

Smoke Tree Resort

Traffic Impact Analysis

7101 E. Lincoln Drive
Town of Paradise Valley, Arizona

October 2019
Project No. 18-0550

Prepared For:

Beus Gilbert, PLC
701 N. 44th Street
Phoenix, Arizona 85008

For Submittal to:

Town of Paradise Valley

Prepared By:



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A handwritten signature in black ink, appearing to read 'Dawn D. Cartier', written over the bottom portion of the professional seal.

October 2019

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EXECUTIVE SUMMARY

This report documents a traffic impact analysis performed for the proposed Smoke Tree Resort south of Lincoln Road between Mockingbird Lane and Scottsdale Road in the Town of Paradise Valley. The proposed development will consist of maximum of 102 standard hotel rooms, 6 resort villas, 4 of which will have 3 keys each and the remaining 2 will have 4 keys each for a total of 20 keys. Additionally, the Smoke Tree Resort will provide a 3,200 square foot quality restaurant, which will be open to the public as well as resort guests, a coffee shop, a market, an event space and other hotel amenities for guests to utilize.

In this study, two scenarios were analyzed at the request of the Town of Paradise Valley. The first scenario, Scenario 1, analyzes Smoke Tree Resort with its own exclusive, full movement access along Lincoln Drive as well as a full movement access on Quail Run Road. The second scenario, Scenario 2, analyzes Smoke Tree Resort with a single shared, full movement access with Lincoln Medical Center as well as a full movement access on Quail Run Road.

CivTech, Inc. has been retained by Beus Gilbert PLLC to perform the traffic impact study for the proposed redevelopment. The purpose of this assessment is to address the traffic and transportation impacts of the proposed development on the surrounding streets and intersections.

The following conclusions have been documented in this study.

General

- The proposed development is anticipated to generate approximately 674 external weekday daily trips, with 48 external trips occurring in the AM peak hour and 69 external trips occurring in the PM peak hour.

Existing Conditions

- The results of the existing conditions analysis indicates that all intersections currently operate at an overall acceptable level of service (LOS D or better). The following intersections include one or more approaches which currently operate with poor levels of service.
 - The intersection of **Mockingbird Lane and Lincoln Drive** currently operates with poor levels of service on the northbound and southbound approaches during both the AM and PM peak hours. Due to the actuated coordinated nature of this signal, if a vehicle does not approach the northbound or southbound approach of the intersection, this phase will be skipped and the green time will be added to the eastbound and westbound green times. The northbound and southbound approaches of this intersection experience minimal traffic volumes during both the AM and

PM peak hours, meaning that when they do approach the intersection, they must wait until the cycle starts again in order to pass through the intersection. If more vehicles utilize the intersection, this delay should decrease because the northbound and southbound green times will be utilized during more cycles throughout the peak hours. This will increase the delay on the eastbound and westbound approaches, however, these approaches are currently operating with maximum delays of 6.1 seconds per vehicle and 10.5 seconds per vehicle respectively, so increasing these delays will not adversely impact levels of service.

- The intersection of **Scottsdale Road and Lincoln Drive** currently experiences delay on the eastbound and westbound approaches during both the AM and PM peak hours. During the AM peak hour, it is recommended that the eastbound green time be extended from 30 seconds to 33 seconds and the westbound green time be extended from 13 seconds to 17 seconds. This mitigation measure is anticipated to decrease the eastbound delay from 56.3 seconds per vehicle to 53.9 seconds per vehicle. The westbound approach remains unchanged, in order to mitigate this delay, the initial green time could be changed to allow for more vehicles to pass through the intersection without the light changing from green to yellow.
 - During the PM peak hour, it is recommended that the eastbound phase be extended from 30 seconds to 33 seconds and the westbound phase be increased from 13 seconds to 21 seconds. With these mitigation measures applied, it is expected that the eastbound delay will decrease from 57.3 seconds per vehicle to 54.2 seconds per vehicle and the westbound delay will decrease from 70.1 seconds per vehicle to 63.0 seconds per vehicle.

Opening Year 2020

- The results of the Scenario 1 and 2 2020 peak hour analysis summarized in **Table 6** indicates that all intersections currently operate at an overall acceptable level of service (LOS D or better) with the exception of Mockingbird Lane/Lincoln Drive and Scottsdale Road/Lincoln Drive.
 - The intersection of **Mockingbird Lane and Lincoln Drive** is expected to operate with poor levels of service on the northbound and southbound approaches during both the AM and PM peak hours for opening year 2020. Due to the actuated coordinated nature of this signal, if a vehicle does not approach the northbound or southbound approach of the intersection, this phase will be skipped and the green time will be added to the eastbound and westbound green times. The northbound and southbound approaches of this intersection experience minimal traffic volumes during both the AM and PM peak hours, meaning that when they do approach the intersection, they must wait until the cycle starts again in order to pass through the intersection. If more vehicles utilize the

intersection, this delay should decrease because the northbound and southbound green times will be utilized during more cycles throughout the peak hours. This will increase the delay on the eastbound and westbound approaches, however, these approaches are currently operating with maximum delays of 6.9 seconds per vehicle and 0.8 seconds per vehicle respectively, so increasing these delays will not adversely impact levels of service.

- The intersection of **Scottsdale Road and Lincoln Drive** is expected to experience delay on the eastbound and westbound approaches during both the AM and PM peak hours of the opening year 2020. During the AM peak hour, it is recommended that the eastbound green time be extended from 30 seconds to 33 seconds and the westbound green time be extended from 123 seconds to 16 seconds. With these mitigation measures applied, it is expected that the eastbound delay would decrease from 57.1 seconds per vehicle to 54.3 seconds per vehicle and the westbound delay would decrease from 60.1 seconds per vehicle to 57.0 seconds per vehicle.
 - During the PM peak hour, it is recommended that the eastbound phase be increased from 30 seconds to 34 seconds and the westbound phase be increased from 13 seconds to 21 seconds. With these mitigation measures applied, it is anticipated that the eastbound delay will decrease from 59.0 seconds per vehicle to 54.3 seconds per vehicle and the westbound delay will decrease from 71.5 seconds per vehicle to 55.2 seconds per vehicle, which is almost an acceptable level of service.

Horizon year 2025

- The results of the Scenario 1 and 2 2025 peak hour analysis summarized in **Table 7** indicates that all intersections currently operate at an overall acceptable level of service (LOS D or better) with the exception of Mockingbird Lane/Lincoln Drive and Scottsdale Road/Lincoln Drive.
 - The intersection of **Mockingbird Lane and Lincoln Drive** is expected to operate with poor levels of service on the northbound and southbound approaches during both the AM and PM peak hours for horizon year 2025. Due to the actuated coordinated nature of this signal, if a vehicle does not approach the northbound or southbound approach of the intersection, this phase will be skipped and the green time will be added to the eastbound and westbound green times. The northbound and southbound approaches of this intersection experience minimal traffic volumes during both the AM and PM peak hours, meaning that when they do approach the intersection, they must wait until the cycle starts again in order to pass through the intersection. If more vehicles utilize the intersection, this delay should decrease because the northbound and southbound green times

will be utilized during more cycles throughout the peak hours. This will increase the delay on the eastbound and westbound approaches, however, these approaches are currently operating with maximum delays of 8.2 seconds per vehicle and 1.0 seconds per vehicle respectively, so increasing these delays will not adversely impact levels of service.

- The intersection of **Scottsdale Road and Lincoln Drive** is expected to experience delay on the southbound, eastbound and westbound approaches during both the AM and PM peak hours of the horizon year 2025. During both the AM and PM peak hours, it is recommended that the eastbound and westbound phasing change from split to protected phasing. During the AM peak hour, this mitigation measure should reduce the southbound approach delay from 63.9 seconds per vehicle to 51.6 seconds per vehicle, reduce the eastbound delay from 55.3 seconds per vehicle to 50.1 seconds per vehicle and reduce the westbound delay from 57.3 seconds per vehicle to 54.2 seconds per vehicle. During the PM peak hour, this mitigation measure should reduce the southbound approach delay from 73.6 seconds per vehicle to 53.5 seconds per vehicle, reduce the eastbound delay from 55.0 seconds per vehicle to 51.1 seconds per vehicle and reduce the westbound delay from 55.5 seconds per vehicle to 52.7 seconds per vehicle.

Queue Storage and Sight Distance

- According to the CivTech study done for the Ritz Carlton, the newly signalized intersection of Quail Run Road and Lincoln Drive will have eastbound/westbound left turn lanes and a westbound right turn lane striped with 150 feet of storage each. While 150 feet is being proposed due to the current development agreement with Five Star Development for the Ritz Carlton, less is required to meet the recommended AASHTO length. The recommended storage lengths are provided for horizon year 2025 using the total traffic projections.
 - The westbound left turn lane proposed at Smoke Tree Access A on Lincoln Drive has previously been discussed with the Town of Paradise Valley. It was decided that a maximum of 50 feet of queue with a 90 foot taper could be provided without interference with existing turn lanes or surrounding development traffic. As summarized in the table, the same amount of queue storage will be required for both scenarios at the Smoke Tree access on Lincoln Drive.
 - For both scenario 1 and scenario 2, Smoke Tree Resort is requesting full access. Both scenarios require the same amount of queue storage. The Town of Paradise Valley has stated that an eastbound right turn deceleration lane is required at either driveway option. Using AASHTO methodology only 25 feet of storage is required, however, 50 feet is the minimum that should be recommended per AASHTO standards with a 90 foot taper. A minimum of 75 feet of storage is recommended for the right turn deceleration lane, however, if interference with other turn lanes is

expected with the 75 foot storage length, 50 feet would be an acceptable storage length.

- There are no existing obstructions to sight distance within the project intersections or along the included corners of the proposed intersection. Adequate site distance must be provided at the intersections to allow safe left and right turning movements from the development
 - The contractor should ensure that sight visibility is provided at all proposed intersections according to the distances and that sight triangles at public intersections are maintained according to the Town Code. All vegetation and trees should be maintained according to Town of Paradise Valley regulations.

INTRODUCTION

This report documents a traffic impact analysis performed for the proposed Smoke Tree Resort south of Lincoln Road between Mockingbird Lane and Scottsdale Road in the Town of Paradise Valley. The proposed development will consist of maximum of 102 standard hotel rooms, 6 resort villas, 4 of which will have 3 keys each and the remaining 2 will have 4 keys each for a total of 20 keys. Additionally, the Smoke Tree Resort will provide a 3,200 square foot quality restaurant, which will be open to the public as well as resort guests, a coffee shop, a market, an event space and other hotel amenities for guests to utilize.

Study Requirements

This study analyzes the traffic impact due to the proposed development on the surrounding street network. The study will be prepared in conformance with the Town of Paradise Valley's Traffic Impact Analysis (TIA) Criteria and Traffic Impact Statement (TIS) Criteria, May 2015. The specific objectives of the study are:

- ◆ To determine whether the planned street system in the vicinity of the site is adequate to accommodate the increased traffic that results from the proposed development.
- ◆ To recommend additional street improvements or traffic control devices, where necessary, and to mitigate the additional site-generated traffic

Study Area

This study is classified as a Category 1 TIA meaning the study area is defined as all signalized and major unsignalized intersections within a ¼ -mile radius of the site. The following study area intersections have been evaluated:

- Mockingbird Lane & Lincoln Drive
- Quail Run Road & Lincoln Drive
- Smoke Tree Driveway West & Lincoln Drive
- Smoke Tree Driveway East & Lincoln Drive
- Medical Office Driveway West & Lincoln Drive
- Medical Office Driveway East & Lincoln Drive
- Apartment Driveway & Lincoln Drive
- AJ's Driveway & Lincoln Drive
- Scottsdale Road & Lincoln Drive

Horizon Years

Per the study requirements, a Category 1 Traffic Impact and Mitigation Analysis is required. Analysis will be conducted on the current conditions, the opening year and opening plus five years.

It is assumed that development will open in October 2020. For purposes of this study, the development will be assumed fully built out by 2020. Therefore, the analysis years to be analyzed for this study include opening year 2020 and horizon year 2025. A location map of the study area is provided in **Figure 1**.

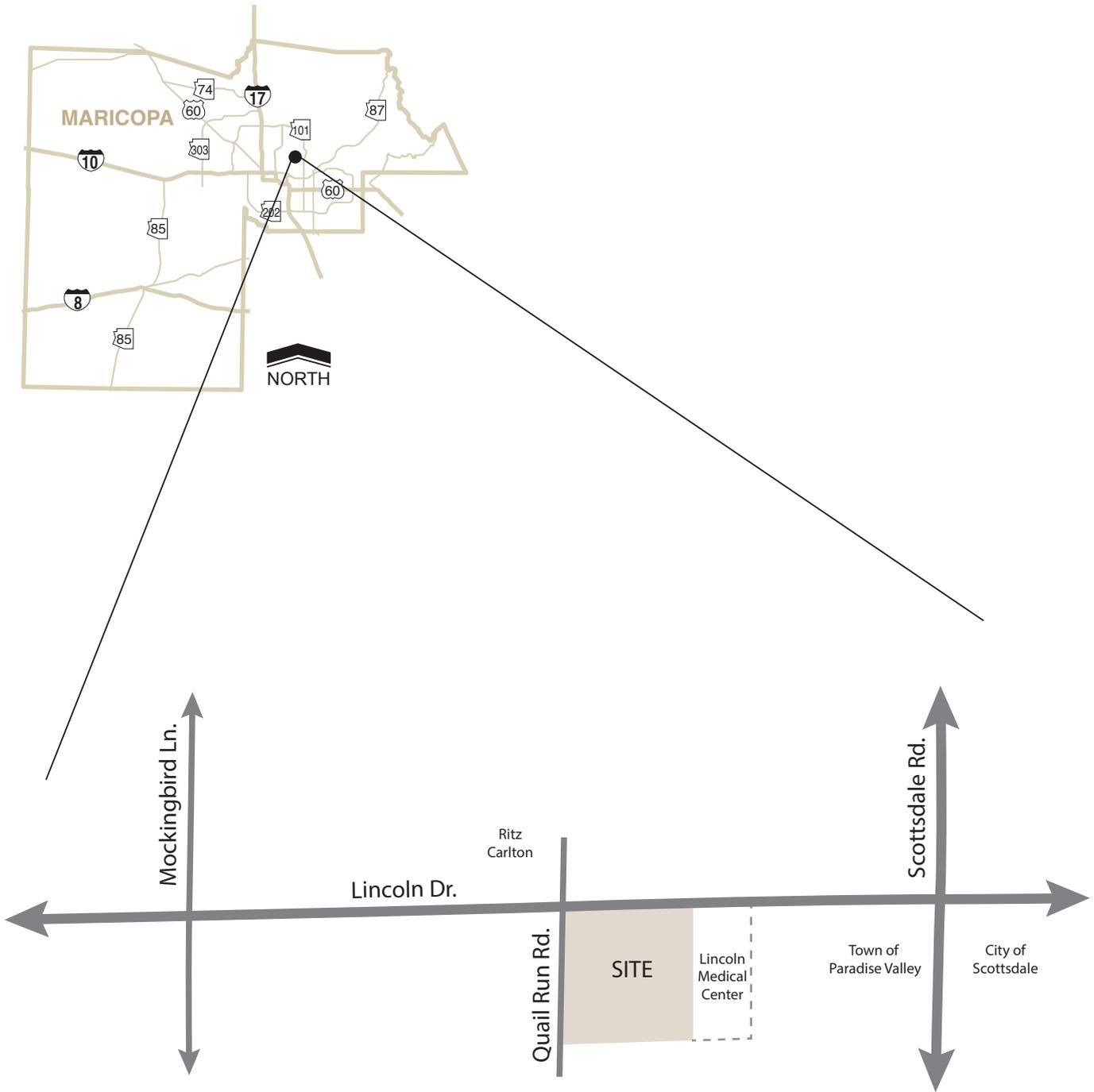


Figure 1: Vicinity Map

EXISTING CONDITIONS

SURROUNDING LAND USE

The surrounding area includes various land uses. Directly north of the site, on the north side of Lincoln Drive, is the site for the new Ritz Carlton luxury hotel. Bordering the site to the east is the site for the proposed Lincoln Medical Center expansion. West of the site are detached single-family homes. Northeast of the site is the Lincoln Scottsdale, multi-family apartment homes. Also within the vicinity of the site are many retail shops and restaurants.

EXISTING ROADWAY NETWORK

The existing roadway network analyzed in this study includes Mockingbird Lane, Lincoln Drive, Quail Run Road and Scottsdale Road.

Mockingbird Lane is a north-south three-lane road with one lane in each travelling direction and a continuous two-way-left-turn lane north of Lincoln Drive, and a two-lane road south of Lincoln Drive. Mockingbird Lane begins at the intersection with McDonald Road and continues north for approximately 2 miles before terminating at the intersection with Northern Avenue. The posted speed limit is 35 miles per hour (mph).

Lincoln Drive is an east-west four-lane road with two lanes in each travelling direction. Within the vicinity of the site, there are raised medians along portions of the road. Lincoln Drive begins just east of the State Route 51 freeway and continues east for approximately 7 miles before terminating at the intersection with Cattletrack Road, just west of the Arizona Canal. The posted speed limit is 40 mph within the vicinity of the site.

Quail Run Road is a north-south two-lane road with one lane in each travelling direction. Quail Run Road begins just north of a private property south of the site and continues north for approximately 0.15 miles before terminating at the intersection with Lincoln Drive. There is no posted speed limit.

Scottsdale Road is a north-south six-lane road with three lanes in each travelling direction within the vicinity of the site. There are broken, raised medians along the whole length of road. Scottsdale Road begins at the intersection with Rio Salado Parkway and continues north for approximately 18 miles before terminating at the intersection with Carefree Highway. The posted speed limit is 45 mph.

EXISTING INTERSECTION CONFIGURATION

The intersection of **Mockingbird Lane and Lincoln Drive** is a four-legged signalized intersection with protected left turns on the southbound and westbound approaches. The northbound and southbound approaches each have one dedicated left turn lane and a shared through and right turn lane. The eastbound and westbound approaches each have one dedicated left turn lane, one through lane, and one shared through and right turn lane. There are pedestrian crosswalks across all legs of the intersection.

The intersection of **Quail Run Road and Lincoln Drive** is a four-legged, stop-controlled intersection with free movements in the east and west directions. The northbound approach has one shared left turn/through/right turn lane. The eastbound approach has one through lane and one shared through and right turn lane. The westbound approach has two through lanes and a break in the median to allow for dedicated left turns. The southbound approach is currently a construction access point with one shared left turn/through/right turn lane.

The intersection of **Smoke Tree Driveway West and Lincoln Drive** is a three-legged, stop-controlled “T” intersection with free movements in the east and west directions. The northbound approach has one shared left turn and right turn lane. The eastbound approach has one through lane and one shared through and right turn lane. The westbound approach has two through lanes and a break in the median to allow for dedicated left turns.

The intersection of **Smoke Tree Driveway East and Lincoln Drive** is a three-legged, stop-controlled “T” intersection with free movements in the east and west directions. The northbound approach has one shared left turn and right turn lane. The eastbound approach has one through lane and one shared through and right turn lane. The westbound approach has two through lanes and a break in the median to allow for dedicated left turns.

The intersection of **Medical Office Driveway West and Lincoln Drive** is a three-legged, stop-controlled “T” intersection with free movements in the east and west directions. The northbound approach has one shared left turn and right turn lane. The eastbound approach has one through lane and one shared through and right turn lane. The westbound approach has two through lanes and a break in the median to allow for dedicated left turns.

The intersection of **Medical Office Driveway East and Lincoln Drive** is a three-legged, stop-controlled “T” intersection with free movements in the east and west directions. The northbound approach has one shared left turn and right turn lane. The eastbound approach has one through lane and one shared through and right turn lane. The westbound approach has two through lanes and a break in the median to allow for dedicated left turns.

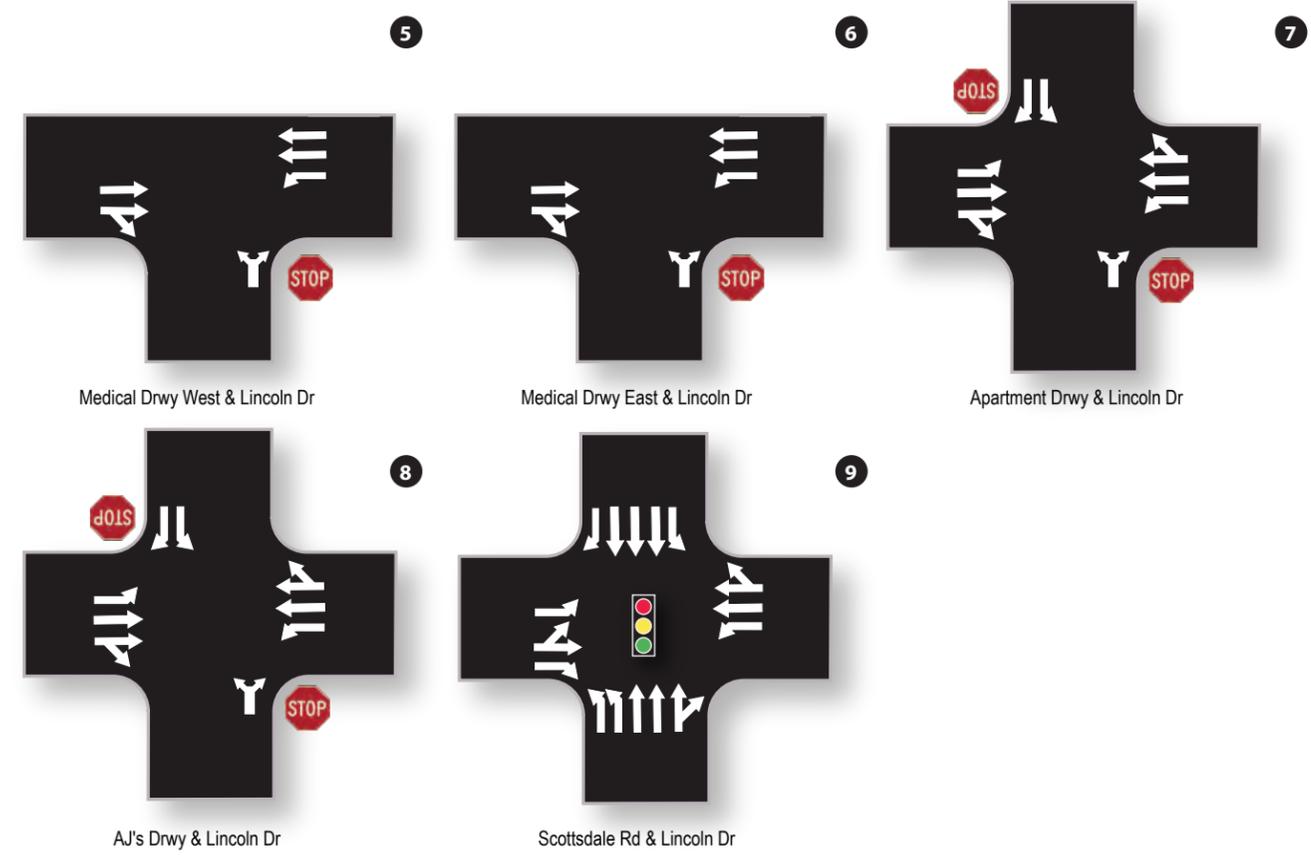
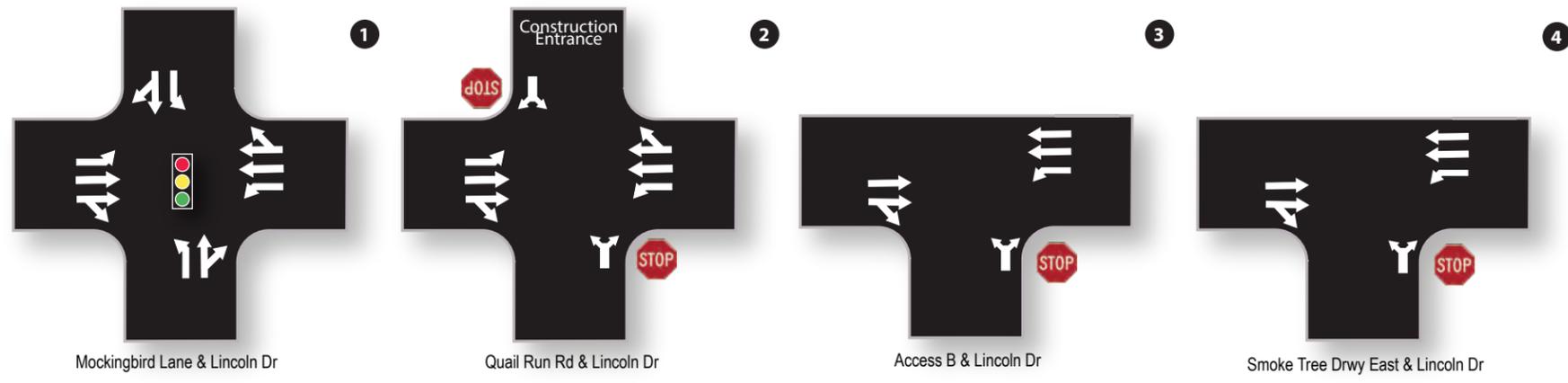
The intersection of **Apartment Driveway and Lincoln Drive** is a four-legged, stop-controlled intersection with free movements in the east and west directions. The southbound approach consists of one dedicated left turn lane and one dedicated right turn lane. The eastbound approach consists of a two-way-left turn lane one through lane and one shared through and right turn lane. The northbound approach consists of one shared left turn and right turn lane. The westbound approach consists of a two-way left turn lane, on through lane and one shared through and right turn lane.

The intersection of **AJ’s Driveway and Lincoln Drive** is a four-legged, stop-controlled intersection with free movements in the east and west directions. The northbound approach has one shared left turn and right turn lane. The eastbound approach has a

two-way-left-turn lane, one through lane and one shared through and right turn lane. The southbound approach has one dedicated left turn lane and one dedicated right turn lane. The westbound approach has a dedicated left turn lane, one through lane and one shared through and right turn lane.

The intersection of **Scottsdale Road and Lincoln Drive** is a four-legged signalized intersection with split phasing on the eastbound and westbound approaches and protected left turns on the northbound and southbound approaches. The northbound approach has two dedicated left turn lanes, two through lanes and one shared through and right turn lane. The westbound approach has one dedicated left turn lane, one through lane and one shared through and right turn lane. The southbound approach has one dedicated left turn lane, three through lanes and one dedicated right turn lane. The eastbound approach has one dedicated left turn lane, one shared left turn and through lane and one dedicated right turn lane. There are pedestrian cross walks across all legs of the intersection.

The existing intersection configurations and traffic control is illustrated in **Figure 2**.



Thru or Turning Movement
 Bike Lane
 Traffic Signal Stop Sign

NORTH

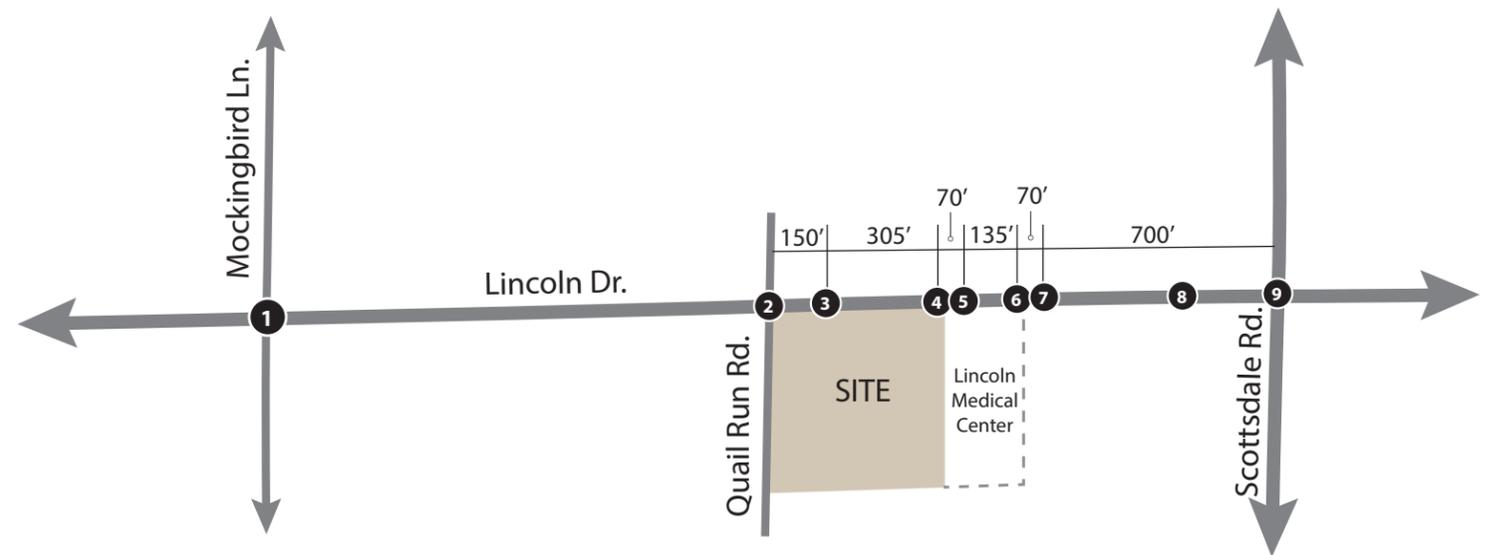


Figure 2: Existing Lane Configurations and Traffic Controls

EXISTING TRAFFIC VOLUMES

CivTech engaged Field Data Services of Arizona, Inc. to record traffic volumes at nine study intersections within the project vicinity. Peak hour volume turning movement counts were performed from 7:00-9:00 AM and 4:00-6:00 PM on Thursday, May 31, 2018. Peak hour turning movement counts were conducted at the following study intersections:

- Mockingbird Lane & Lincoln Drive
- Quail Run Road & Lincoln Drive
- Smoke Tree Driveway West & Lincoln Drive
- Smoke Tree Driveway East & Lincoln Drive
- Medical Office Driveway West & Lincoln Drive
- Medical Office Driveway East & Lincoln Drive
- Apartment Driveway & Lincoln Drive
- AJ's Driveway & Lincoln Drive
- Scottsdale Road & Lincoln Drive

The Town of Paradise Valley requires that a seasonal adjustment factor be applied to existing traffic counts taken outside of typical months. These traffic counts were conducted in May, and summer months typically have lower amounts of traffic due to school not being in session. The seasonal adjustment factor for the month of May is 1.01, however since they were conducted on the last day of the month, the adjustment factor for the month of June will be used to be more conservative. The seasonal adjustment factor for June is 1.03, this was applied to all traffic within the study area. Existing 2018 traffic volumes with the seasonal adjustment factor applied are presented in **Figure 3** for the weekday AM and PM peak hours. Raw traffic volume data obtained for this study have been included in **Appendix B**.

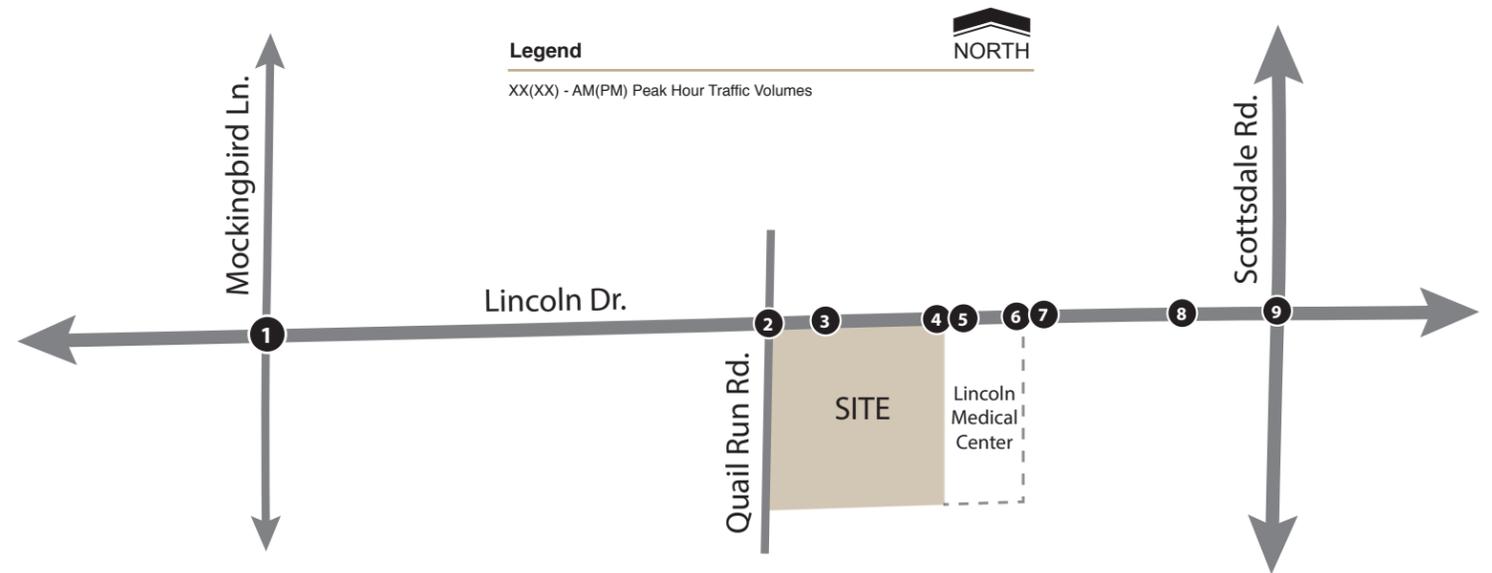
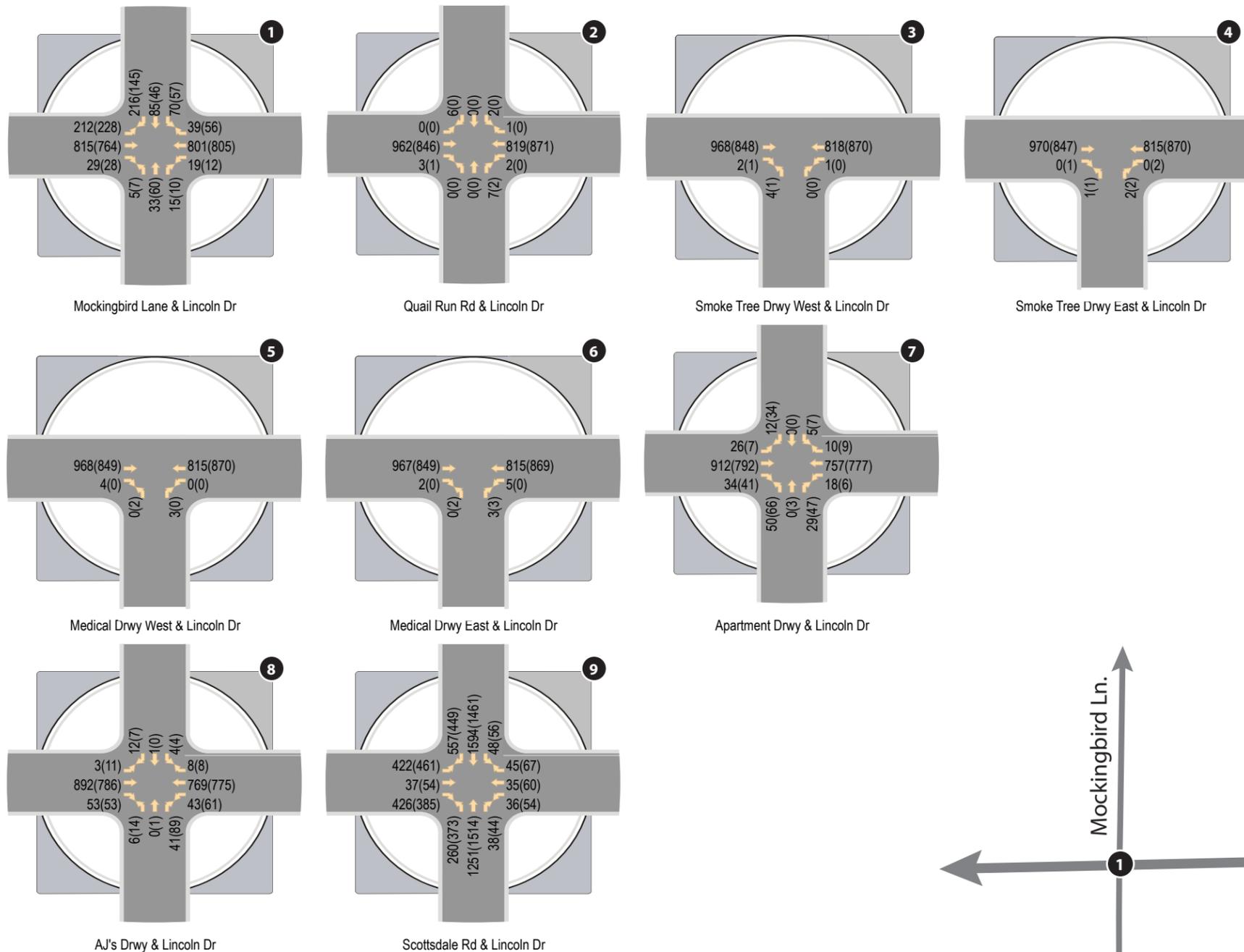


Figure 3: Seasonally Adjusted Existing Traffic Volumes

EXISTING CAPACITY ANALYSIS

Peak hour capacity analyses have been conducted for the study intersections based on existing intersection configurations and traffic volumes. All intersections have been analyzed using the methodologies presented in the *Highway Capacity Manual (HCM)*, *Special Report 209*, and Updated 2016 and using Synchro software, version 10.0 under the HCM 6th edition methodology.

The concept of level of service (LOS) uses qualitative measures that characterize operational conditions within the traffic stream. The individual levels of service are described by factors that include speed, travel time, freedom to maneuver, traffic interruptions, and comfort and convenience. Six levels of service are defined for each type of facility for which analysis procedures are available. They are given letter designations A through F, with LOS A representing the best operating conditions and LOS F the worst. Each level of service represents a range of operating conditions. Levels of service for intersections are defined in terms of delay ranges. **Table 1** lists the level of service criteria for signalized and unsignalized intersections, respectively.

Table 1 – Level of Service Criteria

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

Source: Exhibit 19-8, Exhibit 20-2, Exhibit 21-8 and Exhibit 22-8, Highway Capacity Manual 2017

Synchro 10.0 software calculates the LOS per the HCM 6th edition methodology. The 6th edition HCM documents the signalized LOS calculation methodology which takes into account lane geometry, traffic volumes and cycle length/phasing to compute LOS. Synchro analysis worksheets report individual movement delay/LOS and overall delay/LOS for signalized intersections; unsignalized intersection worksheets report the worst-case delay/LOS and the average overall intersection delay. Signal timing data for the intersection of Mockingbird Lane and Lincoln Drive was provided by the Town of Paradise Valley. Timing for the intersection of Scottsdale Road and Lincoln Drive was provided by the City of Scottsdale. Results of the existing level of service analyses are shown in **Table 2** for both AM and PM peak hours. The existing conditions analysis worksheets have been included in **Appendix C**.

Table 2 – Existing Peak Hour Levels of Service

ID	Intersection	Intersection Control	Approach/Movement	Existing LOS AM (PM)	Mitigated AM (PM)
1	Mockingbird Lane & Lincoln Drive	Signal	NB	E(E)	[Not Mitigated]
			SB	E(E)	
			EB	A(A)	
			WB	B(A)	
			Overall	B(B)	
2	Quail Run Road & Lincoln Drive	2-way stop (NB/SB)	NB Shared	B(A)	[Not Mitigated]
			SB Shared	B(A)	
			EB Left	A(A)	
			WB Left	A(A)	
3	Smoke Tree Driveway West & Lincoln Drive	1-way stop (NB)	NB Shared	B(B)	[Not Mitigated]
			WB Left	A(A)	
4	Smoke Tree Driveway East & Lincoln Drive	1-way stop (NB)	NB Shared	B(B)	[Not Mitigated]
			WB Left	A(A)	
5	Medical Driveway West & Lincoln Drive	1-way stop (NB)	NB Shared	B(B)	[Not Mitigated]
			WB Left	A(A)	
6	Medical Driveway West & Lincoln Drive	1-way stop (NB)	NB Shared	B(B)	[Not Mitigated]
			WB Left	A(A)	
7	Apartment Driveway & Lincoln Drive	2-way stop (NB/SB)	NB Shared	B(B)	[Not Mitigated]
			SB Left	B(B)	
			SB Right	A(B)	
			EB Left	A(A)	
			WB Left	A(A)	
8	AJ's Driveway & Lincoln Drive	2-way stop (NB/SB)	NB Shared	B(B)	[Not Mitigated]
			SB Left	B(B)	
			SB Right	A(A)	
			EB Left	A(A)	
			WB Left	A(A)	
9	Scottsdale Road & Lincoln Drive	Signal	NB	C(C)	D(D)
			SB	D(D)	D(D)
			EB	E(E)	D(D)
			WB	E(E)	E(E)
			Overall	D(D)	D(D)

The results of the existing conditions analysis summarized in **Table 2** indicates that all intersections currently operate at an overall acceptable level of service (LOS D or better). The following intersections include one or more approaches which currently operate with poor levels of service.

The intersection of **Mockingbird Lane and Lincoln Drive** currently operates with poor levels of service on the northbound and southbound approaches during both the AM and PM peak hours. Due to the actuated coordinated nature of this signal, if a vehicle does not approach the northbound or southbound approach of the intersection, this phase will be skipped and the green time will be added to the eastbound and westbound green times. The northbound and southbound approaches of this intersection experience minimal traffic volumes during both the AM and PM peak hours, meaning that when they do approach the intersection, they must wait until the cycle

starts again in order to pass through the intersection. If more vehicles utilize the intersection, this delay should decrease because the northbound and southbound green times will be utilized during more cycles throughout the peak hours. This will increase the delay on the eastbound and westbound approaches, however, these approaches are currently operating with maximum delays of 6.1 seconds per vehicle and 10.5 seconds per vehicle respectively, so increasing these delays will not adversely impact levels of service.

The intersection of **Scottsdale Road and Lincoln Drive** currently experiences delay on the eastbound and westbound approaches during both the AM and PM peak hours. During the AM peak hour, it is recommended that the eastbound green time be extended from 30 seconds to 33 seconds and the westbound green time be extended from 13 seconds to 17 seconds. This mitigation measure is anticipated to decrease the eastbound delay from 56.3 seconds per vehicle to 53.9 seconds per vehicle. The westbound approach remains unchanged, in order to mitigate this delay, the initial green time could be changed to allow for more vehicles to pass through the intersection without the light changing from green to yellow.

During the PM peak hour, it is recommended that the eastbound phase be extended from 30 seconds to 33 seconds and the westbound phase be increased from 13 seconds to 21 seconds. With these mitigation measures applied, it is expected that the eastbound delay will decrease from 57.3 seconds per vehicle to 54.2 seconds per vehicle and the westbound delay will decrease from 70.1 seconds per vehicle to 63.0 seconds per vehicle.

Existing signal timing proposed for the existing scenario was applied to all future scenarios.

PROPOSED DEVELOPMENT

SITE LOCATION

The proposed redevelopment will be located 7101 East Lincoln Drive in the Town of Paradise Valley, Arizona.

SITE ACCESS

There are two access scenarios that will be evaluated within this study; they are described in detail below.

Scenario 1

Scenario 1 provides two unique access points proposed for this development, described as follows:

- Access A is a proposed full movement access point on Lincoln Drive located west of the eastern Smoke Tree property line. The two existing access points to the site will be removed and replaced with this single access. The final location of this access has not been determined at the time of this submittal, however, it will be very close to the existing eastern access of the Smoke Tree Resort, which is located 455 feet east of the Quail Run Road intersection.
- Access B is a proposed access from Quail Run Road to the Smoke Tree site. The intersection of Quail Run Road and Lincoln Drive will be signalized by build out year 2020, and it is expected that some vehicles will utilize Quail Run Road to access the Smoke Tree site. This access will be a full movement access on the western border of the site approximately 215 feet south of Lincoln Drive.

The two existing Smoke Tree Driveways, intersections 3 and 4, will both be removed by opening year 2020 and replaced with a single, full movement access located west of the eastern property line.

Scenario 2

There are two access points proposed for this development, described as follows:

- Access A is a proposed full movement access point on Lincoln Drive located near the Smoke Tree Resort eastern property line. The two existing access points to the site will be removed and replaced with this single access. The two Lincoln Medical access locations will be removed and Access A will be shared between the Lincoln Medical offices and Smoke Tree Resort. The final location of this has not been determined at the time of this submittal, however, it will be very close to the property line between Smoke Tree Resort and Lincoln Medical Center. The property line is located approximately 480 feet east of the Quail Run Road intersection.
- Access B is a proposed access from Quail Run Road to the Smoke Tree site. The intersection of Quail Run Road and Lincoln Drive will be signalized by build out year 2020, and it is expected that some vehicles will utilize Quail Run Road to access the Smoke Tree site. This access will be a full movement access on the western border of the site approximately 215 south of Lincoln Drive.

The proposed site plan is provided in **Figure 4**.



Note: This Site Plan does not accurately depict Access B in its final location

A1 - Represents approximate location of Access if no cross access with Lincoln Medical is available.

A2 - Represents approximate location of Access if cross access with Lincoln Medical is available.

Figure 4: Site Plan and Access

TRIP GENERATION

The potential trip generation for the proposed development was estimated utilizing the Institute of Transportation Engineers (ITE) *Trip Generation Manual, 10th Edition* and *Trip Generation Handbook, 3rd Edition*. The ITE *Trip Generation Manual* contains data collected by various transportation professionals for a wide range of different land uses. The data are summarized in the report and average rates and equations have been established that correlate the relationship between an independent variable that describes the development size and generated trips for each categorized land use. The report provides information for daily and peak hour trips.

Since the Smoke Tree Resort is a proposed redevelopment of the current resort, some of the existing traffic counts are existing trips generated by the site. To be conservative, these trips were not subtracted from the existing traffic counts, meaning that there will actually be less “new trips” than mentioned in this study.

The proposed development will consist of maximum of 102 standard hotel rooms, 6 for rent hotel resort villas, 4 of which will have 3 keys each and the remaining 2 will have 4 keys each for a total of 20 keys. The resort villas are rentable rooms, not for sale units. Additionally, the Smoke Tree Resort will provide a 3,200 square foot quality restaurant, which will be open to the public as well as resort guests. A coffee shop, a market, an event space and other hotel amenities for guests will be provided but are not anticipated to generate any off-site trips.

Since this boutique resort does not fully comply with the definition of a standard hotel or a resort hotel, a combination of the two was used. The weighted averages from the Resort Hotel LUC and the fitted curves from the Hotel LUC were averaged and utilized in order to determine the number of trips generated by the Smoke Tree Resort. Additionally, an internal capture percentage was applied to the external restaurant trips because it is assumed that approximately 50% of all restaurant visitors will be arriving externally and the other 50% will be guests of the resort. **Table 3** depicts the trip generation summary for the proposed development. Trip generation calculations are provided in **Appendix D**.

Table 3 – Trip Generation Summary

Proposed Use	ITE LUC	Size	Units	Weekday Trips						
				Daily	AM			PM		
				Total	In	Out	Total	In	Out	Total
Main Hotel/ Resort Villas	310/330	122	Rooms	540	28	19	47	29	28	57
Quality Restaurant	931	3,200	SF	268	2	0	2	17	8	25
Total Trips				808	30	19	49	46	36	82
<i>Internal Capture Reduction (Quality Restaurant 50%)</i>				<i>(134)</i>	<i>(1)</i>	<i>(0)</i>	<i>(1)</i>	<i>(9)</i>	<i>(4)</i>	<i>(13)</i>
Subtotals				674	29	19	48	37	32	69

As shown in **Table 3**, the proposed development is anticipated to generate approximately 674 external weekday daily trips, with 48 external trips occurring in the AM peak hour and 69 external trips occurring in the PM peak hour.

TRIP DISTRIBUTION AND ASSIGNMENT

A single trip distribution pattern was assumed for the proposed development. It is expected that the resort development will generate trips based on future population within a 7-mile radius of the site. Future total population within a 7-mile radius of the site, as predicted by the 2020/2030 socio-economic data compiled by the Maricopa Association of Governments (MAG), was used as a basis to estimate trip distribution for the resort development.

The resulting trip distribution percentages for the study area are shown in **Table 4**. The trip distribution calculations are included in **Appendix E**.

Table 4 – Site Trip Distribution

Direction (To/From)	Trip Distribution
North on Mockingbird Ln	6%
South on Mockingbird Ln	4%
West on Lincoln Dr	25%
North on Scottsdale Rd	35%
South on Scottsdale Rd	30%
Total	100%

Figure 5 illustrates the trip distribution percentages shown in **Table 4** on the existing roadway network with the study area. The percentages presented in **Figure 5** were applied to the site trips generated to determine the AM and PM peak hour site traffic at the intersections within the study area. The resulting site generated traffic for the proposed development are presented in **Figure 6**.

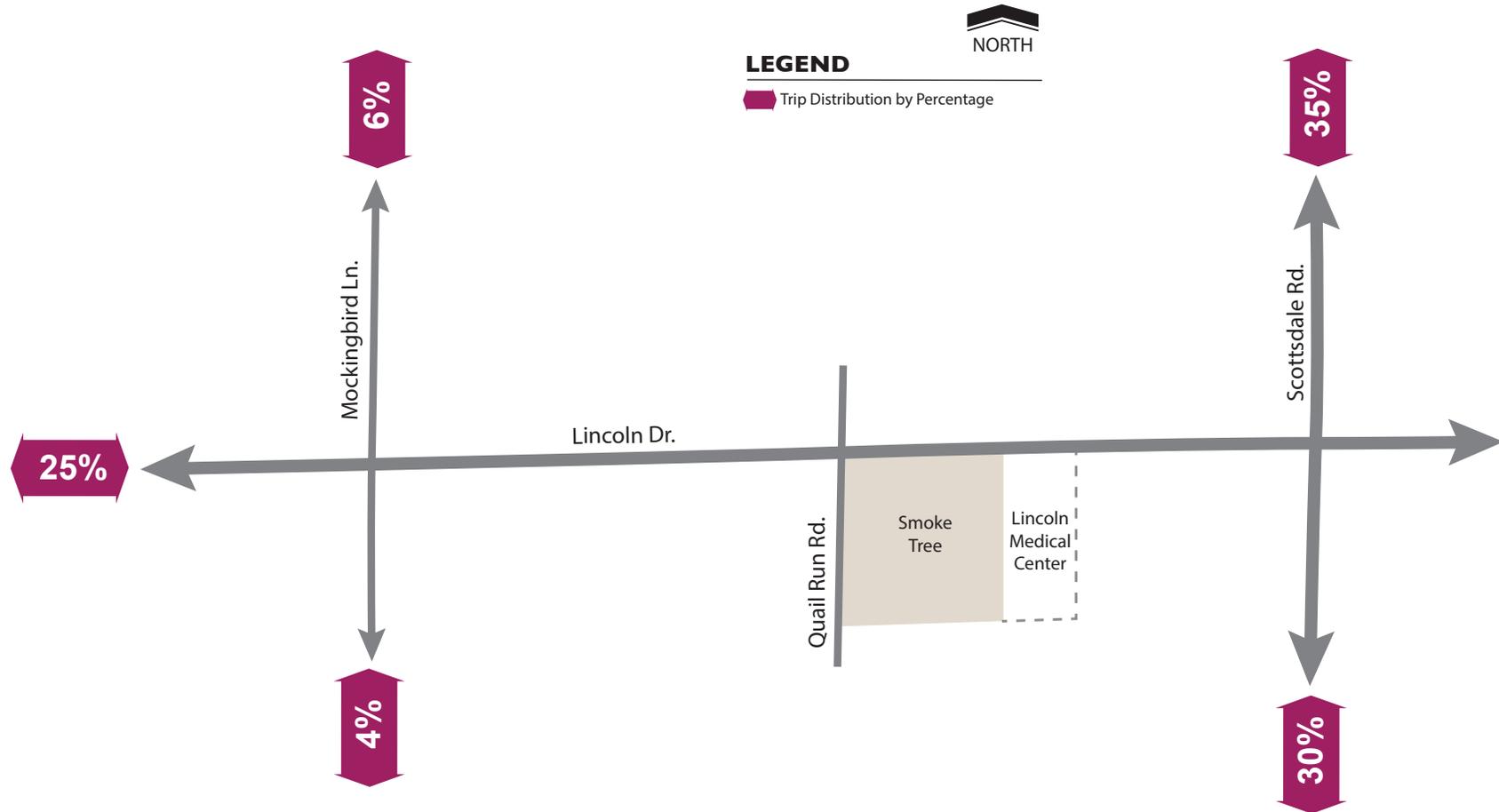


Figure 5: Trip Distribution

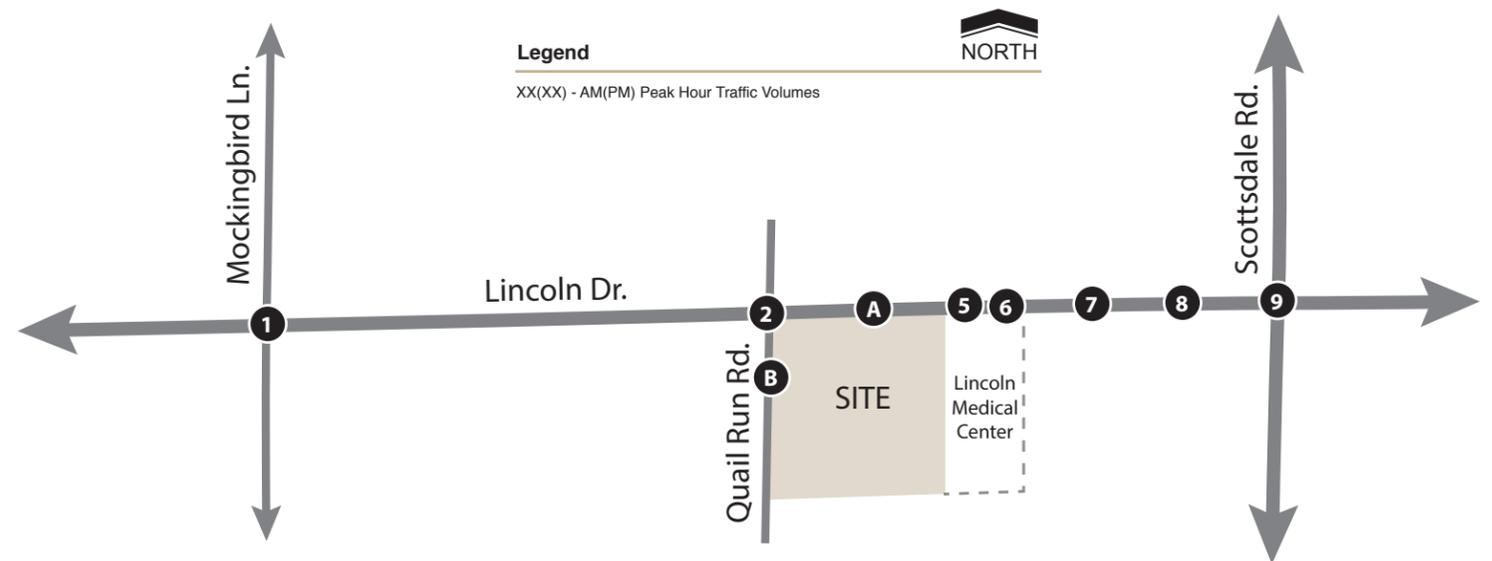
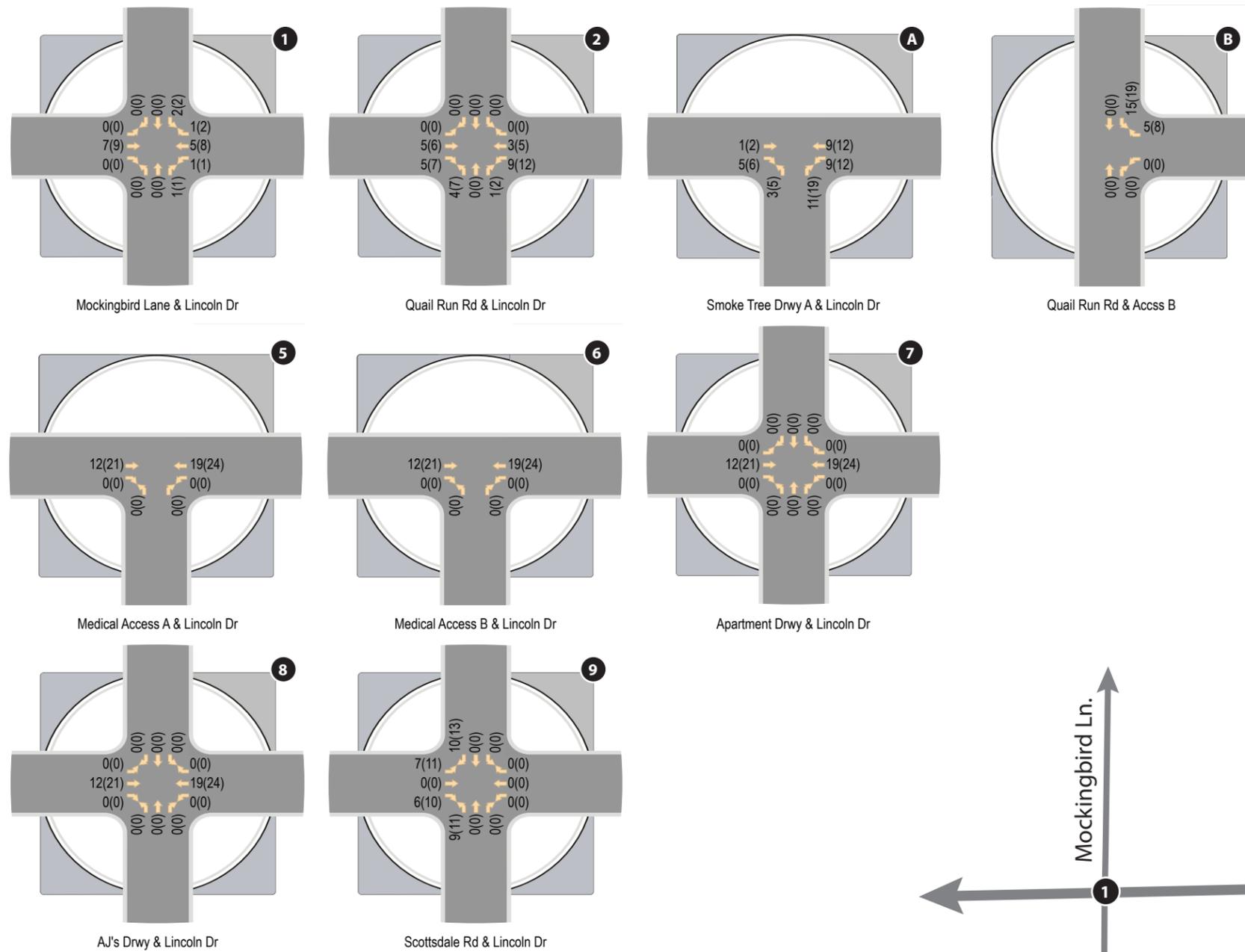


Figure 6: Scenario I - Site Generated Traffic Volumes

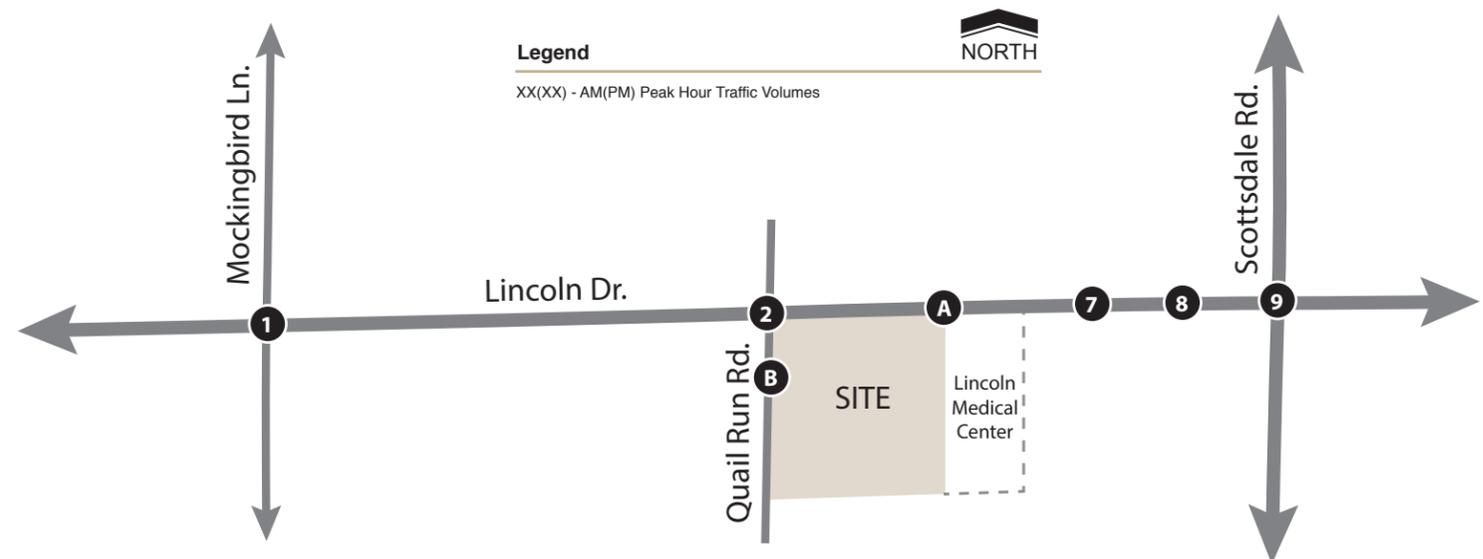
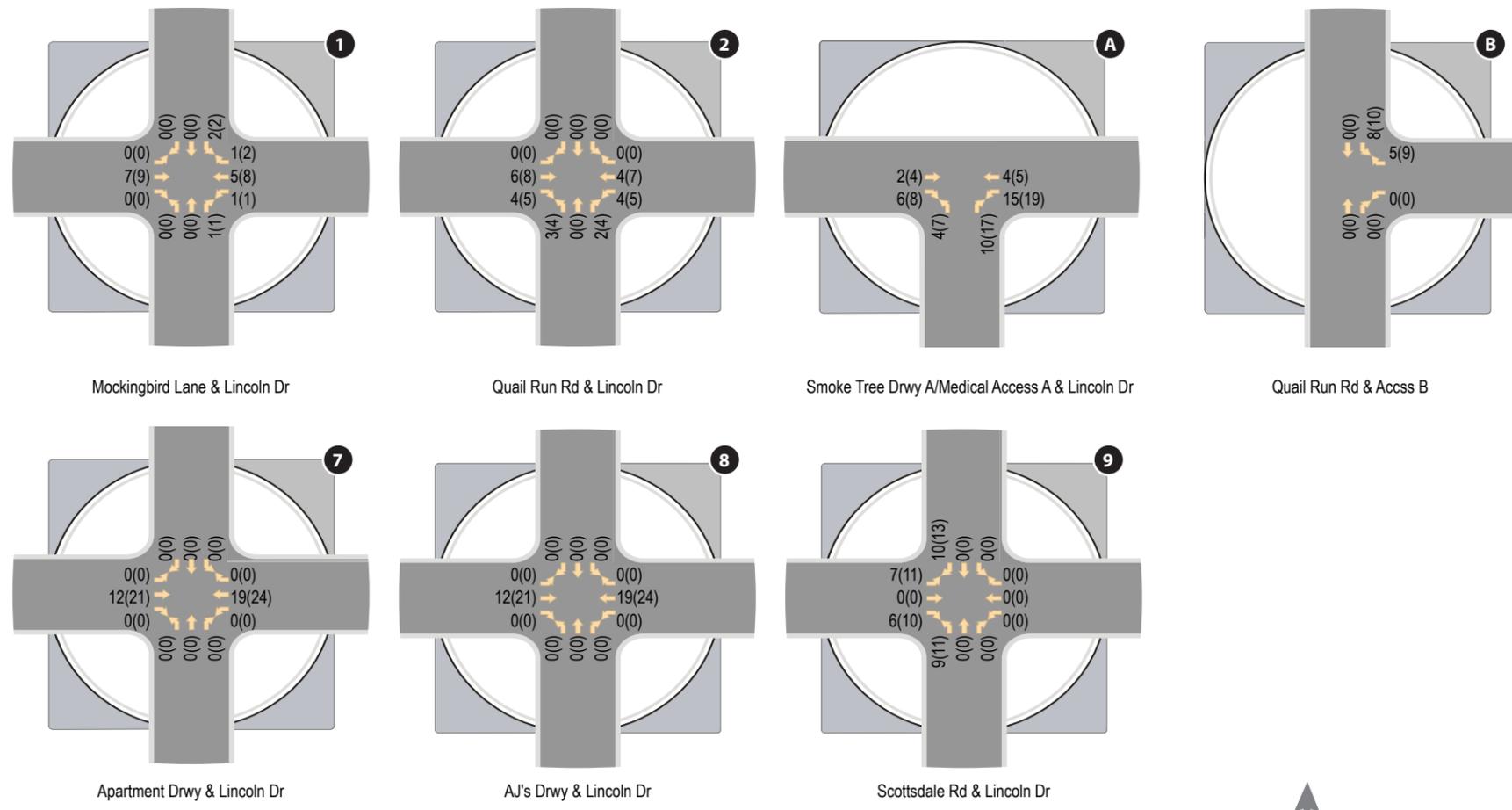


Figure 7: Scenario 2 - Site Generated Traffic Volumes

FUTURE BACKGROUND TRAFFIC

CivTech applied a growth rate to the seasonally adjusted traffic counts for this study in order to obtain the background traffic volumes along the adjacent roadway network. In reviewing the City of Scottsdale Traffic Counts Map, a 1.7% average growth rate was found within the proposed study area. **Table 5** shows the expansion factors used for the proposed opening year 2020 and horizon year 2025.

Table 5 – Growth Rate Expansion Factors

Horizon Year	Expansion Factor
2020	1.034
2025	1.125

Applying the growth rate expansion factors to the seasonally adjusted existing traffic volumes predicts the volume of traffic anticipated on the surrounding area roads for opening year 2020 and horizon year 2025. Directly north of the proposed Smoke Tree Resort is the new Ritz Carlton Resort. Phase 1 of that development is expected to be open by 2020, meaning that it will be adding some site generated trips to the surrounding roadway network. Since CivTech was the company that performed the analysis for the Ritz Carlton in 2015, the site generated volumes expected for 2020 and 2025 were added to the grown existing volumes. Directly east of the proposed site is another proposed development, Lincoln Medical Center. It is expected that the Lincoln Medical expansion and the Smoke Tree Resort will begin and end construction at roughly the same time. Lincoln Medical Center is also expected to add additional traffic to the surrounding roadway network. The proposed site generated trips were assigned to the surrounding roadway network, and these trips were also added to the grown existing volumes.

The same methodology was used for both horizon years. Calculated background traffic for opening year 2020 and horizon year 2025 is presented in **Figure 8** and **Figure 9**, respectively. Seasonally adjusted existing traffic volumes, Ritz Carlton site volumes, Smoke Tree site volumes and more detailed background traffic calculations are included in **Appendix F**.

TOTAL TRAFFIC

Total traffic was determined by adding the site generated traffic to the projected background traffic. Total peak hour traffic volumes for the opening year 2020 are shown in **Figure 10** and **Figure 11** for scenario 1 and scenario 2, respectively. Total Peak hour traffic volumes for the horizon year 2025 are shown in **Figures 12** and **Figure 13** for scenario 1 and scenario 2 respectively.

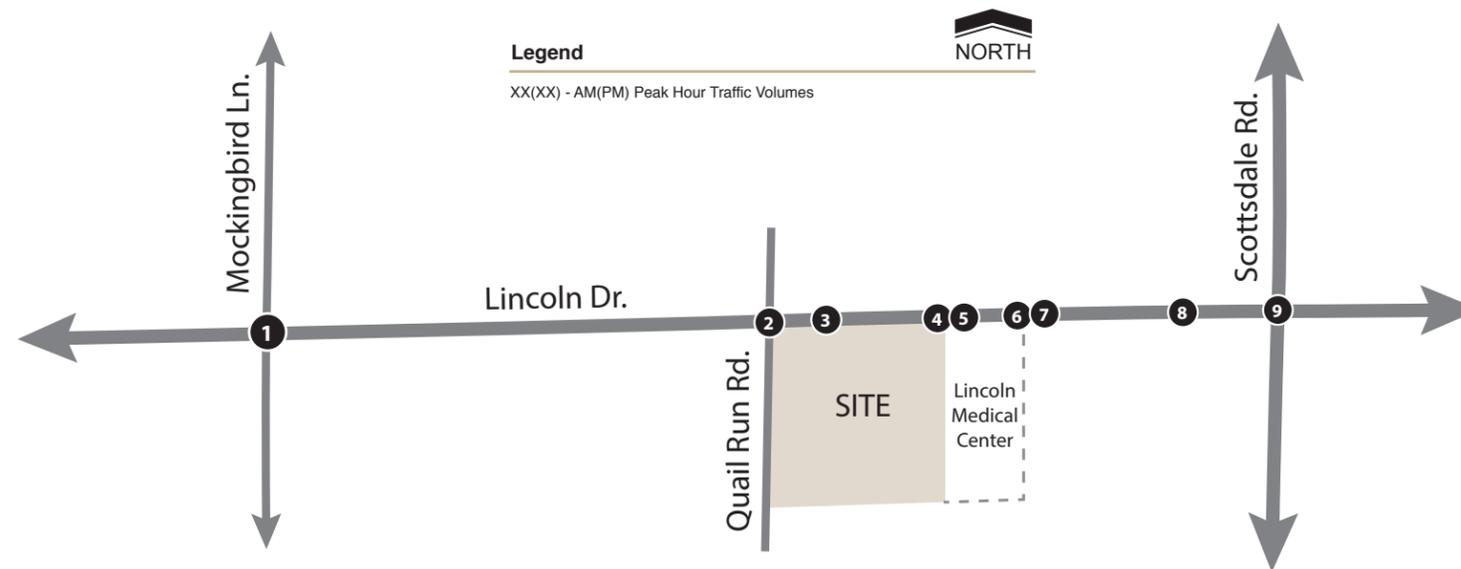
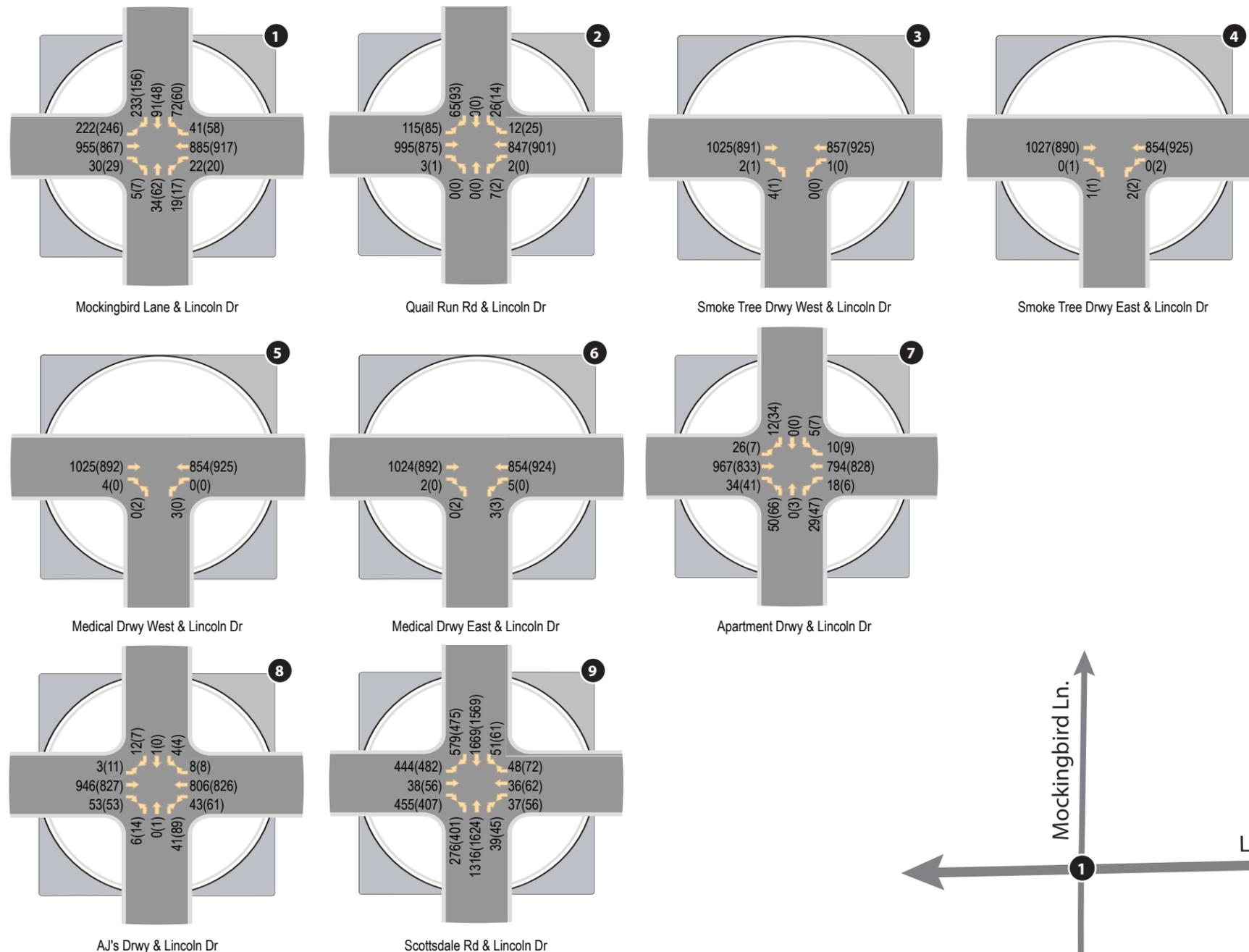


Figure 8: 2020 Background Traffic Volumes

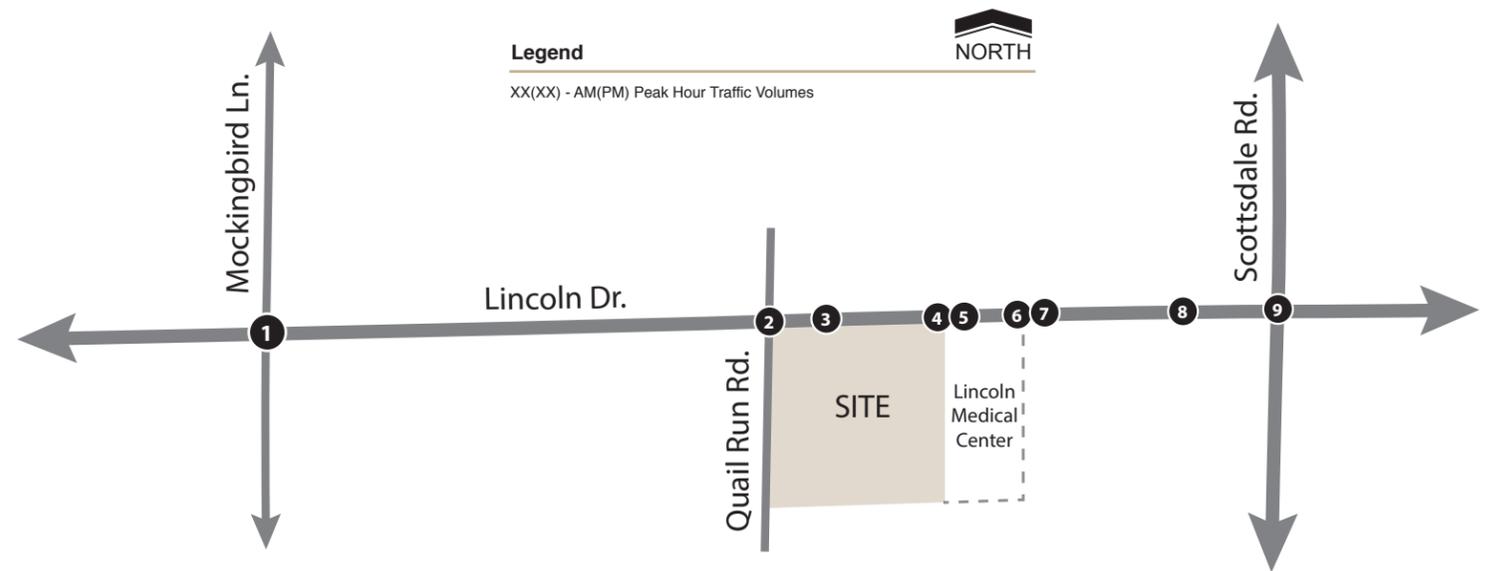
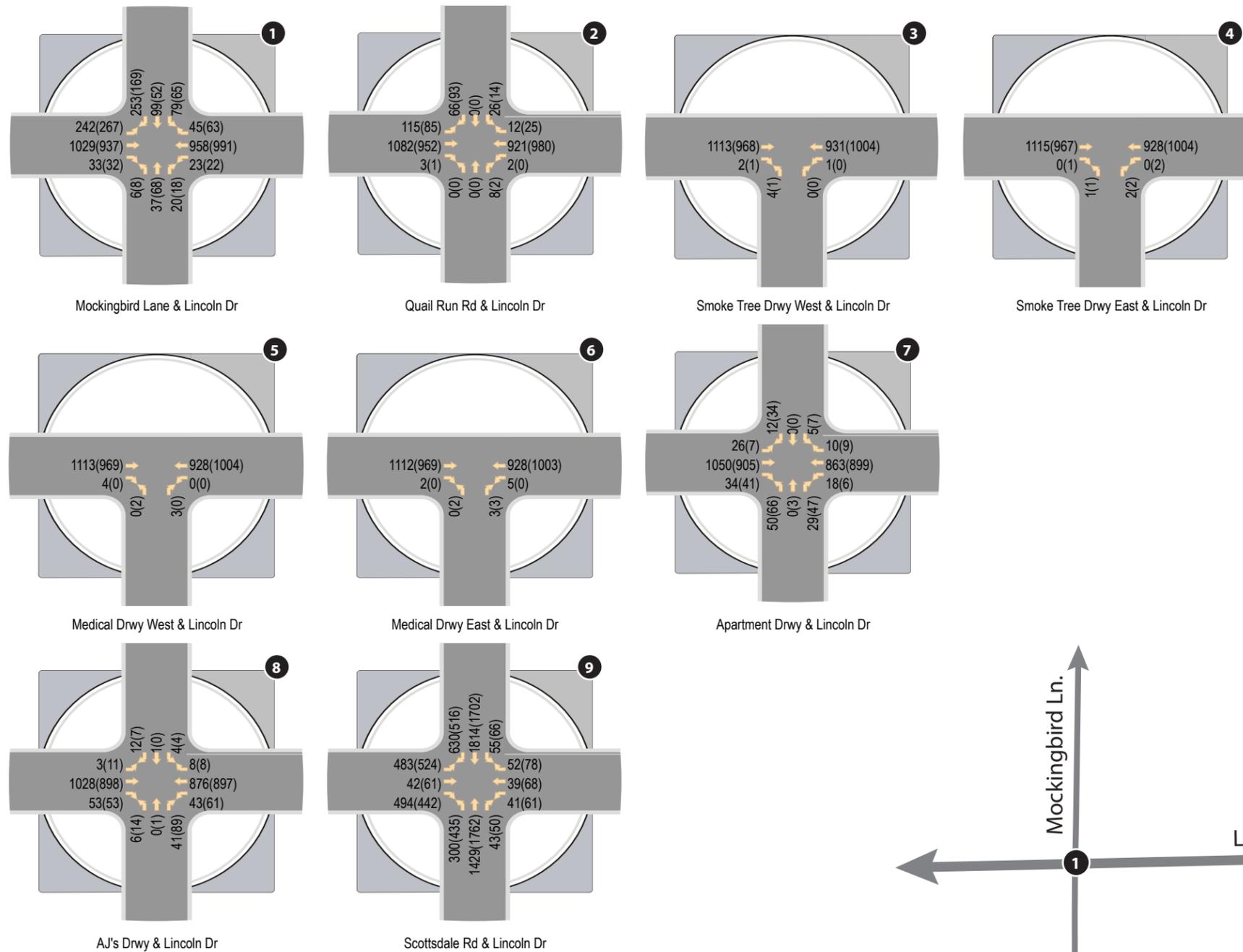


Figure 9: 2025 Background Traffic Volumes

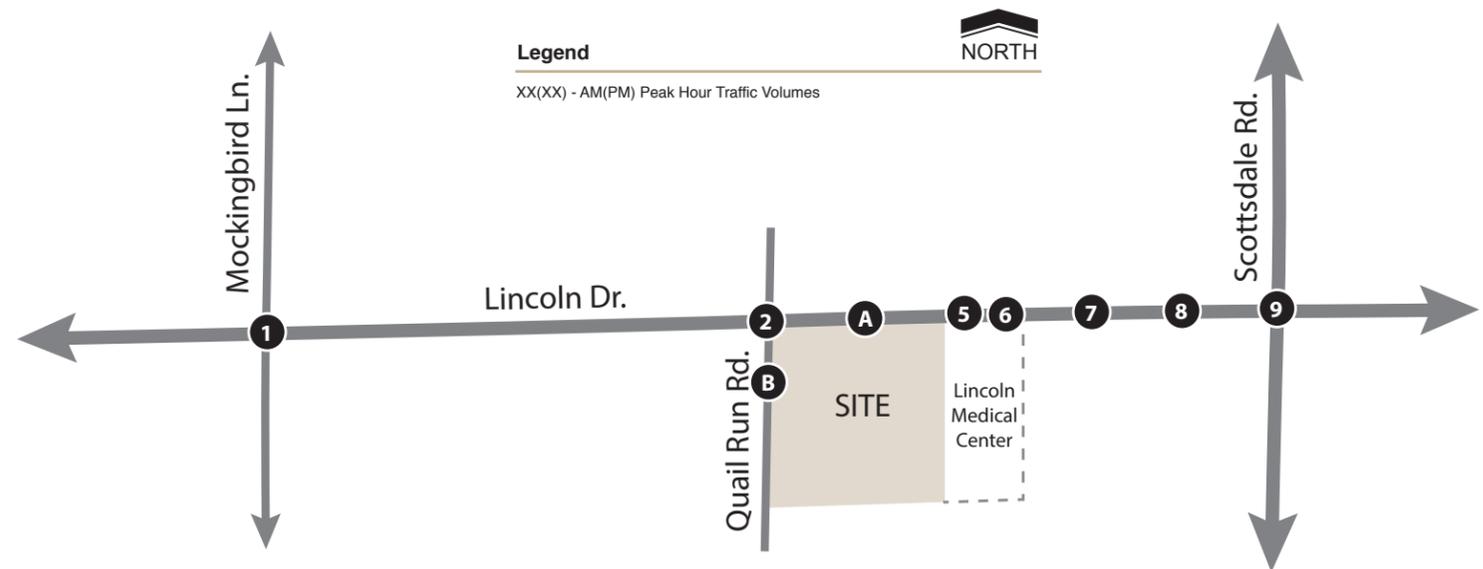
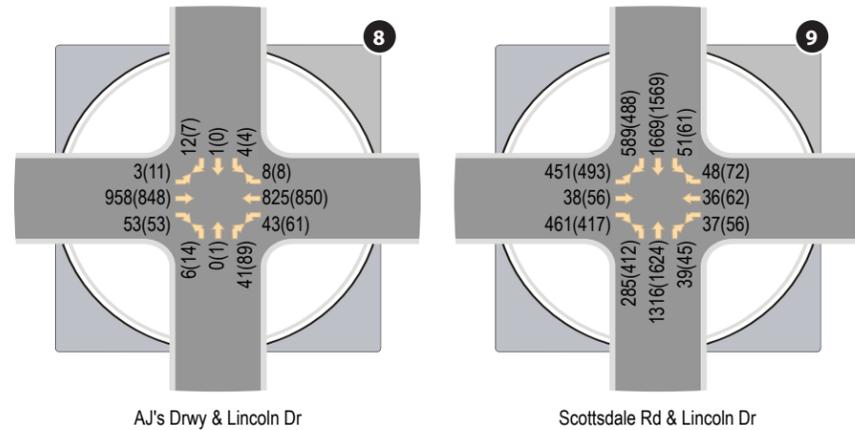
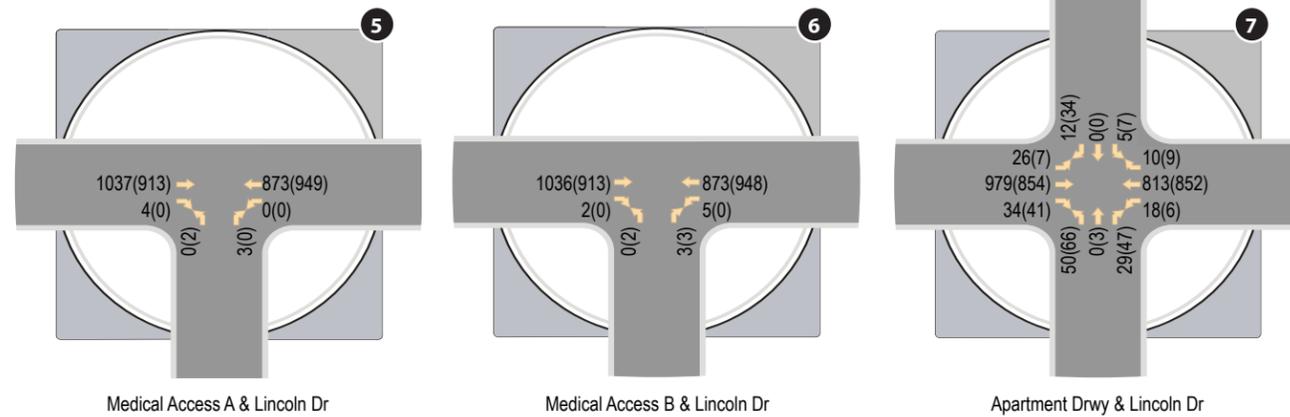
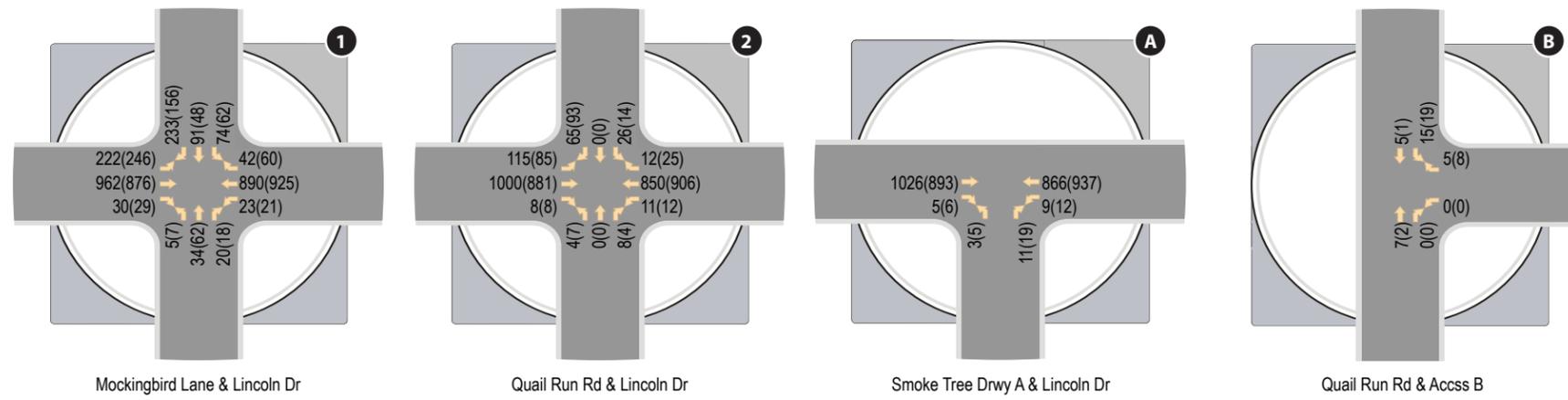
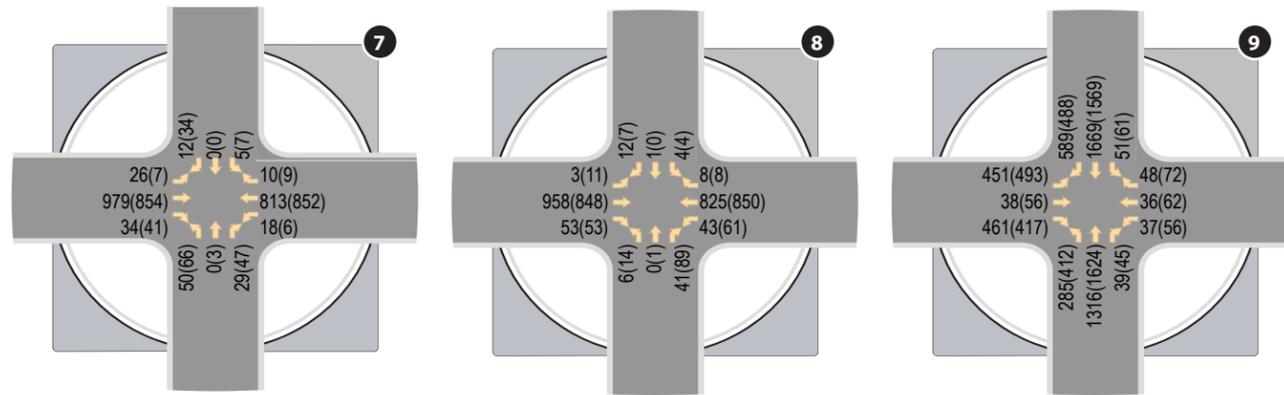
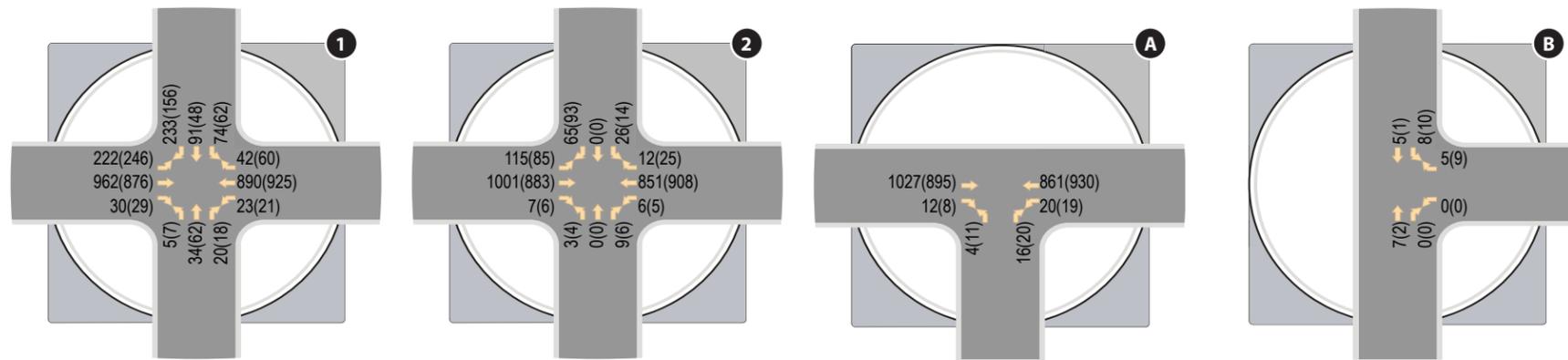


Figure 10: Scenario I - 2020 Total Traffic Volumes



Apartment Drwy & Lincoln Dr

AJ's Drwy & Lincoln Dr

Scottsdale Rd & Lincoln Dr

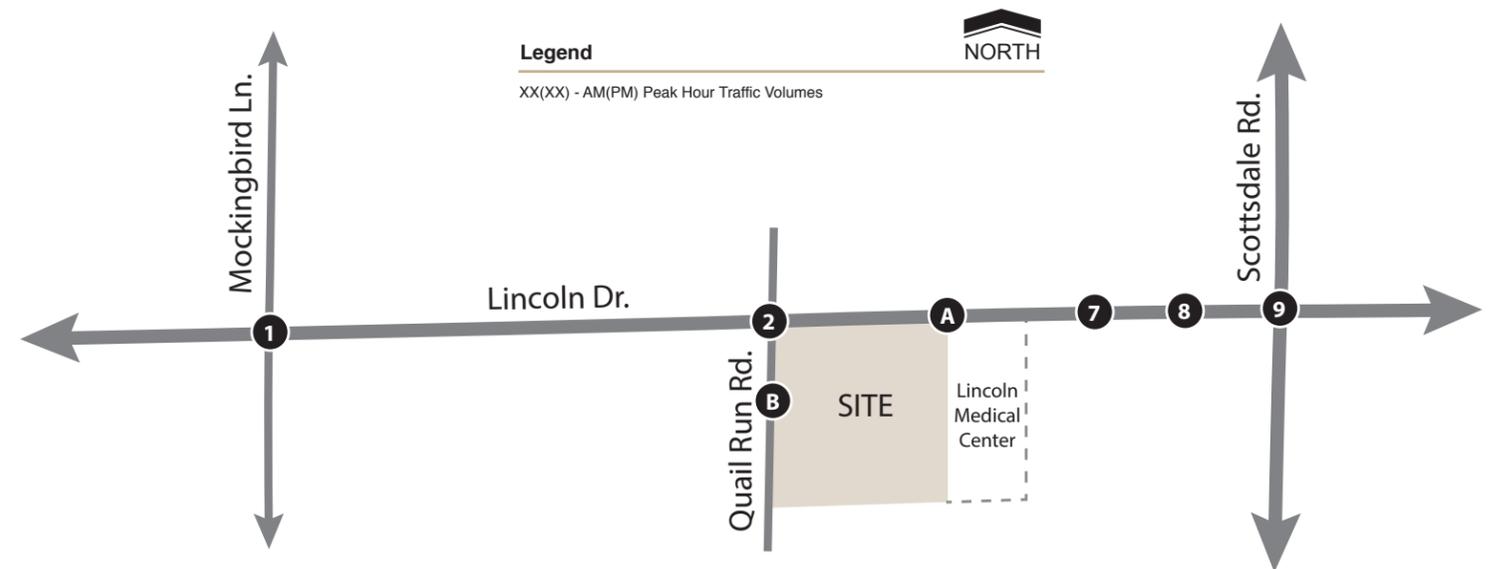


Figure 11: Scenario 2 - 2020 Total Traffic Volumes

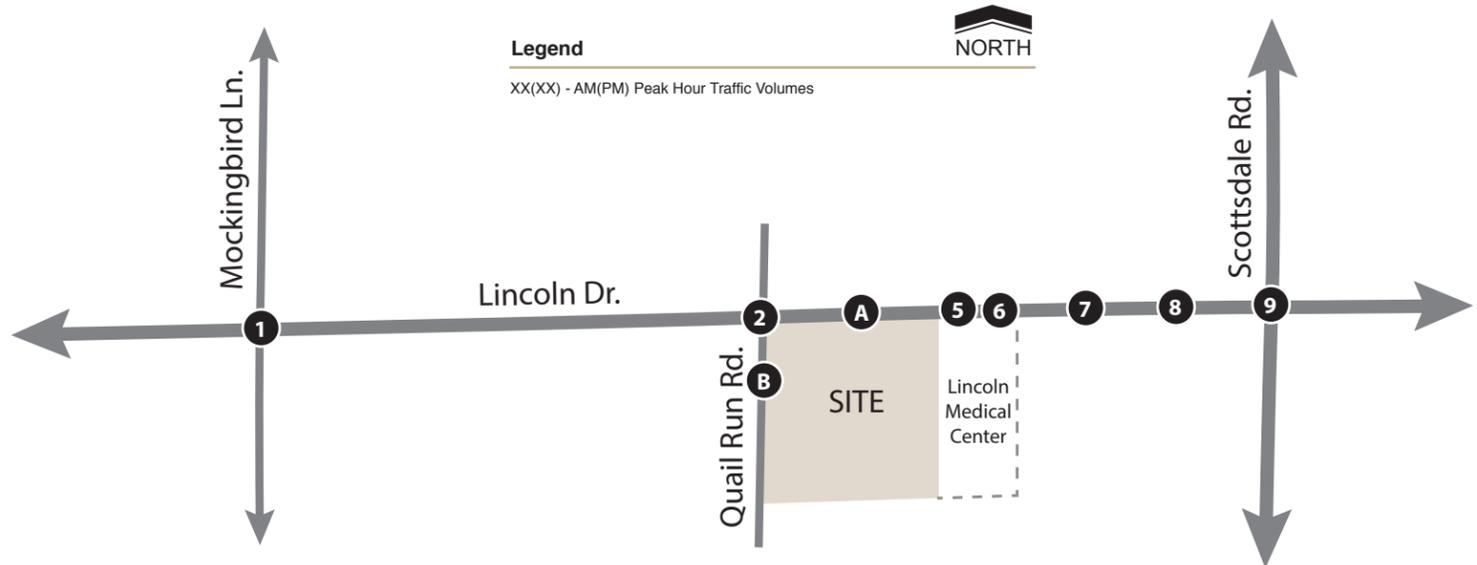
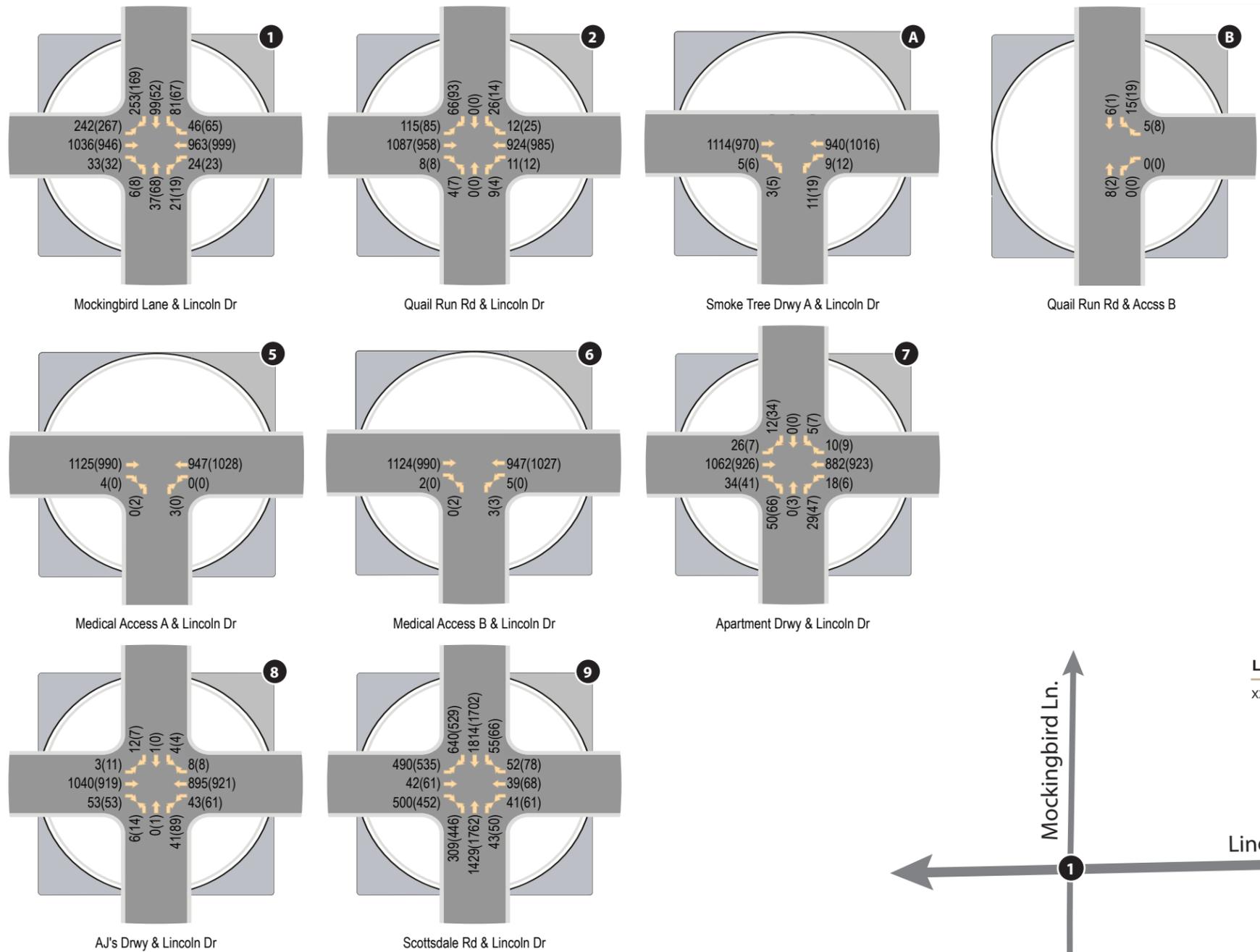


Figure 12: Scenario I - 2025 Total Traffic Volumes

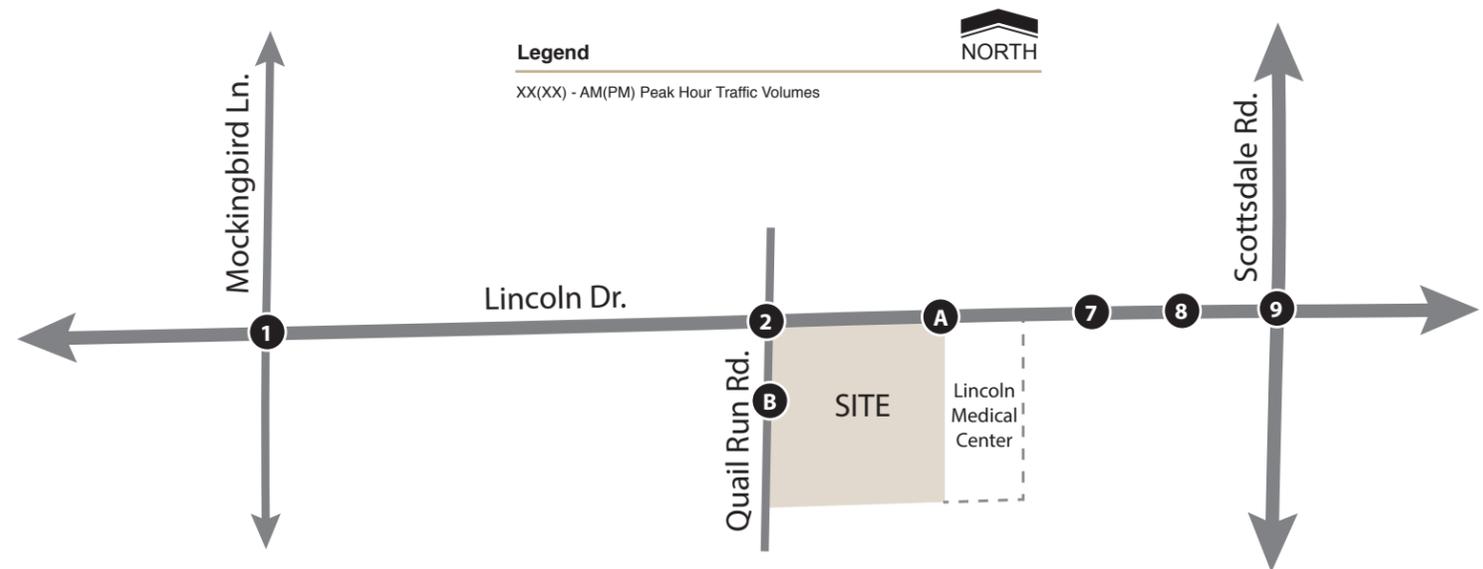
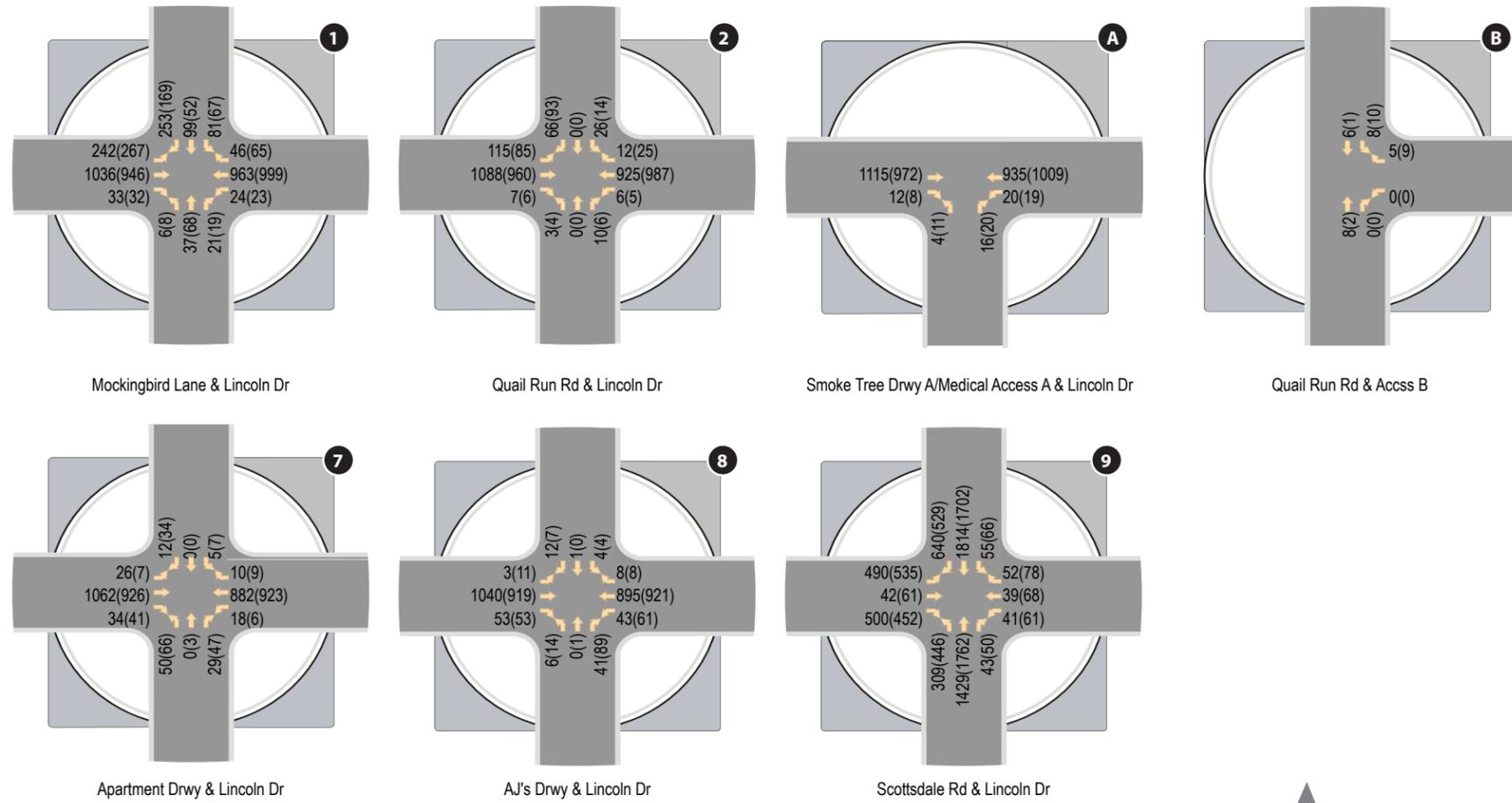


Figure 13: Scenario 2- 2025 Total Traffic Volumes

TRAFFIC AND IMPROVEMENT ANALYSIS

INTERSECTION CAPACITY ANALYSIS

Peak hour capacity analyses have been conducted for all of the intersections within the study area. All study area intersections were analyzed using Synchro 10.0 analysis software and the methodologies previously presented. Signalized intersections were analyzed with signal timing presented by the Town of Paradise Valley and the City of Scottsdale. According to the City of Scottsdale, the intersection of Scottsdale Road & Lincoln Drive will be restriped in the future to operate with dual left turn lanes and a shared through/right turn lane. It is unknown by what year these improvements will be made, so all analysis will be conducted using the existing lane configurations. The overall intersection and approach levels of service are summarized in **Table 6** for the 2020 opening year and **Table 7** for the 2025 horizon for both Scenario 1 and 2. Detailed analysis worksheets can be found in **Appendix G** and **Appendix H**.

Table 6 – 2020 Peak Hour Analysis

ID	Intersection	Intersection Control	Approach/ Movement	2020 LOS AM(PM)				
				No-Build	Scenario 1		Scenario 2	
					Build	Mitigated	Build	Mitigated
1	Mockingbird Ln & Lincoln Dr	Signal	NB	E(E)	E(E)	[Not Mitigated]	D(E)	[Not Mitigated]
			SB	E(E)	E(E)		E(E)	
			EB	A(A)	A(A)		B(A)	
			WB	A(A)	A(A)		A(A)	
			Overall	B(B)	B(B)		B(B)	
2	Quail Run Rd & Lincoln Dr	Signal	NB	A(B)	A(A)	[Not Mitigated]	A(A)	[Not Mitigated]
			SB	B(B)	B(B)		B(B)	
			EB	A(A)	A(A)		A(A)	
			WB	A(B)	A(A)		A(A)	
			Overall	A(A)	A(A)		A(A)	
3	Smoke Tree Drwy West & Lincoln Dr	1-way stop (NB)	NB Shared WB Left	C(C) A(A)	N/A	N/A	N/A	N/A
4	Smoke Tree Drwy East & Lincoln Dr	1-way stop (NB)	NB Shared WB Left	B(B) A(A)	N/A	N/A	N/A	N/A
5	Medical Drwy West & Lincoln Dr	1-way stop (NB)	NB Shared WB Left	B(C) A(A)	B(C) A(A)	[Not Mitigated]	N/A	N/A
6	Medical Drwy East & Lincoln Dr	1-way stop (NB)	NB Shared/Right WB Left	B(B) A(A)	B(B) A(A)	[Not Mitigated]	N/A	N/A
7	Apartment Drwy & Lincoln Dr	2-way Stop (NB/SB)	NB Shared	C(C)	C(C)	[Not Mitigated]	C(C)	[Not Mitigated]
			SB Left	C(C)	C(C)		C(C)	
			SB Right	A(B)	B(B)		B(B)	
			EB Left	A(A)	A(A)		A(A)	
			WB Left	A(A)	A(A)		A(A)	
8	AJ's Drwy & Lincoln Dr	2-way Stop (NB/SB)	NB Shared	B(B)	B(B)	[Not Mitigated]	B(B)	[Not Mitigated]
			SB Left	C(C)	C(C)		C(C)	
			SB Right	A(A)	B(A)		B(A)	
			EB Left	A(A)	A(A)		A(A)	
			WB Left	A(A)	A(A)		A(A)	

Table 6 – 2020 Peak Hour Analysis

ID	Intersection	Intersection Control	Approach/Movement	2020 LOS AM(PM)				
				No-Build	Scenario 1		Scenario 2	
					Build	Mitigated	Build	Mitigated
9	Scottsdale Rd & Lincoln Dr	Signal	NB	C(C)	C(C)	C(D)	C(C)	C(D)
			SB	D(D)	D(D)	D(D)	D(D)	D(D)
			EB	E(E)	E(E)	D(D)	E(E)	D(D)
			WB	E(E)	E(E)	E(E)	E(E)	E(E)
			Overall	D(D)	D(D)	D(D)	D(D)	D(D)
A	Access A & Lincoln Dr	1-way stop (WB)	NB Shared WB Left	-(-) -(-)	B(B) A(A)	[Not Mitigated]	B(B) A(A)	[Not Mitigated]
B	Quail Run Rd & Access B	1-way stop (NB)	SB Left WB Right	-(-) -(-)	A(A) A(A)	[Not Mitigated]	A(A) A(A)	[Not Mitigated]

Note: Scenario 2 Access A is shared access between Lincoln Medical Office and Smoke Tree Resort.

The results of the Scenario 1 and 2 2020 peak hour analysis summarized in **Table 6** indicates that all intersections currently operate at an overall acceptable level of service (LOS D or better) with the exception of Mockingbird Lane/Lincoln Drive and Scottsdale Road/Lincoln Drive.

The intersection of **Mockingbird Lane and Lincoln Drive** is expected to operate with poor levels of service on the northbound and southbound approaches during both the AM and PM peak hours for opening year 2020. Due to the actuated coordinated nature of this signal, if a vehicle does not approach the northbound or southbound approach of the intersection, this phase will be skipped and the green time will be added to the eastbound and westbound green times. The northbound and southbound approaches of this intersection experience minimal traffic volumes during both the AM and PM peak hours, meaning that when they do approach the intersection, they must wait until the cycle starts again in order to pass through the intersection. If more vehicles utilize the intersection, this delay should decrease because the northbound and southbound green times will be utilized during more cycles throughout the peak hours. This will increase the delay on the eastbound and westbound approaches, however, these approaches are currently operating with maximum delays of 6.9 seconds per vehicle and 0.8 seconds per vehicle respectively, so increasing these delays will not adversely impact levels of service.

The intersection of **Scottsdale Road and Lincoln Drive** is expected to experience delay on the eastbound and westbound approaches during both the AM and PM peak hours of the opening year 2020. During the AM peak hour, it is recommended that the eastbound green time be extended from 30 seconds to 33 seconds and the westbound green time be extended from 123 seconds to 16 seconds. With these mitigation measures applied, it is expected that the eastbound delay would decrease from 57.1 seconds per vehicle to 54.3 seconds per vehicle and the westbound delay would decrease from 60.1 seconds per vehicle to 57.0 seconds per vehicle.

During the PM peak hour, it is recommended that the eastbound phase be increased from 30 seconds to 34 seconds and the westbound phase be increased from 13 seconds to 21 seconds. With these mitigation measures applied, it is anticipated that the eastbound delay will decrease from 59.0 seconds per vehicle to 54.3 seconds per

vehicle and the westbound delay will decrease from 71.5 seconds per vehicle to 55.2 seconds per vehicle, which is almost an acceptable level of service.

The signal timing proposed for the 2020 mitigated scenario was applied to the 2025 horizon year.

Table 7 – 2025 Peak Hour Analysis

ID	Intersection	Intersection Control	Approach/Movement	2025 LOS AM(PM)				
				No-Build	Scenario 1		Scenario 2	
					Build	Mitigated	Build	Mitigated
1	Mockingbird Ln & Lincoln Dr	Signal	NB	D(E)	D(E)	[Not Mitigated]	D(E)	[Not Mitigated]
			SB	E(E)	E(E)		E(E)	
			EB	A(A)	A(A)		A(A)	
			WB	A(A)	A(A)		A(A)	
			Overall	B(B)	B(B)		B(B)	
2	Quail Run Rd & Lincoln Dr	Signal	NB	B(B)	B(B)	[Not Mitigated]	B(B)	[Not Mitigated]
			SB	B(B)	B(B)		B(B)	
			EB	A(A)	A(A)		A(A)	
			WB	A(B)	A(B)		A(A)	
			Overall	A(A)	A(A)		A(A)	
3	Smoke Tree Drwy West & Lincoln Dr	1-way stop (NB)	NB Shared WB Left	C(C) A(A)	N/A	N/A	N/A	N/A
4	Smoke Tree Drwy East & Lincoln Dr	1-way stop (NB)	NB Shared WB Left	B(B) A(A)	N/A	N/A	N/A	N/A
5	Medical Drwy West & Lincoln Dr	1-way stop (NB)	NB Shared WB Left	B(C) A(A)	B(C) A(A)	[Not Mitigated]	N/A	N/A
6	Medical Drwy East & Lincoln Dr	1-way stop (NB)	NB Shared/Right WB Left	B(B) A(A)	B(B) A(A)	[Not Mitigated]	N/A	N/A
7	Apartment Drwy & Lincoln Dr	2-way Stop (NB/SB)	NB Shared	C(C)	C(C)	[Not Mitigated]	C(C)	[Not Mitigated]
			SB Left	C(C)	C(C)		C(C)	
			SB Right	B(B)	B(B)		B(B)	
			EB Left	A(A)	A(A)		A(A)	
			WB Left	A(A)	A(A)		A(A)	
8	AJ's Drwy & Lincoln Dr	2-way Stop (NB/SB)	NB Shared	B(B)	B(B)	[Not Mitigated]	B(B)	[Not Mitigated]
			SB Left	C(C)	C(C)		C(C)	
			SB Right	B(B)	B(B)		B(B)	
			EB Left	A(A)	A(A)		A(A)	
			WB Left	A(A)	A(A)		A(A)	
9	Scottsdale Rd & Lincoln Dr	Signal	NB	C(D)	D(D)	[Not Mitigated]	C(D)	[Not Mitigated]
			SB	D(D)	E(E)		D(D)	
			EB	E(E)	E(E)		D(D)	
			WB	E(E)	E(E)		D(D)	
			Overall	D(D)	D(E)		D(D)	D(D)
A	Access A & Lincoln Dr	1-way stop (WB)	NB Shared WB Left	-(-) -(-)	B(B) A(A)	[Not Mitigated]	B(B) A(A)	[Not Mitigated]
B	Quail Run Rd & Access B	1-way stop (NB)	SB Left WB Right	-(-) -(-)	A(A) A(A)	[Not Mitigated]	A(A) A(A)	[Not Mitigated]

Note: Scenario 2 Access A is shared access between Lincoln Medical Office and Smoke Tree Resort.

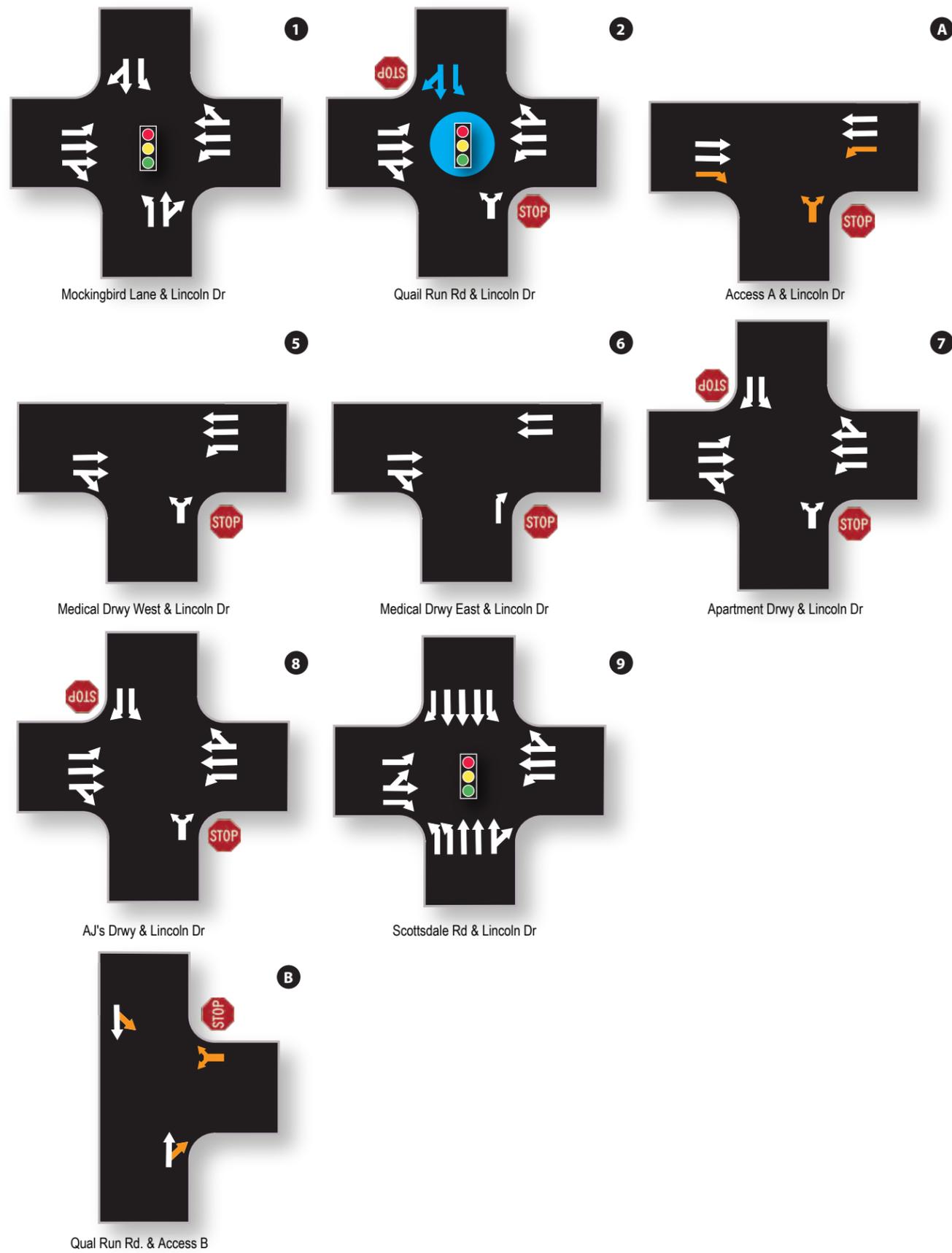
The results of the Scenario 1 and 2 2025 peak hour analysis summarized in **Table 7** indicates that all intersections currently operate at an overall acceptable level of service

(LOS D or better) with the exception of Mockingbird Lane/Lincoln Drive and Scottsdale Road/Lincoln Drive.

The intersection of **Mockingbird Lane and Lincoln Drive** is expected to operate with poor levels of service on the northbound and southbound approaches during both the AM and PM peak hours for horizon year 2025. Due to the actuated coordinated nature of this signal, if a vehicle does not approach the northbound or southbound approach of the intersection, this phase will be skipped and the green time will be added to the eastbound and westbound green times. The northbound and southbound approaches of this intersection experience minimal traffic volumes during both the AM and PM peak hours, meaning that when they do approach the intersection, they must wait until the cycle starts again in order to pass through the intersection. If more vehicles utilize the intersection, this delay should decrease because the northbound and southbound green times will be utilized during more cycles throughout the peak hours. This will increase the delay on the eastbound and westbound approaches, however, these approaches are currently operating with maximum delays of 8.2 seconds per vehicle and 1.0 seconds per vehicle respectively, so increasing these delays will not adversely impact levels of service.

The intersection of **Scottsdale Road and Lincoln Drive** is expected to experience delay on the southbound, eastbound and westbound approaches during both the AM and PM peak hours of the horizon year 2025. During both the AM and PM peak hours, it is recommended that the eastbound and westbound phasing change from split to protected phasing. During the AM peak hour, this mitigation measure should reduce the southbound approach delay from 63.9 seconds per vehicle to 51.6 seconds per vehicle, reduce the eastbound delay from 55.3 seconds per vehicle to 50.1 seconds per vehicle and reduce the westbound delay from 57.3 seconds per vehicle to 54.2 seconds per vehicle. During the PM peak hour, this mitigation measure should reduce the southbound approach delay from 73.6 seconds per vehicle to 53.5 seconds per vehicle, reduce the eastbound delay from 55.0 seconds per vehicle to 51.1 seconds per vehicle and reduce the westbound delay from 55.5 seconds per vehicle to 52.7 seconds per vehicle.

The proposed lane configurations are presented in **Figure 11**.



Thru or Turning Movement
 Traffic Signal Stop Sign
 NORTH
 Improvements by Ritz Carlton
 Improvements by Developer

Note: See figure 2 for approximate driveway distances discussed within the Site Access Section of the TIA.

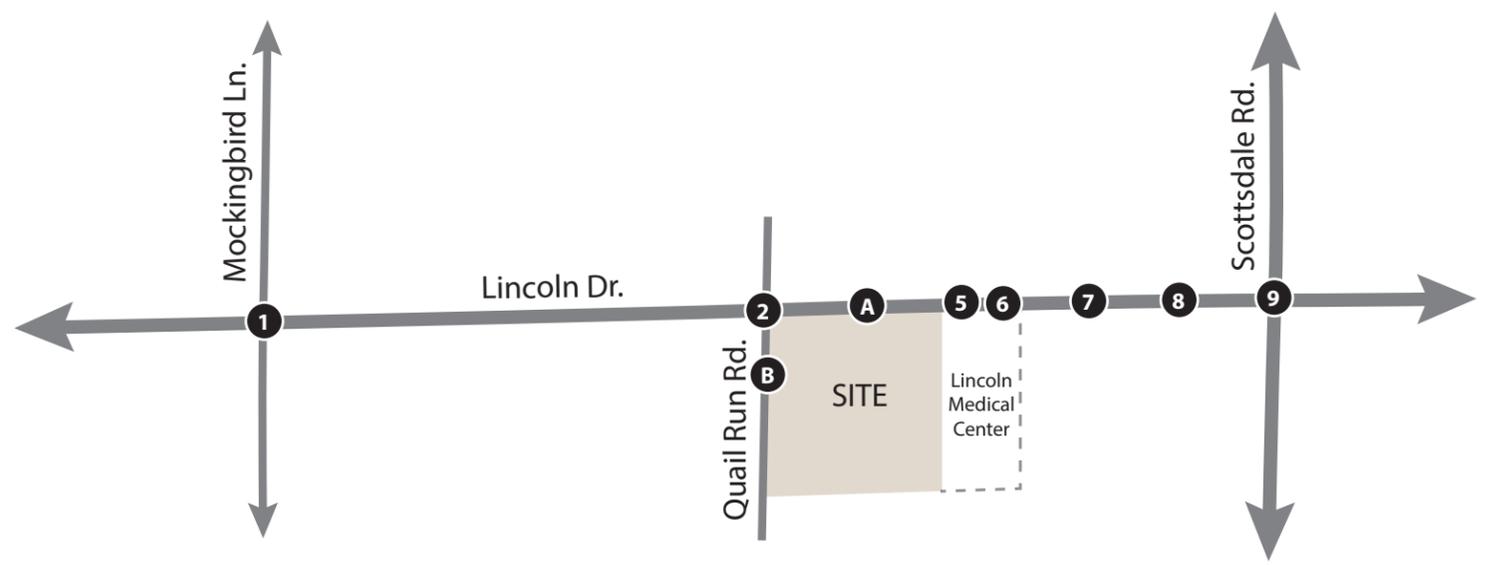
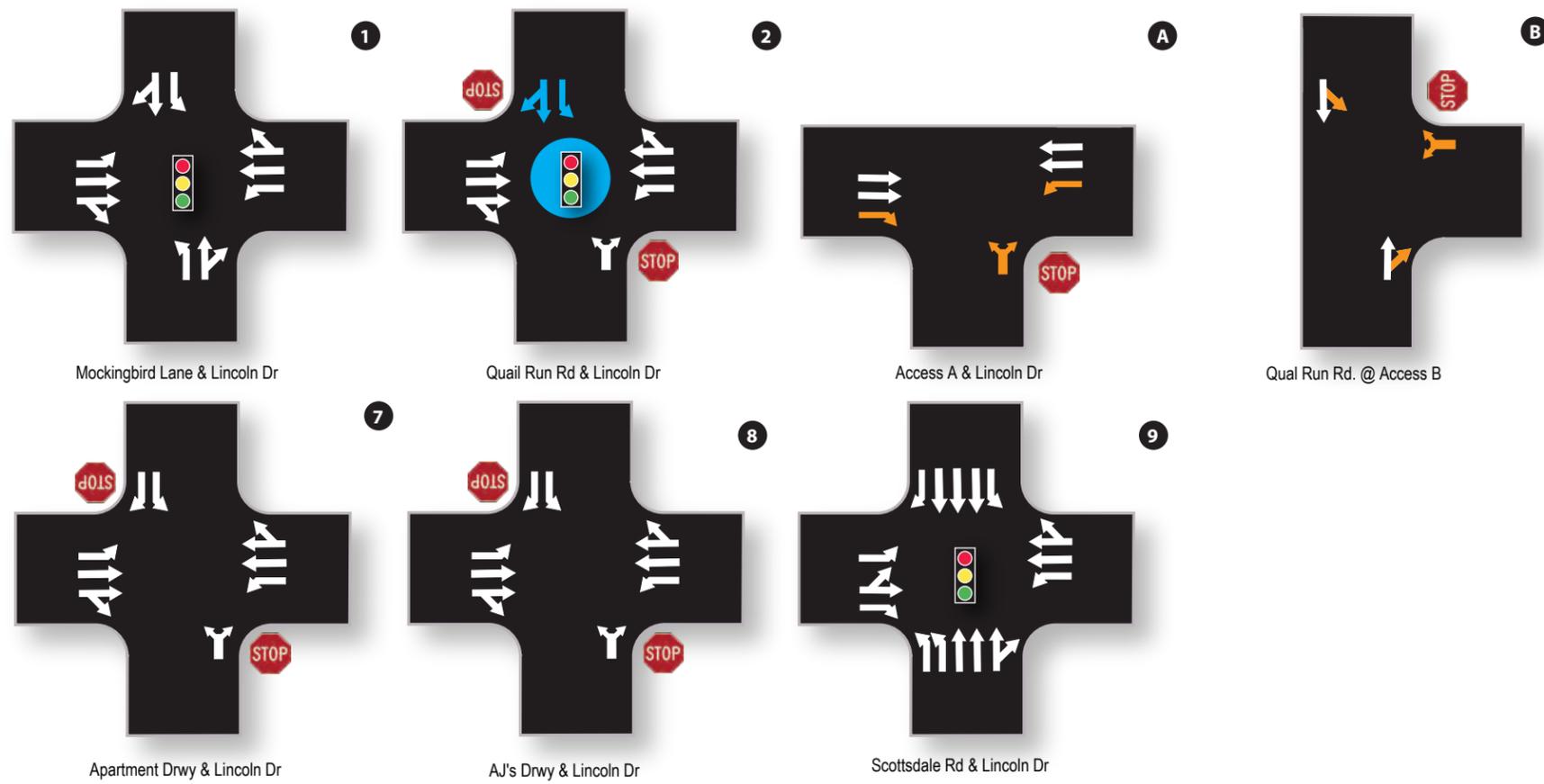


Figure 14: Scenario I - Proposed Lane Configurations and Traffic Controls



Thru or Turning Movement	NORTH
Traffic Signal	Stop Sign
Improvements by Ritz Carlton	
Improvements by Developer	

Note: See figure 2 for approximate driveway distances discussed within the Site Access Section of the TIA.

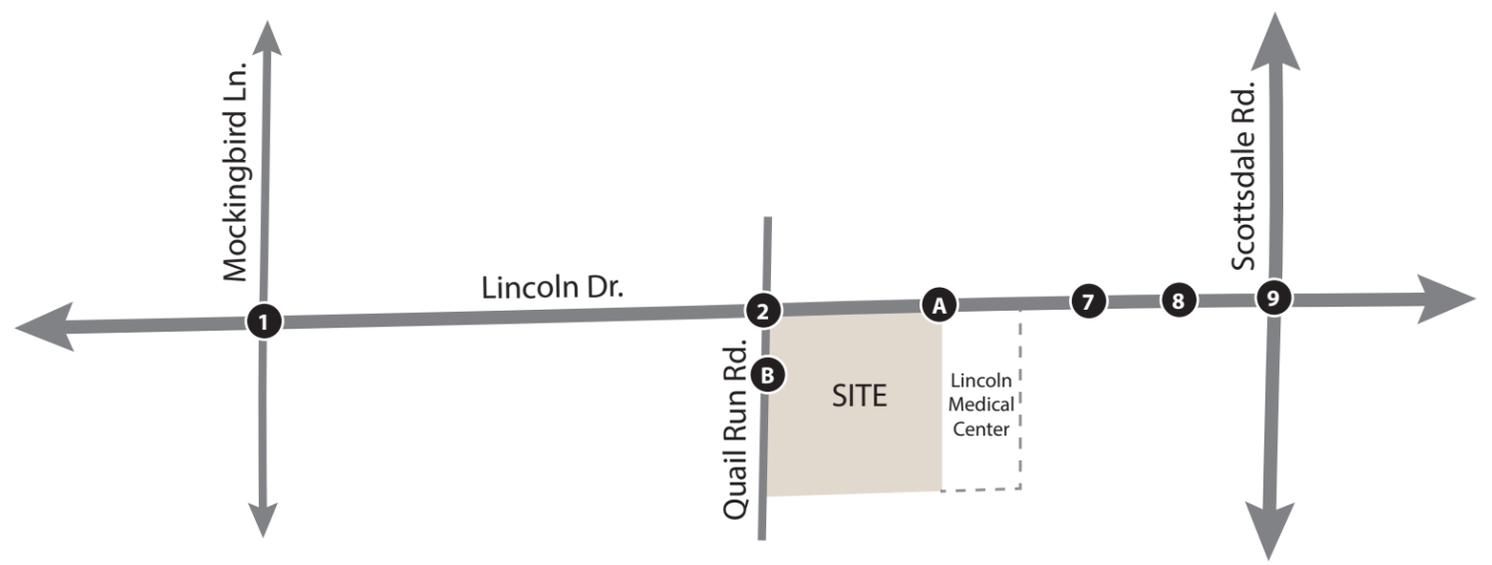


Figure 15: Scenario 2 - Proposed Lane Configurations and Traffic Controls

QUEUE LENGTH ANALYSIS

Adequate turn storage should be supplied on any approach where turn lanes are permitted and/or warranted. A queuing analysis was performed for all warranted/recommended and existing intersection turn lanes where site traffic is expected as well as left turn lanes adjacent to the site. According to the methodology documented in *A Policy on Geometric Design of Highways and Streets* (the AASHTO “Green Book”), the storage length for a turn lane is typically estimated as the length required to hold the average number of arriving vehicles per two minutes, where unsignalized, or per one-and-a half signal cycles, where signalized.¹ The formulas used for the calculations are shown below.

For signalized intersections, the storage length is determined by the following formula:

$$\text{Storage Length} = [2 \times (\text{veh/hr}) / (\text{cycles/hr})] \times 25 \text{ feet}$$

For unsignalized intersections, the storage length is determined by the following formula:

$$\text{Storage Length} = [2 \times (\text{veh/hr}) / (30 \text{ periods/hr})] \times 25 \text{ feet}$$

Using the traffic volumes and lane configurations projected for the 2025 horizon year, the resulting turn lane storage for turn movements affiliated with the site using AASHTO guidelines were calculated with a 130-second cycle length and are summarized in **Table 8**. Calculations for the queue storage length recommendations are provided in **Appendix I**.

¹ The American Association of Highway and Transportation Officials on pages 714-715 of its publication, *Geometric Design of Highways and Streets* (“AASHTO Green Book”), indicates that storage length for a turn lane, exclusive of taper, “should usually be based on one and one-half to two times the average number of vehicles that would store per cycle” at a signalized intersection.

Table 8 – Queue Storage Lengths

ID	Intersection	Scenario	Intersection Control	Movement	Queue Storage			
					Existing ⁽¹⁾	AASHTO	95 th Percentile	Recommended
1	Mockingbird Lane & Lincoln Dr	⁽⁶⁾ S1 & S2	Signalized	NB Left	85'	25'	25'	85'
				SB Left	130'	150'	100'	130'
				EB Left	145'	450'	200'	⁽⁴⁾ 145'
				WB Left	100'	50'	45'	100'
2	Quail Run Rd & Lincoln Dr	S1	Signalized	EB Left	-	200'	165'	⁽⁵⁾ 165'
				WB Left	-	25'	25'	150'
				WB Right	-	50'	25'	150'
		S2		EB Left	-	200'	165'	⁽⁵⁾ 165'
				WB Left	-	25'	25'	150'
				WB Right	-	50'	25'	200'
9	Scottsdale Rd & Lincoln Dr	⁽⁶⁾ S1 & S2	Signalized	NB Left	⁽²⁾ 550'	⁽²⁾ 750'	⁽²⁾ 355'	⁽²⁾ 550'
				SB Left	185'	125'	140'	185'
				EB Left	175'	900'	450'	⁽⁴⁾ 175'
				WB Left	90'	125'	105'	105'
				SB Right	315'	1075'	340'	340'
				EB Right	175'	850'	600'	⁽⁴⁾ 175'
				A	Access A & Lincoln Drive	S1	1-way stop (NB)	WB Left
EB Right	-	25'	0'					75'
S2	WB Left	-	25'			0'		50'
	EB Right	-	25'			0'		75'

(1) Measured from stop bar to end of storage length

(2) Dual left turn lanes. Queue storage includes total storage length of both lanes

(3) Max storage length recommended for signalized intersection

(4) Extending this turn will interfere with left turns into AJ's Fine Foods driveway

(5) Not the responsibility of the developer

(6) The volumes are the same in both scenarios at this intersection.

According to the CivTech study done for the Ritz Carlton, the newly signalized intersection of Quail Run Road and Lincoln Drive will have eastbound/westbound left turn lanes and a westbound right turn lane striped with 150 feet of storage each. The recommended storage lengths in **Table 8** are provided for horizon year 2025 using the total traffic projections.

The westbound left turn lane proposed at Smoke Tree Access A on Lincoln Drive has previously been discussed with Kimley Horn as well as the Town of Paradise Valley. It was decided that a maximum of 50 feet with a 90 foot taper could be provided without interference with existing turn lanes or surrounding development traffic. As summarized in the table, the same amount of queue storage will be required for both scenarios at the Smoke Tree access on Lincoln Drive.

For both scenario 1 and scenario 2, Smoke Tree Resort is requesting full access. Both scenarios require the same amount of queue storage. The Town of Paradise Valley has stated that an eastbound right turn deceleration lane is required at either driveway. Using AASHTO methodology only 25 feet of storage is required, however, 50 feet is the minimum that should be recommended per AASHTO standards with a 90 foot taper. A minimum of 75 feet of storage is recommended for the right turn deceleration lane, however, if interference with other turn lanes is expected with the 75 foot storage length, 50 feet would be an acceptable storage length.

SIGHT DISTANCE ANALYSIS

Adequate sight distance must be provided at intersections and site access driveways to allow safe turning movements. There must be sufficient unobstructed sight distance along both approaches of a street/driveway intersection and across their included corners to allow operators of vehicles to see each other in time to prevent a collision.

The Town of Paradise Valley maintains sight distance requirements within their City Code, standard details and development services guidelines. The Town of Paradise Valley measures sight distance using AASHTO methodology except that the sight triangle from the driveway is measured from the center of the egress lane, 14.5 feet back from the curb return line. Sight distance calculations according to AASHTO guidelines are summarized in **Table 9**.

Table 9 – AASHTO Sight Distance Requirements

Roadway	Posted Speed Limit (mph)	Design Speed (mph)	Sight Distance Along Roadway		
			Left of Driveway (Case B2/B3)	Right of Driveway (Case B1)	On Major Road (Case F)
Access A & Lincoln Dr	-	30	265'	310'	225'
Quail Run Rd & Access B	40	45	400'	465'	335'

There are no existing obstructions to sight distance within the project intersection or along the included corners of the proposed intersection. Adequate site distance must be provided at the intersections to allow safe left and right turning movements from the development. Recommended distances for these movements can be found in the table above.

The contractor should ensure that sight visibility is provided at all proposed intersections according to the distances shown in **Table 9** and that sight triangles at public intersections are maintained according to the Town Code. All vegetation and trees should be maintained according to Town of Paradise Valley regulations. Sight distance worksheets have been included within **Appendix J**.

CONCLUSIONS

The following conclusions have been documented in this study.

General

- The proposed development is anticipated to generate approximately 674 external weekday daily trips, with 48 external trips occurring in the AM peak hour and 69 external trips occurring in the PM peak hour.

Existing Conditions

- The results of the existing conditions analysis indicates that all intersections currently operate at an overall acceptable level of service (LOS D or better). The following intersections include one or more approaches which currently operate with poor levels of service.
 - The intersection of **Mockingbird Lane and Lincoln Drive** currently operates with poor levels of service on the northbound and southbound approaches during both the AM and PM peak hours. Due to the actuated coordinated nature of this signal, if a vehicle does not approach the northbound or southbound approach of the intersection, this phase will be skipped and the green time will be added to the eastbound and westbound green times. The northbound and southbound approaches of this intersection experience minimal traffic volumes during both the AM and PM peak hours, meaning that when they do approach the intersection, they must wait until the cycle starts again in order to pass through the intersection. If more vehicles utilize the intersection, this delay should decrease because the northbound and southbound green times will be utilized during more cycles throughout the peak hours. This will increase the delay on the eastbound and westbound approaches, however, these approaches are currently operating with maximum delays of 6.1 seconds per vehicle and 10.5 seconds per vehicle respectively, so increasing these delays will not adversely impact levels of service.
 - The intersection of **Scottsdale Road and Lincoln Drive** currently experiences delay on the eastbound and westbound approaches during both the AM and PM peak hours. During the AM peak hour, it is recommended that the eastbound green time be extended from 30 seconds to 33 seconds and the westbound green time be extended from 13 seconds to 17 seconds. This mitigation measure is anticipated to decrease the eastbound delay from 56.3 seconds per vehicle to 53.9 seconds per vehicle. The westbound approach remains unchanged, in order to mitigate this delay, the initial green time could be changed to allow for more vehicles to pass through the intersection without the light changing from green to yellow.

- During the PM peak hour, it is recommended that the eastbound phase be extended from 30 seconds to 33 seconds and the westbound phase be increased from 13 seconds to 21 seconds. With these mitigation measures applied, it is expected that the eastbound delay will decrease from 57.3 seconds per vehicle to 54.2 seconds per vehicle and the westbound delay will decrease from 70.1 seconds per vehicle to 63.0 seconds per vehicle.

Opening Year 2020

- The results of the Scenario 1 and 2 2020 peak hour analysis summarized in **Table 6** indicates that all intersections currently operate at an overall acceptable level of service (LOS D or better) with the exception of Mockingbird Lane/Lincoln Drive and Scottsdale Road/Lincoln Drive.
 - The intersection of **Mockingbird Lane and Lincoln Drive** is expected to operate with poor levels of service on the northbound and southbound approaches during both the AM and PM peak hours for opening year 2020. Due to the actuated coordinated nature of this signal, if a vehicle does not approach the northbound or southbound approach of the intersection, this phase will be skipped and the green time will be added to the eastbound and westbound green times. The northbound and southbound approaches of this intersection experience minimal traffic volumes during both the AM and PM peak hours, meaning that when they do approach the intersection, they must wait until the cycle starts again in order to pass through the intersection. If more vehicles utilize the intersection, this delay should decrease because the northbound and southbound green times will be utilized during more cycles throughout the peak hours. This will increase the delay on the eastbound and westbound approaches, however, these approaches are currently operating with maximum delays of 6.9 seconds per vehicle and 0.8 seconds per vehicle respectively, so increasing these delays will not adversely impact levels of service.
 - The intersection of **Scottsdale Road and Lincoln Drive** is expected to experience delay on the eastbound and westbound approaches during both the AM and PM peak hours of the opening year 2020. During the AM peak hour, it is recommended that the eastbound green time be extended from 30 seconds to 33 seconds and the westbound green time be extended from 123 seconds to 16 seconds. With these mitigation measures applied, it is expected that the eastbound delay would decrease from 57.1 seconds per vehicle to 54.3 seconds per vehicle and the westbound delay would decrease from 60.1 seconds per vehicle to 57.0 seconds per vehicle.
 - During the PM peak hour, it is recommended that the eastbound phase be increased from 30 seconds to 34 seconds and the

westbound phase be increased from 13 seconds to 21 seconds. With these mitigation measures applied, it is anticipated that the eastbound delay will decrease from 59.0 seconds per vehicle to 54.3 seconds per vehicle and the westbound delay will decrease from 71.5 seconds per vehicle to 55.2 seconds per vehicle, which is almost an acceptable level of service.

Horizon year 2025

- The results of the Scenario 1 and 2 2025 peak hour analysis summarized in **Table 7** indicates that all intersections currently operate at an overall acceptable level of service (LOS D or better) with the exception of Mockingbird Lane/Lincoln Drive and Scottsdale Road/Lincoln Drive.
 - The intersection of **Mockingbird Lane and Lincoln Drive** is expected to operate with poor levels of service on the northbound and southbound approaches during both the AM and PM peak hours for horizon year 2025. Due to the actuated coordinated nature of this signal, if a vehicle does not approach the northbound or southbound approach of the intersection, this phase will be skipped and the green time will be added to the eastbound and westbound green times. The northbound and southbound approaches of this intersection experience minimal traffic volumes during both the AM and PM peak hours, meaning that when they do approach the intersection, they must wait until the cycle starts again in order to pass through the intersection. If more vehicles utilize the intersection, this delay should decrease because the northbound and southbound green times will be utilized during more cycles throughout the peak hours. This will increase the delay on the eastbound and westbound approaches, however, these approaches are currently operating with maximum delays of 8.2 seconds per vehicle and 1.0 seconds per vehicle respectively, so increasing these delays will not adversely impact levels of service.
 - The intersection of **Scottsdale Road and Lincoln Drive** is expected to experience delay on the southbound, eastbound and westbound approaches during both the AM and PM peak hours of the horizon year 2025. During both the AM and PM peak hours, it is recommended that the eastbound and westbound phasing change from split to protected phasing. During the AM peak hour, this mitigation measure should reduce the southbound approach delay from 63.9 seconds per vehicle to 51.6 seconds per vehicle, reduce the eastbound delay from 55.3 seconds per vehicle to 50.1 seconds per vehicle and reduce the westbound delay from 57.3 seconds per vehicle to 54.2 seconds per vehicle. During the PM peak hour, this mitigation measure should reduce the southbound approach delay from 73.6 seconds per vehicle to 53.5 seconds per vehicle, reduce the eastbound delay from 55.0 seconds per vehicle to 51.1 seconds per vehicle and reduce the westbound delay from 55.5 seconds per vehicle to 52.7 seconds per vehicle.

Queue Storage and Sight Distance

- According to the CivTech study done for the Ritz Carlton, the newly signalized intersection of Quail Run Road and Lincoln Drive will have eastbound/westbound left turn lanes and a westbound right turn lane striped with 150 feet of storage each. While 150 feet is being proposed due to the current development agreement with Five Star Development for the Ritz Carlton, less is required to meet the recommended AASHTO length. The recommended storage lengths are provided for horizon year 2025 using the total traffic projections.
 - The westbound left turn lane proposed at Smoke Tree Access A on Lincoln Drive has previously been discussed with the Town of Paradise Valley. It was decided that a maximum of 50 feet of queue with a 90 foot taper could be provided without interference with existing turn lanes or surrounding development traffic. As summarized in the table, the same amount of queue storage will be required for both scenarios at the Smoke Tree access on Lincoln Drive.
 - For both scenario 1 and scenario 2, Smoke Tree Resort is requesting full access. Both scenarios require the same amount of queue storage. The Town of Paradise Valley has stated that an eastbound right turn deceleration lane is required at either driveway option. Using AASHTO methodology only 25 feet of storage is required, however, 50 feet is the minimum that should be recommended per AASHTO standards with a 90 foot taper. A minimum of 75 feet of storage is recommended for the right turn deceleration lane, however, if interference with other turn lanes is expected with the 75 foot storage length, 50 feet would be an acceptable storage length.
- There are no existing obstructions to sight distance within the project intersections or along the included corners of the proposed intersection. Adequate site distance must be provided at the intersections to allow safe left and right turning movements from the development
 - The contractor should ensure that sight visibility is provided at all proposed intersections according to the distances and that sight triangles at public intersections are maintained according to the Town Code. All vegetation and trees should be maintained according to Town of Paradise Valley regulations.

LIST OF REFERENCES

Highway Capacity Manual. Transportation Research Board, Washington, D.C., 2000.

Manual on Uniform Traffic Control Devices. U.S. Department of Transportation, Federal Highways Administration, Washington, D.C., 2009.

Roadway Design Manual, Maricopa County Department of Transportation, Phoenix, Arizona, Revised April 2004.

Trip Generation Manual, 10th Edition, Institute of Transportation Engineers, Washington, D.C., 2016.

Trip Generation Handbook, 3rd Edition, Institute of Transportation Engineers, Washington, D.C., 2016.

Ritz Carlton Master Plan, Paradise Valley Traffic Impact Analysis (TIA), CivTech, Scottsdale, AZ, March 2016.

Lincoln Medical Center, Paradise Valley Traffic Impact Analysis (TIA), CivTech, Scottsdale, AZ, November 2018.

TECHNICAL APPENDIX

APPENDIX A:	REVIEW COMMENTS AND RESPONSES
APPENDIX B:	EXISTING TRAFFIC COUNTS
APPENDIX C:	EXISTING PEAK HOUR ANALYSIS
APPENDIX D:	TRIP GENERATION
APPENDIX E:	TRIP DISTRIBUTION
APPENDIX F:	BACKGROUND TRAFFIC
APPENDIX G:	SCENARIO 1 & 2 2020 PEAK HOUR ANALYSIS
APPENDIX H:	SCENARIO 1 & 2 2025 PEAK HOUR ANALYSIS
APPENDIX I:	QUEUE STORAGE ANALYSIS
APPENDIX J:	SIGHT DISTANCE ANALYSIS

APPENDIX A

REVIEW COMMENTS AND RESPONSES

**Smoke Tree Resort
3rd Submittal**

CivTech, Inc.

Review Comments & Responses

Disposition Codes: (1) Will Comply (2) Will Evaluate (3) Delete Comment (4) Defer to Consultant/Owner

Reviewer Name, Agency: **Kim Carroll, Kimley Horn on behalf of Town of Paradise Valley**

Item	Review Comment	(Code) & Response
1.	Add spacing between driveways and signalized intersections in Figure 2	(1) Dimensions between existing driveways and signalized intersections has been added.
2.	Page 18, Site Access - provide spacing of access points from the adjacent signalized itnersecections and driveways for each scenario	(1) Text was added to the TIA indicating the location of the two proposed site access points for both scenarios presented.
3.	Site plan and Quail Run Road proposed alignment creates an intersection B that is appears to be close to the intersection of Lincoln/Quail Run. It is our understanding that Quail Run Road will provide connectivity to future developments as well as the existing parcels/community to the south. A standard driveway to/from Smoke Tree is preferred rather than realignment of Quail Run Road.	(3) The architect for the project has updated the site plan to show the original alignment of Quail Run Road.
4.	Trip Generation, Page 20 - combines the resort villas (20 keys) with the hotel/resort land use calculation. These resort villas are like what was previously submitted and detached from the hotel/resort. These should be separated as previously calculated or provide support to combine the units into hotel/resort	(3) The for-sale units are no longer included in the development plan. All units will be hotel units, the resort villas will just be slightly larger and detached from the main hotel building.
5.	Trip Generation, Page 20 - the proposed development description discusses a market. The layout of the market on the site plan and location should be calculated out separately (like the restaurant) as it will attract non-resort trips.	(2) Information provided by the client indicates that the main purpose of the market is to provide services to the guests of the resort. The market will be more of a small shop to purchase items the patron may have forgotten, or quick packaged snacks. While it will not be restricted to only guests of the hotel, it is unlikely that more than 1 or 2 trips per day will be generated by the general public. This land use has not be included in the TIA and analysis based on the description of the use as provided by the Client.
6.	Queue length analysis on Page 38 - unsignalized equation is 1, 1.5 to 2 times the calculation. See previous comments for calculation and source of calculation. Please provide support in the report to use 1.0 calculation x queue length equation for the unsignalized driveways.	(2) Equations used to calcuate queue storage at both signalized and unsignalized intersections used a factor of 2. The equations presented in the TIA now reflect the equations used for calculations.
7.	Review of the Synchro HCS output shows a multi-stage maneuver for the northbound traffic exiting the Smoke Tree Access points in either scenario. The median is not wide enough to allow for a two-stage maneuver. We recommend the Synchro HCS output to be revised for a single maneuver.	(3) The Smoke Tree access on Lincoln Drive was not modeled as a two-stage left turn in either scenario 1 or scenario 2. The AJ's Driveway and Apartment Driveway, located east of Smoke Tree, were modeled with two-stage left turns as it was observed that the vehicles were utilizing the exisiting two-way-left-turn lane as a refuge during peak hour traffic.



**Smoke Tree Resort
March 1, 2019 Review**

CivTech, Inc.

Review Comments & Responses

Disposition Codes: (1) Will Comply (2) Will Evaluate (3) Delete Comment (4) Defer to Consultant/Owner

Reviewer Name, Agency: **Kim Carroll, Kimley Horn/Town of Paradise Valley**

Item	Review Comment	(Code) & Response
1.	As a general note, the Town should be aware that the TIA does not account for shared access between Smoke Tree Resort and Lincoln Medical	(3) In the latest version of the TIA, two scenarios are considered. One with shared access with Lincoln Medical and the other with exclusive Smoke Tree access
2.	As an observation, the land use data has reduced from 150 rooms, 30 units and 3500 square foot restaurante to 135 rooms, 30 units and 3500 square foot restaurant	(3) The unit count has changed since the last submittal, this comment should be disregarded
3.	Page 14, full access (B) and Figure 4 is being referenced as 80 feet from property line. The location is being reviewed with final resolution pending.	(3) The reference to the location of the full access has been removed. If shared access is granted, the access will be very close to the property line, if not, then exclusive access will be somewehre along the Smoke Tree frontage.
4.	Figure 6 (Site Generated Traffic) shows 1 vehicle entering/exiting via Quail Run Road. Two access points are proposed (A and C). Wondering why there is so little to no volume using Quail Run Road considering Quail Run Road is signalized and ther are two points of Access with parking fronting Qauil Run	(3) More traffic has been added to Quail Run, as it will now be the main access to Smoke Tree Resort. Additionally, only one access will be provided on Quail Run Road.
5.	General comment no action required. Volumes for full access Smoke Tree resort entrance has slightly increased from the original volumes received. See clip for comparison and results in little difference	



**Smoke Tree Access Exhibits
November 1, 2018 Review**

CivTech, Inc.

Review Comments & Responses

Disposition Codes: (1) Will Comply (2) Will Evaluate (3) Delete Comment (4) Defer to Consultant/Owner

Reviewer Name, Agency: **Kim Carroll, Kimley Horn/Town of Paradise Valley**

Item	Review Comment	(Code) & Response
1.	While the day collected falls on a typical weekday, the data was collected at a time of the year when volumes drop around the Maricopa Region because school is no longer in session and winter residents have left the region. For this reason, we recommend that existing traffic volumes be seasonally adjusted and traffic analysis be revised based on these adjustments and comments that follow.	(1) A seasonal adjustment factor was utilized in order to provide a more typical pattern of traffic. The City of Scottsdale recommends a seasonal adjustment factor of 1.03 for traffic counts that have been collected during the month of May. This adjustment factor was utilized for all existing traffic counts
2.	Through coordination with TOPV staff we understand the Smoke Tree Resort is proposed to develop 150 rooms and 30 apartments. The trip generation analysis conducted was based on 130 rooms and 20 apartments. We recommend the trip generation be updated to match the proposed development improvements.	(3) The number of units provided by the Smoke Tree Resort has changed to 121 rental units with a 3,500 SF restaurant. This is reflected in the updated TIA.
3.	Smoke Tree Resort analysis was based on ITE Land Use Code (LUC) 330. The number of rooms proposed for development seem low and inconsistent for a resort hotel. The number of data points and size of the independent variable more closely align with the Hotel LUC 310, which has higher trip generation rate than resort hotel. Please provide additional support that would classify Smoke Tree as a resort (LUC 330) as opposed to a hotel (LUC 310).	(1) A blended rate was utilized to better represent Smoke Tree Resort. The weighted averages from LUC 330 and the Fitted Curves from LUC 310 were averaged and then used to estimate trips generated by Smoke Tree Resort.
4.	Smoke Tree Resort utilized equations as opposed to average rates. KHA went through the ITE Trip Generation Handbook process presented in Figure 4.2 assuming proposed number of units for resort hotel (LUC 330).	(1) The weighted averaged from LUC 330 were utilized when finding the blended rates for the new Smoke Tree trip generation.
5.	A proposed growth of 1.125 was utilized through year 2025. Please provide background support on for the growth rate being utilized.	(1) Background support justifying the growth rates utilized has been provided in Appendix F of the TIA.
6.	The storage lengths will need to be updated based on the previous comments.	(1) Storage lengths will be updated per previous comments



**Smoke Tree Access Exhibits
November 1, 2018 Review**

CivTech, Inc.

Review Comments & Responses

Disposition Codes: (1) Will Comply (2) Will Evaluate (3) Delete Comment (4) Defer to Consultant/Owner

Reviewer Name, Agency: **Kim Carroll, Kimley Horn/Town of Paradise Valley**

Item	Review Comment	(Code) & Response
7.	<p>AASHTO A Policy on Geometric Design for Highways and Streets was utilized to calculate the storage length requirements. Per AASHTO “At unsignalized intersection, the storage lengths should be determined by an intersection traffic analysis based on the number of turning vehicles likely to arrive in an average two-minute period within the peak hour. Space for at least two passenger vehicles should be provided.” AASHTO further recommends using the Transportation Research Board (TRB) Access Control Manual. Based on this review, the storage length calculation[1] is summarized as:</p> <p>CivTech used an N value of 60 minutes per hour rather than 30 cycles per hour. One could argue the two-minute period. The two-minute period is a function of opposing volumes and the time necessary to make the left turn maneuver. Considering the opposing volumes on Lincoln Drive, we recommend that no less than two-minute period be utilized. For this reason, the storage lengths for each left turn lane should be updated. Furthermore, based on AASHTO, the minimum storage length shall be 50 feet (not 25 foot) to accommodate at least two passenger vehicles.</p>	
8.	<p>Posted speed limit of Lincoln Drive within the project limits is 40 MPH. Based on the City of Scottsdale’s, Design Standards & Policies Manual, 2018 and Standard Detail 2225 (provided below) an opening taper of 90 feet minimum should be provided at median break locations.</p>	<p>(1) Design recommendations for the westbound left turn lane at the Smoke Tree access on Lincoln Drive have been provided in the TIA</p>



**Smoke Tree Access Exhibits
November 1, 2018 Review**

CivTech, Inc.

Review Comments & Responses

Disposition Codes: (1) Will Comply (2) Will Evaluate (3) Delete Comment (4) Defer to Consultant/Owner

Reviewer Name, Agency: **Kim Carroll, Kimley Horn/Town of Paradise Valley**

Item	Review Comment	(Code) & Response
9.	Based on the comments presented above, the access points to Lincoln Medical under all options should be restricted to right in/right out only movements. The spacing between the driveways coupled with the eastbound stacking do not provide a feasible option for maintaining left turn maneuvers.	(3) Lincoln Medical driveways are no longer being evaluated in this study.
10.	Option 3 presents right in/right out only with U-turns being made at the proposed median break locations at Quail Run and the Lincoln Apartments access on the east end. The width of Lincoln Drive will not provide the width necessary to safely make a U-turn maneuvers. Ideally spacing the access points to accommodate the volumes and lane geometry will provide a safer option. Sharing of access between parcels would also provide access opportunities for the adjacent parcels. In this case, Lincoln Medical could benefit from a shared access with Smoke Tree Resort. Currently today, there is an opening on-site that could be utilized as cross access between the parcels.	(3) Full access on Lincoln Drive and Quail Run Road will be provided as this was agreed upon by CivTech, Kimley Horn and the Town of Paradise Valley.
11.	Spacing between Quail Run and Lincoln Apartments access on the east end is approximately 725 feet. Ideally, per TRB Access Control Manual, 660 feet spacing is preferred for full access (left in/left out/right in/right out) median breaks. In this case, the spacing is not available. As shown in Option 2, consider moving the Smoke Tree full access, a minimum of 365 feet west of the Lincoln Apartment access. This spacing will maximize the spacing between Quail Run and Lincoln Apartments access and will accommodate the minimum geometry necessary to accommodate the estimated left turn volumes. Placement will also fall west of the observed eastbound queues at Scottsdale Road.	(3) The final location of the Smoke Tree access on Lincoln Drive has not been decided upon.



**Smoke Tree Resort
2ns Submittal**

CivTech, Inc.

Review Comments & Responses

Disposition Codes: (1) Will Comply (2) Will Evaluate (3) Delete Comment (4) Defer to Consultant/Owner

Reviewer Name, Agency: **Paul Mood, Town of Paradise Valley**

Item	Review Comment	(Code) & Response
1.	Applicant shall assume staff's recommendation for access onto Lincoln Drive which includes 65 feet of right-of-way, eliminated both existing driveways and adds a right turn deceleration lane and shared use driveway with the Lincoln Medical Plaza approximately 80 feet west of the eastern property line. The TIA should be updated accordingly	(1) The analysis and report text have been updated to reflect the change in access from the two existing driveways on Lincoln Drive to a single, full movement, shared driveway with Lincoln Medical Center. However, Lincoln Medical site traffic was not added to this shared driveway, but instead kept at their two existing driveways, per the instruction of the Town of Paradise Valley.
2.	A cross access easement with the Lincoln Medical Plaza shall be required	(2) Cross access may be included in the site design, but for the purpose of this study, Lincoln Medical site generated traffic was not assumed to be using the shared access, but instead kept their two original driveways.
3.	Update existing speed limit on Lincoln Drive from 35 mph to 40 mph in existing conditions and sight distance analysis sections	(1) Speed limit for Lincoln Drive has been updated from 35 mph to 40 mph

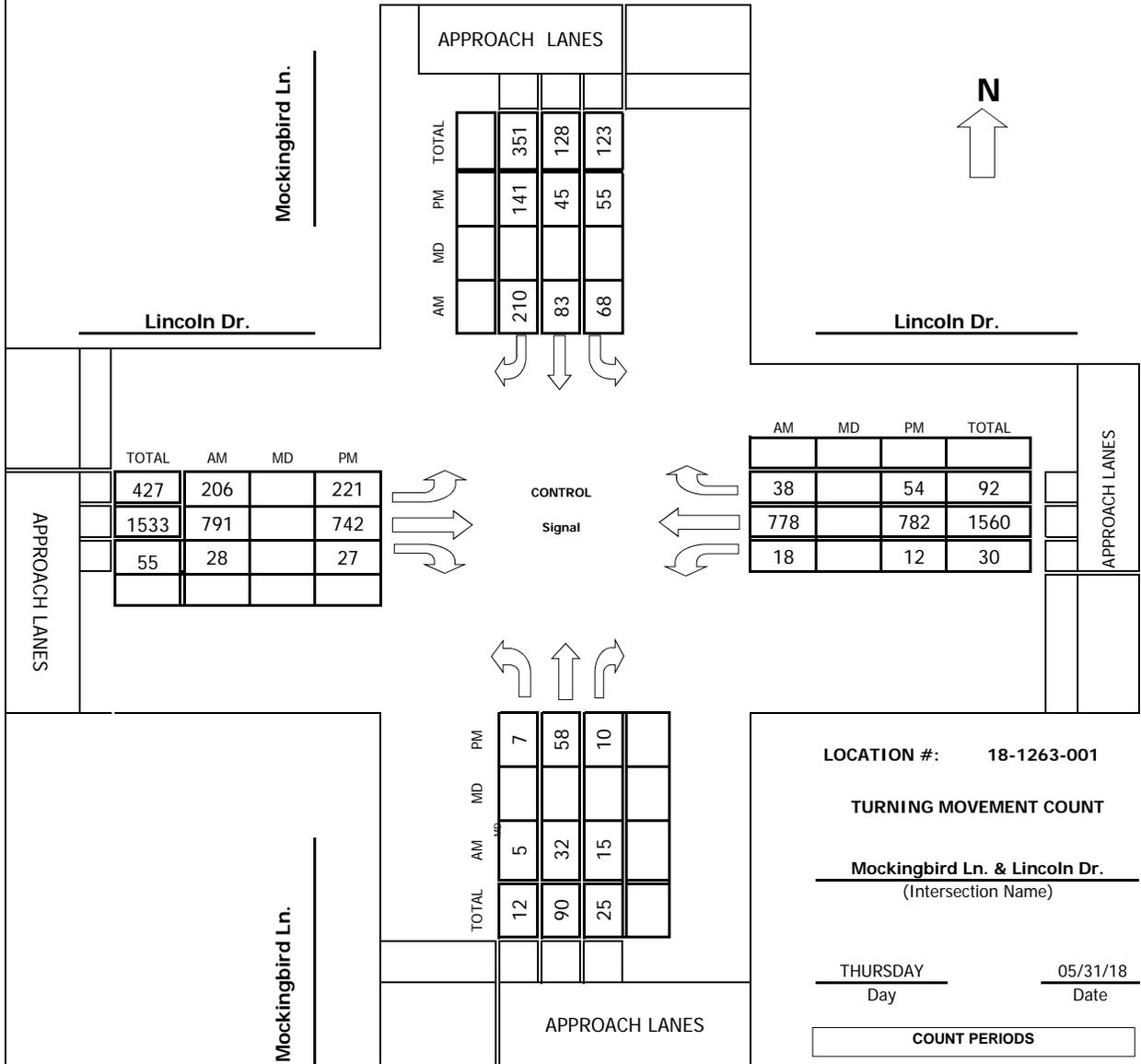


APPENDIX B

EXISTING TRAFFIC COUNTS

Project #: 18-1263-001

TMC SUMMARY OF Mockingbird Ln. & Lincoln Dr.



TOTAL	AM	MD	PM
427	206		221
1533	791		742
55	28		27

AM	MD	PM	TOTAL
38		54	92
778		782	1560
18		12	30

TOTAL	AM	MD	PM
12	5		7
90	32		58
25	15		10

LOCATION #: 18-1263-001

TURNING MOVEMENT COUNT

Mockingbird Ln. & Lincoln Dr.
 (Intersection Name)

THURSDAY 05/31/18
 Day Date

COUNT PERIODS		
AM	700AM	- 900AM
NOON	-	-
PM	400PM	- 600PM

AM PEAK HOUR 745 AM
 NOON PEAK HOUR _____
 PM PEAK HOUR 430 PM

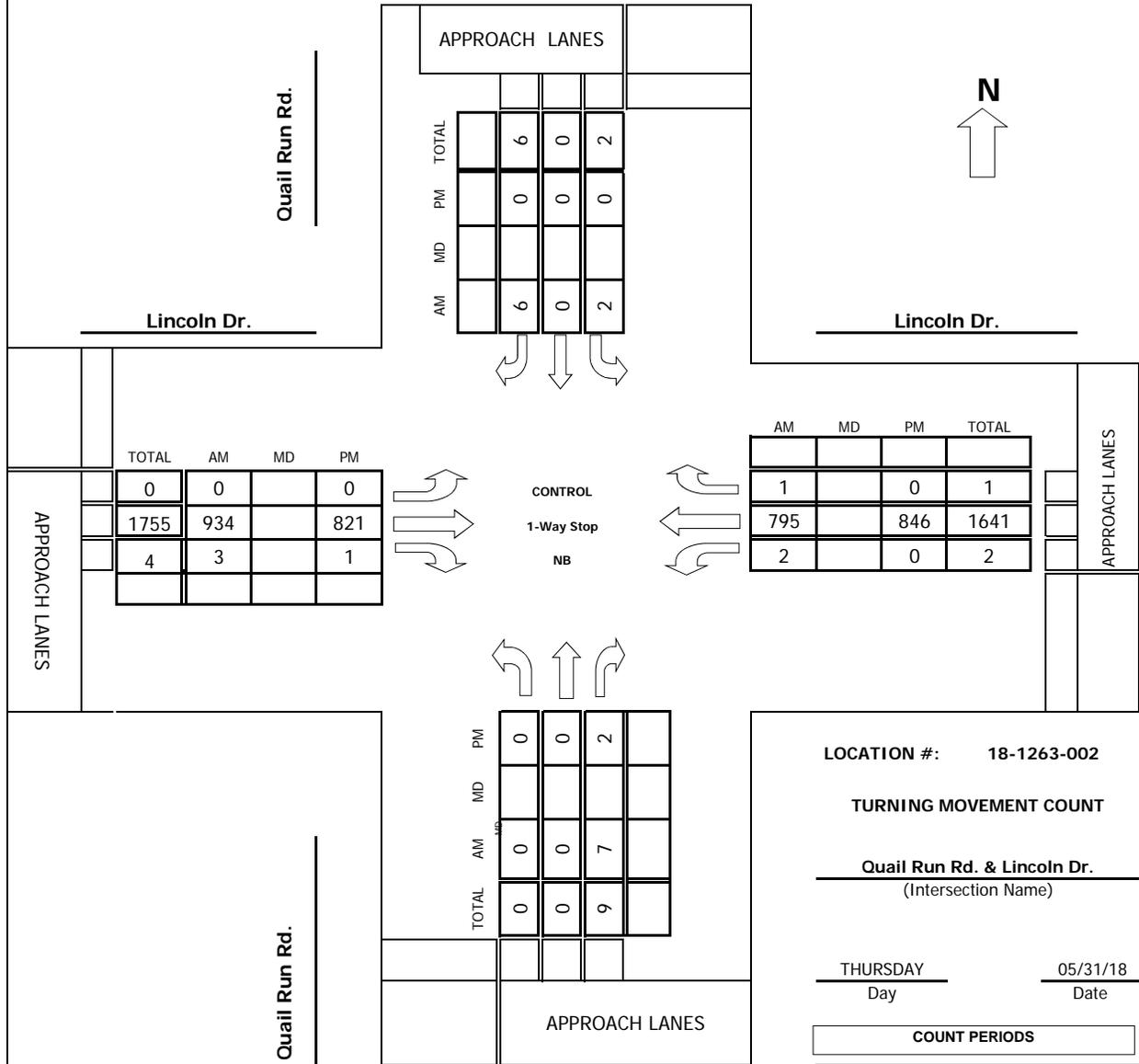
Intersection Turning Movement

Prepared by:



Project #: 18-1263-002

TMC SUMMARY OF Quail Run Rd. & Lincoln Dr.



TOTAL	AM	MD	PM
0	0		0
1755	934		821
4	3		1

AM	MD	PM	TOTAL
1		0	1
795		846	1641
2		0	2

TOTAL	AM	MD	PM
0	0		0
0	0		0
9	7		2

LOCATION #: 18-1263-002

TURNING MOVEMENT COUNT

Quail Run Rd. & Lincoln Dr.
(Intersection Name)

THURSDAY 05/31/18
Day Date

COUNT PERIODS	
AM	700AM - 900AM
NOON	-
PM	400PM - 600PM

AM PEAK HOUR 800 AM

NOON PEAK HOUR _____

PM PEAK HOUR 445 PM

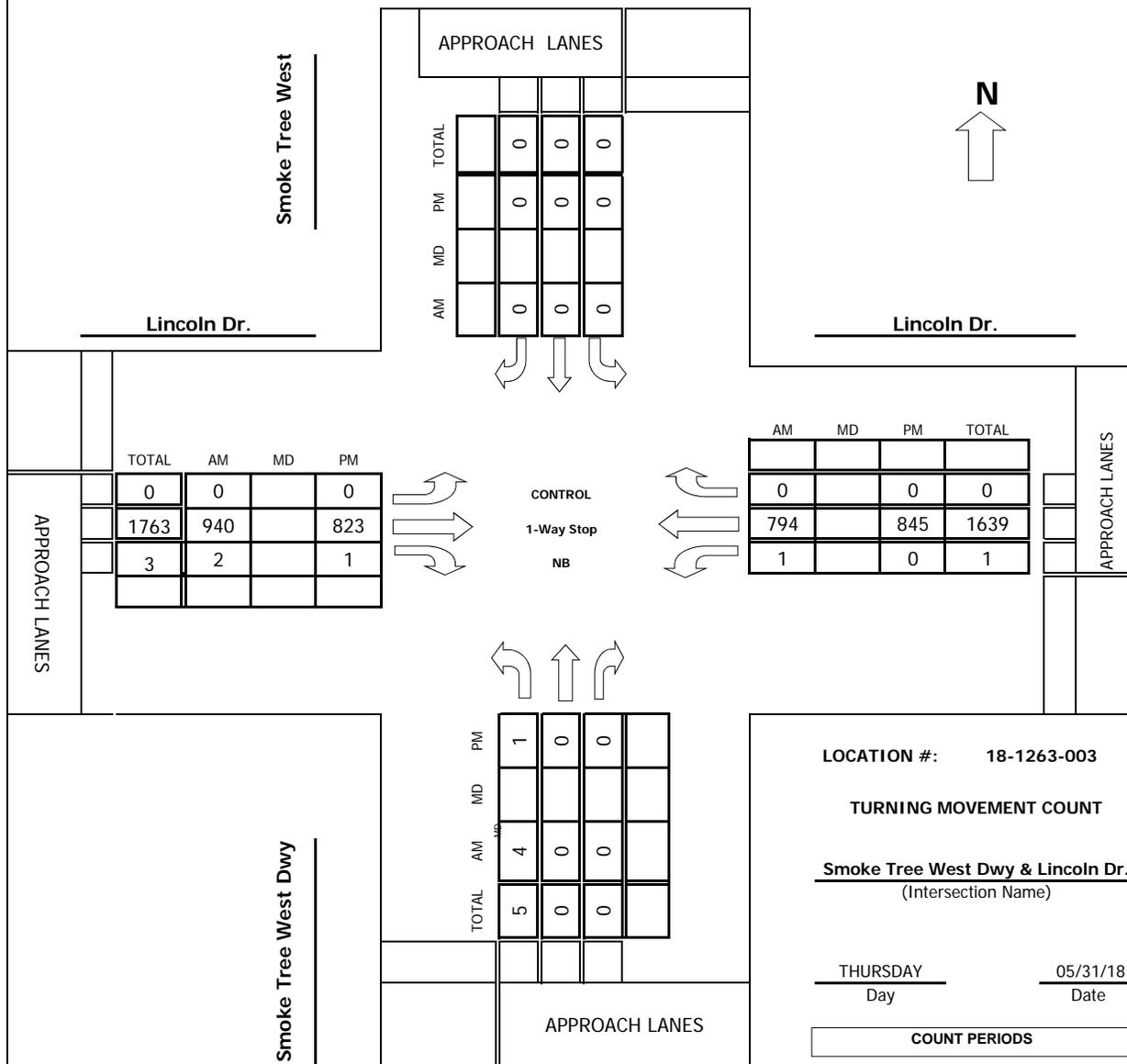
Intersection Turning Movement

Prepared by:



Project #: 18-1263-003

TMC SUMMARY OF Smoke Tree West Dwy & Lincoln Dr.



TOTAL	AM	MD	PM
0	0		0
1763	940		823
3	2		1

AM	MD	PM	TOTAL
0		0	0
794		845	1639
1		0	1

TOTAL	AM	MD	PM
5	4		1
0	0		0
0	0		0

LOCATION #: 18-1263-003

TURNING MOVEMENT COUNT

Smoke Tree West Dwy & Lincoln Dr.
(Intersection Name)

THURSDAY 05/31/18
Day Date

COUNT PERIODS	
AM	700AM - 900AM
NOON	-
PM	400PM - 600PM

AM PEAK HOUR 800 AM

NOON PEAK HOUR _____

PM PEAK HOUR 445 PM

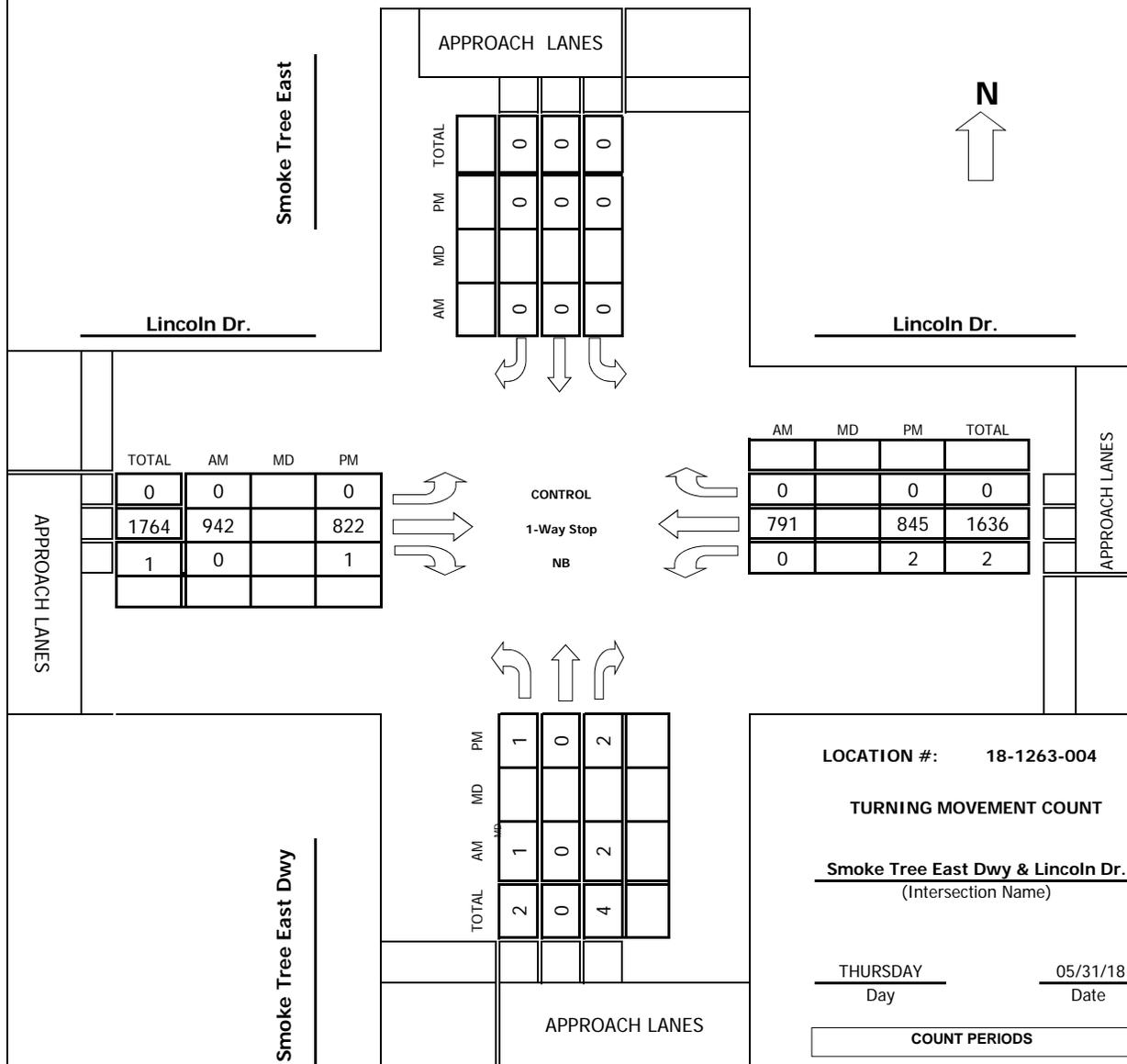
Intersection Turning Movement

Prepared by:



Project #: 18-1263-004

TMC SUMMARY OF Smoke Tree East Dwy & Lincoln Dr.



	TOTAL	AM	MD	PM
APPROACH LANES	0	0		0
	1764	942		822
	1	0		1

	AM	MD	PM	TOTAL
APPROACH LANES	0		0	0
	791		845	1636
	0		2	2

	TOTAL	AM	MD	PM
APPROACH LANES	1			
	1	0		2
	2	0		4

LOCATION #: 18-1263-004

TURNING MOVEMENT COUNT

Smoke Tree East Dwy & Lincoln Dr.
(Intersection Name)

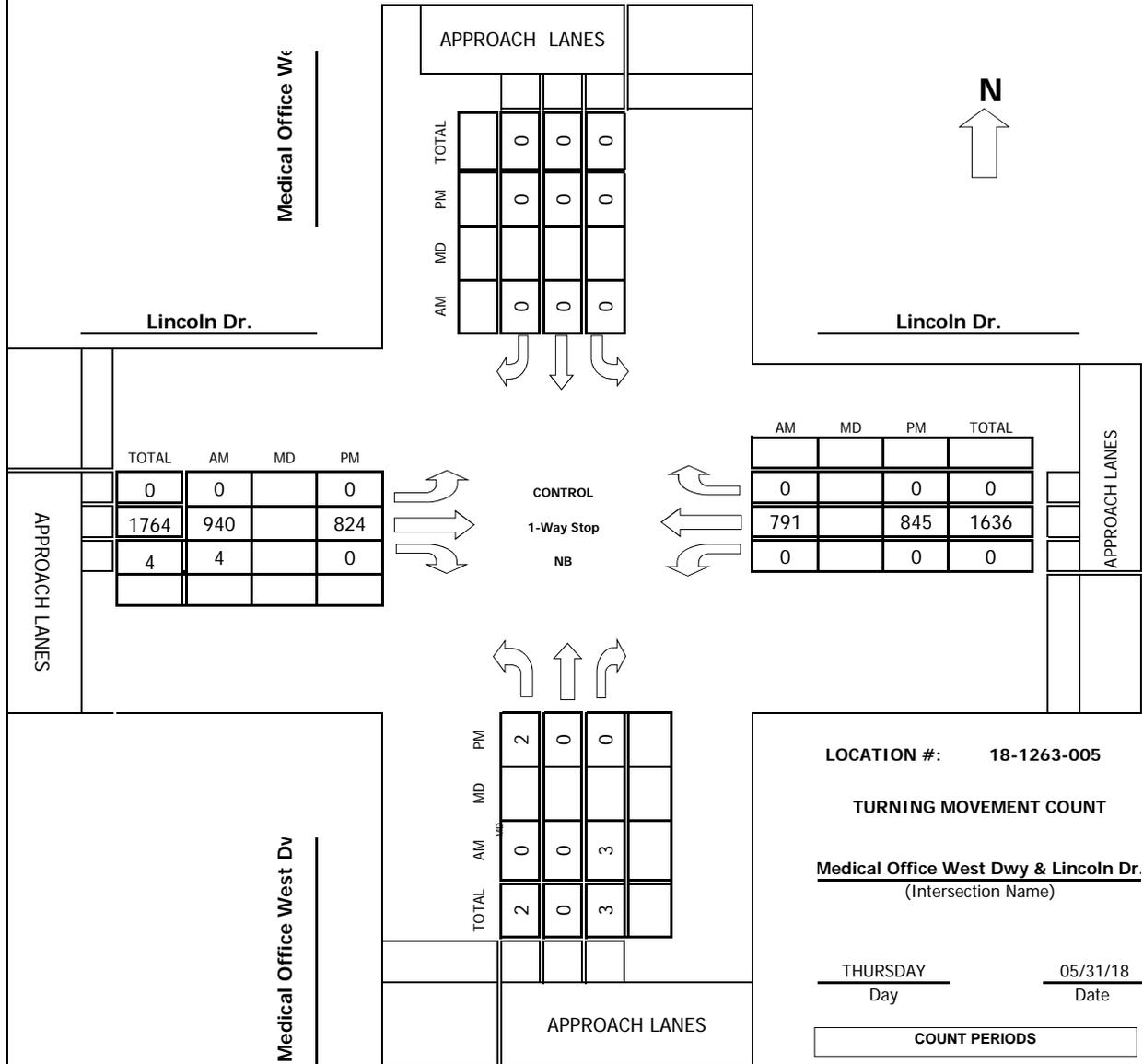
THURSDAY 05/31/18
Day Date

COUNT PERIODS	
AM	700AM - 900AM
NOON	-
PM	400PM - 600PM

AM PEAK HOUR 800 AM
NOON PEAK HOUR _____
PM PEAK HOUR 445 PM

Project #: 18-1263-005

TMC SUMMARY OF Medical Office West Dwy & Lincoln Dr.



	TOTAL	AM	MD	PM
APPROACH LANES	0	0		0
	1764	940		824
	4	4		0

	AM	MD	PM	TOTAL
APPROACH LANES	0		0	0
	791		845	1636
	0		0	0

	TOTAL	AM	MD	PM
APPROACH LANES	2	0		2
	0	0		0
	3	3		0

LOCATION #: 18-1263-005

TURNING MOVEMENT COUNT

Medical Office West Dwy & Lincoln Dr.
 (Intersection Name)

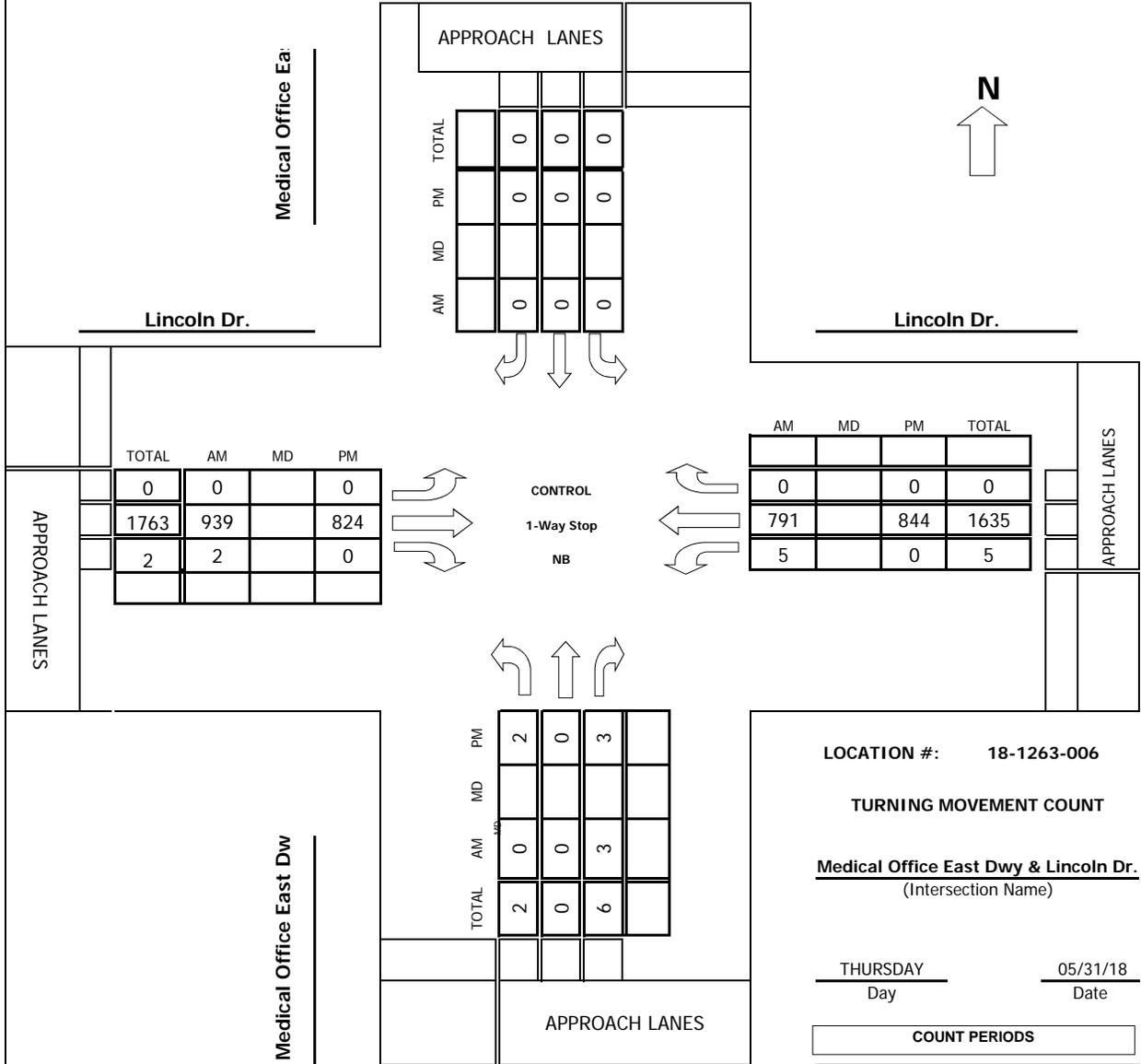
THURSDAY 05/31/18
 Day Date

COUNT PERIODS	
AM	700AM - 900AM
NOON	-
PM	400PM - 600PM

AM PEAK HOUR 800 AM
 NOON PEAK HOUR _____
 PM PEAK HOUR 445 PM

Project #: 18-1263-006

TMC SUMMARY OF Medical Office East Dwy & Lincoln Dr.



TOTAL	AM	MD	PM
0	0		0
1763	939		824
2	2		0

AM	MD	PM	TOTAL
0		0	0
791		844	1635
5		0	5

TOTAL	AM	MD	PM
2	0		2
0	0		0
6	3		3

LOCATION #: 18-1263-006

TURNING MOVEMENT COUNT

Medical Office East Dwy & Lincoln Dr.
 (Intersection Name)

THURSDAY 05/31/18
 Day Date

COUNT PERIODS		
AM	700AM	900AM
NOON	-	-
PM	400PM	600PM

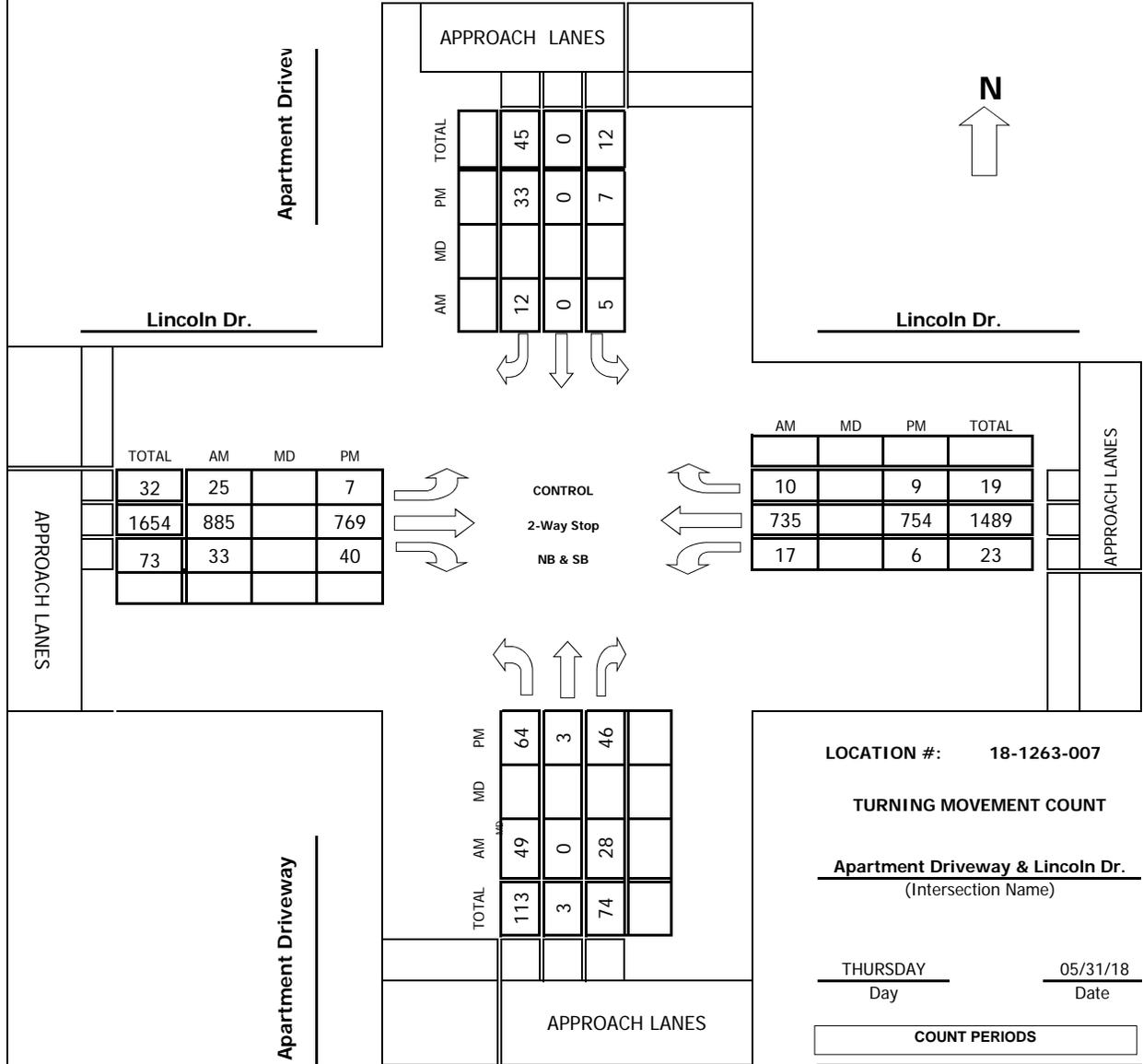
AM PEAK HOUR 800 AM

NOON PEAK HOUR

PM PEAK HOUR 445 PM

Project #: 18-1263-007

TMC SUMMARY OF Apartment Driveway & Lincoln Dr.



TOTAL	AM	MD	PM
32	25		7
1654	885		769
73	33		40

AM	MD	PM	TOTAL
10		9	19
735		754	1489
17		6	23

TOTAL	AM	MD	PM
113	49		64
3	0		3
74	28		46

LOCATION #: 18-1263-007

TURNING MOVEMENT COUNT

Apartment Driveway & Lincoln Dr.
 (Intersection Name)

THURSDAY **05/31/18**
 Day Date

COUNT PERIODS		
AM	700AM	- 900AM
NOON	-	-
PM	400PM	- 600PM

AM PEAK HOUR 800 AM

NOON PEAK HOUR _____

PM PEAK HOUR 430 PM

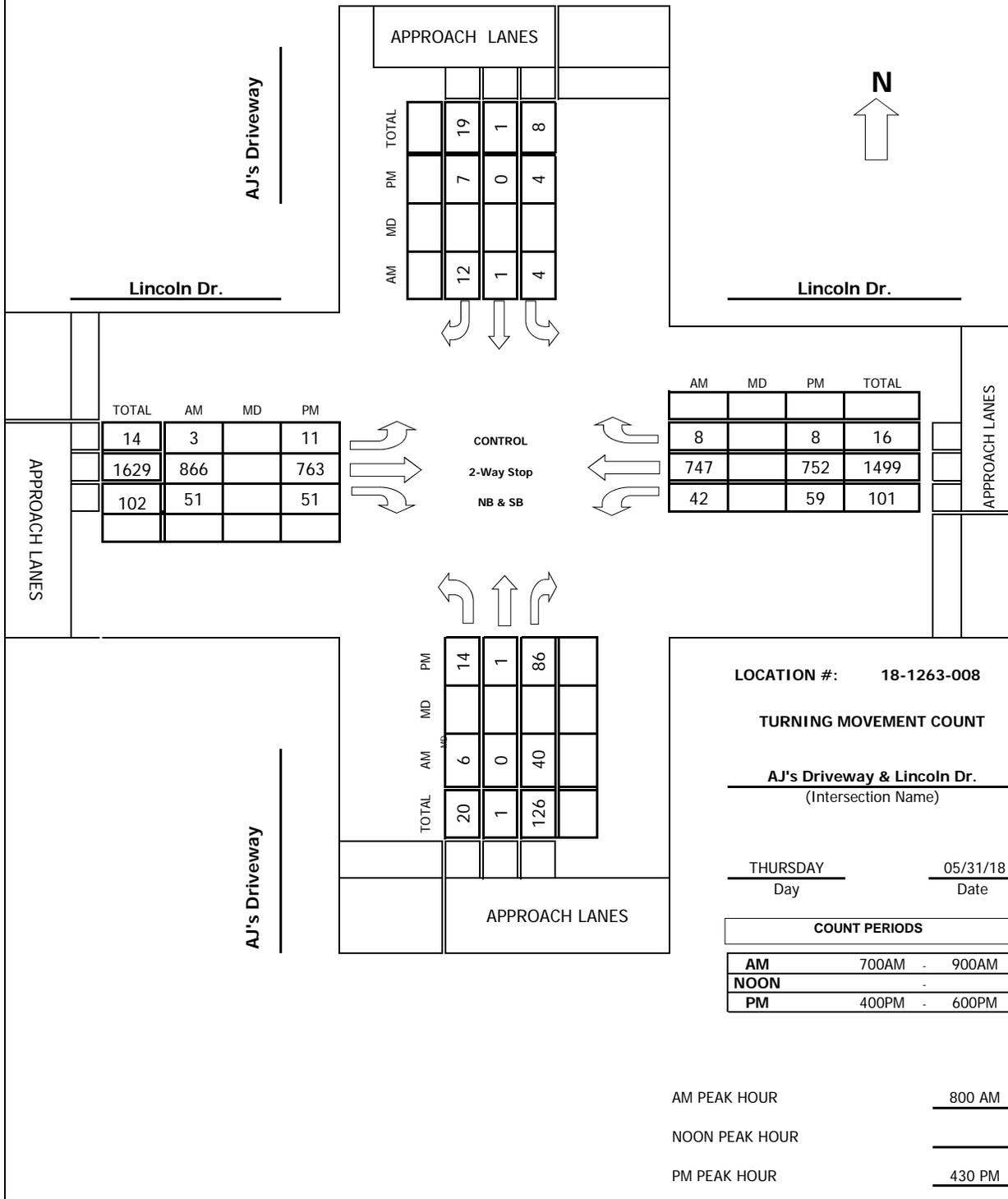
Intersection Turning Movement

Prepared by:



Project #: 18-1263-008

TMC SUMMARY OF AJ's Driveway & Lincoln Dr.



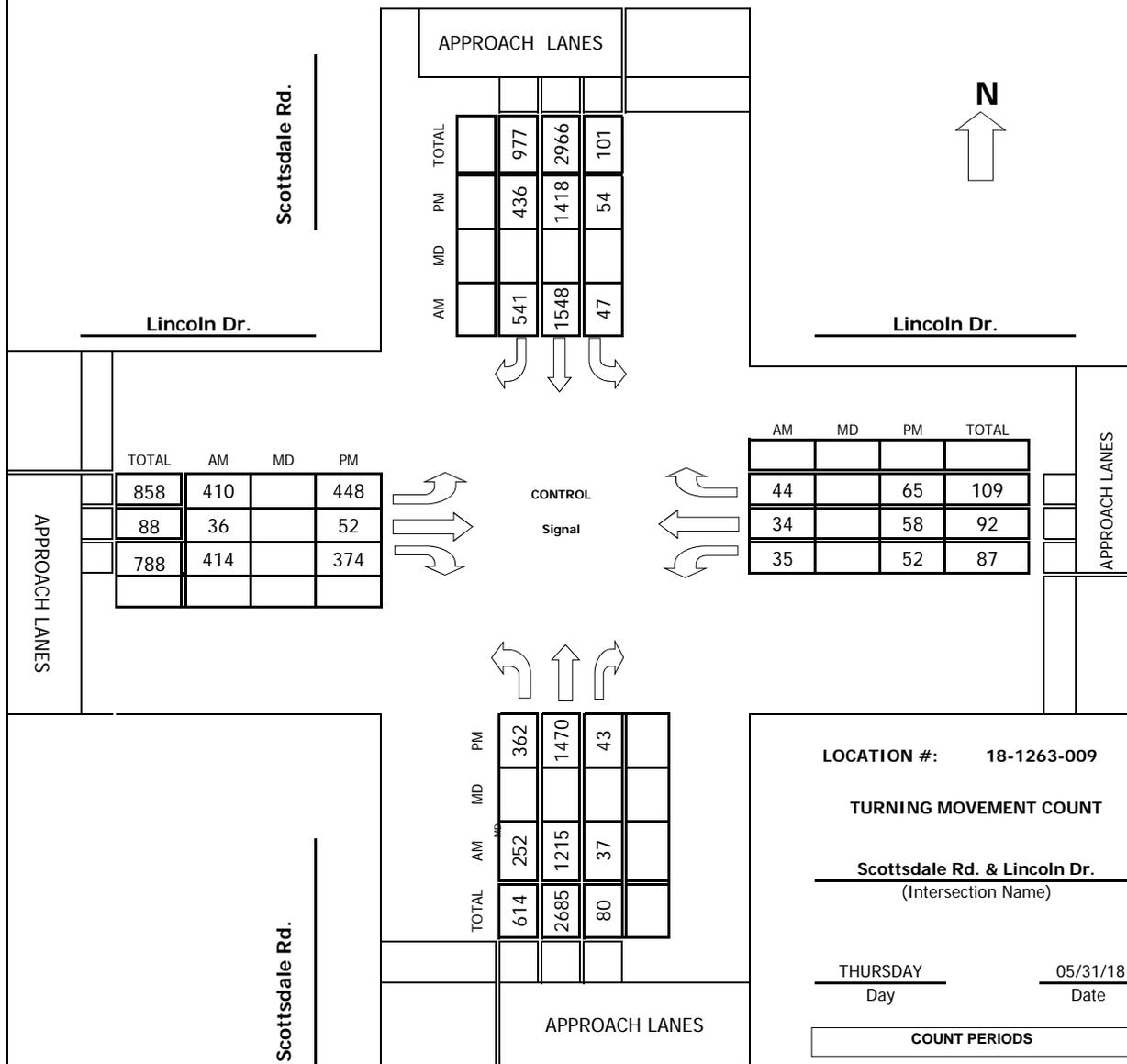
Intersection Turning Movement

Prepared by:



Project #: 18-1263-009

TMC SUMMARY OF Scottsdale Rd. & Lincoln Dr.



AM PEAK HOUR 745 AM

NOON PEAK HOUR

PM PEAK HOUR 430 PM

APPENDIX C

EXISTING PEAK HOUR ANALYSIS

Existing AM
1: Mockingbird Ln & Lincoln Drive

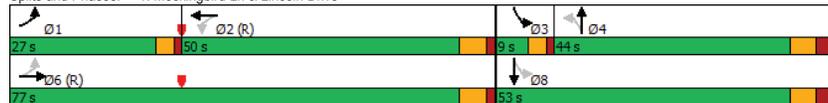
Smoke Tree Resort
Timings

	↖	→	↘	↙	↖	↗	↘	↙
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations	↖	↖↗	↖	↖↗	↖	↖	↖	↖
Traffic Volume (vph)	212	815	19	801	5	33	70	85
Future Volume (vph)	212	815	19	801	5	33	70	85
Turn Type	pm+pt	NA	Perm	NA	Perm	NA	pm+pt	NA
Protected Phases	1	6		2		4	3	8
Permitted Phases	6		2		4		8	
Detector Phase	1	6	2	2	4	4	3	8
Switch Phase								
Minimum Initial (s)	3.5	15.0	15.0	15.0	7.0	7.0	3.5	7.0
Minimum Split (s)	8.0	27.0	27.0	27.0	33.5	33.5	8.0	33.5
Total Split (%)	20.8%	59.2%	38.5%	38.5%	33.8%	33.8%	6.9%	40.8%
Yellow Time (s)	3.0	4.5	4.5	4.5	4.0	4.0	3.0	4.0
All-Red Time (s)	1.0	1.5	1.5	1.5	2.5	2.5	1.0	2.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	6.0	6.0	6.0	6.5	6.5	4.0	6.5
Lead/Lag	Lead		Lag	Lag	Lag	Lag	Lead	
Lead-Lag Optimize?	Yes		Yes	Yes	Yes	Yes	Yes	
Recall Mode	None	C-Max	C-Max	C-Max	None	None	None	None
Act Effct Green (s)	96.1	94.1	74.9	74.9	16.2	16.2	25.9	23.4
Actuated g/C Ratio	0.74	0.72	0.58	0.58	0.12	0.12	0.20	0.18
v/c Ratio	0.53	0.35	0.07	0.44	0.11	0.22	0.34	0.82
Control Delay	10.5	7.8	18.3	18.5	51.6	37.6	45.5	50.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	10.5	7.8	18.3	18.5	51.6	37.6	45.5	50.3
LOS	B	A	B	B	D	D	D	D
Approach Delay		8.3		18.5		39.0		49.4
Approach LOS		A		B		D		D

Intersection Summary

Cycle Length: 130	
Actuated Cycle Length: 130	
Offset: 0 (0%), Referenced to phase 2:WBT and 6:EBTL, Start of Green	
Natural Cycle: 80	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.82	
Intersection Signal Delay: 19.3	Intersection LOS: B
Intersection Capacity Utilization 67.1%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 1: Mockingbird Ln & Lincoln Drive



Existing AM
1: Mockingbird Ln & Lincoln Drive

Smoke Tree Resort
HCM 6th Signalized Intersection Summary

	↖	→	↘	↙	↖	↗	↘	↙	↖	↗	↘	↙
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↖↗		↖	↖↗		↖	↖		↖	↖	↖
Traffic Volume (veh/h)	212	815	29	19	801	39	5	33	15	70	85	216
Future Volume (veh/h)	212	815	29	19	801	39	5	33	15	70	85	216
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No		No		No		No		No	
Adj Sat Flow, veh/h/ln	1772	1969	1772	1772	1969	1772	1772	1969	1772	1772	1969	1772
Adj Flow Rate, veh/h	236	906	21	21	890	26	6	37	10	78	94	129
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	482	2824	65	434	2460	72	84	118	32	192	111	153
Arrive On Green	0.06	0.76	0.76	0.66	0.66	0.66	0.08	0.08	0.08	0.04	0.15	0.15
Sat Flow, veh/h	1688	3737	87	572	3711	108	1097	1493	403	1688	752	1031
Grp Volume(v), veh/h	236	453	474	21	449	467	6	0	47	78	0	223
Grp Sat Flow(s),veh/h/ln	1688	1870	1953	572	1870	1949	1097	0	1896	1688	0	1783
Q Serve(g_s), s	5.5	10.2	10.2	1.7	13.8	13.8	0.7	0.0	3.0	5.0	0.0	15.8
Cycle Q Clear(g_c), s	5.5	10.2	10.2	1.7	13.8	13.8	7.5	0.0	3.0	5.0	0.0	15.8
Prop In Lane	1.00		0.04	1.00		0.06	1.00		0.21	1.00		0.58
Lane Grp Cap(c), veh/h	482	1414	1476	434	1240	1292	84	0	149	192	0	264
V/C Ratio(X)	0.49	0.32	0.32	0.05	0.36	0.36	0.07	0.00	0.31	0.41	0.00	0.84
Avail Cap(c_a), veh/h	675	1414	1476	434	1240	1292	314	0	547	192	0	638
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	6.7	5.1	5.1	7.7	9.7	9.7	62.0	0.0	56.6	51.8	0.0	53.9
Incr Delay (d2), s/veh	0.8	0.6	0.6	0.2	0.8	0.8	0.4	0.0	1.2	1.4	0.0	7.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.9	3.8	3.9	0.2	5.8	6.0	0.2	0.0	1.5	2.4	0.0	7.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	7.5	5.7	5.7	7.9	10.5	10.5	62.3	0.0	57.7	53.2	0.0	61.2
LnGrp LOS	A	A	A	A	B	B	E	A	E	D	A	E
Approach Vol, veh/h		1163			937			53				301
Approach Delay, s/veh		6.1			10.5			58.3				59.1
Approach LOS		A			B			E				E
Timer - Assigned Phs	1	2	3	4		6		8				
Phs Duration (G+Y+Rc), s	12.1	92.2	9.0	16.7		104.3		25.7				
Change Period (Y+Rc), s	4.0	6.0	4.0	6.5		6.0		6.5				
Max Green Setting (Gmax), s	23.0	44.0	5.0	37.5		71.0		46.5				
Max Q Clear Time (g_c+1), s	7.5	15.8	7.0	9.5		12.2		17.8				
Green Ext Time (p_c), s	0.6	6.9	0.0	0.2		7.4		1.4				

Intersection Summary

HCM 6th Ctrl Delay	15.4
HCM 6th LOS	B

Existing AM
2: Quail Run Rd & Lincoln Drive

Smoke Tree Resort
HCM 6th TWSC

Intersection												
Int Delay, s/veh	0.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↕ ↕		↕ ↕		↕ ↕		↕ ↕		↕ ↕		↕ ↕	
Traffic Vol, veh/h	0	962	3	2	819	1	0	0	7	2	0	6
Future Vol, veh/h	0	962	3	2	819	1	0	0	7	2	0	6
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None									
Storage Length	25	-	-	25	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	1069	3	2	910	1	0	0	8	2	0	7

Major/Minor	Major1	Major2	Minor1	Minor2
Conflicting Flow All	911	0	0	1072
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Critical Hdwy	4.14	-	-	4.14
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	2.22	-	-	2.22
Pot Cap-1 Maneuver	*1106	-	-	*1034
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Platoon blocked, %	1	-	-	1
Mov Cap-1 Maneuver	*1106	-	-	*1034
Mov Cap-2 Maneuver	-	-	-	-
Stage 1	-	-	-	-
Stage 2	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0	10.3	11
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	691	*1106	-	-	*1034	-	-	610
HCM Lane V/C Ratio	0.011	-	-	-	0.002	-	-	0.015
HCM Control Delay (s)	10.3	0	-	-	8.5	-	-	11
HCM Lane LOS	B	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0

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

Existing AM
3: Smoke Tree West & Lincoln Dr

Smoke Tree Resort
HCM 6th TWSC

Intersection							
Int Delay, s/veh	0						
Movement	EBT	EBR	WBL	WBT	NBL	NBR	
Lane Configurations	↕ ↕		↕ ↕		↕ ↕		
Traffic Vol, veh/h	968	2	1	818	4	0	
Future Vol, veh/h	968	2	1	818	4	0	
Conflicting Peds, #/hr	0	0	0	0	0	0	
Sign Control	Free	Free	Free	Free	Stop	Stop	
RT Channelized	-	None	-	None	-	None	
Storage Length	-	-	25	-	0	-	
Veh in Median Storage, #	0	-	-	0	0	-	
Grade, %	0	-	-	0	0	-	
Peak Hour Factor	90	90	90	90	90	90	
Heavy Vehicles, %	2	2	2	2	2	2	
Mvmt Flow	1076	2	1	909	4	0	

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	1078
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	-	4.14
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	-	2.22
Pot Cap-1 Maneuver	-	-	*1034
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	1
Mov Cap-1 Maneuver	-	-	*1034
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	13.9
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	407	-	-	*1034	-
HCM Lane V/C Ratio	0.011	-	-	0.001	-
HCM Control Delay (s)	13.9	-	-	8.5	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0	-	-	0	-

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

Existing AM
4: Smoke Tree East & Lincoln Dr

Smoke Tree Resort
HCM 6th TWSC

Intersection						
Int Delay, s/veh	0					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↑	↑↑	↑	↑
Traffic Vol, veh/h	970	0	0	815	1	2
Future Vol, veh/h	970	0	0	815	1	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	25	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1078	0	0	906	1	2

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	1531
Stage 1	-	-	1078
Stage 2	-	-	453
Critical Hdwy	-	4.14	6.84
Critical Hdwy Stg 1	-	-	5.84
Critical Hdwy Stg 2	-	-	5.84
Follow-up Hdwy	-	2.22	3.52
Pot Cap-1 Maneuver	-	*1034	*469
Stage 1	-	-	*652
Stage 2	-	-	*698
Platoon blocked, %	-	1	1
Mov Cap-1 Maneuver	-	*1034	*469
Mov Cap-2 Maneuver	-	-	*521
Stage 1	-	-	*652
Stage 2	-	-	*698

Approach	EB	WB	NB
HCM Control Delay, s	0	0	10.8
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	623	-	-	*1034	-
HCM Lane V/C Ratio	0.005	-	-	-	-
HCM Control Delay (s)	10.8	-	-	0	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0	-	-	0	-

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

Existing AM
5: Lincoln Medical West & Lincoln Dr

Smoke Tree Resort
HCM 6th TWSC

Intersection						
Int Delay, s/veh	0					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↑	↑↑	↑	↑
Traffic Vol, veh/h	968	4	0	815	0	3
Future Vol, veh/h	968	4	0	815	0	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	25	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1076	4	0	906	0	3

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	1531
Stage 1	-	-	1078
Stage 2	-	-	453
Critical Hdwy	-	4.14	6.84
Critical Hdwy Stg 1	-	-	5.84
Critical Hdwy Stg 2	-	-	5.84
Follow-up Hdwy	-	2.22	3.52
Pot Cap-1 Maneuver	-	*1034	*389
Stage 1	-	-	*652
Stage 2	-	-	*698
Platoon blocked, %	-	1	1
Mov Cap-1 Maneuver	-	*1034	*389
Mov Cap-2 Maneuver	-	-	*485
Stage 1	-	-	*652
Stage 2	-	-	*698

Approach	EB	WB	NB
HCM Control Delay, s	0	0	10.2
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	691	-	-	*1034	-
HCM Lane V/C Ratio	0.005	-	-	-	-
HCM Control Delay (s)	10.2	-	-	0	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0	-	-	0	-

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

Existing AM
6: Lincoln Medical East & Lincoln Dr

Smoke Tree Resort
HCM 6th TWSC

Intersection						
Int Delay, s/veh	0.1					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↑↑	↑↑	↑↑	
Traffic Vol, veh/h	967	2	5	815	0	3
Future Vol, veh/h	967	2	5	815	0	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	25	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1074	2	6	906	0	3

Major/Minor	Major1	Major2	Minor1	Minor2
Conflicting Flow All	0	0	1076	0
Stage 1	-	-	-	1075
Stage 2	-	-	-	465
Critical Hdwy	-	-	4.14	-
Critical Hdwy Stg 1	-	-	-	5.84
Critical Hdwy Stg 2	-	-	-	5.84
Follow-up Hdwy	-	-	2.22	-
Pot Cap-1 Maneuver	-	-	*1034	-
Stage 1	-	-	-	*652
Stage 2	-	-	-	*698
Platoon blocked, %	-	-	1	-
Mov Cap-1 Maneuver	-	-	*1034	-
Mov Cap-2 Maneuver	-	-	-	*454
Stage 1	-	-	-	*648
Stage 2	-	-	-	*698

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	10.2
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	691	-	-	*1034	-
HCM Lane V/C Ratio	0.005	-	-	0.005	-
HCM Control Delay (s)	10.2	-	-	8.5	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0	-	-	0	-

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

Existing AM
7: Apartment Drwy & Lincoln Dr

Smoke Tree Resort
HCM 6th TWSC

Intersection												
Int Delay, s/veh	0.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↑↑	↑↑		↑↑	↑↑				↑↑	↑↑		↑↑
Traffic Vol, veh/h	26	912	34	18	757	10	50	0	29	5	0	12
Future Vol, veh/h	26	912	34	18	757	10	50	0	29	5	0	12
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None									
Storage Length	25	-	-	25	-	-	-	-	-	0	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	-	1	-	-	1
Grade, %	-	0	-	-	0	-	-	-	0	-	-	0
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	29	1013	38	20	841	11	56	0	32	6	0	13

Major/Minor	Major1	Major2	Minor1	Minor2
Conflicting Flow All	852	0	0	1051
Stage 1	-	-	-	1090
Stage 2	-	-	-	461
Critical Hdwy	4.14	-	-	4.14
Critical Hdwy Stg 1	-	-	-	6.54
Critical Hdwy Stg 2	-	-	-	6.54
Follow-up Hdwy	2.22	-	-	2.22
Pot Cap-1 Maneuver	*1142	-	-	1028
Stage 1	-	-	-	*585
Stage 2	-	-	-	*720
Platoon blocked, %	1	-	-	1
Mov Cap-1 Maneuver	*1142	-	-	1028
Mov Cap-2 Maneuver	-	-	-	*439
Stage 1	-	-	-	*570
Stage 2	-	-	-	*693

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	0.2	13.5	10.8
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	511	*1142	-	-	1028	-	-	452	763
HCM Lane V/C Ratio	0.172	0.025	-	-	0.019	-	-	0.012	0.017
HCM Control Delay (s)	13.5	8.2	-	-	8.6	-	-	13.1	9.8
HCM Lane LOS	B	A	-	-	A	-	-	B	A
HCM 95th %tile Q(veh)	0.6	0.1	-	-	0.1	-	-	0	0.1

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

Existing AM
8: AJ's Drwy & Lincoln Dr

Smoke Tree Resort
HCM 6th WSC

Intersection												
Int Delay, s/veh	0.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔		↔		↔		↔		↔		↔	
Traffic Vol, veh/h	3	892	53	43	769	8	6	0	41	4	1	12
Future Vol, veh/h	3	892	53	43	769	8	6	0	41	4	1	12
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None									
Storage Length	25	-	-	25	-	-	-	-	-	0	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	3	991	59	48	854	9	7	0	46	4	1	13

Major/Minor	Major1	Major2	Minor1	Minor2
Conflicting Flow All	863	0	1050	0
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Critical Hdwy	4.14	-	4.14	-
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	2.22	-	2.22	-
Pot Cap-1 Maneuver	*1142	-	1029	-
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Platoon blocked, %	1	-	1	-
Mov Cap-1 Maneuver	*1142	-	1029	-
Mov Cap-2 Maneuver	-	-	-	-
Stage 1	-	-	-	-
Stage 2	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.5	10.8	10.7
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	669	*1142	-	-	1029	-	-	429	763
HCM Lane V/C Ratio	0.078	0.003	-	-	0.046	-	-	0.01	0.017
HCM Control Delay (s)	10.8	8.2	-	-	8.7	-	-	13.5	9.8
HCM Lane LOS	B	A	-	-	A	-	-	B	A
HCM 95th %tile Q(veh)	0.3	0	-	-	0.1	-	-	0	0.1

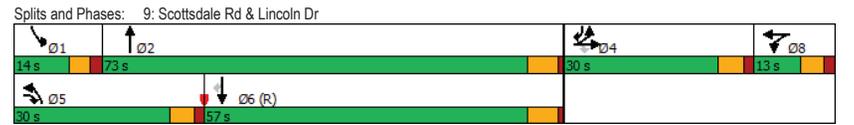
Notes
 ~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Existing AM
9: Scottsdale Rd & Lincoln Dr

Smoke Tree Resort
Timings

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations	↔		↔		↔		↔		↔	
Traffic Volume (vph)	422	37	426	36	35	260	1251	48	1594	557
Future Volume (vph)	422	37	426	36	35	260	1251	48	1594	557
Turn Type	Split	NA	pm+ov	Split	NA	Prot	NA	Prot	NA	pm+ov
Protected Phases	4	4	5	8	8	5	2	1	6	4
Permitted Phases	4									
Detector Phase	4	4	5	8	8	5	2	1	6	4
Switch Phase										
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0	7.0	10.0	5.0	10.0	7.0
Minimum Split (s)	13.0	13.0	13.0	13.0	13.0	13.0	16.7	11.0	16.0	13.0
Total Split (%)	30.0	30.0	30.0	13.0	13.0	30.0	73.0	14.0	57.0	30.0
Total Split (%)	23.1%	23.1%	23.1%	10.0%	10.0%	23.1%	56.2%	10.8%	43.8%	23.1%
Yellow Time (s)	4.0	4.0	4.0	3.6	3.6	4.0	4.7	3.3	4.7	4.0
All-Red Time (s)	1.5	1.5	1.5	2.0	2.0	1.5	1.0	2.0	1.0	1.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	5.5	5.5	5.6	5.6	5.5	5.7	5.3	5.7	5.5
Lead/Lag	Lead		Lead		Lead		Lag	Lead	Lag	Lag
Lead-Lag Optimize?										
Recall Mode	None	C-Max	None							
Act Effct Green (s)	23.0	23.0	39.9	7.2	7.2	16.9	72.2	7.5	60.6	89.3
Actuated g/C Ratio	0.18	0.18	0.31	0.06	0.06	0.13	0.56	0.06	0.47	0.69
v/c Ratio	0.85	0.86	0.89	0.41	0.39	0.65	0.51	0.52	0.75	0.53
Control Delay	77.2	77.4	44.6	72.1	34.3	60.0	19.6	77.2	32.1	8.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	77.2	77.4	44.6	72.1	34.3	60.0	19.6	77.2	32.1	8.4
LOS	E	E	D	E	C	E	B	E	C	A
Approach Delay	61.6		46.0		26.4		27.1			
Approach LOS	E		D		C		C			

Intersection Summary
 Cycle Length: 130
 Actuated Cycle Length: 130
 Offset: 0 (0%), Referenced to phase 6:SBT, Start of Green
 Natural Cycle: 90
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.89
 Intersection Signal Delay: 33.8 Intersection LOS: C
 Intersection Capacity Utilization 77.0% ICU Level of Service D
 Analysis Period (min) 15



Existing AM
9: Scottsdale Rd & Lincoln Dr

Smoke Tree Resort
HCM 6th Signalized Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (veh/h)	422	37	426	36	35	45	260	1251	38	48	1594	557
Future Volume (veh/h)	422	37	426	36	35	45	260	1251	38	48	1594	557
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No		No		No		No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	498	0	251	40	39	33	289	1390	31	53	1771	375
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	572	0	414	94	102	77	348	2357	53	68	2015	880
Arrive On Green	0.16	0.00	0.16	0.05	0.05	0.05	0.10	0.46	0.46	0.04	0.39	0.39
Sat Flow, veh/h	3563	0	1585	1781	1931	1454	3456	5139	115	1781	5106	1585
Grp Volume(v), veh/h	498	0	251	40	35	37	289	921	500	53	1771	375
Grp Sat Flow(s), veh/h/ln	1781	0	1585	1781	1777	1609	1728	1702	1850	1781	1702	1585
Q Serve(g_s), s	17.7	0.0	18.1	2.8	2.5	2.9	10.7	26.1	26.1	3.8	41.8	17.9
Cycle Q Clear(g_c), s	17.7	0.0	18.1	2.8	2.5	2.9	10.7	26.1	26.1	3.8	41.8	17.9
Prop In Lane	1.00		1.00	1.00		0.90	1.00		0.06	1.00		1.00
Lane Grp Cap(c), veh/h	572	0	414	94	94	85	348	1561	848	68	2015	880
V/C Ratio(X)	0.87	0.00	0.61	0.42	0.38	0.43	0.83	0.59	0.59	0.78	0.88	0.43
Avail Cap(c_a), veh/h	671	0	458	101	101	92	651	1762	958	119	2015	880
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	53.3	0.0	42.1	59.6	59.5	59.7	57.4	26.1	26.1	62.0	36.5	16.9
Incr Delay (d2), s/veh	9.6	0.0	1.1	1.1	0.9	1.3	2.0	0.2	0.4	6.9	5.9	1.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.7	0.0	7.2	1.3	1.2	1.2	4.8	10.6	11.5	1.9	18.2	9.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	62.8	0.0	43.3	60.8	60.4	60.9	59.3	26.3	26.5	68.8	42.3	18.4
LnGrp LOS	E	A	D	E	E	E	E	C	C	E	D	B
Approach Vol, veh/h		749			112			1710			2199	
Approach Delay, s/veh		56.3			60.7			31.9			38.9	
Approach LOS		E			E			C			D	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	10.3	65.3		26.4	18.6	57.0		12.5				
Change Period (Y+Rc), s	* 5.3	5.7		5.5	5.5	5.7		5.6				
Max Green Setting (Gmax), s	* 8.7	67.3		24.5	24.5	51.3		7.4				
Max Q Clear Time (g_c+I1), s	5.8	28.1		20.1	12.7	43.8		4.9				
Green Ext Time (p_c), s	0.0	2.0		0.8	0.4	2.5		0.1				

Intersection Summary	
HCM 6th Ctrl Delay	39.6
HCM 6th LOS	D

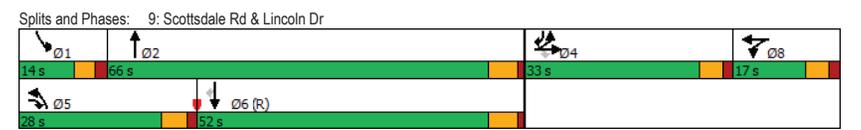
Notes
 User approved pedestrian interval to be less than phase max green.
 User approved volume balancing among the lanes for turning movement.
 * HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Existing AM Mitigated
9: Scottsdale Rd & Lincoln Dr

Smoke Tree Resort
Timings

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	422	37	426	36	35	260	1251	48	1594	557
Future Volume (vph)	422	37	426	36	35	260	1251	48	1594	557
Turn Type	Split	NA	pm+ov	Split	NA	Prot	NA	Prot	NA	pm+ov
Protected Phases	4	4	5	8	8	5	2	1	6	4
Permitted Phases			4						6	
Detector Phase	4	4	5	8	8	5	2	1	6	4
Switch Phase										
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0	10.0	5.0	10.0	7.0	7.0
Minimum Split (s)	13.0	13.0	13.0	13.0	13.0	16.7	11.0	16.0	13.0	13.0
Total Split (s)	33.0	33.0	28.0	17.0	17.0	28.0	66.0	14.0	52.0	33.0
Total Split (%)	25.4%	25.4%	21.5%	13.1%	13.1%	21.5%	50.8%	10.8%	40.0%	25.4%
Yellow Time (s)	4.0	4.0	4.0	3.6	3.6	4.0	4.7	3.3	4.7	4.0
All-Red Time (s)	1.5	1.5	1.5	2.0	2.0	1.5	1.0	2.0	1.0	1.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	5.5	5.5	5.6	5.6	5.5	5.7	5.3	5.7	5.5
Lead/Lag			Lead			Lead	Lag	Lead	Lag	
Lead-Lag Optimize?										
Recall Mode	None	C-Max	None	None						
Act Effct Green (s)	24.5	24.5	40.2	8.1	8.1	15.7	69.5	7.9	59.5	89.6
Actuated g/C Ratio	0.19	0.19	0.31	0.06	0.06	0.12	0.53	0.06	0.46	0.69
v/c Ratio	0.80	0.81	0.83	0.36	0.36	0.70	0.53	0.50	0.76	0.52
Control Delay	69.0	69.3	32.8	67.5	32.4	63.8	22.0	74.2	33.5	6.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	69.0	69.3	32.8	67.5	32.4	63.8	22.0	74.2	33.5	6.4
LOS	E	E	C	E	C	E	C	E	C	A
Approach Delay		51.6			43.3		29.0		27.5	
Approach LOS		D			D		C		C	

Intersection Summary
 Cycle Length: 130
 Actuated Cycle Length: 130
 Offset: 0 (0%), Referenced to phase 6:SBT, Start of Green
 Natural Cycle: 90
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.83
 Intersection Signal Delay: 32.9
 Intersection Capacity Utilization 77.0%
 Analysis Period (min) 15
 Intersection LOS: C
 ICU Level of Service D



Existing AM Mitigated
9: Scottsdale Rd & Lincoln Dr

Smoke Tree Resort
HCM 6th Signalized Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (veh/h)	422	37	426	36	35	45	260	1251	38	48	1594	557
Future Volume (veh/h)	422	37	426	36	35	45	260	1251	38	48	1594	557
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No		No		No		No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	498	0	251	40	39	33	289	1390	31	53	1771	341
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	578	0	417	94	102	77	347	2158	48	68	1819	822
Arrive On Green	0.16	0.00	0.16	0.05	0.05	0.05	0.10	0.42	0.42	0.04	0.36	0.36
Sat Flow, veh/h	3563	0	1585	1781	1931	1454	3456	5139	115	1781	5106	1585
Grp Volume(v), veh/h	498	0	251	40	35	37	289	921	500	53	1771	341
Grp Sat Flow(s), veh/h/ln	1781	0	1585	1781	1777	1609	1728	1702	1850	1781	1702	1585
Q Serve(g_s), s	17.7	0.0	18.0	2.8	2.5	2.9	10.7	28.0	28.0	3.8	44.4	17.2
Cycle Q Clear(g_c), s	17.7	0.0	18.0	2.8	2.5	2.9	10.7	28.0	28.0	3.8	44.4	17.2
Prop In Lane	1.00		1.00	1.00		0.90	1.00		0.06	1.00		1.00
Lane Grp Cap(c), veh/h	578	0	417	94	94	85	347	1429	777	68	1819	822
V/C Ratio(X)	0.86	0.00	0.60	0.42	0.38	0.43	0.83	0.64	0.64	0.78	0.97	0.41
Avail Cap(c_a), veh/h	754	0	495	156	156	141	598	1579	858	119	1819	822
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	53.0	0.0	42.0	59.6	59.5	59.7	57.4	30.0	30.0	62.0	41.3	19.2
Incr Delay (d2), s/veh	6.6	0.0	0.6	1.1	0.9	1.3	2.0	0.5	1.0	6.9	15.8	1.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.4	0.0	7.1	1.3	1.2	1.2	4.8	11.5	12.6	1.9	21.1	9.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	59.6	0.0	42.6	60.8	60.4	60.9	59.4	30.5	31.0	68.8	57.0	20.7
LnGrp LOS	E	A	D	E	E	E	E	C	C	E	E	C
Approach Vol, veh/h		749			112			1710			2165	
Approach Delay, s/veh		53.9			60.7			35.5			51.6	
Approach LOS		D			E			D			D	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	10.3	60.3		26.6	18.6	52.0		12.5				
Change Period (Y+Rc), s	* 5.3	5.7		5.5	5.5	5.7		5.6				
Max Green Setting (Gmax), s	* 8.7	60.3		27.5	22.5	46.3		11.4				
Max Q Clear Time (g_c+I1), s	5.8	30.0		20.0	12.7	46.4		4.9				
Green Ext Time (p_c), s	0.0	2.0		1.1	0.4	0.0		0.1				

Intersection Summary	
HCM 6th Ctrl Delay	46.4
HCM 6th LOS	D

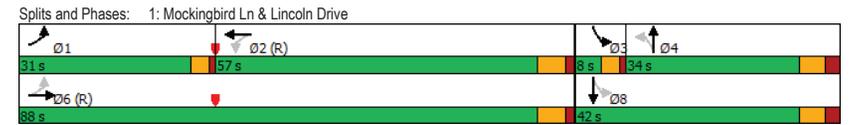
Notes
 User approved pedestrian interval to be less than phase max green.
 User approved volume balancing among the lanes for turning movement.
 * HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Existing PM
1: Mockingbird Ln & Lincoln Drive

Smoke Tree Resort
Timings

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	228	764	12	805	7	60	57	46
Future Volume (vph)	228	764	12	805	7	60	57	46
Turn Type	pm+pt	NA	Perm	NA	Perm	NA	pm+pt	NA
Protected Phases	1	6		2		4	3	8
Permitted Phases	6		2		4		8	
Detector Phase	1	6	2	2	4	4	3	8
Switch Phase								
Minimum Initial (s)	4.0	15.0	15.0	15.0	7.0	7.0	4.0	7.0
Minimum Split (s)	8.0	27.0	27.0	27.0	33.5	33.5	8.0	33.5
Total Split (s)	31.0	88.0	57.0	57.0	34.0	34.0	8.0	42.0
Total Split (%)	23.8%	67.7%	43.8%	43.8%	26.2%	26.2%	6.2%	32.3%
Yellow Time (s)	3.0	4.5	4.5	4.5	4.0	4.0	3.0	4.0
All-Red Time (s)	1.0	1.5	1.5	1.5	2.5	2.5	1.0	2.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	6.0	6.0	6.0	6.5	6.5	4.0	6.5
Lead/Lag	Lead		Lag	Lag	Lag	Lag	Lead	
Lead-Lag Optimize?	Yes		Yes	Yes	Yes	Yes	Yes	
Recall Mode	None	C-Max	C-Max	C-Max	None	None	None	None
Act Effct Green (s)	102.4	100.4	84.3	84.3	10.7	10.7	19.6	17.1
Actuated g/C Ratio	0.79	0.77	0.65	0.65	0.08	0.08	0.15	0.13
v/c Ratio	0.53	0.32	0.03	0.42	0.10	0.51	0.37	0.66
Control Delay	8.1	5.3	11.8	13.0	55.7	63.3	53.2	32.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	8.1	5.3	11.8	13.0	55.7	63.3	53.2	32.6
LOS	A	A	B	B	E	E	D	C
Approach Delay		5.9		13.0		62.6		37.3
Approach LOS		A		B		E		D

Intersection Summary
 Cycle Length: 130
 Actuated Cycle Length: 130
 Offset: 0 (0%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green
 Natural Cycle: 90
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.66
 Intersection Signal Delay: 14.2
 Intersection Capacity Utilization 61.8%
 Analysis Period (min) 15
 ICU Level of Service B



Existing PM
1: Mockingbird Ln & Lincoln Drive

Smoke Tree Resort
HCM 6th Signalized Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↕	↔	↔	↕	↔	↔	↕	↔	↔	↕	↔
Traffic Volume (veh/h)	228	764	28	12	805	56	7	60	10	57	46	145
Future Volume (veh/h)	228	764	28	12	805	56	7	60	10	57	46	145
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No		No		No		No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	253	849	20	13	894	45	8	67	5	63	51	105
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	512	2790	66	499	2399	121	88	96	7	134	64	132
Arrive On Green	0.06	0.79	0.79	0.70	0.70	0.70	0.06	0.06	0.06	0.03	0.12	0.12
Sat Flow, veh/h	1781	3549	84	637	3443	173	1231	1719	128	1781	545	1123
Grp Volume(v), veh/h	253	425	444	13	461	478	8	0	72	63	0	156
Grp Sat Flow(s), veh/h/ln	1781	1777	1855	637	1777	1839	1231	0	1847	1781	0	1668
Q Serve(g_s), s	4.9	8.7	8.7	0.8	13.8	13.8	0.8	0.0	5.0	4.0	0.0	11.8
Cycle Q Clear(g_c), s	4.9	8.7	8.7	0.8	13.8	13.8	4.7	0.0	5.0	4.0	0.0	11.8
Prop In Lane	1.00		0.05	1.00		0.09	1.00		0.07	1.00		0.67
Lane Grp Cap(c), veh/h	512	1397	1459	499	1238	1282	88	0	103	134	0	196
V/C Ratio(X)	0.49	0.30	0.30	0.03	0.37	0.37	0.09	0.00	0.70	0.47	0.00	0.80
Avail Cap(c_a), veh/h	778	1397	1459	499	1238	1282	279	0	391	134	0	456
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	5.6	3.9	3.9	6.1	8.1	8.1	62.0	0.0	60.3	54.9	0.0	55.8
Incr Delay (d2), s/veh	0.7	0.6	0.5	0.1	0.9	0.8	0.4	0.0	8.1	2.6	0.0	7.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.7	2.9	3.0	0.1	5.3	5.5	0.3	0.0	2.6	2.0	0.0	5.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	6.4	4.5	4.4	6.2	8.9	8.9	62.4	0.0	68.4	57.5	0.0	63.0
LnGrp LOS	A	A	A	A	A	A	E	A	E	E	A	E
Approach Vol, veh/h		1122			952			80				219
Approach Delay, s/veh		4.9			8.9			67.8				61.4
Approach LOS		A			A			E				E
Timer - Assigned Phs	1	2	3	4	6	8						
Phs Duration (G+Y+Rc), s	11.6	96.6	8.0	13.8	108.2	21.8						
Change Period (Y+Rc), s	4.0	6.0	4.0	6.5	6.0	6.5						
Max Green Setting (Gmax), s	27.0	51.0	4.0	27.5	82.0	35.5						
Max Q Clear Time (g_c+I1), s	6.9	15.8	6.0	7.0	10.7	13.8						
Green Ext Time (p_c), s	0.7	7.4	0.0	0.3	6.8	0.8						
Intersection Summary												
HCM 6th Ctrl Delay				13.8								
HCM 6th LOS				B								

Existing PM
2: Quail Run Rd & Lincoln Drive

Smoke Tree Resort
HCM 6th TWSC

Intersection												
Int Delay, s/veh	0											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↕	↔	↔	↕	↔	↔	↕	↔	↔	↕	↔
Traffic Vol, veh/h	0	846	1	0	871	0	0	0	2	0	0	0
Future Vol, veh/h	0	846	1	0	871	0	0	0	2	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	25	-	-	25	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	-	0	-	-	0
Grade, %	-	0	-	-	0	-	-	-	0	-	-	0
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	940	1	0	968	0	0	0	2	0	0	0
Major/Minor	Major1	Major2	Minor1	Minor2								
Conflicting Flow All	968	0	0	941	0	0	1425	1909	471	1438	1909	484
Stage 1	-	-	-	-	-	941	941	-	968	968	-	-
Stage 2	-	-	-	-	-	-	-	-	484	968	-	470
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-	-
Critical Hdwy Stg 2	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	*1070	-	-	*1106	-	-	*508	*137	*739	*487	*137	*715
Stage 1	-	-	-	-	-	*697	*611	-	*674	*591	-	-
Stage 2	-	-	-	-	-	*674	*591	-	*697	*611	-	-
Platoon blocked, %	1	-	-	1	-	-	1	1	1	1	1	1
Mov Cap-1 Maneuver	*1070	-	-	*1106	-	-	*508	*137	*739	*487	*137	*715
Mov Cap-2 Maneuver	-	-	-	-	-	*508	*137	-	*487	*137	-	-
Stage 1	-	-	-	-	-	*697	*611	-	*674	*591	-	-
Stage 2	-	-	-	-	-	*674	*591	-	*695	*611	-	-
Approach	EB	WB	NB	SB								
HCM Control Delay, s	0	0	9.9	0								
HCM LOS			A	A								
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	739	*1070	-	-	*1106	-	-	-				
HCM Lane V/C Ratio	0.003	-	-	-	-	-	-	-				
HCM Control Delay (s)	9.9	0	-	-	0	-	-	0				
HCM Lane LOS	A	A	-	-	A	-	-	A				
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	-				
Notes												
-: Volume exceeds capacity	\$: Delay exceeds 300s		+: Computation Not Defined		*: All major volume in platoon							

Existing PM
3: Smoke Tree West & Lincoln Dr

Smoke Tree Resort
HCM 6th TWSC

Intersection						
Int Delay, s/veh	0					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↑	↑↑	↑	↑
Traffic Vol, veh/h	848	1	0	870	1	0
Future Vol, veh/h	848	1	0	870	1	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	25	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	942	1	0	967	1	0

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	943
Stage 1	-	-	943
Stage 2	-	-	484
Critical Hdwy	-	4.14	6.84
Critical Hdwy Stg 1	-	-	5.84
Critical Hdwy Stg 2	-	-	5.84
Follow-up Hdwy	-	2.22	3.52
Pot Cap-1 Maneuver	-	*1106	*301
Stage 1	-	-	*698
Stage 2	-	-	*675
Platoon blocked, %	-	1	1
Mov Cap-1 Maneuver	-	*1106	*301
Mov Cap-2 Maneuver	-	-	*451
Stage 1	-	-	*698
Stage 2	-	-	*675

Approach	EB	WB	NB
HCM Control Delay, s	0	0	13
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	451	-	*1106	-	-
HCM Lane V/C Ratio	0.002	-	-	-	-
HCM Control Delay (s)	13	-	0	-	-
HCM Lane LOS	B	-	A	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

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

Existing PM
4: Smoke Tree East & Lincoln Dr

Smoke Tree Resort
HCM 6th TWSC

Intersection						
Int Delay, s/veh	0					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↑	↑↑	↑	↑
Traffic Vol, veh/h	847	1	2	870	1	2
Future Vol, veh/h	847	1	2	870	1	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	25	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	941	1	2	967	1	2

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	942
Stage 1	-	-	942
Stage 2	-	-	488
Critical Hdwy	-	4.14	6.84
Critical Hdwy Stg 1	-	-	5.84
Critical Hdwy Stg 2	-	-	5.84
Follow-up Hdwy	-	2.22	3.52
Pot Cap-1 Maneuver	-	*1106	*514
Stage 1	-	-	*698
Stage 2	-	-	*675
Platoon blocked, %	-	1	1
Mov Cap-1 Maneuver	-	*1106	*513
Mov Cap-2 Maneuver	-	-	*546
Stage 1	-	-	*696
Stage 2	-	-	*675

Approach	EB	WB	NB
HCM Control Delay, s	0	0	10.5
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	661	-	*1106	-	-
HCM Lane V/C Ratio	0.005	-	-	0.002	-
HCM Control Delay (s)	10.5	-	8.3	-	-
HCM Lane LOS	B	-	A	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

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

Existing PM
5: Lincoln Medical West & Lincoln Dr

Smoke Tree Resort
HCM 6th TWSC

Intersection						
Int Delay, s/veh	0					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↑	↑↑	↑	
Traffic Vol, veh/h	849	0	0	870	2	0
Future Vol, veh/h	849	0	0	870	2	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	25	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	943	0	0	967	2	0

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	943
Stage 1	-	-	943
Stage 2	-	-	484
Critical Hdwy	-	4.14	6.84
Critical Hdwy Stg 1	-	-	5.84
Critical Hdwy Stg 2	-	-	5.84
Follow-up Hdwy	-	2.22	3.52
Pot Cap-1 Maneuver	-	*1106	*434
Stage 1	-	-	*698
Stage 2	-	-	*675
Platoon blocked, %	-	1	1
Mov Cap-1 Maneuver	-	*1106	*434
Mov Cap-2 Maneuver	-	-	*511
Stage 1	-	-	*698
Stage 2	-	-	*675

Approach	EB	WB	NB
HCM Control Delay, s	0	0	12.1
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	511	-	*1106	-	-
HCM Lane V/C Ratio	0.004	-	-	-	-
HCM Control Delay (s)	12.1	-	0	-	-
HCM Lane LOS	B	-	A	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

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

Existing PM
6: Lincoln Medical East & Lincoln Dr

Smoke Tree Resort
HCM 6th TWSC

Intersection						
Int Delay, s/veh	0					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↑	↑↑	↑	
Traffic Vol, veh/h	849	0	0	869	2	3
Future Vol, veh/h	849	0	0	869	2	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	25	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	943	0	0	966	2	3

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	943
Stage 1	-	-	943
Stage 2	-	-	483
Critical Hdwy	-	4.14	6.84
Critical Hdwy Stg 1	-	-	5.84
Critical Hdwy Stg 2	-	-	5.84
Follow-up Hdwy	-	2.22	3.52
Pot Cap-1 Maneuver	-	*1106	*350
Stage 1	-	-	*698
Stage 2	-	-	*675
Platoon blocked, %	-	1	1
Mov Cap-1 Maneuver	-	*1106	*350
Mov Cap-2 Maneuver	-	-	*473
Stage 1	-	-	*698
Stage 2	-	-	*675

Approach	EB	WB	NB
HCM Control Delay, s	0	0	11
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	603	-	*1106	-	-
HCM Lane V/C Ratio	0.009	-	-	-	-
HCM Control Delay (s)	11	-	0	-	-
HCM Lane LOS	B	-	A	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

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

Existing PM
7: Apartment Drwy & Lincoln Dr

Smoke Tree Resort
HCM 6th TWSC

Intersection												
Int Delay, s/veh	1.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖ ↗	↖ ↗		↖ ↗	↖ ↗			↖ ↗		↖ ↗	↖ ↗	↖ ↗
Traffic Vol, veh/h	7	792	41	6	777	9	66	3	47	7	0	34
Future Vol, veh/h	7	792	41	6	777	9	66	3	47	7	0	34
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None									
Storage Length	25	-	-	25	-	-	-	-	-	0	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	8	880	46	7	863	10	73	3	52	8	0	38

Major/Minor	Major1	Major2	Minor1	Minor2
Conflicting Flow All	873	0	0	926
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Critical Hdwy	4.14	-	-	4.14
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	2.22	-	-	2.22
Pot Cap-1 Maneuver	*1142	-	-	1088
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Platoon blocked, %	1	-	-	1
Mov Cap-1 Maneuver	*1142	-	-	1088
Mov Cap-2 Maneuver	-	-	-	-
Stage 1	-	-	-	-
Stage 2	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0.1	13.2	10.4
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	568	*1142	-	-	1088	-	-	487	763
HCM Lane V/C Ratio	0.227	0.007	-	-	0.006	-	-	0.016	0.05
HCM Control Delay (s)	13.2	8.2	-	-	8.3	-	-	12.5	10
HCM Lane LOS	B	A	-	-	A	-	-	B	B
HCM 95th %tile Q(veh)	0.9	0	-	-	0	-	-	0	0.2

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

Existing PM
8: AJ's Drwy & Lincoln Dr

Smoke Tree Resort
HCM 6th TWSC

Intersection												
Int Delay, s/veh	1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖ ↗	↖ ↗		↖ ↗	↖ ↗			↖ ↗		↖ ↗	↖ ↗	↖ ↗
Traffic Vol, veh/h	11	786	53	61	775	8	14	1	89	4	0	7
Future Vol, veh/h	11	786	53	61	775	8	14	1	89	4	0	7
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None									
Storage Length	25	-	-	25	-	-	-	-	-	0	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	12	873	59	68	861	9	16	1	99	4	0	8

Major/Minor	Major1	Major2	Minor1	Minor2
Conflicting Flow All	870	0	0	932
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Critical Hdwy	4.14	-	-	4.14
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	2.22	-	-	2.22
Pot Cap-1 Maneuver	*1142	-	-	1081
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Platoon blocked, %	1	-	-	1
Mov Cap-1 Maneuver	*1142	-	-	1081
Mov Cap-2 Maneuver	-	-	-	-
Stage 1	-	-	-	-
Stage 2	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0.6	11.2	11.3
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	699	*1142	-	-	1081	-	-	413	763
HCM Lane V/C Ratio	0.165	0.011	-	-	0.063	-	-	0.011	0.01
HCM Control Delay (s)	11.2	8.2	-	-	8.6	-	-	13.8	9.8
HCM Lane LOS	B	A	-	-	A	-	-	B	A
HCM 95th %tile Q(veh)	0.6	0	-	-	0.2	-	-	0	0

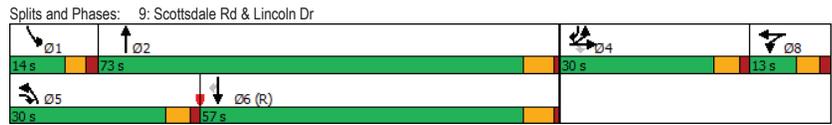
Notes
 ~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Existing PM
9: Scottsdale Rd & Lincoln Dr

Smoke Tree Resort
Timings

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	461	54	385	54	60	373	1514	56	1461	449
Future Volume (vph)	461	54	385	54	60	373	1514	56	1461	449
Turn Type	Split	NA	pm+ov	Split	NA	Prot	NA	Prot	NA	pm+ov
Protected Phases	4	4	5	8	8	5	2	1	6	4
Permitted Phases	4			8			6			
Detector Phase	4	4	5	8	8	5	2	1	6	4
Switch Phase										
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0	10.0	5.0	10.0	7.0	
Minimum Split (s)	13.0	13.0	13.0	13.0	13.0	16.7	11.0	16.0	13.0	
Total Split (s)	30.0	30.0	30.0	13.0	13.0	30.0	73.0	14.0	57.0	30.0
Total Split (%)	23.1%	23.1%	23.1%	10.0%	10.0%	23.1%	56.2%	10.8%	43.8%	23.1%
Yellow Time (s)	4.0	4.0	4.0	3.6	3.6	4.0	4.7	3.3	4.7	4.0
All-Red Time (s)	1.5	1.5	1.5	2.0	2.0	1.5	1.0	2.0	1.0	1.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	5.5	5.5	5.6	5.6	5.5	5.7	5.3	5.7	5.5
Lead/Lag	Lead			Lead			Lag	Lead	Lag	
Lead-Lag Optimize?										
Recall Mode	None	C-Max	None							
Act Effct Green (s)	23.9	23.9	43.7	7.3	7.3	19.9	71.1	7.7	56.6	86.2
Actuated g/C Ratio	0.18	0.18	0.34	0.06	0.06	0.15	0.55	0.06	0.44	0.66
v/c Ratio	0.93	0.91	0.74	0.61	0.56	0.79	0.62	0.60	0.73	0.46
Control Delay	88.8	85.1	29.5	84.9	38.1	64.2	22.3	82.1	33.6	9.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	88.8	85.1	29.5	84.9	38.1	64.2	22.3	82.1	33.6	9.9
LOS	F	F	C	F	D	E	C	F	C	A
Approach Delay	62.4			52.1			30.4			29.5
Approach LOS	E			D			C			C

Intersection Summary	
Cycle Length:	130
Actuated Cycle Length:	130
Offset:	0 (0%), Referenced to phase 6:SBT, Start of Green
Natural Cycle:	90
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.93
Intersection Signal Delay:	36.6
Intersection Capacity Utilization:	77.5%
ICU Level of Service:	D
Analysis Period (min):	15



Existing PM
9: Scottsdale Rd & Lincoln Dr

Smoke Tree Resort
HCM 6th Signalized Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (veh/h)	461	54	385	54	60	67	373	1514	44	56	1461	449
Future Volume (veh/h)	461	54	385	54	60	67	373	1514	44	56	1461	449
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	555	0	261	60	67	52	414	1682	38	62	1623	332
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	615	0	491	96	107	75	473	2510	57	79	2015	899
Arrive On Green	0.17	0.00	0.17	0.05	0.05	0.05	0.14	0.49	0.49	0.04	0.39	0.39
Sat Flow, veh/h	3563	0	1585	1781	1992	1403	3456	5137	116	1781	5106	1585
Grp Volume(v), veh/h	555	0	261	60	59	60	414	1114	606	62	1623	332
Grp Sat Flow(s),veh/h/ln	1781	0	1585	1781	1777	1618	1728	1702	1849	1781	1702	1585
Q Serve(g_s), s	19.8	0.0	17.7	4.3	4.2	4.7	15.3	32.4	32.4	4.5	36.7	14.9
Cycle Q Clear(g_c), s	19.8	0.0	17.7	4.3	4.2	4.7	15.3	32.4	32.4	4.5	36.7	14.9
Prop In Lane	1.00		1.00	1.00		0.87	1.00		0.06	1.00		1.00
Lane Grp Cap(c), veh/h	615	0	491	96	96	87	473	1663	904	79	2015	899
V/C Ratio(X)	0.90	0.00	0.53	0.63	0.62	0.69	0.87	0.67	0.67	0.78	0.81	0.37
Avail Cap(c_a), veh/h	671	0	516	101	101	92	651	1762	957	119	2015	899
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	52.7	0.0	37.1	60.2	60.2	60.4	55.0	25.3	25.3	61.5	34.9	15.4
Incr Delay (d2), s/veh	13.9	0.0	0.4	7.5	6.9	14.9	7.7	0.7	1.3	8.7	3.6	1.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	10.1	0.0	6.9	2.1	2.1	2.3	7.2	13.1	14.4	2.2	15.7	8.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	66.6	0.0	37.5	67.7	67.1	75.3	62.7	26.0	26.6	70.2	38.5	16.6
LnGrp LOS	E	A	D	E	E	E	E	C	C	E	D	B
Approach Vol, veh/h	816			179			2134			2017		
Approach Delay, s/veh	57.3			70.1			33.3			35.8		
Approach LOS	E			E			C			D		

Timer - Assigned Phs	1	2	4	5	6	8
Phs Duration (G+Y+Rc), s	11.1	69.2	28.0	23.3	57.0	12.6
Change Period (Y+Rc), s	* 5.3	5.7	5.5	5.5	5.7	5.6
Max Green Setting (Gmax), s	* 8.7	67.3	24.5	24.5	51.3	7.4
Max Q Clear Time (g_c+1), s	6.5	34.4	21.8	17.3	38.7	6.7
Green Ext Time (p_c), s	0.0	2.6	0.6	0.5	2.7	0.0

Intersection Summary	
HCM 6th Ctrl Delay	39.4
HCM 6th LOS	D

Notes
 User approved pedestrian interval to be less than phase max green.
 User approved volume balancing among the lanes for turning movement.
 * HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Existing PM Mitigated
9: Scottsdale Rd & Lincoln Dr

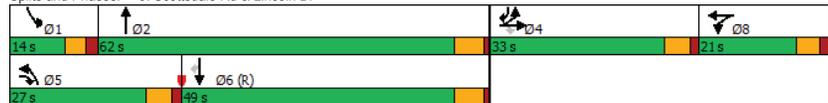
Smoke Tree Resort
Timings

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	461	54	385	54	60	373	1514	56	1461	449
Future Volume (vph)	461	54	385	54	60	373	1514	56	1461	449
Turn Type	Split	NA	pm+ov	Split	NA	Prot	NA	Prot	NA	pm+ov
Protected Phases	4	4	5	8	8	5	2	1	6	4
Permitted Phases	4			8			6			
Detector Phase	4	4	5	8	8	5	2	1	6	4
Switch Phase										
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0	10.0	5.0	10.0	7.0	
Minimum Split (s)	13.0	13.0	13.0	13.0	13.0	16.7	11.0	16.0	13.0	
Total Split (s)	33.0	33.0	27.0	21.0	21.0	27.0	62.0	14.0	49.0	33.0
Total Split (%)	25.4%	25.4%	20.8%	16.2%	16.2%	20.8%	47.7%	10.8%	37.7%	25.4%
Yellow Time (s)	4.0	4.0	4.0	3.6	3.6	4.0	4.7	3.3	4.7	4.0
All-Red Time (s)	1.5	1.5	1.5	2.0	2.0	1.5	1.0	2.0	1.0	1.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	5.5	5.5	5.6	5.6	5.5	5.7	5.3	5.7	5.5
Lead/Lag	Lead			Lead			Lag	Lead	Lag	
Lead-Lag Optimize?										
Recall Mode	None	C-Max	None							
Act Effct Green (s)	25.5	25.5	45.3	9.2	9.2	19.8	66.6	8.7	53.2	84.4
Actuated g/C Ratio	0.20	0.20	0.35	0.07	0.07	0.15	0.51	0.07	0.41	0.65
v/c Ratio	0.87	0.86	0.66	0.48	0.47	0.79	0.67	0.53	0.78	0.44
Control Delay	76.4	73.8	18.8	70.3	33.2	64.6	26.8	74.1	37.8	6.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	76.4	73.8	18.8	70.3	33.2	64.6	26.8	74.1	37.8	6.4
LOS	E	E	B	E	C	E	C	E	D	A
Approach Delay	51.0			44.3			34.1			31.7
Approach LOS	D			D			C			C

Intersection Summary

Cycle Length: 130
Actuated Cycle Length: 130
Offset: 0 (0%), Referenced to phase 6:SBT, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.87
Intersection Signal Delay: 36.6
Intersection Capacity Utilization 77.5%
ICU Level of Service D
Analysis Period (min) 15

Splits and Phases: 9: Scottsdale Rd & Lincoln Dr



Existing PM Mitigated
9: Scottsdale Rd & Lincoln Dr

Smoke Tree Resort
HCM 6th Signalized Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (veh/h)	461	54	385	54	60	67	373	1514	44	56	1461	449
Future Volume (veh/h)	461	54	385	54	60	67	373	1514	44	56	1461	449
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	555	0	261	60	67	52	414	1682	38	62	1623	332
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	625	0	494	96	108	76	470	2188	49	79	1701	806
Arrive On Green	0.18	0.00	0.18	0.05	0.05	0.05	0.14	0.43	0.43	0.04	0.33	0.33
Sat Flow, veh/h	3563	0	1585	1781	1992	1403	3456	5137	116	1781	5106	1585
Grp Volume(v), veh/h	555	0	261	60	59	60	414	1114	606	62	1623	332
Grp Sat Flow(s),veh/h/ln	1781	0	1585	1781	1777	1618	1728	1702	1849	1781	1702	1585
Q Serve(g_s), s	19.8	0.0	17.6	4.3	4.2	4.7	15.3	36.3	36.3	4.5	40.4	16.9
Cycle Q Clear(g_c), s	19.8	0.0	17.6	4.3	4.2	4.7	15.3	36.3	36.3	4.5	40.4	16.9
Prop In Lane	1.00		1.00	1.00		0.87	1.00		0.06	1.00		1.00
Lane Grp Cap(c), veh/h	625	0	494	96	96	87	470	1450	788	79	1701	806
V/C Ratio(X)	0.89	0.00	0.53	0.62	0.61	0.69	0.88	0.77	0.77	0.78	0.95	0.41
Avail Cap(c_a), veh/h	754	0	551	211	210	192	572	1474	801	119	1701	806
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	52.3	0.0	36.9	60.2	60.2	60.4	55.1	31.8	31.8	61.5	42.4	19.9
Incr Delay (d2), s/veh	9.8	0.0	0.3	2.4	2.4	3.5	11.5	2.2	4.0	8.7	13.4	1.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	9.7	0.0	6.9	2.0	2.0	2.0	7.4	15.2	17.0	2.2	18.9	9.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	62.2	0.0	37.2	62.6	62.5	63.9	66.7	34.1	35.9	70.2	55.8	21.4
LnGrp LOS	E	A	D	E	E	E	E	C	D	E	E	C
Approach Vol, veh/h	816			179			2134			2017		
Approach Delay, s/veh	54.2			63.0			40.9			50.6		
Approach LOS	D			E			D			D		

Timer - Assigned Phs	1	2	4	5	6	8
Phs Duration (G+Y+Rc), s	11.1	61.1	28.3	23.2	49.0	12.6
Change Period (Y+Rc), s	* 5.3	5.7	5.5	5.5	5.7	5.6
Max Green Setting (Gmax), s	* 8.7	56.3	27.5	21.5	43.3	15.4
Max Q Clear Time (g_c+1), s	6.5	38.3	21.8	17.3	42.4	6.7
Green Ext Time (p_c), s	0.0	2.6	1.0	0.4	0.5	0.3

Intersection Summary

HCM 6th Ctrl Delay	47.6
HCM 6th LOS	D

Notes

- User approved pedestrian interval to be less than phase max green.
- User approved volume balancing among the lanes for turning movement.
- * HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

APPENDIX D

TRIP GENERATION

Smoke Tree Resort

Proposed

CivTech Inc.

September 2019

Methodology Overview

This form facilitates trip generation estimation using data within the Institute of Transportation Engineer's (ITE) *Trip Generation Manual*, 10th Edition and methodology described within ITE's *Trip Generation Handbook*, 3rd Edition. These references will be referred to as *Manual and Handbook*, respectively. The *Manual* contains data collected by various transportation professionals for a wide range of different land uses, with each land use category represented by a land use code (LUC). Average rates and equations have been established that correlate the relationship between an independent variable that describes the development size and generated trips for each categorized LUC in various settings and time periods. The *Handbook* indicates an established methodology for how to use data contained within the Manual when to use the fitted curve instead of the average rate and when to adjustments to the volume of trips are appropriate and how to do so. The methodology steps are represented visually in boxes in Figure 3.1. This worksheet applies calculations for each box if applicable.

Box 1 - Define Study Site Land Use Type & Site Characteristics

The analyst is to pick an appropriate LUC(s) based on the subject's zoning/land use(s)/future land use(s). The size of the land use(s) is described in reference to an independent variable(s) specific to (each) the land use (example: 1,000 square feet of building area is relatively common).

Land Use Types and Size

Proposed Use	Amount Units	ITE LUC	ITE Land Use Name
Main Hotel/Resort Villas	121 Rooms	310	Hotel
Quality Restaurant	3,200 1,000 square feet	931	Quality Restaurant

Equation Type: Equation Used [Equated Rate] (Type Abbreviations: Weighted Average Rate ("WA"), Fitted Curve ("FC"), or Custom ("C"))

Proposed Use	ADT	AM Peak Hour	PM Peak Hour	(not used)
Main Hotel/Resort Villas	C: $T=X*4.46$ [4.46]	C: $T=X*0.39$ [0.39]	C: $T=X*0.47$ [0.47]	
Quality Restaurant	WA: $T=X*83.84$ [83.84]	WA: $T=X*0.73$ [0.73]	WA: $T=X*7.8$ [7.80]	

Baseline Vehicular Trips

Proposed Use	ADT				AM Peak Hour				PM Peak Hour				(not used)
	% In	In	Out	Total	% In	In	Out	Total	% In	In	Out	Total	
Main Hotel/Resort Villas	50%	270	270	540	59%	28	19	47	51%	29	28	57	
Quality Restaurant	50%	134	134	268	80%	2	0	2	67%	17	8	25	
Totals		404	404	808		30	19	49		46	36	82	

Adjustments for Internal Trips

Proposed Use	ADT				AM Peak Hour				PM Peak Hour				(not used)
	Percent	In	Out	Total	Percent	In	Out	Total	Percent	In	Out	Total	
Main Hotel/Resort Villas	0%	0	0	0	0%	0	0	0	0%	0	0	0	
Quality Restaurant	50%	67	67	134	50%	1	0	1	50%	9	4	13	
Totals		67	67	134		1	0	1		9	4	13	

External Vehicular Trips

Proposed Use	ADT			AM Peak Hour			PM Peak Hour			(not used)
	In	Out	Total	In	Out	Total	In	Out	Total	
Main Hotel/Resort Villas	270	270	540	28	19	47	29	28	57	
Quality Restaurant	67	67	134	1	0	1	8	4	12	
Totals	337	337	674	29	19	48	37	32	69	

APPENDIX E

TRIP DISTRIBUTION

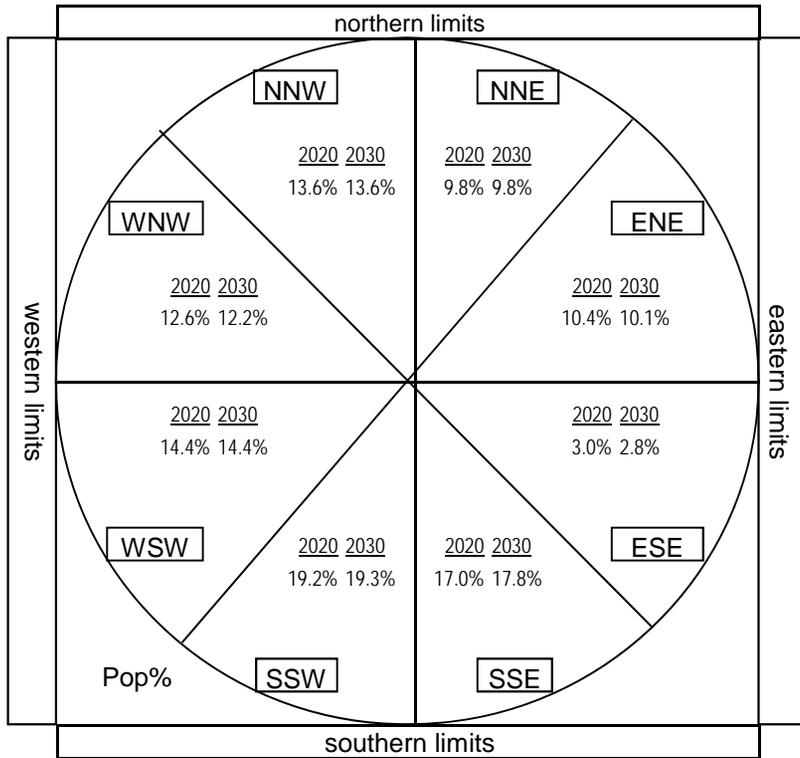
Quadrant	2020		2030	
	Population	Percent	Population	Percent
North Northwest	65,355	13.6%	70,346	13.6%
North Northeast	46,994	9.8%	50,587	9.8%
North	112,348	23.4%	120,934	23.4%
East Northeast	49,891	10.4%	52,124	10.1%
East Southeast	14,233	3.0%	14,712	2.8%
East	64,123	13.4%	66,836	12.9%
South Southeast	81,730	17.0%	92,480	17.8%
South Southwest	92,361	19.2%	99,928	19.3%
South	174,091	36.2%	192,407	37.1%
West Southwest	69,372	14.4%	74,834	14.4%
West Northwest	60,317	12.6%	63,387	12.2%
West	129,689	27.0%	138,221	26.6%
Totals	480,252	100.0%	518,398	100.0%

Radius

Population radius: 10 miles

Select Analysis Year (2020, 2030, 2040,2050)

2020



APPENDIX F

BACKGROUND TRAFFIC

Location of counts: Scottsdale Road between Indian Bend and Lincoln

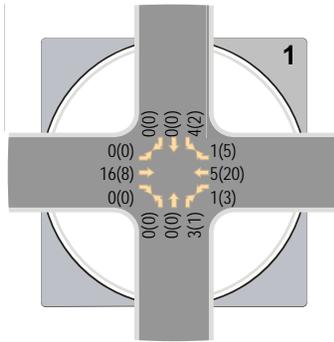
Source(s): <https://www.scottsdaleaz.gov/transportation/studies-reports/traffic-volume>

	Year	Volume	Avg Growth Rate to 2012	Expansion Factor to 2012
Beginning	2012	43,500		
End	2014	45,000	1.7%	0.967

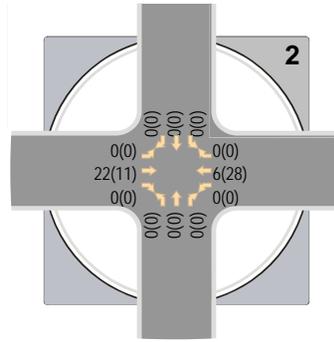
Growth Rate Used 1.7%
 Per-Year Multiplier 1.017

Year	Expansion Factor(s)
2018	1.000
2019	1.017
2020	1.034 <- Expansion factor to opening
2021	1.052
2022	1.070
2023	1.088
2024	1.106
2025	1.125 <- Expansion factor to 5 years after opening
2026	1.144
2027	1.164
2028	1.184
2029	1.204
2030	1.224
2031	1.245
2032	1.266
2033	1.288
2034	1.310
2035	1.332
2036	1.354
2037	1.378
2038	1.401

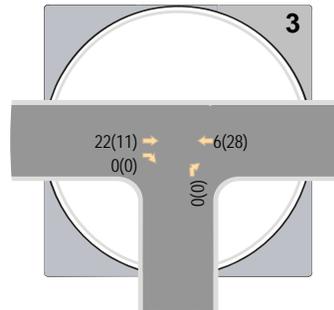
Lincoln medical site



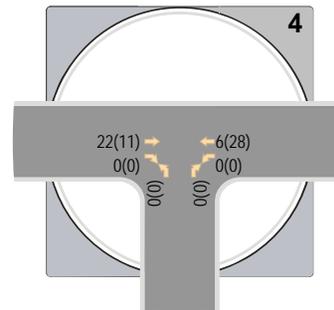
Mockingbird Lane & Lincoln Dr



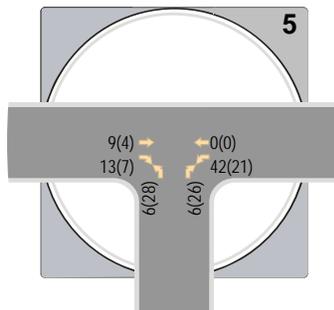
Quail Run Rd & Lincoln Dr



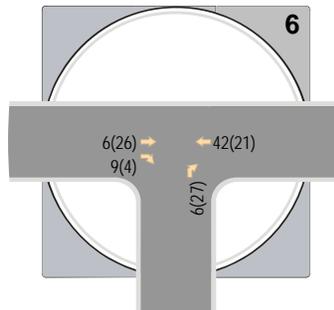
Smoke Tree Drwy West & Lincoln Dr



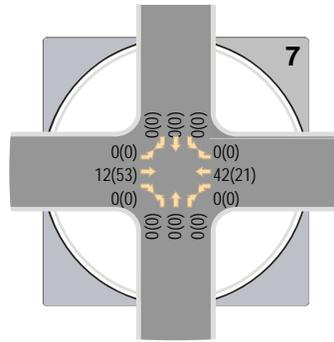
Smoke Tree Drwy East & Lincoln Dr



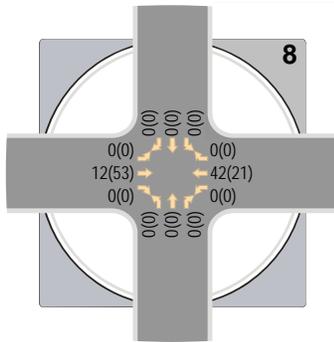
Medical Drwy West & Lincoln Dr



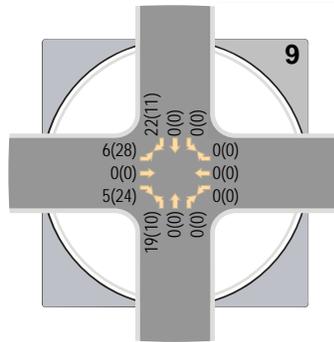
Medical Drwy East & Lincoln Dr



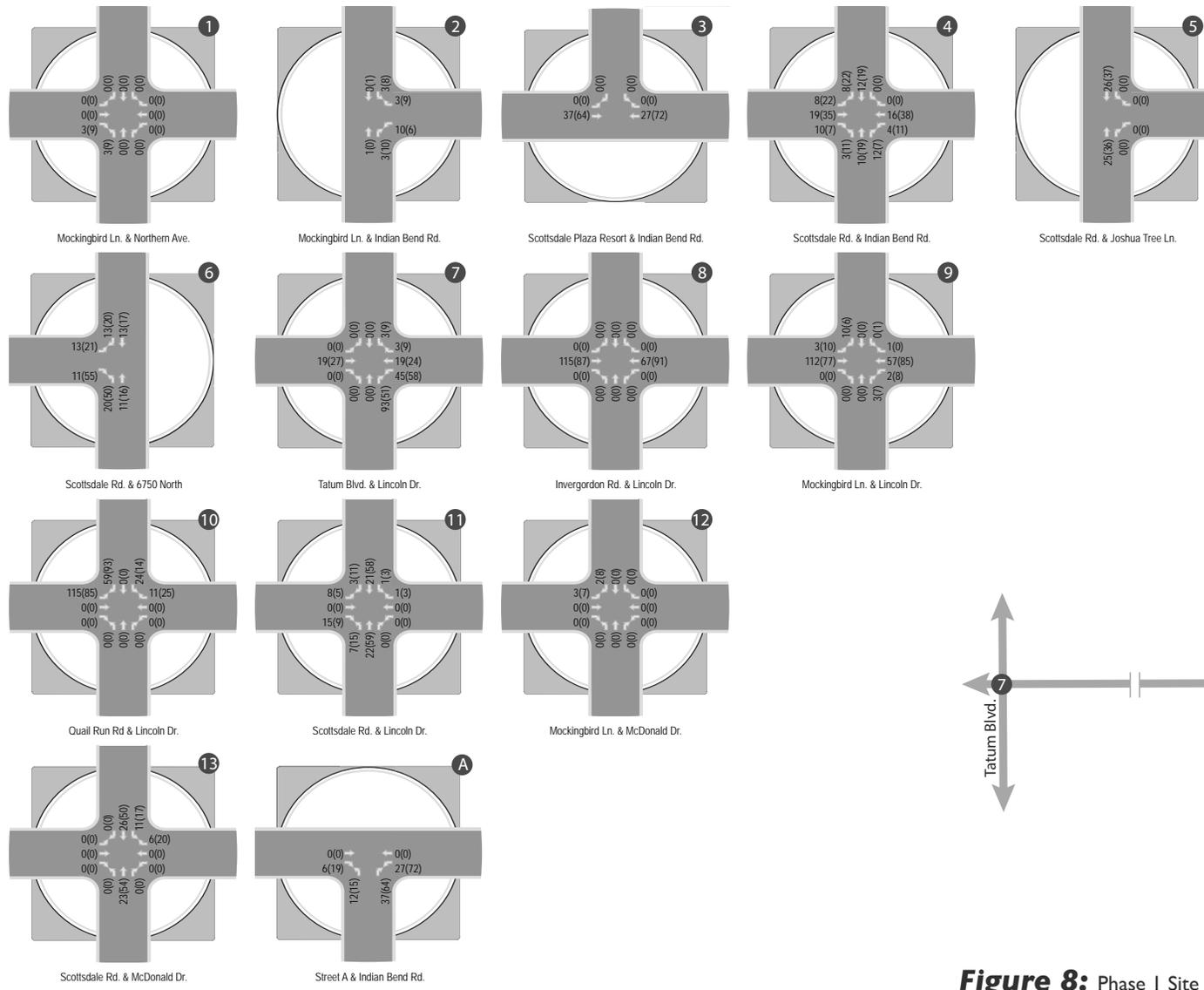
Apartment Drwy & Lincoln Dr



AJ's Drwy & Lincoln Dr



Scottsdale Rd & Lincoln Dr



LEGEND
 XX(XX) - AM(PM) Peak Hour Traffic Volumes

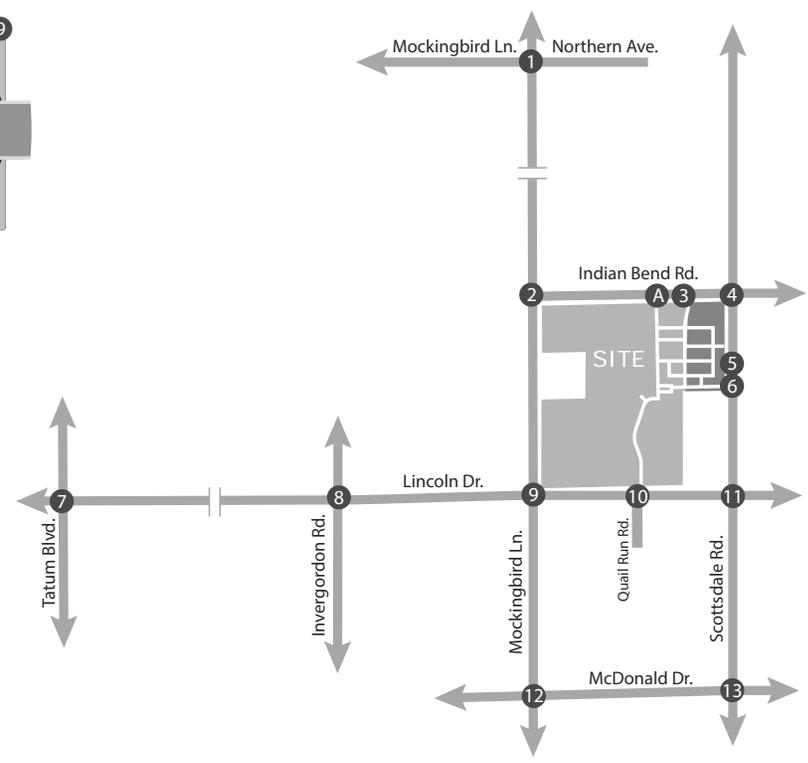


Figure 8: Phase I Site Generated Traffic Volumes without Palmeraie Access A

APPENDIX G

SCENARIO 1 & 2 2020 PEAK HOUR ANALYSIS

2020 Background AM
1: Mockingbird Ln & Lincoln Drive

Smoke Tree Resort
Timings

	↖	→	↙	←	↘	↑	↗	↓
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations	↖	↖↗	↖	↖↗	↖	↖	↖	↖
Traffic Volume (vph)	222	955	22	885	5	34	72	91
Future Volume (vph)	222	955	22	885	5	34	72	91
Turn Type	pm+pt	NA	Perm	NA	Perm	NA	pm+pt	NA
Protected Phases	1	6		2		4	3	8
Permitted Phases	6		2		4		8	
Detector Phase	1	6	2	2	4	4	3	8
Switch Phase								
Minimum Initial (s)	3.5	15.0	15.0	15.0	7.0	7.0	3.5	7.0
Minimum Split (s)	8.0	27.0	27.0	27.0	33.5	33.5	8.0	33.5
Total Split (s)	27.0	77.0	50.0	50.0	44.0	44.0	9.0	53.0
Total Split (%)	20.8%	59.2%	38.5%	38.5%	33.8%	33.8%	6.9%	40.8%
Yellow Time (s)	3.0	4.5	4.5	4.5	4.0	4.0	3.0	4.0
All-Red Time (s)	1.0	1.5	1.5	1.5	2.5	2.5	1.0	2.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	6.0	6.0	6.0	6.5	6.5	4.0	6.5
Lead/Lag	Lead		Lag	Lag	Lag	Lag	Lead	
Lead-Lag Optimize?	Yes		Yes	Yes	Yes	Yes	Yes	
Recall Mode	None	C-Max	C-Max	C-Max	None	None	None	None
Act Effct Green (s)	93.9	91.9	69.7	69.7	18.4	18.4	28.1	25.6
Actuated g/C Ratio	0.72	0.71	0.54	0.54	0.14	0.14	0.22	0.20
v/c Ratio	0.58	0.42	0.10	0.52	0.11	0.21	0.32	0.83
Control Delay	13.5	9.3	26.9	28.9	49.6	33.8	43.1	50.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	13.5	9.3	26.9	28.9	49.6	33.8	43.1	50.1
LOS	B	A	C	C	D	C	D	D
Approach Delay		10.1		28.8		35.3		48.8
Approach LOS		B		C		D		D

Intersection Summary

Cycle Length: 130	
Actuated Cycle Length: 130	
Offset: 0 (0%), Referenced to phase 2:WBL and 6:EBTL, Start of Green	
Natural Cycle: 90	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.83	
Intersection Signal Delay: 23.3	Intersection LOS: C
Intersection Capacity Utilization 72.1%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 1: Mockingbird Ln & Lincoln Drive



2020 Background AM
1: Mockingbird Ln & Lincoln Drive

Smoke Tree Resort
HCM 6th Signalized Intersection Summary

	↖	→	↙	←	↘	↑	↗	↓	↖			
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↖↗		↖	↖↗		↖	↖		↖	↖	↖
Traffic Volume (veh/h)	222	955	30	22	885	41	5	34	19	72	91	233
Future Volume (veh/h)	222	955	30	22	885	41	5	34	19	72	91	233
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No		No		No		No		No	
Adj Sat Flow, veh/h/ln	1772	1969	1772	1772	1969	1772	1772	1969	1772	1772	1969	1772
Adj Flow Rate, veh/h	247	1061	22	24	983	29	6	38	12	80	101	148
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	508	2774	58	370	2382	70	85	136	43	210	118	173
Arrive On Green	0.07	0.74	0.74	1.00	1.00	1.00	0.09	0.09	0.09	0.04	0.16	0.16
Sat Flow, veh/h	1688	3747	78	493	3710	109	1071	1434	453	1688	721	1057
Grp Volume(v), veh/h	247	530	553	24	496	516	6	0	50	80	0	249
Grp Sat Flow(s),veh/h/ln	1688	1870	1955	493	1870	1949	1071	0	1887	1688	0	1779
Q Serve(g_s), s	6.1	13.3	13.3	0.0	0.0	0.0	0.7	0.0	3.2	5.0	0.0	17.7
Cycle Q Clear(g_c), s	6.1	13.3	13.3	0.6	0.0	0.0	9.4	0.0	3.2	5.0	0.0	17.7
Prop In Lane	1.00		0.04	1.00		0.06	1.00		0.24	1.00		0.59
Lane Grp Cap(c), veh/h	508	1384	1447	370	1201	1251	85	0	178	210	0	291
V/C Ratio(X)	0.49	0.38	0.38	0.06	0.41	0.41	0.07	0.00	0.28	0.38	0.00	0.86
Avail Cap(c_a), veh/h	693	1384	1447	370	1201	1251	293	0	544	210	0	636
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.80	0.80	0.80	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	5.8	6.1	6.1	0.0	0.0	0.0	61.8	0.0	54.7	50.0	0.0	52.9
Incr Delay (d2), s/veh	0.7	0.8	0.8	0.3	0.8	0.8	0.3	0.0	0.8	1.1	0.0	7.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.1	5.1	5.3	0.0	0.3	0.3	0.2	0.0	1.6	2.4	0.0	8.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	6.5	6.9	6.9	0.3	0.8	0.8	62.2	0.0	55.6	51.2	0.0	60.0
LnGrp LOS	A	A	A	A	A	A	E	A	E	D	A	E
Approach Vol, veh/h		1330			1036			56			329	
Approach Delay, s/veh		6.8			0.8			56.3			57.8	
Approach LOS		A			A			E			E	
Timer - Assigned Phs	1	2	3	4		6		8				
Phs Duration (G+Y+Rc), s	12.7	89.5	9.0	18.8		102.2		27.8				
Change Period (Y+Rc), s	4.0	6.0	4.0	6.5		6.0		6.5				
Max Green Setting (Gmax), s	23.0	44.0	5.0	37.5		71.0		46.5				
Max Q Clear Time (g_c+1), s	8.1	2.6	7.0	11.4		15.3		19.7				
Green Ext Time (p_c), s	0.6	8.7	0.0	0.2		9.4		1.6				

Intersection Summary

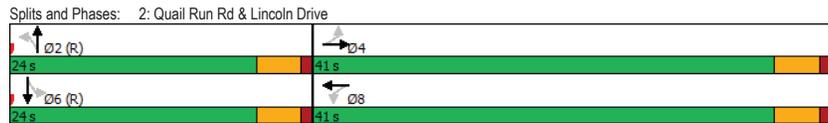
HCM 6th Ctrl Delay	11.7
HCM 6th LOS	B

2020 Background AM
2: Quail Run Rd & Lincoln Drive

Smoke Tree Resort
Timings

	↖	→	↘	←	↑	↙	↓
Lane Group	EBL	EBT	WBL	WBT	NBT	SBL	SBT
Lane Configurations	↖	↕	↘	↕	↕	↕	↕
Traffic Volume (vph)	115	995	2	847	0	26	0
Future Volume (vph)	115	995	2	847	0	26	0
Turn Type	Perm	NA	Perm	NA	NA	Perm	NA
Protected Phases		4		8	2		6
Permitted Phases	4		8			6	
Detector Phase	4	4	8	8	2	6	6
Switch Phase							
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	22.5	22.5	22.5	22.5	22.5
Total Split (s)	41.0	41.0	41.0	41.0	24.0	24.0	24.0
Total Split (%)	63.1%	63.1%	63.1%	63.1%	36.9%	36.9%	36.9%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag							
Lead-Lag Optimize?							
Recall Mode	None	None	None	None	C-Max	C-Max	C-Max
Act Effct Green (s)	30.7	30.7	30.7	30.7	25.3	25.3	25.3
Actuated g/C Ratio	0.47	0.47	0.47	0.47	0.39	0.39	0.39
v/c Ratio	0.68	0.66	0.01	0.57	0.01	0.15	0.15
Control Delay	39.2	18.7	7.0	13.2	0.0	7.7	7.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	39.2	18.7	7.0	13.2	0.0	7.7	7.7
LOS	D	B	A	B	A	A	A
Approach Delay		20.8		13.2			7.7
Approach LOS		C		B			A

Intersection Summary	
Cycle Length:	65
Actuated Cycle Length:	65
Offset:	0 (0%), Referenced to phase 2:NBT and 6:SBTL, Start of Green
Natural Cycle:	60
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.68
Intersection Signal Delay:	17.0
Intersection Capacity Utilization:	55.1%
ICU Level of Service:	B
Analysis Period (min):	15



2020 Background AM
2: Quail Run Rd & Lincoln Drive

Smoke Tree Resort
HCM 6th Signalized Intersection Summary

	↖	→	↘	↙	←	↖	↙	↑	↘	↙	↓	↘
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↕		↖	↕			↕		↕	↕	↕
Traffic Volume (veh/h)	115	995	3	2	847	12	0	0	7	26	0	65
Future Volume (veh/h)	115	995	3	2	847	12	0	0	7	26	0	65
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No											
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	128	1106	0	2	941	7	0	0	5	29	0	50
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	297	1464	0	246	1489	11	0	0	713	296	33	437
Arrive On Green	0.82	0.82	0.00	0.82	0.82	0.82	0.00	0.00	0.45	0.45	0.00	0.45
Sat Flow, veh/h	592	3647	0	510	3615	27	0	0	1585	491	73	972
Grp Volume(v), veh/h	128	1106	0	2	462	486	0	0	5	79	0	0
Grp Sat Flow(s),veh/h/ln	592	1777	0	510	1777	1866	0	0	1585	1536	0	0
Q Serve(g_s), s	9.2	9.4	0.0	0.1	6.2	6.2	0.0	0.0	0.1	0.0	0.0	0.0
Cycle Q Clear(g_c), s	15.4	9.4	0.0	9.7	6.2	6.2	0.0	0.0	0.1	1.8	0.0	0.0
Prop In Lane	1.00		0.00	1.00		0.01	0.00		1.00	0.37		0.63
Lane Grp Cap(c), veh/h	297	1464	0	246	732	769	0	0	713	766	0	0
V/C Ratio(X)	0.43	0.76	0.00	0.01	0.63	0.63	0.00	0.00	0.01	0.10	0.00	0.00
Avail Cap(c_a), veh/h	386	1996	0	322	998	1048	0	0	713	766	0	0
HCM Platoon Ratio	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.92	0.92	0.00	1.00	1.00	1.00	0.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	6.8	4.2	0.0	6.5	3.9	3.9	0.0	0.0	9.9	10.3	0.0	0.0
Incr Delay (d2), s/veh	0.9	1.0	0.0	0.0	0.9	0.9	0.0	0.0	0.0	0.3	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	1.6	0.0	0.0	1.3	1.4	0.0	0.0	0.0	0.6	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	7.7	5.2	0.0	6.5	4.8	4.8	0.0	0.0	9.9	10.6	0.0	0.0
LnGrp LOS	A	A	A	A	A	A	A	A	A	B	A	A
Approach Vol, veh/h		1234			950				5			79
Approach Delay, s/veh		5.5			4.8				9.9			10.6
Approach LOS		A			A				A			B
Timer - Assigned Phs		2		4		6			8			
Phs Duration (G+Y+Rc), s		33.7		31.3		33.7			31.3			
Change Period (Y+Rc), s		4.5		4.5		4.5			4.5			
Max Green Setting (Gmax), s		19.5		36.5		19.5			36.5			
Max Q Clear Time (g_c+1), s		2.1		17.4		3.8			11.7			
Green Ext Time (p_c), s		0.0		9.3		0.3			6.7			

Intersection Summary	
HCM 6th Ctrl Delay	5.4
HCM 6th LOS	A

2020 Background AM
3: Smoke Tree West & Lincoln Dr

Smoke Tree Resort
HCM 6th TWSC

Intersection						
Int Delay, s/veh	0					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↑	↑↑	↑	↑
Traffic Vol, veh/h	1025	2	1	857	4	0
Future Vol, veh/h	1025	2	1	857	4	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	25	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1139	2	1	952	4	0

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	1141
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	-	4.14
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	-	2.22
Pot Cap-1 Maneuver	-	-	976
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	1
Mov Cap-1 Maneuver	-	-	976
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	15.8
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	338	-	-	976	-
HCM Lane V/C Ratio	0.013	-	-	0.001	-
HCM Control Delay (s)	15.8	-	-	8.7	-
HCM Lane LOS	C	-	-	A	-
HCM 95th %tile Q(veh)	0	-	-	0	-

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

2020 Background AM
4: Smoke Tree East & Lincoln Dr

Smoke Tree Resort
HCM 6th TWSC

Intersection						
Int Delay, s/veh	0					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↑	↑↑	↑	↑
Traffic Vol, veh/h	1027	0	0	854	1	2
Future Vol, veh/h	1027	0	0	854	1	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	25	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1141	0	0	949	1	2

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	1141
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	-	4.14
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	-	2.22
Pot Cap-1 Maneuver	-	-	976
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	1
Mov Cap-1 Maneuver	-	-	976
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	12.1
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	511	-	-	976	-
HCM Lane V/C Ratio	0.007	-	-	-	-
HCM Control Delay (s)	12.1	-	-	0	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0	-	-	0	-

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

2020 Background AM
5: Lincoln Medical West & Lincoln Dr

Smoke Tree Resort
HCM 6th TWSC

Intersection						
Int Delay, s/veh	0					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↑	↑↑	↑	
Traffic Vol, veh/h	1025	4	0	854	0	3
Future Vol, veh/h	1025	4	0	854	0	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	25	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1139	4	0	949	0	3

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	1143	0	1616
Stage 1	-	-	-	-	1141
Stage 2	-	-	-	-	475
Critical Hdwy	-	-	4.14	-	6.84
Critical Hdwy Stg 1	-	-	-	-	5.84
Critical Hdwy Stg 2	-	-	-	-	5.84
Follow-up Hdwy	-	-	2.22	-	3.52
Pot Cap-1 Maneuver	-	-	973	-	*94 *684
Stage 1	-	-	-	-	*605
Stage 2	-	-	-	-	*698
Platoon blocked, %	-	-	1	-	1
Mov Cap-1 Maneuver	-	-	973	-	*94 *684
Mov Cap-2 Maneuver	-	-	-	-	*339
Stage 1	-	-	-	-	*605
Stage 2	-	-	-	-	*698

Approach	EB	WB	NB
HCM Control Delay, s	0	0	10.3
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	684	-	-	973	-
HCM Lane V/C Ratio	0.005	-	-	-	-
HCM Control Delay (s)	10.3	-	-	0	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0	-	-	0	-

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

2020 Background AM
6: Lincoln Medical East & Lincoln Dr

Smoke Tree Resort
HCM 6th TWSC

Intersection						
Int Delay, s/veh	0.1					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↑	↑↑	↑	
Traffic Vol, veh/h	1024	2	5	854	0	3
Future Vol, veh/h	1024	2	5	854	0	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	25	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1138	2	6	949	0	3

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	1140	0	1626
Stage 1	-	-	-	-	1139
Stage 2	-	-	-	-	487
Critical Hdwy	-	-	4.14	-	6.84
Critical Hdwy Stg 1	-	-	-	-	5.84
Critical Hdwy Stg 2	-	-	-	-	5.84
Follow-up Hdwy	-	-	2.22	-	3.52
Pot Cap-1 Maneuver	-	-	977	-	*93 *684
Stage 1	-	-	-	-	*607
Stage 2	-	-	-	-	*698
Platoon blocked, %	-	-	1	-	1
Mov Cap-1 Maneuver	-	-	977	-	*92 *684
Mov Cap-2 Maneuver	-	-	-	-	*336
Stage 1	-	-	-	-	*604
Stage 2	-	-	-	-	*698

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	10.3
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	684	-	-	977	-
HCM Lane V/C Ratio	0.005	-	-	0.006	-
HCM Control Delay (s)	10.3	-	-	8.7	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0	-	-	0	-

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

2020 Background AM
7: Apartment Drwy & Lincoln Dr

Smoke Tree Resort
HCM 6th TWSC

Intersection												
Int Delay, s/veh	1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔ ↗		↔ ↗		↔ ↗		↔ ↗		↔ ↗		↔ ↗	
Traffic Vol, veh/h	26	967	34	18	794	10	50	0	29	5	0	12
Future Vol, veh/h	26	967	34	18	794	10	50	0	29	5	0	12
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None									
Storage Length	25	-	-	25	-	-	-	-	-	0	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	-	1	-	-	1
Grade, %	-	0	-	-	0	-	-	-	0	-	-	0
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	29	1074	38	20	882	11	56	0	32	6	0	13

Major/Minor	Major1	Major2	Minor1	Minor2
Conflicting Flow All	893	0	0	1112
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Critical Hdwy	4.14	-	-	4.14
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	2.22	-	-	2.22
Pot Cap-1 Maneuver	1133	-	-	1014
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Platoon blocked, %	1	-	-	1
Mov Cap-1 Maneuver	1133	-	-	1014
Mov Cap-2 Maneuver	-	-	-	-
Stage 1	-	-	-	-
Stage 2	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	0.2	17	11.8
HCM LOS			C	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	387	1133	-	-	1014	-	-	313	763
HCM Lane V/C Ratio	0.227	0.025	-	-	0.02	-	-	0.018	0.017
HCM Control Delay (s)	17	8.3	-	-	8.6	-	-	16.7	9.8
HCM Lane LOS	C	A	-	-	A	-	-	C	A
HCM 95th %tile Q(veh)	0.9	0.1	-	-	0.1	-	-	0.1	0.1

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

2020 Background AM
8: AJ's Drwy & Lincoln Dr

Smoke Tree Resort
HCM 6th TWSC

Intersection												
Int Delay, s/veh	0.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔ ↗		↔ ↗		↔ ↗		↔ ↗		↔ ↗		↔ ↗	
Traffic Vol, veh/h	3	946	53	43	806	8	6	0	41	4	1	12
Future Vol, veh/h	3	946	53	43	806	8	6	0	41	4	1	12
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None									
Storage Length	25	-	-	25	-	-	-	-	-	0	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	-	1	-	-	1
Grade, %	-	0	-	-	0	-	-	-	0	-	-	0
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	3	1051	59	48	896	9	7	0	46	4	1	13

Major/Minor	Major1	Major2	Minor1	Minor2
Conflicting Flow All	905	0	0	1110
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Critical Hdwy	4.14	-	-	4.14
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	2.22	-	-	2.22
Pot Cap-1 Maneuver	1117	-	-	1017
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Platoon blocked, %	1	-	-	1
Mov Cap-1 Maneuver	1117	-	-	1017
Mov Cap-2 Maneuver	-	-	-	-
Stage 1	-	-	-	-
Stage 2	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.4	11.6	11.7
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	601	1117	-	-	1017	-	-	292	763
HCM Lane V/C Ratio	0.087	0.003	-	-	0.047	-	-	0.015	0.017
HCM Control Delay (s)	11.6	8.2	-	-	8.7	-	-	17.5	9.8
HCM Lane LOS	B	A	-	-	A	-	-	C	A
HCM 95th %tile Q(veh)	0.3	0	-	-	0.1	-	-	0	0.1

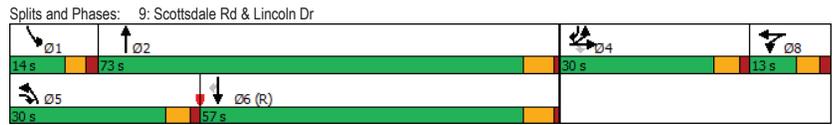
Notes
 -: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

2020 Background AM
9: Scottsdale Rd & Lincoln Dr

Smoke Tree Resort
Timings

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	444	38	455	37	36	276	1316	51	1669	579
Future Volume (vph)	444	38	455	37	36	276	1316	51	1669	579
Turn Type	Split	NA	pm+ov	Split	NA	Prot	NA	Prot	NA	pm+ov
Protected Phases	4	4	5	8	8	5	2	1	6	4
Permitted Phases	4			8			6			
Detector Phase	4	4	5	8	8	5	2	1	6	4
Switch Phase										
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0	10.0	5.0	10.0	7.0	
Minimum Split (s)	13.0	13.0	13.0	13.0	13.0	16.7	11.0	16.0	13.0	
Total Split (s)	30.0	30.0	30.0	13.0	13.0	30.0	73.0	14.0	57.0	30.0
Total Split (%)	23.1%	23.1%	23.1%	10.0%	10.0%	23.1%	56.2%	10.8%	43.8%	23.1%
Yellow Time (s)	4.0	4.0	4.0	3.6	3.6	4.0	4.7	3.3	4.7	4.0
All-Red Time (s)	1.5	1.5	1.5	2.0	2.0	1.5	1.0	2.0	1.0	1.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	5.5	5.5	5.6	5.6	5.5	5.7	5.3	5.7	5.5
Lead/Lag	Lead			Lead			Lag	Lead	Lag	
Lead-Lag Optimize?										
Recall Mode	None	C-Max	None							
Act Effct Green (s)	23.3	23.3	41.6	7.2	7.2	18.3	71.8	7.6	58.9	87.9
Actuated g/C Ratio	0.18	0.18	0.32	0.06	0.06	0.14	0.55	0.06	0.45	0.68
v/c Ratio	0.88	0.88	0.91	0.42	0.40	0.64	0.54	0.55	0.81	0.56
Control Delay	81.2	80.8	48.1	72.5	33.9	58.2	20.3	79.0	35.2	9.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	81.2	80.8	48.1	72.5	33.9	58.2	20.3	79.0	35.2	9.7
LOS	F	F	D	E	C	E	C	E	D	A
Approach Delay	65.0			45.7			26.7		29.8	
Approach LOS	E			D			C		C	

Intersection Summary	
Cycle Length:	130
Actuated Cycle Length:	130
Offset:	0 (0%), Referenced to phase 6:SBT, Start of Green
Natural Cycle:	90
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.91
Intersection Signal Delay:	35.8
Intersection Capacity Utilization:	80.3%
ICU Level of Service D	
Analysis Period (min)	15



2020 Background AM
9: Scottsdale Rd & Lincoln Dr

Smoke Tree Resort
HCM 6th Signalized Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (veh/h)	444	38	455	37	36	48	276	1316	39	51	1669	579
Future Volume (veh/h)	444	38	455	37	36	48	276	1316	39	51	1669	579
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	1.00	1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	523	0	250	41	40	36	307	1462	30	57	1854	365
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	587	0	429	95	100	79	367	2374	49	73	2015	887
Arrive On Green	0.16	0.00	0.16	0.05	0.05	0.05	0.11	0.46	0.46	0.04	0.39	0.39
Sat Flow, veh/h	3563	0	1585	1781	1881	1497	3456	5150	106	1781	5106	1585
Grp Volume(v), veh/h	523	0	250	41	37	39	307	966	526	57	1854	365
Grp Sat Flow(s),veh/h/ln	1781	0	1585	1781	1777	1601	1728	1702	1851	1781	1702	1585
Q Serve(g_s), s	18.7	0.0	17.7	2.9	2.7	3.0	11.3	27.8	27.8	4.1	44.9	17.1
Cycle Q Clear(g_c), s	18.7	0.0	17.7	2.9	2.7	3.0	11.3	27.8	27.8	4.1	44.9	17.1
Prop In Lane	1.00	1.00	1.00	1.00	0.94	1.00	1.00	1.00	0.06	1.00	1.00	1.00
Lane Grp Cap(c), veh/h	587	0	429	95	94	85	367	1570	854	73	2015	887
V/C Ratio(X)	0.89	0.00	0.58	0.43	0.40	0.45	0.84	0.62	0.62	0.78	0.92	0.41
Avail Cap(c_a), veh/h	671	0	467	101	101	91	651	1762	958	119	2015	887
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	53.1	0.0	41.0	59.7	59.5	59.7	57.0	26.4	26.4	61.7	37.4	16.4
Incr Delay (d2), s/veh	11.9	0.0	0.8	1.2	1.0	1.4	2.0	0.3	0.6	6.5	8.4	1.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	9.3	0.0	7.1	1.3	1.2	1.3	5.1	11.2	12.3	2.0	20.0	9.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	65.0	0.0	41.9	60.8	60.6	61.1	59.0	26.7	26.9	68.2	45.8	17.8
LnGrp LOS	E	A	D	E	E	E	E	C	C	E	D	B
Approach Vol, veh/h	773			117			1799		2276			
Approach Delay, s/veh	57.5			60.8			32.3		41.8			
Approach LOS	E			E			C		D			
Timer - Assigned Phs	1	2	4		5	6	8					
Phs Duration (G+Y+Rc), s	10.6	65.6	26.9		19.3	57.0	12.5					
Change Period (Y+Rc), s	* 5.3	5.7	5.5		5.5	5.7	5.6					
Max Green Setting (Gmax), s	* 8.7	67.3	24.5		24.5	51.3	7.4					
Max Q Clear Time (g_c+1), s	6.1	29.8	20.7		13.3	46.9	5.0					
Green Ext Time (p_c), s	0.0	2.2	0.8		0.5	2.0	0.1					

Intersection Summary	
HCM 6th Ctrl Delay	41.3
HCM 6th LOS	D

Notes
 User approved pedestrian interval to be less than phase max green.
 User approved volume balancing among the lanes for turning movement.
 * HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

2020 Background PM
1: Mockingbird Ln & Lincoln Drive

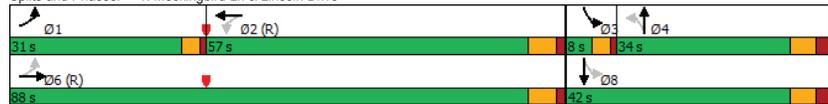
Smoke Tree Resort
Timings

	↖	→	↘	↙	↖	↗	↘	↙
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations	↖	↖↗	↖	↖↗	↖	↖	↖	↖
Traffic Volume (vph)	246	867	20	917	7	62	60	48
Future Volume (vph)	246	867	20	917	7	62	60	48
Turn Type	pm+pt	NA	Perm	NA	Perm	NA	pm+pt	NA
Protected Phases	1	6		2		4	3	8
Permitted Phases	6		2		4		8	
Detector Phase	1	6	2	2	4	4	3	8
Switch Phase								
Minimum Initial (s)	4.0	15.0	15.0	15.0	7.0	7.0	4.0	7.0
Minimum Split (s)	8.0	27.0	27.0	27.0	33.5	33.5	8.0	33.5
Total Split (s)	31.0	88.0	57.0	57.0	34.0	34.0	8.0	42.0
Total Split (%)	23.8%	67.7%	43.8%	43.8%	26.2%	26.2%	6.2%	32.3%
Yellow Time (s)	3.0	4.5	4.5	4.5	4.0	4.0	3.0	4.0
All-Red Time (s)	1.0	1.5	1.5	1.5	2.5	2.5	1.0	2.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	6.0	6.0	6.0	6.5	6.5	4.0	6.5
Lead/Lag	Lead		Lag	Lag	Lag	Lag	Lead	
Lead-Lag Optimize?	Yes		Yes	Yes	Yes	Yes	Yes	
Recall Mode	None	C-Max	C-Max	C-Max	None	None	None	None
Act Effct Green (s)	102.0	100.0	79.2	79.2	11.1	11.1	20.0	17.5
Actuated g/C Ratio	0.78	0.77	0.61	0.61	0.09	0.09	0.15	0.13
v/c Ratio	0.59	0.37	0.07	0.51	0.10	0.54	0.39	0.69
Control Delay	10.3	5.7	22.8	27.2	55.6	62.0	53.2	33.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	10.3	5.7	22.8	27.2	55.6	62.0	53.2	33.9
LOS	B	A	C	C	E	E	D	C
Approach Delay		6.7		27.1		61.5		38.3
Approach LOS		A		C		E		D

Intersection Summary

Cycle Length: 130
 Actuated Cycle Length: 130
 Offset: 0 (0%), Referenced to phase 2:WBT and 6:EBTL, Start of Green
 Natural Cycle: 90
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.69
 Intersection Signal Delay: 20.1
 Intersection Capacity Utilization 66.7%
 Intersection LOS: C
 ICU Level of Service C
 Analysis Period (min) 15

Splits and Phases: 1: Mockingbird Ln & Lincoln Drive



2020 Background PM
1: Mockingbird Ln & Lincoln Drive

Smoke Tree Resort
HCM 6th Signalized Intersection Summary

	↖	→	↘	↙	↖	↗	↘	↙	↖	↗	↘	↙
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↖↗		↖	↖↗		↖	↖		↖	↖	↖
Traffic Volume (veh/h)	246	867	29	20	917	58	7	62	17	60	48	156
Future Volume (veh/h)	246	867	29	20	917	58	7	62	17	60	48	156
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No								
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	273	963	21	22	1019	42	8	69	10	67	53	117
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	533	2772	60	447	2383	98	85	100	14	137	64	142
Arrive On Green	0.06	0.78	0.78	1.00	1.00	1.00	0.06	0.06	0.06	0.03	0.12	0.12
Sat Flow, veh/h	1781	3556	78	572	3478	143	1215	1597	231	1781	519	1145
Grp Volume(v), veh/h	273	481	503	22	521	540	8	0	79	67	0	170
Grp Sat Flow(s),veh/h/ln	1781	1777	1856	572	1777	1845	1215	0	1829	1781	0	1664
Q Serve(g_s), s	5.5	10.6	10.6	0.0	0.0	0.0	0.8	0.0	5.5	4.0	0.0	13.0
Cycle Q Clear(g_c), s	5.5	10.6	10.6	0.0	0.0	0.0	5.8	0.0	5.5	4.0	0.0	13.0
Prop In Lane	1.00		0.04	1.00		0.08	1.00		0.13	1.00		0.69
Lane Grp Cap(c), veh/h	533	1385	1447	447	1217	1264	85	0	114	137	0	207
V/C Ratio(X)	0.51	0.35	0.35	0.05	0.43	0.43	0.09	0.00	0.69	0.49	0.00	0.82
Avail Cap(c_a), veh/h	790	1385	1447	447	1217	1264	266	0	387	137	0	454
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.70	0.70	0.70	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	4.3	4.3	4.3	0.0	0.0	0.0	62.3	0.0	59.7	54.7	0.0	55.5
Incr Delay (d2), s/veh	0.8	0.7	0.7	0.1	0.8	0.7	0.5	0.0	7.2	2.7	0.0	8.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.9	3.6	3.8	0.0	0.3	0.3	0.3	0.0	2.8	0.3	0.0	5.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	5.1	5.0	5.0	0.1	0.8	0.7	62.7	0.0	66.9	57.4	0.0	63.5
LnGrp LOS	A	A	A	A	A	A	E	A	E	E	A	E
Approach Vol, veh/h		1257			1083			87		237		
Approach Delay, s/veh		5.0			0.7			66.5		61.8		
Approach LOS		A			A			E		E		

Timer - Assigned Phs	1	2	3	4	6	8
Phs Duration (G+Y+Rc), s	12.3	95.1	8.0	14.6	107.4	22.6
Change Period (Y+Rc), s	4.0	6.0	4.0	6.5	6.0	6.5
Max Green Setting (Gmax), s	27.0	51.0	4.0	27.5	82.0	35.5
Max Q Clear Time (g_c+1), s	7.5	2.0	6.0	7.8	12.6	15.0
Green Ext Time (p_c), s	0.8	9.5	0.0	0.3	8.2	0.9

Intersection Summary

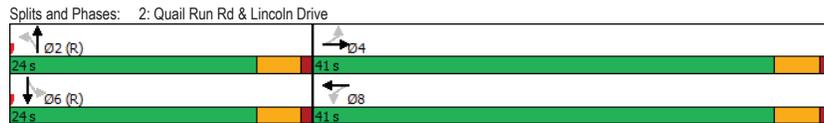
HCM 6th Ctrl Delay 10.3
 HCM 6th LOS B

2020 Background PM
2: Quail Run Rd & Lincoln Drive

Smoke Tree Resort
Timings

Lane Group	EBL	EBT	WBT	NBT	SBL	SBT
Lane Configurations	↔	↕	↕	↕	↔	↕
Traffic Volume (vph)	85	875	901	0	14	0
Future Volume (vph)	85	875	901	0	14	0
Turn Type	Perm	NA	NA	NA	Perm	NA
Protected Phases		4	8	2		6
Permitted Phases	4				6	
Detector Phase	4	4	8	2	6	6
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	22.5	22.5	22.5	22.5
Total Split (s)	41.0	41.0	41.0	24.0	24.0	24.0
Total Split (%)	63.1%	63.1%	63.1%	36.9%	36.9%	36.9%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None	None	None	C-Max	C-Max	C-Max
Act Effct Green (s)	28.7	28.7	28.7	27.3	27.3	27.3
Actuated g/C Ratio	0.44	0.44	0.44	0.42	0.42	0.42
v/c Ratio	0.67	0.62	0.66	0.00	0.16	0.16
Control Delay	42.0	18.6	15.9	0.0	5.6	5.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	42.0	18.6	15.9	0.0	5.6	5.6
LOS	D	B	B	A	A	A
Approach Delay		20.7	15.9		5.6	
Approach LOS		C	B		A	

Intersection Summary						
Cycle Length:	65					
Actuated Cycle Length:	65					
Offset:	0 (0%), Referenced to phase 2:NBT and 6:SBTL, Start of Green					
Natural Cycle:	60					
Control Type:	Actuated-Coordinated					
Maximum v/c Ratio:	0.67					
Intersection Signal Delay:	17.6			Intersection LOS: B		
Intersection Capacity Utilization:	54.8%			ICU Level of Service A		
Analysis Period (min):	15					



2020 Background PM
2: Quail Run Rd & Lincoln Drive

Smoke Tree Resort
HCM 6th Signalized Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↕		↔	↕			↕		↔	↕	
Traffic Volume (veh/h)	85	875	1	0	901	25	0	0	2	14	0	93
Future Volume (veh/h)	85	875	1	0	901	25	0	0	2	14	0	93
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No											
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	94	972	1	0	1001	28	0	0	2	16	0	103
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	250	1611	2	111	1561	44	0	0	665	115	37	575
Arrive On Green	0.88	0.88	0.88	0.00	0.59	0.59	0.00	0.00	0.42	0.42	0.00	0.42
Sat Flow, veh/h	548	3643	4	578	3531	99	0	0	1585	125	88	1371
Grp Volume(v), veh/h	94	474	499	0	504	525	0	0	2	119	0	0
Grp Sat Flow(s),veh/h/ln	548	1777	1870	578	1777	1853	0	0	1585	1584	0	0
Q Serve(g_s), s	8.3	4.3	4.3	0.0	12.2	12.2	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	20.5	4.3	4.3	0.0	12.2	12.2	0.0	0.0	0.0	3.0	0.0	0.0
Prop In Lane	1.00		0.00	1.00		0.05	0.00		1.00	0.13		0.87
Lane Grp Cap(c), veh/h	250	786	827	111	786	819	0	0	665	727	0	0
V/C Ratio(X)	0.38	0.60	0.60	0.00	0.64	0.64	0.00	0.00	0.00	0.16	0.00	0.00
Avail Cap(c_a), veh/h	316	998	1050	180	998	1040	0	0	665	727	0	0
HCM Platoon Ratio	2.00	2.00	2.00	1.33	1.33	1.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.94	0.94	0.94	0.00	1.00	1.00	0.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	7.8	2.3	2.3	0.0	10.0	10.0	0.0	0.0	11.0	11.8	0.0	0.0
Incr Delay (d2), s/veh	0.9	0.7	0.7	0.0	0.9	0.9	0.0	0.0	0.0	0.5	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	0.9	0.9	0.0	3.6	3.7	0.0	0.0	0.0	1.1	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	8.7	3.1	3.0	0.0	10.9	10.9	0.0	0.0	11.0	12.3	0.0	0.0
LnGrp LOS	A	A	A	A	B	B	A	A	B	B	A	A
Approach Vol, veh/h		1067			1029			2			119	
Approach Delay, s/veh		3.5			10.9			11.0			12.3	
Approach LOS		A			B			B			B	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		31.8		33.2		31.8		33.2				
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5				
Max Green Setting (Gmax), s		19.5		36.5		19.5		36.5				
Max Q Clear Time (g_c+1), s		2.0		22.5		5.0		14.2				
Green Ext Time (p_c), s		0.0		6.2		0.5		7.2				

Intersection Summary		
HCM 6th Ctrl Delay		7.4
HCM 6th LOS		A

2020 Background PM
3: Smoke Tree West & Lincoln Dr

Smoke Tree Resort
HCM 6th TWSC

Intersection						
Int Delay, s/veh	0					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↑	↑↑	↑	
Traffic Vol, veh/h	891	1	0	925	1	0
Future Vol, veh/h	891	1	0	925	1	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	25	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	990	1	0	1028	1	0

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	991	0	1505
Stage 1	-	-	-	-	991
Stage 2	-	-	-	-	514
Critical Hdwy	-	-	4.14	-	6.84
Critical Hdwy Stg 1	-	-	-	-	5.84
Critical Hdwy Stg 2	-	-	-	-	5.84
Follow-up Hdwy	-	-	2.22	-	3.52
Pot Cap-1 Maneuver	-	-	1070	-	*112
Stage 1	-	-	-	-	*669
Stage 2	-	-	-	-	*652
Platoon blocked, %	-	-	1	-	1
Mov Cap-1 Maneuver	-	-	1070	-	*112
Mov Cap-2 Maneuver	-	-	-	-	*353
Stage 1	-	-	-	-	*669
Stage 2	-	-	-	-	*652

Approach	EB	WB	NB
HCM Control Delay, s	0	0	15.2
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	353	-	-	1070	-
HCM Lane V/C Ratio	0.003	-	-	-	-
HCM Control Delay (s)	15.2	-	-	0	-
HCM Lane LOS	C	-	-	A	-
HCM 95th %tile Q(veh)	0	-	-	0	-

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

2020 Background PM
4: Smoke Tree East & Lincoln Dr

Smoke Tree Resort
HCM 6th TWSC

Intersection						
Int Delay, s/veh	0					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↑	↑↑	↑	
Traffic Vol, veh/h	890	1	2	925	1	2
Future Vol, veh/h	890	1	2	925	1	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	25	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	989	1	2	1028	1	2

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	990	0	1508
Stage 1	-	-	-	-	990
Stage 2	-	-	-	-	518
Critical Hdwy	-	-	4.14	-	6.84
Critical Hdwy Stg 1	-	-	-	-	5.84
Critical Hdwy Stg 2	-	-	-	-	5.84
Follow-up Hdwy	-	-	2.22	-	3.52
Pot Cap-1 Maneuver	-	-	1071	-	*111
Stage 1	-	-	-	-	*670
Stage 2	-	-	-	-	*652
Platoon blocked, %	-	-	1	-	1
Mov Cap-1 Maneuver	-	-	1071	-	*111
Mov Cap-2 Maneuver	-	-	-	-	*352
Stage 1	-	-	-	-	*669
Stage 2	-	-	-	-	*652

Approach	EB	WB	NB
HCM Control Delay, s	0	0	11.7
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	538	-	-	1071	-
HCM Lane V/C Ratio	0.006	-	-	0.002	-
HCM Control Delay (s)	11.7	-	-	8.4	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0	-	-	0	-

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

2020 Background PM
5: Lincoln Medical West & Lincoln Dr

Smoke Tree Resort
HCM 6th TWSC

Intersection						
Int Delay, s/veh	0					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↑	↑↑	↑	
Traffic Vol, veh/h	892	0	0	925	2	0
Future Vol, veh/h	892	0	0	925	2	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	25	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	991	0	0	1028	2	0

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	991	0	1505 496
Stage 1	-	-	-	-	991 -
Stage 2	-	-	-	-	514 -
Critical Hdwy	-	-	4.14	-	6.84 6.94
Critical Hdwy Stg 1	-	-	-	-	5.84 -
Critical Hdwy Stg 2	-	-	-	-	5.84 -
Follow-up Hdwy	-	-	2.22	-	3.52 3.32
Pot Cap-1 Maneuver	-	-	1070	-	*112 *732
Stage 1	-	-	-	-	*669 -
Stage 2	-	-	-	-	*652 -
Platoon blocked, %	-	-	1	-	1
Mov Cap-1 Maneuver	-	-	1070	-	*112 *732
Mov Cap-2 Maneuver	-	-	-	-	*353 -
Stage 1	-	-	-	-	*669 -
Stage 2	-	-	-	-	*652 -

Approach	EB	WB	NB
HCM Control Delay, s	0	0	15.3
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	353	-	-	1070	-
HCM Lane V/C Ratio	0.006	-	-	-	-
HCM Control Delay (s)	15.3	-	-	0	-
HCM Lane LOS	C	-	-	A	-
HCM 95th %tile Q(veh)	0	-	-	0	-

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

2020 Background PM
6: Lincoln Medical East & Lincoln Dr

Smoke Tree Resort
HCM 6th TWSC

Intersection						
Int Delay, s/veh	0					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↑	↑↑	↑	
Traffic Vol, veh/h	892	0	0	924	2	3
Future Vol, veh/h	892	0	0	924	2	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	25	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	991	0	0	1027	2	3

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	991	0	1505 496
Stage 1	-	-	-	-	991 -
Stage 2	-	-	-	-	514 -
Critical Hdwy	-	-	4.14	-	6.84 6.94
Critical Hdwy Stg 1	-	-	-	-	5.84 -
Critical Hdwy Stg 2	-	-	-	-	5.84 -
Follow-up Hdwy	-	-	2.22	-	3.52 3.32
Pot Cap-1 Maneuver	-	-	1070	-	*112 *732
Stage 1	-	-	-	-	*669 -
Stage 2	-	-	-	-	*652 -
Platoon blocked, %	-	-	1	-	1
Mov Cap-1 Maneuver	-	-	1070	-	*112 *732
Mov Cap-2 Maneuver	-	-	-	-	*353 -
Stage 1	-	-	-	-	*669 -
Stage 2	-	-	-	-	*652 -

Approach	EB	WB	NB
HCM Control Delay, s	0	0	12.1
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	512	-	-	1070	-
HCM Lane V/C Ratio	0.011	-	-	-	-
HCM Control Delay (s)	12.1	-	-	0	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0	-	-	0	-

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

2020 Background PM
7: Apartment Drwy & Lincoln Dr

Smoke Tree Resort
HCM 6th TWSC

Intersection												
Int Delay, s/veh	1.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔ ↗		↔ ↗		↔ ↗		↔ ↗		↔ ↗		↔ ↗	
Traffic Vol, veh/h	7	833	41	6	828	9	66	3	47	7	0	34
Future Vol, veh/h	7	833	41	6	828	9	66	3	47	7	0	34
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None									
Storage Length	25	-	-	25	-	-	-	-	-	0	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	8	926	46	7	920	10	73	3	52	8	0	38

Major/Minor	Major1	Major2	Minor1	Minor2
Conflicting Flow All	930	0	0	972
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Critical Hdwy	4.14	-	-	4.14
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	2.22	-	-	2.22
Pot Cap-1 Maneuver	*1106	-	-	1096
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Platoon blocked, %	1	-	-	1
Mov Cap-1 Maneuver	*1106	-	-	1096
Mov Cap-2 Maneuver	-	-	-	-
Stage 1	-	-	-	-
Stage 2	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0.1	16.6	11.1
HCM LOS			C	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	437	*1106	-	-	1096	-	-	340	739
HCM Lane V/C Ratio	0.295	0.007	-	-	0.006	-	-	0.023	0.051
HCM Control Delay (s)	16.6	8.3	-	-	8.3	-	-	15.8	10.1
HCM Lane LOS	C	A	-	-	A	-	-	C	B
HCM 95th %tile Q(veh)	1.2	0	-	-	0	-	-	0.1	0.2

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

2020 Background PM
8: AJ's Drwy & Lincoln Dr

Smoke Tree Resort
HCM 6th TWSC

Intersection												
Int Delay, s/veh	1.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔ ↗		↔ ↗		↔ ↗		↔ ↗		↔ ↗		↔ ↗	
Traffic Vol, veh/h	11	827	53	61	826	8	14	1	89	4	0	7
Future Vol, veh/h	11	827	53	61	826	8	14	1	89	4	0	7
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None									
Storage Length	25	-	-	25	-	-	-	-	-	0	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	12	919	59	68	918	9	16	1	99	4	0	8

Major/Minor	Major1	Major2	Minor1	Minor2
Conflicting Flow All	927	0	0	978
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Critical Hdwy	4.14	-	-	4.14
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	2.22	-	-	2.22
Pot Cap-1 Maneuver	*1106	-	-	1088
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Platoon blocked, %	1	-	-	1
Mov Cap-1 Maneuver	*1106	-	-	1088
Mov Cap-2 Maneuver	-	-	-	-
Stage 1	-	-	-	-
Stage 2	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0.6	12.1	13
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	621	*1106	-	-	1088	-	-	275	739
HCM Lane V/C Ratio	0.186	0.011	-	-	0.062	-	-	0.016	0.011
HCM Control Delay (s)	12.1	8.3	-	-	8.5	-	-	18.3	9.9
HCM Lane LOS	B	A	-	-	A	-	-	C	A
HCM 95th %tile Q(veh)	0.7	0	-	-	0.2	-	-	0	0

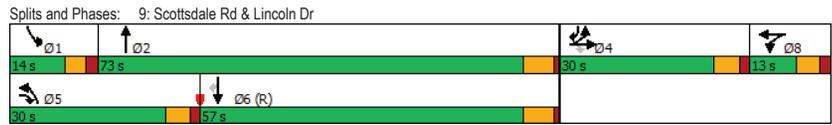
Notes
 ~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

2020 Background PM
9: Scottsdale Rd & Lincoln Dr

Smoke Tree Resort
Timings

	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	482	56	407	56	62	401	1624	61	1569	475
Future Volume (vph)	482	56	407	56	62	401	1624	61	1569	475
Turn Type	Split	NA	pm+ov	Split	NA	Prot	NA	Prot	NA	pm+ov
Protected Phases	4	4	5	8	8	5	2	1	6	4
Permitted Phases			4							6
Detector Phase	4	4	5	8	8	5	2	1	6	4
Switch Phase										
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0	10.0	5.0	10.0	7.0	7.0
Minimum Split (s)	13.0	13.0	13.0	13.0	13.0	16.7	11.0	16.0	13.0	13.0
Total Split (s)	30.0	30.0	30.0	13.0	13.0	30.0	73.0	14.0	57.0	30.0
Total Split (%)	23.1%	23.1%	23.1%	10.0%	10.0%	23.1%	56.2%	10.8%	43.8%	23.1%
Yellow Time (s)	4.0	4.0	4.0	3.6	3.6	4.0	4.7	3.3	4.7	4.0
All-Red Time (s)	1.5	1.5	1.5	2.0	2.0	1.5	1.0	2.0	1.0	1.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	5.5	5.5	5.6	5.6	5.5	5.7	5.3	5.7	5.5
Lead/Lag			Lead			Lead	Lag	Lead	Lag	
Lead-Lag Optimize?										
Recall Mode	None	C-Max	None	None						
Act Effct Green (s)	24.4	24.4	45.3	7.3	7.3	20.9	70.5	7.9	55.1	85.1
Actuated g/C Ratio	0.19	0.19	0.35	0.06	0.06	0.16	0.54	0.06	0.42	0.65
v/c Ratio	0.96	0.94	0.76	0.63	0.58	0.81	0.67	0.64	0.81	0.49
Control Delay	92.8	88.8	30.2	86.8	37.9	64.3	23.7	85.4	37.1	10.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	92.8	88.8	30.2	86.8	37.9	64.3	23.7	85.4	37.1	10.9
LOS	F	F	C	F	D	E	C	F	D	B
Approach Delay		64.7			52.2		31.6		32.6	
Approach LOS		E			D		C		C	

Intersection Summary	
Cycle Length:	130
Actuated Cycle Length:	130
Offset:	0 (0%), Referenced to phase 6:SBT, Start of Green
Natural Cycle:	90
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.96
Intersection Signal Delay:	38.6
Intersection Capacity Utilization:	81.0%
ICU Level of Service:	D
Analysis Period (min):	15



2020 Background PM
9: Scottsdale Rd & Lincoln Dr

Smoke Tree Resort
HCM 6th Signalized Intersection Summary

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (veh/h)	482	56	407	56	62	72	401	1624	45	61	1569	475
Future Volume (veh/h)	482	56	407	56	62	72	401	1624	45	61	1569	475
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No		No		No		No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	580	0	230	62	69	52	446	1804	33	68	1743	284
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	636	0	514	96	108	74	505	2548	47	87	2015	908
Arrive On Green	0.18	0.00	0.18	0.05	0.05	0.05	0.15	0.49	0.49	0.05	0.39	0.39
Sat Flow, veh/h	3563	0	1585	1781	2016	1383	3456	5163	94	1781	5106	1585
Grp Volume(v), veh/h	580	0	230	62	60	61	446	1189	648	68	1743	284
Grp Sat Flow(s),veh/h/ln	1781	0	1585	1781	1777	1622	1728	1702	1853	1781	1702	1585
Q Serve(g_s), s	20.8	0.0	14.9	4.4	4.3	4.8	16.5	35.3	35.4	4.9	40.8	12.1
Cycle Q Clear(g_c), s	20.8	0.0	14.9	4.4	4.3	4.8	16.5	35.3	35.4	4.9	40.8	12.1
Prop In Lane	1.00		1.00	1.00		0.85	1.00		0.05	1.00		1.00
Lane Grp Cap(c), veh/h	636	0	514	96	96	87	505	1680	915	87	2015	908
V/C Ratio(X)	0.91	0.00	0.45	0.65	0.63	0.70	0.88	0.71	0.71	0.78	0.87	0.31
Avail Cap(c_a), veh/h	671	0	530	101	101	92	651	1762	959	119	2015	908
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	52.4	0.0	34.7	60.3	60.2	60.5	54.4	25.6	25.6	61.2	36.2	14.4
Incr Delay (d2), s/veh	15.8	0.0	0.2	9.3	7.7	16.1	9.6	1.0	1.9	13.9	5.3	0.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	10.7	0.0	5.8	2.3	2.1	2.4	7.8	14.3	15.8	2.6	17.7	6.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	68.2	0.0	34.9	69.6	67.9	76.6	64.0	26.7	27.5	75.1	41.4	15.3
LnGrp LOS	E	A	C	E	E	E	E	C	C	E	D	B
Approach Vol, veh/h		810			183			2283			2095	
Approach Delay, s/veh		58.7			71.4			34.2			39.0	
Approach LOS		E			E			C			D	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	11.6	69.9		28.7	24.5	57.0		12.6				
Change Period (Y+Rc), s	* 5.3	5.7		5.5	5.5	5.7		5.6				
Max Green Setting (Gmax), s	* 8.7	67.3		24.5	24.5	51.3		7.4				
Max Q Clear Time (g_c+1), s	6.9	37.4		22.8	18.5	42.8		6.8				
Green Ext Time (p_c), s	0.0	2.9		0.4	0.5	2.6		0.0				

Intersection Summary	
HCM 6th Ctrl Delay	41.0
HCM 6th LOS	D

Notes
User approved pedestrian interval to be less than phase max green.
User approved volume balancing among the lanes for turning movement.
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

2020 Total AM Scenario 1
1: Mockingbird Ln & Lincoln Drive

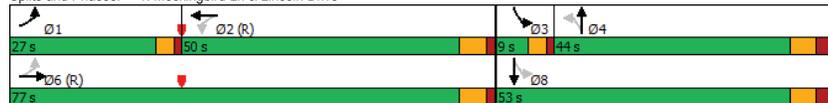
Smoke Tree Resort
Timings

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations	↔	↕	↔	↕	↔	↕	↔	↕
Traffic Volume (vph)	222	962	23	890	5	34	74	91
Future Volume (vph)	222	962	23	890	5	34	74	91
Turn Type	pm+pt	NA	Perm	NA	Perm	NA	pm+pt	NA
Protected Phases	1	6		2		4	3	8
Permitted Phases	6		2		4		8	
Detector Phase	1	6	2	2	4	4	3	8
Switch Phase								
Minimum Initial (s)	3.5	15.0	15.0	15.0	7.0	7.0	3.5	7.0
Minimum Split (s)	8.0	27.0	27.0	27.0	33.5	33.5	8.0	33.5
Total Split (s)	27.0	77.0	50.0	50.0	44.0	44.0	9.0	53.0
Total Split (%)	20.8%	59.2%	38.5%	38.5%	33.8%	33.8%	6.9%	40.8%
Yellow Time (s)	3.0	4.5	4.5	4.5	4.0	4.0	3.0	4.0
All-Red Time (s)	1.0	1.5	1.5	1.5	2.5	2.5	1.0	2.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	6.0	6.0	6.0	6.5	6.5	4.0	6.5
Lead/Lag	Lead		Lag	Lag	Lag	Lag	Lead	
Lead-Lag Optimize?	Yes		Yes	Yes	Yes	Yes	Yes	
Recall Mode	None	C-Max	C-Max	C-Max	None	None	None	None
Act Effct Green (s)	93.9	91.9	69.7	69.7	18.4	18.4	28.1	25.6
Actuated g/C Ratio	0.72	0.71	0.54	0.54	0.14	0.14	0.22	0.20
v/c Ratio	0.59	0.42	0.11	0.52	0.11	0.21	0.33	0.83
Control Delay	13.8	9.4	33.3	36.5	49.6	33.3	43.3	50.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	13.8	9.4	33.3	36.5	49.6	33.3	43.3	50.1
LOS	B	A	C	D	D	C	D	D
Approach Delay		10.2		36.4		34.8		48.8
Approach LOS		B		D		C		D

Intersection Summary

Cycle Length: 130	
Actuated Cycle Length: 130	
Offset: 0 (0%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green	
Natural Cycle: 90	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.83	
Intersection Signal Delay: 26.1	Intersection LOS: C
Intersection Capacity Utilization 72.2%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 1: Mockingbird Ln & Lincoln Drive



2020 Total AM Scenario 1
1: Mockingbird Ln & Lincoln Drive

Smoke Tree Resort
HCM 6th Signalized Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↕		↔	↕		↔	↕		↔	↕	
Traffic Volume (veh/h)	222	962	30	23	890	42	5	34	20	74	91	233
Future Volume (veh/h)	222	962	30	23	890	42	5	34	20	74	91	233
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No		No		No		No		No	
Adj Sat Flow, veh/h/ln	1772	1969	1772	1772	1969	1772	1772	1969	1772	1772	1969	1772
Adj Flow Rate, veh/h	247	1069	22	26	989	30	6	38	13	82	101	148
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	505	2774	57	367	2380	72	85	133	45	209	118	173
Arrive On Green	0.07	0.74	0.74	1.00	1.00	1.00	0.09	0.09	0.09	0.04	0.16	0.16
Sat Flow, veh/h	1688	3748	77	490	3706	112	1071	1403	480	1688	721	1057
Grp Volume(v), veh/h	247	533	558	26	499	520	6	51	82	0	249	
Grp Sat Flow(s),veh/h/ln	1688	1870	1955	490	1870	1949	1071	0	1882	1688	0	1779
Q Serve(g_s), s	6.1	13.5	13.5	0.1	0.0	0.0	0.7	0.0	3.3	5.0	0.0	17.7
Cycle Q Clear(g_c), s	6.1	13.5	13.5	0.8	0.0	0.0	9.4	0.0	3.3	5.0	0.0	17.7
Prop In Lane	1.00		0.04	1.00		0.06	1.00		0.25	1.00		0.59
Lane Grp Cap(c), veh/h	505	1384	1447	367	1201	1251	85	0	178	209	0	291
V/C Ratio(X)	0.49	0.39	0.39	0.07	0.42	0.42	0.07	0.00	0.29	0.39	0.00	0.86
Avail Cap(c_a), veh/h	691	1384	1447	367	1201	1251	293	0	543	209	0	636
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.80	0.80	0.80	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	5.8	6.1	6.1	0.0	0.0	0.0	61.8	0.0	54.8	50.2	0.0	52.9
Incr Delay (d2), s/veh	0.7	0.8	0.8	0.3	0.8	0.8	0.3	0.0	0.9	1.2	0.0	7.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.1	5.2	5.4	0.0	0.3	0.3	0.2	0.0	1.6	0.3	0.0	8.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	6.5	7.0	6.9	0.3	0.8	0.8	62.2	0.0	55.7	51.4	0.0	60.0
LnGrp LOS	A	A	A	A	A	A	E	A	E	D	A	E
Approach Vol, veh/h		1338			1045			57			331	
Approach Delay, s/veh		6.9			0.8			56.3			57.8	
Approach LOS		A			A			E			E	
Timer - Assigned Phs	1	2	3	4		6		8				
Phs Duration (G+Y+Rc), s	12.7	89.5	9.0	18.8		102.2		27.8				
Change Period (Y+Rc), s	4.0	6.0	4.0	6.5		6.0		6.5				
Max Green Setting (Gmax), s	23.0	44.0	5.0	37.5		71.0		46.5				
Max Q Clear Time (g_c+1), s	8.1	2.8	7.0	11.4		15.5		19.7				
Green Ext Time (p_c), s	0.6	8.9	0.0	0.2		9.5		1.6				

Intersection Summary

HCM 6th Ctrl Delay	11.7
HCM 6th LOS	B

2020 Total AM Scenario 1
2: Quail Run Rd & Lincoln Drive

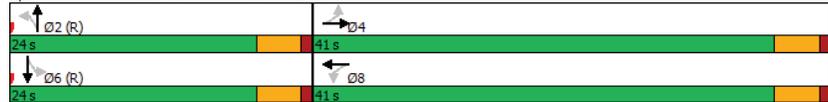
Smoke Tree Resort
Timings

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations	↔	↕	↔	↕	↔	↕	↔	↕
Traffic Volume (vph)	115	1000	11	850	4	0	26	0
Future Volume (vph)	115	1000	11	850	4	0	26	0
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		4		8		2		6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	2	2	6	6
Switch Phase								
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5
Total Split (s)	41.0	41.0	41.0	41.0	24.0	24.0	24.0	24.0
Total Split (%)	63.1%	63.1%	63.1%	63.1%	36.9%	36.9%	36.9%	36.9%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	C-Max	C-Max	C-Max	C-Max
Act Effct Green (s)	31.0	31.0	31.0	31.0	25.0	25.0	25.0	25.0
Actuated g/C Ratio	0.48	0.48	0.48	0.48	0.38	0.38	0.38	0.38
v/c Ratio	0.67	0.66	0.09	0.57	0.02	0.16	0.02	0.16
Control Delay	38.2	18.5	10.5	15.5	4.5	7.7	4.5	7.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	38.2	18.5	10.5	15.5	4.5	7.7	4.5	7.7
LOS	D	B	B	B	A	A	A	A
Approach Delay		20.5		15.4		4.5		7.7
Approach LOS		C		B		A		A

Intersection Summary

Cycle Length: 65
 Actuated Cycle Length: 65
 Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
 Natural Cycle: 60
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.67
 Intersection Signal Delay: 17.8
 Intersection Capacity Utilization 50.1%
 Analysis Period (min) 15
 Intersection LOS: B
 ICU Level of Service A

Splits and Phases: 2: Quail Run Rd & Lincoln Drive



2020 Total AM Scenario 1
2: Quail Run Rd & Lincoln Drive

Smoke Tree Resort
HCM 6th Signalized Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↕		↔	↕		↔	↕		↔	↕	
Traffic Volume (veh/h)	115	1000	8	11	850	12	4	0	8	26	0	65
Future Volume (veh/h)	115	1000	8	11	850	12	4	0	8	26	0	65
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No								
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	128	1111	9	12	944	13	4	0	9	29	0	72
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	294	1486	12	246	1476	20	248	35	474	236	36	498
Arrive On Green	0.82	0.82	0.82	0.82	0.82	0.82	0.45	0.00	0.45	0.45	0.00	0.45
Sat Flow, veh/h	587	3613	29	503	3589	49	390	78	1053	365	80	1106
Grp Volume(v), veh/h	128	546	574	12	467	490	13	0	0	101	0	0
Grp Sat Flow(s),veh/h/ln	587	1777	1865	503	1777	1861	1522	0	0	1551	0	0
Q Serve(g_s), s	9.5	9.2	9.2	0.8	6.4	6.4	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	16.0	9.2	9.2	10.1	6.4	6.4	0.3	0.0	0.0	2.3	0.0	0.0
Prop In Lane	1.00		0.02	1.00		0.03	0.31		0.69	0.29		0.71
Lane Grp Cap(c), veh/h	294	731	767	246	731	766	757	0	0	769	0	0
V/C Ratio(X)	0.44	0.75	0.75	0.05	0.64	0.64	0.02	0.00	0.00	0.13	0.00	0.00
Avail Cap(c_a), veh/h	382	998	1047	321	998	1045	757	0	0	769	0	0
HCM Platoon Ratio	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.91	0.91	0.91	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	7.0	4.2	4.2	6.6	4.0	4.0	9.9	0.0	0.0	10.5	0.0	0.0
Incr Delay (d2), s/veh	0.9	1.9	1.8	0.1	0.9	0.9	0.0	0.0	0.0	0.4	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	1.8	1.9	0.0	1.4	1.4	0.1	0.0	0.0	0.8	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	7.9	6.1	6.0	6.6	4.9	4.9	9.9	0.0	0.0	10.8	0.0	0.0
LnGrp LOS	A	A	A	A	A	A	A	A	A	B	A	A
Approach Vol, veh/h		1248			969			13				101
Approach Delay, s/veh		6.2			4.9			9.9				10.8
Approach LOS		A			A			A				B

Timer - Assigned Phs

Phs Duration (G+Y+Rc), s	33.8	31.2	33.8	31.2
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	19.5	36.5	19.5	36.5
Max Q Clear Time (g_c+1), s	2.3	18.0	4.3	12.1
Green Ext Time (p_c), s	0.0	8.7	0.4	6.9

Intersection Summary

HCM 6th Ctrl Delay	5.9
HCM 6th LOS	A

2020 Total AM Scenario 1
3: Access A & Lincoln Dr

Smoke Tree Resort
HCM 6th TWSC

Intersection						
Int Delay, s/veh	0.1					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↑	↑↑	↑	
Traffic Vol, veh/h	1026	5	9	866	3	11
Future Vol, veh/h	1026	5	9	866	3	11
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	25	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1140	6	10	962	3	12

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	1146	0	1644
Stage 1	-	-	-	-	1143
Stage 2	-	-	-	-	501
Critical Hdwy	-	-	4.14	-	6.84
Critical Hdwy Stg 1	-	-	-	-	5.84
Critical Hdwy Stg 2	-	-	-	-	5.84
Follow-up Hdwy	-	-	2.22	-	3.52
Pot Cap-1 Maneuver	-	-	969	-	*90 *684
Stage 1	-	-	-	-	*603
Stage 2	-	-	-	-	*698
Platoon blocked, %	-	-	1	-	1
Mov Cap-1 Maneuver	-	-	969	-	*89 *684
Mov Cap-2 Maneuver	-	-	-	-	*332
Stage 1	-	-	-	-	*597
Stage 2	-	-	-	-	*698

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	11.6
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	557	-	-	969	-
HCM Lane V/C Ratio	0.028	-	-	0.01	-
HCM Control Delay (s)	11.6	-	-	8.8	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0	-

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

2020 Total AM Scenario 1
4: Quail Run Rd & Access B

Smoke Tree Resort
HCM 6th TWSC

Intersection						
Int Delay, s/veh	4.7					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↑		↑			↑
Traffic Vol, veh/h	0	5	7	0	15	5
Future Vol, veh/h	0	5	7	0	15	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	6	8	0	17	6

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	48	8	0	0	8
Stage 1	8	-	-	-	-
Stage 2	40	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12
Critical Hdwy Stg 1	5.42	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218
Pot Cap-1 Maneuver	962	1074	-	-	1612
Stage 1	1015	-	-	-	-
Stage 2	982	-	-	-	-
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	951	1074	-	-	1612
Mov Cap-2 Maneuver	951	-	-	-	-
Stage 1	1004	-	-	-	-
Stage 2	982	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.4	0	5.4
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	1074	1612
HCM Lane V/C Ratio	-	-	0.005	0.01
HCM Control Delay (s)	-	-	8.4	7.3
HCM Lane LOS	-	-	A	A
HCM 95th %tile Q(veh)	-	-	0	0

2020 Total AM Scenario 1
5: Lincoln Medical West & Lincoln Dr

Smoke Tree Resort
HCM 6th TWSC

Intersection						
Int Delay, s/veh	0					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↑	↑↑	↑	
Traffic Vol, veh/h	1037	4	0	873	0	3
Future Vol, veh/h	1037	4	0	873	0	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	25	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1152	4	0	970	0	3

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	1156	0	1639
Stage 1	-	-	-	-	1154
Stage 2	-	-	-	-	485
Critical Hdwy	-	-	4.14	-	6.84
Critical Hdwy Stg 1	-	-	-	-	5.84
Critical Hdwy Stg 2	-	-	-	-	5.84
Follow-up Hdwy	-	-	2.22	-	3.52
Pot Cap-1 Maneuver	-	-	957	-	*91
Stage 1	-	-	-	-	*591
Stage 2	-	-	-	-	*675
Platoon blocked, %	-	-	1	-	1
Mov Cap-1 Maneuver	-	-	957	-	*91
Mov Cap-2 Maneuver	-	-	-	-	*329
Stage 1	-	-	-	-	*591
Stage 2	-	-	-	-	*675

Approach	EB	WB	NB
HCM Control Delay, s	0	0	10.3
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	684	-	-	957	-
HCM Lane V/C Ratio	0.005	-	-	-	-
HCM Control Delay (s)	10.3	-	-	0	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0	-	-	0	-

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

2020 Total AM Scenario 1
6: Lincoln Medical East & Lincoln Dr

Smoke Tree Resort
HCM 6th TWSC

Intersection						
Int Delay, s/veh	0					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↑	↑↑	↑	
Traffic Vol, veh/h	1036	2	5	873	0	3
Future Vol, veh/h	1036	2	5	873	0	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	25	-	0	-
Veh in Median Storage, #	0	-	-	0	1	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1151	2	6	970	0	3

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	1153	0	1649
Stage 1	-	-	-	-	1152
Stage 2	-	-	-	-	497
Critical Hdwy	-	-	4.14	-	6.84
Critical Hdwy Stg 1	-	-	-	-	5.84
Critical Hdwy Stg 2	-	-	-	-	5.84
Follow-up Hdwy	-	-	2.22	-	3.52
Pot Cap-1 Maneuver	-	-	960	-	*90
Stage 1	-	-	-	-	*593
Stage 2	-	-	-	-	*675
Platoon blocked, %	-	-	1	-	1
Mov Cap-1 Maneuver	-	-	960	-	*89
Mov Cap-2 Maneuver	-	-	-	-	*327
Stage 1	-	-	-	-	*590
Stage 2	-	-	-	-	*675

Approach	EB	WB	NB
HCM Control Delay, s	0	0	10.3
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	684	-	-	960	-
HCM Lane V/C Ratio	0.005	-	-	0.006	-
HCM Control Delay (s)	10.3	-	-	8.8	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0	-	-	0	-

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

2020 Total AM Scenario 1
7: Apartment Drwy & Lincoln Dr

Smoke Tree Resort
HCM 6th TWSC

Intersection												
Int Delay, s/veh	1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔ ↗		↔ ↗		↔ ↗		↔ ↗		↔ ↗		↔ ↗	
Traffic Vol, veh/h	26	979	34	18	813	10	50	0	29	5	0	12
Future Vol, veh/h	26	979	34	18	813	10	50	0	29	5	0	12
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None									
Storage Length	25	-	-	25	-	-	-	-	-	0	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	-	1	-	-	1
Grade, %	-	0	-	-	0	-	-	-	0	-	-	0
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	29	1088	38	20	903	11	56	0	32	6	0	13

Major/Minor	Major1	Major2	Minor1	Minor2
Conflicting Flow All	914	0	0	1126
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Critical Hdwy	4.14	-	-	4.14
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	2.22	-	-	2.22
Pot Cap-1 Maneuver	*1106	-	-	995
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Platoon blocked, %	1	-	-	1
Mov Cap-1 Maneuver	*1106	-	-	995
Mov Cap-2 Maneuver	-	-	-	-
Stage 1	-	-	-	-
Stage 2	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	0.2	17.4	11.9
HCM LOS			C	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	377	*1106	-	-	995	-	-	318	739
HCM Lane V/C Ratio	0.233	0.026	-	-	0.02	-	-	0.017	0.018
HCM Control Delay (s)	17.4	8.3	-	-	8.7	-	-	16.5	10
HCM Lane LOS	C	A	-	-	A	-	-	C	B
HCM 95th %tile Q(veh)	0.9	0.1	-	-	0.1	-	-	0.1	0.1

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

2020 Total AM Scenario 1
8: AJ's Drwy & Lincoln Dr

Smoke Tree Resort
HCM 6th TWSC

Intersection												
Int Delay, s/veh	0.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔ ↗		↔ ↗		↔ ↗		↔ ↗		↔ ↗		↔ ↗	
Traffic Vol, veh/h	3	958	53	43	825	8	6	0	41	4	1	12
Future Vol, veh/h	3	958	53	43	825	8	6	0	41	4	1	12
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None									
Storage Length	25	-	-	25	-	-	-	-	-	0	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	-	1	-	-	1
Grade, %	-	0	-	-	0	-	-	-	0	-	-	0
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	3	1064	59	48	917	9	7	0	46	4	1	13

Major/Minor	Major1	Major2	Minor1	Minor2
Conflicting Flow All	926	0	0	1123
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Critical Hdwy	4.14	-	-	4.14
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	2.22	-	-	2.22
Pot Cap-1 Maneuver	*1106	-	-	1000
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Platoon blocked, %	1	-	-	1
Mov Cap-1 Maneuver	*1106	-	-	1000
Mov Cap-2 Maneuver	-	-	-	-
Stage 1	-	-	-	-
Stage 2	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.4	11.6	11.8
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	598	*1106	-	-	1000	-	-	297	739
HCM Lane V/C Ratio	0.087	0.003	-	-	0.048	-	-	0.015	0.018
HCM Control Delay (s)	11.6	8.3	-	-	8.8	-	-	17.3	10
HCM Lane LOS	B	A	-	-	A	-	-	C	B
HCM 95th %tile Q(veh)	0.3	0	-	-	0.1	-	-	0	0.1

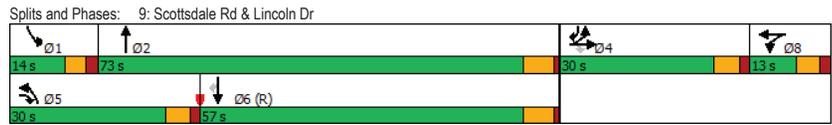
Notes
 -: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

2020 Total AM Scenario 1
9: Scottsdale Rd & Lincoln Dr

Smoke Tree Resort
Timings

	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	451	38	461	37	36	285	1316	51	1669	589
Future Volume (vph)	451	38	461	37	36	285	1316	51	1669	589
Turn Type	Split	NA	pm+ov	Split	NA	Prot	NA	Prot	NA	pm+ov
Protected Phases	4	4	5	8	8	5	2	1	6	4
Permitted Phases			4							6
Detector Phase	4	4	5	8	8	5	2	1	6	4
Switch Phase										
Minimum Initial (s)	10.0	10.0	7.0	7.4	7.4	7.0	10.0	5.0	10.0	10.0
Minimum Split (s)	15.5	15.5	12.5	13.0	13.0	12.5	27.7	10.3	30.7	15.5
Total Split (s)	30.0	30.0	30.0	13.0	13.0	30.0	73.0	14.0	57.0	30.0
Total Split (%)	23.1%	23.1%	23.1%	10.0%	10.0%	23.1%	56.2%	10.8%	43.8%	23.1%
Yellow Time (s)	4.0	4.0	4.0	3.6	3.6	4.0	4.7	3.3	4.7	4.0
All-Red Time (s)	1.5	1.5	1.5	2.0	2.0	1.5	1.0	2.0	1.0	1.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	5.5	5.5	5.6	5.6	5.5	5.7	5.3	5.7	5.5
Lead/Lag			Lead			Lead	Lag	Lead	Lag	
Lead-Lag Optimize?										
Recall Mode	None	None	None	Min	Min	None	None	None	C-Max	None
Act Effct Green (s)	23.6	23.6	42.3	7.4	7.4	18.6	71.3	7.6	58.0	87.4
Actuated g/C Ratio	0.18	0.18	0.33	0.06	0.06	0.14	0.55	0.06	0.45	0.67
v/c Ratio	0.89	0.88	0.91	0.41	0.40	0.64	0.54	0.55	0.82	0.58
Control Delay	64.8	63.9	51.0	71.9	33.6	58.1	20.5	79.0	36.1	10.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	64.8	63.9	51.0	71.9	33.6	58.1	20.5	79.0	36.1	10.3
LOS	E	E	D	E	C	E	C	E	D	B
Approach Delay		57.9			45.3		27.0		30.5	
Approach LOS		E			D		C		C	

Intersection Summary	
Cycle Length:	130
Actuated Cycle Length:	130
Offset:	0 (0%), Referenced to phase 6:SBT, Start of Green
Natural Cycle:	90
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.91
Intersection Signal Delay:	34.9
Intersection Capacity Utilization:	81.0%
ICU Level of Service D	
Analysis Period (min):	15



2020 Total AM Scenario 1
9: Scottsdale Rd & Lincoln Dr

Smoke Tree Resort
HCM 6th Signalized Intersection Summary

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (veh/h)	451	38	461	37	36	48	285	1316	39	51	1669	589
Future Volume (veh/h)	451	38	461	37	36	48	285	1316	39	51	1669	589
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No		No		No		No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	531	0	268	41	40	36	317	1462	26	57	1854	376
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	599	0	439	101	107	85	377	2397	43	73	2015	892
Arrive On Green	0.17	0.00	0.17	0.06	0.06	0.06	0.11	0.46	0.46	0.04	0.39	0.39
Sat Flow, veh/h	3563	0	1585	1781	1881	1497	3456	5166	92	1781	5106	1585
Grp Volume(v), veh/h	531	0	268	41	37	39	317	963	525	57	1854	376
Grp Sat Flow(s),veh/h/ln	1781	0	1585	1781	1777	1601	1728	1702	1854	1781	1702	1585
Q Serve(g_s), s	18.9	0.0	19.1	2.9	2.6	3.0	11.7	27.5	27.5	4.1	44.9	17.7
Cycle Q Clear(g_c), s	18.9	0.0	19.1	2.9	2.6	3.0	11.7	27.5	27.5	4.1	44.9	17.7
Prop In Lane	1.00		1.00	1.00		0.94	1.00		0.05	1.00		1.00
Lane Grp Cap(c), veh/h	599	0	439	101	101	91	377	1579	860	73	2015	892
V/C Ratio(X)	0.89	0.00	0.61	0.40	0.37	0.42	0.84	0.61	0.61	0.78	0.92	0.42
Avail Cap(c_a), veh/h	671	0	471	101	101	91	651	1762	960	119	2015	892
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	52.9	0.0	40.9	59.2	59.1	59.2	56.8	26.0	26.0	61.7	37.4	16.3
Incr Delay (d2), s/veh	11.8	0.0	1.3	1.0	0.8	1.2	2.0	0.3	0.5	6.5	8.4	1.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	9.5	0.0	7.6	1.3	1.2	1.3	5.2	11.1	12.2	2.0	20.0	9.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	64.7	0.0	42.2	60.1	59.9	60.4	58.8	26.3	26.6	68.2	45.8	17.8
LnGrp LOS	E	A	D	E	E	E	E	C	C	E	D	B
Approach Vol, veh/h		799			117		1805			2287		
Approach Delay, s/veh		57.1			60.1		32.1			41.7		
Approach LOS		E			E		C			D		
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	10.6	66.0		27.3	19.7	57.0		13.0				
Change Period (Y+Rc), s	* 5.3	5.7		5.5	5.5	5.7		5.6				
Max Green Setting (Gmax), s	* 8.7	67.3		24.5	24.5	51.3		7.4				
Max Q Clear Time (g_c+1), s	6.1	29.5		21.1	13.7	46.9		5.0				
Green Ext Time (p_c), s	0.0	2.2		0.7	0.5	2.0		0.1				

Intersection Summary	
HCM 6th Ctrl Delay	41.1
HCM 6th LOS	D

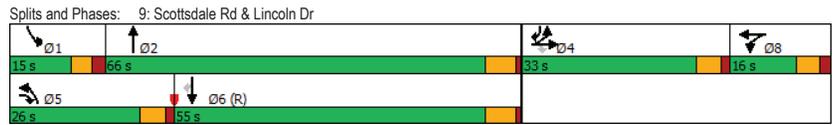
Notes
 User approved pedestrian interval to be less than phase max green.
 User approved volume balancing among the lanes for turning movement.
 * HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

2020 Total AM Scenario 1 Mitigated
9: Scottsdale Rd & Lincoln Dr

Smoke Tree Resort
Timings

	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	451	38	461	37	36	285	1316	51	1669	589
Future Volume (vph)	451	38	461	37	36	285	1316	51	1669	589
Turn Type	Split	NA	pm+ov	Split	NA	Prot	NA	Prot	NA	pm+ov
Protected Phases	4	4	5	8	8	5	2	1	6	4
Permitted Phases			4							6
Detector Phase	4	4	5	8	8	5	2	1	6	4
Switch Phase										
Minimum Initial (s)	10.0	10.0	7.0	10.0	10.0	7.0	10.0	5.0	10.0	10.0
Minimum Split (s)	15.5	15.5	12.5	15.6	15.6	12.5	27.7	10.3	30.7	15.5
Total Split (s)	33.0	33.0	26.0	16.0	16.0	26.0	66.0	15.0	55.0	33.0
Total Split (%)	25.4%	25.4%	20.0%	12.3%	12.3%	20.0%	50.8%	11.5%	42.3%	25.4%
Yellow Time (s)	4.0	4.0	4.0	3.6	3.6	4.0	4.7	3.3	4.7	4.0
All-Red Time (s)	1.5	1.5	1.5	2.0	2.0	1.5	1.0	2.0	1.0	1.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	5.5	5.5	5.6	5.6	5.5	5.7	5.3	5.7	5.5
Lead/Lag			Lead			Lead	Lag	Lead	Lag	
Lead-Lag Optimize?										
Recall Mode	None	None	None	Min	Min	None	None	C-Max	None	None
Act Effct Green (s)	25.3	25.3	41.6	10.1	10.1	16.4	66.5	8.1	56.0	87.0
Actuated g/C Ratio	0.19	0.19	0.32	0.08	0.08	0.13	0.51	0.06	0.43	0.67
v/c Ratio	0.83	0.83	0.89	0.30	0.31	0.74	0.58	0.52	0.85	0.57
Control Delay	54.6	53.9	44.8	62.7	30.0	64.9	24.4	75.1	38.6	8.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	54.6	53.9	44.8	62.7	30.0	64.9	24.4	75.1	38.6	8.5
LOS	D	D	D	E	C	E	C	E	D	A
Approach Delay		49.7			40.0		31.4		31.8	
Approach LOS		D			D		C		C	

Intersection Summary	
Cycle Length:	130
Actuated Cycle Length:	130
Offset:	0 (0%), Referenced to phase 6:SBT, Start of Green
Natural Cycle:	90
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.89
Intersection Signal Delay:	35.2
Intersection Capacity Utilization:	83.1%
ICU Level of Service:	E
Analysis Period (min):	15



2020 Total AM Scenario 1 Mitigated
9: Scottsdale Rd & Lincoln Dr

Smoke Tree Resort
HCM 6th Signalized Intersection Summary

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (veh/h)	451	38	461	37	36	48	285	1316	39	51	1669	589
Future Volume (veh/h)	451	38	461	37	36	48	285	1316	39	51	1669	589
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No		No		No		No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	531	0	268	41	40	31	317	1462	26	57	1854	376
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	607	0	442	137	154	107	374	2314	41	73	1936	871
Arrive On Green	0.17	0.00	0.17	0.08	0.08	0.08	0.11	0.45	0.45	0.04	0.38	0.38
Sat Flow, veh/h	3563	0	1585	1781	2003	1394	3456	5166	92	1781	5106	1585
Grp Volume(v), veh/h	531	0	268	41	35	36	317	963	525	57	1854	376
Grp Sat Flow(s),veh/h/ln	1781	0	1585	1781	1777	1620	1728	1702	1854	1781	1702	1585
Q Serve(g_s), s	18.9	0.0	19.1	2.8	2.4	2.7	11.7	28.3	28.3	4.1	46.0	18.2
Cycle Q Clear(g_c), s	18.9	0.0	19.1	2.8	2.4	2.7	11.7	28.3	28.3	4.1	46.0	18.2
Prop In Lane	1.00		1.00	1.00		0.86	1.00		0.05	1.00		1.00
Lane Grp Cap(c), veh/h	607	0	442	137	137	125	374	1525	830	73	1936	871
V/C Ratio(X)	0.87	0.00	0.61	0.30	0.26	0.29	0.85	0.63	0.63	0.78	0.96	0.43
Avail Cap(c_a), veh/h	754	0	507	143	142	130	545	1579	860	133	1936	871
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	52.6	0.0	40.7	56.7	56.5	56.6	56.9	27.6	27.6	61.7	39.3	17.3
Incr Delay (d2), s/veh	8.2	0.0	0.8	0.4	0.4	0.5	5.7	0.6	1.0	6.5	12.6	1.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	9.1	0.0	7.6	1.3	1.1	1.1	5.4	11.6	12.7	2.0	21.2	10.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	60.8	0.0	41.5	57.1	56.9	57.1	62.6	28.2	28.7	68.2	51.9	18.8
LnGrp LOS	E	A	D	E	E	E	E	C	C	E	D	B
Approach Vol, veh/h		799			112			1805			2287	
Approach Delay, s/veh		54.3			57.0			34.4			46.9	
Approach LOS		D			E			C			D	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	10.7	63.9		27.7	19.6	55.0		15.6				
Change Period (Y+Rc), s	* 5.3	5.7		5.5	5.5	5.7		5.6				
Max Green Setting (Gmax), s	* 9.7	60.3		27.5	20.5	49.3		10.4				
Max Q Clear Time (g_c+1), s	6.1	30.3		21.1	13.7	48.0		4.8				
Green Ext Time (p_c), s	0.0	2.2		1.1	0.4	0.7		0.1				

Intersection Summary	
HCM 6th Ctrl Delay	43.8
HCM 6th LOS	D

Notes
 User approved pedestrian interval to be less than phase max green.
 User approved volume balancing among the lanes for turning movement.
 * HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

2020 Total PM Scenario 1
1: Mockingbird Ln & Lincoln Drive

Smoke Tree Resort
Timings

	↖	→	↗	↖	↗	↖	↗	
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations	↖	↖↗	↖	↖↗	↖	↖	↖	↖
Traffic Volume (vph)	246	876	21	925	7	62	62	48
Future Volume (vph)	246	876	21	925	7	62	62	48
Turn Type	pm+pt	NA	Perm	NA	Perm	NA	pm+pt	NA
Protected Phases	1	6		2		4	3	8
Permitted Phases	6		2		4		8	
Detector Phase	1	6	2	2	4	4	3	8
Switch Phase								
Minimum Initial (s)	4.0	15.0	15.0	15.0	10.0	10.0	4.0	10.0
Minimum Split (s)	8.0	27.0	27.0	27.0	33.5	33.5	8.0	33.5
Total Split (s)	31.0	88.0	57.0	57.0	34.0	34.0	8.0	42.0
Total Split (%)	23.8%	67.7%	43.8%	43.8%	26.2%	26.2%	6.2%	32.3%
Yellow Time (s)	3.0	4.5	4.5	4.5	4.0	4.0	3.0	4.0
All-Red Time (s)	1.0	1.5	1.5	1.5	2.5	2.5	1.0	2.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	6.0	6.0	6.0	6.5	6.5	4.0	6.5
Lead/Lag	Lead		Lag	Lag	Lag	Lag	Lead	
Lead-Lag Optimize?	Yes		Yes	Yes	Yes	Yes	Yes	
Recall Mode	None	C-Max	C-Max	C-Max	None	None	None	None
Act Effct Green (s)	101.1	99.1	78.0	78.0	12.0	12.0	20.9	18.4
Actuated g/C Ratio	0.78	0.76	0.60	0.60	0.09	0.09	0.16	0.14
v/c Ratio	0.60	0.37	0.07	0.52	0.09	0.51	0.38	0.67
Control Delay	11.1	5.9	30.4	37.5	54.9	59.9	52.5	32.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	11.1	5.9	30.4	37.5	54.9	59.9	52.5	32.7
LOS	B	A	C	D	D	E	D	C
Approach Delay		7.0		37.4		59.4		37.3
Approach LOS		A		D		E		D

Intersection Summary

Cycle Length: 130	
Actuated Cycle Length: 130	
Offset: 0 (0%), Referenced to phase 2:WBT and 6:EBTL, Start of Green	
Natural Cycle: 90	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.67	
Intersection Signal Delay: 24.2	Intersection LOS: C
Intersection Capacity Utilization 67.0%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 1: Mockingbird Ln & Lincoln Drive



2020 Total PM Scenario 1
1: Mockingbird Ln & Lincoln Drive

Smoke Tree Resort
HCM 6th Signalized Intersection Summary

	↖	→	↗	↖	↗	↖	↗	↖	↗	↖	↗	↖	↗
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations	↖	↖↗	↖	↖	↖↗	↖	↖	↖	↖	↖	↖	↖	
Traffic Volume (veh/h)	246	876	29	21	925	60	7	62	18	62	48	156	
Future Volume (veh/h)	246	876	29	21	925	60	7	62	18	62	48	156	
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0	
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Work Zone On Approach	No		No		No		No		No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	
Adj Flow Rate, veh/h	273	973	21	23	1028	45	8	69	11	69	53	117	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2	
Cap, veh/h	525	2722	59	434	2317	101	105	121	19	156	72	159	
Arrive On Green	0.07	0.77	0.77	1.00	1.00	1.00	0.08	0.08	0.08	0.03	0.14	0.14	
Sat Flow, veh/h	1781	3557	77	567	3468	152	1215	1574	251	1781	519	1145	
Grp Volume(v), veh/h	273	486	508	23	527	546	8	0	80	69	0	170	
Grp Sat Flow(s),veh/h/ln	1781	1777	1857	567	1777	1843	1215	0	1825	1781	0	1664	
Q Serve(g_s), s	5.9	11.5	11.5	0.0	0.0	0.0	0.8	0.0	5.5	4.0	0.0	12.7	
Cycle Q Clear(g_c), s	5.9	11.5	11.5	0.0	0.0	0.0	5.6	0.0	5.5	4.0	0.0	12.7	
Prop In Lane	1.00		0.04	1.00		0.08	1.00		0.14	1.00		0.69	
Lane Grp Cap(c), veh/h	525	1360	1421	434	1187	1232	105	0	140	156	0	230	
V/C Ratio(X)	0.52	0.36	0.36	0.05	0.44	0.44	0.08	0.00	0.57	0.44	0.00	0.74	
Avail Cap(c_a), veh/h	777	1360	1421	434	1187	1232	268	0	386	156	0	454	
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	
Upstream Filter(I)	1.00	1.00	1.00	0.70	0.70	0.70	1.00	0.00	1.00	1.00	0.00	1.00	
Uniform Delay (d), s/veh	4.8	4.9	4.9	0.0	0.0	0.0	60.2	0.0	57.9	53.1	0.0	53.7	
Incr Delay (d2), s/veh	0.8	0.7	0.7	0.2	0.8	0.8	0.3	0.0	3.6	2.0	0.0	4.6	
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
%ile BackOfQ(50%),veh/ln	2.1	4.0	4.2	0.0	0.3	0.3	0.3	0.0	2.7	0.3	0.0	5.6	
Unsig. Movement Delay, s/veh													
LnGrp Delay(d),s/veh	5.6	5.7	5.6	0.2	0.8	0.8	60.6	0.0	61.5	55.1	0.0	58.3	
LnGrp LOS	A	A	A	A	A	A	E	A	E	E	A	E	
Approach Vol, veh/h		1267			1096				88			239	
Approach Delay, s/veh		5.6			0.8				61.4			57.4	
Approach LOS		A			A				E			E	
Timer - Assigned Phs	1	2	3	4		6		8					
Phs Duration (G+Y+Rc), s	12.6	92.9	8.0	16.5		105.5		24.5					
Change Period (Y+Rc), s	4.0	6.0	4.0	6.5		6.0		6.5					
Max Green Setting (Gmax), s	27.0	51.0	4.0	27.5		82.0		35.5					
Max Q Clear Time (g_c+1), s	7.9	2.0	6.0	7.6		13.5		14.7					
Green Ext Time (p_c), s	0.8	9.6	0.0	0.3		8.3		0.9					

Intersection Summary

HCM 6th Ctrl Delay	10.1
HCM 6th LOS	B

2020 Total PM Scenario 1
2: Quail Run Rd & Lincoln Drive

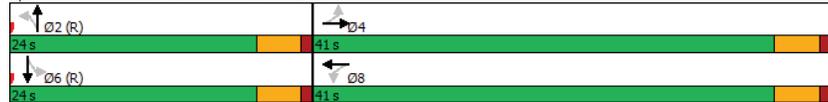
Smoke Tree Resort
Timings

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations	↔	↕	↔	↕	↔	↕	↔	↕
Traffic Volume (vph)	85	881	12	906	7	0	14	0
Future Volume (vph)	85	881	12	906	7	0	14	0
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		4		8		2		6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	2	2	6	6
Switch Phase								
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5
Total Split (s)	41.0	41.0	41.0	41.0	24.0	24.0	24.0	24.0
Total Split (%)	63.1%	63.1%	63.1%	63.1%	36.9%	36.9%	36.9%	36.9%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	C-Max	C-Max	C-Max	C-Max
Act Effct Green (s)	28.9	28.9	28.9	28.9	27.1	27.1	27.1	27.1
Actuated g/C Ratio	0.44	0.44	0.44	0.44	0.42	0.42	0.42	0.42
v/c Ratio	0.67	0.63	0.08	0.66	0.02	0.02	0.16	0.16
Control Delay	42.0	18.8	10.6	18.2	4.1	4.1	5.8	5.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	42.0	18.8	10.6	18.2	4.1	4.1	5.8	5.8
LOS	D	B	B	B	A	A	A	A
Approach Delay		20.8		18.1		4.1		5.8
Approach LOS		C		B		A		A

Intersection Summary

Cycle Length: 65	
Actuated Cycle Length: 65	
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	
Natural Cycle: 60	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.67	
Intersection Signal Delay: 18.7	Intersection LOS: B
Intersection Capacity Utilization 48.2%	ICU Level of Service A
Analysis Period (min) 15	

Spplits and Phases: 2: Quail Run Rd & Lincoln Drive



2020 Total PM Scenario 1
2: Quail Run Rd & Lincoln Drive

Smoke Tree Resort
HCM 6th Signalized Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↕		↔	↕		↔	↕		↔	↕	
Traffic Volume (veh/h)	85	881	8	12	906	25	7	0	4	14	0	93
Future Volume (veh/h)	85	881	8	12	906	25	7	0	4	14	0	93
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No								
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	94	979	9	13	1007	28	8	0	4	16	0	103
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	257	1457	13	272	1426	40	505	18	216	122	38	627
Arrive On Green	0.81	0.81	0.81	0.81	0.81	0.81	0.46	0.00	0.46	0.46	0.00	0.46
Sat Flow, veh/h	545	3608	33	570	3531	98	903	40	471	130	83	1369
Grp Volume(v), veh/h	94	482	506	13	507	528	12	0	0	119	0	0
Grp Sat Flow(s),veh/h/ln	545	1777	1864	570	1777	1853	1413	0	0	1582	0	0
Q Serve(g_s), s	7.9	7.4	7.4	0.7	8.3	8.3	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	16.7	7.4	7.4	8.5	8.3	8.3	0.2	0.0	0.0	2.8	0.0	0.0
Prop In Lane	1.00		0.02	1.00		0.05	0.67		0.33	0.13		0.87
Lane Grp Cap(c), veh/h	257	718	753	272	718	748	739	0	0	787	0	0
V/C Ratio(X)	0.37	0.67	0.67	0.05	0.71	0.71	0.02	0.00	0.00	0.15	0.00	0.00
Avail Cap(c_a), veh/h	343	998	1047	362	998	1040	739	0	0	787	0	0
HCM Platoon Ratio	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.93	0.93	0.93	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	8.4	4.4	4.4	6.3	4.5	4.5	9.6	0.0	0.0	10.3	0.0	0.0
Incr Delay (d2), s/veh	0.8	1.0	1.0	0.1	1.4	1.3	0.0	0.0	0.0	0.4	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	1.5	1.6	0.0	1.7	1.7	0.1	0.0	0.0	1.0	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	9.2	5.5	5.4	6.4	5.9	5.8	9.7	0.0	0.0	10.7	0.0	0.0
LnGrp LOS	A	A	A	A	A	A	A	A	A	B	A	A
Approach Vol, veh/h		1082			1048			12				119
Approach Delay, s/veh		5.8			5.9			9.7				10.7
Approach LOS		A			A			A				B

Timer - Assigned Phs

Phs Duration (G+Y+Rc), s	34.4	30.6	34.4	30.6
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	19.5	36.5	19.5	36.5
Max Q Clear Time (g_c+1), s	2.2	18.7	4.8	10.5
Green Ext Time (p_c), s	0.0	7.2	0.5	7.8

Intersection Summary

HCM 6th Ctrl Delay	6.1
HCM 6th LOS	A

2020 Total PM Scenario 1
3: Access A & Lincoln Dr

Smoke Tree Resort
HCM 6th TWSC

Intersection						
Int Delay, s/veh	0.2					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↑	↑↑	↑	
Traffic Vol, veh/h	893	6	12	937	5	19
Future Vol, veh/h	893	6	12	937	5	19
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	25	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	992	7	13	1041	6	21

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	999
Stage 1	-	-	996
Stage 2	-	-	547
Critical Hdwy	-	4.14	6.84
Critical Hdwy Stg 1	-	-	5.84
Critical Hdwy Stg 2	-	-	5.84
Follow-up Hdwy	-	2.22	3.52
Pot Cap-1 Maneuver	-	1059	*106
Stage 1	-	-	*663
Stage 2	-	-	*652
Platoon blocked, %	-	1	-
Mov Cap-1 Maneuver	-	1059	*105
Mov Cap-2 Maneuver	-	-	*343
Stage 1	-	-	*655
Stage 2	-	-	*652

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	11.4
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	592	-	-	1059	-
HCM Lane V/C Ratio	0.045	-	-	0.013	-
HCM Control Delay (s)	11.4	-	-	8.4	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0	-

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

2020 Total PM Scenario 1
4: Quail Run Rd & Access B

Smoke Tree Resort
HCM 6th TWSC

Intersection						
Int Delay, s/veh	6.8					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↑		↑			↑
Traffic Vol, veh/h	0	8	2	0	19	1
Future Vol, veh/h	0	8	2	0	19	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	9	2	0	21	1

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	45	2	0
Stage 1	2	-	-
Stage 2	43	-	-
Critical Hdwy	6.42	6.22	4.12
Critical Hdwy Stg 1	5.42	-	-
Critical Hdwy Stg 2	5.42	-	-
Follow-up Hdwy	3.518	3.318	2.218
Pot Cap-1 Maneuver	965	1082	1620
Stage 1	1021	-	-
Stage 2	979	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	952	1082	1620
Mov Cap-2 Maneuver	952	-	-
Stage 1	1008	-	-
Stage 2	979	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.4	0	6.9
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	1082	1620	-
HCM Lane V/C Ratio	-	-	0.008	0.013	-
HCM Control Delay (s)	-	-	8.4	7.3	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0	0	-

2020 Total PM Scenario 1
5: Lincoln Medical West & Lincoln Dr

Smoke Tree Resort
HCM 6th TWSC

Intersection						
Int Delay, s/veh	0					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↕↔		↕	↕↕	↕	
Traffic Vol, veh/h	913	0	0	949	2	0
Future Vol, veh/h	913	0	0	949	2	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	25	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1014	0	0	1054	2	0

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	1014	0	1541
Stage 1	-	-	-	-	1014
Stage 2	-	-	-	-	527
Critical Hdwy	-	-	4.14	-	6.84
Critical Hdwy Stg 1	-	-	-	-	5.84
Critical Hdwy Stg 2	-	-	-	-	5.84
Follow-up Hdwy	-	-	2.22	-	3.52
Pot Cap-1 Maneuver	-	-	1039	-	*106
Stage 1	-	-	-	-	*644
Stage 2	-	-	-	-	*652
Platoon blocked, %	-	-	1	-	1
Mov Cap-1 Maneuver	-	-	1039	-	*106
Mov Cap-2 Maneuver	-	-	-	-	*344
Stage 1	-	-	-	-	*644
Stage 2	-	-	-	-	*652

Approach	EB	WB	NB
HCM Control Delay, s	0	0	15.5
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	344	-	-	1039	-
HCM Lane V/C Ratio	0.006	-	-	-	-
HCM Control Delay (s)	15.5	-	-	0	-
HCM Lane LOS	C	-	-	A	-
HCM 95th %tile Q(veh)	0	-	-	0	-

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

2020 Total PM Scenario 1
6: Lincoln Medical East & Lincoln Dr

Smoke Tree Resort
HCM 6th TWSC

Intersection						
Int Delay, s/veh	0					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↕↔		↕	↕↕	↕	
Traffic Vol, veh/h	913	0	0	948	2	3
Future Vol, veh/h	913	0	0	948	2	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	25	-	0	-
Veh in Median Storage, #	0	-	-	0	1	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1014	0	0	1053	2	3

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	1014	0	1541
Stage 1	-	-	-	-	1014
Stage 2	-	-	-	-	527
Critical Hdwy	-	-	4.14	-	6.84
Critical Hdwy Stg 1	-	-	-	-	5.84
Critical Hdwy Stg 2	-	-	-	-	5.84
Follow-up Hdwy	-	-	2.22	-	3.52
Pot Cap-1 Maneuver	-	-	1039	-	*106
Stage 1	-	-	-	-	*644
Stage 2	-	-	-	-	*652
Platoon blocked, %	-	-	1	-	1
Mov Cap-1 Maneuver	-	-	1039	-	*106
Mov Cap-2 Maneuver	-	-	-	-	*344
Stage 1	-	-	-	-	*644
Stage 2	-	-	-	-	*652

Approach	EB	WB	NB
HCM Control Delay, s	0	0	12.2
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	504	-	-	1039	-
HCM Lane V/C Ratio	0.011	-	-	-	-
HCM Control Delay (s)	12.2	-	-	0	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0	-	-	0	-

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

2020 Total PM Scenario 1
7: Apartment Drwy & Lincoln Dr

Smoke Tree Resort
HCM 6th TWSC

Intersection												
Int Delay, s/veh	1.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔		↔		↔		↔		↔		↔	
Traffic Vol, veh/h	7	854	41	6	852	9	66	3	47	7	0	34
Future Vol, veh/h	7	854	41	6	852	9	66	3	47	7	0	34
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None									
Storage Length	25	-	-	25	-	-	-	-	-	0	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	8	949	46	7	947	10	73	3	52	8	0	38

Major/Minor	Major1	Major2	Minor1	Minor2
Conflicting Flow All	957	0	0	995
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Critical Hdwy	4.14	-	-	4.14
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	2.22	-	-	2.22
Pot Cap-1 Maneuver	1100	-	-	1065
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Platoon blocked, %	1	-	-	1
Mov Cap-1 Maneuver	1100	-	-	1065
Mov Cap-2 Maneuver	-	-	-	-
Stage 1	-	-	-	-
Stage 2	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0.1	16.9	11.1
HCM LOS			C	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	430	1100	-	-	1065	-	-	334	739
HCM Lane V/C Ratio	0.3	0.007	-	-	0.006	-	-	0.023	0.051
HCM Control Delay (s)	16.9	8.3	-	-	8.4	-	-	16	10.1
HCM Lane LOS	C	A	-	-	A	-	-	C	B
HCM 95th %tile Q(veh)	1.2	0	-	-	0	-	-	0.1	0.2

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

2020 Total PM Scenario 1
8: AJ's Drwy & Lincoln Dr

Smoke Tree Resort
HCM 6th TWSC

Intersection												
Int Delay, s/veh	1.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔		↔		↔		↔		↔		↔	
Traffic Vol, veh/h	11	848	53	61	850	8	14	1	89	4	0	7
Future Vol, veh/h	11	848	53	61	850	8	14	1	89	4	0	7
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None									
Storage Length	25	-	-	25	-	-	-	-	-	0	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	12	942	59	68	944	9	16	1	99	4	0	8

Major/Minor	Major1	Major2	Minor1	Minor2
Conflicting Flow All	953	0	0	1001
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Critical Hdwy	4.14	-	-	4.14
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	2.22	-	-	2.22
Pot Cap-1 Maneuver	1105	-	-	1056
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Platoon blocked, %	1	-	-	1
Mov Cap-1 Maneuver	1105	-	-	1056
Mov Cap-2 Maneuver	-	-	-	-
Stage 1	-	-	-	-
Stage 2	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0.6	12.2	13.1
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	616	1105	-	-	1056	-	-	268	739
HCM Lane V/C Ratio	0.188	0.011	-	-	0.064	-	-	0.017	0.011
HCM Control Delay (s)	12.2	8.3	-	-	8.6	-	-	18.7	9.9
HCM Lane LOS	B	A	-	-	A	-	-	C	A
HCM 95th %tile Q(veh)	0.7	0	-	-	0.2	-	-	0.1	0

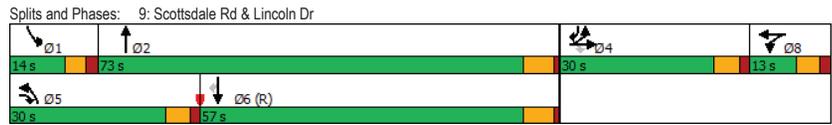
Notes
 -: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

2020 Total PM Scenario 1
9: Scottsdale Rd & Lincoln Dr

Smoke Tree Resort
Timings

	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	493	56	417	56	62	412	1624	61	1569	488
Future Volume (vph)	493	56	417	56	62	412	1624	61	1569	488
Turn Type	Split	NA	pm+ov	Split	NA	Prot	NA	Prot	NA	pm+ov
Protected Phases	4	4	5	8	8	5	2	1	6	4
Permitted Phases			4							6
Detector Phase	4	4	5	8	8	5	2	1	6	4
Switch Phase										
Minimum Initial (s)	13.0	13.0	7.0	7.4	7.4	7.0	10.0	5.0	10.0	13.0
Minimum Split (s)	18.5	18.5	13.0	13.0	13.0	13.0	16.7	11.0	16.0	18.5
Total Split (s)	30.0	30.0	30.0	13.0	13.0	30.0	73.0	14.0	57.0	30.0
Total Split (%)	23.1%	23.1%	23.1%	10.0%	10.0%	23.1%	56.2%	10.8%	43.8%	23.1%
Yellow Time (s)	4.0	4.0	4.0	3.6	3.6	4.0	4.7	3.3	4.7	4.0
All-Red Time (s)	1.5	1.5	1.5	2.0	2.0	1.5	1.0	2.0	1.0	1.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	5.5	5.5	5.6	5.6	5.5	5.7	5.3	5.7	5.5
Lead/Lag			Lead			Lead	Lag	Lead	Lag	
Lead-Lag Optimize?										
Recall Mode	None	C-Max	None	None						
Act Effct Green (s)	24.5	24.5	45.7	7.4	7.4	21.2	70.3	7.9	54.6	84.8
Actuated g/C Ratio	0.19	0.19	0.35	0.06	0.06	0.16	0.54	0.06	0.42	0.65
v/c Ratio	0.95	0.97	0.77	0.62	0.57	0.82	0.68	0.64	0.82	0.51
Control Delay	76.8	79.4	36.0	85.9	37.7	64.7	23.8	85.4	37.7	11.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	76.8	79.4	36.0	85.9	37.7	64.7	23.8	85.4	37.7	11.3
LOS	E	E	D	F	D	E	C	F	D	B
Approach Delay		60.0			51.9		31.9		33.0	
Approach LOS		E			D		C		C	

Intersection Summary	
Cycle Length:	130
Actuated Cycle Length:	130
Offset:	0 (0%), Referenced to phase 6:SBT, Start of Green
Natural Cycle:	90
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.97
Intersection Signal Delay:	38.1
Intersection Capacity Utilization:	81.9%
ICU Level of Service:	D
Analysis Period (min):	15



2020 Total PM Scenario 1
9: Scottsdale Rd & Lincoln Dr

Smoke Tree Resort
HCM 6th Signalized Intersection Summary

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (veh/h)	493	56	417	56	62	72	412	1624	45	61	1569	488
Future Volume (veh/h)	493	56	417	56	62	72	412	1624	45	61	1569	488
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No		No		No		No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	592	0	241	62	69	58	458	1804	33	68	1743	275
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	646	0	524	101	109	83	516	2566	47	87	2015	913
Arrive On Green	0.18	0.00	0.18	0.06	0.06	0.06	0.15	0.50	0.50	0.05	0.39	0.39
Sat Flow, veh/h	3563	0	1585	1781	1925	1460	3456	5163	94	1781	5106	1585
Grp Volume(v), veh/h	592	0	241	62	63	64	458	1189	648	68	1743	275
Grp Sat Flow(s),veh/h/ln	1781	0	1585	1781	1777	1608	1728	1702	1853	1781	1702	1585
Q Serve(g_s), s	21.2	0.0	15.6	4.4	4.5	5.1	16.9	35.1	35.1	4.9	40.8	11.6
Cycle Q Clear(g_c), s	21.2	0.0	15.6	4.4	4.5	5.1	16.9	35.1	35.1	4.9	40.8	11.6
Prop In Lane	1.00		1.00	1.00		0.91	1.00		0.05	1.00		1.00
Lane Grp Cap(c), veh/h	646	0	524	101	101	91	516	1692	921	87	2015	913
V/C Ratio(X)	0.92	0.00	0.46	0.61	0.62	0.70	0.89	0.70	0.70	0.78	0.87	0.30
Avail Cap(c_a), veh/h	671	0	536	101	101	92	651	1762	959	119	2015	913
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	52.3	0.0	34.3	59.9	59.9	60.2	54.2	25.3	25.3	61.2	36.2	14.2
Incr Delay (d2), s/veh	16.7	0.0	0.2	7.7	8.7	17.9	10.3	1.0	1.8	13.9	5.3	0.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	11.0	0.0	6.1	2.2	2.3	2.5	8.1	14.2	15.7	2.6	17.7	6.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	68.9	0.0	34.6	67.6	68.6	78.2	64.5	26.3	27.1	75.1	41.4	15.0
LnGrp LOS	E	A	C	E	E	E	E	C	C	E	D	B
Approach Vol, veh/h		833			189		2295		2086			
Approach Delay, s/veh		59.0			71.5		34.2		39.0			
Approach LOS		E			E		C		D			
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	11.6	70.3		29.1	24.9	57.0		13.0				
Change Period (Y+Rc), s	* 5.3	5.7		5.5	5.5	5.7		5.6				
Max Green Setting (Gmax), s	* 8.7	67.3		24.5	24.5	51.3		7.4				
Max Q Clear Time (g_c+1), s	6.9	37.1		23.2	18.9	42.8		7.1				
Green Ext Time (p_c), s	0.0	2.9		0.3	0.5	2.6		0.0				

Intersection Summary	
HCM 6th Ctrl Delay	41.2
HCM 6th LOS	D

Notes
User approved pedestrian interval to be less than phase max green.
User approved volume balancing among the lanes for turning movement.
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

2020 Total PM Scenario 1 Mitigated
9: Scottsdale Rd & Lincoln Dr

Smoke Tree Resort
Timings

	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	493	56	417	56	62	412	1624	61	1569	488
Future Volume (vph)	493	56	417	56	62	412	1624	61	1569	488
Turn Type	Split	NA	pm+ov	Split	NA	Prot	NA	Prot	NA	pm+ov
Protected Phases	4	4	5	8	8	5	2	1	6	4
Permitted Phases			4							6
Detector Phase	4	4	5	8	8	5	2	1	6	4
Switch Phase										
Minimum Initial (s)	13.0	13.0	7.0	13.0	13.0	7.0	10.0	5.0	10.0	13.0
Minimum Split (s)	18.5	18.5	13.0	18.6	18.6	13.0	16.7	11.0	16.0	18.5
Total Split (s)	34.0	34.0	24.0	21.0	21.0	24.0	62.0	13.0	51.0	34.0
Total Split (%)	26.2%	26.2%	18.5%	16.2%	16.2%	18.5%	47.7%	10.0%	39.2%	26.2%
Yellow Time (s)	4.0	4.0	4.0	3.6	3.6	4.0	4.7	3.3	4.7	4.0
All-Red Time (s)	1.5	1.5	1.5	2.0	2.0	1.5	1.0	2.0	1.0	1.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	5.5	5.5	5.6	5.6	5.5	5.7	5.3	5.7	5.5
Lead/Lag			Lead			Lead	Lag	Lead	Lag	
Lead-Lag Optimize?										
Recall Mode	None	C-Max	None							
Act Effct Green (s)	26.8	26.8	47.3	13.0	13.0	20.5	61.6	8.7	47.4	79.9
Actuated g/C Ratio	0.21	0.21	0.36	0.10	0.10	0.16	0.47	0.07	0.36	0.61
v/c Ratio	0.87	0.88	0.70	0.35	0.38	0.85	0.77	0.57	0.94	0.50
Control Delay	58.0	59.2	19.6	60.6	28.9	68.5	32.5	77.3	51.3	7.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	58.0	59.2	19.6	60.6	28.9	68.5	32.5	77.3	51.3	7.8
LOS	E	E	B	E	C	E	C	E	D	A
Approach Delay		41.8			38.2		39.6		42.0	
Approach LOS		D			D		D		D	

Intersection Summary	
Cycle Length:	130
Actuated Cycle Length:	130
Offset:	0 (0%), Referenced to phase 6:SBT, Start of Green
Natural Cycle:	100
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.94
Intersection Signal Delay:	40.9
Intersection Capacity Utilization:	86.6%
ICU Level of Service E	
Intersection LOS:	D
Analysis Period (min):	15



2020 Total PM Scenario 1 Mitigated
9: Scottsdale Rd & Lincoln Dr

Smoke Tree Resort
HCM 6th Signalized Intersection Summary

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (veh/h)	493	56	417	56	62	72	412	1624	45	61	1569	488
Future Volume (veh/h)	493	56	417	56	62	72	412	1624	45	61	1569	488
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No											
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	592	0	241	62	69	58	458	1804	33	68	1743	275
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	661	0	520	178	192	146	492	2291	42	87	1779	847
Arrive On Green	0.19	0.00	0.19	0.10	0.10	0.10	0.14	0.44	0.44	0.05	0.35	0.35
Sat Flow, veh/h	3563	0	1585	1781	1925	1460	3456	5163	94	1781	5106	1585
Grp Volume(v), veh/h	592	0	241	62	63	64	458	1189	648	68	1743	275
Grp Sat Flow(s),veh/h/ln	1781	0	1585	1781	1777	1608	1728	1702	1853	1781	1702	1585
Q Serve(g_s), s	21.1	0.0	15.7	4.2	4.3	4.8	17.0	38.8	38.9	4.9	43.9	12.7
Cycle Q Clear(g_c), s	21.1	0.0	15.7	4.2	4.3	4.8	17.0	38.8	38.9	4.9	43.9	12.7
Prop In Lane	1.00		1.00	1.00		0.91	1.00		0.05	1.00		1.00
Lane Grp Cap(c), veh/h	661	0	520	178	177	161	492	1510	822	87	1779	847
V/C Ratio(X)	0.90	0.00	0.46	0.35	0.36	0.40	0.93	0.79	0.79	0.79	0.98	0.32
Avail Cap(c_a), veh/h	781	0	573	211	210	190	492	1510	822	106	1779	847
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	51.7	0.0	34.6	54.6	54.6	54.8	55.1	30.9	30.9	61.2	41.9	17.1
Incr Delay (d2), s/veh	10.6	0.0	0.2	0.4	0.4	0.6	24.3	2.6	4.7	21.5	17.0	1.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	10.4	0.0	6.1	1.9	2.0	2.0	9.1	16.3	18.2	2.7	21.0	7.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	62.3	0.0	34.9	55.0	55.1	55.4	79.4	33.5	35.6	82.7	58.9	18.1
LnGrp LOS	E	A	C	D	E	E	E	C	D	F	E	B
Approach Vol, veh/h		833			189		2295			2086		
Approach Delay, s/veh		54.3			55.2		43.3			54.3		
Approach LOS		D			E		D			D		

Timer - Assigned Phs	1	2	4	5	6	8
Phs Duration (G+Y+Rc), s	11.6	63.4	29.6	24.0	51.0	18.6
Change Period (Y+Rc), s	* 5.3	5.7	5.5	5.5	5.7	5.6
Max Green Setting (Gmax), s	* 7.7	56.3	28.5	18.5	45.3	15.4
Max Q Clear Time (g_c+1), s	6.9	40.9	23.1	19.0	45.9	6.8
Green Ext Time (p_c), s	0.0	2.8	1.0	0.0	0.0	0.3

Intersection Summary	
HCM 6th Ctrl Delay	49.7
HCM 6th LOS	D

Notes
 User approved pedestrian interval to be less than phase max green.
 User approved volume balancing among the lanes for turning movement.
 * HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

2020 Total AM Scenario 2
1: Mockingbird Ln & Lincoln Drive

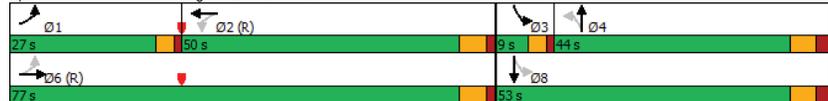
Smoke Tree Resort
Timings

	↖	→	↘	↙	↖	↗	↘	↙
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations	↖	↖↗	↖	↖↗	↖	↖	↖	↖
Traffic Volume (vph)	222	962	23	890	5	34	74	91
Future Volume (vph)	222	962	23	890	5	34	74	91
Turn Type	pm+pt	NA	Perm	NA	Perm	NA	pm+pt	NA
Protected Phases	1	6		2		4	3	8
Permitted Phases	6		2		4		8	
Detector Phase	1	6	2	2	4	4	3	8
Switch Phase								
Minimum Initial (s)	3.5	15.0	15.0	15.0	7.0	7.0	3.5	7.0
Minimum Split (s)	8.0	27.0	27.0	27.0	33.5	33.5	8.0	33.5
Total Split (s)	27.0	77.0	50.0	50.0	44.0	44.0	9.0	53.0
Total Split (%)	20.8%	59.2%	38.5%	38.5%	33.8%	33.8%	6.9%	40.8%
Yellow Time (s)	3.0	4.5	4.5	4.5	4.0	4.0	3.0	4.0
All-Red Time (s)	1.0	1.5	1.5	1.5	2.5	2.5	1.0	2.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	6.0	6.0	6.0	6.5	6.5	4.0	6.5
Lead/Lag	Lead		Lag	Lag	Lag	Lag	Lead	
Lead-Lag Optimize?	Yes		Yes	Yes	Yes	Yes	Yes	
Recall Mode	None	C-Max	C-Max	C-Max	None	None	None	None
Act Effct Green (s)	93.9	91.9	69.7	69.7	18.4	18.4	28.1	25.6
Actuated g/C Ratio	0.72	0.71	0.54	0.54	0.14	0.14	0.22	0.20
v/c Ratio	0.59	0.42	0.11	0.52	0.11	0.21	0.33	0.83
Control Delay	13.8	9.4	33.4	36.5	49.6	33.3	43.3	50.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	13.8	9.4	33.4	36.5	49.6	33.3	43.3	50.1
LOS	B	A	C	D	D	C	D	D
Approach Delay		10.2		36.4		34.8		48.8
Approach LOS		B		D		C		D

Intersection Summary

Cycle Length: 130	
Actuated Cycle Length: 130	
Offset: 0 (0%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green	
Natural Cycle: 90	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.83	
Intersection Signal Delay: 26.1	Intersection LOS: C
Intersection Capacity Utilization 72.2%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 1: Mockingbird Ln & Lincoln Drive



2020 Total AM Scenario 2
1: Mockingbird Ln & Lincoln Drive

Smoke Tree Resort
HCM 6th Signalized Intersection Summary

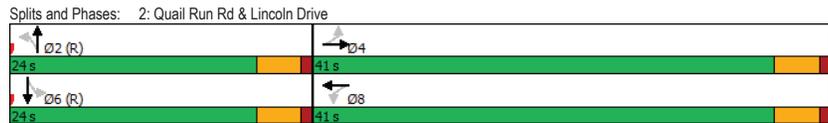
	↖	→	↘	↙	↖	↗	↘	↙	↖	↗	↘	↙	↖	↗	↘	↙									
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations	↖	↖↗		↖	↖↗		↖	↖		↖	↖	↖	↖	↖↗		↖	↖↗		↖	↖		↖	↖	↖	↖
Traffic Volume (veh/h)	222	962	30	23	890	42	5	34	20	74	91	233	222	962	30	23	890	42	5	34	20	74	91	233	
Future Volume (veh/h)	222	962	30	23	890	42	5	34	20	74	91	233	222	962	30	23	890	42	5	34	20	74	91	233	
Initial Q (Qb), 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	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00		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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No																						
Adj Sat Flow, veh/h/ln	1772	1969	1772	1772	1969	1772	1772	1969	1772	1772	1969	1772	1772	1969	1772	1772	1969	1772	1772	1969	1772	1772	1969	1772	1772
Adj Flow Rate, veh/h	247	1069	33	26	989	47	6	38	22	82	101	259	247	1069	33	26	989	47	6	38	22	82	101	259	259
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	478	2487	77	316	2043	97	87	191	110	292	114	291	478	2487	77	316	2043	97	87	191	110	292	114	291	291
Arrive On Green	0.08	0.67	0.67	1.00	1.00	1.00	0.16	0.16	0.16	0.04	0.23	0.23	0.08	0.67	0.67	1.00	1.00	1.00	0.16	0.16	0.16	0.04	0.23	0.23	0.23
Sat Flow, veh/h	1688	3704	114	485	3635	173	968	1170	677	1688	489	1254	1688	3704	114	485	3635	173	968	1170	677	1688	489	1254	1254
Grp Volume(v), veh/h	247	540	562	26	509	527	6	0	60	82	0	360	247	540	562	26	509	527	6	0	60	82	0	360	360
Grp Sat Flow(s),veh/h/ln	1688	1870	1948	485	1870	1938	968	0	1847	1688	0	1743	1688	1870	1948	485	1870	1938	968	0	1847	1688	0	1743	1743
Q Serve(g_s), s	7.7	17.3	17.3	0.3	0.0	0.0	0.8	0.0	3.7	5.0	0.0	26.0	7.7	17.3	17.3	0.3	0.0	0.0	0.8	0.0	3.7	5.0	0.0	26.0	26.0
Cycle Q Clear(g_c), s	7.7	17.3	17.3	3.4	0.0	0.0	17.8	0.0	3.7	5.0	0.0	26.0	7.7	17.3	17.3	3.4	0.0	0.0	17.8	0.0	3.7	5.0	0.0	26.0	26.0
Prop In Lane	1.00		0.06	1.00		0.09	1.00		0.37	1.00		0.72	1.00		0.06	1.00		0.09	1.00		0.37	1.00		0.72	0.72
Lane Grp Cap(c), veh/h	478	1256	1308	316	1051	1089	87	0	301	292	0	405	478	1256	1308	316	1051	1089	87	0	301	292	0	405	405
V/C Ratio(X)	0.52	0.43	0.43	0.08	0.48	0.48	0.07	0.00	0.20	0.28	0.00	0.89	0.52	0.43	0.43	0.08	0.48	0.48	0.07	0.00	0.20	0.28	0.00	0.89	0.89
Avail Cap(c_a), veh/h	644	1256	1308	316	1051	1089	208	0	533	292	0	623	644	1256	1308	316	1051	1089	208	0	533	292	0	623	623
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.80	0.80	0.80	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	0.80	0.80	0.80	1.00	0.00	1.00	1.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	9.0	9.9	9.9	0.1	0.0	0.0	61.2	0.0	47.0	42.2	0.0	48.3	9.0	9.9	9.9	0.1	0.0	0.0	61.2	0.0	47.0	42.2	0.0	48.3	48.3
Incr Delay (d2), s/veh	0.9	1.1	1.0	0.4	1.3	1.2	0.3	0.0	0.3	0.5	0.0	10.0	0.9	1.1	1.0	0.4	1.3	1.2	0.3	0.0	0.3	0.5	0.0	10.0	10.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.9	7.2	7.5	0.0	0.4	0.4	0.2	0.0	1.7	2.2	0.0	12.4	2.9	7.2	7.5	0.0	0.4	0.4	0.2	0.0	1.7	2.2	0.0	12.4	12.4
Unsig. Movement Delay, s/veh																									
LnGrp Delay(d),s/veh	9.9	10.9	10.9	0.5	1.3	1.2	61.5	0.0	47.4	42.7	0.0	58.3	9.9	10.9	10.9	0.5	1.3	1.2	61.5	0.0	47.4	42.7	0.0	58.3	58.3
LnGrp LOS	A	B	B	A	A	A	E	A	D	D	A	E	A	B	B	A	A	A	E	A	D	D	A	E	E
Approach Vol, veh/h		1349			1062				66			442		1349				1062			66			442	442
Approach Delay, s/veh		10.7			1.2				48.7			55.4		10.7				1.2			48.7			55.4	55.4
Approach LOS		B			A				D			E		B				A			D			E	E
Timer - Assigned Phs	1	2	3	4		6		8					1	2	3	4		6		8					
Phs Duration (G+Y+Rc), s	14.2	79.0	9.0	27.7		93.3		36.7					14.2	79.0	9.0	27.7		93.3		36.7					
Change Period (Y+Rc), s	4.0	6.0	4.0	6.5		6.0		6.5					4.0	6.0	4.0	6.5		6.0		6.5					
Max Green Setting (Gmax), s	23.0	44.0	5.0	37.5		71.0		46.5					23.0	44.0	5.0	37.5		71.0		46.5					
Max Q Clear Time (g_c+1), s	9.7	5.4	7.0	19.8		19.3		28.0		</															

2020 Total AM Scenario 2
2: Quail Run Rd & Lincoln Drive

Smoke Tree Resort
Timings

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations	↔	↕	↔	↕	↔	↕	↔	↕
Traffic Volume (vph)	115	1001	6	851	3	0	26	0
Future Volume (vph)	115	1001	6	851	3	0	26	0
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		4		8		2		6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	2	2	6	6
Switch Phase								
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5
Total Split (s)	41.0	41.0	41.0	41.0	24.0	24.0	24.0	24.0
Total Split (%)	63.1%	63.1%	63.1%	63.1%	36.9%	36.9%	36.9%	36.9%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	C-Max	C-Max	C-Max	C-Max
Act Effct Green (s)	31.0	31.0	31.0	31.0	25.0	25.0	25.0	25.0
Actuated g/C Ratio	0.48	0.48	0.48	0.48	0.38	0.38	0.38	0.38
v/c Ratio	0.67	0.66	0.05	0.57	0.02	0.16	0.02	0.16
Control Delay	38.4	18.5	9.5	15.5	4.5	7.7	4.5	7.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	38.4	18.5	9.5	15.5	4.5	7.7	4.5	7.7
LOS	D	B	A	B	A	A	A	A
Approach Delay		20.6		15.5		4.5		7.7
Approach LOS		C		B		A		A

Intersection Summary	
Cycle Length:	65
Actuated Cycle Length:	65
Offset:	0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle:	60
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.67
Intersection Signal Delay:	17.8
Intersection Capacity Utilization:	50.9%
ICU Level of Service:	A
Intersection LOS:	B
Analysis Period (min):	15



2020 Total AM Scenario 2
2: Quail Run Rd & Lincoln Drive

Smoke Tree Resort
HCM 6th Signalized Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↕		↔	↕		↔	↕		↔	↕	
Traffic Volume (veh/h)	115	1001	7	6	851	12	3	0	9	26	0	65
Future Volume (veh/h)	115	1001	7	6	851	12	3	0	9	26	0	65
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No								
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	128	1112	8	7	946	13	3	0	10	29	0	72
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	293	1489	11	246	1478	20	191	38	535	235	36	497
Arrive On Green	0.82	0.82	0.82	0.82	0.82	0.82	0.45	0.00	0.45	0.45	0.00	0.45
Sat Flow, veh/h	586	3617	26	503	3589	49	272	85	1189	365	80	1105
Grp Volume(v), veh/h	128	546	574	7	468	491	13	0	101	0	0	0
Grp Sat Flow(s),veh/h/ln	586	1777	1866	503	1777	1861	1545	0	0	1550	0	0
Q Serve(g_s), s	9.5	9.2	9.2	0.4	6.4	6.4	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	16.0	9.2	9.2	9.7	6.4	6.4	0.3	0.0	0.0	2.3	0.0	0.0
Prop In Lane	1.00		0.01	1.00		0.03	0.23		0.77	0.29		0.71
Lane Grp Cap(c), veh/h	293	732	768	246	732	766	763	0	0	769	0	0
V/C Ratio(X)	0.44	0.75	0.75	0.03	0.64	0.64	0.02	0.00	0.00	0.13	0.00	0.00
Avail Cap(c_a), veh/h	381	998	1048	321	998	1045	763	0	0	769	0	0
HCM Platoon Ratio	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.91	0.91	0.91	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	7.0	4.2	4.2	6.4	3.9	3.9	9.9	0.0	0.0	10.5	0.0	0.0
Incr Delay (d2), s/veh	0.9	1.9	1.8	0.0	0.9	0.9	0.0	0.0	0.0	0.4	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	1.8	1.9	0.0	1.4	1.4	0.1	0.0	0.0	0.8	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	7.9	6.1	6.0	6.5	4.9	4.8	10.0	0.0	0.0	10.8	0.0	0.0
LnGrp LOS	A	A	A	A	A	A	A	A	A	B	A	A
Approach Vol, veh/h		1248			966			13				101
Approach Delay, s/veh		6.2			4.9			10.0				10.8
Approach LOS		A			A			A				B
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		33.8		31.2		33.8		31.2				
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5				
Max Green Setting (Gmax), s		19.5		36.5		19.5		36.5				
Max Q Clear Time (g_c+1), s		2.3		18.0		4.3		11.7				
Green Ext Time (p_c), s		0.0		8.7		0.4		6.9				

Intersection Summary	
HCM 6th Ctrl Delay	5.9
HCM 6th LOS	A

2020 Total AM Scenario 2
3: Smoke Tree Access B & Lincoln Dr

Smoke Tree Resort
HCM 6th TWSC

Intersection						
Int Delay, s/veh	0.2					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↑	↑↑	↑	
Traffic Vol, veh/h	1027	12	20	861	4	16
Future Vol, veh/h	1027	12	20	861	4	16
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	25	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1141	13	22	957	4	18

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	1154	0	1671
Stage 1	-	-	-	-	1148
Stage 2	-	-	-	-	523
Critical Hdwy	-	-	4.14	-	6.84
Critical Hdwy Stg 1	-	-	-	-	5.84
Critical Hdwy Stg 2	-	-	-	-	5.84
Follow-up Hdwy	-	-	2.22	-	3.52
Pot Cap-1 Maneuver	-	-	959	-	*87
Stage 1	-	-	-	-	*597
Stage 2	-	-	-	-	*698
Platoon blocked, %	-	-	1	-	1
Mov Cap-1 Maneuver	-	-	959	-	*85
Mov Cap-2 Maneuver	-	-	-	-	*324
Stage 1	-	-	-	-	*583
Stage 2	-	-	-	-	*698

Approach	EB	WB	NB
HCM Control Delay, s	0	0.2	11.7
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	560	-	-	959	-
HCM Lane V/C Ratio	0.04	-	-	0.023	-
HCM Control Delay (s)	11.7	-	-	8.8	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.1	-

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

2020 Total AM Scenario 2
4: Quail Run Rd & Access A

Smoke Tree Resort
HCM 6th TWSC

Intersection						
Int Delay, s/veh	4					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↑		↑			↓
Traffic Vol, veh/h	0	5	7	0	8	5
Future Vol, veh/h	0	5	7	0	8	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	6	8	0	9	6

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	32	8	0	0	8
Stage 1	8	-	-	-	-
Stage 2	24	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12
Critical Hdwy Stg 1	5.42	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218
Pot Cap-1 Maneuver	982	1074	-	-	1612
Stage 1	1015	-	-	-	-
Stage 2	999	-	-	-	-
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	976	1074	-	-	1612
Mov Cap-2 Maneuver	976	-	-	-	-
Stage 1	1009	-	-	-	-
Stage 2	999	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.4	0	4.5
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	1074	1612
HCM Lane V/C Ratio	-	-	0.005	0.006
HCM Control Delay (s)	-	-	8.4	7.2
HCM Lane LOS	-	-	A	A
HCM 95th %tile Q(veh)	-	-	0	0

2020 Total AM Scenario 2
7: Apartment Drwy & Lincoln Dr

Smoke Tree Resort
HCM 6th TWSC

Intersection												
Int Delay, s/veh	1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔ ↗		↔ ↗		↔ ↗		↔ ↗		↔ ↗		↔ ↗	
Traffic Vol, veh/h	26	979	34	18	813	10	50	0	29	5	0	12
Future Vol, veh/h	26	979	34	18	813	10	50	0	29	5	0	12
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None									
Storage Length	25	-	-	25	-	-	-	-	-	0	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	-	1	-	-	1
Grade, %	-	0	-	-	0	-	-	-	0	-	-	0
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	29	1088	38	20	903	11	56	0	32	6	0	13

Major/Minor	Major1	Major2	Minor1	Minor2
Conflicting Flow All	914	0	0	1126
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Critical Hdwy	4.14	-	-	4.14
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	2.22	-	-	2.22
Pot Cap-1 Maneuver	*1106	-	-	995
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Platoon blocked, %	1	-	-	1
Mov Cap-1 Maneuver	*1106	-	-	995
Mov Cap-2 Maneuver	-	-	-	-
Stage 1	-	-	-	-
Stage 2	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	0.2	17.4	11.9
HCM LOS			C	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	377	*1106	-	-	995	-	-	318	739
HCM Lane V/C Ratio	0.233	0.026	-	-	0.02	-	-	0.017	0.018
HCM Control Delay (s)	17.4	8.3	-	-	8.7	-	-	16.5	10
HCM Lane LOS	C	A	-	-	A	-	-	C	B
HCM 95th %tile Q(veh)	0.9	0.1	-	-	0.1	-	-	0.1	0.1

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

2020 Total AM Scenario 2
8: AJ's Drwy & Lincoln Dr

Smoke Tree Resort
HCM 6th TWSC

Intersection												
Int Delay, s/veh	0.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔ ↗		↔ ↗		↔ ↗		↔ ↗		↔ ↗		↔ ↗	
Traffic Vol, veh/h	3	958	53	43	825	8	6	0	41	4	1	12
Future Vol, veh/h	3	958	53	43	825	8	6	0	41	4	1	12
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None									
Storage Length	25	-	-	25	-	-	-	-	-	0	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	-	1	-	-	1
Grade, %	-	0	-	-	0	-	-	-	0	-	-	0
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	3	1064	59	48	917	9	7	0	46	4	1	13

Major/Minor	Major1	Major2	Minor1	Minor2
Conflicting Flow All	926	0	0	1123
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Critical Hdwy	4.14	-	-	4.14
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	2.22	-	-	2.22
Pot Cap-1 Maneuver	*1106	-	-	1000
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Platoon blocked, %	1	-	-	1
Mov Cap-1 Maneuver	*1106	-	-	1000
Mov Cap-2 Maneuver	-	-	-	-
Stage 1	-	-	-	-
Stage 2	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.4	11.6	11.8
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	598	*1106	-	-	1000	-	-	297	739
HCM Lane V/C Ratio	0.087	0.003	-	-	0.048	-	-	0.015	0.018
HCM Control Delay (s)	11.6	8.3	-	-	8.8	-	-	17.3	10
HCM Lane LOS	B	A	-	-	A	-	-	C	B
HCM 95th %tile Q(veh)	0.3	0	-	-	0.1	-	-	0	0.1

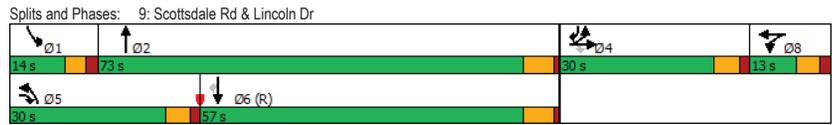
Notes
 -: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

2020 Total AM Scenario 2
9: Scottsdale Rd & Lincoln Dr

Smoke Tree Resort
Timings

	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	451	38	461	37	36	285	1316	51	1669	589
Future Volume (vph)	451	38	461	37	36	285	1316	51	1669	589
Turn Type	Split	NA	pm+ov	Split	NA	Prot	NA	Prot	NA	pm+ov
Protected Phases	4	4	5	8	8	5	2	1	6	4
Permitted Phases			4							6
Detector Phase	4	4	5	8	8	5	2	1	6	4
Switch Phase										
Minimum Initial (s)	10.0	10.0	7.0	7.4	7.4	7.0	10.0	5.0	10.0	10.0
Minimum Split (s)	15.5	15.5	12.5	13.0	13.0	12.5	27.7	10.3	30.7	15.5
Total Split (s)	30.0	30.0	30.0	13.0	13.0	30.0	73.0	14.0	57.0	30.0
Total Split (%)	23.1%	23.1%	23.1%	10.0%	10.0%	23.1%	56.2%	10.8%	43.8%	23.1%
Yellow Time (s)	4.0	4.0	4.0	3.6	3.6	4.0	4.7	3.3	4.7	4.0
All-Red Time (s)	1.5	1.5	1.5	2.0	2.0	1.5	1.0	2.0	1.0	1.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	5.5	5.5	5.6	5.6	5.5	5.7	5.3	5.7	5.5
Lead/Lag			Lead			Lead	Lag	Lead	Lag	
Lead-Lag Optimize?										
Recall Mode	None	None	None	Min	Min	None	None	None	C-Max	None
Act Effct Green (s)	23.6	23.6	42.3	7.4	7.4	18.6	71.3	7.6	58.0	87.4
Actuated g/C Ratio	0.18	0.18	0.33	0.06	0.06	0.14	0.55	0.06	0.45	0.67
v/c Ratio	0.89	0.88	0.91	0.41	0.40	0.64	0.54	0.55	0.82	0.58
Control Delay	64.8	63.9	51.0	71.9	33.6	58.1	20.5	79.0	36.1	10.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	64.8	63.9	51.0	71.9	33.6	58.1	20.5	79.0	36.1	10.3
LOS	E	E	D	E	C	E	C	E	D	B
Approach Delay		57.9			45.3		27.0		30.5	
Approach LOS		E			D		C		C	

Intersection Summary	
Cycle Length:	130
Actuated Cycle Length:	130
Offset:	0 (0%), Referenced to phase 6:SBT, Start of Green
Natural Cycle:	90
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.91
Intersection Signal Delay:	34.9
Intersection Capacity Utilization:	81.0%
ICU Level of Service D	
Analysis Period (min)	15



2020 Total AM Scenario 2
9: Scottsdale Rd & Lincoln Dr

Smoke Tree Resort
HCM 6th Signalized Intersection Summary

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (veh/h)	451	38	461	37	36	48	285	1316	39	51	1669	589
Future Volume (veh/h)	451	38	461	37	36	48	285	1316	39	51	1669	589
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No		No		No		No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	531	0	268	41	40	36	317	1462	32	57	1854	365
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	599	0	439	101	107	85	377	2386	52	73	2015	892
Arrive On Green	0.17	0.00	0.17	0.06	0.06	0.06	0.11	0.46	0.46	0.04	0.39	0.39
Sat Flow, veh/h	3563	0	1585	1781	1881	1497	3456	5142	113	1781	5106	1585
Grp Volume(v), veh/h	531	0	268	41	37	39	317	968	526	57	1854	365
Grp Sat Flow(s),veh/h/ln	1781	0	1585	1781	1777	1601	1728	1702	1850	1781	1702	1585
Q Serve(g_s), s	18.9	0.0	19.1	2.9	2.6	3.0	11.7	27.7	27.7	4.1	44.9	17.0
Cycle Q Clear(g_c), s	18.9	0.0	19.1	2.9	2.6	3.0	11.7	27.7	27.7	4.1	44.9	17.0
Prop In Lane	1.00		1.00	1.00		0.94	1.00		0.06	1.00		1.00
Lane Grp Cap(c), veh/h	599	0	439	101	101	91	377	1579	858	73	2015	892
V/C Ratio(X)	0.89	0.00	0.61	0.40	0.37	0.42	0.84	0.61	0.61	0.78	0.92	0.41
Avail Cap(c_a), veh/h	671	0	471	101	101	91	651	1762	958	119	2015	892
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	52.9	0.0	40.9	59.2	59.1	59.2	56.8	26.1	26.1	61.7	37.4	16.2
Incr Delay (d2), s/veh	11.8	0.0	1.3	1.0	0.8	1.2	2.0	0.3	0.6	6.5	8.4	1.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	9.5	0.0	7.6	1.3	1.2	1.3	5.2	11.2	12.2	2.0	20.0	9.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	64.7	0.0	42.2	60.1	59.9	60.4	58.8	26.4	26.7	68.2	45.8	17.5
LnGrp LOS	E	A	D	E	E	E	E	C	C	E	D	B
Approach Vol, veh/h		799			117			1811			2276	
Approach Delay, s/veh		57.1			60.1			32.1			41.8	
Approach LOS		E			E			C			D	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	10.6	66.0		27.3	19.7	57.0		13.0				
Change Period (Y+Rc), s	* 5.3	5.7		5.5	5.5	5.7		5.6				
Max Green Setting (Gmax), s	* 8.7	67.3		24.5	24.5	51.3		7.4				
Max Q Clear Time (g_c+1), s	6.1	29.7		21.1	13.7	46.9		5.0				
Green Ext Time (p_c), s	0.0	2.2		0.7	0.5	2.0		0.1				

Intersection Summary	
HCM 6th Ctrl Delay	41.2
HCM 6th LOS	D

Notes
 User approved pedestrian interval to be less than phase max green.
 User approved volume balancing among the lanes for turning movement.
 * HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

2020 Total AM Scenario 2 Mitigated
9: Scottsdale Rd & Lincoln Dr

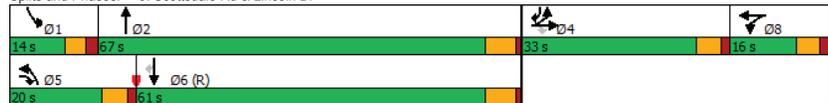
Smoke Tree Resort
Timings

	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	451	38	461	37	36	285	1316	51	1669	589
Future Volume (vph)	451	38	461	37	36	285	1316	51	1669	589
Turn Type	Split	NA	pm+ov	Split	NA	Prot	NA	Prot	NA	pm+ov
Protected Phases	4	4	5	8	8	5	2	1	6	4
Permitted Phases			4						6	
Detector Phase	4	4	5	8	8	5	2	1	6	4
Switch Phase										
Minimum Initial (s)	10.0	10.0	7.0	10.0	10.0	7.0	10.0	5.0	10.0	10.0
Minimum Split (s)	15.5	15.5	12.5	15.6	15.6	12.5	27.7	10.3	30.7	15.5
Total Split (s)	33.0	33.0	20.0	16.0	16.0	20.0	67.0	14.0	61.0	33.0
Total Split (%)	25.4%	25.4%	15.4%	12.3%	12.3%	15.4%	51.5%	10.8%	46.9%	25.4%
Yellow Time (s)	4.0	4.0	4.0	3.6	3.6	4.0	4.7	3.3	4.7	4.0
All-Red Time (s)	1.5	1.5	1.5	2.0	2.0	1.5	1.0	2.0	1.0	1.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	5.5	5.5	5.6	5.6	5.5	5.7	5.3	5.7	5.5
Lead/Lag			Lead			Lead	Lag	Lead	Lag	
Lead-Lag Optimize?										
Recall Mode	None	None	None	Min	Min	None	None	C-Max	None	
Act Effct Green (s)	25.3	25.3	39.6	10.1	10.1	14.3	66.9	7.7	58.0	89.0
Actuated g/C Ratio	0.19	0.19	0.30	0.08	0.08	0.11	0.51	0.06	0.45	0.68
v/c Ratio	0.83	0.83	0.94	0.30	0.31	0.84	0.58	0.55	0.82	0.55
Control Delay	53.8	53.1	52.4	62.7	30.0	76.2	24.0	78.4	35.7	6.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	53.8	53.1	52.4	62.7	30.0	76.2	24.0	78.4	35.7	6.8
LOS	D	D	D	E	C	E	C	E	D	A
Approach Delay		52.9			40.0		33.1		29.3	
Approach LOS		D			D		C		C	

Intersection Summary

Cycle Length: 130	
Actuated Cycle Length: 130	
Offset: 0 (0%), Referenced to phase 6:SBT, Start of Green	
Natural Cycle: 90	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.94	
Intersection Signal Delay: 35.2	Intersection LOS: D
Intersection Capacity Utilization 83.1%	ICU Level of Service E
Analysis Period (min) 15	

Splits and Phases: 9: Scottsdale Rd & Lincoln Dr



2020 Total AM Scenario 2 Mitigated
9: Scottsdale Rd & Lincoln Dr

Smoke Tree Resort
HCM 6th Signalized Intersection Summary

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (veh/h)	451	38	461	37	36	48	285	1316	39	51	1669	589
Future Volume (veh/h)	451	38	461	37	36	48	285	1316	39	51	1669	589
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No		No		No		No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	531	0	268	41	40	36	317	1462	32	57	1854	365
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	608	0	439	137	145	115	367	2529	55	73	2172	945
Arrive On Green	0.17	0.00	0.17	0.08	0.08	0.08	0.11	0.49	0.49	0.04	0.43	0.43
Sat Flow, veh/h	3563	0	1585	1781	1881	1497	3456	5142	113	1781	5106	1585
Grp Volume(v), veh/h	531	0	268	41	37	39	317	968	526	57	1854	365
Grp Sat Flow(s),veh/h/ln	1781	0	1585	1781	1777	1601	1728	1702	1850	1781	1702	1585
Q Serve(g_s), s	18.9	0.0	19.1	2.8	2.6	3.0	11.7	26.2	26.2	4.1	42.6	15.7
Cycle Q Clear(g_c), s	18.9	0.0	19.1	2.8	2.6	3.0	11.7	26.2	26.2	4.1	42.6	15.7
Prop In Lane	1.00		1.00	1.00		0.94	1.00		0.06	1.00		1.00
Lane Grp Cap(c), veh/h	608	0	439	137	137	123	367	1675	910	73	2172	945
V/C Ratio(X)	0.87	0.00	0.61	0.30	0.27	0.31	0.86	0.58	0.58	0.78	0.85	0.39
Avail Cap(c_a), veh/h	754	0	504	143	142	128	385	1675	910	119	2172	945
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	52.5	0.0	40.9	56.7	56.6	56.7	57.2	23.4	23.4	61.7	33.7	13.8
Incr Delay (d2), s/veh	8.1	0.0	0.9	0.4	0.4	0.5	16.6	0.3	0.6	6.5	4.5	1.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	9.1	0.0	7.6	1.3	1.2	1.2	6.0	10.5	11.5	2.0	18.2	8.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	60.6	0.0	41.8	57.1	57.0	57.3	73.7	23.8	24.1	68.2	38.2	15.0
LnGrp LOS	E	A	D	E	E	E	E	C	C	E	D	B
Approach Vol, veh/h		799			117			1811			2276	
Approach Delay, s/veh		54.3			57.1			32.6			35.2	
Approach LOS		D			E			C			D	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	10.6	69.6		27.7	19.3	61.0		15.6				
Change Period (Y+Rc), s	* 5.3	5.7		5.5	5.5	5.7		5.6				
Max Green Setting (Gmax), s	* 8.7	61.3		27.5	14.5	55.3		10.4				
Max Q Clear Time (g_c+1), s	6.1	28.2		21.1	13.7	44.6		5.0				
Green Ext Time (p_c), s	0.0	2.2		1.1	0.1	3.0		0.1				

Intersection Summary

HCM 6th Ctrl Delay	37.8
HCM 6th LOS	D

Notes

- User approved pedestrian interval to be less than phase max green.
- User approved volume balancing among the lanes for turning movement.
- * HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

2020 Total PM Scenario 2
1: Mockingbird Ln & Lincoln Drive

Smoke Tree Resort
Timings

	↖	→	↘	↙	↖	↗	↘	↙
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations	↖	↖↗	↖	↖↗	↖	↖	↖	↖
Traffic Volume (vph)	246	876	21	925	7	62	62	48
Future Volume (vph)	246	876	21	925	7	62	62	48
Turn Type	pm+pt	NA	Perm	NA	Perm	NA	pm+pt	NA
Protected Phases	1	6		2		4	3	8
Permitted Phases	6		2		4		8	
Detector Phase	1	6	2	2	4	4	3	8
Switch Phase								
Minimum Initial (s)	4.0	15.0	15.0	15.0	10.0	10.0	4.0	10.0
Minimum Split (s)	8.0	27.0	27.0	27.0	33.5	33.5	8.0	33.5
Total Split (s)	31.0	88.0	57.0	57.0	34.0	34.0	8.0	42.0
Total Split (%)	23.8%	67.7%	43.8%	43.8%	26.2%	26.2%	6.2%	32.3%
Yellow Time (s)	3.0	4.5	4.5	4.5	4.0	4.0	3.0	4.0
All-Red Time (s)	1.0	1.5	1.5	1.5	2.5	2.5	1.0	2.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	6.0	6.0	6.0	6.5	6.5	4.0	6.5
Lead/Lag	Lead		Lag	Lag	Lag	Lag	Lead	
Lead-Lag Optimize?	Yes		Yes	Yes	Yes	Yes	Yes	
Recall Mode	None	C-Max	C-Max	C-Max	None	None	None	None
Act Effct Green (s)	101.1	99.1	78.0	78.0	12.0	12.0	20.9	18.4
Actuated g/C Ratio	0.78	0.76	0.60	0.60	0.09	0.09	0.16	0.14
v/c Ratio	0.60	0.37	0.07	0.52	0.09	0.51	0.38	0.67
Control Delay	11.1	5.9	30.9	38.4	54.9	59.9	52.5	32.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	11.1	5.9	30.9	38.4	54.9	59.9	52.5	32.7
LOS	B	A	C	D	D	E	D	C
Approach Delay		7.0		38.2		59.4		37.3
Approach LOS		A		D		E		D

Intersection Summary

Cycle Length: 130	
Actuated Cycle Length: 130	
Offset: 0 (0%), Referenced to phase 2:WBT and 6:EBTL, Start of Green	
Natural Cycle: 90	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.67	
Intersection Signal Delay: 24.6	Intersection LOS: C
Intersection Capacity Utilization 67.0%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 1: Mockingbird Ln & Lincoln Drive



2020 Total PM Scenario 2
1: Mockingbird Ln & Lincoln Drive

Smoke Tree Resort
HCM 6th Signalized Intersection Summary

	↖	→	↘	↙	↖	↗	↘	↙	↖	↗	↘	↙
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↖↗	↖	↖	↖↗	↖	↖	↖	↖	↖	↖	↖
Traffic Volume (veh/h)	246	876	29	21	925	60	7	62	18	62	48	156
Future Volume (veh/h)	246	876	29	21	925	60	7	62	18	62	48	156
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No											
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	273	973	21	23	1028	39	8	69	11	69	53	117
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	527	2722	59	434	2333	88	105	121	19	156	72	159
Arrive On Green	0.07	0.77	0.77	1.00	1.00	1.00	0.08	0.08	0.08	0.03	0.14	0.14
Sat Flow, veh/h	1781	3557	77	567	3491	132	1215	1574	251	1781	519	1145
Grp Volume(v), veh/h	273	486	508	23	523	544	8	0	80	69	0	170
Grp Sat Flow(s),veh/h/ln	1781	1777	1857	567	1777	1847	1215	0	1825	1781	0	1664
Q Serve(g_s), s	5.9	11.5	11.5	0.0	0.0	0.0	0.8	0.0	5.5	4.0	0.0	12.7
Cycle Q Clear(g_c), s	5.9	11.5	11.5	0.0	0.0	0.0	5.6	0.0	5.5	4.0	0.0	12.7
Prop In Lane	1.00		0.04	1.00		0.07	1.00		0.14	1.00		0.69
Lane Grp Cap(c), veh/h	527	1360	1421	434	1187	1234	105	0	140	156	0	230
V/C Ratio(X)	0.52	0.36	0.36	0.05	0.44	0.44	0.08	0.00	0.57	0.44	0.00	0.74
Avail Cap(c_a), veh/h	779	1360	1421	434	1187	1234	268	0	386	156	0	454
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.71	0.71	0.71	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	4.8	4.9	4.9	0.0	0.0	0.0	60.2	0.0	57.9	53.1	0.0	53.7
Incr Delay (d2), s/veh	0.8	0.7	0.7	0.2	0.8	0.8	0.3	0.0	3.6	2.0	0.0	4.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.1	4.0	4.2	0.0	0.3	0.3	0.3	0.0	2.7	0.3	0.0	5.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	5.6	5.7	5.6	0.2	0.8	0.8	60.6	0.0	61.5	55.1	0.0	58.3
LnGrp LOS	A	A	A	A	A	A	E	A	E	E	A	E
Approach Vol, veh/h		1267			1090			88				239
Approach Delay, s/veh		5.6			0.8			61.4				57.4
Approach LOS		A			A			E				E

Timer - Assigned Phs	1	2	3	4	6	8
Phs Duration (G+Y+Rc), s	12.6	92.9	8.0	16.5	105.5	24.5
Change Period (Y+Rc), s	4.0	6.0	4.0	6.5	6.0	6.5
Max Green Setting (Gmax), s	27.0	51.0	4.0	27.5	82.0	35.5
Max Q Clear Time (g_c+1), s	7.9	2.0	6.0	7.6	13.5	14.7
Green Ext Time (p_c), s	0.8	9.6	0.0	0.3	8.3	0.9

Intersection Summary

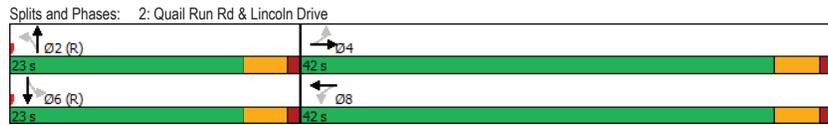
HCM 6th Ctrl Delay	10.1
HCM 6th LOS	B

2020 Total PM Scenario 2
2: Quail Run Rd & Lincoln Drive

Smoke Tree Resort
Timings

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations	↔	↕	↔	↕	↔	↕	↔	↕
Traffic Volume (vph)	85	883	5	908	4	0	14	0
Future Volume (vph)	85	883	5	908	4	0	14	0
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		4		8		2		6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	2	2	6	6
Switch Phase								
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5
Total Split (s)	42.0	42.0	42.0	42.0	23.0	23.0	23.0	23.0
Total Split (%)	64.6%	64.6%	64.6%	64.6%	35.4%	35.4%	35.4%	35.4%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	C-Max	C-Max	C-Max	C-Max
Act Effct Green (s)	29.1	29.1	29.1	29.1	26.9	26.9	26.9	26.9
Actuated g/C Ratio	0.45	0.45	0.45	0.45	0.41	0.41	0.41	0.41
v/c Ratio	0.66	0.62	0.04	0.66	0.02	0.02	0.16	0.16
Control Delay	40.6	19.2	9.0	17.7	3.9	3.9	5.8	5.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	40.6	19.2	9.0	17.7	3.9	3.9	5.8	5.8
LOS	D	B	A	B	A	A	A	A
Approach Delay		21.1		17.7		3.9		5.8
Approach LOS		C		B		A		A

Intersection Summary	
Cycle Length:	65
Actuated Cycle Length:	65
Offset:	0 (0%), Referenced to phase 2:NBT and 6:SBTL, Start of Green
Natural Cycle:	60
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.66
Intersection Signal Delay:	18.6
Intersection Capacity Utilization:	48.7%
ICU Level of Service:	A
Intersection LOS:	B
Analysis Period (min):	15



2020 Total PM Scenario 2
2: Quail Run Rd & Lincoln Drive

Smoke Tree Resort
HCM 6th Signalized Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↕		↔	↕		↔	↕		↔	↕	
Traffic Volume (veh/h)	85	883	6	5	908	25	4	0	6	14	0	93
Future Volume (veh/h)	85	883	6	5	908	25	4	0	6	14	0	93
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No								
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	94	981	7	6	1009	28	4	0	7	16	0	103
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	260	1470	10	275	1435	40	289	33	431	122	38	623
Arrive On Green	0.81	0.81	0.81	0.81	0.81	0.81	0.46	0.00	0.46	0.46	0.00	0.46
Sat Flow, veh/h	544	3617	26	570	3532	98	469	72	948	129	84	1369
Grp Volume(v), veh/h	94	482	506	6	508	529	11	0	0	119	0	0
Grp Sat Flow(s),veh/h/ln	544	1777	1866	570	1777	1853	1489	0	0	1582	0	0
Q Serve(g_s), s	7.8	7.2	7.2	0.3	8.1	8.1	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	16.4	7.2	7.2	8.0	8.1	8.1	0.2	0.0	0.0	2.8	0.0	0.0
Prop In Lane	1.00		0.01	1.00		0.05	0.36		0.64	0.13		0.87
Lane Grp Cap(c), veh/h	260	722	758	275	722	753	753	0	0	783	0	0
V/C Ratio(X)	0.36	0.67	0.67	0.02	0.70	0.70	0.01	0.00	0.00	0.15	0.00	0.00
Avail Cap(c_a), veh/h	352	1025	1076	372	1025	1069	753	0	0	783	0	0
HCM Platoon Ratio	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.93	0.93	0.93	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	8.1	4.3	4.3	6.0	4.4	4.4	9.7	0.0	0.0	10.4	0.0	0.0
Incr Delay (d2), s/veh	0.8	1.0	1.0	0.0	1.3	1.2	0.0	0.0	0.0	0.4	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	1.5	1.6	0.0	1.6	1.7	0.1	0.0	0.0	1.0	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	8.9	5.3	5.2	6.1	5.6	5.6	9.7	0.0	0.0	10.8	0.0	0.0
LnGrp LOS	A	A	A	A	A	A	A	A	A	B	A	A
Approach Vol, veh/h		1082			1043			11				119
Approach Delay, s/veh		5.6			5.6			9.7				10.8
Approach LOS		A			A			A				B
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		34.3		30.7		34.3		30.7				
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5				
Max Green Setting (Gmax), s		18.5		37.5		18.5		37.5				
Max Q Clear Time (g_c+1), s		2.2		18.4		4.8		10.1				
Green Ext Time (p_c), s		0.0		7.5		0.5		7.9				

Intersection Summary	
HCM 6th Ctrl Delay	5.9
HCM 6th LOS	A

2020 Total PM Scenario 2
3: Access A & Lincoln Dr

Smoke Tree Resort
HCM 6th TWSC

Intersection						
Int Delay, s/veh	0.3					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↑	↑↑	↑	
Traffic Vol, veh/h	895	8	19	930	11	20
Future Vol, veh/h	895	8	19	930	11	20
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	25	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	994	9	21	1033	12	22

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	1003
Stage 1	-	-	999
Stage 2	-	-	559
Critical Hdwy	-	4.14	6.84
Critical Hdwy Stg 1	-	-	5.84
Critical Hdwy Stg 2	-	-	5.84
Follow-up Hdwy	-	2.22	3.52
Pot Cap-1 Maneuver	-	1054	*103
Stage 1	-	-	*660
Stage 2	-	-	*652
Platoon blocked, %	-	1	1
Mov Cap-1 Maneuver	-	1054	*101
Mov Cap-2 Maneuver	-	-	*338
Stage 1	-	-	*647
Stage 2	-	-	*652

Approach	EB	WB	NB
HCM Control Delay, s	0	0.2	12.4
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	518	-	-	1054	-
HCM Lane V/C Ratio	0.066	-	-	0.02	-
HCM Control Delay (s)	12.4	-	-	8.5	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0.2	-	-	0.1	-

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

2020 Total PM Scenario 2
4: Quail Run Rd & Access B

Smoke Tree Resort
HCM 6th TWSC

Intersection						
Int Delay, s/veh	6.7					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↑		↑			↑
Traffic Vol, veh/h	0	9	2	0	10	1
Future Vol, veh/h	0	9	2	0	10	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	10	2	0	11	1

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	25	2	0
Stage 1	2	-	-
Stage 2	23	-	-
Critical Hdwy	6.42	6.22	4.12
Critical Hdwy Stg 1	5.42	-	-
Critical Hdwy Stg 2	5.42	-	-
Follow-up Hdwy	3.518	3.318	2.218
Pot Cap-1 Maneuver	991	1082	1620
Stage 1	1021	-	-
Stage 2	1000	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	984	1082	1620
Mov Cap-2 Maneuver	984	-	-
Stage 1	1014	-	-
Stage 2	1000	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.4	0	6.6
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	1082	1620
HCM Lane V/C Ratio	-	-	0.009	0.007
HCM Control Delay (s)	-	-	8.4	7.2
HCM Lane LOS	-	-	A	A
HCM 95th %tile Q(veh)	-	-	0	0

2020 Total PM Scenario 2
7: Apartment Drwy & Lincoln Dr

Smoke Tree Resort
HCM 6th TWSC

Intersection												
Int Delay, s/veh	1.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔		↔		↔		↔		↔		↔	
Traffic Vol, veh/h	7	854	41	6	852	9	66	3	47	7	0	34
Future Vol, veh/h	7	854	41	6	852	9	66	3	47	7	0	34
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None									
Storage Length	25	-	-	25	-	-	-	-	-	0	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	8	949	46	7	947	10	73	3	52	8	0	38

Major/Minor	Major1	Major2	Minor1	Minor2
Conflicting Flow All	957	0	0	995
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Critical Hdwy	4.14	-	-	4.14
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	2.22	-	-	2.22
Pot Cap-1 Maneuver	1100	-	-	1065
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Platoon blocked, %	1	-	-	1
Mov Cap-1 Maneuver	1100	-	-	1065
Stage 1	-	-	-	-
Stage 2	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0.1	16.9	11.1
HCM LOS			C	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	430	1100	-	-	1065	-	-	334	739
HCM Lane V/C Ratio	0.3	0.007	-	-	0.006	-	-	0.023	0.051
HCM Control Delay (s)	16.9	8.3	-	-	8.4	-	-	16	10.1
HCM Lane LOS	C	A	-	-	A	-	-	C	B
HCM 95th %tile Q(veh)	1.2	0	-	-	0	-	-	0.1	0.2

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

2020 Total PM Scenario 2
8: AJ's Drwy & Lincoln Dr

Smoke Tree Resort
HCM 6th TWSC

Intersection												
Int Delay, s/veh	1.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔		↔		↔		↔		↔		↔	
Traffic Vol, veh/h	11	848	53	61	850	8	14	1	89	4	0	7
Future Vol, veh/h	11	848	53	61	850	8	14	1	89	4	0	7
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None									
Storage Length	25	-	-	25	-	-	-	-	-	0	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	12	942	59	68	944	9	16	1	99	4	0	8

Major/Minor	Major1	Major2	Minor1	Minor2
Conflicting Flow All	953	0	0	1001
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Critical Hdwy	4.14	-	-	4.14
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	2.22	-	-	2.22
Pot Cap-1 Maneuver	1105	-	-	1056
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Platoon blocked, %	1	-	-	1
Mov Cap-1 Maneuver	1105	-	-	1056
Stage 1	-	-	-	-
Stage 2	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0.6	12.2	13.1
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	616	1105	-	-	1056	-	-	268	739
HCM Lane V/C Ratio	0.188	0.011	-	-	0.064	-	-	0.017	0.011
HCM Control Delay (s)	12.2	8.3	-	-	8.6	-	-	18.7	9.9
HCM Lane LOS	B	A	-	-	A	-	-	C	A
HCM 95th %tile Q(veh)	0.7	0	-	-	0.2	-	-	0.1	0

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

2020 Total PM Scenario 2
9: Scottsdale Rd & Lincoln Dr

Smoke Tree Resort
Timings

	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	493	56	417	56	62	412	1624	61	1569	488
Future Volume (vph)	493	56	417	56	62	412	1624	61	1569	488
Turn Type	Split	NA	pm+ov	Split	NA	Prot	NA	Prot	NA	pm+ov
Protected Phases	4	4	5	8	8	5	2	1	6	4
Permitted Phases	4			8			6			
Detector Phase	4	4	5	8	8	5	2	1	6	4
Switch Phase										
Minimum Initial (s)	13.0	13.0	7.0	7.4	7.4	7.0	10.0	5.0	10.0	13.0
Minimum Split (s)	18.5	18.5	13.0	13.0	13.0	13.0	16.7	11.0	16.0	18.5
Total Split (s)	30.0	30.0	30.0	13.0	13.0	30.0	73.0	14.0	57.0	30.0
Total Split (%)	23.1%	23.1%	23.1%	10.0%	10.0%	23.1%	56.2%	10.8%	43.8%	23.1%
Yellow Time (s)	4.0	4.0	4.0	3.6	3.6	4.0	4.7	3.3	4.7	4.0
All-Red Time (s)	1.5	1.5	1.5	2.0	2.0	1.5	1.0	2.0	1.0	1.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	5.5	5.5	5.6	5.6	5.5	5.7	5.3	5.7	5.5
Lead/Lag	Lead			Lead			Lag	Lead	Lag	
Lead-Lag Optimize?										
Recall Mode	None	C-Max	None							
Act Effct Green (s)	24.5	24.5	45.7	7.4	7.4	21.2	70.3	7.9	54.6	84.8
Actuated g/C Ratio	0.19	0.19	0.35	0.06	0.06	0.16	0.54	0.06	0.42	0.65
v/c Ratio	0.95	0.97	0.77	0.62	0.57	0.82	0.68	0.64	0.82	0.51
Control Delay	76.8	79.4	34.2	85.9	37.7	64.7	23.8	85.4	37.7	11.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	76.8	79.4	34.2	85.9	37.7	64.7	23.8	85.4	37.7	11.3
LOS	E	E	C	F	D	E	C	F	D	B
Approach Delay	59.2		51.9			31.9		33.0		
Approach LOS	E		D			C		C		

Intersection Summary	
Cycle Length:	130
Actuated Cycle Length:	130
Offset:	0 (0%), Referenced to phase 6:SBT, Start of Green
Natural Cycle:	90
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.97
Intersection Signal Delay:	38.0
Intersection Capacity Utilization:	81.9%
ICU Level of Service	D
Analysis Period (min)	15

Splits and Phases: 9: Scottsdale Rd & Lincoln Dr



2020 Total PM Scenario 2
9: Scottsdale Rd & Lincoln Dr

Smoke Tree Resort
HCM 6th Signalized Intersection Summary

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (veh/h)	493	56	417	56	62	72	412	1624	45	61	1569	488
Future Volume (veh/h)	493	56	417	56	62	72	412	1624	45	61	1569	488
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	1.00	1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	592	0	241	62	69	58	458	1804	39	68	1743	275
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	646	0	524	101	109	83	516	2556	55	87	2015	913
Arrive On Green	0.18	0.00	0.18	0.06	0.06	0.06	0.15	0.50	0.50	0.05	0.39	0.39
Sat Flow, veh/h	3563	0	1585	1781	1925	1460	3456	5143	111	1781	5106	1585
Grp Volume(v), veh/h	592	0	241	62	63	64	458	1194	649	68	1743	275
Grp Sat Flow(s),veh/h/ln	1781	0	1585	1781	1777	1608	1728	1702	1850	1781	1702	1585
Q Serve(g_s), s	21.2	0.0	15.6	4.4	4.5	5.1	16.9	35.3	35.4	4.9	40.8	11.6
Cycle Q Clear(g_c), s	21.2	0.0	15.6	4.4	4.5	5.1	16.9	35.3	35.4	4.9	40.8	11.6
Prop In Lane	1.00	1.00	1.00	1.00	0.91	1.00	1.00	1.00	0.06	1.00	1.00	1.00
Lane Grp Cap(c), veh/h	646	0	524	101	101	91	516	1692	919	87	2015	913
V/C Ratio(X)	0.92	0.00	0.46	0.61	0.62	0.70	0.89	0.71	0.71	0.78	0.87	0.30
Avail Cap(c_a), veh/h	671	0	536	101	101	92	651	1762	958	119	2015	913
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	52.3	0.0	34.3	59.9	59.9	60.2	54.2	25.3	25.3	61.2	36.2	14.2
Incr Delay (d2), s/veh	16.7	0.0	0.2	7.7	8.7	17.9	10.3	1.0	1.9	13.9	5.3	0.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	11.0	0.0	6.1	2.2	2.3	2.5	8.1	14.3	15.8	2.6	17.7	6.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	68.9	0.0	34.6	67.6	68.6	78.2	64.5	26.4	27.2	75.1	41.4	15.0
LnGrp LOS	E	A	C	E	E	E	E	C	C	E	D	B
Approach Vol, veh/h	833		189			2301		2086				
Approach Delay, s/veh	59.0		71.5			34.2		39.0				
Approach LOS	E		E			C		D				
Timer - Assigned Phs	1	2	4		5	6	8					
Phs Duration (G+Y+Rc), s	11.6	70.3	29.1		24.9	57.0	13.0					
Change Period (Y+Rc), s	* 5.3	5.7	5.5		5.5	5.7	5.6					
Max Green Setting (Gmax), s	* 8.7	67.3	24.5		24.5	51.3	7.4					
Max Q Clear Time (g_c+1), s	6.9	37.4	23.2		18.9	42.8	7.1					
Green Ext Time (p_c), s	0.0	2.9	0.3		0.5	2.6	0.0					

Intersection Summary	
HCM 6th Ctrl Delay	41.2
HCM 6th LOS	D

Notes
User approved pedestrian interval to be less than phase max green.
User approved volume balancing among the lanes for turning movement.
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

2020 Total PM Scenario 2 Mitigated
9: Scottsdale Rd & Lincoln Dr

Smoke Tree Resort
Timings

	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	493	56	417	56	62	412	1624	61	1569	488
Future Volume (vph)	493	56	417	56	62	412	1624	61	1569	488
Turn Type	Split	NA	pm+ov	Split	NA	Prot	NA	Prot	NA	pm+ov
Protected Phases	4	4	5	8	8	5	2	1	6	4
Permitted Phases	4			8			6			
Detector Phase	4	4	5	8	8	5	2	1	6	4
Switch Phase										
Minimum Initial (s)	13.0	13.0	7.0	10.0	10.0	7.0	10.0	5.0	10.0	13.0
Minimum Split (s)	18.5	18.5	13.0	15.6	15.6	13.0	16.7	11.0	16.0	18.5
Total Split (s)	34.0	34.0	27.0	18.0	18.0	27.0	64.0	14.0	51.0	34.0
Total Split (%)	26.2%	26.2%	20.8%	13.8%	13.8%	20.8%	49.2%	10.8%	39.2%	26.2%
Yellow Time (s)	4.0	4.0	4.0	3.6	3.6	4.0	4.7	3.3	4.7	4.0
All-Red Time (s)	1.5	1.5	1.5	2.0	2.0	1.5	1.0	2.0	1.0	1.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	5.5	5.5	5.6	5.6	5.5	5.7	5.3	5.7	5.5
Lead/Lag	Lead			Lead			Lag	Lead	Lag	
Lead-Lag Optimize?										
Recall Mode	None	C-Max	None							
Act Effct Green (s)	26.8	26.8	47.4	10.6	10.6	20.6	64.3	8.4	49.7	82.2
Actuated g/C Ratio	0.21	0.21	0.36	0.08	0.08	0.16	0.49	0.06	0.38	0.63
v/c Ratio	0.87	0.88	0.72	0.43	0.44	0.84	0.74	0.60	0.90	0.50
Control Delay	57.7	59.0	23.7	66.3	31.2	67.7	29.8	80.0	45.6	9.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	57.7	59.0	23.7	66.3	31.2	67.7	29.8	80.0	45.6	9.7
LOS	E	E	C	E	C	E	C	F	D	A
Approach Delay	43.4			41.5			37.3			38.3
Approach LOS	D			D			D			D

Intersection Summary	
Cycle Length:	130
Actuated Cycle Length:	130
Offset:	0 (0%), Referenced to phase 6:SBT, Start of Green
Natural Cycle:	100
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.90
Intersection Signal Delay:	39.0
Intersection Capacity Utilization:	84.1%
ICU Level of Service:	E
Analysis Period (min):	15



2020 Total PM Scenario 2 Mitigated
9: Scottsdale Rd & Lincoln Dr

Smoke Tree Resort
HCM 6th Signalized Intersection Summary

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (veh/h)	493	56	417	56	62	72	412	1624	45	61	1569	488
Future Volume (veh/h)	493	56	417	56	62	72	412	1624	45	61	1569	488
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	1.00	1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No											
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	592	0	241	62	69	58	458	1804	39	68	1743	275
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	661	0	529	137	148	112	511	2311	50	87	1779	847
Arrive On Green	0.19	0.00	0.19	0.08	0.08	0.08	0.15	0.45	0.45	0.05	0.35	0.35
Sat Flow, veh/h	3563	0	1585	1781	1925	1460	3456	5143	111	1781	5106	1585
Grp Volume(v), veh/h	592	0	241	62	63	64	458	1194	649	68	1743	275
Grp Sat Flow(s),veh/h/ln	1781	0	1585	1781	1777	1608	1728	1702	1850	1781	1702	1585
Q Serve(g_s), s	21.1	0.0	15.5	4.3	4.4	5.0	16.9	38.7	38.7	4.9	43.9	12.7
Cycle Q Clear(g_c), s	21.1	0.0	15.5	4.3	4.4	5.0	16.9	38.7	38.7	4.9	43.9	12.7
Prop In Lane	1.00	1.00	1.00	1.00	0.91	1.00	1.00	0.06	1.00	1.00	1.00	1.00
Lane Grp Cap(c), veh/h	661	0	529	137	137	124	511	1529	831	87	1779	847
V/C Ratio(X)	0.90	0.00	0.46	0.45	0.46	0.52	0.90	0.78	0.78	0.78	0.98	0.32
Avail Cap(c_a), veh/h	781	0	582	170	169	153	572	1529	831	119	1779	847
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	51.7	0.0	34.1	57.4	57.4	57.7	54.4	30.4	30.4	61.2	41.9	17.1
Incr Delay (d2), s/veh	10.6	0.0	0.2	0.9	0.9	1.2	14.7	2.4	4.4	13.9	17.0	1.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	10.4	0.0	6.0	2.0	2.0	2.1	8.4	16.1	18.0	2.6	21.0	7.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	62.3	0.0	34.3	58.3	58.3	58.9	69.1	32.8	34.8	75.1	58.9	18.1
LnGrp LOS	E	A	C	E	E	E	E	C	C	E	E	B
Approach Vol, veh/h	833			189			2301			2086		
Approach Delay, s/veh	54.2			58.5			40.6			54.1		
Approach LOS	D			E			D			D		
Timer - Assigned Phs	1	2	4		5	6	8					
Phs Duration (G+Y+Rc), s	11.6	64.1	29.6		24.7	51.0	15.6					
Change Period (Y+Rc), s	* 5.3	5.7	5.5		5.5	5.7	5.6					
Max Green Setting (Gmax), s	* 8.7	58.3	28.5		21.5	45.3	12.4					
Max Q Clear Time (g_c+1), s	6.9	40.7	23.1		18.9	45.9	7.0					
Green Ext Time (p_c), s	0.0	2.8	1.0		0.3	0.0	0.2					

Intersection Summary	
HCM 6th Ctrl Delay	48.5
HCM 6th LOS	D

Notes
 User approved pedestrian interval to be less than phase max green.
 User approved volume balancing among the lanes for turning movement.
 * HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

APPENDIX H

SCENARIO 1 & 2 2025 PEAK HOUR ANALYSIS

2025 Background AM
1: Mockingbird Ln & Lincoln Drive

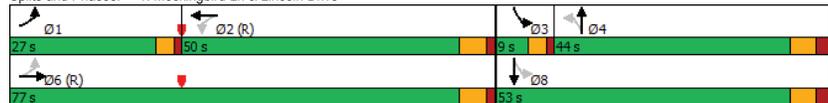
Smoke Tree Resort
Timings

	↖	→	↘	↙	↖	↗	↘	
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations	↖	↖↗	↖	↖↗	↖	↖	↖	↖
Traffic Volume (vph)	242	1029	23	958	6	37	79	99
Future Volume (vph)	242	1029	23	958	6	37	79	99
Turn Type	pm+pt	NA	Perm	NA	Perm	NA	pm+pt	NA
Protected Phases	1	6		2		4	3	8
Permitted Phases	6		2		4		8	
Detector Phase	1	6	2	2	4	4	3	8
Switch Phase								
Minimum Initial (s)	3.5	15.0	15.0	15.0	7.0	7.0	3.5	7.0
Minimum Split (s)	8.0	27.0	27.0	27.0	33.5	33.5	8.0	33.5
Total Split (s)	27.0	77.0	50.0	50.0	44.0	44.0	9.0	53.0
Total Split (%)	20.8%	59.2%	38.5%	38.5%	33.8%	33.8%	6.9%	40.8%
Yellow Time (s)	3.0	4.5	4.5	4.5	4.0	4.0	3.0	4.0
All-Red Time (s)	1.0	1.5	1.5	1.5	2.5	2.5	1.0	2.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	6.0	6.0	6.0	6.5	6.5	4.0	6.5
Lead/Lag	Lead		Lag	Lag	Lag	Lag	Lead	
Lead-Lag Optimize?	Yes		Yes	Yes	Yes	Yes	Yes	
Recall Mode	None	C-Max	C-Max	C-Max	None	None	None	None
Act Effct Green (s)	91.4	89.4	64.9	64.9	18.9	18.9	30.6	28.1
Actuated g/C Ratio	0.70	0.69	0.50	0.50	0.15	0.15	0.24	0.22
v/c Ratio	0.67	0.46	0.12	0.60	0.11	0.22	0.31	0.84
Control Delay	22.8	11.0	30.7	33.6	46.8	33.0	40.8	50.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	22.8	11.0	30.7	33.6	46.8	33.0	40.8	50.5
LOS	C	B	C	C	D	C	D	D
Approach Delay		13.2		33.6		34.4		48.7
Approach LOS		B		C		C		D

Intersection Summary

Cycle Length: 130	
Actuated Cycle Length: 130	
Offset: 0 (0%), Referenced to phase 2:WBT and 6:EBTL, Start of Green	
Natural Cycle: 90	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.84	
Intersection Signal Delay: 26.5	Intersection LOS: C
Intersection Capacity Utilization 75.7%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 1: Mockingbird Ln & Lincoln Drive



2025 Background AM
1: Mockingbird Ln & Lincoln Drive

Smoke Tree Resort
HCM 6th Signalized Intersection Summary

	↖	→	↘	↙	↖	↗	↘	↙	↖	↗	↘	↙
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↖↗		↖	↖↗		↖	↖		↖	↖	↖
Traffic Volume (veh/h)	242	1029	33	23	958	45	6	37	20	79	99	253
Future Volume (veh/h)	242	1029	33	23	958	45	6	37	20	79	99	253
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No											
Adj Sat Flow, veh/h/ln	1772	1969	1772	1772	1969	1772	1772	1969	1772	1772	1969	1772
Adj Flow Rate, veh/h	269	1143	26	26	1064	33	7	41	13	88	110	170
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	483	2698	61	328	2276	71	86	162	51	231	127	196
Arrive On Green	0.08	0.72	0.72	1.00	1.00	1.00	0.11	0.11	0.11	0.04	0.18	0.18
Sat Flow, veh/h	1688	3739	85	455	3704	115	1041	1433	454	1688	697	1078
Grp Volume(v), veh/h	269	572	597	26	537	560	7	0	54	88	0	280
Grp Sat Flow(s),veh/h/ln	1688	1870	1953	455	1870	1948	1041	0	1887	1688	0	1775
Q Serve(g_s), s	7.2	15.9	15.9	0.2	0.0	0.0	0.9	0.0	3.4	5.0	0.0	19.9
Cycle Q Clear(g_c), s	7.2	15.9	15.9	2.3	0.0	0.0	11.8	0.0	3.4	5.0	0.0	19.9
Prop In Lane	1.00		0.04	1.00		0.06	1.00		0.24	1.00		0.61
Lane Grp Cap(c), veh/h	483	1350	1410	328	1150	1197	86	0	213	231	0	324
V/C Ratio(X)	0.56	0.42	0.42	0.08	0.47	0.47	0.08	0.00	0.25	0.38	0.00	0.87
Avail Cap(c_a), veh/h	653	1350	1410	328	1150	1197	268	0	544	231	0	635
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.78	0.78	0.78	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	6.7	7.3	7.3	0.0	0.0	0.0	61.7	0.0	52.6	48.5	0.0	51.6
Incr Delay (d2), s/veh	1.0	1.0	0.9	0.4	1.1	1.0	0.4	0.0	0.6	1.0	0.0	6.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.6	6.3	6.5	0.0	0.3	0.3	0.2	0.0	1.7	0.4	0.0	9.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	7.7	8.2	8.2	0.4	1.1	1.0	62.1	0.0	53.3	49.5	0.0	58.5
LnGrp LOS	A	A	A	A	A	A	E	A	D	D	A	E
Approach Vol, veh/h		1438			1123			61				368
Approach Delay, s/veh		8.1			1.0			54.3				56.4
Approach LOS		A			A			D				E

Timer - Assigned Phs	1	2	3	4	6	8
Phs Duration (G+Y+Rc), s	13.9	85.9	9.0	21.2	99.8	30.2
Change Period (Y+Rc), s	4.0	6.0	4.0	6.5	6.0	6.5
Max Green Setting (Gmax), s	23.0	44.0	5.0	37.5	71.0	46.5
Max Q Clear Time (g_c+1), s	9.2	4.3	7.0	13.8	17.9	21.9
Green Ext Time (p_c), s	0.7	9.8	0.0	0.2	10.7	1.8

Intersection Summary

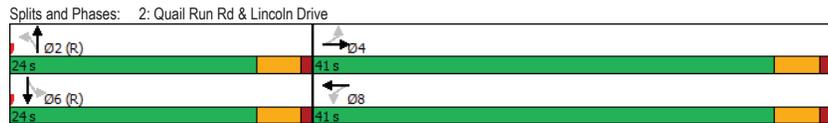
HCM 6th Ctrl Delay	12.3
HCM 6th LOS	B

2025 Background AM
2: Quail Run Rd & Lincoln Drive

Smoke Tree Resort
Timings

	↖	→	↘	←	↑	↙	↓
Lane Group	EBL	EBT	WBL	WBT	NBT	SBL	SBT
Lane Configurations	↖	↕	↘	↕	↕	↕	↕
Traffic Volume (vph)	115	1082	2	921	0	26	0
Future Volume (vph)	115	1082	2	921	0	26	0
Turn Type	Perm	NA	Perm	NA	NA	Perm	NA
Protected Phases		4		8	2		6
Permitted Phases	4		8			6	
Detector Phase	4	4	8	8	2	6	6
Switch Phase							
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	22.5	22.5	22.5	22.5	22.5
Total Split (s)	41.0	41.0	41.0	41.0	24.0	24.0	24.0
Total Split (%)	63.1%	63.1%	63.1%	63.1%	36.9%	36.9%	36.9%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag							
Lead-Lag Optimize?							
Recall Mode	None	None	None	None	C-Max	C-Max	C-Max
Act Effct Green (s)	32.3	32.3	32.3	32.3	23.7	23.7	23.7
Actuated g/C Ratio	0.50	0.50	0.50	0.50	0.36	0.36	0.36
v/c Ratio	0.72	0.68	0.02	0.59	0.01	0.16	0.16
Control Delay	45.8	20.4	7.0	12.7	0.0	7.9	7.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	45.8	20.4	7.0	12.7	0.0	7.9	7.9
LOS	D	C	A	B	A	A	A
Approach Delay		22.8		12.7		7.9	
Approach LOS		C		B		A	

Intersection Summary						
Cycle Length:	65					
Actuated Cycle Length:	65					
Offset:	0 (0%), Referenced to phase 2:NBT and 6:SBTL, Start of Green					
Natural Cycle:	60					
Control Type:	Actuated-Coordinated					
Maximum v/c Ratio:	0.72					
Intersection Signal Delay:	17.9		Intersection LOS: B			
Intersection Capacity Utilization:	57.6%		ICU Level of Service B			
Analysis Period (min):	15					



2025 Background AM
2: Quail Run Rd & Lincoln Drive

Smoke Tree Resort
HCM 6th Signalized Intersection Summary

	↖	→	↘	↙	←	↗	↖	↑	↗	↘	↓	↙
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↕		↖	↕			↕		↕	↕	↕
Traffic Volume (veh/h)	115	1082	3	2	921	12	0	0	8	26	0	66
Future Volume (veh/h)	115	1082	3	2	921	12	0	0	8	26	0	66
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No				No
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	128	1202	0	2	1023	7	0	0	6	29	0	51
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	294	1521	0	240	1549	11	0	0	687	284	33	425
Arrive On Green	0.86	0.86	0.00	0.86	0.86	0.86	0.00	0.00	0.43	0.43	0.00	0.43
Sat Flow, veh/h	548	3647	0	465	3618	25	0	0	1585	481	76	980
Grp Volume(v), veh/h	128	1202	0	2	502	528	0	0	6	80	0	0
Grp Sat Flow(s),veh/h/ln	548	1777	0	465	1777	1866	0	0	1585	1537	0	0
Q Serve(g_s), s	9.4	9.8	0.0	0.1	6.1	6.1	0.0	0.0	0.1	0.0	0.0	0.0
Cycle Q Clear(g_c), s	15.5	9.8	0.0	9.9	6.1	6.1	0.0	0.0	0.1	1.8	0.0	0.0
Prop In Lane	1.00		0.00	1.00		0.01	0.00		1.00	0.36		0.64
Lane Grp Cap(c), veh/h	294	1521	0	240	761	799	0	0	687	742	0	0
V/C Ratio(X)	0.44	0.79	0.00	0.01	0.66	0.66	0.00	0.00	0.01	0.11	0.00	0.00
Avail Cap(c_a), veh/h	367	1996	0	302	998	1048	0	0	687	742	0	0
HCM Platoon Ratio	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.89	0.89	0.00	1.00	1.00	1.00	0.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	5.7	3.4	0.0	5.6	3.1	3.1	0.0	0.0	10.5	11.0	0.0	0.0
Incr Delay (d2), s/veh	0.9	1.5	0.0	0.0	1.0	1.0	0.0	0.0	0.0	0.3	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	1.5	0.0	0.0	1.2	1.3	0.0	0.0	0.5	0.7	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	6.6	4.8	0.0	5.6	4.1	4.1	0.0	0.0	10.5	11.2	0.0	0.0
LnGrp LOS	A	A	A	A	A	A	A	A	B	B	A	A
Approach Vol, veh/h		1330			1032			6		80		
Approach Delay, s/veh		5.0			4.1			10.5		11.2		
Approach LOS		A			A			B		B		
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		32.8		32.2		32.8		32.2				
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5				
Max Green Setting (Gmax), s		19.5		36.5		19.5		36.5				
Max Q Clear Time (g_c+1), s		2.1		17.5		3.8		11.9				
Green Ext Time (p_c), s		0.0		10.2		0.3		7.5				

Intersection Summary	
HCM 6th Ctrl Delay	4.8
HCM 6th LOS	A

2025 Background AM
3: Smoke Tree West & Lincoln Dr

Smoke Tree Resort
HCM 6th TWSC

Intersection						
Int Delay, s/veh	0					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↑	↑↑	↑	↑
Traffic Vol, veh/h	1113	2	1	931	4	0
Future Vol, veh/h	1113	2	1	931	4	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	25	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1237	2	1	1034	4	0

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	1239
Stage 1	-	-	1238
Stage 2	-	-	519
Critical Hdwy	-	4.14	6.84
Critical Hdwy Stg 1	-	-	5.84
Critical Hdwy Stg 2	-	-	5.84
Follow-up Hdwy	-	2.22	3.52
Pot Cap-1 Maneuver	-	951	*76
Stage 1	-	-	*600
Stage 2	-	-	*652
Platoon blocked, %	-	1	1
Mov Cap-1 Maneuver	-	951	*76
Mov Cap-2 Maneuver	-	-	*320
Stage 1	-	-	*600
Stage 2	-	-	*652

Approach	EB	WB	NB
HCM Control Delay, s	0	0	16.4
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	320	-	-	951	-
HCM Lane V/C Ratio	0.014	-	-	0.001	-
HCM Control Delay (s)	16.4	-	-	8.8	-
HCM Lane LOS	C	-	-	A	-
HCM 95th %tile Q(veh)	0	-	-	0	-

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

2025 Background AM
4: Smoke Tree East & Lincoln Dr

Smoke Tree Resort
HCM 6th TWSC

Intersection						
Int Delay, s/veh	0					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↑	↑↑	↑	↑
Traffic Vol, veh/h	1115	0	0	928	1	2
Future Vol, veh/h	1115	0	0	928	1	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	25	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1239	0	0	1031	1	2

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	1239
Stage 1	-	-	1239
Stage 2	-	-	516
Critical Hdwy	-	4.14	6.84
Critical Hdwy Stg 1	-	-	5.84
Critical Hdwy Stg 2	-	-	5.84
Follow-up Hdwy	-	2.22	3.52
Pot Cap-1 Maneuver	-	951	*76
Stage 1	-	-	*599
Stage 2	-	-	*652
Platoon blocked, %	-	1	1
Mov Cap-1 Maneuver	-	951	*76
Mov Cap-2 Maneuver	-	-	*320
Stage 1	-	-	*599
Stage 2	-	-	*652

Approach	EB	WB	NB
HCM Control Delay, s	0	0	12.6
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	478	-	-	951	-
HCM Lane V/C Ratio	0.007	-	-	-	-
HCM Control Delay (s)	12.6	-	-	0	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0	-	-	0	-

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

2025 Background AM
5: Lincoln Medical West & Lincoln Dr

Smoke Tree Resort
HCM 6th TWSC

Intersection						
Int Delay, s/veh	0					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↑	↑↑	↑	
Traffic Vol, veh/h	1113	4	0	928	0	3
Future Vol, veh/h	1113	4	0	928	0	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	25	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1237	4	0	1031	0	3

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	1241
Stage 1	-	-	1239
Stage 2	-	-	516
Critical Hdwy	-	-	4.14
Critical Hdwy Stg 1	-	-	5.84
Critical Hdwy Stg 2	-	-	5.84
Follow-up Hdwy	-	-	2.22
Pot Cap-1 Maneuver	-	-	948
Stage 1	-	-	599
Stage 2	-	-	652
Platoon blocked, %	-	-	1
Mov Cap-1 Maneuver	-	-	948
Mov Cap-2 Maneuver	-	-	320
Stage 1	-	-	599
Stage 2	-	-	652

Approach	EB	WB	NB
HCM Control Delay, s	0	0	10.7
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	636	-	-	948	-
HCM Lane V/C Ratio	0.005	-	-	-	-
HCM Control Delay (s)	10.7	-	-	0	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0	-	-	0	-

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

2025 Background AM
6: Lincoln Medical East & Lincoln Dr

Smoke Tree Resort
HCM 6th TWSC

Intersection						
Int Delay, s/veh	0					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↑	↑↑	↑	
Traffic Vol, veh/h	1112	2	5	928	0	3
Future Vol, veh/h	1112	2	5	928	0	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	25	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1236	2	6	1031	0	3

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	1238
Stage 1	-	-	1237
Stage 2	-	-	528
Critical Hdwy	-	-	4.14
Critical Hdwy Stg 1	-	-	5.84
Critical Hdwy Stg 2	-	-	5.84
Follow-up Hdwy	-	-	2.22
Pot Cap-1 Maneuver	-	-	952
Stage 1	-	-	600
Stage 2	-	-	652
Platoon blocked, %	-	-	1
Mov Cap-1 Maneuver	-	-	952
Mov Cap-2 Maneuver	-	-	317
Stage 1	-	-	597
Stage 2	-	-	652

Approach	EB	WB	NB
HCM Control Delay, s	0	0	10.7
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	636	-	-	952	-
HCM Lane V/C Ratio	0.005	-	-	0.006	-
HCM Control Delay (s)	10.7	-	-	8.8	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0	-	-	0	-

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

2025 Background AM
7: Apartment Drwy & Lincoln Dr

Smoke Tree Resort
HCM 6th TWSC

Intersection												
Int Delay, s/veh	1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↕	↕	↔	↕	↕		↕	↕	↔	↕	↕
Traffic Vol, veh/h	26	1050	34	18	863	10	50	0	29	5	0	12
Future Vol, veh/h	26	1050	34	18	863	10	50	0	29	5	0	12
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None									
Storage Length	25	-	-	25	-	-	-	-	-	0	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	-	1	-	-	1
Grade, %	-	0	-	-	0	-	-	-	0	-	-	0
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	29	1167	38	20	959	11	56	0	32	6	0	13

Major/Minor	Major1	Major2	Minor1	Minor2
Conflicting Flow All	970	0	0	1205
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Critical Hdwy	4.14	-	-	4.14
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	2.22	-	-	2.22
Pot Cap-1 Maneuver	1083	-	-	*952
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Platoon blocked, %	1	-	-	1
Mov Cap-1 Maneuver	1083	-	-	*952
Mov Cap-2 Maneuver	-	-	-	-
Stage 1	-	-	-	-
Stage 2	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	0.2	17.6	12.3
HCM LOS			C	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	372	1083	-	-	*952	-	-	287	739
HCM Lane V/C Ratio	0.236	0.027	-	-	0.021	-	-	0.019	0.018
HCM Control Delay (s)	17.6	8.4	-	-	8.9	-	-	17.8	10
HCM Lane LOS	C	A	-	-	A	-	-	C	B
HCM 95th %tile Q(veh)	0.9	0.1	-	-	0.1	-	-	0.1	0.1

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

2025 Background AM
8: AJ's Drwy & Lincoln Dr

Smoke Tree Resort
HCM 6th TWSC

Intersection												
Int Delay, s/veh	0.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↕	↕	↔	↕	↕		↕	↕	↔	↕	↕
Traffic Vol, veh/h	3	1028	53	43	876	8	6	0	41	4	1	12
Future Vol, veh/h	3	1028	53	43	876	8	6	0	41	4	1	12
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None									
Storage Length	25	-	-	25	-	-	-	-	-	0	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	-	1	-	-	1
Grade, %	-	0	-	-	0	-	-	-	0	-	-	0
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	3	1142	59	48	973	9	7	0	46	4	1	13

Major/Minor	Major1	Major2	Minor1	Minor2
Conflicting Flow All	982	0	0	1201
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Critical Hdwy	4.14	-	-	4.14
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	2.22	-	-	2.22
Pot Cap-1 Maneuver	*1070	-	-	900
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Platoon blocked, %	1	-	-	1
Mov Cap-1 Maneuver	*1070	-	-	900
Mov Cap-2 Maneuver	-	-	-	-
Stage 1	-	-	-	-
Stage 2	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.4	11.8	12
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	583	*1070	-	-	900	-	-	290	715
HCM Lane V/C Ratio	0.09	0.003	-	-	0.053	-	-	0.015	0.019
HCM Control Delay (s)	11.8	8.4	-	-	9.2	-	-	17.6	10.1
HCM Lane LOS	B	A	-	-	A	-	-	C	B
HCM 95th %tile Q(veh)	0.3	0	-	-	0.2	-	-	0	0.1

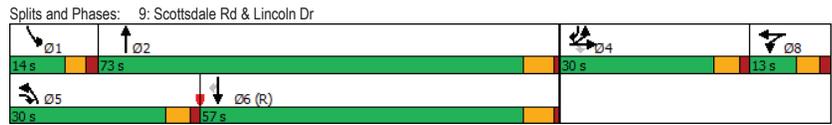
Notes
 ~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

2025 Background AM
9: Scottsdale Rd & Lincoln Dr

Smoke Tree Resort
Timings

	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR		
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔		
Traffic Volume (vph)	483	42	494	41	39	300	1429	55	1814	630		
Future Volume (vph)	483	42	494	41	39	300	1429	55	1814	630		
Turn Type	Split	NA	pm+ov	Split	NA	Prot	NA	Prot	NA	pm+ov		
Protected Phases	4	4	5	8	8	5	2	1	6	4		
Permitted Phases	4			8			6					
Detector Phase	4	4	5	8	8	5	2	1	6	4		
Switch Phase												
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0	10.0	5.0	10.0	7.0			
Minimum Split (s)	13.0	13.0	13.0	13.0	13.0	16.7	11.0	16.0	13.0			
Total Split (s)	30.0	30.0	30.0	13.0	13.0	30.0	73.0	14.0	57.0	30.0		
Total Split (%)	23.1%	23.1%	23.1%	10.0%	10.0%	23.1%	56.2%	10.8%	43.8%	23.1%		
Yellow Time (s)	4.0	4.0	4.0	3.6	3.6	4.0	4.7	3.3	4.7	4.0		
All-Red Time (s)	1.5	1.5	1.5	2.0	2.0	1.5	1.0	2.0	1.0	1.5		
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
Total Lost Time (s)	5.5	5.5	5.5	5.6	5.6	5.5	5.7	5.3	5.7	5.5		
Lead/Lag	Lead			Lead			Lag	Lead	Lag			
Lead-Lag Optimize?												
Recall Mode	None	C-Max	None									
Act Effct Green (s)	24.2	24.2	44.4	7.2	7.2	20.2	70.9	7.7	56.1	85.9		
Actuated g/C Ratio	0.19	0.19	0.34	0.06	0.06	0.16	0.55	0.06	0.43	0.66		
v/c Ratio	0.93	0.93	0.94	0.47	0.43	0.62	0.59	0.59	0.92	0.63		
Control Delay	87.9	87.9	50.9	75.4	33.9	56.1	21.6	81.5	43.5	12.5		
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
Total Delay	87.9	87.9	50.9	75.4	33.9	56.1	21.6	81.5	43.5	12.5		
LOS	F	F	D	E	C	E	C	F	D	B		
Approach Delay	70.0			46.9			27.5			36.5		
Approach LOS	E			D			C			D		

Intersection Summary	
Cycle Length:	130
Actuated Cycle Length:	130
Offset:	0 (0%), Referenced to phase 6:SBT, Start of Green
Natural Cycle:	90
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.94
Intersection Signal Delay:	40.1
Intersection Capacity Utilization:	85.5%
ICU Level of Service:	E
Analysis Period (min):	15



2025 Background AM
9: Scottsdale Rd & Lincoln Dr

Smoke Tree Resort
HCM 6th Signalized Intersection Summary

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (veh/h)	483	42	494	41	39	52	300	1429	43	55	1814	630
Future Volume (veh/h)	483	42	494	41	39	52	300	1429	43	55	1814	630
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	571	0	293	46	43	41	333	1588	35	61	2016	422
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	638	0	464	95	98	82	393	2395	53	78	2015	909
Arrive On Green	0.18	0.00	0.18	0.05	0.05	0.05	0.11	0.47	0.47	0.04	0.39	0.39
Sat Flow, veh/h	3563	0	1585	1781	1832	1538	3456	5141	113	1781	5106	1585
Grp Volume(v), veh/h	571	0	293	46	42	42	333	1051	572	61	2016	422
Grp Sat Flow(s),veh/h/ln	1781	0	1585	1781	1777	1594	1728	1702	1850	1781	1702	1585
Q Serve(g_s), s	20.4	0.0	20.8	3.3	2.9	3.4	12.3	31.0	31.0	4.4	51.3	20.1
Cycle Q Clear(g_c), s	20.4	0.0	20.8	3.3	2.9	3.4	12.3	31.0	31.0	4.4	51.3	20.1
Prop In Lane	1.00		1.00	1.00		0.97	1.00		0.06	1.00		1.00
Lane Grp Cap(c), veh/h	638	0	464	95	95	85	393	1586	862	78	2015	909
V/C Ratio(X)	0.89	0.00	0.63	0.48	0.44	0.50	0.85	0.66	0.66	0.78	1.00	0.46
Avail Cap(c_a), veh/h	671	0	479	101	101	91	651	1762	958	119	2015	909
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	52.2	0.0	39.9	59.8	59.6	59.8	56.5	26.8	26.8	61.5	39.3	16.1
Incr Delay (d2), s/veh	13.5	0.0	1.9	1.4	1.2	1.7	2.5	0.6	1.1	7.7	20.2	1.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	10.3	0.0	8.4	1.5	1.4	1.4	5.5	12.6	13.8	2.2	24.8	11.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	65.7	0.0	41.8	61.2	60.8	61.5	59.0	27.4	27.9	69.2	59.5	17.8
LnGrp LOS	E	A	D	E	E	E	E	C	C	E	F	B
Approach Vol, veh/h	864			130			1956			2499		
Approach Delay, s/veh	57.5			61.2			32.9			52.7		
Approach LOS	E			E			C			D		
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	11.0	66.3		28.8	20.3	57.0		12.5				
Change Period (Y+Rc), s	* 5.3	5.7		5.5	5.5	5.7		5.6				
Max Green Setting (Gmax), s	* 8.7	67.3		24.5	24.5	51.3		7.4				
Max Q Clear Time (g_c+1), s	6.4	33.0		22.8	14.3	53.3		5.4				
Green Ext Time (p_c), s	0.0	2.4		0.4	0.5	0.0		0.1				

Intersection Summary	
HCM 6th Ctrl Delay	46.6
HCM 6th LOS	D

Notes
 User approved pedestrian interval to be less than phase max green.
 User approved volume balancing among the lanes for turning movement.
 * HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

2025 Background PM
1: Mockingbird Ln & Lincoln Drive

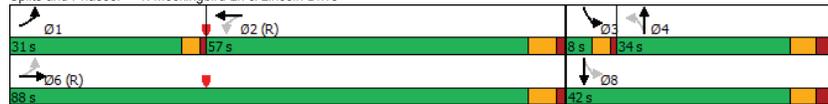
Smoke Tree Resort
Timings

	↖	→	↗	↖	↗	↖	↗	↖	↗
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	
Lane Configurations	↖	↖↗	↖	↖↗	↖	↖	↖	↖	
Traffic Volume (vph)	267	937	22	991	8	68	65	52	
Future Volume (vph)	267	937	22	991	8	68	65	52	
Turn Type	pm+pt	NA	Perm	NA	Perm	NA	pm+pt	NA	
Protected Phases	1	6		2		4	3	8	
Permitted Phases	6		2		4		8		
Detector Phase	1	6	2	2	4	4	3	8	
Switch Phase									
Minimum Initial (s)	4.0	15.0	15.0	15.0	7.0	7.0	4.0	7.0	
Minimum Split (s)	8.0	27.0	27.0	27.0	33.5	33.5	8.0	33.5	
Total Split (%)	31.0	88.0	57.0	57.0	34.0	34.0	8.0	42.0	
Total Split (%)	23.8%	67.7%	43.8%	43.8%	26.2%	26.2%	6.2%	32.3%	
Yellow Time (s)	3.0	4.5	4.5	4.5	4.0	4.0	3.0	4.0	
All-Red Time (s)	1.0	1.5	1.5	1.5	2.5	2.5	1.0	2.5	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.0	6.0	6.0	6.0	6.5	6.5	4.0	6.5	
Lead/Lag	Lead		Lag	Lag	Lag	Lag	Lead		
Lead-Lag Optimize?	Yes		Yes	Yes	Yes	Yes	Yes		
Recall Mode	None	C-Max	C-Max	C-Max	None	None	None	None	
Act Effct Green (s)	101.4	99.4	74.6	74.6	11.7	11.7	20.6	18.1	
Actuated g/C Ratio	0.78	0.76	0.57	0.57	0.09	0.09	0.16	0.14	
v/c Ratio	0.64	0.40	0.08	0.58	0.13	0.56	0.41	0.73	
Control Delay	16.2	6.2	25.5	32.1	56.6	63.2	53.2	38.7	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	16.2	6.2	25.5	32.1	56.6	63.2	53.2	38.7	
LOS	B	A	C	C	E	E	D	D	
Approach Delay		8.4		32.0		62.7		42.0	
Approach LOS		A		C		E		D	

Intersection Summary

Cycle Length: 130	
Actuated Cycle Length: 130	
Offset: 0 (0%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green	
Natural Cycle: 90	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.73	
Intersection Signal Delay: 23.3	Intersection LOS: C
Intersection Capacity Utilization 71.1%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 1: Mockingbird Ln & Lincoln Drive



2025 Background PM
1: Mockingbird Ln & Lincoln Drive

Smoke Tree Resort
HCM 6th Signalized Intersection Summary

	↖	→	↗	↖	↗	↖	↗	↖	↗	↖	↗	↖	↗
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations	↖	↖↗		↖	↖↗		↖	↖		↖	↖	↖	
Traffic Volume (veh/h)	267	937	32	22	991	63	8	68	18	65	52	169	
Future Volume (veh/h)	267	937	32	22	991	63	8	68	18	65	52	169	
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0	
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Work Zone On Approach	No												
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	
Adj Flow Rate, veh/h	297	1041	25	24	1101	48	9	76	11	72	58	116	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2	
Cap, veh/h	510	2755	66	413	2346	102	86	105	15	135	71	142	
Arrive On Green	0.07	0.78	0.78	1.00	1.00	1.00	0.07	0.07	0.07	0.03	0.13	0.13	
Sat Flow, veh/h	1781	3547	85	529	3469	151	1211	1598	231	1781	557	1113	
Grp Volume(v), veh/h	297	522	544	24	564	585	9	0	87	72	0	174	
Grp Sat Flow(s),veh/h/ln	1781	1777	1855	529	1777	1843	1211	0	1829	1781	0	1670	
Q Serve(g_s), s	6.2	12.1	12.1	0.0	0.0	0.0	0.9	0.0	6.1	4.0	0.0	13.2	
Cycle Q Clear(g_c), s	6.2	12.1	12.1	0.0	0.0	0.0	6.1	0.0	6.1	4.0	0.0	13.2	
Prop In Lane	1.00		0.05	1.00		0.08	1.00		0.13	1.00		0.67	
Lane Grp Cap(c), veh/h	510	1380	1441	413	1202	1247	86	0	120	135	0	212	
V/C Ratio(X)	0.58	0.38	0.38	0.06	0.47	0.47	0.10	0.00	0.72	0.53	0.00	0.82	
Avail Cap(c_a), veh/h	756	1380	1441	413	1202	1247	263	0	387	135	0	456	
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	
Upstream Filter(I)	1.00	1.00	1.00	0.68	0.68	0.68	1.00	0.00	1.00	1.00	0.00	1.00	
Uniform Delay (d), s/veh	4.5	4.6	4.6	0.0	0.0	0.0	62.2	0.0	59.6	55.1	0.0	55.3	
Incr Delay (d2), s/veh	1.1	0.8	0.8	0.2	0.9	0.9	0.5	0.0	8.0	4.0	0.0	7.6	
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
%ile BackOfQ(50%),veh/ln	2.2	4.1	4.3	0.0	0.3	0.3	0.3	0.0	3.1	0.5	0.0	6.0	
Unsig. Movement Delay, s/veh													
LnGrp Delay(d),s/veh	5.5	5.4	5.3	0.2	0.9	0.9	62.7	0.0	67.6	59.1	0.0	62.9	
LnGrp LOS	A	A	A	A	A	A	E	A	E	E	A	E	
Approach Vol, veh/h		1363			1173			96				246	
Approach Delay, s/veh		5.4			0.9			67.1				61.8	
Approach LOS		A			A			E				E	

Timer - Assigned Phs	1	2	3	4	6	8
Phs Duration (G+Y+Rc), s	13.0	93.9	8.0	15.0	107.0	23.0
Change Period (Y+Rc), s	4.0	6.0	4.0	6.5	6.0	6.5
Max Green Setting (Gmax), s	27.0	51.0	4.0	27.5	82.0	35.5
Max Q Clear Time (g_c+1), s	8.2	2.0	6.0	8.1	14.1	15.2
Green Ext Time (p_c), s	0.8	10.8	0.0	0.4	9.3	0.9

Intersection Summary

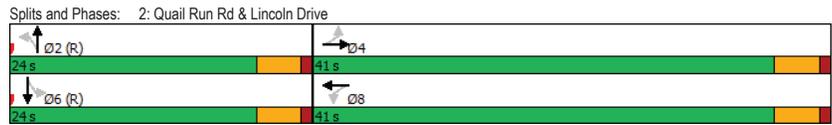
HCM 6th Ctrl Delay	10.4
HCM 6th LOS	B

2025 Background PM
2: Quail Run Rd & Lincoln Drive

Smoke Tree Resort
Timings

Lane Group	EBL	EBT	WBT	NBT	SBL	SBT
Lane Configurations	↔	↕↕	↕↕	↕	↔	↕
Traffic Volume (vph)	85	952	980	0	14	0
Future Volume (vph)	85	952	980	0	14	0
Turn Type	Perm	NA	NA	NA	Perm	NA
Protected Phases		4	8	2		6
Permitted Phases	4				6	
Detector Phase	4	4	8	2	6	6
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	22.5	22.5	22.5	22.5
Total Split (s)	41.0	41.0	41.0	24.0	24.0	24.0
Total Split (%)	63.1%	63.1%	63.1%	36.9%	36.9%	36.9%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None	None	None	C-Max	C-Max	C-Max
Act Effct Green (s)	30.2	30.2	30.2	25.8	25.8	25.8
Actuated g/C Ratio	0.46	0.46	0.46	0.40	0.40	0.40
v/c Ratio	0.72	0.64	0.68	0.00	0.17	0.17
Control Delay	50.5	18.1	15.4	0.0	7.4	7.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	50.5	18.1	15.4	0.0	7.4	7.4
LOS	D	B	B	A	A	A
Approach Delay		20.7	15.4		7.4	
Approach LOS		C	B		A	

Intersection Summary						
Cycle Length:	65					
Actuated Cycle Length:	65					
Offset:	0 (0%), Referenced to phase 2:NBT and 6:SBTL, Start of Green					
Natural Cycle:	60					
Control Type:	Actuated-Coordinated					
Maximum v/c Ratio:	0.72					
Intersection Signal Delay:	17.5			Intersection LOS: B		
Intersection Capacity Utilization:	57.0%			ICU Level of Service B		
Analysis Period (min):	15					



2025 Background PM
2: Quail Run Rd & Lincoln Drive

Smoke Tree Resort
HCM 6th Signalized Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↕↕		↔	↕↕			↕		↔	↕	↕
Traffic Volume (veh/h)	85	952	1	0	980	25	0	0	2	14	0	93
Future Volume (veh/h)	85	952	1	0	980	25	0	0	2	14	0	93
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No											
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	94	1058	1	0	1089	28	0	0	2	16	0	103
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	246	1696	2	111	1648	42	0	0	627	111	36	543
Arrive On Green	0.93	0.93	0.93	0.00	0.62	0.62	0.00	0.00	0.40	0.40	0.00	0.40
Sat Flow, veh/h	504	3643	3	533	3540	91	0	0	1585	121	92	1371
Grp Volume(v), veh/h	94	516	543	0	547	570	0	0	2	119	0	0
Grp Sat Flow(s),veh/h/ln	504	1777	1870	533	1777	1854	0	0	1585	1585	0	0
Q Serve(g_s), s	9.0	3.1	3.1	0.0	12.9	12.9	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	21.9	3.1	3.1	0.0	12.9	12.9	0.0	0.0	0.0	3.1	0.0	0.0
Prop In Lane	1.00		0.00	1.00		0.05	0.00		1.00	0.13		0.87
Lane Grp Cap(c), veh/h	246	827	871	111	827	863	0	0	627	690	0	0
V/C Ratio(X)	0.38	0.62	0.62	0.00	0.66	0.66	0.00	0.00	0.00	0.17	0.00	0.00
Avail Cap(c_a), veh/h	294	998	1050	162	998	1041	0	0	627	690	0	0
HCM Platoon Ratio	2.00	2.00	2.00	1.33	1.33	1.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.92	0.92	0.92	0.00	1.00	1.00	0.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	6.7	1.3	1.3	0.0	9.1	9.1	0.0	0.0	11.9	12.8	0.0	0.0
Incr Delay (d2), s/veh	0.9	0.8	0.8	0.0	1.2	1.2	0.0	0.0	0.0	0.5	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	0.7	0.7	0.0	3.7	3.8	0.0	0.0	0.0	1.1	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	7.6	2.1	2.1	0.0	10.3	10.2	0.0	0.0	11.9	13.3	0.0	0.0
LnGrp LOS	A	A	A	A	B	B	A	A	B	B	A	A
Approach Vol, veh/h	1153			1117			2			119		
Approach Delay, s/veh	2.5			10.3			11.9			13.3		
Approach LOS	A			B			B			B		
Timer - Assigned Phs	2		4		6		8					
Phs Duration (G+Y+Rc), s	30.2		34.8		30.2		34.8					
Change Period (Y+Rc), s	4.5		4.5		4.5		4.5					
Max Green Setting (Gmax), s	19.5		36.5		19.5		36.5					
Max Q Clear Time (g_c+1), s	2.0		23.9		5.1		14.9					
Green Ext Time (p_c), s	0.0		6.4		0.5		7.9					

Intersection Summary	
HCM 6th Ctrl Delay	6.7
HCM 6th LOS	A

2025 Background PM
3: Smoke Tree West & Lincoln Dr

Smoke Tree Resort
HCM 6th TWSC

Intersection						
Int Delay, s/veh	0					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↑	↑↑	↑	↑
Traffic Vol, veh/h	968	1	0	1004	1	0
Future Vol, veh/h	968	1	0	1004	1	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	25	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1076	1	0	1116	1	0

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	1077
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	-	4.14
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	-	2.22
Pot Cap-1 Maneuver	-	-	*1024
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	1
Mov Cap-1 Maneuver	-	-	*1024
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	15.8
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	333	-	-	*1024	-
HCM Lane V/C Ratio	0.003	-	-	-	-
HCM Control Delay (s)	15.8	-	-	0	-
HCM Lane LOS	C	-	-	A	-
HCM 95th %tile Q(veh)	0	-	-	0	-

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

2025 Background PM
4: Smoke Tree East & Lincoln Dr

Smoke Tree Resort
HCM 6th TWSC

Intersection						
Int Delay, s/veh	0					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↑	↑↑	↑	↑
Traffic Vol, veh/h	967	1	2	1004	1	2
Future Vol, veh/h	967	1	2	1004	1	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	25	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1074	1	2	1116	1	2

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	1075
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	-	4.14
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	-	2.22
Pot Cap-1 Maneuver	-	-	*1024
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	1
Mov Cap-1 Maneuver	-	-	*1024
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	12.2
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	505	-	-	*1024	-
HCM Lane V/C Ratio	0.007	-	-	0.002	-
HCM Control Delay (s)	12.2	-	-	8.5	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0	-	-	0	-

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

2025 Background PM
5: Lincoln Medical West & Lincoln Dr

Smoke Tree Resort
HCM 6th TWSC

Intersection						
Int Delay, s/veh	0					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↑	↑↑	↑	
Traffic Vol, veh/h	969	0	0	1004	2	0
Future Vol, veh/h	969	0	0	1004	2	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	25	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1077	0	0	1116	2	0

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	1077
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	-	4.14
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	-	2.22
Pot Cap-1 Maneuver	-	-	*1024
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	1
Mov Cap-1 Maneuver	-	-	*1024
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	15.9
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	333	-	-	*1024	-
HCM Lane V/C Ratio	0.007	-	-	-	-
HCM Control Delay (s)	15.9	-	-	0	-
HCM Lane LOS	C	-	-	A	-
HCM 95th %tile Q(veh)	0	-	-	0	-

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

2025 Background PM
6: Lincoln Medical East & Lincoln Dr

Smoke Tree Resort
HCM 6th TWSC

Intersection						
Int Delay, s/veh	0					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↑	↑↑	↑	
Traffic Vol, veh/h	969	0	0	1003	2	3
Future Vol, veh/h	969	0	0	1003	2	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	25	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1077	0	0	1114	2	3

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	1077
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	-	4.14
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	-	2.22
Pot Cap-1 Maneuver	-	-	*1024
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	1
Mov Cap-1 Maneuver	-	-	*1024
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	12.6
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	481	-	-	*1024	-
HCM Lane V/C Ratio	0.012	-	-	-	-
HCM Control Delay (s)	12.6	-	-	0	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0	-	-	0	-

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

2025 Background PM
7: Apartment Drwy & Lincoln Dr

Smoke Tree Resort
HCM 6th TWSC

Intersection												
Int Delay, s/veh	1.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↖	↖	↖	↖	↖		↖	↖	↖	↖	↖
Traffic Vol, veh/h	7	905	41	6	899	9	66	3	47	7	0	34
Future Vol, veh/h	7	905	41	6	899	9	66	3	47	7	0	34
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None									
Storage Length	25	-	-	25	-	-	-	-	-	0	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	8	1006	46	7	999	10	73	3	52	8	0	38

Major/Minor	Major1	Major2	Minor1	Minor2
Conflicting Flow All	1009	0	0	1052
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Critical Hdwy	4.14	-	-	4.14
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	2.22	-	-	2.22
Pot Cap-1 Maneuver	*1070	-	-	991
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Platoon blocked, %	1	-	-	1
Mov Cap-1 Maneuver	*1070	-	-	991
Stage 1	-	-	-	-
Stage 2	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0.1	18	11.3
HCM LOS			C	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	404	*1070	-	-	991	-	-	328	715
HCM Lane V/C Ratio	0.319	0.007	-	-	0.007	-	-	0.024	0.053
HCM Control Delay (s)	18	8.4	-	-	8.7	-	-	16.2	10.3
HCM Lane LOS	C	A	-	-	A	-	-	C	B
HCM 95th %tile Q(veh)	1.4	0	-	-	0	-	-	0.1	0.2

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

2025 Background PM
8: AJ's Drwy & Lincoln Dr

Smoke Tree Resort
HCM 6th TWSC

Intersection												
Int Delay, s/veh	1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↖	↖	↖	↖	↖		↖	↖	↖	↖	↖
Traffic Vol, veh/h	11	898	53	61	897	8	14	1	89	4	0	7
Future Vol, veh/h	11	898	53	61	897	8	14	1	89	4	0	7
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None									
Storage Length	25	-	-	25	-	-	-	-	-	0	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	12	998	59	68	997	9	16	1	99	4	0	8

Major/Minor	Major1	Major2	Minor1	Minor2
Conflicting Flow All	1006	0	0	1057
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Critical Hdwy	4.14	-	-	4.14
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	2.22	-	-	2.22
Pot Cap-1 Maneuver	*1070	-	-	985
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Platoon blocked, %	1	-	-	1
Mov Cap-1 Maneuver	*1070	-	-	985
Stage 1	-	-	-	-
Stage 2	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0.6	12.4	13.3
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	602	*1070	-	-	985	-	-	263	715
HCM Lane V/C Ratio	0.192	0.011	-	-	0.069	-	-	0.017	0.011
HCM Control Delay (s)	12.4	8.4	-	-	8.9	-	-	18.9	10.1
HCM Lane LOS	B	A	-	-	A	-	-	C	B
HCM 95th %tile Q(veh)	0.7	0	-	-	0.2	-	-	0.1	0

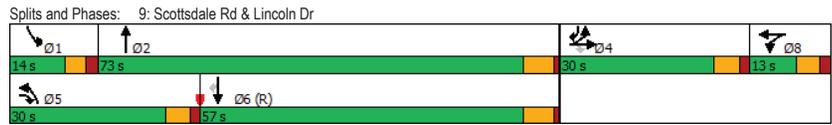
Notes
 ~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

2025 Background PM
9: Scottsdale Rd & Lincoln Dr

Smoke Tree Resort
Timings

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR		
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔		
Traffic Volume (vph)	524	61	442	61	68	435	1762	66	1702	516		
Future Volume (vph)	524	61	442	61	68	435	1762	66	1702	516		
Turn Type	Split	NA	pm+ov	Split	NA	Prot	NA	Prot	NA	pm+ov		
Protected Phases	4	4	5	8	8	5	2	1	6	4		
Permitted Phases	4			8			6					
Detector Phase	4	4	5	8	8	5	2	1	6	4		
Switch Phase												
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0	10.0	5.0	10.0	7.0			
Minimum Split (s)	13.0	13.0	13.0	13.0	13.0	16.7	11.0	16.0	13.0			
Total Split (s)	30.0	30.0	30.0	13.0	13.0	30.0	73.0	14.0	57.0	30.0		
Total Split (%)	23.1%	23.1%	23.1%	10.0%	10.0%	23.1%	56.2%	10.8%	43.8%	23.1%		
Yellow Time (s)	4.0	4.0	4.0	3.6	3.6	4.0	4.7	3.3	4.7	4.0		
All-Red Time (s)	1.5	1.5	1.5	2.0	2.0	1.5	1.0	2.0	1.0	1.5		
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
Total Lost Time (s)	5.5	5.5	5.5	5.6	5.6	5.5	5.7	5.3	5.7	5.5		
Lead/Lag	Lead			Lead			Lag	Lead	Lag			
Lead-Lag Optimize?												
Recall Mode	None	C-Max	None									
Act Effct Green (s)	24.5	24.5	46.3	7.3	7.3	21.8	70.3	8.0	54.1	84.3		
Actuated g/C Ratio	0.19	0.19	0.36	0.06	0.06	0.17	0.54	0.06	0.42	0.65		
v/c Ratio	1.03	1.01	0.81	0.69	0.62	0.84	0.74	0.67	0.89	0.54		
Control Delay	110.3	105.6	33.8	92.9	39.0	66.2	25.4	88.3	42.2	12.1		
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
Total Delay	110.3	105.6	33.8	92.9	39.0	66.2	25.4	88.3	42.2	12.1		
LOS	F	F	C	F	D	E	C	F	D	B		
Approach Delay	76.0			54.9			33.3			36.8		
Approach LOS	E			D			C			D		

Intersection Summary	
Cycle Length:	130
Actuated Cycle Length:	130
Offset:	0 (0%), Referenced to phase 6:SBT, Start of Green
Natural Cycle:	100
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	1.03
Intersection Signal Delay:	43.1
Intersection Capacity Utilization:	85.8%
ICU Level of Service:	E
Analysis Period (min):	15



2025 Background PM
9: Scottsdale Rd & Lincoln Dr

Smoke Tree Resort
HCM 6th Signalized Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (veh/h)	524	61	442	61	68	78	435	1762	50	66	1702	516
Future Volume (veh/h)	524	61	442	61	68	78	435	1762	50	66	1702	516
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	631	0	258	68	76	59	483	1958	34	73	1891	295
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	671	0	547	101	113	80	540	2587	45	93	2015	924
Arrive On Green	0.19	0.00	0.19	0.06	0.06	0.06	0.16	0.50	0.50	0.05	0.39	0.39
Sat Flow, veh/h	3563	0	1585	1781	1989	1405	3456	5169	90	1781	5106	1585
Grp Volume(v), veh/h	631	0	258	68	67	68	483	1289	703	73	1891	295
Grp Sat Flow(s),veh/h/ln	1781	0	1585	1781	1777	1617	1728	1702	1854	1781	1702	1585
Q Serve(g_s), s	22.7	0.0	16.6	4.9	4.8	5.4	17.8	39.6	39.6	5.3	46.3	12.4
Cycle Q Clear(g_c), s	22.7	0.0	16.6	4.9	4.8	5.4	17.8	39.6	39.6	5.3	46.3	12.4
Prop In Lane	1.00		1.00	1.00		0.87	1.00		0.05	1.00		1.00
Lane Grp Cap(c), veh/h	671	0	547	101	101	92	540	1704	928	93	2015	924
V/C Ratio(X)	0.94	0.00	0.47	0.67	0.67	0.74	0.89	0.76	0.76	0.79	0.94	0.32
Avail Cap(c_a), veh/h	671	0	547	101	101	92	651	1762	960	119	2015	924
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	52.0	0.0	33.3	60.1	60.1	60.4	53.8	26.1	26.1	60.9	37.8	13.9
Incr Delay (d2), s/veh	21.0	0.0	0.2	13.3	12.5	24.0	11.8	1.6	3.0	17.6	10.0	0.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	12.1	0.0	6.4	2.6	2.5	2.8	8.6	16.1	17.9	2.8	20.8	7.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	73.0	0.0	33.6	73.4	72.6	84.4	65.6	27.7	29.1	78.5	47.8	14.8
LnGrp LOS	E	A	C	E	E	F	E	C	C	E	D	B
Approach Vol, veh/h	889			203			2475			2259		
Approach Delay, s/veh	61.6			76.8			35.5			44.5		
Approach LOS	E			E			D			D		
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	12.1	70.8		30.0	25.8	57.0		13.0				
Change Period (Y+Rc), s	* 5.3	5.7		5.5	5.5	5.7		5.6				
Max Green Setting (Gmax), s	* 8.7	67.3		24.5	24.5	51.3		7.4				
Max Q Clear Time (g_c+1), s	7.3	41.6		24.7	19.8	48.3		7.4				
Green Ext Time (p_c), s	0.0	3.2		0.0	0.5	1.5		0.0				

Intersection Summary	
HCM 6th Ctrl Delay	44.4
HCM 6th LOS	D

Notes
User approved pedestrian interval to be less than phase max green.
User approved volume balancing among the lanes for turning movement.
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

2025 Total AM Scenario 1
1: Mockingbird Ln & Lincoln Drive

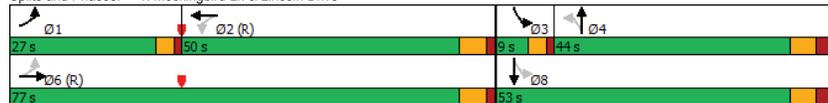
Smoke Tree Resort
Timings

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations	↔	↕	↔	↕	↔	↕	↔	↕
Traffic Volume (vph)	242	1036	24	963	6	37	81	99
Future Volume (vph)	242	1036	24	963	6	37	81	99
Turn Type	pm+pt	NA	Perm	NA	Perm	NA	pm+pt	NA
Protected Phases	1	6		2		4	3	8
Permitted Phases	6		2		4		8	
Detector Phase	1	6	2	2	4	4	3	8
Switch Phase								
Minimum Initial (s)	3.5	15.0	15.0	15.0	7.0	7.0	3.5	7.0
Minimum Split (s)	8.0	27.0	27.0	27.0	33.5	33.5	8.0	33.5
Total Split (s)	27.0	77.0	50.0	50.0	44.0	44.0	9.0	53.0
Total Split (%)	20.8%	59.2%	38.5%	38.5%	33.8%	33.8%	6.9%	40.8%
Yellow Time (s)	3.0	4.5	4.5	4.5	4.0	4.0	3.0	4.0
All-Red Time (s)	1.0	1.5	1.5	1.5	2.5	2.5	1.0	2.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	6.0	6.0	6.0	6.5	6.5	4.0	6.5
Lead/Lag	Lead		Lag	Lag	Lag	Lag	Lead	
Lead-Lag Optimize?	Yes		Yes	Yes	Yes	Yes	Yes	
Recall Mode	None	C-Max	C-Max	C-Max	None	None	None	None
Act Effct Green (s)	91.4	89.4	64.9	64.9	18.9	18.9	30.6	28.1
Actuated g/C Ratio	0.70	0.69	0.50	0.50	0.15	0.15	0.24	0.22
v/c Ratio	0.68	0.47	0.13	0.61	0.11	0.22	0.32	0.84
Control Delay	23.4	11.0	37.2	41.5	46.8	32.5	41.0	50.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	23.4	11.0	37.2	41.5	46.8	32.5	41.0	50.5
LOS	C	B	D	D	D	C	D	D
Approach Delay		13.3		41.4		33.9		48.7
Approach LOS		B		D		C		D

Intersection Summary

Cycle Length: 130	
Actuated Cycle Length: 130	
Offset: 0 (0%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green	
Natural Cycle: 90	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.84	
Intersection Signal Delay: 29.4	Intersection LOS: C
Intersection Capacity Utilization 75.8%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 1: Mockingbird Ln & Lincoln Drive



2025 Total AM Scenario 1
1: Mockingbird Ln & Lincoln Drive

Smoke Tree Resort
HCM 6th Signalized Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↕		↔	↕		↔	↕		↔	↕	
Traffic Volume (veh/h)	242	1036	33	24	963	46	6	37	21	81	99	253
Future Volume (veh/h)	242	1036	33	24	963	46	6	37	21	81	99	253
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No											
Adj Sat Flow, veh/h/ln	1772	1969	1772	1772	1969	1772	1772	1969	1772	1772	1969	1772
Adj Flow Rate, veh/h	269	1151	26	27	1070	34	7	41	14	90	110	170
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	481	2698	61	325	2274	72	86	159	54	231	127	196
Arrive On Green	0.08	0.72	0.72	1.00	1.00	1.00	0.11	0.11	0.11	0.04	0.18	0.18
Sat Flow, veh/h	1688	3740	84	451	3700	118	1041	1403	479	1688	697	1078
Grp Volume(v), veh/h	269	576	601	27	541	563	7	0	55	90	0	280
Grp Sat Flow(s),veh/h/ln	1688	1870	1954	451	1870	1948	1041	0	1883	1688	0	1775
Q Serve(g_s), s	7.2	16.1	16.1	0.2	0.0	0.0	0.9	0.0	3.5	5.0	0.0	19.9
Cycle Q Clear(g_c), s	7.2	16.1	16.1	2.4	0.0	0.0	11.8	0.0	3.5	5.0	0.0	19.9
Prop In Lane	1.00		0.04	1.00		0.06	1.00		0.25	1.00		0.61
Lane Grp Cap(c), veh/h	481	1350	1410	325	1150	1197	86	0	213	231	0	324
V/C Ratio(X)	0.56	0.43	0.43	0.08	0.47	0.47	0.08	0.00	0.26	0.39	0.00	0.87
Avail Cap(c_a), veh/h	651	1350	1410	325	1150	1197	268	0	543	231	0	635
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.78	0.78	0.78	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	6.7	7.3	7.3	0.0	0.0	0.0	61.7	0.0	52.7	48.7	0.0	51.6
Incr Delay (d2), s/veh	1.0	1.0	0.9	0.4	1.1	1.0	0.4	0.0	0.6	1.1	0.0	6.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.6	6.3	6.6	0.0	0.3	0.3	0.2	0.0	1.7	0.5	0.0	9.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	7.7	8.3	8.2	0.4	1.1	1.0	62.1	0.0	53.3	49.8	0.0	58.5
LnGrp LOS	A	A	A	A	A	A	E	A	D	D	A	E
Approach Vol, veh/h		1446			1131			62				370
Approach Delay, s/veh		8.2			1.0			54.3				56.4
Approach LOS		A			A			D				E

Timer - Assigned Phs	1	2	3	4	6	8
Phs Duration (G+Y+Rc), s	13.9	85.9	9.0	21.2	99.8	30.2
Change Period (Y+Rc), s	4.0	6.0	4.0	6.5	6.0	6.5
Max Green Setting (Gmax), s	23.0	44.0	5.0	37.5	71.0	46.5
Max Q Clear Time (g_c+1), s	9.2	4.4	7.0	13.8	18.1	21.9
Green Ext Time (p_c), s	0.7	10.0	0.0	0.2	10.8	1.8

Intersection Summary

HCM 6th Ctrl Delay	12.4
HCM 6th LOS	B

2025 Total AM Scenario 1
2: Quail Run Rd & Lincoln Drive

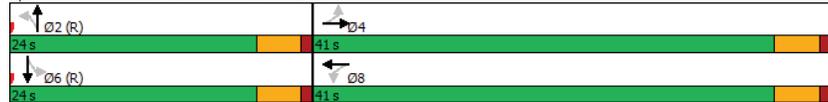
Smoke Tree Resort
Timings

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations	↔	↕	↔	↕	↔	↕	↔	↕
Traffic Volume (vph)	115	1087	11	924	4	0	26	0
Future Volume (vph)	115	1087	11	924	4	0	26	0
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		4		8		2		6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	2	2	6	6
Switch Phase								
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5
Total Split (s)	41.0	41.0	41.0	41.0	24.0	24.0	24.0	24.0
Total Split (%)	63.1%	63.1%	63.1%	63.1%	36.9%	36.9%	36.9%	36.9%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	C-Max	C-Max	C-Max	C-Max
Act Effct Green (s)	32.4	32.4	32.4	32.4	23.6	23.6	23.6	23.6
Actuated g/C Ratio	0.50	0.50	0.50	0.50	0.36	0.36	0.36	0.36
v/c Ratio	0.72	0.69	0.10	0.59	0.02	0.17	0.17	0.17
Control Delay	45.4	20.4	9.8	14.3	5.1	7.9	7.9	7.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	45.4	20.4	9.8	14.3	5.1	7.9	7.9	7.9
LOS	D	C	A	B	A	A	A	A
Approach Delay		22.8		14.3		5.1		7.9
Approach LOS		C		B		A		A

Intersection Summary

Cycle Length: 65
 Actuated Cycle Length: 65
 Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
 Natural Cycle: 60
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.72
 Intersection Signal Delay: 18.5
 Intersection Capacity Utilization 52.8%
 Analysis Period (min) 15
 Intersection LOS: B
 ICU Level of Service A

Splits and Phases: 2: Quail Run Rd & Lincoln Drive



2025 Total AM Scenario 1
2: Quail Run Rd & Lincoln Drive

Smoke Tree Resort
HCM 6th Signalized Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↕		↔	↕		↔	↕		↔	↕	
Traffic Volume (veh/h)	115	1087	8	11	924	12	4	0	9	26	0	66
Future Volume (veh/h)	115	1087	8	11	924	12	4	0	9	26	0	66
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No											
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	128	1208	9	12	1027	13	4	0	10	29	0	73
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	291	1542	11	241	1533	19	225	36	475	227	36	483
Arrive On Green	0.85	0.85	0.85	0.85	0.85	0.85	0.43	0.00	0.43	0.43	0.00	0.43
Sat Flow, veh/h	542	3615	27	459	3594	45	354	83	1092	358	83	1111
Grp Volume(v), veh/h	128	594	623	12	508	532	14	0	102	0	0	0
Grp Sat Flow(s),veh/h/ln	542	1777	1866	459	1777	1862	1529	0	0	1552	0	0
Q Serve(g_s), s	9.7	9.6	9.6	0.8	6.4	6.4	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	15.9	9.6	9.6	10.1	6.4	6.4	0.3	0.0	0.0	2.4	0.0	0.0
Prop In Lane	1.00		0.01	1.00		0.02	0.29		0.71	0.28		0.72
Lane Grp Cap(c), veh/h	291	758	796	241	758	794	736	0	0	746	0	0
V/C Ratio(X)	0.44	0.78	0.78	0.05	0.67	0.67	0.02	0.00	0.00	0.14	0.00	0.00
Avail Cap(c_a), veh/h	364	998	1048	303	998	1046	736	0	0	746	0	0
HCM Platoon Ratio	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.89	0.89	0.89	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	5.9	3.4	3.4	5.6	3.2	3.2	10.5	0.0	0.0	11.1	0.0	0.0
Incr Delay (d2), s/veh	0.9	2.7	2.6	0.1	1.1	1.1	0.0	0.0	0.0	0.4	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	1.8	1.9	0.0	1.3	1.3	0.1	0.0	0.0	0.9	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	6.8	6.2	6.0	5.7	4.3	4.3	10.5	0.0	0.0	11.4	0.0	0.0
LnGrp LOS	A	A	A	A	A	A	B	A	A	B	A	A
Approach Vol, veh/h		1345			1052			14			102	
Approach Delay, s/veh		6.2			4.3			10.5			11.4	
Approach LOS		A			A			B			B	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		32.9		32.1		32.9		32.1				
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5				
Max Green Setting (Gmax), s		19.5		36.5		19.5		36.5				
Max Q Clear Time (g_c+1), s		2.3		17.9		4.4		12.1				
Green Ext Time (p_c), s		0.0		9.6		0.4		7.7				

Intersection Summary

HCM 6th Ctrl Delay 5.6
 HCM 6th LOS A

2025 Total AM Scenario 1
3: Access A & Lincoln Dr

Smoke Tree Resort
HCM 6th TWSC

Intersection						
Int Delay, s/veh	0.1					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↑	↑↑	↑	↑
Traffic Vol, veh/h	1114	5	9	940	3	11
Future Vol, veh/h	1114	5	9	940	3	11
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	25	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1238	6	10	1044	3	12

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	1244	0	1783
Stage 1	-	-	-	-	1241
Stage 2	-	-	-	-	542
Critical Hdwy	-	-	4.14	-	6.84
Critical Hdwy Stg 1	-	-	-	-	5.84
Critical Hdwy Stg 2	-	-	-	-	5.84
Follow-up Hdwy	-	-	2.22	-	3.52
Pot Cap-1 Maneuver	-	-	944	-	*73
Stage 1	-	-	-	-	*597
Stage 2	-	-	-	-	*652
Platoon blocked, %	-	-	1	-	1
Mov Cap-1 Maneuver	-	-	944	-	*72
Mov Cap-2 Maneuver	-	-	-	-	*314
Stage 1	-	-	-	-	*590
Stage 2	-	-	-	-	*652

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	12.1
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	521	-	-	944	-
HCM Lane V/C Ratio	0.03	-	-	0.011	-
HCM Control Delay (s)	12.1	-	-	8.9	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0	-

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

2025 Total AM Scenario 1
4: Quail Run Rd & Access B

Smoke Tree Resort
HCM 6th TWSC

Intersection						
Int Delay, s/veh	4.4					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↑		↑			↑
Traffic Vol, veh/h	0	5	8	0	15	6
Future Vol, veh/h	0	5	8	0	15	6
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	6	9	0	17	7

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	50	9	0	0	9
Stage 1	9	-	-	-	-
Stage 2	41	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12
Critical Hdwy Stg 1	5.42	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218
Pot Cap-1 Maneuver	959	1073	-	-	1611
Stage 1	1014	-	-	-	-
Stage 2	981	-	-	-	-
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	948	1073	-	-	1611
Mov Cap-2 Maneuver	948	-	-	-	-
Stage 1	1003	-	-	-	-
Stage 2	981	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.4	0	5.2
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	1073	1611
HCM Lane V/C Ratio	-	-	0.005	0.01
HCM Control Delay (s)	-	-	8.4	7.3
HCM Lane LOS	-	-	A	A
HCM 95th %tile Q(veh)	-	-	0	0

2025 Total AM Scenario 1
5: Lincoln Medical West & Lincoln Dr

Smoke Tree Resort
HCM 6th TWSC

Intersection						
Int Delay, s/veh	0					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↑	↑↑	↑	
Traffic Vol, veh/h	1125	4	0	947	0	3
Future Vol, veh/h	1125	4	0	947	0	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	25	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1250	4	0	1052	0	3

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	1254
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	-	4.14
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	-	2.22
Pot Cap-1 Maneuver	-	-	931
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	1
Mov Cap-1 Maneuver	-	-	931
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	10.7
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	636	-	-	931	-
HCM Lane V/C Ratio	0.005	-	-	-	-
HCM Control Delay (s)	10.7	-	-	0	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0	-	-	0	-

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

2025 Total AM Scenario 1
6: Lincoln Medical East & Lincoln Dr

Smoke Tree Resort
HCM 6th TWSC

Intersection						
Int Delay, s/veh	0					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↑	↑↑	↑	
Traffic Vol, veh/h	1124	2	5	947	0	3
Future Vol, veh/h	1124	2	5	947	0	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	25	-	0	-
Veh in Median Storage, #	0	-	-	0	1	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1249	2	6	1052	0	3

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	1251
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	-	4.14
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	-	2.22
Pot Cap-1 Maneuver	-	-	935
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	1
Mov Cap-1 Maneuver	-	-	935
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	10.7
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	636	-	-	935	-
HCM Lane V/C Ratio	0.005	-	-	0.006	-
HCM Control Delay (s)	10.7	-	-	8.9	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0	-	-	0	-

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

2025 Total AM Scenario 1
7: Apartment Drwy & Lincoln Dr

Smoke Tree Resort
HCM 6th TWSC

Intersection												
Int Delay, s/veh	1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔ ↗		↔ ↗		↔ ↗		↔ ↗		↔ ↗		↔ ↗	
Traffic Vol, veh/h	26	1062	34	18	882	10	50	0	29	5	0	12
Future Vol, veh/h	26	1062	34	18	882	10	50	0	29	5	0	12
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None									
Storage Length	25	-	-	25	-	-	-	-	-	0	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	-	1	-	-	1
Grade, %	-	0	-	-	0	-	-	-	0	-	-	0
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	29	1180	38	20	980	11	56	0	32	6	0	13

Major/Minor	Major1	Major2	Minor1	Minor2
Conflicting Flow All	991	0	0	1218
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Critical Hdwy	4.14	-	-	4.14
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	2.22	-	-	2.22
Pot Cap-1 Maneuver	*1070	-	-	*952
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Platoon blocked, %	1	-	-	1
Mov Cap-1 Maneuver	*1070	-	-	*952
Mov Cap-2 Maneuver	-	-	-	-
Stage 1	-	-	-	-
Stage 2	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	0.2	18.1	12.3
HCM LOS			C	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	362	*1070	-	-	*952	-	-	293	715
HCM Lane V/C Ratio	0.242	0.027	-	-	0.021	-	-	0.019	0.019
HCM Control Delay (s)	18.1	8.5	-	-	8.9	-	-	17.5	10.1
HCM Lane LOS	C	A	-	-	A	-	-	C	B
HCM 95th %tile Q(veh)	0.9	0.1	-	-	0.1	-	-	0.1	0.1

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

2025 Total AM Scenario 1
8: AJ's Drwy & Lincoln Dr

Smoke Tree Resort
HCM 6th TWSC

Intersection												
Int Delay, s/veh	0.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔ ↗		↔ ↗		↔ ↗		↔ ↗		↔ ↗		↔ ↗	
Traffic Vol, veh/h	3	1040	53	43	895	8	6	0	41	4	1	12
Future Vol, veh/h	3	1040	53	43	895	8	6	0	41	4	1	12
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None									
Storage Length	25	-	-	25	-	-	-	-	-	0	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	-	1	-	-	1
Grade, %	-	0	-	-	0	-	-	-	0	-	-	0
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	3	1156	59	48	994	9	7	0	46	4	1	13

Major/Minor	Major1	Major2	Minor1	Minor2
Conflicting Flow All	1003	0	0	1215
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Critical Hdwy	4.14	-	-	4.14
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	2.22	-	-	2.22
Pot Cap-1 Maneuver	*1070	-	-	884
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Platoon blocked, %	1	-	-	1
Mov Cap-1 Maneuver	*1070	-	-	884
Mov Cap-2 Maneuver	-	-	-	-
Stage 1	-	-	-	-
Stage 2	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.4	11.8	12
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	580	*1070	-	-	884	-	-	283	715
HCM Lane V/C Ratio	0.09	0.003	-	-	0.054	-	-	0.016	0.019
HCM Control Delay (s)	11.8	8.4	-	-	9.3	-	-	17.9	10.1
HCM Lane LOS	B	A	-	-	A	-	-	C	B
HCM 95th %tile Q(veh)	0.3	0	-	-	0.2	-	-	0	0.1

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

2025 Total AM Scenario 1
9: Scottsdale Rd & Lincoln Dr

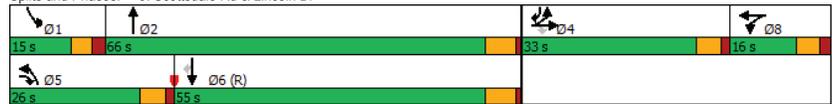
Smoke Tree Resort
Timings

	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	490	42	500	41	39	309	1429	55	1814	640
Future Volume (vph)	490	42	500	41	39	309	1429	55	1814	640
Turn Type	Split	NA	pm+ov	Split	NA	Prot	NA	Prot	NA	pm+ov
Protected Phases	4	4	5	8	8	5	2	1	6	4
Permitted Phases			4							6
Detector Phase	4	4	5	8	8	5	2	1	6	4
Switch Phase										
Minimum Initial (s)	10.0	10.0	7.0	10.0	10.0	7.0	10.0	5.0	10.0	10.0
Minimum Split (s)	15.5	15.5	12.5	15.6	15.6	12.5	27.7	10.3	30.7	15.5
Total Split (s)	33.0	33.0	26.0	16.0	16.0	26.0	66.0	15.0	55.0	33.0
Total Split (%)	25.4%	25.4%	20.0%	12.3%	12.3%	20.0%	50.8%	11.5%	42.3%	25.4%
Yellow Time (s)	4.0	4.0	4.0	3.6	3.6	4.0	4.7	3.3	4.7	4.0
All-Red Time (s)	1.5	1.5	1.5	2.0	2.0	1.5	1.0	2.0	1.0	1.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	5.5	5.5	5.6	5.6	5.5	5.7	5.3	5.7	5.5
Lead/Lag			Lead			Lead	Lag	Lead	Lag	
Lead-Lag Optimize?										
Recall Mode	None	None	None	Min	Min	None	None	C-Max	None	None
Act Effct Green (s)	26.2	26.2	43.9	10.1	10.1	17.7	65.5	8.2	53.8	85.7
Actuated g/C Ratio	0.20	0.20	0.34	0.08	0.08	0.14	0.50	0.06	0.41	0.66
v/c Ratio	0.87	0.87	0.94	0.34	0.33	0.74	0.64	0.55	0.96	0.63
Control Delay	58.3	58.1	49.3	63.9	29.8	63.5	26.2	76.8	49.8	10.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	58.3	58.1	49.3	63.9	29.8	63.5	26.2	76.8	49.8	10.9
LOS	E	E	D	E	C	E	C	E	D	B
Approach Delay		53.9			40.5		32.7		40.4	
Approach LOS		D			D		C		D	

Intersection Summary

Cycle Length: 130	
Actuated Cycle Length: 130	
Offset: 0 (0%), Referenced to phase 6:SBT, Start of Green	
Natural Cycle: 120	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.96	
Intersection Signal Delay: 40.4	Intersection LOS: D
Intersection Capacity Utilization 88.3%	ICU Level of Service E
Analysis Period (min) 15	

Splits and Phases: 9: Scottsdale Rd & Lincoln Dr



2025 Total AM Scenario 1
9: Scottsdale Rd & Lincoln Dr

Smoke Tree Resort
HCM 6th Signalized Intersection Summary

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (veh/h)	490	42	500	41	39	52	309	1429	43	55	1814	640
Future Volume (veh/h)	490	42	500	41	39	52	309	1429	43	55	1814	640
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No											
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	578	0	278	46	43	36	343	1588	31	61	2016	378
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	647	0	471	137	149	111	400	2333	46	78	1936	889
Arrive On Green	0.18	0.00	0.18	0.08	0.08	0.08	0.12	0.45	0.45	0.04	0.38	0.38
Sat Flow, veh/h	3563	0	1585	1781	1939	1448	3456	5156	101	1781	5106	1585
Grp Volume(v), veh/h	578	0	278	46	39	40	343	1048	571	61	2016	378
Grp Sat Flow(s),veh/h/ln	1781	0	1585	1781	1777	1610	1728	1702	1852	1781	1702	1585
Q Serve(g_s), s	20.6	0.0	19.4	3.2	2.7	3.1	12.7	31.7	31.7	4.4	49.3	17.9
Cycle Q Clear(g_c), s	20.6	0.0	19.4	3.2	2.7	3.1	12.7	31.7	31.7	4.4	49.3	17.9
Prop In Lane	1.00		1.00	1.00		0.90	1.00		0.05	1.00		1.00
Lane Grp Cap(c), veh/h	647	0	471	137	137	124	400	1540	838	78	1936	889
V/C Ratio(X)	0.89	0.00	0.59	0.34	0.29	0.32	0.86	0.68	0.68	0.78	1.04	0.43
Avail Cap(c_a), veh/h	754	0	519	143	142	129	545	1579	859	133	1936	889
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	52.0	0.0	38.9	56.9	56.6	56.8	56.4	28.2	28.2	61.5	40.3	16.5
Incr Delay (d2), s/veh	10.9	0.0	0.8	0.5	0.4	0.6	7.7	0.9	1.7	6.1	32.1	1.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	10.2	0.0	7.7	1.5	1.2	1.3	6.0	13.0	14.3	2.1	26.0	10.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	62.9	0.0	39.7	57.4	57.0	57.4	64.2	29.1	29.9	67.7	72.4	18.0
LnGrp LOS	E	A	D	E	E	E	E	C	C	E	F	B
Approach Vol, veh/h		856			125		1962		2455			
Approach Delay, s/veh		55.3			57.3		35.5		63.9			
Approach LOS		E			E		D		E			

Timer - Assigned Phs	1	2	4	5	6	8
Phs Duration (G+Y+Rc), s	11.0	64.5	29.1	20.5	55.0	15.6
Change Period (Y+Rc), s	* 5.3	5.7	5.5	5.5	5.7	5.6
Max Green Setting (Gmax), s	* 9.7	60.3	27.5	20.5	49.3	10.4
Max Q Clear Time (g_c+1), s	6.4	33.7	22.6	14.7	51.3	5.2
Green Ext Time (p_c), s	0.0	2.4	1.0	0.4	0.0	0.1

Intersection Summary

HCM 6th Ctrl Delay	52.1
HCM 6th LOS	D

Notes

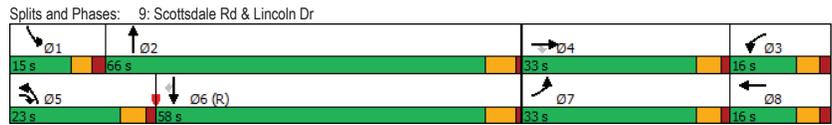
- User approved pedestrian interval to be less than phase max green.
- User approved volume balancing among the lanes for turning movement.
- * HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

2025 Total AM Scenario 1 Mitigated
9: Scottsdale Rd & Lincoln Dr

Smoke Tree Resort
Timings

	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	490	42	500	41	39	309	1429	55	1814	640
Future Volume (vph)	490	42	500	41	39	309	1429	55	1814	640
Turn Type	Prot	NA	pm+ov	Prot	NA	Prot	NA	Prot	NA	Perm
Protected Phases	7	4	5	3	8	5	2	1	6	
Permitted Phases			4							6
Detector Phase	7	4	5	3	8	5	2	1	6	6
Switch Phase										
Minimum Initial (s)	10.0	10.0	7.0	10.0	10.0	7.0	10.0	5.0	10.0	10.0
Minimum Split (s)	15.5	15.5	12.5	15.6	15.6	12.5	27.7	10.3	30.7	30.7
Total Split (s)	33.0	33.0	23.0	16.0	16.0	23.0	66.0	15.0	58.0	58.0
Total Split (%)	25.4%	25.4%	17.7%	12.3%	12.3%	17.7%	50.8%	11.5%	44.6%	44.6%
Yellow Time (s)	4.0	4.0	4.0	3.6	3.6	4.0	4.7	3.3	4.7	4.7
All-Red Time (s)	1.5	1.5	1.5	2.0	2.0	1.5	1.0	2.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	5.5	5.5	5.6	5.6	5.5	5.7	5.3	5.7	5.7
Lead/Lag	Lead	Lead	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?										
Recall Mode	None	None	None	Min	Min	None	None	C-Max	C-Max	
Act Effct Green (s)	25.2	25.2	44.5	10.1	12.4	17.0	64.2	8.2	53.1	53.1
Actuated g/C Ratio	0.19	0.19	0.34	0.08	0.10	0.13	0.49	0.06	0.41	0.41
v/c Ratio	0.90	0.90	0.93	0.34	0.28	0.76	0.65	0.55	0.97	0.76
Control Delay	62.4	62.1	46.7	63.9	28.8	66.3	26.9	76.8	52.0	15.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	62.4	62.1	46.7	63.9	28.8	66.3	26.9	76.8	52.0	15.6
LOS	E	E	D	E	C	E	C	E	D	B
Approach Delay		54.7			39.8		33.7		43.2	
Approach LOS		D			D		C		D	

Intersection Summary	
Cycle Length:	130
Actuated Cycle Length:	130
Offset:	0 (0%), Referenced to phase 6:SBT, Start of Green
Natural Cycle:	120
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.97
Intersection Signal Delay:	42.2
Intersection Capacity Utilization:	88.3%
ICU Level of Service:	E
Analysis Period (min):	15



2025 Total AM Scenario 1 Mitigated
9: Scottsdale Rd & Lincoln Dr

Smoke Tree Resort
HCM 6th Signalized Intersection Summary

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (veh/h)	490	42	500	41	39	52	309	1429	43	55	1814	640
Future Volume (veh/h)	490	42	500	41	39	52	309	1429	43	55	1814	640
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No											
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	578	0	278	46	43	36	343	1588	31	61	2016	355
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	639	0	362	254	149	111	396	2447	48	78	2054	638
Arrive On Green	0.18	0.00	0.11	0.14	0.08	0.08	0.11	0.47	0.47	0.04	0.40	0.40
Sat Flow, veh/h	3563	0	1585	1781	1939	1448	3456	5156	101	1781	5106	1585
Grp Volume(v), veh/h	578	0	278	46	39	40	343	1048	571	61	2016	355
Grp Sat Flow(s), veh/h/ln	1781	0	1585	1781	1777	1610	1728	1702	1852	1781	1702	1585
Q Serve(g_s), s	20.7	0.0	12.3	3.0	2.7	3.1	12.7	30.4	30.4	4.4	50.7	22.4
Cycle Q Clear(g_c), s	20.7	0.0	12.3	3.0	2.7	3.1	12.7	30.4	30.4	4.4	50.7	22.4
Prop In Lane	1.00		1.00	1.00		0.90	1.00		0.05	1.00		1.00
Lane Grp Cap(c), veh/h	639	0	362	254	137	124	396	1615	879	78	2054	638
V/C Ratio(X)	0.90	0.00	0.77	0.18	0.29	0.32	0.87	0.65	0.65	0.78	0.98	0.56
Avail Cap(c_a), veh/h	754	0	517	254	142	129	465	1615	879	133	2054	638
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	52.3	0.0	18.4	49.0	56.6	56.8	25.9	25.9	61.5	38.4	29.9	29.9
Incr Delay (d2), s/veh	12.0	0.0	2.4	0.1	0.4	0.6	12.6	0.7	1.3	6.1	15.9	3.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	10.3	0.0	4.7	1.3	1.2	1.3	6.2	12.4	13.6	2.1	23.8	9.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	64.2	0.0	20.8	49.2	57.0	57.4	69.1	26.7	27.3	67.7	54.3	33.4
LnGrp LOS	E	A	C	D	E	E	E	C	C	E	D	C
Approach Vol, veh/h		856			125		1962		2432			
Approach Delay, s/veh		50.1			54.2		34.3		51.6			
Approach LOS		D			D		C		D			

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	11.0	67.4	24.2	20.2	20.4	58.0	28.8	15.6
Change Period (Y+Rc), s	* 5.3	5.7	5.6	5.5	5.5	5.7	5.5	5.6
Max Green Setting (Gmax), s	* 9.7	60.3	10.4	27.5	17.5	52.3	27.5	10.4
Max Q Clear Time (g_c+1), s	6.4	32.4	5.0	14.3	14.7	52.7	22.7	5.1
Green Ext Time (p_c), s	0.0	2.4	0.0	0.4	0.2	0.0	0.6	0.1

Intersection Summary	
HCM 6th Ctrl Delay	45.1
HCM 6th LOS	D

Notes
 User approved pedestrian interval to be less than phase max green.
 User approved volume balancing among the lanes for turning movement.
 * HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

2025 Total PM Scenario 1
1: Mockingbird Ln & Lincoln Drive

Smoke Tree Resort
Timings

	↖	→	↘	↙	↖	↗	↘	↙
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations	↖	↖↗	↖	↖↗	↖	↖	↖	↖
Traffic Volume (vph)	267	946	23	999	8	68	67	52
Future Volume (vph)	267	946	23	999	8	68	67	52
Turn Type	pm+pt	NA	Perm	NA	Perm	NA	pm+pt	NA
Protected Phases	1	6		2		4	3	8
Permitted Phases	6		2		4		8	
Detector Phase	1	6	2	2	4	4	3	8
Switch Phase								
Minimum Initial (s)	4.0	15.0	15.0	15.0	10.0	10.0	4.0	10.0
Minimum Split (s)	8.0	27.0	27.0	27.0	33.5	33.5	8.0	33.5
Total Split (s)	31.0	88.0	57.0	57.0	34.0	34.0	8.0	42.0
Total Split (%)	23.8%	67.7%	43.8%	43.8%	26.2%	26.2%	6.2%	32.3%
Yellow Time (s)	3.0	4.5	4.5	4.5	4.0	4.0	3.0	4.0
All-Red Time (s)	1.0	1.5	1.5	1.5	2.5	2.5	1.0	2.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	6.0	6.0	6.0	6.5	6.5	4.0	6.5
Lead/Lag	Lead		Lag	Lag	Lag	Lag	Lead	
Lead-Lag Optimize?	Yes		Yes	Yes	Yes	Yes	Yes	
Recall Mode	None	C-Max	C-Max	C-Max	None	None	None	None
Act Effct Green (s)	100.7	98.7	75.7	75.7	12.4	12.4	21.3	18.8
Actuated g/C Ratio	0.77	0.76	0.58	0.58	0.10	0.10	0.16	0.14
v/c Ratio	0.67	0.41	0.09	0.58	0.12	0.54	0.41	0.72
Control Delay	17.7	6.4	32.5	40.3	55.8	60.8	52.8	37.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	17.7	6.4	32.5	40.3	55.8	60.8	52.8	37.5
LOS	B	A	C	D	E	E	D	D
Approach Delay	8.8		40.1		60.4		41.0	
Approach LOS	A		D		E		D	

Intersection Summary

Cycle Length: 130	
Actuated Cycle Length: 130	
Offset: 0 (0%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green	
Natural Cycle: 90	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.72	
Intersection Signal Delay: 26.6	Intersection LOS: C
Intersection Capacity Utilization 71.4%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 1: Mockingbird Ln & Lincoln Drive



2025 Total PM Scenario 1
1: Mockingbird Ln & Lincoln Drive

Smoke Tree Resort
HCM 6th Signalized Intersection Summary

	↖	→	↘	↙	↖	↗	↘	↙	↖	↗	↘	↙
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↖↗		↖	↖↗		↖	↖		↖	↖	↖
Traffic Volume (veh/h)	267	946	32	23	999	65	8	68	19	67	52	169
Future Volume (veh/h)	267	946	32	23	999	65	8	68	19	67	52	169
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No		No		No		No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	297	1051	25	26	1110	50	9	76	12	74	58	132
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	504	2715	65	403	2296	103	88	121	19	150	70	160
Arrive On Green	0.07	0.77	0.77	1.00	1.00	1.00	0.08	0.08	0.08	0.03	0.14	0.14
Sat Flow, veh/h	1781	3548	84	524	3463	156	1193	1577	249	1781	507	1155
Grp Volume(v), veh/h	297	526	550	26	569	591	9	0	88	74	0	190
Grp Sat Flow(s),veh/h/ln	1781	1777	1855	524	1777	1842	1193	0	1826	1781	0	1662
Q Serve(g_s), s	6.5	12.8	12.8	0.0	0.0	0.0	1.0	0.0	6.1	4.0	0.0	14.5
Cycle Q Clear(g_c), s	6.5	12.8	12.8	0.0	0.0	0.0	7.4	0.0	6.1	4.0	0.0	14.5
Prop In Lane	1.00		0.05	1.00		0.08	1.00		0.14	1.00		0.69
Lane Grp Cap(c), veh/h	504	1360	1420	403	1178	1221	88	0	140	150	0	230
V/C Ratio(X)	0.59	0.39	0.39	0.06	0.48	0.48	0.10	0.00	0.63	0.49	0.00	0.83
Avail Cap(c_a), veh/h	746	1360	1420	403	1178	1221	249	0	386	150	0	454
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.67	0.67	0.67	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	4.9	5.1	5.1	0.0	0.0	0.0	62.0	0.0	58.2	53.9	0.0	54.5
Incr Delay (d2), s/veh	1.1	0.8	0.8	0.2	1.0	0.9	0.5	0.0	4.5	2.5	0.0	7.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.3	4.5	4.7	0.0	0.3	0.3	0.3	0.0	3.0	0.5	0.0	6.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	6.0	5.9	5.9	0.2	1.0	0.9	62.5	0.0	62.7	56.4	0.0	61.8
LnGrp LOS	A	A	A	A	A	A	E	A	E	E	A	E
Approach Vol, veh/h	1373		1186				97		264			
Approach Delay, s/veh	5.9		0.9				62.7		60.3			
Approach LOS	A		A				E		E			
Timer - Assigned Phs	1	2	3	4		6		8				
Phs Duration (G+Y+Rc), s	13.3	92.2	8.0	16.5		105.5		24.5				
Change Period (Y+Rc), s	4.0	6.0	4.0	6.5		6.0		6.5				
Max Green Setting (Gmax), s	27.0	51.0	4.0	27.5		82.0		35.5				
Max Q Clear Time (g_c+1), s	8.5	2.0	6.0	9.4		14.8		16.5				
Green Ext Time (p_c), s	0.8	11.0	0.0	0.4		9.4		1.0				

Intersection Summary

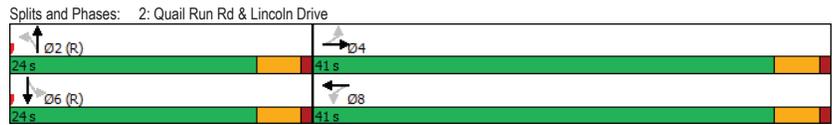
HCM 6th Ctrl Delay	10.7
HCM 6th LOS	B

2025 Total PM Scenario 1
2: Quail Run Rd & Lincoln Drive

Smoke Tree Resort
Timings

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations	↔	↕	↔	↕	↔	↕	↔	↕
Traffic Volume (vph)	85	958	12	985	7	0	14	0
Future Volume (vph)	85	958	12	985	7	0	14	0
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		4		8		2		6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	2	2	6	6
Switch Phase								
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5
Total Split (s)	41.0	41.0	41.0	41.0	24.0	24.0	24.0	24.0
Total Split (%)	63.1%	63.1%	63.1%	63.1%	36.9%	36.9%	36.9%	36.9%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	C-Max	C-Max	C-Max	C-Max
Act Effct Green (s)	30.3	30.3	30.3	30.3	25.7	25.7	25.7	25.7
Actuated g/C Ratio	0.47	0.47	0.47	0.47	0.40	0.40	0.40	0.40
v/c Ratio	0.72	0.65	0.09	0.68	0.02	0.02	0.17	0.00
Control Delay	50.6	18.2	9.3	17.5	4.1	4.1	7.5	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	50.6	18.2	9.3	17.5	4.1	4.1	7.5	0.0
LOS	D	B	A	B	A	A	A	A
Approach Delay		20.8		17.4		4.1		7.5
Approach LOS		C		B		A		A

Intersection Summary	
Cycle Length:	65
Actuated Cycle Length:	65
Offset:	0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle:	60
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.72
Intersection Signal Delay:	18.5
Intersection Capacity Utilization:	50.4%
ICU Level of Service:	A
Analysis Period (min):	15



2025 Total PM Scenario 1
2: Quail Run Rd & Lincoln Drive

Smoke Tree Resort
HCM 6th Signalized Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↕		↔	↕		↔	↕		↔	↕	
Traffic Volume (veh/h)	85	958	8	12	985	25	7	0	4	14	0	93
Future Volume (veh/h)	85	958	8	12	985	25	7	0	4	14	0	93
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No								
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	94	1064	9	13	1094	28	8	0	4	16	0	103
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	246	1688	14	332	1655	42	449	18	188	110	36	541
Arrive On Green	0.93	0.93	0.93	0.62	0.62	0.62	0.39	0.00	0.39	0.39	0.00	0.39
Sat Flow, veh/h	502	3611	31	526	3540	91	906	46	476	121	92	1371
Grp Volume(v), veh/h	94	524	549	13	549	573	12	0	0	119	0	0
Grp Sat Flow(s),veh/h/ln	502	1777	1865	526	1777	1854	1428	0	0	1584	0	0
Q Serve(g_s), s	9.0	3.0	3.0	0.7	12.9	12.9	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	21.9	3.0	3.0	3.8	12.9	12.9	0.3	0.0	0.0	3.1	0.0	0.0
Prop In Lane	1.00		0.02	1.00		0.05	0.67		0.33	0.13		0.87
Lane Grp Cap(c), veh/h	246	830	872	332	830	866	655	0	0	687	0	0
V/C Ratio(X)	0.38	0.63	0.63	0.04	0.66	0.66	0.02	0.00	0.00	0.17	0.00	0.00
Avail Cap(c_a), veh/h	293	998	1047	381	998	1041	655	0	0	687	0	0
HCM Platoon Ratio	2.00	2.00	2.00	1.33	1.33	1.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.92	0.92	0.92	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	6.6	1.2	1.2	8.0	9.0	9.0	12.0	0.0	0.0	12.9	0.0	0.0
Incr Delay (d2), s/veh	0.9	0.9	0.8	0.0	1.2	1.2	0.1	0.0	0.0	0.5	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	0.6	0.7	0.1	3.7	3.8	0.1	0.0	0.0	1.1	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	7.5	2.1	2.1	8.0	10.2	10.2	12.1	0.0	0.0	13.4	0.0	0.0
LnGrp LOS	A	A	A	A	B	B	B	A	A	B	A	A
Approach Vol, veh/h		1167			1135			12				119
Approach Delay, s/veh		2.5			10.2			12.1				13.4
Approach LOS		A			B			B				B
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		30.1		34.9		30.1		34.9				
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5				
Max Green Setting (Gmax), s		19.5		36.5		19.5		36.5				
Max Q Clear Time (g_c+1), s		2.3		23.9		5.1		14.9				
Green Ext Time (p_c), s		0.0		6.5		0.5		8.1				

Intersection Summary	
HCM 6th Ctrl Delay	6.7
HCM 6th LOS	A

2025 Total PM Scenario 1
3: Access A & Lincoln Dr

Smoke Tree Resort
HCM 6th TWSC

Intersection						
Int Delay, s/veh	0.2					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↑	↑↑	↑	
Traffic Vol, veh/h	970	6	12	1016	5	19
Future Vol, veh/h	970	6	12	1016	5	19
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	25	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1078	7	13	1129	6	21

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	1085	0	1673
Stage 1	-	-	-	-	1082
Stage 2	-	-	-	-	591
Critical Hdwy	-	-	4.14	-	6.84
Critical Hdwy Stg 1	-	-	-	-	5.84
Critical Hdwy Stg 2	-	-	-	-	5.84
Follow-up Hdwy	-	-	2.22	-	3.52
Pot Cap-1 Maneuver	-	-	*1024	-	*87
Stage 1	-	-	-	-	*646
Stage 2	-	-	-	-	*630
Platoon blocked, %	-	-	1	-	1
Mov Cap-1 Maneuver	-	-	*1024	-	*86
Mov Cap-2 Maneuver	-	-	-	-	*325
Stage 1	-	-	-	-	*637
Stage 2	-	-	-	-	*630

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	11.8
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	556	-	-	*1024	-
HCM Lane V/C Ratio	0.048	-	-	0.013	-
HCM Control Delay (s)	11.8	-	-	8.6	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0.2	-	-	0	-

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

2025 Total PM Scenario 1
4: Quail Run Rd & Access B

Smoke Tree Resort
HCM 6th TWSC

Intersection						
Int Delay, s/veh	6.8					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↑		↑			↑
Traffic Vol, veh/h	0	8	2	0	19	1
Future Vol, veh/h	0	8	2	0	19	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	9	2	0	21	1

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	45	2	0	0	2
Stage 1	2	-	-	-	-
Stage 2	43	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12
Critical Hdwy Stg 1	5.42	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218
Pot Cap-1 Maneuver	965	1082	-	-	1620
Stage 1	1021	-	-	-	-
Stage 2	979	-	-	-	-
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	952	1082	-	-	1620
Mov Cap-2 Maneuver	952	-	-	-	-
Stage 1	1008	-	-	-	-
Stage 2	979	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.4	0	6.9
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	1082	1620
HCM Lane V/C Ratio	-	-	0.008	0.013
HCM Control Delay (s)	-	-	8.4	7.3
HCM Lane LOS	-	-	A	A
HCM 95th %tile Q(veh)	-	-	0	0

2025 Total PM Scenario 1
5: Lincoln Medical West & Lincoln Dr

Smoke Tree Resort
HCM 6th TWSC

Intersection						
Int Delay, s/veh	0					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↑	↑↑	↑	
Traffic Vol, veh/h	990	0	0	1028	2	0
Future Vol, veh/h	990	0	0	1028	2	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	25	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1100	0	0	1142	2	0

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	1100	0	1671
Stage 1	-	-	-	-	1100
Stage 2	-	-	-	-	571
Critical Hdwy	-	-	4.14	-	6.84
Critical Hdwy Stg 1	-	-	-	-	5.84
Critical Hdwy Stg 2	-	-	-	-	5.84
Follow-up Hdwy	-	-	2.22	-	3.52
Pot Cap-1 Maneuver	-	-	*1024	-	*87
Stage 1	-	-	-	-	*646
Stage 2	-	-	-	-	*630
Platoon blocked, %	-	-	1	-	1
Mov Cap-1 Maneuver	-	-	*1024	-	*87
Mov Cap-2 Maneuver	-	-	-	-	*331
Stage 1	-	-	-	-	*646
Stage 2	-	-	-	-	*630

Approach	EB	WB	NB
HCM Control Delay, s	0	0	16
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	331	-	-	*1024	-
HCM Lane V/C Ratio	0.007	-	-	-	-
HCM Control Delay (s)	16	-	-	0	-
HCM Lane LOS	C	-	-	A	-
HCM 95th %tile Q(veh)	0	-	-	0	-

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

2025 Total PM Scenario 1
6: Lincoln Medical East & Lincoln Dr

Smoke Tree Resort
HCM 6th TWSC

Intersection						
Int Delay, s/veh	0					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↑	↑↑	↑	
Traffic Vol, veh/h	990	0	0	1027	2	3
Future Vol, veh/h	990	0	0	1027	2	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	25	-	0	-
Veh in Median Storage, #	0	-	-	0	1	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1100	0	0	1141	2	3

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	1100	0	1671
Stage 1	-	-	-	-	1100
Stage 2	-	-	-	-	571
Critical Hdwy	-	-	4.14	-	6.84
Critical Hdwy Stg 1	-	-	-	-	5.84
Critical Hdwy Stg 2	-	-	-	-	5.84
Follow-up Hdwy	-	-	2.22	-	3.52
Pot Cap-1 Maneuver	-	-	*1024	-	*87
Stage 1	-	-	-	-	*646
Stage 2	-	-	-	-	*630
Platoon blocked, %	-	-	1	-	1
Mov Cap-1 Maneuver	-	-	*1024	-	*87
Mov Cap-2 Maneuver	-	-	-	-	*331
Stage 1	-	-	-	-	*646
Stage 2	-	-	-	-	*630

Approach	EB	WB	NB
HCM Control Delay, s	0	0	12.6
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	479	-	-	*1024	-
HCM Lane V/C Ratio	0.012	-	-	-	-
HCM Control Delay (s)	12.6	-	-	0	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0	-	-	0	-

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

2025 Total PM Scenario 1
7: Apartment Drwy & Lincoln Dr

Smoke Tree Resort
HCM 6th TWSC

Intersection												
Int Delay, s/veh	1.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔ ↗		↔ ↗		↔ ↗		↔ ↗		↔ ↗		↔ ↗	
Traffic Vol, veh/h	7	926	41	6	923	9	66	3	47	7	0	34
Future Vol, veh/h	7	926	41	6	923	9	66	3	47	7	0	34
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None									
Storage Length	25	-	-	25	-	-	-	-	-	0	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	8	1029	46	7	1026	10	73	3	52	8	0	38

Major/Minor	Major1	Major2	Minor1	Minor2
Conflicting Flow All	1036	0	0	1075
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Critical Hdwy	4.14	-	-	4.14
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	2.22	-	-	2.22
Pot Cap-1 Maneuver	*1034	-	-	963
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Platoon blocked, %	1	-	-	1
Mov Cap-1 Maneuver	*1034	-	-	963
Mov Cap-2 Maneuver	-	-	-	-
Stage 1	-	-	-	-
Stage 2	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0.1	18.7	11.5
HCM LOS			C	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	391	*1034	-	-	963	-	-	321	691
HCM Lane V/C Ratio	0.33	0.008	-	-	0.007	-	-	0.024	0.055
HCM Control Delay (s)	18.7	8.5	-	-	8.8	-	-	16.5	10.5
HCM Lane LOS	C	A	-	-	A	-	-	C	B
HCM 95th %tile Q(veh)	1.4	0	-	-	0	-	-	0.1	0.2

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

2025 Total PM Scenario 1
8: AJ's Drwy & Lincoln Dr

Smoke Tree Resort
HCM 6th TWSC

Intersection												
Int Delay, s/veh	1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔ ↗		↔ ↗		↔ ↗		↔ ↗		↔ ↗		↔ ↗	
Traffic Vol, veh/h	11	919	53	61	921	8	14	1	89	4	0	7
Future Vol, veh/h	11	919	53	61	921	8	14	1	89	4	0	7
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None									
Storage Length	25	-	-	25	-	-	-	-	-	0	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	12	1021	59	68	1023	9	16	1	99	4	0	8

Major/Minor	Major1	Major2	Minor1	Minor2
Conflicting Flow All	1032	0	0	1080
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Critical Hdwy	4.14	-	-	4.14
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	2.22	-	-	2.22
Pot Cap-1 Maneuver	1053	-	-	957
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Platoon blocked, %	1	-	-	1
Mov Cap-1 Maneuver	1053	-	-	957
Mov Cap-2 Maneuver	-	-	-	-
Stage 1	-	-	-	-
Stage 2	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0.6	12.5	13.5
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	597	1053	-	-	957	-	-	254	715
HCM Lane V/C Ratio	0.194	0.012	-	-	0.071	-	-	0.017	0.011
HCM Control Delay (s)	12.5	8.5	-	-	9	-	-	19.4	10.1
HCM Lane LOS	B	A	-	-	A	-	-	C	B
HCM 95th %tile Q(veh)	0.7	0	-	-	0.2	-	-	0.1	0

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

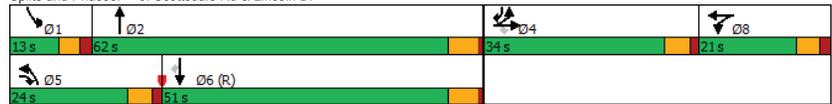
2025 Total PM Scenario 1
9: Scottsdale Rd & Lincoln Dr

Smoke Tree Resort
Timings

	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	535	61	452	61	68	446	1762	66	1702	529
Future Volume (vph)	535	61	452	61	68	446	1762	66	1702	529
Turn Type	Split	NA	pm+ov	Split	NA	Prot	NA	Prot	NA	pm+ov
Protected Phases	4	4	5	8	8	5	2	1	6	4
Permitted Phases			4							6
Detector Phase	4	4	5	8	8	5	2	1	6	4
Switch Phase										
Minimum Initial (s)	13.0	13.0	7.0	13.0	13.0	7.0	10.0	5.0	10.0	13.0
Minimum Split (s)	18.5	18.5	13.0	18.6	18.6	13.0	16.7	11.0	16.0	18.5
Total Split (s)	34.0	34.0	24.0	21.0	21.0	24.0	62.0	13.0	51.0	34.0
Total Split (%)	26.2%	26.2%	18.5%	16.2%	16.2%	18.5%	47.7%	10.0%	39.2%	26.2%
Yellow Time (s)	4.0	4.0	4.0	3.6	3.6	4.0	4.7	3.3	4.7	4.0
All-Red Time (s)	1.5	1.5	1.5	2.0	2.0	1.5	1.0	2.0	1.0	1.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	5.5	5.5	5.6	5.6	5.5	5.7	5.3	5.7	5.5
Lead/Lag			Lead			Lead	Lag	Lead	Lag	
Lead-Lag Optimize?										
Recall Mode	None	C-Max	None							
Act Effct Green (s)	27.7	27.7	49.2	13.1	13.1	21.5	58.2	8.9	45.4	78.8
Actuated g/C Ratio	0.21	0.21	0.38	0.10	0.10	0.17	0.45	0.07	0.35	0.61
v/c Ratio	0.91	0.92	0.74	0.38	0.40	0.87	0.89	0.61	1.07	0.55
Control Delay	64.7	66.3	21.7	61.4	29.0	70.4	39.2	79.5	81.9	9.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	64.7	66.3	21.7	61.4	29.0	70.4	39.2	79.5	81.9	9.8
LOS	E	E	C	E	C	E	D	E	F	A
Approach Delay		46.6			38.6		45.3		65.2	
Approach LOS		D			D		D		E	

Intersection Summary	
Cycle Length:	130
Actuated Cycle Length:	130
Offset:	0 (0%), Referenced to phase 6:SBT, Start of Green
Natural Cycle:	120
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	1.07
Intersection Signal Delay:	53.2
Intersection Capacity Utilization:	91.4%
ICU Level of Service F	
Analysis Period (min)	15

Splits and Phases: 9: Scottsdale Rd & Lincoln Dr



2025 Total PM Scenario 1
9: Scottsdale Rd & Lincoln Dr

Smoke Tree Resort
HCM 6th Signalized Intersection Summary

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (veh/h)	535	61	452	61	68	78	446	1762	50	66	1702	529
Future Volume (veh/h)	535	61	452	61	68	78	446	1762	50	66	1702	529
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No		No		No		No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	643	0	280	68	76	65	496	1958	39	73	1891	321
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	708	0	540	178	191	147	492	2270	45	92	1779	867
Arrive On Green	0.20	0.00	0.20	0.10	0.10	0.10	0.14	0.44	0.44	0.05	0.35	0.35
Sat Flow, veh/h	3563	0	1585	1781	1908	1474	3456	5153	103	1781	5106	1585
Grp Volume(v), veh/h	643	0	280	68	70	71	496	1293	704	73	1891	321
Grp Sat Flow(s),veh/h/ln	1781	0	1585	1781	1777	1605	1728	1702	1852	1781	1702	1585
Q Serve(g_s), s	22.9	0.0	18.4	4.6	4.8	5.4	18.5	44.5	44.6	5.3	45.3	15.0
Cycle Q Clear(g_c), s	22.9	0.0	18.4	4.6	4.8	5.4	18.5	44.5	44.6	5.3	45.3	15.0
Prop In Lane	1.00		1.00	1.00		0.92	1.00		0.06	1.00		1.00
Lane Grp Cap(c), veh/h	708	0	540	178	178	160	492	1499	816	92	1779	867
V/C Ratio(X)	0.91	0.00	0.52	0.38	0.40	0.44	1.01	0.86	0.86	0.79	1.06	0.37
Avail Cap(c_a), veh/h	781	0	573	211	210	190	492	1499	816	106	1779	867
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	50.9	0.0	34.3	54.7	54.8	55.1	55.7	32.8	32.8	60.9	42.3	16.7
Incr Delay (d2), s/veh	13.0	0.0	0.3	0.5	0.5	0.7	42.7	5.2	9.1	25.0	40.3	1.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	11.5	0.0	7.2	2.1	2.2	2.2	11.0	19.1	21.7	3.0	25.4	8.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	63.9	0.0	34.6	55.2	55.4	55.8	98.5	38.0	42.0	85.9	82.6	17.9
LnGrp LOS	E	A	C	E	E	E	F	D	D	F	F	B
Approach Vol, veh/h		923			209		2493			2285		
Approach Delay, s/veh		55.0			55.5		51.2			73.6		
Approach LOS		E			E		D			E		
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	12.0	63.0		31.3	24.0	51.0		18.6				
Change Period (Y+Rc), s	* 5.3	5.7		5.5	5.5	5.7		5.6				
Max Green Setting (Gmax), s	* 7.7	56.3		28.5	18.5	45.3		15.4				
Max Q Clear Time (g_c+1), s	7.3	46.6		24.9	20.5	47.3		7.4				
Green Ext Time (p_c), s	0.0	2.7		0.9	0.0	0.0		0.4				

Intersection Summary	
HCM 6th Ctrl Delay	60.6
HCM 6th LOS	E

Notes
User approved pedestrian interval to be less than phase max green.
User approved volume balancing among the lanes for turning movement.
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

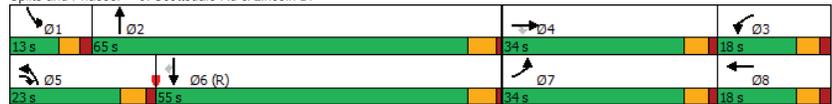
2025 Total PM Scenario 1 Mitigated
9: Scottsdale Rd & Lincoln Dr

Smoke Tree Resort
Timings

	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	535	61	452	61	68	446	1762	66	1702	529
Future Volume (vph)	535	61	452	61	68	446	1762	66	1702	529
Turn Type	Prot	NA	pm+ov	Prot	NA	Prot	NA	Prot	NA	Perm
Protected Phases	7	4	5	3	8	5	2	1	6	
Permitted Phases			4							6
Detector Phase	7	4	5	3	8	5	2	1	6	6
Switch Phase										
Minimum Initial (s)	13.0	13.0	7.0	12.4	12.4	7.0	10.0	5.0	13.0	13.0
Minimum Split (s)	18.5	18.5	13.0	18.0	18.0	13.0	16.7	11.0	18.7	18.7
Total Split (%)	26.2%	26.2%	17.7%	13.8%	13.8%	17.7%	50.0%	10.0%	42.3%	42.3%
Yellow Time (s)	4.0	4.0	4.0	3.6	3.6	4.0	4.7	3.3	4.7	4.7
All-Red Time (s)	1.5	1.5	1.5	2.0	2.0	1.5	1.0	2.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	5.5	5.5	5.6	5.6	5.5	5.7	5.3	5.7	5.7
Lead/Lag	Lead	Lead	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?										
Recall Mode	None	C-Max	C-Max							
Act Effct Green (s)	27.2	27.2	50.7	12.4	12.5	18.7	60.8	7.4	49.3	49.3
Actuated g/C Ratio	0.21	0.21	0.39	0.10	0.10	0.14	0.47	0.06	0.38	0.38
v/c Ratio	0.93	0.94	0.75	0.40	0.42	1.00	0.85	0.74	0.98	0.69
Control Delay	68.2	69.9	27.8	63.1	29.6	97.0	35.2	98.4	56.4	13.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	68.2	69.9	27.8	63.1	29.6	97.0	35.2	98.4	56.4	13.8
LOS	E	E	C	E	C	F	D	F	E	B
Approach Delay		51.2			39.5		47.4		47.8	
Approach LOS		D			D		D		D	

Intersection Summary	
Cycle Length:	130
Actuated Cycle Length:	130
Offset:	0 (0%), Referenced to phase 6:SBT, Start of Green
Natural Cycle:	120
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	1.00
Intersection Signal Delay:	48.0
Intersection Capacity Utilization:	90.9%
ICU Level of Service:	E
Analysis Period (min):	15

Splits and Phases: 9: Scottsdale Rd & Lincoln Dr



2025 Total PM Scenario 1 Mitigated
9: Scottsdale Rd & Lincoln Dr

Smoke Tree Resort
HCM 6th Signalized Intersection Summary

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (veh/h)	535	61	452	61	68	78	446	1762	50	66	1702	529
Future Volume (veh/h)	535	61	452	61	68	78	446	1762	50	66	1702	529
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No		No		No		No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	643	0	280	68	76	65	496	1958	39	73	1891	299
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	701	0	387	324	181	140	465	2388	48	92	1936	601
Arrive On Green	0.20	0.00	0.11	0.18	0.09	0.09	0.13	0.46	0.46	0.05	0.38	0.38
Sat Flow, veh/h	3563	0	1585	1781	1908	1474	3456	5153	103	1781	5106	1585
Grp Volume(v), veh/h	643	0	280	68	70	71	496	1293	704	73	1891	299
Grp Sat Flow(s),veh/h/ln	1781	0	1585	1781	1777	1605	1728	1702	1852	1781	1702	1585
Q Serve(g_s), s	23.0	0.0	11.8	4.2	4.8	5.4	17.5	42.7	42.8	5.3	47.5	18.8
Cycle Q Clear(g_c), s	23.0	0.0	11.8	4.2	4.8	5.4	17.5	42.7	42.8	5.3	47.5	18.8
Prop In Lane	1.00		1.00	1.00		0.92	1.00		0.06	1.00		1.00
Lane Grp Cap(c), veh/h	701	0	387	324	168	152	465	1578	858	92	1936	601
V/C Ratio(X)	0.92	0.00	0.72	0.21	0.42	0.47	1.07	0.82	0.82	0.79	0.98	0.50
Avail Cap(c_a), veh/h	781	0	561	324	169	153	465	1578	858	106	1936	601
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	51.2	0.0	18.1	45.2	55.5	55.7	56.2	30.2	30.2	60.9	39.8	30.9
Incr Delay (d2), s/veh	13.9	0.0	1.0	0.1	0.6	0.8	60.5	3.3	6.0	25.0	15.6	2.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	11.6	0.0	4.3	1.9	2.2	2.2	11.5	17.9	20.2	3.0	22.3	7.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	65.1	0.0	19.1	45.3	56.1	56.5	116.7	33.5	36.2	85.9	55.4	33.8
LnGrp LOS	E	A	B	D	E	E	F	C	D	F	E	C
Approach Vol, veh/h		923			209		2493			2263		
Approach Delay, s/veh		51.1			52.7		50.8			53.5		
Approach LOS		D			D		D			D		

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	12.0	66.0	29.3	19.7	23.0	55.0	31.1	17.9
Change Period (Y+Rc), s	* 5.3	5.7	5.6	5.5	5.5	5.7	5.5	5.6
Max Green Setting (Gmax), s	* 7.7	59.3	12.4	28.5	17.5	49.3	28.5	12.4
Max Q Clear Time (g_c+1), s	7.3	44.8	6.2	13.8	19.5	49.5	25.0	7.4
Green Ext Time (p_c), s	0.0	3.1	0.0	0.4	0.0	0.0	0.6	0.2

Intersection Summary	
HCM 6th Ctrl Delay	52.0
HCM 6th LOS	D

Notes
User approved pedestrian interval to be less than phase max green.
User approved volume balancing among the lanes for turning movement.
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

2025 Total AM Scenario 2
1: Mockingbird Ln & Lincoln Drive

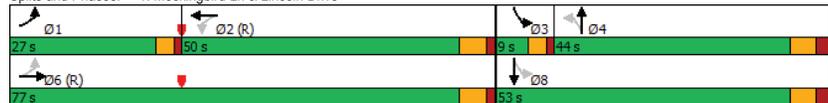
Smoke Tree Resort
Timings

	↖	→	↘	↙	↖	↗	↘	↙
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations	↖	↖↗	↖	↖↗	↖	↖	↖	↖
Traffic Volume (vph)	242	1036	24	963	6	37	81	99
Future Volume (vph)	242	1036	24	963	6	37	81	99
Turn Type	pm+pt	NA	Perm	NA	Perm	NA	pm+pt	NA
Protected Phases	1	6		2		4	3	8
Permitted Phases	6		2		4		8	
Detector Phase	1	6	2	2	4	4	3	8
Switch Phase								
Minimum Initial (s)	3.5	15.0	15.0	15.0	7.0	7.0	3.5	7.0
Minimum Split (s)	8.0	27.0	27.0	27.0	33.5	33.5	8.0	33.5
Total Split (s)	27.0	77.0	50.0	50.0	44.0	44.0	9.0	53.0
Total Split (%)	20.8%	59.2%	38.5%	38.5%	33.8%	33.8%	6.9%	40.8%
Yellow Time (s)	3.0	4.5	4.5	4.5	4.0	4.0	3.0	4.0
All-Red Time (s)	1.0	1.5	1.5	1.5	2.5	2.5	1.0	2.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	6.0	6.0	6.0	6.5	6.5	4.0	6.5
Lead/Lag	Lead		Lag	Lag	Lag	Lag	Lead	
Lead-Lag Optimize?	Yes		Yes	Yes	Yes	Yes	Yes	
Recall Mode	None	C-Max	C-Max	C-Max	None	None	None	None
Act Effct Green (s)	91.4	89.4	64.9	64.9	18.9	18.9	30.6	28.1
Actuated g/C Ratio	0.70	0.69	0.50	0.50	0.15	0.15	0.24	0.22
v/c Ratio	0.68	0.47	0.13	0.61	0.11	0.22	0.32	0.84
Control Delay	23.4	11.0	37.8	41.6	46.8	32.5	41.0	50.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	23.4	11.0	37.8	41.6	46.8	32.5	41.0	50.5
LOS	C	B	D	D	D	C	D	D
Approach Delay		13.3		41.5		33.9		48.7
Approach LOS		B		D		C		D

Intersection Summary

Cycle Length: 130	
Actuated Cycle Length: 130	
Offset: 0 (0%), Referenced to phase 2:WBT and 6:EBTL, Start of Green	
Natural Cycle: 90	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.84	
Intersection Signal Delay: 29.4	Intersection LOS: C
Intersection Capacity Utilization 75.8%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 1: Mockingbird Ln & Lincoln Drive



2025 Total AM Scenario 2
1: Mockingbird Ln & Lincoln Drive

Smoke Tree Resort
HCM 6th Signalized Intersection Summary

	↖	→	↘	↙	↖	↗	↘	↙	↖	↗	↘	↙
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↖↗		↖	↖↗		↖	↖		↖	↖	↖
Traffic Volume (veh/h)	242	1036	33	24	963	46	6	37	21	81	99	253
Future Volume (veh/h)	242	1036	33	24	963	46	6	37	21	81	99	253
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No								
Adj Sat Flow, veh/h/ln	1772	1969	1772	1772	1969	1772	1772	1969	1772	1772	1969	1772
Adj Flow Rate, veh/h	269	1151	26	27	1070	34	7	41	14	90	110	170
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	481	2698	61	325	2274	72	86	159	54	231	127	196
Arrive On Green	0.08	0.72	0.72	1.00	1.00	1.00	0.11	0.11	0.11	0.04	0.18	0.18
Sat Flow, veh/h	1688	3740	84	451	3700	118	1041	1403	479	1688	697	1078
Grp Volume(v), veh/h	269	576	601	27	541	563	7	0	55	90	0	280
Grp Sat Flow(s),veh/h/ln	1688	1870	1954	451	1870	1948	1041	0	1883	1688	0	1775
Q Serve(g_s), s	7.2	16.1	16.1	0.2	0.0	0.0	0.9	0.0	3.5	5.0	0.0	19.9
Cycle Q Clear(g_c), s	7.2	16.1	16.1	2.4	0.0	0.0	11.8	0.0	3.5	5.0	0.0	19.9
Prop In Lane	1.00		0.04	1.00		0.06	1.00		0.25	1.00		0.61
Lane Grp Cap(c), veh/h	481	1350	1410	325	1150	1197	86	0	213	231	0	324
V/C Ratio(X)	0.56	0.43	0.43	0.08	0.47	0.47	0.08	0.00	0.26	0.39	0.00	0.87
Avail Cap(c_a), veh/h	651	1350	1410	325	1150	1197	268	0	543	231	0	635
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.78	0.78	0.78	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	6.7	7.3	7.3	0.0	0.0	0.0	61.7	0.0	52.7	48.7	0.0	51.6
Incr Delay (d2), s/veh	1.0	1.0	0.9	0.4	1.1	1.0	0.4	0.0	0.6	1.1	0.0	6.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.6	6.3	6.6	0.0	0.3	0.3	0.2	0.0	1.7	0.5	0.0	9.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	7.7	8.3	8.2	0.4	1.1	1.0	62.1	0.0	53.3	49.8	0.0	58.5
LnGrp LOS	A	A	A	A	A	A	E	A	D	D	A	E
Approach Vol, veh/h		1446			1131			62				370
Approach Delay, s/veh		8.2			1.0			54.3				56.4
Approach LOS		A			A			D				E

Timer - Assigned Phs	1	2	3	4	6	8
Phs Duration (G+Y+Rc), s	13.9	85.9	9.0	21.2	99.8	30.2
Change Period (Y+Rc), s	4.0	6.0	4.0	6.5	6.0	6.5
Max Green Setting (Gmax), s	23.0	44.0	5.0	37.5	71.0	46.5
Max Q Clear Time (g_c+1), s	9.2	4.4	7.0	13.8	18.1	21.9
Green Ext Time (p_c), s	0.7	10.0	0.0	0.2	10.8	1.8

Intersection Summary

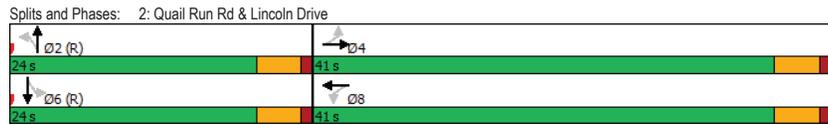
HCM 6th Ctrl Delay	12.4
HCM 6th LOS	B

2025 Total AM Scenario 2
2: Quail Run Rd & Lincoln Drive

Smoke Tree Resort
Timings

	↖	→	↘	↙	↖	↗	↘	↙
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations	↖	↖↗	↖	↖↗		↖	↖	↖↗
Traffic Volume (vph)	115	1088	6	925	3	0	26	0
Future Volume (vph)	115	1088	6	925	3	0	26	0
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		4		8		2		6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	2	2	6	6
Switch Phase								
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5
Total Split (s)	41.0	41.0	41.0	41.0	24.0	24.0	24.0	24.0
Total Split (%)	63.1%	63.1%	63.1%	63.1%	36.9%	36.9%	36.9%	36.9%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	C-Max	C-Max	C-Max	C-Max
Act Effct Green (s)	32.4	32.4	32.4	32.4	23.6	23.6	23.6	23.6
Actuated g/C Ratio	0.50	0.50	0.50	0.50	0.36	0.36	0.36	0.36
v/c Ratio	0.72	0.69	0.06	0.59	0.02	0.17	0.02	0.17
Control Delay	46.0	20.4	7.5	12.9	5.1	7.9	5.1	7.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	46.0	20.4	7.5	12.9	5.1	7.9	5.1	7.9
LOS	D	C	A	B	A	A	A	A
Approach Delay		22.9		12.8		5.1		7.9
Approach LOS		C		B		A		A

Intersection Summary	
Cycle Length:	65
Actuated Cycle Length:	65
Offset:	0 (0%), Referenced to phase 2:NBT and 6:SBTL, Start of Green
Natural Cycle:	60
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.72
Intersection Signal Delay:	18.0
Intersection Capacity Utilization:	53.7%
ICU Level of Service:	A
Analysis Period (min):	15



2025 Total AM Scenario 2
2: Quail Run Rd & Lincoln Drive

Smoke Tree Resort
HCM 6th Signalized Intersection Summary

	↖	→	↘	↙	↖	↗	↘	↙	↖	↗	↘	↙
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↖↗		↖	↖↗			↖		↖	↖	↖↗
Traffic Volume (veh/h)	115	1088	7	6	925	12	3	0	10	26	0	66
Future Volume (veh/h)	115	1088	7	6	925	12	3	0	10	26	0	66
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No											
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	128	1209	8	7	1028	13	3	0	11	29	0	73
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	291	1544	10	241	1533	19	173	38	530	227	36	483
Arrive On Green	0.85	0.85	0.85	0.85	0.85	0.85	0.43	0.00	0.43	0.43	0.00	0.43
Sat Flow, veh/h	542	3619	24	459	3594	45	244	88	1219	358	83	1110
Grp Volume(v), veh/h	128	594	623	7	508	533	14	0	102	0	0	0
Grp Sat Flow(s),veh/h/ln	542	1777	1866	459	1777	1862	1551	0	1551	0	0	0
Q Serve(g_s), s	9.8	9.6	9.6	0.4	6.4	6.4	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	15.9	9.6	9.6	9.7	6.4	6.4	0.3	0.0	2.4	0.0	0.0	0.0
Prop In Lane	1.00		0.01	1.00		0.02	0.21		0.79	0.28		0.72
Lane Grp Cap(c), veh/h	291	758	796	241	758	794	742	0	746	0	0	0
V/C Ratio(X)	0.44	0.78	0.78	0.03	0.67	0.67	0.02	0.00	0.14	0.00	0.00	0.00
Avail Cap(c_a), veh/h	364	998	1048	303	998	1046	742	0	746	0	0	0
HCM Platoon Ratio	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.89	0.89	0.89	1.00	1.00	1.00	1.00	0.00	1.00	0.00	0.00	0.00
Uniform Delay (d), s/veh	5.8	3.4	3.4	5.5	3.2	3.2	10.5	0.0	11.1	0.0	0.0	0.0
Incr Delay (d2), s/veh	0.9	2.7	2.6	0.0	1.1	1.1	0.0	0.0	0.4	0.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	1.8	1.9	0.0	1.3	1.3	0.1	0.0	0.9	0.0	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	6.8	6.1	6.0	5.6	4.3	4.3	10.5	0.0	11.4	0.0	0.0	0.0
LnGrp LOS	A	A	A	A	A	A	B	A	A	B	A	A
Approach Vol, veh/h		1345			1048			14				102
Approach Delay, s/veh		6.2			4.3			10.5				11.4
Approach LOS		A			A			B				B
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		32.9		32.1		32.9		32.1				
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5				
Max Green Setting (Gmax), s		19.5		36.5		19.5		36.5				
Max Q Clear Time (g_c+1), s		2.3		17.9		4.4		11.7				
Green Ext Time (p_c), s		0.0		9.6		0.4		7.7				

Intersection Summary	
HCM 6th Ctrl Delay	5.6
HCM 6th LOS	A

2025 Total AM Scenario 2
3: Smoke Tree Access B & Lincoln Dr

Smoke Tree Resort
HCM 6th TWSC

Intersection						
Int Delay, s/veh	0.2					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↑	↑↑	↑	
Traffic Vol, veh/h	1115	12	20	935	4	16
Future Vol, veh/h	1115	12	20	935	4	16
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	25	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1239	13	22	1039	4	18

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	1252	0	1810
Stage 1	-	-	-	-	1246
Stage 2	-	-	-	-	564
Critical Hdwy	-	-	4.14	-	6.84
Critical Hdwy Stg 1	-	-	-	-	5.84
Critical Hdwy Stg 2	-	-	-	-	5.84
Follow-up Hdwy	-	-	2.22	-	3.52
Pot Cap-1 Maneuver	-	-	933	-	*70
Stage 1	-	-	-	-	*591
Stage 2	-	-	-	-	*652
Platoon blocked, %	-	-	1	-	1
Mov Cap-1 Maneuver	-	-	933	-	*68
Mov Cap-2 Maneuver	-	-	-	-	*306
Stage 1	-	-	-	-	*577
Stage 2	-	-	-	-	*652

Approach	EB	WB	NB
HCM Control Delay, s	0	0.2	12.2
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	523	-	-	933	-
HCM Lane V/C Ratio	0.042	-	-	0.024	-
HCM Control Delay (s)	12.2	-	-	9	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.1	-

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

2025 Total AM Scenario 2
4: Quail Run Rd & Access A

Smoke Tree Resort
HCM 6th TWSC

Intersection						
Int Delay, s/veh	3.7					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↑		↑			↓
Traffic Vol, veh/h	0	5	8	0	8	6
Future Vol, veh/h	0	5	8	0	8	6
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	6	9	0	9	7

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	34	9	0	0	9
Stage 1	9	-	-	-	-
Stage 2	25	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12
Critical Hdwy Stg 1	5.42	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218
Pot Cap-1 Maneuver	979	1073	-	-	1611
Stage 1	1014	-	-	-	-
Stage 2	998	-	-	-	-
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	973	1073	-	-	1611
Mov Cap-2 Maneuver	973	-	-	-	-
Stage 1	1008	-	-	-	-
Stage 2	998	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.4	0	4.1
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	1073	1611
HCM Lane V/C Ratio	-	-	0.005	0.006
HCM Control Delay (s)	-	-	8.4	7.2
HCM Lane LOS	-	-	A	A
HCM 95th %tile Q(veh)	-	-	0	0

2025 Total AM Scenario 2
7: Apartment Drwy & Lincoln Dr

Smoke Tree Resort
HCM 6th TWSC

Intersection												
Int Delay, s/veh	1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔ ↗		↔ ↗		↔ ↗		↔ ↗		↔ ↗		↔ ↗	
Traffic Vol, veh/h	26	1062	34	18	882	10	50	0	29	5	0	12
Future Vol, veh/h	26	1062	34	18	882	10	50	0	29	5	0	12
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None									
Storage Length	25	-	-	25	-	-	-	-	-	0	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	-	1	-	-	1
Grade, %	-	0	-	-	0	-	-	-	0	-	-	0
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	29	1180	38	20	980	11	56	0	32	6	0	13

Major/Minor	Major1	Major2	Minor1	Minor2
Conflicting Flow All	991	0	0	1218
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Critical Hdwy	4.14	-	-	4.14
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	2.22	-	-	2.22
Pot Cap-1 Maneuver	*1070	-	-	*952
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Platoon blocked, %	1	-	-	1
Mov Cap-1 Maneuver	*1070	-	-	*952
Mov Cap-2 Maneuver	-	-	-	-
Stage 1	-	-	-	-
Stage 2	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	0.2	18.1	12.3
HCM LOS			C	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	362	*1070	-	-	*952	-	-	293	715
HCM Lane V/C Ratio	0.242	0.027	-	-	0.021	-	-	0.019	0.019
HCM Control Delay (s)	18.1	8.5	-	-	8.9	-	-	17.5	10.1
HCM Lane LOS	C	A	-	-	A	-	-	C	B
HCM 95th %tile Q(veh)	0.9	0.1	-	-	0.1	-	-	0.1	0.1

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

2025 Total AM Scenario 2
8: AJ's Drwy & Lincoln Dr

Smoke Tree Resort
HCM 6th TWSC

Intersection												
Int Delay, s/veh	0.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔ ↗		↔ ↗		↔ ↗		↔ ↗		↔ ↗		↔ ↗	
Traffic Vol, veh/h	3	1040	53	43	895	8	6	0	41	4	1	12
Future Vol, veh/h	3	1040	53	43	895	8	6	0	41	4	1	12
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None									
Storage Length	25	-	-	25	-	-	-	-	-	0	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	-	1	-	-	1
Grade, %	-	0	-	-	0	-	-	-	0	-	-	0
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	3	1156	59	48	994	9	7	0	46	4	1	13

Major/Minor	Major1	Major2	Minor1	Minor2
Conflicting Flow All	1003	0	0	1215
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Critical Hdwy	4.14	-	-	4.14
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	2.22	-	-	2.22
Pot Cap-1 Maneuver	*1070	-	-	884
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Platoon blocked, %	1	-	-	1
Mov Cap-1 Maneuver	*1070	-	-	884
Mov Cap-2 Maneuver	-	-	-	-
Stage 1	-	-	-	-
Stage 2	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.4	11.8	12
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	580	*1070	-	-	884	-	-	283	715
HCM Lane V/C Ratio	0.09	0.003	-	-	0.054	-	-	0.016	0.019
HCM Control Delay (s)	11.8	8.4	-	-	9.3	-	-	17.9	10.1
HCM Lane LOS	B	A	-	-	A	-	-	C	B
HCM 95th %tile Q(veh)	0.3	0	-	-	0.2	-	-	0	0.1

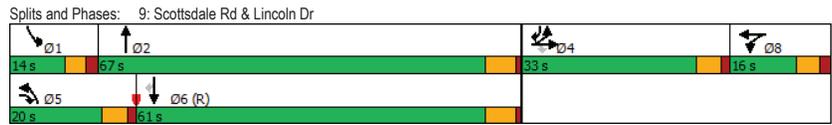
Notes
 ~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

2025 Total AM Scenario 2
9: Scottsdale Rd & Lincoln Dr

Smoke Tree Resort
Timings

	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	490	42	500	41	39	309	1429	55	1814	640
Future Volume (vph)	490	42	500	41	39	309	1429	55	1814	640
Turn Type	Split	NA	pm+ov	Split	NA	Prot	NA	Prot	NA	pm+ov
Protected Phases	4	4	5	8	8	5	2	1	6	4
Permitted Phases	4			8			6			
Detector Phase	4	4	5	8	8	5	2	1	6	4
Switch Phase										
Minimum Initial (s)	10.0	10.0	7.0	10.0	10.0	7.0	10.0	5.0	10.0	10.0
Minimum Split (s)	15.5	15.5	12.5	15.6	15.6	12.5	27.7	10.3	30.7	15.5
Total Split (s)	33.0	33.0	20.0	16.0	16.0	20.0	67.0	14.0	61.0	33.0
Total Split (%)	25.4%	25.4%	15.4%	12.3%	12.3%	15.4%	51.5%	10.8%	46.9%	25.4%
Yellow Time (s)	4.0	4.0	4.0	3.6	3.6	4.0	4.7	3.3	4.7	4.0
All-Red Time (s)	1.5	1.5	1.5	2.0	2.0	1.5	1.0	2.0	1.0	1.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	5.5	5.5	5.6	5.6	5.5	5.7	5.3	5.7	5.5
Lead/Lag	Lead			Lead			Lag	Lead	Lag	Lag
Lead-Lag Optimize?										
Recall Mode	None	None	None	Min	Min	None	None	None	C-Max	None
Act Effct Green (s)	26.2	26.2	42.3	10.1	10.1	16.1	65.9	7.8	55.3	87.2
Actuated g/C Ratio	0.20	0.20	0.33	0.08	0.08	0.12	0.51	0.06	0.43	0.67
v/c Ratio	0.87	0.87	0.97	0.34	0.33	0.81	0.64	0.58	0.93	0.61
Control Delay	56.1	55.8	56.4	63.9	29.8	71.1	25.8	80.4	44.7	8.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	56.1	55.8	56.4	63.9	29.8	71.1	25.8	80.4	44.7	8.6
LOS	E	E	E	E	C	E	C	F	D	A
Approach Delay	56.2			40.5			33.6			36.3
Approach LOS	E			D			C			D

Intersection Summary	
Cycle Length:	130
Actuated Cycle Length:	130
Offset:	0 (0%), Referenced to phase 6:SBT, Start of Green
Natural Cycle:	120
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.97
Intersection Signal Delay:	39.3
Intersection Capacity Utilization:	88.3%
ICU Level of Service:	E
Analysis Period (min):	15



2025 Total AM Scenario 2
9: Scottsdale Rd & Lincoln Dr

Smoke Tree Resort
HCM 6th Signalized Intersection Summary

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (veh/h)	490	42	500	41	39	52	309	1429	43	55	1814	640
Future Volume (veh/h)	490	42	500	41	39	52	309	1429	43	55	1814	640
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	1.00	1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	578	0	278	46	43	41	343	1588	31	61	2016	378
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	647	0	465	137	141	118	385	2550	50	78	2172	962
Arrive On Green	0.18	0.00	0.18	0.08	0.08	0.08	0.11	0.49	0.49	0.04	0.43	0.43
Sat Flow, veh/h	3563	0	1585	1781	1832	1538	3456	5156	101	1781	5106	1585
Grp Volume(v), veh/h	578	0	278	46	42	42	343	1048	571	61	2016	378
Grp Sat Flow(s),veh/h/ln	1781	0	1585	1781	1777	1594	1728	1702	1852	1781	1702	1585
Q Serve(g_s), s	20.6	0.0	19.5	3.2	2.9	3.3	12.7	29.2	29.3	4.4	48.7	16.0
Cycle Q Clear(g_c), s	20.6	0.0	19.5	3.2	2.9	3.3	12.7	29.2	29.3	4.4	48.7	16.0
Prop In Lane	1.00	1.00	1.00	1.00	0.97	1.00	0.05	1.00	1.00	1.00	1.00	1.00
Lane Grp Cap(c), veh/h	647	0	465	137	137	123	385	1683	916	78	2172	962
V/C Ratio(X)	0.89	0.00	0.60	0.34	0.30	0.35	0.89	0.62	0.62	0.78	0.93	0.39
Avail Cap(c_a), veh/h	754	0	512	143	142	127	385	1683	916	119	2172	962
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	52.0	0.0	39.4	56.9	56.7	56.9	57.0	24.0	24.0	61.5	35.5	13.2
Incr Delay (d2), s/veh	10.9	0.0	0.9	0.5	0.5	0.6	21.1	0.5	1.0	7.7	8.5	1.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	10.2	0.0	7.7	1.5	1.3	1.3	6.7	11.8	12.9	2.2	21.5	9.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	62.9	0.0	40.3	57.4	57.2	57.5	78.1	24.5	25.0	69.2	43.9	14.4
LnGrp LOS	E	A	D	E	E	E	E	C	C	E	D	B
Approach Vol, veh/h	856			130			1962			2455		
Approach Delay, s/veh	55.5			57.4			34.0			40.0		
Approach LOS	E			E			C			D		
Timer - Assigned Phs	1	2	4		5	6	8					
Phs Duration (G+Y+Rc), s	11.0	70.0	29.1		20.0	61.0	15.6					
Change Period (Y+Rc), s	* 5.3	5.7	5.5		5.5	5.7	5.6					
Max Green Setting (Gmax), s	* 8.7	61.3	27.5		14.5	55.3	10.4					
Max Q Clear Time (g_c+1), s	6.4	31.3	22.6		14.7	50.7	5.3					
Green Ext Time (p_c), s	0.0	2.4	1.0		0.0	2.2	0.1					

Intersection Summary	
HCM 6th Ctrl Delay	40.7
HCM 6th LOS	D

Notes
User approved pedestrian interval to be less than phase max green.
User approved volume balancing among the lanes for turning movement.
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

2025 Total AM Scenario 2 Mitigated
9: Scottsdale Rd & Lincoln Dr

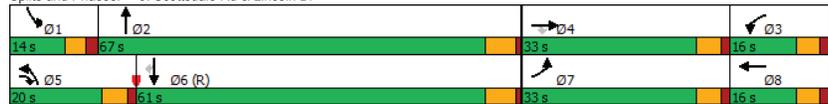
Smoke Tree Resort
Timings

	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	490	42	500	41	39	309	1429	55	1814	640
Future Volume (vph)	490	42	500	41	39	309	1429	55	1814	640
Turn Type	Prot	NA	pm+ov	Prot	NA	Prot	NA	Prot	NA	Perm
Protected Phases	7	4	5	3	8	5	2	1	6	
Permitted Phases			4							6
Detector Phase	7	4	5	3	8	5	2	1	6	6
Switch Phase										
Minimum Initial (s)	10.0	10.0	7.0	10.0	10.0	7.0	10.0	5.0	10.0	10.0
Minimum Split (s)	15.5	15.5	12.5	15.6	15.6	12.5	27.7	10.3	30.7	30.7
Total Split (s)	33.0	33.0	20.0	16.0	16.0	20.0	67.0	14.0	61.0	61.0
Total Split (%)	25.4%	25.4%	15.4%	12.3%	12.3%	15.4%	51.5%	10.8%	46.9%	46.9%
Yellow Time (s)	4.0	4.0	4.0	3.6	3.6	4.0	4.7	3.3	4.7	4.7
All-Red Time (s)	1.5	1.5	1.5	2.0	2.0	1.5	1.0	2.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	5.5	5.5	5.6	5.6	5.5	5.7	5.3	5.7	5.7
Lead/Lag	Lead	Lead	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?										
Recall Mode	None	None	None	Min	Min	None	None	C-Max	C-Max	
Act Effct Green (s)	25.2	25.2	42.3	10.1	12.4	14.8	64.6	7.8	55.3	55.3
Actuated g/C Ratio	0.19	0.19	0.33	0.08	0.10	0.11	0.50	0.06	0.43	0.43
v/c Ratio	0.90	0.90	0.97	0.34	0.28	0.88	0.65	0.58	0.93	0.74
Control Delay	61.2	61.0	56.2	63.9	28.8	80.0	26.4	80.4	44.7	13.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	61.2	61.0	56.2	63.9	28.8	80.0	26.4	80.4	44.7	13.2
LOS	E	E	E	E	C	F	C	F	D	B
Approach Delay		58.7			39.8		35.7		37.4	
Approach LOS		E			D		D		D	

Intersection Summary

Cycle Length: 130	
Actuated Cycle Length: 130	
Offset: 0 (0%), Referenced to phase 6:SBT, Start of Green	
Natural Cycle: 120	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.97	
Intersection Signal Delay: 41.0	Intersection LOS: D
Intersection Capacity Utilization 88.3%	ICU Level of Service E
Analysis Period (min) 15	

Splits and Phases: 9: Scottsdale Rd & Lincoln Dr



2025 Total AM Scenario 2 Mitigated
9: Scottsdale Rd & Lincoln Dr

Smoke Tree Resort
HCM 6th Signalized Intersection Summary

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (veh/h)	490	42	500	41	39	52	309	1429	43	55	1814	640
Future Volume (veh/h)	490	42	500	41	39	52	309	1429	43	55	1814	640
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No											
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	578	0	278	46	43	41	343	1588	31	61	2016	378
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	639	0	364	246	141	118	385	2550	50	78	2172	674
Arrive On Green	0.18	0.00	0.12	0.14	0.08	0.08	0.11	0.49	0.49	0.04	0.43	0.43
Sat Flow, veh/h	3563	0	1585	1781	1832	1538	3456	5156	101	1781	5106	1585
Grp Volume(v), veh/h	578	0	278	46	42	42	343	1048	571	61	2016	378
Grp Sat Flow(s),veh/h/ln	1781	0	1585	1781	1777	1594	1728	1702	1852	1781	1702	1585
Q Serve(g_s), s	20.7	0.0	13.0	3.0	2.9	3.3	12.7	29.2	29.3	4.4	48.7	23.4
Cycle Q Clear(g_c), s	20.7	0.0	13.0	3.0	2.9	3.3	12.7	29.2	29.3	4.4	48.7	23.4
Prop In Lane	1.00		1.00	1.00		0.97	1.00		0.05	1.00		1.00
Lane Grp Cap(c), veh/h	639	0	364	246	137	123	385	1683	916	78	2172	674
V/C Ratio(X)	0.90	0.00	0.76	0.19	0.30	0.35	0.89	0.62	0.62	0.78	0.93	0.56
Avail Cap(c_a), veh/h	754	0	512	246	142	127	385	1683	916	119	2172	674
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	52.3	0.0	19.9	49.6	56.7	56.9	57.0	24.0	24.0	61.5	35.5	28.2
Incr Delay (d2), s/veh	12.0	0.0	2.5	0.1	0.5	0.6	21.1	0.5	1.0	7.7	8.5	3.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	10.3	0.0	5.0	1.3	1.3	1.3	6.7	11.8	12.9	2.2	21.5	9.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	64.2	0.0	22.4	49.7	57.2	57.5	78.1	24.5	25.0	69.2	43.9	31.5
LnGrp LOS	E	A	C	D	E	E	E	C	C	E	D	C
Approach Vol, veh/h		856			130			1962			2455	
Approach Delay, s/veh		50.6			54.7			34.0			42.7	
Approach LOS		D			D			C			D	

Timer - Assigned Phs

	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	11.0	70.0	23.5	20.9	20.0	61.0	28.8	15.6
Change Period (Y+Rc), s	* 5.3	5.7	5.6	5.5	5.5	5.7	5.5	5.6
Max Green Setting (Gmax), s	* 8.7	61.3	10.4	27.5	14.5	55.3	27.5	10.4
Max Q Clear Time (g_c+1), s	6.4	31.3	5.0	15.0	14.7	50.7	22.7	5.3
Green Ext Time (p_c), s	0.0	2.4	0.0	0.4	0.0	2.2	0.6	0.1

Intersection Summary

HCM 6th Ctrl Delay	41.1
HCM 6th LOS	D

Notes

- User approved pedestrian interval to be less than phase max green.
- User approved volume balancing among the lanes for turning movement.
- * HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

2025 Total PM Scenario 2
1: Mockingbird Ln & Lincoln Drive

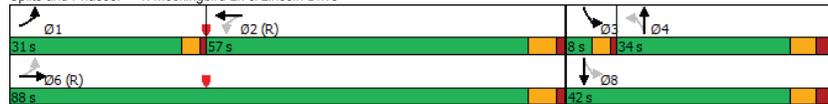
Smoke Tree Resort
Timings

	↖	→	↗	↖	↖	↑	↗	↓
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations	↖	↖↗	↖	↖↗	↖	↖	↖	↖
Traffic Volume (vph)	267	946	23	999	8	68	67	52
Future Volume (vph)	267	946	23	999	8	68	67	52
Turn Type	pm+pt	NA	Perm	NA	Perm	NA	pm+pt	NA
Protected Phases	1	6		2		4	3	8
Permitted Phases	6		2		4		8	
Detector Phase	1	6	2	2	4	4	3	8
Switch Phase								
Minimum Initial (s)	4.0	15.0	15.0	15.0	10.0	10.0	4.0	10.0
Minimum Split (s)	8.0	27.0	27.0	27.0	33.5	33.5	8.0	33.5
Total Split (s)	31.0	88.0	57.0	57.0	34.0	34.0	8.0	42.0
Total Split (%)	23.8%	67.7%	43.8%	43.8%	26.2%	26.2%	6.2%	32.3%
Yellow Time (s)	3.0	4.5	4.5	4.5	4.0	4.0	3.0	4.0
All-Red Time (s)	1.0	1.5	1.5	1.5	2.5	2.5	1.0	2.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	6.0	6.0	6.0	6.5	6.5	4.0	6.5
Lead/Lag	Lead		Lag	Lag	Lag	Lag	Lead	
Lead-Lag Optimize?	Yes		Yes	Yes	Yes	Yes	Yes	
Recall Mode	None	C-Max	C-Max	C-Max	None	None	None	None
Act Effct Green (s)	100.7	98.7	75.7	75.7	12.4	12.4	21.3	18.8
Actuated g/C Ratio	0.77	0.76	0.58	0.58	0.10	0.10	0.16	0.14
v/c Ratio	0.67	0.41	0.09	0.58	0.12	0.54	0.41	0.72
Control Delay	17.7	6.4	33.1	41.4	55.8	60.8	52.8	37.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	17.7	6.4	33.1	41.4	55.8	60.8	52.8	37.5
LOS	B	A	C	D	E	E	D	D
Approach Delay		8.8		41.2		60.4		41.0
Approach LOS		A		D		E		D

Intersection Summary

Cycle Length: 130	
Actuated Cycle Length: 130	
Offset: 0 (0%), Referenced to phase 2:WBT and 6:EBTL, Start of Green	
Natural Cycle: 90	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.72	
Intersection Signal Delay: 27.0	Intersection LOS: C
Intersection Capacity Utilization 71.4%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 1: Mockingbird Ln & Lincoln Drive



2025 Total PM Scenario 2
1: Mockingbird Ln & Lincoln Drive

Smoke Tree Resort
HCM 6th Signalized Intersection Summary

	↖	→	↗	↖	↖	↑	↗	↓	↖			
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↖↗		↖	↖↗		↖	↖		↖	↖	↖
Traffic Volume (veh/h)	267	946	32	23	999	65	8	68	19	67	52	169
Future Volume (veh/h)	267	946	32	23	999	65	8	68	19	67	52	169
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No		No		No		No			No
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	297	1051	25	26	1110	44	9	76	12	74	58	132
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	506	2715	65	403	2310	92	88	121	19	150	70	160
Arrive On Green	0.07	0.77	0.77	1.00	1.00	1.00	0.08	0.08	0.08	0.03	0.14	0.14
Sat Flow, veh/h	1781	3548	84	524	3484	138	1193	1577	249	1781	507	1155
Grp Volume(v), veh/h	297	526	550	26	566	588	9	0	88	74	0	190
Grp Sat Flow(s),veh/h/ln	1781	1777	1855	524	1777	1846	1193	0	1826	1781	0	1662
Q Serve(g_s), s	6.5	12.8	12.8	0.0	0.0	0.0	1.0	0.0	6.1	4.0	0.0	14.5
Cycle Q Clear(g_c), s	6.5	12.8	12.8	0.0	0.0	0.0	7.4	0.0	6.1	4.0	0.0	14.5
Prop In Lane	1.00		0.05	1.00		0.07	1.00		0.14	1.00		0.69
Lane Grp Cap(c), veh/h	506	1360	1420	403	1178	1223	88	0	140	150	0	230
V/C Ratio(X)	0.59	0.39	0.39	0.06	0.48	0.48	0.10	0.00	0.63	0.49	0.00	0.83
Avail Cap(c_a), veh/h	748	1360	1420	403	1178	1223	249	0	386	150	0	454
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.68	0.68	0.68	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	4.9	5.1	5.1	0.0	0.0	0.0	62.0	0.0	58.2	53.9	0.0	54.5
Incr Delay (d2), s/veh	1.1	0.8	0.8	0.2	1.0	0.9	0.5	0.0	4.5	2.5	0.0	7.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.3	4.5	4.7	0.0	0.3	0.3	0.3	0.0	3.0	0.5	0.0	6.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	6.0	5.9	5.9	0.2	1.0	0.9	62.5	0.0	62.7	56.4	0.0	61.8
LnGrp LOS	A	A	A	A	A	A	E	A	E	E	A	E
Approach Vol, veh/h		1373			1180			97				264
Approach Delay, s/veh		5.9			0.9			62.7				60.3
Approach LOS		A			A			E				E
Timer - Assigned Phs	1	2	3	4		6		8				
Phs Duration (G+Y+Rc), s	13.3	92.2	8.0	16.5		105.5		24.5				
Change Period (Y+Rc), s	4.0	6.0	4.0	6.5		6.0		6.5				
Max Green Setting (Gmax), s	27.0	51.0	4.0	27.5		82.0		35.5				
Max Q Clear Time (g_c+1), s	8.5	2.0	6.0	9.4		14.8		16.5				
Green Ext Time (p_c), s	0.8	10.9	0.0	0.4		9.4		1.0				

Intersection Summary

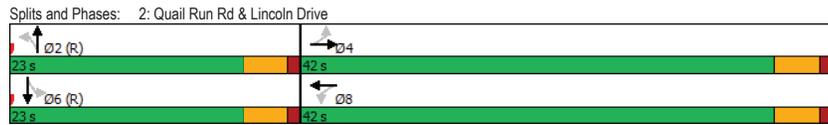
HCM 6th Ctrl Delay	10.7
HCM 6th LOS	B

2025 Total PM Scenario 2
2: Quail Run Rd & Lincoln Drive

Smoke Tree Resort
Timings

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations	↔	↕	↔	↕	↔	↕	↔	↕
Traffic Volume (vph)	85	960	5	987	4	0	14	0
Future Volume (vph)	85	960	5	987	4	0	14	0
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		4		8		2		6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	2	2	6	6
Switch Phase								
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5
Total Split (s)	42.0	42.0	42.0	42.0	23.0	23.0	23.0	23.0
Total Split (%)	64.6%	64.6%	64.6%	64.6%	35.4%	35.4%	35.4%	35.4%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	C-Max	C-Max	C-Max	C-Max
Act Effct Green (s)	30.7	30.7	30.7	30.7	25.3	25.3	25.3	25.3
Actuated g/C Ratio	0.47	0.47	0.47	0.47	0.39	0.39	0.39	0.39
v/c Ratio	0.71	0.64	0.04	0.68	0.02	0.18	0.18	0.18
Control Delay	47.5	18.1	8.2	17.4	3.9	7.3	7.3	7.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	47.5	18.1	8.2	17.4	3.9	7.3	7.3	7.3
LOS	D	B	A	B	A	A	A	A
Approach Delay		20.5		17.3		3.9		7.3
Approach LOS		C		B		A		A

Intersection Summary	
Cycle Length:	65
Actuated Cycle Length:	65
Offset:	0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle:	60
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.71
Intersection Signal Delay:	18.3
Intersection Capacity Utilization:	50.9%
ICU Level of Service:	A
Intersection LOS:	B
Analysis Period (min):	15



2025 Total PM Scenario 2
2: Quail Run Rd & Lincoln Drive

Smoke Tree Resort
HCM 6th Signalized Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↕		↔	↕		↔	↕		↔	↕	
Traffic Volume (veh/h)	85	960	6	5	987	25	4	0	6	14	0	93
Future Volume (veh/h)	85	960	6	5	987	25	4	0	6	14	0	93
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No											
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	94	1067	7	6	1097	28	4	0	7	16	0	103
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	266	1512	10	281	1479	38	283	33	421	120	38	608
Arrive On Green	0.84	0.84	0.84	0.84	0.84	0.84	0.44	0.00	0.44	0.44	0.00	0.44
Sat Flow, veh/h	501	3619	24	525	3541	90	468	74	948	128	85	1369
Grp Volume(v), veh/h	94	524	550	6	550	575	11	0	0	119	0	0
Grp Sat Flow(s),veh/h/ln	501	1777	1866	525	1777	1854	1490	0	0	1582	0	0
Q Serve(g_s), s	7.4	7.7	7.7	0.3	8.7	8.7	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	14.3	7.7	7.7	6.3	8.7	8.7	0.2	0.0	0.0	2.9	0.0	0.0
Prop In Lane	1.00		0.01	1.00		0.05	0.36		0.64	0.13		0.87
Lane Grp Cap(c), veh/h	266	742	779	281	742	774	737	0	0	765	0	0
V/C Ratio(X)	0.35	0.71	0.71	0.02	0.74	0.74	0.01	0.00	0.00	0.16	0.00	0.00
Avail Cap(c_a), veh/h	346	1025	1077	365	1025	1070	737	0	0	765	0	0
HCM Platoon Ratio	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.92	0.92	0.92	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	6.4	3.8	3.8	4.7	3.8	3.8	10.1	0.0	0.0	10.8	0.0	0.0
Incr Delay (d2), s/veh	0.7	1.2	1.2	0.0	1.9	1.8	0.0	0.0	0.0	0.4	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	1.5	1.6	0.0	1.7	1.7	0.1	0.0	0.0	1.0	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	7.1	5.0	4.9	4.8	5.7	5.6	10.2	0.0	0.0	11.3	0.0	0.0
LnGrp LOS	A	A	A	A	A	A	B	A	A	B	A	A
Approach Vol, veh/h		1168			1131			11				119
Approach Delay, s/veh		5.1			5.7			10.2				11.3
Approach LOS		A			A			B				B
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		34.4		30.6		34.4		30.6				
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5				
Max Green Setting (Gmax), s		18.5		37.5		18.5		37.5				
Max Q Clear Time (g_c+1), s		2.2		16.3		4.9		10.7				
Green Ext Time (p_c), s		0.0		8.7		0.5		8.8				

Intersection Summary	
HCM 6th Ctrl Delay	5.7
HCM 6th LOS	A

2025 Total PM Scenario 2
3: Access A & Lincoln Dr

Smoke Tree Resort
HCM 6th TWSC

Intersection						
Int Delay, s/veh	0.3					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↑	↑↑	↑	
Traffic Vol, veh/h	972	8	19	1009	11	20
Future Vol, veh/h	972	8	19	1009	11	20
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	25	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1080	9	21	1121	12	22

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	1089	0	1688 545
Stage 1	-	-	-	-	1085 -
Stage 2	-	-	-	-	603 -
Critical Hdwy	-	-	4.14	-	6.84 6.94
Critical Hdwy Stg 1	-	-	-	-	5.84 -
Critical Hdwy Stg 2	-	-	-	-	5.84 -
Follow-up Hdwy	-	-	2.22	-	3.52 3.32
Pot Cap-1 Maneuver	-	-	*1024	-	*85 *684
Stage 1	-	-	-	-	*646 -
Stage 2	-	-	-	-	*630 -
Platoon blocked, %	-	-	1	-	- 1
Mov Cap-1 Maneuver	-	-	*1024	-	*83 *684
Mov Cap-2 Maneuver	-	-	-	-	*321 -
Stage 1	-	-	-	-	*632 -
Stage 2	-	-	-	-	*630 -

Approach	EB	WB	NB
HCM Control Delay, s	0	0.2	12.9
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	488	-	-	* 1024	-
HCM Lane V/C Ratio	0.071	-	-	0.021	-
HCM Control Delay (s)	12.9	-	-	8.6	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0.2	-	-	0.1	-

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

2025 Total PM Scenario 2
4: Quail Run Rd & Access B

Smoke Tree Resort
HCM 6th TWSC

Intersection						
Int Delay, s/veh	6.7					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↑		↑			↑
Traffic Vol, veh/h	0	9	2	0	10	1
Future Vol, veh/h	0	9	2	0	10	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	10	2	0	11	1

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	25	2	0	0	2 0
Stage 1	2	-	-	-	- -
Stage 2	23	-	-	-	- -
Critical Hdwy	6.42	6.22	-	-	4.12 -
Critical Hdwy Stg 1	5.42	-	-	-	- -
Critical Hdwy Stg 2	5.42	-	-	-	- -
Follow-up Hdwy	3.518	3.318	-	-	2.218 -
Pot Cap-1 Maneuver	991	1082	-	-	1620 -
Stage 1	1021	-	-	-	- -
Stage 2	1000	-	-	-	- -
Platoon blocked, %	-	-	-	-	- -
Mov Cap-1 Maneuver	984	1082	-	-	1620 -
Mov Cap-2 Maneuver	984	-	-	-	- -
Stage 1	1014	-	-	-	- -
Stage 2	1000	-	-	-	- -

Approach	WB	NB	SB
HCM Control Delay, s	8.4	0	6.6
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	1082 1620	-
HCM Lane V/C Ratio	-	-	0.009 0.007	-
HCM Control Delay (s)	-	-	8.4 7.2	0
HCM Lane LOS	-	-	A A	A
HCM 95th %tile Q(veh)	-	-	0 0	-

2025 Total PM Scenario 2
7: Apartment Drwy & Lincoln Dr

Smoke Tree Resort
HCM 6th TWSC

Intersection												
Int Delay, s/veh	1.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖ ↗	↖ ↗		↖ ↗	↖ ↗			↖ ↗		↖ ↗	↖ ↗	↖ ↗
Traffic Vol, veh/h	7	926	41	6	923	9	66	3	47	7	0	34
Future Vol, veh/h	7	926	41	6	923	9	66	3	47	7	0	34
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None									
Storage Length	25	-	-	25	-	-	-	-	-	0	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	8	1029	46	7	1026	10	73	3	52	8	0	38

Major/Minor	Major1	Major2	Minor1	Minor2
Conflicting Flow All	1036	0	0	1075
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Critical Hdwy	4.14	-	-	4.14
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	2.22	-	-	2.22
Pot Cap-1 Maneuver	*1034	-	-	963
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Platoon blocked, %	1	-	-	1
Mov Cap-1 Maneuver	*1034	-	-	963
Stage 1	-	-	-	-
Stage 2	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0.1	18.7	11.5
HCM LOS			C	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	391	*1034	-	-	963	-	-	321	691
HCM Lane V/C Ratio	0.33	0.008	-	-	0.007	-	-	0.024	0.055
HCM Control Delay (s)	18.7	8.5	-	-	8.8	-	-	16.5	10.5
HCM Lane LOS	C	A	-	-	A	-	-	C	B
HCM 95th %tile Q(veh)	1.4	0	-	-	0	-	-	0.1	0.2

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

2025 Total PM Scenario 2
8: AJ's Drwy & Lincoln Dr

Smoke Tree Resort
HCM 6th TWSC

Intersection												
Int Delay, s/veh	1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖ ↗	↖ ↗		↖ ↗	↖ ↗			↖ ↗		↖ ↗	↖ ↗	↖ ↗
Traffic Vol, veh/h	11	919	53	61	921	8	14	1	89	4	0	7
Future Vol, veh/h	11	919	53	61	921	8	14	1	89	4	0	7
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None									
Storage Length	25	-	-	25	-	-	-	-	-	0	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	12	1021	59	68	1023	9	16	1	99	4	0	8

Major/Minor	Major1	Major2	Minor1	Minor2
Conflicting Flow All	1032	0	0	1080
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Critical Hdwy	4.14	-	-	4.14
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	2.22	-	-	2.22
Pot Cap-1 Maneuver	1053	-	-	957
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Platoon blocked, %	1	-	-	1
Mov Cap-1 Maneuver	1053	-	-	957
Stage 1	-	-	-	-
Stage 2	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0.6	12.5	13.5
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	597	1053	-	-	957	-	-	254	715
HCM Lane V/C Ratio	0.194	0.012	-	-	0.071	-	-	0.017	0.011
HCM Control Delay (s)	12.5	8.5	-	-	9	-	-	19.4	10.1
HCM Lane LOS	B	A	-	-	A	-	-	C	B
HCM 95th %tile Q(veh)	0.7	0	-	-	0.2	-	-	0.1	0

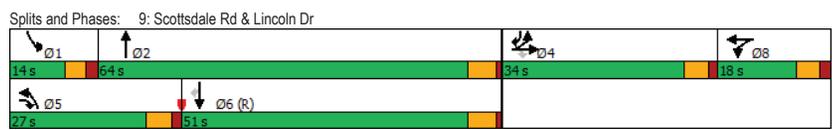
Notes
 -: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

2025 Total PM Scenario 2
9: Scottsdale Rd & Lincoln Dr

Smoke Tree Resort
Timings

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR	
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	
Traffic Volume (vph)	535	61	452	61	68	446	1762	66	1702	529	
Future Volume (vph)	535	61	452	61	68	446	1762	66	1702	529	
Turn Type	Split	NA	pm+ov	Split	NA	Prot	NA	Prot	NA	pm+ov	
Protected Phases	4	4	5	8	8	5	2	1	6	4	
Permitted Phases	4			8			6				
Detector Phase	4	4	5	8	8	5	2	1	6	4	
Switch Phase											
Minimum Initial (s)	13.0	13.0	7.0	10.0	10.0	7.0	10.0	5.0	10.0	13.0	
Minimum Split (s)	18.5	18.5	13.0	15.6	15.6	13.0	16.7	11.0	16.0	18.5	
Total Split (s)	34.0	34.0	27.0	18.0	18.0	27.0	64.0	14.0	51.0	34.0	
Total Split (%)	26.2%	26.2%	20.8%	13.8%	13.8%	20.8%	49.2%	10.8%	39.2%	26.2%	
Yellow Time (s)	4.0	4.0	4.0	3.6	3.6	4.0	4.7	3.3	4.7	4.0	
All-Red Time (s)	1.5	1.5	1.5	2.0	2.0	1.5	1.0	2.0	1.0	1.5	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.5	5.5	5.5	5.6	5.6	5.5	5.7	5.3	5.7	5.5	
Lead/Lag	Lead			Lead			Lag	Lead	Lag		
Lead-Lag Optimize?											
Recall Mode	None	C-Max	None								
Act Effct Green (s)	27.7	27.7	49.4	10.7	10.7	21.6	63.1	8.6	47.7	81.1	
Actuated g/C Ratio	0.21	0.21	0.38	0.08	0.08	0.17	0.49	0.07	0.37	0.62	
v/c Ratio	0.91	0.92	0.76	0.47	0.47	0.87	0.82	0.63	1.02	0.56	
Control Delay	64.3	65.8	25.7	67.7	31.5	69.2	33.1	82.3	65.5	11.8	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	64.3	65.8	25.7	67.7	31.5	69.2	33.1	82.3	65.5	11.8	
LOS	E	E	C	E	C	E	C	F	E	B	
Approach Delay	48.1			42.1			40.3			53.6	
Approach LOS	D			D			D			D	

Intersection Summary	
Cycle Length:	130
Actuated Cycle Length:	130
Offset:	0 (0%), Referenced to phase 6:SBT, Start of Green
Natural Cycle:	110
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	1.02
Intersection Signal Delay:	47.0
Intersection Capacity Utilization:	88.9%
ICU Level of Service:	E
Analysis Period (min):	15



2025 Total PM Scenario 2
9: Scottsdale Rd & Lincoln Dr

Smoke Tree Resort
HCM 6th Signalized Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (veh/h)	535	61	452	61	68	78	446	1762	50	66	1702	529
Future Volume (veh/h)	535	61	452	61	68	78	446	1762	50	66	1702	529
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	1.00	1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	643	0	252	68	76	59	496	1958	34	73	1891	299
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	707	0	565	137	153	108	545	2356	41	93	1779	867
Arrive On Green	0.20	0.00	0.20	0.08	0.08	0.08	0.16	0.46	0.46	0.05	0.35	0.35
Sat Flow, veh/h	3563	0	1585	1781	1989	1405	3456	5169	90	1781	5106	1585
Grp Volume(v), veh/h	643	0	252	68	67	68	496	1289	703	73	1891	299
Grp Sat Flow(s), veh/h/ln	1781	0	1585	1781	1777	1617	1728	1702	1854	1781	1702	1585
Q Serve(g_s), s	22.9	0.0	15.8	4.8	4.7	5.3	18.3	43.1	43.2	5.3	45.3	13.7
Cycle Q Clear(g_c), s	22.9	0.0	15.8	4.8	4.7	5.3	18.3	43.1	43.2	5.3	45.3	13.7
Prop In Lane	1.00	1.00	1.00	1.00	0.87	1.00	0.05	1.00	1.00	1.00	1.00	1.00
Lane Grp Cap(c), veh/h	707	0	565	137	137	124	545	1552	845	93	1779	867
V/C Ratio(X)	0.91	0.00	0.45	0.50	0.49	0.55	0.91	0.83	0.83	0.79	1.06	0.34
Avail Cap(c_a), veh/h	781	0	598	170	169	154	572	1552	845	119	1779	867
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	51.0	0.0	32.0	57.6	57.6	57.8	53.8	31.0	31.0	60.9	42.3	16.4
Incr Delay (d2), s/veh	13.1	0.0	0.2	1.0	1.0	1.4	17.5	3.7	6.7	17.6	40.3	1.1
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%), veh/ln	11.5	0.0	6.1	2.2	2.2	2.2	9.3	18.2	20.5	2.8	25.4	7.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	64.0	0.0	32.2	58.6	58.6	59.2	71.4	34.7	37.7	78.5	82.6	17.5
LnGrp LOS	E	A	C	E	E	E	E	C	D	E	F	B
Approach Vol, veh/h	895			203			2488			2263		
Approach Delay, s/veh	55.1			58.8			42.9			73.9		
Approach LOS	E			E			D			E		

Timer - Assigned Phs	1	2	4	5	6	8
Phs Duration (G+Y+Rc), s	12.1	65.0	31.3	26.0	51.0	15.6
Change Period (Y+Rc), s	* 5.3	5.7	5.5	5.5	5.7	5.6
Max Green Setting (Gmax), s	* 8.7	58.3	28.5	21.5	45.3	12.4
Max Q Clear Time (g_c+1), s	7.3	45.2	24.9	20.3	47.3	7.3
Green Ext Time (p_c), s	0.0	3.0	0.9	0.2	0.0	0.2

Intersection Summary	
HCM 6th Ctrl Delay	57.3
HCM 6th LOS	E

Notes
 User approved pedestrian interval to be less than phase max green.
 User approved volume balancing among the lanes for turning movement.
 * HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

2025 Total PM Scenario 2 Mitigated
9: Scottsdale Rd & Lincoln Dr

Smoke Tree Resort
Timings

	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	535	61	452	61	68	446	1762	66	1702	529
Future Volume (vph)	535	61	452	61	68	446	1762	66	1702	529
Turn Type	Prot	NA	pm+ov	Prot	NA	Prot	NA	Prot	NA	Perm
Protected Phases	7	4	5	3	8	5	2	1	6	
Permitted Phases			4							6
Detector Phase	7	4	5	3	8	5	2	1	6	6
Switch Phase										
Minimum Initial (s)	13.0	13.0	7.0	10.0	10.0	7.0	10.0	5.0	10.0	10.0
Minimum Split (s)	18.5	18.5	13.0	15.6	15.6	13.0	16.7	11.0	16.0	16.0
Total Split (s)	34.0	34.0	23.0	18.0	18.0	23.0	58.0	20.0	55.0	55.0
Total Split (%)	26.2%	26.2%	17.7%	13.8%	13.8%	17.7%	44.6%	15.4%	42.3%	42.3%
Yellow Time (s)	4.0	4.0	4.0	3.6	3.6	4.0	4.7	3.3	4.7	4.7
All-Red Time (s)	1.5	1.5	1.5	2.0	2.0	1.5	1.0	2.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	5.5	5.5	5.6	5.6	5.5	5.7	5.3	5.7	5.7
Lead/Lag	Lead	Lead	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?										
Recall Mode	None	C-Max	C-Max							
Act Effct Green (s)	27.2	27.2	51.9	10.7	10.8	20.4	62.4	9.7	49.3	49.3
Actuated g/C Ratio	0.21	0.21	0.40	0.08	0.08	0.16	0.48	0.07	0.38	0.38
v/c Ratio	0.93	0.94	0.73	0.47	0.47	0.92	0.83	0.55	0.98	0.69
Control Delay	68.0	69.6	25.2	67.7	31.3	77.6	34.4	73.0	56.4	13.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	68.0	69.6	25.2	67.7	31.3	77.6	34.4	73.0	56.4	13.8
LOS	E	E	C	E	C	E	C	E	E	B
Approach Delay		50.0			42.0		42.9		47.0	
Approach LOS		D			D		D		D	

Intersection Summary	
Cycle Length:	130
Actuated Cycle Length:	130
Offset:	0 (0%), Referenced to phase 6:SBT, Start of Green
Natural Cycle:	110
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.98
Intersection Signal Delay:	45.8
Intersection Capacity Utilization:	88.9%
ICU Level of Service:	E
Analysis Period (min):	15



2025 Total PM Scenario 2 Mitigated
9: Scottsdale Rd & Lincoln Dr

Smoke Tree Resort
HCM 6th Signalized Intersection Summary

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (veh/h)	535	61	452	61	68	78	446	1762	50	66	1702	529
Future Volume (veh/h)	535	61	452	61	68	78	446	1762	50	66	1702	529
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No		No		No		No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	643	0	252	68	76	59	496	1958	34	73	1891	299
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	701	0	372	308	152	107	465	2394	42	93	1936	601
Arrive On Green	0.20	0.00	0.10	0.17	0.08	0.08	0.13	0.46	0.46	0.05	0.38	0.38
Sat Flow, veh/h	3563	0	1585	1781	1989	1405	3456	5169	90	1781	5106	1585
Grp Volume(v), veh/h	643	0	252	68	67	68	496	1289	703	73	1891	299
Grp Sat Flow(s),veh/h/ln	1781	0	1585	1781	1777	1617	1728	1702	1854	1781	1702	1585
Q Serve(g_s), s	23.0	0.0	10.4	4.3	4.7	5.3	17.5	42.5	42.6	5.3	47.5	18.8
Cycle Q Clear(g_c), s	23.0	0.0	10.4	4.3	4.7	5.3	17.5	42.5	42.6	5.3	47.5	18.8
Prop In Lane	1.00		1.00	1.00		0.87	1.00		0.05	1.00		1.00
Lane Grp Cap(c), veh/h	701	0	372	308	136	123	465	1577	859	93	1936	601
V/C Ratio(X)	0.92	0.00	0.68	0.22	0.49	0.55	1.07	0.82	0.82	0.79	0.98	0.50
Avail Cap(c_a), veh/h	781	0	561	308	169	154	465	1577	859	201	1936	601
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	51.2	0.0	17.4	46.2	57.6	57.9	56.2	30.1	30.2	60.9	39.8	30.9
Incr Delay (d2), s/veh	13.9	0.0	0.8	0.1	1.0	1.4	60.5	3.3	5.9	5.4	15.6	2.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	11.6	0.0	3.8	1.9	2.2	2.2	11.5	17.8	20.1	2.5	22.3	7.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	65.1	0.0	18.3	46.3	58.7	59.3	116.7	33.4	36.0	66.3	55.4	33.8
LnGrp LOS	E	A	B	D	E	E	F	C	D	E	E	C
Approach Vol, veh/h		895			203		2488			2263		
Approach Delay, s/veh		51.9			54.7		50.8			52.9		
Approach LOS		D			D		D			D		

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	12.1	65.9	28.1	18.5	23.0	55.0	31.1	15.5
Change Period (Y+Rc), s	* 5.3	5.7	5.6	5.5	5.5	5.7	5.5	5.6
Max Green Setting (Gmax), s	* 15	52.3	12.4	28.5	17.5	49.3	28.5	12.4
Max Q Clear Time (g_c+1), s	7.3	44.6	6.3	12.4	19.5	49.5	25.0	7.3
Green Ext Time (p_c), s	0.0	2.5	0.0	0.4	0.0	0.0	0.6	0.2

Intersection Summary	
HCM 6th Ctrl Delay	51.9
HCM 6th LOS	D

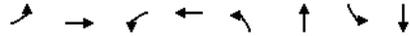
Notes
 User approved pedestrian interval to be less than phase max green.
 User approved volume balancing among the lanes for turning movement.
 * HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

APPENDIX I

QUEUE STORAGE ANALYSIS

2025 Total AM Scenario 1 Mitigated
1: Mockingbird Ln & Lincoln Drive

Smoke Tree Resort
Queues



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	269	1188	27	1121	7	64	90	391
v/c Ratio	0.68	0.47	0.13	0.61	0.11	0.22	0.32	0.84
Control Delay	23.4	11.0	39.0	42.8	46.8	32.5	41.0	50.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	23.4	11.0	39.0	42.8	46.8	32.5	41.0	50.5
Queue Length 50th (ft)	86	220	16	483	5	31	62	235
Queue Length 95th (ft)	200	348	m42	599	19	67	98	322
Internal Link Dist (ft)		105		1255		475		337
Turn Bay Length (ft)	150		95		80		135	
Base Capacity (vph)	443	2550	209	1849	123	550	281	696
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.61	0.47	0.13	0.61	0.06	0.12	0.32	0.56

Intersection Summary

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

2025 Total AM Scenario 1 Mitigated
2: Quail Run Rd & Lincoln Drive

Smoke Tree Resort
Queues



Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	128	1217	12	1040	14	102
v/c Ratio	0.72	0.69	0.10	0.59	0.02	0.17
Control Delay	45.4	20.4	9.6	14.5	5.1	7.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	45.4	20.4	9.6	14.5	5.1	7.9
Queue Length 50th (ft)	58	284	4	257	0	8
Queue Length 95th (ft)	#162	497	m5	267	8	39
Internal Link Dist (ft)		1255		269	287	291
Turn Bay Length (ft)	25		25			
Base Capacity (vph)	202	1986	140	1984	599	617
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.63	0.61	0.09	0.52	0.02	0.17

Intersection Summary

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

Queue shown is maximum after two cycles.

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

2025 Total AM Scenario 1 Mitigated
9: Scottsdale Rd & Lincoln Dr

Smoke Tree Resort
Queues

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	294	297	556	46	101	343	1636	61	2016	711
v/c Ratio	0.90	0.90	0.93	0.34	0.28	0.76	0.65	0.55	0.97	0.76
Control Delay	62.4	62.1	46.7	63.9	28.8	66.3	26.9	76.8	52.0	15.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	62.4	62.1	46.7	63.9	28.8	66.3	26.9	76.8	52.0	15.6
Queue Length 50th (ft)	205	207	401	37	18	144	383	51	609	162
Queue Length 95th (ft)	#394	#395	#598	79	47	198	446	99	#732	339
Internal Link Dist (ft)		389			130		477		335	
Turn Bay Length (ft)	175			90		275		185		
Base Capacity (vph)	355	329	606	141	364	466	2502	133	2076	937
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.83	0.90	0.92	0.33	0.28	0.74	0.65	0.46	0.97	0.76

Intersection Summary

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

2025 Total PM Scenario 1 Mitigated
1: Mockingbird Ln & Lincoln Drive

Smoke Tree Resort
Queues

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	297	1087	26	1182	9	97	74	246
v/c Ratio	0.65	0.41	0.09	0.59	0.12	0.54	0.41	0.72
Control Delay	17.4	6.4	34.4	42.7	55.8	60.8	52.8	37.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	17.4	6.4	34.4	42.7	55.8	60.8	52.8	37.5
Queue Length 50th (ft)	69	150	17	528	7	71	55	99
Queue Length 95th (ft)	174	216	m34	623	25	126	97	186
Internal Link Dist (ft)		105		1255		475		337
Turn Bay Length (ft)	150		95		80		135	
Base Capacity (vph)	534	2675	278	1996	166	389	182	539
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.56	0.41	0.09	0.59	0.05	0.25	0.41	0.46

Intersection Summary

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

2025 Total PM Scenario 1 Mitigated
2: Quail Run Rd & Lincoln Drive

Smoke Tree Resort
Queues

						
Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	94	1073	13	1122	12	119
v/c Ratio	0.71	0.64	0.09	0.68	0.02	0.18
Control Delay	47.7	17.7	9.2	18.1	4.1	7.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	47.7	17.7	9.2	18.1	4.1	7.6
Queue Length 50th (ft)	40	228	5	374	0	9
Queue Length 95th (ft)	#114	283	m7	m346	7	44
Internal Link Dist (ft)		1255		269	107	291
Turn Bay Length (ft)	25		25			
Base Capacity (vph)	158	1986	176	1982	635	677
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.59	0.54	0.07	0.57	0.02	0.18

Intersection Summary

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

2025 Total PM Scenario 1 Mitigated
9: Scottsdale Rd & Lincoln Dr

Smoke Tree Resort
Queues

										
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	327	335	502	68	163	496	2014	73	1891	588
v/c Ratio	0.93	0.94	0.75	0.40	0.42	1.00	0.85	0.74	0.98	0.69
Control Delay	68.2	69.9	27.8	63.1	29.6	97.0	35.2	98.4	56.4	13.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	68.2	69.9	27.8	63.1	29.6	97.0	35.2	98.4	56.4	13.8
Queue Length 50th (ft)	260	270	321	55	31	-239	549	62	572	115
Queue Length 95th (ft)	#448	#461	#465	104	68	#351	619	#139	#689	255
Internal Link Dist (ft)		389			130		477		335	
Turn Bay Length (ft)	175			90		275		185		
Base Capacity (vph)	368	356	671	168	392	494	2372	104	1928	858
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.89	0.94	0.75	0.40	0.42	1.00	0.85	0.70	0.98	0.69

Intersection Summary

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

Smoke Tree Scenario 1

Queue Length Analysis

**Signalized Intersection
2025**

Average Vehicle Length (ft): 25
 Intersection Cycle Length (sec): 120
 Cycles: 2
 Equation Used: storage length = 2 x (vehicles/hour)/(cycles/hour) x average vehicle length

Intersection	Approach	AM Peak (veh/hr)	Midday Peak	PM Peak (veh/hr)	Max vehs per 2 cycles	Max trucks per 2 cycles	Storage Length
Mockingbird Lane & Lincoln Dr	NB Left	6	0	8	1	0	25'
	SB Left	81	0	67	6	0	150'
	EB Left	242	0	267	18	0	450'
	WB Left	24	0	23	2	0	50'
	NB Right	21	0	19	2	0	50'
	SB Right	253	0	169	17	0	425'
	EB Right	33	0	32	3	0	75'
	WB Right	46	0	65	5	0	125'
Quail Run Rd & Lincoln Dr	NB Left	4	0	7	1	0	25'
	SB Left	26	0	14	2	0	50'
	EB Left	115	0	85	8	0	200'
	WB Left	11	0	12	1	0	25'
	NB Right	9	0	4	1	0	25'
	SB Right	66	0	93	7	0	175'
	EB Right	8	0	8	1	0	25'
	WB Right	12	0	25	2	0	50'
Scottsdale Rd & Lincoln Dr	NB Left	309	0	446	30	0	750'
	SB Left	55	0	66	5	0	125'
	EB Left	490	0	535	36	0	900'
	WB Left	41	0	61	5	0	125'
	NB Right	43	0	50	4	0	100'
	SB Right	640	0	529	43	0	1075'
	EB Right	500	0	452	34	0	850'
	WB Right	52	0	78	6	0	150'

Smoke Tree Scenario 1

Queue Length Analysis

**Unsignalized Intersection
2025**

Average Vehicle Length (ft): 25
 Equation Used: storage length = 2 x (vehicles/hour)/(30 cycles/hour) x average vehicle length

Intersection	Approach	AM Peak (veh/hr)	Midday Peak	PM Peak (veh/hr)	Veh per 2 minutes	Trucks per 2 minutes	Storage Length
Smoke Tree Drwy A & Lincoln Dr	NB Left	3	0	5	1	0	25'
	SB Left	0	0	0	0	0	0'
	EB Left	0	0	0	0	0	0'
	WB Left	9	0	12	1	0	25'
	NB Right	11	0	19	1	0	25'
	SB Right	0	0	0	0	0	0'
	EB Right	5	0	6	1	0	25'
	WB Right	0	0	0	0	0	0'

Smoke Tree Scenario 2

Queue Length Analysis

**Signalized Intersection
2025**

Average Vehicle Length (ft): 25
 Intersection Cycle Length (sec): 120
 Cycles: 2
 Equation Used: storage length = 2 x (vehicles/hour)/(cycles/hour) x average vehicle length

Intersection	Approach	AM Peak (veh/hr)	Midday Peak	PM Peak (veh/hr)	Max vehs per 2 cycles	Max trucks per 2 cycles	Storage Length
Mockingbird Lane & Lincoln Dr	NB Left	6	0	8	1	0	25'
	SB Left	81	0	67	6	0	150'
	EB Left	242	0	267	18	0	450'
	WB Left	24	0	23	2	0	50'
	NB Right	21	0	19	2	0	50'
	SB Right	253	0	169	17	0	425'
	EB Right	33	0	32	3	0	75'
	WB Right	46	0	65	5	0	125'
	Quail Run Rd & Lincoln Dr	NB Left	3	0	4	1	0
SB Left		26	0	14	2	0	50'
EB Left		115	0	85	8	0	200'
WB Left		6	0	5	1	0	25'
NB Right		10	0	6	1	0	25'
SB Right		66	0	93	7	0	175'
EB Right		7	0	6	1	0	25'
WB Right		12	0	25	2	0	50'
Scottsdale Rd & Lincoln Dr		NB Left	309	0	446	30	0
	SB Left	55	0	66	5	0	125'
	EB Left	490	0	535	36	0	900'
	WB Left	41	0	61	5	0	125'
	NB Right	43	0	50	4	0	100'
	SB Right	640	0	529	43	0	1075'
	EB Right	500	0	452	34	0	850'
	WB Right	52	0	78	6	0	150'

Smoke Tree Scenario 2

Queue Length Analysis

**Unsignalized Intersection
2025**

Average Vehicle Length (ft): 25
 Equation Used: storage length = 2 x (vehicles/hour)/(30 cycles/hour) x average vehicle length

Intersection	Approach	AM Peak (veh/hr)	Midday Peak	PM Peak (veh/hr)	Veh per 2 minutes	Trucks per 2 minutes	Storage Length
Smoke Tree Drwy A & Lincoln Dr	NB Left	4	0	11	1	0	25'
	SB Left	0	0	0	0	0	0'
	EB Left	0	0	0	0	0	0'
	WB Left	20	0	19	1	0	25'
	NB Right	16	0	20	1	0	25'
	SB Right	0	0	0	0	0	0'
	EB Right	12	0	8	1	0	25'
	WB Right	0	0	0	0	0	0'

APPENDIX J

SIGHT DISTANCE ANALYSIS

Smoke Tree TIA

Location: Access A & Lincoln Dr

Sight Distance Analysis

Assumptions and/or Givens

<i>Elements of Design from AASHTO</i>	<i>6th Edition</i>	<i>AASHTO Ref</i>
Driver Eye Height		
Passenger Vehicle	3.50 ft	§3.2.6, p 3-14
Truck	7.60 ft	§3.2.6, p 3-14
Object Height		
Stopping Sight Distance	2.00 ft	§3.2.6, p 3-14
Passing Sight Distance	3.50 ft	§3.2.6, p 3-14
Vehicle Height	4.25 ft	§3.2.6, p 3-14
Driver Eye Location		
From Edge of Major Rd Traveled Way	14.50 ft	9.5.3, B1
Deceleration Rate (a)		
Passenger Vehicle	11.20 ft/sec ²	§3.2.2, p 3-3
Truck	N/A ft	
Brake reaction time (t)	2.50 sec	§3.2.2, p 3-4

Site Specific Data (Bike & turn lanes are outside traveled way and are not considered)

Major Street Design Speed (V _{major})	30 MPH	
Grades - Approaching Minor Street from: (- = approaching downhill)		
Left (G _L)	%	
Right (G _R)	%	
Approach Grade Adjustment Factor	Left 1.0	Tbl 9-4, p 9-35
	Right 1.0	
Major Road Through Lanes on Each Approach	(Use 1 for RI/RO/[LI] only)	
Median Width (in "Lane Equivalents")	(Use 0 for RI/RO/[LI] only)	
Minor Road Approach Upgrade, if >3%	%	
Minor Road Access (check restricted)		
	LI	LO/Th RO

Stopping Sight Distance = Brake Reaction Distance + Braking Distance

<u>Neglecting Effect of Grade</u>	$d = 1.47Vt + 1.075 \frac{V^2}{a}$	Eq 3-2, p 3-4
Calculated d=	196.7 ft	
Design d=	200 ft	

<u>With Effect of Grade</u>	$d = 1.47Vt + \frac{V^2}{30((\frac{a}{32.2}) \pm G)}$	Eq 3-3, p 3-5
Calculated d=	196.3 ft - left 200 ft - right	
Design d=	196.3 ft - left 200 ft - right	

SSD's do not consider design for truck operations, since better visibility is considered to offset longer braking distance. §3.2.2, p 3-6



Smoke Tree TIA

Location: Access A & Lincoln Dr

Sight Distance Analysis

Intersection Sight Distances

Case B—Intersections with Stop Control on the Minor Road §9.5.3, p 9-36

Case B1—Left Turn from the Minor Road §9.5.3, p 9-36

Design Vehicle	Time Gap (t _g)	
Passenger Car	7.5 sec	Tbl 9-5, p 9-37
Single-Unit Truck	9.5 sec	Tbl 9-5, p 9-37
Combination Truck	11.5 sec	Tbl 9-5, p 9-37

Time gap adjustments		
Add'l lanes to cross (1 st is assumed)		
Passenger Car	0.5 sec	See Notes
Trucks	0.7 sec	below
Minor Approach Upgrade (Per each 1%>3%)	0.2 sec	Tbl 9-5, p 9-37

Site data		
Major Road Lanes on Left Approach	0.0	§9.5.3, p 9-37
Minor Road Approach Upgrade, if >3%	0 %	§9.5.3, p 9-37

Time Gap based on site data		
Design Vehicle Gap+Adj for Approach Grade>3%+Adjs for Add'l Lanes & Median		
Passenger Car	7.0 sec	
Single-Unit Truck	8.8 sec	
Combination Truck	10.8 sec	

ISD to left & right along Major Road ISD=1.47V_{major}t_g (ft) Eq 9-1, p 9-37

		ISD to Left and Right
Passenger Car	calculated ISD=	308.7 ft
	design ISD=	310 ft
Single-Unit Truck	calculated ISD=	388.1 ft
	design ISD=	390 ft
Combination Truck	calculated ISD=	476.3 ft
	design ISD=	480 ft



Smoke Tree TIA

Location: Access A & Lincoln Dr

Sight Distance Analysis

Intersection Sight Distances (cont'd)

			<i>AASHTO Ref</i>
<u>Case B2—Right Turn from the Minor Road</u>			§9.5.3, p 9-40
&			
<u>Case B3—Crossing Maneuver from the Minor Road</u>			§9.5.3, p 9-43
Design Vehicle	Time Gap (t _g)		
Passenger Car	6.5 sec	Tbl 9-7, p 9-40	
Single-Unit Tuck	8.5 sec	Tbl 9-7, p 9-40	
Combination Truck	10.5 sec	Tbl 9-7, p 9-40	
Time gap adjustments - Case B-3 Only*			
Add'l lanes to cross (1 st is assumed)			
Passenger Car	0.5 sec	See Notes	
Trucks	0.7 sec	below	
Minor Approach Upgrade (Per each 1%>3%)	0.1 sec	Tbl 9-7, p 9-40	
Site data			
Major Road Lanes on Left Approach	0.0	§9.5.3, p 9-40	
Minor Road Approach Upgrade, if >3%	0 %	§9.5.3, p 9-40	

Time Gap based on site data (sec)	<u>B2 & B3</u>	<u>B3 Only</u>
<i>Design Vehicle Gap+Adj for Approach Grade>3%(+Adjs for Add'l Lanes & Median for B3)</i>		
Passenger Car	6.0	5.5
Single-Unit Tuck	7.8	7.1
Combination Truck	9.8	9.1

ISD to left (B2/B3) & right (B3) along Major Rd ISD=1.47V_{major}t_g (ft) Eq 9-1, p 9-37

			ISD to Left	ISD to right
			(B2 & B3)	(B3 Only)
Passenger Car	calculated ISD=	264.6	242.6	
	design ISD=	265	245	
Single-Unit Tuck	calculated ISD=	344.0	313.1	
	design ISD=	345	315	
Combination Truck	calculated ISD=	432.2	401.3	
	design ISD=	435	405	

*Number of major road lanes is irrelevant in Case B2.

The differences between Case B1 and Cases B2 & B3 are reduced time gaps and time gap adjustment for the minor approach upgrade. §9.5.3, p 9-43



Smoke Tree TIA

Location: Access A & Lincoln Dr

Sight Distance Analysis

Intersection Sight Distances (cont'd)

			<i>AASHTO Ref</i>
<u>Case F—Left Turns from the Major Road</u>			§9.5.3, p 9-51
Design Vehicle	Time Gap (t _g)		
Passenger Car	5.5 sec	bl 9-13, p 9-51	
Single-Unit Tuck	6.5 sec	bl 9-13, p 9-51	
Combination Truck	7.5 sec	bl 9-13, p 9-51	
Time gap adjustments			
Add'l lanes to cross (1 assumed)			
Passenger Car	0.5 sec	See Notes to	
Trucks	0.7 sec	bl 9-13, p 9-51	
Site data			
Opposing Lanes (adj'd for x-wide median)	-1.0		
Time Gap based on site data			
<i>Design Vehicle Gap+Adj for Add'l Opposing Lanes</i>			
Passenger Car	5.0 sec		
Single-Unit Tuck	5.8 sec		
Combination Truck	6.8 sec		
ISD to front along Major Road	ISD=1.47V _{major} t _g (ft)		Eq 9-1, p 9-37
Passenger Car	calculated ISD=	220.5 ft	
	design ISD=	225 ft	
Single-Unit Tuck	calculated ISD=	255.8 ft	
	design ISD=	260 ft	
Combination Truck	calculated ISD=	299.9 ft	
	design ISD=	300 ft	

The differences between Case F and Cases B1, B2 & B3 are reduced time gaps and no time gap adjustment for any minor approach upgrade. §9.5.3, p 9-43

SIGHT DISTANCE SUMMARY

Sight Distance Type	Governing Case	Car	SU Truck	Combo Truck
Stopping				
Without effect of grade		200	N/A	N/A
With effect of grade on left		200	N/A	N/A
With effect of grade on right		200	N/A	N/A
Intersection				
To Right	B1	310	390	480
To Left	B2/B3	265	345	435
On Major Road	F	225	260	300



Smoke Tree TIA

Location: Quail Run Rd & Access B

Sight Distance Analysis

Assumptions and/or Given

<i>Elements of Design from AASHTO</i>	<i>6th Edition</i>	<i>AASHTO Ref</i>
Driver Eye Height		
Passenger Vehicle	3.50 ft	§3.2.6, p 3-14
Truck	7.60 ft	§3.2.6, p 3-14
Object Height		
Stopping Sight Distance	2.00 ft	§3.2.6, p 3-14
Passing Sight Distance	3.50 ft	§3.2.6, p 3-14
Vehicle Height	4.25 ft	§3.2.6, p 3-14
Driver Eye Location		
From Edge of Major Rd Traveled Way	14.50 ft	9.5.3, B1
Deceleration Rate (a)		
Passenger Vehicle	11.20 ft/sec ²	§3.2.2, p 3-3
Truck	N/A ft	
Brake reaction time (t)	2.50 sec	§3.2.2, p 3-4

Site Specific Data (Bike & turn lanes are outside traveled way and are not considered)

Major Street Design Speed (V _{major})	45 MPH	
Grades - Approaching Minor Street from: (= = approaching downhill)		
Left (G _L)	%	
Right (G _R)	%	
Approach Grade Adjustment Factor	Left 1.0	Tbl 9-4, p 9-35
	Right 1.0	
Major Road Through Lanes on Each Approach	(Use 1 for RI/RO/[LI] only)	
Median Width (in "Lane Equivalents")	(Use 0 for RI/RO/[LI] only)	
Minor Road Approach Upgrade, if >3%	%	
Minor Road Access (check restricted)		
	LI	LO/Th RO

Stopping Sight Distance = Brake Reaction Distance + Braking Distance

<u>Neglecting Effect of Grade</u>	$d = 1.47Vt + 1.075 \frac{V^2}{a}$	Eq 3-2, p 3-4
Calculated d=	359.8 ft	
Design d=	360 ft	

<u>With Effect of Grade</u>	$d = 1.47Vt + \frac{V^2}{30((\frac{a}{32.2}) \pm G)}$	Eq 3-3, p 3-5
Calculated d=	359.1 ft - left 360 ft - right	
Design d=	359.1 ft - left 360 ft - right	

SSD's do not consider design for truck operations, since better visibility is considered to offset longer braking distance. §3.2.2, p 3-6



Smoke Tree TIA

Location: Quail Run Rd & Access B

Sight Distance Analysis

Intersection Sight Distances

Case B—Intersections with Stop Control on the Minor Road

AASHTO Ref
§9.5.3, p 9-36

Case B1—Left Turn from the Minor Road

§9.5.3, p 9-36

Design Vehicle	Time Gap (t _g)	
Passenger Car	7.5 sec	Tbl 9-5, p 9-37
Single-Unit Truck	9.5 sec	Tbl 9-5, p 9-37
Combination Truck	11.5 sec	Tbl 9-5, p 9-37

Time gap adjustments

Add'l lanes to cross (1 st is assumed)		
Passenger Car	0.5 sec	See Notes
Trucks	0.7 sec	below
Minor Approach Upgrade (Per each 1%>3%)	0.2 sec	Tbl 9-5, p 9-37

Site data

Major Road Lanes on Left Approach	0.0	§9.5.3, p 9-37
Minor Road Approach Upgrade, if >3%	0 %	§9.5.3, p 9-37

Time Gap based on site data

Design Vehicle Gap+Adj for Approach Grade>3%+Adjs for Add'l Lanes & Median

Passenger Car	7.0 sec
Single-Unit Truck	8.8 sec
Combination Truck	10.8 sec

ISD to left & right along Major Road ISD=1.47V_{major}t_g (ft) Eq 9-1, p 9-37

		ISD to Left and Right
Passenger Car	calculated ISD=	463.1 ft
	design ISD=	465 ft
Single-Unit Truck	calculated ISD=	582.1 ft
	design ISD=	585 ft
Combination Truck	calculated ISD=	714.4 ft
	design ISD=	715 ft



Smoke Tree TIA
Location: Quail Run Rd & Access B

Sight Distance Analysis

Intersection Sight Distances (cont'd)

			<i>AASHTO Ref</i>
<u>Case B2—Right Turn from the Minor Road</u>			§9.5.3, p 9-40
&			
<u>Case B3—Crossing Maneuver from the Minor Road</u>			§9.5.3, p 9-43
Design Vehicle	Time Gap (t_g)		
Passenger Car	6.5 sec	Tbl 9-7, p 9-40	
Single-Unit Tuck	8.5 sec	Tbl 9-7, p 9-40	
Combination Truck	10.5 sec	Tbl 9-7, p 9-40	
Time gap adjustments - Case B-3 Only*			
Add'l lanes to cross (1 st is assumed)			
Passenger Car	0.5 sec	See Notes	
Trucks	0.7 sec	below	
Minor Approach Upgrade (Per each 1%>3%)	0.1 sec	Tbl 9-7, p 9-40	
Site data			
Major Road Lanes on Left Approach	0.0	§9.5.3, p 9-40	
Minor Road Approach Upgrade, if >3%	0 %	§9.5.3, p 9-40	

Time Gap based on site data (sec)	<u>B2 & B3</u>	<u>B3 Only</u>
<i>Design Vehicle Gap+Adj for Approach Grade>3% (+Adjs for Add'l Lanes & Median for B3)</i>		
Passenger Car	6.0	5.5
Single-Unit Tuck	7.8	7.1
Combination Truck	9.8	9.1

ISD to left (B2/B3) & right (B3) along Major Rd ISD=1.47V_{major}t_g (ft) Eq 9-1, p 9-37

			ISD to Left	ISD to right
			(B2 & B3)	(B3 Only)
Passenger Car	calculated ISD=	396.9	363.8	
	design ISD=	400	365	
Single-Unit Tuck	calculated ISD=	516.0	469.7	
	design ISD=	520	470	
Combination Truck	calculated ISD=	648.3	602.0	
	design ISD=	650	605	

*Number of major road lanes is irrelevant in Case B2.

The differences between Case B1 and Cases B2 & B3 are reduced time gaps and time gap adjustment for the minor approach upgrade. §9.5.3, p 9-43



Smoke Tree TIA
Location: Quail Run Rd & Access B

Sight Distance Analysis

Intersection Sight Distances (cont'd)

			<i>AASHTO Ref</i>
<u>Case F—Left Turns from the Major Road</u>			§9.5.3, p 9-51
Design Vehicle	Time Gap (t_g)		
Passenger Car	5.5 sec	bl 9-13, p 9-51	
Single-Unit Tuck	6.5 sec	bl 9-13, p 9-51	
Combination Truck	7.5 sec	bl 9-13, p 9-51	
Time gap adjustments			
Add'l lanes to cross (1 assumed)			
Passenger Car	0.5 sec	See Notes to	
Trucks	0.7 sec	bl 9-13, p 9-51	
Site data			
Opposing Lanes (adj'd for x-wide median)	-1.0		
Time Gap based on site data			
<i>Design Vehicle Gap+Adj for Add'l Opposing Lanes</i>			
Passenger Car	5.0 sec		
Single-Unit Tuck	5.8 sec		
Combination Truck	6.8 sec		
ISD to front along Major Road	ISD=1.47V _{major} t _g (ft)		Eq 9-1, p 9-37
Passenger Car	calculated ISD=	330.8 ft	
	design ISD=	335 ft	
Single-Unit Tuck	calculated ISD=	383.7 ft	
	design ISD=	385 ft	
Combination Truck	calculated ISD=	449.8 ft	
	design ISD=	450 ft	

The differences between Case F and Cases B1, B2 & B3 are reduced time gaps and no time gap adjustment for any minor approach upgrade. §9.5.3, p 9-43

SIGHT DISTANCE SUMMARY

Sight Distance Type	Governing Case	Car	SU Truck	Combo Truck
Stopping				
Without effect of grade		360	N/A	N/A
With effect of grade on left		360	N/A	N/A
With effect of grade on right		360	N/A	N/A
Intersection				
To Right	B1	465	585	715
To Left	B2/B3	400	520	650
On Major Road	F	335	385	450

