Smoke Tree Resort

Traffic Impact Analysis

7101 E. Lincoln Drive
Town of Paradise Valley, Arizona

February 2019
Project No. 18-0550

Prepared For:

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

For Submittal to:

Town of Paradise Valley

Prepared By:

CivTech

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

SMOKE TREE RESORT
TRAFFIC IMPACT ANALYSIS

7101 E Lincoln Drive
Town of Paradise Valley, Arizona

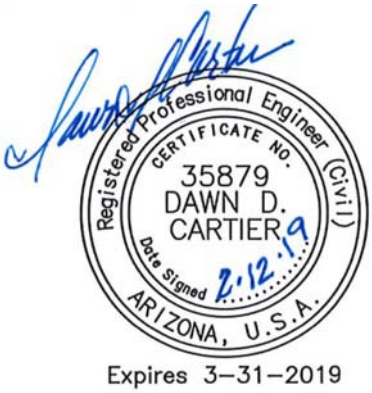
Prepared for:
Beus Gilbert PLLC
701 N 44th Street
Phoenix, Arizona 85008

For Submittal to:

Town of Paradise Valley

Prepared By:

CivTech, Inc.
10605 North Hayden Road
Suite 140
Scottsdale, Arizona 85260
(480) 659-4250



February 2019

CivTech Project No. 18-0550

TABLE OF CONTENTS

EXECUTIVE SUMMARY 1
INTRODUCTION 4
EXISTING CONDITIONS 6
SURROUNDING LAND USE 6
EXISTING ROADWAY NETWORK 6
EXISTING INTERSECTION CONFIGURATION 6
EXISTING TRAFFIC VOLUMES 10
EXISTING CAPACITY ANALYSIS 12
PROPOSED DEVELOPMENT 14
SITE LOCATION 14
SITE ACCESS 14
TRIP GENERATION 16
TRIP DISTRIBUTION AND ASSIGNMENT 17
FUTURE BACKGROUND TRAFFIC 20
TOTAL TRAFFIC 20
TRAFFIC AND IMPROVEMENT ANALYSIS 25
INTERSECTION CAPACITY ANALYSIS 25
QUEUE LENGTH ANALYSIS 30
SIGHT DISTANCE ANALYSIS 31
CONCLUSIONS 33
LIST OF REFERENCES 36
TECHNICAL APPENDIX 37

LIST OF TABLES

Table 1: Level of Service Criteria 12
Table 2: Existing Peak Hour Levels of Service 13
Table 3: Trip Generation Summary 16
Table 4: Site Trip Distribution 17
Table 5: Growth Rate Expansion Factors 20
Table 6: 2020 Peak Hour Analysis 25
Table 7: 2025 Peak Hour Analysis 27
Table 8: Queue Storage Lengths 30
Table 9: AASHTO Sight Distance Requirements 31

LIST OF FIGURES

Figure 1 - Vicinity Map 5
Figure 2 - Existing Lane Configurations and Stop Control 9
Figure 3 - Existing Traffic Volumes 11
Figure 4 - Site Plan and Access 15
Figure 5 - Trip Distribution 18
Figure 6 - Site Generated Traffic Volumes 19
Figure 7 - 2020 Background Traffic Volumes 21
Figure 8 - 2025 Background Traffic Volumes 22
Figure 9 - 2020 Total Traffic Volumes 23
Figure 10 - 2025 Total Traffic Volumes 24
Figure 11 - Proposed Lane Configurations and Traffic Control 29

EXECUTIVE SUMMARY

This report documents a traffic impact analysis performed for the proposed Smoke Tree Resort south of Lincoln Road between Mockingbird Lane and Scottsdale Road in the Town of Paradise Valley. The proposed development will consist of maximum of 120 hotel rooms and a maximum of 30 residential units of 1,200 SF each above the hotel rooms, of which 15 will have a lock-off feature.

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

The following conclusions have been documented in this study.

General

- The proposed development is anticipated to generate approximately 1,032 weekday daily trips, with 69 trips occurring in the AM peak hour and 101 trips occurring in the PM peak hour.

Existing Conditions

- The results of the existing conditions analysis indicates that all intersections currently operate at an overall acceptable level of service (LOS D or better), with the exception of the intersections of Apartment Driveway & Lincoln Drive and AJ's Driveway & Lincoln Drive under the existing lane configurations.
    - The intersections of **Apartment Driveway & Lincoln Drive and AJ's Driveway & Lincoln Drive** experience delays in the northbound left turn approach and southbound left turn. Both of these approaches and driveways are driveways for AJ's Fine Foods and existing Apartments. It is possible that a raised median will be installed along the length of Lincoln Drive.

Opening Year 2020

- The results of the 2020 opening year Synchro analysis indicates that all study intersections are anticipated to experience an acceptable level of service, with the exception of the following intersections:
    - The intersection of **Mockingbird Lane & Lincoln Drive** is expected to experience delay on the northbound and southbound approaches during the no build and the full build scenario. By increasing the southbound left turn phase from 9 seconds to 19 seconds and changing the northbound left turn phase from permissive to permissive-protected, the southbound approach delay is expected to decrease from 56 seconds per vehicle to 55.1 seconds per vehicle during the AM peak hour and decrease from 58.7 seconds per vehicle to 55.4 seconds per vehicle during the PM peak hour. The northbound approach delay is expected to decrease from 48 seconds per vehicle to 43.3 seconds per vehicle during the AM peak hour and decrease from 58.7 seconds per vehicle to 57.3 seconds per vehicle

in the PM peak hour, which is very close to what is considered an acceptable level of service.

- The intersections of **Apartment Driveway & Lincoln Drive and AJ's Driveway & Lincoln Drive** experience delays in the northbound left turn approach and southbound left turn. Both of these approaches and driveways are driveways for AJ's Fine Foods and the existing Lincoln Apartments. The addition of Smoke Tree Resort is not the cause of these delays, which remains consistent with the existing condition.
- The intersection of **Scottsdale Road & Lincoln Drive** is expected to experience delay on the eastbound and westbound approaches during both the AM and PM peak hours for both the no build and full build scenarios. The intersection is expected to operate at an overall acceptable level of service (LOS D or better) during both the AM and PM peak hours of both scenarios, however, the eastbound and westbound approach delay could be improved by increasing the eastbound phase from 30 seconds to 32 seconds and increasing the westbound phase from 13 seconds to 21 seconds. This change is expected to decrease the overall intersection delay from 46.4 seconds per vehicle to 25 seconds per vehicle in the AM peak and increase the overall intersection delay from 44.9 seconds per vehicle to 52.1 seconds per vehicle in the PM peak hour. Although the PM peak hour overall intersection delay is expected to increase, the individual approach delays for the eastbound and westbound decrease significantly. The eastbound approach is expected to decrease from 82.8 seconds per vehicle to 16 seconds per vehicle and the westbound approach is expected to decrease from 63.8 seconds per vehicle to 23.7 seconds per vehicle during the PM peak hour.
- The intersection of **Quail Run Road and Access A** reports a delay of zero seconds using the HCM 6th edition methodology. No LOS is reported in the included appendices, however zero seconds of delay would yield an LOS of A, shown in the table.

Horizon year 2025

- The results of the 2025 horizon year Synchro analysis summarized in **Table 7** indicates that all study intersections are anticipated to experience an acceptable level of service, with the exception of the following intersections:
  - The intersections of **Apartment Driveway & Lincoln Drive and AJ's Driveway & Lincoln Drive** experience delays in the northbound left turn approach and southbound left turn. Both of these approaches and driveways are driveways for AJ's Fine Foods and the existing Lincoln Apartments. The addition of Smoke Tree Resort is not the cause of these delays, which remains consistent with the existing condition.
  - The intersection of **Scottsdale Road & Lincoln Drive** is expected to experience delay on the southbound, eastbound and westbound approaches during both the AM and PM peak hours for both the no build

and full build scenarios. By decreasing the cycle length from 130 seconds to 120 seconds and optimizing the green times, the overall intersection delay is expected to decrease from 76 seconds per vehicle to 58.2 seconds per vehicle during the AM peak hour and decrease from 62.7 seconds per vehicle to 57.7 seconds per vehicle during the PM peak hour. Although this mitigation measure is expected to decrease the approach delays and the overall intersection delay, if this signal is coordinated with any others along Scottsdale Road, changing the cycle length will interfere with the coordination and would not be recommended. The City of Scottsdale has stated that they have plans to change the eastbound approach configuration to dual left turn lanes and a shared through/right turn lane. It is not known when this change will occur, but it could improve the delay if the intersection is retimed.

- The intersection of **Quail Run Road and Access A** reports a delay of zero seconds using the HCM 6th edition methodology. No LOS is reported in the included appendices, however zero seconds of delay would yield an LOS of A, shown in the table.

Queue Storage and Sight Distance

- According to the CivTech study done for the Ritz Carlton, the newly signalized intersection of Quail Run Road and Lincoln Drive will have eastbound/westbound left turn lanes and a westbound right turn lane striped with 150 feet of storage each. While 150 feet is being proposed due to the current development agreement with Five Star Development for the Ritz Carlton, less is required to meet the recommended AASHTO length. The recommended storage lengths are provided for horizon year 2025 using the total traffic projections.
  - The Smoke Tree Resort is requesting a new full access driveway located approximately 80 feet west of the eastern most property line. The Town of Paradise Valley has stated that an eastbound right turn deceleration lane is required at this driveway. Using AASHTO methodology only 25 feet of storage is required, however, 50 feet is the minimum that should be recommended per AASHTO standards with a 90 foot taper.
- There are no existing obstructions to sight distance within the project intersections or along the included corners of the proposed intersection. Adequate site distance must be provided at the intersections to allow safe left and right turning movements from the development
  - The contractor should ensure that sight visibility is provided at all proposed intersections according to the distances and that sight triangles at public intersections are maintained according to the Town Code. All vegetation and trees should be maintained according to Town of Paradise Valley regulations.

INTRODUCTION

Smoke Tree Resort is currently 26 individual suites and bungalows. The site is being redeveloped and is proposed as a hotel with a maximum of 120 hotel rooms and a maximum of 30 residential units of 1,200 SF each above the hotel rooms, of which 15 will have a lock-off feature. The site is located on the south side of Lincoln Drive between Mockingbird Lane and Scottsdale road.

Study Requirements

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

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

Study Area

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

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

Horizon Years

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

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

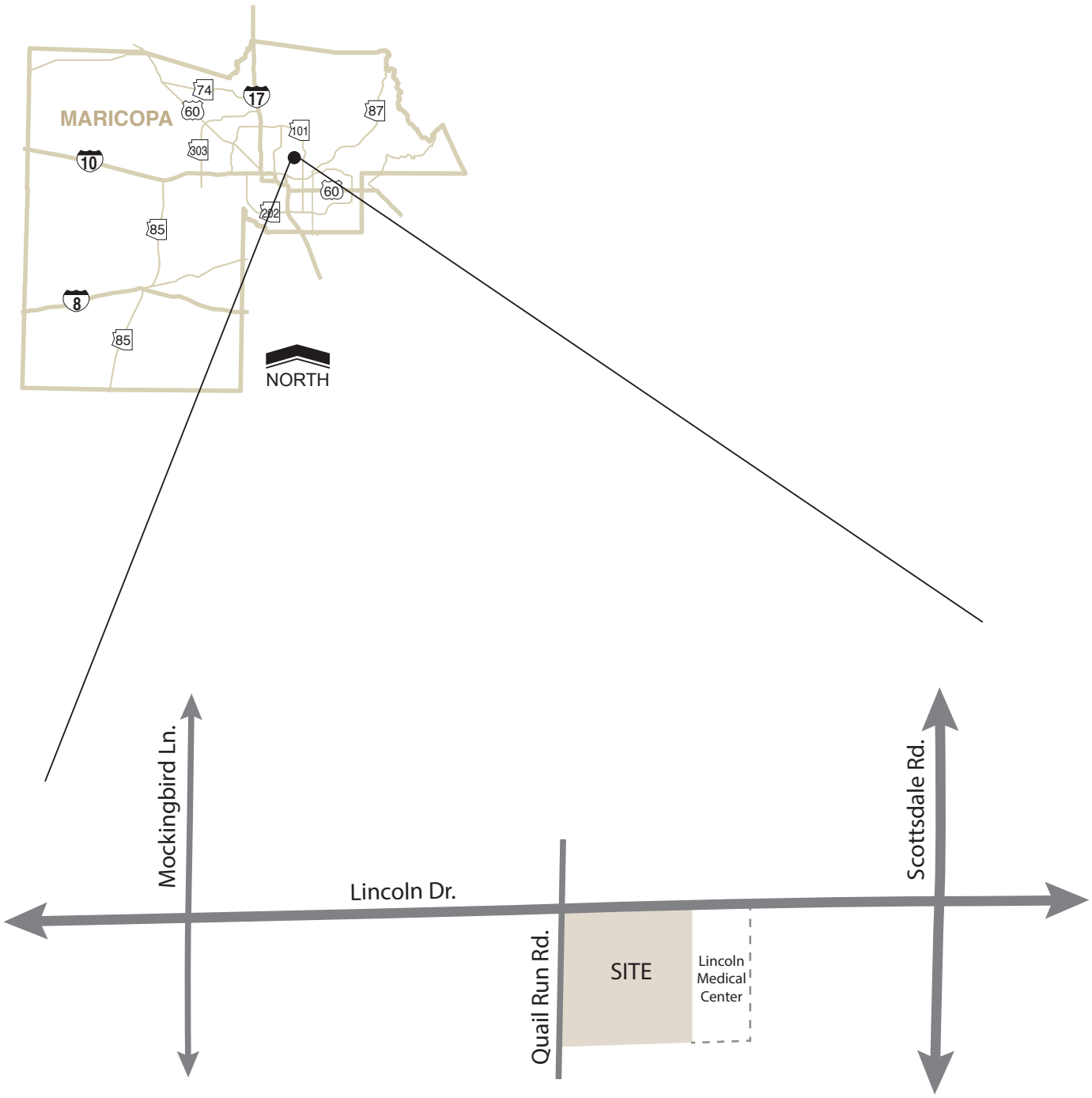


Figure 1: Vicinity Map

EXISTING CONDITIONS

SURROUNDING LAND USE

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

EXISTING ROADWAY NETWORK

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

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

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

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

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

EXISTING INTERSECTION CONFIGURATION

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

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

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

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

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

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

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

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

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

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

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

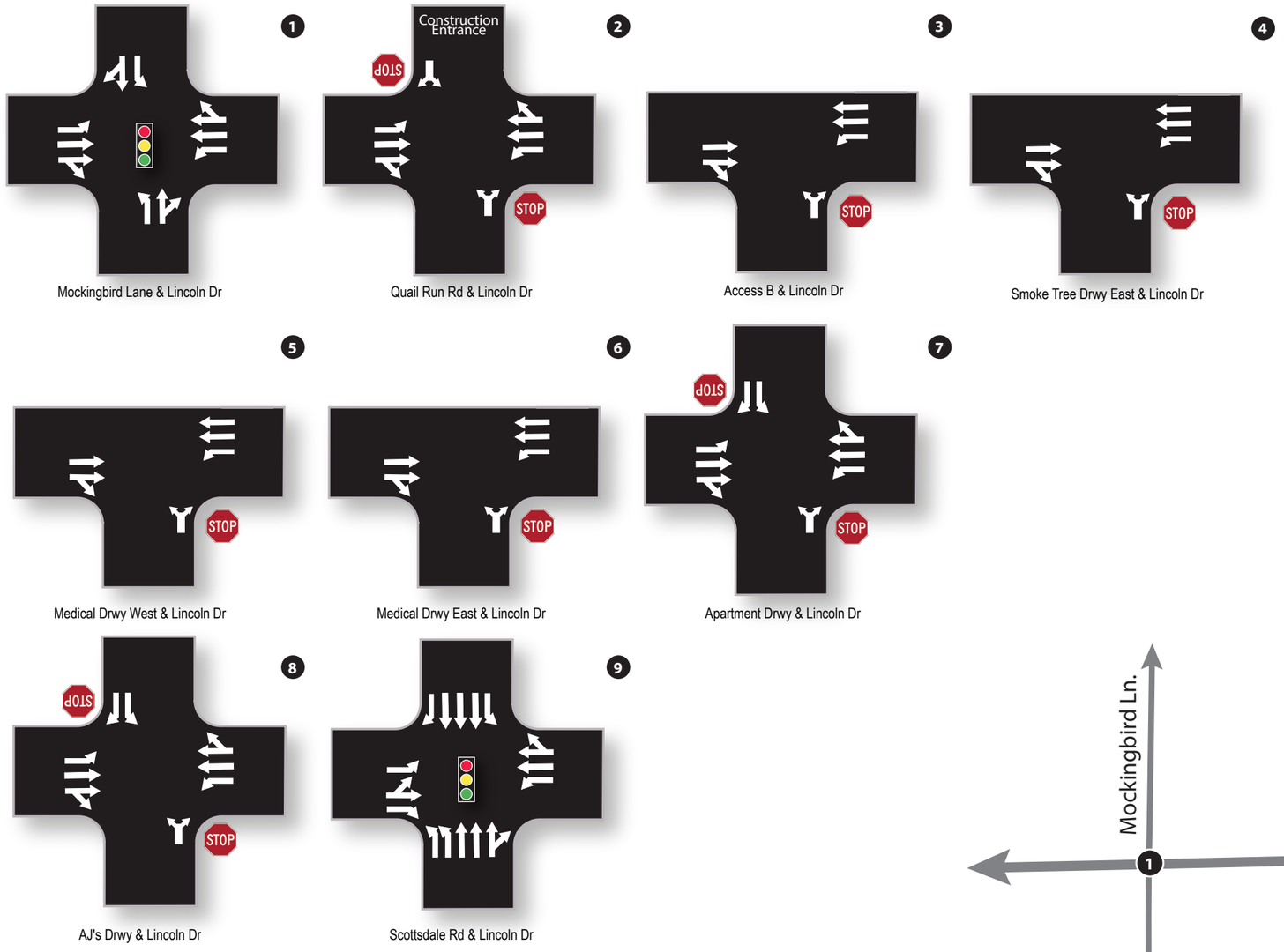


Figure 2: Existing Lane Configurations and Traffic Controls

EXISTING TRAFFIC VOLUMES

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

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

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

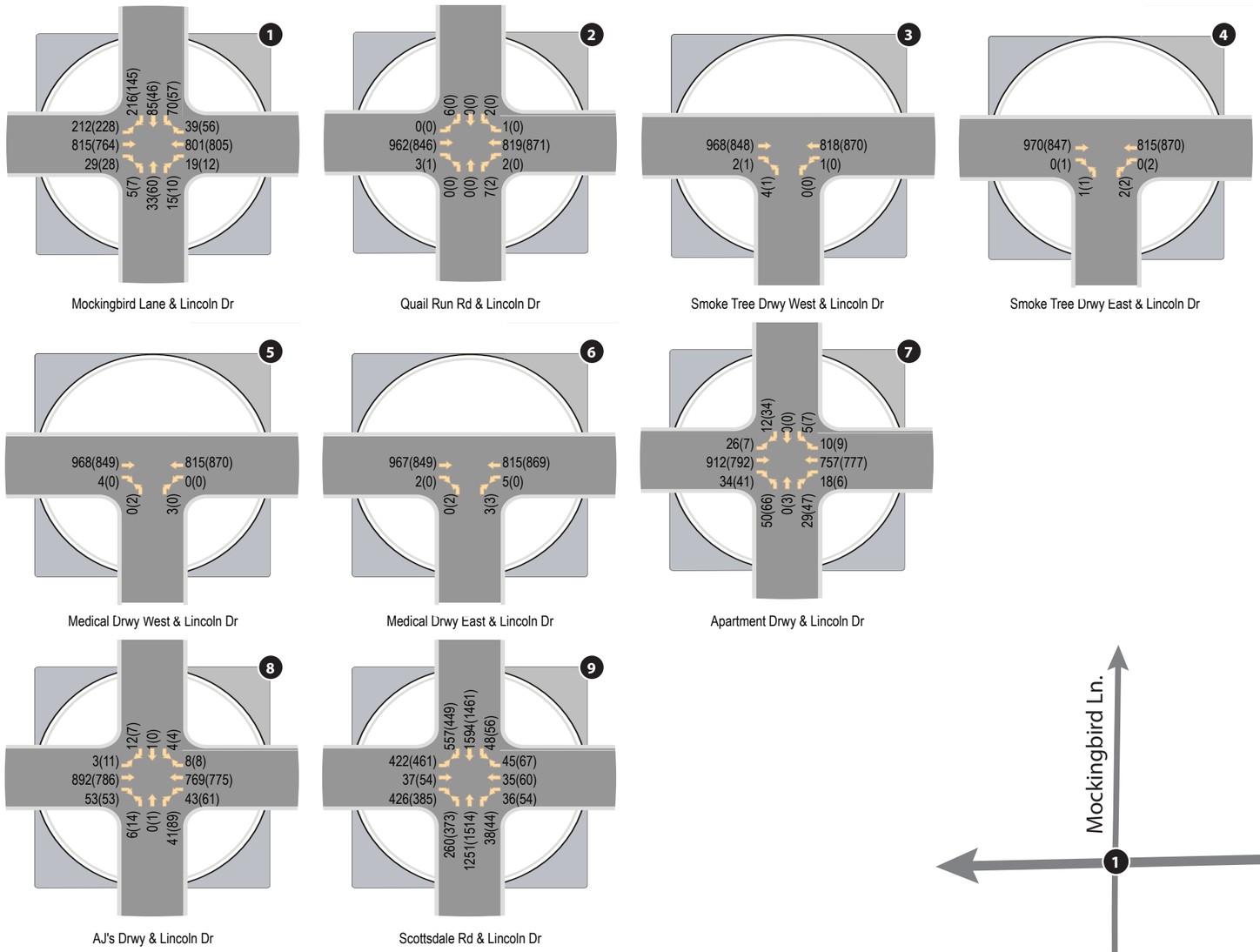


Figure 3: Seasonally Adjusted Existing Traffic Volumes

EXISTING CAPACITY ANALYSIS

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

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

Table 1: Level of Service Criteria

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

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

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

Table 2: Existing Peak Hour Levels of Service

ID	Intersection	Intersection Control	Approach/ Movement	Existing LOS AM (PM)
1	Mockingbird Lane & Lincoln Drive	Signal	NB SB EB WB	D(**E**) **E**(**E**) B(A) B(B)
			Overall	**C(B)**
2	Quail Run Road & Lincoln Drive	2-way stop (NB/SB)	NB Shared SB Shared EB Left WB Left	B(B) C(A) A(A) B(A)
3	Smoke Tree Driveway West & Lincoln Drive	1-way stop (NB)	NB Shared WB Left	C(C) B(A)
4	Smoke Tree Driveway East & Lincoln Drive	1-way stop (NB)	NB Shared WB Left	C(B) A(A)
5	Medical Driveway West & Lincoln Drive	1-way stop (NB)	NB Shared WB Left	B(C) A(A)
6	Medical Driveway West & Lincoln Drive	1-way stop (NB)	NB Shared WB Left	B(C) B(A)
7	Apartment Driveway & Lincoln Drive	2-way stop (NB/SB)	NB Shared SB Left SB Right EB Left WB Left	**F**(**F**) **F**(**E**) B(B) A(A) B(A)
8	AJ's Driveway & Lincoln Drive	2-way stop (NB/SB)	NB Shared SB Left SB Right EB Left WB Left	C(D) **F**(**F**) B(B) A(A) B(B)
9	Scottsdale Road & Lincoln Drive	Signal	NB SB EB WB	C(C) D(C) **E**(**E**) **E**(**F**)
			Overall	**D(D)**

The results of the existing conditions analysis summarized in **Table 2** indicates that all intersections currently operate at an overall acceptable level of service (LOS D or better), with the exception of the intersections of Apartment Driveway & Lincoln Drive and AJ's Driveway & Lincoln Drive under the existing lane configurations depicted in **Figure 2**.

The intersections of **Apartment Driveway & Lincoln Drive and AJ's Driveway & Lincoln Drive** experience delays in the northbound left turn approach and southbound left turn. Both of these approaches and driveways are driveways for AJ's Fine Foods and existing Apartments. It is possible that a raised median will be installed along the length of Lincoln Drive.

PROPOSED DEVELOPMENT

SITE LOCATION

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

SITE ACCESS

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

- *Access A* is a proposed access from Quail Run Road to the Smoke Tree site. The intersection of Quail Run Road and Lincoln Drive will be signalized by build out year 2020, and it is expected that some vehicles will utilize Quail Run Road to access the Smoke Tree site. This access will be a full movement access on the western border of the site.
- *Access B* is a proposed full movement access point on Lincoln Drive located approximately 80 feet west of the eastern Smoke Tree property line. The two existing access points to the site will be removed and replaced with this single access.
- *Access C* is a proposed access from Quail Run Road to Smoke Tree south of the proposed Access A. This access is proposed to be full access, however, due to the location, it is unlikely that many vehicles will be using this driveway and therefore, it was not included in the analysis of this report.

The two existing Smoke Tree Driveways, intersections 3 and 4, will both be removed by opening year 2020 and replaces with a single, full movement access located approximately 80 feet west of the eastern property line.

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

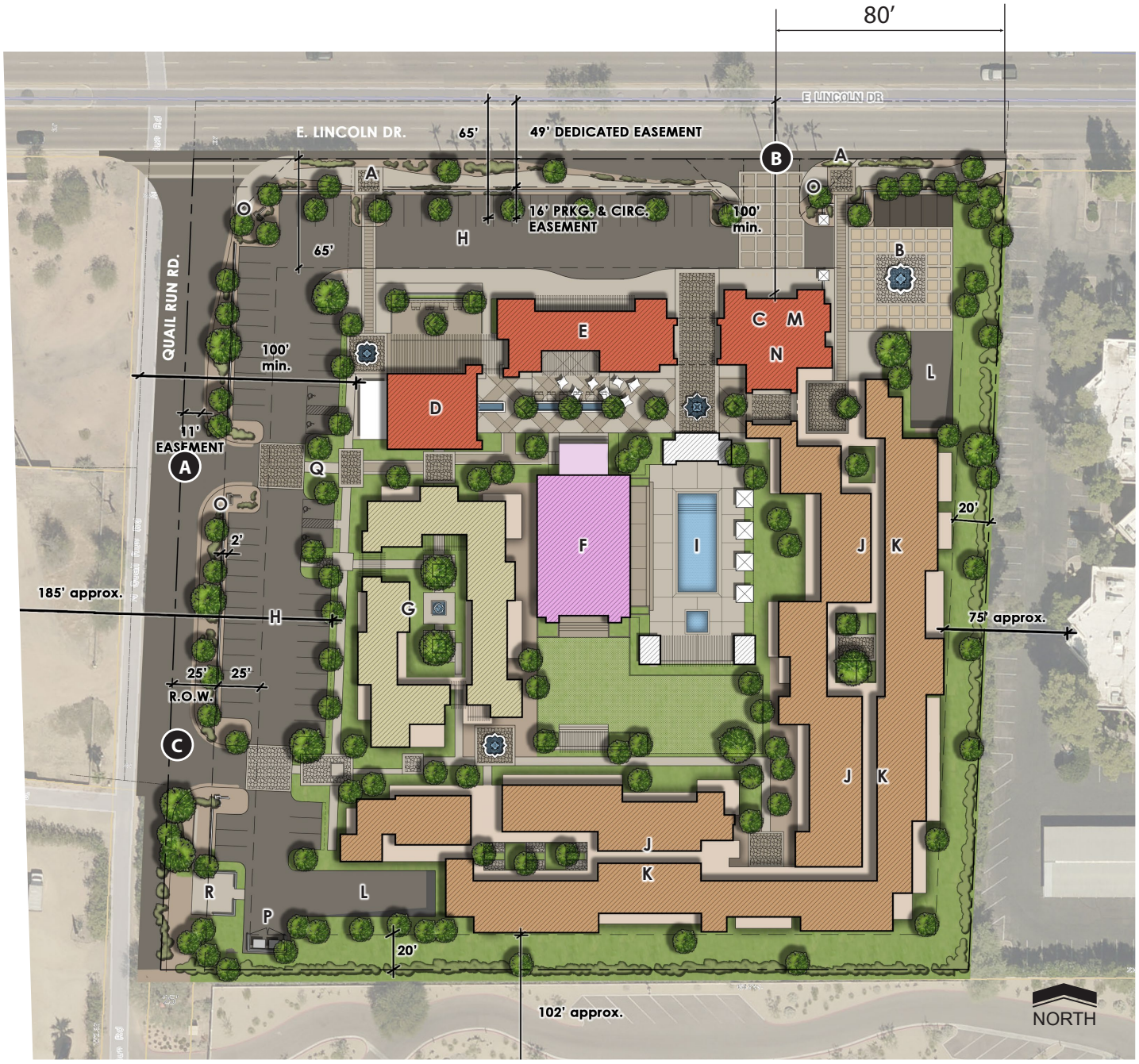


Figure 4: Site Plan and Access

TRIP GENERATION

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

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

The proposed development will consist of a maximum of 120 standard hotel rooms, 30 residential units/condos, 15 lock-off units that will be owned by individuals and rented out to the public, and a 3,500 square foot quality restaurant. The lock-off residential units have been included in the analysis as part of the total hotel room count to present a worst-case scenario where all rooms have been rented at the same time. They have been included in the hotel room count since it is assumed that the owners of each unit will not use this as their primary residence and will rent it out to guests. The restaurant will be on the resort site, but is not intended to serve guests of the resort completely. An internal capture reduction reduces the number of external trips being made to the site. It is assumed that approximately 50% of all visitors to the restaurant will be off site and the other 50% will be guests and residents of the resort. The hotel is not a standard hotel, ITE land use code 310, nor would it be considered a resort hotel, ITE land use code 330. Custom trip rates were established by averaging the trip rates for a standard hotel and a resort hotel for the AM and PM peak hours as well as the daily trips. **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	310/330	135	Rooms	700	38	15	53	29	39	68
Condos	220	30	Dwelling Units	186	3	12	15	13	7	20
Quality Restaurant	931	3,500	SF	294	0	3	3	18	9	27
			Total Trips	1,180	41	30	71	60	55	115
			Internal Capture Reduction (Quality Restaurants 50%)	*(148)*	*(0)*	*(2)*	*(2)*	*(9)*	*(5)*	*(14)*
			Subtotals	**1,032**	**41**	**28**	**69**	**51**	**50**	**101**

As shown in **Table 3**, the proposed development is anticipated to generate approximately 1,032 weekday daily trips, with 69 trips occurring in the AM peak hour and 101 trips occurring in the PM peak hour.

TRIP DISTRIBUTION AND ASSIGNMENT

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

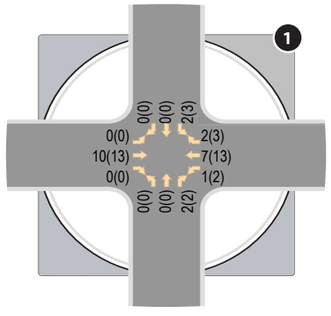
The resulting trip distribution percentages for the study area are shown in **Table 4**. The trip distribution calculations are included in **Appendix E**.

Table 4: Site Trip Distribution

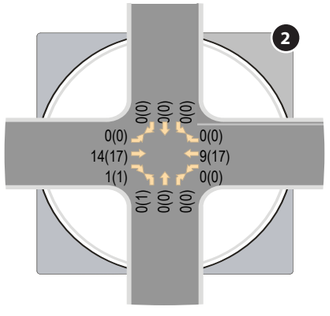
Direction (To/From)	Trip Distribution
North on Mockingbird Ln	6%
South on Mockingbird Ln	4%
West on Lincoln Dr	25%
North on Scottsdale Rd	35%
South on Scottsdale Rd	30%
Total	**100%**

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

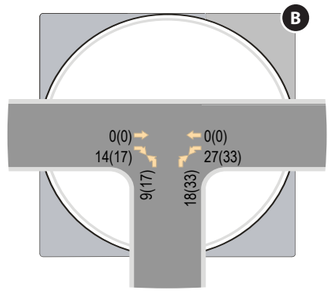
Figure 5: Trip Distribution



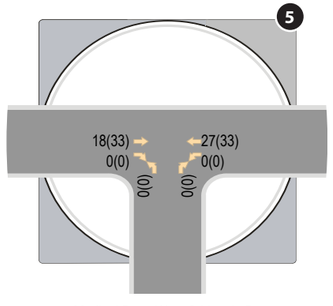
Mockingbird Lane & Lincoln Dr



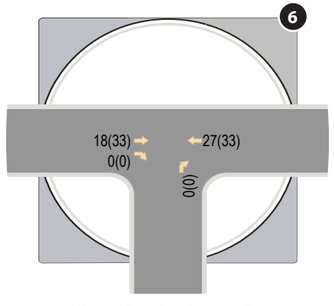
Quail Run Rd & Lincoln Dr



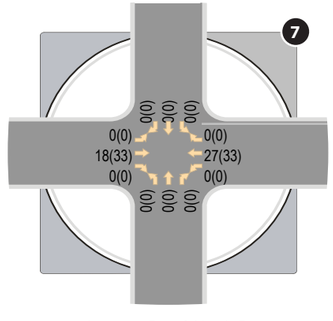
Smoke Tree Access B & Lincoln Dr



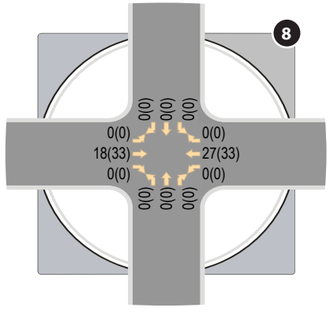
Medical Drwy West & Lincoln Dr



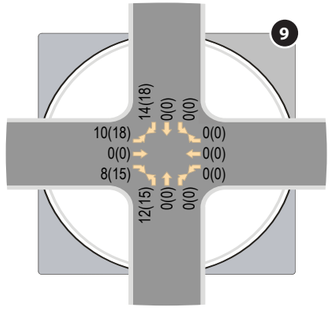
Medical Drwy East & Lincoln Dr



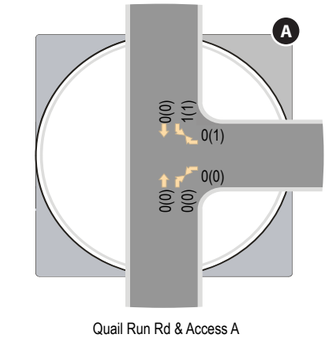
Apartment Drwy & Lincoln Dr



AJ's Drwy & Lincoln Dr



Scottsdale Rd & Lincoln Dr



Quail Run Rd & Access A

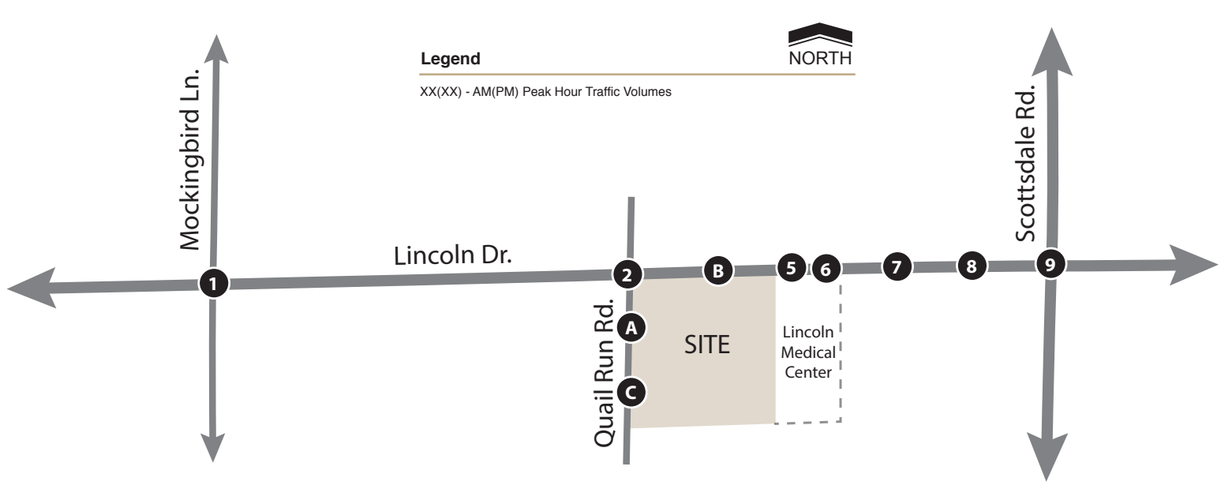


Figure 6: Site Generated Traffic Volumes

FUTURE BACKGROUND TRAFFIC

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

Table 5: Growth Rate Expansion Factors

Horizon Year	Expansion Factor
2020	1.034
2025	1.125

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

The same methodology was used for both horizon years. Calculated background traffic for opening year 2020 and horizon year 2025 is presented in **Figure 7** and **Figure 8**, respectively. Seasonally adjusted existing traffic volumes, Ritz Carlton site volumes, Smoke Tree site volumes and more detailed background traffic calculations are included in **Appendix F**.

TOTAL TRAFFIC

Total traffic was determined by adding the site generated traffic to the projected background traffic. Total peak hour traffic volumes for the opening year 2020 and horizon year 2025 are shown in **Figure 9** and **Figure 10**, respectively.

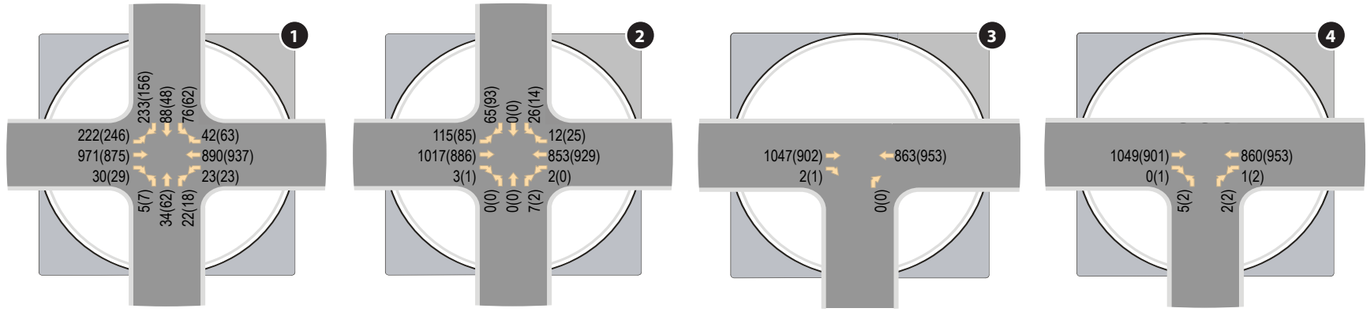


Figure 7: 2020 Background Traffic Volumes

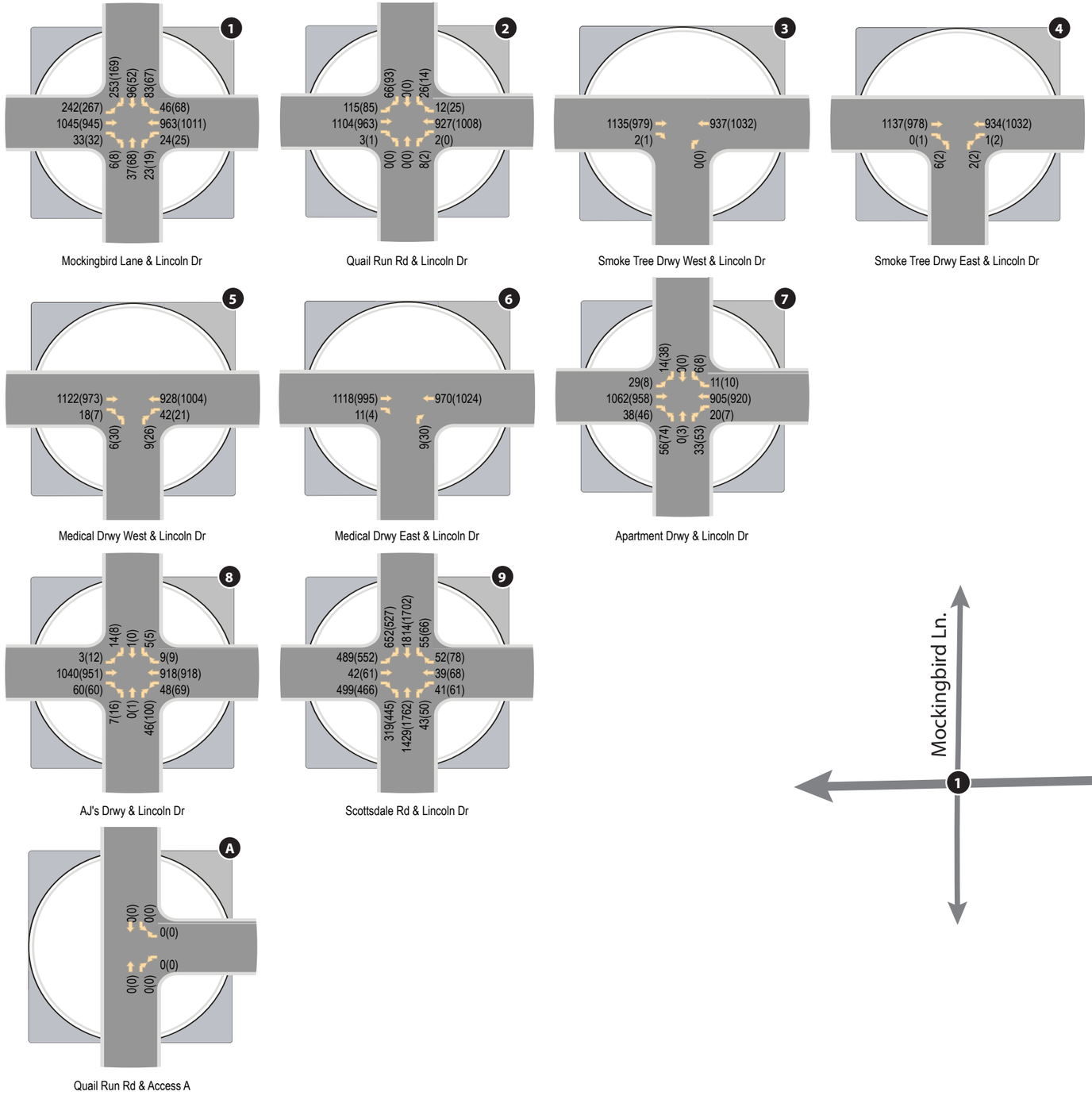
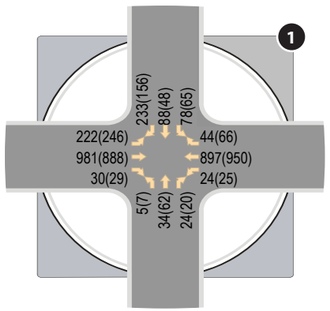
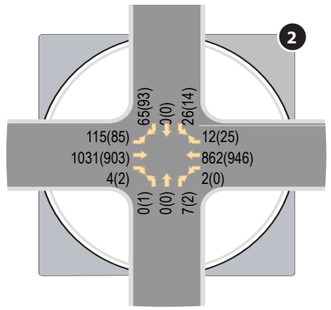


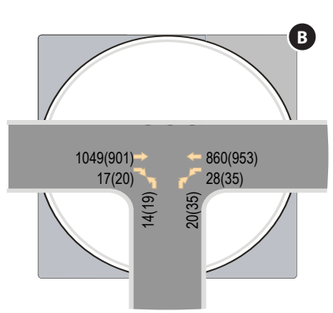
Figure 8: 2025 Background Traffic Volumes



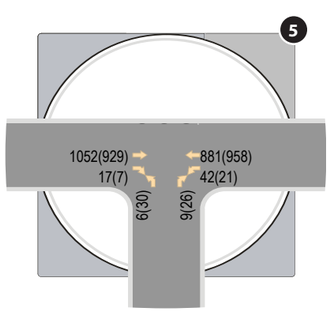
Mockingbird Lane & Lincoln Dr



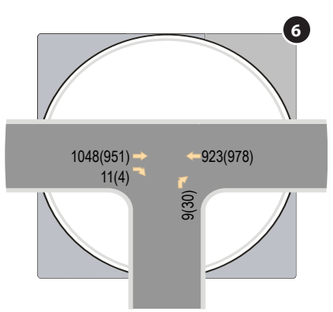
Quail Run Rd & Lincoln Dr



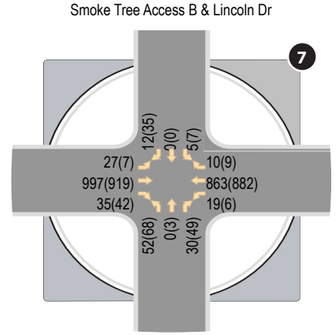
Smoke Tree Access B & Lincoln Dr



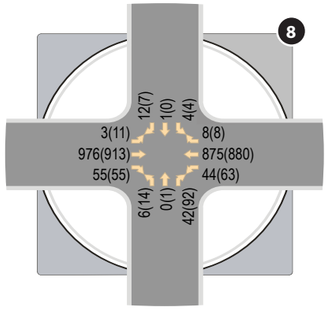
Medical Drwy West & Lincoln Dr



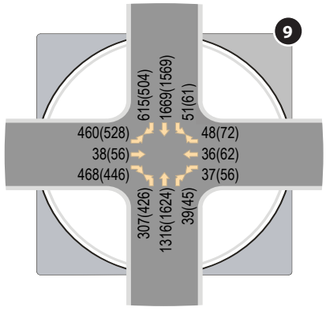
Medical Drwy East & Lincoln Dr



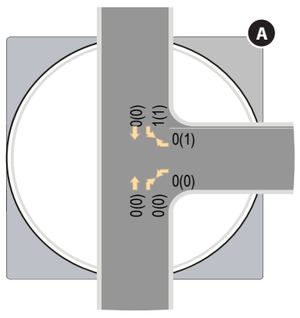
Apartment Drwy & Lincoln Dr



AJ's Drwy & Lincoln Dr



Scottsdale Rd & Lincoln Dr



Quail Run Rd & Access A

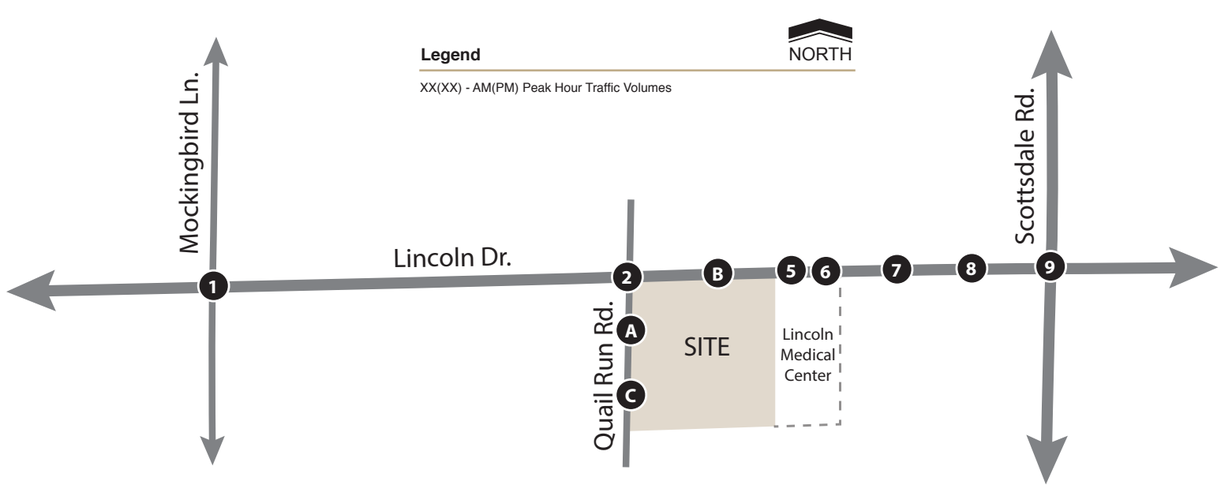
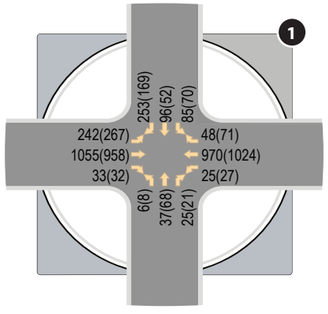
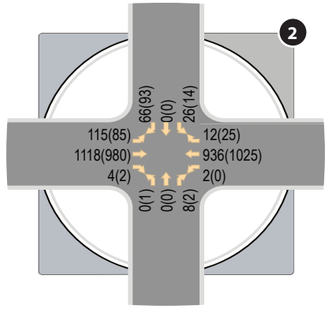


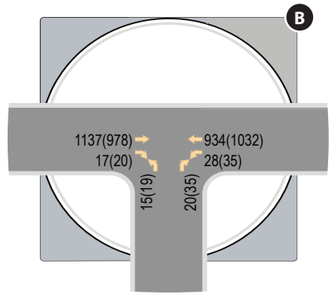
Figure 9: 2020 Total Traffic Volumes



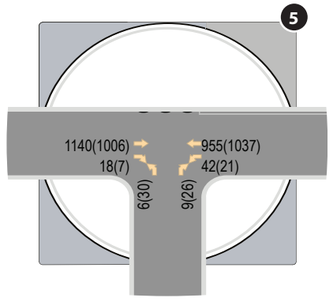
Mockingbird Lane & Lincoln Dr



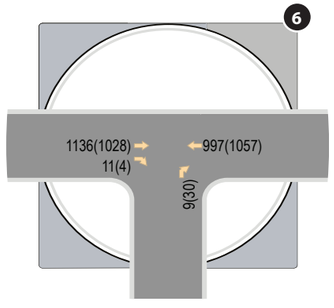
Quail Run Rd & Lincoln Dr



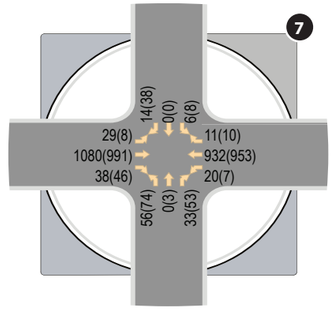
Smoke Tree Access B & Lincoln Dr



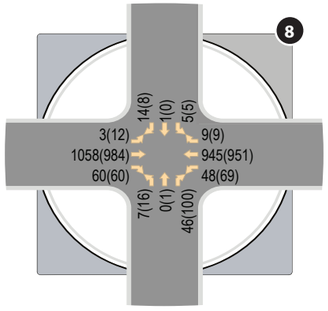
Medical Drwy West & Lincoln Dr



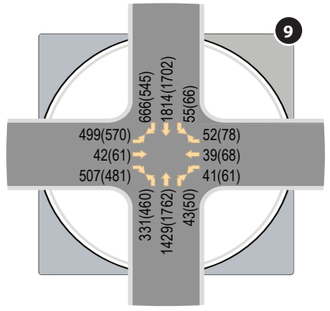
Medical Drwy East & Lincoln Dr



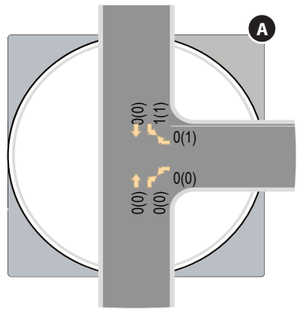
Apartment Drwy & Lincoln Dr



AJ's Drwy & Lincoln Dr



Scottsdale Rd & Lincoln Dr



Quail Run Rd & Access A

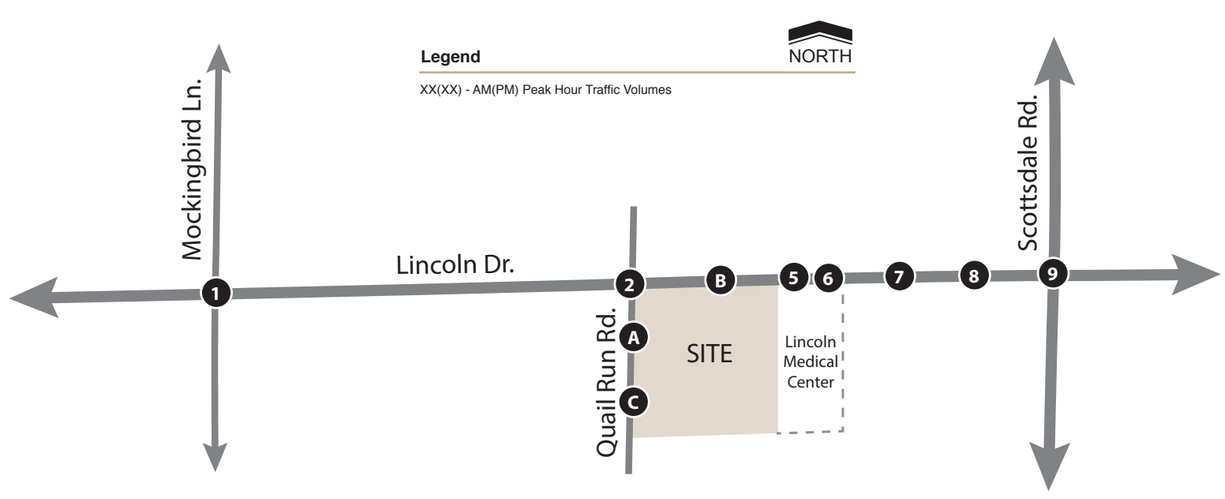


Figure 10: 2025 Total Traffic Volumes

TRAFFIC AND IMPROVEMENT ANALYSIS

INTERSECTION CAPACITY ANALYSIS

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

Table 6: 2020 Peak Hour Analysis

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

ID	Intersection	Intersection Control	Approach/ Movement	2020 LOS AM(PM)		
				No-Build	Build	Mitigated
B	Smoke Tree Access B & Lincoln Dr	1-way stop (NB)	NB Shared WB Left	-(-) -(-)	C(C) B(B)	[Not Mitigated]

The results of the 2020 opening year Synchro analysis summarized in **Table 6** indicates that all study intersections are anticipated to experience an acceptable level of service, with the exception of the following intersections:

The intersection of **Mockingbird Lane & Lincoln Drive** is expected to experience delay on the northbound and southbound approaches during the no build and the full build scenario. By increasing the southbound left turn phase from 9 seconds to 19 seconds and changing the northbound left turn phase from permissive to permissive-protected, the southbound approach delay is expected to decrease from 56 seconds per vehicle to 55.1 seconds per vehicle during the AM peak hour and decrease from 58.7 seconds per vehicle to 55.4 seconds per vehicle during the PM peak hour. The northbound approach delay is expected to decrease from 48 seconds per vehicle to 43.3 seconds per vehicle during the AM peak hour and decrease from 58.7 seconds per vehicle to 57.3 seconds per vehicle in the PM peak hour, which is very close to what is considered an acceptable level of service.

The intersections of **Apartment Driveway & Lincoln Drive and AJ's Driveway & Lincoln Drive** experience delays in the northbound left turn approach and southbound left turn. Both of these approaches and driveways are driveways for AJ's Fine Foods and the existing Lincoln Apartments. The addition of Smoke Tree Resort is not the cause of these delays, which remains consistent with the existing condition.

The intersection of **Scottsdale Road & Lincoln Drive** is expected to experience delay on the eastbound and westbound approaches during both the AM and PM peak hours for both the no build and full build scenarios. The intersection is expected to operate at an overall acceptable level of service (LOS D or better) during both the AM and PM peak hours of both scenarios, however, the eastbound and westbound approach delay could be improved by increasing the eastbound phase from 30 seconds to 32 seconds and increasing the westbound phase from 13 seconds to 21 seconds. This change is expected to decrease the overall intersection delay from 46.4 seconds per vehicle to 25 seconds per vehicle in the AM peak and increase the overall intersection delay from 44.9 seconds per vehicle to 52.1 seconds per vehicle in the PM peak hour. Although the PM peak hour overall intersection delay is expected to increase, the individual approach delays for the eastbound and westbound decrease significantly. The eastbound approach is expected to decrease from 82.8 seconds per vehicle to 16 seconds per vehicle and the westbound approach is expected to decrease from 63.8 seconds per vehicle to 23.7 seconds per vehicle during the PM peak hour.

The intersection of **Quail Run Road and Access A** reports a delay of zero seconds using the HCM 6th edition methodology. No LOS is reported in the included appendices, however zero seconds of delay would yield an LOS of A, shown in the table.

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

Table 7: 2025 Peak Hour Analysis

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

The results of the 2025 horizon year Synchro analysis summarized in **Table 7** indicates that all study intersections are anticipated to experience an acceptable level of service, with the exception of the following intersections:

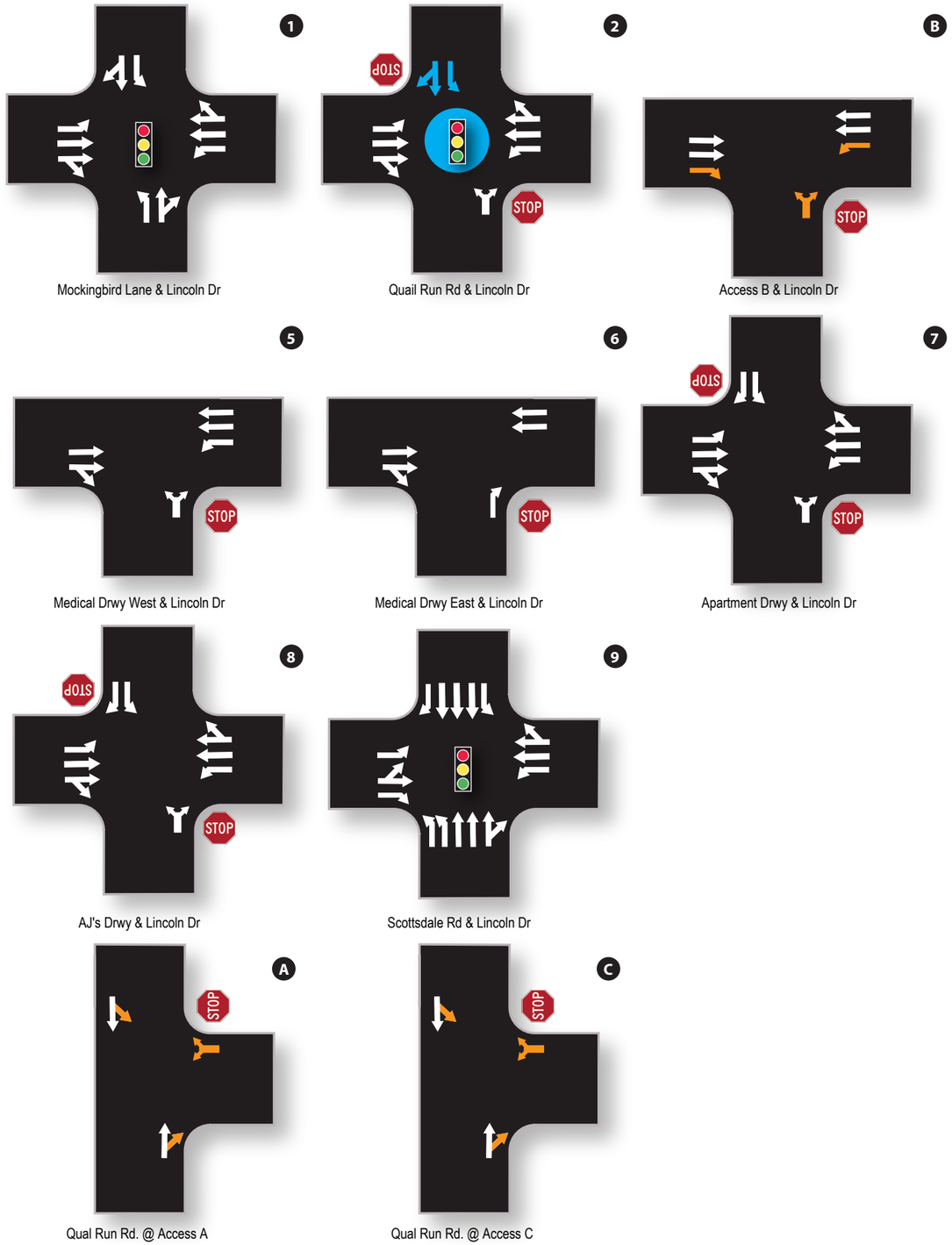
The intersection of **Mockingbird Lane & Lincoln Drive** is expected to have delay on the southbound approach during the AM and PM peak hours of both the no build and full build scenario. The delay is due to the volume of southbound right turning vehicles, however the approach delay is 55.4 seconds per vehicle during the AM peak hour of the full build scenario and 56.2 seconds per vehicle during the PM peak hour, which is lower than the no build scenario and very close to the threshold for an acceptable level of service (LOS D or better).

The intersections of **Apartment Driveway & Lincoln Drive and AJ's Driveway & Lincoln Drive** experience delays in the northbound left turn approach and southbound left turn. Both of these approaches and driveways are driveways for AJ's Fine Foods and the existing Lincoln Apartments. The addition of Smoke Tree Resort is not the cause of these delays, which remains consistent with the existing condition.

The intersection of **Scottsdale Road & Lincoln Drive** is expected to experience delay on the southbound, eastbound and westbound approaches during both the AM and PM peak hours for both the no build and full build scenarios. By decreasing the cycle length from 130 seconds to 120 seconds and optimizing the green times, the overall intersection delay is expected to decrease from 76 seconds per vehicle to 58.2 seconds per vehicle during the AM peak hour and decrease from 62.7 seconds per vehicle to 57.7 seconds per vehicle during the PM peak hour. Although this mitigation measure is expected to decrease the approach delays and the overall intersection delay, if this signal is coordinated with any others along Scottsdale Road, changing the cycle length will interfere with the coordination and would not be recommended. The City of Scottsdale has stated that they have plans to change the eastbound approach configuration to dual left turn lanes and a shared through/right turn lane. It is not known when this change will occur, but it could improve the delay if the intersection is retimed.

The intersection of **Quail Run Road and Access A** reports a delay of zero seconds using the HCM 6th edition methodology. No LOS is reported in the included appendices, however zero seconds of delay would yield an LOS of A, shown in the table.

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



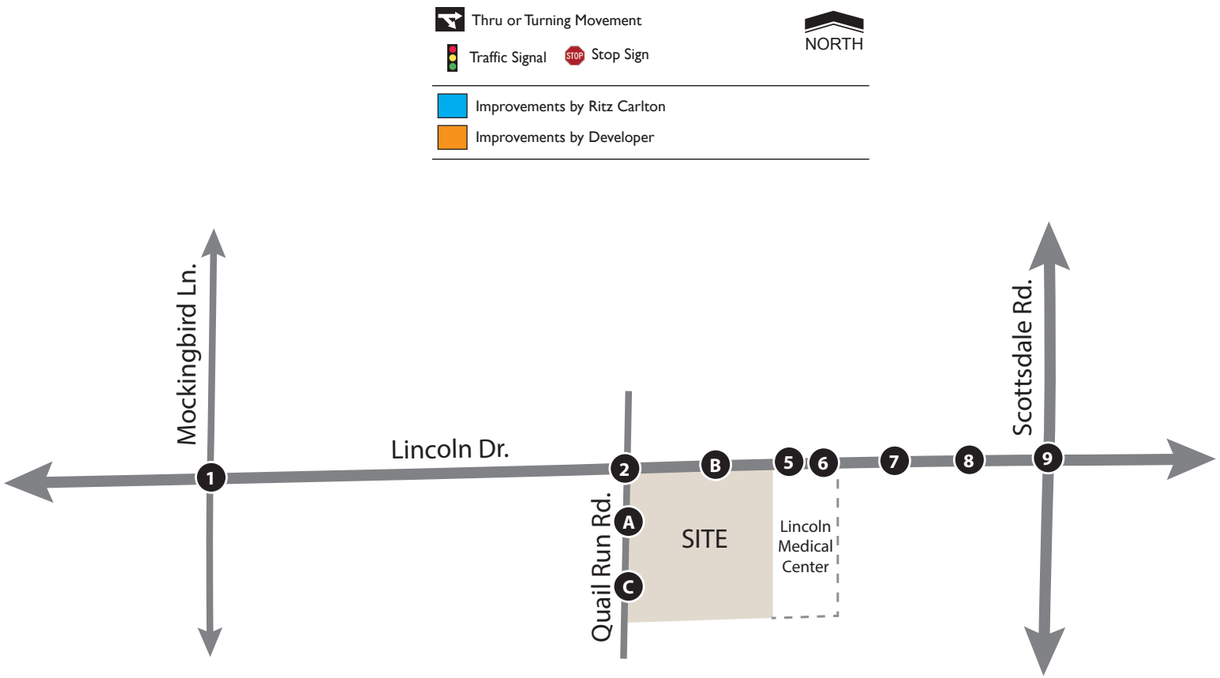


Figure 11: Proposed Lane Configurations and Traffic Controls

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. According to the methodology documented in *A Policy on Geometric Design of Highways and Streets* (the AASHTO "Green Book"*)*, the storage length for a turn lane is typically estimated as the length required to hold the average number of arriving vehicles per two minutes, where unsignalized, or per one-and-a half signal cycles, where signalized.[1] The formulas used for the calculations are shown below.

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

Storage Length = [1.5 x (veh/hr)/(cycles/hr)] x 25 feet

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

Storage Length = [(veh/hr)/(30 periods/hr)] x 25 feet

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

Table 8: Queue Storage Lengths

ID	Intersection	Intersection Control	Movement	Queue Storage			
				Existing (1)	AASHTO	95th Percentile	Recommended
1	Mockingbird Lane & Lincoln Dr	Signalized	NB Left	85'	25'	25'	85'
			SB Left	130'	175'	95'	130'
			EB Left	145'	500'	235'	(4)145'
			WB Left	100'	50'	30'	100'
2	Quail Run Rd & Lincoln Dr	Signalized	EB Left	-	225'	155'	150'
			WB Left	-	25'	25'	150'
			WB Right	-	50'	-	150'
9	Scottsdale Rd & Lincoln Dr	Signalized	NB Left	(2)550'	(2)850'	(2)345'	(2)550'
			SB Left	185'	125'	120'	185'
			EB Left	175'	1,050'	500'	(4)175'
			WB Left	90'	125'	100'	(5)90'
			SB Right	315'	1,225'	275'	(3)350'
			EB Right	175'	925'	350'	(4)175'
B	Smoke Tree Access B & Lincoln Dr	1-way stop (NB)	WB Left	-	50'	25'	50'
			EB Right	-	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) Max storage length recommended for signalized intersection

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

(4) Extending this turn will interfere with left turns into AJ's Fine Foods driveway
(5) Not the responsibility of the developer

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

The Smoke Tree Resort is requesting a new full access driveway located approximately 80 feet west of the eastern most property line. The Town of Paradise Valley has stated that an eastbound right turn deceleration lane is required at this driveway. Using AASHTO methodology only 25 feet of storage is required, however, 50 feet is the minimum that should be recommended per AASHTO standards with a 90 foot taper. A minimum of 75 feet of storage is recommended for the right turn deceleration lane, however, if interference with other turn lanes is expected with the 75 foot storage length, 50 feet would be an acceptable storage length.

SIGHT DISTANCE ANALYSIS

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

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

Table 9: AASHTO Sight Distance Requirements

Roadway	Posted Speed Limit (mph)	Design Speed (mph)	Sight Distance Along Roadway		
			Left of Driveway (Case B2/B3)	Right of Driveway (Case B1)	On Major Road (Case F)
Quail Run Rd & Access A	-	30	290'	335'	245'
Smoke Tree Access B & Lincoln Dr	40	45	860'	930'	795'
Quail Run Rd & Access C	-	30	290'	335'	245'

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

The contractor should ensure that sight visibility is provided at all proposed intersections according to the distances shown in **Table 9** and that sight triangles at public

intersections are maintained according to the Town Code. All vegetation and trees should be maintained according to Town of Paradise Valley regulations. Sight distance worksheets have been included within **Appendix J**.

CONCLUSIONS

The following conclusions have been documented in this study.

General

- The proposed development is anticipated to generate approximately 1,032 weekday daily trips, with 69 trips occurring in the AM peak hour and 101 trips occurring in the PM peak hour.

Existing Conditions

- The results of the existing conditions analysis indicates that all intersections currently operate at an overall acceptable level of service (LOS D or better), with the exception of the intersections of Apartment Driveway & Lincoln Drive and AJ's Driveway & Lincoln Drive under the existing lane configurations.
    - The intersections of **Apartment Driveway & Lincoln Drive and AJ's Driveway & Lincoln Drive** experience delays in the northbound left turn approach and southbound left turn. Both of these approaches and driveways are driveways for AJ's Fine Foods and existing Apartments. It is possible that a raised median will be installed along the length of Lincoln Drive.

Opening Year 2020

- The results of the 2020 opening year Synchro analysis indicates that all study intersections are anticipated to experience an acceptable level of service, with the exception of the following intersections:
    - The intersection of **Mockingbird Lane & Lincoln Drive** is expected to experience delay on the northbound and southbound approaches during the no build and the full build scenario. By increasing the southbound left turn phase from 9 seconds to 19 seconds and changing the northbound left turn phase from permissive to permissive-protected, the southbound approach delay is expected to decrease from 56 seconds per vehicle to 55.1 seconds per vehicle during the AM peak hour and decrease from 58.7 seconds per vehicle to 55.4 seconds per vehicle during the PM peak hour. The northbound approach delay is expected to decrease from 48 seconds per vehicle to 43.3 seconds per vehicle during the AM peak hour and decrease from 58.7 seconds per vehicle to 57.3 seconds per vehicle in the PM peak hour, which is very close to what is considered an acceptable level of service.
    - The intersections of **Apartment Driveway & Lincoln Drive and AJ's Driveway & Lincoln Drive** experience delays in the northbound left turn approach and southbound left turn. Both of these approaches and driveways are driveways for AJ's Fine Foods and the existing Lincoln Apartments. The addition of Smoke Tree Resort is not the cause of these delays, which remains consistent with the existing condition.

- The intersection of **Scottsdale Road & Lincoln Drive** is expected to experience delay on the eastbound and westbound approaches during both the AM and PM peak hours for both the no build and full build scenarios. The intersection is expected to operate at an overall acceptable level of service (LOS D or better) during both the AM and PM peak hours of both scenarios, however, the eastbound and westbound approach delay could be improved by increasing the eastbound phase from 30 seconds to 32 seconds and increasing the westbound phase from 13 seconds to 21 seconds. This change is expected to decrease the overall intersection delay from 46.4 seconds per vehicle to 25 seconds per vehicle in the AM peak and increase the overall intersection delay from 44.9 seconds per vehicle to 52.1 seconds per vehicle in the PM peak hour. Although the PM peak hour overall intersection delay is expected to increase, the individual approach delays for the eastbound and westbound decrease significantly. The eastbound approach is expected to decrease from 82.8 seconds per vehicle to 16 seconds per vehicle and the westbound approach is expected to decrease from 63.8 seconds per vehicle to 23.7 seconds per vehicle during the PM peak hour.
- The intersection of **Quail Run Road and Access A** reports a delay of zero seconds using the HCM 6th edition methodology. No LOS is reported in the included appendices, however zero seconds of delay would yield an LOS of A, shown in the table.

Horizon year 2025

- The results of the 2025 horizon year Synchro analysis summarized in **Table 7** indicates that all study intersections are anticipated to experience an acceptable level of service, with the exception of the following intersections:
  - The intersections of **Apartment Driveway & Lincoln Drive and AJ's Driveway & Lincoln Drive** experience delays in the northbound left turn approach and southbound left turn. Both of these approaches and driveways are driveways for AJ's Fine Foods and the existing Lincoln Apartments. The addition of Smoke Tree Resort is not the cause of these delays, which remains consistent with the existing condition.
  - The intersection of **Scottsdale Road & Lincoln Drive** is expected to experience delay on the southbound, eastbound and westbound approaches during both the AM and PM peak hours for both the no build and full build scenarios. By decreasing the cycle length from 130 seconds to 120 seconds and optimizing the green times, the overall intersection delay is expected to decrease from 76 seconds per vehicle to 58.2 seconds per vehicle during the AM peak hour and decrease from 62.7 seconds per vehicle to 57.7 seconds per vehicle during the PM peak hour. Although this mitigation measure is expected to decrease the approach delays and the overall intersection delay, if this signal is coordinated with any others along Scottsdale Road, changing the cycle length will interfere with the coordination and would not be recommended. The City of

Scottsdale has stated that they have plans to change the eastbound approach configuration to dual left turn lanes and a shared through/right turn lane. It is not known when this change will occur, but it could improve the delay if the intersection is retimed.

- The intersection of **Quail Run Road and Access A** reports a delay of zero seconds using the HCM 6th edition methodology. No LOS is reported in the included appendices, however zero seconds of delay would yield an LOS of A, shown in the table.

Queue Storage and Sight Distance

- According to the CivTech study done for the Ritz Carlton, the newly signalized intersection of Quail Run Road and Lincoln Drive will have eastbound/westbound left turn lanes and a westbound right turn lane striped with 150 feet of storage each. While 150 feet is being proposed due to the current development agreement with Five Star Development for the Ritz Carlton, less is required to meet the recommended AASHTO length. The recommended storage lengths are provided for horizon year 2025 using the total traffic projections.
  - The Smoke Tree Resort is requesting a new full access driveway located approximately 80 feet west of the eastern most property line. The Town of Paradise Valley has stated that an eastbound right turn deceleration lane is required at this driveway. Using AASHTO methodology only 25 feet of storage is required, however, 50 feet is the minimum that should be recommended per AASHTO standards with a 90 foot taper.
- There are no existing obstructions to sight distance within the project intersections or along the included corners of the proposed intersection. Adequate site distance must be provided at the intersections to allow safe left and right turning movements from the development
  - The contractor should ensure that sight visibility is provided at all proposed intersections according to the distances and that sight triangles at public intersections are maintained according to the Town Code. All vegetation and trees should be maintained according to Town of Paradise Valley regulations.

LIST OF REFERENCES

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

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

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

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

Trip Generation Handbook, 3nd *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: 2020 PEAK HOUR ANALYSIS
APPENDIX H: 2025 PEAK HOUR ANALYSIS
APPENDIX I: QUEUE STORAGE ANALYSIS
APPENDIX J: 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: **Paul Mood, Town of Paradise Valley**

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

Reviewed Date: 01/03/2019
CivTech Received Date: 02/08/2019
CivTech Entered Date: 02/11/2019
CivTech Response Date: 02/11/2019

APPENDIX B

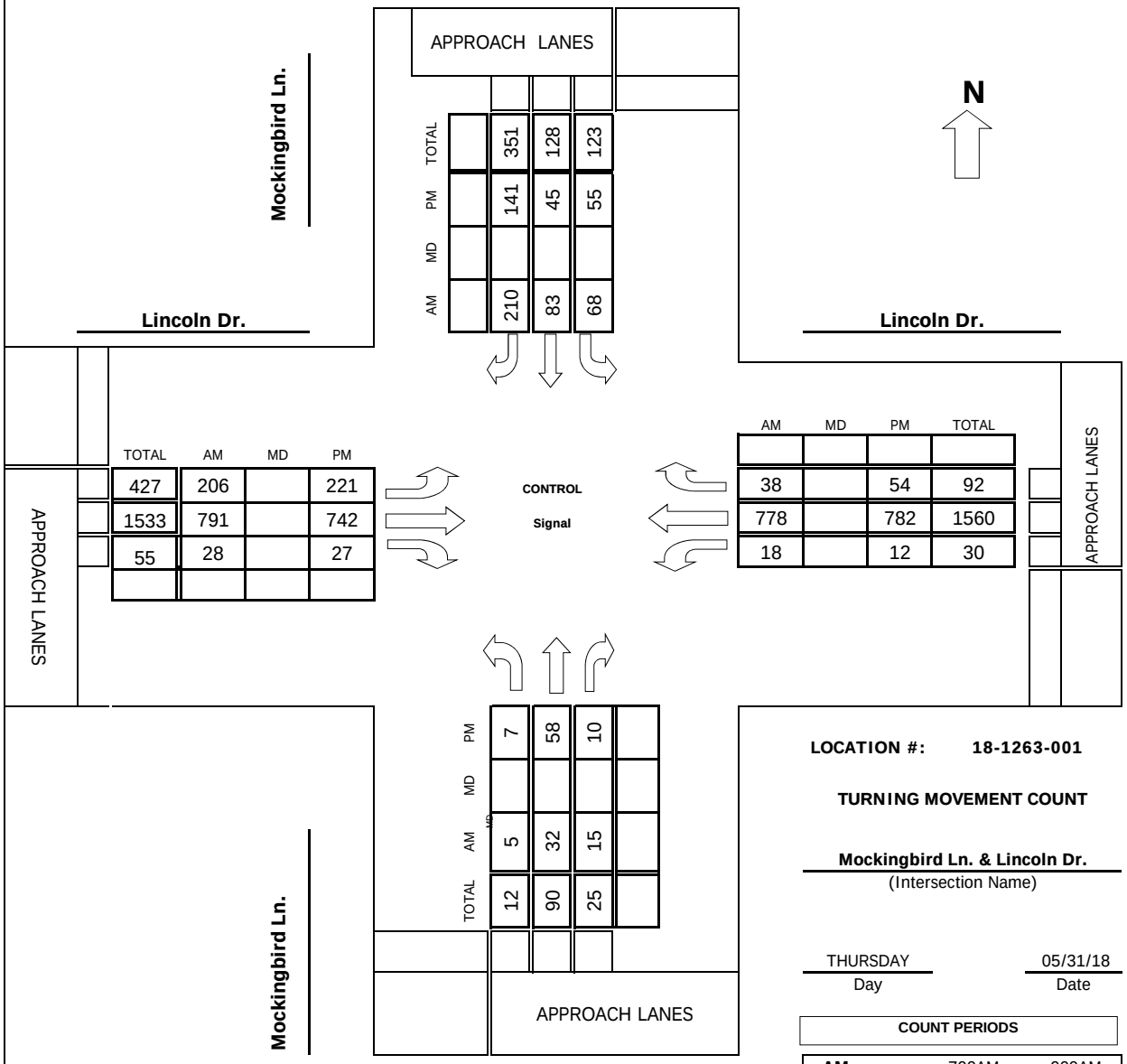
EXISTING TRAFFIC COUNTS

Intersection Turning Movement
Prepared by:

FIELD DATA SERVICES OF ARIZONA, INC.
520.316.6745

Project #: 18-1263-001

TMC SUMMARY OF Mockingbird Ln. & Lincoln Dr.



LOCATION #: 18-1263-001

TURNING MOVEMENT COUNT

Mockingbird Ln. & Lincoln Dr.
(Intersection Name)

THURSDAY — Day
05/31/18 — Date

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

AM PEAK HOUR 745 AM

NOON PEAK HOUR

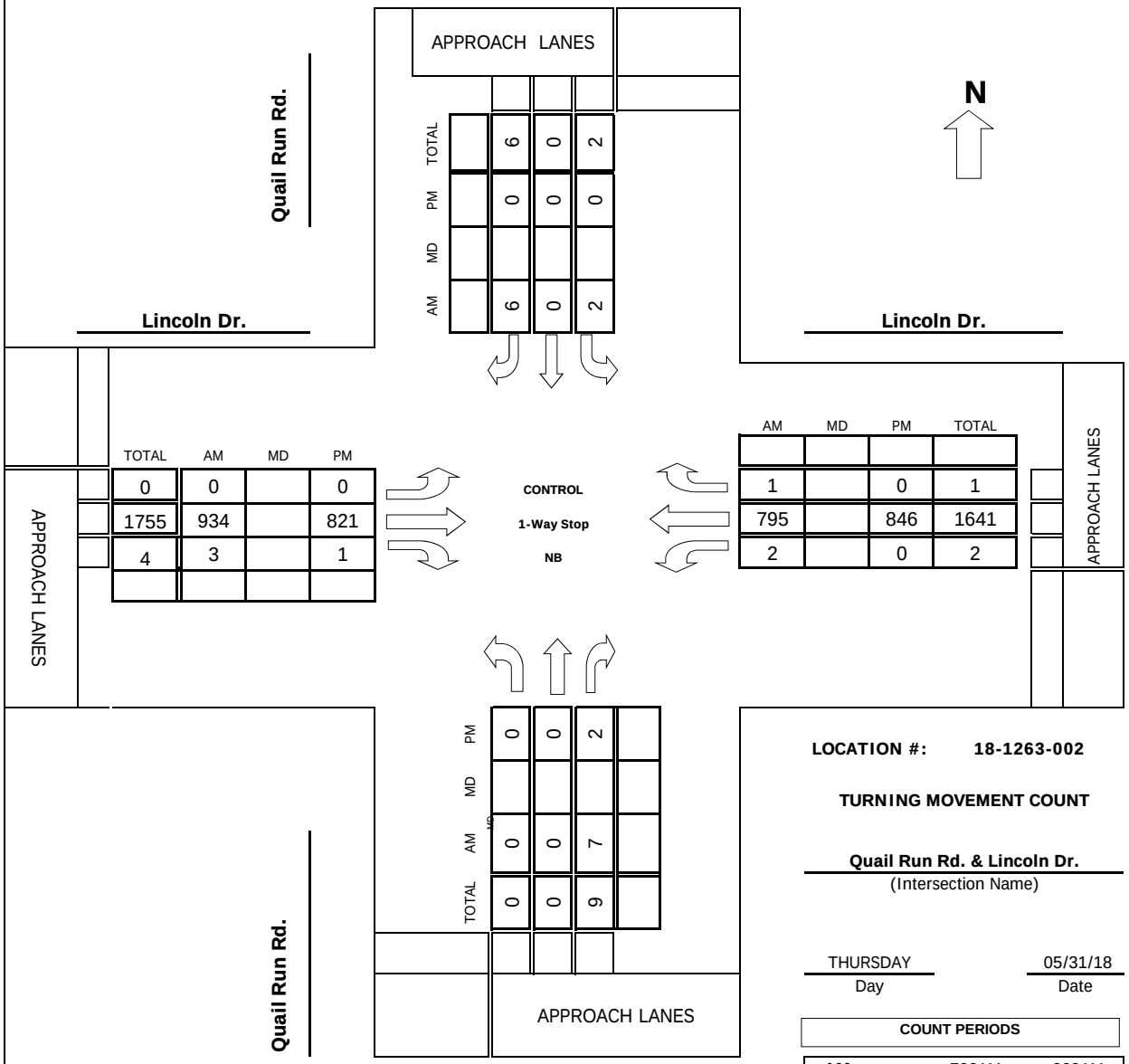
PM PEAK HOUR 430 PM

Intersection Turning Movement
Prepared by:

FIELD DATA SERVICES OF ARIZONA, INC.
520.316.6745

Project #: 18-1263-002

TMC SUMMARY OF Quail Run Rd. & Lincoln Dr.



LOCATION #: 18-1263-002

TURNING MOVEMENT COUNT

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

THURSDAY (Day) 05/31/18 (Date)

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

AM PEAK HOUR 800 AM

NOON PEAK HOUR

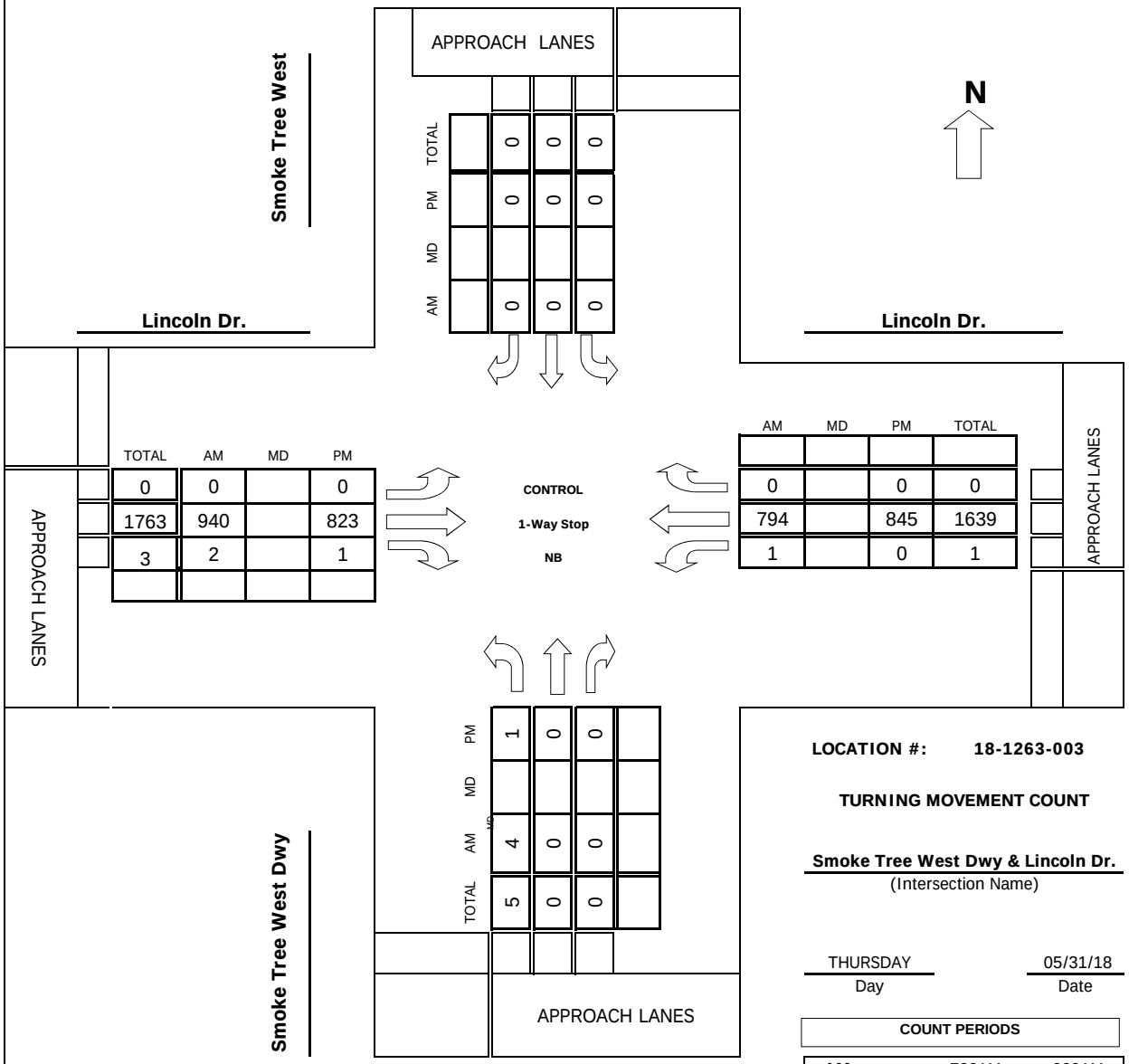
PM PEAK HOUR 445 PM

Intersection Turning Movement
Prepared by:

FIELD DATA SERVICES OF ARIZONA, INC.
520.316.6745

Project #: 18-1263-003

TMC SUMMARY OF Smoke Tree West Dwy & Lincoln Dr.



LOCATION #: 18-1263-003

TURNING MOVEMENT COUNT

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

THURSDAY — Day
05/31/18 — Date

COUNT PERIODS

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

AM PEAK HOUR 800 AM

NOON PEAK HOUR

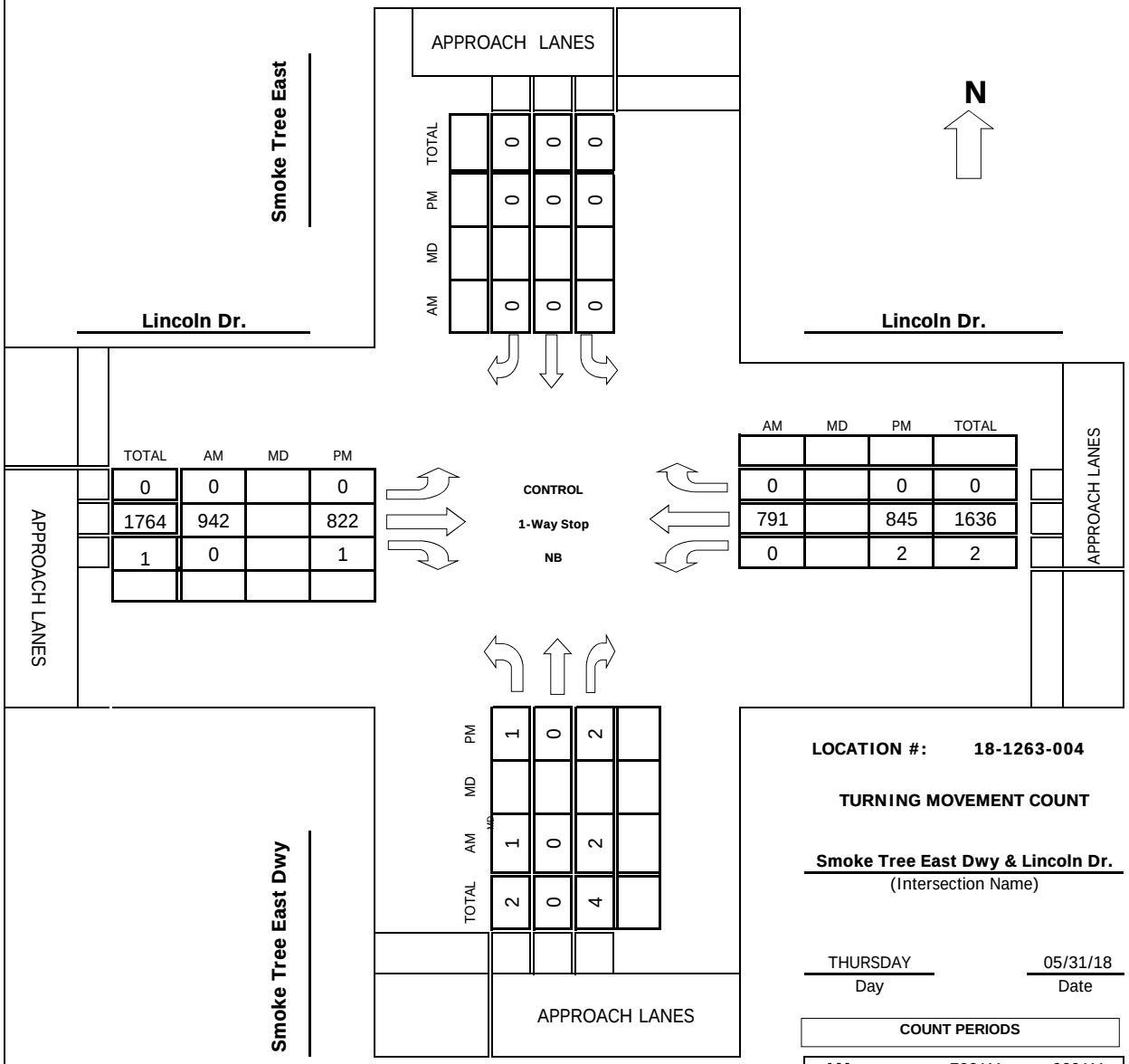
PM PEAK HOUR 445 PM

Intersection Turning Movement
Prepared by:

FIELD DATA SERVICES OF ARIZONA, INC.
520.316.6745

Project #: 18-1263-004

TMC SUMMARY OF Smoke Tree East Dwy & Lincoln Dr.



LOCATION #: 18-1263-004

TURNING MOVEMENT COUNT

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

THURSDAY (Day) 05/31/18 (Date)

COUNT PERIODS

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

AM PEAK HOUR 800 AM

NOON PEAK HOUR

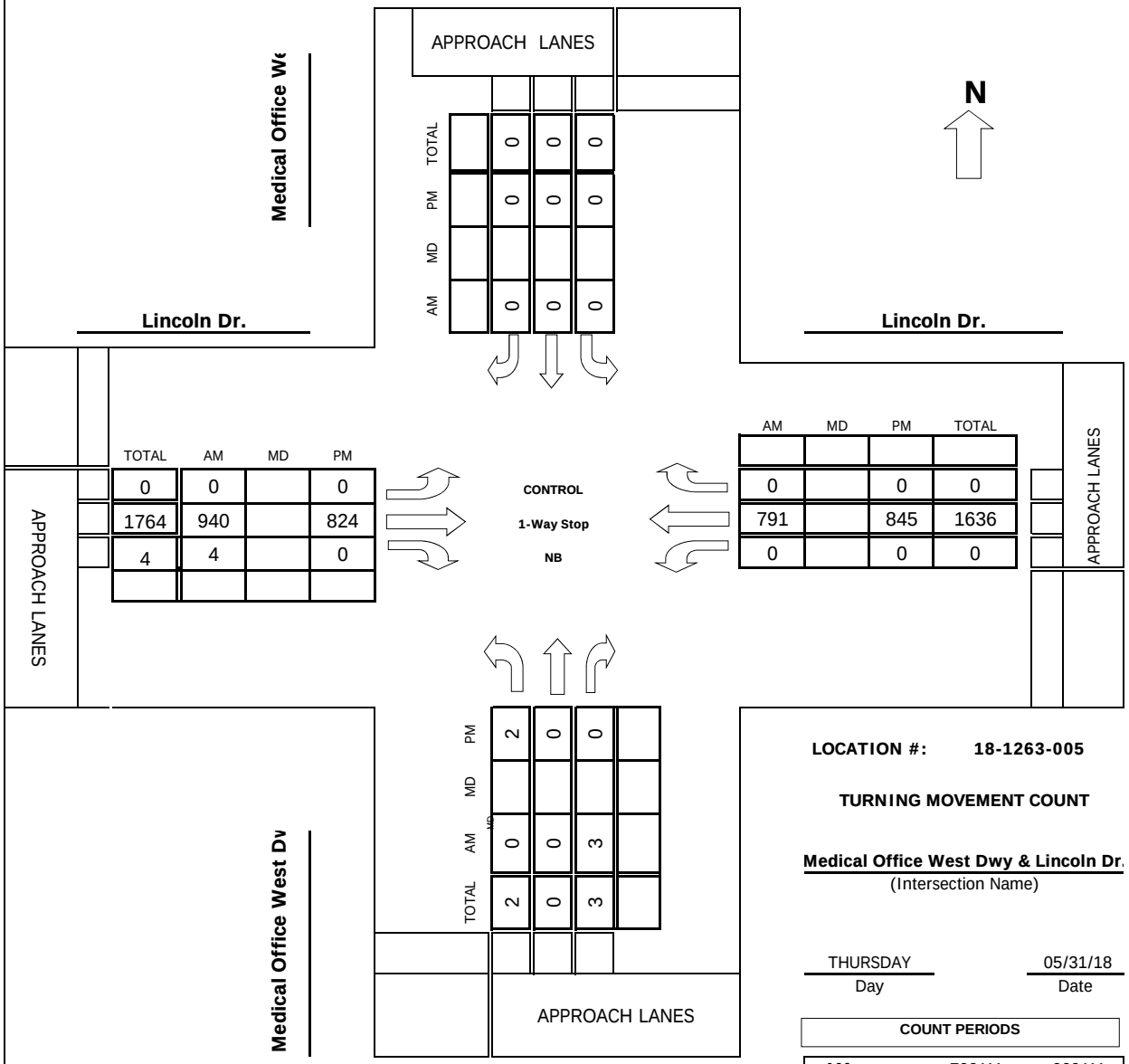
PM PEAK HOUR 445 PM

Intersection Turning Movement
Prepared by:

FIELD DATA SERVICES OF ARIZONA, INC.
520.316.6745

Project #: 18-1263-005

TMC SUMMARY OF Medical Office West Dwy & Lincoln Dr.



LOCATION #: 18-1263-005

TURNING MOVEMENT COUNT

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

THURSDAY — Day
05/31/18 — Date

COUNT PERIODS

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

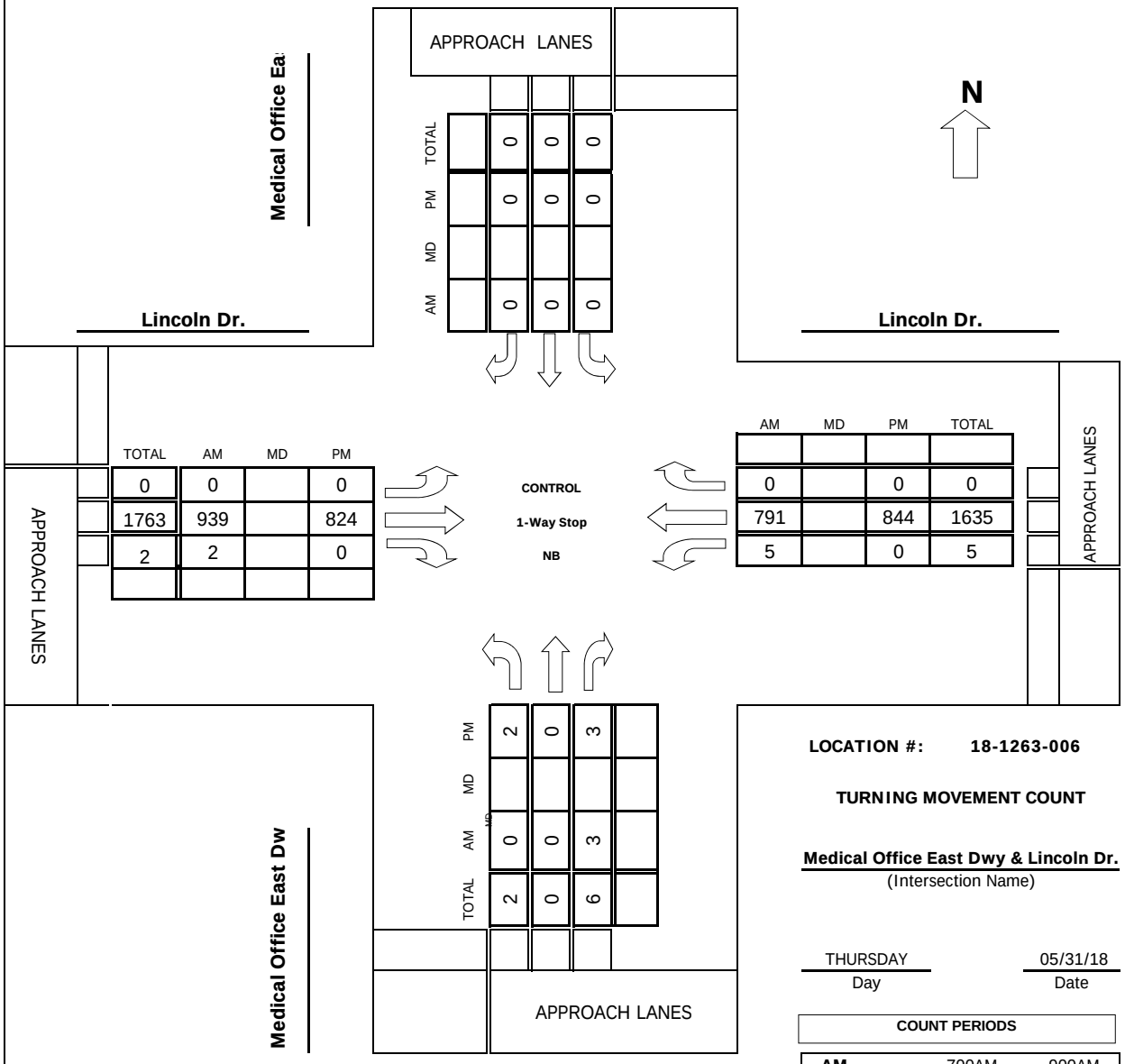
AM PEAK HOUR: 800 AM
NOON PEAK HOUR:
PM PEAK HOUR: 445 PM

Intersection Turning Movement
Prepared by:

FIELD DATA SERVICES OF ARIZONA, INC.
520.316.6745

Project #: 18-1263-006

TMC SUMMARY OF Medical Office East Dwy & Lincoln Dr.



LOCATION #: 18-1263-006

TURNING MOVEMENT COUNT

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

THURSDAY (Day) 05/31/18 (Date)

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

AM PEAK HOUR 800 AM

NOON PEAK HOUR

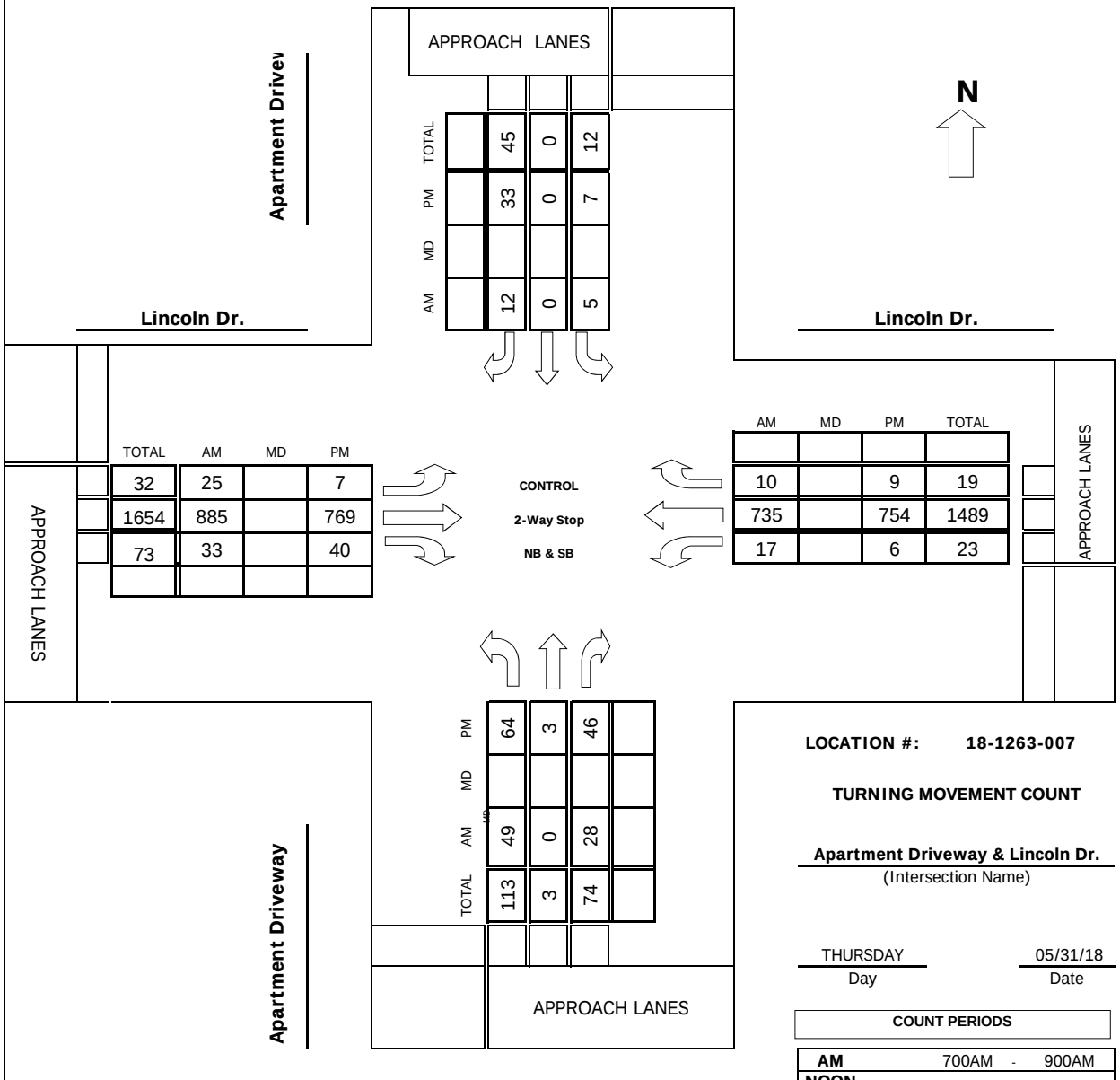
PM PEAK HOUR 445 PM

Intersection Turning Movement
Prepared by:

FIELD DATA SERVICES OF ARIZONA, INC.
520.316.6745

Project #: 18-1263-007

TMC SUMMARY OF Apartment Driveway & Lincoln Dr.



LOCATION #: 18-1263-007

TURNING MOVEMENT COUNT

Apartment Driveway & Lincoln Dr.
(Intersection Name)

THURSDAY (Day) 05/31/18 (Date)

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

AM PEAK HOUR 800 AM

NOON PEAK HOUR

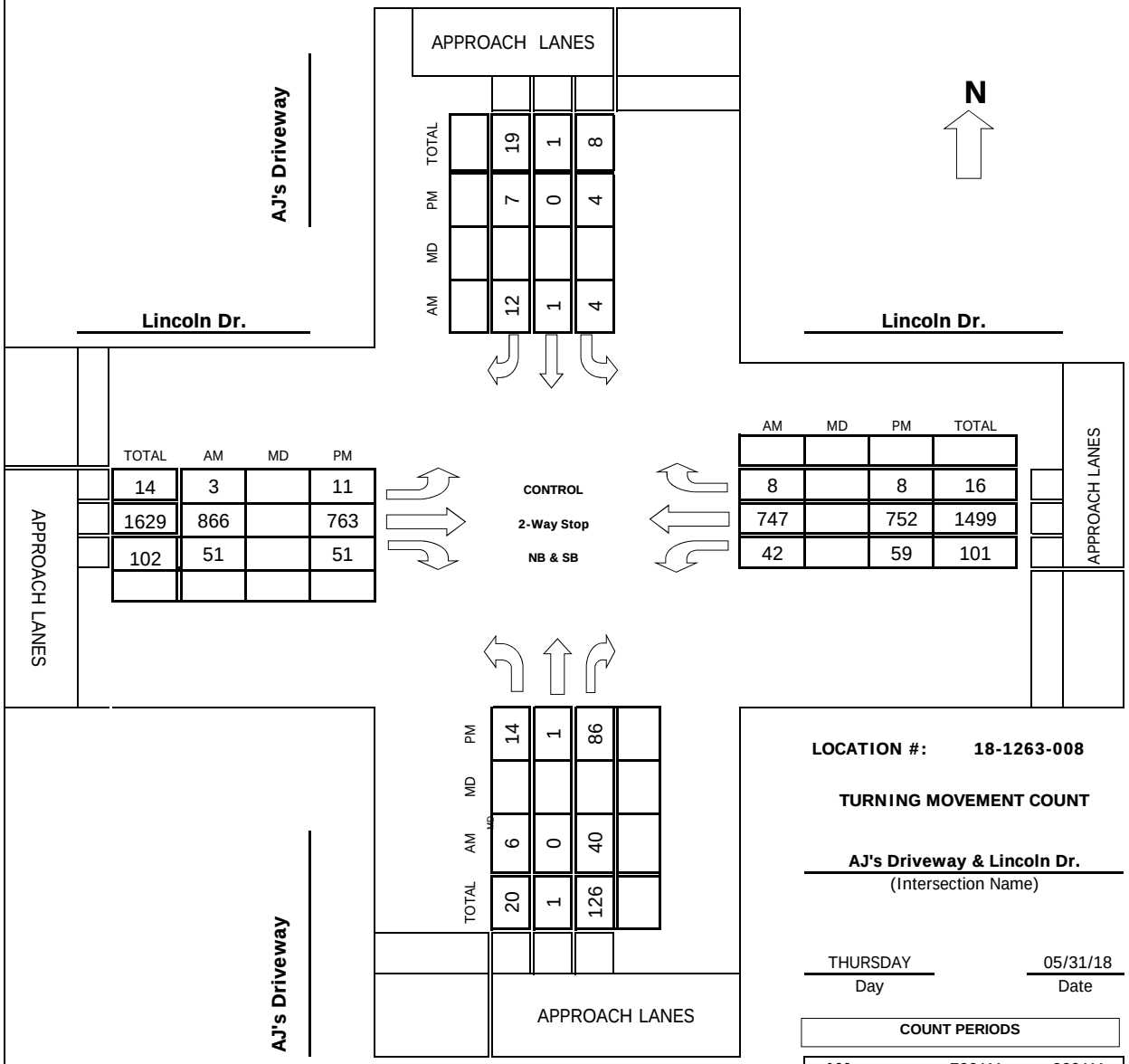
PM PEAK HOUR 430 PM

Intersection Turning Movement
Prepared by:

FIELD DATA SERVICES OF ARIZONA, INC.
520.316.6745

Project #: 18-1263-008

TMC SUMMARY OF AJ's Driveway & Lincoln Dr.



LOCATION #: 18-1263-008

TURNING MOVEMENT COUNT

AJ's Driveway & Lincoln Dr.
(Intersection Name)

THURSDAY — Day
05/31/18 — Date

COUNT PERIODS

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

AM PEAK HOUR 800 AM

NOON PEAK HOUR

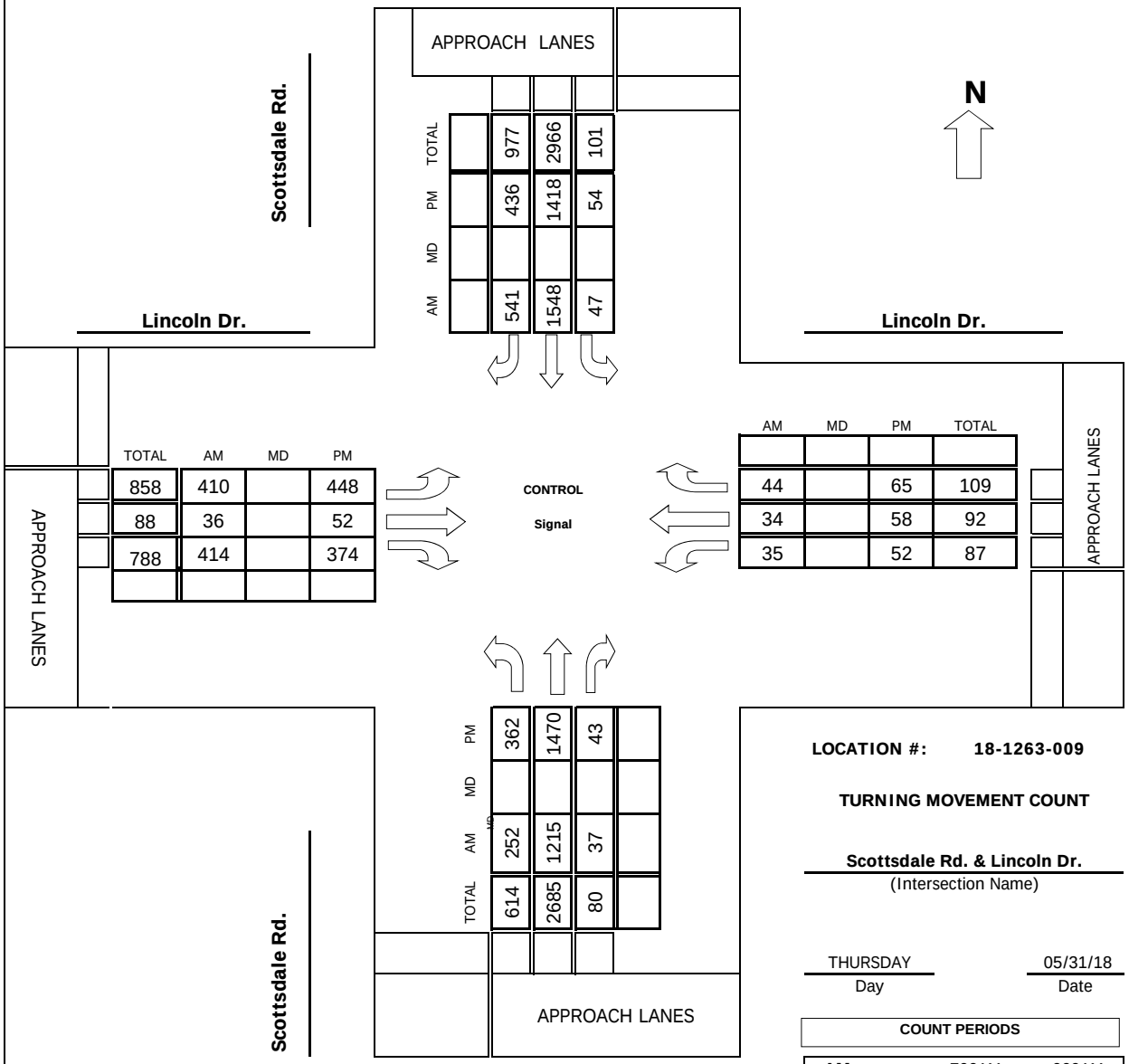
PM PEAK HOUR 430 PM

Intersection Turning Movement
Prepared by:

FIELD DATA SERVICES OF ARIZONA, INC.
520.316.6745

Project #: 18-1263-009

TMC SUMMARY OF Scottsdale Rd. & Lincoln Dr.



LOCATION #: 18-1263-009

TURNING MOVEMENT COUNT

Scottsdale Rd. & Lincoln Dr.
(Intersection Name)

THURSDAY (Day) 05/31/18 (Date)

COUNT PERIODS

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

AM PEAK HOUR 745 AM

NOON PEAK HOUR

PM PEAK HOUR 430 PM

APPENDIX C

EXISTING PEAK HOUR ANALYSIS

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	212	815	19	801	5	33	70	85
Future Volume (vph)	212	815	19	801	5	33	70	85
Turn Type	pm+pt	NA	Perm	NA	Perm	NA	pm+pt	NA
Protected Phases	1	6		2		4	3	8
Permitted Phases	6		2		4		8	
Detector Phase	1	6	2	2	4	4	3	8
Switch Phase								
Minimum Initial (s)	3.5	15.0	15.0	15.0	7.0	7.0	3.5	7.0
Minimum Split (s)	8.0	27.0	27.0	27.0	33.5	33.5	8.0	33.5
Total Split (s)	27.0	77.0	50.0	50.0	44.0	44.0	9.0	53.0
Total Split (%)	20.8%	59.2%	38.5%	38.5%	33.8%	33.8%	6.9%	40.8%
Yellow Time (s)	3.0	4.5	4.5	4.5	4.0	4.0	3.0	4.0
All-Red Time (s)	1.0	1.5	1.5	1.5	2.5	2.5	1.0	2.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	6.0	6.0	6.0	6.5	6.5	4.0	6.5
Lead/Lag	Lead		Lag	Lag	Lag	Lag	Lead	
Lead-Lag Optimize?	Yes		Yes	Yes	Yes	Yes	Yes	
Recall Mode	None	C-Max	C-Max	C-Max	None	None	None	None
Act Effct Green (s)	95.1	93.1	74.8	74.8	17.2	17.2	26.9	24.4
Actuated g/C Ratio	0.73	0.72	0.58	0.58	0.13	0.13	0.21	0.19
v/c Ratio	0.51	0.37	0.06	0.46	0.10	0.22	0.31	0.83
Control Delay	10.5	8.4	18.2	19.1	49.2	36.8	43.6	50.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	10.5	8.4	18.2	19.1	49.2	36.8	43.6	50.8
LOS	B	A	B	B	D	D	D	D
Approach Delay		8.8		19.0		38.1		49.4
Approach LOS		A		B		D		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: 80		
Control Type: Actuated-Coordinated		
Maximum v/c Ratio: 0.83		
Intersection Signal Delay: 19.7	Intersection LOS: B	
Intersection Capacity Utilization 69.1%	ICU Level of Service C	
Analysis Period (min) 15		

Splits and Phases: 1: Mockingbird Ln & Lincoln Drive

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	212	815	29	19	801	39	5	33	15	70	85	216
Future Volume (veh/h)	212	815	29	19	801	39	5	33	15	70	85	216
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	236	906	32	21	890	43	6	37	17	78	94	240
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	439	2371	84	393	1984	96	88	191	88	301	106	270
Arrive On Green	0.07	0.68	0.68	0.58	0.58	0.58	0.16	0.16	0.16	0.04	0.23	0.23
Sat Flow, veh/h	1781	3501	124	597	3450	167	1046	1213	557	1781	466	1190
Grp Volume(v), veh/h	236	460	478	21	458	475	6	0	54	78	0	334
Grp Sat Flow(s),veh/h/ln	1781	1777	1848	597	1777	1840	1046	0	1770	1781	0	1656
Q Serve(g_s), s	6.7	14.6	14.6	2.1	19.2	19.2	0.7	0.0	3.4	4.7	0.0	25.4
Cycle Q Clear(g_c), s	6.7	14.6	14.6	3.4	19.2	19.2	17.1	0.0	3.4	4.7	0.0	25.4
Prop In Lane	1.00		0.07	1.00		0.09	1.00		0.31	1.00		0.72
Lane Grp Cap(c), veh/h	439	1203	1252	393	1022	1058	88	0	279	301	0	375
V/C Ratio(X)	0.54	0.38	0.38	0.05	0.45	0.45	0.07	0.00	0.19	0.26	0.00	0.89
Avail Cap(c_a), veh/h	627	1203	1252	393	1022	1058	225	0	511	301	0	592
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	11.4	9.1	9.1	12.8	15.8	15.8	61.4	0.0	47.6	42.4	0.0	48.7
Incr Delay (d2), s/veh	1.0	0.9	0.9	0.3	1.4	1.4	0.3	0.0	0.3	0.5	0.0	10.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.7	5.7	6.0	0.3	8.1	8.4	0.2	0.0	1.6	2.1	0.0	11.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	12.4	10.1	10.0	13.0	17.2	17.2	61.7	0.0	47.9	42.9	0.0	58.9
LnGrp LOS	B	B	B	B	B	B	E	A	D	D	A	E
Approach Vol, veh/h		1174			954			60			412	
Approach Delay, s/veh		10.5			17.1			49.3			55.8	
Approach LOS		B			B			D			E	

Timer - Assigned Phs	1	2	3	4		6		8				
Phs Duration (G+Y+Rc), s	13.3	80.8	9.0	27.0		94.0		36.0				
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	8.7	21.2	6.7	19.1		16.6		27.4				
Green Ext Time (p_c), s	0.6	6.7	0.0	0.2		7.6		2.1				

Intersection Summary		
HCM 6th Ctrl Delay	21.0	
HCM 6th LOS	C	

Intersection	
Int Delay, s/veh	0.1

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

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	911	0	0	1072	0	0	1530	1986	536	1450	1987	456
Stage 1	-	-	-	-	-	-	1071	1071	-	915	915	-
Stage 2	-	-	-	-	-	-	459	915	-	535	1072	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	743	-	-	646	-	-	80	60	489	92	60	551
Stage 1	-	-	-	-	-	-	236	295	-	294	350	-
Stage 2	-	-	-	-	-	-	551	350	-	497	295	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	743	-	-	646	-	-	79	60	489	90	60	551
Mov Cap-2 Maneuver	-	-	-	-	-	-	79	60	-	90	60	-
Stage 1	-	-	-	-	-	-	236	295	-	294	349	-
Stage 2	-	-	-	-	-	-	543	349	-	489	295	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0	12.5	20.4
HCM LOS			B	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	489	743	-	-	646	-	-	242
HCM Lane V/C Ratio	0.016	-	-	-	0.003	-	-	0.037
HCM Control Delay (s)	12.5	0	-	-	10.6	-	-	20.4
HCM Lane LOS	B	A	-	-	B	-	-	C
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0.1

Intersection	
Int Delay, s/veh	0

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

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1078	0	1534	539
Stage 1	-	-	-	-	1077	-
Stage 2	-	-	-	-	457	-
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	-	-	643	-	107	487
Stage 1	-	-	-	-	288	-
Stage 2	-	-	-	-	604	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	643	-	107	487
Mov Cap-2 Maneuver	-	-	-	-	218	-
Stage 1	-	-	-	-	287	-
Stage 2	-	-	-	-	604	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	21.9
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	218	-	-	643	-
HCM Lane V/C Ratio	0.02	-	-	0.002	-
HCM Control Delay (s)	21.9	-	-	10.6	-
HCM Lane LOS	C	-	-	B	-
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Intersection	
Int Delay, s/veh	0

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

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1078	0	1531	539
Stage 1	-	-	-	-	1078	-
Stage 2	-	-	-	-	453	-
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	-	-	643	-	108	487
Stage 1	-	-	-	-	288	-
Stage 2	-	-	-	-	607	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	643	-	108	487
Mov Cap-2 Maneuver	-	-	-	-	219	-
Stage 1	-	-	-	-	288	-
Stage 2	-	-	-	-	607	-

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

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	346	-	-	643	-
HCM Lane V/C Ratio	0.01	-	-	-	-
HCM Control Delay (s)	15.5	-	-	0	-
HCM Lane LOS	C	-	-	A	-
HCM 95th %tile Q(veh)	0	-	-	0	-

Intersection	
Int Delay, s/veh	0

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

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1080	0	1531	540
Stage 1	-	-	-	-	1078	-
Stage 2	-	-	-	-	453	-
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	-	-	641	-	108	486
Stage 1	-	-	-	-	288	-
Stage 2	-	-	-	-	607	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	641	-	108	486
Mov Cap-2 Maneuver	-	-	-	-	219	-
Stage 1	-	-	-	-	288	-
Stage 2	-	-	-	-	607	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	12.5
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	486	-	-	641	-
HCM Lane V/C Ratio	0.007	-	-	-	-
HCM Control Delay (s)	12.5	-	-	0	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0	-	-	0	-

Intersection	
Int Delay, s/veh	0.1

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

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1076	0	1540	538
Stage 1	-	-	-	-	1075	-
Stage 2	-	-	-	-	465	-
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	-	-	644	-	106	488
Stage 1	-	-	-	-	289	-
Stage 2	-	-	-	-	599	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	644	-	105	488
Mov Cap-2 Maneuver	-	-	-	-	216	-
Stage 1	-	-	-	-	286	-
Stage 2	-	-	-	-	599	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	12.4
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	488	-	-	644	-
HCM Lane V/C Ratio	0.007	-	-	0.009	-
HCM Control Delay (s)	12.4	-	-	10.6	-
HCM Lane LOS	B	-	-	B	-
HCM 95th %tile Q(veh)	0	-	-	0	-

Intersection	
Int Delay, s/veh	5.8

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

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	852	0	0	1051	0	0	1551	1982	526	1452	-	426
Stage 1	-	-	-	-	-	-	1090	1090	-	887	-	-
Stage 2	-	-	-	-	-	-	461	892	-	565	-	-
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	783	-	-	658	-	-	77	61	496	92	0	577
Stage 1	-	-	-	-	-	-	230	289	-	305	0	-
Stage 2	-	-	-	-	-	-	550	358	-	477	0	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	783	-	-	658	-	-	71	57	496	82	-	577
Mov Cap-2 Maneuver	-	-	-	-	-	-	71	57	-	82	-	-
Stage 1	-	-	-	-	-	-	221	278	-	294	-	-
Stage 2	-	-	-	-	-	-	521	347	-	429	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.3	0.2	124.4	23.4
HCM LOS			F	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	104	783	-	-	658	-	-	82	577
HCM Lane V/C Ratio	0.844	0.037	-	-	0.03	-	-	0.068	0.023
HCM Control Delay (s)	124.4	9.8	-	-	10.6	-	-	52.1	11.4
HCM Lane LOS	F	A	-	-	B	-	-	F	B
HCM 95th %tile Q(veh)	4.8	0.1	-	-	0.1	-	-	0.2	0.1

Intersection	
Int Delay, s/veh	1

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

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	863	0	0	1050	0	0	1551	1986	525	1457	2011	432
Stage 1	-	-	-	-	-	-	1027	1027	-	955	955	-
Stage 2	-	-	-	-	-	-	524	959	-	502	1056	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	775	-	-	659	-	-	77	60	497	91	58	572
Stage 1	-	-	-	-	-	-	251	310	-	278	335	-
Stage 2	-	-	-	-	-	-	504	334	-	520	300	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	775	-	-	659	-	-	70	55	497	78	54	572
Mov Cap-2 Maneuver	-	-	-	-	-	-	70	55	-	78	54	-
Stage 1	-	-	-	-	-	-	250	309	-	277	311	-
Stage 2	-	-	-	-	-	-	455	310	-	471	299	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.6	20.9	22
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	279	775	-	-	659	-	-	78	572
HCM Lane V/C Ratio	0.187	0.004	-	-	0.073	-	-	0.057	0.023
HCM Control Delay (s)	20.9	9.7	-	-	10.9	-	-	53.9	11.4
HCM Lane LOS	C	A	-	-	B	-	-	F	B
HCM 95th %tile Q(veh)	0.7	0	-	-	0.2	-	-	0.2	0.1

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

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

Splits and Phases: 9: Scottsdale Rd & Lincoln Dr

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	422	37	426	36	35	45	260	1251	38	48	1594	557
Future Volume (veh/h)	422	37	426	36	35	45	260	1251	38	48	1594	557
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	498	0	473	40	39	50	289	1390	42	53	1771	619
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	671	0	458	95	95	85	348	2336	71	68	2015	924
Arrive On Green	0.19	0.00	0.19	0.05	0.05	0.05	0.10	0.46	0.46	0.04	0.39	0.39
Sat Flow, veh/h	3563	0	1585	1781	1777	1585	3456	5093	154	1781	5106	1585
Grp Volume(v), veh/h	498	0	473	40	39	50	289	929	503	53	1771	619
Grp Sat Flow(s),veh/h/ln	1781	0	1585	1781	1777	1585	1728	1702	1843	1781	1702	1585
Q Serve(g_s), s	17.1	0.0	24.5	2.8	2.8	4.0	10.7	26.4	26.4	3.8	41.8	34.7
Cycle Q Clear(g_c), s	17.1	0.0	24.5	2.8	2.8	4.0	10.7	26.4	26.4	3.8	41.8	34.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.08	1.00		1.00
Lane Grp Cap(c), veh/h	671	0	458	95	95	85	348	1561	845	68	2015	924
V/C Ratio(X)	0.74	0.00	1.03	0.42	0.41	0.59	0.83	0.60	0.60	0.78	0.88	0.67
Avail Cap(c_a), veh/h	671	0	458	101	101	90	651	1762	954	119	2015	924
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	49.8	0.0	46.2	59.6	59.6	60.1	57.4	26.2	26.2	62.0	36.5	18.5
Incr Delay (d2), s/veh	3.9	0.0	50.4	1.1	1.1	5.4	2.0	0.2	0.4	6.9	5.9	3.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.0	0.0	21.1	1.3	1.3	1.7	4.8	10.7	11.6	1.9	18.2	20.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	53.7	0.0	96.6	60.7	60.6	65.5	59.3	26.4	26.6	68.8	42.3	22.4
LnGrp LOS	D	A	F	E	E	E	E	C	C	E	D	C
Approach Vol, veh/h		971			129			1721			2443	
Approach Delay, s/veh		74.6			62.5			32.0			37.9	
Approach LOS		E			E			C			D	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	10.3	65.3		30.0	18.6	57.0		12.5				
Change Period (Y+Rc), s	* 5.3	5.7		5.5	5.5	5.7		5.6				
Max Green Setting (Gmax), s	* 8.7	67.3		24.5	24.5	51.3		7.4				
Max Q Clear Time (g_c+I1), s	5.8	28.4		26.5	12.7	43.8		6.0				
Green Ext Time (p_c), s	0.0	2.1		0.0	0.4	2.5		0.0				

Intersection Summary			
HCM 6th Ctrl Delay		43.3	
HCM 6th LOS		D	

Notes

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

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

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

Splits and Phases: 1: Mockingbird Ln & Lincoln Drive

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	228	764	28	12	805	56	7	60	10	57	46	145
Future Volume (veh/h)	228	764	28	12	805	56	7	60	10	57	46	145
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	253	849	31	13	894	62	8	67	11	63	51	161
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	484	2635	96	471	2222	154	84	139	23	173	59	188
Arrive On Green	0.06	0.75	0.75	0.66	0.66	0.66	0.09	0.09	0.09	0.03	0.15	0.15
Sat Flow, veh/h	1781	3497	128	631	3371	234	1170	1567	257	1781	396	1250
Grp Volume(v), veh/h	253	431	449	13	471	485	8	0	78	63	0	212
Grp Sat Flow(s),veh/h/ln	1781	1777	1847	631	1777	1828	1170	0	1824	1781	0	1645
Q Serve(g_s), s	5.6	10.3	10.3	0.9	16.0	16.0	0.9	0.0	5.3	4.0	0.0	16.3
Cycle Q Clear(g_c), s	5.6	10.3	10.3	0.9	16.0	16.0	9.2	0.0	5.3	4.0	0.0	16.3
Prop In Lane	1.00		0.07	1.00		0.13	1.00		0.14	1.00		0.76
Lane Grp Cap(c), veh/h	484	1339	1392	471	1171	1205	84	0	162	173	0	247
V/C Ratio(X)	0.52	0.32	0.32	0.03	0.40	0.40	0.10	0.00	0.48	0.36	0.00	0.86
Avail Cap(c_a), veh/h	740	1339	1392	471	1171	1205	228	0	386	173	0	449
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	7.4	5.2	5.2	7.7	10.3	10.3	62.3	0.0	56.4	50.9	0.0	53.9
Incr Delay (d2), s/veh	0.9	0.6	0.6	0.1	1.0	1.0	0.5	0.0	2.2	1.3	0.0	8.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.0	3.7	3.8	0.1	6.4	6.6	0.3	0.0	2.5	1.9	0.0	7.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	8.3	5.8	5.8	7.8	11.3	11.3	62.8	0.0	58.6	52.1	0.0	62.3
LnGrp LOS	A	A	A	A	B	B	E	A	E	D	A	E
Approach Vol, veh/h		1133			969			86			275	
Approach Delay, s/veh		6.4			11.3			59.0			60.0	
Approach LOS		A			B			E			E	

Timer - Assigned Phs	1	2	3	4		6		8				
Phs Duration (G+Y+Rc), s	12.3	91.7	8.0	18.0		104.0		26.0				
Change Period (Y+Rc), s	4.0	6.0	4.0	6.5		6.0		6.5				
Max Green Setting (Gmax), s	27.0	51.0	4.0	27.5		82.0		35.5				
Max Q Clear Time (g_c+I1), s	7.6	18.0	6.0	11.2		12.3		18.3				
Green Ext Time (p_c), s	0.7	7.5	0.0	0.3		6.9		1.1				

Intersection Summary		
HCM 6th Ctrl Delay	16.1	
HCM 6th LOS	B	

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	846	1	0	871	0	0	0	2	0	0	0
Future Vol, veh/h	0	846	1	0	871	0	0	0	2	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	25	-	-	25	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	940	1	0	968	0	0	0	2	0	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	968	0	0	941	0	0	1425	1909	471	1438	1909	484
Stage 1	-	-	-	-	-	-	941	941	-	968	968	-
Stage 2	-	-	-	-	-	-	484	968	-	470	941	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	707	-	-	724	-	-	96	68	539	94	68	529
Stage 1	-	-	-	-	-	-	283	340	-	273	330	-
Stage 2	-	-	-	-	-	-	533	330	-	543	340	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	707	-	-	724	-	-	96	68	539	94	68	529
Mov Cap-2 Maneuver	-	-	-	-	-	-	96	68	-	94	68	-
Stage 1	-	-	-	-	-	-	283	340	-	273	330	-
Stage 2	-	-	-	-	-	-	533	330	-	541	340	-

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

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	539	707	-	-	724	-	-	-
HCM Lane V/C Ratio	0.004	-	-	-	-	-	-	-
HCM Control Delay (s)	11.7	0	-	-	0	-	-	0
HCM Lane LOS	B	A	-	-	A	-	-	A
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	-

Intersection	
Int Delay, s/veh	0

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

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	943	0	1427	472
Stage 1	-	-	-	-	943	-
Stage 2	-	-	-	-	484	-
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	-	-	723	-	126	538
Stage 1	-	-	-	-	339	-
Stage 2	-	-	-	-	585	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	723	-	126	538
Mov Cap-2 Maneuver	-	-	-	-	248	-
Stage 1	-	-	-	-	339	-
Stage 2	-	-	-	-	585	-

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

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	248	-	-	723	-
HCM Lane V/C Ratio	0.004	-	-	-	-
HCM Control Delay (s)	19.6	-	-	0	-
HCM Lane LOS	C	-	-	A	-
HCM 95th %tile Q(veh)	0	-	-	0	-

Intersection	
Int Delay, s/veh	0

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

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	942	0	1430	471
Stage 1	-	-	-	-	942	-
Stage 2	-	-	-	-	488	-
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	-	-	724	-	125	539
Stage 1	-	-	-	-	340	-
Stage 2	-	-	-	-	583	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	724	-	125	539
Mov Cap-2 Maneuver	-	-	-	-	247	-
Stage 1	-	-	-	-	339	-
Stage 2	-	-	-	-	583	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	14.4
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	387	-	-	724	-
HCM Lane V/C Ratio	0.009	-	-	0.003	-
HCM Control Delay (s)	14.4	-	-	10	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0	-	-	0	-

Intersection	
Int Delay, s/veh	0

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

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	943	0	1427	472
Stage 1	-	-	-	-	943	-
Stage 2	-	-	-	-	484	-
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	-	-	723	-	126	538
Stage 1	-	-	-	-	339	-
Stage 2	-	-	-	-	585	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	723	-	126	538
Mov Cap-2 Maneuver	-	-	-	-	248	-
Stage 1	-	-	-	-	339	-
Stage 2	-	-	-	-	585	-

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

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	248	-	-	723	-
HCM Lane V/C Ratio	0.009	-	-	-	-
HCM Control Delay (s)	19.6	-	-	0	-
HCM Lane LOS	C	-	-	A	-
HCM 95th %tile Q(veh)	0	-	-	0	-

Intersection	
Int Delay, s/veh	0

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

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	943	0	1426	472
Stage 1	-	-	-	-	943	-
Stage 2	-	-	-	-	483	-
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	-	-	723	-	126	538
Stage 1	-	-	-	-	339	-
Stage 2	-	-	-	-	586	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	723	-	126	538
Mov Cap-2 Maneuver	-	-	-	-	248	-
Stage 1	-	-	-	-	339	-
Stage 2	-	-	-	-	586	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	15
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	367	-	-	723	-
HCM Lane V/C Ratio	0.015	-	-	-	-
HCM Control Delay (s)	15	-	-	0	-
HCM Lane LOS	C	-	-	A	-
HCM 95th %tile Q(veh)	0	-	-	0	-

Intersection	
Int Delay, s/veh	7.6

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

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	873	0	0	926	0	0	1365	1806	463	1340	-	437
Stage 1	-	-	-	-	-	-	919	919	-	882	-	-
Stage 2	-	-	-	-	-	-	446	887	-	458	-	-
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	768	-	-	734	-	-	106	78	546	111	0	567
Stage 1	-	-	-	-	-	-	292	348	-	307	0	-
Stage 2	-	-	-	-	-	-	561	360	-	552	0	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	768	-	-	734	-	-	97	76	546	96	-	567
Mov Cap-2 Maneuver	-	-	-	-	-	-	97	76	-	96	-	-
Stage 1	-	-	-	-	-	-	289	345	-	304	-	-
Stage 2	-	-	-	-	-	-	519	356	-	489	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0.1	109.5	17.6
HCM LOS			F	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	144	768	-	-	734	-	-	96	567
HCM Lane V/C Ratio	0.895	0.01	-	-	0.009	-	-	0.081	0.067
HCM Control Delay (s)	109.5	9.7	-	-	10	-	-	45.8	11.8
HCM Lane LOS	F	A	-	-	A	-	-	E	B
HCM 95th %tile Q(veh)	6.1	0	-	-	0	-	-	0.3	0.2

Intersection	
Int Delay, s/veh	2.1

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

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	870	0	0	932	0	0	1494	1933	466	1463	-	435
Stage 1	-	-	-	-	-	-	927	927	-	1002	-	-
Stage 2	-	-	-	-	-	-	567	1006	-	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	770	-	-	730	-	-	85	65	543	90	0	569
Stage 1	-	-	-	-	-	-	289	345	-	260	0	-
Stage 2	-	-	-	-	-	-	476	317	-	550	0	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	770	-	-	730	-	-	77	58	543	67	-	569
Mov Cap-2 Maneuver	-	-	-	-	-	-	77	58	-	67	-	-
Stage 1	-	-	-	-	-	-	284	339	-	256	-	-
Stage 2	-	-	-	-	-	-	426	288	-	441	-	-

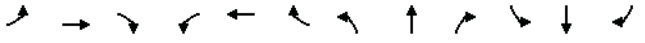
Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0.8	25.7	30
HCM LOS			D	D

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	287	770	-	-	730	-	-	67	569
HCM Lane V/C Ratio	0.403	0.016	-	-	0.093	-	-	0.066	0.014
HCM Control Delay (s)	25.7	9.8	-	-	10.4	-	-	62.5	11.4
HCM Lane LOS	D	A	-	-	B	-	-	F	B
HCM 95th %tile Q(veh)	1.9	0	-	-	0.3	-	-	0.2	0

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

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

Splits and Phases: 9: Scottsdale Rd & Lincoln Dr



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	461	54	385	54	60	67	373	1514	44	56	1461	449
Future Volume (veh/h)	461	54	385	54	60	67	373	1514	44	56	1461	449
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	555	0	428	60	67	74	414	1682	49	62	1623	499
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	671	0	516	101	101	90	473	2491	73	79	2015	924
Arrive On Green	0.19	0.00	0.19	0.06	0.06	0.06	0.14	0.49	0.49	0.04	0.39	0.39
Sat Flow, veh/h	3563	0	1585	1781	1777	1585	3456	5099	149	1781	5106	1585
Grp Volume(v), veh/h	555	0	428	60	67	74	414	1123	608	62	1623	499
Grp Sat Flow(s),veh/h/ln	1781	0	1585	1781	1777	1585	1728	1702	1844	1781	1702	1585
Q Serve(g_s), s	19.5	0.0	24.5	4.3	4.8	6.0	15.3	32.7	32.7	4.5	36.7	24.9
Cycle Q Clear(g_c), s	19.5	0.0	24.5	4.3	4.8	6.0	15.3	32.7	32.7	4.5	36.7	24.9
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.08	1.00		1.00
Lane Grp Cap(c), veh/h	671	0	516	101	101	90	473	1663	901	79	2015	924
V/C Ratio(X)	0.83	0.00	0.83	0.59	0.66	0.82	0.87	0.68	0.68	0.78	0.81	0.54
Avail Cap(c_a), veh/h	671	0	516	101	101	90	651	1762	954	119	2015	924
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	50.7	0.0	40.5	59.8	60.1	60.6	55.0	25.4	25.4	61.5	34.9	16.5
Incr Delay (d2), s/veh	7.9	0.0	10.3	6.2	12.2	40.6	7.7	0.7	1.4	8.7	3.6	2.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	9.4	0.0	14.1	2.1	2.5	3.4	7.2	13.2	14.5	2.2	15.7	14.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	58.6	0.0	50.8	66.0	72.3	101.2	62.7	26.1	26.7	70.2	38.5	18.8
LnGrp LOS	E	A	D	E	E	F	E	C	C	E	D	B
Approach Vol, veh/h		983			201			2145			2184	
Approach Delay, s/veh		55.2			81.1			33.4			34.9	
Approach LOS		E			F			C			C	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	11.1	69.2		30.0	23.3	57.0		13.0				
Change Period (Y+Rc), s	* 5.3	5.7		5.5	5.5	5.7		5.6				
Max Green Setting (Gmax), s	* 8.7	67.3		24.5	24.5	51.3		7.4				
Max Q Clear Time (g_c+I1), s	6.5	34.7		26.5	17.3	38.7		8.0				
Green Ext Time (p_c), s	0.0	2.7		0.0	0.5	2.6		0.0				

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

Notes

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

APPENDIX D

TRIP GENERATION

Smoke Tree Resort

Proposed

Trip Generation

February 2019

Appendix D

Methodology Overview

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

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

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

Land Use Types and Size

Proposed Use	Amount	Units	ITE LUC	ITE Land Use Name
Hotel and Lock-off Units	135	Rooms	310/330	Standard Hotel/Resort Hotel
Residential Units	30	Dwelling Units	220	Multifamily Housing (Low-Rise)
Quality Restaurant	3.500	1,000 square feet	931	Quality 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.

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 and Lock-off Units	WA: []	FC: T=0.38*X-28.58 [0.17]	FC: T=0.52*X-55.42 [0.11]	
Residential Units	FC: T=7.56*X-40.86 [6.20]	FC: LN(T)=0.95*LN(X)-0.51 [0.51]	FC: LN(T)=0.89*LN(X)-0.02 [0.67]	
Quality Restaurant	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

	ADT				AM Peak Hour				PM Peak Hour				(not used)
Proposed Use	% In	In	Out	Total	% In	In	Out	Total	% In	In	Out	Total	
Hotel and Lock-off Units	50%	350	350	700	72%	38	15	53	43%	29	39	68	
Residential Units	50%	93	93	186	23%	3	12	15	63%	13	7	20	
Quality Restaurant	50%	147	147	294	0%	0	3	3	67%	18	9	27	
Totals		**590**	**590**	**1,180**		**41**	**30**	**71**		**60**	**55**	**115**	

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

	ADT				AM Peak Hour				PM Peak Hour				(not used)
Proposed Use	**Percent**	**In**	**Out**	**Total**	**Percent**	**In**	**Out**	**Total**	**Percent**	**In**	**Out**	**Total**	
Hotel and Lock-off Units	0%	0	0	0	0%	0	0	0	0%	0	0	0	
Residential Units	0%	0	0	0	0%	0	0	0	0%	0	0	0	
Quality Restaurant	50%	74	74	148	50%	0	2	2	50%	9	5	14	
Totals		**74**	**74**	**148**		**0**	**2**	**2**		**9**	**5**	**14**	

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 vehilcle trips should be reduced by an additional 0% due to carpooling. The final external trips in vehicles is multiplied by 90% - 0% = 90% to produce the external vehicle trips.

External Vehicular Trips

	ADT			AM Peak Hour			PM Peak Hour			(not used)
Proposed Use	**In**	**Out**	**Total**	**In**	**Out**	**Total**	**In**	**Out**	**Total**	
Totals	**516**	**516**	**1,032**	**41**	**28**	**69**	**51**	**50**	**101**	

Box 10 - Estimate Vehicle Trip Subsets Pass-by/Diverted Trips, Truck Trips (Pass-By Trips)

Some trips may be classified as "pass-by" trips, where some vehicle trips generated by the study site are already traveling on an adjacent road and make a stop while passing by. These trips do not add traffic volume to the roadway. The *Handbook* does not specify that a 'pair' of pass-by trips must enter and exit the same driveway. The current edition of the *Handbook* indicates that pass-by trips should have directional distribution applied (%in/%out), though reviewers often comment when pass-by trip "pairs" do not occur within a the specified time period. This is likely due to ease of calculation and traditional methodology found in the first edition of the *Handbook* . As such, the analyst may ignore the direction distribution divide the total pass-by trip volume by 2 to apply pass-by "pairs". In addition, the analyst may consider pass-by rates at a reduced rate. Data is not available for all land use codes and all periods, assumtions are highlighted. The percentage is applied to total external vehicle trips.

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

10-mile radius

RAZ	MPA	2020 Population	2030 Population	% of TAZ	2020 Adjusted	2030 Adjusted	RAZ	MPA	2020 Population	2030 Population	% of TAZ	2020 Adjusted	2030 Adjusted
NNW							**NNE**						
245	PH	57,570	59,845	30%	17,271	17,954	228	PH	17,962	39,116	5%	898	1,956
227	PH	56,483	67,265	5%	2,824	3,363	230	SC	33,607	41,394	15%	5,041	6,209
228	PH	17,962	39,116	10%	1,796	3,912	246	PH	60,062	62,330	25%	15,016	15,583
246	PH	60,062	62,330	70%	42,043	43,631	247	SC	13,321	13,647	100%	13,321	13,647
262	PV	14,198	14,871	10%	1,420	1,487	248	SC	37,661	39,019	30%	11,298	11,706
		-	-		-	-	262	PV	14,198	14,871	10%	1,420	1,487
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
From NNW					**65,355**	**70,346**	**From NNE**					**46,994**	**50,587**
From North												**112,348**	**120,934**

CivTech

10-mile radius

RAZ	MPA	2020 Population	2030 Population	% of TAZ	2020 Adjusted	2030 Adjusted	RAZ	MPA	2020 Population	2030 Population	% of TAZ	2020 Adjusted	2030 Adjusted
ENE							**ESE**						
230	SC	33,607	41,394	5%	1,680	2,070	262	PV	14,198	14,871	5%	710	744
249	SC	21,657	22,818	40%	8,663	9,127	263	SC	36,704	37,882	35%	12,846	13,259
248	SC	37,661	39,019	70%	26,363	27,313	264	SR	6,766	7,102	10%	677	710
264	SR	6,766	7,102	5%	338	355			-	-		-	-
263	SC	36,704	37,882	35%	12,846	13,259			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
From ENE					**49,891**	**52,124**	**From ESE**					**14,233**	**14,712**
From East												**64,123**	**66,836**

10-mile radius

RAZ	MPA	2020 Population	2030 Population	% of TAZ	2020 Adjusted	2030 Adjusted	RAZ	MPA	2020 Population	2030 Population	% of TAZ	2020 Adjusted	2030 Adjusted
SSE							**SSW**						
262	PV	14,198	14,871	10%	1,420	1,487	262	PV	14,198	14,871	20%	2,840	2,974
263	SC	36,704	37,882	20%	7,341	7,576	271	PH	67,978	72,784	55%	37,388	40,031
272	SC	72,339	81,764	95%	68,722	77,676	272	SC	72,339	81,764	5%	3,617	4,088
264	SR	6,766	7,102	5%	338	355	276	PH	48,517	52,834	100%	48,517	52,834
288	TE	78,175	107,704	5%	3,909	5,385			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
From SSE					**81,730**	**92,480**	**From SSW**					**92,361**	**99,928**
From South												**174,091**	**192,407**

10-mile radius

RAZ	MPA	2020 Population	2030 Population	% of TAZ	2020 Adjusted	2030 Adjusted	RAZ	MPA	2020 Population	2030 Population	% of TAZ	2020 Adjusted	2030 Adjusted
WSW							**WNW**						
262	PV	14,198	14,871	25%	3,550	3,718	349	MC	391	416	100%	391	416
261	PH	35,232	38,363	100%	35,232	38,363	244	PH	55,833	59,925	35%	19,542	20,974
271	PH	67,978	72,784	45%	30,590	32,753	262	PV	14,198	14,871	20%	2,840	2,974
		-	-		-	-	246	PH	60,062	62,330	5%	3,003	3,117
		-	-		-	-	245	PH	57,570	59,845	60%	34,542	35,907
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
		-	-		-	-			-	-		-	-
From WSW					**69,372**	**74,834**	**From WNW**					**60,317**	**63,387**
From West												**129,689**	**138,221**

APPENDIX F

BACKGROUND TRAFFIC

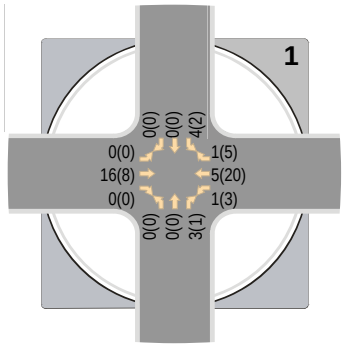
Location of counts: Scottsdale Road between Indian Bend and Lincoln
Source(s): https://www.scottsdaleaz.gov/transportation/studies-reports/traffic-volume

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

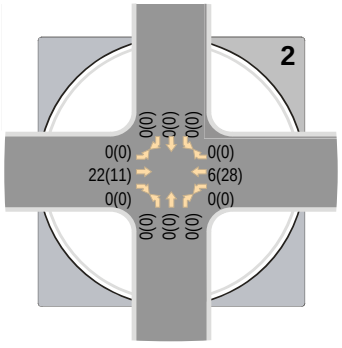
Growth Rate Used	1.7%
Per-Year Multiplier	1.017

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

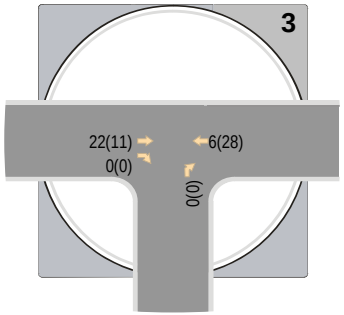
Lincoln medical site



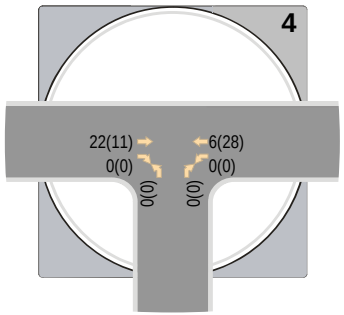
Mockingbird Lane & Lincoln Dr



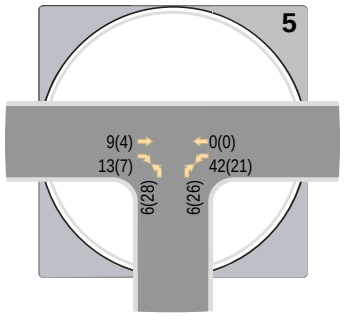
Quail Run Rd & Lincoln Dr



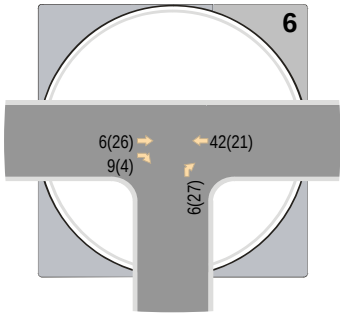
Smoke Tree Drwy West & Lincoln Dr



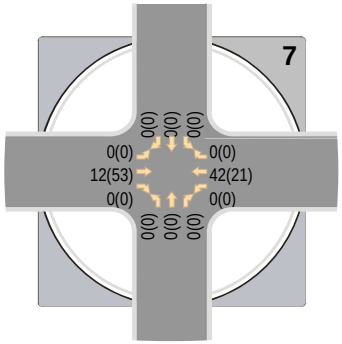
Smoke Tree Drwy East & Lincoln Dr



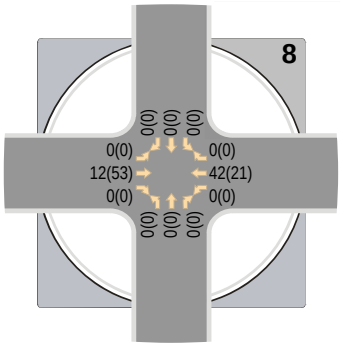
Medical Drwy West & Lincoln Dr



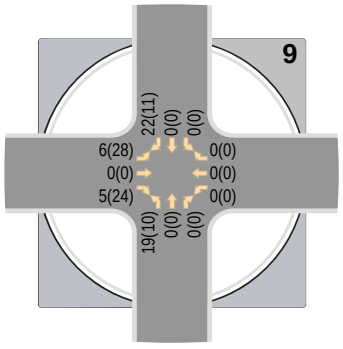
Medical Drwy East & Lincoln Dr



Apartment Drwy & Lincoln Dr



AJ's Drwy & Lincoln Dr



Scottsdale Rd & Lincoln Dr

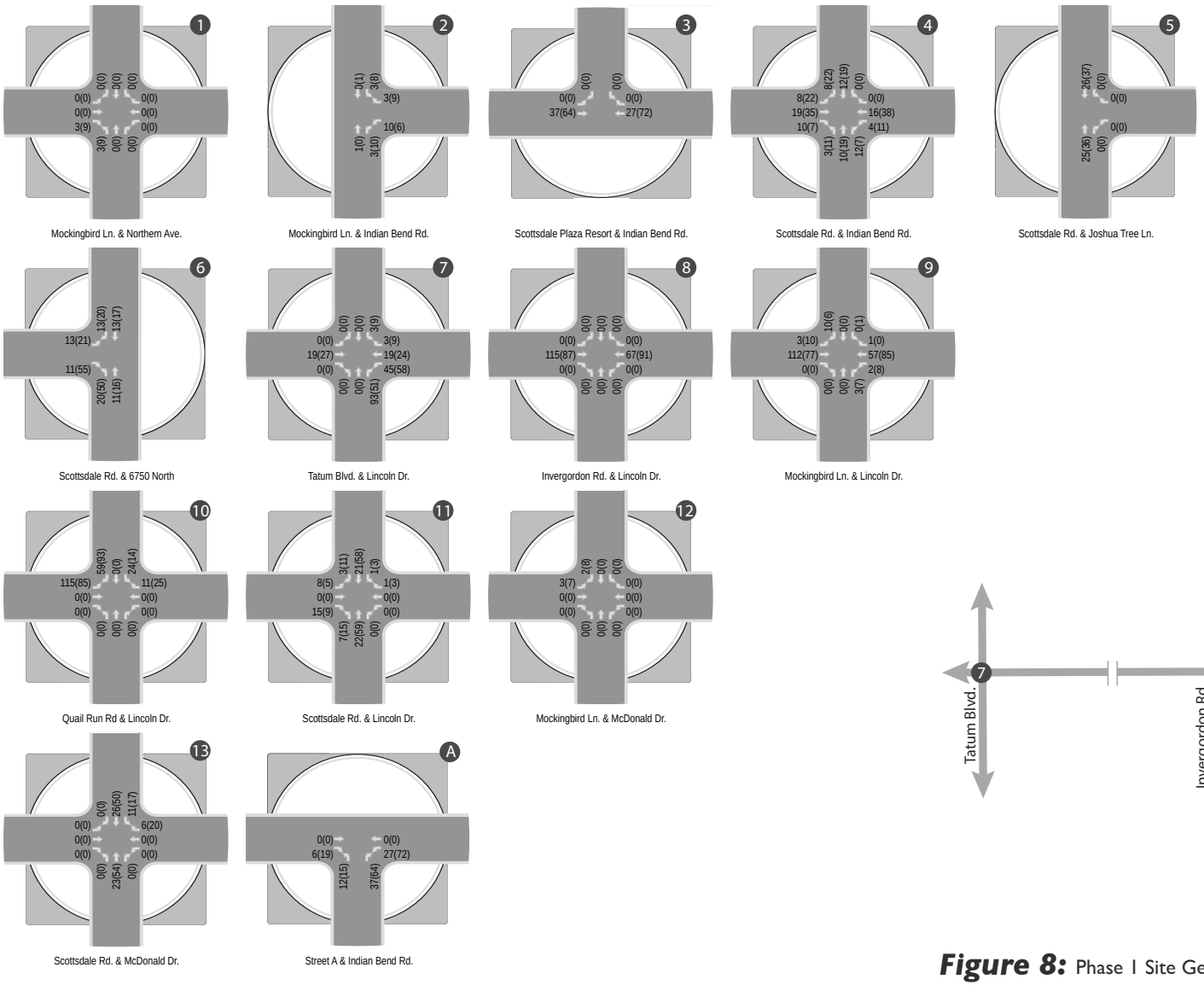


Figure 8: Phase I Site Generated Traffic Volumes without Palmeraie Access A

APPENDIX G

2020 PEAK HOUR ANALYSIS

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	222	971	23	890	5	34	76	88
Future Volume (vph)	222	971	23	890	5	34	76	88
Turn Type	pm+pt	NA	Perm	NA	Perm	NA	pm+pt	NA
Protected Phases	1	6		2		4	3	8
Permitted Phases	6		2		4		8	
Detector Phase	1	6	2	2	4	4	3	8
Switch Phase								
Minimum Initial (s)	3.5	15.0	15.0	15.0	7.0	7.0	3.5	7.0
Minimum Split (s)	8.0	27.0	27.0	27.0	33.5	33.5	8.0	33.5
Total Split (s)	27.0	77.0	50.0	50.0	44.0	44.0	9.0	53.0
Total Split (%)	20.8%	59.2%	38.5%	38.5%	33.8%	33.8%	6.9%	40.8%
Yellow Time (s)	3.0	4.5	4.5	4.5	4.0	4.0	3.0	4.0
All-Red Time (s)	1.0	1.5	1.5	1.5	2.5	2.5	1.0	2.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	6.0	6.0	6.0	6.5	6.5	4.0	6.5
Lead/Lag	Lead		Lag	Lag	Lag	Lag	Lead	
Lead-Lag Optimize?	Yes		Yes	Yes	Yes	Yes	Yes	
Recall Mode	None	C-Max	C-Max	C-Max	None	None	None	None
Act Effct Green (s)	93.3	91.3	70.1	70.1	17.4	17.4	28.7	26.2
Actuated g/C Ratio	0.72	0.70	0.54	0.54	0.13	0.13	0.22	0.20
v/c Ratio	0.57	0.45	0.10	0.55	0.08	0.24	0.30	0.84
Control Delay	13.0	10.1	18.3	25.3	46.2	32.4	41.8	50.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	13.0	10.1	18.3	25.3	46.2	32.4	41.8	50.2
LOS	B	B	B	C	D	C	D	D
Approach Delay		10.6		25.1		33.7		48.6
Approach LOS		B		C		C		D

Intersection Summary		
Cycle Length: 130		
Actuated Cycle Length: 130		
Offset: 0 (0%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green		
Natural Cycle: 90		
Control Type: Actuated-Coordinated		
Maximum v/c Ratio: 0.84		
Intersection Signal Delay: 22.1	Intersection LOS: C	
Intersection Capacity Utilization 74.7%	ICU Level of Service D	
Analysis Period (min) 15		

Splits and Phases: 1: Mockingbird Ln & Lincoln Drive

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	222	971	30	23	890	42	5	34	22	76	88	233
Future Volume (veh/h)	222	971	30	23	890	42	5	34	22	76	88	233
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	247	1079	33	26	989	47	6	38	24	84	98	259
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	397	2334	71	316	1919	91	88	184	116	313	109	289
Arrive On Green	0.08	0.66	0.66	0.56	0.56	0.56	0.17	0.17	0.17	0.04	0.24	0.24
Sat Flow, veh/h	1781	3520	108	507	3454	164	1024	1072	677	1781	454	1200
Grp Volume(v), veh/h	247	545	567	26	509	527	6	0	62	84	0	357
Grp Sat Flow(s),veh/h/ln	1781	1777	1851	507	1777	1841	1024	0	1749	1781	0	1654
Q Serve(g_s), s	7.4	19.4	19.4	3.4	23.2	23.2	0.7	0.0	4.0	5.0	0.0	27.2
Cycle Q Clear(g_c), s	7.4	19.4	19.4	8.8	23.2	23.2	18.9	0.0	4.0	5.0	0.0	27.2
Prop In Lane	1.00		0.06	1.00		0.09	1.00		0.39	1.00		0.73
Lane Grp Cap(c), veh/h	397	1178	1227	316	987	1023	88	0	300	313	0	398
V/C Ratio(X)	0.62	0.46	0.46	0.08	0.52	0.52	0.07	0.00	0.21	0.27	0.00	0.90
Avail Cap(c_a), veh/h	576	1178	1227	316	987	1023	208	0	504	313	0	592
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.56	0.56	0.56	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	13.8	10.6	10.6	16.2	18.0	18.0	61.3	0.0	46.2	41.1	0.0	47.8
Incr Delay (d2), s/veh	1.6	1.3	1.3	0.3	1.1	1.0	0.3	0.0	0.3	0.5	0.0	11.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.0	7.7	8.0	0.4	9.7	10.0	0.2	0.0	1.8	2.2	0.0	12.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	15.4	12.0	11.9	16.5	19.1	19.0	61.6	0.0	46.6	41.5	0.0	59.5
LnGrp LOS	B	B	B	B	B	B	E	A	D	D	A	E
Approach Vol, veh/h		1359			1062			68			441	
Approach Delay, s/veh		12.6			19.0			47.9			56.1	
Approach LOS		B			B			D			E	

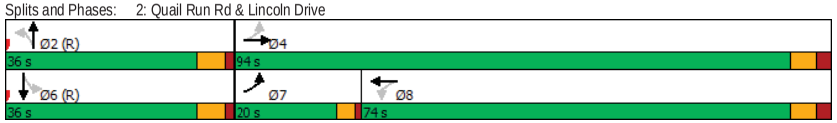
Timer - Assigned Phs	1	2	3	4	6	8
Phs Duration (G+Y+Rc), s	14.0	78.2	9.0	28.8	92.2	37.8
Change Period (Y+Rc), s	4.0	6.0	4.0	6.5	6.0	6.5
Max Green Setting (Gmax), s	23.0	44.0	5.0	37.5	71.0	46.5
Max Q Clear Time (g_c+I1), s	9.4	25.2	7.0	20.9	21.4	29.2
Green Ext Time (p_c), s	0.6	7.1	0.0	0.2	9.8	2.2

Intersection Summary		
HCM 6th Ctrl Delay	22.3	
HCM 6th LOS	C	

Lane Group	EBL	EBT	WBL	WBT	NBT	SBL	SBT
Lane Configurations							
Traffic Volume (vph)	115	1017	2	853	0	26	0
Future Volume (vph)	115	1017	2	853	0	26	0
Turn Type	pm+pt	NA	Perm	NA	NA	Perm	NA
Protected Phases	7	4		8	2		6
Permitted Phases	4		8			6	
Detector Phase	7	4	8	8	2	6	6
Switch Phase							
Minimum Initial (s)	3.5	15.0	15.0	15.0	7.0	7.0	7.0
Minimum Split (s)	8.0	28.0	28.0	28.0	33.0	33.0	33.0
Total Split (s)	20.0	94.0	74.0	74.0	36.0	36.0	36.0
Total Split (%)	15.4%	72.3%	56.9%	56.9%	27.7%	27.7%	27.7%
Yellow Time (s)	3.0	4.0	4.0	4.0	4.5	4.5	4.5
All-Red Time (s)	1.0	2.5	2.5	2.5	1.5	1.5	1.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	6.5	6.5	6.5	6.0	6.0	6.0
Lead/Lag	Lead		Lag	Lag			
Lead-Lag Optimize?	Yes		Yes	Yes			
Recall Mode	None	None	None	None	C-Max	C-Max	C-Max
Act Effct Green (s)	64.0	61.5	46.2	46.2	56.0	56.0	56.0
Actuated g/C Ratio	0.49	0.47	0.36	0.36	0.43	0.43	0.43
v/c Ratio	0.53	0.68	0.02	0.76	0.01	0.05	0.09
Control Delay	29.9	35.8	23.5	40.9	0.0	26.1	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	29.9	35.8	23.5	40.9	0.0	26.1	0.2
LOS	C	D	C	D	A	C	A
Approach Delay		35.2		40.8			7.6
Approach LOS		D		D			A

Intersection Summary		
Cycle Length: 130		
Actuated Cycle Length: 130		
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green		
Natural Cycle: 70		
Control Type: Actuated-Coordinated		
Maximum v/c Ratio: 0.76		
Intersection Signal Delay: 36.2	Intersection LOS: D	
Intersection Capacity Utilization 64.6%	ICU Level of Service C	
Analysis Period (min) 15		

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	115	1017	3	2	853	12	0	0	7	26	0	65
Future Volume (veh/h)	115	1017	3	2	853	12	0	0	7	26	0	65
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	128	1130	3	2	948	13	0	0	8	29	0	72
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	210	1517	4	195	1161	16	0	0	771	737	0	771
Arrive On Green	0.13	0.83	0.83	0.22	0.22	0.22	0.00	0.00	0.49	0.49	0.00	0.49
Sat Flow, veh/h	1781	3636	10	497	3589	49	0	0	1585	1407	0	1585
Grp Volume(v), veh/h	128	552	581	2	469	492	0	0	8	29	0	72
Grp Sat Flow(s),veh/h/ln	1781	1777	1869	497	1777	1862	0	0	1585	1407	0	1585
Q Serve(g_s), s	6.1	17.7	17.7	0.4	32.7	32.7	0.0	0.0	0.3	1.4	0.0	3.2
Cycle Q Clear(g_c), s	6.1	17.7	17.7	5.9	32.7	32.7	0.0	0.0	0.3	1.7	0.0	3.2
Prop In Lane	1.00		0.01	1.00		0.03	0.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	210	741	780	195	575	602	0	0	771	737	0	771
V/C Ratio(X)	0.61	0.74	0.74	0.01	0.82	0.82	0.00	0.00	0.01	0.04	0.00	0.09
Avail Cap(c_a), veh/h	317	1196	1258	292	923	967	0	0	771	737	0	771
HCM Platoon Ratio	2.00	2.00	2.00	0.67	0.67	0.67	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.90	0.90	0.90	1.00	1.00	1.00	0.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	28.8	7.7	7.7	39.0	47.2	47.2	0.0	0.0	17.2	17.7	0.0	17.9
Incr Delay (d2), s/veh	2.6	1.4	1.3	0.0	3.1	2.9	0.0	0.0	0.0	0.1	0.0	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.5	3.4	3.6	0.1	15.5	16.2	0.0	0.0	0.1	0.5	0.0	1.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	31.4	9.1	9.0	39.0	50.3	50.2	0.0	0.0	17.2	17.8	0.0	18.2
LnGrp LOS	C	A	A	D	D	D	A	A	B	B	A	B
Approach Vol, veh/h		1261			963			8			101	
Approach Delay, s/veh		11.3			50.2			17.2			18.1	
Approach LOS		B			D			B			B	

Timer - Assigned Phs		2		4		6	7	8				
Phs Duration (G+Y+Rc), s		69.3		60.7		69.3	12.2	48.6				
Change Period (Y+Rc), s		6.0		6.5		6.0	4.0	6.5				
Max Green Setting (Gmax), s		30.0		87.5		30.0	16.0	67.5				
Max Q Clear Time (g_c+I1), s		2.3		19.7		5.2	8.1	34.7				
Green Ext Time (p_c), s		0.0		10.3		0.4	0.2	7.4				

Intersection Summary		
HCM 6th Ctrl Delay	27.7	
HCM 6th LOS	C	

Intersection	
Int Delay, s/veh	0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	1047	2	0	863	0	0
Future Vol, veh/h	1047	2	0	863	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	25	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1163	2	0	959	0	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1165	0	1644	583
Stage 1	-	-	-	-	1164	-
Stage 2	-	-	-	-	480	-
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	-	-	595	-	90	456
Stage 1	-	-	-	-	259	-
Stage 2	-	-	-	-	588	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	595	-	90	456
Mov Cap-2 Maneuver	-	-	-	-	197	-
Stage 1	-	-	-	-	259	-
Stage 2	-	-	-	-	588	-

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

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	-	-	-	595	-
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	0.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	1049	0	1	860	5	2
Future Vol, veh/h	1049	0	1	860	5	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	25	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1166	0	1	956	6	2

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1166	0	1646	583
Stage 1	-	-	-	-	1166	-
Stage 2	-	-	-	-	480	-
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	-	-	595	-	90	456
Stage 1	-	-	-	-	259	-
Stage 2	-	-	-	-	588	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	595	-	90	456
Mov Cap-2 Maneuver	-	-	-	-	197	-
Stage 1	-	-	-	-	258	-
Stage 2	-	-	-	-	588	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	20.8
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	235	-	-	595	-
HCM Lane V/C Ratio	0.033	-	-	0.002	-
HCM Control Delay (s)	20.8	-	-	11.1	-
HCM Lane LOS	C	-	-	B	-
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Intersection	
Int Delay, s/veh	0.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	1034	17	42	854	6	9
Future Vol, veh/h	1034	17	42	854	6	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	-	-	25	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1149	19	47	949	7	10

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1168	0	1728	584
Stage 1	-	-	-	-	1159	-
Stage 2	-	-	-	-	569	-
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	-	-	594	-	79	455
Stage 1	-	-	-	-	261	-
Stage 2	-	-	-	-	530	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	594	-	73	455
Mov Cap-2 Maneuver	-	-	-	-	175	-
Stage 1	-	-	-	-	240	-
Stage 2	-	-	-	-	530	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.5	18.8
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	277	-	-	594	-
HCM Lane V/C Ratio	0.06	-	-	0.079	-
HCM Control Delay (s)	18.8	-	-	11.6	-
HCM Lane LOS	C	-	-	B	-
HCM 95th %tile Q(veh)	0.2	-	-	0.3	-

Intersection	
Int Delay, s/veh	0.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	1030	11	5	896	0	9
Future Vol, veh/h	1030	11	5	896	0	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	-	-	25	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1144	12	6	996	0	10

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1156	0	1660	578
Stage 1	-	-	-	-	1150	-
Stage 2	-	-	-	-	510	-
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	-	-	600	-	88	459
Stage 1	-	-	-	-	264	-
Stage 2	-	-	-	-	568	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	600	-	87	459
Mov Cap-2 Maneuver	-	-	-	-	196	-
Stage 1	-	-	-	-	261	-
Stage 2	-	-	-	-	568	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	13
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	459	-	-	600	-
HCM Lane V/C Ratio	0.022	-	-	0.009	-
HCM Control Delay (s)	13	-	-	11.1	-
HCM Lane LOS	B	-	-	B	-
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Intersection	
Int Delay, s/veh	9.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	27	979	35	19	836	10	52	0	30	5	0	12
Future Vol, veh/h	27	979	35	19	836	10	52	0	30	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	25	-	-	25	-	-	-	-	-	0	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	30	1088	39	21	929	11	58	0	33	6	0	13

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	940	0	0	1127	0	0	1675	2150	564	1581	-	470
Stage 1	-	-	-	-	-	-	1168	1168	-	977	-	-
Stage 2	-	-	-	-	-	-	507	982	-	604	-	-
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	725	-	-	616	-	-	62	48	469	73	0	540
Stage 1	-	-	-	-	-	-	206	266	-	269	0	-
Stage 2	-	-	-	-	-	-	516	325	-	452	0	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	725	-	-	616	-	-	~ 57	44	469	64	-	540
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 57	44	-	64	-	-
Stage 1	-	-	-	-	-	-	198	255	-	258	-	-
Stage 2	-	-	-	-	-	-	486	314	-	403	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.3	0.2	212.8	27.9
HCM LOS			F	D

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	84	725	-	-	616	-	-	64	540
HCM Lane V/C Ratio	1.085	0.041	-	-	0.034	-	-	0.087	0.025
HCM Control Delay (s)	212.8	10.2	-	-	11.1	-	-	66.5	11.8
HCM Lane LOS	F	B	-	-	B	-	-	F	B
HCM 95th %tile Q(veh)	6.3	0.1	-	-	0.1	-	-	0.3	0.1

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

Intersection	
Int Delay, s/veh	1.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	3	958	55	44	848	8	6	0	42	4	1	12
Future Vol, veh/h	3	958	55	44	848	8	6	0	42	4	1	12
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	25	-	-	25	-	-	-	-	-	0	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	3	1064	61	49	942	9	7	0	47	4	1	13

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	951	0	0	1125	0	0	1671	2150	563	1583	2176	476
Stage 1	-	-	-	-	-	-	1101	1101	-	1045	1045	-
Stage 2	-	-	-	-	-	-	570	1049	-	538	1131	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	718	-	-	617	-	-	63	48	470	73	46	535
Stage 1	-	-	-	-	-	-	226	286	-	245	304	-
Stage 2	-	-	-	-	-	-	474	303	-	495	277	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	718	-	-	617	-	-	56	44	470	62	42	535
Mov Cap-2 Maneuver	-	-	-	-	-	-	56	44	-	62	42	-
Stage 1	-	-	-	-	-	-	225	285	-	244	280	-
Stage 2	-	-	-	-	-	-	424	279	-	444	276	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.6	23.8	25.8
HCM LOS			C	D

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	244	718	-	-	617	-	-	62	535
HCM Lane V/C Ratio	0.219	0.005	-	-	0.079	-	-	0.072	0.025
HCM Control Delay (s)	23.8	10	-	-	11.3	-	-	67.5	11.9
HCM Lane LOS	C	B	-	-	B	-	-	F	B
HCM 95th %tile Q(veh)	0.8	0	-	-	0.3	-	-	0.2	0.1

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	450	38	460	37	36	295	1316	51	1669	601
Future Volume (vph)	450	38	460	37	36	295	1316	51	1669	601
Turn Type	Split	NA	pm+ov	Split	NA	Prot	NA	Prot	NA	pm+ov
Protected Phases	4	4	5	8	8	5	2	1	6	4
Permitted Phases			4							6
Detector Phase	4	4	5	8	8	5	2	1	6	4
Switch Phase										
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0	7.0	10.0	5.0	10.0	7.0
Minimum Split (s)	13.0	13.0	13.0	13.0	13.0	13.0	16.7	11.0	16.0	13.0
Total Split (s)	30.0	30.0	30.0	13.0	13.0	30.0	73.0	14.0	57.0	30.0
Total Split (%)	23.1%	23.1%	23.1%	10.0%	10.0%	23.1%	56.2%	10.8%	43.8%	23.1%
Yellow Time (s)	4.0	4.0	4.0	3.6	3.6	4.0	4.7	3.3	4.7	4.0
All-Red Time (s)	1.5	1.5	1.5	2.0	2.0	1.5	1.0	2.0	1.0	1.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	5.5	5.5	5.6	5.6	5.5	5.7	5.3	5.7	5.5
Lead/Lag			Lead			Lead	Lag	Lead	Lag	
Lead-Lag Optimize?										
Recall Mode	None	None	None	None	None	None	None	None	C-Max	None
Act Effct Green (s)	23.6	23.6	42.3	7.2	7.2	18.7	71.5	7.6	58.1	87.4
Actuated g/C Ratio	0.18	0.18	0.33	0.06	0.06	0.14	0.55	0.06	0.45	0.67
v/c Ratio	0.89	0.88	0.91	0.42	0.40	0.66	0.54	0.55	0.82	0.59
Control Delay	81.3	80.8	47.0	72.5	33.9	58.8	20.4	79.0	35.9	10.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	81.3	80.8	47.0	72.5	33.9	58.8	20.4	79.0	35.9	10.8
LOS	F	F	D	E	C	E	C	E	D	B
Approach Delay		64.5			45.7		27.3		30.4	
Approach LOS		E			D		C		C	

Intersection Summary			
Cycle Length: 130			
Actuated Cycle Length: 130			
Offset: 0 (0%), Referenced to phase 6:SBT, Start of Green			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.91			
Intersection Signal Delay: 36.1		Intersection LOS: D	
Intersection Capacity Utilization 80.6%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 9: Scottsdale Rd & Lincoln Dr

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	450	38	460	37	36	48	295	1316	39	51	1669	601
Future Volume (veh/h)	450	38	460	37	36	48	295	1316	39	51	1669	601
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	530	0	511	41	40	53	328	1462	43	57	1854	668
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	671	0	477	95	95	85	388	2382	70	73	2015	924
Arrive On Green	0.19	0.00	0.19	0.05	0.05	0.05	0.11	0.47	0.47	0.04	0.39	0.39
Sat Flow, veh/h	3563	0	1585	1781	1777	1585	3456	5098	150	1781	5106	1585
Grp Volume(v), veh/h	530	0	511	41	40	53	328	976	529	57	1854	668
Grp Sat Flow(s),veh/h/ln	1781	0	1585	1781	1777	1585	1728	1702	1843	1781	1702	1585
Q Serve(g_s), s	18.4	0.0	24.5	2.9	2.8	4.3	12.1	27.9	27.9	4.1	44.9	39.5
Cycle Q Clear(g_c), s	18.4	0.0	24.5	2.9	2.8	4.3	12.1	27.9	27.9	4.1	44.9	39.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.08	1.00		1.00
Lane Grp Cap(c), veh/h	671	0	477	95	95	85	388	1590	861	73	2015	924
V/C Ratio(X)	0.79	0.00	1.07	0.43	0.42	0.63	0.85	0.61	0.61	0.78	0.92	0.72
Avail Cap(c_a), veh/h	671	0	477	101	101	90	651	1762	954	119	2015	924
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	50.3	0.0	45.5	59.6	59.6	60.3	56.6	25.9	25.9	61.7	37.4	19.5
Incr Delay (d2), s/veh	5.8	0.0	61.9	1.1	1.1	8.2	2.2	0.3	0.6	6.5	8.4	4.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.8	0.0	23.4	1.3	1.3	1.9	5.4	11.3	12.3	2.0	20.0	23.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	56.1	0.0	107.4	60.8	60.7	68.4	58.8	26.2	26.5	68.2	45.8	24.4
LnGrp LOS	E	A	F	E	E	E	E	C	C	E	D	C
Approach Vol, veh/h		1041			134			1833			2579	
Approach Delay, s/veh		81.3			63.8			32.1			40.7	
Approach LOS		F			E			C			D	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	10.6	66.4		30.0	20.1	57.0		12.5				
Change Period (Y+Rc), s	* 5.3	5.7		5.5	5.5	5.7		5.6				
Max Green Setting (Gmax), s	* 8.7	67.3		24.5	24.5	51.3		7.4				
Max Q Clear Time (g_c+I1), s	6.1	29.9		26.5	14.1	46.9		6.3				
Green Ext Time (p_c), s	0.0	2.2		0.0	0.5	1.9		0.0				

Intersection Summary		
HCM 6th Ctrl Delay	46.0	
HCM 6th LOS	D	

Notes

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

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	246	875	23	937	7	62	62	48
Future Volume (vph)	246	875	23	937	7	62	62	48
Turn Type	pm+pt	NA	Perm	NA	Perm	NA	pm+pt	NA
Protected Phases	1	6		2		4	3	8
Permitted Phases	6		2		4		8	
Detector Phase	1	6	2	2	4	4	3	8
Switch Phase								
Minimum Initial (s)	3.5	15.0	15.0	15.0	7.0	7.0	3.5	7.0
Minimum Split (s)	8.0	27.0	27.0	27.0	33.5	33.5	8.0	33.5
Total Split (s)	27.0	77.0	50.0	50.0	44.0	44.0	9.0	53.0
Total Split (%)	20.8%	59.2%	38.5%	38.5%	33.8%	33.8%	6.9%	40.8%
Yellow Time (s)	3.0	4.5	4.5	4.5	4.0	4.0	3.0	4.0
All-Red Time (s)	1.0	1.5	1.5	1.5	2.5	2.5	1.0	2.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	6.0	6.0	6.0	6.5	6.5	4.0	6.5
Lead/Lag	Lead		Lag	Lag	Lag	Lag	Lead	
Lead-Lag Optimize?	Yes		Yes	Yes	Yes	Yes	Yes	
Recall Mode	None	C-Max	C-Max	C-Max	None	None	None	None
Act Effct Green (s)	101.1	99.1	76.2	76.2	11.2	11.2	20.9	18.4
Actuated g/C Ratio	0.78	0.76	0.59	0.59	0.09	0.09	0.16	0.14
v/c Ratio	0.58	0.37	0.08	0.54	0.09	0.54	0.37	0.64
Control Delay	11.3	6.1	10.2	19.4	54.9	61.4	51.4	27.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	11.3	6.1	10.2	19.4	54.9	61.4	51.4	27.7
LOS	B	A	B	B	D	E	D	C
Approach Delay		7.2		19.2		60.8		33.2
Approach LOS		A		B		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: 90		
Control Type: Actuated-Coordinated		
Maximum v/c Ratio: 0.64		
Intersection Signal Delay: 16.6	Intersection LOS: B	
Intersection Capacity Utilization 67.4%	ICU Level of Service C	
Analysis Period (min) 15		

Splits and Phases: 1: Mockingbird Ln & Lincoln Drive

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	246	875	29	23	937	63	7	62	18	62	48	156
Future Volume (veh/h)	246	875	29	23	937	63	7	62	18	62	48	156
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	273	972	32	26	1041	70	8	69	20	69	53	173
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	468	2610	86	416	2172	146	86	127	37	181	62	202
Arrive On Green	0.07	0.74	0.74	0.85	0.85	0.85	0.09	0.09	0.09	0.04	0.16	0.16
Sat Flow, veh/h	1781	3511	116	561	3379	227	1155	1394	404	1781	386	1258
Grp Volume(v), veh/h	273	492	512	26	547	564	8	0	89	69	0	226
Grp Sat Flow(s),veh/h/ln	1781	1777	1850	561	1777	1829	1155	0	1798	1781	0	1644
Q Serve(g_s), s	6.4	12.8	12.8	0.9	9.8	9.8	0.9	0.0	6.2	4.5	0.0	17.4
Cycle Q Clear(g_c), s	6.4	12.8	12.8	0.9	9.8	9.8	9.3	0.0	6.2	4.5	0.0	17.4
Prop In Lane	1.00		0.06	1.00		0.12	1.00		0.22	1.00		0.77
Lane Grp Cap(c), veh/h	468	1321	1375	416	1142	1176	86	0	164	181	0	264
V/C Ratio(X)	0.58	0.37	0.37	0.06	0.48	0.48	0.09	0.00	0.54	0.38	0.00	0.86
Avail Cap(c_a), veh/h	658	1321	1375	416	1142	1176	314	0	519	181	0	588
HCM Platoon Ratio	1.00	1.00	1.00	1.33	1.33	1.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.55	0.55	0.55	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	6.8	5.9	5.9	3.4	4.1	4.1	62.0	0.0	56.5	49.7	0.0	53.1
Incr Delay (d2), s/veh	1.2	0.8	0.8	0.2	0.8	0.8	0.5	0.0	2.8	1.3	0.0	7.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.4	4.6	4.8	0.1	2.8	2.9	0.3	0.0	2.9	2.1	0.0	7.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	8.0	6.7	6.7	3.6	4.9	4.9	62.5	0.0	59.3	51.0	0.0	61.0
LnGrp LOS	A	A	A	A	A	A	E	A	E	D	A	E
Approach Vol, veh/h		1277			1137			97			295	
Approach Delay, s/veh		7.0			4.8			59.5			58.7	
Approach LOS		A			A			E			E	

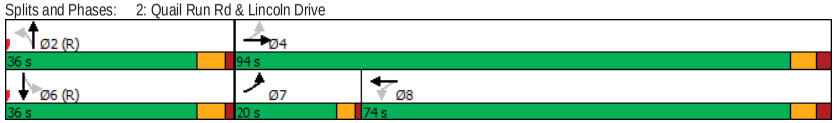
Timer - Assigned Phs	1	2	3	4		6		8				
Phs Duration (G+Y+Rc), s	13.1	89.6	9.0	18.3		102.7		27.3				
Change Period (Y+Rc), s	4.0	6.0	4.0	6.5		6.0		6.5				
Max Green Setting (Gmax), s	23.0	44.0	5.0	37.5		71.0		46.5				
Max Q Clear Time (g_c+I1), s	8.4	11.8	6.5	11.3		14.8		19.4				
Green Ext Time (p_c), s	0.7	9.5	0.0	0.5		8.4		1.5				

Intersection Summary		
HCM 6th Ctrl Delay	13.4	
HCM 6th LOS	B	

Lane Group	EBL	EBT	WBT	NBT	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	85	886	929	0	14	0
Future Volume (vph)	85	886	929	0	14	0
Turn Type	pm+pt	NA	NA	NA	Perm	NA
Protected Phases	7	4	8	2		6
Permitted Phases	4				6	
Detector Phase	7	4	8	2	6	6
Switch Phase						
Minimum Initial (s)	3.5	15.0	15.0	7.0	7.0	7.0
Minimum Split (s)	8.0	28.0	28.0	33.0	33.0	33.0
Total Split (s)	20.0	94.0	74.0	36.0	36.0	36.0
Total Split (%)	15.4%	72.3%	56.9%	27.7%	27.7%	27.7%
Yellow Time (s)	3.0	4.0	4.0	4.5	4.5	4.5
All-Red Time (s)	1.0	2.5	2.5	1.5	1.5	1.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	6.5	6.5	6.0	6.0	6.0
Lead/Lag	Lead		Lag			
Lead-Lag Optimize?	Yes		Yes			
Recall Mode	None	None	None	C-Max	C-Max	C-Max
Act Effct Green (s)	67.4	64.9	50.7	52.6	52.6	52.6
Actuated g/C Ratio	0.52	0.50	0.39	0.40	0.40	0.40
v/c Ratio	0.42	0.56	0.77	0.00	0.03	0.13
Control Delay	30.0	35.1	38.2	0.0	28.5	0.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	30.0	35.1	38.2	0.0	28.5	0.3
LOS	C	D	D	A	C	A
Approach Delay		34.7	38.2			4.1
Approach LOS		C	D			A

Intersection Summary		
Cycle Length: 130		
Actuated Cycle Length: 130		
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green		
Natural Cycle: 70		
Control Type: Actuated-Coordinated		
Maximum v/c Ratio: 0.77		
Intersection Signal Delay: 34.7	Intersection LOS: C	
Intersection Capacity Utilization 60.3%	ICU Level of Service B	
Analysis Period (min) 15		

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	85	886	1	0	929	25	0	0	2	14	0	93
Future Volume (veh/h)	85	886	1	0	929	25	0	0	2	14	0	93
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			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	94	984	1	0	1032	28	0	0	2	16	0	103
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	183	1554	2	55	1230	33	0	0	756	730	0	756
Arrive On Green	0.10	0.85	0.85	0.00	0.35	0.35	0.00	0.00	0.48	0.48	0.00	0.48
Sat Flow, veh/h	1781	3643	4	571	3534	96	0	0	1585	1415	0	1585
Grp Volume(v), veh/h	94	480	505	0	519	541	0	0	2	16	0	103
Grp Sat Flow(s),veh/h/ln	1781	1777	1870	571	1777	1853	0	0	1585	1415	0	1585
Q Serve(g_s), s	4.3	11.2	11.2	0.0	35.0	35.0	0.0	0.0	0.1	0.8	0.0	4.7
Cycle Q Clear(g_c), s	4.3	11.2	11.2	0.0	35.0	35.0	0.0	0.0	0.1	0.9	0.0	4.7
Prop In Lane	1.00		0.00	1.00		0.05	0.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	183	758	798	55	619	645	0	0	756	730	0	756
V/C Ratio(X)	0.51	0.63	0.63	0.00	0.84	0.84	0.00	0.00	0.00	0.02	0.00	0.14
Avail Cap(c_a), veh/h	317	1196	1258	153	923	962	0	0	756	730	0	756
HCM Platoon Ratio	2.00	2.00	2.00	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	0.00	1.00	1.00	0.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	28.6	6.3	6.3	0.0	39.0	39.0	0.0	0.0	17.8	18.0	0.0	19.0
Incr Delay (d2), s/veh	2.1	0.8	0.8	0.0	4.5	4.3	0.0	0.0	0.0	0.1	0.0	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.8	2.5	2.6	0.0	15.9	16.6	0.0	0.0	0.0	0.3	0.0	1.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	30.7	7.1	7.1	0.0	43.5	43.3	0.0	0.0	17.8	18.1	0.0	19.4
LnGrp LOS	C	A	A	A	D	D	A	A	B	B	A	B
Approach Vol, veh/h		1079			1060			2			119	
Approach Delay, s/veh		9.1			43.4			17.8			19.2	
Approach LOS		A			D			B			B	
Timer - Assigned Phs		2		4		6	7	8				
Phs Duration (G+Y+Rc), s		68.0		62.0		68.0	10.2	51.8				
Change Period (Y+Rc), s		6.0		6.5		6.0	4.0	6.5				
Max Green Setting (Gmax), s		30.0		87.5		30.0	16.0	67.5				
Max Q Clear Time (g_c+I1), s		2.1		13.2		6.7	6.3	37.0				
Green Ext Time (p_c), s		0.0		8.2		0.6	0.1	8.3				

Intersection Summary		
HCM 6th Ctrl Delay	25.7	
HCM 6th LOS	C	

Intersection	
Int Delay, s/veh	0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	902	1	0	953	0	0
Future Vol, veh/h	902	1	0	953	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	25	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1002	1	0	1059	0	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1003	0	1533	502
Stage 1	-	-	-	-	1003	-
Stage 2	-	-	-	-	530	-
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	-	-	686	-	107	515
Stage 1	-	-	-	-	315	-
Stage 2	-	-	-	-	555	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	686	-	107	515
Mov Cap-2 Maneuver	-	-	-	-	227	-
Stage 1	-	-	-	-	315	-
Stage 2	-	-	-	-	555	-

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

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	-	-	-	686	-
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	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	901	1	2	953	2	2
Future Vol, veh/h	901	1	2	953	2	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	25	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1001	1	2	1059	2	2

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1002	0	1536	501
Stage 1	-	-	-	-	1002	-
Stage 2	-	-	-	-	534	-
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	-	-	687	-	107	515
Stage 1	-	-	-	-	316	-
Stage 2	-	-	-	-	552	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	687	-	107	515
Mov Cap-2 Maneuver	-	-	-	-	227	-
Stage 1	-	-	-	-	315	-
Stage 2	-	-	-	-	552	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	16.6
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	315	-	-	687	-
HCM Lane V/C Ratio	0.014	-	-	0.003	-
HCM Control Delay (s)	16.6	-	-	10.3	-
HCM Lane LOS	C	-	-	B	-
HCM 95th %tile Q(veh)	0	-	-	0	-

Intersection	
Int Delay, s/veh	0.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	896	7	21	925	30	26
Future Vol, veh/h	896	7	21	925	30	26
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	25	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	996	8	23	1028	33	29

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1004	0	1560	502
Stage 1	-	-	-	-	1000	-
Stage 2	-	-	-	-	560	-
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	-	-	686	-	103	515
Stage 1	-	-	-	-	317	-
Stage 2	-	-	-	-	535	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	686	-	99	515
Mov Cap-2 Maneuver	-	-	-	-	216	-
Stage 1	-	-	-	-	306	-
Stage 2	-	-	-	-	535	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.2	20.4
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	296	-	-	686	-
HCM Lane V/C Ratio	0.21	-	-	0.034	-
HCM Control Delay (s)	20.4	-	-	10.4	-
HCM Lane LOS	C	-	-	B	-
HCM 95th %tile Q(veh)	0.8	-	-	0.1	-

Intersection	
Int Delay, s/veh	0.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	918	4	0	945	2	30
Future Vol, veh/h	918	4	0	945	2	30
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	25	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1020	4	0	1050	2	33

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1024	0	1547	512
Stage 1	-	-	-	-	1022	-
Stage 2	-	-	-	-	525	-
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	-	-	674	-	105	507
Stage 1	-	-	-	-	308	-
Stage 2	-	-	-	-	558	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	674	-	105	507
Mov Cap-2 Maneuver	-	-	-	-	224	-
Stage 1	-	-	-	-	308	-
Stage 2	-	-	-	-	558	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	13.3
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	470	-	-	674	-
HCM Lane V/C Ratio	0.076	-	-	-	-
HCM Control Delay (s)	13.3	-	-	0	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0.2	-	-	0	-

Intersection	
Int Delay, s/veh	13.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	7	886	42	6	849	9	68	3	49	7	0	35
Future Vol, veh/h	7	886	42	6	849	9	68	3	49	7	0	35
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	25	-	-	25	-	-	-	-	-	0	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	8	984	47	7	943	10	76	3	54	8	0	39

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	953	0	0	1031	0	0	1510	1991	516	1472	-	477
Stage 1	-	-	-	-	-	-	1024	1024	-	962	-	-
Stage 2	-	-	-	-	-	-	486	967	-	510	-	-
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	717	-	-	670	-	-	83	60	504	88	0	534
Stage 1	-	-	-	-	-	-	252	311	-	275	0	-
Stage 2	-	-	-	-	-	-	531	331	-	514	0	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	717	-	-	670	-	-	76	59	504	74	-	534
Mov Cap-2 Maneuver	-	-	-	-	-	-	76	59	-	74	-	-
Stage 1	-	-	-	-	-	-	249	308	-	272	-	-
Stage 2	-	-	-	-	-	-	487	328	-	448	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0.1	204.9	20.1
HCM LOS			F	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	115	717	-	-	670	-	-	74	534
HCM Lane V/C Ratio	1.159	0.011	-	-	0.01	-	-	0.105	0.073
HCM Control Delay (s)	204.9	10.1	-	-	10.4	-	-	59.3	12.3
HCM Lane LOS	F	B	-	-	B	-	-	F	B
HCM 95th %tile Q(veh)	8.3	0	-	-	0	-	-	0.3	0.2

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	11	880	55	63	847	8	14	1	92	4	0	7
Future Vol, veh/h	11	880	55	63	847	8	14	1	92	4	0	7
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	25	-	-	25	-	-	-	-	-	0	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	12	978	61	70	941	9	16	1	102	4	0	8

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	950	0	0	1039	0	0	1644	2123	520	1600	-	475
Stage 1	-	-	-	-	-	-	1033	1033	-	1086	-	-
Stage 2	-	-	-	-	-	-	611	1090	-	514	-	-
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	719	-	-	665	-	-	66	49	501	71	0	536
Stage 1	-	-	-	-	-	-	249	308	-	231	0	-
Stage 2	-	-	-	-	-	-	448	289	-	511	0	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	719	-	-	665	-	-	59	43	501	50	-	536
Mov Cap-2 Maneuver	-	-	-	-	-	-	59	43	-	50	-	-
Stage 1	-	-	-	-	-	-	245	303	-	227	-	-
Stage 2	-	-	-	-	-	-	395	259	-	398	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0.8	33.7	38
HCM LOS			D	E

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	241	719	-	-	665	-	-	50	536
HCM Lane V/C Ratio	0.493	0.017	-	-	0.105	-	-	0.089	0.015
HCM Control Delay (s)	33.7	10.1	-	-	11	-	-	83.9	11.8
HCM Lane LOS	D	B	-	-	B	-	-	F	B
HCM 95th %tile Q(veh)	2.5	0.1	-	-	0.4	-	-	0.3	0

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	510	56	431	56	62	411	1624	61	1569	486
Future Volume (vph)	510	56	431	56	62	411	1624	61	1569	486
Turn Type	Split	NA	pm+ov	Split	NA	Prot	NA	Prot	NA	pm+ov
Protected Phases	4	4	5	8	8	5	2	1	6	4
Permitted Phases			4							6
Detector Phase	4	4	5	8	8	5	2	1	6	4
Switch Phase										
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0	7.0	10.0	5.0	10.0	7.0
Minimum Split (s)	13.0	13.0	13.0	13.0	13.0	13.0	16.7	11.0	16.0	13.0
Total Split (s)	30.0	30.0	30.0	13.0	13.0	30.0	73.0	14.0	57.0	30.0
Total Split (%)	23.1%	23.1%	23.1%	10.0%	10.0%	23.1%	56.2%	10.8%	43.8%	23.1%
Yellow Time (s)	4.0	4.0	4.0	3.6	3.6	4.0	4.7	3.3	4.7	4.0
All-Red Time (s)	1.5	1.5	1.5	2.0	2.0	1.5	1.0	2.0	1.0	1.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	5.5	5.5	5.6	5.6	5.5	5.7	5.3	5.7	5.5
Lead/Lag			Lead			Lead	Lag	Lead	Lag	
Lead-Lag Optimize?										
Recall Mode	None	None	None	None	None	None	None	None	C-Max	None
Act Effct Green (s)	24.5	24.5	45.7	7.3	7.3	21.2	70.4	7.9	54.6	84.8
Actuated g/C Ratio	0.19	0.19	0.35	0.06	0.06	0.16	0.54	0.06	0.42	0.65
v/c Ratio	0.99	0.99	0.80	0.63	0.58	0.82	0.68	0.64	0.82	0.50
Control Delay	100.1	100.6	33.0	86.8	37.9	64.6	23.7	85.4	37.6	11.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	100.1	100.6	33.0	86.8	37.9	64.6	23.7	85.4	37.6	11.3
LOS	F	F	C	F	D	E	C	F	D	B
Approach Delay		71.2			52.2		31.8		33.0	
Approach LOS		E			D		C		C	

Intersection Summary			
Cycle Length: 130			
Actuated Cycle Length: 130			
Offset: 0 (0%), Referenced to phase 6:SBT, Start of Green			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.99			
Intersection Signal Delay: 40.3		Intersection LOS: D	
Intersection Capacity Utilization 82.1%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 9: Scottsdale Rd & Lincoln Dr

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	510	56	431	56	62	72	411	1624	45	61	1569	486
Future Volume (veh/h)	510	56	431	56	62	72	411	1624	45	61	1569	486
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	611	0	479	62	69	80	457	1804	50	68	1743	540
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	671	0	535	101	101	90	515	2537	70	87	2015	924
Arrive On Green	0.06	0.00	0.06	0.06	0.06	0.06	0.15	0.50	0.50	0.05	0.39	0.39
Sat Flow, veh/h	3563	0	1585	1781	1777	1585	3456	5107	141	1781	5106	1585
Grp Volume(v), veh/h	611	0	479	62	69	80	457	1202	652	68	1743	540
Grp Sat Flow(s),veh/h/ln	1781	0	1585	1781	1777	1585	1728	1702	1845	1781	1702	1585
Q Serve(g_s), s	22.2	0.0	24.5	4.4	5.0	6.5	16.9	35.7	35.8	4.9	40.8	28.0
Cycle Q Clear(g_c), s	22.2	0.0	24.5	4.4	5.0	6.5	16.9	35.7	35.8	4.9	40.8	28.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.08	1.00		1.00
Lane Grp Cap(c), veh/h	671	0	535	101	101	90	515	1691	916	87	2015	924
V/C Ratio(X)	0.91	0.00	0.90	0.61	0.68	0.89	0.89	0.71	0.71	0.78	0.87	0.58
Avail Cap(c_a), veh/h	671	0	535	101	101	90	651	1762	955	119	2015	924
HCM Platoon Ratio	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	59.9	0.0	46.1	59.9	60.1	60.9	54.2	25.5	25.5	61.2	36.2	17.1
Incr Delay (d2), s/veh	16.2	0.0	17.0	7.6	14.4	57.9	10.3	1.1	2.0	13.9	5.3	2.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	12.2	0.0	16.7	2.2	2.6	4.1	8.1	14.5	15.9	2.6	17.7	16.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	76.0	0.0	63.1	67.5	74.6	118.8	64.5	26.5	27.5	75.1	41.4	19.8
LnGrp LOS	E	A	E	E	E	F	E	C	C	E	D	B
Approach Vol, veh/h		1090			211			2311			2351	
Approach Delay, s/veh		70.4			89.3			34.3			37.4	
Approach LOS		E			F			C			D	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	11.6	70.3		30.0	24.9	57.0		13.0				
Change Period (Y+Rc), s	* 5.3	5.7		5.5	5.5	5.7		5.6				
Max Green Setting (Gmax), s	* 8.7	67.3		24.5	24.5	51.3		7.4				
Max Q Clear Time (g_c+I1), s	6.9	37.8		26.5	18.9	42.8		8.5				
Green Ext Time (p_c), s	0.0	2.9		0.0	0.5	2.5		0.0				

Intersection Summary			
HCM 6th Ctrl Delay		44.1	
HCM 6th LOS		D	

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

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	222	981	24	898	5	34	78	88
Future Volume (vph)	222	981	24	898	5	34	78	88
Turn Type	pm+pt	NA	Perm	NA	Perm	NA	pm+pt	NA
Protected Phases	1	6		2		4	3	8
Permitted Phases	6		2		4		8	
Detector Phase	1	6	2	2	4	4	3	8
Switch Phase								
Minimum Initial (s)	3.5	15.0	15.0	15.0	7.0	7.0	3.5	7.0
Minimum Split (s)	8.0	27.0	27.0	27.0	33.5	33.5	8.0	33.5
Total Split (s)	27.0	77.0	50.0	50.0	44.0	44.0	9.0	53.0
Total Split (%)	20.8%	59.2%	38.5%	38.5%	33.8%	33.8%	6.9%	40.8%
Yellow Time (s)	3.0	4.5	4.5	4.5	4.0	4.0	3.0	4.0
All-Red Time (s)	1.0	1.5	1.5	1.5	2.5	2.5	1.0	2.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	6.0	6.0	6.0	6.5	6.5	4.0	6.5
Lead/Lag	Lead		Lag	Lag	Lag	Lag	Lead	
Lead-Lag Optimize?	Yes		Yes	Yes	Yes	Yes	Yes	
Recall Mode	None	C-Max	C-Max	C-Max	None	None	None	None
Act Effct Green (s)	93.3	91.3	70.1	70.1	17.4	17.4	28.7	26.2
Actuated g/C Ratio	0.72	0.70	0.54	0.54	0.13	0.13	0.22	0.20
v/c Ratio	0.58	0.45	0.11	0.55	0.08	0.25	0.32	0.84
Control Delay	13.3	10.2	18.5	25.6	46.2	31.3	42.1	50.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	13.3	10.2	18.5	25.6	46.2	31.3	42.1	50.2
LOS	B	B	B	C	D	C	D	D
Approach Delay		10.7		25.4		32.6		48.6
Approach LOS		B		C		C		D

Intersection Summary		
Cycle Length: 130		
Actuated Cycle Length: 130		
Offset: 0 (0%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green		
Natural Cycle: 90		
Control Type: Actuated-Coordinated		
Maximum v/c Ratio: 0.84		
Intersection Signal Delay: 22.3	Intersection LOS: C	
Intersection Capacity Utilization 74.9%	ICU Level of Service D	
Analysis Period (min) 15		

Splits and Phases: 1: Mockingbird Ln & Lincoln Drive

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	222	981	30	24	898	44	5	34	24	78	88	233
Future Volume (veh/h)	222	981	30	24	898	44	5	34	24	78	88	233
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	247	1090	33	27	998	49	6	38	27	87	98	259
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	394	2335	71	312	1915	94	88	175	124	310	109	289
Arrive On Green	0.08	0.66	0.66	0.56	0.56	0.56	0.17	0.17	0.17	0.04	0.24	0.24
Sat Flow, veh/h	1781	3521	107	502	3447	169	1024	1017	723	1781	454	1200
Grp Volume(v), veh/h	247	550	573	27	514	533	6	0	65	87	0	357
Grp Sat Flow(s),veh/h/ln	1781	1777	1851	502	1777	1840	1024	0	1740	1781	0	1654
Q Serve(g_s), s	7.4	19.6	19.6	3.6	23.5	23.5	0.7	0.0	4.2	5.0	0.0	27.2
Cycle Q Clear(g_c), s	7.4	19.6	19.6	9.3	23.5	23.5	18.9	0.0	4.2	5.0	0.0	27.2
Prop In Lane	1.00		0.06	1.00		0.09	1.00		0.42	1.00		0.73
Lane Grp Cap(c), veh/h	394	1178	1227	312	987	1022	88	0	299	310	0	398
V/C Ratio(X)	0.63	0.47	0.47	0.09	0.52	0.52	0.07	0.00	0.22	0.28	0.00	0.90
Avail Cap(c_a), veh/h	572	1178	1227	312	987	1022	208	0	502	310	0	592
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.55	0.55	0.55	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	14.0	10.7	10.7	16.4	18.1	18.1	61.3	0.0	46.3	41.3	0.0	47.8
Incr Delay (d2), s/veh	1.6	1.3	1.3	0.3	1.1	1.0	0.3	0.0	0.4	0.5	0.0	11.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.0	7.8	8.2	0.4	9.8	10.2	0.2	0.0	1.9	2.3	0.0	12.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	15.7	12.0	12.0	16.7	19.2	19.1	61.6	0.0	46.7	41.8	0.0	59.5
LnGrp LOS	B	B	B	B	B	B	E	A	D	D	A	E
Approach Vol, veh/h		1370			1074			71			444	
Approach Delay, s/veh		12.7			19.1			48.0			56.0	
Approach LOS		B			B			D			E	

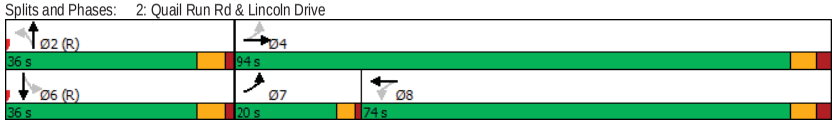
Timer - Assigned Phs	1	2	3	4		6		8				
Phs Duration (G+Y+Rc), s	14.0	78.2	9.0	28.8		92.2		37.8				
Change Period (Y+Rc), s	4.0	6.0	4.0	6.5		6.0		6.5				
Max Green Setting (Gmax), s	23.0	44.0	5.0	37.5		71.0		46.5				
Max Q Clear Time (g_c+I1), s	9.4	25.5	7.0	20.9		21.6		29.2				
Green Ext Time (p_c), s	0.6	7.1	0.0	0.2		9.9		2.2				

Intersection Summary		
HCM 6th Ctrl Delay	22.3	
HCM 6th LOS	C	

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	115	1030	2	863	1	0	26	0
Future Volume (vph)	115	1030	2	863	1	0	26	0
Turn Type	pm+pt	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases	7	4		8		2		6
Permitted Phases	4		8		2		6	
Detector Phase	7	4	8	8	2	2	6	6
Switch Phase								
Minimum Initial (s)	3.5	15.0	15.0	15.0	7.0	7.0	7.0	7.0
Minimum Split (s)	8.0	28.0	28.0	28.0	33.0	33.0	33.0	33.0
Total Split (s)	20.0	94.0	74.0	74.0	36.0	36.0	36.0	36.0
Total Split (%)	15.4%	72.3%	56.9%	56.9%	27.7%	27.7%	27.7%	27.7%
Yellow Time (s)	3.0	4.0	4.0	4.0	4.5	4.5	4.5	4.5
All-Red Time (s)	1.0	2.5	2.5	2.5	1.5	1.5	1.5	1.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	4.0	6.5	6.5	6.5		6.0	6.0	6.0
Lead/Lag	Lead		Lag	Lag				
Lead-Lag Optimize?	Yes		Yes	Yes				
Recall Mode	None	None	None	None	C-Max	C-Max	C-Max	C-Max
Act Effct Green (s)	64.3	61.8	46.6	46.6		55.7	55.7	55.7
Actuated g/C Ratio	0.49	0.48	0.36	0.36		0.43	0.43	0.43
v/c Ratio	0.53	0.68	0.02	0.77		0.01	0.05	0.09
Control Delay	30.0	35.9	26.0	43.2		0.0	26.3	0.2
Queue Delay	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	30.0	35.9	26.0	43.2		0.0	26.3	0.2
LOS	C	D	C	D		A	C	A
Approach Delay		35.3		43.1				7.7
Approach LOS		D		D				A

Intersection Summary		
Cycle Length: 130		
Actuated Cycle Length: 130		
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green		
Natural Cycle: 70		
Control Type: Actuated-Coordinated		
Maximum v/c Ratio: 0.77		
Intersection Signal Delay: 37.2	Intersection LOS: D	
Intersection Capacity Utilization 64.4%	ICU Level of Service C	
Analysis Period (min) 15		

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	115	1030	4	2	863	12	1	0	7	26	0	65
Future Volume (veh/h)	115	1030	4	2	863	12	1	0	7	26	0	65
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	128	1144	4	2	959	13	1	0	8	29	0	72
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	210	1506	5	187	1152	16	94	22	681	745	0	775
Arrive On Green	0.13	0.83	0.83	0.32	0.32	0.32	0.49	0.00	0.49	0.49	0.00	0.49
Sat Flow, veh/h	1781	3632	13	490	3590	49	130	44	1393	1407	0	1585
Grp Volume(v), veh/h	128	560	588	2	475	497	9	0	0	29	0	72
Grp Sat Flow(s),veh/h/ln	1781	1777	1868	490	1777	1862	1567	0	0	1407	0	1585
Q Serve(g_s), s	6.1	18.9	18.9	0.4	32.2	32.2	0.0	0.0	0.0	0.9	0.0	3.2
Cycle Q Clear(g_c), s	6.1	18.9	18.9	7.1	32.2	32.2	0.4	0.0	0.0	1.3	0.0	3.2
Prop In Lane	1.00		0.01	1.00		0.03	0.11		0.89	1.00		1.00
Lane Grp Cap(c), veh/h	210	737	775	187	570	597	797	0	0	745	0	775
V/C Ratio(X)	0.61	0.76	0.76	0.01	0.83	0.83	0.01	0.00	0.00	0.04	0.00	0.09
Avail Cap(c_a), veh/h	317	1196	1257	285	923	967	797	0	0	745	0	775
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.90	0.90	0.90	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	28.9	8.1	8.1	34.8	40.9	40.9	17.1	0.0	0.0	17.3	0.0	17.8
Incr Delay (d2), s/veh	2.6	1.5	1.4	0.0	3.6	3.4	0.0	0.0	0.0	0.1	0.0	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.5	3.6	3.7	0.0	14.6	15.2	0.1	0.0	0.0	0.5	0.0	1.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	31.4	9.6	9.5	34.9	44.5	44.3	17.1	0.0	0.0	17.4	0.0	18.0
LnGrp LOS	C	A	A	C	D	D	B	A	A	B	A	B
Approach Vol, veh/h		1276			974			9			101	
Approach Delay, s/veh		11.7			44.4			17.1			17.8	
Approach LOS		B			D			B			B	

Timer - Assigned Phs		2		4		6	7	8				
Phs Duration (G+Y+Rc), s		69.6		60.4		69.6	12.2	48.2				
Change Period (Y+Rc), s		6.0		6.5		6.0	4.0	6.5				
Max Green Setting (Gmax), s		30.0		87.5		30.0	16.0	67.5				
Max Q Clear Time (g_c+I1), s		2.4		20.9		5.2	8.1	34.2				
Green Ext Time (p_c), s		0.0		10.5		0.4	0.2	7.5				

Intersection Summary		
HCM 6th Ctrl Delay	25.5	
HCM 6th LOS	C	

Intersection	
Int Delay, s/veh	0.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	1049	17	26	860	15	22
Future Vol, veh/h	1049	17	26	860	15	22
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	25	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1166	19	29	956	17	24

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1185	0	1712	593
Stage 1	-	-	-	-	1176	-
Stage 2	-	-	-	-	536	-
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	-	-	585	-	81	449
Stage 1	-	-	-	-	255	-
Stage 2	-	-	-	-	551	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	585	-	77	449
Mov Cap-2 Maneuver	-	-	-	-	180	-
Stage 1	-	-	-	-	242	-
Stage 2	-	-	-	-	551	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.3	20.1
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	280	-	-	585	-
HCM Lane V/C Ratio	0.147	-	-	0.049	-
HCM Control Delay (s)	20.1	-	-	11.5	-
HCM Lane LOS	C	-	-	B	-
HCM 95th %tile Q(veh)	0.5	-	-	0.2	-

Intersection	
Int Delay, s/veh	0.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	1054	17	42	879	6	9
Future Vol, veh/h	1054	17	42	879	6	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	-	-	25	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1171	19	47	977	7	10

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1190	0	1764	595
Stage 1	-	-	-	-	1181	-
Stage 2	-	-	-	-	583	-
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	-	-	582	-	75	447
Stage 1	-	-	-	-	254	-
Stage 2	-	-	-	-	521	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	582	-	69	447
Mov Cap-2 Maneuver	-	-	-	-	170	-
Stage 1	-	-	-	-	233	-
Stage 2	-	-	-	-	521	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.5	19.2
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	271	-	-	582	-
HCM Lane V/C Ratio	0.062	-	-	0.08	-
HCM Control Delay (s)	19.2	-	-	11.7	-
HCM Lane LOS	C	-	-	B	-
HCM 95th %tile Q(veh)	0.2	-	-	0.3	-

Intersection	
Int Delay, s/veh	0.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	1050	11	5	921	0	9
Future Vol, veh/h	1050	11	5	921	0	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	-	-	-	-	-	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	1167	12	6	1023	0	10

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1179	0	-	590
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	4.14	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	2.22	-	-	3.32
Pot Cap-1 Maneuver	-	-	588	-	0	451
Stage 1	-	-	-	-	0	-
Stage 2	-	-	-	-	0	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	588	-	-	451
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	13.2
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	451	-	-	588	-
HCM Lane V/C Ratio	0.022	-	-	0.009	-
HCM Control Delay (s)	13.2	-	-	11.2	-
HCM Lane LOS	B	-	-	B	-
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Intersection	
Int Delay, s/veh	9.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	27	999	35	19	861	10	52	0	30	5	0	12
Future Vol, veh/h	27	999	35	19	861	10	52	0	30	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	25	-	-	25	-	-	-	-	-	0	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	30	1110	39	21	957	11	58	0	33	6	0	13

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	968	0	0	1149	0	0	1711	2200	575	1620	-	484
Stage 1	-	-	-	-	-	-	1190	1190	-	1005	-	-
Stage 2	-	-	-	-	-	-	521	1010	-	615	-	-
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	707	-	-	604	-	-	59	44	461	68	0	529
Stage 1	-	-	-	-	-	-	199	259	-	259	0	-
Stage 2	-	-	-	-	-	-	507	316	-	445	0	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	707	-	-	604	-	-	~ 54	41	461	59	-	529
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 54	41	-	59	-	-
Stage 1	-	-	-	-	-	-	191	248	-	248	-	-
Stage 2	-	-	-	-	-	-	477	305	-	395	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.3	0.2	236.3	29.7
HCM LOS			F	D

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	80	707	-	-	604	-	-	59	529
HCM Lane V/C Ratio	1.139	0.042	-	-	0.035	-	-	0.094	0.025
HCM Control Delay (s)	236.3	10.3	-	-	11.2	-	-	72.3	12
HCM Lane LOS	F	B	-	-	B	-	-	F	B
HCM 95th %tile Q(veh)	6.6	0.1	-	-	0.1	-	-	0.3	0.1

Notes

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

Intersection	
Int Delay, s/veh	1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	3	978	55	44	873	8	6	0	42	4	1	12
Future Vol, veh/h	3	978	55	44	873	8	6	0	42	4	1	12
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	25	-	-	25	-	-	-	-	-	0	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	3	1087	61	49	970	9	7	0	47	4	1	13

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	979	0	0	1148	0	0	1708	2201	574	1623	2227	490
Stage 1	-	-	-	-	-	-	1124	1124	-	1073	1073	-
Stage 2	-	-	-	-	-	-	584	1077	-	550	1154	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	701	-	-	604	-	-	59	44	462	68	43	524
Stage 1	-	-	-	-	-	-	219	279	-	235	295	-
Stage 2	-	-	-	-	-	-	465	293	-	487	270	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	701	-	-	604	-	-	53	40	462	57	39	524
Mov Cap-2 Maneuver	-	-	-	-	-	-	53	40	-	57	39	-
Stage 1	-	-	-	-	-	-	218	278	-	234	271	-
Stage 2	-	-	-	-	-	-	415	269	-	436	269	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.5	24.8	27.4
HCM LOS			C	D

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	235	701	-	-	604	-	-	57	524
HCM Lane V/C Ratio	0.227	0.005	-	-	0.081	-	-	0.078	0.025
HCM Control Delay (s)	24.8	10.2	-	-	11.5	-	-	73.4	12.1
HCM Lane LOS	C	B	-	-	B	-	-	F	B
HCM 95th %tile Q(veh)	0.8	0	-	-	0.3	-	-	0.2	0.1

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	461	38	469	37	36	307	1316	51	1669	615
Future Volume (vph)	461	38	469	37	36	307	1316	51	1669	615
Turn Type	Split	NA	pm+ov	Split	NA	Prot	NA	Prot	NA	pm+ov
Protected Phases	4	4	5	8	8	5	2	1	6	4
Permitted Phases			4							6
Detector Phase	4	4	5	8	8	5	2	1	6	4
Switch Phase										
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0	7.0	10.0	5.0	10.0	7.0
Minimum Split (s)	13.0	13.0	13.0	13.0	13.0	13.0	16.7	11.0	16.0	13.0
Total Split (s)	30.0	30.0	30.0	13.0	13.0	30.0	73.0	14.0	57.0	30.0
Total Split (%)	23.1%	23.1%	23.1%	10.0%	10.0%	23.1%	56.2%	10.8%	43.8%	23.1%
Yellow Time (s)	4.0	4.0	4.0	3.6	3.6	4.0	4.7	3.3	4.7	4.0
All-Red Time (s)	1.5	1.5	1.5	2.0	2.0	1.5	1.0	2.0	1.0	1.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	5.5	5.5	5.6	5.6	5.5	5.7	5.3	5.7	5.5
Lead/Lag			Lead			Lead	Lag	Lead	Lag	
Lead-Lag Optimize?										
Recall Mode	None	None	None	None	None	None	None	None	C-Max	None
Act Effct Green (s)	23.8	23.8	43.1	7.2	7.2	19.3	71.3	7.6	57.4	86.8
Actuated g/C Ratio	0.18	0.18	0.33	0.06	0.06	0.15	0.55	0.06	0.44	0.67
v/c Ratio	0.90	0.90	0.91	0.42	0.40	0.67	0.54	0.55	0.83	0.61
Control Delay	93.2	92.7	39.4	72.5	33.9	58.4	20.5	79.0	36.8	11.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	93.2	92.7	39.4	72.5	33.9	58.4	20.5	79.0	36.8	11.6
LOS	F	F	D	E	C	E	C	E	D	B
Approach Delay		67.0			45.7		27.5		31.1	
Approach LOS		E			D		C		C	

Intersection Summary		
Cycle Length: 130		
Actuated Cycle Length: 130		
Offset: 0 (0%), Referenced to phase 6:SBT, Start of Green		
Natural Cycle: 90		
Control Type: Actuated-Coordinated		
Maximum v/c Ratio: 0.91		
Intersection Signal Delay: 37.1	Intersection LOS: D	
Intersection Capacity Utilization 81.1%	ICU Level of Service D	
Analysis Period (min) 15		

Splits and Phases: 9: Scottsdale Rd & Lincoln Dr

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	461	38	469	37	36	48	307	1316	39	51	1669	615
Future Volume (veh/h)	461	38	469	37	36	48	307	1316	39	51	1669	615
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	542	0	521	41	40	53	341	1462	43	57	1854	683
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	671	0	483	95	95	85	401	2401	71	73	2015	924
Arrive On Green	0.19	0.00	0.19	0.05	0.05	0.05	0.12	0.47	0.47	0.04	0.39	0.39
Sat Flow, veh/h	3563	0	1585	1781	1777	1585	3456	5098	150	1781	5106	1585
Grp Volume(v), veh/h	542	0	521	41	40	53	341	976	529	57	1854	683
Grp Sat Flow(s),veh/h/ln	1781	0	1585	1781	1777	1585	1728	1702	1843	1781	1702	1585
Q Serve(g_s), s	18.9	0.0	24.5	2.9	2.8	4.3	12.6	27.7	27.7	4.1	44.9	41.0
Cycle Q Clear(g_c), s	18.9	0.0	24.5	2.9	2.8	4.3	12.6	27.7	27.7	4.1	44.9	41.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.08	1.00		1.00
Lane Grp Cap(c), veh/h	671	0	483	95	95	85	401	1603	868	73	2015	924
V/C Ratio(X)	0.81	0.00	1.08	0.43	0.42	0.63	0.85	0.61	0.61	0.78	0.92	0.74
Avail Cap(c_a), veh/h	671	0	483	101	101	90	651	1762	954	119	2015	924
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	50.5	0.0	45.2	59.6	59.6	60.3	56.4	25.5	25.5	61.7	37.4	19.9
Incr Delay (d2), s/veh	6.7	0.0	64.1	1.1	1.1	8.2	3.0	0.3	0.6	6.5	8.4	5.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	9.1	0.0	24.0	1.3	1.3	1.9	5.7	11.2	12.2	2.0	20.0	24.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	57.2	0.0	109.3	60.8	60.7	68.4	59.4	25.8	26.1	68.2	45.8	25.1
LnGrp LOS	E	A	F	E	E	E	E	C	C	E	D	C
Approach Vol, veh/h		1063			134			1846			2594	
Approach Delay, s/veh		82.8			63.8			32.1			40.8	
Approach LOS		F			E			C			D	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	10.6	66.9		30.0	20.6	57.0		12.5				
Change Period (Y+Rc), s	* 5.3	5.7		5.5	5.5	5.7		5.6				
Max Green Setting (Gmax), s	* 8.7	67.3		24.5	24.5	51.3		7.4				
Max Q Clear Time (g_c+I1), s	6.1	29.7		26.5	14.6	46.9		6.3				
Green Ext Time (p_c), s	0.0	2.2		0.0	0.5	1.9		0.0				

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

Notes

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

Intersection	
Int Delay, s/veh	0

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	1	0	0	1	0
Future Vol, veh/h	0	1	0	0	1	0
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	1	0	0	1	0

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	2	0	0	0	0	0
Stage 1	0	-	-	-	-	-
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	1021	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	1021	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	1021	-	-	-	-	-
Mov Cap-2 Maneuver	1021	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	1021	-	-	-	-	-

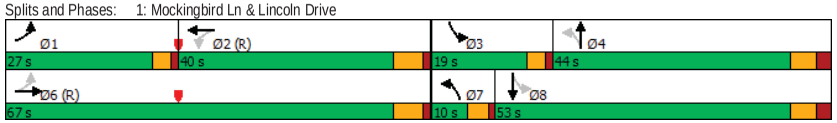
Approach	WB	NB	SB
HCM Control Delay, s		0	
HCM LOS	-		

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

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	222	981	24	898	5	34	78	88
Future Volume (vph)	222	981	24	898	5	34	78	88
Turn Type	pm+pt	NA	Perm	NA	pm+pt	NA	pm+pt	NA
Protected Phases	1	6		2	7	4	3	8
Permitted Phases	6		2		4		8	
Detector Phase	1	6	2	2	7	4	3	8
Switch Phase								
Minimum Initial (s)	3.5	15.0	15.0	15.0	5.0	7.0	3.5	7.0
Minimum Split (s)	8.0	27.0	27.0	27.0	9.5	33.5	8.0	33.5
Total Split (s)	27.0	67.0	40.0	40.0	10.0	44.0	19.0	53.0
Total Split (%)	20.8%	51.5%	30.8%	30.8%	7.7%	33.8%	14.6%	40.8%
Yellow Time (s)	3.0	4.5	4.5	4.5	3.5	4.0	3.0	4.0
All-Red Time (s)	1.0	1.5	1.5	1.5	1.0	2.5	1.0	2.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	6.0	6.0	6.0	4.5	6.5	4.0	6.5
Lead/Lag	Lead		Lag	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	C-Max	C-Max	C-Max	None	None	None	None
Act Effct Green (s)	91.3	89.3	68.7	68.7	19.9	14.2	30.7	26.2
Actuated g/C Ratio	0.70	0.69	0.53	0.53	0.15	0.11	0.24	0.20
v/c Ratio	0.61	0.46	0.11	0.56	0.05	0.30	0.27	0.84
Control Delay	16.5	11.8	15.2	19.1	32.0	34.2	38.7	50.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	16.5	11.8	15.2	19.1	32.0	34.2	38.7	50.3
LOS	B	B	B	B	C	C	D	D
Approach Delay		12.7		19.0		34.0		48.0
Approach LOS		B		B		C		D

Intersection Summary			
Cycle Length: 130			
Actuated Cycle Length: 130			
Offset: 0 (0%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.84			
Intersection Signal Delay: 20.8		Intersection LOS: C	
Intersection Capacity Utilization 74.9%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 1: Mockingbird Ln & Lincoln Drive



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	222	981	30	24	898	44	5	34	24	78	88	233
Future Volume (veh/h)	222	981	30	24	898	44	5	34	24	78	88	233
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	247	1090	33	27	998	49	6	38	27	87	98	259
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	369	2186	66	282	1747	86	101	204	145	374	109	289
Arrive On Green	0.08	0.62	0.62	0.51	0.51	0.51	0.01	0.20	0.20	0.05	0.24	0.24
Sat Flow, veh/h	1781	3521	107	502	3447	169	1781	1017	723	1781	454	1200
Grp Volume(v), veh/h	247	550	573	27	514	533	6	0	65	87	0	357
Grp Sat Flow(s),veh/h/ln	1781	1777	1851	502	1777	1840	1781	0	1740	1781	0	1654
Q Serve(g_s), s	8.3	22.1	22.1	4.1	26.1	26.1	0.3	0.0	4.0	4.9	0.0	27.2
Cycle Q Clear(g_c), s	8.3	22.1	22.1	11.3	26.1	26.1	0.3	0.0	4.0	4.9	0.0	27.2
Prop In Lane	1.00		0.06	1.00		0.09	1.00		0.42	1.00		0.73
Lane Grp Cap(c), veh/h	369	1103	1149	282	901	933	101	0	349	374	0	398
V/C Ratio(X)	0.67	0.50	0.50	0.10	0.57	0.57	0.06	0.00	0.19	0.23	0.00	0.90
Avail Cap(c_a), veh/h	535	1103	1149	282	901	933	163	0	502	488	0	592
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.55	0.55	0.55	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	17.4	13.5	13.5	20.7	22.3	22.3	42.7	0.0	43.1	36.8	0.0	47.8
Incr Delay (d2), s/veh	2.1	1.6	1.5	0.4	1.5	1.4	0.2	0.0	0.3	0.3	0.0	11.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.5	9.1	9.5	0.5	11.2	11.6	0.2	0.0	1.8	2.2	0.0	12.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	19.5	15.1	15.1	21.1	23.7	23.7	43.0	0.0	43.4	37.1	0.0	59.5
LnGrp LOS	B	B	B	C	C	C	D	A	D	D	A	E
Approach Vol, veh/h		1370			1074			71			444	
Approach Delay, s/veh		15.9			23.6			43.4			55.1	
Approach LOS		B			C			D			E	

Timer - Assigned Phs	1	2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s	14.8	71.9	10.7	32.6		86.7	5.5	37.8				
Change Period (Y+Rc), s	4.0	6.0	4.0	6.5		6.0	4.5	6.5				
Max Green Setting (Gmax), s	23.0	34.0	15.0	37.5		61.0	5.5	46.5				
Max Q Clear Time (g_c+I1), s	10.3	28.1	6.9	6.0		24.1	2.3	29.2				
Green Ext Time (p_c), s	0.6	3.3	0.1	0.3		9.5	0.0	2.2				

Intersection Summary			
HCM 6th Ctrl Delay		25.2	
HCM 6th LOS		C	

Notes

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

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	461	38	469	37	36	307	1316	51	1669	615
Future Volume (vph)	461	38	469	37	36	307	1316	51	1669	615
Turn Type	Split	NA	pm+ov	Split	NA	Prot	NA	Prot	NA	pm+ov
Protected Phases	4	4	5	8	8	5	2	1	6	4
Permitted Phases			4							6
Detector Phase	4	4	5	8	8	5	2	1	6	4
Switch Phase										
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0	7.0	10.0	5.0	10.0	7.0
Minimum Split (s)	13.0	13.0	13.0	13.0	13.0	13.0	16.7	11.0	16.0	13.0
Total Split (s)	32.0	32.0	27.0	21.0	21.0	27.0	54.0	23.0	50.0	32.0
Total Split (%)	24.6%	24.6%	20.8%	16.2%	16.2%	20.8%	41.5%	17.7%	38.5%	24.6%
Yellow Time (s)	4.0	4.0	4.0	3.6	3.6	4.0	4.7	3.3	4.7	4.0
All-Red Time (s)	1.5	1.5	1.5	2.0	2.0	1.5	1.0	2.0	1.0	1.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	5.5	5.5	5.6	5.6	5.5	5.7	5.3	5.7	5.5
Lead/Lag			Lead			Lead	Lag	Lead	Lag	
Lead-Lag Optimize?										
Recall Mode	None	None	None	None	None	None	None	None	C-Max	None
Act Effct Green (s)	24.9	24.9	42.4	8.1	8.1	17.4	68.3	8.6	57.2	87.8
Actuated g/C Ratio	0.19	0.19	0.33	0.06	0.06	0.13	0.53	0.07	0.44	0.68
v/c Ratio	0.86	0.86	0.82	0.37	0.37	0.74	0.57	0.49	0.83	0.57
Control Delay	95.4	95.1	34.7	67.7	32.0	63.9	23.3	71.6	37.1	7.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	95.4	95.1	34.7	67.7	32.0	63.9	23.3	71.6	37.1	7.2
LOS	F	F	C	E	C	E	C	E	D	A
Approach Delay		65.9			42.9		30.8		30.0	
Approach LOS		E			D		C		C	

Intersection Summary			
Cycle Length: 130			
Actuated Cycle Length: 130			
Offset: 0 (0%), Referenced to phase 6:SBT, Start of Green			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.86			
Intersection Signal Delay: 37.4		Intersection LOS: D	
Intersection Capacity Utilization 81.1%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 9: Scottsdale Rd & Lincoln Dr

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	461	38	469	37	36	48	307	1316	39	51	1669	615
Future Volume (veh/h)	461	38	469	37	36	48	307	1316	39	51	1669	615
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	542	0	521	41	40	53	341	1462	43	57	1854	683
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	726	0	506	95	95	85	399	2123	62	74	1740	863
Arrive On Green	0.20	0.00	0.20	0.05	0.05	0.05	0.12	0.42	0.42	0.04	0.34	0.34
Sat Flow, veh/h	3563	0	1585	1781	1777	1585	3456	5098	150	1781	5106	1585
Grp Volume(v), veh/h	542	0	521	41	40	53	341	976	529	57	1854	683
Grp Sat Flow(s),veh/h/ln	1781	0	1585	1781	1777	1585	1728	1702	1843	1781	1702	1585
Q Serve(g_s), s	18.6	0.0	26.5	2.9	2.8	4.3	12.6	30.5	30.5	4.1	44.3	44.3
Cycle Q Clear(g_c), s	18.6	0.0	26.5	2.9	2.8	4.3	12.6	30.5	30.5	4.1	44.3	44.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.08	1.00		1.00
Lane Grp Cap(c), veh/h	726	0	506	95	95	85	399	1417	768	74	1740	863
V/C Ratio(X)	0.75	0.00	1.03	0.43	0.42	0.63	0.86	0.69	0.69	0.77	1.07	0.79
Avail Cap(c_a), veh/h	726	0	506	211	210	188	572	1417	768	243	1740	863
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	48.6	0.0	44.2	59.6	59.6	60.3	56.4	31.0	31.0	61.7	42.9	23.6
Incr Delay (d2), s/veh	3.8	0.0	47.8	1.1	1.1	2.8	6.3	1.2	2.2	6.4	41.5	7.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.6	0.0	22.8	1.3	1.3	1.8	5.8	12.7	13.9	2.0	25.1	24.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	52.4	0.0	92.1	60.8	60.7	63.1	62.7	32.2	33.2	68.1	84.3	30.9
LnGrp LOS	D	A	F	E	E	E	E	C	C	E	F	C
Approach Vol, veh/h		1063			134			1846			2594	
Approach Delay, s/veh		71.8			61.6			38.1			69.9	
Approach LOS		E			E			D			E	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	10.7	59.8		32.0	20.5	50.0		12.5				
Change Period (Y+Rc), s	* 5.3	5.7		5.5	5.5	5.7		5.6				
Max Green Setting (Gmax), s	* 18	48.3		26.5	21.5	44.3		15.4				
Max Q Clear Time (g_c+I1), s	6.1	32.5		28.5	14.6	46.3		6.3				
Green Ext Time (p_c), s	0.0	2.1		0.0	0.4	0.0		0.2				

Intersection Summary			
HCM 6th Ctrl Delay		59.7	
HCM 6th LOS		E	

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

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	246	888	25	949	7	62	65	48
Future Volume (vph)	246	888	25	949	7	62	65	48
Turn Type	pm+pt	NA	Perm	NA	Perm	NA	pm+pt	NA
Protected Phases	1	6		2		4	3	8
Permitted Phases	6		2		4		8	
Detector Phase	1	6	2	2	4	4	3	8
Switch Phase								
Minimum Initial (s)	3.5	15.0	15.0	15.0	7.0	7.0	3.5	7.0
Minimum Split (s)	8.0	27.0	27.0	27.0	33.5	33.5	8.0	33.5
Total Split (s)	27.0	77.0	50.0	50.0	44.0	44.0	9.0	53.0
Total Split (%)	20.8%	59.2%	38.5%	38.5%	33.8%	33.8%	6.9%	40.8%
Yellow Time (s)	3.0	4.5	4.5	4.5	4.0	4.0	3.0	4.0
All-Red Time (s)	1.0	1.5	1.5	1.5	2.5	2.5	1.0	2.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	6.0	6.0	6.0	6.5	6.5	4.0	6.5
Lead/Lag	Lead		Lag	Lag	Lag	Lag	Lead	
Lead-Lag Optimize?	Yes		Yes	Yes	Yes	Yes	Yes	
Recall Mode	None	C-Max	C-Max	C-Max	None	None	None	None
Act Effct Green (s)	101.1	99.1	76.2	76.2	11.2	11.2	20.9	18.4
Actuated g/C Ratio	0.78	0.76	0.59	0.59	0.09	0.09	0.16	0.14
v/c Ratio	0.59	0.38	0.09	0.55	0.09	0.55	0.39	0.64
Control Delay	11.8	6.2	10.4	19.8	54.7	61.1	51.9	27.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	11.8	6.2	10.4	19.8	54.7	61.1	51.9	27.6
LOS	B	A	B	B	D	E	D	C
Approach Delay		7.4		19.6		60.6		33.5
Approach LOS		A		B		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: 90		
Control Type: Actuated-Coordinated		
Maximum v/c Ratio: 0.64		
Intersection Signal Delay: 16.9	Intersection LOS: B	
Intersection Capacity Utilization 67.8%	ICU Level of Service C	
Analysis Period (min) 15		

Splits and Phases: 1: Mockingbird Ln & Lincoln Drive

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	246	888	29	25	949	66	7	62	20	65	48	156
Future Volume (veh/h)	246	888	29	25	949	66	7	62	20	65	48	156
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	273	987	32	28	1054	73	8	69	22	72	53	173
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	462	2612	85	411	2167	150	86	124	39	179	62	202
Arrive On Green	0.07	0.74	0.74	0.85	0.85	0.85	0.09	0.09	0.09	0.04	0.16	0.16
Sat Flow, veh/h	1781	3513	114	553	3372	233	1155	1359	433	1781	386	1258
Grp Volume(v), veh/h	273	499	520	28	555	572	8	0	91	72	0	226
Grp Sat Flow(s),veh/h/ln	1781	1777	1850	553	1777	1828	1155	0	1792	1781	0	1644
Q Serve(g_s), s	6.4	13.0	13.0	1.0	10.1	10.1	0.9	0.0	6.3	4.7	0.0	17.4
Cycle Q Clear(g_c), s	6.4	13.0	13.0	1.0	10.1	10.1	9.3	0.0	6.3	4.7	0.0	17.4
Prop In Lane	1.00		0.06	1.00		0.13	1.00		0.24	1.00		0.77
Lane Grp Cap(c), veh/h	462	1321	1375	411	1142	1175	86	0	163	179	0	264
V/C Ratio(X)	0.59	0.38	0.38	0.07	0.49	0.49	0.09	0.00	0.56	0.40	0.00	0.86
Avail Cap(c_a), veh/h	653	1321	1375	411	1142	1175	314	0	517	179	0	588
HCM Platoon Ratio	1.00	1.00	1.00	1.33	1.33	1.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.54	0.54	0.54	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	6.9	5.9	5.9	3.4	4.1	4.1	62.0	0.0	56.6	49.8	0.0	53.1
Incr Delay (d2), s/veh	1.2	0.8	0.8	0.2	0.8	0.8	0.5	0.0	2.9	1.4	0.0	7.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.4	4.7	4.9	0.1	2.8	2.9	0.3	0.0	3.0	2.2	0.0	7.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	8.1	6.8	6.7	3.6	4.9	4.9	62.5	0.0	59.5	51.2	0.0	61.0
LnGrp LOS	A	A	A	A	A	A	E	A	E	D	A	E
Approach Vol, veh/h		1292			1155			99			298	
Approach Delay, s/veh		7.0			4.9			59.8			58.7	
Approach LOS		A			A			E			E	

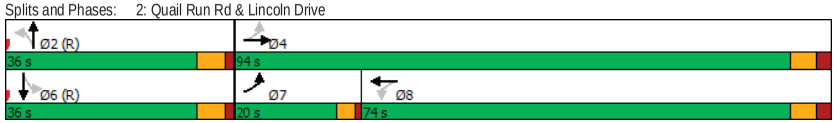
Timer - Assigned Phs	1	2	3	4		6		8				
Phs Duration (G+Y+Rc), s	13.1	89.6	9.0	18.3		102.7		27.3				
Change Period (Y+Rc), s	4.0	6.0	4.0	6.5		6.0		6.5				
Max Green Setting (Gmax), s	23.0	44.0	5.0	37.5		71.0		46.5				
Max Q Clear Time (g_c+I1), s	8.4	12.1	6.7	11.3		15.0		19.4				
Green Ext Time (p_c), s	0.7	9.7	0.0	0.5		8.6		1.5				

Intersection Summary		
HCM 6th Ctrl Delay	13.4	
HCM 6th LOS	B	

Lane Group	EBL	EBT	WBT	NBL	NBT	SBL	SBT
Lane Configurations							
Traffic Volume (vph)	85	904	945	1	0	14	0
Future Volume (vph)	85	904	945	1	0	14	0
Turn Type	pm+pt	NA	NA	Perm	NA	Perm	NA
Protected Phases	7	4	8		2		6
Permitted Phases	4			2		6	
Detector Phase	7	4	8	2	2	6	6
Switch Phase							
Minimum Initial (s)	3.5	15.0	15.0	7.0	7.0	7.0	7.0
Minimum Split (s)	8.0	28.0	28.0	33.0	33.0	33.0	33.0
Total Split (s)	20.0	94.0	74.0	36.0	36.0	36.0	36.0
Total Split (%)	15.4%	72.3%	56.9%	27.7%	27.7%	27.7%	27.7%
Yellow Time (s)	3.0	4.0	4.0	4.5	4.5	4.5	4.5
All-Red Time (s)	1.0	2.5	2.5	1.5	1.5	1.5	1.5
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	4.0	6.5	6.5		6.0	6.0	6.0
Lead/Lag	Lead		Lag				
Lead-Lag Optimize?	Yes		Yes				
Recall Mode	None	None	None	C-Max	C-Max	C-Max	C-Max
Act Effct Green (s)	68.0	65.5	51.3		52.0	52.0	52.0
Actuated g/C Ratio	0.52	0.50	0.39		0.40	0.40	0.40
v/c Ratio	0.42	0.56	0.77		0.00	0.03	0.13
Control Delay	29.9	35.0	44.1		0.0	28.9	0.3
Queue Delay	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	29.9	35.0	44.1		0.0	28.9	0.3
LOS	C	C	D		A	C	A
Approach Delay		34.5	44.1				4.2
Approach LOS		C	D				A

Intersection Summary			
Cycle Length: 130			
Actuated Cycle Length: 130			
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 70			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.77			
Intersection Signal Delay: 37.4		Intersection LOS: D	
Intersection Capacity Utilization 59.2%		ICU Level of Service B	
Analysis Period (min) 15			

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	85	904	2	0	945	25	1	0	2	14	0	93
Future Volume (veh/h)	85	904	2	0	945	25	1	0	2	14	0	93
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			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	94	1004	2	0	1050	28	1	0	2	16	0	103
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	182	1571	3	55	1250	33	251	17	462	726	0	748
Arrive On Green	0.09	0.86	0.86	0.00	0.35	0.35	0.47	0.00	0.47	0.47	0.00	0.47
Sat Flow, veh/h	1781	3639	7	560	3536	94	453	36	978	1415	0	1585
Grp Volume(v), veh/h	94	490	516	0	528	550	3	0	0	16	0	103
Grp Sat Flow(s),veh/h/ln	1781	1777	1869	560	1777	1853	1468	0	0	1415	0	1585
Q Serve(g_s), s	4.3	10.9	10.9	0.0	35.5	35.5	0.0	0.0	0.0	0.0	0.0	4.8
Cycle Q Clear(g_c), s	4.3	10.9	10.9	0.0	35.5	35.5	4.8	0.0	0.0	0.7	0.0	4.8
Prop In Lane	1.00		0.00	1.00		0.05	0.33		0.67	1.00		1.00
Lane Grp Cap(c), veh/h	182	767	807	55	628	655	730	0	0	726	0	748
V/C Ratio(X)	0.52	0.64	0.64	0.00	0.84	0.84	0.00	0.00	0.00	0.02	0.00	0.14
Avail Cap(c_a), veh/h	317	1196	1258	148	923	962	730	0	0	726	0	748
HCM Platoon Ratio	2.00	2.00	2.00	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	0.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	28.4	5.8	5.8	0.0	38.6	38.6	18.2	0.0	0.0	18.3	0.0	19.4
Incr Delay (d2), s/veh	2.1	0.8	0.8	0.0	4.6	4.5	0.0	0.0	0.0	0.1	0.0	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.8	2.4	2.5	0.0	16.2	16.8	0.1	0.0	0.0	0.3	0.0	1.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	30.5	6.6	6.6	0.0	43.3	43.1	18.2	0.0	0.0	18.4	0.0	19.8
LnGrp LOS	C	A	A	A	D	D	B	A	A	B	A	B
Approach Vol, veh/h		1100			1078			3			119	
Approach Delay, s/veh		8.6			43.2			18.2			19.6	
Approach LOS		A			D			B			B	
Timer - Assigned Phs		2		4		6	7	8				
Phs Duration (G+Y+Rc), s		67.4		62.6		67.4	10.2	52.5				
Change Period (Y+Rc), s		6.0		6.5		6.0	4.0	6.5				
Max Green Setting (Gmax), s		30.0		87.5		30.0	16.0	67.5				
Max Q Clear Time (g_c+I1), s		6.8		12.9		6.8	6.3	37.5				
Green Ext Time (p_c), s		0.0		8.5		0.6	0.1	8.5				

Intersection Summary			
HCM 6th Ctrl Delay		25.4	
HCM 6th LOS		C	

Intersection	
Int Delay, s/veh	0.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	901	20	36	953	18	34
Future Vol, veh/h	901	20	36	953	18	34
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	25	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1001	22	40	1059	20	38

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1023	0	1622	512
Stage 1	-	-	-	-	1012	-
Stage 2	-	-	-	-	610	-
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	-	-	674	-	94	507
Stage 1	-	-	-	-	312	-
Stage 2	-	-	-	-	505	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	674	-	88	507
Mov Cap-2 Maneuver	-	-	-	-	202	-
Stage 1	-	-	-	-	294	-
Stage 2	-	-	-	-	505	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.4	18.1
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	333	-	-	674	-
HCM Lane V/C Ratio	0.174	-	-	0.059	-
HCM Control Delay (s)	18.1	-	-	10.7	-
HCM Lane LOS	C	-	-	B	-
HCM 95th %tile Q(veh)	0.6	-	-	0.2	-

Intersection	
Int Delay, s/veh	0.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	928	7	21	959	30	26
Future Vol, veh/h	928	7	21	959	30	26
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	25	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1031	8	23	1066	33	29

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1039	0	1614	520
Stage 1	-	-	-	-	1035	-
Stage 2	-	-	-	-	579	-
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	-	-	665	-	95	501
Stage 1	-	-	-	-	303	-
Stage 2	-	-	-	-	524	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	665	-	92	501
Mov Cap-2 Maneuver	-	-	-	-	207	-
Stage 1	-	-	-	-	292	-
Stage 2	-	-	-	-	524	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.2	21.1
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	285	-	-	665	-
HCM Lane V/C Ratio	0.218	-	-	0.035	-
HCM Control Delay (s)	21.1	-	-	10.6	-
HCM Lane LOS	C	-	-	B	-
HCM 95th %tile Q(veh)	0.8	-	-	0.1	-

Intersection	
Int Delay, s/veh	0.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	950	4	0	979	2	30
Future Vol, veh/h	950	4	0	979	2	30
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
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	1056	4	0	1088	2	33

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	1602	530
Stage 1	-	-	-	-	1058	-
Stage 2	-	-	-	-	544	-
Critical Hdwy	-	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	0	-	96	493
Stage 1	-	-	0	-	295	-
Stage 2	-	-	0	-	546	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	96	493
Mov Cap-2 Maneuver	-	-	-	-	214	-
Stage 1	-	-	-	-	295	-
Stage 2	-	-	-	-	546	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	12.8
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	493	-	-	-
HCM Lane V/C Ratio	0.068	-	-	-
HCM Control Delay (s)	12.8	-	-	-
HCM Lane LOS	B	-	-	-
HCM 95th %tile Q(veh)	0.2	-	-	-

Intersection	
Int Delay, s/veh	15.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	7	918	42	6	883	9	68	3	49	7	0	35
Future Vol, veh/h	7	918	42	6	883	9	68	3	49	7	0	35
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	25	-	-	25	-	-	-	-	-	0	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	8	1020	47	7	981	10	76	3	54	8	0	39

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	991	0	0	1067	0	0	1565	2065	534	1528	-	496
Stage 1	-	-	-	-	-	-	1060	1060	-	1000	-	-
Stage 2	-	-	-	-	-	-	505	1005	-	528	-	-
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	693	-	-	649	-	-	~ 75	54	491	80	0	519
Stage 1	-	-	-	-	-	-	239	299	-	261	0	-
Stage 2	-	-	-	-	-	-	518	317	-	502	0	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	693	-	-	649	-	-	~ 68	53	491	67	-	519
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 68	53	-	67	-	-
Stage 1	-	-	-	-	-	-	236	295	-	258	-	-
Stage 2	-	-	-	-	-	-	474	314	-	436	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0.1	258	21.4
HCM LOS			F	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	104	693	-	-	649	-	-	67	519
HCM Lane V/C Ratio	1.282	0.011	-	-	0.01	-	-	0.116	0.075
HCM Control Delay (s)	258	10.3	-	-	10.6	-	-	65.7	12.5
HCM Lane LOS	F	B	-	-	B	-	-	F	B
HCM 95th %tile Q(veh)	9.1	0	-	-	0	-	-	0.4	0.2

Notes

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

Intersection	
Int Delay, s/veh	2.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	11	912	55	63	881	8	14	1	92	4	0	7
Future Vol, veh/h	11	912	55	63	881	8	14	1	92	4	0	7
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	25	-	-	25	-	-	-	-	-	0	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	12	1013	61	70	979	9	16	1	102	4	0	8

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	988	0	0	1074	0	0	1698	2196	537	1655	-	494
Stage 1	-	-	-	-	-	-	1068	1068	-	1124	-	-
Stage 2	-	-	-	-	-	-	630	1128	-	531	-	-
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	695	-	-	645	-	-	60	44	488	64	0	521
Stage 1	-	-	-	-	-	-	237	296	-	219	0	-
Stage 2	-	-	-	-	-	-	436	278	-	500	0	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	695	-	-	645	-	-	54	39	488	45	-	521
Mov Cap-2 Maneuver	-	-	-	-	-	-	54	39	-	45	-	-
Stage 1	-	-	-	-	-	-	233	291	-	215	-	-
Stage 2	-	-	-	-	-	-	383	248	-	387	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0.7	37.3	41.7
HCM LOS			E	E

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	226	695	-	-	645	-	-	45	521
HCM Lane V/C Ratio	0.526	0.018	-	-	0.109	-	-	0.099	0.015
HCM Control Delay (s)	37.3	10.3	-	-	11.3	-	-	93.6	12
HCM Lane LOS	E	B	-	-	B	-	-	F	B
HCM 95th %tile Q(veh)	2.8	0.1	-	-	0.4	-	-	0.3	0

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	527	56	446	56	62	427	1624	61	1569	505
Future Volume (vph)	527	56	446	56	62	427	1624	61	1569	505
Turn Type	Split	NA	pm+ov	Split	NA	Prot	NA	Prot	NA	pm+ov
Protected Phases	4	4	5	8	8	5	2	1	6	4
Permitted Phases			4							6
Detector Phase	4	4	5	8	8	5	2	1	6	4
Switch Phase										
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0	7.0	10.0	5.0	10.0	7.0
Minimum Split (s)	13.0	13.0	13.0	13.0	13.0	13.0	16.7	11.0	16.0	13.0
Total Split (s)	30.0	30.0	30.0	13.0	13.0	30.0	73.0	14.0	57.0	30.0
Total Split (%)	23.1%	23.1%	23.1%	10.0%	10.0%	23.1%	56.2%	10.8%	43.8%	23.1%
Yellow Time (s)	4.0	4.0	4.0	3.6	3.6	4.0	4.7	3.3	4.7	4.0
All-Red Time (s)	1.5	1.5	1.5	2.0	2.0	1.5	1.0	2.0	1.0	1.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	5.5	5.5	5.6	5.6	5.5	5.7	5.3	5.7	5.5
Lead/Lag			Lead			Lead	Lag	Lead	Lag	
Lead-Lag Optimize?										
Recall Mode	None	None	None	None	None	None	None	None	C-Max	None
Act Effct Green (s)	24.5	24.5	46.1	7.3	7.3	21.6	70.4	7.9	54.3	84.5
Actuated g/C Ratio	0.19	0.19	0.35	0.06	0.06	0.17	0.54	0.06	0.42	0.65
v/c Ratio	1.02	1.02	0.82	0.63	0.58	0.83	0.68	0.64	0.82	0.53
Control Delay	111.5	111.1	22.9	86.8	37.9	65.6	23.7	85.4	38.0	11.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	111.5	111.1	22.9	86.8	37.9	65.6	23.7	85.4	38.0	11.8
LOS	F	F	C	F	D	E	C	F	D	B
Approach Delay		73.0			52.2		32.3		33.2	
Approach LOS		E			D		C		C	

Intersection Summary		
Cycle Length: 130		
Actuated Cycle Length: 130		
Offset: 0 (0%), Referenced to phase 6:SBT, Start of Green		
Natural Cycle: 90		
Control Type: Actuated-Coordinated		
Maximum v/c Ratio: 1.02		
Intersection Signal Delay: 41.0	Intersection LOS: D	
Intersection Capacity Utilization 83.0%	ICU Level of Service E	
Analysis Period (min) 15		

Splits and Phases: 9: Scottsdale Rd & Lincoln Dr

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	527	56	446	56	62	72	427	1624	45	61	1569	505
Future Volume (veh/h)	527	56	446	56	62	72	427	1624	45	61	1569	505
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	630	0	496	62	69	80	474	1804	50	68	1743	561
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	671	0	543	101	101	90	532	2561	71	87	2015	924
Arrive On Green	0.06	0.00	0.06	0.06	0.06	0.06	0.15	0.50	0.50	0.05	0.39	0.39
Sat Flow, veh/h	3563	0	1585	1781	1777	1585	3456	5107	141	1781	5106	1585
Grp Volume(v), veh/h	630	0	496	62	69	80	474	1202	652	68	1743	561
Grp Sat Flow(s),veh/h/ln	1781	0	1585	1781	1777	1585	1728	1702	1845	1781	1702	1585
Q Serve(g_s), s	22.9	0.0	24.5	4.4	5.0	6.5	17.5	35.4	35.4	4.9	40.8	29.7
Cycle Q Clear(g_c), s	22.9	0.0	24.5	4.4	5.0	6.5	17.5	35.4	35.4	4.9	40.8	29.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.08	1.00		1.00
Lane Grp Cap(c), veh/h	671	0	543	101	101	90	532	1707	925	87	2015	924
V/C Ratio(X)	0.94	0.00	0.91	0.61	0.68	0.89	0.89	0.70	0.70	0.78	0.87	0.61
Avail Cap(c_a), veh/h	671	0	543	101	101	90	651	1762	955	119	2015	924
HCM Platoon Ratio	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	60.2	0.0	46.0	59.9	60.1	60.9	53.9	25.0	25.0	61.2	36.2	17.5
Incr Delay (d2), s/veh	20.7	0.0	19.7	7.6	14.4	57.9	11.3	1.0	1.9	13.9	5.3	3.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	12.9	0.0	17.6	2.2	2.6	4.1	8.4	14.3	15.7	2.6	17.7	17.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	80.9	0.0	65.7	67.5	74.6	118.8	65.2	26.0	26.9	75.1	41.4	20.4
LnGrp LOS	F	A	E	E	E	F	E	C	C	E	D	C
Approach Vol, veh/h		1126			211			2328			2372	
Approach Delay, s/veh		74.2			89.3			34.2			37.4	
Approach LOS		E			F			C			D	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	11.6	70.9		30.0	25.5	57.0		13.0				
Change Period (Y+Rc), s	* 5.3	5.7		5.5	5.5	5.7		5.6				
Max Green Setting (Gmax), s	* 8.7	67.3		24.5	24.5	51.3		7.4				
Max Q Clear Time (g_c+I1), s	6.9	37.4		26.5	19.5	42.8		8.5				
Green Ext Time (p_c), s	0.0	2.9		0.0	0.5	2.5		0.0				

Intersection Summary			
HCM 6th Ctrl Delay		44.9	
HCM 6th LOS		D	

Notes

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

Intersection	
Int Delay, s/veh	0

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	1	0	0	1	0
Future Vol, veh/h	0	1	0	0	1	0
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	1	0	0	1	0

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	2	0	0	0	0	0
Stage 1	0	-	-	-	-	-
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	1021	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	1021	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	1021	-	-	-	-	-
Mov Cap-2 Maneuver	1021	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	1021	-	-	-	-	-

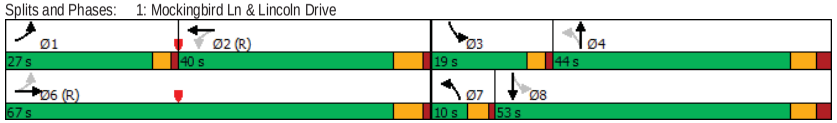
Approach	WB	NB	SB
HCM Control Delay, s		0	
HCM LOS	-		

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

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	246	888	25	949	7	62	65	48
Future Volume (vph)	246	888	25	949	7	62	65	48
Turn Type	pm+pt	NA	Perm	NA	pm+pt	NA	pm+pt	NA
Protected Phases	1	6		2	7	4	3	8
Permitted Phases	6		2		4		8	
Detector Phase	1	6	2	2	7	4	3	8
Switch Phase								
Minimum Initial (s)	3.5	15.0	15.0	15.0	5.0	7.0	3.5	7.0
Minimum Split (s)	8.0	27.0	27.0	27.0	9.5	33.5	8.0	33.5
Total Split (s)	27.0	67.0	40.0	40.0	10.0	44.0	19.0	53.0
Total Split (%)	20.8%	51.5%	30.8%	30.8%	7.7%	33.8%	14.6%	40.8%
Yellow Time (s)	3.0	4.5	4.5	4.5	3.5	4.0	3.0	4.0
All-Red Time (s)	1.0	1.5	1.5	1.5	1.0	2.5	1.0	2.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	6.0	6.0	6.0	4.5	6.5	4.0	6.5
Lead/Lag	Lead		Lag	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	C-Max	C-Max	C-Max	None	None	None	None
Act Effct Green (s)	96.5	94.5	72.2	72.2	17.6	11.2	25.5	21.0
Actuated g/C Ratio	0.74	0.73	0.56	0.56	0.14	0.09	0.20	0.16
v/c Ratio	0.65	0.40	0.10	0.58	0.05	0.55	0.28	0.59
Control Delay	17.6	8.4	8.5	16.5	38.1	61.1	43.4	24.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	17.6	8.4	8.5	16.5	38.1	61.1	43.4	24.8
LOS	B	A	A	B	D	E	D	C
Approach Delay		10.3		16.3		59.2		29.2
Approach LOS		B		B		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: 90		
Control Type: Actuated-Coordinated		
Maximum v/c Ratio: 0.65		
Intersection Signal Delay: 16.4	Intersection LOS: B	
Intersection Capacity Utilization 67.8%	ICU Level of Service C	
Analysis Period (min) 15		

Splits and Phases: 1: Mockingbird Ln & Lincoln Drive



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	246	888	29	25	949	66	7	62	20	65	48	156
Future Volume (veh/h)	246	888	29	25	949	66	7	62	20	65	48	156
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	273	987	32	28	1054	73	8	69	22	72	53	173
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	396	2456	80	377	1992	138	103	173	55	244	62	202
Arrive On Green	0.08	0.70	0.70	0.59	0.59	0.59	0.01	0.13	0.13	0.05	0.16	0.16
Sat Flow, veh/h	1781	3513	114	553	3372	233	1781	1359	433	1781	386	1258
Grp Volume(v), veh/h	273	499	520	28	555	572	8	0	91	72	0	226
Grp Sat Flow(s),veh/h/ln	1781	1777	1850	553	1777	1828	1781	0	1792	1781	0	1644
Q Serve(g_s), s	7.4	15.3	15.3	2.9	24.2	24.2	0.5	0.0	6.1	4.4	0.0	17.4
Cycle Q Clear(g_c), s	7.4	15.3	15.3	4.1	24.2	24.2	0.5	0.0	6.1	4.4	0.0	17.4
Prop In Lane	1.00		0.06	1.00		0.13	1.00		0.24	1.00		0.77
Lane Grp Cap(c), veh/h	396	1242	1293	377	1050	1080	103	0	228	244	0	264
V/C Ratio(X)	0.69	0.40	0.40	0.07	0.53	0.53	0.08	0.00	0.40	0.30	0.00	0.86
Avail Cap(c_a), veh/h	573	1242	1293	377	1050	1080	161	0	517	366	0	588
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.54	0.54	0.54	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	13.5	8.2	8.2	12.0	15.8	15.8	49.3	0.0	52.1	44.8	0.0	53.1
Incr Delay (d2), s/veh	2.1	1.0	0.9	0.2	1.0	1.0	0.3	0.0	1.1	0.7	0.0	7.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.0	5.9	6.1	0.4	9.9	10.2	0.2	0.0	2.8	2.0	0.0	7.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	15.6	9.1	9.1	12.2	16.9	16.9	49.6	0.0	53.3	45.5	0.0	61.0
LnGrp LOS	B	A	A	B	B	B	D	A	D	D	A	E
Approach Vol, veh/h		1292			1155			99			298	
Approach Delay, s/veh		10.5			16.7			53.0			57.3	
Approach LOS		B			B			D			E	

Timer - Assigned Phs	1	2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s	14.1	82.8	10.0	23.1		96.9	5.8	27.3				
Change Period (Y+Rc), s	4.0	6.0	4.0	6.5		6.0	4.5	6.5				
Max Green Setting (Gmax), s	23.0	34.0	15.0	37.5		61.0	5.5	46.5				
Max Q Clear Time (g_c+I1), s	9.4	26.2	6.4	8.1		17.3	2.5	19.4				
Green Ext Time (p_c), s	0.7	4.4	0.1	0.5		8.4	0.0	1.5				

Intersection Summary		
HCM 6th Ctrl Delay	19.4	
HCM 6th LOS	B	

Notes

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

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	527	56	446	56	62	427	1624	61	1569	505
Future Volume (vph)	527	56	446	56	62	427	1624	61	1569	505
Turn Type	Split	NA	pm+ov	Split	NA	Prot	NA	Prot	NA	pm+ov
Protected Phases	4	4	5	8	8	5	2	1	6	4
Permitted Phases			4							6
Detector Phase	4	4	5	8	8	5	2	1	6	4
Switch Phase										
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0	7.0	10.0	5.0	10.0	7.0
Minimum Split (s)	13.0	13.0	13.0	13.0	13.0	13.0	16.7	11.0	16.0	13.0
Total Split (s)	32.0	32.0	27.0	21.0	21.0	27.0	54.0	23.0	50.0	32.0
Total Split (%)	24.6%	24.6%	20.8%	16.2%	16.2%	20.8%	41.5%	17.7%	38.5%	24.6%
Yellow Time (s)	4.0	4.0	4.0	3.6	3.6	4.0	4.7	3.3	4.7	4.0
All-Red Time (s)	1.5	1.5	1.5	2.0	2.0	1.5	1.0	2.0	1.0	1.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	5.5	5.5	5.6	5.6	5.5	5.7	5.3	5.7	5.5
Lead/Lag			Lead			Lead	Lag	Lead	Lag	
Lead-Lag Optimize?										
Recall Mode	None	None	None	None	None	None	None	None	C-Max	None
Act Effct Green (s)	26.4	26.4	48.4	9.3	9.3	22.0	65.0	9.4	50.0	82.1
Actuated g/C Ratio	0.20	0.20	0.37	0.07	0.07	0.17	0.50	0.07	0.38	0.63
v/c Ratio	0.95	0.95	0.73	0.49	0.49	0.82	0.73	0.54	0.89	0.51
Control Delay	101.2	101.1	20.1	70.6	32.6	64.0	29.2	72.5	44.8	9.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	101.2	101.1	20.1	70.6	32.6	64.0	29.2	72.5	44.8	9.0
LOS	F	F	C	E	C	E	C	E	D	A
Approach Delay		66.0			43.8		36.3		37.2	
Approach LOS		E			D		D		D	

Intersection Summary			
Cycle Length: 130			
Actuated Cycle Length: 130			
Offset: 0 (0%), Referenced to phase 6:SBT, Start of Green			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.95			
Intersection Signal Delay: 42.5		Intersection LOS: D	
Intersection Capacity Utilization 83.0%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 9: Scottsdale Rd & Lincoln Dr

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	527	56	446	56	62	72	427	1624	45	61	1569	505
Future Volume (veh/h)	527	56	446	56	62	72	427	1624	45	61	1569	505
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	630	0	496	62	69	80	474	1804	50	68	1743	561
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	726	0	564	120	120	107	526	2276	63	87	1740	863
Arrive On Green	0.07	0.00	0.07	0.07	0.07	0.07	0.15	0.45	0.45	0.05	0.34	0.34
Sat Flow, veh/h	3563	0	1585	1781	1777	1585	3456	5107	141	1781	5106	1585
Grp Volume(v), veh/h	630	0	496	62	69	80	474	1202	652	68	1743	561
Grp Sat Flow(s),veh/h/ln	1781	0	1585	1781	1777	1585	1728	1702	1845	1781	1702	1585
Q Serve(g_s), s	22.8	0.0	26.5	4.4	4.9	6.4	17.5	39.3	39.4	4.9	44.3	32.4
Cycle Q Clear(g_c), s	22.8	0.0	26.5	4.4	4.9	6.4	17.5	39.3	39.4	4.9	44.3	32.4
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.08	1.00		1.00
Lane Grp Cap(c), veh/h	726	0	564	120	120	107	526	1517	822	87	1740	863
V/C Ratio(X)	0.87	0.00	0.88	0.52	0.58	0.75	0.90	0.79	0.79	0.78	1.00	0.65
Avail Cap(c_a), veh/h	726	0	564	211	210	188	572	1517	822	243	1740	863
HCM Platoon Ratio	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	58.9	0.0	44.8	58.6	58.8	59.5	54.2	30.9	30.9	61.1	42.9	20.9
Incr Delay (d2), s/veh	10.4	0.0	14.3	1.3	1.6	3.9	15.9	2.7	4.9	5.6	22.0	3.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	12.0	0.0	16.8	2.0	2.3	2.7	8.8	16.5	18.4	2.4	21.9	19.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	69.3	0.0	59.1	59.8	60.4	63.4	70.0	33.6	35.9	66.7	64.8	24.6
LnGrp LOS	E	A	E	E	E	E	E	C	D	E	F	C
Approach Vol, veh/h		1126			211			2328			2372	
Approach Delay, s/veh		64.8			61.4			41.7			55.4	
Approach LOS		E			E			D			E	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	11.7	63.6		32.0	25.3	50.0		14.4				
Change Period (Y+Rc), s	* 5.3	5.7		5.5	5.5	5.7		5.6				
Max Green Setting (Gmax), s	* 18	48.3		26.5	21.5	44.3		15.4				
Max Q Clear Time (g_c+I1), s	6.9	41.4		28.5	19.5	46.3		8.4				
Green Ext Time (p_c), s	0.0	2.2		0.0	0.3	0.0		0.3				

Intersection Summary		
HCM 6th Ctrl Delay	52.1	
HCM 6th LOS	D	

Notes

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

APPENDIX H

2025 PEAK HOUR ANALYSIS

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	242	1045	24	963	6	37	83	96
Future Volume (vph)	242	1045	24	963	6	37	83	96
Turn Type	pm+pt	NA	Perm	NA	Perm	NA	pm+pt	NA
Protected Phases	1	6		2		4	3	8
Permitted Phases	6		2		4		8	
Detector Phase	1	6	2	2	4	4	3	8
Switch Phase								
Minimum Initial (s)	3.5	15.0	15.0	15.0	7.0	7.0	3.5	7.0
Minimum Split (s)	8.0	27.0	27.0	27.0	33.5	33.5	8.0	33.5
Total Split (s)	27.0	77.0	50.0	50.0	44.0	44.0	9.0	53.0
Total Split (%)	20.8%	59.2%	38.5%	38.5%	33.8%	33.8%	6.9%	40.8%
Yellow Time (s)	3.0	4.5	4.5	4.5	4.0	4.0	3.0	4.0
All-Red Time (s)	1.0	1.5	1.5	1.5	2.5	2.5	1.0	2.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	6.0	6.0	6.0	6.5	6.5	4.0	6.5
Lead/Lag	Lead		Lag	Lag	Lag	Lag	Lead	
Lead-Lag Optimize?	Yes		Yes	Yes	Yes	Yes	Yes	
Recall Mode	None	C-Max	C-Max	C-Max	None	None	None	None
Act Effct Green (s)	90.6	88.6	65.5	65.5	19.6	19.6	31.4	28.9
Actuated g/C Ratio	0.70	0.68	0.50	0.50	0.15	0.15	0.24	0.22
v/c Ratio	0.66	0.50	0.12	0.63	0.09	0.23	0.30	0.85
Control Delay	21.5	12.0	22.8	30.5	44.3	30.9	39.7	50.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	21.5	12.0	22.8	30.5	44.3	30.9	39.7	50.6
LOS	C	B	C	C	D	C	D	D
Approach Delay		13.7		30.3		32.1		48.5
Approach LOS		B		C		C		D

Intersection Summary			
Cycle Length: 130			
Actuated Cycle Length: 130			
Offset: 0 (0%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.85			
Intersection Signal Delay: 25.4		Intersection LOS: C	
Intersection Capacity Utilization 78.5%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 1: Mockingbird Ln & Lincoln Drive

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	242	1045	33	24	963	46	6	37	23	83	96	253
Future Volume (veh/h)	242	1045	33	24	963	46	6	37	23	83	96	253
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			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	269	1161	37	27	1070	51	7	41	26	92	107	281
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	347	2265	72	274	1821	87	88	204	129	335	118	311
Arrive On Green	0.09	0.64	0.64	0.35	0.35	0.35	0.19	0.19	0.19	0.04	0.26	0.26
Sat Flow, veh/h	1781	3515	112	467	3453	165	996	1070	678	1781	456	1198
Grp Volume(v), veh/h	269	587	611	27	550	571	7	0	67	92	0	388
Grp Sat Flow(s),veh/h/ln	1781	1777	1850	467	1777	1841	996	0	1748	1781	0	1655
Q Serve(g_s), s	8.6	22.8	22.8	5.4	32.9	32.9	0.9	0.0	4.2	5.0	0.0	29.5
Cycle Q Clear(g_c), s	8.6	22.8	22.8	13.0	32.9	32.9	21.4	0.0	4.2	5.0	0.0	29.5
Prop In Lane	1.00		0.06	1.00		0.09	1.00		0.39	1.00		0.72
Lane Grp Cap(c), veh/h	347	1145	1192	274	937	971	88	0	333	335	0	429
V/C Ratio(X)	0.78	0.51	0.51	0.10	0.59	0.59	0.08	0.00	0.20	0.27	0.00	0.90
Avail Cap(c_a), veh/h	508	1145	1192	274	937	971	186	0	504	335	0	592
HCM Platoon Ratio	1.00	1.00	1.00	0.67	0.67	0.67	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.55	0.55	0.55	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	20.5	12.3	12.3	26.8	30.5	30.5	61.3	0.0	44.3	39.7	0.0	46.6
Incr Delay (d2), s/veh	4.5	1.6	1.6	0.4	1.5	1.4	0.4	0.0	0.3	0.4	0.0	13.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.4	9.2	9.6	0.7	15.3	15.8	0.2	0.0	1.9	2.4	0.0	13.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	25.0	13.9	13.9	27.2	32.0	31.9	61.6	0.0	44.6	40.1	0.0	60.3
LnGrp LOS	C	B	B	C	C	C	E	A	D	D	A	E
Approach Vol, veh/h		1467			1148			74			480	
Approach Delay, s/veh		15.9			31.8			46.2			56.4	
Approach LOS		B			C			D			E	

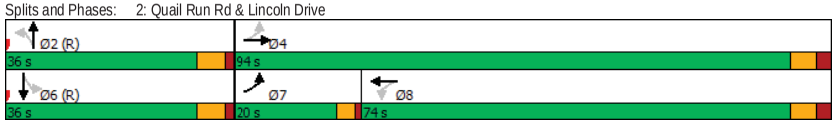
Timer - Assigned Phs	1	2	3	4		6		8				
Phs Duration (G+Y+Rc), s	15.2	74.6	9.0	31.2		89.8		40.2				
Change Period (Y+Rc), s	4.0	6.0	4.0	6.5		6.0		6.5				
Max Green Setting (Gmax), s	23.0	44.0	5.0	37.5		71.0		46.5				
Max Q Clear Time (g_c+I1), s	10.6	34.9	7.0	23.4		24.8		31.5				
Green Ext Time (p_c), s	0.6	5.0	0.0	0.2		10.9		2.2				

Intersection Summary			
HCM 6th Ctrl Delay		28.5	
HCM 6th LOS		C	

Lane Group	EBL	EBT	WBL	WBT	NBT	SBL	SBT
Lane Configurations							
Traffic Volume (vph)	115	1104	2	927	0	26	0
Future Volume (vph)	115	1104	2	927	0	26	0
Turn Type	pm+pt	NA	Perm	NA	NA	Perm	NA
Protected Phases	7	4		8	2		6
Permitted Phases	4		8			6	
Detector Phase	7	4	8	8	2	6	6
Switch Phase							
Minimum Initial (s)	3.5	15.0	15.0	15.0	7.0	7.0	7.0
Minimum Split (s)	8.0	28.0	28.0	28.0	33.0	33.0	33.0
Total Split (s)	20.0	94.0	74.0	74.0	36.0	36.0	36.0
Total Split (%)	15.4%	72.3%	56.9%	56.9%	27.7%	27.7%	27.7%
Yellow Time (s)	3.0	4.0	4.0	4.0	4.5	4.5	4.5
All-Red Time (s)	1.0	2.5	2.5	2.5	1.5	1.5	1.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	6.5	6.5	6.5	6.0	6.0	6.0
Lead/Lag	Lead		Lag	Lag			
Lead-Lag Optimize?	Yes		Yes	Yes			
Recall Mode	None	None	None	None	C-Max	C-Max	C-Max
Act Effct Green (s)	67.4	64.9	50.0	50.0	52.6	52.6	52.6
Actuated g/C Ratio	0.52	0.50	0.38	0.38	0.40	0.40	0.40
v/c Ratio	0.54	0.70	0.02	0.77	0.01	0.05	0.09
Control Delay	28.5	35.5	21.5	38.6	0.0	28.2	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	28.5	35.5	21.5	38.6	0.0	28.2	0.2
LOS	C	D	C	D	A	C	A
Approach Delay		34.9		38.6			8.2
Approach LOS		C		D			A

Intersection Summary		
Cycle Length: 130		
Actuated Cycle Length: 130		
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green		
Natural Cycle: 70		
Control Type: Actuated-Coordinated		
Maximum v/c Ratio: 0.77		
Intersection Signal Delay: 35.2	Intersection LOS: D	
Intersection Capacity Utilization 67.1%	ICU Level of Service C	
Analysis Period (min) 15		

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	115	1104	3	2	927	12	0	0	8	26	0	66
Future Volume (veh/h)	115	1104	3	2	927	12	0	0	8	26	0	66
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	128	1227	3	2	1030	13	0	0	9	29	0	73
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	208	1582	4	191	1231	16	0	0	743	710	0	743
Arrive On Green	0.12	0.87	0.87	0.34	0.34	0.34	0.00	0.00	0.47	0.47	0.00	0.47
Sat Flow, veh/h	1781	3637	9	453	3594	45	0	0	1585	1406	0	1585
Grp Volume(v), veh/h	128	599	631	2	509	534	0	0	9	29	0	73
Grp Sat Flow(s),veh/h/ln	1781	1777	1869	453	1777	1862	0	0	1585	1406	0	1585
Q Serve(g_s), s	5.9	17.6	17.6	0.4	34.3	34.3	0.0	0.0	0.4	1.5	0.0	3.3
Cycle Q Clear(g_c), s	5.9	17.6	17.6	5.9	34.3	34.3	0.0	0.0	0.4	1.9	0.0	3.3
Prop In Lane	1.00		0.00	1.00		0.02	0.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	208	773	813	191	609	638	0	0	743	710	0	743
V/C Ratio(X)	0.62	0.78	0.78	0.01	0.84	0.84	0.00	0.00	0.01	0.04	0.00	0.10
Avail Cap(c_a), veh/h	317	1196	1258	271	923	967	0	0	743	710	0	743
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.87	0.87	0.87	1.00	1.00	1.00	0.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	28.2	5.9	5.9	32.0	39.4	39.4	0.0	0.0	18.4	18.9	0.0	19.2
Incr Delay (d2), s/veh	2.6	1.5	1.4	0.0	4.3	4.1	0.0	0.0	0.0	0.1	0.0	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.5	2.9	3.1	0.0	15.6	16.3	0.0	0.0	0.2	0.5	0.0	1.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	30.7	7.4	7.4	32.0	43.7	43.5	0.0	0.0	18.5	19.0	0.0	19.5
LnGrp LOS	C	A	A	C	D	D	A	A	B	B	A	B
Approach Vol, veh/h		1358			1045			9			102	
Approach Delay, s/veh		9.6			43.5			18.5			19.4	
Approach LOS		A			D			B			B	
Timer - Assigned Phs		2		4		6	7	8				
Phs Duration (G+Y+Rc), s		67.0		63.0		67.0	12.0	51.0				
Change Period (Y+Rc), s		6.0		6.5		6.0	4.0	6.5				
Max Green Setting (Gmax), s		30.0		87.5		30.0	16.0	67.5				
Max Q Clear Time (g_c+I1), s		2.4		19.6		5.3	7.9	36.3				
Green Ext Time (p_c), s		0.0		11.9		0.4	0.2	8.2				

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

Intersection	
Int Delay, s/veh	0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	1135	2	0	937	0	0
Future Vol, veh/h	1135	2	0	937	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	25	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1261	2	0	1041	0	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1263	0	1783	632
Stage 1	-	-	-	-	1262	-
Stage 2	-	-	-	-	521	-
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	-	-	546	-	73	423
Stage 1	-	-	-	-	230	-
Stage 2	-	-	-	-	561	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	546	-	73	423
Mov Cap-2 Maneuver	-	-	-	-	175	-
Stage 1	-	-	-	-	230	-
Stage 2	-	-	-	-	561	-

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

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	-	-	-	546	-
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	0.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	1137	0	1	934	6	2
Future Vol, veh/h	1137	0	1	934	6	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	25	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1263	0	1	1038	7	2

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1263	0	1784	632
Stage 1	-	-	-	-	1263	-
Stage 2	-	-	-	-	521	-
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	-	-	546	-	73	423
Stage 1	-	-	-	-	230	-
Stage 2	-	-	-	-	561	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	546	-	73	423
Mov Cap-2 Maneuver	-	-	-	-	175	-
Stage 1	-	-	-	-	230	-
Stage 2	-	-	-	-	561	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	23.4
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	205	-	-	546	-
HCM Lane V/C Ratio	0.043	-	-	0.002	-
HCM Control Delay (s)	23.4	-	-	11.6	-
HCM Lane LOS	C	-	-	B	-
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Intersection	
Int Delay, s/veh	0.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	1122	18	42	928	6	9
Future Vol, veh/h	1122	18	42	928	6	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	-	-	25	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1247	20	47	1031	7	10

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1267	0	1867	634
Stage 1	-	-	-	-	1257	-
Stage 2	-	-	-	-	610	-
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	-	-	544	-	64	422
Stage 1	-	-	-	-	231	-
Stage 2	-	-	-	-	505	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	544	-	58	422
Mov Cap-2 Maneuver	-	-	-	-	154	-
Stage 1	-	-	-	-	211	-
Stage 2	-	-	-	-	505	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.5	20.5
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	249	-	-	544	-
HCM Lane V/C Ratio	0.067	-	-	0.086	-
HCM Control Delay (s)	20.5	-	-	12.2	-
HCM Lane LOS	C	-	-	B	-
HCM 95th %tile Q(veh)	0.2	-	-	0.3	-

Intersection	
Int Delay, s/veh	0.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	1118	11	6	970	0	9
Future Vol, veh/h	1118	11	6	970	0	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	-	-	25	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1242	12	7	1078	0	10

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1254	0	1801	627
Stage 1	-	-	-	-	1248	-
Stage 2	-	-	-	-	553	-
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	-	-	551	-	71	426
Stage 1	-	-	-	-	234	-
Stage 2	-	-	-	-	540	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	551	-	70	426
Mov Cap-2 Maneuver	-	-	-	-	173	-
Stage 1	-	-	-	-	231	-
Stage 2	-	-	-	-	540	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	13.7
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	426	-	-	551	-
HCM Lane V/C Ratio	0.023	-	-	0.012	-
HCM Control Delay (s)	13.7	-	-	11.6	-
HCM Lane LOS	B	-	-	B	-
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Intersection	
Int Delay, s/veh	16.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	29	1062	38	20	905	11	56	0	33	6	0	14
Future Vol, veh/h	29	1062	38	20	905	11	56	0	33	6	0	14
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	25	-	-	25	-	-	-	-	-	0	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	32	1180	42	22	1006	12	62	0	37	7	0	16

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1018	0	0	1222	0	0	1812	2327	611	1710	-	509
Stage 1	-	-	-	-	-	-	1265	1265	-	1056	-	-
Stage 2	-	-	-	-	-	-	547	1062	-	654	-	-
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	677	-	-	566	-	-	~ 49	37	437	59	0	509
Stage 1	-	-	-	-	-	-	179	239	-	241	0	-
Stage 2	-	-	-	-	-	-	489	298	-	422	0	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	677	-	-	566	-	-	~ 44	34	437	51	-	509
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 44	34	-	51	-	-
Stage 1	-	-	-	-	-	-	171	228	-	230	-	-
Stage 2	-	-	-	-	-	-	456	286	-	368	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.3	0.2	$ 393.8	34.4
HCM LOS			F	D

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	66	677	-	-	566	-	-	51	509
HCM Lane V/C Ratio	1.498	0.048	-	-	0.039	-	-	0.131	0.031
HCM Control Delay (s)	$ 393.8	10.6	-	-	11.6	-	-	85.9	12.3
HCM Lane LOS	F	B	-	-	B	-	-	F	B
HCM 95th %tile Q(veh)	8.5	0.1	-	-	0.1	-	-	0.4	0.1

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

Intersection	
Int Delay, s/veh	1.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	3	1040	60	48	918	9	7	0	46	5	1	14
Future Vol, veh/h	3	1040	60	48	918	9	7	0	46	5	1	14
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	25	-	-	25	-	-	-	-	-	0	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	3	1156	67	53	1020	10	8	0	51	6	1	16

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1030	0	0	1223	0	0	1813	2332	612	1715	2360	515
Stage 1	-	-	-	-	-	-	1196	1196	-	1131	1131	-
Stage 2	-	-	-	-	-	-	617	1136	-	584	1229	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	670	-	-	566	-	-	49	36	436	58	35	505
Stage 1	-	-	-	-	-	-	198	258	-	217	277	-
Stage 2	-	-	-	-	-	-	444	275	-	465	248	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	670	-	-	566	-	-	43	32	436	47	32	505
Mov Cap-2 Maneuver	-	-	-	-	-	-	43	32	-	47	32	-
Stage 1	-	-	-	-	-	-	197	257	-	216	251	-
Stage 2	-	-	-	-	-	-	388	249	-	409	247	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.6	30.7	33.2
HCM LOS			D	D

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	198	670	-	-	566	-	-	47	505
HCM Lane V/C Ratio	0.297	0.005	-	-	0.094	-	-	0.118	0.031
HCM Control Delay (s)	30.7	10.4	-	-	12	-	-	91.6	12.4
HCM Lane LOS	D	B	-	-	B	-	-	F	B
HCM 95th %tile Q(veh)	1.2	0	-	-	0.3	-	-	0.4	0.1

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	489	42	499	41	39	319	1429	55	1814	652
Future Volume (vph)	489	42	499	41	39	319	1429	55	1814	652
Turn Type	Split	NA	pm+ov	Split	NA	Prot	NA	Prot	NA	pm+ov
Protected Phases	4	4	5	8	8	5	2	1	6	4
Permitted Phases			4							6
Detector Phase	4	4	5	8	8	5	2	1	6	4
Switch Phase										
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0	7.0	10.0	5.0	10.0	7.0
Minimum Split (s)	13.0	13.0	13.0	13.0	13.0	13.0	16.7	11.0	16.0	13.0
Total Split (s)	30.0	30.0	30.0	13.0	13.0	30.0	73.0	14.0	57.0	30.0
Total Split (%)	23.1%	23.1%	23.1%	10.0%	10.0%	23.1%	56.2%	10.8%	43.8%	23.1%
Yellow Time (s)	4.0	4.0	4.0	3.6	3.6	4.0	4.7	3.3	4.7	4.0
All-Red Time (s)	1.5	1.5	1.5	2.0	2.0	1.5	1.0	2.0	1.0	1.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	5.5	5.5	5.6	5.6	5.5	5.7	5.3	5.7	5.5
Lead/Lag			Lead			Lead	Lag	Lead	Lag	
Lead-Lag Optimize?										
Recall Mode	None	None	None	None	None	None	None	None	C-Max	None
Act Effct Green (s)	24.3	24.3	44.8	7.2	7.2	20.5	70.7	7.7	55.6	85.6
Actuated g/C Ratio	0.19	0.19	0.34	0.06	0.06	0.16	0.54	0.06	0.43	0.66
v/c Ratio	0.94	0.94	0.94	0.47	0.43	0.65	0.59	0.59	0.93	0.66
Control Delay	88.8	88.7	50.9	75.4	33.9	56.8	21.7	81.5	44.4	13.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	88.8	88.7	50.9	75.4	33.9	56.8	21.7	81.5	44.4	13.7
LOS	F	F	D	E	C	E	C	F	D	B
Approach Delay		70.4			46.9		27.9		37.3	
Approach LOS		E			D		C		D	

Intersection Summary			
Cycle Length: 130			
Actuated Cycle Length: 130			
Offset: 0 (0%), Referenced to phase 6:SBT, Start of Green			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.94			
Intersection Signal Delay: 40.7		Intersection LOS: D	
Intersection Capacity Utilization 85.8%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 9: Scottsdale Rd & Lincoln Dr

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	489	42	499	41	39	52	319	1429	43	55	1814	652
Future Volume (veh/h)	489	42	499	41	39	52	319	1429	43	55	1814	652
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	577	0	554	46	43	58	354	1588	48	61	2016	724
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	671	0	489	95	95	85	414	2404	73	78	2015	924
Arrive On Green	0.06	0.00	0.06	0.05	0.05	0.05	0.12	0.47	0.47	0.04	0.39	0.39
Sat Flow, veh/h	3563	0	1585	1781	1777	1585	3456	5093	154	1781	5106	1585
Grp Volume(v), veh/h	577	0	554	46	43	58	354	1061	575	61	2016	724
Grp Sat Flow(s),veh/h/ln	1781	0	1585	1781	1777	1585	1728	1702	1843	1781	1702	1585
Q Serve(g_s), s	20.9	0.0	24.5	3.3	3.1	4.7	13.1	31.1	31.1	4.4	51.3	45.6
Cycle Q Clear(g_c), s	20.9	0.0	24.5	3.3	3.1	4.7	13.1	31.1	31.1	4.4	51.3	45.6
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.08	1.00		1.00
Lane Grp Cap(c), veh/h	671	0	489	95	95	85	414	1607	870	78	2015	924
V/C Ratio(X)	0.86	0.00	1.13	0.48	0.45	0.68	0.86	0.66	0.66	0.78	1.00	0.78
Avail Cap(c_a), veh/h	671	0	489	101	101	90	651	1762	954	119	2015	924
HCM Platoon Ratio	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	59.3	0.0	50.8	59.8	59.7	60.4	56.1	26.3	26.3	61.5	39.3	20.8
Incr Delay (d2), s/veh	10.4	0.0	83.0	1.4	1.2	14.2	3.9	0.6	1.1	7.7	20.2	6.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	11.0	0.0	26.4	1.5	1.4	2.2	5.9	12.6	13.8	2.2	24.8	25.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	69.7	0.0	133.7	61.2	60.9	74.7	60.0	26.9	27.4	69.2	59.5	27.4
LnGrp LOS	E	A	F	E	E	E	E	C	C	E	F	C
Approach Vol, veh/h		1131			147			1990			2801	
Approach Delay, s/veh		101.0			66.4			32.9			51.4	
Approach LOS		F			E			C			D	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	11.0	67.1		30.0	21.1	57.0		12.6				
Change Period (Y+Rc), s	* 5.3	5.7		5.5	5.5	5.7		5.6				
Max Green Setting (Gmax), s	* 8.7	67.3		24.5	24.5	51.3		7.4				
Max Q Clear Time (g_c+I1), s	6.4	33.1		26.5	15.1	53.3		6.7				
Green Ext Time (p_c), s	0.0	2.5		0.0	0.5	0.0		0.0				

Intersection Summary			
HCM 6th Ctrl Delay		55.0	
HCM 6th LOS		D	

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

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	267	945	25	1011	8	68	67	52
Future Volume (vph)	267	945	25	1011	8	68	67	52
Turn Type	pm+pt	NA	Perm	NA	Perm	NA	pm+pt	NA
Protected Phases	1	6		2		4	3	8
Permitted Phases	6		2		4		8	
Detector Phase	1	6	2	2	4	4	3	8
Switch Phase								
Minimum Initial (s)	3.5	15.0	15.0	15.0	7.0	7.0	3.5	7.0
Minimum Split (s)	8.0	27.0	27.0	27.0	33.5	33.5	8.0	33.5
Total Split (s)	27.0	77.0	50.0	50.0	44.0	44.0	9.0	53.0
Total Split (%)	20.8%	59.2%	38.5%	38.5%	33.8%	33.8%	6.9%	40.8%
Yellow Time (s)	3.0	4.5	4.5	4.5	4.0	4.0	3.0	4.0
All-Red Time (s)	1.0	1.5	1.5	1.5	2.5	2.5	1.0	2.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	6.0	6.0	6.0	6.5	6.5	4.0	6.5
Lead/Lag	Lead		Lag	Lag	Lag	Lag	Lead	
Lead-Lag Optimize?	Yes		Yes	Yes	Yes	Yes	Yes	
Recall Mode	None	C-Max	C-Max	C-Max	None	None	None	None
Act Effct Green (s)	100.6	98.6	73.6	73.6	11.7	11.7	21.4	18.9
Actuated g/C Ratio	0.77	0.76	0.57	0.57	0.09	0.09	0.16	0.15
v/c Ratio	0.66	0.41	0.10	0.60	0.12	0.57	0.40	0.69
Control Delay	18.8	6.6	12.1	22.4	55.8	62.3	51.7	31.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	18.8	6.6	12.1	22.4	55.8	62.3	51.7	31.4
LOS	B	A	B	C	E	E	D	C
Approach Delay		9.2		22.1		61.7		36.1
Approach LOS		A		C		E		D

Intersection Summary		
Cycle Length: 130		
Actuated Cycle Length: 130		
Offset: 0 (0%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green		
Natural Cycle: 90		
Control Type: Actuated-Coordinated		
Maximum v/c Ratio: 0.69		
Intersection Signal Delay: 19.1	Intersection LOS: B	
Intersection Capacity Utilization 71.8%	ICU Level of Service C	
Analysis Period (min) 15		

Splits and Phases: 1: Mockingbird Ln & Lincoln Drive

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	267	945	32	25	1011	68	8	68	19	67	52	169
Future Volume (veh/h)	267	945	32	25	1011	68	8	68	19	67	52	169
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	297	1050	36	28	1123	76	9	76	21	74	58	188
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	397	2562	88	375	2101	142	87	146	40	192	67	217
Arrive On Green	0.08	0.73	0.73	0.62	0.62	0.62	0.10	0.10	0.10	0.04	0.17	0.17
Sat Flow, veh/h	1781	3505	120	519	3378	228	1134	1410	390	1781	388	1257
Grp Volume(v), veh/h	297	532	554	28	590	609	9	0	97	74	0	246
Grp Sat Flow(s),veh/h/ln	1781	1777	1849	519	1777	1829	1134	0	1800	1781	0	1644
Q Serve(g_s), s	7.4	15.0	15.0	2.8	24.5	24.5	1.0	0.0	6.6	4.7	0.0	18.9
Cycle Q Clear(g_c), s	7.4	15.0	15.0	3.7	24.5	24.5	10.9	0.0	6.6	4.7	0.0	18.9
Prop In Lane	1.00		0.07	1.00		0.12	1.00		0.22	1.00		0.76
Lane Grp Cap(c), veh/h	397	1299	1351	375	1105	1138	87	0	187	192	0	284
V/C Ratio(X)	0.75	0.41	0.41	0.07	0.53	0.53	0.10	0.00	0.52	0.38	0.00	0.86
Avail Cap(c_a), veh/h	573	1299	1351	375	1105	1138	296	0	519	192	0	588
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.54	0.54	0.54	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	13.7	6.7	6.7	10.1	13.9	13.9	62.0	0.0	55.2	48.4	0.0	52.3
Incr Delay (d2), s/veh	3.2	1.0	0.9	0.2	1.0	1.0	0.5	0.0	2.2	1.3	0.0	7.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.0	5.5	5.7	0.3	9.8	10.1	0.3	0.0	3.1	2.2	0.0	8.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	17.0	7.7	7.6	10.4	14.9	14.9	62.5	0.0	57.4	49.7	0.0	60.0
LnGrp LOS	B	A	A	B	B	B	E	A	E	D	A	E
Approach Vol, veh/h		1383			1227			106			320	
Approach Delay, s/veh		9.7			14.8			57.8			57.6	
Approach LOS		A			B			E			E	

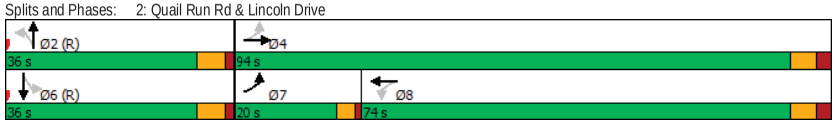
Timer - Assigned Phs	1	2	3	4		6		8				
Phs Duration (G+Y+Rc), s	14.1	86.9	9.0	20.0		101.0		29.0				
Change Period (Y+Rc), s	4.0	6.0	4.0	6.5		6.0		6.5				
Max Green Setting (Gmax), s	23.0	44.0	5.0	37.5		71.0		46.5				
Max Q Clear Time (g_c+I1), s	9.4	26.5	6.7	12.9		17.0		20.9				
Green Ext Time (p_c), s	0.7	8.1	0.0	0.5		9.5		1.6				

Intersection Summary		
HCM 6th Ctrl Delay	18.5	
HCM 6th LOS	B	

Lane Group	EBL	EBT	WBT	NBT	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	85	963	1008	0	14	0
Future Volume (vph)	85	963	1008	0	14	0
Turn Type	pm+pt	NA	NA	NA	Perm	NA
Protected Phases	7	4	8	2		6
Permitted Phases	4				6	
Detector Phase	7	4	8	2	6	6
Switch Phase						
Minimum Initial (s)	3.5	15.0	15.0	7.0	7.0	7.0
Minimum Split (s)	8.0	28.0	28.0	33.0	33.0	33.0
Total Split (s)	20.0	94.0	74.0	36.0	36.0	36.0
Total Split (%)	15.4%	72.3%	56.9%	27.7%	27.7%	27.7%
Yellow Time (s)	3.0	4.0	4.0	4.5	4.5	4.5
All-Red Time (s)	1.0	2.5	2.5	1.5	1.5	1.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	6.5	6.5	6.0	6.0	6.0
Lead/Lag	Lead		Lag			
Lead-Lag Optimize?	Yes		Yes			
Recall Mode	None	None	None	C-Max	C-Max	C-Max
Act Effct Green (s)	71.0	68.5	54.4	49.0	49.0	49.0
Actuated g/C Ratio	0.55	0.53	0.42	0.38	0.38	0.38
v/c Ratio	0.43	0.57	0.78	0.00	0.03	0.14
Control Delay	28.9	34.6	36.1	0.0	30.9	0.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	28.9	34.6	36.1	0.0	30.9	0.4
LOS	C	C	D	A	C	A
Approach Delay		34.2	36.1			4.5
Approach LOS		C	D			A

Intersection Summary	
Cycle Length: 130	
Actuated Cycle Length: 130	
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	
Natural Cycle: 70	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.78	
Intersection Signal Delay: 33.6	Intersection LOS: C
Intersection Capacity Utilization 62.4%	ICU Level of Service B
Analysis Period (min) 15	

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	85	963	1	0	1008	25	0	0	2	14	0	93
Future Volume (veh/h)	85	963	1	0	1008	25	0	0	2	14	0	93
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			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	94	1070	1	0	1120	28	0	0	2	16	0	103
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	180	1645	2	55	1326	33	0	0	717	695	0	717
Arrive On Green	0.09	0.90	0.90	0.00	0.37	0.37	0.00	0.00	0.45	0.45	0.00	0.45
Sat Flow, veh/h	1781	3643	3	527	3543	89	0	0	1585	1415	0	1585
Grp Volume(v), veh/h	94	522	549	0	562	586	0	0	2	16	0	103
Grp Sat Flow(s),veh/h/ln	1781	1777	1870	527	1777	1854	0	0	1585	1415	0	1585
Q Serve(g_s), s	4.1	9.0	9.0	0.0	37.6	37.6	0.0	0.0	0.1	0.8	0.0	4.9
Cycle Q Clear(g_c), s	4.1	9.0	9.0	0.0	37.6	37.6	0.0	0.0	0.1	0.9	0.0	4.9
Prop In Lane	1.00		0.00	1.00		0.05	0.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	180	802	844	55	665	694	0	0	717	695	0	717
V/C Ratio(X)	0.52	0.65	0.65	0.00	0.84	0.84	0.00	0.00	0.00	0.02	0.00	0.14
Avail Cap(c_a), veh/h	316	1196	1258	132	923	963	0	0	717	695	0	717
HCM Platoon Ratio	2.00	2.00	2.00	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	0.00	1.00	1.00	0.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	27.8	3.9	3.9	0.0	37.2	37.2	0.0	0.0	19.5	19.8	0.0	20.8
Incr Delay (d2), s/veh	2.2	0.8	0.8	0.0	5.3	5.1	0.0	0.0	0.0	0.1	0.0	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.7	1.8	1.9	0.0	17.2	17.9	0.0	0.0	0.0	0.3	0.0	1.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	30.0	4.7	4.7	0.0	42.5	42.3	0.0	0.0	19.5	19.8	0.0	21.3
LnGrp LOS	C	A	A	A	D	D	A	A	B	B	A	C
Approach Vol, veh/h		1165			1148			2			119	
Approach Delay, s/veh		6.7			42.4			19.5			21.1	
Approach LOS		A			D			B			C	

Timer - Assigned Phs		2		4		6	7	8				
Phs Duration (G+Y+Rc), s		64.8		65.2		64.8	10.0	55.2				
Change Period (Y+Rc), s		6.0		6.5		6.0	4.0	6.5				
Max Green Setting (Gmax), s		30.0		87.5		30.0	16.0	67.5				
Max Q Clear Time (g_c+I1), s		2.1		11.0		6.9	6.1	39.6				
Green Ext Time (p_c), s		0.0		9.4		0.6	0.1	9.0				

Intersection Summary		
HCM 6th Ctrl Delay	24.3	
HCM 6th LOS	C	

Intersection	
Int Delay, s/veh	0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	979	1	0	1032	0	0
Future Vol, veh/h	979	1	0	1032	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	25	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1088	1	0	1147	0	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1089	0	1663	545
Stage 1	-	-	-	-	1089	-
Stage 2	-	-	-	-	574	-
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	-	-	636	-	88	482
Stage 1	-	-	-	-	284	-
Stage 2	-	-	-	-	527	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	636	-	88	482
Mov Cap-2 Maneuver	-	-	-	-	204	-
Stage 1	-	-	-	-	284	-
Stage 2	-	-	-	-	527	-

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

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	-	-	-	636	-
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	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	978	1	2	1032	2	2
Future Vol, veh/h	978	1	2	1032	2	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	25	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1087	1	2	1147	2	2

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1088	0	1666	544
Stage 1	-	-	-	-	1088	-
Stage 2	-	-	-	-	578	-
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	-	-	637	-	87	483
Stage 1	-	-	-	-	284	-
Stage 2	-	-	-	-	524	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	637	-	87	483
Mov Cap-2 Maneuver	-	-	-	-	203	-
Stage 1	-	-	-	-	283	-
Stage 2	-	-	-	-	524	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	17.8
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	286	-	-	637	-
HCM Lane V/C Ratio	0.016	-	-	0.003	-
HCM Control Delay (s)	17.8	-	-	10.7	-
HCM Lane LOS	C	-	-	B	-
HCM 95th %tile Q(veh)	0	-	-	0	-

Intersection	
Int Delay, s/veh	0.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	973	7	21	1004	30	26
Future Vol, veh/h	973	7	21	1004	30	26
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	25	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1081	8	23	1116	33	29

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1089	0	1689	545
Stage 1	-	-	-	-	1085	-
Stage 2	-	-	-	-	604	-
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	-	-	636	-	84	482
Stage 1	-	-	-	-	285	-
Stage 2	-	-	-	-	508	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	636	-	81	482
Mov Cap-2 Maneuver	-	-	-	-	194	-
Stage 1	-	-	-	-	275	-
Stage 2	-	-	-	-	508	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.2	22.4
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	268	-	-	636	-
HCM Lane V/C Ratio	0.232	-	-	0.037	-
HCM Control Delay (s)	22.4	-	-	10.9	-
HCM Lane LOS	C	-	-	B	-
HCM 95th %tile Q(veh)	0.9	-	-	0.1	-

Intersection	
Int Delay, s/veh	0.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	995	4	0	1024	2	30
Future Vol, veh/h	995	4	0	1024	2	30
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	25	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1106	4	0	1138	2	33

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1110	0	1677	555
Stage 1	-	-	-	-	1108	-
Stage 2	-	-	-	-	569	-
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	-	-	625	-	86	475
Stage 1	-	-	-	-	278	-
Stage 2	-	-	-	-	530	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	625	-	86	475
Mov Cap-2 Maneuver	-	-	-	-	201	-
Stage 1	-	-	-	-	278	-
Stage 2	-	-	-	-	530	-

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

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	438	-	-	625	-
HCM Lane V/C Ratio	0.081	-	-	-	-
HCM Control Delay (s)	13.9	-	-	0	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0.3	-	-	0	-

Intersection	
Int Delay, s/veh	24

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	8	958	46	7	920	10	74	3	53	8	0	38
Future Vol, veh/h	8	958	46	7	920	10	74	3	53	8	0	38
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	25	-	-	25	-	-	-	-	-	0	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	9	1064	51	8	1022	11	82	3	59	9	0	42

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1033	0	0	1115	0	0	1635	2157	558	1596	-	517
Stage 1	-	-	-	-	-	-	1108	1108	-	1044	-	-
Stage 2	-	-	-	-	-	-	527	1049	-	552	-	-
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	668	-	-	622	-	-	~ 67	47	473	71	0	503
Stage 1	-	-	-	-	-	-	224	284	-	245	0	-
Stage 2	-	-	-	-	-	-	502	303	-	486	0	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	668	-	-	622	-	-	~ 60	46	473	58	-	503
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 60	46	-	58	-	-
Stage 1	-	-	-	-	-	-	221	280	-	242	-	-
Stage 2	-	-	-	-	-	-	454	299	-	415	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0.1	$ 382.4	24.1
HCM LOS			F	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	92	668	-	-	622	-	-	58	503
HCM Lane V/C Ratio	1.57	0.013	-	-	0.013	-	-	0.153	0.084
HCM Control Delay (s)	$ 382.4	10.5	-	-	10.9	-	-	78	12.8
HCM Lane LOS	F	B	-	-	B	-	-	F	B
HCM 95th %tile Q(veh)	11.3	0	-	-	0	-	-	0.5	0.3

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

Intersection	
Int Delay, s/veh	3.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	12	951	60	69	918	9	16	1	100	5	0	8
Future Vol, veh/h	12	951	60	69	918	9	16	1	100	5	0	8
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	25	-	-	25	-	-	-	-	-	0	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	13	1057	67	77	1020	10	18	1	111	6	0	9

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1030	0	0	1124	0	0	1781	2301	562	1734	-	515
Stage 1	-	-	-	-	-	-	1117	1117	-	1179	-	-
Stage 2	-	-	-	-	-	-	664	1184	-	555	-	-
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	670	-	-	617	-	-	52	38	470	56	0	505
Stage 1	-	-	-	-	-	-	221	281	-	202	0	-
Stage 2	-	-	-	-	-	-	416	261	-	484	0	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	670	-	-	617	-	-	46	33	470	37	-	505
Mov Cap-2 Maneuver	-	-	-	-	-	-	46	33	-	37	-	-
Stage 1	-	-	-	-	-	-	217	276	-	198	-	-
Stage 2	-	-	-	-	-	-	358	228	-	361	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0.8	52.4	53.3
HCM LOS			F	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	198	670	-	-	617	-	-	37	505
HCM Lane V/C Ratio	0.657	0.02	-	-	0.124	-	-	0.15	0.018
HCM Control Delay (s)	52.4	10.5	-	-	11.7	-	-	118.8	12.3
HCM Lane LOS	F	B	-	-	B	-	-	F	B
HCM 95th %tile Q(veh)	3.9	0.1	-	-	0.4	-	-	0.5	0.1

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	552	61	466	61	68	445	1762	66	1702	527
Future Volume (vph)	552	61	466	61	68	445	1762	66	1702	527
Turn Type	Split	NA	pm+ov	Split	NA	Prot	NA	Prot	NA	pm+ov
Protected Phases	4	4	5	8	8	5	2	1	6	4
Permitted Phases			4							6
Detector Phase	4	4	5	8	8	5	2	1	6	4
Switch Phase										
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0	7.0	10.0	5.0	10.0	7.0
Minimum Split (s)	13.0	13.0	13.0	13.0	13.0	13.0	16.7	11.0	16.0	13.0
Total Split (s)	30.0	30.0	30.0	13.0	13.0	30.0	73.0	14.0	57.0	30.0
Total Split (%)	23.1%	23.1%	23.1%	10.0%	10.0%	23.1%	56.2%	10.8%	43.8%	23.1%
Yellow Time (s)	4.0	4.0	4.0	3.6	3.6	4.0	4.7	3.3	4.7	4.0
All-Red Time (s)	1.5	1.5	1.5	2.0	2.0	1.5	1.0	2.0	1.0	1.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	5.5	5.5	5.6	5.6	5.5	5.7	5.3	5.7	5.5
Lead/Lag			Lead			Lead	Lag	Lead	Lag	
Lead-Lag Optimize?										
Recall Mode	None	None	None	None	None	None	None	None	C-Max	None
Act Effct Green (s)	24.5	24.5	46.7	7.3	7.3	22.2	70.3	8.0	53.7	83.9
Actuated g/C Ratio	0.19	0.19	0.36	0.06	0.06	0.17	0.54	0.06	0.41	0.65
v/c Ratio	1.07	1.07	0.85	0.69	0.62	0.84	0.74	0.67	0.90	0.55
Control Delay	119.1	121.1	37.3	92.9	39.0	66.0	25.4	88.3	43.0	12.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	119.1	121.1	37.3	92.9	39.0	66.0	25.4	88.3	43.0	12.6
LOS	F	F	D	F	D	E	C	F	D	B
Approach Delay		84.3			54.9		33.4		37.3	
Approach LOS		F			D		C		D	

Intersection Summary			
Cycle Length: 130			
Actuated Cycle Length: 130			
Offset: 0 (0%), Referenced to phase 6:SBT, Start of Green			
Natural Cycle: 100			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.07			
Intersection Signal Delay: 45.1		Intersection LOS: D	
Intersection Capacity Utilization 86.9%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 9: Scottsdale Rd & Lincoln Dr

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	552	61	466	61	68	78	445	1762	50	66	1702	527
Future Volume (veh/h)	552	61	466	61	68	78	445	1762	50	66	1702	527
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	662	0	518	68	76	87	494	1958	56	73	1891	586
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	671	0	551	101	101	90	551	2569	73	93	2015	924
Arrive On Green	0.06	0.00	0.06	0.06	0.06	0.06	0.16	0.50	0.50	0.05	0.39	0.39
Sat Flow, veh/h	3563	0	1585	1781	1777	1585	3456	5102	146	1781	5106	1585
Grp Volume(v), veh/h	662	0	518	68	76	87	494	1305	709	73	1891	586
Grp Sat Flow(s),veh/h/ln	1781	0	1585	1781	1777	1585	1728	1702	1844	1781	1702	1585
Q Serve(g_s), s	24.1	0.0	24.5	4.9	5.5	7.1	18.2	40.1	40.3	5.3	46.3	31.8
Cycle Q Clear(g_c), s	24.1	0.0	24.5	4.9	5.5	7.1	18.2	40.1	40.3	5.3	46.3	31.8
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.08	1.00		1.00
Lane Grp Cap(c), veh/h	671	0	551	101	101	90	551	1714	929	93	2015	924
V/C Ratio(X)	0.99	0.00	0.94	0.67	0.75	0.96	0.90	0.76	0.76	0.79	0.94	0.63
Avail Cap(c_a), veh/h	671	0	551	101	101	90	651	1762	955	119	2015	924
HCM Platoon Ratio	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	60.8	0.0	46.1	60.1	60.4	61.2	53.6	26.0	26.0	60.9	37.8	17.9
Incr Delay (d2), s/veh	31.0	0.0	24.0	13.1	24.0	82.2	12.5	1.7	3.2	17.6	10.0	3.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	14.5	0.0	18.9	2.6	3.1	4.9	8.9	16.3	18.1	2.8	20.8	18.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	91.8	0.0	70.0	73.2	84.4	143.4	66.1	27.7	29.2	78.5	47.8	21.2
LnGrp LOS	F	A	E	E	F	F	E	C	C	E	D	C
Approach Vol, veh/h		1180			231			2508			2550	
Approach Delay, s/veh		82.3			103.3			35.7			42.6	
Approach LOS		F			F			D			D	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	12.1	71.2		30.0	26.2	57.0		13.0				
Change Period (Y+Rc), s	* 5.3	5.7		5.5	5.5	5.7		5.6				
Max Green Setting (Gmax), s	* 8.7	67.3		24.5	24.5	51.3		7.4				
Max Q Clear Time (g_c+I1), s	7.3	42.3		26.5	20.2	48.3		9.1				
Green Ext Time (p_c), s	0.0	3.3		0.0	0.5	1.5		0.0				

Intersection Summary		
HCM 6th Ctrl Delay	49.3	
HCM 6th LOS	D	

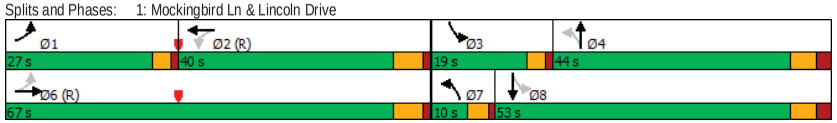
Notes

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

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	242	1055	25	971	6	37	85	96
Future Volume (vph)	242	1055	25	971	6	37	85	96
Turn Type	pm+pt	NA	Perm	NA	pm+pt	NA	pm+pt	NA
Protected Phases	1	6		2	7	4	3	8
Permitted Phases	6		2		4		8	
Detector Phase	1	6	2	2	7	4	3	8
Switch Phase								
Minimum Initial (s)	3.5	15.0	15.0	15.0	5.0	7.0	3.5	7.0
Minimum Split (s)	8.0	27.0	27.0	27.0	9.5	33.5	8.0	33.5
Total Split (s)	27.0	67.0	40.0	40.0	10.0	44.0	19.0	53.0
Total Split (%)	20.8%	51.5%	30.8%	30.8%	7.7%	33.8%	14.6%	40.8%
Yellow Time (s)	3.0	4.5	4.5	4.5	3.5	4.0	3.0	4.0
All-Red Time (s)	1.0	1.5	1.5	1.5	1.0	2.5	1.0	2.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	6.0	6.0	6.0	4.5	6.5	4.0	6.5
Lead/Lag	Lead		Lag	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	C-Max	C-Max	C-Max	None	None	None	None
Act Effct Green (s)	88.6	86.6	64.1	64.1	21.9	16.2	33.4	28.9
Actuated g/C Ratio	0.68	0.67	0.49	0.49	0.17	0.12	0.26	0.22
v/c Ratio	0.72	0.52	0.13	0.65	0.05	0.29	0.27	0.85
Control Delay	28.3	13.9	19.5	23.8	30.3	33.0	36.6	50.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	28.3	13.9	19.5	23.8	30.3	33.0	36.6	50.6
LOS	C	B	B	C	C	C	D	D
Approach Delay		16.5		23.7		32.8		47.9
Approach LOS		B		C		C		D

Intersection Summary		
Cycle Length: 130		
Actuated Cycle Length: 130		
Offset: 0 (0%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green		
Natural Cycle: 90		
Control Type: Actuated-Coordinated		
Maximum v/c Ratio: 0.85		
Intersection Signal Delay: 24.2	Intersection LOS: C	
Intersection Capacity Utilization 78.7%	ICU Level of Service D	
Analysis Period (min) 15		

Splits and Phases: 1: Mockingbird Ln & Lincoln Drive



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	242	1055	33	25	971	48	6	37	25	85	96	253
Future Volume (veh/h)	242	1055	33	25	971	48	6	37	25	85	96	253
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			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	269	1172	37	28	1079	53	7	41	28	94	107	281
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	325	2114	67	241	1643	81	103	226	154	399	118	311
Arrive On Green	0.09	0.60	0.60	0.32	0.32	0.32	0.01	0.22	0.22	0.05	0.26	0.26
Sat Flow, veh/h	1781	3516	111	462	3447	169	1781	1036	707	1781	456	1198
Grp Volume(v), veh/h	269	592	617	28	556	576	7	0	69	94	0	388
Grp Sat Flow(s),veh/h/ln	1781	1777	1850	462	1777	1840	1781	0	1743	1781	0	1655
Q Serve(g_s), s	9.6	25.9	25.9	6.0	35.0	35.1	0.4	0.0	4.2	5.2	0.0	29.5
Cycle Q Clear(g_c), s	9.6	25.9	25.9	15.8	35.0	35.1	0.4	0.0	4.2	5.2	0.0	29.5
Prop In Lane	1.00		0.06	1.00		0.09	1.00		0.41	1.00		0.72
Lane Grp Cap(c), veh/h	325	1068	1112	241	847	877	103	0	380	399	0	429
V/C Ratio(X)	0.83	0.55	0.55	0.12	0.66	0.66	0.07	0.00	0.18	0.24	0.00	0.90
Avail Cap(c_a), veh/h	474	1068	1112	241	847	877	163	0	503	508	0	592
HCM Platoon Ratio	1.00	1.00	1.00	0.67	0.67	0.67	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.55	0.55	0.55	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	23.7	15.5	15.5	32.2	35.1	35.1	41.3	0.0	41.4	35.0	0.0	46.6
Incr Delay (d2), s/veh	7.8	2.1	2.0	0.5	2.2	2.1	0.3	0.0	0.2	0.3	0.0	13.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.7	10.8	11.3	0.8	16.5	17.0	0.2	0.0	1.8	2.3	0.0	13.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	31.5	17.6	17.5	32.8	37.3	37.2	41.6	0.0	41.6	35.3	0.0	60.3
LnGrp LOS	C	B	B	C	D	D	D	A	D	D	A	E
Approach Vol, veh/h		1478			1160			76			482	
Approach Delay, s/veh		20.1			37.1			41.6			55.4	
Approach LOS		C			D			D			E	

Timer - Assigned Phs	1	2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s	16.2	68.0	11.0	34.8		84.2	5.6	40.2				
Change Period (Y+Rc), s	4.0	6.0	4.0	6.5		6.0	4.5	6.5				
Max Green Setting (Gmax), s	23.0	34.0	15.0	37.5		61.0	5.5	46.5				
Max Q Clear Time (g_c+I1), s	11.6	37.1	7.2	6.2		27.9	2.4	31.5				
Green Ext Time (p_c), s	0.6	0.0	0.1	0.3		10.3	0.0	2.2				

Intersection Summary		
HCM 6th Ctrl Delay	32.1	
HCM 6th LOS	C	

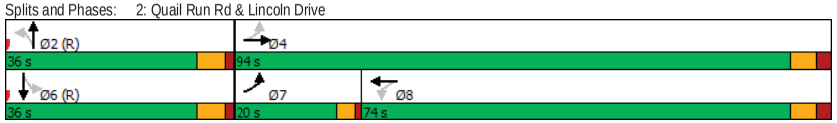
Notes

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

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	115	1117	2	937	1	0	26	0
Future Volume (vph)	115	1117	2	937	1	0	26	0
Turn Type	pm+pt	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases	7	4		8		2		6
Permitted Phases	4		8		2		6	
Detector Phase	7	4	8	8	2	2	6	6
Switch Phase								
Minimum Initial (s)	3.5	15.0	15.0	15.0	7.0	7.0	7.0	7.0
Minimum Split (s)	8.0	28.0	28.0	28.0	33.0	33.0	33.0	33.0
Total Split (s)	20.0	94.0	74.0	74.0	36.0	36.0	36.0	36.0
Total Split (%)	15.4%	72.3%	56.9%	56.9%	27.7%	27.7%	27.7%	27.7%
Yellow Time (s)	3.0	4.0	4.0	4.0	4.5	4.5	4.5	4.5
All-Red Time (s)	1.0	2.5	2.5	2.5	1.5	1.5	1.5	1.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	4.0	6.5	6.5	6.5		6.0	6.0	6.0
Lead/Lag	Lead		Lag	Lag				
Lead-Lag Optimize?	Yes		Yes	Yes				
Recall Mode	None	None	None	None	C-Max	C-Max	C-Max	C-Max
Act Effct Green (s)	67.7	65.2	50.4	50.4		52.3	52.3	52.3
Actuated g/C Ratio	0.52	0.50	0.39	0.39		0.40	0.40	0.40
v/c Ratio	0.55	0.70	0.02	0.77		0.01	0.05	0.09
Control Delay	33.2	42.4	29.0	44.3		0.0	28.4	0.2
Queue Delay	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	33.2	42.4	29.0	44.3		0.0	28.4	0.2
LOS	C	D	C	D		A	C	A
Approach Delay		41.6		44.2				8.2
Approach LOS		D		D				A

Intersection Summary		
Cycle Length: 130		
Actuated Cycle Length: 130		
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green		
Natural Cycle: 70		
Control Type: Actuated-Coordinated		
Maximum v/c Ratio: 0.77		
Intersection Signal Delay: 41.2	Intersection LOS: D	
Intersection Capacity Utilization 67.4%	ICU Level of Service C	
Analysis Period (min) 15		

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	115	1117	4	2	937	12	1	0	8	26	0	66
Future Volume (veh/h)	115	1117	4	2	937	12	1	0	8	26	0	66
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	128	1241	4	2	1041	13	1	0	9	29	0	73
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	208	1567	5	182	1217	15	83	21	668	721	0	749
Arrive On Green	0.12	0.86	0.86	0.45	0.45	0.45	0.47	0.00	0.47	0.47	0.00	0.47
Sat Flow, veh/h	1781	3633	12	447	3594	45	112	45	1413	1406	0	1585
Grp Volume(v), veh/h	128	607	638	2	515	539	10	0	0	29	0	73
Grp Sat Flow(s),veh/h/ln	1781	1777	1868	447	1777	1862	1570	0	0	1406	0	1585
Q Serve(g_s), s	6.0	19.3	19.3	0.4	33.7	33.7	0.0	0.0	0.0	0.9	0.0	3.3
Cycle Q Clear(g_c), s	6.0	19.3	19.3	7.6	33.7	33.7	0.4	0.0	0.0	1.3	0.0	3.3
Prop In Lane	1.00		0.01	1.00		0.02	0.10		0.90	1.00		1.00
Lane Grp Cap(c), veh/h	208	766	806	182	602	631	773	0	0	721	0	749
V/C Ratio(X)	0.61	0.79	0.79	0.01	0.86	0.86	0.01	0.00	0.00	0.04	0.00	0.10
Avail Cap(c_a), veh/h	317	1196	1257	262	923	967	773	0	0	721	0	749
HCM Platoon Ratio	2.00	2.00	2.00	1.33	1.33	1.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.86	0.86	0.86	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	28.2	6.4	6.4	28.0	32.9	32.9	18.2	0.0	0.0	18.4	0.0	19.0
Incr Delay (d2), s/veh	2.5	1.7	1.6	0.0	5.0	4.8	0.0	0.0	0.0	0.1	0.0	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.5	3.2	3.3	0.0	14.2	14.9	0.2	0.0	0.0	0.5	0.0	1.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	30.7	8.1	8.0	28.0	37.9	37.7	18.2	0.0	0.0	18.5	0.0	19.2
LnGrp LOS	C	A	A	C	D	D	B	A	A	B	A	B
Approach Vol, veh/h		1373			1056			10			102	
Approach Delay, s/veh		10.2			37.8			18.2			19.0	
Approach LOS		B			D			B			B	

Timer - Assigned Phs		2		4		6	7	8				
Phs Duration (G+Y+Rc), s		67.4		62.6		67.4	12.0	50.5				
Change Period (Y+Rc), s		6.0		6.5		6.0	4.0	6.5				
Max Green Setting (Gmax), s		30.0		87.5		30.0	16.0	67.5				
Max Q Clear Time (g_c+I1), s		2.4		21.3		5.3	8.0	35.7				
Green Ext Time (p_c), s		0.0		12.1		0.4	0.2	8.3				

Intersection Summary		
HCM 6th Ctrl Delay	22.1	
HCM 6th LOS	C	

Intersection	
Int Delay, s/veh	0.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	1137	17	26	934	16	22
Future Vol, veh/h	1137	17	26	934	16	22
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	25	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1263	19	29	1038	18	24

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1282	0	1850	641
Stage 1	-	-	-	-	1273	-
Stage 2	-	-	-	-	577	-
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	-	-	537	-	66	417
Stage 1	-	-	-	-	227	-
Stage 2	-	-	-	-	525	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	537	-	62	417
Mov Cap-2 Maneuver	-	-	-	-	160	-
Stage 1	-	-	-	-	215	-
Stage 2	-	-	-	-	525	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.3	22.4
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	249	-	-	537	-
HCM Lane V/C Ratio	0.17	-	-	0.054	-
HCM Control Delay (s)	22.4	-	-	12.1	-
HCM Lane LOS	C	-	-	B	-
HCM 95th %tile Q(veh)	0.6	-	-	0.2	-

Intersection	
Int Delay, s/veh	0.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	1142	18	42	953	6	9
Future Vol, veh/h	1142	18	42	953	6	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	-	-	25	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1269	20	47	1059	7	10

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1289	0	1903	645
Stage 1	-	-	-	-	1279	-
Stage 2	-	-	-	-	624	-
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	-	-	534	-	61	415
Stage 1	-	-	-	-	225	-
Stage 2	-	-	-	-	496	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	534	-	56	415
Mov Cap-2 Maneuver	-	-	-	-	150	-
Stage 1	-	-	-	-	205	-
Stage 2	-	-	-	-	496	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.5	20.9
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	243	-	-	534	-
HCM Lane V/C Ratio	0.069	-	-	0.087	-
HCM Control Delay (s)	20.9	-	-	12.4	-
HCM Lane LOS	C	-	-	B	-
HCM 95th %tile Q(veh)	0.2	-	-	0.3	-

Intersection	
Int Delay, s/veh	0.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	1138	11	6	995	0	9
Future Vol, veh/h	1138	11	6	995	0	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	-	-	-	-	-	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	1264	12	7	1106	0	10

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1276	0	-	638
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	4.14	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	2.22	-	-	3.32
Pot Cap-1 Maneuver	-	-	540	-	0	419
Stage 1	-	-	-	-	0	-
Stage 2	-	-	-	-	0	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	540	-	-	419
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	13.8
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	419	-	-	540	-
HCM Lane V/C Ratio	0.024	-	-	0.012	-
HCM Control Delay (s)	13.8	-	-	11.8	-
HCM Lane LOS	B	-	-	B	-
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Intersection	
Int Delay, s/veh	17.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	29	1082	38	20	930	11	56	0	33	6	0	14
Future Vol, veh/h	29	1082	38	20	930	11	56	0	33	6	0	14
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	25	-	-	25	-	-	-	-	-	0	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	32	1202	42	22	1033	12	62	0	37	7	0	16

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1045	0	0	1244	0	0	1848	2376	622	1748	-	523
Stage 1	-	-	-	-	-	-	1287	1287	-	1083	-	-
Stage 2	-	-	-	-	-	-	561	1089	-	665	-	-
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	661	-	-	555	-	-	~ 46	34	430	55	0	499
Stage 1	-	-	-	-	-	-	174	233	-	232	0	-
Stage 2	-	-	-	-	-	-	480	290	-	416	0	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	661	-	-	555	-	-	~ 42	31	430	47	-	499
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 42	31	-	47	-	-
Stage 1	-	-	-	-	-	-	166	222	-	221	-	-
Stage 2	-	-	-	-	-	-	447	278	-	362	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.3	0.2	$ 428.6	36.9
HCM LOS			F	E

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	63	661	-	-	555	-	-	47	499
HCM Lane V/C Ratio	1.57	0.049	-	-	0.04	-	-	0.142	0.031
HCM Control Delay (s)	$ 428.6	10.7	-	-	11.8	-	-	93.9	12.4
HCM Lane LOS	F	B	-	-	B	-	-	F	B
HCM 95th %tile Q(veh)	8.7	0.2	-	-	0.1	-	-	0.5	0.1

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

Intersection	
Int Delay, s/veh	1.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	3	1060	60	48	943	9	7	0	46	5	1	14
Future Vol, veh/h	3	1060	60	48	943	9	7	0	46	5	1	14
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	25	-	-	25	-	-	-	-	-	0	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	3	1178	67	53	1048	10	8	0	51	6	1	16

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1058	0	0	1245	0	0	1849	2382	623	1754	2410	529
Stage 1	-	-	-	-	-	-	1218	1218	-	1159	1159	-
Stage 2	-	-	-	-	-	-	631	1164	-	595	1251	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	654	-	-	555	-	-	46	34	429	54	32	494
Stage 1	-	-	-	-	-	-	191	251	-	208	268	-
Stage 2	-	-	-	-	-	-	436	267	-	458	242	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	654	-	-	555	-	-	40	31	429	44	29	494
Mov Cap-2 Maneuver	-	-	-	-	-	-	40	31	-	44	29	-
Stage 1	-	-	-	-	-	-	190	250	-	207	243	-
Stage 2	-	-	-	-	-	-	380	242	-	402	241	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.6	32.6	35.1
HCM LOS			D	E

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	188	654	-	-	555	-	-	44	494
HCM Lane V/C Ratio	0.313	0.005	-	-	0.096	-	-	0.126	0.031
HCM Control Delay (s)	32.6	10.5	-	-	12.2	-	-	98.3	12.5
HCM Lane LOS	D	B	-	-	B	-	-	F	B
HCM 95th %tile Q(veh)	1.3	0	-	-	0.3	-	-	0.4	0.1

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	500	42	508	41	39	331	1429	55	1814	666
Future Volume (vph)	500	42	508	41	39	331	1429	55	1814	666
Turn Type	Split	NA	pm+ov	Split	NA	Prot	NA	Prot	NA	pm+ov
Protected Phases	4	4	5	8	8	5	2	1	6	4
Permitted Phases			4							6
Detector Phase	4	4	5	8	8	5	2	1	6	4
Switch Phase										
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0	7.0	10.0	5.0	10.0	7.0
Minimum Split (s)	13.0	13.0	13.0	13.0	13.0	13.0	16.7	11.0	16.0	13.0
Total Split (s)	32.0	32.0	27.0	21.0	21.0	27.0	54.0	23.0	50.0	32.0
Total Split (%)	24.6%	24.6%	20.8%	16.2%	16.2%	20.8%	41.5%	17.7%	38.5%	24.6%
Yellow Time (s)	4.0	4.0	4.0	3.6	3.6	4.0	4.7	3.3	4.7	4.0
All-Red Time (s)	1.5	1.5	1.5	2.0	2.0	1.5	1.0	2.0	1.0	1.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	5.5	5.5	5.6	5.6	5.5	5.7	5.3	5.7	5.5
Lead/Lag			Lead			Lead	Lag	Lead	Lag	
Lead-Lag Optimize?										
Recall Mode	None	None	None	None	None	None	None	None	C-Max	None
Act Effct Green (s)	25.7	25.7	44.6	8.4	8.4	18.9	67.0	8.9	54.7	86.1
Actuated g/C Ratio	0.20	0.20	0.34	0.06	0.06	0.15	0.52	0.07	0.42	0.66
v/c Ratio	0.91	0.91	0.86	0.40	0.38	0.74	0.63	0.51	0.94	0.64
Control Delay	99.8	99.8	38.6	68.3	31.3	61.9	25.2	72.1	46.8	9.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	99.8	99.8	38.6	68.3	31.3	61.9	25.2	72.1	46.8	9.7
LOS	F	F	D	E	C	E	C	E	D	A
Approach Delay		70.2			42.9		32.0		37.6	
Approach LOS		E			D		C		D	

Intersection Summary		
Cycle Length: 130		
Actuated Cycle Length: 130		
Offset: 0 (0%), Referenced to phase 6:SBT, Start of Green		
Natural Cycle: 90		
Control Type: Actuated-Coordinated		
Maximum v/c Ratio: 0.94		
Intersection Signal Delay: 42.1	Intersection LOS: D	
Intersection Capacity Utilization 86.3%	ICU Level of Service E	
Analysis Period (min) 15		

Splits and Phases: 9: Scottsdale Rd & Lincoln Dr

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	500	42	508	41	39	52	331	1429	43	55	1814	666
Future Volume (veh/h)	500	42	508	41	39	52	331	1429	43	55	1814	666
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	590	0	564	46	43	58	368	1588	48	61	2016	740
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	726	0	518	95	95	85	425	2145	65	79	1740	863
Arrive On Green	0.07	0.00	0.07	0.05	0.05	0.05	0.12	0.42	0.42	0.04	0.34	0.34
Sat Flow, veh/h	3563	0	1585	1781	1777	1585	3456	5093	154	1781	5106	1585
Grp Volume(v), veh/h	590	0	564	46	43	58	368	1061	575	61	2016	740
Grp Sat Flow(s),veh/h/ln	1781	0	1585	1781	1777	1585	1728	1702	1843	1781	1702	1585
Q Serve(g_s), s	21.2	0.0	26.5	3.3	3.1	4.7	13.6	34.1	34.1	4.4	44.3	44.3
Cycle Q Clear(g_c), s	21.2	0.0	26.5	3.3	3.1	4.7	13.6	34.1	34.1	4.4	44.3	44.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.08	1.00		1.00
Lane Grp Cap(c), veh/h	726	0	518	95	95	85	425	1434	776	79	1740	863
V/C Ratio(X)	0.81	0.00	1.09	0.48	0.45	0.68	0.87	0.74	0.74	0.78	1.16	0.86
Avail Cap(c_a), veh/h	726	0	518	211	210	188	572	1434	776	243	1740	863
HCM Platoon Ratio	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	58.2	0.0	49.9	59.8	59.7	60.4	55.9	31.6	31.6	61.5	42.9	23.6
Incr Delay (d2), s/veh	6.5	0.0	65.7	1.4	1.2	3.6	8.3	1.8	3.4	6.0	78.3	10.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	10.9	0.0	25.4	1.5	1.4	2.0	6.4	14.3	15.8	2.1	31.0	27.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	64.7	0.0	115.6	61.2	60.9	64.0	64.2	33.5	35.0	67.5	121.1	34.3
LnGrp LOS	E	A	F	E	E	E	E	C	C	E	F	C
Approach Vol, veh/h		1154			147			2004			2817	
Approach Delay, s/veh		89.6			62.2			39.5			97.2	
Approach LOS		F			E			D			F	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	11.0	60.5		32.0	21.5	50.0		12.6				
Change Period (Y+Rc), s	* 5.3	5.7		5.5	5.5	5.7		5.6				
Max Green Setting (Gmax), s	* 18	48.3		26.5	21.5	44.3		15.4				
Max Q Clear Time (g_c+I1), s	6.4	36.1		28.5	15.6	46.3		6.7				
Green Ext Time (p_c), s	0.0	2.3		0.0	0.4	0.0		0.2				

Intersection Summary			
HCM 6th Ctrl Delay		76.0	
HCM 6th LOS		E	

Notes

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

Intersection	
Int Delay, s/veh	0

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	1	0	0	1	0
Future Vol, veh/h	0	1	0	0	1	0
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	1	0	0	1	0

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	2	0	0	0	0	0
Stage 1	0	-	-	-	-	-
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	1021	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	1021	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	1021	-	-	-	-	-
Mov Cap-2 Maneuver	1021	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	1021	-	-	-	-	-

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

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

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	500	42	508	41	39	331	1429	55	1814	666
Future Volume (vph)	500	42	508	41	39	331	1429	55	1814	666
Turn Type	Split	NA	pm+ov	Split	NA	Prot	NA	Prot	NA	pm+ov
Protected Phases	4	4	5	8	8	5	2	1	6	4
Permitted Phases			4							6
Detector Phase	4	4	5	8	8	5	2	1	6	4
Switch Phase										
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0	7.0	10.0	5.0	10.0	7.0
Minimum Split (s)	13.0	13.0	13.0	13.0	13.0	13.0	16.7	11.0	16.0	13.0
Total Split (s)	30.0	30.0	21.0	19.0	19.0	21.0	58.0	13.0	50.0	30.0
Total Split (%)	25.0%	25.0%	17.5%	15.8%	15.8%	17.5%	48.3%	10.8%	41.7%	25.0%
Yellow Time (s)	4.0	4.0	4.0	3.6	3.6	4.0	4.7	3.3	4.7	4.0
All-Red Time (s)	1.5	1.5	1.5	2.0	2.0	1.5	1.0	2.0	1.0	1.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	5.5	5.5	5.6	5.6	5.5	5.7	5.3	5.7	5.5
Lead/Lag			Lead			Lead	Lag	Lead	Lag	
Lead-Lag Optimize?										
Recall Mode	None	None	None	None	None	None	None	None	C-Max	None
Act Effct Green (s)	23.8	23.8	40.7	8.2	8.2	16.9	59.7	8.2	48.8	78.3
Actuated g/C Ratio	0.20	0.20	0.34	0.07	0.07	0.14	0.50	0.07	0.41	0.65
v/c Ratio	0.90	0.90	0.89	0.38	0.37	0.76	0.65	0.50	0.98	0.63
Control Delay	77.0	77.0	35.4	62.1	28.9	60.3	25.1	67.8	50.5	8.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	77.0	77.0	35.4	62.1	28.9	60.3	25.1	67.8	50.5	8.4
LOS	E	E	D	E	C	E	C	E	D	A
Approach Delay		56.9			39.3		31.5		39.8	
Approach LOS		E			D		C		D	

Intersection Summary			
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 0 (0%), Referenced to phase 6:SBT, Start of Green			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.98			
Intersection Signal Delay: 40.3		Intersection LOS: D	
Intersection Capacity Utilization 86.3%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 9: Scottsdale Rd & Lincoln Dr

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	500	42	508	41	39	52	331	1429	43	55	1814	666
Future Volume (veh/h)	500	42	508	41	39	52	331	1429	43	55	1814	666
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	590	0	564	46	43	58	368	1588	48	61	2016	740
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	727	0	517	103	103	92	422	2286	69	78	1885	909
Arrive On Green	0.20	0.00	0.20	0.06	0.06	0.06	0.12	0.45	0.45	0.04	0.37	0.37
Sat Flow, veh/h	3563	0	1585	1781	1777	1585	3456	5093	154	1781	5106	1585
Grp Volume(v), veh/h	590	0	564	46	43	58	368	1061	575	61	2016	740
Grp Sat Flow(s),veh/h/ln	1781	0	1585	1781	1777	1585	1728	1702	1843	1781	1702	1585
Q Serve(g_s), s	19.0	0.0	24.5	3.0	2.8	4.3	12.6	30.0	30.0	4.1	44.3	44.3
Cycle Q Clear(g_c), s	19.0	0.0	24.5	3.0	2.8	4.3	12.6	30.0	30.0	4.1	44.3	44.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.08	1.00		1.00
Lane Grp Cap(c), veh/h	727	0	517	103	103	92	422	1528	827	78	1885	909
V/C Ratio(X)	0.81	0.00	1.09	0.45	0.42	0.63	0.87	0.69	0.69	0.78	1.07	0.81
Avail Cap(c_a), veh/h	727	0	517	199	198	177	446	1528	827	114	1885	909
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	45.5	0.0	40.4	54.7	54.6	55.3	51.8	26.5	26.5	56.8	37.8	20.4
Incr Delay (d2), s/veh	6.4	0.0	66.5	1.1	1.0	2.7	15.5	1.2	2.1	10.4	42.2	7.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	9.0	0.0	24.6	1.4	1.3	1.8	6.3	12.2	13.4	2.1	25.4	24.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	52.0	0.0	106.9	55.8	55.6	57.9	67.3	27.6	28.6	67.2	80.0	28.3
LnGrp LOS	D	A	F	E	E	E	E	C	C	E	F	C
Approach Vol, veh/h		1154			147			2004			2817	
Approach Delay, s/veh		78.8			56.6			35.2			66.2	
Approach LOS		E			E			D			E	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	10.6	59.6		30.0	20.1	50.0		12.5				
Change Period (Y+Rc), s	* 5.3	5.7		5.5	5.5	5.7		5.6				
Max Green Setting (Gmax), s	* 7.7	52.3		24.5	15.5	44.3		13.4				
Max Q Clear Time (g_c+I1), s	6.1	32.0		26.5	14.6	46.3		6.3				
Green Ext Time (p_c), s	0.0	2.4		0.0	0.1	0.0		0.2				

Intersection Summary			
HCM 6th Ctrl Delay		58.2	
HCM 6th LOS		E	

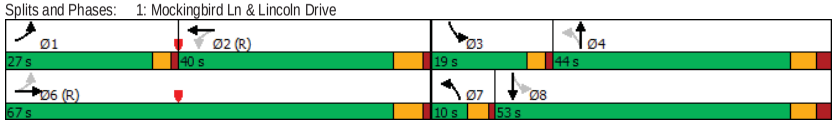
Notes
User approved pedestrian interval to be less than phase max green.
User approved volume balancing among the lanes for turning movement.
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	267	958	27	1023	8	68	70	52
Future Volume (vph)	267	958	27	1023	8	68	70	52
Turn Type	pm+pt	NA	Perm	NA	pm+pt	NA	pm+pt	NA
Protected Phases	1	6		2	7	4	3	8
Permitted Phases	6		2		4		8	
Detector Phase	1	6	2	2	7	4	3	8
Switch Phase								
Minimum Initial (s)	3.5	15.0	15.0	15.0	5.0	7.0	3.5	7.0
Minimum Split (s)	8.0	27.0	27.0	27.0	9.5	33.5	8.0	33.5
Total Split (s)	27.0	67.0	40.0	40.0	10.0	44.0	19.0	53.0
Total Split (%)	20.8%	51.5%	30.8%	30.8%	7.7%	33.8%	14.6%	40.8%
Yellow Time (s)	3.0	4.5	4.5	4.5	3.5	4.0	3.0	4.0
All-Red Time (s)	1.0	1.5	1.5	1.5	1.0	2.5	1.0	2.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	6.0	6.0	6.0	4.5	6.5	4.0	6.5
Lead/Lag	Lead		Lag	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	C-Max	C-Max	C-Max	None	None	None	None
Act Effct Green (s)	95.6	93.6	69.2	69.2	18.2	11.8	26.4	21.9
Actuated g/C Ratio	0.74	0.72	0.53	0.53	0.14	0.09	0.20	0.17
v/c Ratio	0.73	0.43	0.12	0.65	0.06	0.57	0.30	0.63
Control Delay	29.7	9.2	10.7	19.9	37.6	61.9	42.9	27.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	29.7	9.2	10.7	19.9	37.6	61.9	42.9	27.4
LOS	C	A	B	B	D	E	D	C
Approach Delay		13.5		19.6		59.9		31.1
Approach LOS		B		B		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: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.73
Intersection Signal Delay: 19.5 — Intersection LOS: B
Intersection Capacity Utilization 72.2% — ICU Level of Service C
Analysis Period (min) 15

Splits and Phases: 1: Mockingbird Ln & Lincoln Drive



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	267	958	32	27	1023	71	8	68	21	70	52	169
Future Volume (veh/h)	267	958	32	27	1023	71	8	68	21	70	52	169
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	297	1064	36	30	1137	79	9	76	23	78	58	188
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	347	2404	81	337	1914	133	106	190	58	257	67	217
Arrive On Green	0.09	0.69	0.69	0.38	0.38	0.38	0.01	0.14	0.14	0.05	0.17	0.17
Sat Flow, veh/h	1781	3507	119	513	3371	234	1781	1378	417	1781	388	1257
Grp Volume(v), veh/h	297	539	561	30	599	617	9	0	99	78	0	246
Grp Sat Flow(s),veh/h/ln	1781	1777	1849	513	1777	1828	1781	0	1795	1781	0	1644
Q Serve(g_s), s	8.6	17.8	17.8	5.0	35.1	35.1	0.6	0.0	6.5	4.7	0.0	18.9
Cycle Q Clear(g_c), s	8.6	17.8	17.8	7.5	35.1	35.1	0.6	0.0	6.5	4.7	0.0	18.9
Prop In Lane	1.00		0.06	1.00		0.13	1.00		0.23	1.00		0.76
Lane Grp Cap(c), veh/h	347	1218	1268	337	1009	1038	106	0	248	257	0	284
V/C Ratio(X)	0.86	0.44	0.44	0.09	0.59	0.59	0.09	0.00	0.40	0.30	0.00	0.86
Avail Cap(c_a), veh/h	507	1218	1268	337	1009	1038	162	0	518	375	0	588
HCM Platoon Ratio	1.00	1.00	1.00	0.67	0.67	0.67	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.53	0.53	0.53	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	21.7	9.2	9.2	20.6	28.3	28.3	48.1	0.0	51.1	43.5	0.0	52.3
Incr Delay (d2), s/veh	9.5	1.2	1.1	0.3	1.4	1.3	0.3	0.0	1.0	0.7	0.0	7.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.3	6.9	7.2	0.7	16.2	16.7	0.3	0.0	3.0	2.2	0.0	8.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	31.2	10.4	10.4	20.8	29.6	29.6	48.5	0.0	52.1	44.1	0.0	60.0
LnGrp LOS	C	B	B	C	C	C	D	A	D	D	A	E
Approach Vol, veh/h		1397			1246			108			324	
Approach Delay, s/veh		14.8			29.4			51.8			56.2	
Approach LOS		B			C			D			E	
Timer - Assigned Phs	1	2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s	15.3	79.8	10.4	24.5		95.1	5.9	29.0				
Change Period (Y+Rc), s	4.0	6.0	4.0	6.5		6.0	4.5	6.5				
Max Green Setting (Gmax), s	23.0	34.0	15.0	37.5		61.0	5.5	46.5				
Max Q Clear Time (g_c+I1), s	10.6	37.1	6.7	8.5		19.8	2.6	20.9				
Green Ext Time (p_c), s	0.7	0.0	0.1	0.5		9.4	0.0	1.6				

Intersection Summary

HCM 6th Ctrl Delay	26.4	
HCM 6th LOS	C	

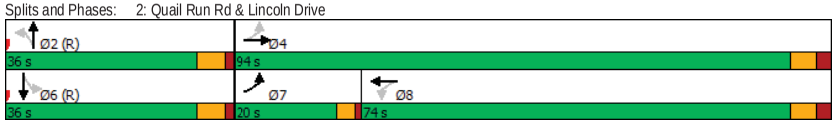
Notes

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

Lane Group	EBL	EBT	WBT	NBL	NBT	SBL	SBT
Lane Configurations							
Traffic Volume (vph)	85	981	1024	1	0	14	0
Future Volume (vph)	85	981	1024	1	0	14	0
Turn Type	pm+pt	NA	NA	Perm	NA	Perm	NA
Protected Phases	7	4	8		2		6
Permitted Phases	4			2		6	
Detector Phase	7	4	8	2	2	6	6
Switch Phase							
Minimum Initial (s)	3.5	15.0	15.0	7.0	7.0	7.0	7.0
Minimum Split (s)	8.0	28.0	28.0	33.0	33.0	33.0	33.0
Total Split (s)	20.0	94.0	74.0	36.0	36.0	36.0	36.0
Total Split (%)	15.4%	72.3%	56.9%	27.7%	27.7%	27.7%	27.7%
Yellow Time (s)	3.0	4.0	4.0	4.5	4.5	4.5	4.5
All-Red Time (s)	1.0	2.5	2.5	1.5	1.5	1.5	1.5
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	4.0	6.5	6.5		6.0	6.0	6.0
Lead/Lag	Lead		Lag				
Lead-Lag Optimize?	Yes		Yes				
Recall Mode	None	None	None	C-Max	C-Max	C-Max	C-Max
Act Effct Green (s)	71.6	69.1	55.1		48.4	48.4	48.4
Actuated g/C Ratio	0.55	0.53	0.42		0.37	0.37	0.37
v/c Ratio	0.43	0.58	0.78		0.00	0.03	0.14
Control Delay	29.8	34.5	44.3		0.0	31.2	0.4
Queue Delay	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	29.8	34.5	44.3		0.0	31.2	0.4
LOS	C	C	D		A	C	A
Approach Delay		34.2	44.3				4.5
Approach LOS		C	D				A

Intersection Summary		
Cycle Length: 130		
Actuated Cycle Length: 130		
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green		
Natural Cycle: 70		
Control Type: Actuated-Coordinated		
Maximum v/c Ratio: 0.78		
Intersection Signal Delay: 37.5	Intersection LOS: D	
Intersection Capacity Utilization 61.3%	ICU Level of Service B	
Analysis Period (min) 15		

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	85	981	2	0	1024	25	1	0	2	14	0	93
Future Volume (veh/h)	85	981	2	0	1024	25	1	0	2	14	0	93
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			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	94	1090	2	0	1138	28	1	0	2	16	0	103
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	183	1569	3	55	1251	31	251	17	462	727	0	749
Arrive On Green	0.09	0.86	0.86	0.00	0.71	0.71	0.47	0.00	0.47	0.47	0.00	0.47
Sat Flow, veh/h	1781	3639	7	516	3544	87	453	36	979	1415	0	1585
Grp Volume(v), veh/h	94	532	560	0	570	596	3	0	0	16	0	103
Grp Sat Flow(s),veh/h/ln	1781	1777	1869	516	1777	1855	1468	0	0	1415	0	1585
Q Serve(g_s), s	4.3	13.4	13.4	0.0	34.3	34.3	0.0	0.0	0.0	0.0	0.0	4.8
Cycle Q Clear(g_c), s	4.3	13.4	13.4	0.0	34.3	34.3	4.8	0.0	0.0	0.7	0.0	4.8
Prop In Lane	1.00		0.00	1.00		0.05	0.33		0.67	1.00		1.00
Lane Grp Cap(c), veh/h	183	766	806	55	627	655	731	0	0	727	0	749
V/C Ratio(X)	0.51	0.69	0.69	0.00	0.91	0.91	0.00	0.00	0.00	0.02	0.00	0.14
Avail Cap(c_a), veh/h	318	1196	1258	141	923	963	731	0	0	727	0	749
HCM Platoon Ratio	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.91	0.91	0.91	0.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	28.2	6.0	6.0	0.0	17.4	17.4	18.1	0.0	0.0	18.3	0.0	19.3
Incr Delay (d2), s/veh	2.0	1.0	1.0	0.0	9.4	9.1	0.0	0.0	0.0	0.1	0.0	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.8	2.7	2.8	0.0	9.3	9.7	0.1	0.0	0.0	0.3	0.0	1.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	30.2	7.0	7.0	0.0	26.8	26.5	18.1	0.0	0.0	18.3	0.0	19.7
LnGrp LOS	C	A	A	A	C	C	B	A	A	B	A	B
Approach Vol, veh/h		1186			1166			3			119	
Approach Delay, s/veh		8.9			26.7			18.1			19.5	
Approach LOS		A			C			B			B	
Timer - Assigned Phs		2		4		6	7	8				
Phs Duration (G+Y+Rc), s		67.4		62.6		67.4	10.2	52.4				
Change Period (Y+Rc), s		6.0		6.5		6.0	4.0	6.5				
Max Green Setting (Gmax), s		30.0		87.5		30.0	16.0	67.5				
Max Q Clear Time (g_c+I1), s		6.8		15.4		6.8	6.3	36.3				
Green Ext Time (p_c), s		0.0		9.7		0.6	0.1	9.6				

Intersection Summary		
HCM 6th Ctrl Delay	17.8	
HCM 6th LOS	B	

Intersection	
Int Delay, s/veh	0.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	978	20	36	1032	18	34
Future Vol, veh/h	978	20	36	1032	18	34
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	25	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1087	22	40	1147	20	38

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1109	0	1752	555
Stage 1	-	-	-	-	1098	-
Stage 2	-	-	-	-	654	-
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	-	-	625	-	77	475
Stage 1	-	-	-	-	281	-
Stage 2	-	-	-	-	479	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	625	-	72	475
Mov Cap-2 Maneuver	-	-	-	-	180	-
Stage 1	-	-	-	-	263	-
Stage 2	-	-	-	-	479	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.4	19.7
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	303	-	-	625	-
HCM Lane V/C Ratio	0.191	-	-	0.064	-
HCM Control Delay (s)	19.7	-	-	11.2	-
HCM Lane LOS	C	-	-	B	-
HCM 95th %tile Q(veh)	0.7	-	-	0.2	-

Intersection	
Int Delay, s/veh	0.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	1005	7	21	1038	30	26
Future Vol, veh/h	1005	7	21	1038	30	26
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	25	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1117	8	23	1153	33	29

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1125	0	1744	563
Stage 1	-	-	-	-	1121	-
Stage 2	-	-	-	-	623	-
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	-	-	617	-	78	470
Stage 1	-	-	-	-	273	-
Stage 2	-	-	-	-	497	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	617	-	75	470
Mov Cap-2 Maneuver	-	-	-	-	185	-
Stage 1	-	-	-	-	263	-
Stage 2	-	-	-	-	497	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.2	23.4
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	257	-	-	617	-
HCM Lane V/C Ratio	0.242	-	-	0.038	-
HCM Control Delay (s)	23.4	-	-	11.1	-
HCM Lane LOS	C	-	-	B	-
HCM 95th %tile Q(veh)	0.9	-	-	0.1	-

Intersection	
Int Delay, s/veh	0.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	1027	4	0	1058	2	30
Future Vol, veh/h	1027	4	0	1058	2	30
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
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	1141	4	0	1176	2	33

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	1731	573
Stage 1	-	-	-	-	1143	-
Stage 2	-	-	-	-	588	-
Critical Hdwy	-	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	0	-	79	463
Stage 1	-	-	0	-	266	-
Stage 2	-	-	0	-	518	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	79	463
Mov Cap-2 Maneuver	-	-	-	-	192	-
Stage 1	-	-	-	-	266	-
Stage 2	-	-	-	-	518	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	13.4
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	463	-	-	-
HCM Lane V/C Ratio	0.072	-	-	-
HCM Control Delay (s)	13.4	-	-	-
HCM Lane LOS	B	-	-	-
HCM 95th %tile Q(veh)	0.2	-	-	-

Intersection	
Int Delay, s/veh	27

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	8	990	46	7	954	10	74	3	53	8	0	38
Future Vol, veh/h	8	990	46	7	954	10	74	3	53	8	0	38
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	25	-	-	25	-	-	-	-	-	0	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	9	1100	51	8	1060	11	82	3	59	9	0	42

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1071	0	0	1151	0	0	1690	2231	576	1652	-	536
Stage 1	-	-	-	-	-	-	1144	1144	-	1082	-	-
Stage 2	-	-	-	-	-	-	546	1087	-	570	-	-
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	647	-	-	603	-	-	~ 61	42	460	65	0	489
Stage 1	-	-	-	-	-	-	213	273	-	232	0	-
Stage 2	-	-	-	-	-	-	490	290	-	474	0	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	647	-	-	603	-	-	~ 55	41	460	52	-	489
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 55	41	-	52	-	-
Stage 1	-	-	-	-	-	-	210	269	-	229	-	-
Stage 2	-	-	-	-	-	-	442	286	-	403	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0.1	$ 443.8	26.1
HCM LOS			F	D

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	85	647	-	-	603	-	-	52	489
HCM Lane V/C Ratio	1.699	0.014	-	-	0.013	-	-	0.171	0.086
HCM Control Delay (s)	$ 443.8	10.6	-	-	11	-	-	88	13.1
HCM Lane LOS	F	B	-	-	B	-	-	F	B
HCM 95th %tile Q(veh)	12	0	-	-	0	-	-	0.6	0.3

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

Intersection	
Int Delay, s/veh	4.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	12	983	60	69	952	9	16	1	100	5	0	8
Future Vol, veh/h	12	983	60	69	952	9	16	1	100	5	0	8
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	25	-	-	25	-	-	-	-	-	0	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	13	1092	67	77	1058	10	18	1	111	6	0	9

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1068	0	0	1159	0	0	1835	2374	580	1790	-	534
Stage 1	-	-	-	-	-	-	1152	1152	-	1217	-	-
Stage 2	-	-	-	-	-	-	683	1222	-	573	-	-
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	648	-	-	599	-	-	47	34	458	51	0	491
Stage 1	-	-	-	-	-	-	210	270	-	192	0	-
Stage 2	-	-	-	-	-	-	405	250	-	472	0	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	648	-	-	599	-	-	41	29	458	33	-	491
Mov Cap-2 Maneuver	-	-	-	-	-	-	41	29	-	33	-	-
Stage 1	-	-	-	-	-	-	206	265	-	188	-	-
Stage 2	-	-	-	-	-	-	347	218	-	349	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0.8	62.9	59.6
HCM LOS			F	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	182	648	-	-	599	-	-	33	491
HCM Lane V/C Ratio	0.714	0.021	-	-	0.128	-	-	0.168	0.018
HCM Control Delay (s)	62.9	10.7	-	-	11.9	-	-	135	12.5
HCM Lane LOS	F	B	-	-	B	-	-	F	B
HCM 95th %tile Q(veh)	4.5	0.1	-	-	0.4	-	-	0.5	0.1

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	569	61	481	61	68	461	1762	66	1702	546
Future Volume (vph)	569	61	481	61	68	461	1762	66	1702	546
Turn Type	Split	NA	pm+ov	Split	NA	Prot	NA	Prot	NA	pm+ov
Protected Phases	4	4	5	8	8	5	2	1	6	4
Permitted Phases			4							6
Detector Phase	4	4	5	8	8	5	2	1	6	4
Switch Phase										
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0	7.0	10.0	5.0	10.0	7.0
Minimum Split (s)	13.0	13.0	13.0	13.0	13.0	13.0	16.7	11.0	16.0	13.0
Total Split (s)	32.0	32.0	27.0	21.0	21.0	27.0	54.0	23.0	50.0	32.0
Total Split (%)	24.6%	24.6%	20.8%	16.2%	16.2%	20.8%	41.5%	17.7%	38.5%	24.6%
Yellow Time (s)	4.0	4.0	4.0	3.6	3.6	4.0	4.7	3.3	4.7	4.0
All-Red Time (s)	1.5	1.5	1.5	2.0	2.0	1.5	1.0	2.0	1.0	1.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	5.5	5.5	5.6	5.6	5.5	5.7	5.3	5.7	5.5
Lead/Lag			Lead			Lead	Lag	Lead	Lag	
Lead-Lag Optimize?										
Recall Mode	None	None	None	None	None	None	None	None	C-Max	None
Act Effct Green (s)	26.5	26.5	49.8	9.7	9.7	23.3	64.1	9.7	48.2	80.4
Actuated g/C Ratio	0.20	0.20	0.38	0.07	0.07	0.18	0.49	0.07	0.37	0.62
v/c Ratio	1.02	1.02	0.77	0.52	0.50	0.83	0.81	0.55	1.00	0.57
Control Delay	116.0	115.7	24.0	71.2	32.4	63.8	32.3	72.8	62.7	11.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	116.0	115.7	24.0	71.2	32.4	63.8	32.3	72.8	62.7	11.4
LOS	F	F	C	E	C	E	C	E	E	B
Approach Delay		76.1			43.9		38.6		50.8	
Approach LOS		E			D		D		D	

Intersection Summary		
Cycle Length: 130		
Actuated Cycle Length: 130		
Offset: 0 (0%), Referenced to phase 6:SBT, Start of Green		
Natural Cycle: 100		
Control Type: Actuated-Coordinated		
Maximum v/c Ratio: 1.02		
Intersection Signal Delay: 50.6	Intersection LOS: D	
Intersection Capacity Utilization 87.8%	ICU Level of Service E	
Analysis Period (min) 15		

Splits and Phases: 9: Scottsdale Rd & Lincoln Dr

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	569	61	481	61	68	78	461	1762	50	66	1702	546
Future Volume (veh/h)	569	61	481	61	68	78	461	1762	50	66	1702	546
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	681	0	534	68	76	87	512	1958	56	73	1891	607
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	726	0	580	128	128	114	559	2306	66	93	1740	863
Arrive On Green	0.07	0.00	0.07	0.07	0.07	0.07	0.16	0.45	0.45	0.05	0.34	0.34
Sat Flow, veh/h	3563	0	1585	1781	1777	1585	3456	5102	146	1781	5106	1585
Grp Volume(v), veh/h	681	0	534	68	76	87	512	1305	709	73	1891	607
Grp Sat Flow(s),veh/h/ln	1781	0	1585	1781	1777	1585	1728	1702	1844	1781	1702	1585
Q Serve(g_s), s	24.7	0.0	26.5	4.8	5.4	7.0	19.0	44.3	44.5	5.3	44.3	36.7
Cycle Q Clear(g_c), s	24.7	0.0	26.5	4.8	5.4	7.0	19.0	44.3	44.5	5.3	44.3	36.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.08	1.00		1.00
Lane Grp Cap(c), veh/h	726	0	580	128	128	114	559	1538	833	93	1740	863
V/C Ratio(X)	0.94	0.00	0.92	0.53	0.59	0.76	0.92	0.85	0.85	0.78	1.09	0.70
Avail Cap(c_a), veh/h	726	0	580	211	210	188	572	1538	833	243	1740	863
HCM Platoon Ratio	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	59.8	0.0	44.7	58.2	58.5	59.2	53.6	31.7	31.7	60.9	42.9	21.8
Incr Delay (d2), s/veh	19.5	0.0	19.9	1.3	1.6	3.9	18.8	4.4	7.9	5.4	49.3	4.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	13.9	0.0	18.8	2.2	2.5	2.9	9.7	18.8	21.3	2.5	26.3	21.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	79.3	0.0	64.6	59.5	60.1	63.1	72.5	36.1	39.7	66.2	92.2	26.6
LnGrp LOS	E	A	E	E	E	E	E	D	D	E	F	C
Approach Vol, veh/h		1215			231			2526			2571	
Approach Delay, s/veh		72.9			61.1			44.5			76.0	
Approach LOS		E			E			D			E	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	12.1	64.4		32.0	26.5	50.0		15.0				
Change Period (Y+Rc), s	* 5.3	5.7		5.5	5.5	5.7		5.6				
Max Green Setting (Gmax), s	* 18	48.3		26.5	21.5	44.3		15.4				
Max Q Clear Time (g_c+I1), s	7.3	46.5		28.5	21.0	46.3		9.0				
Green Ext Time (p_c), s	0.0	1.0		0.0	0.1	0.0		0.4				

Intersection Summary			
HCM 6th Ctrl Delay		62.7	
HCM 6th LOS		E	

Notes

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

Intersection	
Int Delay, s/veh	0

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	1	0	0	1	0
Future Vol, veh/h	0	1	0	0	1	0
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	1	0	0	1	0

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	2	0	0	0	0	0
Stage 1	0	-	-	-	-	-
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	1021	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	1021	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	1021	-	-	-	-	-
Mov Cap-2 Maneuver	1021	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	1021	-	-	-	-	-

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

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

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	569	61	481	61	68	461	1762	66	1702	546
Future Volume (vph)	569	61	481	61	68	461	1762	66	1702	546
Turn Type	Split	NA	pm+ov	Split	NA	Prot	NA	Prot	NA	pm+ov
Protected Phases	4	4	5	8	8	5	2	1	6	4
Permitted Phases			4							6
Detector Phase	4	4	5	8	8	5	2	1	6	4
Switch Phase										
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0	7.0	10.0	5.0	10.0	7.0
Minimum Split (s)	13.0	13.0	13.0	13.0	13.0	13.0	16.7	11.0	16.0	13.0
Total Split (s)	30.0	30.0	21.0	19.0	19.0	21.0	58.0	13.0	50.0	30.0
Total Split (%)	25.0%	25.0%	17.5%	15.8%	15.8%	17.5%	48.3%	10.8%	41.7%	25.0%
Yellow Time (s)	4.0	4.0	4.0	3.6	3.6	4.0	4.7	3.3	4.7	4.0
All-Red Time (s)	1.5	1.5	1.5	2.0	2.0	1.5	1.0	2.0	1.0	1.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	5.5	5.5	5.6	5.6	5.5	5.7	5.3	5.7	5.5
Lead/Lag			Lead			Lead	Lag	Lead	Lag	
Lead-Lag Optimize?										
Recall Mode	None	None	None	None	None	None	None	None	C-Max	None
Act Effct Green (s)	24.5	24.5	44.0	9.4	9.4	19.5	57.8	8.4	44.3	74.5
Actuated g/C Ratio	0.20	0.20	0.37	0.08	0.08	0.16	0.48	0.07	0.37	0.62
v/c Ratio	1.01	1.01	0.82	0.49	0.49	0.92	0.83	0.59	1.01	0.56
Control Delay	100.0	99.6	29.0	64.6	29.9	72.4	31.6	73.2	60.5	9.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	100.0	99.6	29.0	64.6	29.9	72.4	31.6	73.2	60.5	9.2
LOS	F	F	C	E	C	E	C	E	E	A
Approach Delay		69.2			40.1		39.9		48.7	
Approach LOS		E			D		D		D	

Intersection Summary			
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 0 (0%), Referenced to phase 6:SBT, Start of Green			
Natural Cycle: 100			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.01			
Intersection Signal Delay: 48.9		Intersection LOS: D	
Intersection Capacity Utilization 87.8%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 9: Scottsdale Rd & Lincoln Dr

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	569	61	481	61	68	78	461	1762	50	66	1702	546
Future Volume (veh/h)	569	61	481	61	68	78	461	1762	50	66	1702	546
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	681	0	534	68	76	87	512	1958	56	73	1891	607
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	727	0	528	130	130	116	446	2285	65	93	1885	909
Arrive On Green	0.20	0.00	0.20	0.07	0.07	0.07	0.13	0.45	0.45	0.05	0.37	0.37
Sat Flow, veh/h	3563	0	1585	1781	1777	1585	3456	5102	146	1781	5106	1585
Grp Volume(v), veh/h	681	0	534	68	76	87	512	1305	709	73	1891	607
Grp Sat Flow(s),veh/h/ln	1781	0	1585	1781	1777	1585	1728	1702	1844	1781	1702	1585
Q Serve(g_s), s	22.6	0.0	24.5	4.4	5.0	6.5	15.5	41.2	41.4	4.9	44.3	31.8
Cycle Q Clear(g_c), s	22.6	0.0	24.5	4.4	5.0	6.5	15.5	41.2	41.4	4.9	44.3	31.8
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.08	1.00		1.00
Lane Grp Cap(c), veh/h	727	0	528	130	130	116	446	1524	826	93	1885	909
V/C Ratio(X)	0.94	0.00	1.01	0.52	0.59	0.75	1.15	0.86	0.86	0.79	1.00	0.67
Avail Cap(c_a), veh/h	727	0	528	199	198	177	446	1524	826	114	1885	909
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	47.0	0.0	40.0	53.6	53.9	54.6	52.3	29.7	29.7	56.2	37.8	17.7
Incr Delay (d2), s/veh	19.2	0.0	41.8	1.2	1.6	3.7	89.4	4.8	8.6	19.7	21.5	3.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	11.9	0.0	21.5	2.0	2.3	2.7	12.2	17.4	19.8	2.7	21.8	18.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	66.2	0.0	81.8	54.8	55.4	58.2	141.7	34.5	38.3	75.9	59.3	21.6
LnGrp LOS	E	A	F	D	E	E	F	C	D	E	F	C
Approach Vol, veh/h		1215			231			2526			2571	
Approach Delay, s/veh		73.1			56.3			57.3			50.9	
Approach LOS		E			E			E			D	

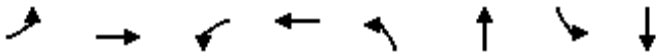
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	11.6	59.4		30.0	21.0	50.0		14.4				
Change Period (Y+Rc), s	* 5.3	5.7		5.5	5.5	5.7		5.6				
Max Green Setting (Gmax), s	* 7.7	52.3		24.5	15.5	44.3		13.4				
Max Q Clear Time (g_c+I1), s	6.9	43.4		26.5	17.5	46.3		8.5				
Green Ext Time (p_c), s	0.0	2.7		0.0	0.0	0.0		0.3				

Intersection Summary		
HCM 6th Ctrl Delay	57.7	
HCM 6th LOS	E	

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

APPENDIX I

QUEUE STORAGE ANALYSIS

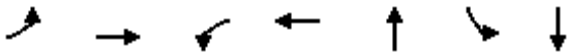


Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	269	1209	28	1132	7	69	94	388
v/c Ratio	0.75	0.52	0.13	0.63	0.05	0.29	0.27	0.85
Control Delay	30.1	14.1	8.6	11.4	29.7	34.6	36.4	49.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	30.1	14.1	8.6	11.4	29.7	34.6	36.4	49.1
Queue Length 50th (ft)	86	235	1	23	5	36	64	225
Queue Length 95th (ft)	231	473	m29	#729	13	68	85	310
Internal Link Dist (ft)		105		1255		475		337
Turn Bay Length (ft)	150		95		80		135	
Base Capacity (vph)	430	2345	221	1794	299	422	588	730
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.63	0.52	0.13	0.63	0.02	0.16	0.16	0.53

Intersection Summary

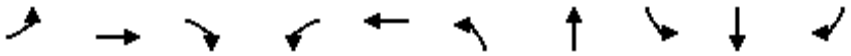
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

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



Lane Group	EBL	EBT	WBL	WBT	NBT	SBL	SBT
Lane Group Flow (vph)	128	1245	2	1054	10	29	73
v/c Ratio	0.55	0.70	0.02	0.77	0.01	0.05	0.09
Control Delay	35.4	35.7	21.5	38.4	0.0	28.4	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	35.4	35.7	21.5	38.4	0.0	28.4	0.2
Queue Length 50th (ft)	73	416	1	402	0	15	0
Queue Length 95th (ft)	151	626	6	426	0	42	0
Internal Link Dist (ft)		1255		319	137		291
Turn Bay Length (ft)	25		25				
Base Capacity (vph)	297	2382	149	1834	689	562	798
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.43	0.52	0.01	0.57	0.01	0.05	0.09

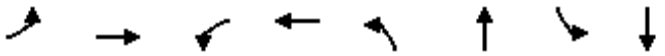
Intersection Summary



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	300	303	564	46	101	368	1636	61	2016	740
v/c Ratio	0.90	0.90	0.89	0.38	0.37	0.76	0.65	0.50	0.98	0.63
Control Delay	77.0	77.0	35.4	62.1	28.9	60.3	25.1	67.8	50.5	8.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	77.0	77.0	35.4	62.1	28.9	60.3	25.1	67.8	50.5	8.4
Queue Length 50th (ft)	238	241	228	35	16	142	347	46	560	133
Queue Length 95th (ft)	#404	#408	#317	73	45	194	436	91	#732	274
Internal Link Dist (ft)		389			130		477		335	
Turn Bay Length (ft)	175			90		275		185		
Base Capacity (vph)	343	346	641	197	412	497	2524	130	2067	1175
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.87	0.88	0.88	0.23	0.25	0.74	0.65	0.47	0.98	0.63

Intersection Summary

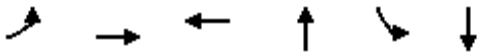
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	297	1100	30	1216	9	99	78	246
v/c Ratio	0.76	0.43	0.11	0.63	0.05	0.57	0.30	0.62
Control Delay	30.7	9.2	3.3	6.4	37.2	62.3	42.7	25.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	30.7	9.2	3.3	6.4	37.2	62.3	42.7	25.8
Queue Length 50th (ft)	115	190	1	22	6	72	54	70
Queue Length 95th (ft)	230	291	m8	578	20	127	91	164
Internal Link Dist (ft)		105		1255		475		337
Turn Bay Length (ft)	150		95		80		135	
Base Capacity (vph)	441	2534	263	1915	313	408	566	743
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.67	0.43	0.11	0.63	0.03	0.24	0.14	0.33

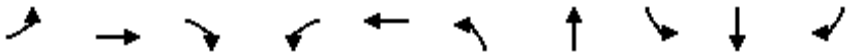
Intersection Summary

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



Lane Group	EBL	EBT	WBT	NBT	SBL	SBT
Lane Group Flow (vph)	94	1092	1166	3	16	103
v/c Ratio	0.43	0.58	0.78	0.00	0.03	0.14
Control Delay	28.4	19.9	35.7	0.0	31.2	0.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	28.4	19.9	35.7	0.0	31.2	0.4
Queue Length 50th (ft)	41	264	436	0	9	0
Queue Length 95th (ft)	92	289	458	0	29	0
Internal Link Dist (ft)		1255	319	137		291
Turn Bay Length (ft)	25					
Base Capacity (vph)	292	2382	1831	648	524	749
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.32	0.46	0.64	0.00	0.03	0.14

Intersection Summary



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	348	352	534	68	163	512	2014	73	1891	607
v/c Ratio	1.01	1.01	0.82	0.49	0.49	0.92	0.83	0.59	1.01	0.56
Control Delay	100.0	99.6	29.0	64.6	29.9	72.4	31.6	73.2	60.5	9.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	100.0	99.6	29.0	64.6	29.9	72.4	31.6	73.2	60.5	9.2
Queue Length 50th (ft)	~292	~295	210	52	30	202	503	55	~540	138
Queue Length 95th (ft)	#495	#501	#346	97	63	#344	597	#120	#658	232
Internal Link Dist (ft)		389			130		477		335	
Turn Bay Length (ft)	175			90		275		185		
Base Capacity (vph)	343	347	654	197	440	558	2441	130	1877	1080
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.01	1.01	0.82	0.35	0.37	0.92	0.83	0.56	1.01	0.56

Intersection Summary

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

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

Signalized Intersection
2025

Average Vehicle Length (ft): 25 Cycles: 2
Intersection Cycle Length (sec): 130
Equation Used: storage length = 2 x (vehicles/hour)/(cycles/hour) x average vehicle length

Intersection	Approach	AM Peak (veh/hr)	Midday Peak	PM Peak (veh/hr)	Max vehs per 2 cycles	Max trucks per 2 cycles	Storage Length
Mockingbird Lane & Lincoln Dr	NB Left	6	0	8	1	0	25'
	SB Left	85	0	70	7	0	175'
	EB Left	242	0	267	20	0	500'
	WB Left	25	0	27	2	0	50'
	NB Right	25	0	21	2	0	50'
	SB Right	253	0	169	19	0	475'
	EB Right	33	0	32	3	0	75'
	WB Right	48	0	71	6	0	150'
Quail Run Rd & Lincoln Dr	NB Left	1	0	1	1	0	25'
	SB Left	26	0	14	2	0	50'
	EB Left	115	0	85	9	0	225'
	WB Left	2	0	0	1	0	25'
	NB Right	8	0	2	1	0	25'
	SB Right	66	0	93	7	0	175'
	EB Right	4	0	2	1	0	25'
	WB Right	12	0	25	2	0	50'
Scottsdale Rd & Lincoln Dr	NB Left	331	0	461	34	0	850'
	SB Left	55	0	66	5	0	125'
	EB Left	500	0	569	42	0	1050'
	WB Left	41	0	61	5	0	125'
	NB Right	43	0	50	4	0	100'
	SB Right	666	0	546	49	0	1225'
	EB Right	508	0	481	37	0	925'
	WB Right	52	0	78	6	0	150'

Unsignalized Intersection
2025

Average Vehicle Length (ft): 25

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

Intersection	Approach	AM Peak (veh/hr)	Midday Peak	PM Peak (veh/hr)	Veh per 2 minutes	Trucks per 2 minutes	Storage Length
Smoke Tree Access B & Lincoln Dr	NB Left	16	0	18	1	0	25'
	SB Left	0	0	0	0	0	0'
	EB Left	0	0	0	0	0	0'
	WB Left	26	0	36	2	0	50'
	NB Right	22	0	34	2	0	50'
	SB Right	0	0	0	0	0	0'
	EB Right	17	0	20	1	0	25'
	WB Right	0	0	0	0	0	0'

APPENDIX J

SIGHT DISTANCE ANALYSIS

Smoke Tree **Sight Distance Analysis**

Location: Smoke Tree Access B & Lincoln Dr

Assumptions and/or Givens

Elements of Design from AASHTO	*6th Edition*		*AASHTO Ref*
Driver Eye Height			
Passenger Vehicle	3.50	ft	§3.2.6, p 3-14
Truck	7.60	ft	§3.2.6, p 3-14
Object Height			
Stopping Sight Distance	2.00	ft	§3.2.6, p 3-14
Passing Sight Distance	3.50	ft	§3.2.6, p 3-14
Vehicle Height	4.25	ft	§3.2.6, p 3-14
Driver Eye Location			
From Edge of Major Rd Traveled Way	14.50	ft	9.5.3, B1
Deceleration Rate (a)			
Passenger Vehicle	11.20	ft/sec^2	§3.2.2, p 3-3
Truck	N/A	ft	
Brake reaction time (t)	2.50	sec	§3.2.2, p 3-4

Site Specific Data (Bike & turn lanes are outside traveled way and are not considered)

Major Street Design Speed (V_{major})		45 MPH	
Grades - Approaching Minor Street from: (– = approaching downhill)			
Left (G_L)		0.00 %	
Right (G_R)		0.00 %	
Approach Grade Adjustment Factor	Left	1.0	Tbl 9-4, p 9-35
	Right	1.0	
Major Road Through Lanes on Each Approach		2.0	(Use 1 for RI/RO[/LI] only)
Median Width (in "Lane Equivalents")		12.0	(Use 0 for RI/RO[/LI] only)
Minor Road Approach Upgrade, if >3%		0.00 %	

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 3-4

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, p 3-6

Location: Smoke Tree Access B & Lincoln Dr

Intersection Sight Distances

Case B—Intersections with Stop Control on the Minor Road — *AASHTO Ref* §9.5.3, p 9-36

Case B1—Left Turn from the Minor Road — §9.5.3, p 9-36

Design Vehicle	Time Gap (t_g)		AASHTO Ref
Passenger Car	7.5	sec	Tbl 9-5, p 9-37
Single-Unit Tuck	9.5	sec	Tbl 9-5, p 9-37
Combination Truck	11.5	sec	Tbl 9-5, p 9-37
Time gap adjustments			
Add'l lanes to cross (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, p 9-37
Minor Road Approach Upgrade, if >3%	0	%	§9.5.3, p 9-37

Time Gap based on site data

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

Passenger Car	14.0	sec	
Single-Unit Tuck	18.6	sec	
Combination Truck	20.6	sec	

ISD to left & right along Major Road — $ISD=1.47V_{major}t_g$ (ft) — Eq 9-1, p 9-37

			ISD to Left and Right	
Passenger Car	calculated	ISD=	926.1	ft
	design	ISD=	930	ft
Single-Unit Tuck	calculated	ISD=	1230.4	ft
	design	ISD=	1235	ft
Combination Truck	calculated	ISD=	1362.7	ft
	design	ISD=	1365	ft

Location: Smoke Tree Access B & Lincoln Dr

Intersection Sight Distances (cont'd)

		AASHTO Ref
Case B2–Right Turn from the Minor Road		§9.5.3, p 9-40
&		
Case B3–Crossing Maneuver from the Minor Road		§9.5.3, p 9-43
Design Vehicle	Time Gap (t_g)	
Passenger Car	6.5 sec	Tbl 9-7, p 9-40
Single-Unit Tuck	8.5 sec	Tbl 9-7, p 9-40
Combination Truck	10.5 sec	Tbl 9-7, p 9-40
Time gap adjustments - Case B-3 Only*		
Add'l lanes to cross (1st is assumed)		
Passenger Car	0.5 sec	See Notes
Trucks	0.7 sec	below
Minor Approach Upgrade (Per each 1%>3%)	0.1 sec	Tbl 9-7, p 9-40
Site data		
Major Road Lanes on Left Approach	2.0	§9.5.3, p 9-40
Minor Road Approach Upgrade, if >3%	0 %	§9.5.3, p 9-40

Time Gap based on site data (sec)	B2 & B3	B3 Only
Design Vehicle Gap+Adj for Approach Grade>3%(+Adjs for Add'l Lanes & Median for B3)		
Passenger Car	13.0	13.5
Single-Unit Tuck	17.6	18.3
Combination Truck	19.6	20.3

ISD to left (B2/B3) & right (B3) along Major Rd $ISD = 1.47 V_{major} t_g$ (ft) Eq 9-1, p 9-37

			ISD to Left (B2 & B3)	ISD to right (B3 Only)
Passenger Car	calculated	ISD=	860.0	893.0
	design	ISD=	860	895
Single-Unit Tuck	calculated	ISD=	1164.2	1210.5
	design	ISD=	1165	1215
Combination Truck	calculated	ISD=	1296.5	1342.8
	design	ISD=	1300	1345

*Number of major road lanes is irrelevant in Case B2.

The differences between Case B1 and Cases B2 & B3 are reduced time gaps and time gap adjustment for the minor approach upgrade. §9.5.3, p 9-43

Location: Smoke Tree Access B & Lincoln Dr

Intersection Sight Distances (cont'd)

Case F—Left Turns from the Major Road ***AASHTO Ref*** §9.5.3, p 9-51

Design Vehicle	Time Gap (t_g)	
Passenger Car	5.5 sec	bl 9-13, p 9-51
Single-Unit Tuck	6.5 sec	bl 9-13, p 9-51
Combination Truck	7.5 sec	bl 9-13, p 9-51
Time gap adjustments		
Add'l lanes to cross (1 assumed)		
Passenger Car	0.5 sec	See Notes to
Trucks	0.7 sec	bl 9-13, p 9-51

Site data
Opposing Lanes (adj'd for x-wide median) 13.0

Time Gap based on site data
Design Vehicle Gap+Adj for Add'l Opposing Lanes

Passenger Car		12.0	sec
Single-Unit Tuck		15.6	sec
Combination Truck		16.6	sec

ISD to front along Major Road $ISD=1.47V_{major}t_g$ (ft) Eq 9-1, p 9-37

Passenger Car	calculated	ISD=	793.8	ft
	design	ISD=	795	ft
Single-Unit Tuck	calculated	ISD=	1031.9	ft
	design	ISD=	1035	ft
Combination Truck	calculated	ISD=	1098.1	ft
	design	ISD=	1100	ft

The differences between Case F and Cases B1, B2 & B3 are reduced time gaps and no time gap adjustment for any minor approach upgrade. §9.5.3, p 9-43

SIGHT DISTANCE SUMMARY

Sight Distance Type	Governing Case	Car	SU Truck	Combo Truck
Stopping				
Without effect of grade		360	N/A	N/A
With effect of grade on left		360	N/A	N/A
With effect of grade on right		360	N/A	N/A
Intersection				
To Right	B1	930	1235	1365
To Left	B2/B3	860	1165	1300
On Major Road	F	795	1035	1100

Assumptions and/or Givens

Elements of Design from AASHTO	***6th Edition***		***AASHTO Ref***
Driver Eye Height			
Passenger Vehicle	3.50	ft	§3.2.6, p 3-14
Truck	7.60	ft	§3.2.6, p 3-14
Object Height			
Stopping Sight Distance	2.00	ft	§3.2.6, p 3-14
Passing Sight Distance	3.50	ft	§3.2.6, p 3-14
Vehicle Height	4.25	ft	§3.2.6, p 3-14
Driver Eye Location			
From Edge of Major Rd Traveled Way	14.50	ft	9.5.3, B1
Deceleration Rate (a)			
Passenger Vehicle	11.20	ft/sec^2	§3.2.2, p 3-3
Truck	N/A	ft	
Brake reaction time (t)	2.50	sec	§3.2.2, p 3-4

Site Specific Data (Bike & turn lanes are outside traveled way and are not considered)

Major Street Design Speed (V_{major})	30	MPH	
Grades - Approaching Minor Street from: (– = approaching downhill)			
Left (G_L)		%	
Right (G_R)		%	
Approach Grade Adjustment Factor	Left 1.0		Tbl 9-4, p 9-35
	Right 1.0		
Major Road Through Lanes on Each Approach	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 3-4

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, p 3-6

Smoke Tree Resort **Sight Distance Analysis**
Location: Quail Run Road

Intersection Sight Distances

AASHTO Ref

Case B—Intersections with Stop Control on the Minor Road §9.5.3, p 9-36

Case B1—Left Turn from the Minor Road §9.5.3, p 9-36

Design Vehicle	Time Gap (t_g)		
Passenger Car	7.5	sec	Tbl 9-5, p 9-37
Single-Unit Tuck	9.5	sec	Tbl 9-5, p 9-37
Combination Truck	11.5	sec	Tbl 9-5, p 9-37

Time gap adjustments			
Add'l lanes to cross (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, p 9-37
Minor Road Approach Upgrade, if >3%	0	%	§9.5.3, p 9-37

Time Gap based on site data

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

Passenger Car	7.5	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 9-37

			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, p 9-40
&		
Case B3—Crossing Maneuver from the Minor Road		§9.5.3, p 9-43
Design Vehicle	Time Gap (t_g)	
Passenger Car	6.5 sec	Tbl 9-7, p 9-40
Single-Unit Tuck	8.5 sec	Tbl 9-7, p 9-40
Combination Truck	10.5 sec	Tbl 9-7, p 9-40
Time gap adjustments - Case B-3 Only*		
Add'l lanes to cross (1st is assumed)		
Passenger Car	0.5 sec	See Notes
Trucks	0.7 sec	below
Minor Approach Upgrade (Per each 1%>3%)	0.1 sec	Tbl 9-7, p 9-40
Site data		
Major Road Lanes on Left Approach	1.0	§9.5.3, p 9-40
Minor Road Approach Upgrade, if >3%	0 %	§9.5.3, p 9-40

Time Gap based on site data (sec)	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 9-37

			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, p 9-43

Intersection Sight Distances (cont'd)

		AASHTO Ref
Case F—Left Turns from the Major Road		§9.5.3, p 9-51
Design Vehicle	Time Gap (t_g)	
Passenger Car	5.5 sec	bl 9-13, p 9-51
Single-Unit Tuck	6.5 sec	bl 9-13, p 9-51
Combination Truck	7.5 sec	bl 9-13, p 9-51
Time gap adjustments		
Add'l lanes to cross (1 assumed)		
Passenger Car	0.5 sec	See Notes to
Trucks	0.7 sec	bl 9-13, p 9-51
Site data		
Opposing Lanes (adj'd for x-wide median)	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 9-37

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, p 9-43

SIGHT DISTANCE SUMMARY

Sight Distance Type	Governing Case	Car	SU Truck	Combo Truck
Stopping				
Without effect of grade		200	N/A	N/A
With effect of grade on left		200	N/A	N/A
With effect of grade on right		200	N/A	N/A
Intersection				
To Right	B1	335	420	510
To Left	B2/B3	290	375	465
On Major Road	F	245	290	335