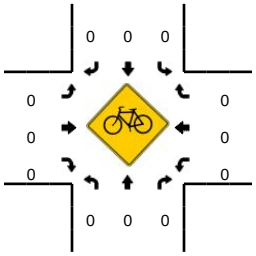
QC JOB #: 14701125
DATE: Tue, May 22 2018

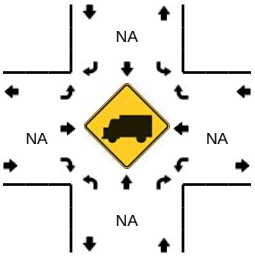
Peak-Hour: 8:00 AM -- 9:00 AM
Peak 15-Min: 8:00 AM -- 8:15 AM

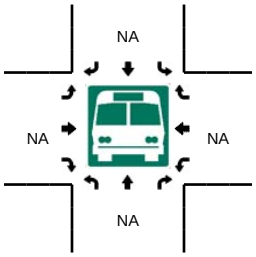












15-Min Count Period Beginning At	Schlotzsky's East Dwy (Northbound)				Schlotzsky's East Dwy (Southbound)				Toomey Rd (Eastbound)				Toomey Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	4
8:00 AM	0	0	0	0	1	0	0	0	1	0	0	0	0	0	2	0	4	6
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	3	9
8:30 AM	0	0	0	0	1	0	1	0	0	0	0	0	0	0	3	0	5	14
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	0	0	0	4	0	0	0	4	0	0	0	0	0	8	0	16
Heavy Trucks	0	0	0		0	0	0		0	0	0		0	0	0		0
Pedestrians		0				8				0				0			8
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

Report generated on 6/13/2018 1:20 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

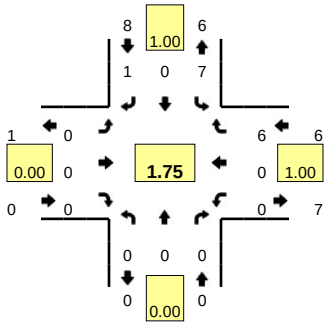
Type of peak hour being reported: System Peak

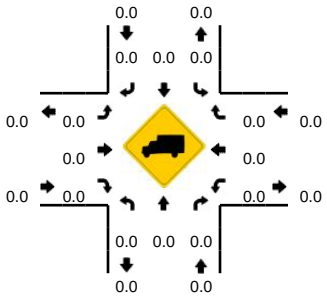
Method for determining peak hour: Total Entering Volume

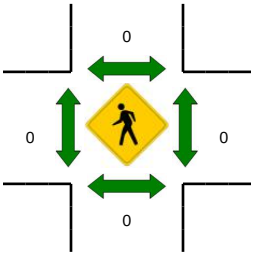
LOCATION: Schlotzsky's East Dwy -- Toomey Rd
CITY/STATE: Austin, TX

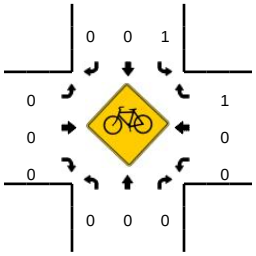
QC JOB #: 14701126
DATE: Tue, May 22 2018

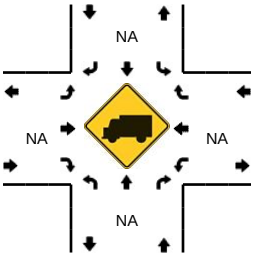
Peak-Hour: 4:30 PM -- 5:30 PM
Peak 15-Min: 5:15 PM -- 5:30 PM

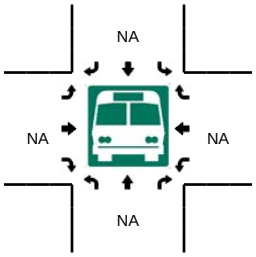












15-Min Count Period Beginning At	Schlotzsky's East Dwy (Northbound)				Schlotzsky's East Dwy (Southbound)				Toomey Rd (Eastbound)				Toomey Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	0	0	0	0	3	0	0	0	0	0	0	0	0	0	4	0	7	
4:15 PM	0	0	0	0	1	0	0	0	0	0	0	0	0	0	2	0	3	
4:30 PM	0	0	0	0	2	0	0	0	0	0	0	0	0	0	2	0	4	
4:45 PM	0	0	0	0	3	0	1	0	0	0	0	0	0	0	2	0	6	20
5:00 PM	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	2	15
5:15 PM	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	2	14
5:30 PM	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	2	12
5:45 PM	0	0	0	0	2	0	0	0	0	0	0	0	0	0	3	0	5	11

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	0	0	0	4	0	0	0	0	0	0	0	0	0	4	0	8
Heavy Trucks	0	0	0		0	0	0		0	0	0		0	0	0		0
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

Report generated on 6/13/2018 1:20 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: System Peak

Method for determining peak hour: Total Entering Volume

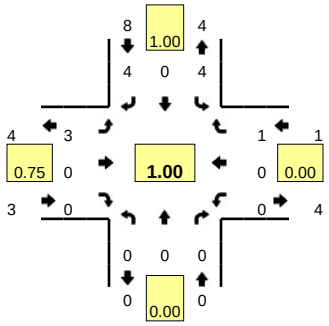
LOCATION: Schlotzsky's West Dwy -- Toomey Rd

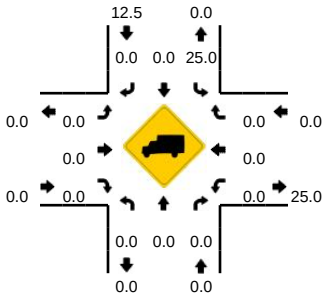
CITY/STATE: Austin, TX

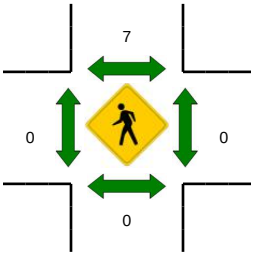
QC JOB #: 14701127

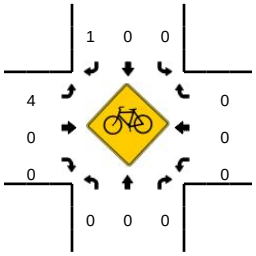
DATE: Tue, May 22 2018

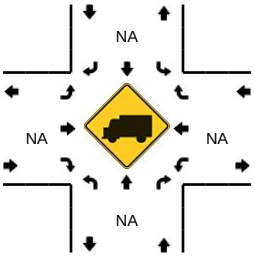
Peak-Hour: 8:00 AM -- 9:00 AM
Peak 15-Min: 8:00 AM -- 8:15 AM

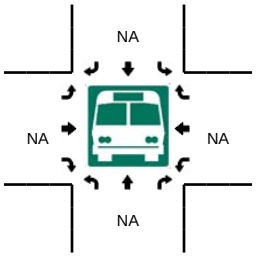












15-Min Count Period Beginning At	Schlotzsky's West Dwy (Northbound)				Schlotzsky's West Dwy (Southbound)				Toomey Rd (Eastbound)				Toomey Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	0	0	0	0	3	0	0	0	1	0	0	0	0	0	1	0	5	
7:15 AM	0	0	0	0	0	0	0	0	2	0	0	0	0	0	1	0	3	
7:30 AM	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	
7:45 AM	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	10
8:00 AM	0	0	0	0	1	0	1	0	1	0	0	0	0	0	0	0	3	8
8:15 AM	0	0	0	0	2	0	1	0	0	0	0	0	0	0	1	0	4	9
8:30 AM	0	0	0	0	1	0	2	0	1	0	0	0	0	0	0	0	4	12
8:45 AM	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	12

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	0	0	0	4	0	4	0	4	0	0	0	0	0	0	0	12
Heavy Trucks	0	0	0		0	0	0		0	0	0		0	0	0		0
Pedestrians		0				8				0				0			8
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

Report generated on 6/13/2018 1:20 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

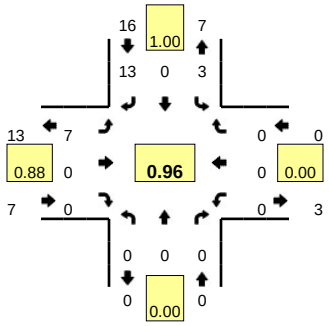
Type of peak hour being reported: System Peak

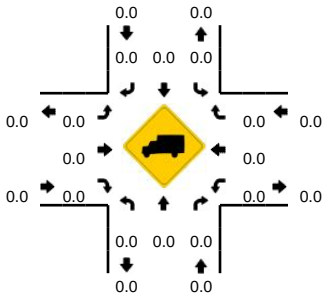
Method for determining peak hour: Total Entering Volume

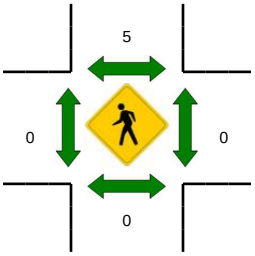
LOCATION: Schlotzsky's West Dwy -- Toomey Rd
CITY/STATE: Austin, TX

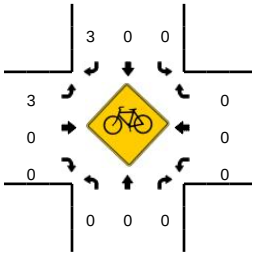
QC JOB #: 14701128
DATE: Tue, May 22 2018

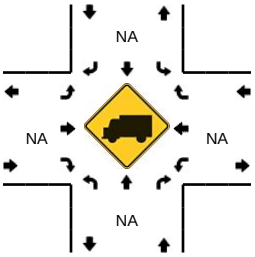
Peak-Hour: 4:30 PM -- 5:30 PM
Peak 15-Min: 5:15 PM -- 5:30 PM

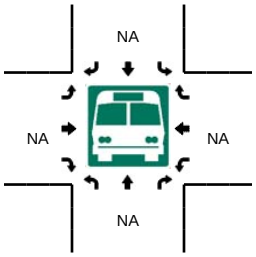












15-Min Count Period Beginning At	Schlotzsky's West Dwy (Northbound)				Schlotzsky's West Dwy (Southbound)				Toomey Rd (Eastbound)				Toomey Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	0	0	0	0	4	0	0	0	2	0	0	0	0	0	0	0	6	
4:15 PM	0	0	0	0	1	0	1	0	1	0	0	0	0	0	0	0	3	
4:30 PM	0	0	0	0	1	0	2	0	2	0	0	0	0	0	0	0	5	
4:45 PM	0	0	0	0	2	0	3	0	2	0	0	0	0	0	0	0	7	21
5:00 PM	0	0	0	0	0	0	4	0	1	0	0	0	0	0	0	0	5	20
5:15 PM	0	0	0	0	0	0	4	0	2	0	0	0	0	0	0	0	6	23
5:30 PM	0	0	0	0	1	0	2	0	2	0	0	0	0	0	0	0	5	23
5:45 PM	0	0	0	0	1	0	2	0	0	0	0	0	0	0	1	0	4	20

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	0	0	0	0	0	16	0	8	0	0	0	0	0	0	0	24
Heavy Trucks	0	0	0		0	0	0		0	0	0		0	0	0		0
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

Report generated on 6/13/2018 1:20 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

TRAFFIC SIGNAL INTERSECTION: Lamar Blvd @ 6th Street

DATE:	GRP:	LOC:	VRS:	HUB:	ZONE:	SEC:	ENGINEER:
3/9/2016		118L					

4 + 2 + RINGS

PHASE 1	RING 1:	1, 2, a, 3, 7, 4, b
	RING 2:	5, 6, a, 8, b
PHASE 2	RING 1:	
	RING 2:	

4 + 2 + PHASEMODE

STARTUP	2, 6
REDSTRT	1, 3 - 5, 7 - 40
PED	2, 4, 6, 8
YELFLASH	
FLASH/ENT	
FLASH/EXIT	

4 + 1 + ACT CONFIG

	#1	#2	#3
PHASE	1		
OVERLAP	1		
PREEMPT	1		
CABINET	2		
DETECTOR	2		
COORD	1		

2 + 3 + PL # + PLAN MODE

PL	PLAN MODE	MAX GRN	PH DATA	PH SEQ	OL DATA	ACT CONF	ENA	OFF	VAR	CYCLE	HOLD / YLD
1											
2											
3											
4	COORD	MAX 2	7	3	3	1	A	30	5	120	2, 6
5	COORD	MAX 2	1	3	3	1	A	30	5	120	2, 6
6											
7	COORD	MAX 1	1	3	3	1	A	13	5	90	2, 6
8	COORD	MAX 2	1	3	3	1	A	30	5	120	2, 6
9											
10											
32	COORD	MAX 2	3	2	3	1	A	140	5	150	2, 6
33	COORD	MAX 2	3	2	3	1	A	12	5	150	2, 6

SCHEDULE

EV	ENA	HR	M	S	M	T	W
1	ENA	0	0	X	X	X	X
2	ENA	6	30		X	X	X
3	ENA	8	0	X			
4	ENA	9	30		X	X	X
5	ENA	11	0	X			
6	ENA	11	0		X	X	X
7	ENA	15	30		X	X	X
8	ENA	19	0	X	X	X	X
9	ENA	20	30	X	X	X	X
10							
11							
12							

PRIORITY SEQUENCE

PHASES	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
TABLE 1	0	0	0	2	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
TABLE 2	0	0	0	2	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
TABLE 3	0	0	0	2	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
TABLE 4	0	0	0	2	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0

NOTE: ZERO DENOTES THE HIGHEST PRIORITY

PED PRAMS & FLAGS

PHASES	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
ENABLE	X	X	X	X																
CALLPHAS	2	4	6	8																
OVERLAP		14																		

VEH PARAMETERS / VEH FLAG

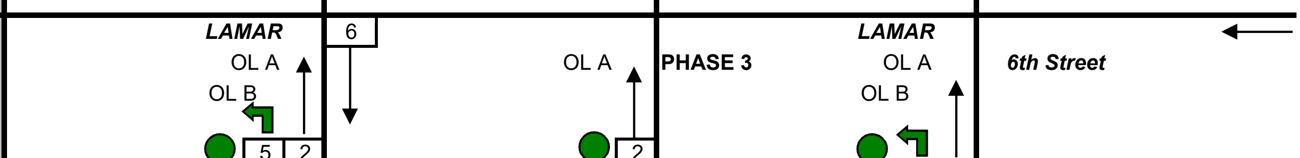
DETECTORS	1	2	3
ENABLE	X	X	X
CALL	X	X	X
EXTEND	X	X	X
ADD INIT			
RED LOCK			
YEL LOCK			
CALL PHASE	5	1	2
SWTCH PHAS			
OVERLAP			
DELAY			

SIGNAL PHASING DIAGRAM - NUMBERS REPRESENT GREEN TIME (SECONDS)

PLAN

PLAN			
4	26 + 4 + 1	44 + 4 + 1	35 + 4 + 1
5	21 + 4 + 1	49 + 4 + 1	35 + 4 + 1
7	15 + 4 + 1	33 + 4 + 1	27 + 4 + 1
8	29 + 4 + 1	45 + 4 + 1	31 + 4 + 1

PLAN



PLAN				
32	8 + 4 + 1	64 + 4 + 1	31 + 4 + 1	27 + 4 +
33	12 + 4 + 1	73 + 4 + 1	10 + 4 + 1	35 + 4 +

FLAGS	PHASES
OMITPHAS	1, 3, 7 - 20
OMIT PED	1, 3 - 5, 7 - 20
MIN RECAL	2, 3, 4, 6
MAXRECAL	2, 3, 4, 5, 6
SOFT RCL	
CDT'L SRVC	

PHASE DATA TABLE # 1	PH 1	PH 2	PH 3	PH 4	PH 5	PH 6	PH 7	PH 8	PH 9	PH
PHASE TIMING		NB LAMAR		WB 6th Street	NB "P" L/T	SB LAMAR				

PED RECAL	2, 4, 6	MIN GREEN		20.0		10.0	10.0	9.0				
DUAL ETRY		PASSAGE		1.0		2.0	1.0	1.0				
SIMGAP		MAXGRN 1		30.0		30.0	20.0	30.0				
REDREST		MAXGRN 2		30.0		30.0	20.0	30.0				
AUTO PED	2, 4, 6, 8	CONDSERV		0.0		0.0	0.0	0.0				
REST WALK	2, 6	YEL CHG		4.0		4.0	4.0	4.0				
PED RECY		RED CLR		1.0		1.0	1.0	1.0				
RED LOCK		WALK		5.0				5.0				
YEL LOCK		PED CLR		16.0				12.0				
NO EXT		ADDED INI										
NO ADD INI		TIME TO RED										
NOGAPRED		TIME BEFOR										
NOMAX LOK	1, 3, 4, 5, 7, 8	MAX INIT GRN										

2+ 3 + PL # +	PHASE		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18		PHASE		1
MIN SPLIT	PLAN	4		40		30	15	25		30											MIN	PLAN	32	
NOM SPLIT	CYCLE	120		80		40	31	49		40											NOM	CYCLE	150	
MAX SPLIT				105		50	35	70		50											MAX			
NOTE: PLAN 20 = FREE MODE PLAN 33 = FLASH MODE	PLAN	5		40		30	15	25		30											MIN	PLAN	33	
	CYCLE	120		80		40	26	54		40											NOM	CYCLE	150	
				105		50	35	70		50											MAX			
	PLAN	7		40		20	15	25		20											MIN	PLAN		
	CYCLE	90		58		32	20	38		32											NOM	CYCLE		
				80		40	25	55		40											MAX			
	PLAN	8		40		30	15	25		30											MIN	PLAN		
	CYCLE	120		84		36	34	50		36											NOM	CYCLE		
				105		50	40	65		50											MAX			

Change ONLY the following:		1	2	3	4	5	6	7	8	9	10	11	12	1
INPUT CHANNELS	FUNCTION TYPE													V
	FUNCTION INDEX													1
	UNIT													C
	CONNECTOR / BUI													
	PIN													5
	CHANNEL IN 1													
	CHANNEL IN 2													
	LOGIC													
OUTPUT CHANNELS		1	2	3	4	5	6	7	8	9	10	11	12	1
	FUNCTION TYPE		OVL				Ovlped	OVL						
	FUNCTION INDEX		2				14	1						
	CONNECTOR / BUI 1													
	PIN 1													
	CONNECTOR / BUI 2													
	PIN 2													
	CONNECTOR / BUI 3													
	PIN 3													

PHASES		TYPE		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
M = MODIFIED	OVL A	~~2~~	P			X		X													
		141	P																		
			S																		
			M																		
	OVL B	~~2~~	P		X	X															
		141	P																		
			S																		
			M																		
	OVL C	2	P																		
		141	P																		
			S																		
			M																		

OVERLAPS		
OVERLAP SETTINGS	FLAGS / PARAM	ENABLE
		PED OVERLAP
		FLASH YELLOW
		ALT FLASH HZ
	FLAGS	RECALL PRIMA
		RECALL SEC
		PED RECALL
		PED RECYCLE
		AUTO EXTEND
	ERS	MIN GREEN
		MAX GREEN
		GREEN CLEAR

P = PRIMARY S = SECONDARY

OVERLAP CONFIGUR

OVL D	2	P																		
	141	P																		
		S																		
		M																		
OVL E	2	P																		
OVL F	2	P																		
OVL G	2	P																		
OVL H	2	P																		
OVL I	2	P																		
OVL J	2	P																		
OVL K	2	P																		
OVL L	2	P																		
OVL M	2	P																		
OVL N	~~2~~	P				X			X											
OVL O	2	P																		
OVL P	2	P																		

C

PARAMETE

YEL CLEAR
RED CLEAR
WALK
PED CLEAR
RESERVICE

	PRE - EMPT	1	3	4
PRE EMPT FLAGS	ENABLE			X
	NO MEM LOK			X
	MAN ENABLE			
	NO OVER FLSH			
	NO OVER NEXT			
	OMIT IN DELAY			
	RE MAX PRES			
	PED NOT DARK			
TIME	MIN PRESENCE			
	DELAY			

FLAGS	PHASES
OMITPHAS	1, 7 - 20
OMIT PED	1, 3 - 5, 7 - 20
MIN RECAL	2, 3, 4, 5, 6
MAXRECAL	2, 3, 4, 5, 6
SOFT RCL	
CDT'L SRVC	
PED RECAL	2, 4, 6
DUAL ETRY	
SIMGAP	
REDREST	
AUTO PED	2, 4, 6, 8
REST WALK	
PED RECY	
RED LOCK	
YEL LOCK	
NO EXT	
NO ADD INI	
NOGAPRED	
NO RANGE	
NOMAX LOK	1, 3, 4, 5, 7, 8

PHASE DATA TABLE # 3	PH 1	PH 2	PH 3	PH 4	PH 5	PH 6	PH 7	PH 8	PH 9	PH
PHASE TIMING		NB LAMAR	NB "P" L/T	WB 6th Street	NB "P" L/T	SB LAMAR				
MIN GREEN		10.0	3.0	5.0	3.0	10.0				
PASSAGE		1.0	1.0	2.0	1.0	1.0				
MAXGRN 1		45.0	20.0	25.0	20.0	45.0				
MAXGRN 2		65.0	60.0	60.0	60.0	65.0				
CONDSERV		0.0	0.0	0.0	0.0	0.0				
YEL CHG		4.0	4.0	4.0	4.0	4.0				
RED CLR		1.0	1.0	1.0	1.0	1.0				
WALK		10.0				10.0				
PED CLR		16.0				12.0				
ADDED INI										
TIME TO RED										
TIME BEFOR										
MIN GAP										
MAX INIT GRN										

FLAGS	PHASES
OMITPHAS	1, 3, 7 - 20
OMIT PED	1, 3 - 5, 7 - 20
MIN RECAL	2, 4, 5, 6
MAXRECAL	2, 4, 5, 6
SOFT RCL	
CDT'L SRVC	
PED RECAL	2, 6
DUAL ETRY	
SIMGAP	
REDREST	
AUTO PED	2, 4, 6, 8
REST WALK	
PED RECY	
RED LOCK	
YEL LOCK	
NO EXT	
NO ADD INI	
NOGAPRED	
NO RANGE	
NOMAX LOK	1, 3, 4, 5, 7, 8

PHASE DATA TABLE # 7	PH 1	PH 2	PH 3	PH 4	PH 5	PH 6	PH 7	PH 8	PH 9	PH
PHASE TIMING		NB LAMAR		WB 6th Street	NB "P" L/T	SB LAMAR				
MIN GREEN		10.0		5.0	3.0	10.0				
PASSAGE		1.0		2.0	1.0	1.0				
MAXGRN 1		45.0		25.0	20.0	45.0				
MAXGRN 2		65.0		60.0	60.0	65.0				
CONDSERV		0.0		0.0	0.0	0.0				
YEL CHG		4.0		4.0	4.0	4.0				
RED CLR		1.0		1.0	1.0	1.0				
WALK		10.0				10.0				
PED CLR		16.0				12.0				
ADDED INI										
TIME TO RED										
TIME BEFOR										
MIN GAP										
MAX INIT GRN										

FLAGS	PHASES	PHASE DATA TABLE # 4	PH 1	PH 2	PH 3	PH 4	PH 5	PH 6	PH 7	PH 8	PH 9	PH
OMITPHAS												
OMIT PED												
MIN RECAL		PHASE TIMING										
MAXRECAL												
SOFT RCL												
CDT'L SRVC												
PED RECAL		MIN GREEN										
DUAL ETRY		PASSAGE										
SIMGAP		MAXGRN 1										
REDREST		MAXGRN 2										
AUTO PED		CONDSERV										
REST WALK		YEL CHG										
PED RECY		RED CLR										
RED LOCK		WALK										
YEL LOCK		PED CLR										
NO EXT		ADDED INI										
NO ADD INI		TIME TO RED										
NOGAPRED		TIME BEFOR										
NO RANGE		MIN GAP										
NOMAX LOK		MAX INIT GRN										

NOTES:

CITY OF AUSTIN
TRAFFIC SIGNAL TIMING & PHASING SHEETS

N

#4	#5	1 + **ACTIVE CONTROL PARAMETERS**					
		CONTROL MODE:		SCHEDULE			
		MAN PLN:	3	FREE PLN:	1	DFSCHED:	1
		4 + 2 + **MISC**				4 + 7 + **COORD CONFIG**	
		TRANSITION MODE:		3:30		START UP FLASH:	1
		SYNCHRO MODE:		BEST		RED REVERT:	2
		MAX DWELL TIME:		0		FLASH CLR:	8

				SPECIAL FUNCTIONS								AUXILIARY			
T	F	S	PL	1	2	3	4	5	6	7	8	1	2	3	4
X	X	X	7												
X	X		32												
		X	8												
X	X		4												
		X	8												
X	X		4												
X	X		33												
X	X	X	5												
X	X	X	7												

4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
X	X	X	X	X	X	X	X	X	X							
X	X	X	X	X	X	X	X	X	X							
X	X	X	X	X	X	X	X	X	X							
6	3	7	4	8	2	6	4	8	3							

4		
1		
1		

10	PH 11	PH 12	PH 13	PH 14	PH 15	PH 16	PH 17	PH 18

2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
60	20	30	10	45		30										
82	36	32	13	69		68										
100	45	60	15	100		75										
60	20	30	15	45		30										
95	15	40	17	78		55										
100	45	60	25	100		75										

13	14	15	16	17	18	19	20	21
EH								
13								
1S								
1								
55								

13	14	15	16	17	18	19	20	21

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
	X	X												X		
														X		
V																
RY																
														X		

	4	4														
	1	1														
														13		
														14		

5	6	SETTINGS		1	3	4	5	6
		TIMING	STRT MIN GRN					
			STRT WALK					
			STRT PED CLR			11		
		PHASE FLAGS	ENT 1 PHASE			6		
			ENT 2 PHASE					
			DWELL PHASE			6		
			INITIAL DWELL					
			DWELL PED					
			RECAL PHASE					
			EXIT PHASE			4		

10	PH 11	PH 12	PH 13	PH 14	PH 15	PH 16	PH 17	PH 18

10	PH 11	PH 12	PH 13	PH 14	PH 15	PH 16	PH 17	PH 18

H 10	PH 11	PH 12	PH 13	PH 14	PH 15	PH 16	PH 17	PH 18

TRAFFIC SIGNAL INTERSECTION:	DATE:	GRP:	LOC:	VRS:	HUB:	ZONE:	SEC:	ENGINEER:
Lamar Blvd @ 5th Street	3/18/2018		119R					

4 + 2 + **RINGS**		
PHASE 1	RING 1:	5, 2, a, 1, 11, 4, 3, b
	RING 2:	6, a, 9, b
PHASE 2	RING 1:	
	RING 2:	

4 + 2 + **PHASEMODE**	
STARTUP	2, 6
REDSTRT	1, 3 - 5, 7 - 40
PED	2, 4, 6, 8
YELFLASH	
FLASH/ENT	
FLASH/EXIT	

4 + 1 + **ACT CONFIG**	#1	#2	#3
PHASE	1		
OVERLAP	1		
PREEMPT	1		
CABINET	2		
DETECTOR	2		
COORD	1		

2 + 3 + PL # + **PLAN MODE**

PL	PLAN MODE	MAX GRN	PH DATA	PH SEQ	OL DATA	ACT CONF	ENA	OFF	VAR	CYCLE	HOLD / YLD
1											
2											
3											
4	COORD	MAX 2	5	1	1	1	A	15	5	120	2, 6
5	COORD	MAX 2	4	1	1	1	A	20	5	120	2, 6
6											
7	COORD	MAX 1	4	1	1	1	A	87	5	90	2, 6
8	COORD	MAX 2	4	1	1	1	A	20	5	120	2, 6
9											
32	COORD	MAX 2	6	1	1	1	A	0	5	150	2, 6
33	COORD	MAX 2	5	1	1	1	A	141	5	150	2, 6
34											

SCHEDULE

EV	ENA	HR	M	S	M	T	W
1	ENA	0	0	X	X	X	X
2	ENA	6	30		X	X	X
3	ENA	8	0	X			
4	ENA	9	30		X	X	X
5	ENA	11	0	X			
6	ENA	15	30		X	X	X
7	ENA	19	0	X	X	X	X
8	ENA	20	30	X	X	X	X
9							
10							
11							
12							

PRIORITY SEQUENCE

PHASES	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
TABLE 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TABLE 2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TABLE 3	0	2	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TABLE 4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

NOTE: ZERO DENOTES THE HIGHEST PRIORITY

PED PRAMS & FLAGS

PHASES	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
ENABLE	X	X	X	X																
CALLPHAS	2	4	6	8																
OVERLAP	13			16																

VEH PARAMETERS

DETECTORS	1	2	3
ENABLE	X	X	X
CALL	X	X	X
EXTEND	X	X	X
ADD INIT			
RED LOCK			
YEL LOCK			

VEH FLAG

CALL PHASE	1	5	2
SWTCH PHAS			
OVERLAP			
DELAY			

SIGNAL PHASING DIAGRAM - NUMBERS REPRESENT GREEN TIME (SECONDS)

PLAN

4	52 + 4 + 1	26 + 4 + 1	27 + 4 + 1
5	59 + 4 + 1	21 + 4 + 1	25 + 4 + 1
7	35 + 4 + 1	13 + 4 + 1	27 + 4 + 1
8	59 + 4 + 1	21 + 4 + 1	25 + 4 + 1
33	75 + 4 + 1	25 + 4 + 1	35 + 4 + 1

PLAN

32	85 + 4 + 1	20 + 4 + 1	30 + 4 + 1

FLAGS	PHASES
OMITPHAS	3, 5, 7 - 20
OMIT PED	1 - 3, 5, 7 - 20
MIN RECAL	2, 4, 6
MAXRECAL	1, 2, 4, 6
SOFT RCL	
CDT'L SRVC	

PHASE DATA TABLE # 4	PH 1	PH 2	PH 3	PH 4	PH 5	PH 6	PH 7	PH 8	PH 9	PH
PHASE TIMING	SB L/T	NB LAMAR		EB 5th Street		SB LAMAR				

PED RECAL	2, 4, 6	MIN GREEN	3.0	10.0		5.0		10.0				
DUAL ETRY		PASSAGE	1.0	1.0		1.0		1.0				
SIMGAP		MAXGRN 1	20.0	45.0		25.0		45.0				
REDREST		MAXGRN 2	25.0	65.0		35.0		65.0				
AUTO PED	2, 4, 6	CONDSERV	0.0	0.0		0.0		0.0				
REST WALK	2, 6	YEL CHG	4.0	4.0		4.0		4.0				
PED RECY		RED CLR	1.0	1.0		1.0		1.0				
RED LOCK		WALK				7.0		10.0				
YEL LOCK	5	PED CLR				20.0		20.0				
NO EXT	5	ADDED INI										
NO ADD INI		TIME TO RED										
NOGAPRED		TIME BEFOR										
NOMAX LOK	1, 3, 4, 5, 7, 8	MAX INIT GRN										

2+ 3 + PL # +	PHASE		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18		PHASE		1
MIN SPLIT	PLAN	4	15	35		25		40			40										MIN	PLAN	32	
NOM SPLIT	CYCLE	120	31	57		32		57			63										NOM	CYCLE	150	
MAX SPLIT			35	90		50		95			80										MAX			
	PLAN	5	15	35		25		40			40										MIN	PLAN	33	15
	CYCLE	120	26	64		30		64			56										NOM	CYCLE	150	30
			35	90		50		95			80										MAX			30
NOTE: PLAN 20 = FREE MODE PLAN 33 = FLASH MODE	PLAN	7	15	23		20		30			35										MIN	PLAN		
	CYCLE	90	18	40		32		40			50										NOM	CYCLE		
			25	53		40		60			65										MAX			
	PLAN	8	15	35		25		40			40										MIN	PLAN		
	CYCLE	120	26	64		30		64			56										NOM	CYCLE		
			30	90		50		95			80										MAX			

Change ONLY the following:		1	2	3	4	5	6	7	8	9	10	11	12	1
INPUT CHANNELS	FUNCTION TYPE													VI
	FUNCTION INDEX													1
	UNIT													
	CONNECTOR / BUI													C
	PIN													5
	CHANNEL IN 1													
	CHANNEL IN 2													
	LOGIC													
OUTPUT CHANNELS		1	2	3	4	5	6	7	8	9	10	11	12	1
	FUNCTION TYPE	OVL	PHASE	OvlPed	Phase	Phase	Ped	Phase	OVL	Ped			OvlPed	
	FUNCTION INDEX	1	2	13	3	4	4	5	6	6			16	
	CONNECTOR / BUI 1													
	PIN 1													
	CONNECTOR / BUI 2													
	PIN 2													
	CONNECTOR / BUI 3													
	PIN 3													

PHASES		TYPE		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	OVERLAPS		
M = MODIFIED	OVL A	~~2~~	P	X		X								X								OVERLAP SETTINGS	FLAGS / PARAM	ENABLE
		141	P																					PED OVERLAP
			S																					FLASH YELLOW
			M																					ALT FLASH HZ
	OVL B	2	P																				FLAGS	RECALL PRIMA
		141	P																					RECALL SEC
			S																					PED RECALL
			M																					PED RECYCLE
	OVL C	2	P																					AUTO EXTEND
		141	P																				ERS	MIN GREEN
			S																					MAX GREEN
			M																					GREEN CLEAR

ATION

P = PRIMARY S = SECONDARY

OVERLAP CONFIGUR

OVL D	2	P																		
	141	P																		
		S																		
		M																		
OVL E	2	P																		
OVL F	~~2~~	P	X		X		X	X												
OVL G	2	P																		
OVL H	2	P																		
OVL I	2	P																		
OVL J	2	P																		
OVL K	2	P																		
OVL L	2	P																		
OVL M	~~2~~	P		X			X													
OVL N	2	P																		
OVL O	2	P																		
OVL P	~~2~~	P				X							X							

C

PARAMETE

YEL CLEAR
RED CLEAR
WALK
PED CLEAR
RESERVICE

	PRE - EMPT	1	3	4
PRE EMPT FLAGS	ENABLE		X	
	NO MEM LOK		X	
	MAN ENABLE			
	NO OVER FLSH			
	NO OVER NEXT			
	OMIT IN DELAY			
	RE MAX PRES			
	PED NOT DARK			
TIME	MIN PRESENCE			
	DELAY			

FLAGS	PHASES
OMITPHAS	3, 5, 7 - 20
OMIT PED	1 - 3, 5, 7 - 20
MIN RECAL	1, 2, 4, 6
MAXRECAL	1, 2, 4, 6
SOFT RCL	
CDT'L SRVC	
PED RECAL	2, 4, 6
DUAL ETRY	
SIMGAP	
REDREST	
AUTO PED	2, 4, 6
REST WALK	
PED RECY	
RED LOCK	
YEL LOCK	5
NO EXT	5
NO ADD INI	
NOGAPRED	
NO RANGE	
NOMAX LOK	1, 3, 4, 5, 7, 8

PHASE DATA TABLE # 5	PH 1	PH 2	PH 3	PH 4	PH 5	PH 6	PH 7	PH 8	PH 9	PH
PHASE TIMING	SB L/T	NB LAMAR		EB 5th Street		SB LAMAR				
MIN GREEN	3.0	10.0		5.0		10.0				
PASSAGE	1.0	1.0		1.0		1.0				
MAXGRN 1	20.0	45.0		25.0		45.0				
MAXGRN 2	35.0	90.0		45.0		90.0				
CONDSERV	0.0	0.0		0.0		0.0				
YEL CHG	4.0	4.0		4.0		4.0				
RED CLR	1.0	1.0		1.0		1.0				
WALK				7.0		10.0				
PED CLR				18.0		20.0				
ADDED INI										
TIME TO RED										
TIME BEFOR										
MIN GAP										
MAX INIT GRN										

FLAGS	PHASES
OMITPHAS	1, 3, 5, 7 - 10, 12 - 20
OMIT PED	1 - 3, 5, 7 - 20
MIN RECAL	2, 4, 6, 11
MAXRECAL	2, 6
SOFT RCL	
CDT'L SRVC	
PED RECAL	2, 4, 6
DUAL ETRY	
SIMGAP	
REDREST	
AUTO PED	2, 4, 6
REST WALK	
PED RECY	
RED LOCK	
YEL LOCK	5
NO EXT	5
NO ADD INI	
NOGAPRED	
NO RANGE	
NOMAX LOK	1, 3, 4, 5, 7, 8

PHASE DATA TABLE # 6	PH 1	PH 2	PH 3	PH 4	PH 5	PH 6	PH 7	PH 8	PH 9	PH
PHASE TIMING		NB LAMAR		EB 5th Street		SB LAMAR				
MIN GREEN		10.0		5.0		10.0				
PASSAGE		1.0		1.0		1.0				
MAXGRN 1		45.0		25.0		45.0				
MAXGRN 2		75.0		30.0		75.0				
CONDSERV		0.0		0.0		0.0				
YEL CHG		4.0		4.0		4.0				
RED CLR		1.0		1.0		1.0				
WALK				7.0		10.0				
PED CLR				20.0		20.0				
ADDED INI										
TIME TO RED										
TIME BEFOR										
MIN GAP										
MAX INIT GRN										

FLAGS	PHASES	PHASE DATA TABLE # 2	PH 1	PH 2	PH 3	PH 4	PH 5	PH 6	PH 7	PH 8	PH 9	PH
OMITPHAS												
OMIT PED												
MIN RECAL		PHASE TIMING										
MAXRECAL												
SOFT RCL												
CDT'L SRVC												
PED RECAL		MIN GREEN										
DUAL ETRY		PASSAGE										
SIMGAP		MAXGRN 1										
REDREST		MAXGRN 2										
AUTO PED		CONDSERV										
REST WALK		YEL CHG										
PED RECY		RED CLR										
RED LOCK		WALK										
YEL LOCK		PED CLR										
NO EXT		ADDED INI										
NO ADD INI		TIME TO RED										
NOGAPRED		TIME BEFOR										
NO RANGE		MIN GAP										
NOMAX LOK		MAX INIT GRN										

NOTES:

FLAGS	PHASES	PHASE DATA TABLE # 3	PH 1	PH 2	PH 3	PH 4	PH 5	PH 6	PH 7	PH 8	PH 9	PH
OMITPHAS												
OMIT PED												
MIN RECAL		PHASE TIMING										
MAXRECAL												
SOFT RCL												
CDT'L SRVC												
PED RECAL		MIN GREEN										
DUAL ETRY		PASSAGE										
SIMGAP		MAXGRN 1										
REDREST		MAXGRN 2										
AUTO PED		CONDSERV										
REST WALK		YEL CHG										
PED RECY		RED CLR										
RED LOCK		WALK										
YEL LOCK		PED CLR										
NO EXT		ADDED INI										
NO ADD INI		TIME TO RED										
NOGAPRED		TIME BEFOR										
NO RANGE		MIN GAP										
NOMAX LOK		MAX INIT GRN										

FLAGS	PHASES	PHASE DATA TABLE # 6	PH 1	PH 2	PH 3	PH 4	PH 5	PH 6	PH 7	PH 8	PH 9	PH
OMITPHAS												
OMIT PED												
MIN RECAL		PHASE TIMING										
MAXRECAL												
SOFT RCL												

CDT'L SRVC												
PED RECAL		MIN GREEN										
DUAL ETRY		PASSAGE										
SIMGAP		MAXGRN 1										
REDREST		MAXGRN 2										
AUTO PED		CONDSERV										
REST WALK		YEL CHG										
PED RECY		RED CLR										
RED LOCK		WALK										
YEL LOCK		PED CLR										
NO EXT		ADDED INI										
NO ADD INI		TIME TO RED										
NOGAPRED		TIME BEFOR										
NO RANGE		MIN GAP										
NOMAX LOK		MAX INIT GRN										

CITY OF AUSTIN
TRAFFIC SIGNAL TIMING & PHASING SHEETS

N

#4	#5	1 + **ACTIVE CONTROL PARAMETERS**					
		CONTROL MODE:		SCHEDULE			
		MAN PLN:	1	FREE PLN:	1	DFSCHED:	1
		4 + 2 + **MISC**			4 + 7 + **COORD CONFIG**		
		TRANSITION MODE:		3:30	START UP FLASH:		1
		SYNCHRO MODE:		BEST	RED REVERT:		2
		MAX DWELL TIME:		0	FLASH CLR:		8

				SPECIAL FUNCTIONS								AUXILIARY			
T	F	S	PL	1	2	3	4	5	6	7	8	1	2	3	4
X	X	X	7												
X	X		32												
		X	8												
X	X		4												
		X	8												
X	X		33												
X	X	X	5												
X	X	X	7												

4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
X	X	X	X	X	X	X	X	X	X							
X	X	X	X	X	X	X	X	X	X							
X	X	X	X	X	X	X	X	X	X							
6	3	7	4	8	2	6	4	8	11							

10	PH 11	PH 12	PH 13	PH 14	PH 15	PH 16	PH 17	PH 18

2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
50		25		65			40		15							
90		35		90			60		25							
105		50		135			80		25							
50		25		65			40									
80		40		80			70									
105		50		135			80									

13	14	15	16	17	18	19	20	21
EH								
13								
1								
1S								
56								

13	14	15	16	17	18	19	20	21

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
	X					X							X			X
													X			X
V																
RY																
													X			X

	4					4										
	1					1										
													10			7
													18			20

5	6	SETTINGS		1	3	4	5	6
		TIMING	STRT MIN GRN					
			STRT WALK					
			STRT PED CLR		11			
		PHASE FLAGS	ENT 1 PHASE		1			
			ENT 2 PHASE					
			DWELL PHASE		1			
			INITIAL DWELL					
			DWELL PED					
			RECAL PHASE					
			EXIT PHASE		4			

10	PH 11	PH 12	PH 13	PH 14	PH 15	PH 16	PH 17	PH 18

10	PH 11	PH 12	PH 13	PH 14	PH 15	PH 16	PH 17	PH 18
	SB L/T							
	5.0							
	1.0							
	20.0							
	25.0							
	0.0							
	4.0							
	1.0							

H 10	PH 11	PH 12	PH 13	PH 14	PH 15	PH 16	PH 17	PH 18

H 10	PH 11	PH 12	PH 13	PH 14	PH 15	PH 16	PH 17	PH 18

H 10	PH 11	PH 12	PH 13	PH 14	PH 15	PH 16	PH 17	PH 18

TRAFFIC SIGNAL INTERSECTION:	DATE:	GRP:	LOC:	VRS:	HUB:	ZONE:	SEC:	ENGINE
Lamar @ Riverside	11/13/2017		120H					

4 + 2 + **PHASEMODE**		4 + 1 + **ACT CONFIG**	#1	#2
STARTUP	2, 6	PHASE	1	
REDSTRT	1, 3 - 5, 7 - 9	OVERLAP	1	
PED	2, 4, 6, 8	PREEMPT	1	
YELFLASH		CABINET	2	
FLASH/ENT		DETECTOR	1	
FLASH/EXIT		COORD	1	

4 + 2 + **RINGS**		
PHASE 1	RING 1:	1, 2, 12, a, 3, 14, 4, b
	RING 2:	5, 6, 16, a, 7, 8, b
PHASE 2	RING 1:	
	RING 2:	

2 + 3 + PL # + **PLAN MODE**

PL	PLAN MODE	MAX GRN	PH DATA	PH SEQ	OL DATA	ACT CONF	ENA	OFF	VAR	CYCLE	HOLD / YLD
1	COORD	MAX 2	5	1	1	1	A	110	5	120	2, 6
2	COORD	MAX 2	1	1	1	1	A	107	5	135	2, 6
3											
4	COORD	MAX 1	2	1	1	1	A	45	5	90	2, 6
5											
6											
7											
8											
9											
10											
11											
13	COORD	MAX 2	5	1	1	1	A	132	5	150	2, 6
20	FREE	MAX I	1	1	1	1					
25	FLASH										

SCHEDUL

EV	ENA	HR	M	S	M	T
1	ENA	0	0	X	X	X
2	ENA	6	0		X	X
3	ENA	6	30		X	X
4	ENA	8	0	X		
5	ENA	9	30	X	X	X
6	ENA	15	30		X	X
7	ENA	19	30		X	X
8	ENA	22	0	X	X	X
9						
10						
11						
12						
13						
14						

PRIORITY SEQUENCE

PHASES	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
TABLE 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TABLE 2	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TABLE 3																				
TABLE 4																				
TABLE 5																				

NOTE: ZERO DENOTES THE HIGHEST PRIORITY

VEH PARAMETERS

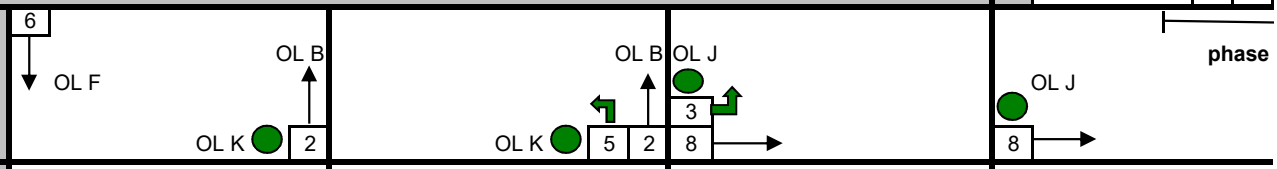
DETECTORS	1	2
ENABLE	X	X
CALL	X	X
EXTEND	X	X
ADD INIT		
RED LOCK		
YEL LOCK		
CALL PHASE	1	5
SWTCH PHAS		
OVERLAP		
DELAY		

PED PRAMS & FLAGS

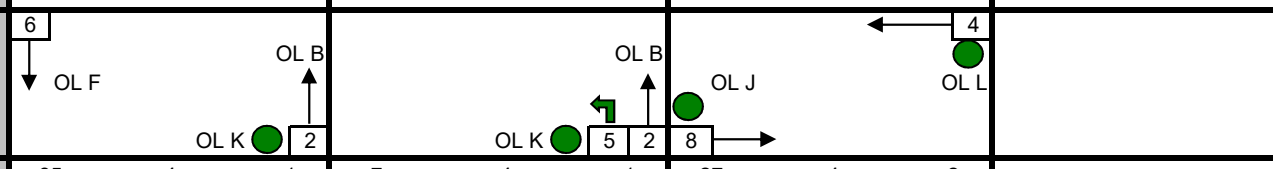
PHASES	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
ENABLE	X	X	X	X																
CALLPHAS	2	4	6	8																
OVERLAP	0	14	0	0																

VEH FLAG

SIGNAL PHASING DIAGRAM - (SECONDS)



1	60	+	4	+	1	7	+	4	+	1	5	+	4	+	1	7	WALK
13	85	+	4	+	1	5	+	4	+	1	5	+	4	+	1	7	WALK



2	85	+	4	+	1	7	+	4	+	1	27	+	4	+	2				
4	56	+	4	+	1	9	+	4	+	1	9	+	4	+	2				
20		+	4	+	1		+	4	+	1			4	+	2				

FLAGS	PHASES	PHASE DATA	PH 1	PH 2	PH 3	PH 4	PH 5	PH 6	PH 7	PH 8	PH 9

OMITPHAS	1, 3, 7, 9 - 11, 13, 15, 17 - 20	**TABLE # 1**											
OMIT PED	1, 3 - 5, 7, 9 - 40												
MIN RECAL	2, 6	PHASE TIMING		NB LAMAR		WB RIVERSIDE	NB LT	SB LAMAR		EB RIVERSIDE	
MAXRECAL											
SOFT RCL											
CDT'L SRVC											
PED RECAL	2, 6	MIN GREEN		10.0		5.0	3.0	10.0		5.0	
DUAL ETRY	4, 8	PASSAGE		1.0		1.5	1.0	1.0		1.5	
SIMGAP		MAXGRN 1		45.0		40.0	8.0	45.0		40.0	
REDREST		MAXGRN 2		95.0		20.0	10.0	95.0		20.0	
AUTO PED	2, 6, 8, 12, 14, 16	CONDSERV		0.0		0.0	0.0	0.0		0.0	
REST WALK	2, 6	YEL CHG		4.0		4.0	4.0	4.0		4.0	
PED RECY		RED CLR		1.0		2.0	1.0	1.0		2.0	
RED LOCK		WALK		7.0				7.0		7.0	
YEL LOCK		PED CLR		22.0				22.0		28.0	
NO EXT	12, 16	ADDED INI									
NO ADD INI		TIME TO RED									
NOGAPRED	14	TIME BEFOR									
NOMAX LOK	3, 4, 5, 7, 8, 12, 14, 16	MAX INIT GRN									

2+ 3 + PL # +	PHASE		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18		PHASE	
MIN SPLIT	PLAN	1		45	10	25	12	45		25						7					MIN	PLAN	13
NOM SPLIT	CYCLE	120		77	10	26	12	65		43						7					NOM	CYCLE	150
MAX SPLIT				95	10	35	15	95		45						7					MAX		
NOTE: PLAN 20 = FREE MODE PLAN 33 = FLASH MODE	PLAN	2		45		25	12	45		25											MIN	PLAN	
	CYCLE	135		102		33	12	90		33											NOM	CYCLE	
				135		35	15	135		35											MAX		
	PLAN																				MIN	PLAN	
	CYCLE																				NOM	CYCLE	
																					MAX		
	PLAN	4		25		15	12	25		15											MIN	PLAN	
	CYCLE	90		75		15	14	61		15											NOM	CYCLE	
				75		25	15	75		25											MAX		

Change ONLY the following:		1	2	3	4	5	6	7	8	9	10	11	12
INPUT CHANNELS	FUNCTION TYPE												
	FUNCTION INDEX												
	UNIT												
	CONNECTOR / BUI												
	PIN												
	CHANNEL IN 1												
	CHANNEL IN 2												
	LOGIC												
OUTPUT CHANNELS		**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
	FUNCTION TYPE		OVL				OVLPED		OVL				
	FUNCTION INDEX		2				14		6				
	CONNECTOR / BUI 1												
	PIN 1												
	CONNECTOR / BUI 2												
	PIN 2												
	CONNECTOR / BUI 3												
	PIN 3												

PHASES	**TYPE**		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	22	**OVERLAPS**		
OVL A	2	P																			.E # 1	FLAGS / PARAM	ENABLE
	141	P																					PED OVERL
		S																					FLASH YEL
		M																					ALT FLASH
OVL B	~~2~~	P		X										X									RECALL PR

P = PRIMARY S = SECONDARY M = MODIFIED

OVERLAP CONFIGURATION

OVL C	2	P																		
OVL D	2	P																		
OVL E	2	P																		
OVL F	2	P						X										X		
OVL G	2	P																		
OVL H	2	P																		
OVL I	2	P	X																	
OVL J	2	P																		
	111	P			X															
		S				X														
		M							X											
OVL K	2	P																		
	111	P					X													
		S						X										X		
		M																		
OVL L	2	P																		
	111	P							X											
		S								X										
		M			X															
OVL M	2	P																		
OVL N	2	P				X										X				
OVL O	2	P																		
OVL P	2	P																		

OVERLAP SETTINGS TABL

FLAGS	RECALL SE
	PED RECAL
	PED RECYC
	AUTO EXTE
PARAMETERS	MIN GREEN
	MAX GREE
	GREEN CLE
	YEL CLEAR
	RED CLEAR
	WALK
	PED CLEAR
	RESERVICE

PRE - EMPT	1	3
PRE EMPT FLAGS: ENABLE		
NO MEM LOK		
MAN ENABLE		
NO OVER FLSH		
NO OVER NEXT		
OMIT IN DELAY		
RE MAX PRES		
PED NOT DARK		
TIME: MIN PRESENCE		
DELAY		

FLAGS	PHASES
OMITPHAS	1, 3, 7, 9 - 11, 13, 15, 17 - 20
OMIT PED	1, 3 - 5, 7, 9 - 40
MIN RECAL	2, 6
MAXRECAL	
SOFT RCL	
CDT'L SRVC	
PED RECAL	2, 6
DUAL ETRY	4, 8
SIMGAP	
REDREST	
AUTO PED	2, 6, 8, 12, 14, 16
REST WALK	2, 6
PED RECY	
RED LOCK	
YEL LOCK	
NO EXT	12, 16
NO ADD INI	
NOGAPRED	
NO RANGE	14
NOMAX LOK	3, 4, 5, 7, 8, 12, 14, 16

PHASE DATA TABLE # 2	PH 1	PH 2	PH 3	PH 4	PH 5	PH 6	PH 7	PH 8	PH 9
PHASE TIMING		NB LAMAR		WB RIVERSIDE	NB LT	SB LAMAR		EB RIVERSIDE	
MIN GREEN		10.0		5.0	3.0	10.0		5.0	
PASSAGE		1.0		1.5	1.0	1.0		1.5	
MAXGRN 1		45.0		40.0	8.0	45.0		40.0	
MAXGRN 2		95.0		20.0	10.0	95.0		20.0	
CONDSERV		0.0		0.0	0.0	0.0		0.0	
YEL CHG		4.0		4.0	4.0	4.0		4.0	
RED CLR		1.0		2.0	1.0	1.0		2.0	
WALK		7.0				7.0		7.0	
PED CLR		22.0				22.0		28.0	
ADDED INI									
TIME TO RED									
TIME BEFOR									
MIN GAP									
MAX INIT GRN									

FLAGS	PHASES
OMITPHAS	1, 7, 9 - 11, 13, 15, 17 - 40
OMIT PED	1, 3, 4, 5, 7, 9 - 40
MIN RECAL	2, 6
MAXRECAL	
SOFT RCL	
CDT'L SRVC	
PED RECAL	2, 6
DUAL ETRY	4, 8
SIMGAP	
REDREST	
AUTO PED	2, 6, 8, 12, 14, 16

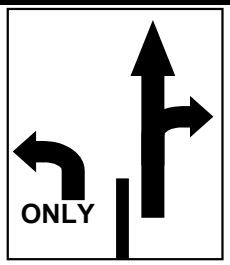
PHASE DATA TABLE # 5	PH 1	PH 2	PH 3	PH 4	PH 5	PH 6	PH 7	PH 8	PH 9
PHASE TIMING		NB LAMAR	EB LT	WB RIVERSIDE	NB LT	SB LAMAR		EB RIVERSIDE	
MIN GREEN		10.0	5.0	5.0	3.0	10.0		5.0	
PASSAGE		1.0	1.0	1.5	1.0	1.0		1.5	
MAXGRN 1		45.0	10.0	40.0	8.0	45.0		40.0	
MAXGRN 2		95.0	10.0	20.0	10.0	95.0		20.0	
CONDSERV		0.0	0.0	0.0	0.0	0.0		0.0	

REST WALK	2, 6	YEL CHG		4.0	4.0	4.0	4.0	4.0		4.0	
PED RECY		RED CLR		1.0	1.0	2.0	1.0	1.0		2.0	
RED LOCK		WALK		7.0				7.0		7.0	
YEL LOCK		PED CLR		22.0				22.0		28.0	
NO EXT	12, 16	ADDED INI									
NO ADD INI		TIME TO RED									
NOGAPRED		TIME BEFOR									
NO RANGE	14	MIN GAP									
MAX LOK	3, 4, 5, 7, 8, 12, 14, 16	MAX INIT GRN									

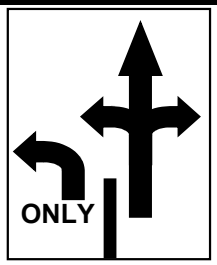
FLAGS	PHASES	**PHASE DATA TABLE # 6**										
OMITPHAS												
OMIT PED												
MIN RECAL		PHASE TIMING										
MAXRECAL												
SOFT RCL												
CDT'L SRVC												
PED RECAL		MIN GREEN										
DUAL ETRY		PASSAGE										
SIMGAP		MAXGRN 1										
REDREST		MAXGRN 2										
AUTO PED		CONDSERV										
REST WALK		YEL CHG										
PED RECY		RED CLR										
RED LOCK		WALK										
YEL LOCK		PED CLR										
NO EXT		ADDED INI										
NO ADD INI		TIME TO RED										
NOGAPRED		TIME BEFOR										
NO RANGE		MIN GAP										
MAX LOK		MAX INIT GRN										

NOTES:

SPECIAL FUNCTION # 7 SHOWS:



SPECIAL FUNCTION # 8 SHOWS:



ER:

CITY OF AUSTIN
TRAFFIC SIGNAL TIMING & PHASING SHEETS

N

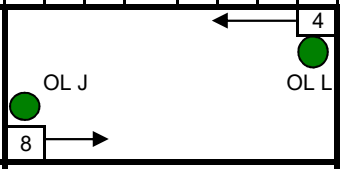
#3	#4	#5	1 + **ACTIVE CONTROL PARAMETERS**					
			CONTROL MODE:	SCHEDULE				
			MAN PLN:	3	FREE PLN:	1	DFSCHED:	1
			4 + 7 + **MISC**			4 + 2 + **COORD CONFIG**		
			TRANSITION MODE:	3:30		START UP FLASH:		1
			SYNCHRO MODE:	BEST		RED REVERT:		2
			MAX DWELL TIME:	0		FLASH CLR:		8

LE 7

W	T	F	S	PL	SPECIAL FUNCTIONS 1	2	3	4	5	6	7	8	AUXILIARY 1	2	3	4
X	X	X	X	20							X					
X	X	X		4							X					
X	X	X		2							X					
			X	1							X					
X	X	X	X	1							X					
X	X	X		13							X					
X	X	X		1							X					
X	X	X	X	20							X					

3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
X	X	X	X	X	X	X	X				X						
X	X	X	X	X	X	X	X				X						
X	X	X	X	X	X	X	X				X						
2	6	3	4	4	8	1	5										

14



20 + 4 + 2

27 + 4 + 2

PH 10 | PH 11 | PH 12 | PH 13 | PH 14 | PH 15 | PH 16 | PH 17 | PH 18

								ADV WALK E-W N. SIDE									
								7.0									
								0.0									
								7.0									
								7.0									

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
	45	10	20	10	45		25						7				
	100	10	33	10	90		50						7				
	135	10	35	15	135		35						7				

13	14	15	16	27	28	19	20	21
				VEH	VEH			
				17	18			
				1	1			
				CIS	CIS			
				56	43			

13	14	15	16	17	18	19	20	21
						SPECL	SPECL	
						7	8	
						35	36	

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
		X				X			X	X	X	X		X		
LAP														X		
LOW																
HZ																
IMARY																

C																
L														X		
CLE																
END																
N																
N																
EAR																
		0				0			4	4	4	4				
R		0				0			2	2	1	2				
														7		
R														20		
E																

4	5	6	SETTINGS		1	3	4	5	6
			TIMING	STRT MIN GRN					
				STRT WALK					
				STRT PED CLR					
			PHASE FLAGS	ENT 1 PHASE					
				ENT 2 PHASE					
				DWELL PHASE					
				INITIAL DWELL					
				DWELL PED					
				RECAL PHASE					
				EXIT PHASE					

PH 10	PH 11	PH 12	PH 13	PH 14 ADV WALK E-W N. SIDE	PH 15	PH 16	PH 17	PH 18
				7.0				
				0.0				
				7.0				
				7.0				

PH 10	PH 11	PH 12	PH 13	PH 14 ADV WALK E-W N. SIDE	PH 15	PH 16	PH 17	PH 18
				7.0				
				0.0				
				7.0				
				7.0				

TRAFFIC SIGNAL INTERSECTION:	DATE:	GRP:	LOC:	VRS:	HUB:	ZONE:	SEC:	ENGINEER:	CITY OF AUSTIN TRAFFIC SIGNAL TIMING & PHASING SHEETS	N
Barton Springs @ Lamar	11/13/2017	15	121K							

4 + 2 + RINGS

PHASE 1	RING 1:	1, 2, 12, a, 3, 4, 7, b
	RING 2:	5, 6, 16, a, 8, b
PHASE 2	RING 1:	
	RING 2:	

4 + 2 + PHASEMODE

STARTUP	2, 6
REDSTRT	1, 3, 4, 5, 7 - 40
PED	2, 3, 4, 6
YELFLASH	
FLASH/ENT	
FLASH/EXIT	

4 + 1 + ACT CONFIG

	#1	#2	#3	#4	#5
PHASE	1				
OVERLAP	1				
PREEMPT	1				
CABINET	2				
DETECTOR	2				
COORD	1				

1 + ACTIVE CONTROL PARAMETERS

CONTROL MODE:	SCHEDULE				
MAN PLN:	17	FREE PLN:	20	DFSCHED:	1

4 + 7 + MISC

TRANSITION MODE:	3:30
SYNCHRO MODE:	BEST
MAX DWELL TIME:	0

4 + 2 + COORD CONFIG

START UP FLASH:	1
RED REVERT:	2
FLASH CLR:	6

2 + 3 + PL # + PLAN MODE

PL	PLAN MODE	MAX GRN	PH DATA	PH SEQ	OL DATA	ACT CONF	ENA	OFF	VAR	CYCLE	HOLD / YLD
1	COORD	MAX 2	2	2	1	1	A	0	5	120	2, 6
2	COORD	MAX 2	2	2	1	1	A	72	5	135	2, 6
3	COORD	MAX 2	2	1	1	1	A	120	5	135	2, 6
4	COORD	MAX 1	2	5	1	1	A	0	5	90	2, 6
5											
6											
7											
8											
9											
10											
11											
12											
13	COORD	MAX 2	2	1	1	1	A	120	5	150	2, 6
14											
20	FREE	MAX I	3	1	1	1					

SCHEDULE / SPECIAL FUNCTIONS / AUXILIARY

EV	ENA	HR	M	S	M	T	W	T	F	S	PL	SF 1	SF 2	SF 3	SF 4	SF 5	SF 6	SF 7	SF 8	AUX 1	AUX 2	AUX 3	AUX 4
1	ENA	0	0	X	X	X	X	X	X	X	20												
2	ENA	6	0		X	X	X	X	X		4												
3	ENA	6	30		X	X	X	X	X		2												
4	ENA	8	0	X						X	1												
5	ENA	9	0	X						X	1												
6	ENA	9	30		X	X	X	X	X		1												
7	ENA	15	30		X	X	X	X	X		13												
8	ENA	19	30	X	X	X	X	X	X	X	1												
9	ENA	22	0	X	X	X	X	X	X	X	20												
10																							
11																							
12																							
13																							
14																							
15																							

PRIORITY SEQUENCE

PHASES	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
TABLE 1	1	0	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TABLE 2	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
TABLE 5	0	0	2	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

NOTE: ZERO DENOTES THE HIGHEST PRIORITY

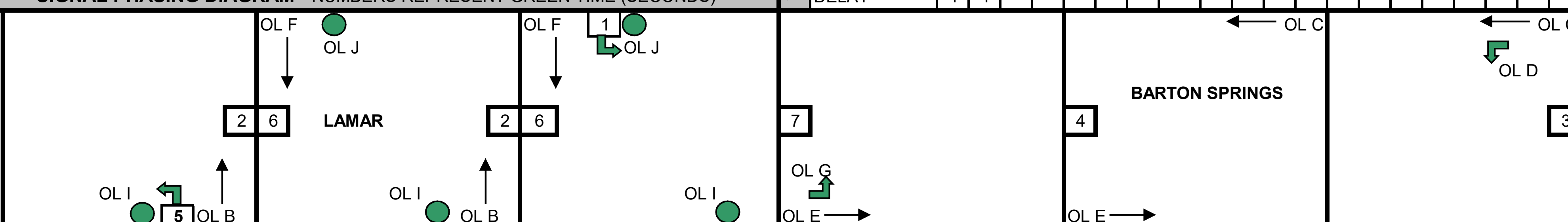
PED PRAMS & FLAGS

PHASES	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
ENABLE	X	X	X	X										X		X				
CALLPHAS	2	4	6	3																
OVERLAP		14		16																

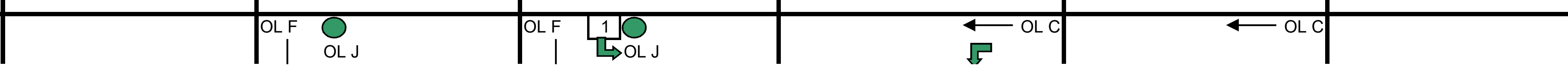
VEH PARAMETERS / VEH FLAGS

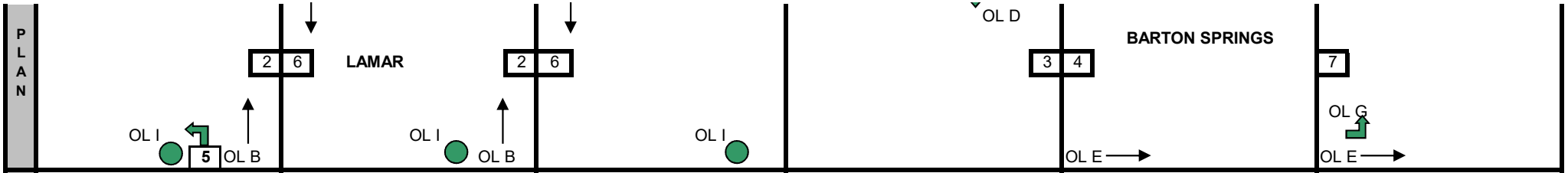
DETECTORS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
ENABLE	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
CALL	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
EXTEND	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
RED LOCK																				
YEL LOCK																				
CALL PHASE	1	5	2	6	3	7	4	4												
SWTCH PHAS																				
OVERLAP																				
DELAY	1	1																		

SIGNAL PHASING DIAGRAM - NUMBERS REPRESENT GREEN TIME (SECONDS)

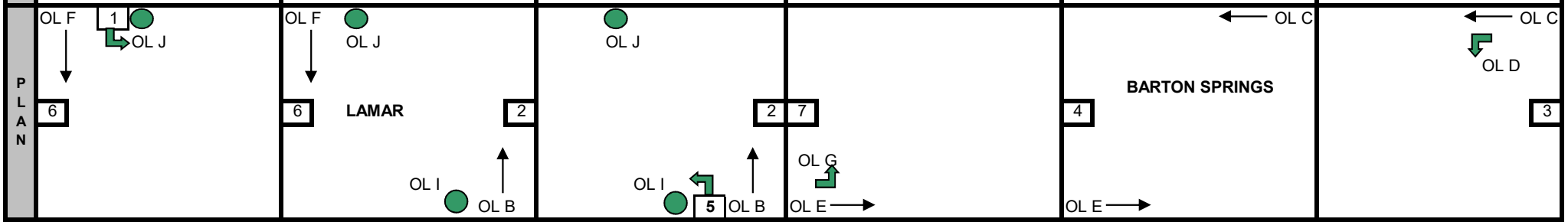


PLAN					
3	11 + 4 + 1	35 + 4 + 2	18 + 4 + 2	13 + 4 + 1	10 + 4 + 2	15 + 4 + 1
13	13 + 4 + 1	39 + 4 + 2	21 + 4 + 2	13 + 4 + 1	12 + 4 + 2	19 + 4 + 1
20	+ 4 + 1	+ 4 + 2	+ 4 + 2	+ 4 + 1	+ 4 + 2	+ 4 + 1





1	13	+	4	+	1	11	+	4	+	2	23	+	4	+	2	13	+	4	+	1	14	+	4	+	2	13	+	4	+	1
2	13	+	4	+	1	33	+	4	+	2	14	+	4	+	2	13	+	4	+	1	10	+	4	+	2	19	+	4	+	1



4	9	+	4	+	1	14	+	4	+	2	8	+	4	+	2	13	+	4	+	1	2	+	4	+	2	11	+	4	+	1

PLAN

		+		+			+		+			+		+			+		+			+		+			+		+
		+		+			+		+			+		+			+		+			+		+			+		+
		+		+			+		+			+		+			+		+			+		+			+		+
		+		+			+		+			+		+			+		+			+		+			+		+

PLAN

		+		+			+		+			+		+			+		+			+		+			+		+
		+		+			+		+			+		+			+		+			+		+			+		+

FLAGS	PHASES
OMITPHAS	8 - 11, 13 - 15, 17 - 40
OMIT PED	1, 3 - 5, 7 - 40
MIN RECAL	2, 6

PHASE DATA TABLE # 1

PH 1	PH 2	PH 3	PH 4	PH 5	PH 6	PH 7	PH 8	PH 9	PH 10	PH 11	PH 12	PH 13	PH 14	PH 15	PH 16	PH 17	PH 18
OL B / T	OL B AR	OL D / T	OL E Barton Sp	OL B / T	OL B AR	OL G / T											

		PHASE TIMING	SE "P" L	NE LAM/	OL WB L	OL C & E-W Ba	NE "P" L	SE LAM/	OL EB L													
MAXRECAL	2, 6																					
SOFT RCL																						
CDT'L SRVC																						
PED RECAL	2, 6	MIN GREEN	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0				1.0				1.0		
DUAL ETRY		PASSAGE	1.5	3.0	1.5	2.0	1.5	3.0	1.5	2.0				0.0				0.0		
SIMGAP	2, 4, 6, 8	MAXGRN 1	35.0	70.0	20.0	25.0	25.0	75.0	35.0	65.0				1.0				1.0		
REDREST		MAXGRN 2	25.0	80.0	30.0	15.0	15.0	80.0	10.0	35.0				1.0				1.0		
AUTO PED	2, 4, 6, 8	CONDSERV	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0				0.0				0.0		
REST WALK	2, 6	YEL CHG	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0				4.0				4.0		
PED RECY		RED CLR	1.0	2.0	1.0	2.0	1.0	2.0	1.0	2.0				2.0				2.0		
RED LOCK		WALK		7.0				7.0												
YEL LOCK		PED CLR		22.0				22.0												
NO EXT	12, 16	ADDED INI																		
NO ADD INI		TIME TO RED																		
NOGAPRED		TIME BEFOR																		
NOMAX LOK	1, 3 - 5, 7, 12, 16	MAX INIT GRN																		

2+ 3 + PL # +	PHASE		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18		PHASE		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
MIN SPLIT	PLAN	1	20	35	15	10	15	40	15	40											MIN	PLAN																				
NOM SPLIT	CYCLE	120	29	35	18	20	18	46	18	56											NOM	CYCLE																				
MAX SPLIT			35	75	25	20	25	85	25	70											MAX																					
NOTE: PLAN 20 = FREE MODE PLAN 33 = FLASH MODE	PLAN	2	20	35	15	10	10	45	15	30											MIN	PLAN																				
	CYCLE	135	20	57	18	16	18	59	24	58											NOM	CYCLE																				
			35	85	25	20	20	100	30	60											MAX																					
	PLAN	3	20	35	15	10	10	45	15	30											MIN	PLAN																				
	CYCLE	135	24	57	20	16	16	65	18	54											NOM	CYCLE																				
			35	85	25	25	20	100	25	75											MAX																					
	PLAN	4	10	20	15	8	10	20	15	38											MIN	PLAN	13	20	35	20	10	10	45	15												
	CYCLE	90	14	34	16	8	14	34	18	42											NOM	CYCLE	150	27	63	24	18	18	72	18												
			20	50	25	8	20	50	25	58											MAX			35	85	35	25	20	100	25												

Change ONLY the following:		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
INPUT CHANNELS	FUNCTION TYPE																					
	FUNCTION INDEX																					
	UNIT																					
	CONNECTOR / BUI																					
	PIN																					
	CHANNEL IN 1																					
	CHANNEL IN 2																					
	LOGIC																					
OUTPUT CHANNELS		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
	FUNCTION TYPE	PHASE	OVL	PED	OVL	OVL	Ovlped	PHASE	OVL	PED	OVL	OVL	Ovlped	OVL	OVL							
	FUNCTION INDEX	1	2	2	4	5	14	5	6	6	7	3	16	9	10							
	CONNECTOR / BUI 1																					
	PIN 1																					
	CONNECTOR / BUI 2																					
	PIN 2																					
	CONNECTOR / BUI 3																					
	PIN 3																					

PHASES	TYPE		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
OVL A	2	P																		
	141	P																		
		S																		
		M																		
	~~2~~	P		X										X						

OVERLAPS		A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
FLAGS / PARAM	ENABLE		X	X	X	X	X	X		X	X			X	X	X	X
	PED OVERLAP													X	X	X	X
	FLASH YELLOW																
	ALT FLASH HZ																
	RECALL PRIMARY																

P = PRIMARY S = SECONDARY M = MODIFIED

OVERLAP CONFIGURATION

OVL B	141	P																		
		S																		
		M																		
OVL C	~~2~~	P			X	X														
OVL D	~~2~~	P			X															
OVL E	~~2~~	P				X			X											
OVL F	~~2~~	P						X									X			
OVL G	~~2~~	P							X											
OVL H	2	P																		
OVL I	2	P																		
	~~141~~	P					X													
		S						X									X			
		M	X																	
OVL J	2	P																		
	~~141~~	P	X																	
		S		X										X						
		M					X													
OVL K	2	P																		
OVL L	2	P																		
OVL M	2	P																		
OVL N	~~2~~	P				X			X											
OVL O	2	P																		
OVL P	~~2~~	P			X	X														

OVERLAP SETTINGS

FLAGS	RECALL SEC																	
	PED RECALL																	
	PED RECYCLE																	
	AUTO EXTEND																	
PARAMETERS TABLE 1	MIN GREEN																	
	MAX GREEN																	
	GREEN CLEAR																	
	YEL CLEAR		4	4	4	4	4	4		4	4							
	RED CLEAR		2	1	1	1	2	1		2	2							
	WALK														7		7	
	PED CLEAR														24		24	
	RESERVICE																	

PRE - EMPT	1	3	4	5	6
PRE EMPT FLAGS: ENABLE					
NO MEM LOK					
MAN ENABLE					
NO OVER FLSH					
NO OVER NEXT					
OMIT IN DELAY					
RE MAX PRES					
PED NOT DARK					
TIME: MIN PRESENCE					
DELAY					

SETTINGS	1	3	4	5	6
TIMING: STRT MIN GRN					
STRT WALK					
STRT PED CLR					
PHASE FLAGS: ENT 1 PHASE					
ENT 2 PHASE					
DWELL PHASE					
INITIAL DWELL					
DWELL PED					
RECAL PHASE					
EXIT PHASE					

FLAGS	PHASES
OMITPHAS	8 - 11, 13 - 15, 17 - 40
OMIT PED	1, 3 - 5, 7 - 40
MIN RECAL	2, 6
MAXRECAL	2, 6
SOFT RCL	
CDT'L SRVC	
PED RECAL	
DUAL ETRY	
SIMGAP	2, 6
REDREST	
AUTO PED	2, 4, 6, 8
REST WALK	2, 6
PED RECY	
RED LOCK	
YEL LOCK	
NO EXT	12, 16
NO ADD INI	
NOGAPRED	
NO RANGE	
NOMAX LOK	1, 3 - 5, 7, 12, 16

PHASE DATA TABLE # 2

PHASE TIMING	PH 1 SB "P" L / T	PH 2 NB LAMAR	PH 3 OL D WB L/ T	PH 4 OL C & OL E E-W Barton Sp	PH 5 NB "P" L / T	PH 6 SB LAMAR	PH 7 OL G EB L / T	PH 8	PH 9	PH 10	PH 11	PH 12	PH 13	PH 14	PH 15	PH 16	PH 17	PH 18
MIN GREEN	5.0	25.0	5.0	5.0	5.0	25.0	5.0	5.0				1.0				1.0		
PASSAGE	1.0	3.0	1.0	1.0	1.0	3.0	1.0	1.0				0.0				0.0		
MAXGRN 1	20.0	45.0	20.0	25.0	20.0	45.0	20.0	25.0				1.0				1.0		
MAXGRN 2	35.0	65.0	25.0	20.0	25.0	65.0	45.0	35.0				1.0				1.0		
CONDSERV	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0				0.0				0.0		
YEL CHG	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0				4.0				4.0		
RED CLR	1.0	2.0	1.0	2.0	1.0	2.0	1.0	2.0				2.0				2.0		
WALK		7.0				7.0												
PED CLR		22.0				22.0												
ADDED INI																		
TIME TO RED																		
TIME BEFOR																		
MIN GAP																		
MAX INIT GRN																		

FLAGS	PHASES
OMITPHAS	8 - 11, 13 - 15, 17 - 40
OMIT PED	1, 3 - 5, 7 - 40
MIN RECAL	2, 6
MAXRECAL	
SOFT RCL	
CDT'L SRVC	
PED RECAL	
DUAL ETRY	

PHASE DATA TABLE # 3

PHASE TIMING	PH 1 SB "P" L / T	PH 2 NB LAMAR	PH 3 OL D WB L/ T	PH 4 OL C & OL E E-W Barton Sp	PH 5 NB "P" L / T	PH 6 SB LAMAR	PH 7 OL G EB L / T	PH 8	PH 9	PH 10	PH 11	PH 12	PH 13	PH 14	PH 15	PH 16	PH 17	PH 18
MIN GREEN	5.0	10.0	5.0	5.0	5.0	10.0	5.0	5.0				1.0				1.0		
PASSAGE	1.5	3.0	1.5	2.0	1.5	3.0	1.5	2.0				0.0				0.0		

SIMGAP	2, 4, 6, 8	MAXGRN 1	35.0	70.0	25.0	25.0	25.0	75.0	30.0	65.0				1.0				1.0		
REDREST		MAXGRN 2	25.0	80.0	30.0	15.0	15.0	80.0	10.0	35.0				1.0				1.0		
AUTO PED	2, 4, 6, 8	CONDSERV	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0				0.0				0.0		
REST WALK	2, 6	YEL CHG	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0				4.0				4.0		
PED RECY		RED CLR	1.0	2.0	1.0	2.0	1.0	2.0	1.0	2.0				2.0				2.0		
RED LOCK		WALK		7.0				7.0												
YEL LOCK		PED CLR		22.0				22.0												
NO EXT	12, 16	ADDED INI																		
NO ADD INI		TIME TO RED																		
NOGAPRED		TIME BEFOR																		
NO RANGE		MIN GAP																		
NOMAX LOK	1, 3 - 5, 7, 12, 16	MAX INIT GRN																		

FLAGS	PHASES	**PHASE DATA TABLE # 4**	PH 1	PH 2	PH 3	PH 4	PH 5	PH 6	PH 7	PH 8	PH 9	PH 10	PH 11	PH 12	PH 13	PH 14	PH 15	PH 16	PH 17	PH 18
OMITPHAS																				
OMIT PED																				
MIN RECAL		PHASE TIMING																		
MAXRECAL																				
SOFT RCL																				
CDT'L SRVC																				
PED RECAL		MIN GREEN																		
DUAL ETRY		PASSAGE																		
SIMGAP		MAXGRN 1																		
REDREST		MAXGRN 2																		
AUTO PED		CONDSERV																		
REST WALK		YEL CHG																		
PED RECY		RED CLR																		
RED LOCK		WALK																		
YEL LOCK		PED CLR																		
NO EXT		ADDED INI																		
NO ADD INI		TIME TO RED																		
NOGAPRED		TIME BEFOR																		
NO RANGE		MIN GAP																		
NOMAX LOK		MAX INIT GRN																		

NOTES:

TRAFFIC SIGNAL INTERSECTION:	DATE:	GRP:	LOC:	VRS:	HUB:	ZONE:	SEC:	ENGINEER:
Cesar Chavez @ Sandra Muraida	2/15/2013		229J		3			

4 + 2 + **RINGS**		
PHASE 1	RING 1:	2, a, 4, b
	RING 2:	5, 6, 16, a, 8, 7, 17, b
PHASE 2	RING 1:	
	RING 2:	

4 + 2 + **PHASEMODE**	
STARTUP	2, 6
REDSTRT	1, 3 - 5, 7 - 40
PED	2, 4, 6, 8
YELFLASH	2, 6
FLASH/ENT	
FLASH/EXIT	

4 + 1 + **ACT CONFIG**	#1	#2	#3
PHASE	1	1	
OVERLAP	1	1	
PREEMPT	1	1	
CABINET	2	2	
DETECTOR	2	1	
COORD	1	1	

2 + 3 + PL # + **PLAN MODE**

PL	PLAN MODE	MAX GRN	PH DATA	PH SEQ	OL DATA	ACT CONF	ENA	OFF	VAR	CYCLE	HOLD / YLD
1											
2											
3	COORD	MAX 1	2	1	1	1	A	15	5	120	2, 6
4											
5											
6											
7	COORD	MAX 1	1	1	1	1	A	36	5	80	2, 6
8											
20	FREE	MAX 1	20	1	1	1					
21	COORD	MAX 1	6	1	1	2	A	78	5	120	2, 6
33	COORD	MAX 1	6	1	1	2	A	10	5	150	2, 6

SCHEDULE 3

EV	ENA	HR	M	S	M	T	W
1	ENA	0	0	X	X	X	X
2	ENA	5	30	X	X	X	X
3	ENA	6	30		X	X	X
4	ENA	7	30	X			
5	ENA	7	45		X	X	X
6	ENA	9	30		X	X	X
7	ENA	15	30		X	X	X
8	ENA	19	0		X	X	X
9	ENA	23	0	X	X	X	X
10							
11							

PRIORITY SEQUENCE

PHASES		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
TABLE	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TABLE	2																				
TABLE	3																				
TABLE	4																				

NOTE: ZERO DENOTES THE HIGHEST PRIORITY

PED PRAMS & FLAGS

PHASES	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
ENABLE	X	X	X	X																
CALLPHAS	2	4	6	8																
OVERLAP																				

VEH PARAMETERS

DETECTORS	1	2	3
ENABLE	X	X	X
CALL	X	X	X
EXTEND	X	X	X
ADD INIT			
RED LOCK			
YEL LOCK			

VEH FLAG

CALL PHASE	7	5	2
SWTCH PHAS			
OVERLAP			
DELAY			

SIGNAL PHASING DIAGRAM - (SECONDS)

PLAN

Cesar Chavez: 6 ← ; 2 →

OL E 7 ↵ ↳

Sandra Muraida

3	80	+	4	+	1	30.5	+	3	+	1.5											
7	59	+	4	+	1	11.5	+	3	+	1.5											
20		+	4	+	1		+	3	+	1.5											

VEH PARAMETERS

DETECTORS	1	2	3
ENABLE	X	X	X
CALL	X	X	X
EXTEND	X	X	X
ADD INIT			
RED LOCK			
YEL LOCK			

VEH FLAG

CALL PHASE	7	7	2
SWTCH PHAS			
OVERLAP			
DELAY	10	10	

PLAN

Cesar Chavez: 6 ← ; 2 →

OL E 5 ↵

2 →

OL E 7 ↵ ↳

Sandra Muraida

21	50	+	4	+	1	20	+	4	+	1	35.5	+	3	+	1.5						
33	90	+	4	+	1	15	+	4	+	1	30.5	+	3	+	1.5						

FLAGS	PHASES
OMITPHAS	1, 3 - 5, 9 - 15, 18 - 40
OMIT PED	1 - 5, 7, 9 - 40
MIN RECAL	2, 6
MAXRECAL	2, 6
SOFT RCL	
CDT'L SRVC	
PED RECAL	2, 6
DUAL ETRY	

PHASE DATA TABLE # 1	PH 1	PH 2	PH 3	PH 4	PH 5	PH 6	PH 7	PH 8	PH 9	PH
PHASE TIMING		EB CESAR				WB CESAR	SB LT	N - S PED E- SIDE		
MIN GREEN		15.0				15.0	5.0	0.0		
PASSAGE		2.0				2.0	1.0	0.0		

SIMGAP		MAXGRN 1		50.0				50.0	20.0	0.0		
REDREST		MAXGRN 2		30.0				30.0	20.0	0.0		
AUTO PED	6, 8	CONDSERV		0.0				0.0	0.0	0.0		
REST WALK		YEL CHG		4.0				4.0	3.0	0.0		
PED RECY		RED CLR		1.0				1.0	1.5	0.0		
RED LOCK		WALK						5.0		4.0		
YEL LOCK		PED CLR						12.0		12.0		
NO EXT	16, 17	ADDED INI										
NO ADD INI		TIME TO RED										
NO RANGE	7, 8, 17	TIME BEFOR										
NOMAX LOK	1, 3, 4, 5, 7 - 10, 16, 17	MAX INIT GRN										

2+ 3 + PL # +	PHASE		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18		PHASE		1
MIN SPLIT	PLAN	3		25		14		25	14												MIN	PLAN		
NOM SPLIT	CYCLE	120		85		35		85	35												NOM	CYCLE		
MAX SPLIT				100		50		80	50												MAX			
NOTE: PLAN 20 = FREE MODE PLAN 33 = FLASH MODE	PLAN	7		40		15	8	40	15												MIN	PLAN		
	CYCLE	80		64		16	12	52	16												NOM	CYCLE		
				80		26	25	80	26												MAX			
	PLAN	21		25		14	10	25	14												MIN	PLAN		
	CYCLE	120		80		40	25	55	40												NOM	CYCLE		
				90		30	40	90	50												MAX			
	PLAN	33		60		14	15	60	14												MIN	PLAN		
	CYCLE	150		115		35	20	95	35												NOM	CYCLE		
				125		50	25	125	50												MAX			

Change ONLY the following:		1	2	3	4	5	6	7	8	9	10	11	12	2
INPUT CHANNELS	FUNCTION TYPE					VEH								VE
	FUNCTION INDEX					5								1
	UNIT													C
	CONNECTOR / BUI													1
	PIN					41								5
	CHANNEL IN 1													
	CHANNEL IN 2													
	LOGIC													
OUTPUT CHANNELS		1	2	3	4	5	6	7	8	9	10	11	12	1
	FUNCTION TYPE							OVL						
	FUNCTION INDEX							5						
	CONNECTOR / BUI 1													
	PIN 1													
	CONNECTOR / BUI 2													
	PIN 2													
	CONNECTOR / BUI 3													
	PIN 3													

PHASES		TYPE		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
SECONDARY M = MODIFIED P CONFIGURATION	OVL A	2	P																		
		141	P																		
			S																		
			M																		
	OVL B	2	P																		
		141	P																		
			S																		
			M																		
	OVL C	2	P																		
		141	P																		
			S																		
			M																		
	OVL D	2	P																		
		141	P																		
			S																		
			M																		

OVERLAPS		
OVERLAP SETTINGS	FLAGS / PARAM	ENABLE
		PED OVERLAP
		FLASH YELLOW
		ALT FLASH HZ
	FLAGS	RECALL PRIMA
		RECALL SEC
		PED RECALL
		PED RECYCLE
		AUTO EXTEND
	PARAMETERS	MIN GREEN
		MAX GREEN
		GREEN CLEAR
		YEL CLEAR
		RED CLEAR
		WALK
		PED CLEAR

P = PRIMARY S = OVERLAI

OVL E	~~2~~	P					X		X	X										
OVL F	~~2~~	P						X										X		
OVL G	~~2~~	P							X										X	
OVL H	2	P																		
OVL I	~~2~~	P						X										X		
OVL J	2	P																		
OVL K	~~2~~	P						X										X		
OVL L	2	P																		
OVL M	2	P																		
OVL N	2	P																		
OVL O	2	P																		
OVL P	2	P																		

RESERVICE

	PRE - EMPT	1	3	4
PRE EMPT FLAGS	ENABLE			
	NO MEM LOK			
	MAN ENABLE			
	NO OVER FLSH			
	NO OVER NEXT			
	OMIT IN DELAY			
	RE MAX PRES			
	PED NOT DARK			
TIME	MIN PRESENCE			
	DELAY			

FLAGS	PHASES
OMITPHAS	1, 3 - 5, 9 - 15, 18 - 40
OMIT PED	1 - 5, 7, 9 - 40
MIN RECAL	2, 6
MAXRECAL	2, 6
SOFT RCL	
CDT'L SRVC	
PED RECAL	
DUAL ETRY	
SIMGAP	
REDREST	
AUTO PED	6, 8
REST WALK	
PED RECY	6
RED LOCK	
YEL LOCK	
NO EXT	16, 17
NO ADD INI	
NOGAPRED	
NO RANGE	7, 8, 17
NOMAX LOK	1, 3, 4, 5, 7 - 10

PHASE DATA TABLE # 2	PH 1	PH 2	PH 3	PH 4	PH 5	PH 6	PH 7	PH 8	PH 9	PH
PHASE TIMING		EB CESAR				WB CESAR	SB LT	N - S PED E- SIDE		
MIN GREEN		12.0				12.0	8.0	0.0		
PASSAGE		2.0				2.0	1.0	0.0		
MAXGRN 1		60.0				60.0	40.0	0.0		
MAXGRN 2		60.0				60.0	40.0	0.0		
CONDSERV		0.0				0.0	0.0	0.0		
YEL CHG		4.0				4.0	3.0	0.0		
RED CLR		1.0				1.0	1.5	0.0		
WALK						5.0		4.0		
PED CLR						12.0		12.0		
ADDED INI										
TIME TO RED										
TIME BEFOR										
MIN GAP										
MAX INIT GRN										

FLAGS	PHASES
OMITPHAS	1, 3 - 4, 9 - 15, 18 - 40
OMIT PED	1 - 5, 7, 9 - 40
MIN RECAL	2, 6
MAXRECAL	2, 6
SOFT RCL	
CDT'L SRVC	
PED RECAL	6
DUAL ETRY	
SIMGAP	
REDREST	
AUTO PED	6, 8
REST WALK	
PED RECY	6
RED LOCK	
YEL LOCK	
NO EXT	
NO ADD INI	
NOGAPRED	
NO RANGE	7, 8, 17
NOMAX LOK	1, 3, 4, 5, 7 - 10

PHASE DATA TABLE # 6	PH 1	PH 2	PH 3	PH 4	PH 5	PH 6	PH 7	PH 8	PH 9	PH
PHASE TIMING		EB CESAR			EB CLEAR	WB CESAR	SB LT	N - S PED E- SIDE		
MIN GREEN		12.0			5.0	12.0	8.0	0.0		
PASSAGE		2.0			1.0	2.0	1.0	0.0		
MAXGRN 1		95.0			35.0	60.0	24.0	0.0		
MAXGRN 2		30.0			20.0	30.0	20.0	0.0		
CONDSERV		0.0			0.0	0.0	0.0	0.0		
YEL CHG		4.0			4.0	4.0	3.0	0.0		
RED CLR		1.0			1.0	1.0	1.5	0.0		
WALK						5.0		4.0		
PED CLR						12.0		12.0		
ADDED INI										
TIME TO RED										
TIME BEFOR										
MIN GAP										
MAX INIT GRN										

FLAGS	PHASES
OMITPHAS	1, 3, 4, 9 - 15, 18 - 40
OMIT PED	1 - 5, 7, 9 - 40
MIN RECAL	2, 6
MAXRECAL	2, 6

PHASE DATA TABLE # 20	PH 1	PH 2	PH 3	PH 4	PH 5	PH 6	PH 7	PH 8	PH 9	PH
PHASE		EB ESAR				WB ESAR	SB LT	S PED SIDE		

SOFT RCL		TIMING		Ct				Ct		N -	E-	
CDT'L SRVC												
PED RECAL	2, 6	MIN GREEN		15.0				15.0	5.0	0.0		
DUAL ETRY		PASSAGE		2.0				2.0	1.0	0.0		
SIMGAP		MAXGRN 1		50.0				50.0	20.0	0.0		
REDREST		MAXGRN 2		30.0				30.0	20.0	0.0		
AUTO PED	6, 8	CONDSERV		0.0				0.0	0.0	0.0		
REST WALK		YEL CHG		4.0				4.0	3.0	0.0		
PED RECY		RED CLR		1.0				1.0	1.5	0.0		
RED LOCK		WALK						5.0		4.0		
YEL LOCK		PED CLR						12.0		12.0		
NO EXT	16, 17	ADDED INI										
NO ADD INI		TIME TO RED										
NOGAPRED		TIME BEFOR										
NO RANGE	7, 8, 17	MIN GAP										
NOMAX LOK	1, 3, 4, 5, 7 - 10	MAX INIT GRN										

NOTES:

CITY OF AUSTIN
TRAFFIC SIGNAL TIMING & PHASING SHEETS

N

#4	#5	1 + **ACTIVE CONTROL PARAMETERS**					
		CONTROL MODE:		SCHEDULE			
		MAN PLN:	6	FREE PLN:	1	DFSCHED:	1
		4 + 7 + **MISC**			4 + 2 + **COORD CONFIG**		
		TRANSITION MODE:		3:30	START UP FLASH:		1
		SYNCHRO MODE:		BEST	RED REVERT:		2
		MAX DWELL TIME:		0	FLASH CLR:		6

				SPECIAL FUNCTIONS								AUXILIARY			
T	F	S	PL	1	2	3	4	5	6	7	8	1	2	3	4
X	X	X	20												
X	X	X	7												
X	X		21												
		X	3												
X	X		33												
X	X		3												
X	X		33												
X	X		3												
X	X	X	7												

4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
X	X	X	X	X	X	X	X	X	X	X	X					
X	X	X	X	X	X	X	X	X	X	X	X					
X	X	X	X	X	X	X	X	X	X	X	X					

DETECTOR CONFIGURATION TABLE # 1

6	7	7	4	8	3	3	3	3	7	5	7					
		2														

4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
X	X	X	X	X	X	X	X	X	X							
X	X	X	X	X	X	X	X	X	X							
X	X	X	X	X	X	X	X	X	X							

DETECTOR CONFIGURATION TABLE # 2

6	7	7	4	8	3	3	3	3	7							
	10	5							5							

10	PH 11	PH 12	PH 13	PH 14	PH 15	PH 16 E/W BUS EXTENSION	PH 17 SB EXTENSION	PH 18
						1.0	1.0	
						0.0	0.0	

											1.0	1.0				
											1.0	1.0				
											0.0	0.0				
											4.0	3.0				
											1.0	1.5				

2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18

7	28	29	30	31	32	33	34	35
EH	VEH	VEH	Specl					
3	14	15	4					
1S	C1S	C1S	C1S					
1	1	1	1					
7	56	55						

3	14	15	16	17	18	19	20	21

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
					X	X	X		X		X					
V																
						X										
RY																
					3	4	3		4		4					
					1.5	1	1.5		1		1					

5	6	SETTINGS		1	3	4	5	6
		TIMING	STRT MIN GRN					
			STRT WALK					
			STRT PED CLR					
		PHASE FLAGS	ENT 1 PHASE					
			ENT 2 PHASE					
			DWELL PHASE					
			INITIAL DWELL					
			DWELL PED					
			RECAL PHASE					
			EXIT PHASE					

10	PH 11	PH 12	PH 13	PH 14	PH 15	PH 16 E/W BUS EXTENSION	PH 17 SB EXTENSION	PH 18
						1.0	1.0	
						0.0	0.0	
						1.0	1.0	
						1.0	1.0	
						0.0	0.0	
						4.0	3.0	
						1.0	1.5	

10	PH 11	PH 12	PH 13	PH 14	PH 15	PH 16 E/W BUS EXTENSION	PH 17 SB EXTENSION	PH 18
						1.0	1.0	
						0.0	0.0	
						1.0	1.0	
						1.0	1.0	
						0.0	0.0	
						4.0	3.0	
						2.0	1.5	

10	PH 11	PH 12	PH 13	PH 14	PH 15	PH 16 V BUS ENSION	PH 17 SB ENSION	PH 18

						E/V EXTI	EXTI	
						1.0	1.0	
						0.0	0.0	
						1.0	1.0	
						1.0	1.0	
						0.0	0.0	
						4.0	3.0	
						1.0	1.5	

TRAFFIC SIGNAL INTERSECTION:	DATE:	GRP:	LOC:	VRS:	HUB:	ZONE:	SEC:	ENGINEER:
B.R. Reynolds @ Cesar Chavez	8/24/2017		230L					

CITY OF AUSTIN
TRAFFIC SIGNAL TIMING & PHASING SHEETS

N

4 + 2 + RINGS		
PHASE 1	RING 1:	5, 2, 22, a, 1, 4, 3, 6, 26, b
	RING 2:	
PHASE 2	RING 1:	5, 12, 2, 22, a, 1, 4, 3, 6, b
	RING 2:	16, a, 14, b

4 + 2 + PHASEMODE	
STARTUP	
REDSTRT	1 - 11, 12 - 40
PED	2, 4, 6, 8
YELFLASH	2
FLASH/ENT	
FLASH/EXIT	

4 + 1 + ACT CONFIG	#1	#2	#3	#4	#5
PHASE	1	2	2		
OVERLAP	1	2	2		
PREEMPT	1	1	1		
CABINET	2	2	2		
DETECTOR	2	2	3		
COORD	1	1	1		

CONTROL MODE:		REMOTE			
MAN PLN:	14	FREE PLN:	20	DFSCHED:	2
4 + 7 + MISC			4 + 2 + COORD CONFIG		
TRANSITION MODE:	3:30		START UP FLASH:		1
SYNCHRO MODE:	BEST		RED REVERT:		2
MAX DWELL TIME:	0		FLASH CLR:		6

2 + 3 + PL # + PLAN MODE

PL	PLAN MODE	MAX GRN	PH DATA	PH SEQ	OL DATA	ACT CONF	ENA	OFF	VAR	CYCLE	HOLD / YLD
1											
2	COORD	MAX 1	22	1	1	2	A	10	5	90	16
3	COORD	MAX 1	11	1	1	2	A	0	5	120	16
4											
5	COORD	MAX 1	25	1	1	2	A	42	5	80	16
6											
7	COORD	MAX 1	25	1	1	2	A	42	5	80	16
20	FREE	MAX 2	20	1	1	2					
21	COORD	MAX 1	21	1	1	2	A	10	5	120	16
25	FLASH	NONE	1	1	1	1					

SCHEDULE 2 (MoPac Construction)

EV	ENA	HR	M	S	M	T	W	T	F	S	PL	1	2	3	4	5	6	7	8	1	2	3	4
1	ENA	0	0	X	X	X	X	X	X	X	20												
2	ENA	5	30	X	X	X	X	X	X	X	7												
3	ENA	6	30		X	X	X	X	X		21												
4	ENA	7	30	X						X	3												
5	ENA	9	30		X	X	X	X	X		3												
6	ENA	15	0		X	X	X	X	X		3												
7	ENA	23	0		X	X	X	X	X		5												

SPECIAL FUNCTIONS — AUXILIARY

SCHEDULE 1 (Default)

EV	ENA	HR	M	S	M	T	W	T	F	S	PL	1	2	3	4	5	6	7	8	1	2	3	4
1	ENA	0	0	X	X	X	X	X	X	X	20												
2	ENA	5	30	X	X	X	X	X	X	X	7												
3	ENA	6	30		X	X	X	X	X		2												
4	ENA	7	30	X						X	3												
5	ENA	9	30		X	X	X	X	X		3												
6	ENA	15	0		X	X	X	X	X		3												
7	ENA	23	0		X	X	X	X	X		5												
8																							

SPECIAL FUNCTIONS — AUXILIARY

PRIORITY SEQUENCE

	PHASES	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
TABLE	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TABLE	2	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TABLE	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TABLE	4	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

NOTE: ZERO DENOTES THE HIGHEST PRIORITY

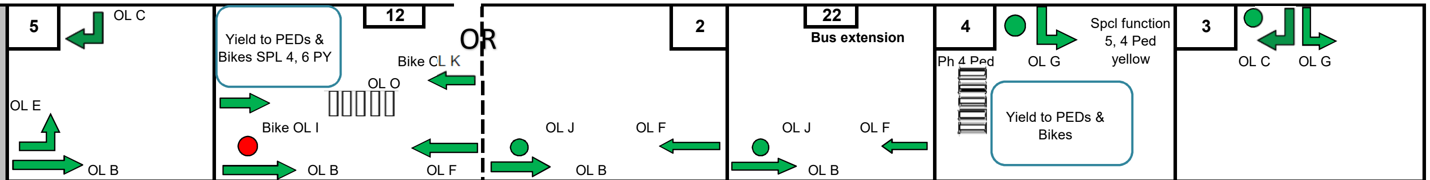
PED PRAMS & FLAGS

PHASES	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
ENABLE	X	X	X	X																
CALLPHAS	2	4	2	8																
OVERLAP	15	0	15	0																

VEH PARAMETERS / VEH FLAG

DETECTORS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
ENABLE	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X		
CALL	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X		
EXTEND	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X		
ADD INIT																				
RED LOCK																				
YEL LOCK																				
CALL PHASE	1	5	2	2	3		4	8	2	6	4	8	1	12	12	12	12	12		
SWTCH PHAS																				
OVERLAP																	9	11		
DELAY					2															

SIGNAL PHASING DIAGRAM - NUMBERS REPRESENT GREEN TIME (SECONDS)



PLAN	5	12 / 2 (12)	12 / 2 (2)	22	4	3
2	15 + 4 + 2	21 + 4 + 2	2 + 4 + 2	+ +	+ +	28 + 4 + 2
3	18 + 4 + 2	13 + 4 + 2	24 + 4 + 2	+ +	24 + 3 + 0	14 + 4 + 2
5	5 + 4 + 2	42 + 4 + 2	2 + 4 + 2	+ +	+ +	7 + 4 + 2
7	5 + 4 + 2	42 + 4 + 2	2 + 4 + 2	+ +	+ +	7 + 4 + 2
21	16 + 4 + 2	21 + 4 + 2	32 + 4 + 2	+ +	+ +	27 + 4 + 2

PLAN

FLAGS	PHASES
OMITPHAS	1, 6-11, 13-15, 17-21, 23-25, 27-40
OMIT PED	1, 3, 5 - 40
MIN RECAL	2, 16
MAXRECAL	16
SOFT RCL	
CDT'L SRVC	
PED RECAL	
DUAL ETRY	
SIMGAP	
REDREST	
AUTO PED	2, 4
REST WALK	
PED RECY	
RED LOCK	
YEL LOCK	
NO EXT	4, 22, 26
NO ADD INI	
NOGAPRED	
NO RANGE	4
NOMAX LOK	3, 4, 5, 12, 22, 26

PHASE DATA TABLE # 22	PH 1	PH 2	PH 3	PH 4	PH 5	PH 6	PH 7	PH 8	PH 9	PH 10	PH 11	PH 12	PH 13	PH 14	PH 15	PH 16	PH 22	PH 26
PHASE TIMING		EB LT PERM E/W C CHAVEZ	OL C SB RT	N - S PED	OL E EB C.C. "P" L/T							NO EB LFT E/W BIKE, PED					EB BUS EXT CESAR CHAVEZ	
MIN GREEN		27.0	5.0	5.0	5.0							10.0				27.0	1.0	1.0
PASSAGE		1.0	1.0	0.0	1.0							1.0				1.0	0.0	0.0
MAXGRN 1		70.0	25.0	21.0	20.0							70.0				30.0	1.0	1.0
MAXGRN 2		30.0	30.0	21.0	20.0							30.0				30.0	1.0	1.0
CONDSERV		0.0	0.0	0.0	0.0							0.0				0.0	0.0	0.0
YEL CHG		4.0	4.0	3.0	4.0							4.0				4.0	4.0	4.0
RED CLR		2.0	2.0	0.0	2.0							2.0				2.0	2.0	2.0
WALK				6.0														
PED CLR				18.0														
ADDED INI																		
TIME TO RED																		
TIME BEFOR																		
MIN GAP																		
MAX INIT GRN																		

2+ 3 + PL # +	PHASE		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
MIN SPLIT	PLAN	2		8	11		11							20		11		20		
NOM SPLIT	CYCLE	90		8	34		21							27		34		56		
MAX SPLIT				8	40		25							40		40		70		
NOTE: PLAN 20 = FREE MODE PLAN 33 = FLASH MODE	PLAN	3		8	11	11	11							16		11		20		
	CYCLE	120		30	20	27	24							19		47		73		
				30	40	27	25							45		50		80		
	PLAN	5		8	11		11							30		11		30		
	CYCLE	80		8	13		11							48		13		67		
				8	20		20							60		20		80		
	PLAN	7		8	11		11							30		11		30		
	CYCLE	80		8	13		11							48		13		67		

	PHASE		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
MIN	PLAN	21		25	11		11							20		11		20		
NOM	CYCLE	120		38	34		21							27		34		86		
MAX				45	40		25							35		40		95		
MIN	PLAN																			
NOM	CYCLE																			
MAX																				
MIN	PLAN																			
NOM	CYCLE																			
MAX																				
MIN	PLAN																			
NOM	CYCLE																			

		8	20	20					60	20	80		MAX										
Change ONLY the following:		**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**16**	**17**				**27**		**30**						**35**
INPUT CHANNELS	FUNCTION TYPE									VEH	Omit				Ped		Specl						Specl
	FUNCTION INDEX									16	2				3		4						5
	UNIT																						
	CONNECTOR / BUI									C1S	C1S				C1S		C1S						C1S
	PIN									31	31				43		None						None
	CHANNEL IN 1																28						33
	CHANNEL IN 2																29						34
	LOGIC																						
OUTPUT CHANNELS		**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**			**30**	**31**
	FUNCTION TYPE	PHASE	OVL	ovlped	OVL	PHASE	PED	OVL	OVL	OvlPED	OVL	PHASE	PED								specl	specl
	FUNCTION INDEX	1	2	15	3	4	4	5	6	15	7	8	4								4	5
	CONNECTOR / BUI 1																				C1S	C1S
	PIN 1																				36	37
	CONNECTOR / BUI 2																					
	PIN 2																					
	CONNECTOR / BUI 3																					
	PIN 3																					

Overlap Config Table 1 (Permissive EBLT)

PHASES		TYPE		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
P = PRIMARY S = SECONDARY M = MODIFIED OVERLAP CONFIGURATION	OVL A	2	P																																								
		141	P																																								
			S																																								
			M																																								
	OVL B	2	P		X			X							X										X																		
		141	P																																								
			S																																								
			M																																								
	OVL C	2	P			X		X																																			
		141	P																																								
			S																																								
			M																																								
	OVL D	2	P																																								
		141	P																																								
			S																																								
			M																																								
	OVL E	2	P					X																																			
	OVL F	2	P		X										X										X																		
	OVL G	2	P			X	X																																				
	OVL H	2	P																																								
	OVL I	2	P		X										X										X																		
	OVL J	2	P	X	X			X	X																X				X														
	OVL K	2	P		X										X										X																		
	OVL L	2	P																																								
	OVL M	2	P																																								
	OVL N	2	P																																								
	OVL O	2	P		X				X																																		
	OVL P	2	P																																								

Overlap Config Table 2 (Protected EBLT)

PHASES		TYPE		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
P = PRIMARY S = SECONDARY M = MODIFIED OVERLAP CONFIGURATION	OVL A	2	P																																								
		141	P																																								
			S																																								
			M																																								
	OVL B	2	P		X			X							X										X																		
		141	P																																								
			S																																								
			M																																								
	OVL C	2	P			X		X																																			
		141	P																																								
			S																																								
			M																																								
	OVL D	2	P																																								
		141	P																																								
			S																																								
			M																																								
	OVL E	2	P					X																																			
	OVL F	2	P		X										X										X																		
	OVL G	2	P			X	X																																				
	OVL H	2	P																																								
	OVL I	2	P												X																												
	OVL J	2	P	X	X			X	X																X				X														
	OVL K	2	P												X																												

OVL L	2	P																																										
OVL M	2	P																																										
OVL N	2	P																																										
OVL O	2	P					X						X																															
OVL P	2	P																																										

OVERLAP Config1 "P" EBLT			A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
OVERLAP SETTINGS	FLAGS / PARAM	ENABLE		X	X		X	X	X		X	X	X				X	
		PED OVERLAP															X	
		FLASH YELLOW		X				X				X						
		ALT FLASH HZ																
	FLAGS	RECALL PRIMARY																
		RECALL SEC																
		PED RECALL																
		PED RECYCLE																
		AUTO EXTEND																
	PARAMETERS	MIN GREEN																
		MAX GREEN																
		GREEN CLEAR																
		YEL CLEAR		4.0	4.0		4.0	4.0	4.0		3.0	4.0	3.0					
		RED CLEAR		2.0	2.0		2.0	2.0	2.0		3.0	2.0	3.0					
		WALK															7.0	
		PED CLEAR															16.0	
		RESERVICE																

OVERLAPS			A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
OVERLAP SETTINGS	FLAGS / PARAM	ENABLE		X	X		X	X	X		X	X	X				X	
		PED OVERLAP															X	
		FLASH YELLOW		X				X				X						
		ALT FLASH HZ																
	FLAGS	RECALL PRIMARY																
		RECALL SEC																
		PED RECALL																
		PED RECYCLE																
		AUTO EXTEND																
	PARAMETERS	MIN GREEN																
		MAX GREEN																
		GREEN CLEAR																
		YEL CLEAR		4.0	4.0		4.0	4.0	4.0		3.0	4.0	3.0					
		RED CLEAR		2.0	2.0		2.0	2.0	2.0		3.0	2.0	3.0					
		WALK															7.0	
		PED CLEAR															16.0	
		RESERVICE																

FLAGS	PHASES	PHASE DATA TABLE # 11	PH 1	PH 2	PH 3	PH 4	PH 5	PH 6	PH 7	PH 8	PH 9	PH 10	PH 11	PH 12	PH 13	PH 14	PH 15	PH 16	PH 22	PH 26
OMITPHAS	1, 6-11, 13-15,17-21, 23-25, 27-40			OL B EB CESAR CHAVEZ	OL C SB RT	N - S PED	OL E EB C.C. "P" L/T							NO EB LFT E/W BIKE, PED					EB BUS EXT CESAR CHAVEZ	WB BUS EXT CESAR CHAVEZ
OMIT PED	1, 3, 5 - 40																			
MIN RECAL	2, 5, 16	PHASE TIMING																		
MAXRECAL	2, 6																			
SOFT RCL																				
CDT'L SRVC																				
PED RECAL		MIN GREEN		27.0	5.0	5.0	10.0							10.0				27.0	1.0	1.0
DUAL ETRY		PASSAGE		1.0	1.0	2.0	2.0							1.0				1.0	0.0	0.0
SIMGAP		MAXGRN 1		90.0	25.0	21.0	20.0							70.0				30.0	1.0	1.0
REDREST		MAXGRN 2		30.0	30.0	21.0	20.0							30.0				30.0	1.0	1.0
AUTO PED	2, 4	CONDSERV		0.0	0.0	0.0	0.0							0.0				0.0	0.0	0.0
REST WALK		YEL CHG		4.0	4.0	3.0	4.0							4.0				4.0	4.0	4.0
PED RECY		RED CLR		2.0	2.0	0.0	2.0							2.0				2.0	2.0	2.0
RED LOCK		WALK				6.0														
YEL LOCK		PED CLR				18.0														
NO EXT	4, 22, 26	ADDED INI																		
NO ADD INI		TIME TO RED																		
NORANGE		TIME BEFOR																		
NOMAX LOK	3, 4, 5, 12,22, 26	MAX INIT GRN																		

FLAGS	PHASES	PHASE DATA TABLE # 25	PH 1	PH 2	PH 3	PH 4	PH 5	PH 6	PH 7	PH 8	PH 9	PH 10	PH 11	PH 12	PH 13	PH 14	PH 15	PH 16	PH 22	PH 26
OMITPHAS	1, 6-11,13-15,17-21,23-25, 27-40			OL B EB CESAR CHAVEZ	OL C SB RT	N - S PED	OL E EB C.C. "P" L/T							NO EB LFT E/W BIKE, PED					EB BUS EXT CESAR CHAVEZ	WB BUS EXT CESAR CHAVEZ
OMIT PED	1, 3, 5 - 40																			
MIN RECAL	2, 16	PHASE TIMING																		
MAXRECAL	16																			
SOFT RCL																				
CDT'L SRVC																				
PED RECAL		MIN GREEN		40.0	5.0	5.0	5.0	0.0						40.0				40.0	1.0	1.0
DUAL ETRY		PASSAGE		1.0	1.0	0.0	1.0	0.0						1.0				1.0	0.0	0.0
SIMGAP		MAXGRN 1		30.0	30.0	21.0	20.0	0.0						55.0				75.0	1.0	1.0
REDREST		MAXGRN 2		30.0	30.0	21.0	20.0	0.0						30.0				30.0	1.0	1.0
AUTO PED	2, 4	CONDSERV		0.0	0.0	0.0	0.0	0.0						0.0				0.0	0.0	0.0
REST WALK		YEL CHG		4.0	4.0	4.0	4.0	0.0						4.0				4.0	4.0	4.0
PED RECY		RED CLR		2.0	2.0	2.0	2.0	0.0						2.0				2.0	2.0	2.0
RED LOCK		WALK				6.0														
YEL LOCK		PED CLR				18.0														
NO EXT	4, 22, 26	ADDED INI																		

NO ADD INI		TIME TO RED																		
NOGAPRED		TIME BEFOR																		
NO RANGE	4	MIN GAP																		
NOMAX LOK	3, 4, 5, 12, 22, 26	MAX INIT GRN																		

FLAGS	PHASES
OMITPHAS	1, 6-11, 13-15, 17-21,23-25,27-40
OMIT PED	1, 3, 5-40
MIN RECAL	2, 16
MAXRECAL	16
SOFT RCL	
CDT'L SRVC	

PHASE DATA TABLE # 21	PH 1	PH 2	PH 3	PH 4	PH 5	PH 6	PH 7	PH 8	PH 9	PH 10	PH 11	PH 12	PH 13	PH 14	PH 15	PH 16	PH 17	PH 18
PHASE TIMING		OL B EB CESAR CHAVEZ	OL C SB RT	N - S PED	OL E EB C.C. "P" L/T							NO EB LFT E/W BIKE, PED					EB BUS EXT CESAR CHAVEZ	WB BUS EXT CESAR CHAVEZ
MIN GREEN		27.0	5.0	5.0	5.0							10.0					1.0	1.0
PASSAGE		1.0	1.0	0.0	1.0							1.0					0.0	0.0
MAXGRN 1		70.0	25.0	21.0	20.0							70.0					1.0	1.0
MAXGRN 2		30.0	30.0	21.0	20.0							30.0					1.0	1.0
CONDSERV		0.0	0.0	0.0	0.0							0.0					0.0	0.0
YEL CHG		4.0	4.0	3.0	4.0							4.0					4.0	4.0
RED CLR		2.0	2.0	0.0	2.0							2.0					2.0	2.0
WALK				6.0														
PED CLR				18.0														
ADDED INI																		
TIME TO RED																		
TIME BEFOR																		
MIN GAP																		
MAX INIT GRN																		

REDREST	2, 4	AUTO PED	REST WALK	PED RECY	RED LOCK	YEL LOCK	NO EXT	NO ADD INI	NOGAPRED	NO RANGE	NOMAX LOK

NOTES:

TRAFFIC SIGNAL INTERSECTION:	DATE:	GRP:	LOC:	VRS:	HUB:	ZONE:	SEC:	ENGINEER:
Lamar @ Toomey	11/13/2017		1018A					

CITY OF AUSTIN
TRAFFIC SIGNAL TIMING & PHASING SHEETS

N

4 + 2 + **RINGS**		
PHASE 1	RING 1:	1, 2, a, 3, 4, b
	RING 2:	5, 6, a, 7, 8, b
PHASE 2	RING 1:	
	RING 2:	

4 + 2 + **PHASEMODE**	
STARTUP	2, 6
REDSTRT	1, 3 - 5, 7 - 20
PED	6
YELFLASH	
FLASH/ENT	
FLASH/EXIT	

4 + 1 + **ACT CONFIG**	#1	#2	#3	#4	#5
PHASE	1	1			
OVERLAP	1	2			
PREEMPT	1	1			
CABINET	2	2			
DETECTOR	2	2			
COORD	1	1			

1 + **ACTIVE CONTROL PARAMETERS**					
CONTROL MODE:	SCHEDULE				
MAN PLN:	1	FREE PLN:	20	DFSCHED:	1

4 + 7 + **MISC**		4 + 2 + **COORD CONFIG**	
TRANSITION MODE:	3:30	START UP FLASH:	1
SYNCHRO MODE:	BEST	RED REVERT:	2
MAX DWELL TIME:	0	FLASH CLR:	8

2 + 3 + PL # + **PLAN MODE**

PL	PLAN MODE	MAX GRN	PH DATA	PH SEQ	OL DATA	ACT CONF	ENA	OFF	VAR	CYCLE	HOLD / YLD
1	COORD	MAX1	1	1	1	1	A	113	5	120	2, 6
2	COORD	MAX1	1	3	1	1	A	86	5	135	2, 6
3	COORD	MAX1	1	3	1	2	A	0	5	135	2, 6
4	COORD	MAX1	1	1	1	1	A	78	5	90	2, 6
5											
6											
7	COORD	MAX1	1	1	1	1	A	113	5	120	2, 6
8											
9											
13	COORD	MAX2	1	2	1	2	A	129	5	150	2, 6
20	FREE	MAX 2	4	1	1	1					
21											

SCHEDULE

EV	ENA	HR	M	S	M	T	W	T	F	S	PL	SF 1	SF 2	SF 3	SF 4	SF 5	SF 6	SF 7	SF 8	AUX 1	AUX 2	AUX 3	AUX 4
1	ENA	0	0	X	X	X	X	X	X	X	20												
2	ENA	6	0		X	X	X	X	X		4												
3	ENA	6	30		X	X	X	X	X		2												
4	ENA	8	0	X						X	7												
5	ENA	9	0	X						X	7												
6	ENA	9	30		X	X	X	X	X		1												
7	ENA	15	30		X	X	X	X	X		13												
8	ENA	19	30	X	X	X	X	X	X	X	1												
9	ENA	22	0	X	X	X	X	X	X	X	20												
10																							
11																							
12																							

PRIORITY SEQUENCE

PHASES		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
TABLE	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TABLE	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TABLE	3	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TABLE	4																				

NOTE: ZERO DENOTES THE HIGHEST PRIORITY

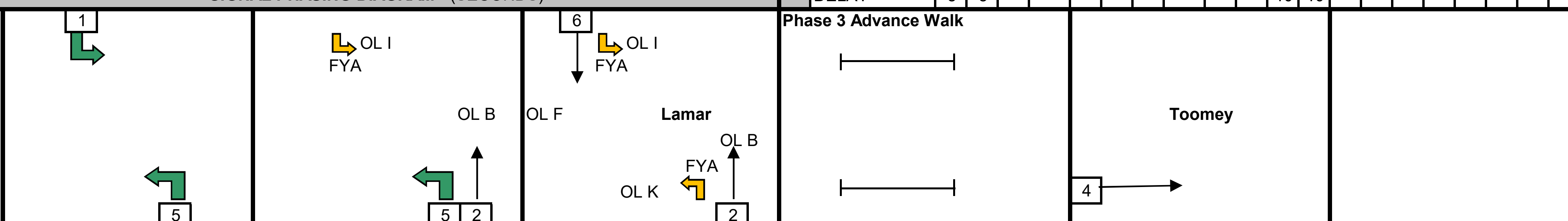
PED PRAMS & FLAGS

PHASES	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
ENABLE	X	X	X	X																
CALLPHAS	2	4	6	8																
OVERLAP		14		16																

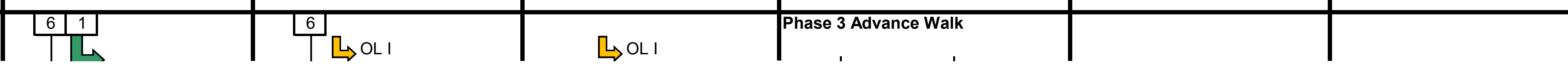
VEH PARAMETERS / VEH FLAGS

DETECTORS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
ENABLE	X	X	X	X			X		X	X	X	X								
CALL	X	X	X	X			X		X	X	X	X								
EXTEND	X	X	X	X			X		X	X	X	X								
ADD INIT																				
RED LOCK																				
YEL LOCK																				
CALL PHASE	1	5	2	6			4		2	6	4	8								
SWTCH PHAS																				
OVERLAP																				
DELAY	5	5									10	10								

SIGNAL PHASING DIAGRAM - (SECONDS)



PLAN					
1	5 + 4 + 1	0 + 4 + 1	73 + 4 + 1	5 + 0 + 0	17 + 4 + 1
4	5 + 4 + 1		53 + 4 + 1	5 + 0 + 0	12 + 4 + 1
7	5 + 4 + 1	0 + 4 + 1	71 + 4 + 1	5 + 0 + 0	19 + 4 + 1
20	+ 4 + 1	+ 4 + 1	+ 4 + 1	5 + 0 + 0	+ 4 + 1



PLAN					
	OL F, OL K, FYA	OL F, Lamar, OL K, FYA, OL B, 2	FYA, OL B, 5, 2		Toomey, 4
2	5 + 4 + 1	77 + 4 + 1	10 + 4 + 1	5 + 0 + 0	18 + 4 + 1

PLAN					
	OL I, FYA, OL B, 5, 2	6, OL I, FYA, OL F, Lamar, OL B, 2	6, 1, OL F	Phase 3 Advance Walk	Toomey, 4
13	16 + 4 + 1	60 + 4 + 1	9 + 4 + 1	5 + 0 + 0	40 + 4 + 1

FLAGS	PHASES
OMITPHAS	7 - 11, 13 - 15, 17 - 20
OMIT PED	1 - 5, 7 - 20
MIN RECAL	2, 6
MAXRECAL	
SOFT RCL	
CDT'L SRVC	
PED RECAL	
DUAL ETRY	
SIMGAP	
REDREST	
AUTO PED	4, 6, 8
REST WALK	6
PED RECY	
RED LOCK	
YEL LOCK	
NO EXT	3, 12, 16
NO ADD INI	
NOGAPRED	3
NOMAX LOK	1, 3, 4, 5, 7, 8, 12, 16

PHASE DATA TABLE # 1	PH 1	PH 2	PH 3	PH 4	PH 5	PH 6	PH 7	PH 8	PH 9	PH 10	PH 11	PH 12	PH 13	PH 14	PH 15	PH 16	PH 17	PH 18
PHASE TIMING	SB U-TURN	NB LAMAR	E-W ADV WALK	EB TOOMEY	NB LT	SB LAMAR												
MIN GREEN	5.0	20.0	5.0	5.0	5.0	20.0						2.0				2.0		
PASSAGE	1.5	1.0	0.0	1.0	1.5	1.0						0.0				0.0		
MAXGRN 1	10.0	95.0	5.0	30.0	20.0	95.0						2.0				2.0		
MAXGRN 2	10.0	95.0	5.0	25.0	20.0	95.0						2.0				2.0		
CONDSERV	0.0	0.0	0.0	0.0	0.0	0.0						0.0				0.0		
YEL CHG	4.0	4.0	0.0	4.0	4.0	4.0						4.0				4.0		
RED CLR	1.0	1.0	0.0	1.0	1.0	1.0						1.0				1.0		
WALK						7.0												
PED CLR						10.0												
ADDED INI																		
TIME TO RED																		
TIME BEFOR																		
MAX INIT GRN																		

2+ 3 + PL # +	PHASE		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
MIN SPLIT	PLAN	1	10	25	5	13	10	25		13										
NOM SPLIT	CYCLE	120	10	83	5	22	15	78		22										
MAX SPLIT			15	95	5	45	20	95		40										
	PLAN	2	10	25	5	13	10	25		13										
	CYCLE	135	10	97	5	23	15	92		23										
			15	110	5	40	20	110		40										
	PLAN	3	10	25	5	13	10	25		13										
	CYCLE	135	11	95	5	24	21	85		24										

	PHASE		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
MIN	PLAN	7	10	25	5	13	10	25		13										
NOM	CYCLE	120	10	81	5	24	15	76		24										
MAX			15	95	5	40	20	95		40										
MIN	PLAN	13	10	50	5	13	10	45		13										
NOM	CYCLE	150	14	86	5	45	21	79		45										
MAX			14	120	5	35	21	120		35										
MIN	PLAN																			
NOM	CYCLE																			

NOTE:
PLAN 20 =
FREE MODE

PLAN 33 = FLASH MODE																																				
			15	110	5	40	30	110		40										MAX																
	PLAN	4	10	25	5	13	10	25		13										MIN	PLAN															
	CYCLE	90	10	58	5	17	10	58		17										NOM	CYCLE															
			10	80	5	30	10	80		30										MAX																

Change ONLY the following:		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
INPUT CHANNELS	FUNCTION TYPE																					
	FUNCTION INDEX																					
	UNIT																					
	CONNECTOR / BUI																					
	PIN																					
	CHANNEL IN 1																					
	CHANNEL IN 2																					
	LOGIC																					
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
OUTPUT CHANNELS	FUNCTION TYPE		OVL				OvlPed		OVL				OvlPed	OVL	OVL	OVL	OVL					
	FUNCTION INDEX		2				14		6				16	9	10	11	12					
	CONNECTOR / BUI 1																					
	PIN 1																					
	CONNECTOR / BUI 2																					
	PIN 2																					
	CONNECTOR / BUI 3																					
	PIN 3																					

PHASES	TYPE		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
OVL A	2	P																		
OVL B	~~2~~	P		X										X						
OVL C	2	P																		
OVL D	2	P																		
OVL E	2	P																		
OVL F	~~2~~	P						X									X			
OVL G	2	P																		
OVL H	2	P																		
OVL I	2	P																		
	~~142~~	P		X																
		S																		
		M	X																	
OVL J	2	P																		
	142	P																		
		S																		
		M																		
OVL K	2	P																		
	~~142~~	P						X												
		S																		
		M					X													
OVL L	2	P																		
	142	P																		
		S																		
		M																		
OVL M	2	P																		
OVL N	~~2~~	P			X	X														
OVL O	2	P																		
OVL P	~~2~~	P			X	X														

P = PRIMARY S = SECONDARY M = MODIFIED

OVERLAP CONFIGURATION TABLE # 1

Table 2; OVL K has no Primary Parent Phase

OVERLAPS			A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
OVERLAP SETTINGS	FLAGS / PARAM	ENABLE		X				X			X		X			X		X
		PED OVERLAP														X		X
		FLASH YELLOW		X				X										
		ALT FLASH HZ																
	FLAGS	RECALL PRIMARY																
		RECALL SEC																
		PED RECALL																
		PED RECYCLE																
		AUTO EXTEND																
	PARAMETERS	MIN GREEN																
		MAX GREEN																
		GREEN CLEAR																
		YEL CLEAR		4				4			4		4					
		RED CLEAR		1				1			1		1					
		WALK														8		8
		PED CLEAR														27		27
		RESERVICE																

PRE - EMPT		1	3	4	5	6
PRE EMPT FLAGS	ENABLE					
	NO MEM LOK					
	MAN ENABLE					
	NO OVER FLSH					
	NO OVER NEXT					
	OMIT IN DELAY					
	RE MAX PRES					
	PED NOT DARK					
TIME	MIN PRESENCE					
	DELAY					

SETTINGS		1	3	4	5	6
TIMING	STRT MIN GRN					
	STRT WALK					
	STRT PED CLR					
PHASE FLAGS	ENT 1 PHASE					
	ENT 2 PHASE					
	DWELL PHASE					
	INITIAL DWELL					
	DWELL PED					
	RECAL PHASE					
	EXIT PHASE					

FLAGS	PHASES	PHASE DATA TABLE # 4	PH 1	PH 2	PH 3	PH 4	PH 5	PH 6	PH 7	PH 8	PH 9	PH 10	PH 11	PH 12	PH 13	PH 14	PH 15	PH 16	PH 17	PH 18
OMITPHAS	7 - 11, 13 - 15, 17 - 20																			
OMIT PED	1 - 5, 7 - 20																			
MIN RECAL	2, 6	PHASE TIMING	SB U-TURN	NB LAMAR	E-W ADV WALK	EB TOOMEY	NB LT	SB LAMAR												
MAXRECAL																				
SOFT RCL																				
CDT'L SRVC																				
PED RECAL		MIN GREEN	5.0	20.0	5.0	5.0	5.0	20.0						2.0				2.0		
DUAL ETRY		PASSAGE	1.5	1.0	0.0	1.5	1.5	1.0						0.0				0.0		
SIMGAP		MAXGRN 1	10.0	95.0	5.0	30.0	20.0	95.0						2.0				2.0		
REDREST		MAXGRN 2	7.0	60.0	5.0	15.0	10.0	60.0						2.0				2.0		
AUTO PED	4, 6, 8	CONDSERV	0.0	0.0	0.0	0.0	0.0	0.0						0.0				0.0		
REST WALK	6	YEL CHG	4.0	4.0	0.0	4.0	4.0	4.0						4.0				4.0		
PED RECY		RED CLR	1.0	1.0	0.0	1.0	1.0	1.0						1.0				1.0		
RED LOCK		WALK						7.0												
YEL LOCK		PED CLR						10.0												
NO EXT	3, 12, 16	ADDED INI																		
NO ADD INI		TIME TO RED																		
NOGAPRED		TIME BEFOR																		
NO RANGE		MIN GAP																		
NOMAX LOK	1, 3, 4, 5, 7, 8, 12, 16	MAX INIT GRN																		

FLAGS	PHASES	PHASE DATA TABLE # 3	PH 1	PH 2	PH 3	PH 4	PH 5	PH 6	PH 7	PH 8	PH 9	PH 10	PH 11	PH 12	PH 13	PH 14	PH 15	PH 16	PH 17	PH 18
OMITPHAS																				
OMIT PED																				
MIN RECAL		PHASE TIMING																		
MAXRECAL																				
SOFT RCL																				
CDT'L SRVC																				
PED RECAL		MIN GREEN																		
DUAL ETRY		PASSAGE																		
SIMGAP		MAXGRN 1																		
REDREST		MAXGRN 2																		
AUTO PED		CONDSERV																		
REST WALK		YEL CHG																		
PED RECY		RED CLR																		
RED LOCK		WALK																		
YEL LOCK		PED CLR																		
NO EXT		ADDED INI																		
NO ADD INI		TIME TO RED																		
NOGAPRED		TIME BEFOR																		
NO RANGE		MIN GAP																		
NOMAX LOK		MAX INIT GRN																		

FLAGS	PHASES	PHASE DATA TABLE #	PH 1	PH 2	PH 3	PH 4	PH 5	PH 6	PH 7	PH 8	PH 9	PH 10	PH 11	PH 12	PH 13	PH 14	PH 15	PH 16	PH 17	PH 18
OMITPHAS																				
OMIT PED																				
MIN RECAL		PHASE TIMING																		
MAXRECAL																				
SOFT RCL																				
CDT'L SRVC																				
PED RECAL		MIN GREEN																		
DUAL ETRY		PASSAGE																		
SIMGAP		MAXGRN 1																		
REDREST		MAXGRN 2																		
AUTO PED		CONDSERV																		

REST WALK		YEL CHG																		
PED RECY		RED CLR																		
RED LOCK		WALK																		
YEL LOCK		PED CLR																		
NO EXT		ADDED INI																		
NO ADD INI		TIME TO RED																		
NOGAPRED		TIME BEFOR																		
NO RANGE		MIN GAP																		
NOMAX LOK		MAX INIT GRN																		

NOTES:

Technical Appendices for

Transportation Impact Study

218 South Lamar Development in Austin, Texas

Appendix C
Intersection Level of Service Calculations

August 2018

BIG RED DOG
ENGINEERING | CONSULTING

1074.40.001

Lane Group	WBL	WBT	WBR	NBL	NBT	SBT
Lane Group Flow (vph)	186	638	106	317	1353	790
v/c Ratio	0.32	0.69	0.31	0.71	0.51	0.54
Control Delay	53.6	61.1	11.9	31.7	4.8	34.6
Queue Delay	0.0	0.0	0.0	0.0	0.5	0.0
Total Delay	53.6	61.1	11.9	31.7	5.3	34.6
Queue Length 50th (ft)	82	216	4	213	115	302
Queue Length 95th (ft)	113	248	55	m256	m86	418
Internal Link Dist (ft)		443			433	403
Turn Bay Length (ft)	250		250	200		
Base Capacity (vph)	608	974	354	531	2733	1575
Starvation Cap Reductn	0	0	0	0	798	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.31	0.66	0.30	0.60	0.70	0.50

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	186	638	106	304	1299	0	0	605	129
Future Volume (vph)	0	0	0	186	638	106	304	1299	0	0	605	129
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				5.0	5.0	5.0	5.0	5.0			5.0	
Lane Util. Factor				0.97	0.91	1.00	1.00	0.95			0.95	
Frpb, ped/bikes				1.00	1.00	0.94	1.00	1.00			0.99	
Flpb, ped/bikes				0.93	1.00	1.00	1.00	1.00			1.00	
Frt				1.00	1.00	0.85	1.00	1.00			0.97	
Flt Protected				0.95	1.00	1.00	0.95	1.00			1.00	
Satd. Flow (prot)				3120	4988	1399	1770	3574			3374	
Flt Permitted				0.95	1.00	1.00	0.95	1.00			1.00	
Satd. Flow (perm)				3120	4988	1399	1770	3574			3374	
Peak-hour factor, PHF	0.92	0.92	0.92	1.00	1.00	1.00	0.96	0.96	0.96	0.93	0.93	0.93
Adj. Flow (vph)	0	0	0	186	638	106	317	1353	0	0	651	139
RTOR Reduction (vph)	0	0	0	0	0	82	0	0	0	0	12	0
Lane Group Flow (vph)	0	0	0	186	638	24	317	1353	0	0	778	0
Confl. Peds. (#/hr)				27		23						16
Confl. Bikes (#/hr)						6			4			2
Heavy Vehicles (%)	0%	0%	0%	4%	4%	9%	2%	1%	0%	0%	3%	5%
Turn Type				Perm	NA	Perm	Prot	NA			NA	
Protected Phases					4		3 5	2			6	
Permitted Phases				4		4						
Actuated Green, G (s)				27.6	27.6	27.6	37.7	112.4			64.7	
Effective Green, g (s)				27.6	27.6	27.6	37.7	112.4			64.7	
Actuated g/C Ratio				0.18	0.18	0.18	0.25	0.75			0.43	
Clearance Time (s)				5.0	5.0	5.0		5.0			5.0	
Vehicle Extension (s)				3.0	3.0	3.0		3.0			3.0	
Lane Grp Cap (vph)				574	917	257	444	2678			1455	
v/s Ratio Prot					c0.13		c0.18	c0.38			0.23	
v/s Ratio Perm				0.06		0.02						
v/c Ratio				0.32	0.70	0.09	0.71	0.51			0.53	
Uniform Delay, d1				53.1	57.3	50.8	51.2	7.6			31.5	
Progression Factor				1.00	1.00	1.00	0.97	0.55			1.00	
Incremental Delay, d2				0.3	2.3	0.2	2.7	0.3			1.4	
Delay (s)				53.4	59.6	51.0	52.2	4.5			32.9	
Level of Service				D	E	D	D	A			C	
Approach Delay (s)		0.0			57.4			13.6			32.9	
Approach LOS		A			E			B			C	

Intersection Summary			
HCM 2000 Control Delay	30.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	91.2%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	NBT	SBL	SBT
Lane Group Flow (vph)	268	1251	86	1807	124	708
v/c Ratio	0.66	0.87	0.29	0.93	0.68	0.29
Control Delay	61.7	62.6	52.4	38.9	84.3	7.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.5
Total Delay	61.7	62.6	52.4	38.9	84.3	8.1
Queue Length 50th (ft)	242	370	86	799	117	124
Queue Length 95th (ft)	#380	#484	160	930	191	80
Internal Link Dist (ft)		385		2703		433
Turn Bay Length (ft)					200	
Base Capacity (vph)	407	1438	292	1964	238	2419
Starvation Cap Reductn	0	0	0	0	0	1160
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.66	0.87	0.29	0.92	0.52	0.56

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	257	1191	92	0	0	0	0	1288	428	118	673	0
Future Volume (vph)	257	1191	92	0	0	0	0	1288	428	118	673	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0					5.0		5.0	5.0	
Lane Util. Factor	1.00	0.81	0.81					0.95		1.00	0.95	
Frpb, ped/bikes	1.00	1.00	0.95					0.99		1.00	1.00	
Flpb, ped/bikes	0.97	1.00	1.00					1.00		1.00	1.00	
Frt	1.00	1.00	0.85					0.96		1.00	1.00	
Flt Protected	0.95	1.00	1.00					1.00		0.95	1.00	
Satd. Flow (prot)	1725	6086	1238					3428		1787	3471	
Flt Permitted	0.95	1.00	1.00					1.00		0.95	1.00	
Satd. Flow (perm)	1725	6086	1238					3428		1787	3471	
Peak-hour factor, PHF	0.96	0.96	0.96	0.92	0.92	0.92	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	268	1241	96	0	0	0	0	1356	451	124	708	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	22	0	0	0	0
Lane Group Flow (vph)	268	1251	86	0	0	0	0	1785	0	124	708	0
Confl. Peds. (#/hr)	15		23	23		15	22		16			22
Confl. Bikes (#/hr)			5						11			7
Heavy Vehicles (%)	2%	1%	0%	0%	0%	0%	0%	1%	0%	1%	4%	0%
Turn Type	Perm	NA	Perm					NA		Prot	NA	
Protected Phases		4						2		1	6	
Permitted Phases	4		4									
Actuated Green, G (s)	35.4	35.4	35.4					84.2		15.4	104.6	
Effective Green, g (s)	35.4	35.4	35.4					84.2		15.4	104.6	
Actuated g/C Ratio	0.24	0.24	0.24					0.56		0.10	0.70	
Clearance Time (s)	5.0	5.0	5.0					5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0	3.0					3.0		3.0	3.0	
Lane Grp Cap (vph)	407	1436	292					1924		183	2420	
v/s Ratio Prot		c0.21						c0.52		c0.07	0.20	
v/s Ratio Perm	0.16		0.07									
v/c Ratio	0.66	0.87	0.29					0.93		0.68	0.29	
Uniform Delay, d1	51.8	55.1	47.0					30.1		64.9	8.6	
Progression Factor	1.00	1.00	1.00					1.00		1.05	0.88	
Incremental Delay, d2	3.8	6.1	0.6					9.3		8.7	0.3	
Delay (s)	55.7	61.2	47.6					39.5		76.9	7.9	
Level of Service	E	E	D					D		E	A	
Approach Delay (s)		59.5			0.0			39.5			18.1	
Approach LOS		E			A			D			B	

Intersection Summary			
HCM 2000 Control Delay	42.9	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	91.2%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group Flow (vph)	280	2146	1722	115	71	133
v/c Ratio	0.53	0.71	0.93	0.14	0.47	0.25
Control Delay	28.0	6.7	44.1	15.0	61.7	23.7
Queue Delay	0.0	0.0	45.4	0.0	0.0	0.0
Total Delay	28.0	6.7	89.5	15.0	61.7	23.7
Queue Length 50th (ft)	128	316	694	36	53	61
Queue Length 95th (ft)	230	475	m#841	m62	99	106
Internal Link Dist (ft)		805	469		380	
Turn Bay Length (ft)	275			175		200
Base Capacity (vph)	531	3024	1854	804	406	541
Starvation Cap Reductn	0	0	434	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.53	0.71	1.21	0.14	0.17	0.25

Intersection Summary

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

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	272	2082	1636	109	71	133
Future Volume (vph)	272	2082	1636	109	71	133
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0	6.0
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	1.00	0.98	1.00	0.99
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1752	3574	3574	1495	1805	1569
Flt Permitted	0.06	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	110	3574	3574	1495	1805	1569
Peak-hour factor, PHF	0.97	0.97	0.95	0.95	1.00	1.00
Adj. Flow (vph)	280	2146	1722	115	71	133
RTOR Reduction (vph)	0	0	0	30	0	6
Lane Group Flow (vph)	280	2146	1722	86	71	127
Confl. Peds. (#/hr)				3		18
Confl. Bikes (#/hr)				11		3
Heavy Vehicles (%)	3%	1%	1%	6%	0%	2%
Turn Type	pm+pt	NA	NA	Perm	Prot	pm+ov
Protected Phases	5	2 5	6		3	5
Permitted Phases	2 5			6		3
Actuated Green, G (s)	99.1	99.1	61.0	61.0	8.9	41.0
Effective Green, g (s)	99.1	99.1	61.0	61.0	8.9	41.0
Actuated g/C Ratio	0.83	0.83	0.51	0.51	0.07	0.34
Clearance Time (s)	6.0		6.0	6.0	6.0	6.0
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	530	2951	1816	759	133	614
v/s Ratio Prot	0.14	c0.60	c0.48		c0.04	0.06
v/s Ratio Perm	0.29			0.06		0.03
v/c Ratio	0.53	0.73	0.95	0.11	0.53	0.21
Uniform Delay, d1	29.8	4.6	28.0	15.4	53.6	28.0
Progression Factor	1.00	1.00	1.35	1.73	1.00	1.00
Incremental Delay, d2	1.0	0.9	8.5	0.2	4.1	0.2
Delay (s)	30.8	5.5	46.3	26.9	57.6	28.2
Level of Service	C	A	D	C	E	C
Approach Delay (s)		8.4	45.1		38.4	
Approach LOS		A	D		D	

Intersection Summary			
HCM 2000 Control Delay	24.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	86.6%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	2200	1402	85	515
v/c Ratio	0.76	0.67	0.53	0.96
Control Delay	6.2	18.5	62.7	68.1
Queue Delay	0.0	14.1	0.0	44.5
Total Delay	6.2	32.6	62.7	112.5
Queue Length 50th (ft)	293	342	64	~404
Queue Length 95th (ft)	333	465	113	#586
Internal Link Dist (ft)	469	757	278	
Turn Bay Length (ft)				
Base Capacity (vph)	2902	2080	481	537
Starvation Cap Reductn	13	0	0	0
Spillback Cap Reductn	0	686	0	183
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.76	1.01	0.18	1.45

Intersection Summary

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

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

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	3	2153	1239	36	85	515
Future Volume (vph)	3	2153	1239	36	85	515
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	5.0		4.5	2.0
Lane Util. Factor		0.95	0.95		1.00	1.00
Frpb, ped/bikes		1.00	1.00		1.00	1.00
Flpb, ped/bikes		1.00	1.00		1.00	1.00
Frt		1.00	1.00		1.00	0.85
Flt Protected		1.00	1.00		0.95	1.00
Satd. Flow (prot)		3574	3489		1626	1592
Flt Permitted		0.95	1.00		0.95	1.00
Satd. Flow (perm)		3408	3489		1626	1592
Peak-hour factor, PHF	0.98	0.98	0.91	0.91	1.00	1.00
Adj. Flow (vph)	3	2197	1362	40	85	515
RTOR Reduction (vph)	0	0	1	0	0	8
Lane Group Flow (vph)	0	2200	1401	0	85	507
Confl. Peds. (#/hr)	4			4	2	
Confl. Bikes (#/hr)				4		7
Heavy Vehicles (%)	0%	1%	3%	0%	11%	1%
Turn Type	Perm	NA	NA		Prot	custom
Protected Phases		2	6		7	5
Permitted Phases	2					7
Actuated Green, G (s)		100.2	70.5		10.3	38.0
Effective Green, g (s)		100.2	70.5		10.3	38.0
Actuated g/C Ratio		0.84	0.59		0.09	0.32
Clearance Time (s)		5.0	5.0		4.5	2.0
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)		2845	2049		139	530
v/s Ratio Prot			0.40		0.05	c0.22
v/s Ratio Perm		c0.65				0.10
v/c Ratio		0.77	0.68		0.61	0.96
Uniform Delay, d1		4.6	17.1		52.9	40.2
Progression Factor		0.85	1.00		1.00	1.00
Incremental Delay, d2		1.5	1.9		7.7	28.1
Delay (s)		5.4	18.9		60.6	68.3
Level of Service		A	B		E	E
Approach Delay (s)		5.4	18.9		67.2	
Approach LOS		A	B		E	

Intersection Summary			
HCM 2000 Control Delay	18.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	11.5
Intersection Capacity Utilization	76.2%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBT
Lane Group Flow (vph)	5	23	57	188	185	18	2153	166	876
v/c Ratio	0.04	0.09	0.27	0.79	0.69	0.04	0.80	0.14	0.36
Control Delay	45.7	29.0	51.6	71.9	49.6	2.5	11.9	0.6	12.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	4.2	0.0	0.0
Total Delay	45.7	29.0	51.6	71.9	49.6	2.5	16.2	0.6	12.2
Queue Length 50th (ft)	4	8	45	153	112	0	391	4	112
Queue Length 95th (ft)	10	17	84	235	193	m2	1114	m0	380
Internal Link Dist (ft)		436		273			283		2703
Turn Bay Length (ft)			250			100			
Base Capacity (vph)	146	331	269	302	330	508	2701	1207	2577
Starvation Cap Reductn	0	0	0	0	0	0	469	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.03	0.07	0.21	0.62	0.56	0.04	0.96	0.14	0.34

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	3	6	7	57	11	362	16	1938	149	0	860	16
Future Volume (vph)	3	6	7	57	11	362	16	1938	149	0	860	16
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		6.0	6.0	6.0	5.0	5.0	5.0		5.0	
Lane Util. Factor	1.00	1.00		1.00	0.95	0.95	1.00	0.95	1.00		0.95	
Frpb, ped/bikes	1.00	0.99		1.00	0.95	0.95	1.00	1.00	0.95		1.00	
Flpb, ped/bikes	0.99	1.00		0.99	1.00	1.00	1.00	1.00	1.00		1.00	
Frt	1.00	0.92		1.00	0.86	0.85	1.00	1.00	0.85		1.00	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00		1.00	
Satd. Flow (prot)	1779	1609		1724	1431	1409	1703	3539	1535		3457	
Flt Permitted	0.39	1.00		0.74	1.00	1.00	0.29	1.00	1.00		1.00	
Satd. Flow (perm)	730	1609		1347	1431	1409	519	3539	1535		3457	
Peak-hour factor, PHF	0.57	0.57	0.57	1.00	1.00	1.00	0.90	0.90	0.90	1.00	1.00	1.00
Adj. Flow (vph)	5	11	12	57	11	362	18	2153	166	0	860	16
RTOR Reduction (vph)	0	10	0	0	14	48	0	0	36	0	1	0
Lane Group Flow (vph)	5	13	0	57	174	137	18	2153	130	0	875	0
Confl. Peds. (#/hr)	18		6	6		18			24	24		14
Confl. Bikes (#/hr)			6			6			18			1
Heavy Vehicles (%)	0%	0%	14%	4%	0%	3%	6%	2%	0%	0%	4%	6%
Turn Type	Perm	NA		Perm	NA	Perm	pm+pt	NA	Perm		NA	
Protected Phases		4			8		5	2			6	
Permitted Phases	4			8		8	2		2			
Actuated Green, G (s)	21.0	21.0		21.0	21.0	21.0	103.0	103.0	103.0		90.9	
Effective Green, g (s)	21.0	21.0		21.0	21.0	21.0	103.0	103.0	103.0		90.9	
Actuated g/C Ratio	0.16	0.16		0.16	0.16	0.16	0.76	0.76	0.76		0.67	
Clearance Time (s)	6.0	6.0		6.0	6.0	6.0	5.0	5.0	5.0		5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0		3.0	
Lane Grp Cap (vph)	113	250		209	222	219	458	2700	1171		2327	
v/s Ratio Prot		0.01			c0.12		0.00	c0.61			0.25	
v/s Ratio Perm	0.01			0.04		0.10	0.03		0.08			
v/c Ratio	0.04	0.05		0.27	0.78	0.62	0.04	0.80	0.11		0.38	
Uniform Delay, d1	48.5	48.5		50.3	54.8	53.3	6.8	9.7	4.1		9.6	
Progression Factor	1.00	1.00		1.00	1.00	1.00	0.46	0.89	0.39		1.00	
Incremental Delay, d2	0.2	0.1		0.7	16.3	5.5	0.0	2.1	0.2		0.5	
Delay (s)	48.6	48.6		51.0	71.1	58.8	3.2	10.7	1.8		10.1	
Level of Service	D	D		D	E	E	A	B	A		B	
Approach Delay (s)		48.6			63.1			10.0			10.1	
Approach LOS		D			E			B			B	

Intersection Summary			
HCM 2000 Control Delay	16.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	135.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	88.6%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	120	15	11	56	33	91
Future Volume (Veh/h)	120	15	11	56	33	91
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	0.93	0.93	0.84	0.84
Hourly flow rate (vph)	120	15	12	60	39	108
Pedestrians	5			8	2	
Lane Width (ft)	12.0			12.0	12.0	
Walking Speed (ft/s)	3.5			3.5	3.5	
Percent Blockage	0			1	0	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)				398		
pX, platoon unblocked						
vC, conflicting volume			137		218	138
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			137		218	138
tC, single (s)			4.2		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.3		3.5	3.3
p0 queue free %			99		95	88
cM capacity (veh/h)			1402		762	897

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	135	72	147
Volume Left	0	12	39
Volume Right	15	0	108
cSH	1700	1402	857
Volume to Capacity	0.08	0.01	0.17
Queue Length 95th (ft)	0	1	15
Control Delay (s)	0.0	1.3	10.1
Lane LOS		A	B
Approach Delay (s)	0.0	1.3	10.1
Approach LOS			B

Intersection Summary			
Average Delay	4.4		
Intersection Capacity Utilization	28.3%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBR	NBL	NBT	SBU	SBT
Lane Group Flow (vph)	173	35	20	2130	14	886
v/c Ratio	0.76	0.16	0.03	0.59	0.10	0.32
Control Delay	77.7	17.3	2.1	4.3	4.9	33.4
Queue Delay	0.0	0.0	0.0	0.1	0.0	0.0
Total Delay	77.7	17.3	2.1	4.4	4.9	33.4
Queue Length 50th (ft)	147	0	2	85	3	80
Queue Length 95th (ft)	#252	33	m3	101	2	300
Internal Link Dist (ft)	86			221		189
Turn Bay Length (ft)	75		60		75	
Base Capacity (vph)	247	229	606	3678	145	3462
Starvation Cap Reductn	0	0	0	229	0	0
Spillback Cap Reductn	0	0	0	92	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.70	0.15	0.03	0.62	0.10	0.26

Intersection Summary

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

Movement	EBL	EBR	NBU	NBL	NBT	SBU	SBT	SBR
Lane Configurations								
Traffic Volume (vph)	171	35	2	16	1874	14	831	55
Future Volume (vph)	171	35	2	16	1874	14	831	55
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0	5.0	5.0	
Lane Util. Factor	1.00	1.00		1.00	0.91	1.00	0.91	
Frpb, ped/bikes	1.00	0.97		1.00	1.00	1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	
Frt	1.00	0.85		1.00	1.00	1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00	0.95	1.00	
Satd. Flow (prot)	1779	1431		1709	5136	1805	4929	
Flt Permitted	0.95	1.00		0.27	1.00	0.05	1.00	
Satd. Flow (perm)	1779	1431		494	5136	103	4929	
Peak-hour factor, PHF	0.99	0.99	0.88	0.88	0.88	1.00	1.00	1.00
Adj. Flow (vph)	173	35	2	18	2130	14	831	55
RTOR Reduction (vph)	0	31	0	0	0	0	7	0
Lane Group Flow (vph)	173	4	0	20	2130	14	879	0
Confl. Peds. (#/hr)	2	6						9
Confl. Bikes (#/hr)		5						3
Heavy Vehicles (%)	1%	9%	2%	6%	1%	0%	4%	2%
Turn Type	Perm	Perm	custom	custom	NA	custom	NA	
Protected Phases			5	5	2	1	6	
Permitted Phases	4	4	1 2	1 2		5 6		
Actuated Green, G (s)	17.3	17.3		99.0	91.8	99.0	72.8	
Effective Green, g (s)	17.3	17.3		99.0	91.8	99.0	72.8	
Actuated g/C Ratio	0.13	0.13		0.73	0.68	0.73	0.54	
Clearance Time (s)	5.0	5.0		5.0	5.0	5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	227	183		553	3492	103	2658	
v/s Ratio Prot				0.01	c0.41	0.00	c0.18	
v/s Ratio Perm	c0.10	0.00		0.02		0.10		
v/c Ratio	0.76	0.02		0.04	0.61	0.14	0.33	
Uniform Delay, d1	56.9	51.5		7.7	11.8	9.3	17.4	
Progression Factor	1.00	1.00		0.36	0.34	0.72	1.49	
Incremental Delay, d2	14.0	0.1		0.0	0.7	0.6	0.3	
Delay (s)	70.9	51.5		2.8	4.6	7.2	26.4	
Level of Service	E	D		A	A	A	C	
Approach Delay (s)	67.6				4.6		26.1	
Approach LOS	E				A		C	

Intersection Summary			
HCM 2000 Control Delay	14.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	135.0	Sum of lost time (s)	19.0
Intersection Capacity Utilization	54.0%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	11	0	0	19	0	1884	10	4	852	9
Future Volume (Veh/h)	0	0	11	0	0	19	0	1884	10	4	852	9
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	1.00	1.00	1.00	0.79	0.79	0.79	1.00	0.90	0.90	1.00	1.00	1.00
Hourly flow rate (vph)	0	0	11	0	0	24	0	2093	11	4	852	9
Pedestrians		7			19			10			1	
Lane Width (ft)		12.0			12.0			12.0			12.0	
Walking Speed (ft/s)		3.5			3.5			3.5			3.5	
Percent Blockage		1			2			1			0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)								478			301	
pX, platoon unblocked	0.85	0.85	0.91	0.85	0.85	0.80	0.91			0.80		
vC, conflicting volume	1594	2994	306	2430	2994	723	868			2123		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	331	1982	0	1317	1981	0	494			1534		
tC, single (s)	7.5	6.5	7.3	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.5	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	99	100	100	97	100			99		
cM capacity (veh/h)	481	51	923	93	51	858	973			346		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3	SB 4
Volume Total	11	24	837	837	430	4	341	341	179
Volume Left	0	0	0	0	0	4	0	0	0
Volume Right	11	24	0	0	11	0	0	0	9
cSH	923	858	1700	1700	1700	346	1700	1700	1700
Volume to Capacity	0.01	0.03	0.49	0.49	0.25	0.01	0.20	0.20	0.11
Queue Length 95th (ft)	1	2	0	0	0	1	0	0	0
Control Delay (s)	8.9	9.3	0.0	0.0	0.0	15.5	0.0	0.0	0.0
Lane LOS	A	A				C			
Approach Delay (s)	8.9	9.3	0.0			0.1			
Approach LOS	A	A							

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	47.0%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBU	EBL	EBT	WBU	WBT	WBR	SBL	SBR
Lane Configurations								
Traffic Volume (veh/h)	100	56	714	20	955	25	6	61
Future Volume (Veh/h)	100	56	714	20	955	25	6	61
Sign Control			Free		Free		Stop	
Grade			0%		0%		0%	
Peak Hour Factor	0.90	0.90	0.90	0.25	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	62	793	0	955	25	6	61
Pedestrians							5	
Lane Width (ft)							12.0	
Walking Speed (ft/s)							3.5	
Percent Blockage							0	
Right turn flare (veh)								
Median type			Raised		Raised			
Median storage veh)			1		1			
Upstream signal (ft)								
pX, platoon unblocked	0.00			0.00				
vC, conflicting volume	0	985		0			1493	495
vC1, stage 1 conf vol							972	
vC2, stage 2 conf vol							520	
vCu, unblocked vol	0	985		0			1493	495
tC, single (s)	0.0	4.1		0.0			6.8	7.0
tC, 2 stage (s)							5.8	
tF (s)	0.0	2.2		0.0			3.5	3.3
p0 queue free %	0	91		0			97	88
cM capacity (veh/h)	0	700		0			229	515

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	SB 1
Volume Total	62	396	396	637	343	0	67
Volume Left	62	0	0	0	0	0	6
Volume Right	0	0	0	0	25	0	61
cSH	700	1700	1700	1700	1700	1700	463
Volume to Capacity	0.09	0.23	0.23	0.37	0.20	0.00	0.14
Queue Length 95th (ft)	7	0	0	0	0	0	13
Control Delay (s)	10.6	0.0	0.0	0.0	0.0	0.0	14.1
Lane LOS	B						B
Approach Delay (s)	0.8			0.0			14.1
Approach LOS							B

Intersection Summary			
Average Delay	0.8		
Intersection Capacity Utilization	50.0%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBU	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations							
Traffic Volume (veh/h)	10	64	943	807	34	4	31
Future Volume (Veh/h)	10	64	943	807	34	4	31
Sign Control			Free	Free		Stop	
Grade			0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	70	1025	807	34	4	31
Pedestrians						23	
Lane Width (ft)						12.0	
Walking Speed (ft/s)						3.5	
Percent Blockage						2	
Right turn flare (veh)							
Median type			None	None			
Median storage veh)							
Upstream signal (ft)				516			
pX, platoon unblocked	0.00	0.86				0.86	0.86
vC, conflicting volume	0	864				1500	444
vC1, stage 1 conf vol							
vC2, stage 2 conf vol							
vCu, unblocked vol	0	527				1263	40
tC, single (s)	0.0	4.2				6.8	7.0
tC, 2 stage (s)							
tF (s)	0.0	2.2				3.5	3.3
p0 queue free %	0	92				97	96
cM capacity (veh/h)	0	869				128	861

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1
Volume Total	70	512	512	538	303	35
Volume Left	70	0	0	0	0	4
Volume Right	0	0	0	0	34	31
cSH	869	1700	1700	1700	1700	520
Volume to Capacity	0.08	0.30	0.30	0.32	0.18	0.07
Queue Length 95th (ft)	7	0	0	0	0	5
Control Delay (s)	9.5	0.0	0.0	0.0	0.0	12.4
Lane LOS	A					B
Approach Delay (s)	0.6			0.0		12.4
Approach LOS						B

Intersection Summary			
Average Delay	0.6		
Intersection Capacity Utilization	62.9%	ICU Level of Service	B
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	342	465	101	115	522	295	199	1316	354	213	514	142
v/c Ratio	0.76	0.54	0.21	0.47	0.77	0.68	0.53	0.61	0.43	0.78	0.35	0.19
Control Delay	68.5	47.1	2.1	66.0	59.8	30.4	32.2	32.7	8.4	62.9	22.5	11.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	68.5	47.1	2.1	66.0	59.8	30.4	32.2	32.7	8.4	62.9	22.5	11.7
Queue Length 50th (ft)	150	184	0	50	227	107	119	348	40	107	157	28
Queue Length 95th (ft)	203	242	m8	81	288	210	183	406	123	#299	309	145
Internal Link Dist (ft)		436			534			359			398	
Turn Bay Length (ft)	175		125	275		325	200		200	240		
Base Capacity (vph)	492	915	493	312	745	460	382	2167	817	301	1473	737
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.70	0.51	0.20	0.37	0.70	0.64	0.52	0.61	0.43	0.71	0.35	0.19

Intersection Summary

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

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT
Lane Configurations												
Traffic Volume (vph)	339	460	100	115	522	295	181	1198	322	3	210	514
Future Volume (vph)	339	460	100	115	522	295	181	1198	322	3	210	514
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	6.0	6.0	5.0	5.0	5.0	5.0	6.0	6.0		5.0	6.0
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	1.00	0.91	1.00		1.00	0.95
Frpb, ped/bikes	1.00	1.00	0.95	1.00	1.00	0.98	1.00	1.00	0.96		1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85		1.00	1.00
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	3502	3574	1477	3242	3471	1552	1767	5085	1537		1718	3438
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.33	1.00	1.00		0.18	1.00
Satd. Flow (perm)	3502	3574	1477	3242	3471	1552	616	5085	1537		321	3438
Peak-hour factor, PHF	0.99	0.99	0.99	1.00	1.00	1.00	0.91	0.91	0.91	1.00	1.00	1.00
Adj. Flow (vph)	342	465	101	115	522	295	199	1316	354	3	210	514
RTOR Reduction (vph)	0	0	77	0	0	130	0	0	162	0	0	0
Lane Group Flow (vph)	342	465	24	115	522	165	199	1316	192	0	213	514
Confl. Peds. (#/hr)			22			2	9		17		17	
Confl. Bikes (#/hr)			11			4			7			
Heavy Vehicles (%)	0%	1%	4%	8%	4%	2%	2%	2%	1%	5%	5%	5%
Turn Type	Prot	NA	Perm	Prot	NA	Perm	pm+pt	NA	Perm	pm+pt	pm+pt	NA
Protected Phases	7	4		3	8		5	2		1	1	6
Permitted Phases			4			8	2		2	6	6	
Actuated Green, G (s)	17.3	32.5	32.5	10.1	26.3	26.3	57.5	57.5	57.5		58.6	57.6
Effective Green, g (s)	17.3	32.5	32.5	10.1	26.3	26.3	57.5	57.5	57.5		58.6	57.6
Actuated g/C Ratio	0.13	0.24	0.24	0.07	0.19	0.19	0.43	0.43	0.43		0.43	0.43
Clearance Time (s)	5.0	6.0	6.0	5.0	5.0	5.0	5.0	6.0	6.0		5.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	448	860	355	242	676	302	371	2165	654		272	1466
v/s Ratio Prot	c0.10	0.13		0.04	c0.15		0.05	c0.26			c0.07	0.15
v/s Ratio Perm			0.02			0.11	0.18		0.12		c0.26	
v/c Ratio	0.76	0.54	0.07	0.48	0.77	0.54	0.54	0.61	0.29		0.78	0.35
Uniform Delay, d1	56.9	44.7	39.6	59.9	51.5	49.0	25.8	30.0	25.4		38.2	26.1
Progression Factor	1.00	1.00	0.98	1.00	1.00	1.00	1.00	1.00	1.00		0.95	0.80
Incremental Delay, d2	7.6	0.7	0.1	1.5	5.5	2.0	1.5	1.3	1.1		13.4	0.6
Delay (s)	64.6	45.5	38.8	61.4	57.0	51.0	27.3	31.3	26.6		49.8	21.5
Level of Service	E	D	D	E	E	D	C	C	C		D	C
Approach Delay (s)		52.0			55.6			30.0				35.9
Approach LOS		D			E			C				D

Intersection Summary			
HCM 2000 Control Delay	40.7	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	135.0	Sum of lost time (s)	22.0
Intersection Capacity Utilization	81.6%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SBR
Lane Configurations	
Traffic Volume (vph)	142
Future Volume (vph)	142
Ideal Flow (vphpl)	1900
Total Lost time (s)	6.0
Lane Util. Factor	1.00
Frpb, ped/bikes	0.97
Flpb, ped/bikes	1.00
Frt	0.85
Flt Protected	1.00
Satd. Flow (prot)	1527
Flt Permitted	1.00
Satd. Flow (perm)	1527
Peak-hour factor, PHF	1.00
Adj. Flow (vph)	142
RTOR Reduction (vph)	81
Lane Group Flow (vph)	61
Confl. Peds. (#/hr)	9
Confl. Bikes (#/hr)	4
Heavy Vehicles (%)	3%
Turn Type	Perm
Protected Phases	
Permitted Phases	6
Actuated Green, G (s)	57.6
Effective Green, g (s)	57.6
Actuated g/C Ratio	0.43
Clearance Time (s)	6.0
Vehicle Extension (s)	3.0
Lane Grp Cap (vph)	651
v/s Ratio Prot	
v/s Ratio Perm	0.04
v/c Ratio	0.09
Uniform Delay, d1	23.1
Progression Factor	2.89
Incremental Delay, d2	0.3
Delay (s)	67.1
Level of Service	E
Approach Delay (s)	
Approach LOS	

Intersection Summary

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	0	0	2103	921	3
Future Volume (Veh/h)	0	0	0	2103	921	3
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	0	2286	1001	3
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)				269	363	
pX, platoon unblocked	0.81	0.92	0.92			
vC, conflicting volume	1764	335	1004			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	470	0	713			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	100			
cM capacity (veh/h)	426	1007	828			

Direction, Lane #	EB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	0	457	914	914	400	400	203
Volume Left	0	0	0	0	0	0	0
Volume Right	0	0	0	0	0	0	3
cSH	1700	828	1700	1700	1700	1700	1700
Volume to Capacity	0.00	0.00	0.54	0.54	0.24	0.24	0.12
Queue Length 95th (ft)	0	0	0	0	0	0	0
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS	A						
Approach Delay (s)	0.0	0.0			0.0		
Approach LOS	A						

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	44.0%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	3	208	65	1	4	4
Future Volume (Veh/h)	3	208	65	1	4	4
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.75	0.92	0.92	0.25	1.00	1.00
Hourly flow rate (vph)	4	226	71	4	4	4
Pedestrians					7	
Lane Width (ft)					12.0	
Walking Speed (ft/s)					3.5	
Percent Blockage					1	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)			287			
pX, platoon unblocked						
vC, conflicting volume	82				314	80
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	82				314	80
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				99	100
cM capacity (veh/h)	1518				677	979

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	230	75	8
Volume Left	4	0	4
Volume Right	0	4	4
cSH	1518	1700	800
Volume to Capacity	0.00	0.04	0.01
Queue Length 95th (ft)	0	0	1
Control Delay (s)	0.2	0.0	9.5
Lane LOS	A		A
Approach Delay (s)	0.2	0.0	9.5
Approach LOS			A

Intersection Summary			
Average Delay	0.4		
Intersection Capacity Utilization	23.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	1	204	65	8	2	1
Future Volume (Veh/h)	1	204	65	8	2	1
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.25	0.92	0.92	1.00	0.75	0.75
Hourly flow rate (vph)	4	222	71	8	3	1
Pedestrians					6	
Lane Width (ft)					12.0	
Walking Speed (ft/s)					3.5	
Percent Blockage					1	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)			166			
pX, platoon unblocked						
vC, conflicting volume	85				311	81
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	85				311	81
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	100
cM capacity (veh/h)	1516				680	973

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	226	79	4
Volume Left	4	0	3
Volume Right	0	8	1
cSH	1516	1700	735
Volume to Capacity	0.00	0.05	0.01
Queue Length 95th (ft)	0	0	0
Control Delay (s)	0.2	0.0	9.9
Lane LOS	A		A
Approach Delay (s)	0.2	0.0	9.9
Approach LOS			A

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	21.5%	ICU Level of Service	A
Analysis Period (min)	15		

1: North Lamar Boulevard & West 6th Street

Lane Group	WBL	WBT	WBR	NBL	NBT	SBT
Lane Group Flow (vph)	418	907	205	234	1269	903
v/c Ratio	0.52	0.68	0.46	0.63	0.53	0.64
Control Delay	49.5	52.3	26.2	41.7	8.1	39.9
Queue Delay	0.0	0.0	0.0	0.0	0.4	0.0
Total Delay	49.5	52.3	26.2	41.7	8.5	39.9
Queue Length 50th (ft)	176	286	83	185	143	397
Queue Length 95th (ft)	237	346	167	m221	242	455
Internal Link Dist (ft)		443			433	403
Turn Bay Length (ft)	250		250	200		
Base Capacity (vph)	816	1356	453	371	2493	1726
Starvation Cap Reductn	0	0	0	0	649	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.51	0.67	0.45	0.63	0.69	0.52

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	418	907	205	234	1269	0	0	868	35
Future Volume (vph)	0	0	0	418	907	205	234	1269	0	0	868	35
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				5.0	5.0	5.0	5.0	5.0			5.0	
Lane Util. Factor				0.97	0.91	1.00	1.00	0.95			0.95	
Frpb, ped/bikes				1.00	1.00	0.90	1.00	1.00			1.00	
Flpb, ped/bikes				0.90	1.00	1.00	1.00	1.00			1.00	
Frt				1.00	1.00	0.85	1.00	1.00			0.99	
Flt Protected				0.95	1.00	1.00	0.95	1.00			1.00	
Satd. Flow (prot)				3103	5085	1446	1787	3539			3543	
Flt Permitted				0.95	1.00	1.00	0.95	1.00			1.00	
Satd. Flow (perm)				3103	5085	1446	1787	3539			3543	
Peak-hour factor, PHF	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. Flow (vph)	0	0	0	418	907	205	234	1269	0	0	868	35
RTOR Reduction (vph)	0	0	0	0	0	73	0	0	0	0	2	0
Lane Group Flow (vph)	0	0	0	418	907	132	234	1269	0	0	901	0
Confl. Peds. (#/hr)				55		73						20
Confl. Bikes (#/hr)						15			7			4
Heavy Vehicles (%)	0%	0%	0%	1%	2%	0%	1%	2%	0%	0%	1%	3%
Turn Type				Perm	NA	Perm	Prot	NA			NA	
Protected Phases					4		3 5	2			6	
Permitted Phases				4		4						
Actuated Green, G (s)				39.3	39.3	39.3	31.1	100.7			59.6	
Effective Green, g (s)				39.3	39.3	39.3	31.1	100.7			59.6	
Actuated g/C Ratio				0.26	0.26	0.26	0.21	0.67			0.40	
Clearance Time (s)				5.0	5.0	5.0		5.0			5.0	
Vehicle Extension (s)				3.0	3.0	3.0		3.0			3.0	
Lane Grp Cap (vph)				812	1332	378	370	2375			1407	
v/s Ratio Prot					c0.18		c0.13	c0.36			c0.25	
v/s Ratio Perm				0.13		0.09						
v/c Ratio				0.51	0.68	0.35	0.63	0.53			0.64	
Uniform Delay, d1				47.2	49.7	45.0	54.2	12.6			36.5	
Progression Factor				1.00	1.00	1.00	1.29	0.57			1.00	
Incremental Delay, d2				0.6	1.5	0.6	2.4	0.6			2.2	
Delay (s)				47.8	51.2	45.5	72.5	7.7			38.8	
Level of Service				D	D	D	E	A			D	
Approach Delay (s)		0.0			49.5			17.8			38.8	
Approach LOS		A			D			B			D	

Intersection Summary			
HCM 2000 Control Delay	34.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	76.0%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	NBT	SBL	SBT
Lane Group Flow (vph)	315	1158	262	1382	89	1389
v/c Ratio	0.62	0.66	0.73	0.78	0.59	0.62
Control Delay	50.8	47.5	59.8	42.5	73.1	12.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.2
Total Delay	50.8	47.5	59.8	42.5	73.1	12.9
Queue Length 50th (ft)	251	289	269	358	92	266
Queue Length 95th (ft)	387	362	#471	580	150	285
Internal Link Dist (ft)		385		2703		433
Turn Bay Length (ft)					200	
Base Capacity (vph)	511	1751	358	1797	297	2501
Starvation Cap Reductn	0	0	0	0	0	323
Spillback Cap Reductn	0	0	0	10	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.62	0.66	0.73	0.77	0.30	0.64

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	302	859	504	0	0	0	0	1125	202	81	1264	0
Future Volume (vph)	302	859	504	0	0	0	0	1125	202	81	1264	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0					5.0		5.0	5.0	
Lane Util. Factor	1.00	0.81	0.81					0.95		1.00	0.95	
Frpb, ped/bikes	1.00	0.98	0.90					0.99		1.00	1.00	
Flpb, ped/bikes	0.93	1.00	1.00					1.00		1.00	1.00	
Frt	1.00	0.97	0.85					0.98		1.00	1.00	
Flt Protected	0.95	1.00	1.00					1.00		0.95	1.00	
Satd. Flow (prot)	1668	5715	1171					3469		1787	3574	
Flt Permitted	0.95	1.00	1.00					1.00		0.95	1.00	
Satd. Flow (perm)	1668	5715	1171					3469		1787	3574	
Peak-hour factor, PHF	0.96	0.96	0.96	0.92	0.92	0.92	0.96	0.96	0.96	0.91	0.91	0.91
Adj. Flow (vph)	315	895	525	0	0	0	0	1172	210	89	1389	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	9	0	0	0	0
Lane Group Flow (vph)	315	1158	262	0	0	0	0	1373	0	89	1389	0
Confl. Peds. (#/hr)	37		46	46		37	7		49			7
Confl. Bikes (#/hr)			5						11			7
Heavy Vehicles (%)	1%	2%	1%	0%	0%	0%	0%	1%	1%	1%	1%	0%
Turn Type	Perm	NA	Perm					NA		Prot	NA	
Protected Phases		4						2		1	6	
Permitted Phases	4		4									
Actuated Green, G (s)	46.0	46.0	46.0					76.2		12.8	94.0	
Effective Green, g (s)	46.0	46.0	46.0					76.2		12.8	94.0	
Actuated g/C Ratio	0.31	0.31	0.31					0.51		0.09	0.63	
Clearance Time (s)	5.0	5.0	5.0					5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0	3.0					3.0		3.0	3.0	
Lane Grp Cap (vph)	511	1752	359					1762		152	2239	
v/s Ratio Prot		0.20						c0.40		0.05	c0.39	
v/s Ratio Perm	0.19		c0.22									
v/c Ratio	0.62	0.66	0.73					0.78		0.59	0.62	
Uniform Delay, d1	44.5	45.2	46.4					30.0		66.0	17.1	
Progression Factor	1.00	1.00	1.00					1.29		0.90	0.66	
Incremental Delay, d2	2.2	0.9	7.3					3.0		5.1	1.2	
Delay (s)	46.7	46.2	53.7					41.7		64.8	12.5	
Level of Service	D	D	D					D		E	B	
Approach Delay (s)		47.4			0.0			41.7			15.7	
Approach LOS		D			A			D			B	

Intersection Summary			
HCM 2000 Control Delay	35.5	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	76.0%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group Flow (vph)	236	1574	1767	243	72	120
v/c Ratio	0.39	0.53	1.03	0.31	0.47	0.20
Control Delay	17.3	4.4	64.3	15.8	61.8	19.4
Queue Delay	0.0	0.0	26.4	0.0	0.0	0.0
Total Delay	17.3	4.4	90.7	15.8	61.8	19.4
Queue Length 50th (ft)	85	168	~853	70	54	52
Queue Length 95th (ft)	150	253	#1100	153	99	76
Internal Link Dist (ft)		805	467		380	
Turn Bay Length (ft)	275			175		200
Base Capacity (vph)	602	2991	1708	778	610	593
Starvation Cap Reductn	0	0	174	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.39	0.53	1.15	0.31	0.12	0.20

Intersection Summary

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

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

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	229	1527	1679	231	72	120
Future Volume (vph)	229	1527	1679	231	72	120
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0	6.0
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	1.00	0.97	1.00	0.99
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1770	3539	3539	1514	1787	1559
Flt Permitted	0.06	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	119	3539	3539	1514	1787	1559
Peak-hour factor, PHF	0.97	0.97	0.95	0.95	1.00	1.00
Adj. Flow (vph)	236	1574	1767	243	72	120
RTOR Reduction (vph)	0	0	0	52	0	1
Lane Group Flow (vph)	236	1574	1767	191	72	119
Confl. Peds. (#/hr)				12		10
Confl. Bikes (#/hr)				12		1
Heavy Vehicles (%)	2%	2%	2%	4%	1%	3%
Turn Type	pm+pt	NA	NA	Perm	Prot	pm+ov
Protected Phases	5	2 5	6		3	5
Permitted Phases	2 5			6		3
Actuated Green, G (s)	99.0	99.0	56.7	56.7	9.0	45.3
Effective Green, g (s)	99.0	99.0	56.7	56.7	9.0	45.3
Actuated g/C Ratio	0.82	0.82	0.47	0.47	0.08	0.38
Clearance Time (s)	6.0		6.0	6.0	6.0	6.0
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	597	2919	1672	715	134	666
v/s Ratio Prot	0.12	c0.44	c0.50		c0.04	0.05
v/s Ratio Perm	0.21			0.13		0.02
v/c Ratio	0.40	0.54	1.06	0.27	0.54	0.18
Uniform Delay, d1	24.9	3.3	31.6	19.1	53.5	24.9
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.4	0.2	38.8	0.9	4.1	0.1
Delay (s)	25.3	3.5	70.4	20.0	57.6	25.1
Level of Service	C	A	E	C	E	C
Approach Delay (s)		6.3	64.3		37.3	
Approach LOS		A	E		D	

Intersection Summary			
HCM 2000 Control Delay	36.9	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	82.8%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	1582	1673	65	364
v/c Ratio	0.53	0.72	0.52	0.78
Control Delay	3.5	20.1	80.7	56.3
Queue Delay	0.9	0.0	0.0	0.0
Total Delay	4.4	20.1	80.7	56.3
Queue Length 50th (ft)	164	576	62	289
Queue Length 95th (ft)	251	650	111	410
Internal Link Dist (ft)	467	757	278	
Turn Bay Length (ft)				
Base Capacity (vph)	2976	2329	321	465
Starvation Cap Reductn	1017	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.81	0.72	0.20	0.78

Intersection Summary

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	1	1581	1590	50	58	324
Future Volume (vph)	1	1581	1590	50	58	324
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	5.0		4.5	2.0
Lane Util. Factor		0.95	0.95		1.00	1.00
Frpb, ped/bikes		1.00	1.00		1.00	1.00
Flpb, ped/bikes		1.00	1.00		1.00	1.00
Frt		1.00	1.00		1.00	0.85
Flt Protected		1.00	1.00		0.95	1.00
Satd. Flow (prot)		3539	3520		1583	1578
Flt Permitted		0.95	1.00		0.95	1.00
Satd. Flow (perm)		3378	3520		1583	1578
Peak-hour factor, PHF	1.00	1.00	0.98	0.98	0.89	0.89
Adj. Flow (vph)	1	1581	1622	51	65	364
RTOR Reduction (vph)	0	0	1	0	0	20
Lane Group Flow (vph)	0	1582	1672	0	65	344
Confl. Peds. (#/hr)	6			6	6	
Confl. Bikes (#/hr)				8		1
Heavy Vehicles (%)	0%	2%	2%	0%	14%	2%
Turn Type	Perm	NA	NA		Prot	custom
Protected Phases		2	6		7	5
Permitted Phases	2					7
Actuated Green, G (s)		130.3	98.1		10.2	40.4
Effective Green, g (s)		130.3	98.1		10.2	40.4
Actuated g/C Ratio		0.87	0.65		0.07	0.27
Clearance Time (s)		5.0	5.0		4.5	2.0
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)		2934	2302		107	446
v/s Ratio Prot			c0.47		0.04	c0.16
v/s Ratio Perm		0.47				0.06
v/c Ratio		0.54	0.73		0.61	0.77
Uniform Delay, d1		2.4	17.1		68.0	50.5
Progression Factor		1.00	1.00		1.00	1.00
Incremental Delay, d2		0.7	2.0		9.4	8.1
Delay (s)		3.1	19.1		77.3	58.6
Level of Service		A	B		E	E
Approach Delay (s)		3.1	19.1		61.5	
Approach LOS		A	B		E	

Intersection Summary			
HCM 2000 Control Delay	17.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	11.5
Intersection Capacity Utilization	73.1%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBT
Lane Group Flow (vph)	13	55	258	181	178	9	1303	102	2030
v/c Ratio	0.04	0.11	0.74	0.38	0.38	0.08	0.58	0.10	0.91
Control Delay	36.3	17.5	64.5	15.7	15.4	18.8	20.8	5.2	30.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	30.4	0.0	0.0
Total Delay	36.3	17.5	64.5	15.7	15.4	18.8	51.2	5.2	30.9
Queue Length 50th (ft)	9	15	231	35	32	0	487	31	686
Queue Length 95th (ft)	25	45	#393	114	111	m11	774	64	#1249
Internal Link Dist (ft)		436		273			283		2703
Turn Bay Length (ft)			250			100			
Base Capacity (vph)	294	542	351	472	463	113	2308	1026	2233
Starvation Cap Reductn	0	0	0	0	0	0	1071	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.04	0.10	0.74	0.38	0.38	0.08	1.05	0.10	0.91

Intersection Summary

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

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	11	17	30	253	17	335	9	1303	102	0	1977	13
Future Volume (vph)	11	17	30	253	17	335	9	1303	102	0	1977	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	6.0		6.0	6.0	6.0	5.0	5.0	5.0		5.0	
Lane Util. Factor	1.00	1.00		1.00	0.95	0.95	1.00	0.95	1.00		0.95	
Frpb, ped/bikes	1.00	0.98		1.00	0.95	0.94	1.00	1.00	0.95		1.00	
Flpb, ped/bikes	1.00	1.00		0.99	1.00	1.00	1.00	1.00	1.00		1.00	
Frt	1.00	0.90		1.00	0.86	0.85	1.00	1.00	0.85		1.00	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00		1.00	
Satd. Flow (prot)	1805	1691		1794	1466	1432	1805	3539	1518		3570	
Flt Permitted	0.46	1.00		0.72	1.00	1.00	0.04	1.00	1.00		1.00	
Satd. Flow (perm)	874	1691		1362	1466	1432	83	3539	1518		3570	
Peak-hour factor, PHF	0.85	0.85	0.85	0.98	0.98	0.98	1.00	1.00	1.00	0.98	0.98	0.98
Adj. Flow (vph)	13	20	35	258	17	342	9	1303	102	0	2017	13
RTOR Reduction (vph)	0	24	0	0	101	101	0	0	39	0	0	0
Lane Group Flow (vph)	13	31	0	258	80	77	9	1303	63	0	2030	0
Confl. Peds. (#/hr)			5	5		29			21	21		15
Confl. Bikes (#/hr)			10			15			19			
Heavy Vehicles (%)	0%	0%	0%	0%	0%	1%	0%	2%	1%	0%	1%	0%
Turn Type	pm+pt	NA		Perm	NA	Perm	pm+pt	NA	Perm		NA	
Protected Phases	7	4			8		5	2			6	
Permitted Phases	4			8		8	2		2			
Actuated Green, G (s)	46.1	46.1		38.7	38.7	38.7	92.9	92.9	92.9		86.9	
Effective Green, g (s)	46.1	46.1		38.7	38.7	38.7	92.9	92.9	92.9		86.9	
Actuated g/C Ratio	0.31	0.31		0.26	0.26	0.26	0.62	0.62	0.62		0.58	
Clearance Time (s)	5.0	6.0		6.0	6.0	6.0	5.0	5.0	5.0		5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0		3.0	
Lane Grp Cap (vph)	283	519		351	378	369	62	2191	940		2068	
v/s Ratio Prot	0.00	c0.02			0.05		0.00	c0.37			c0.57	
v/s Ratio Perm	0.01			c0.19		0.05	0.09		0.04			
v/c Ratio	0.05	0.06		0.74	0.21	0.21	0.15	0.59	0.07		0.98	
Uniform Delay, d1	36.7	36.7		51.0	43.7	43.6	69.5	17.2	11.3		30.8	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.37	1.22	2.46		0.98	
Incremental Delay, d2	0.1	0.0		7.8	0.3	0.3	1.0	1.1	0.1		14.2	
Delay (s)	36.8	36.7		58.7	44.0	43.9	96.3	22.1	28.1		44.3	
Level of Service	D	D		E	D	D	F	C	C		D	
Approach Delay (s)		36.7			50.1			23.0			44.3	
Approach LOS		D			D			C			D	

Intersection Summary			
HCM 2000 Control Delay	37.7	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.93		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	25.5
Intersection Capacity Utilization	84.9%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	96	8	31	108	22	46
Future Volume (Veh/h)	96	8	31	108	22	46
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	0.81	0.81	1.00	1.00
Hourly flow rate (vph)	96	8	38	133	22	46
Pedestrians	8			8	2	
Lane Width (ft)	12.0			12.0	12.0	
Walking Speed (ft/s)	3.5			3.5	3.5	
Percent Blockage	1			1	0	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)				398		
pX, platoon unblocked						
vC, conflicting volume			106		319	110
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			106		319	110
tC, single (s)			4.1		6.5	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.6	3.3
p0 queue free %			97		97	95
cM capacity (veh/h)			1476		637	940

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	104	171	68
Volume Left	0	38	22
Volume Right	8	0	46
cSH	1700	1476	815
Volume to Capacity	0.06	0.03	0.08
Queue Length 95th (ft)	0	2	7
Control Delay (s)	0.0	1.8	9.8
Lane LOS		A	A
Approach Delay (s)	0.0	1.8	9.8
Approach LOS			A

Intersection Summary			
Average Delay	2.9		
Intersection Capacity Utilization	27.4%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBR	NBL	NBT	SBT
Lane Group Flow (vph)	95	49	33	1352	2301
v/c Ratio	0.60	0.26	0.09	0.43	0.58
Control Delay	80.7	18.5	5.3	19.8	7.8
Queue Delay	0.0	0.0	0.0	0.0	0.2
Total Delay	80.7	18.5	5.3	19.8	8.0
Queue Length 50th (ft)	91	0	2	328	320
Queue Length 95th (ft)	150	41	m13	293	194
Internal Link Dist (ft)	86			221	189
Turn Bay Length (ft)	75		60		
Base Capacity (vph)	471	458	382	3283	3983
Starvation Cap Reductn	0	0	0	0	750
Spillback Cap Reductn	0	1	0	97	132
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.20	0.11	0.09	0.42	0.71

Intersection Summary

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

Movement	EBL	EBR	NBL	NBT	SBU	SBT	SBR
Lane Configurations							
Traffic Volume (vph)	95	49	32	1298	0	2098	111
Future Volume (vph)	95	49	32	1298	0	2098	111
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0		5.0	
Lane Util. Factor	1.00	1.00	1.00	0.91		0.91	
Frpb, ped/bikes	1.00	0.97	1.00	1.00		1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00		1.00	
Frt	1.00	0.85	1.00	1.00		0.99	
Flt Protected	0.95	1.00	0.95	1.00		1.00	
Satd. Flow (prot)	1764	1560	1805	5085		5030	
Flt Permitted	0.95	1.00	0.05	1.00		1.00	
Satd. Flow (perm)	1764	1560	98	5085		5030	
Peak-hour factor, PHF	1.00	1.00	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	95	49	33	1352	0	2185	116
RTOR Reduction (vph)	0	45	0	0	0	2	0
Lane Group Flow (vph)	95	4	33	1352	0	2299	0
Confl. Peds. (#/hr)	1	3					11
Confl. Bikes (#/hr)		5					40
Heavy Vehicles (%)	2%	0%	0%	2%	0%	2%	0%
Turn Type	Perm	Perm	custom	NA	custom	NA	
Protected Phases			5!	2!	1!	6!	
Permitted Phases	4	4	1 2		5 6		
Actuated Green, G (s)	13.4	13.4	113.9	90.5		118.9	
Effective Green, g (s)	13.4	13.4	113.9	90.5		118.9	
Actuated g/C Ratio	0.09	0.09	0.76	0.60		0.79	
Clearance Time (s)	5.0	5.0	5.0	5.0		5.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0		3.0	
Lane Grp Cap (vph)	157	139	340	3067		3987	
v/s Ratio Prot			0.02	0.27		c0.46	
v/s Ratio Perm	c0.05	0.00	0.06				
v/c Ratio	0.61	0.03	0.10	0.44		0.58	
Uniform Delay, d1	65.8	62.4	15.3	16.1		5.9	
Progression Factor	1.00	1.00	0.56	1.02		1.22	
Incremental Delay, d2	6.4	0.1	0.1	0.4		0.3	
Delay (s)	72.2	62.5	8.7	16.8		7.6	
Level of Service	E	E	A	B		A	
Approach Delay (s)	68.9			16.6		7.6	
Approach LOS	E			B		A	

Intersection Summary			
HCM 2000 Control Delay	13.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	19.0
Intersection Capacity Utilization	56.7%	ICU Level of Service	B
Analysis Period (min)	15		

! Phase conflict between lane groups.
c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	18	0	0	17	0	1319	10	1	2130	18
Future Volume (Veh/h)	0	0	18	0	0	17	0	1319	10	1	2130	18
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.94	0.94	0.94	0.97	0.97	0.97
Hourly flow rate (vph)	0	0	18	0	0	17	0	1403	11	1	2196	19
Pedestrians		10			18			5			2	
Lane Width (ft)		12.0			12.0			12.0			12.0	
Walking Speed (ft/s)		3.5			3.5			3.5			3.5	
Percent Blockage		1			2			0			0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)								478			301	
pX, platoon unblocked	0.91	0.91	0.82	0.91	0.91	0.83	0.82			0.83		
vC, conflicting volume	2704	3650	756	2184	3654	493	2225			1432		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1247	2287	0	675	2291	0	1737			794		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	98	100	100	98	100			100		
cM capacity (veh/h)	114	35	885	293	35	886	300			680		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3	SB 4
Volume Total	18	17	561	561	292	1	878	878	458
Volume Left	0	0	0	0	0	1	0	0	0
Volume Right	18	17	0	0	11	0	0	0	19
cSH	885	886	1700	1700	1700	680	1700	1700	1700
Volume to Capacity	0.02	0.02	0.33	0.33	0.17	0.00	0.52	0.52	0.27
Queue Length 95th (ft)	2	1	0	0	0	0	0	0	0
Control Delay (s)	9.2	9.1	0.0	0.0	0.0	10.3	0.0	0.0	0.0
Lane LOS	A	A				B			
Approach Delay (s)	9.2	9.1	0.0			0.0			
Approach LOS	A	A							

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	53.1%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	WBU	WBT	WBR	SBL	SBR
Lane Configurations							
Traffic Volume (veh/h)	100	890	32	1456	40	25	74
Future Volume (Veh/h)	100	890	32	1456	40	25	74
Sign Control		Free		Free		Stop	
Grade		0%		0%		0%	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.95	0.95
Hourly flow rate (vph)	104	927	0	1517	42	26	78
Pedestrians				2		34	
Lane Width (ft)				8.0		12.0	
Walking Speed (ft/s)				3.5		3.5	
Percent Blockage				0		3	
Right turn flare (veh)							
Median type		Raised		Raised			
Median storage veh)		1		1			
Upstream signal (ft)							
pX, platoon unblocked			0.00				
vC, conflicting volume	1593		0			2246	814
vC1, stage 1 conf vol						1572	
vC2, stage 2 conf vol						674	
vCu, unblocked vol	1593		0			2246	814
tC, single (s)	4.1		0.0			6.8	6.9
tC, 2 stage (s)						5.8	
tF (s)	2.2		0.0			3.5	3.3
p0 queue free %	74		0			76	75
cM capacity (veh/h)	399		0			108	315

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	SB 1
Volume Total	104	464	464	1011	548	0	104
Volume Left	104	0	0	0	0	0	26
Volume Right	0	0	0	0	42	0	78
cSH	399	1700	1700	1700	1700	1700	213
Volume to Capacity	0.26	0.27	0.27	0.59	0.32	0.00	0.49
Queue Length 95th (ft)	26	0	0	0	0	0	61
Control Delay (s)	17.2	0.0	0.0	0.0	0.0	0.0	37.2
Lane LOS	C						E
Approach Delay (s)	1.7			0.0			37.2
Approach LOS							E

Intersection Summary			
Average Delay	2.1		
Intersection Capacity Utilization	63.1%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBU	EBL	EBT	WBU	WBT	WBR	SBL	SBR
Lane Configurations								
Traffic Volume (veh/h)	11	47	874	2	1560	19	11	51
Future Volume (Veh/h)	11	47	874	2	1560	19	11	51
Sign Control			Free		Free		Stop	
Grade			0%		0%		0%	
Peak Hour Factor	1.00	1.00	1.00	0.96	0.96	0.96	0.86	0.86
Hourly flow rate (vph)	0	47	874	0	1625	20	13	59
Pedestrians							40	
Lane Width (ft)							12.0	
Walking Speed (ft/s)							3.5	
Percent Blockage							4	
Right turn flare (veh)								
Median type			None		None			
Median storage veh)								
Upstream signal (ft)					516			
pX, platoon unblocked	0.00	0.78		0.00			0.78	0.78
vC, conflicting volume	0	1685		0			2206	862
vC1, stage 1 conf vol								
vC2, stage 2 conf vol								
vCu, unblocked vol	0	1309		0			1979	251
tC, single (s)	0.0	4.1		0.0			7.0	6.9
tC, 2 stage (s)								
tF (s)	0.0	2.2		0.0			3.6	3.3
p0 queue free %	0	88		0			60	89
cM capacity (veh/h)	0	392		0			33	560

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1
Volume Total	47	437	437	1083	562	72
Volume Left	47	0	0	0	0	13
Volume Right	0	0	0	0	20	59
cSH	392	1700	1700	1700	1700	143
Volume to Capacity	0.12	0.26	0.26	0.64	0.33	0.50
Queue Length 95th (ft)	10	0	0	0	0	60
Control Delay (s)	15.4	0.0	0.0	0.0	0.0	53.4
Lane LOS	C					F
Approach Delay (s)	0.8			0.0		53.4
Approach LOS						F

Intersection Summary			
Average Delay	1.7		
Intersection Capacity Utilization	58.6%	ICU Level of Service	B
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	260	423	186	345	817	173	186	1006	209	175	1350	601
v/c Ratio	0.87	0.74	0.50	0.61	0.93	0.36	0.89	0.70	0.37	0.33	0.87	0.72
Control Delay	93.8	68.0	17.9	64.3	72.7	9.7	81.6	50.7	7.7	29.8	36.6	18.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.5
Total Delay	93.8	68.0	17.9	64.3	72.7	9.7	81.6	50.7	7.7	29.8	37.2	19.2
Queue Length 50th (ft)	131	210	31	163	413	7	148	330	8	85	693	343
Queue Length 95th (ft)	m#208	m260	m104	#236	#530	70	#241	344	63	116	615	174
Internal Link Dist (ft)		436			534			359			398	
Turn Bay Length (ft)	175		125	275		325	200		200	240		
Base Capacity (vph)	300	707	422	564	890	491	210	1932	690	530	1560	831
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	45	46
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.87	0.60	0.44	0.61	0.92	0.35	0.89	0.52	0.30	0.33	0.89	0.77

Intersection Summary

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

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT
Lane Configurations												
Traffic Volume (vph)	260	423	186	345	817	173	164	885	184	1	174	1350
Future Volume (vph)	260	423	186	345	817	173	164	885	184	1	174	1350
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	6.0	6.0	5.0	5.0	5.0	5.0	6.0	6.0		5.0	6.0
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	1.00	0.91	1.00		1.00	0.95
Frpb, ped/bikes	1.00	1.00	0.94	1.00	1.00	0.94	1.00	1.00	0.93		1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85		1.00	1.00
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	3467	3539	1497	3467	3610	1495	1787	5085	1491		1783	3539
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.14	1.00	1.00		0.24	1.00
Satd. Flow (perm)	3467	3539	1497	3467	3610	1495	257	5085	1491		455	3539
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	0.88	0.88	0.88	1.00	1.00	1.00
Adj. Flow (vph)	260	423	186	345	817	173	186	1006	209	1	174	1350
RTOR Reduction (vph)	0	0	126	0	0	123	0	0	142	0	0	0
Lane Group Flow (vph)	260	423	60	345	817	50	186	1006	67	0	175	1350
Confl. Peds. (#/hr)			19			21	22		34		34	
Confl. Bikes (#/hr)			13			21			5			
Heavy Vehicles (%)	1%	2%	1%	1%	0%	2%	1%	2%	1%	0%	1%	2%
Turn Type	Prot	NA	Perm	Prot	NA	Perm	pm+pt	NA	Perm	pm+pt	pm+pt	NA
Protected Phases	7	4		3	8		5	2		1	1	6
Permitted Phases			4			8	2		2	6	6	
Actuated Green, G (s)	13.0	24.1	24.1	24.4	36.5	36.5	42.6	42.6	42.6		67.2	66.2
Effective Green, g (s)	13.0	24.1	24.1	24.4	36.5	36.5	42.6	42.6	42.6		67.2	66.2
Actuated g/C Ratio	0.09	0.16	0.16	0.16	0.24	0.24	0.28	0.28	0.28		0.45	0.44
Clearance Time (s)	5.0	6.0	6.0	5.0	5.0	5.0	5.0	6.0	6.0		5.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	300	568	240	563	878	363	208	1444	423		530	1561
v/s Ratio Prot	0.07	c0.12		0.10	c0.23		c0.08	0.20			0.08	c0.38
v/s Ratio Perm			0.04			0.03	0.17		0.05		0.07	
v/c Ratio	0.87	0.74	0.25	0.61	0.93	0.14	0.89	0.70	0.16		0.33	0.86
Uniform Delay, d1	67.6	60.0	55.1	58.4	55.5	44.4	45.3	47.9	40.3		33.0	37.9
Progression Factor	1.00	1.00	0.99	1.00	1.00	1.00	1.00	1.00	1.00		0.78	0.80
Incremental Delay, d2	22.1	5.3	0.6	2.0	16.1	0.2	34.8	2.8	0.8		0.3	5.6
Delay (s)	89.6	65.2	55.2	60.4	71.6	44.6	80.1	50.7	41.1		26.0	36.1
Level of Service	F	E	E	E	E	D	F	D	D		C	D
Approach Delay (s)		70.4			65.2			53.2				33.9
Approach LOS		E			E			D				C

Intersection Summary			
HCM 2000 Control Delay	51.5	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.90		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	22.0
Intersection Capacity Utilization	93.9%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SBR
Lane Configurations	
Traffic Volume (vph)	601
Future Volume (vph)	601
Ideal Flow (vphpl)	1900
Total Lost time (s)	6.0
Lane Util. Factor	1.00
Frpb, ped/bikes	0.95
Flpb, ped/bikes	1.00
Frt	0.85
Flt Protected	1.00
Satd. Flow (prot)	1515
Flt Permitted	1.00
Satd. Flow (perm)	1515
Peak-hour factor, PHF	1.00
Adj. Flow (vph)	601
RTOR Reduction (vph)	163
Lane Group Flow (vph)	438
Confl. Peds. (#/hr)	22
Confl. Bikes (#/hr)	15
Heavy Vehicles (%)	1%
Turn Type	Perm
Protected Phases	
Permitted Phases	6
Actuated Green, G (s)	66.2
Effective Green, g (s)	66.2
Actuated g/C Ratio	0.44
Clearance Time (s)	6.0
Vehicle Extension (s)	3.0
Lane Grp Cap (vph)	668
v/s Ratio Prot	
v/s Ratio Perm	0.29
v/c Ratio	0.66
Uniform Delay, d1	32.9
Progression Factor	0.83
Incremental Delay, d2	4.2
Delay (s)	31.4
Level of Service	C
Approach Delay (s)	
Approach LOS	

Intersection Summary

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	4	0	1414	2247	13
Future Volume (Veh/h)	0	4	0	1414	2247	13
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	4	0	1537	2442	14
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)				269	363	
pX, platoon unblocked	0.54	0.47	0.47			
vC, conflicting volume	2961	821	2456			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	0	0	127			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	99	100			
cM capacity (veh/h)	554	510	688			

Direction, Lane #	EB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	4	307	615	615	977	977	502
Volume Left	0	0	0	0	0	0	0
Volume Right	4	0	0	0	0	0	14
cSH	510	688	1700	1700	1700	1700	1700
Volume to Capacity	0.01	0.00	0.36	0.36	0.57	0.57	0.30
Queue Length 95th (ft)	1	0	0	0	0	0	0
Control Delay (s)	12.1	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS	B						
Approach Delay (s)	12.1	0.0			0.0		
Approach LOS	B						

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	53.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	7	135	138	0	3	13
Future Volume (Veh/h)	7	135	138	0	3	13
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.88	0.92	0.92	0.92	1.00	1.00
Hourly flow rate (vph)	8	147	150	0	3	13
Pedestrians					7	
Lane Width (ft)					12.0	
Walking Speed (ft/s)					3.5	
Percent Blockage					1	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)			287			
pX, platoon unblocked						
vC, conflicting volume	157				320	157
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	157				320	157
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	99				100	99
cM capacity (veh/h)	1426				669	888

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	155	150	16
Volume Left	8	0	3
Volume Right	0	0	13
cSH	1426	1700	837
Volume to Capacity	0.01	0.09	0.02
Queue Length 95th (ft)	0	0	1
Control Delay (s)	0.4	0.0	9.4
Lane LOS	A		A
Approach Delay (s)	0.4	0.0	9.4
Approach LOS			A

Intersection Summary			
Average Delay	0.7		
Intersection Capacity Utilization	22.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	137	137	6	7	1
Future Volume (Veh/h)	0	137	137	6	7	1
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	1.00	1.00	1.00
Hourly flow rate (vph)	0	149	149	6	7	1
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)			166			
pX, platoon unblocked						
vC, conflicting volume	155				301	152
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	155				301	152
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				99	100
cM capacity (veh/h)	1438				695	900

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	149	155	8
Volume Left	0	0	7
Volume Right	0	6	1
cSH	1438	1700	715
Volume to Capacity	0.00	0.09	0.01
Queue Length 95th (ft)	0	0	1
Control Delay (s)	0.0	0.0	10.1
Lane LOS			B
Approach Delay (s)	0.0	0.0	10.1
Approach LOS			B

Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	17.6%	ICU Level of Service	A
Analysis Period (min)	15		

1: North Lamar Boulevard & West 6th Street

Lane Group	WBL	WBT	WBR	NBL	NBT	SBT
Lane Group Flow (vph)	205	690	115	350	1471	859
v/c Ratio	0.35	0.73	0.34	0.75	0.55	0.61
Control Delay	53.6	61.5	18.2	30.7	5.2	37.6
Queue Delay	0.0	0.0	0.0	0.0	0.8	0.0
Total Delay	53.6	61.5	18.2	30.8	6.0	37.6
Queue Length 50th (ft)	89	232	23	223	139	355
Queue Length 95th (ft)	128	278	80	m292	m127	442
Internal Link Dist (ft)		443			433	403
Turn Bay Length (ft)	250		250	200		
Base Capacity (vph)	613	983	345	530	2715	1517
Starvation Cap Reductn	0	0	0	3	828	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.33	0.70	0.33	0.66	0.78	0.57

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	205	690	115	336	1412	0	0	658	140
Future Volume (vph)	0	0	0	205	690	115	336	1412	0	0	658	140
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				5.0	5.0	5.0	5.0	5.0			5.0	
Lane Util. Factor				0.97	0.91	1.00	1.00	0.95			0.95	
Frpb, ped/bikes				1.00	1.00	0.95	1.00	1.00			0.99	
Flpb, ped/bikes				0.93	1.00	1.00	1.00	1.00			1.00	
Frt				1.00	1.00	0.85	1.00	1.00			0.97	
Flt Protected				0.95	1.00	1.00	0.95	1.00			1.00	
Satd. Flow (prot)				3129	4988	1402	1770	3574			3374	
Flt Permitted				0.95	1.00	1.00	0.95	1.00			1.00	
Satd. Flow (perm)				3129	4988	1402	1770	3574			3374	
Peak-hour factor, PHF	0.92	0.92	0.92	1.00	1.00	1.00	0.96	0.96	0.96	0.93	0.93	0.93
Adj. Flow (vph)	0	0	0	205	690	115	350	1471	0	0	708	151
RTOR Reduction (vph)	0	0	0	0	0	70	0	0	0	0	12	0
Lane Group Flow (vph)	0	0	0	205	690	45	350	1471	0	0	847	0
Confl. Peds. (#/hr)				27		23						16
Confl. Bikes (#/hr)						6			4			2
Heavy Vehicles (%)	0%	0%	0%	4%	4%	9%	2%	1%	0%	0%	3%	5%
Turn Type				Perm	NA	Perm	Prot	NA			NA	
Protected Phases					4		3 5	2			6	
Permitted Phases				4		4						
Actuated Green, G (s)				28.6	28.6	28.6	39.7	111.4			61.7	
Effective Green, g (s)				28.6	28.6	28.6	39.7	111.4			61.7	
Actuated g/C Ratio				0.19	0.19	0.19	0.26	0.74			0.41	
Clearance Time (s)				5.0	5.0	5.0		5.0			5.0	
Vehicle Extension (s)				3.0	3.0	3.0		3.0			3.0	
Lane Grp Cap (vph)				596	951	267	468	2654			1387	
v/s Ratio Prot					c0.14		c0.20	0.41			c0.25	
v/s Ratio Perm				0.07		0.03						
v/c Ratio				0.34	0.73	0.17	0.75	0.55			0.61	
Uniform Delay, d1				52.6	57.0	50.7	50.6	8.4			34.7	
Progression Factor				1.00	1.00	1.00	0.89	0.56			1.00	
Incremental Delay, d2				0.3	2.8	0.3	2.3	0.3			2.0	
Delay (s)				52.9	59.8	51.0	47.2	5.0			36.7	
Level of Service				D	E	D	D	A			D	
Approach Delay (s)		0.0			57.4			13.1			36.7	
Approach LOS		A			E			B			D	

Intersection Summary			
HCM 2000 Control Delay	30.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	96.5%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	NBT	SBL	SBT
Lane Group Flow (vph)	290	1353	99	1979	135	775
v/c Ratio	0.74	0.98	0.35	1.01	0.71	0.32
Control Delay	67.2	77.4	54.5	53.7	84.0	6.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.5
Total Delay	67.2	77.4	54.5	53.7	84.0	6.8
Queue Length 50th (ft)	268	412	102	~1002	113	14
Queue Length 95th (ft)	#429	#548	181	#1187	214	113
Internal Link Dist (ft)		385		2703		433
Turn Bay Length (ft)					200	
Base Capacity (vph)	390	1377	279	1963	238	2454
Starvation Cap Reductn	0	0	0	0	0	1127
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.74	0.98	0.35	1.01	0.57	0.58

Intersection Summary

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

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	278	1288	106	0	0	0	0	1407	473	128	736	0
Future Volume (vph)	278	1288	106	0	0	0	0	1407	473	128	736	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0					5.0		5.0	5.0	
Lane Util. Factor	1.00	0.81	0.81					0.95		1.00	0.95	
Frpb, ped/bikes	1.00	1.00	0.95					0.99		1.00	1.00	
Flpb, ped/bikes	0.97	1.00	1.00					1.00		1.00	1.00	
Frt	1.00	1.00	0.85					0.96		1.00	1.00	
Flt Protected	0.95	1.00	1.00					1.00		0.95	1.00	
Satd. Flow (prot)	1725	6085	1237					3427		1787	3471	
Flt Permitted	0.95	1.00	1.00					1.00		0.95	1.00	
Satd. Flow (perm)	1725	6085	1237					3427		1787	3471	
Peak-hour factor, PHF	0.96	0.96	0.96	0.92	0.92	0.92	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	290	1342	110	0	0	0	0	1481	498	135	775	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	22	0	0	0	0
Lane Group Flow (vph)	290	1353	99	0	0	0	0	1957	0	135	775	0
Confl. Peds. (#/hr)	15		23	23		15	22		16			22
Confl. Bikes (#/hr)			5						11			7
Heavy Vehicles (%)	2%	1%	0%	0%	0%	0%	0%	1%	0%	1%	4%	0%
Turn Type	Perm	NA	Perm					NA		Prot	NA	
Protected Phases		4						2		1	6	
Permitted Phases	4		4									
Actuated Green, G (s)	33.9	33.9	33.9					85.0		16.1	106.1	
Effective Green, g (s)	33.9	33.9	33.9					85.0		16.1	106.1	
Actuated g/C Ratio	0.23	0.23	0.23					0.57		0.11	0.71	
Clearance Time (s)	5.0	5.0	5.0					5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0	3.0					3.0		3.0	3.0	
Lane Grp Cap (vph)	389	1375	279					1941		191	2455	
v/s Ratio Prot		c0.22						c0.57		c0.08	0.22	
v/s Ratio Perm	0.17		0.08									
v/c Ratio	0.75	0.98	0.35					1.01		0.71	0.32	
Uniform Delay, d1	54.0	57.8	48.8					32.5		64.7	8.3	
Progression Factor	1.00	1.00	1.00					1.00		1.04	0.74	
Incremental Delay, d2	7.6	20.4	0.8					22.4		9.9	0.3	
Delay (s)	61.6	78.1	49.6					54.9		76.9	6.4	
Level of Service	E	E	D					D		E	A	
Approach Delay (s)		73.8			0.0			54.9			16.9	
Approach LOS		E			A			D			B	

Intersection Summary			
HCM 2000 Control Delay	54.5	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.97		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	96.5%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group Flow (vph)	310	2322	1876	132	77	144
v/c Ratio	0.54	0.77	1.07	0.17	0.49	0.25
Control Delay	29.0	8.3	75.4	14.5	61.9	23.9
Queue Delay	0.0	0.0	14.6	0.0	0.1	0.0
Total Delay	29.0	8.3	90.0	14.5	62.0	23.9
Queue Length 50th (ft)	150	401	~852	44	58	69
Queue Length 95th (ft)	261	611	m#912	m61	105	117
Internal Link Dist (ft)		805	469		380	
Turn Bay Length (ft)	275			175		200
Base Capacity (vph)	573	3014	1758	767	406	581
Starvation Cap Reductn	0	0	434	0	0	0
Spillback Cap Reductn	0	14	0	0	38	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.54	0.77	1.42	0.17	0.21	0.25

Intersection Summary

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

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

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

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	301	2252	1782	125	77	144
Future Volume (vph)	301	2252	1782	125	77	144
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0	6.0
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	1.00	0.98	1.00	0.99
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1752	3574	3574	1495	1805	1570
Flt Permitted	0.06	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	116	3574	3574	1495	1805	1570
Peak-hour factor, PHF	0.97	0.97	0.95	0.95	1.00	1.00
Adj. Flow (vph)	310	2322	1876	132	77	144
RTOR Reduction (vph)	0	0	0	33	0	3
Lane Group Flow (vph)	310	2322	1876	99	77	141
Confl. Peds. (#/hr)				3		18
Confl. Bikes (#/hr)				11		3
Heavy Vehicles (%)	3%	1%	1%	6%	0%	2%
Turn Type	pm+pt	NA	NA	Perm	Prot	pm+ov
Protected Phases	5	2 5	6		3	5
Permitted Phases	2 5			6		3
Actuated Green, G (s)	98.8	98.8	57.8	57.8	9.2	44.2
Effective Green, g (s)	98.8	98.8	57.8	57.8	9.2	44.2
Actuated g/C Ratio	0.82	0.82	0.48	0.48	0.08	0.37
Clearance Time (s)	6.0		6.0	6.0	6.0	6.0
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	572	2942	1721	720	138	656
v/s Ratio Prot	0.16	c0.65	c0.52		c0.04	0.06
v/s Ratio Perm	0.29			0.07		0.03
v/c Ratio	0.54	0.79	1.09	0.14	0.56	0.21
Uniform Delay, d1	28.9	5.3	31.1	17.3	53.4	26.0
Progression Factor	1.00	1.00	1.30	1.57	1.00	1.00
Incremental Delay, d2	1.1	1.5	46.4	0.2	4.8	0.2
Delay (s)	29.9	6.8	86.8	27.4	58.3	26.2
Level of Service	C	A	F	C	E	C
Approach Delay (s)		9.5	82.9		37.3	
Approach LOS		A	F		D	

Intersection Summary			
HCM 2000 Control Delay	41.1	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.97		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	92.3%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	2380	1523	102	570
v/c Ratio	0.86	0.72	0.58	1.11
Control Delay	9.2	19.8	63.4	109.2
Queue Delay	0.0	48.7	0.0	4.2
Total Delay	9.2	68.4	63.4	113.4
Queue Length 50th (ft)	317	408	76	~502
Queue Length 95th (ft)	441	556	130	#669
Internal Link Dist (ft)	469	757	278	
Turn Bay Length (ft)				
Base Capacity (vph)	2767	2110	481	515
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	859	0	183
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.86	1.22	0.21	1.72

Intersection Summary

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

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

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	3	2329	1347	39	102	570
Future Volume (vph)	3	2329	1347	39	102	570
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	5.0		4.5	2.0
Lane Util. Factor		0.95	0.95		1.00	1.00
Frpb, ped/bikes		1.00	1.00		1.00	0.99
Flpb, ped/bikes		1.00	1.00		1.00	1.00
Frt		1.00	1.00		1.00	0.85
Flt Protected		1.00	1.00		0.95	1.00
Satd. Flow (prot)		3574	3489		1626	1589
Flt Permitted		0.95	1.00		0.95	1.00
Satd. Flow (perm)		3408	3489		1626	1589
Peak-hour factor, PHF	0.98	0.98	0.91	0.91	1.00	1.00
Adj. Flow (vph)	3	2377	1480	43	102	570
RTOR Reduction (vph)	0	0	1	0	0	6
Lane Group Flow (vph)	0	2380	1522	0	102	564
Confl. Peds. (#/hr)	4			4	2	
Confl. Bikes (#/hr)				4		7
Heavy Vehicles (%)	0%	1%	3%	0%	11%	1%
Turn Type	Perm	NA	NA		Prot	custom
Protected Phases		2	6		7	5
Permitted Phases	2					7
Actuated Green, G (s)		97.5	72.5		13.0	36.0
Effective Green, g (s)		97.5	72.5		13.0	36.0
Actuated g/C Ratio		0.81	0.60		0.11	0.30
Clearance Time (s)		5.0	5.0		4.5	2.0
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)		2769	2107		176	503
v/s Ratio Prot			0.44		0.06	c0.21
v/s Ratio Perm		c0.70				0.14
v/c Ratio		0.86	0.72		0.58	1.12
Uniform Delay, d1		7.0	16.7		50.9	42.0
Progression Factor		0.78	1.00		1.00	1.00
Incremental Delay, d2		2.4	2.2		4.6	78.1
Delay (s)		7.9	18.9		55.5	120.1
Level of Service		A	B		E	F
Approach Delay (s)		7.9	18.9		110.3	
Approach LOS		A	B		F	

Intersection Summary			
HCM 2000 Control Delay	26.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.99		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	11.5
Intersection Capacity Utilization	81.3%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBT
Lane Group Flow (vph)	5	25	73	204	200	19	2381	180	963
v/c Ratio	0.04	0.09	0.32	0.82	0.70	0.04	0.90	0.15	0.40
Control Delay	45.3	27.4	52.0	75.9	50.4	2.6	17.4	0.5	12.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	19.0	0.0	0.0
Total Delay	45.3	27.4	52.0	75.9	50.4	2.6	36.5	0.5	12.1
Queue Length 50th (ft)	4	8	56	172	124	3	1120	4	142
Queue Length 95th (ft)	10	17	103	264	212	m3	1235	m1	398
Internal Link Dist (ft)		436		273			283		2703
Turn Bay Length (ft)			250			100			
Base Capacity (vph)	138	329	269	296	330	454	2658	1189	2535
Starvation Cap Reductn	0	0	0	0	0	0	356	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.04	0.08	0.27	0.69	0.61	0.04	1.03	0.15	0.38

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	3	6	8	73	12	392	17	2143	162	0	946	17
Future Volume (vph)	3	6	8	73	12	392	17	2143	162	0	946	17
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		6.0	6.0	6.0	5.0	5.0	5.0		5.0	
Lane Util. Factor	1.00	1.00		1.00	0.95	0.95	1.00	0.95	1.00		0.95	
Frpb, ped/bikes	1.00	0.99		1.00	0.95	0.95	1.00	1.00	0.95		1.00	
Flpb, ped/bikes	0.99	1.00		0.99	1.00	1.00	1.00	1.00	1.00		1.00	
Frt	1.00	0.92		1.00	0.86	0.85	1.00	1.00	0.85		1.00	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00		1.00	
Satd. Flow (prot)	1780	1590		1724	1435	1413	1703	3539	1534		3458	
Flt Permitted	0.37	1.00		0.74	1.00	1.00	0.26	1.00	1.00		1.00	
Satd. Flow (perm)	692	1590		1345	1435	1413	463	3539	1534		3458	
Peak-hour factor, PHF	0.57	0.57	0.57	1.00	1.00	1.00	0.90	0.90	0.90	1.00	1.00	1.00
Adj. Flow (vph)	5	11	14	73	12	392	19	2381	180	0	946	17
RTOR Reduction (vph)	0	12	0	0	8	47	0	0	37	0	1	0
Lane Group Flow (vph)	5	13	0	73	196	153	19	2381	143	0	962	0
Confl. Peds. (#/hr)	18		6	6		18			24	24		14
Confl. Bikes (#/hr)			6			6			18			1
Heavy Vehicles (%)	0%	0%	14%	4%	0%	3%	6%	2%	0%	0%	4%	6%
Turn Type	Perm	NA		Perm	NA	Perm	pm+pt	NA	Perm		NA	
Protected Phases		4			8		5	2			6	
Permitted Phases	4			8		8	2		2			
Actuated Green, G (s)	22.6	22.6		22.6	22.6	22.6	101.4	101.4	101.4		90.3	
Effective Green, g (s)	22.6	22.6		22.6	22.6	22.6	101.4	101.4	101.4		90.3	
Actuated g/C Ratio	0.17	0.17		0.17	0.17	0.17	0.75	0.75	0.75		0.67	
Clearance Time (s)	6.0	6.0		6.0	6.0	6.0	5.0	5.0	5.0		5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0		3.0	
Lane Grp Cap (vph)	115	266		225	240	236	403	2658	1152		2313	
v/s Ratio Prot		0.01			c0.14		0.00	c0.67			0.28	
v/s Ratio Perm	0.01			0.05		0.11	0.03		0.09			
v/c Ratio	0.04	0.05		0.32	0.82	0.65	0.05	0.90	0.12		0.42	
Uniform Delay, d1	47.1	47.2		49.5	54.2	52.5	8.2	12.8	4.6		10.3	
Progression Factor	1.00	1.00		1.00	1.00	1.00	0.46	0.91	0.23		1.00	
Incremental Delay, d2	0.2	0.1		0.8	18.8	6.0	0.0	4.2	0.2		0.6	
Delay (s)	47.3	47.3		50.3	73.0	58.4	3.8	15.9	1.3		10.8	
Level of Service	D	D		D	E	E	A	B	A		B	
Approach Delay (s)		47.3			63.4			14.8			10.8	
Approach LOS		D			E			B			B	

Intersection Summary			
HCM 2000 Control Delay	19.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.92		
Actuated Cycle Length (s)	135.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	95.5%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	130	16	12	61	36	110
Future Volume (Veh/h)	130	16	12	61	36	110
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	0.93	0.93	0.84	0.84
Hourly flow rate (vph)	130	16	13	66	43	131
Pedestrians	5			8	2	
Lane Width (ft)	12.0			12.0	12.0	
Walking Speed (ft/s)	3.5			3.5	3.5	
Percent Blockage	0			1	0	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)				398		
pX, platoon unblocked						
vC, conflicting volume			148		237	148
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			148		237	148
tC, single (s)			4.2		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.3		3.5	3.3
p0 queue free %			99		94	85
cM capacity (veh/h)			1389		744	885

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	146	79	174
Volume Left	0	13	43
Volume Right	16	0	131
cSH	1700	1389	845
Volume to Capacity	0.09	0.01	0.21
Queue Length 95th (ft)	0	1	19
Control Delay (s)	0.0	1.3	10.4
Lane LOS		A	B
Approach Delay (s)	0.0	1.3	10.4
Approach LOS			B

Intersection Summary			
Average Delay	4.8		
Intersection Capacity Utilization	30.5%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBR	NBL	NBT	SBU	SBT
Lane Group Flow (vph)	199	38	21	2317	15	985
v/c Ratio	0.83	0.17	0.04	0.64	0.12	0.31
Control Delay	84.0	17.2	1.8	4.3	7.5	18.1
Queue Delay	0.0	0.0	0.0	0.1	0.0	0.0
Total Delay	84.0	17.2	1.8	4.4	7.5	18.1
Queue Length 50th (ft)	167	0	2	98	3	98
Queue Length 95th (ft)	#307	34	m2	112	m6	297
Internal Link Dist (ft)	86			221		189
Turn Bay Length (ft)	75		60		75	
Base Capacity (vph)	248	232	503	3617	125	3511
Starvation Cap Reductn	0	0	0	161	0	0
Spillback Cap Reductn	0	0	0	233	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.80	0.16	0.04	0.68	0.12	0.28

Intersection Summary

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

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

Movement	EBL	EBR	NBU	NBL	NBT	SBU	SBT	SBR
Lane Configurations								
Traffic Volume (vph)	197	38	2	17	2039	15	926	59
Future Volume (vph)	197	38	2	17	2039	15	926	59
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0	5.0	5.0	
Lane Util. Factor	1.00	1.00		1.00	0.91	1.00	0.91	
Frpb, ped/bikes	1.00	0.97		1.00	1.00	1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	
Frt	1.00	0.85		1.00	1.00	1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00	0.95	1.00	
Satd. Flow (prot)	1779	1433		1709	5136	1805	4932	
Flt Permitted	0.95	1.00		0.25	1.00	0.04	1.00	
Satd. Flow (perm)	1779	1433		457	5136	78	4932	
Peak-hour factor, PHF	0.99	0.99	0.88	0.88	0.88	1.00	1.00	1.00
Adj. Flow (vph)	199	38	2	19	2317	15	926	59
RTOR Reduction (vph)	0	33	0	0	0	0	6	0
Lane Group Flow (vph)	199	5	0	21	2317	15	979	0
Confl. Peds. (#/hr)	2	6						9
Confl. Bikes (#/hr)		5						3
Heavy Vehicles (%)	1%	9%	2%	6%	1%	0%	4%	2%
Turn Type	Perm	Perm	custom	custom	NA	custom	NA	
Protected Phases			5	5	2	1	6	
Permitted Phases	4	4	1 2	1 2		5 6		
Actuated Green, G (s)	18.2	18.2		99.0	92.0	99.0	83.8	
Effective Green, g (s)	18.2	18.2		99.0	92.0	99.0	83.8	
Actuated g/C Ratio	0.13	0.13		0.73	0.68	0.73	0.62	
Clearance Time (s)	5.0	5.0		5.0	5.0	5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	239	193		429	3500	82	3061	
v/s Ratio Prot				0.00	c0.45	0.00	c0.20	
v/s Ratio Perm	c0.11	0.00		0.03		0.13		
v/c Ratio	0.83	0.03		0.05	0.66	0.18	0.32	
Uniform Delay, d1	56.9	50.7		7.4	12.5	11.0	12.1	
Progression Factor	1.00	1.00		0.33	0.32	1.24	1.29	
Incremental Delay, d2	21.3	0.1		0.0	0.8	1.0	0.3	
Delay (s)	78.2	50.8		2.5	4.8	14.6	15.9	
Level of Service	E	D		A	A	B	B	
Approach Delay (s)	73.8				4.8		15.8	
Approach LOS	E				A		B	

Intersection Summary			
HCM 2000 Control Delay	12.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	135.0	Sum of lost time (s)	19.0
Intersection Capacity Utilization	58.6%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	16	0	0	21	0	2050	11	4	932	27
Future Volume (Veh/h)	0	0	16	0	0	21	0	2050	11	4	932	27
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	1.00	1.00	1.00	0.79	0.79	0.79	1.00	0.90	0.90	1.00	1.00	1.00
Hourly flow rate (vph)	0	0	16	0	0	27	0	2278	12	4	932	27
Pedestrians		7			19			10			1	
Lane Width (ft)		12.0			12.0			12.0			12.0	
Walking Speed (ft/s)		3.5			3.5			3.5			3.5	
Percent Blockage		1			2			1			0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)								478			301	
pX, platoon unblocked	0.81	0.81	0.91	0.81	0.81	0.77	0.91			0.77		
vC, conflicting volume	1748	3270	341	2648	3277	785	966			2309		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	384	2258	0	1492	2267	0	627			1648		
tC, single (s)	7.5	6.5	7.3	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.5	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	98	100	100	97	100			99		
cM capacity (veh/h)	419	33	929	66	32	822	874			300		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3	SB 4
Volume Total	16	27	911	911	468	4	373	373	213
Volume Left	0	0	0	0	0	4	0	0	0
Volume Right	16	27	0	0	12	0	0	0	27
cSH	929	822	1700	1700	1700	300	1700	1700	1700
Volume to Capacity	0.02	0.03	0.54	0.54	0.28	0.01	0.22	0.22	0.13
Queue Length 95th (ft)	1	3	0	0	0	1	0	0	0
Control Delay (s)	8.9	9.5	0.0	0.0	0.0	17.2	0.0	0.0	0.0
Lane LOS	A	A				C			
Approach Delay (s)	8.9	9.5	0.0			0.1			
Approach LOS	A	A							

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	50.2%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBU	EBL	EBT	WBU	WBT	WBR	SBL	SBR
Lane Configurations								
Traffic Volume (veh/h)	108	61	775	22	1077	27	6	66
Future Volume (Veh/h)	108	61	775	22	1077	27	6	66
Sign Control			Free		Free		Stop	
Grade			0%		0%		0%	
Peak Hour Factor	0.90	0.90	0.90	0.25	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	68	861	0	1077	27	6	66
Pedestrians							5	
Lane Width (ft)							12.0	
Walking Speed (ft/s)							3.5	
Percent Blockage							0	
Right turn flare (veh)								
Median type			Raised		Raised			
Median storage veh)			1		1			
Upstream signal (ft)								
pX, platoon unblocked	0.00			0.00				
vC, conflicting volume	0	1109		0			1662	557
vC1, stage 1 conf vol							1096	
vC2, stage 2 conf vol							566	
vCu, unblocked vol	0	1109		0			1662	557
tC, single (s)	0.0	4.1		0.0			6.8	7.0
tC, 2 stage (s)							5.8	
tF (s)	0.0	2.2		0.0			3.5	3.3
p0 queue free %	0	89		0			97	86
cM capacity (veh/h)	0	628		0			196	469

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	SB 1
Volume Total	68	430	430	718	386	0	72
Volume Left	68	0	0	0	0	0	6
Volume Right	0	0	0	0	27	0	66
cSH	628	1700	1700	1700	1700	1700	420
Volume to Capacity	0.11	0.25	0.25	0.42	0.23	0.00	0.17
Queue Length 95th (ft)	9	0	0	0	0	0	15
Control Delay (s)	11.4	0.0	0.0	0.0	0.0	0.0	15.3
Lane LOS	B						C
Approach Delay (s)	0.8			0.0			15.3
Approach LOS							C

Intersection Summary			
Average Delay	0.9		
Intersection Capacity Utilization	54.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBU	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations							
Traffic Volume (veh/h)	11	71	1021	873	42	4	35
Future Volume (Veh/h)	11	71	1021	873	42	4	35
Sign Control			Free	Free		Stop	
Grade			0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	77	1110	873	42	4	35
Pedestrians						23	
Lane Width (ft)						12.0	
Walking Speed (ft/s)						3.5	
Percent Blockage						2	
Right turn flare (veh)							
Median type			None	None			
Median storage veh)							
Upstream signal (ft)				516			
pX, platoon unblocked	0.00	0.85				0.85	0.85
vC, conflicting volume	0	938				1626	480
vC1, stage 1 conf vol							
vC2, stage 2 conf vol							
vCu, unblocked vol	0	575				1384	37
tC, single (s)	0.0	4.2				6.8	7.0
tC, 2 stage (s)							
tF (s)	0.0	2.2				3.5	3.3
p0 queue free %	0	91				96	96
cM capacity (veh/h)	0	821				103	851

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1
Volume Total	77	555	555	582	333	39
Volume Left	77	0	0	0	0	4
Volume Right	0	0	0	0	42	35
cSH	821	1700	1700	1700	1700	488
Volume to Capacity	0.09	0.33	0.33	0.34	0.20	0.08
Queue Length 95th (ft)	8	0	0	0	0	6
Control Delay (s)	9.8	0.0	0.0	0.0	0.0	13.0
Lane LOS	A					B
Approach Delay (s)	0.6			0.0		13.0
Approach LOS						B

Intersection Summary			
Average Delay	0.6		
Intersection Capacity Utilization	67.1%	ICU Level of Service	C
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	372	503	109	124	567	321	219	1426	382	232	564	158
v/c Ratio	0.80	0.56	0.23	0.50	0.81	0.73	0.65	0.70	0.49	0.89	0.40	0.22
Control Delay	70.8	46.9	2.8	66.3	61.2	34.4	38.7	36.5	10.5	74.2	20.1	7.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	70.8	46.9	2.8	66.3	61.2	34.4	38.7	36.5	10.5	74.2	20.1	7.7
Queue Length 50th (ft)	163	199	0	54	247	131	134	393	58	140	131	17
Queue Length 95th (ft)	220	264	m16	87	315	243	202	451	151	#357	327	139
Internal Link Dist (ft)		436			534			359			398	
Turn Bay Length (ft)	175		125	275		325	200		200	240		
Base Capacity (vph)	492	923	496	312	745	460	340	2050	787	274	1426	725
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.76	0.54	0.22	0.40	0.76	0.70	0.64	0.70	0.49	0.85	0.40	0.22

Intersection Summary

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

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT
Lane Configurations												
Traffic Volume (vph)	368	498	108	124	567	321	199	1298	348	3	229	564
Future Volume (vph)	368	498	108	124	567	321	199	1298	348	3	229	564
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	6.0	6.0	5.0	5.0	5.0	5.0	6.0	6.0		5.0	6.0
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	1.00	0.91	1.00		1.00	0.95
Frpb, ped/bikes	1.00	1.00	0.95	1.00	1.00	0.98	1.00	1.00	0.96		1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85		1.00	1.00
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	3502	3574	1479	3242	3471	1553	1768	5085	1537		1719	3438
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.29	1.00	1.00		0.14	1.00
Satd. Flow (perm)	3502	3574	1479	3242	3471	1553	531	5085	1537		250	3438
Peak-hour factor, PHF	0.99	0.99	0.99	1.00	1.00	1.00	0.91	0.91	0.91	1.00	1.00	1.00
Adj. Flow (vph)	372	503	109	124	567	321	219	1426	382	3	229	564
RTOR Reduction (vph)	0	0	82	0	0	129	0	0	168	0	0	0
Lane Group Flow (vph)	372	503	27	124	567	192	219	1426	214	0	232	564
Confl. Peds. (#/hr)			22			2	9		17		17	
Confl. Bikes (#/hr)			11			4			7			
Heavy Vehicles (%)	0%	1%	4%	8%	4%	2%	2%	2%	1%	5%	5%	5%
Turn Type	Prot	NA	Perm	Prot	NA	Perm	pm+pt	NA	Perm	pm+pt	pm+pt	NA
Protected Phases	7	4		3	8		5	2		1	1	6
Permitted Phases			4			8	2		2	6	6	
Actuated Green, G (s)	17.9	33.7	33.7	10.4	27.2	27.2	54.4	54.4	54.4		57.0	56.0
Effective Green, g (s)	17.9	33.7	33.7	10.4	27.2	27.2	54.4	54.4	54.4		57.0	56.0
Actuated g/C Ratio	0.13	0.25	0.25	0.08	0.20	0.20	0.40	0.40	0.40		0.42	0.41
Clearance Time (s)	5.0	6.0	6.0	5.0	5.0	5.0	5.0	6.0	6.0		5.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	464	892	369	249	699	312	332	2049	619		263	1426
v/s Ratio Prot	c0.11	0.14		0.04	c0.16		0.06	c0.28			c0.09	0.16
v/s Ratio Perm			0.02			0.12	0.20		0.14		c0.28	
v/c Ratio	0.80	0.56	0.07	0.50	0.81	0.61	0.66	0.70	0.35		0.88	0.40
Uniform Delay, d1	56.8	44.2	38.7	59.8	51.4	49.1	28.5	33.4	27.9		42.2	27.7
Progression Factor	1.00	1.00	1.01	1.00	1.00	1.00	1.00	1.00	1.00		0.83	0.68
Incremental Delay, d2	9.6	0.8	0.1	1.6	7.1	3.6	4.7	2.0	1.5		26.8	0.8
Delay (s)	66.6	45.2	39.0	61.4	58.6	52.7	33.2	35.4	29.5		62.0	19.5
Level of Service	E	D	D	E	E	D	C	D	C		E	B
Approach Delay (s)		52.6			57.0			34.1				33.9
Approach LOS		D			E			C				C

Intersection Summary			
HCM 2000 Control Delay	42.4	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	135.0	Sum of lost time (s)	22.0
Intersection Capacity Utilization	86.0%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SBR
Lane Configurations	↱
Traffic Volume (vph)	158
Future Volume (vph)	158
Ideal Flow (vphpl)	1900
Total Lost time (s)	6.0
Lane Util. Factor	1.00
Frpb, ped/bikes	0.97
Flpb, ped/bikes	1.00
Frt	0.85
Flt Protected	1.00
Satd. Flow (prot)	1527
Flt Permitted	1.00
Satd. Flow (perm)	1527
Peak-hour factor, PHF	1.00
Adj. Flow (vph)	158
RTOR Reduction (vph)	92
Lane Group Flow (vph)	66
Confl. Peds. (#/hr)	9
Confl. Bikes (#/hr)	4
Heavy Vehicles (%)	3%
Turn Type	Perm
Protected Phases	
Permitted Phases	6
Actuated Green, G (s)	56.0
Effective Green, g (s)	56.0
Actuated g/C Ratio	0.41
Clearance Time (s)	6.0
Vehicle Extension (s)	3.0
Lane Grp Cap (vph)	633
v/s Ratio Prot	
v/s Ratio Perm	0.04
v/c Ratio	0.10
Uniform Delay, d1	24.2
Progression Factor	1.81
Incremental Delay, d2	0.3
Delay (s)	44.1
Level of Service	D
Approach Delay (s)	
Approach LOS	

Intersection Summary

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	0	0	2227	1000	3
Future Volume (Veh/h)	0	0	0	2227	1000	3
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	0	2421	1087	3
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)				269	363	
pX, platoon unblocked	0.78	0.91	0.91			
vC, conflicting volume	1896	364	1090			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	353	0	736			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	100			
cM capacity (veh/h)	487	988	796			

Direction, Lane #	EB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	0	484	968	968	435	435	220
Volume Left	0	0	0	0	0	0	0
Volume Right	0	0	0	0	0	0	3
cSH	1700	796	1700	1700	1700	1700	1700
Volume to Capacity	0.00	0.00	0.57	0.57	0.26	0.26	0.13
Queue Length 95th (ft)	0	0	0	0	0	0	0
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS	A						
Approach Delay (s)	0.0	0.0			0.0		
Approach LOS	A						

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	46.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	235	77	0	0	0
Future Volume (Veh/h)	0	235	77	0	0	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.75	0.92	0.92	0.25	1.00	1.00
Hourly flow rate (vph)	0	255	84	0	0	0
Pedestrians					7	
Lane Width (ft)					12.0	
Walking Speed (ft/s)					3.5	
Percent Blockage					1	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)			287			
pX, platoon unblocked						
vC, conflicting volume	91				346	91
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	91				346	91
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	100
cM capacity (veh/h)	1507				650	966

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	255	84	0
Volume Left	0	0	0
Volume Right	0	0	0
cSH	1507	1700	1700
Volume to Capacity	0.00	0.05	0.00
Queue Length 95th (ft)	0	0	0
Control Delay (s)	0.0	0.0	0.0
Lane LOS			A
Approach Delay (s)	0.0	0.0	0.0
Approach LOS			A

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	15.7%	ICU Level of Service	A
Analysis Period (min)	15		

1: North Lamar Boulevard & West 6th Street

Lane Group	WBL	WBT	WBR	NBL	NBT	SBT
Lane Group Flow (vph)	459	981	222	258	1378	984
v/c Ratio	0.58	0.74	0.51	0.61	0.58	0.75
Control Delay	51.6	54.8	32.7	38.8	8.5	45.2
Queue Delay	0.0	0.0	0.0	0.0	1.0	0.0
Total Delay	51.6	54.8	32.7	38.8	9.5	45.2
Queue Length 50th (ft)	191	306	106	185	244	453
Queue Length 95th (ft)	272	393	209	m225	275	487
Internal Link Dist (ft)		443			433	403
Turn Bay Length (ft)	250		250	200		
Base Capacity (vph)	802	1334	438	421	2481	1726
Starvation Cap Reductn	0	0	0	0	763	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.57	0.74	0.51	0.61	0.80	0.57

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	459	981	222	258	1378	0	0	946	38
Future Volume (vph)	0	0	0	459	981	222	258	1378	0	0	946	38
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				5.0	5.0	5.0	5.0	5.0			5.0	
Lane Util. Factor				0.97	0.91	1.00	1.00	0.95			0.95	
Frpb, ped/bikes				1.00	1.00	0.89	1.00	1.00			1.00	
Flpb, ped/bikes				0.89	1.00	1.00	1.00	1.00			1.00	
Frt				1.00	1.00	0.85	1.00	1.00			0.99	
Flt Protected				0.95	1.00	1.00	0.95	1.00			1.00	
Satd. Flow (prot)				3102	5085	1445	1787	3539			3543	
Flt Permitted				0.95	1.00	1.00	0.95	1.00			1.00	
Satd. Flow (perm)				3102	5085	1445	1787	3539			3543	
Peak-hour factor, PHF	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. Flow (vph)	0	0	0	459	981	222	258	1378	0	0	946	38
RTOR Reduction (vph)	0	0	0	0	0	64	0	0	0	0	3	0
Lane Group Flow (vph)	0	0	0	459	981	158	258	1378	0	0	981	0
Confl. Peds. (#/hr)				55		73						20
Confl. Bikes (#/hr)						15			7			4
Heavy Vehicles (%)	0%	0%	0%	1%	2%	0%	1%	2%	0%	0%	1%	3%
Turn Type				Perm	NA	Perm	Prot	NA			NA	
Protected Phases					4		3 5	2			6	
Permitted Phases				4		4						
Actuated Green, G (s)				39.2	39.2	39.2	35.4	100.8			55.4	
Effective Green, g (s)				39.2	39.2	39.2	35.4	100.8			55.4	
Actuated g/C Ratio				0.26	0.26	0.26	0.24	0.67			0.37	
Clearance Time (s)				5.0	5.0	5.0		5.0			5.0	
Vehicle Extension (s)				3.0	3.0	3.0		3.0			3.0	
Lane Grp Cap (vph)				810	1328	377	421	2378			1308	
v/s Ratio Prot					c0.19		0.14	c0.39			c0.28	
v/s Ratio Perm				0.15		0.11						
v/c Ratio				0.57	0.74	0.42	0.61	0.58			0.75	
Uniform Delay, d1				48.0	50.7	45.9	51.2	13.2			41.3	
Progression Factor				1.00	1.00	1.00	1.30	0.59			1.00	
Incremental Delay, d2				0.9	2.2	0.8	1.5	0.6			4.0	
Delay (s)				48.9	52.9	46.7	68.1	8.3			45.3	
Level of Service				D	D	D	E	A			D	
Approach Delay (s)		0.0			51.0			17.8			45.3	
Approach LOS		A			D			B			D	

Intersection Summary			
HCM 2000 Control Delay	37.0	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	79.9%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

2: Lamar Boulevard/North Lamar Boulevard & West 5th Street

Lane Group	EBL	EBT	EBR	NBT	SBL	SBT
Lane Group Flow (vph)	341	1258	289	1513	97	1518
v/c Ratio	0.63	0.68	0.76	0.89	0.61	0.70
Control Delay	51.0	47.2	61.3	51.6	70.0	13.8
Queue Delay	0.0	0.0	0.0	0.2	0.0	0.1
Total Delay	51.0	47.2	61.3	51.8	70.0	14.0
Queue Length 50th (ft)	290	337	320	465	99	290
Queue Length 95th (ft)	427	404	#555	662	159	312
Internal Link Dist (ft)		385		2703		433
Turn Bay Length (ft)					200	
Base Capacity (vph)	540	1848	378	1743	297	2501
Starvation Cap Reductn	0	0	0	0	0	221
Spillback Cap Reductn	0	0	0	20	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.63	0.68	0.76	0.88	0.33	0.67

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	327	929	556	0	0	0	0	1227	226	88	1381	0
Future Volume (vph)	327	929	556	0	0	0	0	1227	226	88	1381	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0					5.0		5.0	5.0	
Lane Util. Factor	1.00	0.81	0.81					0.95		1.00	0.95	
Frpb, ped/bikes	1.00	0.98	0.90					0.99		1.00	1.00	
Flpb, ped/bikes	0.93	1.00	1.00					1.00		1.00	1.00	
Frt	1.00	0.97	0.85					0.98		1.00	1.00	
Flt Protected	0.95	1.00	1.00					1.00		0.95	1.00	
Satd. Flow (prot)	1668	5710	1171					3466		1787	3574	
Flt Permitted	0.95	1.00	1.00					1.00		0.95	1.00	
Satd. Flow (perm)	1668	5710	1171					3466		1787	3574	
Peak-hour factor, PHF	0.96	0.96	0.96	0.92	0.92	0.92	0.96	0.96	0.96	0.91	0.91	0.91
Adj. Flow (vph)	341	968	579	0	0	0	0	1278	235	97	1518	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	10	0	0	0	0
Lane Group Flow (vph)	341	1258	289	0	0	0	0	1503	0	97	1518	0
Confl. Peds. (#/hr)	37		46	46		37	7		49			7
Confl. Bikes (#/hr)			5						11			7
Heavy Vehicles (%)	1%	2%	1%	0%	0%	0%	0%	1%	1%	1%	1%	0%
Turn Type	Perm	NA	Perm					NA		Prot	NA	
Protected Phases		4						2		1	6	
Permitted Phases	4		4									
Actuated Green, G (s)	48.6	48.6	48.6					72.9		13.5	91.4	
Effective Green, g (s)	48.6	48.6	48.6					72.9		13.5	91.4	
Actuated g/C Ratio	0.32	0.32	0.32					0.49		0.09	0.61	
Clearance Time (s)	5.0	5.0	5.0					5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0	3.0					3.0		3.0	3.0	
Lane Grp Cap (vph)	540	1850	379					1684		160	2177	
v/s Ratio Prot		0.22						c0.43		0.05	c0.42	
v/s Ratio Perm	0.20		c0.25									
v/c Ratio	0.63	0.68	0.76					0.89		0.61	0.70	
Uniform Delay, d1	43.1	44.0	45.5					35.0		65.7	19.9	
Progression Factor	1.00	1.00	1.00					1.31		0.86	0.62	
Incremental Delay, d2	2.4	1.0	8.8					6.4		5.6	1.7	
Delay (s)	45.5	45.0	54.3					52.2		62.0	14.0	
Level of Service	D	D	D					D		E	B	
Approach Delay (s)		46.5			0.0			52.2			16.9	
Approach LOS		D			A			D			B	

Intersection Summary			
HCM 2000 Control Delay	38.7	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	79.9%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group Flow (vph)	270	1703	1922	276	78	130
v/c Ratio	0.42	0.57	1.20	0.37	0.49	0.21
Control Delay	18.3	4.9	126.4	18.2	61.9	18.2
Queue Delay	0.0	0.0	0.2	0.0	0.0	0.0
Total Delay	18.3	4.9	126.6	18.2	61.9	18.2
Queue Length 50th (ft)	95	199	~1092	100	59	48
Queue Length 95th (ft)	178	300	#1231	180	106	83
Internal Link Dist (ft)		805	467		380	
Turn Bay Length (ft)	275			175		200
Base Capacity (vph)	643	2980	1607	740	610	633
Starvation Cap Reductn	0	0	80	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.42	0.57	1.26	0.37	0.13	0.21

Intersection Summary

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

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

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	262	1652	1826	262	78	130
Future Volume (vph)	262	1652	1826	262	78	130
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0	6.0
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	1.00	0.97	1.00	0.99
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1770	3539	3539	1513	1787	1560
Flt Permitted	0.07	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	126	3539	3539	1513	1787	1560
Peak-hour factor, PHF	0.97	0.97	0.95	0.95	1.00	1.00
Adj. Flow (vph)	270	1703	1922	276	78	130
RTOR Reduction (vph)	0	0	0	57	0	0
Lane Group Flow (vph)	270	1703	1922	219	78	130
Confl. Peds. (#/hr)				12		10
Confl. Bikes (#/hr)				12		1
Heavy Vehicles (%)	2%	2%	2%	4%	1%	3%
Turn Type	pm+pt	NA	NA	Perm	Prot	pm+ov
Protected Phases	5	2 5	6		3	5
Permitted Phases	2 5			6		3
Actuated Green, G (s)	98.7	98.7	53.3	53.3	9.3	48.7
Effective Green, g (s)	98.7	98.7	53.3	53.3	9.3	48.7
Actuated g/C Ratio	0.82	0.82	0.44	0.44	0.08	0.41
Clearance Time (s)	6.0		6.0	6.0	6.0	6.0
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	643	2910	1571	672	138	711
v/s Ratio Prot	0.14	c0.48	c0.54		c0.04	0.06
v/s Ratio Perm	0.21			0.14		0.02
v/c Ratio	0.42	0.59	1.22	0.33	0.57	0.18
Uniform Delay, d1	23.8	3.6	33.4	21.7	53.4	22.9
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.4	0.3	106.5	1.3	5.2	0.1
Delay (s)	24.3	3.9	139.8	23.0	58.6	23.0
Level of Service	C	A	F	C	E	C
Approach Delay (s)		6.7	125.1		36.4	
Approach LOS		A	F		D	

Intersection Summary			
HCM 2000 Control Delay	67.6	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.94		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	88.8%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	1711	1822	82	404
v/c Ratio	0.60	0.80	0.59	0.86
Control Delay	4.8	22.8	82.1	64.2
Queue Delay	1.7	0.0	0.0	0.0
Total Delay	6.5	22.8	82.1	64.2
Queue Length 50th (ft)	211	762	79	321
Queue Length 95th (ft)	325	670	132	#581
Internal Link Dist (ft)	467	757	278	
Turn Bay Length (ft)				
Base Capacity (vph)	2865	2291	321	471
Starvation Cap Reductn	919	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.88	0.80	0.26	0.86

Intersection Summary

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

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	1	1710	1732	54	73	360
Future Volume (vph)	1	1710	1732	54	73	360
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	5.0		4.5	2.0
Lane Util. Factor		0.95	0.95		1.00	1.00
Frpb, ped/bikes		1.00	1.00		1.00	1.00
Flpb, ped/bikes		1.00	1.00		1.00	1.00
Frt		1.00	1.00		1.00	0.85
Flt Protected		1.00	1.00		0.95	1.00
Satd. Flow (prot)		3539	3520		1583	1577
Flt Permitted		0.95	1.00		0.95	1.00
Satd. Flow (perm)		3378	3520		1583	1577
Peak-hour factor, PHF	1.00	1.00	0.98	0.98	0.89	0.89
Adj. Flow (vph)	1	1710	1767	55	82	404
RTOR Reduction (vph)	0	0	1	0	0	14
Lane Group Flow (vph)	0	1711	1821	0	82	390
Confl. Peds. (#/hr)	6			6	6	
Confl. Bikes (#/hr)				8		1
Heavy Vehicles (%)	0%	2%	2%	0%	14%	2%
Turn Type	Perm	NA	NA		Prot	custom
Protected Phases		2	6		7	5
Permitted Phases	2					7
Actuated Green, G (s)		127.3	97.4		13.2	41.1
Effective Green, g (s)		127.3	97.4		13.2	41.1
Actuated g/C Ratio		0.85	0.65		0.09	0.27
Clearance Time (s)		5.0	5.0		4.5	2.0
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)		2866	2285		139	453
v/s Ratio Prot			c0.52		0.05	c0.16
v/s Ratio Perm		0.51				0.09
v/c Ratio		0.60	0.80		0.59	0.86
Uniform Delay, d1		3.5	19.1		65.8	51.7
Progression Factor		1.00	1.00		1.00	1.00
Incremental Delay, d2		0.9	3.0		6.3	15.4
Delay (s)		4.4	22.1		72.1	67.1
Level of Service		A	C		E	E
Approach Delay (s)		4.4	22.1		68.0	
Approach LOS		A	C		E	

Intersection Summary			
HCM 2000 Control Delay	20.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	11.5
Intersection Capacity Utilization	79.4%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBT
Lane Group Flow (vph)	14	59	288	195	192	10	1447	111	2211
v/c Ratio	0.04	0.11	0.74	0.39	0.39	0.09	0.67	0.11	1.06
Control Delay	37.2	17.6	62.4	20.9	20.6	16.3	22.0	4.3	67.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	48.8	0.0	0.0
Total Delay	37.2	17.6	62.4	20.9	20.6	16.3	70.9	4.3	67.0
Queue Length 50th (ft)	10	15	250	56	54	4	789	30	1204
Queue Length 95th (ft)	26	47	#465	149	147	m9	862	59	#1439
Internal Link Dist (ft)		436		273			283		2703
Turn Bay Length (ft)			250			100			
Base Capacity (vph)	315	554	388	497	487	112	2241	1000	2095
Starvation Cap Reductn	0	0	0	0	0	0	970	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.04	0.11	0.74	0.39	0.39	0.09	1.14	0.11	1.06

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	12	18	32	282	18	362	10	1447	111	0	2153	14
Future Volume (vph)	12	18	32	282	18	362	10	1447	111	0	2153	14
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	6.0		6.0	6.0	6.0	5.0	5.0	5.0		5.0	
Lane Util. Factor	1.00	1.00		1.00	0.95	0.95	1.00	0.95	1.00		0.95	
Frpb, ped/bikes	1.00	0.98		1.00	0.95	0.95	1.00	1.00	0.95		1.00	
Flpb, ped/bikes	1.00	1.00		0.99	1.00	1.00	1.00	1.00	1.00		1.00	
Frt	1.00	0.90		1.00	0.86	0.85	1.00	1.00	0.85		1.00	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00		1.00	
Satd. Flow (prot)	1805	1689		1794	1471	1439	1805	3539	1518		3570	
Flt Permitted	0.46	1.00		0.72	1.00	1.00	0.05	1.00	1.00		1.00	
Satd. Flow (perm)	877	1689		1357	1471	1439	87	3539	1518		3570	
Peak-hour factor, PHF	0.85	0.85	0.85	0.98	0.98	0.98	1.00	1.00	1.00	0.98	0.98	0.98
Adj. Flow (vph)	14	21	38	288	18	369	10	1447	111	0	2197	14
RTOR Reduction (vph)	0	25	0	0	86	86	0	0	43	0	0	0
Lane Group Flow (vph)	14	34	0	288	109	106	10	1447	68	0	2211	0
Confl. Peds. (#/hr)			5	5		29			21	21		15
Confl. Bikes (#/hr)			10			15			19			
Heavy Vehicles (%)	0%	0%	0%	0%	0%	1%	0%	2%	1%	0%	1%	0%
Turn Type	pm+pt	NA		Perm	NA	Perm	pm+pt	NA	Perm		NA	
Protected Phases	7	4			8		5	2			6	
Permitted Phases	4			8		8	2		2			
Actuated Green, G (s)	50.0	50.0		43.0	43.0	43.0	89.0	89.0	89.0		82.0	
Effective Green, g (s)	50.0	50.0		43.0	43.0	43.0	89.0	89.0	89.0		82.0	
Actuated g/C Ratio	0.33	0.33		0.29	0.29	0.29	0.59	0.59	0.59		0.55	
Clearance Time (s)	5.0	6.0		6.0	6.0	6.0	5.0	5.0	5.0		5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0		3.0	
Lane Grp Cap (vph)	304	563		389	421	412	74	2099	900		1951	
v/s Ratio Prot	0.00	c0.02			0.07		0.00	c0.41			c0.62	
v/s Ratio Perm	0.01			c0.21		0.07	0.08		0.04			
v/c Ratio	0.05	0.06		0.74	0.26	0.26	0.14	0.69	0.08		1.13	
Uniform Delay, d1	34.1	34.0		48.4	41.2	41.2	68.6	21.0	13.0		34.0	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.13	1.09	1.95		1.08	
Incremental Delay, d2	0.1	0.0		7.4	0.3	0.3	0.8	1.7	0.2		65.6	
Delay (s)	34.2	34.1		55.8	41.6	41.5	78.4	24.5	25.5		102.3	
Level of Service	C	C		E	D	D	E	C	C		F	
Approach Delay (s)		34.1			47.7			24.9			102.3	
Approach LOS		C			D			C			F	

Intersection Summary			
HCM 2000 Control Delay	66.3	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.03		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	25.5
Intersection Capacity Utilization	91.4%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	104	9	34	117	24	66
Future Volume (Veh/h)	104	9	34	117	24	66
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	0.81	0.81	1.00	1.00
Hourly flow rate (vph)	104	9	42	144	24	66
Pedestrians	8			8	2	
Lane Width (ft)	12.0			12.0	12.0	
Walking Speed (ft/s)	3.5			3.5	3.5	
Percent Blockage	1			1	0	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)				398		
pX, platoon unblocked						
vC, conflicting volume			115		346	118
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			115		346	118
tC, single (s)			4.1		6.5	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.6	3.3
p0 queue free %			97		96	93
cM capacity (veh/h)			1465		612	930

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	113	186	90
Volume Left	0	42	24
Volume Right	9	0	66
cSH	1700	1465	817
Volume to Capacity	0.07	0.03	0.11
Queue Length 95th (ft)	0	2	9
Control Delay (s)	0.0	1.9	10.0
Lane LOS		A	A
Approach Delay (s)	0.0	1.9	10.0
Approach LOS			A

Intersection Summary			
Average Delay	3.2		
Intersection Capacity Utilization	29.1%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBR	NBL	NBT	SBT
Lane Group Flow (vph)	119	53	36	1484	2513
v/c Ratio	0.65	0.25	0.10	0.46	0.63
Control Delay	80.6	16.9	8.0	16.3	6.2
Queue Delay	0.0	0.0	0.0	0.0	0.3
Total Delay	80.6	16.9	8.0	16.3	6.5
Queue Length 50th (ft)	114	0	4	322	243
Queue Length 95th (ft)	177	42	m17	m275	m200
Internal Link Dist (ft)	86			221	189
Turn Bay Length (ft)	75		60		
Base Capacity (vph)	471	461	360	3324	4008
Starvation Cap Reductn	0	0	0	0	727
Spillback Cap Reductn	0	1	0	188	119
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.25	0.12	0.10	0.47	0.77

Intersection Summary

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

Movement	EBL	EBR	NBL	NBT	SBU	SBT	SBR
Lane Configurations							
Traffic Volume (vph)	119	53	35	1425	0	2292	120
Future Volume (vph)	119	53	35	1425	0	2292	120
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0		5.0	
Lane Util. Factor	1.00	1.00	1.00	0.91		0.91	
Frpb, ped/bikes	1.00	0.97	1.00	1.00		1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00		1.00	
Frt	1.00	0.85	1.00	1.00		0.99	
Flt Protected	0.95	1.00	0.95	1.00		1.00	
Satd. Flow (prot)	1764	1565	1805	5085		5031	
Flt Permitted	0.95	1.00	0.04	1.00		1.00	
Satd. Flow (perm)	1764	1565	82	5085		5031	
Peak-hour factor, PHF	1.00	1.00	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	119	53	36	1484	0	2388	125
RTOR Reduction (vph)	0	48	0	0	0	1	0
Lane Group Flow (vph)	119	5	36	1484	0	2512	0
Confl. Peds. (#/hr)	1	3					11
Confl. Bikes (#/hr)		5					40
Heavy Vehicles (%)	2%	0%	0%	2%	0%	2%	0%
Turn Type	Perm	Perm	custom	NA	custom	NA	
Protected Phases			5!	2!	1!	6!	
Permitted Phases	4	4	1 2		5 6		
Actuated Green, G (s)	15.5	15.5	114.5	92.2		119.5	
Effective Green, g (s)	15.5	15.5	114.5	92.2		119.5	
Actuated g/C Ratio	0.10	0.10	0.76	0.61		0.80	
Clearance Time (s)	5.0	5.0	5.0	5.0		5.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0		3.0	
Lane Grp Cap (vph)	182	161	318	3125		4008	
v/s Ratio Prot			0.02	0.29		c0.50	
v/s Ratio Perm	c0.07	0.00	0.07				
v/c Ratio	0.65	0.03	0.11	0.47		0.63	
Uniform Delay, d1	64.7	60.5	18.8	15.7		6.2	
Progression Factor	1.00	1.00	0.57	0.84		0.90	
Incremental Delay, d2	8.2	0.1	0.1	0.4		0.2	
Delay (s)	72.8	60.6	10.8	13.6		5.8	
Level of Service	E	E	B	B		A	
Approach Delay (s)	69.1			13.5		5.8	
Approach LOS	E			B		A	

Intersection Summary			
HCM 2000 Control Delay	11.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	19.0
Intersection Capacity Utilization	61.9%	ICU Level of Service	B
Analysis Period (min)	15		

! Phase conflict between lane groups.
c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	23	0	0	18	0	1448	11	1	2311	35
Future Volume (Veh/h)	0	0	23	0	0	18	0	1448	11	1	2311	35
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.94	0.94	0.94	0.97	0.97	0.97
Hourly flow rate (vph)	0	0	23	0	0	18	0	1540	12	1	2382	36
Pedestrians		10			18			5			2	
Lane Width (ft)		12.0			12.0			12.0			12.0	
Walking Speed (ft/s)		3.5			3.5			3.5			3.5	
Percent Blockage		1			2			0			0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)								478			301	
pX, platoon unblocked	0.89	0.89	0.79	0.89	0.89	0.81	0.79			0.81		
vC, conflicting volume	2945	3982	827	2388	3994	539	2428			1570		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1303	2471	0	675	2484	0	1887			882		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	97	100	100	98	100			100		
cM capacity (veh/h)	101	26	853	284	26	867	253			617		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3	SB 4
Volume Total	23	18	616	616	320	1	953	953	512
Volume Left	0	0	0	0	0	1	0	0	0
Volume Right	23	18	0	0	12	0	0	0	36
cSH	853	867	1700	1700	1700	617	1700	1700	1700
Volume to Capacity	0.03	0.02	0.36	0.36	0.19	0.00	0.56	0.56	0.30
Queue Length 95th (ft)	2	2	0	0	0	0	0	0	0
Control Delay (s)	9.3	9.2	0.0	0.0	0.0	10.8	0.0	0.0	0.0
Lane LOS	A	A				B			
Approach Delay (s)	9.3	9.2	0.0			0.0			
Approach LOS	A	A							

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	57.0%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBT	WBU	WBT	WBR	SBL	SBR
Lane Configurations							
Traffic Volume (veh/h)	108	969	35	1577	43	27	80
Future Volume (Veh/h)	108	969	35	1577	43	27	80
Sign Control		Free		Free		Stop	
Grade		0%		0%		0%	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.95	0.95
Hourly flow rate (vph)	113	1009	0	1643	45	28	84
Pedestrians				2		34	
Lane Width (ft)				8.0		12.0	
Walking Speed (ft/s)				3.5		3.5	
Percent Blockage				0		3	
Right turn flare (veh)							
Median type		Raised		Raised			
Median storage veh)		1		1			
Upstream signal (ft)							
pX, platoon unblocked			0.00				
vC, conflicting volume	1722		0			2432	878
vC1, stage 1 conf vol						1700	
vC2, stage 2 conf vol						732	
vCu, unblocked vol	1722		0			2432	878
tC, single (s)	4.1		0.0			6.8	6.9
tC, 2 stage (s)						5.8	
tF (s)	2.2		0.0			3.5	3.3
p0 queue free %	68		0			69	71
cM capacity (veh/h)	356		0			90	286

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	SB 1
Volume Total	113	504	504	1095	593	0	112
Volume Left	113	0	0	0	0	0	28
Volume Right	0	0	0	0	45	0	84
cSH	356	1700	1700	1700	1700	1700	185
Volume to Capacity	0.32	0.30	0.30	0.64	0.35	0.00	0.60
Queue Length 95th (ft)	33	0	0	0	0	0	84
Control Delay (s)	19.8	0.0	0.0	0.0	0.0	0.0	50.3
Lane LOS	C						F
Approach Delay (s)	2.0			0.0			50.3
Approach LOS							F

Intersection Summary			
Average Delay	2.7		
Intersection Capacity Utilization	67.4%	ICU Level of Service	C
Analysis Period (min)	15		

Movement	EBU	EBL	EBT	WBU	WBT	WBR	SBL	SBR
Lane Configurations								
Traffic Volume (veh/h)	12	53	949	2	1687	25	12	57
Future Volume (Veh/h)	12	53	949	2	1687	25	12	57
Sign Control			Free		Free		Stop	
Grade			0%		0%		0%	
Peak Hour Factor	1.00	1.00	1.00	0.96	0.96	0.96	0.86	0.86
Hourly flow rate (vph)	0	53	949	0	1757	26	14	66
Pedestrians							40	
Lane Width (ft)							12.0	
Walking Speed (ft/s)							3.5	
Percent Blockage							4	
Right turn flare (veh)								
Median type			None		None			
Median storage veh)								
Upstream signal (ft)					516			
pX, platoon unblocked	0.00	0.76		0.00			0.76	0.76
vC, conflicting volume	0	1823		0			2390	932
vC1, stage 1 conf vol								
vC2, stage 2 conf vol								
vCu, unblocked vol	0	1451		0			2198	277
tC, single (s)	0.0	4.1		0.0			7.0	6.9
tC, 2 stage (s)								
tF (s)	0.0	2.2		0.0			3.6	3.3
p0 queue free %	0	84		0			35	87
cM capacity (veh/h)	0	338		0			22	526

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1
Volume Total	53	474	474	1171	612	80
Volume Left	53	0	0	0	0	14
Volume Right	0	0	0	0	26	66
cSH	338	1700	1700	1700	1700	103
Volume to Capacity	0.16	0.28	0.28	0.69	0.36	0.78
Queue Length 95th (ft)	14	0	0	0	0	106
Control Delay (s)	17.6	0.0	0.0	0.0	0.0	111.0
Lane LOS	C					F
Approach Delay (s)	0.9			0.0		111.0
Approach LOS						F

Intersection Summary			
Average Delay	3.4		
Intersection Capacity Utilization	64.9%	ICU Level of Service	C
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	285	458	201	373	886	192	203	1094	226	191	1466	653
v/c Ratio	0.95	0.76	0.53	0.68	1.00	0.39	0.99	0.74	0.39	0.39	0.94	0.79
Control Delay	107.6	67.9	20.6	67.4	84.9	13.1	101.4	50.6	9.1	30.8	39.7	16.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.7	0.9
Total Delay	107.6	67.9	20.6	67.4	84.9	13.1	101.4	50.6	9.1	30.8	42.5	17.6
Queue Length 50th (ft)	145	226	44	181	459	26	158	355	21	81	633	158
Queue Length 95th (ft)	m#238	m281	m121	#268	#606	98	#277	364	77	125	#863	270
Internal Link Dist (ft)		436			534			359			398	
Turn Bay Length (ft)	175		125	275		325	200		200	240		
Base Capacity (vph)	300	707	422	545	890	488	206	1932	688	496	1557	824
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	46	41
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.95	0.65	0.48	0.68	1.00	0.39	0.99	0.57	0.33	0.39	0.97	0.83

Intersection Summary

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

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT
Lane Configurations												
Traffic Volume (vph)	285	458	201	373	886	192	179	963	199	1	190	1466
Future Volume (vph)	285	458	201	373	886	192	179	963	199	1	190	1466
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	6.0	6.0	5.0	5.0	5.0	5.0	6.0	6.0		5.0	6.0
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	1.00	0.91	1.00		1.00	0.95
Frpb, ped/bikes	1.00	1.00	0.94	1.00	1.00	0.94	1.00	1.00	0.93		1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85		1.00	1.00
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	3467	3539	1501	3467	3610	1496	1787	5085	1492		1784	3539
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.13	1.00	1.00		0.20	1.00
Satd. Flow (perm)	3467	3539	1501	3467	3610	1496	244	5085	1492		374	3539
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	0.88	0.88	0.88	1.00	1.00	1.00
Adj. Flow (vph)	285	458	201	373	886	192	203	1094	226	1	190	1466
RTOR Reduction (vph)	0	0	125	0	0	119	0	0	139	0	0	0
Lane Group Flow (vph)	285	458	76	373	886	73	203	1094	87	0	191	1466
Confl. Peds. (#/hr)			19			21	22		34		34	
Confl. Bikes (#/hr)			13			21			5			
Heavy Vehicles (%)	1%	2%	1%	1%	0%	2%	1%	2%	1%	0%	1%	2%
Turn Type	Prot	NA	Perm	Prot	NA	Perm	pm+pt	NA	Perm	pm+pt	pm+pt	NA
Protected Phases	7	4		3	8		5	2		1	1	6
Permitted Phases			4			8	2		2	6	6	
Actuated Green, G (s)	13.0	25.4	25.4	23.6	37.0	37.0	43.9	43.9	43.9		67.0	66.0
Effective Green, g (s)	13.0	25.4	25.4	23.6	37.0	37.0	43.9	43.9	43.9		67.0	66.0
Actuated g/C Ratio	0.09	0.17	0.17	0.16	0.25	0.25	0.29	0.29	0.29		0.45	0.44
Clearance Time (s)	5.0	6.0	6.0	5.0	5.0	5.0	5.0	6.0	6.0		5.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	300	599	254	545	890	369	205	1488	436		496	1557
v/s Ratio Prot	c0.08	0.13		0.11	c0.25		c0.09	0.22			0.09	c0.41
v/s Ratio Perm			0.05			0.05	c0.20		0.06		0.08	
v/c Ratio	0.95	0.76	0.30	0.68	1.00	0.20	0.99	0.74	0.20		0.39	0.94
Uniform Delay, d1	68.2	59.4	54.5	59.7	56.4	44.7	46.0	47.8	39.9		35.4	40.2
Progression Factor	1.00	1.00	0.99	1.00	1.00	1.00	1.00	1.00	1.00		0.72	0.71
Incremental Delay, d2	38.2	5.8	0.7	3.5	28.9	0.3	59.9	3.3	1.0		0.4	10.5
Delay (s)	106.2	65.1	54.7	63.2	85.3	45.0	105.9	51.1	40.9		25.9	39.2
Level of Service	F	E	D	E	F	D	F	D	D		C	D
Approach Delay (s)		75.3			74.3			56.9				33.9
Approach LOS		E			E			E				C

Intersection Summary			
HCM 2000 Control Delay	55.2	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.98		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	22.0
Intersection Capacity Utilization	100.6%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SBR
Lane Configurations	↱
Traffic Volume (vph)	653
Future Volume (vph)	653
Ideal Flow (vphpl)	1900
Total Lost time (s)	6.0
Lane Util. Factor	1.00
Frpb, ped/bikes	0.95
Flpb, ped/bikes	1.00
Frt	0.85
Flt Protected	1.00
Satd. Flow (prot)	1515
Flt Permitted	1.00
Satd. Flow (perm)	1515
Peak-hour factor, PHF	1.00
Adj. Flow (vph)	653
RTOR Reduction (vph)	158
Lane Group Flow (vph)	495
Confl. Peds. (#/hr)	22
Confl. Bikes (#/hr)	15
Heavy Vehicles (%)	1%
Turn Type	Perm
Protected Phases	
Permitted Phases	6
Actuated Green, G (s)	66.0
Effective Green, g (s)	66.0
Actuated g/C Ratio	0.44
Clearance Time (s)	6.0
Vehicle Extension (s)	3.0
Lane Grp Cap (vph)	666
v/s Ratio Prot	
v/s Ratio Perm	0.33
v/c Ratio	0.74
Uniform Delay, d1	35.0
Progression Factor	0.52
Incremental Delay, d2	5.9
Delay (s)	24.2
Level of Service	C
Approach Delay (s)	
Approach LOS	

Intersection Summary

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	4	0	1507	2412	13
Future Volume (Veh/h)	0	4	0	1507	2412	13
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	4	0	1638	2622	14
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)				269	363	
pX, platoon unblocked	0.56	0.48	0.48			
vC, conflicting volume	3175	881	2636			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	209	0	607			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	99	100			
cM capacity (veh/h)	427	522	470			

Direction, Lane #	EB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	4	328	655	655	1049	1049	538
Volume Left	0	0	0	0	0	0	0
Volume Right	4	0	0	0	0	0	14
cSH	522	470	1700	1700	1700	1700	1700
Volume to Capacity	0.01	0.00	0.39	0.39	0.62	0.62	0.32
Queue Length 95th (ft)	1	0	0	0	0	0	0
Control Delay (s)	11.9	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS	B						
Approach Delay (s)	11.9	0.0			0.0		
Approach LOS	B						

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	56.9%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	172	155	0	3	13
Future Volume (Veh/h)	0	172	155	0	3	13
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.88	0.92	0.92	0.92	1.00	1.00
Hourly flow rate (vph)	0	187	168	0	3	13
Pedestrians					7	
Lane Width (ft)					12.0	
Walking Speed (ft/s)					3.5	
Percent Blockage					1	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)			287			
pX, platoon unblocked						
vC, conflicting volume	175				362	175
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	175				362	175
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	99
cM capacity (veh/h)	1404				637	868

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	187	168	16
Volume Left	0	0	3
Volume Right	0	0	13
cSH	1404	1700	812
Volume to Capacity	0.00	0.10	0.02
Queue Length 95th (ft)	0	0	2
Control Delay (s)	0.0	0.0	9.5
Lane LOS			A
Approach Delay (s)	0.0	0.0	9.5
Approach LOS			A

Intersection Summary			
Average Delay	0.4		
Intersection Capacity Utilization	19.2%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	WBL	WBT	WBR	NBL	NBT	SBT
Lane Group Flow (vph)	225	690	115	357	1479	882
v/c Ratio	0.38	0.73	0.34	0.75	0.56	0.63
Control Delay	54.6	61.9	18.4	30.8	4.9	38.5
Queue Delay	0.0	0.0	0.0	0.1	0.8	0.0
Total Delay	54.6	61.9	18.4	30.9	5.8	38.5
Queue Length 50th (ft)	98	232	23	232	134	369
Queue Length 95th (ft)	141	282	82	m300	m124	452
Internal Link Dist (ft)		443			433	403
Turn Bay Length (ft)	250		250	200		
Base Capacity (vph)	608	974	343	536	2712	1509
Starvation Cap Reductn	0	0	0	6	836	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.37	0.71	0.34	0.67	0.79	0.58

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	225	690	115	343	1420	0	0	680	140
Future Volume (vph)	0	0	0	225	690	115	343	1420	0	0	680	140
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				5.0	5.0	5.0	5.0	5.0			5.0	
Lane Util. Factor				0.97	0.91	1.00	1.00	0.95			0.95	
Frpb, ped/bikes				1.00	1.00	0.95	1.00	1.00			0.99	
Flpb, ped/bikes				0.93	1.00	1.00	1.00	1.00			1.00	
Frt				1.00	1.00	0.85	1.00	1.00			0.97	
Flt Protected				0.95	1.00	1.00	0.95	1.00			1.00	
Satd. Flow (prot)				3128	4988	1401	1770	3574			3377	
Flt Permitted				0.95	1.00	1.00	0.95	1.00			1.00	
Satd. Flow (perm)				3128	4988	1401	1770	3574			3377	
Peak-hour factor, PHF	0.92	0.92	0.92	1.00	1.00	1.00	0.96	0.96	0.96	0.93	0.93	0.93
Adj. Flow (vph)	0	0	0	225	690	115	357	1479	0	0	731	151
RTOR Reduction (vph)	0	0	0	0	0	70	0	0	0	0	12	0
Lane Group Flow (vph)	0	0	0	225	690	45	357	1479	0	0	870	0
Confl. Peds. (#/hr)				27		23						16
Confl. Bikes (#/hr)						6			4			2
Heavy Vehicles (%)	0%	0%	0%	4%	4%	9%	2%	1%	0%	0%	3%	5%
Turn Type				Perm	NA	Perm	Prot	NA			NA	
Protected Phases					4		3 5	2			6	
Permitted Phases				4		4						
Actuated Green, G (s)				28.5	28.5	28.5	40.3	111.5			61.2	
Effective Green, g (s)				28.5	28.5	28.5	40.3	111.5			61.2	
Actuated g/C Ratio				0.19	0.19	0.19	0.27	0.74			0.41	
Clearance Time (s)				5.0	5.0	5.0		5.0			5.0	
Vehicle Extension (s)				3.0	3.0	3.0		3.0			3.0	
Lane Grp Cap (vph)				594	947	266	475	2656			1377	
v/s Ratio Prot					c0.14		c0.20	0.41			c0.26	
v/s Ratio Perm				0.07		0.03						
v/c Ratio				0.38	0.73	0.17	0.75	0.56			0.63	
Uniform Delay, d1				53.0	57.1	50.8	50.3	8.4			35.4	
Progression Factor				1.00	1.00	1.00	0.91	0.53			1.00	
Incremental Delay, d2				0.4	2.8	0.3	2.2	0.3			2.2	
Delay (s)				53.4	59.9	51.1	47.9	4.7			37.6	
Level of Service				D	E	D	D	A			D	
Approach Delay (s)		0.0			57.5			13.1			37.6	
Approach LOS		A			E			B			D	

Intersection Summary			
HCM 2000 Control Delay	31.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	97.3%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	NBT	SBL	SBT
Lane Group Flow (vph)	290	1357	130	2006	135	819
v/c Ratio	0.74	0.99	0.47	1.02	0.71	0.33
Control Delay	67.2	78.2	57.8	57.4	83.7	6.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.5
Total Delay	67.2	78.2	57.8	57.4	83.7	6.8
Queue Length 50th (ft)	268	~415	138	~1081	112	16
Queue Length 95th (ft)	#429	#551	233	#1215	215	124
Internal Link Dist (ft)		385		2703		433
Turn Bay Length (ft)					200	
Base Capacity (vph)	390	1375	279	1963	238	2454
Starvation Cap Reductn	0	0	0	0	0	1100
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.74	0.99	0.47	1.02	0.57	0.60

Intersection Summary

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

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	278	1288	139	0	0	0	0	1422	484	128	778	0
Future Volume (vph)	278	1288	139	0	0	0	0	1422	484	128	778	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0					5.0		5.0	5.0	
Lane Util. Factor	1.00	0.81	0.81					0.95		1.00	0.95	
Frpb, ped/bikes	1.00	1.00	0.95					0.99		1.00	1.00	
Flpb, ped/bikes	0.97	1.00	1.00					1.00		1.00	1.00	
Frt	1.00	1.00	0.85					0.96		1.00	1.00	
Flt Protected	0.95	1.00	1.00					1.00		0.95	1.00	
Satd. Flow (prot)	1725	6082	1237					3425		1787	3471	
Flt Permitted	0.95	1.00	1.00					1.00		0.95	1.00	
Satd. Flow (perm)	1725	6082	1237					3425		1787	3471	
Peak-hour factor, PHF	0.96	0.96	0.96	0.92	0.92	0.92	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	290	1342	145	0	0	0	0	1497	509	135	819	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	23	0	0	0	0
Lane Group Flow (vph)	290	1357	130	0	0	0	0	1983	0	135	819	0
Confl. Peds. (#/hr)	15		23	23		15	22		16			22
Confl. Bikes (#/hr)			5						11			7
Heavy Vehicles (%)	2%	1%	0%	0%	0%	0%	0%	1%	0%	1%	4%	0%
Turn Type	Perm	NA	Perm					NA		Prot	NA	
Protected Phases		4						2		1	6	
Permitted Phases	4		4									
Actuated Green, G (s)	33.9	33.9	33.9					85.0		16.1	106.1	
Effective Green, g (s)	33.9	33.9	33.9					85.0		16.1	106.1	
Actuated g/C Ratio	0.23	0.23	0.23					0.57		0.11	0.71	
Clearance Time (s)	5.0	5.0	5.0					5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0	3.0					3.0		3.0	3.0	
Lane Grp Cap (vph)	389	1374	279					1940		191	2455	
v/s Ratio Prot		c0.22						c0.58		c0.08	0.24	
v/s Ratio Perm	0.17		0.11									
v/c Ratio	0.75	0.99	0.47					1.02		0.71	0.33	
Uniform Delay, d1	54.0	57.8	50.2					32.5		64.7	8.4	
Progression Factor	1.00	1.00	1.00					1.00		1.04	0.72	
Incremental Delay, d2	7.6	21.1	1.2					26.3		9.8	0.3	
Delay (s)	61.6	79.0	51.5					58.8		76.7	6.4	
Level of Service	E	E	D					E		E	A	
Approach Delay (s)		74.1			0.0			58.8			16.4	
Approach LOS		E			A			E			B	

Intersection Summary			
HCM 2000 Control Delay	56.0	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.98		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	97.3%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group Flow (vph)	353	2322	1891	168	77	144
v/c Ratio	0.62	0.77	1.08	0.22	0.49	0.25
Control Delay	32.5	8.3	78.1	14.5	61.9	23.9
Queue Delay	0.0	0.0	10.9	0.0	0.1	0.0
Total Delay	32.5	8.4	89.0	14.5	62.0	23.9
Queue Length 50th (ft)	185	401	~865	57	58	69
Queue Length 95th (ft)	310	611	m#925	m74	105	117
Internal Link Dist (ft)		805	469		380	
Turn Bay Length (ft)	275			175		200
Base Capacity (vph)	573	3014	1757	775	406	581
Starvation Cap Reductn	0	0	438	0	0	0
Spillback Cap Reductn	0	25	0	0	44	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.62	0.78	1.43	0.22	0.21	0.25

Intersection Summary

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

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

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

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	342	2252	1796	160	77	144
Future Volume (vph)	342	2252	1796	160	77	144
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0	6.0
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	1.00	0.98	1.00	0.99
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1752	3574	3574	1495	1805	1570
Flt Permitted	0.06	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	116	3574	3574	1495	1805	1570
Peak-hour factor, PHF	0.97	0.97	0.95	0.95	1.00	1.00
Adj. Flow (vph)	353	2322	1891	168	77	144
RTOR Reduction (vph)	0	0	0	41	0	3
Lane Group Flow (vph)	353	2322	1891	127	77	141
Confl. Peds. (#/hr)				3		18
Confl. Bikes (#/hr)				11		3
Heavy Vehicles (%)	3%	1%	1%	6%	0%	2%
Turn Type	pm+pt	NA	NA	Perm	Prot	pm+ov
Protected Phases	5	2 5	6		3	5
Permitted Phases	2 5			6		3
Actuated Green, G (s)	98.8	98.8	57.8	57.8	9.2	44.2
Effective Green, g (s)	98.8	98.8	57.8	57.8	9.2	44.2
Actuated g/C Ratio	0.82	0.82	0.48	0.48	0.08	0.37
Clearance Time (s)	6.0		6.0	6.0	6.0	6.0
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	572	2942	1721	720	138	656
v/s Ratio Prot	0.18	c0.65	c0.53		c0.04	0.06
v/s Ratio Perm	0.33			0.08		0.03
v/c Ratio	0.62	0.79	1.10	0.18	0.56	0.21
Uniform Delay, d1	30.4	5.3	31.1	17.6	53.4	26.0
Progression Factor	1.00	1.00	1.29	1.57	1.00	1.00
Incremental Delay, d2	2.0	1.5	49.6	0.3	4.8	0.2
Delay (s)	32.4	6.8	89.7	27.9	58.3	26.2
Level of Service	C	A	F	C	E	C
Approach Delay (s)		10.2	84.6		37.3	
Approach LOS		B	F		D	

Intersection Summary			
HCM 2000 Control Delay	42.3	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.97		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	95.0%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	2380	1562	114	584
v/c Ratio	0.87	0.75	0.61	1.11
Control Delay	9.8	21.2	63.7	110.5
Queue Delay	0.0	48.7	0.0	4.0
Total Delay	9.8	69.9	63.7	114.5
Queue Length 50th (ft)	317	436	85	~516
Queue Length 95th (ft)	441	595	141	#682
Internal Link Dist (ft)	469	757	278	
Turn Bay Length (ft)				
Base Capacity (vph)	2744	2086	481	525
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	881	0	183
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.87	1.30	0.24	1.71

Intersection Summary

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

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

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	3	2329	1382	39	114	584
Future Volume (vph)	3	2329	1382	39	114	584
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	5.0		4.5	2.0
Lane Util. Factor		0.95	0.95		1.00	1.00
Frpb, ped/bikes		1.00	1.00		1.00	0.99
Flpb, ped/bikes		1.00	1.00		1.00	1.00
Frt		1.00	1.00		1.00	0.85
Flt Protected		1.00	1.00		0.95	1.00
Satd. Flow (prot)		3574	3490		1626	1589
Flt Permitted		0.95	1.00		0.95	1.00
Satd. Flow (perm)		3408	3490		1626	1589
Peak-hour factor, PHF	0.98	0.98	0.91	0.91	1.00	1.00
Adj. Flow (vph)	3	2377	1519	43	114	584
RTOR Reduction (vph)	0	0	1	0	0	5
Lane Group Flow (vph)	0	2380	1561	0	114	579
Confl. Peds. (#/hr)	4			4	2	
Confl. Bikes (#/hr)				4		7
Heavy Vehicles (%)	0%	1%	3%	0%	11%	1%
Turn Type	Perm	NA	NA		Prot	custom
Protected Phases		2	6		7	5
Permitted Phases	2					7
Actuated Green, G (s)		96.7	71.7		13.8	36.8
Effective Green, g (s)		96.7	71.7		13.8	36.8
Actuated g/C Ratio		0.81	0.60		0.12	0.31
Clearance Time (s)		5.0	5.0		4.5	2.0
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)		2746	2085		186	513
v/s Ratio Prot			0.45		0.07	c0.22
v/s Ratio Perm		c0.70				0.15
v/c Ratio		0.87	0.75		0.61	1.13
Uniform Delay, d1		7.5	17.6		50.6	41.6
Progression Factor		0.78	1.00		1.00	1.00
Incremental Delay, d2		2.6	2.5		5.9	80.2
Delay (s)		8.4	20.1		56.4	121.8
Level of Service		A	C		E	F
Approach Delay (s)		8.4	20.1		111.2	
Approach LOS		A	C		F	

Intersection Summary			
HCM 2000 Control Delay	27.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	1.00		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	11.5
Intersection Capacity Utilization	83.1%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBT
Lane Group Flow (vph)	5	25	80	204	200	19	2439	182	1114
v/c Ratio	0.04	0.09	0.36	0.82	0.70	0.05	0.92	0.15	0.49
Control Delay	45.3	27.4	52.9	76.1	50.3	2.9	19.1	0.5	15.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	20.1	0.0	0.0
Total Delay	45.3	27.4	52.9	76.1	50.3	2.9	39.2	0.5	15.8
Queue Length 50th (ft)	4	8	62	172	124	2	1183	4	176
Queue Length 95th (ft)	10	17	111	265	212	m3	#1282	m5	424
Internal Link Dist (ft)		436		273			283		2703
Turn Bay Length (ft)			250			100			
Base Capacity (vph)	138	329	269	296	330	415	2656	1188	2475
Starvation Cap Reductn	0	0	0	0	0	0	308	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.04	0.08	0.30	0.69	0.61	0.05	1.04	0.15	0.45

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	3	6	8	80	12	392	17	2195	164	0	1097	17
Future Volume (vph)	3	6	8	80	12	392	17	2195	164	0	1097	17
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		6.0	6.0	6.0	5.0	5.0	5.0		5.0	
Lane Util. Factor	1.00	1.00		1.00	0.95	0.95	1.00	0.95	1.00		0.95	
Frpb, ped/bikes	1.00	0.99		1.00	0.95	0.95	1.00	1.00	0.95		1.00	
Flpb, ped/bikes	0.99	1.00		0.99	1.00	1.00	1.00	1.00	1.00		1.00	
Frt	1.00	0.92		1.00	0.86	0.85	1.00	1.00	0.85		1.00	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00		1.00	
Satd. Flow (prot)	1780	1590		1724	1435	1413	1703	3539	1534		3459	
Flt Permitted	0.37	1.00		0.74	1.00	1.00	0.20	1.00	1.00		1.00	
Satd. Flow (perm)	692	1590		1345	1435	1413	366	3539	1534		3459	
Peak-hour factor, PHF	0.57	0.57	0.57	1.00	1.00	1.00	0.90	0.90	0.90	1.00	1.00	1.00
Adj. Flow (vph)	5	11	14	80	12	392	19	2439	182	0	1097	17
RTOR Reduction (vph)	0	12	0	0	7	47	0	0	37	0	1	0
Lane Group Flow (vph)	5	13	0	80	197	153	19	2439	145	0	1113	0
Confl. Peds. (#/hr)	18		6	6		18			24	24		14
Confl. Bikes (#/hr)			6			6			18			1
Heavy Vehicles (%)	0%	0%	14%	4%	0%	3%	6%	2%	0%	0%	4%	6%
Turn Type	Perm	NA		Perm	NA	Perm	pm+pt	NA	Perm		NA	
Protected Phases		4			8		5	2			6	
Permitted Phases	4			8		8	2		2			
Actuated Green, G (s)	22.6	22.6		22.6	22.6	22.6	101.4	101.4	101.4		86.4	
Effective Green, g (s)	22.6	22.6		22.6	22.6	22.6	101.4	101.4	101.4		86.4	
Actuated g/C Ratio	0.17	0.17		0.17	0.17	0.17	0.75	0.75	0.75		0.64	
Clearance Time (s)	6.0	6.0		6.0	6.0	6.0	5.0	5.0	5.0		5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0		3.0	
Lane Grp Cap (vph)	115	266		225	240	236	373	2658	1152		2213	
v/s Ratio Prot		0.01			c0.14		0.00	c0.69			0.32	
v/s Ratio Perm	0.01			0.06		0.11	0.03		0.09			
v/c Ratio	0.04	0.05		0.36	0.82	0.65	0.05	0.92	0.13		0.50	
Uniform Delay, d1	47.1	47.2		49.8	54.2	52.5	10.5	13.5	4.6		12.9	
Progression Factor	1.00	1.00		1.00	1.00	1.00	0.49	0.91	0.18		1.00	
Incremental Delay, d2	0.2	0.1		1.0	19.1	6.0	0.0	5.1	0.2		0.8	
Delay (s)	47.3	47.3		50.7	73.3	58.4	5.2	17.4	1.0		13.7	
Level of Service	D	D		D	E	E	A	B	A		B	
Approach Delay (s)		47.3			63.4			16.2			13.7	
Approach LOS		D			E			B			B	

Intersection Summary			
HCM 2000 Control Delay	21.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.94		
Actuated Cycle Length (s)	135.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	97.0%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	130	16	12	61	36	127
Future Volume (Veh/h)	130	16	12	61	36	127
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	0.93	0.93	0.84	0.84
Hourly flow rate (vph)	130	16	13	66	43	151
Pedestrians	5			8	2	
Lane Width (ft)	12.0			12.0	12.0	
Walking Speed (ft/s)	3.5			3.5	3.5	
Percent Blockage	0			1	0	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)				398		
pX, platoon unblocked						
vC, conflicting volume			148		237	148
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			148		237	148
tC, single (s)			4.2		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.3		3.5	3.3
p0 queue free %			99		94	83
cM capacity (veh/h)			1389		744	885

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	146	79	194
Volume Left	0	13	43
Volume Right	16	0	151
cSH	1700	1389	849
Volume to Capacity	0.09	0.01	0.23
Queue Length 95th (ft)	0	1	22
Control Delay (s)	0.0	1.3	10.5
Lane LOS		A	B
Approach Delay (s)	0.0	1.3	10.5
Approach LOS			B

Intersection Summary			
Average Delay	5.1		
Intersection Capacity Utilization	31.3%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBR	NBL	NBT	SBU	SBT
Lane Group Flow (vph)	254	38	71	2317	15	1006
v/c Ratio	0.81	0.13	0.11	0.68	0.12	0.54
Control Delay	74.6	16.6	2.4	4.6	5.0	50.1
Queue Delay	0.0	0.0	0.0	0.1	0.0	0.0
Total Delay	74.6	16.6	2.4	4.8	5.0	50.1
Queue Length 50th (ft)	215	0	8	101	4	295
Queue Length 95th (ft)	#421	34	m8	117	m1	307
Internal Link Dist (ft)	86			221		189
Turn Bay Length (ft)	75		60		75	
Base Capacity (vph)	312	282	646	3500	124	3183
Starvation Cap Reductn	0	0	0	230	0	0
Spillback Cap Reductn	0	0	0	292	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.81	0.13	0.11	0.72	0.12	0.32

Intersection Summary

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

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

Movement	EBL	EBR	NBU	NBL	NBT	SBU	SBT	SBR
Lane Configurations								
Traffic Volume (vph)	251	38	2	61	2039	15	947	59
Future Volume (vph)	251	38	2	61	2039	15	947	59
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0	5.0	5.0	
Lane Util. Factor	1.00	1.00		1.00	0.91	1.00	0.91	
Frpb, ped/bikes	1.00	0.97		1.00	1.00	1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	
Frt	1.00	0.85		1.00	1.00	1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00	0.95	1.00	
Satd. Flow (prot)	1781	1440		1705	5136	1805	4932	
Flt Permitted	0.95	1.00		0.18	1.00	0.04	1.00	
Satd. Flow (perm)	1781	1440		325	5136	83	4932	
Peak-hour factor, PHF	0.99	0.99	0.88	0.88	0.88	1.00	1.00	1.00
Adj. Flow (vph)	254	38	2	69	2317	15	947	59
RTOR Reduction (vph)	0	31	0	0	0	0	9	0
Lane Group Flow (vph)	254	7	0	71	2317	15	997	0
Confl. Peds. (#/hr)	2	6						9
Confl. Bikes (#/hr)		5						3
Heavy Vehicles (%)	1%	9%	2%	6%	1%	0%	4%	2%
Turn Type	Perm	Perm	custom	custom	NA	custom	NA	
Protected Phases			5	5	2	1	6	
Permitted Phases	4	4	1 2	1 2		5 6		
Actuated Green, G (s)	23.7	23.7		93.5	86.5	93.5	47.3	
Effective Green, g (s)	23.7	23.7		93.5	86.5	93.5	47.3	
Actuated g/C Ratio	0.18	0.18		0.69	0.64	0.69	0.35	
Clearance Time (s)	5.0	5.0		5.0	5.0	5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	312	252		646	3290	82	1728	
v/s Ratio Prot				0.03	c0.45	0.00	c0.20	
v/s Ratio Perm	c0.14	0.00		0.04		0.12		
v/c Ratio	0.81	0.03		0.11	0.70	0.18	0.58	
Uniform Delay, d1	53.5	46.1		15.1	15.9	14.1	35.7	
Progression Factor	1.00	1.00		0.28	0.27	0.63	1.37	
Incremental Delay, d2	14.9	0.0		0.1	1.0	1.0	1.3	
Delay (s)	68.5	46.1		4.3	5.3	9.9	50.4	
Level of Service	E	D		A	A	A	D	
Approach Delay (s)	65.5				5.3		49.8	
Approach LOS	E				A		D	

Intersection Summary			
HCM 2000 Control Delay	22.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	135.0	Sum of lost time (s)	19.0
Intersection Capacity Utilization	70.0%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	16	0	0	21	0	2094	11	4	953	27
Future Volume (Veh/h)	0	0	16	0	0	21	0	2094	11	4	953	27
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	1.00	1.00	1.00	0.79	0.79	0.79	1.00	0.90	0.90	1.00	1.00	1.00
Hourly flow rate (vph)	0	0	16	0	0	27	0	2327	12	4	953	27
Pedestrians		7			19			10			1	
Lane Width (ft)		12.0			12.0			12.0			12.0	
Walking Speed (ft/s)		3.5			3.5			3.5			3.5	
Percent Blockage		1			2			1			0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)								478			301	
pX, platoon unblocked	0.84	0.84	0.84	0.84	0.84	0.76	0.84			0.76		
vC, conflicting volume	1785	3340	348	2704	3347	802	987			2358		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	0	1838	0	1081	1847	0	320			1683		
tC, single (s)	7.5	6.5	7.3	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.5	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	98	100	100	97	100			99		
cM capacity (veh/h)	805	62	855	136	61	814	1044			288		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3	SB 4
Volume Total	16	27	931	931	477	4	381	381	218
Volume Left	0	0	0	0	0	4	0	0	0
Volume Right	16	27	0	0	12	0	0	0	27
cSH	855	814	1700	1700	1700	288	1700	1700	1700
Volume to Capacity	0.02	0.03	0.55	0.55	0.28	0.01	0.22	0.22	0.13
Queue Length 95th (ft)	1	3	0	0	0	1	0	0	0
Control Delay (s)	9.3	9.6	0.0	0.0	0.0	17.7	0.0	0.0	0.0
Lane LOS	A	A				C			
Approach Delay (s)	9.3	9.6	0.0			0.1			
Approach LOS	A	A							

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	51.0%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBU	EBL	EBT	WBU	WBT	WBR	SBL	SBR
Lane Configurations								
Traffic Volume (veh/h)	108	61	792	22	1083	27	6	66
Future Volume (Veh/h)	108	61	792	22	1083	27	6	66
Sign Control			Free		Free		Stop	
Grade			0%		0%		0%	
Peak Hour Factor	0.90	0.90	0.90	0.25	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	68	880	0	1083	27	6	66
Pedestrians							5	
Lane Width (ft)							12.0	
Walking Speed (ft/s)							3.5	
Percent Blockage							0	
Right turn flare (veh)								
Median type			Raised		Raised			
Median storage veh)			1		1			
Upstream signal (ft)								
pX, platoon unblocked	0.00			0.00				
vC, conflicting volume	0	1115		0			1678	560
vC1, stage 1 conf vol							1102	
vC2, stage 2 conf vol							576	
vCu, unblocked vol	0	1115		0			1678	560
tC, single (s)	0.0	4.1		0.0			6.8	7.0
tC, 2 stage (s)							5.8	
tF (s)	0.0	2.2		0.0			3.5	3.3
p0 queue free %	0	89		0			97	86
cM capacity (veh/h)	0	625		0			194	467

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	SB 1
Volume Total	68	440	440	722	388	0	72
Volume Left	68	0	0	0	0	0	6
Volume Right	0	0	0	0	27	0	66
cSH	625	1700	1700	1700	1700	1700	418
Volume to Capacity	0.11	0.26	0.26	0.42	0.23	0.00	0.17
Queue Length 95th (ft)	9	0	0	0	0	0	15
Control Delay (s)	11.5	0.0	0.0	0.0	0.0	0.0	15.4
Lane LOS	B						C
Approach Delay (s)	0.8			0.0			15.4
Approach LOS							C

Intersection Summary			
Average Delay	0.9		
Intersection Capacity Utilization	54.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBU	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations							
Traffic Volume (veh/h)	11	88	1021	879	42	4	35
Future Volume (Veh/h)	11	88	1021	879	42	4	35
Sign Control			Free	Free		Stop	
Grade			0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	96	1110	879	42	4	35
Pedestrians						23	
Lane Width (ft)						12.0	
Walking Speed (ft/s)						3.5	
Percent Blockage						2	
Right turn flare (veh)							
Median type			None	None			
Median storage veh)							
Upstream signal (ft)				516			
pX, platoon unblocked	0.00	0.85				0.85	0.85
vC, conflicting volume	0	944				1670	484
vC1, stage 1 conf vol							
vC2, stage 2 conf vol							
vCu, unblocked vol	0	582				1436	41
tC, single (s)	0.0	4.2				6.8	7.0
tC, 2 stage (s)							
tF (s)	0.0	2.2				3.5	3.3
p0 queue free %	0	88				96	96
cM capacity (veh/h)	0	816				93	847

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1
Volume Total	96	555	555	586	335	39
Volume Left	96	0	0	0	0	4
Volume Right	0	0	0	0	42	35
cSH	816	1700	1700	1700	1700	462
Volume to Capacity	0.12	0.33	0.33	0.34	0.20	0.08
Queue Length 95th (ft)	10	0	0	0	0	7
Control Delay (s)	10.0	0.0	0.0	0.0	0.0	13.5
Lane LOS	A					B
Approach Delay (s)	0.8			0.0		13.5
Approach LOS						B

Intersection Summary			
Average Delay	0.7		
Intersection Capacity Utilization	67.3%	ICU Level of Service	C
Analysis Period (min)	15		

11: South Lamar Boulevard & Barton Springs Road

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	372	503	109	124	567	341	219	1453	382	239	572	164
v/c Ratio	0.80	0.56	0.23	0.50	0.81	0.77	0.67	0.72	0.49	0.91	0.40	0.23
Control Delay	70.8	46.9	2.8	66.3	61.2	38.6	39.6	37.3	10.9	82.2	21.4	11.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	70.8	46.9	2.8	66.3	61.2	38.6	39.6	37.3	10.9	82.2	21.4	11.6
Queue Length 50th (ft)	164	199	0	54	247	151	134	403	61	209	276	100
Queue Length 95th (ft)	220	265	m16	87	315	270	202	463	155	#377	330	146
Internal Link Dist (ft)		436			534			359			398	
Turn Bay Length (ft)	175		125	275		325	200		200	240		
Base Capacity (vph)	492	923	496	312	745	460	333	2028	779	269	1425	728
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.76	0.54	0.22	0.40	0.76	0.74	0.66	0.72	0.49	0.89	0.40	0.23

Intersection Summary

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

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT
Lane Configurations												
Traffic Volume (vph)	368	498	108	124	567	341	199	1322	348	3	236	572
Future Volume (vph)	368	498	108	124	567	341	199	1322	348	3	236	572
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	6.0	6.0	5.0	5.0	5.0	5.0	6.0	6.0		5.0	6.0
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	1.00	0.91	1.00		1.00	0.95
Frpb, ped/bikes	1.00	1.00	0.95	1.00	1.00	0.98	1.00	1.00	0.96		1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85		1.00	1.00
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	3502	3574	1479	3242	3471	1553	1768	5085	1537		1719	3438
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.28	1.00	1.00		0.13	1.00
Satd. Flow (perm)	3502	3574	1479	3242	3471	1553	518	5085	1537		234	3438
Peak-hour factor, PHF	0.99	0.99	0.99	1.00	1.00	1.00	0.91	0.91	0.91	1.00	1.00	1.00
Adj. Flow (vph)	372	503	109	124	567	341	219	1453	382	3	236	572
RTOR Reduction (vph)	0	0	82	0	0	129	0	0	166	0	0	0
Lane Group Flow (vph)	372	503	27	124	567	212	219	1453	216	0	239	572
Confl. Peds. (#/hr)			22			2	9		17		17	
Confl. Bikes (#/hr)			11			4			7			
Heavy Vehicles (%)	0%	1%	4%	8%	4%	2%	2%	2%	1%	5%	5%	5%
Turn Type	Prot	NA	Perm	Prot	NA	Perm	pm+pt	NA	Perm	pm+pt	pm+pt	NA
Protected Phases	7	4		3	8		5	2		1	1	6
Permitted Phases			4			8	2		2	6	6	
Actuated Green, G (s)	17.9	33.7	33.7	10.4	27.2	27.2	53.9	53.9	53.9		57.0	56.0
Effective Green, g (s)	17.9	33.7	33.7	10.4	27.2	27.2	53.9	53.9	53.9		57.0	56.0
Actuated g/C Ratio	0.13	0.25	0.25	0.08	0.20	0.20	0.40	0.40	0.40		0.42	0.41
Clearance Time (s)	5.0	6.0	6.0	5.0	5.0	5.0	5.0	6.0	6.0		5.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	464	892	369	249	699	312	326	2030	613		263	1426
v/s Ratio Prot	c0.11	0.14		0.04	c0.16		0.06	c0.29			c0.10	0.17
v/s Ratio Perm			0.02			0.14	0.20		0.14		c0.28	
v/c Ratio	0.80	0.56	0.07	0.50	0.81	0.68	0.67	0.72	0.35		0.91	0.40
Uniform Delay, d1	56.8	44.2	38.7	59.8	51.4	49.9	28.9	34.1	28.3		43.0	27.7
Progression Factor	1.00	1.00	1.01	1.00	1.00	1.00	1.00	1.00	1.00		0.92	0.72
Incremental Delay, d2	9.6	0.8	0.1	1.6	7.1	5.8	5.4	2.2	1.6		31.4	0.8
Delay (s)	66.6	45.2	39.1	61.4	58.6	55.6	34.3	36.3	29.9		70.9	20.7
Level of Service	E	D	D	E	E	E	C	D	C		E	C
Approach Delay (s)		52.6			57.9			34.9				41.1
Approach LOS		D			E			C				D

Intersection Summary			
HCM 2000 Control Delay	44.3	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.86		
Actuated Cycle Length (s)	135.0	Sum of lost time (s)	22.0
Intersection Capacity Utilization	88.1%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SBR
Lane Configurations	
Traffic Volume (vph)	164
Future Volume (vph)	164
Ideal Flow (vphpl)	1900
Total Lost time (s)	6.0
Lane Util. Factor	1.00
Frpb, ped/bikes	0.97
Flpb, ped/bikes	1.00
Frt	0.85
Flt Protected	1.00
Satd. Flow (prot)	1527
Flt Permitted	1.00
Satd. Flow (perm)	1527
Peak-hour factor, PHF	1.00
Adj. Flow (vph)	164
RTOR Reduction (vph)	96
Lane Group Flow (vph)	68
Confl. Peds. (#/hr)	9
Confl. Bikes (#/hr)	4
Heavy Vehicles (%)	3%
Turn Type	Perm
Protected Phases	
Permitted Phases	6
Actuated Green, G (s)	56.0
Effective Green, g (s)	56.0
Actuated g/C Ratio	0.41
Clearance Time (s)	6.0
Vehicle Extension (s)	3.0
Lane Grp Cap (vph)	633
v/s Ratio Prot	
v/s Ratio Perm	0.04
v/c Ratio	0.11
Uniform Delay, d1	24.2
Progression Factor	2.85
Incremental Delay, d2	0.3
Delay (s)	69.2
Level of Service	E
Approach Delay (s)	
Approach LOS	

Intersection Summary

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	21	0	2281	1000	158
Future Volume (Veh/h)	0	21	0	2281	1000	158
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	23	0	2479	1087	172
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)				269	363	
pX, platoon unblocked	0.77	0.86	0.86			
vC, conflicting volume	1999	448	1259			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	41	0	740			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	98	100			
cM capacity (veh/h)	748	940	755			

Direction, Lane #	EB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	23	496	992	992	435	435	389
Volume Left	0	0	0	0	0	0	0
Volume Right	23	0	0	0	0	0	172
cSH	940	755	1700	1700	1700	1700	1700
Volume to Capacity	0.02	0.00	0.58	0.58	0.26	0.26	0.23
Queue Length 95th (ft)	2	0	0	0	0	0	0
Control Delay (s)	8.9	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS	A						
Approach Delay (s)	8.9	0.0			0.0		
Approach LOS	A						

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	54.1%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	17	235	77	44	54	0
Future Volume (Veh/h)	17	235	77	44	54	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.75	0.92	0.92	0.25	1.00	1.00
Hourly flow rate (vph)	23	255	84	176	54	0
Pedestrians					7	
Lane Width (ft)					12.0	
Walking Speed (ft/s)					3.5	
Percent Blockage					1	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)			287			
pX, platoon unblocked						
vC, conflicting volume	267				480	179
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	267				480	179
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	98				90	100
cM capacity (veh/h)	1300				535	863

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	278	260	54
Volume Left	23	0	54
Volume Right	0	176	0
cSH	1300	1700	535
Volume to Capacity	0.02	0.15	0.10
Queue Length 95th (ft)	1	0	8
Control Delay (s)	0.8	0.0	12.5
Lane LOS	A		B
Approach Delay (s)	0.8	0.0	12.5
Approach LOS			B

Intersection Summary			
Average Delay	1.5		
Intersection Capacity Utilization	35.0%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	WBL	WBT	WBR	NBL	NBT	SBT
Lane Group Flow (vph)	468	981	222	274	1396	994
v/c Ratio	0.60	0.75	0.52	0.59	0.58	0.80
Control Delay	52.9	55.9	33.4	38.2	8.5	48.7
Queue Delay	0.0	0.0	0.0	0.0	1.4	0.0
Total Delay	52.9	55.9	33.4	38.2	9.9	48.7
Queue Length 50th (ft)	201	313	108	198	235	457
Queue Length 95th (ft)	278	393	209	m232	276	488
Internal Link Dist (ft)		443			433	403
Turn Bay Length (ft)	250		250	200		
Base Capacity (vph)	783	1303	430	464	2477	1726
Starvation Cap Reductn	0	0	0	0	820	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.60	0.75	0.52	0.59	0.84	0.58

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	468	981	222	274	1396	0	0	956	38
Future Volume (vph)	0	0	0	468	981	222	274	1396	0	0	956	38
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				5.0	5.0	5.0	5.0	5.0			5.0	
Lane Util. Factor				0.97	0.91	1.00	1.00	0.95			0.95	
Frpb, ped/bikes				1.00	1.00	0.89	1.00	1.00			1.00	
Flpb, ped/bikes				0.89	1.00	1.00	1.00	1.00			1.00	
Frt				1.00	1.00	0.85	1.00	1.00			0.99	
Flt Protected				0.95	1.00	1.00	0.95	1.00			1.00	
Satd. Flow (prot)				3095	5085	1442	1787	3539			3544	
Flt Permitted				0.95	1.00	1.00	0.95	1.00			1.00	
Satd. Flow (perm)				3095	5085	1442	1787	3539			3544	
Peak-hour factor, PHF	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. Flow (vph)	0	0	0	468	981	222	274	1396	0	0	956	38
RTOR Reduction (vph)	0	0	0	0	0	65	0	0	0	0	3	0
Lane Group Flow (vph)	0	0	0	468	981	157	274	1396	0	0	991	0
Confl. Peds. (#/hr)				55		73						20
Confl. Bikes (#/hr)						15			7			4
Heavy Vehicles (%)	0%	0%	0%	1%	2%	0%	1%	2%	0%	0%	1%	3%
Turn Type				Perm	NA	Perm	Prot	NA			NA	
Protected Phases					4		3 5	2			6	
Permitted Phases				4		4						
Actuated Green, G (s)				38.4	38.4	38.4	39.0	101.6			52.6	
Effective Green, g (s)				38.4	38.4	38.4	39.0	101.6			52.6	
Actuated g/C Ratio				0.26	0.26	0.26	0.26	0.68			0.35	
Clearance Time (s)				5.0	5.0	5.0		5.0			5.0	
Vehicle Extension (s)				3.0	3.0	3.0		3.0			3.0	
Lane Grp Cap (vph)				792	1301	369	464	2397			1242	
v/s Ratio Prot					c0.19		0.15	c0.39			c0.28	
v/s Ratio Perm				0.15		0.11						
v/c Ratio				0.59	0.75	0.43	0.59	0.58			0.80	
Uniform Delay, d1				48.9	51.4	46.6	48.5	12.9			43.9	
Progression Factor				1.00	1.00	1.00	1.35	0.61			1.00	
Incremental Delay, d2				1.2	2.5	0.8	1.0	0.5			5.4	
Delay (s)				50.1	54.0	47.4	66.6	8.4			49.3	
Level of Service				D	D	D	E	A			D	
Approach Delay (s)		0.0			52.0			18.0			49.3	
Approach LOS		A			D			B			D	

Intersection Summary			
HCM 2000 Control Delay	38.3	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	81.8%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

2: Lamar Boulevard/North Lamar Boulevard & West 5th Street

Lane Group	EBL	EBT	EBR	NBT	SBL	SBT
Lane Group Flow (vph)	341	1265	297	1578	97	1538
v/c Ratio	0.64	0.70	0.80	0.92	0.61	0.70
Control Delay	51.9	48.1	64.9	52.1	68.8	12.5
Queue Delay	0.0	0.0	0.0	0.4	0.0	0.1
Total Delay	51.9	48.1	64.9	52.5	68.8	12.6
Queue Length 50th (ft)	290	339	333	518	99	295
Queue Length 95th (ft)	427	407	#577	704	156	317
Internal Link Dist (ft)		385		2703		433
Turn Bay Length (ft)					200	
Base Capacity (vph)	530	1813	371	1740	297	2501
Starvation Cap Reductn	0	0	0	0	0	208
Spillback Cap Reductn	0	0	0	23	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.64	0.70	0.80	0.92	0.33	0.67

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	327	929	570	0	0	0	0	1261	253	88	1400	0
Future Volume (vph)	327	929	570	0	0	0	0	1261	253	88	1400	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0					5.0		5.0	5.0	
Lane Util. Factor	1.00	0.81	0.81					0.95		1.00	0.95	
Frpb, ped/bikes	1.00	0.98	0.90					0.99		1.00	1.00	
Flpb, ped/bikes	0.93	1.00	1.00					1.00		1.00	1.00	
Frt	1.00	0.96	0.85					0.97		1.00	1.00	
Flt Protected	0.95	1.00	1.00					1.00		0.95	1.00	
Satd. Flow (prot)	1668	5704	1171					3458		1787	3574	
Flt Permitted	0.95	1.00	1.00					1.00		0.95	1.00	
Satd. Flow (perm)	1668	5704	1171					3458		1787	3574	
Peak-hour factor, PHF	0.96	0.96	0.96	0.92	0.92	0.92	0.96	0.96	0.96	0.91	0.91	0.91
Adj. Flow (vph)	341	968	594	0	0	0	0	1314	264	97	1538	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	11	0	0	0	0
Lane Group Flow (vph)	341	1265	297	0	0	0	0	1567	0	97	1538	0
Confl. Peds. (#/hr)	37		46	46		37	7		49			7
Confl. Bikes (#/hr)			5						11			7
Heavy Vehicles (%)	1%	2%	1%	0%	0%	0%	0%	1%	1%	1%	1%	0%
Turn Type	Perm	NA	Perm					NA		Prot	NA	
Protected Phases		4						2		1	6	
Permitted Phases	4		4									
Actuated Green, G (s)	47.7	47.7	47.7					73.8		13.5	92.3	
Effective Green, g (s)	47.7	47.7	47.7					73.8		13.5	92.3	
Actuated g/C Ratio	0.32	0.32	0.32					0.49		0.09	0.62	
Clearance Time (s)	5.0	5.0	5.0					5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0	3.0					3.0		3.0	3.0	
Lane Grp Cap (vph)	530	1813	372					1701		160	2199	
v/s Ratio Prot		0.22						c0.45		0.05	c0.43	
v/s Ratio Perm	0.20		c0.25									
v/c Ratio	0.64	0.70	0.80					0.92		0.61	0.70	
Uniform Delay, d1	43.9	44.8	46.8					35.4		65.7	19.5	
Progression Factor	1.00	1.00	1.00					1.27		0.84	0.56	
Incremental Delay, d2	2.7	1.2	11.3					7.8		5.6	1.6	
Delay (s)	46.5	46.0	58.1					52.8		60.9	12.6	
Level of Service	D	D	E					D		E	B	
Approach Delay (s)		48.0			0.0			52.8			15.5	
Approach LOS		D			A			D			B	

Intersection Summary			
HCM 2000 Control Delay	39.1	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	81.8%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group Flow (vph)	289	1703	1959	292	78	130
v/c Ratio	0.45	0.57	1.23	0.40	0.49	0.20
Control Delay	19.4	4.9	139.8	18.7	61.9	18.0
Queue Delay	0.0	0.0	0.2	0.0	0.0	0.0
Total Delay	19.4	4.9	140.0	18.7	61.9	18.0
Queue Length 50th (ft)	106	199	~1124	108	59	48
Queue Length 95th (ft)	193	300	#1262	192	106	83
Internal Link Dist (ft)		805	467		380	
Turn Bay Length (ft)	275			175		200
Base Capacity (vph)	649	2980	1595	738	610	638
Starvation Cap Reductn	0	0	78	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.45	0.57	1.29	0.40	0.13	0.20

Intersection Summary

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

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

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	280	1652	1861	277	78	130
Future Volume (vph)	280	1652	1861	277	78	130
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0	6.0
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	1.00	0.97	1.00	0.99
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1770	3539	3539	1513	1787	1560
Flt Permitted	0.07	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	127	3539	3539	1513	1787	1560
Peak-hour factor, PHF	0.97	0.97	0.95	0.95	1.00	1.00
Adj. Flow (vph)	289	1703	1959	292	78	130
RTOR Reduction (vph)	0	0	0	59	0	0
Lane Group Flow (vph)	289	1703	1959	233	78	130
Confl. Peds. (#/hr)				12		10
Confl. Bikes (#/hr)				12		1
Heavy Vehicles (%)	2%	2%	2%	4%	1%	3%
Turn Type	pm+pt	NA	NA	Perm	Prot	pm+ov
Protected Phases	5	2 5	6		3	5
Permitted Phases	2 5			6		3
Actuated Green, G (s)	98.7	98.7	52.9	52.9	9.3	49.1
Effective Green, g (s)	98.7	98.7	52.9	52.9	9.3	49.1
Actuated g/C Ratio	0.82	0.82	0.44	0.44	0.08	0.41
Clearance Time (s)	6.0		6.0	6.0	6.0	6.0
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	649	2910	1560	666	138	716
v/s Ratio Prot	0.15	c0.48	c0.55		c0.04	0.06
v/s Ratio Perm	0.22			0.15		0.02
v/c Ratio	0.45	0.59	1.26	0.35	0.57	0.18
Uniform Delay, d1	24.2	3.6	33.5	22.2	53.4	22.6
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.5	0.3	120.5	1.4	5.2	0.1
Delay (s)	24.7	3.9	154.1	23.6	58.6	22.7
Level of Service	C	A	F	C	E	C
Approach Delay (s)		7.0	137.1		36.2	
Approach LOS		A	F		D	

Intersection Summary			
HCM 2000 Control Delay	74.2	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.95		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	90.7%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	1711	1838	115	444
v/c Ratio	0.61	0.83	0.68	0.89
Control Delay	6.0	25.6	82.8	66.3
Queue Delay	2.0	0.0	0.0	0.0
Total Delay	8.0	25.6	82.8	66.3
Queue Length 50th (ft)	250	786	110	365
Queue Length 95th (ft)	385	745	170	#627
Internal Link Dist (ft)	467	757	278	
Turn Bay Length (ft)				
Base Capacity (vph)	2797	2234	321	500
Starvation Cap Reductn	884	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.89	0.82	0.36	0.89

Intersection Summary

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

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	1	1710	1747	54	102	395
Future Volume (vph)	1	1710	1747	54	102	395
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	5.0		4.5	2.0
Lane Util. Factor		0.95	0.95		1.00	1.00
Frpb, ped/bikes		1.00	1.00		1.00	1.00
Flpb, ped/bikes		1.00	1.00		1.00	1.00
Frt		1.00	1.00		1.00	0.85
Flt Protected		1.00	1.00		0.95	1.00
Satd. Flow (prot)		3539	3520		1583	1576
Flt Permitted		0.95	1.00		0.95	1.00
Satd. Flow (perm)		3378	3520		1583	1576
Peak-hour factor, PHF	1.00	1.00	0.98	0.98	0.89	0.89
Adj. Flow (vph)	1	1710	1783	55	115	444
RTOR Reduction (vph)	0	0	1	0	0	13
Lane Group Flow (vph)	0	1711	1837	0	115	431
Confl. Peds. (#/hr)	6			6	6	
Confl. Bikes (#/hr)				8		1
Heavy Vehicles (%)	0%	2%	2%	0%	14%	2%
Turn Type	Perm	NA	NA		Prot	custom
Protected Phases		2	6		7	5
Permitted Phases	2					7
Actuated Green, G (s)		124.3	94.5		16.2	44.0
Effective Green, g (s)		124.3	94.5		16.2	44.0
Actuated g/C Ratio		0.83	0.63		0.11	0.29
Clearance Time (s)		5.0	5.0		4.5	2.0
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)		2799	2217		170	483
v/s Ratio Prot			c0.52		0.07	c0.17
v/s Ratio Perm		0.51				0.11
v/c Ratio		0.61	0.83		0.68	0.89
Uniform Delay, d1		4.5	21.5		64.4	50.7
Progression Factor		1.00	1.00		1.00	1.00
Incremental Delay, d2		1.0	3.7		10.2	18.5
Delay (s)		5.5	25.2		74.6	69.2
Level of Service		A	C		E	E
Approach Delay (s)		5.5	25.2		70.3	
Approach LOS		A	C		E	

Intersection Summary			
HCM 2000 Control Delay	23.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.86		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	11.5
Intersection Capacity Utilization	82.0%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBT
Lane Group Flow (vph)	14	59	291	195	192	10	1572	116	2278
v/c Ratio	0.04	0.11	0.74	0.40	0.39	0.09	0.73	0.12	1.09
Control Delay	37.2	17.6	62.4	23.0	20.5	11.9	22.6	1.8	81.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	48.3	0.0	0.0
Total Delay	37.2	17.6	62.4	23.0	20.5	11.9	70.9	1.8	81.7
Queue Length 50th (ft)	10	15	252	65	54	2	857	8	~1280
Queue Length 95th (ft)	26	47	#469	161	147	m5	928	13	#1508
Internal Link Dist (ft)		436		273			283		2703
Turn Bay Length (ft)			250			100			
Base Capacity (vph)	317	556	391	492	489	112	2241	999	2089
Starvation Cap Reductn	0	0	0	0	0	0	843	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.04	0.11	0.74	0.40	0.39	0.09	1.12	0.12	1.09

Intersection Summary

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

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

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	12	18	32	285	18	362	10	1572	116	0	2219	14
Future Volume (vph)	12	18	32	285	18	362	10	1572	116	0	2219	14
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	6.0		6.0	6.0	6.0	5.0	5.0	5.0		5.0	
Lane Util. Factor	1.00	1.00		1.00	0.95	0.95	1.00	0.95	1.00		0.95	
Frpb, ped/bikes	1.00	0.98		1.00	0.95	0.95	1.00	1.00	0.95		1.00	
Flpb, ped/bikes	1.00	1.00		0.99	1.00	1.00	1.00	1.00	1.00		1.00	
Frt	1.00	0.90		1.00	0.86	0.85	1.00	1.00	0.85		1.00	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00		1.00	
Satd. Flow (prot)	1805	1689		1794	1471	1439	1805	3539	1518		3570	
Flt Permitted	0.46	1.00		0.72	1.00	1.00	0.05	1.00	1.00		1.00	
Satd. Flow (perm)	879	1689		1357	1471	1439	88	3539	1518		3570	
Peak-hour factor, PHF	0.85	0.85	0.85	0.98	0.98	0.98	1.00	1.00	1.00	0.98	0.98	0.98
Adj. Flow (vph)	14	21	38	291	18	369	10	1572	116	0	2264	14
RTOR Reduction (vph)	0	25	0	0	78	85	0	0	41	0	0	0
Lane Group Flow (vph)	14	34	0	291	117	107	10	1572	75	0	2278	0
Confl. Peds. (#/hr)			5	5		29			21	21		15
Confl. Bikes (#/hr)			10			15			19			
Heavy Vehicles (%)	0%	0%	0%	0%	0%	1%	0%	2%	1%	0%	1%	0%
Turn Type	pm+pt	NA		Perm	NA	Perm	pm+pt	NA	Perm		NA	
Protected Phases	7	4			8		5	2			6	
Permitted Phases	4			8		8	2		2			
Actuated Green, G (s)	50.2	50.2		43.2	43.2	43.2	88.8	88.8	88.8		81.8	
Effective Green, g (s)	50.2	50.2		43.2	43.2	43.2	88.8	88.8	88.8		81.8	
Actuated g/C Ratio	0.33	0.33		0.29	0.29	0.29	0.59	0.59	0.59		0.55	
Clearance Time (s)	5.0	6.0		6.0	6.0	6.0	5.0	5.0	5.0		5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0		3.0	
Lane Grp Cap (vph)	306	565		390	423	414	74	2095	898		1946	
v/s Ratio Prot	0.00	c0.02			0.08		0.00	c0.44			c0.64	
v/s Ratio Perm	0.01			c0.21		0.07	0.08		0.05			
v/c Ratio	0.05	0.06		0.75	0.28	0.26	0.14	0.75	0.08		1.17	
Uniform Delay, d1	34.0	33.9		48.4	41.3	41.1	68.6	22.5	13.1		34.1	
Progression Factor	1.00	1.00		1.00	1.00	1.00	0.80	1.02	0.63		1.13	
Incremental Delay, d2	0.1	0.0		7.6	0.4	0.3	0.7	2.2	0.2		81.4	
Delay (s)	34.1	33.9		56.0	41.7	41.4	55.3	25.1	8.4		120.0	
Level of Service	C	C		E	D	D	E	C	A		F	
Approach Delay (s)		33.9			47.8			24.1			120.0	
Approach LOS		C			D			C			F	

Intersection Summary			
HCM 2000 Control Delay	73.8	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.06		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	25.5
Intersection Capacity Utilization	93.4%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	104	9	34	117	24	74
Future Volume (Veh/h)	104	9	34	117	24	74
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	0.81	0.81	1.00	1.00
Hourly flow rate (vph)	104	9	42	144	24	74
Pedestrians	8			8	2	
Lane Width (ft)	12.0			12.0	12.0	
Walking Speed (ft/s)	3.5			3.5	3.5	
Percent Blockage	1			1	0	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)				398		
pX, platoon unblocked						
vC, conflicting volume			115		346	118
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			115		346	118
tC, single (s)			4.1		6.5	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.6	3.3
p0 queue free %			97		96	92
cM capacity (veh/h)			1465		612	930

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	113	186	98
Volume Left	0	42	24
Volume Right	9	0	74
cSH	1700	1465	825
Volume to Capacity	0.07	0.03	0.12
Queue Length 95th (ft)	0	2	10
Control Delay (s)	0.0	1.9	10.0
Lane LOS		A	A
Approach Delay (s)	0.0	1.9	10.0
Approach LOS			A

Intersection Summary			
Average Delay	3.3		
Intersection Capacity Utilization	29.5%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBR	NBL	NBT	SBT
Lane Group Flow (vph)	249	53	57	1484	2565
v/c Ratio	0.80	0.16	0.15	0.57	0.70
Control Delay	77.4	12.5	14.8	19.7	9.6
Queue Delay	0.0	0.0	0.0	0.0	0.6
Total Delay	77.4	12.5	14.8	19.7	10.2
Queue Length 50th (ft)	236	0	14	275	291
Queue Length 95th (ft)	317	38	m35	m218	m259
Internal Link Dist (ft)	86			221	189
Turn Bay Length (ft)	75		60		
Base Capacity (vph)	471	461	399	2988	3641
Starvation Cap Reductn	0	0	0	0	614
Spillback Cap Reductn	0	1	0	185	146
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.53	0.12	0.14	0.53	0.85

Intersection Summary

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

Movement	EBL	EBR	NBL	NBT	SBU	SBT	SBR
Lane Configurations							
Traffic Volume (vph)	249	53	55	1425	0	2342	120
Future Volume (vph)	249	53	55	1425	0	2342	120
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0		5.0	
Lane Util. Factor	1.00	1.00	1.00	0.91		0.91	
Frpb, ped/bikes	1.00	0.98	1.00	1.00		1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00		1.00	
Frt	1.00	0.85	1.00	1.00		0.99	
Flt Protected	0.95	1.00	0.95	1.00		1.00	
Satd. Flow (prot)	1767	1577	1805	5085		5032	
Flt Permitted	0.95	1.00	0.05	1.00		1.00	
Satd. Flow (perm)	1767	1577	100	5085		5032	
Peak-hour factor, PHF	1.00	1.00	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	249	53	57	1484	0	2440	125
RTOR Reduction (vph)	0	44	0	0	0	2	0
Lane Group Flow (vph)	249	9	57	1484	0	2563	0
Confl. Peds. (#/hr)	1	3					11
Confl. Bikes (#/hr)		5					40
Heavy Vehicles (%)	2%	0%	0%	2%	0%	2%	0%
Turn Type	Perm	Perm	custom	NA	custom	NA	
Protected Phases			5!	2!	1!	6!	
Permitted Phases	4	4	1 2		5 6		
Actuated Green, G (s)	26.5	26.5	103.5	76.3		108.5	
Effective Green, g (s)	26.5	26.5	103.5	76.3		108.5	
Actuated g/C Ratio	0.18	0.18	0.69	0.51		0.72	
Clearance Time (s)	5.0	5.0	5.0	5.0		5.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0		3.0	
Lane Grp Cap (vph)	312	278	378	2586		3639	
v/s Ratio Prot			0.03	0.29		c0.51	
v/s Ratio Perm	c0.14	0.01	0.08				
v/c Ratio	0.80	0.03	0.15	0.57		0.70	
Uniform Delay, d1	59.2	51.1	34.4	25.6		11.7	
Progression Factor	1.00	1.00	0.62	0.68		0.74	
Incremental Delay, d2	13.3	0.0	0.1	0.7		0.3	
Delay (s)	72.4	51.2	21.4	18.1		8.9	
Level of Service	E	D	C	B		A	
Approach Delay (s)	68.7			18.2		8.9	
Approach LOS	E			B		A	

Intersection Summary			
HCM 2000 Control Delay	16.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	19.0
Intersection Capacity Utilization	70.1%	ICU Level of Service	C
Analysis Period (min)	15		

! Phase conflict between lane groups.
c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	23	0	0	18	0	1468	11	1	2361	35
Future Volume (Veh/h)	0	0	23	0	0	18	0	1468	11	1	2361	35
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.94	0.94	0.94	0.97	0.97	0.97
Hourly flow rate (vph)	0	0	23	0	0	18	0	1562	12	1	2434	36
Pedestrians		10			18			5			2	
Lane Width (ft)		12.0			12.0			12.0			12.0	
Walking Speed (ft/s)		3.5			3.5			3.5			3.5	
Percent Blockage		1			2			0			0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)								478			301	
pX, platoon unblocked	0.80	0.80	0.71	0.80	0.80	0.81	0.71			0.81		
vC, conflicting volume	3005	4056	844	2427	4068	547	2480			1592		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1021	2330	0	303	2345	0	1644			899		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	97	100	100	98	100			100		
cM capacity (veh/h)	147	29	760	471	29	864	279			606		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3	SB 4
Volume Total	23	18	625	625	324	1	974	974	523
Volume Left	0	0	0	0	0	1	0	0	0
Volume Right	23	18	0	0	12	0	0	0	36
cSH	760	864	1700	1700	1700	606	1700	1700	1700
Volume to Capacity	0.03	0.02	0.37	0.37	0.19	0.00	0.57	0.57	0.31
Queue Length 95th (ft)	2	2	0	0	0	0	0	0	0
Control Delay (s)	9.9	9.3	0.0	0.0	0.0	10.9	0.0	0.0	0.0
Lane LOS	A	A				B			
Approach Delay (s)	9.9	9.3	0.0			0.0			
Approach LOS	A	A							

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	57.9%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBT	WBU	WBT	WBR	SBL	SBR
Lane Configurations							
Traffic Volume (veh/h)	108	977	35	1591	43	27	80
Future Volume (Veh/h)	108	977	35	1591	43	27	80
Sign Control		Free		Free		Stop	
Grade		0%		0%		0%	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.95	0.95
Hourly flow rate (vph)	113	1018	0	1657	45	28	84
Pedestrians				2		34	
Lane Width (ft)				8.0		12.0	
Walking Speed (ft/s)				3.5		3.5	
Percent Blockage				0		3	
Right turn flare (veh)							
Median type		Raised		Raised			
Median storage veh)		1		1			
Upstream signal (ft)							
pX, platoon unblocked			0.00				
vC, conflicting volume	1736		0			2450	885
vC1, stage 1 conf vol						1714	
vC2, stage 2 conf vol						737	
vCu, unblocked vol	1736		0			2450	885
tC, single (s)	4.1		0.0			6.8	6.9
tC, 2 stage (s)						5.8	
tF (s)	2.2		0.0			3.5	3.3
p0 queue free %	68		0			68	70
cM capacity (veh/h)	351		0			89	283

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	SB 1
Volume Total	113	509	509	1105	597	0	112
Volume Left	113	0	0	0	0	0	28
Volume Right	0	0	0	0	45	0	84
cSH	351	1700	1700	1700	1700	1700	183
Volume to Capacity	0.32	0.30	0.30	0.65	0.35	0.00	0.61
Queue Length 95th (ft)	34	0	0	0	0	0	85
Control Delay (s)	20.0	0.0	0.0	0.0	0.0	0.0	51.6
Lane LOS	C						F
Approach Delay (s)	2.0			0.0			51.6
Approach LOS							F

Intersection Summary			
Average Delay	2.7		
Intersection Capacity Utilization	67.8%	ICU Level of Service	C
Analysis Period (min)	15		

Movement	EBU	EBL	EBT	WBU	WBT	WBR	SBL	SBR
Lane Configurations								
Traffic Volume (veh/h)	12	61	949	2	1701	25	12	57
Future Volume (Veh/h)	12	61	949	2	1701	25	12	57
Sign Control			Free		Free		Stop	
Grade			0%		0%		0%	
Peak Hour Factor	1.00	1.00	1.00	0.96	0.96	0.96	0.86	0.86
Hourly flow rate (vph)	0	61	949	0	1772	26	14	66
Pedestrians							40	
Lane Width (ft)							12.0	
Walking Speed (ft/s)							3.5	
Percent Blockage							4	
Right turn flare (veh)								
Median type			None		None			
Median storage veh)								
Upstream signal (ft)					516			
pX, platoon unblocked	0.00	0.76		0.00			0.76	0.76
vC, conflicting volume	0	1838		0			2422	939
vC1, stage 1 conf vol								
vC2, stage 2 conf vol								
vCu, unblocked vol	0	1470		0			2238	287
tC, single (s)	0.0	4.1		0.0			7.0	6.9
tC, 2 stage (s)								
tF (s)	0.0	2.2		0.0			3.6	3.3
p0 queue free %	0	82		0			28	87
cM capacity (veh/h)	0	332		0			19	519

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1
Volume Total	61	474	474	1181	617	80
Volume Left	61	0	0	0	0	14
Volume Right	0	0	0	0	26	66
cSH	332	1700	1700	1700	1700	95
Volume to Capacity	0.18	0.28	0.28	0.69	0.36	0.85
Queue Length 95th (ft)	17	0	0	0	0	116
Control Delay (s)	18.3	0.0	0.0	0.0	0.0	133.4
Lane LOS	C					F
Approach Delay (s)	1.1			0.0		133.4
Approach LOS						F

Intersection Summary			
Average Delay	4.1		
Intersection Capacity Utilization	71.5%	ICU Level of Service	C
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	285	458	201	373	886	201	203	1107	226	207	1486	667
v/c Ratio	0.95	0.76	0.53	0.68	1.00	0.41	0.99	0.74	0.39	0.42	0.95	0.81
Control Delay	107.6	68.0	20.6	67.4	84.9	14.5	101.1	50.4	9.3	28.8	37.5	15.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.9	1.9
Total Delay	107.6	68.0	20.6	67.4	84.9	14.5	101.1	50.4	9.3	28.8	41.5	17.5
Queue Length 50th (ft)	145	226	44	181	459	33	158	360	23	89	654	170
Queue Length 95th (ft)	m#238	m281	m121	#268	#606	108	#277	367	78	138	#884	369
Internal Link Dist (ft)		436			534			359			398	
Turn Bay Length (ft)	175		125	275		325	200		200	240		
Base Capacity (vph)	300	707	422	545	890	488	206	1932	687	491	1557	824
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	48	61
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.95	0.65	0.48	0.68	1.00	0.41	0.99	0.57	0.33	0.42	0.98	0.87

Intersection Summary

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

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT
Lane Configurations												
Traffic Volume (vph)	285	458	201	373	886	201	179	974	199	1	206	1486
Future Volume (vph)	285	458	201	373	886	201	179	974	199	1	206	1486
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	6.0	6.0	5.0	5.0	5.0	5.0	6.0	6.0		5.0	6.0
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	1.00	0.91	1.00		1.00	0.95
Frpb, ped/bikes	1.00	1.00	0.94	1.00	1.00	0.94	1.00	1.00	0.93		1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85		1.00	1.00
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	3467	3539	1501	3467	3610	1496	1787	5085	1492		1784	3539
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.13	1.00	1.00		0.19	1.00
Satd. Flow (perm)	3467	3539	1501	3467	3610	1496	240	5085	1492		365	3539
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	0.88	0.88	0.88	1.00	1.00	1.00
Adj. Flow (vph)	285	458	201	373	886	201	203	1107	226	1	206	1486
RTOR Reduction (vph)	0	0	125	0	0	119	0	0	137	0	0	0
Lane Group Flow (vph)	285	458	76	373	886	82	203	1107	89	0	207	1486
Confl. Peds. (#/hr)			19			21	22		34		34	
Confl. Bikes (#/hr)			13			21			5			
Heavy Vehicles (%)	1%	2%	1%	1%	0%	2%	1%	2%	1%	0%	1%	2%
Turn Type	Prot	NA	Perm	Prot	NA	Perm	pm+pt	NA	Perm	pm+pt	pm+pt	NA
Protected Phases	7	4		3	8		5	2		1	1	6
Permitted Phases			4			8	2		2	6	6	
Actuated Green, G (s)	13.0	25.4	25.4	23.6	37.0	37.0	44.3	44.3	44.3		67.0	66.0
Effective Green, g (s)	13.0	25.4	25.4	23.6	37.0	37.0	44.3	44.3	44.3		67.0	66.0
Actuated g/C Ratio	0.09	0.17	0.17	0.16	0.25	0.25	0.30	0.30	0.30		0.45	0.44
Clearance Time (s)	5.0	6.0	6.0	5.0	5.0	5.0	5.0	6.0	6.0		5.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	300	599	254	545	890	369	204	1501	440		491	1557
v/s Ratio Prot	c0.08	0.13		0.11	c0.25		c0.09	0.22			0.10	c0.42
v/s Ratio Perm			0.05			0.05	c0.21		0.06		0.09	
v/c Ratio	0.95	0.76	0.30	0.68	1.00	0.22	1.00	0.74	0.20		0.42	0.95
Uniform Delay, d1	68.2	59.4	54.5	59.7	56.4	45.0	45.7	47.6	39.6		36.1	40.5
Progression Factor	1.00	1.00	0.99	1.00	1.00	1.00	1.00	1.00	1.00		0.65	0.63
Incremental Delay, d2	38.2	5.8	0.7	3.5	28.9	0.3	61.3	3.3	1.0		0.4	11.2
Delay (s)	106.2	65.2	54.9	63.2	85.3	45.3	106.9	50.9	40.7		23.8	36.9
Level of Service	F	E	D	E	F	D	F	D	D		C	D
Approach Delay (s)		75.4			74.1			56.8				31.5
Approach LOS		E			E			E				C

Intersection Summary			
HCM 2000 Control Delay	54.1	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.98		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	22.0
Intersection Capacity Utilization	101.1%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SBR
Lane Configurations	
Traffic Volume (vph)	667
Future Volume (vph)	667
Ideal Flow (vphpl)	1900
Total Lost time (s)	6.0
Lane Util. Factor	1.00
Frpb, ped/bikes	0.95
Flpb, ped/bikes	1.00
Frt	0.85
Flt Protected	1.00
Satd. Flow (prot)	1515
Flt Permitted	1.00
Satd. Flow (perm)	1515
Peak-hour factor, PHF	1.00
Adj. Flow (vph)	667
RTOR Reduction (vph)	158
Lane Group Flow (vph)	509
Confl. Peds. (#/hr)	22
Confl. Bikes (#/hr)	15
Heavy Vehicles (%)	1%
Turn Type	Perm
Protected Phases	
Permitted Phases	6
Actuated Green, G (s)	66.0
Effective Green, g (s)	66.0
Actuated g/C Ratio	0.44
Clearance Time (s)	6.0
Vehicle Extension (s)	3.0
Lane Grp Cap (vph)	666
v/s Ratio Prot	
v/s Ratio Perm	0.34
v/c Ratio	0.76
Uniform Delay, d1	35.4
Progression Factor	0.45
Incremental Delay, d2	6.0
Delay (s)	21.9
Level of Service	C
Approach Delay (s)	
Approach LOS	

Intersection Summary

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	50	0	1637	2412	69
Future Volume (Veh/h)	0	50	0	1637	2412	69
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	54	0	1779	2622	75
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)				269	363	
pX, platoon unblocked	0.58	0.48	0.48			
vC, conflicting volume	3252	912	2697			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	6	0	745			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	90	100			
cM capacity (veh/h)	593	524	419			

Direction, Lane #	EB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	54	356	712	712	1049	1049	599
Volume Left	0	0	0	0	0	0	0
Volume Right	54	0	0	0	0	0	75
cSH	524	419	1700	1700	1700	1700	1700
Volume to Capacity	0.10	0.00	0.42	0.42	0.62	0.62	0.35
Queue Length 95th (ft)	9	0	0	0	0	0	0
Control Delay (s)	12.7	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS	B						
Approach Delay (s)	12.7	0.0			0.0		
Approach LOS	B						

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	58.1%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	8	172	155	20	130	0
Future Volume (Veh/h)	8	172	155	20	130	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.88	0.92	0.92	0.92	1.00	1.00
Hourly flow rate (vph)	9	187	168	22	130	0
Pedestrians					7	
Lane Width (ft)					12.0	
Walking Speed (ft/s)					3.5	
Percent Blockage					1	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)			287			
pX, platoon unblocked						
vC, conflicting volume	197				391	186
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	197				391	186
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	99				79	100
cM capacity (veh/h)	1379				609	856

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	196	190	130
Volume Left	9	0	130
Volume Right	0	22	0
cSH	1379	1700	609
Volume to Capacity	0.01	0.11	0.21
Queue Length 95th (ft)	0	0	20
Control Delay (s)	0.4	0.0	12.5
Lane LOS	A		B
Approach Delay (s)	0.4	0.0	12.5
Approach LOS			B

Intersection Summary			
Average Delay	3.3		
Intersection Capacity Utilization	29.4%	ICU Level of Service	A
Analysis Period (min)	15		

1: North Lamar Boulevard & West 6th Street

Lane Group	WBL	WBT	WBR	NBT	SBT
Lane Group Flow (vph)	225	690	115	1836	882
v/c Ratio	0.37	0.71	0.38	0.70	0.35
Control Delay	53.4	60.3	36.0	19.3	7.7
Queue Delay	0.0	0.0	0.0	4.2	0.0
Total Delay	53.4	60.3	36.0	23.5	7.7
Queue Length 50th (ft)	98	232	62	776	147
Queue Length 95th (ft)	136	272	121	482	197
Internal Link Dist (ft)		443		433	403
Turn Bay Length (ft)	250		250		
Base Capacity (vph)	625	1002	313	2712	2563
Starvation Cap Reductn	0	0	0	785	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.36	0.69	0.37	0.95	0.34

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	225	690	115	0	1763	0	0	680	140
Future Volume (vph)	0	0	0	225	690	115	0	1763	0	0	680	140
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				5.0	5.0	5.0		5.0			5.0	
Lane Util. Factor				0.97	0.91	1.00		0.95			0.95	
Frpb, ped/bikes				1.00	1.00	0.95		1.00			0.99	
Flpb, ped/bikes				0.93	1.00	1.00		1.00			1.00	
Frt				1.00	1.00	0.85		1.00			0.97	
Flt Protected				0.95	1.00	1.00		1.00			1.00	
Satd. Flow (prot)				3134	4988	1403		3574			3378	
Flt Permitted				0.95	1.00	1.00		1.00			1.00	
Satd. Flow (perm)				3134	4988	1403		3574			3378	
Peak-hour factor, PHF	0.92	0.92	0.92	1.00	1.00	1.00	0.96	0.96	0.96	0.93	0.93	0.93
Adj. Flow (vph)	0	0	0	225	690	115	0	1836	0	0	731	151
RTOR Reduction (vph)	0	0	0	0	0	33	0	0	0	0	1	0
Lane Group Flow (vph)	0	0	0	225	690	82	0	1836	0	0	881	0
Confl. Peds. (#/hr)				27		23						16
Confl. Bikes (#/hr)						6			4			2
Heavy Vehicles (%)	0%	0%	0%	4%	4%	9%	2%	1%	0%	0%	3%	5%
Turn Type				Perm	NA	Perm		NA			NA	
Protected Phases					4			2			6	
Permitted Phases				4		4						
Actuated Green, G (s)				29.3	29.3	29.3		110.7			110.7	
Effective Green, g (s)				29.3	29.3	29.3		110.7			110.7	
Actuated g/C Ratio				0.20	0.20	0.20		0.74			0.74	
Clearance Time (s)				5.0	5.0	5.0		5.0			5.0	
Vehicle Extension (s)				3.0	3.0	3.0		3.0			3.0	
Lane Grp Cap (vph)				612	974	274		2637			2492	
v/s Ratio Prot					c0.14			c0.51			0.26	
v/s Ratio Perm				0.07		0.06						
v/c Ratio				0.37	0.71	0.30		0.70			0.35	
Uniform Delay, d1				52.3	56.4	51.6		10.6			7.0	
Progression Factor				1.00	1.00	1.00		1.61			1.00	
Incremental Delay, d2				0.4	2.4	0.6		1.0			0.4	
Delay (s)				52.7	58.7	52.2		18.1			7.4	
Level of Service				D	E	D		B			A	
Approach Delay (s)		0.0			56.7			18.1			7.4	
Approach LOS		A			E			B			A	

Intersection Summary			
HCM 2000 Control Delay	26.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	86.0%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	NBT	SBT
Lane Group Flow (vph)	290	1357	130	2006	954
v/c Ratio	0.53	0.71	0.33	0.95	0.45
Control Delay	48.8	48.2	45.9	36.8	16.2
Queue Delay	0.6	0.0	0.0	3.7	0.5
Total Delay	49.4	48.2	45.9	40.5	16.7
Queue Length 50th (ft)	222	343	114	994	249
Queue Length 95th (ft)	#429	#551	233	700	269
Internal Link Dist (ft)		385		2703	433
Turn Bay Length (ft)					
Base Capacity (vph)	545	1922	391	2513	2162
Starvation Cap Reductn	0	0	0	0	678
Spillback Cap Reductn	65	0	0	415	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.60	0.71	0.33	0.96	0.64

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	278	1288	139	0	0	0	0	1422	484	0	906	0
Future Volume (vph)	278	1288	139	0	0	0	0	1422	484	0	906	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0					5.0			5.0	
Lane Util. Factor	1.00	0.81	0.81					0.95			0.95	
Frpb, ped/bikes	1.00	1.00	0.95					0.99			1.00	
Flpb, ped/bikes	0.97	1.00	1.00					1.00			1.00	
Frt	1.00	1.00	0.85					0.96			1.00	
Flt Protected	0.95	1.00	1.00					1.00			1.00	
Satd. Flow (prot)	1725	6082	1239					3426			3471	
Flt Permitted	0.95	1.00	1.00					1.00			1.00	
Satd. Flow (perm)	1725	6082	1239					3426			3471	
Peak-hour factor, PHF	0.96	0.96	0.96	0.92	0.92	0.92	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	290	1342	145	0	0	0	0	1497	509	0	954	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	290	1357	130	0	0	0	0	2006	0	0	954	0
Confl. Peds. (#/hr)	15		23	23		15	22		16			22
Confl. Bikes (#/hr)			5						11			7
Heavy Vehicles (%)	2%	1%	0%	0%	0%	0%	0%	1%	0%	1%	4%	0%
Turn Type	Perm	NA	Perm					NA			NA	
Protected Phases		4						2			6	
Permitted Phases	4		4									
Actuated Green, G (s)	47.4	47.4	47.4					92.6			92.6	
Effective Green, g (s)	47.4	47.4	47.4					92.6			92.6	
Actuated g/C Ratio	0.32	0.32	0.32					0.62			0.62	
Clearance Time (s)	5.0	5.0	5.0					5.0			5.0	
Vehicle Extension (s)	3.0	3.0	3.0					3.0			3.0	
Lane Grp Cap (vph)	545	1921	391					2114			2142	
v/s Ratio Prot		c0.22						c0.59			0.27	
v/s Ratio Perm	0.17		0.10									
v/c Ratio	0.53	0.71	0.33					0.95			0.45	
Uniform Delay, d1	42.2	45.2	39.2					26.5			15.1	
Progression Factor	1.00	1.00	1.00					1.00			1.05	
Incremental Delay, d2	1.0	1.2	0.5					10.8			0.6	
Delay (s)	43.2	46.4	39.7					37.3			16.5	
Level of Service	D	D	D					D			B	
Approach Delay (s)		45.4			0.0			37.3			16.5	
Approach LOS		D			A			D			B	

Intersection Summary			
HCM 2000 Control Delay	36.1	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.90		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	86.0%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group Flow (vph)	353	2322	1891	168	205	144
v/c Ratio	0.87	0.87	1.07	0.22	0.72	0.26
Control Delay	56.4	17.3	72.5	11.5	62.4	24.4
Queue Delay	0.0	0.0	14.6	0.0	5.6	0.0
Total Delay	56.4	17.3	87.1	11.5	68.0	24.4
Queue Length 50th (ft)	213	604	~871	58	153	69
Queue Length 95th (ft)	#458	#950	#1017	m63	223	118
Internal Link Dist (ft)		805	469		380	
Turn Bay Length (ft)	275			175		200
Base Capacity (vph)	407	2656	1772	781	383	553
Starvation Cap Reductn	0	0	444	0	0	0
Spillback Cap Reductn	0	0	0	0	123	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.87	0.87	1.42	0.22	0.79	0.26

Intersection Summary

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

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

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

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	342	2252	1796	160	205	144
Future Volume (vph)	342	2252	1796	160	205	144
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0	6.0
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	1.00	0.98	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1752	3574	3574	1495	1805	1555
Flt Permitted	0.06	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	113	3574	3574	1495	1805	1555
Peak-hour factor, PHF	0.97	0.97	0.95	0.95	1.00	1.00
Adj. Flow (vph)	353	2322	1891	168	205	144
RTOR Reduction (vph)	0	0	0	40	0	3
Lane Group Flow (vph)	353	2322	1891	128	205	141
Confl. Peds. (#/hr)				3		18
Confl. Bikes (#/hr)				11		3
Heavy Vehicles (%)	3%	1%	1%	6%	0%	2%
Turn Type	pm+pt	NA	NA	Perm	Prot	pm+ov
Protected Phases	5	2 5	6		3	5
Permitted Phases	2 5			6		3
Actuated Green, G (s)	89.2	89.2	59.5	59.5	18.8	42.5
Effective Green, g (s)	89.2	89.2	59.5	59.5	18.8	42.5
Actuated g/C Ratio	0.74	0.74	0.50	0.50	0.16	0.35
Clearance Time (s)	6.0		6.0	6.0	6.0	6.0
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	407	2656	1772	741	282	628
v/s Ratio Prot	0.17	c0.65	c0.53		c0.11	0.04
v/s Ratio Perm	0.47			0.09		0.05
v/c Ratio	0.87	0.87	1.07	0.17	0.73	0.22
Uniform Delay, d1	38.9	11.3	30.2	16.7	48.2	27.2
Progression Factor	1.00	1.00	1.23	1.26	1.00	1.00
Incremental Delay, d2	17.4	3.5	36.5	0.2	9.0	0.2
Delay (s)	56.3	14.8	73.6	21.2	57.2	27.4
Level of Service	E	B	E	C	E	C
Approach Delay (s)		20.3	69.3		44.9	
Approach LOS		C	E		D	

Intersection Summary			
HCM 2000 Control Delay	41.8	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.99		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	98.9%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	2510	1562	114	584
v/c Ratio	0.91	0.86	0.64	0.90
Control Delay	11.0	31.6	67.5	48.5
Queue Delay	0.1	48.1	0.0	49.2
Total Delay	11.1	79.7	67.5	97.8
Queue Length 50th (ft)	295	538	85	390
Queue Length 95th (ft)	484	680	145	#599
Internal Link Dist (ft)	469	757	278	
Turn Bay Length (ft)				
Base Capacity (vph)	2765	1819	218	657
Starvation Cap Reductn	12	0	0	0
Spillback Cap Reductn	0	717	0	178
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.91	1.42	0.52	1.22

Intersection Summary

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

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	3	2457	1382	39	114	584
Future Volume (vph)	3	2457	1382	39	114	584
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	5.0		4.5	2.0
Lane Util. Factor		0.95	0.95		1.00	1.00
Frpb, ped/bikes		1.00	1.00		1.00	1.00
Flpb, ped/bikes		1.00	1.00		1.00	1.00
Frt		1.00	1.00		1.00	0.85
Flt Protected		1.00	1.00		0.95	1.00
Satd. Flow (prot)		3574	3490		1626	1592
Flt Permitted		0.95	1.00		0.95	1.00
Satd. Flow (perm)		3408	3490		1626	1592
Peak-hour factor, PHF	0.98	0.98	0.91	0.91	1.00	1.00
Adj. Flow (vph)	3	2507	1519	43	114	584
RTOR Reduction (vph)	0	0	1	0	0	10
Lane Group Flow (vph)	0	2510	1561	0	114	574
Confl. Peds. (#/hr)	4			4	2	
Confl. Bikes (#/hr)				4		7
Heavy Vehicles (%)	0%	1%	3%	0%	11%	1%
Turn Type	Perm	NA	NA		Prot	custom
Protected Phases		2	6		7	5
Permitted Phases	2					7
Actuated Green, G (s)		97.4	62.5		13.1	46.0
Effective Green, g (s)		97.4	62.5		13.1	46.0
Actuated g/C Ratio		0.81	0.52		0.11	0.38
Clearance Time (s)		5.0	5.0		4.5	2.0
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)		2766	1817		177	636
v/s Ratio Prot			0.45		0.07	c0.25
v/s Ratio Perm		c0.74				0.11
v/c Ratio		0.91	0.86		0.64	0.90
Uniform Delay, d1		8.1	24.9		51.2	34.9
Progression Factor		0.82	1.00		1.00	1.00
Incremental Delay, d2		3.0	5.5		7.8	16.1
Delay (s)		9.6	30.5		59.0	51.0
Level of Service		A	C		E	D
Approach Delay (s)		9.6	30.5		52.3	
Approach LOS		A	C		D	

Intersection Summary			
HCM 2000 Control Delay	22.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.94		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	11.5
Intersection Capacity Utilization	84.6%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBT
Lane Group Flow (vph)	5	25	46	46	392	19	2621	1114
v/c Ratio	0.02	0.08	0.18	0.16	1.14	0.05	1.04	0.51
Control Delay	43.7	27.0	47.1	46.6	131.8	3.1	42.7	17.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	24.1	0.0
Total Delay	43.7	27.0	47.1	46.6	131.8	3.1	66.7	17.3
Queue Length 50th (ft)	4	8	35	35	~358	3	~1341	192
Queue Length 95th (ft)	10	17	75	74	#565	m2	m#1458	424
Internal Link Dist (ft)		436		273			283	2703
Turn Bay Length (ft)			250			100		
Base Capacity (vph)	270	329	255	279	345	393	2515	2363
Starvation Cap Reductn	0	0	0	0	0	0	139	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.02	0.08	0.18	0.16	1.14	0.05	1.10	0.47

Intersection Summary

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

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

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	3	6	8	80	12	392	17	2195	164	0	1097	17
Future Volume (vph)	3	6	8	80	12	392	17	2195	164	0	1097	17
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		6.0	6.0	6.0	5.0	5.0			5.0	
Lane Util. Factor	1.00	1.00		0.95	0.95	1.00	1.00	0.95			0.95	
Frpb, ped/bikes	1.00	0.99		1.00	1.00	0.96	1.00	1.00			1.00	
Flpb, ped/bikes	0.98	1.00		0.99	1.00	1.00	1.00	1.00			1.00	
Frt	1.00	0.92		1.00	1.00	0.85	1.00	0.99			1.00	
Flt Protected	0.95	1.00		0.95	0.96	1.00	0.95	1.00			1.00	
Satd. Flow (prot)	1770	1591		1638	1682	1498	1703	3495			3459	
Flt Permitted	0.73	1.00		0.74	0.80	1.00	0.20	1.00			1.00	
Satd. Flow (perm)	1351	1591		1277	1396	1498	350	3495			3459	
Peak-hour factor, PHF	0.57	0.57	0.57	1.00	1.00	1.00	0.90	0.90	0.90	1.00	1.00	1.00
Adj. Flow (vph)	5	11	14	80	12	392	19	2439	182	0	1097	17
RTOR Reduction (vph)	0	11	0	0	0	46	0	4	0	0	1	0
Lane Group Flow (vph)	5	14	0	46	46	346	19	2617	0	0	1113	0
Confl. Peds. (#/hr)	18		6	6		18			24	24		14
Confl. Bikes (#/hr)			6			6			18			1
Heavy Vehicles (%)	0%	0%	14%	4%	0%	3%	6%	2%	0%	0%	4%	6%
Turn Type	Perm	NA		Perm	NA	Perm	pm+pt	NA			NA	
Protected Phases		4			8		5	2			6	
Permitted Phases	4			8		8	2					
Actuated Green, G (s)	27.0	27.0		27.0	27.0	27.0	97.0	97.0			82.0	
Effective Green, g (s)	27.0	27.0		27.0	27.0	27.0	97.0	97.0			82.0	
Actuated g/C Ratio	0.20	0.20		0.20	0.20	0.20	0.72	0.72			0.61	
Clearance Time (s)	6.0	6.0		6.0	6.0	6.0	5.0	5.0			5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0			3.0	
Lane Grp Cap (vph)	270	318		255	279	299	351	2511			2101	
v/s Ratio Prot		0.01					0.00	c0.75			0.32	
v/s Ratio Perm	0.00			0.04	0.03	c0.23	0.03					
v/c Ratio	0.02	0.04		0.18	0.16	1.16	0.05	1.04			0.53	
Uniform Delay, d1	43.4	43.6		44.8	44.7	54.0	13.3	19.0			15.3	
Progression Factor	1.00	1.00		1.00	1.00	1.00	0.50	0.85			1.00	
Incremental Delay, d2	0.0	0.1		0.3	0.3	102.1	0.0	25.4			1.0	
Delay (s)	43.4	43.6		45.2	45.0	156.1	6.7	41.5			16.3	
Level of Service	D	D		D	D	F	A	D			B	
Approach Delay (s)		43.6			135.0			41.2			16.3	
Approach LOS		D			F			D			B	

Intersection Summary			
HCM 2000 Control Delay	45.4	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.11		
Actuated Cycle Length (s)	135.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	115.0%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	130	16	12	61	36	127
Future Volume (Veh/h)	130	16	12	61	36	127
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	0.93	0.93	0.84	0.84
Hourly flow rate (vph)	130	16	13	66	43	151
Pedestrians	5			8	2	
Lane Width (ft)	12.0			12.0	12.0	
Walking Speed (ft/s)	3.5			3.5	3.5	
Percent Blockage	0			1	0	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)				398		
pX, platoon unblocked						
vC, conflicting volume			148		237	148
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			148		237	148
tC, single (s)			4.2		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.3		3.5	3.3
p0 queue free %			99		94	83
cM capacity (veh/h)			1389		744	885

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	146	79	194
Volume Left	0	13	43
Volume Right	16	0	151
cSH	1700	1389	849
Volume to Capacity	0.09	0.01	0.23
Queue Length 95th (ft)	0	1	22
Control Delay (s)	0.0	1.3	10.5
Lane LOS		A	B
Approach Delay (s)	0.0	1.3	10.5
Approach LOS			B

Intersection Summary			
Average Delay	5.1		
Intersection Capacity Utilization	31.3%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBR	NBL	NBT	SBU	SBT
Lane Group Flow (vph)	254	38	71	2317	15	1006
v/c Ratio	0.99	0.16	0.12	0.92	0.12	0.63
Control Delay	110.4	17.0	2.2	12.7	5.1	29.5
Queue Delay	0.0	0.0	0.0	40.1	0.0	0.0
Total Delay	110.4	17.0	2.2	52.9	5.1	29.6
Queue Length 50th (ft)	~247	0	7	137	3	304
Queue Length 95th (ft)	#421	34	m6	1174	m1	267
Internal Link Dist (ft)	86			221		189
Turn Bay Length (ft)	75		60		150	
Base Capacity (vph)	257	239	582	2541	121	2228
Starvation Cap Reductn	0	0	0	326	0	66
Spillback Cap Reductn	0	0	0	410	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.99	0.16	0.12	1.09	0.12	0.47

Intersection Summary

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

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

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

Movement	EBL	EBR	NBU	NBL	NBT	SBU	SBT	SBR
Lane Configurations								
Traffic Volume (vph)	251	38	2	61	2039	15	947	59
Future Volume (vph)	251	38	2	61	2039	15	947	59
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0	5.0	5.0	
Lane Util. Factor	1.00	1.00		1.00	0.95	1.00	0.95	
Frpb, ped/bikes	1.00	0.95		1.00	1.00	1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	
Frt	1.00	0.85		1.00	1.00	1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00	0.95	1.00	
Satd. Flow (prot)	1780	1403		1705	3574	1805	3433	
Flt Permitted	0.95	1.00		0.17	1.00	0.04	1.00	
Satd. Flow (perm)	1780	1403		305	3574	78	3433	
Peak-hour factor, PHF	0.99	0.99	0.88	0.88	0.88	1.00	1.00	1.00
Adj. Flow (vph)	254	38	2	69	2317	15	947	59
RTOR Reduction (vph)	0	33	0	0	0	0	5	0
Lane Group Flow (vph)	254	5	0	71	2317	15	1001	0
Confl. Peds. (#/hr)	2	6						9
Confl. Bikes (#/hr)		5						3
Heavy Vehicles (%)	1%	9%	2%	6%	1%	0%	4%	2%
Turn Type	Perm	Perm	custom	custom	NA	custom	NA	
Protected Phases			5	5	2	1	6	
Permitted Phases	4	4	1 2	1 2		5 6		
Actuated Green, G (s)	19.5	19.5		99.6	92.6	99.6	60.1	
Effective Green, g (s)	19.5	19.5		99.6	92.6	99.6	60.1	
Actuated g/C Ratio	0.14	0.14		0.74	0.69	0.74	0.45	
Clearance Time (s)	5.0	5.0		5.0	5.0	5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	257	202		582	2451	83	1528	
v/s Ratio Prot				0.03	c0.65	0.00	c0.29	
v/s Ratio Perm	c0.14	0.00		0.06		0.13		
v/c Ratio	0.99	0.03		0.12	0.95	0.18	0.66	
Uniform Delay, d1	57.6	49.6		16.3	18.9	34.6	29.3	
Progression Factor	1.00	1.00		0.32	0.47	0.77	0.97	
Incremental Delay, d2	52.3	0.1		0.1	5.9	1.0	2.0	
Delay (s)	110.0	49.7		5.3	14.7	27.4	30.4	
Level of Service	F	D		A	B	C	C	
Approach Delay (s)	102.1				14.4		30.4	
Approach LOS	F				B		C	

Intersection Summary			
HCM 2000 Control Delay	25.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.95		
Actuated Cycle Length (s)	135.0	Sum of lost time (s)	19.0
Intersection Capacity Utilization	78.6%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	16	0	0	21	0	2094	11	0	953	27
Future Volume (Veh/h)	0	0	16	0	0	21	0	2094	11	0	953	27
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	1.00	1.00	1.00	0.79	0.79	0.79	1.00	0.90	0.90	1.00	1.00	1.00
Hourly flow rate (vph)	0	0	16	0	0	27	0	2327	12	0	953	27
Pedestrians		7			19			10			1	
Lane Width (ft)		12.0			12.0			12.0			12.0	
Walking Speed (ft/s)		3.5			3.5			3.5			3.5	
Percent Blockage		1			2			1			0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)								478			301	
pX, platoon unblocked	0.70	0.70	0.77	0.70	0.70	0.59	0.77			0.59		
vC, conflicting volume	2165	3332	507	2854	3339	1190	987			2358		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	363	2020	0	1343	2031	0	396			1913		
tC, single (s)	7.5	6.5	7.3	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.5	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	98	100	100	96	100			100		
cM capacity (veh/h)	376	40	787	74	40	632	901			182		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	16	27	1551	788	635	345
Volume Left	0	0	0	0	0	0
Volume Right	16	27	0	12	0	27
cSH	787	632	1700	1700	1700	1700
Volume to Capacity	0.02	0.04	0.91	0.46	0.37	0.20
Queue Length 95th (ft)	2	3	0	0	0	0
Control Delay (s)	9.7	11.0	0.0	0.0	0.0	0.0
Lane LOS	A	B				
Approach Delay (s)	9.7	11.0	0.0		0.0	
Approach LOS	A	B				

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	68.6%	ICU Level of Service	C
Analysis Period (min)	15		

Movement	EBU	EBL	EBT	WBU	WBT	WBR	SBL	SBR
Lane Configurations								
Traffic Volume (veh/h)	108	61	792	22	1083	27	6	66
Future Volume (Veh/h)	108	61	792	22	1083	27	6	66
Sign Control			Free		Free		Stop	
Grade			0%		0%		0%	
Peak Hour Factor	0.90	0.90	0.90	0.25	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	68	880	0	1083	27	6	66
Pedestrians							5	
Lane Width (ft)							12.0	
Walking Speed (ft/s)							3.5	
Percent Blockage							0	
Right turn flare (veh)								
Median type			Raised		Raised			
Median storage veh)			1		1			
Upstream signal (ft)								
pX, platoon unblocked	0.00			0.00				
vC, conflicting volume	0	1115		0			1678	560
vC1, stage 1 conf vol							1102	
vC2, stage 2 conf vol							576	
vCu, unblocked vol	0	1115		0			1678	560
tC, single (s)	0.0	4.1		0.0			6.8	7.0
tC, 2 stage (s)							5.8	
tF (s)	0.0	2.2		0.0			3.5	3.3
p0 queue free %	0	89		0			97	86
cM capacity (veh/h)	0	625		0			194	467

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	SB 1
Volume Total	68	440	440	722	388	0	72
Volume Left	68	0	0	0	0	0	6
Volume Right	0	0	0	0	27	0	66
cSH	625	1700	1700	1700	1700	1700	418
Volume to Capacity	0.11	0.26	0.26	0.42	0.23	0.00	0.17
Queue Length 95th (ft)	9	0	0	0	0	0	15
Control Delay (s)	11.5	0.0	0.0	0.0	0.0	0.0	15.4
Lane LOS	B						C
Approach Delay (s)	0.8			0.0			15.4
Approach LOS							C

Intersection Summary			
Average Delay	0.9		
Intersection Capacity Utilization	54.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBU	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations							
Traffic Volume (veh/h)	11	88	1021	879	42	4	35
Future Volume (Veh/h)	11	88	1021	879	42	4	35
Sign Control			Free	Free		Stop	
Grade			0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	96	1110	879	42	4	35
Pedestrians						23	
Lane Width (ft)						12.0	
Walking Speed (ft/s)						3.5	
Percent Blockage						2	
Right turn flare (veh)							
Median type			None	None			
Median storage veh)							
Upstream signal (ft)				516			
pX, platoon unblocked	0.00	0.85				0.85	0.85
vC, conflicting volume	0	944				1670	484
vC1, stage 1 conf vol							
vC2, stage 2 conf vol							
vCu, unblocked vol	0	586				1439	46
tC, single (s)	0.0	4.2				6.8	7.0
tC, 2 stage (s)							
tF (s)	0.0	2.2				3.5	3.3
p0 queue free %	0	88				96	96
cM capacity (veh/h)	0	815				93	842

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1
Volume Total	96	555	555	586	335	39
Volume Left	96	0	0	0	0	4
Volume Right	0	0	0	0	42	35
cSH	815	1700	1700	1700	1700	460
Volume to Capacity	0.12	0.33	0.33	0.34	0.20	0.08
Queue Length 95th (ft)	10	0	0	0	0	7
Control Delay (s)	10.0	0.0	0.0	0.0	0.0	13.5
Lane LOS	B					B
Approach Delay (s)	0.8			0.0		13.5
Approach LOS						B

Intersection Summary			
Average Delay	0.7		
Intersection Capacity Utilization	67.3%	ICU Level of Service	C
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	372	503	109	124	567	341	219	1453	382	239	572	164
v/c Ratio	0.80	0.55	0.22	0.49	0.78	0.75	0.62	0.96	0.50	0.68	0.41	0.23
Control Delay	70.4	45.9	2.7	66.0	58.7	36.9	35.5	53.7	16.9	40.9	12.6	5.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.1	0.0	12.0	0.0	0.0	0.0	0.0
Total Delay	70.4	45.9	2.7	66.0	58.7	37.0	35.5	65.6	16.9	40.9	12.6	5.7
Queue Length 50th (ft)	163	195	0	54	244	149	129	~717	121	82	179	63
Queue Length 95th (ft)	220	265	m16	86	314	268	202	#891	228	117	175	80
Internal Link Dist (ft)		436			534			359			398	
Turn Bay Length (ft)	175		125	275		325	200		200	240		
Base Capacity (vph)	495	947	505	314	769	470	358	1513	767	474	1433	731
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	4	0	88	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.75	0.53	0.22	0.39	0.74	0.73	0.61	1.02	0.50	0.50	0.40	0.22

Intersection Summary

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

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

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT
Lane Configurations												
Traffic Volume (vph)	368	498	108	124	567	341	199	1322	348	3	236	572
Future Volume (vph)	368	498	108	124	567	341	199	1322	348	3	236	572
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	6.0	6.0	5.0	5.0	5.0	5.0	6.0	6.0		5.0	6.0
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	1.00	0.95	1.00		0.97	0.95
Frpb, ped/bikes	1.00	1.00	0.95	1.00	1.00	0.98	1.00	1.00	0.96		1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85		1.00	1.00
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	3502	3574	1481	3242	3471	1553	1768	3539	1537		3335	3438
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.29	1.00	1.00		0.09	1.00
Satd. Flow (perm)	3502	3574	1481	3242	3471	1553	537	3539	1537		308	3438
Peak-hour factor, PHF	0.99	0.99	0.99	1.00	1.00	1.00	0.91	0.91	0.91	1.00	1.00	1.00
Adj. Flow (vph)	372	503	109	124	567	341	219	1453	382	3	236	572
RTOR Reduction (vph)	0	0	81	0	0	128	0	0	111	0	0	0
Lane Group Flow (vph)	372	503	28	124	567	213	219	1453	271	0	239	572
Confl. Peds. (#/hr)			22			2	9		17		17	
Confl. Bikes (#/hr)			11			4			7			
Heavy Vehicles (%)	0%	1%	4%	8%	4%	2%	2%	2%	1%	5%	5%	5%
Turn Type	Prot	NA	Perm	Prot	NA	Perm	pm+pt	NA	Perm	pm+pt	pm+pt	NA
Protected Phases	7	4		3	8		5	2		1	1	6
Permitted Phases			4			8	2		2	6	6	
Actuated Green, G (s)	18.0	34.7	34.7	10.5	28.2	28.2	57.7	57.7	57.7		55.7	54.7
Effective Green, g (s)	18.0	34.7	34.7	10.5	28.2	28.2	57.7	57.7	57.7		55.7	54.7
Actuated g/C Ratio	0.13	0.26	0.26	0.08	0.21	0.21	0.43	0.43	0.43		0.41	0.41
Clearance Time (s)	5.0	6.0	6.0	5.0	5.0	5.0	5.0	6.0	6.0		5.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	466	918	380	252	725	324	348	1512	656		353	1393
v/s Ratio Prot	c0.11	0.14		0.04	c0.16		0.06	c0.41			c0.05	0.17
v/s Ratio Perm			0.02			0.14	0.21		0.18		0.23	
v/c Ratio	0.80	0.55	0.07	0.49	0.78	0.66	0.63	0.96	0.41		0.68	0.41
Uniform Delay, d1	56.7	43.4	38.0	59.7	50.5	49.0	26.4	37.6	26.9		53.2	28.6
Progression Factor	1.00	1.00	1.01	1.00	1.00	1.00	1.00	1.00	1.00		0.65	0.40
Incremental Delay, d2	9.2	0.7	0.1	1.5	5.5	4.7	3.5	15.5	1.9		4.7	0.8
Delay (s)	66.2	44.2	38.3	61.2	56.0	53.7	30.0	53.1	28.8		39.6	12.2
Level of Service	E	D	D	E	E	D	C	D	C		D	B
Approach Delay (s)		51.9			55.9			46.1				22.2
Approach LOS		D			E			D				C

Intersection Summary			
HCM 2000 Control Delay	44.6	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	135.0	Sum of lost time (s)	22.0
Intersection Capacity Utilization	92.7%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SBR
Lane Configurations	
Traffic Volume (vph)	164
Future Volume (vph)	164
Ideal Flow (vphpl)	1900
Total Lost time (s)	6.0
Lane Util. Factor	1.00
Frpb, ped/bikes	0.97
Flpb, ped/bikes	1.00
Frt	0.85
Flt Protected	1.00
Satd. Flow (prot)	1526
Flt Permitted	1.00
Satd. Flow (perm)	1526
Peak-hour factor, PHF	1.00
Adj. Flow (vph)	164
RTOR Reduction (vph)	98
Lane Group Flow (vph)	66
Confl. Peds. (#/hr)	9
Confl. Bikes (#/hr)	4
Heavy Vehicles (%)	3%
Turn Type	Perm
Protected Phases	
Permitted Phases	6
Actuated Green, G (s)	54.7
Effective Green, g (s)	54.7
Actuated g/C Ratio	0.41
Clearance Time (s)	6.0
Vehicle Extension (s)	3.0
Lane Grp Cap (vph)	618
v/s Ratio Prot	
v/s Ratio Perm	0.04
v/c Ratio	0.11
Uniform Delay, d1	25.0
Progression Factor	1.26
Incremental Delay, d2	0.3
Delay (s)	31.9
Level of Service	C
Approach Delay (s)	
Approach LOS	

Intersection Summary

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	21	0	2281	1000	158
Future Volume (Veh/h)	0	21	0	2281	1000	158
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	23	0	2479	1087	172
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)				269	363	
pX, platoon unblocked	0.42	0.81	0.81			
vC, conflicting volume	2412	630	1259			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	0	83	858			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	97	100			
cM capacity (veh/h)	430	785	643			

Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	23	1240	1240	725	534
Volume Left	0	0	0	0	0
Volume Right	23	0	0	0	172
cSH	785	1700	1700	1700	1700
Volume to Capacity	0.03	0.73	0.73	0.43	0.31
Queue Length 95th (ft)	2	0	0	0	0
Control Delay (s)	9.7	0.0	0.0	0.0	0.0
Lane LOS	A				
Approach Delay (s)	9.7	0.0		0.0	
Approach LOS	A				

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	73.1%	ICU Level of Service	D
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	17	235	77	44	54	0
Future Volume (Veh/h)	17	235	77	44	54	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.75	0.92	0.92	0.25	1.00	1.00
Hourly flow rate (vph)	23	255	84	176	54	0
Pedestrians					7	
Lane Width (ft)					12.0	
Walking Speed (ft/s)					3.5	
Percent Blockage					1	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)			287			
pX, platoon unblocked						
vC, conflicting volume	267				480	179
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	267				480	179
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	98				90	100
cM capacity (veh/h)	1300				535	863

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	278	260	54
Volume Left	23	0	54
Volume Right	0	176	0
cSH	1300	1700	535
Volume to Capacity	0.02	0.15	0.10
Queue Length 95th (ft)	1	0	8
Control Delay (s)	0.8	0.0	12.5
Lane LOS	A		B
Approach Delay (s)	0.8	0.0	12.5
Approach LOS			B

Intersection Summary			
Average Delay	1.5		
Intersection Capacity Utilization	35.0%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	WBL	WBT	WBR	NBT	SBT
Lane Group Flow (vph)	468	981	222	1670	994
v/c Ratio	0.56	0.71	0.53	0.72	0.43
Control Delay	49.8	52.3	41.8	17.0	12.9
Queue Delay	0.2	0.0	0.0	0.4	0.1
Total Delay	50.0	52.3	41.8	17.4	13.0
Queue Length 50th (ft)	193	302	141	710	252
Queue Length 95th (ft)	278	393	253	719	234
Internal Link Dist (ft)		443		433	403
Turn Bay Length (ft)	250		250		
Base Capacity (vph)	836	1391	422	2477	2480
Starvation Cap Reductn	0	0	0	320	0
Spillback Cap Reductn	57	0	0	0	259
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.60	0.71	0.53	0.77	0.45

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	468	981	222	0	1670	0	0	956	38
Future Volume (vph)	0	0	0	468	981	222	0	1670	0	0	956	38
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				5.0	5.0	5.0		5.0			5.0	
Lane Util. Factor				0.97	0.91	1.00		0.95			0.95	
Frpb, ped/bikes				1.00	1.00	0.90		1.00			1.00	
Flpb, ped/bikes				0.90	1.00	1.00		1.00			1.00	
Frt				1.00	1.00	0.85		1.00			0.99	
Flt Protected				0.95	1.00	1.00		1.00			1.00	
Satd. Flow (prot)				3118	5085	1452		3539			3544	
Flt Permitted				0.95	1.00	1.00		1.00			1.00	
Satd. Flow (perm)				3118	5085	1452		3539			3544	
Peak-hour factor, PHF	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. Flow (vph)	0	0	0	468	981	222	0	1670	0	0	956	38
RTOR Reduction (vph)	0	0	0	0	0	32	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	468	981	190	0	1670	0	0	994	0
Confl. Peds. (#/hr)				55		73						20
Confl. Bikes (#/hr)						15			7			4
Heavy Vehicles (%)	0%	0%	0%	1%	2%	0%	1%	2%	0%	0%	1%	3%
Turn Type				Perm	NA	Perm		NA			NA	
Protected Phases					4			2			6	
Permitted Phases				4		4						
Actuated Green, G (s)				41.0	41.0	41.0		99.0			99.0	
Effective Green, g (s)				41.0	41.0	41.0		99.0			99.0	
Actuated g/C Ratio				0.27	0.27	0.27		0.66			0.66	
Clearance Time (s)				5.0	5.0	5.0		5.0			5.0	
Vehicle Extension (s)				3.0	3.0	3.0		3.0			3.0	
Lane Grp Cap (vph)				852	1389	396		2335			2339	
v/s Ratio Prot					c0.19			c0.47			0.28	
v/s Ratio Perm				0.15		0.13						
v/c Ratio				0.55	0.71	0.48		0.72			0.42	
Uniform Delay, d1				46.6	49.1	45.6		16.4			12.0	
Progression Factor				1.00	1.00	1.00		0.92			1.00	
Incremental Delay, d2				0.7	1.7	0.9		1.5			0.6	
Delay (s)				47.3	50.7	46.5		16.5			12.6	
Level of Service				D	D	D		B			B	
Approach Delay (s)		0.0			49.2			16.5			12.6	
Approach LOS		A			D			B			B	

Intersection Summary			
HCM 2000 Control Delay	28.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	76.7%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	NBT	SBT
Lane Group Flow (vph)	341	1265	297	1578	1635
v/c Ratio	0.65	0.70	0.80	0.74	0.74
Control Delay	53.4	49.2	65.6	33.4	24.8
Queue Delay	0.0	0.0	0.0	0.3	0.2
Total Delay	53.4	49.2	65.6	33.8	25.0
Queue Length 50th (ft)	299	350	343	514	682
Queue Length 95th (ft)	#500	#458	#640	586	456
Internal Link Dist (ft)		385		2703	433
Turn Bay Length (ft)					
Base Capacity (vph)	528	1807	370	2425	2501
Starvation Cap Reductn	0	0	0	0	195
Spillback Cap Reductn	0	0	0	317	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.65	0.70	0.80	0.75	0.71

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	327	929	570	0	0	0	0	1261	253	0	1488	0
Future Volume (vph)	327	929	570	0	0	0	0	1261	253	0	1488	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0					5.0			5.0	
Lane Util. Factor	1.00	0.81	0.81					0.95			0.95	
Frpb, ped/bikes	1.00	0.98	0.90					0.99			1.00	
Flpb, ped/bikes	0.93	1.00	1.00					1.00			1.00	
Frt	1.00	0.96	0.85					0.97			1.00	
Flt Protected	0.95	1.00	1.00					1.00			1.00	
Satd. Flow (prot)	1668	5704	1171					3462			3574	
Flt Permitted	0.95	1.00	1.00					1.00			1.00	
Satd. Flow (perm)	1668	5704	1171					3462			3574	
Peak-hour factor, PHF	0.96	0.96	0.96	0.92	0.92	0.92	0.96	0.96	0.96	0.91	0.91	0.91
Adj. Flow (vph)	341	968	594	0	0	0	0	1314	264	0	1635	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	1	0	0	0	0
Lane Group Flow (vph)	341	1265	297	0	0	0	0	1577	0	0	1635	0
Confl. Peds. (#/hr)	37		46	46		37	7		49			7
Confl. Bikes (#/hr)			5						11			7
Heavy Vehicles (%)	1%	2%	1%	0%	0%	0%	0%	1%	1%	1%	1%	0%
Turn Type	Perm	NA	Perm					NA			NA	
Protected Phases		4						2			6	
Permitted Phases	4		4									
Actuated Green, G (s)	47.5	47.5	47.5					92.5			92.5	
Effective Green, g (s)	47.5	47.5	47.5					92.5			92.5	
Actuated g/C Ratio	0.32	0.32	0.32					0.62			0.62	
Clearance Time (s)	5.0	5.0	5.0					5.0			5.0	
Vehicle Extension (s)	3.0	3.0	3.0					3.0			3.0	
Lane Grp Cap (vph)	528	1806	370					2134			2203	
v/s Ratio Prot		0.22						0.46			c0.46	
v/s Ratio Perm	0.20		c0.25									
v/c Ratio	0.65	0.70	0.80					0.74			0.74	
Uniform Delay, d1	44.0	45.0	47.0					20.3			20.3	
Progression Factor	1.00	1.00	1.00					1.60			1.13	
Incremental Delay, d2	2.7	1.2	11.9					1.5			2.2	
Delay (s)	46.7	46.2	58.8					34.0			25.2	
Level of Service	D	D	E					C			C	
Approach Delay (s)		48.3			0.0			34.0			25.2	
Approach LOS		D			A			C			C	

Intersection Summary			
HCM 2000 Control Delay	36.5	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	76.7%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group Flow (vph)	289	1703	1959	292	166	130
v/c Ratio	0.74	0.63	1.05	0.34	0.68	0.26
Control Delay	44.6	8.3	62.7	8.9	62.8	26.5
Queue Delay	0.0	0.0	22.5	0.0	0.0	0.0
Total Delay	44.6	8.3	85.1	8.9	62.8	26.5
Queue Length 50th (ft)	158	269	~867	58	124	65
Queue Length 95th (ft)	#349	409	#1005	115	188	114
Internal Link Dist (ft)		805	467		380	
Turn Bay Length (ft)	275			175		200
Base Capacity (vph)	388	2700	1872	870	379	501
Starvation Cap Reductn	0	0	331	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.74	0.63	1.27	0.34	0.44	0.26

Intersection Summary

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

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

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	280	1652	1861	277	166	130
Future Volume (vph)	280	1652	1861	277	166	130
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0	6.0
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	1.00	0.98	1.00	0.99
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1770	3539	3539	1516	1787	1550
Flt Permitted	0.06	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	107	3539	3539	1516	1787	1550
Peak-hour factor, PHF	0.97	0.97	0.95	0.95	1.00	1.00
Adj. Flow (vph)	289	1703	1959	292	166	130
RTOR Reduction (vph)	0	0	0	68	0	4
Lane Group Flow (vph)	289	1703	1959	224	166	126
Confl. Peds. (#/hr)				12		10
Confl. Bikes (#/hr)				12		1
Heavy Vehicles (%)	2%	2%	2%	4%	1%	3%
Turn Type	pm+pt	NA	NA	Perm	Prot	pm+ov
Protected Phases	5	2 5	6		3	5
Permitted Phases	2 5			6		3
Actuated Green, G (s)	91.6	91.6	63.5	63.5	16.4	38.5
Effective Green, g (s)	91.6	91.6	63.5	63.5	16.4	38.5
Actuated g/C Ratio	0.76	0.76	0.53	0.53	0.14	0.32
Clearance Time (s)	6.0		6.0	6.0	6.0	6.0
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	387	2701	1872	802	244	574
v/s Ratio Prot	c0.14	0.48	c0.55		c0.09	0.04
v/s Ratio Perm	0.43			0.15		0.04
v/c Ratio	0.75	0.63	1.05	0.28	0.68	0.22
Uniform Delay, d1	37.6	6.5	28.2	15.6	49.3	29.8
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	7.7	0.5	34.2	0.9	7.6	0.2
Delay (s)	45.3	7.0	62.4	16.5	56.9	30.0
Level of Service	D	A	E	B	E	C
Approach Delay (s)		12.5	56.5		45.1	
Approach LOS		B	E		D	

Intersection Summary			
HCM 2000 Control Delay	36.4	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.92		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	94.2%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	1799	1838	115	444
v/c Ratio	0.64	0.86	0.69	0.84
Control Delay	6.2	29.7	85.3	57.9
Queue Delay	2.4	0.0	0.0	0.0
Total Delay	8.6	29.7	85.3	57.9
Queue Length 50th (ft)	277	739	110	381
Queue Length 95th (ft)	394	924	173	494
Internal Link Dist (ft)	467	757	278	
Turn Bay Length (ft)				
Base Capacity (vph)	2807	2149	216	535
Starvation Cap Reductn	839	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.91	0.86	0.53	0.83

Intersection Summary

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	1	1798	1747	54	102	395
Future Volume (vph)	1	1798	1747	54	102	395
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	5.0		4.5	2.0
Lane Util. Factor		0.95	0.95		1.00	1.00
Frpb, ped/bikes		1.00	1.00		1.00	1.00
Flpb, ped/bikes		1.00	1.00		1.00	1.00
Frt		1.00	1.00		1.00	0.85
Flt Protected		1.00	1.00		0.95	1.00
Satd. Flow (prot)		3539	3520		1583	1577
Flt Permitted		0.95	1.00		0.95	1.00
Satd. Flow (perm)		3378	3520		1583	1577
Peak-hour factor, PHF	1.00	1.00	0.98	0.98	0.89	0.89
Adj. Flow (vph)	1	1798	1783	55	115	444
RTOR Reduction (vph)	0	0	1	0	0	11
Lane Group Flow (vph)	0	1799	1837	0	115	433
Confl. Peds. (#/hr)	6			6	6	
Confl. Bikes (#/hr)				8		1
Heavy Vehicles (%)	0%	2%	2%	0%	14%	2%
Turn Type	Perm	NA	NA		Prot	custom
Protected Phases		2	6		7	5
Permitted Phases	2					7
Actuated Green, G (s)		124.7	91.5		15.8	47.0
Effective Green, g (s)		124.7	91.5		15.8	47.0
Actuated g/C Ratio		0.83	0.61		0.11	0.31
Clearance Time (s)		5.0	5.0		4.5	2.0
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)		2808	2147		166	515
v/s Ratio Prot			c0.52		0.07	c0.17
v/s Ratio Perm		0.53				0.10
v/c Ratio		0.64	0.86		0.69	0.84
Uniform Delay, d1		4.6	23.9		64.8	48.0
Progression Factor		1.00	1.00		1.00	1.00
Incremental Delay, d2		1.1	4.6		11.8	11.8
Delay (s)		5.7	28.5		76.6	59.8
Level of Service		A	C		E	E
Approach Delay (s)		5.7	28.5		63.3	
Approach LOS		A	C		E	

Intersection Summary			
HCM 2000 Control Delay	23.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.86		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	11.5
Intersection Capacity Utilization	82.0%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBT
Lane Group Flow (vph)	14	59	154	155	369	10	1688	2278
v/c Ratio	0.05	0.12	0.50	0.51	0.83	0.09	0.73	1.01
Control Delay	38.3	18.1	55.8	56.3	52.3	10.1	15.5	35.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	4.6	17.5
Total Delay	38.3	18.1	55.8	56.3	52.3	10.1	20.1	52.9
Queue Length 50th (ft)	10	15	132	134	233	1	493	491
Queue Length 95th (ft)	26	47	224	225	#428	m3	663	#1474
Internal Link Dist (ft)		436		273			283	2703
Turn Bay Length (ft)			250			100		
Base Capacity (vph)	287	521	310	306	446	113	2306	2258
Starvation Cap Reductn	0	0	0	0	0	0	540	0
Spillback Cap Reductn	0	0	0	0	0	0	0	105
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.05	0.11	0.50	0.51	0.83	0.09	0.96	1.06

Intersection Summary

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

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	12	18	32	285	18	362	10	1572	116	0	2219	14
Future Volume (vph)	12	18	32	285	18	362	10	1572	116	0	2219	14
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	6.0		6.0	6.0	6.0	5.0	5.0			5.0	
Lane Util. Factor	1.00	1.00		0.95	0.95	1.00	1.00	0.95			0.95	
Frpb, ped/bikes	1.00	0.98		1.00	1.00	0.94	1.00	1.00			1.00	
Flpb, ped/bikes	1.00	1.00		0.99	0.99	1.00	1.00	1.00			1.00	
Frt	1.00	0.90		1.00	1.00	0.85	1.00	0.99			1.00	
Flt Protected	0.95	1.00		0.95	0.96	1.00	0.95	1.00			1.00	
Satd. Flow (prot)	1805	1688		1705	1720	1502	1805	3493			3570	
Flt Permitted	0.49	1.00		0.72	0.71	1.00	0.04	1.00			1.00	
Satd. Flow (perm)	929	1688		1289	1273	1502	81	3493			3570	
Peak-hour factor, PHF	0.85	0.85	0.85	0.98	0.98	0.98	1.00	1.00	1.00	0.98	0.98	0.98
Adj. Flow (vph)	14	21	38	291	18	369	10	1572	116	0	2264	14
RTOR Reduction (vph)	0	27	0	0	0	91	0	4	0	0	0	0
Lane Group Flow (vph)	14	32	0	154	155	278	10	1684	0	0	2278	0
Confl. Peds. (#/hr)			5	5		29			21	21		15
Confl. Bikes (#/hr)			10			15			19			
Heavy Vehicles (%)	0%	0%	0%	0%	0%	1%	0%	2%	1%	0%	1%	0%
Turn Type	pm+pt	NA		Perm	NA	Perm	pm+pt	NA			NA	
Protected Phases	7	4			8		5	2			6	
Permitted Phases	4			8		8	2					
Actuated Green, G (s)	43.1	43.1		36.1	36.1	36.1	95.9	95.9			88.9	
Effective Green, g (s)	43.1	43.1		36.1	36.1	36.1	95.9	95.9			88.9	
Actuated g/C Ratio	0.29	0.29		0.24	0.24	0.24	0.64	0.64			0.59	
Clearance Time (s)	5.0	6.0		6.0	6.0	6.0	5.0	5.0			5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0			3.0	
Lane Grp Cap (vph)	278	485		310	306	361	74	2233			2115	
v/s Ratio Prot	0.00	c0.02					0.00	c0.48			c0.64	
v/s Ratio Perm	0.01			0.12	0.12	c0.18	0.08					
v/c Ratio	0.05	0.07		0.50	0.51	0.77	0.14	0.75			1.08	
Uniform Delay, d1	38.8	38.8		49.1	49.2	53.1	68.6	18.8			30.5	
Progression Factor	1.00	1.00		1.00	1.00	1.00	0.69	0.79			0.53	
Incremental Delay, d2	0.1	0.1		1.3	1.3	9.5	0.6	1.8			41.9	
Delay (s)	38.8	38.9		50.4	50.6	62.6	47.9	16.7			58.0	
Level of Service	D	D		D	D	E	D	B			E	
Approach Delay (s)		38.9			57.1			16.9			58.0	
Approach LOS		D			E			B			E	

Intersection Summary			
HCM 2000 Control Delay	42.8	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.02		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	25.5
Intersection Capacity Utilization	94.5%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	104	9	34	117	24	74
Future Volume (Veh/h)	104	9	34	117	24	74
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	0.81	0.81	1.00	1.00
Hourly flow rate (vph)	104	9	42	144	24	74
Pedestrians	8			8	2	
Lane Width (ft)	12.0			12.0	12.0	
Walking Speed (ft/s)	3.5			3.5	3.5	
Percent Blockage	1			1	0	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)				398		
pX, platoon unblocked						
vC, conflicting volume			115		346	118
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			115		346	118
tC, single (s)			4.1		6.5	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.6	3.3
p0 queue free %			97		96	92
cM capacity (veh/h)			1465		612	930

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	113	186	98
Volume Left	0	42	24
Volume Right	9	0	74
cSH	1700	1465	825
Volume to Capacity	0.07	0.03	0.12
Queue Length 95th (ft)	0	2	10
Control Delay (s)	0.0	1.9	10.0
Lane LOS		A	A
Approach Delay (s)	0.0	1.9	10.0
Approach LOS			A

Intersection Summary			
Average Delay	3.3		
Intersection Capacity Utilization	29.5%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBR	NBL	NBT	SBT
Lane Group Flow (vph)	249	53	57	1484	2565
v/c Ratio	0.80	0.16	0.22	0.72	1.01
Control Delay	77.4	12.5	17.3	17.0	29.4
Queue Delay	0.0	0.0	0.0	0.1	15.7
Total Delay	77.4	12.5	17.3	17.1	45.1
Queue Length 50th (ft)	236	0	11	361	~423
Queue Length 95th (ft)	317	38	m20	m293	m#1473
Internal Link Dist (ft)	86			221	189
Turn Bay Length (ft)	75		60		
Base Capacity (vph)	471	461	272	2105	2534
Starvation Cap Reductn	0	0	0	31	17
Spillback Cap Reductn	0	1	0	83	104
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.53	0.12	0.21	0.73	1.06

Intersection Summary

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

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

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

Movement	EBL	EBR	NBL	NBT	SBU	SBT	SBR
Lane Configurations							
Traffic Volume (vph)	249	53	55	1425	0	2342	120
Future Volume (vph)	249	53	55	1425	0	2342	120
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0		5.0	
Lane Util. Factor	1.00	1.00	1.00	0.95		0.95	
Frpb, ped/bikes	1.00	0.98	1.00	1.00		1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00		1.00	
Frt	1.00	0.85	1.00	1.00		0.99	
Flt Protected	0.95	1.00	0.95	1.00		1.00	
Satd. Flow (prot)	1767	1577	1805	3539		3502	
Flt Permitted	0.95	1.00	0.05	1.00		1.00	
Satd. Flow (perm)	1767	1577	88	3539		3502	
Peak-hour factor, PHF	1.00	1.00	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	249	53	57	1484	0	2440	125
RTOR Reduction (vph)	0	44	0	0	0	1	0
Lane Group Flow (vph)	249	9	57	1484	0	2564	0
Confl. Peds. (#/hr)	1	3					11
Confl. Bikes (#/hr)		5					40
Heavy Vehicles (%)	2%	0%	0%	2%	0%	2%	0%
Turn Type	Perm	Perm	custom	NA	custom	NA	
Protected Phases			5!	2!	1!	6!	
Permitted Phases	4	4	1 2		5 6		
Actuated Green, G (s)	26.5	26.5	103.5	86.8		108.5	
Effective Green, g (s)	26.5	26.5	103.5	86.8		108.5	
Actuated g/C Ratio	0.18	0.18	0.69	0.58		0.72	
Clearance Time (s)	5.0	5.0	5.0	5.0		5.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0		3.0	
Lane Grp Cap (vph)	312	278	251	2047		2533	
v/s Ratio Prot			0.03	0.42		c0.73	
v/s Ratio Perm	c0.14	0.01	0.13				
v/c Ratio	0.80	0.03	0.23	0.72		1.01	
Uniform Delay, d1	59.2	51.1	57.5	22.9		20.8	
Progression Factor	1.00	1.00	0.57	0.64		0.60	
Incremental Delay, d2	13.3	0.0	0.3	1.4		15.0	
Delay (s)	72.4	51.2	33.1	16.0		27.5	
Level of Service	E	D	C	B		C	
Approach Delay (s)	68.7			16.6		27.5	
Approach LOS	E			B		C	

Intersection Summary			
HCM 2000 Control Delay	26.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	1.00		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	19.0
Intersection Capacity Utilization	90.7%	ICU Level of Service	E
Analysis Period (min)	15		

! Phase conflict between lane groups.
c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	23	0	0	18	0	1468	11	0	2361	35
Future Volume (Veh/h)	0	0	23	0	0	18	0	1468	11	0	2361	35
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.94	0.94	0.94	0.97	0.97	0.97
Hourly flow rate (vph)	0	0	23	0	0	18	0	1562	12	0	2434	36
Pedestrians		10			18			5			2	
Lane Width (ft)		12.0			12.0			12.0			12.0	
Walking Speed (ft/s)		3.5			3.5			3.5			3.5	
Percent Blockage		1			2			0			0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)								478			301	
pX, platoon unblocked	0.43	0.43	0.28	0.43	0.43	0.71	0.28			0.71		
vC, conflicting volume	3263	4054	1250	2831	4066	807	2480			1592		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	533	2379	0	0	2407	0	1156			1007		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	92	100	100	98	100			100		
cM capacity (veh/h)	176	15	303	391	14	756	171			483		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	23	18	1041	533	1623	847
Volume Left	0	0	0	0	0	0
Volume Right	23	18	0	12	0	36
cSH	303	756	1700	1700	1700	1700
Volume to Capacity	0.08	0.02	0.61	0.31	0.95	0.50
Queue Length 95th (ft)	6	2	0	0	0	0
Control Delay (s)	17.8	9.9	0.0	0.0	0.0	0.0
Lane LOS	C	A				
Approach Delay (s)	17.8	9.9	0.0		0.0	
Approach LOS	C	A				

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	77.9%	ICU Level of Service	D
Analysis Period (min)	15		

Movement	EBL	EBT	WBU	WBT	WBR	SBL	SBR
Lane Configurations							
Traffic Volume (veh/h)	108	977	35	1591	43	27	80
Future Volume (Veh/h)	108	977	35	1591	43	27	80
Sign Control		Free		Free		Stop	
Grade		0%		0%		0%	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.95	0.95
Hourly flow rate (vph)	113	1018	0	1657	45	28	84
Pedestrians				2		34	
Lane Width (ft)				8.0		12.0	
Walking Speed (ft/s)				3.5		3.5	
Percent Blockage				0		3	
Right turn flare (veh)							
Median type		Raised		Raised			
Median storage veh)		1		1			
Upstream signal (ft)							
pX, platoon unblocked			0.00				
vC, conflicting volume	1736		0			2450	885
vC1, stage 1 conf vol						1714	
vC2, stage 2 conf vol						737	
vCu, unblocked vol	1736		0			2450	885
tC, single (s)	4.1		0.0			6.8	6.9
tC, 2 stage (s)						5.8	
tF (s)	2.2		0.0			3.5	3.3
p0 queue free %	68		0			68	70
cM capacity (veh/h)	351		0			89	283

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	SB 1
Volume Total	113	509	509	1105	597	0	112
Volume Left	113	0	0	0	0	0	28
Volume Right	0	0	0	0	45	0	84
cSH	351	1700	1700	1700	1700	1700	183
Volume to Capacity	0.32	0.30	0.30	0.65	0.35	0.00	0.61
Queue Length 95th (ft)	34	0	0	0	0	0	85
Control Delay (s)	20.0	0.0	0.0	0.0	0.0	0.0	51.6
Lane LOS	C						F
Approach Delay (s)	2.0			0.0			51.6
Approach LOS							F

Intersection Summary			
Average Delay	2.7		
Intersection Capacity Utilization	67.8%	ICU Level of Service	C
Analysis Period (min)	15		

Movement	EBU	EBL	EBT	WBU	WBT	WBR	SBL	SBR
Lane Configurations								
Traffic Volume (veh/h)	12	61	949	2	1701	25	12	57
Future Volume (Veh/h)	12	61	949	2	1701	25	12	57
Sign Control			Free		Free		Stop	
Grade			0%		0%		0%	
Peak Hour Factor	1.00	1.00	1.00	0.96	0.96	0.96	0.86	0.86
Hourly flow rate (vph)	0	61	949	0	1772	26	14	66
Pedestrians							40	
Lane Width (ft)							12.0	
Walking Speed (ft/s)							3.5	
Percent Blockage							4	
Right turn flare (veh)								
Median type			None		None			
Median storage veh)								
Upstream signal (ft)					516			
pX, platoon unblocked	0.00	0.76		0.00			0.76	0.76
vC, conflicting volume	0	1838		0			2422	939
vC1, stage 1 conf vol								
vC2, stage 2 conf vol								
vCu, unblocked vol	0	1470		0			2238	287
tC, single (s)	0.0	4.1		0.0			7.0	6.9
tC, 2 stage (s)								
tF (s)	0.0	2.2		0.0			3.6	3.3
p0 queue free %	0	82		0			28	87
cM capacity (veh/h)	0	332		0			19	519

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1
Volume Total	61	474	474	1181	617	80
Volume Left	61	0	0	0	0	14
Volume Right	0	0	0	0	26	66
cSH	332	1700	1700	1700	1700	95
Volume to Capacity	0.18	0.28	0.28	0.69	0.36	0.85
Queue Length 95th (ft)	17	0	0	0	0	116
Control Delay (s)	18.3	0.0	0.0	0.0	0.0	133.4
Lane LOS	C					F
Approach Delay (s)	1.1			0.0		133.4
Approach LOS						F

Intersection Summary			
Average Delay	4.1		
Intersection Capacity Utilization	71.5%	ICU Level of Service	C
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	285	458	201	373	886	201	203	1107	226	207	1486	667
v/c Ratio	0.95	0.76	0.53	0.68	1.00	0.41	0.99	0.87	0.36	0.30	0.95	0.81
Control Delay	107.6	68.0	20.6	67.4	84.9	14.5	98.7	52.7	14.4	25.4	30.7	11.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	15.3	2.1
Total Delay	107.6	68.0	20.6	67.4	84.9	14.5	98.7	52.7	14.4	25.4	46.0	13.3
Queue Length 50th (ft)	145	226	44	181	459	33	145	516	57	40	656	254
Queue Length 95th (ft)	m#238	m281	m121	#268	#606	108	#301	584	120	m34	m612	m200
Internal Link Dist (ft)		436			534			359			398	
Turn Bay Length (ft)	175		125	275		325	200		200	240		
Base Capacity (vph)	300	707	422	545	890	488	205	1344	652	701	1557	821
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	112	64
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.95	0.65	0.48	0.68	1.00	0.41	0.99	0.82	0.35	0.30	1.03	0.88

Intersection Summary

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

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT
Lane Configurations												
Traffic Volume (vph)	285	458	201	373	886	201	179	974	199	1	206	1486
Future Volume (vph)	285	458	201	373	886	201	179	974	199	1	206	1486
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	6.0	6.0	5.0	5.0	5.0	5.0	6.0	6.0		5.0	6.0
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	1.00	0.95	1.00		0.97	0.95
Frpb, ped/bikes	1.00	1.00	0.94	1.00	1.00	0.94	1.00	1.00	0.93		1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85		1.00	1.00
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	3467	3539	1501	3467	3610	1496	1787	3539	1493		3464	3539
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.10	1.00	1.00		0.12	1.00
Satd. Flow (perm)	3467	3539	1501	3467	3610	1496	183	3539	1493		451	3539
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	0.88	0.88	0.88	1.00	1.00	1.00
Adj. Flow (vph)	285	458	201	373	886	201	203	1107	226	1	206	1486
RTOR Reduction (vph)	0	0	125	0	0	119	0	0	88	0	0	0
Lane Group Flow (vph)	285	458	76	373	886	82	203	1107	138	0	207	1486
Confl. Peds. (#/hr)			19			21	22		34		34	
Confl. Bikes (#/hr)			13			21			5			
Heavy Vehicles (%)	1%	2%	1%	1%	0%	2%	1%	2%	1%	0%	1%	2%
Turn Type	Prot	NA	Perm	Prot	NA	Perm	pm+pt	NA	Perm	pm+pt	pm+pt	NA
Protected Phases	7	4		3	8		5	2		1	1	6
Permitted Phases			4			8	2		2	6	6	
Actuated Green, G (s)	13.0	25.4	25.4	23.6	37.0	37.0	54.1	54.1	54.1		67.0	66.0
Effective Green, g (s)	13.0	25.4	25.4	23.6	37.0	37.0	54.1	54.1	54.1		67.0	66.0
Actuated g/C Ratio	0.09	0.17	0.17	0.16	0.25	0.25	0.36	0.36	0.36		0.45	0.44
Clearance Time (s)	5.0	6.0	6.0	5.0	5.0	5.0	5.0	6.0	6.0		5.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	300	599	254	545	890	369	205	1276	538		701	1557
v/s Ratio Prot	c0.08	0.13		0.11	c0.25		0.09	c0.31			0.05	c0.42
v/s Ratio Perm			0.05			0.05	c0.27		0.09		0.08	
v/c Ratio	0.95	0.76	0.30	0.68	1.00	0.22	0.99	0.87	0.26		0.30	0.95
Uniform Delay, d1	68.2	59.4	54.5	59.7	56.4	45.0	42.6	44.6	33.8		44.0	40.5
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		0.62	0.62
Incremental Delay, d2	38.2	5.8	0.7	3.5	28.9	0.3	59.9	8.1	1.1		0.1	5.0
Delay (s)	106.2	65.2	54.9	63.2	85.3	45.3	102.5	52.7	34.9		27.3	30.1
Level of Service	F	E	D	E	F	D	F	D	C		C	C
Approach Delay (s)		75.4			74.1			56.7				26.1
Approach LOS		E			E			E				C

Intersection Summary			
HCM 2000 Control Delay	52.1	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.98		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	22.0
Intersection Capacity Utilization	101.1%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SBR
Lane Configurations	
Traffic Volume (vph)	667
Future Volume (vph)	667
Ideal Flow (vphpl)	1900
Total Lost time (s)	6.0
Lane Util. Factor	1.00
Frpb, ped/bikes	0.95
Flpb, ped/bikes	1.00
Frt	0.85
Flt Protected	1.00
Satd. Flow (prot)	1515
Flt Permitted	1.00
Satd. Flow (perm)	1515
Peak-hour factor, PHF	1.00
Adj. Flow (vph)	667
RTOR Reduction (vph)	155
Lane Group Flow (vph)	512
Confl. Peds. (#/hr)	22
Confl. Bikes (#/hr)	15
Heavy Vehicles (%)	1%
Turn Type	Perm
Protected Phases	
Permitted Phases	6
Actuated Green, G (s)	66.0
Effective Green, g (s)	66.0
Actuated g/C Ratio	0.44
Clearance Time (s)	6.0
Vehicle Extension (s)	3.0
Lane Grp Cap (vph)	666
v/s Ratio Prot	
v/s Ratio Perm	0.34
v/c Ratio	0.77
Uniform Delay, d1	35.5
Progression Factor	0.41
Incremental Delay, d2	2.3
Delay (s)	16.9
Level of Service	B
Approach Delay (s)	
Approach LOS	

Intersection Summary

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	50	0	1637	2412	69
Future Volume (Veh/h)	0	50	0	1637	2412	69
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	54	0	1779	2622	75
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)				269	363	
pX, platoon unblocked	0.57	0.41	0.41			
vC, conflicting volume	3549	1348	2697			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1500	0	2263			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	88	100			
cM capacity (veh/h)	65	448	94			

Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	54	593	1186	1748	949
Volume Left	0	0	0	0	0
Volume Right	54	0	0	0	75
cSH	448	94	1700	1700	1700
Volume to Capacity	0.12	0.00	0.70	1.03	0.56
Queue Length 95th (ft)	10	0	0	0	0
Control Delay (s)	14.1	0.0	0.0	0.0	0.0
Lane LOS	B				
Approach Delay (s)	14.1	0.0		0.0	
Approach LOS	B				

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	78.9%	ICU Level of Service	D
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	8	172	155	20	130	0
Future Volume (Veh/h)	8	172	155	20	130	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.88	0.92	0.92	0.92	1.00	1.00
Hourly flow rate (vph)	9	187	168	22	130	0
Pedestrians					7	
Lane Width (ft)					12.0	
Walking Speed (ft/s)					3.5	
Percent Blockage					1	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)			287			
pX, platoon unblocked						
vC, conflicting volume	197				391	186
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	197				391	186
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	99				79	100
cM capacity (veh/h)	1379				609	856

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	196	190	130
Volume Left	9	0	130
Volume Right	0	22	0
cSH	1379	1700	609
Volume to Capacity	0.01	0.11	0.21
Queue Length 95th (ft)	0	0	20
Control Delay (s)	0.4	0.0	12.5
Lane LOS	A		B
Approach Delay (s)	0.4	0.0	12.5
Approach LOS			B

Intersection Summary			
Average Delay	3.3		
Intersection Capacity Utilization	29.4%	ICU Level of Service	A
Analysis Period (min)	15		

Technical Appendices for

Transportation Impact Study

218 South Lamar Development in Austin, Texas

Appendix D
Cost Estimate Calculations and South Lamar Boulevard Corridor Improvement Program Worksheets

August 2018

BIG RED DOG
ENGINEERING | CONSULTING

1074.40.001

PRELIMINARY
NOT FOR PERMITTING, BIDDING, OR CONSTRUCTION
PREPARED BY:
HDR ENGINEERING, INC.
TBPE FIRM NO. F-754
PHILIP A. FULTON, PE
NO. 73469

ESTIMATED CONSTRUCTION COST
SOUTH LAMAR TRANSPORTATION IMPROVEMENT PROGRAM
CITY OF AUSTIN TRANSPORTATION DEPARTMENT

PROJECT NAME: SOUTH LAMAR TRANSPORTATION IMPROVEMENTS - FULL RECONSTRUCTION

PROJECT LIMITS: FROM RIVERSIDE DRIVE TO BARTON SPRINGS ROAD

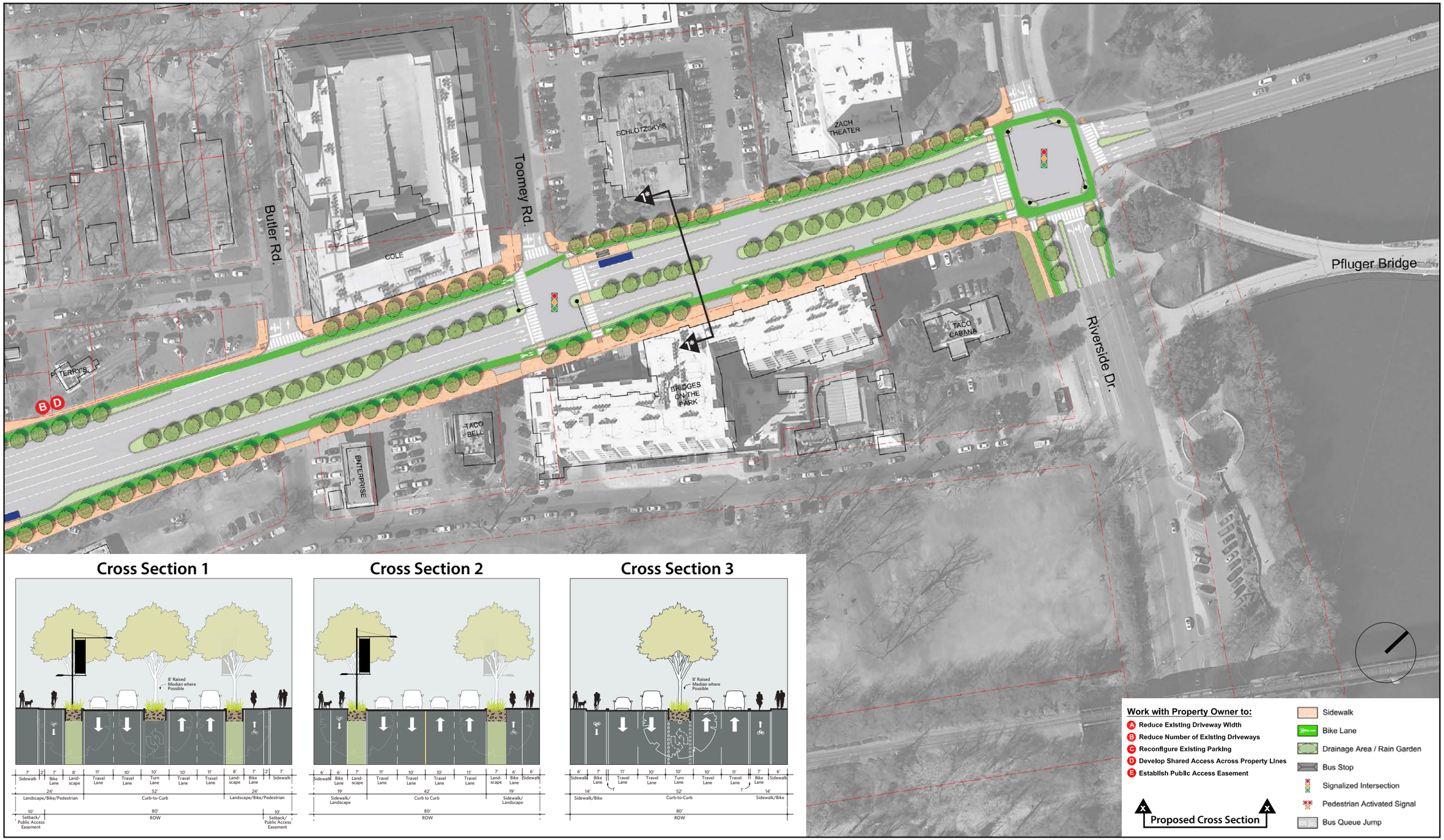
PROJECT DESCRIPTION: COMPLETE RECONSTRUCTION

I. PROJECT DATA

a.	PROJECT TYPE:	URBAN RECONSTRUCTION	
b.	TYPICAL SECTION:	SOLA-NORTH	
c.	PROJECT LENGTH =	0.300	MILES
d.	NOMINAL ROW WIDTH =	100	FEET
e.	NOMINAL PAVEMENT WIDTH =	60	FEET
f.	HMAC PAVEMENT TYPE	URBAN ARTERIAL	
g.	ROADWAY TYPE (FOR DRAINAGE CALCULATION)	URBAN 4-5 LANES	
h.	EDWARDS AQUIFER/WATER QUALITY ZONE?	YES	
i.	CURRENT YEAR / YEAR OF EXPENDITURE	2015	
J.	NUMBER OF SIGNALIZED INTERSECTIONS	3	
k.	NUMBER OF PEDESTRIAN HYBRID BEACONS (HAWK'S)	0	
l.	NUMBER OF MONTHS FOR CONSTRUCTION	24	
m.	FULL PAVEMENT RECONSTRUCTION OR MILL/OVERLAY?	RECONSTR	
n.			
o.			
p.			

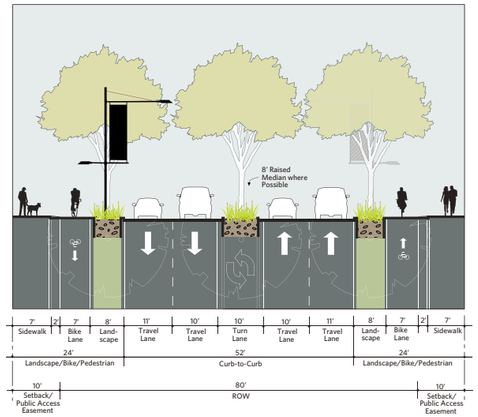
	II. CONSTRUCTION ITEMS	QTY		UNITS	UNIT PRICE	TOTAL COST
a.	PREPARING ROW & REMOVALS	16		STA	$ 1,000.00	$ 16,000
b.	EXCAVATION & PAVEMENT REMOVALS		14,670	CY	$ 9.00	$ 132,030
c.	EMBANKMENT		3,690	CY	$ 15.00	$ 55,350
d.	HMAC PAVEMENT		10,560	SY	$ 71.37	$ 753,632
e.	DRAINAGE SYSTEMS		0.300	LS/MI		$ 405,197
f.	WATER QUALITY ADDITIONAL ALLOWANCE		20%	LS	$ 81,039.40	$ 81,039
g.	ILLUMINATION (COMBINATION)		0.30	LS/MI	$ 239,000.00	$ 143,400
h.	SIGNING AND PAVEMENT MARKINGS		0.30	LS	$ 50,000.00	$ 15,000
i.	TEMPORARY/PERMANENT EROSION CONTROL	3%		LS		$ 42,817
j.	SIDEWALKS		3,168	SY	$ 54.00	$ 171,072
k.	PEDESTRIAN PAVERS, RAISED PLANTERS & GATEWAY ELEMENTS	5.0%		LS		$ 67,310
l.	CURB AND GUTTER		12,672	LF	$ 20.00	$ 253,440
m.	CYCLE TRACK PAVEMENT		3,520	SY	$ 41.71	$ 146,823
n.	SIGNALIZATION (FULL INTERSECTION)		1	EA	$250,000	$ 250,000
o.	SIGNALIZATION (PROTECTED BIKEWAY)		2	EA	$400,000	$ 800,000
p.	SIGNALIZATION (PEDESTRIAN HYBRID BEACONS)		-	EA	$ 80,000.00	$ -
q.	CROSS DRAINAGE STRUCTURES			LS		$ -
r.	RETAINING WALLS			LS		$ -
s.	BARRICADES, SIGNS, AND TRAFFIC HANDLING		24	MO	$ 4,000.00	$ 96,000
t.	RAISED/PAVED CYCLE TRACK OR PARKING BUFFER		704	SY	$ 54.00	$ 38,016
u.	PUBLIC ART	2%		LS		$ 65,275
v.	SAFETY ALLOWANCE (TRAFFIC CONTROL PLAN CONTIGENCY)		0.30	LS/MI	$ 10,000.00	$ 3,000
w.	DRIVEWAY RECONSTRUCTION/CONSOLIDATION		0.30	LS/MI	$ 400,000.00	$ 120,000
x.	BUS PAD/BUS STOP IMPROVEMENTS		0.30	LS/MI	$ 50,000.00	$ 15,000
y.	IRRIGATION		0.30	LS/MI	$ 75,000.00	$ 22,500
z.	MEDIAN IMPROVEMENTS-TREES, SOD & TREE GATES		0.30	LS/MI	$300,000	$ 90,000
aa.						
bb.						
	SUBTOTAL					$ 3,782,902
III. OTHER ITEMS						
	MOBILIZATION	10%				$ 378,290
	ENGINEERING AND DESIGN	15%				$ 567,435
	CONSTRUCTION CONTIGENCY	15%				$ 567,435
	CONSTRUCTION ENGINEERING AND INSPECTION (CE&I)	10%				$ 472,863
	SUBTOTAL					$ 1,986,024
IV.	**TOTAL PROJECT COST (CURRENT YEAR DOLLARS)**					**$ 5,768,926**
V.	**AUSTIN ENERGY UTILITY RELOCATIONS/ADJUSTMENTS**		1,584	LF	$916.80	**$ 1,452,300**
VI.	**TOTAL PROJECT COST INCLUDING AUSTIN ENERGY RELOCATION**					**$ 7,221,226**

This estimate represents our engineering judgment as professionals knowledgeable with the construction of similar projects.
This estimate is for planning and programming purposes only and does not guarantee what actual construction costs will be.
Estimates rounded up to nearest $50,000 for reporting purposes.

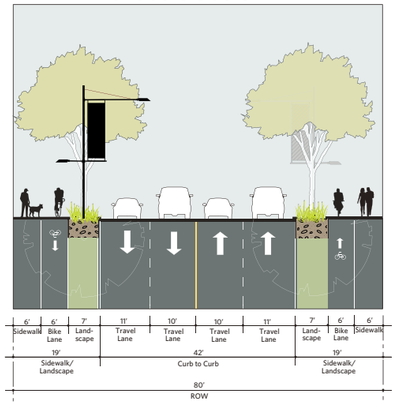


1* Two-way cycle tracks will be part of the proposed Cross Section 1 between Riverside Drive and Barton Springs Road.

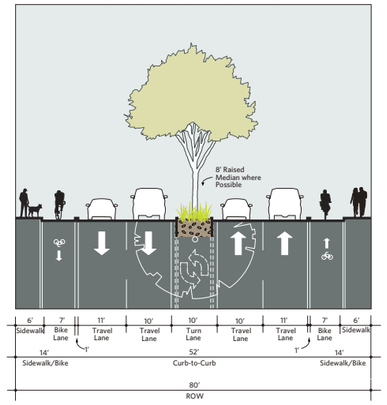
Cross Section 1

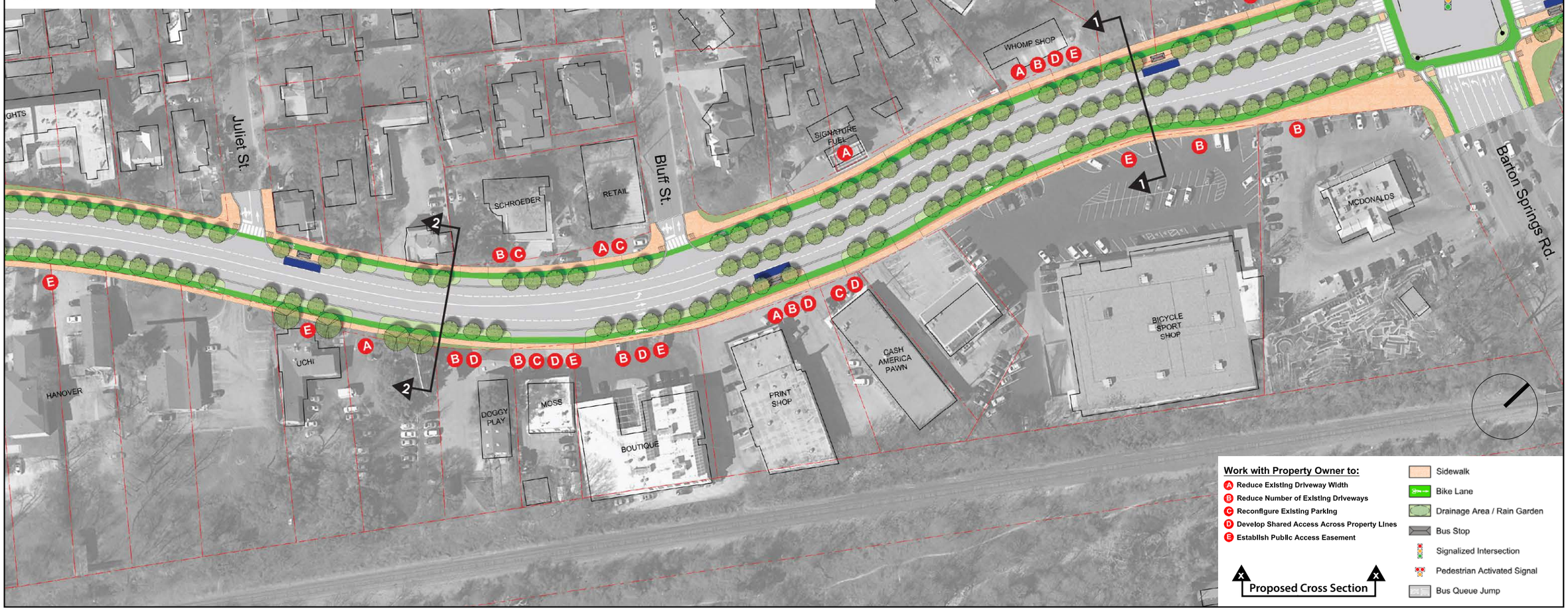


Cross Section 2



Cross Section 3





Improvements to the South Lamar corridor in the form of pedestrian and bicycle facilities, roadway, and public green spaces have substantial potential to impact health of the neighboring communities. Given the size of the population and interest in active transportation, facilities should offer separated space for people who want to walk and bike. Facilities should also be planned to accommodate a large volume of non-motorized travelers.

FUTURE CORRIDOR CHARACTERISTICS AND RECOMMENDATIONS

South Lamar Boulevard offers many amenities and is a major destination in South Austin. The recent projects that have sprung up in the area along with the many that are in the planning stages will continue to increase density along the corridor. More and more pedestrian-friendly destinations could see an increase in multimodal activity in the future.

Recommended improvements for South Lamar Boulevard are based on the complete streets and corridor concepts. Improvements have been identified as short- (0 – 5 years) or long-term (5 – 20 years) to help the City of Austin prioritize based on need and feasibility and also to allow the City time to raise the needed funds. **Table ES-1** summarizes the recommended improvements that could be implemented in the short-term.

Table ES-1. Short-Term Improvements

Limits (Lamar @)	Project	Mode				Description
		🚶	🚲	🚌	🚗	
5th/6th Streets*	Operational				X	Prohibit left-turn movements along Lamar Blvd. during peak periods.
Riverside Dr.	Operational		X			Construct protected bike facility at intersection.
Riverside Dr. & Toomey Rd.	Operational	X			X	Install new traffic signal.
Between Riverside Dr. & Treadwell St.	Raised Median				X	Construct raised landscaped median with select openings at driveways.
Between Riverside Dr. and Barton Springs Rd.	Bicycle Lanes		X			Construct 2-way cycle tracks on both sides of S. Lamar Blvd.
Barton Springs Rd.	Operational		X			Construct protected bike facility at intersection.
	Bus Queue Jump			X		Install NB and SB bus queue jumps (using right-turn lanes).
	Operational				X	Construct dual SB left-turn bays.
	Operational			X	X	Convert NB approach to two through lanes with third receiving lane for bus stop pullout.
Treadwell St.	Network		X			Construct bicycle connection under UPRR tracks to West Bouldin Creek Greenbelt.
Between Riverside Dr. & Treadwell St.	Operational	X	X	X	X	Construct recommended ultimate cross section.

**5th and 6th Streets are beyond the scope of this study; however, due to their impact on corridor operations, recommendations have been provided.*

Limits (Lamar @)	Project	Mode				Description
		🚶	🚲	🚌	🚗	
South Lamar and Collier St./ Evergreen Ave.	Operational/ Safety	X			X	• Install new traffic signal. • Prohibit left-turn movement at Mary St. approach. • Build roundabout at Mary St. and Evergreen Ave. • Close NB "ramp" from South Lamar Blvd. to Mary St.
Oltorf St.	Bus Queue Jump			X		Install NB bus queue jump (using right-turn lane).
	Operational	X			X	Move pedestrian crossing across S. Lamar Blvd. from south side to north side of intersection.
	Safety	X			X	Remove channelization from NB right-turn lane.
South Lamar & Del Curto Rd.	Operational	X			X	• Install new traffic signal. • Prohibit left-turn movement at WB Bluebonnet Ln. approach. • Construct roundabout at Del Curto Rd. and Bluebonnet Ln.
Bluebonnet Ln.	Bus Queue Jump			X		Install NB bus queue jump (using right-turn lane).
	Bicycle Lanes		X			Install continuous 2-way cycle track across South Lamar Blvd.
Manchaca Rd.	Bus Queue Jump			X		Install NB bus queue jump (using proposed bus lane).
Between Manchaca Rd. and Barton Skwy.	Bus Lane			X		Construct NB bus lane.
Barton Skwy.	Operational/ Bus Queue Jump			X	X	Construct NB right-turn bay and install bus queue jump (using right-turn lane).

Wider, connected sidewalks, ladder-style crosswalks, and pedestrian hybrid beacons build a better infrastructure for multimodal connectivity and activities.

Limits (Lamar @)	Project	Mode				Description
		🚶	🚲	🚌	🚗	
South Lamar Blvd. and West Oak Dr.	Safety	X		X		Install pedestrian hybrid beacon.
South Lamar Blvd. and Brodie Oaks	Operational				X	Prohibit NB left-turn movement from US 290/SH 71 underpass.
Corridor-wide	Policy	X	X		X	Reduce speed limit to 35 mph
	Policy			X		Pass ordinance to assign right-of-way to buses at pullouts.
	Informa-tional/Rec-reational	X	X	X	X	Install wayfinding signs, especially to/from area green spaces.
	Safety	X				Time leading pedestrian intervals at signalized crosswalks where significant conflict between turning vehicles and pedestrians exists.
	Bicycle Supply		X			Install B-cycle stations where supported by local demand.
	Operational				X	Install adaptive signal system.
	Informa-tional				X	Install dynamic message signs with travel times, alternative, routes, parking info, etc.
	Operational/ Safety			X	X	Institute an incident management program.
	Bus Stops			X		Provide covered, enclosed bus stops.
	Bus Stops			X		Install far side bus stops instead of nearside stops.

Two-way cycle tracks, a signal at Toomey Road and pedestrian improvements are recommended for South Lamar Boulevard.

LONG-TERM IMPROVEMENTS

Long-term projects are recommended for implementation within five to twenty years, and may require more funding to implement than short-term projects. To obtain the necessary right-of-way needed to build the full recommended cross section for South Lamar Boulevard, properties along the corridor will have to wait until redevelopment occurs. Long-term recommendations will need time to enact. **Table ES-2** details long-term projects.

Table ES-2: Long-Term Improvements

Limits (Lamar @)	Project	Mode				Description
		🚶	🚲	🚌	🚗	
Between Treadwell St. and Brodie Oaks	Operational	X	X	X	X	Construct recommended ultimate cross section.
North Lamar Blvd. and 5th/6th Sts*.	Operational				X	Consider constructing a grade separation to reduce delay.
Between Riverside Dr. and Panther Tr.	Operational/ Safety				X	Consider implementation of variable speed limit.
Between Barton Springs Rd. and Treadwell St.	Safety	X				Install pedestrian crossing (pedestrian hybrid beacon or elevated) near Bluff St., when warranted.
South Lamar Blvd. and Hether St./Mary St.	Operational/ Safety				X	Acquire right-of-way to realign Mary St. approach to remove skew with Hether St.
South Lamar Blvd. and Bluebonnet Ln.	Operational/ Safety				X	Acquire right-of-way to realign Bluebonnet Ln. approach(es) to remove skew at South Lamar Blvd.
Barton Skwy.	Network		X			Construct bicycle connection to (1) Barton Creek Greenbelt and (2) Barton Skwy. and Spyglass Dr.
Corridor-wide	Network	X	X			Install bicycle and pedestrian connections to side streets and adjacent communities.
Corridor-wide	Parking				X	Implement parking district with centralized parking facilities.
Corridor-wide	Bus Lane			X		Implement transit-only lane(s) during peak periods, when supported by ridership.

**5th and 6th Streets are beyond the scope of this study; however, due to their impact on corridor operations, recommendations have been provided.*

COST

The total cost for short-term improvements is $20.4M, and the total cost for long-term improvements is $40M. Cost estimates do not include right-of-way acquisition costs but do include engineering, materials, traffic control, construction, and contingency costs.

Table ES-3: South Lamar Boulevard Preliminary Project Cost Summary

	Improvement Type		Ultimate Cost
	Short-Term	Long-Term	
Total	$20,400,000	$40,000,000	$60,400,000

FUNDING

The funding strategies discussed in this report are a combination of guidance from the federal, state, and regional agencies regarding the use of local funds provided by the 2012 General Bond election and the leveraging of grant funding from these sources.

NEXT STEPS

The South Lamar Boulevard Corridor Development Program has helped to identify improvements that can help to enhance safety and mobility for people who walk, bike or use transit, and for people that drive. New developments along the corridor provide facilities for people who walk, and the City has already taken steps to enhance conditions for cyclists and pedestrians. In order to implement the recommended improvements identified by this program, some additional tasks lay ahead. Right-of-way will need to be obtained, and further analysis of costs and benefits may be necessary. Funding will also need to be secured for future improvements.

The next steps toward implementation of these findings include:

- Identify funding sources such as private, local, regional, state and federal programs.
- Prioritize short-term improvements that can be completed with available resources and that build towards long-term improvements.
- Develop detailed design plans for implementation.
- Continue to engage the public and deliver updates regarding implementation status, major milestones and significant information regarding South Lamar Boulevard.
- Follow the Imagine Austin Comprehensive Plan, the CAMPO plan, and other governing policies to determine appropriate development for properties along the corridor.

Riverside / Toomey / Barton Springs Mitigation Cost Calculations

Total Cost:	$7,250,000
Cost Per Intersection:	$ 2,416,667

Riverside

	Project Generated Trips		Total Intersection Counts		Percent Share of Total Traffic	Average Percentage	Approximate Cost
AM	212	**AM**	3991	**AM**	5.31%	4.79%	$115,809
PM	199	**PM**	4658	**PM**	4.27%		

Toomey

	Project Generated Trips		Total Intersection Counts		Percent Share of Total Traffic	Average Percentage	Approximate Cost
AM	119	**AM**	3412	**AM**	3.49%	4.10%	$99,086
PM	200	**PM**	4244	**PM**	4.71%		

Barton Springs

	Project Generated Trips		Total Intersection Counts		Percent Share of Total Traffic	Average Percentage	Approximate Cost
AM	65	**AM**	4850	**AM**	1.34%	1.24%	$30,024
PM	70	**PM**	6116	**PM**	1.14%		

Total: $244,919