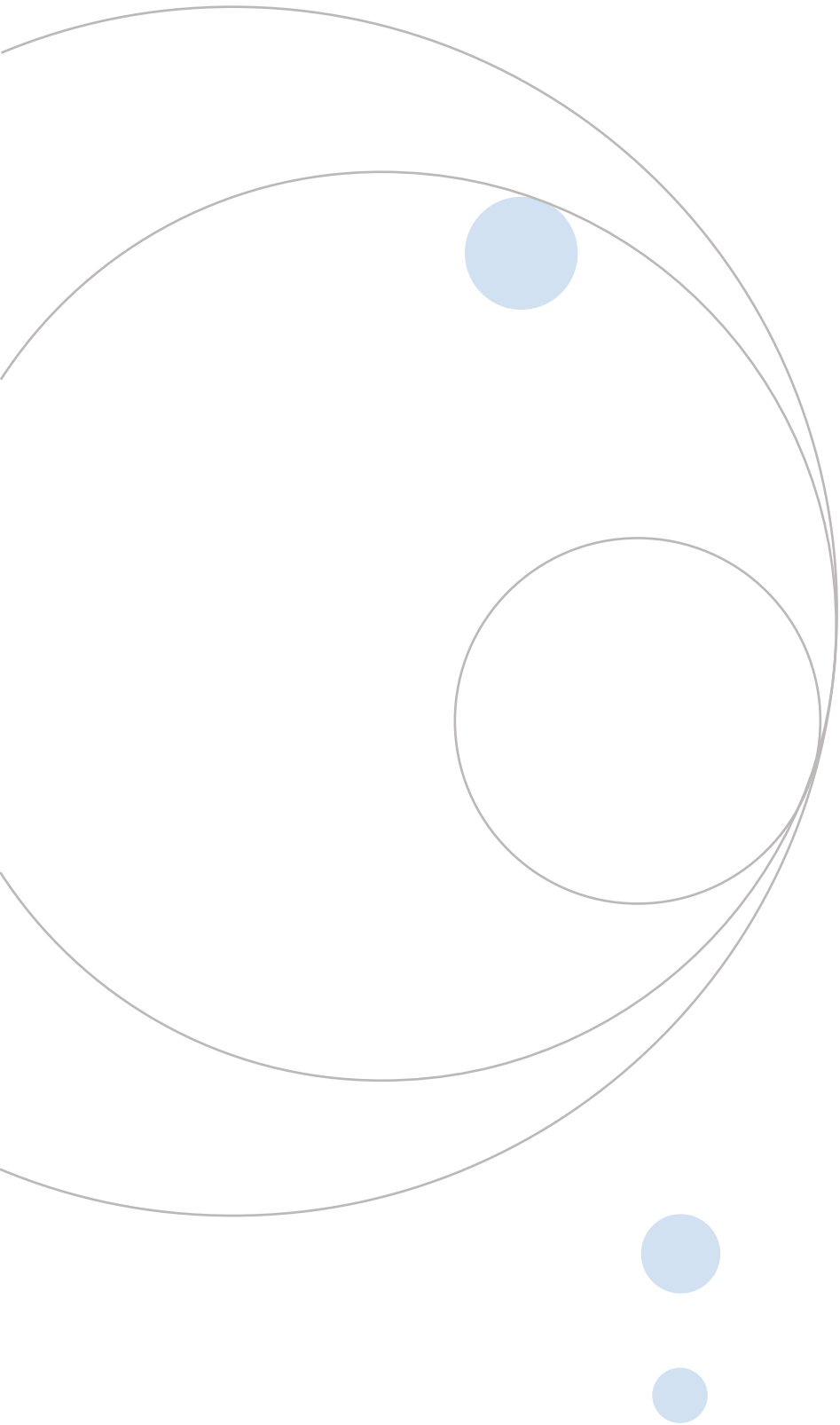




Smoke Tree Resort

Traffic Impact Analysis

7101 E. Lincoln Drive
Town of Paradise Valley, Arizona

February 2023
Project No. 18-0555

Prepared For:

Walton Global Holdings
8800 N Gainey Center Drive, Suite 345
Scottsdale, Arizona 85258

For Submittal to:

Town of Paradise Valley

Prepared By:



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SMOKE TREE RESORT TRAFFIC IMPACT ANALYSIS

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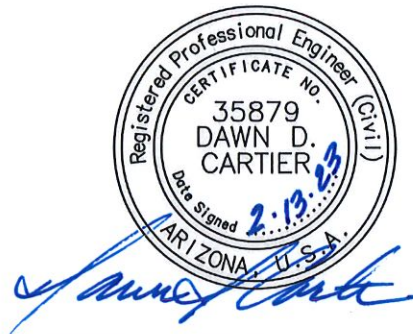
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February 2023

CivTech Project No. 18-0555

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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 80 hotel rooms composed of 75 lodge rooms and 5 casita room keys. Additionally, the Smoke Tree Resort will provide 17,222 square feet of quality restaurant which will be open to the public as well as resort guests, an event space, and other hotel amenities for guests to utilize.

CivTech, Inc. has been retained by Walton Global Holdings to perform the traffic impact analysis 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 1,168 external weekday daily trips, with 39 trips (23 in/ 16 out) occurring in the AM peak hour and 98 trips (61 in/ 37 out) occurring in the PM peak hour.

EXISTING CONDITIONS

- The results of the existing conditions analysis indicate 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 the AM peak hour. 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.
- The intersection of **Scottsdale Road and Lincoln Drive** currently experiences delays on the eastbound and westbound approaches during both the AM and PM peak hours and the southbound approach during the PM peak hour. Although mitigation is not typically recommended for existing conditions, since this stretch of Lincoln Drive is currently under development, recommendations will be made in order to minimize the current delay.

- o During the AM and PM peak hours, it is recommended that the green time is increased for the southbound, eastbound, and westbound movements. This mitigation measure is anticipated to reduce the southbound delay from 58.4 sec/veh (LOS E) to 28.1 sec/veh (LOS C) in the PM peak hour. The eastbound delay is improved from 76.8 sec/veh (LOS E) to 52.1 sec/veh (LOS D) in the AM peak hour and 71.7 sec/veh (LOS E) to 46.9 sec/veh (LOS D) in the PM peak hour. The westbound approach remains unchanged, in order to mitigate this delay, the initial green time could be changed allowing for more vehicles to pass through the intersection before the signal changes, however, this change will be at the discretion of the City of Scottsdale as this intersection is owned and operated by the City.

OPENING YEAR 2024

- The results of the 2024 peak hour analysis indicate that all intersections currently operate at an overall acceptable level of service (LOS D or better) with the exception of **Scottsdale Road and Lincoln Drive**.
- The intersection of **Scottsdale Road and Lincoln Drive** is expected to experience delay in the southbound, eastbound, and westbound approaches. The southbound approach experiences delay during the PM peak hour in the 2024 opening year. The eastbound and westbound approaches experience delay in the AM and PM peak hours in both no-build and build scenario in the 2024 opening year. To mitigate this delay, it is recommended that the green time is increased for the through movements on the southbound, eastbound, and westbound approaches.
 - o With these mitigation measures applied to the 2024 Build PM peak hour scenario, the southbound delay is anticipated to decrease from 62.0 sec/veh (LOS E) to 27.1 sec/veh (LOS C).
 - o In the eastbound approach during the AM peak hour in the 2024 Build opening year, the delay is anticipated to decrease from 81.8 sec/veh (LOS F) to 50.8 (LOS D). In the eastbound approach during the PM peak hour in the 2024 opening year, the delay is anticipated to decrease from 79.0 sec/veh (LOS E) to 52.6 sec/veh (LOS D).
 - o The westbound approach remains unchanged in the AM and PM peak hours at both the 2024 Build opening year. 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, however, this change will be at the discretion of the City of Scottsdale as this intersection is owned and operated by the City.

HORIZON YEAR 2029

- The results of the 2029 peak hour analysis indicate that all intersections currently operate at an overall acceptable level of service (LOS D or better) with the exception of **Scottsdale Road and Lincoln Drive**.
- The intersection of **Scottsdale Road and Lincoln Drive** is expected to experience delay in the southbound, eastbound, and westbound approaches in both the no-build and build scenarios. The southbound approach experiences delay during the PM peak hour in the 2029 horizon year. The eastbound and westbound approaches experience delay in the AM and PM peak hours during the 2029 horizon year. To mitigate this delay, it is recommended that the green time is increased for the through movements on the southbound, eastbound, and westbound approaches.
 - o With these mitigation measures applied, it is expected that in the southbound approach during the 2029 Build PM peak hour scenario, the delay is anticipated to decrease from 134.9 sec/veh (LOS F) to 37.4 sec/veh (LOS D).
 - o In the eastbound approach during the 2029 Build AM peak hour scenario, the delay is anticipated to decrease from 133.2 sec/veh (LOS F) to 66.5 sec/veh (LOS E). In the eastbound approach during the 2029 Build PM peak hour scenario, the delay is anticipated to decrease from 174.0 sec/veh (LOS F) to 91.9 sec/veh (LOS F).
 - o The westbound approach remains unchanged in the AM and PM peak hours at the 2029 Build horizon year. 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, however, this change will be at the discretion of the City of Scottsdale as this intersection is owned and operated by the City.

QUEUE STORAGE

- The recommended storage lengths in **Table 7** are provided for horizon year 2029 using the total traffic projections.

SIGHT DISTANCE

- Adequate sight distance must be provided at the intersections to allow safe left and right turning movements from the development.
 - o The developer 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 80 total hotel rooms comprised of 75 lodge rooms and 5 casita room keys. Additionally, the Smoke Tree Resort will provide a total of 17,222 square feet of quality restaurant which will be open to the public as well as resort guests, 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 & 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. For purposes of this study, the development will be assumed fully built out by 2024. Therefore, the analysis years to be analyzed for this study include the opening year 2024 and horizon year 2029. A vicinity map of the study area is provided in **Figure 1**.

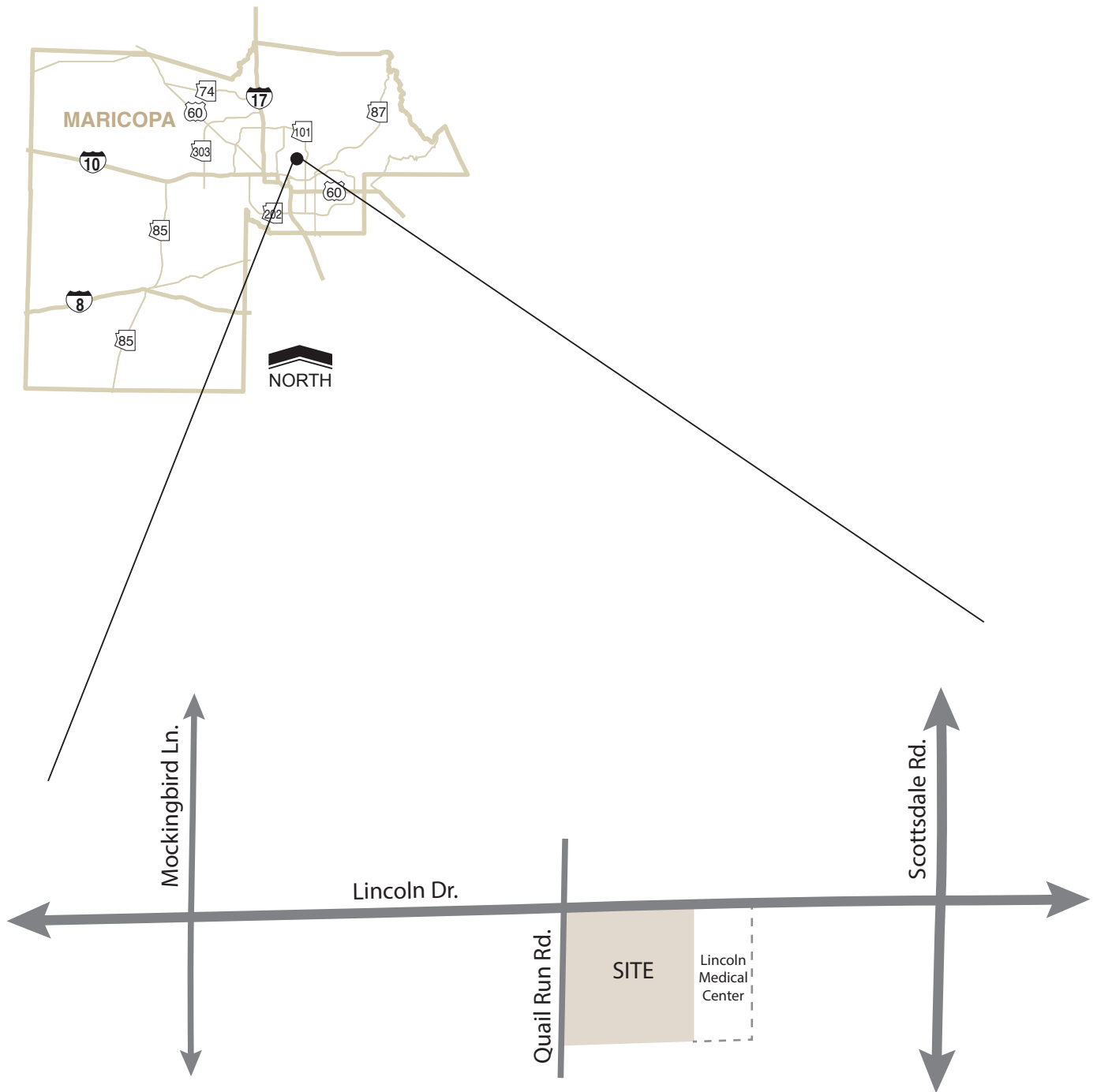


Figure 1: Vicinity Map

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 (TWLTL) 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 northbound and westbound approaches. The northbound approach provides one exclusive left turn lane and a shared through/right-turn lane. The southbound approach provides an exclusive left turn lane, a through lane, a bike lane, and a dedicated right turn lane. The eastbound approach provides an exclusive left turn lane, one through lane, and one shared through and right turn lane. The westbound approach

provides an exclusive left turn lane, two through lanes, and a dedicated 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, signalized with permitted protected phasing in the eastbound and westbound approaches. The northbound approach provides one shared left-turn/through/right-turn lane. The eastbound approach provides an exclusive left-turn lane, two through lanes, and a dedicated right turn lane. The westbound provides one exclusive left-turn, one through lane, and one shared through/right-turn lane. The southbound approach provides one shared left-turn/through/right-turn lane.

The intersection of **Shared Driveway and Lincoln Drive** is a three-legged, stop-controlled intersection with free movements in the east and west directions. The northbound approach consists of one shared left and right turn lane. The eastbound approach consists of one through lane and one shared through and right turn lane. The westbound approach consists of an exclusive left-turn lane and two through lanes.

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 provides a one shared left/through/right lane. The eastbound approach provides an exclusive left-turn lane, a through lane, and one shared through/right-turn lane. The southbound approach provides one exclusive left turn lane and one dedicated right turn lane. The westbound approach provides a TWTL, one through lane, and one shared through/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, protected left turns on the northbound and southbound approaches, and permitted overlap right turn phasing in the southbound and eastbound approaches. The northbound approach provides two exclusive left turn lanes, two through lanes, and one shared through/right-turn lane. The westbound approach provides one exclusive left-turn lane, one through lane, one shared through/right-turn lane, and a bike lane. The southbound approach provides one exclusive left turn-lane, three through lanes, and one dedicated right-turn lane. The eastbound approach provides one exclusive left turn lane, one shared left turn and through lane and one dedicated right turn lane.

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

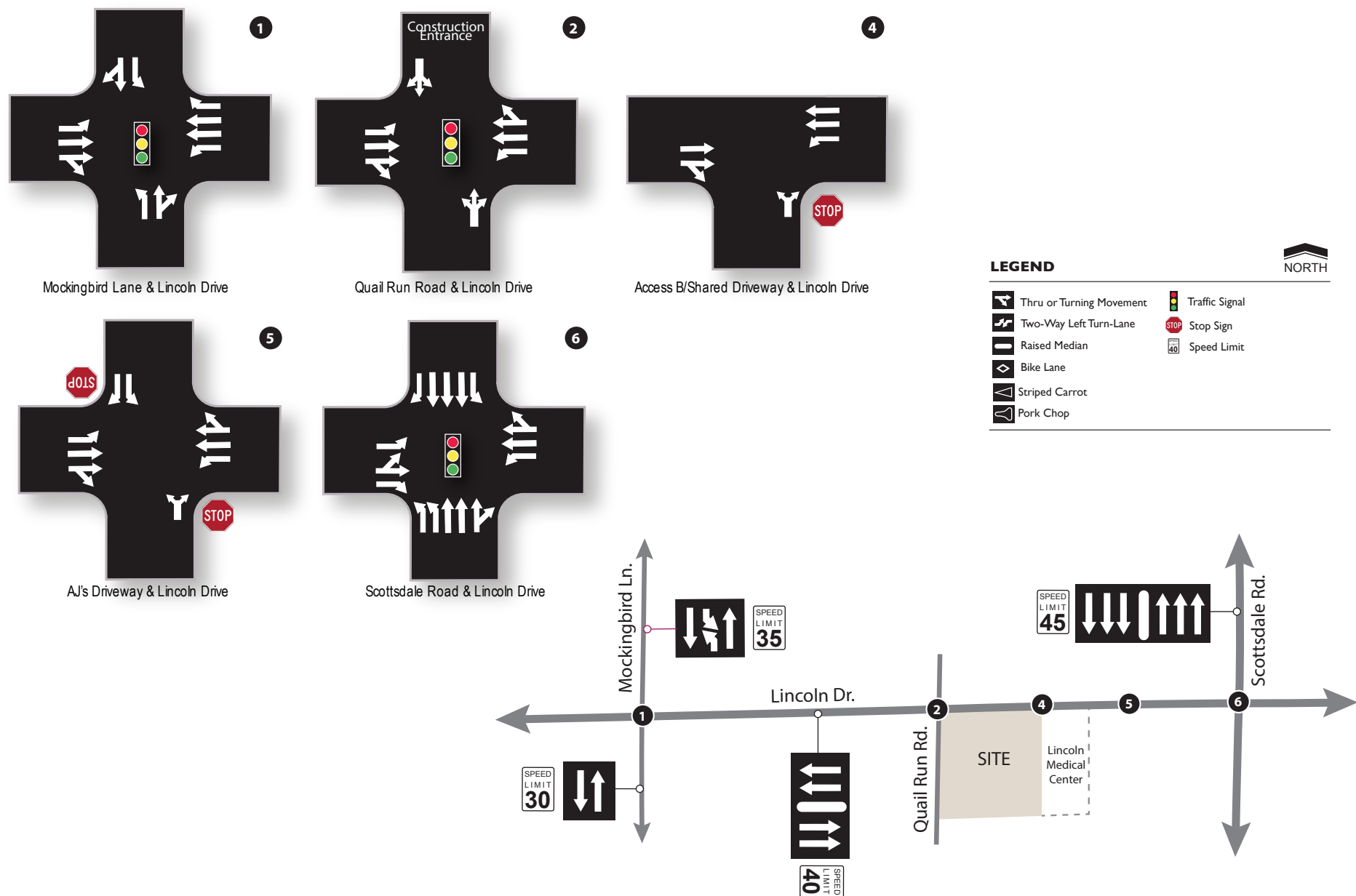


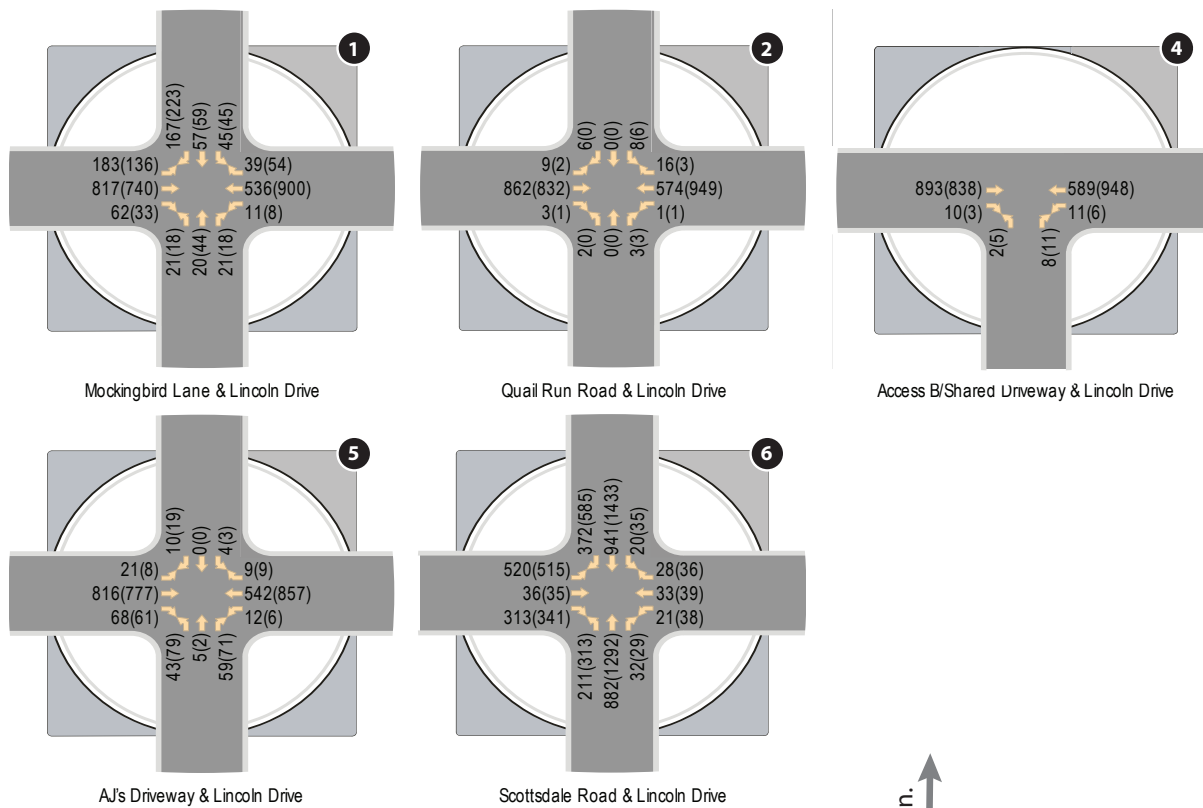
Figure 2: Existing Lane Configurations and Traffic Controls

EXISTING TRAFFIC VOLUMES

CivTech engaged Field Data Services of Arizona, Inc. to record traffic volumes at six (6) 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 Wednesday, November 16, 2022. Peak hour turning movement counts were conducted at the following study intersections:

- Mockingbird Lane & Lincoln Drive
- Quail Run Road & Lincoln Drive
- West Smoke Tree Driveway & Lincoln Drive
- Shared Driveway & Lincoln Drive
- AJ's Driveway & Lincoln Drive
- Scottsdale Road & Lincoln Drive

Existing traffic volumes 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**.



Legend

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

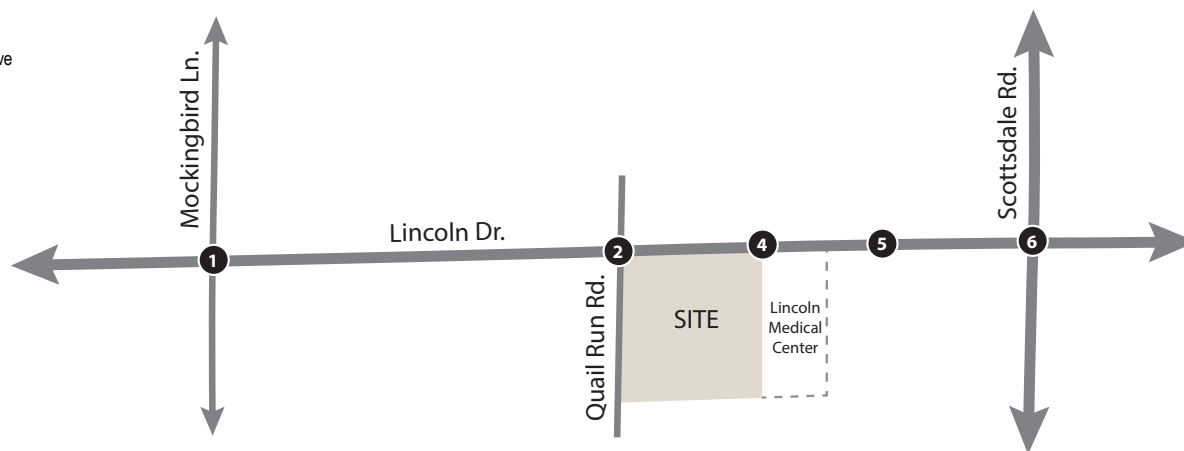


Figure 3: Existing Traffic Volumes

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 11.0 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 11.0 software calculates the LOS per the HCM 6th edition methodology. The 6th edition HCM documents the signalized LOS calculation methodology which considers 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	Control	Approach / Movement	Existing LOS AM (PM)	Mitigated AM (PM)
1	Mockingbird Lane & Lincoln Drive	Signal	NB	E(D)	[Not Mitigated]
			SB	E(D)	
			EB	A(A)	
			WB	B(B)	
			Overall	B(B)	
2	Quail Run Road & Lincoln Drive	Signal	NB	B(B)	[Not Mitigated]
			SB	B(B)	
			EB	B(D)	
			WB	D(A)	
			Overall	D (C)	
4	Smoke Tree Driveway & Lincoln Drive	1-way stop (NB)	NB Shared	B(B)	[Not Mitigated]
			WB Left	A(A)	
5	AJ's 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)	
6	Scottsdale Road & Lincoln Drive	Signal	NB	D(D)	C(C)
			SB	D(E)	B(C)
			EB	E(E)	D(D)
			WB	E(E)	E(E)
			Overall	D(D)	C(C)

The results of the existing conditions analysis summarized in **Table 2** indicate 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 the AM peak hour. 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.

The intersection of **Scottsdale Road and Lincoln Drive** currently experiences delays on the eastbound and westbound approaches during both the AM and PM peak hours and the southbound approach during the PM peak hour. Although mitigation is not typically

recommended for existing conditions, since this stretch of Lincoln Drive is currently under development, recommendations will be made in order to minimize the current delay.

During the AM and PM peak hours, it is recommended that the green time is increased for the southbound, eastbound, and westbound movements. This mitigation measure is anticipated to reduce the southbound delay from 58.4 sec/veh (LOS E) to 28.1 sec/veh (LOS C) in the PM peak hour. The eastbound delay is improved from 76.8 sec/veh (LOS E) to 52.1 sec/veh (LOS D) in the AM peak hour and 71.7 sec/veh (LOS E) to 46.9 sec/veh (LOS D) in the PM peak hour. The westbound approach remains unchanged, in order to mitigate this delay, the initial green time could be changed allowing for more vehicles to pass through the intersection before the signal changes, however, this change will be at the discretion of the City of Scottsdale as this intersection is owned and operated by the City.

PROPOSED DEVELOPMENT

SITE LOCATION

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

SITE ACCESS

- Access A is a proposed full access on Quail Run Road to the Smoke Tree site. The access point is approximately 165 feet south of Lincoln Drive.
- Access B is an existing full movement access point on Lincoln Drive located at the Smoke Tree Resort eastern property line; this is a shared access with the Lincoln Medical Plaza bordering Smoke Tree to the east.

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



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, 11th Edition* and *Trip Generation Handbook, 3^d 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 on daily and peak hour trips.

The proposed development will consist of 80 hotel rooms which consist of 75 lodge rooms and 5 casita room keys. Additionally, the Smoke Tree Resort will provide a 5,000 square foot French cowboy quality restaurant, a 3,420 square foot Speakeasy bar, an 8,252 SF contemporary casual dining 3-Meal Lounge, a 550 SF pool bar, and a 200-person event space, all of which will be open to the public as well as resort guests. Event space and other hotel amenities for guests will be provided but are not anticipated to generate any off-site trips.

ITE's definition of the hotel land use (LUC 310) includes supporting facilities such as, "a full-service restaurant, cocktail lounge, meeting rooms, banquet rooms, and convention facilities." The proposed ancillary uses to the hotel: the Speakeasy bar, contemporary casual dining 3-meal lounge, pool bar, and event space, are therefore included in the hotel trip generation.

Additionally, an internal capture percentage was applied to the external French Cowboy quality restaurant trips because it is assumed that not all trips to and from these areas will be external. For the French Cowboy quality restaurant uses, it is anticipated that 50% of the trips will be arriving externally and the other 50% will be hotel guests. **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	80	Rooms	444	18	15	33	16	15	31
(French Cowboy) Quality Restaurant	931	17,222	SF	1,448	10	3	13	90	45	135
Total Trips				1,892	28	18	46	106	60	166
<i>Internal Capture Reduction (Quality Restaurant 50%)</i>				<i>(724)</i>	<i>(5)</i>	<i>(2)</i>	<i>(7)</i>	<i>(45)</i>	<i>(23)</i>	<i>(68)</i>
Total External Trips				1,168	23	16	39	61	37	98

The proposed development is anticipated to generate approximately 1,168 external weekday daily trips, with 39 trips (23 in/ 16 out) occurring in the AM peak hour and 98 trips (61 in/ 37 out) 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**.

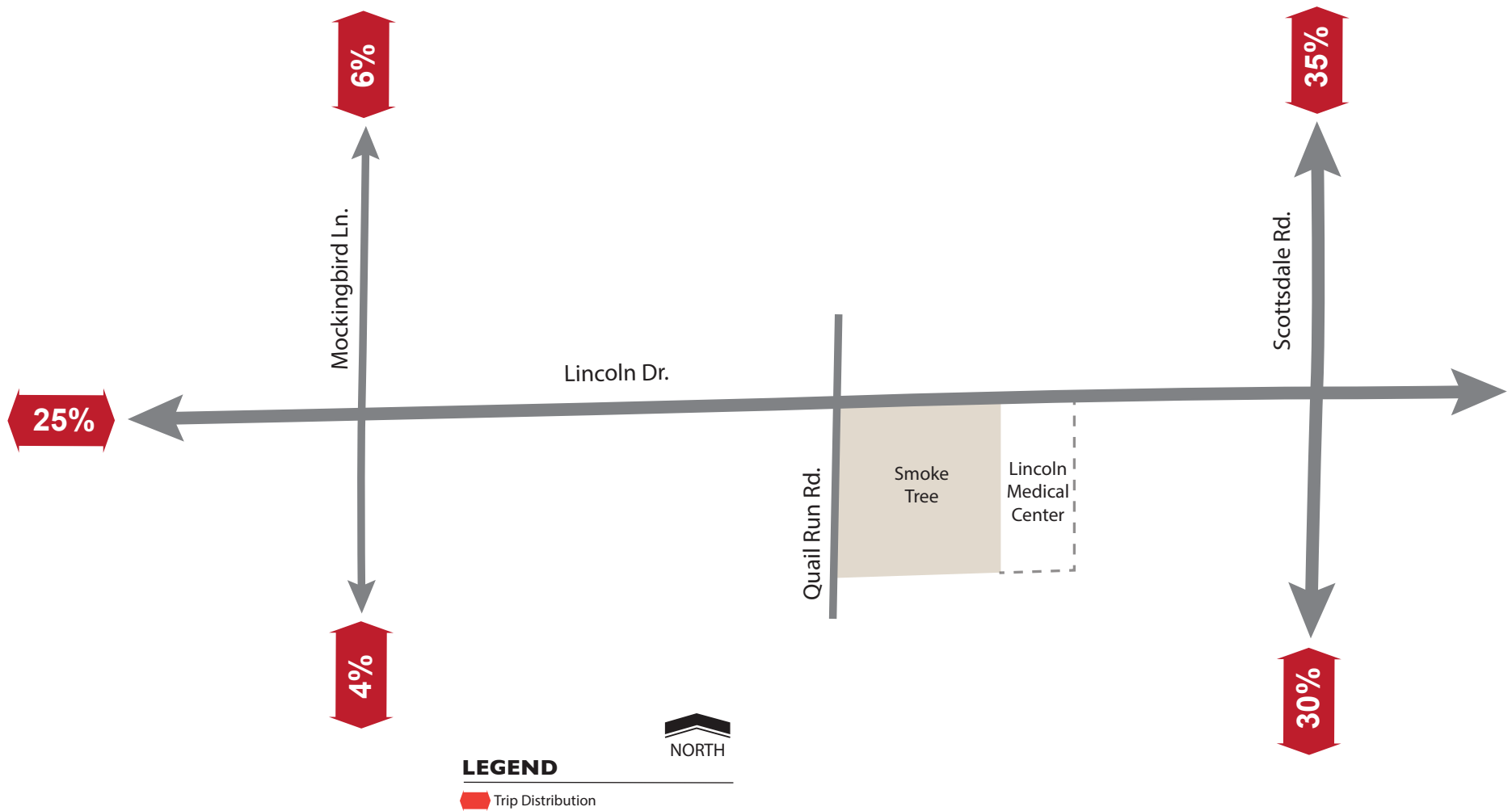
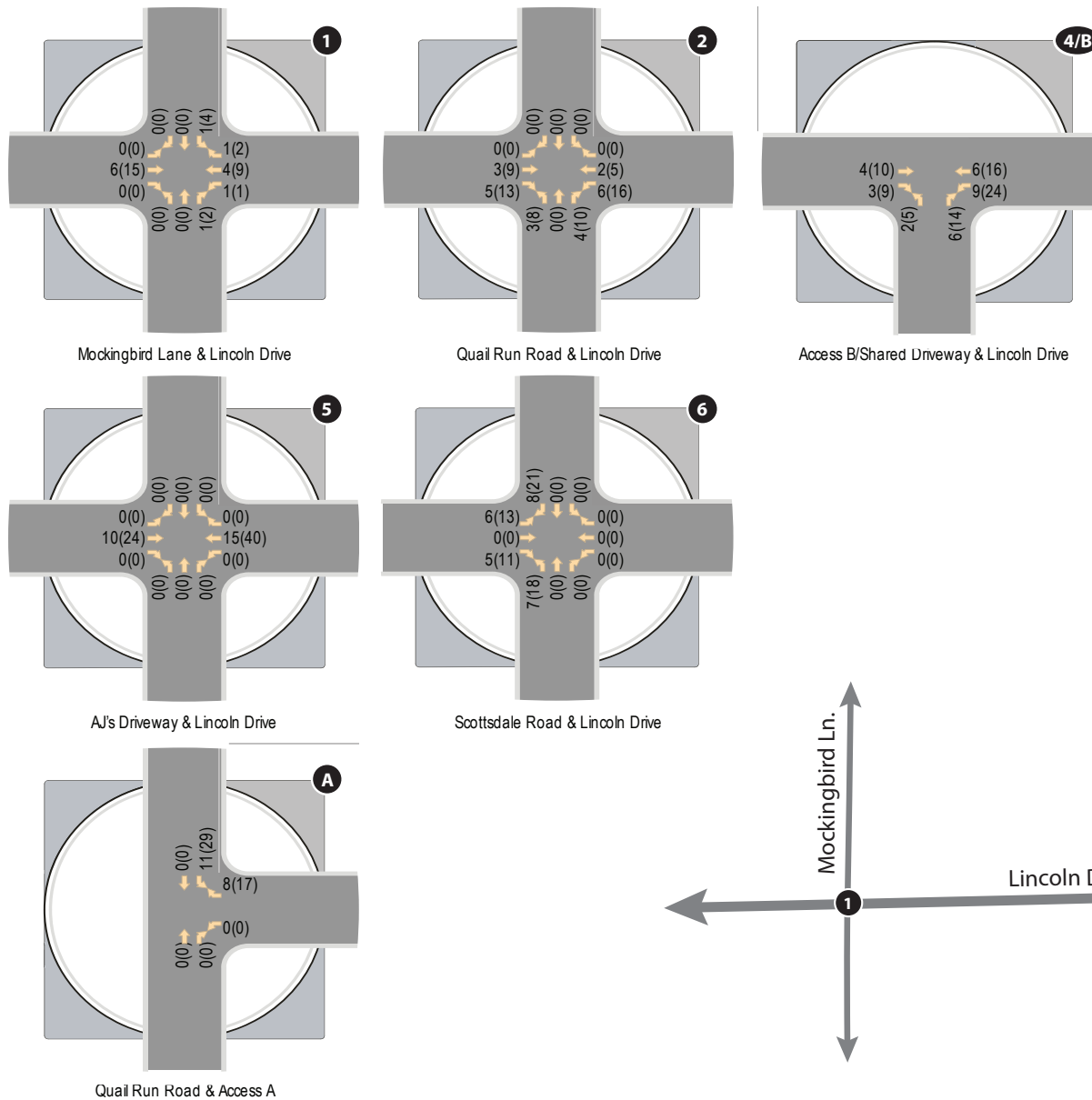


Figure 5: Trip Distribution



Legend

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

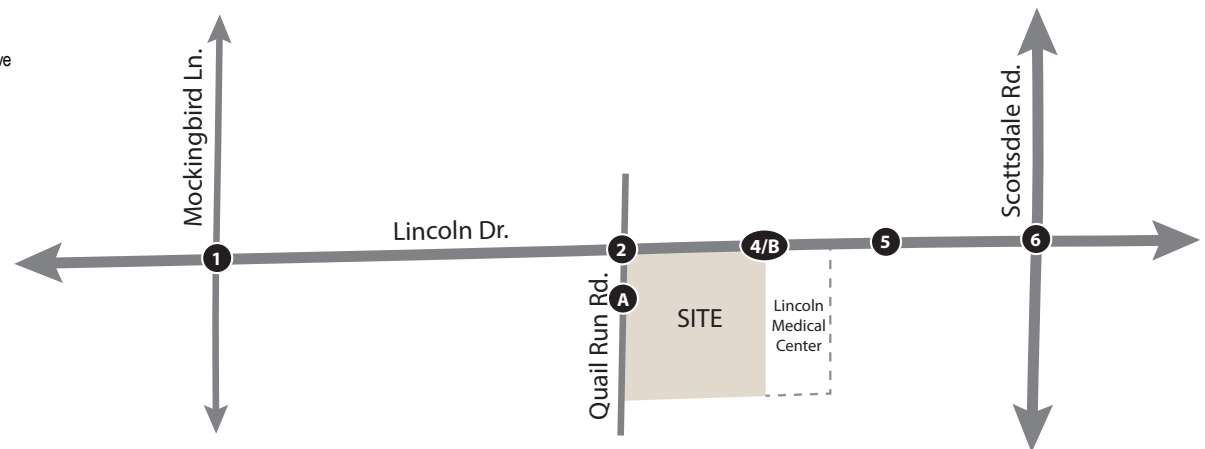


Figure 6: Site Generated Traffic Volumes

FUTURE BACKGROUND TRAFFIC

CivTech applied a growth rate to the existing 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 2024 and horizon year 2029.

Table 5 – Growth Rate Expansion Factors

Horizon Year	Expansion Factor
2024	1.017
2029	1.106

Applying the growth rate expansion factors to the existing traffic volumes predicts the volume of traffic anticipated on the surrounding area roads for opening year 2024 and horizon year 2029.

RITZ CARLTON

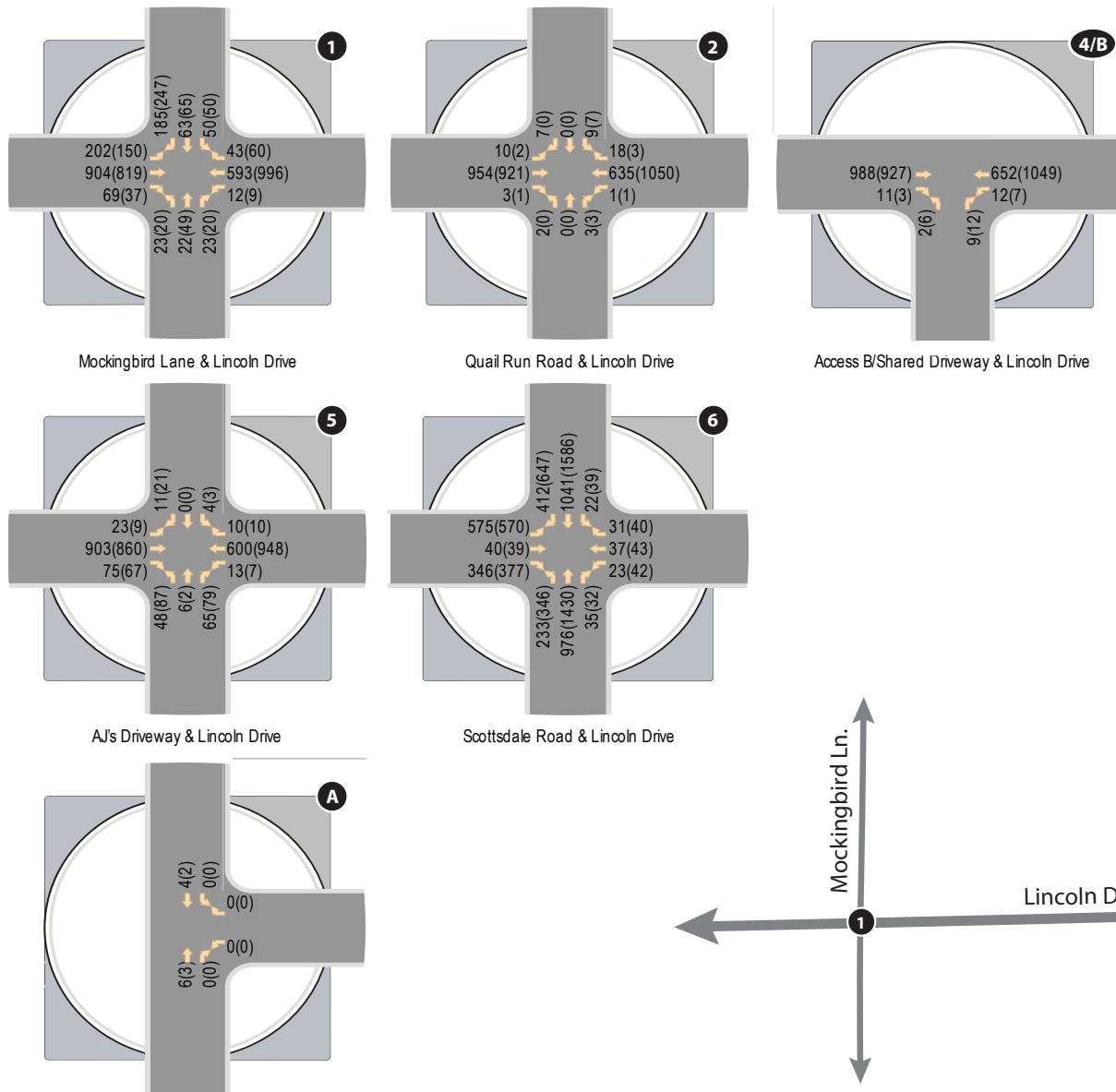
Directly north of the proposed Smoke Tree Resort is the new Ritz Carlton Resort. Phase 1 of that development was expected to be open by 2021, meaning that it is already adding some site generated trips to the surrounding roadway network. Since CivTech was the company that performed the analysis for the Ritz Carlton in 2016, the site generated volumes expected for the 2026 horizon year, as depicted in the *Ritz Carlton Resort Master Traffic Impact Analysis, March 2016*, were added to the grown existing volumes.

The future signal at the intersection of Quail Run Road and Lincoln Drive is being constructed by the Ritz Carlton developer. By the horizon year 2026, this intersection will provide a dedicated southbound right turn lane striped at 300 feet. These two improvements have been included in the analysis for the 2029 horizon year.

The background traffic for the opening year 2024 is presented in **Figure 7**. The background traffic for the horizon year 2029 is presented in **Figure 8**. 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 2024 are shown in **Figure 9**. Total peak hour traffic volumes for the horizon year 2029 are shown in **Figure 10**.



Legend

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

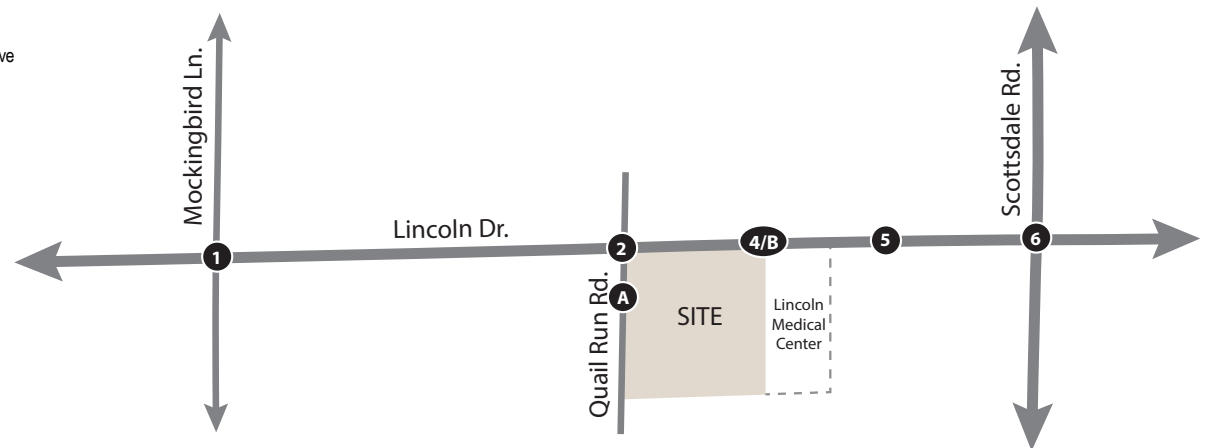
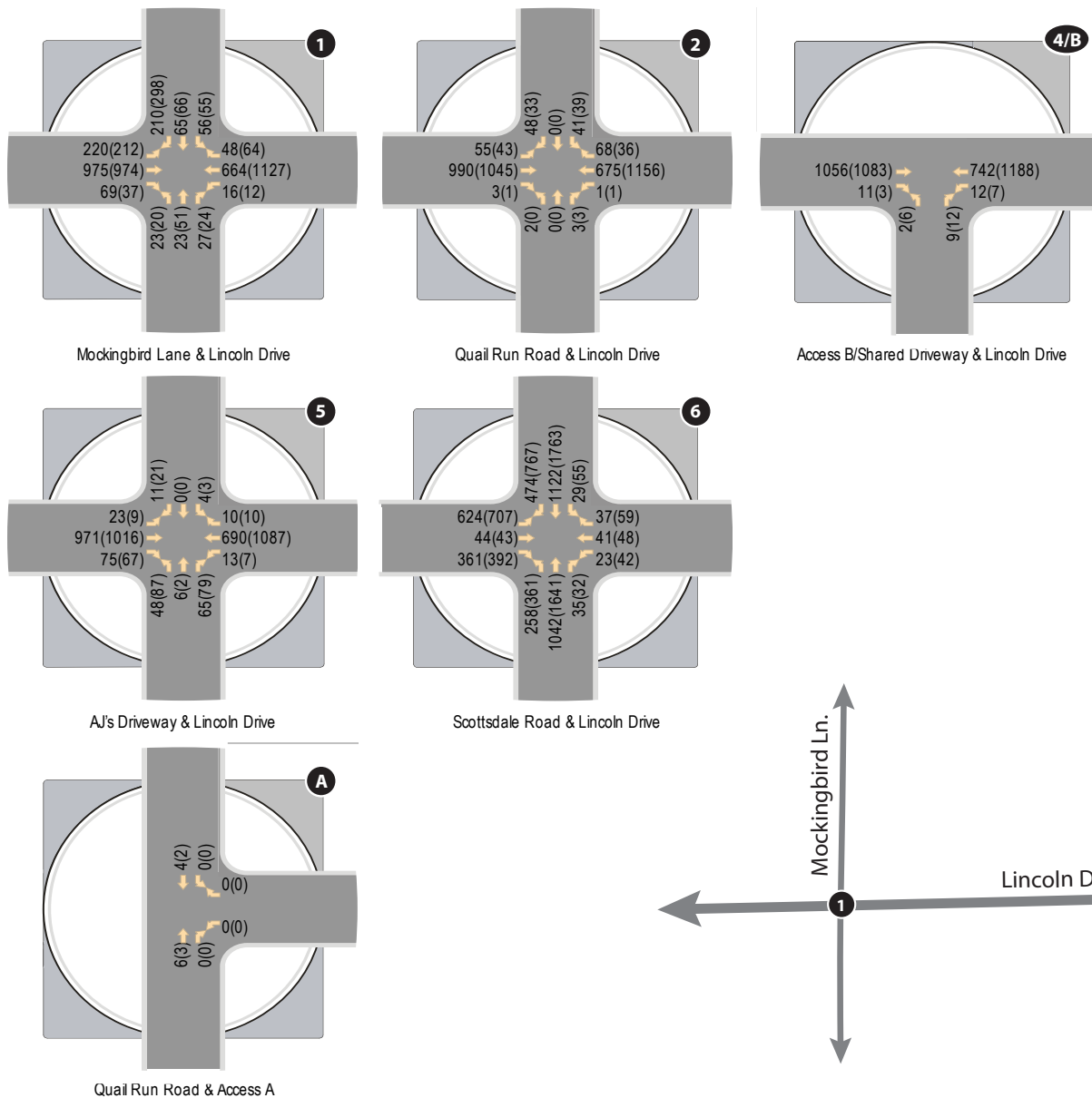


Figure 7: 2024 Background Traffic Volumes



Legend

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

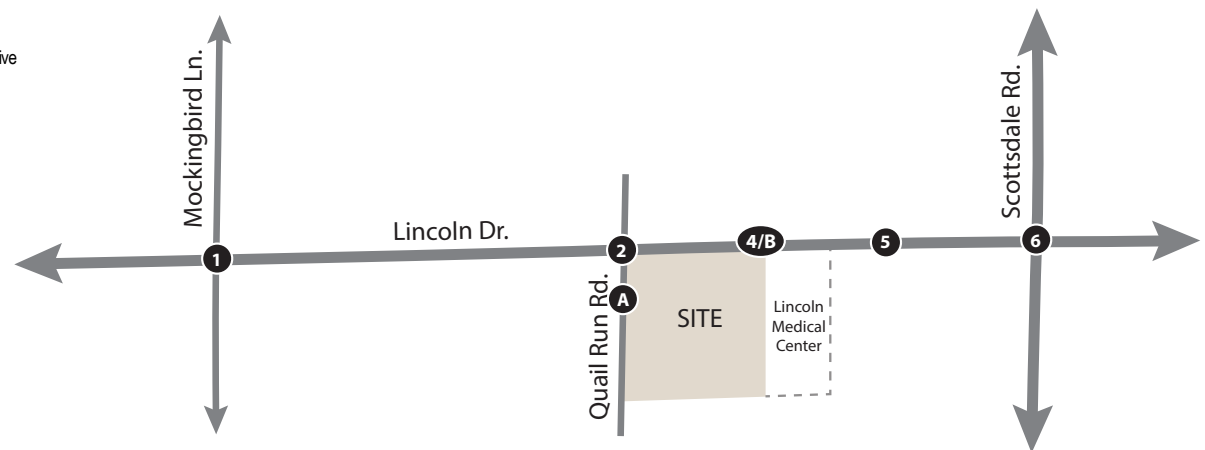
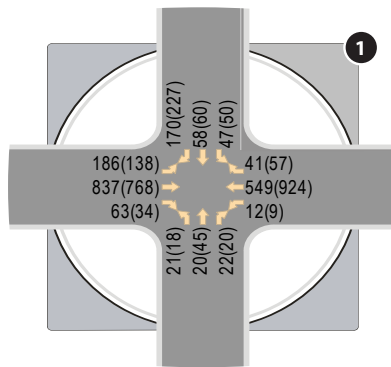
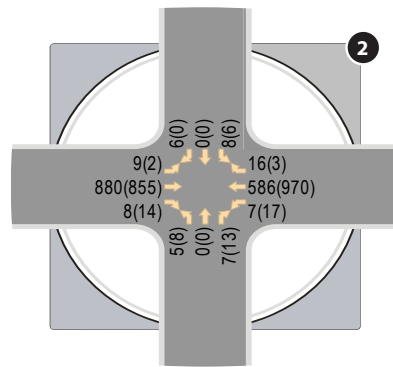


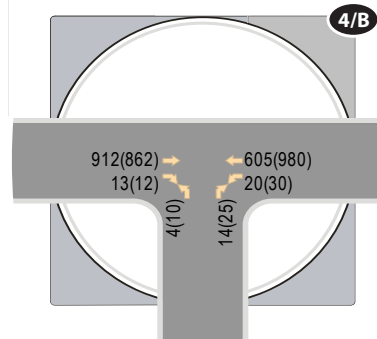
Figure 8: 2029 Background Traffic Volumes



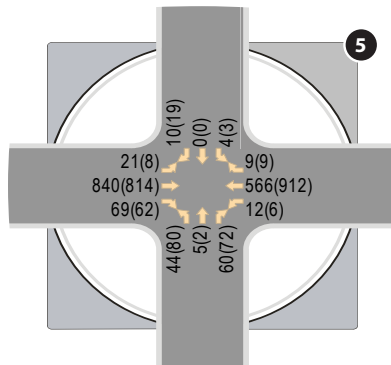
Mockingbird Lane & Lincoln Drive



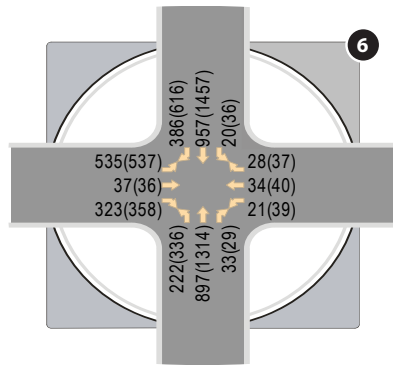
Quail Run Road & Lincoln Drive



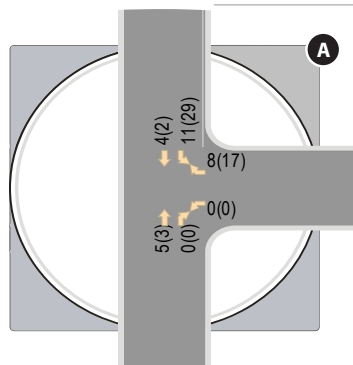
Access B/Shared Driveway & Lincoln Drive



AJ's Driveway & Lincoln Drive



Scottsdale Road & Lincoln Drive



Quail Run Road & Access A

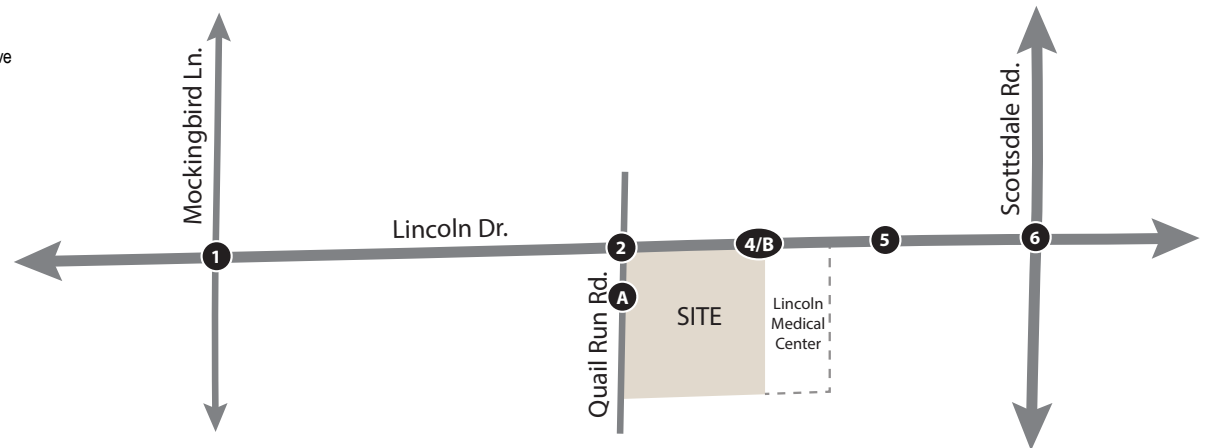
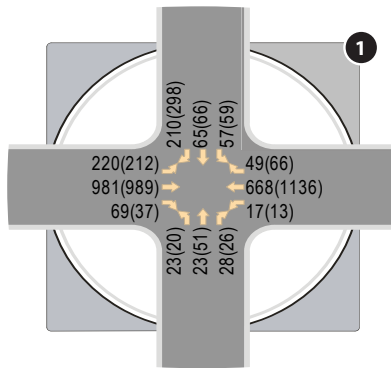
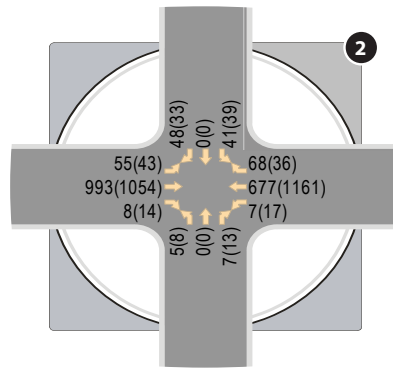


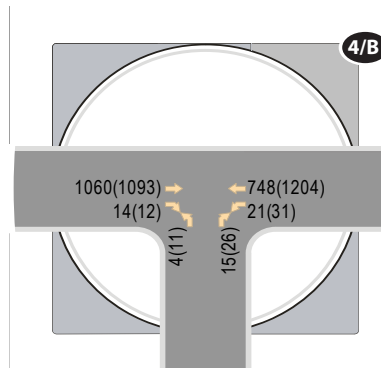
Figure 9: 2024 Total Traffic Volumes



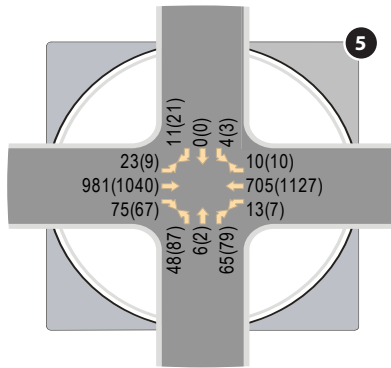
Mockingbird Lane & Lincoln Drive



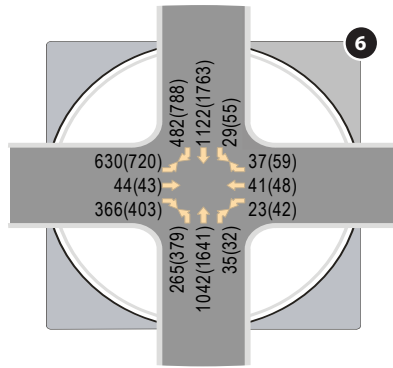
Quail Run Road & Lincoln Drive



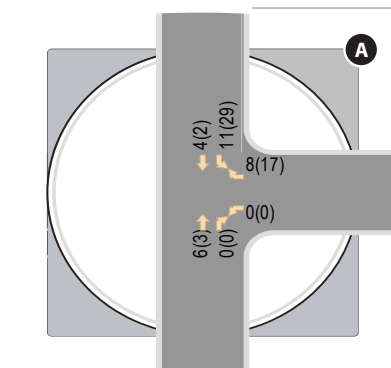
Access B/Shared Driveway & Lincoln Drive



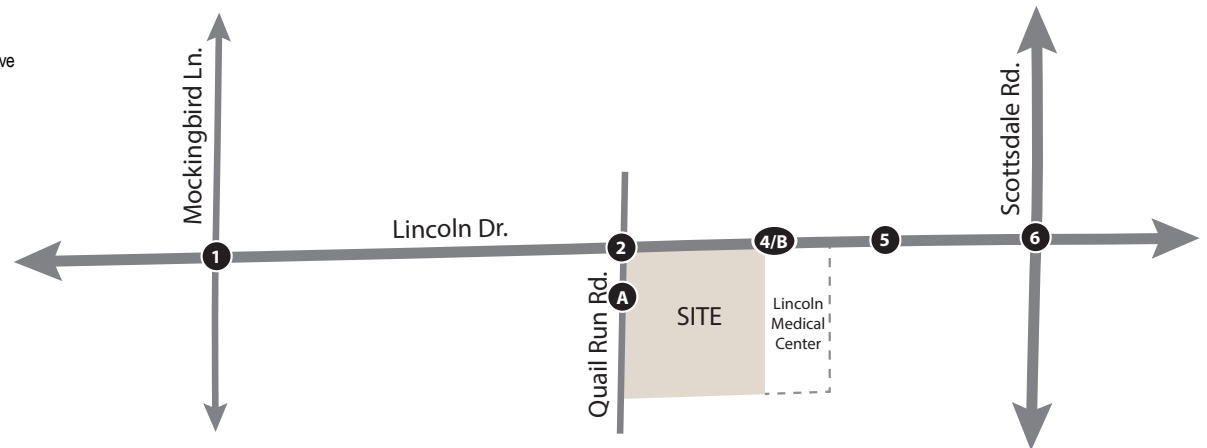
AJ's Driveway & Lincoln Drive



Scottsdale Road & Lincoln Drive



Quail Run Road & Access A



Legend

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



Figure 10: 2029 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 11.0 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 and 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 2024 opening year and the 2029 horizon year. Detailed analysis worksheets can be found in **Appendix G** for the 2024 no-build scenario, **Appendix H** for 2024 build scenario, **Appendix I** for 2029 no-build scenario, and **Appendix J** for 2029 build scenario.

Table 6 – Peak Hour Analysis

ID	Intersection	Control	Approach / Movement	2024			2029		
				No-Build	Build	Mitigated	No-Build	Build	Mitigated
1	Mockingbird Ln & Lincoln Dr	Signal	NB	E(D)	E(D)	[Not Mitigated]	D(D)	D(D)	[Not Mitigated]
			SB	E(D)	E(D)		D(D)	D(D)	
			EB	A(A)	A(A)		A(B)	A(B)	
			WB	B(B)	B(B)		B(C)	B(B)	
			Overall	B(B)	B(B)		C(C)	C(C)	
2	Quail Run Rd & Lincoln Dr	Signal	NB	B(B)	B(B)	[Not Mitigated]	B(B)	B(B)	[Not Mitigated]
			SB	B(B)	B(B)		B(B)	B(B)	
			EB	D(D)	D(D)		D(D)	D(D)	
			WB	B(A)	B(A)		B(B)	B(B)	
			Overall	D(C)	D(C)		D(C)	D(C)	
4/B	Shared Drwy & Lincoln Dr	1-Way Stop (NB)	NB Shared WB Left	B(B) A(A)	B(B) A(A)	[Not Mitigated]	B(C) A(A)	B(C) A(A)	[Not Mitigated]
5	AJ's Drwy & Lincoln Dr	2-Way Stop (NB/SB)	NB Shared SB Left	B(B)	B(B)	[Not Mitigated]	C(C)	B(C)	[Not Mitigated]
			SB Right	B(B)	B(B)		B(B)	B(B)	
			EB Left	A(B)	A(B)		A(B)	A(B)	
			WB Left	A(A)	A(A)		A(A)	A(A)	
6	Scottsdale Rd & Lincoln Dr	Signal	NB	D(D)	D(D)	C(C)	D(D)	D(D)	C(D)
			SB	D(E)	D(E)	C(C)	D(F)	D(F)	C(D)
			EB	F(E)	F(E)	D(D)	F(F)	F(F)	E(F)
			WB	E(E)	E(E)	E(E)	E(E)	E(E)	E(E)
			Overall	D(E)	D(E)	C(D)	E(F)	E(F)	D(D)
A	Access A & Quail Run Dr	1-Way Stop (WB)	WB Shared SB Left	-	A(A) A(A)	[Not Mitigated]	-	A(A) A(A)	[Not Mitigated]

The results of the peak hour analysis are summarized indicate that all intersections currently operate at an overall acceptable level of service (LOS D or better) with the exception of **Scottsdale Road and Lincoln Drive**.

2024 CAPACITY ANALYSIS

The results of the 2024 peak hour analysis indicate that all intersections currently operate at an overall acceptable level of service (LOS D or better) with the exception of **Scottsdale Road and Lincoln Drive**.

The intersection of **Scottsdale Road and Lincoln Drive** is expected to experience delay in the southbound, eastbound, and westbound approaches. The southbound approach experiences delay during the PM peak hour in the 2024 opening year. The eastbound and westbound approaches experience delay in the AM and PM peak hours in both no-build and build scenario in the 2024 opening year. To mitigate this delay, it is recommended that the green time is increased for the through movements on the southbound, eastbound, and westbound approaches.

With these mitigation measures applied to the 2024 Build PM peak hour scenario, the southbound delay is anticipated to decrease from 62.0 sec/veh (LOS E) to 27.1 sec/veh (LOS C).

In the eastbound approach during the AM peak hour in the 2024 Build opening year, the delay is anticipated to decrease from 81.8 sec/veh (LOS F) to 50.8 (LOS D). In the eastbound approach during the PM peak hour in the 2024 opening year, the delay is anticipated to decrease from 79.0 sec/veh (LOS E) to 52.6 sec/veh (LOS D).

The westbound approach remains unchanged in the AM and PM peak hours at both the 2024 Build opening year. 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, however, this change will be at the discretion of the City of Scottsdale as this intersection is owned and operated by the City.

2029 CAPACITY ANALYSIS

The results of the 2029 peak hour analysis indicate that all intersections currently operate at an overall acceptable level of service (LOS D or better) with the exception of **Scottsdale Road and Lincoln Drive**.

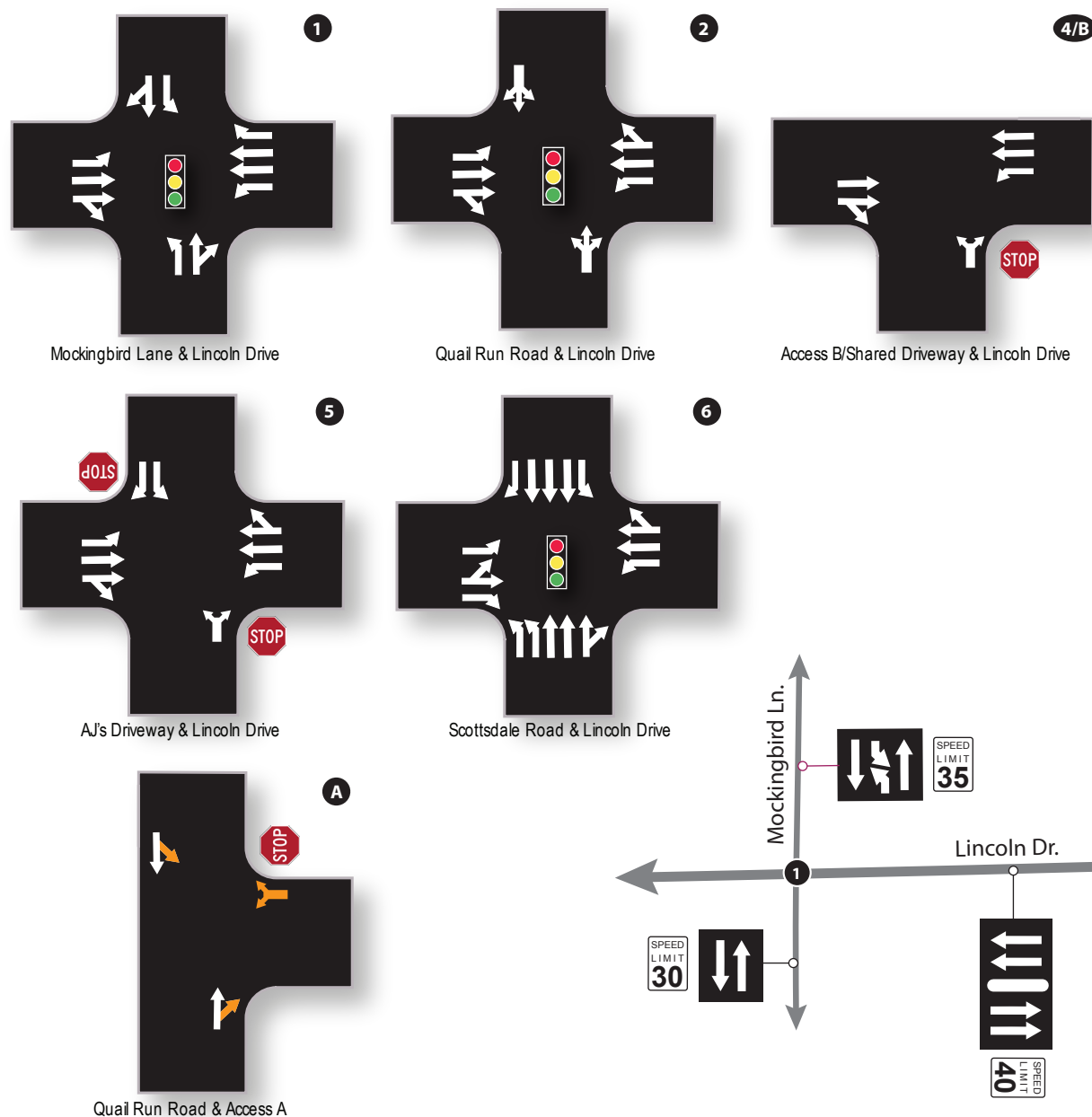
The intersection of **Scottsdale Road and Lincoln Drive** is expected to experience delay in the southbound, eastbound, and westbound approaches in both the no-build and build scenarios. The southbound approach experiences delay during the PM peak hour in the 2029 horizon year. The eastbound and westbound approaches experience delay in the AM and PM peak hours during the 2029 horizon year. To mitigate this delay, it is recommended that the green time is increased for the through movements on the southbound, eastbound, and westbound approaches.

With these mitigation measures applied, it is expected that in the southbound approach during the 2029 Build PM peak hour scenario, the delay is anticipated to decrease from 134.9 sec/veh (LOS F) to 37.4 sec/veh (LOS D).

In the eastbound approach during the 2029 Build AM peak hour scenario, the delay is anticipated to decrease from 133.2 sec/veh (LOS F) to 66.5 sec/veh (LOS E). In the eastbound approach during the 2029 Build PM peak hour scenario, the delay is anticipated to decrease from 174.0 sec/veh (LOS F) to 91.9 sec/veh (LOS F).

The westbound approach remains unchanged in the AM and PM peak hours at the 2029 horizon year. 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, however, this change will be at the discretion of the City of Scottsdale as this intersection is owned and operated by the City.

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



LEGEND

	Thru or Turning Movement		Traffic Signal
	Two-Way Left Turn-Lane		Stop Sign
	Raised Median		Speed Limit
	Bike Lane		
	Striped Carrot		
	Pork Chop		
	Developer Improvements		

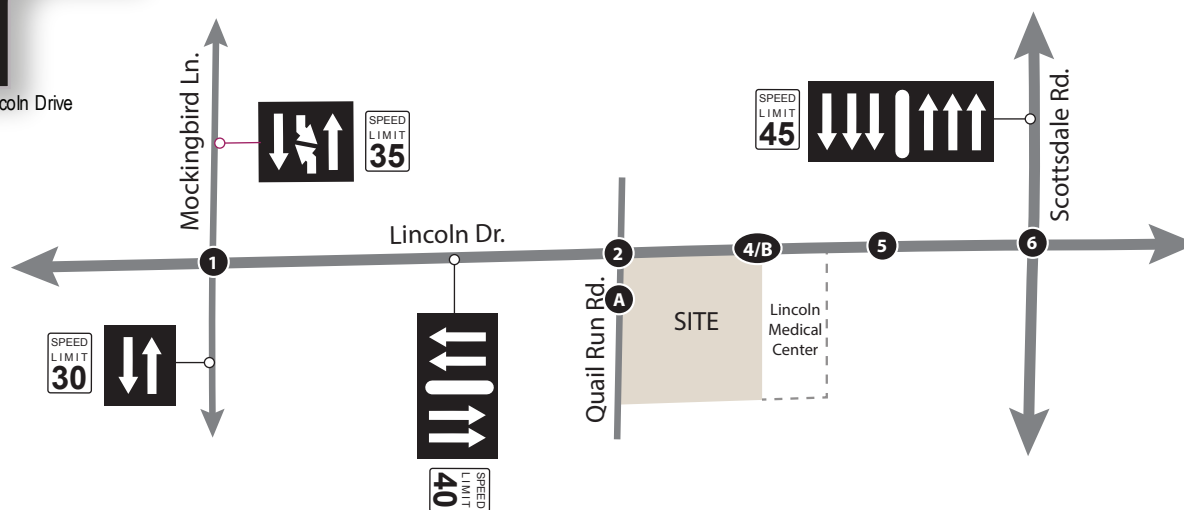


Figure 11: Proposed Lane Configurations and Traffic Controls

QUEUE LENGTH ANALYSIS

Adequate turn storage should be supplied on any approach where turn lanes are permitted and/or warranted. A queuing analysis was prepared according to the methodology documented in *AASHTO's A Policy on Geometric Design of Highways and Streets*. The study intersections were analyzed to determine the left-turn and right-turn storage needed to accommodate the expected traffic volumes in the 2029 horizon year.

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 to two signal cycles, where signalized.¹

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

$$\text{Storage Length} = \left[\frac{1.5 \times (\text{veh/hr})}{(\text{cycles/hr})} \right] \times 25 \text{ feet}$$

For unsignalized intersections, the storage length for a left turn lane is determined by the following equation:

$$\text{Storage Length} = \left\{ \frac{\ln[P(n>N)]}{\ln \frac{v}{c}} - 1 \right\} \times 25 \text{ feet}$$

where:

$$c = \frac{V_0 e^{-V_0 t_c / 3600}}{1 - e^{-V_0 t_c / 3600}}$$

as defined in *AASHTO's A Policy on Geometric Design of Highways and Streets Equations 9-3 and 9-4*.

¹ The American Association of Highway and Transportation Officials, under Section 9.7.2.2 (page 9-96) of the latest (7th) edition of its publication, *A Policy on Geometric Design of Highways and Streets* (the AASHTO "Green Book"), indicates that storage length for a turn lane, exclusive of taper, "should usually be based on 1.5 to 2 times the average number of vehicles that would need to be stored per signal cycle" at a signalized intersection.

Table 7 – Queue Storage Lengths

ID	Intersection	Control	Movement	Queue Storage			
				⁽¹⁾ Existing	AASHTO	95 th % -ile	Recommended
1	Mockingbird Lane & Lincoln Dr	Signal	NB Left	85'	50'	35'	85'
			SB Left	185'	125'	90'	185'
			EB Left	345'	400'	140'	345'
			WB Left	145'	50'	25'	145'
			SB Right	230'	550'	460'	⁽³⁾ 230'
			WB Right	280'	125'	45'	280'
2	Quail Run Rd & Lincoln Dr	Signal	EB Left	175'	100'	100'	175'
			WB Left	150'	50'	25'	150'
			WB Right	155'	125'	275'	275'
4/B	Apartment Drwy & Lincoln Dr	1-Way Stop (NB)	WB Left	50'	25'	25'	50'
5	AJ's Drwy & Lincoln Dr	2-Way Stop (NB/SB)	SB Left	100'	25'	<25'	100'
			EB Left	70'	25'	25'	70'
			WB Left	TWLTL	25'	<25'	TWLTL
			SB Right	100'	25'	25'	100'
6	Scottsdale Rd & Lincoln Dr	Signal	NB Left	⁽²⁾ 455'	⁽²⁾ 700'	⁽²⁾ 335'	⁽²⁾ 455'
			SB Left	185'	100'	115'	185'
			EB Left	⁽²⁾ 310'	⁽²⁾ 1,300'	⁽²⁾ 690'	⁽³⁾⁽²⁾ 310'
			WB Left	90'	100'	70'	90'
			SB Right	315'	1,425'	1,010'	⁽³⁾ 315'
			EB Right	175'	750'	525'	⁽³⁾ 175'
A	Access A & Quail Run Dr	1-Way Stop (WB)	WB Shared	-	25'	50'	50'

(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) Insufficient space exists to permit extension of turn lane

The recommended storage lengths in **Table 7** are provided for horizon year 2029 using the total traffic projections.

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 Town 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 8**.

Table 8 – 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)
Lincoln Dr	40	45	500'	565'	430'
Quail Run Rd	-	30	290'	335'	245'

Adequate sight 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 **Table 8**.

The developer should ensure that sight visibility is provided at all proposed intersections according to the distances shown in 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 L**.

CONCLUSIONS

The following conclusions have been documented in this study.

GENERAL

- The proposed development is anticipated to generate approximately 1,168 external weekday daily trips, with 39 trips (23 in/ 16 out) occurring in the AM peak hour and 98 trips (61 in/ 37 out) occurring in the PM peak hour.

EXISTING CONDITIONS

- The results of the existing conditions analysis indicate 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 the AM peak hour. 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.
- The intersection of **Scottsdale Road and Lincoln Drive** currently experiences delays on the eastbound and westbound approaches during both the AM and PM peak hours and the southbound approach during the PM peak hour. Although mitigation is not typically recommended for existing conditions, since this stretch of Lincoln Drive is currently under development, recommendations will be made in order to minimize the current delay.
 - o During the AM and PM peak hours, it is recommended that the green time is increased for the southbound, eastbound, and westbound movements. This mitigation measure is anticipated to reduce the southbound delay from 58.4 sec/veh (LOS E) to 28.1 sec/veh (LOS C) in the PM peak hour. The eastbound delay is improved from 76.8 sec/veh (LOS E) to 52.1 sec/veh (LOS D) in the AM peak hour and 71.7 sec/veh (LOS E) to 46.9 sec/veh (LOS D) in the PM peak hour. The westbound approach remains unchanged, in order to mitigate this delay, the initial green time could be changed allowing for more vehicles to pass through the intersection before the signal changes, however, this change will be at the discretion of the City of Scottsdale as this intersection is owned and operated by the City.

OPENING YEAR 2024

- The results of the 2024 peak hour analysis indicate that all intersections currently operate at an overall acceptable level of service (LOS D or better) with the exception of **Scottsdale Road and Lincoln Drive**.
- The intersection of **Scottsdale Road and Lincoln Drive** is expected to experience delay in the southbound, eastbound, and westbound approaches. The southbound approach experiences delay during the PM peak hour in the 2024 opening year. The eastbound and westbound approaches experience delay in the AM and PM peak hours in both no-build and build scenario in the 2024 opening year. To mitigate this delay, it is recommended that the green time is increased for the through movements on the southbound, eastbound, and westbound approaches.
 - o With these mitigation measures applied to the 2024 Build PM peak hour scenario, the southbound delay is anticipated to decrease from 62.0 sec/veh (LOS E) to 27.1 sec/veh (LOS C).
 - o In the eastbound approach during the AM peak hour in the 2024 Build opening year, the delay is anticipated to decrease from 81.8 sec/veh (LOS F) to 50.8 (LOS D). In the eastbound approach during the PM peak hour in the 2024 opening year, the delay is anticipated to decrease from 79.0 sec/veh (LOS E) to 52.6 sec/veh (LOS D).
 - o The westbound approach remains unchanged in the AM and PM peak hours at both the 2024 Build opening year. 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, however, this change will be at the discretion of the City of Scottsdale as this intersection is owned and operated by the City.

HORIZON YEAR 2029

- The results of the 2029 peak hour analysis indicate that all intersections currently operate at an overall acceptable level of service (LOS D or better) with the exception of **Scottsdale Road and Lincoln Drive**.
- The intersection of **Scottsdale Road and Lincoln Drive** is expected to experience delay in the southbound, eastbound, and westbound approaches in both the no-build and build scenarios. The southbound approach experiences delay during the PM peak hour in the 2029 horizon year. The eastbound and westbound approaches experience delay in the AM and PM peak hours during the 2029 horizon year. To mitigate this delay, it is recommended that the green time is increased for the through movements on the southbound, eastbound, and westbound approaches.

- o With these mitigation measures applied, it is expected that in the southbound approach during the 2029 Build PM peak hour scenario, the delay is anticipated to decrease from 134.9 sec/veh (LOS F) to 37.4 sec/veh (LOS D).
- o In the eastbound approach during the 2029 Build AM peak hour scenario, the delay is anticipated to decrease from 133.2 sec/veh (LOS F) to 66.5 sec/veh (LOS E). In the eastbound approach during the 2029 Build PM peak hour scenario, the delay is anticipated to decrease from 174.0 sec/veh (LOS F) to 91.9 sec/veh (LOS F).
- o The westbound approach remains unchanged in the AM and PM peak hours at the 2029 Build horizon year. 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, however, this change will be at the discretion of the City of Scottsdale as this intersection is owned and operated by the City.

QUEUE STORAGE

- The recommended storage lengths in **Table 7** are provided for horizon year 2029 using the total traffic projections.

SIGHT DISTANCE

- Adequate sight distance must be provided at the intersections to allow safe left and right turning movements from the development.
 - o The developer 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, 11th 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:	2024 NO-BUILD PEAK HOUR ANALYSIS
APPENDIX H:	2029 NO-BUILD PEAK HOUR ANALYSIS
APPENDIX I:	2024 BUILD PEAK HOUR ANALYSIS
APPENDIX J:	2029 BUILD PEAK HOUR ANALYSIS
APPENDIX K:	QUEUE STORAGE ANALYSIS
APPENDIX L:	SIGHT DISTANCE ANALYSIS

APPENDIX A

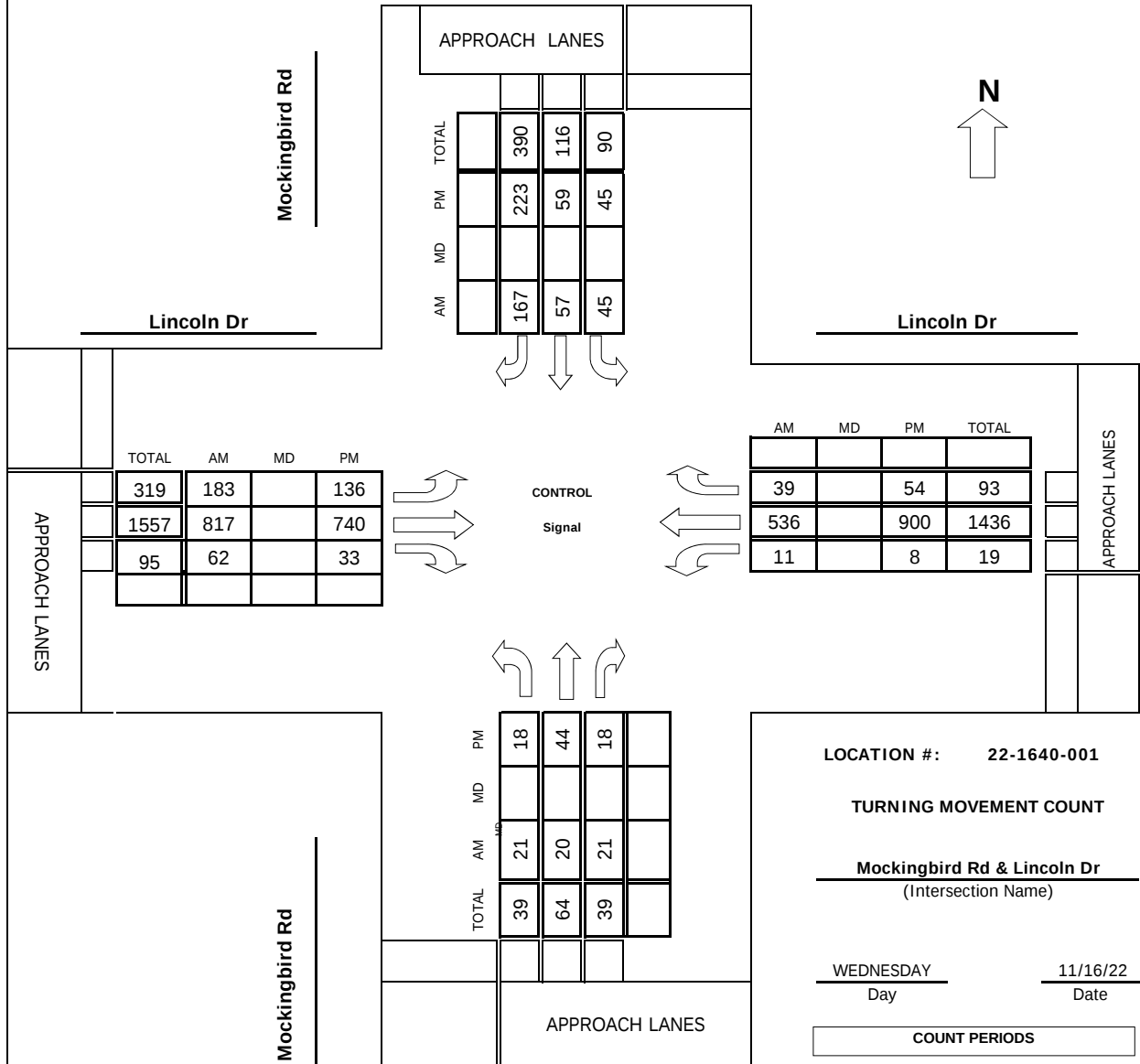
REVIEW COMMENTS AND RESPONSES

APPENDIX B

EXISTING TRAFFIC COUNTS

Project #: 22-1640-001

TMC SUMMARY OF Mockingbird Rd & Lincoln Dr



LOCATION #: 22-1640-001

TURNING MOVEMENT COUNT

Mockingbird Rd & Lincoln Dr
(Intersection Name)

WEDNESDAY
Day

11/16/22
Date

COUNT PERIODS

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

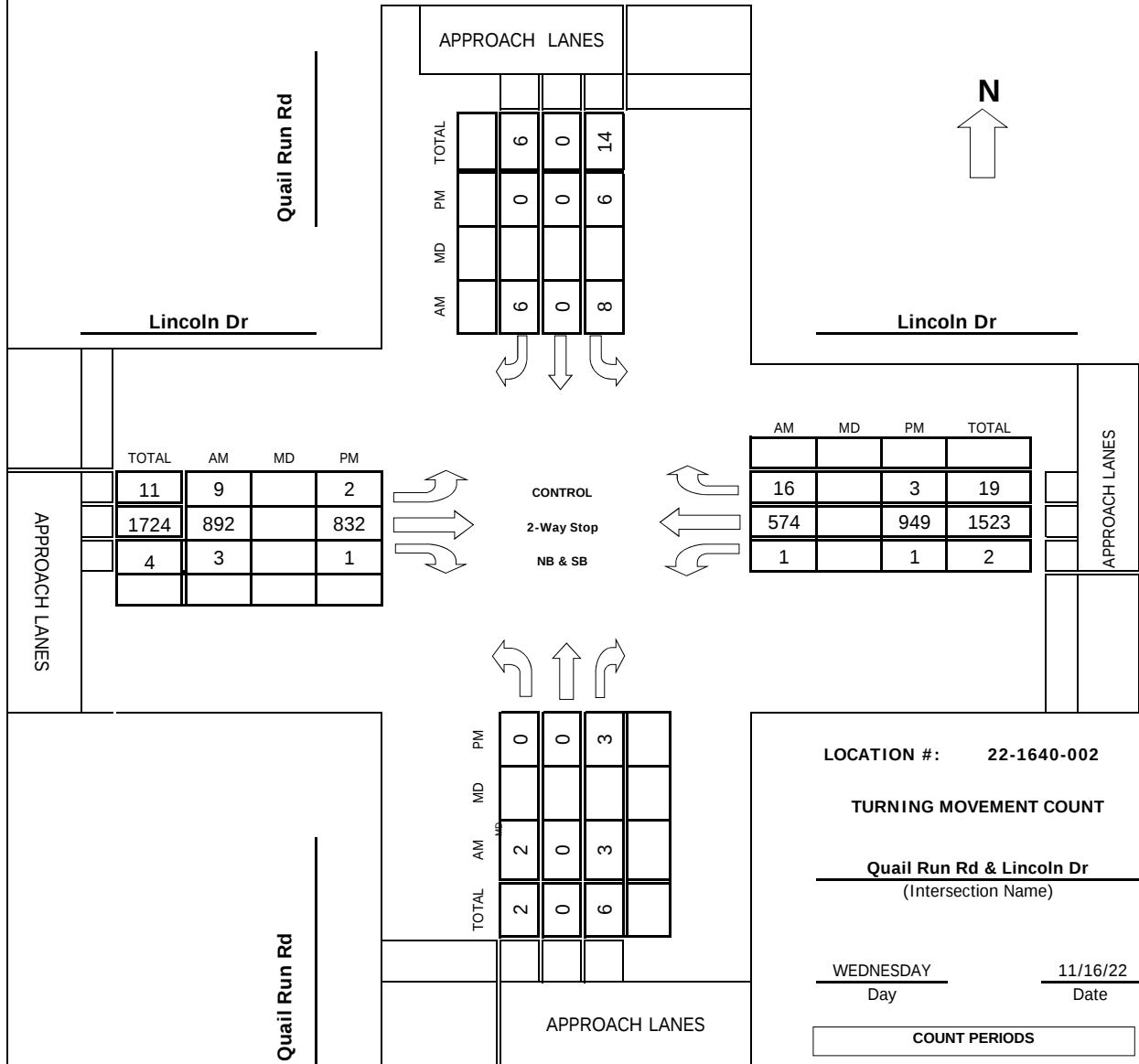
AM PEAK HOUR 800 AM

NOON PEAK HOUR

PM PEAK HOUR 415 PM

Project #: 22-1640-002

TMC SUMMARY OF Quail Run Rd & Lincoln Dr



LOCATION #: 22-1640-002

TURNING MOVEMENT COUNT

Quail Run Rd & Lincoln Dr
(Intersection Name)

WEDNESDAY
Day

11/16/22
Date

COUNT PERIODS

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

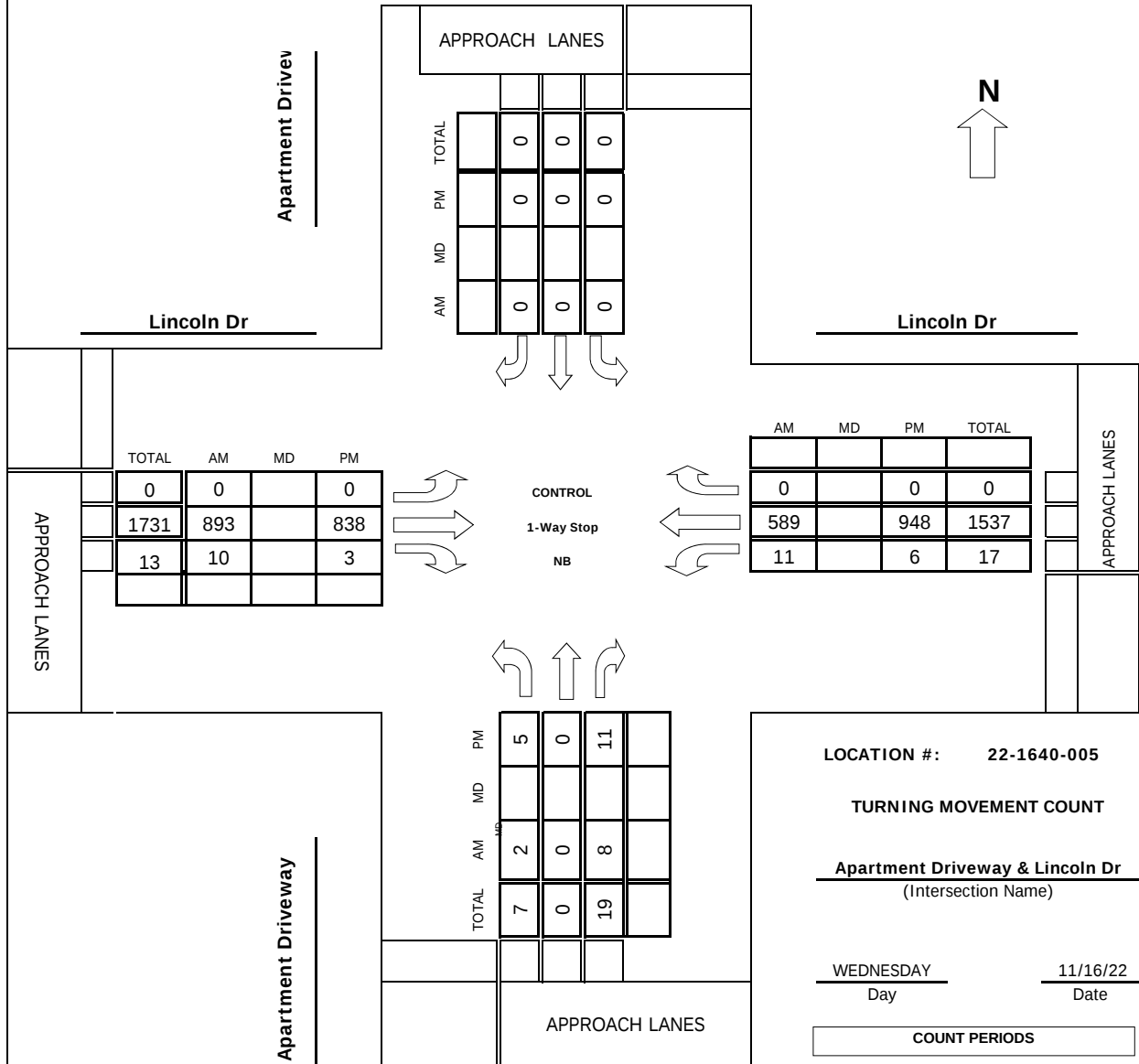
AM PEAK HOUR 800 AM

NOON PEAK HOUR

PM PEAK HOUR 430 PM

Project #: 22-1640-005

TMC SUMMARY OF Apartment Driveway & Lincoln Dr



LOCATION #: 22-1640-005

TURNING MOVEMENT COUNT

Apartment Driveway & Lincoln Dr
(Intersection Name)

WEDNESDAY 11/16/22
Day Date

COUNT PERIODS

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

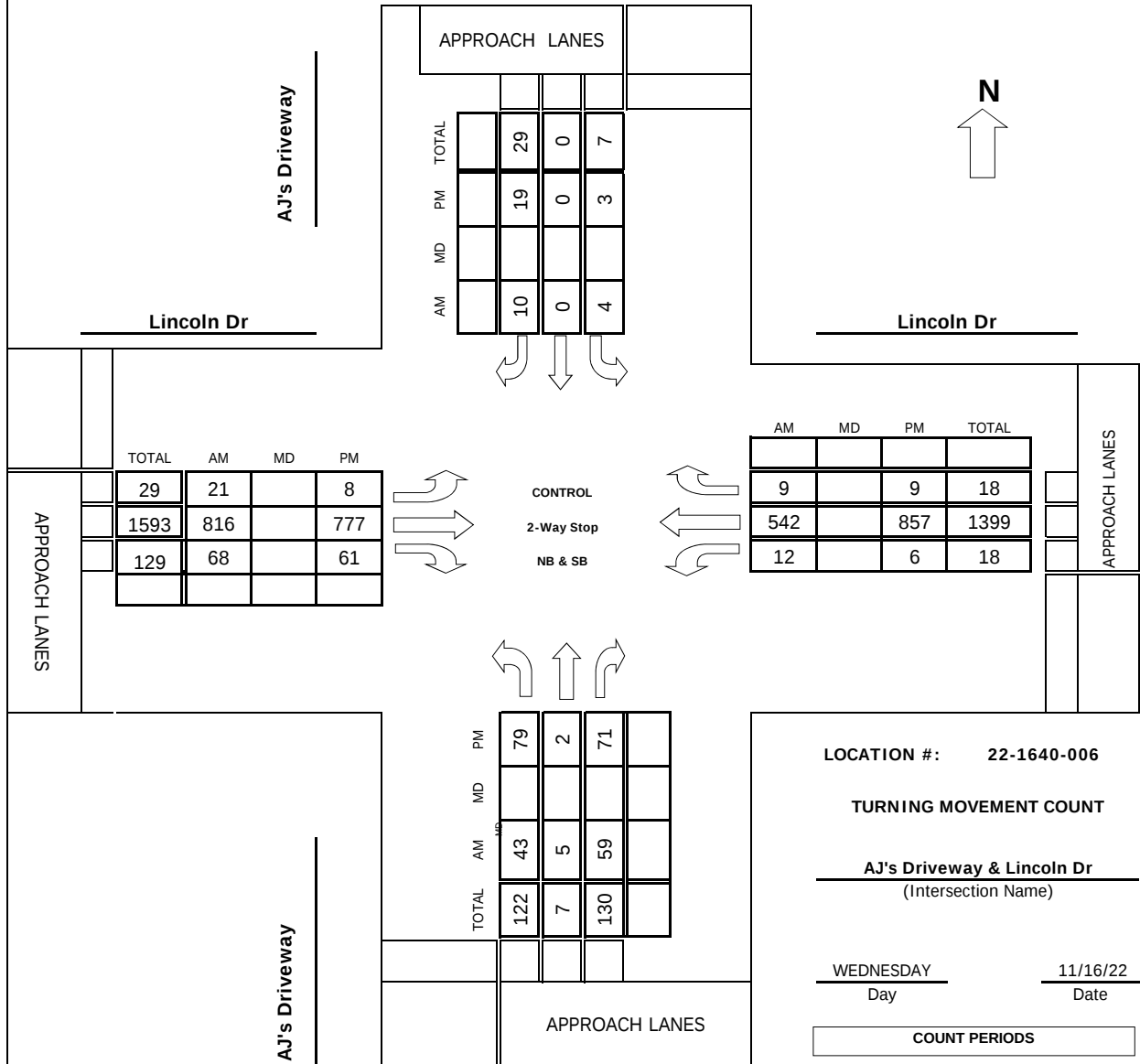
AM PEAK HOUR 800 AM

NOON PEAK HOUR

PM PEAK HOUR 430 PM

Project #: 22-1640-006

TMC SUMMARY OF AJ's Driveway & Lincoln Dr



LOCATION #: 22-1640-006

TURNING MOVEMENT COUNT

AJ's Driveway & Lincoln Dr
(Intersection Name)

WEDNESDAY
Day

11/16/22
Date

COUNT PERIODS

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

AM PEAK HOUR 800 AM

NOON PEAK HOUR

PM PEAK HOUR 430 PM

520,316,6745

TMC SUMMARY OF Scottsdale Rd & Lincoln Dr



AM PEAK HOUR 800 AM

NOON PEAK HOUR

PM PEAK HOUR 445 PM

APPENDIX C

EXISTING PEAK HOUR ANALYSIS

APPENDIX D

TRIP GENERATION

Methodology Overview

This form facilitates trip generation estimation using data within the Institute of Transportation Engineer's (ITE) Trip Generation Manual, 11th 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
Resort Hotel	83 Rooms	330	Resort Hotel
Quality Restaurant	10,012 1,000 square feet	931	Quality Restaurant
Strip Retail Plaza	2,282 1,000 square feet	822	Strip Retail Plaza (<40k)

Box 2 - Define Site Context

Context assessment is to "simply determine whether the study sites is in a multimodal setting" and "could have persons accessing the site by walking, bicycling, or riding transit." This assessment is used in Box 4. The Manual separates data into 4 setting categories - Rural, General Urban/Suburban, Dense Multi-Urban Use and Center City Core. This worksheet uses the following abbreviations, respectively: R, G, D, and C. The Manual does not have data for all settings of all land use codes. See the table on the next page titled "Site Context and Time Periods" - if this table is not provided, the "General Urban/Suburban" setting is used by default.

Box 3 - Define Analysis Objectives Types of Trips & Time Period

This tool will focus on vehicular trips for a 24-hour period on a typical weekday as well as its AM peak hour and PM peak hour. Other time period(s) may be of interest.

Site Context and Time Periods - Actual Setting, Setting Data Available for LUC, Setting Used in Analyses

Proposed Use	Setting	ADT		AM Peak Hour		PM Peak Hour	
		Available	Used	Available	Used	Available	Used
Resort Hotel	General Urban/Suburban G		N/A	G	G	G	G
Quality Restaurant	General Urban/Suburban G	G		G	G	G	G
Strip Retail Plaza	General Urban/Suburban G	G		G	G	G	G

If the desired setting is not available within the Manual, adjustments may be made in Boxes 6 through 8.

Per the Handbook, "if the objective is to establish a local trip generation rate for a particular land use or study site, the simplified approach (Box 9) may be acceptable but the Box 5 through 8

Box 5/Box 9 - Estimate Baseline Trips/Estimate Vehicular Trips (Determine Equation)

Vehicular trips are estimated using rates/equations applicable to each LUC. When the appropriate graph has a fitted curve, the Handbook has a process (Figure 4.2) to determine when to use it versus using the weighted average rate or collecting local data. The methodology requires for engineering judgement in some circumstances and permits engineering judgement to override or make adjustments when appropriate to best project (example 1: study site is expected to operate differently than data in the applicable land use code - such as restaurant that is closed in the morning or in the evening; example 2: LUC data in a localized area fails to be represented by the typically selected fitted curve/weighted average rate - a small shop/LUC 820, AM peak hour is skewed by the high y-intercept).

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
Resort Hotel	C: $T = X^{0.74}$ [5.74]	FC: $T = 0.38 \cdot X - 28.58$ [0.04]	WA: $T = X^{0.41}$ [0.41]
Quality Restaurant	WA: $T = X^{0.83}$ [83.84]	WA: $T = X^{0.73}$ [0.73]	WA: $T = X^{0.78}$ [7.80]
Strip Retail Plaza	FC: $T = 42.2 \cdot X + 229.68$ [142.85]	FC: $LN(T) = 0.66 \cdot LN(X) + 1.84$ [4.76]	FC: $LN(T) = 0.71 \cdot LN(X) + 2.72$ [11.95]

Box 5/Box 9 - Estimate Baseline Trips/Estimate Vehicular Trips (Apply Equations and in/out Distributions)**Baseline Vehicular Trips**

Proposed Use	ADT				AM Peak Hour				PM Peak Hour			
	% In	In	Out	Total	% In	In	Out	Total	% In	In	Out	Total
Resort Hotel	50%	238	238	476	72%	2	1	3	43%	15	19	34
Quality Restaurant	50%	420	420	840	80%	6	1	7	67%	52	26	78
Strip Retail Plaza	50%	163	163	326	60%	7	4	11	50%	14	13	27
Totals		821	821	1,642		15	6	21		81	58	139

If vehicle trip reductions are not applied for internal capture and alternative mode, vehicle trips may be separated into vehicle trip subsets (pass-by trips, diverted trips, truck trips, new passenger vehicle trips) as part of Box 10. If vehicle trip reductions are to be applied, continue to Box 6.

Box 6 - Convert Baseline Vehicle Trips to Person Trips

If no vehicle trip reductions are to be applied, this portion may be ignored. The Handbook states "There are not enough samples to derive precise percentages by mode...however, for all but one...the motor vehicle percentage of total person trips is at least 96 percent." and "[vehicle occupancy for] many of the most commonly analyzed land use codes are not [available]." This form assumes that the total baseline vehicle trips for all land use codes accounts for 90% of total person trips. Unless otherwise specified, this form later reverses the conversion in Box 8.

Box 7 - Estimate Internal Person Trips, External Walk/Bike Trips, Transit Person Trips, External Person Trips (Internal Capture)

Internal capture occurs for mixed-use developments when a portion of the trips generated by the site are expected to have the both the origin and destination within the site. Internal capture is not dependent on mode choice. The table below presents the internal capture percentages and trips in units of vehicle trips. CivTech can provide trips in units of persons if requested.

Adjustments for Internal Trips

Proposed Use	ADT				AM Peak Hour				PM Peak Hour			
	Percent	In	Out	Total	Percent	In	Out	Total	Percent	In	Out	Total
Resort Hotel	0%	0	0	0	0%	0	0	0	0%	0	0	0
Quality Restaurant	50%	210	210	420	50%	3	1	4	50%	26	13	39
Strip Retail Plaza	65%	106	106	212	65%	5	2	7	65%	9	9	18
Totals		316	316	632		8	3	11		35	22	57

Box 8 - Convert Person Trips to Final Vehicle Trips

The vehicle occupancy and baseline alternate mode are now factored out from the external trips in vehicles, after any adjustments for internal capture and additional alternate mode from Box 7. In Box 6, vehicle trips were considered to account for 90% of total person trips. Alternate mode trips in addition to the baseline, if any, are accounted for in Box 7. It is estimated that vehicle trips should be reduced by an additional 0% due to carpooling. The final external trips in vehicles is multiplied by 90% (= 90% - 0%) to produce the external vehicle trips.

External Vehicular Trips

Proposed Use	ADT				AM Peak Hour				PM Peak Hour			
	In	Out	Total		In	Out	Total		In	Out	Total	
Resort Hotel	238	238	476		2	1	3		15	19	34	
Quality Restaurant	210	210	420		3	0	3		26	13	39	
Strip Retail Plaza	57	57	114		2	2	4		5	4	9	
Totals	505	505	1,010		7	3	10		46	36	82	

APPENDIX E

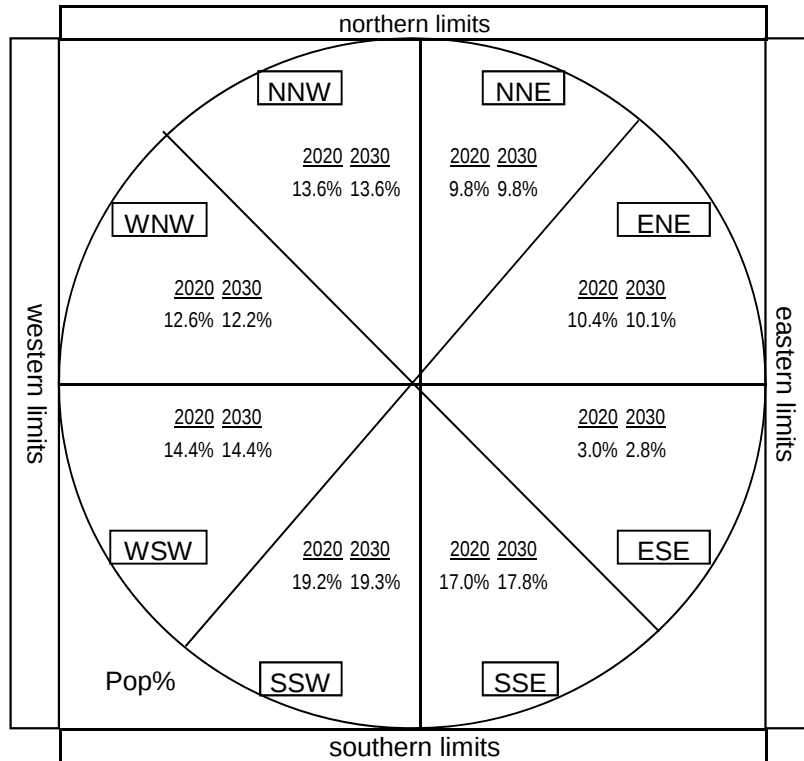
TRIP DISTRIBUTION

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:*Source(s):* City of Scottsdale Traffic Counts Map

	Year	Volume
Start	2015	10,484
End	2019	10,744
AAGR		0.60%
Exp Factor		1.025

Growth Rate Used 1.7%

Per-Year Multiplier 1.017

2024

2029

Year	Expansion Factor(s)	
2023	1.000	Existing Opening
2024	1.017	
2025	1.034	
2026	1.052	
2027	1.070	
2028	1.088	Horizon
2029	1.106	
2030	1.125	
2031	1.144	
2032	1.164	
2033	1.184	
2034	1.204	
2035	1.224	
2036	1.245	
2037	1.266	
2038	1.288	
2039	1.310	
2040	1.332	
2041	1.354	
2042	1.378	
2043	1.401	
2044	1.425	
2045	1.449	
2046	1.474	
2047	1.499	
2048	1.524	
2049	1.550	
2050	1.576	
2051	1.603	
2052	1.630	
2053	1.658	
2054	1.686	
2055	1.715	

APPENDIX G

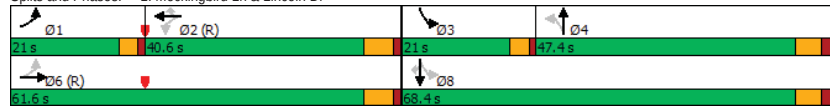
2024 NO-BUILD PEAK HOUR ANALYSIS

18-0555 SmokeTree Resort
2024 Background AM

1: Mockingbird Ln & Lincoln Dr
Timing Report, Sorted By Phase

						
Phase Number	1	2	3	4	6	8
Movement	EBL	WBTL	SBL	NBTL	EBTL	SBTL
Lead/Lag	Lead	Lag	Lead	Lag		
Lead-Lag Optimize	Yes	Yes	Yes	Yes		
Recall Mode	None	C-Max	None	None	C-Max	None
Maximum Split (s)	21	40.6	21	47.4	61.6	68.4
Maximum Split (%)	16.2%	31.2%	16.2%	36.5%	47.4%	52.6%
Minimum Split (s)	8	27	8	33.5	27	33.5
Yellow Time (s)	3	4.5	3	4	4.5	4
All-Red Time (s)	1	1.5	1	2.5	1.5	2.5
Minimum Initial (s)	3.5	15	3.5	7	15	7
Vehicle Extension (s)	3	3	3	3	3	3
Minimum Gap (s)	3	3	3	3	3	3
Time Before Reduce (s)	0	0	0	0	0	0
Time To Reduce (s)	0	0	0	0	0	0
Walk Time (s)		7		7	7	7
Flash Dont Walk (s)		14		20	14	20
Dual Entry	No	No	No	Yes	No	Yes
Inhibit Max	Yes	Yes	Yes	Yes	Yes	Yes
Start Time (s)	109	0	40.6	61.6	109	40.6
End Time (s)	0	40.6	61.6	109	40.6	109
Yield/Force Off (s)	126	34.6	57.6	102.5	34.6	102.5
Yield/Force Off 170(s)	126	20.6	57.6	82.5	20.6	82.5
Local Start Time (s)	109	0	40.6	61.6	109	40.6
Local Yield (s)	126	34.6	57.6	102.5	34.6	102.5
Local Yield 170(s)	126	20.6	57.6	82.5	20.6	82.5
Intersection Summary						
Cycle Length	130					
Control Type	Actuated-Coordinated					
Natural Cycle	80					
Offset: 0 (0%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green						

Splits and Phases: 1: Mockingbird Ln & Lincoln Dr

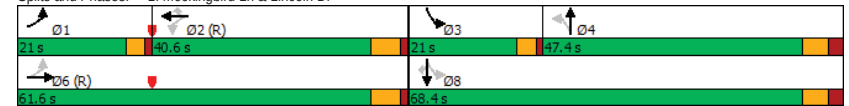


18-0555 SmokeTree Resort
2024 Background PM

1: Mockingbird Ln & Lincoln Dr
Timing Report, Sorted By Phase

								
Phase Number	1	2	3	4	6	8		
Movement	EBL	WBTL	SBL	NBTL	EBTL	SBTL		
Lead/Lag	Lead	Lag	Lead	Lag				
Lead-Lag Optimize	Yes	Yes	Yes	Yes				
Recall Mode	None	C-Max	None	None	C-Max	None		
Maximum Split (s)	21	40.6	21	47.4	61.6	68.4		
Maximum Split (%)	16.2%	31.2%	16.2%	36.5%	47.4%	52.6%		
Minimum Split (s)	8	27	8	33.5	27	33.5		
Yellow Time (s)	3	4.5	3	4	4.5	4		
All-Red Time (s)	1	1.5	1	2.5	1.5	2.5		
Minimum Initial (s)	3.5	15	3.5	7	15	7		
Vehicle Extension (s)	3	3	3	3	3	3		
Minimum Gap (s)	3	3	3	3	3	3		
Time Before Reduce (s)	0	0	0	0	0	0		
Time To Reduce (s)	0	0	0	0	0	0		
Walk Time (s)		7		7	7	7		
Flash Dont Walk (s)		14		20	14	20		
Dual Entry	No	No	No	Yes	No	Yes		
Inhibit Max	Yes	Yes	Yes	Yes	Yes	Yes		
Start Time (s)	109	0	40.6	61.6	109	40.6		
End Time (s)	0	40.6	61.6	109	40.6	109		
Yield/Force Off (s)	126	34.6	57.6	102.5	34.6	102.5		
Yield/Force Off 170(s)	126	20.6	57.6	82.5	20.6	82.5		
Local Start Time (s)	109	0	40.6	61.6	109	40.6		
Local Yield (s)	126	34.6	57.6	102.5	34.6	102.5		
Local Yield 170(s)	126	20.6	57.6	82.5	20.6	82.5		
Intersection Summary								
Cycle Length	130							
Control Type	Actuated-Coordinated							
Natural Cycle	80							
Offset: 0 (0%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green								

Splits and Phases: 1: Mockingbird Ln & Lincoln Dr



18-0555 SmokeTree Resort
2024 Background AM

1: Mockingbird Ln & Lincoln Dr
HCM 6th Signalized Intersection Summary

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	186	831	63	11	545	40	21	20	21	46	58	170
Future Volume (veh/h)	186	831	63	11	545	40	21	20	21	46	58	170
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	1772	1969	1772	1772	1969	1772	1772	1969	1772	1772	1969	1772
Adj Flow Rate, veh/h	198	884	67	12	586	43	23	22	23	57	72	210
Peak Hour Factor	0.94	0.94	0.94	0.93	0.93	0.93	0.91	0.91	0.91	0.81	0.81	0.81
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	570	2619	198	423	2461	988	149	79	83	209	316	241
Arrive On Green	0.05	0.74	0.74	0.44	0.44	0.44	0.09	0.09	0.09	0.04	0.16	0.16
Sat Flow, veh/h	1688	3524	267	559	3741	1502	1039	881	921	1688	1969	1502
Grp Volume(v), veh/h	198	469	482	12	586	43	23	0	45	57	72	210
Grp Sat Flow(s),veh/h/ln	1688	1870	1921	559	1870	1502	1039	0	1803	1688	1969	1502
Q Serve(g_s), s	4.7	11.2	11.2	1.6	12.7	2.1	2.7	0.0	3.0	3.9	4.1	17.7
Cycle Q Clear(g_c), s	4.7	11.2	11.2	1.7	12.7	2.1	2.7	0.0	3.0	3.9	4.1	17.7
Prop In Lane	1.00		0.14	1.00		1.00	1.00		0.51	1.00		1.00
Lane Grp Cap(c), veh/h	570	1390	1427	423	2461	988	149	0	162	209	316	241
V/C Ratio(X)	0.35	0.34	0.34	0.03	0.24	0.04	0.15	0.00	0.28	0.27	0.23	0.87
Avail Cap(c_a), veh/h	699	1390	1427	423	2461	988	382	0	567	362	937	715
HCM Platoon Ratio	1.00	1.00	1.00	0.67	0.67	0.67	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.92	0.92	0.92	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	6.6	5.7	5.7	12.9	16.0	13.0	55.0	0.0	55.2	49.2	47.5	53.2
Incr Delay (d2), s/veh	0.4	0.7	0.6	0.1	0.2	0.1	0.5	0.0	0.9	0.7	0.4	9.3
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(95%),veh/ln	2.9	7.6	7.8	0.4	9.9	1.3	1.3	0.0	2.6	3.0	3.7	11.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	7.0	6.4	6.4	13.0	16.2	13.1	55.5	0.0	56.1	49.9	47.9	62.5
LnGrp LOS	A	A	A	B	B	B	E	A	E	D	D	E
Approach Vol, veh/h	1149			641			68			339		
Approach Delay, s/veh	6.5			15.9			55.9			57.3		
Approach LOS	A			B			E			E		
Timer - Assigned Phs	1	2	3	4	6			8				
Phs Duration (G+Y+Rc), s	11.1	91.5	9.2	18.2	102.6			27.4				
Change Period (Y+Rc), s	4.0	6.0	4.0	6.5	6.0			6.5				
Max Green Setting (Gmax), s	17.0	34.6	17.0	40.9	55.6			61.9				
Max Q Clear Time (g_c+I), s	6.7	14.7	5.9	5.0	13.2			19.7				
Green Ext Time (p_c), s	0.4	4.2	0.1	0.3	7.6			1.2				
Intersection Summary												
HCM 6th Ctrl Delay	18.6											
HCM 6th LOS	B											

18-0555 SmokeTree Resort
2024 Background PM

1: Mockingbird Ln & Lincoln Dr
HCM 6th Signalized Intersection Summary

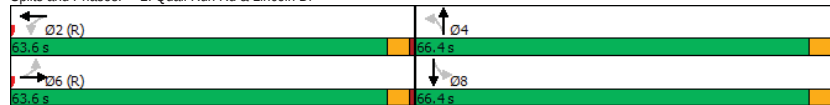
													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		 			 						 		
Traffic Volume (veh/h)	138	753	34	8	915	55	18	45	18	46	60	227	
Future Volume (veh/h)	138	753	34	8	915	55	18	45	18	46	60	227	
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0	
Peak-Bike Adj(A_pbT)	1.00		1.00	1.00		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	1772	1969	1772	1772	1969	1772	1772	1969	1772	1772	1969	1772	
Adj Flow Rate, veh/h	147	801	36	9	984	59	20	49	20	57	74	280	
Peak Hour Factor	0.94	0.94	0.94	0.93	0.93	0.93	0.91	0.91	0.91	0.81	0.81	0.81	
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2	
Cap, veh/h	382	2537	114	435	2310	927	190	184	75	254	409	312	
Arrive On Green	0.05	0.70	0.70	0.62	0.62	0.62	0.14	0.14	0.14	0.04	0.21	0.21	
Sat Flow, veh/h	1688	3646	164	622	3741	1502	973	1329	542	1688	1969	1502	
Grp Volume(v), veh/h	147	411	426	9	984	59	20	0	69	57	74	280	
Grp Sat Flow(s),veh/h/ln	1688	1870	1939	622	1870	1502	973	0	1871	1688	1969	1502	
Q Serve(g_s), s	4.0	11.1	11.1	0.7	17.8	2.0	2.3	0.0	4.3	3.7	4.0	23.6	
Cycle Q Clear(g_c), s	4.0	11.1	11.1	1.7	17.8	2.0	2.3	0.0	4.3	3.7	4.0	23.6	
Prop In Lane	1.00		0.08	1.00		1.00	1.00		0.29	1.00		1.00	
Lane Grp Cap(c), veh/h	382	1302	1350	435	2310	927	190	0	259	254	409	312	
V/C Ratio(X)	0.38	0.32	0.32	0.02	0.43	0.06	0.11	0.00	0.27	0.22	0.18	0.90	
Avail Cap(c_a), veh/h	523	1302	1350	435	2310	927	362	0	589	409	937	715	
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	0.70	0.70	0.70	1.00	0.00	1.00	1.00	1.00	1.00	
Uniform Delay (d), s/veh	9.4	7.7	7.7	10.0	12.9	9.9	49.2	0.0	50.1	44.0	42.4	50.1	
Incr Delay (d2), s/veh	0.6	0.6	0.6	0.1	0.4	0.1	0.2	0.0	0.5	0.4	0.2	9.0	
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(95%),veh/ln	2.6	8.0	8.2	0.2	11.2	1.2	1.1	0.0	3.7	2.8	3.6	14.7	
Unsig. Movement Delay, s/veh													
LnGrp Delay(d),s/veh	10.0	8.3	8.3	10.1	13.3	10.0	49.5	0.0	50.6	44.5	42.6	59.2	
LnGrp LOS	B	A	A	B	B	A	D	A	D	D	D	E	
Approach Vol, veh/h	984			1052			89			411			
Approach Delay, s/veh	8.6			13.1			50.4			54.1			
Approach LOS	A			B			D			D			
Timer - Assigned Phs	1	2	3	4	6			8					
Phs Duration (G+Y+Rc), s	10.2	86.3	9.0	24.5	96.5			33.5					
Change Period (Y+Rc), s	4.0	6.0	4.0	6.5	6.0			6.5					
Max Green Setting (G_max), s	17.0	34.6	17.0	40.9	55.6			61.9					
Max Q Clear Time (g_c+I), s	6.0	19.8	5.7	6.3	13.1			25.6					
Green Ext Time (p_c), s	0.3	6.4	0.1	0.5	6.3			1.4					
Intersection Summary													
HCM 6th Ctrl Delay	19.3												
HCM 6th LOS	B												

18-0555 SmokeTree Resort
2024 Background AM

2: Quail Run Rd & Lincoln Dr
Timing Report, Sorted By Phase

				
Phase Number	2	4	6	8
Movement	WBTL	NBTL	EBTL	SBTL
Lead/Lag				
Lead-Lag Optimize				
Recall Mode	C-Max	Max	C-Max	Max
Maximum Split (s)	63.6	66.4	63.6	66.4
Maximum Split (%)	48.9%	51.1%	48.9%	51.1%
Minimum Split (s)	22.5	22.5	22.5	22.5
Yellow Time (s)	3.5	3.5	3.5	3.5
All-Red Time (s)	1	1	1	1
Minimum Initial (s)	5	5	5	5
Vehicle Extension (s)	3	3	3	3
Minimum Gap (s)	3	3	3	3
Time Before Reduce (s)	0	0	0	0
Time To Reduce (s)	0	0	0	0
Walk Time (s)	7	7	7	7
Flash Dont Walk (s)	11	11	11	11
Dual Entry	Yes	Yes	Yes	Yes
Inhibit Max	Yes	Yes	Yes	Yes
Start Time (s)	94.6	28.2	94.6	28.2
End Time (s)	28.2	94.6	28.2	94.6
Yield/Force Off (s)	23.7	90.1	23.7	90.1
Yield/Force Off 170(s)	12.7	79.1	12.7	79.1
Local Start Time (s)	0	63.6	0	63.6
Local Yield (s)	59.1	125.5	59.1	125.5
Local Yield 170(s)	48.1	114.5	48.1	114.5
Intersection Summary				
Cycle Length	130			
Control Type	Actuated-Coordinated			
Natural Cycle	45			
Offset: 94.6 (73%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green				

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

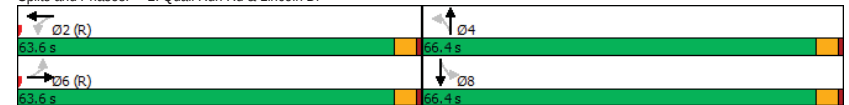


18-0555 SmokeTree Resort
2024 Background PM

2: Quail Run Rd & Lincoln Dr
Timing Report, Sorted By Phase

				
Phase Number	2	4	6	8
Movement	WBTL	NBTL	EBTL	SBTL
Lead/Lag				
Lead-Lag Optimize				
Recall Mode	C-Max	Max	C-Max	Max
Maximum Split (s)	63.6	66.4	63.6	66.4
Maximum Split (%)	48.9%	51.1%	48.9%	51.1%
Minimum Split (s)	22.5	22.5	22.5	22.5
Yellow Time (s)	3.5	3.5	3.5	3.5
All-Red Time (s)	1	1	1	1
Minimum Initial (s)	5	5	5	5
Vehicle Extension (s)	3	3	3	3
Minimum Gap (s)	3	3	3	3
Time Before Reduce (s)	0	0	0	0
Time To Reduce (s)	0	0	0	0
Walk Time (s)	7	7	7	7
Flash Dont Walk (s)	11	11	11	11
Dual Entry	Yes	Yes	Yes	Yes
Inhibit Max	Yes	Yes	Yes	Yes
Start Time (s)	94.6	28.2	94.6	28.2
End Time (s)	28.2	94.6	28.2	94.6
Yield/Force Off (s)	23.7	90.1	23.7	90.1
Yield/Force Off 170(s)	12.7	79.1	12.7	79.1
Local Start Time (s)	0	63.6	0	63.6
Local Yield (s)	59.1	125.5	59.1	125.5
Local Yield 170(s)	48.1	114.5	48.1	114.5
Intersection Summary				
Cycle Length	130			
Control Type	Actuated-Coordinated			
Natural Cycle	45			
Offset: 94.6 (73%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green				

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



18-0555 SmokeTree Resort
2024 Background AM

2: Quail Run Rd & Lincoln Dr
HCM 6th Signalized Intersection Summary

	↖	→	↗	↙	←	↖	↗	↙	↘	↗	↘	↙
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↕	↗	↖	↕	↗	↕	↕	↕	↖	↕	↗
Traffic Volume (veh/h)	9	877	3	1	584	16	2	0	3	8	0	6
Future Volume (veh/h)	9	877	3	1	584	16	2	0	3	8	0	6
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	10	1020	3	1	642	18	3	0	5	11	0	9
Peak Hour Factor	0.86	0.86	0.86	0.91	0.91	0.91	0.62	0.62	0.62	0.70	0.70	0.70
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	334	1652	5	161	1605	45	294	16	453	421	12	319
Arrive On Green	0.15	0.15	0.15	0.60	0.60	0.60	0.48	0.00	0.48	0.48	0.00	0.48
Sat Flow, veh/h	774	3635	11	551	3530	99	537	34	951	795	25	671
Grp Volume(v), veh/h	10	499	524	1	323	337	8	0	0	20	0	0
Grp Sat Flow(s),veh/h/ln	774	1777	1868	551	1777	1853	1522	0	0	1491	0	0
Q Serve(g_s), s	1.5	34.2	34.2	0.2	12.3	12.3	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	13.8	34.2	34.2	34.4	12.3	12.3	0.3	0.0	0.0	0.8	0.0	0.0
Prop In Lane	1.00		0.01	1.00		0.05	0.37		0.62	0.55		0.45
Lane Grp Cap(c), veh/h	334	808	849	161	808	842	763	0	0	753	0	0
V/C Ratio(X)	0.03	0.62	0.62	0.01	0.40	0.40	0.01	0.00	0.00	0.03	0.00	0.00
Avail Cap(c_a), veh/h	334	808	849	161	808	842	763	0	0	753	0	0
HCM Platoon Ratio	0.33	0.33	0.33	1.33	1.33	1.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.95	0.95	0.95	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	41.5	44.7	44.7	33.6	16.5	16.5	17.9	0.0	0.0	18.0	0.0	0.0
Incr Delay (d2), s/veh	0.2	3.3	3.2	0.1	1.5	1.4	0.0	0.0	0.0	0.1	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.6	23.7	24.7	0.0	8.5	8.7	0.2	0.0	0.0	0.6	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	41.6	48.0	47.8	33.6	17.9	17.9	17.9	0.0	0.0	18.1	0.0	0.0
LnGrp LOS	D	D	D	C	B	B	B	A	A	B	A	A
Approach Vol, veh/h		1033			661			8			20	
Approach Delay, s/veh		47.9			17.9			17.9			18.1	
Approach LOS		D			B			B			B	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		63.6		66.4		63.6		66.4				
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5				
Max Green Setting (Gmax), s		59.1		61.9		59.1		61.9				
Max Q Clear Time (g_c+I), s		36.4		2.3		36.2		2.8				
Green Ext Time (p_c), s		4.2		0.0		7.3		0.1				
Intersection Summary												
HCM 6th Ctrl Delay				35.9								
HCM 6th LOS				D								

18-0555 SmokeTree Resort
2024 Background PM

2: Quail Run Rd & Lincoln Dr
HCM 6th Signalized Intersection Summary

	↖	→	↗	↙	←	↖	↗	↙	↘	↗	↘	↙
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↕	↗	↖	↕	↗	↕	↕	↕	↖	↕	↗
Traffic Volume (veh/h)	2	846	1	1	965	3	0	0	3	6	0	0
Future Volume (veh/h)	2	846	1	1	965	3	0	0	3	6	0	0
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	2	984	1	1	1060	3	0	0	5	9	0	0
Peak Hour Factor	0.86	0.86	0.86	0.91	0.91	0.91	0.62	0.62	0.62	0.70	0.70	0.70
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	263	1656	2	171	1653	5	0	0	755	725	0	0
Arrive On Green	0.15	0.15	0.15	0.91	0.91	0.91	0.00	0.00	0.48	0.48	0.00	0.00
Sat Flow, veh/h	531	3643	4	571	3635	10	0	0	1585	1406	0	0
Grp Volume(v), veh/h	2	480	505	1	518	545	0	0	5	9	0	0
Grp Sat Flow(s),veh/h/ln	531	1777	1870	571	1777	1869	0	0	1585	1406	0	0
Q Serve(g_s), s	0.4	32.8	32.8	0.1	8.3	8.3	0.0	0.0	0.2	0.4	0.0	0.0
Cycle Q Clear(g_c), s	8.7	32.8	32.8	32.9	8.3	8.3	0.0	0.0	0.2	0.7	0.0	0.0
Prop In Lane	1.00		0.00	1.00		0.01	0.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	263	808	850	171	808	849	0	0	755	725	0	0
V/C Ratio(X)	0.01	0.59	0.59	0.01	0.64	0.64	0.00	0.00	0.01	0.01	0.00	0.00
Avail Cap(c_a), veh/h	263	808	850	171	808	849	0	0	755	725	0	0
HCM Platoon Ratio	0.33	0.33	0.33	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.96	0.96	0.96	1.00	1.00	1.00	0.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	37.4	44.1	44.1	14.5	3.6	3.6	0.0	0.0	17.9	18.1	0.0	0.0
Incr Delay (d2), s/veh	0.1	3.1	2.9	0.1	3.9	3.7	0.0	0.0	0.0	0.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.1	22.9	23.8	0.0	4.3	4.5	0.0	0.0	0.2	0.3	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	37.5	47.1	47.0	14.6	7.5	7.3	0.0	0.0	17.9	18.1	0.0	0.0
LnGrp LOS	D	D	D	B	A	A	A	A	B	B	A	A
Approach Vol, veh/h		987			1064			5			9	
Approach Delay, s/veh		47.0			7.4			17.9			18.1	
Approach LOS		D			A			B			B	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		63.6		66.4		63.6		66.4				
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5				
Max Green Setting (Gmax), s		59.1		61.9		59.1		61.9				
Max Q Clear Time (g_c+I), s		34.9		2.2		34.8		2.7				
Green Ext Time (p_c), s		7.7		0.0		7.0		0.0				
Intersection Summary												
HCM 6th Ctrl Delay				26.4								
HCM 6th LOS				C								

18-0555 SmokeTree Resort
2024 Background AM

4: Shared Drwy & Lincoln Dr
HCM 6th TWSC

Intersection						
Int Delay, s/veh	0.2					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↑	↑↑	↑	
Traffic Vol, veh/h	908	10	11	599	2	8
Future Vol, veh/h	908	10	11	599	2	8
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	60	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	86	86	91	91	50	50
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1056	12	12	658	4	16
Major/Minor						
Conflicting Flow All	0	0	1068	0	1415	534
Stage 1	-	-	-	-	1062	-
Stage 2	-	-	-	-	353	-
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	-	-	1005	-	*441	*715
Stage 1	-	-	-	-	*627	-
Stage 2	-	-	-	-	*789	-
Platoon blocked, %	-	-	1	-	1	1
Mov Cap-1 Maneuver	-	-	1005	-	*436	*715
Mov Cap-2 Maneuver	-	-	-	-	*436	-
Stage 1	-	-	-	-	*627	-
Stage 2	-	-	-	-	*779	-
Approach						
EB	WB		NB			
HCM Control Delay, s	0	0.2		10.9		
HCM LOS					B	
Minor Lane/Major Mvmt						
NBLn1	EBT	EBR	WBL	WBT		
Capacity (veh/h)	634	-	-	1005	-	
HCM Lane V/C Ratio	0.032	-	-	0.012	-	
HCM Control Delay (s)	10.9	-	-	8.6	-	
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						

18-0555 SmokeTree Resort
2024 Background PM

4: Shared Drwy & Lincoln Dr
HCM 6th TWSC

Intersection						
Int Delay, s/veh	0.2					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↑	↑↑	↑	
Traffic Vol, veh/h	852	3	6	964	5	11
Future Vol, veh/h	852	3	6	964	5	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	-	-	60	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	86	86	91	91	50	50
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	991	3	7	1059	10	22
Major/Minor						
Conflicting Flow All	0	0	994	0	1537	497
Stage 1	-	-	-	-	993	-
Stage 2	-	-	-	-	544	-
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	-	-	1051	-	*328	*739
Stage 1	-	-	-	-	*652	-
Stage 2	-	-	-	-	*652	-
Platoon blocked, %	-	-	1	-	1	1
Mov Cap-1 Maneuver	-	-	1051	-	*325	*739
Mov Cap-2 Maneuver	-	-	-	-	*325	-
Stage 1	-	-	-	-	*652	-
Stage 2	-	-	-	-	*648	-
Approach						
EB	WB		NB			
HCM Control Delay, s	0	0.1		12.2		
HCM LOS				B		
Minor Lane/Major Mvmt						
NBLn1	EBT	EBR	WBL	WBT		
Capacity (veh/h)	529	-	-	1051	-	
HCM Lane V/C Ratio	0.06	-	-	0.006	-	
HCM Control Delay (s)	12.2	-	-	8.4	-	
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						

18-0555 SmokeTree Resort
2024 Background AM

5: AJ's Drwy/Apartment Drwy & Lincoln Dr
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	21	830	69	12	551	9	44	5	60	4	0	10	
Future Vol, veh/h	21	830	69	12	551	9	44	5	60	4	0	10	
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	60	-	-	25	-	-	-	-	-	0	-	0	
Veh in Median Storage, #	-	0	-	-	0	-	-	1	-	-	1	-	
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-	
Peak Hour Factor	88	88	88	95	95	95	76	76	76	70	70	70	
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2	
Mvmt Flow	24	943	78	13	580	9	58	7	79	6	0	14	

Major/Minor	Major1	Major2	Minor1	Minor2									
Conflicting Flow All	589	0	0	1021	0	0	1346	1645	511	1134	-	295	
Stage 1	-	-	-	-	-	-	1030	1030	-	611	-	-	
Stage 2	-	-	-	-	-	-	316	615	-	523	-	-	
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	-	6.94	
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	-	-	
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	-	-	
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	-	3.32	
Pot Cap-1 Maneuver	*1286	-	-	1017	-	-	*499	*229	*739	*582	0	*860	
Stage 1	-	-	-	-	-	-	*599	*546	-	*810	0	-	
Stage 2	-	-	-	-	-	-	*810	*710	-	*697	0	-	
Platoon blocked, %	1	-	-	1	-	-	1	1	1	1	1	1	
Mov Cap-1 Maneuver	*1286	-	-	1017	-	-	*479	*222	*739	*500	-	*860	
Mov Cap-2 Maneuver	-	-	-	-	-	-	*509	*372	-	*519	-	-	
Stage 1	-	-	-	-	-	-	*588	*536	-	*795	-	-	
Stage 2	-	-	-	-	-	-	*787	*701	-	*603	-	-	

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	0.2	12.8	10.1
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	602	*1286	-	-	1017	-	-	519	860
HCM Lane V/C Ratio	0.238	0.019	-	-	0.012	-	-	0.011	0.017
HCM Control Delay (s)	12.8	7.9	-	-	8.6	-	-	12	9.3
HCM Lane LOS	B	A	-	-	A	-	-	B	A
HCM 95th %tile Q(veh)	0.9	0.1	-	-	0	-	-	0	0.1

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

18-0555 SmokeTree Resort
2024 Background PM

5: AJ's Drwy/Apartment Drwy & Lincoln Dr
HCM 6th TWSC

Intersection													
Int Delay, s/veh	1.6												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Vol, veh/h	8	790	62	6	872	9	80	2	72	3	0	19	
Future Vol, veh/h	8	790	62	6	872	9	80	2	72	3	0	19	
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	60	-	-	25	-	-	-	-	-	0	-	0	
Veh in Median Storage, #	-	0	-	-	0	-	-	1	-	-	1	-	
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-	
Peak Hour Factor	88	88	88	95	95	95	76	76	76	70	70	70	
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2	
Mvmt Flow	9	898	70	6	918	9	105	3	95	4	0	27	

Major/Minor	Major1	Major2	Minor1	Minor2									
Conflicting Flow All	927	0	0	968	0	0	1422	1890	484	1404	-	464	
Stage 1	-	-	-	-	-	-	951	951	-	935	-	-	
Stage 2	-	-	-	-	-	-	471	939	-	469	-	-	
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	-	6.94	
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	-	-	
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	-	-	
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	-	3.32	
Pot Cap-1 Maneuver	*1070	-	-	1036	-	-	*446	*218	*763	*446	0	*715	
Stage 1	-	-	-	-	-	-	*637	*576	-	*674	0	-	
Stage 2	-	-	-	-	-	-	*674	*591	-	*720	0	-	
Platoon blocked, %	1	-	-	1	-	-	1	1	1	1	1	1	
Mov Cap-1 Maneuver	*1070	-	-	1036	-	-	*424	*215	*763	*384	-	*715	
Mov Cap-2 Maneuver	-	-	-	-	-	-	*483	*361	-	*467	-	-	
Stage 1	-	-	-	-	-	-	*631	*571	-	*669	-	-	
Stage 2	-	-	-	-	-	-	*645	*588	-	*622	-	-	

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0.1	14.5	10.6
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	580	*1070	-	-	1036	-	-	467	715
HCM Lane V/C Ratio	0.349	0.008	-	-	0.006	-	-	0.009	0.038
HCM Control Delay (s)	14.5	8.4	-	-	8.5	-	-	12.8	10.2
HCM Lane LOS	B	A	-	-	A	-	-	B	B
HCM 95th %tile Q(veh)	1.6	0	-	-	0	-	-	0	0.1

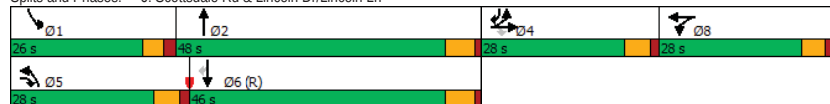
Notes			
-: Volume exceeds capacity	\$. Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

18-0555 SmokeTree Resort
2024 Background AM

6: Scottsdale Rd & Lincoln Dr/Lincoln Ln
Timing Report, Sorted By Phase

	1	2	4	5	6	8
Phase Number	1	2	4	5	6	8
Movement	SBL	NBT	EBTL	NBL	SBT	WBTL
Lead/Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize						
Recall Mode	None	None	None	None	C-Max	None
Maximum Split (s)	26	48	28	28	46	28
Maximum Split (%)	20.0%	36.9%	21.5%	21.5%	35.4%	21.5%
Minimum Split (s)	11	27.7	13	13	30.7	13
Yellow Time (s)	3.3	4.7	4	4	4.7	3.6
All-Red Time (s)	2	1	1.5	1.5	1	2
Minimum Initial (s)	5	10	7	7	10	7
Vehicle Extension (s)	2	0.2	2	2	0.2	2
Minimum Gap (s)	1	1	1	1	1	1
Time Before Reduce (s)	0	0	0	0	0	0
Time To Reduce (s)	0	0	0	0	0	0
Walk Time (s)		7			7	
Flash Dont Walk (s)		15			18	
Dual Entry	No	Yes	No	No	Yes	No
Inhibit Max	Yes	Yes	Yes	Yes	Yes	Yes
Start Time (s)	102	128	46	102	0	74
End Time (s)	128	46	74	0	46	102
Yield/Force Off (s)	122.7	40.3	68.5	124.5	40.3	96.4
Yield/Force Off 170(s)	122.7	25.3	68.5	124.5	22.3	96.4
Local Start Time (s)	102	128	46	102	0	74
Local Yield (s)	122.7	40.3	68.5	124.5	40.3	96.4
Local Yield 170(s)	122.7	25.3	68.5	124.5	22.3	96.4
Intersection Summary						
Cycle Length	130					
Control Type	Actuated-Coordinated					
Natural Cycle	75					
Offset: 0 (0%), Referenced to phase 6:SBT, Start of Green						

Splits and Phases: 6: Scottsdale Rd & Lincoln Dr/Lincoln Ln

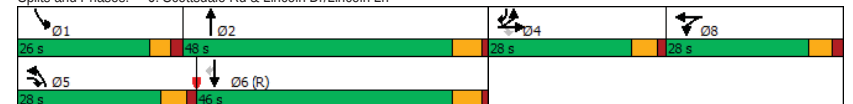


18-0555 SmokeTree Resort
2024 Background PM

6: Scottsdale Rd & Lincoln Dr/Lincoln Ln
Timing Report, Sorted By Phase

	1	2	4	5	6	8
Phase Number	1	2	4	5	6	8
Movement	SBL	NBT	EBTL	NBL	SBT	WBTL
Lead/Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize						
Recall Mode	None	None	None	None	C-Max	None
Maximum Split (s)	26	48	28	28	46	28
Maximum Split (%)	20.0%	36.9%	21.5%	21.5%	35.4%	21.5%
Minimum Split (s)	11	27.7	13	13	30.7	13
Yellow Time (s)	3.3	4.7	4	4	4.7	3.6
All-Red Time (s)	2	1	1.5	1.5	1	2
Minimum Initial (s)	5	10	7	7	10	7
Vehicle Extension (s)	2	0.2	2	2	0.2	2
Minimum Gap (s)	1	1	1	1	1	1
Time Before Reduce (s)	0	0	0	0	0	0
Time To Reduce (s)	0	0	0	0	0	0
Walk Time (s)		7			7	
Flash Dont Walk (s)		15			18	
Dual Entry	No	Yes	No	No	Yes	No
Inhibit Max	Yes	Yes	Yes	Yes	Yes	Yes
Start Time (s)	102	128	46	102	0	74
End Time (s)	128	46	74	0	46	102
Yield/Force Off (s)	122.7	40.3	68.5	124.5	40.3	96.4
Yield/Force Off 170(s)	122.7	25.3	68.5	124.5	22.3	96.4
Local Start Time (s)	102	128	46	102	0	74
Local Yield (s)	122.7	40.3	68.5	124.5	40.3	96.4
Local Yield 170(s)	122.7	25.3	68.5	124.5	22.3	96.4
Intersection Summary						
Cycle Length	130					
Control Type	Actuated-Coordinated					
Natural Cycle	90					
Offset: 0 (0%), Referenced to phase 6:SBT, Start of Green						

Splits and Phases: 6: Scottsdale Rd & Lincoln Dr/Lincoln Ln



18-0555 SmokeTree Resort
2024 Background AM

6: Scottsdale Rd & Lincoln Dr/Lincoln Ln
HCM 6th Signalized Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱	↱	↰	↱	↱	↰	↱	↱	↰	↱	↱
Traffic Volume (veh/h)	529	37	318	21	34	28	215	897	33	20	957	378
Future Volume (veh/h)	529	37	318	21	34	28	215	897	33	20	957	378
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	617	0	353	24	39	32	236	986	36	22	1052	415
Peak Hour Factor	0.90	0.90	0.90	0.88	0.88	0.88	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	617	0	409	93	102	75	294	1899	69	38	1583	766
Arrive On Green	0.17	0.00	0.17	0.05	0.05	0.05	0.09	0.38	0.38	0.02	0.31	0.31
Sat Flow, veh/h	3563	0	1585	1781	1957	1433	3456	5057	184	1781	5106	1585
Grp Volume(v), veh/h	617	0	353	24	35	36	236	663	359	22	1052	415
Grp Sat Flow(s),veh/h/ln	1781	0	1585	1781	1777	1612	1728	1702	1837	1781	1702	1585
Q Serve(g_s), s	22.5	0.0	22.5	1.7	2.5	2.8	8.7	19.7	19.7	1.6	23.3	23.8
Cycle Q Clear(g_c), s	22.5	0.0	22.5	1.7	2.5	2.8	8.7	19.7	19.7	1.6	23.3	23.8
Prop In Lane	1.00		1.00	1.00		0.89	1.00		0.10	1.00		1.00
Lane Grp Cap(c), veh/h	617	0	409	93	93	84	294	1278	690	38	1583	766
V/C Ratio(X)	1.00	0.00	0.86	0.26	0.38	0.43	0.80	0.52	0.52	0.59	0.66	0.54
Avail Cap(c_a), veh/h	617	0	409	307	306	278	598	1278	690	284	1583	766
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	53.8	0.0	46.0	59.2	59.6	59.7	58.4	31.5	31.5	63.1	39.0	23.5
Incr Delay (d2), s/veh	36.4	0.0	16.4	0.5	0.9	1.3	2.0	0.2	0.3	5.3	2.2	2.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	19.1	0.0	18.6	1.4	2.1	2.1	7.0	12.8	13.7	1.4	15.2	18.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	90.2	0.0	62.4	59.7	60.5	61.0	60.4	31.7	31.8	68.4	41.2	26.3
LnGrp LOS	F	A	E	E	E	E	E	C	C	E	D	C
Approach Vol, veh/h		970			95			1258			1489	
Approach Delay, s/veh		80.0			60.5			37.1			37.4	
Approach LOS		F			E			D			D	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	8.0	54.5		28.0	16.6	46.0		12.4				
Change Period (Y+Rc), s	* 5.3	5.7		5.5	5.5	5.7		5.6				
Max Green Setting (Gmax), s	* 21	42.3		22.5	22.5	40.3		22.4				
Max Q Clear Time (g_c+I), s	3.6	21.7		24.5	10.7	25.8		4.8				
Green Ext Time (p_c), s	0.0	1.4		0.0	0.3	1.5		0.2				

Intersection Summary

HCM 6th Ctrl Delay	48.7
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.

18-0555 SmokeTree Resort
2024 Background PM

6: Scottsdale Rd & Lincoln Dr/Lincoln Ln
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	36	347	39	40	37	318	1314	29	36	1457	595
Future Volume (veh/h)	524	36	347	39	40	37	318	1314	29	36	1457	595
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	611	0	386	44	45	42	349	1444	32	40	1601	654
Peak Hour Factor	0.90	0.90	0.90	0.88	0.88	0.88	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	617	0	461	95	99	81	407	2056	46	52	1583	766
Arrive On Green	0.17	0.00	0.17	0.05	0.05	0.05	0.12	0.40	0.40	0.03	0.31	0.31
Sat Flow, veh/h	3563	0	1585	1781	1849	1524	3456	5140	114	1781	5106	1585
Grp Volume(v), veh/h	611	0	386	44	43	44	349	956	520	40	1601	654
Grp Sat Flow(s),veh/h/ln	1781	0	1585	1781	1777	1596	1728	1702	1850	1781	1702	1585
Q Serve(g_s), s	22.3	0.0	22.5	3.1	3.1	3.5	12.9	30.5	30.5	2.9	40.3	40.3
Cycle Q Clear(g_c), s	22.3	0.0	22.5	3.1	3.1	3.5	12.9	30.5	30.5	2.9	40.3	40.3
Prop In Lane	1.00		1.00	1.00		0.95	1.00		0.06	1.00		1.00
Lane Grp Cap(c), veh/h	617	0	461	95	95	85	407	1362	740	52	1583	766
V/C Ratio(X)	0.99	0.00	0.84	0.46	0.45	0.52	0.86	0.70	0.70	0.76	1.01	0.85
Avail Cap(c_a), veh/h	617	0	461	307	306	275	598	1362	740	284	1583	766
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	53.6	0.0	43.2	59.7	59.7	59.9	56.3	32.5	32.5	62.6	44.8	27.8
Incr Delay (d2), s/veh	33.8	0.0	12.0	1.3	1.3	1.8	5.7	1.4	2.5	8.3	25.5	11.7
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(95%),veh/ln	18.7	0.0	19.1	2.6	2.5	2.6	9.9	18.6	20.2	2.6	28.2	32.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	87.4	0.0	55.2	61.0	60.9	61.7	61.9	33.9	35.1	70.9	70.3	39.5
LnGrp LOS	F	A	E	E	E	E	E	C	D	E	F	D
Approach Vol, veh/h		997			131			1825			2295	
Approach Delay, s/veh		75.0			61.2			39.6			61.5	
Approach LOS		E			E			D			E	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	9.1	57.7		28.0	20.8	46.0		12.5				
Change Period (Y+Rc), s	* 5.3	5.7		5.5	5.5	5.7		5.6				
Max Green Setting (Gmax), s	* 21	42.3		22.5	22.5	40.3		22.4				
Max Q Clear Time (g_c+I), s	4.9	32.5		24.5	14.9	42.3		5.5				
Green Ext Time (p_c), s	0.0	1.9		0.0	0.4	0.0		0.3				

Intersection Summary

HCM 6th Ctrl Delay	56.5
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.

18-0555 SmokeTree Resort
2024 Background AM

7: Quail Run Rd & Access A
HCM 6th TWSC

Intersection						
Int Delay, s/veh	0					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	W		T			T
Traffic Vol, veh/h	0	0	5	0	0	4
Future Vol, veh/h	0	0	5	0	0	4
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	0	6	0	0	4

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	10	6	0
Stage 1	6	-	-
Stage 2	4	-	-
Critical Hdwy	6.42	6.22	-
Critical Hdwy Stg 1	5.42	-	-
Critical Hdwy Stg 2	5.42	-	-
Follow-up Hdwy	3.518	3.318	-
Pot Cap-1 Maneuver	1010	1077	-
Stage 1	1017	-	-
Stage 2	1019	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	1010	1077	-
Mov Cap-2 Maneuver	1010	-	-
Stage 1	1017	-	-
Stage 2	1019	-	-

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

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	1615	-
HCM Lane V/C Ratio	-	-	-	-
HCM Control Delay (s)	-	-	0	-
HCM Lane LOS	-	-	A	-
HCM 95th %tile Q(veh)	-	-	0	-

18-0555 SmokeTree Resort
2024 Background PM

7: Quail Run Rd & Access A
HCM 6th TWSC

Intersection						
Int Delay, s/veh	0					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	W		T			T
Traffic Vol, veh/h	0	0	3	0	0	2
Future Vol, veh/h	0	0	3	0	0	2
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	0	3	0	0	2

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	5	3	0
Stage 1	3	-	-
Stage 2	2	-	-
Critical Hdwy	6.42	6.22	-
Critical Hdwy Stg 1	5.42	-	-
Critical Hdwy Stg 2	5.42	-	-
Follow-up Hdwy	3.518	3.318	-
Pot Cap-1 Maneuver	1017	1081	-
Stage 1	1020	-	-
Stage 2	1021	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	1017	1081	-
Mov Cap-2 Maneuver	1017	-	-
Stage 1	1020	-	-
Stage 2	1021	-	-

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

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	1619	-
HCM Lane V/C Ratio	-	-	-	-
HCM Control Delay (s)	-	-	0	-
HCM Lane LOS	-	-	A	-
HCM 95th %tile Q(veh)	-	-	0	-

APPENDIX H

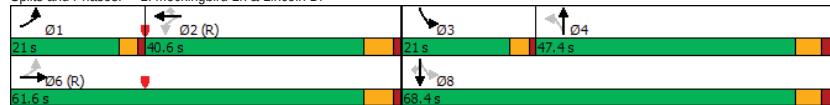
2029 NO-BULD PEAK HOUR ANALYSIS

18-0555 SmokeTree Resort
2029 Background AM

1: Mockingbird Ln & Lincoln Dr
Timing Report, Sorted By Phase

						
Phase Number	1	2	3	4	6	8
Movement	EBL	WBTL	SBL	NBTL	EBTL	SBTL
Lead/Lag	Lead	Lag	Lead	Lag		
Lead-Lag Optimize	Yes	Yes	Yes	Yes		
Recall Mode	None	C-Max	None	None	C-Max	None
Maximum Split (s)	21	40.6	21	47.4	61.6	68.4
Maximum Split (%)	16.2%	31.2%	16.2%	36.5%	47.4%	52.6%
Minimum Split (s)	8	27	8	33.5	27	33.5
Yellow Time (s)	3	4.5	3	4	4.5	4
All-Red Time (s)	1	1.5	1	2.5	1.5	2.5
Minimum Initial (s)	3.5	15	3.5	7	15	7
Vehicle Extension (s)	3	3	3	3	3	3
Minimum Gap (s)	3	3	3	3	3	3
Time Before Reduce (s)	0	0	0	0	0	0
Time To Reduce (s)	0	0	0	0	0	0
Walk Time (s)		7		7	7	7
Flash Dont Walk (s)		14		20	14	20
Dual Entry	No	No	No	Yes	No	Yes
Inhibit Max	Yes	Yes	Yes	Yes	Yes	Yes
Start Time (s)	109	0	40.6	61.6	109	40.6
End Time (s)	0	40.6	61.6	109	40.6	109
Yield/Force Off (s)	126	34.6	57.6	102.5	34.6	102.5
Yield/Force Off 170(s)	126	20.6	57.6	82.5	20.6	82.5
Local Start Time (s)	109	0	40.6	61.6	109	40.6
Local Yield (s)	126	34.6	57.6	102.5	34.6	102.5
Local Yield 170(s)	126	20.6	57.6	82.5	20.6	82.5
Intersection Summary						
Cycle Length	130					
Control Type	Actuated-Coordinated					
Natural Cycle	80					
Offset: 0 (0%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green						

Splits and Phases: 1: Mockingbird Ln & Lincoln Dr

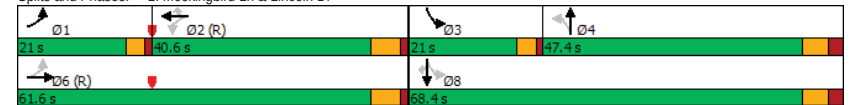


18-0555 SmokeTree Resort
2029 Background PM

1: Mockingbird Ln & Lincoln Dr
Timing Report, Sorted By Phase

						
Phase Number	1	2	3	4	6	8
Movement	EBL	WBTL	SBL	NBTL	EBTL	SBTL
Lead/Lag	Lead	Lag	Lead	Lag		
Lead-Lag Optimize	Yes	Yes	Yes	Yes		
Recall Mode	None	C-Max	None	None	C-Max	None
Maximum Split (s)	21	40.6	21	47.4	61.6	68.4
Maximum Split (%)	16.2%	31.2%	16.2%	36.5%	47.4%	52.6%
Minimum Split (s)	8	27	8	33.5	27	33.5
Yellow Time (s)	3	4.5	3	4	4.5	4
All-Red Time (s)	1	1.5	1	2.5	1.5	2.5
Minimum Initial (s)	3.5	15	3.5	7	15	7
Vehicle Extension (s)	3	3	3	3	3	3
Minimum Gap (s)	3	3	3	3	3	3
Time Before Reduce (s)	0	0	0	0	0	0
Time To Reduce (s)	0	0	0	0	0	0
Walk Time (s)		7		7	7	7
Flash Dont Walk (s)		14		20	14	20
Dual Entry	No	No	No	Yes	No	Yes
Inhibit Max	Yes	Yes	Yes	Yes	Yes	Yes
Start Time (s)	109	0	40.6	61.6	109	40.6
End Time (s)	0	40.6	61.6	109	40.6	109
Yield/Force Off (s)	126	34.6	57.6	102.5	34.6	102.5
Yield/Force Off 170(s)	126	20.6	57.6	82.5	20.6	82.5
Local Start Time (s)	109	0	40.6	61.6	109	40.6
Local Yield (s)	126	34.6	57.6	102.5	34.6	102.5
Local Yield 170(s)	126	20.6	57.6	82.5	20.6	82.5
Intersection Summary						
Cycle Length	130					
Control Type	Actuated-Coordinated					
Natural Cycle	90					
Offset: 0 (0%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green						

Splits and Phases: 1: Mockingbird Ln & Lincoln Dr



18-0555 SmokeTree Resort
2029 Background AM

1: Mockingbird Ln & Lincoln Dr
HCM 6th Signalized Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↰↱	↰	↰	↰↱	↰	↰	↰	↰	↰	↰	↰
Traffic Volume (veh/h)	220	975	69	16	664	48	23	23	27	56	65	210
Future Volume (veh/h)	220	975	69	16	664	48	23	23	27	56	65	210
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	234	1037	73	17	714	52	25	25	30	69	80	259
Peak Hour Factor	0.94	0.94	0.94	0.93	0.93	0.93	0.91	0.91	0.91	0.81	0.81	0.81
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	490	2516	177	339	2286	918	170	95	114	247	382	291
Arrive On Green	0.07	0.71	0.71	0.41	0.41	0.41	0.12	0.12	0.12	0.05	0.19	0.19
Sat Flow, veh/h	1688	3545	249	481	3741	1502	987	815	978	1688	1969	1502
Grp Volume(v), veh/h	234	547	563	17	714	52	25	0	55	69	80	259
Grp Sat Flow(s), veh/h/ln	1688	1870	1924	481	1870	1502	987	0	1793	1688	1969	1502
Q Serve(g_s), s	6.4	15.6	15.6	2.8	16.8	2.7	3.0	0.0	3.6	4.6	4.4	21.8
Cycle Q Clear(g_c), s	6.4	15.6	15.6	5.6	16.8	2.7	3.0	0.0	3.6	4.6	4.4	21.8
Prop In Lane	1.00		0.13	1.00		1.00	1.00		0.55	1.00		1.00
Lane Grp Cap(c), veh/h	490	1328	1366	339	2286	918	170	0	209	247	382	291
V/C Ratio(X)	0.48	0.41	0.41	0.05	0.31	0.06	0.15	0.00	0.26	0.28	0.21	0.89
Avail Cap(c_a), veh/h	596	1328	1366	339	2286	918	366	0	564	389	937	715
HCM Platoon Ratio	1.00	1.00	1.00	0.67	0.67	0.67	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.85	0.85	0.85	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	9.1	7.7	7.7	17.4	19.9	15.7	52.1	0.0	52.4	45.8	44.0	51.0
Incr Delay (d2), s/veh	0.7	0.9	0.9	0.2	0.3	0.1	0.4	0.0	0.7	0.6	0.3	9.0
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(95%), veh/ln	4.1	10.3	10.6	0.6	12.3	1.7	1.4	0.0	3.0	3.5	4.0	13.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	9.9	8.7	8.7	17.7	20.2	15.8	52.5	0.0	53.0	46.5	44.3	60.1
LnGrp LOS	A	A	A	B	C	B	D	A	D	D	D	E
Approach Vol, veh/h	1344			783			80			408		
Approach Delay, s/veh	8.9			19.8			52.8			54.7		
Approach LOS	A			B			D			D		
Timer - Assigned Phs	1	2	3	4	6	8						
Phs Duration (G+Y+Rc), s	12.8	85.5	10.1	21.6	98.3	31.7						
Change Period (Y+Rc), s	4.0	6.0	4.0	6.5	6.0	6.5						
Max Green Setting (Gmax), s	17.0	34.6	17.0	40.9	55.6	61.9						
Max Q Clear Time (g_c+I), s	8.4	18.8	6.6	5.6	17.6	23.8						
Green Ext Time (p_c), s	0.4	4.8	0.1	0.4	9.4	1.4						
Intersection Summary												
HCM 6th Ctrl Delay	20.7											
HCM 6th LOS	C											

18-0555 SmokeTree Resort
2029 Background PM

1: Mockingbird Ln & Lincoln Dr
HCM 6th Signalized Intersection Summary

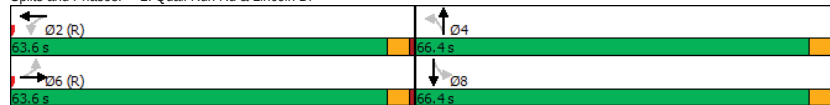
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↰↱	↰	↰	↰↱	↰	↰	↰	↰	↰	↰	↰
Traffic Volume (veh/h)	212	974	37	12	1127	64	20	51	24	55	66	298
Future Volume (veh/h)	212	974	37	12	1127	64	20	51	24	55	66	298
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	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	226	1036	39	13	1212	69	22	56	26	68	81	368
Peak Hour Factor	0.94	0.94	0.94	0.93	0.93	0.93	0.91	0.91	0.91	0.81	0.81	0.81
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	309	2340	88	301	1979	794	228	246	114	323	526	401
Arrive On Green	0.08	0.64	0.64	0.53	0.53	0.53	0.19	0.19	0.19	0.04	0.27	0.27
Sat Flow, veh/h	1688	3676	138	497	3741	1502	892	1272	591	1688	1969	1502
Grp Volume(v), veh/h	226	527	548	13	1212	69	22	0	82	68	81	368
Grp Sat Flow(s), veh/h/ln	1688	1870	1944	497	1870	1502	892	0	1863	1688	1969	1502
Q Serve(g_s), s	7.6	18.5	18.5	1.8	29.3	2.9	2.7	0.0	4.8	4.1	4.1	30.9
Cycle Q Clear(g_c), s	7.6	18.5	18.5	6.3	29.3	2.9	2.7	0.0	4.8	4.1	4.1	30.9
Prop In Lane	1.00		0.07	1.00		1.00	1.00		0.32	1.00		1.00
Lane Grp Cap(c), veh/h	309	1191	1238	301	1979	794	228	0	360	323	526	401
V/C Ratio(X)	0.73	0.44	0.44	0.04	0.61	0.09	0.10	0.00	0.23	0.21	0.15	0.92
Avail Cap(c_a), veh/h	400	1191	1238	301	1979	794	336	0	586	470	937	715
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	0.47	0.47	0.47	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	19.2	12.0	12.0	17.1	21.3	15.1	43.4	0.0	44.3	38.1	36.4	46.2
Incr Delay (d2), s/veh	4.8	1.2	1.2	0.1	0.7	0.1	0.2	0.0	0.3	0.3	0.1	9.5
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(95%), veh/ln	6.0	12.5	12.9	0.4	16.9	1.9	1.1	0.0	4.1	3.1	3.6	18.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	24.1	13.1	13.1	17.2	22.0	15.2	43.6	0.0	44.6	38.4	36.5	55.7
LnGrp LOS	C	B	B	B	C	B	D	A	D	D	D	E
Approach Vol, veh/h	1301			1294			104			517		
Approach Delay, s/veh	15.0			21.6			44.4			50.4		
Approach LOS	B			C			D			D		
Timer - Assigned Phs	1	2	3	4	6	8						
Phs Duration (G+Y+Rc), s	14.0	74.8	9.6	31.6	88.8	41.2						
Change Period (Y+Rc), s	4.0	6.0	4.0	6.5	6.0	6.5						
Max Green Setting (Gmax), s	17.0	34.6	17.0	40.9	55.6	61.9						
Max Q Clear Time (g_c+I), s	9.6	31.3	6.1	6.8	20.5	32.9						
Green Ext Time (p_c), s	0.4	2.4	0.1	0.6	8.8	1.8						
Intersection Summary												
HCM 6th Ctrl Delay	24.3											
HCM 6th LOS	C											

18-0555 SmokeTree Resort
2029 Background AM

2: Quail Run Rd & Lincoln Dr
Timing Report, Sorted By Phase

				
Phase Number	2	4	6	8
Movement	WBTL	NBTL	EBTL	SBTL
Lead/Lag				
Lead-Lag Optimize				
Recall Mode	C-Max	Max	C-Max	Max
Maximum Split (s)	63.6	66.4	63.6	66.4
Maximum Split (%)	48.9%	51.1%	48.9%	51.1%
Minimum Split (s)	22.5	22.5	22.5	22.5
Yellow Time (s)	3.5	3.5	3.5	3.5
All-Red Time (s)	1	1	1	1
Minimum Initial (s)	5	5	5	5
Vehicle Extension (s)	3	3	3	3
Minimum Gap (s)	3	3	3	3
Time Before Reduce (s)	0	0	0	0
Time To Reduce (s)	0	0	0	0
Walk Time (s)	7	7	7	7
Flash Dont Walk (s)	11	11	11	11
Dual Entry	Yes	Yes	Yes	Yes
Inhibit Max	Yes	Yes	Yes	Yes
Start Time (s)	94.6	28.2	94.6	28.2
End Time (s)	28.2	94.6	28.2	94.6
Yield/Force Off (s)	23.7	90.1	23.7	90.1
Yield/Force Off 170(s)	12.7	79.1	12.7	79.1
Local Start Time (s)	0	63.6	0	63.6
Local Yield (s)	59.1	125.5	59.1	125.5
Local Yield 170(s)	48.1	114.5	48.1	114.5
Intersection Summary				
Cycle Length	130			
Control Type	Actuated-Coordinated			
Natural Cycle	50			
Offset: 94.6 (73%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green				

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

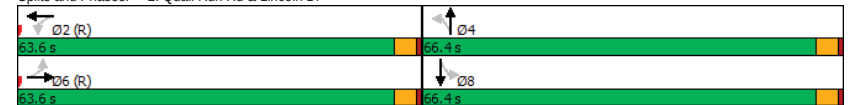


18-0555 SmokeTree Resort
2029 Background PM

2: Quail Run Rd & Lincoln Dr
Timing Report, Sorted By Phase

				
Phase Number	2	4	6	8
Movement	WBTL	NBTL	EBTL	SBTL
Lead/Lag				
Lead-Lag Optimize				
Recall Mode	C-Max	Max	C-Max	Max
Maximum Split (s)	63.6	66.4	63.6	66.4
Maximum Split (%)	48.9%	51.1%	48.9%	51.1%
Minimum Split (s)	22.5	22.5	22.5	22.5
Yellow Time (s)	3.5	3.5	3.5	3.5
All-Red Time (s)	1	1	1	1
Minimum Initial (s)	5	5	5	5
Vehicle Extension (s)	3	3	3	3
Minimum Gap (s)	3	3	3	3
Time Before Reduce (s)	0	0	0	0
Time To Reduce (s)	0	0	0	0
Walk Time (s)	7	7	7	7
Flash Dont Walk (s)	11	11	11	11
Dual Entry	Yes	Yes	Yes	Yes
Inhibit Max	Yes	Yes	Yes	Yes
Start Time (s)	94.6	28.2	94.6	28.2
End Time (s)	28.2	94.6	28.2	94.6
Yield/Force Off (s)	23.7	90.1	23.7	90.1
Yield/Force Off 170(s)	12.7	79.1	12.7	79.1
Local Start Time (s)	0	63.6	0	63.6
Local Yield (s)	59.1	125.5	59.1	125.5
Local Yield 170(s)	48.1	114.5	48.1	114.5
Intersection Summary				
Cycle Length	130			
Control Type	Actuated-Coordinated			
Natural Cycle	60			
Offset: 94.6 (73%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green				

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



18-0555 SmokeTree Resort
2029 Background AM

2: Quail Run Rd & Lincoln Dr
HCM 6th Signalized Intersection Summary

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	55	990	3	1	675	68	2	0	3	41	0	48
Future Volume (veh/h)	55	990	3	1	675	68	2	0	3	41	0	48
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	64	1151	3	1	742	75	3	0	5	59	0	69
Peak Hour Factor	0.86	0.86	0.86	0.91	0.91	0.91	0.62	0.62	0.62	0.70	0.70	0.70
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	273	1653	4	130	1481	150	291	16	448	357	14	387
Arrive On Green	0.15	0.15	0.15	0.60	0.60	0.60	0.48	0.00	0.48	0.48	0.00	0.48
Sat Flow, veh/h	669	3636	9	487	3259	329	531	34	941	665	30	813
Grp Volume(v), veh/h	64	562	592	1	404	413	8	0	0	128	0	0
Grp Sat Flow(s),veh/h/ln	669	1777	1869	487	1777	1811	1506	0	0	1508	0	0
Q Serve(g_s), s	11.5	39.1	39.1	0.2	16.8	16.8	0.0	0.0	0.0	3.7	0.0	0.0
Cycle Q Clear(g_c), s	28.3	39.1	39.1	39.3	16.8	16.8	0.3	0.0	0.0	6.0	0.0	0.0
Prop In Lane	1.00		0.01	1.00		0.18	0.37		0.62	0.46		0.54
Lane Grp Cap(c), veh/h	273	808	850	130	808	823	755	0	0	758	0	0
V/C Ratio(X)	0.23	0.70	0.70	0.01	0.50	0.50	0.01	0.00	0.00	0.17	0.00	0.00
Avail Cap(c_a), veh/h	273	808	850	130	808	823	755	0	0	758	0	0
HCM Platoon Ratio	0.33	0.33	0.33	1.33	1.33	1.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	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	49.9	46.7	46.7	37.3	17.3	17.3	17.9	0.0	0.0	19.4	0.0	0.0
Incr Delay (d2), s/veh	1.8	4.5	4.3	0.1	2.2	2.2	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(95%),veh/ln	4.0	26.7	27.8	0.1	10.7	10.9	0.2	0.0	0.0	4.2	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	51.7	51.3	51.1	37.5	19.5	19.5	17.9	0.0	0.0	19.8	0.0	0.0
LnGrp LOS	D	D	D	D	B	B	B	A	A	B	A	A
Approach Vol, veh/h	1218			818			8			128		
Approach Delay, s/veh	51.2			19.5			17.9			19.8		
Approach LOS	D			B			B			B		
Timer - Assigned Phs	2			4			6			8		
Phs Duration (G+Y+Rc), s	63.6			66.4			63.6			66.4		
Change Period (Y+Rc), s	4.5			4.5			4.5			4.5		
Max Green Setting (Gmax), s	59.1			61.9			59.1			61.9		
Max Q Clear Time (g_c+I), s	41.3			2.3			41.1			8.0		
Green Ext Time (p_c), s	5.0			0.0			8.1			0.8		
Intersection Summary												
HCM 6th Ctrl Delay	37.3											
HCM 6th LOS	D											

18-0555 SmokeTree Resort
2029 Background PM

2: Quail Run Rd & Lincoln Dr
HCM 6th Signalized Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	43	1045	1	1	1156	36	0	0	3	39	0	33
Future Volume (veh/h)	43	1045	1	1	1156	36	0	0	3	39	0	33
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	50	1215	1	1	1270	40	0	0	5	56	0	47
Peak Hour Factor	0.86	0.86	0.86	0.91	0.91	0.91	0.62	0.62	0.62	0.70	0.70	0.70
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	197	1656	1	118	1599	50	0	0	755	417	12	324
Arrive On Green	0.15	0.15	0.15	0.91	0.91	0.91	0.00	0.00	0.48	0.48	0.00	0.48
Sat Flow, veh/h	420	3644	3	459	3517	111	0	0	1585	786	25	681
Grp Volume(v), veh/h	50	592	624	1	641	669	0	0	5	103	0	0
Grp Sat Flow(s),veh/h/ln	420	1777	1870	459	1777	1850	0	0	1585	1492	0	0
Q Serve(g_s), s	14.3	41.4	41.4	0.2	15.3	15.4	0.0	0.0	0.2	3.1	0.0	0.0
Cycle Q Clear(g_c), s	29.7	41.4	41.4	41.6	15.3	15.4	0.0	0.0	0.2	4.8	0.0	0.0
Prop In Lane	1.00		0.00	1.00		0.06	0.00		1.00	0.54		0.46
Lane Grp Cap(c), veh/h	197	808	850	118	808	841	0	0	755	753	0	0
V/C Ratio(X)	0.25	0.73	0.73	0.01	0.79	0.79	0.00	0.00	0.01	0.14	0.00	0.00
Avail Cap(c_a), veh/h	197	808	850	118	808	841	0	0	755	753	0	0
HCM Platoon Ratio	0.33	0.33	0.33	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.93	0.93	0.93	1.00	1.00	1.00	0.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	49.9	47.7	47.7	20.2	3.9	3.9	0.0	0.0	17.9	19.0	0.0	0.0
Incr Delay (d2), s/veh	2.9	5.5	5.2	0.1	7.9	7.7	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(95%),veh/ln	3.2	28.3	29.5	0.0	6.6	6.8	0.0	0.0	0.2	3.3	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	52.8	53.2	52.9	20.4	11.8	11.6	0.0	0.0	17.9	19.4	0.0	0.0
LnGrp LOS	D	D	D	C	B	B	A	A	B	B	A	A
Approach Vol, veh/h	1266			1311			5			103		
Approach Delay, s/veh	53.0			11.7			17.9			19.4		
Approach LOS	D			B			B			B		
Timer - Assigned Phs	2			4			6			8		
Phs Duration (G+Y+Rc), s	63.6			66.4			63.6			66.4		
Change Period (Y+Rc), s	4.5			4.5			4.5			4.5		
Max Green Setting (Gmax), s	59.1			61.9			59.1			61.9		
Max Q Clear Time (g_c+I), s	43.6			2.2			43.4			6.8		
Green Ext Time (p_c), s	8.1			0.0			8.1			0.7		
Intersection Summary												
HCM 6th Ctrl Delay	31.5											
HCM 6th LOS	C											

18-0555 SmokeTree Resort
2029 Background AM

4: Shared Drwy & Lincoln Dr
HCM 6th TWSC

Intersection						
Int Delay, s/veh	0.2					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↑	↑↑	↑	
Traffic Vol, veh/h	1056	11	12	742	2	9
Future Vol, veh/h	1056	11	12	742	2	9
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	60	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	86	86	91	91	50	50
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1228	13	13	815	4	18

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	1241
Stage 1	-	-	1235
Stage 2	-	-	434
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	-	932	*339
Stage 1	-	-	*589
Stage 2	-	-	*743
Platoon blocked, %	-	1	1
Mov Cap-1 Maneuver	-	932	*334
Mov Cap-2 Maneuver	-	-	*334
Stage 1	-	-	*589
Stage 2	-	-	*733

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)	550	-	-	932	-
HCM Lane V/C Ratio	0.04	-	-	0.014	-
HCM Control Delay (s)	11.8	-	-	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

18-0555 SmokeTree Resort
2029 Background PM

4: Shared Drwy & Lincoln Dr
HCM 6th TWSC

Intersection						
Int Delay, s/veh	0.3					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↑	↑↑	↑	
Traffic Vol, veh/h	1083	3	7	1188	6	12
Future Vol, veh/h	1083	3	7	1188	6	12
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	60	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	86	86	91	91	50	50
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1259	3	8	1305	12	24

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	1262
Stage 1	-	-	1261
Stage 2	-	-	669
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	-	905	*158
Stage 1	-	-	*560
Stage 2	-	-	*562
Platoon blocked, %	-	1	1
Mov Cap-1 Maneuver	-	905	*156
Mov Cap-2 Maneuver	-	-	*156
Stage 1	-	-	*560
Stage 2	-	-	*557

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	17.9
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	315	-	-	905	-
HCM Lane V/C Ratio	0.114	-	-	0.008	-
HCM Control Delay (s)	17.9	-	-	9	-
HCM Lane LOS	C	-	-	A	-
HCM 95th %tile Q(veh)	0.4	-	-	0	-

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

18-0555 SmokeTree Resort
2029 Background AM

5: AJ's Drwy/Apartment Drwy & Lincoln Dr
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	23	971	75	13	690	10	48	6	65	4	0	11
Future Vol, veh/h	23	971	75	13	690	10	48	6	65	4	0	11
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	60	-	-	25	-	-	-	-	-	0	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	88	95	95	95	76	76	76	70	70	70
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	26	1103	85	14	726	11	63	8	86	6	0	16

Major/Minor	Major1	Major2	Minor1	Minor2
Conflicting Flow All	737	0	0	1188
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	*1214	-	-	903
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Platoon blocked, %	1	-	-	1
Mov Cap-1 Maneuver	*1214	-	-	903
Mov Cap-2 Maneuver	-	-	-	-
Stage 1	-	-	-	-
Stage 2	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	0.2	15.2	10.4
HCM LOS			C	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	509	*1214	-	-	903	-	-	470	812
HCM Lane V/C Ratio	0.308	0.022	-	-	0.015	-	-	0.012	0.019
HCM Control Delay (s)	15.2	8	-	-	9	-	-	12.8	9.5
HCM Lane LOS	C	A	-	-	A	-	-	B	A
HCM 95th %tile Q(veh)	1.3	0.1	-	-	0	-	-	0	0.1

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

18-0555 SmokeTree Resort
2029 Background PM

5: AJ's Drwy/Apartment Drwy & Lincoln Dr
HCM 6th TWSC

Intersection												
Int Delay, s/veh	1.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	9	1016	67	7	1087	10	87	2	79	3	0	21
Future Vol, veh/h	9	1016	67	7	1087	10	87	2	79	3	0	21
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	60	-	-	25	-	-	-	-	-	0	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	88	95	95	95	76	76	76	70	70	70
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	10	1155	76	7	1144	11	114	3	104	4	0	30

Major/Minor	Major1	Major2	Minor1	Minor2
Conflicting Flow All	1155	0	0	1231
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	*962	-	-	896
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Platoon blocked, %	1	-	-	1
Mov Cap-1 Maneuver	*962	-	-	896
Mov Cap-2 Maneuver	-	-	-	-
Stage 1	-	-	-	-
Stage 2	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0.1	17.8	11.3
HCM LOS			C	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	500	*962	-	-	896	-	-	394	643
HCM Lane V/C Ratio	0.442	0.011	-	-	0.008	-	-	0.011	0.047
HCM Control Delay (s)	17.8	8.8	-	-	9.1	-	-	14.2	10.9
HCM Lane LOS	C	A	-	-	A	-	-	B	B
HCM 95th %tile Q(veh)	2.2	0	-	-	0	-	-	0	0.1

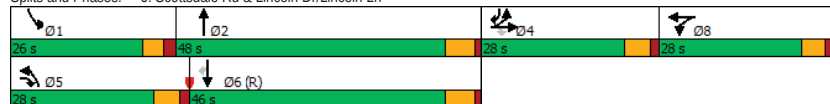
Notes
 -: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

18-0555 SmokeTree Resort
2029 Background AM

6: Scottsdale Rd & Lincoln Dr/Lincoln Ln
Timing Report, Sorted By Phase

						
Phase Number	1	2	4	5	6	8
Movement	SBL	NBT	EBTL	NBL	SBT	WBTL
Lead/Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize						
Recall Mode	None	None	None	None	C-Max	None
Maximum Split (s)	26	48	28	28	46	28
Maximum Split (%)	20.0%	36.9%	21.5%	21.5%	35.4%	21.5%
Minimum Split (s)	11	27.7	13	13	30.7	13
Yellow Time (s)	3.3	4.7	4	4	4.7	3.6
All-Red Time (s)	2	1	1.5	1.5	1	2
Minimum Initial (s)	5	10	7	7	10	7
Vehicle Extension (s)	2	0.2	2	2	0.2	2
Minimum Gap (s)	1	1	1	1	1	1
Time Before Reduce (s)	0	0	0	0	0	0
Time To Reduce (s)	0	0	0	0	0	0
Walk Time (s)		7			7	
Flash Dont Walk (s)		15			18	
Dual Entry	No	Yes	No	No	Yes	No
Inhibit Max	Yes	Yes	Yes	Yes	Yes	Yes
Start Time (s)	102	128	46	102	0	74
End Time (s)	128	46	74	0	46	102
Yield/Force Off (s)	122.7	40.3	68.5	124.5	40.3	96.4
Yield/Force Off 170(s)	122.7	25.3	68.5	124.5	22.3	96.4
Local Start Time (s)	102	128	46	102	0	74
Local Yield (s)	122.7	40.3	68.5	124.5	40.3	96.4
Local Yield 170(s)	122.7	25.3	68.5	124.5	22.3	96.4
Intersection Summary						
Cycle Length	130					
Control Type	Actuated-Coordinated					
Natural Cycle	80					
Offset: 0 (0%), Referenced to phase 6:SBT, Start of Green						

Splits and Phases: 6: Scottsdale Rd & Lincoln Dr/Lincoln Ln

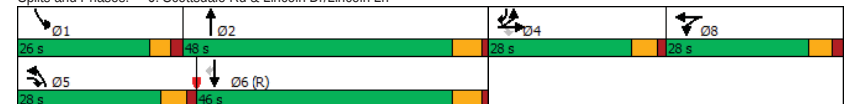


18-0555 SmokeTree Resort
2029 Background PM

6: Scottsdale Rd & Lincoln Dr/Lincoln Ln
Timing Report, Sorted By Phase

						
Phase Number	1	2	4	5	6	8
Movement	SBL	NBT	EBTL	NBL	SBT	WBTL
Lead/Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize						
Recall Mode	None	None	None	None	C-Max	None
Maximum Split (s)	26	48	28	28	46	28
Maximum Split (%)	20.0%	36.9%	21.5%	21.5%	35.4%	21.5%
Minimum Split (s)	11	27.7	13	13	30.7	13
Yellow Time (s)	3.3	4.7	4	4	4.7	3.6
All-Red Time (s)	2	1	1.5	1.5	1	2
Minimum Initial (s)	5	10	7	7	10	7
Vehicle Extension (s)	2	0.2	2	2	0.2	2
Minimum Gap (s)	1	1	1	1	1	1
Time Before Reduce (s)	0	0	0	0	0	0
Time To Reduce (s)	0	0	0	0	0	0
Walk Time (s)		7			7	
Flash Dont Walk (s)		15			18	
Dual Entry	No	Yes	No	No	Yes	No
Inhibit Max	Yes	Yes	Yes	Yes	Yes	Yes
Start Time (s)	102	128	46	102	0	74
End Time (s)	128	46	74	0	46	102
Yield/Force Off (s)	122.7	40.3	68.5	124.5	40.3	96.4
Yield/Force Off 170(s)	122.7	25.3	68.5	124.5	22.3	96.4
Local Start Time (s)	102	128	46	102	0	74
Local Yield (s)	122.7	40.3	68.5	124.5	40.3	96.4
Local Yield 170(s)	122.7	25.3	68.5	124.5	22.3	96.4
Intersection Summary						
Cycle Length	130					
Control Type	Actuated-Coordinated					
Natural Cycle	120					
Offset: 0 (0%), Referenced to phase 6:SBT, Start of Green						

Splits and Phases: 6: Scottsdale Rd & Lincoln Dr/Lincoln Ln



18-0555 SmokeTree Resort
2029 Background AM

6: Scottsdale Rd & Lincoln Dr/Lincoln Ln
HCM 6th Signalized Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↰	↰	↰	↰	↰	↰	↰	↰	↰	↰	↰
Traffic Volume (veh/h)	624	44	361	23	41	37	258	1042	35	29	1122	474
Future Volume (veh/h)	624	44	361	23	41	37	258	1042	35	29	1122	474
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	728	0	401	26	47	42	284	1145	38	32	1233	521
Peak Hour Factor	0.90	0.90	0.90	0.88	0.88	0.88	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	617	0	431	94	100	79	342	1950	65	47	1583	766
Arrive On Green	0.06	0.00	0.06	0.05	0.05	0.05	0.10	0.38	0.38	0.03	0.31	0.31
Sat Flow, veh/h	3563	0	1585	1781	1884	1495	3456	5076	168	1781	5106	1585
Grp Volume(v), veh/h	728	0	401	26	44	45	284	768	415	32	1233	521
Grp Sat Flow(s),veh/h/ln	1781	0	1585	1781	1777	1601	1728	1702	1840	1781	1702	1585
Q Serve(g_s), s	22.5	0.0	22.5	1.8	3.1	3.6	10.5	23.3	23.3	2.3	28.6	32.9
Cycle Q Clear(g_c), s	22.5	0.0	22.5	1.8	3.1	3.6	10.5	23.3	23.3	2.3	28.6	32.9
Prop In Lane	1.00		1.00	1.00		0.93	1.00		0.09	1.00		1.00
Lane Grp Cap(c), veh/h	617	0	431	94	94	85	342	1308	707	47	1583	766
V/C Ratio(X)	1.18	0.00	0.93	0.28	0.47	0.53	0.83	0.59	0.59	0.68	0.78	0.68
Avail Cap(c_a), veh/h	617	0	431	307	306	276	598	1308	707	284	1583	766
HCM Platoon Ratio	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	61.3	0.0	51.8	59.2	59.8	60.0	57.5	31.8	31.8	62.7	40.8	25.9
Incr Delay (d2), s/veh	97.2	0.0	26.2	0.6	1.3	1.9	2.0	0.5	0.9	6.3	3.9	4.8
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(95%),veh/ln	28.5	0.0	22.4	1.5	2.6	2.7	8.2	14.8	15.9	2.0	18.3	25.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	158.5	0.0	78.1	59.7	61.1	61.9	59.5	32.3	32.7	69.1	44.7	30.7
LnGrp LOS	F	A	E	E	E	E	E	C	C	E	D	C
Approach Vol, veh/h	1129			115			1467			1786		
Approach Delay, s/veh	129.9			61.1			37.7			41.0		
Approach LOS	F			E			D			D		
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	8.7	55.7		28.0	18.4	46.0		12.5				
Change Period (Y+Rc), s	* 5.3	5.7		5.5	5.5	5.7		5.6				
Max Green Setting (Gmax), s	* 21	42.3		22.5	22.5	40.3		22.4				
Max Q Clear Time (g_c+I), s	4.3	25.3		24.5	12.5	34.9		5.6				
Green Ext Time (p_c), s	0.0	1.6		0.0	0.4	1.4		0.3				

Intersection Summary

HCM 6th Ctrl Delay	62.8
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.

18-0555 SmokeTree Resort
2029 Background PM

6: Scottsdale Rd & Lincoln Dr/Lincoln Ln
HCM 6th Signalized Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↰	↰	↰	↰	↰	↰	↰	↰	↰	↰	↰
Traffic Volume (veh/h)	707	43	392	42	48	59	361	1641	32	55	1763	767
Future Volume (veh/h)	707	43	392	42	48	59	361	1641	32	55	1763	767
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	820	0	436	48	55	67	397	1803	35	60	1937	843
Peak Hour Factor	0.90	0.90	0.90	0.88	0.88	0.88	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	617	0	483	107	106	95	455	2061	40	77	1583	766
Arrive On Green	0.06	0.00	0.06	0.06	0.06	0.06	0.13	0.40	0.40	0.04	0.31	0.31
Sat Flow, veh/h	3563	0	1585	1781	1777	1585	3456	5156	100	1781	5106	1585
Grp Volume(v), veh/h	820	0	436	48	55	67	397	1190	648	60	1937	843
Grp Sat Flow(s),veh/h/ln	1781	0	1585	1781	1777	1585	1728	1702	1852	1781	1702	1585
Q Serve(g_s), s	22.5	0.0	22.5	3.4	3.9	5.4	14.7	41.9	42.0	4.3	40.3	40.3
Cycle Q Clear(g_c), s	22.5	0.0	22.5	3.4	3.9	5.4	14.7	41.9	42.0	4.3	40.3	40.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.05	1.00		1.00
Lane Grp Cap(c), veh/h	617	0	483	107	106	95	455	1360	740	77	1583	766
V/C Ratio(X)	1.33	0.00	0.90	0.45	0.52	0.71	0.87	0.87	0.88	0.78	1.22	1.10
Avail Cap(c_a), veh/h	617	0	483	307	306	273	598	1360	740	284	1583	766
HCM Platoon Ratio	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	61.3	0.0	48.5	59.0	59.3	60.0	55.4	36.0	36.0	61.5	44.8	27.8
Incr Delay (d2), s/veh	159.4	0.0	19.6	1.1	1.4	3.6	9.0	6.4	11.0	6.1	106.5	63.7
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(95%),veh/ln	37.1	0.0	22.4	2.8	3.3	4.1	11.3	25.4	28.5	3.8	47.2	52.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	220.7	0.0	68.2	60.1	60.7	63.5	64.4	42.4	47.0	67.6	151.4	91.5
LnGrp LOS	F	A	E	E	E	E	E	D	D	E	F	F
Approach Vol, veh/h	1256			170			2235			2840		
Approach Delay, s/veh	167.7			61.7			47.6			131.8		
Approach LOS	F			E			D			F		
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	10.9	57.7		28.0	22.6	46.0		13.4				
Change Period (Y+Rc), s	* 5.3	5.7		5.5	5.5	5.7		5.6				
Max Green Setting (Gmax), s	* 21	42.3		22.5	22.5	40.3		22.4				
Max Q Clear Time (g_c+I), s	6.3	44.0		24.5	16.7	42.3		7.4				
Green Ext Time (p_c), s	0.0	0.0		0.0	0.5	0.0		0.4				

Intersection Summary

HCM 6th Ctrl Delay	108.0
HCM 6th LOS	F

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.

18-0555 SmokeTree Resort
2029 Background AM

7: Quail Run Rd & Access A
HCM 6th TWSC

Intersection						
Int Delay, s/veh	0					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	W		T			T
Traffic Vol, veh/h	0	0	6	0	0	4
Future Vol, veh/h	0	0	6	0	0	4
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	0	7	0	0	4

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	11	7	0
Stage 1	7	-	-
Stage 2	4	-	-
Critical Hdwy	6.42	6.22	-
Critical Hdwy Stg 1	5.42	-	-
Critical Hdwy Stg 2	5.42	-	-
Follow-up Hdwy	3.518	3.318	-
Pot Cap-1 Maneuver	1009	1075	-
Stage 1	1016	-	-
Stage 2	1019	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	1009	1075	-
Mov Cap-2 Maneuver	1009	-	-
Stage 1	1016	-	-
Stage 2	1019	-	-

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

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	1614	-
HCM Lane V/C Ratio	-	-	-	-
HCM Control Delay (s)	-	-	0	-
HCM Lane LOS	-	-	A	-
HCM 95th %tile Q(veh)	-	-	0	-

18-0555 SmokeTree Resort
2029 Background PM

7: Quail Run Rd & Access A
HCM 6th TWSC

Intersection						
Int Delay, s/veh	0					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	W		T			T
Traffic Vol, veh/h	0	0	3	0	0	2
Future Vol, veh/h	0	0	3	0	0	2
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	0	3	0	0	2

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	5	3	0
Stage 1	3	-	-
Stage 2	2	-	-
Critical Hdwy	6.42	6.22	-
Critical Hdwy Stg 1	5.42	-	-
Critical Hdwy Stg 2	5.42	-	-
Follow-up Hdwy	3.518	3.318	-
Pot Cap-1 Maneuver	1017	1081	-
Stage 1	1020	-	-
Stage 2	1021	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	1017	1081	-
Mov Cap-2 Maneuver	1017	-	-
Stage 1	1020	-	-
Stage 2	1021	-	-

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

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	1619	-
HCM Lane V/C Ratio	-	-	-	-
HCM Control Delay (s)	-	-	0	-
HCM Lane LOS	-	-	A	-
HCM 95th %tile Q(veh)	-	-	0	-

APPENDIX I

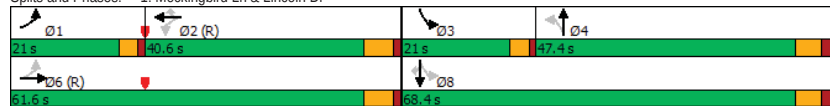
2024 BUILD PEAK HOUR ANALYSIS

18-0555 SmokeTree Resort
2024 Total AM

1: Mockingbird Ln & Lincoln Dr
Timing Report, Sorted By Phase

						
Phase Number	1	2	3	4	6	8
Movement	EBL	WBTL	SBL	NBTL	EBTL	SBTL
Lead/Lag	Lead	Lag	Lead	Lag		
Lead-Lag Optimize	Yes	Yes	Yes	Yes		
Recall Mode	None	C-Max	None	None	C-Max	None
Maximum Split (s)	21	40.6	21	47.4	61.6	68.4
Maximum Split (%)	16.2%	31.2%	16.2%	36.5%	47.4%	52.6%
Minimum Split (s)	8	27	8	33.5	27	33.5
Yellow Time (s)	3	4.5	3	4	4.5	4
All-Red Time (s)	1	1.5	1	2.5	1.5	2.5
Minimum Initial (s)	3.5	15	3.5	7	15	7
Vehicle Extension (s)	3	3	3	3	3	3
Minimum Gap (s)	3	3	3	3	3	3
Time Before Reduce (s)	0	0	0	0	0	0
Time To Reduce (s)	0	0	0	0	0	0
Walk Time (s)		7		7	7	7
Flash Dont Walk (s)		14		20	14	20
Dual Entry	No	No	No	Yes	No	Yes
Inhibit Max	Yes	Yes	Yes	Yes	Yes	Yes
Start Time (s)	109	0	40.6	61.6	109	40.6
End Time (s)	0	40.6	61.6	109	40.6	109
Yield/Force Off (s)	126	34.6	57.6	102.5	34.6	102.5
Yield/Force Off 170(s)	126	20.6	57.6	82.5	20.6	82.5
Local Start Time (s)	109	0	40.6	61.6	109	40.6
Local Yield (s)	126	34.6	57.6	102.5	34.6	102.5
Local Yield 170(s)	126	20.6	57.6	82.5	20.6	82.5
Intersection Summary						
Cycle Length	130					
Control Type	Actuated-Coordinated					
Natural Cycle	80					
Offset: 0 (0%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green						

Splits and Phases: 1: Mockingbird Ln & Lincoln Dr

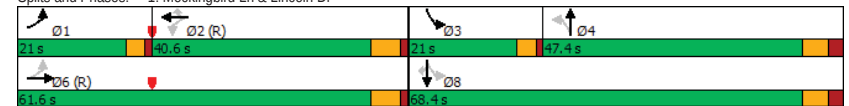


18-0555 SmokeTree Resort
2024 Total PM

1: Mockingbird Ln & Lincoln Dr
Timing Report, Sorted By Phase

						
Phase Number	1	2	3	4	6	8
Movement	EBL	WBTL	SBL	NBTL	EBTL	SBTL
Lead/Lag	Lead	Lag	Lead	Lag		
Lead-Lag Optimize	Yes	Yes	Yes	Yes		
Recall Mode	None	C-Max	None	None	C-Max	None
Maximum Split (s)	21	40.6	21	47.4	61.6	68.4
Maximum Split (%)	16.2%	31.2%	16.2%	36.5%	47.4%	52.6%
Minimum Split (s)	8	27	8	33.5	27	33.5
Yellow Time (s)	3	4.5	3	4	4.5	4
All-Red Time (s)	1	1.5	1	2.5	1.5	2.5
Minimum Initial (s)	3.5	15	3.5	7	15	7
Vehicle Extension (s)	3	3	3	3	3	3
Minimum Gap (s)	3	3	3	3	3	3
Time Before Reduce (s)	0	0	0	0	0	0
Time To Reduce (s)	0	0	0	0	0	0
Walk Time (s)		7		7	7	7
Flash Dont Walk (s)		14		20	14	20
Dual Entry	No	No	No	Yes	No	Yes
Inhibit Max	Yes	Yes	Yes	Yes	Yes	Yes
Start Time (s)	109	0	40.6	61.6	109	40.6
End Time (s)	0	40.6	61.6	109	40.6	109
Yield/Force Off (s)	126	34.6	57.6	102.5	34.6	102.5
Yield/Force Off 170(s)	126	20.6	57.6	82.5	20.6	82.5
Local Start Time (s)	109	0	40.6	61.6	109	40.6
Local Yield (s)	126	34.6	57.6	102.5	34.6	102.5
Local Yield 170(s)	126	20.6	57.6	82.5	20.6	82.5
Intersection Summary						
Cycle Length	130					
Control Type	Actuated-Coordinated					
Natural Cycle	80					
Offset: 0 (0%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green						

Splits and Phases: 1: Mockingbird Ln & Lincoln Dr



18-0555 SmokeTree Resort
2024 Total AM

1: Mockingbird Ln & Lincoln Dr
HCM 6th Signalized Intersection Summary

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	186	837	63	12	549	41	21	20	22	47	58	170
Future Volume (veh/h)	186	837	63	12	549	41	21	20	22	47	58	170
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	1772	1969	1772	1772	1969	1772	1772	1969	1772	1772	1969	1772
Adj Flow Rate, veh/h	198	890	67	13	590	44	23	22	24	58	72	210
Peak Hour Factor	0.94	0.94	0.94	0.93	0.93	0.93	0.91	0.91	0.91	0.81	0.81	0.81
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	568	2620	197	420	2461	988	148	77	84	208	316	241
Arrive On Green	0.05	0.74	0.74	0.44	0.44	0.44	0.09	0.09	0.09	0.04	0.16	0.16
Sat Flow, veh/h	1688	3526	265	556	3741	1502	1039	861	939	1688	1969	1502
Grp Volume(v), veh/h	198	472	485	13	590	44	23	0	46	58	72	210
Grp Sat Flow(s),veh/h/ln	1688	1870	1921	556	1870	1502	1039	0	1800	1688	1969	1502
Q Serve(g_s), s	4.7	11.3	11.3	1.7	12.8	2.2	2.7	0.0	3.1	4.0	4.1	17.7
Cycle Q Clear(g_c), s	4.7	11.3	11.3	1.9	12.8	2.2	2.7	0.0	3.1	4.0	4.1	17.7
Prop In Lane	1.00		0.14	1.00		1.00	1.00		0.52	1.00		1.00
Lane Grp Cap(c), veh/h	568	1390	1428	420	2461	988	148	0	161	208	316	241
V/C Ratio(X)	0.35	0.34	0.34	0.03	0.24	0.04	0.16	0.00	0.29	0.28	0.23	0.87
Avail Cap(c_a), veh/h	696	1390	1428	420	2461	988	382	0	566	360	937	715
HCM Platoon Ratio	1.00	1.00	1.00	0.67	0.67	0.67	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.92	0.92	0.92	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	6.6	5.7	5.7	13.0	16.0	13.0	55.1	0.0	55.3	49.3	47.5	53.2
Incr Delay (d2), s/veh	0.4	0.7	0.6	0.1	0.2	0.1	0.5	0.0	1.0	0.7	0.4	9.3
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(95%),veh/ln	2.9	7.7	7.8	0.4	10.0	1.3	1.3	0.0	2.6	3.1	3.7	11.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	7.0	6.4	6.4	13.2	16.2	13.1	55.6	0.0	56.3	50.0	47.9	62.5
LnGrp LOS	A	A	A	B	B	B	E	A	E	D	D	E
Approach Vol, veh/h	1155			647			69			340		
Approach Delay, s/veh	6.5			16.0			56.1			57.3		
Approach LOS	A			B			E			E		
Timer - Assigned Phs	1	2	3	4	6		8					
Phs Duration (G+Y+Rc), s	11.1	91.5	9.3	18.1	102.6		27.4					
Change Period (Y+Rc), s	4.0	6.0	4.0	6.5	6.0		6.5					
Max Green Setting (Gmax), s	17.0	34.6	17.0	40.9	55.6		61.9					
Max Q Clear Time (g_c+I), s	6.7	14.8	6.0	5.1	13.3		19.7					
Green Ext Time (p_c), s	0.4	4.2	0.1	0.3	7.7		1.2					
Intersection Summary												
HCM 6th Ctrl Delay	18.6											
HCM 6th LOS	B											

18-0555 SmokeTree Resort
2024 Total PM

1: Mockingbird Ln & Lincoln Dr
HCM 6th Signalized Intersection Summary

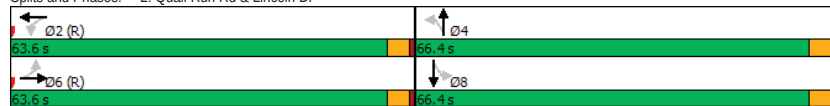
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	138	768	34	9	924	57	18	45	20	50	60	227
Future Volume (veh/h)	138	768	34	9	924	57	18	45	20	50	60	227
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		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	1772	1969	1772	1772	1969	1772	1772	1969	1772	1772	1969	1772
Adj Flow Rate, veh/h	147	817	36	10	994	61	20	49	22	62	74	280
Peak Hour Factor	0.94	0.94	0.94	0.93	0.93	0.93	0.91	0.91	0.91	0.81	0.81	0.81
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	379	2540	112	428	2310	927	187	174	78	253	409	312
Arrive On Green	0.05	0.70	0.70	0.62	0.62	0.62	0.14	0.14	0.14	0.04	0.21	0.21
Sat Flow, veh/h	1688	3649	161	613	3741	1502	973	1287	578	1688	1969	1502
Grp Volume(v), veh/h	147	419	434	10	994	61	20	0	71	62	74	280
Grp Sat Flow(s),veh/h/ln	1688	1870	1940	613	1870	1502	973	0	1865	1688	1969	1502
Q Serve(g_s), s	4.0	11.4	11.4	0.8	18.0	2.1	2.4	0.0	4.4	4.0	4.0	23.6
Cycle Q Clear(g_c), s	4.0	11.4	11.4	2.1	18.0	2.1	2.4	0.0	4.4	4.0	4.0	23.6
Prop In Lane	1.00		0.08	1.00		1.00	1.00		0.31	1.00		1.00
Lane Grp Cap(c), veh/h	379	1302	1350	428	2310	927	187	0	252	253	409	312
V/C Ratio(X)	0.39	0.32	0.32	0.02	0.43	0.07	0.11	0.00	0.28	0.24	0.18	0.90
Avail Cap(c_a), veh/h	519	1302	1350	428	2310	927	362	0	587	403	937	715
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	0.70	0.70	0.70	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	9.4	7.7	7.7	10.1	13.0	9.9	49.6	0.0	50.5	44.2	42.4	50.1
Incr Delay (d2), s/veh	0.7	0.7	0.6	0.1	0.4	0.1	0.2	0.0	0.6	0.5	0.2	9.0
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(95%),veh/ln	2.6	8.1	8.4	0.2	11.3	1.3	1.1	0.0	3.8	3.1	3.6	14.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	10.1	8.4	8.4	10.2	13.4	10.0	49.9	0.0	51.1	44.7	42.6	59.2
LnGrp LOS	B	A	A	B	B	B	D	A	D	D	D	E
Approach Vol, veh/h	1000			1065			91			416		
Approach Delay, s/veh	8.6			13.1			50.8			54.1		
Approach LOS	A			B			D			D		
Timer - Assigned Phs	1	2	3	4	6		8					
Phs Duration (G+Y+Rc), s	10.2	86.3	9.4	24.1	96.5		33.5					
Change Period (Y+Rc), s	4.0	6.0	4.0	6.5	6.0		6.5					
Max Green Setting (Gmax), s	17.0	34.6	17.0	40.9	55.6		61.9					
Max Q Clear Time (g_c+I), s	6.0	20.0	6.0	6.4	13.4		25.6					
Green Ext Time (p_c), s	0.3	6.4	0.1	0.5	6.5		1.4					
Intersection Summary												
HCM 6th Ctrl Delay	19.3											
HCM 6th LOS	B											

18-0555 SmokeTree Resort
2024 Total AM

2: Quail Run Rd & Lincoln Dr
Timing Report, Sorted By Phase

				
Phase Number	2	4	6	8
Movement	WBTL	NBTL	EBTL	SBTL
Lead/Lag				
Lead-Lag Optimize				
Recall Mode	C-Max	Max	C-Max	Max
Maximum Split (s)	63.6	66.4	63.6	66.4
Maximum Split (%)	48.9%	51.1%	48.9%	51.1%
Minimum Split (s)	22.5	22.5	22.5	22.5
Yellow Time (s)	3.5	3.5	3.5	3.5
All-Red Time (s)	1	1	1	1
Minimum Initial (s)	5	5	5	5
Vehicle Extension (s)	3	3	3	3
Minimum Gap (s)	3	3	3	3
Time Before Reduce (s)	0	0	0	0
Time To Reduce (s)	0	0	0	0
Walk Time (s)	7	7	7	7
Flash Dont Walk (s)	11	11	11	11
Dual Entry	Yes	Yes	Yes	Yes
Inhibit Max	Yes	Yes	Yes	Yes
Start Time (s)	94.6	28.2	94.6	28.2
End Time (s)	28.2	94.6	28.2	94.6
Yield/Force Off (s)	23.7	90.1	23.7	90.1
Yield/Force Off 170(s)	12.7	79.1	12.7	79.1
Local Start Time (s)	0	63.6	0	63.6
Local Yield (s)	59.1	125.5	59.1	125.5
Local Yield 170(s)	48.1	114.5	48.1	114.5
Intersection Summary				
Cycle Length	130			
Control Type	Actuated-Coordinated			
Natural Cycle	45			
Offset: 94.6 (73%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green				

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

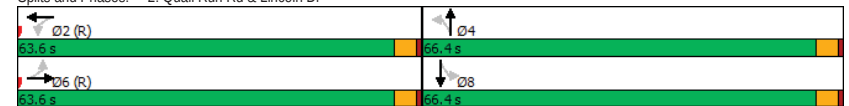


18-0555 SmokeTree Resort
2024 Total PM

2: Quail Run Rd & Lincoln Dr
Timing Report, Sorted By Phase

				
Phase Number	2	4	6	8
Movement	WBTL	NBTL	EBTL	SBTL
Lead/Lag				
Lead-Lag Optimize				
Recall Mode	C-Max	Max	C-Max	Max
Maximum Split (s)	63.6	66.4	63.6	66.4
Maximum Split (%)	48.9%	51.1%	48.9%	51.1%
Minimum Split (s)	22.5	22.5	22.5	22.5
Yellow Time (s)	3.5	3.5	3.5	3.5
All-Red Time (s)	1	1	1	1
Minimum Initial (s)	5	5	5	5
Vehicle Extension (s)	3	3	3	3
Minimum Gap (s)	3	3	3	3
Time Before Reduce (s)	0	0	0	0
Time To Reduce (s)	0	0	0	0
Walk Time (s)	7	7	7	7
Flash Dont Walk (s)	11	11	11	11
Dual Entry	Yes	Yes	Yes	Yes
Inhibit Max	Yes	Yes	Yes	Yes
Start Time (s)	94.6	28.2	94.6	28.2
End Time (s)	28.2	94.6	28.2	94.6
Yield/Force Off (s)	23.7	90.1	23.7	90.1
Yield/Force Off 170(s)	12.7	79.1	12.7	79.1
Local Start Time (s)	0	63.6	0	63.6
Local Yield (s)	59.1	125.5	59.1	125.5
Local Yield 170(s)	48.1	114.5	48.1	114.5
Intersection Summary				
Cycle Length	130			
Control Type	Actuated-Coordinated			
Natural Cycle	45			
Offset: 94.6 (73%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green				

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



18-0555 SmokeTree Resort
2024 Total AM

2: Quail Run Rd & Lincoln Dr
HCM 6th Signalized Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱		↰	↱			↰	↱		↰	↱
Traffic Volume (veh/h)	9	880	8	7	586	16	5	0	7	8	0	6
Future Volume (veh/h)	9	880	8	7	586	16	5	0	7	8	0	6
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	10	1023	9	8	644	18	8	0	11	11	0	9
Peak Hour Factor	0.86	0.86	0.86	0.91	0.91	0.91	0.62	0.62	0.62	0.70	0.70	0.70
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	333	1641	14	159	1605	45	328	15	417	420	12	318
Arrive On Green	0.15	0.15	0.15	0.60	0.60	0.60	0.48	0.00	0.48	0.48	0.00	0.48
Sat Flow, veh/h	773	3610	32	547	3531	99	605	32	876	792	25	669
Grp Volume(v), veh/h	10	504	528	8	324	338	19	0	0	20	0	0
Grp Sat Flow(s),veh/h/ln	773	1777	1865	547	1777	1853	1513	0	0	1486	0	0
Q Serve(g_s), s	1.5	34.5	34.5	1.5	12.4	12.4	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	13.9	34.5	34.5	36.0	12.4	12.4	0.8	0.0	0.0	0.8	0.0	0.0
Prop In Lane	1.00		0.02	1.00		0.05	0.42		0.58	0.55		0.45
Lane Grp Cap(c), veh/h	333	808	848	159	808	842	760	0	0	751	0	0
V/C Ratio(X)	0.03	0.62	0.62	0.05	0.40	0.40	0.03	0.00	0.00	0.03	0.00	0.00
Avail Cap(c_a), veh/h	333	808	848	159	808	842	760	0	0	751	0	0
HCM Platoon Ratio	0.33	0.33	0.33	1.33	1.33	1.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.95	0.95	0.95	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	41.5	44.8	44.8	34.3	16.5	16.5	18.0	0.0	0.0	18.0	0.0	0.0
Incr Delay (d2), s/veh	0.2	3.4	3.3	0.6	1.5	1.4	0.1	0.0	0.0	0.1	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.6	23.9	24.9	0.4	8.5	8.8	0.6	0.0	0.0	0.6	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	41.7	48.2	48.1	34.9	17.9	17.9	18.1	0.0	0.0	18.1	0.0	0.0
LnGrp LOS	D	D	D	C	B	B	B	A	A	B	A	A
Approach Vol, veh/h		1042			670			19			20	
Approach Delay, s/veh		48.1			18.1			18.1			18.1	
Approach LOS		D			B			B			B	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		63.6		66.4		63.6		66.4			66.4	
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5			4.5	
Max Green Setting (Gmax), s		59.1		61.9		59.1		61.9			61.9	
Max Q Clear Time (g_c+I), s		38.0		2.8		36.5		2.8			2.3	
Green Ext Time (p_c), s		4.2		0.1		7.3		0.1			0.0	
Intersection Summary												
HCM 6th Ctrl Delay				36.0								
HCM 6th LOS				D								

18-0555 SmokeTree Resort
2024 Total PM

2: Quail Run Rd & Lincoln Dr
HCM 6th Signalized Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱		↰	↱			↰	↱		↰	↱
Traffic Volume (veh/h)	2	855	14	17	970	3	8	0	13	6	0	0
Future Volume (veh/h)	2	855	14	17	970	3	8	0	13	6	0	0
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	2	994	16	19	1066	3	13	0	21	9	0	0
Peak Hour Factor	0.86	0.86	0.86	0.91	0.91	0.91	0.62	0.62	0.62	0.70	0.70	0.70
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	261	1627	26	164	1653	5	300	16	449	722	0	0
Arrive On Green	0.15	0.15	0.15	0.91	0.91	0.91	0.48	0.00	0.48	0.48	0.00	0.00
Sat Flow, veh/h	528	3579	58	558	3635	10	550	34	942	1400	0	0
Grp Volume(v), veh/h	2	493	517	19	521	548	34	0	0	9	0	0
Grp Sat Flow(s),veh/h/ln	528	1777	1860	558	1777	1869	1525	0	0	1400	0	0
Q Serve(g_s), s	0.4	33.8	33.8	2.9	8.4	8.4	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	8.8	33.8	33.8	36.7	8.4	8.4	1.4	0.0	0.0	0.3	0.0	0.0
Prop In Lane	1.00		0.03	1.00		0.01	0.38		0.62	1.00		0.00
Lane Grp Cap(c), veh/h	261	808	846	164	808	849	765	0	0	722	0	0
V/C Ratio(X)	0.01	0.61	0.61	0.12	0.65	0.65	0.04	0.00	0.00	0.01	0.00	0.00
Avail Cap(c_a), veh/h	261	808	846	164	808	849	765	0	0	722	0	0
HCM Platoon Ratio	0.33	0.33	0.33	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.96	0.96	0.96	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	37.5	44.5	44.5	15.9	3.6	3.6	18.2	0.0	0.0	17.9	0.0	0.0
Incr Delay (d2), s/veh	0.1	3.3	3.2	1.4	4.0	3.8	0.1	0.0	0.0	0.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.1	23.5	24.4	0.7	4.4	4.5	1.0	0.0	0.0	0.3	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	37.6	47.8	47.6	17.4	7.5	7.4	18.3	0.0	0.0	18.0	0.0	0.0
LnGrp LOS	D	D	D	B	A	A	B	A	A	B	A	A
Approach Vol, veh/h		1012			1088			34			9	
Approach Delay, s/veh		47.7			7.6			18.3			18.0	
Approach LOS		D			A			B			B	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		63.6		66.4		63.6		66.4			66.4	
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5			4.5	
Max Green Setting (Gmax), s		59.1		61.9		59.1		61.9			61.9	
Max Q Clear Time (g_c+I), s		38.7		3.4		35.8		2.3			2.3	
Green Ext Time (p_c), s		7.5		0.2		7.2		0.0			0.0	
Intersection Summary												
HCM 6th Ctrl Delay				26.8								
HCM 6th LOS				C								

18-0555 SmokeTree Resort
2024 Total AM

4: Shared Drwy & Lincoln Dr
HCM 6th TWSC

Intersection						
Int Delay, s/veh	0.3					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↑	↑↑	↑	
Traffic Vol, veh/h	912	13	20	605	4	14
Future Vol, veh/h	912	13	20	605	4	14
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	60	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	86	86	91	91	50	50
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1060	15	22	665	8	28
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1075	0	1445	538
Stage 1	-	-	-	-	1068	-
Stage 2	-	-	-	-	377	-
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	-	-	997	-	*441	*715
Stage 1	-	-	-	-	*620	-
Stage 2	-	-	-	-	*789	-
Platoon blocked, %	-	-	1	-	1	1
Mov Cap-1 Maneuver	-	-	997	-	*431	*715
Mov Cap-2 Maneuver	-	-	-	-	*431	-
Stage 1	-	-	-	-	*620	-
Stage 2	-	-	-	-	*771	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		0.3		11.1	
HCM LOS					B	
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	624	-	-	997	-	
HCM Lane V/C Ratio	0.058	-	-	0.022	-	
HCM Control Delay (s)	11.1	-	-	8.7	-	
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						

18-0555 SmokeTree Resort
2024 Total PM

4: Shared Drwy & Lincoln Dr
HCM 6th TWSC

Intersection						
Int Delay, s/veh	0.6					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↑	↑↑	↑	
Traffic Vol, veh/h	862	12	30	980	10	25
Future Vol, veh/h	862	12	30	980	10	25
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	60	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	86	86	91	91	50	50
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1002	14	33	1077	20	50
Major/Minor						
Major1	Major2	Minor1				
Conflicting Flow All	0	0	1016	0	1614	508
Stage 1	-	-	-	-	1009	-
Stage 2	-	-	-	-	605	-
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	-	-	1023	-	*305	*739
Stage 1	-	-	-	-	*635	-
Stage 2	-	-	-	-	*630	-
Platoon blocked, %	-	-	1	-	1	1
Mov Cap-1 Maneuver	-	-	1023	-	*295	*739
Mov Cap-2 Maneuver	-	-	-	-	*295	-
Stage 1	-	-	-	-	*635	-
Stage 2	-	-	-	-	*610	-
Approach						
EB	WB	NB				
HCM Control Delay, s	0	0.3	13.1			
HCM LOS	B					
Minor Lane/Major Mvmt						
NBLn1	EBT	EBR	WBL	WBT		
Capacity (veh/h)	517	-	-	1023	-	
HCM Lane V/C Ratio	0.135	-	-	0.032	-	
HCM Control Delay (s)	13.1	-	-	8.6	-	
HCM Lane LOS	B	-	-	A	-	
HCM 95th %tile Q(veh)	0.5	-	-	0.1	-	
Notes						
~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon						

18-0555 SmokeTree Resort
2024 Total AM

5: AJ's Drwy/Apartment Drwy & Lincoln Dr
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	21	840	69	12	566	9	44	5	60	4	0	10
Future Vol, veh/h	21	840	69	12	566	9	44	5	60	4	0	10
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	60	-	-	25	-	-	-	-	-	0	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	88	95	95	95	76	76	76	70	70	70
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	24	955	78	13	596	9	58	7	79	6	0	14

Major/Minor	Major1	Major2	Minor1	Minor2
Conflicting Flow All	605	0	0	1033
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	*1286	-	-	1002
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Platoon blocked, %	1	-	-	1
Mov Cap-1 Maneuver	*1286	-	-	1002
Mov Cap-2 Maneuver	-	-	-	-
Stage 1	-	-	-	-
Stage 2	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	0.2	13	10.1
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	591	*1286	-	-	1002	-	-	519	860
HCM Lane V/C Ratio	0.243	0.019	-	-	0.013	-	-	0.011	0.017
HCM Control Delay (s)	13	7.9	-	-	8.6	-	-	12	9.3
HCM Lane LOS	B	A	-	-	A	-	-	B	A
HCM 95th %tile Q(veh)	0.9	0.1	-	-	0	-	-	0	0.1

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

18-0555 SmokeTree Resort
2024 Total PM

5: AJ's Drwy/Apartment Drwy & Lincoln Dr
HCM 6th TWSC

Intersection												
Int Delay, s/veh	1.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↱	↱↱		↱	↱↱			↱		↱	↱	↱
Traffic Vol, veh/h	8	814	62	6	912	9	80	2	72	3	0	19
Future Vol, veh/h	8	814	62	6	912	9	80	2	72	3	0	19
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	60	-	-	25	-	-	-	-	-	0	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	88	95	95	95	76	76	76	70	70	70
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	9	925	70	6	960	9	105	3	95	4	0	27

Major/Minor	Major1	Major2	Minor1	Minor2
Conflicting Flow All	969	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	*1070	-	-	1050
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Platoon blocked, %	1	-	-	1
Mov Cap-1 Maneuver	*1070	-	-	1050
Mov Cap-2 Maneuver	-	-	-	-
Stage 1	-	-	-	-
Stage 2	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0.1	14.6	10.6
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	577	*1070	-	-	1050	-	-	460	715
HCM Lane V/C Ratio	0.351	0.008	-	-	0.006	-	-	0.009	0.038
HCM Control Delay (s)	14.6	8.4	-	-	8.4	-	-	12.9	10.2
HCM Lane LOS	B	A	-	-	A	-	-	B	B
HCM 95th %tile Q(veh)	1.6	0	-	-	0	-	-	0	0.1

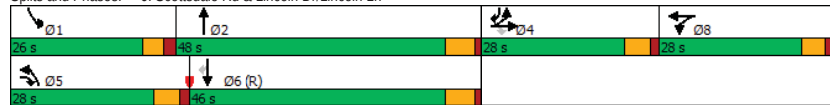
Notes			
-: Volume exceeds capacity	\$. Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

18-0555 SmokeTree Resort
2024 Total AM

6: Scottsdale Rd & Lincoln Dr/Lincoln Ln
Timing Report, Sorted By Phase

						
Phase Number	1	2	4	5	6	8
Movement	SBL	NBT	EBTL	NBL	SBT	WBTL
Lead/Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize						
Recall Mode	None	None	None	None	C-Max	None
Maximum Split (s)	26	48	28	28	46	28
Maximum Split (%)	20.0%	36.9%	21.5%	21.5%	35.4%	21.5%
Minimum Split (s)	11	27.7	13	13	30.7	13
Yellow Time (s)	3.3	4.7	4	4	4.7	3.6
All-Red Time (s)	2	1	1.5	1.5	1	2
Minimum Initial (s)	5	10	7	7	10	7
Vehicle Extension (s)	2	0.2	2	2	0.2	2
Minimum Gap (s)	1	1	1	1	1	1
Time Before Reduce (s)	0	0	0	0	0	0
Time To Reduce (s)	0	0	0	0	0	0
Walk Time (s)		7			7	
Flash Dont Walk (s)		15			18	
Dual Entry	No	Yes	No	No	Yes	No
Inhibit Max	Yes	Yes	Yes	Yes	Yes	Yes
Start Time (s)	102	128	46	102	0	74
End Time (s)	128	46	74	0	46	102
Yield/Force Off (s)	122.7	40.3	68.5	124.5	40.3	96.4
Yield/Force Off 170(s)	122.7	25.3	68.5	124.5	22.3	96.4
Local Start Time (s)	102	128	46	102	0	74
Local Yield (s)	122.7	40.3	68.5	124.5	40.3	96.4
Local Yield 170(s)	122.7	25.3	68.5	124.5	22.3	96.4
Intersection Summary						
Cycle Length	130					
Control Type	Actuated-Coordinated					
Natural Cycle	80					
Offset: 0 (0%), Referenced to phase 6:SBT, Start of Green						

Splits and Phases: 6: Scottsdale Rd & Lincoln Dr/Lincoln Ln

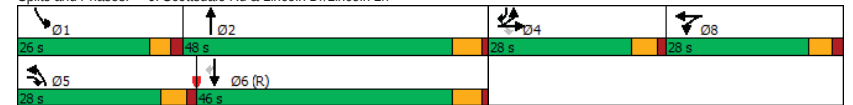


18-0555 SmokeTree Resort
2024 Total PM

6: Scottsdale Rd & Lincoln Dr/Lincoln Ln
Timing Report, Sorted By Phase

						
Phase Number	1	2	4	5	6	8
Movement	SBL	NBT	EBTL	NBL	SBT	WBTL
Lead/Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize						
Recall Mode	None	None	None	None	C-Max	None
Maximum Split (s)	26	48	28	28	46	28
Maximum Split (%)	20.0%	36.9%	21.5%	21.5%	35.4%	21.5%
Minimum Split (s)	11	27.7	13	13	30.7	13
Yellow Time (s)	3.3	4.7	4	4	4.7	3.6
All-Red Time (s)	2	1	1.5	1.5	1	2
Minimum Initial (s)	5	10	7	7	10	7
Vehicle Extension (s)	2	0.2	2	2	0.2	2
Minimum Gap (s)	1	1	1	1	1	1
Time Before Reduce (s)	0	0	0	0	0	0
Time To Reduce (s)	0	0	0	0	0	0
Walk Time (s)		7			7	
Flash Dont Walk (s)		15			18	
Dual Entry	No	Yes	No	No	Yes	No
Inhibit Max	Yes	Yes	Yes	Yes	Yes	Yes
Start Time (s)	102	128	46	102	0	74
End Time (s)	128	46	74	0	46	102
Yield/Force Off (s)	122.7	40.3	68.5	124.5	40.3	96.4
Yield/Force Off 170(s)	122.7	25.3	68.5	124.5	22.3	96.4
Local Start Time (s)	102	128	46	102	0	74
Local Yield (s)	122.7	40.3	68.5	124.5	40.3	96.4
Local Yield 170(s)	122.7	25.3	68.5	124.5	22.3	96.4
Intersection Summary						
Cycle Length	130					
Control Type	Actuated-Coordinated					
Natural Cycle	90					
Offset: 0 (0%), Referenced to phase 6:SBT, Start of Green						

Splits and Phases: 6: Scottsdale Rd & Lincoln Dr/Lincoln Ln



18-0555 SmokeTree Resort
2024 Total AM

6: Scottsdale Rd & Lincoln Dr/Lincoln Ln
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	37	323	21	34	28	222	897	33	20	957	386
Future Volume (veh/h)	535	37	323	21	34	28	222	897	33	20	957	386
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	623	0	359	24	39	32	244	986	36	22	1052	424
Peak Hour Factor	0.90	0.90	0.90	0.88	0.88	0.88	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	617	0	413	93	102	75	302	1911	70	38	1583	766
Arrive On Green	0.17	0.00	0.17	0.05	0.05	0.05	0.09	0.38	0.38	0.02	0.31	0.31
Sat Flow, veh/h	3563	0	1585	1781	1957	1433	3456	5057	184	1781	5106	1585
Grp Volume(v), veh/h	623	0	359	24	35	36	244	663	359	22	1052	424
Grp Sat Flow(s),veh/h/ln	1781	0	1585	1781	1777	1612	1728	1702	1837	1781	1702	1585
Q Serve(g_s), s	22.5	0.0	22.5	1.7	2.5	2.8	9.0	19.6	19.6	1.6	23.3	24.5
Cycle Q Clear(g_c), s	22.5	0.0	22.5	1.7	2.5	2.8	9.0	19.6	19.6	1.6	23.3	24.5
Prop In Lane	1.00		1.00	1.00		0.89	1.00		0.10	1.00		1.00
Lane Grp Cap(c), veh/h	617	0	413	93	93	84	302	1286	694	38	1583	766
V/C Ratio(X)	1.01	0.00	0.87	0.26	0.38	0.43	0.81	0.52	0.52	0.59	0.66	0.55
Avail Cap(c_a), veh/h	617	0	413	307	306	278	598	1286	694	284	1583	766
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	53.8	0.0	46.0	59.2	59.6	59.7	58.2	31.3	31.3	63.1	39.0	23.7
Incr Delay (d2), s/veh	38.8	0.0	17.1	0.5	0.9	1.3	2.0	0.2	0.3	5.3	2.2	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(95%),veh/ln	19.5	0.0	18.9	1.4	2.1	2.1	7.3	12.8	13.6	1.4	15.2	19.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	92.6	0.0	63.1	59.7	60.5	61.0	60.2	31.4	31.6	68.4	41.2	26.6
LnGrp LOS	F	A	E	E	E	E	E	C	C	E	D	C
Approach Vol, veh/h		982			95			1266			1498	
Approach Delay, s/veh		81.8			60.5			37.0			37.5	
Approach LOS		F			E			D			D	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	8.0	54.8		28.0	16.9	46.0		12.4				
Change Period (Y+Rc), s	* 5.3	5.7		5.5	5.5	5.7		5.6				
Max Green Setting (Gmax), s	* 21	42.3		22.5	22.5	40.3		22.4				
Max Q Clear Time (g_c+I), s	3.6	21.6		24.5	11.0	26.5		4.8				
Green Ext Time (p_c), s	0.0	1.4		0.0	0.3	1.5		0.2				

Intersection Summary

HCM 6th Ctrl Delay	49.2
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.

18-0555 SmokeTree Resort
2024 Total PM

6: Scottsdale Rd & Lincoln Dr/Lincoln Ln
HCM 6th Signalized Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱	↱	↰	↱	↱	↰	↱	↱	↰	↱	↱
Traffic Volume (veh/h)	537	36	358	39	40	37	336	1314	29	36	1457	616
Future Volume (veh/h)	537	36	358	39	40	37	336	1314	29	36	1457	616
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	626	0	398	44	45	42	369	1444	32	40	1601	677
Peak Hour Factor	0.90	0.90	0.90	0.88	0.88	0.88	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	617	0	470	95	99	81	427	2086	46	52	1583	766
Arrive On Green	0.17	0.00	0.17	0.05	0.05	0.05	0.12	0.41	0.41	0.03	0.31	0.31
Sat Flow, veh/h	3563	0	1585	1781	1849	1524	3456	5140	114	1781	5106	1585
Grp Volume(v), veh/h	626	0	398	44	43	44	369	956	520	40	1601	677
Grp Sat Flow(s),veh/h/ln	1781	0	1585	1781	1777	1596	1728	1702	1850	1781	1702	1585
Q Serve(g_s), s	22.5	0.0	22.5	3.1	3.1	3.5	13.6	30.2	30.2	2.9	40.3	40.3
Cycle Q Clear(g_c), s	22.5	0.0	22.5	3.1	3.1	3.5	13.6	30.2	30.2	2.9	40.3	40.3
Prop In Lane	1.00		1.00	1.00		0.95	1.00		0.06	1.00		1.00
Lane Grp Cap(c), veh/h	617	0	470	95	95	85	427	1381	751	52	1583	766
V/C Ratio(X)	1.02	0.00	0.85	0.46	0.45	0.52	0.86	0.69	0.69	0.76	1.01	0.88
Avail Cap(c_a), veh/h	617	0	470	307	306	275	598	1381	751	284	1583	766
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	53.8	0.0	42.9	59.7	59.7	59.9	55.9	31.9	31.9	62.6	44.8	27.8
Incr Delay (d2), s/veh	40.1	0.0	12.8	1.3	1.3	1.8	7.1	1.3	2.3	8.3	25.5	14.1
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(95%),veh/ln	19.7	0.0	19.7	2.6	2.5	2.6	10.5	18.4	20.0	2.6	28.2	33.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	93.9	0.0	55.7	61.0	60.9	61.7	63.0	33.2	34.2	70.9	70.3	41.9
LnGrp LOS	F	A	E	E	E	E	E	C	C	E	F	D
Approach Vol, veh/h		1024			131			1845			2318	
Approach Delay, s/veh		79.0			61.2			39.4			62.0	
Approach LOS		E			E			D			E	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	9.1	58.5		28.0	21.6	46.0		12.5				
Change Period (Y+Rc), s	* 5.3	5.7		5.5	5.5	5.7		5.6				
Max Green Setting (Gmax), s	* 21	42.3		22.5	22.5	40.3		22.4				
Max Q Clear Time (g_c+I), s	4.9	32.2		24.5	15.6	42.3		5.5				
Green Ext Time (p_c), s	0.0	1.9		0.0	0.5	0.0		0.3				

Intersection Summary

HCM 6th Ctrl Delay	57.4
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.

18-0555 SmokeTree Resort
2024 Total AM

7: Quail Run Rd & Access A
HCM 6th TWSC

Intersection						
Int Delay, s/veh	5.2					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	W		T			T
Traffic Vol, veh/h	0	8	5	0	11	4
Future Vol, veh/h	0	8	5	0	11	4
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	6	0	12	4

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	34	6	0
Stage 1	6	-	-
Stage 2	28	-	-
Critical Hdwy	6.42	6.22	-
Critical Hdwy Stg 1	5.42	-	-
Critical Hdwy Stg 2	5.42	-	-
Follow-up Hdwy	3.518	3.318	-
Pot Cap-1 Maneuver	979	1077	-
Stage 1	1017	-	-
Stage 2	995	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	972	1077	-
Mov Cap-2 Maneuver	972	-	-
Stage 1	1017	-	-
Stage 2	988	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.4	0	5.3
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	1077	1615
HCM Lane V/C Ratio	-	-	0.008	0.008
HCM Control Delay (s)	-	-	8.4	7.2
HCM Lane LOS	-	-	A	A
HCM 95th %tile Q(veh)	-	-	0	0

18-0555 SmokeTree Resort
2024 Total PM

7: Quail Run Rd & Access A
HCM 6th TWSC

Intersection						
Int Delay, s/veh	6.9					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	W		T			T
Traffic Vol, veh/h	0	17	3	0	29	2
Future Vol, veh/h	0	17	3	0	29	2
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	19	3	0	32	2

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	69	3	0
Stage 1	3	-	-
Stage 2	66	-	-
Critical Hdwy	6.42	6.22	-
Critical Hdwy Stg 1	5.42	-	-
Critical Hdwy Stg 2	5.42	-	-
Follow-up Hdwy	3.518	3.318	-
Pot Cap-1 Maneuver	936	1081	-
Stage 1	1020	-	-
Stage 2	957	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	917	1081	-
Mov Cap-2 Maneuver	917	-	-
Stage 1	1020	-	-
Stage 2	938	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.4	0	6.8
HCM LOS	A		

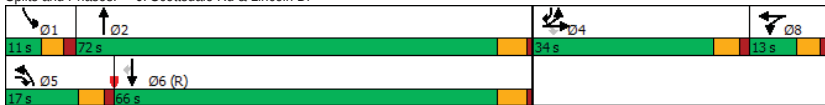
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	1081	1619
HCM Lane V/C Ratio	-	-	0.017	0.02
HCM Control Delay (s)	-	-	8.4	7.3
HCM Lane LOS	-	-	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0.1

18-0555 SmokeTree Resort
2024 Total AM Mitigated

6: Scottsdale Rd & Lincoln Dr
Timing Report, Sorted By Phase

						
Phase Number	1	2	4	5	6	8
Movement	SBL	NBT	EBTL	NBL	SBT	WBTL
Lead/Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize						
Recall Mode	None	None	None	None	C-Max	None
Maximum Split (s)	11	72	34	17	66	13
Maximum Split (%)	8.5%	55.4%	26.2%	13.1%	50.8%	10.0%
Minimum Split (s)	11	27.7	13	13	30.7	13
Yellow Time (s)	3.3	4.7	4	4	4.7	3.6
All-Red Time (s)	2	1	1.5	1.5	1	2
Minimum Initial (s)	5	10	7	7	10	7
Vehicle Extension (s)	2	0.2	2	2	0.2	2
Minimum Gap (s)	1	1	1	1	1	1
Time Before Reduce (s)	0	0	0	0	0	0
Time To Reduce (s)	0	0	0	0	0	0
Walk Time (s)		7			7	
Flash Dont Walk (s)		15			18	
Dual Entry	No	Yes	No	No	Yes	No
Inhibit Max	Yes	Yes	Yes	Yes	Yes	Yes
Start Time (s)	113	124	66	113	0	100
End Time (s)	124	66	100	0	66	113
Yield/Force Off (s)	118.7	60.3	94.5	124.5	60.3	107.4
Yield/Force Off 170(s)	118.7	45.3	94.5	124.5	42.3	107.4
Local Start Time (s)	113	124	66	113	0	100
Local Yield (s)	118.7	60.3	94.5	124.5	60.3	107.4
Local Yield 170(s)	118.7	45.3	94.5	124.5	42.3	107.4
Intersection Summary						
Cycle Length	130					
Control Type	Actuated-Coordinated					
Natural Cycle	80					
Offset: 0 (0%), Referenced to phase 6:SBT, Start of Green						

Splits and Phases: 6: Scottsdale Rd & Lincoln Dr

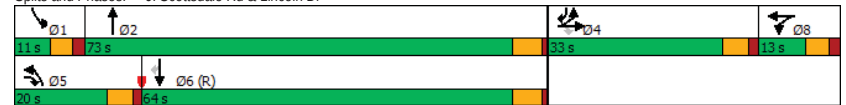


18-0555 SmokeTree Resort
2024 Total PM Mitigated

6: Scottsdale Rd & Lincoln Dr
Timing Report, Sorted By Phase

						
Phase Number	1	2	4	5	6	8
Movement	SBL	NBT	EBTL	NBL	SBT	WBTL
Lead/Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize						
Recall Mode	None	None	None	None	C-Max	None
Maximum Split (s)	11	73	33	20	64	13
Maximum Split (%)	8.5%	56.2%	25.4%	15.4%	49.2%	10.0%
Minimum Split (s)	11	27.7	13	13	30.7	13
Yellow Time (s)	3.3	4.7	4	4	4.7	3.6
All-Red Time (s)	2	1	1.5	1.5	1	2
Minimum Initial (s)	5	10	7	7	10	7
Vehicle Extension (s)	2	0.2	2	2	0.2	2
Minimum Gap (s)	1	1	1	1	1	1
Time Before Reduce (s)	0	0	0	0	0	0
Time To Reduce (s)	0	0	0	0	0	0
Walk Time (s)		7			7	
Flash Dont Walk (s)		15			18	
Dual Entry	No	Yes	No	No	Yes	No
Inhibit Max	Yes	Yes	Yes	Yes	Yes	Yes
Start Time (s)	110	121	64	110	0	97
End Time (s)	121	64	97	0	64	110
Yield/Force Off (s)	115.7	58.3	91.5	124.5	58.3	104.4
Yield/Force Off 170(s)	115.7	43.3	91.5	124.5	40.3	104.4
Local Start Time (s)	110	121	64	110	0	97
Local Yield (s)	115.7	58.3	91.5	124.5	58.3	104.4
Local Yield 170(s)	115.7	43.3	91.5	124.5	40.3	104.4
Intersection Summary						
Cycle Length	130					
Control Type	Actuated-Coordinated					
Natural Cycle	90					
Offset: 0 (0%), Referenced to phase 6:SBT, Start of Green						

Splits and Phases: 6: Scottsdale Rd & Lincoln Dr



18-0555 SmokeTree Resort
2024 Total AM Mitigated

6: Scottsdale Rd & Lincoln Dr
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	37	323	21	34	28	222	897	33	20	957	386
Future Volume (veh/h)	535	37	323	21	34	28	222	897	33	20	957	386
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	623	0	359	24	39	32	244	986	36	22	1052	424
Peak Hour Factor	0.90	0.90	0.90	0.88	0.88	0.88	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	781	0	482	93	102	75	294	2677	98	38	2368	1083
Arrive On Green	0.22	0.00	0.22	0.05	0.05	0.05	0.09	0.53	0.53	0.02	0.46	0.46
Sat Flow, veh/h	3563	0	1585	1781	1957	1433	3456	5057	184	1781	5106	1585
Grp Volume(v), veh/h	623	0	359	24	35	36	244	663	359	22	1052	424
Grp Sat Flow(s),veh/h/ln	1781	0	1585	1781	1777	1612	1728	1702	1837	1781	1702	1585
Q Serve(g_s), s	21.5	0.0	26.5	1.7	2.5	2.8	9.0	14.8	14.8	1.6	18.1	15.0
Cycle Q Clear(g_c), s	21.5	0.0	26.5	1.7	2.5	2.8	9.0	14.8	14.8	1.6	18.1	15.0
Prop In Lane	1.00		1.00	1.00		0.89	1.00		0.10	1.00		1.00
Lane Grp Cap(c), veh/h	781	0	482	93	93	84	294	1802	973	38	2368	1083
V/C Ratio(X)	0.80	0.00	0.74	0.26	0.38	0.43	0.83	0.37	0.37	0.59	0.44	0.39
Avail Cap(c_a), veh/h	781	0	482	101	101	92	306	1802	973	78	2368	1083
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	48.0	0.0	40.7	59.2	59.6	59.7	58.5	17.9	17.9	63.1	23.5	8.9
Incr Delay (d2), s/veh	5.4	0.0	5.5	0.5	0.9	1.3	15.6	0.0	0.1	5.3	0.6	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(95%),veh/ln	15.4	0.0	16.5	1.4	2.1	2.1	8.1	9.8	10.4	1.4	11.9	15.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	53.4	0.0	46.2	59.7	60.5	61.0	74.1	17.9	18.0	68.4	24.1	10.0
LnGrp LOS	D	A	D	E	E	E	E	B	B	E	C	A
Approach Vol, veh/h	982			95			1266			1498		
Approach Delay, s/veh	50.8			60.5			28.8			20.8		
Approach LOS	D			E			C			C		
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	8.0	74.5		34.0	16.6	66.0		12.4				
Change Period (Y+Rc), s	* 5.3	5.7		5.5	5.5	5.7		5.6				
Max Green Setting (Gmax), s	* 5.7	66.3		28.5	11.5	60.3		7.4				
Max Q Clear Time (g_c+I), s	3.6	16.8		28.5	11.0	20.1		4.8				
Green Ext Time (p_c), s	0.0	1.4		0.0	0.0	1.6		0.0				

Intersection Summary

HCM 6th Ctrl Delay	32.1
HCM 6th LOS	C

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.

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Synchro 11 Report

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18-0555 SmokeTree Resort
2024 Total PM Mitigated

6: Scottsdale Rd & Lincoln Dr
HCM 6th Signalized Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	537	36	358	39	40	37	336	1314	29	36	1457	616
Future Volume (veh/h)	537	36	358	39	40	37	336	1314	29	36	1457	616
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	626	0	398	44	45	42	369	1444	32	40	1601	677
Peak Hour Factor	0.90	0.90	0.90	0.88	0.88	0.88	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	754	0	512	95	99	81	385	2735	61	52	2290	1046
Arrive On Green	0.21	0.00	0.21	0.05	0.05	0.05	0.11	0.53	0.53	0.03	0.45	0.45
Sat Flow, veh/h	3563	0	1585	1781	1849	1524	3456	5140	114	1781	5106	1585
Grp Volume(v), veh/h	626	0	398	44	43	44	369	956	520	40	1601	677
Grp Sat Flow(s),veh/h/ln	1781	0	1585	1781	1777	1596	1728	1702	1850	1781	1702	1585
Q Serve(g_s), s	21.9	0.0	27.5	3.1	3.1	3.5	13.8	23.8	23.8	2.9	32.8	33.0
Cycle Q Clear(g_c), s	21.9	0.0	27.5	3.1	3.1	3.5	13.8	23.8	23.8	2.9	32.8	33.0
Prop In Lane	1.00		1.00	1.00		0.95	1.00		0.06	1.00		1.00
Lane Grp Cap(c), veh/h	754	0	512	95	95	85	385	1811	984	52	2290	1046
V/C Ratio(X)	0.83	0.00	0.78	0.46	0.45	0.52	0.96	0.53	0.53	0.76	0.70	0.65
Avail Cap(c_a), veh/h	754	0	512	101	101	91	385	1811	984	78	2290	1046
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	49.0	0.0	39.8	59.7	59.7	59.9	57.4	19.8	19.8	62.6	28.8	13.1
Incr Delay (d2), s/veh	7.4	0.0	6.8	1.3	1.3	1.8	34.5	0.1	0.3	10.4	1.8	3.1
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(95%),veh/ln	15.8	0.0	18.2	2.6	2.5	2.6	12.5	14.4	15.4	2.6	19.7	28.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	56.4	0.0	46.5	61.0	60.9	61.7	92.0	19.9	20.1	73.0	30.6	16.2
LnGrp LOS	E	A	D	E	E	F	F	B	C	E	C	B
Approach Vol, veh/h	1024			131			1845			2318		
Approach Delay, s/veh	52.6			61.2			34.4			27.1		
Approach LOS	D			E			C			C		
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	9.1	74.9		33.0	20.0	64.0		12.5				
Change Period (Y+Rc), s	* 5.3	5.7		5.5	5.5	5.7		5.6				
Max Green Setting (Gmax), s	* 5.7	67.3		27.5	14.5	58.3		7.4				
Max Q Clear Time (g_c+I), s	4.9	25.8		29.5	15.8	35.0		5.5				
Green Ext Time (p_c), s	0.0	2.2		0.0	0.0	2.7		0.1				

Intersection Summary

HCM 6th Ctrl Delay	35.4
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.

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Synchro 11 Report

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APPENDIX J

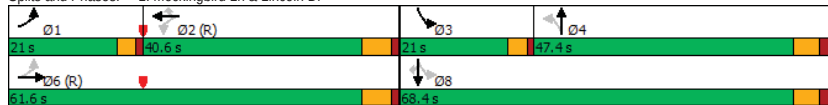
2029 BUILD PEAK HOUR ANALYSIS

18-0555 SmokeTree Resort
2029 Total AM

1: Mockingbird Ln & Lincoln Dr
Timing Report, Sorted By Phase

												
Phase Number	1	2	3	4	6	8						
Movement	EBL	WBTL	SBL	NBTL	EBTL	SBTL						
Lead/Lag	Lead	Lag	Lead	Lag								
Lead-Lag Optimize	Yes	Yes	Yes	Yes								
Recall Mode	None	C-Max	None	None	C-Max	None						
Maximum Split (s)	21	40.6	21	47.4	61.6	68.4						
Maximum Split (%)	16.2%	31.2%	16.2%	36.5%	47.4%	52.6%						
Minimum Split (s)	8	27	8	33.5	27	33.5						
Yellow Time (s)	3	4.5	3	4	4.5	4						
All-Red Time (s)	1	1.5	1	2.5	1.5	2.5						
Minimum Initial (s)	3.5	15	3.5	7	15	7						
Vehicle Extension (s)	3	3	3	3	3	3						
Minimum Gap (s)	3	3	3	3	3	3						
Time Before Reduce (s)	0	0	0	0	0	0						
Time To Reduce (s)	0	0	0	0	0	0						
Walk Time (s)		7		7	7	7						
Flash Dont Walk (s)		14		20	14	20						
Dual Entry	No	No	No	Yes	No	Yes						
Inhibit Max	Yes	Yes	Yes	Yes	Yes	Yes						
Start Time (s)	109	0	40.6	61.6	109	40.6						
End Time (s)	0	40.6	61.6	109	40.6	109						
Yield/Force Off (s)	126	34.6	57.6	102.5	34.6	102.5						
Yield/Force Off 170(s)	126	20.6	57.6	82.5	20.6	82.5						
Local Start Time (s)	109	0	40.6	61.6	109	40.6						
Local Yield (s)	126	34.6	57.6	102.5	34.6	102.5						
Local Yield 170(s)	126	20.6	57.6	82.5	20.6	82.5						
Intersection Summary												
Cycle Length	130											
Control Type	Actuated-Coordinated											
Natural Cycle	80											
Offset: 0 (0%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green												

Splits and Phases: 1: Mockingbird Ln & Lincoln Dr

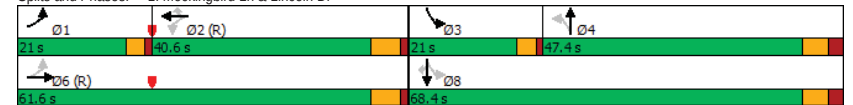


18-0555 SmokeTree Resort
2029 Total PM

1: Mockingbird Ln & Lincoln Dr
Timing Report, Sorted By Phase

												
Phase Number	1	2	3	4	6	8						
Movement	EBL	WBTL	SBL	NBTL	EBTL	SBTL						
Lead/Lag	Lead	Lag	Lead	Lag								
Lead-Lag Optimize	Yes	Yes	Yes	Yes								
Recall Mode	None	C-Max	None	None	C-Max	None						
Maximum Split (s)	21	40.6	21	47.4	61.6	68.4						
Maximum Split (%)	16.2%	31.2%	16.2%	36.5%	47.4%	52.6%						
Minimum Split (s)	8	27	8	33.5	27	33.5						
Yellow Time (s)	3	4.5	3	4	4.5	4						
All-Red Time (s)	1	1.5	1	2.5	1.5	2.5						
Minimum Initial (s)	3.5	15	3.5	7	15	7						
Vehicle Extension (s)	3	3	3	3	3	3						
Minimum Gap (s)	3	3	3	3	3	3						
Time Before Reduce (s)	0	0	0	0	0	0						
Time To Reduce (s)	0	0	0	0	0	0						
Walk Time (s)		7		7	7	7						
Flash Dont Walk (s)		14		20	14	20						
Dual Entry	No	No	No	Yes	No	Yes						
Inhibit Max	Yes	Yes	Yes	Yes	Yes	Yes						
Start Time (s)	109	0	40.6	61.6	109	40.6						
End Time (s)	0	40.6	61.6	109	40.6	109						
Yield/Force Off (s)	126	34.6	57.6	102.5	34.6	102.5						
Yield/Force Off 170(s)	126	20.6	57.6	82.5	20.6	82.5						
Local Start Time (s)	109	0	40.6	61.6	109	40.6						
Local Yield (s)	126	34.6	57.6	102.5	34.6	102.5						
Local Yield 170(s)	126	20.6	57.6	82.5	20.6	82.5						
Intersection Summary												
Cycle Length	130											
Control Type	Actuated-Coordinated											
Natural Cycle	90											
Offset: 0 (0%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green												

Splits and Phases: 1: Mockingbird Ln & Lincoln Dr



18-0555 SmokeTree Resort
2029 Total AM

1: Mockingbird Ln & Lincoln Dr
HCM 6th Signalized Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↰↱	↰	↰	↰↱	↰	↰	↰	↰	↰	↰	↰
Traffic Volume (veh/h)	220	981	69	17	668	49	23	23	28	57	65	210
Future Volume (veh/h)	220	981	69	17	668	49	23	23	28	57	65	210
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	1772	1969	1772	1772	1969	1772	1772	1969	1772	1772	1969	1772
Adj Flow Rate, veh/h	234	1044	73	18	718	53	25	25	31	70	80	259
Peak Hour Factor	0.94	0.94	0.94	0.93	0.93	0.93	0.91	0.91	0.91	0.81	0.81	0.81
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	488	2517	176	337	2286	918	170	93	115	247	382	291
Arrive On Green	0.07	0.71	0.71	0.41	0.41	0.41	0.12	0.12	0.12	0.05	0.19	0.19
Sat Flow, veh/h	1688	3547	248	478	3741	1502	987	799	991	1688	1969	1502
Grp Volume(v), veh/h	234	550	567	18	718	53	25	0	56	70	80	259
Grp Sat Flow(s), veh/h/ln	1688	1870	1924	478	1870	1502	987	0	1790	1688	1969	1502
Q Serve(g_s), s	6.4	15.7	15.7	3.0	16.9	2.8	3.0	0.0	3.7	4.6	4.4	21.8
Cycle Q Clear(g_c), s	6.4	15.7	15.7	6.0	16.9	2.8	3.0	0.0	3.7	4.6	4.4	21.8
Prop In Lane	1.00		0.13	1.00		1.00	1.00		0.55	1.00		1.00
Lane Grp Cap(c), veh/h	488	1328	1366	337	2286	918	170	0	207	247	382	291
V/C Ratio(X)	0.48	0.41	0.41	0.05	0.31	0.06	0.15	0.00	0.27	0.28	0.21	0.89
Avail Cap(c_a), veh/h	594	1328	1366	337	2286	918	366	0	563	387	937	715
HCM Platoon Ratio	1.00	1.00	1.00	0.67	0.67	0.67	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.85	0.85	0.85	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	9.2	7.8	7.8	17.6	19.9	15.7	52.1	0.0	52.5	45.9	44.0	51.0
Incr Delay (d2), s/veh	0.7	1.0	0.9	0.3	0.3	0.1	0.4	0.0	0.7	0.6	0.3	9.0
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(95%), veh/ln	4.1	10.4	10.6	0.7	12.4	1.7	1.4	0.0	3.1	3.6	4.0	13.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	9.9	8.7	8.7	17.8	20.2	15.8	52.5	0.0	53.2	46.5	44.3	60.1
LnGrp LOS	A	A	A	B	C	B	D	A	D	D	D	E
Approach Vol, veh/h	1351			789			81			409		
Approach Delay, s/veh	8.9			19.9			53.0			54.7		
Approach LOS	A			B			D			D		
Timer - Assigned Phs	1	2	3	4	6	8						
Phs Duration (G+Y+Rc), s	12.8	85.5	10.2	21.6	98.3	31.7						
Change Period (Y+Rc), s	4.0	6.0	4.0	6.5	6.0	6.5						
Max Green Setting (Gmax), s	17.0	34.6	17.0	40.9	55.6	61.9						
Max Q Clear Time (g_c+I), s	8.4	18.9	6.6	5.7	17.7	23.8						
Green Ext Time (p_c), s	0.4	4.9	0.1	0.4	9.5	1.4						
Intersection Summary												
HCM 6th Ctrl Delay	20.7											
HCM 6th LOS	C											

18-0555 SmokeTree Resort
2029 Total PM

1: Mockingbird Ln & Lincoln Dr
HCM 6th Signalized Intersection Summary

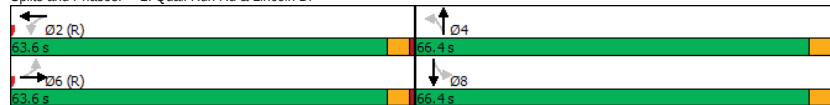
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↰↱	↰	↰	↰↱	↰	↰	↰	↰	↰	↰	↰
Traffic Volume (veh/h)	212	989	37	13	1136	66	20	51	26	59	66	298
Future Volume (veh/h)	212	989	37	13	1136	66	20	51	26	59	66	298
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	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	1772	1969	1772	1772	1969	1772	1772	1969	1772	1772	1969	1772
Adj Flow Rate, veh/h	226	1052	39	14	1222	71	22	56	29	73	81	368
Peak Hour Factor	0.94	0.94	0.94	0.93	0.93	0.93	0.91	0.91	0.91	0.81	0.81	0.81
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	330	2342	87	296	1979	794	225	232	120	322	526	401
Arrive On Green	0.08	0.64	0.64	0.70	0.70	0.70	0.19	0.19	0.19	0.05	0.27	0.27
Sat Flow, veh/h	1688	3678	136	490	3741	1502	892	1222	633	1688	1969	1502
Grp Volume(v), veh/h	226	535	556	14	1222	71	22	0	85	73	81	368
Grp Sat Flow(s), veh/h/ln	1688	1870	1944	490	1870	1502	892	0	1855	1688	1969	1502
Q Serve(g_s), s	7.6	18.9	18.9	1.3	22.3	1.9	2.7	0.0	5.1	4.4	4.1	30.9
Cycle Q Clear(g_c), s	7.6	18.9	18.9	6.3	22.3	1.9	2.7	0.0	5.1	4.4	4.1	30.9
Prop In Lane	1.00		0.07	1.00		1.00	1.00		0.34	1.00		1.00
Lane Grp Cap(c), veh/h	330	1191	1238	296	1979	794	225	0	353	322	526	401
V/C Ratio(X)	0.69	0.45	0.45	0.05	0.62	0.09	0.10	0.00	0.24	0.23	0.15	0.92
Avail Cap(c_a), veh/h	421	1191	1238	296	1979	794	336	0	584	464	937	715
HCM Platoon Ratio	1.00	1.00	1.00	1.33	1.33	1.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.46	0.46	0.46	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	15.9	12.0	12.0	10.9	12.4	9.4	43.7	0.0	44.7	38.2	36.4	46.2
Incr Delay (d2), s/veh	3.2	1.2	1.2	0.1	0.7	0.1	0.2	0.0	0.3	0.4	0.1	9.5
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(95%), veh/ln	5.6	12.7	13.1	0.3	10.7	1.2	1.1	0.0	4.3	3.4	3.6	18.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	19.1	13.2	13.2	11.0	13.0	9.5	43.9	0.0	45.0	38.6	36.5	55.7
LnGrp LOS	B	B	B	B	B	A	D	A	D	D	D	E
Approach Vol, veh/h	1317			1307			107			522		
Approach Delay, s/veh	14.2			12.8			44.8			50.3		
Approach LOS	B			B			D			D		
Timer - Assigned Phs	1	2	3	4	6	8						
Phs Duration (G+Y+Rc), s	14.0	74.8	10.0	31.2	88.8	41.2						
Change Period (Y+Rc), s	4.0	6.0	4.0	6.5	6.0	6.5						
Max Green Setting (Gmax), s	17.0	34.6	17.0	40.9	55.6	61.9						
Max Q Clear Time (g_c+I), s	9.6	24.3	6.4	7.1	20.9	32.9						
Green Ext Time (p_c), s	0.4	6.3	0.1	0.6	8.9	1.8						
Intersection Summary												
HCM 6th Ctrl Delay	20.5											
HCM 6th LOS	C											

18-0555 SmokeTree Resort
2029 Total AM

2: Quail Run Rd & Lincoln Dr
Timing Report, Sorted By Phase

				
Phase Number	2	4	6	8
Movement	WBTL	NBTL	EBTL	SBTL
Lead/Lag				
Lead-Lag Optimize				
Recall Mode	C-Max	Max	C-Max	Max
Maximum Split (s)	63.6	66.4	63.6	66.4
Maximum Split (%)	48.9%	51.1%	48.9%	51.1%
Minimum Split (s)	22.5	22.5	22.5	22.5
Yellow Time (s)	3.5	3.5	3.5	3.5
All-Red Time (s)	1	1	1	1
Minimum Initial (s)	5	5	5	5
Vehicle Extension (s)	3	3	3	3
Minimum Gap (s)	3	3	3	3
Time Before Reduce (s)	0	0	0	0
Time To Reduce (s)	0	0	0	0
Walk Time (s)	7	7	7	7
Flash Dont Walk (s)	11	11	11	11
Dual Entry	Yes	Yes	Yes	Yes
Inhibit Max	Yes	Yes	Yes	Yes
Start Time (s)	94.6	28.2	94.6	28.2
End Time (s)	28.2	94.6	28.2	94.6
Yield/Force Off (s)	23.7	90.1	23.7	90.1
Yield/Force Off 170(s)	12.7	79.1	12.7	79.1
Local Start Time (s)	0	63.6	0	63.6
Local Yield (s)	59.1	125.5	59.1	125.5
Local Yield 170(s)	48.1	114.5	48.1	114.5
Intersection Summary				
Cycle Length	130			
Control Type	Actuated-Coordinated			
Natural Cycle	50			
Offset: 94.6 (73%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green				

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

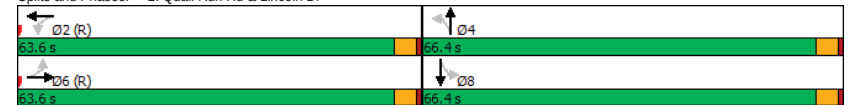


18-0555 SmokeTree Resort
2029 Total PM

2: Quail Run Rd & Lincoln Dr
Timing Report, Sorted By Phase

				
Phase Number	2	4	6	8
Movement	WBTL	NBTL	EBTL	SBTL
Lead/Lag				
Lead-Lag Optimize				
Recall Mode	C-Max	Max	C-Max	Max
Maximum Split (s)	63.6	66.4	63.6	66.4
Maximum Split (%)	48.9%	51.1%	48.9%	51.1%
Minimum Split (s)	22.5	22.5	22.5	22.5
Yellow Time (s)	3.5	3.5	3.5	3.5
All-Red Time (s)	1	1	1	1
Minimum Initial (s)	5	5	5	5
Vehicle Extension (s)	3	3	3	3
Minimum Gap (s)	3	3	3	3
Time Before Reduce (s)	0	0	0	0
Time To Reduce (s)	0	0	0	0
Walk Time (s)	7	7	7	7
Flash Dont Walk (s)	11	11	11	11
Dual Entry	Yes	Yes	Yes	Yes
Inhibit Max	Yes	Yes	Yes	Yes
Start Time (s)	94.6	28.2	94.6	28.2
End Time (s)	28.2	94.6	28.2	94.6
Yield/Force Off (s)	23.7	90.1	23.7	90.1
Yield/Force Off 170(s)	12.7	79.1	12.7	79.1
Local Start Time (s)	0	63.6	0	63.6
Local Yield (s)	59.1	125.5	59.1	125.5
Local Yield 170(s)	48.1	114.5	48.1	114.5
Intersection Summary				
Cycle Length	130			
Control Type	Actuated-Coordinated			
Natural Cycle	60			
Offset: 94.6 (73%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green				

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



18-0555 SmokeTree Resort
2029 Total AM

2: Quail Run Rd & Lincoln Dr
HCM 6th Signalized Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	55	993	8	7	677	68	5	0	7	41	0	48
Future Volume (veh/h)	55	993	8	7	677	68	5	0	7	41	0	48
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	64	1155	9	8	744	75	8	0	11	59	0	69
Peak Hour Factor	0.86	0.86	0.86	0.91	0.91	0.91	0.62	0.62	0.62	0.70	0.70	0.70
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	272	1643	13	128	1482	149	324	15	413	356	14	386
Arrive On Green	0.15	0.15	0.15	0.60	0.60	0.60	0.48	0.00	0.48	0.48	0.00	0.48
Sat Flow, veh/h	668	3614	28	482	3260	328	599	32	867	663	30	811
Grp Volume(v), veh/h	64	568	596	8	405	414	19	0	0	128	0	0
Grp Sat Flow(s),veh/h/ln	668	1777	1865	482	1777	1811	1497	0	0	1504	0	0
Q Serve(g_s), s	11.5	39.5	39.5	1.8	16.8	16.9	0.0	0.0	0.0	3.7	0.0	0.0
Cycle Q Clear(g_c), s	28.3	39.5	39.5	41.2	16.8	16.9	0.8	0.0	0.0	6.0	0.0	0.0
Prop In Lane	1.00		0.02	1.00		0.18	0.42		0.58	0.46		0.54
Lane Grp Cap(c), veh/h	272	808	848	128	808	823	752	0	0	756	0	0
V/C Ratio(X)	0.23	0.70	0.70	0.06	0.50	0.50	0.03	0.00	0.00	0.17	0.00	0.00
Avail Cap(c_a), veh/h	272	808	848	128	808	823	752	0	0	756	0	0
HCM Platoon Ratio	0.33	0.33	0.33	1.33	1.33	1.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	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	49.9	46.9	46.9	38.3	17.3	17.3	18.0	0.0	0.0	19.4	0.0	0.0
Incr Delay (d2), s/veh	1.9	4.7	4.5	0.9	2.2	2.2	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(95%),veh/ln	4.0	26.9	28.1	0.4	10.8	10.9	0.6	0.0	0.0	4.2	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	51.8	51.6	51.4	39.2	19.6	19.5	18.1	0.0	0.0	19.8	0.0	0.0
LnGrp LOS	D	D	D	D	B	B	B	A	A	B	A	A
Approach Vol, veh/h	1228			827			19			128		
Approach Delay, s/veh	51.5			19.7			18.1			19.8		
Approach LOS	D			B			B			B		
Timer - Assigned Phs	2			4			6			8		
Phs Duration (G+Y+Rc), s	63.6			66.4			63.6			66.4		
Change Period (Y+Rc), s	4.5			4.5			4.5			4.5		
Max Green Setting (Gmax), s	59.1			61.9			59.1			61.9		
Max Q Clear Time (g_c+I), s	43.2			2.8			41.5			8.0		
Green Ext Time (p_c), s	4.9			0.1			8.1			0.8		
Intersection Summary												
HCM 6th Ctrl Delay	37.4											
HCM 6th LOS	D											

18-0555 SmokeTree Resort
2029 Total PM

2: Quail Run Rd & Lincoln Dr
HCM 6th Signalized Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	43	1054	14	17	1161	36	8	0	13	39	0	33
Future Volume (veh/h)	43	1054	14	17	1161	36	8	0	13	39	0	33
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	50	1226	16	19	1276	40	13	0	21	56	0	47
Peak Hour Factor	0.86	0.86	0.86	0.91	0.91	0.91	0.62	0.62	0.62	0.70	0.70	0.70
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	195	1633	21	113	1599	50	297	16	444	414	12	322
Arrive On Green	0.15	0.15	0.15	0.91	0.91	0.91	0.48	0.00	0.48	0.48	0.00	0.48
Sat Flow, veh/h	417	3592	47	448	3517	110	543	34	932	779	25	675
Grp Volume(v), veh/h	50	606	636	19	644	672	34	0	0	103	0	0
Grp Sat Flow(s),veh/h/ln	417	1777	1862	448	1777	1851	1509	0	0	1480	0	0
Q Serve(g_s), s	14.4	42.5	42.5	4.5	15.6	15.6	0.0	0.0	0.0	3.1	0.0	0.0
Cycle Q Clear(g_c), s	30.1	42.5	42.5	47.0	15.6	15.6	1.4	0.0	0.0	4.8	0.0	0.0
Prop In Lane	1.00		0.03	1.00		0.06	0.38		0.62	0.54		0.46
Lane Grp Cap(c), veh/h	195	808	846	113	808	841	757	0	0	748	0	0
V/C Ratio(X)	0.26	0.75	0.75	0.17	0.80	0.80	0.04	0.00	0.00	0.14	0.00	0.00
Avail Cap(c_a), veh/h	195	808	846	113	808	841	757	0	0	748	0	0
HCM Platoon Ratio	0.33	0.33	0.33	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	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	50.2	48.2	48.2	22.6	3.9	3.9	18.2	0.0	0.0	19.0	0.0	0.0
Incr Delay (d2), s/veh	2.9	5.9	5.6	3.2	8.1	7.8	0.1	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(95%),veh/ln	3.2	29.0	30.1	1.0	6.7	6.9	1.0	0.0	0.0	3.3	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	53.1	54.1	53.8	25.9	12.0	11.7	18.3	0.0	0.0	19.4	0.0	0.0
LnGrp LOS	D	D	D	C	B	B	B	A	A	B	A	A
Approach Vol, veh/h	1292			1335			34			103		
Approach Delay, s/veh	53.9			12.1			18.3			19.4		
Approach LOS	D			B			B			B		
Timer - Assigned Phs	2			4			6			8		
Phs Duration (G+Y+Rc), s	63.6			66.4			63.6			66.4		
Change Period (Y+Rc), s	4.5			4.5			4.5			4.5		
Max Green Setting (Gmax), s	59.1			61.9			59.1			61.9		
Max Q Clear Time (g_c+I), s	49.0			3.4			44.5			6.8		
Green Ext Time (p_c), s	6.2			0.2			7.9			0.7		
Intersection Summary												
HCM 6th Ctrl Delay	32.0											
HCM 6th LOS	C											

18-0555 SmokeTree Resort
2029 Total AM

4: Shared Drwy & Lincoln Dr
HCM 6th TWSC

Intersection						
Int Delay, s/veh	0.3					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↑	↑↑	↑	
Traffic Vol, veh/h	1060	14	21	748	4	15
Future Vol, veh/h	1060	14	21	748	4	15
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	60	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	86	86	91	91	50	50
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1233	16	23	822	8	30

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	1249
Stage 1	-	-	1241
Stage 2	-	-	457
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	-	922	*339
Stage 1	-	-	*581
Stage 2	-	-	*743
Platoon blocked, %	-	1	1
Mov Cap-1 Maneuver	-	922	*331
Mov Cap-2 Maneuver	-	-	*331
Stage 1	-	-	*581
Stage 2	-	-	*725

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)	537	-	-	922	-
HCM Lane V/C Ratio	0.071	-	-	0.025	-
HCM Control Delay (s)	12.2	-	-	9	-
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

18-0555 SmokeTree Resort
2029 Total PM

4: Shared Drwy & Lincoln Dr
HCM 6th TWSC

Intersection						
Int Delay, s/veh	0.7					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↑	↑↑	↑	
Traffic Vol, veh/h	1093	12	31	1204	11	26
Future Vol, veh/h	1093	12	31	1204	11	26
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	60	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	86	86	91	91	50	50
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1271	14	34	1323	22	52

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	1285
Stage 1	-	-	1278
Stage 2	-	-	730
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	-	927	*135
Stage 1	-	-	*584
Stage 2	-	-	*539
Platoon blocked, %	-	1	1
Mov Cap-1 Maneuver	-	927	*130
Mov Cap-2 Maneuver	-	-	*130
Stage 1	-	-	*584
Stage 2	-	-	*519

Approach	EB	WB	NB
HCM Control Delay, s	0	0.2	21.5
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	292	-	-	927	-
HCM Lane V/C Ratio	0.253	-	-	0.037	-
HCM Control Delay (s)	21.5	-	-	9	-
HCM Lane LOS	C	-	-	A	-
HCM 95th %tile Q(veh)	1	-	-	0.1	-

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

18-0555 SmokeTree Resort
2029 Total AM

5: AJ's Drwy/Apartment Drwy & Lincoln Dr
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	23	981	75	13	705	10	48	6	65	4	0	11
Future Vol, veh/h	23	981	75	13	705	10	48	6	65	4	0	11
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	60	-	-	25	-	-	-	-	-	0	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	88	95	95	95	76	76	76	70	70	70
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	26	1115	85	14	742	11	63	8	86	6	0	16

Major/Minor	Major1	Major2	Minor1	Minor2
Conflicting Flow All	753	0	0 1200	0 1609
Stage 1	-	-	- 1210	1210 - 776
Stage 2	-	-	- 399	781 - 614
Critical Hdwy	4.14	-	- 4.14	- 7.54
Critical Hdwy Stg 1	-	-	- -	- 6.54
Critical Hdwy Stg 2	-	-	- -	- 6.54
Follow-up Hdwy	2.22	-	- 2.22	- 3.52
Pot Cap-1 Maneuver	*1178	-	- 935	- *352
Stage 1	-	-	- -	- *556
Stage 2	-	-	- -	- *742
Platoon blocked, %	1	-	- 1	- 1
Mov Cap-1 Maneuver	*1178	-	- 935	- *336
Mov Cap-2 Maneuver	-	-	- -	- *426
Stage 1	-	-	- -	- *543
Stage 2	-	-	- -	- *717

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	0.2	14.9	10.6
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	518	*1178	-	-	935	-	-	451	787
HCM Lane V/C Ratio	0.302	0.022	-	-	0.015	-	-	0.013	0.02
HCM Control Delay (s)	14.9	8.1	-	-	8.9	-	-	13.1	9.7
HCM Lane LOS	B	A	-	-	A	-	-	B	A
HCM 95th %tile Q(veh)	1.3	0.1	-	-	0	-	-	0	0.1

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

18-0555 SmokeTree Resort
2029 Total PM

5: AJ's Drwy/Apartment Drwy & Lincoln Dr
HCM 6th TWSC

Intersection												
Int Delay, s/veh	1.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖ ↗	↖ ↗		↖ ↗	↖ ↗			↖		↖	↖	↗
Traffic Vol, veh/h	9	1040	67	7	1127	10	87	2	79	3	0	21
Future Vol, veh/h	9	1040	67	7	1127	10	87	2	79	3	0	21
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	60	-	-	25	-	-	-	-	-	0	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	88	95	95	95	76	76	76	70	70	70
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	10	1182	76	7	1186	11	114	3	104	4	0	30

Major/Minor	Major1	Major2	Minor1	Minor2
Conflicting Flow All	1197	0	0 1258	0 1847
Stage 1	-	-	- 1240	1240 - 1206
Stage 2	-	-	- 607	1211 - 613
Critical Hdwy	4.14	-	- 4.14	- 7.54
Critical Hdwy Stg 1	-	-	- -	- 6.54
Critical Hdwy Stg 2	-	-	- -	- 6.54
Follow-up Hdwy	2.22	-	- 2.22	- 3.52
Pot Cap-1 Maneuver	*926	-	- 910	- *355
Stage 1	-	-	- -	- *578
Stage 2	-	-	- -	- *584
Platoon blocked, %	1	-	- 1	- 1
Mov Cap-1 Maneuver	*926	-	- 910	- *333
Mov Cap-2 Maneuver	-	-	- -	- *405
Stage 1	-	-	- -	- *572
Stage 2	-	-	- -	- *551

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0.1	18.4	11.5
HCM LOS			C	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	486	*926	-	-	910	-	-	374	619
HCM Lane V/C Ratio	0.455	0.011	-	-	0.008	-	-	0.011	0.048
HCM Control Delay (s)	18.4	8.9	-	-	9	-	-	14.7	11.1
HCM Lane LOS	C	A	-	-	A	-	-	B	B
HCM 95th %tile Q(veh)	2.3	0	-	-	0	-	-	0	0.2

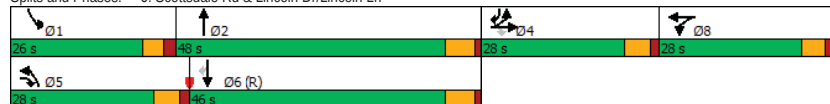
Notes
 -: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

18-0555 SmokeTree Resort
2029 Total AM

6: Scottsdale Rd & Lincoln Dr/Lincoln Ln
Timing Report, Sorted By Phase

						
Phase Number	1	2	4	5	6	8
Movement	SBL	NBT	EBTL	NBL	SBT	WBTL
Lead/Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize						
Recall Mode	None	None	None	None	C-Max	None
Maximum Split (s)	26	48	28	28	46	28
Maximum Split (%)	20.0%	36.9%	21.5%	21.5%	35.4%	21.5%
Minimum Split (s)	11	27.7	13	13	30.7	13
Yellow Time (s)	3.3	4.7	4	4	4.7	3.6
All-Red Time (s)	2	1	1.5	1.5	1	2
Minimum Initial (s)	5	10	7	7	10	7
Vehicle Extension (s)	2	0.2	2	2	0.2	2
Minimum Gap (s)	1	1	1	1	1	1
Time Before Reduce (s)	0	0	0	0	0	0
Time To Reduce (s)	0	0	0	0	0	0
Walk Time (s)		7			7	
Flash Dont Walk (s)		15			18	
Dual Entry	No	Yes	No	No	Yes	No
Inhibit Max	Yes	Yes	Yes	Yes	Yes	Yes
Start Time (s)	102	128	46	102	0	74
End Time (s)	128	46	74	0	46	102
Yield/Force Off (s)	122.7	40.3	68.5	124.5	40.3	96.4
Yield/Force Off 170(s)	122.7	25.3	68.5	124.5	22.3	96.4
Local Start Time (s)	102	128	46	102	0	74
Local Yield (s)	122.7	40.3	68.5	124.5	40.3	96.4
Local Yield 170(s)	122.7	25.3	68.5	124.5	22.3	96.4
Intersection Summary						
Cycle Length	130					
Control Type	Actuated-Coordinated					
Natural Cycle	80					
Offset: 0 (0%), Referenced to phase 6:SBT, Start of Green						

Splits and Phases: 6: Scottsdale Rd & Lincoln Dr/Lincoln Ln

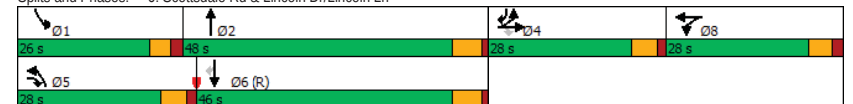


18-0555 SmokeTree Resort
2029 Total PM

6: Scottsdale Rd & Lincoln Dr/Lincoln Ln
Timing Report, Sorted By Phase

						
Phase Number	1	2	4	5	6	8
Movement	SBL	NBT	EBTL	NBL	SBT	WBTL
Lead/Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize						
Recall Mode	None	None	None	None	C-Max	None
Maximum Split (s)	26	48	28	28	46	28
Maximum Split (%)	20.0%	36.9%	21.5%	21.5%	35.4%	21.5%
Minimum Split (s)	11	27.7	13	13	30.7	13
Yellow Time (s)	3.3	4.7	4	4	4.7	3.6
All-Red Time (s)	2	1	1.5	1.5	1	2
Minimum Initial (s)	5	10	7	7	10	7
Vehicle Extension (s)	2	0.2	2	2	0.2	2
Minimum Gap (s)	1	1	1	1	1	1
Time Before Reduce (s)	0	0	0	0	0	0
Time To Reduce (s)	0	0	0	0	0	0
Walk Time (s)		7			7	
Flash Dont Walk (s)		15			18	
Dual Entry	No	Yes	No	No	Yes	No
Inhibit Max	Yes	Yes	Yes	Yes	Yes	Yes
Start Time (s)	102	128	46	102	0	74
End Time (s)	128	46	74	0	46	102
Yield/Force Off (s)	122.7	40.3	68.5	124.5	40.3	96.4
Yield/Force Off 170(s)	122.7	25.3	68.5	124.5	22.3	96.4
Local Start Time (s)	102	128	46	102	0	74
Local Yield (s)	122.7	40.3	68.5	124.5	40.3	96.4
Local Yield 170(s)	122.7	25.3	68.5	124.5	22.3	96.4
Intersection Summary						
Cycle Length	130					
Control Type	Actuated-Coordinated					
Natural Cycle	120					
Offset: 0 (0%), Referenced to phase 6:SBT, Start of Green						

Splits and Phases: 6: Scottsdale Rd & Lincoln Dr/Lincoln Ln



18-0555 SmokeTree Resort
2029 Total AM

6: Scottsdale Rd & Lincoln Dr/Lincoln Ln
HCM 6th Signalized Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	630	44	366	23	41	37	265	1042	35	29	1122	482
Future Volume (veh/h)	630	44	366	23	41	37	265	1042	35	29	1122	482
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	735	0	407	26	47	42	291	1145	38	32	1233	530
Peak Hour Factor	0.90	0.90	0.90	0.88	0.88	0.88	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	617	0	435	94	100	79	349	1961	65	47	1583	766
Arrive On Green	0.06	0.00	0.06	0.05	0.05	0.05	0.10	0.39	0.39	0.03	0.31	0.31
Sat Flow, veh/h	3563	0	1585	1781	1884	1495	3456	5076	168	1781	5106	1585
Grp Volume(v), veh/h	735	0	407	26	44	45	291	768	415	32	1233	530
Grp Sat Flow(s),veh/h/ln	1781	0	1585	1781	1777	1601	1728	1702	1840	1781	1702	1585
Q Serve(g_s), s	22.5	0.0	22.5	1.8	3.1	3.6	10.7	23.2	23.3	2.3	28.6	33.8
Cycle Q Clear(g_c), s	22.5	0.0	22.5	1.8	3.1	3.6	10.7	23.2	23.3	2.3	28.6	33.8
Prop In Lane	1.00		1.00	1.00		0.93	1.00		0.09	1.00		1.00
Lane Grp Cap(c), veh/h	617	0	435	94	94	85	349	1315	711	47	1583	766
V/C Ratio(X)	1.19	0.00	0.94	0.28	0.47	0.53	0.83	0.58	0.58	0.68	0.78	0.69
Avail Cap(c_a), veh/h	617	0	435	307	306	276	598	1315	711	284	1583	766
HCM Platoon Ratio	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	61.3	0.0	51.8	59.2	59.8	60.0	57.3	31.6	31.6	62.7	40.8	26.1
Incr Delay (d2), s/veh	101.8	0.0	27.5	0.6	1.3	1.9	2.0	0.4	0.8	6.3	3.9	5.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	29.1	0.0	22.8	1.5	2.6	2.7	8.4	14.7	15.8	2.0	18.3	25.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	163.1	0.0	79.2	59.7	61.1	61.9	59.3	32.1	32.4	69.1	44.7	31.2
LnGrp LOS	F	A	E	E	E	E	E	C	C	E	D	C
Approach Vol, veh/h	1142			115			1474			1795		
Approach Delay, s/veh	133.2			61.1			37.6			41.1		
Approach LOS	F			E			D			D		
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	8.7	55.9		28.0	18.6	46.0		12.5				
Change Period (Y+Rc), s	* 5.3	5.7		5.5	5.5	5.7		5.6				
Max Green Setting (Gmax), s	* 21	42.3		22.5	22.5	40.3		22.4				
Max Q Clear Time (g_c+I), s	4.3	25.3		24.5	12.7	35.8		5.6				
Green Ext Time (p_c), s	0.0	1.6		0.0	0.4	1.3		0.3				

Intersection Summary

HCM 6th Ctrl Delay	63.7
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.

18-0555 SmokeTree Resort
2029 Total PM

6: Scottsdale Rd & Lincoln Dr/Lincoln Ln
HCM 6th Signalized Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	720	43	403	42	48	59	379	1641	32	55	1763	788
Future Volume (veh/h)	720	43	403	42	48	59	379	1641	32	55	1763	788
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	834	0	448	48	55	67	416	1803	35	60	1937	866
Peak Hour Factor	0.90	0.90	0.90	0.88	0.88	0.88	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	617	0	491	107	106	95	473	2088	41	77	1583	766
Arrive On Green	0.06	0.00	0.06	0.06	0.06	0.06	0.14	0.40	0.40	0.04	0.31	0.31
Sat Flow, veh/h	3563	0	1585	1781	1777	1585	3456	5156	100	1781	5106	1585
Grp Volume(v), veh/h	834	0	448	48	55	67	416	1190	648	60	1937	866
Grp Sat Flow(s),veh/h/ln	1781	0	1585	1781	1777	1585	1728	1702	1852	1781	1702	1585
Q Serve(g_s), s	22.5	0.0	22.5	3.4	3.9	5.4	15.4	41.6	41.6	4.3	40.3	40.3
Cycle Q Clear(g_c), s	22.5	0.0	22.5	3.4	3.9	5.4	15.4	41.6	41.6	4.3	40.3	40.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.05	1.00		1.00
Lane Grp Cap(c), veh/h	617	0	491	107	106	95	473	1379	750	77	1583	766
V/C Ratio(X)	1.35	0.00	0.91	0.45	0.52	0.71	0.88	0.86	0.86	0.78	1.22	1.13
Avail Cap(c_a), veh/h	617	0	491	307	306	273	598	1379	750	284	1583	766
HCM Platoon Ratio	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	61.3	0.0	48.2	59.0	59.3	60.0	55.0	35.4	35.4	61.5	44.8	27.8
Incr Delay (d2), s/veh	169.2	0.0	20.8	1.1	1.4	3.6	10.3	5.6	9.8	6.1	106.5	74.9
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(95%),veh/ln	38.4	0.0	23.0	2.8	3.3	4.1	11.8	25.1	28.0	3.8	47.2	56.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	230.4	0.0	69.0	60.1	60.7	63.5	65.3	41.0	45.2	67.6	151.4	102.7
LnGrp LOS	F	A	E	E	E	E	E	D	D	E	F	F
Approach Vol, veh/h	1282			170			2254			2863		
Approach Delay, s/veh	174.0			61.7			46.7			134.9		
Approach LOS	F			E			D			F		
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	10.9	58.3		28.0	23.3	46.0		13.4				
Change Period (Y+Rc), s	* 5.3	5.7		5.5	5.5	5.7		5.6				
Max Green Setting (Gmax), s	* 21	42.3		22.5	22.5	40.3		22.4				
Max Q Clear Time (g_c+I), s	6.3	43.6		24.5	17.4	42.3		7.4				
Green Ext Time (p_c), s	0.0	0.0		0.0	0.4	0.0		0.4				

Intersection Summary

HCM 6th Ctrl Delay	110.4
HCM 6th LOS	F

Notes

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

User approved volume balancing among the lanes for turning movement.

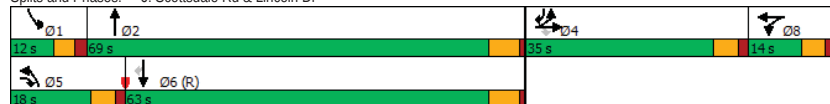
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

18-0555 SmokeTree Resort
2029 Total AM Mitigated

6: Scottsdale Rd & Lincoln Dr
Timing Report, Sorted By Phase

	1	2	4	5	6	8
Phase Number	1	2	4	5	6	8
Movement	SBL	NBT	EBTL	NBL	SBT	WBTL
Lead/Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize						
Recall Mode	None	None	None	None	C-Max	None
Maximum Split (s)	12	69	35	18	63	14
Maximum Split (%)	9.2%	53.1%	26.9%	13.8%	48.5%	10.8%
Minimum Split (s)	11	27.7	13	13	30.7	13
Yellow Time (s)	3.3	4.7	4	4	4.7	3.6
All-Red Time (s)	2	1	1.5	1.5	1	2
Minimum Initial (s)	5	10	7	7	10	7
Vehicle Extension (s)	2	0.2	2	2	0.2	2
Minimum Gap (s)	1	1	1	1	1	1
Time Before Reduce (s)	0	0	0	0	0	0
Time To Reduce (s)	0	0	0	0	0	0
Walk Time (s)		7			7	
Flash Dont Walk (s)		15			18	
Dual Entry	No	Yes	No	No	Yes	No
Inhibit Max	Yes	Yes	Yes	Yes	Yes	Yes
Start Time (s)	112	124	63	112	0	98
End Time (s)	124	63	98	0	63	112
Yield/Force Off (s)	118.7	57.3	92.5	124.5	57.3	106.4
Yield/Force Off 170(s)	118.7	42.3	92.5	124.5	39.3	106.4
Local Start Time (s)	112	124	63	112	0	98
Local Yield (s)	118.7	57.3	92.5	124.5	57.3	106.4
Local Yield 170(s)	118.7	42.3	92.5	124.5	39.3	106.4
Intersection Summary						
Cycle Length	130					
Control Type	Actuated-Coordinated					
Natural Cycle	80					
Offset: 0 (0%), Referenced to phase 6:SBT, Start of Green						

Splits and Phases: 6: Scottsdale Rd & Lincoln Dr

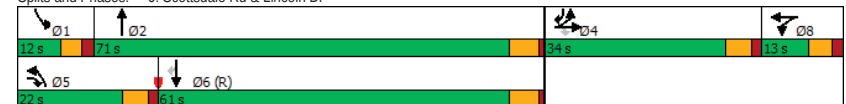


18-0555 SmokeTree Resort
2029 Total PM Mitigated

6: Scottsdale Rd & Lincoln Dr
Timing Report, Sorted By Phase

	1	2	4	5	6	8
Phase Number	1	2	4	5	6	8
Movement	SBL	NBT	EBTL	NBL	SBT	WBTL
Lead/Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize						
Recall Mode	None	None	None	None	C-Max	None
Maximum Split (s)	12	71	34	22	61	13
Maximum Split (%)	9.2%	54.6%	26.2%	16.9%	46.9%	10.0%
Minimum Split (s)	11	27.7	13	13	30.7	13
Yellow Time (s)	3.3	4.7	4	4	4.7	3.6
All-Red Time (s)	2	1	1.5	1.5	1	2
Minimum Initial (s)	5	10	7	7	10	7
Vehicle Extension (s)	2	0.2	2	2	0.2	2
Minimum Gap (s)	1	1	1	1	1	1
Time Before Reduce (s)	0	0	0	0	0	0
Time To Reduce (s)	0	0	0	0	0	0
Walk Time (s)		7			7	
Flash Dont Walk (s)		15			18	
Dual Entry	No	Yes	No	No	Yes	No
Inhibit Max	Yes	Yes	Yes	Yes	Yes	Yes
Start Time (s)	108	120	61	108	0	95
End Time (s)	120	61	95	0	61	108
Yield/Force Off (s)	114.7	55.3	89.5	124.5	55.3	102.4
Yield/Force Off 170(s)	114.7	40.3	89.5	124.5	37.3	102.4
Local Start Time (s)	108	120	61	108	0	95
Local Yield (s)	114.7	55.3	89.5	124.5	55.3	102.4
Local Yield 170(s)	114.7	40.3	89.5	124.5	37.3	102.4
Intersection Summary						
Cycle Length	130					
Control Type	Actuated-Coordinated					
Natural Cycle	120					
Offset: 0 (0%), Referenced to phase 6:SBT, Start of Green						

Splits and Phases: 6: Scottsdale Rd & Lincoln Dr



18-0555 SmokeTree Resort
2029 Total AM Mitigated

6: Scottsdale Rd & Lincoln Dr
HCM 6th Signalized Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↰	↰	↰	↰	↰	↰	↰	↰	↰	↰	↰
Traffic Volume (veh/h)	630	44	366	23	41	37	265	1042	35	29	1122	482
Future Volume (veh/h)	630	44	366	23	41	37	265	1042	35	29	1122	482
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	735	0	407	26	47	42	291	1145	38	32	1233	530
Peak Hour Factor	0.90	0.90	0.90	0.88	0.88	0.88	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	808	0	512	94	100	79	332	2599	86	47	2251	1058
Arrive On Green	0.07	0.00	0.07	0.05	0.05	0.05	0.10	0.51	0.51	0.03	0.44	0.44
Sat Flow, veh/h	3563	0	1585	1781	1884	1495	3456	5076	168	1781	5106	1585
Grp Volume(v), veh/h	735	0	407	26	44	45	291	768	415	32	1233	530
Grp Sat Flow(s),veh/h/ln	1781	0	1585	1781	1777	1601	1728	1702	1840	1781	1702	1585
Q Serve(g_s), s	26.6	0.0	29.5	1.8	3.1	3.6	10.8	18.5	18.5	2.3	23.1	21.7
Cycle Q Clear(g_c), s	26.6	0.0	29.5	1.8	3.1	3.6	10.8	18.5	18.5	2.3	23.1	21.7
Prop In Lane	1.00		1.00	1.00		0.93	1.00		0.09	1.00		1.00
Lane Grp Cap(c), veh/h	808	0	512	94	94	85	332	1743	942	47	2251	1058
V/C Ratio(X)	0.91	0.00	0.79	0.28	0.47	0.53	0.88	0.44	0.44	0.68	0.55	0.50
Avail Cap(c_a), veh/h	808	0	512	115	115	103	332	1743	942	92	2251	1058
HCM Platoon Ratio	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	58.8	0.0	47.6	59.2	59.8	60.0	58.0	20.0	20.0	62.7	26.8	10.8
Incr Delay (d2), s/veh	13.9	0.0	7.8	0.6	1.3	1.9	21.3	0.1	0.1	6.3	1.0	1.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	20.6	0.0	19.8	1.5	2.6	2.7	9.6	11.8	12.6	2.0	14.6	20.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	72.7	0.0	55.4	59.7	61.1	61.9	79.3	20.0	20.1	69.1	27.8	12.5
LnGrp LOS	E	A	E	E	E	E	E	C	C	E	C	B
Approach Vol, veh/h	1142			115			1474			1795		
Approach Delay, s/veh	66.5			61.1			31.8			24.0		
Approach LOS	E			E			C			C		
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	8.7	72.3		35.0	18.0	63.0		12.5				
Change Period (Y+Rc), s	* 5.3	5.7		5.5	5.5	5.7		5.6				
Max Green Setting (Gmax), s	* 6.7	63.3		29.5	12.5	57.3		8.4				
Max Q Clear Time (g_c+I), s	4.3	20.5		31.5	12.8	25.1		5.6				
Green Ext Time (p_c), s	0.0	1.6		0.0	0.0	1.9		0.1				

Intersection Summary

HCM 6th Ctrl Delay	38.2
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.

18-0555 SmokeTree Resort
2029 Total PM Mitigated

6: Scottsdale Rd & Lincoln Dr
HCM 6th Signalized Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↰	↰	↰	↰	↰	↰	↰	↰	↰	↰	↰
Traffic Volume (veh/h)	720	43	403	42	48	59	379	1641	32	55	1763	788
Future Volume (veh/h)	720	43	403	42	48	59	379	1641	32	55	1763	788
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	834	0	448	48	55	67	416	1803	35	60	1937	866
Peak Hour Factor	0.90	0.90	0.90	0.88	0.88	0.88	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	781	0	549	101	101	90	439	2633	51	77	2172	1022
Arrive On Green	0.07	0.00	0.07	0.06	0.06	0.06	0.13	0.51	0.51	0.04	0.43	0.43
Sat Flow, veh/h	3563	0	1585	1781	1777	1585	3456	5156	100	1781	5106	1585
Grp Volume(v), veh/h	834	0	448	48	55	67	416	1190	648	60	1937	866
Grp Sat Flow(s),veh/h/ln	1781	0	1585	1781	1777	1585	1728	1702	1852	1781	1702	1585
Q Serve(g_s), s	28.5	0.0	28.5	3.4	3.9	5.4	15.5	34.2	34.2	4.3	45.7	55.3
Cycle Q Clear(g_c), s	28.5	0.0	28.5	3.4	3.9	5.4	15.5	34.2	34.2	4.3	45.7	55.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.05	1.00		1.00
Lane Grp Cap(c), veh/h	781	0	549	101	101	90	439	1738	946	77	2172	1022
V/C Ratio(X)	1.07	0.00	0.82	0.47	0.54	0.74	0.95	0.68	0.68	0.78	0.89	0.85
Avail Cap(c_a), veh/h	781	0	549	101	101	90	439	1738	946	92	2172	1022
HCM Platoon Ratio	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	60.3	0.0	45.3	59.4	59.7	60.4	56.3	23.9	23.9	61.6	34.6	18.0
Incr Delay (d2), s/veh	51.9	0.0	8.7	1.3	3.4	25.0	29.9	0.9	1.7	24.2	6.1	8.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	27.5	0.0	21.0	2.8	3.4	5.1	13.4	19.8	21.6	4.5	27.1	40.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	112.2	0.0	54.0	60.7	63.0	85.4	86.2	24.9	25.7	85.8	40.7	26.7
LnGrp LOS	F	A	D	E	E	F	F	C	C	F	D	C
Approach Vol, veh/h	1282			170			2254			2863		
Approach Delay, s/veh	91.9			71.2			36.4			37.4		
Approach LOS	F			E			D			D		
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	10.9	72.1		34.0	22.0	61.0		13.0				
Change Period (Y+Rc), s	* 5.3	5.7		5.5	5.5	5.7		5.6				
Max Green Setting (Gmax), s	* 6.7	65.3		28.5	16.5	55.3		7.4				
Max Q Clear Time (g_c+I), s	6.3	36.2		30.5	17.5	57.3		7.4				
Green Ext Time (p_c), s	0.0	2.9		0.0	0.0	0.0		0.0				

Intersection Summary

HCM 6th Ctrl Delay	48.6
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.

18-0555 SmokeTree Resort
2029 Total AM

7: Quail Run Rd & Access A
HCM 6th TWSC

Intersection						
Int Delay, s/veh	5.1					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	W		T			T
Traffic Vol, veh/h	0	8	6	0	11	4
Future Vol, veh/h	0	8	6	0	11	4
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	7	0	12	4

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	35	7	0	0	7
Stage 1	7	-	-	-	-
Stage 2	28	-	-	-	-
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	978	1075	-	-	1614
Stage 1	1016	-	-	-	-
Stage 2	995	-	-	-	-
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	971	1075	-	-	1614
Mov Cap-2 Maneuver	971	-	-	-	-
Stage 1	1016	-	-	-	-
Stage 2	988	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.4	0	5.3
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	1075	1614
HCM Lane V/C Ratio	-	-	0.008	0.008
HCM Control Delay (s)	-	-	8.4	7.2
HCM Lane LOS	-	-	A	A
HCM 95th %tile Q(veh)	-	-	0	0

18-0555 SmokeTree Resort
2029 Total PM

7: Quail Run Rd & Access A
HCM 6th TWSC

Intersection						
Int Delay, s/veh	6.9					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	W		T			T
Traffic Vol, veh/h	0	17	3	0	29	2
Future Vol, veh/h	0	17	3	0	29	2
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	19	3	0	32	2

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	69	3	0	0	3
Stage 1	3	-	-	-	-
Stage 2	66	-	-	-	-
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	936	1081	-	-	1619
Stage 1	1020	-	-	-	-
Stage 2	957	-	-	-	-
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	917	1081	-	-	1619
Mov Cap-2 Maneuver	917	-	-	-	-
Stage 1	1020	-	-	-	-
Stage 2	938	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.4	0	6.8
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	1081	1619
HCM Lane V/C Ratio	-	-	0.017	0.02
HCM Control Delay (s)	-	-	8.4	7.3
HCM Lane LOS	-	-	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0.1

APPENDIX K

QUEUE STORAGE ANALYSIS

Signalized Intersections

2029

Average Vehicle Length, VL (Per Table 9-23, AASHTO "Green Book" 2018, p 9-99)

Intersection Cycle Length (sec): 130

Cycles per Hour: 28 Queuing Cycles: 2

Truck % = 2%

VL (ft) = 25

Average Vehicle Length

Table 9-23	
Truck%	VL (ft)
0%	25
2%	25
10%	32
15%	35
20%	38
25%	41

Equation Used Storage Length, SL, = 2 x (vehicles/hour)/(cycles/hour) x Average Vehicle Length

Intersection	Cycle Length	Move-ment	AM Peak (veh/hr)	Midday Peak (veh/hr)	PM Peak (veh/hr)	Max vehs per 2 cycles	AASHTO Storage Length (ft)	Synchro 95 th %-ile Q
Mockingbird Lane & Lincoln Drive	130	NB Left	23	0	20	2	50'	35
		SB Left	57	0	59	5	125'	90
		EB Left	220	0	212	16	400'	140
		WB Left	17	0	13	2	50'	25
		SB Right	210	0	298	22	550'	460
		WB Right	49	0	66	5	125'	45
Quail Run Road & Lincoln Drive	130	EB Left	55	0	43	4	100'	100
		WB Left	7	0	17	2	50'	25
		WB Right	68	0	36	5	125'	275
Scottsdale Road & Lincoln Drive	130	NB Left	265	0	379	28	700'	335
		SB Left	29	0	55	4	100'	115
		EB Left	630	0	720	52	1,300'	690
		WB Left	23	0	42	4	100'	70
		SB Right	482	0	788	57	1,425'	1,010
		EB Right	366	0	403	30	750'	525

*Note: Truck/Passenger Vehicle split is projected based on percentage and not reflective of actual vehicle classification counts.

"Yield" for turns indicates that, while movement may or may not be subject to a Yield sign, vehicles must yield to oncoming traffic and may experience delays.

Unsignalized Intersections 2029

Left Turns (Per AASHTO "Green Book" 2018, pp 9-96 to 9-99)

Equation 9-3	Equation 9-4
U.S. Customary	U.S. Customary
$c = \frac{V_o e^{-V_o t_c / 3600}}{1 - e^{-V_o t_f / 3600}}$ where: c = left-turn capacity, veh/h V_o = major-road volume conflicting with the minor movement, assumed to be equal to one-half of the two-way major-road volume, veh/h t_c = critical gap, s t_f = follow-up gap, s	$SL = \left\{ \frac{\ln [P(n > N)]}{\ln \left[\frac{v}{c} \right]} - 1 \right\} \times VL$ where: SL = storage length, ft $P(n > N)$ = probability of turn-lane overflow v = left-turn vehicle volume, veh/h c = left-turn capacity, veh/h VL = average length per vehicle, ft

Table 9-23	
Truck%	VL (ft)
0%	25
5%	28
10%	32
15%	35
20%	38
25%	41

Per Section 9.7.2.2 Storage Length

c (veh/hr) = *calculated* Left-Turn Capacity
 V_o (veh/hr) = Opposing Major Road Volume
 t_c (sec) = 6.25 85th %-ile Critical Gap
 t_f (sec) = 2.50 Follow-Up Gap
 SL (ft) = *calculated* Storage Length
 $P(n > N)$ = 0.005 (a probability, no units)
 v (veh/hr) = *enter below* Left-Turn Vehicle Volume

Truck % = 2%

VL (ft) = 25 Average Vehicle Length

Right Turns: Equation Used: storage length = 2 x (vehicles/hour)/(60 minutes/hour) x average vehicle length

Intersection	Move-ment	AM Peak (veh/hr)	Midday Peak (veh/hr)	PM Peak (veh/hr)	Veh per 2 minutes	Opposing V_o (veh/hr)	AASHTO Storage Length (ft)	Synchro 95 th %-ile Q
Access B/Shared Driveway &	WB Left	21	0	31	2	1,093	25	25'
	SB Left	4	0	3	1	6	25	0'
AJ's Driveway & Lincoln Drive	EB Left	23	0	9	1	705	25	25'
	WB Left	13	0	7	1	981	25	0'
	SB Right	11	0	21	1	0	25	25'
Quail Run Road & Access A	SB Left	11	0	29	1	3	25'	50'
	WB Right	8	0	17	1	0	25'	70'

*Note: Truck/Passenger Vehicle split is projected based on percentage and not reflective of actual vehicle classification counts.

"Yield" for turns indicates that, while movement may or may not be subject to a Yield sign, vehicles must yield to oncoming traffic and may experience delays.

APPENDIX L

SIGHT DISTANCE ANALYSIS

18-0555 Smoke Tree Resort

Sight Distance Analysis

Location: Lincoln Drive

Assumptions and/or Given

Elements of Design from AASHTO

6th Edition

AASHTO Ref

Driver Eye Height		
Passenger Vehicle	3.50 ft	§3.2.6.1, p 3-15
Truck	7.60 ft	§3.2.6.1, p 3-15
Object Height		
Stopping Sight Distance	2.00 ft	§3.2.6.2, p 3-15
Passing Sight Distance	3.50 ft	§3.2.6.2, p 3-15
Vehicle Height	4.25 ft	§3.2.6.1, p 3-15
Driver Eye Location		
From Edge of Major Rd Traveled Way	14.50 ft	§9.5.3.2.1, p 9-43
Deceleration Rate (a)		
Passenger Vehicle	11.20 ft/sec ²	§3.2.2.2, p 3-4
Truck	N/A ft	
Brake reaction time (t)	2.50 sec	§3.2.2.1, p 3-3

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 Right 1.0	Tbl 9-5, p 9-42
Major Road Through Lanes on Each Approach	2.0	(Use 1 for RI/RO/LI only)
Median Width (in "Lane Equivalents")	1.0	(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

Neglecting Effect of Grade

$$d = 1.47Vt + 1.075 \frac{V^2}{a} \quad \text{Eq 3-2, p 3-5}$$

Calculated d= 359.8 ft
Design d= 360 ft

With Effect of Grade

$$d = 1.47Vt + \frac{V^2}{30\left(\left(\frac{a}{32.2}\right) \pm G\right)} \quad \text{Eq 3-3, p 3-5}$$

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. §3.2.2.5, p 3-6



18-0555 Smoke Tree Resort

Sight Distance Analysis

Location: Lincoln Drive

Intersection Sight Distances

AASHTO Ref

Case B—Intersections with Stop Control on the Minor Road §9.5.3.2, p 9-42

Case B1—Left Turn from the Minor Road

§9.5.3.2.1, p 9-43

Design Vehicle	Time Gap (t_g)	
Passenger Car	7.5 sec	Tbl 9-6, p 9-44
Single-Unit Truck	9.5 sec	Tbl 9-6, p 9-44
Combination Truck	11.5 sec	Tbl 9-6, p 9-44

Time gap adjustments

Add'l lanes to cross (1st 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	2.0	§9.5.3.2.1, p 9-44
Minor Road Approach Upgrade, if >3%	0 %	§9.5.3.2.1, p 9-44

Time Gap based on site data

Design Vehicle Gap+Adj for Approach Grade>3%+Adjs for Add'l Lanes & Median

Passenger Car	8.5 sec
Single-Unit Truck	10.9 sec
Combination Truck	12.9 sec

ISD to left & right along Major Road $ISD = 1.47V_{major}t_g$ (ft) Eq 9-1, p 9-45

		ISD to Left and Right
Passenger Car	calculated ISD= 562.3 ft design ISD= 565 ft	
Single-Unit Truck	calculated ISD= 721.0 ft design ISD= 725 ft	
Combination Truck	calculated ISD= 853.3 ft design ISD= 855 ft	



18-0555 Smoke Tree Resort**Sight Distance Analysis**

Location: Lincoln Drive

Intersection Sight Distances (cont'd)

		<i>AASHTO Ref</i>
Case B2—Right Turn from the Minor Road &		§9.5.3.2.2, p 9-47
Case B3—Crossing Maneuver from the Minor Road		§9.5.3.2.3, p 9-48
Design Vehicle	Time Gap (t_g)	
Passenger Car	6.5 sec	Tbl 9-8, p 9-47
Single-Unit Truck	8.5 sec	&
Combination Truck	10.5 sec	Tbl 9-10, p 9-49
Time gap adjustments		
Add'l lanes to cross (1 st is assumed) - Case B-3 Only*		
Passenger Car	0.5 sec	See Notes
Trucks	0.7 sec	below
Minor Approach Upgrade (Per each 1%>3%)		
Case B-2 Only	0.1 sec	Tbl 9-8, p 9-47
Case B-3 Only	0.2 sec	Tbl 9-10, p 9-49
Site data		
Major Road Lanes on Left Approach	2.0	§9.5.3.2.2, p 9-47
Minor Road Approach Upgrade, if >3%	0 %	§9.5.3.2.2, p 9-47

Time Gap based on site data (sec)	B2 & B3	B3 Only
<i>Design Vehicle Gap+Adj for Approach Grade>3% (+Adjs for Add'l Lanes & Median for B3)</i>		
Passenger Car	7.5	8.0
Single-Unit Truck	9.9	10.6
Combination Truck	11.9	12.6

ISD to left (B2/B3) & right (B3) along Major Rd $ISD = 1.47V_{major}t_g$ (ft) Eq 9-1, p 9-45

		ISD to Left	ISD to right
		(B2 & B3)	(B3 Only)
Passenger Car	calculated ISD=	496.1	529.2
	design ISD=	500	530
Single-Unit Truck	calculated ISD=	654.9	701.2
	design ISD=	655	705
Combination Truck	calculated ISD=	787.2	833.5
	design ISD=	790	835

*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. §9.5.3.2.3, p 9-48

**18-0555 Smoke Tree Resort****Sight Distance Analysis**

Location: Lincoln Drive

Intersection Sight Distances (cont'd)

		<i>AASHTO Ref</i>
Case F—Left Turns from the Major Road		§9.5.3.6, p 9-56
Design Vehicle	Time Gap (t_g)	
Passenger Car	5.5 sec	Tbl 9-16, p 9-57
Single-Unit Truck	6.5 sec	Tbl 9-16, p 9-57
Combination Truck	7.5 sec	Tbl 9-16, p 9-57
Time gap adjustments		
Add'l lanes to cross (1 assumed)		
Passenger Car	0.5 sec	See Notes to
Trucks	0.7 sec	Tbl 9-16, p 9-57
Site data		
Opposing Lanes (adj'd for x-wide median)	2.0	
Time Gap based on site data		
<i>Design Vehicle Gap+Adj for Add'l Opposing Lanes</i>		
Passenger Car	6.5 sec	
Single-Unit Truck	7.9 sec	
Combination Truck	8.9 sec	
ISD to front along Major Road	$ISD = 1.47V_{major}t_g$ (ft)	Eq 9-1, p 9-45
Passenger Car	calculated ISD=	430.0 ft
	design ISD=	430 ft
Single-Unit Truck	calculated ISD=	522.6 ft
	design ISD=	525 ft
Combination Truck	calculated ISD=	588.7 ft
	design ISD=	590 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. §9.5.3.6, p 9-58

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	565	725	855
To Left	B2/B3	500	655	790
On Major Road	F	430	525	590



18-0555 Smoke Tree Resort

Sight Distance Analysis

Location: Quail Run Rd

Assumptions and/or Given

Elements of Design from AASHTO

6th Edition

AASHTO Ref

Driver Eye Height		
Passenger Vehicle	3.50 ft	§3.2.6.1, p 3-15
Truck	7.60 ft	§3.2.6.1, p 3-15
Object Height		
Stopping Sight Distance	2.00 ft	§3.2.6.2, p 3-15
Passing Sight Distance	3.50 ft	§3.2.6.2, p 3-15
Vehicle Height	4.25 ft	§3.2.6.1, p 3-15
Driver Eye Location		
From Edge of Major Rd Traveled Way	14.50 ft	§9.5.3.2.1, p 9-43
Deceleration Rate (a)		
Passenger Vehicle	11.20 ft/sec ²	§3.2.2.2, p 3-4
Truck	N/A ft	
Brake reaction time (t)	2.50 sec	§3.2.2.1, p 3-3

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 9-5, p 9-42
	Right 1.0	
Major Road Through Lanes on Each Approach	1.0	(Use 1 for RI/RO/LI only)
Median Width (in "Lane Equivalents")	0.0	(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

Neglecting Effect of Grade

$$d = 1.47Vt + 1.075 \frac{V^2}{a} \quad \text{Eq 3-2, p 3-5}$$

Calculated d= 196.7 ft
Design d= 200 ft

With Effect of Grade

$$d = 1.47Vt + \frac{V^2}{30\left(\left(\frac{a}{32.2}\right) \pm G\right)} \quad \text{Eq 3-3, p 3-5}$$

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. §3.2.2.5, p 3-6



18-0555 Smoke Tree Resort

Sight Distance Analysis

Location: Quail Run Rd

Intersection Sight Distances

AASHTO Ref

Case B—Intersections with Stop Control on the Minor Road

§9.5.3.2, p 9-42

Case B1—Left Turn from the Minor Road

§9.5.3.2.1, p 9-43

Design Vehicle	Time Gap (t_g)	
Passenger Car	7.5 sec	Tbl 9-6, p 9-44
Single-Unit Truck	9.5 sec	Tbl 9-6, p 9-44
Combination Truck	11.5 sec	Tbl 9-6, p 9-44

Time gap adjustments

Add'l lanes to cross (1st 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	1.0	§9.5.3.2.1, p 9-44
Minor Road Approach Upgrade, if >3%	0 %	§9.5.3.2.1, p 9-44

Time Gap based on site data

Design Vehicle Gap+Adj for Approach Grade>3%+Adjs for Add'l Lanes & Median

Passenger Car	7.5 sec
Single-Unit Truck	9.5 sec
Combination Truck	11.5 sec

ISD to left & right along Major Road $ISD = 1.47V_{major}t_g$ (ft) Eq 9-1, p 9-45

		ISD to Left and Right
Passenger Car	calculated ISD= 330.8 ft	design ISD= 335 ft
Single-Unit Truck	calculated ISD= 419.0 ft	design ISD= 420 ft
Combination Truck	calculated ISD= 507.2 ft	design ISD= 510 ft



18-0555 Smoke Tree Resort

Sight Distance Analysis

Location: Quail Run Rd

Intersection Sight Distances (cont'd)

		AASHTO Ref
<u>Case B2—Right Turn from the Minor Road</u>		§9.5.3.2.2, p 9-47
&		
<u>Case B3—Crossing Maneuver from the Minor Road</u>		§9.5.3.2.3, p 9-48
Design Vehicle	Time Gap (t_g)	
Passenger Car	6.5 sec	Tbl 9-8, p 9-47
Single-Unit Truck	8.5 sec	&
Combination Truck	10.5 sec	Tbl 9-10, p 9-49
Time gap adjustments		
Add'l lanes to cross (1 st is assumed) - Case B-3 Only*		
Passenger Car	0.5 sec	See Notes
Trucks	0.7 sec	below
Minor Approach Upgrade (Per each 1%>3%)		
Case B-2 Only	0.1 sec	Tbl 9-8, p 9-47
Case B-3 Only	0.2 sec	Tbl 9-10, p 9-49
Site data		
Major Road Lanes on Left Approach	1.0	§9.5.3.2.2, p 9-47
Minor Road Approach Upgrade, if >3%	0 %	§9.5.3.2.2, p 9-47

Time Gap based on site data (sec)		B2 & B3	B3 Only
<i>Design Vehicle Gap+Adj for Approach Grade>3% (+Adjs for Add'l Lanes & Median for B3)</i>			
Passenger Car		6.5	6.5
Single-Unit Truck		8.5	8.5
Combination Truck		10.5	10.5

ISD to left (B2/B3) & right (B3) along Major Rd $ISD=1.47V_{major}t_g$ (ft) Eq 9-1, p 9-45

		ISD to Left ISD to right (B2 & B3) (B3 Only)	
Passenger Car	calculated ISD=	286.7	286.7
	design ISD=	290	290
Single-Unit Truck	calculated ISD=	374.9	374.9
	design ISD=	375	375
Combination Truck	calculated ISD=	463.1	463.1
	design ISD=	465	465

*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. §9.5.3.2.3, p 9-48



18-0555 Smoke Tree Resort

Sight Distance Analysis

Location: Quail Run Rd

Intersection Sight Distances (cont'd)

		AASHTO Ref	
Case F—Left Turns from the Major Road		§9.5.3.6, p 9-56	
Design Vehicle	Time Gap (t_g)		
Passenger Car	5.5 sec	Tbl 9-16, p 9-57	
Single-Unit Truck	6.5 sec	Tbl 9-16, p 9-57	
Combination Truck	7.5 sec	Tbl 9-16, p 9-57	
Time gap adjustments			
Add'l lanes to cross (1 assumed)			
Passenger Car	0.5 sec	See Notes to	
Trucks	0.7 sec	Tbl 9-16, p 9-57	
Site data			
Opposing Lanes (adj'd for x-wide median)	0.0		
Time Gap based on site data			
<i>Design Vehicle Gap+Adj for Add'l Opposing Lanes</i>			
Passenger Car	5.5 sec		
Single-Unit Truck	6.5 sec		
Combination Truck	7.5 sec		
ISD to front along Major Road	$ISD=1.47V_{major}t_g$ (ft)		Eq 9-1, p 9-45
Passenger Car	calculated ISD= 242.6 ft design ISD= 245 ft		
Single-Unit Truck	calculated ISD= 286.7 ft design ISD= 290 ft		
Combination Truck	calculated ISD= 330.8 ft design ISD= 335 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. §9.5.3.6, p 9-58

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	335	420	510
To Left	B2/B3	290	375	465
On Major Road	F	245	290	335

