TI TRACT
TRAFFIC IMPACT ANALYSIS

LJA Project No. 2172-1000

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Executive Summary

This report presents the summary of findings for a Traffic Impact Analysis (TIA) prepared by LJA Engineering, Inc. (LJA) for the proposed TI Tract development in Stafford, Texas. The proposed development site is bounded by US Highway 59 (US Hwy 59) and South Kirkwood Road to the West, Murphy Road to the east, West Airport Boulevard to the North, and several developments along Bluebonnet Drive to the south. This proposed development will consist of an outlet mall, restaurants, retail stores, apartments, hotels, an industrial park, office buildings, and a gas station. Construction of this development is expected to be completed in six phases. Phase 1 is expected to begin in 2015, while Phase 6 is expected to be completed in 2020. The objective of this study is to analyze the traffic impacts of each year of development on the performance of the surrounding street network and to determine mitigation measures to address any resulting deficiencies.

Access to this development will be provided via five driveways along West Airport Boulevard (Driveways 1,2,3,4 and 5), two Driveways along Murphy Road (Driveways 6 and 7), one driveway along South Kirkwood Road (Driveway 8), and two driveways along US Hwy 59 Northbound Frontage Road (Driveways 9 and 10). The study area for this TIA includes the street network determined during this project's kick off meeting with the City of Stafford. Major intersections that were analyzed in this TIA are presented in the Existing Area Conditions section of the report. Existing land uses within the study area include retail, lodging, restaurant, office, and industrial land uses. The development site currently consists of an industrial park that will be demolished in phases in correspondence to the proposed development.

Due to the nature of this development and the traffic conditions within the study area, only the weekday AM and the weekday PM peak hour periods were analyzed in this TIA. The overall proposed development is expected to add 46,246 daily vehicle trips with 3,281 vehicle trips during the AM peak hour period and 4,188 vehicle trips during the PM peak hour period. In order to evaluate the impacts of the proposed development on the surrounding street network, each year of development was analyzed without (No Build Conditions) and with (Build Conditions) the development's generated traffic.

This study includes the analysis of several intersections that are operated and maintained by the City of Stafford, and others that are operated and maintained by the Texas Department of Transportation (TxDOT). Mitigation measures for this TIA require:

1. When the LOS without development is LOS A, B, C or D, the minimum acceptable projected LOS shall be LOS D.

2. When the LOS without development is LOS E or F, the minimum acceptable projected LOS shall be equal to the LOS without development.

Left and Right Turn Lane Warrant Analyses were completed for all driveways to the proposed development. The lengths of turn bays along the street network maintained by the City of Stafford were determined to accommodate the corresponding anticipated traffic queue lengths. The lengths of turn bays along the street network maintained by TxDOT were determined in

accordance with the requirements in the Texas Department of Transportation (TxDOT) Access Management Manual. The following is a list of access management requirements at the driveways to the proposed development:

1. Construct right and left turn bays along West Airport Boulevard at Driveway 1. These right and left turn bays should each have full width of 100 feet and a 100 foot taper.
2. Construct a right turn bay along eastbound West Airport Boulevard at Driveway 2. This right turn bay should have a full width of 100 feet and a 100 foot taper.
3. Extend the existing left turn bay along westbound West Airport Boulevard at Driveway 2 to consist of a full width of 175 feet and a 100 foot taper.
4. Construct right and left turn bays along West Airport Boulevard at Driveway 3. The right turn bay should have a full width of 100 feet and a 100 foot taper, while the left turn bay should have a full width of 175 feet and a 100 foot taper.
5. Construct a left turn bay along westbound West Airport Boulevard at Driveway 4. This left turn bay should have a full width of 150 feet and a 100 foot taper.
6. Construct a left turn bay along westbound West Airport Boulevard at Driveway 5. This left turn bay should have a full width of 150 feet and a 100 foot taper.
7. Construct a right turn bay along southbound Murphy Road at Driveway 6. This right turn bay should have a full width of 375 feet and a 100 foot taper.
8. Construct right and left turn bays along South Kirkwood Road at Driveway 8. These right and left turn bays should each have a full width of 100 feet and a 100 foot taper.
9. Construct a right turn bay along US Hwy 59 Northbound Frontage Road at Driveway 9. This right turn bay should have a full width of 375 feet and a 100 foot taper.

In order to maintain acceptable operational conditions within the study street network, several roadway improvements will be required concurrently with the proposed development. The following is the list of recommendations corresponding to each year of development:

Year 2015:

1. Construct Driveways 1 through 8 each to consist of two exit lanes (One shared left/through and one right lanes) in order to prevent right turning vehicles from getting trapped behind left turning vehicles that will require more time to exit the development site.

Year 2016:

1. Construct dual left turn bays along northbound Murphy Road at its intersection with West Airport Boulevard. These left turn bays should have a full width of 645 feet and a 150 foot taper.
2. Construct eastbound left turn lane at the intersection of West Airport Boulevard and Murphy Road. This left turn lane should have a full width of 250 feet and a 100 foot taper. This improvement will be constructed by City of Stafford as part of the improvements recommended in the FM 1092 Access Management Study.
3. Reconstruct the eastbound approach of West Airport Boulevard at its intersection with Murphy Road to consist of one left turn bay (See recommendation #2 in Year 2016), two

through lanes, and one channelized right turn bay. The channelized right turn bay should have a full width of 100 feet and a 100 foot taper.

4. Change the operation of the traffic signal at West Airport Boulevard and Murphy Road from split phase operation along the eastbound and westbound approaches to protected left turns operation. This improvement will require modification of the traffic signal at this intersection and will be constructed by City of Stafford as part of the improvements recommended in the FM 1092 Access Management Study.
5. Construct a right turn bay along westbound Cash Road at its intersection with Murphy Road. This right turn bay should have a full width of 100 feet and a 100 foot taper.
6. Reconstruct the existing right turn bay along the northbound approach of US 59 Northbound Frontage Road at its intersection with West Airport Boulevard to a channelized right turn bay.
7. Reconstruct the existing right turn bay along the westbound approach of West Airport Boulevard at its intersection with US 59 Northbound Frontage Road to a channelized right turn bay. This improvement may require right-of-way acquisition.

Year 2017:

1. Reconstruct the eastbound and westbound approaches of Greenbriar Drive at Murphy Road to consist of one left turn bay, one through lane, and one shared through/right turn lane along the eastbound direction, and one left turn lane, one through lane, and one right turn bay along the westbound direction. The eastbound left turn bay should have a full width of 300 feet and a 100 foot taper. The westbound right turn bay should have a full width of 100 feet and a 100 foot taper.
2. Change the operation of the traffic signal at Greenbriar Drive and Murphy Road from split phase operation along the eastbound and westbound approaches to protected left turns operation. This improvement will require modification of the traffic signal at this intersection and will be constructed by City of Stafford as part of the improvements recommended in the FM 1092 Access Management Study.
3. Construct dual left turn bays along southbound Murphy Road at its intersection with Cash Road. These left turn bays should have a full width of 545 feet and a 150 foot taper.
4. Reconstruct the existing right turn bay along US Highway 59 Southbound Frontage Road at its intersection with West Airport Boulevard to a channelized right turn bay, and change the lane configuration along US Highway 59 Southbound Frontage Road to one channelized right turn bay, two through lanes, one shared left/through lane, one left turn bay and one U-turn bay. This improvement may require right-of-way acquisition.

Year 2018: (Mitigation Not Required)

Year 2019: (Mitigation Not Required)

Year 2020: (Mitigation Not Required)

This study assumed that traffic signal timings at all signalized intersections within the study area will be updated as needed. Several roadway recommendations listed above may require right-of-

way acquisitions along adjacent properties. These roadway improvements will require coordination between the developer, City of Stafford, TxDOT, and impacted business owners.

Several roadway improvements along Murphy Road within the study area were recommended as part of the FM 1092 Access Management Study dated December 2013. Refer to the Proposed Area Conditions Section of this report for a list of these roadway improvements. These recommendations include geometric and traffic signal improvements along the eastbound and westbound approaches of West Airport Boulevard, Greenbriar Drive, and Cash Road at Murphy Road. These proposed recommendations do not take into account the traffic generated by this proposed development, and therefore, should be updated as described in the list of recommendations above.

Several intersection movements will operate at unacceptable levels with and without the proposed development. Mitigation measures to address these deficiencies were not established in this study. This study provides mitigation measures to improve the operation of movements that will be reduced to unacceptable levels upon the construction of this proposed development.

West Airport Boulevard and Murphy Road

The intersection of West Airport Boulevard and Murphy Road is located northeast of the proposed development site. This intersection is currently signalized with protected left turns along the northbound and southbound approaches of Murphy Road and split phase along the eastbound and westbound approaches of West Airport Boulevard. The northbound and southbound approaches to this intersection each consists of three through lanes and one 150 foot left turn bay. The eastbound approach consists of one shared left/through and one shared through/right lanes. The westbound approach consists of two through lanes and one 50 foot left turn bay. **Table 5** and **Table 6** provide a summary of the MOEs at this intersection for the AM and PM peak hours, respectively.

Table 5: West Airport Boulevard @ Murphy Road Summary of MOEs - (AM Peak)

Scenario / Lane Group	EBL/T	EBT/R	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Int.
2014 Existing AM	**168.0/F**	**259.0/F**	-	29.5/C	**96.3/F**	**109.7/F**	44.4/D	18.4/B	21.3/C	42.5/D	28.8/C	33.8/C	**63.2/E**
2015 No Build AM	**190.2/F**	**284.5/F**	-	29.8/C	**107.5/F**	**121.5/F**	48.2/D	19.1/B	22.3/C	44.3/D	30.2/C	35.8/D	**69.1/E**
2015 Build AM	**218.7/F**	**437.0/F**	-	29.9/C	**110.9/F**	**125.1/F**	**93.3/F**	19.2/B	22.4/C	44.3/D	30.8/C	36.6/D	**95.5/F**
2015 Build AM*	**164.8/F**	**360.0/F**	-	33.2/C	**188.5/F**	**209.3/F**	**56.5/E**	19.2/B	22.4/C	44.3/D	42.6/D	53.2/D	**88.4/F**
2016 No Build AM	**209.0/F**	**307.5/F**	-	29.9/C	**118.4/F**	**133.2/F**	**55.6/E**	20.2/C	23.9/C	46.5/D	31.6/C	37.9/D	**75.1/E**
2016 Build AM	**370.3/F**	**968.3/F**	-	30.8/C	**145.2/F**	**160.1/F**	**361.7/F**	20.8/C	24.8/C	46.5/D	38.4/D	48.2/D	**238.8/F**
2016 Build AM**	47.7/D	-	48.9/D	31.1/C	**62.9/E**	**71.1/E**	31.8/C	17.3/B	20.6/C	38.3/D	29.0/C	35.7/D	30.9/C
2017 No Build AM	**228.1/F**	**330.7/F**	-	30.1/C	**130.2/F**	**145.7/F**	**64.6/E**	21.5/C	25.9/C	49.0/D	33.2/C	40.3/D	**81.4/F**
2017 Build AM	**464.1/F**	**1145.1/F**	-	31.2/C	**176.5/F**	**191.4/F**	**523.1/F**	22.3/C	27.1/C	49.0/D	48.5/D	**60.6/E**	**312.2/F**
2017 Build AM*	**76.4/E**	-	37.3/D	53.7/D	**79.0/E**	**87.6/F**	38.8/D	17.3/B	19.8/B	52.0/D	39.0/D	48.1/D	36.6/D
2018 No Build AM	**248.9/F**	**355.7/F**	-	30.2/C	**144.0/F**	**160.4/F**	**73.7/E**	23.4/C	28.8/C	50.3/D	35.4/D	43.4/D	**88.7/F**
2018 Build AM	**508.5/F**	**1231.7/F**	-	31.6/C	**194.7/F**	**209.9/F**	**552.0/F**	24.4/C	30.3/C	50.3D	**55.5/E**	**68.0/E**	**338.8/F**
2018 Build AM*	**84.1/F**	-	43.2/D	53.8/D	**90.1/F**	**99.0/F**	45.6/D	18.6/B	20.9/C	52.8/D	39.1/D	46.2/D	39.7/D
2019 No Build AM	**270.0/F**	**380.9/F**	-	30.6/C	**158.4/F**	**175.0/F**	**84.7/F**	26.1/C	32.7/C	51.0/D	38.3/D	47.3/D	**96.6/F**
2019 Build AM	**557.7/F**	**1320.2/F**	-	32.3/C	**211.9/F**	**227.1/F**	**582.8/F**	27.6/C	34.7/C	51.0/D	**64.3/E**	**76.7/E**	**367.3/F**
2019 Build AM*	**61.2/E**	-	42.7/D	54.8/D	**132.4/F**	**143.2/F**	**58.6/E**	20.3/C	23.2/C	52.4/D	42.1/D	49.3/D	46.0/D
2020 No Build AM	**294.2/F**	**408.0/F**	-	31.2/C	**173.3/F**	**190.2/F**	**97.0/F**	30.2/C	38.1/D	51.6/D	42.2/D	52.2/D	**106.0/F**
2020 Build AM	**603.8/F**	**1408.7/F**	-	33.3/C	**229.6/F**	**244.5/F**	**612.7/F**	32.4/C	41.0/D	51.6/D	**75.2/E**	**87.1/F**	**396.1/F**
2020 Build AM*	**59.8/E**	-	42.1/D	51.9/D	**142.6/F**	**153.5/F**	**94.3/F**	22.5/C	26.2/C	52.5/D	39.5/D	47.0/D	53.5/D

* Update signal timing

** Reconfigure intersection geometry and update signal operation

Bold text indicates LOS E or LOS F

Red highlight indicates movements that will require mitigation

Green highlight indicates mitigated movements

Table 6: West Airport Boulevard @ Murphy Road Summary of MOEs - (PM Peak)

Scenario / Lane Group	EBL/T	EBT/R	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Int.
2014 Existing PM	**171.5/F**	**255.2/F**	-	36.3/D	**137.4/F**	**145.0/F**	**89.8/E**	29.2/C	33.5/C	**58.5/E**	52.6/D	**63.1/E**	**87.1/F**
2015 No Build PM	**189.2/F**	**276.9/F**	-	37.1/D	**153.0/F**	**160.5/F**	**99.5/F**	30.3/C	35.2/D	**63.6/E**	**61.4/E**	**72.0/E**	**96.2/F**
2015 Build PM	**218.9/F**	**412.5/F**	-	37.2/D	**157.6/F**	**164.9/F**	**225.0/F**	30.8/C	35.9/D	**63.6/E**	**64.6/E**	**75.3/E**	**126.2/F**
2016 No Build PM	**208.3/F**	**298.7/F**	-	37.8/D	**168.2/F**	**175.4/F**	**111.3/F**	31.8/D	37.4/D	**70.4/E**	**72.4/E**	**82.8/F**	**106.3/F**
2016 Build PM	**431.8/F**	**1056.9/F**	-	40.5/D	**207.3/F**	**213.0/F**	**697.5/F**	33.8/C	40.4/D	**70.4/E**	**110.6/F**	**121.1/F**	**329.4/F**
2016 Build PM**	51.8/D	-	46.3/D	51.5/D	**106.0/F**	**109.9/F**	**86.2/F**	27.0/C	30.3/C	**55.4/E**	**72.0/E**	**83.6/E**	**63.5/E**
2017 No Build PM	**227.8/F**	**322.2/F**	-	38.9/D	**185.7/F**	**192.7/F**	**124.1/F**	33.7/C	40.1/D	**78.3/E**	**85.4/F**	**95.3/F**	**117.7/F**
2017 Build PM	**559.1/F**	**1394.3/F**	-	42.1/D	**236.8/F**	**241.7/F**	**824.7/F**	36.3/D	43.7/D	**78.3/E**	**134.9/F**	**146.4/F**	**442.8/F**
2017 Build PM*	**58.9/E**	-	45.4/D	54.0/D	**129.5/F**	**133.1/F**	**84.5/F**	32.8/C	36.6/C	**65.6/E**	**137.3/F**	**148.9/F**	**89.0/F**
2018 No Build PM	**250.0/F**	**348.7/F**	-	40.3/D	**202.8/F**	**209.3/F**	**139.0/F**	36.2/D	43.6/D	**86.2/F**	**100.3/F**	**109.8/F**	**130.5/F**
2018 Build PM	**594.1/F**	**1454.9/F**	-	44.0/D	**258.9/F**	**263.2/F**	**893.2/F**	39.6/D	48.1/D	**86.2/F**	**154.3/F**	**166.9/F**	**472.5/F**
2019 No Build PM	**271.0/F**	**373.9/F**	-	41.8/D	**224.7/F**	**230.7/F**	**153.4/F**	39.6/D	48.0/D	**96.5/F**	**115.8/F**	**125.0/F**	**144.1/F**
2019 Build PM	**625.5/F**	**1516.9/F**	-	46.1/D	**283.3/F**	**287.2/F**	**955.5/F**	44.3/D	53.8/D	96.5/D	**173.2/F**	**187.3/F**	**501.8/F**
2020 No Build PM	**293.5/F**	**399.2/F**	-	43.3/D	**243.3/F**	**248.8/F**	**171.0/F**	44.6/D	54.0/D	**106.9/F**	**133.1/F**	**142.3/F**	**158.6/F**
2020 Build PM	**660.3/F**	**1576.0/F**	-	48.1/D	**306.8/F**	**310.0/F**	**1023.9/F**	**50.9/F**	**61.1/E**	**106.9/F**	**193.5/F**	**209.8/F**	**532.0/F**

* Update signal timing
** Reconfigure intersection geometry and update signal operation
Bold text indicates LOS E or LOS F
Red highlight indicates movements that will require mitigation
Green highlight indicates mitigated movements

The intersection of West Airport Boulevard and Murphy Road will operate at unacceptable levels during the Existing, No Build and Build Conditions. Several intersection movements will also operate at unacceptable levels with and without the proposed development in place.

The construction of the proposed development will reduce the level of operation of this intersection from a LOS E to a LOS F during the 2017 Build AM Condition. The level of operation of several movements will also be reduced from acceptable levels to unacceptable levels during several AM and PM Build Conditions. In order to mitigate these failing conditions, the reconstruction of eastbound West Airport Boulevard to consist of a left turn bay, two through lanes, and a right turn bay, as well as changing the operation of the traffic signal along the eastbound and westbound approaches from a split phase to a protected left turns will be required. The analysis for this intersection assumed that signal timings at this intersection will be updated as needed.

Improvements at the intersection of West Airport Boulevard and Murphy Road have been established as part of the FM 1092 Access Management Study dated December 2013. These improvements do not take this proposed development into account, and therefore should be updated as recommended in this TIA.

Murphy Road and Fountaingate Drive

The intersection of Murphy Road and Fountaingate Drive is located east of the proposed development site. This intersection is currently a one way stop controlled T-intersection with stop sign along the westbound approach of Fountaingate Drive. The northbound and southbound approaches of Murphy Road each consists of three through lanes and a two way left turn lane. The westbound approach of Fountaingate Drive consists of one shared left/through/right lane.

Table 40: Right and Left Turn Bay Requirements					
Driveway/ Turn Bay	Right Turn Bays			Left Turn Bays	
	Storage length	Deceleration Length	Taper Length	Storage length	Taper Length
Driveway 1	100	N/A	100	100	100
Driveway 2	100	N/A	100	175	100
Driveway 3	100	N/A	100	175	100
Driveway 4	N/A	N/A	N/A	175	100
Driveway 5	N/A	N/A	N/A	175	100
Driveway 6*	30	345	100	N/A	N/A
Driveway 7	N/A	N/A	N/A	N/A	N/A
Driveway 8	100	N/A	100	100	100
Driveway 9*	30	345	100	N/A	N/A

*Requirements per TxDOT turn lanes criteria

Conclusion

This study examined the flow of traffic around the proposed TI Tract development in Stafford, Texas. This proposed development will consist of an outlet mall, restaurants, retail stores, apartments, hotels, an industrial park, office buildings, and a gas station. Construction of this development is expected to be completed in six phases. Phase 1 is expected to begin in 2015, while Phase 6 is expected to be completed in 2020. The objective of this study is to analyze the traffic impacts of each year of development on the performance of the surrounding street network and to determine mitigation measures to address any resulting deficiencies.

Planned roadway improvements within the study area include several access management improvements along Murphy Road. These improvements are presented in the FM 1092 Access Management Study dated December 2013. These improvements consist of:

1. Constructing a raised median along parts of Murphy Road with turn bays at major intersections and driveways to provide access to adjacent properties.
2. Installing crosswalks, pedestrian ramps, and pedestrian signal heads along all approaches at the intersection of Murphy Road and West Airport Boulevard.
3. Installing eastbound left and right lanes along eastbound West Airport Boulevard, and extending the westbound left turn bay along westbound West Airport Boulevard.
4. Removing the split phase traffic signal operation at the intersection of Murphy Road and West Airport Boulevard.
5. Restriping Cash Road and Greenbriar Drive as three lane roads with one lane in each direction, a two way left turn lane, and two 5 feet bicycle lanes. Improvements to the intersections of Murphy Road with Greenbriar Road and Cash Road also include updating the signal operations at these intersections to support the proposed lane geometry. These improvements also call for installing pedestrian crosswalks and signal heads along all approaches to these intersections.
6. Extending Cash Road in the west direction to intersect South Kirkwood Road.

As of the date of this study, these planned roadway improvements are unfunded and were not included as part of this study. However, these improvements were taken into consideration during the process of establishing mitigation measures to address deficiencies in the study area street network as a result of this proposed development.

In order to determine any impacts caused by the proposed development on the existing and proposed transportation network, this study examined the performance of key intersections within the study area. A 3.5 percent annualized growth rate was calculated and applied to the existing traffic volumes to determine the future No-Build Conditions. Traffic that will be generated by the proposed development was then added to the No Build Conditions to determine the Build Condition.

The intersection of West Airport Boulevard and Murphy Road will operate at unacceptable levels during the Existing, No Build and Build Conditions. Several intersection movements will also operate at unacceptable levels with and without the proposed development in place. The construction of the proposed development will reduce the level of operation of this intersection from a LOS E to a LOS F during the 2017 Build AM Condition. The level of operation of several movements will also be reduced from acceptable levels to unacceptable levels during several AM and PM Build Conditions. In order to mitigate these failing conditions, the reconstruction of eastbound West Airport Boulevard to consist of a left turn bay, two through lanes, and a right turn bay, as well as changing the operation of the traffic signal along the eastbound and westbound approaches from a split phase to a protected left turns will be required. The analysis for this intersection assumed that signal timings at this intersection will be updated as needed. Improvements at the intersection of West Airport Boulevard and Murphy Road have been established as part of the FM 1092 Access Management Study dated December 2013. These improvements do not take this proposed development into account, and therefore should be updated as recommended in this TIA.

The level of operation of the southbound left and westbound right movements at the intersection of Murphy Road and Fountaingate Drive will be reduced from acceptable levels to unacceptable levels during several Build Conditions; this is primarily due to the high volume of traffic along Murphy Road and the lack of sufficient gaps for conflicting traffic to complete their corresponding turning maneuver. This study investigated the installation of a traffic signal at this intersection, however, due to the close proximity of this intersection to other signalized intersections to the north and south, the installation of a traffic signal at this location was determined not feasible, and there are no other improvements which could be made to improve the LOS of these movements to the required mitigated levels.

The level of operation of the intersection of Murphy Road and Greenbriar Drive will be reduced from acceptable levels to unacceptable levels during several AM and PM Build Conditions. The level of operation of several movements will also be reduced from acceptable levels to unacceptable levels during several AM and PM Build Conditions. In order to mitigate these failing conditions, the reconstruction of the eastbound and westbound approaches of Greenbriar Drive at Murphy Road to consist of one left turn bay, one through lane, and one shared through/right turn lane along the eastbound direction, and one left turn lane, one through lane, and one right turn bay along the westbound direction will be required. This improvement will

also require the modification of the traffic signal operation along these approaches from split phase operation to protected left turns operation.

The construction of the proposed development will reduce the level of operation of the intersection of Murphy Road and Cash Road from acceptable levels to unacceptable levels during several AM and PM Build Conditions. The level of operation of several movements will also be reduced from acceptable levels to unacceptable levels during several AM and PM Build Conditions. In order to mitigate these failing conditions, the construction of a right turn bay along westbound Cash Road will be required in year 2016, and the construction of dual left turn bays along southbound Murphy Road will be required in 2017.

The construction of the proposed development will reduce the level of operation of the intersection of South Kirkwood Road and Greenbriar Drive to levels that will require mitigation during several AM Build Conditions. The westbound left and the southbound through movements will also be reduced to unacceptable levels during several PM Build Conditions. These failing conditions are primarily due to the high volume of traffic at this intersection. This study investigated the installation of a traffic signal at this intersection, however, due to the close proximity of this intersection to other signalized intersections to the north and south, the installation of a traffic signal at this location was determined not feasible, and there are no other improvements which could be made to improve the LOS of these movements to the required mitigated levels.

The construction of the proposed development will reduce the level of operation of the east and west intersections at US 59 Frontage Roads and West Airport Boulevard to levels that require mitigation during several AM and PM Build Conditions. The level of operation of several movements at both intersections will also require mitigation during several AM and PM Build Conditions. In order to feasibly mitigate these failing conditions, the construction of a westbound and a northbound channelized right turn bays will be required at the east intersection during the 2016 Build Conditions, the construction of a southbound channelized right turn bay will be required at the west intersection during the 2017 Build Conditions, and updating the signal timings during the 2016 through 2020 Build Conditions will be required at both intersections.

The operation of other signalized intersections within the study area will be reduced during several Build Conditions to levels that will require mitigation. In order to feasibly mitigate the operation of these signals, updating the signal timings will be required as discussed in the intersection Capacity Analysis section of this report.

Left and Right Turn Lane Warrant Analyses were performed to analyze the need for left and right turn bays at all driveways to the proposed development in accordance with the City of Stafford and the Texas Department of Transportation (TxDOT) Access Management Manual requirements. The results of the Left Turn Lane Warrant Analysis indicated that left turn bays will be required at Driveway 1, Driveway 3, Driveway 4, Driveway 5, and Driveway 8. Northbound left turns along Murphy Road into Driveway 6 and Driveway 7 will utilize the existing two way left turn lane. Driveway 9 and Driveway 10 will be located along US 59 Northbound Frontage Road and therefore, left turning movement is not possible at these

driveways. The results of the Right Turn Lane Warrant Analysis indicated that right turn bays will be required at all driveways to the proposed development except for Driveway, 4 Driveway 5, and Driveway 7.

Recommendations

In order to maintain acceptable operational conditions within the study street network, several roadway improvements will be required concurrently with the proposed development. The following is the list of recommendations corresponding to each year of development:

Year 2015:

1. Construct Driveways 1 through 8 each to consist of two exit lanes (One shared left/through and one right lanes) in order to prevent right turning vehicles from getting trapped behind left turning vehicles that will require more time to exit the development site.

Year 2016:

1. Construct dual left turn bays along northbound Murphy Road at its intersection with West Airport Boulevard. These left turn bays should have a full width of 645 feet and a 150 foot taper.
2. Construct eastbound left turn lane at the intersection of West Airport Boulevard and Murphy Road. This left turn lane should have a full width of 250 feet and a 100 foot taper. This improvement will be constructed by City of Stafford as part of the improvements recommended in the FM 1092 Access Management Study.
3. Reconstruct the eastbound approach of West Airport Boulevard at its intersection with Murphy Road to consist of one left turn bay (See recommendation #2 in Year 2016), two through lanes, and one channelized right turn bay. The channelized right turn bay should have a full width of 100 feet and a 100 foot taper.
4. Change the operation of the traffic signal at West Airport Boulevard and Murphy Road from split phase operation along the eastbound and westbound approaches to protected left turns operation. This improvement will require modification of the traffic signal at this intersection and will be constructed by City of Stafford as part of the improvements recommended in the FM 1092 Access Management Study.
5. Construct a right turn bay along westbound Cash Road at its intersection with Murphy Road. This right turn bay should have a full width of 100 feet and a 100 foot taper.
6. Reconstruct the existing right turn bay along the northbound approach of US 59 Northbound Frontage Road at its intersection with West Airport Boulevard to a channelized right turn bay.
7. Reconstruct the existing right turn bay along the westbound approach of West Airport Boulevard at its intersection with US 59 Northbound Frontage Road to a channelized right turn bay. This improvement may require right-of-way acquisition.

Year 2017:

1. Reconstruct the eastbound and westbound approaches of Greenbriar Drive at Murphy Road to consist of one left turn bay, one through lane, and one shared through/right turn lane along the eastbound direction, and one left turn lane, one through lane, and one right turn bay along the westbound direction. The eastbound left turn bay should have a full width of 300 feet and a 100 foot taper. The westbound right turn bay should have a full width of 100 feet and a 100 foot taper.
2. Change the operation of the traffic signal at Greenbriar Drive and Murphy Road from split phase operation along the eastbound and westbound approaches to protected left turns operation. This improvement will require modification of the traffic signal at this intersection and will be constructed by City of Stafford as part of the improvements recommended in the FM 1092 Access Management Study.
3. Construct dual left turn bays along southbound Murphy Road at its intersection with Cash Road. These left turn bays should have a full width of 545 feet and a 150 foot taper.
4. Reconstruct the existing right turn bay along US Highway 59 Southbound Frontage Road at its intersection with West Airport Boulevard to a channelized right turn bay, and change the lane configuration along US Highway 59 Southbound Frontage Road to one channelized right turn bay, two through lanes, one shared left/through lane, one left turn bay and one U-turn bay. This improvement may require right-of-way acquisition.

Year 2018: (Mitigation Not Required)

Year 2019: (Mitigation Not Required)

Year 2020: (Mitigation Not Required)

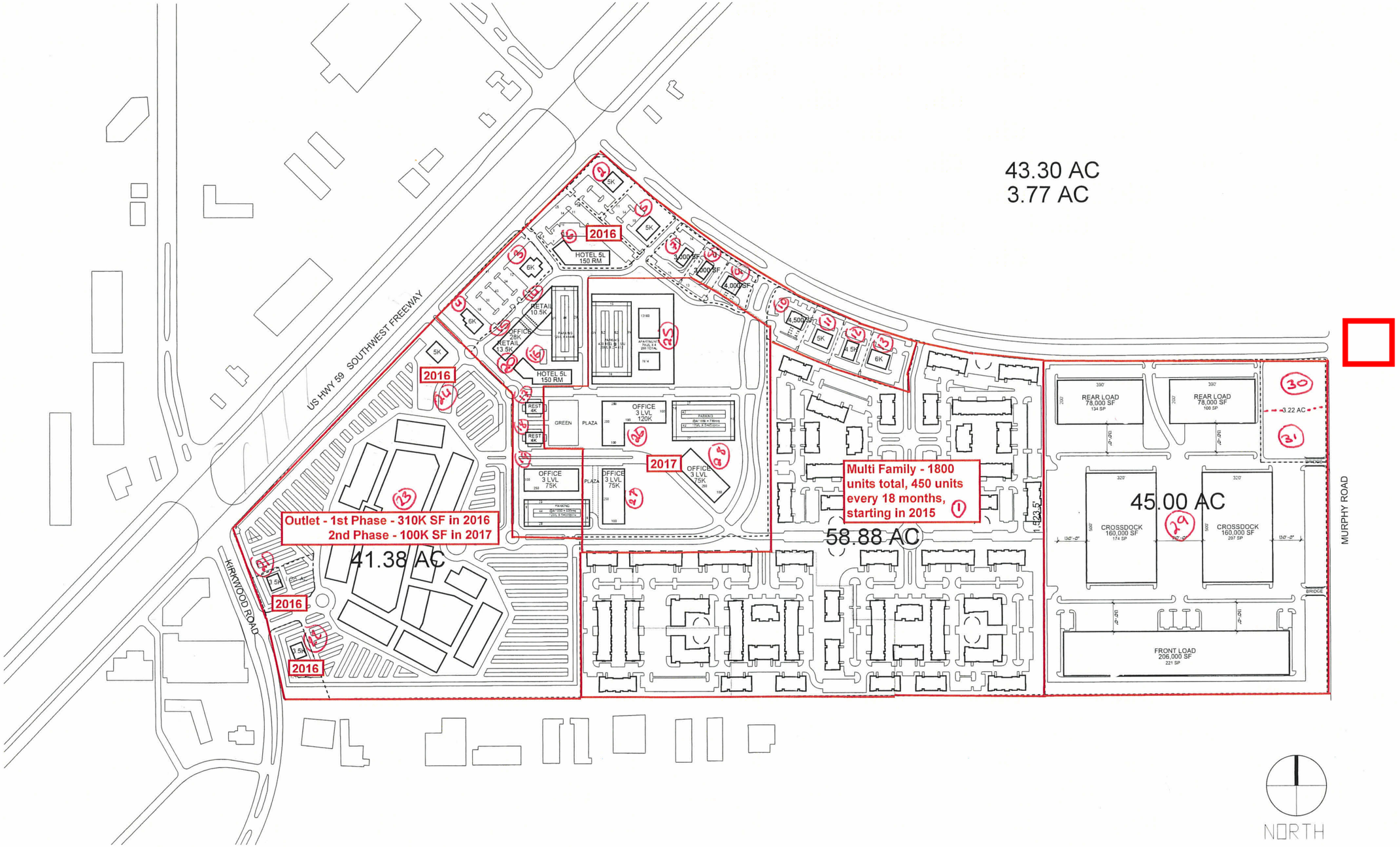
This study assumed that traffic signal timings at all signalized intersections within the study area will be updated as needed. Several roadway recommendations listed above may require right-of-way acquisitions along adjacent properties. These roadway improvements will require coordination between the developer, City of Stafford, TxDOT, and impacted business owners.

Several roadway improvements along Murphy Road within the study area were recommended as part of the FM 1092 Access Management Study dated December 2013. Refer to the Proposed Area Conditions Section of this report for a list of these roadway improvements. These recommendations include geometric and traffic signal improvements along the eastbound and westbound approaches of West Airport Boulevard, Greenbriar Drive, and Cash Road at Murphy Road. These proposed recommendations do not take into account the traffic generated by this proposed development, and therefore, should be updated as described in the list of recommendations above.

Several intersection movements will operate at unacceptable levels with and without the proposed development. Mitigation measures to address these deficiencies were not established in this study. This study provides mitigation measures to improve the operation of movements that will be reduced to unacceptable levels upon the construction of this proposed development.

Appendix A

Preliminary Site Plan



STAFFORD GROVES

STAFFORD, TX

STREET LEVEL INVESTMENTS

SP-26

Date: 04.30.2014 Scale 1" = 200'-0"

Appendix C

Trip Generation Calculations

		2015					
		AM Peak		PM Peak		Weekday	
		In	Out	In	Out	In	Out
1	Mid-Rise Apartments	34	76	77	56	971	971
2	Retail						
3	Restaurant						
4	Restaurant						
5	Restaurant						
6	Hotel						
7	Restaurant						
8	Restaurant						
9	Restaurant						
10	Retail						
11	Retail						
12	Retail						
13	Retail						
14	Retail						
15	Office						
16	Hotel						
17	Restaurant						
18	Restaurant						
19	Office						
20	Retail						
21	Restaurant						
22	Restaurant						
23	Outlet Mall						
24	Restaurant						
25	Mid-Rise Apartments						
26	Office						
27	Office						
28	Office						
29	Industrial Park	204	45	62	234	1,190	1,190
30	Gas Station						
31	Restaurant						
	Totals	238	121	139	290	2,161	2,161

		2016					
		AM Peak		PM Peak		Weekday	
		In	Out	In	Out	In	Out
1	Mid-Rise Apartments	72	161	161	116	1,880	1,880
2	Retail	0	0	15	19	126	126
3	Restaurant	36	29	35	24	381	381
4	Restaurant	36	29	35	24	381	381
5	Restaurant	30	24	30	20	318	318
6	Hotel	51	37	51	54	669	669
7	Restaurant	18	15	18	12	191	191
8	Restaurant	18	15	18	12	191	191
9	Restaurant	24	19	24	16	254	254
10	Retail	0	0	14	18	115	115
11	Retail	0	0	15	19	126	126
12	Retail	0	0	14	18	115	115
13	Retail	0	0	16	20	147	147
14	Retail	0	0	21	26	243	243
15	Office	61	8	19	91	249	249
16	Hotel	51	37	51	54	669	669
17	Restaurant	24	19	24	16	254	254
18	Restaurant	24	19	24	16	254	254
19	Office	134	18	28	135	527	527
20	Retail	0	0	24	30	308	308
21	Restaurant	21	17	21	14	223	223
22	Restaurant	21	17	21	14	223	223
23	Outlet Mall	152	56	220	248	4,121	4,121
24	Restaurant	30	24	30	20	318	318
25	Mid-Rise Apartments						
26	Office						
27	Office						
28	Office						
29	Industrial Park	353	77	118	444	2,041	2,041
30	Gas Station	145	139	170	163	1,834	1,834
31	Restaurant	18	15	18	12	191	191
	Totals	1,319	775	1,235	1,655	16,349	16,349

		2017					
		AM Peak		PM Peak		Weekday	
		In	Out	In	Out	In	Out
1	Mid-Rise Apartments	110	246	244	177	2,789	2,789
2	Retail	0	0	15	19	126	126
3	Restaurant	36	29	35	24	381	381
4	Restaurant	36	29	35	24	381	381
5	Restaurant	30	24	30	20	318	318
6	Hotel	51	37	51	54	669	669
7	Restaurant	18	15	18	12	191	191
8	Restaurant	18	15	18	12	191	191
9	Restaurant	24	19	24	16	254	254
10	Retail	0	0	14	18	115	115
11	Retail	0	0	15	19	126	126
12	Retail	0	0	14	18	115	115
13	Retail	0	0	16	20	147	147
14	Retail	0	0	21	26	243	243
15	Office	61	8	19	91	249	249
16	Hotel	51	37	51	54	669	669
17	Restaurant	24	19	24	16	254	254
18	Restaurant	24	19	24	16	254	254
19	Office	134	18	28	135	527	527
20	Retail	0	0	24	30	308	308
21	Restaurant	21	17	21	14	223	223
22	Restaurant	21	17	21	14	223	223
23	Outlet Mall	201	74	248	279	5,451	5,451
24	Restaurant	30	24	30	20	318	318
25	Mid-Rise Apartments	32	70	72	52	910	910
26	Office	195	27	36	177	754	754
27	Office	134	18	28	135	527	527
28	Office	134	18	28	135	527	527
29	Industrial Park	353	77	118	444	2,041	2,041
30	Gas Station	145	139	170	163	1,834	1,834
31	Restaurant	18	15	18	12	191	191
	Totals	1,901	1,011	1,510	2,246	21,306	21,306

		2018					
		AM Peak		PM Peak		Weekday	
		In	Out	In	Out	In	Out
1	Mid-Rise Apartments	148	330	328	237	3,698	3,698
2	Retail	0	0	15	19	126	126
3	Restaurant	36	29	35	24	381	381
4	Restaurant	36	29	35	24	381	381
5	Restaurant	30	24	30	20	318	318
6	Hotel	51	37	51	54	669	669
7	Restaurant	18	15	18	12	191	191
8	Restaurant	18	15	18	12	191	191
9	Restaurant	24	19	24	16	254	254
10	Retail	0	0	14	18	115	115
11	Retail	0	0	15	19	126	126
12	Retail	0	0	14	18	115	115
13	Retail	0	0	16	20	147	147
14	Retail	0	0	21	26	243	243
15	Office	61	8	19	91	249	249
16	Hotel	51	37	51	54	669	669
17	Restaurant	24	19	24	16	254	254
18	Restaurant	24	19	24	16	254	254
19	Office	134	18	28	135	527	527
20	Retail	0	0	24	30	308	308
21	Restaurant	21	17	21	14	223	223
22	Restaurant	21	17	21	14	223	223
23	Outlet Mall	201	74	248	279	5,451	5,451
24	Restaurant	30	24	30	20	318	318
25	Mid-Rise Apartments	32	70	72	52	910	910
26	Office	195	27	36	177	754	754
27	Office	134	18	28	135	527	527
28	Office	134	18	28	135	527	527
29	Industrial Park	353	77	118	444	2,041	2,041
30	Gas Station	145	139	170	163	1,834	1,834
31	Restaurant	18	15	18	12	191	191
	Totals	1,939	1,095	1,594	2,306	22,215	22,215

		2019					
		AM Peak		PM Peak		Weekday	
		In	Out	In	Out	In	Out
1	Mid-Rise Apartments	187	415	411	298	4,604	4,604
2	Retail	0	0	15	19	126	126
3	Restaurant	36	29	35	24	381	381
4	Restaurant	36	29	35	24	381	381
5	Restaurant	30	24	30	20	318	318
6	Hotel	51	37	51	54	669	669
7	Restaurant	18	15	18	12	191	191
8	Restaurant	18	15	18	12	191	191
9	Restaurant	24	19	24	16	254	254
10	Retail	0	0	14	18	115	115
11	Retail	0	0	15	19	126	126
12	Retail	0	0	14	18	115	115
13	Retail	0	0	16	20	147	147
14	Retail	0	0	21	26	243	243
15	Office	61	8	19	91	249	249
16	Hotel	51	37	51	54	669	669
17	Restaurant	24	19	24	16	254	254
18	Restaurant	24	19	24	16	254	254
19	Office	134	18	28	135	527	527
20	Retail	0	0	24	30	308	308
21	Restaurant	21	17	21	14	223	223
22	Restaurant	21	17	21	14	223	223
23	Outlet Mall	201	74	248	279	5,451	5,451
24	Restaurant	30	24	30	20	318	318
25	Mid-Rise Apartments	32	70	72	52	910	910
26	Office	195	27	36	177	754	754
27	Office	134	18	28	135	527	527
28	Office	134	18	28	135	527	527
29	Industrial Park	353	77	118	444	2,041	2,041
30	Gas Station	145	139	170	163	1,834	1,834
31	Restaurant	18	15	18	12	191	191
	Totals	1,978	1,180	1,677	2,367	23,121	23,121

Table 3: Proposed Development Generated Traffic Volumes										
Development ID#	Development Type	Year 2020								
		AM Peak			PM Peak			Weekday		
		In	Out	Total	In	Out	Total	In	Out	Total
1	Mid-Rise Apartments	225	500	725	495	358	853	5,516	5,516	11,032
2	Retail	0	0	0	15	19	34	126	126	252
3	Restaurant	36	29	65	35	24	59	381	381	762
4	Restaurant	36	29	65	35	24	59	381	381	762
5	Restaurant	30	24	54	30	20	50	318	318	636
6	Hotel	51	37	88	51	54	105	669	669	1,338
7	Restaurant	18	15	33	18	12	30	191	191	382
8	Restaurant	18	15	33	18	12	30	191	191	382
9	Restaurant	24	19	43	24	16	40	254	254	508
10	Retail	0	0	0	14	18	32	115	115	230
11	Retail	0	0	0	15	19	34	126	126	252
12	Retail	0	0	0	14	18	32	115	115	230
13	Retail	0	0	0	16	20	36	147	147	294
14	Retail	0	0	0	21	26	47	243	243	486
15	Office	61	8	69	19	91	110	249	249	498
16	Hotel	51	37	88	51	54	105	669	669	1,338
17	Restaurant	24	19	43	24	16	40	254	254	508
18	Restaurant	24	19	43	24	16	40	254	254	508
19	Office	134	18	152	28	135	163	527	527	1,054
20	Retail	0	0	0	24	30	54	308	308	616
21	Restaurant	21	17	38	21	14	35	223	223	446
22	Restaurant	21	17	38	21	14	35	223	223	446
23	Outlet Mall	201	74	275	248	279	527	5,451	5,451	10,902
24	Restaurant	30	24	54	30	20	50	318	318	636
25	Mid-Rise Apartments	32	70	102	72	52	124	910*	910*	0
26	Office	195	27	222	36	177	213	754	754	1,508
27	Office	134	18	152	28	135	163	527	527	1,054
28	Office	134	18	152	28	135	163	527	527	1,054
29	Industrial Park	353	77	430	118	444	562	2,041	2,041	4,082
30	Gas Station	145	139	284	170	163	333	1,834	1,834	3,668
31	Restaurant	18	15	33	18	12	30	191	191	382
Totals		2,016	1,265	3,281	1,761	2,427	4,188	23,123	23,123	46,246

Appendix D

Intersection Capacity Analysis Reports

Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Volume (veh/h)	1	28	304	330	64	213	85	383	1570	58	68	864
Number		7	4	14	3	8	18	5	2	12	1	6
Initial Q (Qb), veh		0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Parking Bus Adj		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow veh/h/ln		186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3
Lanes		0	2	0	1	2	0	1	3	0	1	3
Cap, veh/h		24	263	245	164	232	89	459	2260	83	101	1244
Arrive On Green		0.15	0.15	0.15	0.09	0.09	0.09	0.26	0.45	0.45	0.06	0.25
Sat Flow, veh/h		155	1700	1583	1774	2500	963	1774	5034	186	1774	5033
Grp Volume(v), veh/h		360	0	359	70	162	162	416	1149	621	74	632
Grp Sat Flow(s),veh/h/ln		1855	0	1583	1774	1770	1693	1774	1695	1830	1774	1695
Q Serve(g_s), s		10.0	0.0	10.0	2.4	5.9	6.0	14.7	18.3	18.3	2.7	11.2
Cycle Q Clear(g_c), s		10.0	0.0	10.0	2.4	5.9	6.0	14.7	18.3	18.3	2.7	11.2
Prop In Lane		0.08		1.00	1.00		0.57	1.00		0.10	1.00	
Lane Grp Cap(c), veh/h		287	0	245	164	164	157	459	1522	822	101	838
V/C Ratio(X)		1.26	0.00	1.47	0.43	0.99	1.03	0.91	0.76	0.76	0.73	0.75
Avail Cap(c_a), veh/h		287	0	245	164	164	157	466	1522	822	137	838
HCM Platoon Ratio		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Upstream Filter(I)		1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh		27.4	0.0	27.4	27.7	29.3	29.4	23.2	14.9	14.9	30.1	22.6
Incr Delay (d2), s/veh		140.7	0.0	231.6	1.7	66.9	80.3	21.1	3.5	6.4	12.5	6.3
Initial Q Delay(d3),s/veh		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q (50%), veh/ln		15.5	0.0	19.4	1.1	5.5	5.9	8.5	7.1	8.4	1.5	5.0
Lane Grp Delay (d), s/veh		168.0	0.0	259.0	29.5	96.3	109.7	44.4	18.4	21.3	42.5	28.8
Lane Grp LOS		F		F	C	F	F	D	B	C	D	C
Approach Vol, veh/h			719			394			2186			1048
Approach Delay, s/veh			213.4			89.9			24.2			31.4
Approach LOS			F			F			C			C

Timer												
Assigned Phs			4			8		5	2		1	6
Phs Duration (G+Y+Rc), s			14.0			10.0		20.7	33.1		7.7	20.0
Change Period (Y+Rc), s			4.0			4.0		4.0	4.0		4.0	4.0
Max Green Setting (Gmax), s			10.0			6.0		17.0	28.0		5.0	16.0
Max Q Clear Time (g_c+I1), s			12.0			8.0		16.7	20.3		4.7	13.2
Green Ext Time (p_c), s			0.0			0.0		0.0	6.9		0.0	2.6

Intersection Summary	
HCM 2010 Ctrl Delay	63.2
HCM 2010 LOS	E

Notes

Movement	SBR
Lane Configurations	
Volume (veh/h)	32
Number	16
Initial Q (Qb), veh	0
Ped-Bike Adj(A_pbT)	1.00
Parking Bus Adj	1.00
Adj Sat Flow veh/h/ln	186.3
Lanes	0
Cap, veh/h	46
Arrive On Green	0.25
Sat Flow, veh/h	187
Grp Volume(v), veh/h	342
Grp Sat Flow(s),veh/h/ln	1830
Q Serve(g_s), s	11.2
Cycle Q Clear(g_c), s	11.2
Prop In Lane	0.10
Lane Grp Cap(c), veh/h	452
V/C Ratio(X)	0.76
Avail Cap(c_a), veh/h	452
HCM Platoon Ratio	0.00
Upstream Filter(I)	1.00
Uniform Delay (d), s/veh	22.6
Incr Delay (d2), s/veh	11.2
Initial Q Delay(d3),s/veh	0.0
%ile Back of Q (50%), veh/ln	6.1
Lane Grp Delay (d), s/veh	33.8
Lane Grp LOS	C
Approach Vol, veh/h	
Approach Delay, s/veh	
Approach LOS	

Timer
Assigned Phs
Phs Duration (G+Y+Rc), s
Change Period (Y+Rc), s
Max Green Setting (Gmax), s
Max Q Clear Time (g_c+I1), s
Green Ext Time (p_c), s

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	32	372	397	133	376	132	269	1180	80	192	1355	119
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow veh/h/ln	186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3
Lanes	0	2	0	1	2	0	1	3	0	1	3	0
Cap, veh/h	28	320	297	244	355	123	288	1642	111	244	1488	130
Arrive On Green	0.19	0.19	0.19	0.14	0.14	0.14	0.16	0.34	0.34	0.14	0.31	0.31
Sat Flow, veh/h	148	1707	1583	1774	2582	893	1774	4865	330	1774	4762	417
Grp Volume(v), veh/h	439	0	432	145	279	273	292	894	476	209	1048	554
Grp Sat Flow(s),veh/h/ln	1855	0	1583	1774	1770	1705	1774	1695	1805	1774	1695	1789
Q Serve(g_s), s	15.0	0.0	15.0	6.1	11.0	11.0	13.0	19.0	19.0	9.2	24.6	24.6
Cycle Q Clear(g_c), s	15.0	0.0	15.0	6.1	11.0	11.0	13.0	19.0	19.0	9.2	24.6	24.6
Prop In Lane	0.08		1.00	1.00		0.52	1.00		0.18	1.00		0.23
Lane Grp Cap(c), veh/h	348	0	297	244	243	234	288	1144	609	244	1059	559
V/C Ratio(X)	1.26	0.00	1.46	0.59	1.15	1.16	1.01	0.78	0.78	0.86	0.99	0.99
Avail Cap(c_a), veh/h	348	0	297	244	243	234	288	1144	609	244	1059	559
HCM Platoon Ratio	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	32.5	0.0	32.5	32.4	34.5	34.5	33.5	23.8	23.8	33.7	27.4	27.4
Incr Delay (d2), s/veh	139.0	0.0	222.7	3.9	102.9	110.5	56.3	5.3	9.6	24.7	25.3	35.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q (50%), veh/ln	20.0	0.0	24.0	2.9	11.6	11.7	10.0	8.2	9.4	5.6	13.3	15.7
Lane Grp Delay (d), s/veh	171.5	0.0	255.2	36.3	137.4	145.0	89.8	29.2	33.5	58.5	52.6	63.1
Lane Grp LOS	F		F	D	F	F	F	C	C	E	D	E
Approach Vol, veh/h		871			697			1662			1811	
Approach Delay, s/veh		213.0			119.4			41.1			56.5	
Approach LOS		F			F			D			E	

Timer												
Assigned Phs		4			8		5	2		1	6	
Phs Duration (G+Y+Rc), s		19.0			15.0		17.0	31.0		15.0	29.0	
Change Period (Y+Rc), s		4.0			4.0		4.0	4.0		4.0	4.0	
Max Green Setting (Gmax), s		15.0			11.0		13.0	27.0		11.0	25.0	
Max Q Clear Time (g_c+I1), s		17.0			13.0		15.0	21.0		11.2	26.6	
Green Ext Time (p_c), s		0.0			0.0		0.0	5.6		0.0	0.0	

Intersection Summary		
HCM 2010 Ctrl Delay	87.1	
HCM 2010 LOS	F	

Notes

Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Volume (veh/h)	1	29	315	342	66	220	88	396	1625	60	70	894
Number		7	4	14	3	8	18	5	2	12	1	6
Initial Q (Qb), veh		0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Parking Bus Adj		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow veh/h/ln		186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3
Lanes		0	2	0	1	2	0	1	3	0	1	3
Cap, veh/h		24	261	244	164	230	90	464	2267	83	102	1239
Arrive On Green		0.15	0.15	0.15	0.09	0.09	0.09	0.26	0.45	0.45	0.06	0.25
Sat Flow, veh/h		159	1696	1583	1774	2489	972	1774	5035	185	1774	5034
Grp Volume(v), veh/h		374	0	372	72	168	167	430	1189	642	76	654
Grp Sat Flow(s),veh/h/ln		1855	0	1583	1774	1770	1691	1774	1695	1830	1774	1695
Q Serve(g_s), s		10.0	0.0	10.0	2.5	6.0	6.0	15.4	19.3	19.3	2.7	11.7
Cycle Q Clear(g_c), s		10.0	0.0	10.0	2.5	6.0	6.0	15.4	19.3	19.3	2.7	11.7
Prop In Lane		0.09		1.00	1.00		0.57	1.00		0.10	1.00	
Lane Grp Cap(c), veh/h		285	0	244	164	163	156	464	1527	824	102	835
V/C Ratio(X)		1.31	0.00	1.53	0.44	1.03	1.07	0.93	0.78	0.78	0.75	0.78
Avail Cap(c_a), veh/h		285	0	244	164	163	156	464	1527	824	136	835
HCM Platoon Ratio		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Upstream Filter(I)		1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh		27.5	0.0	27.5	27.9	29.5	29.5	23.4	15.1	15.1	30.2	22.9
Incr Delay (d2), s/veh		162.7	0.0	257.0	1.8	78.0	92.0	24.8	4.0	7.2	14.1	7.3
Initial Q Delay(d3),s/veh		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q (50%), veh/ln		17.2	0.0	21.0	1.1	6.0	6.4	9.3	7.6	9.0	1.6	5.3
Lane Grp Delay (d), s/veh		190.2	0.0	284.5	29.8	107.5	121.5	48.2	19.1	22.3	44.3	30.2
Lane Grp LOS		F		F	C	F	F	D	B	C	D	C
Approach Vol, veh/h			746			407			2261			1084
Approach Delay, s/veh			237.2			99.5			25.6			33.0
Approach LOS			F			F			C			C

Timer												
Assigned Phs			4			8		5	2		1	6
Phs Duration (G+Y+Rc), s			14.0			10.0		21.0	33.3		7.7	20.0
Change Period (Y+Rc), s			4.0			4.0		4.0	4.0		4.0	4.0
Max Green Setting (Gmax), s			10.0			6.0		17.0	28.0		5.0	16.0
Max Q Clear Time (g_c+I1), s			12.0			8.0		17.4	21.3		4.7	13.7
Green Ext Time (p_c), s			0.0			0.0		0.0	6.1		0.0	2.1

Intersection Summary	
HCM 2010 Ctrl Delay	69.1
HCM 2010 LOS	E

Notes

Movement	SBR
Lane Configurations	
Volume (veh/h)	33
Number	16
Initial Q (Qb), veh	0
Ped-Bike Adj(A_pbT)	1.00
Parking Bus Adj	1.00
Adj Sat Flow veh/h/ln	186.3
Lanes	0
Cap, veh/h	46
Arrive On Green	0.25
Sat Flow, veh/h	186
Grp Volume(v), veh/h	354
Grp Sat Flow(s),veh/h/ln	1830
Q Serve(g_s), s	11.7
Cycle Q Clear(g_c), s	11.7
Prop In Lane	0.10
Lane Grp Cap(c), veh/h	450
V/C Ratio(X)	0.79
Avail Cap(c_a), veh/h	450
HCM Platoon Ratio	0.00
Upstream Filter(I)	1.00
Uniform Delay (d), s/veh	22.9
Incr Delay (d2), s/veh	12.9
Initial Q Delay(d3),s/veh	0.0
%ile Back of Q (50%), veh/ln	6.4
Lane Grp Delay (d), s/veh	35.8
Lane Grp LOS	D
Approach Vol, veh/h	
Approach Delay, s/veh	
Approach LOS	

Timer
Assigned Phs
Phs Duration (G+Y+Rc), s
Change Period (Y+Rc), s
Max Green Setting (Gmax), s
Max Q Clear Time (g_c+I1), s
Green Ext Time (p_c), s

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	33	385	411	138	389	137	278	1221	83	199	1402	123
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow veh/h/ln	186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3
Lanes	0	2	0	1	2	0	1	3	0	1	3	0
Cap, veh/h	28	320	297	244	354	124	288	1642	111	244	1488	131
Arrive On Green	0.19	0.19	0.19	0.14	0.14	0.14	0.16	0.34	0.34	0.14	0.31	0.31
Sat Flow, veh/h	147	1708	1583	1774	2576	898	1774	4865	330	1774	4761	418
Grp Volume(v), veh/h	454	0	447	150	289	283	302	925	492	216	1085	573
Grp Sat Flow(s),veh/h/ln	1855	0	1583	1774	1770	1704	1774	1695	1805	1774	1695	1789
Q Serve(g_s), s	15.0	0.0	15.0	6.4	11.0	11.0	13.0	19.9	19.9	9.6	25.0	25.0
Cycle Q Clear(g_c), s	15.0	0.0	15.0	6.4	11.0	11.0	13.0	19.9	19.9	9.6	25.0	25.0
Prop In Lane	0.08		1.00	1.00		0.53	1.00		0.18	1.00		0.23
Lane Grp Cap(c), veh/h	348	0	297	244	243	234	288	1144	609	244	1059	559
V/C Ratio(X)	1.31	0.00	1.51	0.61	1.19	1.21	1.05	0.81	0.81	0.89	1.02	1.02
Avail Cap(c_a), veh/h	348	0	297	244	243	234	288	1144	609	244	1059	559
HCM Platoon Ratio	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	32.5	0.0	32.5	32.5	34.5	34.5	33.5	24.1	24.1	33.9	27.5	27.5
Incr Delay (d2), s/veh	156.7	0.0	244.4	4.5	118.5	126.0	66.0	6.2	11.0	29.7	33.9	44.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q (50%), veh/ln	21.7	0.0	25.8	3.0	12.7	12.7	10.8	8.7	10.1	6.1	14.7	17.2
Lane Grp Delay (d), s/veh	189.2	0.0	276.9	37.1	153.0	160.5	99.5	30.3	35.2	63.6	61.4	72.0
Lane Grp LOS	F		F	D	F	F	F	C	D	E	F	F
Approach Vol, veh/h		901			722			1719			1874	
Approach Delay, s/veh		232.7			131.8			43.9			64.9	
Approach LOS		F			F			D			E	

Timer												
Assigned Phs		4			8		5	2		1	6	
Phs Duration (G+Y+Rc), s		19.0			15.0		17.0	31.0		15.0	29.0	
Change Period (Y+Rc), s		4.0			4.0		4.0	4.0		4.0	4.0	
Max Green Setting (Gmax), s		15.0			11.0		13.0	27.0		11.0	25.0	
Max Q Clear Time (g_c+I1), s		17.0			13.0		15.0	21.9		11.6	27.0	
Green Ext Time (p_c), s		0.0			0.0		0.0	4.9		0.0	0.0	

Intersection Summary		
HCM 2010 Ctrl Delay	96.2	
HCM 2010 LOS	F	

Notes

Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Volume (veh/h)	1	30	326	354	69	228	91	410	1682	62	73	926
Number		7	4	14	3	8	18	5	2	12	1	6
Initial Q (Qb), veh		0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Parking Bus Adj		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow veh/h/ln		186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3
Lanes		0	2	0	1	2	0	1	3	0	1	3
Cap, veh/h		24	261	244	164	230	89	464	2262	83	104	1240
Arrive On Green		0.15	0.15	0.15	0.09	0.09	0.09	0.26	0.45	0.45	0.06	0.25
Sat Flow, veh/h		158	1697	1583	1774	2493	968	1774	5036	184	1774	5035
Grp Volume(v), veh/h		387	0	385	75	174	173	446	1230	665	79	678
Grp Sat Flow(s),veh/h/ln		1855	0	1583	1774	1770	1692	1774	1695	1830	1774	1695
Q Serve(g_s), s		10.0	0.0	10.0	2.6	6.0	6.0	16.1	20.4	20.4	2.9	12.2
Cycle Q Clear(g_c), s		10.0	0.0	10.0	2.6	6.0	6.0	16.1	20.4	20.4	2.9	12.2
Prop In Lane		0.09		1.00	1.00		0.57	1.00		0.10	1.00	
Lane Grp Cap(c), veh/h		285	0	244	164	163	156	464	1523	822	104	835
V/C Ratio(X)		1.36	0.00	1.58	0.46	1.07	1.11	0.96	0.81	0.81	0.76	0.81
Avail Cap(c_a), veh/h		285	0	244	164	163	156	464	1523	822	136	835
HCM Platoon Ratio		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Upstream Filter(I)		1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh		27.5	0.0	27.5	28.0	29.5	29.5	23.7	15.5	15.5	30.2	23.1
Incr Delay (d2), s/veh		181.5	0.0	280.0	2.0	88.9	103.7	31.9	4.7	8.4	16.4	8.5
Initial Q Delay(d3),s/veh		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q (50%), veh/ln		18.7	0.0	22.6	1.2	6.5	6.9	10.6	8.2	9.7	1.7	5.6
Lane Grp Delay (d), s/veh		209.0	0.0	307.5	29.9	118.4	133.2	55.6	20.2	23.9	46.5	31.6
Lane Grp LOS		F		F	C	F	F	E	C	C	D	C
Approach Vol, veh/h			772			422			2341			1123
Approach Delay, s/veh			258.1			108.8			28.0			34.7
Approach LOS			F			F			C			C
Timer												
Assigned Phs			4			8		5	2		1	6
Phs Duration (G+Y+Rc), s			14.0			10.0		21.0	33.2		7.8	20.0
Change Period (Y+Rc), s			4.0			4.0		4.0	4.0		4.0	4.0
Max Green Setting (Gmax), s			10.0			6.0		17.0	28.0		5.0	16.0
Max Q Clear Time (g_c+I1), s			12.0			8.0		18.1	22.4		4.9	14.3
Green Ext Time (p_c), s			0.0			0.0		0.0	5.2		0.0	1.7
Intersection Summary												
HCM 2010 Ctrl Delay			75.1									
HCM 2010 LOS			E									
Notes												

Movement	SBR
Lane Configurations	
Volume (veh/h)	34
Number	16
Initial Q (Qb), veh	0
Ped-Bike Adj(A_pbT)	1.00
Parking Bus Adj	1.00
Adj Sat Flow veh/h/ln	186.3
Lanes	0
Cap, veh/h	45
Arrive On Green	0.25
Sat Flow, veh/h	185
Grp Volume(v), veh/h	366
Grp Sat Flow(s),veh/h/ln	1830
Q Serve(g_s), s	12.3
Cycle Q Clear(g_c), s	12.3
Prop In Lane	0.10
Lane Grp Cap(c), veh/h	450
V/C Ratio(X)	0.81
Avail Cap(c_a), veh/h	450
HCM Platoon Ratio	0.00
Upstream Filter(I)	1.00
Uniform Delay (d), s/veh	23.1
Incr Delay (d2), s/veh	14.8
Initial Q Delay(d3),s/veh	0.0
%ile Back of Q (50%), veh/ln	6.9
Lane Grp Delay (d), s/veh	37.9
Lane Grp LOS	D
Approach Vol, veh/h	
Approach Delay, s/veh	
Approach LOS	

Timer
Assigned Phs
Phs Duration (G+Y+Rc), s
Change Period (Y+Rc), s
Max Green Setting (Gmax), s
Max Q Clear Time (g_c+I1), s
Green Ext Time (p_c), s

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	34	398	425	142	403	141	288	1264	86	206	1452	127
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow veh/h/ln	186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3
Lanes	0	2	0	1	2	0	1	3	0	1	3	0
Cap, veh/h	27	321	297	244	355	123	288	1642	111	244	1489	130
Arrive On Green	0.19	0.19	0.19	0.14	0.14	0.14	0.16	0.34	0.34	0.14	0.31	0.31
Sat Flow, veh/h	146	1709	1583	1774	2581	894	1774	4866	329	1774	4763	416
Grp Volume(v), veh/h	470	0	462	154	299	292	313	957	510	224	1123	593
Grp Sat Flow(s),veh/h/ln	1855	0	1583	1774	1770	1705	1774	1695	1805	1774	1695	1789
Q Serve(g_s), s	15.0	0.0	15.0	6.6	11.0	11.0	13.0	20.9	20.9	10.0	25.0	25.0
Cycle Q Clear(g_c), s	15.0	0.0	15.0	6.6	11.0	11.0	13.0	20.9	20.9	10.0	25.0	25.0
Prop In Lane	0.08		1.00	1.00		0.52	1.00		0.18	1.00		0.23
Lane Grp Cap(c), veh/h	348	0	297	244	243	234	288	1144	609	244	1059	559
V/C Ratio(X)	1.35	0.00	1.56	0.63	1.23	1.25	1.09	0.84	0.84	0.92	1.06	1.06
Avail Cap(c_a), veh/h	348	0	297	244	243	234	288	1144	609	244	1059	559
HCM Platoon Ratio	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	32.5	0.0	32.5	32.6	34.5	34.5	33.5	24.5	24.5	34.1	27.5	27.5
Incr Delay (d2), s/veh	175.8	0.0	266.2	5.2	133.7	140.9	77.8	7.3	12.9	36.4	44.9	55.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q (50%), veh/ln	23.6	0.0	27.6	3.1	13.7	13.7	11.8	9.3	10.8	6.7	16.3	18.8
Lane Grp Delay (d), s/veh	208.3	0.0	298.7	37.8	168.2	175.4	111.3	31.8	37.4	70.4	72.4	82.8
Lane Grp LOS	F		F	D	F	F	F	C	D	E	F	F
Approach Vol, veh/h		932			745			1780			1940	
Approach Delay, s/veh		253.1			144.0			47.4			75.4	
Approach LOS		F			F			D			E	

Timer												
Assigned Phs		4			8		5	2		1	6	
Phs Duration (G+Y+Rc), s		19.0			15.0		17.0	31.0		15.0	29.0	
Change Period (Y+Rc), s		4.0			4.0		4.0	4.0		4.0	4.0	
Max Green Setting (Gmax), s		15.0			11.0		13.0	27.0		11.0	25.0	
Max Q Clear Time (g_c+I1), s		17.0			13.0		15.0	22.9		12.0	27.0	
Green Ext Time (p_c), s		0.0			0.0		0.0	4.0		0.0	0.0	

Intersection Summary		
HCM 2010 Ctrl Delay	106.3	
HCM 2010 LOS	F	

Notes

Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Volume (veh/h)	1	31	337	366	71	236	94	425	1741	64	75	958
Number		7	4	14	3	8	18	5	2	12	1	6
Initial Q (Qb), veh		0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Parking Bus Adj		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow veh/h/ln		186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3
Lanes		0	2	0	1	2	0	1	3	0	1	3
Cap, veh/h		24	261	244	164	230	89	464	2257	83	105	1240
Arrive On Green		0.15	0.15	0.15	0.09	0.09	0.09	0.26	0.45	0.45	0.06	0.25
Sat Flow, veh/h		158	1697	1583	1774	2497	965	1774	5034	186	1774	5037
Grp Volume(v), veh/h		400	0	398	77	180	179	462	1273	689	82	700
Grp Sat Flow(s),veh/h/ln		1855	0	1583	1774	1770	1692	1774	1695	1830	1774	1695
Q Serve(g_s), s		10.0	0.0	10.0	2.7	6.0	6.0	16.9	21.6	21.6	3.0	12.8
Cycle Q Clear(g_c), s		10.0	0.0	10.0	2.7	6.0	6.0	16.9	21.6	21.6	3.0	12.8
Prop In Lane		0.09		1.00	1.00		0.57	1.00		0.10	1.00	
Lane Grp Cap(c), veh/h		285	0	244	164	163	156	464	1520	820	105	835
V/C Ratio(X)		1.40	0.00	1.63	0.47	1.10	1.14	1.00	0.84	0.84	0.78	0.84
Avail Cap(c_a), veh/h		285	0	244	164	163	156	464	1520	820	136	835
HCM Platoon Ratio		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Upstream Filter(I)		1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh		27.5	0.0	27.5	28.0	29.5	29.5	24.0	15.8	15.9	30.1	23.3
Incr Delay (d2), s/veh		200.6	0.0	303.2	2.1	100.7	116.2	40.6	5.7	10.1	18.8	9.9
Initial Q Delay(d3),s/veh		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q (50%), veh/ln		20.2	0.0	24.2	1.2	7.1	7.4	11.9	8.8	10.5	1.8	6.0
Lane Grp Delay (d), s/veh		228.1	0.0	330.7	30.1	130.2	145.7	64.6	21.5	25.9	49.0	33.2
Lane Grp LOS		F		F	C	F	F	E	C	C	D	C
Approach Vol, veh/h			798			436			2424			1161
Approach Delay, s/veh			279.3			118.9			31.0			36.6
Approach LOS			F			F			C			D
Timer												
Assigned Phs			4			8		5	2		1	6
Phs Duration (G+Y+Rc), s			14.0			10.0		21.0	33.1		7.9	20.0
Change Period (Y+Rc), s			4.0			4.0		4.0	4.0		4.0	4.0
Max Green Setting (Gmax), s			10.0			6.0		17.0	28.0		5.0	16.0
Max Q Clear Time (g_c+I1), s			12.0			8.0		18.9	23.6		5.0	14.8
Green Ext Time (p_c), s			0.0			0.0		0.0	4.1		0.0	1.2
Intersection Summary												
HCM 2010 Ctrl Delay			81.4									
HCM 2010 LOS			F									
Notes												

Movement	SBR
Lane Configurations	
Volume (veh/h)	35
Number	16
Initial Q (Qb), veh	0
Ped-Bike Adj(A_pbT)	1.00
Parking Bus Adj	1.00
Adj Sat Flow veh/h/ln	186.3
Lanes	0
Cap, veh/h	45
Arrive On Green	0.25
Sat Flow, veh/h	184
Grp Volume(v), veh/h	379
Grp Sat Flow(s),veh/h/ln	1830
Q Serve(g_s), s	12.8
Cycle Q Clear(g_c), s	12.8
Prop In Lane	0.10
Lane Grp Cap(c), veh/h	451
V/C Ratio(X)	0.84
Avail Cap(c_a), veh/h	451
HCM Platoon Ratio	0.00
Upstream Filter(I)	1.00
Uniform Delay (d), s/veh	23.3
Incr Delay (d2), s/veh	17.0
Initial Q Delay(d3),s/veh	0.0
%ile Back of Q (50%), veh/ln	7.4
Lane Grp Delay (d), s/veh	40.3
Lane Grp LOS	D
Approach Vol, veh/h	
Approach Delay, s/veh	
Approach LOS	

Timer
Assigned Phs
Phs Duration (G+Y+Rc), s
Change Period (Y+Rc), s
Max Green Setting (Gmax), s
Max Q Clear Time (g_c+I1), s
Green Ext Time (p_c), s

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	35	412	440	147	417	146	298	1308	89	213	1502	132
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow veh/h/ln	186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3
Lanes	0	2	0	1	2	0	1	3	0	1	3	0
Cap, veh/h	27	321	297	244	354	123	288	1641	112	244	1488	130
Arrive On Green	0.19	0.19	0.19	0.14	0.14	0.14	0.16	0.34	0.34	0.14	0.31	0.31
Sat Flow, veh/h	145	1710	1583	1774	2577	897	1774	4863	332	1774	4763	417
Grp Volume(v), veh/h	486	0	478	160	310	302	324	991	528	232	1162	614
Grp Sat Flow(s),veh/h/ln	1855	0	1583	1774	1770	1704	1774	1695	1804	1774	1695	1789
Q Serve(g_s), s	15.0	0.0	15.0	6.8	11.0	11.0	13.0	21.9	21.9	10.4	25.0	25.0
Cycle Q Clear(g_c), s	15.0	0.0	15.0	6.8	11.0	11.0	13.0	21.9	21.9	10.4	25.0	25.0
Prop In Lane	0.08		1.00	1.00		0.53	1.00		0.18	1.00		0.23
Lane Grp Cap(c), veh/h	348	0	297	244	243	234	288	1144	609	244	1059	559
V/C Ratio(X)	1.40	0.00	1.61	0.66	1.27	1.29	1.12	0.87	0.87	0.95	1.10	1.10
Avail Cap(c_a), veh/h	348	0	297	244	243	234	288	1144	609	244	1059	559
HCM Platoon Ratio	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	32.5	0.0	32.5	32.7	34.5	34.5	33.5	24.8	24.8	34.2	27.5	27.5
Incr Delay (d2), s/veh	195.3	0.0	289.7	6.2	151.2	158.2	90.6	8.9	15.3	44.1	57.9	67.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q (50%), veh/ln	25.4	0.0	29.5	3.3	14.9	14.8	12.8	9.9	11.7	7.4	18.2	20.8
Lane Grp Delay (d), s/veh	227.8	0.0	322.2	38.9	185.7	192.7	124.1	33.7	40.1	78.3	85.4	95.3
Lane Grp LOS	F		F	D	F	F	F	C	D	E	F	F
Approach Vol, veh/h		964			772			1843			2008	
Approach Delay, s/veh		274.6			158.0			51.4			87.6	
Approach LOS		F			F			D			F	

Timer												
Assigned Phs		4			8		5	2		1	6	
Phs Duration (G+Y+Rc), s		19.0			15.0		17.0	31.0		15.0	29.0	
Change Period (Y+Rc), s		4.0			4.0		4.0	4.0		4.0	4.0	
Max Green Setting (Gmax), s		15.0			11.0		13.0	27.0		11.0	25.0	
Max Q Clear Time (g_c+I1), s		17.0			13.0		15.0	23.9		12.4	27.0	
Green Ext Time (p_c), s		0.0			0.0		0.0	3.0		0.0	0.0	

Intersection Summary		
HCM 2010 Ctrl Delay	117.7	
HCM 2010 LOS	F	

Notes

Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Volume (veh/h)	1	32	349	379	73	244	98	440	1802	67	78	991
Number		7	4	14	3	8	18	5	2	12	1	6
Initial Q (Qb), veh		0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Parking Bus Adj		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow veh/h/ln		186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3
Lanes		0	2	0	1	2	0	1	3	0	1	3
Cap, veh/h		24	261	244	164	229	90	464	2247	84	109	1239
Arrive On Green		0.15	0.15	0.15	0.09	0.09	0.09	0.26	0.45	0.45	0.06	0.25
Sat Flow, veh/h		157	1698	1583	1774	2483	977	1774	5033	187	1774	5033
Grp Volume(v), veh/h		414	0	412	79	187	185	478	1318	714	85	725
Grp Sat Flow(s),veh/h/ln		1855	0	1583	1774	1770	1690	1774	1695	1830	1774	1695
Q Serve(g_s), s		10.0	0.0	10.0	2.7	6.0	6.0	17.0	22.9	23.0	3.1	13.3
Cycle Q Clear(g_c), s		10.0	0.0	10.0	2.7	6.0	6.0	17.0	22.9	23.0	3.1	13.3
Prop In Lane		0.08		1.00	1.00		0.58	1.00		0.10	1.00	
Lane Grp Cap(c), veh/h		285	0	244	164	163	156	464	1514	817	109	835
V/C Ratio(X)		1.45	0.00	1.69	0.48	1.14	1.19	1.03	0.87	0.87	0.78	0.87
Avail Cap(c_a), veh/h		285	0	244	164	163	156	464	1514	817	136	835
HCM Platoon Ratio		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Upstream Filter(I)		1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh		27.5	0.0	27.5	28.0	29.5	29.5	24.0	16.3	16.3	30.1	23.5
Incr Delay (d2), s/veh		221.4	0.0	328.2	2.2	114.5	130.9	49.7	7.2	12.5	20.2	11.9
Initial Q Delay(d3),s/veh		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q (50%), veh/ln		21.8	0.0	25.9	1.2	7.7	8.1	13.1	9.6	11.6	1.9	6.4
Lane Grp Delay (d), s/veh		248.9	0.0	355.7	30.2	144.0	160.4	73.7	23.4	28.8	50.3	35.4
Lane Grp LOS		F		F	C	F	F	F	C	C	D	D
Approach Vol, veh/h			826			451			2510			1202
Approach Delay, s/veh			302.2			130.8			34.5			39.1
Approach LOS			F			F			C			D
Timer												
Assigned Phs			4			8		5	2		1	6
Phs Duration (G+Y+Rc), s			14.0			10.0		21.0	33.0		8.0	20.0
Change Period (Y+Rc), s			4.0			4.0		4.0	4.0		4.0	4.0
Max Green Setting (Gmax), s			10.0			6.0		17.0	28.0		5.0	16.0
Max Q Clear Time (g_c+I1), s			12.0			8.0		19.0	25.0		5.1	15.4
Green Ext Time (p_c), s			0.0			0.0		0.0	2.9		0.0	0.6
Intersection Summary												
HCM 2010 Ctrl Delay			88.7									
HCM 2010 LOS			F									
Notes												

Movement	SBR
Lane Configurations	
Volume (veh/h)	37
Number	16
Initial Q (Qb), veh	0
Ped-Bike Adj(A_pbT)	1.00
Parking Bus Adj	1.00
Adj Sat Flow veh/h/ln	186.3
Lanes	0
Cap, veh/h	46
Arrive On Green	0.25
Sat Flow, veh/h	187
Grp Volume(v), veh/h	392
Grp Sat Flow(s),veh/h/ln	1830
Q Serve(g_s), s	13.4
Cycle Q Clear(g_c), s	13.4
Prop In Lane	0.10
Lane Grp Cap(c), veh/h	450
V/C Ratio(X)	0.87
Avail Cap(c_a), veh/h	450
HCM Platoon Ratio	0.00
Upstream Filter(I)	1.00
Uniform Delay (d), s/veh	23.5
Incr Delay (d2), s/veh	19.9
Initial Q Delay(d3),s/veh	0.0
%ile Back of Q (50%), veh/ln	7.9
Lane Grp Delay (d), s/veh	43.4
Lane Grp LOS	D
Approach Vol, veh/h	
Approach Delay, s/veh	
Approach LOS	

Timer
Assigned Phs
Phs Duration (G+Y+Rc), s
Change Period (Y+Rc), s
Max Green Setting (Gmax), s
Max Q Clear Time (g_c+I1), s
Green Ext Time (p_c), s

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	37	427	456	153	431	151	309	1354	92	220	1555	137
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow veh/h/ln	186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3
Lanes	0	2	0	1	2	0	1	3	0	1	3	0
Cap, veh/h	28	320	297	244	354	123	288	1642	112	244	1488	131
Arrive On Green	0.19	0.19	0.19	0.14	0.14	0.14	0.16	0.34	0.34	0.14	0.31	0.31
Sat Flow, veh/h	147	1708	1583	1774	2577	897	1774	4864	330	1774	4760	419
Grp Volume(v), veh/h	504	0	496	166	320	312	336	1026	546	239	1203	636
Grp Sat Flow(s),veh/h/ln	1855	0	1583	1774	1770	1705	1774	1695	1804	1774	1695	1789
Q Serve(g_s), s	15.0	0.0	15.0	7.1	11.0	11.0	13.0	23.0	23.0	10.7	25.0	25.0
Cycle Q Clear(g_c), s	15.0	0.0	15.0	7.1	11.0	11.0	13.0	23.0	23.0	10.7	25.0	25.0
Prop In Lane	0.08		1.00	1.00		0.53	1.00		0.18	1.00		0.23
Lane Grp Cap(c), veh/h	348	0	297	244	243	234	288	1144	609	244	1059	559
V/C Ratio(X)	1.45	0.00	1.67	0.68	1.32	1.33	1.17	0.90	0.90	0.98	1.14	1.14
Avail Cap(c_a), veh/h	348	0	297	244	243	234	288	1144	609	244	1059	559
HCM Platoon Ratio	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	32.5	0.0	32.5	32.8	34.5	34.5	33.5	25.2	25.2	34.4	27.5	27.5
Incr Delay (d2), s/veh	217.5	0.0	316.2	7.5	168.3	174.8	105.5	11.0	18.4	51.8	72.8	82.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q (50%), veh/ln	27.6	0.0	31.7	3.5	16.0	15.9	14.0	10.7	12.7	8.1	20.4	23.0
Lane Grp Delay (d), s/veh	250.0	0.0	348.7	40.3	202.8	209.3	139.0	36.2	43.6	86.2	100.3	109.8
Lane Grp LOS	F		F	D	F	F	F	D	D	F	F	F
Approach Vol, veh/h		1000			798			1908			2078	
Approach Delay, s/veh		299.0			171.6			56.4			101.6	
Approach LOS		F			F			E			F	

Timer												
Assigned Phs		4			8		5	2		1	6	
Phs Duration (G+Y+Rc), s		19.0			15.0		17.0	31.0		15.0	29.0	
Change Period (Y+Rc), s		4.0			4.0		4.0	4.0		4.0	4.0	
Max Green Setting (Gmax), s		15.0			11.0		13.0	27.0		11.0	25.0	
Max Q Clear Time (g_c+I1), s		17.0			13.0		15.0	25.0		12.7	27.0	
Green Ext Time (p_c), s		0.0			0.0		0.0	2.0		0.0	0.0	

Intersection Summary			
HCM 2010 Ctrl Delay		130.5	
HCM 2010 LOS		F	

Notes

Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Volume (veh/h)	1	33	361	392	76	253	101	455	1865	69	81	1026
Number		7	4	14	3	8	18	5	2	12	1	6
Initial Q (Qb), veh		0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Parking Bus Adj		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow veh/h/ln		186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3
Lanes		0	2	0	1	2	0	1	3	0	1	3
Cap, veh/h		24	261	244	164	230	90	464	2237	83	112	1239
Arrive On Green		0.15	0.15	0.15	0.09	0.09	0.09	0.26	0.44	0.44	0.06	0.25
Sat Flow, veh/h		156	1699	1583	1774	2489	972	1774	5034	186	1774	5035
Grp Volume(v), veh/h		428	0	426	83	194	191	495	1363	739	88	751
Grp Sat Flow(s),veh/h/ln		1855	0	1583	1774	1770	1691	1774	1695	1830	1774	1695
Q Serve(g_s), s		10.0	0.0	10.0	2.9	6.0	6.0	17.0	24.3	24.4	3.2	13.9
Cycle Q Clear(g_c), s		10.0	0.0	10.0	2.9	6.0	6.0	17.0	24.3	24.4	3.2	13.9
Prop In Lane		0.08		1.00	1.00		0.57	1.00		0.10	1.00	
Lane Grp Cap(c), veh/h		285	0	244	164	163	156	464	1506	813	112	835
V/C Ratio(X)		1.50	0.00	1.75	0.51	1.18	1.23	1.07	0.91	0.91	0.78	0.90
Avail Cap(c_a), veh/h		285	0	244	164	163	156	464	1506	813	136	835
HCM Platoon Ratio		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Upstream Filter(I)		1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh		27.5	0.0	27.5	28.1	29.5	29.5	24.0	16.8	16.8	30.0	23.7
Incr Delay (d2), s/veh		242.5	0.0	353.4	2.5	128.9	145.5	60.7	9.4	15.8	21.0	14.6
Initial Q Delay(d3),s/veh		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q (50%), veh/ln		23.5	0.0	27.6	1.3	8.3	8.7	14.5	10.7	13.0	2.0	7.0
Lane Grp Delay (d), s/veh		270.0	0.0	380.9	30.6	158.4	175.0	84.7	26.1	32.7	51.0	38.3
Lane Grp LOS		F		F	C	F	F	F	C	C	D	D
Approach Vol, veh/h			854			468			2597			1244
Approach Delay, s/veh			325.3			142.5			39.2			42.1
Approach LOS			F			F			D			D

Timer												
Assigned Phs			4			8		5	2		1	6
Phs Duration (G+Y+Rc), s			14.0			10.0		21.0	32.9		8.1	20.0
Change Period (Y+Rc), s			4.0			4.0		4.0	4.0		4.0	4.0
Max Green Setting (Gmax), s			10.0			6.0		17.0	28.0		5.0	16.0
Max Q Clear Time (g_c+I1), s			12.0			8.0		19.0	26.4		5.2	15.9
Green Ext Time (p_c), s			0.0			0.0		0.0	1.5		0.0	0.1

Intersection Summary												
HCM 2010 Ctrl Delay			96.6									
HCM 2010 LOS			F									

Notes

Movement	SBR
Lane Configurations	
Volume (veh/h)	38
Number	16
Initial Q (Qb), veh	0
Ped-Bike Adj(A_pbT)	1.00
Parking Bus Adj	1.00
Adj Sat Flow veh/h/ln	186.3
Lanes	0
Cap, veh/h	46
Arrive On Green	0.25
Sat Flow, veh/h	185
Grp Volume(v), veh/h	405
Grp Sat Flow(s),veh/h/ln	1830
Q Serve(g_s), s	13.9
Cycle Q Clear(g_c), s	13.9
Prop In Lane	0.10
Lane Grp Cap(c), veh/h	450
V/C Ratio(X)	0.90
Avail Cap(c_a), veh/h	450
HCM Platoon Ratio	0.00
Upstream Filter(I)	1.00
Uniform Delay (d), s/veh	23.7
Incr Delay (d2), s/veh	23.6
Initial Q Delay(d3),s/veh	0.0
%ile Back of Q (50%), veh/ln	8.7
Lane Grp Delay (d), s/veh	47.3
Lane Grp LOS	D
Approach Vol, veh/h	
Approach Delay, s/veh	
Approach LOS	

Timer
Assigned Phs
Phs Duration (G+Y+Rc), s
Change Period (Y+Rc), s
Max Green Setting (Gmax), s
Max Q Clear Time (g_c+I1), s
Green Ext Time (p_c), s

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	38	442	472	158	447	157	319	1401	95	228	1609	141
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow veh/h/ln	186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3
Lanes	0	2	0	1	2	0	1	3	0	1	3	0
Cap, veh/h	27	321	297	244	354	124	288	1642	111	244	1489	130
Arrive On Green	0.19	0.19	0.19	0.14	0.14	0.14	0.16	0.34	0.34	0.14	0.31	0.31
Sat Flow, veh/h	146	1709	1583	1774	2574	900	1774	4866	329	1774	4764	416
Grp Volume(v), veh/h	521	0	513	172	333	324	347	1061	565	248	1243	659
Grp Sat Flow(s),veh/h/ln	1855	0	1583	1774	1770	1704	1774	1695	1805	1774	1695	1789
Q Serve(g_s), s	15.0	0.0	15.0	7.4	11.0	11.0	13.0	24.1	24.2	11.0	25.0	25.0
Cycle Q Clear(g_c), s	15.0	0.0	15.0	7.4	11.0	11.0	13.0	24.1	24.2	11.0	25.0	25.0
Prop In Lane	0.08		1.00	1.00		0.53	1.00		0.18	1.00		0.23
Lane Grp Cap(c), veh/h	348	0	297	244	243	234	288	1144	609	244	1059	559
V/C Ratio(X)	1.50	0.00	1.73	0.71	1.37	1.38	1.20	0.93	0.93	1.02	1.17	1.18
Avail Cap(c_a), veh/h	348	0	297	244	243	234	288	1144	609	244	1059	559
HCM Platoon Ratio	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	32.5	0.0	32.5	33.0	34.5	34.5	33.5	25.6	25.6	34.5	27.5	27.5
Incr Delay (d2), s/veh	238.5	0.0	341.4	8.9	190.2	196.2	119.9	14.0	22.4	62.0	88.3	97.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q (50%), veh/ln	29.6	0.0	33.8	3.8	17.5	17.3	15.1	11.7	13.8	8.9	22.7	25.4
Lane Grp Delay (d), s/veh	271.0	0.0	373.9	41.8	224.7	230.7	153.4	39.6	48.0	96.5	115.8	125.0
Lane Grp LOS	F		F	D	F	F	F	D	D	F	F	F
Approach Vol, veh/h		1034			829			1973			2150	
Approach Delay, s/veh		322.1			189.1			62.0			116.4	
Approach LOS		F			F			E			F	

Timer												
Assigned Phs		4			8		5	2		1	6	
Phs Duration (G+Y+Rc), s		19.0			15.0		17.0	31.0		15.0	29.0	
Change Period (Y+Rc), s		4.0			4.0		4.0	4.0		4.0	4.0	
Max Green Setting (Gmax), s		15.0			11.0		13.0	27.0		11.0	25.0	
Max Q Clear Time (g_c+I1), s		17.0			13.0		15.0	26.2		13.0	27.0	
Green Ext Time (p_c), s		0.0			0.0		0.0	0.8		0.0	0.0	

Intersection Summary		
HCM 2010 Ctrl Delay	144.1	
HCM 2010 LOS	F	

Notes

Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Volume (veh/h)	1	34	374	406	79	262	104	471	1930	71	84	1062
Number		7	4	14	3	8	18	5	2	12	1	6
Initial Q (Qb), veh		0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Parking Bus Adj		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow veh/h/ln		186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3
Lanes		0	2	0	1	2	0	1	3	0	1	3
Cap, veh/h		24	262	244	164	230	89	464	2227	81	116	1240
Arrive On Green		0.15	0.15	0.15	0.09	0.09	0.09	0.26	0.44	0.44	0.07	0.25
Sat Flow, veh/h		155	1700	1583	1774	2495	967	1774	5036	184	1774	5037
Grp Volume(v), veh/h		444	0	441	86	200	198	512	1410	765	91	777
Grp Sat Flow(s),veh/h/ln		1855	0	1583	1774	1770	1692	1774	1695	1830	1774	1695
Q Serve(g_s), s		10.0	0.0	10.0	3.0	6.0	6.0	17.0	25.8	26.0	3.3	14.6
Cycle Q Clear(g_c), s		10.0	0.0	10.0	3.0	6.0	6.0	17.0	25.8	26.0	3.3	14.6
Prop In Lane		0.08		1.00	1.00		0.57	1.00		0.10	1.00	
Lane Grp Cap(c), veh/h		285	0	244	164	163	156	464	1499	809	116	835
V/C Ratio(X)		1.56	0.00	1.81	0.53	1.23	1.27	1.10	0.94	0.94	0.78	0.93
Avail Cap(c_a), veh/h		285	0	244	164	163	156	464	1499	809	136	835
HCM Platoon Ratio		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Upstream Filter(I)		1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh		27.5	0.0	27.5	28.1	29.5	29.5	24.0	17.3	17.4	29.9	24.0
Incr Delay (d2), s/veh		266.7	0.0	380.5	3.1	143.8	160.7	73.0	12.9	20.8	21.7	18.2
Initial Q Delay(d3),s/veh		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q (50%), veh/ln		25.4	0.0	29.4	1.4	9.0	9.4	16.1	11.9	14.9	2.1	7.6
Lane Grp Delay (d), s/veh		294.2	0.0	408.0	31.2	173.3	190.2	97.0	30.2	38.1	51.6	42.2
Lane Grp LOS		F		F	C	F	F	F	C	D	D	D
Approach Vol, veh/h			885			484			2687			1287
Approach Delay, s/veh			350.9			155.0			45.2			46.1
Approach LOS			F			F			D			D

Timer												
Assigned Phs			4			8		5	2		1	6
Phs Duration (G+Y+Rc), s			14.0			10.0		21.0	32.7		8.3	20.0
Change Period (Y+Rc), s			4.0			4.0		4.0	4.0		4.0	4.0
Max Green Setting (Gmax), s			10.0			6.0		17.0	28.0		5.0	16.0
Max Q Clear Time (g_c+I1), s			12.0			8.0		19.0	28.0		5.3	16.6
Green Ext Time (p_c), s			0.0			0.0		0.0	0.0		0.0	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	106.0
HCM 2010 LOS	F

Notes

Movement	SBR
Lane Configurations	
Volume (veh/h)	39
Number	16
Initial Q (Qb), veh	0
Ped-Bike Adj(A_pbT)	1.00
Parking Bus Adj	1.00
Adj Sat Flow veh/h/ln	186.3
Lanes	0
Cap, veh/h	45
Arrive On Green	0.25
Sat Flow, veh/h	183
Grp Volume(v), veh/h	419
Grp Sat Flow(s),veh/h/ln	1830
Q Serve(g_s), s	14.6
Cycle Q Clear(g_c), s	14.6
Prop In Lane	0.10
Lane Grp Cap(c), veh/h	451
V/C Ratio(X)	0.93
Avail Cap(c_a), veh/h	451
HCM Platoon Ratio	0.00
Upstream Filter(I)	1.00
Uniform Delay (d), s/veh	24.0
Incr Delay (d2), s/veh	28.2
Initial Q Delay(d3),s/veh	0.0
%ile Back of Q (50%), veh/ln	9.5
Lane Grp Delay (d), s/veh	52.2
Lane Grp LOS	D
Approach Vol, veh/h	
Approach Delay, s/veh	
Approach LOS	

Timer
Assigned Phs
Phs Duration (G+Y+Rc), s
Change Period (Y+Rc), s
Max Green Setting (Gmax), s
Max Q Clear Time (g_c+I1), s
Green Ext Time (p_c), s

Intersection Summary

Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Volume (veh/h)	1	42	319	420	68	224	88	466	1628	61	70	901
Number		7	4	14	3	8	18	5	2	12	1	6
Initial Q (Qb), veh		0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Parking Bus Adj		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow veh/h/ln		186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3
Lanes		0	2	0	1	2	0	1	3	0	1	3
Cap, veh/h		33	252	244	164	231	89	464	2266	84	102	1225
Arrive On Green		0.15	0.15	0.15	0.09	0.09	0.09	0.26	0.45	0.45	0.06	0.25
Sat Flow, veh/h		217	1635	1583	1774	2502	961	1774	5032	187	1774	4978
Grp Volume(v), veh/h		393	0	457	74	170	169	507	1192	644	76	666
Grp Sat Flow(s),veh/h/ln		1852	0	1583	1774	1770	1693	1774	1695	1830	1774	1695
Q Serve(g_s), s		10.0	0.0	10.0	2.6	6.0	6.0	17.0	19.4	19.4	2.7	12.0
Cycle Q Clear(g_c), s		10.0	0.0	10.0	2.6	6.0	6.0	17.0	19.4	19.4	2.7	12.0
Prop In Lane		0.12		1.00	1.00		0.57	1.00		0.10	1.00	
Lane Grp Cap(c), veh/h		285	0	244	164	163	156	464	1527	824	102	835
V/C Ratio(X)		1.38	0.00	1.88	0.45	1.04	1.08	1.09	0.78	0.78	0.75	0.80
Avail Cap(c_a), veh/h		285	0	244	164	163	156	464	1527	824	136	835
HCM Platoon Ratio		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Upstream Filter(I)		1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh		27.5	0.0	27.5	27.9	29.5	29.5	24.0	15.1	15.2	30.2	23.0
Incr Delay (d2), s/veh		191.2	0.0	409.5	1.9	81.4	95.6	69.3	4.0	7.3	14.1	7.9
Initial Q Delay(d3),s/veh		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q (50%), veh/ln		19.4	0.0	31.4	1.2	6.2	6.5	15.6	7.6	9.0	1.6	5.4
Lane Grp Delay (d), s/veh		218.7	0.0	437.0	29.9	110.9	125.1	93.3	19.2	22.4	44.3	30.8
Lane Grp LOS		F		F	C	F	F	F	B	C	D	C
Approach Vol, veh/h			850			413			2343			1101
Approach Delay, s/veh			336.1			102.2			36.1			33.7
Approach LOS			F			F			D			C

Timer												
Assigned Phs			4			8		5	2		1	6
Phs Duration (G+Y+Rc), s			14.0			10.0		21.0	33.3		7.7	20.0
Change Period (Y+Rc), s			4.0			4.0		4.0	4.0		4.0	4.0
Max Green Setting (Gmax), s			10.0			6.0		17.0	28.0		5.0	16.0
Max Q Clear Time (g_c+I1), s			12.0			8.0		19.0	21.4		4.7	14.0
Green Ext Time (p_c), s			0.0			0.0		0.0	6.1		0.0	1.9

Intersection Summary												
HCM 2010 Ctrl Delay			95.5									
HCM 2010 LOS			F									

Notes

Movement	SBR
Lane Configurations	
Volume (veh/h)	42
Number	16
Initial Q (Qb), veh	0
Ped-Bike Adj(A_pbT)	1.00
Parking Bus Adj	1.00
Adj Sat Flow veh/h/ln	186.3
Lanes	0
Cap, veh/h	57
Arrive On Green	0.25
Sat Flow, veh/h	234
Grp Volume(v), veh/h	359
Grp Sat Flow(s),veh/h/ln	1822
Q Serve(g_s), s	12.0
Cycle Q Clear(g_c), s	12.0
Prop In Lane	0.13
Lane Grp Cap(c), veh/h	448
V/C Ratio(X)	0.80
Avail Cap(c_a), veh/h	448
HCM Platoon Ratio	0.00
Upstream Filter(I)	1.00
Uniform Delay (d), s/veh	23.0
Incr Delay (d2), s/veh	13.9
Initial Q Delay(d3),s/veh	0.0
%ile Back of Q (50%), veh/ln	6.6
Lane Grp Delay (d), s/veh	36.9
Lane Grp LOS	D
Approach Vol, veh/h	
Approach Delay, s/veh	
Approach LOS	

Timer
Assigned Phs
Phs Duration (G+Y+Rc), s
Change Period (Y+Rc), s
Max Green Setting (Gmax), s
Max Q Clear Time (g_c+I1), s
Green Ext Time (p_c), s

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	48	392	496	139	395	137	366	1231	87	199	1406	134
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow veh/h/ln	186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3
Lanes	0	2	0	1	2	0	1	3	0	1	3	0
Cap, veh/h	38	310	297	244	356	122	288	1636	116	244	1476	141
Arrive On Green	0.19	0.19	0.19	0.14	0.14	0.14	0.16	0.34	0.34	0.14	0.31	0.31
Sat Flow, veh/h	202	1651	1583	1774	2586	890	1774	4848	344	1774	4722	451
Grp Volume(v), veh/h	478	0	539	151	292	286	398	936	497	216	1097	577
Grp Sat Flow(s),veh/h/ln	1853	0	1583	1774	1770	1706	1774	1695	1802	1774	1695	1783
Q Serve(g_s), s	15.0	0.0	15.0	6.4	11.0	11.0	13.0	20.2	20.2	9.6	25.0	25.0
Cycle Q Clear(g_c), s	15.0	0.0	15.0	6.4	11.0	11.0	13.0	20.2	20.2	9.6	25.0	25.0
Prop In Lane	0.11		1.00	1.00		0.52	1.00		0.19	1.00		0.25
Lane Grp Cap(c), veh/h	347	0	297	244	243	235	288	1144	608	244	1059	557
V/C Ratio(X)	1.38	0.00	1.82	0.62	1.20	1.22	1.38	0.82	0.82	0.89	1.04	1.04
Avail Cap(c_a), veh/h	347	0	297	244	243	235	288	1144	608	244	1059	557
HCM Platoon Ratio	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	32.5	0.0	32.5	32.5	34.5	34.5	33.5	24.2	24.2	33.9	27.5	27.5
Incr Delay (d2), s/veh	186.4	0.0	380.0	4.7	123.1	130.4	191.5	6.5	11.6	29.7	37.1	47.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q (50%), veh/ln	24.6	0.0	36.9	3.0	13.0	13.0	20.9	8.8	10.3	6.1	15.2	17.6
Lane Grp Delay (d), s/veh	218.9	0.0	412.5	37.2	157.6	164.9	225.0	30.8	35.9	63.6	64.6	75.3
Lane Grp LOS	F		F	D	F	F	F	C	D	E	F	F
Approach Vol, veh/h		1017			729			1831			1890	
Approach Delay, s/veh		321.5			135.5			74.4			67.8	
Approach LOS		F			F			E			E	

Timer												
Assigned Phs		4			8		5	2		1	6	
Phs Duration (G+Y+Rc), s		19.0			15.0		17.0	31.0		15.0	29.0	
Change Period (Y+Rc), s		4.0			4.0		4.0	4.0		4.0	4.0	
Max Green Setting (Gmax), s		15.0			11.0		13.0	27.0		11.0	25.0	
Max Q Clear Time (g_c+I1), s		17.0			13.0		15.0	22.2		11.6	27.0	
Green Ext Time (p_c), s		0.0			0.0		0.0	4.6		0.0	0.0	

Intersection Summary		
HCM 2010 Ctrl Delay	126.2	
HCM 2010 LOS	F	

Notes

Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Volume (veh/h)	1	105	346	687	77	253	91	739	1707	68	73	949
Number		7	4	14	3	8	18	5	2	12	1	6
Initial Q (Qb), veh		0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Parking Bus Adj		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow veh/h/ln		186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3
Lanes		0	2	0	1	2	0	1	3	0	1	3
Cap, veh/h		66	217	244	164	237	83	464	2254	90	104	1146
Arrive On Green		0.15	0.15	0.15	0.09	0.09	0.09	0.26	0.45	0.45	0.06	0.25
Sat Flow, veh/h		428	1413	1583	1774	2569	904	1774	5018	200	1774	4654
Grp Volume(v), veh/h		490	0	747	84	187	187	803	1253	676	79	751
Grp Sat Flow(s),veh/h/ln		1841	0	1583	1774	1770	1703	1774	1695	1827	1774	1695
Q Serve(g_s), s		10.0	0.0	10.0	2.9	6.0	6.0	17.0	21.0	21.0	2.9	13.9
Cycle Q Clear(g_c), s		10.0	0.0	10.0	2.9	6.0	6.0	17.0	21.0	21.0	2.9	13.9
Prop In Lane		0.23		1.00	1.00		0.53	1.00		0.11	1.00	
Lane Grp Cap(c), veh/h		283	0	244	164	163	157	464	1523	821	104	835
V/C Ratio(X)		1.73	0.00	3.07	0.51	1.15	1.19	1.73	0.82	0.82	0.76	0.90
Avail Cap(c_a), veh/h		283	0	244	164	163	157	464	1523	821	136	835
HCM Platoon Ratio		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Upstream Filter(I)		1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh		27.5	0.0	27.5	28.1	29.5	29.5	24.0	15.6	15.7	30.2	23.7
Incr Delay (d2), s/veh		342.8	0.0	940.8	2.7	115.7	130.6	337.7	5.1	9.2	16.4	14.7
Initial Q Delay(d3),s/veh		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q (50%), veh/ln		31.2	0.0	67.3	1.3	7.7	8.1	50.2	8.4	10.0	1.7	7.0
Lane Grp Delay (d), s/veh		370.3	0.0	968.3	30.8	145.2	160.1	361.7	20.8	24.8	46.5	38.4
Lane Grp LOS		F		F	C	F	F	F	C	C	D	D
Approach Vol, veh/h			1237			458			2732			1224
Approach Delay, s/veh			731.4			130.3			122.0			42.1
Approach LOS			F			F			F			D

Timer												
Assigned Phs			4			8		5	2		1	6
Phs Duration (G+Y+Rc), s			14.0			10.0		21.0	33.2		7.8	20.0
Change Period (Y+Rc), s			4.0			4.0		4.0	4.0		4.0	4.0
Max Green Setting (Gmax), s			10.0			6.0		17.0	28.0		5.0	16.0
Max Q Clear Time (g_c+I1), s			12.0			8.0		19.0	23.0		4.9	16.0
Green Ext Time (p_c), s			0.0			0.0		0.0	4.7		0.0	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	238.8
HCM 2010 LOS	F

Notes

Movement	SBR
Lane Configurations	
Volume (veh/h)	104
Number	16
Initial Q (Qb), veh	0
Ped-Bike Adj(A_pbT)	1.00
Parking Bus Adj	1.00
Adj Sat Flow veh/h/ln	186.3
Lanes	0
Cap, veh/h	125
Arrive On Green	0.25
Sat Flow, veh/h	509
Grp Volume(v), veh/h	394
Grp Sat Flow(s),veh/h/ln	1773
Q Serve(g_s), s	14.0
Cycle Q Clear(g_c), s	14.0
Prop In Lane	0.29
Lane Grp Cap(c), veh/h	436
V/C Ratio(X)	0.90
Avail Cap(c_a), veh/h	436
HCM Platoon Ratio	0.00
Upstream Filter(I)	1.00
Uniform Delay (d), s/veh	23.7
Incr Delay (d2), s/veh	24.5
Initial Q Delay(d3),s/veh	0.0
%ile Back of Q (50%), veh/ln	8.5
Lane Grp Delay (d), s/veh	48.2
Lane Grp LOS	D
Approach Vol, veh/h	
Approach Delay, s/veh	
Approach LOS	

Timer
Assigned Phs
Phs Duration (G+Y+Rc), s
Change Period (Y+Rc), s
Max Green Setting (Gmax), s
Max Q Clear Time (g_c+I1), s
Green Ext Time (p_c), s

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	142	450	890	154	447	141	650	1297	101	206	1480	235
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow veh/h/ln	186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3
Lanes	0	2	0	1	2	0	1	3	0	1	3	0
Cap, veh/h	83	262	297	244	365	114	288	1624	127	244	1384	219
Arrive On Green	0.19	0.19	0.19	0.14	0.14	0.14	0.16	0.34	0.34	0.14	0.31	0.31
Sat Flow, veh/h	441	1400	1583	1774	2655	831	1774	4811	375	1774	4430	699
Grp Volume(v), veh/h	643	0	967	167	323	316	707	993	527	224	1230	634
Grp Sat Flow(s),veh/h/ln	1841	0	1583	1774	1770	1716	1774	1695	1797	1774	1695	1739
Q Serve(g_s), s	15.0	0.0	15.0	7.2	11.0	11.0	13.0	22.0	22.0	10.0	25.0	25.0
Cycle Q Clear(g_c), s	15.0	0.0	15.0	7.2	11.0	11.0	13.0	22.0	22.0	10.0	25.0	25.0
Prop In Lane	0.24		1.00	1.00		0.48	1.00		0.21	1.00		0.40
Lane Grp Cap(c), veh/h	345	0	297	244	243	236	288	1144	606	244	1059	544
V/C Ratio(X)	1.86	0.00	3.26	0.68	1.33	1.34	2.45	0.87	0.87	0.92	1.16	1.17
Avail Cap(c_a), veh/h	345	0	297	244	243	236	288	1144	606	244	1059	544
HCM Platoon Ratio	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	32.5	0.0	32.5	32.8	34.5	34.5	33.5	24.8	24.8	34.1	27.5	27.5
Incr Delay (d2), s/veh	399.3	0.0	1024.4	7.7	172.8	178.5	664.0	9.0	15.5	36.4	83.1	93.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q (50%), veh/ln	44.8	0.0	90.1	3.6	16.3	16.2	58.7	10.0	11.7	6.7	21.9	24.1
Lane Grp Delay (d), s/veh	431.8	0.0	1056.9	40.5	207.3	213.0	697.5	33.8	40.4	70.4	110.6	121.1
Lane Grp LOS	F		F	D	F	F	F	C	D	E	F	F
Approach Vol, veh/h		1610			806			2227			2088	
Approach Delay, s/veh		807.3			175.0			246.1			109.5	
Approach LOS		F			F			F			F	

Timer												
Assigned Phs		4			8		5	2		1	6	
Phs Duration (G+Y+Rc), s		19.0			15.0		17.0	31.0		15.0	29.0	
Change Period (Y+Rc), s		4.0			4.0		4.0	4.0		4.0	4.0	
Max Green Setting (Gmax), s		15.0			11.0		13.0	27.0		11.0	25.0	
Max Q Clear Time (g_c+I1), s		17.0			13.0		15.0	24.0		12.0	27.0	
Green Ext Time (p_c), s		0.0			0.0		0.0	2.9		0.0	0.0	

Intersection Summary		
HCM 2010 Ctrl Delay	329.4	
HCM 2010 LOS	F	

Notes

Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Volume (veh/h)	1	138	367	776	79	276	94	893	1766	70	75	981
Number		7	4	14	3	8	18	5	2	12	1	6
Initial Q (Qb), veh		0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Parking Bus Adj		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow veh/h/ln		186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3
Lanes		0	2	0	1	2	0	1	3	0	1	3
Cap, veh/h		77	205	244	164	241	80	464	2250	89	105	1101
Arrive On Green		0.15	0.15	0.15	0.09	0.09	0.09	0.26	0.45	0.45	0.06	0.25
Sat Flow, veh/h		502	1336	1583	1774	2609	870	1774	5020	198	1774	4474
Grp Volume(v), veh/h		549	0	843	86	202	200	971	1296	700	82	807
Grp Sat Flow(s),veh/h/ln		1838	0	1583	1774	1770	1709	1774	1695	1828	1774	1695
Q Serve(g_s), s		10.0	0.0	10.0	3.0	6.0	6.0	17.0	22.2	22.3	3.0	15.3
Cycle Q Clear(g_c), s		10.0	0.0	10.0	3.0	6.0	6.0	17.0	22.2	22.3	3.0	15.3
Prop In Lane		0.27		1.00	1.00		0.51	1.00		0.11	1.00	
Lane Grp Cap(c), veh/h		283	0	244	164	163	158	464	1520	819	105	835
V/C Ratio(X)		1.94	0.00	3.46	0.53	1.23	1.27	2.09	0.85	0.85	0.78	0.97
Avail Cap(c_a), veh/h		283	0	244	164	163	158	464	1520	819	136	835
HCM Platoon Ratio		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Upstream Filter(I)		1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh		27.5	0.0	27.5	28.1	29.5	29.5	24.0	16.0	16.0	30.1	24.2
Incr Delay (d2), s/veh		436.6	0.0	1117.6	3.1	147.0	161.9	499.1	6.3	11.1	18.8	24.2
Initial Q Delay(d3),s/veh		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q (50%), veh/ln		38.5	0.0	79.3	1.4	9.2	9.5	71.0	9.1	10.9	1.8	8.6
Lane Grp Delay (d), s/veh		464.1	0.0	1145.1	31.2	176.5	191.4	523.1	22.3	27.1	49.0	48.5
Lane Grp LOS		F		F	C	F	F	F	C	C	D	D
Approach Vol, veh/h			1392			488			2967			1306
Approach Delay, s/veh			876.5			157.0			187.3			52.4
Approach LOS			F			F			F			D

Timer												
Assigned Phs			4			8		5	2		1	6
Phs Duration (G+Y+Rc), s			14.0			10.0		21.0	33.1		7.9	20.0
Change Period (Y+Rc), s			4.0			4.0		4.0	4.0		4.0	4.0
Max Green Setting (Gmax), s			10.0			6.0		17.0	28.0		5.0	16.0
Max Q Clear Time (g_c+I1), s			12.0			8.0		19.0	24.3		5.0	17.4
Green Ext Time (p_c), s			0.0			0.0		0.0	3.6		0.0	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	312.2
HCM 2010 LOS	F

Notes

Movement	SBR
Lane Configurations	
Volume (veh/h)	145
Number	16
Initial Q (Qb), veh	0
Ped-Bike Adj(A_pbT)	1.00
Parking Bus Adj	1.00
Adj Sat Flow veh/h/ln	186.3
Lanes	0
Cap, veh/h	163
Arrive On Green	0.25
Sat Flow, veh/h	662
Grp Volume(v), veh/h	417
Grp Sat Flow(s),veh/h/ln	1746
Q Serve(g_s), s	15.4
Cycle Q Clear(g_c), s	15.4
Prop In Lane	0.38
Lane Grp Cap(c), veh/h	430
V/C Ratio(X)	0.97
Avail Cap(c_a), veh/h	430
HCM Platoon Ratio	0.00
Upstream Filter(I)	1.00
Uniform Delay (d), s/veh	24.3
Incr Delay (d2), s/veh	36.4
Initial Q Delay(d3),s/veh	0.0
%ile Back of Q (50%), veh/ln	10.4
Lane Grp Delay (d), s/veh	60.6
Lane Grp LOS	E
Approach Vol, veh/h	
Approach Delay, s/veh	
Approach LOS	

Timer
Assigned Phs
Phs Duration (G+Y+Rc), s
Change Period (Y+Rc), s
Max Green Setting (Gmax), s
Max Q Clear Time (g_c+I1), s
Green Ext Time (p_c), s

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	194	487	1095	159	473	146	726	1341	104	213	1530	270
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow veh/h/ln	186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3
Lanes	0	2	0	1	2	0	1	3	0	1	3	0
Cap, veh/h	98	246	297	244	367	113	288	1625	126	244	1361	238
Arrive On Green	0.19	0.19	0.19	0.14	0.14	0.14	0.16	0.34	0.34	0.14	0.31	0.31
Sat Flow, veh/h	524	1313	1583	1774	2667	821	1774	4814	373	1774	4356	762
Grp Volume(v), veh/h	740	0	1190	173	340	333	789	1027	544	232	1292	664
Grp Sat Flow(s),veh/h/ln	1837	0	1583	1774	1770	1718	1774	1695	1797	1774	1695	1728
Q Serve(g_s), s	15.0	0.0	15.0	7.5	11.0	11.0	13.0	23.0	23.0	10.4	25.0	25.0
Cycle Q Clear(g_c), s	15.0	0.0	15.0	7.5	11.0	11.0	13.0	23.0	23.0	10.4	25.0	25.0
Prop In Lane	0.29		1.00	1.00		0.48	1.00		0.21	1.00		0.44
Lane Grp Cap(c), veh/h	344	0	297	244	243	236	288	1144	606	244	1059	540
V/C Ratio(X)	2.15	0.00	4.01	0.71	1.40	1.41	2.74	0.90	0.90	0.95	1.22	1.23
Avail Cap(c_a), veh/h	344	0	297	244	243	236	288	1144	606	244	1059	540
HCM Platoon Ratio	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	32.5	0.0	32.5	33.0	34.5	34.5	33.5	25.2	25.2	34.2	27.5	27.5
Incr Delay (d2), s/veh	526.6	0.0	1361.8	9.2	202.3	207.2	791.3	11.1	18.5	44.1	107.4	118.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q (50%), veh/ln	56.9	0.0	117.9	3.8	18.3	18.1	68.9	10.7	12.6	7.4	25.5	27.7
Lane Grp Delay (d), s/veh	559.1	0.0	1394.3	42.1	236.8	241.7	824.8	36.3	43.7	78.3	134.9	146.4
Lane Grp LOS	F		F	D	F	F	F	D	D	E	F	F
Approach Vol, veh/h		1930			846			2360			2188	
Approach Delay, s/veh		1074.1			198.9			301.6			132.4	
Approach LOS		F			F			F			F	

Timer												
Assigned Phs		4			8		5	2		1	6	
Phs Duration (G+Y+Rc), s		19.0			15.0		17.0	31.0		15.0	29.0	
Change Period (Y+Rc), s		4.0			4.0		4.0	4.0		4.0	4.0	
Max Green Setting (Gmax), s		15.0			11.0		13.0	27.0		11.0	25.0	
Max Q Clear Time (g_c+I1), s		17.0			13.0		15.0	25.0		12.4	27.0	
Green Ext Time (p_c), s		0.0			0.0		0.0	1.9		0.0	0.0	

Intersection Summary												
HCM 2010 Ctrl Delay			442.8									
HCM 2010 LOS			F									

Notes

Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Volume (veh/h)	1	150	381	819	81	285	98	921	1827	73	78	1014
Number		7	4	14	3	8	18	5	2	12	1	6
Initial Q (Qb), veh		0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Parking Bus Adj		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow veh/h/ln		186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3
Lanes		0	2	0	1	2	0	1	3	0	1	3
Cap, veh/h		80	203	244	164	240	81	464	2241	89	109	1103
Arrive On Green		0.15	0.15	0.15	0.09	0.09	0.09	0.26	0.45	0.45	0.06	0.25
Sat Flow, veh/h		519	1318	1583	1774	2597	880	1774	5019	199	1774	4479
Grp Volume(v), veh/h		577	0	890	88	209	208	1001	1340	725	85	834
Grp Sat Flow(s),veh/h/ln		1837	0	1583	1774	1770	1707	1774	1695	1828	1774	1695
Q Serve(g_s), s		10.0	0.0	10.0	3.1	6.0	6.0	17.0	23.5	23.6	3.1	16.0
Cycle Q Clear(g_c), s		10.0	0.0	10.0	3.1	6.0	6.0	17.0	23.5	23.6	3.1	16.0
Prop In Lane		0.28		1.00	1.00		0.52	1.00		0.11	1.00	
Lane Grp Cap(c), veh/h		283	0	244	164	163	158	464	1514	816	109	835
V/C Ratio(X)		2.04	0.00	3.65	0.54	1.28	1.32	2.16	0.89	0.89	0.78	1.00
Avail Cap(c_a), veh/h		283	0	244	164	163	158	464	1514	816	136	835
HCM Platoon Ratio		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Upstream Filter(I)		1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh		27.5	0.0	27.5	28.2	29.5	29.5	24.0	16.5	16.5	30.1	24.5
Incr Delay (d2), s/veh		481.0	0.0	1204.2	3.4	165.2	180.4	528.0	8.0	13.8	20.2	31.0
Initial Q Delay(d3),s/veh		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q (50%), veh/ln		42.0	0.0	85.1	1.4	10.0	10.3	74.7	9.9	12.0	1.9	9.7
Lane Grp Delay (d), s/veh		508.5	0.0	1231.7	31.6	194.7	209.9	552.0	24.4	30.3	50.3	55.5
Lane Grp LOS		F		F	C	F	F	F	C	C	D	E
Approach Vol, veh/h			1467			505			3066			1349
Approach Delay, s/veh			947.3			172.5			198.0			59.1
Approach LOS			F			F			F			E

Timer												
Assigned Phs			4			8		5	2		1	6
Phs Duration (G+Y+Rc), s			14.0			10.0		21.0	33.0		8.0	20.0
Change Period (Y+Rc), s			4.0			4.0		4.0	4.0		4.0	4.0
Max Green Setting (Gmax), s			10.0			6.0		17.0	28.0		5.0	16.0
Max Q Clear Time (g_c+I1), s			12.0			8.0		19.0	25.6		5.1	18.0
Green Ext Time (p_c), s			0.0			0.0		0.0	2.3		0.0	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	338.8
HCM 2010 LOS	F

Notes

Movement	SBR
Lane Configurations	
Volume (veh/h)	149
Number	16
Initial Q (Qb), veh	0
Ped-Bike Adj(A_pbT)	1.00
Parking Bus Adj	1.00
Adj Sat Flow veh/h/ln	186.3
Lanes	0
Cap, veh/h	162
Arrive On Green	0.25
Sat Flow, veh/h	658
Grp Volume(v), veh/h	430
Grp Sat Flow(s),veh/h/ln	1747
Q Serve(g_s), s	16.0
Cycle Q Clear(g_c), s	16.0
Prop In Lane	0.38
Lane Grp Cap(c), veh/h	430
V/C Ratio(X)	1.00
Avail Cap(c_a), veh/h	430
HCM Platoon Ratio	0.00
Upstream Filter(I)	1.00
Uniform Delay (d), s/veh	24.5
Incr Delay (d2), s/veh	43.5
Initial Q Delay(d3),s/veh	0.0
%ile Back of Q (50%), veh/ln	11.5
Lane Grp Delay (d), s/veh	68.0
Lane Grp LOS	F
Approach Vol, veh/h	
Approach Delay, s/veh	
Approach LOS	

Timer
Assigned Phs
Phs Duration (G+Y+Rc), s
Change Period (Y+Rc), s
Max Green Setting (Gmax), s
Max Q Clear Time (g_c+I1), s
Green Ext Time (p_c), s

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	201	505	1132	165	491	151	766	1387	107	220	1583	284
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow veh/h/ln	186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3
Lanes	0	2	0	1	2	0	1	3	0	1	3	0
Cap, veh/h	98	246	297	244	367	112	288	1626	125	244	1357	242
Arrive On Green	0.19	0.19	0.19	0.14	0.14	0.14	0.16	0.34	0.34	0.14	0.31	0.31
Sat Flow, veh/h	522	1315	1583	1774	2671	817	1774	4817	370	1774	4343	773
Grp Volume(v), veh/h	767	0	1230	179	353	345	833	1061	563	239	1340	690
Grp Sat Flow(s),veh/h/ln	1837	0	1583	1774	1770	1719	1774	1695	1797	1774	1695	1726
Q Serve(g_s), s	15.0	0.0	15.0	7.7	11.0	11.0	13.0	24.1	24.2	10.7	25.0	25.0
Cycle Q Clear(g_c), s	15.0	0.0	15.0	7.7	11.0	11.0	13.0	24.1	24.2	10.7	25.0	25.0
Prop In Lane	0.28		1.00	1.00		0.48	1.00		0.21	1.00		0.45
Lane Grp Cap(c), veh/h	344	0	297	244	243	236	288	1144	607	244	1059	539
V/C Ratio(X)	2.23	0.00	4.14	0.73	1.45	1.46	2.89	0.93	0.93	0.98	1.26	1.28
Avail Cap(c_a), veh/h	344	0	297	244	243	236	288	1144	607	244	1059	539
HCM Platoon Ratio	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	32.5	0.0	32.5	33.1	34.5	34.5	33.5	25.6	25.6	34.4	27.5	27.5
Incr Delay (d2), s/veh	561.6	0.0	1422.4	10.9	224.4	228.8	859.7	14.1	22.5	51.8	126.8	139.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q (50%), veh/ln	60.2	0.0	122.9	4.0	19.8	19.5	74.4	11.7	13.8	8.1	28.4	30.8
Lane Grp Delay (d), s/veh	594.1	0.0	1454.9	44.0	258.9	263.3	893.2	39.6	48.1	86.2	154.3	166.9
Lane Grp LOS	F		F	D	F	F	F	D	D	F	F	F
Approach Vol, veh/h		1997			877			2457			2269	
Approach Delay, s/veh		1124.3			216.8			331.0			150.9	
Approach LOS		F			F			F			F	

Timer												
Assigned Phs		4			8		5	2		1	6	
Phs Duration (G+Y+Rc), s		19.0			15.0		17.0	31.0		15.0	29.0	
Change Period (Y+Rc), s		4.0			4.0		4.0	4.0		4.0	4.0	
Max Green Setting (Gmax), s		15.0			11.0		13.0	27.0		11.0	25.0	
Max Q Clear Time (g_c+I1), s		17.0			13.0		15.0	26.2		12.7	27.0	
Green Ext Time (p_c), s		0.0			0.0		0.0	0.8		0.0	0.0	

Intersection Summary		
HCM 2010 Ctrl Delay	472.5	
HCM 2010 LOS	F	

Notes

Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Volume (veh/h)	1	162	397	863	84	295	101	950	1890	75	81	1049
Number		7	4	14	3	8	18	5	2	12	1	6
Initial Q (Qb), veh		0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Parking Bus Adj		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow veh/h/ln		186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3
Lanes		0	2	0	1	2	0	1	3	0	1	3
Cap, veh/h		82	201	244	164	240	81	464	2229	89	112	1104
Arrive On Green		0.15	0.15	0.15	0.09	0.09	0.09	0.26	0.44	0.44	0.06	0.25
Sat Flow, veh/h		532	1305	1583	1774	2602	876	1774	5018	200	1774	4485
Grp Volume(v), veh/h		608	0	938	91	216	215	1033	1386	750	88	862
Grp Sat Flow(s),veh/h/ln		1836	0	1583	1774	1770	1708	1774	1695	1827	1774	1695
Q Serve(g_s), s		10.0	0.0	10.0	3.2	6.0	6.0	17.0	25.0	25.1	3.2	16.0
Cycle Q Clear(g_c), s		10.0	0.0	10.0	3.2	6.0	6.0	17.0	25.0	25.1	3.2	16.0
Prop In Lane		0.29		1.00	1.00		0.51	1.00		0.11	1.00	
Lane Grp Cap(c), veh/h		282	0	244	164	163	158	464	1506	812	112	835
V/C Ratio(X)		2.15	0.00	3.85	0.56	1.33	1.36	2.23	0.92	0.92	0.78	1.03
Avail Cap(c_a), veh/h		282	0	244	164	163	158	464	1506	812	136	835
HCM Platoon Ratio		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Upstream Filter(I)		1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh		27.5	0.0	27.5	28.2	29.5	29.5	24.0	17.0	17.0	30.0	24.5
Incr Delay (d2), s/veh		530.2	0.0	1292.7	4.1	182.4	197.6	558.8	10.6	17.7	21.0	39.8
Initial Q Delay(d3),s/veh		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q (50%), veh/ln		45.8	0.0	91.1	1.5	10.8	11.1	78.7	11.3	13.8	2.0	10.8
Lane Grp Delay (d), s/veh		557.7	0.0	1320.2	32.3	211.9	227.1	582.8	27.6	34.7	51.0	64.3
Lane Grp LOS		F		F	C	F	F	F	C	C	D	F
Approach Vol, veh/h			1546			522			3169			1394
Approach Delay, s/veh			1020.3			186.8			210.3			67.4
Approach LOS			F			F			F			E

Timer												
Assigned Phs			4			8		5	2		1	6
Phs Duration (G+Y+Rc), s			14.0			10.0		21.0	32.9		8.1	20.0
Change Period (Y+Rc), s			4.0			4.0		4.0	4.0		4.0	4.0
Max Green Setting (Gmax), s			10.0			6.0		17.0	28.0		5.0	16.0
Max Q Clear Time (g_c+I1), s			12.0			8.0		19.0	27.1		5.2	18.0
Green Ext Time (p_c), s			0.0			0.0		0.0	0.8		0.0	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	367.3
HCM 2010 LOS	F

Notes

Movement	SBR
Lane Configurations	
Volume (veh/h)	153
Number	16
Initial Q (Qb), veh	0
Ped-Bike Adj(A_pbT)	1.00
Parking Bus Adj	1.00
Adj Sat Flow veh/h/ln	186.3
Lanes	0
Cap, veh/h	161
Arrive On Green	0.25
Sat Flow, veh/h	653
Grp Volume(v), veh/h	444
Grp Sat Flow(s),veh/h/ln	1748
Q Serve(g_s), s	16.0
Cycle Q Clear(g_c), s	16.0
Prop In Lane	0.37
Lane Grp Cap(c), veh/h	430
V/C Ratio(X)	1.03
Avail Cap(c_a), veh/h	430
HCM Platoon Ratio	0.00
Upstream Filter(I)	1.00
Uniform Delay (d), s/veh	24.5
Incr Delay (d2), s/veh	52.2
Initial Q Delay(d3),s/veh	0.0
%ile Back of Q (50%), veh/ln	12.6
Lane Grp Delay (d), s/veh	76.7
Lane Grp LOS	F
Approach Vol, veh/h	
Approach Delay, s/veh	
Approach LOS	

Timer
Assigned Phs
Phs Duration (G+Y+Rc), s
Change Period (Y+Rc), s
Max Green Setting (Gmax), s
Max Q Clear Time (g_c+I1), s
Green Ext Time (p_c), s

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	207	522	1169	170	510	157	803	1434	110	228	1637	297
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow veh/h/ln	186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3
Lanes	0	2	0	1	2	0	1	3	0	1	3	0
Cap, veh/h	98	247	297	244	367	113	288	1626	125	244	1355	243
Arrive On Green	0.19	0.19	0.19	0.14	0.14	0.14	0.16	0.34	0.34	0.14	0.31	0.31
Sat Flow, veh/h	522	1315	1583	1774	2667	820	1774	4817	371	1774	4337	779
Grp Volume(v), veh/h	792	0	1271	185	367	358	873	1097	582	248	1386	716
Grp Sat Flow(s),veh/h/ln	1837	0	1583	1774	1770	1718	1774	1695	1797	1774	1695	1725
Q Serve(g_s), s	15.0	0.0	15.0	8.0	11.0	11.0	13.0	25.4	25.4	11.0	25.0	25.0
Cycle Q Clear(g_c), s	15.0	0.0	15.0	8.0	11.0	11.0	13.0	25.4	25.4	11.0	25.0	25.0
Prop In Lane	0.28		1.00	1.00		0.48	1.00		0.21	1.00		0.45
Lane Grp Cap(c), veh/h	344	0	297	244	243	236	288	1144	607	244	1059	539
V/C Ratio(X)	2.30	0.00	4.28	0.76	1.51	1.52	3.03	0.96	0.96	1.02	1.31	1.33
Avail Cap(c_a), veh/h	344	0	297	244	243	236	288	1144	607	244	1059	539
HCM Platoon Ratio	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	32.5	0.0	32.5	33.2	34.5	34.5	33.5	26.0	26.0	34.5	27.5	27.5
Incr Delay (d2), s/veh	594.0	0.0	1484.4	12.9	248.8	252.7	922.0	18.4	27.8	62.0	145.7	159.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q (50%), veh/ln	63.3	0.0	128.0	4.3	21.5	21.1	79.4	12.8	15.2	8.9	31.1	33.8
Lane Grp Delay (d), s/veh	626.5	0.0	1516.9	46.1	283.3	287.2	955.5	44.3	53.8	96.5	173.2	187.3
Lane Grp LOS	F		F	D	F	F	F	D	D	F	F	F
Approach Vol, veh/h		2063			910			2552			2350	
Approach Delay, s/veh		1175.1			236.6			358.2			169.4	
Approach LOS		F			F			F			F	

Timer												
Assigned Phs		4			8		5	2		1	6	
Phs Duration (G+Y+Rc), s		19.0			15.0		17.0	31.0		15.0	29.0	
Change Period (Y+Rc), s		4.0			4.0		4.0	4.0		4.0	4.0	
Max Green Setting (Gmax), s		15.0			11.0		13.0	27.0		11.0	25.0	
Max Q Clear Time (g_c+I1), s		17.0			13.0		15.0	27.4		13.0	27.0	
Green Ext Time (p_c), s		0.0			0.0		0.0	0.0		0.0	0.0	

Intersection Summary												
HCM 2010 Ctrl Delay			501.8									
HCM 2010 LOS			F									

Notes

Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Volume (veh/h)	1	174	412	907	87	305	104	979	1955	77	84	1085
Number		7	4	14	3	8	18	5	2	12	1	6
Initial Q (Qb), veh		0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Parking Bus Adj		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow veh/h/ln		186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3
Lanes		0	2	0	1	2	0	1	3	0	1	3
Cap, veh/h		84	199	244	164	241	81	464	2220	87	116	1105
Arrive On Green		0.15	0.15	0.15	0.09	0.09	0.09	0.26	0.44	0.44	0.07	0.25
Sat Flow, veh/h		545	1291	1583	1774	2606	872	1774	5020	198	1774	4487
Grp Volume(v), veh/h		637	0	986	95	224	221	1064	1433	776	91	891
Grp Sat Flow(s),veh/h/ln		1836	0	1583	1774	1770	1709	1774	1695	1828	1774	1695
Q Serve(g_s), s		10.0	0.0	10.0	3.3	6.0	6.0	17.0	26.5	26.8	3.3	16.0
Cycle Q Clear(g_c), s		10.0	0.0	10.0	3.3	6.0	6.0	17.0	26.5	26.8	3.3	16.0
Prop In Lane		0.30		1.00	1.00		0.51	1.00		0.11	1.00	
Lane Grp Cap(c), veh/h		282	0	244	164	163	158	464	1499	808	116	835
V/C Ratio(X)		2.26	0.00	4.05	0.58	1.37	1.40	2.29	0.96	0.96	0.78	1.07
Avail Cap(c_a), veh/h		282	0	244	164	163	158	464	1499	808	136	835
HCM Platoon Ratio		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Upstream Filter(I)		1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh		27.5	0.0	27.5	28.3	29.5	29.5	24.0	17.5	17.6	29.9	24.5
Incr Delay (d2), s/veh		576.3	0.0	1381.2	5.1	200.1	215.0	588.7	14.9	23.4	21.7	50.7
Initial Q Delay(d3),s/veh		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q (50%), veh/ln		49.4	0.0	97.1	1.6	11.6	11.8	82.6	12.6	15.6	2.1	12.0
Lane Grp Delay (d), s/veh		603.8	0.0	1408.7	33.3	229.6	244.5	612.7	32.4	41.0	51.6	75.2
Lane Grp LOS		F		F	C	F	F	F	C	D	D	F
Approach Vol, veh/h			1623			540			3273			1441
Approach Delay, s/veh			1092.8			201.2			223.1			77.5
Approach LOS			F			F			F			E

Timer												
Assigned Phs			4			8		5	2		1	6
Phs Duration (G+Y+Rc), s			14.0			10.0		21.0	32.7		8.3	20.0
Change Period (Y+Rc), s			4.0			4.0		4.0	4.0		4.0	4.0
Max Green Setting (Gmax), s			10.0			6.0		17.0	28.0		5.0	16.0
Max Q Clear Time (g_c+I1), s			12.0			8.0		19.0	28.8		5.3	18.0
Green Ext Time (p_c), s			0.0			0.0		0.0	0.0		0.0	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	396.1
HCM 2010 LOS	F

Notes

Movement	SBR
Lane Configurations	
Volume (veh/h)	157
Number	16
Initial Q (Qb), veh	0
Ped-Bike Adj(A_pbT)	1.00
Parking Bus Adj	1.00
Adj Sat Flow veh/h/ln	186.3
Lanes	0
Cap, veh/h	160
Arrive On Green	0.25
Sat Flow, veh/h	651
Grp Volume(v), veh/h	459
Grp Sat Flow(s),veh/h/ln	1748
Q Serve(g_s), s	16.0
Cycle Q Clear(g_c), s	16.0
Prop In Lane	0.37
Lane Grp Cap(c), veh/h	430
V/C Ratio(X)	1.07
Avail Cap(c_a), veh/h	430
HCM Platoon Ratio	0.00
Upstream Filter(I)	1.00
Uniform Delay (d), s/veh	24.5
Incr Delay (d2), s/veh	62.6
Initial Q Delay(d3),s/veh	0.0
%ile Back of Q (50%), veh/ln	13.8
Lane Grp Delay (d), s/veh	87.1
Lane Grp LOS	F
Approach Vol, veh/h	
Approach Delay, s/veh	
Approach LOS	

Timer
Assigned Phs
Phs Duration (G+Y+Rc), s
Change Period (Y+Rc), s
Max Green Setting (Gmax), s
Max Q Clear Time (g_c+I1), s
Green Ext Time (p_c), s

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	213	539	1205	175	529	162	844	1484	113	236	1694	311
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow veh/h/ln	186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3
Lanes	0	2	0	1	2	0	1	3	0	1	3	0
Cap, veh/h	98	247	297	244	367	112	288	1627	124	244	1353	245
Arrive On Green	0.19	0.19	0.19	0.14	0.14	0.14	0.16	0.34	0.34	0.14	0.31	0.31
Sat Flow, veh/h	521	1316	1583	1774	2673	816	1774	4821	367	1774	4331	784
Grp Volume(v), veh/h	818	0	1310	190	380	371	917	1134	602	257	1435	744
Grp Sat Flow(s),veh/h/ln	1837	0	1583	1774	1770	1719	1774	1695	1798	1774	1695	1724
Q Serve(g_s), s	15.0	0.0	15.0	8.3	11.0	11.0	13.0	26.6	26.7	11.0	25.0	25.0
Cycle Q Clear(g_c), s	15.0	0.0	15.0	8.3	11.0	11.0	13.0	26.6	26.7	11.0	25.0	25.0
Prop In Lane	0.28		1.00	1.00		0.47	1.00		0.20	1.00		0.45
Lane Grp Cap(c), veh/h	344	0	297	244	243	236	288	1144	607	244	1059	539
V/C Ratio(X)	2.38	0.00	4.41	0.78	1.56	1.57	3.18	0.99	0.99	1.05	1.35	1.38
Avail Cap(c_a), veh/h	344	0	297	244	243	236	288	1144	607	244	1059	539
HCM Platoon Ratio	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	32.5	0.0	32.5	33.3	34.5	34.5	33.5	26.4	26.4	34.5	27.5	27.5
Incr Delay (d2), s/veh	627.8	0.0	1543.5	14.8	272.3	275.5	990.4	24.5	34.7	72.4	166.0	182.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q (50%), veh/ln	66.6	0.0	132.9	4.5	23.1	22.6	84.8	14.3	16.9	9.6	34.1	37.2
Lane Grp Delay (d), s/veh	660.3	0.0	1576.0	48.1	306.8	310.0	1023.9	50.9	61.1	106.9	193.5	209.8
Lane Grp LOS	F		F	D	F	F	F	D	E	F	F	F
Approach Vol, veh/h		2128			941			2653			2436	
Approach Delay, s/veh		1224.0			255.8			389.5			189.3	
Approach LOS		F			F			F			F	

Timer												
Assigned Phs		4			8		5	2		1	6	
Phs Duration (G+Y+Rc), s		19.0			15.0		17.0	31.0		15.0	29.0	
Change Period (Y+Rc), s		4.0			4.0		4.0	4.0		4.0	4.0	
Max Green Setting (Gmax), s		15.0			11.0		13.0	27.0		11.0	25.0	
Max Q Clear Time (g_c+I1), s		17.0			13.0		15.0	28.7		13.0	27.0	
Green Ext Time (p_c), s		0.0			0.0		0.0	0.0		0.0	0.0	

Intersection Summary		
HCM 2010 Ctrl Delay	532.0	
HCM 2010 LOS	F	

Notes

Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Volume (veh/h)	1	42	319	420	68	224	88	466	1628	61	70	901
Number		7	4	14	3	8	18	5	2	12	1	6
Initial Q (Qb), veh		0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Parking Bus Adj		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow veh/h/ln		186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3
Lanes		0	2	0	1	2	0	1	3	0	1	3
Cap, veh/h		37	277	268	136	192	74	519	2266	84	102	1072
Arrive On Green		0.17	0.17	0.17	0.08	0.08	0.08	0.29	0.45	0.45	0.06	0.22
Sat Flow, veh/h		217	1635	1583	1774	2502	961	1774	5032	187	1774	4978
Grp Volume(v), veh/h		393	0	457	74	170	169	507	1192	644	76	666
Grp Sat Flow(s),veh/h/ln		1852	0	1583	1774	1770	1693	1774	1695	1830	1774	1695
Q Serve(g_s), s		11.0	0.0	11.0	2.6	5.0	5.0	18.4	19.4	19.4	2.7	12.5
Cycle Q Clear(g_c), s		11.0	0.0	11.0	2.6	5.0	5.0	18.4	19.4	19.4	2.7	12.5
Prop In Lane		0.12		1.00	1.00		0.57	1.00		0.10	1.00	
Lane Grp Cap(c), veh/h		313	0	268	136	136	130	519	1527	824	102	730
V/C Ratio(X)		1.25	0.00	1.71	0.54	1.25	1.30	0.98	0.78	0.78	0.75	0.91
Avail Cap(c_a), veh/h		313	0	268	136	136	130	519	1527	824	136	730
HCM Platoon Ratio		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Upstream Filter(I)		1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh		27.0	0.0	27.0	28.9	30.0	30.0	22.8	15.1	15.2	30.2	24.9
Incr Delay (d2), s/veh		137.8	0.0	333.0	4.3	158.5	179.3	33.7	4.0	7.3	14.1	17.7
Initial Q Delay(d3),s/veh		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q (50%), veh/ln		16.7	0.0	28.8	1.3	8.1	8.5	12.0	7.6	9.0	1.6	6.6
Lane Grp Delay (d), s/veh		164.8	0.0	360.0	33.2	188.5	209.3	56.5	19.2	22.4	44.3	42.6
Lane Grp LOS		F		F	C	F	F	E	B	C	D	D
Approach Vol, veh/h			850			413			2343			1101
Approach Delay, s/veh			269.7			169.2			28.2			46.2
Approach LOS			F			F			C			D
Timer												
Assigned Phs			4			8		5	2		1	6
Phs Duration (G+Y+Rc), s			15.0			9.0		23.0	33.3		7.7	18.0
Change Period (Y+Rc), s			4.0			4.0		4.0	4.0		4.0	4.0
Max Green Setting (Gmax), s			11.0			5.0		19.0	28.0		5.0	14.0
Max Q Clear Time (g_c+I1), s			13.0			7.0		20.4	21.4		4.7	14.5
Green Ext Time (p_c), s			0.0			0.0		0.0	6.1		0.0	0.0
Intersection Summary												
HCM 2010 Ctrl Delay			88.4									
HCM 2010 LOS			F									
Notes												

Movement	SBR
Lane Configurations	
Volume (veh/h)	42
Number	16
Initial Q (Qb), veh	0
Ped-Bike Adj(A_pbT)	1.00
Parking Bus Adj	1.00
Adj Sat Flow veh/h/ln	186.3
Lanes	0
Cap, veh/h	50
Arrive On Green	0.22
Sat Flow, veh/h	234
Grp Volume(v), veh/h	359
Grp Sat Flow(s),veh/h/ln	1822
Q Serve(g_s), s	12.5
Cycle Q Clear(g_c), s	12.5
Prop In Lane	0.13
Lane Grp Cap(c), veh/h	392
V/C Ratio(X)	0.91
Avail Cap(c_a), veh/h	392
HCM Platoon Ratio	0.00
Upstream Filter(I)	1.00
Uniform Delay (d), s/veh	24.9
Incr Delay (d2), s/veh	28.2
Initial Q Delay(d3),s/veh	0.0
%ile Back of Q (50%), veh/ln	8.3
Lane Grp Delay (d), s/veh	53.2
Lane Grp LOS	D
Approach Vol, veh/h	
Approach Delay, s/veh	
Approach LOS	

Timer
Assigned Phs
Phs Duration (G+Y+Rc), s
Change Period (Y+Rc), s
Max Green Setting (Gmax), s
Max Q Clear Time (g_c+I1), s
Green Ext Time (p_c), s

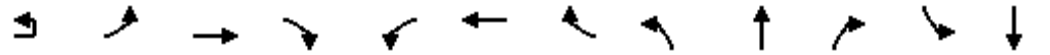
Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	48	392	496	139	395	137	366	1231	87	199	1406	134
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow veh/h/ln	186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3
Lanes	0	2	0	1	2	0	1	3	0	1	3	0
Cap, veh/h	38	310	297	244	356	122	288	1636	116	244	1476	141
Arrive On Green	0.19	0.19	0.19	0.14	0.14	0.14	0.16	0.34	0.34	0.14	0.31	0.31
Sat Flow, veh/h	202	1651	1583	1774	2586	890	1774	4848	344	1774	4722	451
Grp Volume(v), veh/h	478	0	539	151	292	286	398	936	497	216	1097	577
Grp Sat Flow(s),veh/h/ln	1853	0	1583	1774	1770	1706	1774	1695	1802	1774	1695	1783
Q Serve(g_s), s	15.0	0.0	15.0	6.4	11.0	11.0	13.0	20.2	20.2	9.6	25.0	25.0
Cycle Q Clear(g_c), s	15.0	0.0	15.0	6.4	11.0	11.0	13.0	20.2	20.2	9.6	25.0	25.0
Prop In Lane	0.11		1.00	1.00		0.52	1.00		0.19	1.00		0.25
Lane Grp Cap(c), veh/h	347	0	297	244	243	235	288	1144	608	244	1059	557
V/C Ratio(X)	1.38	0.00	1.82	0.62	1.20	1.22	1.38	0.82	0.82	0.89	1.04	1.04
Avail Cap(c_a), veh/h	347	0	297	244	243	235	288	1144	608	244	1059	557
HCM Platoon Ratio	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	32.5	0.0	32.5	32.5	34.5	34.5	33.5	24.2	24.2	33.9	27.5	27.5
Incr Delay (d2), s/veh	186.4	0.0	380.0	4.7	123.1	130.4	191.5	6.5	11.6	29.7	37.1	47.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q (50%), veh/ln	24.6	0.0	36.9	3.0	13.0	13.0	20.9	8.8	10.3	6.1	15.2	17.6
Lane Grp Delay (d), s/veh	218.9	0.0	412.5	37.2	157.6	164.9	225.0	30.8	35.9	63.6	64.6	75.3
Lane Grp LOS	F		F	D	F	F	F	C	D	E	F	F
Approach Vol, veh/h		1017			729			1831			1890	
Approach Delay, s/veh		321.5			135.5			74.4			67.8	
Approach LOS		F			F			E			E	

Timer												
Assigned Phs		4			8		5	2		1	6	
Phs Duration (G+Y+Rc), s		19.0			15.0		17.0	31.0		15.0	29.0	
Change Period (Y+Rc), s		4.0			4.0		4.0	4.0		4.0	4.0	
Max Green Setting (Gmax), s		15.0			11.0		13.0	27.0		11.0	25.0	
Max Q Clear Time (g_c+I1), s		17.0			13.0		15.0	22.2		11.6	27.0	
Green Ext Time (p_c), s		0.0			0.0		0.0	4.6		0.0	0.0	

Intersection Summary		
HCM 2010 Ctrl Delay	126.2	
HCM 2010 LOS	F	

Notes



Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Volume (veh/h)	1	105	346	687	77	253	91	739	1707	68	73	949
Number		7	4	14	3	8	18	5	2	12	1	6
Initial Q (Qb), veh		0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Parking Bus Adj		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow veh/h/ln		186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3
Lanes		1	2	1	1	2	0	2	3	0	1	3
Cap, veh/h		149	415	186	149	302	106	902	2355	94	109	1249
Arrive On Green		0.08	0.12	0.00	0.08	0.12	0.12	0.26	0.47	0.47	0.06	0.27
Sat Flow, veh/h		1774	3539	1583	1774	2569	904	3442	5018	200	1774	4654
Grp Volume(v), veh/h		114	376	0	84	187	187	803	1253	676	79	751
Grp Sat Flow(s),veh/h/ln		1774	1770	1583	1774	1770	1703	1721	1695	1827	1774	1695
Q Serve(g_s), s		3.8	6.3	0.0	2.7	6.2	6.5	13.4	18.5	18.6	2.6	12.4
Cycle Q Clear(g_c), s		3.8	6.3	0.0	2.7	6.2	6.5	13.4	18.5	18.6	2.6	12.4
Prop In Lane		1.00		1.00	1.00		0.53	1.00		0.11	1.00	
Lane Grp Cap(c), veh/h		149	415	186	149	208	200	902	1591	858	109	910
V/C Ratio(X)		0.77	0.90	0.00	0.56	0.90	0.93	0.89	0.79	0.79	0.73	0.83
Avail Cap(c_a), veh/h		149	415	186	149	208	200	923	1591	858	149	910
HCM Platoon Ratio		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Upstream Filter(I)		1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh		26.7	26.0	0.0	26.3	26.0	26.1	21.2	13.3	13.3	27.5	20.5
Incr Delay (d2), s/veh		21.0	22.9	0.0	4.9	36.9	45.0	10.6	4.0	7.3	10.8	8.5
Initial Q Delay(d3),s/veh		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q (95%), veh/ln		4.4	7.0	0.0	2.4	8.2	8.7	10.5	11.5	13.3	2.5	9.6
Lane Grp Delay (d), s/veh		47.7	48.9	0.0	31.1	62.9	71.1	31.8	17.3	20.6	38.3	29.0
Lane Grp LOS		D	D		C	E	E	C	B	C	D	C
Approach Vol, veh/h			490			458			2732			1224
Approach Delay, s/veh			48.6			60.4			22.4			31.7
Approach LOS			D			E			C			C

Timer												
Assigned Phs		7	4		3	8		5	2		1	6
Phs Duration (G+Y+Rc), s		9.0	11.0		9.0	11.0		19.6	32.0		7.6	20.0
Change Period (Y+Rc), s		4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0
Max Green Setting (Gmax), s		5.0	7.0		5.0	7.0		16.0	27.0		5.0	16.0
Max Q Clear Time (g_c+I1), s		5.8	8.3		4.7	8.5		15.4	20.6		4.6	14.5
Green Ext Time (p_c), s		0.0	0.0		0.0	0.0		0.2	6.0		0.0	1.5

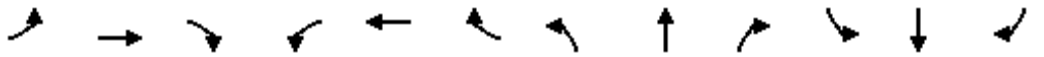
Intersection Summary												
HCM 2010 Ctrl Delay			30.9									
HCM 2010 LOS			C									

Notes

Movement	SBR
Lane Configurations	
Volume (veh/h)	104
Number	16
Initial Q (Qb), veh	0
Ped-Bike Adj(A_pbT)	1.00
Parking Bus Adj	1.00
Adj Sat Flow veh/h/ln	186.3
Lanes	0
Cap, veh/h	137
Arrive On Green	0.27
Sat Flow, veh/h	509
Grp Volume(v), veh/h	394
Grp Sat Flow(s),veh/h/ln	1773
Q Serve(g_s), s	12.5
Cycle Q Clear(g_c), s	12.5
Prop In Lane	0.29
Lane Grp Cap(c), veh/h	476
V/C Ratio(X)	0.83
Avail Cap(c_a), veh/h	476
HCM Platoon Ratio	0.00
Upstream Filter(I)	1.00
Uniform Delay (d), s/veh	20.5
Incr Delay (d2), s/veh	15.2
Initial Q Delay(d3),s/veh	0.0
%ile Back of Q (95%), veh/ln	11.1
Lane Grp Delay (d), s/veh	35.7
Lane Grp LOS	D
Approach Vol, veh/h	
Approach Delay, s/veh	
Approach LOS	

Timer
Assigned Phs
Phs Duration (G+Y+Rc), s
Change Period (Y+Rc), s
Max Green Setting (Gmax), s
Max Q Clear Time (g_c+I1), s
Green Ext Time (p_c), s

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	142	450	890	154	447	141	650	1297	101	206	1480	235
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow veh/h/ln	186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3
Lanes	1	2	1	1	2	0	2	3	0	1	3	0
Cap, veh/h	193	580	260	206	455	142	669	1877	146	261	1519	240
Arrive On Green	0.11	0.16	0.00	0.12	0.17	0.17	0.19	0.39	0.39	0.15	0.34	0.34
Sat Flow, veh/h	1774	3539	1583	1774	2655	831	3442	4811	375	1774	4430	699
Grp Volume(v), veh/h	154	489	0	167	323	316	707	993	527	224	1230	634
Grp Sat Flow(s),veh/h/ln	1774	1770	1583	1774	1770	1716	1721	1695	1797	1774	1695	1739
Q Serve(g_s), s	7.4	11.7	0.0	8.0	15.0	15.0	17.0	22.1	22.1	10.8	30.0	30.0
Cycle Q Clear(g_c), s	7.4	11.7	0.0	8.0	15.0	15.0	17.0	22.1	22.1	10.8	30.0	30.0
Prop In Lane	1.00		1.00	1.00		0.48	1.00		0.21	1.00		0.40
Lane Grp Cap(c), veh/h	193	580	260	206	303	294	669	1323	701	261	1162	596
V/C Ratio(X)	0.80	0.84	0.00	0.81	1.06	1.07	1.06	0.75	0.75	0.86	1.06	1.06
Avail Cap(c_a), veh/h	243	580	260	264	303	294	669	1323	701	304	1162	596
HCM Platoon Ratio	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	38.1	35.5	0.0	37.7	36.3	36.3	35.3	23.0	23.0	36.4	28.8	28.8
Incr Delay (d2), s/veh	13.7	10.8	0.0	13.8	69.8	73.7	51.0	4.0	7.3	19.0	43.2	54.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q (50%), veh/ln	3.9	6.0	0.0	4.3	12.4	12.3	11.8	9.4	10.6	6.0	18.9	21.4
Lane Grp Delay (d), s/veh	51.8	46.3	0.0	51.5	106.0	109.9	86.2	27.0	30.3	55.4	72.0	83.6
Lane Grp LOS	D	D		D	F	F	F	C	C	E	F	F
Approach Vol, veh/h		643			806			2227			2088	
Approach Delay, s/veh		47.6			96.3			46.6			73.7	
Approach LOS		D			F			D			E	

Timer												
Assigned Phs	7	4		3	8		5	2		1	6	
Phs Duration (G+Y+Rc), s	13.5	18.4		14.2	19.0		21.0	38.1		16.9	34.0	
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Max Green Setting (Gmax), s	12.0	14.0		13.0	15.0		17.0	32.0		15.0	30.0	
Max Q Clear Time (g_c+I1), s	9.4	13.7		10.0	17.0		19.0	24.1		12.8	32.0	
Green Ext Time (p_c), s	0.1	0.2		0.1	0.0		0.0	7.5		0.1	0.0	

Intersection Summary	
HCM 2010 Ctrl Delay	63.5
HCM 2010 LOS	E

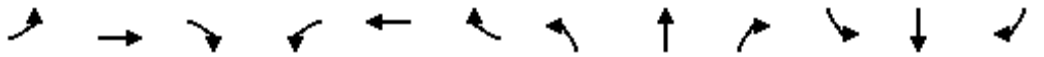
Notes

Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Volume (veh/h)	1	138	367	776	79	276	94	893	1766	70	75	981
Number		7	4	14	3	8	18	5	2	12	1	6
Initial Q (Qb), veh		0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Parking Bus Adj		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow veh/h/ln		186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3
Lanes		1	2	1	1	2	0	2	3	0	1	3
Cap, veh/h		166	521	233	119	314	105	1046	2572	102	105	1198
Arrive On Green		0.09	0.15	0.00	0.07	0.12	0.12	0.30	0.51	0.51	0.06	0.27
Sat Flow, veh/h		1774	3539	1583	1774	2609	870	3442	5020	198	1774	4474
Grp Volume(v), veh/h		150	399	0	86	202	200	971	1296	700	82	807
Grp Sat Flow(s),veh/h/ln		1774	1770	1583	1774	1770	1709	1721	1695	1828	1774	1695
Q Serve(g_s), s		6.3	8.1	0.0	3.6	8.4	8.7	20.4	22.5	22.6	3.4	17.1
Cycle Q Clear(g_c), s		6.3	8.1	0.0	3.6	8.4	8.7	20.4	22.5	22.6	3.4	17.1
Prop In Lane		1.00		1.00	1.00		0.51	1.00		0.11	1.00	
Lane Grp Cap(c), veh/h		166	521	233	119	213	206	1046	1737	937	105	908
V/C Ratio(X)		0.90	0.77	0.00	0.72	0.95	0.97	0.93	0.75	0.75	0.78	0.89
Avail Cap(c_a), veh/h		166	521	233	119	213	206	1060	1737	937	142	908
HCM Platoon Ratio		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Upstream Filter(I)		1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh		33.5	30.6	0.0	34.2	32.6	32.7	25.2	14.4	14.4	34.7	26.3
Incr Delay (d2), s/veh		42.9	6.7	0.0	19.5	46.4	54.8	13.6	3.0	5.4	17.3	12.7
Initial Q Delay(d3),s/veh		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q (50%), veh/ln		4.6	3.9	0.0	2.2	6.3	6.7	9.9	8.8	10.2	2.0	8.3
Lane Grp Delay (d), s/veh		76.4	37.3	0.0	53.7	79.0	87.6	38.8	17.3	19.8	52.0	39.0
Lane Grp LOS		E	D		D	E	F	D	B	B	D	D
Approach Vol, veh/h			549			488			2967			1306
Approach Delay, s/veh			48.0			78.1			25.0			42.7
Approach LOS			D			E			C			D
Timer												
Assigned Phs		7	4		3	8		5	2		1	6
Phs Duration (G+Y+Rc), s		11.0	15.0		9.0	13.0		26.7	42.3		8.4	24.0
Change Period (Y+Rc), s		4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0
Max Green Setting (Gmax), s		7.0	11.0		5.0	9.0		23.0	37.0		6.0	20.0
Max Q Clear Time (g_c+I1), s		8.3	10.1		5.6	10.7		22.4	24.6		5.4	19.1
Green Ext Time (p_c), s		0.0	0.5		0.0	0.0		0.3	11.4		0.0	0.8
Intersection Summary												
HCM 2010 Ctrl Delay			36.6									
HCM 2010 LOS			D									
Notes												

Movement	SBR
Lane Configurations	
Volume (veh/h)	145
Number	16
Initial Q (Qb), veh	0
Ped-Bike Adj(A_pbT)	1.00
Parking Bus Adj	1.00
Adj Sat Flow veh/h/ln	186.3
Lanes	0
Cap, veh/h	177
Arrive On Green	0.27
Sat Flow, veh/h	662
Grp Volume(v), veh/h	417
Grp Sat Flow(s),veh/h/ln	1746
Q Serve(g_s), s	17.1
Cycle Q Clear(g_c), s	17.1
Prop In Lane	0.38
Lane Grp Cap(c), veh/h	467
V/C Ratio(X)	0.89
Avail Cap(c_a), veh/h	467
HCM Platoon Ratio	0.00
Upstream Filter(I)	1.00
Uniform Delay (d), s/veh	26.3
Incr Delay (d2), s/veh	21.8
Initial Q Delay(d3),s/veh	0.0
%ile Back of Q (50%), veh/ln	9.8
Lane Grp Delay (d), s/veh	48.1
Lane Grp LOS	D
Approach Vol, veh/h	
Approach Delay, s/veh	
Approach LOS	

Timer
Assigned Phs
Phs Duration (G+Y+Rc), s
Change Period (Y+Rc), s
Max Green Setting (Gmax), s
Max Q Clear Time (g_c+I1), s
Green Ext Time (p_c), s

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	194	487	1095	159	473	146	726	1341	104	213	1530	270
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow veh/h/ln	186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3
Lanes	1	2	1	1	2	0	2	3	0	1	3	0
Cap, veh/h	245	685	306	208	460	141	758	1866	145	264	1377	241
Arrive On Green	0.14	0.19	0.00	0.12	0.17	0.17	0.22	0.39	0.39	0.15	0.32	0.32
Sat Flow, veh/h	1774	3539	1583	1774	2667	821	3442	4814	373	1774	4356	762
Grp Volume(v), veh/h	211	529	0	173	340	333	789	1027	544	232	1292	664
Grp Sat Flow(s),veh/h/ln	1774	1770	1583	1774	1770	1718	1721	1695	1797	1774	1695	1728
Q Serve(g_s), s	12.1	14.8	0.0	10.0	18.0	18.0	23.0	27.8	27.8	13.4	33.0	33.0
Cycle Q Clear(g_c), s	12.1	14.8	0.0	10.0	18.0	18.0	23.0	27.8	27.8	13.4	33.0	33.0
Prop In Lane	1.00		1.00	1.00		0.48	1.00		0.21	1.00		0.44
Lane Grp Cap(c), veh/h	245	685	306	208	305	296	758	1314	697	264	1071	546
V/C Ratio(X)	0.86	0.77	0.00	0.83	1.12	1.12	1.04	0.78	0.78	0.88	1.21	1.22
Avail Cap(c_a), veh/h	340	685	306	340	305	296	758	1314	697	306	1071	546
HCM Platoon Ratio	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	44.0	39.9	0.0	45.1	43.2	43.2	40.7	28.1	28.1	43.5	35.7	35.7
Incr Delay (d2), s/veh	14.9	5.5	0.0	8.9	86.3	89.9	43.8	4.7	8.5	22.1	101.6	113.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q (50%), veh/ln	6.3	7.1	0.0	5.0	15.3	15.1	14.4	12.0	13.4	7.5	28.8	31.1
Lane Grp Delay (d), s/veh	58.9	45.4	0.0	54.0	129.5	133.1	84.5	32.8	36.6	65.6	137.3	148.9
Lane Grp LOS	E	D		D	F	F	F	C	D	E	F	F
Approach Vol, veh/h		740			846			2360			2188	
Approach Delay, s/veh		49.2			115.5			50.9			133.2	
Approach LOS		D			F			D			F	

Timer												
Assigned Phs	7	4		3	8		5	2		1	6	
Phs Duration (G+Y+Rc), s	18.4	24.2		16.2	22.0		27.0	44.5		19.5	37.0	
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Max Green Setting (Gmax), s	20.0	18.0		20.0	18.0		23.0	38.0		18.0	33.0	
Max Q Clear Time (g_c+I1), s	14.1	16.8		12.0	20.0		25.0	29.8		15.4	35.0	
Green Ext Time (p_c), s	0.3	0.8		0.3	0.0		0.0	7.9		0.2	0.0	

Intersection Summary												
HCM 2010 Ctrl Delay			89.0									
HCM 2010 LOS			F									

Notes

EXHIBIT D
Development Plan

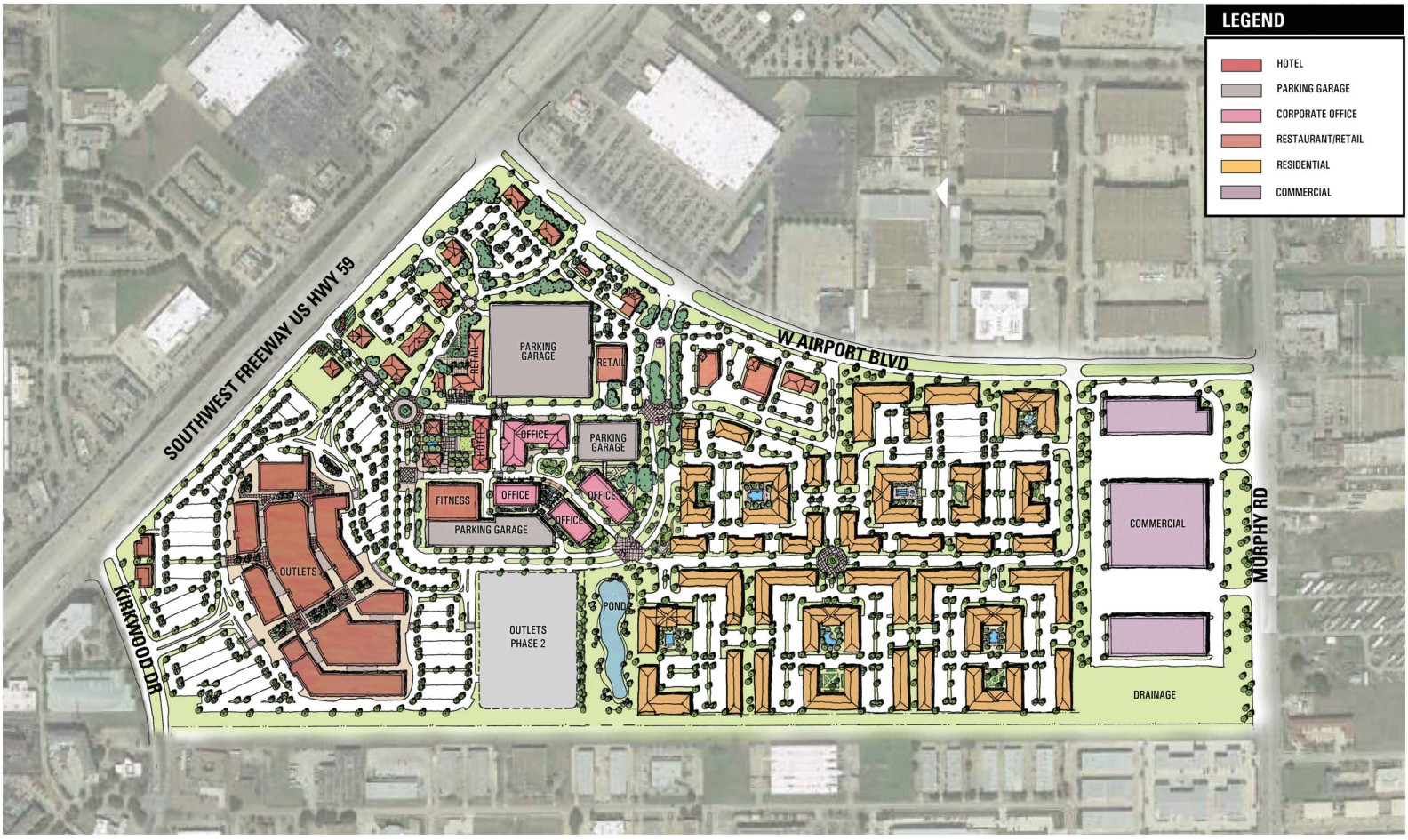
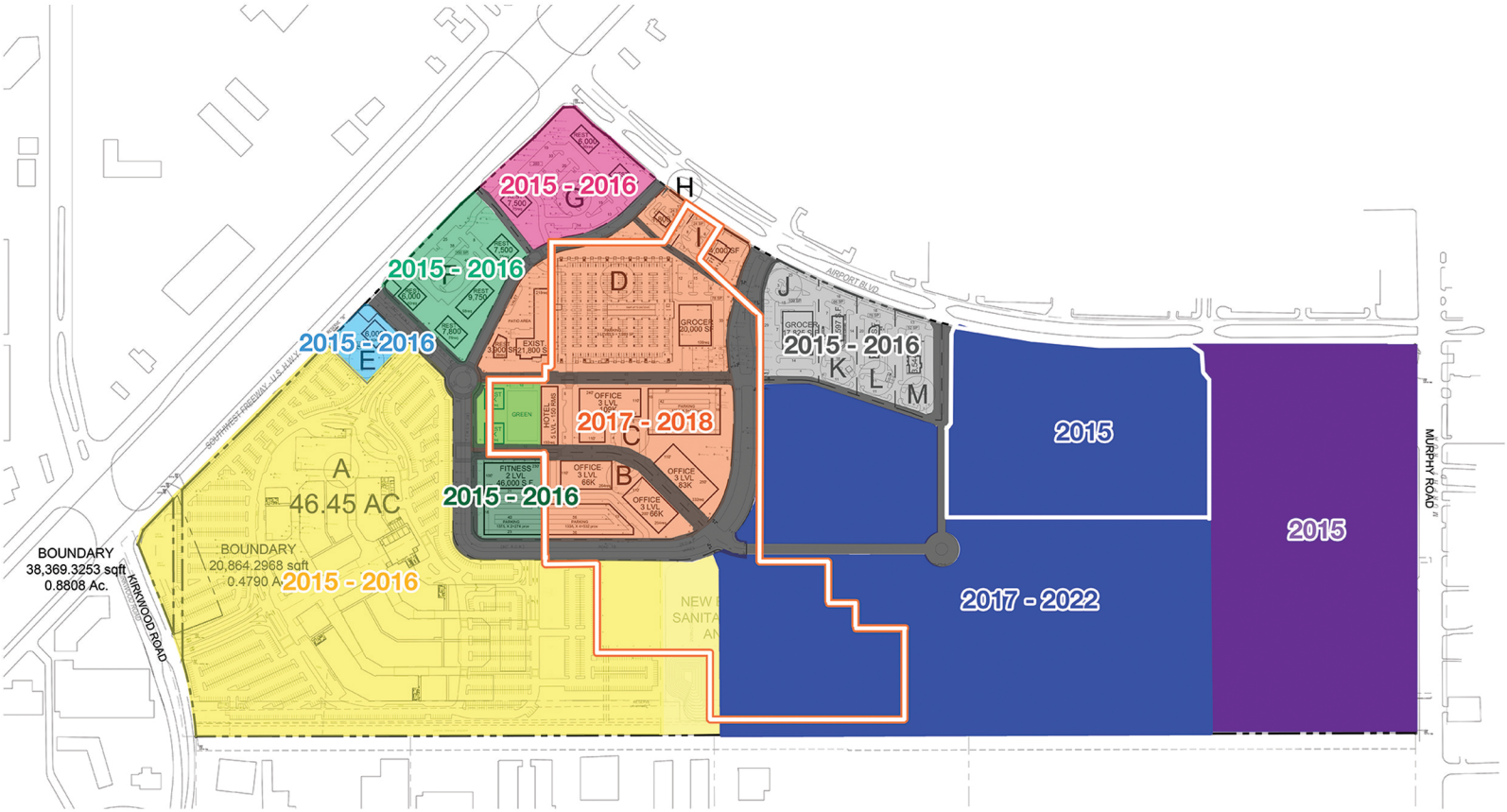



EXHIBIT D-2
Construction Schedule