CivTech

April 18, 2025

Mr. Bill Doherty
Walton Global Holdings
8800 N Gainey Center Drive, Suite 345
Scottsdale, Arizona, 85258

RE: TRIP GENERATION COMPARISON STATEMENT FOR SMOKETREE RESORT MIXED-USE HOTEL AND RESTAURANT PROJECT AT THE SEC OF QUAIL RUN DRIVE & LINCOLN DRIVE – PARADISE VALLEY, ARIZONA

Dear Mr. Doherty,

Thank you for retaining CivTech to provide a trip generation and comparison statement for the proposed Project planned to consist of 95 total resort hotel rooms which include 88 lodge rooms and 7 casita room keys. Additionally, the Smoketree Resort will provide a 6,880 square foot restaurant, a 285 square foot private dining area, and 830 square feet of grab & go meal area, a 300 square foot bar, and other hotel amenities. The restaurant includes 3,140 square feet of dining area and a 3,375 square foot kitchen. The proposed site plan is included herewith as **Attachment A**.

BACKGROUND AND PURPOSE

A Traffic Impact Analysis (TIA) was produced by CivTech for this project in December 2023 ('December 2023 TIA') based on the land use plan expected at that time. The Project is submitting a revised site plan which increases the number of hotel keys and decreases the square footage of other uses within the hotel. CivTech has been retained to provide a comparison analysis of the trip generation potential for the project based on the latest land use plan and the previously submitted land use plan as included in the December 2023 TIA.

PROPOSED DEVELOPMENT

The previous land use plan contained similar land uses at different quantities. The current and previous land use plans for the proposed development are summarized in **Table 1**.

Table 1 - Land Use Plan

Land Use	Previous Values		Current Values	
Hotel Guest*	82	Keys	95	Keys
Hotel Restaurant	8,577	SF	6,880	SF
Private Dining	608	SF	285	SF
Grab & Go Restaurant	928	SF	830	SF
Bar	448	SF	300	SF

*amenities such as pool, spa, and fitness are included within the hotel trip generation rate as noted in the ITE Trip Generation Manual.

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, 3rd Edition*. The ITE *Trip Generation Manual* contains data collected by various transportation professionals for a wide range of different land uses. The data are summarized in the report and average rates and equations have been established that correlate the relationship between an independent variable that describes the development size and generated trips for each categorized land use. The report provides information on daily and peak hour 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 pool bar and event space, are therefore included in the hotel trip generation.

Additionally, an internal capture percentage was applied to the Hotel Restaurant, Private Dining, and the Grab & Go because it is assumed that not all trips to and from these areas will be external. For these restaurant uses, it is anticipated that 50% of the trips will be arriving externally and the other 50% will be visiting other on-site uses. This is consistent with the internal capture assumptions used in the December 2023 TIA. **Table 2** depicts the trip generation summary for the proposed development. Trip generation calculations are provided in **Attachment B**.

Table 2 – Trip Generation Summary

Proposed Use	ITE LUC	Size	Units	Weekday Trips						
				Daily	AM			PM		
				Total	In	Out	Total	In	Out	Total
Previous Land Use Plan – December 2023										
Hotel/Resort Villas and Amenities	310	82	Rooms	466	19	15	34	17	16	33
Hotel Restaurant (Fine Dining Restaurant)	931	8,577	SF	720	5	1	6	45	22	67
Private Dining (Fine Dining Restaurant)	931	608	SF	50	0	0	0	3	2	5
Grab & Go (High Turn Over Restaurant)	932	928	SF	100	5	4	9	5	3	8
Bar (Fine Dining Restaurant)	931	448	SF	38	0	0	0	2	1	3
Previous Subtotal				**1,374**	**29**	**20**	**49**	**72**	**44**	**116**
Internal Capture Reduction				456	6	2	8	29	14	43
Previous Total External Trips				**918**	**23**	**18**	**41**	**43**	**30**	**73**
New Land Use Plan – February 2025										
Hotel/Resort Villas and Amenities	310	95	Rooms	606	22	18	40	21	21	42
Hotel Restaurant (Fine Dining Restaurant)	931	6,880	SF	576	4	1	5	36	18	54
Private Dining (Fine Dining Restaurant)	931	285	SF	24	0	0	0	1	1	2
Grab & Go (High Turn Over Restaurant)	932	830	SF	88	4	4	8	5	3	8
Bar (Fine Dining Restaurant)	931	300	SF	26	0	0	0	1	1	2
New Subtotal				**1,320**	**30**	**23**	**53**	**64**	**44**	**108**
Internal Capture Reduction				358	*4*	*3*	*7*	*23*	*10*	*33*
New Total External Trips				**962**	**26**	**20**	**46**	**41**	**34**	**75**
Difference New minus Previous				**44**	**3**	**2**	**5**	**-2**	**4**	**2**

CALCULATIONS (Equations shown only where applicable)			
Land Use [Units]	*Daily*	*AM Peak Hour*	*PM Peak Hour*
Hotel	$T_{Day} = U \times 10.84 - 423.51$	$T_{AM} = U \times 0.5 - 7.45$	$T_{PM} = U \times 0.74 - 27.89$
Hotel Restaurant	$T_{Day} = U \times 83.84$	$T_{AM} = U \times 0.73$	$T_{PM} = U \times 7.8$
Private Dining	$T_{Day} = U \times 83.84$	$T_{AM} = U \times 0.73$	$T_{PM} = U \times 7.8$
Grab & Go	$T_{Day} = U \times 107.20$	$T_{AM} = U \times 9.57$	$T_{PM} = U \times 9.05$
Bar	$T_{Day} = U \times 83.84$	$T_{AM} = U \times 0.73$	$T_{PM} = U \times 7.8$

*Note: U = Units

The proposed development is anticipated to generate approximately 962 external weekday daily trips, with 46 trips (26 in/ 20 out) occurring in the AM peak hour and 75 trips (41 in/ 34 out) occurring in the PM peak hour.

This is an increase of 44 daily trips, 5 AM peak hour trips, and 2 PM peak hour trips. While a reduction in keys would typically equate to a reduction in traffic, the small number of units associated with the land use in Trip Generation adjusts the trip rate slightly, thereby increasing the number of trips per room. The adjustment to the trip rate, when multiplied over the number of planned hotel rooms, creates a small increase in overall traffic. An increase of 3 inbound trips and of 2 outbound trips, over the course of an entire hour, divided between two access points, is not expected to result in access point operations that differ from what was expected with previous trip generation results. No recommendations are amended as a result of this increase.

CONCLUSIONS

From the above, the following can be concluded:

- The updated land use plan for the proposed development will consist of 95 total resort hotel keys which include 88 lodge keys and 7 casita room keys. Additionally, the Smoketree Resort will provide a 6,880 square foot restaurant, a 285 square foot private dining area, and 830 square feet of grab & go meal area, a 300 square foot bar, and other hotel amenities.
- The proposed development is anticipated to generate approximately 962 external weekday daily trips, with 46 trips (26 in/ 20 out) occurring in the AM peak hour and 75 trips (41 in/ 34 out) occurring in the PM peak hour.
- This is an increase of 44 daily trips, 5 AM peak hour trips, and 2 PM peak hour trips. An increase of 3 inbound trips and of 2 outbound trips, over the course of an entire hour, divided between two access points, is not expected to result in access point operations that differ from what was expected with previous trip generation results. No recommendations are amended as a result of this increase.

Thank you for allowing CivTech to assist you on this project. Please contact me with any questions you may have on this Parking Statement.

Sincerely,

CivTech

Dawn Cartier, P.E., PTOE

Attachments (2)

A. Site Plan
B. Trip Generation Calculations

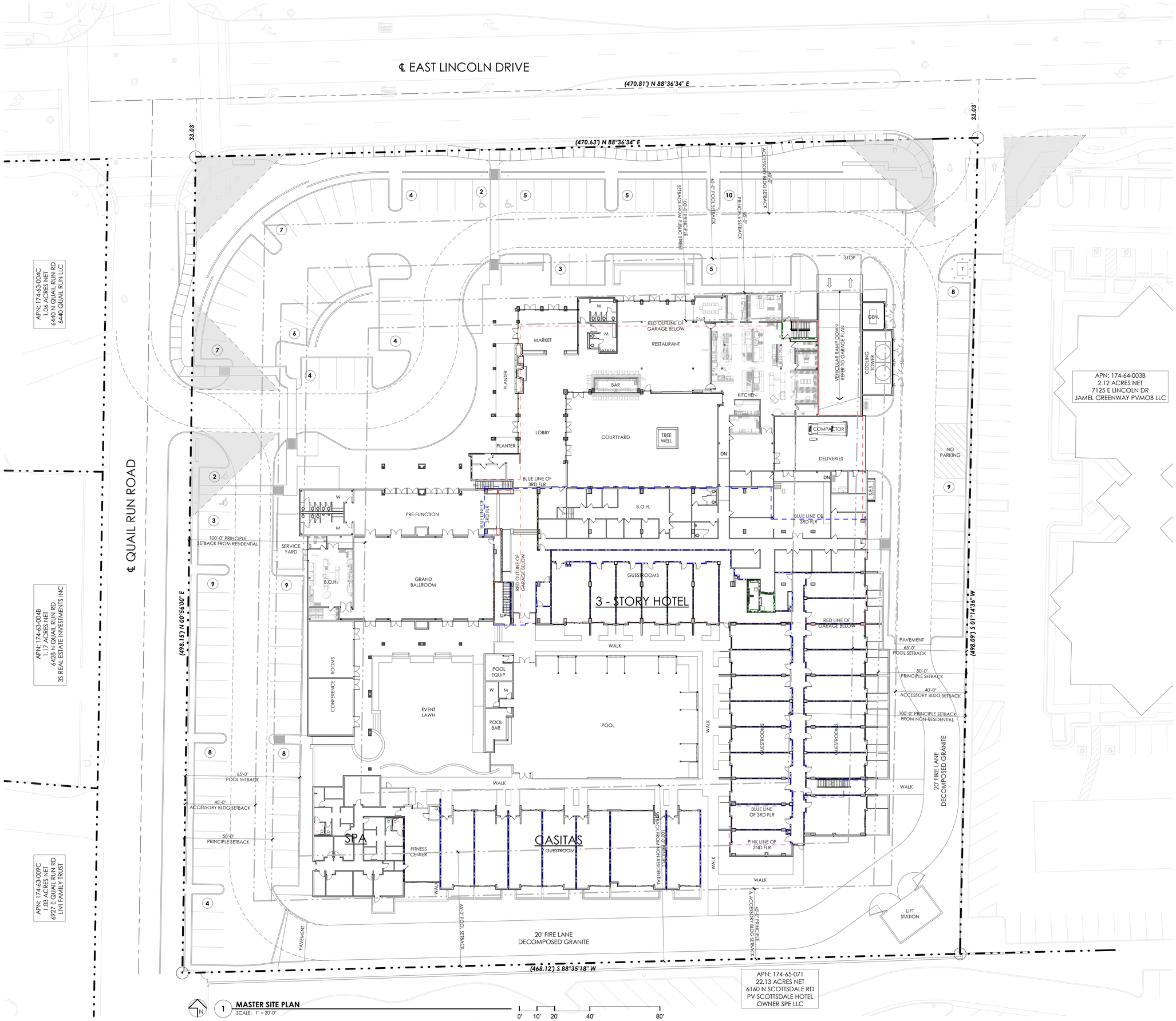
ATTACHMENT A

SITE PLAN

Allen + Philp Partners
architects · interiors
7154 East Stetson Drive | 4th Floor | Scottsdale, AZ 85251 | 480.990.2800 | allenphilp.com

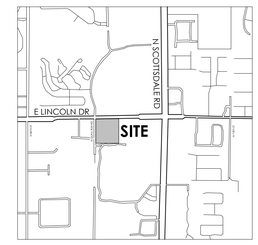
SMOKETREE RESORT
7101 E. Lincoln Drive, Paradise Valley, AZ

Walton



1 **MASTER SITE PLAN**
SCALE: 1" = 20'-0"

VICINITY MAP



NUM	ISSUE TITLE	DATE
1	SCHEMATIC DESIGN	10/01/24

ARCHITECTURAL SITE PLAN

NOT FOR CONSTRUCTION OR RECORDING FOR REVIEW AND BIDDING ONLY

Sheet Issue Date: 10/01/24
Project Number: AP2207
Checked By: BC
Drawn By: BC

A11.1.1

1/23/2025 2:40:30 PM

ATTACHMENT B

TRIP GENERATION CALCULATIONS

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
Hotel	95	Rooms	310	Hotel
Hotel Restauraunt	6.880	1,000 square feet	931	Fine Dining Restaurant
Private Dining	0.285	1,000 square feet	931	Fine Dining Restaurant
Grab & Go	0.830	1,000 square feet	932	High Turnover(Sit Down) Restaurant
Bar	0.300	1,000 square feet	931	Fine Dining Restaurant

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 Available	ADT Used	AM Peak Hour Available	AM Peak Hour Used	PM Peak Hour Available	PM Peak Hour Used	(not used)	
Hotel	General Urban/Suburban	G	G C	G	G D C	G	G D C	G		
Hotel Restauraunt	General Urban/Suburban	G	G	G	G	G	G	G		
Private Dining	General Urban/Suburban	G	G	G	G	G	G	G		
Grab & Go	General Urban/Suburban	G	G	G	G	G	G D	G		
Bar	General Urban/Suburban	G	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.

Box 4 - Is Study Site Multimodal?

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 approach is required if the study site is located in an infill setting, contains a mix of uses on-site, or is near significant transit service."

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

Vehicle 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	(not used)
Hotel	FC: T=10.84*X-423.51 [6.38]	FC: T=0.5*X-7.45 [0.42]	FC: T=0.74*X-27.89 [0.45]	
Hotel Restauraunt	WA: T=X*83.84 [83.84]	WA: T=X*0.73 [0.73]	WA: T=X*7.8 [7.80]	
Private Dining	WA: T=X*83.84 [83.84]	WA: T=X*0.73 [0.73]	WA: T=X*7.8 [7.80]	
Grab & Go	WA: T=X*107.2 [107.20]	WA: T=X*9.57 [9.57]	WA: T=X*9.05 [9.05]	
Bar	WA: T=X*83.84 [83.84]	WA: T=X*0.73 [0.73]	WA: T=X*7.8 [7.80]	

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

Baseline Vehicular Trips

Proposed Use	ADT % In	ADT In	ADT Out	ADT Total	AM Peak Hour % In	AM Peak Hour In	AM Peak Hour Out	AM Peak Hour Total	PM Peak Hour % In	PM Peak Hour In	PM Peak Hour Out	PM Peak Hour Total	(not used)
Hotel	50%	303	303	606	56%	22	18	40	51%	21	21	42	
Hotel Restauraunt	50%	288	288	576	80%	4	1	5	67%	36	18	54	
Private Dining	50%	12	12	24	80%	0	0	0	67%	1	1	2	
Grab & Go	50%	44	44	88	55%	4	4	8	61%	5	3	8	
Bar	50%	13	13	26	80%	0	0	0	67%	1	1	2	
Totals		**660**	**660**	**1,320**		**30**	**23**	**53**		**64**	**44**	**108**	

If vehicle trip reductions are not applied for internal capture and alternative mode, vehicle trips may be separtated 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 capure 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				(not used)			
	Percent	In	Out	Total	Percent	In	Out	Total	Percent	In	Out	Total				
Hotel	0%	0	0	0	0%	0	0	0	0%	0	0	0				
Hotel Restauraunt	50%	144	144	288	50%	2	1	3	50%	18	9	27				
Private Dining	50%	6	6	12	50%	0	0	0	50%	1	0	1				
Grab & Go	50%	22	22	44	50%	2	2	4	50%	3	1	4				
Bar	50%	7	7	14	50%	0	0	0	50%	1	0	1				
Totals		**179**	**179**	**358**		**4**	**3**	**7**		**23**	**10**	**33**				

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

Alternate mode reductions are applied to account for trips to/from the study site made any means except as the driver of a personal vehicle (though carpooling is separate in Box 9). Alternative mode reductions, with respect to trips entering/existing the site, include trips where more than one mode is used as long as the trip is not in a vehicle when crossing the boundary of the study site. The reduction is applied as a percent of vehicular trips removed from total external trips. The reduction percentage used does not include any amount of alternate mode trips that are accounted for in the baseline rates; the Dense Multi-Urban Use and City Core settings already account for alternate mode trips, though further reduction may still be reasonable in specific circumstances. The table below presents the alternative mode percentages and trips in units of vehicle trips. CivTech can provide trips in units of persons if requested.

Adjustments for Alternate Mode Trips

Proposed Use	ADT				AM Peak Hour				PM Peak Hour				(not used)			
	Percent	In	Out	Total	Percent	In	Out	Total	Percent	In	Out	Total				
Hotel	0%	0	0	0	0%	0	0	0	0%	0	0	0				
Hotel Restauraunt	0%	0	0	0	0%	0	0	0	0%	0	0	0				
Private Dining	0%	0	0	0	0%	0	0	0	0%	0	0	0				
Grab & Go	0%	0	0	0	0%	0	0	0	0%	0	0	0				
Bar	0%	0	0	0	0%	0	0	0	0%	0	0	0				
Totals	**0%**	**0**	**0**	**0**	**0%**	**0**	**0**	**0**	**0%**	**0**	**0**	**0**				

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				(not used)			
		In	Out	Total		In	Out	Total		In	Out	Total				
Hotel		303	303	606	55%	22	18	40	50%	21	21	42				
Hotel Restauraunt		144	144	288	100%	2	0	2	67%	18	9	27				
Private Dining		6	6	12	0%	0	0	0	0%	0	1	1				
Grab & Go		22	22	44	50%	2	2	4	50%	2	2	4				
Bar		6	6	12	0%	0	0	0	0%	0	1	1				
Totals		**481**	**481**	**962**		**26**	**20**	**46**		**41**	**34**	**75**				

SUP-23-01
Traffic Impact Analysis

Smoketree Resort

Traffic Impact Analysis
8th Submittal

7101 E. Lincoln Drive
Town of Paradise Valley, Arizona

December 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:

CivTech

10605 North Hayden Road
Suite 140
Scottsdale, Arizona 85260
480-659-4250

SMOKETREE RESORT
TRAFFIC IMPACT ANALYSIS

7101 E Lincoln Drive
Town of Paradise Valley, Arizona

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

For Submittal to:
Town of Paradise Valley, City of Scottsdale

Prepared By:

CivTech Inc.
10605 North Hayden Road
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Office: (480) 659-4250
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December 2023

CivTech Project No. 18-0555

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EXECUTIVE SUMMARY

This report documents a traffic impact analysis performed for the proposed Smoketree Resort south of Lincoln Road between Mockingbird Lane and Scottsdale Road in the Town of Paradise Valley. The proposed development will consist of 82 hotel rooms composed of 77 lodge rooms and 5 casita room keys. Additionally, the Smoketree Resort will provide a 5,577 square foot restaurant, a 608 square foot private dining area, a 928 square foot Grab & Go meal area, a 448 square foot bar, a 200-seat meeting/event space, and other hotel amenities.

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 918 external weekday daily trips, with 41 trips (23 in/ 18 out) occurring in the AM peak hour and 73 trips (43 in/ 30 out) occurring in the PM peak hour.

EXISTING CONDITIONS

- 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.

OPENING YEAR 2026

- The results of the 2026 peak hour analysis are summarized indicate that most intersections will operate at an overall acceptable level of service (LOS D or better) with the exception of **Mockingbird Lane & Lincoln Drive, Smoke Tree Driveway East & Lincoln Drive,** and **Scottsdale Road & Lincoln Drive**.
    - The intersection of **Mockingbird Lane and Lincoln Drive** is expected to experience undesirable delay in the southbound approach. The southbound approach experiences undesirable delay during the AM and PM peak hours in both the no-build and build scenarios in the 2026 opening year. The addition of an overlap phase for the southbound right-turn could be expected to mitigate delay particularly in the PM Peak Hour. With the issue existing in the no build condition, no recommendation for improvement is made.
    - The intersection of **Scottsdale Road and Lincoln Drive** is expected to experience undesirable delay in the westbound approach. The westbound approach experiences undesirable delay during the AM and PM peak hours in both the no-build and build scenarios in the 2026 opening year.
- The 2026 opening year level of service delays are provided for comparison to the 2031 horizon year delays. All mitigation analyses were performed based on the highest projected volumes and delays which occur in the horizon year 2031.
- Striping of a dedicated northbound left-turn lane at the intersection of Quail Run Road and Lincoln Drive in good geometric opposition to the expected southbound left-turn lane is recommended in the opening year.

HORIZON YEAR 2031

- The results of the 2031 peak hour analysis indicate that all intersections currently operate at an overall acceptable level of service (LOS D or better) with the exception of **Mockingbird Lane & Lincoln Drive, Smoke Tree Driveway East & Lincoln Drive,** and **Scottsdale Road & Lincoln Drive**.
    - The intersection of **Mockingbird Lane and Lincoln Drive** is expected to experience undesirable delay in the southbound approach. The southbound approach experiences undesirable delay during the PM peak hour in both the no-build and build scenarios in the 2031 horizon year. The signalized intersection is expected to operate with lower delays in the 2031 horizon year than in the opening year 2026. The increase in volumes from 2026 to 2031 likely caused a more even balance of volumes on each approach, which will allow an actuated signal to operate more efficiently.
    - The intersection of **Smoke Tree Driveway and Lincoln Drive** is expected to experience undesirable delay in the northbound shared approach. The northbound shared approach experiences undesirable delay during the PM peak hour in both the no-build and build scenarios in the 2031 horizon year.

- The intersection of **Scottsdale Road and Lincoln Drive** is expected to experience undesirable delay in the eastbound and westbound approaches in both the no-build and build scenarios. The eastbound approach experiences undesirable delay during the PM peak hour in both the no-build and build scenarios in the 2031 horizon year. The westbound approach experiences undesirable delay in the AM and PM peak hours in both the no-build and build scenarios in the 2031 horizon year. It is possible to mitigate the eastbound and overall delay slightly, by adjusting green times to allow for more through time in the eastbound approach. With the mitigation measures, the intersection is expected to operate with an acceptable overall intersection delay.
  - Adjusting the timing by no greater than 10 seconds during the AM peak hour results in a decrease in eastbound delay from 55.1 sec/veh (LOS E) to 43.6 sec/veh (LOS D) and the overall intersection delay decreases from 35.9 sec/veh (LOS D) to 34.4 sec/veh (LOS C). With the decrease in delay in the eastbound approach there are marginal increases (<10 sec/veh) in delay in the northbound and southbound approaches.
  - During the PM peak hour, increasing cycle length to 125 seconds is able to decrease the eastbound delay from 73.0 sec/veh (LOS E) to 62.5 sec/veh (LOS E) and the overall intersection delay from 62.5 sec/veh (LOS E) to 54.1 sec/veh (LOS D). With the decrease in delay in the eastbound approach, there is a marginal increase (<10 sec/veh) in delay in the northbound approach, and an increase in delay in the westbound approach from 59.9 sec/veh (LOS E) to 72.3 sec/veh (LOS E).
  - In order to mitigate the delays at this intersection, 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

- A DO NOT BLOCK pavement marking and striping at the private internal drive intersection, south of Smoke Tree Driveway East & Lincoln Drive, is recommended to prevent conflicts due to onsite queue stacking.
- The recommended storage lengths in **Table 9** are provided for horizon year 2031 using the total traffic projections.

SIGHT DISTANCE

- Adequate site distance must be provided at the intersections to allow safe left and right turning movements from the development.
  - 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 82 hotel rooms composed of 77 lodge rooms and 5 casita room keys. Additionally, the Smoke Tree Resort will provide a 8,577 square foot restaurant, a 608 square foot private dining area, a 928 square foot Grab & Go meal area, a 448 square foot bar, a 200-seat event/meeting space, and other hotel amenities.

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 East & Lincoln Drive
- AJ's Center 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 to be fully built out by 2026. Therefore, the analysis years to be analyzed for this study include the opening year 2026 and horizon year 2031. A vicinity map of the study area is provided in **Figure 1**.

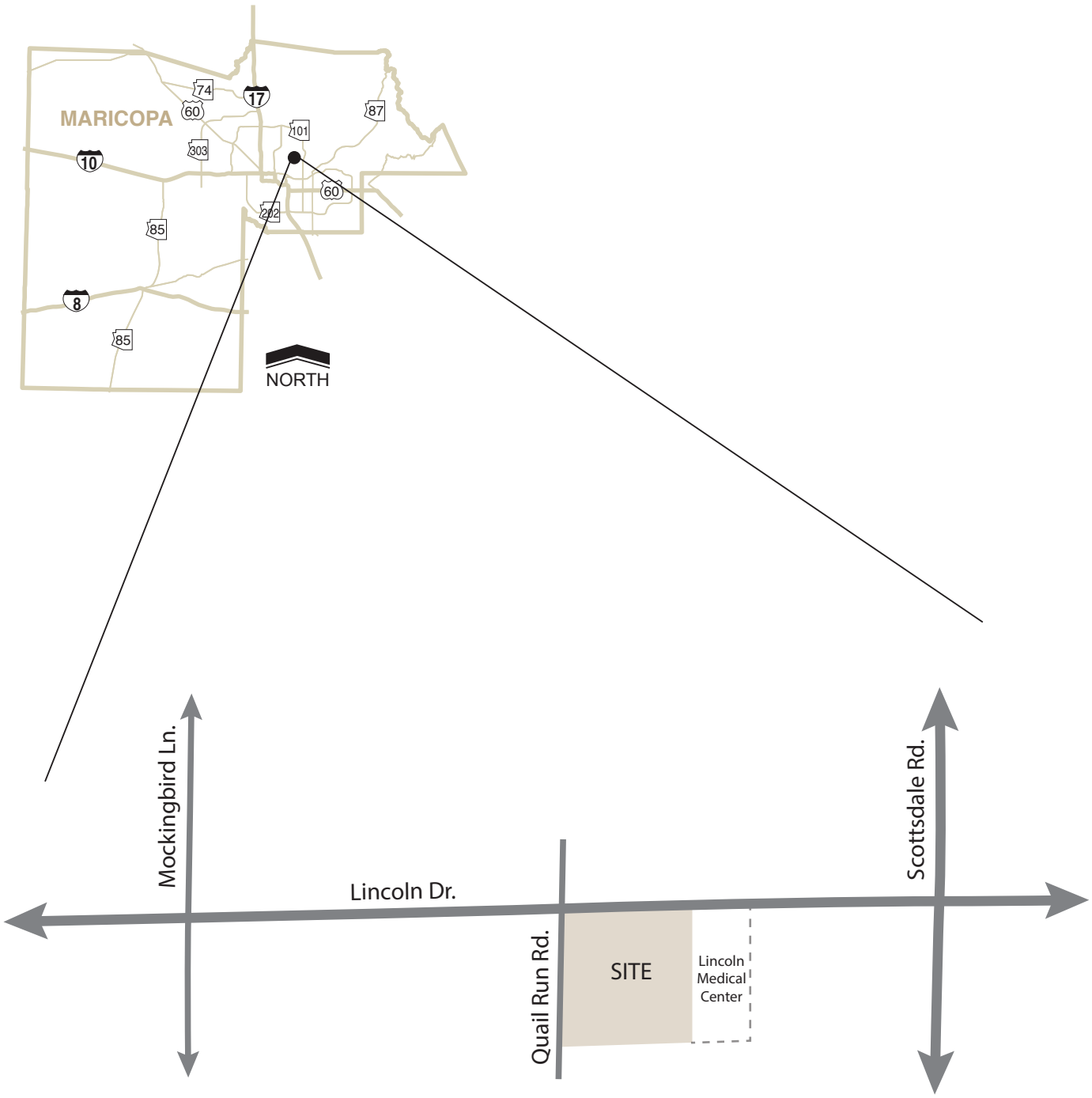


Figure 1: Vicinity Map

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. The roadway classifications were obtained from the Town of Paradise Valley Street Classification Map.

Mockingbird Lane is a north-south three-lane minor arterial 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 major arterial 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 local 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 major arterial 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-permitted left-turn phasing in the southbound and eastbound approaches and permitted left-turn phasing in 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 intersection with permitted-protected left-turn phasing in the eastbound approach and permitted left-turn phasing in the northbound, southbound, and westbound approaches. The northbound approach provides one shared left-turn/through/right-turn lane. The eastbound approach provides an exclusive left-turn lane, one through lane, and one shared through/right-turn lane. The westbound approach provides one exclusive left-turn lane, two through lanes, and a dedicated right-turn lane. The westbound approach is equipped for permitted-protected left turn phasing, but it is not implemented. The southbound approach provides one shared left-turn/through/right-turn lane.

The intersection of **Smoke Tree Driveway East 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 Center 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 AJ's Center Driveway and Lincoln Drive is maintained by the City of Scottsdale.

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 intersection of Scottsdale Road and Lincoln Drive is maintained by the City of Scottsdale.

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

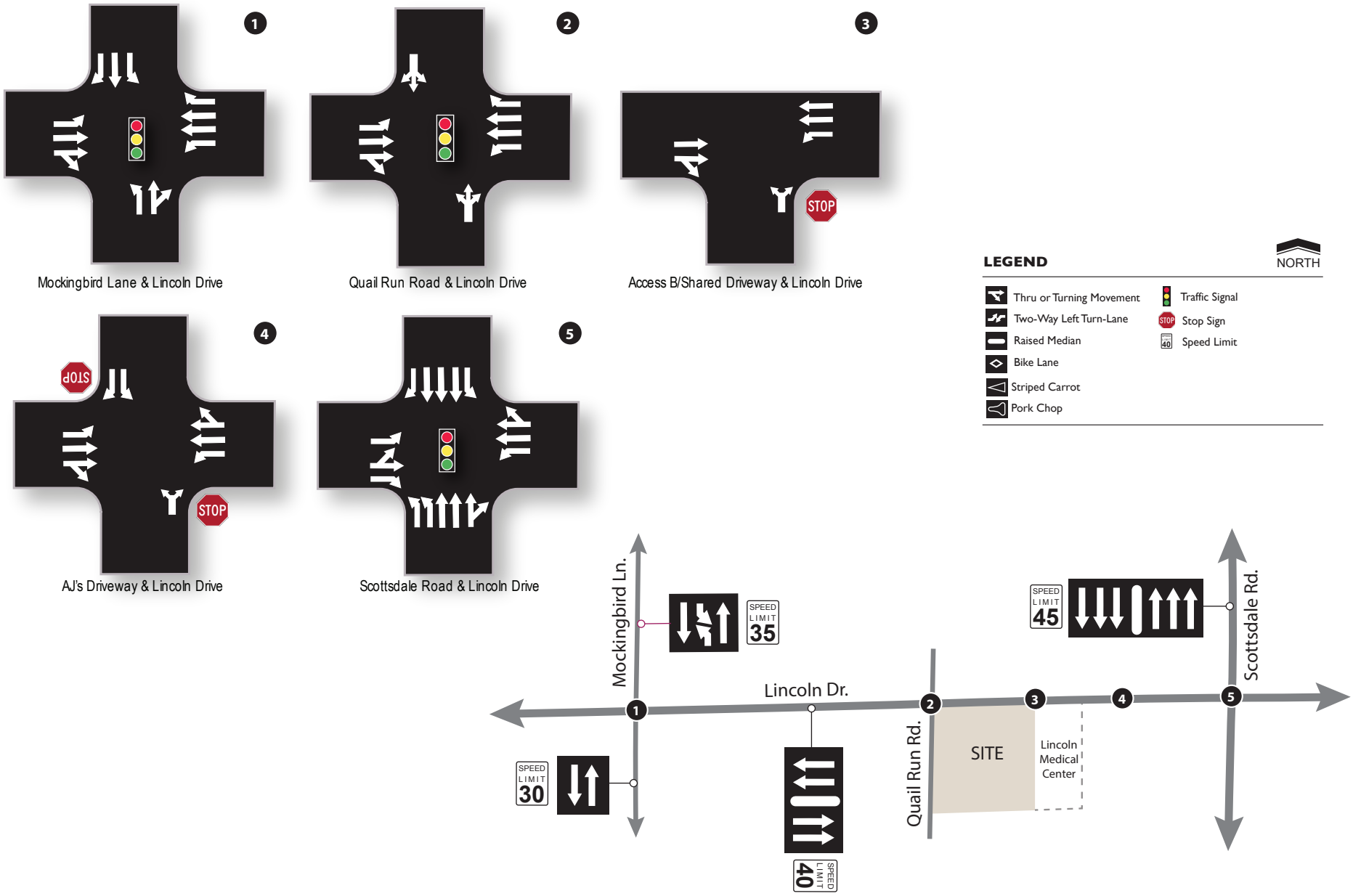


Figure 2: Existing Lane Configurations and Traffic Controls

EXISTING TRAFFIC VOLUMES

CivTech engaged Field Data Services of Arizona, Inc. to record traffic volumes at five (5) 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
- Smoke Tree Driveway East & Lincoln Drive
- AJ's Center 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**.

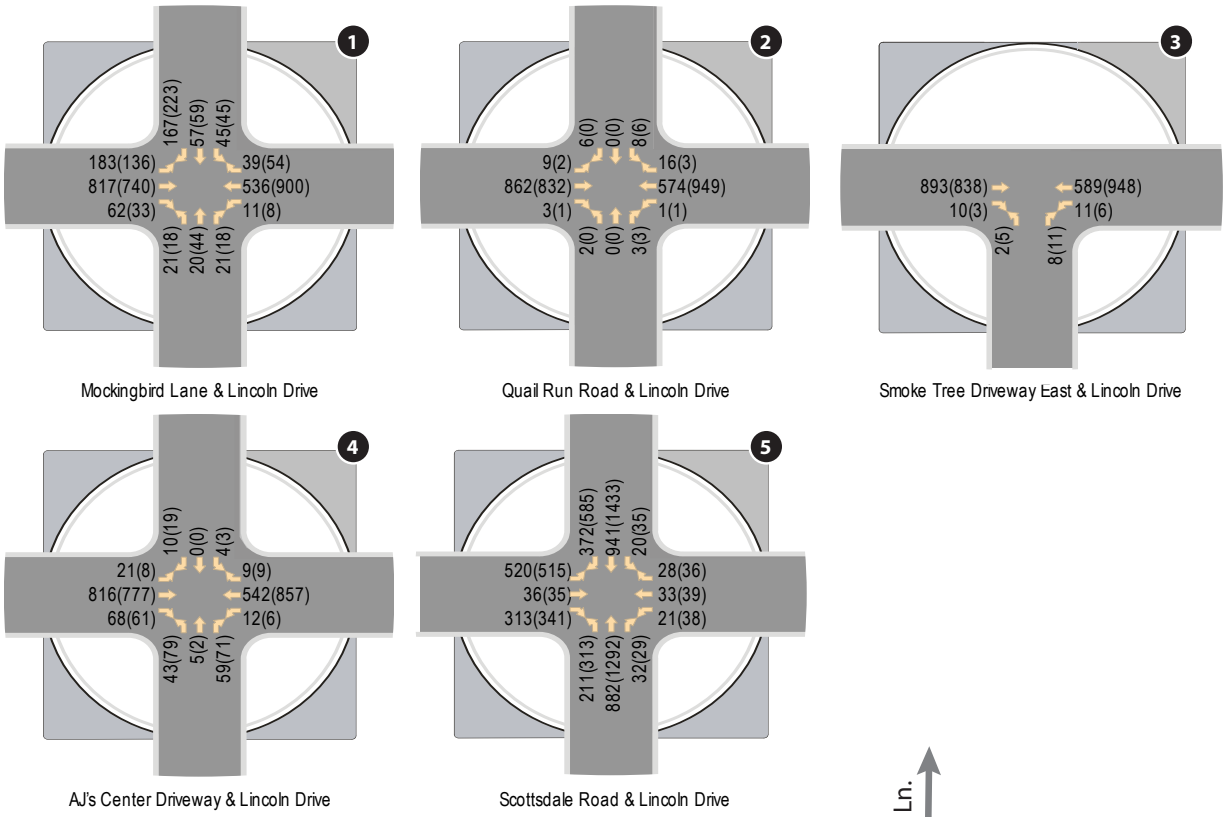


Figure 3: Existing Traffic Volumes

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 intersections of Mockingbird Lane and Lincoln Drive, and Quail Run Road and Lincoln Drive were 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 and existing timing sheets have been included in **Appendix C**.

Table 2 – Existing Peak Hour Levels of Service

ID	Intersection	Control	Approach/ Movement	Existing LOS AM (PM)
1	Mockingbird Lane & Lincoln Drive	Signal	NB SB EB WB **Overall**	**E**(D) **E**(**E**) A(A) C(A) **C(B)**
2	Quail Run Road & Lincoln Drive	Signal	NB SB EB WB **Overall**	D(D) D(D) C(A) A(B) **C(A)**
3	Smoke Tree Driveway East & Lincoln Drive	1-Way Stop (NB)	NB Shared WB Left	C(C) A(A)
4	AJ's Center Driveway & Lincoln Drive	2-Way Stop (NB/SB)	NB Shared SB Left SB Right EB Left WB Left	C(C) B(C) A(B) A(A) A(A)
5	Scottsdale Road & Lincoln Drive	Signal	NB SB EB WB **Overall**	C(C) C(C) D(D) **E**(**E**) **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.

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. Signage restricting westbound left-turns out of the site may be required. No vehicles are expected to make this turning movement.

- *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**.

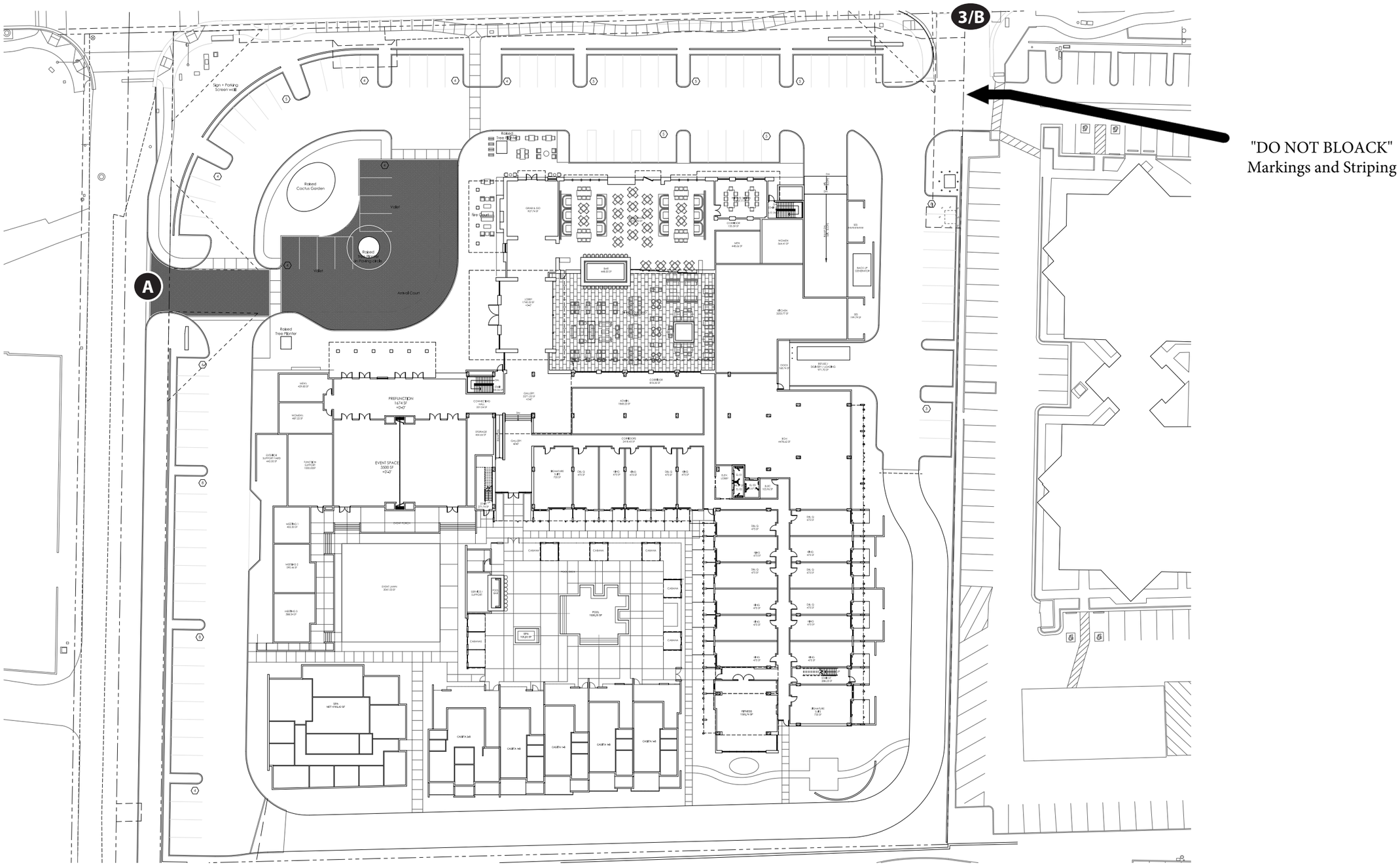


Figure 4: Site Plan and Access

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, 3rd Edition*. The ITE *Trip Generation Manual* contains data collected by various transportation professionals for a wide range of different land uses. The data are summarized in the report and average rates and equations have been established that correlate the relationship between an independent variable that describes the development size and generated trips for each categorized land use. The report provides information on daily and peak hour trips.

The proposed development will consist of 82 hotel rooms which consist of 77 lodge rooms and 5 casita room keys. Additionally, the Smoke Tree Resort will provide 4,153 square feet of restaurant dining area, a 608 square foot private dining area, a 928 square foot Grab & Go meal area, a 448 square foot bar, a 200-seat event/meeting spaces, and other hotel amenities.

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 pool bar and event space, are therefore included in the hotel trip generation.

Additionally, an internal capture percentage was applied to the Hotel Restaurant, Private Dining, and the Grab & Go because it is assumed that not all trips to and from these areas will be external. For these restaurant uses, it is anticipated that 50% of the trips will be arriving externally and the other 50% will be visiting other on-site uses. **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
Hotel/Resort Villas and Amenities	310	82	Rooms	466	19	15	34	17	16	33
Hotel Restaurant (Fine Dining Restaurant)	931	8,577	SF	720	5	1	6	45	22	67
Private Dining (Fine Dining Restaurant)	931	608	SF	50	0	0	0	3	2	5
Grab & Go (High Turn Over Restaurant)	932	928	SF	100	5	4	9	5	3	8
Bar (Fine Dining Restaurant)	931	448	SF	38	0	0	0	2	1	3
Total Trips				**1,374**	**29**	**20**	**49**	**72**	**44**	**116**
Internal Capture Reduction				(456)	*(6)*	*(2)*	*(8)*	*(29)*	*(14)*	*(43)*
Total External Trips				**918**	**23**	**18**	**41**	**43**	**30**	**73**

CALCULATIONS (Equations shown only where applicable)			
Land Use [Units]	*Daily*	*AM Peak Hour*	*PM Peak Hour*
Hotel [82 Rooms]	$T_{Day} = 82 \times 10.84 - 423.51 = 466$	$T_{AM} = 82 \times 0.5 - 7.45 = 34$	$T_{PM} = 82 \times 0.74 - 27.89 = 33$
Hotel Restaurant [8.577 KSF]	$T_{Day} = 8.577 \times 83.84 = 720$	$T_{AM} = 8.577 \times 0.73 = 6$	$T_{PM} = 8.577 \times 7.8 = 67$
Private Dining [0.608 KSF]	$T_{Day} = 0.608 \times 83.84 = 50$	$T_{AM} = 0.608 \times 0.73 = 0$	$T_{PM} = 0.608 \times 7.8 = 5$
Grab & Go [0.928 KSF]	$T_{Day} = 0.928 \times 107.20 = 100$	$T_{AM} = 0.928 \times 9.57 = 9$	$T_{PM} = 0.928 \times 9.05 = 8$
Bar [0.448 KSF]	$T_{Day} = 0.448 \times 83.84 = 38$	$T_{AM} = 0.448 \times 0.73 = 0$	$T_{PM} = 0.448 \times 7.8 = 3$

The proposed development is anticipated to generate approximately 918 external weekday daily trips, with 41 trips (23 in/ 18 out) occurring in the AM peak hour and 73 trips (43 in/ 30 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**.

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 is presented in **Figure 6**.

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%**

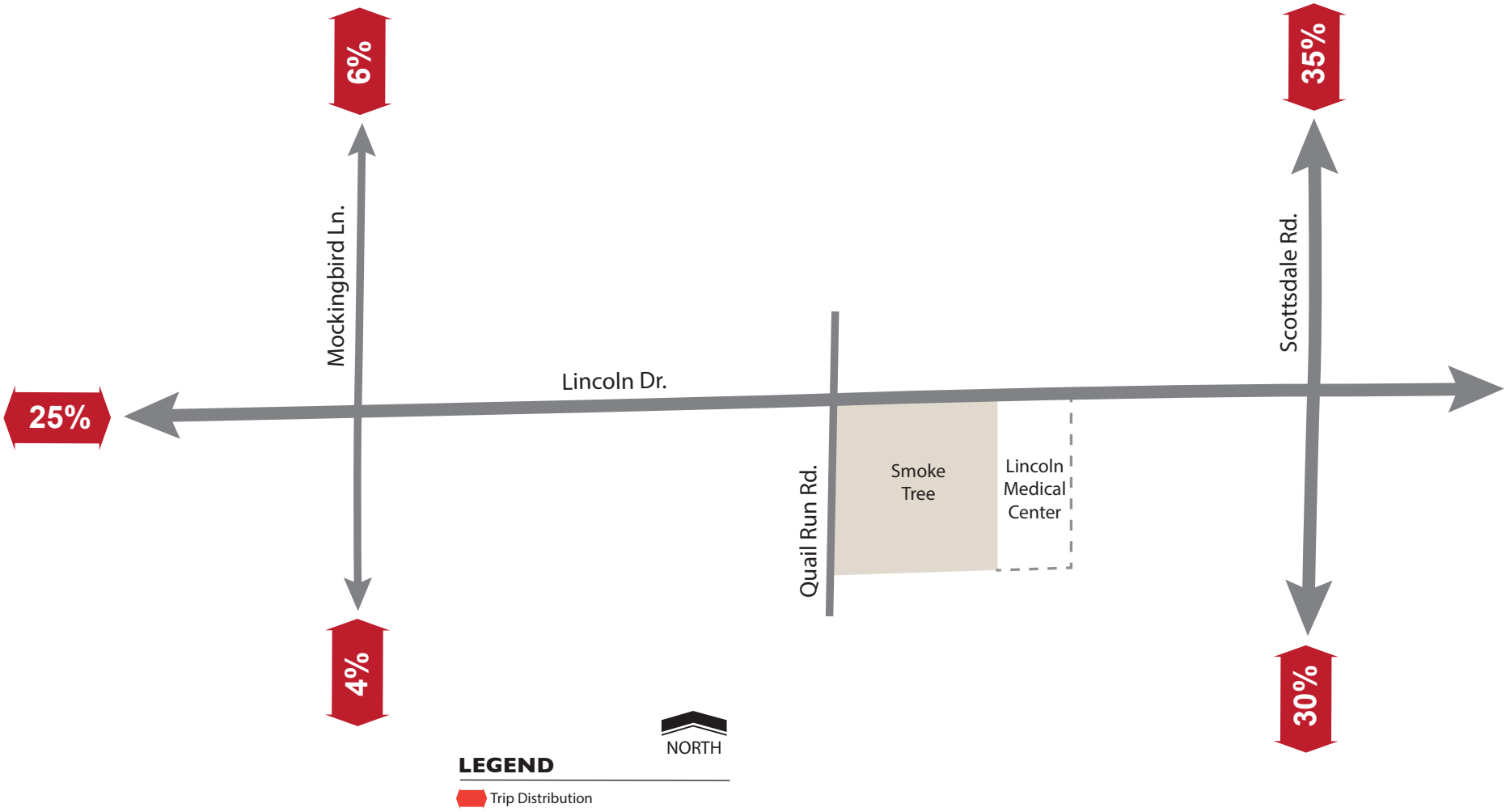


Figure 5: Trip Distribution

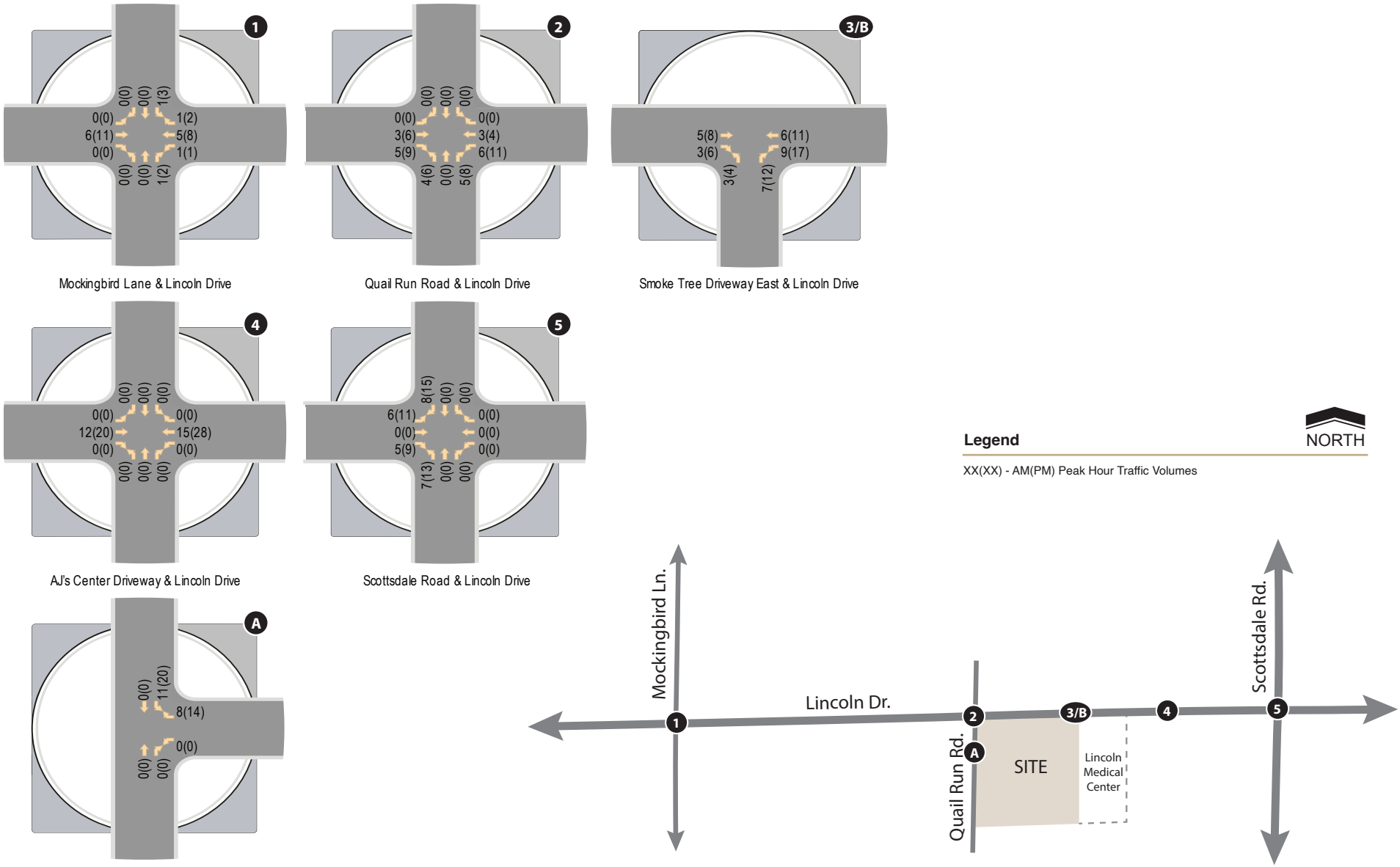


Figure 6: Site Generated Traffic Volumes

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 2026 and horizon year 2031. Detailed background traffic calculations are presented in **Appendix F**.

Table 5 – Growth Rate Expansion Factors

Horizon Year	Expansion Factor
2026	1.070
2031	1.164

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 2026 and horizon year 2031.

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. To be conservative, CivTech estimated that 75% of the Ritz Carlton development would be open and occupied by the opening year 2026. For the horizon year 2031, all Ritz Carlton site traffic was added to the background traffic volumes.

The signal at the intersection of Quail Run Road and Lincoln Drive has been constructed by the Ritz Carlton developer and is currently operational.

QUAIL RUN 8

Southwest of the site across Quail Run Road is a proposed development of eight single-family detached homes. The Quail Run 8 development is expected to open in 2026. Site-generated volumes from the proposed Quail Run 8 development were obtained From the Traffic Impact Statement performed by CivTech in March 2023, and added to the 2026 and 2031 background traffic volumes.

The background traffic for the opening year 2026 is presented in **Figure 7**. The background traffic for the horizon year 2031 is presented in **Figure 8**. Ritz Carlton site-generated traffic volumes 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 2026 are shown in **Figure 9**. Total peak hour traffic volumes for the horizon year 2031 are shown in **Figure 10**.

NOTE REGARDING PARKING STATEMENT

This TIA and the Parking Statement (PS) for the same property are based on the same land uses and square footage but must account for different spaces when completing the analysis. For example, the amenities of the hotel are included under the hotel land use for the TIA but must be broken out for the PS and the kitchen space of a restaurant must be considered in the TIA but does not for a PS. The Table below provides a comparison of the square footage used for both the TIA and the PS.

Table 6 – Parking Study to TIA Land Use Comparison

SUP	Land Use	Quantities TIA		Quantities PS	
i.	Hotel Guest	82	Keys	82	Keys
ii.	Banquet/Meeting Space	A part of the hotel		200	Seats
iv.	Indoor Fitness	A part of the hotel		1,328	SF
v.	Indoor Spa/Pool	A part of the hotel		1,822	SF
vi.	Hotel Restaurant[1]	8,577	SF	8,886	SF
vi.	Private Dining	608	SF	608	SF
vi.	Grab & Go Restaurant	928	SF	928	SF
vi.	Bar	448	SF	448	SF

[1] For the TIA this value is the indoors GSF. For the PS this value is the indoor + outdoor dining area SF.

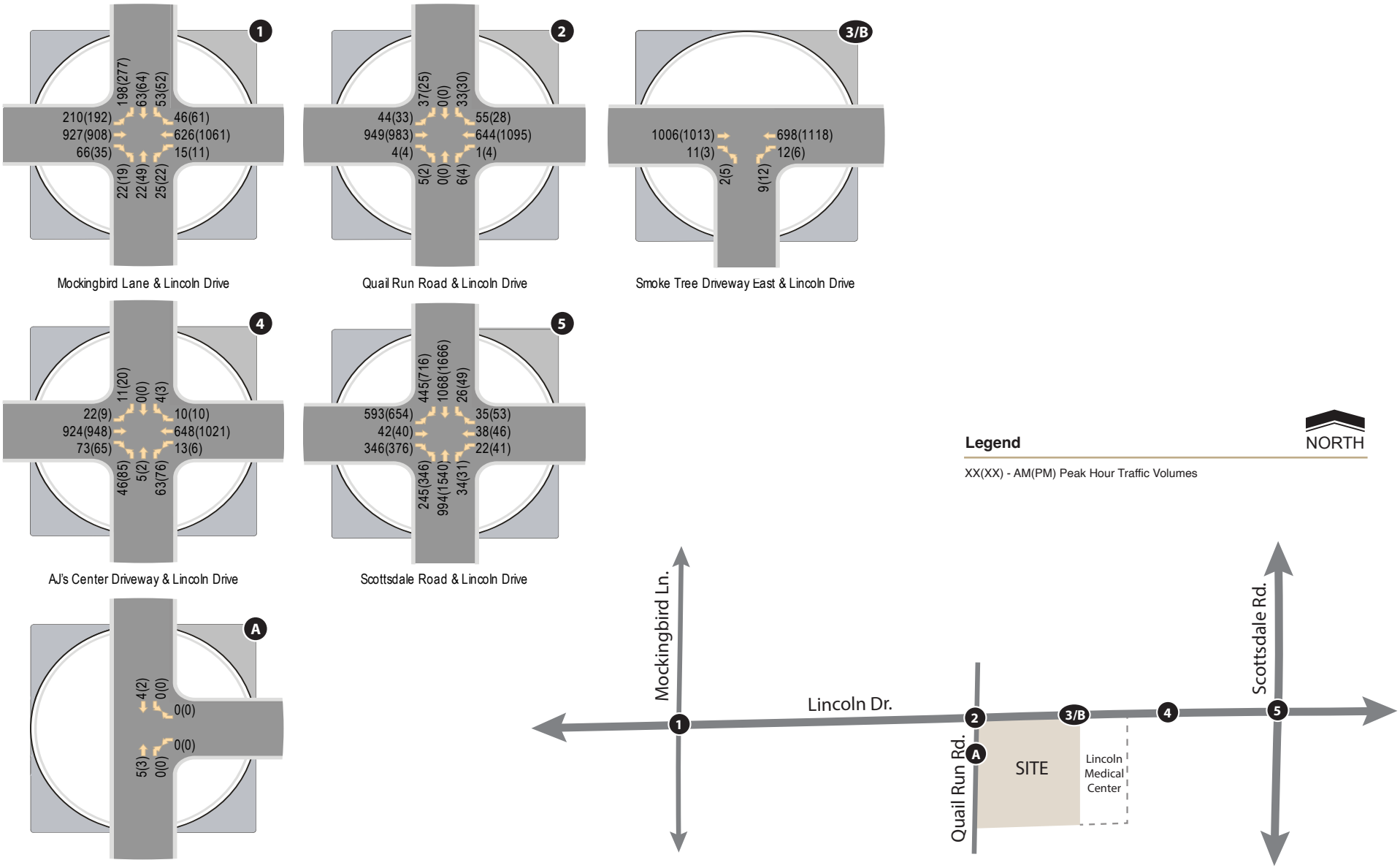


Figure 7: 2026 Background Traffic Volumes

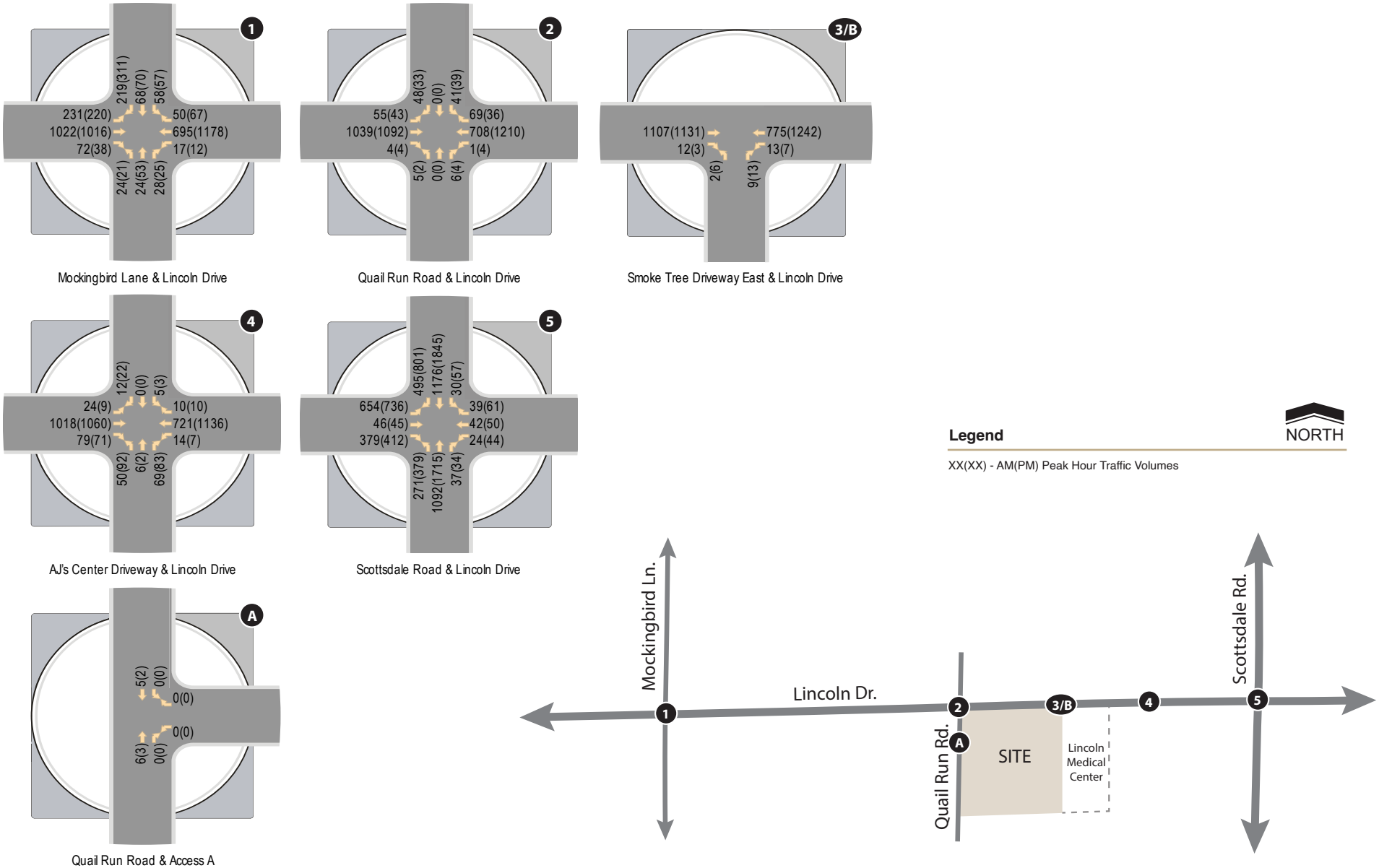


Figure 8: 2031 Background Traffic Volumes

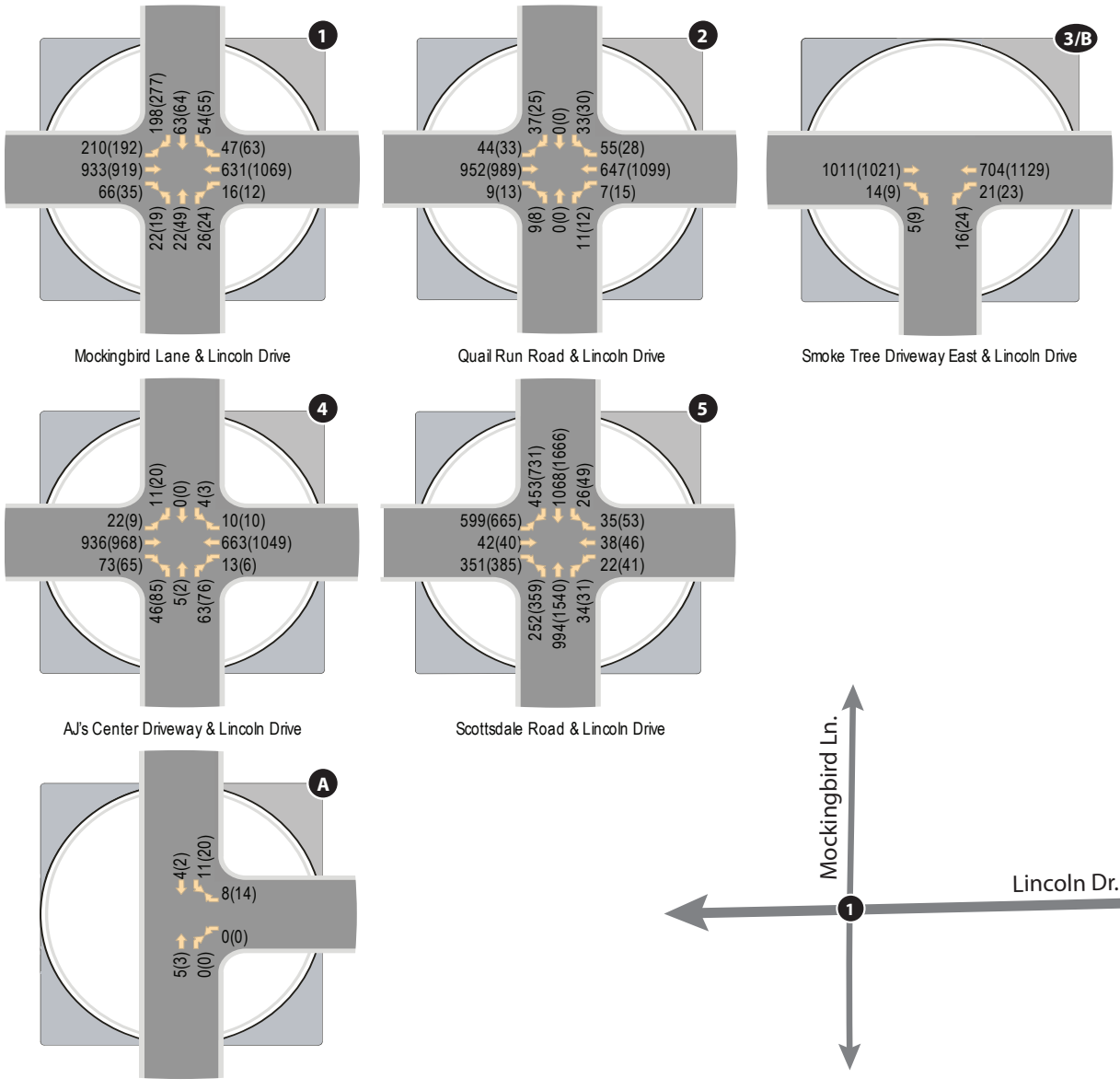


Figure 9: 2026 Total Traffic Volumes

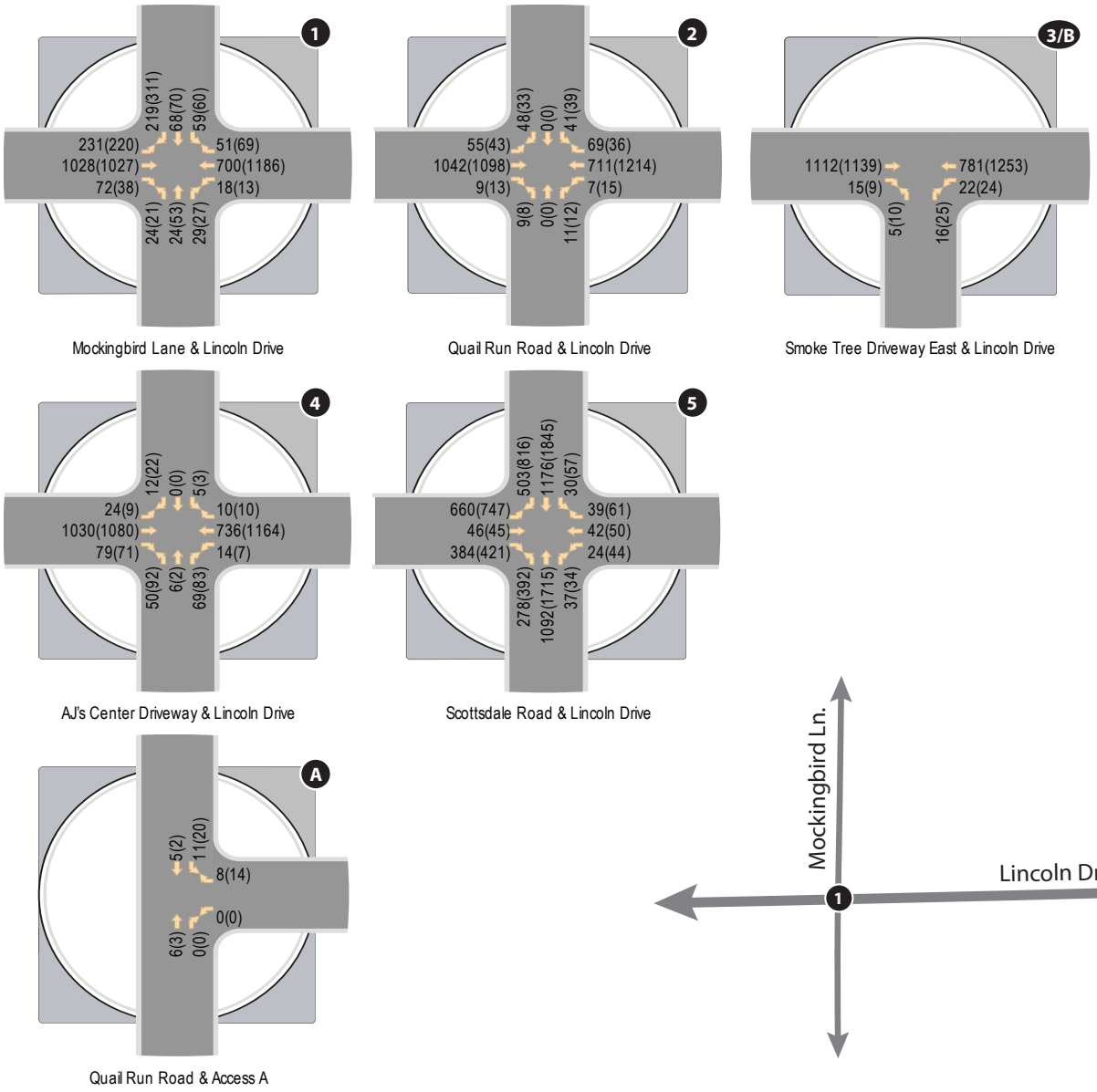


Figure 10: 2031 Total Traffic Volumes

TRAFFIC AND IMPROVEMENT ANALYSIS

TURN LANE WARRANTING ANALYSIS

RIGHT-TURN DECELERATION LANES

The Town of Paradise Valley provides in their *TIA Criteria, May 2015* specific warrants for the installation of dedicated right-turn auxiliary lanes. Three of the below conditions must be met to warrant a deceleration lane.

1. At least 5,000 vehicles per day are using or are expected in the near future (five years after the development is built-out) to be using the adjacent street.
2. The posted speed limit is 35 mph or the 85th percentile speed limit is greater than 35 mph.
3. At least 1,000 vehicles per day are using or are expected to use the driveway(s) for the development or adjacent development(s) (existing or future).
4. At least 90 vehicles are expected to make right turns into the driveway(s) for a one-hour period for the development or adjacent developments (existing or future).

The 2031 peak hour right-turn volumes from the adjacent street onto the proposed driveways is summarized in **Table 7**:

Table 7 – Right-turn Deceleration Lane Warranting Criteria

Access	Adjacent ADT	Speed (MPH)	Driveway ADT	Right-Turn Peak Hour Volume	Warrant Met?
Criteria	5,000	35	1,000	90	
Quail Run Rd. & Lincoln Dr. Eastbound	11,993	40	419	10	**No**
Criteria Met?	**Yes**	**Yes**	**No**	**No**	
Smoketree Drwy. & Lincoln Dr. Eastbound	12,634	40	652	15	**No**
Criteria Met?	**Yes**	**Yes**	**No**	**No**	

These warrants are **not** met at the intersection of **Smoke Tree Driveway East & Lincoln Drive** or **Quail Run Road & Lincoln Drive**. The capacity analysis section will determine whether right-turn deceleration lanes are recommended at the intersection of **Smoke Tree Driveway East & Lincoln Drive** or **Quail Run Rd. & Lincoln Drive**.

LEFT-TURN DECELERATION LANES

The Town of Paradise Valley does not have specific warrants for the installation of exclusive left-turn auxiliary lanes. The intersection of Smoke Tree Driveway East and Lincoln Drive; however, has an existing TWLTL that provides storage for vehicles turning left into the site. In accordance with recommendations made in agency comments, the reconstruction of Quail Run Road at Lincoln Drive is expected to include an exclusive northbound and southbound left-turn lane.

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 eastbound 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 8** for the 2026 opening year and the 2031 horizon year. Detailed analysis worksheets can be found in **Appendix G** for the 2026 no-build scenario, **Appendix H** for 2026 build scenario, **Appendix I** for 2031 no-build scenario, and **Appendix J** for 2031 build scenario.

Table 8 – Peak Hour Analysis

ID	Intersection	Control	Approach/ Movement	2026			2031		
				No-Build	Build	Mitigated	No-Build	Build	Mitigated
1	Mockingbird Ln & Lincoln Dr	Signal	NB SB EB WB	D(D) **E(E)** A(A) C(A)	D(D) **E(E)** A(B) C(A)	[Not Mitigated]	D(D) D(**E**) A(B) C(A)	D(D) D(**E**) A(B) C(A)	[Not Mitigated]
			Overall	**C(B)**	**C(B)**		**C(B)**	**C(B)**	
2	Quail Run Rd & Lincoln Dr	Signal	NB SB EB WB	D(D) D(D) C(B) B(B)	D(D) D(D) C(B) B(B)	[Not Mitigated]	D(D) D(D) C(B) B(B)	D(D) D(D) C(B) B(B)	[Not Mitigated]
			Overall	**C(B)**	**C(B)**		**C(B)**	**C(B)**	
3/B	Smoke Tree Drwy East & Lincoln Dr	1-Way Stop (NB)	NB Shared WB Left	C(C) A(A)	C(D) A(A)	[Not Mitigated]	C(**E**) A(A)	D(**F**) A(A)	[Not Mitigated]
4	AJ's Center Drwy & Lincoln Dr	2-Way Stop (NB/SB)	NB Shared SB Left SB Right EB Left WB Left	C(C) C(C) A(A) A(A) A(A)	C(D) C(C) A(B) A(A) A(A)	[Not Mitigated]	C(D) C(C) A(B) A(A) A(A)	C(D) C(C) A(B) A(A) A(A)	[Not Mitigated]
5	Scottsdale Rd & Lincoln Dr	Signal	NB SB EB WB	C(C) C(C) D(D) **E(E)**	C(D) C(D) D(D) **E(E)**	[Not Mitigated]	C(D) C(**E**) D(**E**) **E(E)**	C(D) C(**E**) **E**(**E**) **E(E)**	C(D) C(D) D(**E**) **E(E)**
			Overall	**C(C)**	**C(D)**		**D(D)**	**D(E)**	**C(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 summarized in **Table 8** indicate that most intersections are expected to operate at an overall acceptable level of service (LOS D or better) with the exception of **Mockingbird Lane & Lincoln Drive, Smoke Tree Driveway East & Lincoln Drive,** and **Scottsdale Road & Lincoln Drive**.

2026 CAPACITY ANALYSIS

The results of the 2026 peak hour analysis indicate that most intersections will operate at an overall acceptable level of service (LOS D or better) with the exceptions of **Mockingbird Lane and Lincoln Drive** and **Scottsdale Road and Lincoln Drive**.

The intersection of **Mockingbird Lane and Lincoln Drive** is expected to experience undesirable delay in the southbound approach. The southbound approach experiences undesirable delay during the AM and PM peak hours in both the no-build and build scenarios in the 2026 opening year. The addition of an overlap phase for the southbound right-turn could be expected to mitigate delay particularly in the PM Peak Hour. With the issue existing in the no build condition, no recommendation for improvement is made.

The intersection of **Scottsdale Road and Lincoln Drive** is expected to experience undesirable delay in the westbound approach. The westbound approach experiences undesirable delay during the AM and PM peak hours in both the no-build and build scenarios in the 2026 opening year.

The 2026 opening year level of service delays are provided for comparison to the 2031 horizon year delays. All mitigation analyses were performed based on the highest projected volumes and delays which occur in the horizon year 2031.

2031 CAPACITY ANALYSIS

The results of the 2031 peak hour analysis indicate that all intersections currently operate at an overall acceptable level of service (LOS D or better) with the exception of **Mockingbird Lane and Lincoln Drive, Smoke Tree Driveway East and Lincoln Drive,** and **Scottsdale Road and Lincoln Drive**.

The intersection of **Mockingbird Lane and Lincoln Drive** is expected to experience undesirable delay in the southbound approach. The southbound approach experiences undesirable delay during the PM peak hour in both the no-build and build scenarios in the 2031 horizon year. The signalized intersection is expected to operate with lower delays in the 2031 horizon year than in the opening year 2026. The increase in volumes from 2026 to 2031 likely caused a more even balance of volumes on each approach, which will allow an actuated signal to operate more efficiently.

The intersection of **Smoke Tree Driveway and Lincoln Drive** is expected to experience undesirable delay in the northbound shared approach. The northbound shared approach experiences undesirable delay during the PM peak hour in both the no-build and build scenarios in the 2031 horizon year.

The intersection of **Scottsdale Road and Lincoln Drive** is expected to experience undesirable delay in the eastbound and westbound approaches in both the no-build and build scenarios. The eastbound approach experiences undesirable delay during the PM peak hour in both the no-build and build scenarios in the 2031 horizon year. The westbound approach experiences undesirable delay in the AM and PM peak hours in both the no-build and build scenarios in the 2031 horizon

year. It is possible to mitigate the eastbound and overall delay slightly, by increasing the cycle length by 5 seconds and adjusting green times to allow for more through time in the eastbound approach. With the mitigation measures, the intersection is expected to operate with an acceptable overall intersection delay. Adjusting the timing by no greater than 10 seconds during the AM peak hour results in a decrease in eastbound delay from 55.1 sec/veh (LOS E) to 43.6 sec/veh (LOS D) and the overall intersection delay decreases from 35.9 sec/veh (LOS D) to 34.4 sec/veh (LOS C). With the decrease in delay in the eastbound approach there are marginal increases (<5 sec/veh) in delay in the northbound and southbound approaches.

During the PM peak hour, increasing cycle length to 125 seconds is able to decrease the eastbound delay from 73.0 sec/veh (LOS E) to 62.5 sec/veh (LOS E) and the overall intersection delay from 55.5 sec/veh (LOS E) to 54.1 sec/veh (LOS D). With the decrease in delay in the eastbound approach, there is a marginal increase (<10 sec/veh) in delay in the northbound approach, and an increase in delay in the westbound approach from 59.9 sec/veh (LOS E) to 72.3 sec/veh (LOS E).

In order to mitigate the delays at this intersection, 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**.

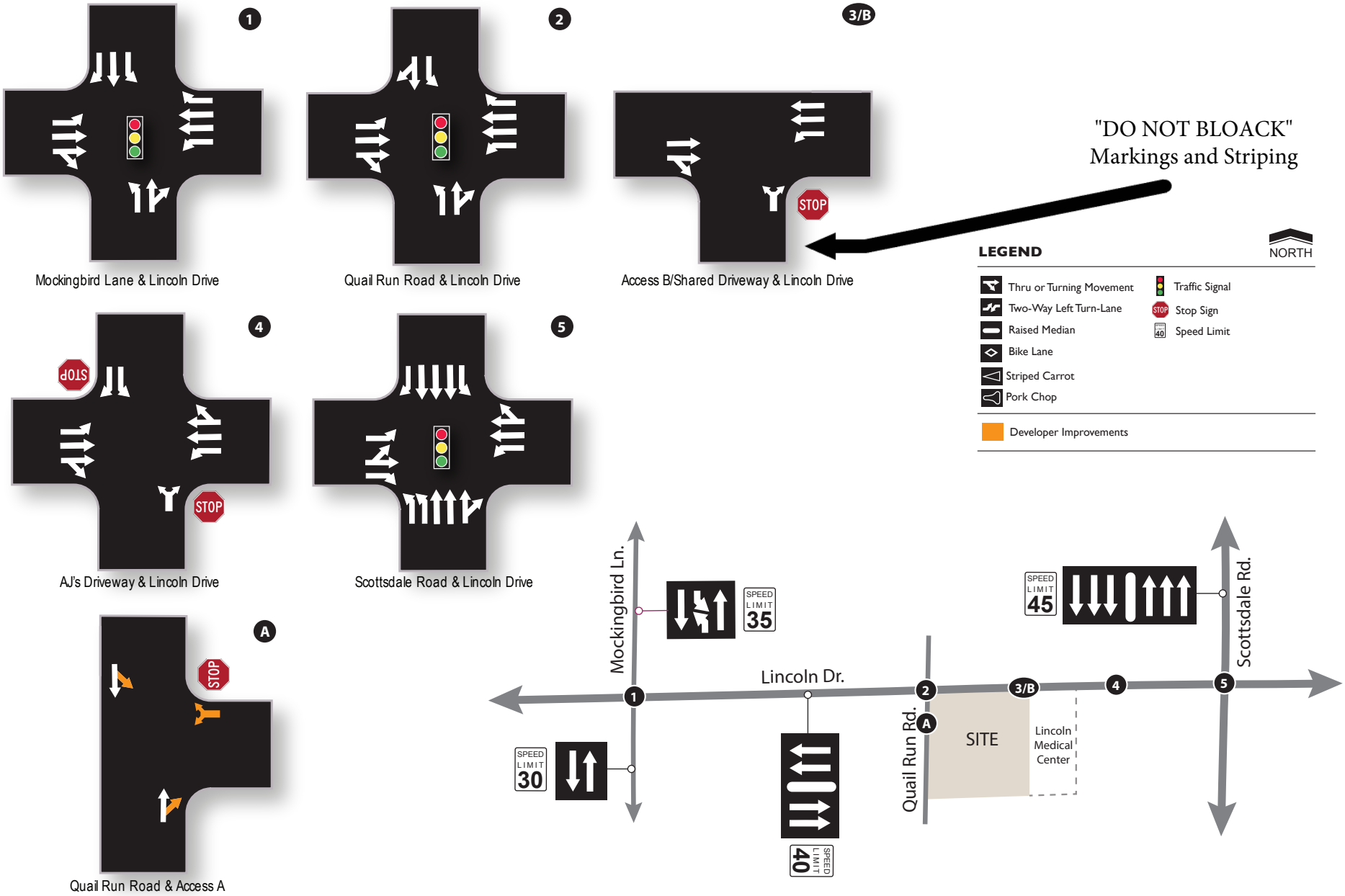


Figure 11: Proposed Lane Configurations and Traffic Controls

QUEUE LENGTH ANALYSIS

Adequate turn storage should be supplied on any approach where turn lanes are permitted and/or warranted. A queuing analysis was performed for all warranted/recommended and existing intersection turn lanes where site traffic is expected as well as left-turn lanes adjacent to the site. The analysis is based on the expected traffic volumes in the 2026 horizon year. Several methodologies exist to calculate turn-lane storage lengths including AASHTO and HCM. Each of these methodologies is described below.

Turn lane storage length calculation methodologies are documented on pages 9-96 through 9-99 of the latest (7th) edition of the American Association of Highway and Transportation Officials' (AASHTO) *A Policy on Geometric Design of Highways and Streets* (the AASHTO "Green Book"). The Green Book indicates that, "A deceleration lane should be sufficiently long to store the number of vehicles likely to accumulate in a queue during a critical period."

For a right-turn lane at an unsignalized driveway or intersection and for a left-turn lane on a stop-controlled approach of an unsignalized driveway or intersection, the critical period has typically been two minutes and the storage length estimated as the length required to hold the average number of arriving vehicles per a two-minute period, of which there are 30 per hour. Thus, for unsignalized driveways and intersections, the storage length for a right-turn lane or stop controlled left-turn lane can be calculated by use of the following formula:

$$\text{Storage Length} = \left\{\frac{(veh/hr)}{(30\ periods/hr)}\right\} \times VL,$$

where *VL* is an assumed average Vehicle Length of 25 feet.

For the major approaches (not stop-controlled) of an unsignalized intersections, the storage length for a left-turn lane is determined by the use of Equations 9-4 and 9-3 of the Green Book.

$$\text{Storage Length} = \left\{\frac{\ln[P(n>N)]}{\ln\frac{v}{c}} - 1\right\} \times VL \text{ [9-4]}, \qquad \text{where } c = \frac{V_0 e^{-V_0 t_c/3600}}{1-e^{-V_0 t_c/3600}} \text{ [9-3]},$$

and *VL* is an assumed average Vehicle Length of 25 feet.

Where signalized, the critical period per the Green Book is one-and-a-half to two signal cycles.[1] The equation used to calculate the queue storage for a right- *or* left-turn lane is:

$$\text{Storage Length} = \left\{\frac{1.5\ x\ (veh/hr)}{(cycles/hr)}\right\} \times VL,$$

where *VL* is an assumed average Vehicle Length of 25 feet.

[1] AASHTO, under Section 9.7.2.2 (page 9-96) of the 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.

Outlined in the Highway Capacity Manual, 6th Edition (HCM 6) is another methodology to calculate turn lane storage length. This method is used by the Synchro software to report the 95th percentile number of vehicles stored at an intersection to the back of the queues. CivTech multiplied this number of vehicles by and average Vehicle Length of 25 feet to convert the number of vehicles to a required queue and rounded this number up to the nearest multiple of five feet.

Table 9 – Queue Storage Lengths

ID	Intersection	Control	Movement	Queue Storage			
				(1)Existing	AASHTO	95th %-ile	Recommended
1	Mockingbird Lane & Lincoln Dr	Signal	NB Left	85′	50'	35′	85′
			SB Left	185′	125'	95′	185′
			EB Left	345′	425'	140′	345′
			WB Left	145′	50'	25′	145′
			SB Right	230′	575'	560′	(3)230′
			WB Right	280′	125'	65′	280′
2	Quail Run Rd & Lincoln Dr	Signal	NB Left	-	25'	25'	75'
			SB Left	-	75'	80'	75'
			EB Left	175′	100'	30′	175′
			WB Left	150′	50'	25′	150′
			WB Right	155′	125'	40′	155′
3/B	Smoke Tree Drwy East & Lincoln Dr	1-Way Stop (NB)	NB Shared	-	25'	65′	50′
			WB Left	50′	25'	25′	50′
4	AJ's Center 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′
5	Scottsdale Rd & Lincoln Dr	Signal	NB Left	(2)455′	(2)675'	(2)820'	(3)(2)455′
			SB Left	185′	100'	110'	185′
			EB Left	(2)310′	(2)1,250'	(2)1,150'	(3)(2)310′
			WB Left	90′	75'	70'	90′
			SB Right	315′	1,375'	1,025'	(3)315′
			EB Right	175′	725'	510'	(3)175′
A	Access A & Quail Run Dr	1-Way Stop (WB)	WB Shared	-	25'	<25′	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.

A DO NOT BLOCK pavement marking and striping at the private internal drive intersection, south of Smoke Tree Driveway East & Lincoln Drive, is recommended to prevent conflicts due to onsite queue stacking. The recommended storage lengths in **Table 9** are provided for horizon year 2031 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 10**.

Table 10 – 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 site distance must be provided at the intersections to allow safe left and right turning movements from the development. Recommended distances for these movements can be found in **Table 10**.

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 918 external weekday daily trips, with 41 trips (23 in/ 18 out) occurring in the AM peak hour and 73 trips (43 in/ 30 out) occurring in the PM peak hour.

EXISTING CONDITIONS

- 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.

OPENING YEAR 2026

- The results of the 2026 peak hour analysis are summarized indicate that most intersections will operate at an overall acceptable level of service (LOS D or better) with the exception of **Mockingbird Lane & Lincoln Drive, Smoke Tree Driveway East & Lincoln Drive,** and **Scottsdale Road & Lincoln Drive**.

    - The intersection of **Mockingbird Lane and Lincoln Drive** is expected to experience undesirable delay in the southbound approach. The southbound

approach experiences undesirable delay during the AM and PM peak hours in both the no-build and build scenarios in the 2026 opening year. The addition of an overlap phase for the southbound right-turn could be expected to mitigate delay particularly in the PM Peak Hour. With the issue existing in the no build condition, no recommendation for improvement is made.

- The intersection of **Scottsdale Road and Lincoln Drive** is expected to experience undesirable delay in the westbound approach. The westbound approach experiences undesirable delay during the AM and PM peak hours in both the no-build and build scenarios in the 2026 opening year.

- The 2026 opening year level of service delays are provided for comparison to the 2031 horizon year delays. All mitigation analyses were performed based on the highest projected volumes and delays which occur in the horizon year 2031.

- Striping of a dedicated northbound left-turn lane at the intersection of Quail Run Road and Lincoln Drive in good geometric opposition to the expected southbound left-turn lane is recommended in the opening year.

HORIZON YEAR 2031

- The results of the 2031 peak hour analysis indicate that all intersections currently operate at an overall acceptable level of service (LOS D or better) with the exception of **Mockingbird Lane & Lincoln Drive, Smoke Tree Driveway East & Lincoln Drive,** and **Scottsdale Road & Lincoln Drive**.

  - The intersection of **Mockingbird Lane and Lincoln Drive** is expected to experience undesirable delay in the southbound approach. The southbound approach experiences undesirable delay during the PM peak hour in both the no-build and build scenarios in the 2031 horizon year. The signalized intersection is expected to operate with lower delays in the 2031 horizon year than in the opening year 2026. The increase in volumes from 2026 to 2031 likely caused a more even balance of volumes on each approach, which will allow an actuated signal to operate more efficiently.

  - The intersection of **Smoke Tree Driveway and Lincoln Drive** is expected to experience undesirable delay in the northbound shared approach. The northbound shared approach experiences undesirable delay during the PM peak hour in both the no-build and build scenarios in the 2031 horizon year.

  - The intersection of **Scottsdale Road and Lincoln Drive** is expected to experience undesirable delay in the eastbound and westbound approaches in both the no-build and build scenarios. The eastbound approach experiences undesirable delay during the PM peak hour in both the no-build and build scenarios in the 2031 horizon year. The westbound approach experiences undesirable delay in the AM and PM peak hours in both the no-build and build scenarios in the 2031 horizon

year. It is possible to mitigate the eastbound and overall delay slightly, by adjusting green times to allow for more through time in the eastbound approach. With the mitigation measures, the intersection is expected to operate with an acceptable overall intersection delay.

- Adjusting the timing by no greater than 10 seconds during the AM peak hour results in a decrease in eastbound delay from 55.1 sec/veh (LOS E) to 43.6 sec/veh (LOS D) and the overall intersection delay decreases from 35.9 sec/veh (LOS D) to 34.4 sec/veh (LOS C). With the decrease in delay in the eastbound approach there are marginal increases (<10 sec/veh) in delay in the northbound and southbound approaches.

- During the PM peak hour, increasing cycle length to 125 seconds is able to decrease the eastbound delay from 73.0 sec/veh (LOS E) to 62.5 sec/veh (LOS E) and the overall intersection delay from 62.5 sec/veh (LOS E) to 54.1 sec/veh (LOS D). With the decrease in delay in the eastbound approach, there is a marginal increase (<10 sec/veh) in delay in the northbound approach, and an increase in delay in the westbound approach from 59.9 sec/veh (LOS E) to 72.3 sec/veh (LOS E).

- In order to mitigate the delays at this intersection, 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

- A DO NOT BLOCK pavement marking and striping at the private internal drive intersection, south of Smoke Tree Driveway East & Lincoln Drive, is recommended to prevent conflicts due to onsite queue stacking.

- The recommended storage lengths in **Table 9** are provided for horizon year 2031 using the total traffic projections.

SIGHT DISTANCE

- Adequate site distance must be provided at the intersections to allow safe left and right turning movements from the development.

    - 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: 2026 NO-BUILD PEAK HOUR ANALYSIS

APPENDIX H: 2031 NO-BUILD PEAK HOUR ANALYSIS

APPENDIX I: 2026 BUILD PEAK HOUR ANALYSIS

APPENDIX J: 2031 BUILD PEAK HOUR ANALYSIS

APPENDIX K: QUEUE STORAGE ANALYSIS

APPENDIX L: SIGHT DISTANCE ANALYSIS

APPENDIX A

REVIEW COMMENTS AND RESPONSES

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

Reviewer Name, Agency: **Zack Handy, P.E., PTOE Traffic Engineer Kimley-Horn and Associates, Inc.**

Item	Review Comment	(Code) & Response
1.	**General – The comment response for Item 1 indicates that a northbound left turn lane can be striped with the development. However, this improvement is not reflected in the traffic study. It is recommended that the study include this improvement in the analysis, figures, and overall recommendations for documentation.**	(1) Capacity and queue storage anlaysis has been updated in the 2026 Total, 2031 Background, and 2031 Total (Unmitigated and Mitigated) scenarios haave been updated to include northbound and southbound left-turn lanes. Proposed lane configuration figure has been updated to include northbound and southbound left-turn lanes.
2.	**Page 28 – The report indicates that "Do Not Block" pavement markings are recommended for the internal intersection near Access B. This should be reiterated in the Executive Summary and Conclusions sections as it is a principal finding of the study.**	(1) Recommendation included in Conclusions and Executive Summary.

Reviewed Date: 12-21-20233
CivTech Received Date: 12-22-2023
CivTech Entered Date: 12-27-2023
CivTech Response Date: 12-29-2023

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

Reviewer Name, Agency: **Zack Handy, P.E., PTOE Traffic Engineer Kimley-Horn and Associates, Inc.**

Item	Review Comment	(Code) & Response
1.	**General – It is recommended to stripe a northbound left turn lane at Quail Run Road/Lincoln Drive. A southbound left turn lane at this intersection will be provided by the Ritz Carlton development. A northbound left turn lane would align with the southbound left turn lane and will avoid future split phasing operations at the intersection.**	(1) The reconstruction of Quail Run Road at Lincoln Drive will be wide enough to allow for a northbound left-turn lane.
2.	**General – The 3-meal restaurant and the private dining area should be combined uses. The private dining area is an extension of the restaurant.**	(3) CivTech agrees that the two uses mentioned could be analyzed as a single land use. The current method of analyzing them as separate land uses provideds a more conservative trip generation estimate as well as making clear which trips and internal capture rates apply to which uses.
3.	**General – Rename intersection "3" to "3/B" for applicable figures in the TIA.**	(1) Figures updated to reflect Intersection 3/B.
4.	**Page 13, Table 3 – Fix the trip generation numbers in the PM peak hour for "Hotel Restaurant"**	(1) Table has been updated to show the correct inbound PM peak hour trips for Hotel Restaurant. This values was again adjusted based on Comment 6.
5.	**Page 13, Table 3 – Revise the LUC for the Grab & Go land use to 930 (Fast Casual Restaurant). This land use is more representative of the expected use of this market, since it is expected that patrons will order at the front instead of being sat by restaurant staff.**	(3) The Fast Casual Land Use (LUC 930) provides a less conservative and unrealistic trip generation rate for a use of only 928 square feet. Values of 1 trip in each peak hour are calculated. For that reason the High Turnover Sit Down Restaurant Land Use (LUC 932) was retained.
6.	**Page 17, Table 6 – Verify the values in this table, specifically for "Hotel Restaurant". The TIA should apply GSF of the restaurant, which includes kitchen SF. The parking study should apply dining room SF, which should also include the large outdoor dining area.**	(1) The TIA trip generation, volumes, and analysis have been updated to reflect the 8,577 GSF of the hotel restaurant. The Parking Study has been updated to include the area of the outside dining. Table 6 has been updated to reflect this.
7.	**Page 28, Table 9 – The available on-site stacking for Access B is about 40 feet before conflicting with the adjacent drive aisle. On-site mitigation should be recommended to ensure that conflicts will not occur that could create back-up onto Lincoln Drive.**	(1) Client will utilize a Valet plan durring peak operations which can account for onsite circulation and direction. CiVTech will recommend the use of DO NOT BLOCK pavement markings and striping at the private intersections of internal drive aisles.

Reviewed Date: 12-14-20233
CivTech Received Date: 12-15-2023
CivTech Entered Date: 12-18-2023
CivTech Response Date: 12-19-2023

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

Reviewer Name, Agency: **Zack Handy, P.E., PTOE Traffic Engineer Kimley-Horn and Associates, Inc.**

Item	Review Comment	(Code) & Response
1.	**Appendix D, Trip Generation – Revise the trip generation calculations shown in the Appendix to match the results shown in Table 3 of the TIA.**	Appendix D Trip Generation has been replaced with the latest Trip Generation calculations. These calculations are unchanged from the 4th submittal.
2.	**Appendix K, Queue Storage Analysis – Revise the queue storage calculations shown in the Appendix to match the results shown in Table 9 of the TIA.**	Appendix K Queue Storage Anakysis has been replaced with the latest Queue Storage analysis. These calculations are unchanged from the 4th submittal.

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

Reviewer Name, Agency: **Zack Handy, P.E., PTOE Traffic Engineer Kimley-Horn and Associates, Inc.**

Item	Review Comment	(Code) & Response
1.	**General – Revise the date on the footer to match the date the traffic study was finalized.**	(1) Headers and footers have been updated.
2.	**Page 12, Trip Generation – Per previous comments, the 50% internal capture should only be applied to the 3-meal restaurant. The speakeasy bar and standalone restaurant should only apply a 20% internal capture.**	(1)Trip Generation, volumes, and all subsequent analysis have been updated with new internal capture to provide a more conservative analysis. The internal capture requested by the reviewer does not account for activity at the speakeasy from patrons already considered offsite to both the internal and external restaurant. The speakeasy will have some offsite patrons but 80% grossly exagerates that volume, many of the speakeasy patrons will come from the 80% already considered at the French Cowboy and the 50% already considered from the internal 3-meal restaurant.
3.	**Page 12, Trip Generation – Per previous comments, the outward facing 3-meal restaurant should be considered as a High Turnover Sit Down Restaurant (LUC 932) and a 50% internal capture should be applied. The 3-meal restaurant does not match the description for LUC 931 – Fine Dining.**	(1)Trip Generation, volumes, and all subsequent analysis have been updated with new land use.
4.	**Page 22, Turn Lane Warranting Analysis – Please expand on the right turn deceleration lane section to detail what criteria needs to be provided and what criteria is not met for the driveway.**	(1) More detailed analysis has been included.

Reviewed Date: 8-7-202
CivTech Received Date: 8-8-202
CivTech Entered Date: 8-8-202
CivTech Response Date: 8-22-202

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

Reviewer Name, Agency: **Zack Handy, P.E., PTOE Traffic Engineer Kimley-Horn and Associates, Inc.**

Item	Review Comment	(Code) & Response
5.	**Appendix K, Queue Storage Analysis – Per previous comments, the value for V0 is not calculated correctly when evaluating minor street left turn movements. For example, the northbound shared movement at Smoke Tree Driveway and Lincoln Drive should include eastbound thru, westbound thru, and westbound left turn movements as conflicting volume. The current value is set at 0. This should be applied to similar occurrences. Additionally, the northbound approach should be evaluated as a single shared lane as shown in the study, not separated as shown in Appendix K.**	(1) Queue storage calculations and explanaions updated in the report and appendices.

Reviewed Date: 8-7-202
CivTech Received Date: 8-8-202
CivTech Entered Date: 8-8-202
CivTech Response Date: 8-22-202

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

Reviewer Name, Agency: **Zack Handy, Kimley-Horn and Associates, Inc.**

Item	Review Comment	(Code) & Response
1.	**General – (Repeat Comment) The Parking Study and Narrative notes 77 lodge rooms and 5 casita rooms, which does not match what is described in the TIA. Please revise accordingly.**	(1) The Land Use values are updated to be consistent through all sections and documents. CivTech verified values and, because the actual values are similar to the previous trip gen, volumes where not changed. A note was added explaining the difference.
2.	**General – Please split out the square footages for each land use identified. I am not able to verify the 17,222 SF number looking at the site plan and narrative documents. Verify that the values for restaurants/bar are in GSF as indicated as the required unit of measurement in the Trip Generation Manual.**	(1) The Land Use values are updated to be consistent through all sections and documents. CivTech verified values and, because the actual values are similar to the previous trip gen, volumes where not changed. The site plan has been updated.
3.	**General – The trip generation numbers in the executive summary do not match the results in Table 3 of the TIA. Please revise.**	(1) The Executive Summary has been updated to match the values used in the Trip Generation and reported in the Trip Generation section of the report.
4.	**Page 4, Existing Intersection Configuration – Quail Run Road/Lincoln Drive – Please note that the westbound approach is equipped for permitted/protected left turn phasing, but not implemented according to signal timing information.**	(1) The text has been updated in the Existing Intersection Configuration section.
5.	**Page 9, Table 2 – The results of the LOS in the table do not correspond with the discussion in the succeeding paragraphs.**	(1) Text and table have been updated.
6.	**Page 10, Site Access – Per feedback from the local community, please coordinate internally for Intersection A to restrict left turns out of the site, either through signage or raised features.**	(1) Text added to the report indicating this restriction.
7.	**Page 12, Trip Generation – Suggest adding a sentence within the internal capture discussion to document the 50% internal capture of the outward facing restaurant/market.**	(1) Text explaining IC added to report.

Reviewed Date:7-5-2023
CivTech Received Date:7-12-2023
CivTech Entered Date:7-18-2023
CivTech Response Date:TBD

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

Reviewer Name, Agency: **Zack Handy, Kimley-Horn and Associates, Inc.**

Item	Review Comment	(Code) & Response
8.	**Page 13, Trip Generation – (Repeat Comment) The proposed speakeasy bar is located below ground level beneath the standalone restaurant. Because of this, it is expected that this bar will generate external trips, with some trips likely captured within the hotel land use. Suggest adding this to the trip generation calculations and applying the same internal capture for the French Cowboy (20%).**	(1) The bar is considered its own land use with 50% internal capture.
9.	**Page 13, Table 3 – Recommend using LUC 932 (High Turnover Sit Down Restaurant) for the 3-Meal Restaurant, which fits more closely to what is described in the narrative.**	(1) The 3-meal restaurant is now considered quality restaurant along with the French Cowboy. Also with 50% internal capture.
10.	**Page 16, Future Background Traffic – Quail Run 8 – Change "West" to "Southwest".**	(1) Text updated.
11.	**Page 16, Future Background Traffic – Add site-generated traffic from Quail Run 8 to Appendix F.**	(1) Included in Appendix F
12.	**Page 18-21, Figures 7-10 – (Repeat Comment) Verify volumes are adding correctly for Total. Figure 7 (2024 BG) needs to be revised.**	(1) Figure has been corrected.
13.	**Page 22, Turn Lane Warranting Analysis – I do not agree that deceleration lanes for driveways are dependent on the capacity analysis. Recommend using criteria provided in the Town's TIA criteria document to determine if a right turn deceleration lane is warranted.**	(2) They do not meet based on the deceleration lane criteria. Will update section to note that it isn't met based on the criteria and will be reviewed based on LOS only then.

Reviewed Date:7-5-2023
CivTech Received Date:7-12-2023
CivTech Entered Date:7-18-2023
CivTech Response Date:TBD

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

Reviewer Name, Agency: **Zack Handy, Kimley-Horn and Associates, Inc.**

Item	Review Comment	(Code) & Response
14.	**Page 23, 2024 Capacity Analysis – Mockingbird Lane and Lincoln Drive – Provide a discussion on potential mitigation measures to reduce delay for the SB approach. One mitigation measure that could be explored for the SBR movement is an overlap phase. This may mitigate the SBR delay and queueing identified in the TIA. Carry through to 2029 Analysis.**	(1) Discussion added.
15.	**Page 23, 2024 Capacity Analysis – Smoketree Driveway East and Lincoln Drive – The results of the LOS in Table 6 indicate that site traffic degrades the LOS for the NB movement from C to E in the PM peak hour. Revise language in the TIA and provide a mitigation discussion on this deficient movement. Carry through to 2029 Analysis.**	(1) Discussion of potential mitigation has been included.
16.	**Page 27, Table 7 – Intersection 2 – It appears that the recommended lengthening of the WBR at this intersection is due to the miscoded approach in Synchro as a shared thru/right turn lane. Revising the model to a dedicated right turn lane would result in a lower 95th percentile calculation. Revise report and Synchro models as needed.**	(1) Configuration and Queue analysis has been revised.

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

Reviewer Name, Agency: **Zack Handy, Kimley-Horn and Associates, Inc.**

Item	Review Comment	(Code) & Response
17.	**Page 27, Table 7 – Intersection 3/B – I'm concerned about the potential blockage of on-site circulation due to the proposed throat length of 50-feet and the 95th queue length of 130-feet. The site plan shows approximately 40 feet of storage before conflicting with the on site drive aisle. The site plan should be evaluated to lengthen the proposed throat length at this driveway.**	(4) A valet firm is expected to provide a circulation plan that will manage vehicle access even during peak hours when queue is at maximum. No effect on the TIA.
18.	**Page 27, Table 7 – Intersection A – The recommended WB on-site storage is 50-feet but the site plan shows about 30 feet of available storage before conflicting with an on site drive aisle. This should be discussed in the traffic study. Due to the low volumes on Quail Run Rd, the on-site stacking is not as much of a concern as the other driveway. However, the site plan should still be evaluated to lengthen the proposed throat length of this driveway to 50-feet if feasible.**	(4) A valet firm is expected to provide a circulation plan that will manage vehicle access even during peak hours when queue is at maximum. No effect on the TIA.
19.	**Appendix K, Queue Storage Analysis – Please check methodology for AASHTO queue storage calculations for left turn movements. For minor street left turn movements, the conflicting major street volume should be accounted for.**	(2) The conflicting volumes are accounted for. They are represented by the variable V0 in the 3rd equation on page 27. This value is given in Appendix K, 7th column from the left.

1st Submittal

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

Reviewer Name, Agency: **Zack Handy, Kimley-Horn and Associates, Inc.**

Item	Review Comment	(Code) & Response
1.	**General -** The TIA should be sent to the City of Scottsdale for review and approval for impacts to study intersections within their jurisdiction.	Acknowledged.
2.	**General -** The Parking Study and Narrative notes 75 lodge rooms and 7 casita rooms, which does not match what is described in the TIA. Please revise accordingly.	Parking Study and TIA both show 75 lodge rooms and 5 casitas rooms.
3.	**General -** The TIA should analyze the need for an eastbound right turn deceleration lane at Intersection 4/B.	Turn Lane Warrant section has been added to the TIA.
4.	**Page 1 -** Study notes that 6 intersections are identified in the study area, but only 5 intersections are evaluated. Please revise accordingly.	TIA notes that 5 intersections are identified and analyzed.
5.	**Page 1 -** Please provide additional information to identify driveways listed as "Smoke Tree Driveway", "Apartment Driveway", and "AJ's Driveway".	Smoke Tree Driveway is now identified as "SmokeTree Driveway East" and AJ's Driveway is now identified as "AJ's Center Driveway"
6.	**Page 3 -** Add roadway classification for each study roadway.	Roadway classifications have been added.
7.	**Page 3 -** Mockingbird Lane/Lincoln Drive - Verify left turn phasing. It appears it is protected/permitted left turns for southbound and eastbound approaches.	Intersection description has been updated with permitted/protected left-turn phasing for southbound and eastbound approaches.
8.	**Page 4 -** Quail Run Road/Lincoln Drive - Revise description of lanes provided for eastbound and westbound approaches. Also, add the word "intersection" after "signalized".	Intersection description has been updated.
9.	**Page 4 -** AJ's Driveway/Lincoln Drive - Add a note that this intersection is maintained by the City of Scottsdale.	Note has been added.
10.	**Page 4 -** Scottsdale Road/Lincoln Drive - Add a note that this intersection is maintained by the City of Scottsdale.	Note has been added.
11.	**Page 5 -** Intersection 1 needs to show dedicated southbound right turn lane. Intersection 2 needs to show dedicated westbound right turn lane.	Figure has been updated.

Reviewed Date: 3/13/202
CivTech Received Date: 3/17/202
CivTech Entered Date: 4/14/202
CivTech Response Date: 4/26/202

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

Reviewer Name, Agency: **Zack Handy, Kimley-Horn and Associates, Inc.**

Item	Review Comment	(Code) & Response
12.	**Page 6 -** TIA notes 6 study intersections, but only analyzes 5. Revise accordingly. Renumber intersections if 3 has been removed.	Intersections have been renumbered accordingly.
13.	**Page 8 -** Is the study utilizing existing signal timing at Quail Run Rd/Lincoln Dr? If so, add language to this section. If not, the data needs to be requested to the Town and included in the Appendix.	Existing signal timing is being utilized and has been added to this section as well as the Appendix.
14.	**Page 8 -** Add language discussing what is considered acceptable LOS for the study and what standards were followed.	HCM 6th LOS standards were utlized as defomed in "Existing Capacity Analysis" report section. It is reccomneded that the acceptability of LOS should be reviewed on a case by case basis.
15.	**Page 13 -** The proposed outward facing market and lobby restaurant should not be considered included in the hotel land use. The narrative states that these land uses will be shared by the local community and guests. Due to the relative location of these uses to Lincoln Drive, I would believe that external trips from local residents would be generated by these land uses. Recommend adding this land use to the calculations with appropriate internal capture.	The trip generation has been updated to show the 3 - meal restaurant and market in their own land use. It is anticipated that at least 50% of the trips are from resort patrons, and therefore a 50% internal capture percentage has been applied to the hotel restaurant.
16.	**Page 13 -** I believe the proposed speakeasy bar is located below ground level beneath the standalone restaurant. If this is true, I do not agree that this land use is incidental to the hotel land use. Please verify and revise trip generation calculations accordingly.	External trips are not expected to make up many of the trips generated by the Speakeasy. It is expected that the Speakeasy, acting as a hotel bar facility, will be occupied mostly by resort patrons. CivTech maintains that the Speakeasy bar is included in the hotel land use.
17.	**Page 13 -** 50% internal capture for the standalone restaurant seems excessive. Suggest a lower rate such as 20%. Percentage should correlate to Parking Study.	20% internal capture for French Cowboy applied.
18.	**Page 17 -** Show documentation for the 1.7% growth rate. Was this rate applied to all existing traffic, or just for certain movements?	Background growth calculations are presented in Appendix F. The growth rate was applied to all existing counts.

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

Reviewer Name, Agency: **Zack Handy, Kimley-Horn and Associates, Inc.**

Item	Review Comment	(Code) & Response
19.	**Page 17 -** Under the Ritz Carlton discussion, it appears that no traffic was considered by this development by opening year 2024. From research, it appears that this development may be open as soon as this year. Please add site-generated traffic to year 2024 background volumes.	Based on aerial images from July 2022, an estimated 50% of the Ritz Carlton Resort traffic was added to the 2024 background volumes. CivTech believes this to be conservative given that the single-family home portion of the site, "Section B" within the Ritz Carlton study, is the only one currently partially occupied.
20.	**Page 17 -** Under the Ritz Carlton discussion, reword the second paragraph to note that the signal is already constructed and operational. Analysis should consider this intersection signalized under existing conditions. Also, the Ritz Carlton TIA does not recommend a 300-foot SBR at Quail Run Road/Lincoln Drive. Please review and update accordingly.	Signal operation now clarified as currently operational. SBR turn lane discussion has been removed.
21.	**Page 17 -** Add anticipated traffic volumes from the adjacent “Quail Run 8” development to the south, TIA completed by CivTech.	Quail Run 8 site traffic included within background traffic.
22.	**Figures 7-10 -** Verify volumes are adding correctly for Total. For example, Intersection 2, WB thru does not calculate correctly when adding site traffic (2 AM, 5 PM) and 2024 BG (635 AM, 1050 PM) to get 2024 Total (586 AM, 970 PM).	Volumes, based on updates, all add up correctly.
23.	**Page 22 -** What approach will be restriped in the future at the intersection of Scottsdale Road and Lincoln Drive?	Eastbound approach, sentence has been clarified.
24.	**Figure 11 -** Revise to match existing lane geometry comments. Also, the TIA notes that the southbound approach at Quail Run Rd/Lincoln Dr will include a southbound right turn lane. This should be reflected in this figure as a future improvement by others.	Existing lane geometry updates have been carried through. The SBR turn lane discussion has been removed and not included within the figure.
25.	**Page 27 -** Intersection 4 should be evaluated for the NB approach to determine if sufficient on-site storage is provided per the site plan.	Northbound approach added to analysis.

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

Reviewer Name, Agency: **Zack Handy, Kimley-Horn and Associates, Inc.**

Item	Review Comment	(Code) & Response
26.	**Page 27 -** The table notes that the westbound right turn lane should be extended at Intersection 2 from 155' to 275'. Verify this calculation is correct since the Ritz Carlton calculated a much shorter queue. This should be discussed in the executive summary and noted in this section.	Discussion about the queue sotrage at this intersection is added. Volumes from Ritz Carlton Resort TIA do not compare to those from the proposed development which explains the increase in storage recommendation.
27.	**Page 27 -** Intersection A should be evaluated for the WB approach to determine if sufficient on-site storage is provided per the site plan.	Westbound approach is included in analysis.
28.	**Page 31 -** Suggest stating what queue storage recommendations are instead of referencing the table.	Queue storage recommendations that differ from existing are mentioned in executive summary and conclusions.
29.	**Appendix C -** Appendix C is missing.	Appendix C now included.
30.	**Appendix D –** Revise to match report.	Revised.
31.	**Appendix G –** Synchro needs to show protected/permitted EB/WB lefts at Quail Run Rd/Lincoln Dr (Typical for all Synchro analysis).	Existing signal timing sheets shows the only EBL as permitted/protected phasing. Signal timing sheets provided by the Town of Paradise Valley are included within Appendix C.

Reviewed Date: 3/13/202
CivTech Received Date: 3/17/202
CivTech Entered Date: 4/14/202
CivTech Response Date: 4/26/202

APPENDIX B

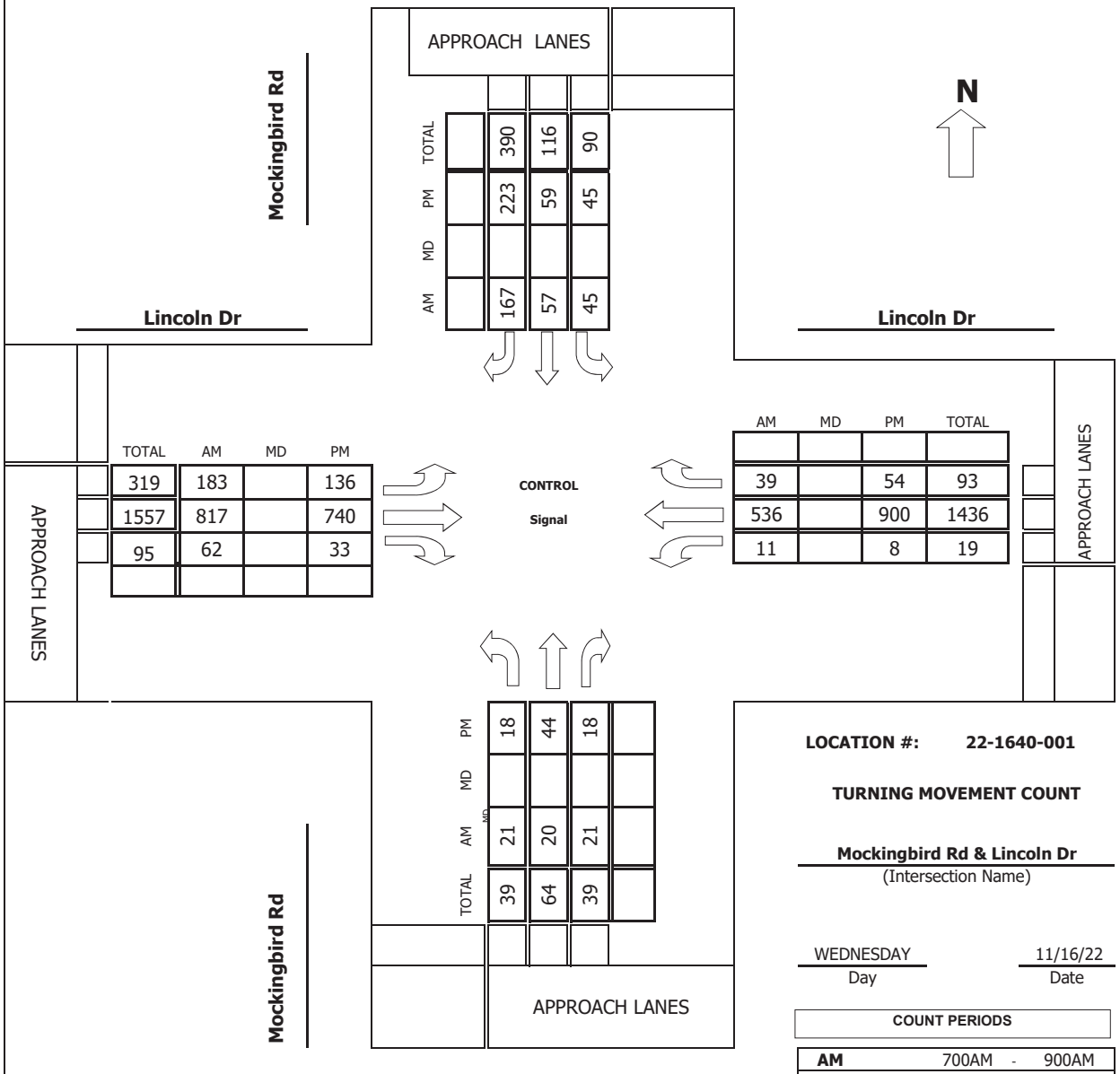
EXISTING TRAFFIC COUNTS

Intersection Turning Movement
Prepared by:

FIELD DATA SERVICES OF ARIZONA, INC.
520.316.6745

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

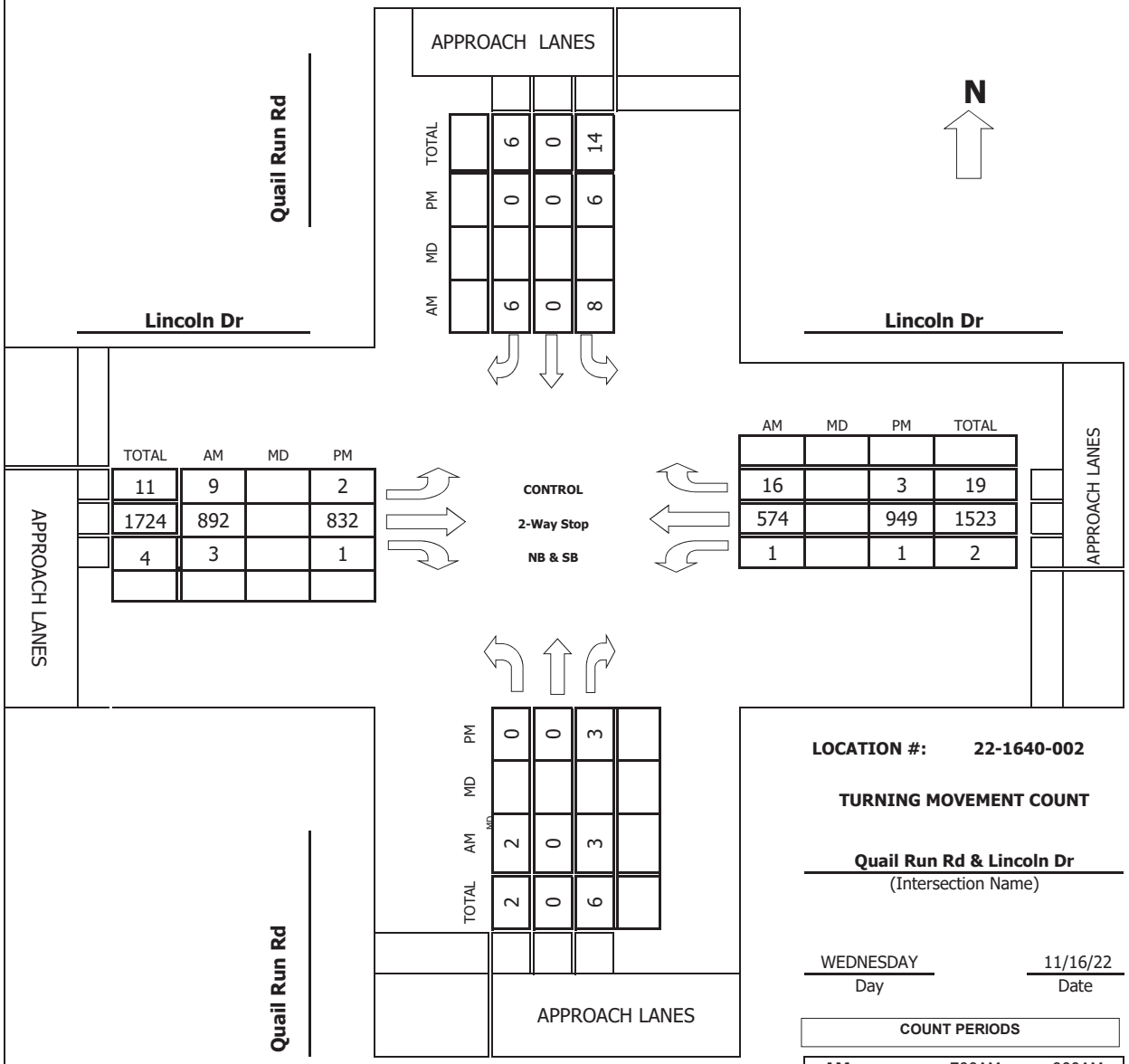
PM PEAK HOUR 415 PM

Intersection Turning Movement
Prepared by:

FIELD DATA SERVICES OF ARIZONA, INC.
520.316.6745

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

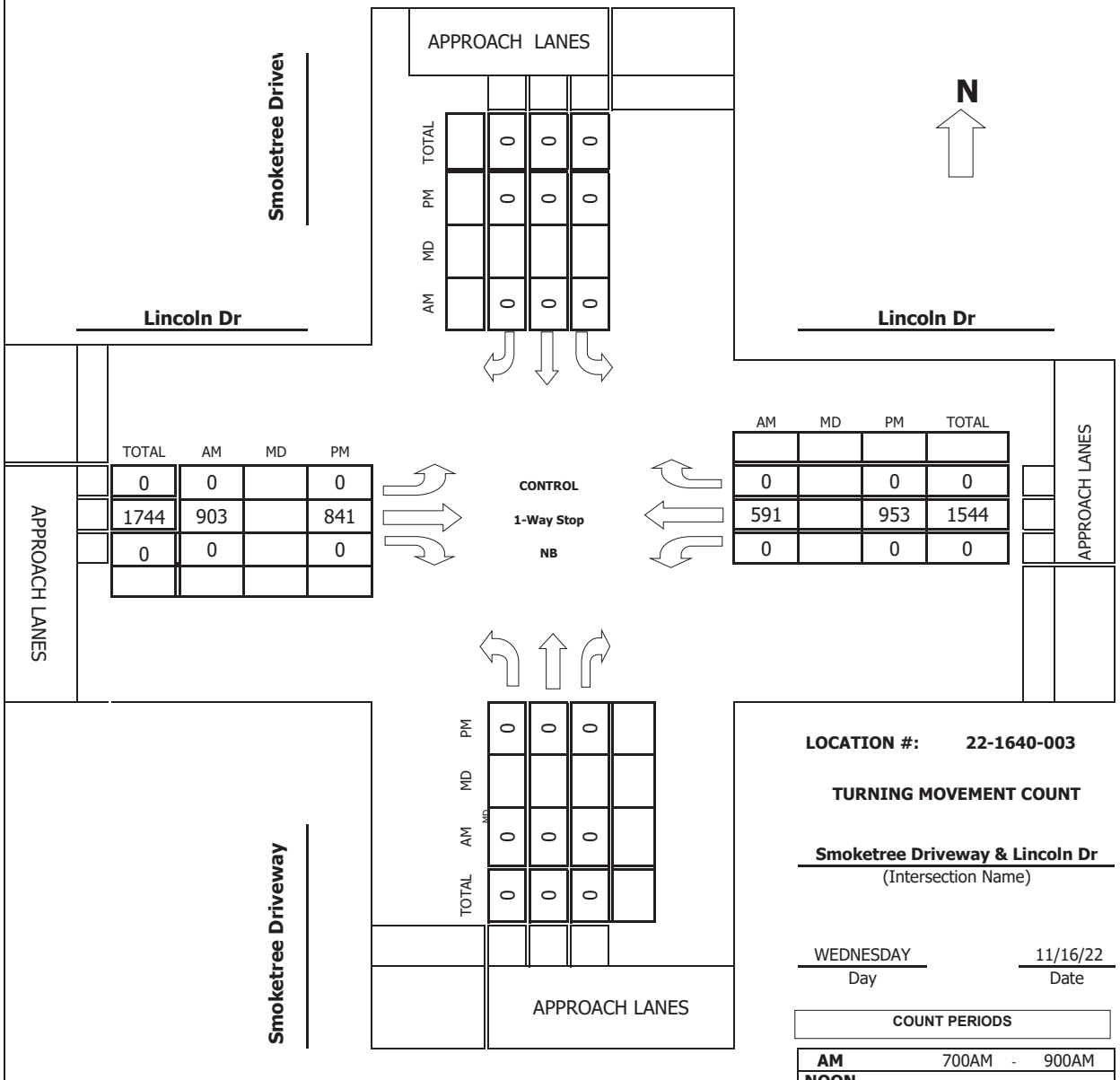
PM PEAK HOUR 430 PM

Intersection Turning Movement
Prepared by:

FIELD DATA SERVICES OF ARIZONA, INC.
520.316.6745

Project #: 22-1640-003

TMC SUMMARY OF Smoketree Driveway & Lincoln Dr



LOCATION #: 22-1640-003

TURNING MOVEMENT COUNT

Smoketree 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

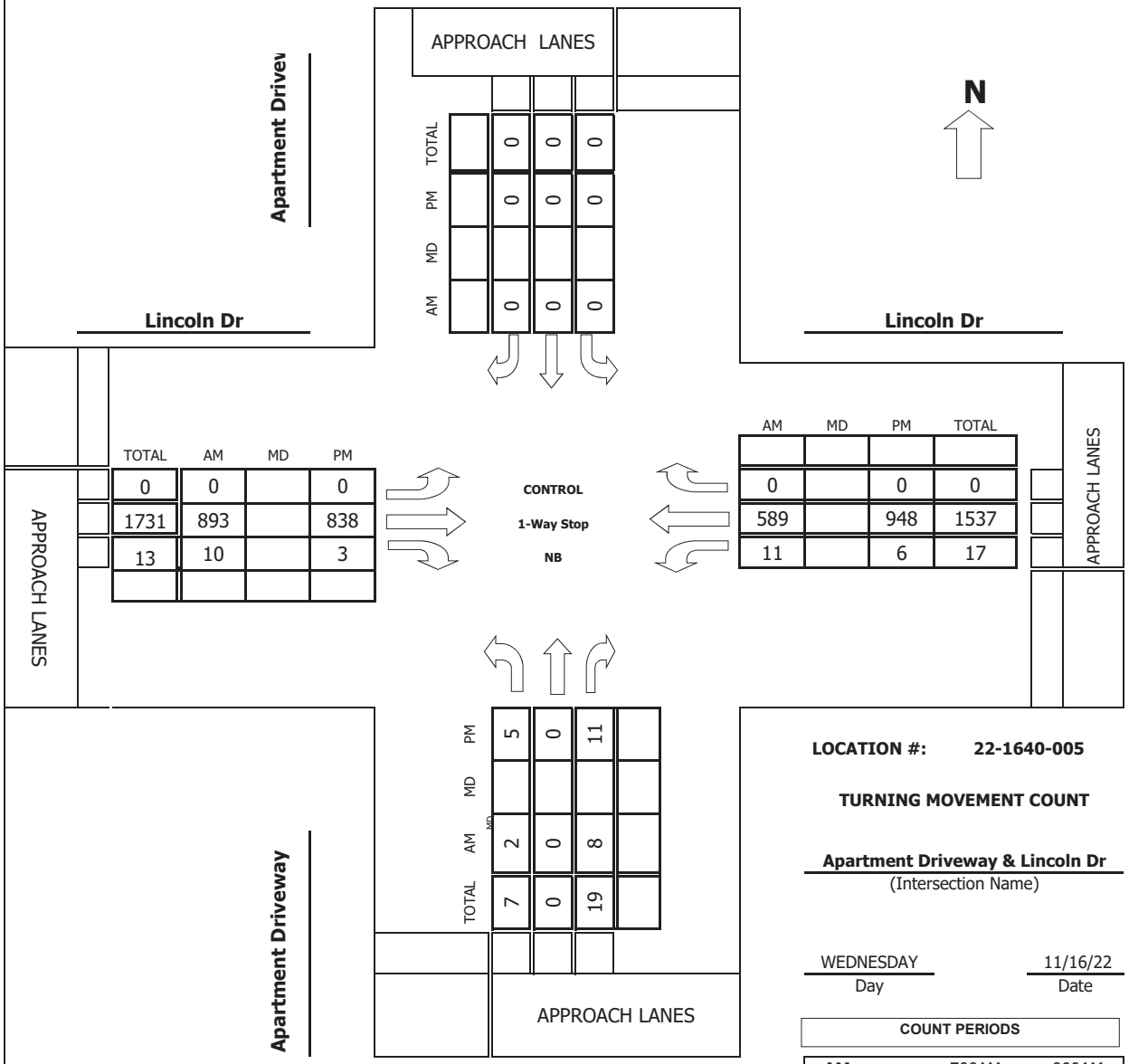
PM PEAK HOUR 430 PM

Intersection Turning Movement
Prepared by:

FIELD DATA SERVICES OF ARIZONA, INC.
520.316.6745

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 — Day
11/16/22 — Date

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

AM PEAK HOUR 800 AM

NOON PEAK HOUR

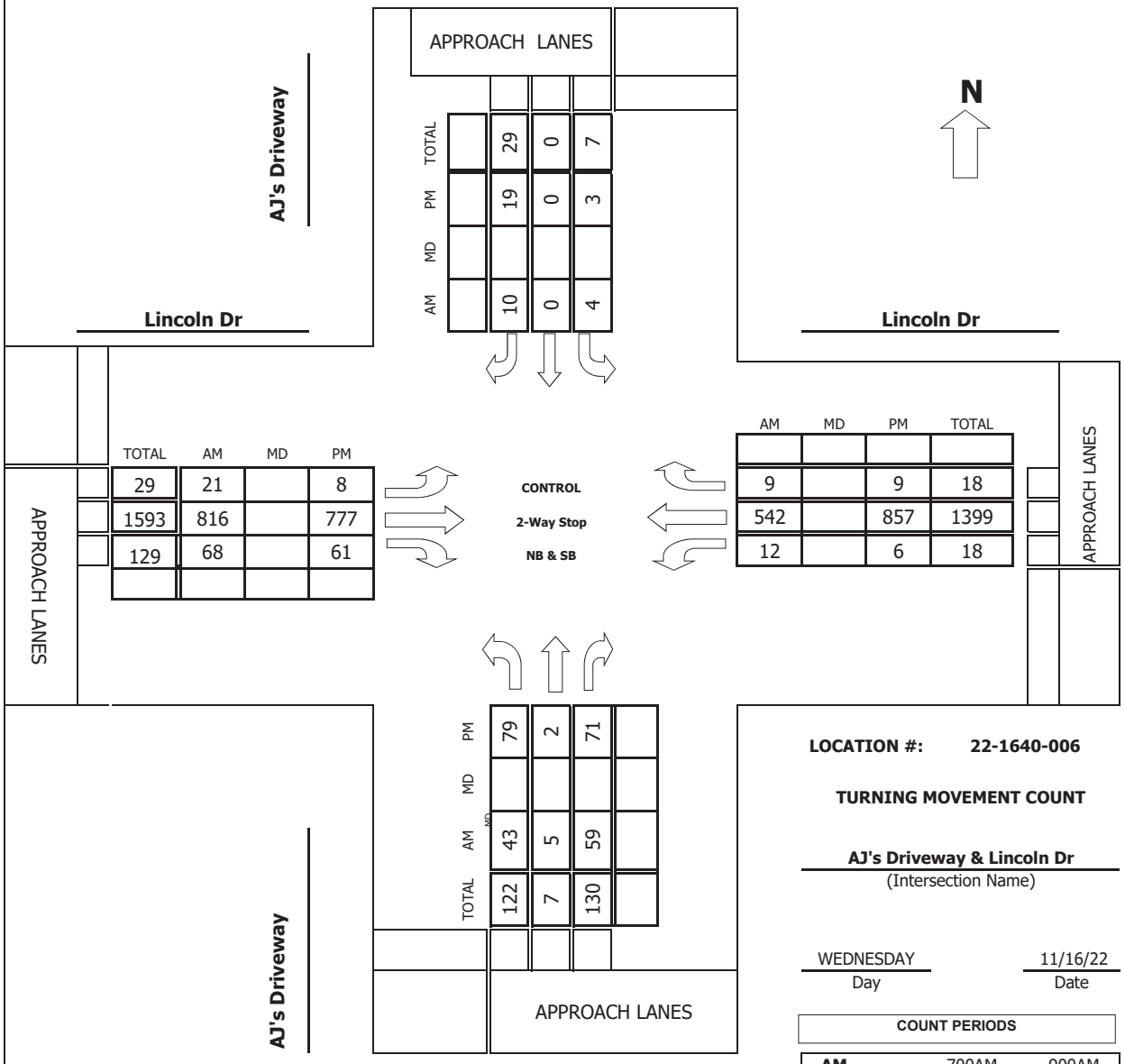
PM PEAK HOUR 430 PM

Intersection Turning Movement
Prepared by:

FIELD DATA SERVICES OF ARIZONA, INC.
520.316.6745

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

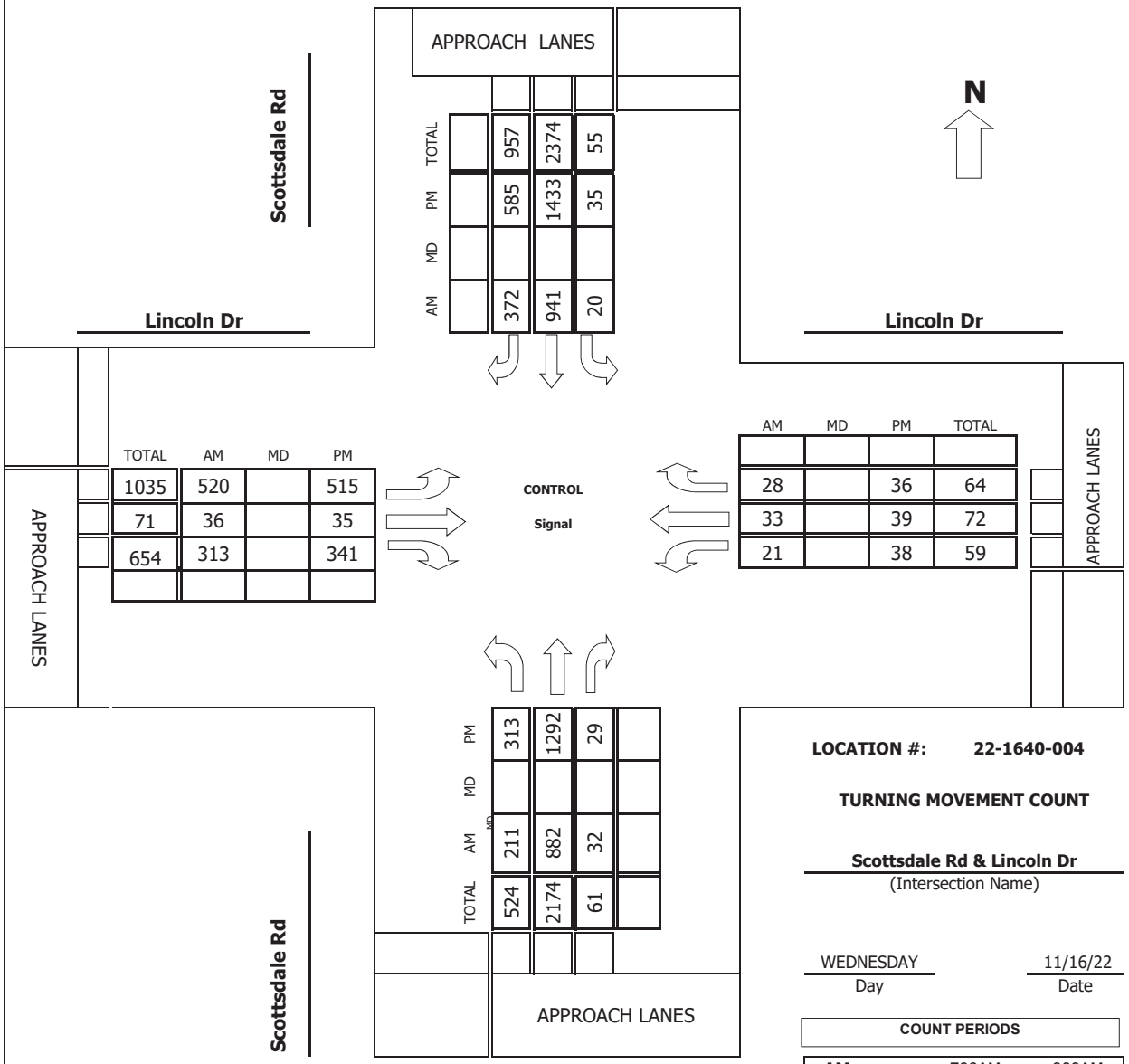
PM PEAK HOUR 430 PM

Intersection Turning Movement
Prepared by:

FIELD DATA SERVICES OF ARIZONA, INC.
520.316.6745

Project #: 22-1640-004

TMC SUMMARY OF Scottsdale Rd & Lincoln Dr



LOCATION #: 22-1640-004

TURNING MOVEMENT COUNT

Scottsdale 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 445 PM

APPENDIX C

EXISTING PEAK HOUR ANALYSIS

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	183	817	11	536	39	21	20	45	57	167
Future Volume (vph)	183	817	11	536	39	21	20	45	57	167
Turn Type	pm+pt	NA	Perm	NA	Perm	Perm	NA	pm+pt	NA	Perm
Protected Phases	1	6		2			4	3	8	
Permitted Phases	6		2		2	4		8		8
Detector Phase	1	6	2	2	2	4	4	3	8	8
Switch Phase										
Minimum Initial (s)	3.5	15.0	15.0	15.0	15.0	7.0	7.0	3.5	7.0	7.0
Minimum Split (s)	8.0	27.0	27.0	27.0	27.0	33.5	33.5	8.0	33.5	33.5
Total Split (s)	27.0	77.0	50.0	50.0	50.0	44.0	44.0	9.0	53.0	53.0
Total Split (%)	20.8%	59.2%	38.5%	38.5%	38.5%	33.8%	33.8%	6.9%	40.8%	40.8%
Yellow Time (s)	3.0	4.5	4.5	4.5	4.5	4.0	4.0	3.0	4.0	4.0
All-Red Time (s)	1.0	1.5	1.5	1.5	1.5	2.5	2.5	1.0	2.5	2.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	6.0	6.0	6.0	6.0	6.5	6.5	4.0	6.5	6.5
Lead/Lag	Lead		Lag	Lag	Lag	Lag	Lag	Lead		
Lead-Lag Optimize?	Yes		Yes	Yes	Yes	Yes	Yes	Yes		
Recall Mode	None	C-Max	C-Max	C-Max	C-Max	None	None	None	None	None
Act Effct Green (s)	103.9	101.9	88.8	88.8	88.8	8.4	8.4	18.1	15.6	15.6
Actuated g/C Ratio	0.80	0.78	0.68	0.68	0.68	0.06	0.06	0.14	0.12	0.12
v/c Ratio	0.31	0.32	0.03	0.23	0.04	0.28	0.33	0.37	0.30	0.57
Control Delay	4.7	4.7	6.6	6.1	0.1	66.2	39.9	55.2	53.9	13.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	4.7	4.7	6.6	6.1	0.1	66.2	39.9	55.2	53.9	13.1
LOS	A	A	A	A	A	E	D	E	D	B
Approach Delay		4.7		5.7			48.8		28.8	
Approach LOS		A		A			D		C	

Intersection Summary		
Cycle Length: 130		
Actuated Cycle Length: 130		
Offset: 35 (27%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green		
Natural Cycle: 80		
Control Type: Actuated-Coordinated		
Maximum v/c Ratio: 0.57		
Intersection Signal Delay: 10.1	Intersection LOS: B	
Intersection Capacity Utilization 60.5%	ICU Level of Service B	
Analysis Period (min) 15		

Splits and Phases: 1: Mockingbird Ln & Lincoln Dr

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	136	740	8	900	54	18	44	45	59	223
Future Volume (vph)	136	740	8	900	54	18	44	45	59	223
Turn Type	pm+pt	NA	Perm	NA	Perm	Perm	NA	pm+pt	NA	Perm
Protected Phases	1	6		2			4	3	8	
Permitted Phases	6		2		2	4		8		8
Detector Phase	1	6	2	2	2	4	4	3	8	8
Switch Phase										
Minimum Initial (s)	3.5	15.0	15.0	15.0	15.0	7.0	7.0	3.5	7.0	7.0
Minimum Split (s)	8.0	27.0	27.0	27.0	27.0	33.5	33.5	8.0	33.5	33.5
Total Split (s)	31.0	88.0	57.0	57.0	57.0	34.0	34.0	8.0	42.0	42.0
Total Split (%)	23.8%	67.7%	43.8%	43.8%	43.8%	26.2%	26.2%	6.2%	32.3%	32.3%
Yellow Time (s)	3.0	4.5	4.5	4.5	4.5	4.0	4.0	3.0	4.0	4.0
All-Red Time (s)	1.0	1.5	1.5	1.5	1.5	2.5	2.5	1.0	2.5	2.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	6.0	6.0	6.0	6.0	6.5	6.5	4.0	6.5	6.5
Lead/Lag	Lead		Lag	Lag	Lag	Lag	Lag	Lead		
Lead-Lag Optimize?	Yes		Yes	Yes	Yes	Yes	Yes	Yes		
Recall Mode	None	C-Max	C-Max	C-Max	C-Max	None	None	None	None	None
Act Effct Green (s)	103.6	101.6	89.5	89.5	89.5	9.5	9.5	18.4	15.9	15.9
Actuated g/C Ratio	0.80	0.78	0.69	0.69	0.69	0.07	0.07	0.14	0.12	0.12
v/c Ratio	0.34	0.28	0.02	0.38	0.05	0.22	0.45	0.38	0.31	0.65
Control Delay	5.6	4.6	8.5	8.9	0.4	61.4	54.4	55.2	53.7	13.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	5.6	4.6	8.5	8.9	0.4	61.4	54.4	55.2	53.7	13.2
LOS	A	A	A	A	A	E	D	E	D	B
Approach Delay		4.7		8.4			56.0		26.4	
Approach LOS		A		A			E		C	

Intersection Summary		
Cycle Length: 130		
Actuated Cycle Length: 130		
Offset: 0 (0%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green		
Natural Cycle: 80		
Control Type: Actuated-Coordinated		
Maximum v/c Ratio: 0.65		
Intersection Signal Delay: 11.6	Intersection LOS: B	
Intersection Capacity Utilization 59.9%	ICU Level of Service B	
Analysis Period (min) 15		

Splits and Phases: 1: Mockingbird Ln & Lincoln Dr

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	183	817	62	11	536	39	21	20	21	45	57	167
Future Volume (veh/h)	183	817	62	11	536	39	21	20	21	45	57	167
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	195	869	66	12	576	42	23	22	23	56	70	206
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	554	2629	200	431	2474	993	148	78	81	204	310	237
Arrive On Green	0.05	0.75	0.75	0.22	0.22	0.22	0.09	0.09	0.09	0.04	0.16	0.16
Sat Flow, veh/h	1688	3523	268	567	3741	1502	1045	881	921	1688	1969	1502
Grp Volume(v), veh/h	195	461	474	12	576	42	23	0	45	56	70	206
Grp Sat Flow(s),veh/h/ln	1688	1870	1921	567	1870	1502	1045	0	1803	1688	1969	1502
Q Serve(g_s), s	4.6	10.8	10.8	2.2	16.5	2.9	2.7	0.0	3.0	3.8	4.0	17.4
Cycle Q Clear(g_c), s	4.6	10.8	10.8	2.2	16.5	2.9	2.7	0.0	3.0	3.8	4.0	17.4
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	554	1396	1433	431	2474	993	148	0	159	204	310	237
V/C Ratio(X)	0.35	0.33	0.33	0.03	0.23	0.04	0.16	0.00	0.28	0.27	0.23	0.87
Avail Cap(c_a), veh/h	762	1396	1433	431	2474	993	357	0	520	204	704	537
HCM Platoon Ratio	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.97	0.97	0.97	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	7.1	5.6	5.6	18.1	23.7	18.3	55.2	0.0	55.4	49.6	47.8	53.5
Incr Delay (d2), s/veh	0.4	0.6	0.6	0.1	0.2	0.1	0.5	0.0	1.0	0.7	0.4	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	2.8	7.3	7.5	0.5	13.0	1.8	1.3	0.0	2.6	3.0	3.7	11.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	7.5	6.2	6.2	18.2	23.9	18.4	55.7	0.0	56.4	50.3	48.2	63.0
LnGrp LOS	A	A	A	B	C	B	E	A	E	D	D	E
Approach Vol, veh/h		1130			630			68			332	
Approach Delay, s/veh		6.4			23.4			56.1			57.7	
Approach LOS		A			C			E			E	
Timer - Assigned Phs	1	2	3	4		6		8				
Phs Duration (G+Y+Rc), s	11.0	92.0	9.0	18.0		103.0		27.0				
Change Period (Y+Rc), s	4.0	6.0	4.0	6.5		6.0		6.5				
Max Green Setting (Gmax), s	23.0	44.0	5.0	37.5		71.0		46.5				
Max Q Clear Time (g_c+I1), s	6.6	18.5	5.8	5.0		12.8		19.4				
Green Ext Time (p_c), s	0.5	4.4	0.0	0.3		7.6		1.1				
Intersection Summary												
HCM 6th Ctrl Delay			20.8									
HCM 6th LOS			C									

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	136	740	33	8	900	54	18	44	18	45	59	223
Future Volume (veh/h)	136	740	33	8	900	54	18	44	18	45	59	223
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	145	787	35	9	968	58	20	48	20	56	73	275
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	460	2561	114	446	2334	937	193	185	77	244	397	303
Arrive On Green	0.05	0.70	0.70	1.00	1.00	1.00	0.14	0.14	0.14	0.03	0.20	0.20
Sat Flow, veh/h	1688	3648	162	631	3741	1502	978	1320	550	1688	1969	1502
Grp Volume(v), veh/h	145	403	419	9	968	58	20	0	68	56	73	275
Grp Sat Flow(s),veh/h/ln	1688	1870	1940	631	1870	1502	978	0	1870	1688	1969	1502
Q Serve(g_s), s	3.8	10.7	10.7	0.0	0.0	0.0	2.3	0.0	4.2	3.6	4.0	23.3
Cycle Q Clear(g_c), s	3.8	10.7	10.7	0.5	0.0	0.0	2.3	0.0	4.2	3.6	4.0	23.3
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	460	1313	1362	446	2334	937	193	0	262	244	397	303
V/C Ratio(X)	0.32	0.31	0.31	0.02	0.41	0.06	0.10	0.00	0.26	0.23	0.18	0.91
Avail Cap(c_a), veh/h	731	1313	1362	446	2334	937	262	0	396	244	538	410
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.89	0.89	0.89	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	7.0	7.4	7.4	0.0	0.0	0.0	49.0	0.0	49.8	44.6	43.0	50.7
Incr Delay (d2), s/veh	0.4	0.6	0.6	0.1	0.5	0.1	0.2	0.0	0.5	0.5	0.2	19.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	2.5	7.7	7.9	0.0	0.3	0.1	1.1	0.0	3.6	2.8	3.6	15.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	7.4	8.0	7.9	0.1	0.5	0.1	49.3	0.0	50.4	45.1	43.2	69.9
LnGrp LOS	A	A	A	A	A	A	D	A	D	D	D	E
Approach Vol, veh/h		967			1035			88			404	
Approach Delay, s/veh		7.9			0.5			50.1			61.7	
Approach LOS		A			A			D			E	
Timer - Assigned Phs	1	2	3	4		6		8				
Phs Duration (G+Y+Rc), s	10.2	87.1	8.0	24.7		97.3		32.7				
Change Period (Y+Rc), s	4.0	6.0	4.0	6.5		6.0		6.5				
Max Green Setting (Gmax), s	27.0	51.0	4.0	27.5		82.0		35.5				
Max Q Clear Time (g_c+I1), s	5.8	2.5	5.6	6.2		12.7		25.3				
Green Ext Time (p_c), s	0.4	9.3	0.0	0.4		6.3		1.0				
Intersection Summary												
HCM 6th Ctrl Delay			15.0									
HCM 6th LOS			B									

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	9	862	1	574	16	2	0	8	0
Future Volume (vph)	9	862	1	574	16	2	0	8	0
Turn Type	pm+pt	NA	Perm	NA	Perm	Perm	NA	Perm	NA
Protected Phases	1	6		2			4		8
Permitted Phases	6		2		2	4		8	
Detector Phase	1	6	2	2	2	4	4	8	8
Switch Phase									
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.5	24.0	24.0	24.0	24.0	26.5	26.5	26.5	26.5
Total Split (s)	18.0	96.0	78.0	78.0	78.0	34.0	34.0	34.0	34.0
Total Split (%)	13.8%	73.8%	60.0%	60.0%	60.0%	26.2%	26.2%	26.2%	26.2%
Yellow Time (s)	3.0	4.5	4.5	4.5	4.5	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.5	1.5	1.5	1.5	2.5	2.5	2.5	2.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0		0.0
Total Lost Time (s)	4.0	6.0	6.0	6.0	6.0		6.5		6.5
Lead/Lag	Lead		Lag	Lag	Lag				
Lead-Lag Optimize?	Yes		Yes	Yes	Yes				
Recall Mode	None	C-Max	C-Max	C-Max	C-Max	Max	Max	Max	Max
Act Effct Green (s)	92.0	90.0	88.0	88.0	88.0		27.5		27.5
Actuated g/C Ratio	0.71	0.69	0.68	0.68	0.68		0.21		0.21
v/c Ratio	0.02	0.41	0.00	0.26	0.02		0.02		0.05
Control Delay	5.3	7.9	8.0	9.0	0.0		0.0		0.3
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0		0.0
Total Delay	5.3	7.9	8.0	9.0	0.0		0.0		0.3
LOS	A	A	A	A	A		A		A
Approach Delay		7.9		8.7					0.3
Approach LOS		A		A					A

Intersection Summary

Cycle Length: 130
Actuated Cycle Length: 130
Offset: 0 (0%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green
Natural Cycle: 60
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.41
Intersection Signal Delay: 8.1 — Intersection LOS: A
Intersection Capacity Utilization 38.5% — ICU Level of Service A
Analysis Period (min) 15

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

Lane Group	EBL	EBT	WBL	WBT	WBR	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	2	832	1	949	3	0	6	0
Future Volume (vph)	2	832	1	949	3	0	6	0
Turn Type	pm+pt	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases	1	6		2		4		8
Permitted Phases	6		2		2		8	
Detector Phase	1	6	2	2	2	4	8	8
Switch Phase								
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	12.0	24.0	24.0	24.0	24.0	26.5	26.5	26.5
Total Split (s)	23.0	93.0	70.0	70.0	70.0	37.0	37.0	37.0
Total Split (%)	17.7%	71.5%	53.8%	53.8%	53.8%	28.5%	28.5%	28.5%
Yellow Time (s)	3.0	4.5	4.5	4.5	4.5	4.0	4.0	4.0
All-Red Time (s)	1.0	1.5	1.5	1.5	1.5	2.5	2.5	2.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0		0.0
Total Lost Time (s)	4.0	6.0	6.0	6.0	6.0	6.5		6.5
Lead/Lag	Lead		Lag	Lag	Lag			
Lead-Lag Optimize?	Yes		Yes	Yes	Yes			
Recall Mode	None	C-Max	C-Max	C-Max	C-Max	Max	Max	Max
Act Effct Green (s)	89.0	87.0	85.1	85.1	85.1	30.5		30.5
Actuated g/C Ratio	0.68	0.67	0.65	0.65	0.65	0.23		0.23
v/c Ratio	0.01	0.41	0.00	0.45	0.00	0.01		0.03
Control Delay	5.5	8.3	9.0	12.2	0.0	0.0		38.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0		0.0
Total Delay	5.5	8.3	9.0	12.2	0.0	0.0		38.8
LOS	A	A	A	B	A	A		D
Approach Delay		8.3		12.1				38.8
Approach LOS		A		B				D

Intersection Summary

Cycle Length: 130
Actuated Cycle Length: 130
Offset: 0 (0%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green
Natural Cycle: 65
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.45
Intersection Signal Delay: 10.4 — Intersection LOS: B
Intersection Capacity Utilization 41.6% — ICU Level of Service A
Analysis Period (min) 15

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	9	862	3	1	574	16	2	0	3	8	0	6
Future Volume (veh/h)	9	862	3	1	574	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	1002	3	1	631	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	525	2516	8	312	2309	1030	144	16	203	205	12	143
Arrive On Green	0.00	0.23	0.23	0.65	0.65	0.65	0.21	0.00	0.21	0.21	0.00	0.21
Sat Flow, veh/h	1781	3634	11	561	3554	1585	499	76	958	768	57	675
Grp Volume(v), veh/h	10	490	515	1	631	18	8	0	0	20	0	0
Grp Sat Flow(s),veh/h/ln	1781	1777	1868	561	1777	1585	1533	0	0	1499	0	0
Q Serve(g_s), s	0.2	30.4	30.4	0.1	9.8	0.5	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.2	30.4	30.4	25.0	9.8	0.5	0.5	0.0	0.0	1.2	0.0	0.0
Prop In Lane	1.00		0.01	1.00		1.00	0.37		0.62	0.55		0.45
Lane Grp Cap(c), veh/h	525	1230	1294	312	2309	1030	362	0	0	360	0	0
V/C Ratio(X)	0.02	0.40	0.40	0.00	0.27	0.02	0.02	0.00	0.00	0.06	0.00	0.00
Avail Cap(c_a), veh/h	697	1230	1294	312	2309	1030	362	0	0	360	0	0
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)	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	7.4	27.2	27.2	19.1	9.7	8.1	40.6	0.0	0.0	40.9	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.9	0.9	0.0	0.3	0.0	0.1	0.0	0.0	0.3	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.2	21.0	21.9	0.0	6.9	0.3	0.4	0.0	0.0	1.0	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	7.4	28.1	28.0	19.1	10.0	8.1	40.7	0.0	0.0	41.2	0.0	0.0
LnGrp LOS	A	C	C	B	A	A	D	A	A	D	A	A
Approach Vol, veh/h		1015			650			8			20	
Approach Delay, s/veh		27.9			9.9			40.7			41.2	
Approach LOS		C			A			D			D	

Timer - Assigned Phs	1	2		4		6		8				
Phs Duration (G+Y+Rc), s	5.5	90.5		34.0		96.0		34.0				
Change Period (Y+Rc), s	4.0	6.0		6.5		6.0		6.5				
Max Green Setting (Gmax), s	14.0	72.0		27.5		90.0		27.5				
Max Q Clear Time (g_c+I1), s	2.2	27.0		2.5		32.4		3.2				
Green Ext Time (p_c), s	0.0	5.1		0.0		8.4		0.0				

Intersection Summary	
HCM 6th Ctrl Delay	21.2
HCM 6th LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	2	832	1	1	949	3	0	0	3	6	0	0
Future Volume (veh/h)	2	832	1	1	949	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	967	1	1	1043	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	321	2438	3	418	2259	1008	0	0	372	383	0	0
Arrive On Green	0.00	0.89	0.89	0.64	0.64	0.64	0.00	0.00	0.23	0.23	0.00	0.00
Sat Flow, veh/h	1781	3643	4	581	3554	1585	0	0	1585	1397	0	0
Grp Volume(v), veh/h	2	472	496	1	1043	3	0	0	5	9	0	0
Grp Sat Flow(s),veh/h/ln	1781	1777	1870	581	1777	1585	0	0	1585	1397	0	0
Q Serve(g_s), s	0.1	5.9	5.9	0.1	19.7	0.1	0.0	0.0	0.3	0.6	0.0	0.0
Cycle Q Clear(g_c), s	0.1	5.9	5.9	1.6	19.7	0.1	0.0	0.0	0.3	1.0	0.0	0.0
Prop In Lane	1.00		0.00	1.00		1.00	0.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	321	1189	1251	418	2259	1008	0	0	372	383	0	0
V/C Ratio(X)	0.01	0.40	0.40	0.00	0.46	0.00	0.00	0.00	0.01	0.02	0.00	0.00
Avail Cap(c_a), veh/h	577	1189	1251	418	2259	1008	0	0	372	383	0	0
HCM Platoon Ratio	1.33	1.33	1.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.97	0.97	0.97	1.00	1.00	1.00	0.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	9.6	2.7	2.7	9.2	12.2	8.6	0.0	0.0	38.2	38.6	0.0	0.0
Incr Delay (d2), s/veh	0.0	1.0	0.9	0.0	0.7	0.0	0.0	0.0	0.1	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	0.0	3.4	3.5	0.0	12.4	0.1	0.0	0.0	0.2	0.4	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	9.6	3.6	3.6	9.2	12.9	8.6	0.0	0.0	38.3	38.7	0.0	0.0
LnGrp LOS	A	A	A	A	B	A	A	A	D	D	A	A
Approach Vol, veh/h		970			1047			5			9	
Approach Delay, s/veh		3.6			12.9			38.3			38.7	
Approach LOS		A			B			D			D	

Timer - Assigned Phs	1	2		4		6		8				
Phs Duration (G+Y+Rc), s	4.3	88.7		37.0		93.0		37.0				
Change Period (Y+Rc), s	4.0	6.0		6.5		6.0		6.5				
Max Green Setting (Gmax), s	19.0	64.0		30.5		87.0		30.5				
Max Q Clear Time (g_c+I1), s	2.1	21.7		2.3		7.9		3.0				
Green Ext Time (p_c), s	0.0	9.8		0.0		8.0		0.0				

Intersection Summary	
HCM 6th Ctrl Delay	8.6
HCM 6th LOS	A

Intersection	
Int Delay, s/veh	0.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	893	10	11	589	2	8
Future Vol, veh/h	893	10	11	589	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	1038	12	12	647	4	16

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1050	0	1392	525
Stage 1	-	-	-	-	1044	-
Stage 2	-	-	-	-	348	-
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	-	-	1029	-	*133	*715
Stage 1	-	-	-	-	*647	-
Stage 2	-	-	-	-	*794	-
Platoon blocked, %	-	-	1	-		1
Mov Cap-1 Maneuver	-	-	1029	-	*131	*715
Mov Cap-2 Maneuver	-	-	-	-	*131	-
Stage 1	-	-	-	-	*647	-
Stage 2	-	-	-	-	*784	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.2	15.1
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	378	-	-	1029	-
HCM Lane V/C Ratio	0.053	-	-	0.012	-
HCM Control Delay (s)	15.1	-	-	8.5	-
HCM Lane LOS	C	-	-	A	-
HCM 95th %tile Q(veh)	0.2	-	-	0	-

Notes

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

Intersection	
Int Delay, s/veh	0.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	838	3	6	948	5	11
Future Vol, veh/h	838	3	6	948	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	974	3	7	1042	10	22

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	977	0	1511	489
Stage 1	-	-	-	-	976	-
Stage 2	-	-	-	-	535	-
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	-	-	1073	-	*111	*739
Stage 1	-	-	-	-	*670	-
Stage 2	-	-	-	-	*646	-
Platoon blocked, %	-	-	1	-		1
Mov Cap-1 Maneuver	-	-	1073	-	*110	*739
Mov Cap-2 Maneuver	-	-	-	-	*110	-
Stage 1	-	-	-	-	*670	-
Stage 2	-	-	-	-	*642	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	20.4
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	265	-	-	1073	-
HCM Lane V/C Ratio	0.121	-	-	0.006	-
HCM Control Delay (s)	20.4	-	-	8.4	-
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

Intersection	
Int Delay, s/veh	1.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	21	816	68	12	542	9	43	5	59	4	0	10
Future Vol, veh/h	21	816	68	12	542	9	43	5	59	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	927	77	13	571	9	57	7	78	6	0	14

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	580	0	0	1004	0	0	1326	1620	502	1117	-	290
Stage 1	-	-	-	-	-	-	1014	1014	-	602	-	-
Stage 2	-	-	-	-	-	-	312	606	-	515	-	-
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	*1297	-	-	1038	-	-	*114	102	*739	*162	0	*867
Stage 1	-	-	-	-	-	-	*619	559	-	*813	0	-
Stage 2	-	-	-	-	-	-	*817	710	-	*697	0	-
Platoon blocked, %	1	-	-	1	-	-			1			1
Mov Cap-1 Maneuver	*1297	-	-	1038	-	-	*109	99	*739	*139	-	*867
Mov Cap-2 Maneuver	-	-	-	-	-	-	*359	321	-	*372	-	-
Stage 1	-	-	-	-	-	-	*607	549	-	*798	-	-
Stage 2	-	-	-	-	-	-	*794	701	-	*605	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	0.2	15.1	10.8
HCM LOS			C	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	497	* 1297	-	-	1038	-	-	372	867
HCM Lane V/C Ratio	0.283	0.018	-	-	0.012	-	-	0.015	0.016
HCM Control Delay (s)	15.1	7.8	-	-	8.5	-	-	14.8	9.2
HCM Lane LOS	C	A	-	-	A	-	-	B	A
HCM 95th %tile Q(veh)	1.2	0.1	-	-	0	-	-	0	0.1

Notes

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

Intersection	
Int Delay, s/veh	2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	8	777	61	6	857	9	79	2	71	3	0	19
Future Vol, veh/h	8	777	61	6	857	9	79	2	71	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	883	69	6	902	9	104	3	93	4	0	27

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	911	0	0	952	0	0	1399	1859	476	1380	-	456
Stage 1	-	-	-	-	-	-	936	936	-	919	-	-
Stage 2	-	-	-	-	-	-	463	923	-	461	-	-
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	*1102	-	-	1055	-	-	*~ 100	*73	*763	*104	0	*737
Stage 1	-	-	-	-	-	-	*655	*588	-	*695	0	-
Stage 2	-	-	-	-	-	-	*695	*609	-	*720	0	-
Platoon blocked, %	1	-	-	1	-	-			1			1
Mov Cap-1 Maneuver	*1102	-	-	1055	-	-	*~ 95	*72	*763	*90	-	*737
Mov Cap-2 Maneuver	-	-	-	-	-	-	*341	*302	-	*338	-	-
Stage 1	-	-	-	-	-	-	*650	*583	-	*689	-	-
Stage 2	-	-	-	-	-	-	*665	*605	-	*624	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0.1	18.8	10.9
HCM LOS			C	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	459	* 1102	-	-	1055	-	-	338	737
HCM Lane V/C Ratio	0.436	0.008	-	-	0.006	-	-	0.013	0.037
HCM Control Delay (s)	18.8	8.3	-	-	8.4	-	-	15.8	10.1
HCM Lane LOS	C	A	-	-	A	-	-	C	B
HCM 95th %tile Q(veh)	2.2	0	-	-	0	-	-	0	0.1

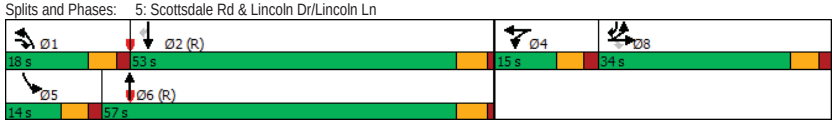
Notes

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

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	520	36	313	21	33	211	882	20	941	372
Future Volume (vph)	520	36	313	21	33	211	882	20	941	372
Turn Type	Split	NA	pm+ov	Split	NA	Prot	NA	Prot	NA	pm+ov
Protected Phases	8	8	1	4	4	1	6	5	2	8
Permitted Phases			8							2
Detector Phase	8	8	1	4	4	1	6	5	2	8
Switch Phase										
Minimum Initial (s)	7.0	7.0	5.0	7.0	7.0	5.0	10.0	5.0	10.0	7.0
Minimum Split (s)	34.0	34.0	11.0	13.0	13.0	11.0	30.7	11.0	30.7	34.0
Total Split (s)	34.0	34.0	18.0	15.0	15.0	18.0	57.0	14.0	53.0	34.0
Total Split (%)	28.3%	28.3%	15.0%	12.5%	12.5%	15.0%	47.5%	11.7%	44.2%	28.3%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.7	4.0	4.7	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	1.0	2.0	1.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	5.7	6.0	5.7	6.0
Lead/Lag			Lead			Lead	Lag	Lead	Lag	
Lead-Lag Optimize?										
Recall Mode	None	None	None	None	None	None	C-Max	None	C-Max	None
Act Effct Green (s)	26.5	26.5	43.7	7.3	7.3	11.2	63.4	6.2	53.9	81.3
Actuated g/C Ratio	0.22	0.22	0.36	0.06	0.06	0.09	0.53	0.05	0.45	0.68
v/c Ratio	0.82	0.84	0.52	0.22	0.31	0.72	0.38	0.24	0.45	0.35
Control Delay	63.0	64.0	19.4	58.7	35.8	66.2	19.4	60.6	25.2	1.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	63.0	64.0	19.4	58.7	35.8	66.2	19.4	60.6	25.2	1.9
LOS	E	E	B	E	D	E	B	E	C	A
Approach Delay		47.6			41.7		28.2		19.2	
Approach LOS		D			D		C		B	

Intersection Summary		
Cycle Length: 120		
Actuated Cycle Length: 120		
Offset: 2 (2%), Referenced to phase 2:SBT and 6:NBT, Start of Green		
Natural Cycle: 90		
Control Type: Actuated-Coordinated		
Maximum v/c Ratio: 0.84		
Intersection Signal Delay: 30.0	Intersection LOS: C	
Intersection Capacity Utilization 61.0%	ICU Level of Service B	
Analysis Period (min) 15		

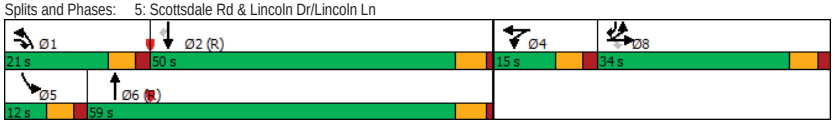
Splits and Phases: 5: Scottsdale Rd & Lincoln Dr/Lincoln Ln



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	515	35	341	38	39	313	1292	35	1433	585
Future Volume (vph)	515	35	341	38	39	313	1292	35	1433	585
Turn Type	Split	NA	pm+ov	Split	NA	Prot	NA	Prot	NA	pm+ov
Protected Phases	8	8	1	4	4	1	6	5	2	8
Permitted Phases			8							2
Detector Phase	8	8	1	4	4	1	6	5	2	8
Switch Phase										
Minimum Initial (s)	7.0	7.0	5.0	7.0	7.0	5.0	10.0	5.0	10.0	7.0
Minimum Split (s)	34.0	34.0	11.0	13.0	13.0	11.0	30.7	11.0	30.7	34.0
Total Split (s)	34.0	34.0	21.0	15.0	15.0	21.0	59.0	12.0	50.0	34.0
Total Split (%)	28.3%	28.3%	17.5%	12.5%	12.5%	17.5%	49.2%	10.0%	41.7%	28.3%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.7	4.0	4.7	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	1.0	2.0	1.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	5.7	6.0	5.7	6.0
Lead/Lag			Lead			Lead	Lag	Lead	Lag	
Lead-Lag Optimize?										
Recall Mode	None	None	None	None	None	None	C-Max	None	C-Max	None
Act Effct Green (s)	26.3	26.3	46.8	7.8	7.8	14.4	63.6	5.8	50.4	77.6
Actuated g/C Ratio	0.22	0.22	0.39	0.06	0.06	0.12	0.53	0.05	0.42	0.65
v/c Ratio	0.82	0.83	0.56	0.38	0.34	0.83	0.54	0.45	0.74	0.57
Control Delay	63.0	63.5	24.5	63.1	33.8	69.5	21.9	72.4	33.5	6.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	63.0	63.5	24.5	63.1	33.8	69.5	21.9	72.4	33.5	6.1
LOS	E	E	C	E	C	E	C	E	C	A
Approach Delay		48.4			43.6		31.0		26.4	
Approach LOS		D			D		C		C	

Intersection Summary		
Cycle Length: 120		
Actuated Cycle Length: 120		
Offset: 62 (52%), Referenced to phase 2:SBT and 6:NBT, Start of Green		
Natural Cycle: 100		
Control Type: Actuated-Coordinated		
Maximum v/c Ratio: 0.83		
Intersection Signal Delay: 32.6	Intersection LOS: C	
Intersection Capacity Utilization 73.2%	ICU Level of Service D	
Analysis Period (min) 15		

Splits and Phases: 5: Scottsdale Rd & Lincoln Dr/Lincoln Ln



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	520	36	313	21	33	28	211	882	32	20	941	372
Future Volume (veh/h)	520	36	313	21	33	28	211	882	32	20	941	372
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	607	0	348	24	38	32	232	969	35	22	1034	409
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	779	0	479	99	108	81	288	2562	92	39	2270	1051
Arrive On Green	0.22	0.00	0.22	0.06	0.06	0.06	0.08	0.51	0.51	0.02	0.44	0.44
Sat Flow, veh/h	3563	0	1585	1781	1936	1450	3456	5059	183	1781	5106	1585
Grp Volume(v), veh/h	607	0	348	24	34	36	232	652	352	22	1034	409
Grp Sat Flow(s),veh/h/ln	1781	0	1585	1781	1777	1609	1728	1702	1838	1781	1702	1585
Q Serve(g_s), s	19.3	0.0	23.6	1.5	2.2	2.6	7.9	14.0	14.1	1.5	16.9	14.1
Cycle Q Clear(g_c), s	19.3	0.0	23.6	1.5	2.2	2.6	7.9	14.0	14.1	1.5	16.9	14.1
Prop In Lane	1.00		1.00	1.00		0.90	1.00		0.10	1.00		1.00
Lane Grp Cap(c), veh/h	779	0	479	99	99	90	288	1724	930	39	2270	1051
V/C Ratio(X)	0.78	0.00	0.73	0.24	0.35	0.40	0.80	0.38	0.38	0.57	0.46	0.39
Avail Cap(c_a), veh/h	831	0	502	134	133	121	346	1724	930	119	2270	1051
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	44.1	0.0	37.4	54.2	54.6	54.7	54.0	18.1	18.1	58.1	23.2	9.2
Incr Delay (d2), s/veh	3.9	0.0	4.2	0.5	0.8	1.0	9.2	0.6	1.2	4.8	0.7	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	13.8	0.0	14.7	1.3	1.8	1.9	6.9	9.5	10.3	1.3	11.2	13.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	48.1	0.0	41.7	54.7	55.3	55.7	63.3	18.7	19.3	63.0	23.9	10.3
LnGrp LOS	D	A	D	D	E	E	E	B	B	E	C	B
Approach Vol, veh/h		955			94			1236			1465	
Approach Delay, s/veh		45.7			55.3			27.2			20.7	
Approach LOS		D			E			C			C	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	16.0	59.1		12.7	8.6	66.5		32.2				
Change Period (Y+Rc), s	6.0	5.7		6.0	6.0	5.7		6.0				
Max Green Setting (Gmax), s	12.0	47.3		9.0	8.0	51.3		28.0				
Max Q Clear Time (g_c+I1), s	9.9	18.9		4.6	3.5	16.1		25.6				
Green Ext Time (p_c), s	0.1	6.6		0.1	0.0	5.0		0.7				

Intersection Summary	
HCM 6th Ctrl Delay	30.1
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.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	515	35	341	38	39	36	313	1292	29	35	1433	585
Future Volume (veh/h)	515	35	341	38	39	36	313	1292	29	35	1433	585
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	600	0	379	43	44	41	344	1420	32	38	1575	643
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	807	0	542	102	106	88	399	2509	57	53	2058	998
Arrive On Green	0.23	0.00	0.23	0.06	0.06	0.06	0.12	0.49	0.49	0.03	0.40	0.40
Sat Flow, veh/h	3563	0	1585	1781	1851	1522	3456	5138	116	1781	5106	1585
Grp Volume(v), veh/h	600	0	379	43	42	43	344	941	511	38	1575	643
Grp Sat Flow(s),veh/h/ln	1781	0	1585	1781	1777	1596	1728	1702	1850	1781	1702	1585
Q Serve(g_s), s	18.8	0.0	24.8	2.8	2.7	3.1	11.7	23.4	23.4	2.5	32.0	30.3
Cycle Q Clear(g_c), s	18.8	0.0	24.8	2.8	2.7	3.1	11.7	23.4	23.4	2.5	32.0	30.3
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	807	0	542	102	102	92	399	1663	903	53	2058	998
V/C Ratio(X)	0.74	0.00	0.70	0.42	0.41	0.47	0.86	0.57	0.57	0.71	0.77	0.64
Avail Cap(c_a), veh/h	831	0	553	134	133	120	432	1663	903	89	2058	998
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	43.2	0.0	34.1	54.6	54.6	54.8	52.1	21.7	21.7	57.7	30.9	13.8
Incr Delay (d2), s/veh	3.1	0.0	3.2	1.0	1.0	1.4	14.4	1.4	2.6	6.4	2.8	3.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	13.4	0.0	15.1	2.3	2.3	2.3	9.9	14.6	16.0	2.2	19.5	26.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	46.2	0.0	37.3	55.6	55.6	56.1	66.5	23.1	24.3	64.1	33.7	17.1
LnGrp LOS	D	A	D	E	E	E	E	C	C	E	C	B
Approach Vol, veh/h		979			128			1796			2256	
Approach Delay, s/veh		42.8			55.8			31.8			29.5	
Approach LOS		D			E			C			C	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	19.8	54.1		12.9	9.6	64.3		33.2				
Change Period (Y+Rc), s	6.0	5.7		6.0	6.0	5.7		6.0				
Max Green Setting (Gmax), s	15.0	44.3		9.0	6.0	53.3		28.0				
Max Q Clear Time (g_c+I1), s	13.7	34.0		5.1	4.5	25.4		26.8				
Green Ext Time (p_c), s	0.1	6.8		0.1	0.0	8.0		0.4				

Intersection Summary	
HCM 6th Ctrl Delay	33.4
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.

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
Hotel	82	Rooms	310	Hotel
Hotel Restauraunt	8.577	1,000 square feet	931	Fine Dining Restaurant
Private Dining	0.608	1,000 square feet	931	Fine Dining Restaurant
Grab & Go	0.928	1,000 square feet	932	High Turnover(Sit Down) Restaurant
Bar	0.448	1,000 square feet	931	Fine Dining Restaurant

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 Available	ADT Used	AM Peak Hour Available	AM Peak Hour Used	PM Peak Hour Available	PM Peak Hour Used	(not used)	
Hotel	General Urban/Suburban	G	G C	G	G D C	G	G D C	G		
Hotel Restauraunt	General Urban/Suburban	G	G	G	G	G	G	G		
Private Dining	General Urban/Suburban	G	G	G	G	G	G	G		
Grab & Go	General Urban/Suburban	G	G	G	G	G	G D	G		
Bar	General Urban/Suburban	G	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.

Box 4 - Is Study Site Multimodal?

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 approach is required if the study site is located in an infill setting, contains a mix of uses on-site, or is near significant transit service."

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

Vehicle 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	(not used)
Hotel	FC: T=10.84*X-423.51 [5.68]	FC: T=0.5*X-7.45 [0.41]	FC: T=0.74*X-27.89 [0.40]	
Hotel Restauraunt	WA: T=X*83.84 [83.84]	WA: T=X*0.73 [0.73]	WA: T=X*7.8 [7.80]	
Private Dining	WA: T=X*83.84 [83.84]	WA: T=X*0.73 [0.73]	WA: T=X*7.8 [7.80]	
Grab & Go	WA: T=X*107.2 [107.20]	WA: T=X*9.57 [9.57]	WA: T=X*9.05 [9.05]	
Bar	WA: T=X*83.84 [83.84]	WA: T=X*0.73 [0.73]	WA: T=X*7.8 [7.80]	

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

Baseline Vehicular Trips

Proposed Use	ADT % In	ADT In	ADT Out	ADT Total	AM Peak Hour % In	AM Peak Hour In	AM Peak Hour Out	AM Peak Hour Total	PM Peak Hour % In	PM Peak Hour In	PM Peak Hour Out	PM Peak Hour Total	(not used)
Hotel	50%	233	233	466	56%	19	15	34	51%	17	16	33	
Hotel Restauraunt	50%	360	360	720	80%	5	1	6	67%	45	22	67	
Private Dining	50%	25	25	50	80%	0	0	0	67%	3	2	5	
Grab & Go	50%	50	50	100	55%	5	4	9	61%	5	3	8	
Bar	50%	19	19	38	80%	0	0	0	67%	2	1	3	
Totals		**687**	**687**	**1,374**		**29**	**20**	**49**		**72**	**44**	**116**	

If vehicle trip reductions are not applied for internal capture and alternative mode, vehicle trips may be separtated 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 capure 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				(not used)			
	Percent	In	Out	Total	Percent	In	Out	Total	Percent	In	Out	Total				
Hotel	0%	0	0	0	0%	0	0	0	0%	0	0	0				
Hotel Restauraunt	50%	180	180	360	50%	3	0	3	50%	23	11	34				
Private Dining	50%	13	13	26	50%	0	0	0	50%	2	1	3				
Grab & Go	50%	25	25	50	50%	3	2	5	50%	3	1	4				
Bar	50%	10	10	20	50%	0	0	0	50%	1	1	2				
Totals		**228**	**228**	**456**		**6**	**2**	**8**		**29**	**14**	**43**				

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

Alternate mode reductions are applied to account for trips to/from the study site made any means except as the driver of a personal vehicle (though carpooling is separate in Box 9). Alternative mode reductions, with respect to trips entering/existing the site, include trips where more than one mode is used as long as the trip is not in a vehicle when crossing the boundary of the study site. The reduction is applied as a percent of vehicular trips removed from total external trips. The reduction percentage used does not include any amount of alternate mode trips that are accounted for in the baseline rates; the Dense Multi-Urban Use and City Core settings already account for alternate mode trips, though further reduction may still be reasonable in specific circumstances. The table below presents the alternative mode percentages and trips in units of vehicle trips. CivTech can provide trips in units of persons if requested.

Adjustments for Alternate Mode Trips

Proposed Use	ADT				AM Peak Hour				PM Peak Hour				(not used)			
	Percent	In	Out	Total	Percent	In	Out	Total	Percent	In	Out	Total				
Hotel	0%	0	0	0	0%	0	0	0	0%	0	0	0				
Hotel Restauraunt	0%	0	0	0	0%	0	0	0	0%	0	0	0				
Private Dining	0%	0	0	0	0%	0	0	0	0%	0	0	0				
Grab & Go	0%	0	0	0	0%	0	0	0	0%	0	0	0				
Bar	0%	0	0	0	0%	0	0	0	0%	0	0	0				
Totals	**0%**	**0**	**0**	**0**	**0%**	**0**	**0**	**0**	**0%**	**0**	**0**	**0**				

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				(not used)			
		In	Out	Total		In	Out	Total		In	Out	Total				
Hotel		233	233	466	56%	19	15	34	52%	17	16	33				
Hotel Restauraunt		180	180	360	67%	2	1	3	67%	22	11	33				
Private Dining		12	12	24	0%	0	0	0	50%	1	1	2				
Grab & Go		25	25	50	50%	2	2	4	50%	2	2	4				
Bar		9	9	18	0%	0	0	0	100%	1	0	1				
Totals		**459**	**459**	**918**		**23**	**18**	**41**		**43**	**30**	**73**				

APPENDIX E

TRIP DISTRIBUTION

	2020				2030			
Quadrant	**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

Year	Expansion Factor(s)	
2022	**1.000**	**Existing**
2023	1.017	
2024	1.034	
2025	1.052	
2026	**1.070**	**Opening**
2027	1.088	
2028	1.106	
2029	1.125	
2030	1.144	
2031	**1.164**	**Horizon**
2032	1.184	
2033	1.204	
2034	1.224	
2035	1.245	
2036	1.266	
2037	1.288	
2038	1.310	
2039	1.332	
2040	1.354	
2041	1.378	
2042	1.401	
2043	1.425	
2044	1.449	
2045	1.474	
2046	1.499	
2047	1.524	
2048	1.550	
2049	1.576	
2050	1.603	
2051	1.630	
2052	1.658	
2053	1.686	
2054	1.715	

APPENDIX G

2026 NO-BUILD PEAK HOUR ANALYSIS

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)	27	50	9	44	77	53
Maximum Split (%)	20.8%	38.5%	6.9%	33.8%	59.2%	40.8%
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)	8	35	85	94	8	85
End Time (s)	35	85	94	8	85	8
Yield/Force Off (s)	31	79	90	1.5	79	1.5
Yield/Force Off 170(s)	31	65	90	111.5	65	111.5
Local Start Time (s)	103	0	50	59	103	50
Local Yield (s)	126	44	55	96.5	44	96.5
Local Yield 170(s)	126	30	55	76.5	30	76.5

Intersection Summary	
Cycle Length	130
Control Type	Actuated-Coordinated
Natural Cycle	80
Offset: 35 (27%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green	

Splits and Phases: 1: Mockingbird Ln & Lincoln Dr

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)	31	57	8	34	88	42
Maximum Split (%)	23.8%	43.8%	6.2%	26.2%	67.7%	32.3%
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)	99	0	57	65	99	57
End Time (s)	0	57	65	99	57	99
Yield/Force Off (s)	126	51	61	92.5	51	92.5
Yield/Force Off 170(s)	126	37	61	72.5	37	72.5
Local Start Time (s)	99	0	57	65	99	57
Local Yield (s)	126	51	61	92.5	51	92.5
Local Yield 170(s)	126	37	61	72.5	37	72.5

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	210	927	66	15	626	46	22	22	25	53	63	198
Future Volume (veh/h)	210	927	66	15	626	46	22	22	25	53	63	198
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	223	986	70	16	673	49	24	24	27	65	78	244
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	492	2552	181	366	2339	939	170	97	109	233	361	275
Arrive On Green	0.06	0.72	0.72	0.21	0.21	0.21	0.11	0.11	0.11	0.04	0.18	0.18
Sat Flow, veh/h	1688	3542	251	506	3741	1502	1002	846	952	1688	1969	1502
Grp Volume(v), veh/h	223	521	535	16	673	49	24	0	51	65	78	244
Grp Sat Flow(s),veh/h/ln	1688	1870	1924	506	1870	1502	1002	0	1798	1688	1969	1502
Q Serve(g_s), s	5.8	14.0	14.0	3.3	19.7	3.4	2.8	0.0	3.4	4.3	4.4	20.6
Cycle Q Clear(g_c), s	5.8	14.0	14.0	5.0	19.7	3.4	2.8	0.0	3.4	4.3	4.4	20.6
Prop In Lane	1.00		0.13	1.00		1.00	1.00		0.53	1.00		1.00
Lane Grp Cap(c), veh/h	492	1348	1386	366	2339	939	170	0	205	233	361	275
V/C Ratio(X)	0.45	0.39	0.39	0.04	0.29	0.05	0.14	0.00	0.25	0.28	0.22	0.89
Avail Cap(c_a), veh/h	682	1348	1386	366	2339	939	344	0	519	233	704	537
HCM Platoon Ratio	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.96	0.96	0.96	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	9.2	7.0	7.0	22.0	27.2	20.7	52.3	0.0	52.5	46.9	45.1	51.8
Incr Delay (d2), s/veh	0.7	0.8	0.8	0.2	0.3	0.1	0.4	0.0	0.6	0.6	0.3	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	3.7	9.4	9.6	0.8	15.1	2.2	1.3	0.0	2.8	3.4	3.9	13.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	9.8	7.9	7.9	22.2	27.5	20.8	52.6	0.0	53.1	47.6	45.4	61.1
LnGrp LOS	A	A	A	C	C	C	D	A	D	D	D	E
Approach Vol, veh/h		1279			738			75			387	
Approach Delay, s/veh		8.2			26.9			53.0			55.6	
Approach LOS		A			C			D			E	

Timer - Assigned Phs	1	2	3	4		6		8				
Phs Duration (G+Y+Rc), s	12.4	87.3	9.0	21.3		99.7		30.3				
Change Period (Y+Rc), s	4.0	6.0	4.0	6.5		6.0		6.5				
Max Green Setting (Gmax), s	23.0	44.0	5.0	37.5		71.0		46.5				
Max Q Clear Time (g_c+I1), s	7.8	21.7	6.3	5.4		16.0		22.6				
Green Ext Time (p_c), s	0.5	5.2	0.0	0.4		9.1		1.2				

Intersection Summary	
HCM 6th Ctrl Delay	22.5
HCM 6th LOS	C

Notes

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	192	908	35	11	1061	61	19	49	22	52	64	277
Future Volume (veh/h)	192	908	35	11	1061	61	19	49	22	52	64	277
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	204	966	37	12	1141	66	21	54	24	64	79	342
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	417	2424	93	342	2098	842	222	236	105	291	480	366
Arrive On Green	0.07	0.66	0.66	1.00	1.00	1.00	0.18	0.18	0.18	0.03	0.24	0.24
Sat Flow, veh/h	1688	3673	141	532	3741	1502	915	1291	574	1688	1969	1502
Grp Volume(v), veh/h	204	492	511	12	1141	66	21	0	78	64	79	342
Grp Sat Flow(s),veh/h/ln	1688	1870	1943	532	1870	1502	915	0	1865	1688	1969	1502
Q Serve(g_s), s	6.4	15.8	15.8	0.1	0.0	0.0	2.5	0.0	4.6	4.0	4.1	29.0
Cycle Q Clear(g_c), s	6.4	15.8	15.8	3.0	0.0	0.0	2.5	0.0	4.6	4.0	4.1	29.0
Prop In Lane	1.00		0.07	1.00		1.00	1.00		0.31	1.00		1.00
Lane Grp Cap(c), veh/h	417	1234	1282	342	2098	842	222	0	340	291	480	366
V/C Ratio(X)	0.49	0.40	0.40	0.04	0.54	0.08	0.09	0.00	0.23	0.22	0.16	0.93
Avail Cap(c_a), veh/h	652	1234	1282	342	2098	842	249	0	395	291	538	410
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.80	0.80	0.80	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	9.4	10.2	10.2	0.1	0.0	0.0	44.5	0.0	45.3	40.4	38.7	48.1
Incr Delay (d2), s/veh	0.9	1.0	0.9	0.2	0.8	0.1	0.2	0.0	0.3	0.4	0.2	26.9
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	4.3	10.8	11.1	0.0	0.4	0.1	1.1	0.0	4.0	3.0	3.7	19.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	10.3	11.2	11.1	0.2	0.8	0.1	44.7	0.0	45.7	40.8	38.9	75.0
LnGrp LOS	B	B	B	A	A	A	D	A	D	D	D	E
Approach Vol, veh/h		1207			1219			99			485	
Approach Delay, s/veh		11.0			0.8			45.5			64.6	
Approach LOS		B			A			D			E	

Timer - Assigned Phs	1	2	3	4		6		8				
Phs Duration (G+Y+Rc), s	12.9	78.9	8.0	30.2		91.8		38.2				
Change Period (Y+Rc), s	4.0	6.0	4.0	6.5		6.0		6.5				
Max Green Setting (Gmax), s	27.0	51.0	4.0	27.5		82.0		35.5				
Max Q Clear Time (g_c+I1), s	8.4	5.0	6.0	6.6		17.8		31.0				
Green Ext Time (p_c), s	0.5	11.9	0.0	0.4		8.4		0.7				

Intersection Summary	
HCM 6th Ctrl Delay	16.6
HCM 6th LOS	B

Phase Number	1	2	4	6	8
Movement	EBL	WBTL	NBTL	EBTL	SBTL
Lead/Lag	Lead	Lag			
Lead-Lag Optimize	Yes	Yes			
Recall Mode	None	C-Max	Max	C-Max	Max
Maximum Split (s)	18	78	34	96	34
Maximum Split (%)	13.8%	60.0%	26.2%	73.8%	26.2%
Minimum Split (s)	8	21	26.5	21	26.5
Yellow Time (s)	3	4.5	4	4.5	4
All-Red Time (s)	1	1.5	2.5	1.5	2.5
Minimum Initial (s)	4	15	7	15	7
Vehicle Extension (s)	3	3	3	3	3
Minimum Gap (s)	3	3	3	3	3
Time Before Reduce (s)	0	0	0	0	0
Time To Reduce (s)	0	0	0	0	0
Walk Time (s)		7	7	7	7
Flash Dont Walk (s)		7	13	7	13
Dual Entry	No	Yes	Yes	Yes	Yes
Inhibit Max	Yes	Yes	Yes	Yes	Yes
Start Time (s)	112	0	78	112	78
End Time (s)	0	78	112	78	112
Yield/Force Off (s)	126	72	105.5	72	105.5
Yield/Force Off 170(s)	126	65	92.5	65	92.5
Local Start Time (s)	112	0	78	112	78
Local Yield (s)	126	72	105.5	72	105.5
Local Yield 170(s)	126	65	92.5	65	92.5

Intersection Summary	
Cycle Length	130
Control Type	Actuated-Coordinated
Natural Cycle	60
Offset: 0 (0%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green	

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

Phase Number	1	2	4	6	8
Movement	EBL	WBTL	NBTL	EBTL	SBTL
Lead/Lag	Lead	Lag			
Lead-Lag Optimize	Yes	Yes			
Recall Mode	None	C-Max	Max	C-Max	Max
Maximum Split (s)	23	70	37	93	37
Maximum Split (%)	17.7%	53.8%	28.5%	71.5%	28.5%
Minimum Split (s)	9.5	24	26.5	24	26.5
Yellow Time (s)	3	4.5	4	4.5	4
All-Red Time (s)	1	1.5	2.5	1.5	2.5
Minimum Initial (s)	5	5	5	5	5
Vehicle Extension (s)	3	3	3	3	3
Minimum Gap (s)	3	3	3	3	3
Time Before Reduce (s)	0	0	0	0	0
Time To Reduce (s)	0	0	0	0	0
Walk Time (s)		7	7	7	7
Flash Dont Walk (s)		7	13	7	13
Dual Entry	No	Yes	Yes	Yes	Yes
Inhibit Max	Yes	Yes	Yes	Yes	Yes
Start Time (s)	107	0	70	107	70
End Time (s)	0	70	107	70	107
Yield/Force Off (s)	126	64	100.5	64	100.5
Yield/Force Off 170(s)	126	57	87.5	57	87.5
Local Start Time (s)	107	0	70	107	70
Local Yield (s)	126	64	100.5	64	100.5
Local Yield 170(s)	126	57	87.5	57	87.5

Intersection Summary	
Cycle Length	130
Control Type	Actuated-Coordinated
Natural Cycle	65
Offset: 0 (0%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green	

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	44	949	4	1	644	55	5	0	6	33	0	37
Future Volume (veh/h)	44	949	4	1	644	55	5	0	6	33	0	37
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	51	1103	5	1	708	60	8	0	10	47	0	53
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	483	2512	11	275	2259	1008	170	15	181	177	14	170
Arrive On Green	0.01	0.23	0.23	0.64	0.64	0.64	0.21	0.00	0.21	0.21	0.00	0.21
Sat Flow, veh/h	1781	3628	16	509	3554	1585	614	69	854	645	66	802
Grp Volume(v), veh/h	51	540	568	1	708	60	18	0	0	100	0	0
Grp Sat Flow(s),veh/h/ln	1781	1777	1867	509	1777	1585	1537	0	0	1512	0	0
Q Serve(g_s), s	1.2	33.9	33.9	0.1	11.8	1.9	0.0	0.0	0.0	4.7	0.0	0.0
Cycle Q Clear(g_c), s	1.2	33.9	33.9	26.7	11.8	1.9	1.1	0.0	0.0	7.0	0.0	0.0
Prop In Lane	1.00		0.01	1.00		1.00	0.44		0.56	0.47		0.53
Lane Grp Cap(c), veh/h	483	1230	1293	275	2259	1008	365	0	0	361	0	0
V/C Ratio(X)	0.11	0.44	0.44	0.00	0.31	0.06	0.05	0.00	0.00	0.28	0.00	0.00
Avail Cap(c_a), veh/h	629	1230	1293	275	2259	1008	365	0	0	361	0	0
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)	0.94	0.94	0.94	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	7.9	28.5	28.5	21.0	10.8	9.0	40.8	0.0	0.0	43.1	0.0	0.0
Incr Delay (d2), s/veh	0.1	1.1	1.0	0.0	0.4	0.1	0.3	0.0	0.0	1.9	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.9	23.0	24.0	0.0	8.2	1.2	0.9	0.0	0.0	5.3	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	8.0	29.6	29.5	21.1	11.1	9.1	41.1	0.0	0.0	45.0	0.0	0.0
LnGrp LOS	A	C	C	C	B	A	D	A	A	D	A	A
Approach Vol, veh/h		1159			769			18			100	
Approach Delay, s/veh		28.6			11.0			41.1			45.0	
Approach LOS		C			B			D			D	

Timer - Assigned Phs	1	2		4		6		8				
Phs Duration (G+Y+Rc), s	7.4	88.6		34.0		96.0		34.0				
Change Period (Y+Rc), s	4.0	6.0		6.5		6.0		6.5				
Max Green Setting (Gmax), s	14.0	72.0		27.5		90.0		27.5				
Max Q Clear Time (g_c+I1), s	3.2	28.7		3.1		35.9		9.0				
Green Ext Time (p_c), s	0.1	6.0		0.0		9.7		0.4				

Intersection Summary			
HCM 6th Ctrl Delay			22.9
HCM 6th LOS			C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	33	983	4	4	1095	28	2	0	4	30	0	25
Future Volume (veh/h)	33	983	4	4	1095	28	2	0	4	30	0	25
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	38	1143	5	4	1203	31	3	0	6	43	0	36
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	292	2428	11	309	2167	966	140	17	241	222	12	160
Arrive On Green	0.03	0.67	0.67	0.61	0.61	0.61	0.23	0.00	0.23	0.23	0.00	0.23
Sat Flow, veh/h	1781	3628	16	490	3554	1585	441	73	1028	764	52	683
Grp Volume(v), veh/h	38	560	588	4	1203	31	9	0	0	79	0	0
Grp Sat Flow(s),veh/h/ln	1781	1777	1868	490	1777	1585	1543	0	0	1498	0	0
Q Serve(g_s), s	1.0	19.8	19.8	0.5	26.0	1.0	0.0	0.0	0.0	3.6	0.0	0.0
Cycle Q Clear(g_c), s	1.0	19.8	19.8	12.6	26.0	1.0	0.5	0.0	0.0	5.3	0.0	0.0
Prop In Lane	1.00		0.01	1.00		1.00	0.33		0.67	0.54		0.46
Lane Grp Cap(c), veh/h	292	1189	1250	309	2167	966	399	0	0	394	0	0
V/C Ratio(X)	0.13	0.47	0.47	0.01	0.56	0.03	0.02	0.00	0.00	0.20	0.00	0.00
Avail Cap(c_a), veh/h	501	1189	1250	309	2167	966	399	0	0	394	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.94	0.94	0.94	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	11.2	10.4	10.4	15.3	15.0	10.1	38.3	0.0	0.0	40.0	0.0	0.0
Incr Delay (d2), s/veh	0.2	1.3	1.2	0.1	1.0	0.1	0.1	0.0	0.0	1.1	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.7	12.2	12.7	0.1	15.8	0.7	0.4	0.0	0.0	3.9	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	11.4	11.6	11.6	15.4	16.0	10.2	38.4	0.0	0.0	41.2	0.0	0.0
LnGrp LOS	B	B	B	B	B	B	D	A	A	D	A	A
Approach Vol, veh/h		1186			1238			9			79	
Approach Delay, s/veh		11.6			15.8			38.4			41.2	
Approach LOS		B			B			D			D	

Timer - Assigned Phs	1	2		4		6		8				
Phs Duration (G+Y+Rc), s	7.7	85.3		37.0		93.0		37.0				
Change Period (Y+Rc), s	4.0	6.0		6.5		6.0		6.5				
Max Green Setting (Gmax), s	19.0	64.0		30.5		87.0		30.5				
Max Q Clear Time (g_c+I1), s	3.0	28.0		2.5		21.8		7.3				
Green Ext Time (p_c), s	0.0	11.8		0.0		10.5		0.4				

Intersection Summary			
HCM 6th Ctrl Delay			14.7
HCM 6th LOS			B

Intersection	
Int Delay, s/veh	0.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	1006	11	12	698	2	9
Future Vol, veh/h	1006	11	12	698	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	1170	13	13	767	4	18

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1183	0	1587	592
Stage 1	-	-	-	-	1177	-
Stage 2	-	-	-	-	410	-
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	-	-	957	-	*99	*667
Stage 1	-	-	-	-	*601	-
Stage 2	-	-	-	-	*744	-
Platoon blocked, %	-	-	1	-		1
Mov Cap-1 Maneuver	-	-	957	-	*98	*667
Mov Cap-2 Maneuver	-	-	-	-	*98	-
Stage 1	-	-	-	-	*601	-
Stage 2	-	-	-	-	*734	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	16.9
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	324	-	-	957	-
HCM Lane V/C Ratio	0.068	-	-	0.014	-
HCM Control Delay (s)	16.9	-	-	8.8	-
HCM Lane LOS	C	-	-	A	-
HCM 95th %tile Q(veh)	0.2	-	-	0	-

Notes

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

Intersection	
Int Delay, s/veh	0.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	1013	3	6	1118	5	12
Future Vol, veh/h	1013	3	6	1118	5	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	1178	3	7	1229	10	24

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1181	0	1809	591
Stage 1	-	-	-	-	1180	-
Stage 2	-	-	-	-	629	-
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	-	-	960	-	*70	*667
Stage 1	-	-	-	-	*598	-
Stage 2	-	-	-	-	*572	-
Platoon blocked, %	-	-	1	-		1
Mov Cap-1 Maneuver	-	-	960	-	*70	*667
Mov Cap-2 Maneuver	-	-	-	-	*70	-
Stage 1	-	-	-	-	*598	-
Stage 2	-	-	-	-	*568	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	28
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	190	-	-	960	-
HCM Lane V/C Ratio	0.179	-	-	0.007	-
HCM Control Delay (s)	28	-	-	8.8	-
HCM Lane LOS	D	-	-	A	-
HCM 95th %tile Q(veh)	0.6	-	-	0	-

Notes

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

Intersection	
Int Delay, s/veh	1.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	22	924	73	13	648	10	46	5	63	4	0	11
Future Vol, veh/h	22	924	73	13	648	10	46	5	63	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	25	1050	83	14	682	11	61	7	83	6	0	16

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	693	0	0	1133	0	0	1511	1863	567	1295	-	347
Stage 1	-	-	-	-	-	-	1142	1142	-	716	-	-
Stage 2	-	-	-	-	-	-	369	721	-	579	-	-
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	*1219	-	-	972	-	-	*83	*72	*691	*120	0	*815
Stage 1	-	-	-	-	-	-	*580	*523	-	*768	0	-
Stage 2	-	-	-	-	-	-	*768	*673	-	*652	0	-
Platoon blocked, %	1	-	-	1	-	-			1			1
Mov Cap-1 Maneuver	*1219	-	-	972	-	-	*79	*69	*691	*101	-	*815
Mov Cap-2 Maneuver	-	-	-	-	-	-	*325	*291	-	*332	-	-
Stage 1	-	-	-	-	-	-	*567	*512	-	*752	-	-
Stage 2	-	-	-	-	-	-	*743	*664	-	*555	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	0.2	16.7	11.2
HCM LOS			C	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	456	* 1219	-	-	972	-	-	332	815
HCM Lane V/C Ratio	0.329	0.021	-	-	0.014	-	-	0.017	0.019
HCM Control Delay (s)	16.7	8	-	-	8.8	-	-	16	9.5
HCM Lane LOS	C	A	-	-	A	-	-	C	A
HCM 95th %tile Q(veh)	1.4	0.1	-	-	0	-	-	0.1	0.1

Notes

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

Intersection	
Int Delay, s/veh	2.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	9	948	65	6	1021	10	85	2	76	3	0	20
Future Vol, veh/h	9	948	65	6	1021	10	85	2	76	3	0	20
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	1077	74	6	1075	11	112	3	100	4	0	29

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1086	0	0	1151	0	0	1684	2232	576	1653	-	543
Stage 1	-	-	-	-	-	-	1134	1134	-	1093	-	-
Stage 2	-	-	-	-	-	-	550	1098	-	560	-	-
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	*985	-	-	949	-	-	*~ 61	*42	*691	*65	0	*659
Stage 1	-	-	-	-	-	-	*590	*530	-	*621	0	-
Stage 2	-	-	-	-	-	-	*621	*544	-	*652	0	-
Platoon blocked, %	1	-	-	1	-	-			1			1
Mov Cap-1 Maneuver	*985	-	-	949	-	-	*~ 58	*41	*691	*54	-	*659
Mov Cap-2 Maneuver	-	-	-	-	-	-	*292	*259	-	*288	-	-
Stage 1	-	-	-	-	-	-	*584	*524	-	*615	-	-
Stage 2	-	-	-	-	-	-	*590	*541	-	*549	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0.1	24	11.6
HCM LOS			C	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	399	* 985	-	-	949	-	-	288	659
HCM Lane V/C Ratio	0.538	0.01	-	-	0.007	-	-	0.015	0.043
HCM Control Delay (s)	24	8.7	-	-	8.8	-	-	17.7	10.7
HCM Lane LOS	C	A	-	-	A	-	-	C	B
HCM 95th %tile Q(veh)	3.1	0	-	-	0	-	-	0	0.1

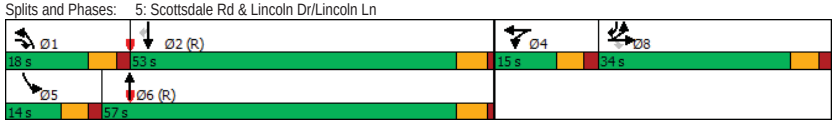
Notes

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

Phase Number	1	2	4	5	6	8
Movement	NBL	SBT	WBTL	SBL	NBT	EBTL
Lead/Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize						
Recall Mode	None	C-Max	None	None	C-Max	None
Maximum Split (s)	18	53	15	14	57	34
Maximum Split (%)	15.0%	44.2%	12.5%	11.7%	47.5%	28.3%
Minimum Split (s)	11	23.7	13	11	20.7	34
Yellow Time (s)	4	4.7	4	4	4.7	4
All-Red Time (s)	2	1	2	2	1	2
Minimum Initial (s)	5	10	7	5	10	7
Vehicle Extension (s)	2	2	2	2	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)		4			4	4
Flash Dont Walk (s)		14			11	24
Dual Entry	No	Yes	No	No	Yes	No
Inhibit Max	Yes	Yes	Yes	Yes	Yes	Yes
Start Time (s)	100	118	51	100	114	66
End Time (s)	118	51	66	114	51	100
Yield/Force Off (s)	112	45.3	60	108	45.3	94
Yield/Force Off 170(s)	112	31.3	60	108	34.3	70
Local Start Time (s)	102	0	53	102	116	68
Local Yield (s)	114	47.3	62	110	47.3	96
Local Yield 170(s)	114	33.3	62	110	36.3	72

Intersection Summary	
Cycle Length	120
Control Type	Actuated-Coordinated
Natural Cycle	85
Offset: 118 (98%), Referenced to phase 2:SBT and 6:NBT, Start of Green	

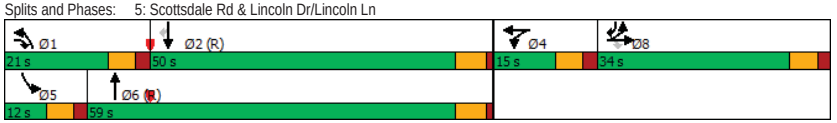
Splits and Phases: 5: Scottsdale Rd & Lincoln Dr/Lincoln Ln



Phase Number	1	2	4	5	6	8
Movement	NBL	SBT	WBTL	SBL	NBT	EBTL
Lead/Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize						
Recall Mode	None	C-Max	None	None	C-Max	None
Maximum Split (s)	21	50	15	12	59	34
Maximum Split (%)	17.5%	41.7%	12.5%	10.0%	49.2%	28.3%
Minimum Split (s)	11	23.7	13	11	20.7	34
Yellow Time (s)	4	4.7	4	4	4.7	4
All-Red Time (s)	2	1	2	2	1	2
Minimum Initial (s)	5	10	7	5	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)		4			4	4
Flash Dont Walk (s)		14			11	24
Dual Entry	No	Yes	No	No	Yes	No
Inhibit Max	Yes	Yes	Yes	Yes	Yes	Yes
Start Time (s)	41	62	112	41	53	7
End Time (s)	62	112	7	53	112	41
Yield/Force Off (s)	56	106.3	1	47	106.3	35
Yield/Force Off 170(s)	56	92.3	1	47	95.3	11
Local Start Time (s)	99	0	50	99	111	65
Local Yield (s)	114	44.3	59	105	44.3	93
Local Yield 170(s)	114	30.3	59	105	33.3	69

Intersection Summary	
Cycle Length	120
Control Type	Actuated-Coordinated
Natural Cycle	105
Offset: 62 (52%), Referenced to phase 2:SBT and 6:NBT, Start of Green	

Splits and Phases: 5: Scottsdale Rd & Lincoln Dr/Lincoln Ln



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	593	42	346	22	38	35	245	994	34	26	1068	445
Future Volume (veh/h)	593	42	346	22	38	35	245	994	34	26	1068	445
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	693	0	384	25	43	40	269	1092	37	29	1174	489
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	829	0	517	101	105	86	323	2472	84	46	2142	1034
Arrive On Green	0.23	0.00	0.23	0.06	0.06	0.06	0.09	0.49	0.49	0.03	0.42	0.42
Sat Flow, veh/h	3563	0	1585	1781	1853	1521	3456	5072	172	1781	5106	1585
Grp Volume(v), veh/h	693	0	384	25	41	42	269	733	396	29	1174	489
Grp Sat Flow(s),veh/h/ln	1781	0	1585	1781	1777	1597	1728	1702	1839	1781	1702	1585
Q Serve(g_s), s	22.2	0.0	25.9	1.6	2.7	3.1	9.2	16.9	16.9	1.9	20.8	18.6
Cycle Q Clear(g_c), s	22.2	0.0	25.9	1.6	2.7	3.1	9.2	16.9	16.9	1.9	20.8	18.6
Prop In Lane	1.00		1.00	1.00		0.95	1.00		0.09	1.00		1.00
Lane Grp Cap(c), veh/h	829	0	517	101	101	91	323	1659	896	46	2142	1034
V/C Ratio(X)	0.84	0.00	0.74	0.25	0.41	0.46	0.83	0.44	0.44	0.63	0.55	0.47
Avail Cap(c_a), veh/h	831	0	518	134	133	120	346	1659	896	119	2142	1034
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	43.9	0.0	36.0	54.1	54.6	54.8	53.5	20.1	20.1	57.9	26.2	10.5
Incr Delay (d2), s/veh	7.0	0.0	5.0	0.5	1.0	1.4	13.8	0.9	1.6	5.2	1.0	1.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	15.9	0.0	16.0	1.3	2.2	2.3	8.1	11.1	12.1	1.7	13.4	17.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	50.9	0.0	41.0	54.6	55.6	56.2	67.2	20.9	21.7	63.1	27.3	12.1
LnGrp LOS	D	A	D	D	E	E	E	C	C	E	C	B
Approach Vol, veh/h		1077			108			1398			1692	
Approach Delay, s/veh		47.4			55.6			30.1			23.5	
Approach LOS		D			E			C			C	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	17.2	56.0		12.8	9.1	64.2		33.9				
Change Period (Y+Rc), s	6.0	5.7		6.0	6.0	5.7		6.0				
Max Green Setting (Gmax), s	12.0	47.3		9.0	8.0	51.3		28.0				
Max Q Clear Time (g_c+I1), s	11.2	22.8		5.1	3.9	18.9		27.9				
Green Ext Time (p_c), s	0.1	7.7		0.1	0.0	5.8		0.1				

Intersection Summary	
HCM 6th Ctrl Delay	32.5
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.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	654	40	376	41	46	53	346	1540	31	49	1666	716
Future Volume (veh/h)	654	40	376	41	46	53	346	1540	31	49	1666	716
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	758	0	418	47	52	60	380	1692	34	54	1831	787
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	831	0	568	103	103	92	431	2433	49	69	1973	982
Arrive On Green	0.23	0.00	0.23	0.06	0.06	0.06	0.12	0.47	0.47	0.04	0.39	0.39
Sat Flow, veh/h	3563	0	1585	1781	1777	1585	3456	5152	104	1781	5106	1585
Grp Volume(v), veh/h	758	0	418	47	52	60	380	1118	608	54	1831	787
Grp Sat Flow(s),veh/h/ln	1781	0	1585	1781	1777	1585	1728	1702	1852	1781	1702	1585
Q Serve(g_s), s	24.9	0.0	27.6	3.1	3.4	4.4	13.0	31.0	31.0	3.6	41.2	45.0
Cycle Q Clear(g_c), s	24.9	0.0	27.6	3.1	3.4	4.4	13.0	31.0	31.0	3.6	41.2	45.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.06	1.00		1.00
Lane Grp Cap(c), veh/h	831	0	568	103	103	92	431	1607	874	69	1973	982
V/C Ratio(X)	0.91	0.00	0.74	0.45	0.50	0.65	0.88	0.70	0.70	0.78	0.93	0.80
Avail Cap(c_a), veh/h	831	0	568	134	133	119	432	1607	874	89	1973	982
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	44.8	0.0	33.6	54.7	54.8	55.3	51.6	24.9	24.9	57.1	35.2	17.2
Incr Delay (d2), s/veh	13.9	0.0	4.4	1.2	1.4	3.2	18.0	2.5	4.6	20.7	9.2	6.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	18.3	0.0	16.7	2.5	2.8	3.3	10.9	18.7	20.7	3.6	25.4	34.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	58.7	0.0	38.0	55.8	56.3	58.5	69.6	27.4	29.5	77.8	44.4	24.1
LnGrp LOS	E	A	D	E	E	E	E	C	C	E	D	C
Approach Vol, veh/h		1176			159			2106			2672	
Approach Delay, s/veh		51.3			57.0			35.6			39.1	
Approach LOS		D			E			D			D	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	21.0	52.1		13.0	10.7	62.4		34.0				
Change Period (Y+Rc), s	6.0	5.7		6.0	6.0	5.7		6.0				
Max Green Setting (Gmax), s	15.0	44.3		9.0	6.0	53.3		28.0				
Max Q Clear Time (g_c+I1), s	15.0	47.0		6.4	5.6	33.0		29.6				
Green Ext Time (p_c), s	0.0	0.0		0.1	0.0	2.6		0.0				

Intersection Summary	
HCM 6th Ctrl Delay	40.7
HCM 6th LOS	D

Notes

User approved pedestrian interval to be less than phase max green.
User approved volume balancing among the lanes for turning movement.

APPENDIX H

2031 NO-BULD PEAK HOUR ANALYSIS

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)	27	50	9	44	77	53
Maximum Split (%)	20.8%	38.5%	6.9%	33.8%	59.2%	40.8%
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)	8	35	85	94	8	85
End Time (s)	35	85	94	8	85	8
Yield/Force Off (s)	31	79	90	1.5	79	1.5
Yield/Force Off 170(s)	31	65	90	111.5	65	111.5
Local Start Time (s)	103	0	50	59	103	50
Local Yield (s)	126	44	55	96.5	44	96.5
Local Yield 170(s)	126	30	55	76.5	30	76.5

Intersection Summary		
Cycle Length		130
Control Type	Actuated-Coordinated	
Natural Cycle		80
Offset: 35 (27%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green		

Splits and Phases: 1: Mockingbird Ln & Lincoln Dr

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	231	1022	72	17	695	50	24	24	28	58	68	219
Future Volume (veh/h)	231	1022	72	17	695	50	24	24	28	58	68	219
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	246	1087	77	18	747	54	26	26	31	72	84	270
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	454	2490	176	316	2240	899	184	108	128	252	396	302
Arrive On Green	0.07	0.70	0.70	0.20	0.20	0.20	0.13	0.13	0.13	0.04	0.20	0.20
Sat Flow, veh/h	1688	3543	251	457	3741	1502	973	818	975	1688	1969	1502
Grp Volume(v), veh/h	246	574	590	18	747	54	26	0	57	72	84	270
Grp Sat Flow(s),veh/h/ln	1688	1870	1924	457	1870	1502	973	0	1793	1688	1969	1502
Q Serve(g_s), s	6.9	17.1	17.1	4.2	22.3	3.8	3.1	0.0	3.7	4.7	4.6	22.8
Cycle Q Clear(g_c), s	6.9	17.1	17.1	7.8	22.3	3.8	3.1	0.0	3.7	4.7	4.6	22.8
Prop In Lane	1.00		0.13	1.00		1.00	1.00		0.54	1.00		1.00
Lane Grp Cap(c), veh/h	454	1315	1352	316	2240	899	184	0	236	252	396	302
V/C Ratio(X)	0.54	0.44	0.44	0.06	0.33	0.06	0.14	0.00	0.24	0.29	0.21	0.89
Avail Cap(c_a), veh/h	629	1315	1352	316	2240	899	336	0	517	252	704	537
HCM Platoon Ratio	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.95	0.95	0.95	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	11.1	8.3	8.3	25.5	29.9	22.4	50.3	0.0	50.6	45.2	43.4	50.6
Incr Delay (d2), s/veh	1.0	1.1	1.0	0.3	0.4	0.1	0.3	0.0	0.5	0.6	0.3	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	4.6	11.2	11.4	0.9	16.7	2.5	1.4	0.0	3.1	3.7	4.2	14.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	12.1	9.3	9.3	25.8	30.2	22.6	50.7	0.0	51.1	45.8	43.6	59.9
LnGrp LOS	B	A	A	C	C	C	D	A	D	D	D	E
Approach Vol, veh/h		1410			819			83			426	
Approach Delay, s/veh		9.8			29.6			51.0			54.3	
Approach LOS		A			C			D			D	

Timer - Assigned Phs	1	2	3	4	6	8
Phs Duration (G+Y+Rc), s	13.5	83.9	9.0	23.6	97.4	32.6
Change Period (Y+Rc), s	4.0	6.0	4.0	6.5	6.0	6.5
Max Green Setting (Gmax), s	23.0	44.0	5.0	37.5	71.0	46.5
Max Q Clear Time (g_c+I1), s	8.9	24.3	6.7	5.7	19.1	24.8
Green Ext Time (p_c), s	0.6	5.6	0.0	0.4	10.6	1.4

Intersection Summary	
HCM 6th Ctrl Delay	23.9
HCM 6th LOS	C

Notes

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

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)	31	57	8	34	88	42
Maximum Split (%)	23.8%	43.8%	6.2%	26.2%	67.7%	32.3%
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)	99	0	57	65	99	57
End Time (s)	0	57	65	99	57	99
Yield/Force Off (s)	126	51	61	92.5	51	92.5
Yield/Force Off 170(s)	126	37	61	72.5	37	72.5
Local Start Time (s)	99	0	57	65	99	57
Local Yield (s)	126	51	61	92.5	51	92.5
Local Yield 170(s)	126	37	61	72.5	37	72.5

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	220	1016	38	12	1178	67	21	53	25	57	70	311
Future Volume (veh/h)	220	1016	38	12	1178	67	21	53	25	57	70	311
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	1081	40	13	1267	72	23	58	27	70	86	384
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	395	2338	87	286	1959	786	236	263	122	317	528	403
Arrive On Green	0.08	0.64	0.64	1.00	1.00	1.00	0.21	0.21	0.21	0.03	0.27	0.27
Sat Flow, veh/h	1688	3679	136	476	3741	1502	875	1271	592	1688	1969	1502
Grp Volume(v), veh/h	234	550	571	13	1267	72	23	0	85	70	86	384
Grp Sat Flow(s),veh/h/ln	1688	1870	1944	476	1870	1502	875	0	1862	1688	1969	1502
Q Serve(g_s), s	7.9	19.7	19.7	0.3	0.0	0.0	2.8	0.0	4.9	4.0	4.3	32.7
Cycle Q Clear(g_c), s	7.9	19.7	19.7	5.5	0.0	0.0	2.8	0.0	4.9	4.0	4.3	32.7
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	395	1189	1236	286	1959	786	236	0	385	317	528	403
V/C Ratio(X)	0.59	0.46	0.46	0.05	0.65	0.09	0.10	0.00	0.22	0.22	0.16	0.95
Avail Cap(c_a), veh/h	608	1189	1236	286	1959	786	240	0	394	317	538	410
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.74	0.74	0.74	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	10.9	12.2	12.2	0.2	0.0	0.0	42.0	0.0	42.9	38.3	36.4	46.8
Incr Delay (d2), s/veh	1.4	1.3	1.2	0.2	1.2	0.2	0.2	0.0	0.3	0.3	0.1	32.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	5.6	13.2	13.6	0.0	0.6	0.1	1.1	0.0	4.2	3.2	3.8	22.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	12.3	13.5	13.5	0.4	1.2	0.2	42.2	0.0	43.1	38.7	36.5	79.1
LnGrp LOS	B	B	B	A	A	A	D	A	D	D	D	E
Approach Vol, veh/h		1355			1352			108			540	
Approach Delay, s/veh		13.3			1.2			42.9			67.1	
Approach LOS		B			A			D			E	

Timer - Assigned Phs	1	2	3	4		6		8				
Phs Duration (G+Y+Rc), s	14.5	74.1	8.0	33.4		88.6		41.4				
Change Period (Y+Rc), s	4.0	6.0	4.0	6.5		6.0		6.5				
Max Green Setting (Gmax), s	27.0	51.0	4.0	27.5		82.0		35.5				
Max Q Clear Time (g_c+I1), s	9.9	7.5	6.0	6.9		21.7		34.7				
Green Ext Time (p_c), s	0.6	13.9	0.0	0.5		10.1		0.2				

Intersection Summary		
HCM 6th Ctrl Delay	18.0	
HCM 6th LOS	B	

Phase Number	1	2	4	6	8
Movement	EBL	WBTL	NBTL	EBTL	SBTL
Lead/Lag	Lead	Lag			
Lead-Lag Optimize	Yes	Yes			
Recall Mode	None	C-Max	Max	C-Max	Max
Maximum Split (s)	18	78	34	96	34
Maximum Split (%)	13.8%	60.0%	26.2%	73.8%	26.2%
Minimum Split (s)	8	21	26.5	21	26.5
Yellow Time (s)	3	4.5	4	4.5	4
All-Red Time (s)	1	1.5	2.5	1.5	2.5
Minimum Initial (s)	4	15	7	15	7
Vehicle Extension (s)	3	3	3	3	3
Minimum Gap (s)	3	3	3	3	3
Time Before Reduce (s)	0	0	0	0	0
Time To Reduce (s)	0	0	0	0	0
Walk Time (s)		7	7	7	7
Flash Dont Walk (s)		7	13	7	13
Dual Entry	No	Yes	Yes	Yes	Yes
Inhibit Max	Yes	Yes	Yes	Yes	Yes
Start Time (s)	112	0	78	112	78
End Time (s)	0	78	112	78	112
Yield/Force Off (s)	126	72	105.5	72	105.5
Yield/Force Off 170(s)	126	65	92.5	65	92.5
Local Start Time (s)	112	0	78	112	78
Local Yield (s)	126	72	105.5	72	105.5
Local Yield 170(s)	126	65	92.5	65	92.5

Intersection Summary	
Cycle Length	130
Control Type	Actuated-Coordinated
Natural Cycle	60
Offset: 0 (0%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green	

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	55	1039	4	1	708	69	5	0	6	41	0	48
Future Volume (veh/h)	55	1039	4	1	708	69	5	0	6	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	1208	5	1	778	76	8	0	10	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	448	2513	10	241	2252	1005	289	0	335	346	0	335
Arrive On Green	0.01	0.23	0.23	0.63	0.63	0.63	0.21	0.00	0.21	0.21	0.00	0.21
Sat Flow, veh/h	1781	3629	15	460	3554	1585	1332	0	1585	1405	0	1585
Grp Volume(v), veh/h	64	591	622	1	778	76	8	0	10	59	0	69
Grp Sat Flow(s),veh/h/ln	1781	1777	1868	460	1777	1585	1332	0	1585	1405	0	1585
Q Serve(g_s), s	1.6	37.5	37.5	0.2	13.3	2.4	0.6	0.0	0.7	4.5	0.0	4.7
Cycle Q Clear(g_c), s	1.6	37.5	37.5	30.1	13.3	2.4	5.3	0.0	0.7	5.2	0.0	4.7
Prop In Lane	1.00		0.01	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	448	1230	1293	241	2252	1005	289	0	335	346	0	335
V/C Ratio(X)	0.14	0.48	0.48	0.00	0.35	0.08	0.03	0.00	0.03	0.17	0.00	0.21
Avail Cap(c_a), veh/h	590	1230	1293	241	2252	1005	289	0	335	346	0	335
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)	0.92	0.92	0.92	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	8.2	29.9	29.9	23.2	11.2	9.2	44.4	0.0	40.7	42.7	0.0	42.2
Incr Delay (d2), s/veh	0.1	1.2	1.2	0.0	0.4	0.1	0.2	0.0	0.2	1.1	0.0	1.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	1.1	25.0	26.1	0.0	9.1	1.6	0.4	0.0	0.5	3.0	0.0	3.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	8.3	31.1	31.1	23.2	11.6	9.3	44.6	0.0	40.8	43.8	0.0	43.6
LnGrp LOS	A	C	C	C	B	A	D	A	D	D	A	D
Approach Vol, veh/h		1277			855			18			128	
Approach Delay, s/veh		30.0			11.4			42.5			43.7	
Approach LOS		C			B			D			D	

Timer - Assigned Phs	1	2	4	6	8
Phs Duration (G+Y+Rc), s	7.6	88.4	34.0	96.0	34.0
Change Period (Y+Rc), s	4.0	6.0	6.5	6.0	6.5
Max Green Setting (Gmax), s	14.0	72.0	27.5	90.0	27.5
Max Q Clear Time (g_c+I1), s	3.6	32.1	7.3	39.5	7.2
Green Ext Time (p_c), s	0.1	6.8	0.0	11.3	0.5

Intersection Summary		
HCM 6th Ctrl Delay	23.9	
HCM 6th LOS	C	

Phase Number	1	2	4	6	8
Movement	EBL	WBTL	NBTL	EBTL	SBTL
Lead/Lag	Lead	Lag			
Lead-Lag Optimize	Yes	Yes			
Recall Mode	None	C-Max	Max	C-Max	Max
Maximum Split (s)	23	70	37	93	37
Maximum Split (%)	17.7%	53.8%	28.5%	71.5%	28.5%
Minimum Split (s)	9.5	24	26.5	24	26.5
Yellow Time (s)	3	4.5	4	4.5	4
All-Red Time (s)	1	1.5	2.5	1.5	2.5
Minimum Initial (s)	5	5	5	5	5
Vehicle Extension (s)	3	3	3	3	3
Minimum Gap (s)	3	3	3	3	3
Time Before Reduce (s)	0	0	0	0	0
Time To Reduce (s)	0	0	0	0	0
Walk Time (s)		7	7	7	7
Flash Dont Walk (s)		7	13	7	13
Dual Entry	No	Yes	Yes	Yes	Yes
Inhibit Max	Yes	Yes	Yes	Yes	Yes
Start Time (s)	107	0	70	107	70
End Time (s)	0	70	107	70	107
Yield/Force Off (s)	126	64	100.5	64	100.5
Yield/Force Off 170(s)	126	57	87.5	57	87.5
Local Start Time (s)	107	0	70	107	70
Local Yield (s)	126	64	100.5	64	100.5
Local Yield 170(s)	126	57	87.5	57	87.5

Intersection Summary	
Cycle Length	130
Control Type	Actuated-Coordinated
Natural Cycle	70
Offset: 0 (0%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green	

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	43	1092	4	4	1210	36	2	0	4	39	0	33
Future Volume (veh/h)	43	1092	4	4	1210	36	2	0	4	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	1270	5	4	1330	40	3	0	6	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	260	2430	10	269	2155	961	342	0	372	382	0	372
Arrive On Green	0.03	0.67	0.67	0.61	0.61	0.61	0.23	0.00	0.23	0.23	0.00	0.23
Sat Flow, veh/h	1781	3630	14	434	3554	1585	1359	0	1585	1410	0	1585
Grp Volume(v), veh/h	50	622	653	4	1330	40	3	0	6	56	0	47
Grp Sat Flow(s),veh/h/ln	1781	1777	1868	434	1777	1585	1359	0	1585	1410	0	1585
Q Serve(g_s), s	1.3	23.1	23.1	0.6	30.6	1.3	0.2	0.0	0.4	4.1	0.0	3.0
Cycle Q Clear(g_c), s	1.3	23.1	23.1	15.6	30.6	1.3	3.3	0.0	0.4	4.5	0.0	3.0
Prop In Lane	1.00		0.01	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	260	1189	1250	269	2155	961	342	0	372	382	0	372
V/C Ratio(X)	0.19	0.52	0.52	0.01	0.62	0.04	0.01	0.00	0.02	0.15	0.00	0.13
Avail Cap(c_a), veh/h	463	1189	1250	269	2155	961	342	0	372	382	0	372
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)	0.93	0.93	0.93	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	12.7	10.9	10.9	17.0	16.1	10.3	40.5	0.0	38.2	40.0	0.0	39.2
Incr Delay (d2), s/veh	0.3	1.5	1.5	0.1	1.3	0.1	0.0	0.0	0.1	0.8	0.0	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.9	13.9	14.5	0.1	18.2	0.9	0.1	0.0	0.3	2.8	0.0	2.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	13.0	12.5	12.4	17.1	17.4	10.4	40.6	0.0	38.3	40.8	0.0	39.9
LnGrp LOS	B	B	B	B	B	B	D	A	D	D	A	D
Approach Vol, veh/h		1325			1374			9			103	
Approach Delay, s/veh		12.5			17.2			39.1			40.4	
Approach LOS		B			B			D			D	

Timer - Assigned Phs	1	2		4		6		8				
Phs Duration (G+Y+Rc), s	8.2	84.8		37.0		93.0		37.0				
Change Period (Y+Rc), s	4.0	6.0		6.5		6.0		6.5				
Max Green Setting (Gmax), s	19.0	64.0		30.5		87.0		30.5				
Max Q Clear Time (g_c+I1), s	3.3	32.6		5.3		25.1		6.5				
Green Ext Time (p_c), s	0.1	13.0		0.0		12.6		0.4				

Intersection Summary		
HCM 6th Ctrl Delay	15.9	
HCM 6th LOS	B	

Intersection	
Int Delay, s/veh	0.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	1107	12	13	775	2	9
Future Vol, veh/h	1107	12	13	775	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	1287	14	14	852	4	18

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1301	0	1748	651
Stage 1	-	-	-	-	1294	-
Stage 2	-	-	-	-	454	-
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	-	-	906	-	*77	*619
Stage 1	-	-	-	-	*574	-
Stage 2	-	-	-	-	*720	-
Platoon blocked, %	-	-	1	-		1
Mov Cap-1 Maneuver	-	-	906	-	*76	*619
Mov Cap-2 Maneuver	-	-	-	-	*76	-
Stage 1	-	-	-	-	*574	-
Stage 2	-	-	-	-	*709	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	19.6
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	269	-	-	906	-
HCM Lane V/C Ratio	0.082	-	-	0.016	-
HCM Control Delay (s)	19.6	-	-	9	-
HCM Lane LOS	C	-	-	A	-
HCM 95th %tile Q(veh)	0.3	-	-	0	-

Notes

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

Intersection	
Int Delay, s/veh	0.6

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	1131	3	7	1242	6	13
Future Vol, veh/h	1131	3	7	1242	6	13
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	1315	3	8	1365	12	26

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1318	0	2016	659
Stage 1	-	-	-	-	1317	-
Stage 2	-	-	-	-	699	-
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	-	-	883	-	*51	*619
Stage 1	-	-	-	-	*549	-
Stage 2	-	-	-	-	*523	-
Platoon blocked, %	-	-	1	-		1
Mov Cap-1 Maneuver	-	-	883	-	*51	*619
Mov Cap-2 Maneuver	-	-	-	-	*51	-
Stage 1	-	-	-	-	*549	-
Stage 2	-	-	-	-	*518	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	41.1
HCM LOS			E

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	137	-	-	883	-
HCM Lane V/C Ratio	0.277	-	-	0.009	-
HCM Control Delay (s)	41.1	-	-	9.1	-
HCM Lane LOS	E	-	-	A	-
HCM 95th %tile Q(veh)	1.1	-	-	0	-

Notes

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

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	24	1018	79	14	721	10	50	6	69	5	0	12
Future Vol, veh/h	24	1018	79	14	721	10	50	6	69	5	0	12
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	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	27	1157	90	15	759	11	66	8	91	7	0	17

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	770	0	0	1247	0	0	1666	2056	624	1432	-	385
Stage 1	-	-	-	-	-	-	1256	1256	-	795	-	-
Stage 2	-	-	-	-	-	-	410	800	-	637	-	-
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	*1180	-	-	877	-	-	*~ 63	*55	*667	*95	0	*789
Stage 1	-	-	-	-	-	-	*503	*466	-	*744	0	-
Stage 2	-	-	-	-	-	-	*744	*652	-	*629	0	-
Platoon blocked, %	1	-	-	1	-	-			1			1
Mov Cap-1 Maneuver	*1180	-	-	877	-	-	*~ 60	*53	*667	*78	-	*789
Mov Cap-2 Maneuver	-	-	-	-	-	-	*288	*262	-	*307	-	-
Stage 1	-	-	-	-	-	-	*491	*456	-	*727	-	-
Stage 2	-	-	-	-	-	-	*715	*641	-	*522	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	0.2	19.1	11.8
HCM LOS			C	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	417	* 1180	-	-	877	-	-	307	789
HCM Lane V/C Ratio	0.394	0.023	-	-	0.017	-	-	0.023	0.022
HCM Control Delay (s)	19.1	8.1	-	-	9.2	-	-	17	9.7
HCM Lane LOS	C	A	-	-	A	-	-	C	A
HCM 95th %tile Q(veh)	1.8	0.1	-	-	0.1	-	-	0.1	0.1

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

Intersection	
Int Delay, s/veh	2.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	9	1060	71	7	1136	10	92	2	83	3	0	22
Future Vol, veh/h	9	1060	71	7	1136	10	92	2	83	3	0	22
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	1205	81	7	1196	11	121	3	109	4	0	31

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1207	0	0	1286	0	0	1878	2487	643	1840	-	604
Stage 1	-	-	-	-	-	-	1266	1266	-	1216	-	-
Stage 2	-	-	-	-	-	-	612	1221	-	624	-	-
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	*907	-	-	875	-	-	*~ 44	*29	*643	*47	0	*607
Stage 1	-	-	-	-	-	-	*546	*491	-	*572	0	-
Stage 2	-	-	-	-	-	-	*572	*501	-	*606	0	-
Platoon blocked, %	1	-	-	1	-	-			1			1
Mov Cap-1 Maneuver	*907	-	-	875	-	-	*~ 41	*28	*643	*38	-	*607
Mov Cap-2 Maneuver	-	-	-	-	-	-	*262	*235	-	*256	-	-
Stage 1	-	-	-	-	-	-	*540	*486	-	*566	-	-
Stage 2	-	-	-	-	-	-	*538	*497	-	*495	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0.1	31.2	12.3
HCM LOS			D	B

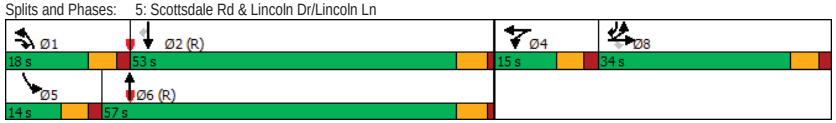
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	362	* 907	-	-	875	-	-	256	607
HCM Lane V/C Ratio	0.643	0.011	-	-	0.008	-	-	0.017	0.052
HCM Control Delay (s)	31.2	9	-	-	9.1	-	-	19.3	11.3
HCM Lane LOS	D	A	-	-	A	-	-	C	B
HCM 95th %tile Q(veh)	4.3	0	-	-	0	-	-	0.1	0.2

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

Phase Number	1	2	4	5	6	8
Movement	NBL	SBT	WBTL	SBL	NBT	EBTL
Lead/Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize						
Recall Mode	None	C-Max	None	None	C-Max	None
Maximum Split (s)	18	53	15	14	57	34
Maximum Split (%)	15.0%	44.2%	12.5%	11.7%	47.5%	28.3%
Minimum Split (s)	11	23.7	13	11	20.7	34
Yellow Time (s)	4	4.7	4	4	4.7	4
All-Red Time (s)	2	1	2	2	1	2
Minimum Initial (s)	5	10	7	5	10	7
Vehicle Extension (s)	2	2	2	2	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)		4			4	4
Flash Dont Walk (s)		14			11	24
Dual Entry	No	Yes	No	No	Yes	No
Inhibit Max	Yes	Yes	Yes	Yes	Yes	Yes
Start Time (s)	100	118	51	100	114	66
End Time (s)	118	51	66	114	51	100
Yield/Force Off (s)	112	45.3	60	108	45.3	94
Yield/Force Off 170(s)	112	31.3	60	108	34.3	70
Local Start Time (s)	102	0	53	102	116	68
Local Yield (s)	114	47.3	62	110	47.3	96
Local Yield 170(s)	114	33.3	62	110	36.3	72

Intersection Summary	
Cycle Length	120
Control Type	Actuated-Coordinated
Natural Cycle	85
Offset: 118 (98%), Referenced to phase 2:SBT and 6:NBT, Start of Green	

Splits and Phases: 5: Scottsdale Rd & Lincoln Dr/Lincoln Ln



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	654	46	379	24	42	39	271	1092	37	30	1176	495
Future Volume (veh/h)	654	46	379	24	42	39	271	1092	37	30	1176	495
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	763	0	421	27	48	44	298	1200	41	33	1292	544
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	831	0	528	102	107	87	346	2455	84	50	2103	1023
Arrive On Green	0.23	0.00	0.23	0.06	0.06	0.06	0.10	0.48	0.48	0.03	0.41	0.41
Sat Flow, veh/h	3563	0	1585	1781	1862	1513	3456	5070	173	1781	5106	1585
Grp Volume(v), veh/h	763	0	421	27	46	46	298	806	435	33	1292	544
Grp Sat Flow(s),veh/h/ln	1781	0	1585	1781	1777	1598	1728	1702	1839	1781	1702	1585
Q Serve(g_s), s	25.1	0.0	28.0	1.7	3.0	3.4	10.2	19.2	19.2	2.2	23.9	22.2
Cycle Q Clear(g_c), s	25.1	0.0	28.0	1.7	3.0	3.4	10.2	19.2	19.2	2.2	23.9	22.2
Prop In Lane	1.00		1.00	1.00		0.95	1.00		0.09	1.00		1.00
Lane Grp Cap(c), veh/h	831	0	528	102	102	91	346	1648	890	50	2103	1023
V/C Ratio(X)	0.92	0.00	0.80	0.26	0.45	0.51	0.86	0.49	0.49	0.67	0.61	0.53
Avail Cap(c_a), veh/h	831	0	528	134	133	120	346	1648	890	119	2103	1023
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	44.9	0.0	36.3	54.1	54.7	54.9	53.2	20.9	20.9	57.8	27.8	11.5
Incr Delay (d2), s/veh	14.7	0.0	7.7	0.5	1.1	1.6	18.7	1.0	1.9	5.6	1.4	2.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	18.5	0.0	17.9	1.4	2.5	2.5	9.1	12.4	13.5	1.9	15.1	20.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	59.6	0.0	44.0	54.7	55.9	56.5	71.9	22.0	22.8	63.4	29.1	13.5
LnGrp LOS	E	A	D	D	E	E	E	C	C	E	C	B
Approach Vol, veh/h		1184			119			1539			1869	
Approach Delay, s/veh		54.0			55.9			31.9			25.2	
Approach LOS		D			E			C			C	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	18.0	55.1		12.9	9.3	63.8		34.0				
Change Period (Y+Rc), s	6.0	5.7		6.0	6.0	5.7		6.0				
Max Green Setting (Gmax), s	12.0	47.3		9.0	8.0	51.3		28.0				
Max Q Clear Time (g_c+I1), s	12.2	25.9		5.4	4.2	21.2		30.0				
Green Ext Time (p_c), s	0.0	8.3		0.1	0.0	6.5		0.0				

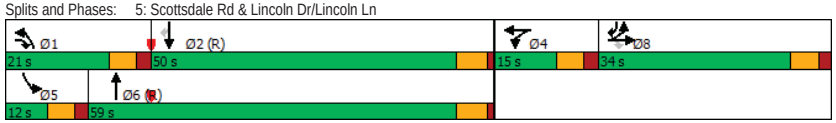
Intersection Summary		
HCM 6th Ctrl Delay	35.4	
HCM 6th LOS	D	

Notes
User approved pedestrian interval to be less than phase max green.
User approved volume balancing among the lanes for turning movement.

Phase Number	1	2	4	5	6	8
Movement	NBL	SBT	WBTL	SBL	NBT	EBTL
Lead/Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize						
Recall Mode	None	C-Max	None	None	C-Max	None
Maximum Split (s)	21	50	15	12	59	34
Maximum Split (%)	17.5%	41.7%	12.5%	10.0%	49.2%	28.3%
Minimum Split (s)	11	23.7	13	11	20.7	34
Yellow Time (s)	4	4.7	4	4	4.7	4
All-Red Time (s)	2	1	2	2	1	2
Minimum Initial (s)	5	10	7	5	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)		4			4	4
Flash Dont Walk (s)		14			11	24
Dual Entry	No	Yes	No	No	Yes	No
Inhibit Max	Yes	Yes	Yes	Yes	Yes	Yes
Start Time (s)	41	62	112	41	53	7
End Time (s)	62	112	7	53	112	41
Yield/Force Off (s)	56	106.3	1	47	106.3	35
Yield/Force Off 170(s)	56	92.3	1	47	95.3	11
Local Start Time (s)	99	0	50	99	111	65
Local Yield (s)	114	44.3	59	105	44.3	93
Local Yield 170(s)	114	30.3	59	105	33.3	69

Intersection Summary	
Cycle Length	120
Control Type	Actuated-Coordinated
Natural Cycle	135
Offset: 62 (52%), Referenced to phase 2:SBT and 6:NBT, Start of Green	

Splits and Phases: 5: Scottsdale Rd & Lincoln Dr/Lincoln Ln



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	736	45	412	44	50	61	379	1715	34	57	1845	801
Future Volume (veh/h)	736	45	412	44	50	61	379	1715	34	57	1845	801
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	854	0	458	50	57	69	416	1885	37	63	2027	880
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	831	0	568	107	107	95	432	2391	47	81	1961	979
Arrive On Green	0.23	0.00	0.23	0.06	0.06	0.06	0.13	0.46	0.46	0.05	0.38	0.38
Sat Flow, veh/h	3563	0	1585	1781	1777	1585	3456	5155	101	1781	5106	1585
Grp Volume(v), veh/h	854	0	458	50	57	69	416	1244	678	63	2027	880
Grp Sat Flow(s),veh/h/ln	1781	0	1585	1781	1777	1585	1728	1702	1852	1781	1702	1585
Q Serve(g_s), s	28.0	0.0	28.0	3.3	3.7	5.1	14.4	37.1	37.1	4.2	46.1	46.1
Cycle Q Clear(g_c), s	28.0	0.0	28.0	3.3	3.7	5.1	14.4	37.1	37.1	4.2	46.1	46.1
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	831	0	568	107	107	95	432	1579	859	81	1961	979
V/C Ratio(X)	1.03	0.00	0.81	0.47	0.53	0.73	0.96	0.79	0.79	0.78	1.03	0.90
Avail Cap(c_a), veh/h	831	0	568	134	133	119	432	1579	859	89	1961	979
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	46.0	0.0	34.7	54.5	54.8	55.4	52.2	27.2	27.2	56.7	37.0	17.6
Incr Delay (d2), s/veh	38.4	0.0	7.8	1.2	1.5	10.5	33.5	4.1	7.3	28.4	29.5	12.8
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	23.8	0.0	19.1	2.7	3.1	4.2	12.9	22.1	24.7	4.5	32.9	39.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	84.4	0.0	42.5	55.7	56.3	65.9	85.8	31.3	34.5	85.0	66.4	30.4
LnGrp LOS	F	A	D	E	E	E	F	C	C	F	F	C
Approach Vol, veh/h		1312			176			2338			2970	
Approach Delay, s/veh		69.8			59.9			41.9			56.2	
Approach LOS		E			E			D			E	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	21.0	51.8		13.2	11.4	61.4		34.0				
Change Period (Y+Rc), s	6.0	5.7		6.0	6.0	5.7		6.0				
Max Green Setting (Gmax), s	15.0	44.3		9.0	6.0	53.3		28.0				
Max Q Clear Time (g_c+I1), s	16.4	48.1		7.1	6.2	39.1		30.0				
Green Ext Time (p_c), s	0.0	0.0		0.1	0.0	2.9		0.0				

Intersection Summary		
HCM 6th Ctrl Delay	54.0	
HCM 6th LOS	D	

Notes
User approved pedestrian interval to be less than phase max green.
User approved volume balancing among the lanes for turning movement.

Intersection	
Int Delay, s/veh	0

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
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	0	7	0
Stage 1	7	-	-	-	-	-
Stage 2	4	-	-	-	-	-
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	1009	1075	-	-	1614	-
Stage 1	1016	-	-	-	-	-
Stage 2	1019	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	1009	1075	-	-	1614	-
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	0	-
HCM Lane LOS	-	- A	A	-
HCM 95th %tile Q(veh)	-	- -	0	-

Intersection	
Int Delay, s/veh	0

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
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	0	3	0
Stage 1	3	-	-	-	-	-
Stage 2	2	-	-	-	-	-
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	1017	1081	-	-	1619	-
Stage 1	1020	-	-	-	-	-
Stage 2	1021	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	1017	1081	-	-	1619	-
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	0	-
HCM Lane LOS	-	- A	A	-
HCM 95th %tile Q(veh)	-	- -	0	-

APPENDIX I

2026 BUILD PEAK HOUR ANALYSIS

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)	27	50	9	44	77	53
Maximum Split (%)	20.8%	38.5%	6.9%	33.8%	59.2%	40.8%
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)	8	35	85	94	8	85
End Time (s)	35	85	94	8	85	8
Yield/Force Off (s)	31	79	90	1.5	79	1.5
Yield/Force Off 170(s)	31	65	90	111.5	65	111.5
Local Start Time (s)	103	0	50	59	103	50
Local Yield (s)	126	44	55	96.5	44	96.5
Local Yield 170(s)	126	30	55	76.5	30	76.5

Intersection Summary		
Cycle Length		130
Control Type	Actuated-Coordinated	
Natural Cycle		80
Offset: 35 (27%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green		

Splits and Phases: 1: Mockingbird Ln & Lincoln Dr

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	210	933	66	16	631	47	22	22	26	54	63	198
Future Volume (veh/h)	210	933	66	16	631	47	22	22	26	54	63	198
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	223	993	70	17	678	51	24	24	29	67	78	244
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	489	2554	180	363	2339	939	170	93	112	232	361	275
Arrive On Green	0.06	0.72	0.72	0.21	0.21	0.21	0.11	0.11	0.11	0.04	0.18	0.18
Sat Flow, veh/h	1688	3544	250	503	3741	1502	1002	812	981	1688	1969	1502
Grp Volume(v), veh/h	223	524	539	17	678	51	24	0	53	67	78	244
Grp Sat Flow(s),veh/h/ln	1688	1870	1924	503	1870	1502	1002	0	1792	1688	1969	1502
Q Serve(g_s), s	5.8	14.1	14.1	3.5	19.9	3.5	2.8	0.0	3.5	4.5	4.4	20.6
Cycle Q Clear(g_c), s	5.8	14.1	14.1	5.3	19.9	3.5	2.8	0.0	3.5	4.5	4.4	20.6
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	489	1348	1386	363	2339	939	170	0	205	232	361	275
V/C Ratio(X)	0.46	0.39	0.39	0.05	0.29	0.05	0.14	0.00	0.26	0.29	0.22	0.89
Avail Cap(c_a), veh/h	679	1348	1386	363	2339	939	344	0	517	232	704	537
HCM Platoon Ratio	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.96	0.96	0.96	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	9.2	7.1	7.1	22.2	27.2	20.7	52.3	0.0	52.6	47.0	45.1	51.8
Incr Delay (d2), s/veh	0.7	0.8	0.8	0.2	0.3	0.1	0.4	0.0	0.7	0.7	0.3	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	3.7	9.4	9.6	0.8	15.2	2.3	1.3	0.0	2.9	3.5	3.9	13.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	9.9	7.9	7.9	22.4	27.5	20.8	52.6	0.0	53.2	47.7	45.4	61.1
LnGrp LOS	A	A	A	C	C	C	D	A	D	D	D	E
Approach Vol, veh/h		1286			746			77			389	
Approach Delay, s/veh		8.2			27.0			53.0			55.6	
Approach LOS		A			C			D			E	

Timer - Assigned Phs	1	2	3	4	6	8
Phs Duration (G+Y+Rc), s	12.4	87.3	9.0	21.3	99.7	30.3
Change Period (Y+Rc), s	4.0	6.0	4.0	6.5	6.0	6.5
Max Green Setting (Gmax), s	23.0	44.0	5.0	37.5	71.0	46.5
Max Q Clear Time (g_c+I1), s	7.8	21.9	6.5	5.5	16.1	22.6
Green Ext Time (p_c), s	0.5	5.2	0.0	0.4	9.2	1.2

Intersection Summary		
HCM 6th Ctrl Delay		22.6
HCM 6th LOS		C

Notes

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

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)	31	57	8	34	88	42
Maximum Split (%)	23.8%	43.8%	6.2%	26.2%	67.7%	32.3%
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)	99	0	57	65	99	57
End Time (s)	0	57	65	99	57	99
Yield/Force Off (s)	126	51	61	92.5	51	92.5
Yield/Force Off 170(s)	126	37	61	72.5	37	72.5
Local Start Time (s)	99	0	57	65	99	57
Local Yield (s)	126	51	61	92.5	51	92.5
Local Yield 170(s)	126	37	61	72.5	37	72.5

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	192	919	35	12	1069	63	19	49	24	55	64	277
Future Volume (veh/h)	192	919	35	12	1069	63	19	49	24	55	64	277
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	204	978	37	13	1149	68	21	54	26	68	79	342
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	414	2425	92	338	2098	842	222	229	110	289	480	366
Arrive On Green	0.07	0.66	0.66	1.00	1.00	1.00	0.18	0.18	0.18	0.03	0.24	0.24
Sat Flow, veh/h	1688	3675	139	526	3741	1502	915	1255	604	1688	1969	1502
Grp Volume(v), veh/h	204	498	517	13	1149	68	21	0	80	68	79	342
Grp Sat Flow(s),veh/h/ln	1688	1870	1944	526	1870	1502	915	0	1860	1688	1969	1502
Q Serve(g_s), s	6.4	16.0	16.0	0.1	0.0	0.0	2.5	0.0	4.8	4.0	4.1	29.0
Cycle Q Clear(g_c), s	6.4	16.0	16.0	3.3	0.0	0.0	2.5	0.0	4.8	4.0	4.1	29.0
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	414	1234	1283	338	2098	842	222	0	339	289	480	366
V/C Ratio(X)	0.49	0.40	0.40	0.04	0.55	0.08	0.09	0.00	0.24	0.24	0.16	0.93
Avail Cap(c_a), veh/h	650	1234	1283	338	2098	842	249	0	393	289	538	410
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.81	0.81	0.81	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	9.4	10.2	10.2	0.1	0.0	0.0	44.5	0.0	45.4	40.8	38.7	48.1
Incr Delay (d2), s/veh	0.9	1.0	0.9	0.2	0.8	0.2	0.2	0.0	0.4	0.4	0.2	26.9
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	4.3	11.0	11.3	0.0	0.4	0.1	1.1	0.0	4.1	3.2	3.7	19.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	10.3	11.2	11.2	0.2	0.8	0.2	44.7	0.0	45.8	41.2	38.9	75.0
LnGrp LOS	B	B	B	A	A	A	D	A	D	D	D	E
Approach Vol, veh/h		1219			1230			101			489	
Approach Delay, s/veh		11.1			0.8			45.5			64.5	
Approach LOS		B			A			D			E	

Timer - Assigned Phs	1	2	3	4	6	8
Phs Duration (G+Y+Rc), s	12.9	78.9	8.0	30.2	91.8	38.2
Change Period (Y+Rc), s	4.0	6.0	4.0	6.5	6.0	6.5
Max Green Setting (Gmax), s	27.0	51.0	4.0	27.5	82.0	35.5
Max Q Clear Time (g_c+I1), s	8.4	5.3	6.0	6.8	18.0	31.0
Green Ext Time (p_c), s	0.5	12.1	0.0	0.4	8.6	0.7

Intersection Summary	
HCM 6th Ctrl Delay	16.6
HCM 6th LOS	B

Phase Number	1	2	4	6	8
Movement	EBL	WBTL	NBTL	EBTL	SBTL
Lead/Lag	Lead	Lag			
Lead-Lag Optimize	Yes	Yes			
Recall Mode	None	C-Max	Max	C-Max	Max
Maximum Split (s)	18	78	34	96	34
Maximum Split (%)	13.8%	60.0%	26.2%	73.8%	26.2%
Minimum Split (s)	8	21	26.5	21	26.5
Yellow Time (s)	3	4.5	4	4.5	4
All-Red Time (s)	1	1.5	2.5	1.5	2.5
Minimum Initial (s)	4	15	7	15	7
Vehicle Extension (s)	3	3	3	3	3
Minimum Gap (s)	3	3	3	3	3
Time Before Reduce (s)	0	0	0	0	0
Time To Reduce (s)	0	0	0	0	0
Walk Time (s)		7	7	7	7
Flash Dont Walk (s)		7	13	7	13
Dual Entry	No	Yes	Yes	Yes	Yes
Inhibit Max	Yes	Yes	Yes	Yes	Yes
Start Time (s)	112	0	78	112	78
End Time (s)	0	78	112	78	112
Yield/Force Off (s)	126	72	105.5	72	105.5
Yield/Force Off 170(s)	126	65	92.5	65	92.5
Local Start Time (s)	112	0	78	112	78
Local Yield (s)	126	72	105.5	72	105.5
Local Yield 170(s)	126	65	92.5	65	92.5

Intersection Summary	
Cycle Length	130
Control Type	Actuated-Coordinated
Natural Cycle	60
Offset: 0 (0%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green	

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	44	952	9	7	647	55	9	0	11	33	0	37
Future Volume (veh/h)	44	952	9	7	647	55	9	0	11	33	0	37
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	51	1107	10	8	711	60	15	0	18	47	0	53
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	482	2498	23	272	2259	1008	304	0	335	338	0	335
Arrive On Green	0.01	0.23	0.23	0.64	0.64	0.64	0.21	0.00	0.21	0.21	0.00	0.21
Sat Flow, veh/h	1781	3609	33	504	3554	1585	1351	0	1585	1395	0	1585
Grp Volume(v), veh/h	51	545	572	8	711	60	15	0	18	47	0	53
Grp Sat Flow(s),veh/h/ln	1781	1777	1864	504	1777	1585	1351	0	1585	1395	0	1585
Q Serve(g_s), s	1.2	34.2	34.2	1.2	11.8	1.9	1.2	0.0	1.2	3.6	0.0	3.5
Cycle Q Clear(g_c), s	1.2	34.2	34.2	28.1	11.8	1.9	4.7	0.0	1.2	4.8	0.0	3.5
Prop In Lane	1.00		0.02	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	482	1230	1291	272	2259	1008	304	0	335	338	0	335
V/C Ratio(X)	0.11	0.44	0.44	0.03	0.31	0.06	0.05	0.00	0.05	0.14	0.00	0.16
Avail Cap(c_a), veh/h	627	1230	1291	272	2259	1008	304	0	335	338	0	335
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)	0.94	0.94	0.94	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	7.9	28.6	28.6	21.5	10.8	9.0	43.7	0.0	40.9	42.8	0.0	41.8
Incr Delay (d2), s/veh	0.1	1.1	1.0	0.2	0.4	0.1	0.3	0.0	0.3	0.9	0.0	1.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.9	23.2	24.1	0.3	8.2	1.2	0.8	0.0	0.9	2.4	0.0	2.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	8.0	29.7	29.7	21.7	11.2	9.1	44.0	0.0	41.2	43.6	0.0	42.8
LnGrp LOS	A	C	C	C	B	A	D	A	D	D	A	D
Approach Vol, veh/h		1168			779			33			100	
Approach Delay, s/veh		28.8			11.1			42.5			43.2	
Approach LOS		C			B			D			D	

Timer - Assigned Phs	1	2		4		6		8				
Phs Duration (G+Y+Rc), s	7.4	88.6		34.0		96.0		34.0				
Change Period (Y+Rc), s	4.0	6.0		6.5		6.0		6.5				
Max Green Setting (Gmax), s	14.0	72.0		27.5		90.0		27.5				
Max Q Clear Time (g_c+I1), s	3.2	30.1		6.7		36.2		6.8				
Green Ext Time (p_c), s	0.1	6.2		0.1		9.9		0.3				

Intersection Summary		
HCM 6th Ctrl Delay	23.1	
HCM 6th LOS	C	

Phase Number	1	2	4	6	8
Movement	EBL	WBTL	NBTL	EBTL	SBTL
Lead/Lag	Lead	Lag			
Lead-Lag Optimize	Yes	Yes			
Recall Mode	None	C-Max	Max	C-Max	Max
Maximum Split (s)	23	70	37	93	37
Maximum Split (%)	17.7%	53.8%	28.5%	71.5%	28.5%
Minimum Split (s)	9.5	24	26.5	24	26.5
Yellow Time (s)	3	4.5	4	4.5	4
All-Red Time (s)	1	1.5	2.5	1.5	2.5
Minimum Initial (s)	5	5	5	5	5
Vehicle Extension (s)	3	3	3	3	3
Minimum Gap (s)	3	3	3	3	3
Time Before Reduce (s)	0	0	0	0	0
Time To Reduce (s)	0	0	0	0	0
Walk Time (s)		7	7	7	7
Flash Dont Walk (s)		7	13	7	13
Dual Entry	No	Yes	Yes	Yes	Yes
Inhibit Max	Yes	Yes	Yes	Yes	Yes
Start Time (s)	107	0	70	107	70
End Time (s)	0	70	107	70	107
Yield/Force Off (s)	126	64	100.5	64	100.5
Yield/Force Off 170(s)	126	57	87.5	57	87.5
Local Start Time (s)	107	0	70	107	70
Local Yield (s)	126	64	100.5	64	100.5
Local Yield 170(s)	126	57	87.5	57	87.5

Intersection Summary		
Cycle Length		130
Control Type	Actuated-Coordinated	
Natural Cycle		65
Offset: 0 (0%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green		

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	33	989	13	15	1099	28	8	0	12	30	0	25
Future Volume (veh/h)	33	989	13	15	1099	28	8	0	12	30	0	25
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	38	1150	15	16	1208	31	13	0	19	43	0	36
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	290	2404	31	303	2167	966	353	0	372	369	0	372
Arrive On Green	0.03	0.67	0.67	0.61	0.61	0.61	0.23	0.00	0.23	0.23	0.00	0.23
Sat Flow, veh/h	1781	3592	47	482	3554	1585	1372	0	1585	1393	0	1585
Grp Volume(v), veh/h	38	569	596	16	1208	31	13	0	19	43	0	36
Grp Sat Flow(s),veh/h/ln	1781	1777	1862	482	1777	1585	1372	0	1585	1393	0	1585
Q Serve(g_s), s	1.0	20.2	20.3	2.2	26.1	1.0	1.0	0.0	1.2	3.2	0.0	2.3
Cycle Q Clear(g_c), s	1.0	20.2	20.3	14.7	26.1	1.0	3.3	0.0	1.2	4.4	0.0	2.3
Prop In Lane	1.00		0.03	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	290	1189	1246	303	2167	966	353	0	372	369	0	372
V/C Ratio(X)	0.13	0.48	0.48	0.05	0.56	0.03	0.04	0.00	0.05	0.12	0.00	0.10
Avail Cap(c_a), veh/h	499	1189	1246	303	2167	966	353	0	372	369	0	372
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)	0.94	0.94	0.94	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	11.3	10.5	10.5	15.9	15.0	10.1	40.2	0.0	38.5	40.2	0.0	39.0
Incr Delay (d2), s/veh	0.2	1.3	1.2	0.3	1.0	0.1	0.2	0.0	0.3	0.6	0.0	0.5
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	0.7	12.5	13.0	0.5	15.9	0.7	0.6	0.0	0.9	2.1	0.0	1.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	11.5	11.8	11.7	16.2	16.0	10.2	40.4	0.0	38.8	40.9	0.0	39.5
LnGrp LOS	B	B	B	B	B	B	D	A	D	D	A	D
Approach Vol, veh/h		1203			1255			32			79	
Approach Delay, s/veh		11.7			15.9			39.5			40.2	
Approach LOS		B			B			D			D	

Timer - Assigned Phs	1	2	4	6	8
Phs Duration (G+Y+Rc), s	7.7	85.3	37.0	93.0	37.0
Change Period (Y+Rc), s	4.0	6.0	6.5	6.0	6.5
Max Green Setting (Gmax), s	19.0	64.0	30.5	87.0	30.5
Max Q Clear Time (g_c+I1), s	3.0	28.1	5.3	22.3	6.4
Green Ext Time (p_c), s	0.0	12.1	0.1	10.8	0.3

Intersection Summary		
HCM 6th Ctrl Delay		15.0
HCM 6th LOS		B

Intersection	
Int Delay, s/veh	0.6

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	1011	14	21	704	5	16
Future Vol, veh/h	1011	14	21	704	5	16
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	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	1176	16	23	774	10	32

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1192	0	1617	596
Stage 1	-	-	-	-	1184	-
Stage 2	-	-	-	-	433	-
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	-	-	946	-	*94	*667
Stage 1	-	-	-	-	*594	-
Stage 2	-	-	-	-	*744	-
Platoon blocked, %	-	-	1	-		1
Mov Cap-1 Maneuver	-	-	946	-	*92	*667
Mov Cap-2 Maneuver	-	-	-	-	*92	-
Stage 1	-	-	-	-	*594	-
Stage 2	-	-	-	-	*727	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.3	20.9
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	268	-	-	946	-
HCM Lane V/C Ratio	0.157	-	-	0.024	-
HCM Control Delay (s)	20.9	-	-	8.9	-
HCM Lane LOS	C	-	-	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

Intersection	
Int Delay, s/veh	1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	1021	9	23	1129	9	24
Future Vol, veh/h	1021	9	23	1129	9	24
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	1187	10	25	1241	18	48

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1197	0	1863	599
Stage 1	-	-	-	-	1192	-
Stage 2	-	-	-	-	671	-
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	-	-	939	-	*65	*667
Stage 1	-	-	-	-	*585	-
Stage 2	-	-	-	-	*572	-
Platoon blocked, %	-	-	1	-		1
Mov Cap-1 Maneuver	-	-	939	-	*63	*667
Mov Cap-2 Maneuver	-	-	-	-	*63	-
Stage 1	-	-	-	-	*585	-
Stage 2	-	-	-	-	*557	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.2	34.9
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	185	-	-	939	-
HCM Lane V/C Ratio	0.357	-	-	0.027	-
HCM Control Delay (s)	34.9	-	-	8.9	-
HCM Lane LOS	D	-	-	A	-
HCM 95th %tile Q(veh)	1.5	-	-	0.1	-

Notes

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

Intersection	
Int Delay, s/veh	1.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	22	936	73	13	663	10	46	5	63	4	0	11
Future Vol, veh/h	22	936	73	13	663	10	46	5	63	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	25	1064	83	14	698	11	61	7	83	6	0	16

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	709	0	0	1147	0	0	1533	1893	574	1318	-	355
Stage 1	-	-	-	-	-	-	1156	1156	-	732	-	-
Stage 2	-	-	-	-	-	-	377	737	-	586	-	-
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	*1219	-	-	954	-	-	*80	*69	*691	*115	0	*815
Stage 1	-	-	-	-	-	-	*563	*513	-	*768	0	-
Stage 2	-	-	-	-	-	-	*768	*673	-	*652	0	-
Platoon blocked, %	1	-	-	1	-	-			1			1
Mov Cap-1 Maneuver	*1219	-	-	954	-	-	*76	*67	*691	*97	-	*815
Mov Cap-2 Maneuver	-	-	-	-	-	-	*318	*287	-	*330	-	-
Stage 1	-	-	-	-	-	-	*551	*502	-	*752	-	-
Stage 2	-	-	-	-	-	-	*742	*663	-	*554	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	0.2	16.9	11.3
HCM LOS			C	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	450	* 1219	-	-	954	-	-	330	815
HCM Lane V/C Ratio	0.333	0.021	-	-	0.014	-	-	0.017	0.019
HCM Control Delay (s)	16.9	8	-	-	8.8	-	-	16.1	9.5
HCM Lane LOS	C	A	-	-	A	-	-	C	A
HCM 95th %tile Q(veh)	1.4	0.1	-	-	0	-	-	0.1	0.1

Notes

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

Intersection	
Int Delay, s/veh	2.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	9	968	65	6	1049	10	85	2	76	3	0	20
Future Vol, veh/h	9	968	65	6	1049	10	85	2	76	3	0	20
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	1100	74	6	1104	11	112	3	100	4	0	29

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1115	0	0	1174	0	0	1721	2284	587	1694	-	558
Stage 1	-	-	-	-	-	-	1157	1157	-	1122	-	-
Stage 2	-	-	-	-	-	-	564	1127	-	572	-	-
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	*946	-	-	920	-	-	*~ 57	*39	*691	*60	0	*633
Stage 1	-	-	-	-	-	-	*562	*511	-	*596	0	-
Stage 2	-	-	-	-	-	-	*596	*523	-	*652	0	-
Platoon blocked, %	1	-	-	1	-	-			1			1
Mov Cap-1 Maneuver	*946	-	-	920	-	-	*~ 54	*38	*691	*50	-	*633
Mov Cap-2 Maneuver	-	-	-	-	-	-	*278	*249	-	*281	-	-
Stage 1	-	-	-	-	-	-	*556	*506	-	*590	-	-
Stage 2	-	-	-	-	-	-	*566	*519	-	*549	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0.1	25.5	11.9
HCM LOS			D	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	385	* 946	-	-	920	-	-	281	633
HCM Lane V/C Ratio	0.557	0.011	-	-	0.007	-	-	0.015	0.045
HCM Control Delay (s)	25.5	8.8	-	-	8.9	-	-	18	11
HCM Lane LOS	D	A	-	-	A	-	-	C	B
HCM 95th %tile Q(veh)	3.3	0	-	-	0	-	-	0	0.1

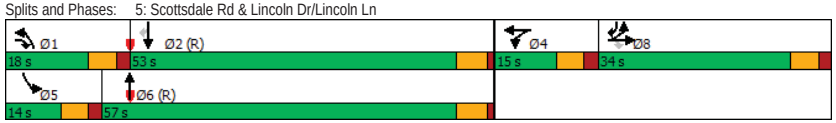
Notes

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

Phase Number	1	2	4	5	6	8
Movement	NBL	SBT	WBTL	SBL	NBT	EBTL
Lead/Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize						
Recall Mode	None	C-Max	None	None	C-Max	None
Maximum Split (s)	18	53	15	14	57	34
Maximum Split (%)	15.0%	44.2%	12.5%	11.7%	47.5%	28.3%
Minimum Split (s)	11	23.7	13	11	20.7	34
Yellow Time (s)	4	4.7	4	4	4.7	4
All-Red Time (s)	2	1	2	2	1	2
Minimum Initial (s)	5	10	7	5	10	7
Vehicle Extension (s)	2	2	2	2	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)		4			4	4
Flash Dont Walk (s)		14			11	24
Dual Entry	No	Yes	No	No	Yes	No
Inhibit Max	Yes	Yes	Yes	Yes	Yes	Yes
Start Time (s)	100	118	51	100	114	66
End Time (s)	118	51	66	114	51	100
Yield/Force Off (s)	112	45.3	60	108	45.3	94
Yield/Force Off 170(s)	112	31.3	60	108	34.3	70
Local Start Time (s)	102	0	53	102	116	68
Local Yield (s)	114	47.3	62	110	47.3	96
Local Yield 170(s)	114	33.3	62	110	36.3	72

Intersection Summary	
Cycle Length	120
Control Type	Actuated-Coordinated
Natural Cycle	85
Offset: 118 (98%), Referenced to phase 2:SBT and 6:NBT, Start of Green	

Splits and Phases: 5: Scottsdale Rd & Lincoln Dr/Lincoln Ln



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	599	42	351	22	38	35	252	994	34	26	1068	453
Future Volume (veh/h)	599	42	351	22	38	35	252	994	34	26	1068	453
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	700	0	390	25	43	40	277	1092	37	29	1174	498
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	831	0	522	101	105	86	331	2468	84	46	2128	1030
Arrive On Green	0.23	0.00	0.23	0.06	0.06	0.06	0.10	0.49	0.49	0.03	0.42	0.42
Sat Flow, veh/h	3563	0	1585	1781	1853	1521	3456	5072	172	1781	5106	1585
Grp Volume(v), veh/h	700	0	390	25	41	42	277	733	396	29	1174	498
Grp Sat Flow(s),veh/h/ln	1781	0	1585	1781	1777	1597	1728	1702	1839	1781	1702	1585
Q Serve(g_s), s	22.5	0.0	26.3	1.6	2.7	3.1	9.5	16.9	16.9	1.9	20.9	19.2
Cycle Q Clear(g_c), s	22.5	0.0	26.3	1.6	2.7	3.1	9.5	16.9	16.9	1.9	20.9	19.2
Prop In Lane	1.00		1.00	1.00		0.95	1.00		0.09	1.00		1.00
Lane Grp Cap(c), veh/h	831	0	522	101	101	91	331	1656	895	46	2128	1030
V/C Ratio(X)	0.84	0.00	0.75	0.25	0.41	0.46	0.84	0.44	0.44	0.63	0.55	0.48
Avail Cap(c_a), veh/h	831	0	522	134	133	120	346	1656	895	119	2128	1030
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	43.9	0.0	35.8	54.1	54.6	54.8	53.3	20.2	20.2	57.9	26.5	10.7
Incr Delay (d2), s/veh	7.4	0.0	5.2	0.5	1.0	1.4	14.8	0.9	1.6	5.2	1.0	1.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	16.1	0.0	16.2	1.3	2.2	2.3	8.4	11.1	12.1	1.7	13.4	18.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	51.3	0.0	41.1	54.6	55.6	56.2	68.1	21.0	21.7	63.1	27.5	12.3
LnGrp LOS	D	A	D	D	E	E	E	C	C	E	C	B
Approach Vol, veh/h		1090			108			1406			1701	
Approach Delay, s/veh		47.6			55.6			30.5			23.7	
Approach LOS		D			E			C			C	

Timer - Assigned Phs	1	2	4	5	6	8
Phs Duration (G+Y+Rc), s	17.5	55.7	12.8	9.1	64.1	34.0
Change Period (Y+Rc), s	6.0	5.7	6.0	6.0	5.7	6.0
Max Green Setting (Gmax), s	12.0	47.3	9.0	8.0	51.3	28.0
Max Q Clear Time (g_c+I1), s	11.5	22.9	5.1	3.9	18.9	28.3
Green Ext Time (p_c), s	0.0	7.7	0.1	0.0	5.8	0.0

Intersection Summary	
HCM 6th Ctrl Delay	32.8
HCM 6th LOS	C

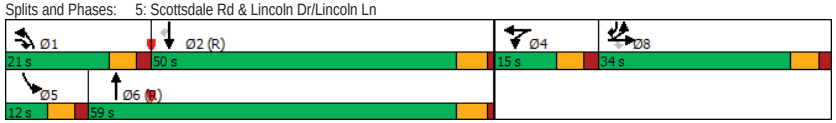
Notes
User approved pedestrian interval to be less than phase max green.
User approved volume balancing among the lanes for turning movement.

Phase Number	1	2	4	5	6	8
Movement	NBL	SBT	WBTL	SBL	NBT	EBTL
Lead/Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize						
Recall Mode	None	C-Max	None	None	C-Max	None
Maximum Split (s)	21	50	15	12	59	34
Maximum Split (%)	17.5%	41.7%	12.5%	10.0%	49.2%	28.3%
Minimum Split (s)	11	23.7	13	11	20.7	34
Yellow Time (s)	4	4.7	4	4	4.7	4
All-Red Time (s)	2	1	2	2	1	2
Minimum Initial (s)	5	10	7	5	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)		4			4	4
Flash Dont Walk (s)		14			11	24
Dual Entry	No	Yes	No	No	Yes	No
Inhibit Max	Yes	Yes	Yes	Yes	Yes	Yes
Start Time (s)	41	62	112	41	53	7
End Time (s)	62	112	7	53	112	41
Yield/Force Off (s)	56	106.3	1	47	106.3	35
Yield/Force Off 170(s)	56	92.3	1	47	95.3	11
Local Start Time (s)	99	0	50	99	111	65
Local Yield (s)	114	44.3	59	105	44.3	93
Local Yield 170(s)	114	30.3	59	105	33.3	69

Intersection Summary	
Cycle Length	120
Control Type	Actuated-Coordinated
Natural Cycle	105

Offset: 62 (52%), Referenced to phase 2:SBT and 6:NBT, Start of Green

Splits and Phases: 5: Scottsdale Rd & Lincoln Dr/Lincoln Ln



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	665	40	385	41	46	53	359	1540	31	49	1666	731
Future Volume (veh/h)	665	40	385	41	46	53	359	1540	31	49	1666	731
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	770	0	428	47	52	60	395	1692	34	54	1831	803
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	831	0	568	103	103	92	432	2433	49	69	1972	982
Arrive On Green	0.23	0.00	0.23	0.06	0.06	0.06	0.13	0.47	0.47	0.04	0.39	0.39
Sat Flow, veh/h	3563	0	1585	1781	1777	1585	3456	5152	104	1781	5106	1585
Grp Volume(v), veh/h	770	0	428	47	52	60	395	1118	608	54	1831	803
Grp Sat Flow(s),veh/h/ln	1781	0	1585	1781	1777	1585	1728	1702	1852	1781	1702	1585
Q Serve(g_s), s	25.4	0.0	28.0	3.1	3.4	4.4	13.6	31.0	31.0	3.6	41.2	46.3
Cycle Q Clear(g_c), s	25.4	0.0	28.0	3.1	3.4	4.4	13.6	31.0	31.0	3.6	41.2	46.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.06	1.00		1.00
Lane Grp Cap(c), veh/h	831	0	568	103	103	92	432	1607	874	69	1972	982
V/C Ratio(X)	0.93	0.00	0.75	0.45	0.50	0.65	0.91	0.70	0.70	0.78	0.93	0.82
Avail Cap(c_a), veh/h	831	0	568	134	133	119	432	1607	874	89	1972	982
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	45.0	0.0	33.8	54.7	54.8	55.3	51.9	24.9	24.9	57.1	35.3	17.5
Incr Delay (d2), s/veh	15.9	0.0	5.1	1.2	1.4	3.2	23.4	2.5	4.6	20.7	9.2	7.5
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	18.9	0.0	17.2	2.5	2.8	3.3	11.7	18.7	20.7	3.6	25.4	34.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	60.9	0.0	38.9	55.8	56.3	58.5	75.2	27.4	29.5	77.8	44.5	25.0
LnGrp LOS	E	A	D	E	E	E	E	C	C	E	D	C
Approach Vol, veh/h		1198			159			2121			2688	
Approach Delay, s/veh		53.0			57.0			36.9			39.3	
Approach LOS		D			E			D			D	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	21.0	52.0		13.0	10.7	62.4		34.0				
Change Period (Y+Rc), s	6.0	5.7		6.0	6.0	5.7		6.0				
Max Green Setting (Gmax), s	15.0	44.3		9.0	6.0	53.3		28.0				
Max Q Clear Time (g_c+I1), s	15.6	48.3		6.4	5.6	33.0		30.0				
Green Ext Time (p_c), s	0.0	0.0		0.1	0.0	2.6		0.0				

Intersection Summary	
HCM 6th Ctrl Delay	41.6
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.

Intersection	
Int Delay, s/veh	5.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
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	0	6	0
Stage 1	6	-	-	-	-	-
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	979	1077	-	-	1615	-
Stage 1	1017	-	-	-	-	-
Stage 2	995	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	972	1077	-	-	1615	-
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	0
HCM Lane LOS	-	- A	A	A
HCM 95th %tile Q(veh)	-	- 0	0	-

Intersection	
Int Delay, s/veh	6.7

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	14	3	0	20	2
Future Vol, veh/h	0	14	3	0	20	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	16	3	0	22	2

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	49	3	0	0	3	0
Stage 1	3	-	-	-	-	-
Stage 2	46	-	-	-	-	-
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	960	1081	-	-	1619	-
Stage 1	1020	-	-	-	-	-
Stage 2	976	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	947	1081	-	-	1619	-
Mov Cap-2 Maneuver	947	-	-	-	-	-
Stage 1	1020	-	-	-	-	-
Stage 2	962	-	-	-	-	-

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

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	- 1081	1619	-
HCM Lane V/C Ratio	-	- 0.014	0.014	-
HCM Control Delay (s)	-	- 8.4	7.3	0
HCM Lane LOS	-	- A	A	A
HCM 95th %tile Q(veh)	-	- 0	0	-

APPENDIX J

2031 BUILD PEAK HOUR ANALYSIS

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)	27	50	9	44	77	53
Maximum Split (%)	20.8%	38.5%	6.9%	33.8%	59.2%	40.8%
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)	8	35	85	94	8	85
End Time (s)	35	85	94	8	85	8
Yield/Force Off (s)	31	79	90	1.5	79	1.5
Yield/Force Off 170(s)	31	65	90	111.5	65	111.5
Local Start Time (s)	103	0	50	59	103	50
Local Yield (s)	126	44	55	96.5	44	96.5
Local Yield 170(s)	126	30	55	76.5	30	76.5

Intersection Summary		
Cycle Length		130
Control Type	Actuated-Coordinated	
Natural Cycle		80
Offset: 35 (27%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green		

Splits and Phases: 1: Mockingbird Ln & Lincoln Dr

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	231	1028	72	18	700	51	24	24	29	59	68	219
Future Volume (veh/h)	231	1028	72	18	700	51	24	24	29	59	68	219
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	246	1094	77	19	753	55	26	26	32	73	84	270
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	451	2492	175	314	2240	899	184	106	130	251	396	302
Arrive On Green	0.07	0.70	0.70	0.20	0.20	0.20	0.13	0.13	0.13	0.04	0.20	0.20
Sat Flow, veh/h	1688	3545	249	454	3741	1502	973	803	988	1688	1969	1502
Grp Volume(v), veh/h	246	577	594	19	753	55	26	0	58	73	84	270
Grp Sat Flow(s),veh/h/ln	1688	1870	1924	454	1870	1502	973	0	1791	1688	1969	1502
Q Serve(g_s), s	6.9	17.2	17.3	4.5	22.5	3.9	3.1	0.0	3.8	4.8	4.6	22.8
Cycle Q Clear(g_c), s	6.9	17.2	17.3	8.2	22.5	3.9	3.1	0.0	3.8	4.8	4.6	22.8
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	451	1315	1352	314	2240	899	184	0	236	251	396	302
V/C Ratio(X)	0.55	0.44	0.44	0.06	0.34	0.06	0.14	0.00	0.25	0.29	0.21	0.89
Avail Cap(c_a), veh/h	626	1315	1352	314	2240	899	336	0	517	251	704	537
HCM Platoon Ratio	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.95	0.95	0.95	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	11.2	8.3	8.3	25.7	29.9	22.5	50.3	0.0	50.6	45.2	43.4	50.6
Incr Delay (d2), s/veh	1.0	1.1	1.0	0.3	0.4	0.1	0.3	0.0	0.5	0.6	0.3	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	4.6	11.3	11.5	1.0	16.8	2.5	1.4	0.0	3.1	3.7	4.2	14.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	12.2	9.4	9.3	26.1	30.3	22.6	50.7	0.0	51.2	45.8	43.6	59.9
LnGrp LOS	B	A	A	C	C	C	D	A	D	D	D	E
Approach Vol, veh/h		1417			827			84			427	
Approach Delay, s/veh		9.8			29.7			51.0			54.3	
Approach LOS		A			C			D			D	

Timer - Assigned Phs	1	2	3	4	6	8
Phs Duration (G+Y+Rc), s	13.5	83.9	9.0	23.6	97.4	32.6
Change Period (Y+Rc), s	4.0	6.0	4.0	6.5	6.0	6.5
Max Green Setting (Gmax), s	23.0	44.0	5.0	37.5	71.0	46.5
Max Q Clear Time (g_c+I1), s	8.9	24.5	6.8	5.8	19.3	24.8
Green Ext Time (p_c), s	0.6	5.7	0.0	0.4	10.7	1.4

Intersection Summary	
HCM 6th Ctrl Delay	24.0
HCM 6th LOS	C

Notes

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

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)	31	57	8	34	88	42
Maximum Split (%)	23.8%	43.8%	6.2%	26.2%	67.7%	32.3%
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)	99	0	57	65	99	57
End Time (s)	0	57	65	99	57	99
Yield/Force Off (s)	126	51	61	92.5	51	92.5
Yield/Force Off 170(s)	126	37	61	72.5	37	72.5
Local Start Time (s)	99	0	57	65	99	57
Local Yield (s)	126	51	61	92.5	51	92.5
Local Yield 170(s)	126	37	61	72.5	37	72.5

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	220	1027	38	13	1186	69	21	53	27	60	70	311
Future Volume (veh/h)	220	1027	38	13	1186	69	21	53	27	60	70	311
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	1093	40	14	1275	74	23	58	30	74	86	384
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	393	2339	86	282	1959	786	236	253	131	315	528	403
Arrive On Green	0.08	0.64	0.64	1.00	1.00	1.00	0.21	0.21	0.21	0.03	0.27	0.27
Sat Flow, veh/h	1688	3680	135	471	3741	1502	875	1223	632	1688	1969	1502
Grp Volume(v), veh/h	234	555	578	14	1275	74	23	0	88	74	86	384
Grp Sat Flow(s),veh/h/ln	1688	1870	1945	471	1870	1502	875	0	1855	1688	1969	1502
Q Serve(g_s), s	7.9	20.0	20.0	0.3	0.0	0.0	2.8	0.0	5.1	4.0	4.3	32.7
Cycle Q Clear(g_c), s	7.9	20.0	20.0	5.8	0.0	0.0	2.8	0.0	5.1	4.0	4.3	32.7
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	393	1189	1236	282	1959	786	236	0	383	315	528	403
V/C Ratio(X)	0.60	0.47	0.47	0.05	0.65	0.09	0.10	0.00	0.23	0.24	0.16	0.95
Avail Cap(c_a), veh/h	607	1189	1236	282	1959	786	240	0	392	315	538	410
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.75	0.75	0.75	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	10.9	12.3	12.3	0.2	0.0	0.0	42.0	0.0	42.9	38.7	36.4	46.8
Incr Delay (d2), s/veh	1.4	1.3	1.3	0.2	1.3	0.2	0.2	0.0	0.3	0.4	0.1	32.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	5.6	13.3	13.8	0.0	0.6	0.1	1.1	0.0	4.3	3.4	3.8	22.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	12.4	13.6	13.5	0.5	1.3	0.2	42.2	0.0	43.2	39.1	36.5	79.1
LnGrp LOS	B	B	B	A	A	A	D	A	D	D	D	E
Approach Vol, veh/h		1367			1363			111			544	
Approach Delay, s/veh		13.4			1.2			43.0			66.9	
Approach LOS		B			A			D			E	

Timer - Assigned Phs	1	2	3	4		6		8				
Phs Duration (G+Y+Rc), s	14.5	74.1	8.0	33.4		88.6		41.4				
Change Period (Y+Rc), s	4.0	6.0	4.0	6.5		6.0		6.5				
Max Green Setting (Gmax), s	27.0	51.0	4.0	27.5		82.0		35.5				
Max Q Clear Time (g_c+I1), s	9.9	7.8	6.0	7.1		22.0		34.7				
Green Ext Time (p_c), s	0.6	14.1	0.0	0.5		10.2		0.2				

Intersection Summary	
HCM 6th Ctrl Delay	18.1
HCM 6th LOS	B

Phase Number	1	2	4	6	8
Movement	EBL	WBTL	NBTL	EBTL	SBTL
Lead/Lag	Lead	Lag			
Lead-Lag Optimize	Yes	Yes			
Recall Mode	None	C-Max	Max	C-Max	Max
Maximum Split (s)	18	78	34	96	34
Maximum Split (%)	13.8%	60.0%	26.2%	73.8%	26.2%
Minimum Split (s)	8	21	26.5	21	26.5
Yellow Time (s)	3	4.5	4	4.5	4
All-Red Time (s)	1	1.5	2.5	1.5	2.5
Minimum Initial (s)	4	15	7	15	7
Vehicle Extension (s)	3	3	3	3	3
Minimum Gap (s)	3	3	3	3	3
Time Before Reduce (s)	0	0	0	0	0
Time To Reduce (s)	0	0	0	0	0
Walk Time (s)		7	7	7	7
Flash Dont Walk (s)		7	13	7	13
Dual Entry	No	Yes	Yes	Yes	Yes
Inhibit Max	Yes	Yes	Yes	Yes	Yes
Start Time (s)	112	0	78	112	78
End Time (s)	0	78	112	78	112
Yield/Force Off (s)	126	72	105.5	72	105.5
Yield/Force Off 170(s)	126	65	92.5	65	92.5
Local Start Time (s)	112	0	78	112	78
Local Yield (s)	126	72	105.5	72	105.5
Local Yield 170(s)	126	65	92.5	65	92.5

Intersection Summary	
Cycle Length	130
Control Type	Actuated-Coordinated
Natural Cycle	60
Offset: 0 (0%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green	

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	55	1042	9	7	711	69	9	0	11	41	0	48
Future Volume (veh/h)	55	1042	9	7	711	69	9	0	11	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	1212	10	8	781	76	15	0	18	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	447	2501	21	239	2252	1005	289	0	335	338	0	335
Arrive On Green	0.01	0.23	0.23	0.63	0.63	0.63	0.21	0.00	0.21	0.21	0.00	0.21
Sat Flow, veh/h	1781	3612	30	457	3554	1585	1332	0	1585	1395	0	1585
Grp Volume(v), veh/h	64	596	626	8	781	76	15	0	18	59	0	69
Grp Sat Flow(s),veh/h/ln	1781	1777	1865	457	1777	1585	1332	0	1585	1395	0	1585
Q Serve(g_s), s	1.6	37.8	37.8	1.4	13.4	2.4	1.2	0.0	1.2	4.6	0.0	4.7
Cycle Q Clear(g_c), s	1.6	37.8	37.8	31.6	13.4	2.4	5.9	0.0	1.2	5.8	0.0	4.7
Prop In Lane	1.00		0.02	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	447	1230	1291	239	2252	1005	289	0	335	338	0	335
V/C Ratio(X)	0.14	0.48	0.48	0.03	0.35	0.08	0.05	0.00	0.05	0.17	0.00	0.21
Avail Cap(c_a), veh/h	589	1230	1291	239	2252	1005	289	0	335	338	0	335
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)	0.92	0.92	0.92	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	8.2	30.0	30.0	23.7	11.2	9.2	44.7	0.0	40.9	43.2	0.0	42.2
Incr Delay (d2), s/veh	0.1	1.3	1.2	0.3	0.4	0.1	0.3	0.0	0.3	1.1	0.0	1.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	1.1	25.2	26.3	0.3	9.1	1.6	0.8	0.0	0.9	3.1	0.0	3.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	8.3	31.3	31.2	24.0	11.6	9.3	45.0	0.0	41.2	44.3	0.0	43.6
LnGrp LOS	A	C	C	C	B	A	D	A	D	D	A	D
Approach Vol, veh/h		1286			865			33			128	
Approach Delay, s/veh		30.1			11.5			42.9			43.9	
Approach LOS		C			B			D			D	

Timer - Assigned Phs	1	2		4		6		8				
Phs Duration (G+Y+Rc), s	7.6	88.4		34.0		96.0		34.0				
Change Period (Y+Rc), s	4.0	6.0		6.5		6.0		6.5				
Max Green Setting (Gmax), s	14.0	72.0		27.5		90.0		27.5				
Max Q Clear Time (g_c+I1), s	3.6	33.6		7.9		39.8		7.8				
Green Ext Time (p_c), s	0.1	6.9		0.1		11.4		0.5				

Intersection Summary		
HCM 6th Ctrl Delay	24.1	
HCM 6th LOS	C	

Phase Number	1	2	4	6	8
Movement	EBL	WBTL	NBTL	EBTL	SBTL
Lead/Lag	Lead	Lag			
Lead-Lag Optimize	Yes	Yes			
Recall Mode	None	C-Max	Max	C-Max	Max
Maximum Split (s)	23	70	37	93	37
Maximum Split (%)	17.7%	53.8%	28.5%	71.5%	28.5%
Minimum Split (s)	9.5	24	26.5	24	26.5
Yellow Time (s)	3	4.5	4	4.5	4
All-Red Time (s)	1	1.5	2.5	1.5	2.5
Minimum Initial (s)	5	5	5	5	5
Vehicle Extension (s)	3	3	3	3	3
Minimum Gap (s)	3	3	3	3	3
Time Before Reduce (s)	0	0	0	0	0
Time To Reduce (s)	0	0	0	0	0
Walk Time (s)		7	7	7	7
Flash Dont Walk (s)		7	13	7	13
Dual Entry	No	Yes	Yes	Yes	Yes
Inhibit Max	Yes	Yes	Yes	Yes	Yes
Start Time (s)	107	0	70	107	70
End Time (s)	0	70	107	70	107
Yield/Force Off (s)	126	64	100.5	64	100.5
Yield/Force Off 170(s)	126	57	87.5	57	87.5
Local Start Time (s)	107	0	70	107	70
Local Yield (s)	126	64	100.5	64	100.5
Local Yield 170(s)	126	57	87.5	57	87.5

Intersection Summary	
Cycle Length	130
Control Type	Actuated-Coordinated
Natural Cycle	70
Offset: 0 (0%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green	

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	43	1098	13	15	1214	36	8	0	12	39	0	33
Future Volume (veh/h)	43	1098	13	15	1214	36	8	0	12	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	1277	15	16	1334	40	13	0	19	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	259	2407	28	263	2155	961	342	0	372	369	0	372
Arrive On Green	0.03	0.67	0.67	0.61	0.61	0.61	0.23	0.00	0.23	0.23	0.00	0.23
Sat Flow, veh/h	1781	3597	42	427	3554	1585	1359	0	1585	1393	0	1585
Grp Volume(v), veh/h	50	631	661	16	1334	40	13	0	19	56	0	47
Grp Sat Flow(s),veh/h/ln	1781	1777	1863	427	1777	1585	1359	0	1585	1393	0	1585
Q Serve(g_s), s	1.3	23.7	23.7	2.6	30.8	1.3	1.0	0.0	1.2	4.2	0.0	3.0
Cycle Q Clear(g_c), s	1.3	23.7	23.7	18.1	30.8	1.3	4.0	0.0	1.2	5.4	0.0	3.0
Prop In Lane	1.00		0.02	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	259	1189	1247	263	2155	961	342	0	372	369	0	372
V/C Ratio(X)	0.19	0.53	0.53	0.06	0.62	0.04	0.04	0.00	0.05	0.15	0.00	0.13
Avail Cap(c_a), veh/h	462	1189	1247	263	2155	961	342	0	372	369	0	372
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)	0.92	0.92	0.92	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	12.7	11.0	11.0	17.8	16.1	10.3	40.8	0.0	38.5	40.6	0.0	39.2
Incr Delay (d2), s/veh	0.3	1.6	1.5	0.4	1.3	0.1	0.2	0.0	0.3	0.9	0.0	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.9	14.2	14.7	0.5	18.3	0.9	0.6	0.0	0.9	2.8	0.0	2.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	13.1	12.6	12.5	18.2	17.5	10.4	41.0	0.0	38.8	41.5	0.0	39.9
LnGrp LOS	B	B	B	B	B	B	D	A	D	D	A	D
Approach Vol, veh/h		1342			1390			32			103	
Approach Delay, s/veh		12.6			17.3			39.7			40.8	
Approach LOS		B			B			D			D	

Timer - Assigned Phs	1	2	4	6	8
Phs Duration (G+Y+Rc), s	8.2	84.8	37.0	93.0	37.0
Change Period (Y+Rc), s	4.0	6.0	6.5	6.0	6.5
Max Green Setting (Gmax), s	19.0	64.0	30.5	87.0	30.5
Max Q Clear Time (g_c+I1), s	3.3	32.8	6.0	25.7	7.4
Green Ext Time (p_c), s	0.1	13.3	0.1	12.9	0.4

Intersection Summary		
HCM 6th Ctrl Delay	16.2	
HCM 6th LOS	B	

Intersection	
Int Delay, s/veh	0.6

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	1112	15	22	781	5	16
Future Vol, veh/h	1112	15	22	781	5	16
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	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	1293	17	24	858	10	32

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1310	0	1779	655
Stage 1	-	-	-	-	1302	-
Stage 2	-	-	-	-	477	-
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	-	-	894	-	*73	*619
Stage 1	-	-	-	-	*565	-
Stage 2	-	-	-	-	*720	-
Platoon blocked, %	-	-	1	-		1
Mov Cap-1 Maneuver	-	-	894	-	*71	*619
Mov Cap-2 Maneuver	-	-	-	-	*71	-
Stage 1	-	-	-	-	*565	-
Stage 2	-	-	-	-	*700	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.3	25.4
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	218	-	-	894	-
HCM Lane V/C Ratio	0.193	-	-	0.027	-
HCM Control Delay (s)	25.4	-	-	9.1	-
HCM Lane LOS	D	-	-	A	-
HCM 95th %tile Q(veh)	0.7	-	-	0.1	-

Notes

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

Intersection	
Int Delay, s/veh	1.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	1139	9	24	1253	10	25
Future Vol, veh/h	1139	9	24	1253	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	1324	10	26	1377	20	50

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1334	0	2070	667
Stage 1	-	-	-	-	1329	-
Stage 2	-	-	-	-	741	-
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	-	-	862	-	*47	*619
Stage 1	-	-	-	-	*536	-
Stage 2	-	-	-	-	*523	-
Platoon blocked, %	-	-	1	-		1
Mov Cap-1 Maneuver	-	-	862	-	*46	*619
Mov Cap-2 Maneuver	-	-	-	-	*46	-
Stage 1	-	-	-	-	*536	-
Stage 2	-	-	-	-	*508	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.2	56.6
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	136	-	-	862	-
HCM Lane V/C Ratio	0.515	-	-	0.031	-
HCM Control Delay (s)	56.6	-	-	9.3	-
HCM Lane LOS	F	-	-	A	-
HCM 95th %tile Q(veh)	2.5	-	-	0.1	-

Notes

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

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	24	1030	79	14	736	10	50	6	69	5	0	12
Future Vol, veh/h	24	1030	79	14	736	10	50	6	69	5	0	12
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	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	27	1170	90	15	775	11	66	8	91	7	0	17

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	786	0	0	1260	0	0	1687	2085	630	1454	-	393
Stage 1	-	-	-	-	-	-	1269	1269	-	811	-	-
Stage 2	-	-	-	-	-	-	418	816	-	643	-	-
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	*1180	-	-	861	-	-	*~ 61	52	*667	*91	0	*789
Stage 1	-	-	-	-	-	-	*489	457	-	*744	0	-
Stage 2	-	-	-	-	-	-	*744	651	-	*629	0	-
Platoon blocked, %	1	-	-	1	-	-			1			1
Mov Cap-1 Maneuver	*1180	-	-	861	-	-	*~ 58	50	*667	*74	-	*789
Mov Cap-2 Maneuver	-	-	-	-	-	-	*283	258	-	*305	-	-
Stage 1	-	-	-	-	-	-	*477	447	-	*727	-	-
Stage 2	-	-	-	-	-	-	*715	640	-	*522	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	0.2	19.4	11.9
HCM LOS			C	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	412	* 1180	-	-	861	-	-	305	789
HCM Lane V/C Ratio	0.399	0.023	-	-	0.017	-	-	0.023	0.022
HCM Control Delay (s)	19.4	8.1	-	-	9.3	-	-	17.1	9.7
HCM Lane LOS	C	A	-	-	A	-	-	C	A
HCM 95th %tile Q(veh)	1.9	0.1	-	-	0.1	-	-	0.1	0.1

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

Intersection	
Int Delay, s/veh	2.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	9	1080	71	7	1164	10	92	2	83	3	0	22
Future Vol, veh/h	9	1080	71	7	1164	10	92	2	83	3	0	22
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	1227	81	7	1225	11	121	3	109	4	0	31

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1236	0	0	1308	0	0	1915	2538	654	1880	-	618
Stage 1	-	-	-	-	-	-	1288	1288	-	1245	-	-
Stage 2	-	-	-	-	-	-	627	1250	-	635	-	-
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	*907	-	-	848	-	-	*~ 41	*27	*643	*44	0	*607
Stage 1	-	-	-	-	-	-	*520	*474	-	*572	0	-
Stage 2	-	-	-	-	-	-	*572	*501	-	*606	0	-
Platoon blocked, %	1	-	-	1	-	-			1			1
Mov Cap-1 Maneuver	*907	-	-	848	-	-	*~ 38	*26	*643	*36	-	*607
Mov Cap-2 Maneuver	-	-	-	-	-	-	*255	*230	-	*256	-	-
Stage 1	-	-	-	-	-	-	*514	*469	-	*566	-	-
Stage 2	-	-	-	-	-	-	*538	*497	-	*495	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0.1	32.5	12.3
HCM LOS			D	B

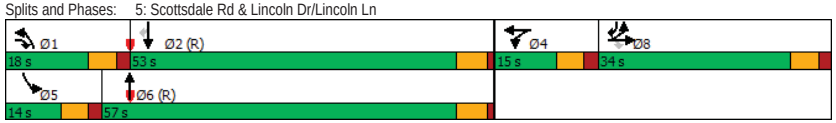
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	355	* 907	-	-	848	-	-	256	607
HCM Lane V/C Ratio	0.656	0.011	-	-	0.009	-	-	0.017	0.052
HCM Control Delay (s)	32.5	9	-	-	9.3	-	-	19.3	11.3
HCM Lane LOS	D	A	-	-	A	-	-	C	B
HCM 95th %tile Q(veh)	4.4	0	-	-	0	-	-	0.1	0.2

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

Phase Number	1	2	4	5	6	8
Movement	NBL	SBT	WBTL	SBL	NBT	EBTL
Lead/Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize						
Recall Mode	None	C-Max	None	None	C-Max	None
Maximum Split (s)	18	53	15	14	57	34
Maximum Split (%)	15.0%	44.2%	12.5%	11.7%	47.5%	28.3%
Minimum Split (s)	11	23.7	13	11	20.7	34
Yellow Time (s)	4	4.7	4	4	4.7	4
All-Red Time (s)	2	1	2	2	1	2
Minimum Initial (s)	5	10	7	5	10	7
Vehicle Extension (s)	2	2	2	2	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)		4			4	4
Flash Dont Walk (s)		14			11	24
Dual Entry	No	Yes	No	No	Yes	No
Inhibit Max	Yes	Yes	Yes	Yes	Yes	Yes
Start Time (s)	100	118	51	100	114	66
End Time (s)	118	51	66	114	51	100
Yield/Force Off (s)	112	45.3	60	108	45.3	94
Yield/Force Off 170(s)	112	31.3	60	108	34.3	70
Local Start Time (s)	102	0	53	102	116	68
Local Yield (s)	114	47.3	62	110	47.3	96
Local Yield 170(s)	114	33.3	62	110	36.3	72

Intersection Summary	
Cycle Length	120
Control Type	Actuated-Coordinated
Natural Cycle	85
Offset: 118 (98%), Referenced to phase 2:SBT and 6:NBT, Start of Green	

Splits and Phases: 5: Scottsdale Rd & Lincoln Dr/Lincoln Ln



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	660	46	384	24	42	39	278	1092	37	30	1176	503
Future Volume (veh/h)	660	46	384	24	42	39	278	1092	37	30	1176	503
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	769	0	427	27	48	44	305	1200	41	33	1292	553
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	831	0	528	102	107	87	346	2455	84	50	2103	1023
Arrive On Green	0.23	0.00	0.23	0.06	0.06	0.06	0.10	0.48	0.48	0.03	0.41	0.41
Sat Flow, veh/h	3563	0	1585	1781	1862	1513	3456	5070	173	1781	5106	1585
Grp Volume(v), veh/h	769	0	427	27	46	46	305	806	435	33	1292	553
Grp Sat Flow(s),veh/h/ln	1781	0	1585	1781	1777	1598	1728	1702	1839	1781	1702	1585
Q Serve(g_s), s	25.3	0.0	28.0	1.7	3.0	3.4	10.5	19.2	19.2	2.2	23.9	22.8
Cycle Q Clear(g_c), s	25.3	0.0	28.0	1.7	3.0	3.4	10.5	19.2	19.2	2.2	23.9	22.8
Prop In Lane	1.00		1.00	1.00		0.95	1.00		0.09	1.00		1.00
Lane Grp Cap(c), veh/h	831	0	528	102	102	91	346	1648	890	50	2103	1023
V/C Ratio(X)	0.93	0.00	0.81	0.26	0.45	0.51	0.88	0.49	0.49	0.67	0.61	0.54
Avail Cap(c_a), veh/h	831	0	528	134	133	120	346	1648	890	119	2103	1023
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	45.0	0.0	36.5	54.1	54.7	54.9	53.3	20.9	20.9	57.8	27.8	11.6
Incr Delay (d2), s/veh	15.7	0.0	8.5	0.5	1.1	1.6	21.7	1.0	1.9	5.6	1.4	2.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	18.8	0.0	18.3	1.4	2.5	2.5	9.4	12.4	13.5	1.9	15.1	21.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	60.7	0.0	45.0	54.7	55.9	56.5	75.1	22.0	22.8	63.4	29.1	13.6
LnGrp LOS	E	A	D	D	E	E	E	C	C	E	C	B
Approach Vol, veh/h		1196			119			1546			1878	
Approach Delay, s/veh		55.1			55.9			32.7			25.2	
Approach LOS		E			E			C			C	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	18.0	55.1		12.9	9.3	63.8		34.0				
Change Period (Y+Rc), s	6.0	5.7		6.0	6.0	5.7		6.0				
Max Green Setting (Gmax), s	12.0	47.3		9.0	8.0	51.3		28.0				
Max Q Clear Time (g_c+I1), s	12.5	25.9		5.4	4.2	21.2		30.0				
Green Ext Time (p_c), s	0.0	8.4		0.1	0.0	6.5		0.0				

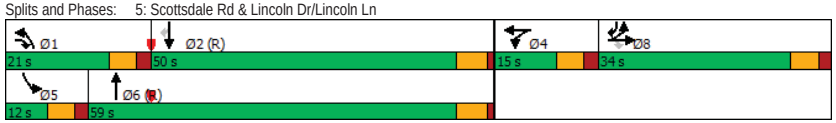
Intersection Summary	
HCM 6th Ctrl Delay	35.9
HCM 6th LOS	D

Notes
User approved pedestrian interval to be less than phase max green.
User approved volume balancing among the lanes for turning movement.

Phase Number	1	2	4	5	6	8
Movement	NBL	SBT	WBTL	SBL	NBT	EBTL
Lead/Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize						
Recall Mode	None	C-Max	None	None	C-Max	None
Maximum Split (s)	21	50	15	12	59	34
Maximum Split (%)	17.5%	41.7%	12.5%	10.0%	49.2%	28.3%
Minimum Split (s)	11	23.7	13	11	20.7	34
Yellow Time (s)	4	4.7	4	4	4.7	4
All-Red Time (s)	2	1	2	2	1	2
Minimum Initial (s)	5	10	7	5	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)		4			4	4
Flash Dont Walk (s)		14			11	24
Dual Entry	No	Yes	No	No	Yes	No
Inhibit Max	Yes	Yes	Yes	Yes	Yes	Yes
Start Time (s)	41	62	112	41	53	7
End Time (s)	62	112	7	53	112	41
Yield/Force Off (s)	56	106.3	1	47	106.3	35
Yield/Force Off 170(s)	56	92.3	1	47	95.3	11
Local Start Time (s)	99	0	50	99	111	65
Local Yield (s)	114	44.3	59	105	44.3	93
Local Yield 170(s)	114	30.3	59	105	33.3	69

Intersection Summary	
Cycle Length	120
Control Type	Actuated-Coordinated
Natural Cycle	145
Offset: 62 (52%), Referenced to phase 2:SBT and 6:NBT, Start of Green	

Splits and Phases: 5: Scottsdale Rd & Lincoln Dr/Lincoln Ln



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	747	45	421	44	50	61	392	1715	34	57	1845	816
Future Volume (veh/h)	747	45	421	44	50	61	392	1715	34	57	1845	816
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	866	0	468	50	57	69	431	1885	37	63	2027	897
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	831	0	568	107	107	95	432	2391	47	81	1961	979
Arrive On Green	0.23	0.00	0.23	0.06	0.06	0.06	0.13	0.46	0.46	0.05	0.38	0.38
Sat Flow, veh/h	3563	0	1585	1781	1777	1585	3456	5155	101	1781	5106	1585
Grp Volume(v), veh/h	866	0	468	50	57	69	431	1244	678	63	2027	897
Grp Sat Flow(s),veh/h/ln	1781	0	1585	1781	1777	1585	1728	1702	1852	1781	1702	1585
Q Serve(g_s), s	28.0	0.0	28.0	3.3	3.7	5.1	15.0	37.1	37.1	4.2	46.1	46.1
Cycle Q Clear(g_c), s	28.0	0.0	28.0	3.3	3.7	5.1	15.0	37.1	37.1	4.2	46.1	46.1
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	831	0	568	107	107	95	432	1579	859	81	1961	979
V/C Ratio(X)	1.04	0.00	0.82	0.47	0.53	0.73	1.00	0.79	0.79	0.78	1.03	0.92
Avail Cap(c_a), veh/h	831	0	568	134	133	119	432	1579	859	89	1961	979
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	46.0	0.0	35.1	54.5	54.8	55.4	52.5	27.2	27.2	56.7	37.0	17.6
Incr Delay (d2), s/veh	42.6	0.0	9.0	1.2	1.5	10.5	42.7	4.1	7.3	28.4	29.5	14.5
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	24.6	0.0	19.8	2.7	3.1	4.2	14.0	22.1	24.7	4.5	32.9	40.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	88.6	0.0	44.1	55.7	56.3	65.9	95.1	31.3	34.5	85.0	66.4	32.1
LnGrp LOS	F	A	D	E	E	E	F	C	C	F	F	C
Approach Vol, veh/h		1334			176			2353			2987	
Approach Delay, s/veh		73.0			59.9			43.9			56.5	
Approach LOS		E			E			D			E	

Timer - Assigned Phs	1	2	4	5	6	8
Phs Duration (G+Y+Rc), s	21.0	51.8	13.2	11.4	61.4	34.0
Change Period (Y+Rc), s	6.0	5.7	6.0	6.0	5.7	6.0
Max Green Setting (Gmax), s	15.0	44.3	9.0	6.0	53.3	28.0
Max Q Clear Time (g_c+I1), s	17.0	48.1	7.1	6.2	39.1	30.0
Green Ext Time (p_c), s	0.0	0.0	0.1	0.0	2.9	0.0

Intersection Summary	
HCM 6th Ctrl Delay	55.5
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.

Intersection	
Int Delay, s/veh	4.9

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	8	6	0	11	5
Future Vol, veh/h	0	8	6	0	11	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	9	7	0	12	6

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	37	7	0	0	7	0
Stage 1	7	-	-	-	-	-
Stage 2	30	-	-	-	-	-
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	975	1075	-	-	1614	-
Stage 1	1016	-	-	-	-	-
Stage 2	993	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	968	1075	-	-	1614	-
Mov Cap-2 Maneuver	968	-	-	-	-	-
Stage 1	1016	-	-	-	-	-
Stage 2	986	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.4	0	5
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	1075	1614	-
HCM Lane V/C Ratio	-	-	0.008	0.008	-
HCM Control Delay (s)	-	-	8.4	7.2	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0	0	-

Intersection	
Int Delay, s/veh	6.7

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	14	3	0	20	2
Future Vol, veh/h	0	14	3	0	20	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	16	3	0	22	2

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	49	3	0	0	3	0
Stage 1	3	-	-	-	-	-
Stage 2	46	-	-	-	-	-
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	960	1081	-	-	1619	-
Stage 1	1020	-	-	-	-	-
Stage 2	976	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	947	1081	-	-	1619	-
Mov Cap-2 Maneuver	947	-	-	-	-	-
Stage 1	1020	-	-	-	-	-
Stage 2	962	-	-	-	-	-

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

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	1081	1619	-
HCM Lane V/C Ratio	-	-	0.014	0.014	-
HCM Control Delay (s)	-	-	8.4	7.3	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0	0	-

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)	27	50	9	44	77	53
Maximum Split (%)	20.8%	38.5%	6.9%	33.8%	59.2%	40.8%
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)	8	35	85	94	8	85
End Time (s)	35	85	94	8	85	8
Yield/Force Off (s)	31	79	90	1.5	79	1.5
Yield/Force Off 170(s)	31	65	90	111.5	65	111.5
Local Start Time (s)	103	0	50	59	103	50
Local Yield (s)	126	44	55	96.5	44	96.5
Local Yield 170(s)	126	30	55	76.5	30	76.5

Intersection Summary		
Cycle Length		130
Control Type	Actuated-Coordinated	
Natural Cycle		80
Offset: 35 (27%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green		

Splits and Phases: 1: Mockingbird Ln & Lincoln Dr

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	231	1028	72	18	700	51	24	24	29	59	68	219
Future Volume (veh/h)	231	1028	72	18	700	51	24	24	29	59	68	219
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	246	1094	77	19	753	55	26	26	32	73	84	270
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	451	2492	175	314	2240	899	184	106	130	251	396	302
Arrive On Green	0.07	0.70	0.70	0.20	0.20	0.20	0.13	0.13	0.13	0.04	0.20	0.20
Sat Flow, veh/h	1688	3545	249	454	3741	1502	973	803	988	1688	1969	1502
Grp Volume(v), veh/h	246	577	594	19	753	55	26	0	58	73	84	270
Grp Sat Flow(s),veh/h/ln	1688	1870	1924	454	1870	1502	973	0	1791	1688	1969	1502
Q Serve(g_s), s	6.9	17.2	17.3	4.5	22.5	3.9	3.1	0.0	3.8	4.8	4.6	22.8
Cycle Q Clear(g_c), s	6.9	17.2	17.3	8.2	22.5	3.9	3.1	0.0	3.8	4.8	4.6	22.8
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	451	1315	1352	314	2240	899	184	0	236	251	396	302
V/C Ratio(X)	0.55	0.44	0.44	0.06	0.34	0.06	0.14	0.00	0.25	0.29	0.21	0.89
Avail Cap(c_a), veh/h	626	1315	1352	314	2240	899	336	0	517	251	704	537
HCM Platoon Ratio	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.95	0.95	0.95	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	11.2	8.3	8.3	25.7	29.9	22.5	50.3	0.0	50.6	45.2	43.4	50.6
Incr Delay (d2), s/veh	1.0	1.1	1.0	0.3	0.4	0.1	0.3	0.0	0.5	0.6	0.3	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	4.6	11.3	11.5	1.0	16.8	2.5	1.4	0.0	3.1	3.7	4.2	14.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	12.2	9.4	9.3	26.1	30.3	22.6	50.7	0.0	51.2	45.8	43.6	59.9
LnGrp LOS	B	A	A	C	C	C	D	A	D	D	D	E
Approach Vol, veh/h		1417			827			84			427	
Approach Delay, s/veh		9.8			29.7			51.0			54.3	
Approach LOS		A			C			D			D	

Timer - Assigned Phs	1	2	3	4	6	8
Phs Duration (G+Y+Rc), s	13.5	83.9	9.0	23.6	97.4	32.6
Change Period (Y+Rc), s	4.0	6.0	4.0	6.5	6.0	6.5
Max Green Setting (Gmax), s	23.0	44.0	5.0	37.5	71.0	46.5
Max Q Clear Time (g_c+I1), s	8.9	24.5	6.8	5.8	19.3	24.8
Green Ext Time (p_c), s	0.6	5.7	0.0	0.4	10.7	1.4

Intersection Summary	
HCM 6th Ctrl Delay	24.0
HCM 6th LOS	C

Notes

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

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)	31	57	8	34	88	42
Maximum Split (%)	23.8%	43.8%	6.2%	26.2%	67.7%	32.3%
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)	99	0	57	65	99	57
End Time (s)	0	57	65	99	57	99
Yield/Force Off (s)	126	51	61	92.5	51	92.5
Yield/Force Off 170(s)	126	37	61	72.5	37	72.5
Local Start Time (s)	99	0	57	65	99	57
Local Yield (s)	126	51	61	92.5	51	92.5
Local Yield 170(s)	126	37	61	72.5	37	72.5

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	220	1027	38	13	1186	69	21	53	27	60	70	311
Future Volume (veh/h)	220	1027	38	13	1186	69	21	53	27	60	70	311
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	1093	40	14	1275	74	23	58	30	74	86	384
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	393	2339	86	282	1959	786	236	253	131	315	528	403
Arrive On Green	0.08	0.64	0.64	1.00	1.00	1.00	0.21	0.21	0.21	0.03	0.27	0.27
Sat Flow, veh/h	1688	3680	135	471	3741	1502	875	1223	632	1688	1969	1502
Grp Volume(v), veh/h	234	555	578	14	1275	74	23	0	88	74	86	384
Grp Sat Flow(s),veh/h/ln	1688	1870	1945	471	1870	1502	875	0	1855	1688	1969	1502
Q Serve(g_s), s	7.9	20.0	20.0	0.3	0.0	0.0	2.8	0.0	5.1	4.0	4.3	32.7
Cycle Q Clear(g_c), s	7.9	20.0	20.0	5.8	0.0	0.0	2.8	0.0	5.1	4.0	4.3	32.7
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	393	1189	1236	282	1959	786	236	0	383	315	528	403
V/C Ratio(X)	0.60	0.47	0.47	0.05	0.65	0.09	0.10	0.00	0.23	0.24	0.16	0.95
Avail Cap(c_a), veh/h	607	1189	1236	282	1959	786	240	0	392	315	538	410
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.75	0.75	0.75	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	10.9	12.3	12.3	0.2	0.0	0.0	42.0	0.0	42.9	38.7	36.4	46.8
Incr Delay (d2), s/veh	1.4	1.3	1.3	0.2	1.3	0.2	0.2	0.0	0.3	0.4	0.1	32.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	5.6	13.3	13.8	0.0	0.6	0.1	1.1	0.0	4.3	3.4	3.8	22.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	12.4	13.6	13.5	0.5	1.3	0.2	42.2	0.0	43.2	39.1	36.5	79.1
LnGrp LOS	B	B	B	A	A	A	D	A	D	D	D	E
Approach Vol, veh/h		1367			1363			111			544	
Approach Delay, s/veh		13.4			1.2			43.0			66.9	
Approach LOS		B			A			D			E	

Timer - Assigned Phs	1	2	3	4		6		8				
Phs Duration (G+Y+Rc), s	14.5	74.1	8.0	33.4		88.6		41.4				
Change Period (Y+Rc), s	4.0	6.0	4.0	6.5		6.0		6.5				
Max Green Setting (Gmax), s	27.0	51.0	4.0	27.5		82.0		35.5				
Max Q Clear Time (g_c+I1), s	9.9	7.8	6.0	7.1		22.0		34.7				
Green Ext Time (p_c), s	0.6	14.1	0.0	0.5		10.2		0.2				

Intersection Summary	
HCM 6th Ctrl Delay	18.1
HCM 6th LOS	B

Phase Number	1	2	4	6	8
Movement	EBL	WBTL	NBTL	EBTL	SBTL
Lead/Lag	Lead	Lag			
Lead-Lag Optimize	Yes	Yes			
Recall Mode	None	C-Max	Max	C-Max	Max
Maximum Split (s)	18	78	34	96	34
Maximum Split (%)	13.8%	60.0%	26.2%	73.8%	26.2%
Minimum Split (s)	8	21	26.5	21	26.5
Yellow Time (s)	3	4.5	4	4.5	4
All-Red Time (s)	1	1.5	2.5	1.5	2.5
Minimum Initial (s)	4	15	7	15	7
Vehicle Extension (s)	3	3	3	3	3
Minimum Gap (s)	3	3	3	3	3
Time Before Reduce (s)	0	0	0	0	0
Time To Reduce (s)	0	0	0	0	0
Walk Time (s)		7	7	7	7
Flash Dont Walk (s)		7	13	7	13
Dual Entry	No	Yes	Yes	Yes	Yes
Inhibit Max	Yes	Yes	Yes	Yes	Yes
Start Time (s)	112	0	78	112	78
End Time (s)	0	78	112	78	112
Yield/Force Off (s)	126	72	105.5	72	105.5
Yield/Force Off 170(s)	126	65	92.5	65	92.5
Local Start Time (s)	112	0	78	112	78
Local Yield (s)	126	72	105.5	72	105.5
Local Yield 170(s)	126	65	92.5	65	92.5

Intersection Summary	
Cycle Length	130
Control Type	Actuated-Coordinated
Natural Cycle	60
Offset: 0 (0%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green	

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	55	1042	9	7	711	69	9	0	11	41	0	48
Future Volume (veh/h)	55	1042	9	7	711	69	9	0	11	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	1212	10	8	781	76	15	0	18	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	447	2501	21	239	2252	1005	289	0	335	338	0	335
Arrive On Green	0.01	0.23	0.23	0.63	0.63	0.63	0.21	0.00	0.21	0.21	0.00	0.21
Sat Flow, veh/h	1781	3612	30	457	3554	1585	1332	0	1585	1395	0	1585
Grp Volume(v), veh/h	64	596	626	8	781	76	15	0	18	59	0	69
Grp Sat Flow(s),veh/h/ln	1781	1777	1865	457	1777	1585	1332	0	1585	1395	0	1585
Q Serve(g_s), s	1.6	37.8	37.8	1.4	13.4	2.4	1.2	0.0	1.2	4.6	0.0	4.7
Cycle Q Clear(g_c), s	1.6	37.8	37.8	31.6	13.4	2.4	5.9	0.0	1.2	5.8	0.0	4.7
Prop In Lane	1.00		0.02	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	447	1230	1291	239	2252	1005	289	0	335	338	0	335
V/C Ratio(X)	0.14	0.48	0.48	0.03	0.35	0.08	0.05	0.00	0.05	0.17	0.00	0.21
Avail Cap(c_a), veh/h	589	1230	1291	239	2252	1005	289	0	335	338	0	335
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)	0.92	0.92	0.92	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	8.2	30.0	30.0	23.7	11.2	9.2	44.7	0.0	40.9	43.2	0.0	42.2
Incr Delay (d2), s/veh	0.1	1.3	1.2	0.3	0.4	0.1	0.3	0.0	0.3	1.1	0.0	1.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	1.1	25.2	26.3	0.3	9.1	1.6	0.8	0.0	0.9	3.1	0.0	3.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	8.3	31.3	31.2	24.0	11.6	9.3	45.0	0.0	41.2	44.3	0.0	43.6
LnGrp LOS	A	C	C	C	B	A	D	A	D	D	A	D
Approach Vol, veh/h		1286			865			33			128	
Approach Delay, s/veh		30.1			11.5			42.9			43.9	
Approach LOS		C			B			D			D	

Timer - Assigned Phs	1	2	4	6	8
Phs Duration (G+Y+Rc), s	7.6	88.4	34.0	96.0	34.0
Change Period (Y+Rc), s	4.0	6.0	6.5	6.0	6.5
Max Green Setting (Gmax), s	14.0	72.0	27.5	90.0	27.5
Max Q Clear Time (g_c+I1), s	3.6	33.6	7.9	39.8	7.8
Green Ext Time (p_c), s	0.1	6.9	0.1	11.4	0.5

Intersection Summary		
HCM 6th Ctrl Delay	24.1	
HCM 6th LOS	C	

Phase Number	1	2	4	6	8
Movement	EBL	WBTL	NBTL	EBTL	SBTL
Lead/Lag	Lead	Lag			
Lead-Lag Optimize	Yes	Yes			
Recall Mode	None	C-Max	Max	C-Max	Max
Maximum Split (s)	23	70	37	93	37
Maximum Split (%)	17.7%	53.8%	28.5%	71.5%	28.5%
Minimum Split (s)	9.5	24	26.5	24	26.5
Yellow Time (s)	3	4.5	4	4.5	4
All-Red Time (s)	1	1.5	2.5	1.5	2.5
Minimum Initial (s)	5	5	5	5	5
Vehicle Extension (s)	3	3	3	3	3
Minimum Gap (s)	3	3	3	3	3
Time Before Reduce (s)	0	0	0	0	0
Time To Reduce (s)	0	0	0	0	0
Walk Time (s)		7	7	7	7
Flash Dont Walk (s)		7	13	7	13
Dual Entry	No	Yes	Yes	Yes	Yes
Inhibit Max	Yes	Yes	Yes	Yes	Yes
Start Time (s)	107	0	70	107	70
End Time (s)	0	70	107	70	107
Yield/Force Off (s)	126	64	100.5	64	100.5
Yield/Force Off 170(s)	126	57	87.5	57	87.5
Local Start Time (s)	107	0	70	107	70
Local Yield (s)	126	64	100.5	64	100.5
Local Yield 170(s)	126	57	87.5	57	87.5

Intersection Summary	
Cycle Length	130
Control Type	Actuated-Coordinated
Natural Cycle	70
Offset: 0 (0%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green	

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	43	1098	13	15	1214	36	8	0	12	39	0	33
Future Volume (veh/h)	43	1098	13	15	1214	36	8	0	12	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	1277	15	16	1334	40	13	0	19	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	259	2407	28	263	2155	961	342	0	372	369	0	372
Arrive On Green	0.03	0.67	0.67	0.61	0.61	0.61	0.23	0.00	0.23	0.23	0.00	0.23
Sat Flow, veh/h	1781	3597	42	427	3554	1585	1359	0	1585	1393	0	1585
Grp Volume(v), veh/h	50	631	661	16	1334	40	13	0	19	56	0	47
Grp Sat Flow(s),veh/h/ln	1781	1777	1863	427	1777	1585	1359	0	1585	1393	0	1585
Q Serve(g_s), s	1.3	23.7	23.7	2.6	30.8	1.3	1.0	0.0	1.2	4.2	0.0	3.0
Cycle Q Clear(g_c), s	1.3	23.7	23.7	18.1	30.8	1.3	4.0	0.0	1.2	5.4	0.0	3.0
Prop In Lane	1.00		0.02	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	259	1189	1247	263	2155	961	342	0	372	369	0	372
V/C Ratio(X)	0.19	0.53	0.53	0.06	0.62	0.04	0.04	0.00	0.05	0.15	0.00	0.13
Avail Cap(c_a), veh/h	462	1189	1247	263	2155	961	342	0	372	369	0	372
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)	0.92	0.92	0.92	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	12.7	11.0	11.0	17.8	16.1	10.3	40.8	0.0	38.5	40.6	0.0	39.2
Incr Delay (d2), s/veh	0.3	1.6	1.5	0.4	1.3	0.1	0.2	0.0	0.3	0.9	0.0	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.9	14.2	14.7	0.5	18.3	0.9	0.6	0.0	0.9	2.8	0.0	2.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	13.1	12.6	12.5	18.2	17.5	10.4	41.0	0.0	38.8	41.5	0.0	39.9
LnGrp LOS	B	B	B	B	B	B	D	A	D	D	A	D
Approach Vol, veh/h		1342			1390			32			103	
Approach Delay, s/veh		12.6			17.3			39.7			40.8	
Approach LOS		B			B			D			D	

Timer - Assigned Phs	1	2		4		6		8				
Phs Duration (G+Y+Rc), s	8.2	84.8		37.0		93.0		37.0				
Change Period (Y+Rc), s	4.0	6.0		6.5		6.0		6.5				
Max Green Setting (Gmax), s	19.0	64.0		30.5		87.0		30.5				
Max Q Clear Time (g_c+I1), s	3.3	32.8		6.0		25.7		7.4				
Green Ext Time (p_c), s	0.1	13.3		0.1		12.9		0.4				

Intersection Summary		
HCM 6th Ctrl Delay	16.2	
HCM 6th LOS	B	

Intersection	
Int Delay, s/veh	0.6

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	1112	15	22	781	5	16
Future Vol, veh/h	1112	15	22	781	5	16
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	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	1293	17	24	858	10	32

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1310	0	1779	655
Stage 1	-	-	-	-	1302	-
Stage 2	-	-	-	-	477	-
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	-	-	894	-	*73	*619
Stage 1	-	-	-	-	*565	-
Stage 2	-	-	-	-	*732	-
Platoon blocked, %	-	-	1	-		1
Mov Cap-1 Maneuver	-	-	894	-	*71	*619
Mov Cap-2 Maneuver	-	-	-	-	*71	-
Stage 1	-	-	-	-	*565	-
Stage 2	-	-	-	-	*712	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.3	25.4
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	218	-	-	894	-
HCM Lane V/C Ratio	0.193	-	-	0.027	-
HCM Control Delay (s)	25.4	-	-	9.1	-
HCM Lane LOS	D	-	-	A	-
HCM 95th %tile Q(veh)	0.7	-	-	0.1	-

Notes

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

Intersection	
Int Delay, s/veh	1.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	1139	9	24	1253	10	25
Future Vol, veh/h	1139	9	24	1253	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	1324	10	26	1377	20	50

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1334	0	2070	667
Stage 1	-	-	-	-	1329	-
Stage 2	-	-	-	-	741	-
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	-	-	862	-	*47	*619
Stage 1	-	-	-	-	*536	-
Stage 2	-	-	-	-	*520	-
Platoon blocked, %	-	-	1	-		1
Mov Cap-1 Maneuver	-	-	862	-	*46	*619
Mov Cap-2 Maneuver	-	-	-	-	*46	-
Stage 1	-	-	-	-	*536	-
Stage 2	-	-	-	-	*504	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.2	56.6
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	136	-	-	862	-
HCM Lane V/C Ratio	0.515	-	-	0.031	-
HCM Control Delay (s)	56.6	-	-	9.3	-
HCM Lane LOS	F	-	-	A	-
HCM 95th %tile Q(veh)	2.5	-	-	0.1	-

Notes

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

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	24	1030	79	14	736	10	50	6	69	5	0	12
Future Vol, veh/h	24	1030	79	14	736	10	50	6	69	5	0	12
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	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	27	1170	90	15	775	11	66	8	91	7	0	17

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	786	0	0	1260	0	0	1687	2085	630	1454	-	393
Stage 1	-	-	-	-	-	-	1269	1269	-	811	-	-
Stage 2	-	-	-	-	-	-	418	816	-	643	-	-
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	*1160	-	-	861	-	-	*~ 61	*52	*667	*91	0	*776
Stage 1	-	-	-	-	-	-	*489	*457	-	*731	0	-
Stage 2	-	-	-	-	-	-	*731	*641	-	*629	0	-
Platoon blocked, %	1	-	-	1	-	-			1			1
Mov Cap-1 Maneuver	*1160	-	-	861	-	-	*~ 58	*50	*667	*74	-	*776
Mov Cap-2 Maneuver	-	-	-	-	-	-	*281	*257	-	*303	-	-
Stage 1	-	-	-	-	-	-	*477	*447	-	*714	-	-
Stage 2	-	-	-	-	-	-	*703	*630	-	*521	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	0.2	19.5	11.9
HCM LOS			C	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	410	* 1160	-	-	861	-	-	303	776
HCM Lane V/C Ratio	0.401	0.024	-	-	0.017	-	-	0.024	0.022
HCM Control Delay (s)	19.5	8.2	-	-	9.3	-	-	17.2	9.7
HCM Lane LOS	C	A	-	-	A	-	-	C	A
HCM 95th %tile Q(veh)	1.9	0.1	-	-	0.1	-	-	0.1	0.1

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

Intersection	
Int Delay, s/veh	2.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	9	1080	71	7	1164	10	92	2	83	3	0	22
Future Vol, veh/h	9	1080	71	7	1164	10	92	2	83	3	0	22
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	1227	81	7	1225	11	121	3	109	4	0	31

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1236	0	0	1308	0	0	1915	2538	654	1880	-	618
Stage 1	-	-	-	-	-	-	1288	1288	-	1245	-	-
Stage 2	-	-	-	-	-	-	627	1250	-	635	-	-
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	*898	-	-	848	-	-	*~ 41	*27	*643	*44	0	*601
Stage 1	-	-	-	-	-	-	*520	*474	-	*566	0	-
Stage 2	-	-	-	-	-	-	*566	*496	-	*606	0	-
Platoon blocked, %	1	-	-	1	-	-			1			1
Mov Cap-1 Maneuver	*898	-	-	848	-	-	*~ 38	*26	*643	*36	-	*601
Mov Cap-2 Maneuver	-	-	-	-	-	-	*254	*229	-	*254	-	-
Stage 1	-	-	-	-	-	-	*514	*469	-	*560	-	-
Stage 2	-	-	-	-	-	-	*532	*492	-	*495	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0.1	32.7	12.3
HCM LOS			D	B

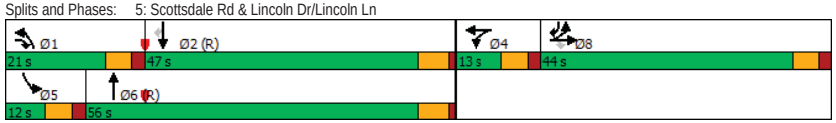
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	354	* 898	-	-	848	-	-	254	601
HCM Lane V/C Ratio	0.658	0.011	-	-	0.009	-	-	0.017	0.052
HCM Control Delay (s)	32.7	9.1	-	-	9.3	-	-	19.4	11.3
HCM Lane LOS	D	A	-	-	A	-	-	C	B
HCM 95th %tile Q(veh)	4.5	0	-	-	0	-	-	0.1	0.2

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

Phase Number	1	2	4	5	6	8
Movement	NBL	SBT	WBTL	SBL	NBT	EBTL
Lead/Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize						
Recall Mode	None	C-Max	None	None	C-Max	None
Maximum Split (s)	21	47	13	12	56	44
Maximum Split (%)	16.8%	37.6%	10.4%	9.6%	44.8%	35.2%
Minimum Split (s)	11	23.7	13	11	20.7	34
Yellow Time (s)	4	4.7	4	4	4.7	4
All-Red Time (s)	2	1	2	2	1	2
Minimum Initial (s)	5	10	7	5	10	7
Vehicle Extension (s)	2	2	2	2	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)		4			4	4
Flash Dont Walk (s)		14			11	24
Dual Entry	No	Yes	No	No	Yes	No
Inhibit Max	Yes	Yes	Yes	Yes	Yes	Yes
Start Time (s)	104	0	47	104	116	60
End Time (s)	0	47	60	116	47	104
Yield/Force Off (s)	119	41.3	54	110	41.3	98
Yield/Force Off 170(s)	119	27.3	54	110	30.3	74
Local Start Time (s)	104	0	47	104	116	60
Local Yield (s)	119	41.3	54	110	41.3	98
Local Yield 170(s)	119	27.3	54	110	30.3	74

Intersection Summary	
Cycle Length	125
Control Type	Actuated-Coordinated
Natural Cycle	85
Offset: 0 (0%), Referenced to phase 2:SBT and 6:NBT, Start of Green	

Splits and Phases: 5: Scottsdale Rd & Lincoln Dr/Lincoln Ln



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	660	46	384	24	42	39	278	1092	37	30	1176	503
Future Volume (veh/h)	660	46	384	24	42	39	278	1092	37	30	1176	503
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	769	0	427	27	48	44	305	1200	41	33	1292	553
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	938	0	582	98	103	83	359	2356	80	49	1981	1032
Arrive On Green	0.26	0.00	0.26	0.06	0.06	0.06	0.10	0.46	0.46	0.03	0.39	0.39
Sat Flow, veh/h	3563	0	1585	1781	1862	1513	3456	5070	173	1781	5106	1585
Grp Volume(v), veh/h	769	0	427	27	46	46	305	806	435	33	1292	553
Grp Sat Flow(s),veh/h/ln	1781	0	1585	1781	1777	1598	1728	1702	1839	1781	1702	1585
Q Serve(g_s), s	25.3	0.0	29.2	1.8	3.1	3.5	10.8	20.7	20.8	2.3	25.9	23.4
Cycle Q Clear(g_c), s	25.3	0.0	29.2	1.8	3.1	3.5	10.8	20.7	20.8	2.3	25.9	23.4
Prop In Lane	1.00		1.00	1.00		0.95	1.00		0.09	1.00		1.00
Lane Grp Cap(c), veh/h	938	0	582	98	98	88	359	1582	855	49	1981	1032
V/C Ratio(X)	0.82	0.00	0.73	0.28	0.46	0.53	0.85	0.51	0.51	0.68	0.65	0.54
Avail Cap(c_a), veh/h	1083	0	647	100	100	89	415	1582	855	86	1981	1032
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	43.2	0.0	34.2	56.7	57.3	57.5	55.0	23.5	23.5	60.3	31.3	11.7
Incr Delay (d2), s/veh	3.9	0.0	3.1	0.6	1.3	2.6	12.3	1.2	2.2	6.0	1.7	2.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	17.2	0.0	17.2	1.5	2.6	2.7	9.1	13.3	14.5	2.0	16.3	22.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	47.1	0.0	37.4	57.2	58.5	60.1	67.3	24.6	25.6	66.3	33.0	13.7
LnGrp LOS	D	A	D	E	E	E	E	C	C	E	C	B
Approach Vol, veh/h		1196			119			1546			1878	
Approach Delay, s/veh		43.6			58.8			33.3			27.9	
Approach LOS		D			E			C			C	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	19.0	54.2		12.9	9.4	63.8		38.9				
Change Period (Y+Rc), s	6.0	5.7		6.0	6.0	5.7		6.0				
Max Green Setting (Gmax), s	15.0	41.3		7.0	6.0	50.3		38.0				
Max Q Clear Time (g_c+I1), s	12.8	27.9		5.5	4.3	22.8		31.2				
Green Ext Time (p_c), s	0.1	6.7		0.0	0.0	6.4		1.8				

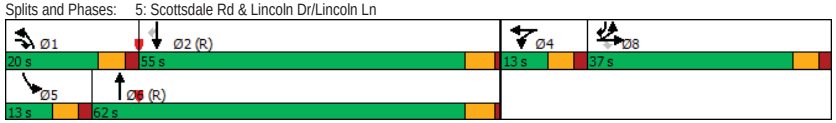
Intersection Summary		
HCM 6th Ctrl Delay	34.4	
HCM 6th LOS	C	

Notes
User approved pedestrian interval to be less than phase max green.
User approved volume balancing among the lanes for turning movement.

Phase Number	1	2	4	5	6	8
Movement	NBL	SBT	WBTL	SBL	NBT	EBTL
Lead/Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize						
Recall Mode	None	C-Max	None	None	C-Max	None
Maximum Split (s)	20	55	13	13	62	37
Maximum Split (%)	16.0%	44.0%	10.4%	10.4%	49.6%	29.6%
Minimum Split (s)	11	23.7	13	11	20.7	34
Yellow Time (s)	4	4.7	4	4	4.7	4
All-Red Time (s)	2	1	2	2	1	2
Minimum Initial (s)	5	10	7	5	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)		4			4	4
Flash Dont Walk (s)		14			11	24
Dual Entry	No	Yes	No	No	Yes	No
Inhibit Max	Yes	Yes	Yes	Yes	Yes	Yes
Start Time (s)	105	0	55	105	118	68
End Time (s)	0	55	68	118	55	105
Yield/Force Off (s)	119	49.3	62	112	49.3	99
Yield/Force Off 170(s)	119	35.3	62	112	38.3	75
Local Start Time (s)	105	0	55	105	118	68
Local Yield (s)	119	49.3	62	112	49.3	99
Local Yield 170(s)	119	35.3	62	112	38.3	75

Intersection Summary	
Cycle Length	125
Control Type	Actuated-Coordinated
Natural Cycle	145
Offset: 0 (0%), Referenced to phase 2:SBT and 6:NBT, Start of Green	

Splits and Phases: 5: Scottsdale Rd & Lincoln Dr/Lincoln Ln



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	747	45	421	44	50	61	392	1715	34	57	1845	816
Future Volume (veh/h)	747	45	421	44	50	61	392	1715	34	57	1845	816
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	866	0	468	50	57	69	431	1885	37	63	2027	897
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	884	0	571	100	100	89	387	2377	47	81	2014	1018
Arrive On Green	0.25	0.00	0.25	0.06	0.06	0.06	0.11	0.46	0.46	0.05	0.39	0.39
Sat Flow, veh/h	3563	0	1585	1781	1777	1585	3456	5155	101	1781	5106	1585
Grp Volume(v), veh/h	866	0	468	50	57	69	431	1244	678	63	2027	897
Grp Sat Flow(s),veh/h/ln	1781	0	1585	1781	1777	1585	1728	1702	1852	1781	1702	1585
Q Serve(g_s), s	30.2	0.0	31.0	3.4	3.9	5.4	14.0	38.8	38.9	4.4	49.3	49.3
Cycle Q Clear(g_c), s	30.2	0.0	31.0	3.4	3.9	5.4	14.0	38.8	38.9	4.4	49.3	49.3
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	884	0	571	100	100	89	387	1570	854	81	2014	1018
V/C Ratio(X)	0.98	0.00	0.82	0.50	0.57	0.78	1.11	0.79	0.79	0.78	1.01	0.88
Avail Cap(c_a), veh/h	884	0	571	100	100	89	387	1570	854	100	2014	1018
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	46.7	0.0	36.3	57.3	57.5	58.2	55.5	28.6	28.6	59.1	37.9	16.8
Incr Delay (d2), s/veh	25.3	0.0	8.7	1.5	5.1	31.7	80.2	4.2	7.5	21.1	21.6	10.9
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	23.0	0.0	20.4	2.8	3.4	5.3	16.4	23.1	25.8	4.4	32.3	40.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	72.0	0.0	45.0	58.8	62.6	90.0	135.7	32.8	36.1	80.1	59.5	27.7
LnGrp LOS	E	A	D	E	E	F	F	C	D	F	F	C
Approach Vol, veh/h		1334			176			2353			2987	
Approach Delay, s/veh		62.5			72.3			52.6			50.4	
Approach LOS		E			E			D			D	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	20.0	55.0		13.0	11.7	63.3		37.0				
Change Period (Y+Rc), s	6.0	5.7		6.0	6.0	5.7		6.0				
Max Green Setting (Gmax), s	14.0	49.3		7.0	7.0	56.3		31.0				
Max Q Clear Time (g_c+I1), s	16.0	51.3		7.4	6.4	40.9		33.0				
Green Ext Time (p_c), s	0.0	0.0		0.0	0.0	2.9		0.0				

Intersection Summary		
HCM 6th Ctrl Delay	54.1	
HCM 6th LOS	D	

Notes
User approved pedestrian interval to be less than phase max green.
User approved volume balancing among the lanes for turning movement.

Intersection	
Int Delay, s/veh	4.9

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	8	6	0	11	5
Future Vol, veh/h	0	8	6	0	11	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	9	7	0	12	6

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	37	7	0	0	7	0
Stage 1	7	-	-	-	-	-
Stage 2	30	-	-	-	-	-
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	975	1075	-	-	1614	-
Stage 1	1016	-	-	-	-	-
Stage 2	993	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	968	1075	-	-	1614	-
Mov Cap-2 Maneuver	968	-	-	-	-	-
Stage 1	1016	-	-	-	-	-
Stage 2	986	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.4	0	5
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	0
HCM Lane LOS	-	- A	A	A
HCM 95th %tile Q(veh)	-	- 0	0	-

Intersection	
Int Delay, s/veh	6.7

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	14	3	0	20	2
Future Vol, veh/h	0	14	3	0	20	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	16	3	0	22	2

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	49	3	0	0	3	0
Stage 1	3	-	-	-	-	-
Stage 2	46	-	-	-	-	-
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	960	1081	-	-	1619	-
Stage 1	1020	-	-	-	-	-
Stage 2	976	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	947	1081	-	-	1619	-
Mov Cap-2 Maneuver	947	-	-	-	-	-
Stage 1	1020	-	-	-	-	-
Stage 2	962	-	-	-	-	-

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

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	- 1081	1619	-
HCM Lane V/C Ratio	-	- 0.014	0.014	-
HCM Control Delay (s)	-	- 8.4	7.3	0
HCM Lane LOS	-	- A	A	A
HCM 95th %tile Q(veh)	-	- 0	0	-

APPENDIX K

QUEUE STORAGE ANALYSIS

Signalized Intersections

2031

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 95th %-ile Q
Mockingbird Lane & Lincoln Drive	130	NB Left	24	0	21	2	50'	35'
		SB Left	59	0	60	5	125'	95'
		EB Left	231	0	220	17	425'	140'
		WB Left	18	0	13	2	50'	25'
		SB Right	219	0	311	23	575'	560'
		WB Right	51	0	69	5	125'	65'
Quail Run Road & Lincoln Drive	130	NB Left	9	0	8	1	25'	25'
		SB Left	41	0	39	3	75'	80'
		EB Left	55	0	43	4	100'	30'
		WB Left	7	0	15	2	50'	25'
		WB Right	69	0	36	5	125'	40'
Scottsdale Road & Lincoln Drive	120	NB Left	278	0	392	27	675'	410'
		SB Left	30	0	57	4	100'	110'
		EB Left	660	0	747	50	1,250'	575'
		WB Left	24	0	44	3	75'	70'
		SB Right	503	0	816	55	1,375'	1,025'
		EB Right	384	0	421	29	725'	510'

*Note: Truck/Passenger Vehicle split is projected based on percentage and not reflective of acctual 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

2031

Truck % = 2% *VL* (ft) = *25'* Average Vehicle Length

Table 9-23	
Truck%	**VL (ft)**
0%	25
2%	25
5%	28
10%	32
20%	38
25%	41

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
$c = \frac{V_o e^{-V_o t_c/3600}}{1 - e^{-V_o t_f/3600}}$	$SL = \left\{ \frac{\ln\left[P(n>N)\right]}{\ln\left[\frac{v}{c}\right]} - 1 \right\} \times VL$
where:	where:
c = left-turn capacity, veh/h	SL = storage length, ft
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	$P(n>N)$ = probability of turn-lane overflow
t_c = critical gap, s	v = left-turn vehicle volume, veh/h
t_f = follow-up gap, s	c = left-turn capacity, veh/h
	VL = average length per vehicle, ft

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

Left Turns if above is unsuitable: storage length = 2 x (vehicles/hour)/(60 minutes/hour) x average vehicle length

Right Turns: 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 95th %-ile Q
Smoke Tree Driveway East & Lincoln Drive	NB Left	5	0	10	1	No Calculation	25'	65'
	WB Left	22	0	24	1	No Calculation	25'	25'
	NB Right	16	0	25	1	No Calculation	25'	65'
AJ's Center Driveway & Lincoln Drive	SB Left	5	0	3	1	No Calculation	25'	25'
	EB Left	24	0	9	1	No Calculation	25'	25'
	WB Left	14	0	7	1	No Calculation	25'	25'
	SB Right	12	0	22	1	No Calculation	25'	25'
Quail Run Road & Access A	WB Right	8	0	14	1	No Calculation	25'	0'

*Note: Truck/Passenger Vehicle split is projected based on percentage and not reflective of acctual 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

Assumptions and/or Givens

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		Tbl 9-5, p 9-42
	Right 1.0		
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

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

Calculated d= 359.8 ft
Design d= 360 ft

With Effect of Grade

$$d = 1.47Vt + \frac{V^2}{30\left(\left(\frac{a}{32.2}\right) \pm G\right)}$$ 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

Case B—Intersections with Stop Control on the Minor Road *AASHTO Ref* §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 Tuck	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 Tuck	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 Tuck	calculated	ISD=	721.0	ft
	design	ISD=	725	ft
Combination Truck	calculated	ISD=	853.3	ft
	design	ISD=	855	ft

Intersection Sight Distances (cont'd)

AASHTO Ref

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 Tuck	8.5 sec	&
Combination Truck	10.5 sec	Tbl 9-10, p 9-49

Time gap adjustments
Add'l lanes to cross (1st 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
Design Vehicle Gap+Adj for Approach Grade>3%(+Adjs for Add'l Lanes & Median for B3)		
Passenger Car	7.5	8.0
Single-Unit Tuck	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 (B2 & B3)	ISD to right (B3 Only)
Passenger Car	calculated	ISD=	496.1	529.2
	design	ISD=	500	530
Single-Unit Tuck	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)

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 Tuck	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
Design Vehicle Gap+Adj for Add'l Opposing Lanes

Passenger Car	6.5 sec
Single-Unit Tuck	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 Tuck	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

Assumptions and/or Givens

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

Calculated d= 196.7 ft
Design d= 200 ft

With Effect of Grade $d = 1.47Vt + \frac{V^2}{30\left(\left(\frac{a}{32.2}\right) \pm G\right)}$ 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

Intersection Sight Distances

Case B—Intersections with Stop Control on the Minor Road *AASHTO Ref* §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 Tuck	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 Tuck	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 Tuck	calculated	ISD=	419.0 ft
	design	ISD=	420 ft
Combination Truck	calculated	ISD=	507.2 ft
	design	ISD=	510 ft

Intersection Sight Distances (cont'd)

AASHTO Ref

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 Tuck	8.5 sec	&
Combination Truck	10.5 sec	Tbl 9-10, p 9-49

Time gap adjustments
Add'l lanes to cross (1st 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
Design Vehicle Gap+Adj for Approach Grade>3%(+Adjs for Add'l Lanes & Median for B3)		
Passenger Car	6.5	6.5
Single-Unit Tuck	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 (B2 & B3)	ISD to right (B3 Only)
Passenger Car	calculated	ISD=	286.7	286.7
	design	ISD=	290	290
Single-Unit Tuck	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

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 Tuck	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
Design Vehicle Gap+Adj for Add'l Opposing Lanes

Passenger Car	5.5 sec
Single-Unit Tuck	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 Tuck	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